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Schematic/Electrical Parts

Milnor® Washer-Extractor
MWR/T12E5, MWR/T16E5,
MWR/T18E4, MWR/T27E5
One Touch 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
ME1MWR11BE/25104A

COMPONENT PARTS LIST

W1MWRPL/2020185N

COMPONENT NUMBER	FUNCTION OF THIS COMPONENT NUMBER	WHERE TO FIND THIS COMPONENT	MILNOR P/N	DESCRIPTION	LOCATION
	>>CONTROL BOX LAYOUTS				
001	CONTROL PANEL LAYOUT	W1MWRTG1	B2T2015011	TAG:MWR12E5, MWR16E5, MWR18E4	CONTROL PANEL
BA	**>>PRINTED CIRCUIT BOARDS**				
BASP	BOARD-SWITCH PANEL	W1MWRCV	98CMCR0912	BD:MWR OPL STATUS->TEST	SWITCH PANEL
BASP	BOARD-SWITCH PANEL	W1MWRIA	98CMCR0912	BD:MWR OPL STATUS->TEST	SWITCH PANEL
BAUP	BOARD-PROCESSOR W/O TEMPERATURE	W1MWRBW	98CMCR0911	BD:16OUTPUT-8INPUT OPL->TEST	CONTROL PANEL
BAUP	BOARD-PROCESSOR W/ TEMPERATURE	W1MWRBW	08BT168BT	BD:16/8 E-TIMER W/A-D ->TESTED	CONTROL PANEL
CR	**>>RELAY-PILOT OR CONTROL**				
CRD	RELAY-OK TO OPEN DOOR	W1MWRS+	09C024D71	RELAY 4PDT DIFGLD 14PN 240V	CONTROL PANEL
CRDL	RELAY-DOOR CLOSED AND LOCKED	W1MWRS+	09C024D71	RELAY 4PDT DIFGLD 14PN 240V	CONTROL PANEL
CRE	RELAY-OK TO LOCK DOOR	W1MWRS+	09C024D71	RELAY 4PDT DIFGLD 14PN 240V	CONTROL PANEL
CS	**>>CONTACTOR-MOTOR STARTER**				
CSVP	CONTACTOR-ENABLE INVERTER	W1MWRS+	98CMCR1801	12A 3P CONTACTOR NR 240V5/6	CONTROL PANEL
EF	**>>FUSE OR FUSE HOLDER**				
EF71A	FUSE-240V INCOMING POWER X-BUSS	W1MWRS+	09FF002F2H	2A 250V F2H CONTROL FUSE	CONTROL PANEL
EF71B	FUSE-240V INCOMING POWER Y-BUSS	W1MWRS+	09FF002F2H	2A 250V F2H CONTROL FUSE	CONTROL PANEL
EFP1	FUSE-LV FEED TRANSFORMER PRIMARY	W1MWRLV	09FF006AWV	FUSE BUSS STYLE CC TYPE FNQ-R 6 AMP 60	CONTROL PANEL
EFP2	FUSE-LV FEED TRANSFORMER PRIMARY	W1MWRLV	09FF006AWV	FUSE BUSS STYLE CC TYPE FNQ-R 6 AMP 60	CONTROL PANEL
EFP1	FUSE-HV FEED TRANSFORMER PRIMARY	W1MWRLV	09FF003AWV	FUSE BUSS STYLE CC TYPE FNQ-R 3 AMP 60	CONTROL PANEL
EFP2	FUSE-HV FEED TRANSFORMER PRIMARY	W1MWRLV	09FF006AWV	FUSE BUSS STYLE CC TYPE FNQ-R 3 AMP 60	CONTROL PANEL
	>>PILOT LIGHTS				
ELFP	LIGHT-FORMULA IN PROGESS	W1MWRCV	MESSAGE EW	SEE COMPONENT NUMBER BASP	SWITCH PANEL
ELLR	LIGHT-LAST RINSE (ON PCB)	W1MWRCV	MESSAGE EW	SEE COMPONENT NUMBER BASP	SWITCH PANEL
EM	**>>ELECTROMAGNET AND SOLENOID**				
EMDL	SOLENOID-DOOR UNLOCK	W1MWRS+	09K063C24	DOOR LOCK SOLENOID 24V	DOOR LOCK
ES	**>>POWER SUPPLY-ELECTRONIC**				
ESPS	POWER SUPPLY-MICROPROCESSOR	W1MWRBW	98CMCR0913	PWRSUP 24V/OUT 85-264VAC/IN	CONTROL PANEL
EX	**>>TRANSFORMERS**				
EXHV	TRANSFORMER-INCOMING VOLT.240VAC	W1MWRLV	MESSAGE EW	SEE EX37-1 OR -3 FOR VOLTAGE	CONTROL PANEL
EXHV-1	TRANSFORMER-208VAC TO 240VAC	W1MWRLV	98CMCR0902	AUTOXFMR 208V/230V 250VA	CONTROL PANEL
EXHV-2	TRANSFORMER-120VAC TO 240VAC	W1MWRLV	09UB20AA71	XFMR 120V PRI/240V SEC 200VA	CONTROL PANEL
MR	**>>>MOTORS**				
MTWE	MOTOR-BASKET	W1MWRVP	MESSAGE SO	SEE SPECIFIC COMPONENT+NAMEPLATE	MACHINE BASE

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COMPONENT NUMBER	FUNCTION OF THIS COMPONENT NUMBER	WHERE TO FIND THIS COMPONENT	MILNOR P/N	DESCRIPTION	LOCATION
MTWE	MOTOR-BASKET	W1MWRVPS	MESSAGE SO	SEE SPECIFIC COMPONENT+NAMEPLATE	MACHINE BASE
MTWE	MOTOR-BASKET	W1MWRVPSA	MESSAGE SO	SEE SPECIFIC COMPONENT+NAMEPLATE	MACHINE BASE
MV	**>>>MOTOR POWER INVERTERS**				
MVINV	INVETRER-BASKET MOTOR MWR12	W1MWRVP	09MV020F74	INVERTER 2HP 230V (GPD315)	CONTROL PANEL
MVINV	INVETRER-BASKET MOTOR MWR18	W1MWRVP	09MV030F74	VARSPEED 3HP 11A 230V GPD315	CONTROL PANEL
MVINV	INVERTER-BASKET MOTOR MWR18	W1MWRVPA	09MWB01174	V1000 INVERTER 11AMP 230V	CONTROL PANEL
MVINVa	INVERTER-BASKET MOTOR MWR09-120V/1P	W1MWRVPSA	09MWW006A37	WEG CFW300 INVERTER 120V1P IN 240V3P O	CONTROL PANEL
MVINVb	INVERTER-BASKET MOTOR MWR09-120V/1P	W1MWRVPSA	09MWWAD4O3	WEG CARD CFW300 INVERTER 4 INPUTS 3 OU	CONTROL PANEL
MVINV	INVERTER-BASKET MOTOR MWR09-120V/1P	W1MWRVPS	09MV005C37	INVERTER GPD205 5 AMPS 120V	CONTROL PANEL
PX	**>>>PROXIMITY SWITCH**				
SH	**>>SWITCH-HAND OPERATED**				
SHDO	SWITCH-DOOR OPEN	W1MWRIA	09N400CBNO	CONT.BLOCK 1-NO SQD#ZB2BE101	SWITCH PANEL
SHDO	SWITCH-DOOR OPEN	W1MWRS+	09N400CBNO	CONT.BLOCK 1-NO SQD#ZB2BE101	SWITCH PANEL
SHFA	SWITCH-FORMULA A	W1MWRIA	MESSAGE EW	SEE COMPONENT NUMBER BASP	SWITCH PANEL
SHFB	SWITCH-FORMULA B	W1MWRIA	MESSAGE EW	SEE COMPONENT NUMBER BASP	SWITCH PANEL
SHFC	SWITCH-FORMULA C	W1MWRIA	MESSAGE EW	SEE COMPONENT NUMBER BASP	SWITCH PANEL
SHFD	SWITCH-FORMULA D	W1MWRIA	MESSAGE EW	SEE COMPONENT NUMBER BASP	SWITCH PANEL
SHO1	SWITCH-208/240V SELECTOR	W1MWRLV	09N050	TOGSW SPDT NO OFF 10A250V	CONTROL PANEL
SHTR	SWITCH-TERMINATE	W1MWRIA	MESSAGE EW	SEE COMPONENT NUMBER BASP	SWITCH PANEL
SM	**>>SWITCH-MECHANICAL OPERATED**				
SMD	SWITCH-DOOR INTERLOCK	W1MWRS+	09R010D	DOOR LOCK SWITCH	DOOR LOCK
SME	SWITCH-DOOR IS LOCKED	W1MWRS+	02-04177	MICROSWITCH=W/MAN CUT LEVER	DOOR LOCK
SMVB	MECHANICAL SWITCH-VIBRATION	W1MWRIA	98CMCR0910	VIBRATION SWITCH	CONTROL PANEL
SN	**>>SNUBBER**				
SNVP	SNUBBER-INVERTER ENABLE CONTACTOR	W1MWRS+	09ARC2047J	SNUB .2MFD 470 OHM 600VDC	CONTROL PANEL
SP	**>>SWITCH-PRESSURE OPERATED**				
SPHL	PRESSURE SWITCH-HIGH LEVEL-MWR18	W1MWRIA	09N101	PRESS SW ASSY TRIP 4.85"	CONTROL PANEL
SPHL	PRESSURE SW-HIGH LEVEL-MWR12&16	W1MWRIA	09N100	PRESS SW ASSY TRIP 2.5"	CONTROL PANEL
SPLL	PRESSURE SWITCH-LOW LEVEL	W1MWRIA	09N100	PRESS SW ASSY TRIP 2.5"	CONTROL PANEL
VE	**>>VALVE-ELECTRIC OPERATED**				
VEC1	VALVE-FLUSH CHEM. POCKET 1	W1MWRCV	N/A	NOT INSTALLED THIS MODEL	REAR OF MACH.
VEC2	VALVE-FLUSH CHEM. POCKET 2	W1MWRCV	N/A	NOT INSTALLED THIS MODEL	REAR OF MACH.
VEC3	VALVE-FLUSH CHEM. POCKET 3	W1MWRCV	N/A	NOT INSTALLED THIS MODEL	REAR OF MACH.

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COMPONENT NUMBER	FUNCTION OF THIS COMPONENT NUMBER	WHERE TO FIND THIS COMPONENT	MILNOR P/N	DESCRIPTION	LOCATION
VECFL	VALVE-FLUSH CHEMICAL	W1MWRCV	98CMCR0939	PERISTALTIC/WATER INLET	REAR OF MACH.
VEDR	VALVE-DRAIN (MWR09&12)	W1MWRCV	96D25RAA71	DRAINVALRTANG 2"N/O 240V 50/60	REAR OF MACH.
VEDR	VALVE-DRAIN (MWR18)	W1MWRCV	96D35RAA71	DRAINVAL RT-ANG 3" 240V 50/60C	REAR OF MACH.
VEWC	VALVE-COLD WATER	W1MWRCV	98CMCR0937	3/4"DUOINLET 1/2"HOSEOUT	REAR OF MACH.
VEWH	VALVE-HOT WATER	W1MWRCV	98CMCR0937	3/4"DUOINLET 1/2"HOSEOUT	REAR OF MACH.

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PELLERIN MILNOR CORPORATION
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.

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.

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.

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

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).

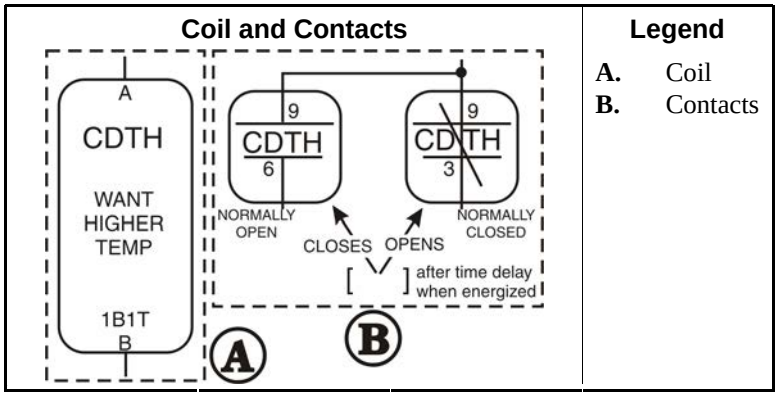
BA=Printed Circuit Board—Insulating substrate on which a thin pattern of copper conductors has been formed to connect discrete electronic components also mounted on the board.

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)

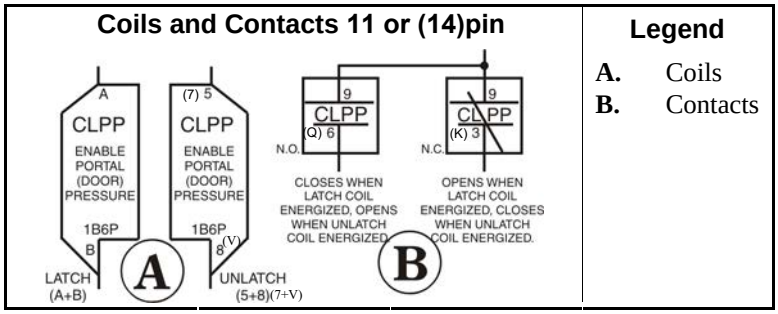
CD=Control, Time Delay Relay (Figure 2)—A relay whose contacts switch only after a fixed or adjustable delay, once voltage has been applied to its coil. The contacts switch back to normal (de-energized state) immediately when the voltage is removed.

Figure 2: Time Delay Relay (CD)



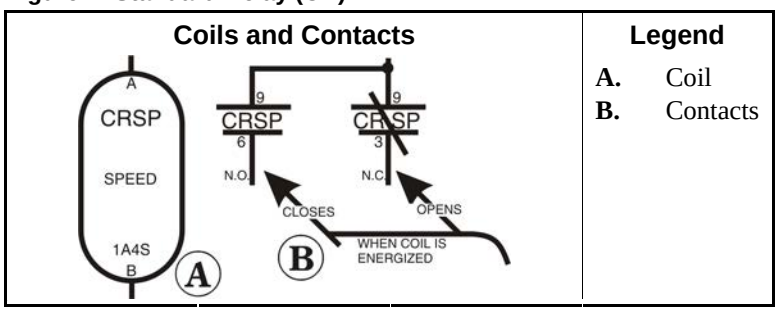
CL=Control, Latch Relay (Figure 3)—A relay which latches in an energized or set position when operated by one coil (the latch/set coil). The relay stays latched even though coil voltage is removed. The relay releases or unlatches when voltage is applied to a second coil (the unlatch/reset coil).

Figure 3: Latch Relay (CL)



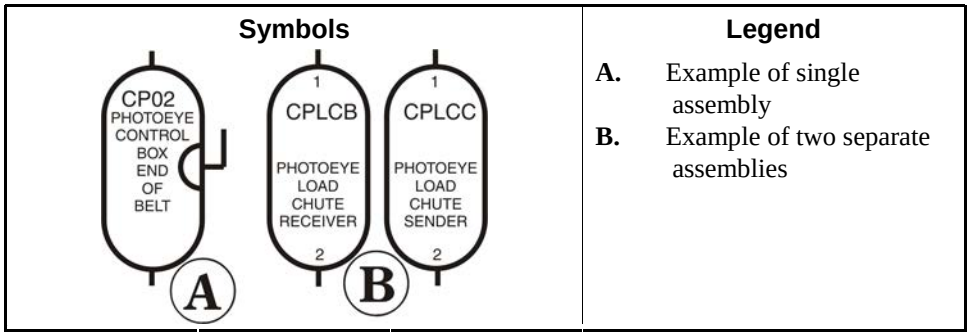
CR=Control, Relay (Figure 4)—A relay whose contacts switch immediately when voltage is applied to its coil and revert to normal when the voltage is removed.

Figure 4: Standard Relay (CR)



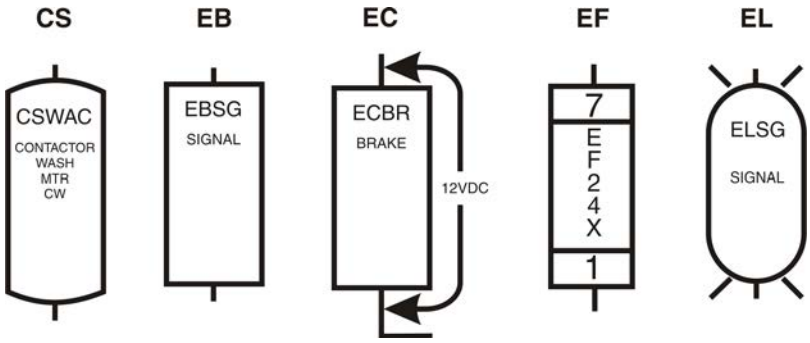
CP=Control, Photo-Eye (Figure 5)—Photo-eyes sense the presence of an object without direct physical contact. Photo-eyes consist of a transmitter, receiver, and output module. These components may be housed in one assembly with the transmitter bouncing light off of a reflector to the receiver, or these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

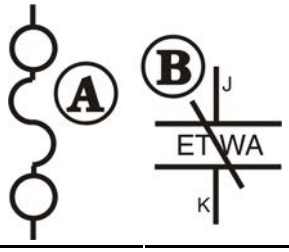
EL=Electric Light (Figure 6)—Indicator lights may be either incandescent or fluorescent.

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.

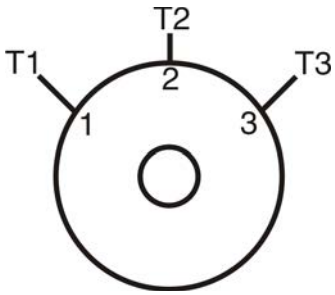
KB=Keyboard—Device similar to a typewriter for making entries to a computer.

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)

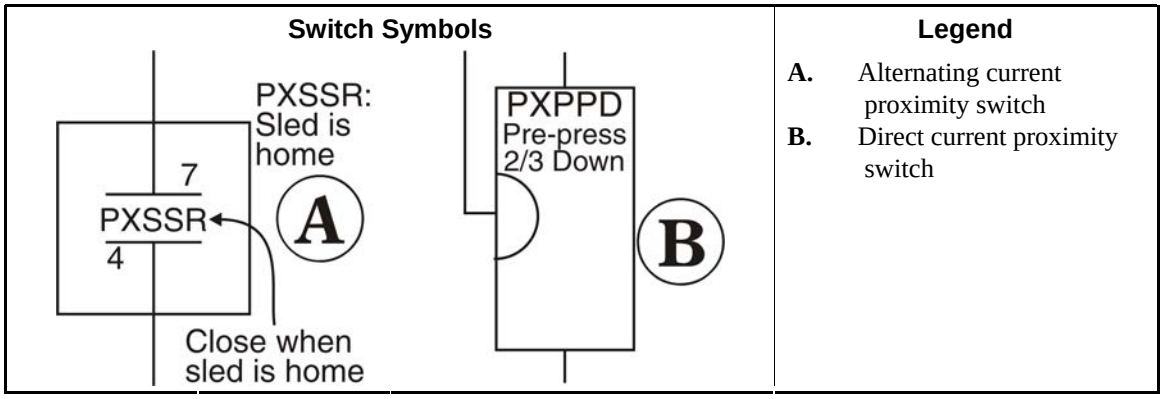


MV=Motor (Variable Speed) Inverter—To vary the speed of an AC motor, the volts to frequency ratio must be kept constant. The motor will overheat if this ratio is not maintained. The motor variable speed inverter converts three phase AC to DC. The inverter then uses this DC voltage to generate AC at the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

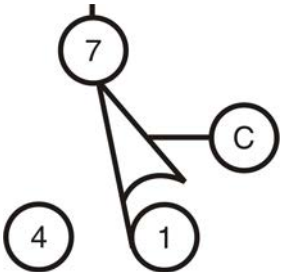
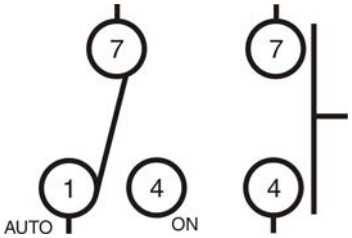


Figure 12: Hand Operated Switch (SH)



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)

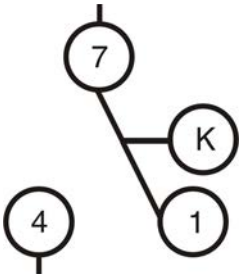
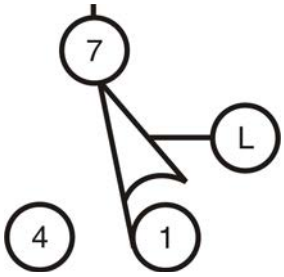


Figure 14: Level Switch (SL)



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)

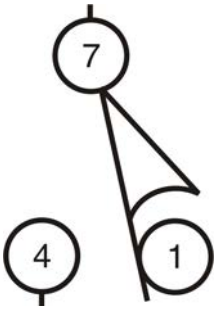
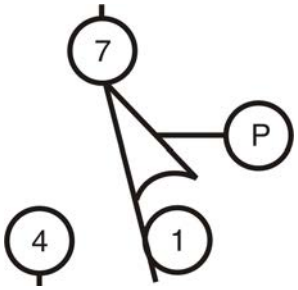


Figure 16: Pressure Switch (SP)



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)

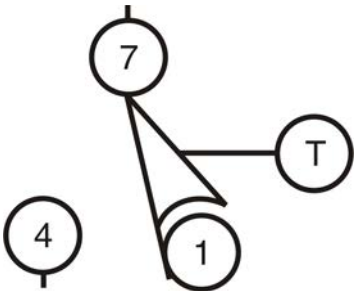
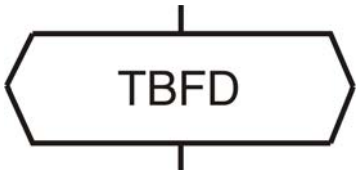


Figure 18: Terminal Board (TB)



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)

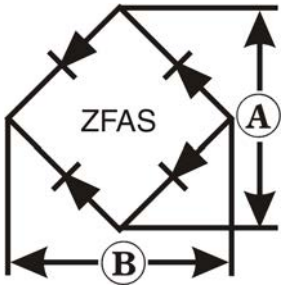
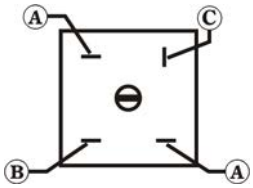
Component Symbol	Legend
	**A.** Alternating current input **B.** Direct current output

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.

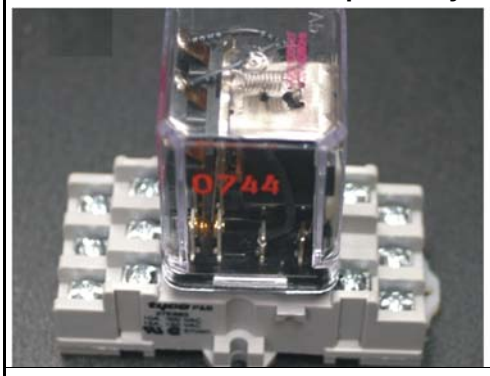
2. Component Terminal Numbering

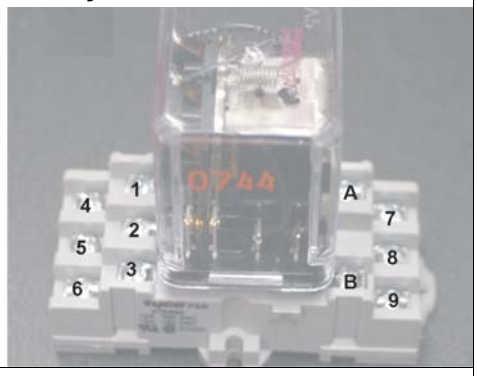
CAUTION 1: Risk of Mis-wiring—Due to electrical component manufacturing inconsistencies, the pin numbers imprinted on components such as connectors and relay bases used on Milnor machines often do not correspond to the pin numbers shown in the schematics.

- 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.

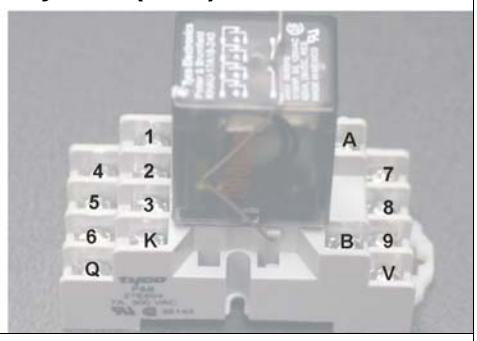
Figure 22: Plug-in Relays

11-pin Relay with Grey Base

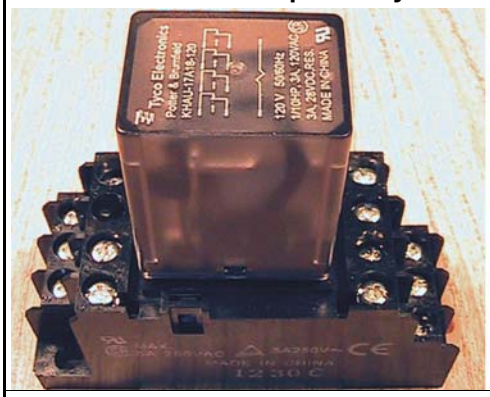


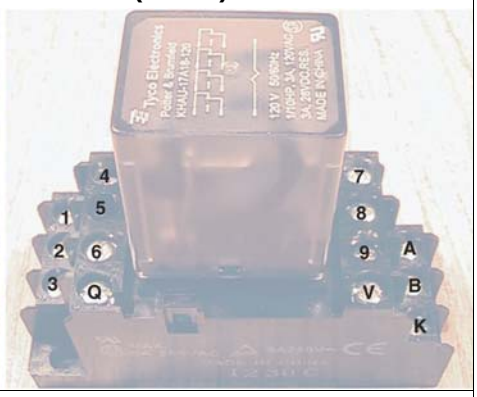


14-pin Relay with Grey Base (older)

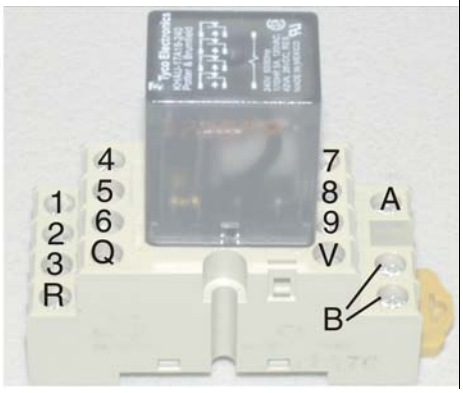


14-pin Relay with Black Base (newer)





14-pin Relay with Beige Base (rare)



Legend

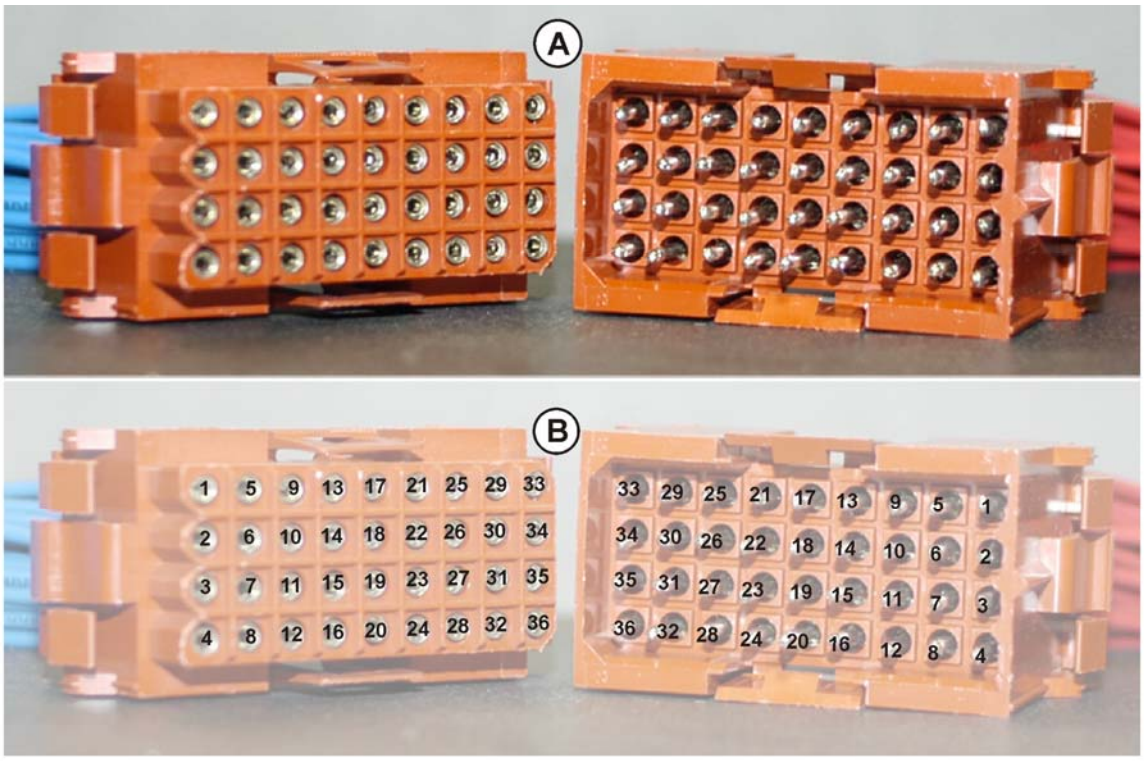
Left. View of relay and base

Right. Same view, showing pin numbers

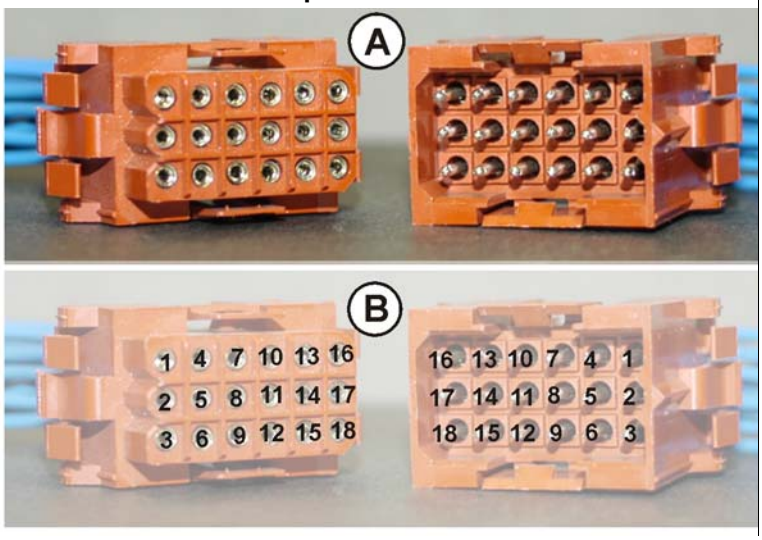
Note 3: Relay functional names ending with the letter "M" (e.g., CRxxM) are not discrete components but are a component of a printed circuit board. They are usually not individually replaceable.

Figure 23: AMP Connector Pin Locations

36-pin Connector



18-pin Connector

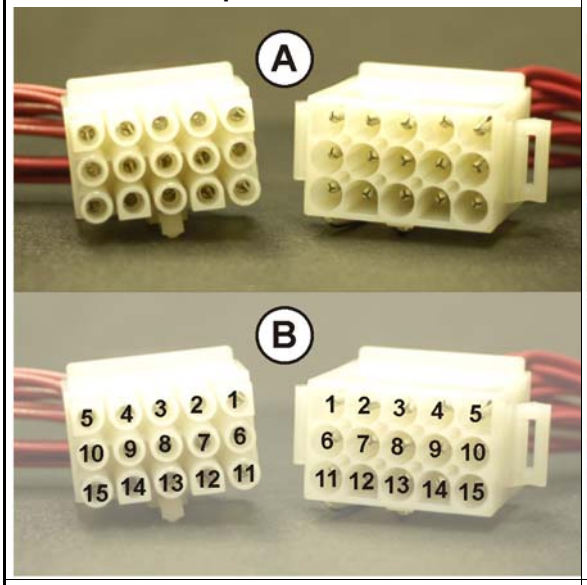


Legend

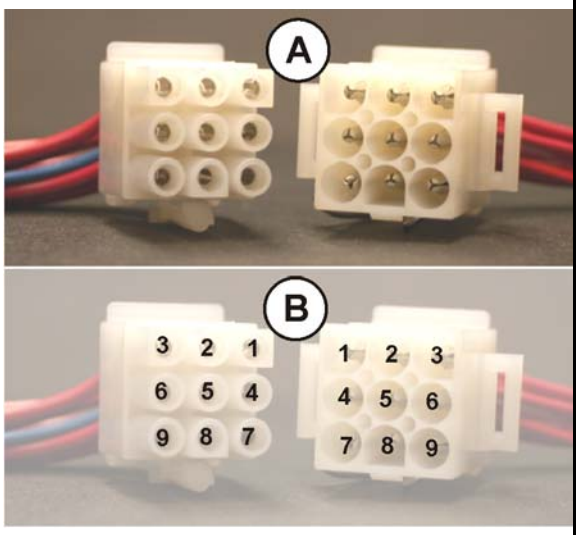
A. View of mating halves of connector
B. Same view, showing assigned pin numbers

Figure 24: Molex Connector Pin Locations

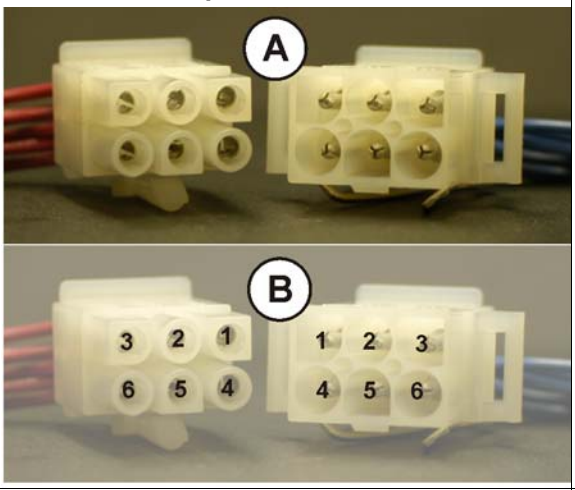
15-pin Connector



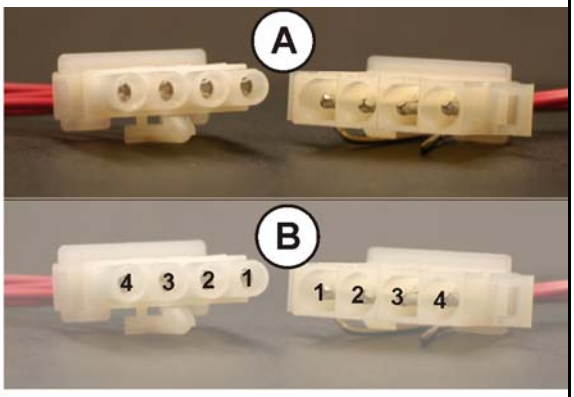
9-pin Connector



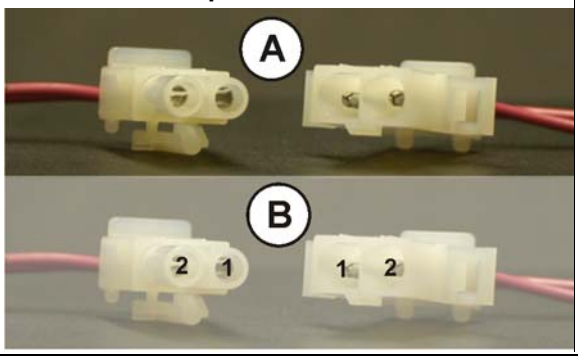
6-pin Connector



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

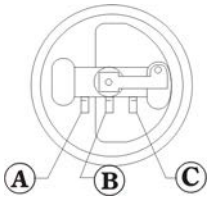
Component	Legend
	**A.** Contact 1—Normally open **B.** Contact 2—Normally closed **C.** Contact 3—Common

Figure 26: Toggle Switch

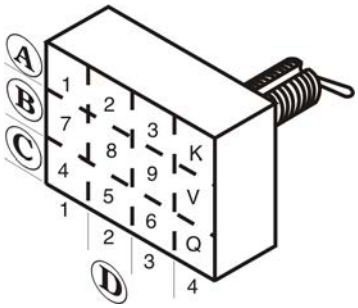
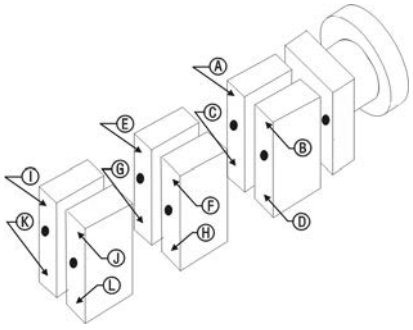
Component	Legend
	**A.** Normally closed contacts **B.** Common contacts **C.** Normally open contacts **D.** Pole

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

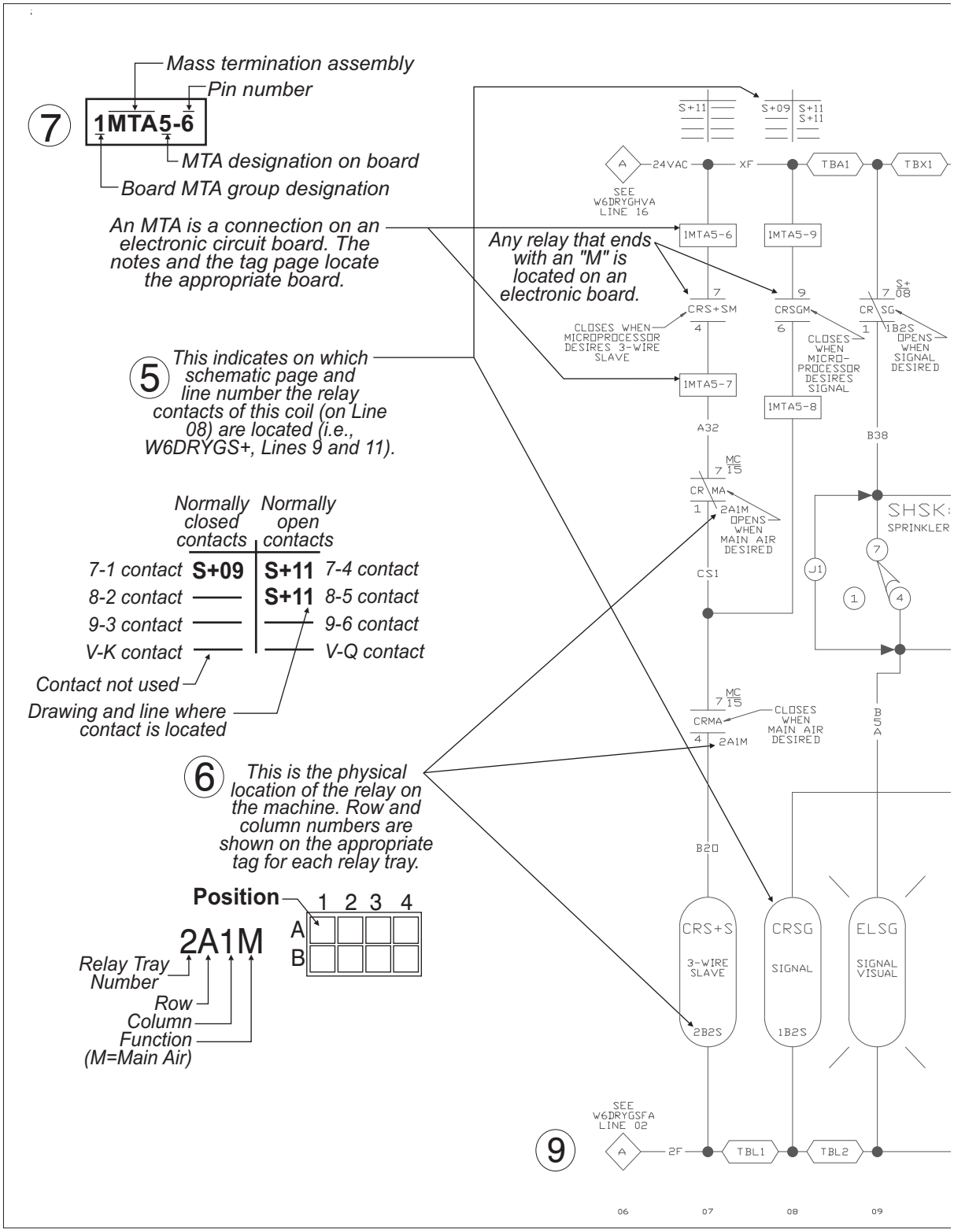
circuitry (S+=three-wire circuit) and establish the order in which the schematic occurs in the manual (schematics are arranged in alpha-numeric order in the manual).

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).

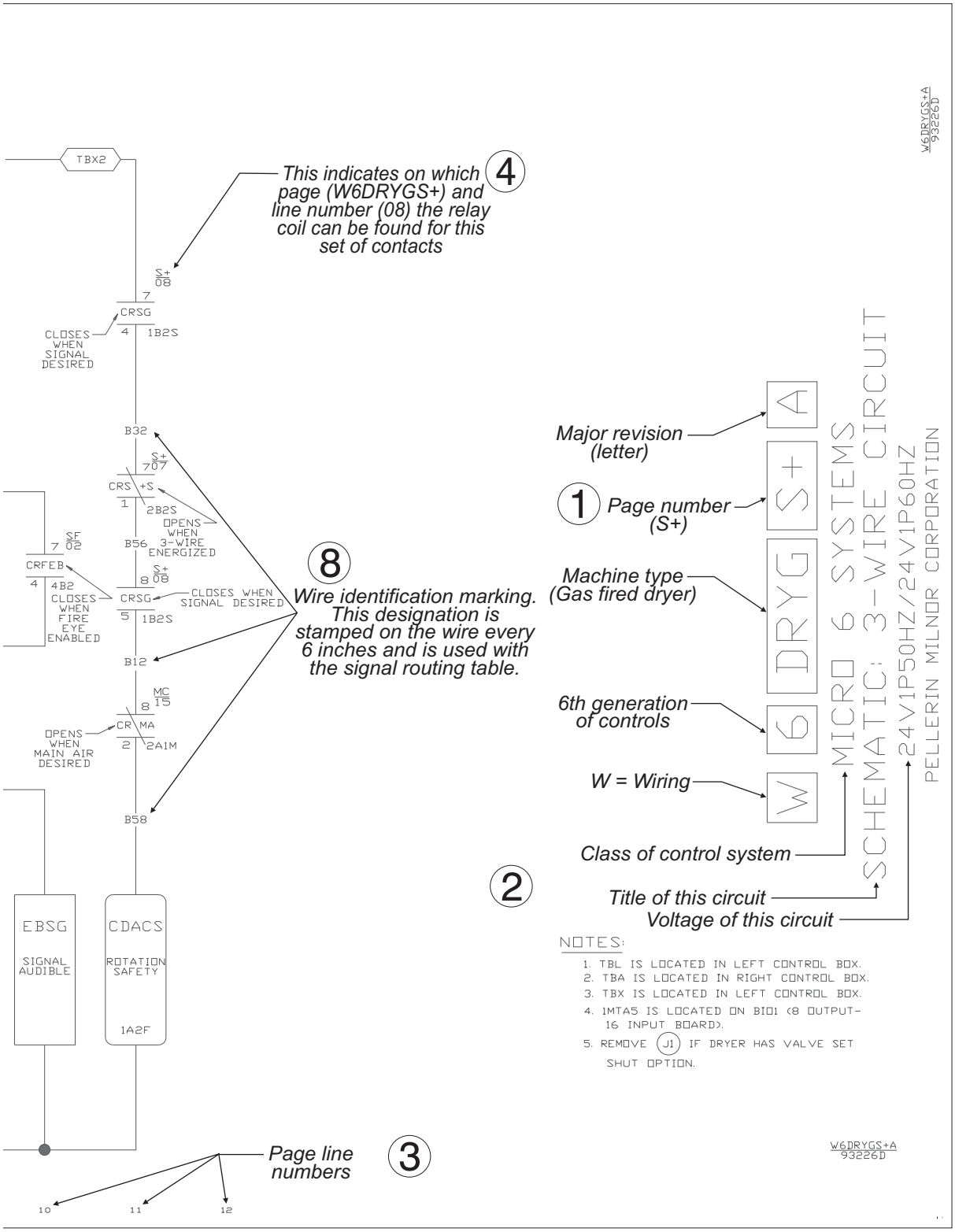
2. Included in the drawing title are the class of control system, the title of this circuit, and the circuit voltage.
3. Line numbers are provided along the bottom edge of the drawing. These permit service personnel in the field and at the Milnor® factory to quickly relate circuit locations when discussing 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 —

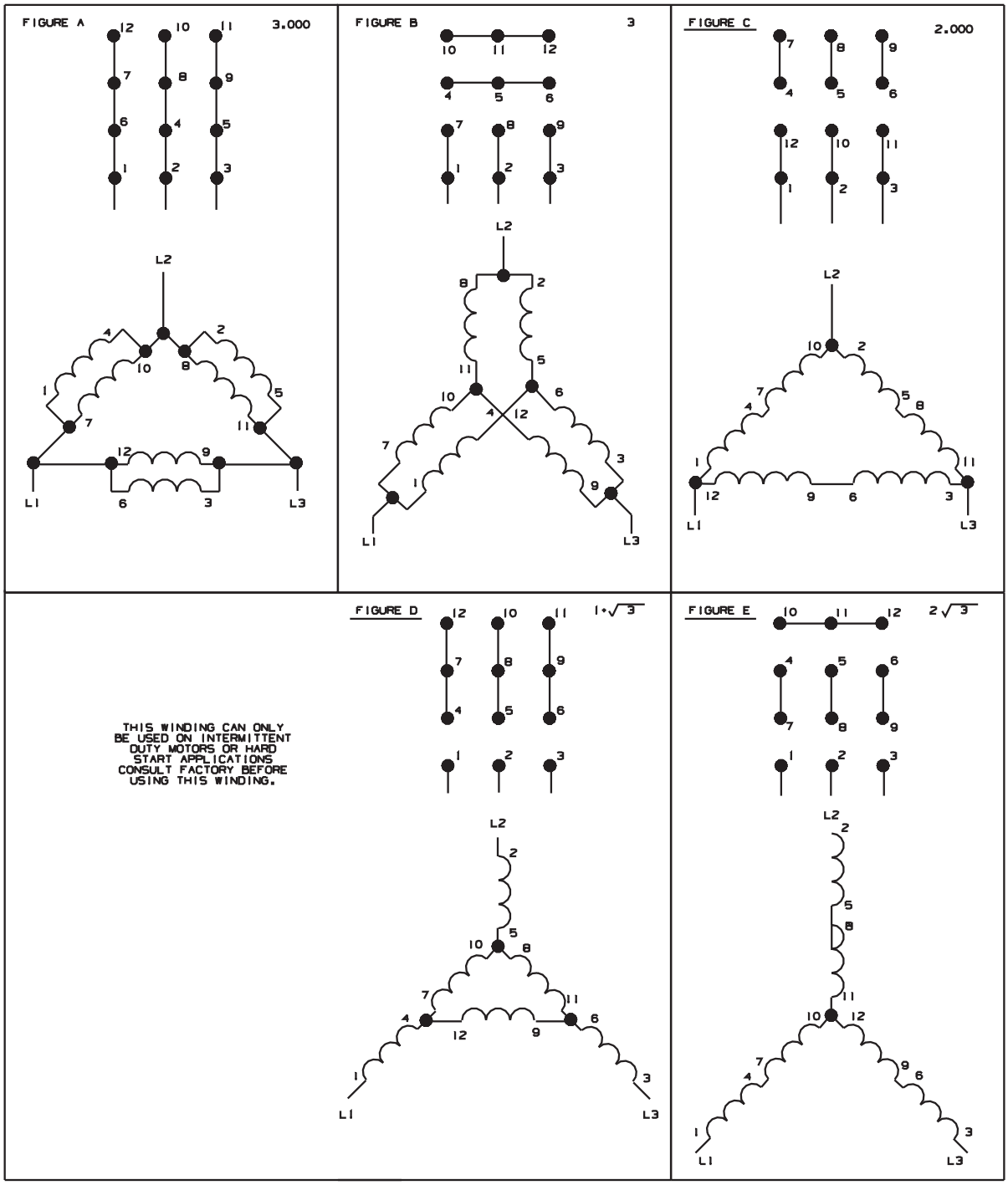


BMP010012 (left) / 2018343



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

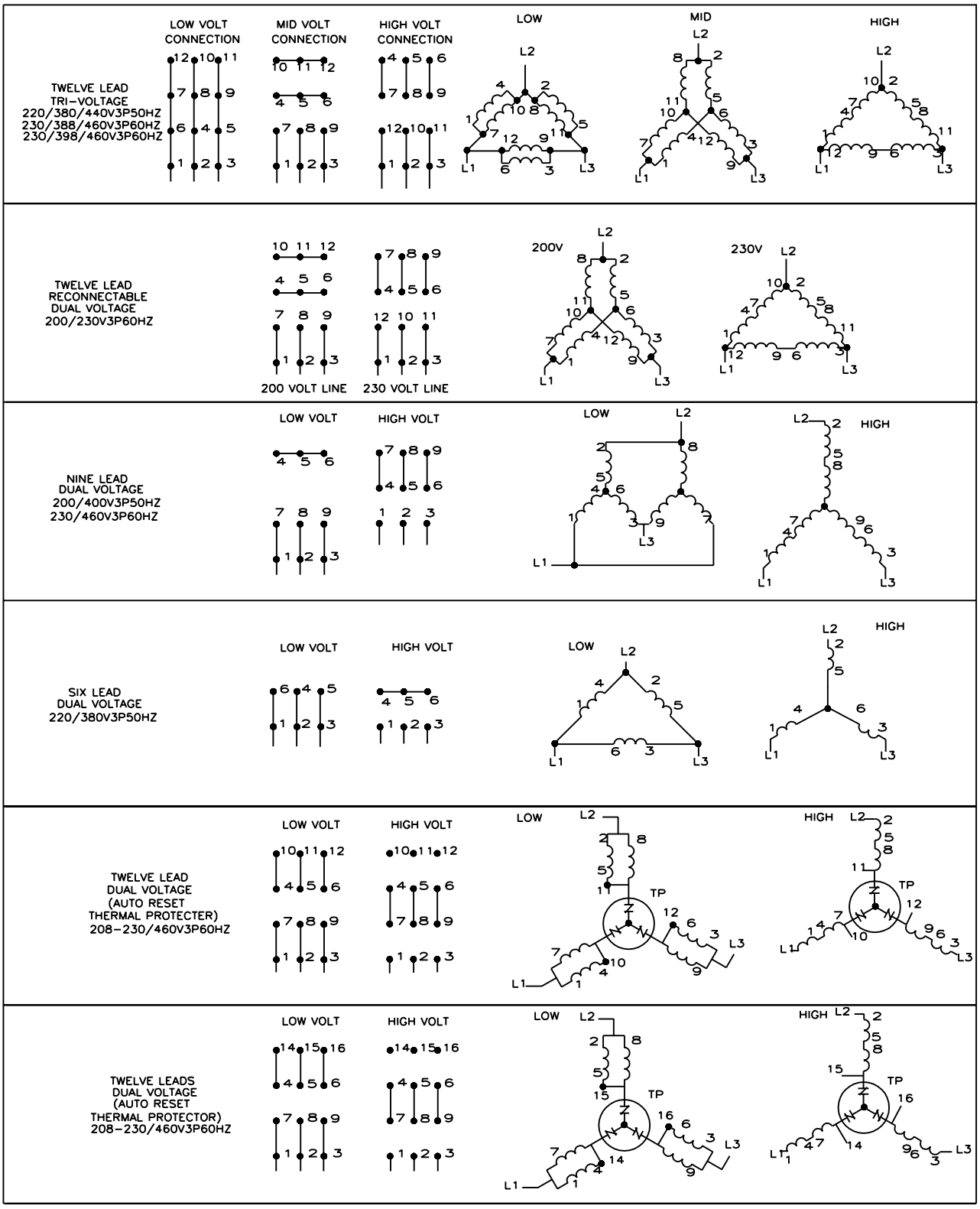
MOTOR CONNECTION DIAGRAMS

THREE PHASE SINGLE SPEED MOTORS WITH MULTIPLE VOLTAGE RATINGS

(ONLY FOR MOTOR SUFFIXES LISTED)

PELLERIN MILNOR CORPORATION

BMP850029
993628

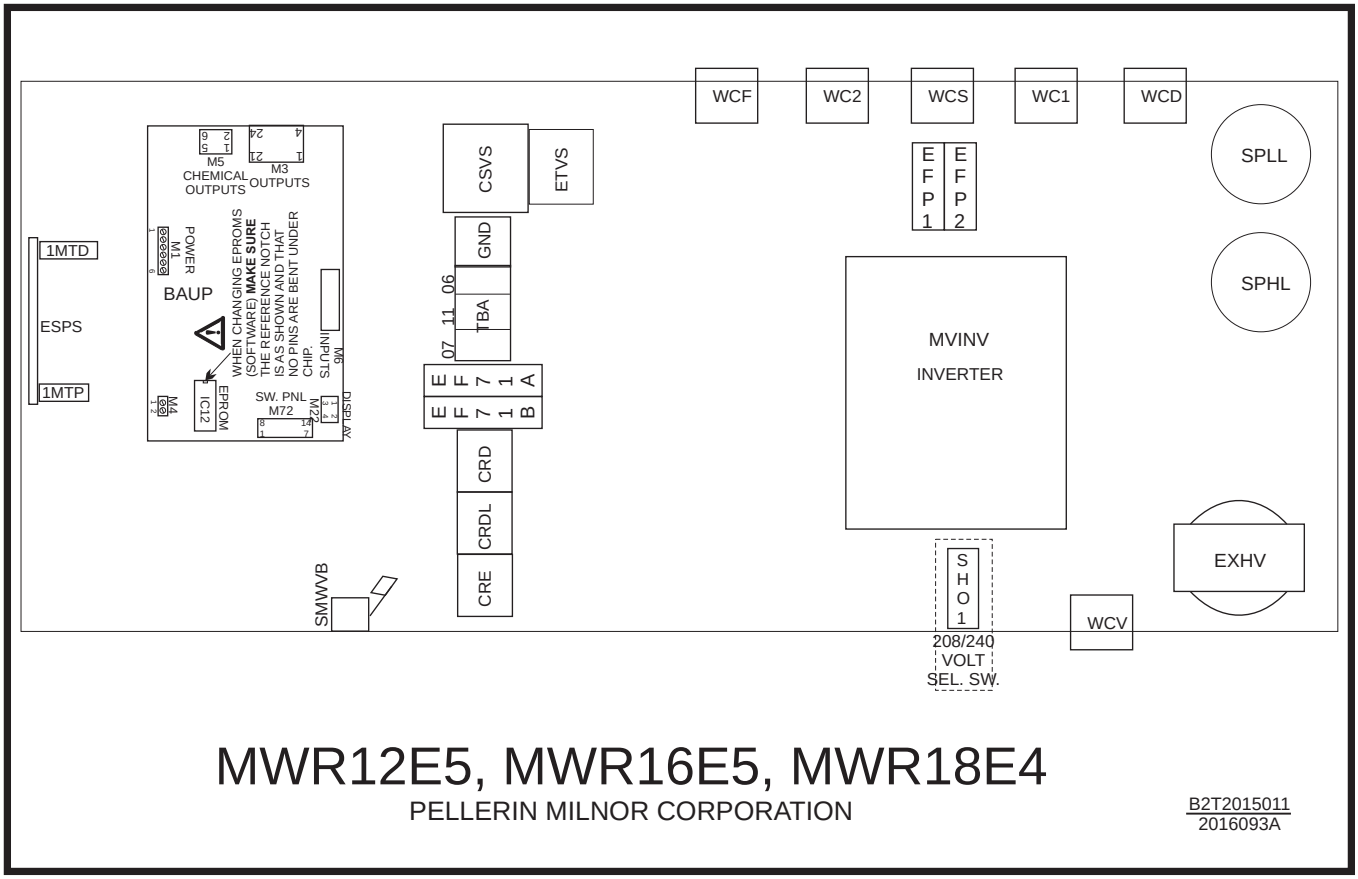


W80008

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

PELLERIN MILNOR CORPORATION

W80008
2001253A



MWR12E5, MWR16E5, MWR18E4

PELLERIN MILNOR CORPORATION

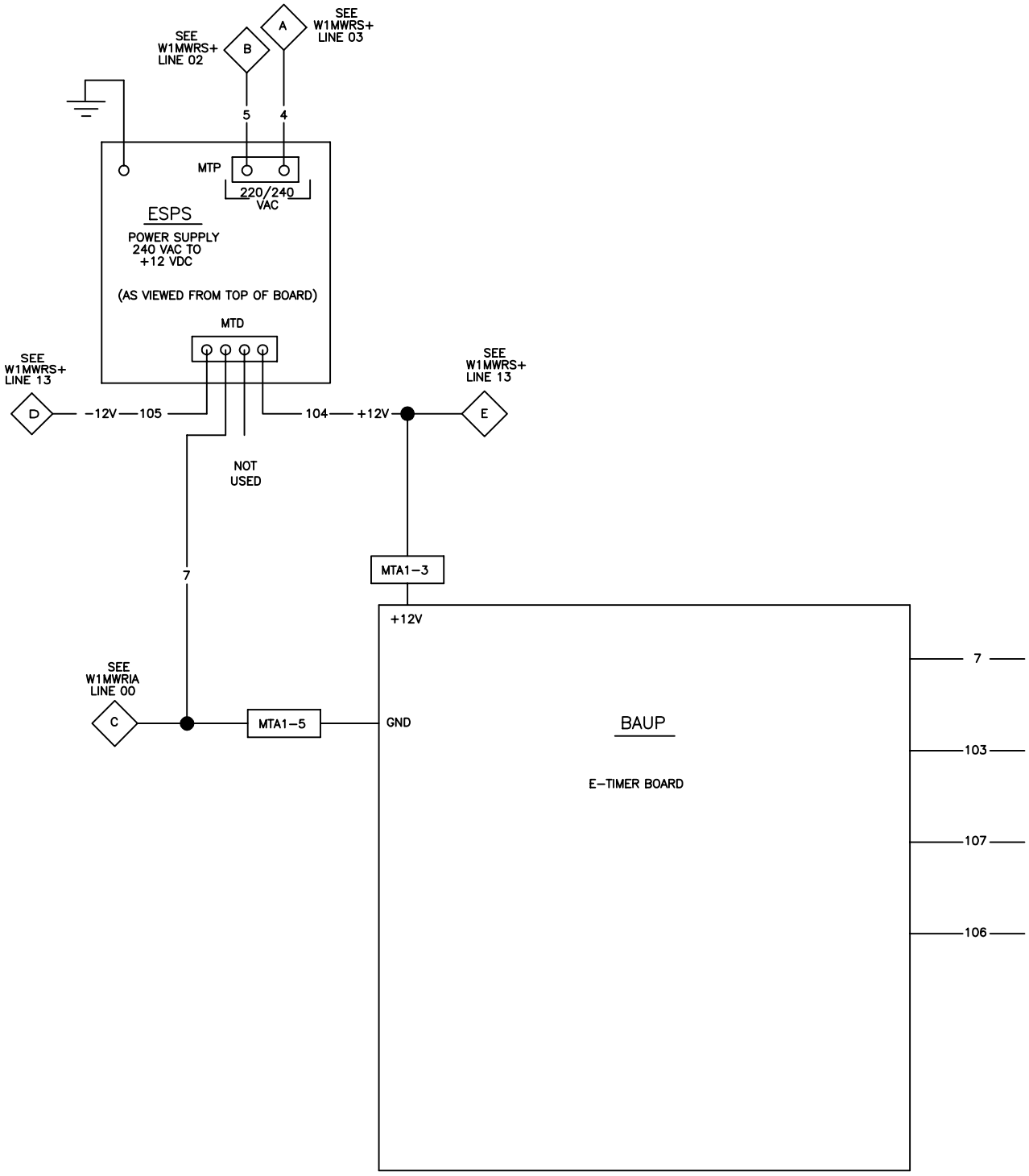
B2T2015011
2016093A

W1MWRTG1
2016093B

W1MWRTG1

E-P ONE TOUCH CONTROLS
CONTROL BOX LAYOUTS

PELLERIN MILNOR CORPORATION

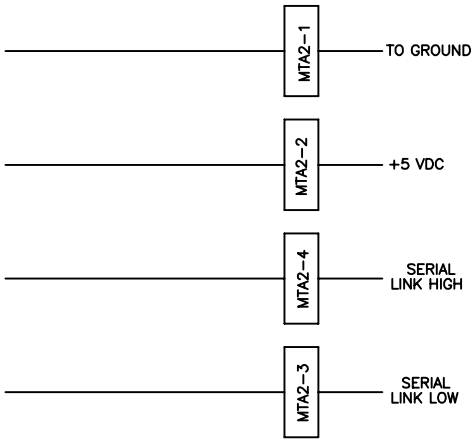

SEE W1MWRS+ LINE 02
B
A
SEE W1MWRS+ LINE 03
5
4
MTP
220/240 VAC
ESPS
POWER SUPPLY 240 VAC TO +12 VDC
(AS VIEWED FROM TOP OF BOARD)
MTD
SEE W1MWRS+ LINE 13
D
−12V
105
104
+12V
SEE W1MWRS+ LINE 13
E
NOT USED
7
MTA1−3
+12V
SEE W1MWRIA LINE 00
C
MTA1−5
GND
BAUP
E−TIMER BOARD
7
103
107
106
00
01
02
03
04
05
06
07
08
09
10
W1MWRBW
2006355B

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 −105	−12VDC

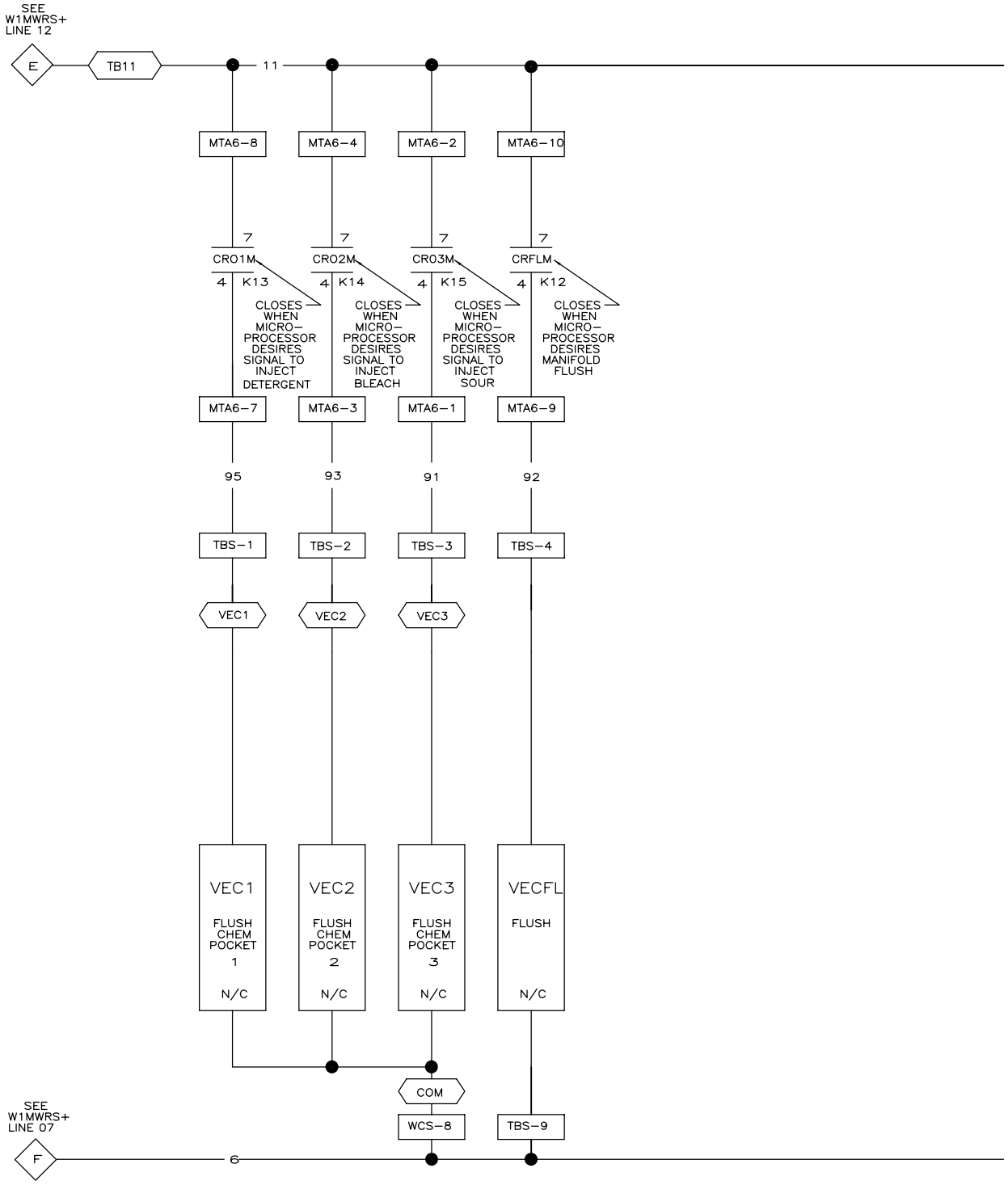
NOTES

1. MTA1 AND MTA2 ARE LOCATED ON BAUP E−TIMER PROCESSOR BOARD.



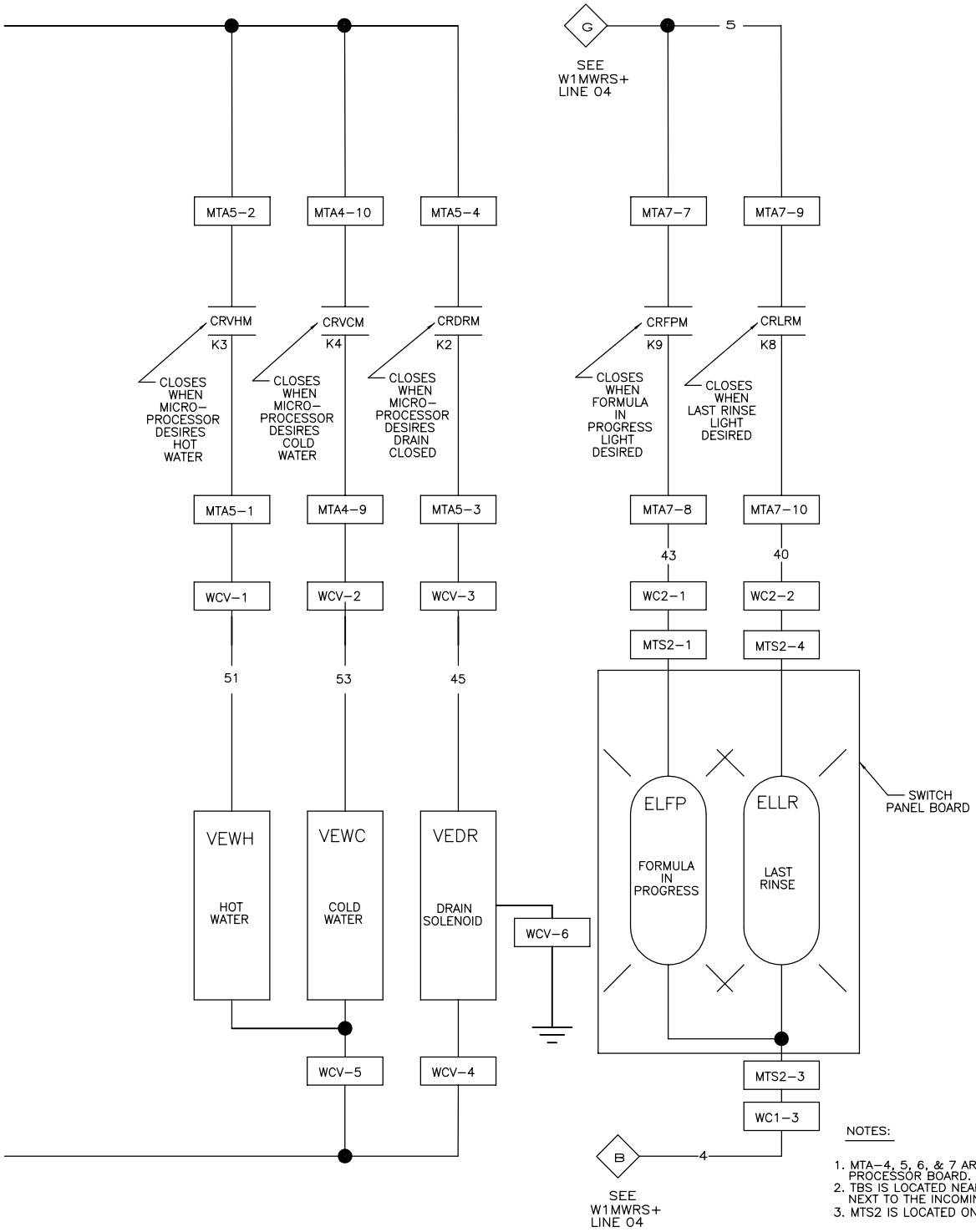
W1MWRBW
E−P ONE TOUCH CONTROLS
SCHEMATIC: BOARD TO BOARD WIRING
PELLERIN MILNOR CORPORATION

11 12 13 14 15 16 17 18 19



W1MWRCV
2007506B

LITHO IN U.S.A.

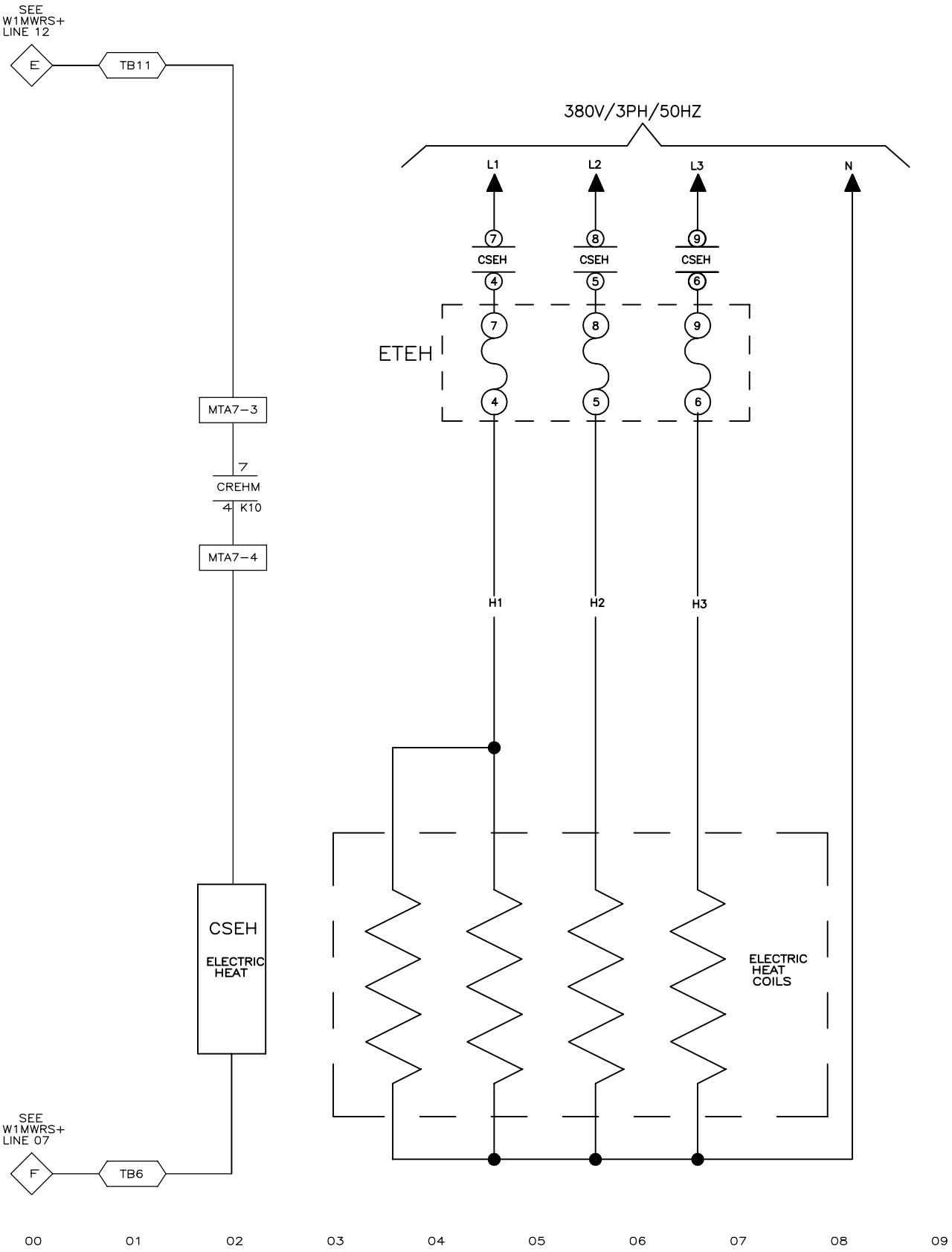


W1MWRCV
E–P ONE TOUCH CONTROLS
SCHEMATIC: ELECTRIC VALVES
220V1P50HZ/240V1P60HZ

PELLERIN MILNOR CORPORATION

NOTES:

1. MTA–4, 5, 6, & 7 ARE LOCATED ON THE E–TIMER PROCESSOR BOARD.
2. TBS IS LOCATED NEAR THE REAR ACCESS PANEL NEXT TO THE INCOMING POWER CONNECTIO
3. MTS2 IS LOCATED ON THE SWITCH PANEL BOARD.



W1MWREH
2006212B

W1MWREH

E-P ONE TOUCH CONTROLS

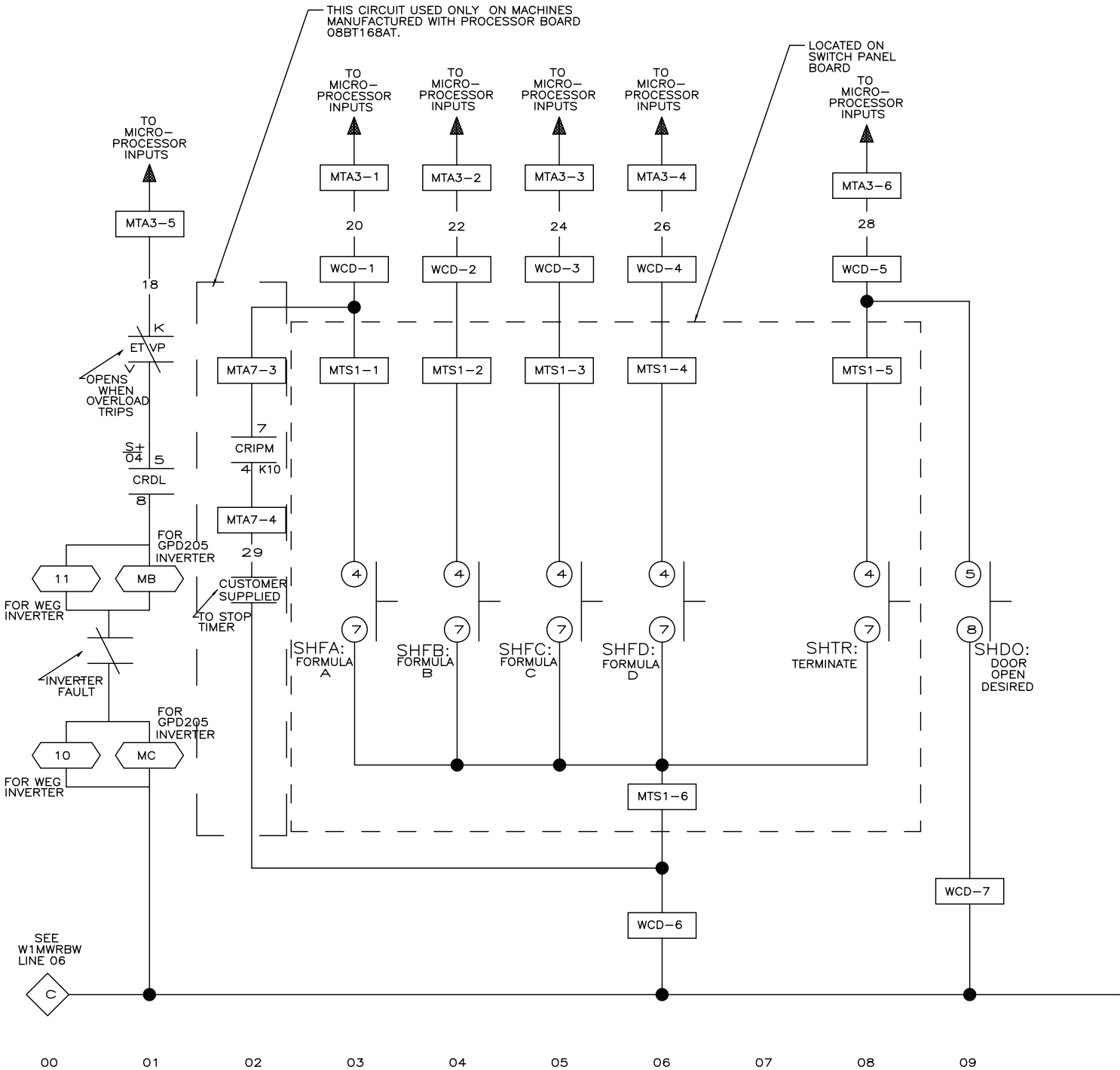
SCHEMATIC: ELECTRIC HEAT

PELLERIN MILNOR CORPORATION

NOTES

1. MTA-7 AND 8 ARE LOCATED ON THE PROCESSOR BOARD.

10 11 12



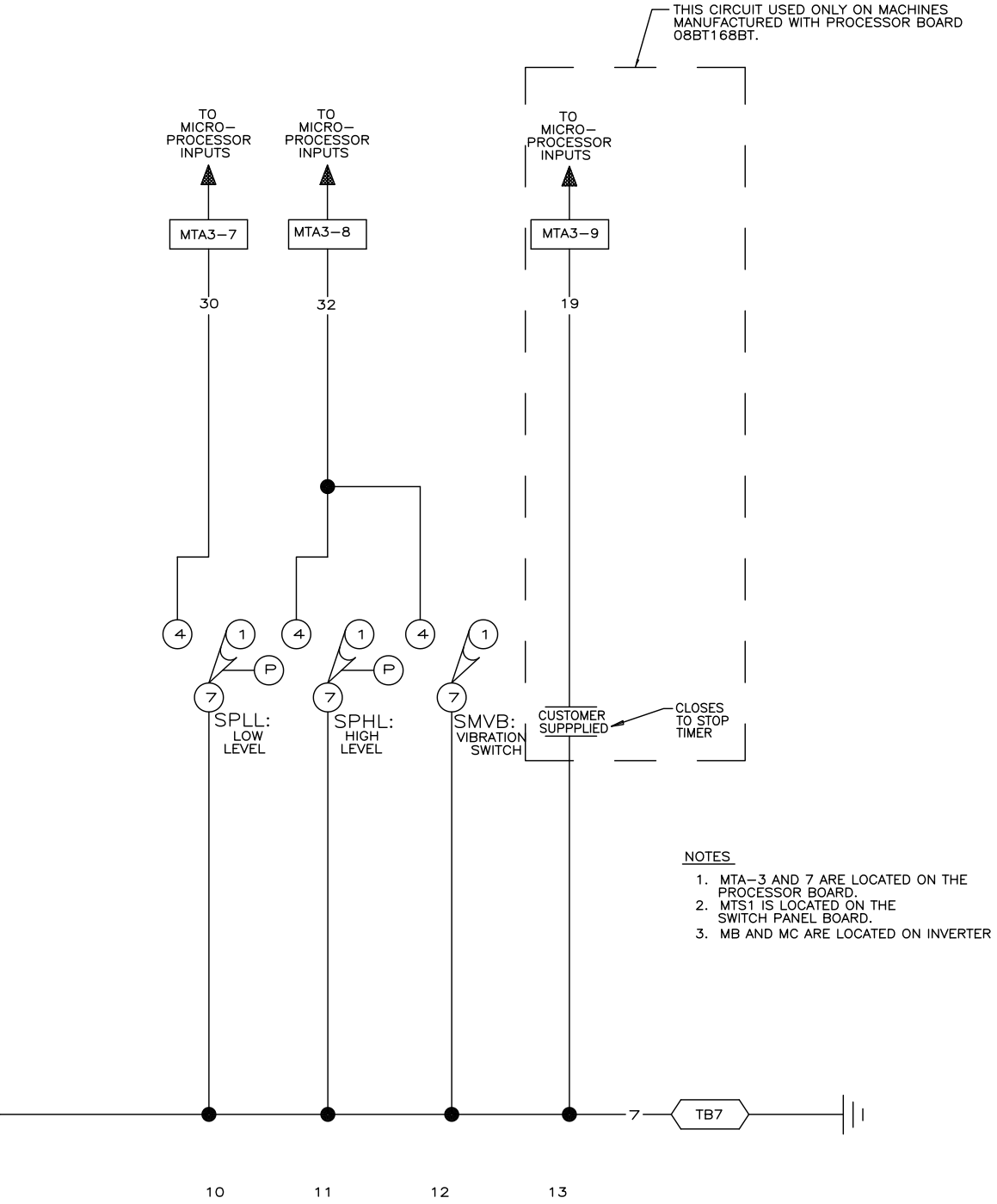
W1MWRIA
2020185B

W1MWRIA

E-P ONE TOUCH CONTROLS

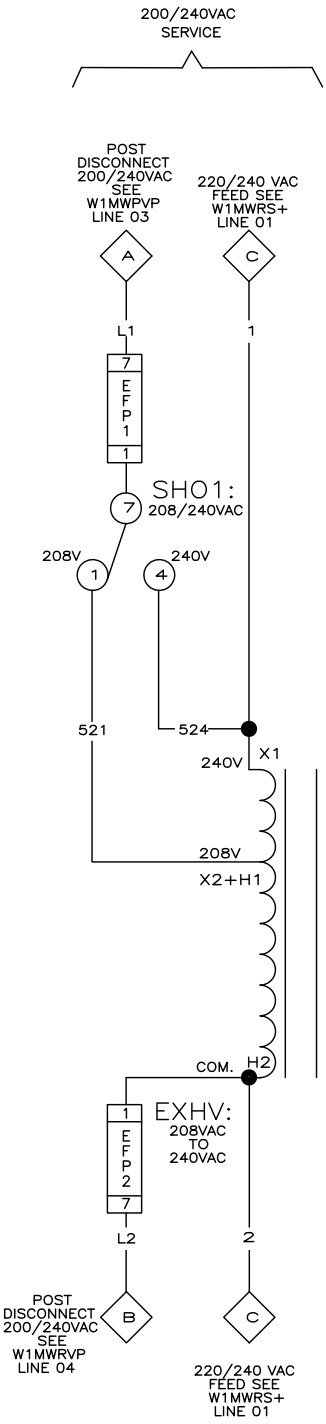
SCHEMATIC: MICROPROCESSOR INPUTS

PELLERIN MILNOR CORPORATION



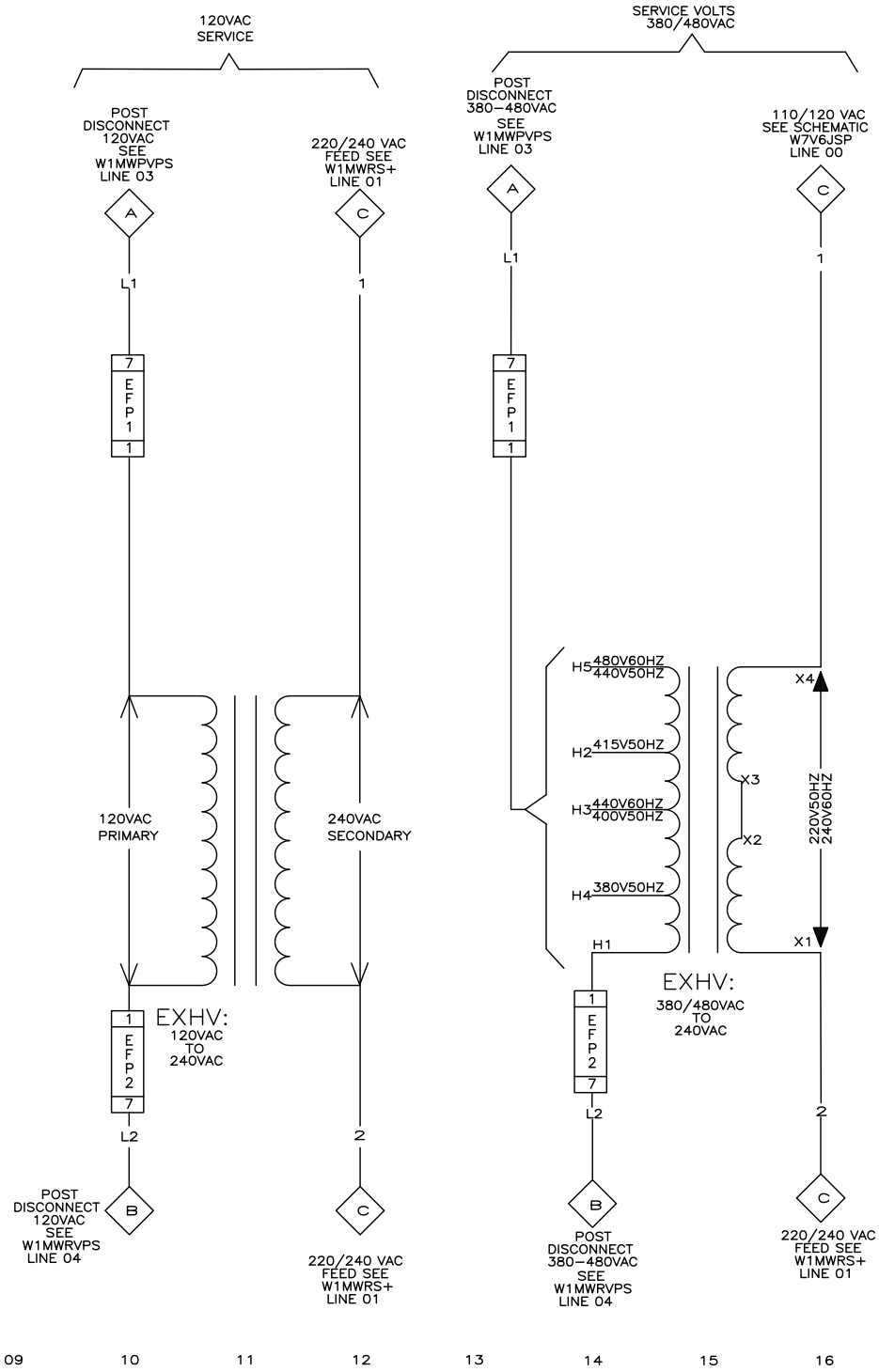
NOTES

1. MTA-3 AND 7 ARE LOCATED ON THE PROCESSOR BOARD.
2. MTS1 IS LOCATED ON THE SWITCH PANEL BOARD.
3. MB AND MC ARE LOCATED ON INVERTER



00 01 02 03 04 05 06 07 08

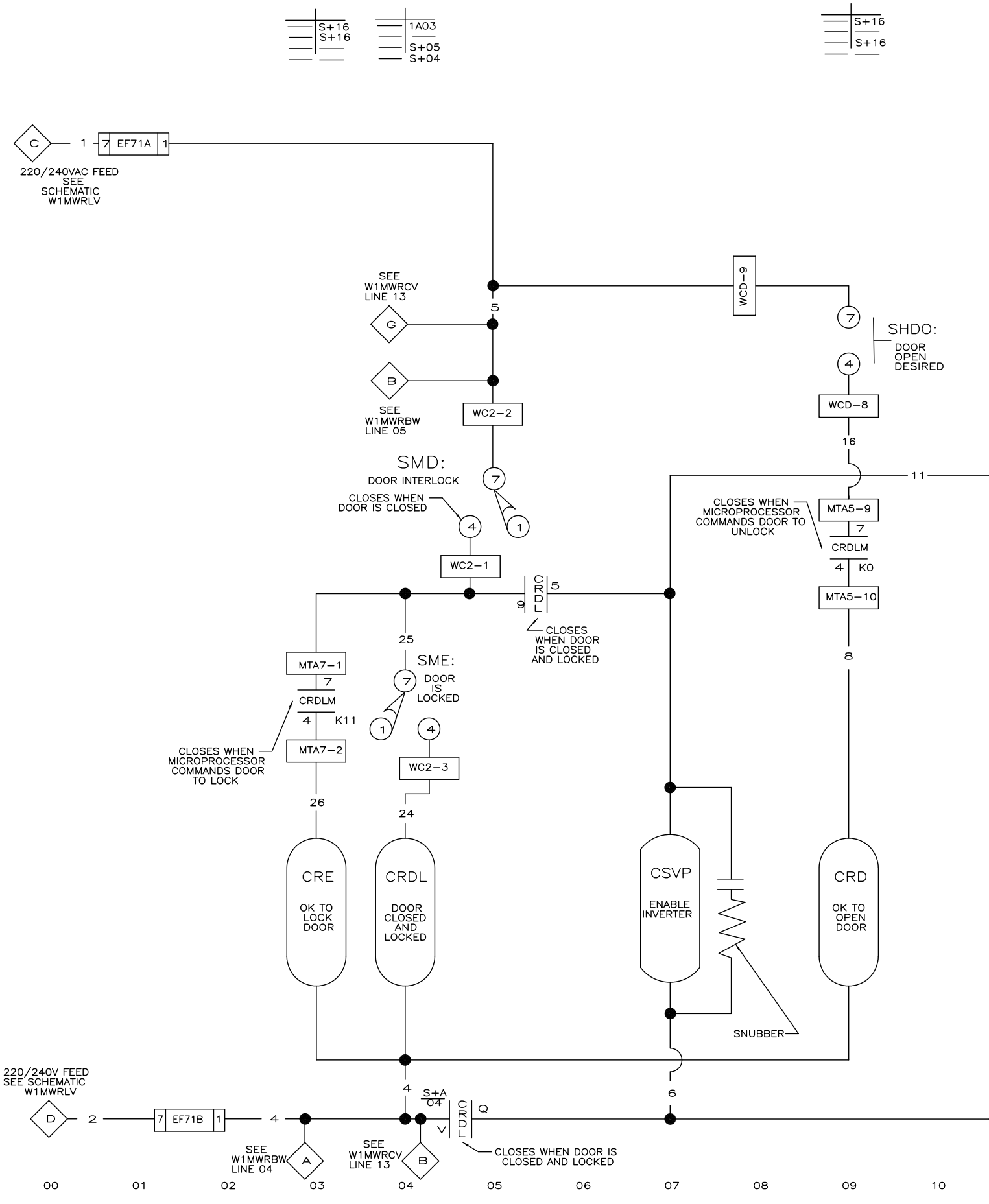
W1MWRLV
2017294B



W1MWRLV

E–P ONE TOUCH CONTROLS
SCHEMATIC: CONTROL CIRCUIT TRANSFORMER
220V1P50HZ/240V1P60HZ

PELLERIN MILNOR CORPORATION



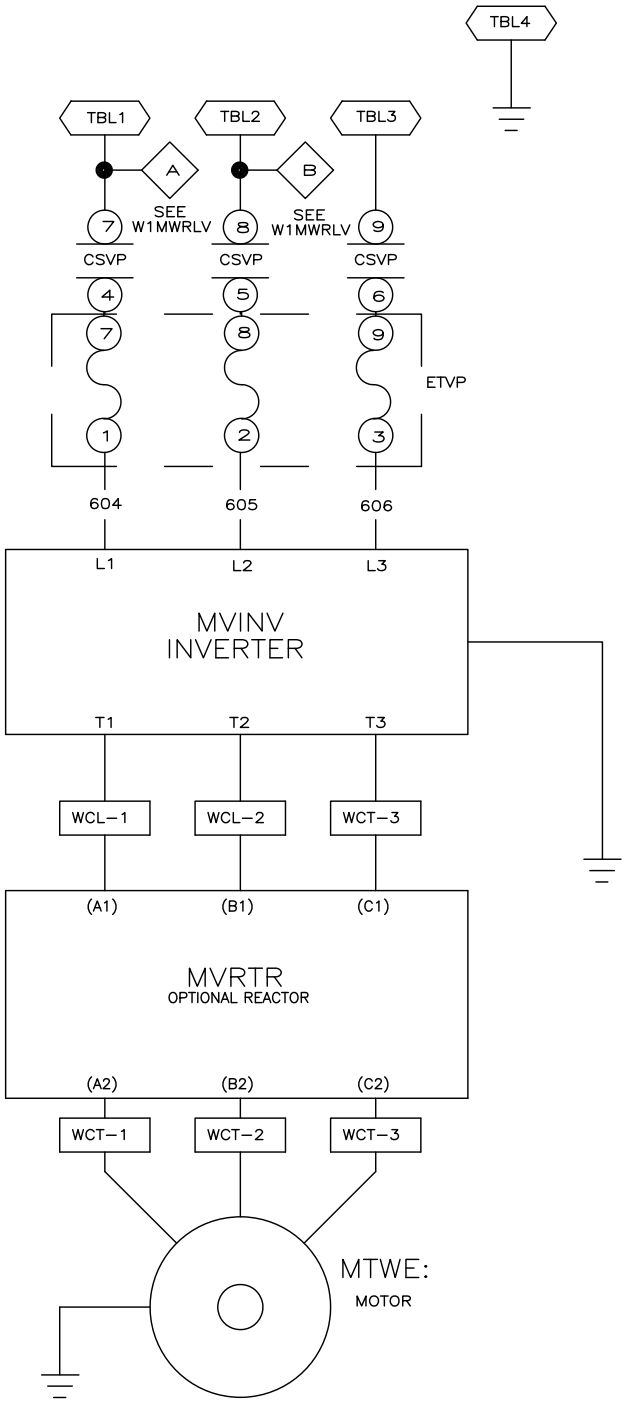
W1MWRS+
2025104B

W1MWRS+

E–P ONE TOUCH CONTROLS
SCHEMATIC:START CIRCUIT & DOOR INTERLOCK
FOR MWR12 AND MWR18
220V,1P,50HZ/240V,1P,60HZ

PELLERIN MILNOR CORPORATION

11 12 13 14 15 16



SC — SC

LITHO IN U.S.A.

00 01 02 03 04 05 06 07 08 09 10

W1MWRVP
2020424B

W1MWRVP
2020424B

STATUS	CW K5	CCW K6	K1	K7
WASH	X			
DRAIN	X		X	
EXTRACT	X			X

NOTES
MTA4 & MTA5 ARE LOCATED ON THE E–TIMER PROCESSOR BOARD.

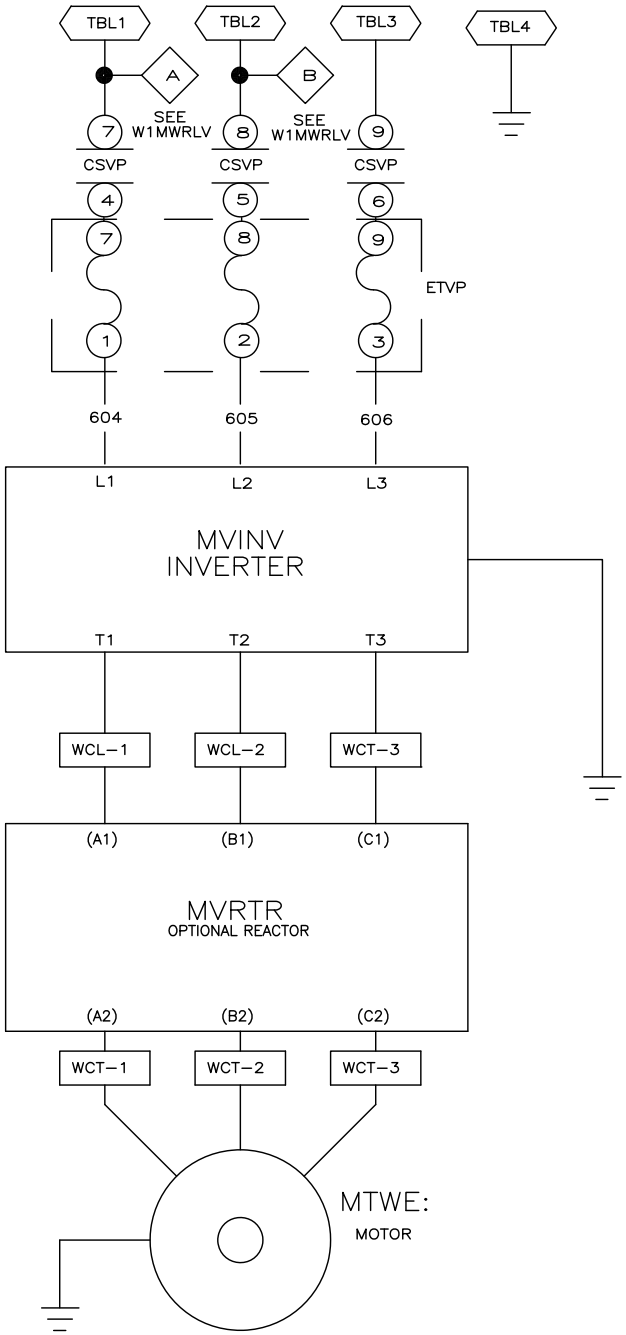
W1MWRVP

E–P ONE TOUCH CONTROLS

SCHEMATIC: VARIABLE SPEED INVERTER FOR MODELS MWR12 AND MWR18 (GPD315)

PELLERIN MILNOR CORPORATION

W1MWRVP
2020424B



SC — SC

LITHO IN U.S.A.

00 01 02 03 04 05 06 07 08 09 10

W1MWRVPA
2020424B

W1MWRVPA
2020424B

SOLENOIDS	CW K5	CCW K6	K1	K7
WASH	X			
DRAIN	X		X	
EXTRACT	X			X

NOTES
MTA4 & MTA5 ARE LOCATED ON THE E–TIMER PROCESSOR BOARD.

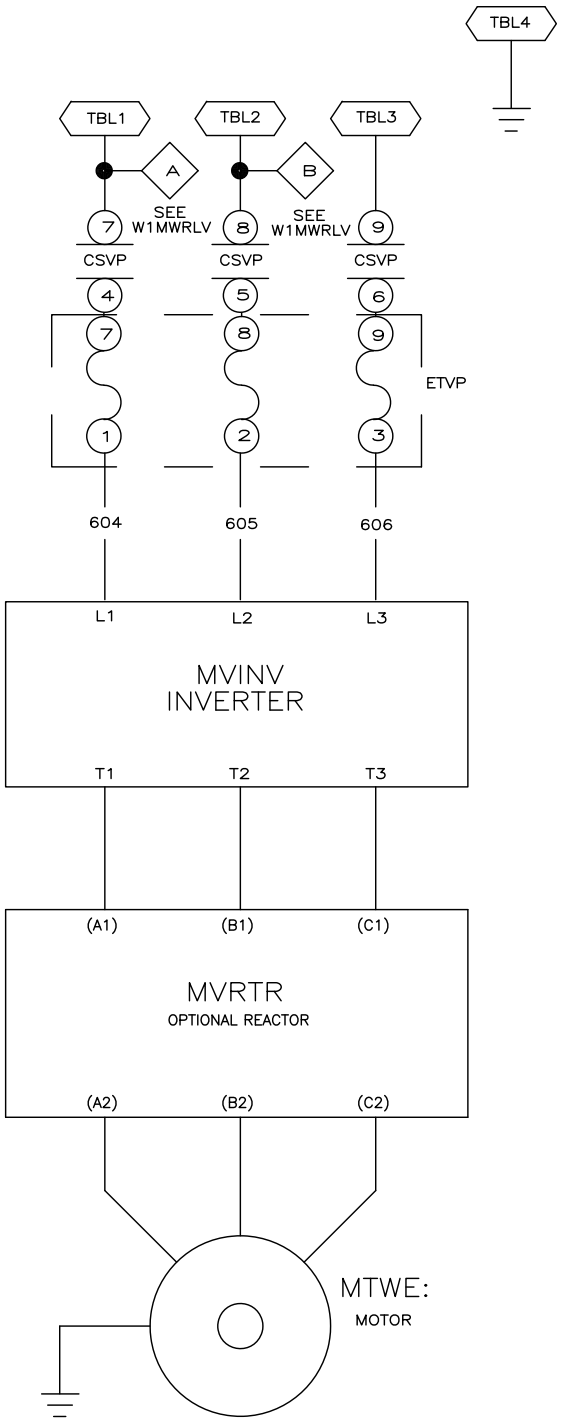
W1MWRVPA

E–P ONE TOUCH CONTROLS

SCHEMATIC: VARIABLE SPEED INVERTER FOR MODELS MWR12 AND MWR18 V1000 INVERTER

PELLERIN MILNOR CORPORATION

W1MWRVPA
2020424B



LITHO IN U.S.A.

00 01 02 03 04 05 06 07 08 09 10

W1MWRVPS
2020424B

W1MWRVPS
2020424B

SOLENOIDS	CW K5	CCW K6	K1	K7
WASH	X			
DRAIN	X		X	
EXTRACT	X			X

W1MWRVPS

E–P ONE TOUCH CONTROLS

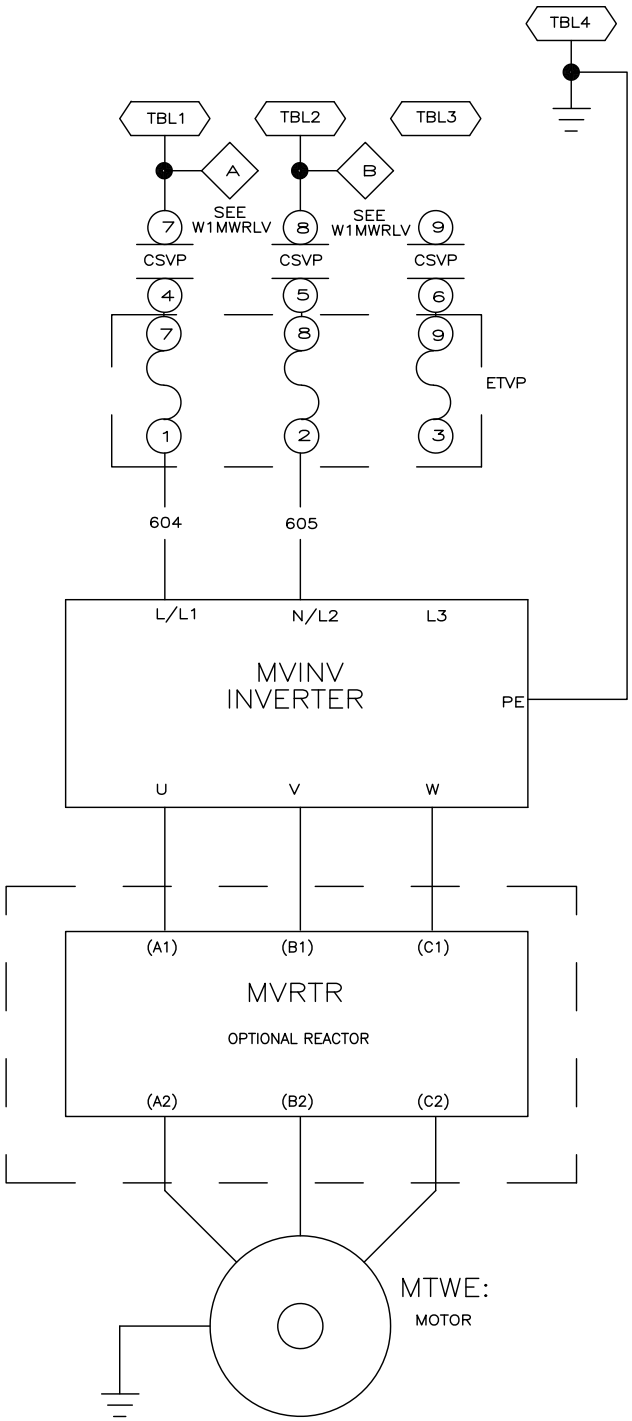
SCHEMATIC: VARIABLE SPEED INVERTER

FOR MODELS MWR12 120VAC/1 PHASE (GPD205)

PELLERIN MILNOR CORPORATION

NOTES
MTA4 & MTA5 ARE LOCATED ON THE E–TIMER PROCESSOR BOARD.

W1MWRVPS
2020424B



17 5 SC

LITHO IN U.S.A.

00 01 02 03 04 05 06 07 08 09 10

W1MWRVPSA
2021213B

W1MWRVPSA
2021213B

SOLENOIDS	CW K5	CCW K6	K1	K7
WASH	X			
DRAIN	X		X	
EXTRACT	X			X

W1MWRVPSA

E–P ONE TOUCH CONTROLS

SCHEMATIC: VARIABLE SPEED INVERTER

FOR MODELS MWR12 120VAC/1 PHASE (WEG CFW300)

PELLERIN MILNOR CORPORATION

NOTES
MTA4 & MTA5 ARE LOCATED ON THE E–TIMER PROCESSOR BOARD.

W1MWRVPSA
2021213B