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

Schematic/Electrical Parts

76032G1, 76028&76039G2

CBW Continuous Batch Washer System

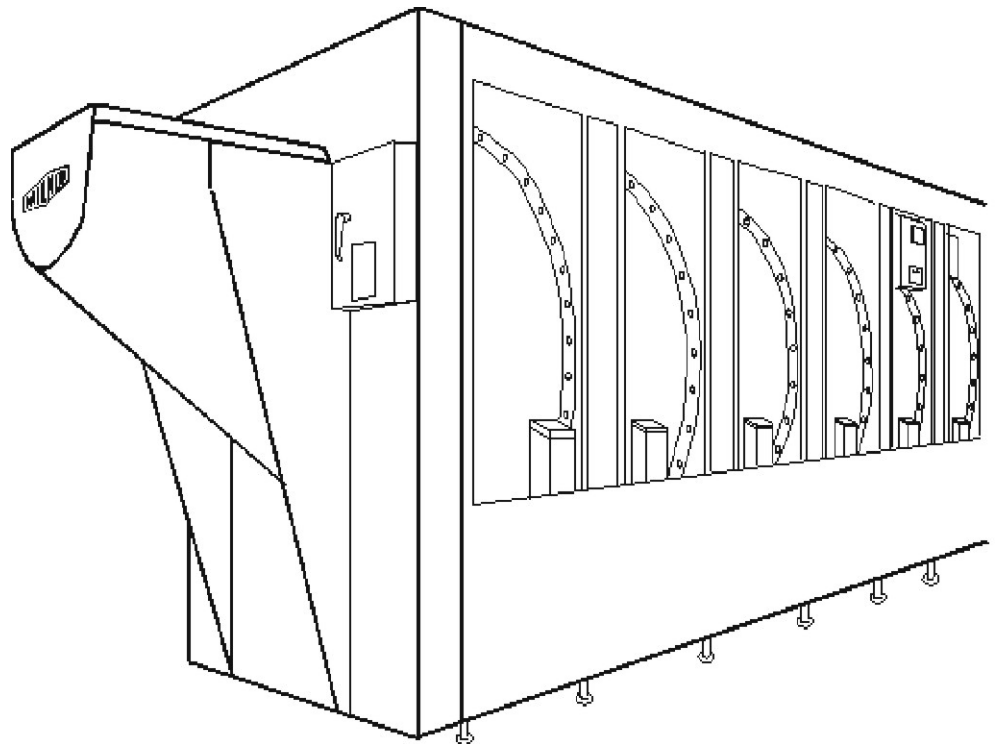


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COMPONENT PARTS LIST

<u>COMPONENT NUMBER</u>	<u>FUNCTION OF THIS COMPONENT</u>	<u>WHERE TO FIND THIS COMPONENT</u>	<u>MILNOR P/N</u>	<u>DESCRIPTION</u>	<u>LOCATION</u>
	>>CONTROL BOX LAYOUTS				
01	DETAIL-MENTOR BACK PANEL	W8CBWTG1	B2TAG99014	MENTOR CONTROL PANEL	SEE FUNCTION
02	DETAIL-POWER ENABLE PANEL	W8CBWTG1	B2TAG99013	MENTOR POWER ENABLE BOX	SEE FUNCTION
03	DETAIL-CONWA/CONILO C-BOX	W8CBWTG1	B2TAG92059	CONWA/CONILO CONTROL BOX	SEE FUNCTION
04	DETAIL-STD OUTPUT BOX	W8CBWTG1	B2TAG91068	MARK 8 CBW STD OUTPUT BOX	SEE FUNCTION
05	DETAIL-STD OUTPUT BOARDS	W8CBWTG1	B2TAG91071	MK 8 CBW STD OUTPUT BX BD	SEE FUNCTION
06	DETAIL-MODULE BOX 76028,76039	W8CBWTG2	B2TAG92086	M6 SYS. CONTROL BOARD BOX	SEE FUNCTION
07	DETAIL-FLUSH INTERFACE BOX	W8CBWTG3	B2TAG91056	MK8 FLUSH PUMP INTERFACE	SEE FUNCTION
08	DETAIL-FLUSH BOX 76039 W/O DRAIN	W8CBWTG3	B2TAG94062	FL PUMP INTFACE W/O DRAIN	SEE FUNCTION
09	DETAIL-FLUSH BOX 76039 W/ DRAIN	W8CBWTG3	B2TAG94061	FL PUMP INTFACE W/ DRAIN	SEE FUNCTION
10	DETAIL-RINSE ZONE BOX	W8CBWTG3	B2TAG91057	MK8 CBW RINSE ZONE BOX	SEE FUNCTION
11	DETAIL-WASH WATER FLOW LIFTER BOX	W8CBWTG3	B2TAG91058	MK8 CBW WASH WATER FLOW LIFTER	SEE FUNCTION
12	DETAIL-MODULE BOX 76032	W8CBWTG2	B2TAG91072	MK8 CBW MODULE BOX	SEE FUNCTION
13	DETAIL-MODULE BOX BOARDS	W8CBWTG2	B2TAG91074	MK8 CBW MODULE BOARDS	SEE FUNCTION
14	DETAIL-INTERPERET RELAY BOARDS	W8CBWTG2	B2TAG91073	MK8 CBW INTERPRET RELAY BD	SEE FUNCTION
15	DETAIL-DRIVE BOX (76032)	W8CBWTG2	B2TAG91069	DRIVE CONTACTOR BX MK8 CBW	SEE FUNCTION
16	DETAIL- DRIVE BOX (76028 & 39)	W8CBWTG3	B2TAG97013	MK9 CBW WELDED DRIVE BOX	SEE FUNCTION
BA	>>PRINTED CIRCUIT BOARDS				
B-PC	PERSONAL COMPUTER	W8CBWNB	08PC805866	PC P5-166 INDUSTRIAL FOR MENTOR	MNTR CNTR PN
BAD-1	BOARD-ANALOG TO DIGITAL CONVERTER	W8CBWNB	08BSADDBT	BOARD;DRYER SERIAL ATOD-TEST	MODULE BOX
BAD-2	BOARD-A-D CONV FOR LEVEL	W8CBWEL	08BSADCT	BD:SERIAL A-D CONVERT->TEST	MODULE C-BOX
BAD-3	BOARD-ANALOG TO DIGITAL CONV #3	W8CBWFT	08BSADEBT	BOARD:CBW SERIAL A TO D TEST	MODULE C-BOX
BAD1*	BOARD-ANALOG TO DIGITAL TEMP	W9CBWJB	08BSADEBT	BOARD:CBW SERIAL A TO D TEST	MODULE C-BOX
BAD1*	BOARD-ANALOG TO DIGITAL TEMP	W8CBWJBA	08BSADCT	BD:SERIAL A-D CONVERT->TEST	MODULE C-BOX
BBB	BOARD-BATTERY BACKUP	08CBWNB	08BSBB1T	BOARD: SER BATT BACKUP-TEST	MNTR CNTR PN
BFS-*	BPARD-FLOW SENSOR SIGNAL CONDITNR	W8CBWJJ	08BNDFST	FLOW SENSOR SIG COND>TESTED	MODULE C-BOX
BIO*	BOARD-8OUT / 16 INPUT	W8CBWAW	08BS16BT	BOARD:SERIAL 8OUT-16IN-TEST	STD OUTPT BX
BIO-A	BOARD-STD 8OUT / 16 INPUT 00	W8CBWGA	08BS16BT	BOARD:SERIAL 8OUT-16IN-TEST	STD OUTPT BX
BIO-A	BOARD-STD 8OUT / 16 INPUT 00	W8CBWGB	08BS16BT	BOARD:SERIAL 8OUT-16IN-TEST	STD OUTPT BX
BIO-B	BOARD-STD 8OUT / 16 INPUT 01	W8CBWGA	08BS16BT	BOARD:SERIAL 8OUT-16IN-TEST	STD OUTPT BX
BIO-B	BOARD-STD 8OUT / 16 INPUT 01	W8CBWGB	08BS16BT	BOARD:SERIAL 8OUT-16IN-TEST	MODULE C-BOX
BIO1*	BOARD-INPUT / OUTPUT #1 (EACH MODULE)	W8CBWJB	08BS16BT	BOARD:SERIAL 8OUT-16IN-TEST	MODULE C-BOX
BIO1*	BOARD-INPUT / OUTPUT #1 (EACH MODULE)	W8CBWJBA	08BS16BT	BOARD:SERIAL 8OUT-16IN-TEST	MODULE C-BOX

COMPONENT PARTS LIST

<u>COMPONENT</u>	<u>FUNCTION OF</u>	<u>WHERE TO FIND</u>	<u>MILNOR P/N</u>	<u>DESCRIPTION</u>	<u>LOCATION</u>
<u>NUMBER</u>	<u>THIS COMPONENT</u>	<u>THIS COMPONENT</u>			
BIO2*	BOARD-INPUT / OUTPUT #1 (IF REQUIRED)	W8CBWJB	08BS816BT	BOARD:SERIAL 8OUT-16IN-TEST	MODULE C-BOX
BIO2*	BOARD-INPUT / OUTPUT #1 (IF REQUIRED)	W8CBWJBA	08BS816BT	BOARD:SERIAL 8OUT-16IN-TEST	MODULE C-BOX
BLBB-*	BOARD-LEVEL TRANSDUCER	W8CBWEL	08BNLRIT	E-LVL +RPM INTERF 0-2.5V>TST	MODULE C-BOX
BO16-1	BOARD-ALLIED INTERFACE #1	W8CBWAI	08BSO16BT	BOARD:SERIAL 16 OUTPUT-TEST	LAST MOD BOX
BO16-2	BOARD-INTERPRET RELAY BOARD #2	W8CBWIA	08BSO16BT	BOARD:SERIAL 16 OUTPUT-TEST	MODULE C-BOX
BO16-3	BOARD-INTERPRET RELAY BOARD #3	W8CBWIA	08BSO16BT	BOARD:SERIAL 16 OUTPUT-TEST	MODULE C-BOX
BO16-4	BOARD-INTERPRET RELAY BOARD #4	W8CBWIA	08BSO16BT	BOARD:SERIAL 16 OUTPUT-TEST	MODULE C-BOX
BO16-5	BOARD INTERPRET RELAY BOARD #5	W8CBWIA	08BSO16BT	BOARD:SERIAL 16 OUTPUT-TEST	MODULE C-BOX
BO16-6	BOARD-ALLIED INTERFACE #6	W8CBWAI	08BSO16BT	BOARD:SERIAL 16 OUTPUT-TEST	LAST MOD BOX
BPB	BOARD-186 PROCESSOR BOARD	W8CBWNB	08BSPDET	186 SERIAL PROCESSOR-TESTED	MNTR CNTR PN
BRPN	PRINTER-MENTOR	W8CBWNB	08MPARRLIJ	PRINTER-OKIDATA OKIPAGE #6EX	MNTR CNTR PN
BSD	BOARD-STM DISINFECT BATTERY BACKUP	W8CBWFS	08B1BSDT	BOARD:M6 CBW STEAM DIS TEST	STM DISNNFBX
CB	>>>CIRCUIT BREAKERS				
CBCL	CIRCUIT BRK-CONWA LIGHT CIRCUIT	W8CBWLC	09FM02BKBK	CKT BKR 2 AMP 240V	CONWA C-BOX
CBCP1	CIRCUIT BRK-PRESS PUMP BOX 120V	W8CBWPA	09FM02BKBK	CKT BKR 2 AMP 240V	PRESS PMP BX
CBFC1	CIRCUIT BRK-WASH FLOW BX 120V	W8CBWZA	09FM02BKBK	CKT BKR 2 AMP 240V	WASH FLOW BX
CBFC1	CIRCUIT BRK-WASH FLOW BX 120V	W8CBWZE	09FM02BKBK	CKT BKR 2 AMP 240V	WASH FLOW BX
CBFC2	CIRCUIT BRK-WASH FLOW BX 24V	W8CBWZA	09FM02BKBK	CKT BKR 2 AMP 240V	WASH FLOW BX
CBFC2	CIRCUIT BRK-WASH FLOW BX 24V	W8CBWZE	09FM02BKBK	CKT BKR 2 AMP 240V	WASH FLOW BX
CBLC	CIRCUIT BRK-LOADING INTERFACE	W8CBWLB	09FM02BKBK	CKT BKR 2 AMP 240V	CONLOWA BOX
CBMC	CIRCUIT BRK-O/L-CONLOWA BELT MTR	W8CBWWA	MESSAGE EW	SEE CBMC-1 OR CBMC-2 FOR PART	
CBMC-1	CIRCUIT BRK-O/L-CONLOWA MTR <250V	W8CBWWA	09FTB006T	THERM OL (GFUS250)MAN:ADJ4-6A	CONLOWA BOX
CBMC-2	CIRCUIT BRK-O/L-CONLOWA BELT MTR	W8CBWWA	09FTB004T	THERM OL (GFUS250)MAN:ADJ2-4A	CONLOWA BOX
CBML	CIRCUIT BRK-O/L LAST MOD DRIVE MT	W8CBWWA	MESSAGE EW	SEE CBML-1, -2 OR -3 FOR PART	
CBML-1	CIRCUIT BRK-O/LCBML FOR <250V	W8CBWWA	09FTB016T	THERM OL (GFUS250)MAN:ADJ10-16A	LAST MOD BOX
CBML-2	CIRCUIT BRK -O/L CBML FOR >250V	W8CBWWA	09FTB010T	THERM OL (GFUS250)MAN:ADJ6-10A	LAST MOD BOX
CBML-3	CIRCUIT BRK-O.L CBML FOR 600V	W8CBWWA	09FTB004T	THERM OL (GFUS250)MAN:ADJ2-4A	LAST MOD BOX
CBMM	CIRCUIT BRK -O/L MID MOD DRIVE MTR	W8CBWWA	MESSAGE EW	SEE CBMM-1, -2, OR -3 FOR PART	
CBMM-1	CIRCUIT BRK-O/LCBMM FOR <250V	W8CBWWA	09FTB016T	THERM OL (GFUS250)MAN:ADJ10-16A	MID MOD BOX
CBMM-2	CIRCUIT BRK -O/L CBMM FOR >250V	W8CBWWA	09FTB010T	THERM OL (GFUS250)MAN:ADJ6-10A	MID MOD BOX
CBMM-3	CIRCUIT BRK-O.L CBMM FOR 600V	W8CBWWA	09FTB004T	THERM OL (GFUS250)MAN:ADJ2-4A	MID MOD BOX
CBMPF	CIRCUIT BRK-O/L FLUSH PUMP MOTOR	W8CBWWA	MESSAGE EW	SEE CBMPF-1 OR CBMPF-2 FOR PART	
CBMPF-1	CIRCUIT BRK-O/L FLUSH PUMP <380V/60HZ	W8CBWWA	09FTB001T	THERM OL (GFUS250)MAN:ADJ1.6A	FLUSH INF BOX

COMPONENT PARTS LIST

<u>COMPONENT</u>	<u>FUNCTION OF</u>	<u>WHERE TO FIND</u>	<u>MILNOR P/N</u>	<u>DESCRIPTION</u>	<u>LOCATION</u>
<u>NUMBER</u>	<u>THIS COMPONENT</u>	<u>THIS COMPONENT</u>			
CBMPF-2	CIRCUIT BRK-O/L FLUSH PUMP >380V50HZ	W8CBWWA	09FTC004T	THERM OL (GFUS250)MAN:ADJ2-4A	FLUSH INF BOX
CBM1	CIRCUIT BRK-O/L FIRST MODULE DRIVE	W8CBWWA	MESSAGE EW	SEE CBM1-1, -2, AND -3 FOR PART	
CBM1-1	CIRCUIT BRK-O/L CBM1 FOR <250V	W8CBWWA	09FTB016T	THERM OL (GFUS250)MAN:ADJ10-16A	FIRST MOD BOX
CBM1-2	CIRCUIT BRK-O/L CBM1 FOR <250V	W8CBWWA	09FTB010T	THERM OL (GFUS250)MAN:ADJ6-10A	FIRST MOD BOX
CBM1-3	CIRCUIT BRK-O/L CBM1 FOR 600V	W8CBWWA	09FTB004T	THERM OL (GFUS250)MAN:ADJ2-4A	FIRST MOD BOX
CBPP	CIRCUIT BRK-O/L PRESS PUMP MOTOR	W8CBWWA	09FTB006T	THERM OL (GFUS250)MAN:ADJ4-6A	PRESS PMP BX
CBP2	CIRCUIT BRK-PRESS PUMP BOX 24V	W8CBWPA	09FM02BKBK	CKT BKR 2 AMP 240V	PRESS PMP BX
CBWFS	CIRCUIT BRK-O/L RINSE ZONE PUMP MTR	W8CBWWA	MESSAGE EW	SEE CBWFS-1, AND -2 FOR PART	
CBWFS-1	CIRCUIT BRK-O/L CBWFS FOR <380V60HZ	W8CBWWA	09FTB001T	THERM OL (GFUS250)MAN:ADJ1.6A	RINSE ZN BOX
CBWFS-2	CIRCUIT BRK-O/L CBWFS FOR >380V50HZ	W8CBWWA	09FTC004T	THERM OL (GFUS250)MAN:ADJ2-4A	RINSE ZN BOX
CBWZP	CIRCUIT BRK-O/L WASH ZONE FLOW PMP	W8CBWWA	MESSAGE EW	SEE CBWZP-1 AND -2 FOR PART	
CBWZP-1	CIRCUIT BRK-O/L CBWZP <380V60HZ	W8CBWWA	09FTB001T	THERM OL (GFUS250)MAN:ADJ1.6A	WASH FLOW BX
CBWZP-2	CIRCUIT BRK-O/L CBWZP >380V50HZ	W8CBWWA	09FTC004T	THERM OL (GFUS250)MAN:ADJ2-4A	WASH FLOW BX
CBWZR	CIRCUIT BRK-O/L WASH ZONE SURPLUS	W8CBWWA	MESSAGE EW	SEE CBWZR-1 AND -2 FOR PART	
CBWZR-1	CIRCUIT BRK-O/L CBWZR FOR <380V60HZ	W8CBWWA	09FTB001T	THERM OL (GFUS250)MAN:ADJ1.6A	WASH FLOW BX
CBWZR-2	CIRCUIT BRK-O/L CBWZR FOR >380V50HZ	W8CBWWA	09FTC004T	THERM OL (GFUS250)MAN:ADJ2-4A	WASH FLOW BX
CBWZ1	CIRCUIT BRK-RINSE ZONE 120V CIRCUIT	W8CBWZB	09FM02BKBK	CKT BKR 2 AMP 240V	RINSE ZN BOX
CBWZ1	CIRCUIT BRK-RINSE ZONE 120V CIRCUIT	W8CBWZG	09FM02BKBK	CKT BKR 2 AMP 240V	RINSE ZN BOX
CBWZ1	CIRCUIT BRK-RINSE ZONE 120V CIRCUIT	W8CBWZW	09FM02BKBK	CKT BKR 2 AMP 240V	RINSE ZN BOX
CBWZ2	CIRCUIT BRK-RINSE ZONE 24V CIRCUIT	W8CBWZB	09FM02BKBK	CKT BKR 2 AMP 240V	RINSE ZN BOX
CBWZ2	CIRCUIT BRK-RINSE ZONE 24V CIRCUIT	W8CBWZG	09FM02BKBK	CKT BKR 2 AMP 240V	RINSE ZN BOX
CBWZ2	CIRCUIT BRK-RINSE ZONE 24V CIRCUIT	W8CBWZW	09FM02BKBK	CKT BKR 2 AMP 240V	RINSE ZN BOX
CB02	CIRCUIT BRK-120V STD I/O BOX	W8CBWSA	09FM05BKGR	CKT BRK 5A240VBLK/BEZ-GRAY/IBTN	STD I/O BOX
CB03	CIRCUIT BRK-120V FLUSH PMP INTERF	W8CBWLF	09FM05BKGR	CKT BRK 5A240VBLK/BEZ-GRAY/IBTN	FLUSH INF BX
CB37*	CIRCUIT BRK-MODULE CONTROL BOX	W8CBWJA	09FM05BKGR	CKT BRK 5A240VBLK/BEZ-GRAY/IBTN	MODULE C-BOX
CD	>>RELAY-TIME DELAY				
CDSDT	DELAY-3HOURS BETWEEN DISINFECT	W8CBWFS	09CA999924	TIMER,ATC UNIVERASL 24V50/60C	STM DISINF BX
CDTPR	DELAY-TUNNEL POWER	W8CBWFS	09CF001024	TDR F1S 2PDT 11PIN 24V60/50C	STM DISINF BX
CD02	DELAY-BLT COMPRT AT C-BOX LOADED	W8CBWLB	09CF001037	TDR F1S 2PDT 11PIN 120V60C	CONLO/WA BOX
CD1	DELAY-WATER DELAY #1	W8CBWJH	09CF001037	TDR F1S 2PDT 11PIN 120V60C	MODULE C-BOX
CD1N	DELAY-WASH LIFTER BYPASS VALVE	W8CBWZA	09CF007524	TDR F7.5S 2PDT 11PIN 24V50/60C	WASH FLOW BX
CD1N	DELAY-WASH LIFTER BYPASS VALVE	W8CBWZE	09CF007524	TDR F7.5S 2PDT 11PIN 24V50/60C	WASH FLOW BX
CD2	DELAY-WATER DELAY #2	W8CBWJH	09CF001037	TDR F1S 2PDT 11PIN 120V60C	MODULE C-BOX

COMPONENT PARTS LIST

<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>
CL	>>RELAY-LATCH				
CLDSDS	LATCH-CALL FOR DISINFECT	W8CBWFS	09CL2C-C24	RELAY-LATCH DPDT 24V 2 COIL	STM DISINF BX
CLFF	LATCH-FLOW NOT (DUAL BATH)	W8CBWFB	09CL2C-C37	RELAY-LATCH DPDT 120V 2-COIL	LAST MOD BOX
CLSC	LATCH-AUTOMATIC FORWARD COMMANDED	W8CBWLB	09CL2C-C37	RELAY-LATCH DPDT 120V 2-COIL	CONLOWA BOX
CP	>>PHOTOEYES				
CPLCB	PHOTOEYE-RECEIVER LOAD CHUTE	W8CBWLA	09RPE006B	PHOTOEYE RECEIVER 24/120V AC	LOAD CHUTE
CPLCB	PHOTOEYE-RECEIVER LOAD CHUTE	W8CBWLF	09RPE006B	PHOTOEYE RECEIVER 24/120V AC	LOAD CHUTE
CPLCC	PHOTOEYE-TRANSMITTER LOAD CHUTE	W8CBWLA	09RPE006A	PHOTOEYE EMITTER 24/120V AC	LOAD CHUTE
CPLCC	PHOTOEYE-TRANSMITTER LOAD CHUTE	W8CBWLF	09RPE006A	PHOTOEYE EMITTER 24/120V AC	LOAD CHUTE
CP01	PHOTOEYE-CBW END OF LOADING BELT	W8CBWLB	09RPE004	SENSOR DARK OPERATE AC N/O-OUT	CONLOWA BOX
CP02	PHOTOEYE-C-BOX END OF LOADING BLT	W8CBWLB	09RPE004	SENSOR DARK OPERATE AC N/O-OUT	CONLOWA BOX
CR	>>RELAY-PILOT OR CONTROL				
CRAB	RELAY-OK TO PASS EMPTY LOAD	W8CBWJA	09C024D37	4PDT "KH" 110/120V	STD I/O BOX
CRAE	RELAY-CCW DIRECTION	W8CBWDCB	09C024D37	4PDT "KH" 110/120V	INVERTER BOX
CRBE	RELAY-CW DIRECTION	W8CBWDCB	09C024D37	4PDT "KH" 110/120V	INVERTER BOX
CRCB*	RELAY-CIRCUIT BREAKER TRIPPED	W8CBWJA	09C024D37	4PDT "KH" 110/120V	MODULE C-BOX
CRCBF	RELAY-120VAC ON AT FLUSH BOX	W8CBWLA	09C024D37	4PDT "KH" 110/120V	FLUSH INF BOX
CBCBF	RELAY-120VAC ON AT FLUSH BOX	W8CBWLF	09C024D37	4PDT "KH" 110/120V	FLUSH INF BOX
CRCL	RELAY-LOADING BELT CIRCUIT BRK ON	W8CBWLB	09C024D37	4PDT "KH" 110/120V	CONLOWA BOX
CRCBS	RELAY-120VAC ON AT STD I/O BOX	W8CBWSA	09C024D37	4PDT "KH" 110/120V	STD I/O BOX
CRCBZ	RELAY-RINSE ZONE CIRCUIT BRK 24V	W8CBWZB	09C024D24	RELAY 4PDT DIFGLD 14PIN 24V	RINSE ZN BOX
CRCBZ	RELAY-RINSE ZONE CIRCUIT BRK 24V	W8CBWZG	09C024D24	RELAY 4PDT DIFGLD 14PIN 24V	RINSE ZN BOX
CRCBZ	RELAY-RINSE ZONE CIRCUIT BRK 24V	W8CBWZW	09C024D24	RELAY 4PDT DIFGLD 14PIN 24V	RINSE ZN BOX
CRCB1	RELAY-RINSE ZONE 120V CIRCUIT BRK	W8CBWZB	09C024D37	4PDT "KH" 110/120V	RINSE ZN BOX
CRCB1	RELAY-RINSE ZONE 120V CIRCUIT BRK	W8CBWZG	09C024D37	4PDT "KH" 110/120V	RINSE ZN BOX
CRCB1	RELAY-RINSE ZONE 120V CIRCUIT BRK	W8CBWZW	09C024D37	4PDT "KH" 110/120V	RINSE ZN BOX
CRCP2	RELAY-24VAC ON AT PRESS PMP BOX	W8CBWPA	09C024D24	RELAY 4PDT DIFGLD 14PIN 24V	PRESS PMP BOX
CRCWH	RELAY CONWA WEIGHT IS HIGH	W8CBWLC	09C024D37	4PDT "KH" 110/120V	CONWA C-BOX
CRCLW	RELAY-CONWA WEIGHT IS LOW	W8CBWLC	09C024D37	4PDT "KH" 110/120V	CONWA C-BOX
CRCWO	RELAY-CONWA WEIGHT IS OK	W8CBWLC	09C024D37	4PDT "KH" 110/120V	CONWA C-BOX
CRDOT	RELAY-OVERHEAD FLUSH ENABLED	W8CBWJE	09C024D37	4PDT "KH" 110/120V	MODULE C-BOX
CRDOT	RELAY-DRAIN OVERHEAD TANK	W8CBWJG	09C024D37	4PDT "KH" 110/120V	MODULE C-BOX
CRDR	RELAY-DRAIN MODULE	W8CBWFT	09C024D37	4PDT "KH" 110/120V	MODULE C-BOX

COMPONENT PARTS LIST

<u>COMPONENT</u>	<u>FUNCTION OF</u>	<u>WHERE TO FIND</u>	<u>MILNOR P/N</u>	<u>DESCRIPTION</u>	<u>LOCATION</u>
<u>NUMBER</u>	<u>THIS COMPONENT</u>	<u>THIS COMPONENT</u>			
CRDR	RELAY-DRAIN MODULE	W8CBWJD	09C024D37	4PDT "KH" 110/120V	MODULE C-BOX
CRDR	RELAY-DRAIN MODULE	W8CBWJE	09C024D37	4PDT "KH" 110/120V	MODULE C-BOX
CRDR	RELAY-DRAIN MODULE	W8CBWJG	09C024D37	4PDT "KH" 110/120V	MODULE C-BOX
CRDR	RELAY-DRAIN MODULE	W8CBWZD	09C024D37	4PDT "KH" 110/120V	MODULE C-BOX
CRDRM	RELAY-OVERHEAD DRAIN ENABLED	W8CBWJE	09C024D37	4PDT "KH" 110/120V	LOW VOLT BOX
CRDRM	RELAY-DRAIN MOD BY C-BIT OR MANUAL	W8CBWJG	09C024D37	4PDT "KH" 110/120V	LOW VOLT BOX
CRDRT	RELAY-DRAIN TANK	W8CBWFT	09C024D37	4PDT "KH" 110/120V	MODULE C-BOX
CRDRX	RELAY-DRAIN MODULE	W8CBWFT	09C024D37	4PDT "KH" 110/120V	MODULE C-BOX
CRESS	RELAY-TEST DRIVE	W8CBWDA	09C024D37	4PDT "KH" 110/120V	DRIVE CONTEXT
CREST	RELAY-TEST DRIVE	W8CBWDA	09C024D37	4PDT "KH" 110/120V	DRIVE CONTEXT
CREST	RELAY-TEST DRIVE	W8CBWDC	09C024D37	4PDT "KH" 110/120V	DRIVE CONTEXT
CREST	RELAY-TEST DRIVE	W8CBWDGB	09C024D37	4PDT "KH" 110/120V	DRIVE CONTEXT
CRFD	RELAY-DRAIN FLOW SPLITTER	W8CBWZD	09C024D37	4PDT "KH" 110/120V	MOD W/ FL SP
CRFD	RELAY-WASH WATER FLOW TO DRAIN	W8CBWZE	09C024D37	4PDT "KH" 110/120V	WASH FLOW BX
CRFD	RELAY-FLOW SPLITTER TO DRAIN	W8CBWZG	09C024D37	4PDT "KH" 110/120V	RINSE ZN BOX
CRFD	RELAY-FLOW SPLITTER TO DRAIN	W8CBWZW	09C024D37	4PDT "KH" 110/120V	RINSE ZN BOX
CRFE	RELAY-FLUSH ENHANCE	W8CBWLA	09C024D37	4PDT "KH" 110/120V	FLUSH INF BX
CRFE	RELAY-FLUSH ENHANCE	W8CBWLF	09C024D37	4PDT "KH" 110/120V	FLUSH INF BX
CRFLK	RELAY-FLUSH WATER INTO MODULE 1	W8CBWLA	09C024D37	4PDT "KH" 110/120V	FLUSH INF BX
CRFLK	RELAY-FLUSH WATER INTO MODULE 1	W8CBWLF	09C024D37	4PDT "KH" 110/120V	FLUSH INF BX
CRFL	RELAY-FLUSH LOAD INTO MODULE 1	W8CBWLA	09C024D37	4PDT "KH" 110/120V	FLUSH INF BX
CRFL	RELAY-FLUSH LOAD INTO MODULE 1	W8CBWLF	09C024D37	4PDT "KH" 110/120V	FLUSH INF BX
CRFL1	RELAY-LOW LVL SATISFIED REUSE TANK	W8CBWLG	09C024D37	4PDT "KH" 110/120V	FLUSH INF BX
CRHFF	RELAY-FILTER TANK HIGH LEVEL	W8CBWZB	09C024D24	RELAY 4PDT DIFGLD 14PIN 24V	RINSE ZN BOX
CRHFF	RELAY-FILTER TANK HIGH LEVEL	W8CBWZG	09C024D24	RELAY 4PDT DIFGLD 14PIN 24V	RINSE ZN BOX
CRHFF	RELAY-FILTER TANK HIGH LEVEL	W8CBWZW	09C024D24	RELAY 4PDT DIFGLD 14PIN 24V	RINSE ZN BOX
CRHL	RELAY-WASH WATER TANK HIGH LEVEL	W8CBWZA	09C024D24	RELAY 4PDT DIFGLD 14PIN 24V	WASH FLOW BX
CRHL	RELAY-WASH WATER TANK HIGH LEVEL	W8CBWZE	09C024D24	RELAY 4PDT DIFGLD 14PIN 24V	WASH FLOW BX
CRHN	RELAY-SOUND HORN	W8CBWSB	09C024D37	4PDT "KH" 110/120V	STD I/O BOX
CRHNS	RELAY-HOLD HORN CANCEL	W8CBWNA	09C024D37	4PDT "KH" 110/120V	MNTR CNTL BX
CRI	RELAY-SEC,ALTERNATE ROTATION ARC.	W8CBWSJ	09C024D37	4PDT "KH" 110/120V	RINSE ZN BOX
CRI 1	RELAY-INTERPRET ALLIED INF #1	W8CBWIA	09C024D37	4PDT "KH" 110/120V	INTERPRET BX
CRI 2	RELAY-INTERPRET ALLIED INF #2	W8CBWIA	09C024D37	4PDT "KH" 110/120V	INTERPRET BX

COMPONENT PARTS LIST

<u>COMPONENT</u>	<u>FUNCTION OF</u>	<u>WHERE TO FIND</u>	<u>MIL/NOR P/N</u>	<u>DESCRIPTION</u>	<u>LOCATION</u>
<u>NUMBER</u>	<u>THIS COMPONENT</u>	<u>THIS COMPONENT</u>			
CRI 3	RELAY-INTERPRET ALLIED INF #3	W8CBWIA	09C024D37	4PDT "KH" 110/120V	INTERPRET BX
CRI 4	RELAY-INTERPRET ALLIED INF #4	W8CBWIA	09C024D37	4PDT "KH" 110/120V	INTERPRET BX
CRI 5	RELAY-INTERPRET ALLIED INF #5	W8CBWIA	09C024D37	4PDT "KH" 110/120V	INTERPRET BX
CRI 6	RELAY-INTERPRET ALLIED INF #6	W8CBWIA	09C024D37	4PDT "KH" 110/120V	INTERPRET BX
CRI 7	RELAY-INTERPRET ALLIED INF #7	W8CBWIA	09C024D37	4PDT "KH" 110/120V	INTERPRET BX
CRI 8	RELAY-INTERPRET ALLIED INF #8	W8CBWIA	09C024D37	4PDT "KH" 110/120V	INTERPRET BX
CRI 9	RELAY-INTERPRET ALLIED INF #9	W8CBWIA	09C024D37	4PDT "KH" 110/120V	INTERPRET BX
CRIN1	RELAY-HIGH LEVEL 1	W8CBWFTDT	09C024D37	4PDT "KH" 110/120V	O/H DYE TANK
CRIN1	RELAY-SELECT HIGH LEVEL 1	W8CBWYT	09C024D37	4PDT "KH" 110/120V	O/H DYE TANK
CRIN2	RELAY-HIGH LEVEL 2	W8CBWFTDT	09C024D37	4PDT "KH" 110/120V	O/H DYE TANK
CRIN2	RELAY-SELECT HIGH LEVEL 2	W8CBWYT	09C024D37	4PDT "KH" 110/120V	O/H DYE TANK
CRIN3	RELAY-HIGH LEVEL 3	W8CBWFTDT	09C024D37	4PDT "KH" 110/120V	O/H DYE TANK
CRIN3	RELAY-SELECT HIGH LEVEL 3	W8CBWYT	09C024D37	4PDT "KH" 110/120V	O/H DYE TANK
CR10	RELAY-INTERPRET ALLIED INF #10	W8CBWIA	09C024D37	4PDT "KH" 110/120V	INTERPRET BX
CR11	RELAY-INTERPRET ALLIED INF #11	W8CBWIA	09C024D37	4PDT "KH" 110/120V	INTERPRET BX
CR12	RELAY-INTERPRET ALLIED INF #12	W8CBWIA	09C024D37	4PDT "KH" 110/120V	INTERPRET BX
CR13	RELAY-INTERPRET ALLIED INF #13	W8CBWIA	09C024D37	4PDT "KH" 110/120V	INTERPRET BX
CR14	RELAY-INTERPRET ALLIED INF #14	W8CBWIA	09C024D37	4PDT "KH" 110/120V	INTERPRET BX
CR15	RELAY-INTERPRET ALLIED INF #15	W8CBWIA	09C024D37	4PDT "KH" 110/120V	INTERPRET BX
CR16	RELAY-INTERPRET ALLIED INF #16	W8CBWIA	09C024D37	4PDT "KH" 110/120V	INTERPRET BX
CRLCB	RELAY-LOAD CHUTE BLOCKED	W8CBWLA	09C024D37	4PDT "KH" 110/120V	FLUSH INF BX
CRLCB	RELAY-LOAD CHUTE BLOCKED	W8CBWLF	09C024D37	4PDT "KH" 110/120V	FLUSH INF BX
CRLD1	RELAY-LONG DISTANCE INCOMPATABILITY	W8CBWFA	09C024D37	4PDT "KH" 110/120V	MODULE C-BOX
CRLD2	RELAY-LONG DISTANCE INCOMPATABILITY	W8CBWFA	09C024D37	4PDT "KH" 110/120V	MODULE C-BOX
CRLFS	RELAY-FILTER TANK LOW LEVEL	W8CBWZB	09C024D24	RELAY 4PDT DIFGLD 14PIN 24V	RINSE ZN BOX
CRLFS	RELAY-FILTER TANK LOW LEVEL	W8CBWZG	09C024D24	RELAY 4PDT DIFGLD 14PIN 24V	RINSE ZN BOX
CRLFS	RELAY-FILTER TANK LOW LEVEL	W8CBWZW	09C024D24	RELAY 4PDT DIFGLD 14PIN 24V	RINSE ZN BOX
CRLL	RELAY-LOW LVL SATISFIED MOD 1	W8CBWLG	09C024D37	4PDT "KH" 110/120V	FLUSH INF BX
CRLLA	RELAY-LOW LVL SATISFIED MOD 1	W8CBWLG	09C024D37	4PDT "KH" 110/120V	FLUSH INF BX
CRLX	RELAY-FAST FILL	W8CBWFN	09C024D37	4PDT "KH" 110/120V	MODULE C-BOX
CRNSA	RELAY-TUNNEL NOT IN HOLD	W8CBWZB	09C024D37	4PDT "KH" 110/120V	RINSE ZN BOX
CRNSA	RELAY-TUNNEL NOT IN HOLD	W8CBWZG	09C024D37	4PDT "KH" 110/120V	RINSE ZN BOX
CRNSA	RELAY-TUNNEL NOT IN HOLD	W8CBWZW	09C024D37	4PDT "KH" 110/120V	RINSE ZN BOX

COMPONENT PARTS LIST

<u>COMPONENT</u>	<u>FUNCTION OF</u>	<u>WHERE TO FIND</u>	<u>MILNOR PIN</u>	<u>DESCRIPTION</u>	<u>LOCATION</u>
<u>NUMBER</u>	<u>THIS COMPONENT</u>	<u>THIS COMPONENT</u>			
CRNS7A	RELAY-ALL TEMPS SATISFIED	W8CBWFS	09C024D37	4PDT "KH" 110/120V	STM DISINF BX
CRNS8	RELAY-CONWA TARING	W8CBWSB	09C024D37	4PDT "KH" 110/120V	STD I/O BOX
CRP	RELAY-WASH LIFTER NORMAL FLOW	W8CBWZA	09C024D24	RELAY 4PDT DIFGLD 14PIN 24V	WASH FLOW BX
CRP	RELAY-WASH LIFTER NORMAL FLOW	W8CBWZE	09C024D24	RELAY 4PDT DIFGLD 14PIN 24V	WASH FLOW BX
CRPPH	RELAY-PRESS PUMP HIGH LEVEL	W8CBWPA	09C024D37	4PDT "KH" 110/120V	PRESS PMP BOX
CRPPL	RELAY-PRESS PUMP LOW LEVEL	W8CBWPA	09C024D37	4PDT "KH" 110/120V	PRESS PMP BOX
CRRD	RELAY-REUSE TANK TO DRAIN	W8CBWRA	09C024D37	4PDT "KH" 110/120V	FIRST MOD BX
CRRDA	RELAY-REUSE TANK TO DRAIN	W8CBWZW	09C024D37	4PDT "KH" 110/120V	RINSE ZN BOX
CRRDB	RELAY-REUSE DRAIN AUX.	W8CBWRA	09C024D37	4PDT "KH" 110/120V	REUSE TK BOX
CRROT1	RELAY-RUN MOTORS ON ODD MODULES	W8CBWDA	09C024D37	4PDT "KH" 110/120V	DRIVE CONTBX
CRROT2	RELAY-RUN MOTORS ON EVEN MODULES	W8CBWDA	09C024D37	4PDT "KH" 110/120V	DRIVE CONTBX
CRSC	RELAY-START LOAD CONVEYOR	W8CBWLB	09C024D37	4PDT "KH" 110/120V	CONLOWA BOX
CRSCA	RELAY-LOADING BELT FORWARD	W8CBWLB	09C024D37	4PDT "KH" 110/120V	CONLOWA BOX
CRSDO	RELAY-START DISINFECT IN MODULE	W8CBWFS	09C024D24	RELAY 4PDT DIFGLD 14PIN 24V	MODULE C-BOX
CRSDO	RELAY-START DISINFECT IN MODULE	W8CBWJF	09C024D24	RELAY 4PDT DIFGLD 14PIN 24V	MODULE C-BOX
CRSDT	RELAY-HOLDS CIRCUIT INFOR TMR RST	W8CBWFS	09C024D24	RELAY 4PDT DIFGLD 14PIN 24V	STM DISINF BX
CRST1	RELAY-START LOAD CONVEYOR	W8CBWSA	09C024D37	4PDT "KH" 110/120V	STD OUTPT BX
CRST2	RELAY-START LOAD CONVEYOR	W8CBWSA	09C024D37	4PDT "KH" 110/120V	STD OUTPT BX
CRTHI	RELAY-HIGH LEVEL IN TANK	W8CBWFTDT	09C024D37	4PDT "KH" 110/120V	O/H DYE TANK
CRTHI	RELAY-HIGH LEVEL IN TANK	W8CBWYT	09C024D37	4PDT "KH" 110/120V	O/H DYE TANK
CRTL1	RELAY-LOW LEVEL IN TANK	W8CBWFTDT	09C024D37	4PDT "KH" 110/120V	O/H DYE TANK
CRTL1	RELAY-LOW LEVEL IN TANK	W8CBWYT	09C024D37	4PDT "KH" 110/120V	O/H DYE TANK
CRTP+	RELAY-TUNNEL POWER ENABLED	W8CBWNA	09C024D37	4PDT "KH" 110/120V	MNTR CNTL BX
CRTST	RELAY-TEMPERATURE SATISFIED	W8CBWJF	09C024D37	4PDT "KH" 110/120V	MODULE C-BOX
CRUN1	RELAY-CONWA WEIGHT 0	W8CBWLC	09C024D37	4PDT "KH" 110/120V	CONWA C-BOX
CRUN2	RELAY-CONWA WEIGHT 1	W8CBWLC	09C024D37	4PDT "KH" 110/120V	CONWA C-BOX
CRUN3	RELAY-LOCKOUT MANUAL OPERATION	W8CBWLB	09C024D37	4PDT "KH" 110/120V	CONLOWA BOX
CRUN8	RELAY-CBW IN HOLD	W8CBWSB	09C024D37	4PDT "KH" 110/120V	STD OUTPT BX
CRWA	RELAY-WASH CONTACTOR ON	W8CBWDA	09C024D37	4PDT "KH" 110/120V	DRIVE CONTBX
CRWDT	RELAY-CW ROTATION ERROR	W8CBWDA	09C024D37	4PDT "KH" 110/120V	DRIVE CONTBX
CRWDT	RELAY-CW ROTATION ERROR	W8CBWDC	09C024D37	4PDT "KH" 110/120V	DRIVE CONTBX
CRWDT	RELAY-CW ROTATION ERROR	W8CBWDCB	09C024D37	4PDT "KH" 110/120V	DRIVE CONTBX
CRWT	RELAY-CONWA IS TARING	W8CBWLC	09C024D37	4PDT "KH" 110/120V	CONWA C-BOX

COMPONENT PARTS LIST

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CR01	RELAY-BELT CMPRT AT CBW LOADED	W8CBWLB	09C024D37	4PDT "KH" 110/120V	CONLO/WA BOX
CR24	RELAY-WASH LIFTER 24V CIRCUIT	W8CBWZA	09C024D37	4PDT "KH" 110/120V	WASH FLOW BX
CR24	RELAY-WASH LIFTER 24V CIRCUIT	W8CBWZE	09C024D24	RELAY 4PDT DIFGLD 14PIN 24V	WASH FLOW BX
CR37	RELAY-WASH LIFTER 120V CIRCUIT	W8CBWZA	09C024D37	4PDT "KH" 110/120V	WASH FLOW BX
CR37	RELAY-WASH LIFTER 120V CIRCUIT	W8CBWZE	09C024D37	4PDT "KH" 110/120V	WASH FLOW BX
CRT	>>ELECTRONIC DISPLAYS				
CRT1	MONITOR-MENTOR	W8CBWNB	08MN075VGA	MONITOR SVGA 15" .28DP IN	MNTR C-BOX
LCDMD	DISPLAY-MENTOR DIAGNOSTIC (LCD)	W9CBW3ND	08B1ELC3T	BD:MENTOR DISPLAY BUFFER->TEST	MNTR C-BOX
CS	>>CONTACTOR-MOTOR STARTER				
CSAE	CONTACTOR-CCW ROTATION IN EVEN MOD	W8CBWDA	MESSAGE EW	SEE CSBE FOR PART NUMBER	DRIVE CONTBX
CSAE	CONTACTOR-CCW ROTATION IN EVEN MOD	W8CBWDC	MESSAGE EW	SEE CSBE FOR PART NUMBER	DRIVE CONTBX
CSAO	CONTACTOR-CCW ROTATION IN ODD MOD	W8CBWDA	MESSAGE EW	SEE CSBO FOR PART NUMBER	DRIVE CONTBX
CSBE	CONTACTOR-CW ROTATION IN EVEN MOD	W8CBWDA	09MR08B337	12A 3P REV+2N/C 120V5/6 IEC	DRIVE CONTBX
CSBE	CONTACTOR-CW ROTATION IN EVEN MOD	W8CBWDC	09MR08B337	12A 3P REV+2N/C 120V5/6 IEC	DRIVE CONTBX
CSBO	CONTACTOR-CW ROTATION IN ODD MOD	W8CBWDA	09MR08B337	12A 3P REV+2N/C 120V5/6 IEC	DRIVE CONTBX
CSCF	CONTACTOR-LOADING BELT FORWARD	W8CBWLB	MESSAGE EW	SEE CSCR FOR PART NUMBER	CONLO/WA BOX
CSCF	CONTACTOR-LOADING BELT FORWARD	W8CBWWA	MESSAGE EW	SEE CSCR FOR PART NUMBER	CONLO/WA BOX
CSCR	CONTACTOR-LOADING BELT FORWARD	W8CBWLB	09MR08D337	24A 3P REV+2N/C 120V5/6 IEC	CONLO/WA BOX
CSCR	CONTACTOR-LOADING BELT FORWARD	W8CBWWA	09MR08D337	24A 3P REV+2N/C 120V5/6 IEC	CONLO/WA BOX
CSI	CONTACTOR-INVERTER POWER	W8CBWDCB	MESSAGE EW	SEE CSI-1,-2,-3 FOR VOLTAGE++ OF MOD	INVERTER BOX
CSI-1	CONTACTOR-INVERTER POWER	W8CBWDCB	09MCM08N337	72A 3P MCS CONT NR 120V5/6	INVERTER BOX
CSI-2	CONTACTOR-INVERTER POWER	W8CBWDCB	09MCM08T337	110A 3P MCS CONT. NR 120V5/6	INVERTER BOX
CSI-3	CONTACTOR-INVERTER POWER	W8CBWDCB	09MCM08U337	180A 3P MCS CONT NR 120V5/6	INVERTER BOX
CSMIX	CONTACTOR-MIX MOTOR	W8CBWFTDT	09MCM08B337	12A 3P MCS CONT NR 120V5/6	RINSE ZN BOX
CSMIX	CONTACTOR-MIX MOTOR	W8CBWYT	09MCM08B337	12A 3P MCS CONT NR 120V5/6	RINSE ZN BOX
CSMP+	CONTACTOR-ENABLE MENTOR POWER	W8CBWNA	09MCM08D337	23A 3P MCS CONT NR 120V5/6	MNTR CNTL BX
CSMPF	CONTACTOR-FLUSH PUMP MOD 1	W8CBWLA	09MCM08B337	12A 3P MCS CONT NR 120V5/6	FLUSH INF BX
CSMPF	CONTACTOR-FLUSH PUMP MOD 1	W8CBWLF	09MCM08B337	12A 3P MCS CONT NR 120V5/6	FLUSH INF BX
CSNPF	CONTACTOR-2ND FLUSH PUMP	W8CBWLG	09MCM08B337	12A 3P MCS CONT NR 120V5/6	FLUSH INF BX
CSPF	CONTACTOR-FLUSH PUMP MOTOR	W8CBWWA	09MCM08B337	12A 3P MCS CONT NR 120V5/6	FLUSH INF BX
CSPP	CONTACTOR-PRESS RETURN WATER CONT	W8CBWPA	09MCM08D337	23A 3P MCS CONT NR 120V5/6	PRESS PMP BOX
CSPP	CONTACTOR-PRESS PUMP MOTOR	W8CBWWA	09MCM08D337	23A 3P MCS CONT NR 120V5/6	PRESS PMP BOX
CSTP+	CONTACTOR-ENABLE TUNNEL POWER	W8CBWNA	09MCM08D337	23A 3P MCS CONT NR 120V5/6	MNTR CNTL BX

COMPONENT PARTS LIST

<u>COMPONENT NUMBER</u>	<u>FUNCTION OF THIS COMPONENT</u>	<u>WHERE TO FIND THIS COMPONENT</u>	<u>MILNOR P/N</u>	<u>DESCRIPTION</u>	<u>LOCATION</u>
CSWA	CONTACTOR-CCW ROTATION	W8CBWDB	MESSAGE EW	SEE CSWC FOR PART NUMBER	MODULE C-BOX
CSWA	CONTACTOR-CCW ROTATION	W8CBWWA	MESSAGE EW	SEE CSWC FOR PART NUMBER	MODULE C-BOX
CSWC	CONTACTOR-CW ROTATION	W8CBWDB	09MC08D337	23A 3P MCS CONT NR 120V5/6	MODULE C-BOX
CSWC	CONTACTOR-CW ROTATION	W8CBWWA	09MC08D337	23A 3P MCS CONT NR 120V5/6	MODULE C-BOX
CSWFS	CONTACTOR-WASH ZONE PUMP MOTOR	W8CBWWA	09MC08B337	12A 3P MCS CONT NR 120V5/6	WASH ZN BOX
CSWFS	CONTACTOR-WASH ZONE PUMP MOTOR	W8CBWZA	09MC08B337	12A 3P MCS CONT NR 120V5/6	WASH ZN BOX
CSWFS	CONTACTOR-WASH ZONE PUMP MOTOR	W8CBWZE	09MC08B337	12A 3P MCS CONT NR 120V5/6	WASH ZN BOX
CSWZP	CONTACTOR-RINSE ZONE FLOW PUMP	W8CBWWA	09MC08B337	12A 3P MCS CONT NR 120V5/6	RINSE ZN BOX
CSWZP	CONTACTOR-RINSE ZONE FLOW PUMP	W8CBWZB	09MC08B337	12A 3P MCS CONT NR 120V5/6	RINSE ZN BOX
CSWZP	CONTACTOR-RINSE ZONE FLOW PUMP	W8CBWZG	09MC08B337	12A 3P MCS CONT NR 120V5/6	RINSE ZN BOX
CSWZP	CONTACTOR-RINSE ZONE FLOW PUMP	W8CBWZW	09MC08B337	12A 3P MCS CONT NR 120V5/6	RINSE ZN BOX
CSWZR	CONTACTOR-RINSE ZONE SURPLUS PUMP	W8CBWWA	09MC08B337	12A 3P MCS CONT NR 120V5/6	RINSE ZN BOX
CSWZR	CONTACTOR-RINSE ZONE SURPLUS PUMP	W8CBWZB	09MC08B337	12A 3P MCS CONT NR 120V5/6	RINSE ZN BOX
CSWZR	CONTACTOR-RINSE ZONE SURPLUS PUMP	W8CBWZF	09MC08B337	12A 3P MCS CONT NR 120V5/6	RINSE ZN BOX
CSWZR	CONTACTOR-RINSE ZONE SURPLUS PUMP	W8CBWZG	09MC08B337	12A 3P MCS CONT NR 120V5/6	RINSE ZN BOX
CSWZR	CONTACTOR-RINSE ZONE SURPLUS PUMP	W8CBWZW	09MC08B337	12A 3P MCS CONT NR 120V5/6	RINSE ZN BOX
EB	>>BUZZER OR AUDIBLE SIGNAL				
EBHNS	BUZZER-MACHINE IN HOLD	W8CBWNA	09H020	ALARM SONALERT 115V	MNTR CNTL PN
EBWT	BUZZER-CONWA IS TARING	W8CBWLC	09H020	ALARM SONALERT 115V	CONWA LITE BX
ED	>>ELECTRICAL DELAYS				
EDWDT	DELAY-CBW ROTATION ERROR	W8CBWDA	08TF030A37	ELECT ADJ RELAY .5-30 120V5/6	DRIVE CONTBX
EDWDT	DELAY-CBW ROTATION ERROR	W8CBWDC	08TF030A37	ELECT ADJ RELAY .5-30 120V5/6	DRIVE CONTBX
EDWDT	DELAY-CBW ROTATION ERROR	W8CBWDCB	08TF030A37	ELECT ADJ RELAY .5-30 120V5/6	DRIVE CONTBX
EF	>>FLASHERS				
EFL	FLASHER-CONWA IS TARING	W8CBWLC	08FL007537	FLASHER 120V 1AMP 75FL/MIN	CONWA LITE BX
EFM	>>COOLING FAN				
EFM1	FAN-INVERTER COOLING	W8CBWDCB	13AF100A37	FAN 92CFM115V60 NEWARK #90F6921	INVERTER BOX
EFM2	FAN-INVERTER COOLING	W8CBWDCB	13AF100A37	FAN 92CFM115V60 NEWARK #90F6921	INVERTER BOX
EL	>>LIGHT-PILOT OR INDICATOR				
ELCFA	LIGHT-AUTOMATIC STOP	W8CBWLB	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	CONLO/WA BOX
ELCP+	LIGHT-LOADING CIRCUIT ON	W8CBWLB	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	CONWA LITE BX
ELCWA	LIGHT-CONWA WEIGHT IS HIGH	W8CBWLC	09J070REC	LITE-STOP 4" RED LENS	CONWA LITE BX
ELCWL	LIGHT-CONWA WEIGHT IS LOW	W8CBWLC	09J070REC	LITE-STOP 4" RED LENS	CONWA LITE BX

COMPONENT PARTS LIST

<u>COMPONENT</u>	<u>FUNCTION OF</u>	<u>WHERE TO FIND</u>	<u>MILNOR P/N</u>	<u>DESCRIPTION</u>	<u>LOCATION</u>
<u>NUMBER</u>	<u>THIS COMPONENT</u>	<u>THIS COMPONENT</u>			
ELCWL	LENS-FOR ELCWL	W8CBWLC	09J070A12	LENS-AMBER 4" DIETZ A77-15000	CONWA LITE BX
ELCWO	LIGHT-CONWA WEIGHT IS O.K.	W8CBWLC	09J070REC	LITE-STOP 4" RED LENS	CONWA LITE BX
ELCWO	LENS-FOR ELCWO	W8CBWLC	09J070B12	LENS-BLUE 4" DIETZ #77-15000	CONWA LITE BX
ELFD	LIGHT-DRAIN FLOW SPLITTER	W8CBWZD	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	MOD W/ FL SP
ELFT	LIGHT-FLUSH TANK WATER VALVE ON	W8CBWLF	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	FLUSH INF BX
ELHNS	LIGHT-MACHINE IN HOLD	W8CBWNA	09J060WH37	LAMP 1/2" WHITE 120V TAB	MNTR CNTL BX
ELI	LIGHT-MANUAL FLUSH ENABLE	W8CBWZF	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	RINSE ZN BOX
ELMIX	LIGHT-MIX MOTOR ENABLED	W8CBWYT	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	RINSE ZN BOX
ELMP+	LIGHT-MENTOR POWER ENABLED	W8CBWNA	09J060G37	LAMP 1/2" GRN 125V IDI 1052QC5	MNTR CNTL PN
ELMPO	LIGHT-MENTOR POWER OFF	W8CBWNA	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	MNTR CNTL PN
ELNFS	LIGHT-WASH WATER PUMP ENABLE	W8CBWZA	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	WASH FLOW BX
ELNFS	LIGHT-WASH WATER PUMP ENABLE	W8CBWZE	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	WASH FLOW BX
ELNFT	LIGHT-WASH PUMP SHOULD HAVE RUN	W8CBWZA	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	WASH FLOW BX
ELNFT	LIGHT-WASH PUMP SHOULD HAVE RUN	W8CBWZE	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	WASH FLOW BX
ELPF	LIGHT-FLUSH PUMP MOD 1 RUNNING	W8CBWLA	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	FLUSH INF BX
ELPF	LIGHT-FLUSH PUMP MOD 1 RUNNING	W8CBWLF	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	FLUSH INF BX
ELPFN	LIGHT-FLUSH PUMP SHOULD HAVE RUN	W8CBWLA	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	FLUSH INF BX
ELPFN	LIGHT-FLUSH PUMP SHOULD HAVE RUN	W8CBWLF	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	FLUSH INF BX
ELPP	LIGHT-PRESS PUMP RUNNING	W8CBWPA	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	PRESS PMP BOX
ELPRS	LIGHT-SURPLUS TO REUSE PUMP RUNNING	W8CBWZB	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	RINSE ZN BOX
ELPRS	LIGHT-SURPLUS TO REUSE PUMP RUNNING	W8CBWZF	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	RINSE ZN BOX
ELPRS	LIGHT-SURPLUS TO REUSE PUMP RUNNING	W8CBWZG	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	RINSE ZN BOX
ELPRS	LIGHT-SURPLUS TO REUSE PUMP RUNNING	W8CBWZW	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	RINSE ZN BOX
ELPRT	LIGHT-SURPLUS TO REUSE PUMP NOT RUNNING	W8CBWZB	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	RINSE ZN BOX
ELPRT	LIGHT-SURPLUS TO REUSE PUMP NOT RUNNING	W8CBWZG	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	RINSE ZN BOX
ELPRT	LIGHT-SURPLUS TO REUSE PUMP NOT RUNNING	W8CBWZW	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	RINSE ZN BOX
ELPTT	LIGHT-PRESS PUMP DID NOT RUN	W8CBWPA	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	PRESS PMP BOX
ELPWT	LIGHT-RINSE ZONE PUMP DID NOT RUN	W8CBWZB	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	RINSE ZN BOX
ELPWT	LIGHT-RINSE ZONE PUMP DID NOT RUN	W8CBWZG	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	RINSE ZN BOX
ELPWT	LIGHT-RINSE ZONE PUMP DID NOT RUN	W8CBWZW	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	RINSE ZN BOX
ELPWZ	LIGHT-RINSE ZONE FLOW PUMP RUNNING	W8CBWZB	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	RINSE ZN BOX
ELPWZ	LIGHT-RINSE ZONE FLOW PUMP RUNNING	W8CBWZG	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	RINSE ZN BOX
ELPWZ	LIGHT-RINSE ZONE FLOW PUMP RUNNING	W8CBWZW	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	RINSE ZN BOX

COMPONENT PARTS LIST

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<u>COMPONENT NUMBER</u>	<u>FUNCTION OF THIS COMPONENT</u>	<u>WHERE TO FIND THIS COMPONENT</u>	<u>MILNOR P/N</u>	<u>DESCRIPTION</u>	<u>LOCATION</u>
ELRD	LIGHT-REUSE TANK TO DRAIN	W8CBWRA	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	FLUSH INF BX
ELSDS	LIGHT-DISINFECT TEMP NEEDED	W8CBWFS	09J060A24	LAMP 1/2" AMB IDI #1090QC3-28V	DISINFET SWPL
ELSDS	LIGHT-DISINFECT TEMP REACHED	W8CBWFS	09J060A24	LAMP 1/2" AMB IDI #1090QC3-28V	DISINFET SWPL
ELTP+	LIGHT-TUNNEL POWER ENABLED	W8CBWNA	09J060G37	LAMP 1/2" GRN 125V IDI 1052QC5	MNTR CNTL BX
ELTPO	LIGHT-TUNNEL POWER OFF	W8CBWNA	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	MNTR CNTL BX
ELVF1	LIGHT-MODULE 1 VALVE OPEN	W8CBWLA	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	FLUSH INF BX
ELVF1	LIGHT-MODULE 1 VALVE OPEN	W8CBWLF	09J060A37	LAMP 1/2" AMB 125V IDI 1050QC3	FLUSH INF BX
ELWT	LIGHT-CONWA IS TARING	W8CBWLC	09J070REC	LITE-STOP 4" RED LENS	CONWA LITE BX
ELWT	LENS FOR ELWT	W8CBWLC	09J070W12	LENS-WH 4" SIGNAL-STAT #9029W	CONWA LITE BX
EL2W	LIGHT-WASH LIFTER BYPASS FLOW	W8CBWZA	09J060A24	LAMP 1/2" AMB 125V IDI #1090QC3-28V	WASH FLOW BX
EL2W	LIGHT-WASH LIFTER BYPASS FLOW	W8CBWZE	09J060A24	LAMP 1/2" AMB 125V IDI #1090QC3-28V	WASH FLOW BX
ES	>>POWER SUPPLY-ELECTRONIC				
ESPS	POWER SUPPLY-MENTOR	W8CBWNB	08PSS3401T	30 WATT POWER SUPPLY TESTED	MNTR CNTL BX
ESPSO	POWER SUPPLY- MODULE BOARDS	W8CBWSGA	08PSS4801T	PWR SUP 115/230VAC 80WATTS TESTED	STD I/O BOX
ESPSO	POWER SUPPLY-MODULE BOARDS	W8CBWSGB	08PSS3401T	40 WATT POWER SUPPLY TESTED	STD I/O BOX
ET	>>THERMAL OVERLOAD DEVICES				
ETBM-H	OVERLOAD-BASKET ROTATION (HI VOLT)	W8CBWDB	09FTB010T	THERM OL (GFUS250) MAN:ADJ6-10	MODULE C-BOX
ETBM-L	OVERLOAD-BASKET ROTATION (LO VOLT)	W8CBWDB	09FTB016T	THERM OL (GFUS250) MANADJ10-16	MODULE C-BOX
ETDB	OVERLOAD-DYNAMIC BRAKE	W8CBWDF	09FC030BAA	CIRCUIT BREAKER 30A 380V	INVERTER BOX
ETMIX	OVERLOAD-MIX MOTOR	W8CBWFTDT	09FTB001T	THERM OL (GFUS250) MAN:ADJ1.6	RINSE ZN BOX
ETMIX	OVERLOAD-MIX MOTOR	W8CBWYT	09FTB001T	THERM OL (GFUS250) MAN:ADJ1.6	RINSE ZN BOX
EX	>>TRANSFORMERS				
EXCL	TRANSFORMER-120V TO 16VAC	W8CBWLC	09J002EBR	XFMR 120/240 PRI EBR 12VDC	CONWA C-BOX
EXPWZH	TRANSFORMER-120V CNTL >240V PRIMARY	W8CBWZC	09U200AAB	ZFMR 380-480V/240-120V 250VA	STD I/O BOX
EXPWZL	TRANSFORMER-120V CNTL <250V PRIMARY	W8CBWZC	09U250AT71	AUTOXFMR 208V-230V 250VA	STD I/O BOX
EXPWZ9	TRANSFORMER-120V CNTL 600V PRIMARY	W8CBWZC	09U251AA37	XFMR 600VPR/120VSEC/250SEC	STD I/O BOX
EX24	TRANSFORMER-120VAC TO 24VAC	W8CBWYT	09U27AB24	XFMR 120-240,110-220/24V 150VA	RINSE ZN BOX
EX24	TRANSFORMER-120VAC TO 24VAC	W8CBWZB	09U27AB24	XFMR 120-240,110-220/24V 150VA	RINSE ZN BOX
EX24	TRANSFORMER-120VAC TO 24VAC	W8CBWZG	09U27AB24	XFMR 120-240,110-220/24V 150VA	RINSE ZN BOX
EX24	TRANSFORMER-120VAC TO 24VAC	W8CBWZW	09U27AB24	XFMR 120-240,110-220/24V 150VA	RINSE ZN BOX
EX96	TRANSFORMER-600V TO 480V INVERTER	W8CBWWB	MESSAGE EW	SEE EX96-1 FOR UP TO 2SEC.-2 FOR 3 TO 4	INVERTER BOX
EX96-1	TRANSFORMER-600V TO 480V INV <3 SECT	W8CBWWB	09US030A	XFMR 1PH 3KVA 240/480X120/240	INVERTER BOX
EX96-2	TRANSFORMER-600V TO 480V INV >2 SECT	W8CBWWB	09US050A	XFMR 1PH 5KVA 240/280X120/240	INVERTER BOX

COMPONENT PARTS LIST

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INV	>>INVERTER				
INVD1	BRAKING MODULE-INVERTER	W8CBWDF	MESSAGE SO	SEE SPECIFIC COMPONENT+NAMEPLATE	INVERTER BOX
INVD2	BRAKING MODULE-INVERTER	W8CBWDF	MESSAGE SO	SEE SPECIFIC COMPONENT+NAMEPLATE	INVERTER BOX
KB	>>KEYBOARD-ELECTRONIC				
KEYBD	KEYPAD-PC	W8CBWNB	08PCME005K	KEYBOARD PS1 104KEY WIN95	MNTR CNTL BX
M	>>MOUSE				
MOUSE	MOUSE-PC	W8CBWNB	09PCME001M	MOUSE PS2 2BUTTON MICROSOFT	MNTR CNTL BX
MT	>>MOTORS				
MTBM	MOTOR-BASKET ROTATION	W8CBWDB	MESSAGE SO	SEE SPECIFIC COMPONENT+NAMEPLATE	MOD CONT SDE
MTMIX	MOTOR-MIXER O/H DYE FILL TANK	W8CBWFTDT	MESSAGE SO	SEE SPECIFIC COMPONENT+NAMEPLATE	O/H FILL TK
MTMIX	MOTOR-MIXER	W8CBWYT	MESSAGE SO	SEE SPECIFIC COMPONENT+NAMEPLATE	MOD CONT SDE
MTNPF	MOTOR-2ND FLUSH PUMP	W8CBWLG	MESSAGE SO	SEE SPECIFIC COMPONENT+NAMEPLATE	FLUSH PUMP
PS	>>POWER SUPPLY-ELECTRONIC				
PS24	POWER SUPPLY-24VDC SUPPLY	W8CBWSE	08PSL1B224	PWR SUP 100-240VAC TO 24VDC	STD I/O BOX
RES	>>INVERTER RESISTORS				
RES*	RESISTOR-DYNAMIC BRAKE	W8CBWDF	09MV020RET	RESISTOR 20 OHM 1000 WATT	INVERTER BOX
RP	>>PROXIMITY SWITCH				
RPXA	PROX SW-ROTATION COUNTER CW NORMAL	W8CBWSJ	09RPS30ADU	PRXSW QK CONN 30M NO-DC UNSHLD	1ST MOD RGT
RPX1	PROX SW-CW LEFT LOAD END	W8CBWSE	09RPS30ADU	PRXSW QK CONN 30M NO-DC UNSHLD	1ST MOD RGT
RPX2	PROX SW-CCW RIGHT LOAD END	W8CBWSE	09RPS30ADU	PRXSW QK CONN 30M NO-DC UNSHLD	1ST MOD LFT
RPX2	PROX SW-ROTATION COUNTER CW NORMAL	W8CBWSJ	09RPS30ADU	PRXSW QK CONN 30M NO-DC UNSHLD	1ST MOD RGT
RPX3	PROX SW-SAFETY RT DISCHARGE END	W8CBWSE	09RPS30ADU	PRXSW QK CONN 30M NO-DC UNSHLD	LAST MOD RGT
RPX4	PROX SW-TRANSFER LF DISCHARGE END	W8CBWSE	09RPS30ADU	PRXSW QK CONN 30M NO-DC UNSHLD	LAST MOD LFT
RPX5	PROX SW-ALIGN	W8CBWSE	09RPS30ADU	PRXSW QK CONN 30M NO-DC UNSHLD	1ST SECTION RT
RPX6	PROX SW-ALIGN	W8CBWSE	09RPS30ADU	PRXSW QK CONN 30M NO-DC UNSHLD	2ND SECTION RT
SH	>>SWITCH-HAND OPERATED				
SHCCA	SWITCH-GOODS/FORMULA ALPHA	W8CBWSF	09N041N	ROTSW 5-POLE 8-POSIT 5A125V	RMT SELECTOR
SHCCA	SWITCH-CUSTOMER SELECT ALPHA	W8CBWSH	09N041N	ROTSW 5-POLE 8-POSIT 5A125V	RMT SELECTOR
SHCCB	SWITCH-GOODS/FORMULA NUMERICAL 2	W8CBWSF	09N041N	ROTSW 5-POLE 8-POSIT 5A125V	RMT SELECTOR
SHCCB	SWITCH-CUSTOMER SELECT NUMERICAL 2	W8CBWSH	09N041N	ROTSW 5-POLE 8-POSIT 5A125V	RMT SELECTOR
SHCCN	SWITCH-GOODS/FORMULA NUMERICAL 1	W8CBWSF	09N041N	ROTSW 5-POLE 8-POSIT 5A125V	RMT SELECTOR
SHCCN	SWITCH-CUSTOMER SELECT NUMERICAL 1	W8CBWSH	09N041N	ROTSW 5-POLE 8-POSIT 5A125V	RMT SELECTOR
SHCMA	SWITCH-MASTER LOADING CIRCUIT	W8CBWLB	09N405M220	SWASS M2W 2NO	CONLO/WA C-BX

COMPONENT PARTS LIST

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SHCMA	SWITCH-MASTER LOADING CIRCUIT	W8CBWLD	09N405M220	SWASS M2W 2NO	CONLOWA C-BX
SHCME	SWITCH-O.K. TO PASS EMPTY LOADED	W8CBWLD	09N405M210	SWASS M2W 1NO	FLUSH INF BOX
SHCMO	SWITCH-LOADING BELT MODE SELECTOR	W8CBWLB	09N405M240	SWASS M2W 4NO	CONLOWA C-BX
SHCMO	SWITCH-LOADING BELT MODE SELECTOR	W8CBWLD	09N405M240	SWASS M2W 4NO	CONLOWA C-BX
SHDR	SWITCH-FLUSH/DRAIN/AUTOMATIC WKWR	W8CBWJD	09N405M211	SWASS M2W 1NO+1NC	MODULE C-BOX
SHDR	SWITCH-FLUSH/DRAIN/AUTOMATIC WKWR	W8CBWJE	09N405M211	SWASS M2W 1NO+1NC	MODULE C-BOX
SHDR	SWITCH-FLUSH/DRAIN/AUTOMATIC WKWR	W8CBWJG	09N405M211	SWASS M2W 1NO+1NC	MODULE C-BOX
SHDTF	SWITCH-ENABLE FLUSH WHEN DRAINING	W8CBWLF	09N405M210	SWASS M2W 1NO	FLUSH INF BOX
SHDTF	SWITCH-ENABLE TRICKLE FLOW	W8CBWRA	09N405M210	SWASS M2W 1NO	MOD CNT BOX
SHED2	SWITCH-EMERG STOP 1ST MOD RIGHT SIDE	W8CBWSD	09N505	SW ASSY EMER STOP	FIRST MOD RGT
SHED3	SWITCH-EMERG STOP 1ST MOD LEFT SIDE	W8CBWSD	09N505	SW ASSY EMER STOP	FIRST MOD LFT
SHED4	SWITCH-EMERG STOP LAST MOD LEFT SIDE	W8CBWSD	09N505	SW ASSY EMER STOP	LAST MOD LFT
SHED5	SWITCH-EMERG STOP LAST MOD RIGHT SIDE	W8CBWSD	09N505	SW ASSY EMER STOP	LAST MOD RGT
SHEST	SWITCH-TEST DRIVE	W8CBWDA	09N405S320	SWASS S3W 2NO	DRIVE CNT BOX
SHEST	SWITCH-TEST DRIVE	W8CBWDC	09N405S320	SWASS S3W 2NO	DRIVE CNT BOX
SHEST	SWITCH-TEST DRIVE	W8CBWDCB	09N405S320	SWASS S3W 2NO	DRIVE CNT BOX
SHFI	SWITCH-ENABLE FLUSH VALVE	W8CBWLA	09N405PB10	SWASS PBBK 1NO	FLUSH INF BOX
SHFLT	SWITCH-ENABLE PUMP WHEN DRAINING	W8CBWLF	09N405M210	SWASS M2W 1NO	FLUSH INF BOX
SHFLT	SWITCH-ENABLE PUMP WHEN DRAINING	W8CBWRA	09N405M210	SWASS M2W 1NO	FLUSH INF BOX
SHFR	SWITCH-LOADING BELT DIRECTION	W8CBWLB	09N405S320	SWASS S3W 2NO	CONLOWA C-BX
SHNS	SWITCH-CANCEL HORN	W8CBWNA	09N405PY10	SWASS PB YELLOW IND	MNTR CNTL PN
SHMD	SWITCH-DISCONNECT MOTOR	W8CBWSD	09N042204	ROTARY DISCON 10A 600V 2POS 4P	CONLOWA C-BX
SHMD	SWITCH-DISCONNECT MOTOR	W8CBWWA	09N042204	ROTARY DISCON 10A 600V 2POS 4P	CONLOWA C-BX
SHMPO	SWITCH-MENTOR POWER OFF	W8CBWNA	09N405PR01	SWASS PBRD 1NC	MNTR CNTL PN
SHMPO	SWITCH-MENTOR POWER OFF	W8CBWNC	09N405PR01	SWASS PBRD 1NC	MNTR CNTL PN
SHMP1	SWITCH-MENTOR POWER ON	W8CBWNA	09N405PB01	SWASS PB BLUE 1NC	MNTR CNTL PN
SHNS5	SWITCH-TUNNEL IN HOLD	W8CBWNC	09N405M210	SWASS M2W 1NO	MNTR CNTL PN
SHO1	SWITCH-TEST OILER	W8CBWSA	09N405M211	SWASS M2W 1NO+1NC	STD I/O BOX
SHPF	SWITCH-FLUSH PUMP OFF/AUTOMATIC	W8CBWLA	09N405M210	SWASS M2W 1NO	FLUSH INF BOX
SHPF	SWITCH-FLUSH PUMP OFF/AUTOMATIC	W8CBWLF	09N405M210	SWASS M2W 1NO	FLUSH INF BOX
SHPP	SWITCH-PRESS PUMP OFF/AUTOMATIC	W8CBWPA	09N405M210	SWASS M2W 1NO	PRESS PMP BX
SHPRS	SWITCH-RINSE ZONE SURPLUS PUMP	W8CBWZB	09N405M210	SWASS M2W 1NO	RINSE ZN BOX
SHPRS	SWITCH-RINSE ZONE SURPLUS PUMP	W8CBWZG	09N405M210	SWASS M2W 1NO	RINSE ZN BOX

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SHPRS	SWITCH-RINSE ZONE SURPLUS PUMP	W8CBWZW	09N405M210	SWASS M2W 1NO	RINSE ZN BOX
SHPWZ	SWITCH-RINSE ZONE PUMP	W8CBWZB	09N405M210	SWASS M2W 1NO	RINSE ZN BOX
SHPWZ	SWITCH-RINSE ZONE PUMP	W8CBWZG	09N405M210	SWASS M2W 1NO	RINSE ZN BOX
SHPWZ	SWITCH-RINSE ZONE PUMP	W8CBWZW	09N405M210	SWASS M2W 1NO	RINSE ZN BOX
SHRC	SWITCH-RESET COUNTERS	W9CBW3ND	09N405PB10	SWASS P8BK 1NO	MNTR CNTL PN
SHSC	SWITCH-LOAD CONVEYOR ON/OFF	W8CBWNC	09N405M211	SWASS M2W 1NO+1NC	MNTR CNTL PN
SHSDL	SWITCH-MANUAL STM DISINFECT (KEY OPER)	W8CBWFS	09N127C	KEYSW SPST 7A120VAC SCREW TERM	STM DISINFBX
SHSDT	SWITCH-STEAM DISINFECT TEST	W8CBWFS	09N405M320	SWASS M3W 2NO	STM DISINFBX
SHSG	SWITCH-LOAD CHUTE EYE BLOCK TOO LG OK	W8CBWNC	MESSAGE MS	REMOTE MOUNTED SWITCH BY OTHERS	REMOTE MOUNT
SHTPO	SWITCH-TUNNEL POWER OFF	W8CBWNA	09N505	SW ASSY EMER STOP	MNTR CNTL PN
SHTP1	SWITCH-TUNNEL POWER ON	W8CBWNA	09N405PG10	SWASS PBGN 1NO	MNTR CNTL PN
SHTST	SWITCH-DISABLE STM AFTER TEMP SATIF	W8CBWJF	09N405M210	SWASS M2W 1NO	STM DISINFBX
SHWFS	SWITCH-WASH WATER FL LIFTER PUMP	W8CBWZA	09N405M210	SWASS M2W 1NO	WASH FLOW BX
SHWFS	SWITCH-WASH WATER FL LIFTER PUMP	W8CBWZE	09N405M210	SWASS M2W 1NO	WASH FLOW BX
SH1	SWITCH-ENABLE MANUAL FLUSH	W8CBWZF	09N405M211	SWASS M2W 1NO+1NC	RINSE ZN BOX
SK	>>SWITCH-KEYLOCK				
SKEST	SWITCH-TEST DRIVE	W8CBWDA	09N127C	KEYSW SPST 7A120VAC SCREW TERM	DRIVE CNT BOX
SKEST	SWITCH-TEST DRIVE	W8CBWDC	09N127C	KEYSW SPST 7A120VAC SCREW TERM	DRIVE CNT BOX
SKEST	SWITCH-TEST DRIVE	W8CBWDCB	09N127C	KEYSW SPST 7A120VAC SCREW TERM	STD I/O BOX
SL	>>SWITCH-LEVEL OPERATED				
SLFHI	LEVEL SW-HIGH LEVEL IN FLUSH TANK	W8CBWLA	09R014A	MINI-SW SPDT STAKON #V15G1C26	FLUSH TANK
SLFHI	LEVEL SW-HIGH LEVEL IN FLUSH TANK	W8CBWLF	09R014A	MINI-SW SPDT STAKON #V15G1C26	FLUSH TANK
SLFHS	LEVEL SW-HIGH LEVEL IN FILTER TANK	W8CBWZB	09R014A	MINI-SW SPDT STAKON #V15G1C26	WEDGE WIRE TK
SLFHS	LEVEL SW-HIGH LEVEL IN FILTER TANK	W8CBWZG	09R014A	MINI-SW SPDT STAKON #V15G1C26	WEDGE WIRE TK
SLFHS	LEVEL SW-HIGH LEVEL IN FILTER TANK	W8CBWZW	09R014A	MINI-SW SPDT STAKON #V15G1C26	WEDGE WIRE TK
SLFLI	LEVEL SW-LOW LEVEL IN FLUSH TANK	W8CBWLA	09R014A	MINI-SW SPDT STAKON #V15G1C26	FLUSH TANK
SLFLI	LEVEL SW-LOW LEVEL IN FLUSH TANK	W8CBWLF	09R014A	MINI-SW SPDT STAKON #V15G1C26	FLUSH TANK
SLFLI	LEVEL SW-LOW LEVEL IN FLUSH TANK	W8CBWLG	09R014A	MINI-SW SPDT STAKON #V15G1C26	FLUSH TANK
SLLFS	LEVEL SW-LOW LEVEL FILTER TANK	W8CBWZB	09R014A	MINI-SW SPDT STAKON #V15G1C26	WEDGE WIRE TK
SLLFS	LEVEL SW-LOW LEVEL FILTER TANK	W8CBWZG	09R014A	MINI-SW SPDT STAKON #V15G1C26	WEDGE WIRE TK
SLLFS	LEVEL SW-LOW LEVEL FILTER TANK	W8CBWZW	09R014A	MINI-SW SPDT STAKON #V15G1C26	WEDGE WIRE TK
SLLH	LEVEL SW-HIGH LEVEL IN WASH WATER TK	W8CBWZA	09R014A	MINI-SW SPDT STAKON #V15G1C26	WASH WATER TK
SLLH	LEVEL SW-HIGH LEVEL IN WASH WATER TK	W8CBWZE	09R014A	MINI-SW SPDT STAKON #V15G1C26	WASH WATER TK

COMPONENT PARTS LIST

<u>COMPONENT NUMBER</u>	<u>FUNCTION OF THIS COMPONENT</u>	<u>WHERE TO FIND THIS COMPONENT</u>	<u>MILNOR P/N</u>	<u>DESCRIPTION</u>	<u>LOCATION</u>
SLLL	LEVEL SW-LOW LEVEL IN WASH WATER TK	W8CBWZA	09R014A	MINI-SW SPDT STAKON #V15G1C26	WASH WATER TK
SLLL	LEVEL SW-LOW LEVEL IN WASH WATER TK	W8CBWZE	09R014A	MINI-SW SPDT STAKON #V15G1C26	WASH WATER TK
SLLL	LEVEL SW-LOW LEVEL IN MODULE	W8CBWLG	09R014A	MINI-SW SPDT STAKON #V15G1C26	MOD FLOAT TUBE
SLPPH	LEVEL SW-HIGH LEVEL IN PRESS PUMP TK	W8CBWPA	09R014A	MINI-SW SPDT STAKON #V15G1C26	PRESS TANK
SLPPL	LEVEL SW-LOW LEVEL IN PRESS PUMP TK	W8CBWPA	09R014A	MINI-SW SPDT STAKON #V15G1C26	PRESS TANK
SLTH1	LEVEL SW-HIGH LEVEL IN FILL TANK	W8CBWFT	09R014A	MINI-SW SPDT STAKON #V15G1C26	FILL TANK
SLTH1	LEVEL SW-HIGH LEVEL IN FILL TANK	W8CBWFTDT	09R014A	MINI-SW SPDT STAKON #V15G1C26	FILL TANK
SLTH1	LEVEL SW-HIGH LEVEL IN FILL TANK	W8CBWYT	09R014A	MINI-SW SPDT STAKON #V15G1C26	FILL TANK
SLTH2	LEVEL SW-HIGH LEVEL IN FILL TANK	W8CBWFTDT	09R014WS	MICROSW SPDT STAKON V3-2101-D8	FILL TANK
SLTH2	LEVEL SW-HIGH LEVEL IN FILL TANK	W8CBWYT	09R014WS	MICROSW SPDT STAKON V3-2101-D8	FILL TANK
SLTH3	LEVEL SW-HIGH LEVEL IN FILL TANK	W8CBWFTDT	09R014A	MINI-SW SPDT STAKON #V15G1C26	FILL TANK
SLTH3	LEVEL SW-HIGH LEVEL IN FILL TANK	W8CBWYT	09R014A	MINI-SW SPDT STAKON #V15G1C26	FILL TANK
SLTL1	LEVEL SW-LOW LEVEL IN FILL TANK	W8CBWFT	09R014A	MINI-SW SPDT STAKON #V15G1C26	FILL TANK
SLTL1	LEVEL SW-LOW LEVEL IN FILL TANK	W8CBWFTDT	09R014A	MINI-SW SPDT STAKON #V15G1C26	FILL TANK
SLTL1	LEVEL SW-LOW LEVEL IN FILL TANK	W8CBWYT	09R014A	MINI-SW SPDT STAKON #V15G1C26	FILL TANK
SM	>>SWITCH-MECHANICAL OPERATED				
SMPD1	SWITCH-AUTOMATIC LOAD BELT STOP 1	W8CBWLB	09RLS002	MICROSW 1-NO/NC MOMENTARY	CONLO/CONWA
SMPD2	SWITCH-AUTOMATIC LOAD BELT STOP 2	W8CBWLB	09RLS002	MICROSW 1-NO/NC MOMENTARY	CONLO/CONWA
SMSOL	SWITCH-EMERGENCY STOP CABLE LEFT	W8CBWLB	09R014A	MINI-SW SPDT STAKON #V15G1C26	CONLO/CONWA
SMSOL	SWITCH-EMERGENCY STOP CABLE LEFT	W8CBWSD	09R014A	MINI-SW SPDT STAKON #V15G1C26	CONLO/CONWA
SMSOR	SWITCH-EMERGENCY STOP CABLE RIGHT	W8CBWLB	09R014A	MINI-SW SPDT STAKON #V15G1C26	CONLO/CONWA
SMSOR	SWITCH-EMERGENCY STOP CABLE RIGHT	W8CBWSD	09R014A	MINI-SW SPDT STAKON #V15G1C26	CONLO/CONWA
SP	>>SWITCH-PRESSURE OPERATED				
SPWZP	PRESSURE SW-RINSE ZONE AIR LOW	W8CBWZA	09N082B10	PRESSW NASON CLOSE @ 10 LB.	RINSE ZN BOX
SPWZP	PRESSURE SW-RINSE ZONE AIR LOW	W8CBWZB	09N082B10	PRESSW NASON CLOSE @ 10 LB.	RINSE ZN BOX
SPWZP	PRESSURE SW-RINSE ZONE AIR LOW	W8CBWZE	09N082B10	PRESSW NASON CLOSE @ 10 LB.	RINSE ZN BOX
SPWZP	PRESSURE SW-RINSE ZONE AIR LOW	W8CBWZG	09N082B10	PRESSW NASON CLOSE @ 10 LB.	RINSE ZN BOX
SPWZP	PRESSURE SW-RINSE ZONE AIR LOW	W8CBWZW	09N082B10	PRESSW NASON CLOSE @ 10 LB.	RINSE ZN BOX
ST	>>SWITCH-TEMPERATURE OPERATED				
STTH1	SWITCH-THERMSTAT/THERMOMETER	W8CBWJF	30R00621	STORK COMBISTAT 2-POLE 70-230F	STM DISINFBX
VE	>>VALVE-ELECTRIC OPERATED				
VEALT	VALVE-ALTERNATE WATER SOURCE	W8CBWFN	96R301B37	1/8" AIRPILOT 3W NC 120V/50/60	MOD VALVE BOX
VEALT	VALVE-ALTERNATE WATER SOURCE	W8CBWZD	96R301B37	1/8" AIRPILOT 3W NC 120V/50/60	MOD VALVE BOX

COMPONENT PARTS LIST

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VECT	VALVE-COLD WATER PILOT	W8CBWFT	96R301B37	1/8"AIRPILOT 3W NC 120V50/60	MOD VALVE BOX
VEDO	VALVE-DRAIN OVERHEAD FILL TANK	W8CBWJE	96R301B37	1/8"AIRPILOT 3W NC 120V50/60	MOD VALVE BOX
VEDO	VALVE-DRAIN OVERHEAD FILL TANK	W8CBWJG	96R301B37	1/8"AIRPILOT 3W NC 120V50/60	MOD VALVE BOX
VEDRT	VALVE-DRAIN FILL TANK	W8CBWFT	96R301B37	1/8"AIRPILOT 3W NC 120V50/60	MOD VALVE BOX
VEEF	VALVE-ENABLE FLUSH WATER TO REUSE	W8CBWRA	96R301B37	1/8"AIRPILOT 3W NC 120V50/60	MOD VALVE BOX
VEERT	VALVE-ENABLE REUSE TANK	W8CBWLG	96R301B37	1/8"AIRPILOT 3W NC 120V50/60	MOD VALVE BOX
VEFD	VALVE-DRAIN FLOW SPLITTER	W8CBWZD	96R301B37	1/8"AIRPILOT 3W NC 120V50/60	MOD VALVE BOX
VEFH	VALVE-FLUSH MOD HOUSE AND FAST FILL	W8CBWJG	96R301B37	1/8"AIRPILOT 3W NC 120V50/60	MOD VALVE BOX
VEFL	VALVE-FLUSH AND FAST FILL	W8CBWJD	96R301B37	1/8"AIRPILOT 3W NC 120V50/60	MOD VALVE BOX
VEFL	VALVE-FLUSH AND FAST FILL	W8CBWJE	96R301B37	1/8"AIRPILOT 3W NC 120V50/60	MOD VALVE BOX
VEFL	VALVE-FLUSH AND FAST FILL	W8CBWJG	96R301B37	1/8"AIRPILOT 3W NC 120V50/60	MOD VALVE BOX
VEFN	VALVE-FLOW NOT (NC)	W8CBWFB	96R301B37	1/8"AIRPILOT 3W NC 120V50/60	MOD VALVE BOX
VEFN	VALVE-FLOW NOT (NC)	W8CBWFN	96R301B37	1/8"AIRPILOT 3W NC 120V50/60	MOD VALVE BOX
VEFN1	VALVE-FLOW NOT (NO)	W8CBWFB	96R301B37	1/8"AIRPILOT 3W NC 120V50/60	MOD VALVE BOX
VEFN1	VALVE-FLOW NOT (NO)	W8CBWFN	96R301B37	1/8"AIRPILOT 3W NC 120V50/60	MOD VALVE BOX
VEFO	VALVE-FLUSH OVERHEAD TANK	W8CBWJE	96R301B37	1/8"AIRPILOT 3W NC 120V50/60	MOD VALVE BOX
VEFO	VALVE-FLUSH OVERHEAD TANK	W8CBWJG	96R301B37	1/8"AIRPILOT 3W NC 120V50/60	MOD VALVE BOX
VEFT	VALVE-FLUSH TANK WATER INLET	W8CBWLA	AVA030237	1/8"NC120VASCO AIRVAL+MTG HWD	FLUSH INF BX
VEFT	VALVE-FLUSH TANK WATER INLET	W8CBWLF	AVA030237	1/8"NC120VASCO AIRVAL+MTG HWD	FLUSH INF BX
VEFW	VALVE-FRESH WATER	W8CBWJH	96R301B37	1/8"AIRPILOT 3W NC 120V50/60	MOD VALVE BOX
VEF1	VALVE-MODULE 1 VALVE INLET	W8CBWLA	AVA030237	1/8"NC120VASCO AIRVAL+MTG HWD	FLUSH INF BX
VEF1	VALVE-MODULE 1 VALVE INLET	W8CBWLF	AVA030237	1/8"NC120VASCO AIRVAL+MTG HWD	FLUSH INF BX
VEHT	VALVE-HOT WATER PILOT	W8CBWFT	96R301B37	1/8"AIRPILOT 3W NC 120V50/60	MOD VALVE BOX
VENPF	VALVE-ENABLE FIRST MODULE	W8CBWLG	AVA030237	1/8"NC120VASCO AIRVAL+MTG HWD	FLUSH INF BX
VEO1	VALVE-OILER	W8CBWSA	96TDC2AA37	1/2" N/C 2WAY 120V50/60C VALVE	TOP 1ST MODULE
VERD	VALVE-REUSE TANK TO DRAIN N/O	W8CBWRA	96R302B37	1/8"AIRPILOT 3W NO 120V50/60	MOD VALVE BOX
VESBL	VALVE-DISABLE FLOW IN LAST MODULE	W8CBWFB	96R301B37	1/8"AIRPILOT 3W NC 120V50/60	MOD VALVE BOX
VESB2	VALVE-ENABLE FLOW IN 2ND TO LAST	W8CBWFB	96R301B37	1/8"AIRPILOT 3W NC 120V50/60	MOD VALVE BOX
VESTM	VALVE-STEAM DISINFECT	W8CBWJF	96R301B37	1/8"AIRPILOT 3W NC 120V50/60	MOD VALVE BOX
VESTT	VALVE-STEAM PILOT	W8CBWFT	96R301B37	1/8"AIRPILOT 3W NC 120V50/60	MOD VALVE BOX
VETF	VALVE-TRICKLE FLOW	W8CBWRA	96R301B37	1/8"AIRPILOT 3W NC 120V50/60	MOD VALVE BOX
VEWFS	VALVE-PUMP DISCHARGE OPEN	W8CBWZA	AVA030237	1/8"NC120VASCO AIRVAL+MTG HWD	WASH FLOW BX
VEWFS	VALVE-PUMP DISCHARGE OPEN	W8CBWZE	AVA030237	1/8"NC120VASCO AIRVAL+MTG HWD	WASH FLOW BX

COMPONENT PARTS LIST

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VEWZP	VALVE-PUMP DISCHARGE OPEN	W8CBWZB	AVA030237	1/8"NC120VASCO AIRVAL+MTG HWD	WASH FLOW BX
VEWZP	VALVE-PUMP DISCHARGE OPEN	W8CBWZG	AVA030237	1/8"NC120VASCO AIRVAL+MTG HWD	WASH FLOW BX
VEWZP	VALVE-PUMP DISCHARGE OPEN	W8CBWZW	AVA030237	1/8"NC120VASCO AIRVAL+MTG HWD	WASH FLOW BX
VEXYZ	VALVE-ALTERNATE WATER FOR 2ND PUMP	W8CBWLG	AVA030237	1/8"NC120VASCO AIRVAL+MTG HWD	FLUSH INF BX
VE2W	VALVE-WASH LIFTER BYPASS FLOW	W8CBWZA	AVA030224	1/8"NC24V ASCO AIRVAL+MTG HWD	WASH FLOW BX
VE2W	VALVE-WASH LIFTER BYPASS FLOW	W8CBWZE	AVA030224	1/8"NC24V ASCO AIRVAL+MTG HWD	WASH FLOW BX
WF	>>METER-WATER				
WFM-*	METER-WATER FLOW	W8CBWJJ	30F515	FLOW SENSOR SIGNET P51530-P0	WATER INLET
ZF	>>RECTIFIER				
ZFWA	RECTIFIER-WEIGHT IS HIGH	W8CBWLC	09A020EBR	RECTIFIER (EBR) 15A/600PIV	CONWA LIGHTS
ZFWL	RECTIFIER-WEIGHT IS LOW	W8CBWLC	09A020EBR	RECTIFIER (EBR) 15A/600PIV	CONWA LIGHTS
ZFWO	RECTIFIER-WEIGHT IS O.K.	W8CBWLC	09A020EBR	RECTIFIER (EBR) 15A/600PIV	CONWA LIGHTS
ZFWT	RECTIFIER-CONWA IS TARING	W8CBWLC	09A020EBR	RECTIFIER (EBR) 15A/600PIV	CONWA LIGHTS
ZS	>>LOAD CELL				
ZSCW	LOAD CELL-CONWA	W8CBWNB	30L2005	LOADCELL	UNDER CONWA

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, FOB our factory. 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.

ANY SALE OR FURNISHING OF ANY EQUIPMENT BY MILNOR IS MADE ONLY UPON THE EXPRESS UNDERSTANDING THAT MILNOR MAKES NO EXPRESSED OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR USE OR PURPOSE OR ANY OTHER WARRANTY IMPLIED BY LAW INCLUDING BUT NOT LIMITED TO REDHIBITION. MILNOR WILL NOT BE RESPONSIBLE FOR ANY COSTS OR DAMAGES ACTUALLY INCURRED OR REQUIRED AS A RESULT OF: THE FAILURE OF ANY OTHER PERSON OR ENTITY TO PERFORM ITS RESPONSIBILITIES, FIRE OR OTHER HAZARD, ACCIDENT, IMPROPER STORAGE, MIS-USE, NEGLIGENCE, POWER OR ENVIRONMENTAL CONTROL MALFUNCTIONS, DAMAGE FROM LIQUIDS, OR ANY OTHER CAUSE BEYOND THE NORMAL RANGE OF USE. REGARDLESS OF HOW CAUSED, IN NO EVENT SHALL MILNOR BE LIABLE FOR SPECIAL, INDIRECT, PUNITIVE, LIQUIDATED, OR CONSEQUENTIAL COSTS OR DAMAGES, OR ANY COSTS OR DAMAGES WHATSOEVER WHICH EXCEED THE PRICE PAID TO MILNOR FOR THE EQUIPMENT IT SELLS OR FURNISHES.

THE PROVISIONS ON THIS PAGE REPRESENT THE ONLY WARRANTY FROM MILNOR AND NO OTHER WARRANTY OR CONDITIONS, STATUTORY OR OTHERWISE, SHALL BE IMPLIED.

WE NEITHER ASSUME, NOR AUTHORIZE ANY EMPLOYEE OR OTHER PERSON TO ASSUME FOR US, ANY OTHER RESPONSIBILITY AND/OR LIABILITY IN CONNECTION WITH THE SALE OR FURNISHING OF OUR EQUIPMENT TO ANY BUYER.

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 —

Safety—Continuous Batch Washer

1. General Safety Requirements—Vital Information for Management Personnel [Document BIUUUS04]

Incorrect installation, neglected preventive maintenance, abuse, and/or improper repairs, or changes to the machine can cause unsafe operation and personal injuries, such as multiple fractures, amputations, or death. The owner or his selected representative (owner/user) is responsible for understanding and ensuring the proper operation and maintenance of the machine. The owner/user must familiarize himself with the contents of all machine instruction manuals. The owner/user should direct any questions about these instructions to a Milnor® dealer or the Milnor® Service department.

Most regulatory authorities (including OSHA in the USA and CE in Europe) hold the owner/user ultimately responsible for maintaining a safe working environment. Therefore, the owner/user must do or ensure the following:

- recognize all foreseeable safety hazards within his facility and take actions to protect his personnel, equipment, and facility;
- work equipment is suitable, properly adapted, can be used without risks to health or safety, and is adequately maintained;
- where specific hazards are likely to be involved, access to the equipment is restricted to those employees given the task of using it;
- only specifically designated workers carry out repairs, modifications, maintenance, or servicing;
- information, instruction, and training is provided;
- workers and/or their representatives are consulted.

Work equipment must comply with the requirements listed below. The owner/user must verify that installation and maintenance of equipment is performed in such a way as to support these requirements:

- control devices must be visible, identifiable, and marked; be located outside dangerous zones; and not give rise to a hazard due to unintentional operation;
- control systems must be safe and breakdown/damage must not result in danger;
- work equipment is to be stabilized;
- protection against rupture or disintegration of work equipment;
- guarding, to prevent access to danger zones or to stop movements of dangerous parts before the danger zones are reached. Guards to be robust; not give rise to any additional hazards; not be easily removed or rendered inoperative; situated at a sufficient distance from the danger zone; not restrict view of operating cycle; allow fitting, replacing, or maintenance by restricting access to relevant area and without removal of guard/protection device;
- suitable lighting for working and maintenance areas;
- maintenance to be possible when work equipment is shut down. If not possible, then protection measures to be carried out outside danger zones;
- work equipment must be appropriate for preventing the risk of fire or overheating; discharges of gas, dust, liquid, vapor, other substances; explosion of the equipment or substances in it.

- 1.1. Laundry Facility**—Provide a supporting floor that is strong and rigid enough to support—with a reasonable safety factor and without undue or objectionable deflection—the weight of the fully loaded machine and the forces transmitted by it during operation. Provide sufficient clearance for machine movement. Provide any safety guards, fences, restraints, devices, and verbal and/or posted restrictions necessary to prevent personnel, machines, or other moving machinery from accessing the machine or its path. Provide adequate ventilation to carry away heat and vapors. Ensure service connections to installed machines meet local and national safety standards, especially regarding the electrical disconnect (see the National Electric Code). Prominently post safety information, including signs showing the source of electrical disconnect.
- 1.2. Personnel**—Inform personnel about hazard avoidance and the importance of care and common sense. Provide personnel with the safety and operating instructions that apply to them. Verify that personnel use proper safety and operating procedures. Verify that personnel understand and abide by the warnings on the machine and precautions in the instruction manuals.
- 1.3. Safety Devices**—Ensure that no one eliminates or disables any safety device on the machine or in the facility. Do not allow machine to be used with any missing guard, cover, panel or door. Service any failing or malfunctioning device before operating the machine.
- 1.4. Hazard Information**—Important information on hazards is provided on the machine safety placards, in the Safety Guide, and throughout the other machine manuals. **Placards must be kept clean so that the information is not obscured. They must be replaced immediately if lost or damaged. The Safety Guide and other machine manuals must be available at all times to the appropriate personnel.** See the machine service manual for safety placard part numbers. Contact the Milnor Parts department for replacement placards or manuals.
- 1.5. Maintenance**—Ensure the machine is inspected and serviced in accordance with the norms of good practice and with the preventive maintenance schedule. Replace belts, pulleys, brake shoes/disks, clutch plates/tires, rollers, seals, alignment guides, etc. before they are severely worn. Immediately investigate any evidence of impending failure and make needed repairs (e.g., cylinder, shell, or frame cracks; drive components such as motors, gear boxes, bearings, etc., whining, grinding, smoking, or becoming abnormally hot; bending or cracking of cylinder, shell, frame, etc.; leaking seals, hoses, valves, etc.) Do not permit service or maintenance by unqualified personnel.

2. Safety Alert Messages—Internal Electrical and Mechanical Hazards [Document BIUUUS11]

The following are instructions about hazards inside the machine and in electrical enclosures.



WARNING 1: Electrocution and Electrical Burn Hazards—Contact with electric power can kill or seriously injure you. Electric power is present inside the cabinetry unless the main machine power disconnect is off.

- Do not unlock or open electric box doors.
- Do not remove guards, covers, or panels.
- Do not reach into the machine housing or frame.
- Keep yourself and others off of machine.
- Know the location of the main machine disconnect and use it in an emergency to remove all electric power from the machine.



WARNING [2]: Entangle and Crush Hazards—Contact with moving components normally isolated by guards, covers, and panels, can entangle and crush your limbs. These components move automatically.

- Do not remove guards, covers, or panels.
- Do not reach into the machine housing or frame.
- Keep yourself and others off of machine.
- Know the location of all emergency stop switches, pull cords, and/or kick plates and use them in an emergency to stop machine motion. These may not stop certain devices such as pumps on some machines.



CAUTION [3]: Burn Hazards—Contact with hot goods or machine components can burn you.

- Do not remove guards, covers, or panels.
- Do not reach into the machine housing or frame.

3. Safety Alert Messages—External Mechanical Hazards [Document BIUUUS12]

The following are instructions about hazards around the front, sides, rear or top of the machine.

4. Safety Alert Messages—Cylinder and Processing Hazards [Document BIUUUS13]

The following are instructions about hazards related to the cylinder and laundering process.



WARNING [4]: Confined Space Hazards—Confinement in the cylinder can kill or injure you. Hazards include but are not limited to panic, burns, poisoning, suffocation, heat prostration, biological contamination, electrocution, and crushing.

- Do not attempt unauthorized servicing, repairs, or modification.



WARNING [5]: Explosion and Fire Hazards—Flammable substances can explode or ignite in the cylinder, drain trough, or sewer. The machine is designed for washing with water, not any other solvent. Processing can cause solvent-containing goods to give off flammable vapors.

- Do not use flammable solvents in processing.
- Do not process goods containing flammable substances. Consult with your local fire department/public safety office and all insurance providers.

5. Safety Alert Messages—Unsafe Conditions [Document BIUUUS14]

5.1. Damage and Malfunction Hazards

5.1.1. Hazards Resulting from Inoperative Safety Devices



WARNING [6]: Multiple Hazards—Operating the machine with an inoperative safety device can kill or injure personnel, damage or destroy the machine, damage property, and/or void the warranty.

- Do not tamper with or disable any safety device or operate the machine with a malfunctioning safety device. Request authorized service.



WARNING [7]: Electrocutation and Electrical Burn Hazards—Electric box doors—Operating the machine with any electric box door unlocked can expose high voltage conductors inside the box.

- Do not unlock or open electric box doors.



WARNING [8]: Entangle and Crush Hazards—Guards, covers, and panels—Operating the machine with any guard, cover, or panel removed exposes moving components.

- Do not remove guards, covers, or panels.

5.1.2. Hazards Resulting from Damaged Mechanical Devices



WARNING [9]: Multiple Hazards—Operating a damaged machine can kill or injure personnel, further damage or destroy the machine, damage property, and/or void the warranty.

- Do not operate a damaged or malfunctioning machine. Request authorized service.



CAUTION [10]: Machine Damage Hazards—Drive shaft and drive motors—Although the tunnel may operate with drive shafts disconnected between modules or units, or with a motor not functioning, the added stress on drive components will quickly damage the machine.

- Do not operate the machine with any evidence of damage or malfunction.

5.2. Careless Use Hazards

5.2.1. Careless Operation Hazards—Vital Information for Operator Personnel (see also operator hazards throughout manual)



WARNING [11]: Multiple Hazards—Careless operator actions can kill or injure personnel, damage or destroy the machine, damage property, and/or void the warranty.

- Do not tamper with or disable any safety device or operate the machine with a malfunctioning safety device. Request authorized service.
- Do not operate a damaged or malfunctioning machine. Request authorized service.
- Do not attempt unauthorized servicing, repairs, or modification.
- Do not use the machine in any manner contrary to the factory instructions.
- Use the machine only for its customary and intended purpose.
- Understand the consequences of operating manually.



CAUTION [12]: Goods Damage and Wasted Resources—Entering incorrect cake data causes improper processing, routing, and accounting of batches.

- Understand the consequences of entering cake data.

5.2.2. Careless Servicing Hazards—Vital Information for Service Personnel (see also service hazards throughout manuals)



WARNING [13]: Electrocutation and Electrical Burn Hazards—Contact with electric power can kill or seriously injure you. Electric power is present inside the cabinetry unless the main machine power disconnect is off.

- Do not service the machine unless qualified and authorized. You must clearly understand the hazards and how to avoid them.
- Abide by the current OSHA lockout/tagout standard when lockout/tagout is called for in the service instructions. Outside the USA, abide by the OSHA standard in the absence of

any other overriding standard.



WARNING [14]: Entangle and Crush Hazards—Contact with moving components normally isolated by guards, covers, and panels, can entangle and crush your limbs. These components move automatically.

- Do not service the machine unless qualified and authorized. You must clearly understand the hazards and how to avoid them.
- Abide by the current OSHA lockout/tagout standard when lockout/tagout is called for in the service instructions. Outside the USA, abide by the OSHA standard in the absence of any other overriding standard.



WARNING [15]: Confined Space Hazards—Confinement in the cylinder can kill or injure you. Hazards include but are not limited to panic, burns, poisoning, suffocation, heat prostration, biological contamination, electrocution, and crushing.

- Do not enter the cylinder until it has been thoroughly purged, flushed, drained, cooled, and immobilized.
- Abide by the confined space entry procedures in the reference manual.

— End of BIUUUS27 —

CBW (Tunnel) to Press System Connections

MSIN0911AE/98247N

Connections Between the CBW or Allied Tunnel and the Press (Non-Miltrac)

"Dry Code" Inputs—In the low voltage control box of the Press, you will see the tag identified as "Micro 6 Systems— Press—Customer's Connections". These connections are made to TBA located in the press low voltage control box. Dry Code information is as follows:

Dry Code A connects in TBA 99
Dry Code B connects in TBA 90
Dry Code C connects in TBA 91
Dry Code D connects in TBA 92

The Dry Codes are interpreted binary up to 16 different dry codes. Dry Code A is considered the least significant.

"Shuttle Is Here" Input—"Shuttle is Here" connects in TBA 87. This is only used when the Press is interfaced to an allied shuttle. When this input is made, it tells the Press that the Shuttle is in front of the Press and is at the loading height and is ready to accept a load.

"Low Pressure For Goods" Input— This input connects to TBA 96. The goods have just been dumped into the Pre-Press will receive low pressure under the main bell.

"Third Pressure For Goods" Input— This input connects in TBA 95. The goods that have been dumped into the Pre-Press will receive the third pressure under the main bell.

"Don't Main Press Goods" Input— This input connects to TBA 88. The goods that have just dumped into the Pre-Press will not be pressurized at all under the main bell.

"No Goods Transferred" Input— This input connects to TBA 94. When this input is made, it tells the Press that there were no goods transferred, thus the Pre-Press does not come down.

"New Customer", "New Formula", "New Goods" Input—"New Customer", "New Formula", "New Goods" connects to TBA 99. When this input is made, it tells the Press that the goods that have just transferred into the Pre-Press are a different customer, a different formula, or different goods from the previous load.

"Single Cake" Input— This input connects to TBA 93. When this input is made, it tells the Press that these goods must be delivered by themselves.

"Press Loaded" Input— Connects to TBA 97. When this input is made, it tells the Press that goods have just been transferred into the Pre-Press.

"Press Free Contact"— Connects between TBA 86 and TBA 101. This contact will close telling the allied machinery that the Press is ready to accept a new load.

"Press Desires To Unload" Contact— Connects between TBA 85 and TBA 100.

This is only used when there is an allied Shuttle. This contact closes when the Press is ready to unload goods.

Please note that the inputs conduct a ground potential. It is important that a 14 AWG ground connects the systems together.

Also, ground all spare wires between the Press and the Tunnel. Wires run between the Press and Tunnel must go through a ferrite bead.

Refer to schematic W6PR5SIMT for more information.

Connections Between MILTRAC and the Press

A shielded twisted pair must be run between the Press and MILNET/MILTRAC along with a 14 gauge ground. The ground must be secure between the Press ground lug in the low voltage control box and the ground lug in the MILNET/MILTRAC control box. The twisted pair is for serial communications. In the Press processor control box, connect the twisted pair to MTA32-1 and MTA32-3. Ground the shielded cable on this side only. In the MILNET/MILTRAC processor control box, connect the twisted pair on MTA32-2 and MTA32-4.

Special Load Interface Requirements for the Milnor® Centrifugal Extractor

Regardless of what device loads a Milnor centrifugal extractor or what type of system the extractor is in, communication between the extractor and the loading device requires one or more allied interface connections (see Note 1). This document explains how to establish these connections when:

- the centrifugal extractor is loaded by a Milnor CBW® or Milnor COBUC (wet goods shuttle) and both devices communicate with Miltrac™ (either the older Miltrac controller or PC Miltrac software running on a MultiTrac PC),
- the centrifugal extractor is loaded by a Milnor CBW controlled by a Mentor® or Mark 8 Miltron™ controller, but one or both of the devices **do not** communicate with Miltrac.

Unlikely and/or nonspecific loading devices (e.g., COBUC in a non-Miltrac system, CBW with non-serial controls, allied tunnel) are not covered in this document. For such conditions, consult with Milnor Technical Support.

Allied interface signals are referred to in this document by their common names only. Connection points (terminal and pin number) are not provided. See the allied interface signals tables for this information. These tables can be found both in manual MTPALI01 (see Note 1) and in the schematic manuals for the individual machines.

Note 1: For a detailed explanation of allied interfaces, refer to manual MTPALR01 “Allied Interfaces for Milnor Automated Laundering System Machines (Mark 5 Controls and Later).”

1. When the Devices Communicate Via Miltrac

If the CBW or COBUC and the centrifugal extractor communicate with Miltrac, all batch data and most operational data are handled by the Miltrac controller. Only the **start cycle** allied input to the extractor need be used in addition. This signal ensures proper distribution by causing the extractor to begin the cycle, and hence, to go from loading speed to distribution speed, as soon as the goods transfer, and before too much water has drained out. This timing cannot be reliably achieved by Miltrac.

If the centrifugal extractor is loaded by a CBW, this extractor input must be triggered by a CBW programmable output, as explained in Section 2.6 “The Start Cycle Signal”. If loaded by a Milnor COBUC, use the COBUC **finished unloading to Milnor** output to close the extractor input (see Note 2). The COBUC is used where two or more extraction devices receive batches from the same tunnel. Wire this COBUC output to each centrifugal extractor that receives goods from the COBUC. Only the extractor that is currently receiving from the COBUC will respond to this signal.

Note 2: Two COBUC outputs perform similar functions: **finished unloading to Milnor** (TBC-1 and TBC-2) and **finished unloading** (WCO-03 and WCO-04). The first is specifically for the Milnor centrifugal extractor and closes when the bucket, tilting up to dump the goods, reaches its upper limit. The second is for use by any other allied device.

2. When Devices Do Not Communicate Via Miltrac

If the CBW or the centrifugal extractor or both **do not** communicate with Miltrac, all communication between the CBW and the centrifugal extractor is via an allied interface. This requires that **data passing** is enabled on the Mentor or Miltron controller (Section 2.1). Batch data passed from the CBW to the extractor includes the **extract code** (Section 2.3), the **empty load** signal (Section 2.4), and may include other batch data, if available (Section 2.2). Operational signals from the CBW to the extractor include the optional **end extract (early call)** signal and the

required **start extractor** signal (Section 2.5), and the **start cycle** signal (Section 2.6). Additionally, the extractor must pass a **extractor says load allowed** signal to the CBW (Section 2.7).

2.1. Enabling Allied Data Pass—Whether the CBW is Miltron- or Mentor-controlled, allied data pass must be enabled and the module that supplies the batch data must be specified. On the Miltron, allied data pass is enabled in *Display N, Data Pass*. On the Mentor, it is enabled in *Data Pass* on the *CBW Hardware Configuration* page. The last module of the CBW supplies batch data to the extractor. The number that identifies this module is one less than the number of modules (for example, the last module on a 10 module CBW is module 9) because for this purpose, counting starts at zero (the first module is module 0). On the Miltron, enter this value in *Display H, Page 01*, in the *NCPOS* field. On the Mentor, enter it on the *CBW Output Timers* page, in the *Module Supplying Batch Data* field.

2.2. Batch Data—Applicable CBWs can provide, via allied signals, and the centrifugal extractor can read in: 16 dry codes, 256 customer codes, and the following signals: new formula, new customer, and single cake. The extractor can also read in 128 goods codes and 16 destination codes, but the CBW can only provide 8 destination codes. Refer to manual MTPALR01 (see Note 1) or the machine schematic manuals for connection points for these signals.

The extractor can be programmed for 16 discrete extract codes. Some, but not all applicable CBWs provide these. However, a work-around is available to handle extract codes, as explained in Section 2.3, below. The extractor can also read in an empty load signal. This must be handled as explained in Section 2.4, below.

2.3. Using Drycode for Extract Code on Certain CBW's—Some CBWs explicitly provide 16 extract code output signals. The following CBW controllers **do not**:

- Miltron controller with a software version 9401C or earlier
- Mentor controller with Generation2 (G2) Mentor software version 97107 or earlier
- Mentor controller with any Generation3 (G3) Mentor software version

On CBW's with any of the controllers listed above, the four output signals for drycode must be used instead for the extract code. If the CBW is Miltron-controlled, the extract codes would be programmed in the *Drycodes* column of Miltron *Display H, page 3, field B*. If the CBW is Mentor-controlled, they would be entered, instead of drycode, in the *Post Wash Codes* zone of the *Formula Programming* page. Of course, this means that another method must be used to introduce dry codes farther downstream in the system, if needed.

2.4. The Empty Load Signal—The CBW does not provide an explicit “empty load” (also referred to as *pass empty*) allied output. However, the “don't main press goods” output, normally used with the Milnor two-stage press, may be used for this purpose. Wire this output to the empty load input on the extractor. Whether the CBW is Miltron or Mentor controlled, enable this output for the “pass empty” formula by programming a value of 1 for press pressure. On the Mark 8 Miltron, this is *Display H, Page 3, Field E*. On the Mentor, this is the *Pressure* drop down box (not the *Pass Empty* check box) in the *Post-Wash Codes* zone of the *Formula Programming* page.

2.5. The End Extract (Early Call) and Start Extractor Signals—The end extract (early call) (if used) and start extractor inputs on the extractor can both be enabled at the same time. Hence, they can be served by a single output on the CBW. There is no explicit allied output provided for this purpose. Rather, a programmable output (C-bit) assigned to the last module must be allocated and wired to both the early call / end extract and loading mode / start extractor inputs on the extractor. This output is programmed as follows (whether the CBW is Miltron or Mentor controlled):

- Compatibility = off
- Op code = 09 (“Early Call”)
- Hold code = N (or not checked)
- Init code = A
- On time = 255 (for every formula)

2.6. The Start Cycle Signal—Although the CBW does provide an explicit start press allied output, this is only for use with the press, not the extractor. Rather, for proper timing, a programmable output assigned to the last module must be allocated and wired to the to the extractor start cycle input. Whether a Miltron or a Mentor, this output is programmed as follows:

- Compatibility = off
- Hold code = N (or not checked)
- Op code = 00 (“Standard Timed”)
- Init code = H
- On time = 004 (for every formula)

2.7. The Extractor Says Load Allowed Signal—The extractor says load allowed output on the extractor signals the CBW that it is free to receive a load. On a CBW with a Miltron controller or a Generation2 (G2) Mentor controller, connect this output to the explicitly provided press free allied input. The Generation3 (G3) Mentor controller does not provide an explicit press free input. On these machines, allocate a programmable input for this purpose and assign it input op code 11 (“Press Free”).

— End of BICXUI01 —

Milnor® Allied Interface Specifications and Signals, CBW®

An allied device that interfaces with the Milnor system machine equipped with Mark 5 or later microprocessor controls must meet the electrical specifications and functional requirements given in Section 1 “Electrical and Functional Specifications”.

The “Signals...” section(s) herein identify the allied interface signals and provide related information (see Section 2 “How the Signals Tables Are Organized”).

This document also provides useful information for troubleshooting allied interfaces:

- The **Display/code** and **Board/code** values in the signals tables, are cross-references to the output and input displays and to the output and input numbers on the I/O boards respectively. Section 4 “Monitoring Allied Interface Outputs and Inputs”, explains how to use these cross-references.
- As an aid in working with **numeric signals**, Section 5 “Decimal / Binary Conversion and How It Applies to Allied Interfaces” explains how to determine, for any batch code, which value (off or on) each signal in a group should pass.

1. Electrical and Functional Specifications



WARNING [1]: Electrocution and Electrical Burn Hazards—Contact with high voltage will electrocute or burn you. Power switches on the machine and the control box do not eliminate these hazards. High voltage is present at the machine unless the main machine power disconnect is off.

- Do not service machine unless qualified and authorized.
- Lock out and tag out power at the main machine disconnect before opening electric boxes and accessing electrical components.

For inputs from Milnor (Milnor outputs), the allied device must limit circuit load to that specified in Section 1.1, below. For outputs to Milnor (Milnor inputs), the allied device must supply circuitry that meets the specifications in Section 1.2, below. The functional requirements stated in Section 1.3 must be met for proper coordination and data exchange between the devices.

1.1. Permissible Load for Milnor Outputs—For signals from Milnor to allied (Milnor outputs/allied inputs), Milnor supplies potential-free contacts located on board-mounted relays. The signals are conducted by traces on the board having the following capacity:

- Maximum voltage: 240V
- Maximum current: 0.5 amps
- Maximum VA: 3



CAUTION [2]: Risk of Damage/Malfunction—Traces on control boards may burn out, requiring board replacement, if called upon to handle heavy currents. High voltages can cause arcing across traces.

- Do not apply loads exceeding the specified capacity.
- Do not use allied interface outputs to operate motors or for any other unintended purpose. These may, however, be used to operate relays that do not exceed the specified capacity.

1.2. Component Requirements for Milnor Inputs—For signals from allied to Milnor (allied outputs/Milnor inputs—which connect directly to control boards and are used to ground Milnor control inputs), Milnor applies a low energy signal as follows:

- Voltage: 5VDC or 12VDC
- Minimum current: 5 milliamps

The potential-free contacts supplied by allied and the circuit wiring must be capable of faithfully carrying these low energy signals.



CAUTION [3]: Risk of Bad Data—Resistance due to wire length or deteriorated contacts can mask signals. Inadequate shielding against electrical noise can trigger false signals.

- Keep wire runs as short as possible.
- Use a digital signal ground connection (wire number 2G on the CBW; wire number 7 on other Milnor devices), not merely chassis ground.
- Ground any spare wires.
- Pass all wires through a ferrite bead.
- Replace relays that have worn or corroded contacts.
- Do not run input wiring adjacent to, or in the same conduit with, any wires carrying AC. For example, do not run input and output wiring in the same conduit if AC is used to power Milnor output/allied input signals.

1.3. Functional Requirements

1. For numeric signals (batch codes) from allied to Milnor (allied loading interface), all signals must be properly set when the operational signal indicating this data is valid occurs. Signals must remain set for the longer of 5 seconds or through any subsequent operational signal requiring this data (see “Loading Interface non-Numeric Signals...”). Milnor will read all numeric signals during this time.
2. For numeric signals from Milnor to allied (allied discharge interface), allied must not read signals until the data valid, or other operational signal indicating data is valid occurs (see “Discharge Interface non-Numeric Signals...”).
3. Although not all the operational signals listed in the tables are necessarily required, (the signals used will vary with specific machine models and with variations in the operating cycle), those signals used, must occur in the order listed.
4. When connecting numeric signals between devices, ensure that signals are properly matched up with respect to significance (least significant-to-least significant, next least significant-to-next least significant, etc.).

2. How the Signals Tables Are Organized

For an allied device that loads the Milnor machine, Milnor provides an allied **loading interface**. For an allied device that receives goods from (discharges) the Milnor machine, Milnor provides an allied **discharge interface**. In both cases, some signals are used in groups to pass **numeric** values in binary and some signals are used individually to pass **non-numeric** (on/off) values. The receiving device can read the groups of numeric signals in any order as long as it reads this data during the window of time within which it is valid. However, because each signal within a group of numeric signals represents a specific digit of the binary number, the order of significance of the signals (**digit order**) must be understood and must match on sending and receiving devices. Most non-numeric signals provide operational information which must be exchanged according to a predetermined “handshaking” scheme. Hence, the sequence in which operational signals occur (**enabling order**) is critical. Accordingly, the signal information is presented in four tables:

1. **Loading interface numeric input signals and digit order**—In this table, signals are depicted in digit order, that is, the way they would be read as a binary number. The rightmost **column** represents the signal that carries the least significant digit. Each adjacent **column** to

the left is the signal representing the digit of next higher significance. The table is divided into **row** groups—one row group for each batch code provided. Each row group provides pertinent information for the signals used with that batch code. In an allied loading interface, all numeric signals pass from allied to Milnor and are therefore, **inputs** to Milnor.

2. **Loading interface non-numeric signals and enabling order**—In this table, each **row** represents a signal and each **column** provides pertinent information for that signal. Generally, these signals must be exchanged by the interfaced devices in the order listed. The labels given to operational signals in the schematics can vary from device to device. However, the document “Summary of Milnor Allied Interface Capability” provides generic names for these. The right-hand column of this table provides both the generic (function) name and the signal name as shown in the schematic, except where these are the same.
3. **Discharge interface numeric output signals and digit order**—This table is arranged the same as the “loading interface numeric...” table. However, in an allied discharge interface, all numeric signals pass from Milnor to allied and are therefore, **outputs** from Milnor.
4. **Discharge interface non-numeric signals and enabling order**—This table is arranged the same as the “loading interface non-numeric...” table. As with a loading interface, the devices need to exchange these signals in the order shown.

3. Signals—CBW®'s (Tunnels) with Mark 8 and Mark 9 Controls

[Document BICALC03]

This document applies to all currently manufactured CBW's. However, portions of this document specifically pertain to either the Mark 8 or the Mark 9 tunnel control system. Table 1 clarifies which types of CBW and Mentor software each control system is used with.

Table 1: Distinctions Between CBW's That Use Mark 8 Controls and Those That Use Mark 9

	Tunnel Control System	
	Mark 8	Mark 9
Model prefix(es)	76032	76028 and 76039
Common names	76032 CBW ("Classic")	G3 ("Generation3") CBW
Hardware type	individual modules	welded groups of modules
Mentor software provided	G2 ("Generation2")*	G3 ("Generation3")
* The predecessor to the G3 CBW was known as the G2 ("Generation2") CBW. This product had welded units like the G3 CBW, but Mark 8 wiring, like the 76032 CBW. It and the 76032 CBW used the same Mentor software, which became known as "Generation2" software. The 76032 CBW continues to use this software.		

Like other Milnor® system machines, the CBW® explicitly provides several signals to be used when interfacing with allied devices. However, some of these must be enabled on the Mentor® controller *CBW Hardware Configuration* page before they will function. For the loading interface, you must enable:

- *Allied Weight* (weight)
- *Remote Soil Select* (formula code)
- *Remote Customer Select* (customer code)

For the discharge interface, you must enable *Data Pass* (all batch data outputs).

The Mentor controller also provides user-definable outputs. Additionally, Mentor controllers with G3 software (the G3 CBW) provide user-definable inputs. If a particular allied interface signal is not explicitly provided, it may be possible to define the needed output or input.

3.1. Explicit Allied Interface Signals

Table 2: Loading Interface Numeric Input Signals and Digit Order—CBW

Signal name on schematic (e.g., Drycode A, B, etc.)-->		Common Conn.	Most Significant	Dedicated Connections (Binary Data Signals)								Least Significant
			K	J	H	G	F	E	D	C	B	A
256 Formula or Goods Codes (000 - 255)	Multi-terminal	WCG			WCG	WCG	WCG	WCG	WCG	WCG	WCG	WCG
	Pin Number	9			8	7	6	5	4	3	2	1
	Wire Number	2G			EAH	EAG	EAF	EAE	EAD	EAC	EAB	EAA
	Display/code	--			View on Mentor "Direct and Standard Inputs" page.							
	Board/code	--			io2/15	io2/14	io2/13	io2/12	io2/11	io2/10	io2/9	io2/8
1000 (usable) Customer Codes (000 - 999)	Multi-terminal	WCF	WCF	WCF	WCF	WCF	WCF	WCF	WCF	WCF	WCF	WCF
	Pin Number	9	11	10	8	7	6	5	4	3	2	1
	Wire Number	2G	DAK	DAJ	DAH	DAG	DAF	DAE	DAD	DAC	DAB	DAA
	Display/code	--	View on Mentor "Direct and Standard Inputs" page.									
	Board/code	--	io1/10	io1/9	io2/7	io2/6	io2/5	io2/4	io2/3	io2/2	io2/1	io2/0
Weight (0 to 409.5 Lbs)*	Multi-terminal	WCI	WCU	WCU	WCU	WCU	WCU	WCU	WCU	WCU	WCU	WCU
	Pin Number	9	10	9	8	7	6	5	4	3	2	1
	Wire Number	2G	XX2	XX1	XXZ	XXY	XXX	XXW	XXV	XXU	XXT	XXS
	Display/code	--	Not available for viewing on Mentor screens.									
	Board/code	--	io**/9	io**/8	io**/7	io**/6	io**/5	io**/4	io**/3	io**/2	io**/1	io**/0
* A range of load weight from 0 to 409.5 lb's (in tenths of a pound) can be passed. This requires twelve signals—the ten shown in the table plus L and M. Data for L are: connector WCU, pin 11, wire XX3, Board/code io**/10. Data for M are: connector WCU, pin 12, wire XX4 Board/code io**/11.												
** The position of this board is variable.												

Table 3: Loading Interface non-Numeric Signals and Enabling Order—CBW (see Note 1)

Signal Direc- tion	Common Connection*			Dedicated Connection			Display / code	Board / code *****	Function Name / Signal Name
	Multi- terminal	Pin	Wire	Multi- terminal	Pin	Wire			
Milnor will read in the batch data (previous table) when the tunnel cylinders pause at top dead center during transfer--before it enables the "load allowed / start conveyor or release bag" signal. Hence, the batch data signals must be set before the "discharge allowed / bag ready" signal is enabled.									
Input	WCG	9	2G	WCG	11	none	***	io1/2	discharge allowed / bag ready
Output*	WCH	5	NAE	WCH	6	NAF	****	io2/4	load allowed / start conveyor or release bag**
* For outputs from Milnor, Milnor does not normally assign either pin of the potential-free contact as the common. Hence, both pins have unique pin and wire numbers.									
** This output provides potential-free contacts, but actuates during every cycle and bypasses the loading conveyor controls on the Mentor console. The console controls are designed for use with Milnor loading conveyors only and permit placing the load conveyor in "hold" to pass empty pockets in the tunnel, but they do not provide potential-free contacts.									
*** Shown on the Mentor "Direct and Standard Inputs" page as "Bag Ready."									
**** Shown on the Mentor "Standard Outputs" page as "Start Conveyor."									
***** Applies to G3 CBW (Mark 9) only. The 76032 CBW uses Mark 8 controls which do not provide boards with LED's.									

Note 1: Several allied interface inputs and outputs shown on the schematics are not usable with current production machines. These were used with the Miltron™ Rail Sequencer (Display I), which is not

provided with the Mentor controller. They include the Rail Empty and Halt Rail inputs and the Rail Sequencer bit 0 through bit 3 outputs.

Table 4: Discharge Interface Numeric Output Signals and Digit Order—76032CBW (Mark 8)

Signal name on schematic (e.g., Drycode A, B, etc.)-->		Common Conn.*	Dedicated Connections (Binary Data Signals)								Least Significant	
			J	I	H	G	F	E	D	C	B	A
16 Drycodes (00 - 15)	Multi-terminal	n/a							WCIR	WCIR	WCIR	WCIR
	Pin Number	n/a							4 • 20	3 • 19	2 • 18	1 • 17
	Wire Number	n/a							DDH • DDG	DDF • DDE	DDD • DDC	DDB • DDA
	Display/code	--							Not available.			
	Board/code	--							Not available.			
4 Cooldown Codes (0 - 3)	Multi-terminal	n/a									WCIR	WCIR
	Pin Number	n/a									6 • 22	5 • 21
	Wire Number	n/a									DDM • DDL	DDK • DDJ
	Display/code	--									Not available.	
	Board/code	--									Not available.	
8 Destina- tion Codes (0 - 7)	Multi-terminal	n/a								WCIR	WCIR	WCIR
	Pin Number	n/a								9 • 25	8 • 24	7 • 23
	Wire Number	n/a								DDT • DDS	DDR • DDO	DDP • DDN
	Display/code	--								Not available.		
	Board/code	--								Not available.		
16 Extract Codes (00- 15)	Multi-terminal	n/a							WCJR	WCJR	WCJR	WCJR
	Pin Number	n/a							4 • 20	3 • 19	2 • 18	1 • 17
	Wire Number	n/a							EDH • EDG	EDF • EDE	EDD • EDC	EDB • EDA
	Display/code	--							Not available.			
	Board/code	--							Not available.			
1024 (1000 usable) Customer Codes (000- 999)	Multi-terminal	n/a	WCJR	WCJR	WCJR	WCJR	WCJR	WCJR	WCJR	WCJR	WCJR	WCJR
	Pin Number	n/a	14 • 30	13 • 29	12 • 28	11 • 27	10 • 26	9 • 25	8 • 24	7 • 23	6 • 22	5 • 21
	Wire Number	n/a	ED4 • ED3	ED2 • ED1	EDZ • EDY	EDX • EDW	EDV • EDU	EDT • EDS	EDR • EDO	EDP • EDN	EDM • EDL	EDK • EDJ
	Display/code	--	Not available.									
	Board/code	--	Not available.									
* For outputs from Milnor, Milnor does not normally assign either pin of the potential-free contact as the common. Hence, both pins have unique pin and wire numbers. In this table these are listed together in the same cell, with a dot between (e.g., 1 • 17).												

Table 5: Discharge Interface Numeric Output Signals and Digit Order—G3 CBW (Mark 9)

Signal name on schematic (e.g., Drycode A, B, etc.)-->		Common Conn.*	Dedicated Connections (Binary Data Signals)								Least Significant	
			K	J	H	G	F	E	D	C	B	A
1000*** Formula or Goods Codes (000 - 999)	MTA Number	n/a	14	14	14	14	14	14	14-10 •	14-10 •	14	14
	Pin Number	n/a	10 • 18	10 • 8	10 • 17	10 • 7	10 • 16	10 • 6	4-15	4-5	4 • 14	4 • 13
	Wire Number	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Display/code	--	Not available.									
	Board/code	--	o6/21	o6/20	o6/19	o6/18	o6/17	o6/16	o6/15	o6/14	o6/13	o6/12
16 Drycodes or 16 Extract Codes (00 - 15)	Multi-terminal	n/a							WCIR	WCIR	WCIR	WCIR
	Pin Number	n/a							4 • 20	3 • 19	2 • 18	1 • 17
	Wire Number	n/a							DDH • DDG	DDF • DDE	DDD • DDC	DDB • DDA
	Display/code	--							Not available.			
	Board/code	--							o1/3	o1/2	o1/1	o1/0
4 Cooldown Codes (0 - 3)	Multi-terminal	n/a									WCIR	WCIR
	Pin Number	n/a									6 • 22	5 • 21
	Wire Number	n/a									DDM • DDL	DDK • DDJ
	Display/code	--									Not available.	
	Board/code	--									o1/5	o1/4
8 Destina- tion Codes (0 - 7)	Multi-terminal	n/a								WCIR	WCIR	WCIR
	Pin Number	n/a								9 • 25	8 • 24	7 • 23
	Wire Number	n/a								DDT • DDS	DDR • DDQ	DDP • DDN
	Display/code	--								Not available.		
	Board/code	--								o1/8	o1/7	o1/6
256 or 1000*** Customer Codes (000 - 255 or 999)	Multi-terminal or MTA No.	WCIR**	mta14	mta14	WCIS	WCIS	WCIS	WCIS	WCIS	WCIS	WCIS	WCIS
	Pin Number	31 or 32	10 • 19	10 • 9	8	7	6	5	4	3	2	1
	Wire Number	DD5	n/a	n/a	DCH	DCG	DCF	DCE	DCD	DCC	DCB	DCA
	Display/code	--	Not available.									
	Board/code	--	o6/23	o6/22	o1/23	o1/22	o1/21	o1/20	o1/19	o1/18	o1/17	o1/16
Weight (0 to 409.5 Lbs) *** @	MTA Number	n/a	13-10 •	13	13	13	13	13	13	13	13	13
	Pin Number	n/a	14-1	9 • 19	8 • 18	7 • 17	6 • 16	5 • 15	4 • 14	3 • 13	2 • 12	1 • 11
	Wire Number	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Display/code	--	Not available.									
	Board/code	--	o6/9	o6/8	o6/7	o6/6	o6/5	o6/4	o6/3	o6/2	o6/1	o6/0
* For outputs from Milnor, Milnor does not normally assign either pin of the potential-free contact as the common. Hence, both pins have unique pin and wire numbers. These are listed together in the same cell, with a dot between (e.g., 1 • 17).												
** To provide eight Customer code signals with limited available terminals, Customer codes A through H, along with the "Start Press" and "Single Cake" signals, had to share board-level connector 1MTA14-10 (WCIR, pin 31 or 32).												
*** Requires optional extra data pass board. Currently, outputs on this board are not wired to multi-terminals in the electric box. Connections must be made directly to the pins on the board-level MTA connectors												
@ A range of load weights from 0 to 409.5 (in tenths of pounds) can be passed. This requires twelve signals—the ten shown in the table plus L and M. Data for L: connector 6MTA14, pins 2 and 11; board/code o6/10. Data for M: connector 6MTA14, pins 3 and 12; board/code o6/11.												

Table 6: Discharge Interface non-Numeric Signals and Enabling Order—CBW

Signal Direction	Common Connection*			Dedicated Connection			Display / code	Board / code ****	Function Name / Signal Name
Input	WCI	9	2G	WCI	6	JAP	**	***	load allowed / press free (G2 Mentor only***)
Milnor sets all batch data (previous two tables and next six signals) before it enables the "transfer complete / start press" signal.									
Output*	WCIR	14	DD2	WCIR	30	DD1	**	o1/13	new formula
Output*	WCIR	13	DD4	WCIR	29	DD3	**	o1/12	new customer
Output*	WCIR	15	DD6	WCIR	31	DD5	**	o1/14	single cake
Output*	WCIR	11	DDX	WCIR	27	DDW	**	o1/10	low pressure
Output*	WCIR	10	DDV	WCIR	26	DDU	**	o1/9	third pressure
Output*	WCIR	12	DDZ	WCIR	28	DDY	**	o1/11	no pressure / don't main press goods *****
Output*	WCIR	16	DD8	WCIR	32	DD7	**	o1/15	transfer complete / start press
* For outputs from Milnor, Milnor does not normally assign either pin of the potential-free contact as the common. Hence, both pins have unique pin and wire numbers.									
** Not available for viewing on the Mentor screens.									
*** On the G3 CBW, this input must be defined using an assignable input as explained elsewhere in this document.									
**** Applies to G3 CBW (Mark 9) only. The 76032 CBW uses Mark 8 controls which do not provide boards with LED's.									
***** An explicit "empty load" allied output is not provided with the CBW. However, the "don't main press goods" output may be used for this purpose. For example, in a CBW-to-Milnor extractor allied interface, this output may be connected to the extractor "empty load" input. In the "Post Wash Codes" zone of the Formula Programming Page, simply ensure that for the "pass-empty" formula, Pressure = 00.									

3.2. Defining Special Purpose Allied Interface Signals—Detailed information on programmable outputs and inputs is provided in the Mentor reference manual. You should have a solid understanding of the sections on assigning functions, programming formulas, programming Generation3 inputs and outputs (G3 CBW only), and assigning interpret relays (76032 CBW only), before attempting to define outputs or inputs for allied interface use. The following information supplements those explanations with regard to allied interface signals.

Mentor controllers are normally provided with a certain number of programmable outputs (and inputs on the G3 CBW) in addition to those preprogrammed by the factory to meet the machine's anticipated requirements. Any extra outputs and inputs are available for any use including providing allied interface signals. Defining an output or input in the field involves wiring and programming it.

3.2.1. Wiring Programmable Outputs—Connection points for programmable outputs are available in every module electric box of the 76032 CBW and in the module section (right side) of the main control box, on the front of the G3 CBW. Connection points are on the connectors designated WCA. (Refer to the schematics to identify pins and wires.) However, programmable outputs, by themselves, do not provide the potential-free contacts normally needed for allied interface outputs. Normally, it is necessary to use the 120VAC signal provided by the programmable output to control an interpret relay that in turn, provides potential free contacts. (Refer to the interpret relay schematic page in the schematic manual.)

3.2.1.1. Working With Interpret Relays—Interpret relays are optional equipment. Generally, when a CBW is ordered, the purchaser only buys the number of interpret relays he knows are needed. Usually, these are for chemical supply pumps. If the need for special purpose allied interface outputs was anticipated, interpret relays should be available. Otherwise, it will be necessary to purchase and install an interpret relay for each allied interface output to be defined. (Contact Milnor Technical Support for assistance.)

All interpret relays used on a CBW are located in one electric box regardless of the location of the programmable output used to control it. If you need an interpret relay for an allied interface output, you must consider availability and CBW type, as explained below.

- 3.2.1.1.1. **76032 CBW (Mark 8 tunnel controls and Generation2 Mentor Software)**—On the 76032 CBW, the interpret relay box is located on the side of the tunnel. On these machines, interpret relays are programmatically assignable; that is, the user specifies on the Mentor *Interpret Relay Assignment* page, which programmable output he wants the interpret relay to be operated by.
- 3.2.1.1.2. **G3 CBW (Mark 9 tunnel controls and Generation3 Mentor Software)**—On the G3 CBW, the interpret relay box is located on the front of the tunnel, above the main control box. On the G3 CBW (G3 Mentor software), there is no software control over the association between programmable outputs and interpret relays. If additional interpret relays are purchased after the CBW is installed, these must be hard wired to their respective programmable outputs in the field.
- 3.2.1.2. **Relating the Output to the Bit Number**—Because implementing special purpose allied outputs involves both wiring and programming, the implementer must be able to associate the physical output (to be wired) with the correct bit number displayed on the Mentor screens. The Mentor software automatically assigns bit numbers to programmable outputs according to one of two schemes, as explained below.
 - 3.2.1.2.1. **76032 CBW (Mark 8 tunnel controls and Generation2 Mentor Software)**—In Generation2 Mentor software, the bit numbers for a given module apply to the outputs on the I/O board(s) provided **with that module**. A two digit bit number is assigned to each programmable output, from the first output (output 0) on the first I/O board (board #1) to the last output on the last board provided with that module. Bit numbering is sequential, beginning with 01 (i.e., output 0 on I/O board #1 on a given module is represented as output 01 on that module). Because output numbering starts over in each module, on the Mentor screen you will see bit numbers repeated several times in different module columns of the *Function Programming* and the *Formula Programming* pages. For example, you may see Bit # 05 associated with several modules, but each of these is a different output.
 - 3.2.1.2.2. **G3 CBW (Mark 9 Tunnel Controls and Generation3 Mentor Software)**—In Generation3 Mentor software, a three digit bit number is assigned to each programmable output, from the first output (output 0) on the first I/O board (I/O board #1) to the last output on the last board on that machine, used for programmable outputs. As previously mentioned, these boards are located in the module section (right side) of the main control box on the front of the machine. Bit numbering is sequential, starting with 001 (i.e., output 0 on I/O board #1 is represented as output 001). Because bit numbering is machine-wide (not per module), a given bit number will appear only once on the Mentor *Function Programming Page* and the *Formula Programming Page*.
- 3.2.2. **Wiring Inputs On the G3 CBW (Mark 8 Tunnel Controls)**—Connection points for programmable inputs are available in the module section (right side) of the main control box, on the front of the G3 CBW. Connection points are on the connectors designated WCB. Refer to the schematics to identify specific pins and wire numbers.
- 3.2.3. **Programming Outputs and Inputs**—When you program an output or input, you assign various properties to it. Some properties, such as the Hold code are simple on/off decisions. Some, such as the Op code provide a list of values to select from. Some values, such as Output Op Code 09 “Early Call” and Input Op code 11 “Press Free” are specifically intended for use with allied interface signals. For example, if the Miltrac controller is not used, a Milnor CBW may be interfaced with a Milnor centrifugal extractor via an allied interface. In this situation, three special purpose operational signals, two of which use the mentioned Op codes, must be defined. These signals are described below, as examples:

3.2.3.1. **Example: “Early Call” Output**—An output assigned to the last CBW module must be defined to provide the signal needed by two load interface operational inputs on the Milnor extractor. It is permissible to trigger these inputs simultaneously, (thus requiring only one programmable output on the CBW, not two). The extractor inputs include:

- “early call / end extract”
- “loading mode / start extractor”

On the left side of the Mentor *Function Programming Page*, define the function properties for the early call output as follows:

- Function name: “Early Call”
- C (Compatibility) = 0
- H (Hold Code) = not checked
- Op Code = 09 (“Early Call”)
- S (Show on formula programming page) = checked

On the right side of the Mentor *Function Programming Page*, the programmable output will be represented in the *Bit* and *Init* columns for the last module. Define the module-specific properties as follows:

- Bit = the identifier number for this output (see Section 3.2.1.2 “Relating the Output to the Bit Number”).
- Init = A

On the *Formula Programming Page*, assign On Time = 255 **for every formula** (see Note 2).

Note 2: The extractor load scoop must be lowered (or the door raised) even in the case of the pass empty formula, or the extractor will not signal that it is OK for the CBW to transfer (extractor load interface operational output “load allowed / start discharge”).

3.2.3.2. **Example: “Start Extract Cycle” Output**—An output assigned to the last CBW module must be defined to provide the signal needed by the “transfer complete / start cycle” input on the extractor that raises the load scoop (or lowers the door) and starts the extract cycle. On the left side of the Mentor *Function Programming Page*, define the function properties as follows:

- Function name: “Start Extract Cycle”
- C (Compatibility) = 0
- H (Hold Code) = not checked
- Op Code = 00 (“Standard Timed”)
- S (Show on formula programming page) = checked

On the right side of the Mentor *Function Programming Page*, the programmable output will be represented in the *Bit* and *Init* columns for the last module. Define the module-specific properties as follows:

- Bit = the identifier number for this output (see Section 3.2.1.2 “Relating the Output to the Bit Number”).
- Init = H

On the *Formula Programming Page*, assign On Time = 004 **for every formula** (see Note 2).

3.2.3.3. **Example: “Extractor Free” Input (G3 CBW)**—The CBW needs a signal to indicate when the extractor is free to receive a load. This is provided by the “load allowed / extractor says load allowed” output signal on the extractor. On the 76032 CBW, an explicit “press free” input is provided. But on the G3 CBW, a special input must be defined to read this signal. On the Mentor

Input Definition Page, define this input as follows:

- Input Name = “Extractor Free”
- Op Code = 11 “Press Free”
- Bit = the identifier number for the input used (see Section 3.2.2 “Wiring Inputs On the G3 CBW (Mark 8 Tunnel Controls)”).

4. Monitoring Allied Interface Outputs and Inputs

The status of outputs and inputs can be monitored on the machine display while the machine is in operation, as explained in the machine reference manual (see Note 3 and Note 4). Beginning with Mark 4 controls (Mark 9 on the CBW), output and input status can also be monitored on the I/O boards. These boards contain LED's—one green LED for each input and one red LED for each output (see Note 5). When the LED is illuminated, the circuit is made.

Note 3: It is also possible to actuate certain outputs for testing, as explained in the reference manual. However, the “Display/code” values in the tables herein, refer only to the displays used to view outputs/inputs.

Note 4: The outputs and inputs available for viewing on the display include some (but not all) allied interface signals as well as signals for many other functions. See the reference manual for a listing of all outputs and inputs that can be monitored during operation.

Note 5: Almost all allied interface outputs and inputs are passed via the I/O boards (peripheral boards) and are therefore, represented by LED's on the boards. A few, however, are passed directly via the processor board (direct outputs/inputs). The processor board does not contain LED's.

4.1. Identifying Outputs and Inputs on the Display Pages —On CBW's, some allied inputs are available for viewing on the Mentor *Direct and Standard Inputs* page (as indicated in the signals tables). It is fairly easy to identify signals on the Mentor because the signal names are displayed.

The single stage press, two stage press, centrifugal extractor, shuttle, COBUC, and dryer use a two or four line by 20 character LCD display (see Note 6). On these devices, each output or input is represented by a character (lower or upper case letter) on the top line and a plus (+) or minus (-) sign under the character indicating the on/off status of the signal. The outputs and inputs span several display pages. Each page is accessed via the keypad and the procedures for doing so are explained in the reference manual. The “Display/code” values listed in the tables herein tell you which display page and character represent the indicated signal, as shown in the following example:

i 2/H

Where:

i = **input** display page (o = **output** display page)

2 = the second in a series of input display pages. See the reference manual for the keystrokes used to access each display page in the series. Note that in some software such as the centrifugal extractor, page numbering begins with 0 (zero); that is, the first page is page #0. Hence, on software such as the extractor, i2 = inputs page #1 (the second inputs page).

H = This input is represented by the character “H” on the display.

Note 6: When the Milnor Dryer/Shuttle Controller is provided for a new installation, the LCD displays are omitted from the controllers for any shuttle(s) and dryer(s) also provided. In this case, inputs and outputs

may be viewed on the monitor supplied with the shuttle/dryer controller. As with the CBW Mentor controller, it is easy to identify signals because the signal names are displayed.

4.2. Identifying Output and Input LED's On the I/O Boards (all except 76032 CBW)

—Two types of output/input peripheral boards are used in conjunction with the allied interfaces covered herein. Their designations and capacities are:

1. **BO24-x**—contains 24 outputs (and no inputs). x is “1”, “2”, etc. indicating the first, second, etc. such board in this machine.
2. **BIO-x**—contains 16 inputs and 8 outputs. x is “1”, “2”, etc. indicating the first, second, etc. such board in this machine.

For all except the CBW, the peripheral boards are located in the low voltage electric box. The arrangement and combination of these boards within the card cage varies with the machine type and optional equipment provided. For the G3 CBW (Mark 9), the boards that support the explicit allied interface signals are located in the card cage in the left (Standard Output) section of the main control box.

A tag located in the electric box identifies the boards that may be provided and shows the position of each board in the card cage. Each 24 output board has a set of red LED's (numbered 0 through 23). Each 16/8 I/O board has two sets of LED's—a red set for the outputs (numbered 0 through 7) and a green set for the inputs (numbered 0 through 15). The “Board/code” values listed in the tables herein tell you which board and output or input number represent the indicated signal, as in the following example:

io2/5

Where:

io2 = the 16/8 I/O board designated “BIO-2”. (Other examples:
io1=BIO-1, o1=BO24-1, o2=BO24-2)

5 = input #5, if this signal is an input or output #5 if this signal is an output.

5. Decimal / Binary Conversion and How It Applies to Allied Interfaces

Batch codes (decimal numbers) are converted to binary by the sending controller, then passed via the numeric signals to the receiving controller, where they must be converted back to decimal numbers. For example, if an interface provides for passing 16 drycodes, then to pass drycode 14 (binary 1110), drycode signals D, C, B, and A (from most to least significant) must be on, on, on, and off respectively, during the “data valid” window.

Table 7 “Numeric Signal Decimal and Binary Values” shows, for the first 16 decimal numbers (e.g., drycodes 00 through 15), the corresponding binary numbers and which numeric signal carries each binary digit. This table's columns correspond to, and align with the columns in each table of numeric signals herein. For higher numbers, use the “Decimal Value of Signal” values in this table to convert between decimal and binary as explained herein.

Table 7: Numeric Signal Decimal and Binary Values

		Decimal Value of Group	Most Significant	Binary Data Signals								Least Significant
Signal name on schematic (e.g., Drycode A, B, etc.)-->			J or K or 9	I or J or 8	H or 7	G or 6	F or 5	E or 4	D or 3	C or 2	B or 1	A or 0
Decimal Value of Signal-->			512	256	128	64	32	16	8	4	2	1
The number of data signals required for typical ranges of batch codes are as follows: Code Range Signals Required		0						0	0	0	0	
		1							0	0	0	1
		2		For brevity, this table shows only the binary numbers for decimals 0 - 15 (e.g., decimal 7 = binary 0111).					0	0	1	0
		3						0	0	1	1	
		4						0	1	0	0	
		5						0	1	0	1	
6						0	1	1	0			
00-15	A-D	7	Use the "Decimal Value of Signal" values above, to convert between decimal and binary, for any decimal number between 16 and 1023.					0	1	1	1	
00-31	A-E	8						1	0	0	0	
00-63	A-F	9						1	0	0	1	
000-127	A-G	10						1	0	1	0	
000-255	A-H	11						1	0	1	1	
000-511	A-I or J	12	See explanations of decimal / binary conversion herein.						1	1	0	0
0000-1023	A-J or K	13							1	1	0	1
		14							1	1	1	0
		15							1	1	1	1

For convenience, an example and explanations of converting between decimal and binary follow. Many other examples and explanations can be found in mathematics texts, on the Internet, etc. Also, some pocket calculators and many computer programs are available for converting between decimal and binary.

Note 7: In Table 8, which follows, the “Decimal value of binary 1 in this position” is the same as “Decimal Value of Signal” in Table 7.

Table 8: Decimal Values for Binary Digit 1 In the First Ten Positions

Significance of digit	most										least
Position of digit	10	9	8	7	6	5	4	3	2	1	
Decimal value of binary 1 in this position	512	256	128	64	32	16	8	4	2	1	
Example binary number	1	0	0	1	0	1	1	0	1	0	
Decimal value carried down for this example	512	0	0	64	0	16	8	0	2	0	= 602

5.1. Converting Decimal to Binary—Referring to Table 8, if you want to convert decimal number 602 to binary, use the “Decimal value of binary 1 in this position” values, as follows:

512 = highest value not exceeding 602.

602 – 512 = 90

64 = highest value not exceeding 90.

90 – 64 = 26

16 = highest value not exceeding 26.

26 – 16 = 10

8 = highest value not exceeding 10.
 $10 - 8 = 2$
2 = highest value not exceeding 2.
 $2 - 2 = 0$

In the above arithmetic, you used the decimal values 512, 64, 16, 8, and 2. You did not use 256, 128, 32, 4, and 1. Placing a 1 in the position for each decimal value used and a 0 (zero) in each position not used, yields 1001011010. Hence, decimal 602 = binary 1001011010.

5.2. Converting Binary to Decimal—Referring to Table 8, if you want to convert binary to decimal, simply sum the decimal values corresponding to the 1's in each position of the binary number. Keep in mind that while a 1 in any position has a certain positive decimal value, a 0 (zero) in any position has the decimal value 0 (zero). The conversion for binary 1001011010 looks like this:

$$512 + 0 + 0 + 64 + 0 + 16 + 8 + 0 + 2 + 0 = 602$$

Hence, binary 1001011010 = decimal 602.

— End of BICALC02 —

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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.

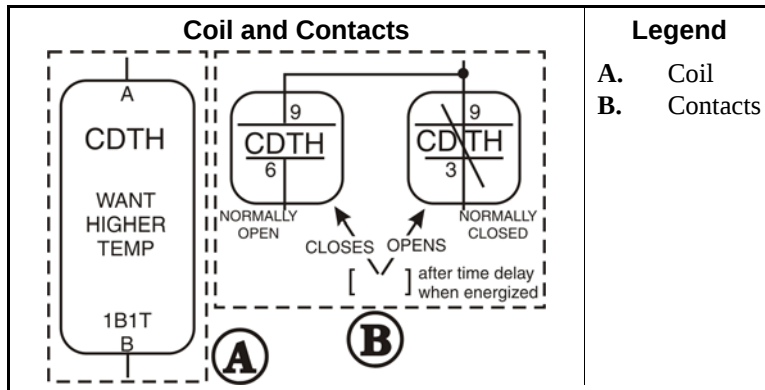
CB=Circuit Breaker (Figure 1)—Automatic switch that opens an electric circuit in abnormal current conditions (e.g., an overload).

Figure 1: Circuit Breaker (CB)



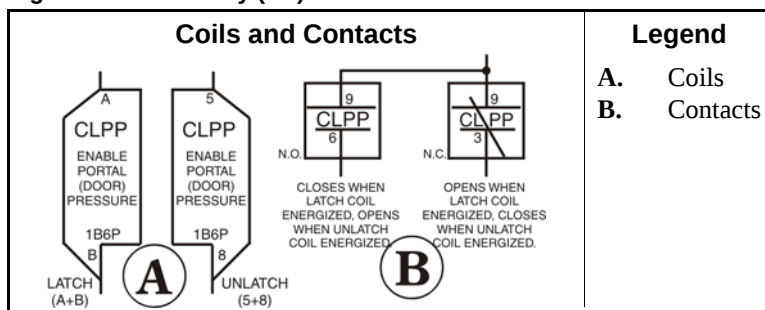
CD=Control, Time Delay Relay (Figure 2)—A relay whose contacts switch only after a fixed or adjustable delay, once voltage has been applied to its coil. The contacts switch back to normal (de-energized state) immediately when the voltage is removed.

Figure 2: Time Delay Relay (CD)



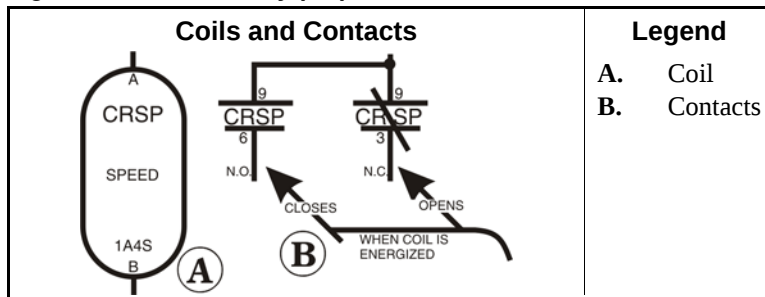
CL=Control, Latch Relay (Figure 3)—A relay which latches in an energized or set position when operated by one coil (the latch/set coil). The relay stays latched even though coil voltage is removed. The relay releases or unlatches when voltage is applied to a second coil (the unlatch/reset coil).

Figure 3: Latch Relay (CL)



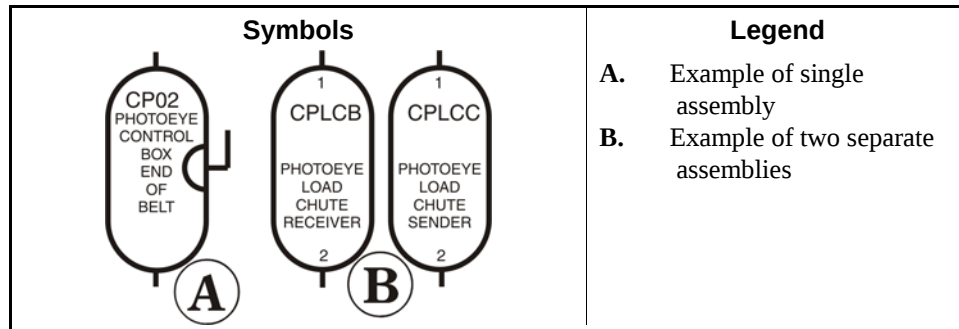
CR=Control, Relay (Figure 4)—A relay whose contacts switch immediately when voltage is applied to its coil and revert to normal when the voltage is removed.

Figure 4: Standard Relay (CR)



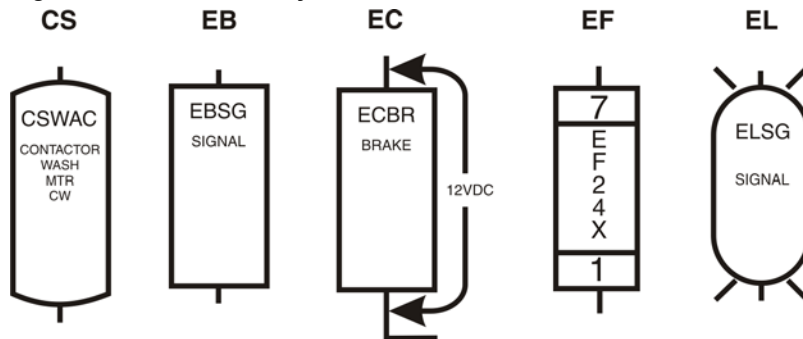
CP=Control, Photo-Eye (Figure 5)—Photo-eyes sense the presence of an object without direct physical contact. Photo-eyes consist of a transmitter, receiver, and output module. These components may be housed in one assembly with the transmitter bouncing light off of a reflector to the receiver, or these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

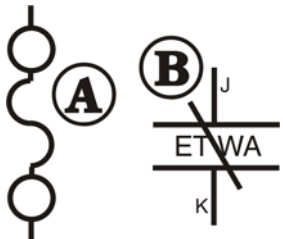
EL=Electric Light (Figure 6)—Indicator lights may be either incandescent or fluorescent.

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.

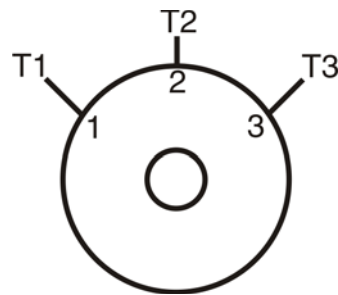
MN=Electronic Monitor (CRT)—A cathode ray tube used for visual presentation of data.

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

Figure 8: Transformer (EX)



Figure 9: Electric Motor (MR)

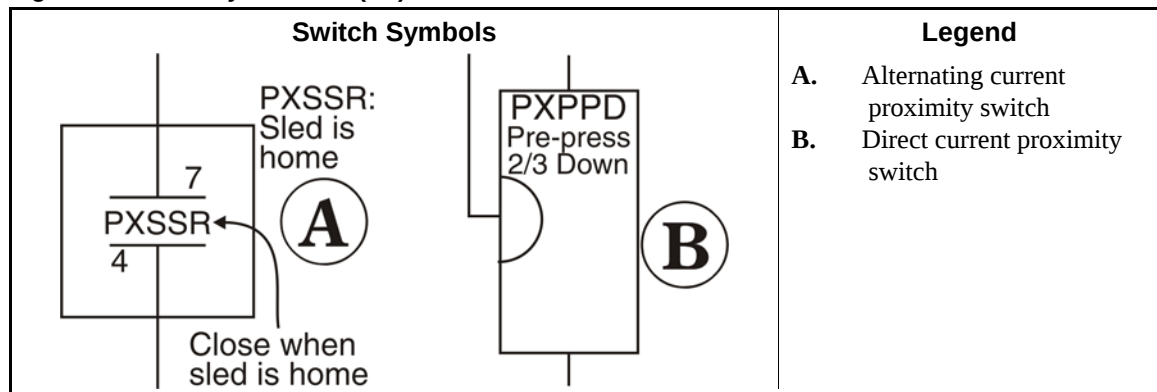


MV=Motor (Variable Speed) Inverter—To vary the speed of an AC motor, the volts to frequency ratio must be kept constant. The motor will overheat if this ratio is not maintained. The motor variable speed inverter converts three phase AC to DC. The inverter then uses this DC voltage to generate AC at the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

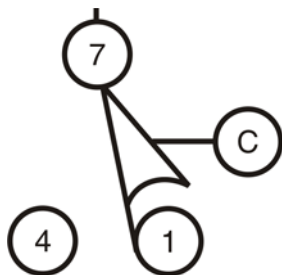
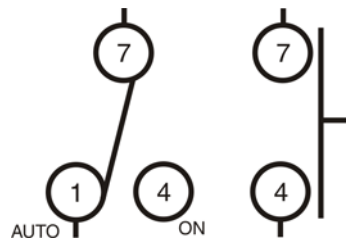


Figure 12: Hand Operated Switch (SH)



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)

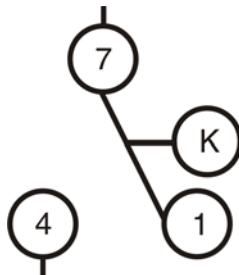
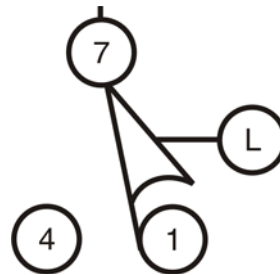


Figure 14: Level Switch (SL)



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)

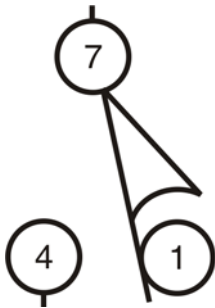
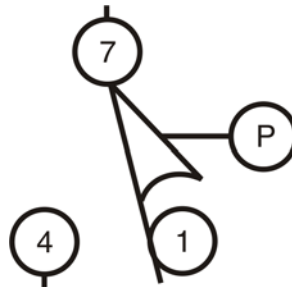


Figure 16: Pressure Switch (SP)



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)

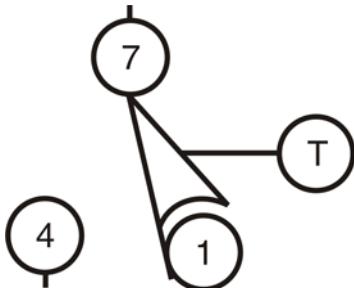


Figure 18: Terminal Board (TB)



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)

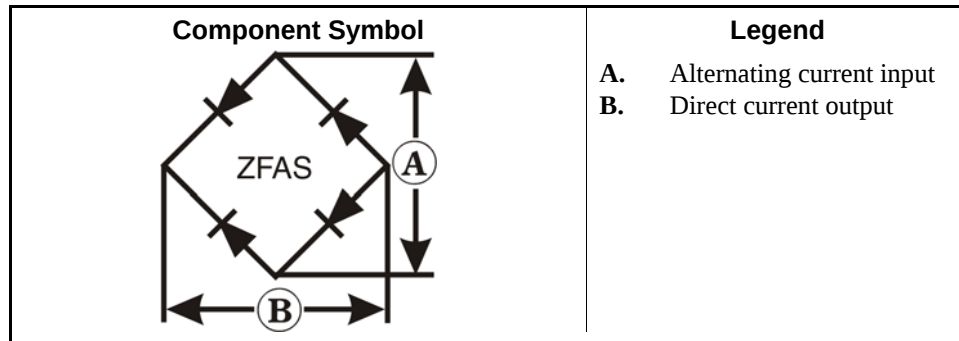
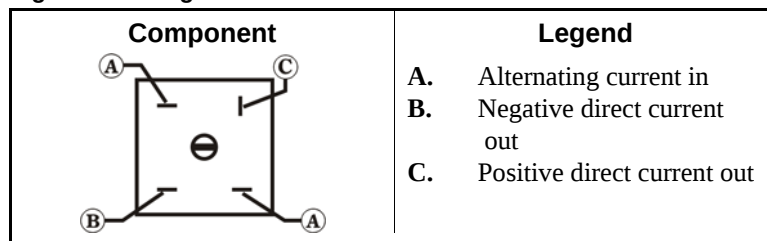


Figure 21: Bridge Rectifier



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.

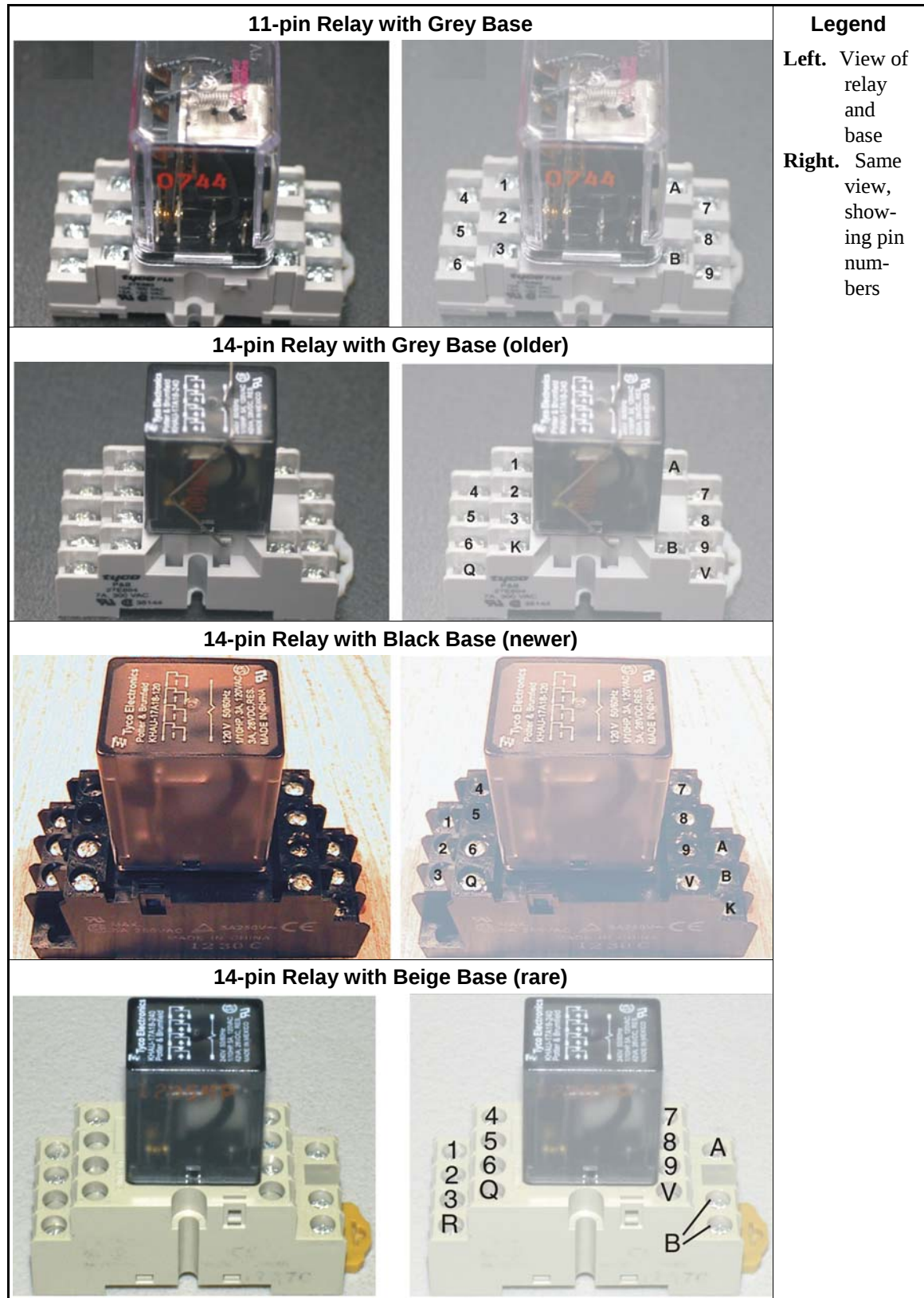
2. Component Terminal Numbering



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

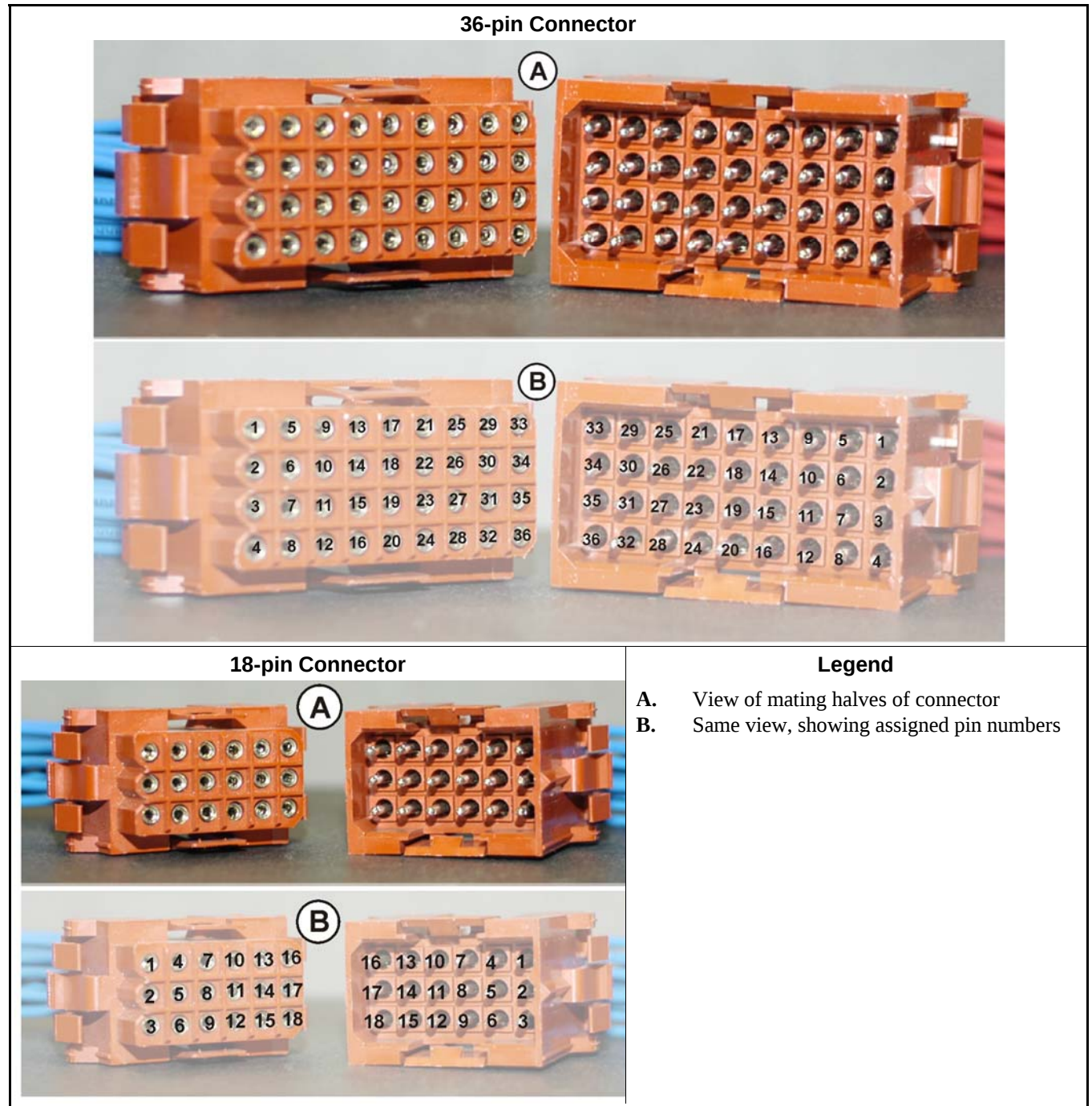


Figure 24: Molex Connector Pin Locations

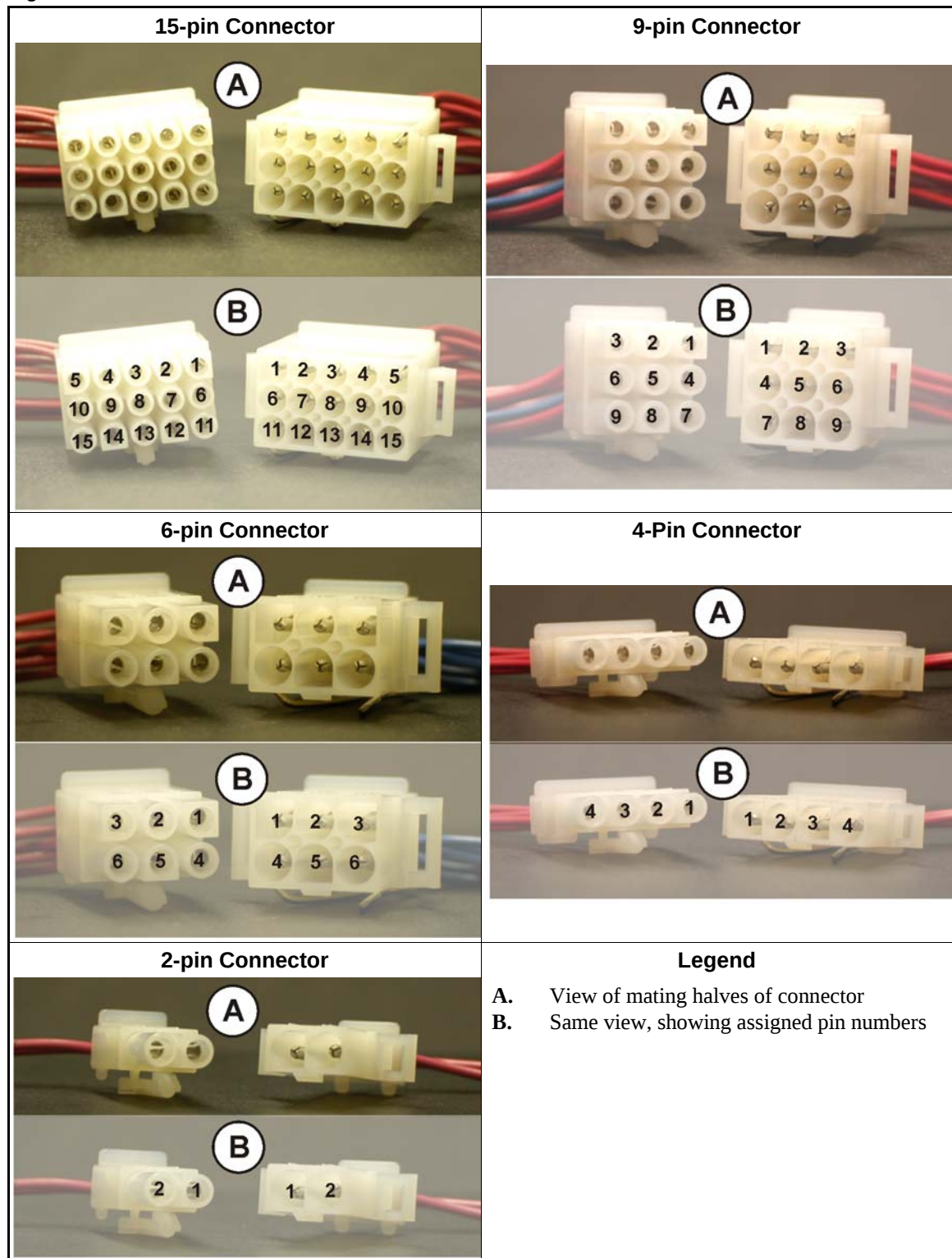


Figure 25: Pressure Switch

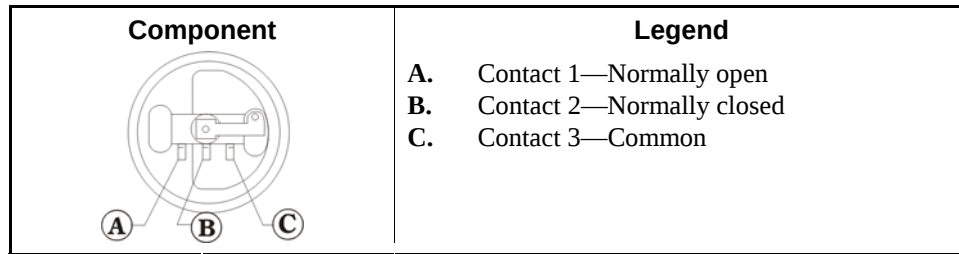


Figure 26: Toggle Switch

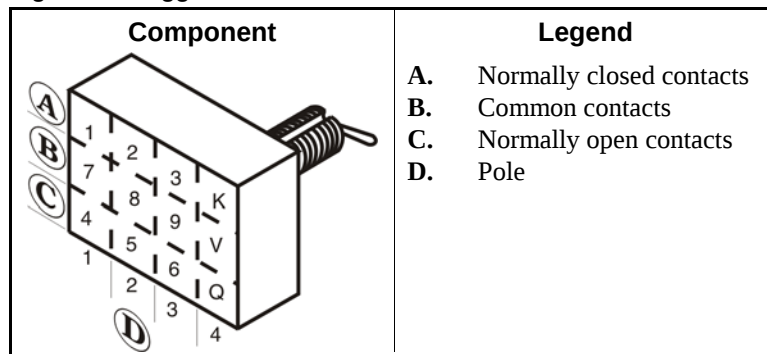
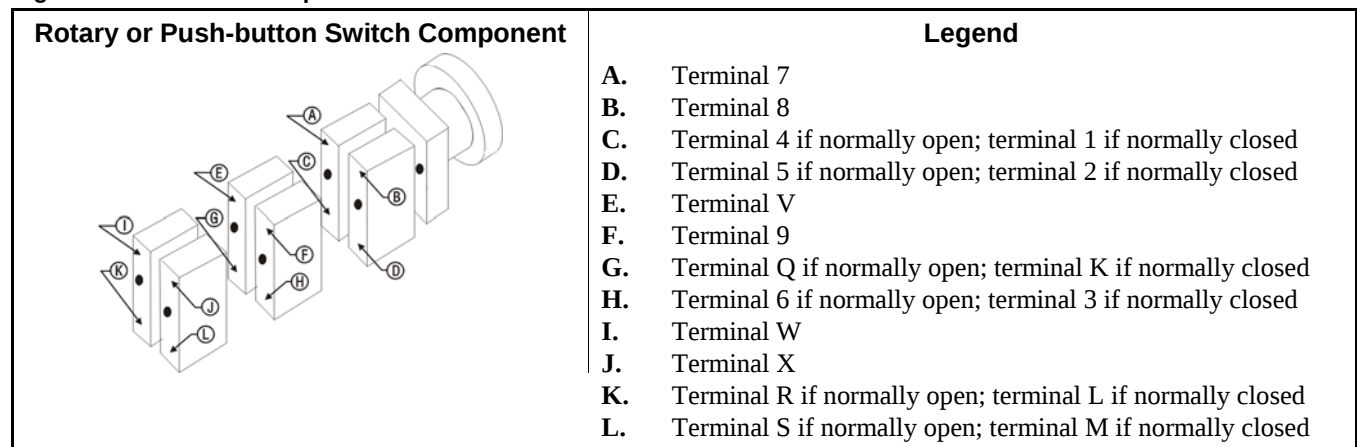


Figure 27: Switch with Replaceable Contact Blocks



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 —

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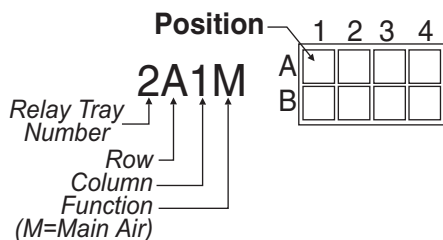
4 This indicates on which page (W6DRYGS+) and line number (08) the relay coil can be found for this set of contacts

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).

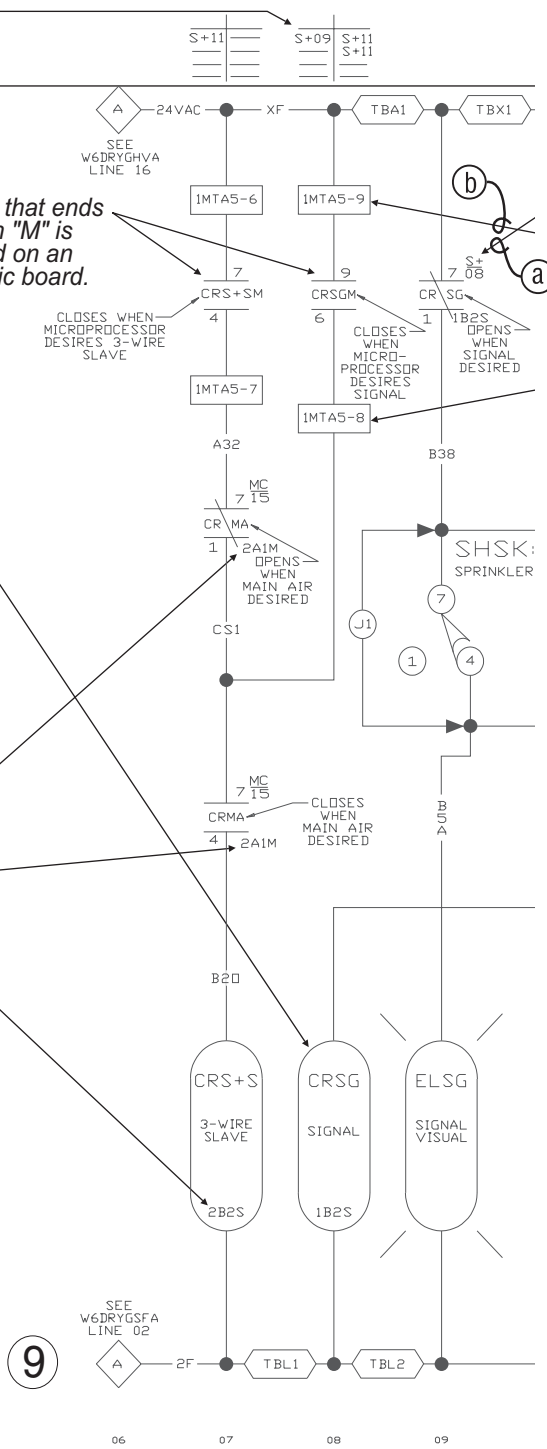
	Normally closed contacts	Normally open contacts	
7-1 contact	S+09	S+11	7-4 contact
8-2 contact	—	S+11	8-5 contact
9-3 contact	—	—	9-6 contact
V-Q contact	—	—	V-K contact
Contact not used	—	—	—

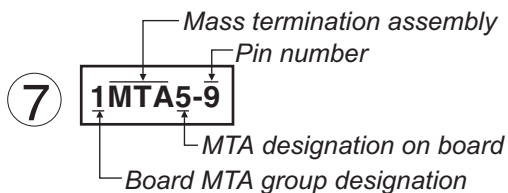
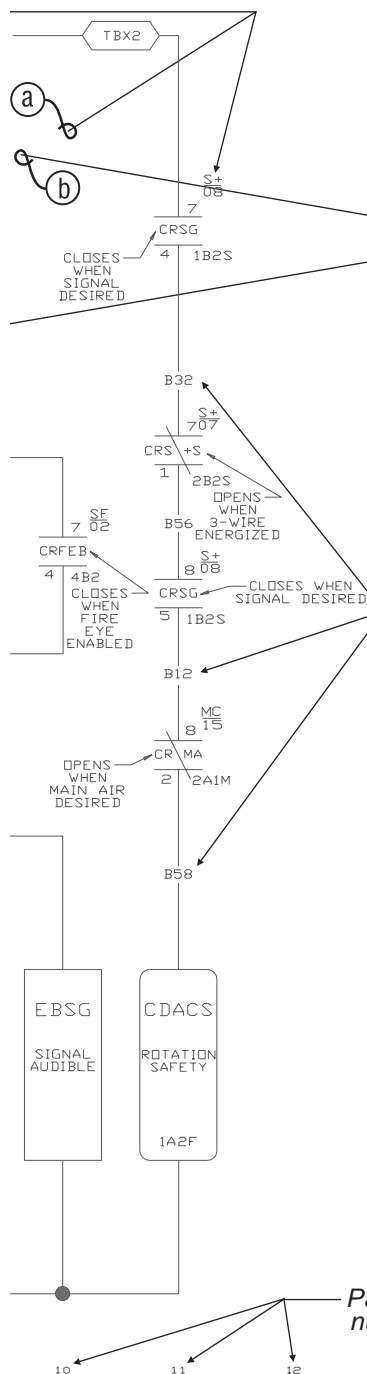
Drawing and line where contact is located

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.



Any relay that ends with an "M" is located on an electronic board.

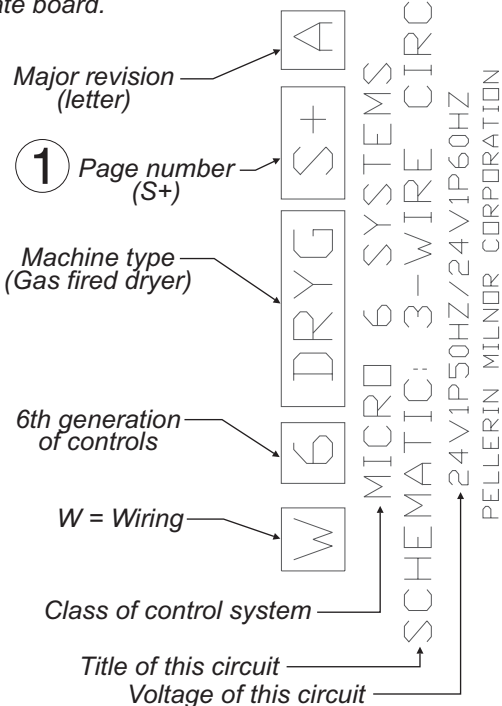




An MTA is a connection on an electronic circuit board. The notes and the tag page locate the appropriate board.

8

Wire identification marking.
This designation is stamped on the wire every 6 inches and is used with the signal routing table.



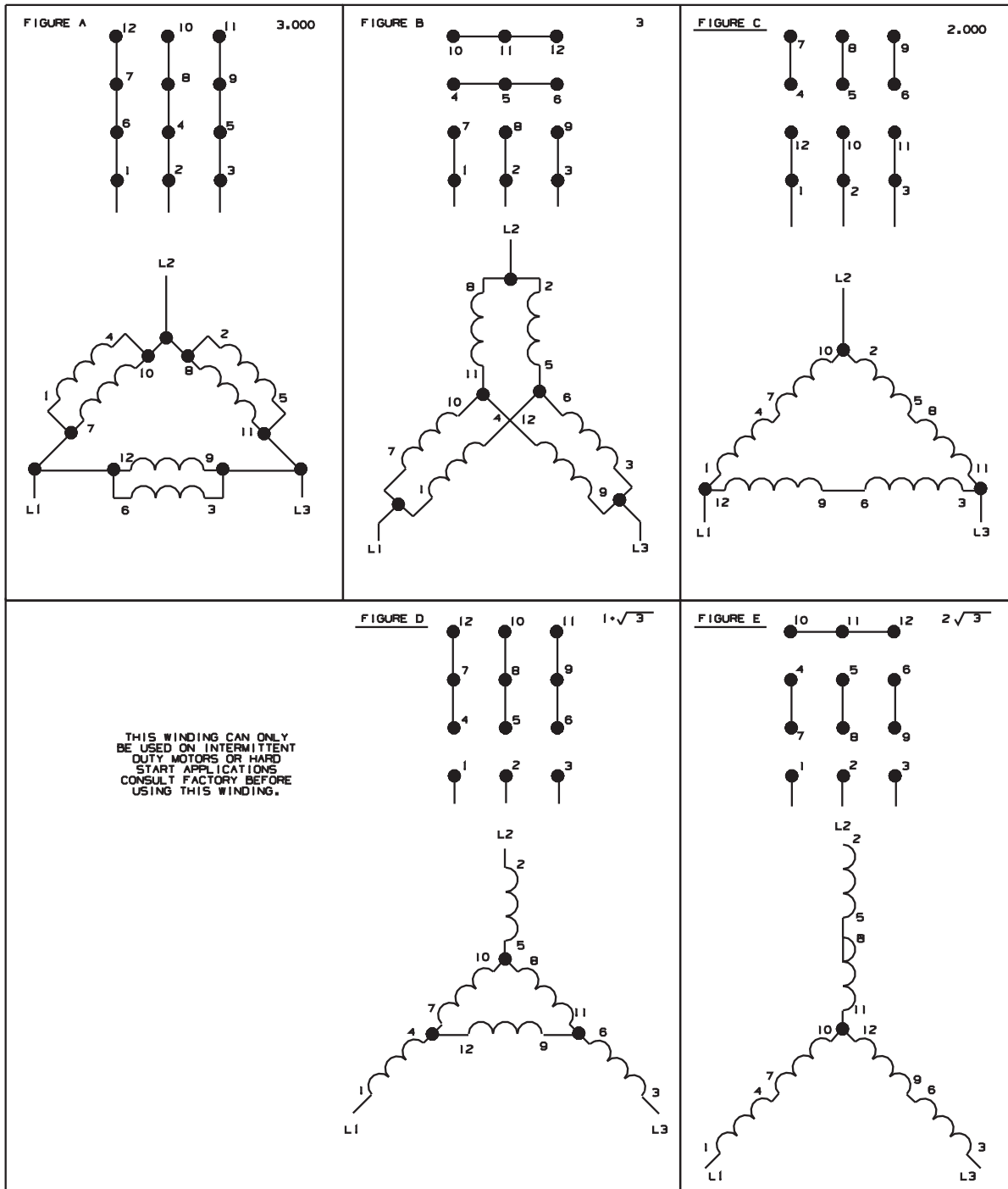
NOTES:

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.

Page line numbers

3

FIGURE	ELECTRICAL VALUES	SUFFIXES							
		B		H		M		T	
		50HZ	60HZ	50HZ	60HZ	50HZ	60HZ	50HZ	60HZ
A	1,000	208	230			200	220	220	240
B	$\sqrt{3}$			208	240	346	380	380	
C	2,000	416	460	220	240	400	440	440	480
D	$1 + \sqrt{3}$						600		
E	$2\sqrt{3}$			380					



06

07

08

09

10

11

12

13

14

15

16

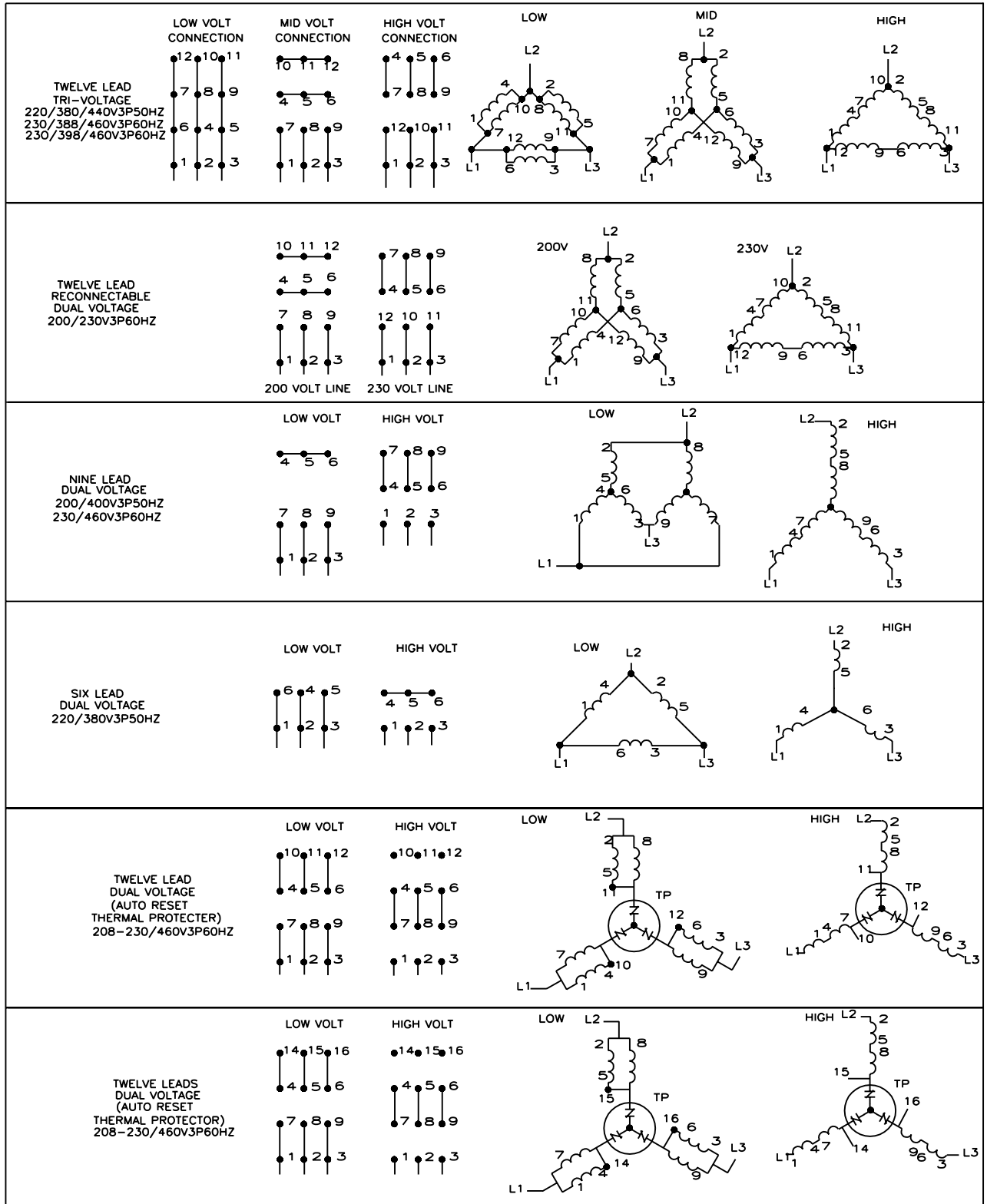
17

BMP850029

MOTOR CONNECTION DIAGRAMS

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

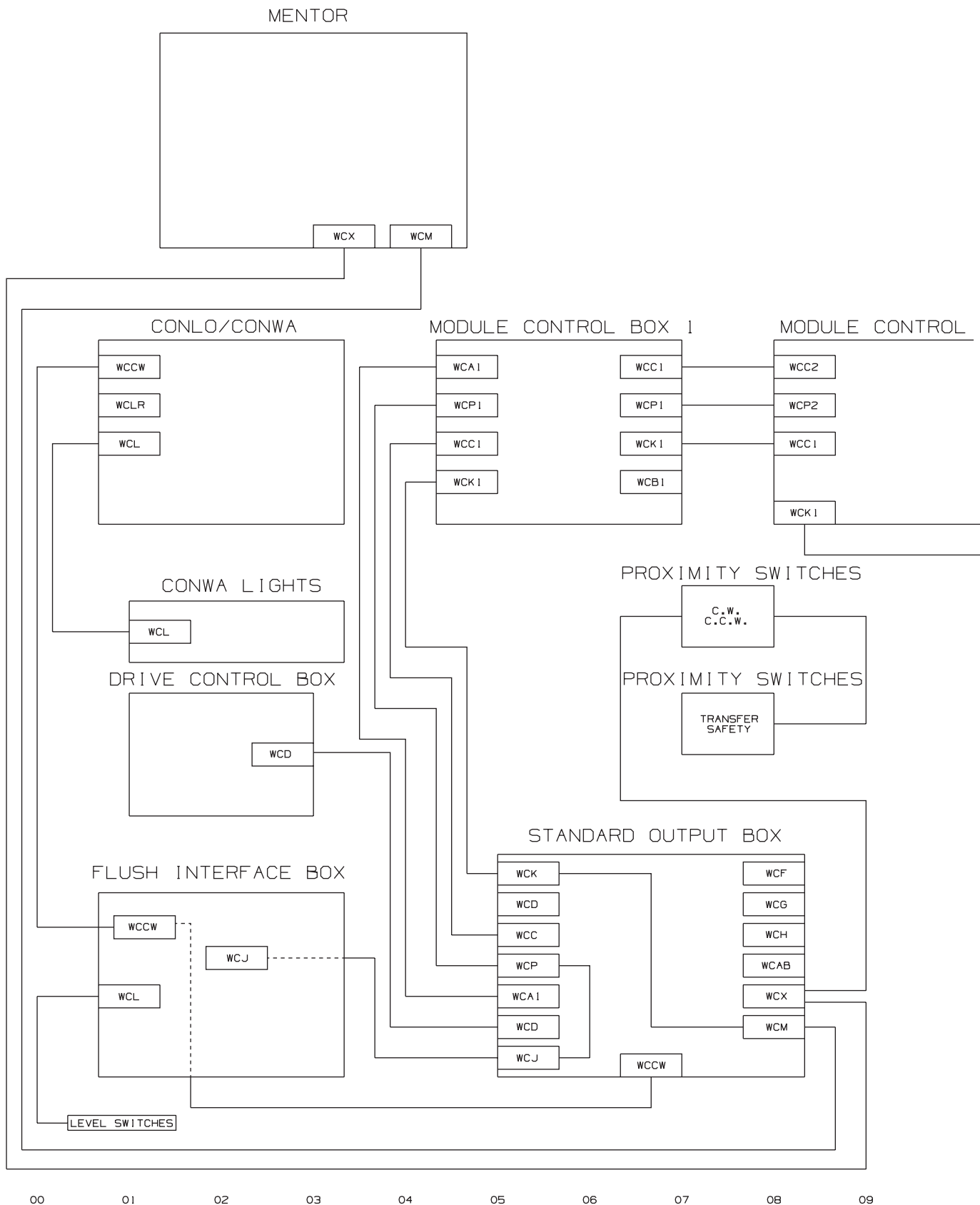
PELLERIN MILNOR CORPORATION

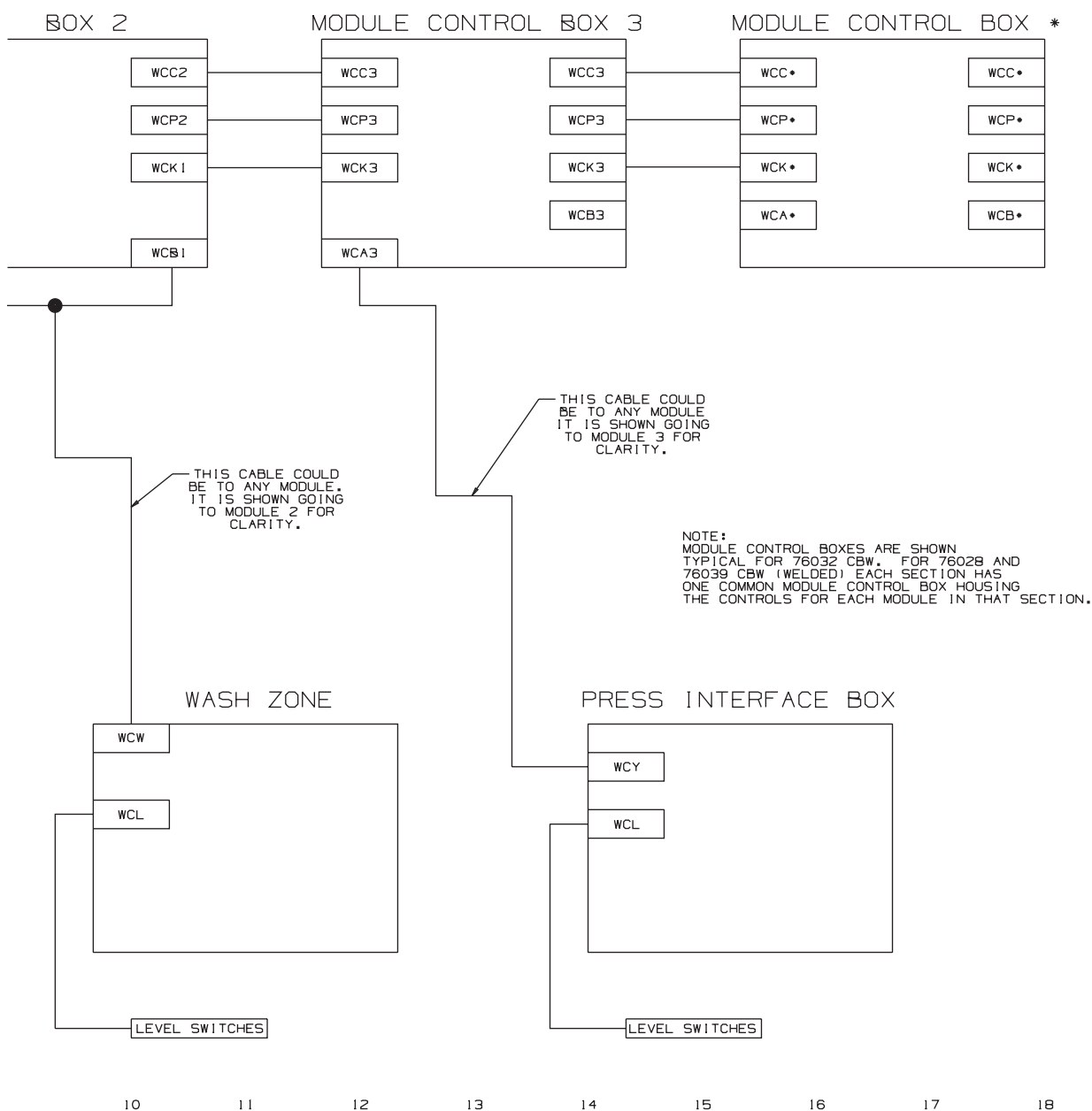
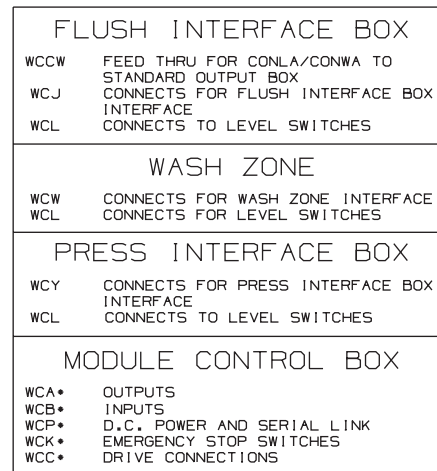
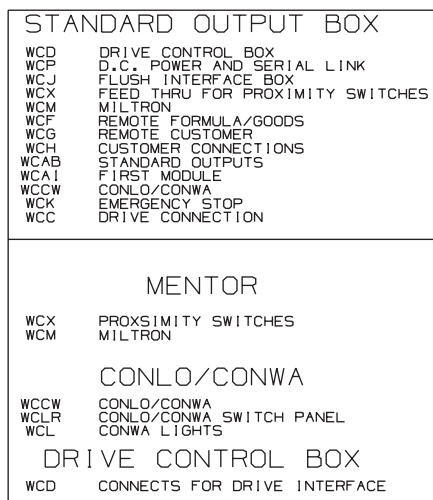


W80008

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

W80008
2001253A

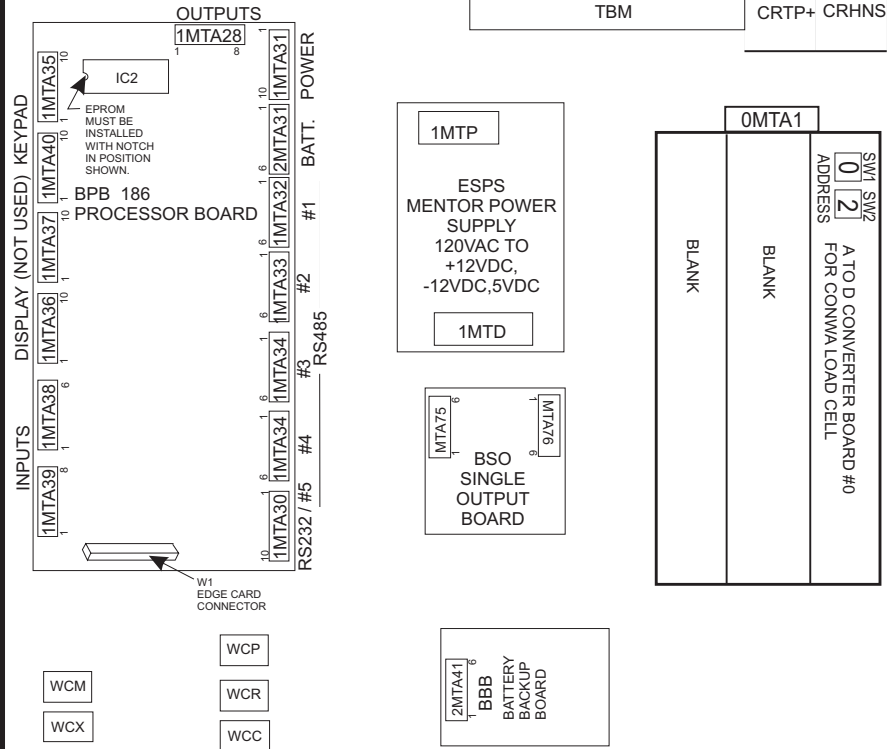




WBCBWCC
 CBW SYSTEMS MARK 8
 SCHEMATIC: CABLE ROUTING
 PELLERIN MILNOR CORPORATION

NOTES FOR INSTALLING EPROM:
1. EPROMS MUST BE INSTALLED IN THE CORRECT SOCKET FOR THE MACHINE TO OPERATE. FOR THIS MACHINE THERE WILL BE ONE EPROM AND IT MUST BE INSTALLED IN THE

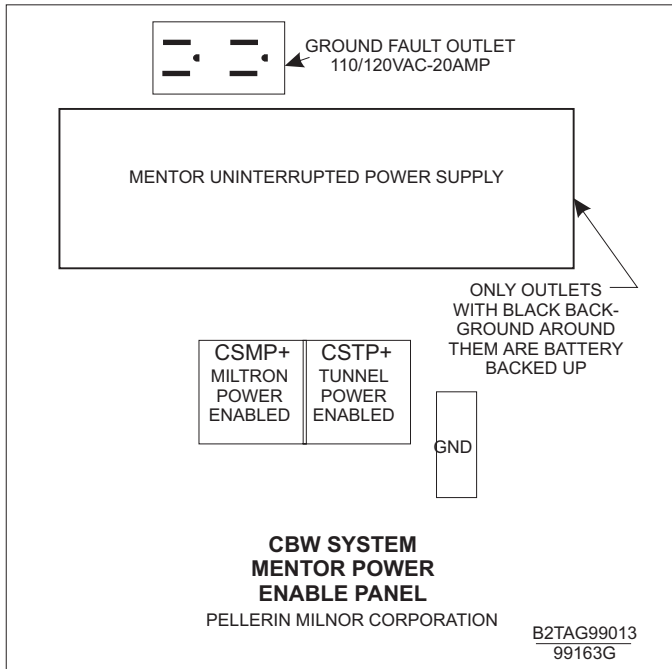
RS232
TO
RS485
CONVERTER



CBW SYSTEMS MENTOR CONTROL PANEL

PELLERIN MILNOR CORPORATION

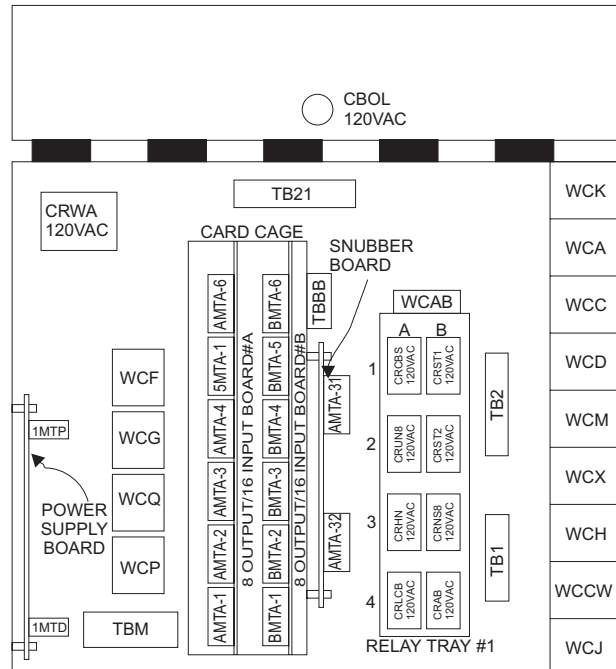
B2TAG99014
99163G



CBW SYSTEM MENTOR POWER ENABLE PANEL

PELLERIN MILNOR CORPORATION

B2TAG99013
99163G

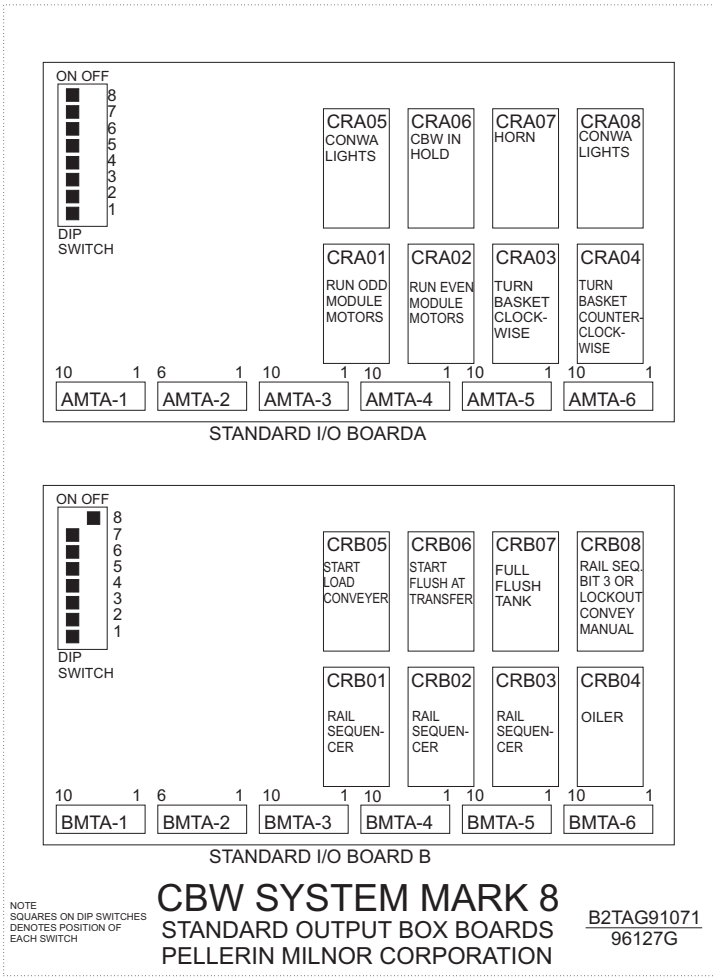
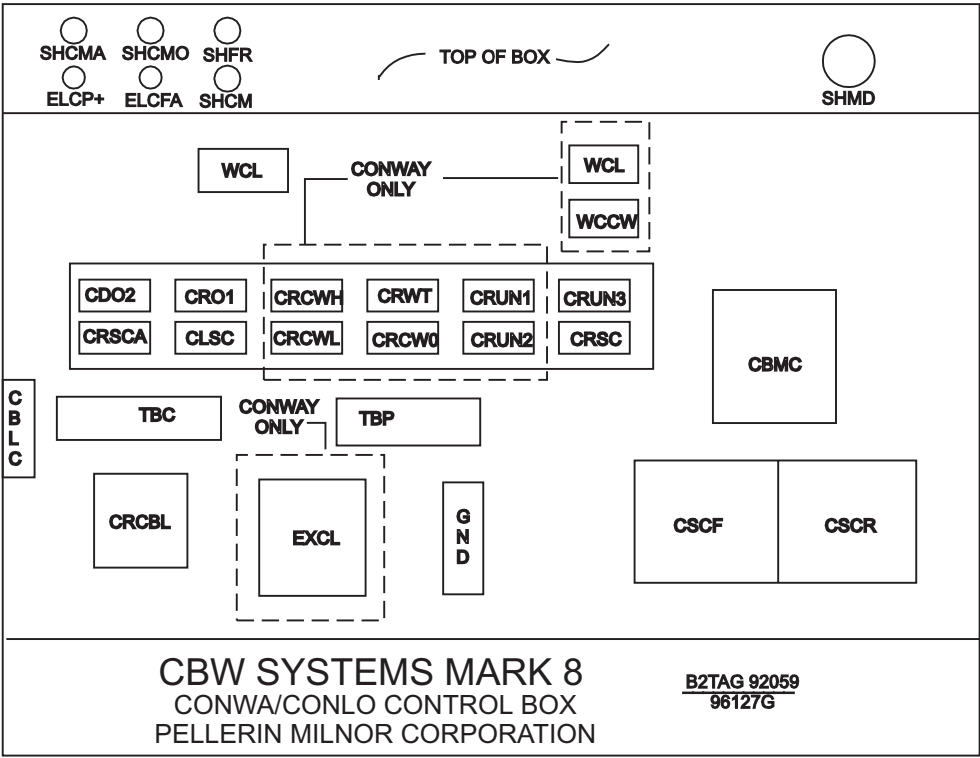


MK8 CBW MODULE

STANDARD OUTPUT BOX
PELLERIN MILNOR CORPORATION

B2TAG91068
96127G

W8CBWTG1
99263B

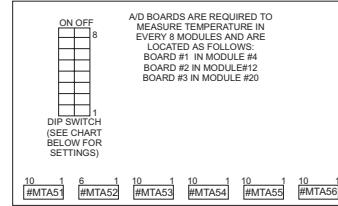
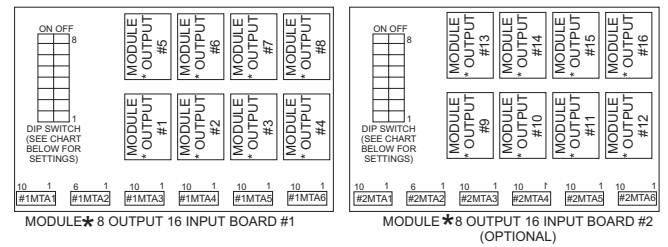
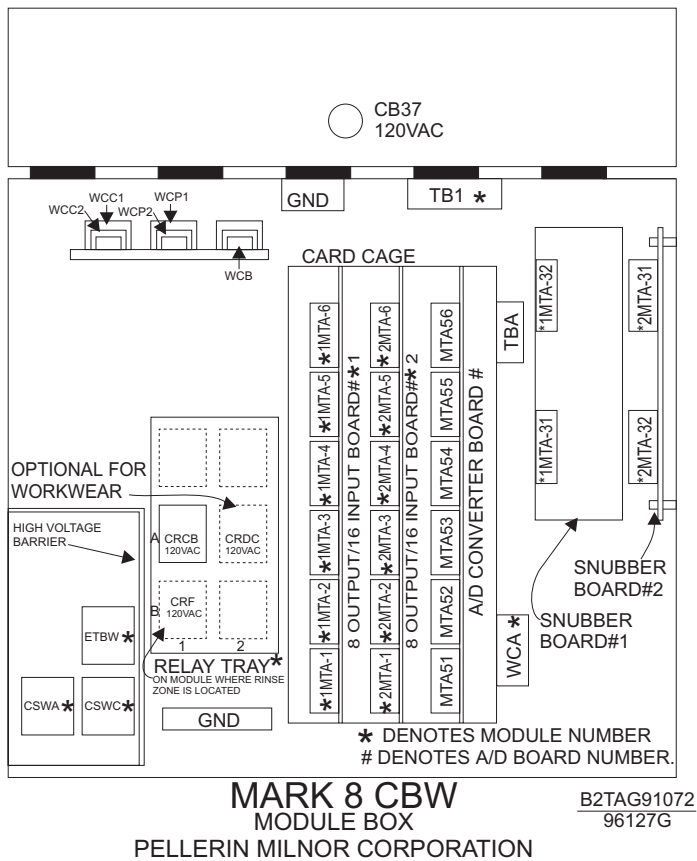


W8CBWTG1

MARK 8 SYSTEMS
CONTROL BOX LAYOUTS
FOR MENTOR, LOAD CONVEYOR, AND OUTPUT BOX
PELLERIN MILNOR CORPORATION

W8CBWTG1
99263B

W8CBWTG1
99263B

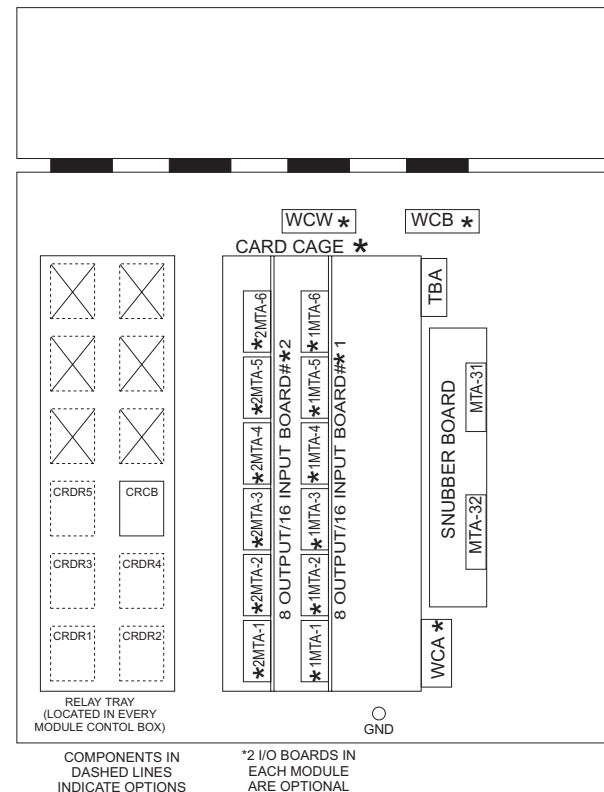
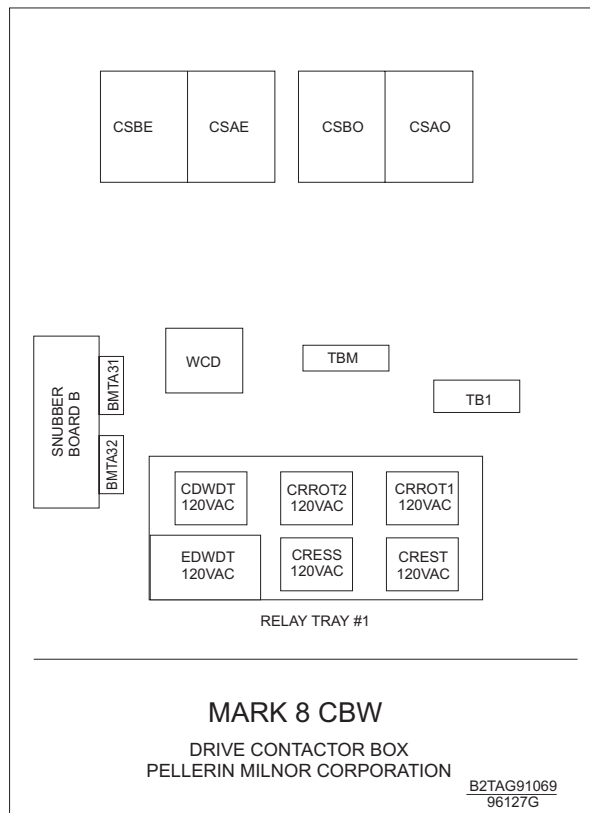


	MODULE 8 OUTPUT 16 INPUT BOARD #1 SWITCH #								MODULE 8 OUTPUT 16 INPUT BOARD #2 SWITCH #								MODULE A/D BOARD SWITCH #							
MODULE X	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
MODULE 1	X								X								X							
MODULE 2		X								X								X						
MODULE 3			X								X								X					
MODULE 4				X								X								X				
MODULE 5					X								X								X			
MODULE 6						X								X								X		
MODULE 7							X								X								X	
MODULE 8								X								X								X
MODULE 9									X								X							
MODULE 10										X								X						
MODULE 11											X								X					
MODULE 12												X								X				
MODULE 13													X								X			
MODULE 14														X								X		
MODULE 15															X								X	
MODULE 16																X								X
MODULE 17																	X							
MODULE 18																		X						
MODULE 19																			X					
MODULE 20																				X				

NOTE, X DENOTES SWITCH IS IN THE OFF POSITION

MARK 8 CBW SYSTEMS
PELLERIN MILNOR CORPORATION

B2TAG91074
96127G

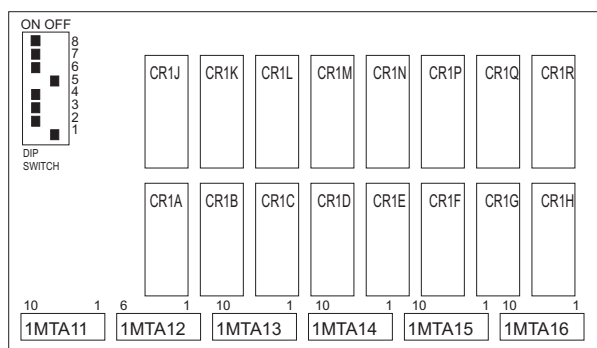


W8CBWTG2

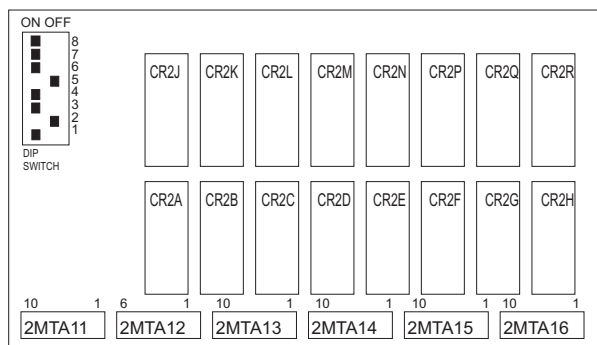
MARK 8 SYSTEMS

MODULE CONTROL BOX LAYOUTS

PELLERIN MILNOR CORPORATION



INTERPRET RELAY BOARD #1



INTERPRET RELAY BOARD #2

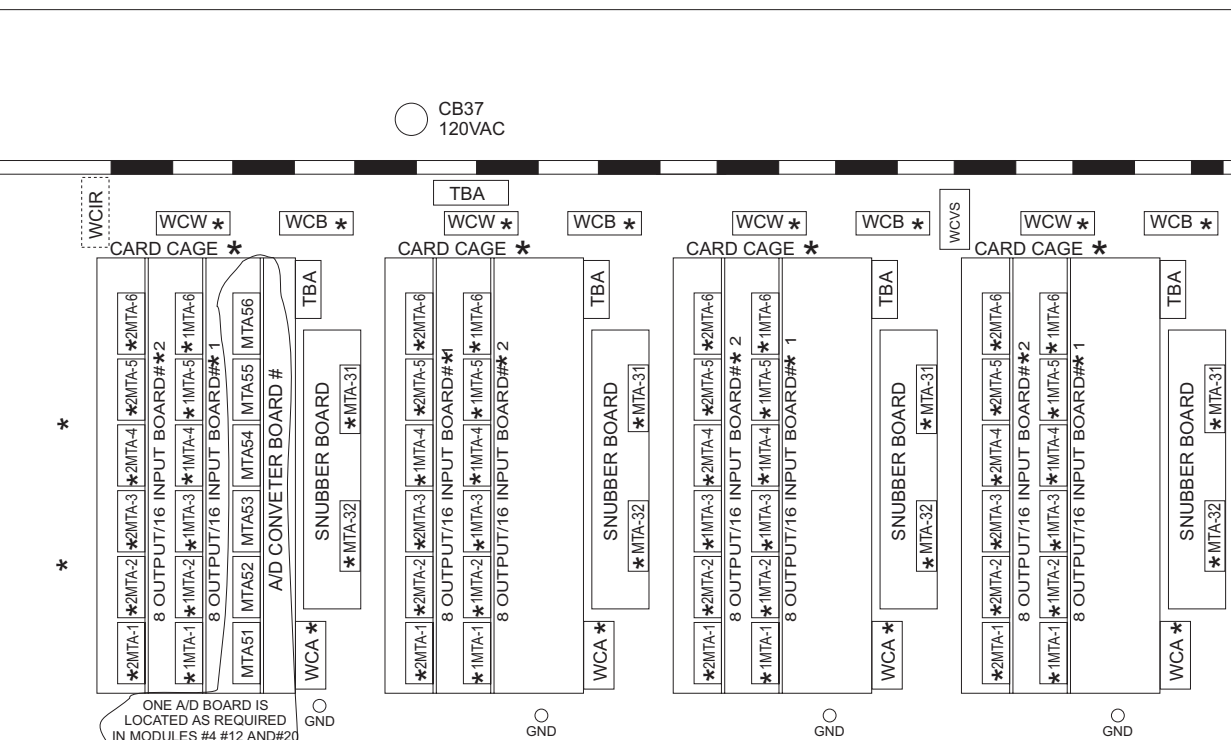
NOTE
SQUARES ON DIP SWITCHES
DENOTES POSITION OF
EACH SWITCH

CBW SYSTEM MARK 8

INTERPRET RELAY BOARDS

PELLERIN MILNOR CORPORATION

B2TAG91073
96127G



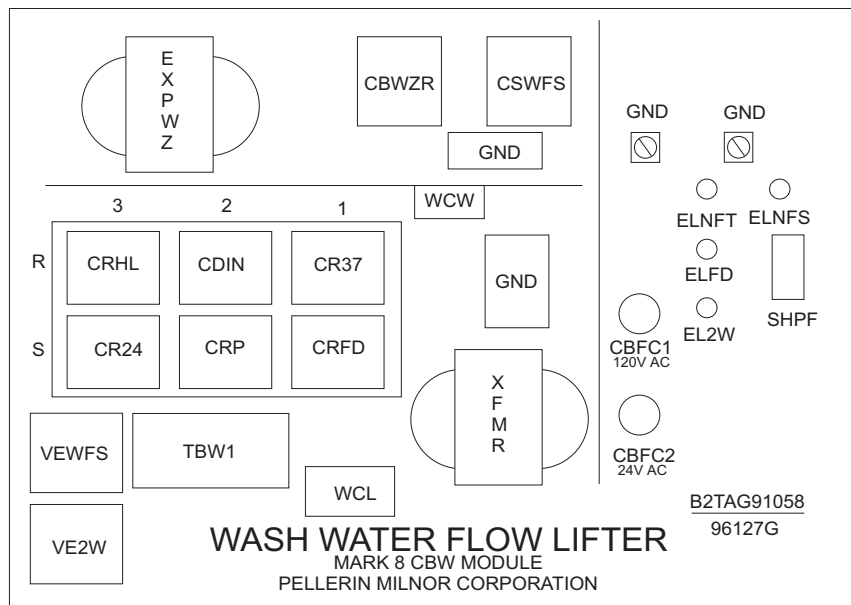
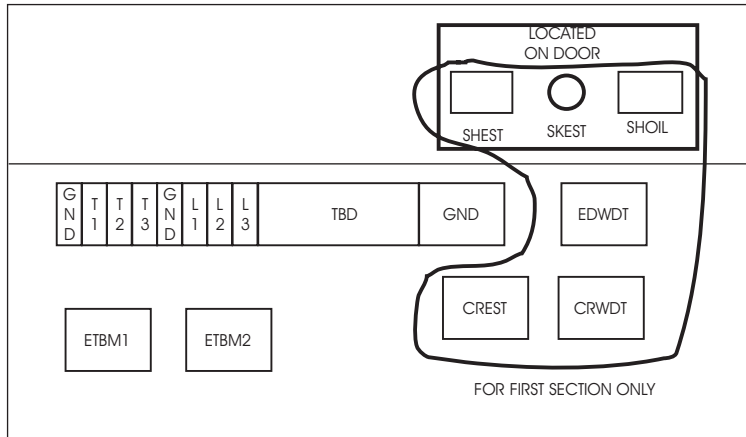
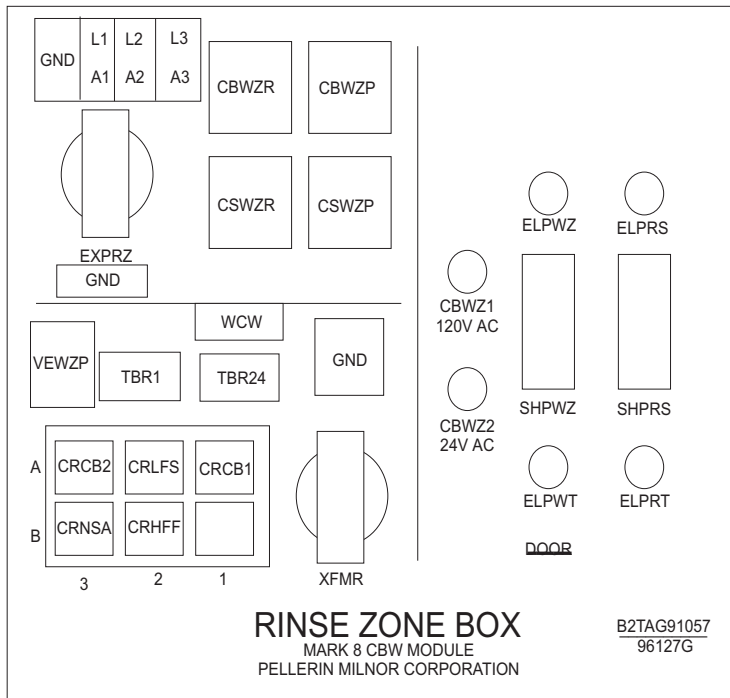
MARK 8 CBW

MODULE BOX

PELLERIN MILNOR CORPORATION

* DENOTES MODULE NUMBER

B2TAG92086
96127G



W8CBWTG3
99263B

W8CBWTG3

MARK 8 SYSTEMS

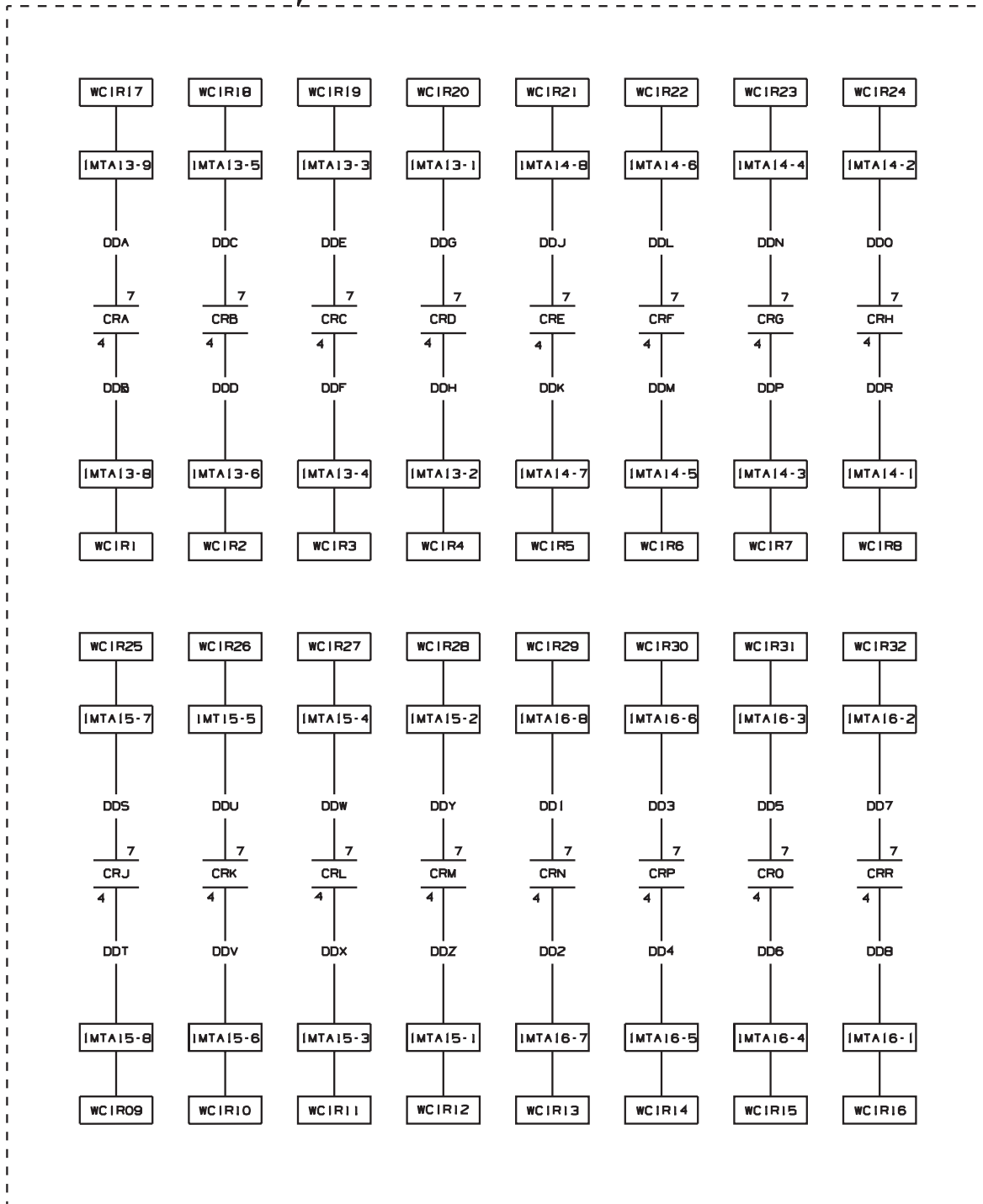
CONTROL BOX LAYOUTS

FOR ASSOCIATED TANKS

PELLERIN MILNOR CORPORATION

W8CBWTG3
99263B

LOCATED IN MODULE (NORMALLY THE LAST MODULE) THAT
CONTAINS THE ALLIED INTERFACE BOARD.



SEE
WBCBWJC
LINE 08
TO
MICRO-
PROCESSOR
INPUTS

•MTA4-3

JAP

WC1•-6

PRESS
TIME

WC1•-9

2G

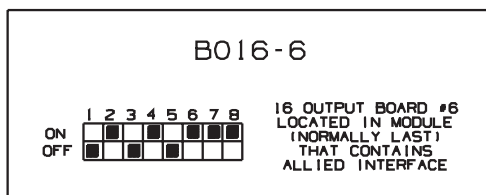
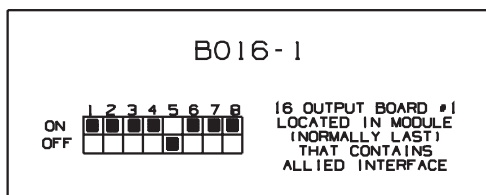
—

00 01 02 03 04 05 06 07 08 09 10

ALLIED INTERFACE BOARD #1	
ALLIED RELAY ASSIGNMENTS	
CRA	: DRY CODE A
CRB	: DRY CODE B
CRC	: DRY CODE C
CRD	: DRY CODE D
CRE	: COOLDOWN A
CRF	: COOLDOWN B
CRG	: DESTINATION A
CRH	: DESTINATION B
CRJ	: DESTINATION C
CRK	: 3RD PRESSURE
CRL	: LOW PRESSURE
CRM	: DON'T MAIN PRESS GOODS
CRN	: NEW CUSTOMER
CRP	: NEW FORMULA
CRO	: SINGLE CAKE
CRR	: START PRESS

ALLIED INTERFACE BOARD #6	
ALLIED RELAY ASSIGNMENTS	
CRA	: EXTRACT CODE A
CRB	: EXTRACT CODE B
CRC	: EXTRACT CODE C
CRD	: EXTRACT CODE D
CRE	: CUSTOMER CODE A
CRF	: CUSTOMER CODE B
CRG	: CUSTOMER CODE C
CRH	: CUSTOMER CODE D
CRJ	: CUSTOMER CODE E
CRK	: CUSTOMER CODE F
CRL	: CUSTOMER CODE G
CRM	: CUSTOMER CODE H
CRN	: CUSTOMER CODE I
CRP	: CUSTOMER CODE J
CRO	: NOT USED
CRR	: NOT USED

ALLIED INPUT ASSIGNMENT		
PRESS FREE	IMTA4-3	WC2-6

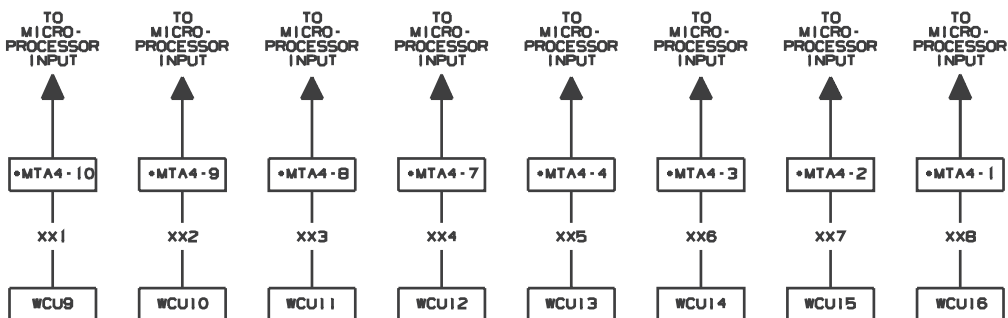
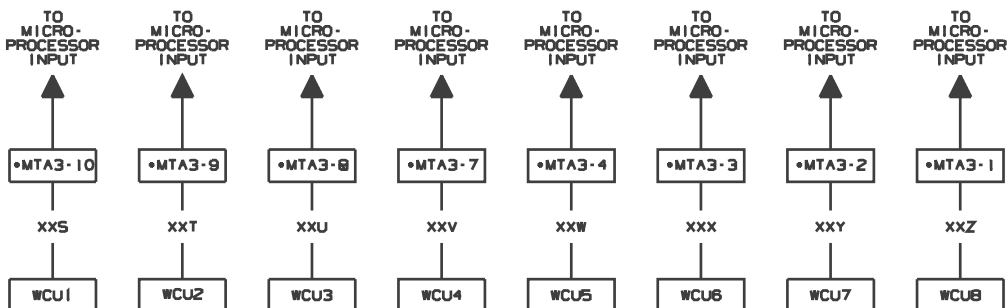
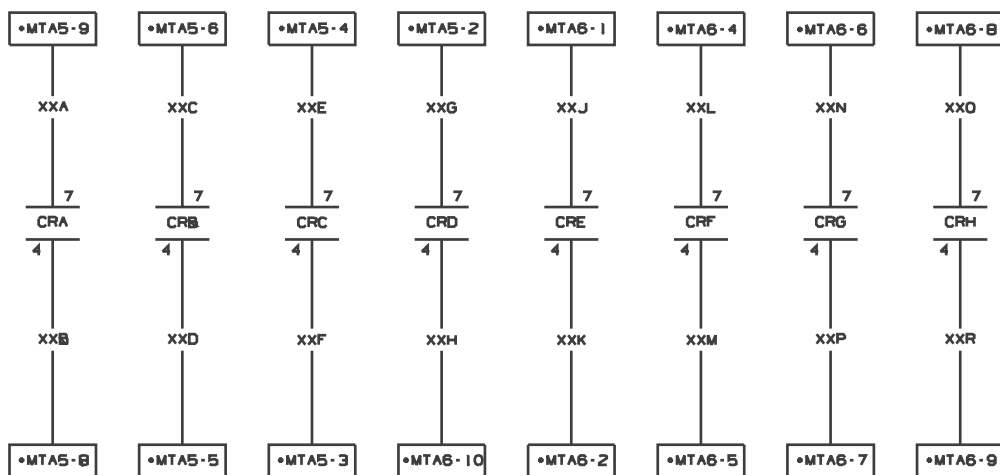


LOCATED IN
PRESS

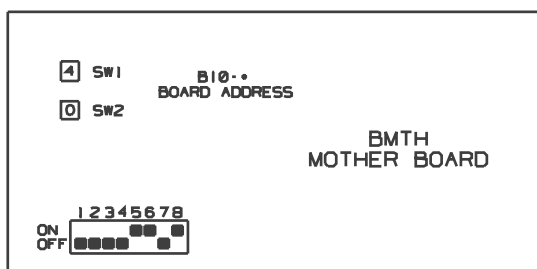
SEE
W8CBWAI FOR
INTERPRET RELAY
BOARD 2 THRU 5.

W8CBWAI
 CBW SYSTEM MARK 8
 SCHEMATIC: ALLIED INTERFACE
 PELLERIN MILNOR CORPORATION

11 12 13 14 15 16 17 18 19



00 01 02 03 04 05 06 07 08 09



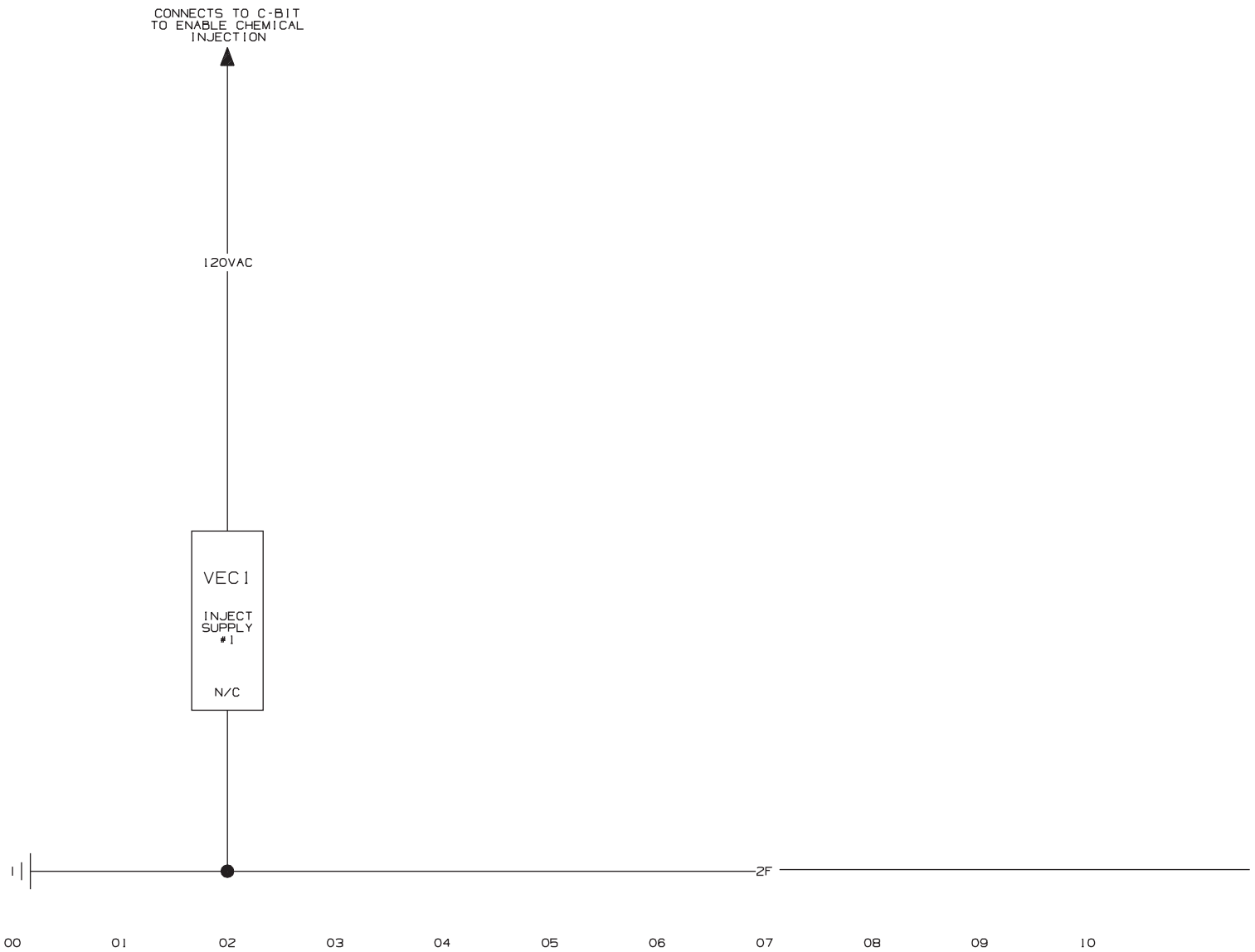
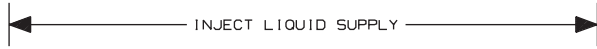
NOTES:

1. THIS BOARD ACCOMMODATES A TWELVE BIT DATA INPUT PROVIDING FOR A WEIGHT VALUE FROM 0 THROUGH 409.5. TOTAL WEIGHT CORRESPONDING TO THE SUM OF THE INDIVIDUAL VALUES OF EACH ACTIVE INPUT AS SHOWN IN THE TABLE BELOW.

INPUT	BIT	VALUE
XXS	0	0.1
XXT	1	0.2
XXU	2	0.4
XXV	3	0.8
XXW	4	1.6
XXX	5	3.2
XXY	6	6.4
XXZ	7	12.8
XX1	8	25.6
XX2	9	51.2
XX3	10	102.4
XX4	11	204.8
XX5	NOT USED	
XX6	NOT USED	
XX7	NOT USED	
XX8	NOT USED	

2. OUTPUTS FROM THIS BOARD ARE NOT USED.

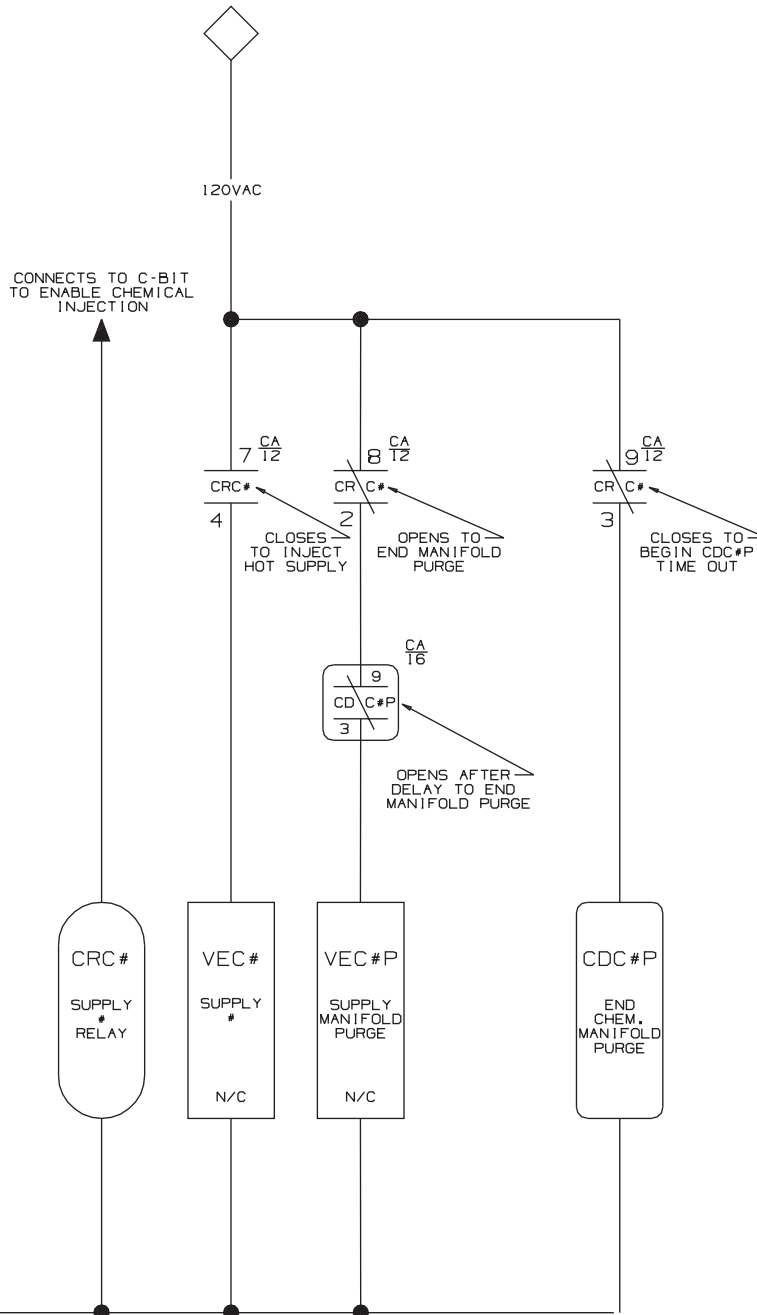
W8CBWAW
CBW SYSTEM
MARK 8
SCHEMATIC: ALLIED WEIGHT INPUTS
PELLERIN MILNOR CORPORATION



← HOT SUPPLY INJECT WITH PURGE →

CA16
CA14 CA13

CA14



11 12 13 14 15 16 17 18 19

W8CBWCA

SCHEMATIC: CHEMICAL ADD OPTIONS

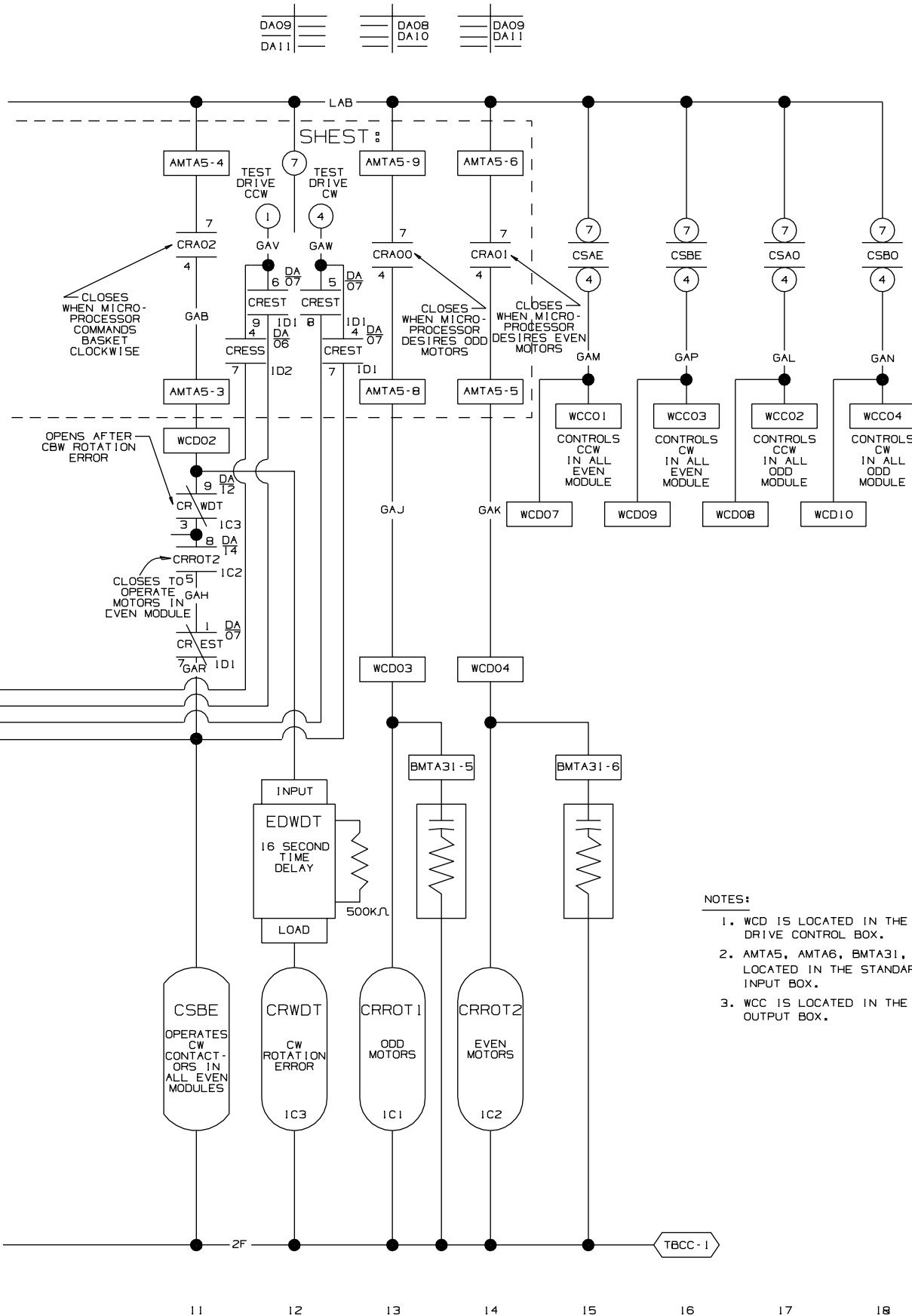
CONTROL VOLTAGE: 110V1P50HZ/120VP60HZ

PELLERIN MILNOR CORPORATION

W8CBWCA
99263D

W8CBWCA
99263D

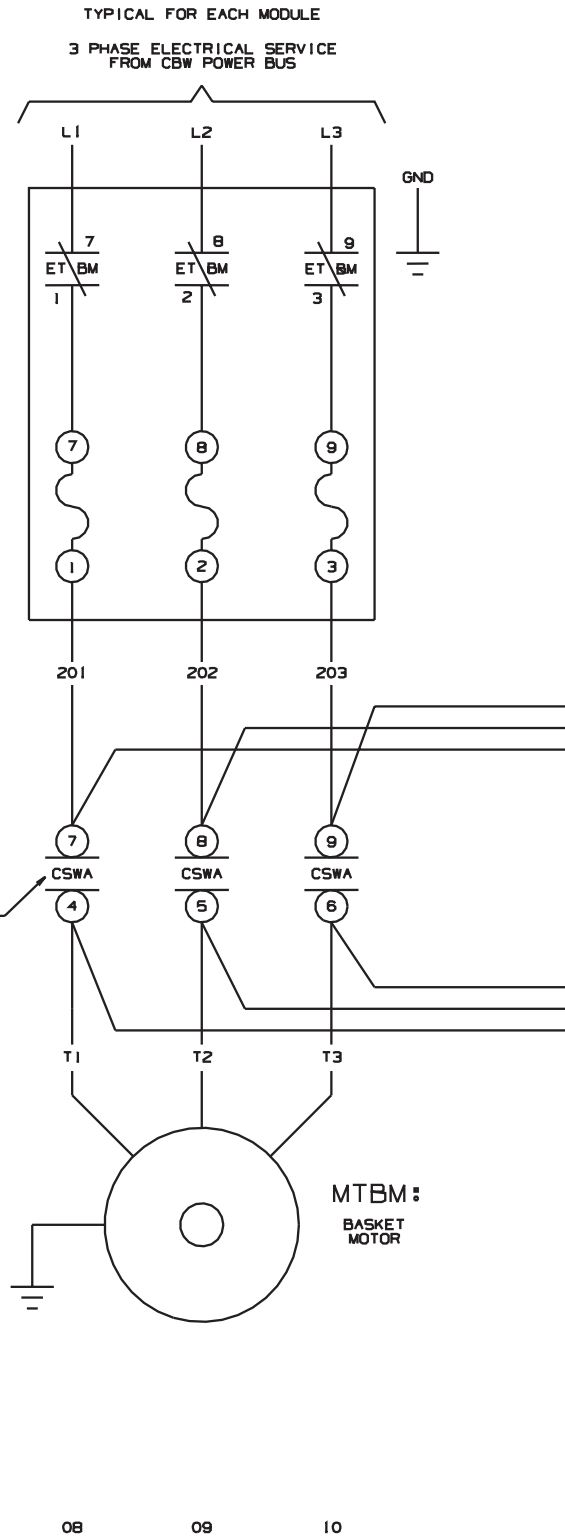
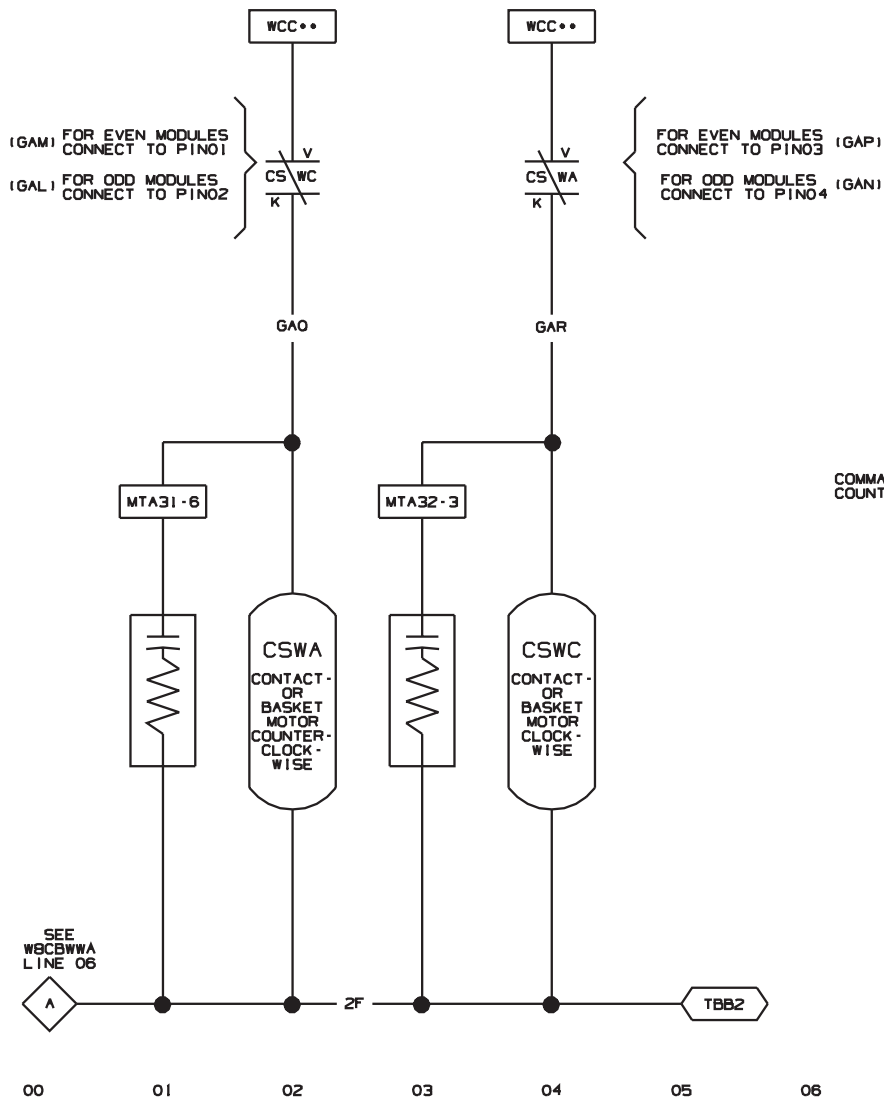




NOTES:

1. WCD IS LOCATED IN THE BASKET DRIVE CONTROL BOX.
2. AMTA5, AMTA6, BMTA31, BMTA32 ARE LOCATED IN THE STANDARD OUTPUT/ INPUT BOX.
3. WCC IS LOCATED IN THE STANDARD OUTPUT BOX.

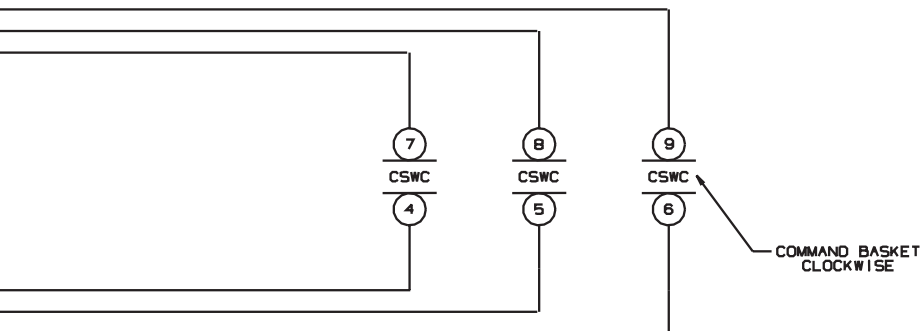
W8CBWDA
 CBW SYSTEMS MARK 8
 SCHEMATIC: DRIVE CONTACTORS
 FOR 7632 CBW ONLY
 PELLERIN MILNOR CORPORATION



W8CBWDB

CBW SYSTEMS: MARK 8
SCHEMATIC: DRIVE MOTORS
FOR 7632 CBW ONLY
PELLERIN MILNOR CORPORATION

ETBM:
BASKET MOTOR
OVERLOAD



NOTES:

1. WCC• IS LOCATED EVERY
MODULE CONTROL BOX.

11

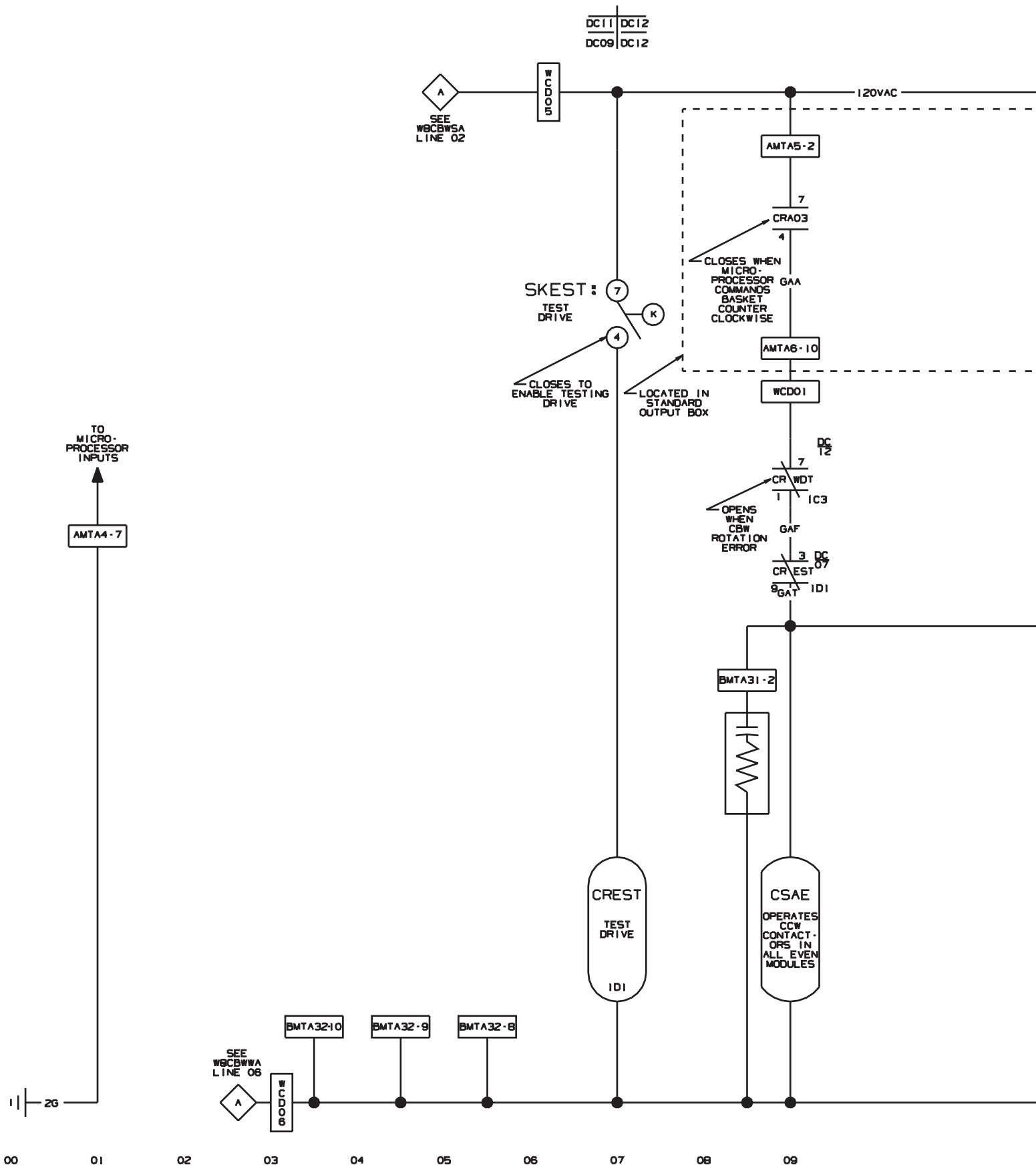
12

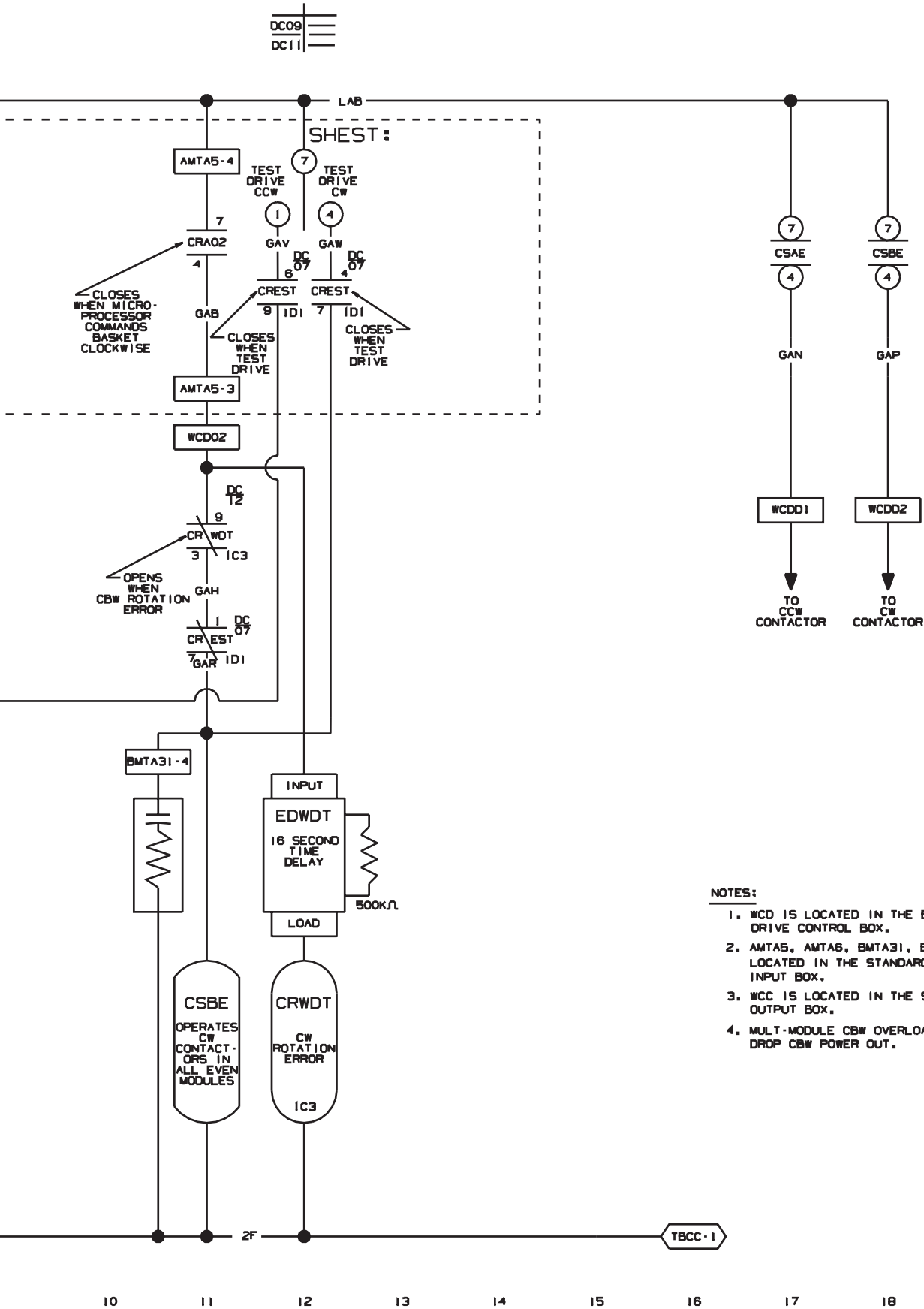
13

14

15

16

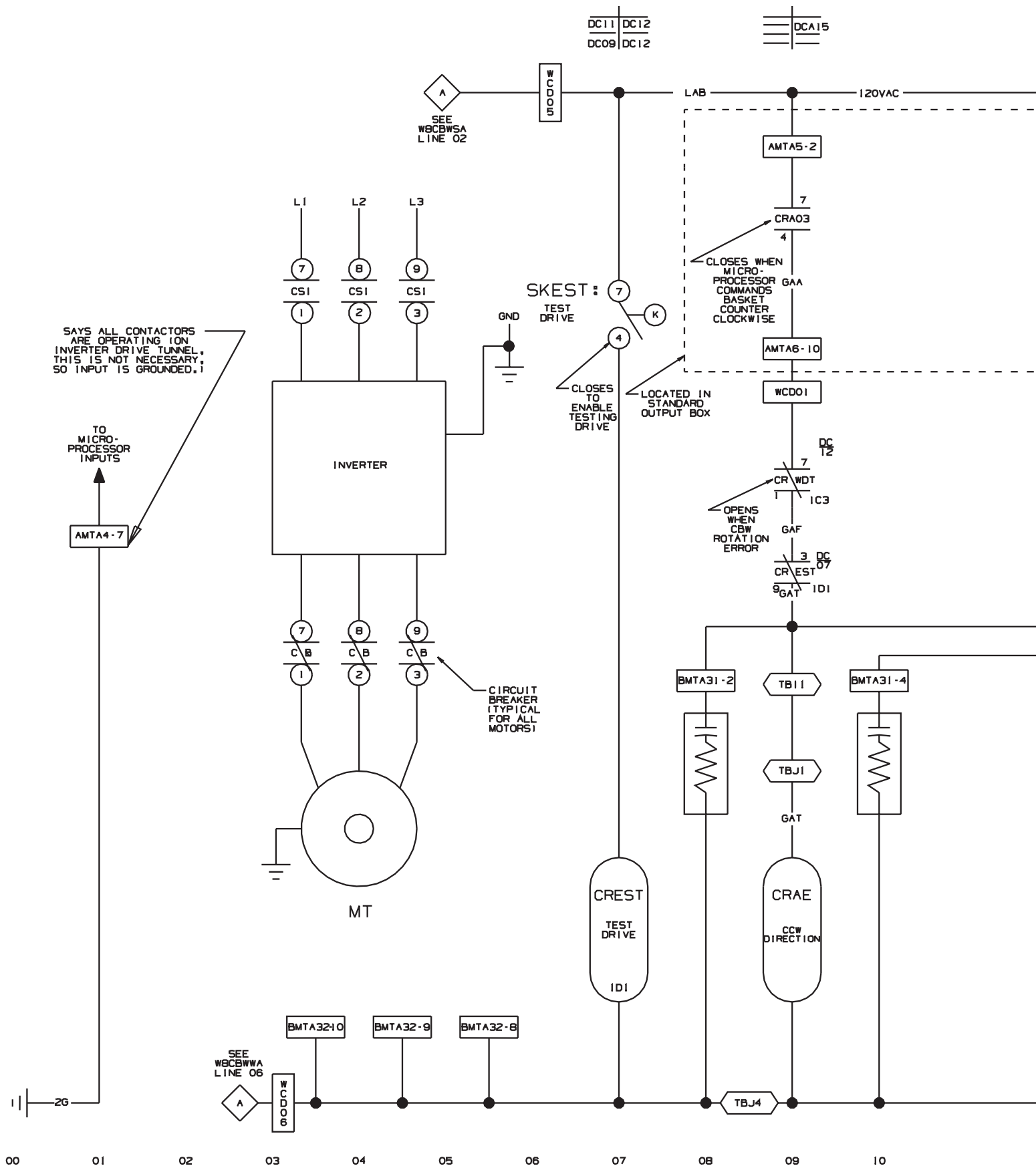


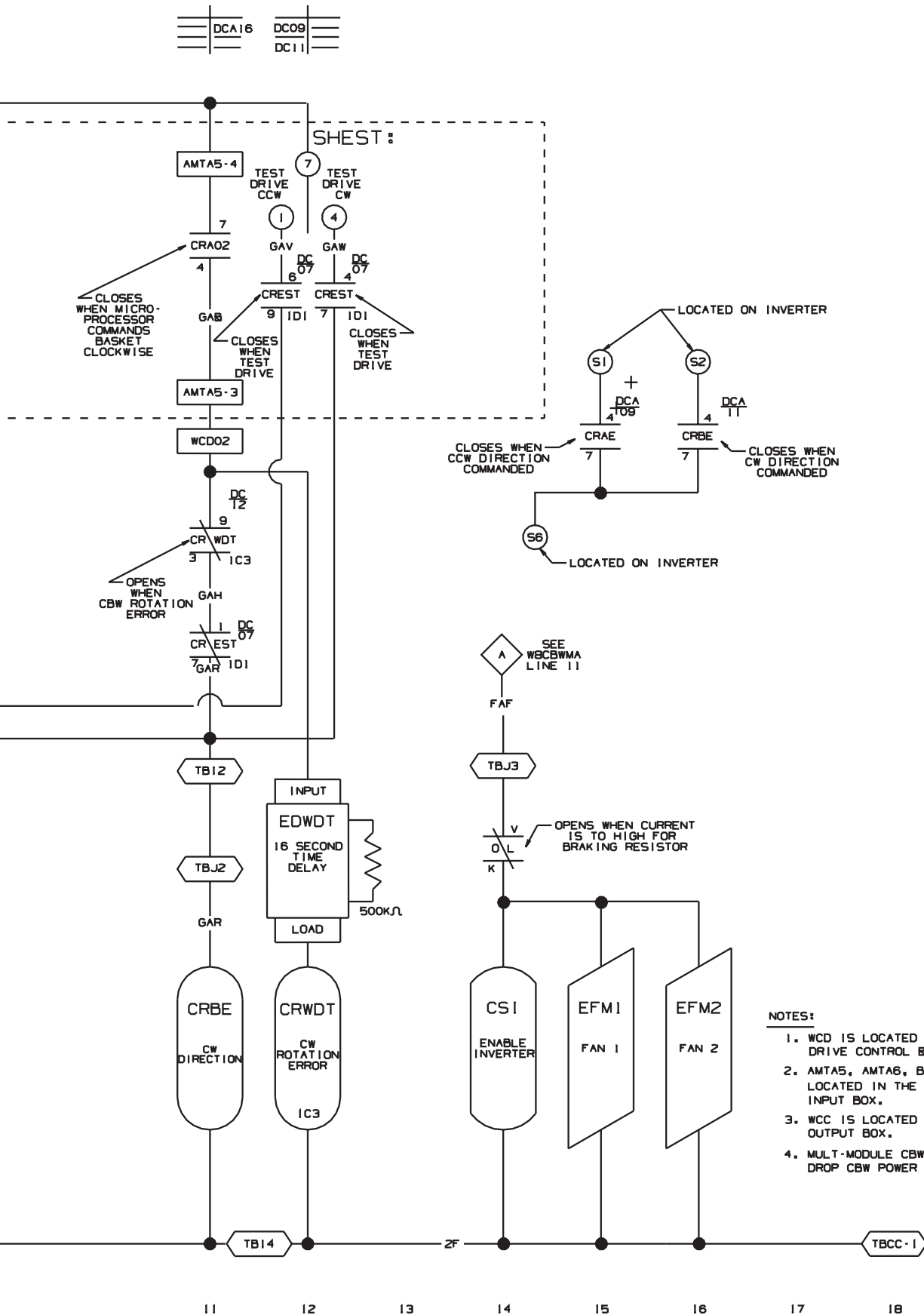


NOTES:

1. WCD IS LOCATED IN THE BASKET DRIVE CONTROL BOX.
2. AMTAS, AMTAS, BMTA31, BMTA32 ARE LOCATED IN THE STANDARD OUTPUT/ INPUT BOX.
3. WCC IS LOCATED IN THE STANDARD OUTPUT BOX.
4. MULT-MODULE CBW OVERLOADS DROP CBW POWER OUT.

W8CBWDC
CBW SYSTEMS MARK 8
SCHEMATIC: DRIVE CONTACTORS
NON-INVERTER MULTI-MODULE ONLY
PELLERIN MILNOR CORPORATION



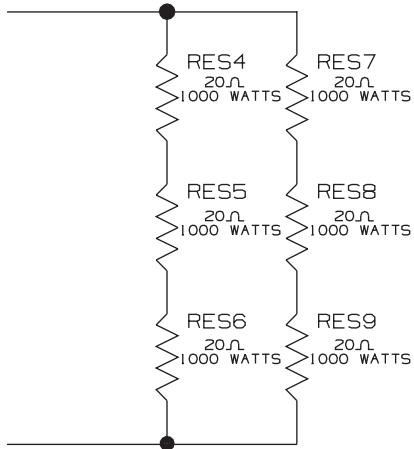


W8CBWDCB CBW SYSTEMS MARK 8 SCHEMATIC: DRIVE CONTACTORS WITH GPD505 VARIABLE SPEED INVERTER MULTI-MODULE ONLY PELLERIN MILNOR CORPORATION

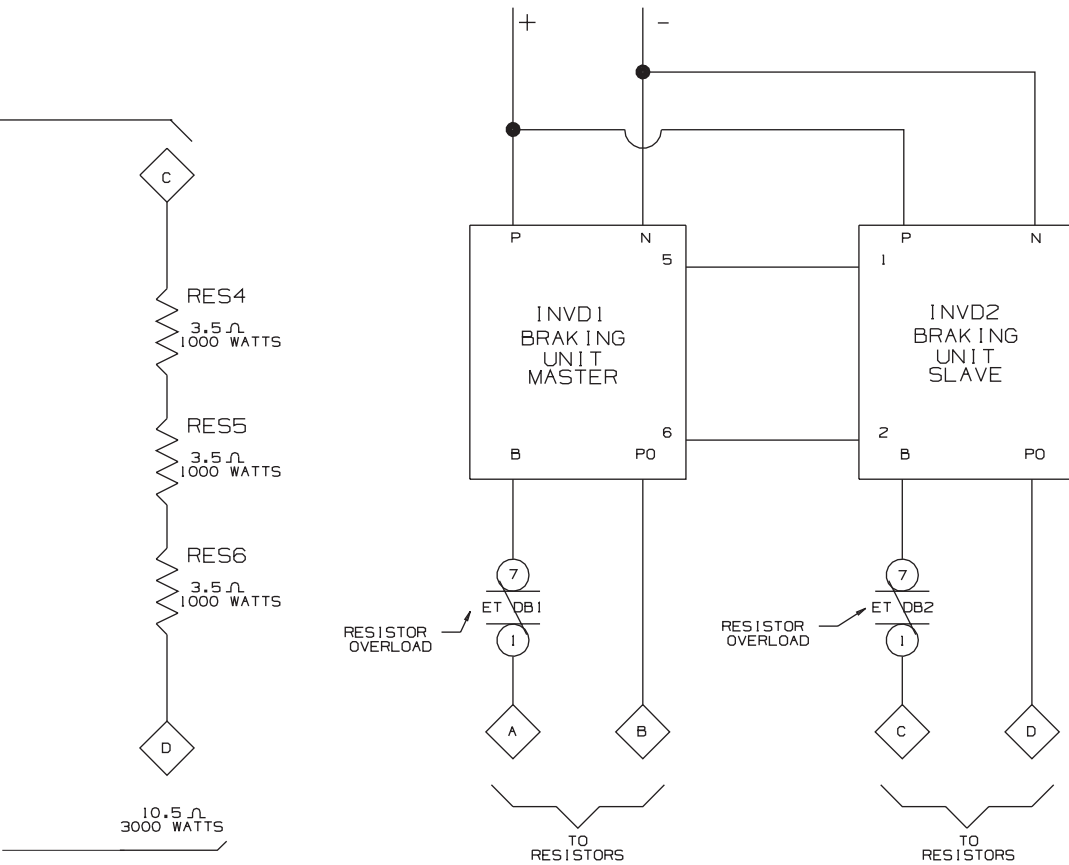
NOTES:

1. WCD IS LOCATED IN THE BASKET DRIVE CONTROL BOX.
2. AMTAS, AMTAS6, BMTA31, BMTA32 ARE LOCATED IN THE STANDARD OUTPUT/INPUT BOX.
3. WCC IS LOCATED IN THE STANDARD OUTPUT BOX.
4. MULT-MODULE CBW OVERLOADS DROP CBW POWER OUT.

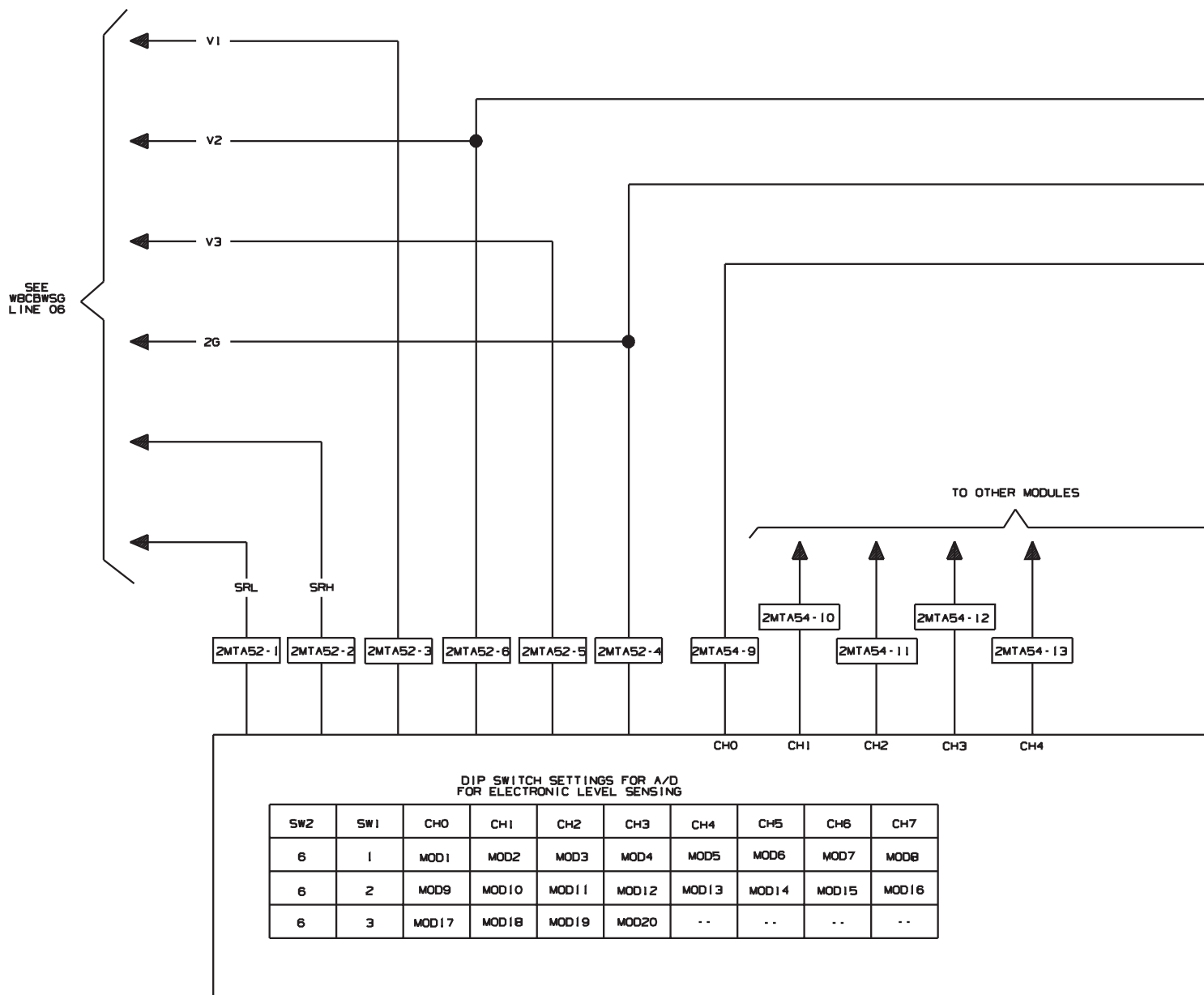
W8CBWDF
CBW SYSTEMS MARK 8
SCHEMATIC: VARIABLE SPEED DRIVE DYNAMIC
BRAKING RESISTORS
PELLERIN MILNOR CORPORATION



FROM INVERTER



11 12 13 14 15 16 17 18 19



00

01

02

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04

05

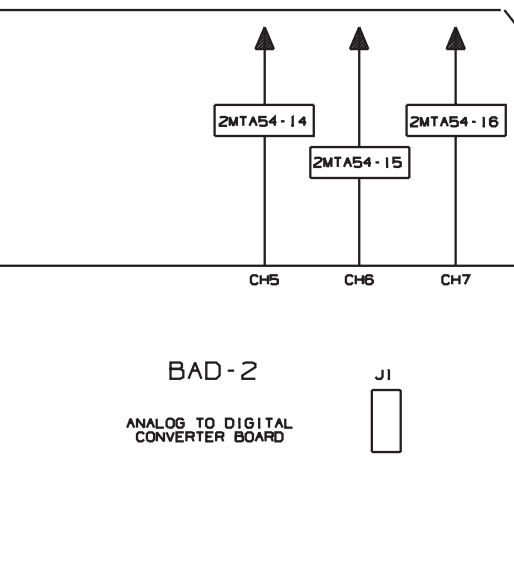
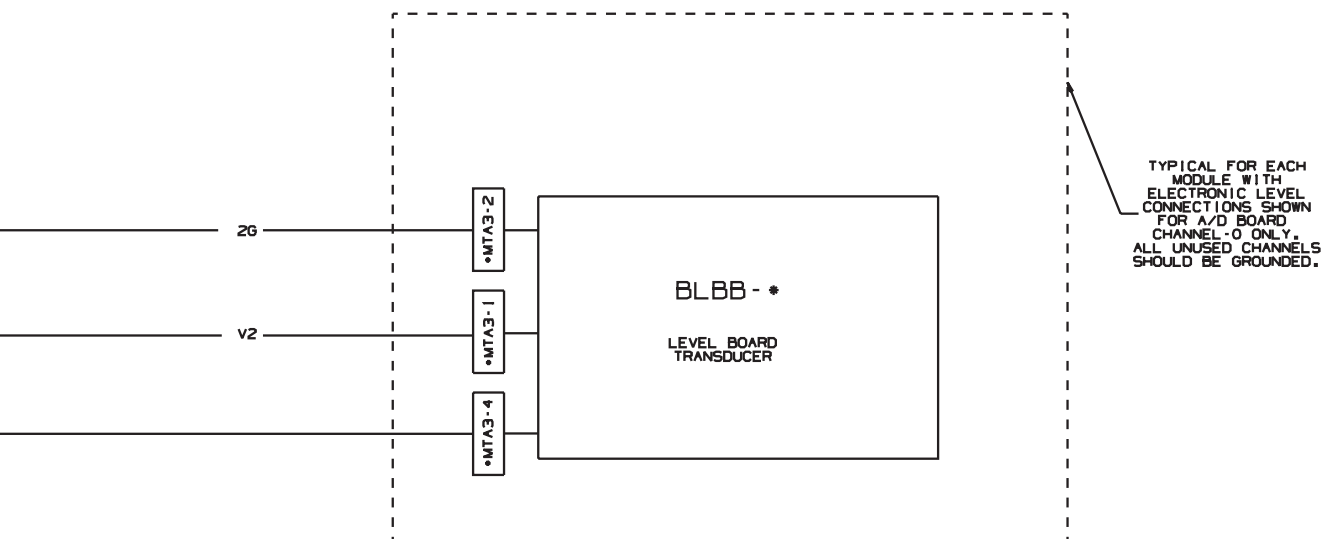
06

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10



NOTES

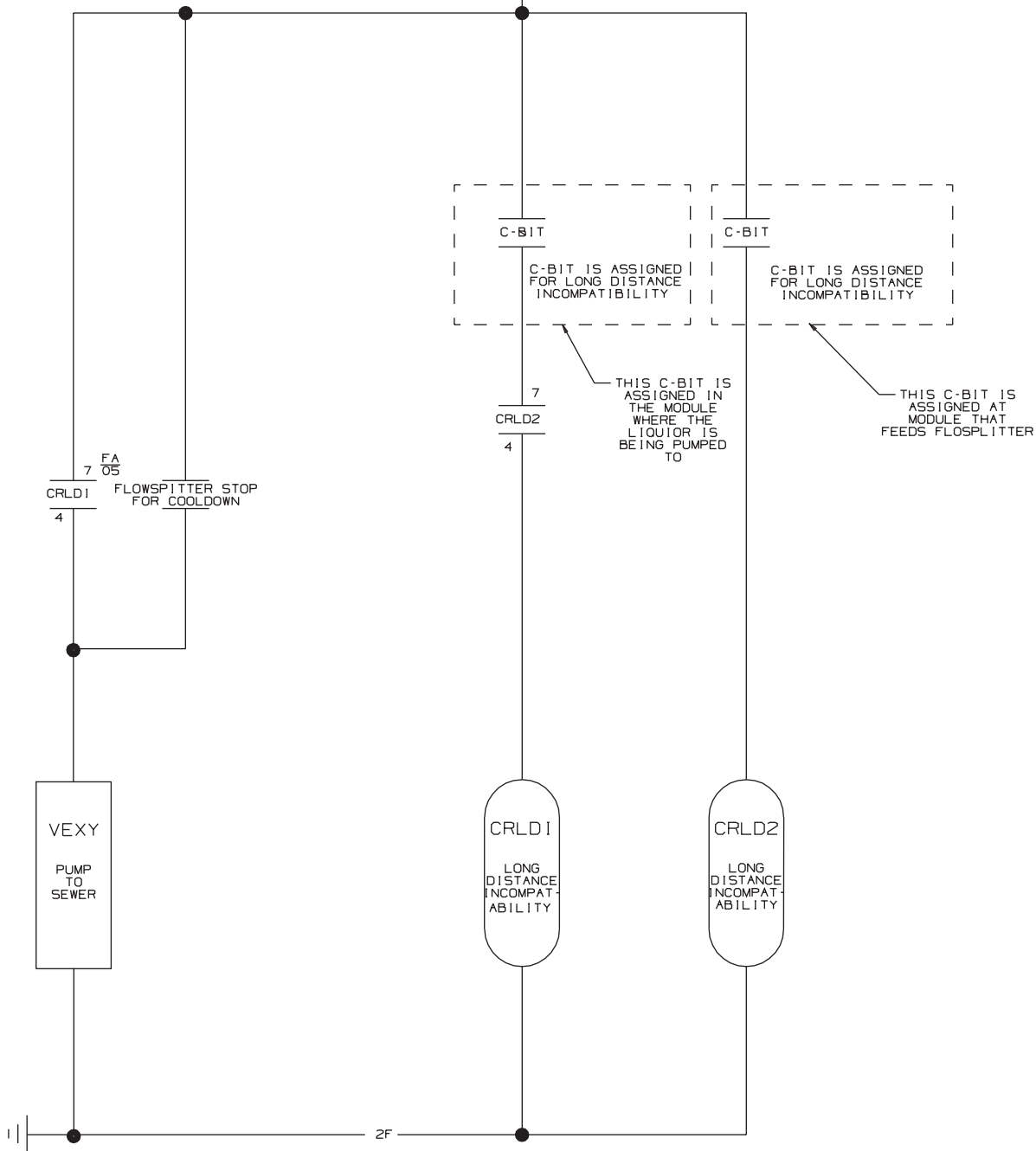
1. REMOVE ALL JUMPERS FROM J1 ON BOARD BAD-2.
2. BOARD BLBA & BLBB IS PROVIDED IN EACH MODULE WITH ELECTRONIC LEVEL. SEE TABLE FOR APPROPRIATE CONNECTIONS TO A/D BOARD. ALL UNUSED CHANNELS SHOULD BE GROUNDED.

W8CBWEL
SCHEMATIC: ELECTRONIC LEVEL SENSING
PELLERIN MILNOR CORPORATION

11 12 13 14 15 16 17

FA01

120VAC



00

01

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03

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09

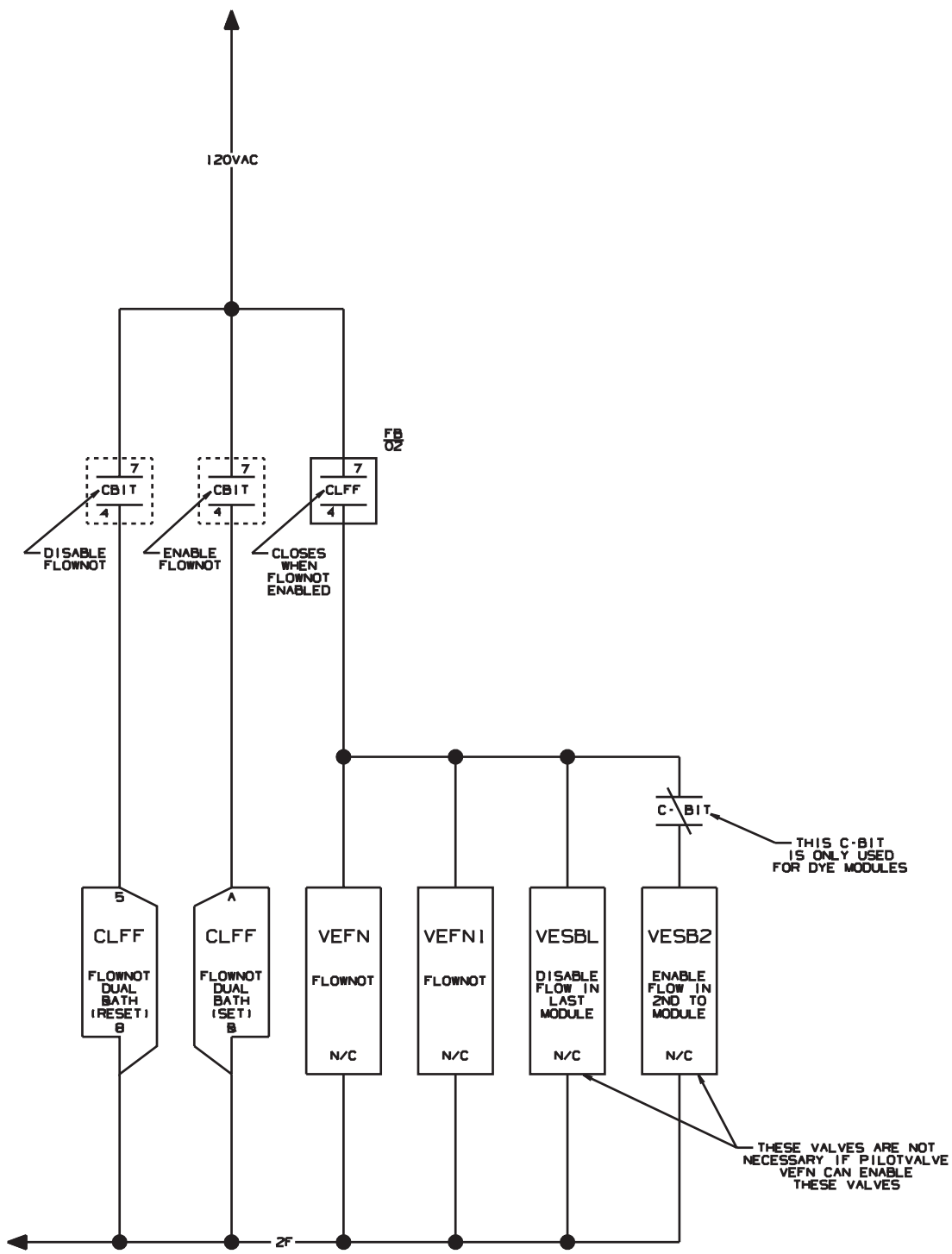
10

11

W8CBWFA

CBW SYSTEMS: MARK 8
SCHEMATIC: LONG DISTANCE INCOMPATIBILITY
PELLERIN MILNOR CORPORATION

FB03



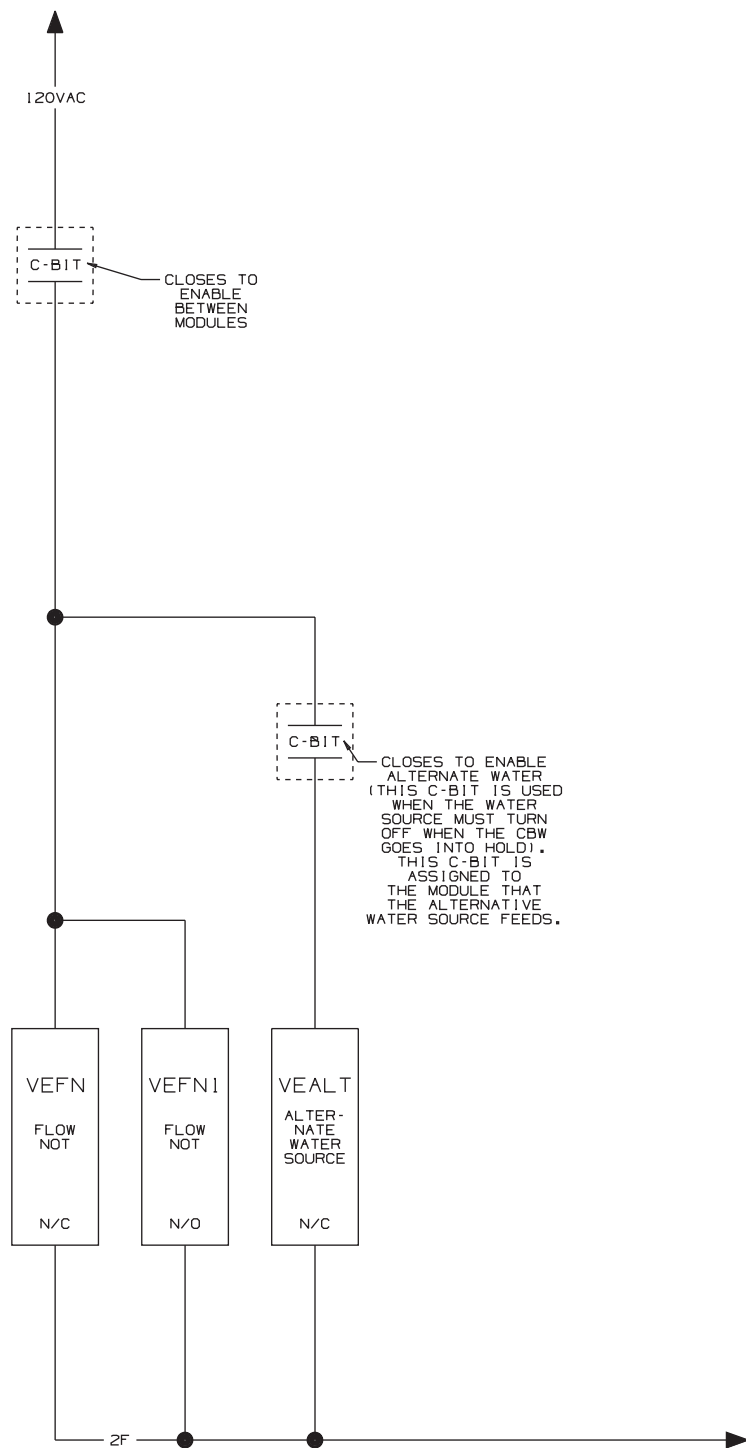
00 01 02 03 04 05 06 07 08 09

W8CBWFB
CBW SYSTEMS: MARK 8
SCHEMATIC: DUAL BATH
PELLERIN MILNOR CORPORATION

NOTES:

1. DUAL BATH REQUIRES FAST FILL

10 11 12 13 14



00

01

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03

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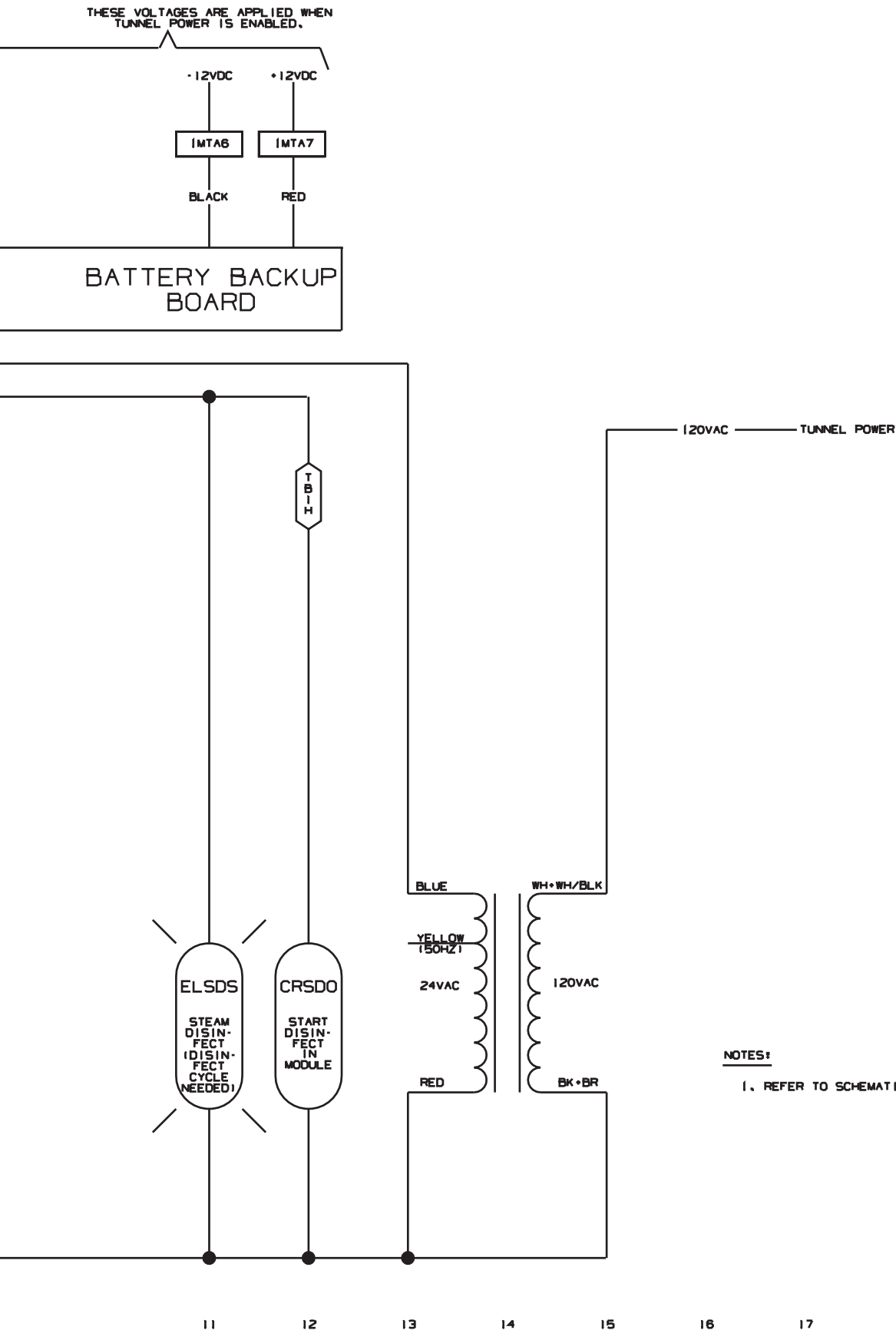
11

W8CBWFN

CBW SYSTEMS: MARK 8
SCHEMATIC: FLOW/FLOW NOT

PELLERIN MILNOR CORPORATION



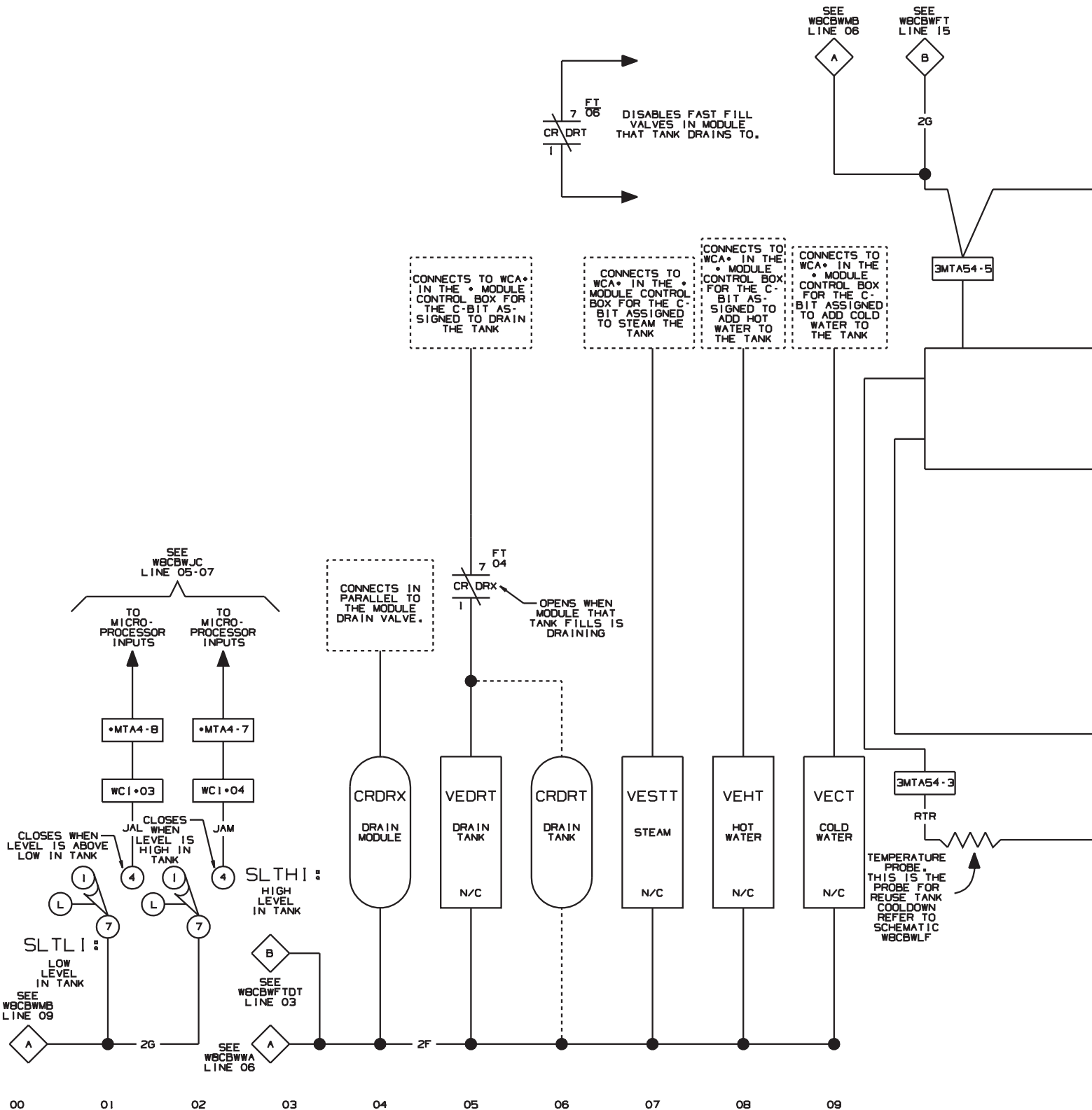


NOTES:
1. REFER TO SCHEMATIC W8CBWJF.

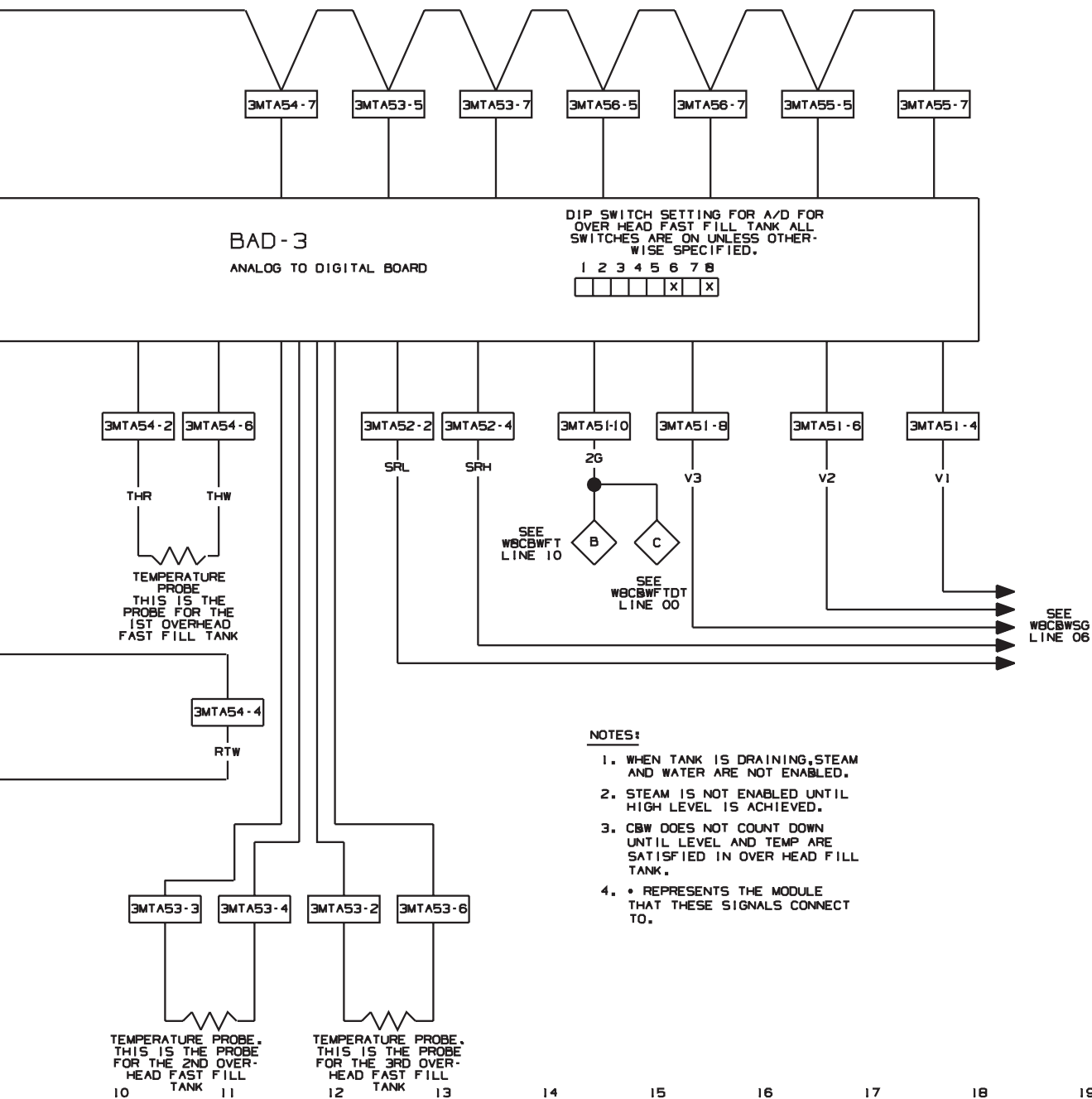
W8CBWFS
CBW SYSTEMS: MARK 8
SCHEMATIC: STEAM DISINFECT
24VAC50HZ/24VAC60HZ
PELLERIN MILNOR CORPORATION

FT05

FT06

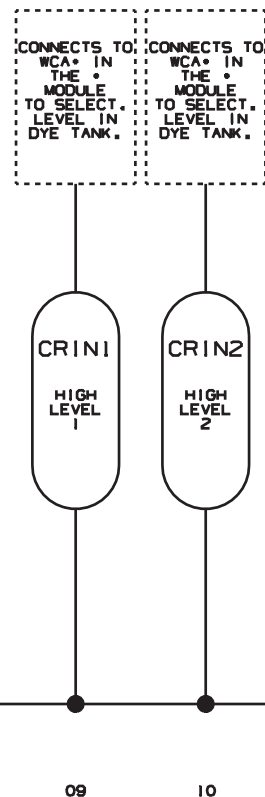
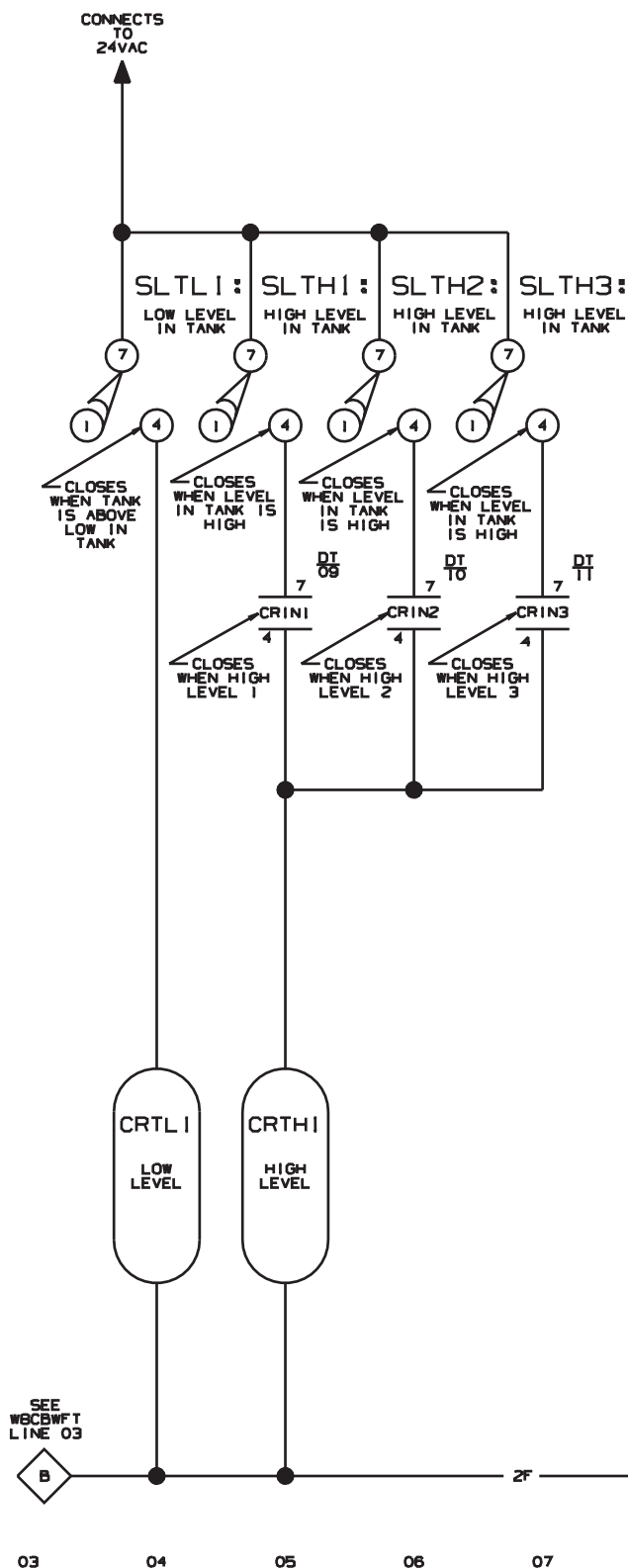
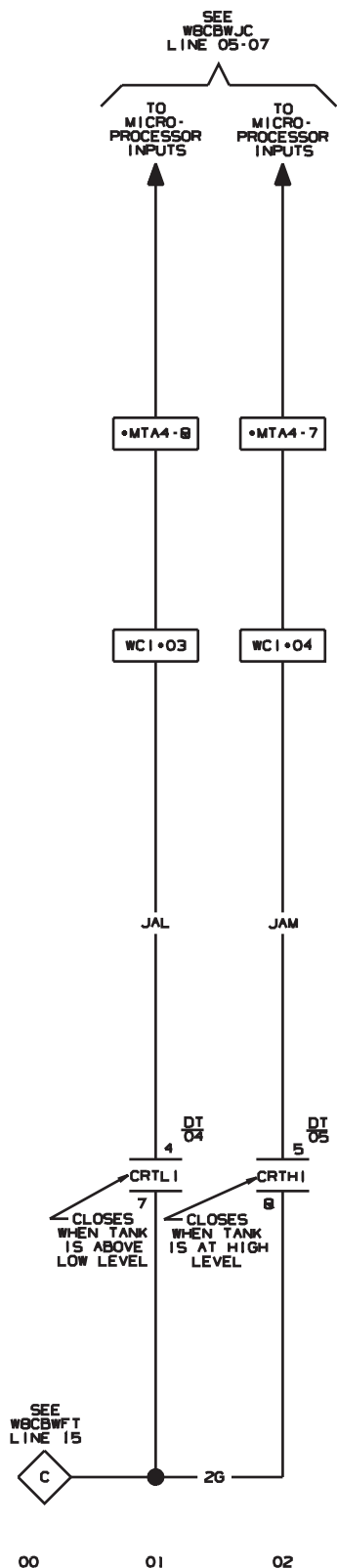


WIRE NO.	VOLTAGE	WIRE COLOR
V1	+5VDC	BLUE
V2	+12VDC	BLUE/ORANGE
V3	+12VDC	BLUE/BLACK
2G	GROUND	BLUE/WHITE
SRH	SERIAL HIGH	BLUE/RED
SRL	SERIAL LOW	BLACK/BLUE
INPUTS	-	BLACK/BLUE
-	24 VAC	BLUE/RED
-	120VAC	RED
2F	CONTROL GROUND	RED/WHITE

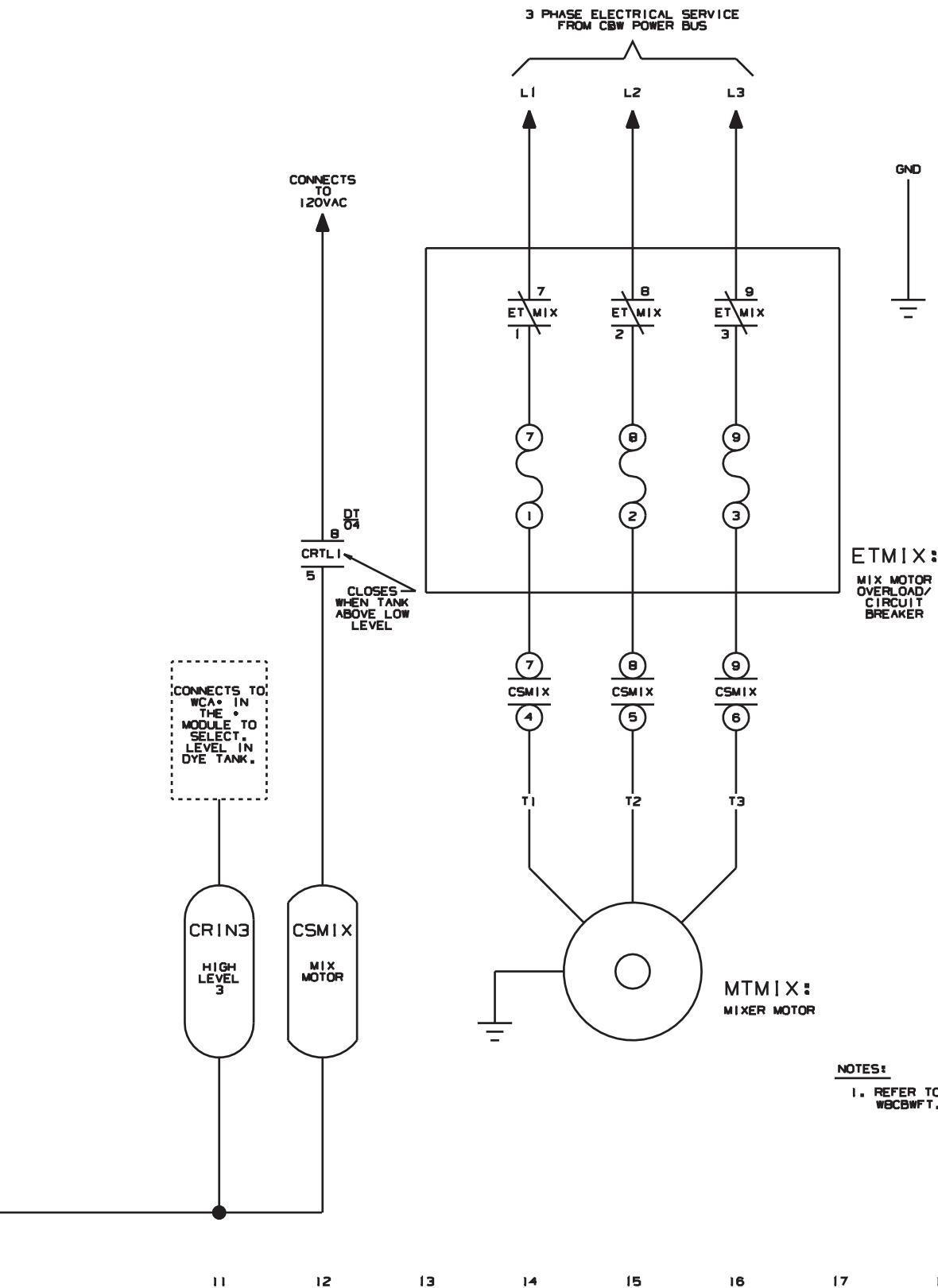


DT01 DT02

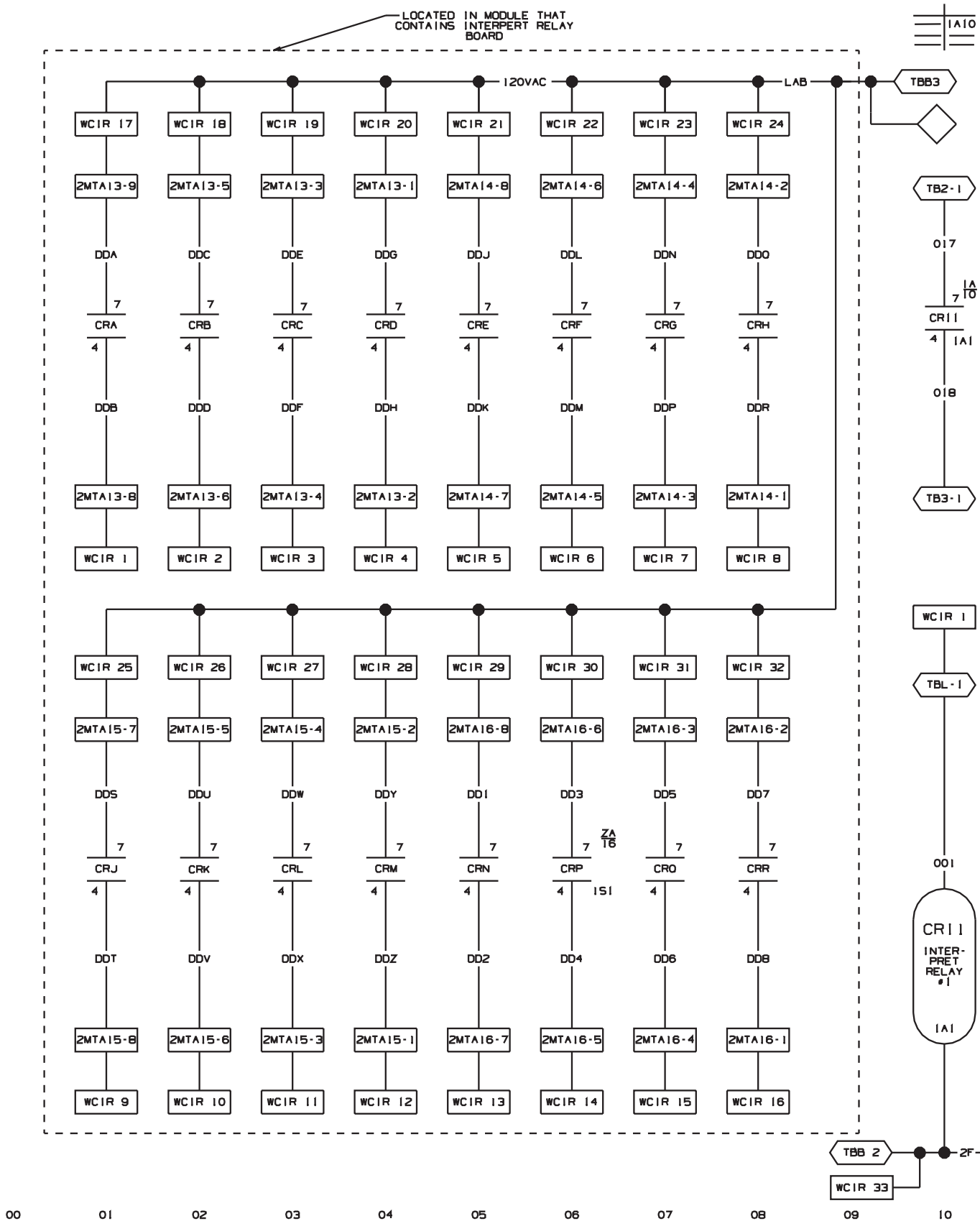
DT05 DT06

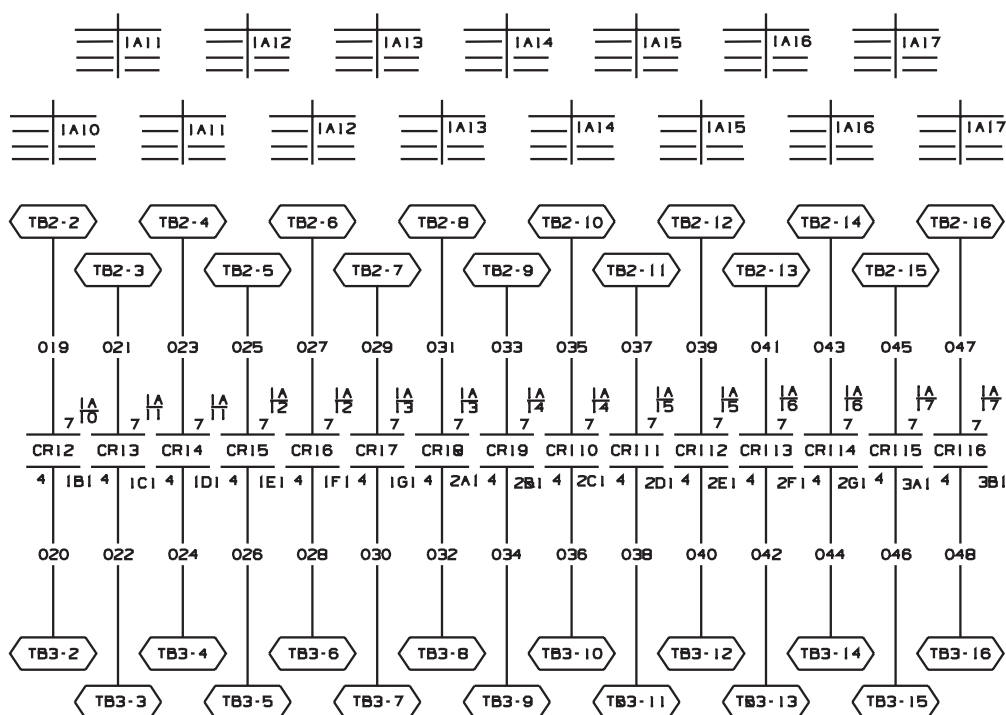


DT07



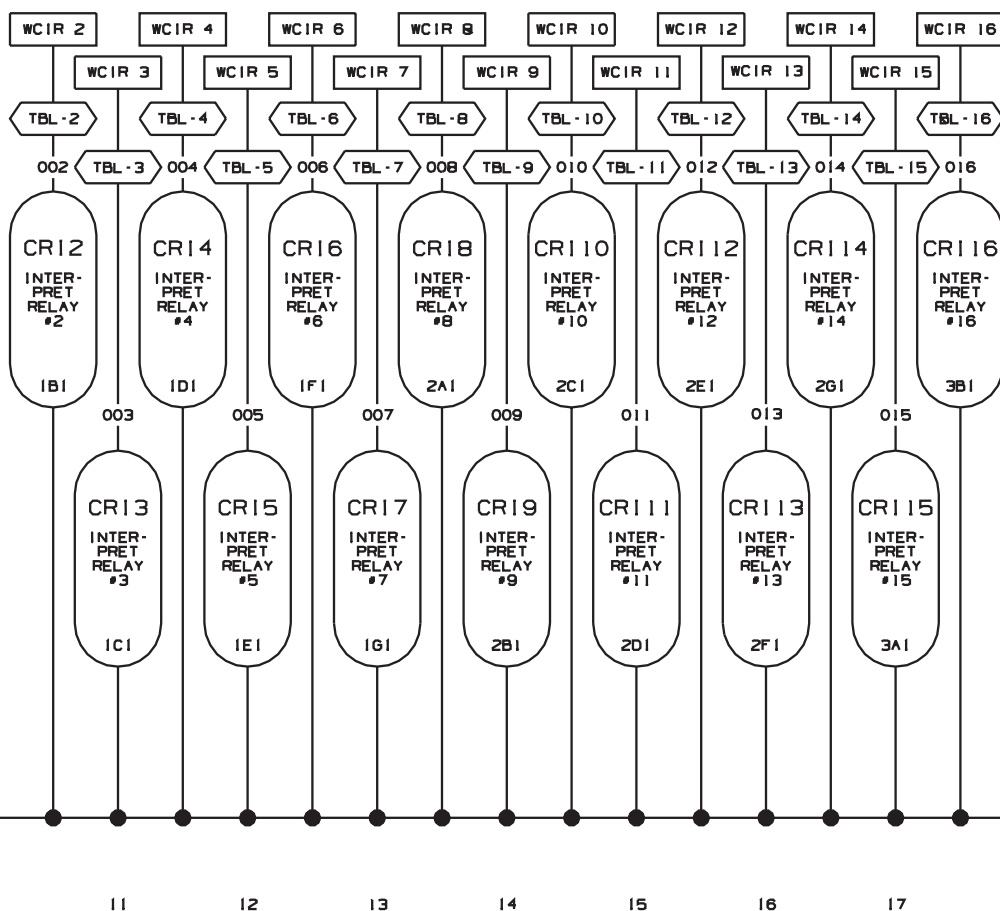
W8CBWFTDT
 CBW SYSTEMS MARK 8
 SCHEMATIC: OVERHEAD FILL DYE TANK
 110V1P50HZ/120V1P60HZ
 PELLERIN MILNOR CORPORATION





DIP SWITCH SETTING OF INTERPERT RELAY BOARD ARE SHOWN BELOW
X DENOTES ON SWITCH

	1	2	3	4	5	6	7	8
2ND 16 OUT	X				X			
3RD 16 OUT		X			X			
4TH 16 OUT	X	X			X			
5TH 16 OUT			X		X			



NOTES:

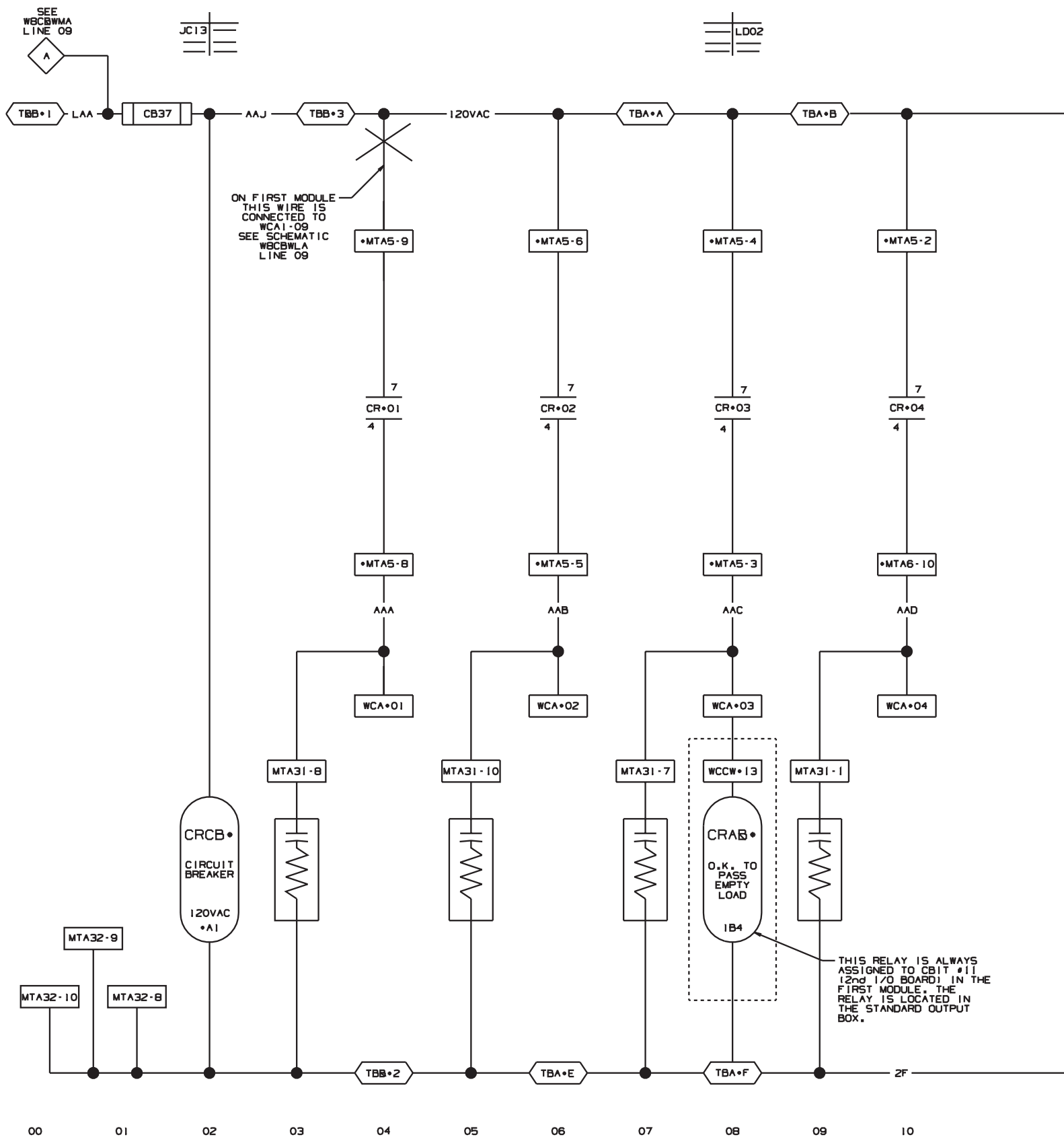
1. WCIR CABLES TO THE MODULE THAT CONTAINS THE INTERPERT RELAY BOARD.
2. IF THE 2ND 16 OUTPUT BOARD IS USED:
 - A) RELAYS CHANGE FROM CR1 TO CRJ.
 - B) TBL CHANGES TO TBM.
 - C) TB2 CHANGES TO TB4.
 - D) TB3 CHANGES TO TB5.
 - E) WCIR CHANGE TO WCJR.
 - F) WIRE NUMBERS BEGINNING WITH 0 BECOME 1, WIRE NUMBERS BEGINNING WITH D BECOME E.

W8CBWIA

CBW SYSTEM MARK 8

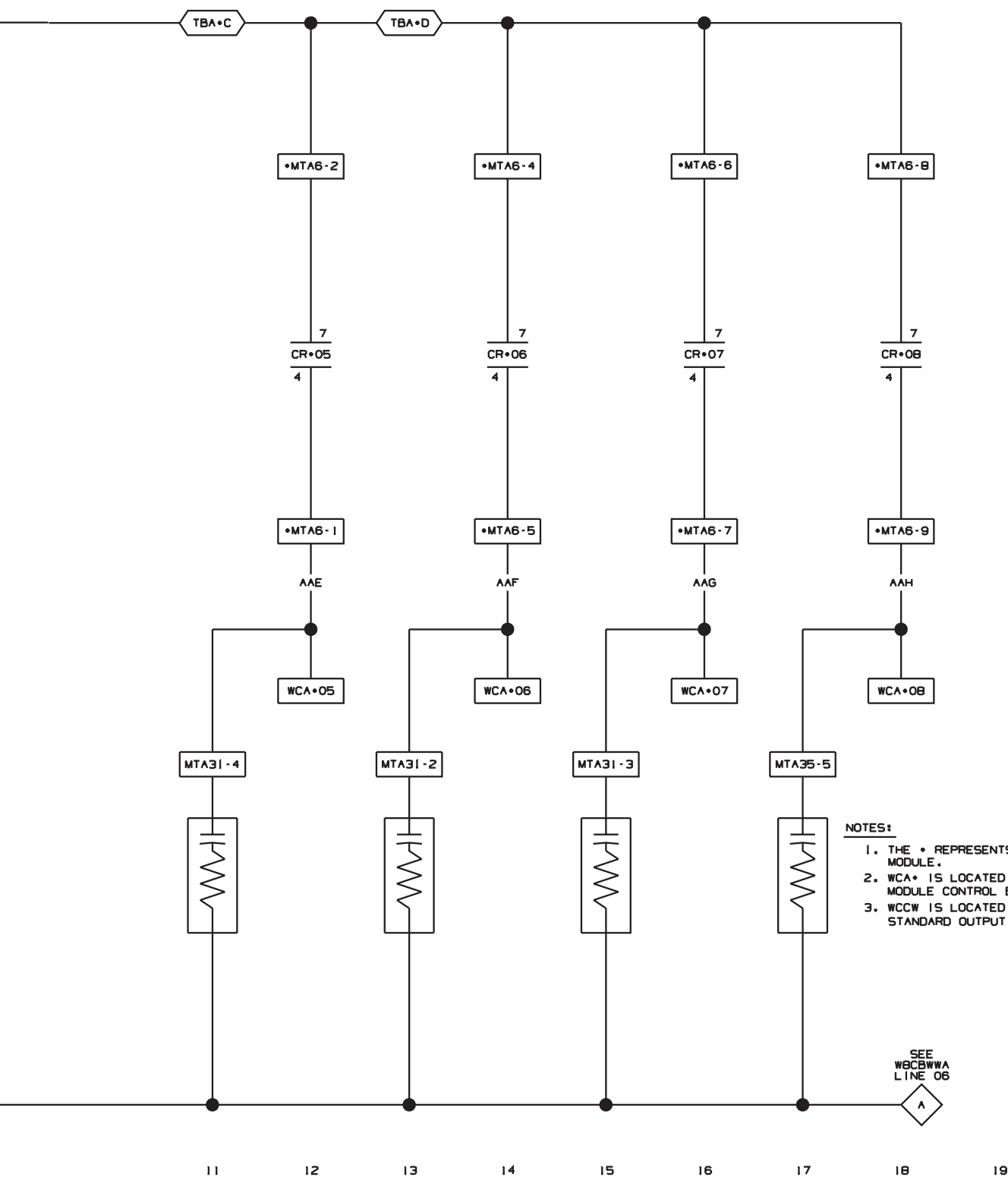
SCHEMATIC: INTERPERT RELAY

PELLERIN MILNOR CORPORATION



W8CBWJA

CBW SYSTEMS: MARK 8
SCHEMATIC: MODULE CONTROLS OUTPUTS
PELLERIN MILNOR CORPORATION

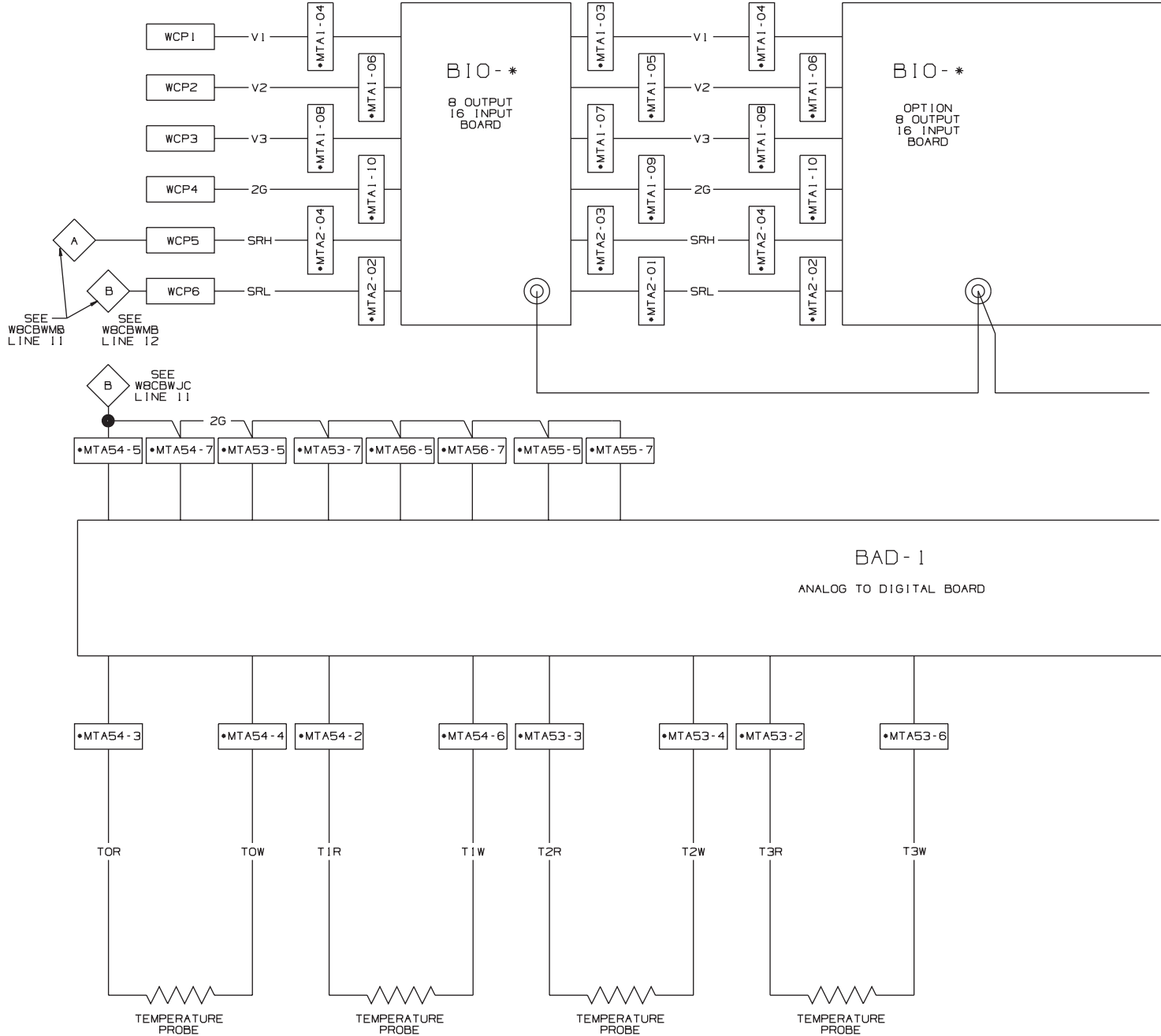


- NOTES:
1. THE • REPRESENTS WHICH MODULE.
 2. WCA• IS LOCATED IN THE MODULE CONTROL BOX.
 3. WCCW IS LOCATED IN THE STANDARD OUTPUT BOX.

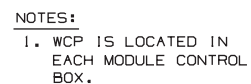
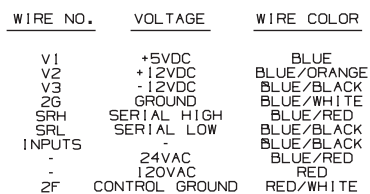
DIP SWITCH SETTINGS

ALL SWITCHES ARE ON UNLESS OTHERWISE SPECIFIED

1ST 16/8 BOARD (STANDARD)								2ND 16/8 BOARD (OPTIONAL)								1ST 16/8 BOARD (STANDARD)								2ND 16/8 BOARD (OPTIONAL)								1ST 16/8 BOARD (STANDARD)							
1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
MODULE 1	X							X								X								X								X							
MODULE 2		X							X								X								X								X						
MODULE 3	X	X						X	X							X	X							X	X							X							
MODULE 4			X							X								X								X								X					
MODULE 5	X		X					X		X						X		X						X		X						X							
MODULE 6		X	X						X	X							X	X							X	X							X						
MODULE 7	X	X	X					X	X	X						X	X	X						X	X	X						X							
MODULE 8				X									X																			X							
MODULE 9	X							X								X								X								X							
MODULE 10		X		X													X		X						X		X					X							
MODULE 11	X	X						X	X							X	X							X	X							X							
MODULE 12			X	X						X								X		X						X		X					X						
MODULE 13	X		X	X				X		X						X		X	X					X		X	X					X							
MODULE 14		X	X	X					X	X							X	X	X						X	X	X						X						
MODULE 15	X	X	X	X				X	X	X						X	X	X	X					X	X	X	X					X							
MODULE 16								X																								X							
MODULE 17	X															X								X								X							
MODULE 18		X															X								X								X						
MODULE 19	X	X						X	X							X	X							X	X							X							
MODULE 20			X																													X							



1ST A-D BOARD FOR MODULE 1-8	MODULE 1	MODULE 2	MODULE 3	MODULE 4
2ND A-D BOARD FOR MODULE 9-16	MODULE 9	MODULE 10	MODULE 11	MODULE 12
3RD A-D BOARD FOR MODULE 17-20	MODULE 17	MODULE 18	MODULE 19	MODULE 20



10	11	12	13	14	15	16	17	18	19
----	----	----	----	----	----	----	----	----	----

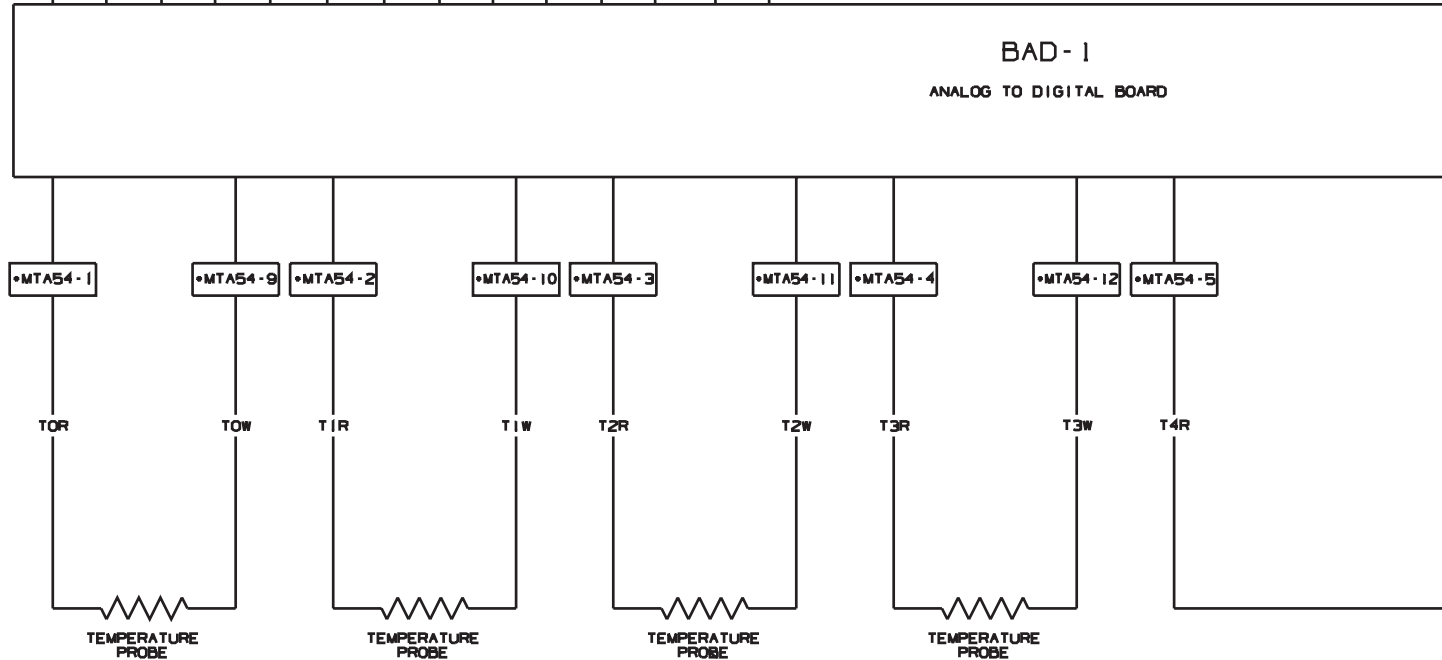
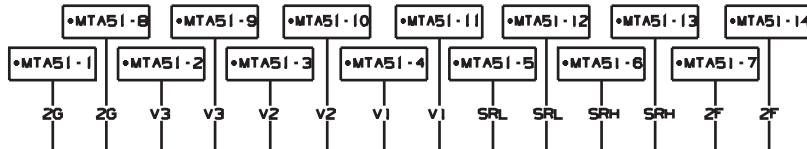
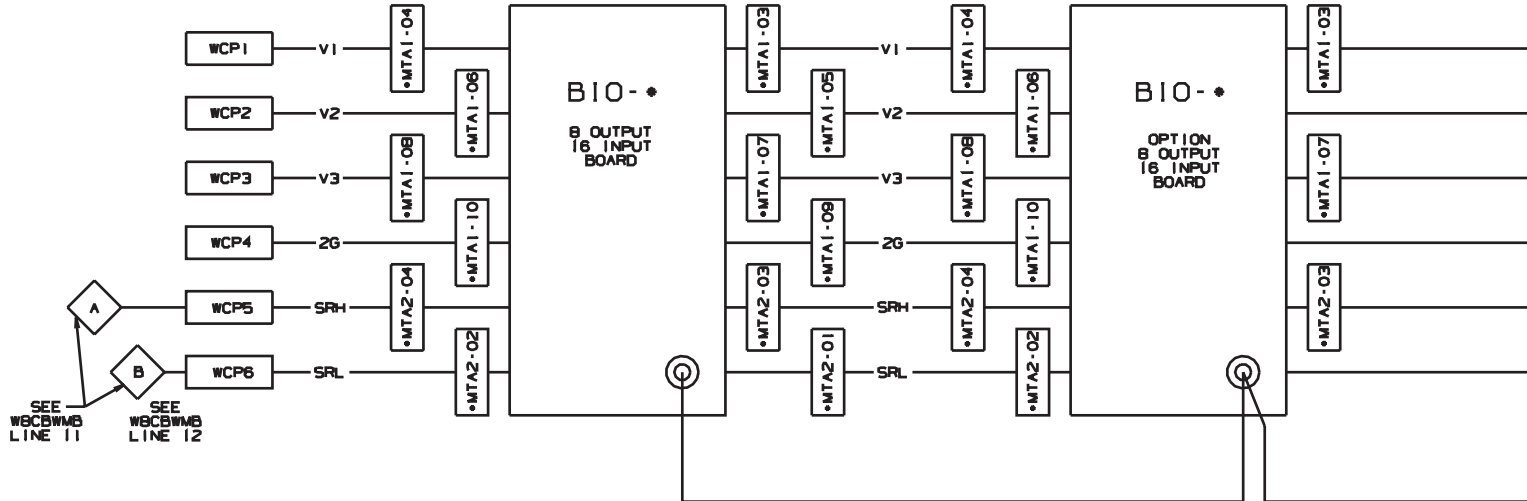
DIP SWITCH SETTINGS

ALL SWITCHES ARE ON UNLESS OTHERWISE SPECIFIED

1ST 16/8 BOARD (STANDARD)								2ND 16/8 BOARD (OPTIONAL)							
1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
MODULE 1	X							X							X
MODULE 2		X							X						X
MODULE 3	X	X						X	X						X
MODULE 4			X							X					X
MODULE 5	X	X						X	X						X
MODULE 6	X	X						X	X						X
MODULE 7	X	X	X					X	X	X					X
MODULE 8				X							X				X

1ST 16/8 BOARD (STANDARD)								2ND 16/8 BOARD (OPTIONAL)							
1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
MODULE 9	X			X				X		X					X
MODULE 10		X	X						X	X					X
MODULE 11	X	X	X					X	X	X					X
MODULE 12		X	X						X	X					X
MODULE 13	X		X	X				X		X	X				X
MODULE 14	X	X	X						X	X	X				X
MODULE 15	X	X	X					X	X	X					X
MODULE 16						X								X	X

1ST 16/8 BOARD (STANDARD)							
1	2	3	4	5	6	7	8
MODULE 17	X						X
MODULE 18		X					X
MODULE 19	X	X					X
MODULE 20		X					X



1ST A-D BOARD FOR MODULE 1-8	MODULE 1	MODULE 2	MODULE 3	MODULE 4
2ND A-D BOARD FOR MODULE 9-16	MODULE 9	MODULE 10	MODULE 11	MODULE 12
3RD A-D BOARD FOR MODULE 17-20	MODULE 17	MODULE 18	MODULE 19	MODULE 20

2ND 16/8 BOARD (OPTIONAL)								
	1	2	3	4	5	6	7	8
	X						X	X
		X					X	X
	X	X					X	X
			X				X	X

1ST A-D BOARD
FOR MODULES
1-8

SW1	SW2
1	2

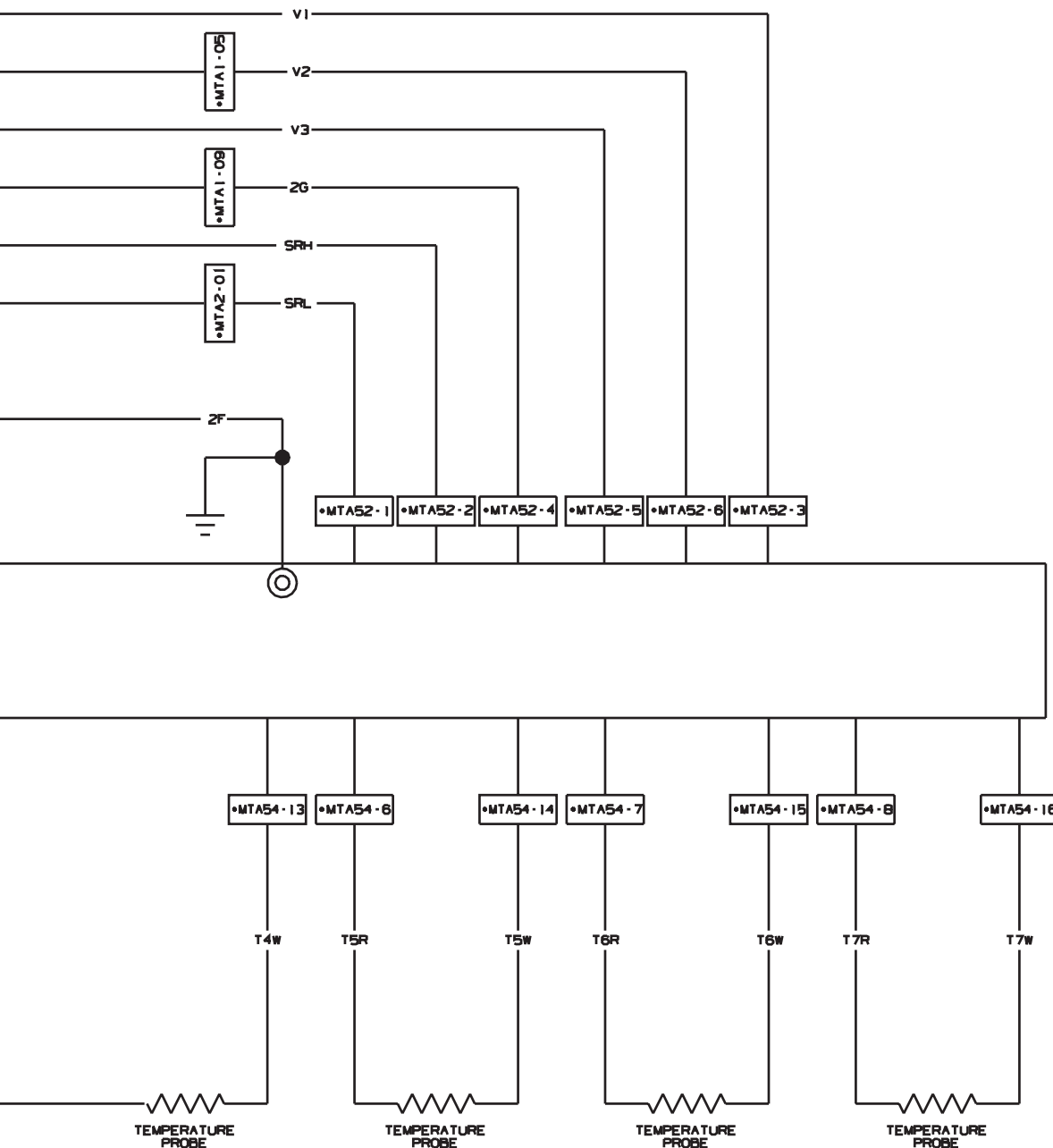
2ND A-D BOARD
FOR MODULES
9-16

SW1	SW2
2	2

3RD A-D BOARD
FOR MODULES
17-20

SW1	SW2
3	2

WIRE NO.	VOLTAGE	WIRE COLOR
V1	+5VDC	BLUE
V2	+12VDC	BLUE/ORANGE
V3	-12VDC	BLUE/BLACK
ZG	GROUND	BLUE/WHITE
SRH	SERIAL HIGH	BLUE/RED
SRL	SERIAL LOW	BLUE/BLACK
INPUTS	-	BLUE/BLACK
-	24VAC	BLUE/RED
-	120VAC	RED
ZF	CONTROL GROUND	RED/WHITE

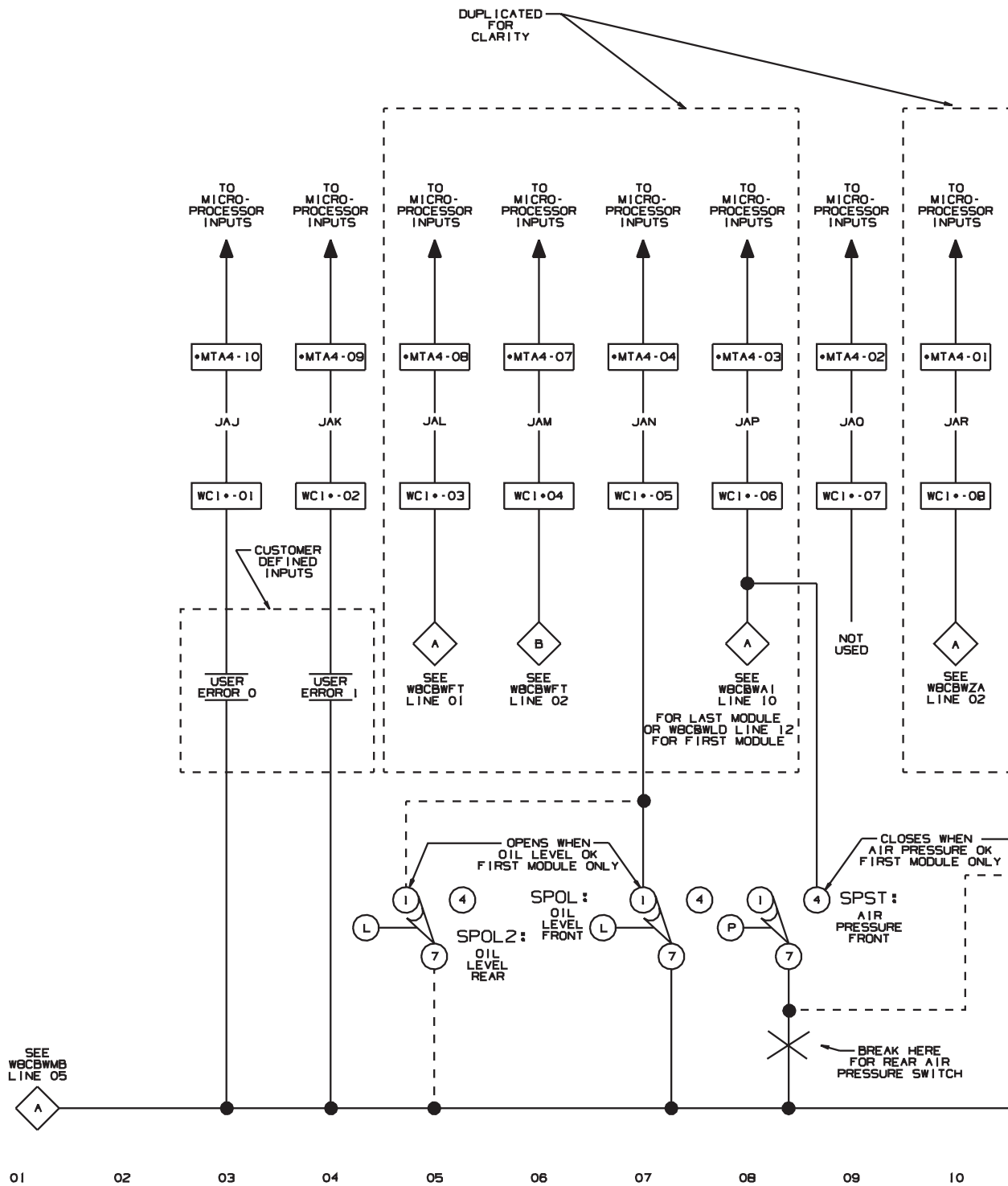


- NOTES:
1. WCP IS LOCATED IN EACH MODULE CONTROL BOX.
 2. JUMPER J1 SHOULD BE INSTALLED FOR ALL RTD CHANNELS ON BAD-1

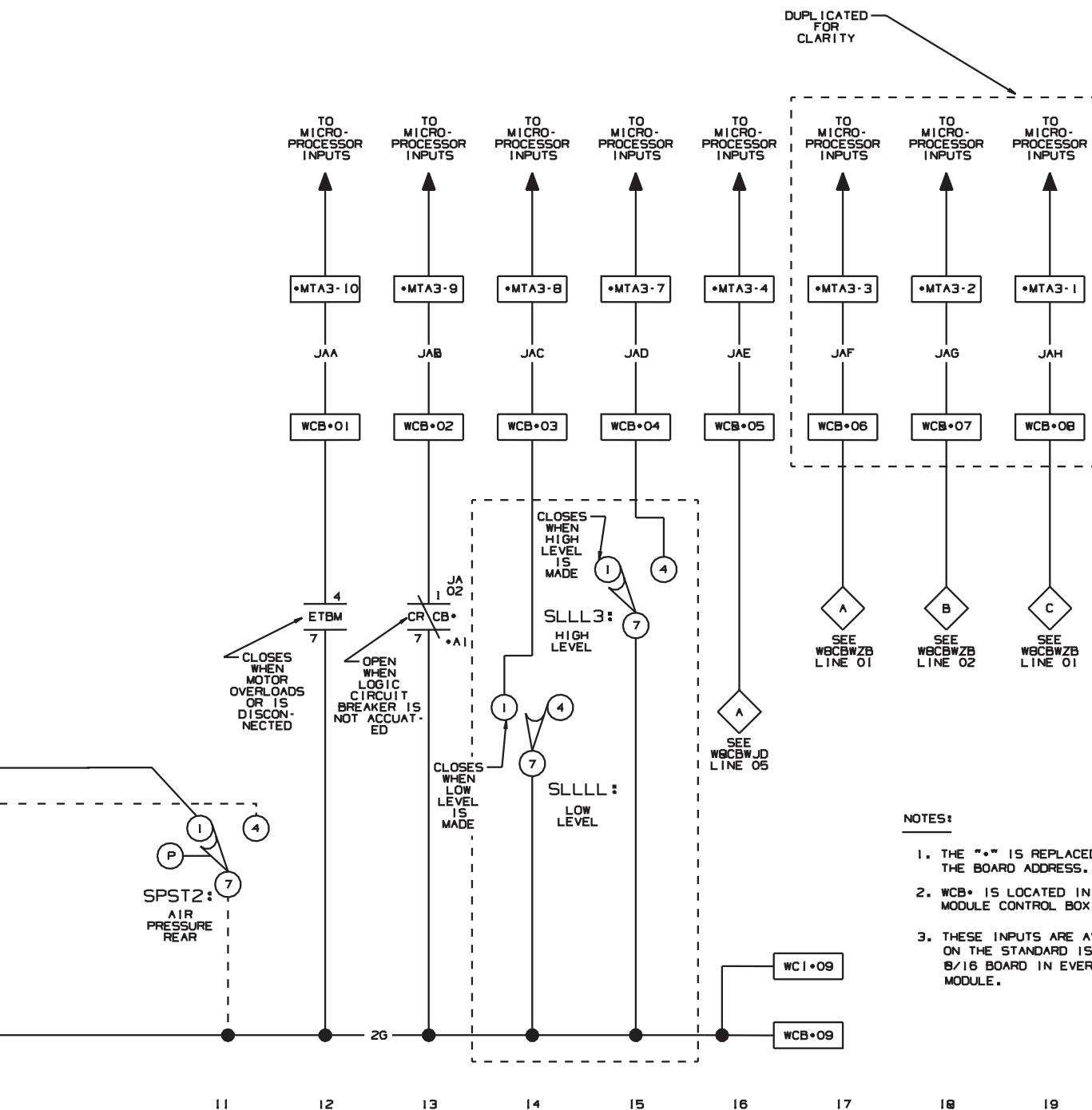
MODULE 5	MODULE 6	MODULE 7	MODULE 8
MODULE 13	MODULE 14	MODULE 15	MODULE 16

10 11 12 13 14 15 16 17 18 19

W8CBWJBA CBW SYSTEMS: MARK 8 SCHEMATIC: MODULE CONTROLS BOARD WIRING FOR PAPER MACHINE ONLY PELLERIN MILNOR CORPORATION

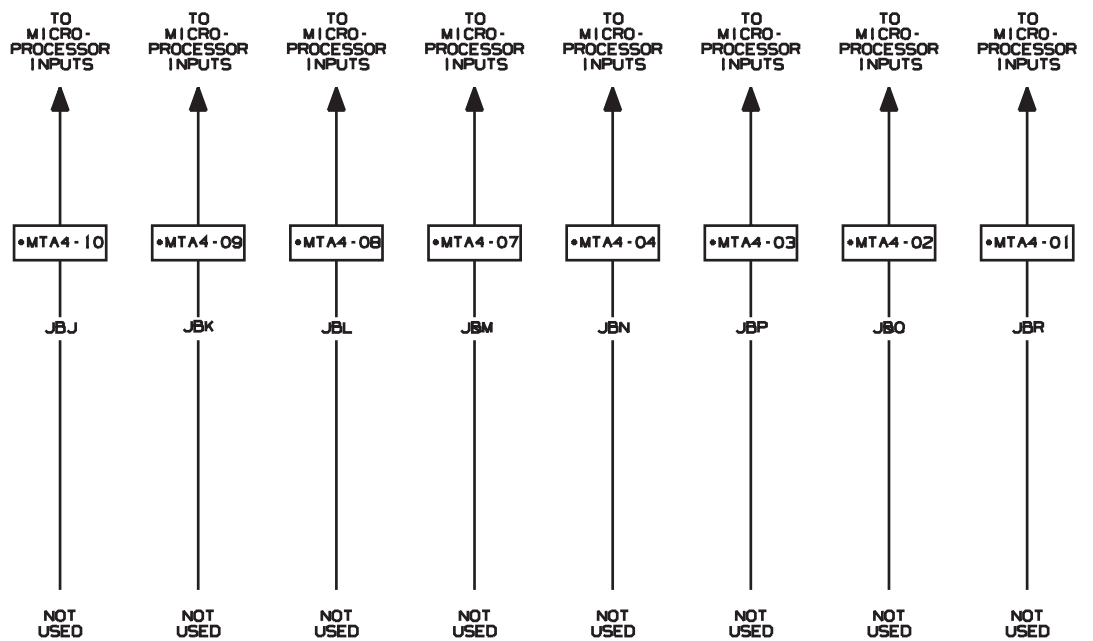


WCBWJCA CBW SYSTEMS: MARK 8 SCHEMATIC: MODULE CONTROLS INPUTS PELLERIN MILNOR CORPORATION



NOTES:

1. THE "*" IS REPLACED BY THE BOARD ADDRESS.
2. WCB* IS LOCATED IN EVERY MODULE CONTROL BOX.
3. THESE INPUTS ARE AVAILABLE ON THE STANDARD 1ST 8/16 BOARD IN EVERY MODULE.



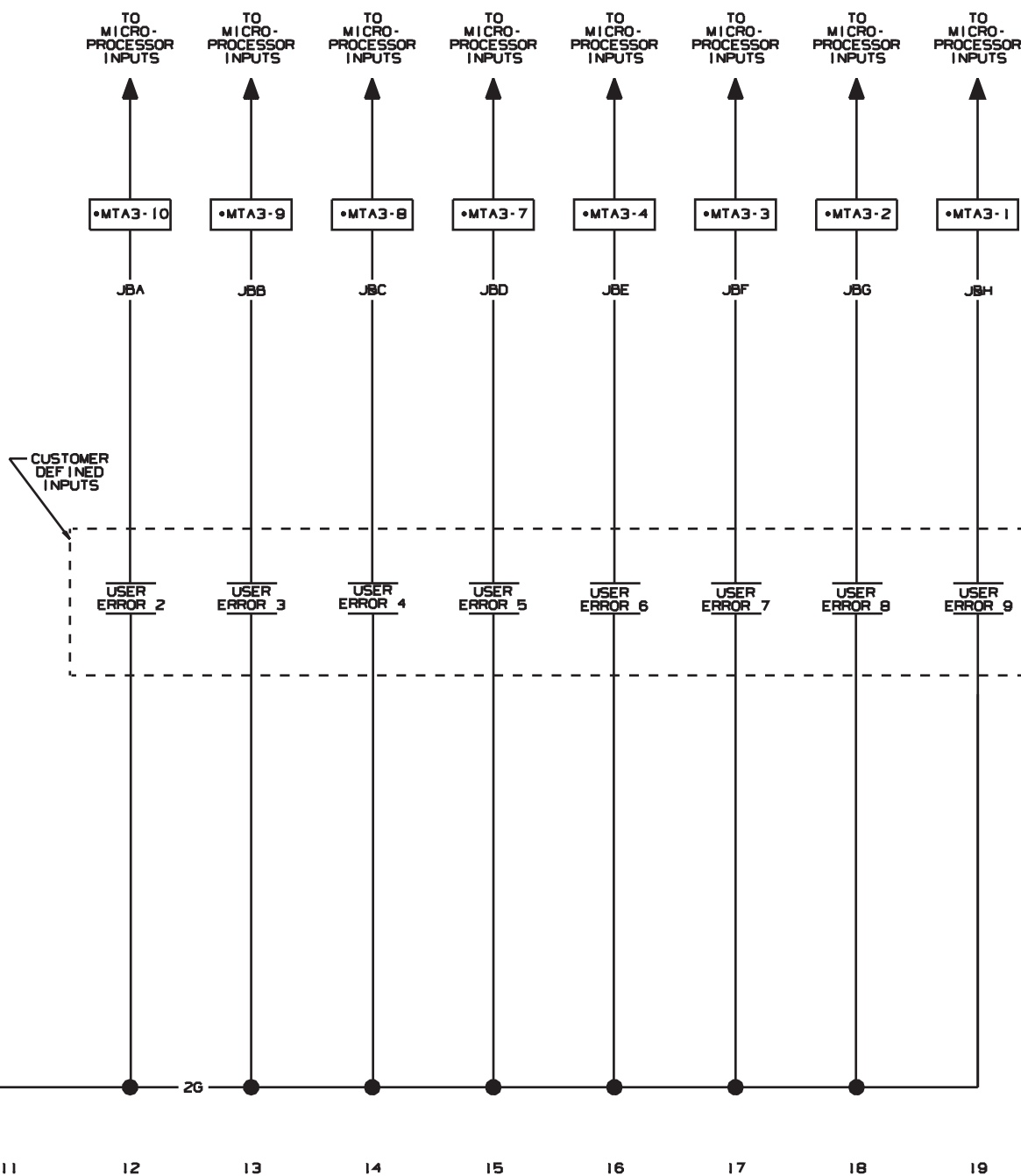
SEE
WBCBWMB
LINE 05



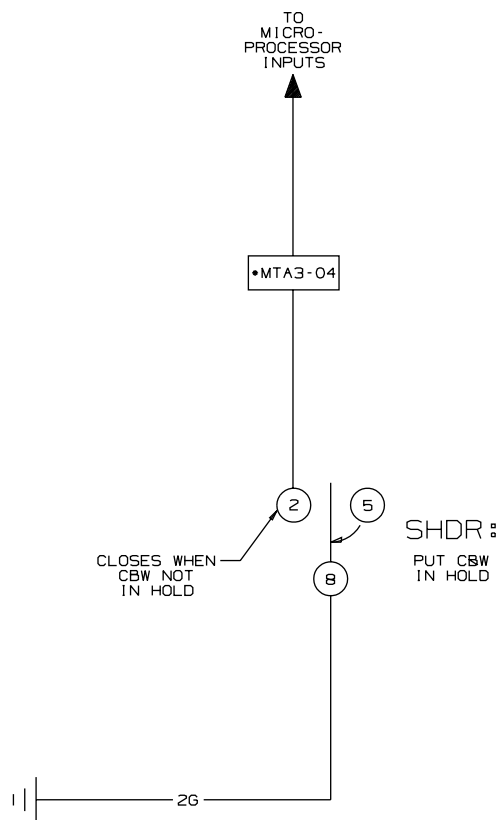
00 01 02 03 04 05 06 07 08 09 10

NOTES:

1. THE "*" IS REPLACED BY THE BOARD ADDRESS.
2. THESE INPUTS ARE AVAILABLE ON THE
OPTIONAL 2ND 8/16 BOARD IN EVERY MODULE.



W8CBW JCB
 CBW SYSTEMS: MARK 8
 SCHEMATIC: MODULE CONTROLS INPUTS
 PELLERIN MILNOR CORPORATION



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05

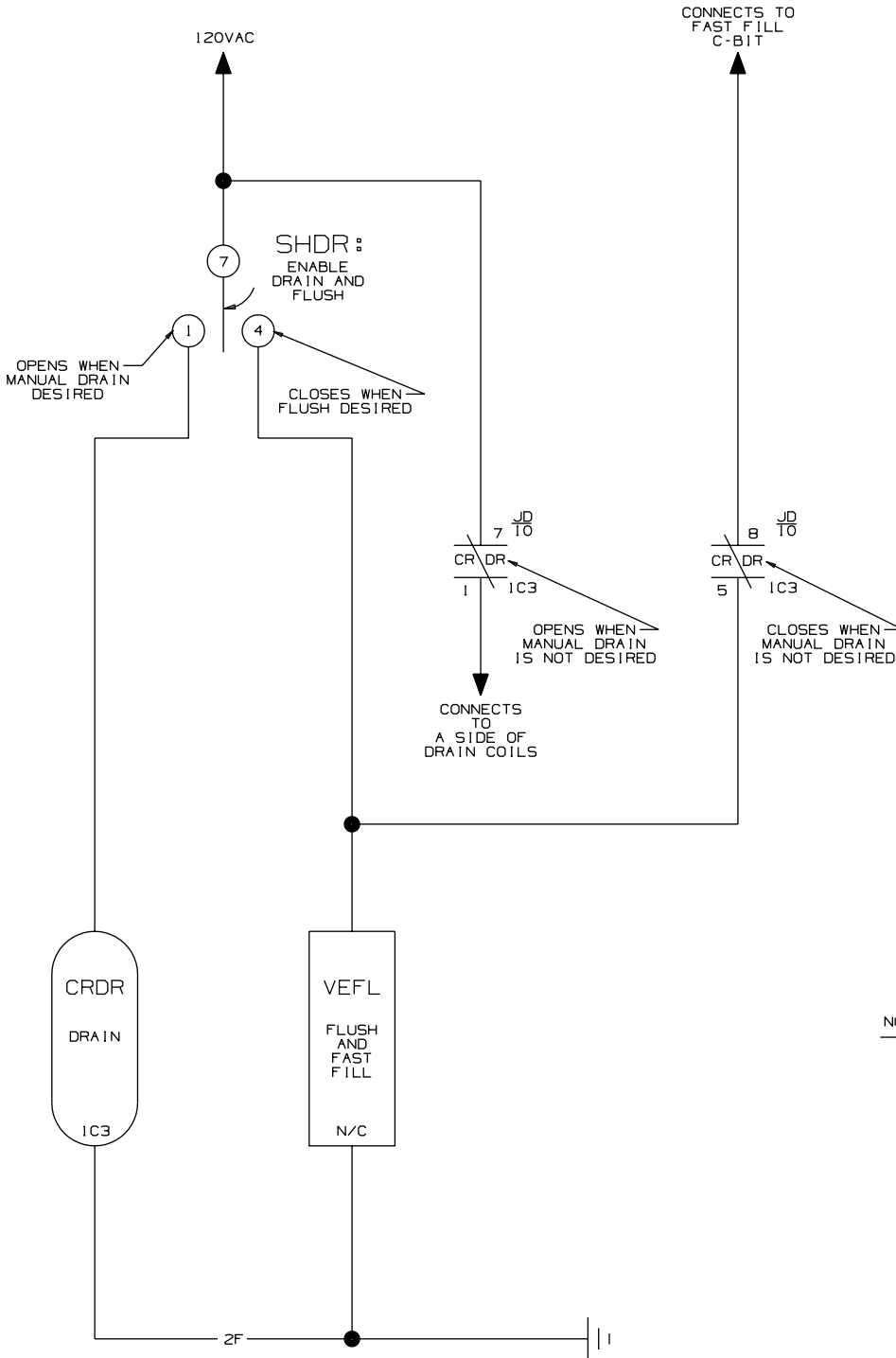
06

07

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09

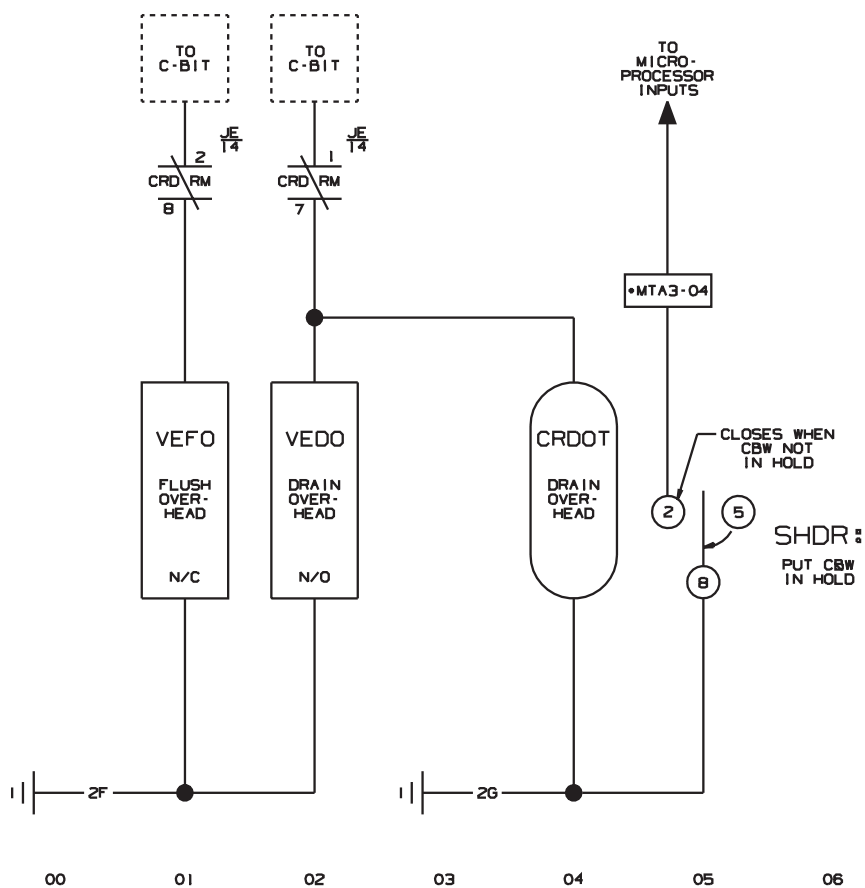
W8CBWJD
99263D



NOTES:

1. • REPRESENTS MODULE
2. REFER TO WBCBWFT IF FAST FILL TANK IS LOCATED ON THE MODULE.

WBCBWJD
CBW SYSTEMS: MARK 8
SCHEMATIC: WORKWEAR MODULE
PELLERIN MILNOR CORPORATION





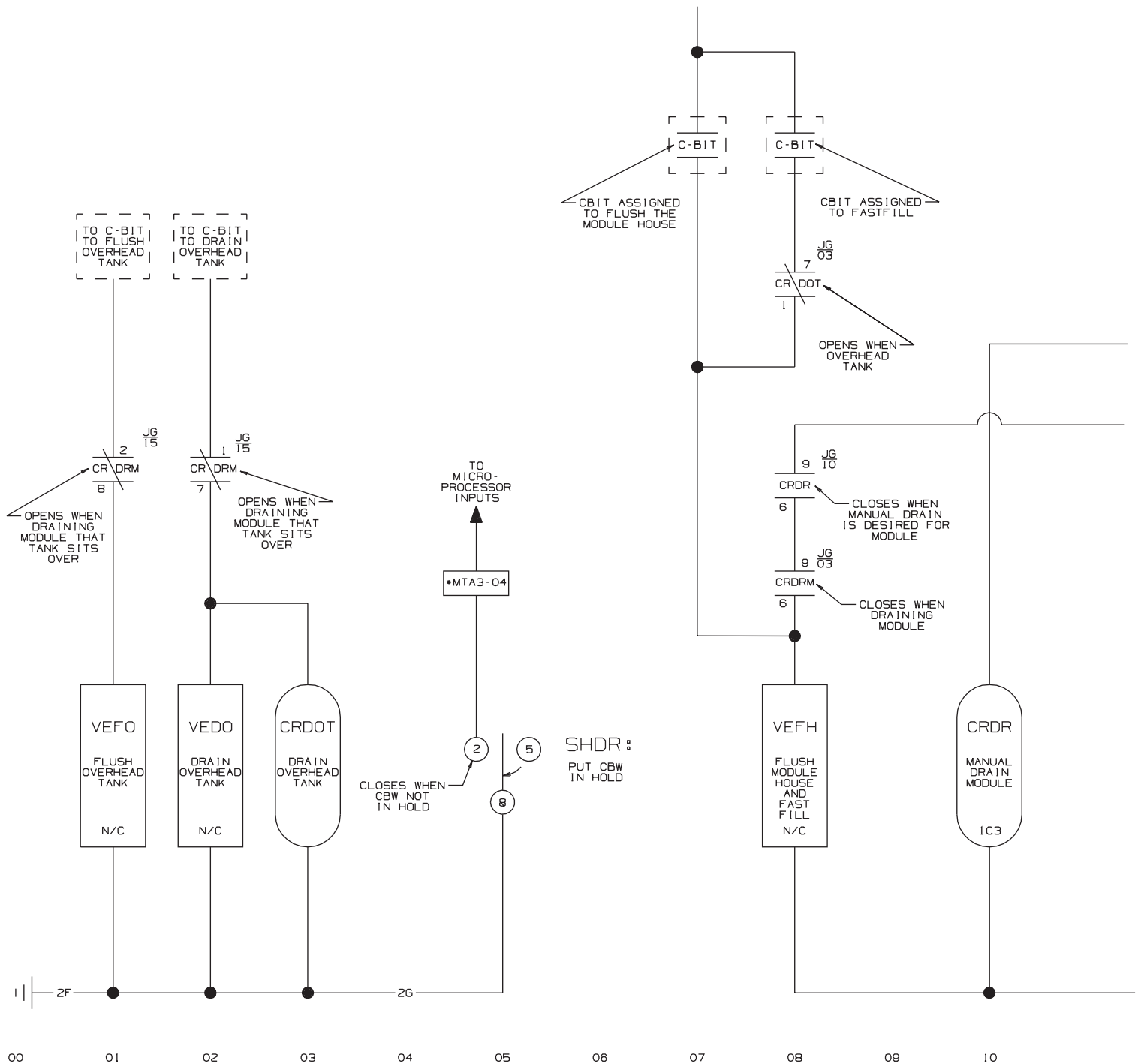
1. • REPRESENTS MODULE



W8CBWJF
CBW SYSTEMS: MARK 8
SCHEMATIC: STEAM DISINFECT MODULE
110VAC, 50HZ/120VAC, 60HZ
PELLERIN MILNOR CORPORATION

JG11
JG08

JG13
JG11
JG08

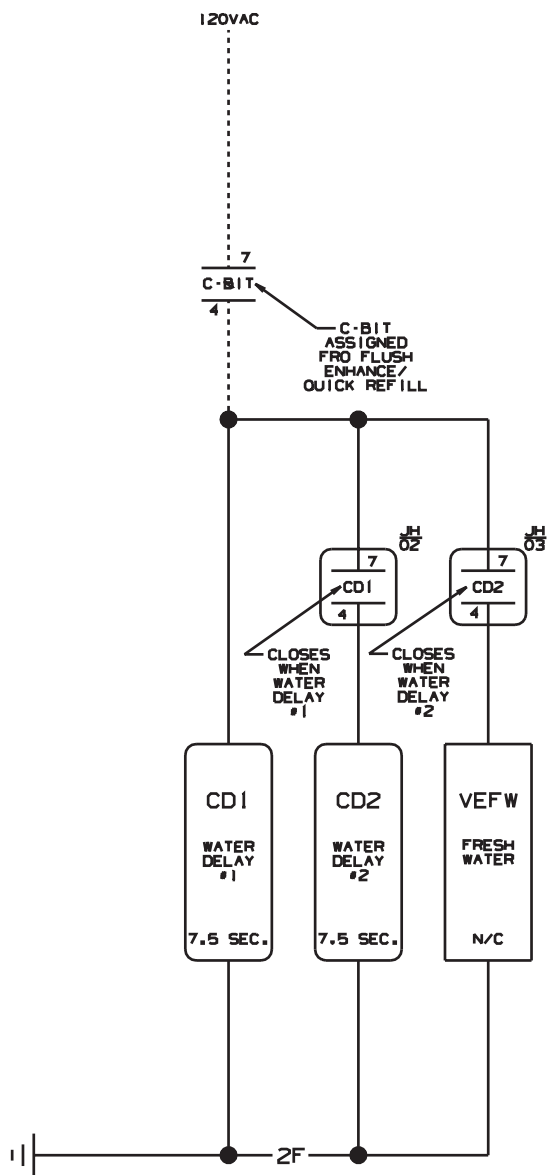




CBW SYSTEMS: MARK 8
SCHEMATIC: WORKWEAR MODULE
FLUSH+FAST FILL+OVERHEAD
PELLERIN MILNOR CORPORATION

NOTES:

1. * REPRESENTS MODULE
2. DYE MODULE ONLY GETS
1 DRAIN C-BIT



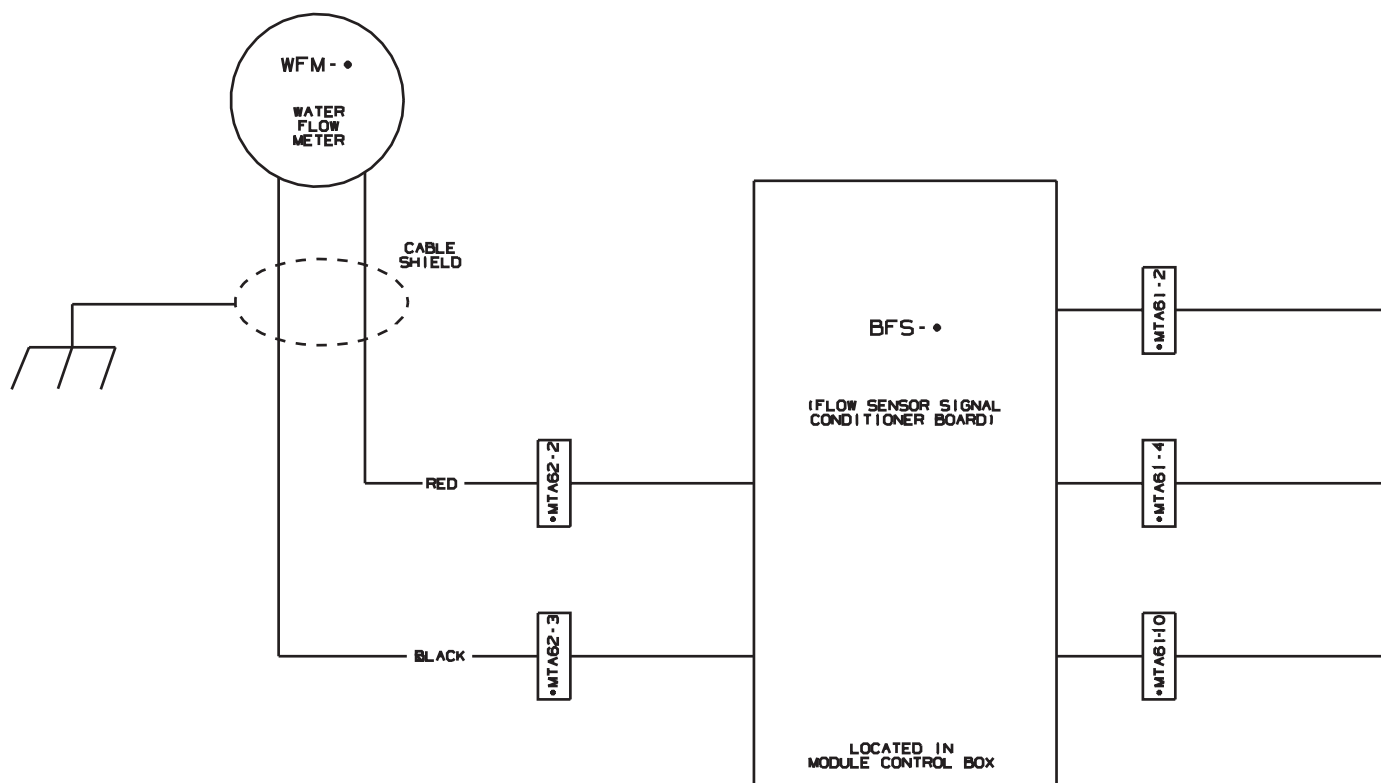
NOTES:

1. THE LEVEL SWITCH MUST BE WIRED TO THE MODULE WHERE THE WATER VALVE ORIGINATES.

00 01 02 03 04 05 06 07 08

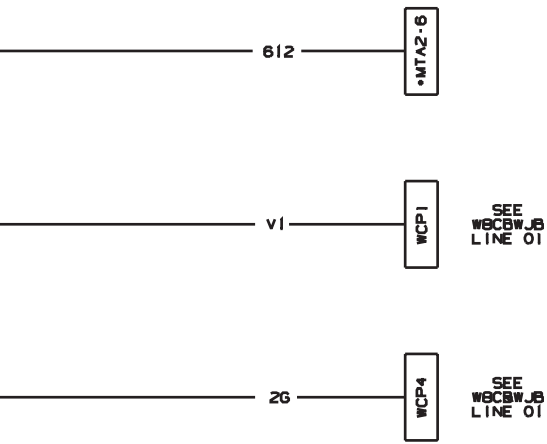
W8CBW JH

SCHEMATIC: FLUSH ENHANCE/QUICK REFILL
 (WHERE THE LEVEL SWITCH IS IN MODULE A
 AND THE WATER VALVE IS IN MODULE B)
 PELLERIN MILNOR CORPORATION



LITHO IN U.S.A.

00 01 02 03 04 05 06 07 08 09 10



NOTE

• DENOTES EACH MODULE WHERE
OPTIONAL FLOW SENSOR IS USED.

11 12 13 14 15 16

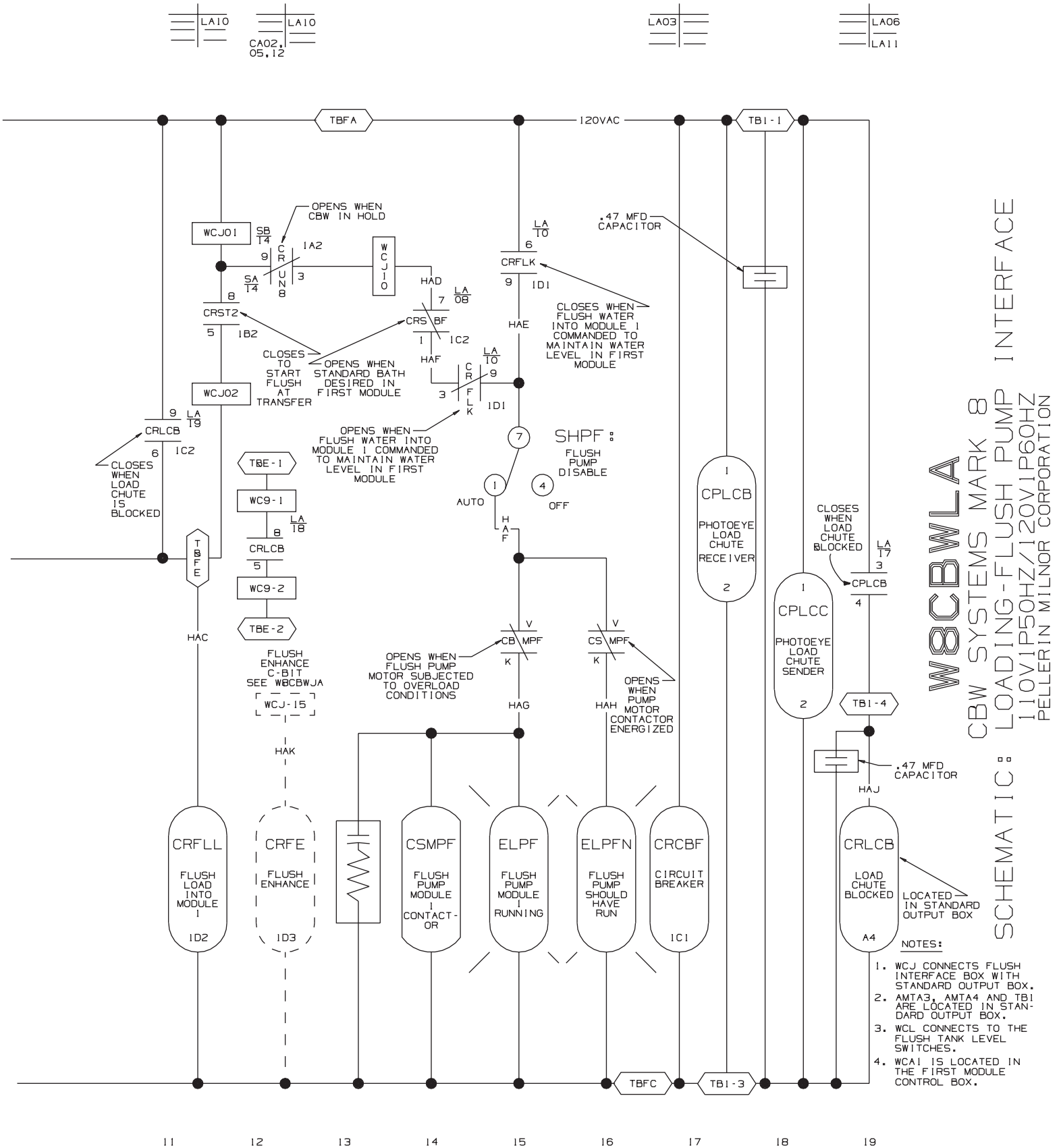
W8CBWJJ MICRO 6 SYSTEMS SCHEMATIC: FLOW SENSOR (OPTIONAL)

PELLERIN MILNOR CORPORATION

W8CBWJJ
95067B

W8CBWJJ
95067B



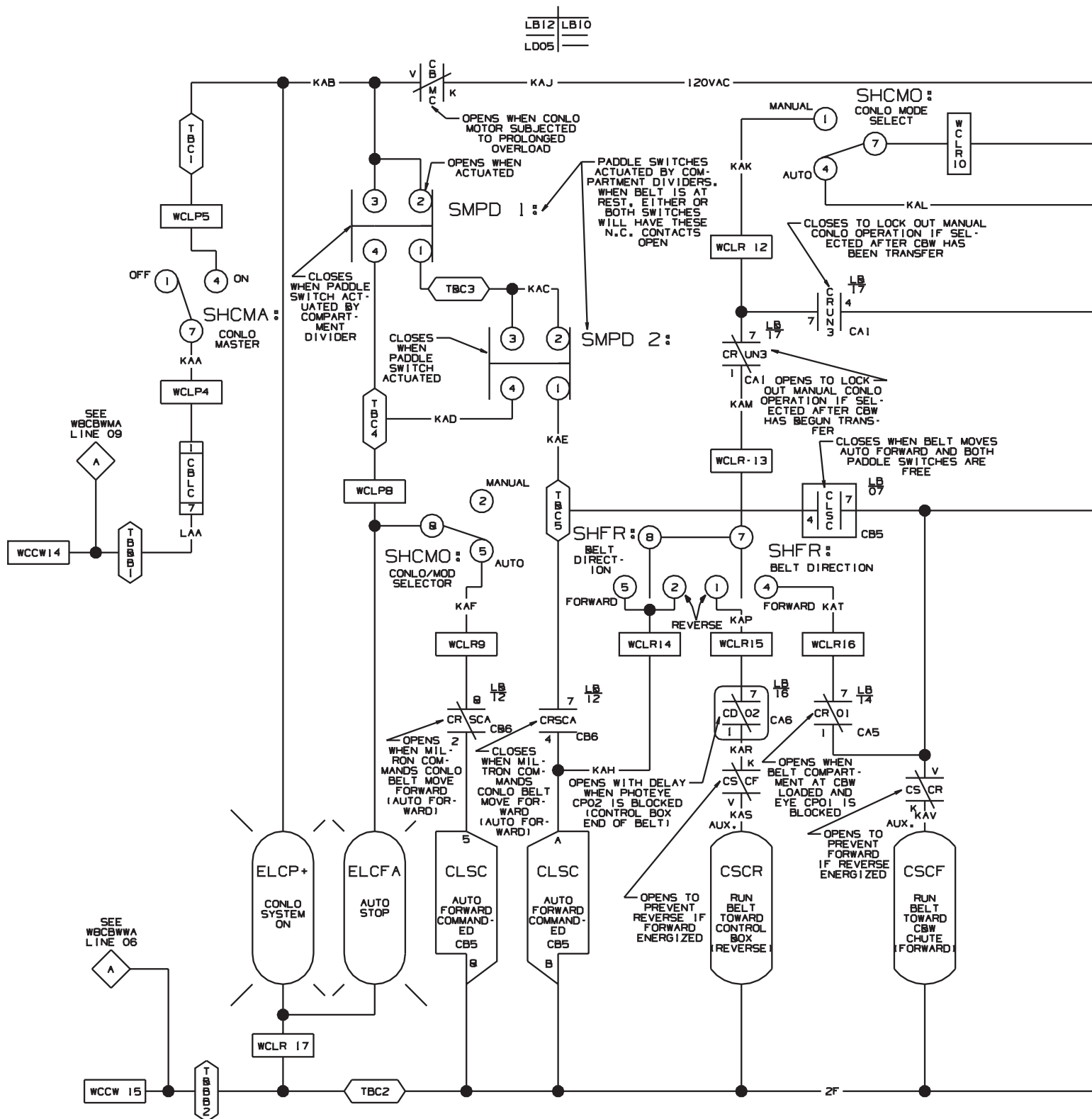


CONLO/CONWAY CONTROL
CIRCUIT POWER: XFMR
FUSES

MOTOR
OVERLOAD
RELAY
CONTACT

BELT CONTROL-AUTO, MANUAL-INCLUDING MOTOR CONTACTORS
PLUS ONE SHOT INTERLOCK FOR AUTO FORWARD COMMAND

LB12 LB10
LD05



00

01

02

03

04

05

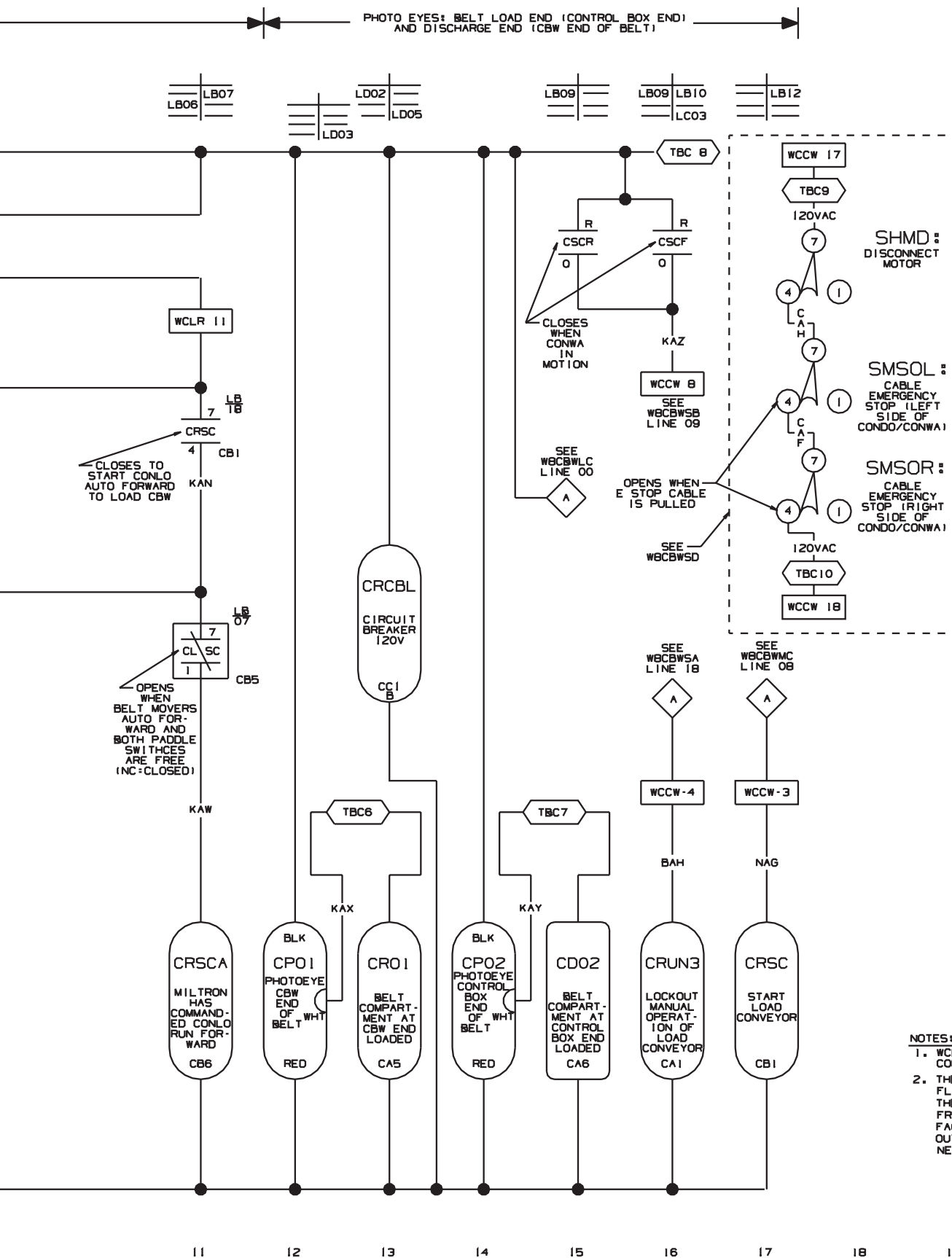
06

07

08

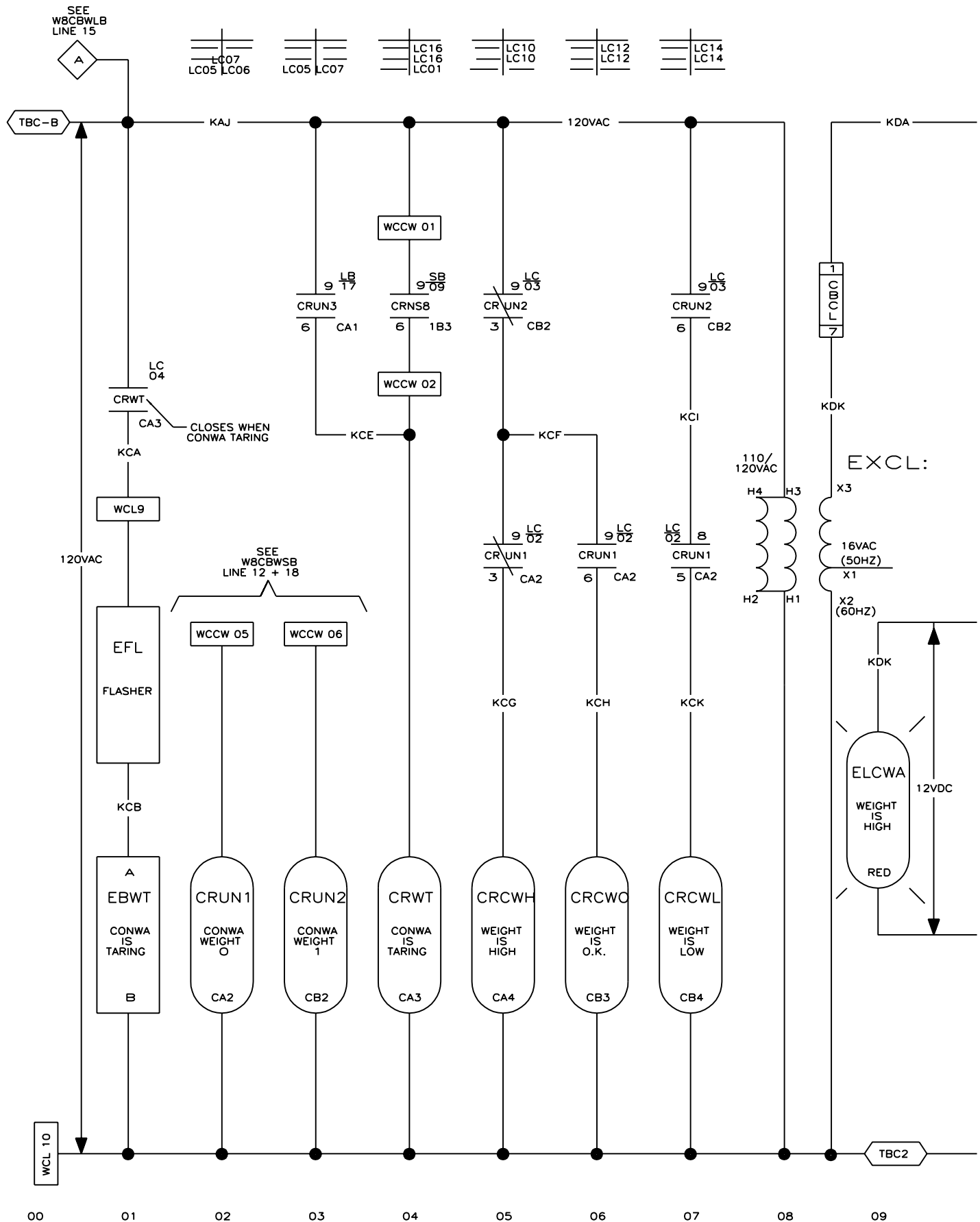
09

10



W8CBWLB
CBW SYSTEMS: MARK 8
SCHEMATIC: LOADING CONLO/CONWA CONTROLS
110V50HZ/120V60HZ
PELLERIN MILNOR CORPORATION

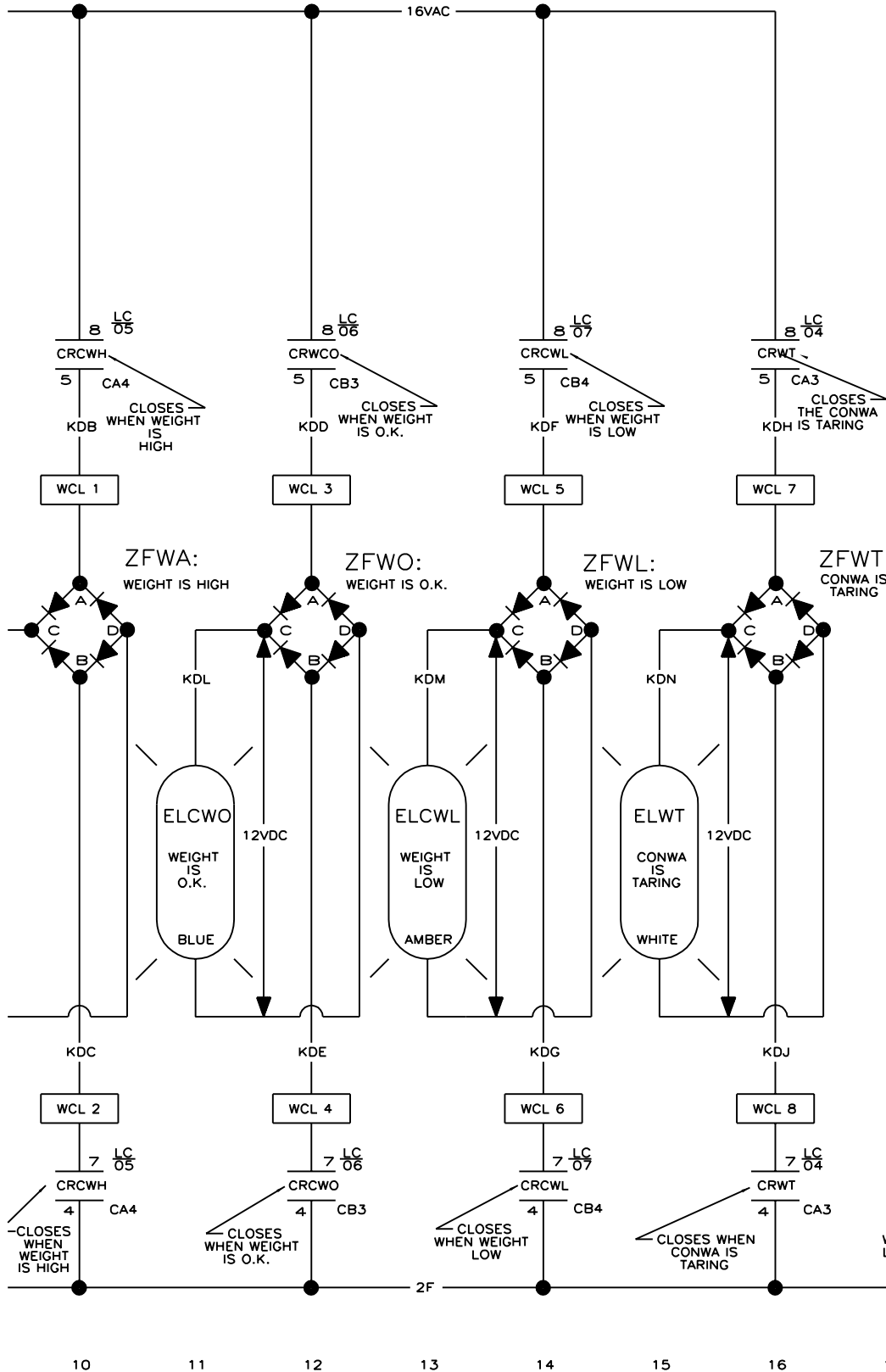
- NOTES:
1. WCL IS THE SWITCH PANEL CONNECTOR
 2. THE CONLO CABLES TO THE FLUSH INTERFACE BOX, THE CABLE THEN CONTINUES FROM THE FLUSH INTERFACE BOX TO THE STANDARD OUTPUT BOX. ALL CONNECTORS ARE CALLED WCCW.



W8CBWLC

SCHEMATIC: LOADING—CONWA LIGHTS

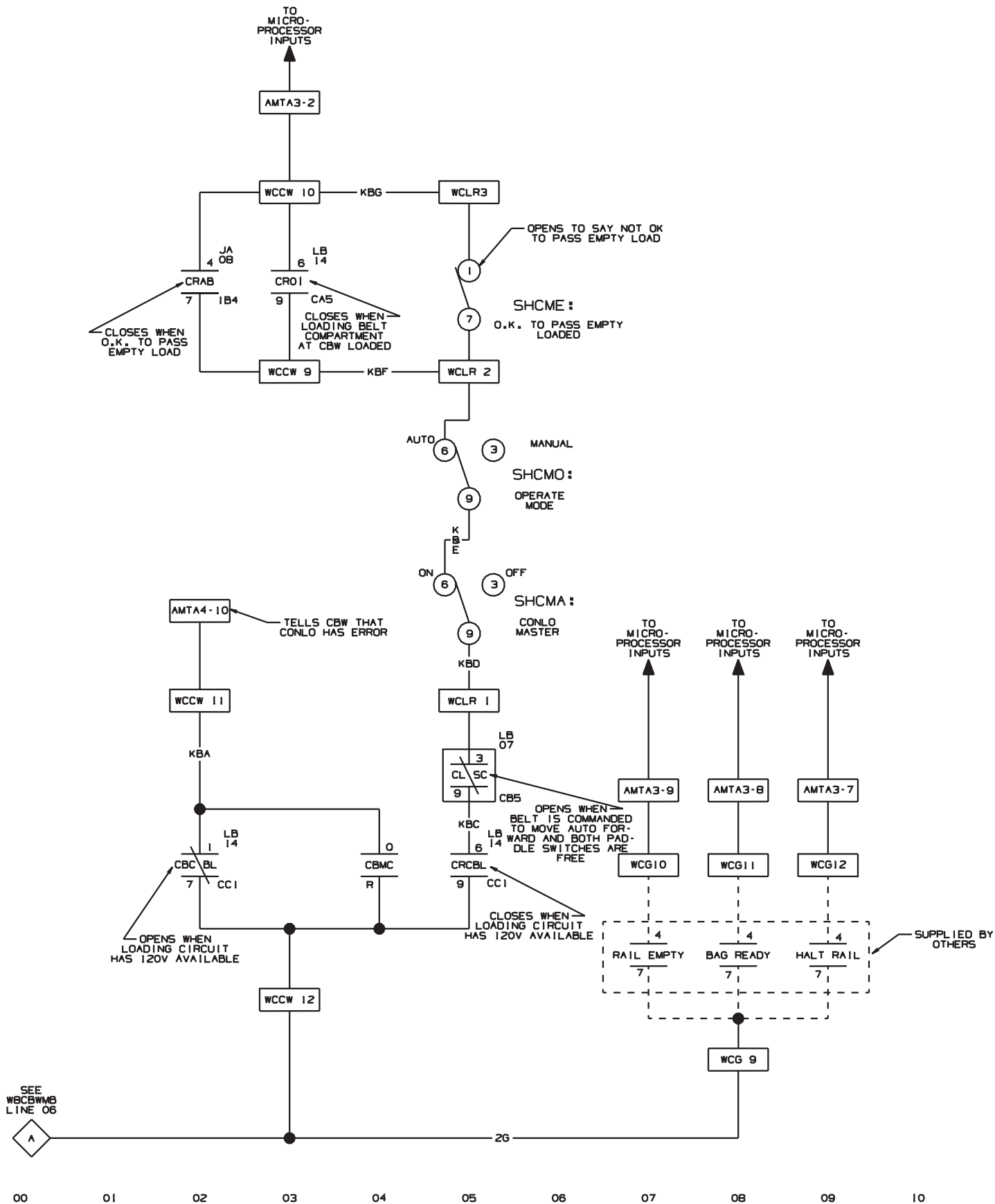
PELLERIN MILNOR CORPORATION



NOTES:

1. TBC, TBE ARE LOCATED IN CONWA CONTROL BOX.
2. WCL IS LOCATED IN THE CONLO BOX AND THE LIGHT BOX.

SEE
W8CBWWA
LINE 06



11

12

13

14

15

16

17

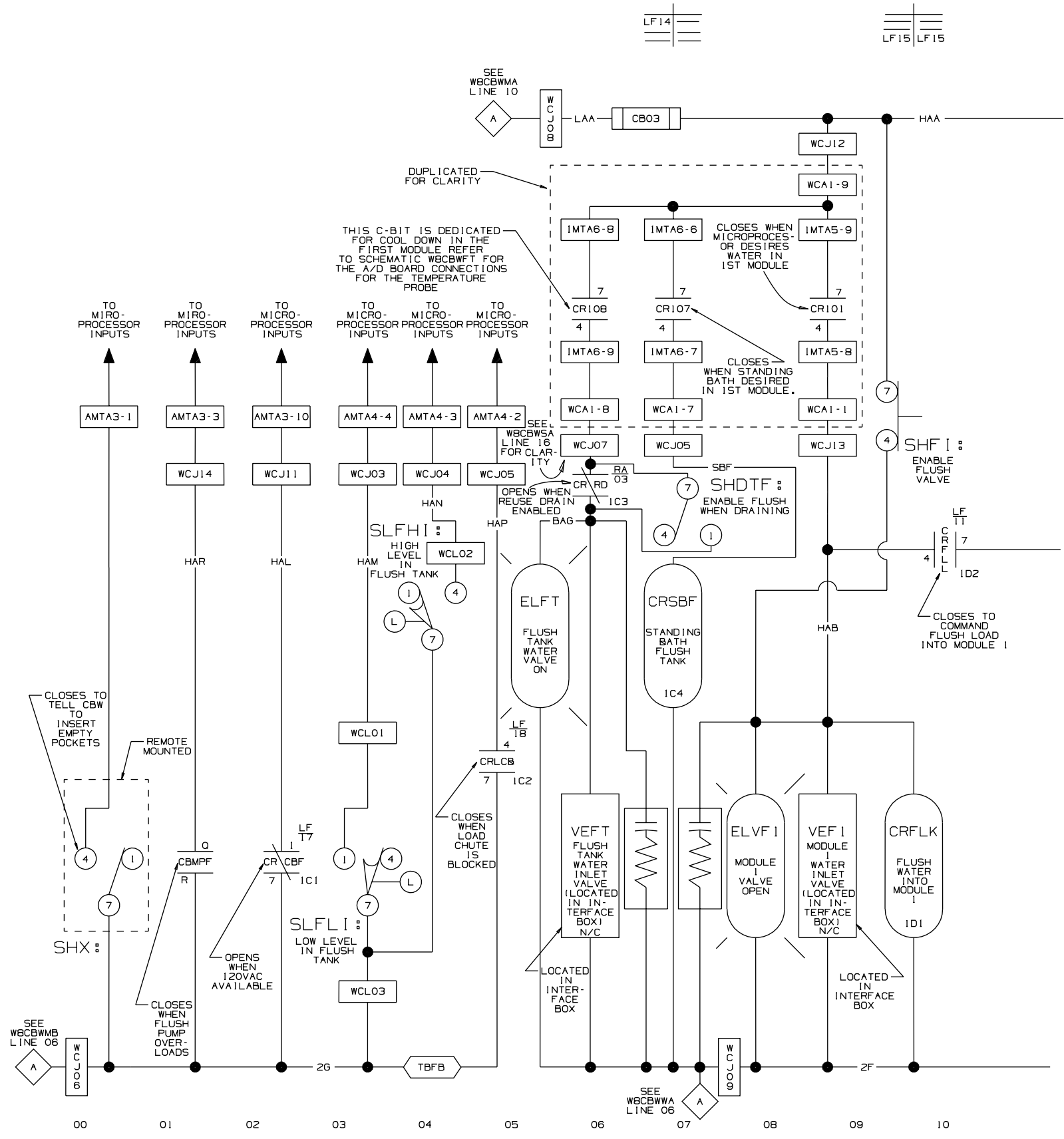
18

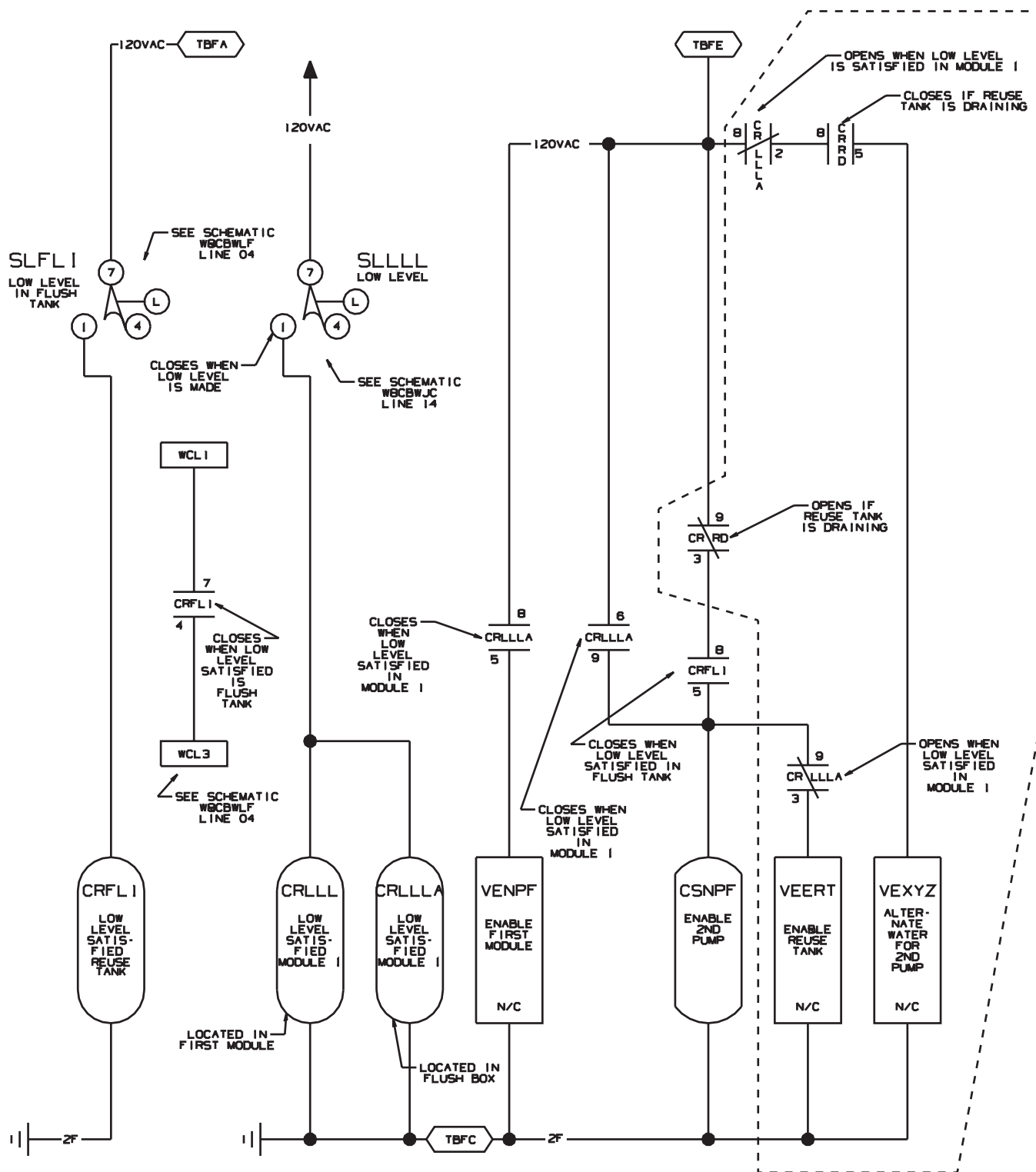
19

W8CBWLD
CBW SYSTEMS: MARK 8
SCHEMATIC: CONLO/CONWA/BAG INPUTS
REFER TO W8CBWLB
PELLERIN MILNOR CORPORATION

LF14

LF15



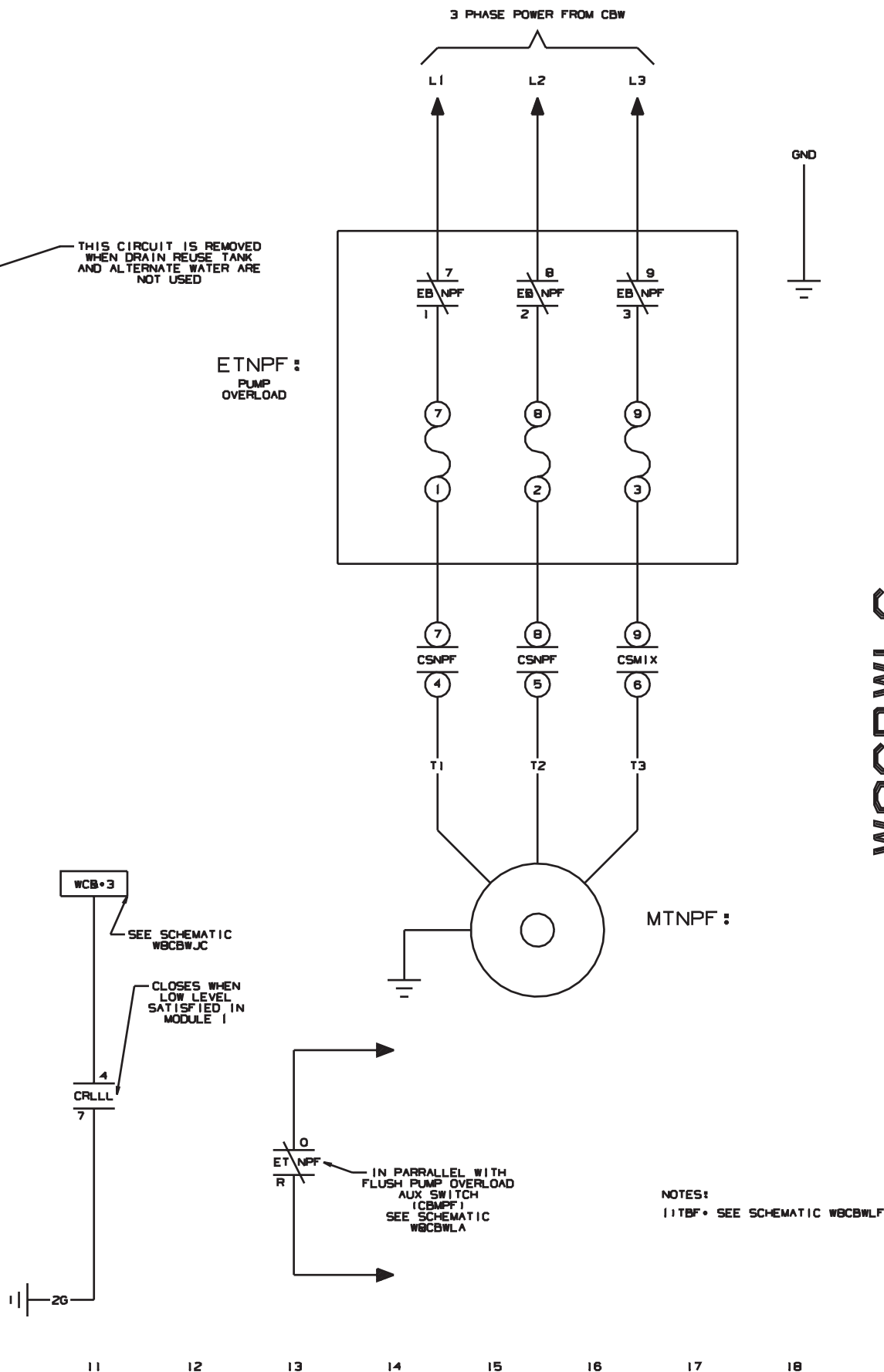


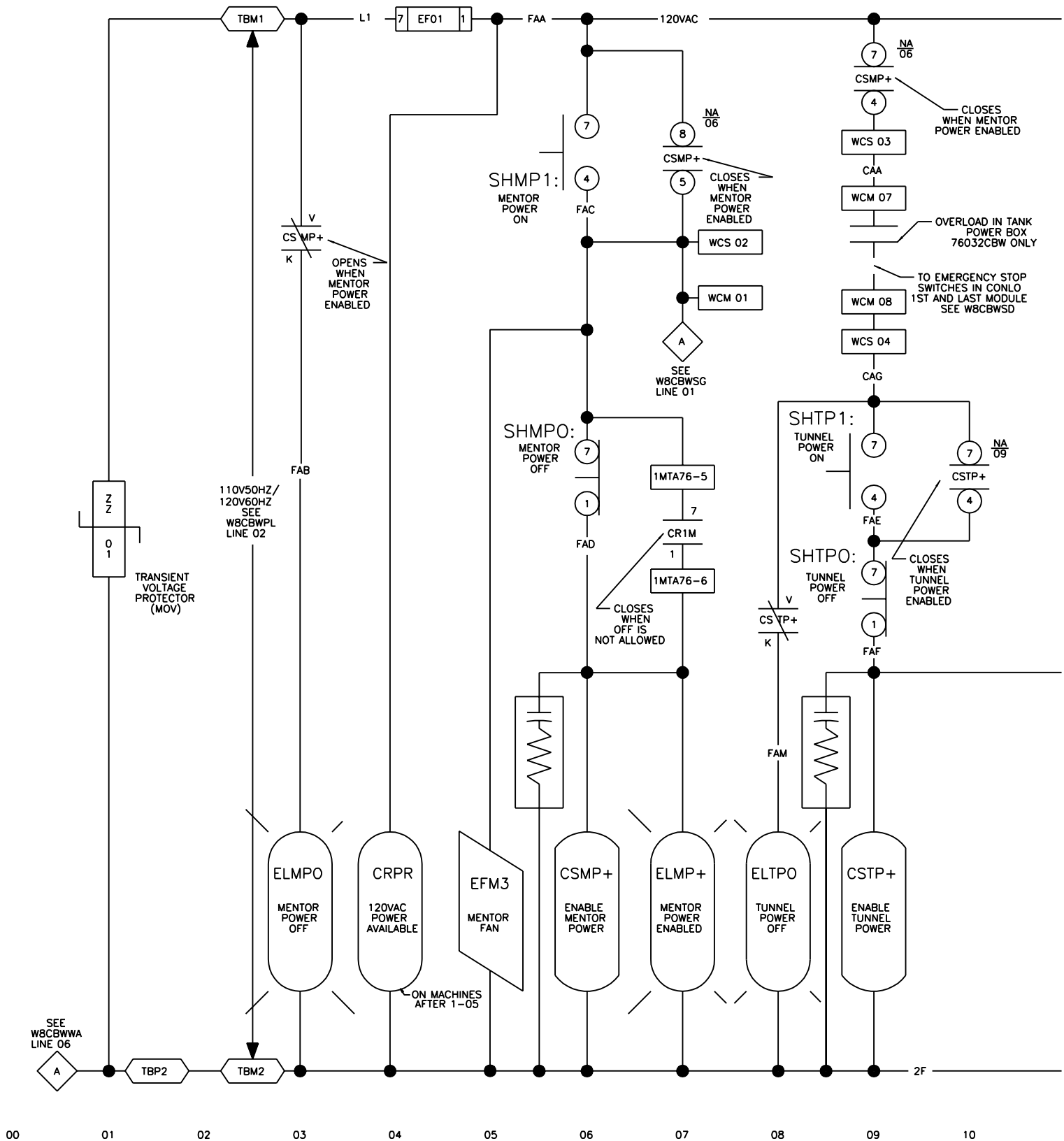
00 01 02 03 04 05 06 07 08 09 10

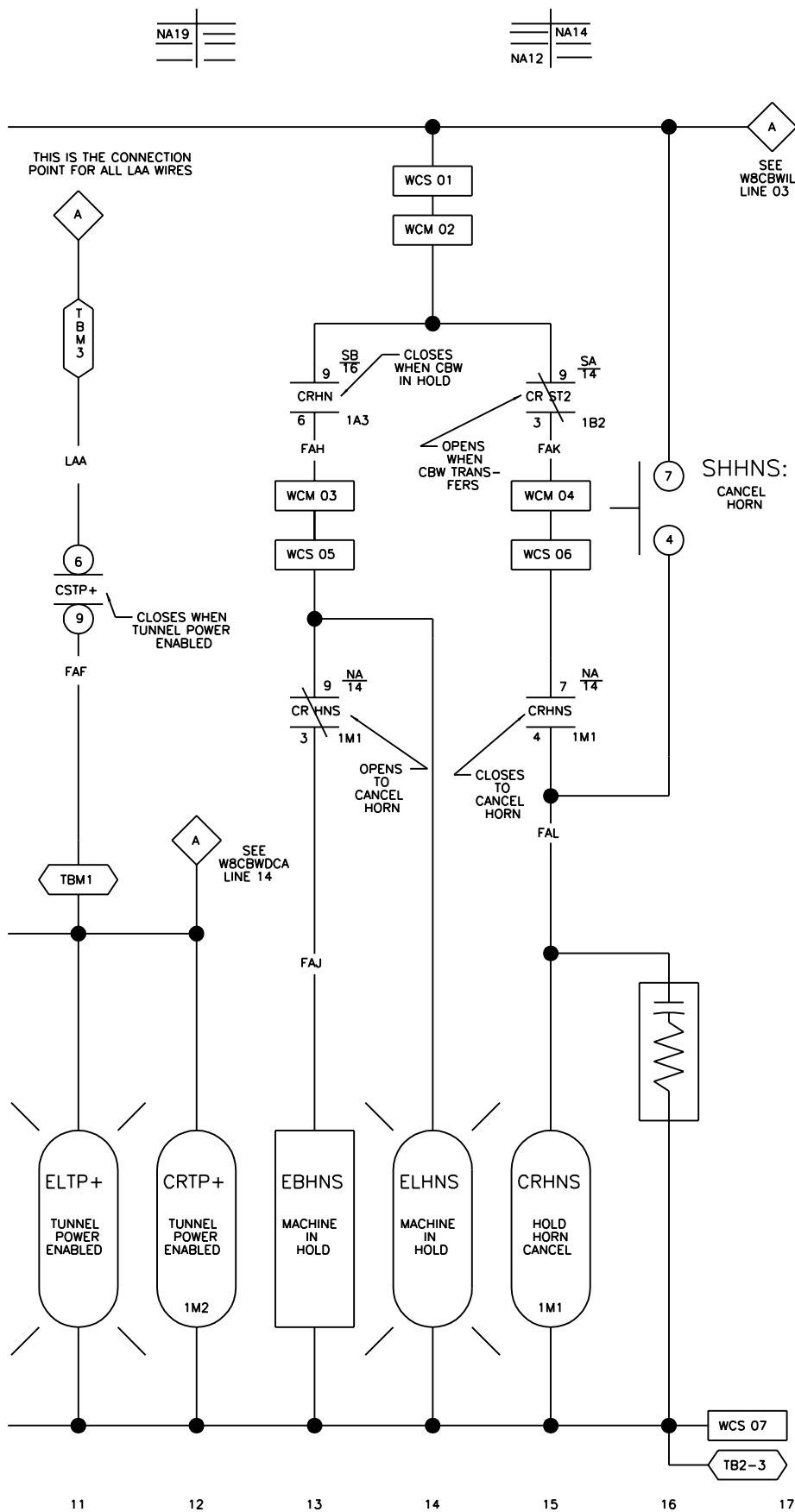
SCHEMATIC: FLUSH VALVES FOR WELDED TUNNELS
PELLERIN MILNOR CORPORATION

WBCBWL

CBW SYSTEMS MARK 8
FOR 76039 CBW ONLY







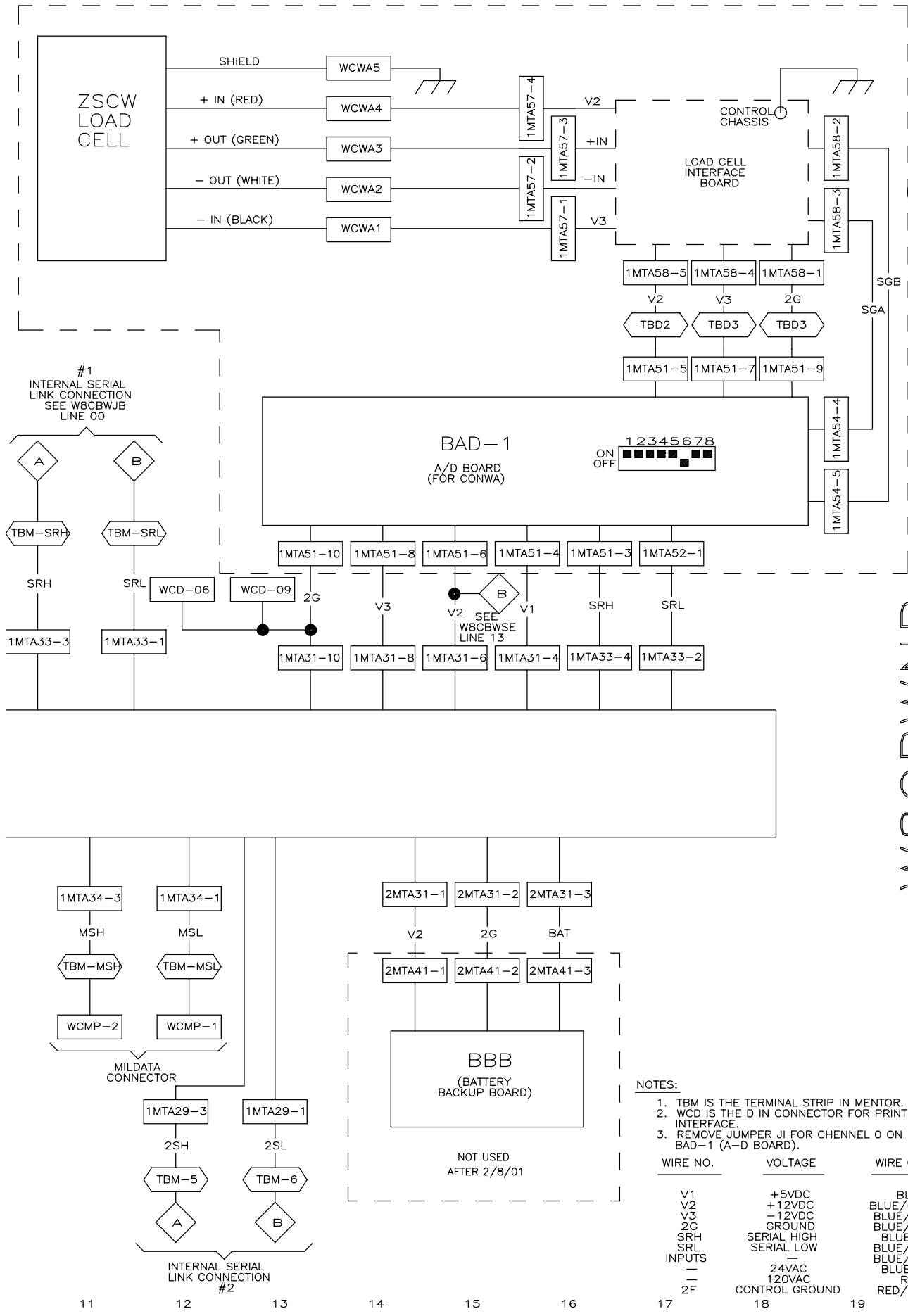
W8CBWNA

CBW SYSTEMS: MARK 8

SCHEMATIC: MENTOR CONTROL

PELLERIN MILNOR CORPORATION



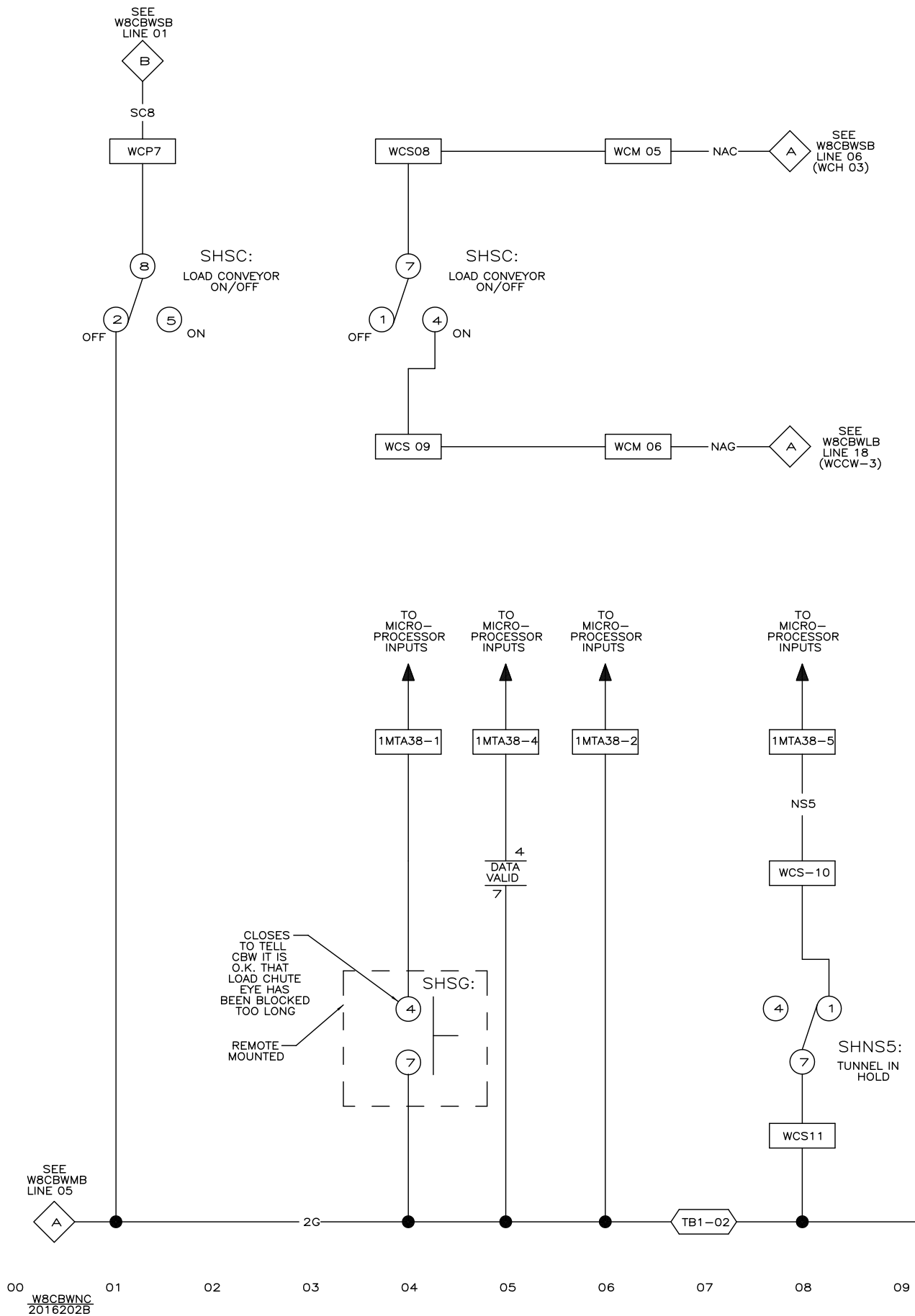


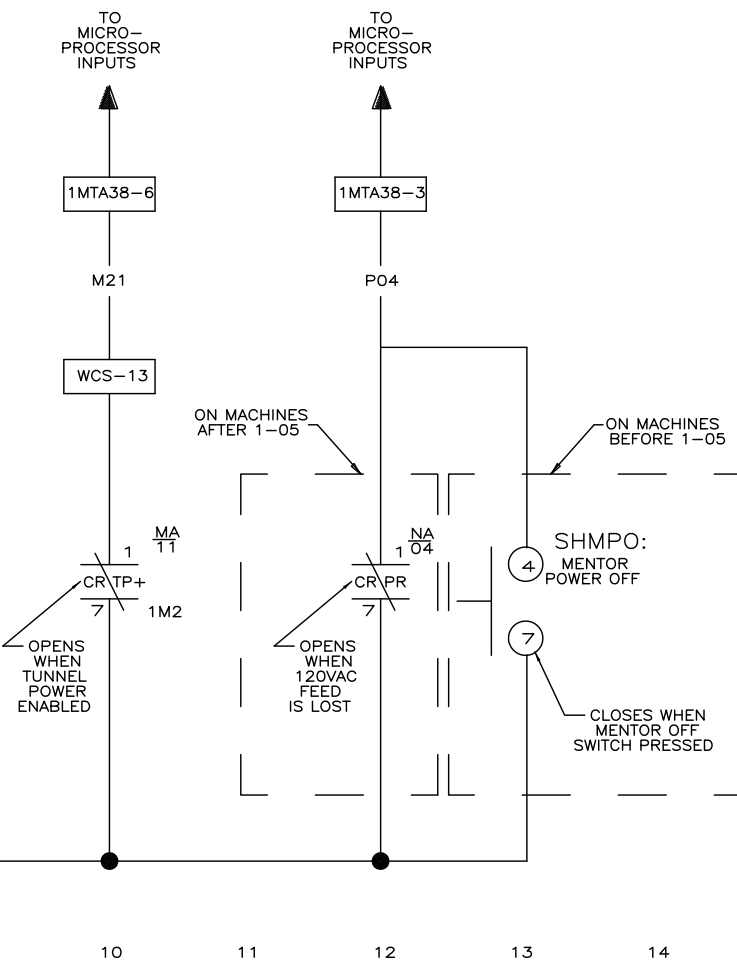
W8CBWNB
CBW SYSTEMS: MARK 8
SCHEMATIC: MENTOR-BOARD WIRING
PELLERIN MILNOR CORPORATION

NOTES:

1. TBM IS THE TERMINAL STRIP IN MENTOR.
2. WCD IS THE D IN CONNECTOR FOR PRINTER INTERFACE.
3. REMOVE JUMPER J1 FOR CHENNEL 0 ON BAD-1 (A-D BOARD).

WIRE NO.	VOLTAGE	WIRE COLOR
V1	+5VDC	BLUE
V2	+12VDC	BLUE/ORANGE
V3	-12VDC	BLUE/BLACK
2G	GROUND	BLUE/WHITE
SRH	SERIAL HIGH	BLUE/RED
SRL	SERIAL LOW	BLUE/BLACK
2F	24VAC	BLUE/BLACK
2F	120VAC	BLUE/RED
2F	CONTROL GROUND	RED
2F	CONTROL GROUND	RED/WHITE





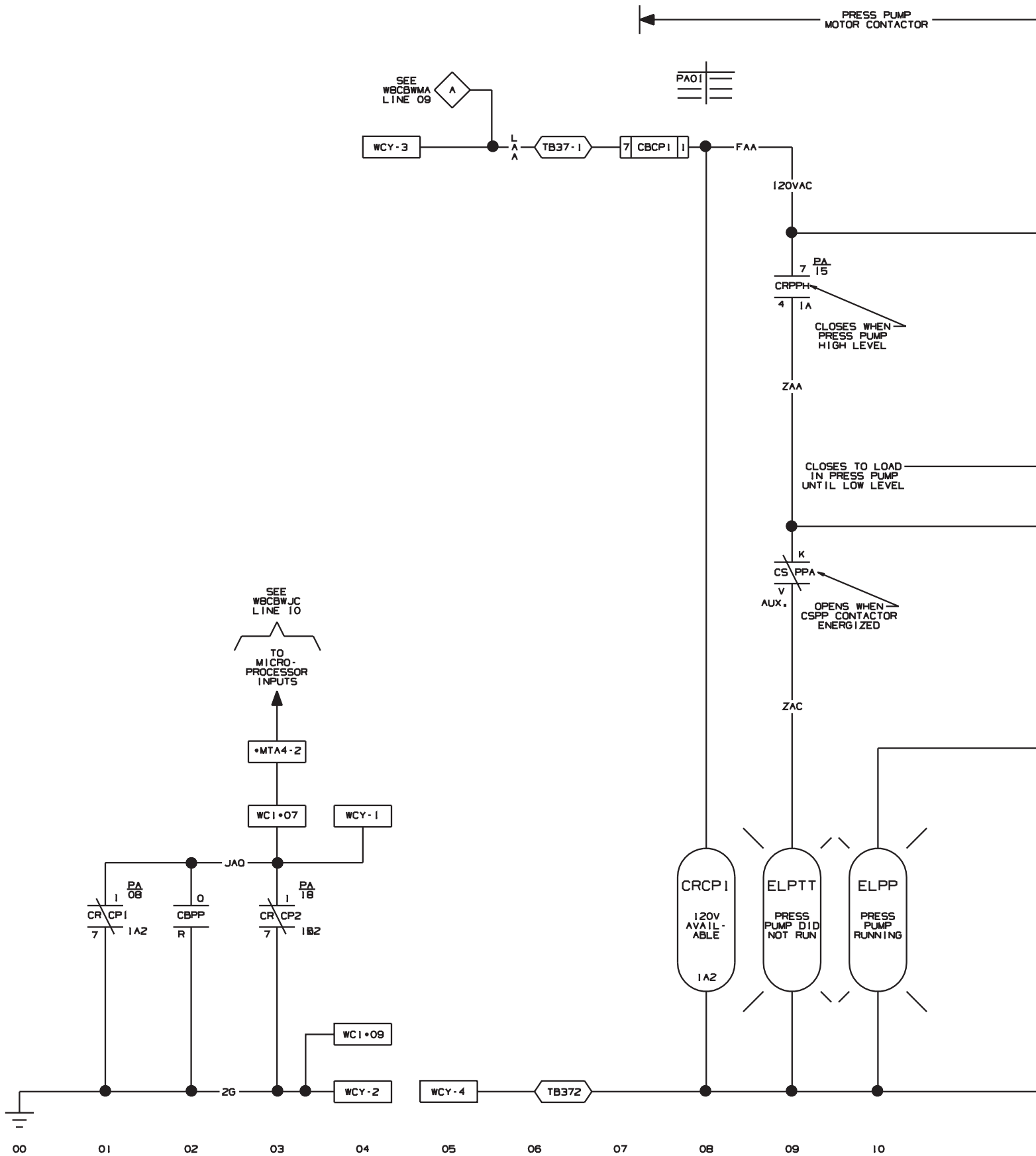
W8CBWNC

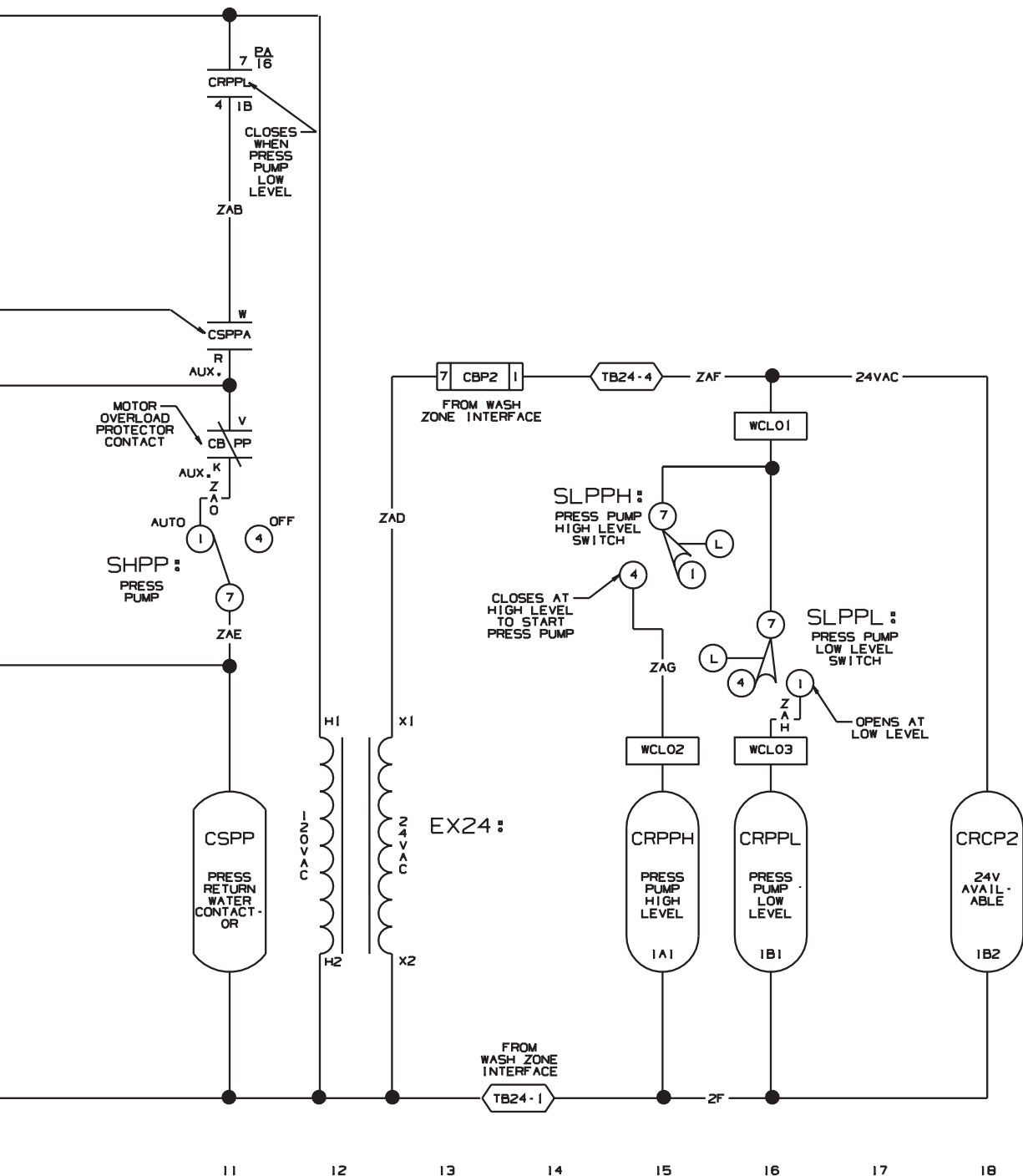
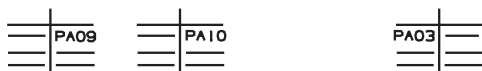
CBW SYSTEMS MARK 8

SCHEMATIC: MENTOR

MICROPROCESSOR INPUTS

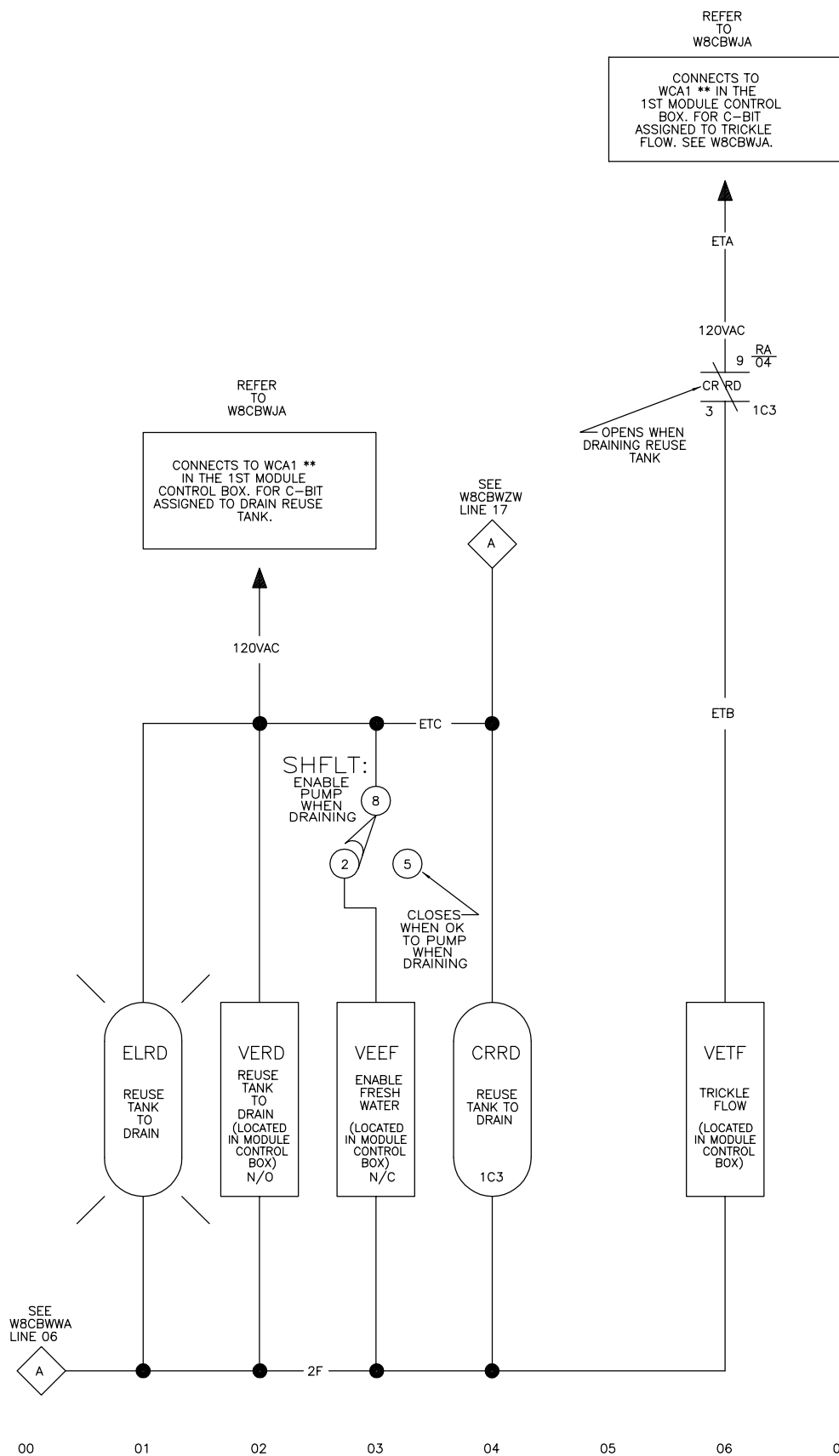
PELLERIN MILNOR CORPORATION





W8CBWPA
 CBW SYSTEMS: MARK 8
 SCHEMATIC: PRESS PUMP INTERFACE
 220V50HZ/240V60HZ
 PELLERIN MILNOR CORPORATION

- NOTES:
1. WCY AND WCL IS LOCATED IN THE PRESS INTERFACE BOX.
 2. WCL* IS LOCATED IN EVERY MODULE CONTROL BOX.



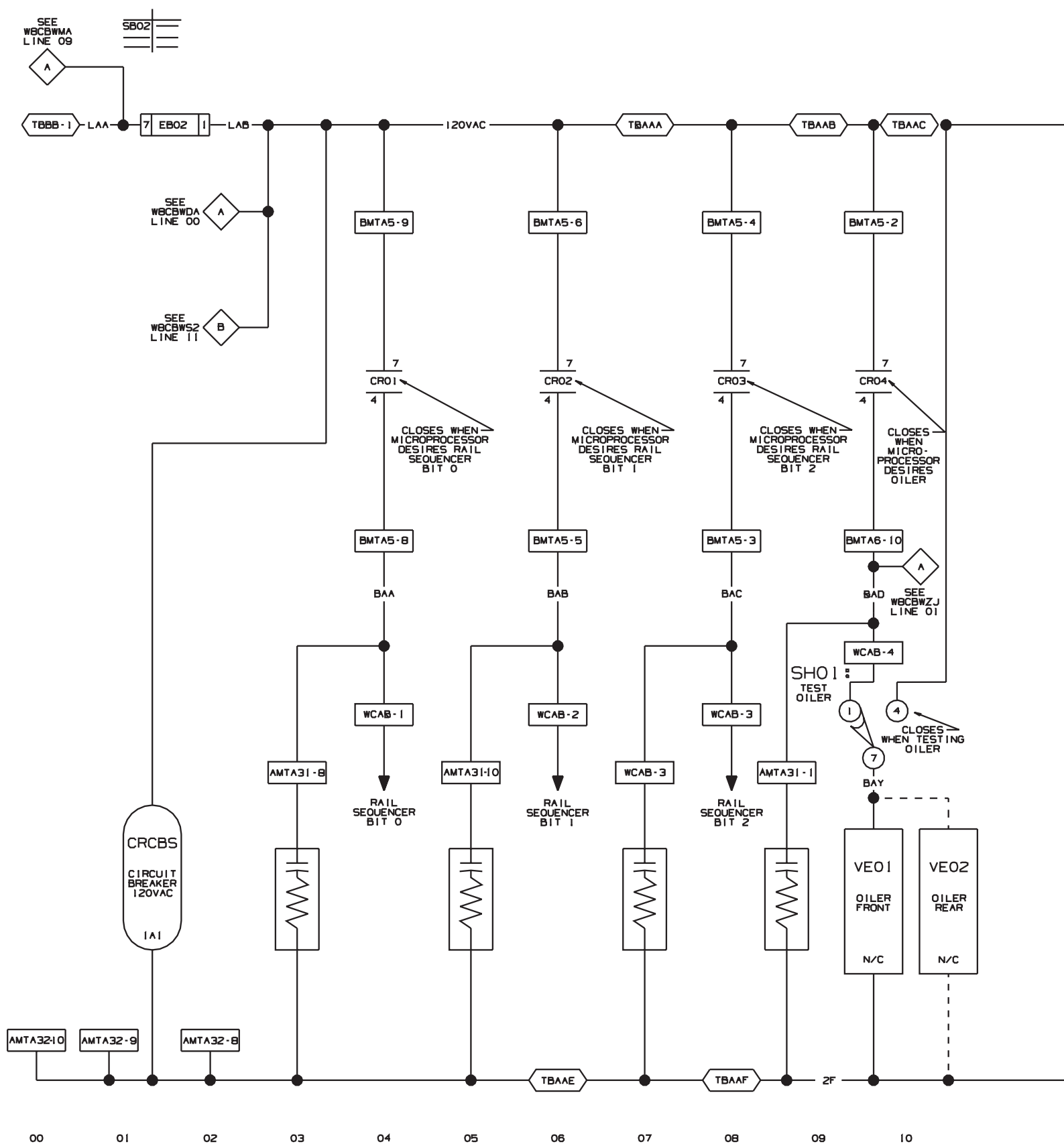
NOTES:

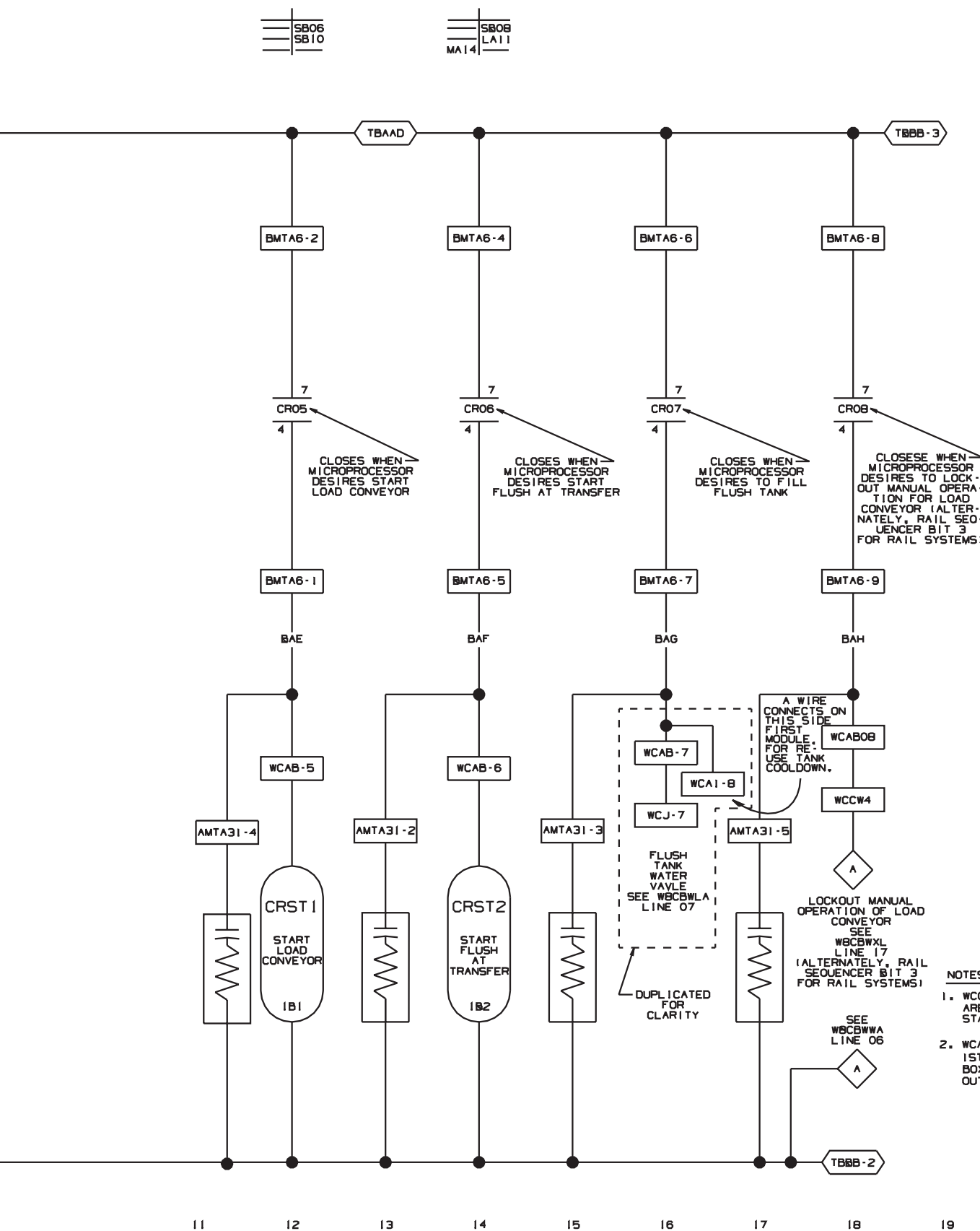
1. * REPRESENTS THE PIN NUMBER OF THE CONNECTOR.
2. WHEN THE REUSE TANK DRAINS ALTERNATE WATER IS ENABLED TO THE 1ST MODULE THE REUSE PUMP IS DISABLED AND THE FLOSPITTER PUMP THAT FEEDS THE REUSE TANK IS DISABLED.

W8CBWRA
CBW SYSTEMS MARK 8
SCHEMATIC: REUSE TANK TO DRAIN
110V50HZ/120V60HZ
PELLERIN MILNOR CORPORATION

W8CBWRA
2005462B

W8CBWRA
2005462B





W8CBWSA

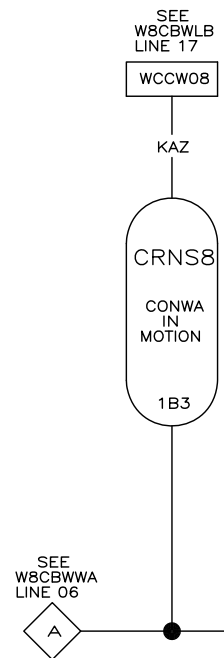
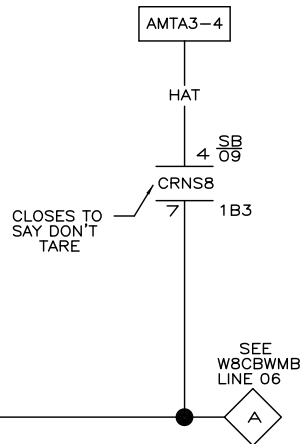
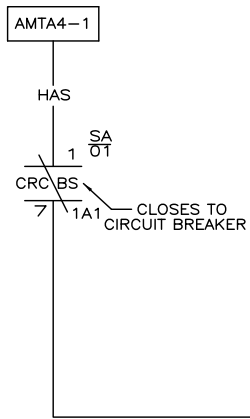
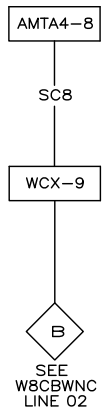
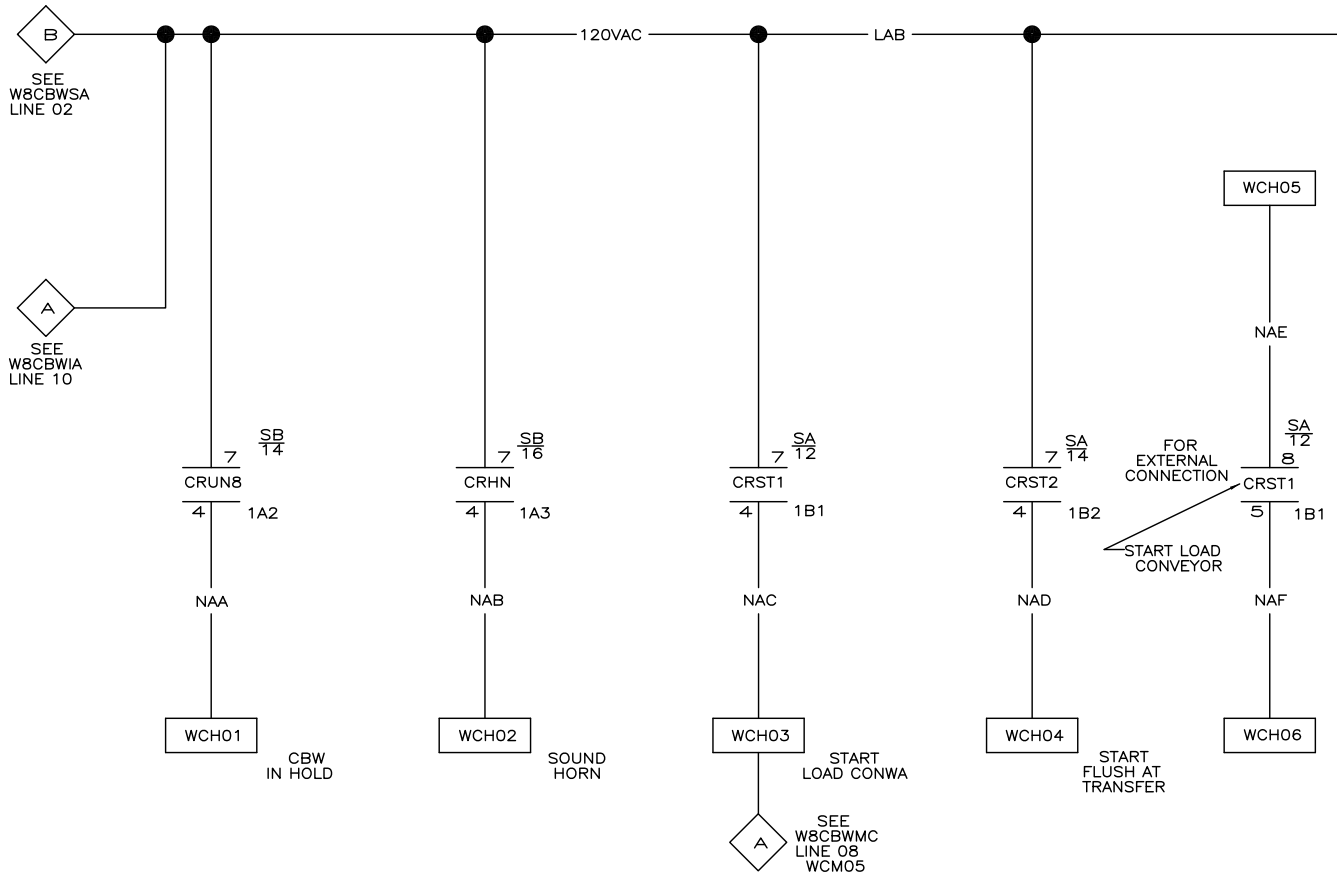
CBW SYSTEMS: MARK 8

SCHEMATIC: STANDARD I/O OUTPUTS

PELLERIN MILNOR CORPORATION

NOTES:

1. WCCW, WCAB, AND WCJ ARE LOCATED IN THE STANDARD OUTPUT BOX.
2. WCA1 IS LOCATED IN THE 1ST MODULE CONTROL BOX AND STANDARD OUTPUT BOX.



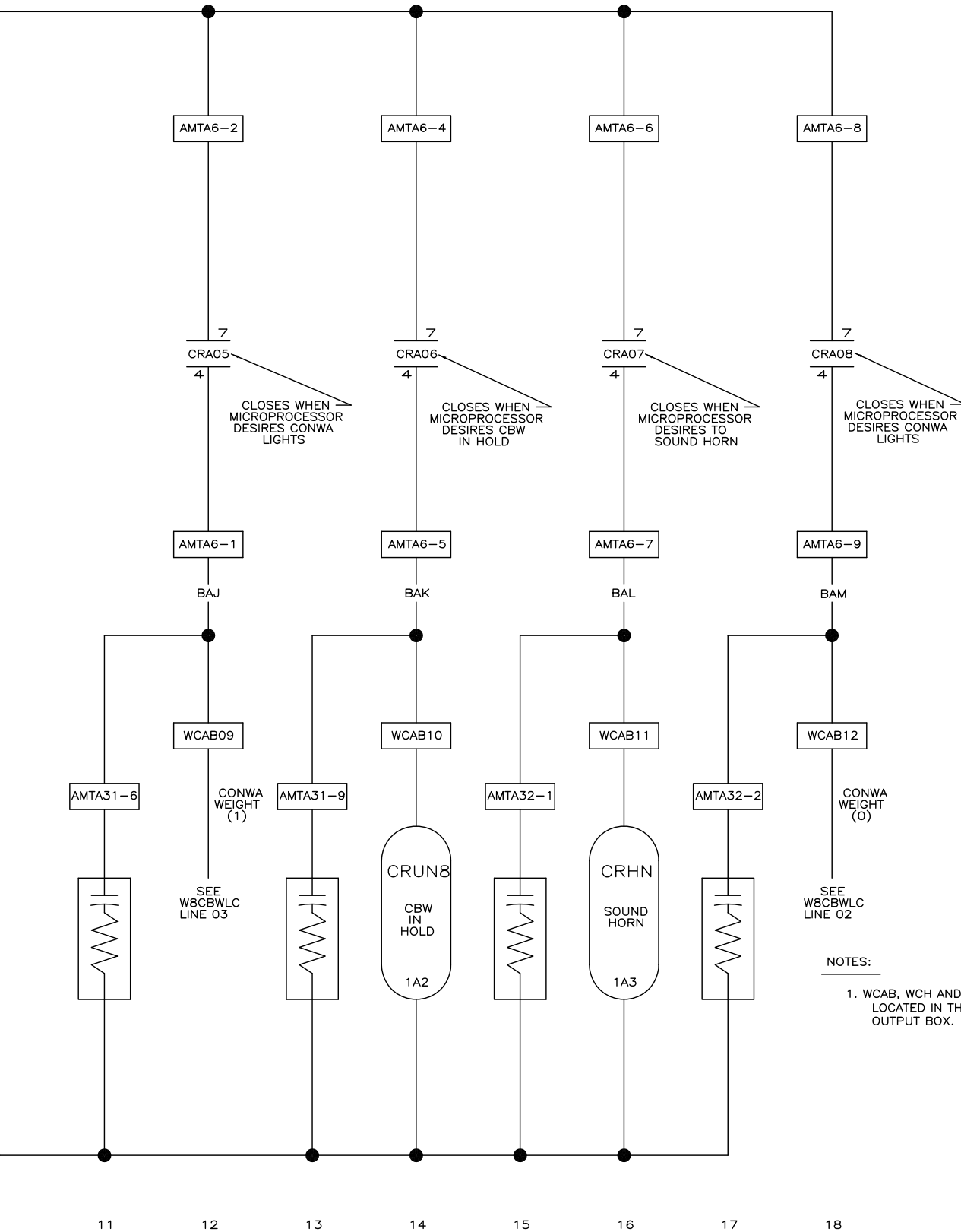
LA12,LF12

SB02

SB04

MA12

W8CBWSB
2016202B



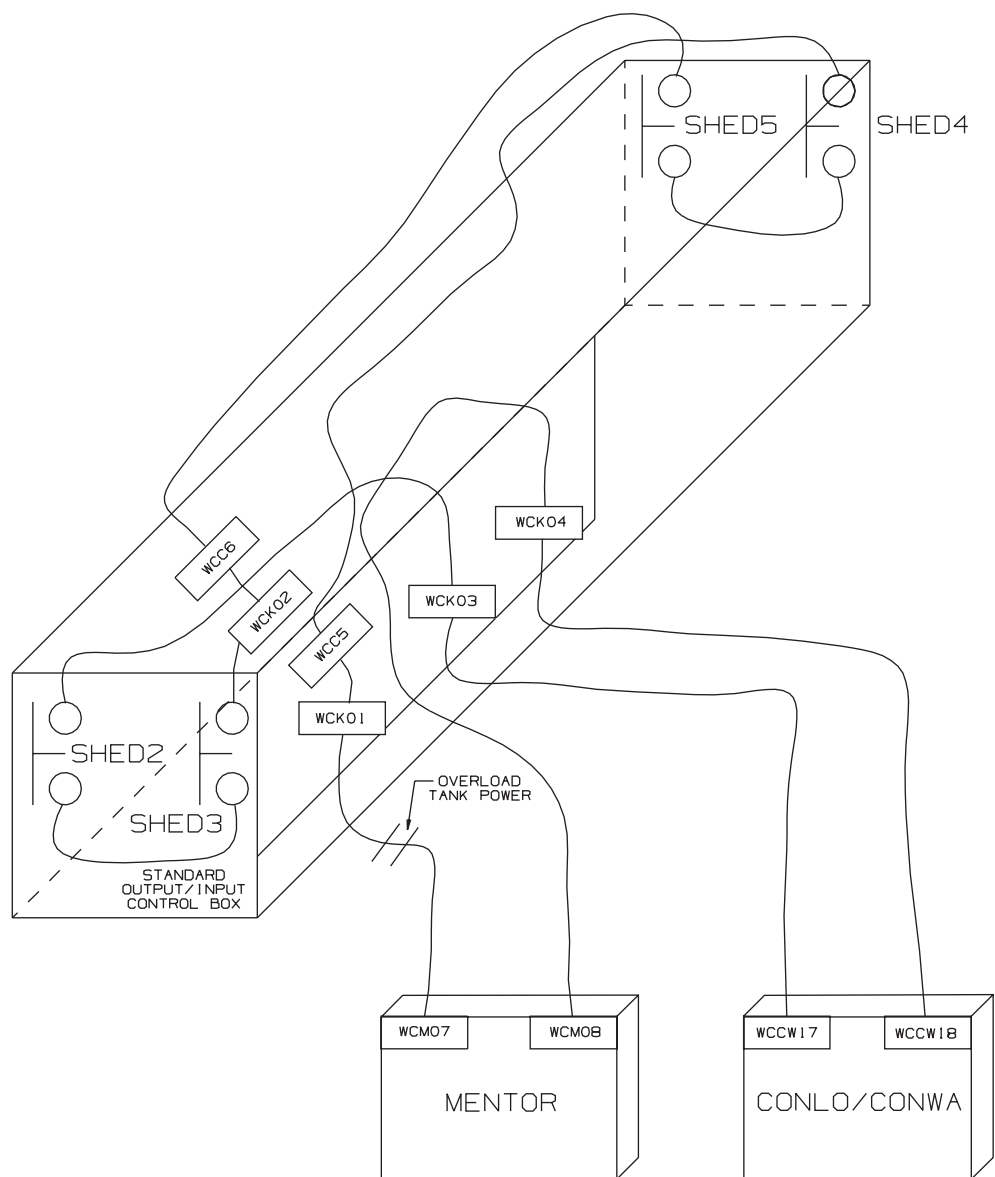
W8CBWSB

CBW SYSTEMS: MARK 8

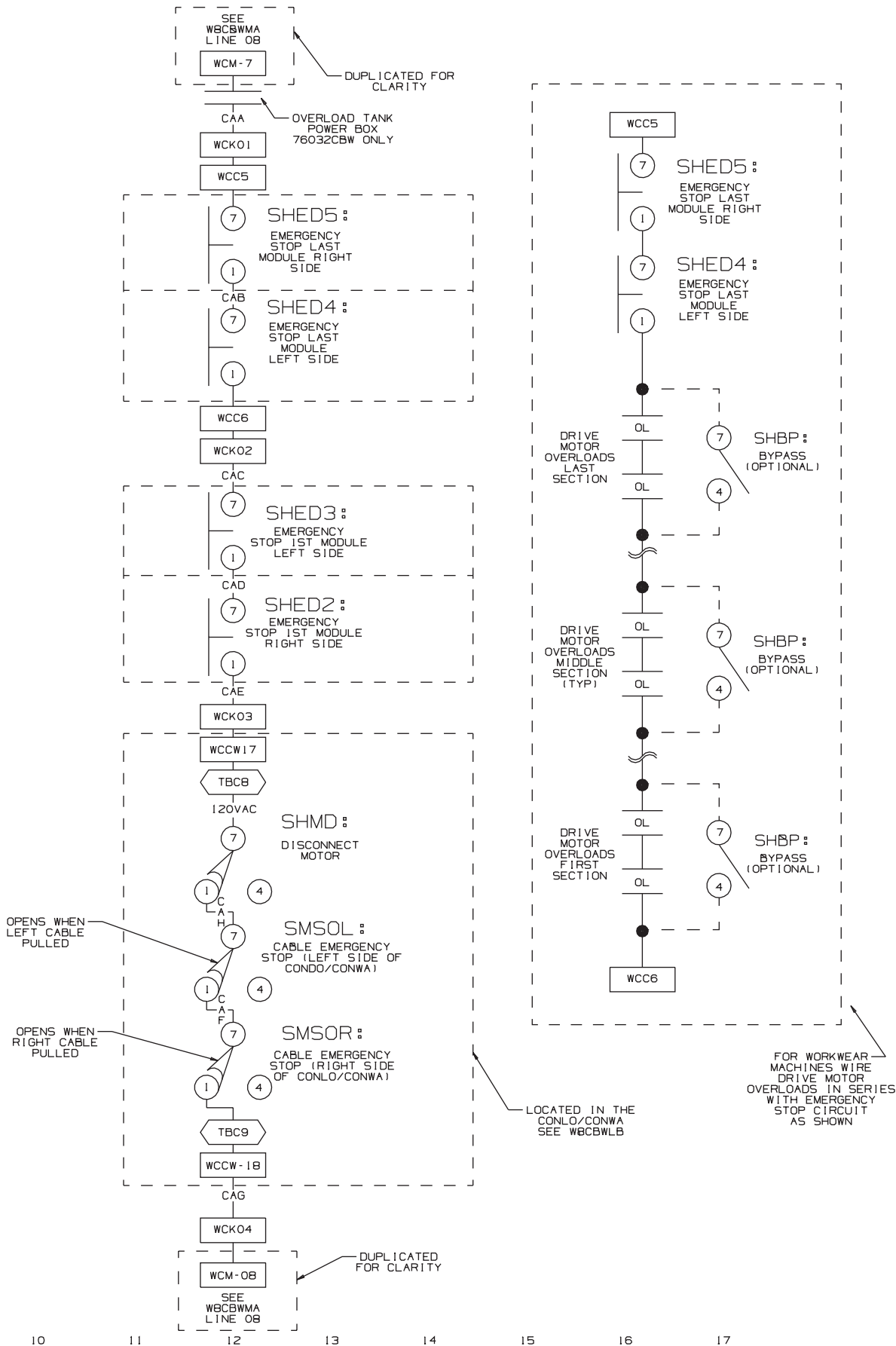
SCHEMATIC: STANDARD I/O: OUTPUT

PELLERIN MILNOR CORPORATION

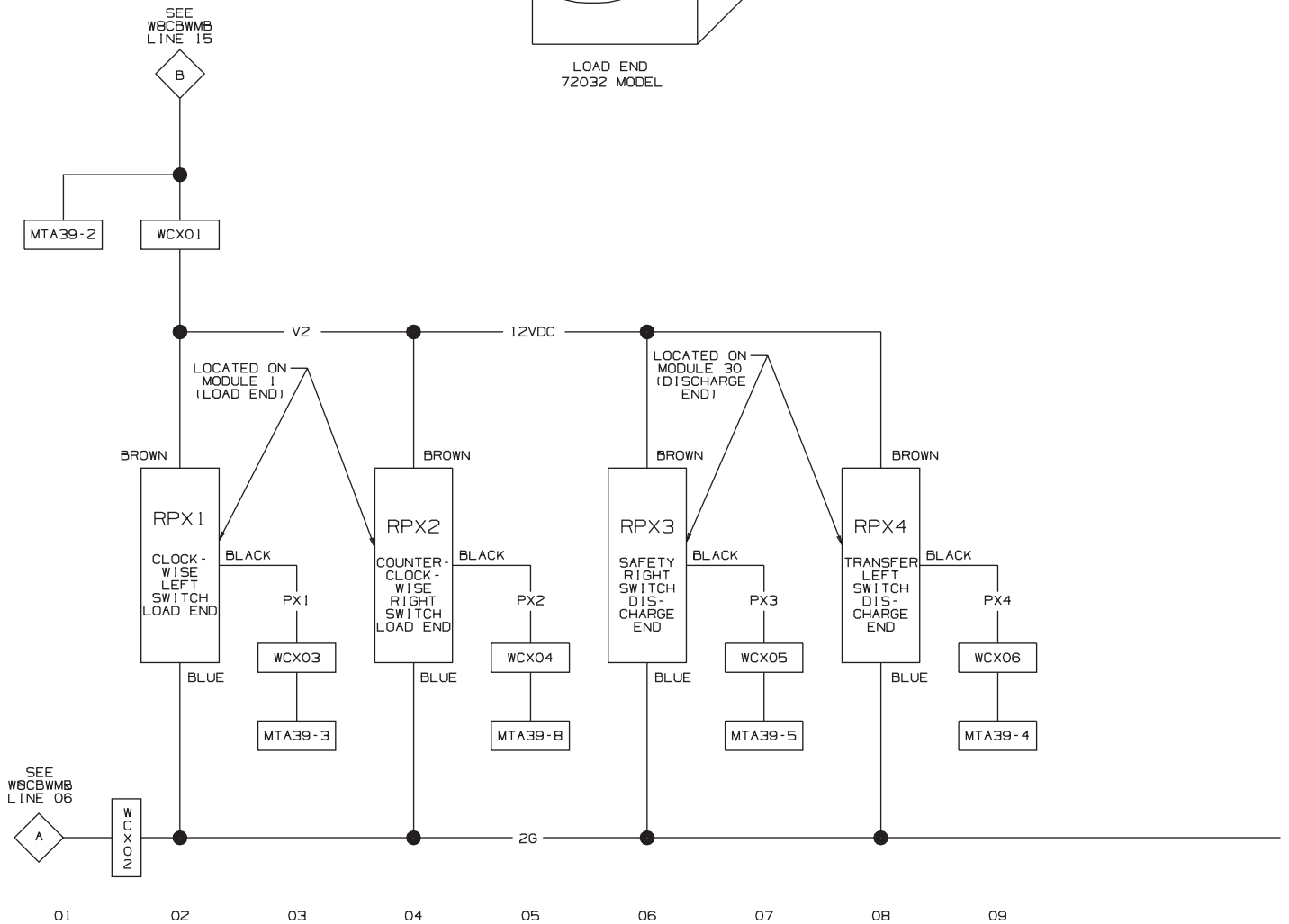
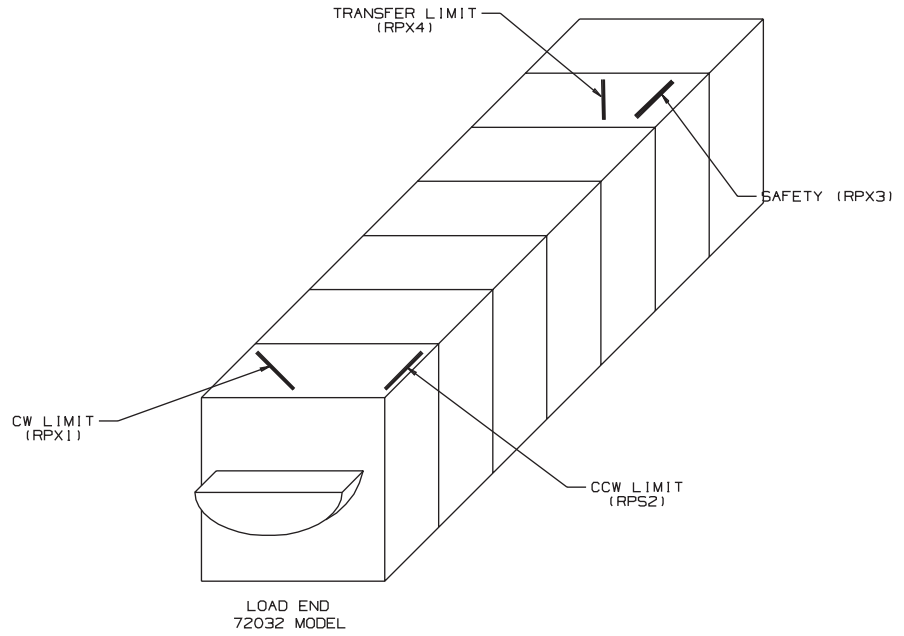
W8CBWSB
2016202B



00 01 02 03 04 05 06 07 08 09



WBCBWSO
CBW SYSTEMS
SCHEMATIC: EMERGENCY STOPS
PELLERIN MILNOR CORPORATION

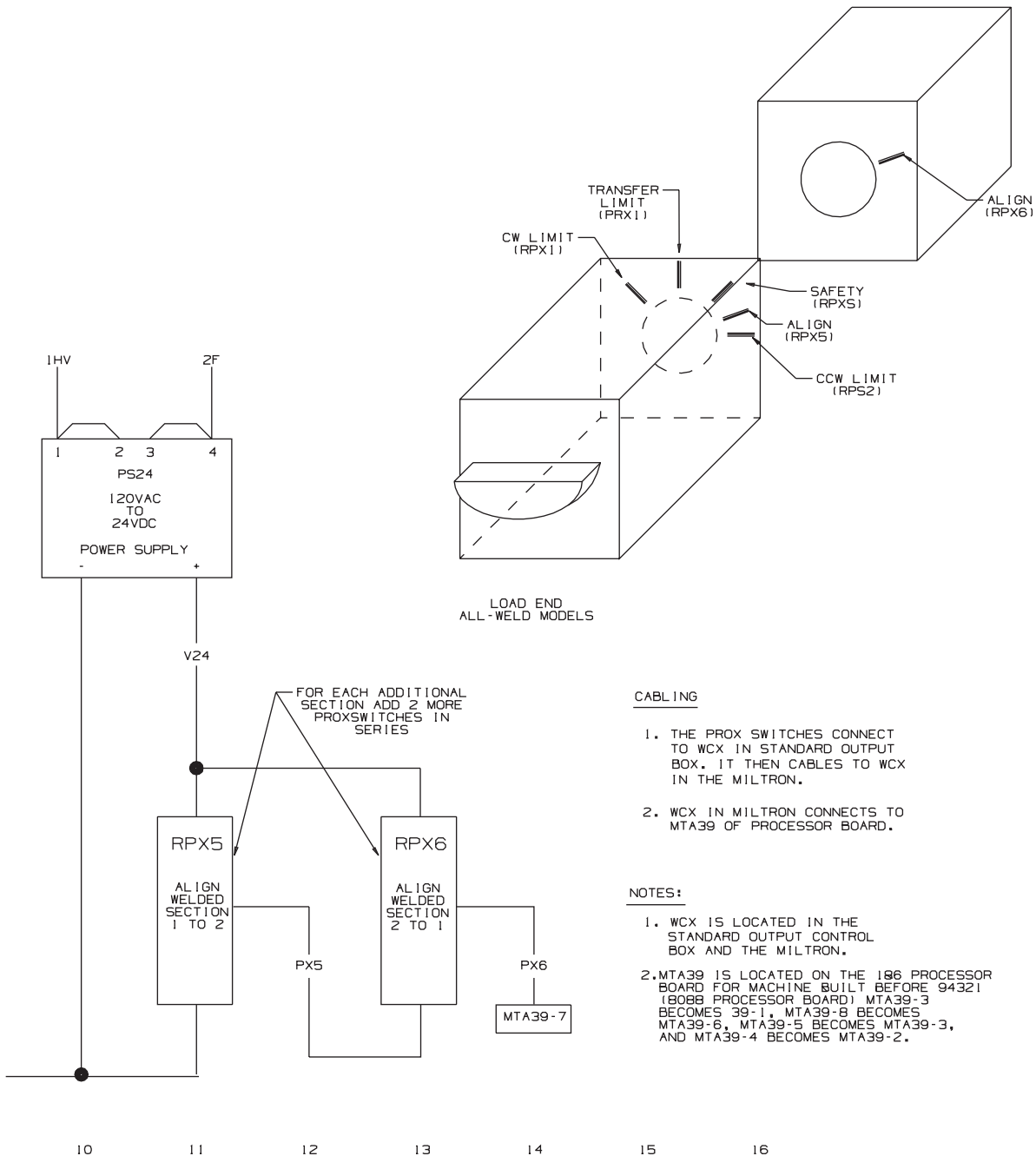


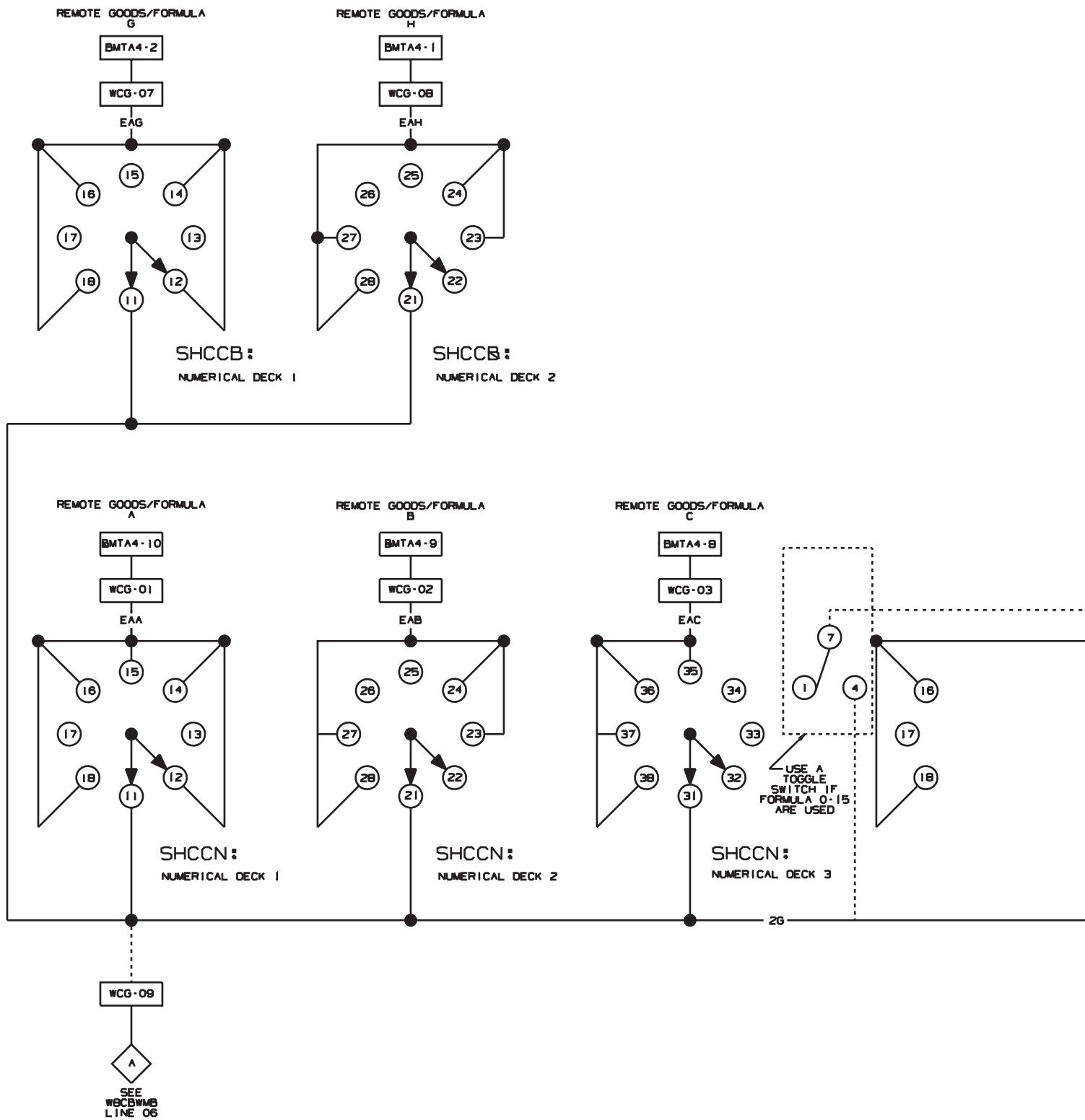
WBCBWE

CBW SYSTEMS: MARK 8

SCHEMATIC: PROXIMITY SWITCHES

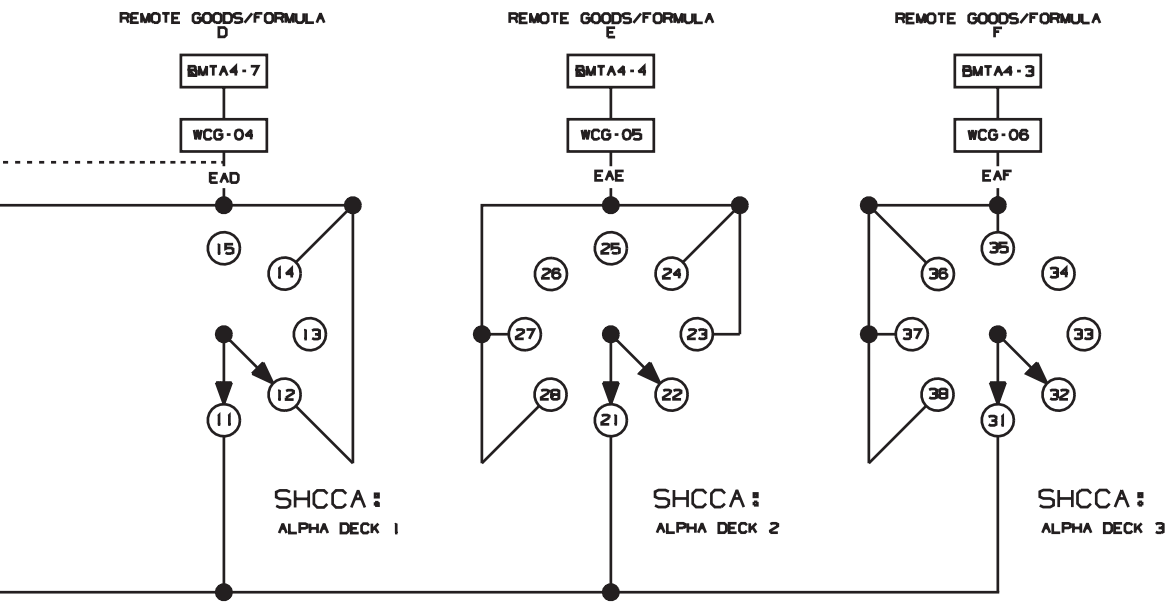
PELLERIN MILNOR CORPORATION





00 01 02 03 04 05 06 07 08 09

DATA IS ACCEPTED IN BINARY												
0 : UNGROUNDED												
1 : GROUNDED												
H	G	F	E	D	C	B	A					
0	0	0	0	0	0	0	0	:	000	GOODS/FORMULA		
0	0	0	0	0	0	0	1	:	001	GOODS/FORMULA		
ETC...												
0	0	0	0	1	0	0	0	:	008	GOODS/FORMULA		
ETC...												
1	1	1	1	1	1	1	1	:	255	GOODS/FORMULA		



NOTES:

1. WCG BMTA4 ARE LOCATED IN THE STANDARD OUTPUT BOX.

W8CBWSF

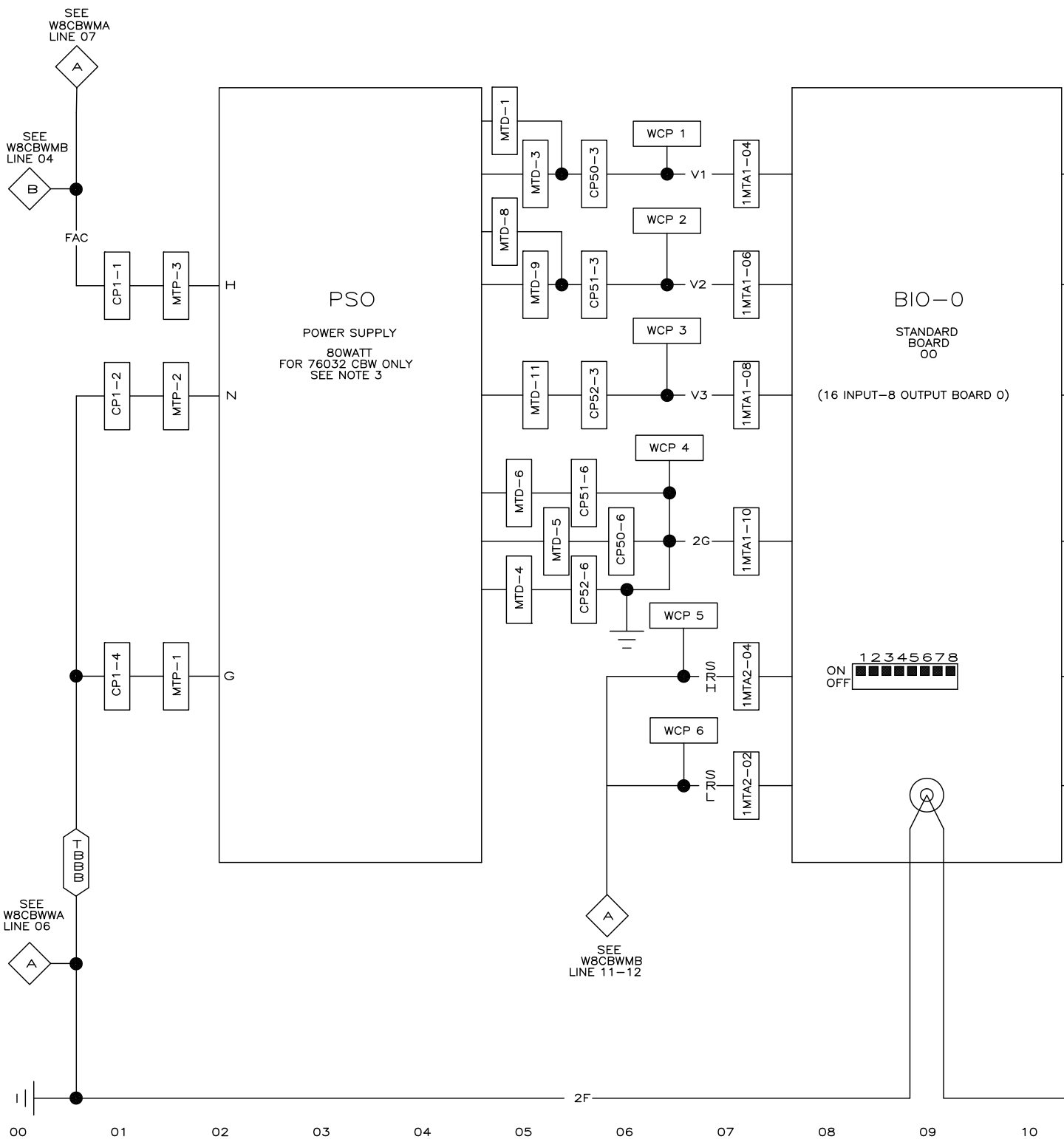
CBW SYSTEMS: MARK 8

SCHEMATIC: STANDARD I/O: REMOTE GOODS

CLASS/FORMULA SELECTOR

PELLERIN MILNOR CORPORATION

10 11 12 13 14 15 16 17 18



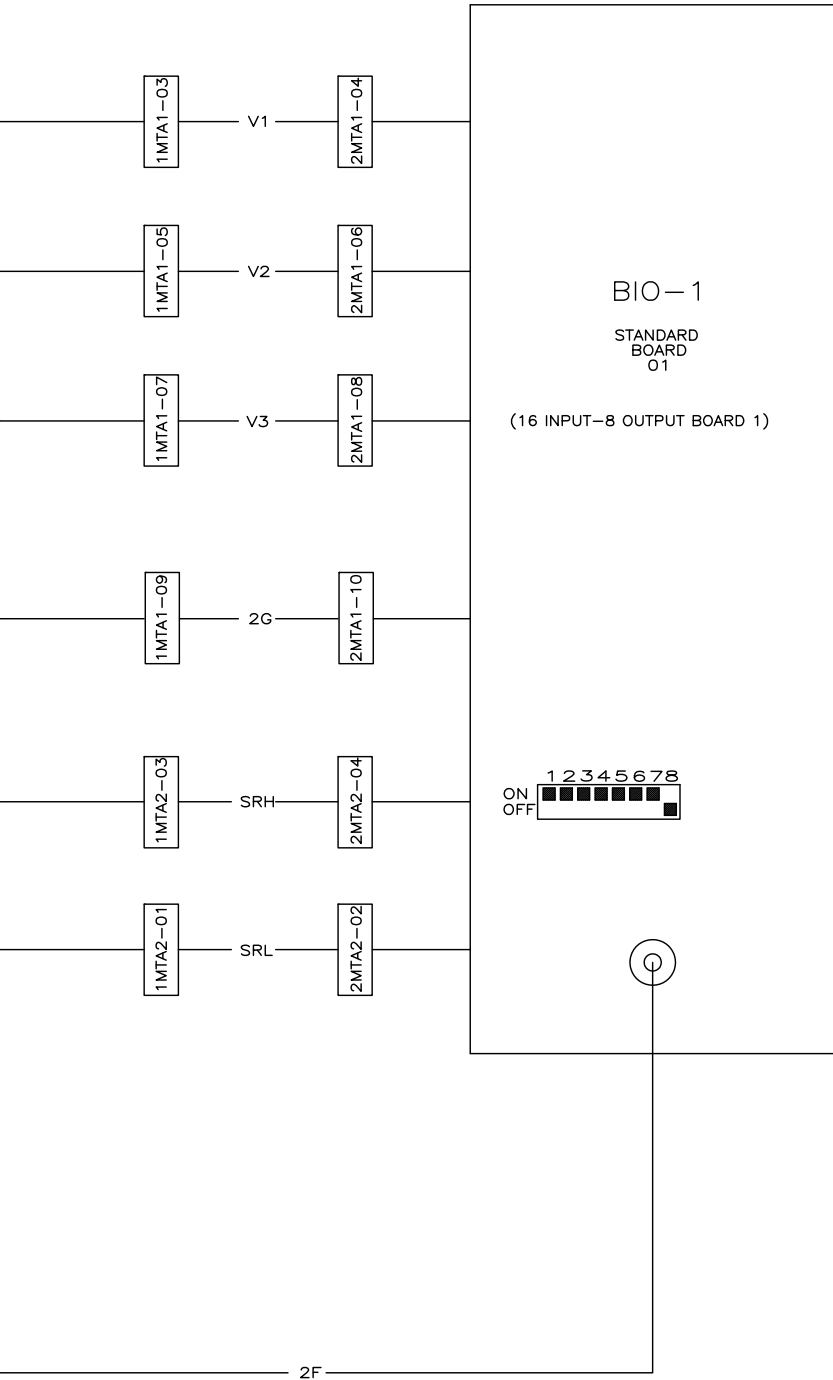
WIRE NO.	VOLTAGE	WIRE COLOR
V1	+5VDC	BLUE
V2	+12VDC	BLUE/ORANGE
V3	-12VDC	BLUE/BLACK
2G	GROUND	BLUE/WHITE
SRH	SERIAL HIGH	BLUE/RED
SRL	SERIAL LOW	BLACK/BLUE
—	—	—
—	24VAC	BLUE/RED
—	120VAC	RED
2F	CONTROL GROUND	RED/WHITE

NOTES:

1. WCP CONNECTS TO ALL OTHER MODULES FOR D.C. POWER AND SERIAL LINK.
2. WCM IS LOCATED IN THE MILTRON/MENTOR.
3. THE POWER SUPPLY AS SHOWN SUPPLIES VOLTAGES FOR THE STANDARD OUTPUT BOX AND THE FIRST SECTION ONLY. FOR EACH ADDITIONAL SECTION ANOTHER IDENTICAL POWER SUPPLY IS ADDED IN THAT SECTION'S MODULE CONTROL BOX.
4. PSO SHOWN IS FOR MACHINES AFTER 1-1-2009 PRIOR TO THAT DATE THE POWER SUPPLY VOLTAGE OUTPUTS ON MTD WAS AS FOLLOWS:

V1	MTD3
V2	MTD7
V3	MTD8
2G	MTD4/5/6

W8CBWSGA
2015093B



W8CBWSGA

FOR 76032 CBW ONLY
SCHEMATIC: STANDARD I/O BOARD WIRING
PELLERIN MILNOR CORPORATION

W8CBWSGA
2015093B

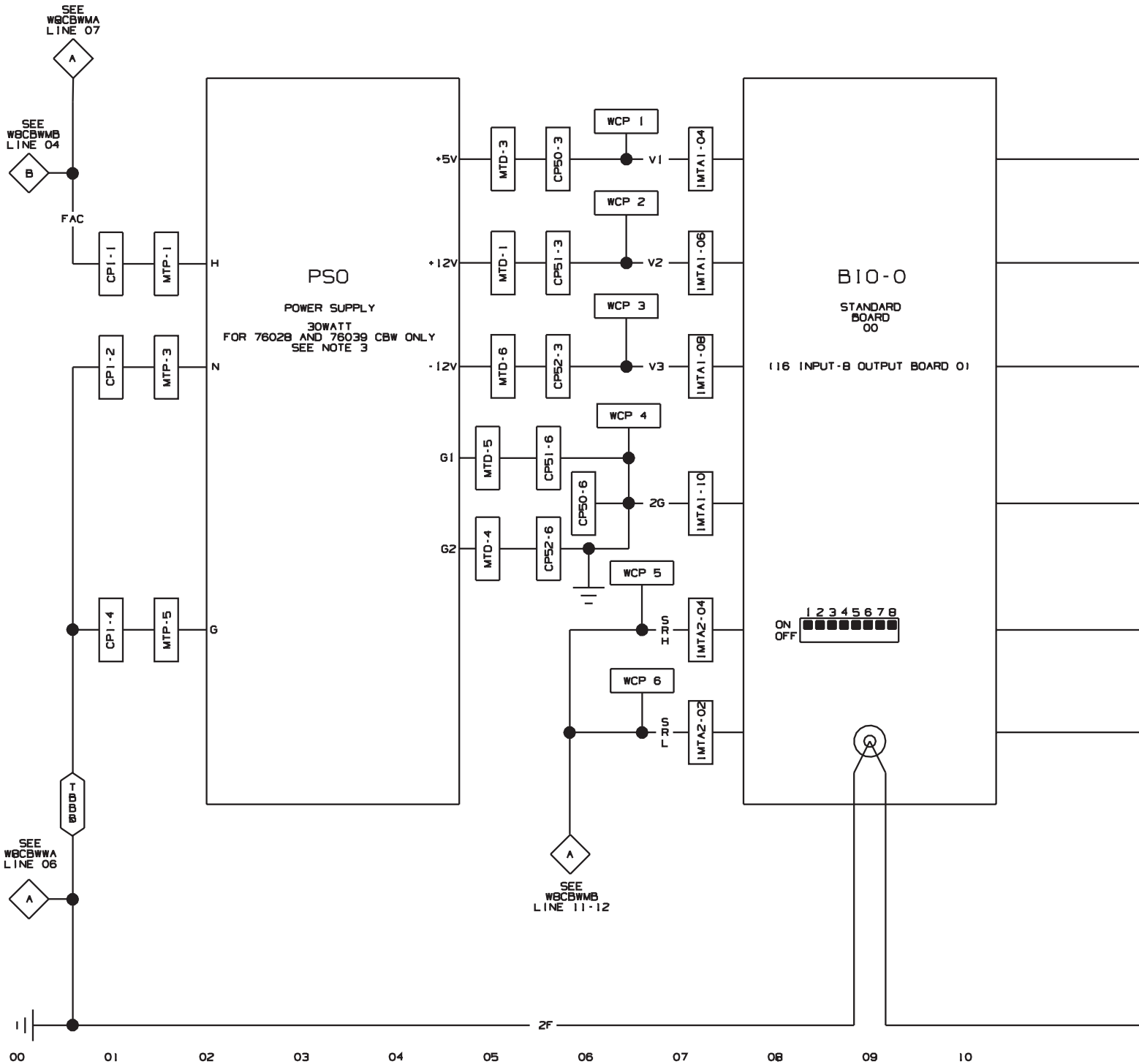
SEE
WBCBWWA
LINE 07

SEE
WBCBWWB
LINE 04

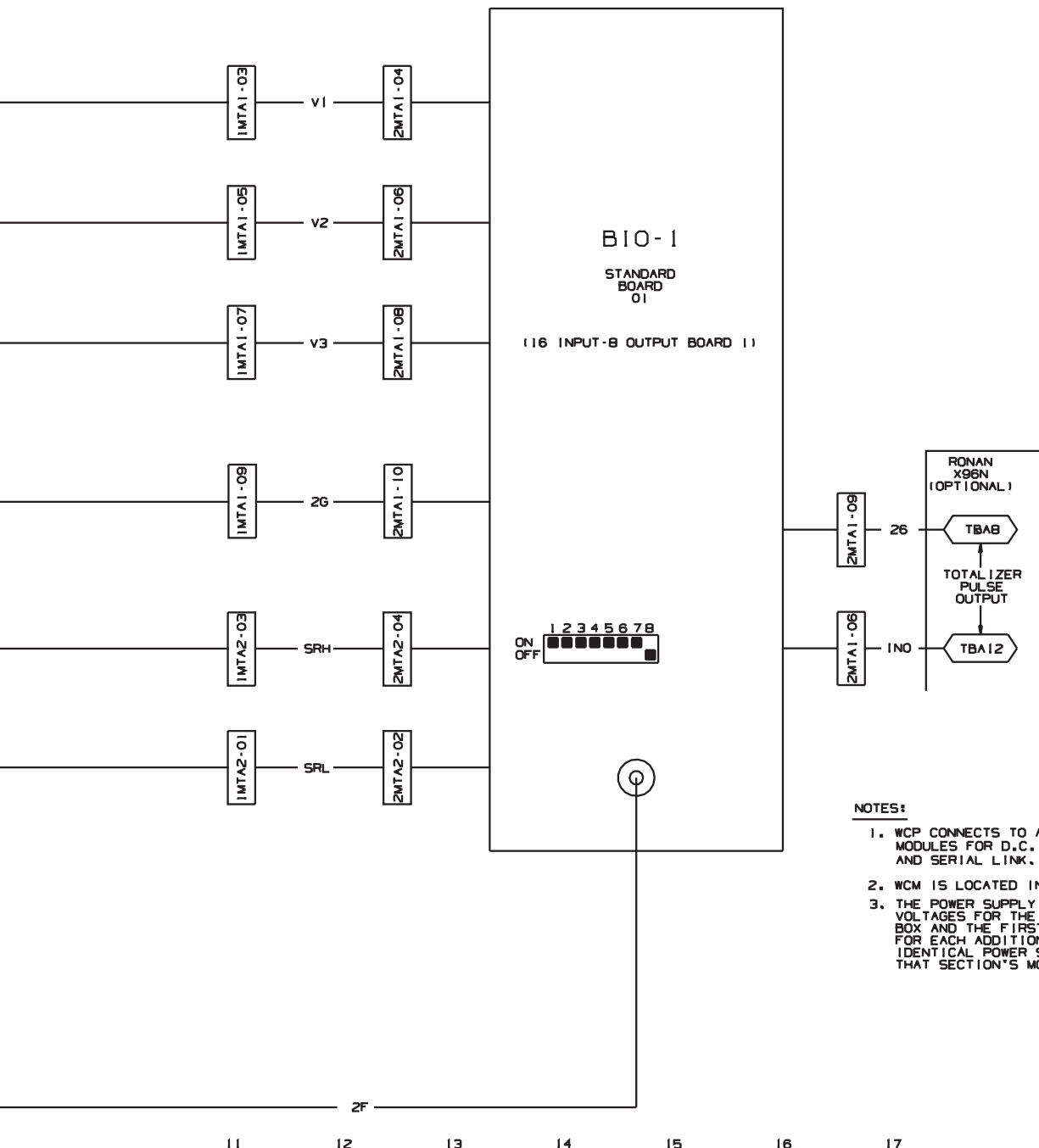
SEE
WBCBWWA
LINE 06

00 01 02 03 04 05 06 07 08 09 10

WBCBWSGB
97216B



WIRE NO.	VOLTAGE	WIRE COLOR
V1	+5VDC	BLUE
V2	+12VDC	BLUE/ORANGE
V3	-12VDC	BLUE/BLACK
ZG	GROUND	BLUE/WHITE
SRH	SERIAL HIGH	BLUE/RED
SRL	SERIAL LOW	BLACK/BLUE
INPUTS	-	BLUE/BLACK
-	24VAC	BLUE/RED
-	120VAC	RED
ZF	CONTROL GROUND	RED/WHITE

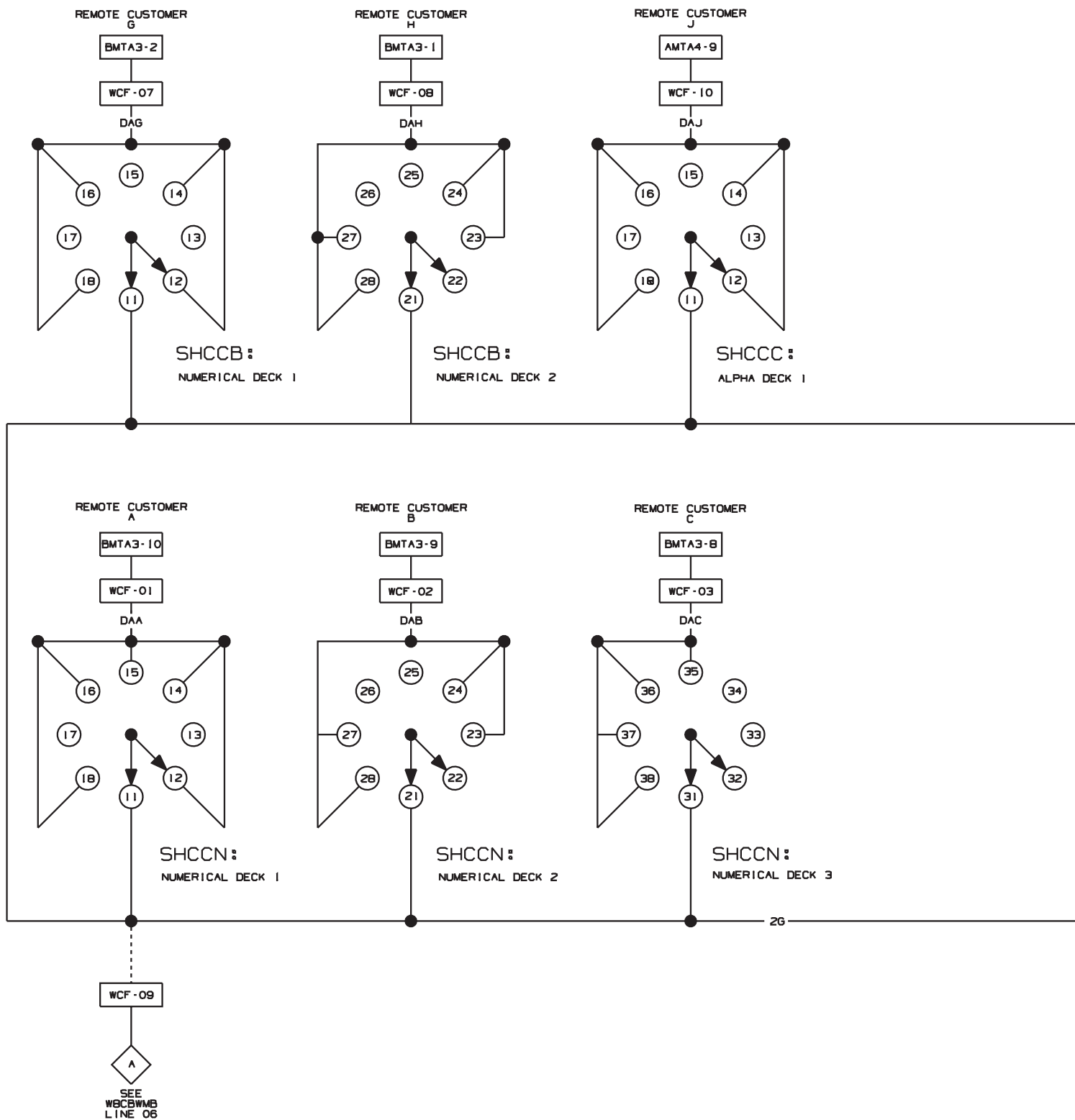


NOTES:

1. WCP CONNECTS TO ALL OTHER MODULES FOR D.C. POWER AND SERIAL LINK.
2. WCM IS LOCATED IN THE MILTRON.
3. THE POWER SUPPLY AS SHOWN SUPPLIES VOLTAGES FOR THE STANDARD OUTPUT BOX AND THE FIRST SECTION ONLY. FOR EACH ADDITIONAL SECTION ANOTHER IDENTICAL POWER SUPPLY IS ADDED IN THAT SECTION'S MODULE CONTROL BOX.

W8CBWSGB

FOR 76028 AND 76039 CBW ONLY
SCHEMATIC: STANDARD I/O BOARD WIRING
PELLERIN MILNOR CORPORATION



00

01

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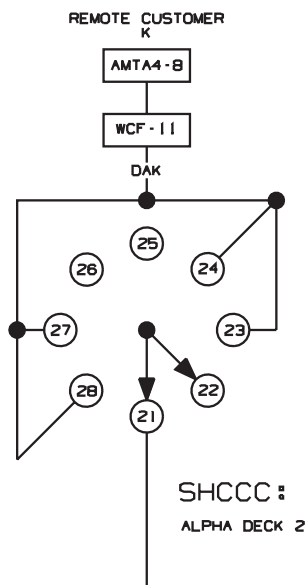
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08

09

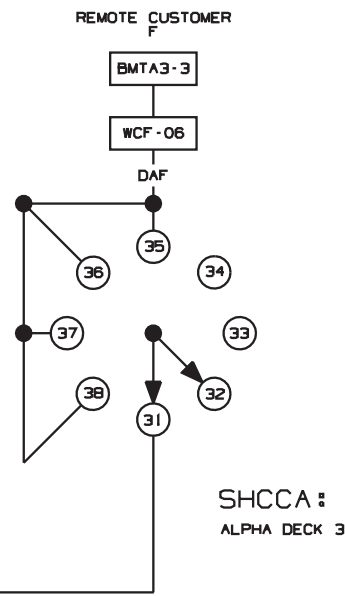
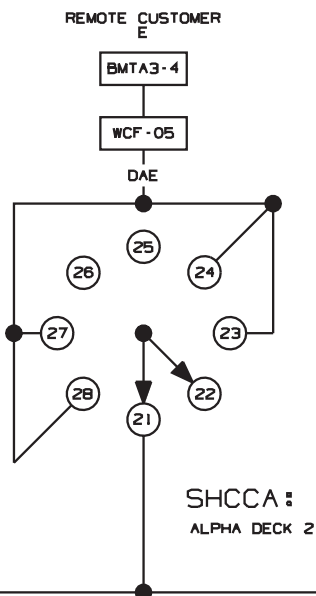
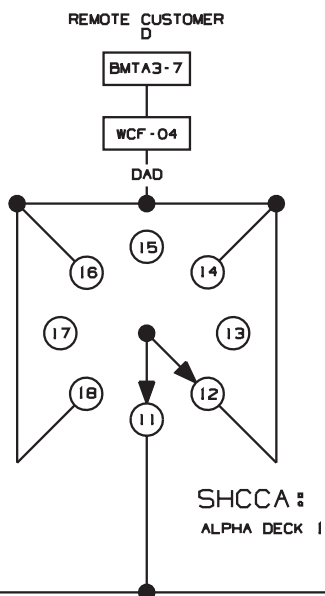
W8CBWSH

CBW SYSTEMS: MARK 8
SCHEMATIC: REMOTE CUSTOMER SELECTOR
PELLERIN MILNOR CORPORATION



DATA IS ACCEPTED IN BINARY
0 : UNGROUNDED
1 : GROUNDED

K	J	H	G	F	E	D	C	B	A	
0	0	0	0	0	0	0	0	0	0	: 000 CUSTOMER
0	0	0	0	0	0	0	0	0	1	: 001 CUSTOMER
ETC....										
0	0	0	0	0	1	0	0	0	0	: 008 CUSTOMER
0	1	0	0	0	0	0	0	0	0	: 256 CUSTOMER
0	0	1	1	1	1	1	1	1	1	: 255 CUSTOMER
1	1	1	1	0	0	1	1	1	1	: 999 CUSTOMER



10

11

12

13

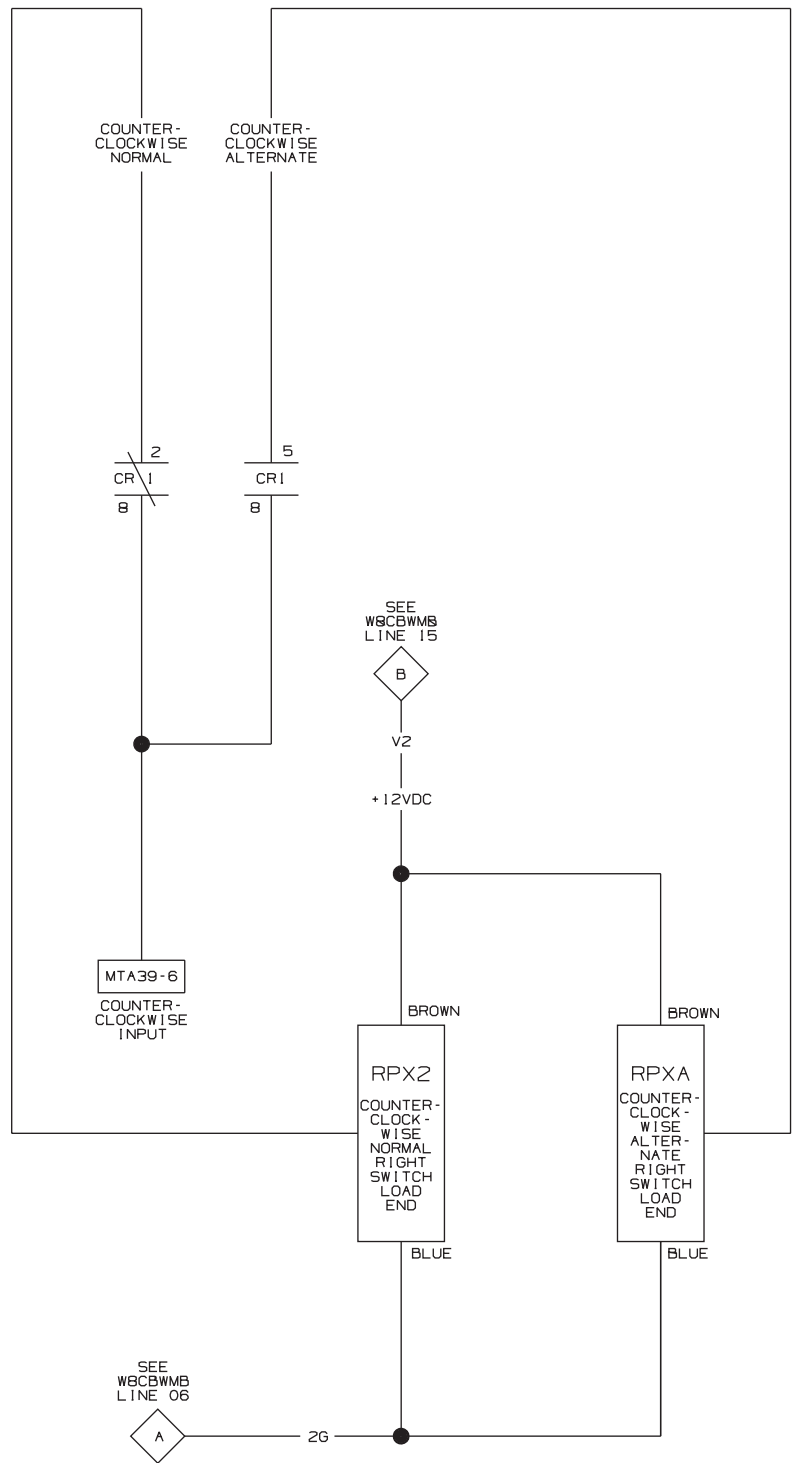
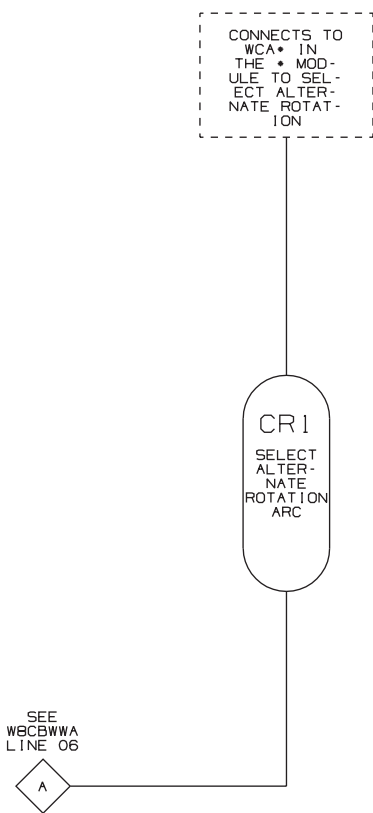
14

15

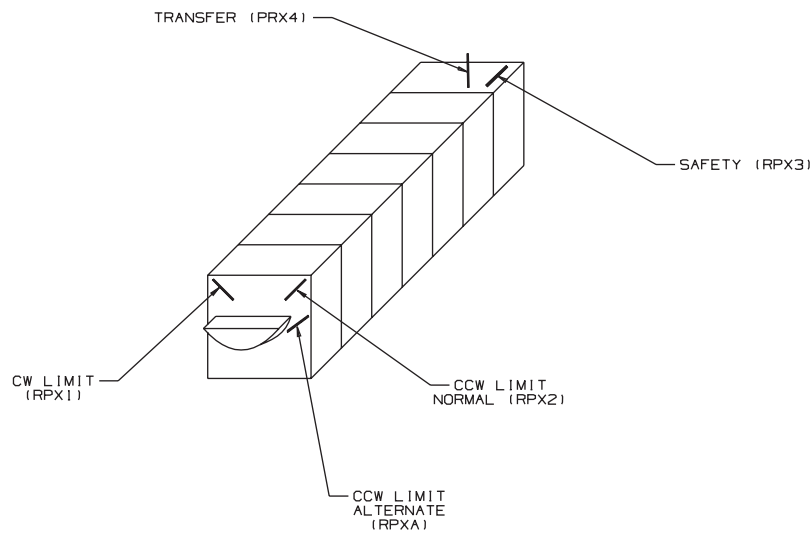
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17

18



00 01 02 03 04 05 06 07 08 09 10 11

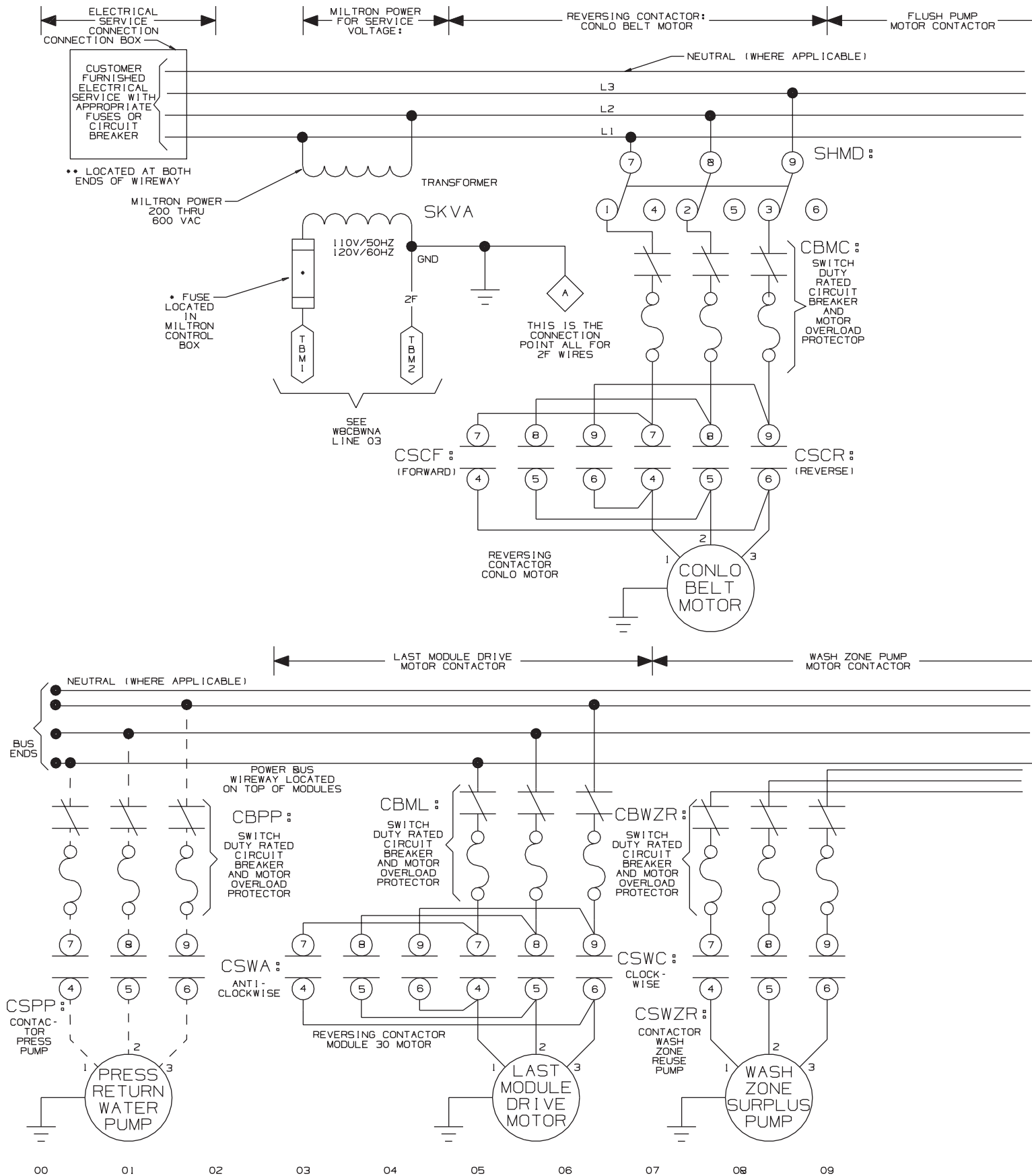


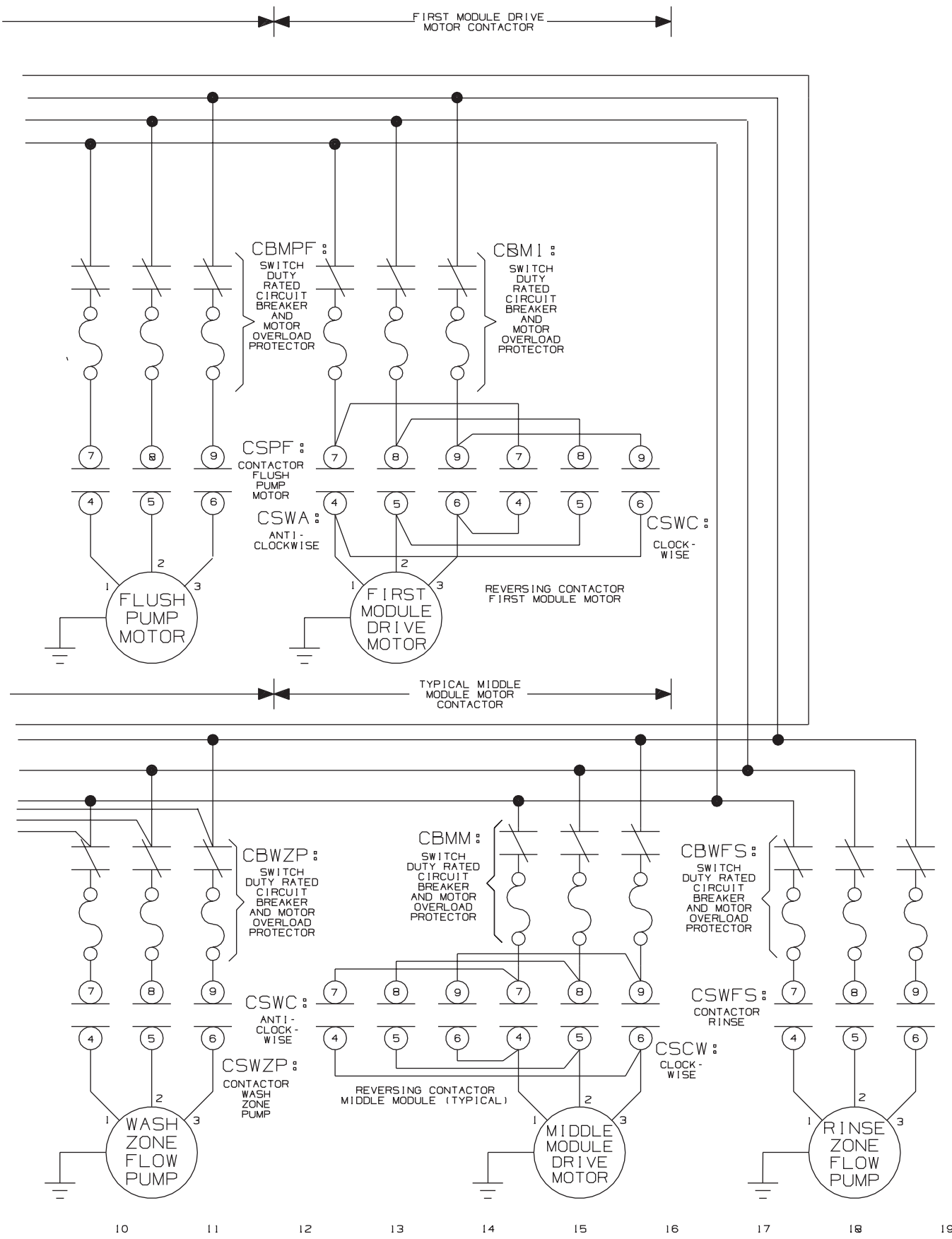
NOTES:

1. REFER TO SCHEMATIC W8CBWSE

W8CBWSJ

CBW SYSTEMS: MARK 8
SCHEMATIC: SELECTION OF 2 DIFFERENT
ROTATION ARCS
PELLERIN MILNOR CORPORATION



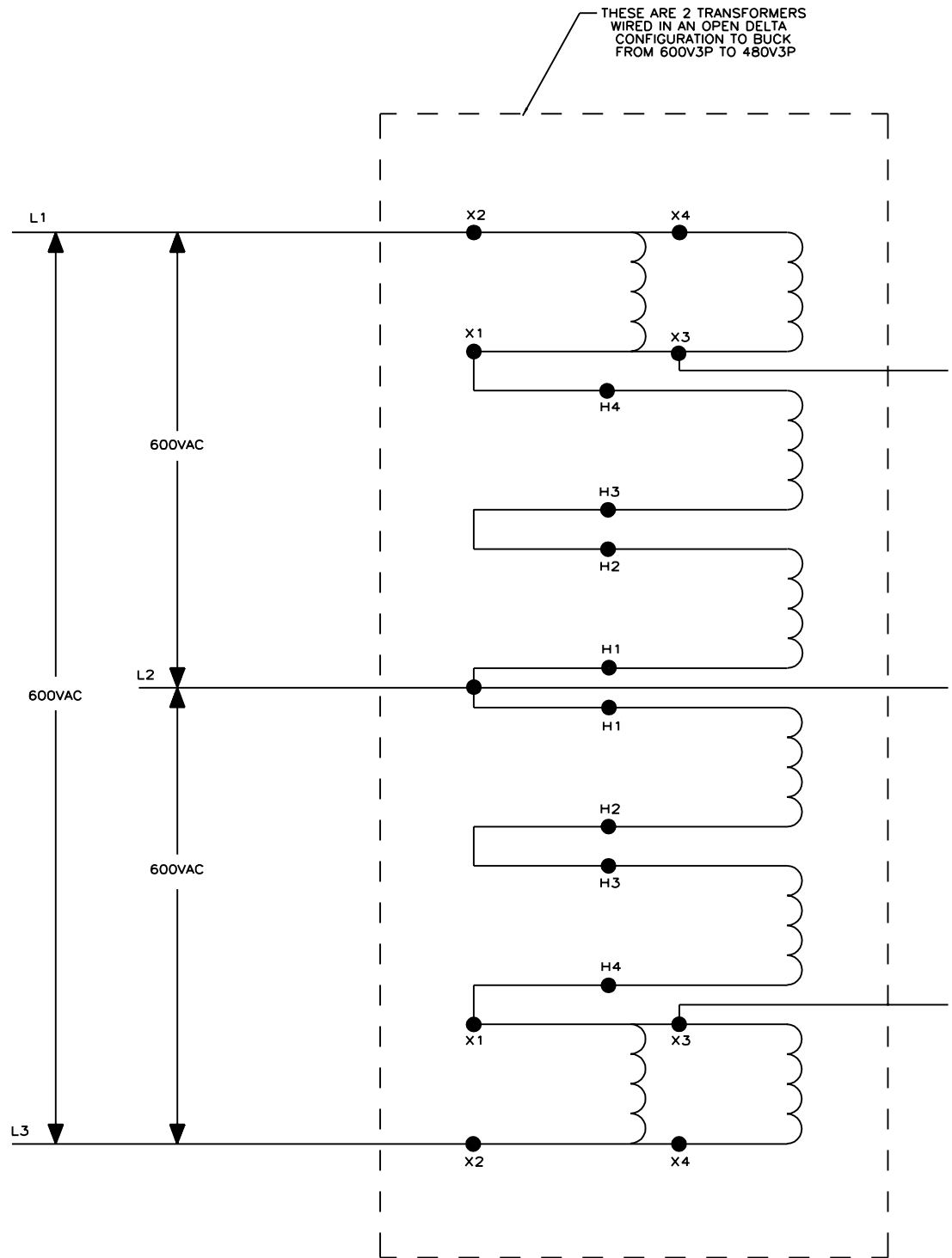


W8CBWWA
 CBW SYSTEM: MARK 8
 SCHEMATIC: POWER DISTRIBUTION
 PELLERIN MILNOR CORPORATION

W8CBWWA
 99263D

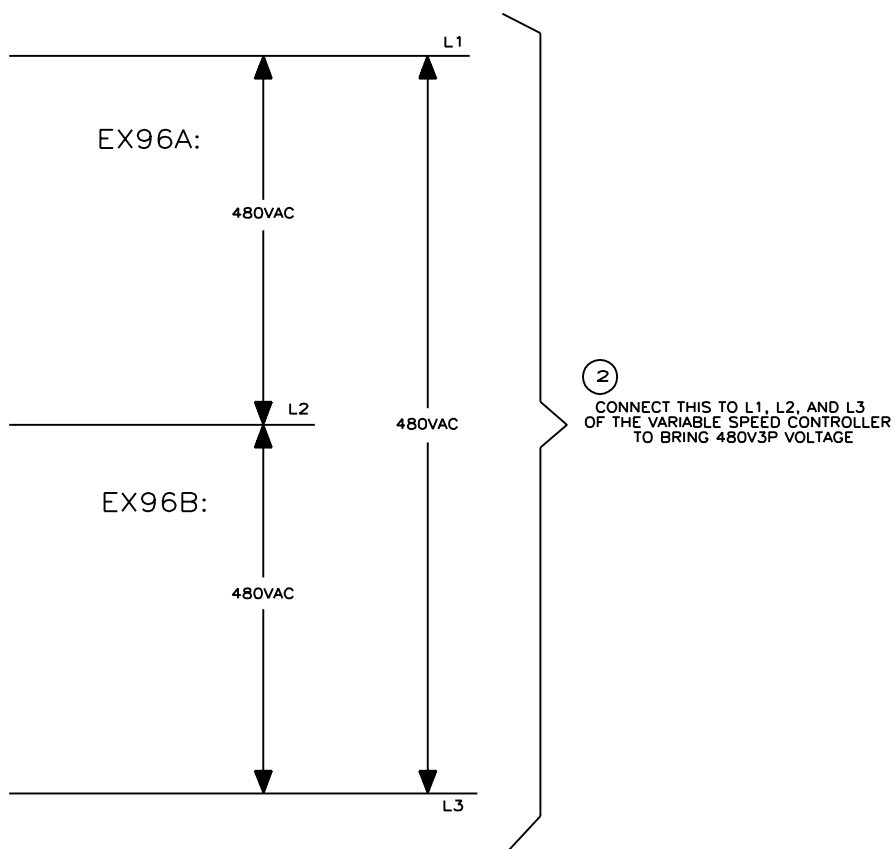
W8CBWWA
 99263D

①
REMOVE THE 3 PHASE
FEED FROM L1, L2, AND L3
OF THE VARIABLE SPEED
CONTROLLER AND CONNECT
TO THE TRANSFORMERS



00 01 02 03 04 05 06 07 08 09 10

INPUT (SUPPLY SYSTEM)	DESIRED OUTPUT CONNECTION	
DELTA 3 WIRE	WYE 3 OR 4 WIRE	DO NOT USE
OPEN DELTA 3 WIRE	WYE 3 OR 4 WIRE	DO NOT USE
WYE 3 OR 4 WIRE	CLOSED DELTA 3 WIRE	DO NOT USE
WYE 4 WIRE	WYE 3 OR 4 WIRE	OK
WYE 3 OR 4 WIRE	OPEN DELTA 3 WIRE	OK
CLOSED DELTA 3 WIRE	OPEN DELTA 3 WIRE	OK

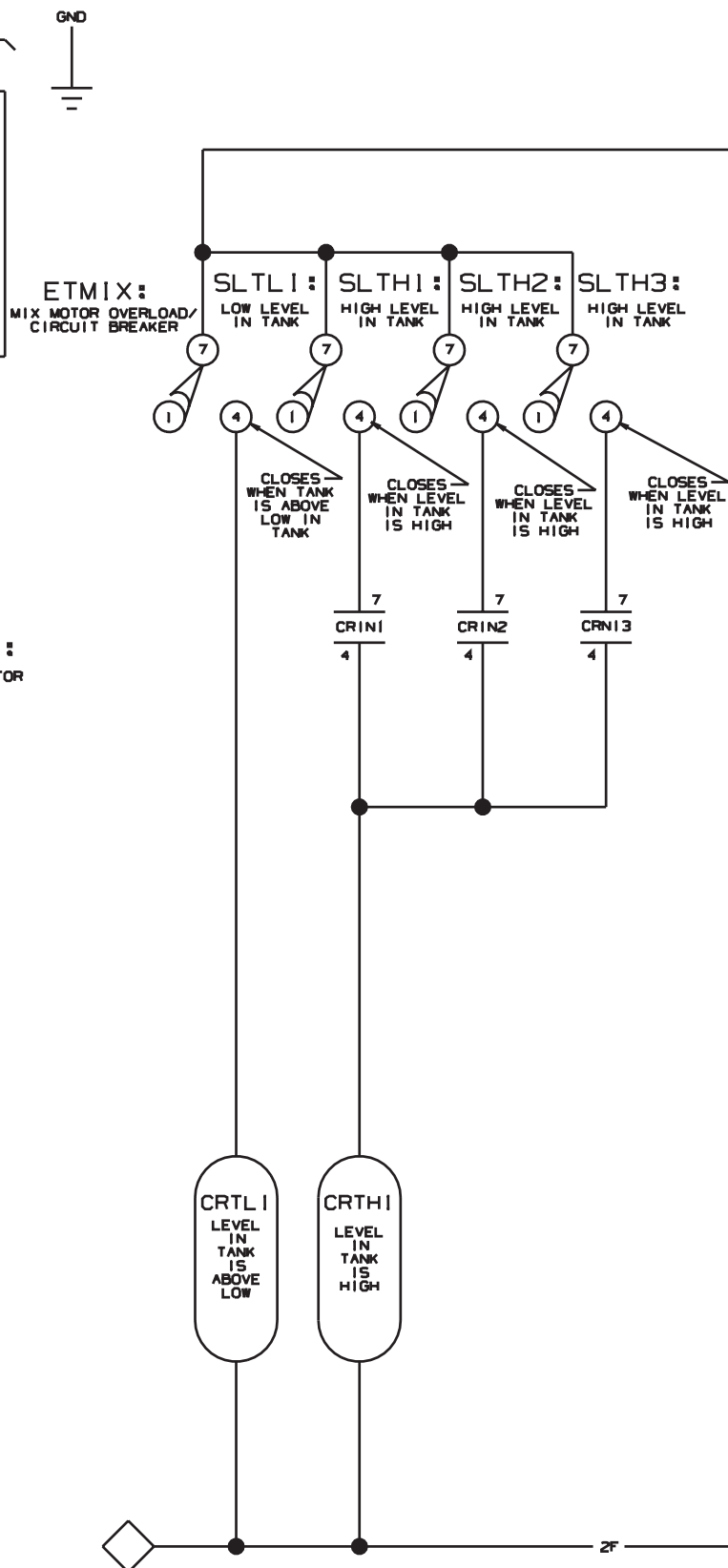
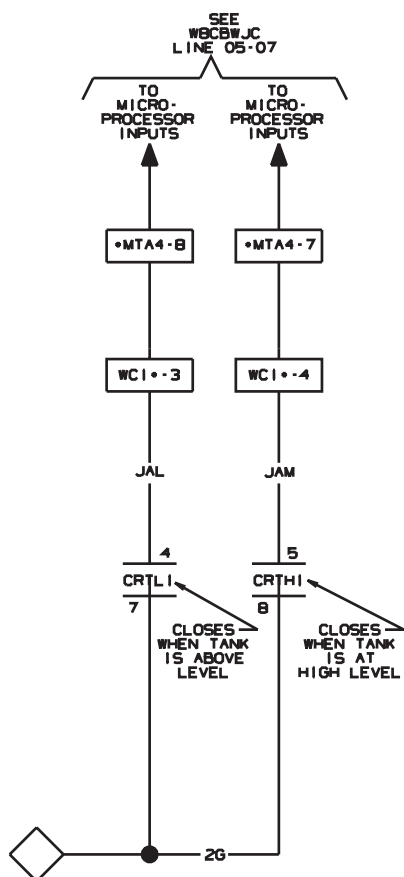
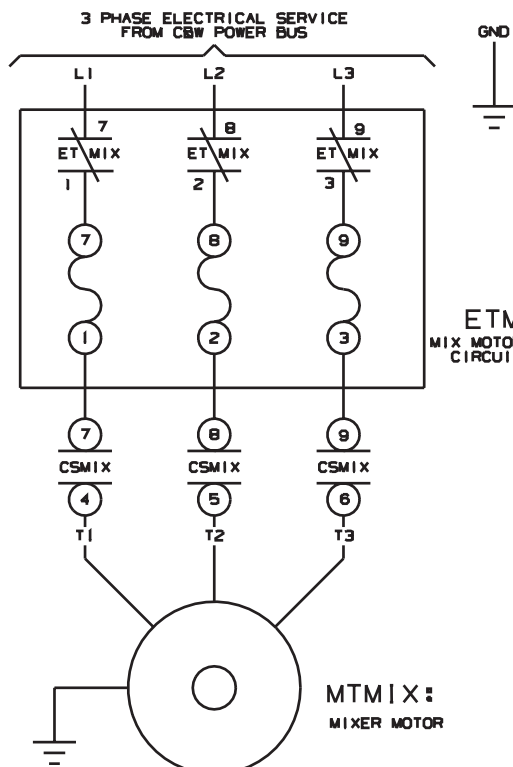


NOTES:

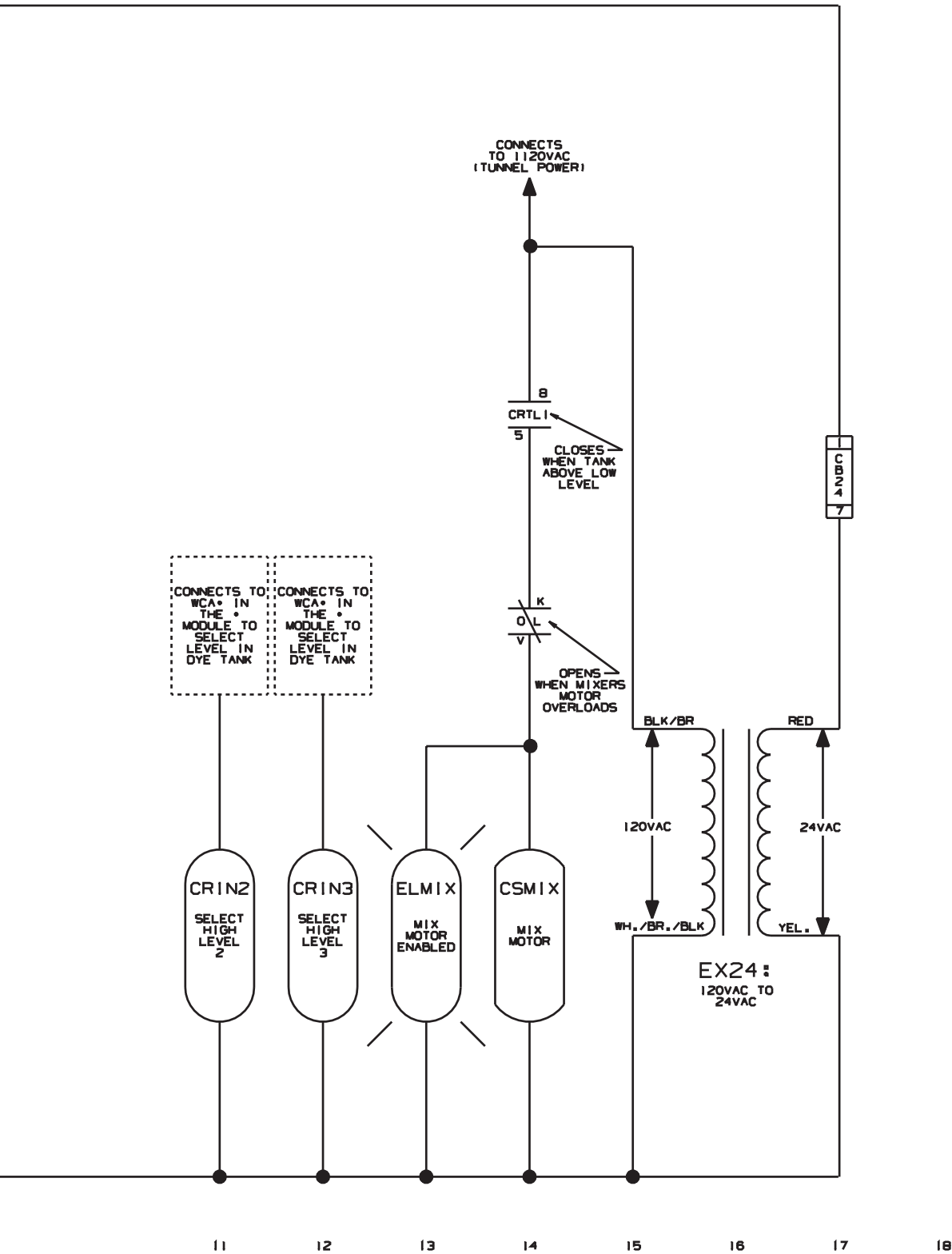
1. FOR 1 OR 2 CBW GROUPS
USE 2-09US030A96.
2. FOR 3 OR MORE CBW GROUPS
USE 2-09US050A96.

W8CBWWB
MICRO 6 SYSTEMS
SCHEMATIC: 600V WELDED CBW
WITH INVERTER

PELLERIN MILNOR CORPORATION



00 01 02 03 04 05 06 07 08 09 10

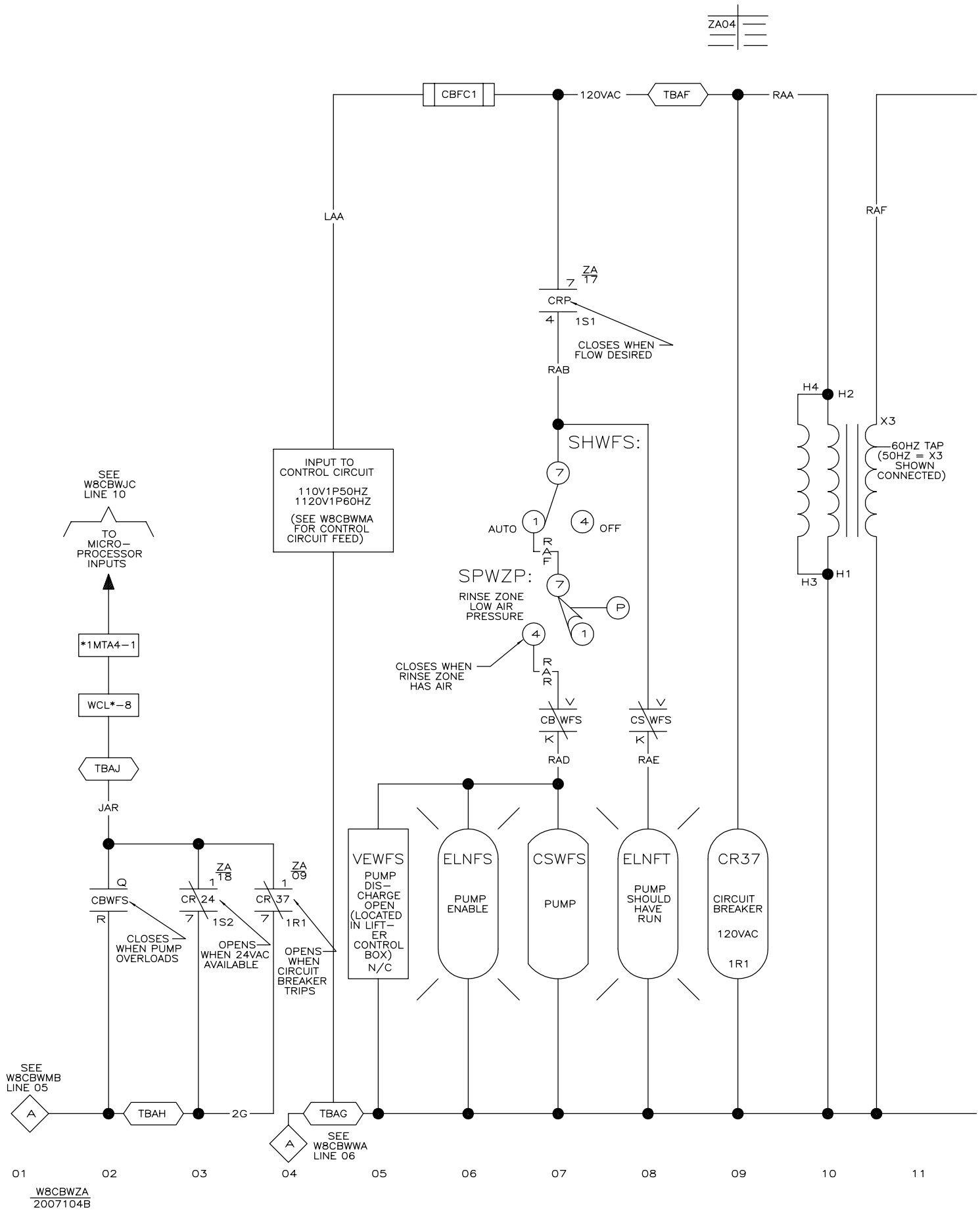


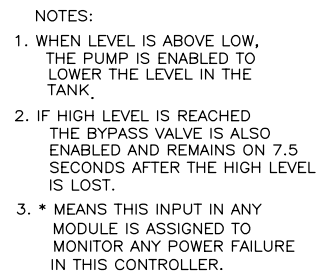
W8CBWYT

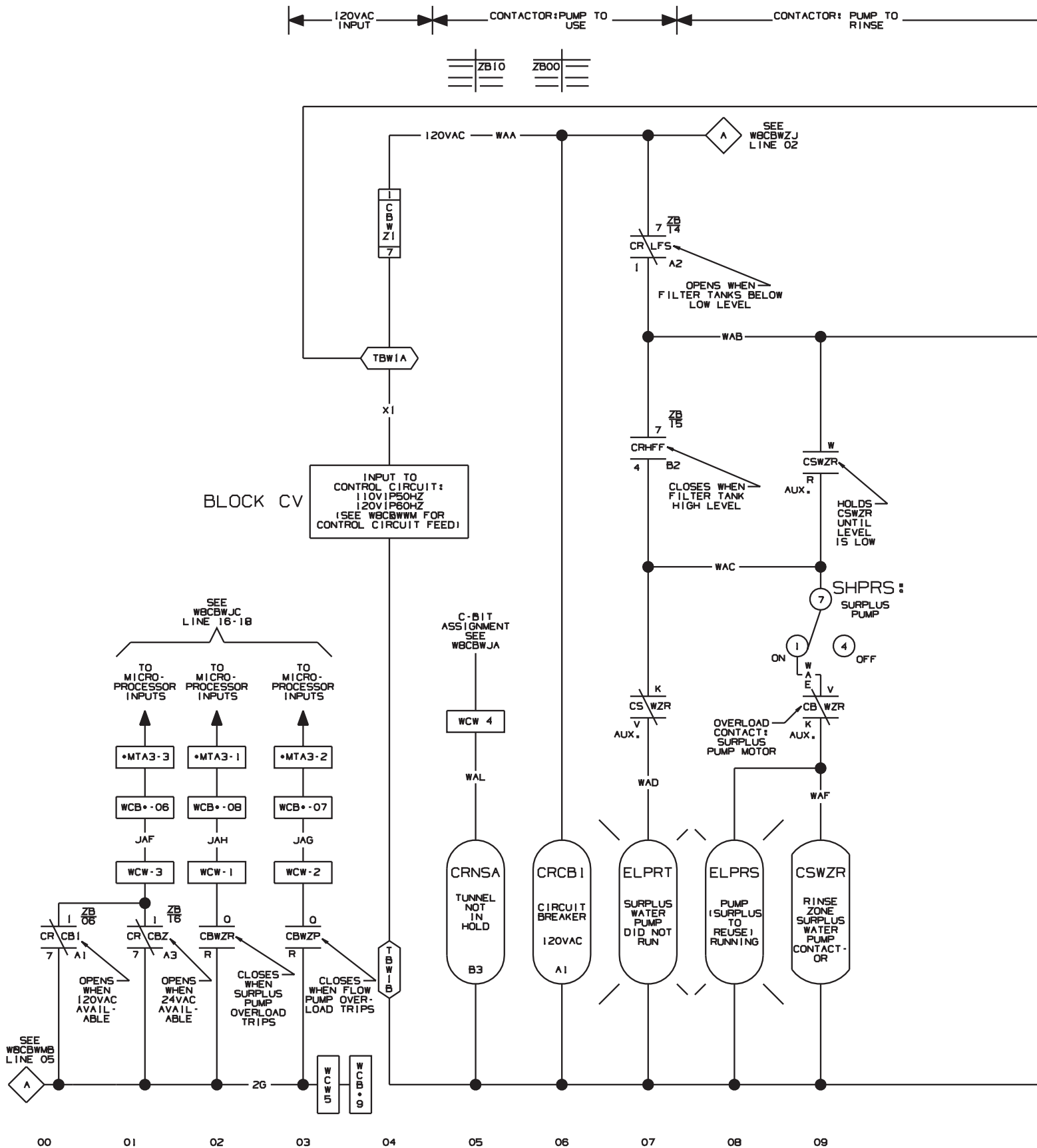
CBW SYSTEMS: MARK 8

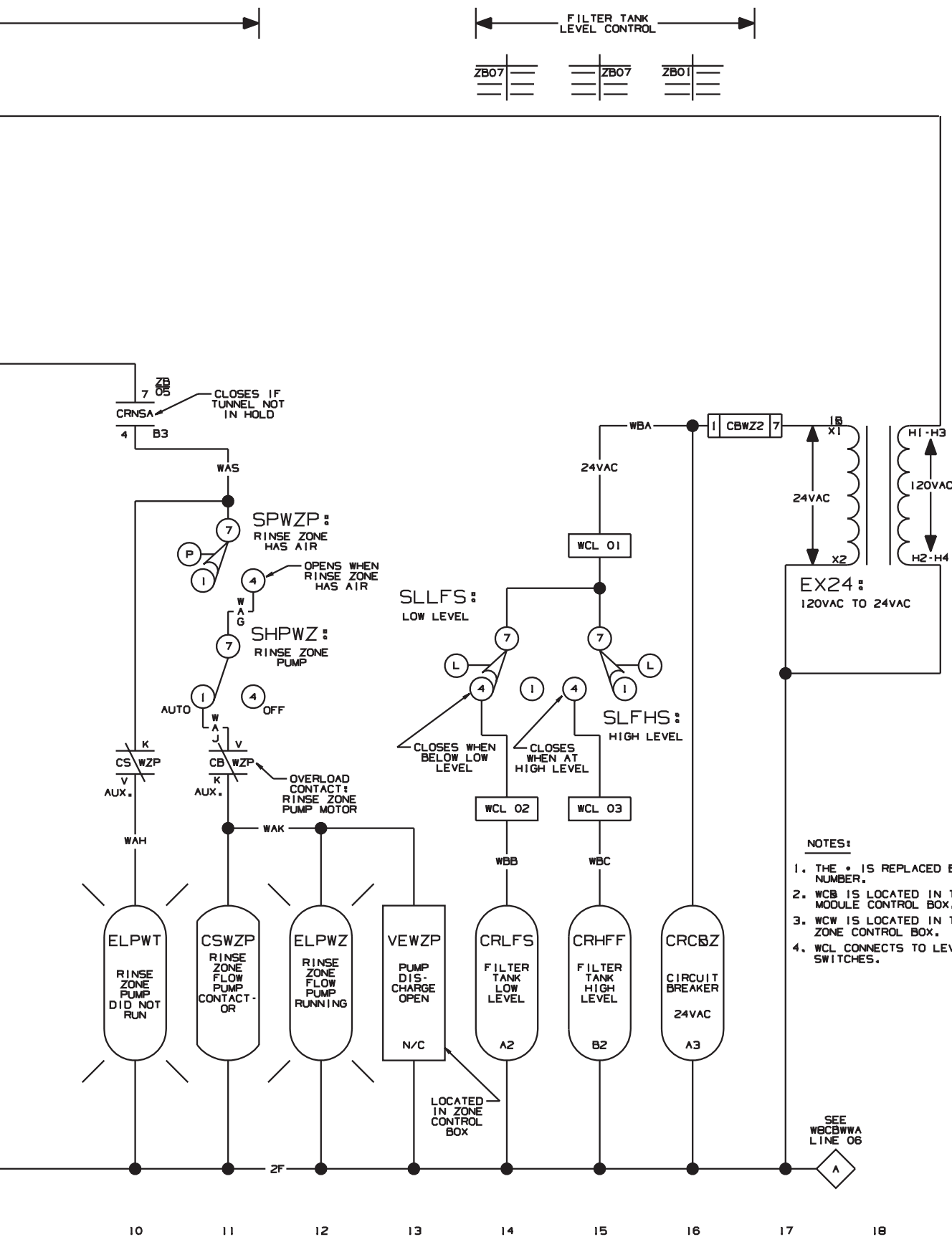
SCHEMATIC: DYE TANK CIRCUIT

PELLERIN MILNOR CORPORATION









FILTERTANK
LEVEL CONTROL

ZB07

ZB07

ZB01

WBCBWZB
94193D

BY MODULE
THE
X.
THE WASH
LEVEL

W8CBWZB

CBW SYSTEMS: MARK 8

SCHEMATIC: RINSE ZONE CONTROL CIRCUIT

110V50HZ/120V60HZ

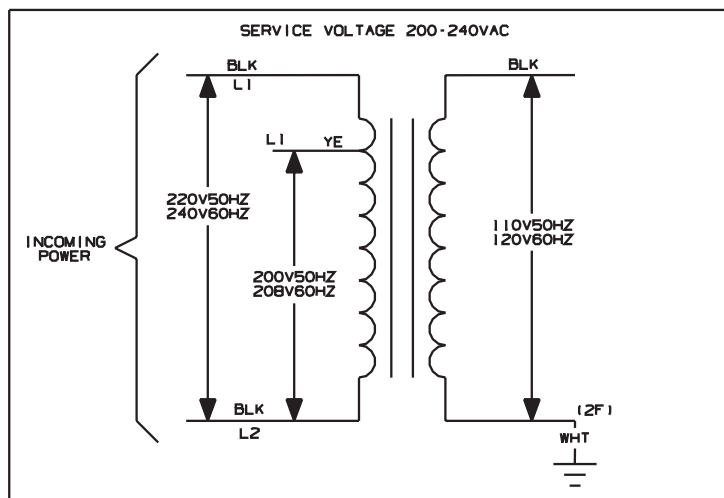
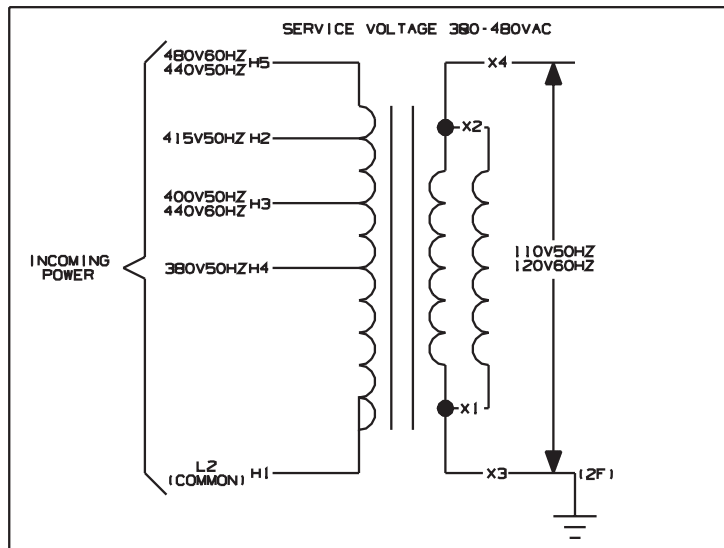
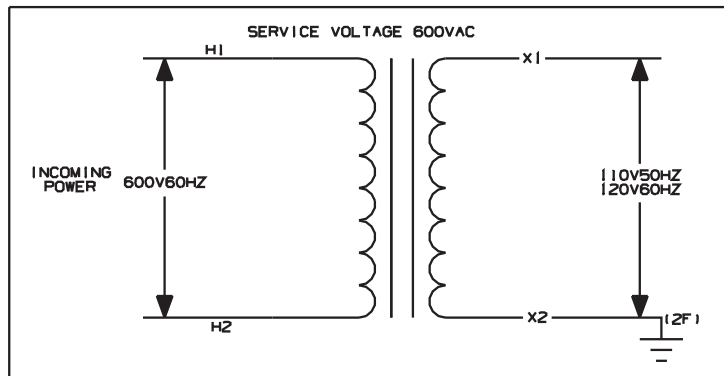
PELLERIN MILNOR CORPORATION

- NOTES:**
- 1. THE • IS REPLACED BY MODULE NUMBER.
 - 2. WCB IS LOCATED IN THE MODULE CONTROL BOX.
 - 3. WCW IS LOCATED IN THE WASH ZONE CONTROL BOX.
 - 4. WCL CONNECTS TO LEVEL SWITCHES.

SEE
WBCBWWA
LINE 06

WBCBWZB
94 | 93D

← 120VAC POWER SUPPLY TO CONTROL CIRCUIT →



00 01 02 03 04 05 06 07 08 09 10

11

12

13

14

15

16

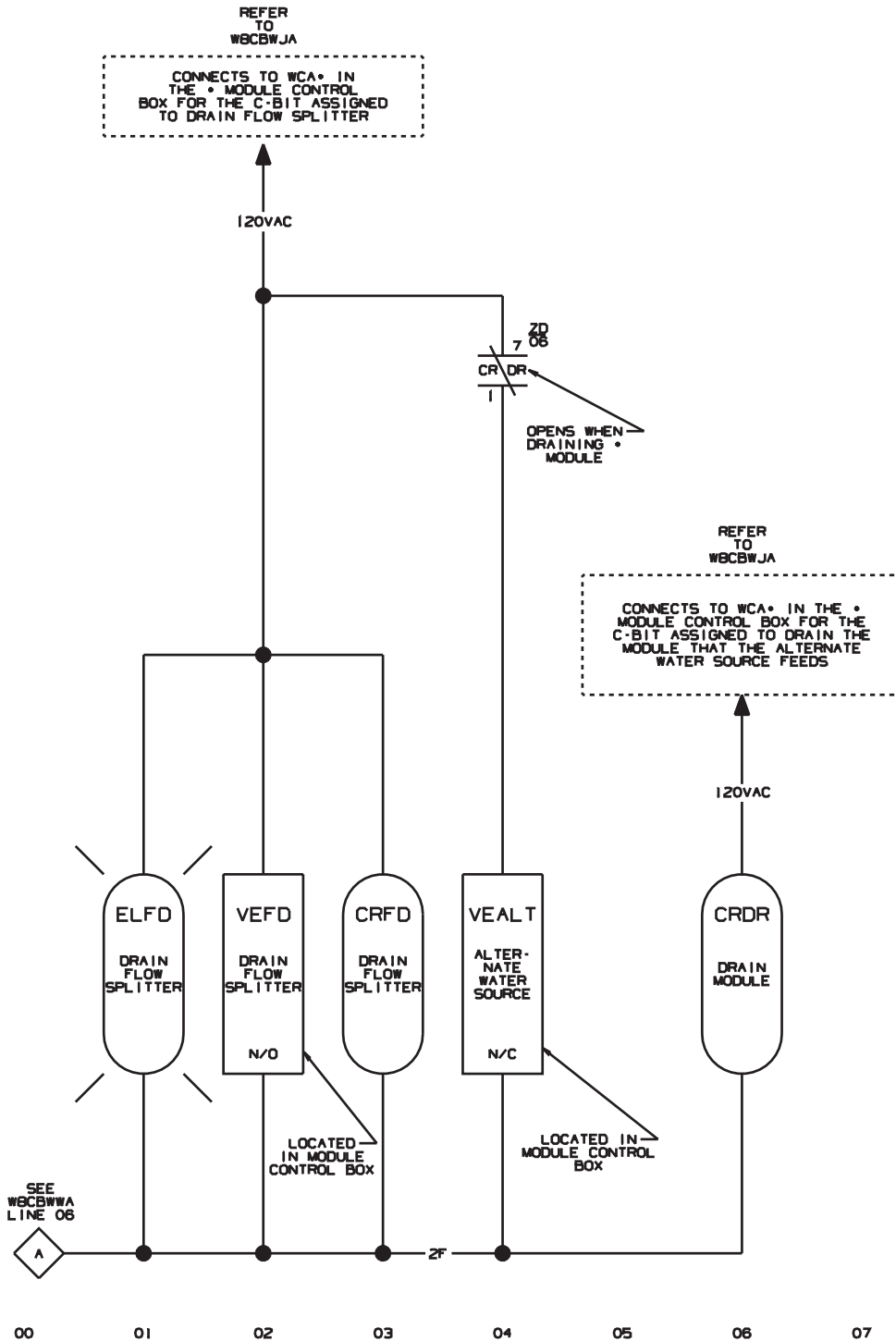
17

W8CBWZC

CBW SYSTEM: MARK 8
SCHEMATIC: CONTROL CIRCUIT TRANSFORMER
PELLERIN MILNOR CORPORATION

ZE07

ZD04

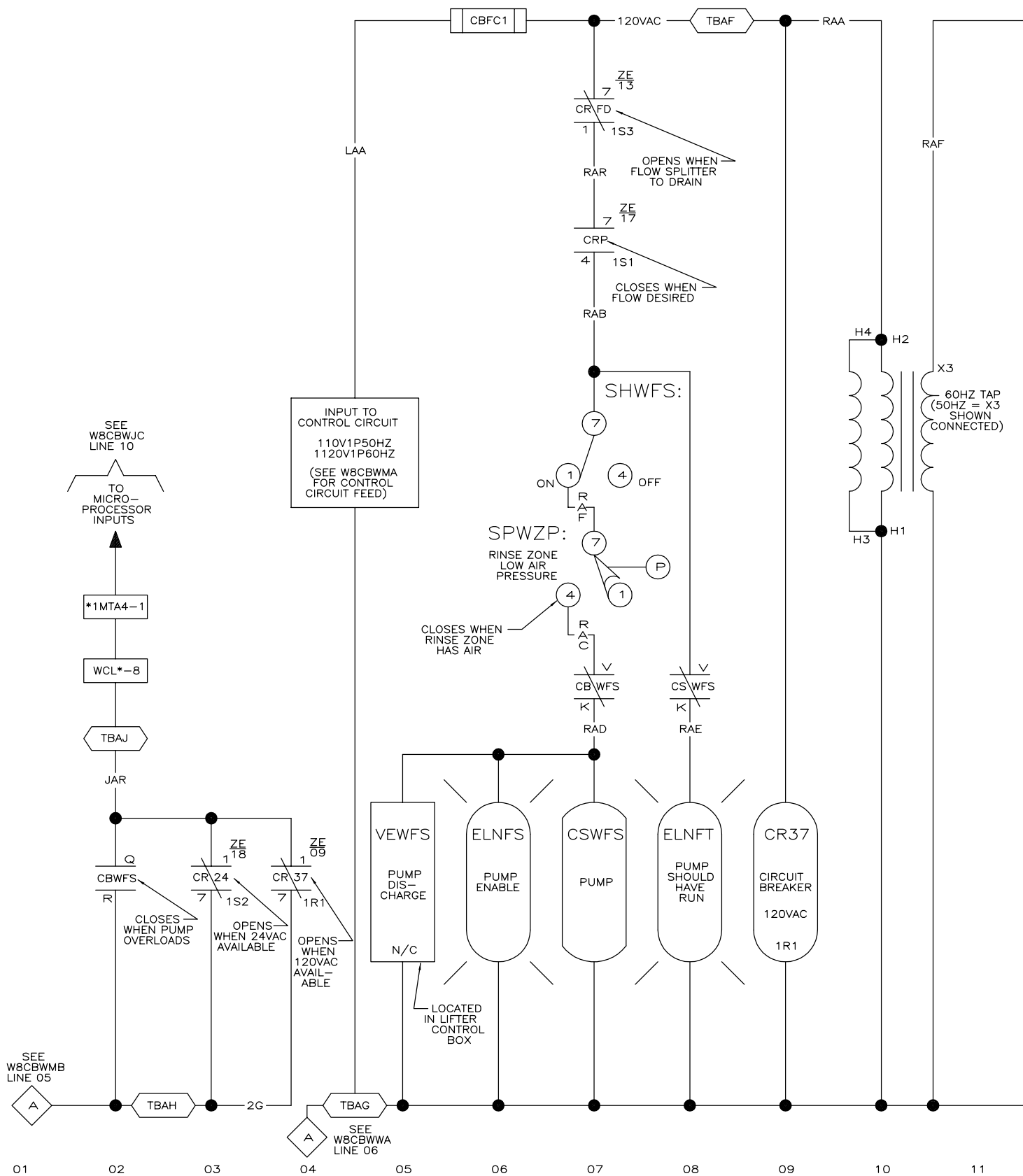


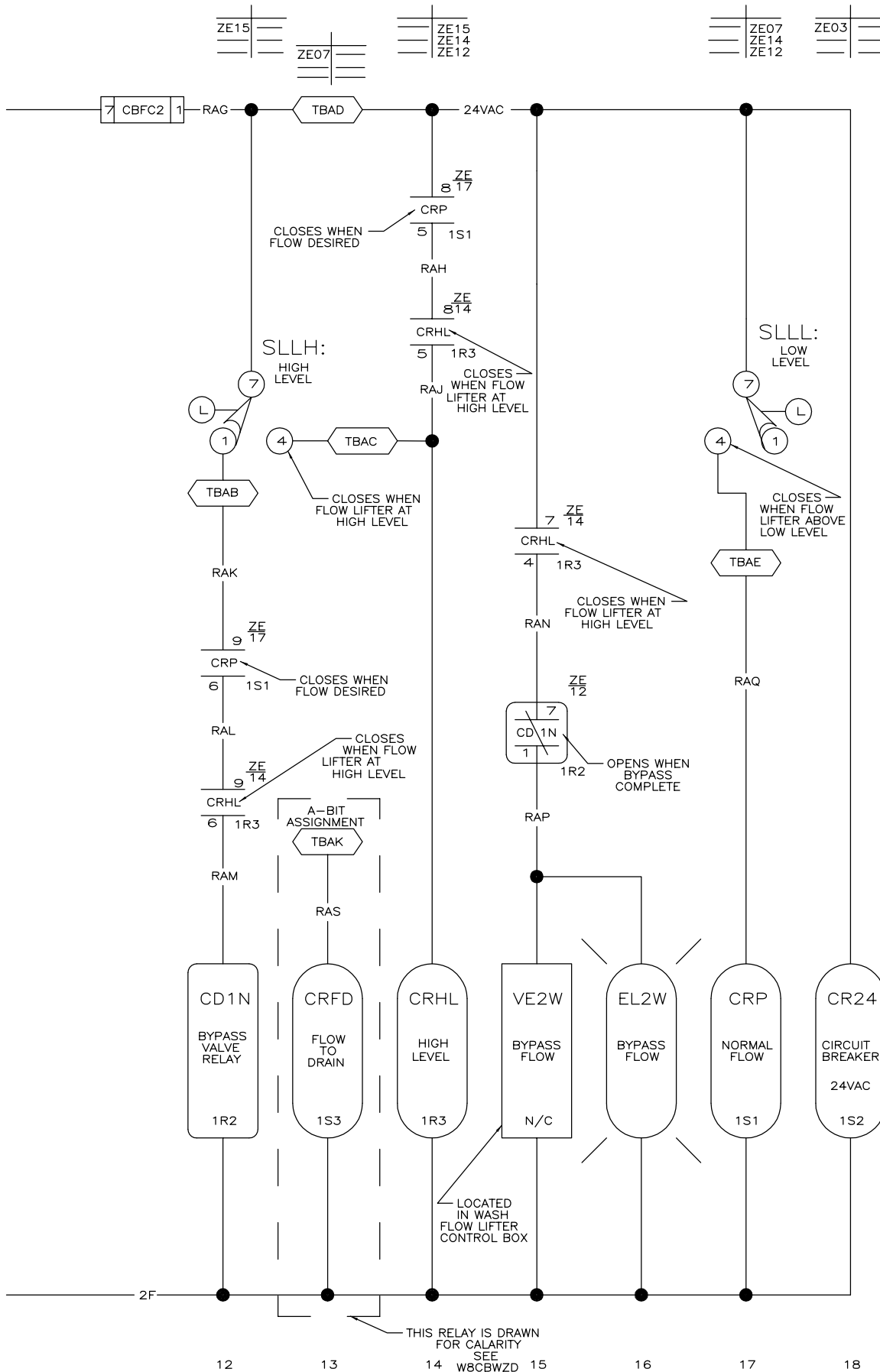
NOTES:

1. THE • REPRESENTS THE MODULE NUMBER.
2. REFER TO SCHEMATIC W8CBWZD FOR WASH ZONE DRAIN.
3. REFER TO SCHEMATIC W8CBWZE FOR RINSE ZONE DRAIN.

W8CBWZD
CBW SYSTEMS: MARK 8
SCHEMATIC: DRAIN FLOSPITTER
110V50HZ/120V60HZ
PELLERIN MILNOR CORPORATION

ZE04



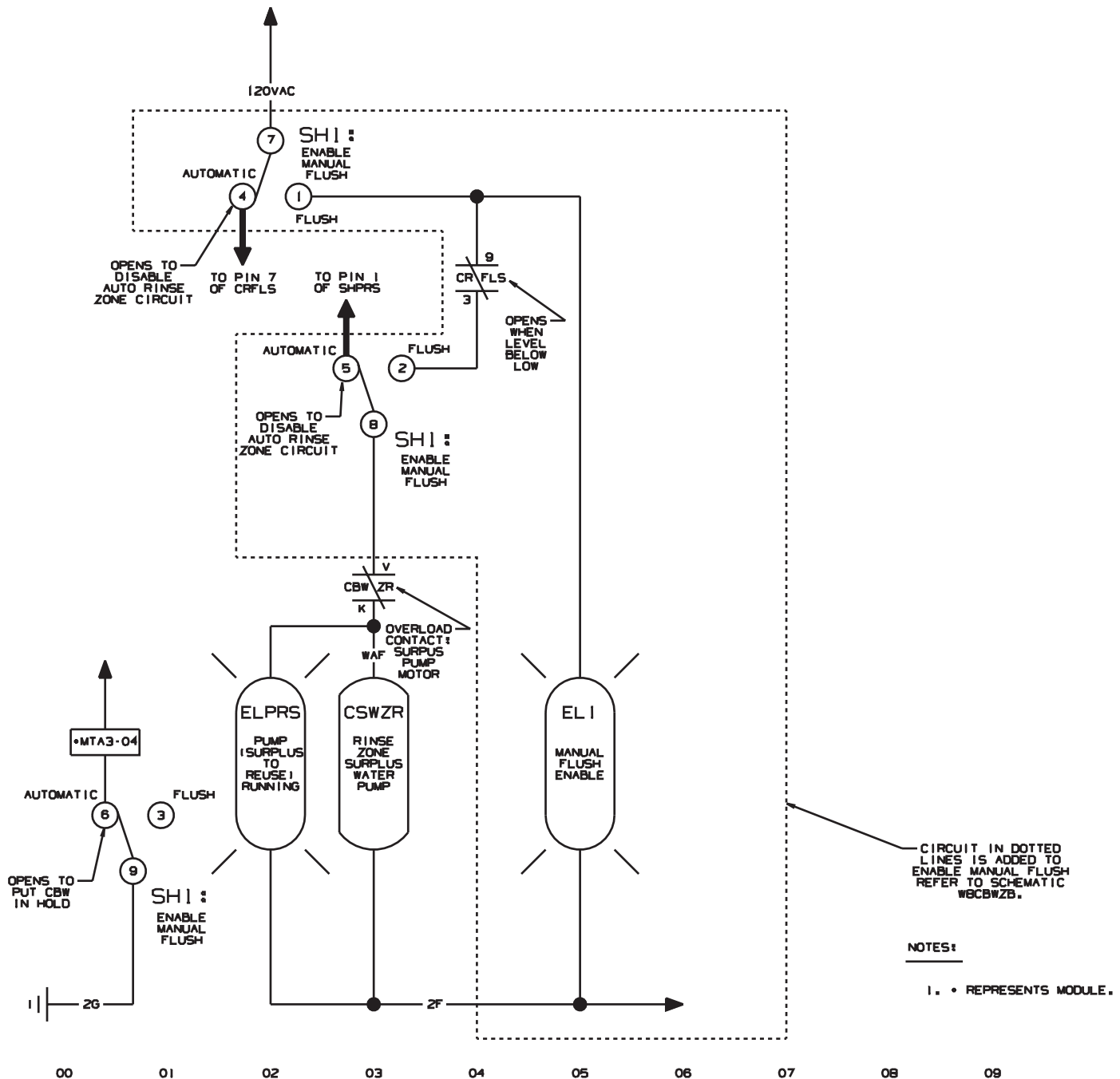


W8CBWZE CBW SYSTEMS: MARK 8 SCHEMATIC: WASH WATER FLOW LIFTER CONTROL WITH DRAIN

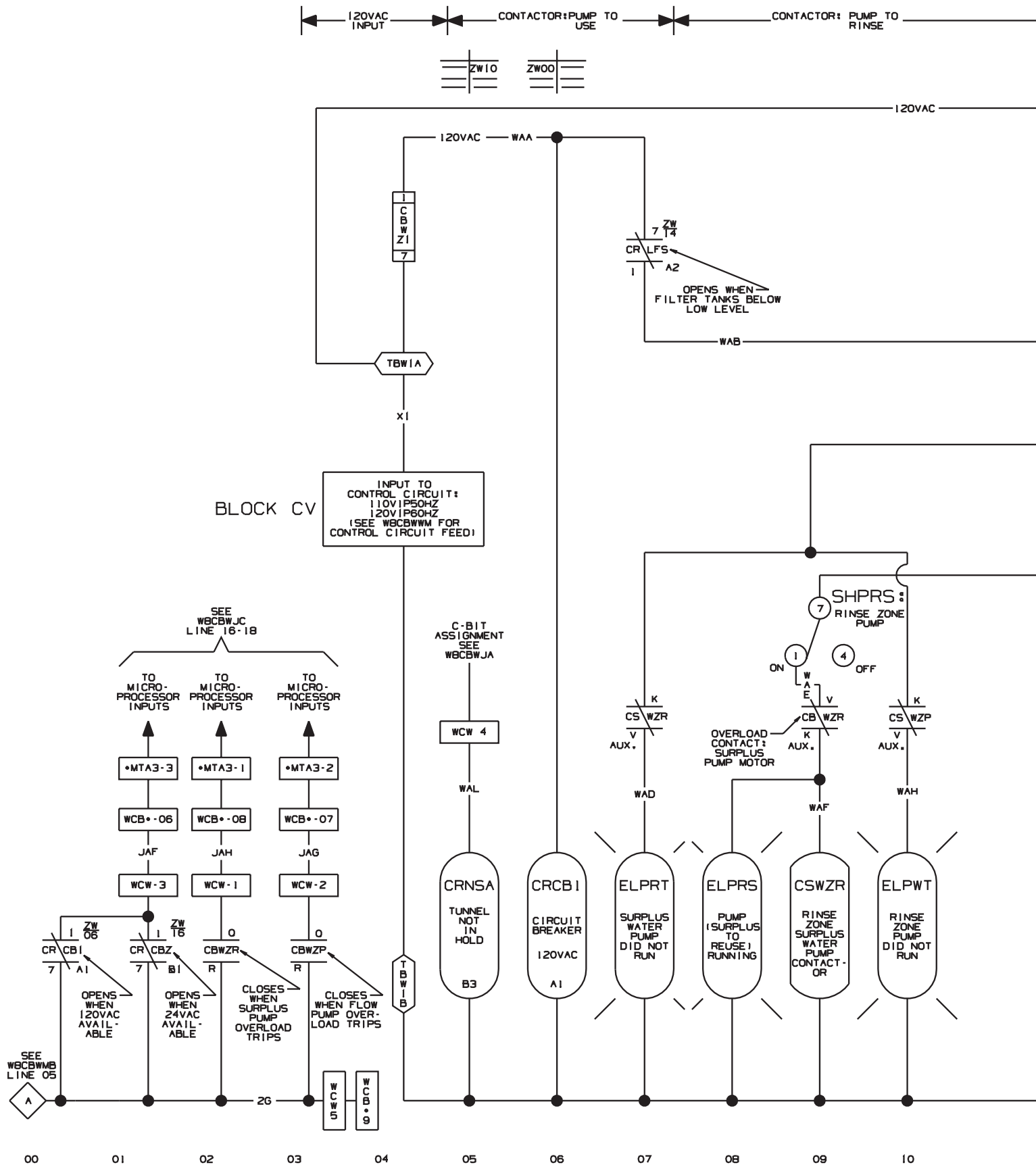
PELLERIN MILNOR CORPORATION

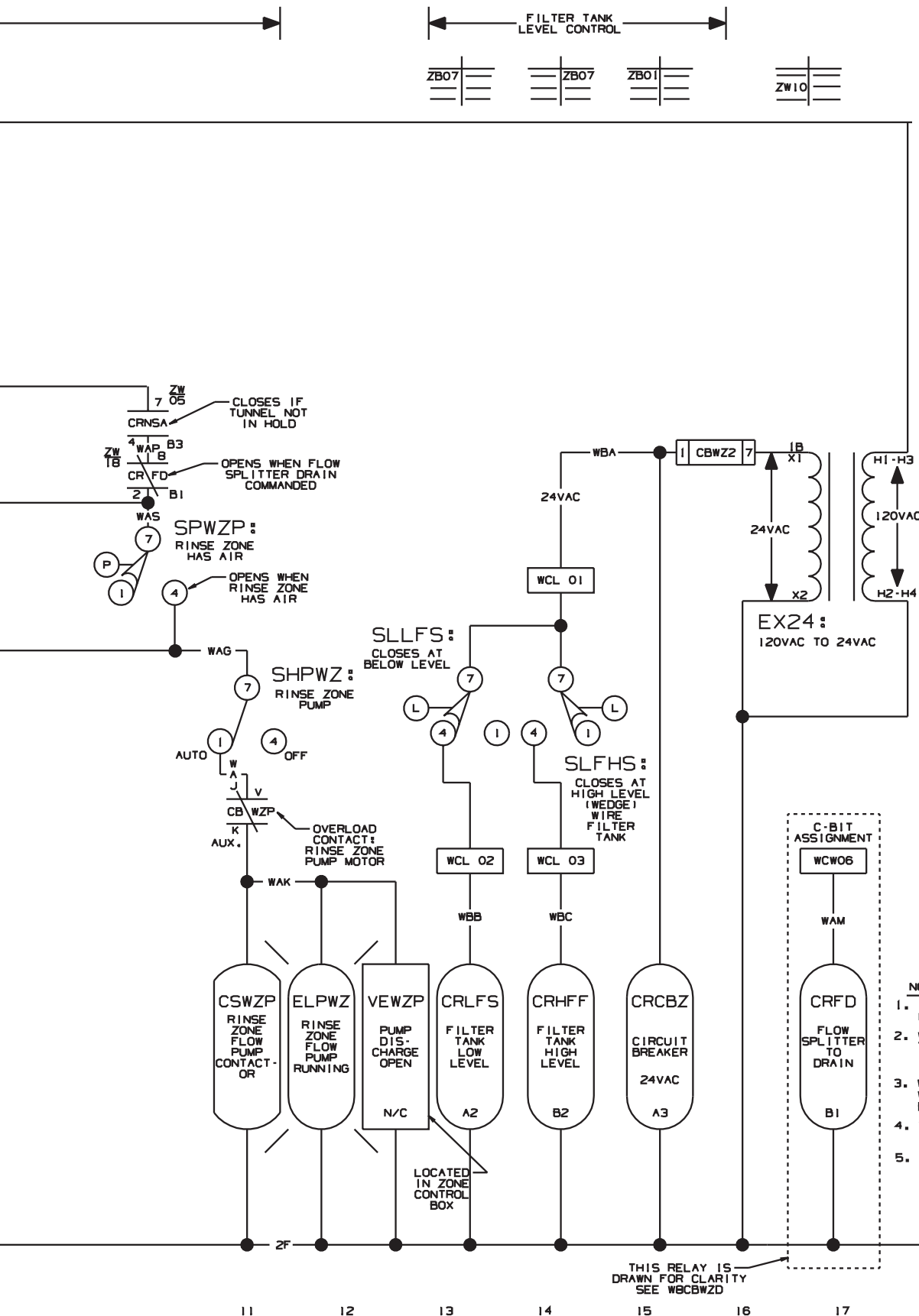
NOTES:

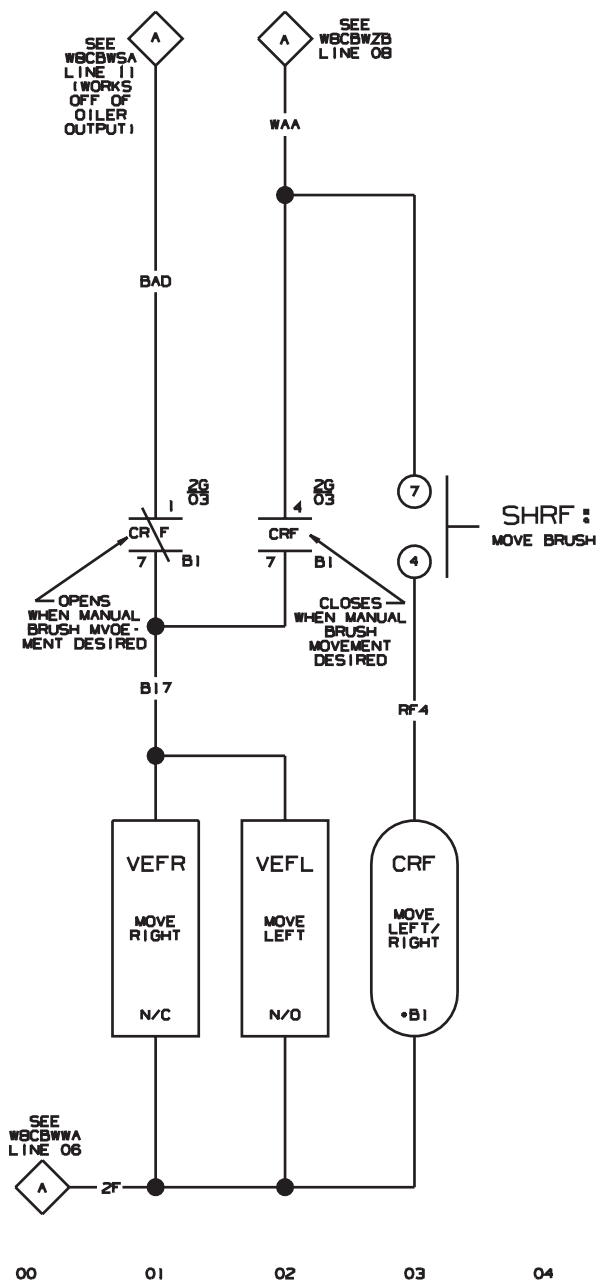
1. WHEN LEVEL IS ABOVE LOW, THE PUMP IS ENABLED TO LOWER THE LEVEL IN THE TANK.
2. IF HIGH LEVEL IS REACHED THE BYPASS VALVE IS ALSO ENABLED AND REMAINS ON 7.5 SECONDS AFTER THE HIGH LEVEL IS LOST.
3. * MEANS THIS INPUT IN ANY MODULE IS ASSIGNED TO MONITOR ANY POWER FAILURE IN THIS CONTROLLER.
4. REFER TO SCHEMATIC W8CBWZD FOR THE VALVE CIRCUITS.



W8CBWZF
CBW SYSTEMS: MARK 8
SCHEMATIC: WORK WEAR MODULE FOR RINSE
ZONE
PELLERIN MILNOR CORPORATION





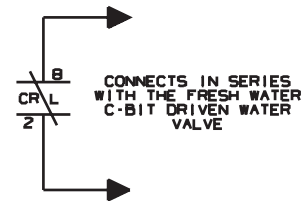
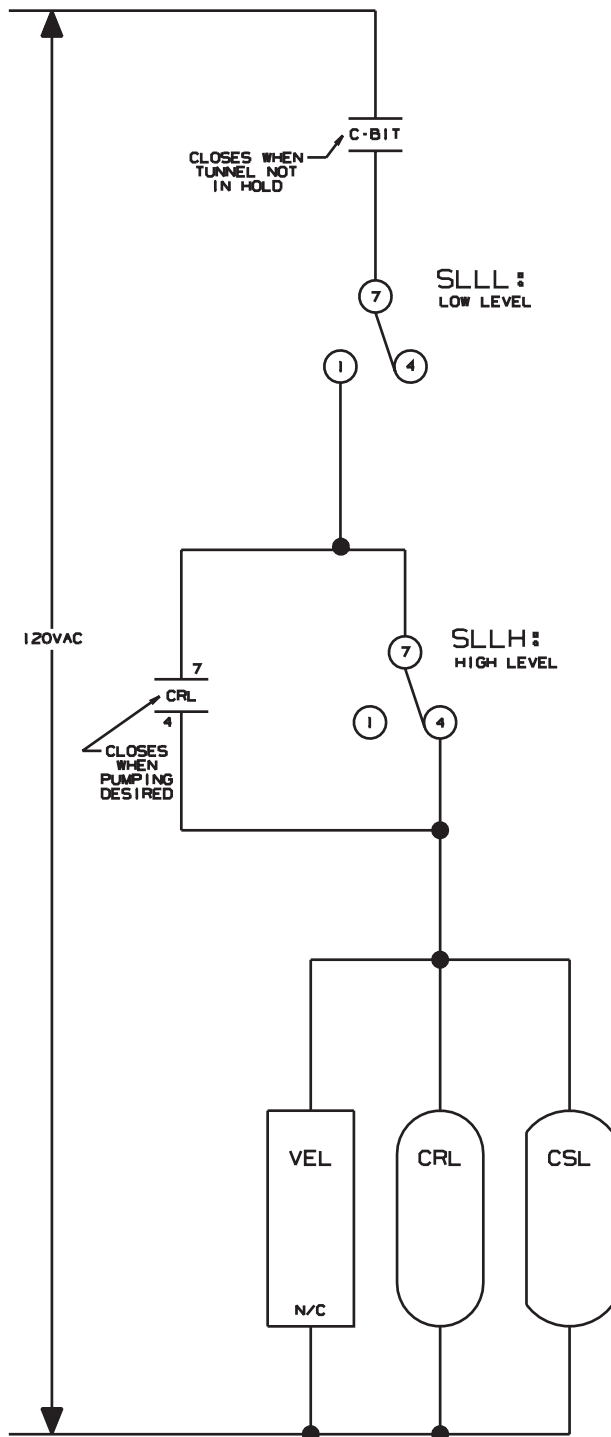


W8CBWZJ

SCHEMATIC: AUTOBRUSH FLOWSPLITTER
110V50HZ/120V60HZ
PELLERIN MILNOR CORPORATION

~~W8CBWZJ~~
~~82551D~~

~~W8CBWZJ~~
~~82551D~~



00

01

02

03

04

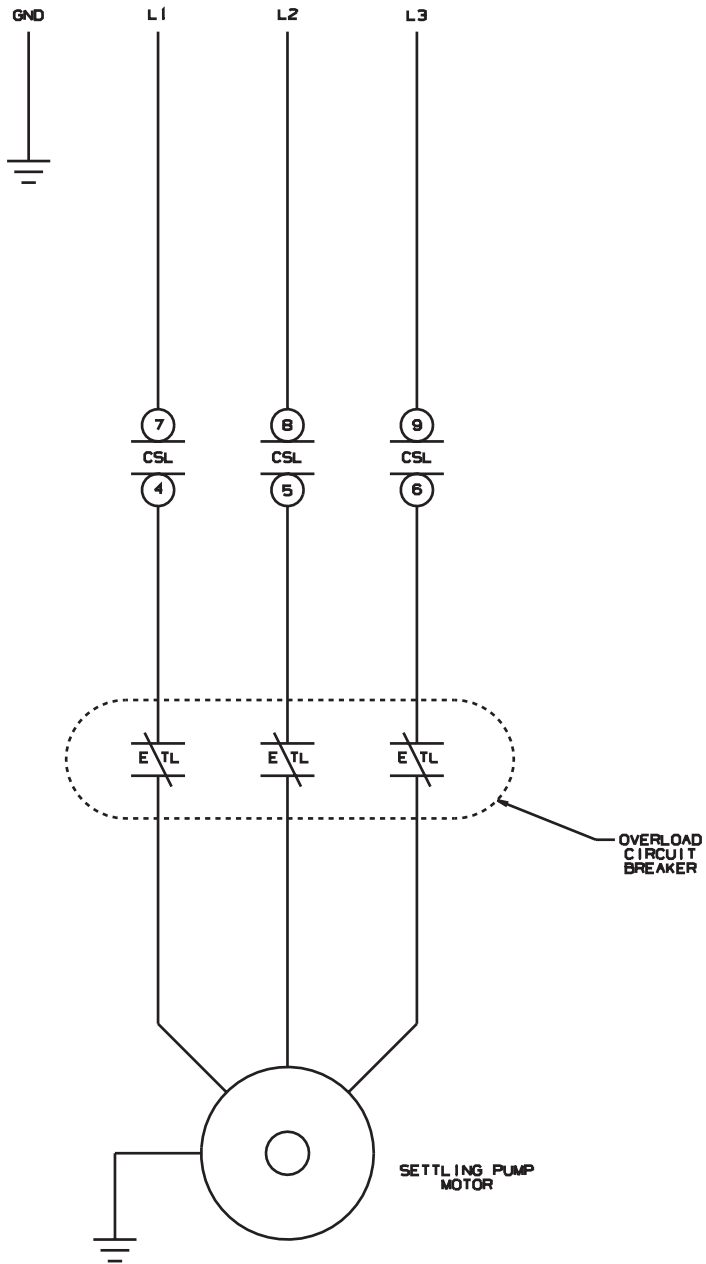
05

06

07

08

09



W8CBWZK

CBW SYSTEMS MARK 8

SCHEMATIC: SETTLING TANK

PELLERIN MILNOR CORPORATION

