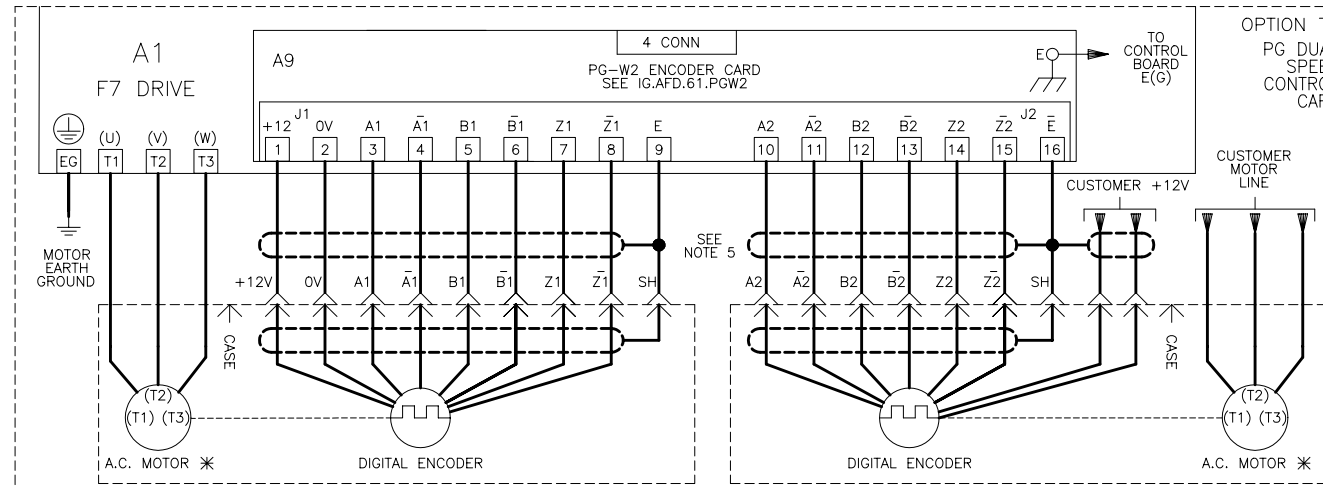
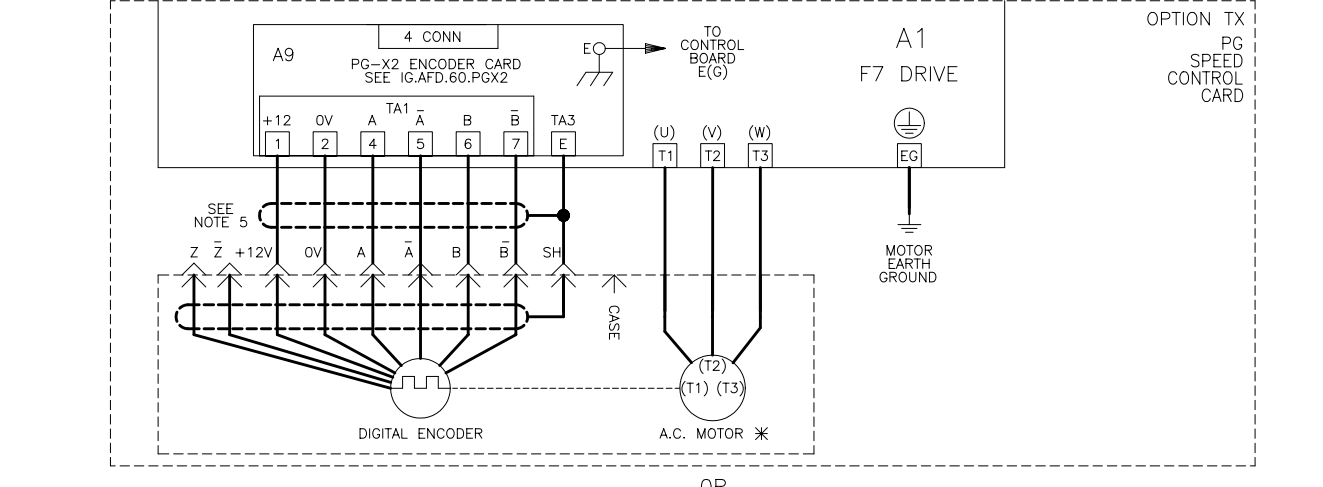
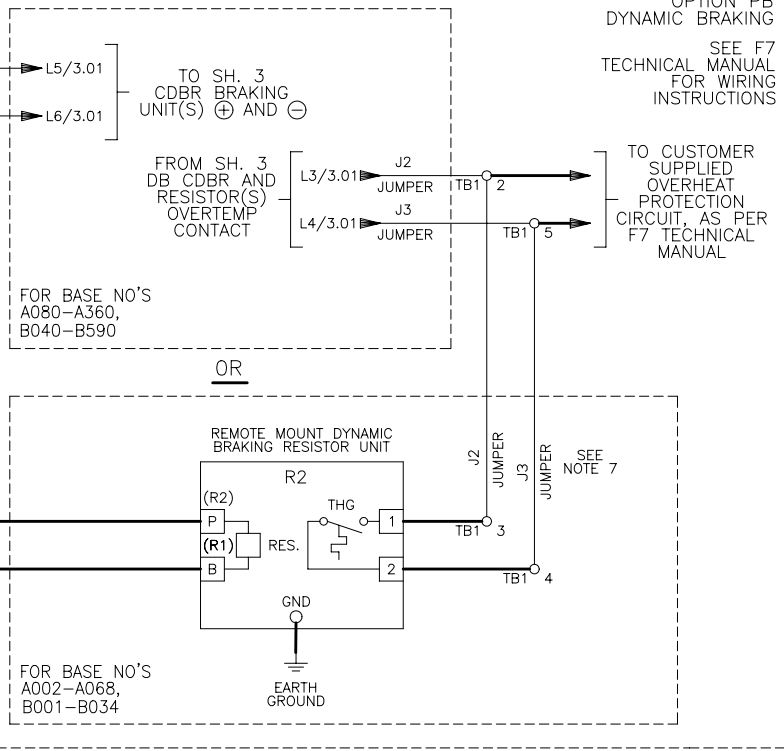
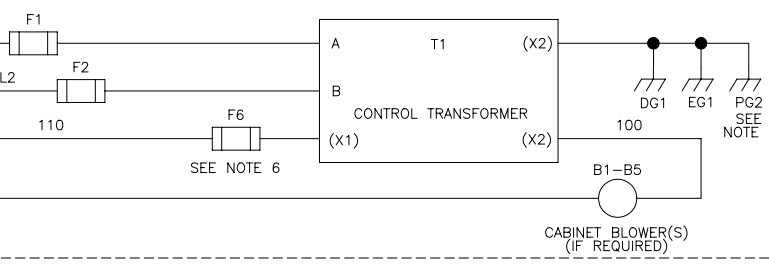


INPUT VOLTS	TERMINALS		JUMPER LOCATION
	A	B	
230/240	(H1)	(H4)	(H1) TO (H3) (H2) TO (H4)
460/480	(H1)	(H4)	(H2) TO (H3)



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DRAWN BY: C. VANG	DATE: 1/22/04	TITLE: SCHEMATIC DIAGRAM F7 CONFIGURED
CHECKED: D.R. CMELAK	DATE: 1/22/04	
TECH:	DATE:	
APPROVED:	DATE:	SIZE: D
ORIGINAL DESIGN: D.R. CMELAK	DATE: 1/22/04	REVISION: R00
		PAGE: 1 of 3

DRAWING #: F7C-00

* - INDICATES COMPONENTS NOT SUPPLIED BY YASKAWA.
 - - INDICATES CUSTOMER WIRING.
 SEE SHEET 2 AND 3 FOR NOTES AND TABLES.

CUSTOMER WIRING REQUIREMENTS

- FOR 0 TO 100 AMPS, USE 60°-75°C COPPER WIRE.
- FOR ABOVE 100 AMPS, USE 75°C COPPER WIRE.

TABLE 4

F7 CONFIG. MODEL NO. BASE NUMBER F7C *XXXX		EARTH GROUND WIRING		A.C. MOTOR WIRING			OR, WITHOUT OPTION PH, TO STANDARD AC DRIVE
230V	480V	GROUND LUG	WITH OPTION PH, TO LOAD REACTOR L4				
		WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)	MFG. PART NUMBER	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)	
A002	B001	14 - 10	35	RL-0020X	22-14	4.5	CUSTOMER TO SUPPLY A UL LISTED CLOSED-LOOP CONNECTOR, PER THE AC DRIVE TECHNICAL MANUAL
	B002						
A003	B003	14 - 10	35	RL-0040X			
A004							
A006	B004	14 - 10	35	RL-0080X	22-6	16	
	B007						
A009	B011	14 - 10	35	RL-0120X			
A015	B014	14 - 10	35	RL-0180X			
A022		14 - 10	35	RL-02501			
	B021	8	40	RL-02502			
A028	B027	8	40	RL-0350X			
A042		8	40	RL-04501	18-4	20	
	B034	6 - 4	45	RL-03502	22-6	16	
	B040	6 - 4	45	RL-04502	18-4	20	
	B052	6 - 4	45	RL-05502	6-1/0	45	
A054		6 - 4	45	RL-05501			
A068	B065	6 - 4	45	RL-0800X	6-1/0	50	
A080	B077	6 - 4	45	RL-1000X			
	B096						
A104		6 - 4	45	RL-1300X	2-4/0	180	
A130	B124	4 -2/0	120				
A154	B156	4 -2/0	120	RL-1600X	2-4/0	250	
	B180	4 -2/0	120	RL-2500X	2/0-500	250	
A192	B240	4 -2/0	120	RL-2500X	2/0-500	325	
A248							
A312	B302	4 -2/0	120	RL-5000X			
A360	B361						
	B414						
	B477						
	B515	4 -2/0	120	RL-6000X			
	B590						

TABLE 5

F7 CONFIG. MODEL NO. BASE NUMBER F7C *XXXX		OPTION PB				CONTROL WIRING	
230V	480V	TO F7 DRIVE		OR, TO CDBR A2, A3, A4		TERMINAL BLOCK TB1	
		WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)
A002	B001	CUSTOMER TO SUPPLY A UL LISTED CLOSED-LOOP CONNECTOR, PER THE AC DRIVE TECHNICAL MANUAL				22 - 8	16
A003	B002						
A004	B003						
A006	B004						
A009	B011						
A015	B014						
A022	B021						
A028	B027						
A042	B034						
A054							
A068		CUSTOMER TO SUPPLY A UL LISTED CLOSED-LOOP CONNECTOR, PER THE AC DRIVE TECHNICAL MANUAL					
A080	B040						
A104	B052						
A130	B065						
A154	B077						
A192	B096						
A248	B124						
A312	B156						
A360	B180						
	B240						
	B302						
	B361						
	B414						
	B477						
	B515						
	B590						

NOTES:

- CONNECTED TO THE CABINET. CUSTOMER TO CONNECT THE CABINET GROUND LUG TO EARTH GROUND.
 - THE CUSTOMER MUST USE TYPE 12 RATED HUBS OR FITTINGS (OR EQUIVALENT) TO MAINTAIN THE ENCLOSURE RATING.
 - WITHOUT THE CIRCUIT BREAKER/MCP OPTION PC, OR DISCONNECT SWITCH OPTION PD, THE DISCONNECT MEANS MUST BE SUPPLIED BY THE CUSTOMER.
 - IF DRIVE INPUT FUSES (OPTION PF) ARE NOT ADDED, THEN BRANCH CIRCUIT PROTECTION (CIRCUIT BREAKER OR AC INPUT FUSES) MUST BE SUPPLIED BY THE CUSTOMER.
 - INSULATED TWISTED SHIELDED WIRE IS REQUIRED. SHIELD TO CONNECT TO PROPER TERMINAL AS SHOWN. CONNECT THE SHIELD ONLY AT THIS END. STUB AND ISOLATE THE OTHER END. DO NOT RUN THESE WIRES IN THE SAME CONDUIT AS THE AC POWER AND AC CONTROL WIRES.
 - FOR AN F7 CONFIGURED WITH A CONTROL TRANSFORMER, T1, POWER RATING OF 350VA OR GREATER, SECONDARY FUSE F6 IS ADDED.
 - CUSTOMER TO REMOVE JUMPERS J2 AND J3 FOR WIRING TO EXTERNAL CONTROL LOGIC, IF APPLICABLE.
 - IF AC MOTOR IS FURNISHED WITH A N.C. THERMAL SWITCH THEN SET DRIVE PARAMETER H1-06 TO 27. THIS WILL CAUSE THE DRIVE TO COAST TO STOP UPON A AC MOTOR THERMAL FAULT.
- CUSTOMER WIRING:
- A. WITHOUT OPTION TV, WIRE BETWEEN DRIVE TERMINALS S8 AND SN, AS PER NOTE 4 ABOVE.
- B. WITH OPTION TV, WIRE BETWEEN TERMINAL 8 OF THE 120VAC INTERFACE CARD AND THE HIGH SIDE OF THE 120VAC SOURCE.
- OPTIONS TG, TH, TJ, TL OR TQ CONTROL (SEE TABLE 2):
- OPTION TG = DEVICENET (SI-N1)
 OPTION TH = PROFIBUS
 OPTION TJ = MODBUS PLUS
 OPTION TL = LONWORKS
 OPTION TQ = ETHERNET MODBUS TCP/IP
 - WHEN OPTION TL IS ORDERED, A JUMPER IS REQUIRED FROM DRIVE TERMINALS S1 (OR S2) TO SN, SO THAT THE LONWORKS SERIAL COMMUNICATIONS CAN CONTROL THE RUN, STOP AND SPEED OF THE AC MOTOR. CUSTOMER TO REPLACE THE JUMPER WITH NORMALLY CLOSED SAFETY INTELLOCKS, IF APPLICABLE.

TABLE 1 FACTORY SET F7 CONFIGURED DRIVE PARAMETERS

PARAMETER	DATA	UNIT	DESCRIPTION/REMARKS
A1-02	SEE TABLE 3	N/A	CONTROL METHOD SELECTION
b1-01	SEE TABLE 2	N/A	FREQUENCY REFERENCE SELECTION
b1-02	SEE TABLE 2	N/A	RUN COMMAND SELECTION
d1-01	10.0	HZ.	INITIAL FREQUENCY REFERENCE - SEE TABLE 2
E2-01	---	AMPS	MOTOR FULL LOAD AMPS (MUST BE SET BY USER)
L3-04	SEE TABLE 3	N/A	STALL PREVENTION DURING DECELERATION SELECTION
o2-03	1	N/A	USER INITIALIZATION FACTORY SET PARAMETER DEFAULT VALUES (FOUND IN A1-03= "1110")
o3-02	1	N/A	DIGITAL OPERATOR KEYPAD READ ALLOWED ENABLED

TABLE 2 F7C FACTORY SET DRIVE PARAMETERS

OPTION PRESENT	PARAMETER	DRIVE CONTROL BOARD SWITCH S1-1 SETTING	DRIVE SPEED REFERENCE		DRIVE RUN/STOP CONTROL		
			DRIVE KEYPAD d1-01	0-10VDC AT TERM. A1 OR 4-20MADC AT TERM. A2	SERIAL COMM.	DRIVE TERMINAL S1 OR S2	DRIVE KEYPAD
YES +		1 ■ 1 ■	OFF ■	YES		YES	
YES		0 1 ■	OFF ■	YES		YES	
YES		1 ■ 0	OFF ■	YES		YES	
YES		0 0	OFF ■	YES		YES	
	YES +	3 3	OFF ■		YES		YES
	YES	1 ■ 3	OFF ■	YES			YES
	YES	0 3	OFF ■	YES			YES
	YES	3 1 ■	OFF ■		YES	YES	
	YES	3 0	OFF ■		YES		YES
	YES +	2 2	ON		YES		YES
	YES	1 ■ 2	ON	YES			YES
	YES	0 2	ON	YES			YES
	YES	2 1 ■	ON		YES	YES	
	YES	2 0	ON		YES		YES

- + = STANDARD F7 CONFIGURED SET UP
- = FACTORY 2-WIRE INITIALIZATION DEFAULT SETTING

TABLE 3 F7C FACTORY SET DRIVE PARAMETERS

OPTION PRESENT	PARAMETER	A1-02	L3-04
PB	TX OR TY		
NO	NO	2 ■ 1 ■	
YES	NO	2 ■ 3	
NO	YES	3 1 ■	
YES	YES	3 3	


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TABLE 6

A.C. LINE WIRING

F7 CONFIG. MODEL NO. BASE NUMBER F7C *XXXX		WITH OPTION PC, TO CIRCUIT BREAKER CB1				OR, WITH OPTION PD, TO DISCONNECT SWITCH S1				OR, WITH OPTION PR, TO INPUT REACTOR L1		
240V	480V	MFG. PART NUMBER	CURRENT RATING (AMPS)	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)	MFG. PART NUMBER	CURRENT RATING (AMPS)	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)	MFG. PART NUMBER	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)
A002	B001	FAL36003	3	14 - 4	35	BTCN30	30	14 - 10	35	RL-0020X	22 - 14	4.5
A003	B002	FAL36007	7	14 - 4	35	BTCN30	30	14 - 10	35	RL-0040X		
A004	B003	FAL36007	7	14 - 4	35	BTCN30	30	14 - 10	35	RL-00803	22 - 6	16
A006	B004	FAL36015	15	14 - 4	35	BTCN30	30	14 - 10	35	RL-0080X		
A009	B007	FAL36015	15	14 - 4	35	BTCN30	30	14 - 10	35	RL-01202		
A015	B011	FAL36030	30	14 - 4	35	BTCN30	30	14 - 10	35	RL-0180X		
A022	B014	FAL36030	30	14 - 4	35	BTCN30	30	14 - 10	35	RL-02501		
A028	B021	FAL36030	30	14 - 4	35	BTCN30	30	8 - 4	40	RL-0250X		
	B027	FAL36050	50	14 - 1/0	80	BTDN60	60	8 - 4	40	RL-0350X		
	B034	FAL36050	50	14 - 1/0	80	BTDN60	60	8 - 4	40	RL-0350X		
A042	B040	FAL36100	100	14 - 1/0	80	BTDN60	60	8 - 4	40	RL-0450X	18 - 4	20
A054	B052	FAL36100	100	14 - 1/0	80	BTEN10	100	3 - 1/0	45	RL-05501	6 - 1/0	50
A068	B065	FAL36100	100	14 - 1/0	80	BTEN10	100	3 - 1/0	45	RL-0800x		
	B077	FAL36100	100	14 - 1/0	80	BTEN10	100	3 - 1/0	45	RL-1000X		
A080	B096	KAL36150	150	4 - 350 kcmil	250	TFB1	200	6 - 300 kcmil	375	RL-1300X	2 - 4/0	180
A104	B124	KAL36150	150	4 - 350 kcmil	250	TFB1	200	6 - 300 kcmil	375	RL-1300X	2 - 4/0	180
A130	B156	KAL36250	250	4 - 350 kcmil	250	TFB1	200	6 - 300 kcmil	375	RL-13001	2 - 4/0	250
A154	B180	KAL36250	250	4 - 350 kcmil	250	TFB1	200	6 - 300 kcmil	375	RL-1600X		
A192	B240	KAL36250	250	4 - 350 kcmil	250	KHL36000M	250	4 - 350 kcmil	250	RL-25001	2/0 - 500	325
A248	B302	LAL36400	400	1 x (1-600 kcmil) 2 x (1-250 kcmil)	1 x 375 2 x 375	LHL36000M	400	1 x (1-600 kcmil) 2 x (1-250 kcmil)	1 x 375 2 x 375	RL-2500X	2/0 - 500	375
A312	B361	LAL36400	400	1 x (1-600 kcmil) 2 x (1-250 kcmil)	1 x 375 2 x 375	LHL36000M	400	1 x (1-600 kcmil) 2 x (1-250 kcmil)	1 x 375 2 x 375	RL-5000X		
A360	B414	MAL36600	600	(1-3) x (3/0-500 kcmil)	(1-3) x 300	MHL36006M	600	(1-3) x (3/0-500 kcmil)	(1-3) x 300			
	B477	MAL36800	800	(1-3) x (3/0-500 kcmil)	(1-3) x 300	MHL36008M	800	(1-3) x (3/0-500 kcmil)	(1-3) x 300			
	B515	MAL36800	800	(1-3) x (3/0-500 kcmil)	(1-3) x 300	MHL36008M	800	(1-3) x (3/0-500 kcmil)	(1-3) x 300	RL-6000X		
	B590	MAL36800	800	(1-3) x (3/0-500 kcmil)	(1-3) x 300	MHL36008M	800	(1-3) x (3/0-500 kcmil)	(1-3) x 300			

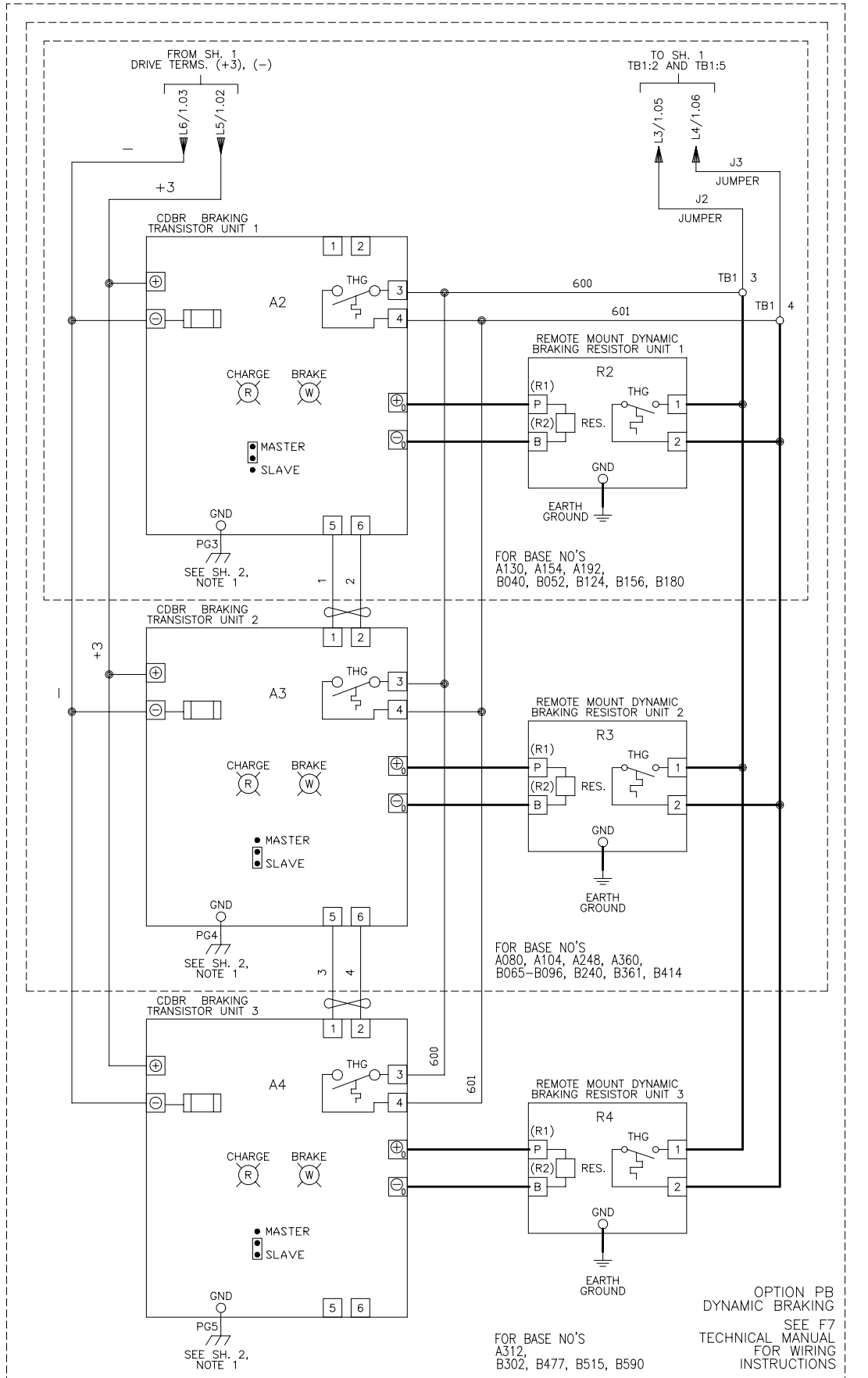
CUSTOMER TO SUPPLY A UL LISTED CLOSED-LOOP CONNECTOR, PER THE AC DRIVE TECHNICAL MANUAL

TABLE 7

F7 CONFIG. MODEL NO. BASE NUMBER F7C *XXXX		OR, WITHOUT OPTIONS PC, PD, PF AND/OR PR, TO INPUT POWER TERMINAL BLOCK TB2		OR, WITH OPTION PF, TO DRIVE INPUT FUSES F3,F4,F5			OR, WITHOUT OPTIONS PC, PD, PF, PR AND/OR TB2, TO STANDARD AC DRIVE
240V	480V	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)	MFG. PART NUMBER	WIRE SIZE RANGE (AWG)	TIGHTENING TORQUE (LB.-IN.)	
A002	B001	16 - 10	35	70308	14 - 2	35	
A003	B002						
A004	B003						
A006	B004						
A009	B007						
	B011						
	B014						
A015	B021	16 - 10	35	1BS101	14 - 2/0	120	
A022	B027	8	40				
A028	B034	6 - 4	45				
A042	B040	6 - 4	45	1BS102	(1-2) X (6 - 250 kcmil)	(1-2) X 275	CUSTOMER TO SUPPLY A UL LISTED CLOSED-LOOP CONNECTOR, PER THE AC DRIVE TECHNICAL MANUAL
A054	B052	6 - 250 kcmil	375				
A068	B065						
A080	B077						
A104	B096						
A154	B124						
A192	B302	2 X (4-350 kcmil)	2 X 275	1BS103	(1-2) X (6 - 250 kcmil)	(1-2) X 275	
A248	B361	2 X (4-350 kcmil)	2 X 275	1BS104	(1-2) X (4 - 500 kcmil)	(1-2) X 375	
A312	B414						
A130	B156	6 - 250 kcmil	375	170H3003			
	B180						CUSTOMER TO SUPPLY A UL LISTED CLOSED-LOOP CONNECTOR, PER THE AC DRIVE TECHNICAL MANUAL
A360	B240	2 X (4-350 kcmil)	2 X 275	BUS BAR			
	B361	2 X (4-350 kcmil)	2 X 275				
	B477	2 X (4-500 kcmil)	2 X 500				
	B515	2 X (4-600 kcmil)					

CUSTOMER WIRING REQUIREMENTS

- FOR 0 TO 100 AMPS, USE A MINIMUM OF 60°-75°C COPPER WIRE.
- FOR ABOVE 100 AMPS, USE A MINIMUM OF 75°C COPPER WIRE.



INDICATES CUSTOMER WIRING. SEE SHEET 2 FOR NOTES AND TABLES 1 - 5.

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