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Schematic/Electrical Parts

30010, 30015 and 30022

G5X, T5X, T6X

E-P Express® Controls



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



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COMPONENT PARTS LIST

W7T5XPL/2024406N

<u>COMPONENT NUMBER</u>	<u>FUNCTION OF THIS COMPONENT</u>	<u>WHERE TO FIND THIS COMPONENT</u>	<u>MIL NOR P/N</u>	<u>DESCRIPTION</u>	<u>LOCATION</u>
01	>>>CONTROL BOX LAYOUTS				
BA	DETAIL- CONTROL PANEL H8J	W7T5JTG1	B2T2001033	3015/3022 T5X CONTROL PANEL	SEE FUNCTION
BADV	>>PRINTED CIRCUIT BOARDS				
BAFR	BOARD=DISPLAY/SWITCH PANEL	W7T5XBW	08BHEPSPT	EP+ SWITCH PANEL BD>TEST	BEHIND SWPNL
BAFR	BOARD FUSE/RELAY	W7T5XS+B	08BHFRCT	BD-T/V/X START CIRCUIT->TEST	CONTROL PANEL
BAFR	BOARD FUSE/RELAY	W7T5XS+B	08BHFRDT	BD-T/V/X START CIRCUIT->TEST	CONTROL PANEL
BAUP	BOARD=PROCESSOR+I/O	W7T5XBW	08BH18EPXT	188 PROC EP-EXPRESS->TEST	CONTROL PANEL
CR	>>RELAY-PILOT OR CONTROL				
CRD	RELAY-OK TO OPEN DOOR	W7T5XS+	09C024D71	RELAY 4PDT DIFGLD 14PN 240V	CONTROL PANEL
CRD	RELAY-OK TO OPEN DOOR	W7T5XS+A	09C024D71	RELAY 4PDT DIFGLD 14PN 240V	START/RELAY BD
CRD	RELAY-OK TO OPEN DOOR	W7T5XS+B	09C024D71	RELAY 4PDT DIFGLD 14PN 240V	START/RELAY BD
CRDL	RELAY-DOOR CLOSED AND LOCKED	W7T5XS+	09C024D71	RELAY 4PDT DIFGLD 14PN 240V	CONTROL PANEL
CRDL	RELAY-DOOR CLOSED AND LOCKED	W7T5XS+A	09C024D71	RELAY 4PDT DIFGLD 14PN 240V	START/RELAY BD
CRDL	RELAY-DOOR CLOSED AND LOCKED	W7T5XS+B	09C024D71	RELAY 4PDT DIFGLD 14PN 240V	START/RELAY BD
CS	>>CONTACTOR-MOTOR STARTER				
CSVP	CONTACTOR-ENABLE INVERTER	W7T5XS+	09MC08C371	16A 3P MCS CONT NR 240V5/6	CONTROL PANEL
CSVP	CONTACTOR-ENABLE INVERTER	W7T5XS+A	09MC08C371	16A 3P MCS CONT NR 240V5/6	CONTROL PANEL
CSVP	CONTACTOR-ENABLE INVERTER	W7T5XS+B	09MC08C371	16A 3P MCS CONT NR 240V5/6	CONTROL PANEL
EF	>>FUSE OR FUSE HOLDER				
EF1	FUSE-CONTROL CIRCUIT X-BUS	W7T5XS+A	09FF006AMA	FUSE BK/ABC 6 AMP 250V BUSS	START/RELAY BD
EF1	FUSE-CONTROL CIRCUIT X-BUS	W7T5XS+B	09FF006AMA	FUSE BK/ABC 6 AMP 250V BUSS	START/RELAY BD
EF2	FUSE-CONTROL CIRCUIT Y-BUS	W7T5XS+A	09FF006AMA	FUSE BK/ABC 6 AMP 250V BUSS	START/RELAY BD
EF2	FUSE-CONTROL CIRCUIT Y-BUS	W7T5XS+B	09FF006AMA	FUSE BK/ABC 6 AMP 250V BUSS	START/RELAY BD
EF71A	FUSE-CONTROL CIRCUIT X-BUS	W7T5XS+	09FF006AMA	FUSE BK/ABC 6 AMP 250V BUSS	CONTROL PANEL
EF71B	FUSE-CONTROL CIRCUIT Y-BUS	W7T5XS+	09FF006AMA	FUSE BK/ABC 6 AMP 250V BUSS	CONTROL PANEL
EFP1	FUSE-TRANSFORMER PRIMARY	W7T5XLV	09FF005AWN	FUSE #KTK 5A600V=HPS HOLDER	CONTROL PANEL
EFP2	FUSE-TRANSFORMER PRIMARY	W7T5XLV	09FF005AWN	FUSE #KTK 5A600V=HPS HOLDER	CONTROL PANEL
EM	>>ELECTROMAGNET AND SOLENOID				
EMDL	SOLENOID-DOOR UNLOCK	W7T5XS+	09K062B71	SOLENOID 240/60--220/50 = ILOC	DOOR LATCH
EMDR	SOLENOID-DRAIN VALVE	W7T5XEV	96D350SA71	DRAINVAL 3" 240V50/60 SUDSPOR	BELOW SHELL
ES	>>POWER SUPPLY-ELECTRONIC				
ESPS	POWER SUPPLY-MICROPROCESSOR - T5X	W7T5XBW	08PSS3401T	40 WATT POWER SUPPLY TESTED	CONTROL PANEL
ESPS	POWER SUPPLY-MICROPROCESSOR - G5X	W7T5XBW	08PSS2125T	25 WATT 5/12 OUT 85-264 VAC/IN PWRSP	CONTROL PANEL

COMPONENT PARTS LIST

W7T5XPL/2024406N

<u>COMPONENT NUMBER</u>	<u>FUNCTION OF THIS COMPONENT NUMBER</u>	<u>WHERE TO FIND THIS COMPONENT</u>	<u>MILNOR P/N</u>	<u>DESCRIPTION</u>	<u>LOCATION</u>
EX	>>TRANSFORMERS				
EXHV	TRANSFORMER-INCOMING VOLT.240VAC	W7T5XLV	MESSAGE EW	SEE EX37-1, -2, OR -3 FOR VOLTAGE	CONTROL PANEL
EXHV-1	TRANSFORMER-208VAC TO 240VAC	W7T5XLV	09UB25AT71	AUTOXFMR 208V-230V 250VA	CONTROL PANEL
EXHV-3	TRANSFORMER-380/480V TO 240V	W7T5XLV	09JA025AAB	XFMR 380-480PRI/120-240SEC250V	CONTROL PANEL
EXHV-2	TRANSFORMER-600V TO 240V	W7T5XLV	09U251AB71	XFMR 600VPRI/240VSC-250VA-3%REG	CONTROL PANEL
MT	>>MOTORS				
MTWE	MOTOR-WASHER	W7T5XVPA	MESSAGE SO	SEE SPECIFIC COMPONENT+NAMEPLATE	BELOW SHELL
MTWE	MOTOR-WASHER	W7T5XVPB	MESSAGE SO	SEE SPECIFIC COMPONENT+NAMEPLATE	BELOW SHELL
MTWE	MOTOR-WASHER	W7T5XVPC	MESSAGE SO	SEE SPECIFIC COMPONENT+NAMEPLATE	BELOW SHELL
MTWE	MOTOR-WASHER	W7T5XVPD	MESSAGE SO	SEE SPECIFIC COMPONENT+NAMEPLATE	BELOW SHELL
MV	>>>MOTOR POWER INVERTERS				
MV/DBR	BREAKING RESISTOR	W7T5XVPD	09MV100RES	RESIST 100 OHM 225WATT ADJ	CONTROL PANEL
MV/INR	REACTOR - INVERTER LOW VOLTAGE	W7T5XVPA	09MX030A74	REACTOR 3HP 230V 12A	CONTROL PANEL
MV/INR	REACTOR - INVERTER HIGH VOLTAGE	W7T5XVPA	09MX030A96	REACTOR 3HP 460V 6A	CONTROL PANEL
MV/INR	REACTOR - INVERTER LOW VOLTAGE	W7TFXVPB	09MX030A74	REACTOR 3HP 230V 12A	CONTROL PANEL
MV/INR	REACTOR - INVERTER HIGH VOLTAGE	W7TFXVPB	09MX030A96	REACTOR 3HP 460V 6A	CONTROL PANEL
MV/INR	REACTOR - INVERTER LOW VOLTAGE	W7TFXVPC	09MX030A74	REACTOR 3HP 230V 12A	CONTROL PANEL
MV/INR	REACTOR - INVERTER HIGH VOLTAGE	W7TFXVPC	09MX030A96	REACTOR 3HP 460V 6A	CONTROL PANEL
MV/INV	INVERTER-VARI SPEED LOW VOLT	W7TFXVPD	09MMWB01174	V1000 INVERTER 11AMP 230V	CONTROL PANEL
MV/INV	INVERTER-VARI SPEED LOW VOLT	W7TFXVPD	09MWD01174	GA500 INVERTER 11AMP 230V	CONTROL PANEL
MV/INV	INVERTER-VARI SPEED LOW VOLT 1PH	W7TFXVPD	09MMWB01774	V1000 INVERTER 17.5AMP 230V	CONTROL PANEL
MV/INV	INVERTER-VARI SPEED LOW VOLT 1PH	W7TFXVPD	09MMWD01774	GA500 INVERTER 17AMP 230V	CONTROL PANEL
MV/INV	INVERTER-VARI SPEED HIGH VOLTAGE	W7TFXVPD	09MMWB00796	V1000 INVERTER 7.2AMP 460V	CONTROL PANEL
MV/INV	INVERTER-VARI SPEED HIGH VOLTAGE	W7TFXVPD	09MWD00796	GA500 INVERTER 7.3 AMP 460V	CONTROL PANEL
MV/INV	INVERTER-VARI SPEED LOW VOLTAGE	W7T5XVPA	09MV030G74	VARSPEED 3HP 1A 230V GPD305	CONTROL PANEL
MV/INV	INVERTER-VARI SPEED LOW VOLT 1PH	W7T5XVPB	09MV050F74	VARSPEED STANDARD 5HP 230V	CONTROL PANEL
SH	>>SWITCH-HAND OPERATED				
SH01	SWITCH-208/240VAC	W7T5XLV	09N050	TOGSW SPDT NO OFF 10A250V	CONTROL PANEL
SHDD	SWITCH-UNLATCH DOOR	W7T5XS+	09N405PB10	SWASS PBBK 1NO	DOOR LATCH
SHDD	SWITCH-UNLATCH DOOR	W7T5XS+A	09N405PB10	SWASS PBBK 1NO	DOOR LATCH
SHES	SWITCH-EMERGENCY STOP OPTIONAL	W7T5XS+B	09N508A	SW ASSY EMER STOP VERSION 3-2POLE	CONTROL PANEL
SK	>>SWITCH-KEYLOCK				
SKPR	SWITCH-RUN/PROGRAM	W7T5XIA	09N127C	KEYSW SPST 7A120VAC SCREW TERM	SWITCH PANEL

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SM	>> SWITCH-MECHANICAL OPERATED				
SMD	SWITCH-DOOR CLOSED	W7T5XS+	02-04177	MICROSWITCH, 1 IN LEVER	DOOR LATCH
SMD	SWITCH-DOOR CLOSED	W7T5XS+A	02-04177	MICROSWITCH, 1 IN LEVER	DOOR LATCH
SMWVB	SWITCH-VIBRATION	W7T5XIA	SAE03 151	ASSY-VIBRATION SWT=LG CONTR	CONTROL PANEL
SP	>>> SWITCH-PRESSURE				
SPLL	PRESSURE SW.-LOW WATER LEVEL	W7T5XIA	09N086A	PRESS SWITCH EATON #738-761	CONTROL PANEL
SPHL	PRESSURE SW.-HIGH WATER LEVEL	W7T5XIA	09N086A	PRESS SWITCH EATON #738-761	CONTROL PANEL
VE	>> VALVE-ELECTRIC OPERATED				
VEC1	VALVE-FLUSH DETERGENT	W7T5XCF	MESSAGE MS	CHEMICAL FLUSHING VALVE BY OTHERS	SUPPLY INJECT
VEC2	VALVE-FLUSH BLEACH	W7T5XCF	MESSAGE MS	CHEMICAL FLUSHING VALVE BY OTHERS	SUPPLY INJECT
VEC3	VALVE-FLUSH SOUR	W7T5XCF	MESSAGE MS	CHEMICAL FLUSHING VALVE BY OTHERS	SUPPLY INJECT
VEC4	VALVE-FLUSH SOFTNER	W7T5XCF	MESSAGE MS	CHEMICAL FLUSHING VALVE BY OTHERS	SUPPLY INJECT
VEC5	VALVE-FLUSH STARCH	W7T5XCF	MESSAGE MS	CHEMICAL FLUSHING VALVE BY OTHERS	SUPPLY INJECT
VEWC	VALVE-COLD WATER	W7T5XEV	96P057A71	1/2"NPT X 1/2"ORIFICE 240V 5/6	REAR OF MACH
VEFL	VALVE-FLUSH	W7T5XEV	96P058A71	1/4"NPT X 1/8"ORIFICE 240V 5/6	REAR OF MACH
VEWH	VALVE-HOT WATER	W7T5XEV	96P057A71	1/2"NPT X 1/2"ORIFICE 240V 5/6	REAR OF MACH

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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.

Providing we receive written notification of a warranted defect within 30 days of its discovery, we will—at our option—repair or replace the defective part or parts, EX Factory (labor and freight specifically NOT included). We retain the right to require inspection of the parts claimed defective in our factory prior to repairing or replacing same. We will not be responsible, or in any way liable, for unauthorized repairs or service to our equipment, and this warranty shall be void if the equipment is tampered with, modified, or abused, used for purposes not intended in the design and construction of the machine, or is repaired or altered in any way without MILNOR's written consent.

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We reserve the right to make changes in the design and/or construction of our equipment (including purchased components) without obligation to change any equipment previously supplied.

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BMP720097/19036

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 —

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.

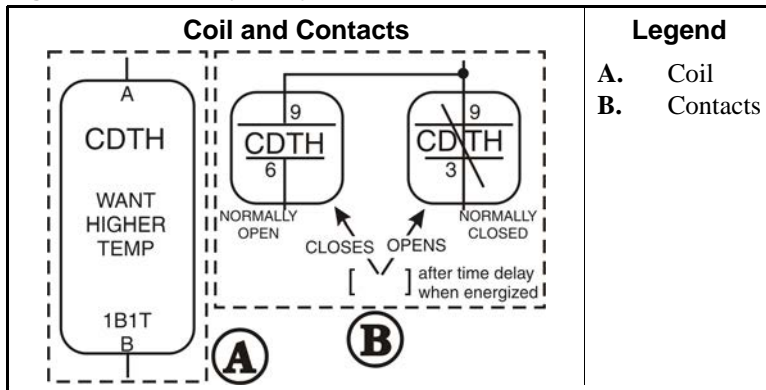
CB=Circuit Breaker (Figure 1)—Automatic switch that opens an electric circuit in abnormal current conditions (e.g., an overload).

Figure 1: Circuit Breaker (CB)



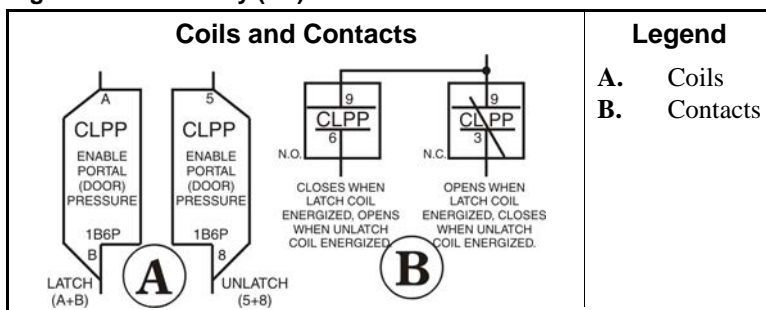
CD=Control, Time Delay Relay (Figure 2)—A relay whose contacts switch only after a fixed or adjustable delay, once voltage has been applied to its coil. The contacts switch back to normal (de-energized state) immediately when the voltage is removed.

Figure 2: Time Delay Relay (CD)



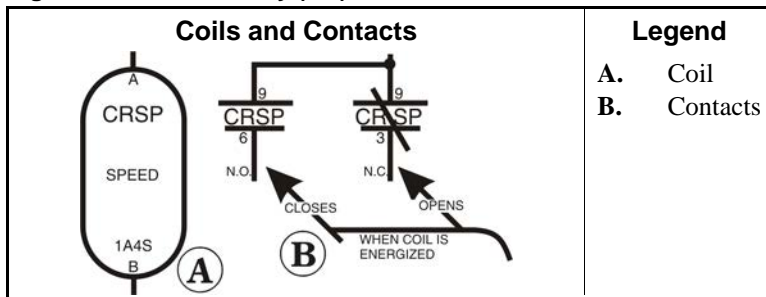
CL=Control, Latch Relay (Figure 3)—A relay which latches in an energized or set position when operated by one coil (the latch/set coil). The relay stays latched even though coil voltage is removed. The relay releases or unlatches when voltage is applied to a second coil (the unlatch/reset coil).

Figure 3: Latch Relay (CL)



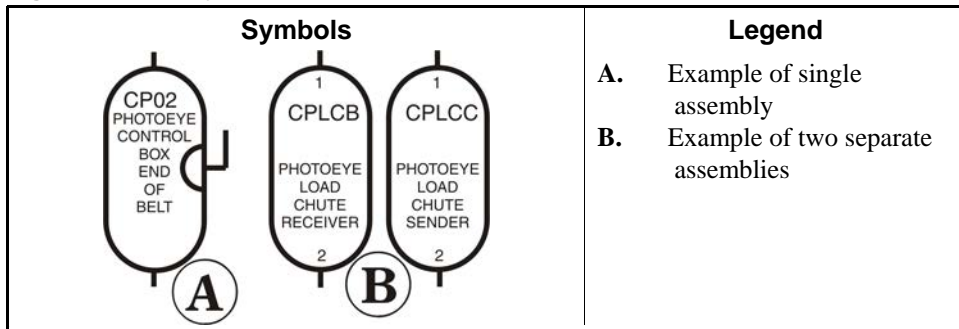
CR=Control, Relay (Figure 4)—A relay whose contacts switch immediately when voltage is applied to its coil and revert to normal when the voltage is removed.

Figure 4: Standard Relay (CR)



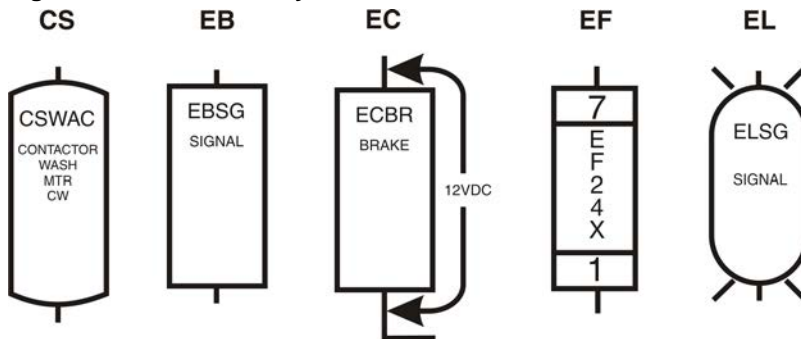
CP=Control, Photo-Eye (Figure 5)—Photo-eyes sense the presence of an object without direct physical contact. Photo-eyes consist of a transmitter, receiver, and output module. These components may be housed in one assembly with the transmitter bouncing light off of a reflector to the receiver, or these 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.

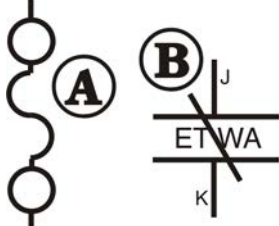
EL=Electric Light (Figure 6)—Indicator lights may be either incandescent or fluorescent.

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
	<p>A. Heater (one per phase)</p> <p>B. Overload relay; contacts open if overload condition exists</p>

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.

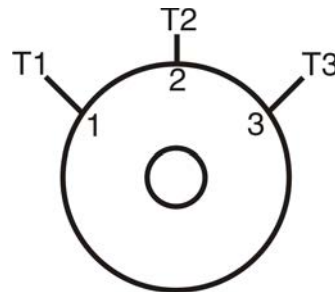
MN=Electronic Monitor (CRT)—A cathode ray tube used for visual presentation of data.

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

Figure 8: Transformer (EX)



Figure 9: Electric Motor (MR)

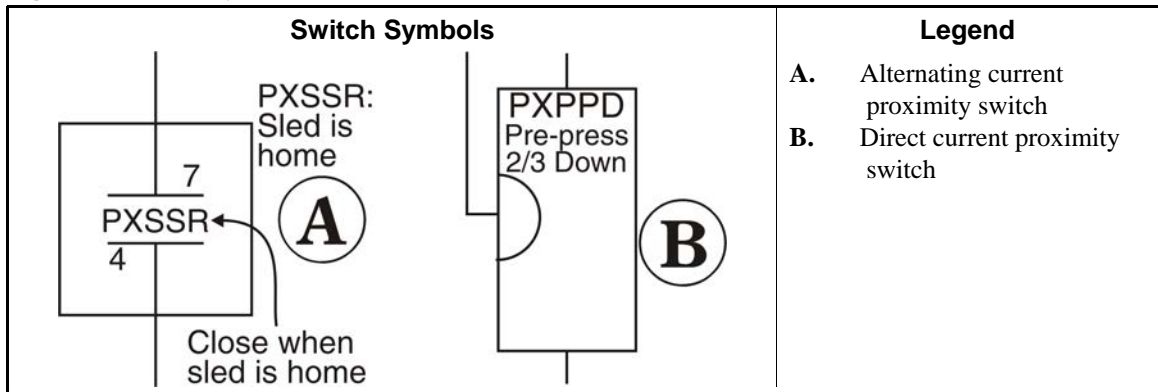


MV=Motor (Variable Speed) Inverter—To vary the speed of an AC motor, the volts to frequency ratio must be kept constant. The motor will overheat if this ratio is not maintained. The motor variable speed inverter converts three phase AC to DC. The inverter then uses this DC voltage to generate AC at the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

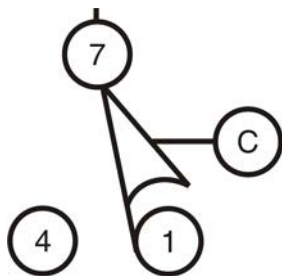
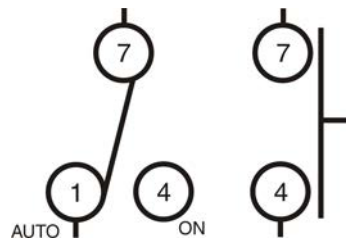


Figure 12: Hand Operated Switch (SH)



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)

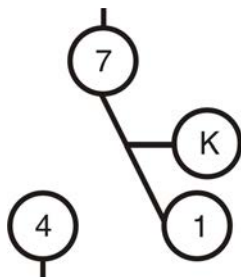
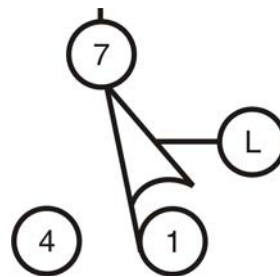


Figure 14: Level Switch (SL)



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)

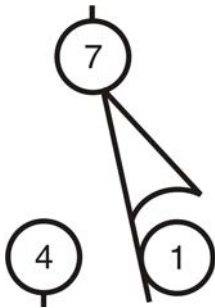
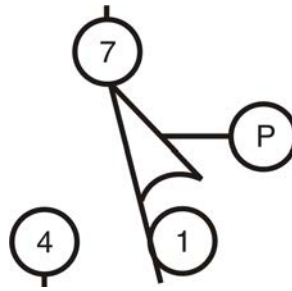


Figure 16: Pressure Switch (SP)



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)

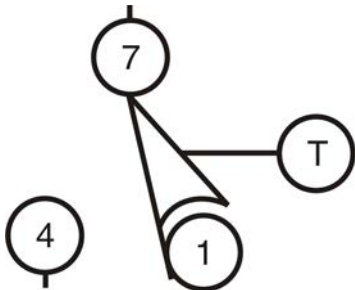
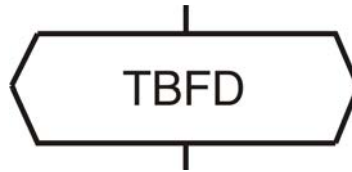


Figure 18: Terminal Board (TB)



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)

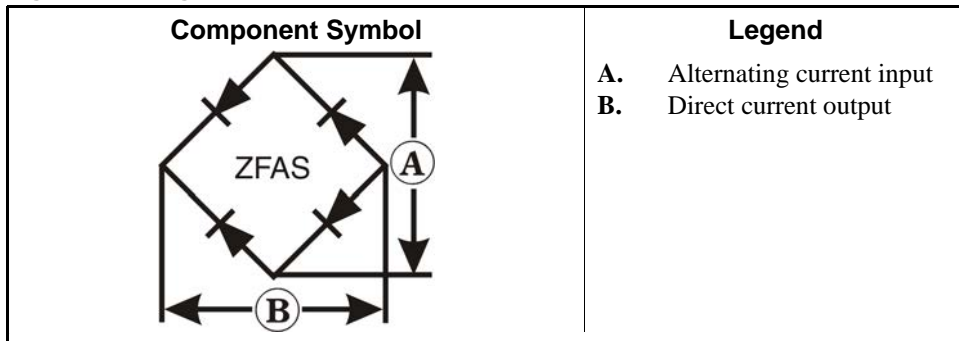
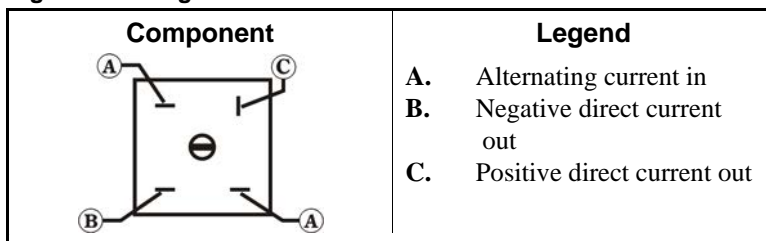


Figure 21: Bridge Rectifier



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.

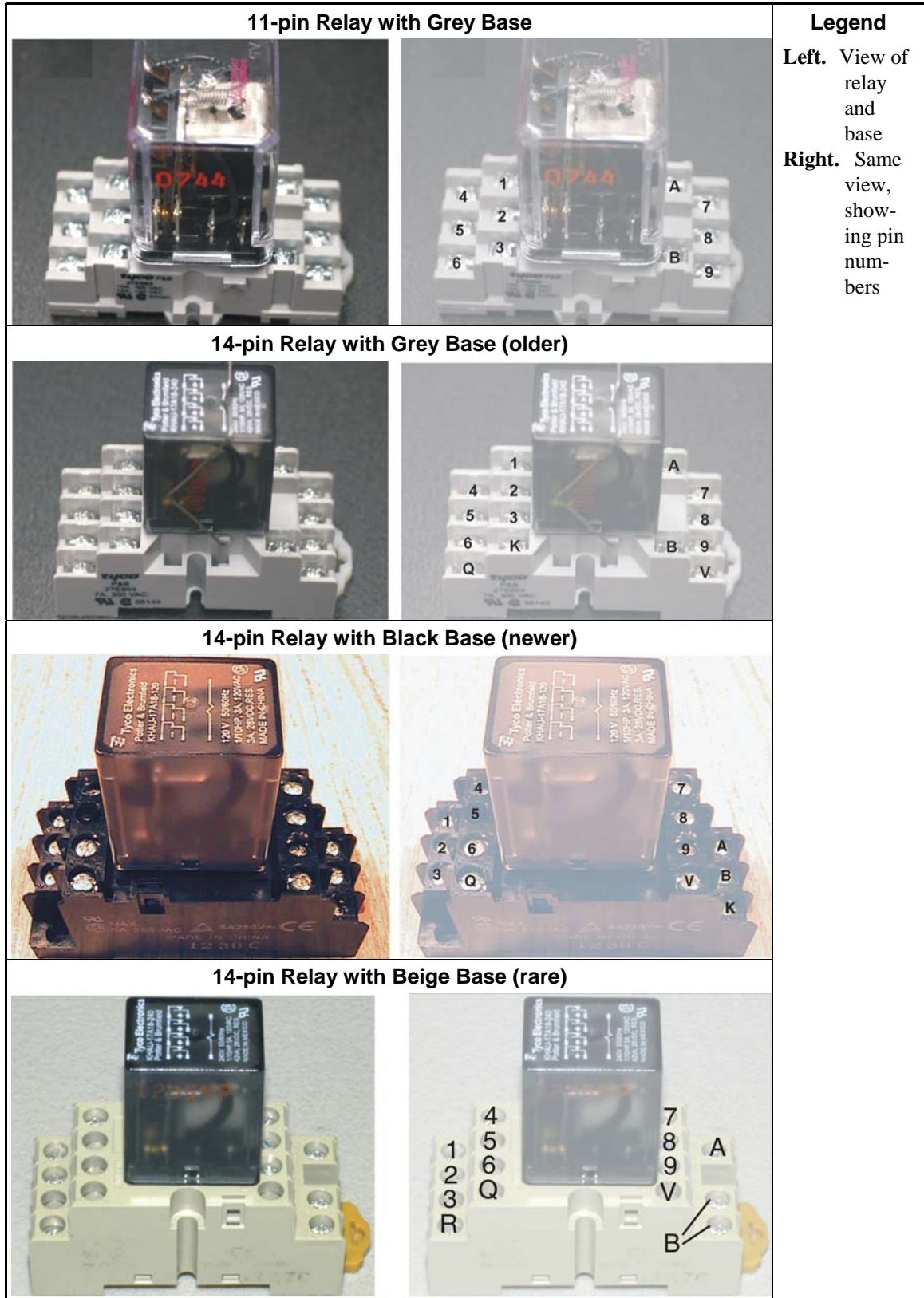
2. Component Terminal Numbering



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



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

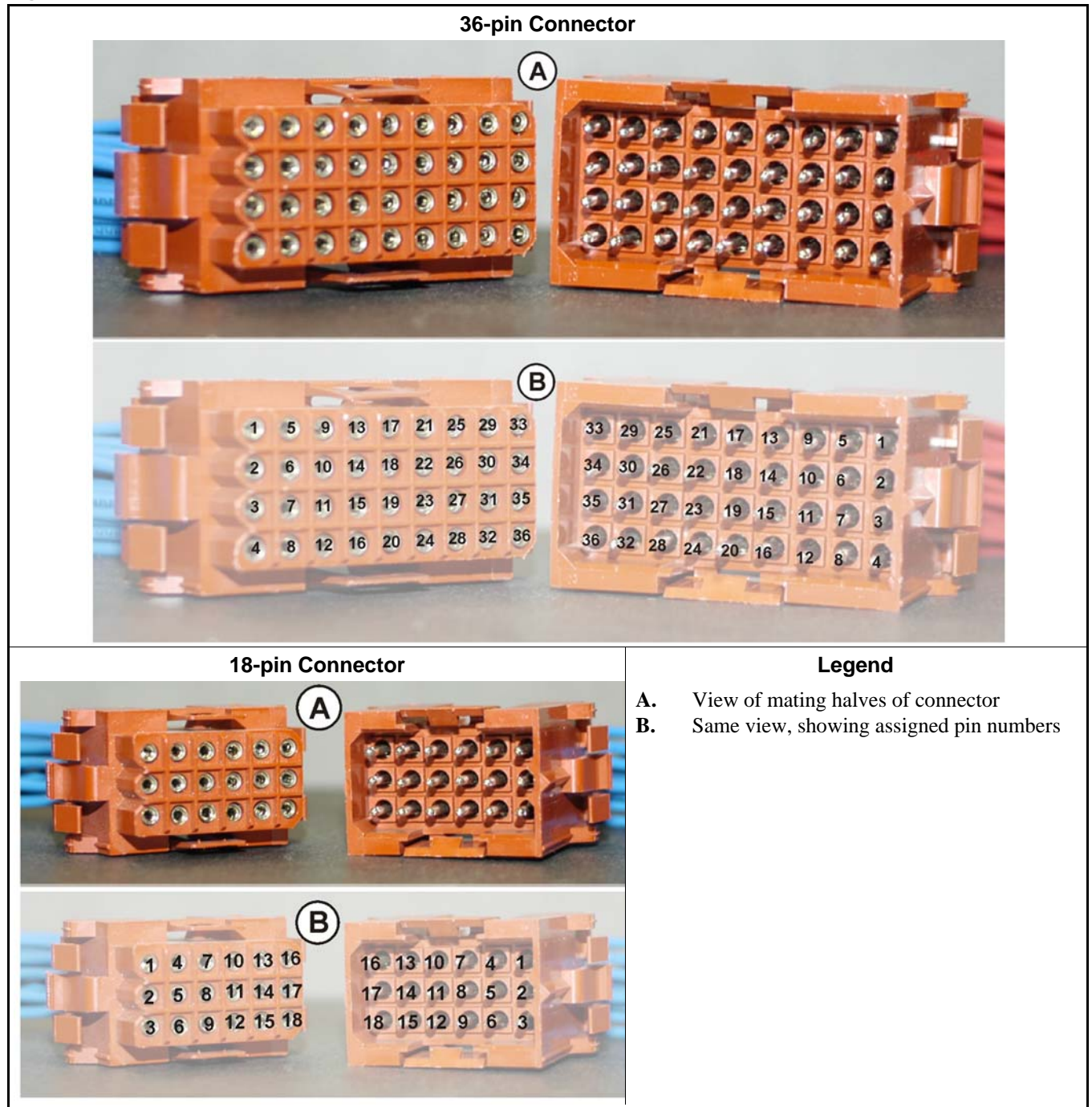


Figure 24: Molex Connector Pin Locations

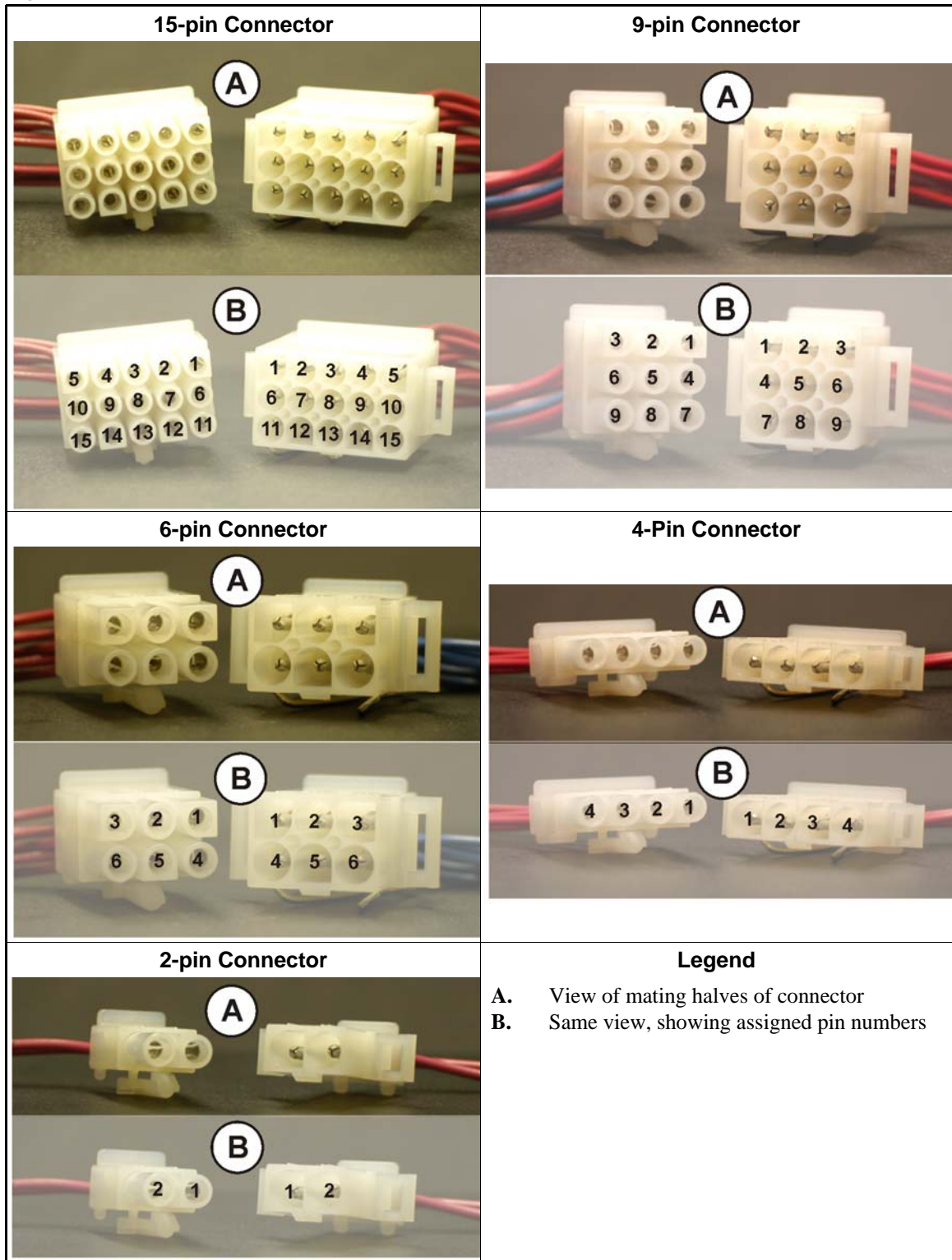


Figure 25: Pressure Switch

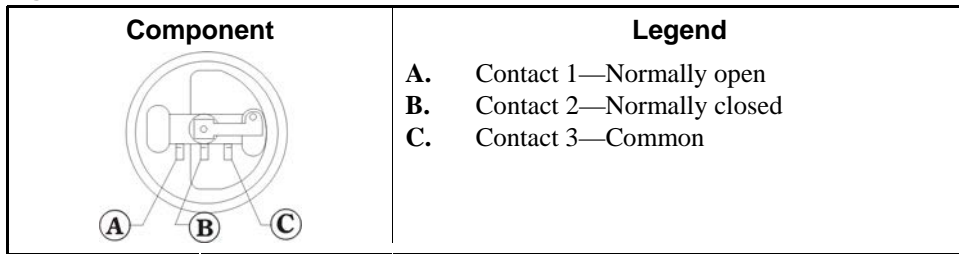


Figure 26: Toggle Switch

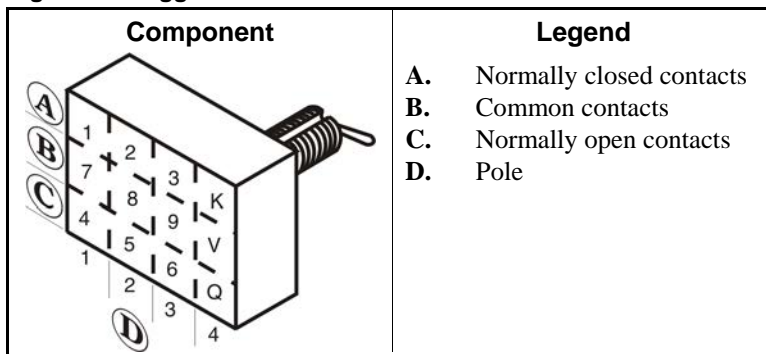
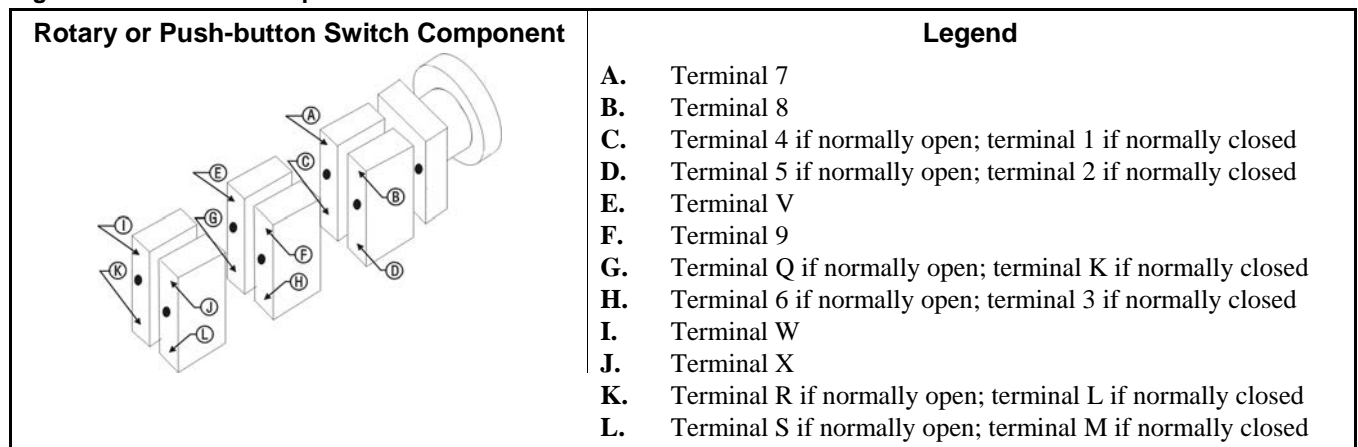


Figure 27: Switch with Replaceable Contact Blocks



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).

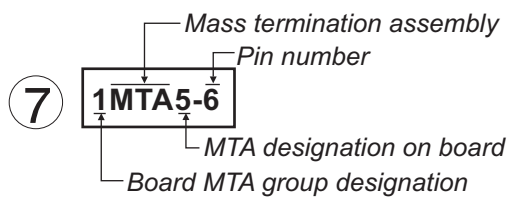
Whenever circuitry changes are significant enough to warrant publishing a new schematic drawing, the new drawing number will be the same as the old except for the major revision letter (A in the example).

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 —



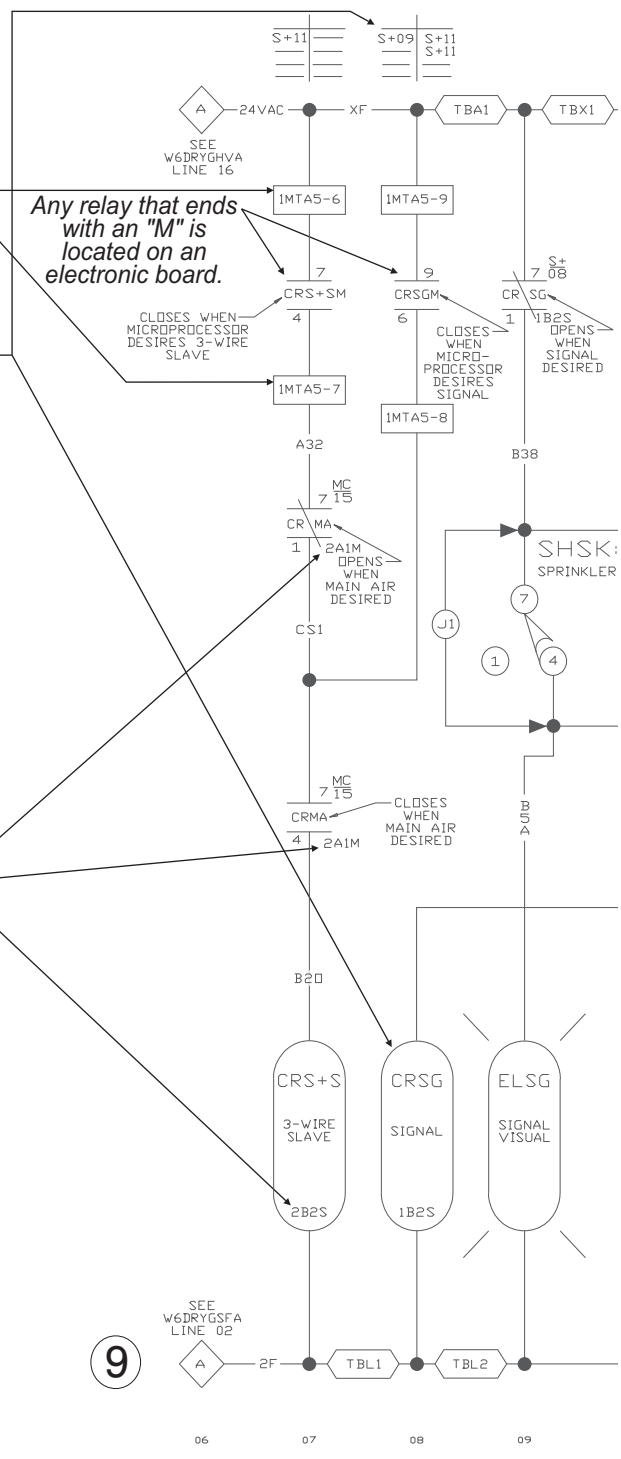
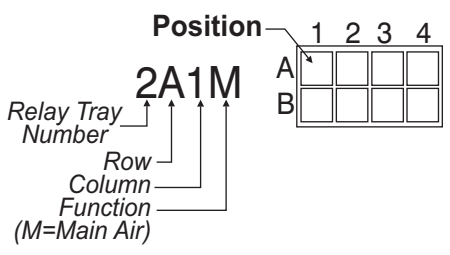
An MTA is a connection on an electronic circuit board. The notes and the tag page locate the appropriate board.

5 This indicates on which schematic page and line number the relay contacts of this coil (on Line 08) are located (i.e., W6DRYGS+, Lines 9 and 11).

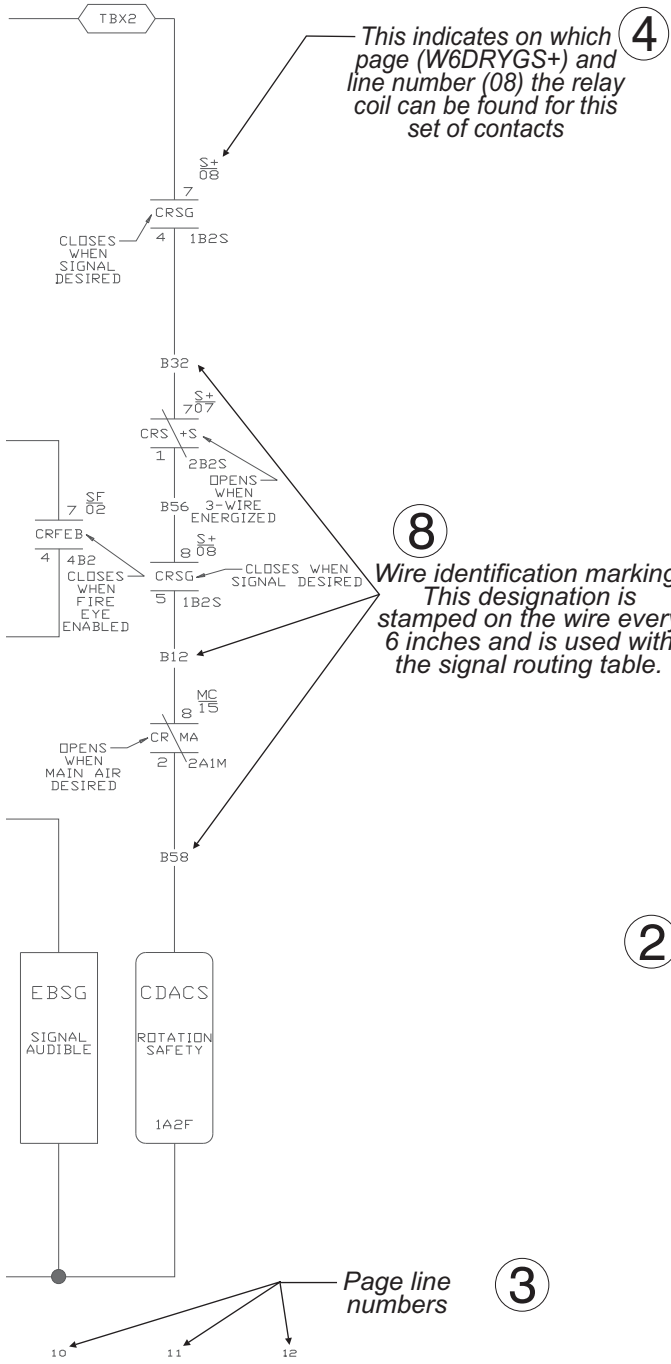
	Normally closed contacts	Normally open contacts	
7-1 contact	S+09	S+11	7-4 contact
8-2 contact	—	S+11	8-5 contact
9-3 contact	—	—	9-6 contact
V-K contact	—	—	V-Q contact

Contact not used
 Drawing and line where contact is located

6 This is the physical location of the relay on the machine. Row and column numbers are shown on the appropriate tag for each relay tray.



9



Major revision (letter) → A

1 Page number (S+) → S+

Machine type (Gas fired dryer) → DRYG

6th generation of controls → 6

W = Wiring → W

Class of control system → MICRO 6 SYSTEMS

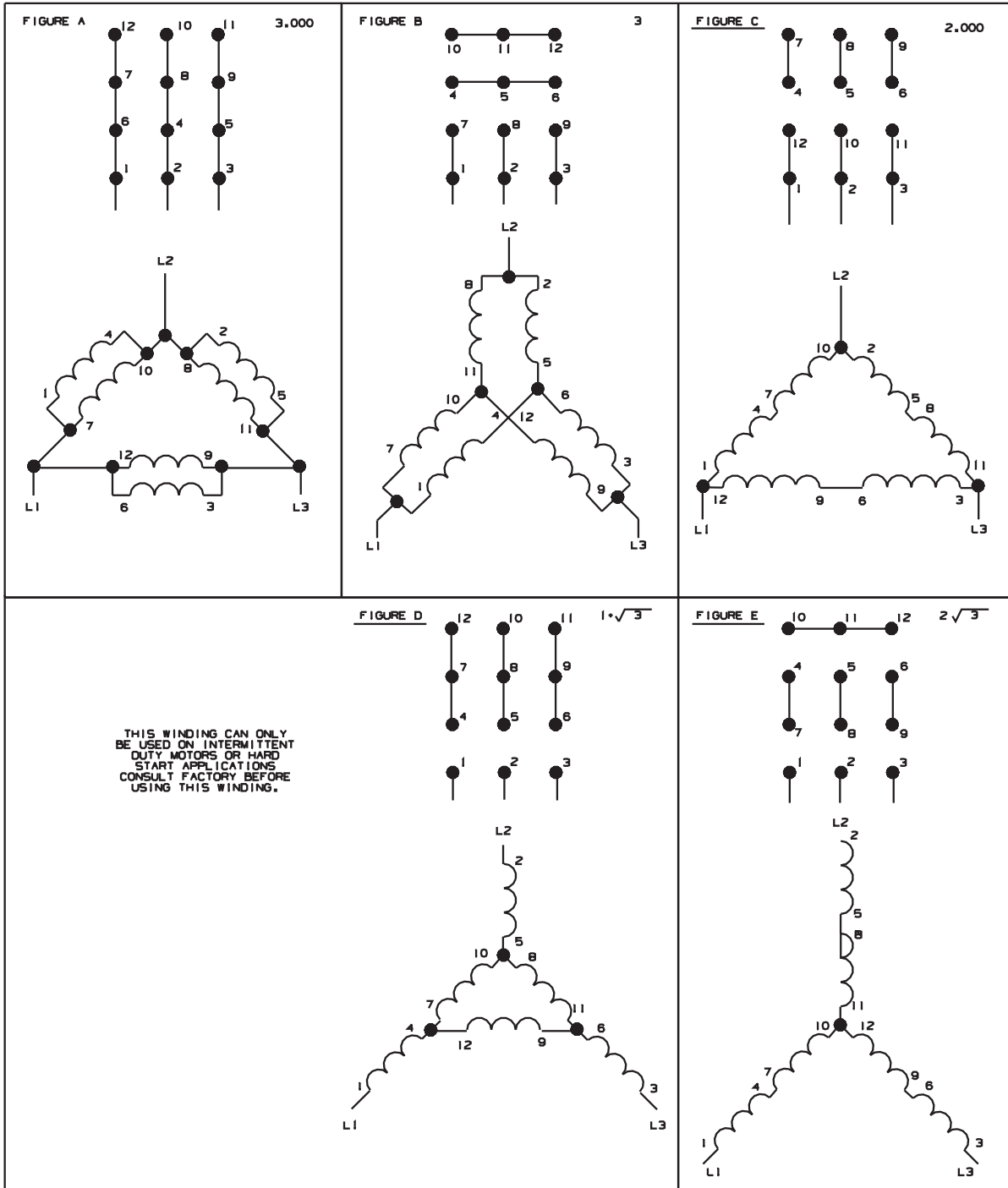
Title of this circuit → SCHEMATIC: 3-WIRE CIRCUIT

Voltage of this circuit → 24V1P50HZ/24V1P60HZ

PELLERIN MILNOR CORPORATION

- NOTES:**
1. TBL IS LOCATED IN LEFT CONTROL BOX.
 2. TBA IS LOCATED IN RIGHT CONTROL BOX.
 3. TBX IS LOCATED IN LEFT CONTROL BOX.
 4. 1MTA5 IS LOCATED ON BID1 (8 OUTPUT-16 INPUT BOARD).
 5. REMOVE (J1) IF DRYER HAS VALVE SET SHUT OPTION.

FIGURE	ELECTRICAL VALUES	SUFFIXES									
		B		H		M		T		U	
		50HZ	60HZ	50HZ	60HZ	50HZ	60HZ	50HZ	60HZ	50HZ	60HZ
A	1,000	20B	230			200	220	220	240	200-220	20B-240
B	$\sqrt{3}$					20B	346	380	380	346-380	380
C	2,000	416	460	220	240	400	440	440	480	400-440	440-480
D	$1 \cdot \sqrt{3}$										600
E	$2 \sqrt{3}$			380							



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

BMP850029

MOTOR CONNECTION DIAGRAMS

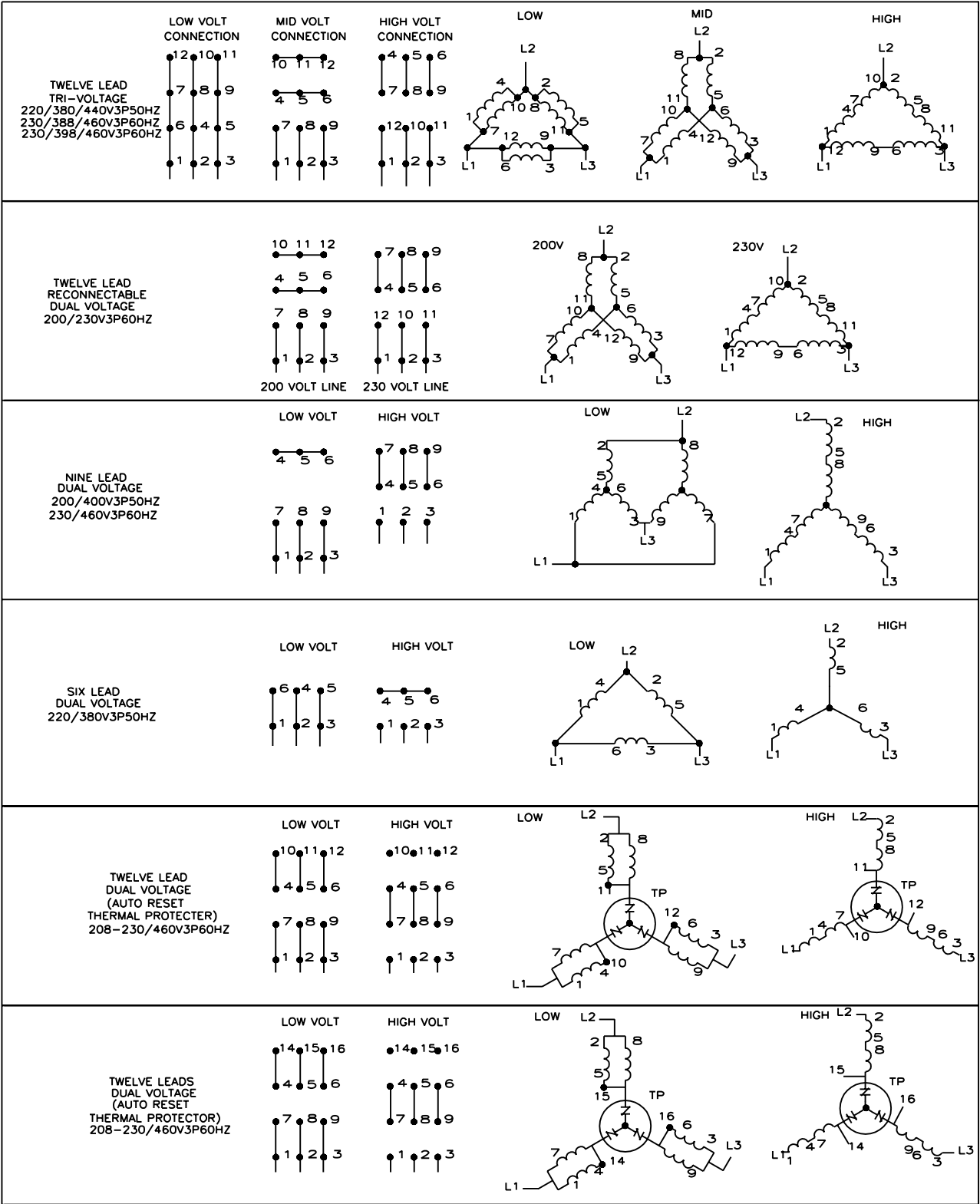
THREE PHASE SINGLE SPEED MOTORS WITH MULTIPLE VOLTAGE RATINGS
(ONLY FOR MOTOR SUFFIXES LISTED)

PELLERIN MILNOR CORPORATION

BMP850029
99362B

BMP850029
99362B

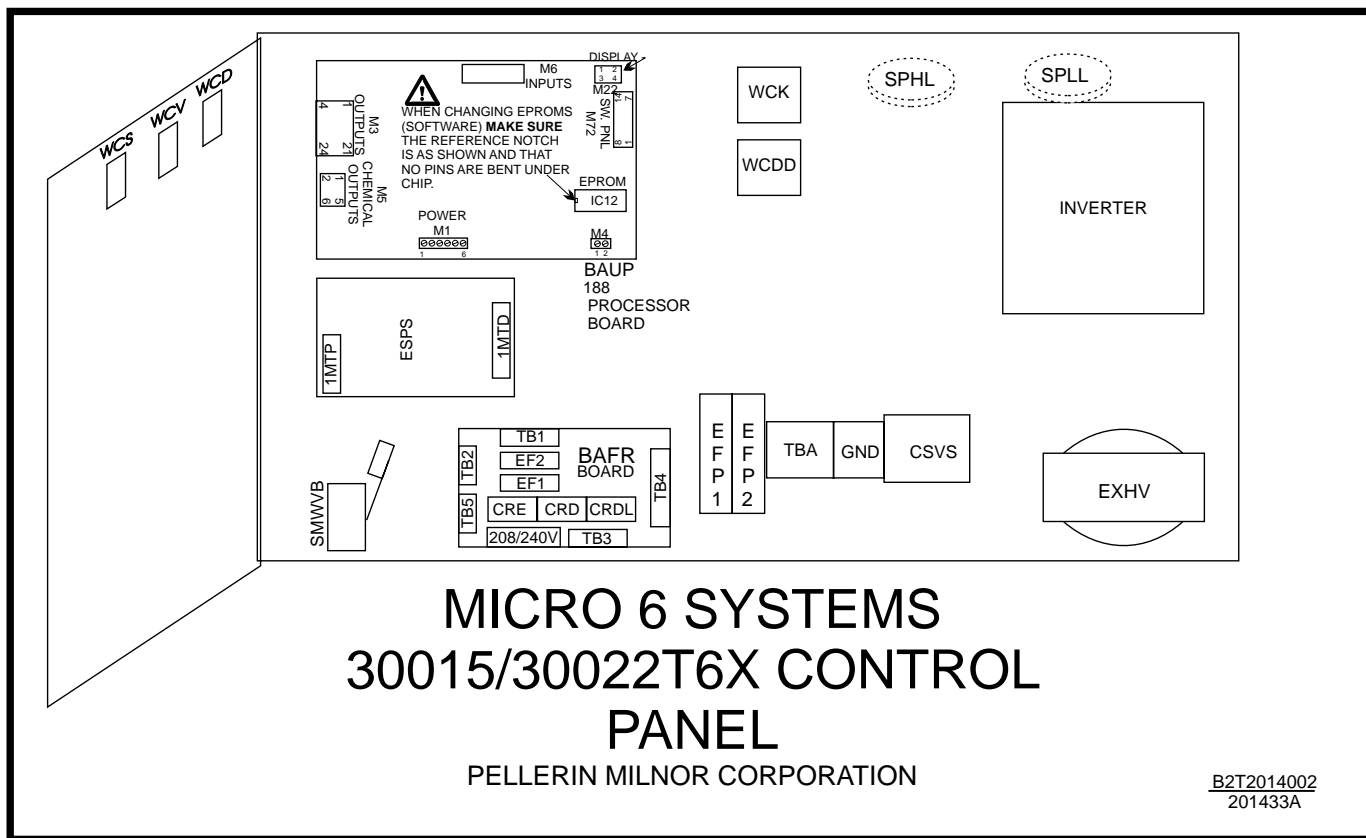
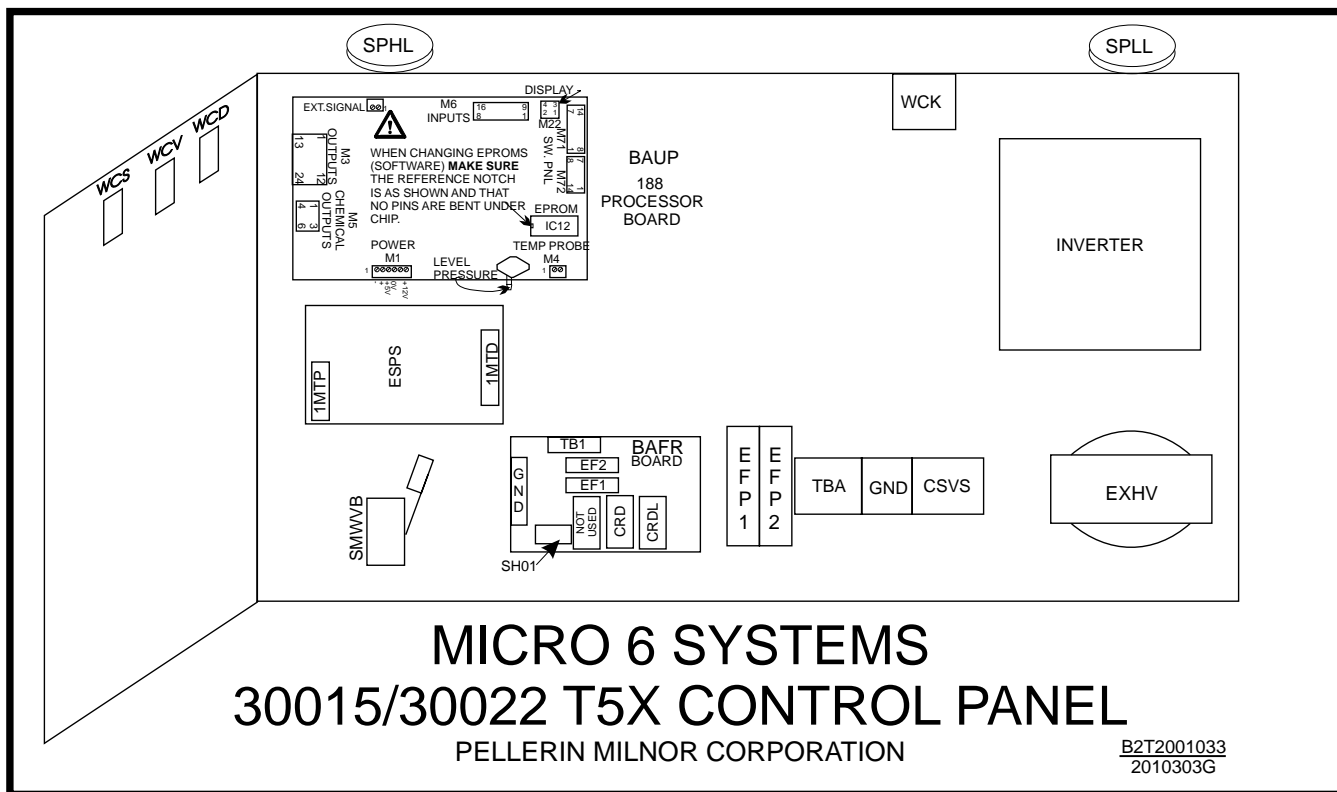
00
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19

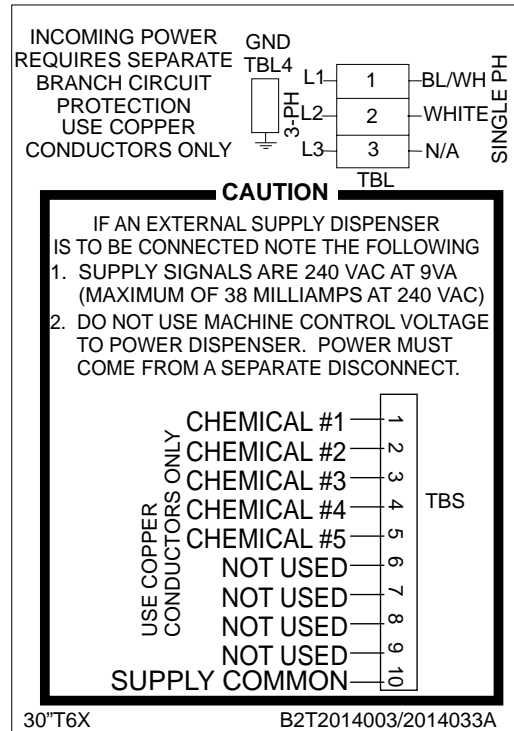
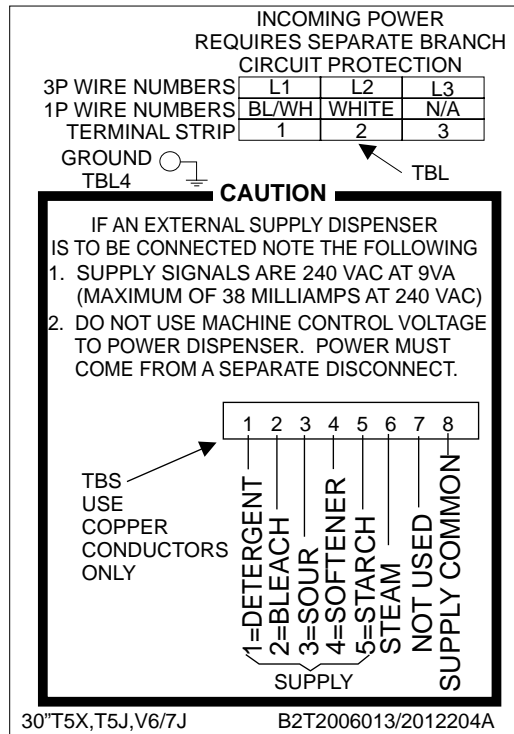


W80008

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

W80008
2001253A

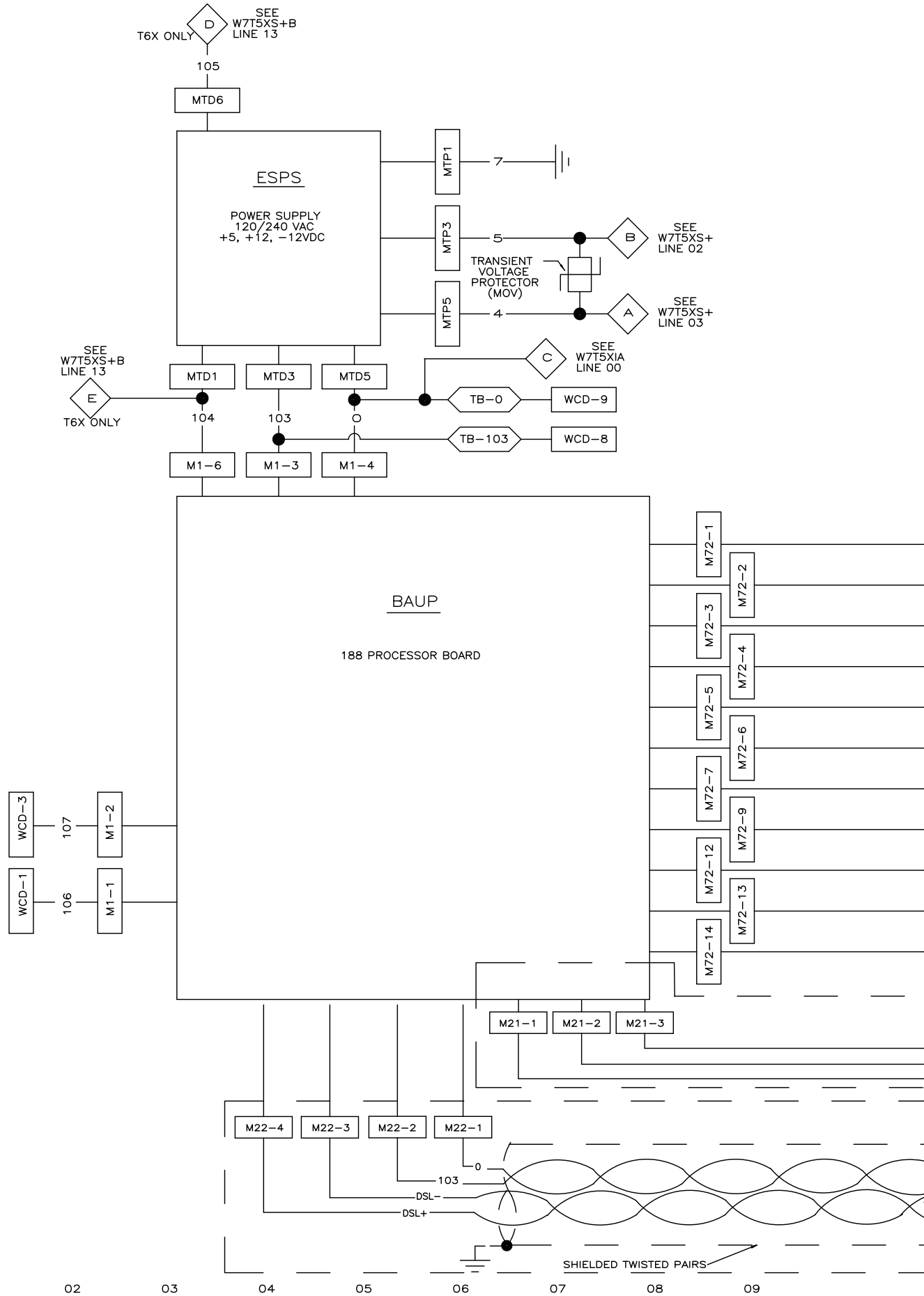




W7T5XTG1

MICRO 6 SYSTEMS CONTROL BOX LAYOUT

PELLERIN MILNOR CORPORATION



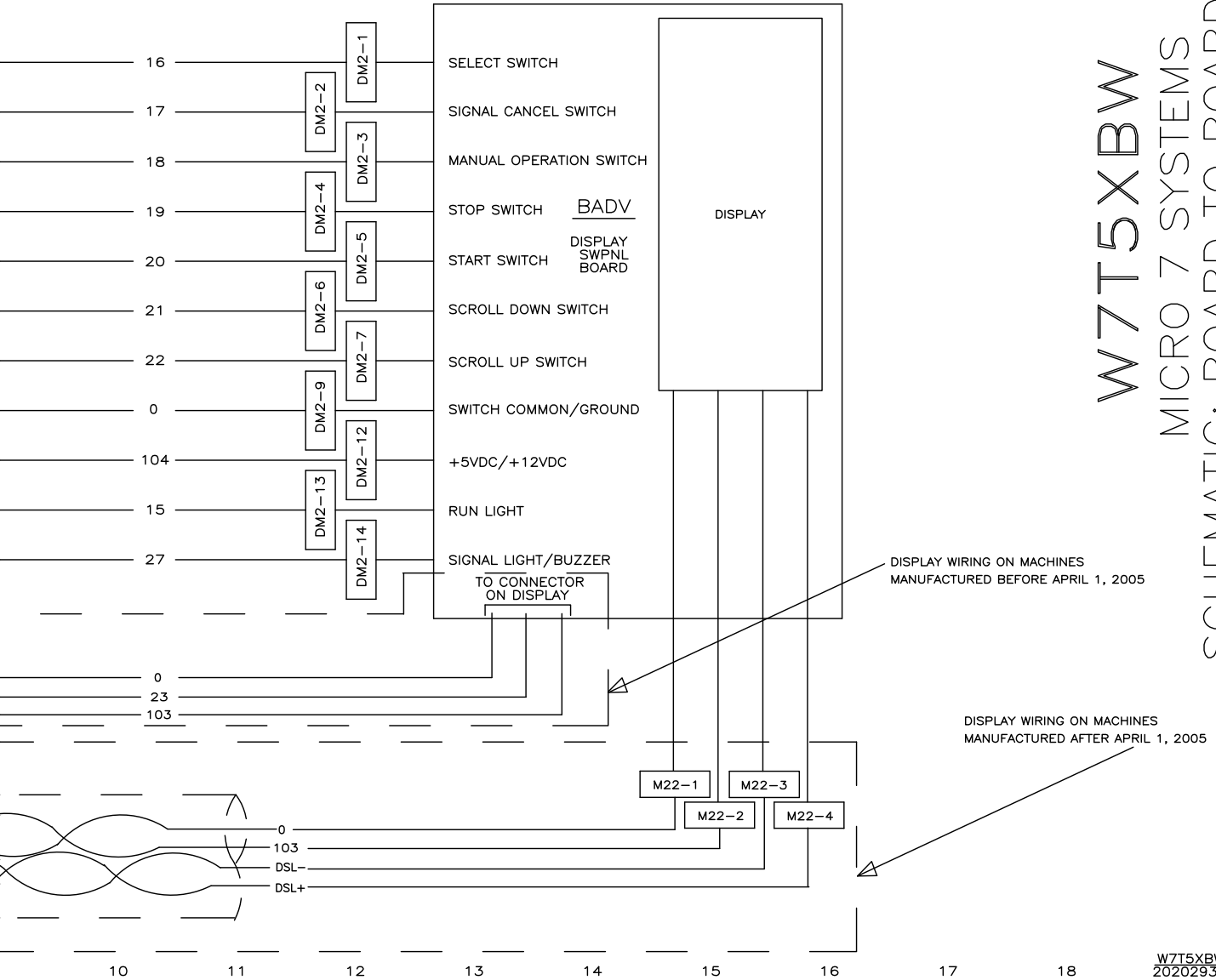
WIRE COLOR CODE

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 -0	D.C. GROUND
BLUE/BLACK -105	D.C. CONTROL SIGNALS

W7T5XBW
2020293B

NOTES

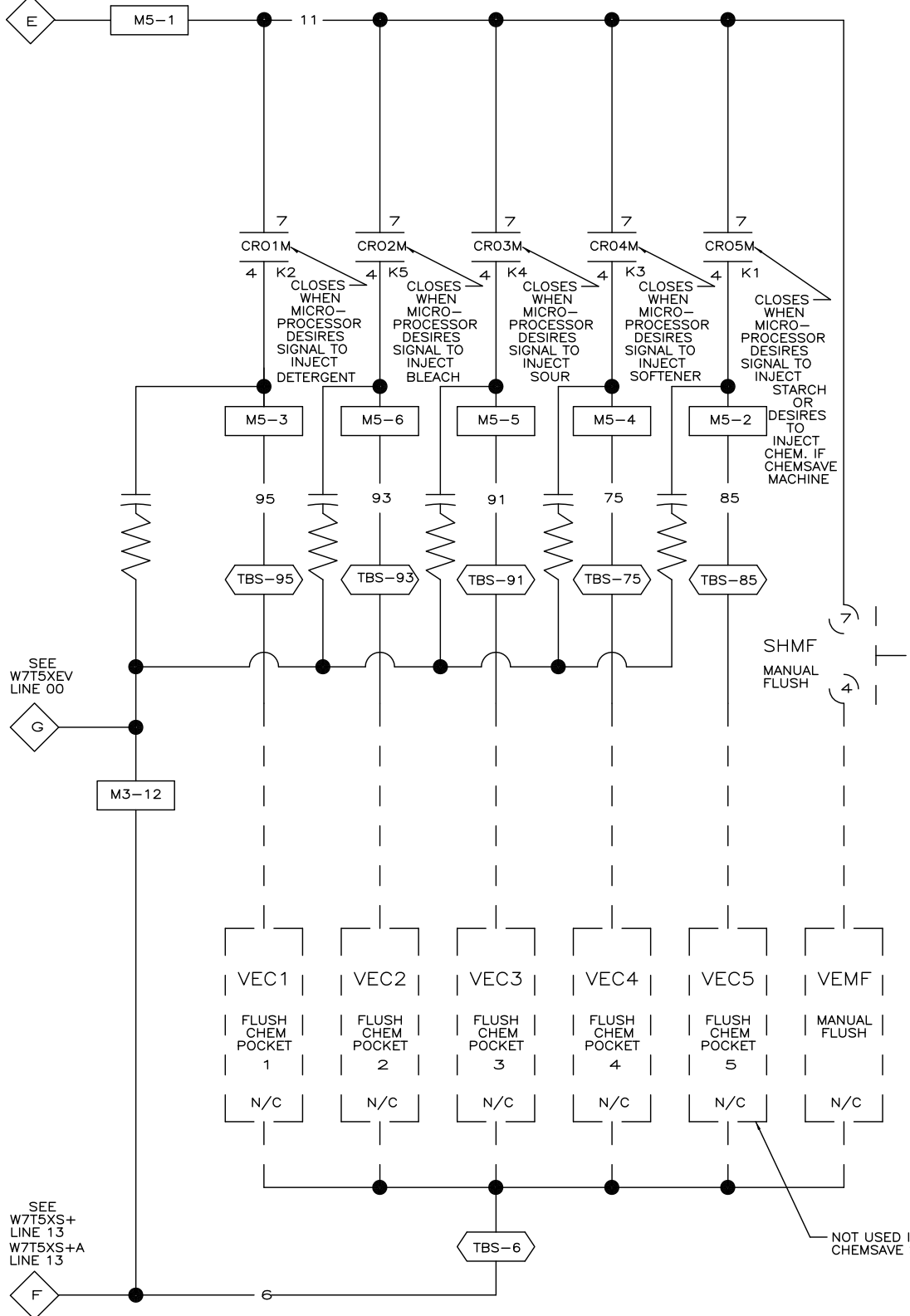
- M1, M2, M4, AND M7 ARE LOCATED ON BAUP 188 PROCESSOR BOARD.
- DM1 IS LOCATED ON BADU DISPLAY SWPNL BOARD.
- WCD IS THE DOWNLOAD CONNECTOR LOCATED ON THE SIDE OF THE SWITCH PANEL CONTROL BOX.



W7T5XBW
 MICRO 7 SYSTEMS
 SCHEMATIC: BOARD TO BOARD WIRING
 PELLERIN MILNOR CORPORATION

W7T5XBW
2020293B

SEE
W7T5XS+
LINE 12
W7T5XS+A
LINE 13



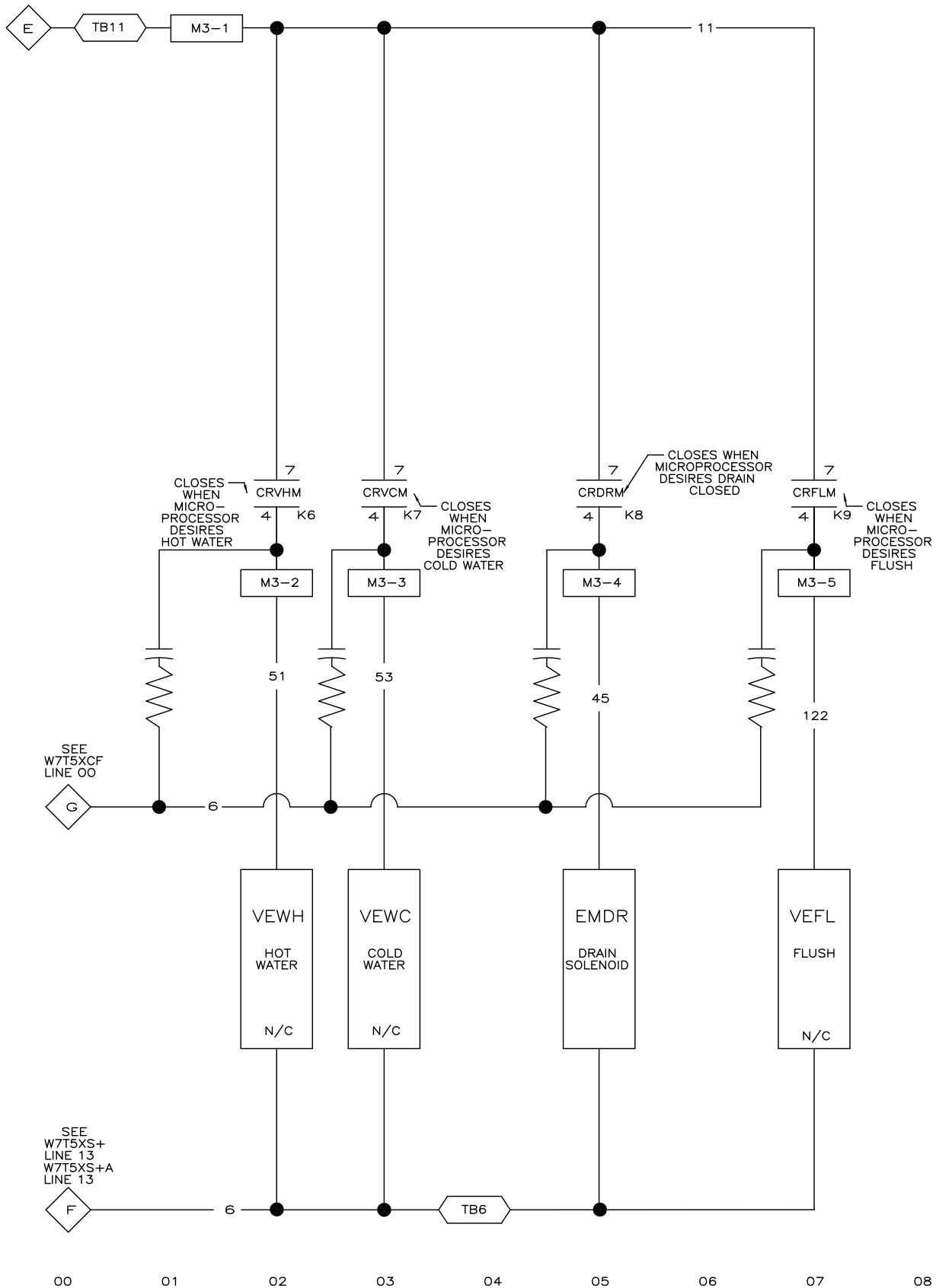
W7T5XCF

SCHEMATIC: FLUSHING SUPPLIES
220V1P50HZ/240V1P60HZ
PELLERIN MILNOR CORPORATION

NOTES:

1. M 5 IS LOCATED ON THE PROCESSOR BOARD.
2. TBS IS LOCATED NEAR THE REAR ACCESS PANEL NEXT TO THE INCOMING POWER CONNECTIONS.

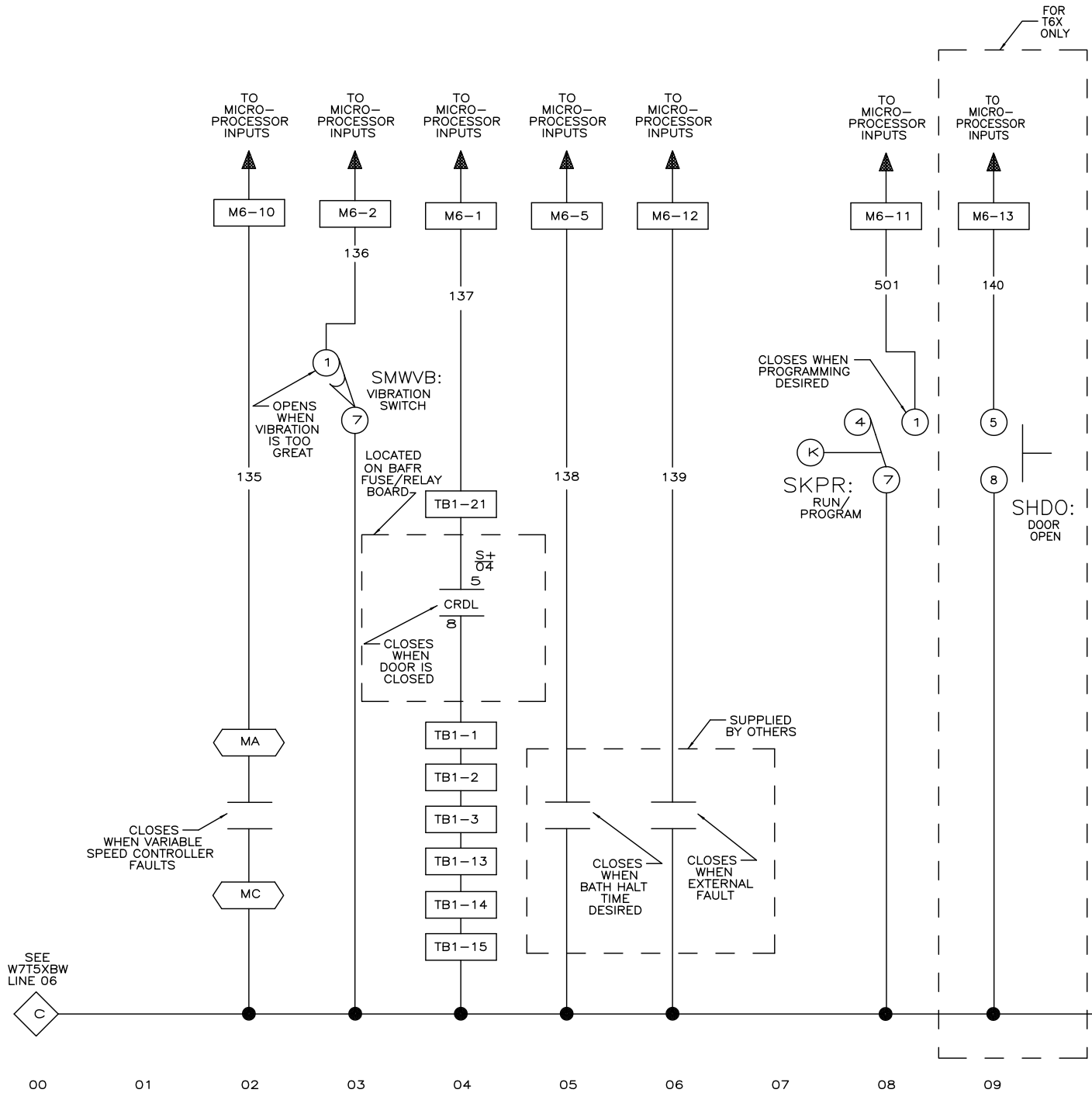
SEE
W7T5XS+
LINE 12
W7T5XS+A
LINE 13



W7T5XEV
SCHEMATIC: ELECTRIC VALVES
220V1P50HZ/240V1P60HZ
PELLERIN MILNOR CORPORATION

NOTES:

1. M3 IS LOCATED ON THE
BAUP (188 PROCESSOR BOARD).

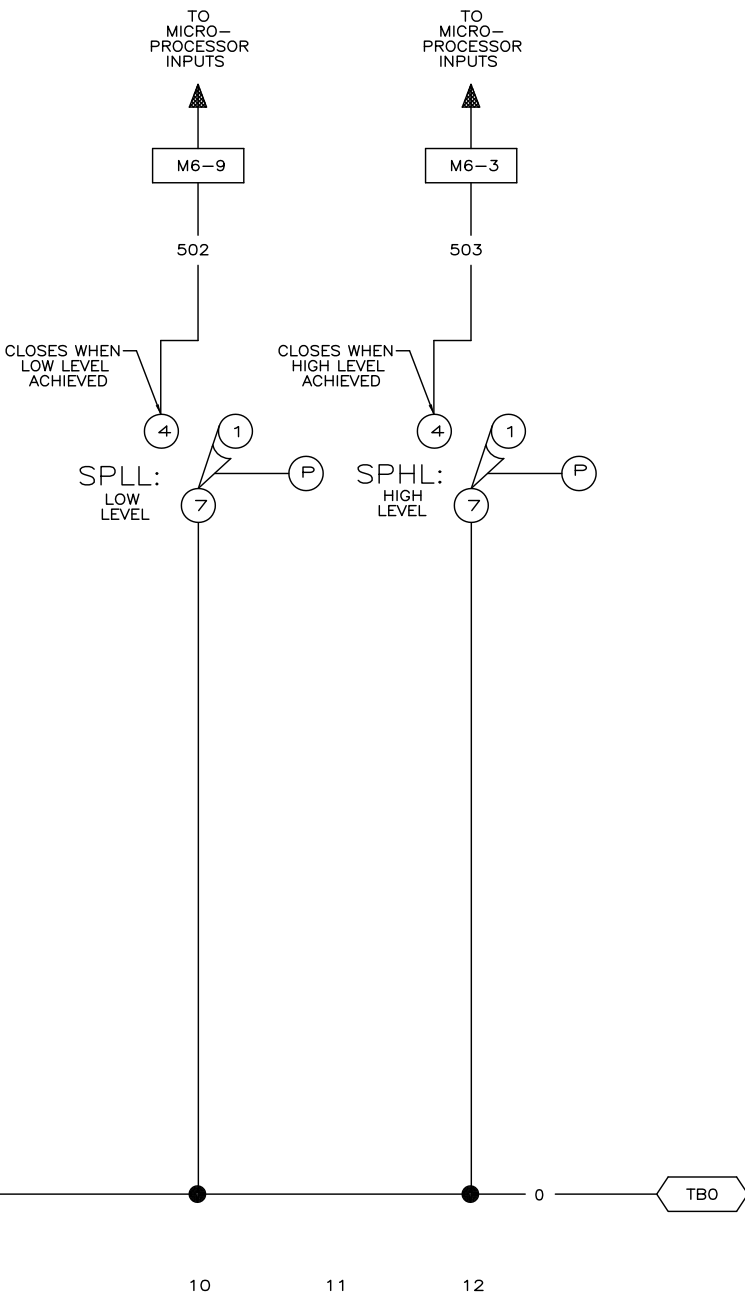


W7T5XIA
2025053B

W7T5XIA

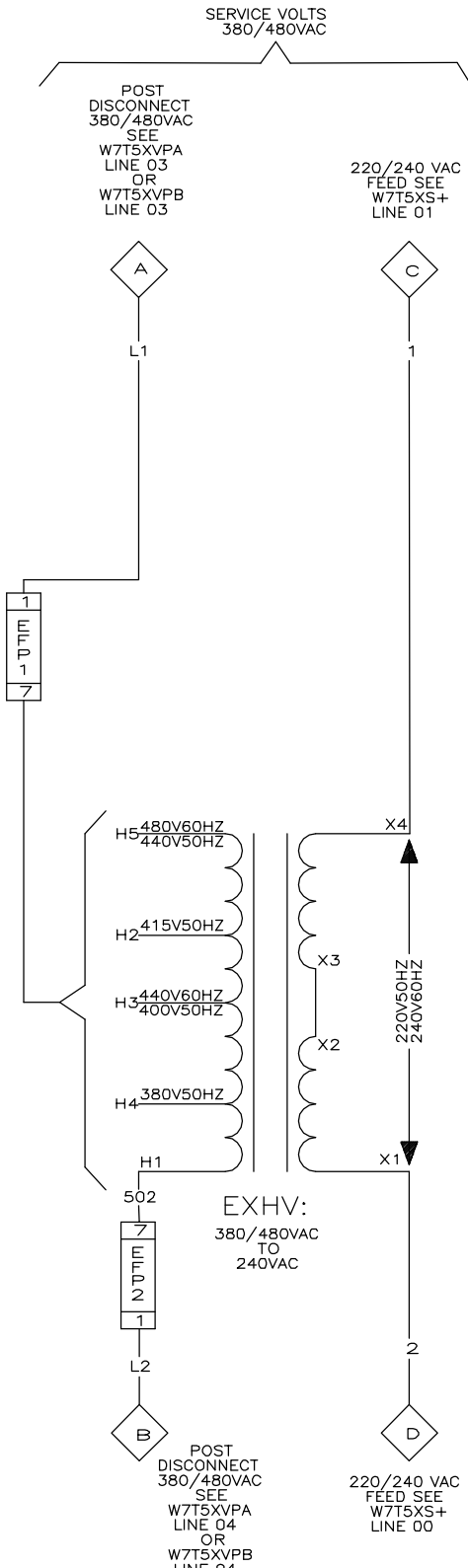
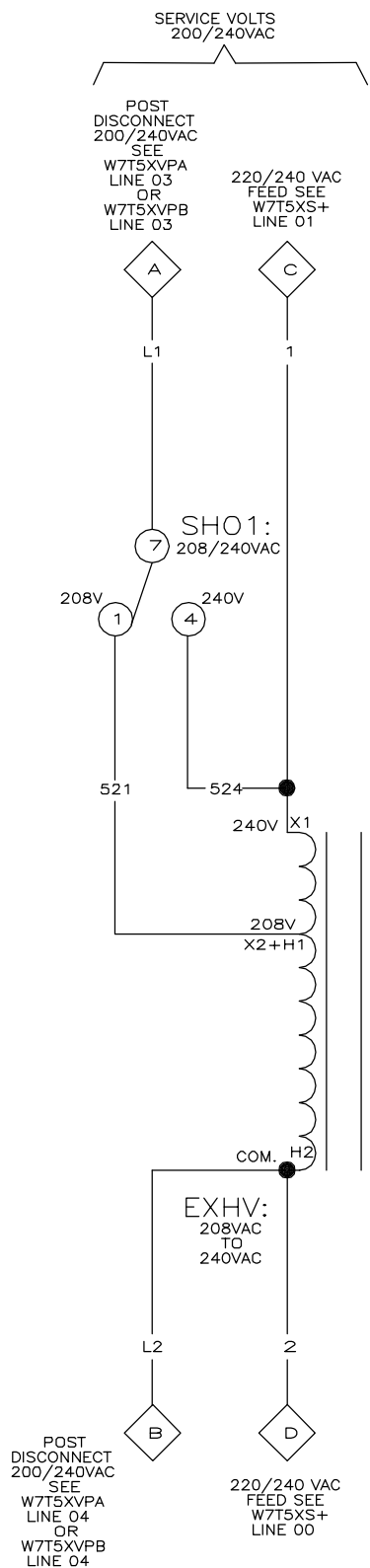
PELLERIN MILNOR CORPORATION

SCHEMATIC: MICROPROCESSOR INPUTS

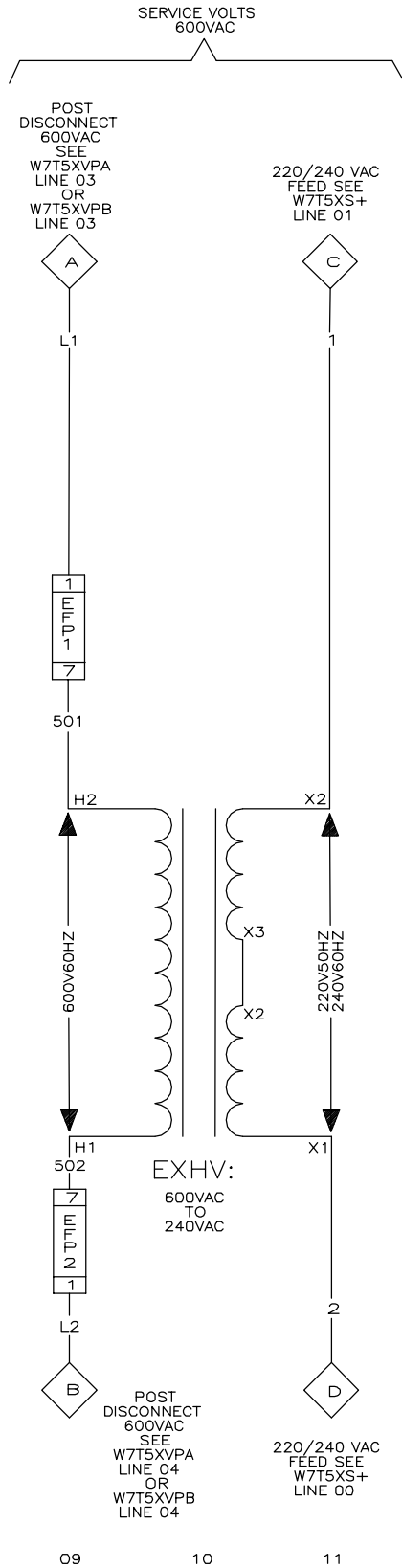


NOTES

1. M6 IS LOCATED ON THE PROCESSOR BOARD.

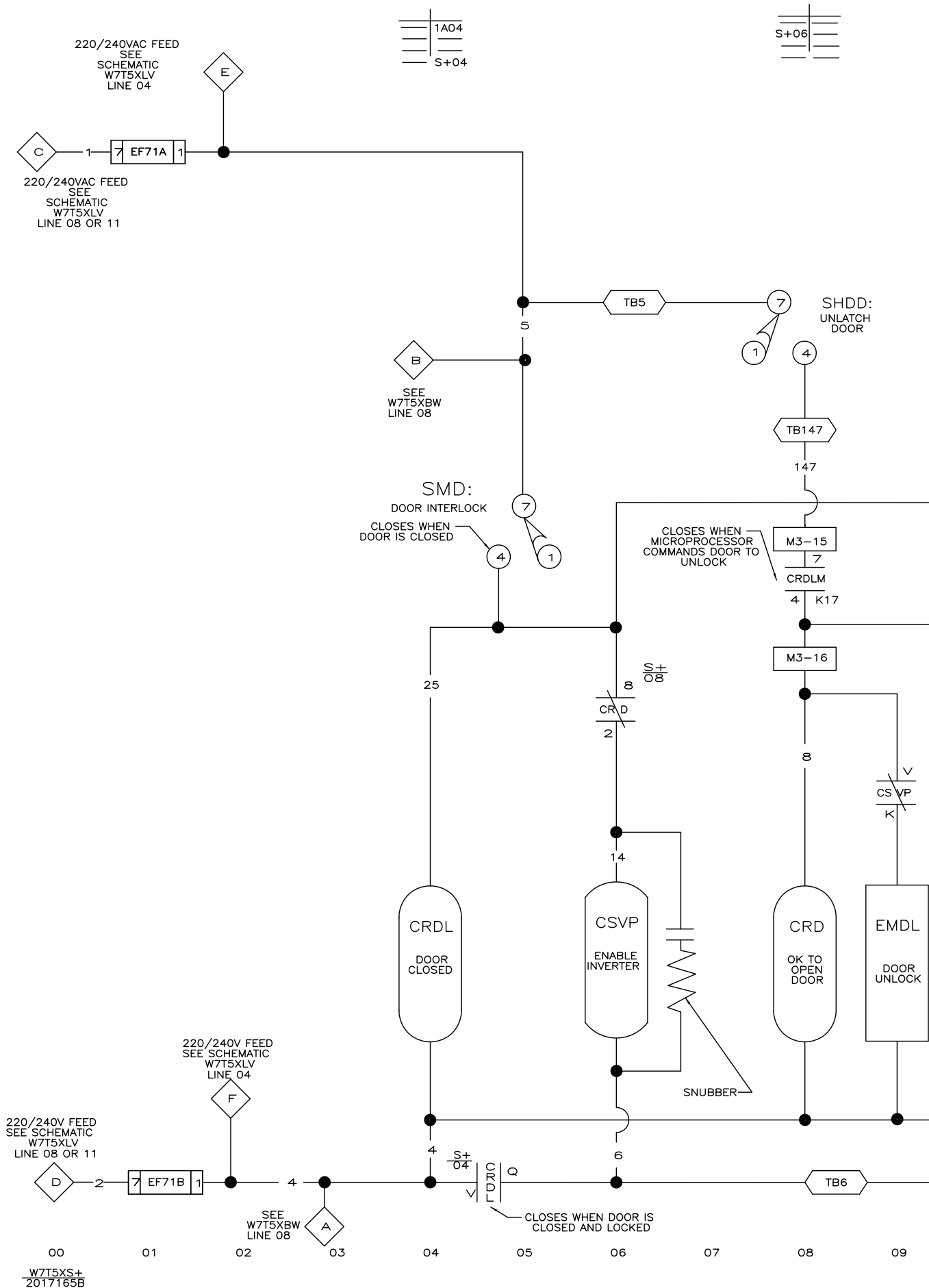


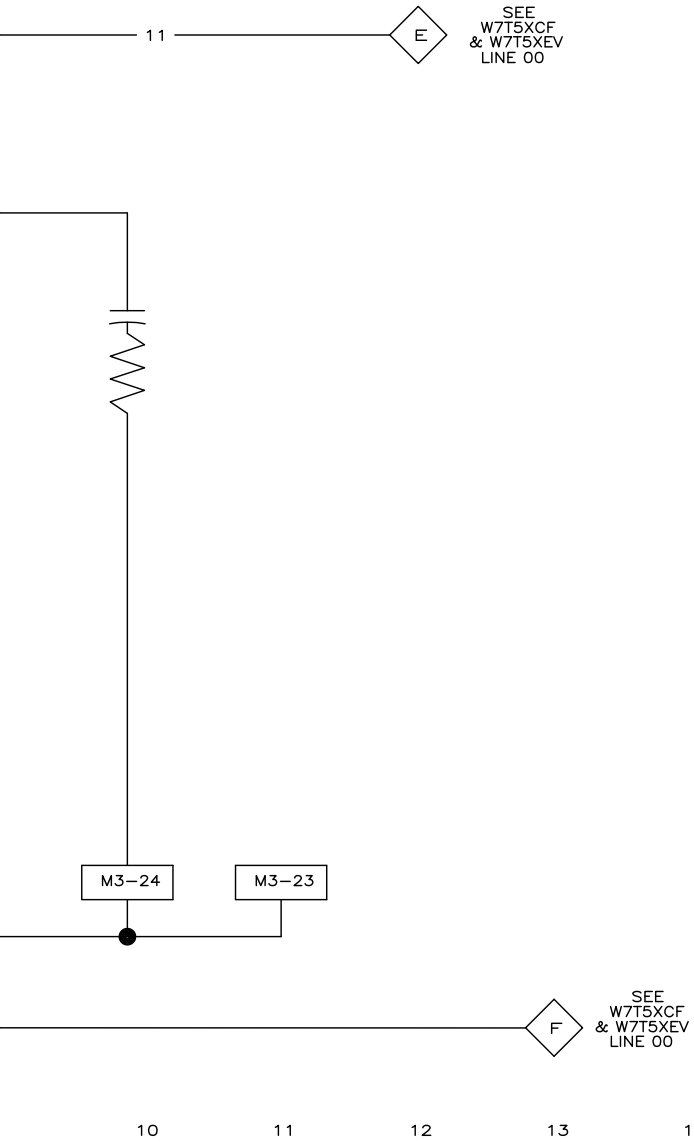
00 01
W7T5XLV
2017365B



W7T5XLV
SCHEMATIC: CONTROL CIRCUIT TRANSFORMER
220V1P50HZ/240V1P60HZ

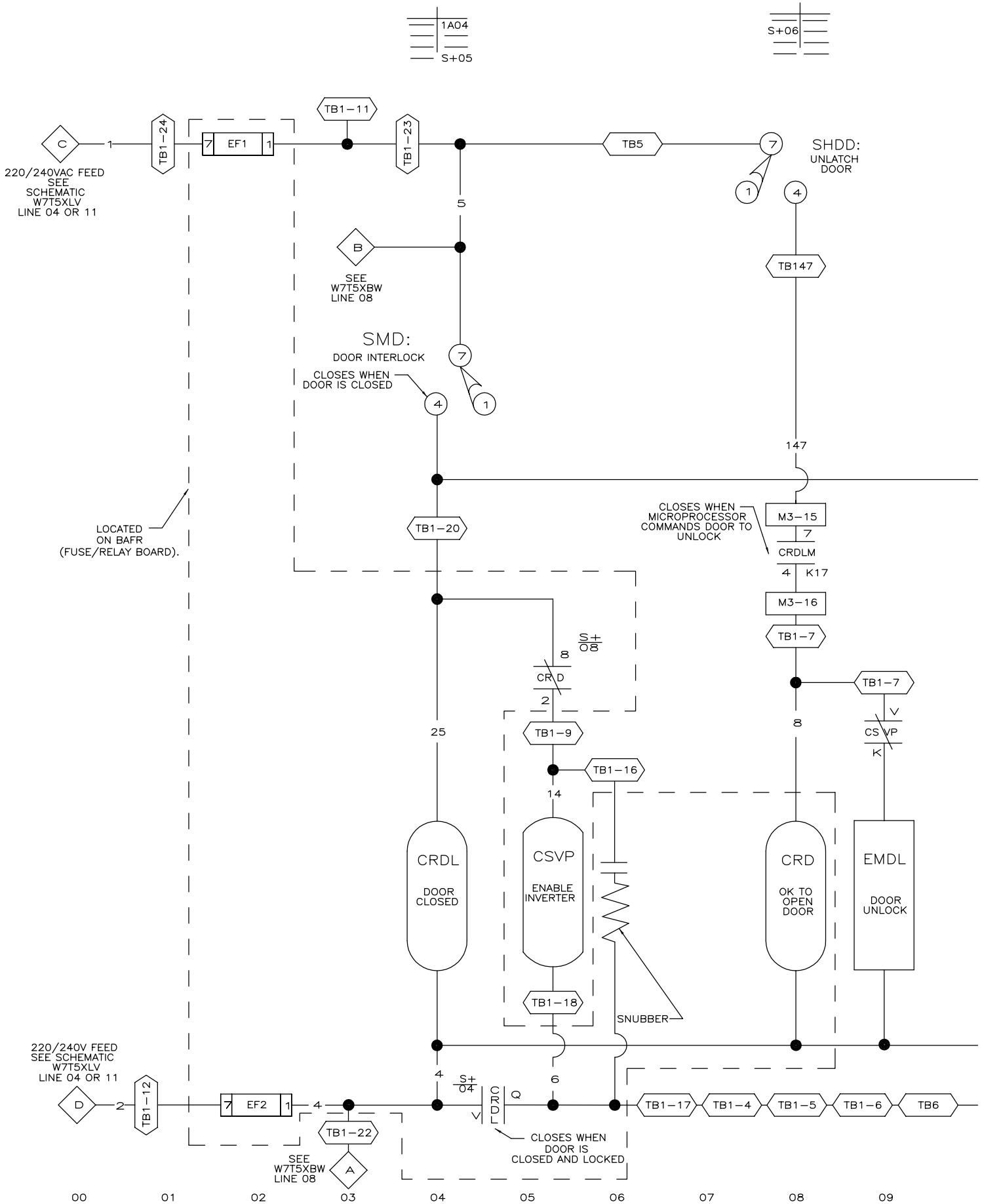
PELLERIN MILNOR CORPORATION



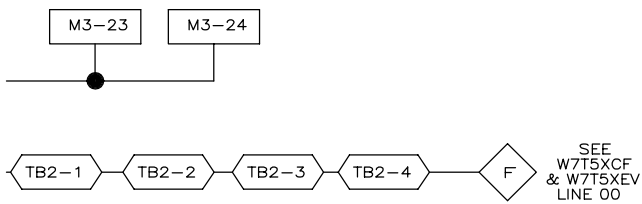
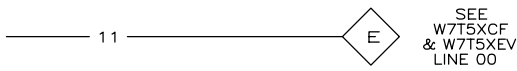


W7T5XS+

SCHEMATIC: START CIRCUIT & DOOR INTERLOCK
FOR 30015T5X & 3022T5X
220V, 1P, 50HZ / 240V, 1P, 60HZ
PELLERIN MILNOR CORPORATION



W7T5XS+A
2012306B



10 11 12 13 14 15 16

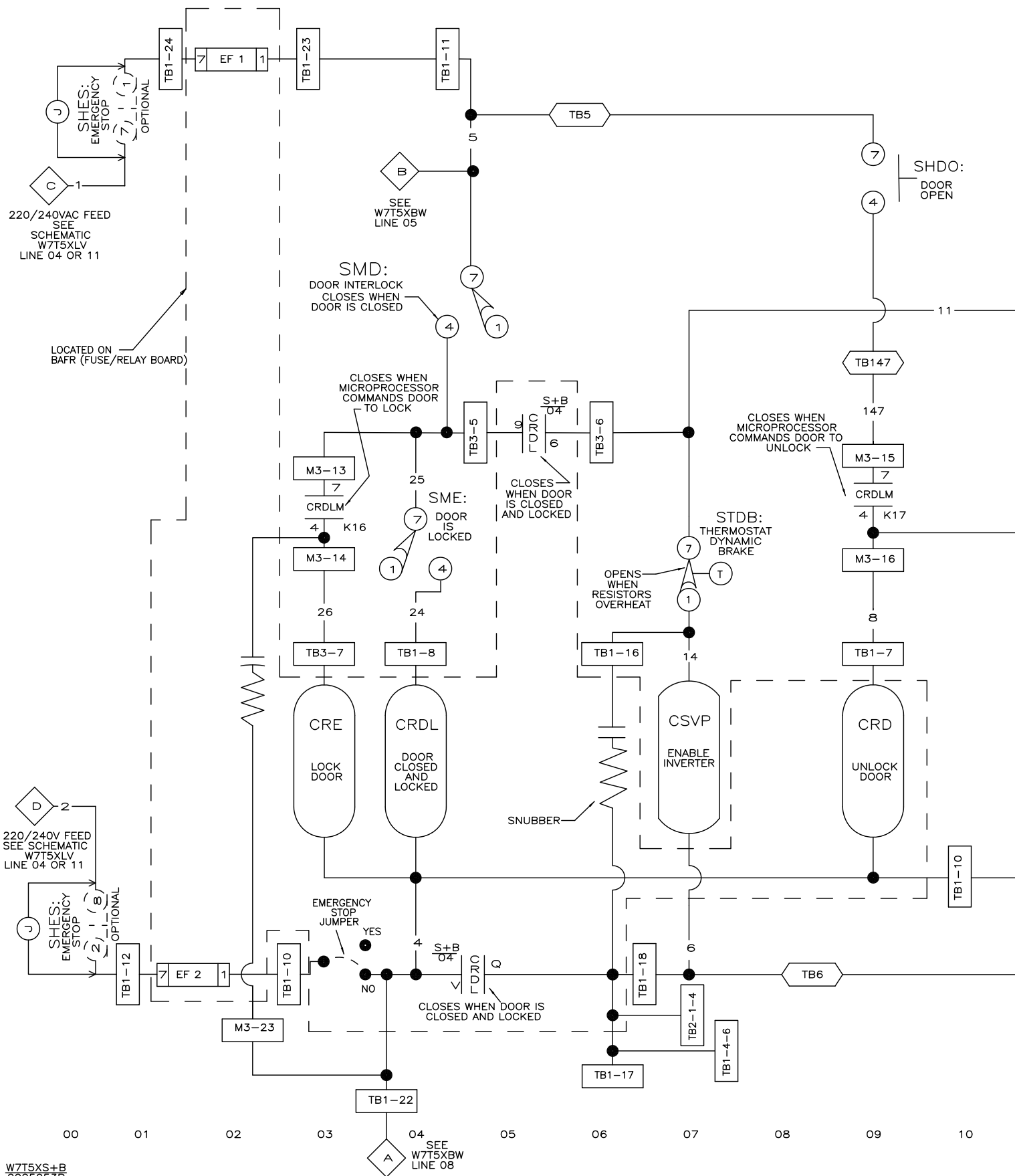
W7T5XS+A

SCHEMATIC: START CIRCUIT & DOOR INTERLOCK FOR 30015T5X & 3022T5X

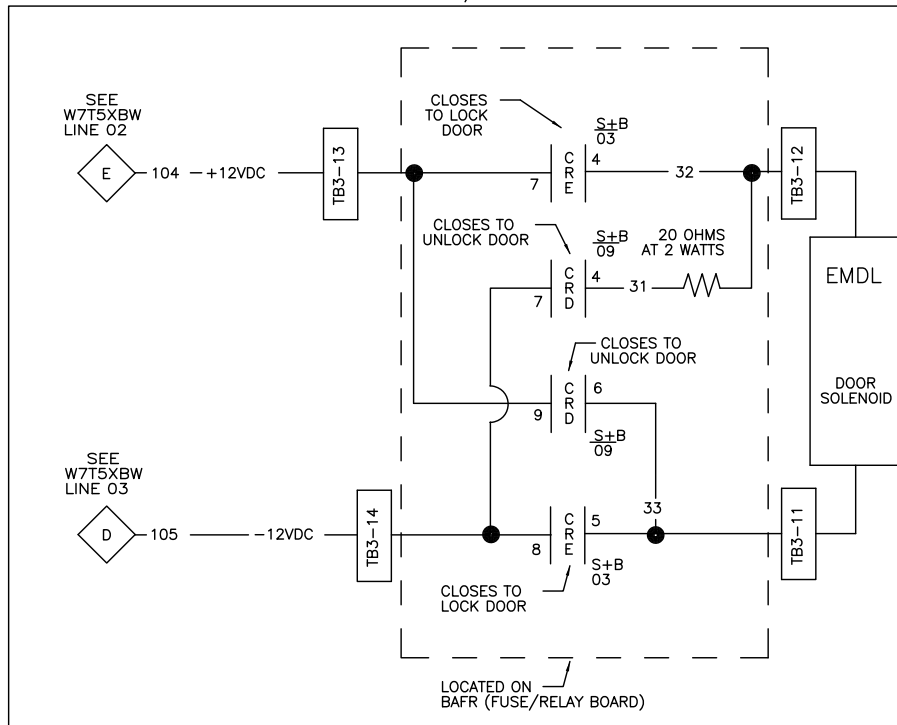
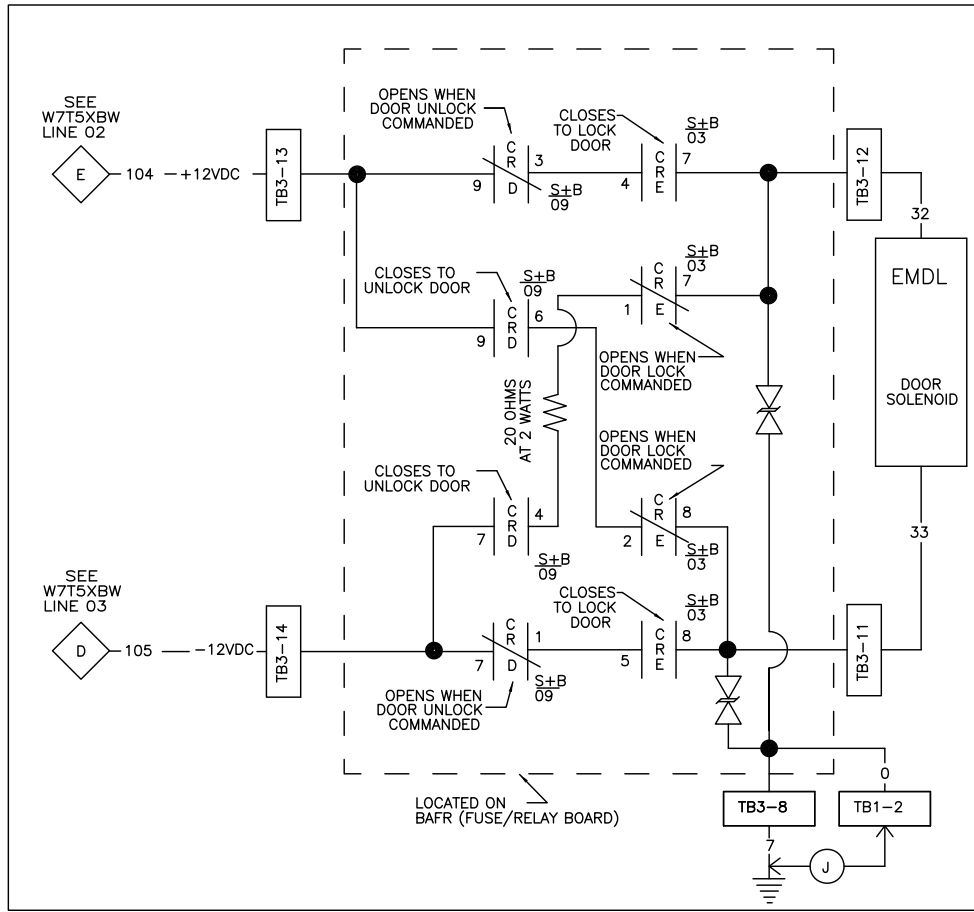
220V, 1P, 50HZ / 240V, 1P, 60HZ
PELLERIN MILNOR CORPORATION

S+B17	S+B17	1A03
S+B17	S+B17	S+B05
		S+B04

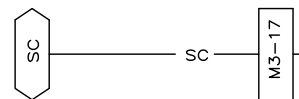
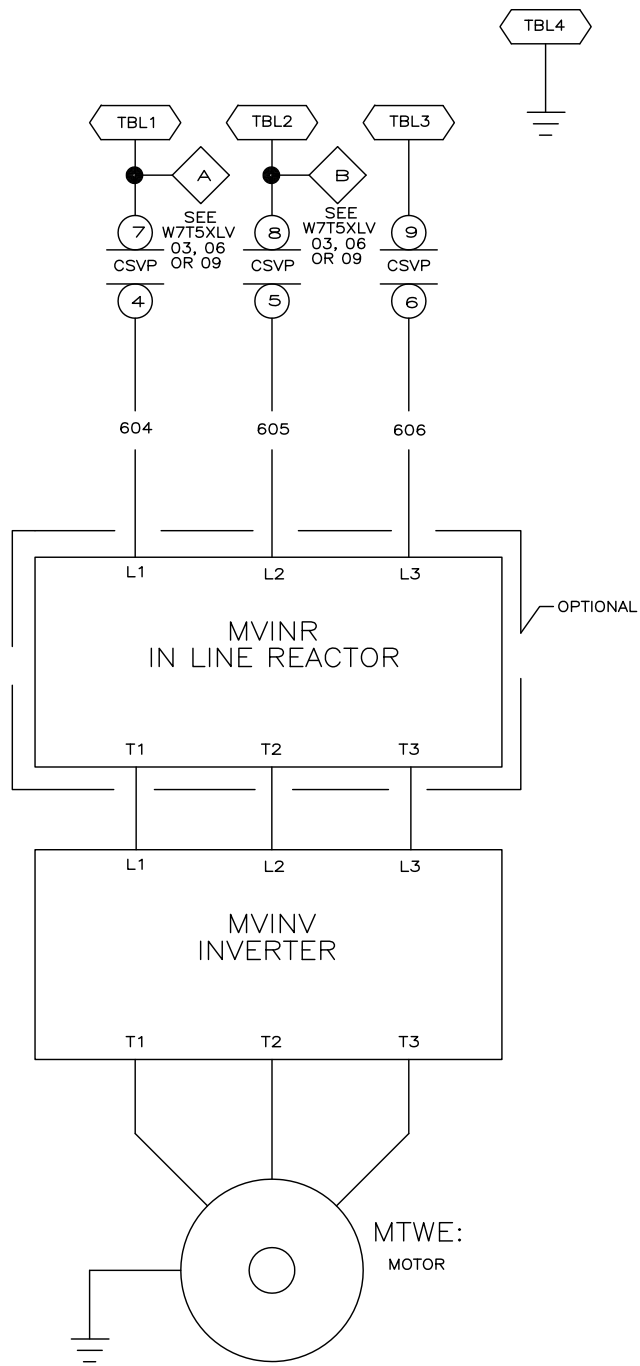
S+B16	S+B16
S+B16	S+B16



W7T5XS+B
2025053B



W7T5XS+B
 SCHEMATIC: START CIRCUIT & DOOR INTERLOCK
 FOR T6X ONLY
 220V, 1P, 50HZ/240V, 1P, 60HZ
 PELLERIN MILNOR CORPORATION

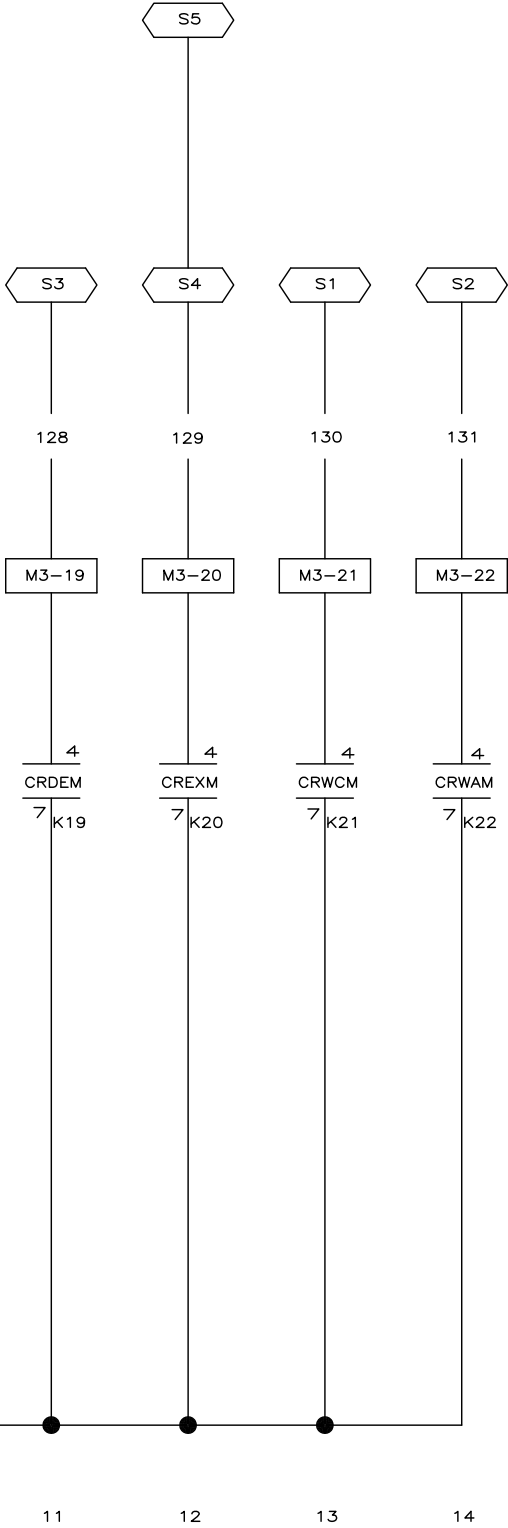


LITHO IN U.S.A.

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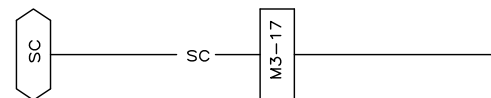
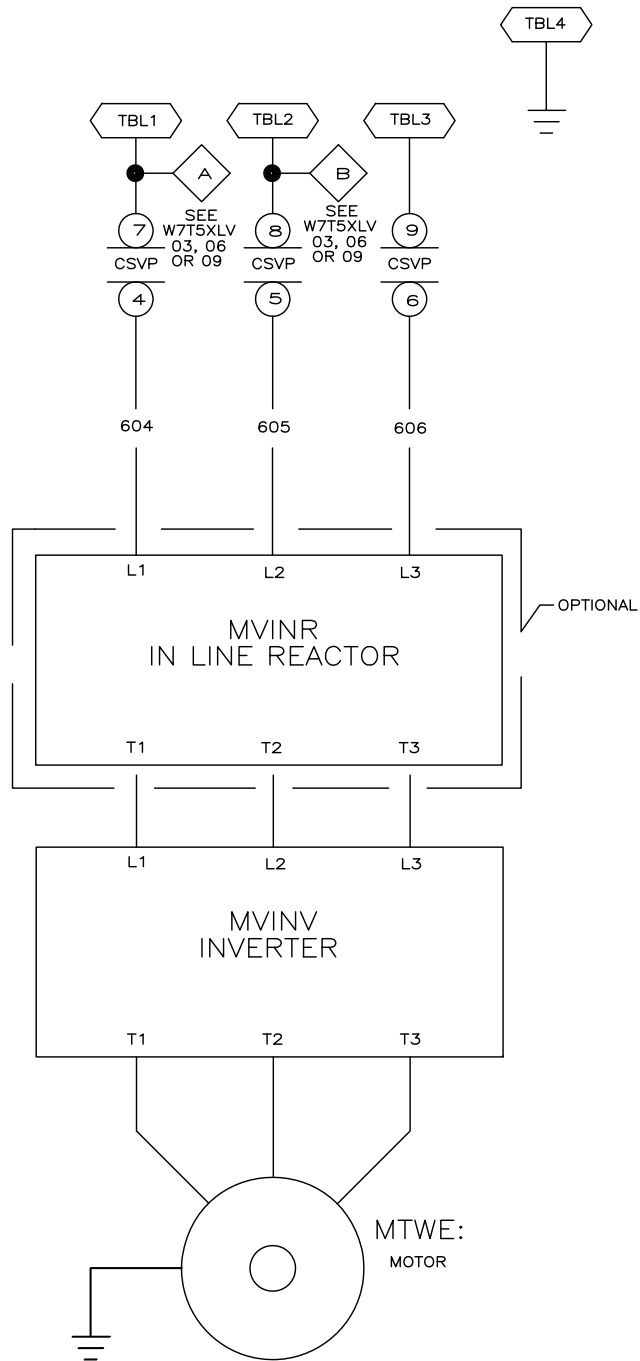
W7T5XVPA
2015162B

	CW		CCW		
	K21	K22	K18	K19	K20
WASH	X				
DRAIN	X			X	
EXTRACT	X				X



W7T5XVPA
SCHEMATIC: VARIABLE SPEED CONTROLLER
FOR 30015T5X & 30022T5X
(GPD305)

PELLERIN MILNOR CORPORATION

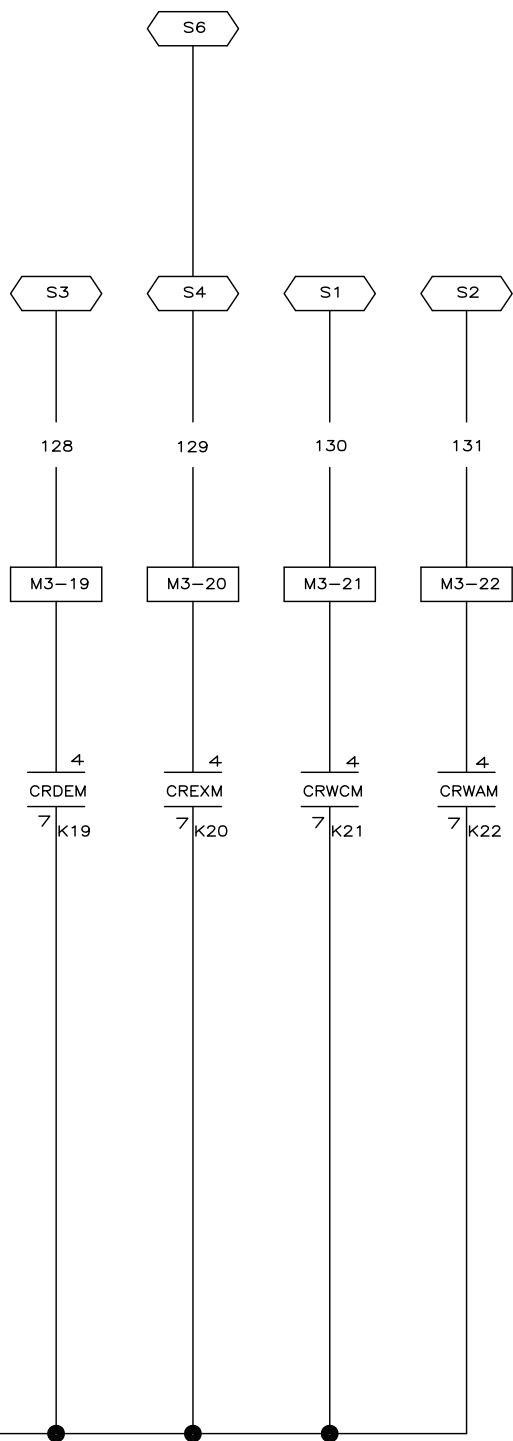


LITHO IN U.S.A.

00 01 02 03 04 05 06 07 08 09 10

W7T5XVPB
2015162B

	CW	CCW			
	K21	K22	K18	K19	K20
WASH	X				
DRAIN	X			X	
EXTRACT	X				X



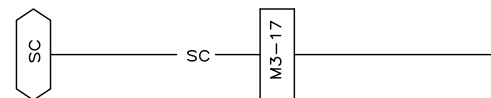
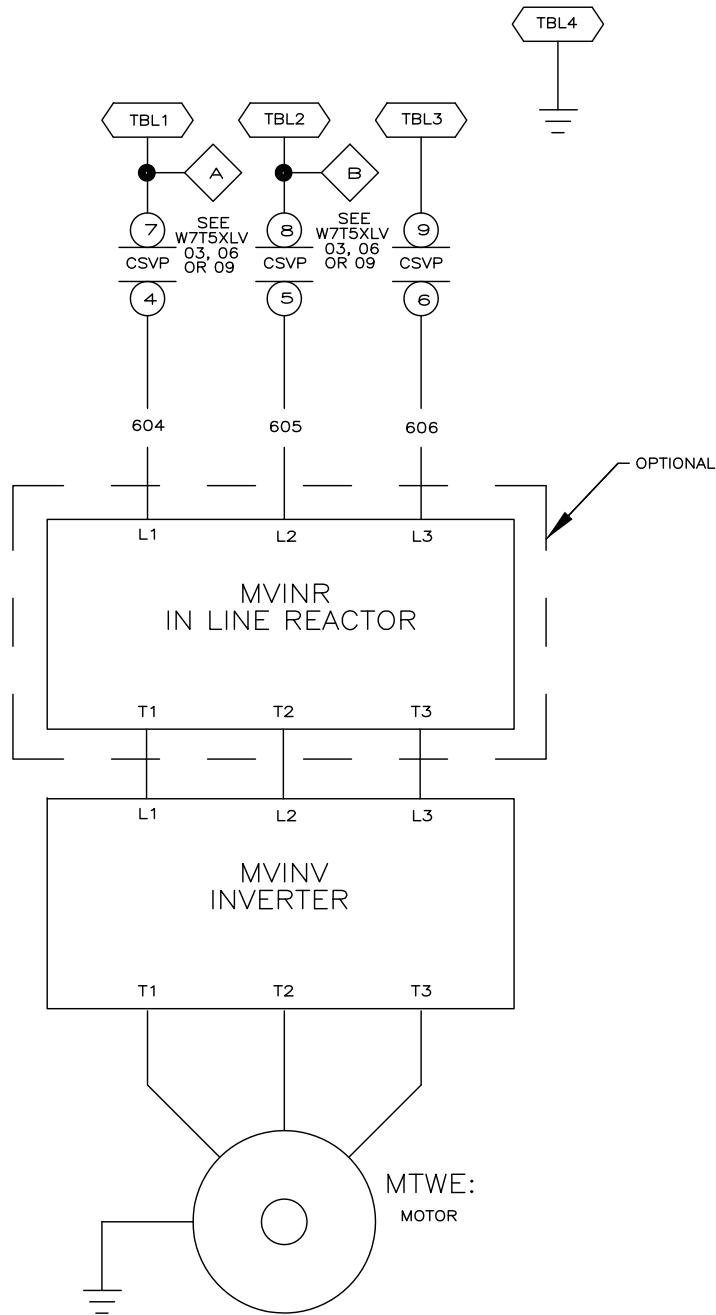
W7T5XVPB

SCHEMATIC: VARIABLE SPEED CONTROLLER

FOR 30015T5X & 30022T5X (GPD315)

PELLERIN MILNOR CORPORATION

11 12 13 14 15 16 17 18 19

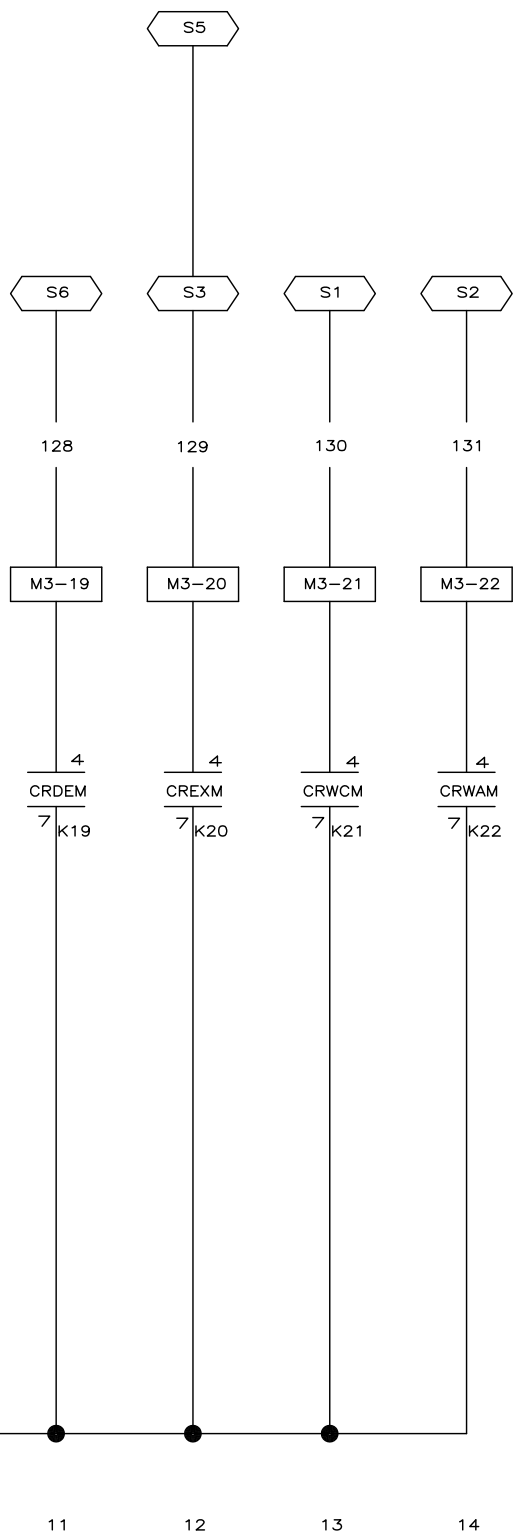


LITHO IN U.S.A.

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W7T5XVPC
2015162B

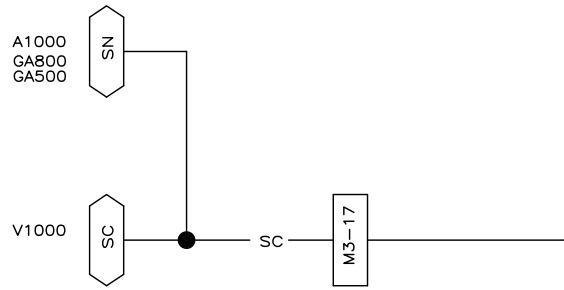
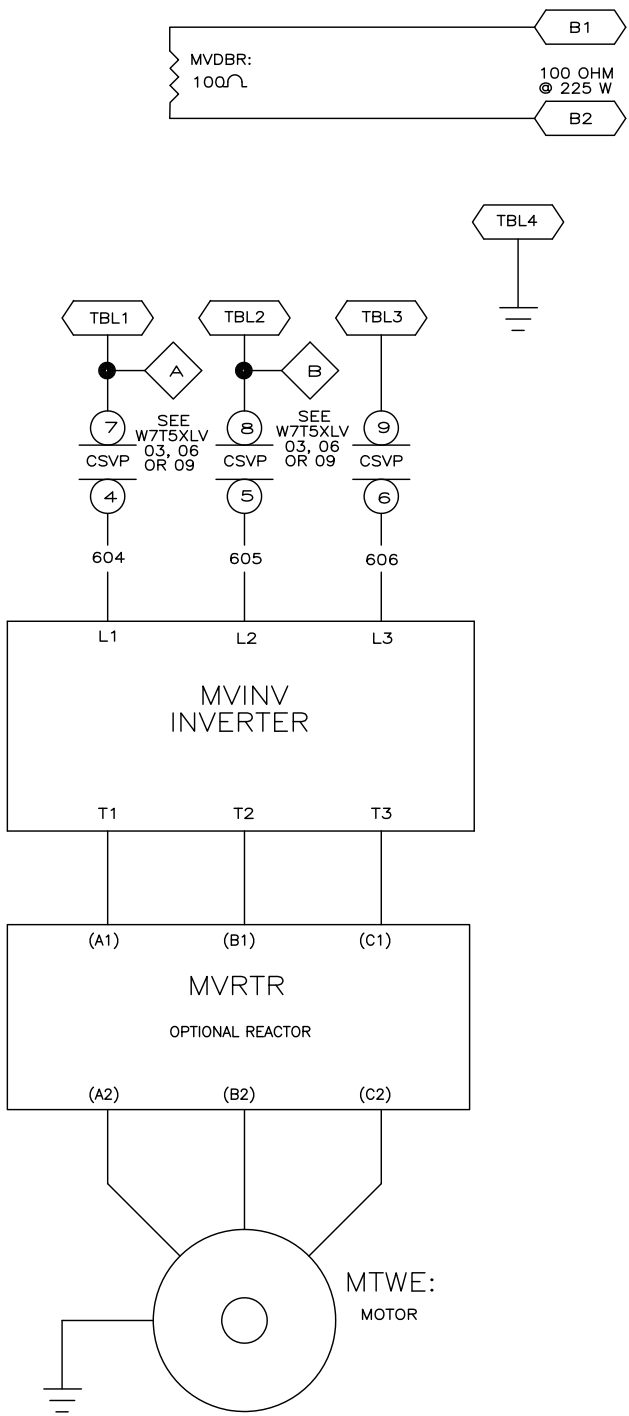
	CW		CCW		
	K21	K22	K18	K19	K20
WASH	X				
DRAIN	X			X	
EXTRACT	X				X



W7T5XVPC

SCHEMATIC: VARIABLE SPEED CONTROLLER FOR 30015T5X & 30022T5X WITH SINGLE PHASE POWER (GPD506)

PELLERIN MILNOR CORPORATION

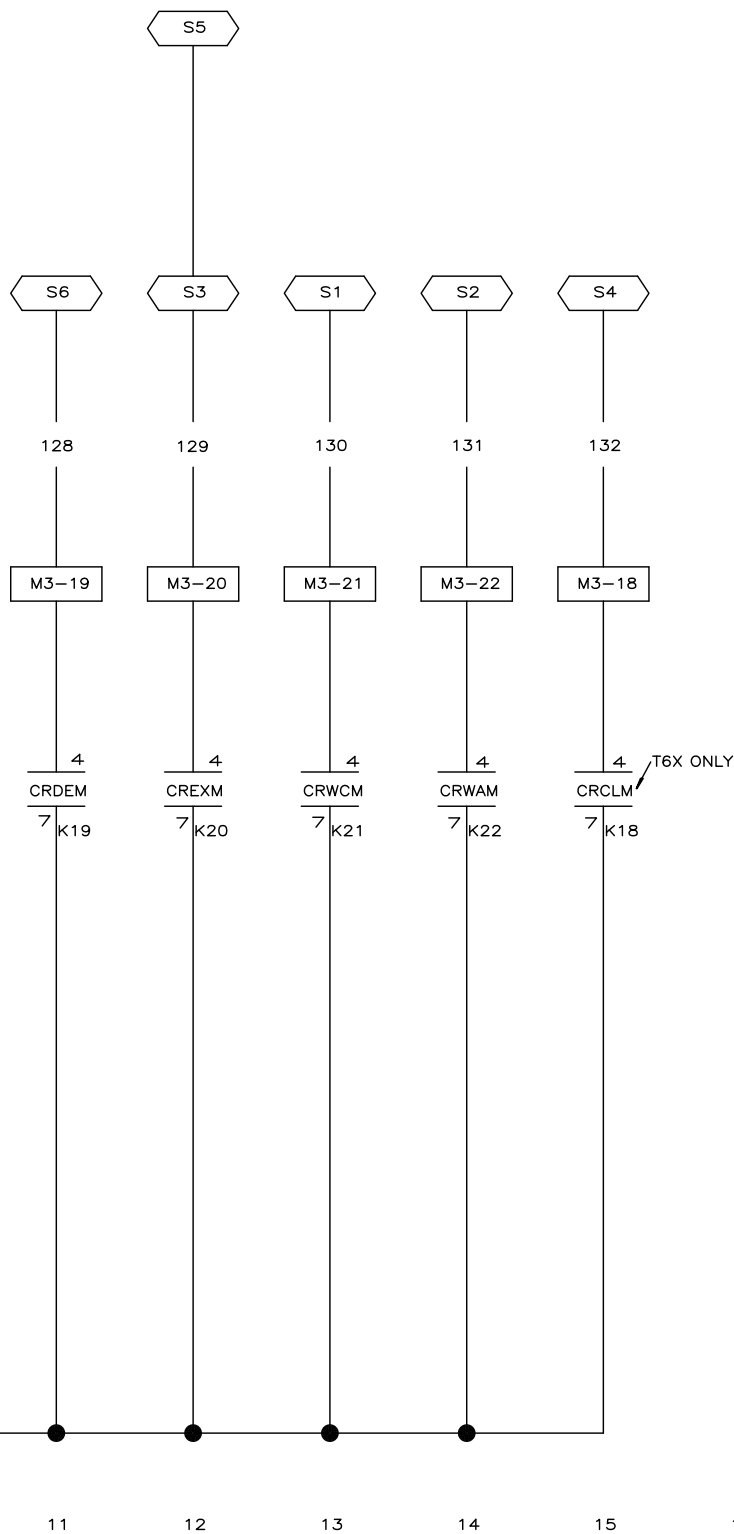


LITHO IN U.S.A.

00 01 02 03 04 05 06 07 08 09 10

W7T5XVPD
2021304B

	CW		CCW		
	K21	K22	K18	K19	K20
WASH	X				
DRAIN	X			X	
RINSAVE	X		X	X	
EXTRACT	X				X



W7T5XVPD

SCHEMATIC: VARIABLE SPEED CONTROLLER
FOR 30015T5X & 30022T5X, T6X WITH SINGLE PHASE POWER
V1000/GA500 3 PHASE AND SINGLE PHASE

PELLERIN MILNOR CORPORATION