

Z3E052 05 S01 1601

CDC Z3E052

Electrical Power Production Journeyman

Supplementary Material for Volume 5

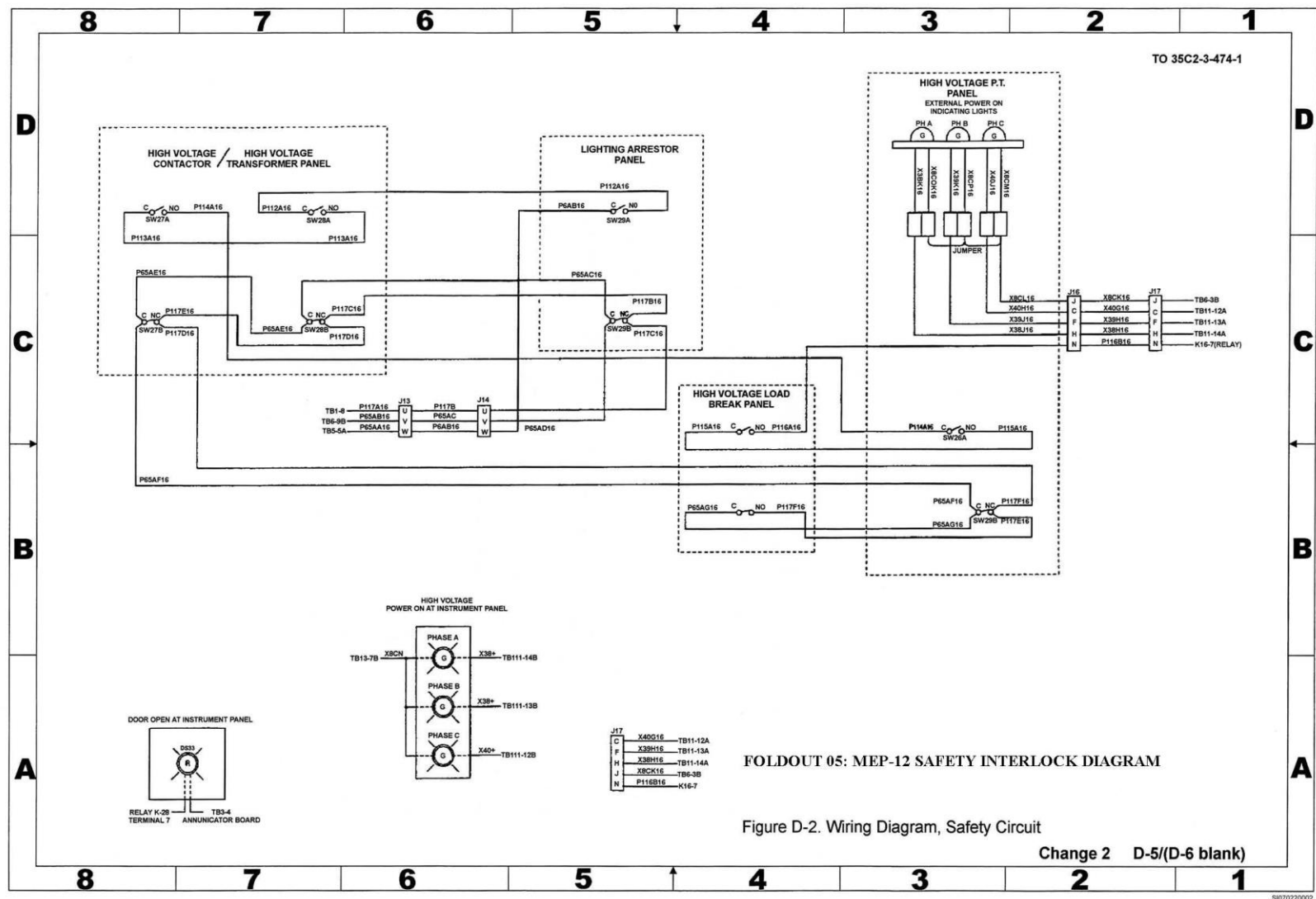
Foldouts 1–14



**Air Force Career Development Academy
The Air University
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A1	RESISTOR ASSY GOV
A3	VOLTAGE REGULATOR
A4	GOVERNOR CONTROL UNIT
B1, B2	STARTER MOTORS
BT1	BATTERY 24 VDC
CB1	CIRCUIT BREAKER, DC CONTROL
CR1	DIODE, DC BLOCKING
CR3 - CR12	DIODE, FAULT LT LOGIC
CR17 - CR23	DIODE, DC BLOCKING
D1 THRU D18	DIODE, ANNUNCIATOR LOGIC
DS1, DS2	LIGHT, CONTROL PANEL
DS3	LIGHT, CKT BKR "OPEN"
DS4	LIGHT, CKT BKR "CLOSED"
DS5	LIGHT, LOP FAULT
DS6	LIGHT, HCT FAULT
DS7	LIGHT, LOW FUEL LEVEL WARNING
DS8	LIGHT, OVERSPEED FAULT
DS9	LIGHT, OVERVOLTAGE FAULT
DS10	LIGHT, GROUND FAULT
DS11	LIGHT, REVERSE POWER FAULT
DS12	LIGHT, OVERCURRENT FAULT
DS13	LIGHT, BLOWN FUES FAULT
DS17	LIGHT, BATTERY CHARGER
F22	FUSE, GOVERNOR POWER
FS1 - FS4	SWITCH FLOAT, FUEL TANK
G1	ALTERNATOR, DC
J1	SLAVE RECEPTACLE
J4, J5, J6, J9 & J10	PHONE JACK

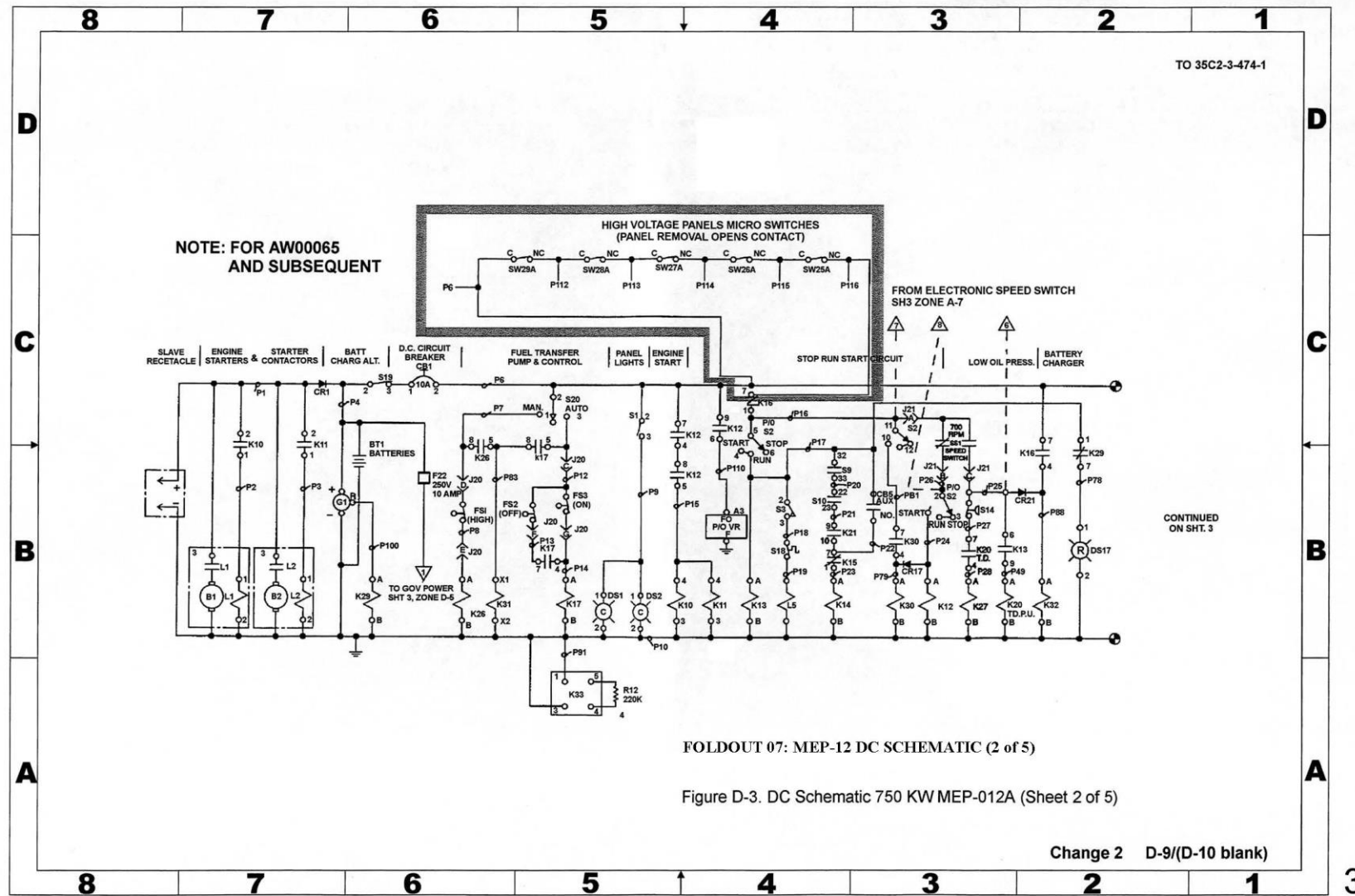
K1 THRU K9	RELAY, FAULT ANNUNCIATOR
K10, K11	RELAY, AUX START
K12	RELAY, START
K13	RELAY, RUN
K14	RELAY, CKT BKR "CLOSED"
K15	RELAY, CKT BKR "OPEN"
K16	RELAY, SHUTDOWN
K17	RELAY, AUTO FUEL PUMP CONT.
K18	RELAY, LOW FUEL WARNING
K19	RELAY, ALARM SILENCE
K20	RELAY, T D OIL PRESS
K21	RELAY, SYNCHRONIZING CHECK
K22	RELAY, GROUND FAULT
K23	RELAY, OVERVOLTAGE
K24	RELAY, REVERSE POWER
K25	RELAY, OVERCURRENT
K26	RELAY, MANUAL FUEL PUMP CONT.
K27	RELAY, LOW OIL PRESSURE FAULT
K28	RELAY, LAMP TEST
K29	RELAY, ALTERNATOR
K30	RELAY, IDLE START
K31	RELAY, AUX FUEL PUMP CONTROL
K32	RELAY, GOVERNOR
K33	RELAY, TIME DELAY MODULE
L1, L2	STARTER SOLENOID
L3	ENGINE FUEL SOLENOID
L5	ETHER PRIMER SOLENOID
L6	GOV ACTUATOR
LS1, LS2	ALARM

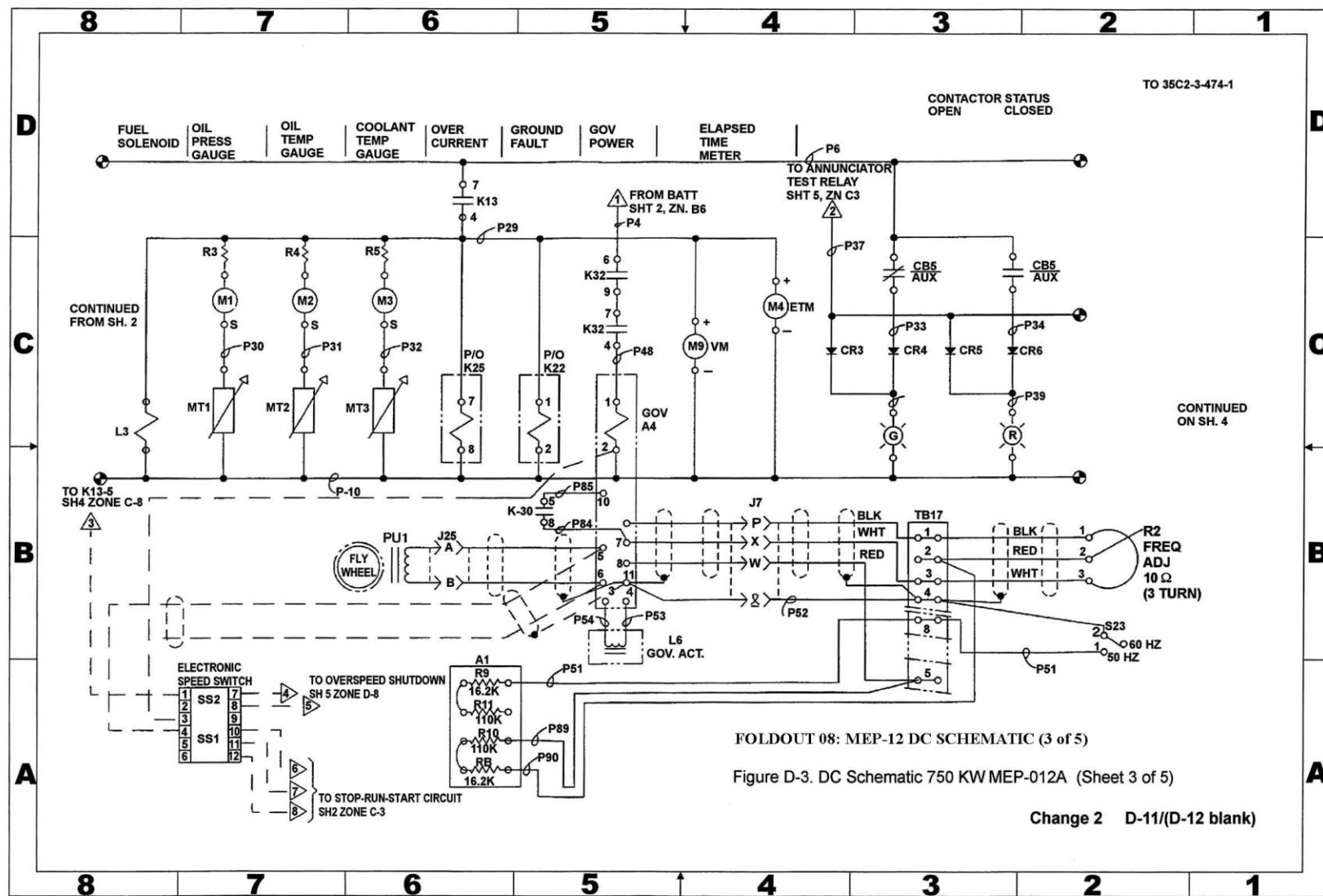
M1	OIL PRESSURE GAUGE
M2	OIL TEMP GAUGE
M3	COOLANT TEMP GAUGE
M4	ELASPSE TIME METER
M9	GEN/BUS VOLTMETER
MT1	OIL PRESSURE TRANSMITTER
MT2	OIL TEMP TRANSMITTER
MT3	COOLANT TEMP TRANSMITTER
PU1	GOV MAGNETIC PICKUP
R2	FREQ ADJUST RHEOSTAT
R3, R4, R5	GAUGE, VOLTAGE DROPPING RES
S1	SWITCH, PANEL LIGHTS
S2	SWITCH, START-RUN-STOP
S3	SWITCH, ETHER PRIMER
S4	SWITCH, BATTLE SHORT
S5, S22	SWITCH, EMERGENCY SHUTDOWN
S6	SWITCH, ALARM SILENCE
S7	SWITCH, FAULT RESET
S8	SWITCH, LAMP TEST
S9	SWITCH, SYNCHRONIZING
S10	SWITCH, LOAD CKT BKR CONTROL
S14	SWITCH, LOP SHUTDOWN
S15	SWITCH, LOP WARNING
S16	SWITCH, HCT WARNING
S17	SWITCH, HCT SHUTDOWN
S18	SWITCH, LOW COOLANT TEMP
S19	SWITCH, MAINTENANCE LOCKOUT
S20	SWITCH, FUEL TRANSFER PUMP
S23	SWITCH, 50/60 HZ SEL
S24	SWITCH, BLOWN FUSE IND.
SS1, SS2	SWITCH, ENGINE SPEED

SW25A & B	LOADBREAK OUTPUT PANEL
SW26A & B	HV POTENTIAL TRANSFORMER PANEL
SW27A & B	HV CONTACTOR PANEL
SW28A & B	HV SURGE CAPACITOR PANEL
SW29A & B	LIGHTNING ARRESTOR PANEL

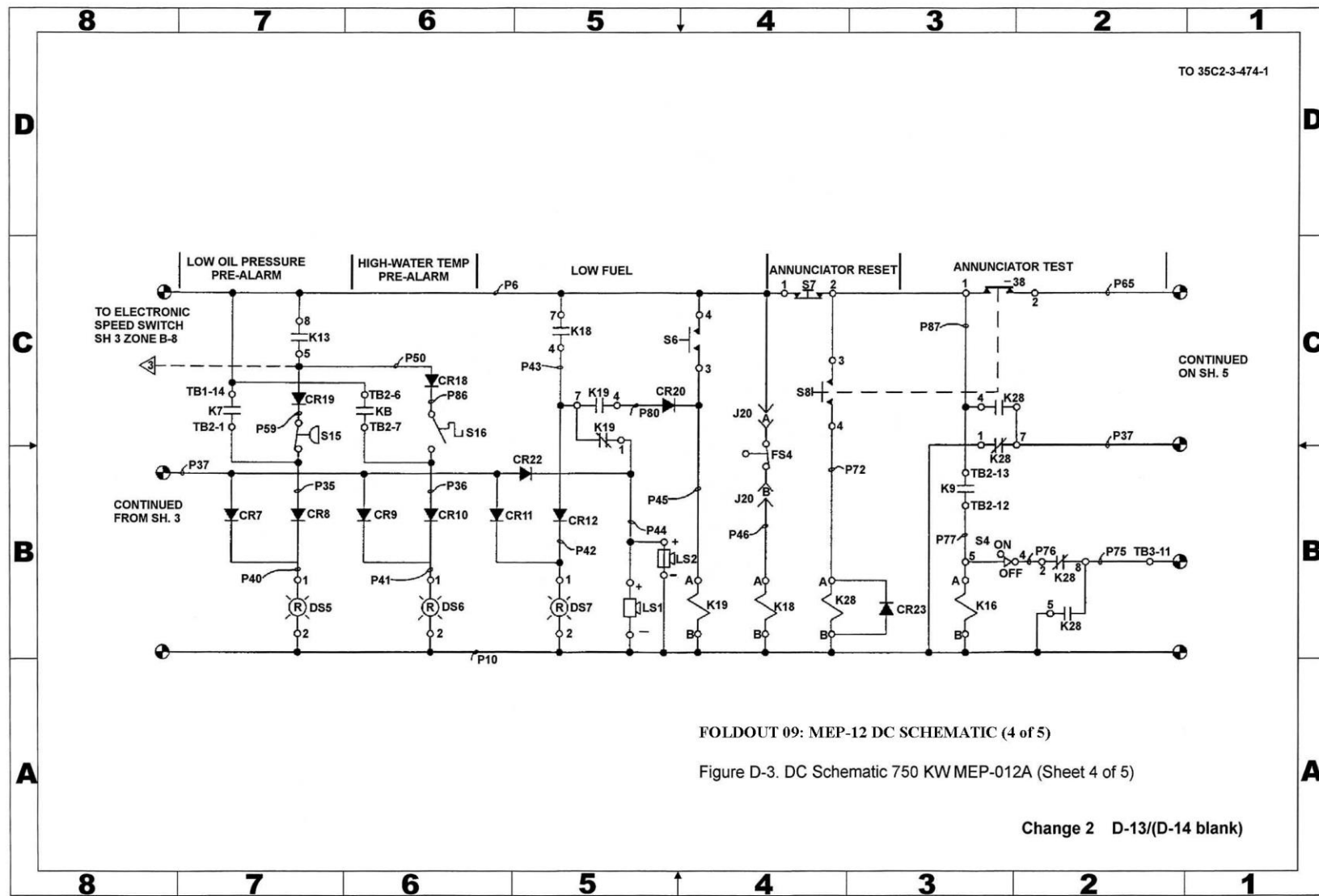
NOTE:
FOR SERIAL NUMBER AW0065
AND SUBSEQUENT

Foldout 2. MEP-12 DC Schematic (sheet 1 of 5).

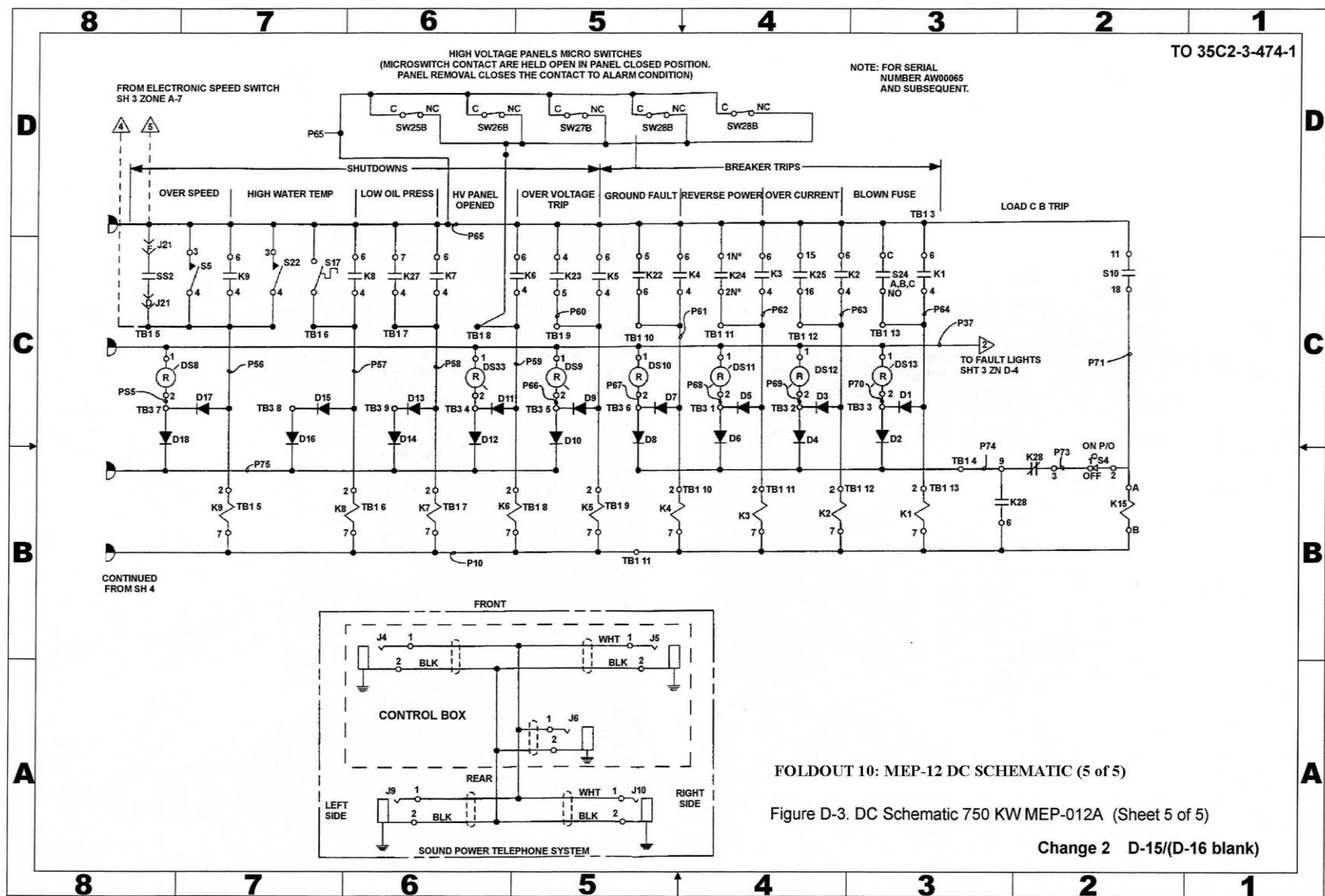




Foldout 4. MEP-12 DC Schematic (sheet 3 of 5).



Foldout 5. MEP-12 DC Schematic (sheet 4 of 5).



Foldout 6. MEP-12 DC Schematic (sheet 5 of 5).

A2	CURRENT BOOST MODULE	K24	RELAY, REVERSE PWR.
A3	VOLTAGE REGULATOR ASSY.	K25	RELAY, OVERCURRENT
B3	FUEL TRANSFER PUMP MOTOR	K30	RELAY, IDLE START
C1	SURGE CAPACITOR	K31	RELAY, AUX FUEL PUMP CONTROL
CB2	CIRCUIT BREAKER, AC RECEPTACLE (GROUND FAULT CIRCUIT INTERRUPTER	M5	FREQUENCY METER
CB4	CIRCUIT BREAKER, LOAD CKT BKR CONTROL	M6	AMMETER
CB5	CIRCUIT BREAKER, LOAD	M7	WATTMETER
CB6	CIRCUIT BREAKER, FUEL PUMP	M8	POWER FACTOR METER
CR2	DIODE, SURGE SUPP.-GEN. FIELD	M9	GEN/BUS VOLTMETER
CR13 - CR16	BRIDGE RECTIFIER-MAN. CONT.	M10	SYNCHROSCOPE
CT1, CT2, CT3	INSTRUMENT, C.T.	MT4	FREQ. TRANSDUCER
CT4	GROUND FAULT, C.T.	MT5	WATTMETER TRANSDUCER
CT5, CT6	CURRENT BOOST, C.T.	MT6	POWER FACTOR METER TRANSDUCER
CT7	PARALLELING, C.T.	R1	VOLTAGE ADJUST RHEOSTAT
DS14, DS15	LIGHT, SYNCHRONIZING	R6, R7	SYNCH. LT. RESISTOR
DS16	LIGHT, FUEL TRANSFER PUMP	S9	SWITCH, SYNCHRONIZING
E1, E2, E3	LIGHTNING ARRESTOR	S10	SWITCH, LOAD CKT. BKR. CONTROL
F1, F2, F3	FUSE, GEN. CONT. TRANS. PRIMARY	S11	SWITCH, GEN/BUS V.M. SEL
F4, F5, F6	FUSE, GEN. CONT. TRANS. SECONDARY	S12	SWITCH, AMMETER SEL
F7	FUSE, V.R. TRANS. PRIMARY	S13	SWITCH, V.R. MODE SEL
F8, F9, F10	FUSE, V.R. TRANS. SECONDARY	S21	SWITCH, PARALLEL
F11, F22	FUSE, MANUAL VOLTAGE CONTR. ZFMR.	S24	SWITCH, BLOSE FUSE IND.
F12, F13, F14	FUSE, BUS TRANS. PRIMARY	T1	TRANSFORMER, MANUAL VOLTAGE
F15, F16, F17	FUSE, BUS TRANS. SECONDARY	T2	TRANSFORMER, V.R.
F18, F23	FUSE, STATION PWR. TRANS.	T3	TRANSFORMER, STATION POWER
F19, F20, F21	FUSE, MAIN CKT. BKR.	T4, T5, T6	TRANSFORMER, GEN. INSTR.
G2	MAIN GENERATOR, 750 KW	T7, T8, T9	TRANSFORMER, BUS INST.
J2, J3	DUPLEX RECEPTACLE		
K21	RELAY, SYNCHRONIZING CHECK		
K22	RELAY, GROUND FAULT		
K23	RELAY, OVERVOLTAGE		
DS30A	LIGHT, H.V. PHASE A AT INS. PNL		
DS30B	LIGHT, H.V. PHASE A AT P.T. PNL		
DS31A	LIGHT, H.V. PHASE B AT INS. PNL		
DS31B	LIGHT, H.V. PHASE B AT P.T. PNL		
DS32A	LIGHT, H.V. PHASE C AT INS. PNL		
DS32B	LIGHT, H.V. PHASE C AT P.T. PNL		
DS33	LIGHT, H.V. PANEL OPEN		

FOLDOUT 11: MEP-12 AC SCHEMATIC (1of 3)

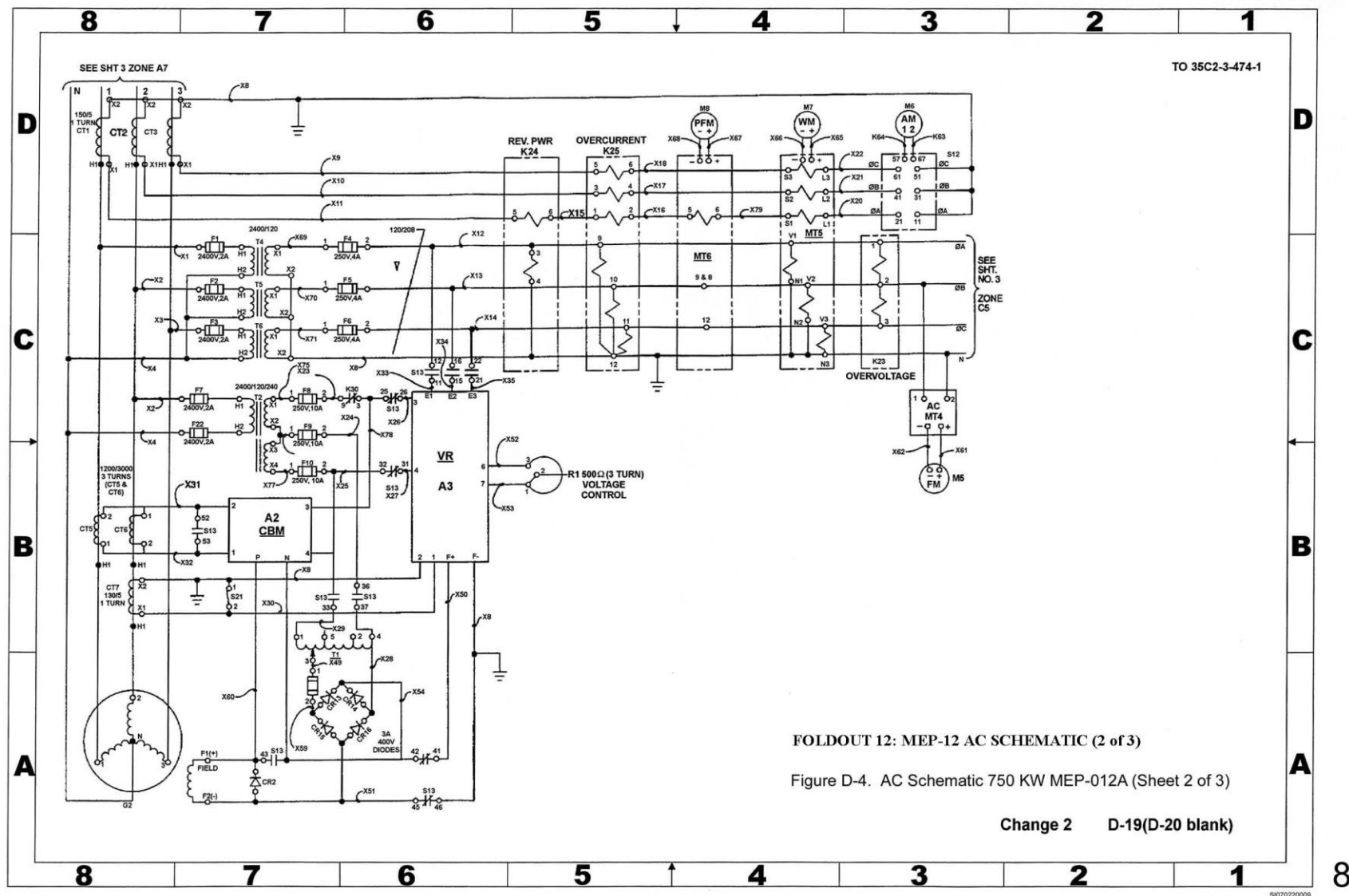
Figure D-4. AC Schematic 750 KW MEP-012A (Sheet 1 of 3)

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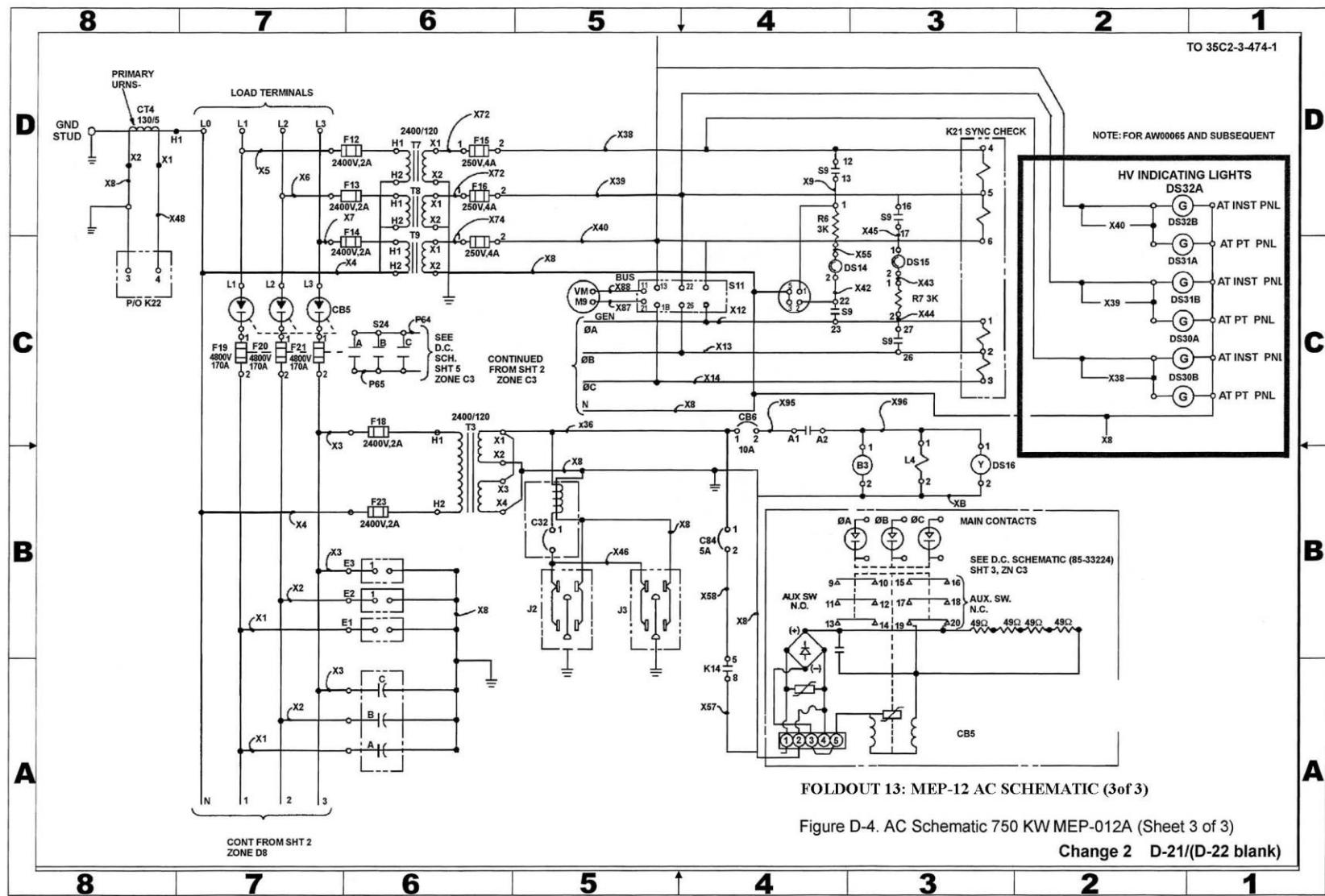
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Change 2 D17/(D18 blank)

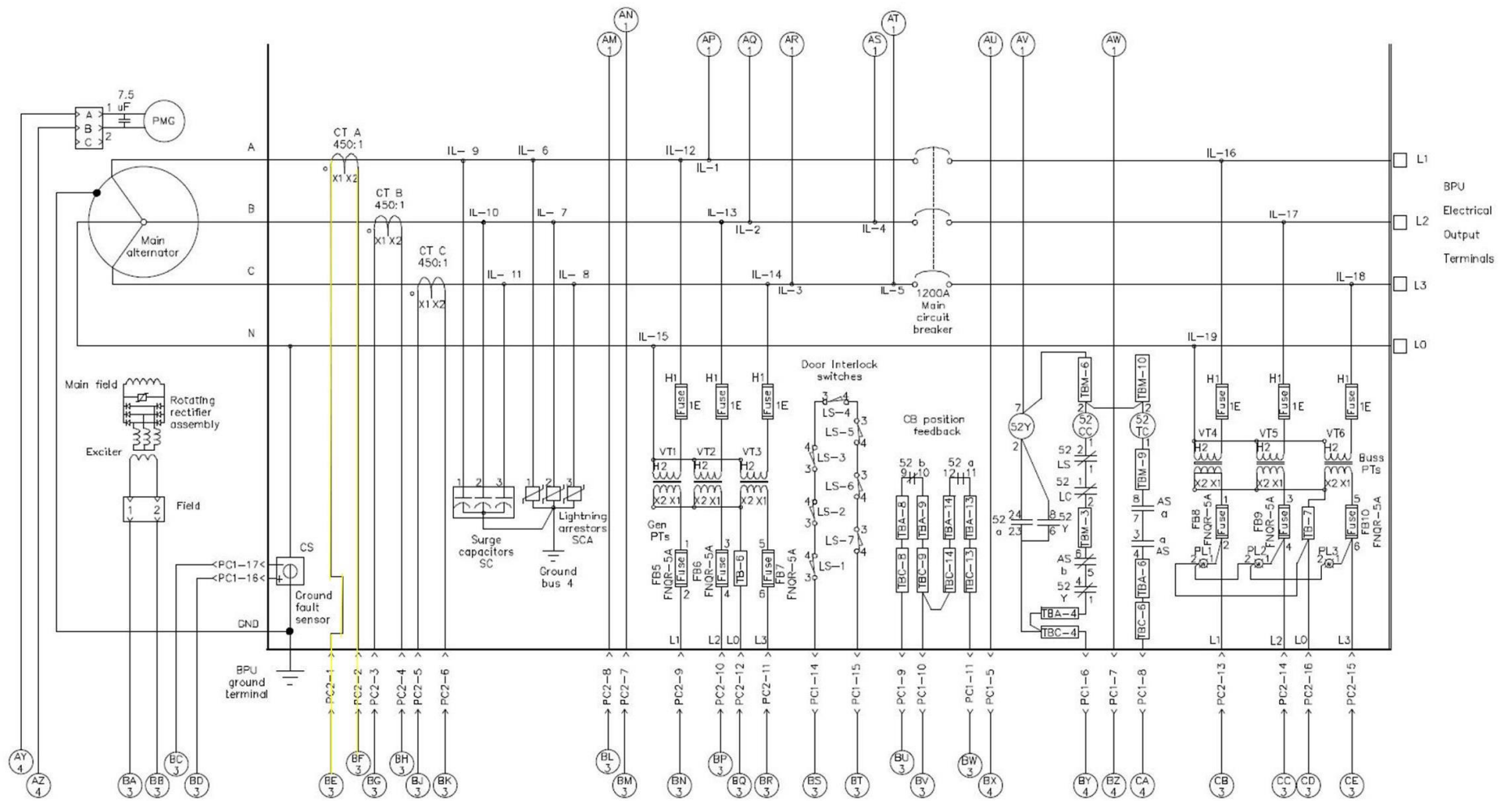
Foldout 7. MEP-12 AC Schematic (sheet 1 of 3).



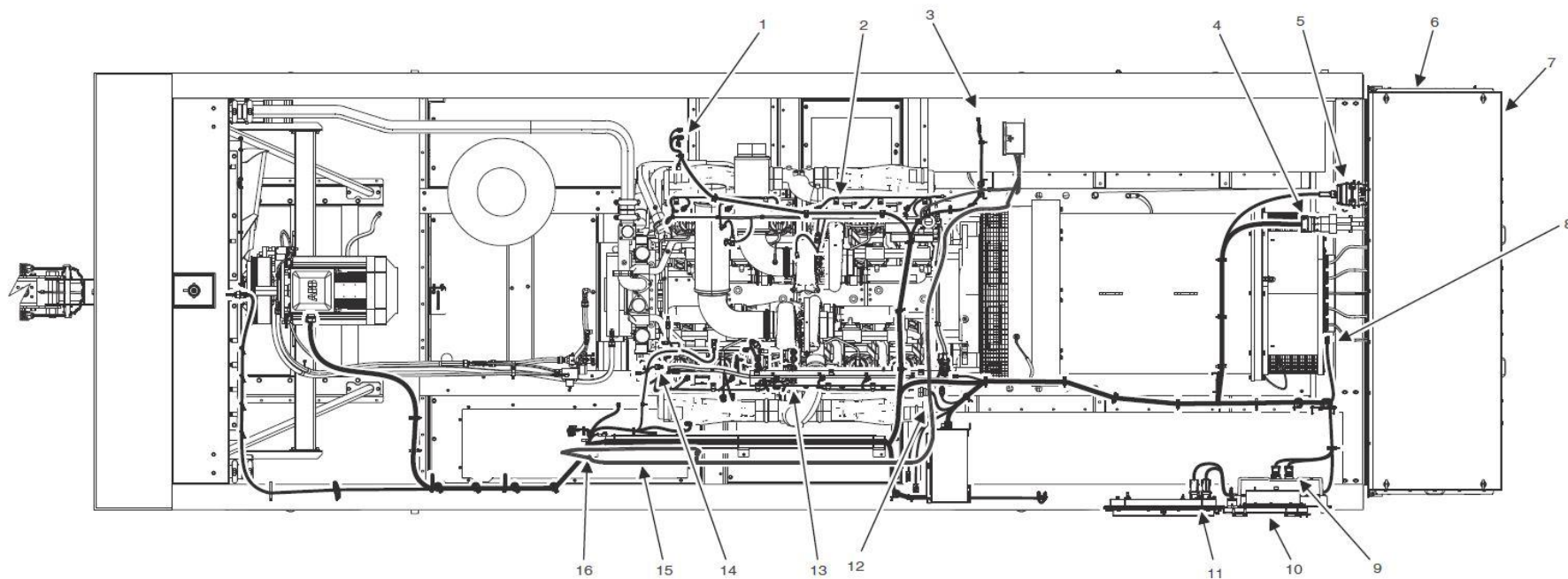
Foldout 8. MEP-12 AC Schematic (sheet 2 of 3).



Foldout 9. MEP-12 AC Schematic (sheet 3 of 3).



Foldout 11. BPU Circuit diagram (sheet 2).

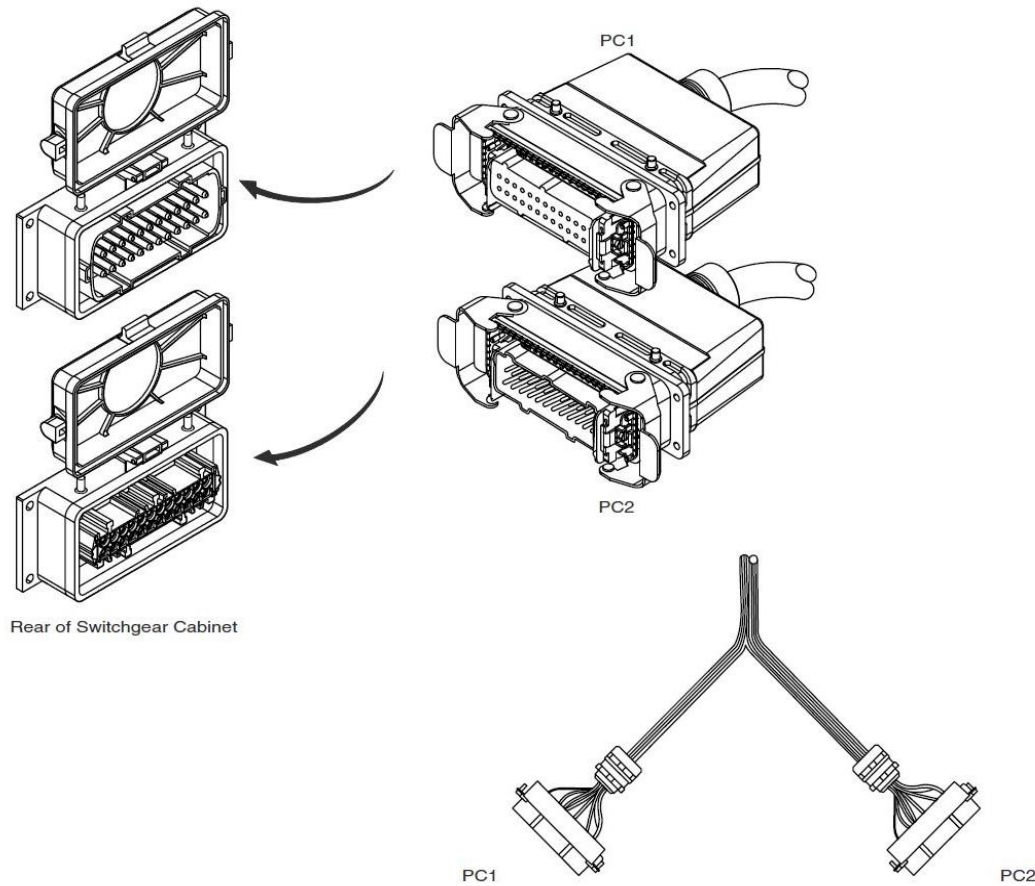


LABEL	ITEM NUMBER	FIGURE/ SHEET
AC BOX	12	1/7
ANN	9	1/5
BATTSEN BREAKER	1	1/10
CAN	6	4/4
CN1	12	1/7
CN2	11	1/4
DCS	11	1/4
ECM (FUEL PRIMING PUMP)	10	3/1
ENG	15	1/11
ECM WIRING HARNESS	12	1/7
E-STOP1	2	2/-
	15	1/9

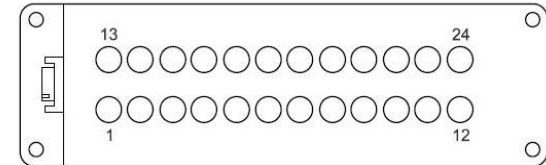
LABEL	ITEM NUMBER	FIGURE/ SHEET
E-STOP2	3	1/8
FFHTR1	16	1/9
FFHTR2	16	1/9
FFHTR3	15	1/9
FIELD	8	1/8
FUEL PUMP	15	1/9
FUEL SEN	16	1/9
FUEL SOL	15	1/9
FUELSW	16	1/10
HEATER1	1	1/10
HEATER2	1	1/10
HORN	3	1/8

LABEL	ITEM NUMBER	FIGURE/ SHEET
LIFT PUMP	15	1/11
OILSW	12	1/7
P1	9	1/5
P2	9	1/6
P3	9	1/6
PC1	5	1/2
PC2	5	1/2
PC3	4	1/3
PMG	8	1/8
SOLENOID	14	1/9
SWITCHGEAR	7	4/-
VALVE SOLENOID	14	1/9

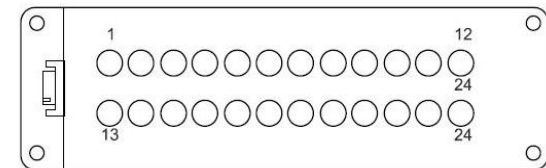
Foldout 12. BPU Connector (Sheet 1 of 11).



FROM STATION	TO STATION	FIGURE/ SHEET	DESCRIPTION	SIZE AWG	WIRE TYPE	WIRE COLOR
PC1-3	CN1-9	1/4	+24 VDC to switchgear	14	SINGLE	WHITE
PC1-4	CN1-22	1/4	GND to switchgear	14	SINGLE	WHITE
PC1-5	CN2-A11	1/4	+24 VDC from SG for remote close	18	SINGLE	WHITE
PC1-6	CN2-C9	1/4	remote close +24 VDC to SG	18	SINGLE	WHITE
PC1-7	CN2-B10	1/4	+24 VDC from SG for remote trip	18	SINGLE	WHITE
PC1-8	CN2-C11	1/4	remote trip +24 VDC to SG	18	SINGLE	WHITE
PC1-9	P3-BB	1/6	CB closed position "b"	20	SINGLE	WHITE
PC1-10	P3-H	1/6	GND for CB position switches	20	SINGLE	WHITE
PC1-11	P3-AA	1/6	CB open position "a"	20	SINGLE	WHITE
PC1-14	P3-FF	1/6	SG door switch neg	20	SINGLE	WHITE
PC1-15	P3-MM	1/6	SG door switch input	20	SINGLE	WHITE
PC1-16	P3-H	1/6	GND Fault Sensor +	20	SINGLE	WHITE
PC1-17	P3-q	1/6	GND Fault Sensor -	20	SINGLE	WHITE
PC2-1	P3-A	1/6	CT1-X1 Gen current	20	SINGLE	WHITE
PC2-2	P3-b	1/6	CT1-X2 Gen current	20	SINGLE	WHITE
PC2-3	P3-B	1/6	CT2-X1 Gen current	20	SINGLE	WHITE
PC2-4	P3-c	1/6	CT2-X2 Gen current	20	SINGLE	WHITE
PC2-5	P3-C	1/6	CT3-X1 Gen current	20	SINGLE	WHITE
PC2-6	P3-d	1/6	CT3-X2 Gen current	20	SINGLE	WHITE
PC2-7	P3-D	1/6	CT4-X1 transformer current	20	SINGLE	WHITE
PC2-8	P3-e	1/6	CT4-X2 transformer current	20	SINGLE	WHITE
PC2-9	P1-A	1/5	GEN L1	16	SINGLE	WHITE
PC2-10	P1-R	1/5	GEN L2	16	SINGLE	WHITE
PC2-11	P1-C	1/5	GEN L3	16	SINGLE	WHITE
PC2-12	P1-D	1/5	GEN N	16	SINGLE	WHITE
PC2-13	P1-G	1/5	BUSS L1	16	SINGLE	WHITE
PC2-14	P1-T	1/5	BUSS L2	16	SINGLE	WHITE
PC2-15	P1-E	1/5	BUSS L3	16	SINGLE	WHITE
PC2-16	P1-S	1/5	BUSS N	16	SINGLE	WHITE
PC2-22	CN1-2	1/4	120 VAC from switchgear	14	SINGLE	WHITE
PC2-23	SPICE2-1	1/9	Neutral from switchgear to splice	14	SINGLE	WHITE
PC2-24	SPICE3-1	1/9	Ground from switchgear to splice	14	SINGLE	WHITE

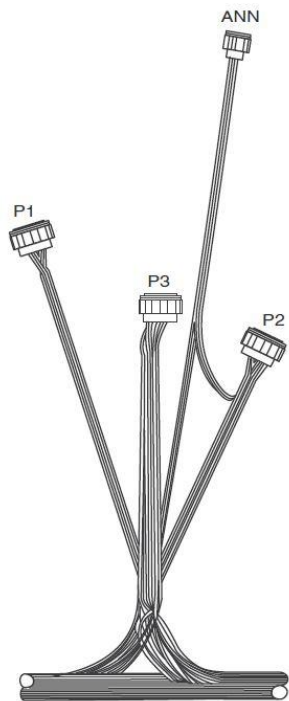


PC1

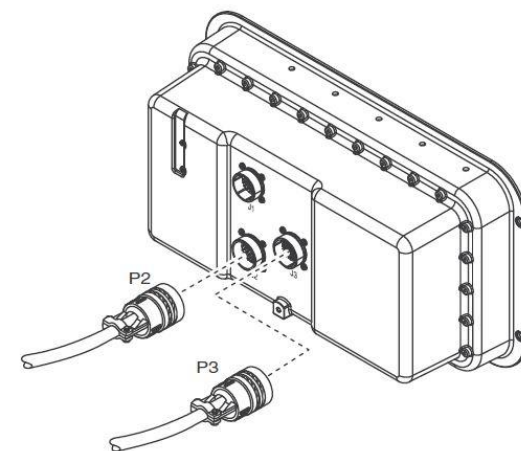
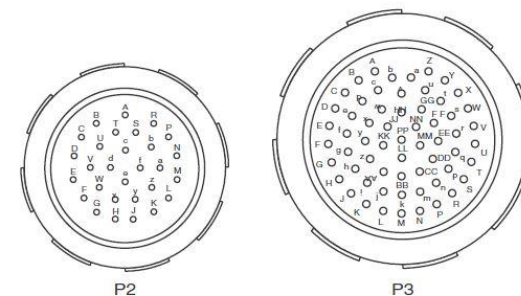


PC2

Foldout 13. BPU Connector (Sheet 3).



FROM STATION	TO STATION	FIGURE/ SHEET	DESCRIPTION	SIZE AWG	WIRE TYPE	WIRE COLOR
P2-A	CN2-D8	1/4	B+ to control	16	SINGLE	WHITE
P2-a	CN2-A7	1/4	hour meter B- return	16	SINGLE	WHITE
P2-B	CN2-C16	1/4	B+ to control	16	SINGLE	WHITE
P2-b	CN2-C4	1/4	PreLube K2 coil - return	16	SINGLE	WHITE
P2-C	CN2-C14	1/4	B+ to control	16	SINGLE	WHITE
P2-D	CN2-C7	1/4	B+ winter heater K12 coil	16	SINGLE	WHITE
P2-d	CN2-C12	1/4	B- to control	16	SINGLE	WHITE
P2-E	CN2-D6	1/4	PreLube K2 coil +	16	SINGLE	WHITE
P2-e	CN2-C10	1/4	B- to control	16	SINGLE	WHITE
P2-F	CN2-A3	1/4	B+ CB close K9 coil	16	SINGLE	WHITE
P2-f	CN2-C8	1/4	B- to control	16	SINGLE	WHITE
P2-H	CN2-C3	1/4	B+ Fuel relay K16 coil	16	SINGLE	WHITE
P2-K	CN2-C2	1/4	B+ CB open K10 coil	16	SINGLE	WHITE
P2-L	CN2-C6	1/4	B+ Run K16, K17 coils	16	SINGLE	WHITE
P2-N	ANN B	1/5	LED annunciator switched B+	20	PAIR1	WHITE
P2-P	BATTALT D+	-	battery alternator flash signal	16	SINGLE	WHITE
P2-R	CN2-C5	1/4	B+ heater run/venable K3 coil	16	SINGLE	WHITE
P2-S	CN2-D2	1/4	B- CB close K9 coil	16	SINGLE	WHITE
P2-T	CN2-A6	1/4	hour meter B+	16	SINGLE	WHITE
P2-U	CN2-B7	1/4	B- winter heater K15 coil	16	SINGLE	WHITE
P2-V	ANN E	1/5	LED annunciator B- return (PAIR)	20	PAIR1	BLACK
P2-W	CN2-A2	1/4	B- CB open K10 coil	16	SINGLE	WHITE
P2-Z	CN2-B3	1/4	B- Fuel relay K16 coil return	16	SINGLE	WHITE
P3-A	PC2-1	1/2	CT1-X1 Gen current	20	SINGLE	WHITE
P3-AA	PC1-11	1/2	CB open position "a"	20	SINGLE	WHITE
P3-B	PC2-3	1/2	CT2-X1 Gen current	20	SINGLE	WHITE
P3-b	PC2-2	1/2	CT1-X2 Gen current	20	SINGLE	WHITE
P3-BB	PC1-9	1/2	CB closed position "b"	20	SINGLE	WHITE
P3-C	PC2-5	1/2	CT3-X1 Gen current	20	SINGLE	WHITE
P3-c	PC2-4	1/2	CT2-X2 Gen current	20	SINGLE	WHITE
P3-CC	FUELSW 1	1/9	Fuel overfill input	20	SINGLE	WHITE
P3-D	PC2-7	1/2	CT4-X1 transformer	20	SINGLE	WHITE
P3-d	PC2-6	1/2	CT3-X2 Gen current	20	SINGLE	WHITE
P3-E	BATTSEN B	1/10	+ 5V for battery charging sensor	20	3 COND	RED
P3-e	PC2-8	1/2	CT4-X2 transformer current	20	SINGLE	WHITE
P3-F	FUELSEN A	1/9	+12 V for fuel level sensor	20	SINGLE	WHITE
P3-FF	PC1-14	1/2	SG door switch neg	20	SINGLE	WHITE
P3-G	FUELSEN B	1/9	signal from fuel level sensor	20	SINGLE	WHITE
P3-g	BATTSEN A	1/10	signal (3 COND Shielded)	20	3 COND	WHITE
P3-H	PC1-10	1/2	GND for CB position switches	20	SINGLE	WHITE
P3-h	PC1-16	1/2	GND Fault Sensor +	20	SINGLE	WHITE
P3-J	OILSW-1	1/7	PreLube pressure Switch	20	SINGLE	WHITE
P3-j	FUELSEN C	1/9	return	20	SINGLE	WHITE
P3-K	CAN-A	1/7	CAN-HIGH	20	SHIELDED	YELLOW
P3-k	BATTSEN C	1/10	return (3 COND Shielded)	20	3 COND	BLACK
P3-L	CAN-B	1/7	CAN-LOW	20	TWISTED PAIR	GREEN
P3-LL	HEATER2-2	1/10	winter heater fault input	20	PAIR2	WHITE
P3-M	FUELSW 2	1/9	fuel overfill return	20	SINGLE	WHITE
P3-MM	PC1-15	1/2	SG door switch input	20	SINGLE	WHITE
P3-n	ESTOP2-4	1/8	E-stop circuit for control	20	SINGLE	WHITE
P3-p	ACBOX E	1/7	motor overload return	20	SINGLE	WHITE
P3-q	PC1-17	1/2	GND Fault Sensor -	20	SINGLE	WHITE
P3-r	OILSW-2	1/7	PreLube pressure Switch	20	SINGLE	WHITE
P3-S	CN2-C1	1/4	B- FANS K6 coil low side driver	20	SINGLE	WHITE
P3-s	ESTOP1-3	1/9	E-stop circuit for control	20	SINGLE	WHITE
P3-T	CN2-B1	1/4	B- Ready To Load K7 coil low side driver	20	SINGLE	WHITE
P3-u	ANN C	1/5	LED BD clock	20	PAIR2	BROWN
P3-u	ACBOX F	1/7	motor overload input	20	SINGLE	WHITE
P3-V	ANN D	1/5	LED BD data	20	SINGLE	WHITE
P3-W	CN2-D1	1/4	B- ECM K8 coil low side driver	20	SINGLE	WHITE
P3-X	CN2-B2	1/4	B- alarm K4 coil low side driver	20	SINGLE	WHITE
P3-Y	CN2-D5	1/4	B- crank K5 coil low side driver	20	SINGLE	WHITE
P3-Z	CN2-B6	1/4	Keyswitch B+ K1 coil	20	SINGLE	WHITE



Rear of DCS

Foldout 14. BPU Connector (Sheet 6).

Student Notes

AFSC 3E052
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