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Schematic/Electrical Parts

MWS26, MWS70, MWS90
Barrier Washer-Extractor
MilTouch 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.

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COMPONENT PARTS LIST

W7MWSPL#2025355A

COMPONENT NUMBER	FUNCTION OF THIS COMPONENT	WHERE TO FIND THIS COMPONENT	MILNOR P/N	DESCRIPTION	LOCATION
	>>CONTROL BOX LAYOUTS				
001	MWS26	W7MWSTG1	B2T2024009	TAG MWS26 CONTROL BOX	CONTROL BOX
002	MWS70 & 90	W7MWSTG1	B2T2025009	TAG MWS70-90 CONTROL BOX	CONTROL BOX
BA	**>>PRINTED CIRCUIT BOARDS**				
BPBS	ARM9 PROCESSOR + DISPLAY	W7MWSBD	08BHMX6AT	ASSY:IMX6 PROC+5.7 DSP-TESTED	SOIL SIDE CONTR
BPCNT	CONTROLLER ,I/O BOARD	W7MWSBD	08BJT120BT	BD:SER BD: TIPPO MILTOUCH-I/O+FLOV	CONTROL BOX
CB	**>>CIRCUIT BREAKERS**				
CB1	CIRCUIT BREAKER-DRIVE MOTOR	W7MWSPWR	09FC032CAA	IEC MINI CIR.BREAK 32A 480V3P	CONTROL BOX
CB1	CIRCUIT BREAKER-DRIVE MOTOR	W7MWSPWRA	09FC032BAA	CIRCUIT BREAKER 50A 480V D CURVE	CONTROL BOX
CB2	CIRCUIT BREAKER-240V PRIMARY	W7MWSPWR	09FC004CA2	IEC MINI CIR.BREAK 2P 4A 480V3P C CU	CONTROL BOX
CB2	CIRCUIT BREAKER-240V PRIMARY	W7MWSPWRA	09FC004CA2	IEC MINI CIR.BREAK 2P 4A 480V3P C CU	CONTROL BOX
CB3	CIRCUIT BREAKER-240V SECONDARY	W7MWSPWR	09FC004CA2	IEC MINI CIR.BREAK 2P 4A 480V3P C CU	CONTROL BOX
CB3	CIRCUIT BREAKER-240V SECONDARY	W7MWSPWRA	09FC004CA2	IEC MINI CIR.BREAK 2P 4A 480V3P C CU	CONTROL BOX
CB4	CIRCUIT BREAKER-24V SECONDARY	W7MWSPWR	09FC004CA1	IEC MINI CIR.BREAK 4A 480V1P D CURV	CONTROL BOX
CB4	CIRCUIT BREAKER-24V SECONDARY	W7MWSPWRA	09FC004CA1	IEC MINI CIR.BREAK 4A 480V1P D CURV	CONTROL BOX
CBM	CIRCUIT BREAKER MOTOR FAN MWS70&90	W7MWSPWR	13AF200A71KT	70-90MWB MTR FAN W/ HOUSING 200 C	CONTROL BOX
CBM	CIRCUIT BREAKER MOTOR FAN MWS70&90	W7MWSPWRA	13AF200A71KT	70-90MWB MTR FAN W/ HOUSING 200 C	CONTROL BOX
CR	**>>RELAY-PILOT OR CONTROL**				
CRCWT	RELAY-COLD WATER	W7MWSEV	09C024D24	RELAY 4PDT DIFGLD 14PIN 24VAC	CONTROL BOX
CRDR	RELAY-DRAIN (AIR OPERATED)	W7MWSEV	09C024D24	RELAY 4PDT DIFGLD 14PIN 24VAC	CONTROL BOX
CRHWT	RELAY-HOT WATER	W7MWSEV	09C024D24	RELAY 4PDT DIFGLD 14PIN 24VAC	CONTROL BOX
CRSTM	RELAY-STEAM VALVE	W7MWSEV	09C024D24	RELAY 4PDT DIFGLD 14PIN 24VAC	CONTROL BOX
CRCSC	RELAY-CLEAN AND SOIL SIDE CLOSED	W7MWSIA	09C024D24	RELAY 4PDT DIFGLD 14PIN 24VAC	CONTROL BOX
CS	**>>CONTACTOR-MOTOR STARTER**				
CSP	CONTACTOR-INVERTER 208-240V MWS26	W7MWSPWR	09MC08D324A	23A 3P MCS CONT NR 24V60HZ ONLY A	CONTROL BOX
CSP	CONTACTOR-INVERTER 380-480V MWS26	W7MWSPWRA	09MC08D324A	23A 3P MCS CONT NR 24V60HZ ONLY A	CONTROL BOX
CSP	CONTACTOR-INVERTER 208-240V MWS70+90	W7MWSPWR	09MC08J324A	43A 3P MCS CONT NR 24V50/60HZ ON	CONTROL BOX
CSP	CONTACTOR-INVERTER 380-480V MWS70+90	W7MWSPWRA	09MC08J324A	43A 3P MCS CONT NR 24V50/60HZ ON	CONTROL BOX
CSEH	CONTACTOR-ELECTRIC HEAT	W7MWSPWR			CONTROL BOX
CSEH	CONTACTOR-ELECTRIC HEAT	W7MWSPWRA			CONTROL BOX
EB	**>>BUZZER OR AUDIBLE SIGNAL**				
EHEP	HORN-END OF PROGRAM CLEAN SIDE	W7MWSCM	09H013A	TONE BUZZER 9-15VAC/DC	CLEAN SIDE SWPNL
EBRD	BUZZER-LOAD SOIL AND CLEAN SIDE	W7MWSCM	09H013A	TONE BUZZER 9-15VAC/DC	SOIL SIDE SWPNL
EF	**>>FAN**				
EF1	FAN MOTOR COOLING (MWS26)	W7MWSPWR	13AF200A71	FAN 300 CFM 230V 50/60	ON DRIVE MOTOR
EF1	FAN MOTOR COOLING (MWS26)	W7MWSPWRA	13AF200A71	FAN 300 CFM 230V 50/60	ON DRIVE MOTOR
EFM	FAN MOTOR COOLING (MWS70-90)	W7MWSPWR	13AF100A71KT	70-90MWB MTR FAN W/ HOUSING 200 C	ON DRIVE MOTOR

COMPONENT PARTS LIST

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COMPONENT NUMBER	FUNCTION OF THIS COMPONENT	WHERE TO FIND THIS COMPONENT	MILNOR P/N	DESCRIPTION	LOCATION
EFM	FAN MOTOR COOLING (MWS70-90)	W7MWSPWRA	13AF100A71KT	70-90MWB MTR FAN W/ HOUSING 200 C	ON DRIVE MOTOR
EL	**>>LIGHT-PILOT OR INDICATOR**				
ELRD	LIGHT-LOAD SOIL SIDE	W7MWSCM	09N401IRL	ILLUMINATED LIGHT RED LENS WITH LE	SOIL SIDE SWPL
ELGN	LIGHT-WASH IN PROGRESS	W7MWSCM	09N401IGPBA	ILLUMINATED PUSH BUTTON OPR GN+M	CLEAN SIDE SWPNL
ELGBW	LIGHT END OF WASHING	W7MWSCM	09N401IGPBA	ILLUMINATED PUSH BUTTON OPR GN+M	CLEAN SIDE SWPNL
ELGRP	LIGHT-DRUM PEPOSITION CLEAN SIDE	W7MWSCM	09N401IGPBA	ILLUMINATED PUSH BUTTON OPR GN+M	CLEAN SIDE SWPNL
ELGRP	LIGHT-CLEAN DOOR UNLOCKED	W7MWSCM	09N401IGPBA	ILLUMINATED PUSH BUTTON OPR GN+M	CLEAN SIDE SWPNL
EM	**>> ELECTROMAGNIC ACTUATOR**				
EMCDL	LOCK-CLEAN SIDE DOOR	W7MWSCM			CLN SIDE DOOR
EMSDL	LOCK-SOIL SIDE DOOR	W7MWSCM			SOIL SIDE DOOR
ES	**>>POWER SUPPLY-ELECTRONIC**				
ESECC	POWER SUPPLY-230V TO 24VDC	W7MWSBD	08PSS2403	POWER SUPPLY DIN RAIL 120/240VAC T	LOW VOLT BOX
EPS2	POWER SUPPLY-230V TO +12VDC	W7MWSBD	08PSS2402	POWER SUPPLY DIN RAIL 120/240VAC T	LOW VOLT BOX
ET	**>>OVERLOAD-MOTORS**				
ETM	OVERLOAD DRIVE	W7MWSPWR	09FTW020T	OVERLOAD/DISCONNECT ADJ 16 - 20A	CONTROL BOX
ETM	OVERLOAD DRIVE	W7MWSPWRA			
ETEH	OVERLOAD-HEATER	W7MWSPWR			
ETEH	OVERLOAD-HEATER	W7MWSPWRA			
EX	**>>TRANSFORMERS**				
EXHV	TRANSFORMER-360-480>120VAC	W7MWSPWRA	09UA025AAB	XFMR 380-480PRI/120-240SEC250V	CONTROL BOX
EX240	TRANSFORMER-208/240>120VAC	W7MWSPWR	09UB25AU71	AUTOXFMR 208V/230V 250VA UL/CSA	CONTROL BOX
EX24	TRANSFORMER-240>24VAC	W7MWSPWRA	09U027AB24	XFMR 120-240,110-220/24V 150VA	CONTROL BOX
EX24	TRANSFORMER-240>24VAC	W7MWSBD	09U027AB24	XFMR 120-240,110-220/24V 150VA	CONTROL BOX
FILTER	**>>FILTER**				
FILTER	FILTER-EMC/EMI	W7MWSPWRA	09AFACH32C	EMC/EMI FILTER WITH HIGH ATTENUAT	CONTROL BOX
FILTER	FILTER-EMC/EMI	W7MWSPWR	09AFACH32C	EMC/EMI FILTER WITH HIGH ATTENUAT	CONTROL BOX
MT	**>>MOTORS**				
MTD	MOTOR-DRIVE	W7MWSPWRA	39G816AAT	6HP 4P 240/380/480 50/6	MACHINE BASE
MTD	MOTOR-DRIVE	W7MWSPWR	39G816AAT	6HP 4P 240/380/480 50/6	MACHINE BASE
MV	**>>MOTOR POWER INVERTERS**				
MVDBR	RESISTOR-DYNAMIC BRAKE	W7MWSPWR	09MV040RES	RESIST 40 OHM 225WATT	CONTROL BOX
MVDBR	RESISTOR-DYNAMIC BRAKE	W7MWSPWRA	09MV040RES	RESIST 40 OHM 225WATT	CONTROL BOX
MVINVS	INVERTER-DRIVE	W7MWSPWR	09MWB02574	V1000 INVERTER 25AMP 230V	MACHINE LEG
MVINVS	INVERTER-DRIVE	W7MWSPWRA	09MWB01596	V1000 INVERTER 15AMP 460V	MACHINE LEG
MVM	REACTOR-IN LINE INVERTER MWS26	W7MWSPWR	09MX300A74	REACTOR 25/30HP 230V 80A	MACHINE LEG/BASE
MVM	REACTOR-IN LINE INVERTER MWS26	W7MWSPWRA	09MX100A96	REACTOR 25/30HP 230V 80A	MACHINE LEG/BASE

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COMPONENT PARTS LIST

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COMPONENT NUMBER	FUNCTION OF THIS COMPONENT	WHERE TO FIND THIS COMPONENT	MILNOR P/N	DESCRIPTION	LOCATION
MVM	REACTOR-IN LINE INVERTER MWS90	W7MWSPWR			
MVM	REACTOR-IN LINE INVERTER MWS90	W7MWSPWRA			
SH	**>>SWITCH-HAND OPERATED**				
SHEF	SWITCH-END OF FORMULA	W7MWSIA	09N401IGPBA	LLUMINATED PUSH BUTTON OPR GN+N	CLEAN SWPNL
SHDC	SWITCH-REPOSITION DRUM ON CLEAN SIDE	W7MWSIA	09N401IGPBA	LLUMINATED PUSH BUTTON OPR GN+N	CLEAN SWPNL
SHESC	SWITCH-EMERGENCY STOP CLEAN SIDE	W7MWSIA	09N508	SW ASSY EMER STOP VERSION 3	CLN SIDE SWPL
SHESS	SWITCH-EMERGENCY STOP SOIL SIDE	W7MWSIA	09N508	SW ASSY EMER STOP VERSION 3	SOIL SIDE SWPNL
SM	**>>SWITCH-MECHANICALLY OPERATED**				
SMCL	SWITCH-CLEAN DOOR LOCKED	W7MWSIA			CLEAN SIDE
SMCD	SWITCH-CLEAN DOOR	W7MWSIA	09RPS12AAS	REACTOR 25/30HP 230V 80A	CLEAN SIDE
SMSD	SWITCH-SOIL DOOR	W7MWSIA	09RPS12AAS	REACTOR 25/30HP 230V 80A	SOIL SIDE
SLSL	SWITCH-SOIL DOOR LOCKED	W7MWSIA			SOIL SIDE
SMVB	SWITCH-VIBRATION	W7MWSIA	SAE03 151	ASSY-VIBRATIONSWT LGCON	CONTROL BOX
SP	**>>SWITCH-PRESSURE OPERATED**				
SPA	PRESSURE SW-AIR	W7MWSIA	09N082A	PRESSW NASON CLOSE @ 62 LB.	AIR INLET
TP	**>>PROBE-TEMPERATURE**				
TP1	TEMPERATURE PROBE	W7MWSBD	30R0043P	TEMP PROBE:THERMISTOR 30K OHMS	DRAIN SUMP
ST	**>>SWITCH-TEMPERATURE OPERATED**				
STDB	THERMOSTAT-DYNAMIC BRAKE RESISTOR	W7MWSPWR	09RA175T	THERMOSTAT OPENS AT 175F	CONTROL BOX
STDB	THERMOSTAT-DYNAMIC BRAKE RESISTOR	W7MWSPWRA	09RA175T	THERMOSTAT OPENS AT 175F	CONTROL BOX
PX	**>>SWITCH-PROX**				
PXCS	PROX SWITCH- CLEAN SIDE SPOTTED	W7MWSIA	09RPS12AAS	PROXSW QD CONN 12M NO-AC SHLD M	END OF CYLINDER
PXSS	PROX SWITCH- SOIL SIDE SPOTTED	W7MWSIA	09RPS12AAS	PROXSW QD CONN 12M NO-AC SHLD MICROFAST	END OF CYLINGER
ST	**>>SWITCH-PRESSURE OPERATED**				
STDB	TERMOSTAT BRAKING RESISTORS	W7MWSPWRA	30RA175T	TERM0STAT 0PENS AT 175 DEGREES	CONTROL BOX
STDB	TERMOSTAT BRAKING RESISTORS	W7MWSPWR	30RA175T	TERM0STAT 0PENS AT 175 DEGREES	CONTROL BOX
VE	**>>VALVE-ELECTRIC OPERATED**				
VECWT	VALVE-COLD WATER	W7MWSBD	96PVMBVNC24	24VDC SUB MICRO 9MM	VALVE PANEL
VEWHT	VALVE-HOT WATER	W7MWSBD	96PVMBVNC24	24VDC SUB MICRO 9MM	VALVE PANEL
VESTM	VALVE-STEAM	W7MWSBD			
VEDR	VALVE-DRAIN TO SEWER	W7MWSBD	96PVMBVNC24	24VDC SUB MICRO 9MM	VALVE PANEL
VERD	VALVE-DRAIN TO REUSE	W7MWSBD	96PVMBVNC24	24VDC SUB MICRO 9MM	VALVE PANEL
VECD	VALVE-COOL DOWN	W7MWSCF	96PVMBVNC24	24VDC SUB MICRO 9MM	VALVE PANEL
VEC1	VALVE-FLUSH CHEMICAL #1	W7MWSCF			
VEC2	VALVE-FLUSH CHEMICAL #2	W7MWSCF			
VEC3	VALVE-FLUSH CHEMICAL #3	W7MWSCF			

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COMPONENT PARTS LIST

W7MWSPL#2025355A

COMPONENT NUMBER	FUNCTION OF THIS COMPONENT	WHERE TO FIND THIS COMPONENT	MILNOR P/N	DESCRIPTION	LOCATION
VEC4	VALVE-FLUSH CHEMICAL #4	W7MWSCF			
VEC5	VALVE-FLUSH CHEMICAL #5	W7MWSCF			
VEC6	VALVE-FLUSH CHEMICAL #6	W7MWSCF			
VEXW	VALVE-3RD WATER	W7MWSEV	96PVMBVNC24	24VDC SUB MICRO 9MM	VALVE PANEL

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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 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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How to order repair parts

Repair parts may be ordered either from the authorized dealer who sold you this machine, or directly from the MILNOR factory. In most cases, your dealer will have these parts in stock.

When ordering parts, please be sure to give us the following information:

1. Model and serial number of the machine for which the parts are required
2. Part number
3. Name of the part
4. Quantity needed
5. Method of shipment desired
6. In correspondence regarding motors or electrical controls, please include all nameplate data, including wiring diagram number and the make or manufacturer of the motor or controls.

All parts will be shipped C.O.D. transportation charges collect only.

Please read this manual

It is strongly recommended that you read the installation and operating manual before attempting to install or operate your machine. We suggest that this manual be kept in your business office so that it will not become lost.

PELLERIN MILNOR CORPORATION
P.O. BOX 400, KENNER, LA., 70063-0400, U.S.A.
FAX: Administration 504/468-9307, Engineering 504/469-1849, Service 504/469-9777

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HOW TO USE MILNOR® ELECTRICAL SCHEMATICS

Milnor® electrical schematic manuals contain a ***table of contents/component list,*** **a set of s*chematic drawings, and a signal routing table.*** 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.

The ***schematic drawings*** use symbols for each electro-mechanical 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 but are shown in the signal routing table. **Most machines (manuals) require several schematics to describe the complete control system *including all available options.* However, this means that there are usually some schematics that do not apply to a specific machine.** Each schematic is devoted to circuits with common functions (e.g., microprocessor inputs, motor contactors). Schematics appear in the manual in alphanumeric order.

The ***signal routing table*** assists in determining wire routing. It identifies each group of conductors in a control system connected with zero resistance. Groups are identified by a two or three character wire number. Each wire belonging to such a group of conductors has that group's wire number printed along the wire insulation. Although there are some exceptions, generally each group of conductors within the entire electrical system for a machine family has its own unique wire number. The signal routing table for the manual lists each wire alphanumerically by wire number and each component/pin number to which *the wire is attached,* including those not shown on the schematics (e.g., wire connectors). Milnor® document MSTS0202BE "HOW TO USE THE SIGNAL ROUTING TABLE" provides more information.

Component Prefix Classifications and Descriptions

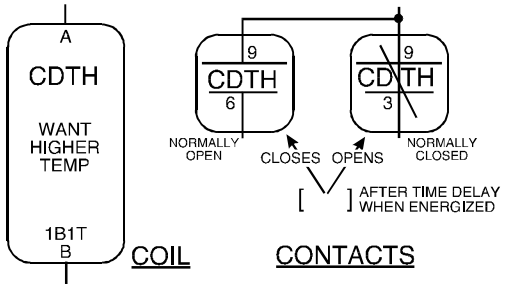
The ***component item numbers*** consist of up to six characters and appear as part of a component's symbol on the schematic. The first two characters indicate the general class of component and the remaining characters are a mnemonic for the function. For example, "CD" is the code for all time delay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

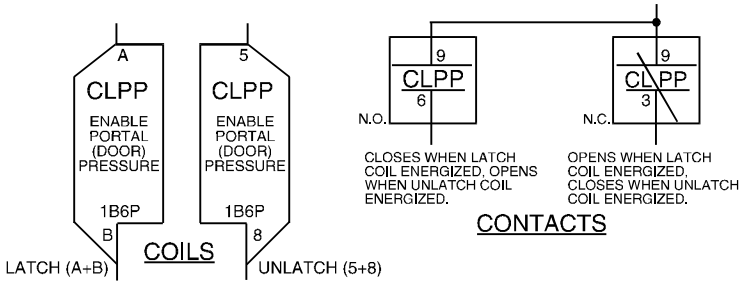
The following are descriptions of the electrical components used in Milnor® machines. Descriptions are in alphabetical order of the component class code (two character prefix).

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 Automatic switch that opens an electric circuit in abnormal current conditions (e.g., an overload).

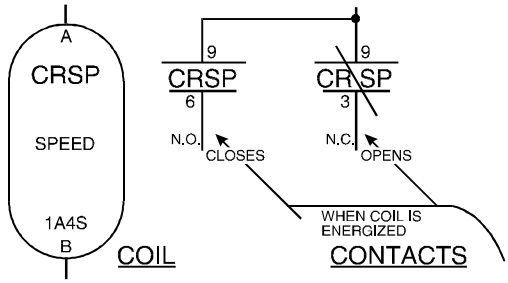
CD=Control, Time Delay Relay A relay whose contacts switch only after a fixed or adjustable delay, once voltage has been applied to its coil. The contacts switch back to normal (de-energized state) immediately when the voltage is removed.

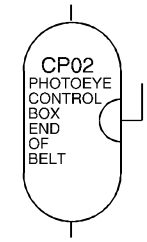




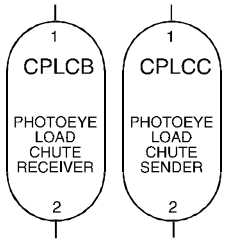
CL=Control, Latch Relay A relay which latches in an energized or set position when operated by one coil (the *latch/set coil*). The relay stays latched, even though coil voltage is removed. The relay releases or unlatches when voltage is applied to a second coil, (the *unlatch/reset coil*).

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





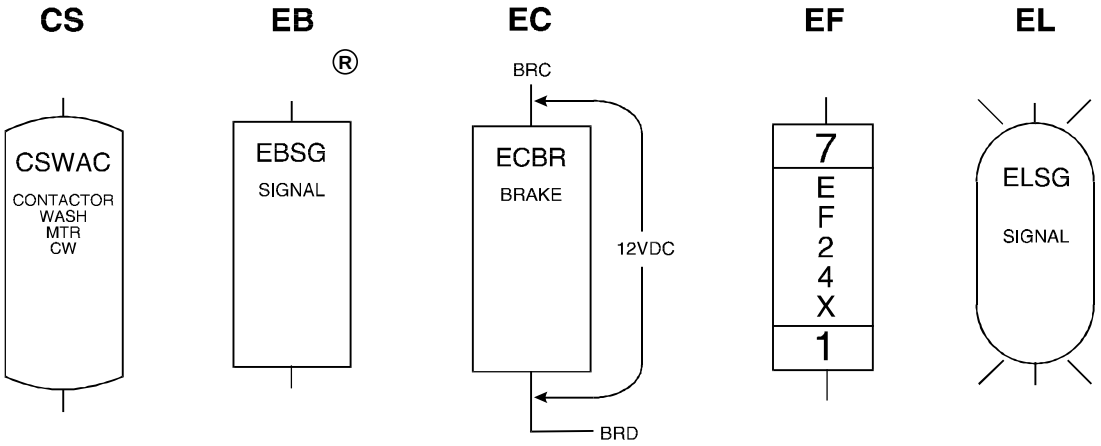
Example of One Assembly



Example of Two Separate Assemblies

CP=Control, Photo-Eyes 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 unblocked (light operate).



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

EB=Electric Buzzer An audible signaling device.

EC=Electric Clutch 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).

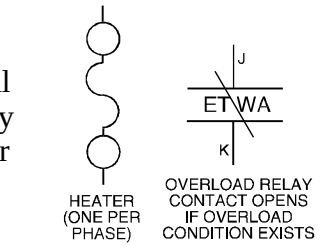
EF=Electric Fuse A fuse is an over-current safety device with a circuit opening fusible member which is heated and severed by the passage of over-current through it.

EL=Electric Light Indicator lights may be either incandescent or fluorescent.

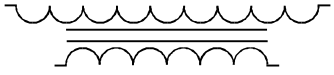
EM=Electro Magnet Solenoid A device consisting of a core surrounded by a wire coil through which an electric current is passed. While current is flowing, iron is attracted to the core (e.g., a pinch tube drain valve solenoid).

ES=Electronic Power Supply A device that converts AC (altemating 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 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.

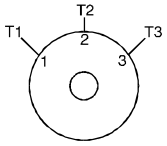


EX=Electrical Transformer A device that transfers electrical energy from one isolated circuit to another, often raising or lowering the voltage in the process.



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.



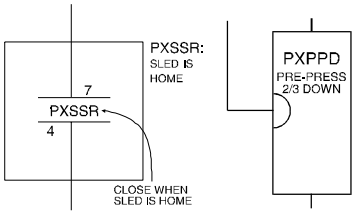
MR=Motors Electro-mechanical device that converts electrical energy into mechanical energy.

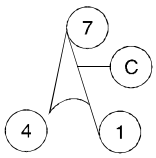
MV=Motor (Variable Speed) Inverter To vary the speed of an AC motor, the volts to frequency ratio must be kept constant. The motor will overheat if this ratio is not maintained.

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: Switch symbols used in the schematics and described below always depict the switch in its unactuated state.

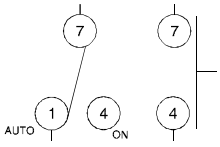
PX=Proximity Switch A device which reacts to the proximity of an target without physical contact or connection. The actuator or target causes a change in the inductance of the proximity switch which causes the switch to operate. Proximity switches can be two-wire (AC) or three-wire (DC) devices.

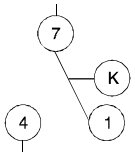




SC=Switch, Cam Operated A switch in which the electrical contacts are opened and/or closed by the mechanical action of a cam(s). Applications include 35-50 pound timer operated machines, autospot, timer reversing motor assembly, and some balancing systems.

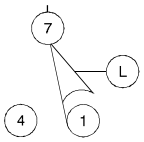
SH=Switch, Hand Operated A switch that is manually operated (e.g., *Start button, Master switch,* etc.).



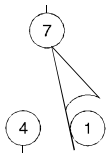


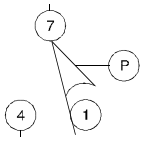
SK=Switch, Key Lock A switch that requires a key to operate . This prevents unauthorized personnel from gaining access to certain functions (e.g., the *Program Menu*).

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



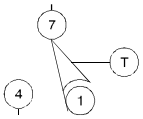
SM=Switch, Mechanically Operated A switch that is mechanically operated by a part of or the motion of the machine (e.g., door closed switch, tilt limit switches, etc.)





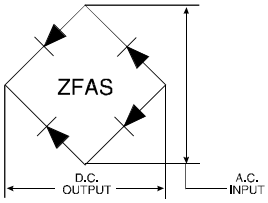
SP=Switch, Pressure Operated A switch consisting of a diaphragm that pushes against a switch actuator.

ST=Switch, Temperature Operated 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 A strip or block for attaching or terminating wires.

VE=Valve, Electric Operated A valve operated by an electric coil to control the flow of fluid. The fluid can be air, water or hydraulics.

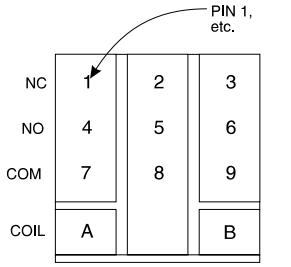


ZF=Rectifier A solid state device that converts alternating current to direct current.

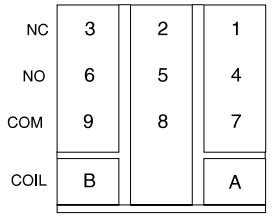
WC=Wiring Connector A coupling device for joining two cables or connecting a cable to an electronic circuit or piece of equipment. Connectors are male or female, according to whether they plug into or receive the mating connector.

Component Terminal Numbering

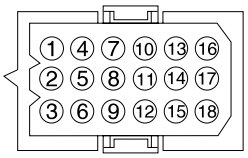
NOTE: Numbers shown usually appear on the component.



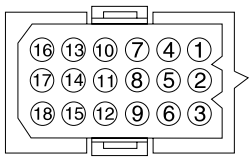
11 PIN PLUG IN RELAY
(PIN END VIEW)



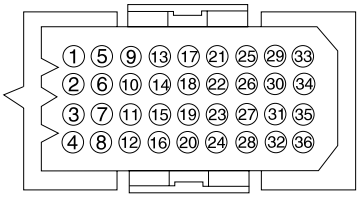
11 PIN RELAY BASE
("PLUG- IN" SIDE)



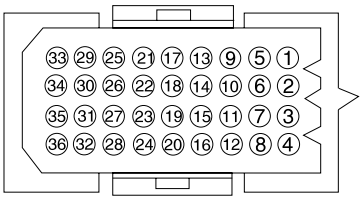
18 PIN (R)



18 PIN (P)

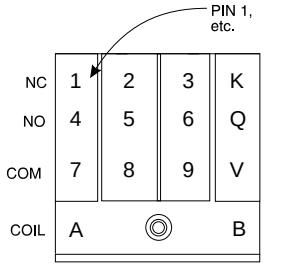


36 PIN (R)

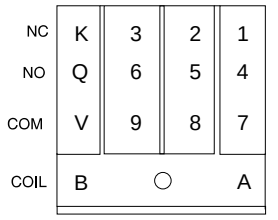


36 PIN (P)

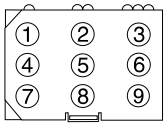
AMP CONNECTOR PIN LOCATIONS
(Viewed from mating side of connector)



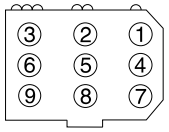
14 PIN PLUG IN RELAY
(PIN END VIEW)



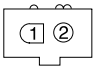
14 PIN RELAY BASE
("PLUG- IN" SIDE)



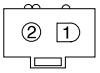
9 PIN (R)



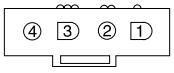
9 PIN (P)



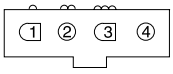
2 PIN (R)



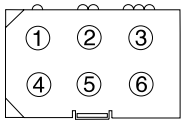
2 PIN (P)



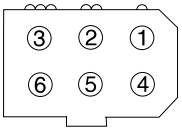
4 PIN (P)



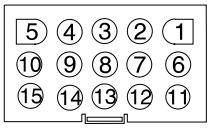
4 PIN (R)



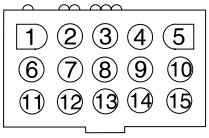
6 PIN (R)



6 PIN (P)

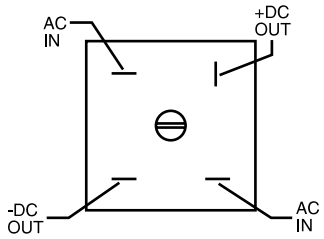


15 PIN (P)

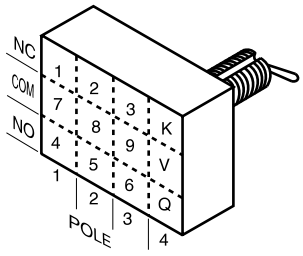


15 PIN (R)

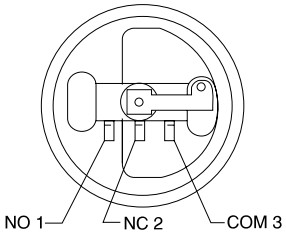
MOLEX CONNECTOR PIN LOCATIONS
(Viewed from mating side of connector)



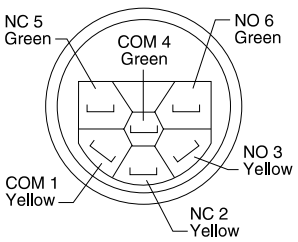
BRIDGE RECTIFIER



TOGGLE SWITCH

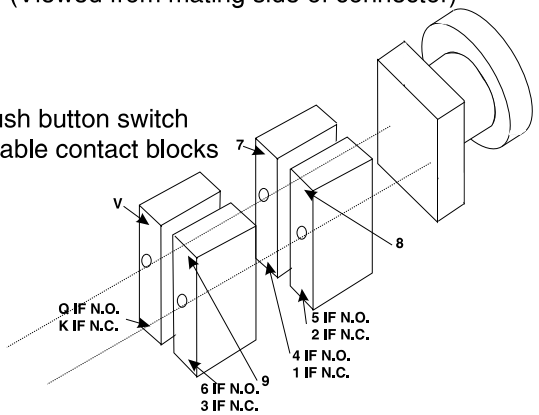


PRESSURE SWITCH



TEMPERATURE CONTROLLER
(Stork Combistat)

Rotary or push button switch
with replaceable contact blocks



Features of Milnor® Electrical Schematics

Document W6DRYGS+A shown on the next page, is part of an actual schematic for the Milnor® Gas Dryer. For the purposes of this instruction, 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 General functions of the circuit or portions thereof are stated across the top edge of the drawing.

⑤ 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.

⑥ Relay coils show the page and line number on which its associated contacts are located.

⑦ Relay contacts and relay coils show the physical location of the relay if mounted on a tray..

⑧ 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 II washer-extractor control and their designations are as follows:

MTA1-MTA6 = 8 output, 16 input (8/16) boards.

MTA11-MTA16 = 16 output boards

MTA30-MTA40 = processor boards

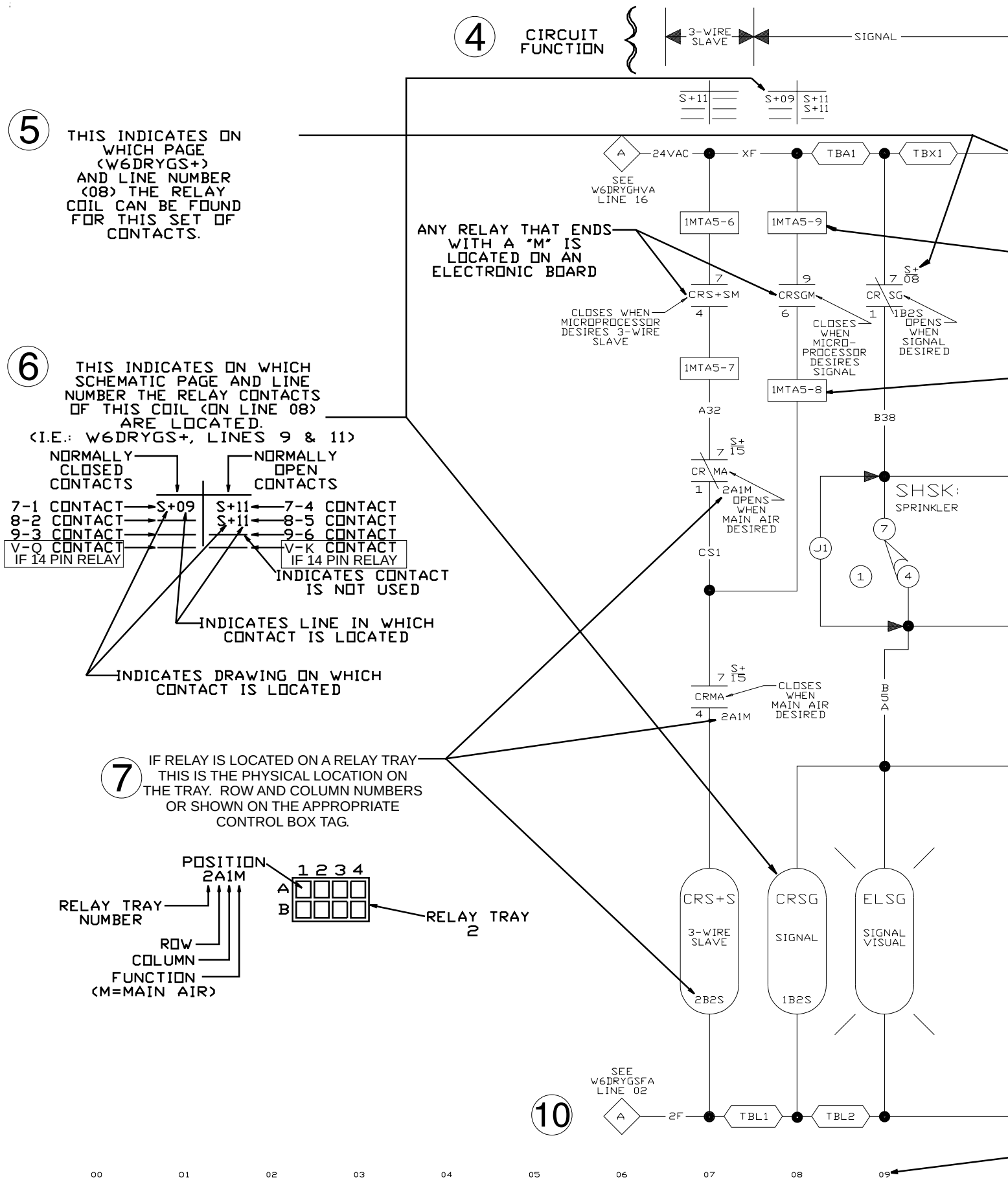
MTA41-MTA43 = digital to analog (D/A) boards

MTA51-MTA56 = analog to digital (A/D) boards

The complete listing of the boards utilized in a given control system can be found in the component list for that system.

⑨ The wire numbers, as described in the explanation of the signal routing table at the beginning of this section, are shown at appropriate locations on the schematic drawing.

⑩ 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.


4
CIRCUIT FUNCTION
3-WIRE SLAVE
SIGNAL
5
THIS INDICATES ON WHICH PAGE (W6DRYGS+) AND LINE NUMBER (08) THE RELAY COIL CAN BE FOUND FOR THIS SET OF CONTACTS.
S+11
S+09
S+11
S+11
A
24VAC
XF
TBA1
TBX1
SEE W6DRYGHVA LINE 16
1MTA5-6
1MTA5-9
ANY RELAY THAT ENDS WITH A "M" IS LOCATED ON AN ELECTRONIC BOARD
7
CRS+SM
4
CLOSES WHEN MICROPROCESSOR DESIRES 3-WIRE SLAVE
9
CRSGM
6
CLOSES WHEN MICRO-PROCESSOR DESIRES SIGNAL
7
S+08
CR SG
1
1B2S
OPENS WHEN SIGNAL DESIRED
1MTA5-7
1MTA5-8
6
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 & 11)
NORMALLY CLOSED CONTACTS
NORMALLY OPEN CONTACTS
7-1 CONTACT
8-2 CONTACT
9-3 CONTACT
V-Q CONTACT
IF 14 PIN RELAY
S+09
S+11
S+11
7-4 CONTACT
8-5 CONTACT
9-6 CONTACT
V-K CONTACT
IF 14 PIN RELAY
INDICATES CONTACT IS NOT USED
INDICATES LINE IN WHICH CONTACT IS LOCATED
INDICATES DRAWING ON WHICH CONTACT IS LOCATED
A32
B38
7
S+15
CR MA
1
2A1M
OPENS WHEN MAIN AIR DESIRED
CS1
SHSK
SPRINKLER
J1
7
1
4
7
S+15
CRMA
4
2A1M
CLOSES WHEN MAIN AIR DESIRED
B5A
7
IF RELAY IS LOCATED ON A RELAY TRAY THIS IS THE PHYSICAL LOCATION ON THE TRAY. ROW AND COLUMN NUMBERS OR SHOWN ON THE APPROPRIATE CONTROL BOX TAG.
POSITION
2A1M
1 2 3 4
A
B
RELAY TRAY NUMBER
RELAY TRAY 2
ROW
COLUMN
FUNCTION (M=MAIN AIR)
CRS+S
3-WIRE SLAVE
2B2S
CRSG
SIGNAL
1B2S
ELSG
SIGNAL VISUAL
SEE W6DRYGSFA LINE 02
10
A
2F
TBL1
TBL2
00
01
02
03
04
05
06
07
08
09

HOW TO READ MILNOR ELECTRICAL SCHEMATICS

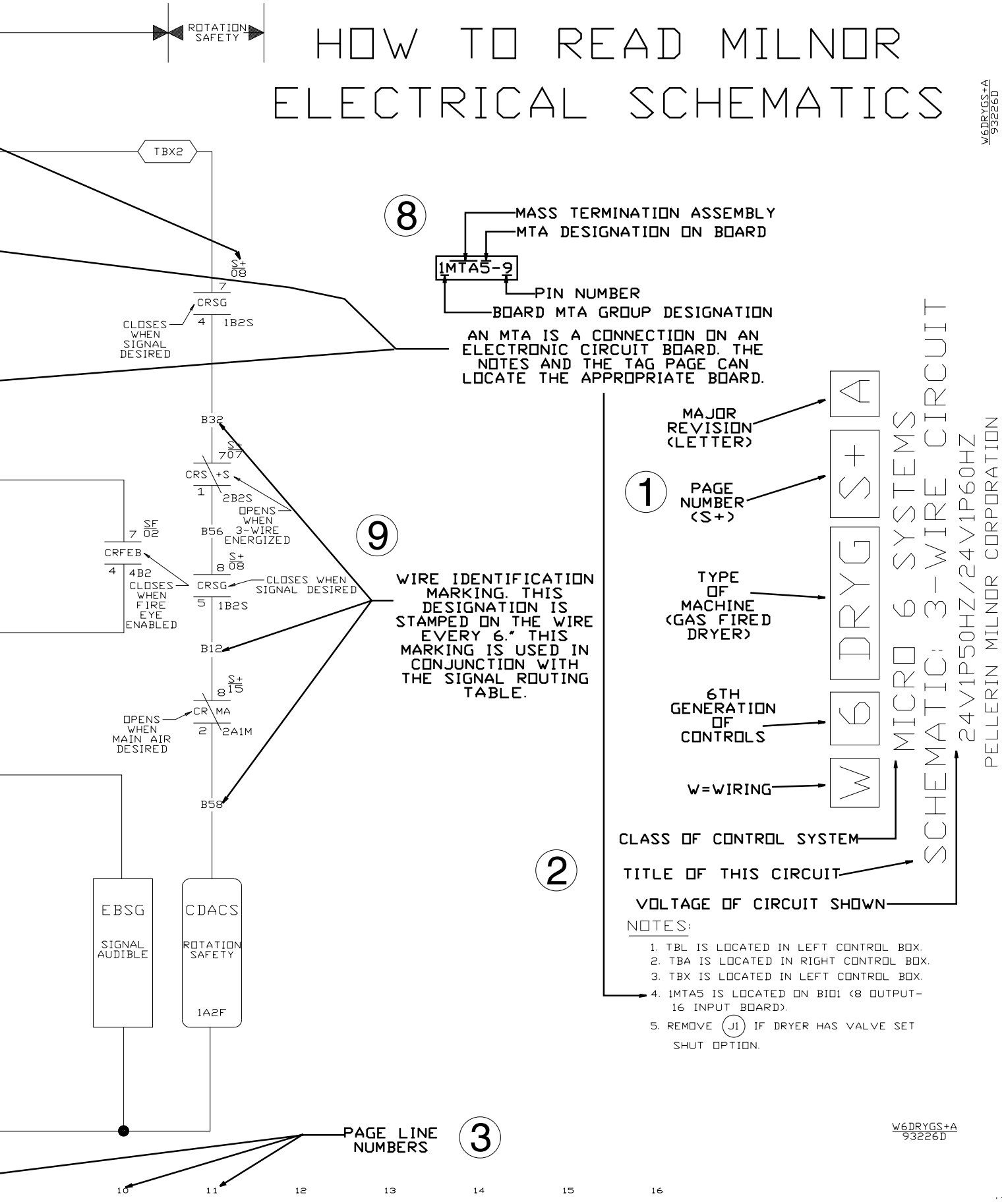
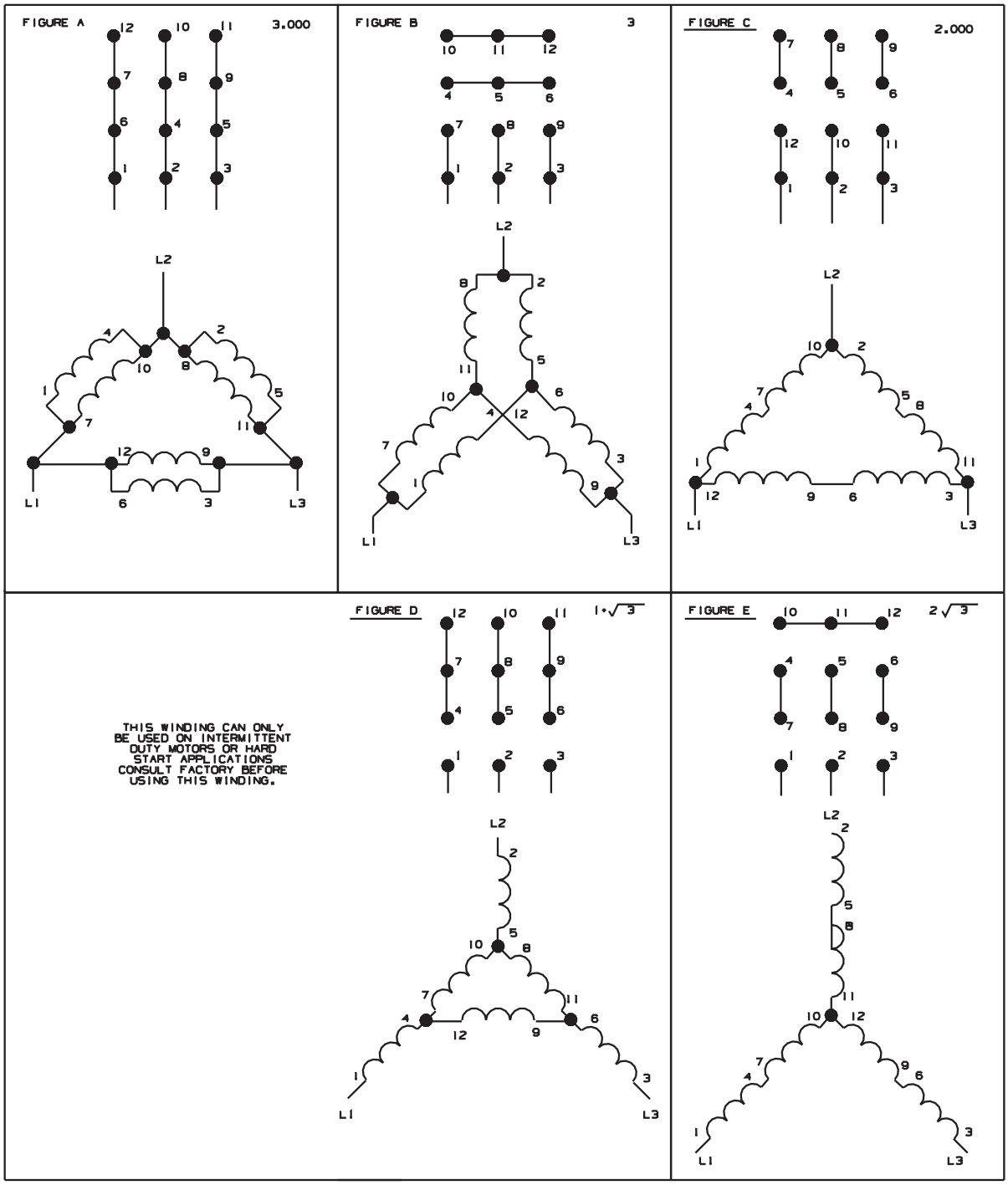


FIGURE	ELECTRICAL VALUES	SUFFIXES									
		B		H		M		T		U	
		50HZ	60HZ	50HZ	60HZ	50HZ	60HZ	50HZ	60HZ	50HZ	60HZ
A	1.000	208	230			200	220	220	240	200-220	208-240
B	$\sqrt{3}$				208	346	380	380		346-380	380
C	2.000	416	460	220	240	400	440	440	480	400-440	440-480
D	$1+\sqrt{3}$						600				600
E	$2\sqrt{3}$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



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

BMP850029

MOTOR CONNECTION DIAGRAMS

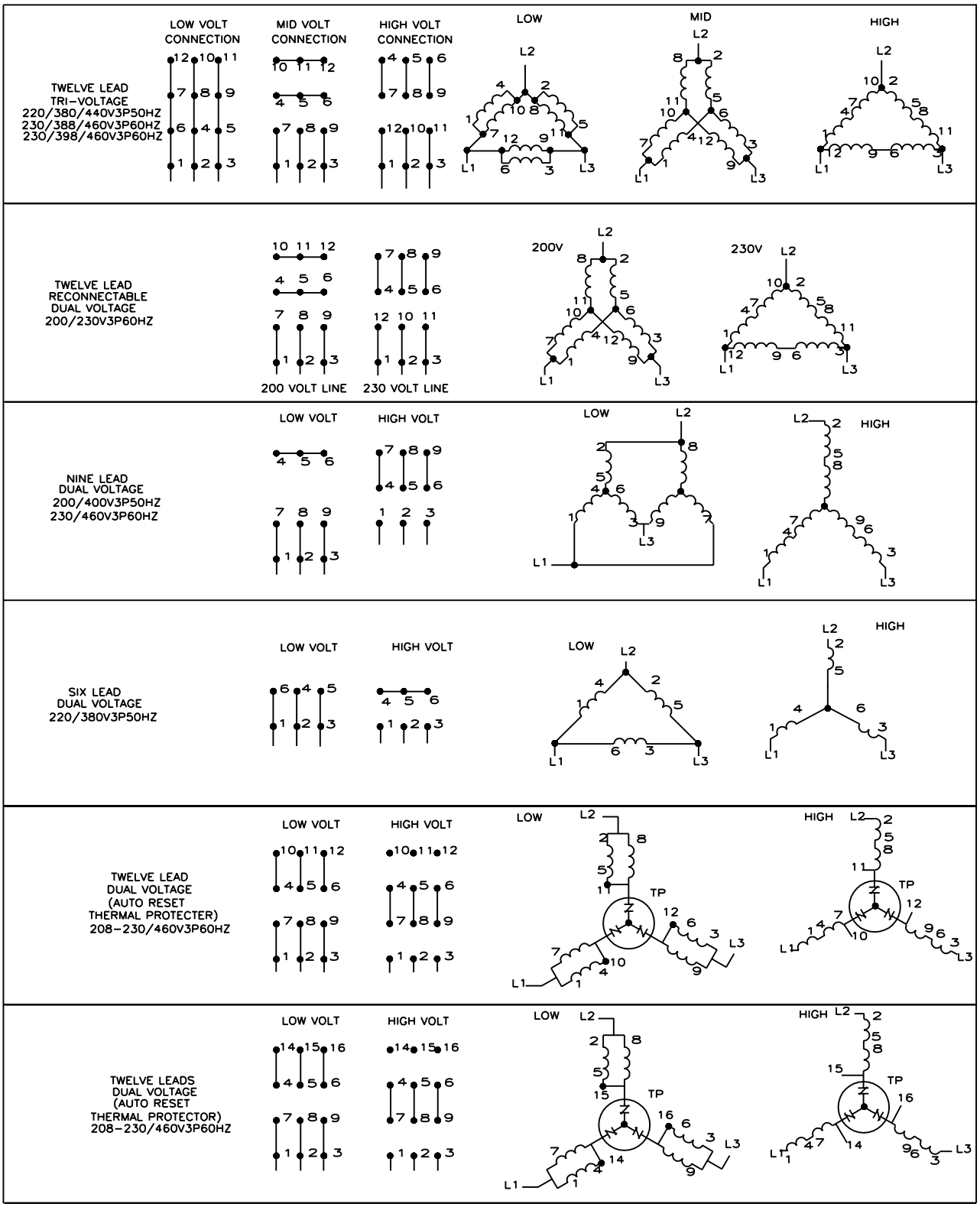
THREE PHASE SINGLE SPEED MOTORS WITH MULTIPLE VOLTAGE RATINGS

(ONLY FOR MOTOR SUFFIXES LISTED)

PELLERIN MILNOR CORPORATION

BMP850029
993628

BMP850029
993628

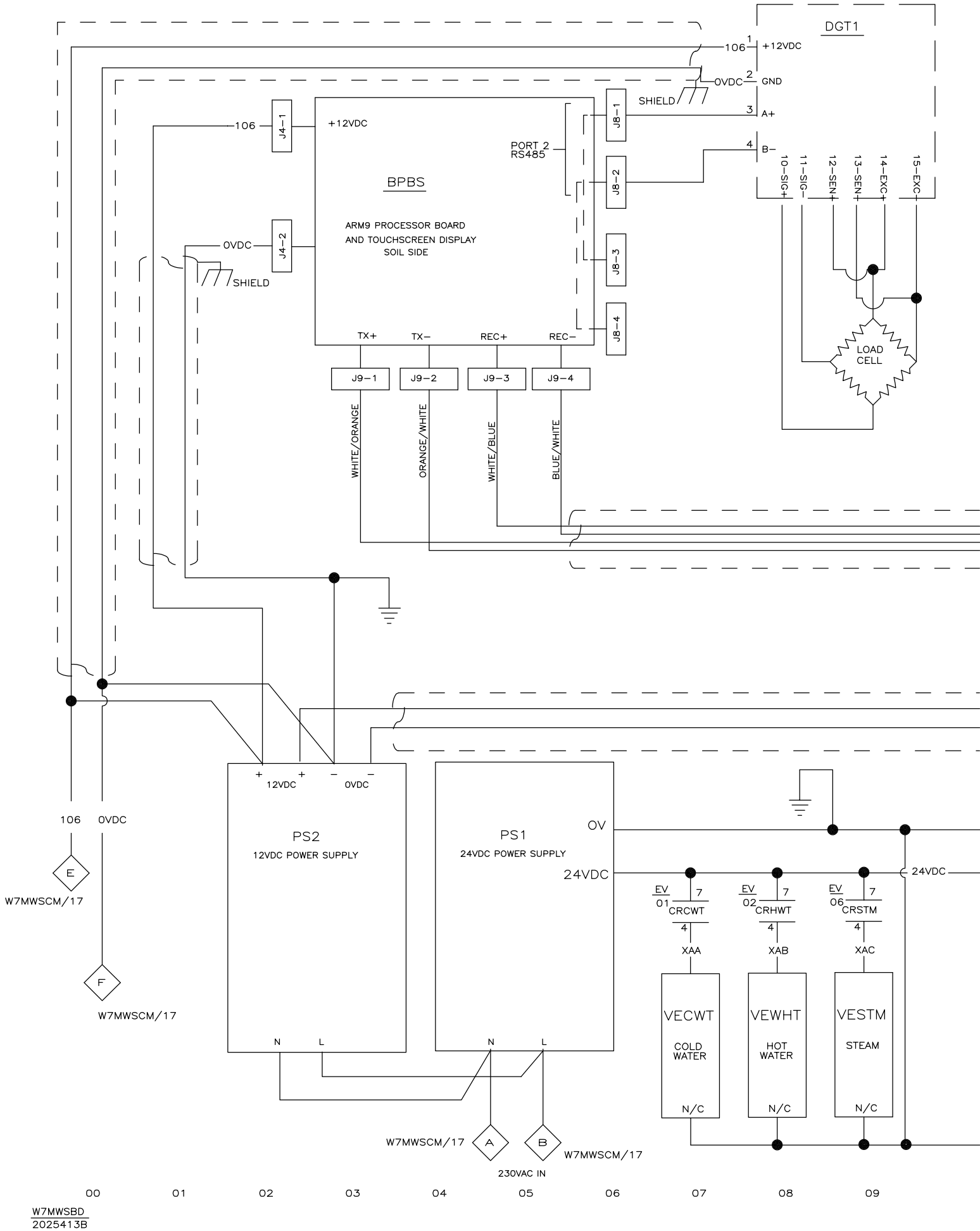


W80008

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

PELLERIN MILNOR CORPORATION

W80008
2001253A



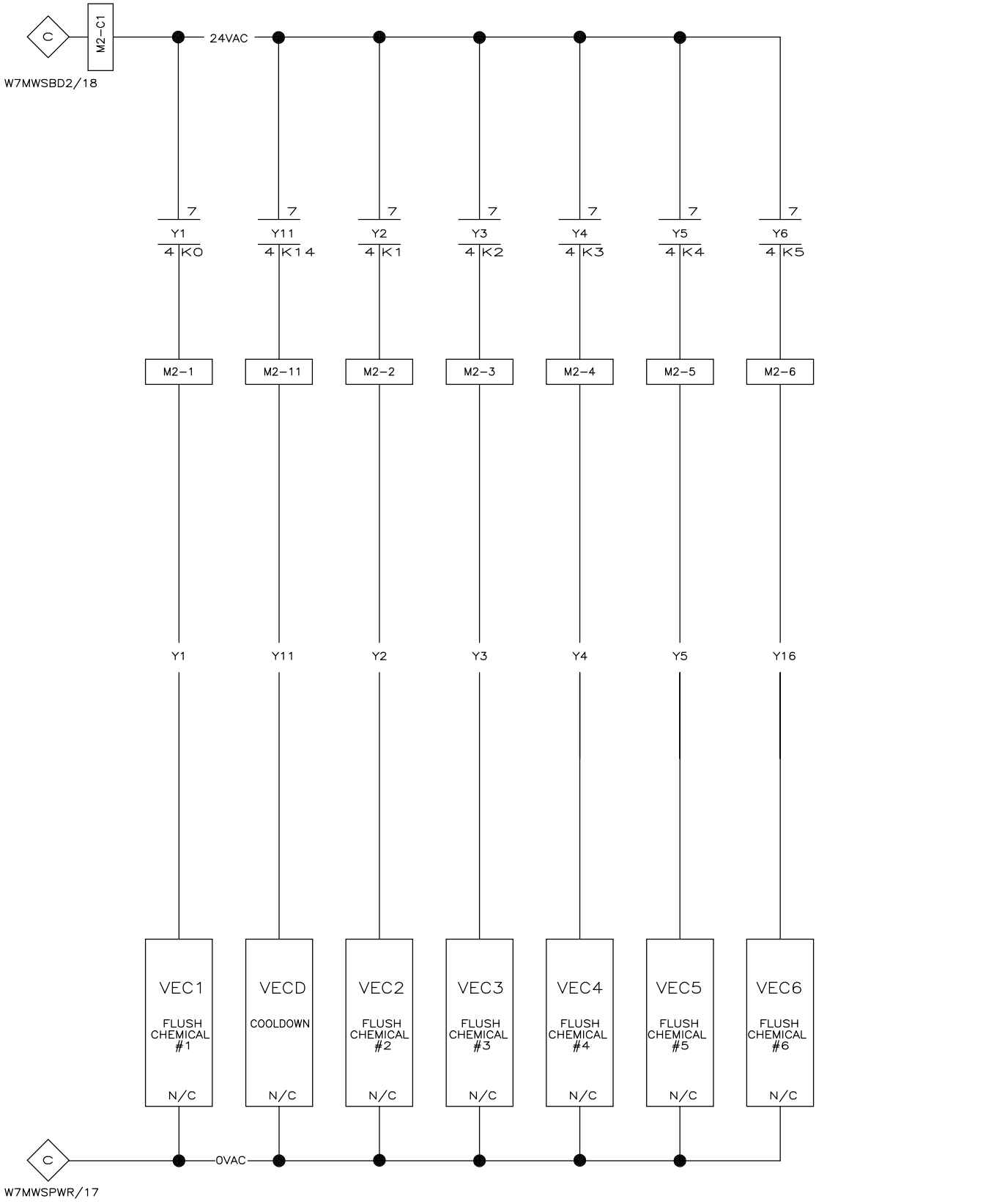
W7MWSBD
2025413B

W7MWSBD

MILTOUCH™ CONTROLS

SCHEMATIC: BOARD WIRING

PELLERIN MILNOR CORPORATION



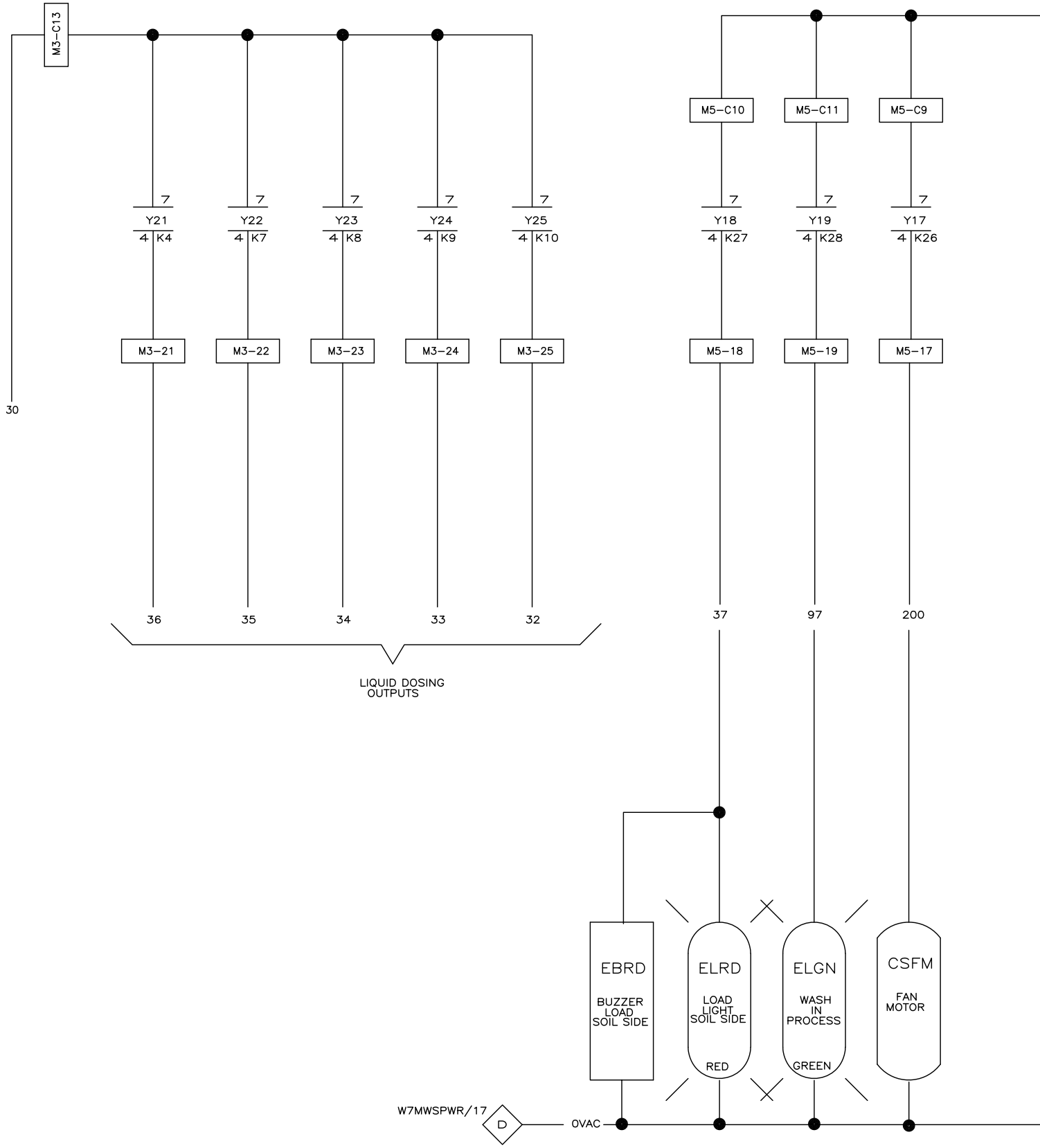
W7MWSCF
2025413B

W7MWSCF

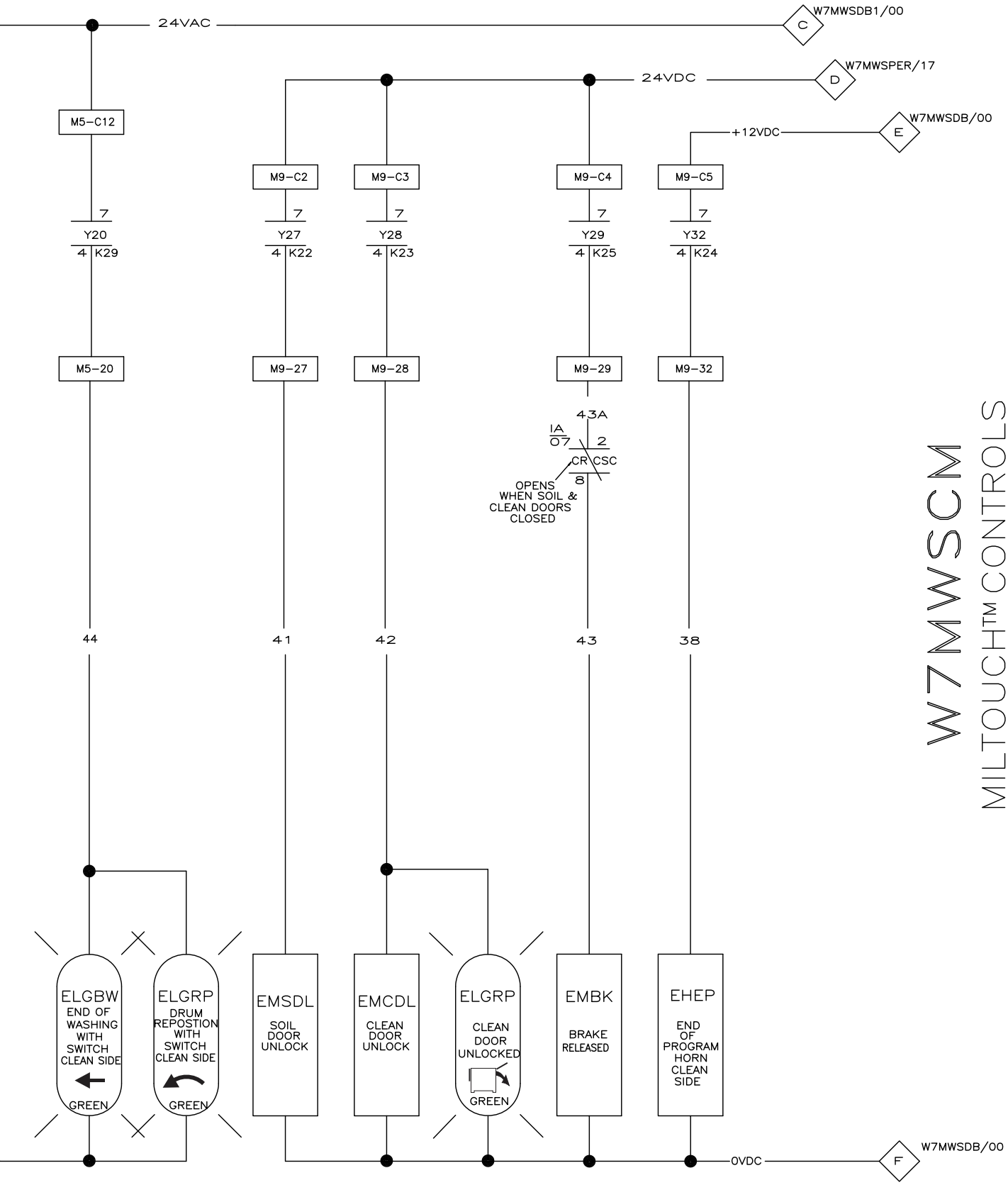
MILTOUCH™ CONTROLS
SCHEMATIC: FLUSHING SUPPLIES

PELLERIN MILNOR CORPORATION

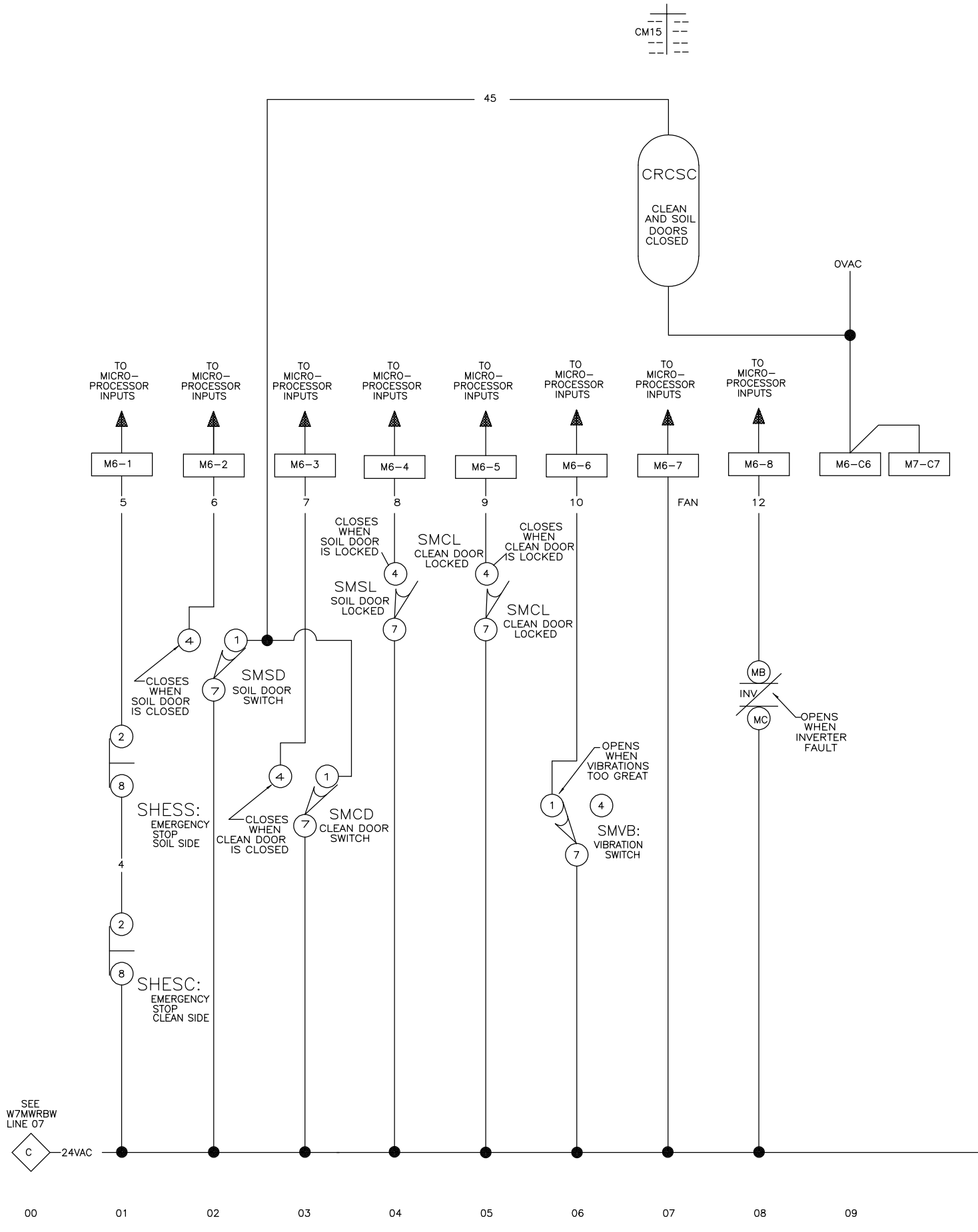
W7MWSCF
2025413B



W7MWSCM
2025445B

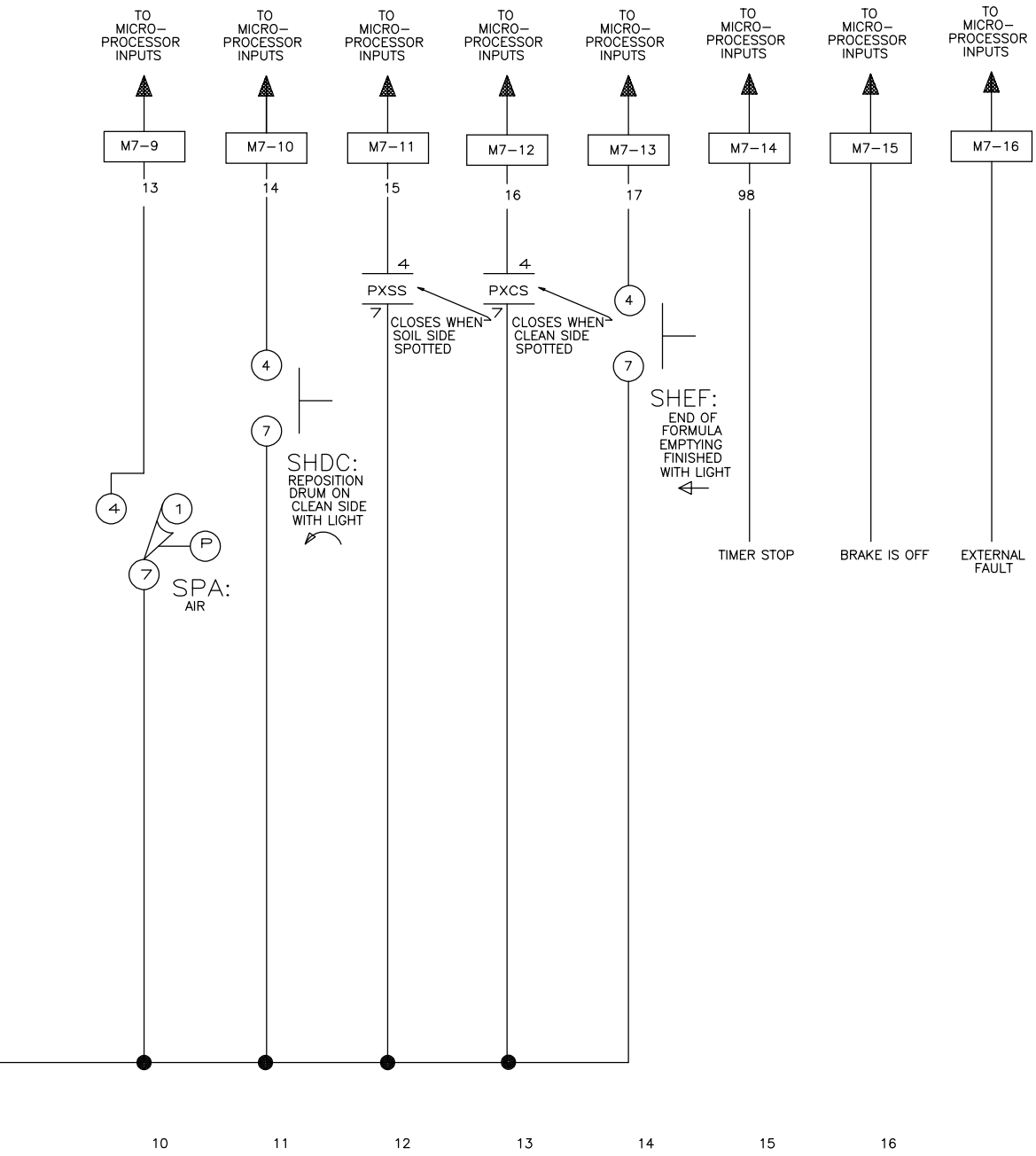


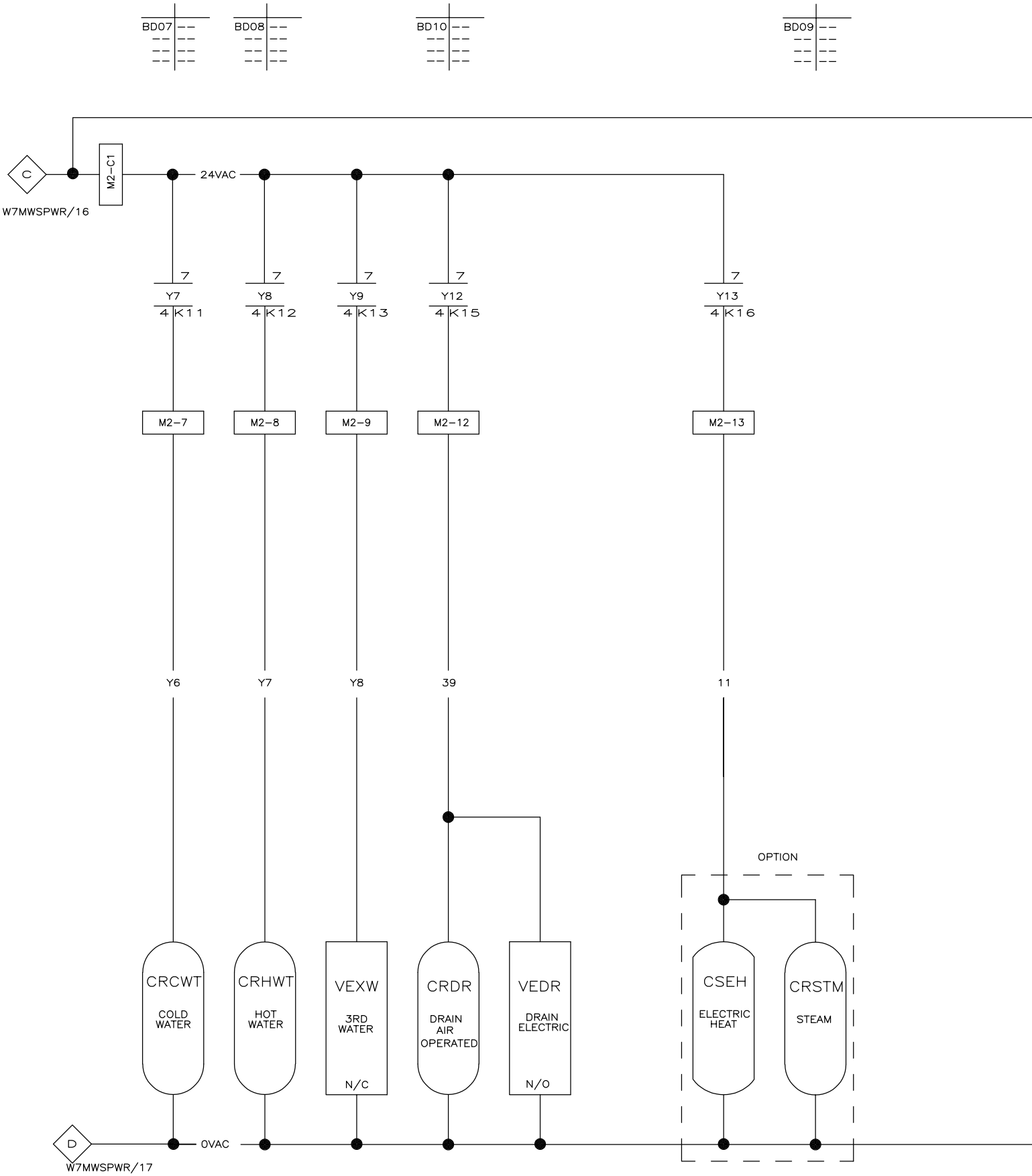
W7MWSCM
MILTOUCH™ CONTROLS
SCHEMATIC: OUTPUTS
PELLERIN MILNOR CORPORATION



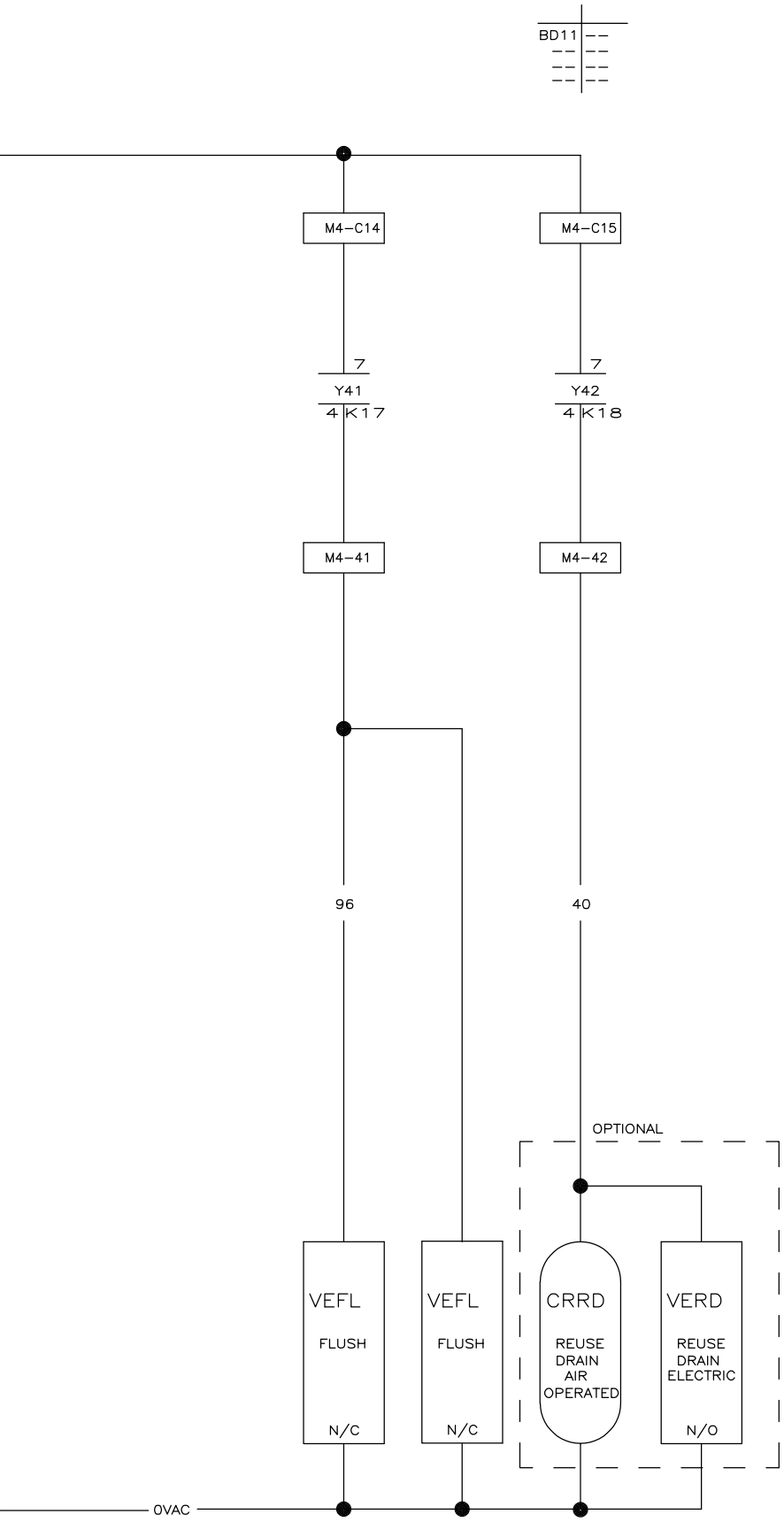
W7MWSIA
2025413B

W7MWSIA
MILTOUCH™ CONTROLS
SCHEMATIC: MICROPROCESSOR INPUTS
PELLERIN MILNOR CORPORATION





W7MWSEV
2025413B



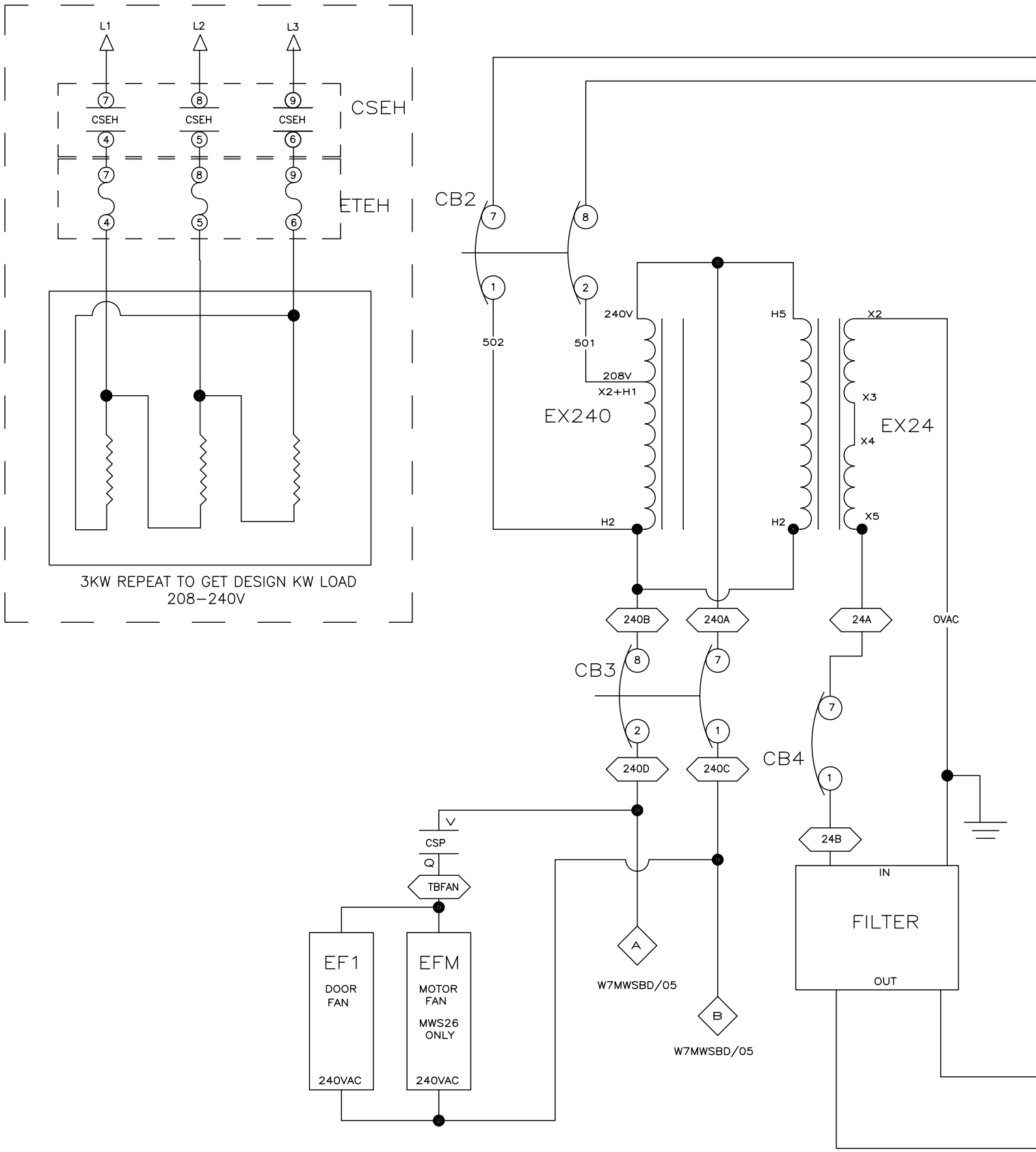
W7MWSEV

MILTOUCH™ CONTROLS

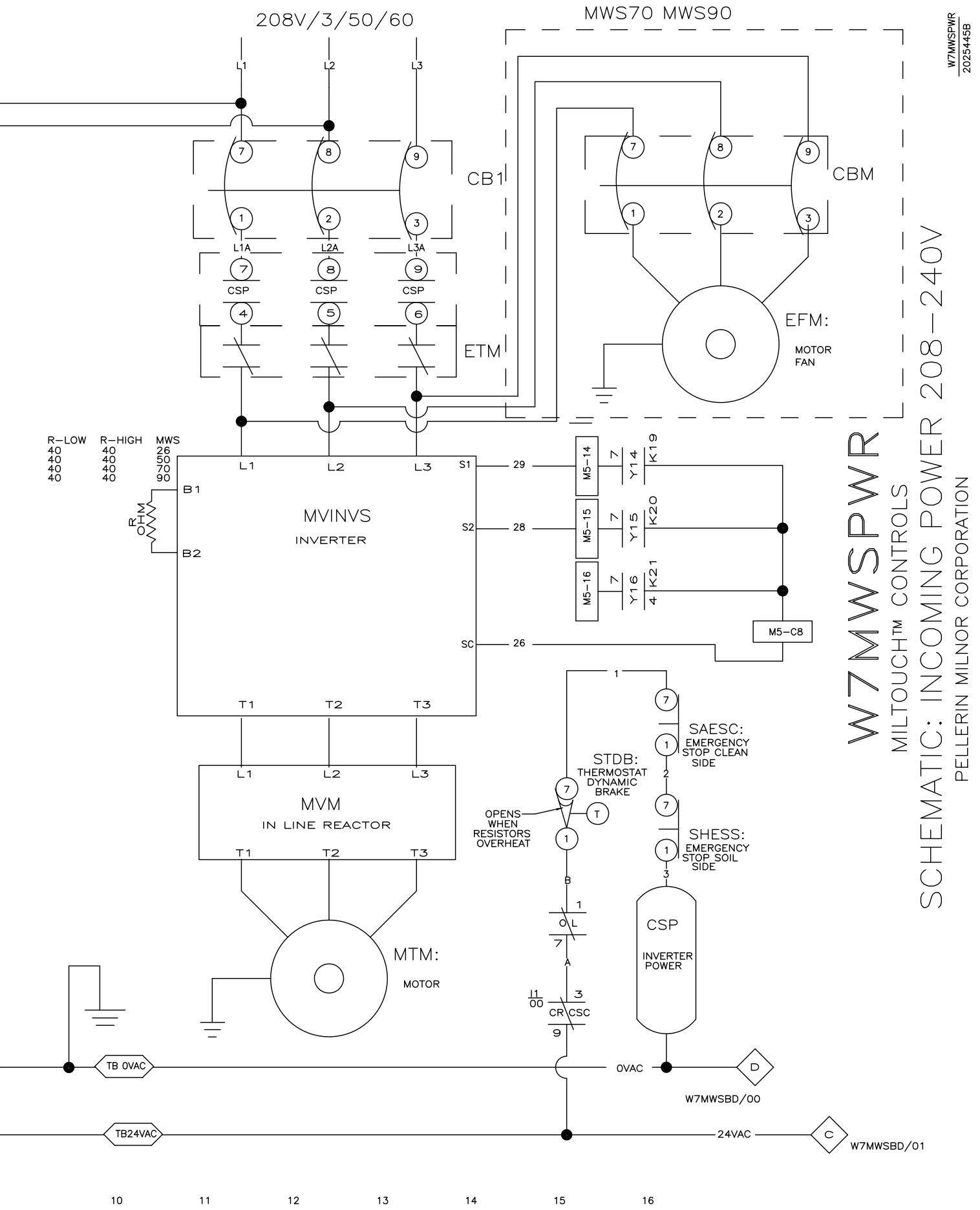
SCHEMATIC: ELECTRIC VALVES

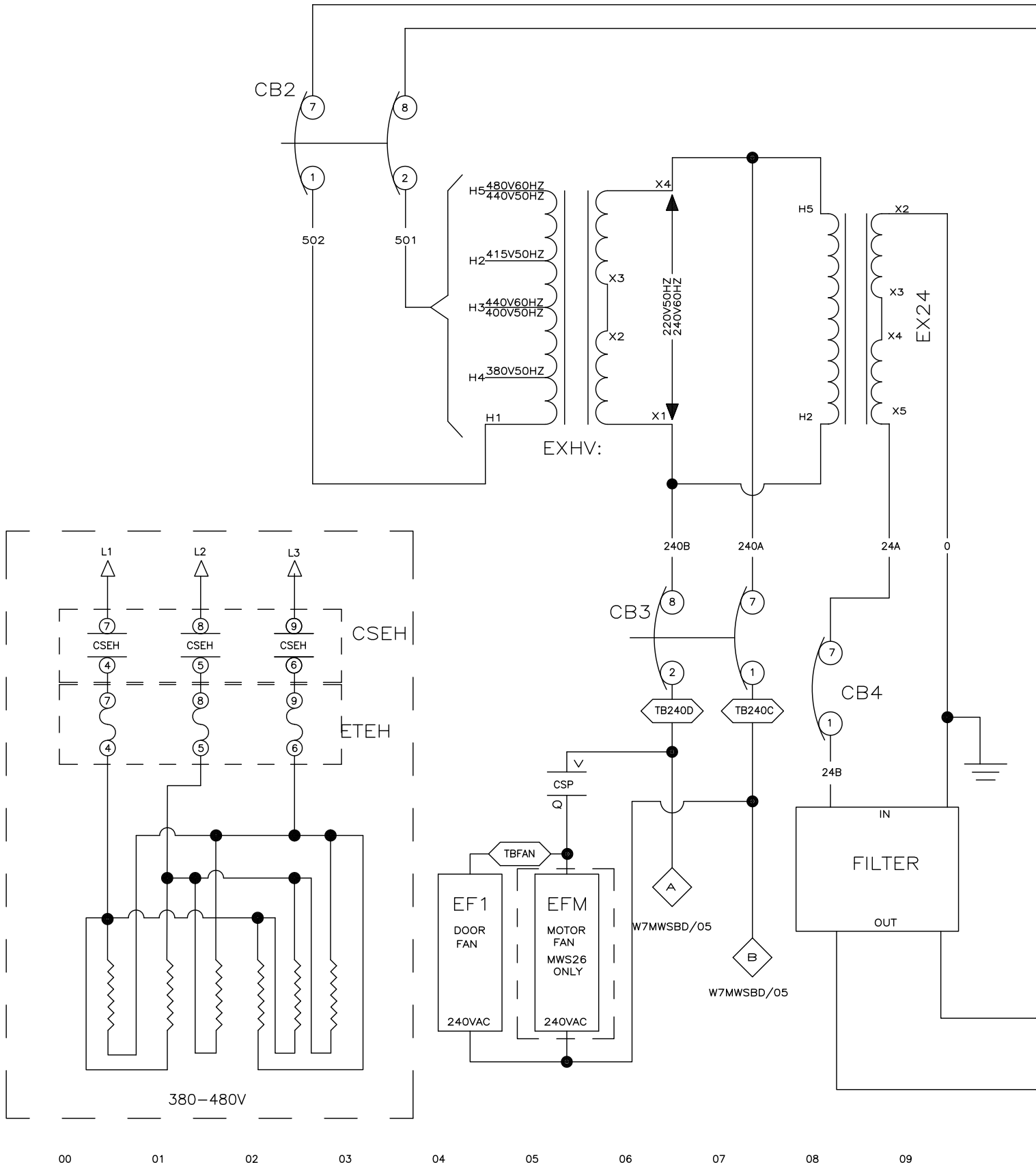
PELLERIN MILNOR CORPORATION

10 11 12 13 14 15

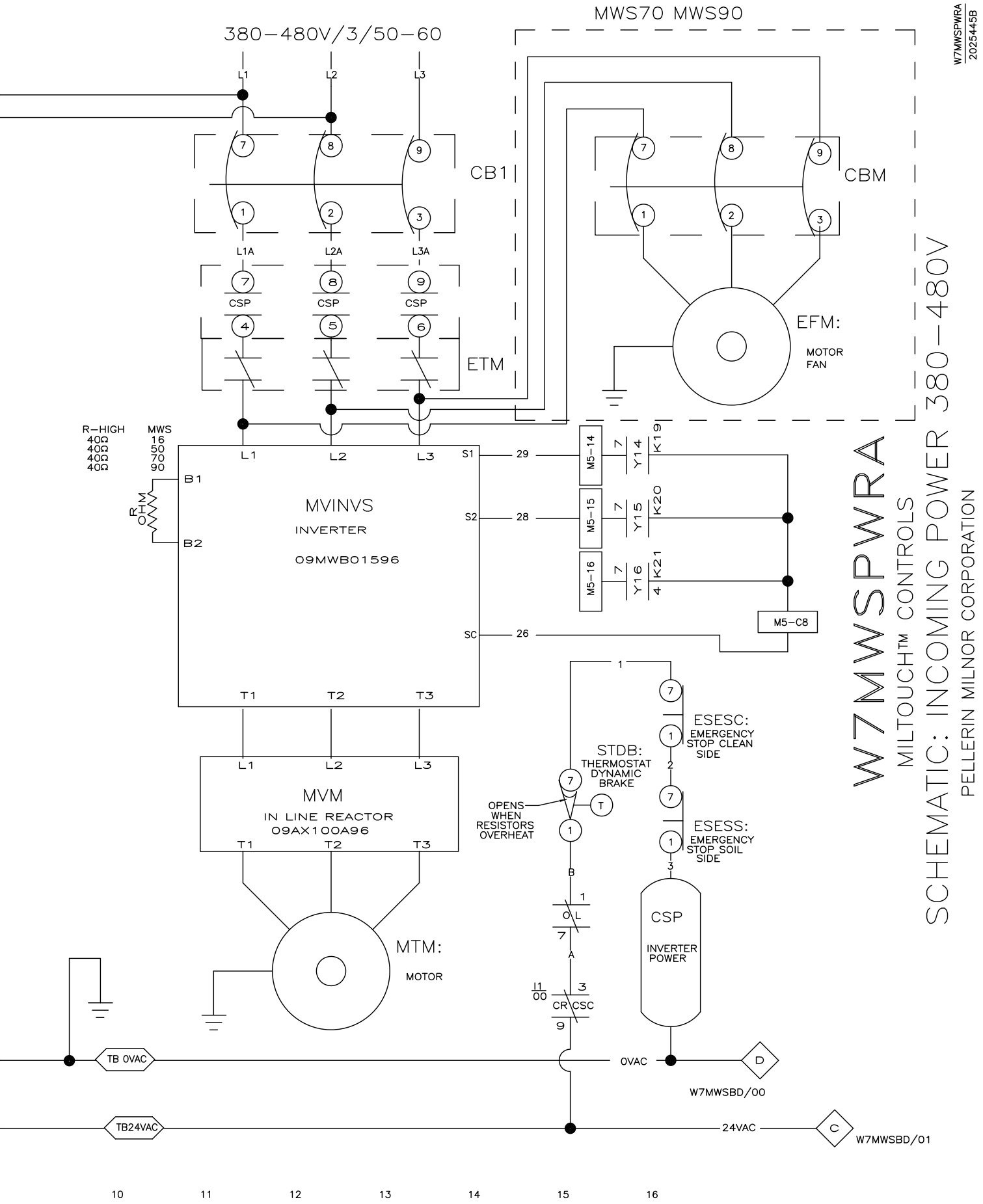


W7MWSPWR
2025445B


208V/3/50/60
MWS70 MWS90
W7MWSPWR
2025445B
L1
L2
L3
CB1
CBM
L1A
L2A
L3A
CSP
ETM
EFM:
MOTOR
FAN
R–LOW
R–HIGH
MWS
40
40
26
40
40
50
40
40
70
40
40
90
B1
B2
RHM
MVINVS
INVERTER
S1
S2
SC
29
28
26
M5–14
M5–15
M5–16
Y14
Y15
Y16
K19
K20
K21
M5–C8
T1
T2
T3
MVM
IN LINE REACTOR
MTM:
MOTOR
STDB:
THERMOSTAT
DYNAMIC
BRAKE
OPENS
WHEN
RESISTORS
OVERHEAT
SAESC:
EMERGENCY
STOP CLEAN
SIDE
SHESS:
EMERGENCY
STOP SOIL
SIDE
OL
CR
CSC
CSP
INVERTER
POWER
TB 0VAC
0VAC
W7MWSBD/00
TB24VAC
24VAC
W7MWSBD/01
W7MWSPWR
MILTOUCH™ CONTROLS
SCHEMATIC: INCOMING POWER 208–240V
PELLERIN MILNOR CORPORATION
W7MWSPWR
2025445B
10
11
12
13
14
15
16



W7MWSPWRA
2025445B


W7MWSPWRA
2025445B
MWS70 MWS90
380–480V/3/50–60
L1
L2
L3
CB1
CBM
L1A
L2A
L3A
CSP
ETM
EFM:
MOTOR
FAN
R–HIGH
MWS
40Ω 16
40Ω 50
40Ω 70
40Ω 90
RHIGH
B1
B2
MVINVS
INVERTER
09MWB01596
S1
S2
SC
29
28
26
M5–14
M5–15
M5–16
Y14
Y15
Y16
K19
K20
K21
M5–C8
T1
T2
T3
MVM
IN LINE REACTOR
09AX100A96
MTM:
MOTOR
STDB:
THERMOSTAT
DYNAMIC
BRAKE
OPENS
WHEN
RESISTORS
OVERHEAT
ESESC:
EMERGENCY
STOP CLEAN
SIDE
ESESS:
EMERGENCY
STOP SOIL
SIDE
OL
CR
CSC
CSP
INVERTER
POWER
TB 0VAC
0VAC
TB24VAC
24VAC
W7MWSBD/00
W7MWSBD/01
W7MWSPWRA
MILTOUCH™ CONTROLS
SCHEMATIC: INCOMING POWER 380–480V
PELLERIN MILNOR CORPORATION
10
11
12
13
14
15
16