

ELECTRICAL CONTROL EQUIPMENT  
 BY  
 GENERAL ELECTRIC  
 ENGINEERING SERVICES  
 FOR  
 CANADIAN COAST GUARD  
 CANADA

PROPULSION CONTROL SYSTEM UPGRADE OF THE CCGS GRIFFON

G.E. REQUISITION — 84702084  
 SHOP ORDER — ZTG038  
 INSTRUCTION BOOK  
 DIAGRAM INDEX

DIAGRAM	SHEET	TYPE	DESCRIPTION
359B7019CA	0A	ELEMENTARY	TITLE & INDEX
359B7019CA	0B	ELEMENTARY	DRAWING SYMBOLS, NOTES & GROUNDING
359B7019CA	0C, 0C1	ELEMENTARY	SYSTEM ONE-LINE / BLOCK DIAGRAM
359B7019CA	0D	ELEMENTARY	SYSTEM LAN TOPOLOGY
359B7019CA	0E	ELEMENTARY	SYSTEM CCOM LAYOUT
359B7019CA	0F	ELEMENTARY	AMPHENOL CONNECTOR PIN ASSIGNMENTS
359B7019CA	1AB	ELEMENTARY	PORT SIDE UC CONTROLLER
359B7019CA	1BA	ELEMENTARY	PORT SIGNAL RELAYS
359B7019CA	2AA-2HA	ELEMENTARY	PORT OUTBOARD GEN EXC
359B7019CA	3AA-3HA	ELEMENTARY	PORT INBOARD GEN EXC
359B7019CA	4AA-4HB	ELEMENTARY	PORT MOTOR FIELD EXCITER
359B7019CA	5AA-5HA	ELEMENTARY	STARBOARD OUTBOARD GEN EXC
359B7019CA	6AA-6HA	ELEMENTARY	STARBOARD INBOARD GEN EXC
359B7019CA	7AA-7HB	ELEMENTARY	STARBOARD MOTOR FIELD EXCITER
359B7019CA	8AA-8HA	ELEMENTARY	SPARE GEN EXC
359B7019CA	9AA-9HA	ELEMENTARY	SPARE MOTOR FIELD EXC
359B7019CA	10AB	ELEMENTARY	STARBOARD UC CONTROLLER
359B7019CA	10BA	ELEMENTARY	STBD SIGNAL RELAYS
359B7019CA	20AA	ELEMENTARY	24VDC SYSTEM

AS COMMISSIONED  
 NOV 14 2003  
 PORT WELLER  
 ONTARIO

SH. NO. 0A  
CONT. ON SH. 0B  
359B7019CA

# SYMBOLS

## LOCATIONS

**[O]** SUPPLIED BY OTHERS--DISCLAIMER THE INFORMATION APPEARING ON THIS DOCUMENT INDICATED BY **[O]** WAS OBTAINED BY GE FROM A THIRD PARTY AND IS PROVIDED SOLELY AS A CONVENIENCE. GE HAS NOT INDEPENDENTLY VERIFIED SUCH INFORMATION AND, THEREFORE, DOES NOT WARRANT ITS ACCURACY OR SAFE OPERATION

- [R]** OR **[REMOTE]** REMOTELY MOUNTED
- [M]** MOUNTED AT MOTOR
- [?PCA]** MOUNTED IN CORE ONE, TWO, ETC.
- [CA?]** MOUNTED IN CASE ONE, TWO, ETC.
- [D]** **[D1]** **[D2]** MOUNTED ON DOOR, DOOR OF CASE 1, DOOR OF CASE 2, ETC.
- [RTBA]** MOUNTED ON RTB CARD
- [P]** PANEL MOUNTED, SUPPLIED BY OTHERS
- [E]** EQUIPMENT EXISTS IN PLACE
- [G]** REMOTE DEVICE SUPPLIED BY GE
- [OPTION]** CATALOG OPTION
- [C]** CONTINUED ON

## CROSS MAPPING

**[100AB03]** "CROSS MAPPING" NUMBER, SPECIFIES LOCATION OF CONTINUATION OF ELECTRICAL CIRCUIT OR ORIGIN OF ELECTRICAL CIRCUIT. EXAMPLE INDICATES DRIVE NO. 100, SHEET AB, LINE 3. NOTE: DRIVE NO. AND/OR SHEET NO. IS OMITTED IF MAPPED TO LOCATION IN THE SAME DRIVE NO. OR SAME SHEET NO.

## WIRE NUMBERING

WIRE NO. ARE A CONCATENATED STRING CONSTRUCTED AS FOLLOWS: DRIVE NO. + SHEET NO. + LINE NO. + COLUMN NO. FOR CLARITY, THE DRIVE NO. AND/OR SHEET NO. MAY BE OMITTED ON THE ELEMENTARY IF THE WIRE ORIGINATES IN THE SAME DRIVE NO. SET OR THE SAME SHEET NO.

## DEVICES

- THERMAL SWITCH
- LIMIT SWITCH (N.C.)
- TERMINAL JUMPER
- FAN
- OFF ON SELECTOR SWITCH
- ADJUSTMENT POT.
- AC COIL SUPPRESSION (RC ONLY)
- DC COIL SUPPRESSION (RC & MOV)
- CENTRIFUGAL SPEED SWITCH
- PUSHBUTTON (N.C.)
- PUSHBUTTON (N.O.)
- REDUNDANT RELAY CONTACT, SHOWN FOR DRAWING CLARITY
- PLUG WITH SCREW TERMINATION
- PLUG TERMINATION
- COLLECTOR

- TWISTED PAIR WIRE
- TWISTED SHIELDED PAIR WIRE
- SHIELDED PAIR WIRE
- HARNESS WIRING
- COAXIAL CABLE
- FIBER OPTIC CABLE
- INTERNAL COMMON
- TERMINAL BOARD JUMPER PLUG
- FESTOON CABLE
- PL PIN NUMBER
- TEST POINT
- DELTA
- WYE
- INTENDED TO BE AT EARTH POTENTIAL
- CHASSIS GROUND SEE NOTE 3 FOR DETAILS
- SOFTWARE PROGRAMMABLE
- LOW LEVEL WIRING
- HIGH LEVEL WIRING
- POWER WIRING
- POWER WIRING: >800V AND/OR >800A PRACTICES REQUIRED
- LOW LEVEL SIGNAL WIRING PRACTICES REQUIRED

## NOTES:

- A. UNLESS OTHERWISE SHOWN ON THE ELEMENTARY DIAGRAM:
  1. ALL CONNECTIONS TO THE CONTROLLER'S COMMON MUST BE MADE TO PCOMX.
  2. NO CONNECTION SHOULD BE MADE TO 3TB60 (+5 VOLTS).
  3. ALL DIGITAL TACH AND ENCODER SIGNALS SHOULD BE DIFFERENTIAL.
  4. DRIVE COMMON (PCOMX) SHOULD BE GROUNDED AT ONLY ONE POINT. IF THE REFERENCE IS SUPPLIED BY NUMERICAL CONTROL OR PROCESS INSTRUMENT WITH A GROUNDED COMMON THE DRIVE COMMON SHOULD NOT BE GROUNDED SEPARATELY.
- B. CONTROL SYSTEM RELAYS, SOLENOIDS OR BRAKE COILS CAN PRODUCE ERRATIC DRIVE BEHAVIOR DUE TO ELECTRICAL NOISE TRANSIENTS. TO REDUCE THIS POSSIBILITY, AN RC SUPPRESSOR SHOULD BE ADDED IN PARALLEL WITH THE COILS OF THESE DEVICES. A 220 OHM, 2 WATT RESISTOR IN SERIES WITH 0.5 MFD, 600 VOLT CAPACITOR CAN BE USED. AVOID ELECTROMAGNETIC INTERFERENCE OR "NOISE" INTRODUCED BY:
  1. RADIO FREQUENCY SIGNALS, TYPICALLY FROM PORTABLE TRANSMITTERS USED IN THE VICINITY OF THE EQUIPMENT OR ITS WIRING.
  2. STRAY HIGH VOLTAGE OR HIGH FREQUENCY SIGNALS AS MIGHT BE PROVIDED BY ARC WELDERS.
- C. WIRING SHOULD BE RUN IN SEPARATE CONDUITS OR WIREWAYS FOR SIGNAL, CONTROL AND POWER WIRING LEVELS.
  - SIGNAL - LOW LEVEL ANALOG AND DIGITAL SIGNALS
    - SPEED, POSITION AND OTHER FEEDBACK/REFERENCE SIGNALS
    - POWER SUPPLIES AND LOGIC SYMBOLS (SEE SYSTEM ELEMENTARY AND NOTES TO IDENTIFY SIGNALS)
  - CONTROL - AC OR DC CONTROL CIRCUITS, 115VAC CIRCUITS
  - POWER - FIELD LEADS, ARMATURE LEADS
    - BRAKES, LINE VOLTAGE AC CIRCUITS
- D. SIGNAL WIRING AND POWER WIRING MUST CROSS AT RIGHT ANGLES WITH A MINIMUM ONE INCH SEPARATION. AVOID PARALLEL RUNS BETWEEN SIGNAL LEVEL WIRES AND POWER OR CONTROL WIRES. IF SIGNAL WIRES MUST BE RUN IN PARALLEL TO CONTROL OR POWER WIRES, A MINIMUM OF A FOUR-INCH SEPARATION MUST BE MAINTAINED BETWEEN THE WIRES.
- E. INDICATES [SHIELDED/TWISTED] OR [TWISTED PAIR] WIRING.
  - FOR SHORT WIRE RUNS INTERNAL TO THE CONTROLLER, TWISTED PAIR IS ADEQUATE.
  - FOR WIRE RUNS EXTERNAL TO THE CONTROLLER (AND INTERNAL TO THE CONTROLLER WHEN LONGER THAN 20 FEET) SHIELDED, TWISTED WIRE IS REQUIRED.
  - ALL SHIELD DRAINS SHOULD BE TERMINATED ON ONE END ONLY, THAT END BEING AT THE CONTROLLER. THIS POINT MAY BE DEPICTED ON THE ELEMENTARIES AS THE REMOTE END OF THE SHIELD DRAIN WIRE SHOULD BE CUT OFF AND THE WIRE TAPED TO PREVENT ACCIDENTAL GROUNDING.
  - NO SHIELD DRAIN WIRES SHOULD EVER BE ROUTED THROUGH ANY CONTROLLER MOUNTED FERRITE CORES.
- F. THIS EQUIPMENT MAY CONTAIN THERMOSWITCHES OR OTHER DEVICES WHICH INDICATE CONDITIONS HAZARDOUS TO CONTINUED EQUIPMENT OPERATION. IT IS RECOMMENDED THAT THE CUSTOMER CONNECT THESE DEVICES IN STOP OR ALARM CIRCUITS IN A MANNER THAT PREVENTS ACCIDENTAL RESTART OF THE EQUIPMENT UPON RESETTING OF THE DEVICE.
- G. CLOSED PUSHBUTTONS AND/OR CLOSED INTERLOCKS INDICATE MAINTAINED CIRCUIT CLOSURE REQUIRED.
- H. OPEN PUSHBUTTONS INDICATE MOMENTARY CIRCUIT CLOSURE REQUIRED.
- I. SOME SINGLE TERMINAL BOARD CONNECTION POINTS MAY BE SHOWN MORE THAN ONCE FOR DRAWING CLARITY.
- J. RELAY CONTACT RATINGS ARE 1 AMP (NON-INDUCTIVE) AT 115 VAC OR 28 VDC, AND .5 AMPS (NON INDUCTIVE) AT 125 VDC UNLESS NOTED OTHERWISE.
- K. ADDITIONAL CONSIDERATIONS:
 

ATTENTION SHOULD BE GIVEN TO THE NATIONAL ELECTRICAL CODE AND ANY APPLICABLE LOCAL CODES WHEN INSTALLING ANY DRIVES. WIRE SIZE AND INSULATION TYPE, CONDUIT SIZING, ENCLOSURES, ETC., SHOULD BE DETERMINED PER THESE CODES.

ENVIRONMENTS WHICH INCLUDE EXCESSIVE AMOUNTS OF ONE OR MORE OF THE FOLLOWING CHARACTERISTICS SHOULD BE CONSIDERED HOSTILE TO DRIVE PERFORMANCE AND LIFE:

  1. DUST, DIRT OR FOREIGN MATTER.
  2. VIBRATION OR SHOCK.
  3. MOISTURE OR VAPORS.
  4. RAPID TEMPERATURE EXCURSIONS OR HIGH AMBIENT TEMPERATURES.
  5. CAUSTIC FUMES.
  6. POWER LINE FLUCTUATIONS.

## STANDARD PANEL GROUNDING PROCEDURES TO BE FOLLOWED AT INSTALLATION

### SCOPE

THIS DRAWING WILL DOCUMENT PROCEDURES WHICH ARE TO BE FOLLOWED BY CUSTOMER'S CONTRACTOR WHEN HE INSTALLS DRIVES PANELS SUPPLIED BY THE DRIVES DEPARTMENT OF GENERAL ELECTRIC COMPANY. IN ORDER TO UNDERSTAND THE REASONS FOR MANY OF THE PRACTICES THAT ARE RECOMMENDED, IT IS HELPFUL TO SEGREGATE THESE PRACTICES INTO TWO CATEGORIES AS FOLLOWS:

- 1) THOSE GENERALLY REFERRED TO AS PROTECTIVE GROUNDING PRACTICES WHOSE PURPOSES ARE:
  - X) TO PROTECT AGAINST THE RISK OF ELECTRICAL SHOCK OR BURN.
  - Y) TO PROTECT THE EQUIPMENT FROM FIRE OR OTHER DAMAGE DUE TO GROUND FAULTS OR LIGHTNING STRIKES.
- 2) THOSE PRACTICES WHICH MAKE THE EQUIPMENT IMMUNE TO ELECTRICAL NOISE ORIGINATING WITHIN OR WITHOUT THE EQUIPMENT. THESE COMPLEMENT THE PROTECTIVE GROUNDING AND LEVEL WIRING PRACTICES IN PROVIDING NOISE IMMUNITY.

### PROTECTIVE GROUNDING

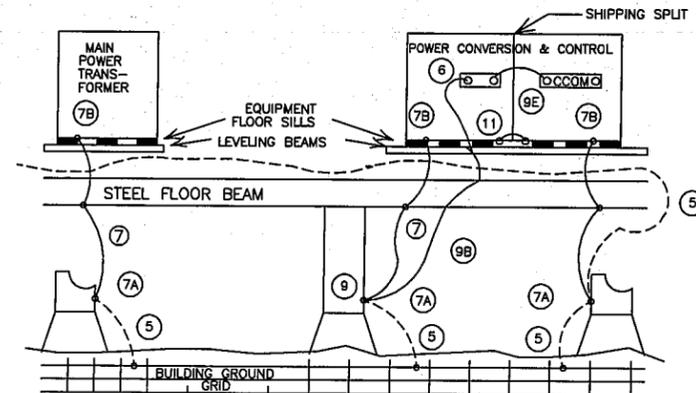
1. ALL METAL BUILDING STRUCTURES SUCH AS COLUMNS, FLOOR BEAMS, ETC. SHOULD BE GROUNDED BY AN INTERCONNECTING HEAVY GROUND CABLE **(5)** IN ACCORDANCE WITH RECOMMENDED BUILDING PRACTICES AND LOCAL CODES.
2. ALL ELECTRICAL JOINTS AND CONNECTIONS TO THE BUILDING STRUCTURES SHOULD BE BRAZED OR CAD WELDED TO ASSURE THAT THE REQUIRED GOOD ELECTRICAL AND MECHANICAL PROPERTIES DO NOT DETERIORATE WITH THE PASSAGE OF TIME.
3. ALL PANELS SHOULD BE GROUNDED AT AT LEAST ONE POINT USING A HEAVY SAFETY CABLE **(WHEN THE PANEL IS >15 FT. LONG IT SHOULD BE GROUNDED AT BOTH ENDS. THE GROUND CABLE NEEDS TO BE AT LEAST 1/0 FOR MECHANICAL REASONS AND NEED NOT BE GREATER THAN 500 MCM. THIS CABLE IS USUALLY NON-INSULATED.)**
4. THE SAFETY GROUND CABLE **(7)** SHOULD BE BRAZED OR CAD WELDED **(7A)** A BUILDING GROUND CABLE AT ITS CONNECTION TO A BUILDING STEEL STRUCTURE THAT IS CLOSEST TO THE PANEL.
5. THE EQUIPMENT END **(9)** OF THE SAFETY GROUND **(7)** SHOULD BE BOLTED OR BRAZED TO A GROUND TERMINATION POINT ON THE PANEL.
6. THE EQUIPMENT GROUNDING TERMINAL IS A COPPER GROUND BUS OR STUB BUS BONDED TO THE PANEL ENCLOSURE USING BRAZING OR BOLTING IN SUCH MANNER THAT THE CONDUCTING PATH HAS A RESISTANCE OF ONE OHM OR LESS.
7. THE GROUNDING CONDUCTORS MUST BE CAPABLE OF HANDLING ANTICIPATED GROUND FAULT CURRENTS.
8. THERE SHOULD BE A JUMPER CABLE **(1)** ACROSS THE GROUND BUS FLOOR SILL BETWEEN ANY SHIPPING SPLITS AND SIZED THE SAME AS THE SAFETY GROUND UNLESS OTHERWISE SPECIFIED.
9. THE PROTECTIVE GROUNDING DESCRIBED ABOVE FOR POWER CONVERSION AND CONTROL CABINETS IS ALSO NEEDED FOR MOTORS, TRANSFORMERS AND REACTORS. EACH OF THESE SHOULD HAVE ITS OWN GROUNDING CONDUCTOR GOING DIRECTLY TO THE BUILDING GROUND GRID.

### GROUNDING PROCEDURES NEEDED TO ENSURE ELECTRICAL NOISE IMMUNITY

- THE FOLLOWING PROCEDURES OVER AND ABOVE THOSE DESCRIBED ABOVE FOR PROTECTIVE GROUNDING ARE SOME OF THOSE NEEDED TO MAKE THE INSTALLATION IMMUNE TO ELECTRICAL NOISE.
1. LEVELING BEAMS (STEEL CHANNELS) SHOULD BE EMBEDDED IN THE CONCRETE AT THE TIME THE FOUNDATION IS BEING PREPARED. THESE SHOULD BE CONNECTED TO THE BUILDING GROUND SYSTEM USING A BRAZING OR CAD WELDING PROCESS.
  2. GROUNDING LEVELING BEAMS ARE NOT AN ABSOLUTE NECESSITY FOR SATISFACTORY OPERATION. ON NEW CONSTRUCTION SUCH BEAMS CAN BE PROVIDED WITH LITTLE DIFFICULTY. FOR EXISTING CONSTRUCTION IT USUALLY WILL BE MORE DIFFICULT, IN WHICH CASE THE LEVELING BEAMS MAY BE DISPENSED WITH PROVIDED OTHER GROUNDED STRUCTURES SUCH AS COLUMNS AND FLOOR BEAMS ARE WITHIN 10 FEET OF THE EQUIPMENT.
  3. AFTER SETTING THE CONTROL PANELS IN PLACE, THE PERIPHERY OF THE CONTROL PANELS SHOULD BE SPOT WELDED TO THE STEEL CHANNELS APPROXIMATELY EVERY 18 INCHES. THIS CREATES A VERY GOOD HIGH FREQUENCY GROUND PLANE. CARE SHOULD BE TAKEN TO AVOID ELECTRONIC COMPONENT DAMAGE DURING THE WELDING PROCESS BY KEEPING THE WELDED RETURN PATH AS CLOSE AS POSSIBLE TO THE WORK POSITION. THAT IS, THE RETURN PATH SHOULD ALWAYS BE WITHIN 3 FEET OF THE ELECTRODE.
  4. IF LEVELING BEAMS ARE NOT INSTALLED, A NUMBER OF GROUNDING CABLES **(SHOULD)** BE RUN FROM THE GROUND LUGS PROVIDED ON THE PANEL TO THE NEAREST GROUNDED COLUMN OR FLOOR BEAM. THIS WILL PROVIDE THE NECESSARY HIGH FREQUENCY GROUND PLANE.

### INTERNAL COMMON SIGNAL COMMON GROUNDING

5. THE ELECTRONIC CONTROL COMMON SIGNAL MUST BE GROUNDED AT ONE POINT ONLY FOLLOWING THE METHOD OUTLINED IN 6.
6. AN INSULATED GROUND CABLE **(9B)** 1/0, CAN BE RUN BETWEEN COMTB AND A SELECTED CONTROL COMMON GROUND TAP **(9)** AT A BUILDING STRUCTURE SUCH AS A COLUMN, WHERE THE COMMON BUILDING GROUND CABLE IS ACTUALLY BRAZED OR CAD WELDED TO THE COLUMN. THIS CABLE IS TO BE AS SHORT AS POSSIBLE AND SHOULD BE SEPARATE FROM ANY PROTECTIVE GROUND CABLES.
7. SOLIDLY BOLTED CONNECTIONS AT THE EQUIPMENT ARE DESIRABLE FOR **(9A)** THAT THE CONNECTION CAN BE REMOVED TO ALLOW ANY SERIOUS GROUNDS WHICH MAY OCCUR LATER TO BE TRACKED DOWN AND CLEARED.
8. AN 1/0 JUMPER **(9C)** SHOULD BE INSTALLED TO CONNECT COMTB ACROSS SHIPPING SPLITS.



# DRAWING SYMBOLS

## MASTER AND SELECTOR SWITCHES

VARIATIONS OF THIS SYMBOL ARE USED FOR SWITCHES WITH MORE OR FEWER CONTACTS AND POSITIONS. DOUBLE NUMBERS AT A CONTACT SYMBOL INDICATE TWO CONTACTS IN SERIES (DOUBLE BREAK).

TO INTERPRET THIS SYMBOL, CONSIDER THE OPERATING HANDLE TO BE IN POSITION REV.2. WHEN THIS CONDITION EXISTS, CONTACT 3 IS CLOSED AND CONTACTS 1,2 & 4 ARE OPEN.

AN INDIVIDUAL CONTACT MAY BE SHOWN DISASSOCIATED FROM THE OTHERS IN DIFFERENT AREAS OF THE DIAGRAM. IN THIS CASE A CONTACT SEQUENCE TABLE IS SHOWN ELSEWHERE.

CONTACT	POSITION	
	REV	FOR
2,1		
3	X	X
4		X X

X = CLOSED

CIRCUIT BREAKER	LINE SWITCH	FUSED SWITCH	AMMETER	VOLTMETER	METER & SHUNT	HORN, SIREN	RECTIFIER HALF WAVE	SCR	ZENER DIODE

POTENTIAL	AUTO	CURRENT	SERIES	SATURABLE	RESISTORS		POTENTIOMETER	BATTERY	LAMP
					FIXED	ADJUSTABLE			

FAN	TERMINAL JUMPER	PLUG WITH SCREW TERMINATION	PLUG TERMINATION	SOFTWARE PROGRAMMABLE	PL PIN NUMBER	TEST POINT

INTERLOCKS				TIMER INTERLOCKS				FLOAT SWITCHES		PUSHBUTTONS	
NORM OPEN	NORM CLOSED	NORM OPEN W/BLOWOUT	NORM CLO W/BLOWOUT	ENERGIZED		DE-ENERGIZED		NORM OPEN	NORM CLO	NORM OPEN	NORM CLO
				NORM CLO W/BLOWOUT	NORM CLO W/BLOWOUT	NORM CLO W/BLOWOUT	NORM CLO W/BLOWOUT				

LIMIT SWITCHES				FLOW SWITCHES		PRESSURE SWITCHES		TEMP ACTUATED		CAPACITOR	CENTRIFUGAL SPEED SW
NORMALLY OPEN	NORMALLY CLOSED	NORM OPEN HELD CLOSED	NORM CLO HELD OPEN	NORM OPEN	NORM CLO	NORM OPEN	NORM CLO	NORM OPEN	NORM CLO		

FUSE	COIL SUPPRESSION		COILS			THERMOCOUPLE		RTD		MOV
	DC	AC	SHUNT	THERMAL	BREAKER	NON-GND	GROUND	3-WIRE	2-WIRE	

CONNECT WIRES	CROSSING WIRES	TERMINALS	COMM. CONN.	CHASSIS/FRAME CONN	TWISTED WIRE	SHIELDED CABLE	TWISTED SHIELDED	EARTH GROUND	WIRE TRUNKING	CONNECTOR	FESTOON CABLE

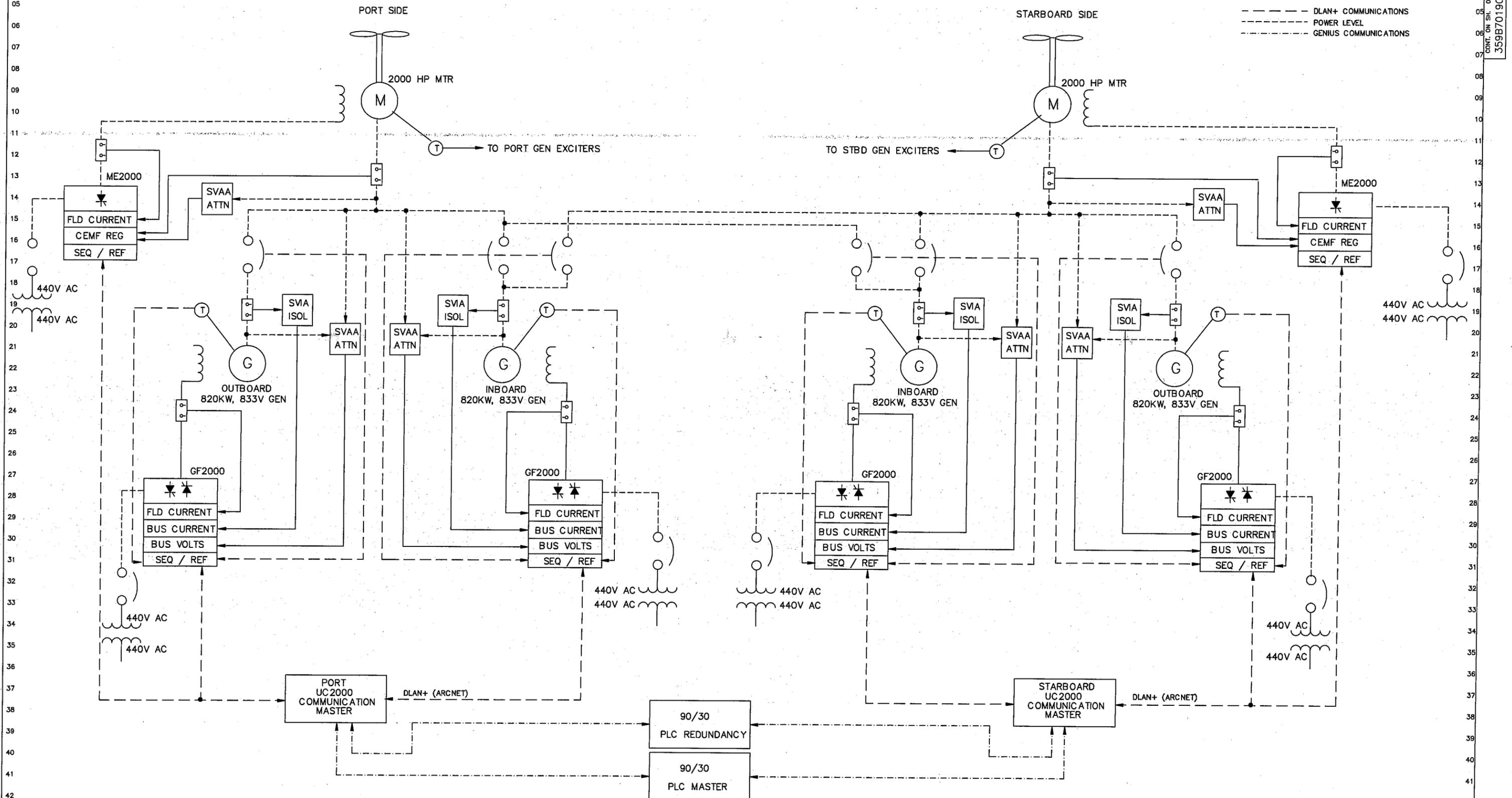
HARNESS WIRING	COAXIAL CABLE	FIBER OPTIC

CCSG GRIFFON  
PROPULSION CONTROL SYSTEM

NOTE: BACKUP EQUIPMENT NOT SHOWN

- (T) = TACHOMETER
- (M) = MOTOR
- (OS) = OVERSPEED DEVICE

- DLAN+ COMMUNICATIONS
- POWER LEVEL
- GENIUS COMMUNICATIONS



REVISION NO. 3	REVISION DATE Nov 7 03	REVISED BY PS	ENGINEERING D.WALLACE	TECHNICIAN	DRAWN BY D. WALLACE	ISSUE DATE 11/25/2002	REQUISITION 84702084	SHOP ORDER ZTG038	GENERAL ELECTRIC - DRIVES APPLICATION CENTER	ELEMENTARY DIAGRAM CANADIAN COAST GUARD SYSTEM ONE-LINE DIAGRAM	359B7019CA	SH. NO. OC
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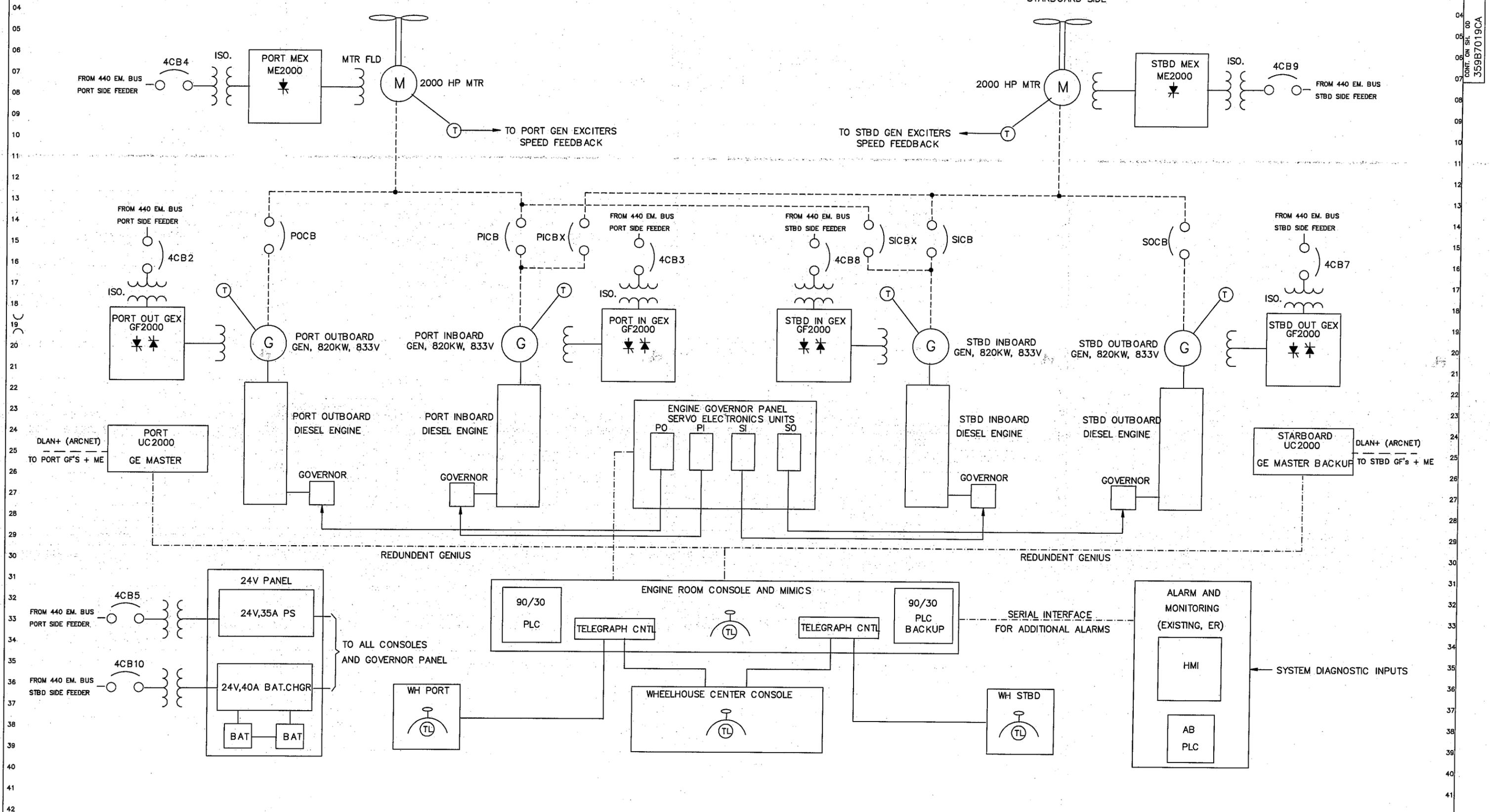
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CONT. ON SH. 01  
359B7019CA

CONT. ON SH. 0C1

# CCSG GRIFFON PROPULSION CONTROL SYSTEM BLOCK DIAGRAM

NOTE: BACKUP EQUIPMENT NOT SHOWN

- - - - - DLAN+ COMMUNICATIONS  
 - - - - - POWER LEVEL  
 - - - - - GENIUS COMMUNICATIONS  
 (T) = TACHOMETER  
 (M) = MOTOR  
 (TL) TELEGRAPH



REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	DRAWN BY	ISSUE DATE	REQUISITION	SHOP ORDER	GENERAL ELECTRIC - DRIVES APPLICATION CENTER	ELEMENTARY DIAGRAM CANADIAN COAST GUARD SYSTEM BLOCK DIAGRAM	359B7019CA	SH. NO.
1	Nov 7 03	PS	P.SCHULTZ		P.SCHULTZ	Nov 3 03	84702084	ZTG038			CONT. ON SH. OD	OC1

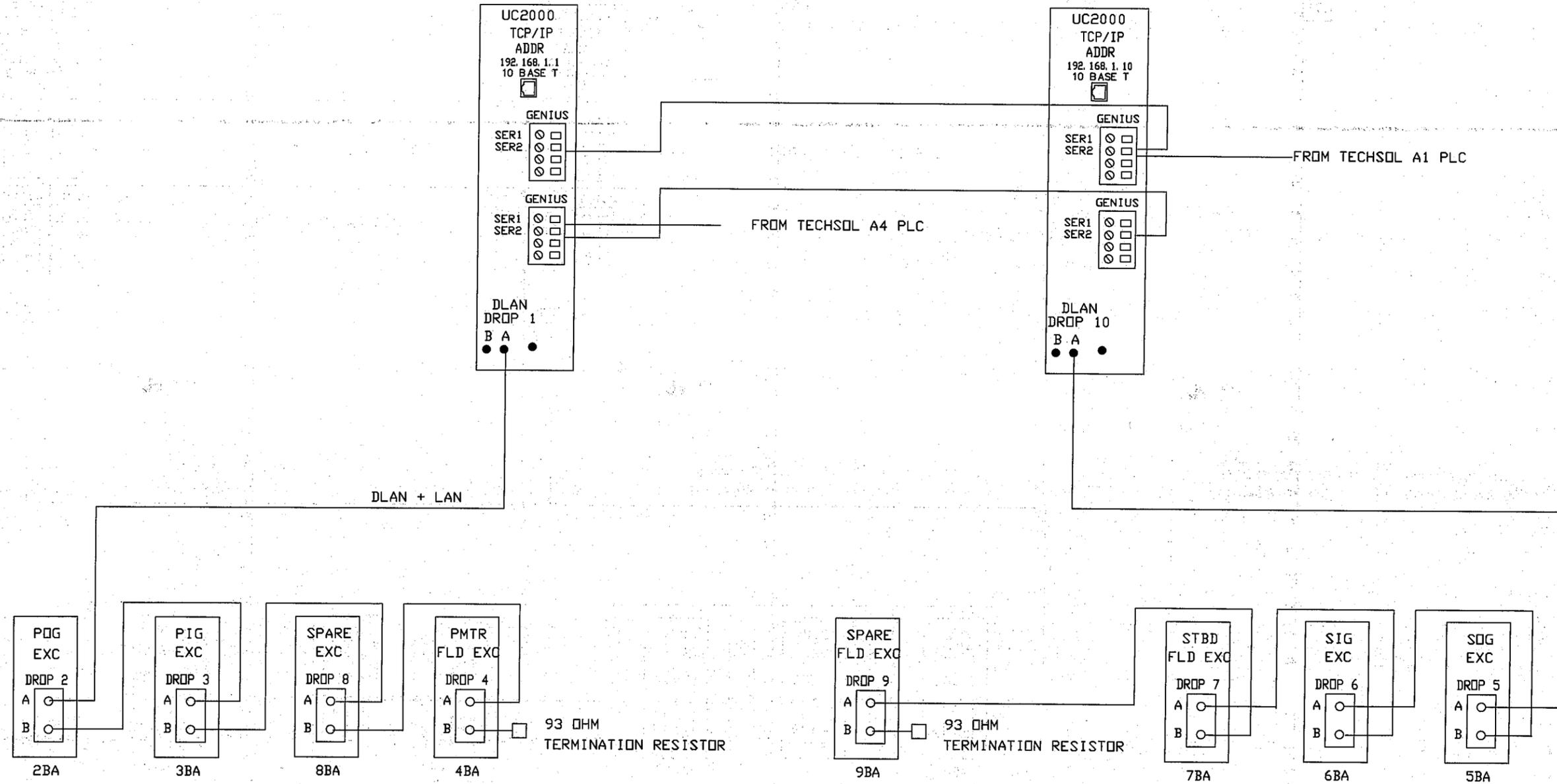
CONT. ON SH. OD 359B7019CA

SH. NO. OC

# GRIFFON - PROPULSION CONTROL SYSTEM LAN TOPOLOGY

PORT SIDE  
DRIVE COMMUNICATION MASTER

STARBOARD SIDE  
DRIVE COMMUNICATION MASTER

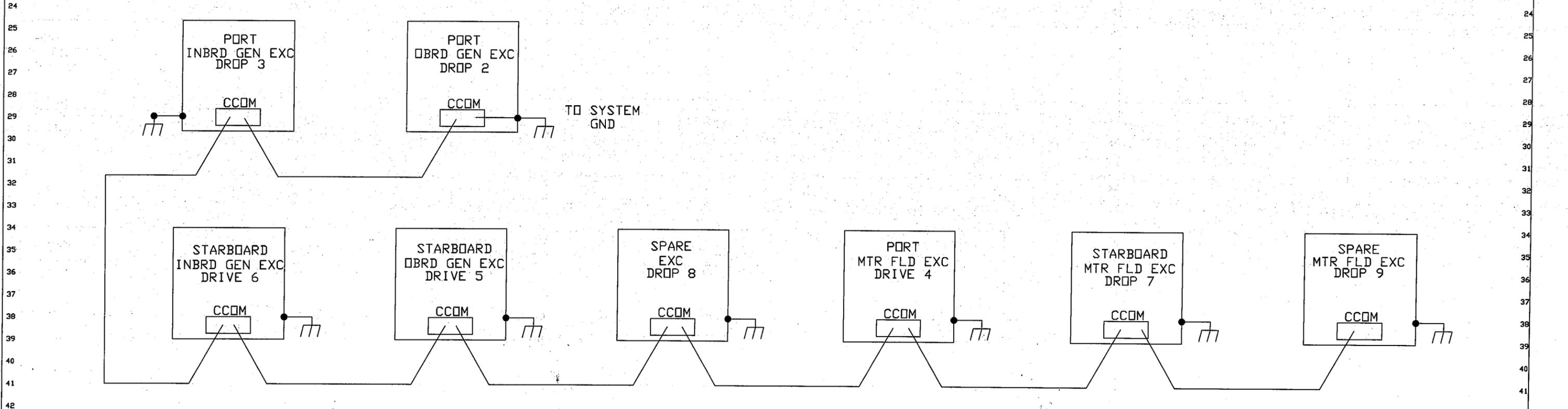
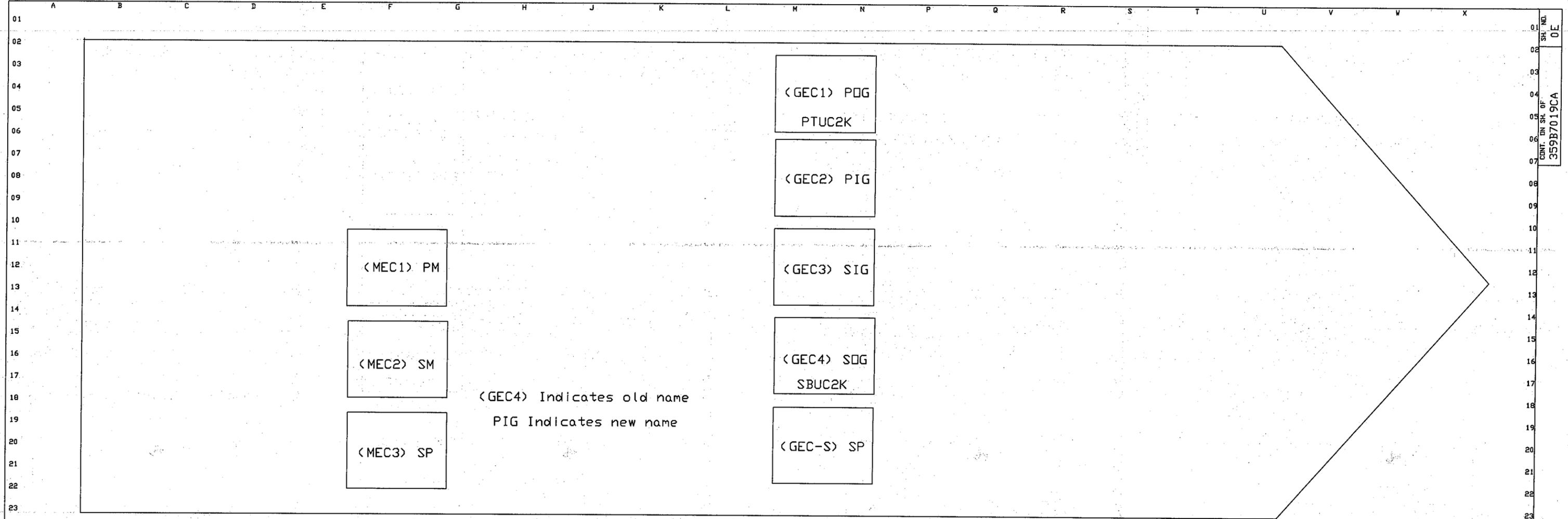


REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	ISSUE DATE	SHOP ORDER	REQUISITION	GENERAL ELECTRIC - ENGINEERING SERVICES	ELEMENTARY DIAGRAM GRIFFON PROPULSION SYSTEM LAN TOPOLOGY	359B7019CA CONT. ON SH. 0E	SH. NO. 00
4	Nov 20 03	PS	D. WALLACE	D. WALLACE	12/9/02	ZTG038	84702084				

LAN TOPOLOGY

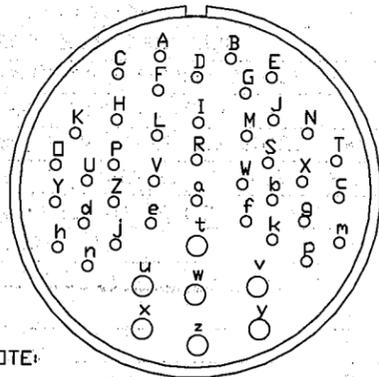
LAN TOPOLOGY

SH. NO.  
00  
 359B7019CA  
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REVISION NO. 2	REVISION DATE Nov 7 03	REVISED BY PS	ENGINEERING D. WALLACE	TECHNICIAN D. WALLACE	ISSUE DATE 12/9/02	SHOP ORDER ZTG038	REQUISITION 84702084	GENERAL ELECTRIC - ENGINEERING SERVICES			ELEMENTARY DIAGRAM GRIFFON PROPULSION SYSTEM CCOM CONNECTIONS			359B7019CA CONT. ON SH. OF	SH. NO. 0E
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AMPHENOL CONNECTOR 7#12's 40 #16's  
 SOCKET AC02A36-7S  
 PLUG AC06F36-7P  
 RATING: 700VDC, 23A, 500VAC

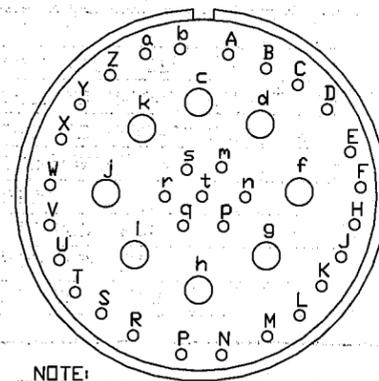


NOTE:  
 1) \* = NEW SIGNAL

GENERATOR EXCITER PLUG CONNECTORS

PIN	ASSIGNMENT
A	GENERATOR CURRENT FDBK + *
B	GENERATOR CURRENT FDBK - *
C	GEN CURRENT REF FROM OTHER GEN+ *
D	GENERATOR CURRENT FDBK SIGNAL SHIELD *
E	GEN CURRENT REF TO OTHER GEN + *
F	GEN CURRENT REF FROM OTHER GEN SHIELD *
G	GEN CURRENT REF TO OTHER GEN SHIELD *
H	GEN CURRENT REF FROM OTHER GEN - *
I	ALT DC BRKR CLOSE CMD
J	GEN CURRENT REF TO OTHER GEN - *
K	SPARE #16 1
L	SPARE #16 2
M	SPARE #16 3
N	24 VDC TO CURRENT ISOLATOR SHIELD *
O	GENERATOR TACHOMETER FDBK +
P	GENERATOR TACHOMETER FDBK -
R	MAIN DC BRKR CNTL PWR
S	ALT DC BRKR TRIP CMD
T	24 VDC TO CURRENT ISOLATOR COM *
U	EXC TIED TO AN INBOARD GEN
V	SPARE 1 PAIR SHIELDED BLK
W	GF2000 115VAC I/O POWER *
X	24 VDC TO CURRENT ISOLATOR + *
Y	MOTOR TACHOMETER FDBK + *
Z	MOTOR TACHOMETER FDBK - *
a	MAIN DC BRKR CLOSE CMD
b	MAIN DC BRKR TRIP CMD
c	MOTOR VOLTAGE FDBK +
d	MTR FIELD EXC NO TRIP FAULT CONTACT PT 2
e	SPARE 1 PAIR SHIELDED WHT
f	EXC CONNECTED TO PORT SIDE GEN
g	ALT DC BRKR CNTL PWR
h	GENERATOR VOLTAGE FDBK +
J	SPARE 1 PAIR SHIELDED GND
k	SPARE #16 4
m	MOTOR VOLTAGE FDBK -
n	GENERATOR VOLTAGE FDBK -
P	ALTERNATE CIRCUIT BRKR IS CLOSED *
r	GENERATOR CIRCUIT BRKR IS CLOSED *
s	CURRENT ISOLATOR STATUS FDBK *
t	
u	GENERATOR SHUNT FIELD CONNECTION F1
v	GENERATOR SHUNT FIELD CONNECTION F2
w	
x	440VAC POWER PHASE A *
y	440VAC POWER PHASE B
z	440VAC POWER PHASE C

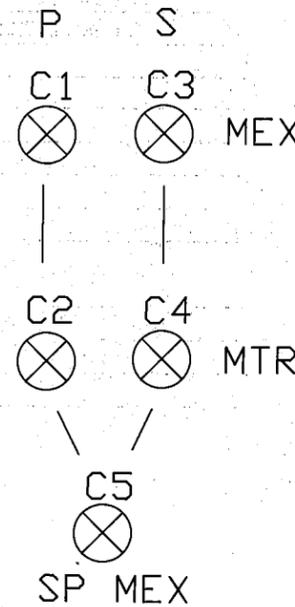
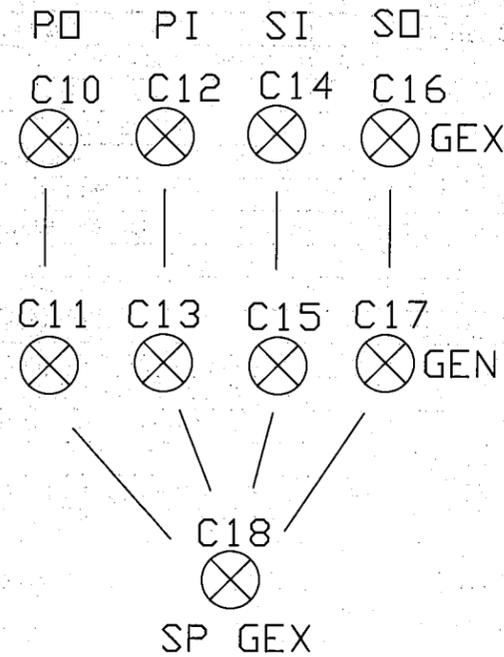
AMPHENOL CONNECTOR 8 #8's 31 #16's  
 SOCKET AC02A36-54S  
 PLUG AC06F36-54P  
 RATING: 700VDC, 46A, 500VAC

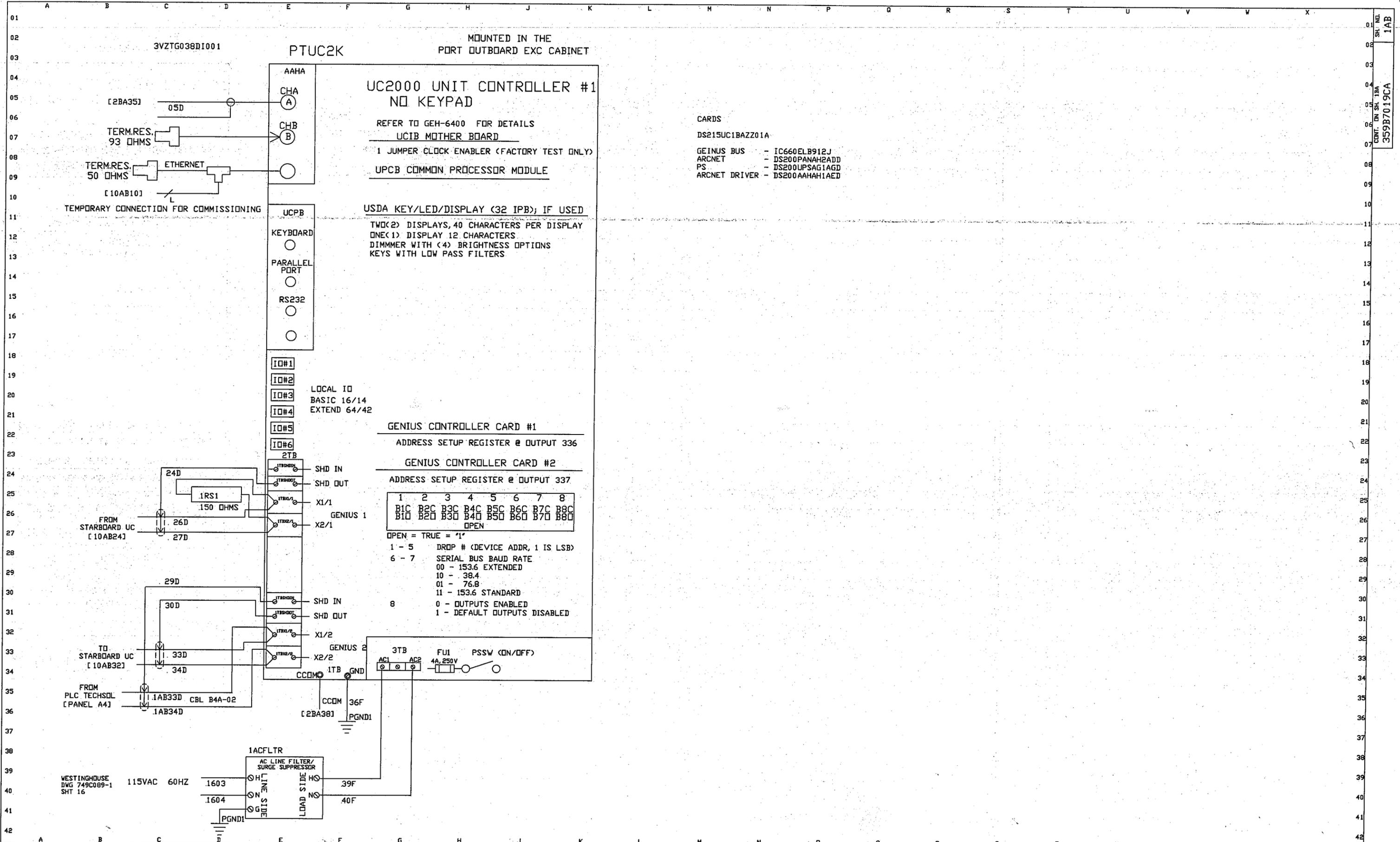


NOTE:  
 1) \* = NEW SIGNAL

MOTOR FIELD EXCITER PLUG CONNECTORS

PIN	ASSIGNMENT
A	SPARE #16 3
B	CURRENT ISOLATOR STATUS FDBK *
C	TRIP FAULT CONTACT TO INBOARD GEN PT 1
D	TRIP FAULT CONTACT TO INBOARD GEN PT 2
E	GF2000 115VAC I/O POWER *
F	TIED TO PORT MOTOR
H	SPARE 1 PAIR SHIELDED BLK
J	SPARE 1 PAIR SHIELDED WHT
K	SPARE 1 PAIR SHIELDED SHLD
L	SPARE #16 4
M	SPARE #16 2
N	MOTOR VOLTAGE FDBK -
P	MOTOR VOLTAGE FDBK +
R	
S	MOTOR CURRENT FDBK SHIELD *
T	MOTOR CURRENT FDBK - *
U	MOTOR CURRENT FDBK + *
V	24 VDC TO CURRENT ISOLATOR SHIELD *
W	24 VDC TO CURRENT ISOLATOR - *
X	24 VDC TO CURRENT ISOLATOR CCOM *
Y	24 VDC TO CURRENT ISOLATOR + *
Z	TRIP FAULT CONTACT TO OUTBOARD GEN PT 1
a	TRIP FAULT CONTACT TO OUTBOARD GEN PT 2
b	SPARE #16 1
c	440VAC POWER PHASE B
d	440VAC POWER PHASE C
f	MOTOR SHUNT FIELD CONNECTION F1
g	MOTOR SHUNT FIELD CONNECTION F2
h	
i	
j	
k	440VAC POWER PHASE A *
m	
n	
p	
q	MOTOR GROUND FAULT SIGNAL SHIELD
r	MOTOR GROUND FAULT SIGNAL
s	
t	





**UC2000 UNIT CONTROLLER #1  
NO KEYPAD**

REFER TO GEH-6400 FOR DETAILS  
UCIB MOTHER BOARD  
1 JUMPER CLOCK ENABLER (FACTORY TEST ONLY)  
UPGB COMMON PROCESSOR MODULE

USDA KEY/LED/DISPLAY (32 IPB); IF USED  
TWO(2) DISPLAYS, 40 CHARACTERS PER DISPLAY  
ONE(1) DISPLAY 12 CHARACTERS  
DIMMER WITH (4) BRIGHTNESS OPTIONS  
KEYS WITH LOW PASS FILTERS

**GENIUS CONTROLLER CARD #1**  
ADDRESS SETUP REGISTER @ OUTPUT 336

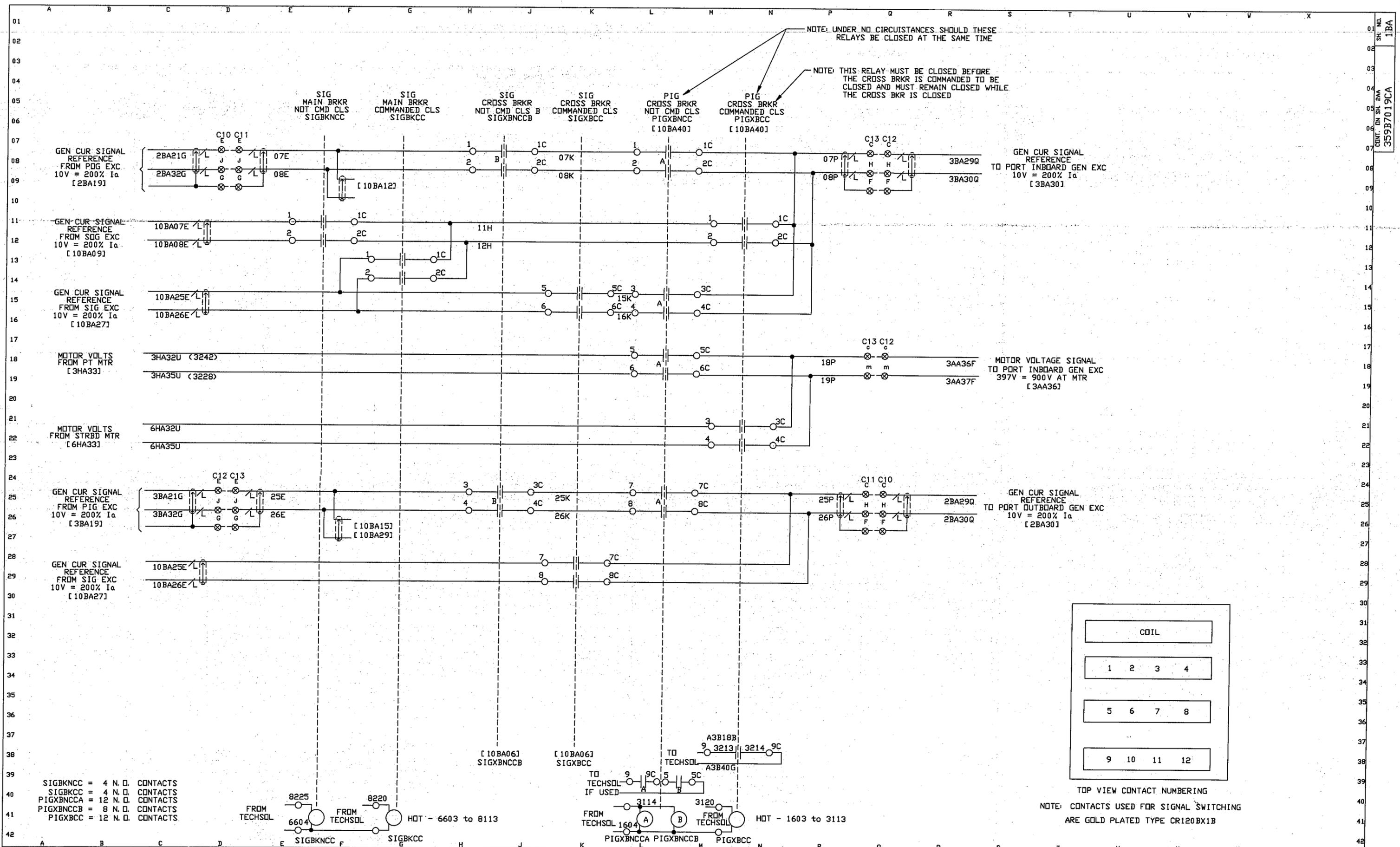
**GENIUS CONTROLLER CARD #2**  
ADDRESS SETUP REGISTER @ OUTPUT 337

1	2	3	4	5	6	7	8
B1C	B2C	B3C	B4C	B5C	B6C	B7C	B8C
B1D	B2D	B3D	B4D	B5D	B6D	B7D	B8D
OPEN							

OPEN = TRUE = '1'  
1 - 5 DROP # (DEVICE ADDR, 1 IS LSB)  
6 - 7 SERIAL BUS BAUD RATE  
00 - 153.6 EXTENDED  
10 - 38.4  
01 - 76.8  
11 - 153.6 STANDARD  
8 0 - OUTPUTS ENABLED  
1 - DEFAULT OUTPUTS DISABLED

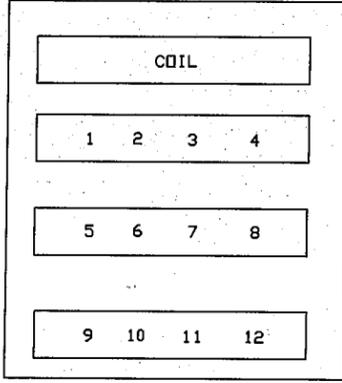
**CARDS**

- DS215UC1BAZZ01A
- GEINUS BUS - IC660ELB912J
- ARCNET - DS200PANAH2ADD
- PS - DS200UPSAG1AGD
- ARCNET DRIVER - DS200AAHAH1AED



SIGBKNC = 4 N.O. CONTACTS  
 SIGBKCC = 4 N.O. CONTACTS  
 PIGXBCCA = 12 N.O. CONTACTS  
 PIGXBCCB = 8 N.O. CONTACTS  
 PIGXBCC = 12 N.O. CONTACTS

REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	ISSUE DATE	SHOP ORDER	REQUISITION	GENERAL ELECTRIC - ENGINEERING SERVICES		ELEMENTARY DIAGRAM	359B7019CA	SH. NO.
3	Nov 7 03	PS	D WALLACE	D WALLACE	07/07/03	ZTG038	84702084			GRIFTON PORT SIDE	CONT. ON SH. 2AA	1BA

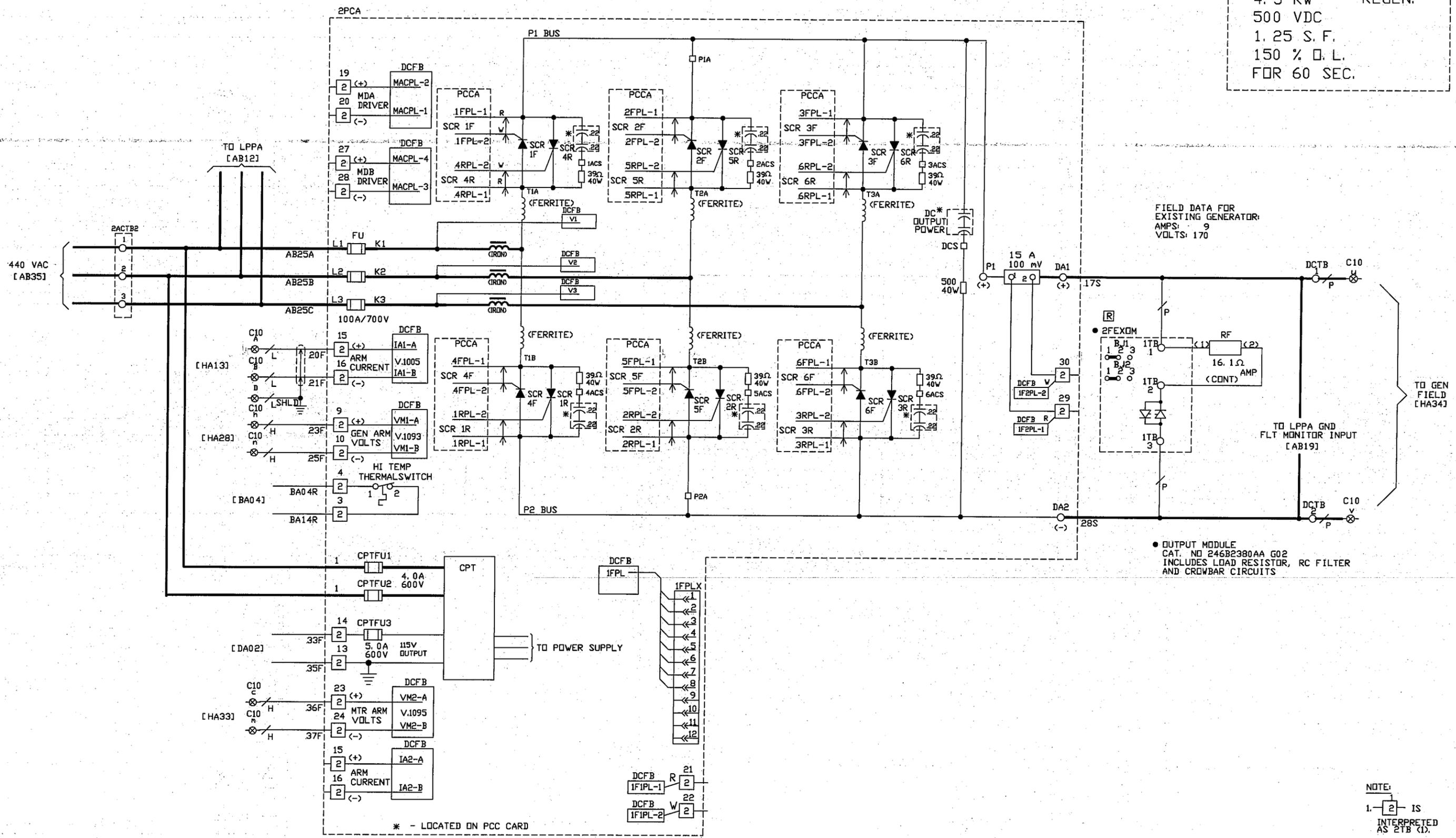


TOP VIEW CONTACT NUMBERING  
 NOTE: CONTACTS USED FOR SIGNAL SWITCHING  
 ARE GOLD PLATED TYPE CR120BX1B

SH. NO. 1BA  
 CONT. ON SH. 2AA  
 359B7019CA

MODEL NO. 3VZTG038CD002  
 SEE GEH-6148  
 GF2000 G-FRAME  
 4.5 KW REGEN.  
 500 VDC  
 1.25 S. F.  
 150 % O. L.  
 FOR 60 SEC.

SH. NO. 2AA  
 CONT. ON SH. 2AB  
 359B7019CA

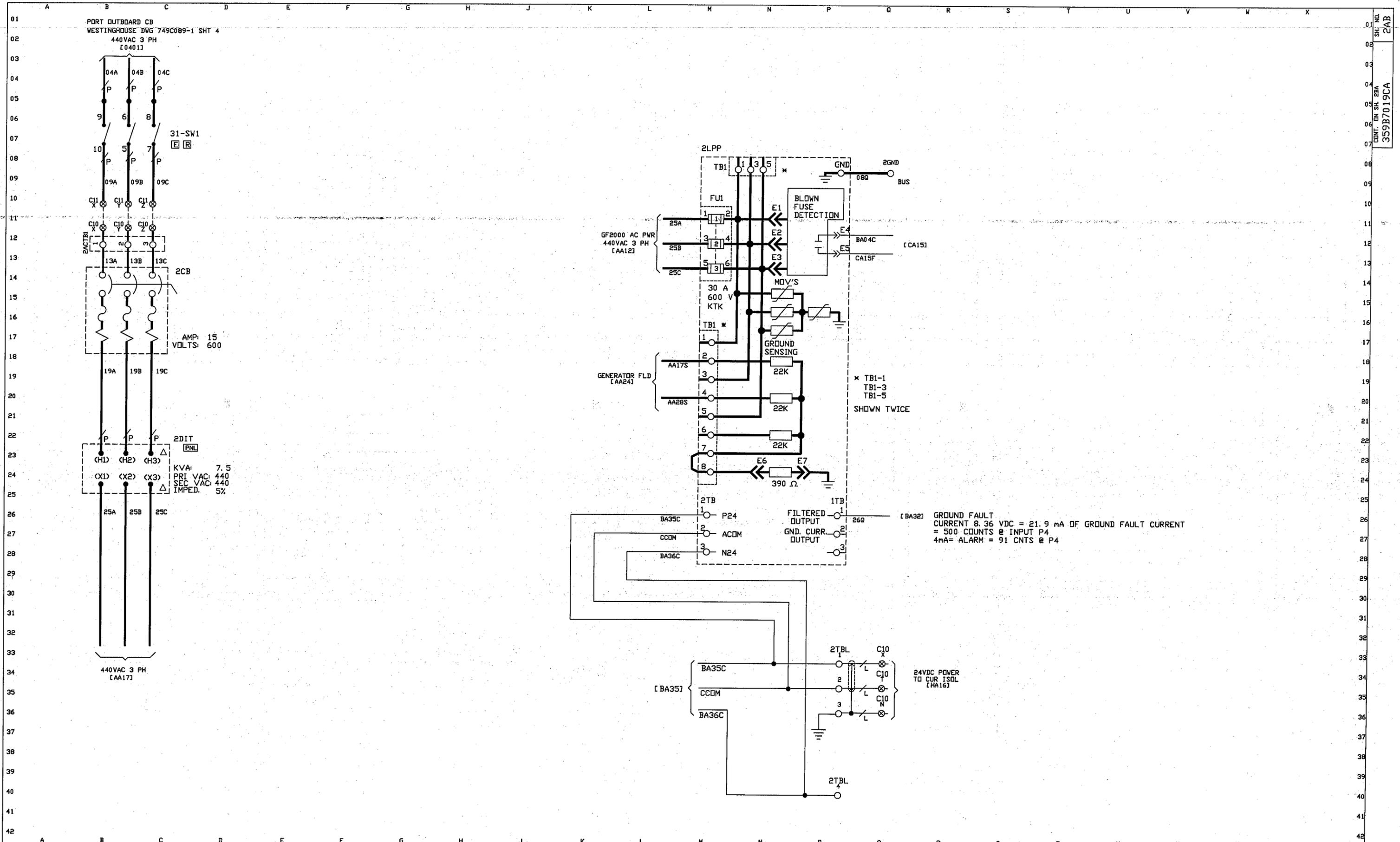


FIELD DATA FOR EXISTING GENERATOR:  
 AMPS: 9  
 VOLTS: 170

• OUTPUT MODULE  
 CAT. NO 246B2380AA G02  
 INCLUDES LOAD RESISTOR, RC FILTER  
 AND CROWBAR CIRCUITS

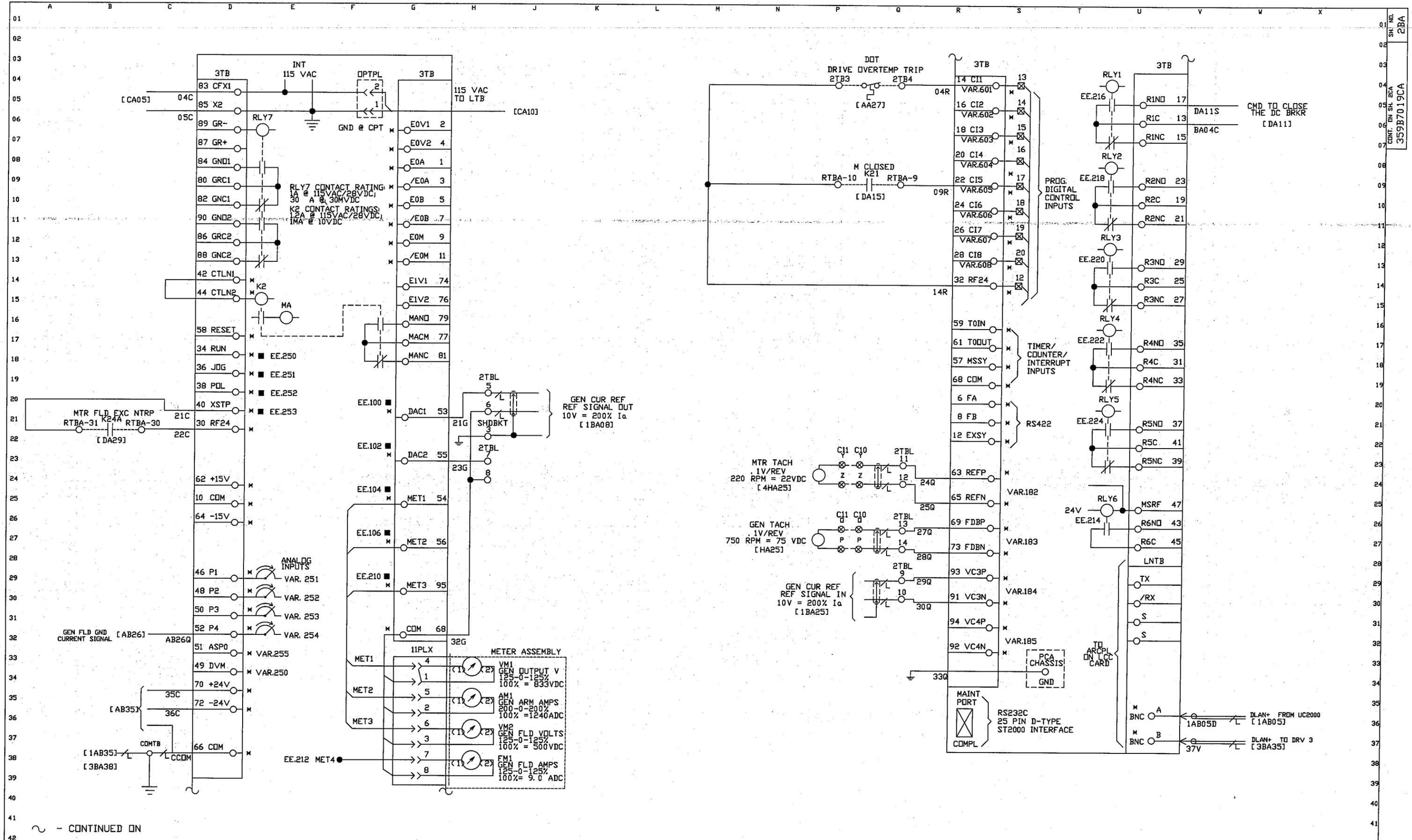
NOTE:  
 1-2 IS  
 INTERPRETED  
 AS 2TB (1).

REVISION NO. 3	REVISION DATE Nov 26 03	REVISED BY PS	ENGINEERING D WALLACE	TECHNICIAN D WALLACE	ISSUE DATE 12/9/02	SHOP ORDER ZTG038	REQUISITION 84702084	GENERAL ELECTRIC - ENGINEERING SERVICES	ELEMENTARY DIAGRAM GRIFFON PORT OUTBOARD GEN EXC CONVERTER	359B7019CA CONT. ON SH. 2AB	SH. NO. 2AA
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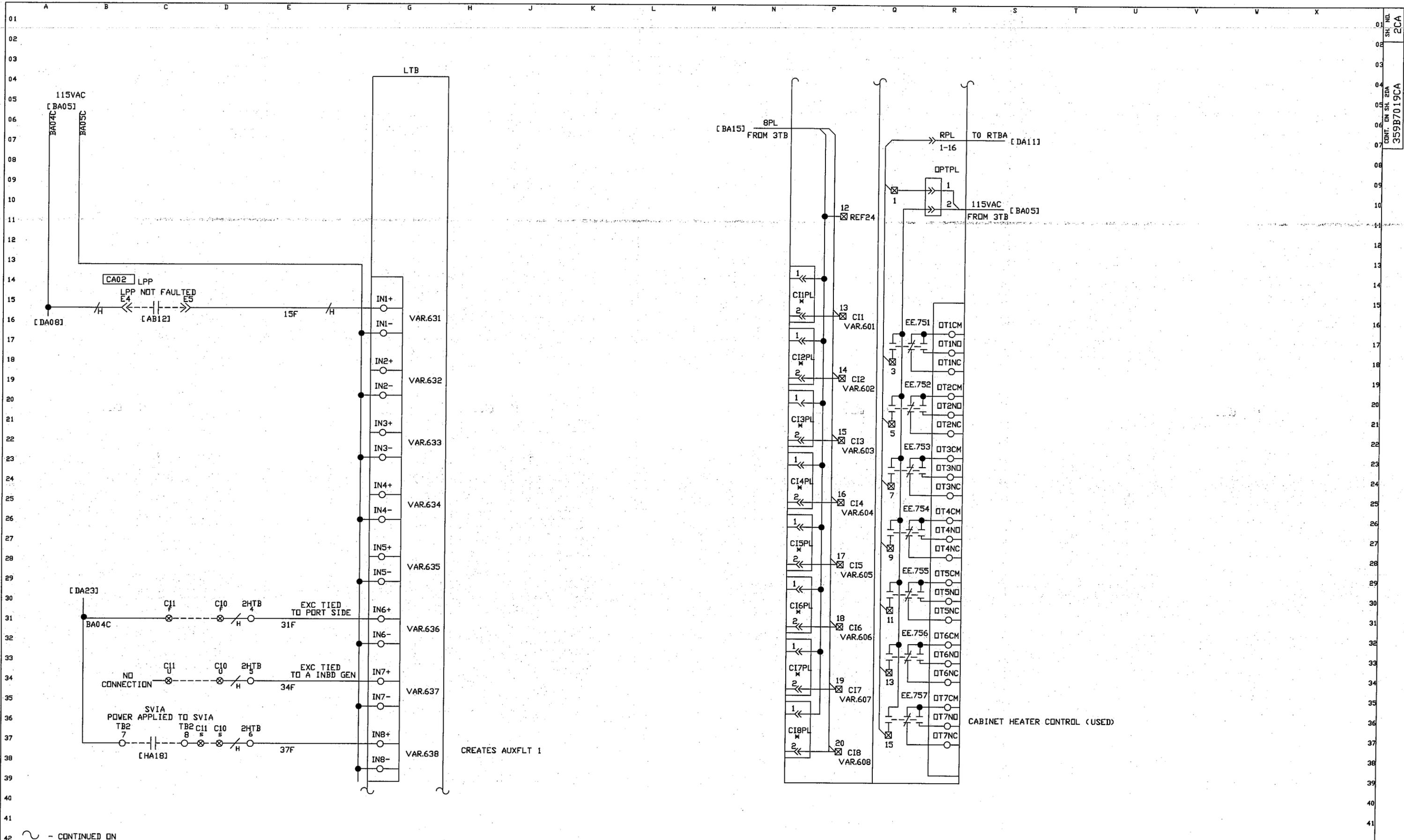
REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	ISSUE DATE	SHOP ORDER	REQUISITION	GENERAL ELECTRIC - ENGINEERING SERVICES	ELEMENTARY DIAGRAM GRIFFON PORT OUTBOARD GEN EXC. LINE FILTER AND GND FLT MONITOR	359B7019CA CONT. ON SH. 2BA	SH. NO. 2AB
3	Sept 25 03	PS	D WALLACE	D WALLACE	12/9/02	ZTG038	84702084				

SH. NO. 2AB  
 CONT. ON SH. 2BA  
 359B7019CA

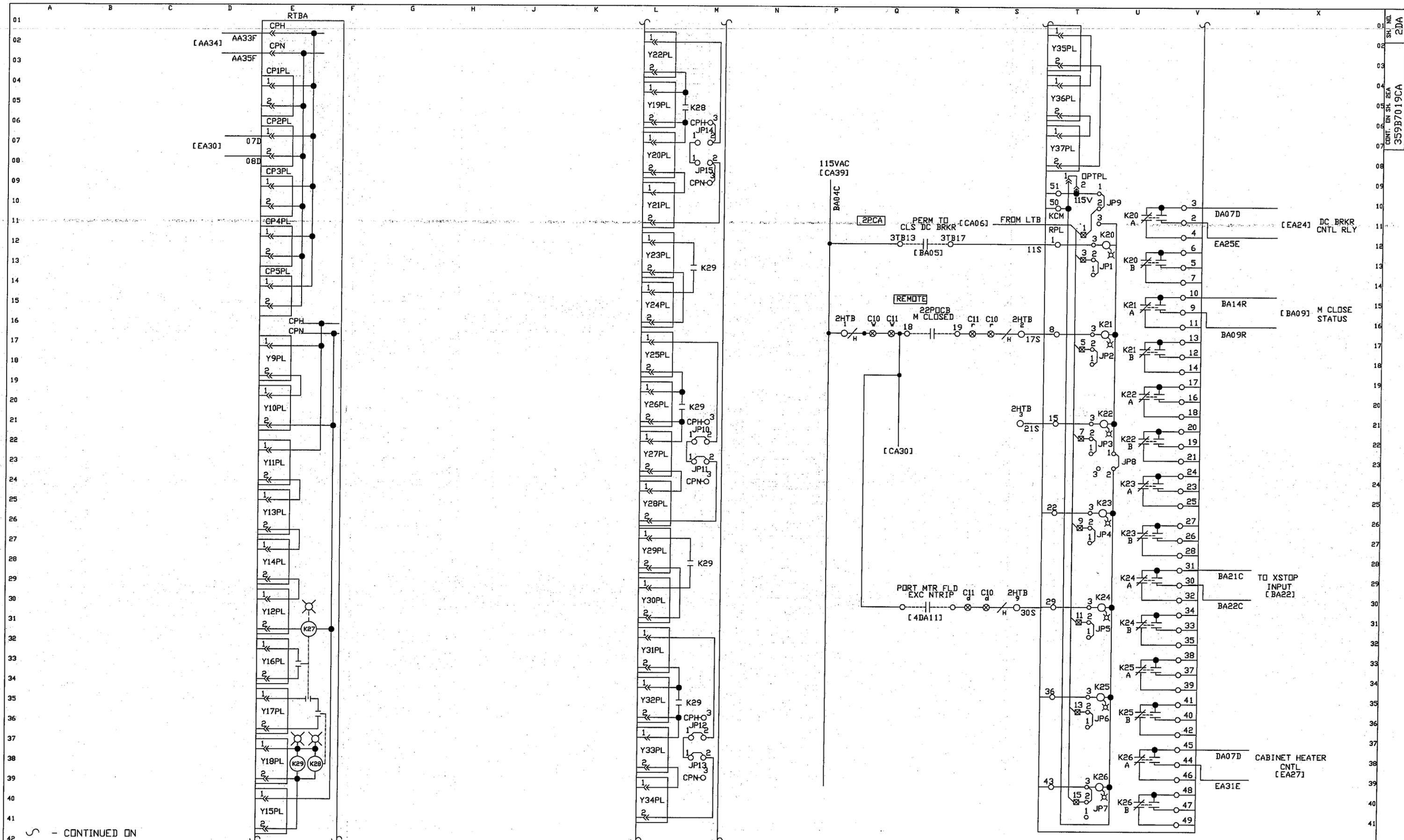


- CONTINUED ON

REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	ISSUE DATE	SHOP ORDER	REQUISITION	GENERAL ELECTRIC - ENGINEERING SERVICES	ELEMENTARY DIAGRAM GRIFFON PORT OUTBOARD GEN EXC CONTROL IFC/3TB RELAYS	359B7019CA CONT. ON SH. 2CA	SH. NO. 2BA
4	Nov 26 03	PS	D WALLACE	D WALLACE	12/09/02	ZTG038	84702084				



REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	ISSUE DATE	SHOP ORDER	REQUISITION	ELEMENTARY DIAGRAM		SH. NDL
2	June 23 03	PS	D WALLACE	D WALLACE	12/12/02	ZTG038	84702084	GRIFFON PORT OUTBOARD GEN EXC GF2000 INPUTS/OUTPUTS (LAN TB)		2CA

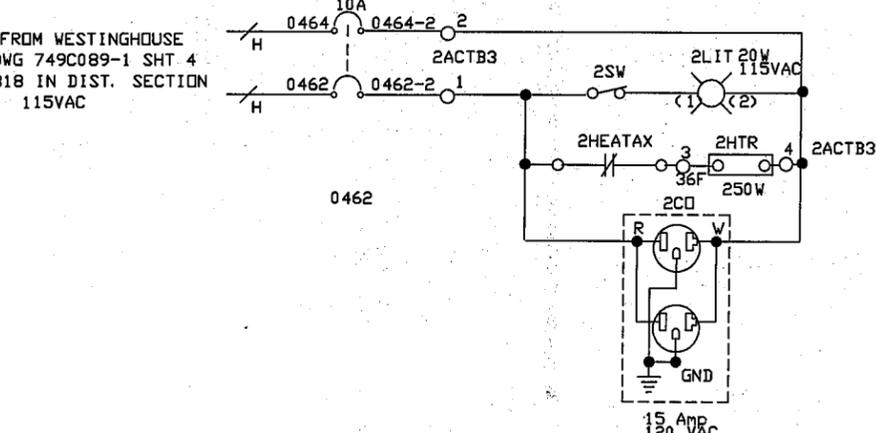
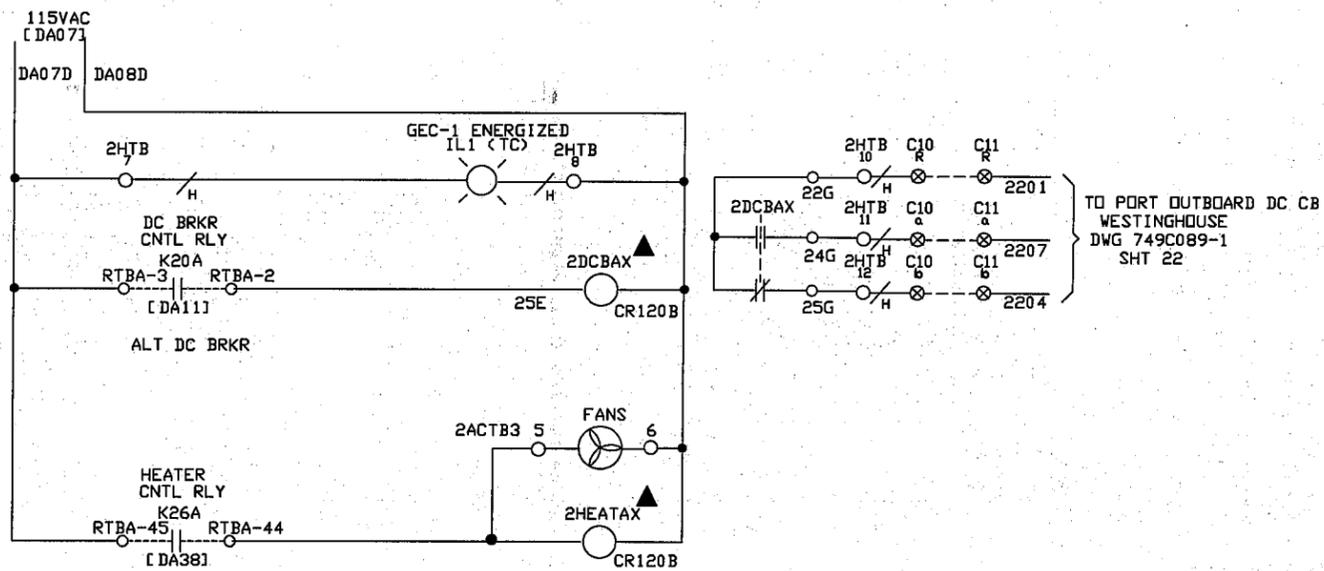


REVISION NO. 2	REVISION DATE Nov 7 03	REVISED BY PS	ENGINEERING D WALLACE	TECHNICIAN D WALLACE	ISSUE DATE 12/12/02	SHOP ORDER ZTG038	REQUISITION 84702084	GENERAL ELECTRIC - ENGINEERING SERVICES	ELEMENTARY DIAGRAM GRIFFON PORT OUTBOARD GEN EXC GF2000 RELAY TB	359B7019CA CONT. ON SH. 2EA	SH. NO. 2DA
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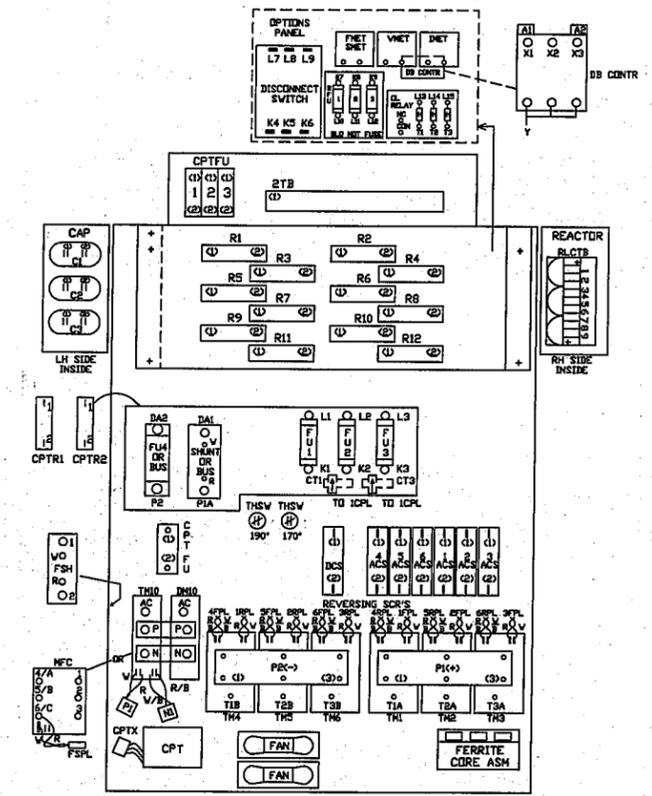
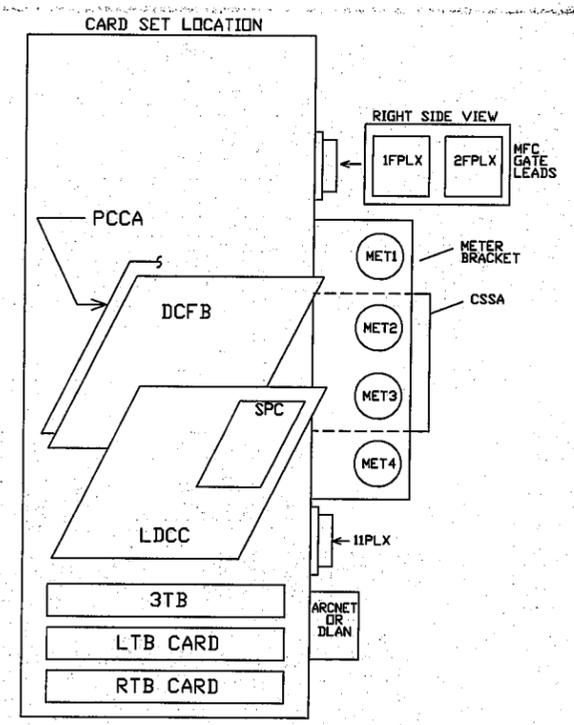
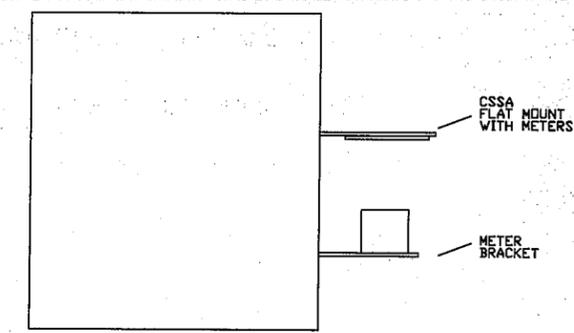
HARDWARE DRAWINGS - G-FRAME DRIVES

GF2000 DIGITAL ADJUSTABLE SPEED DRIVES

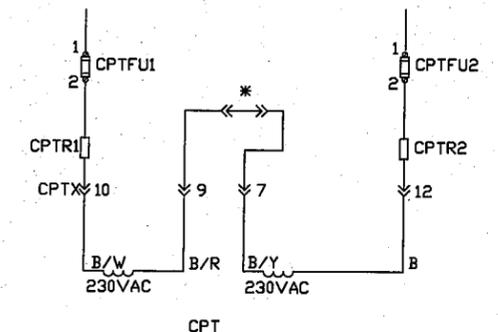
SH. NDL  
2EA  
CONT. ON SH. 2HA  
359B7019CA



TO PORT OUTBOARD DC CB  
WESTINGHOUSE  
DWG 749C089-1  
SHT 22



CPT CONNECTIONS



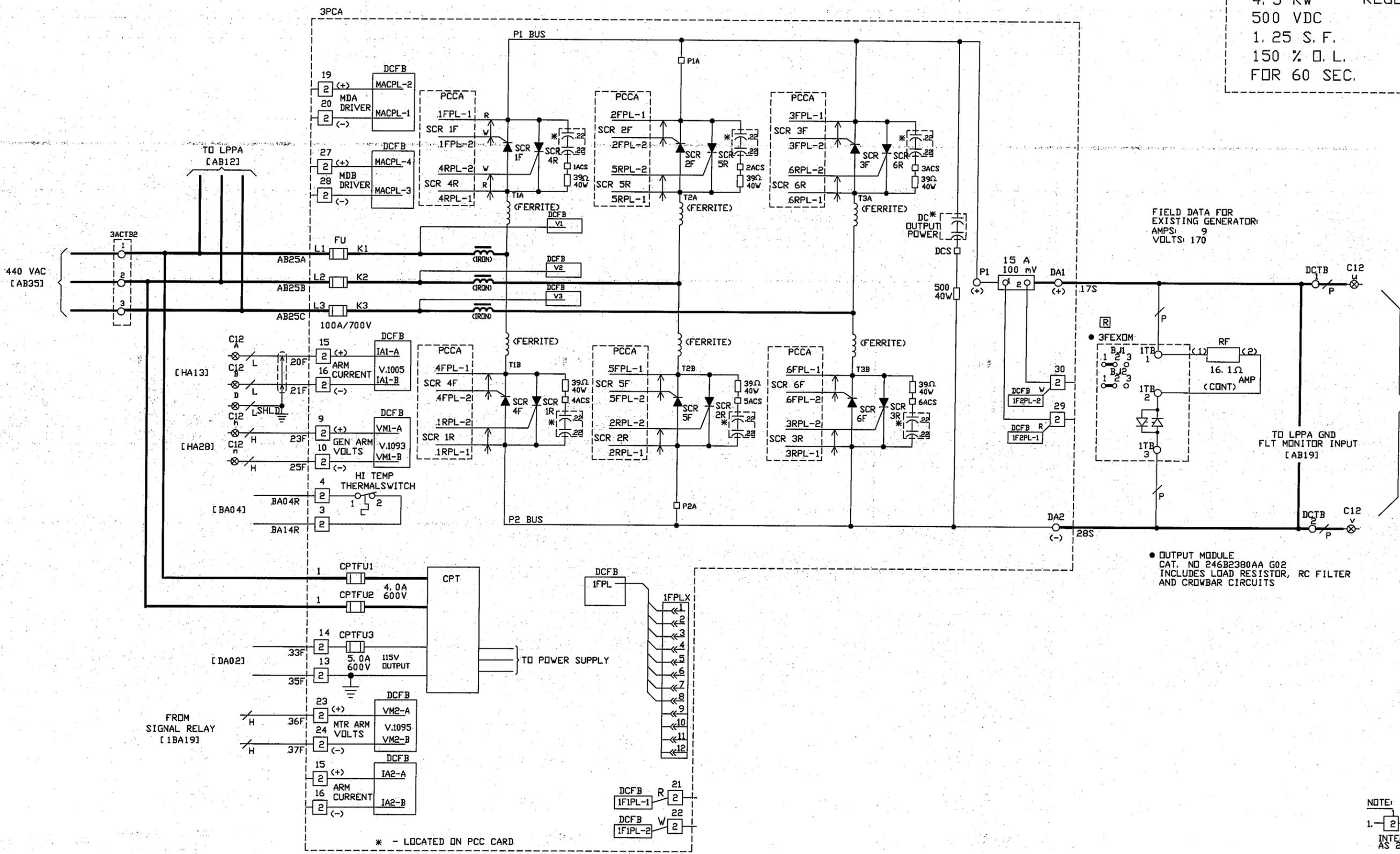
OPTIONAL CPT  
4.6 AMP OUTPUT

	230 VAC	460 VAC	575 VAC
FU1	8A	4A	3.2A
FU2	8A	4A	3.2A
FU3	5A	5A	5A

\* - 460VAC CONNECTIONS SHOWN ABOVE  
- FOR 230VAC - REMOVE CONNECTING JUMPER  
BETWEEN 9-7. CONNECT AS FOLLOWS:  
- 9 TO CPTFU2-2  
- 7 TO CPTFU1-2



MODEL NO. 3VZTG038CD003  
 SEE GEH-6148  
 GF2000 G-FRAME  
 4.5 KW REGEN.  
 500 VDC  
 1.25 S. F.  
 150 % O. L.  
 FOR 60 SEC.

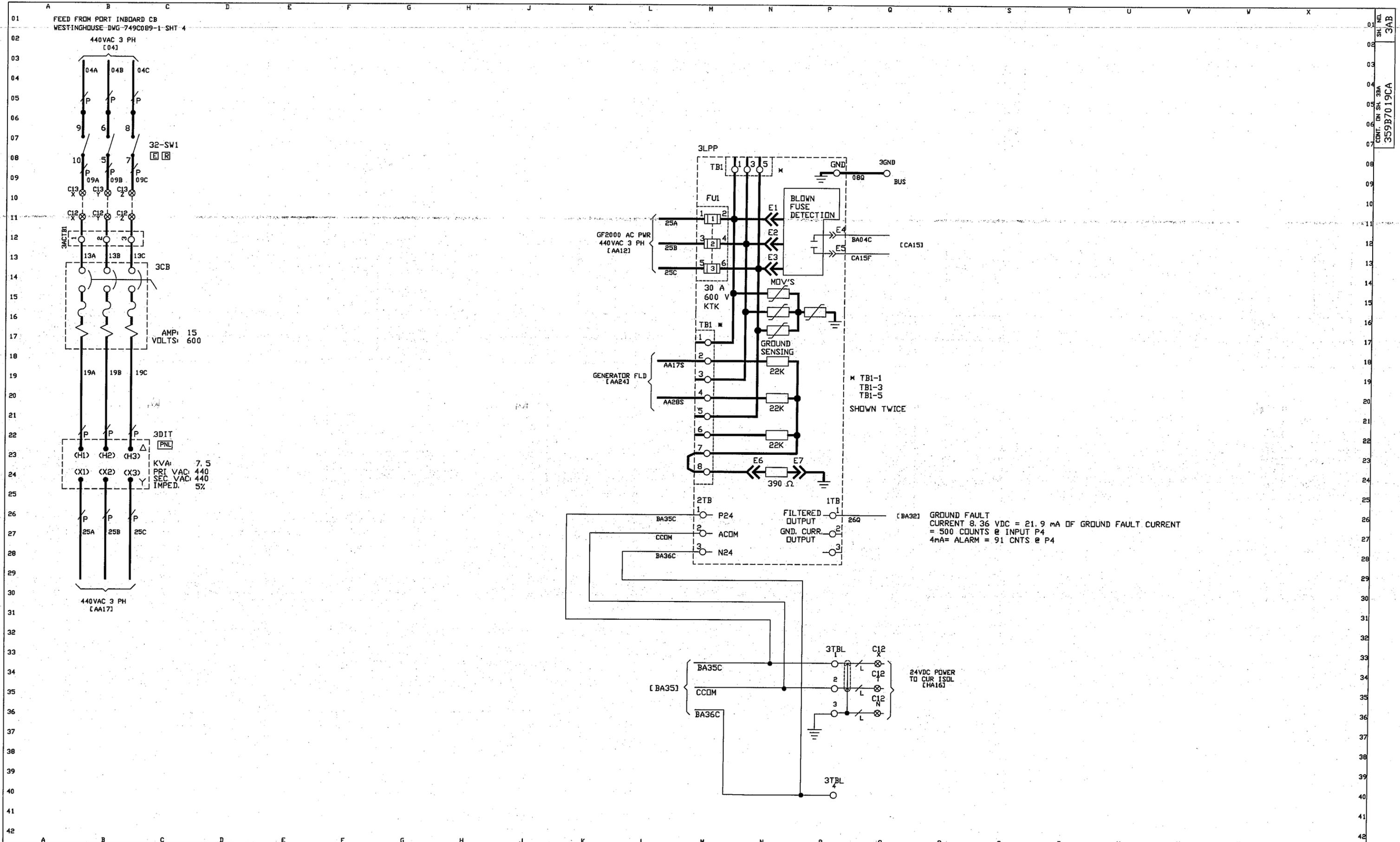


FIELD DATA FOR EXISTING GENERATOR:  
 AMPS: 9  
 VOLTS: 170

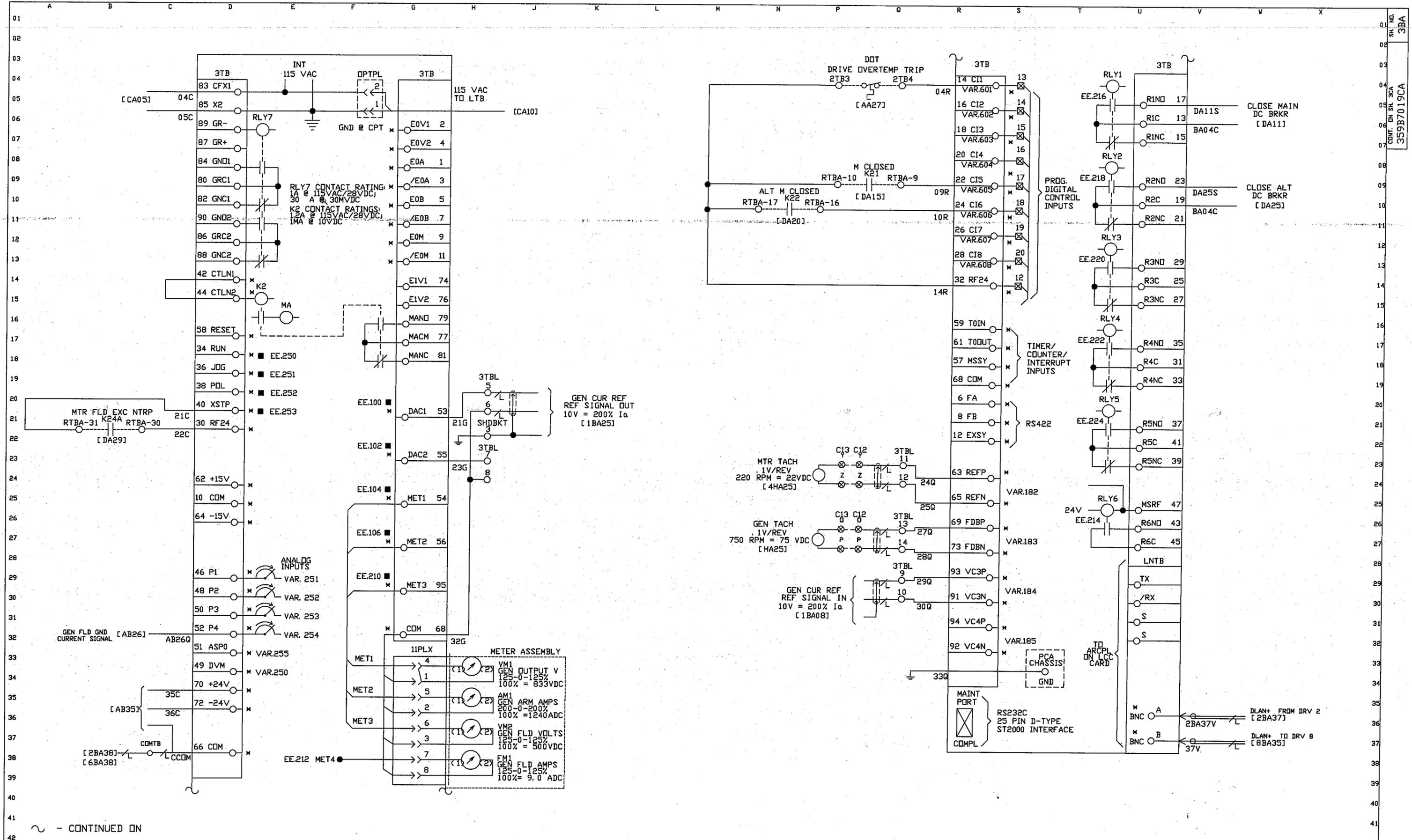
• OUTPUT MODULE  
 CAT. NO 246B2380AA G02  
 INCLUDES LOAD RESISTOR, RC FILTER  
 AND CROWBAR CIRCUITS

NOTE:  
 1-2 IS  
 INTERPRETED  
 AS 2TB (1).

REVISION NO. 2	REVISION DATE Nov 26 03	REVISED BY PS	ENGINEERING D WALLACE	TECHNICIAN D WALLACE	ISSUE DATE 12/9/02	SHOP ORDER ZTG038	REQUISITION 84702084	GENERAL ELECTRIC - ENGINEERING SERVICES	ELEMENTARY DIAGRAM GRIFFON PORT INSIDE GEN EXC CONVERTER	359B7019CA CONT. ON SH. 3AB	SH. NO. 3AA
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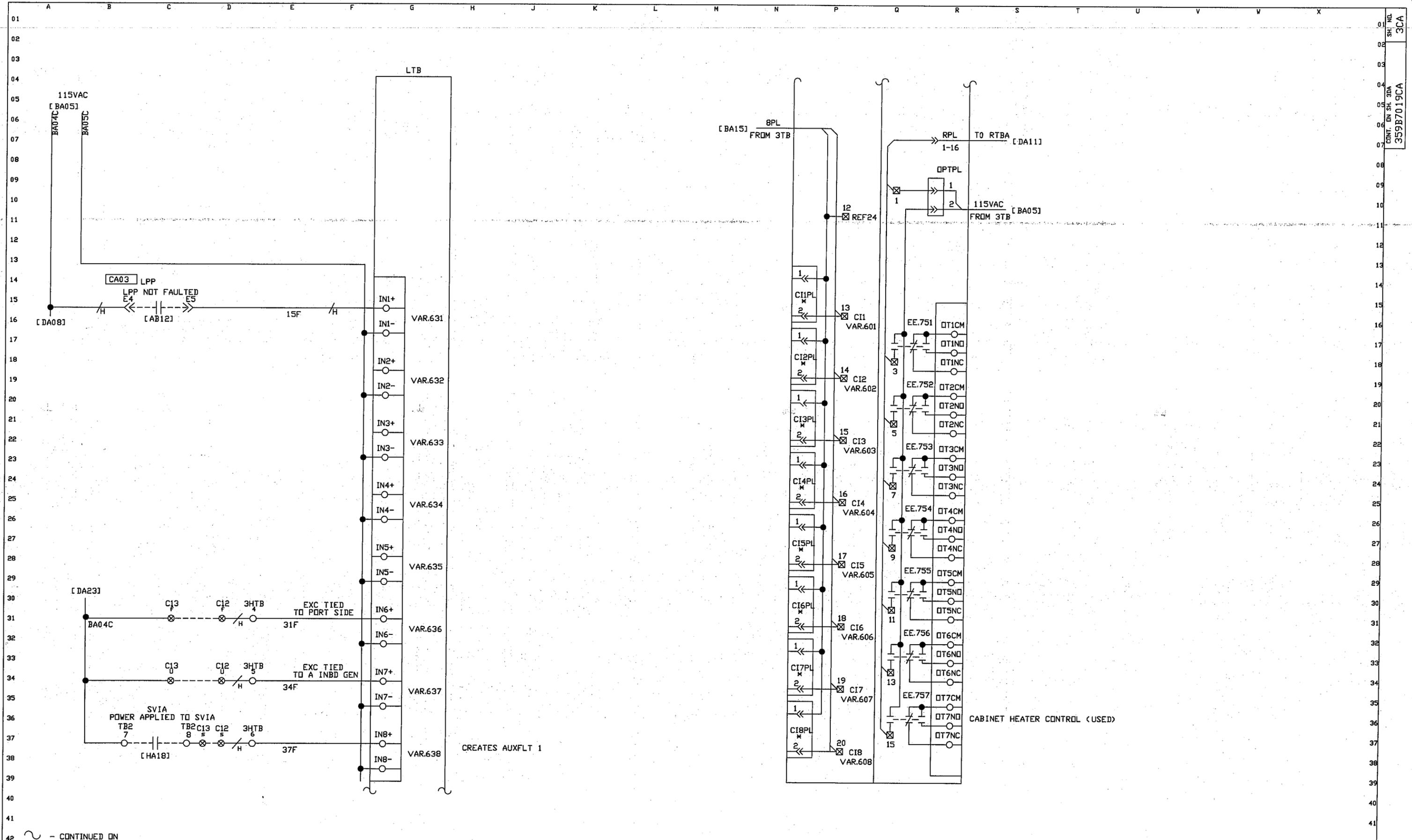


REVISION NO. 3	REVISION DATE Sept 25 03	REVISED BY PS	ENGINEERING D WALLACE	TECHNICIAN D WALLACE	ISSUE DATE 12/9/02	SHOP ORDER ZTG038	REQUISITION 84702084	GENERAL ELECTRIC - ENGINEERING SERVICES	ELEMENTARY DIAGRAM GRIFFON PORT INBOARD GEN EXC. LINE FILTER AND GND FLT MONITOR	359B7019CA CONT. ON SH. 3BA	SH. NO. 3AB
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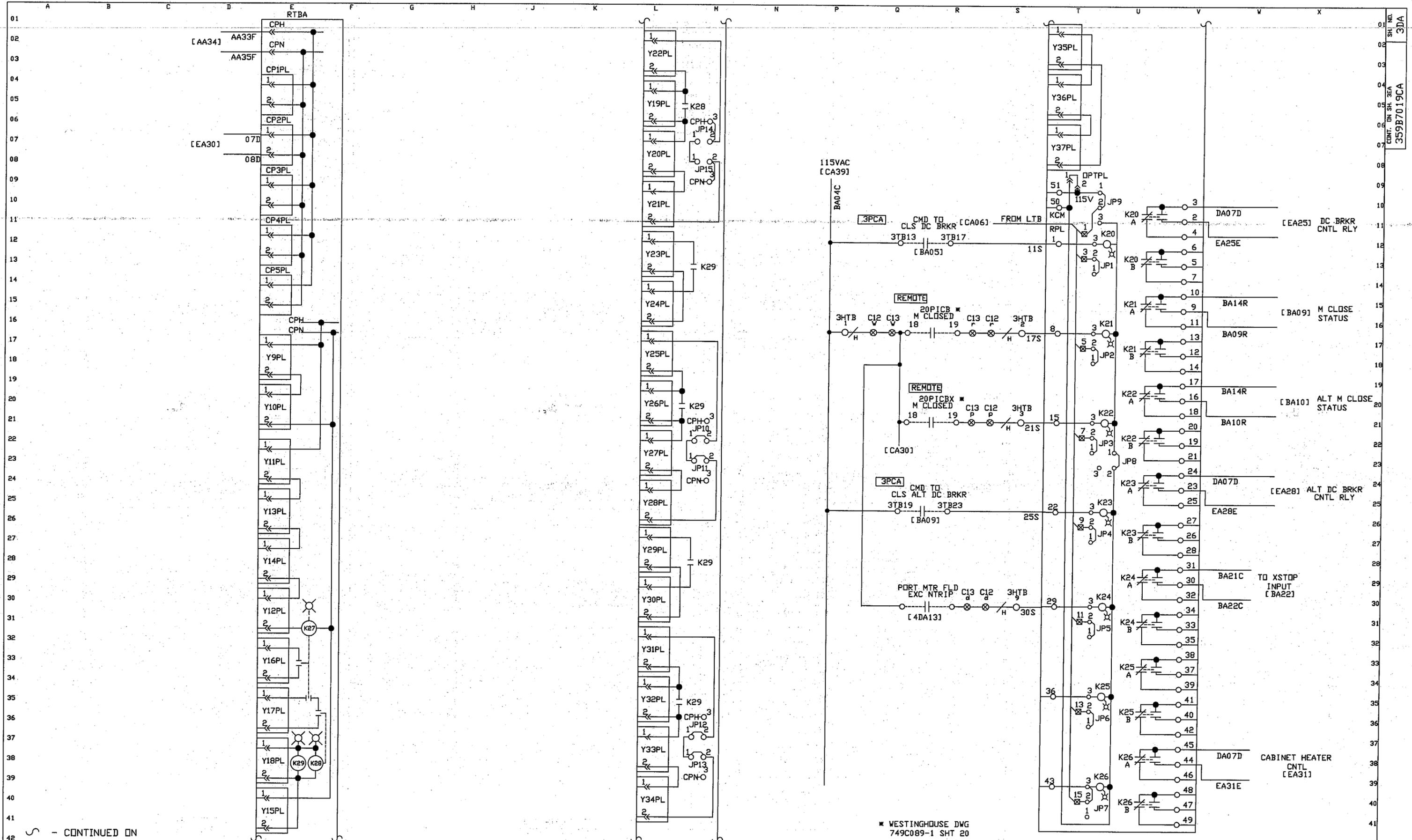


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REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	ISSUE DATE	SHOP ORDER	REQUISITION	GENERAL ELECTRIC - ENGINEERING SERVICES	ELEMENTARY DIAGRAM GRIFFON PORT INBOARD GEN EXC CONTROL IFC/3TB RELAYS	359B7019CA CONT. ON SH. 3CA	SH. NO. 3BA
4	Nov 26 03	PS	D WALLACE	D WALLACE	12/09/02	ZTG038	84702084				



REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	ISSUE DATE	SHOP ORDER	REQUISITION	GENERAL ELECTRIC - ENGINEERING SERVICES		ELEMENTARY DIAGRAM	359B7019CA	SHL NO.
2	June 23 03	PS	D WALLACE	D WALLACE	12/12/02	ZTG038	84702084	GRIFTON PORT INBOARD GEN EXC		GF2000 INPUTS/OUTPUTS (LAN TB)	CONT. ON SH. 3DA	3CA



REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	ISSUE DATE	SHOP ORDER	REQUISITION	ELEMENTARY DIAGRAM	359B7019CA	SH. NO.
2	Nov 7 03	PS	D WALLACE	D WALLACE	12/12/02	ZTG038	84702084	GRIFTON PORT INBOARD GEN EXC GF2000 RELAY TB	CONT. ON SH. 3EA	3DA

GENERAL ELECTRIC - ENGINEERING SERVICES

WESTINGHOUSE DWG  
749C089-1 SHT 20

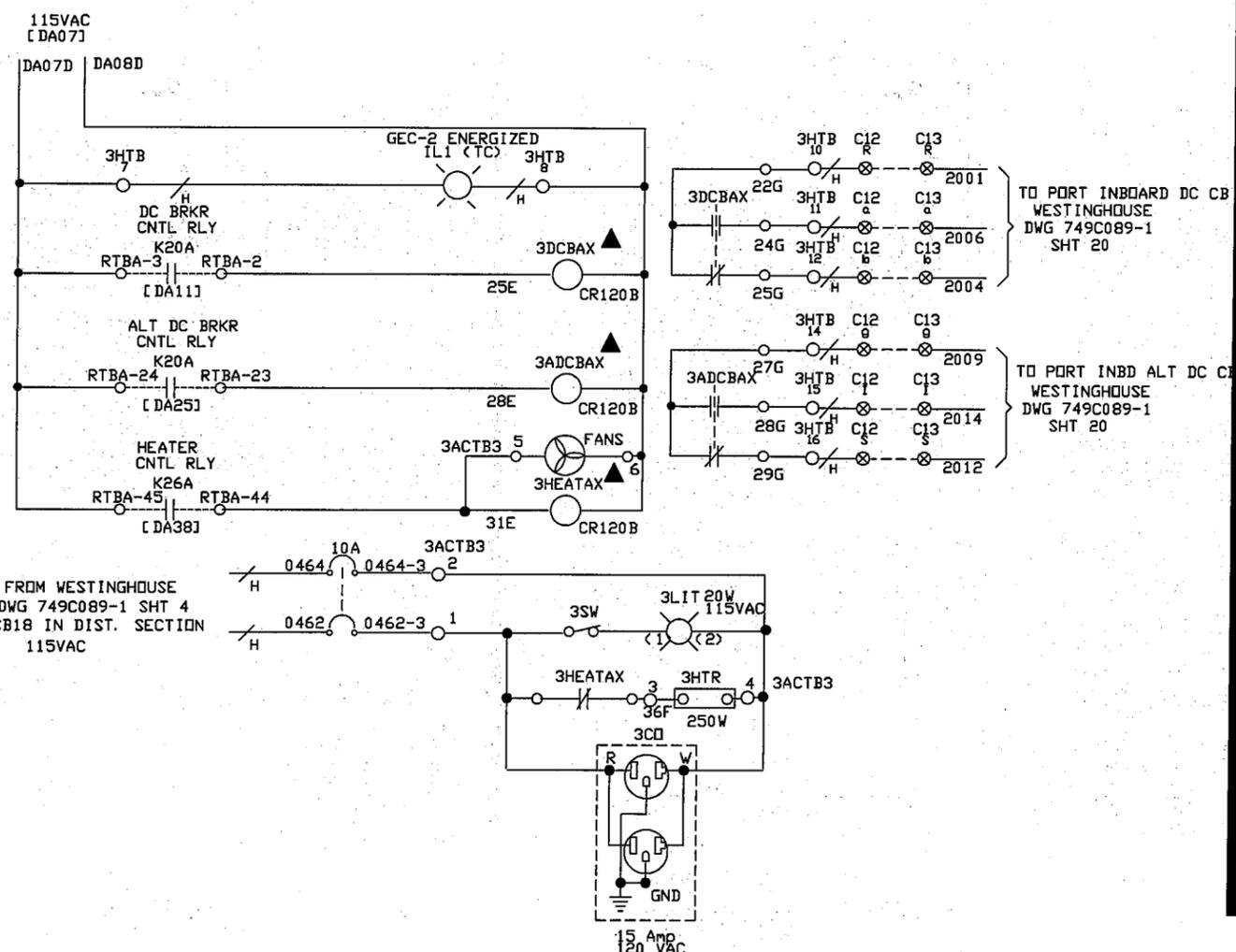
359B7019CA  
CONT. ON SH. 3EA

3DA

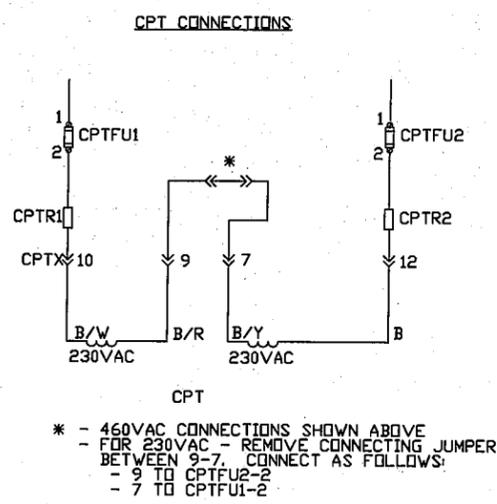
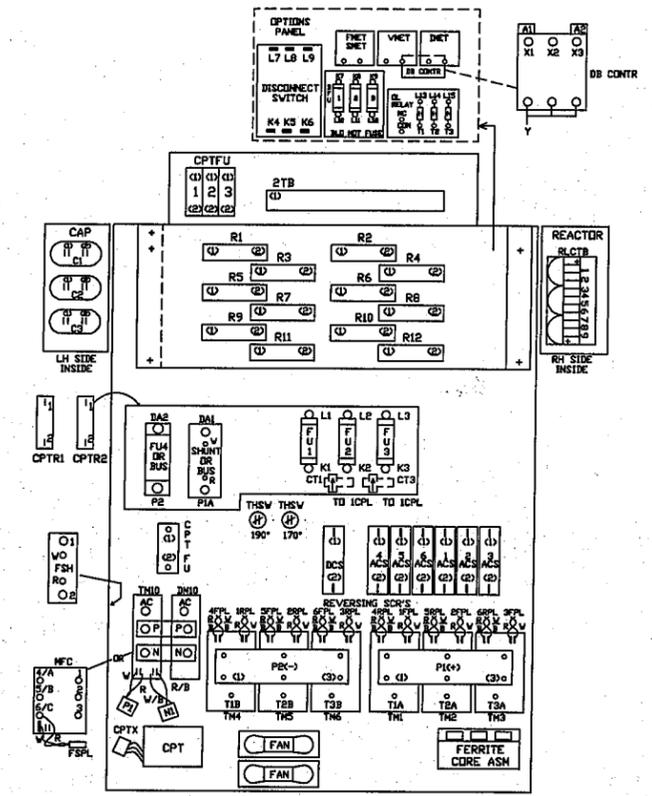
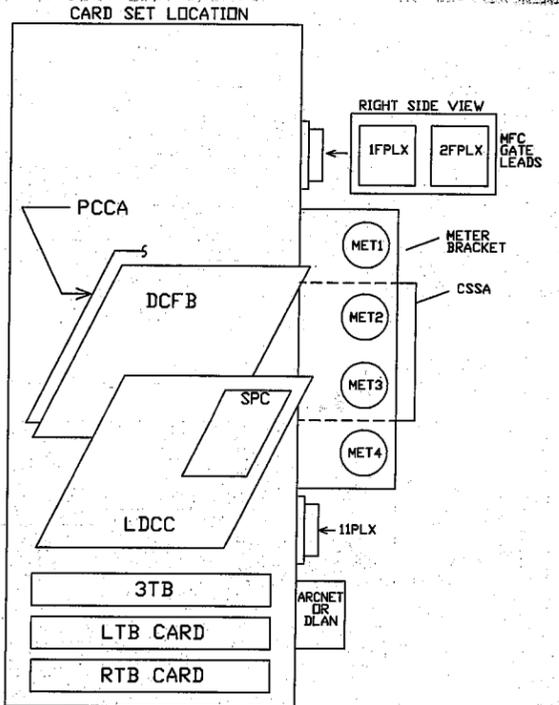
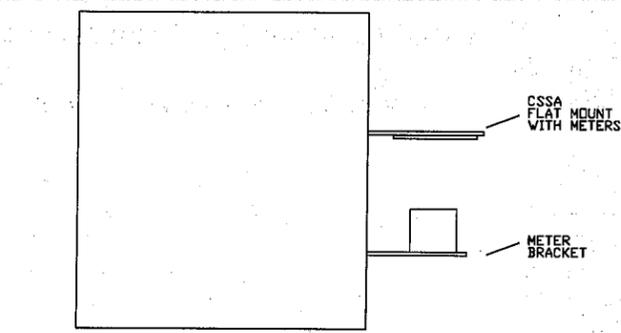
HARDWARE DRAWINGS - G-FRAME DRIVES

GF2000 DIGITAL ADJUSTABLE SPEED DRIVES

SHEET NO. 3EA  
CONT. ON SH. 3HA  
359B7019CA

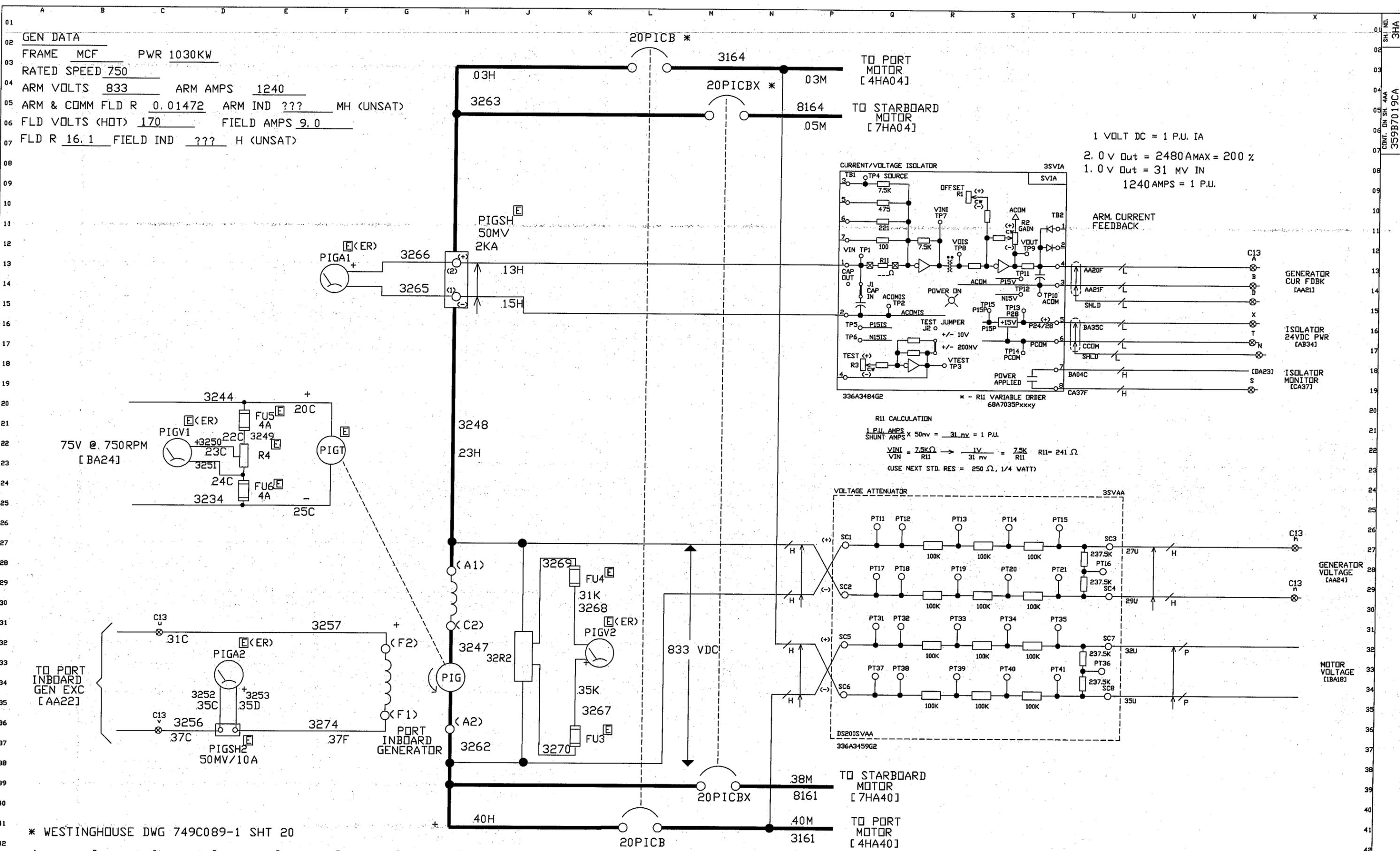


FROM WESTINGHOUSE  
DWG 749C089-1 SHT 4  
CB18 IN DIST. SECTION  
115VAC



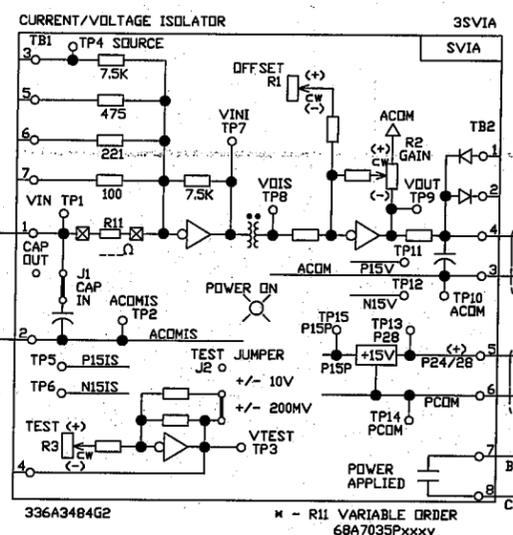
OPTIONAL CPT  
4.5 AMP OUTPUT

	230 VAC	460 VAC	575 VAC
FU1	8A	4A	3.2A
FU2	8A	4A	3.2A
FU3	5A	5A	5A

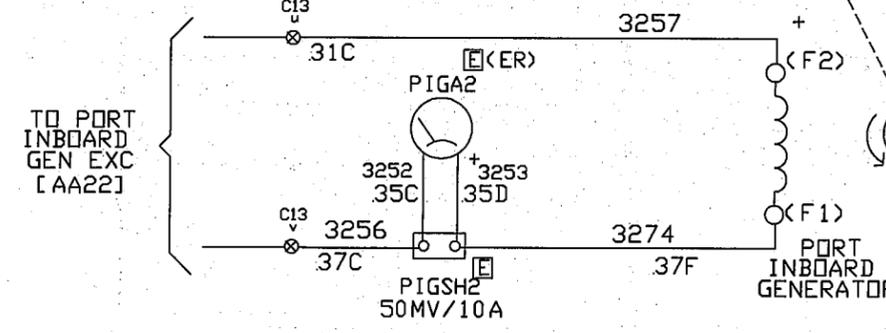
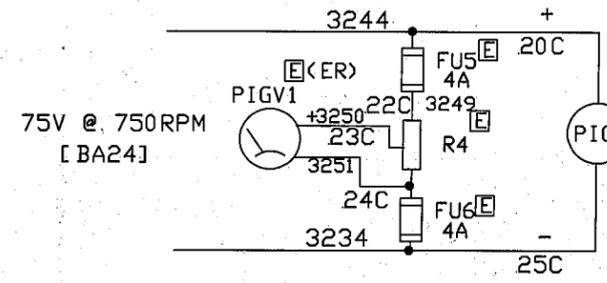
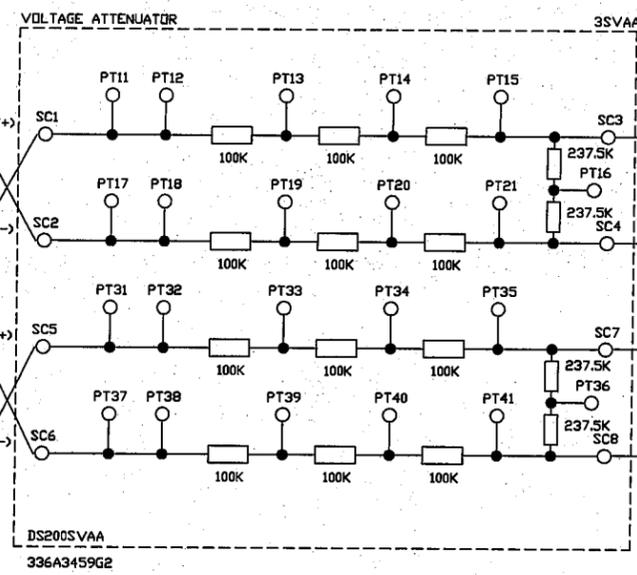


GEN DATA  
 FRAME MCF PWR 1030KW  
 RATED SPEED 750  
 ARM VOLTS 833 ARM AMPS 1240  
 ARM & COMM FLD R 0.01472 ARM IND ??? MH (UNSAT)  
 FLD VOLTS (HOT) 170 FIELD AMPS 9.0  
 FLD R 16.1 FIELD IND ??? H (UNSAT)

1 VOLT DC = 1 P.U. IA  
 2.0 V Out = 2480 AMAX = 200 %  
 1.0 V Out = 31 MV IN  
 1240 AMPS = 1 P.U.



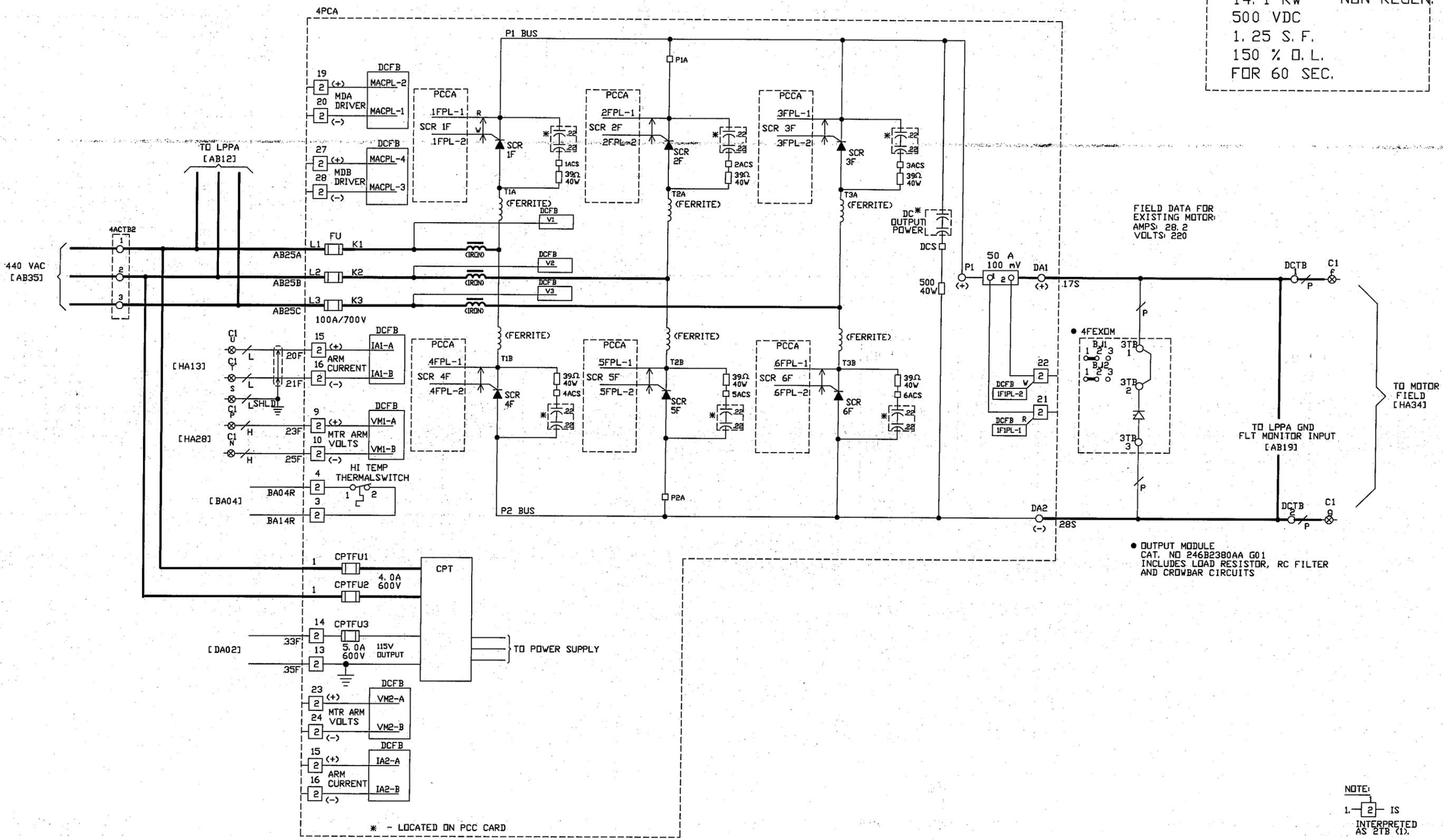
**R11 CALCULATION**  
 $1 \text{ P.U. AMPS SHUNT AMPS} \times 50 \text{ mv} = 31 \text{ mv} = 1 \text{ P.U.}$   
 $\frac{V_{INI}}{V_{IN}} = \frac{7.5K \Omega}{R_{11}} \rightarrow \frac{1 \text{ V}}{31 \text{ mv}} = \frac{7.5K}{R_{11}} \rightarrow R_{11} = 241 \Omega$   
 (USE NEXT STD. RES = 250  $\Omega$ , 1/4 WATT)



\* WESTINGHOUSE DWG 749C089-1 SHT 20

REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	ISSUE DATE	SHOP ORDER	REQUISITION	GENERAL ELECTRIC - ENGINEERING SERVICES	ELEMENTARY DIAGRAM	359B7019CA	SH. NO.
2	Nov 26 03	PS	D. WALLACE	D. WALLACE	12/9/02	ZTG038	84702084	GRIFFON PORT INBOARD GEN EXC.	GENERATOR ARMATURE CIRCUIT	CONT. ON SH. 4AA	3HA

MODEL NO. 3VZTG038CD004  
 SEE GEH-6150  
 ME2000 G-FRAME  
 14.1 KW NON-REGEN.  
 500 VDC  
 1.25 S. F.  
 150 % O. L.  
 FOR 60 SEC.

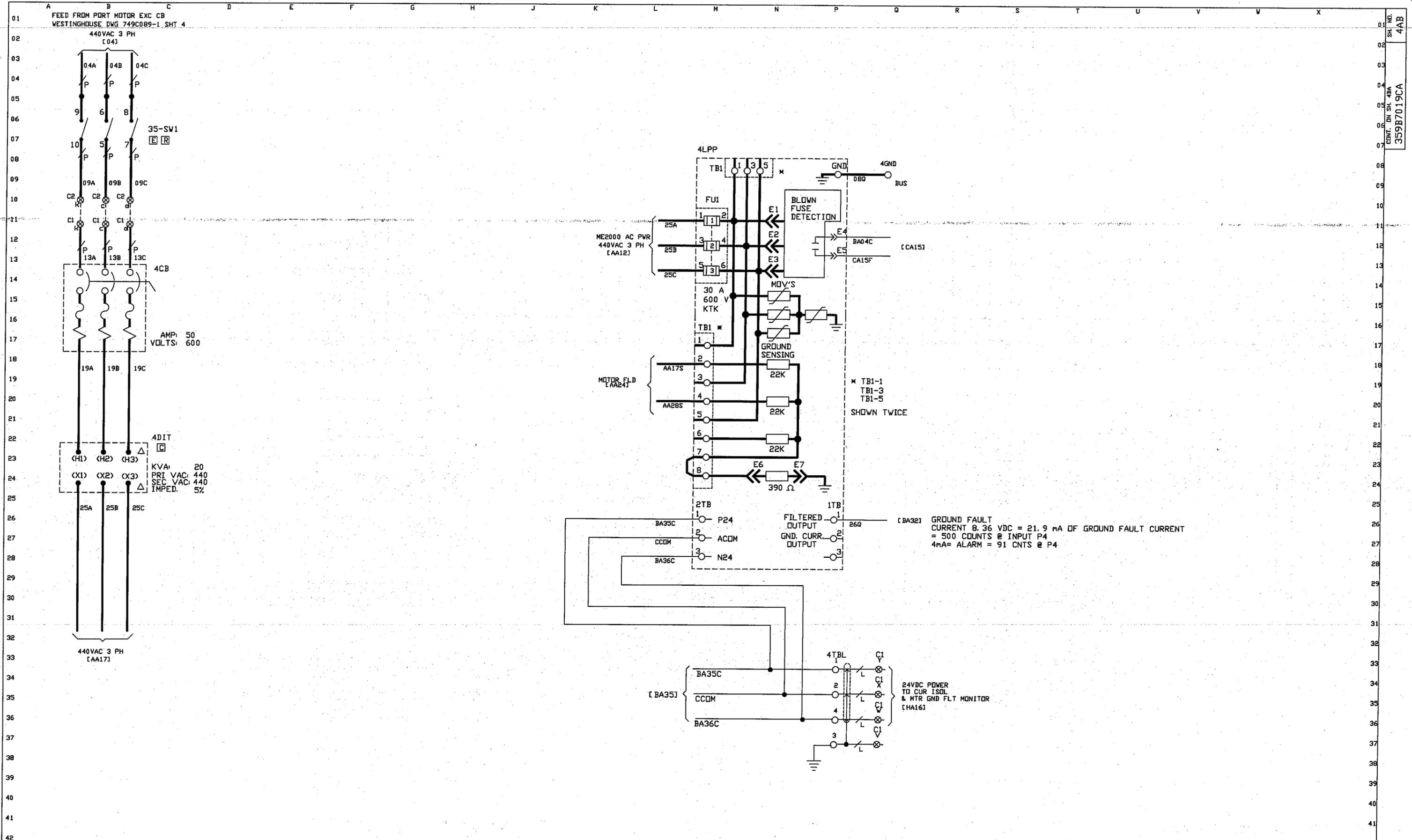


FIELD DATA FOR EXISTING MOTOR:  
 AMPS: 28.2  
 VOLTS: 220

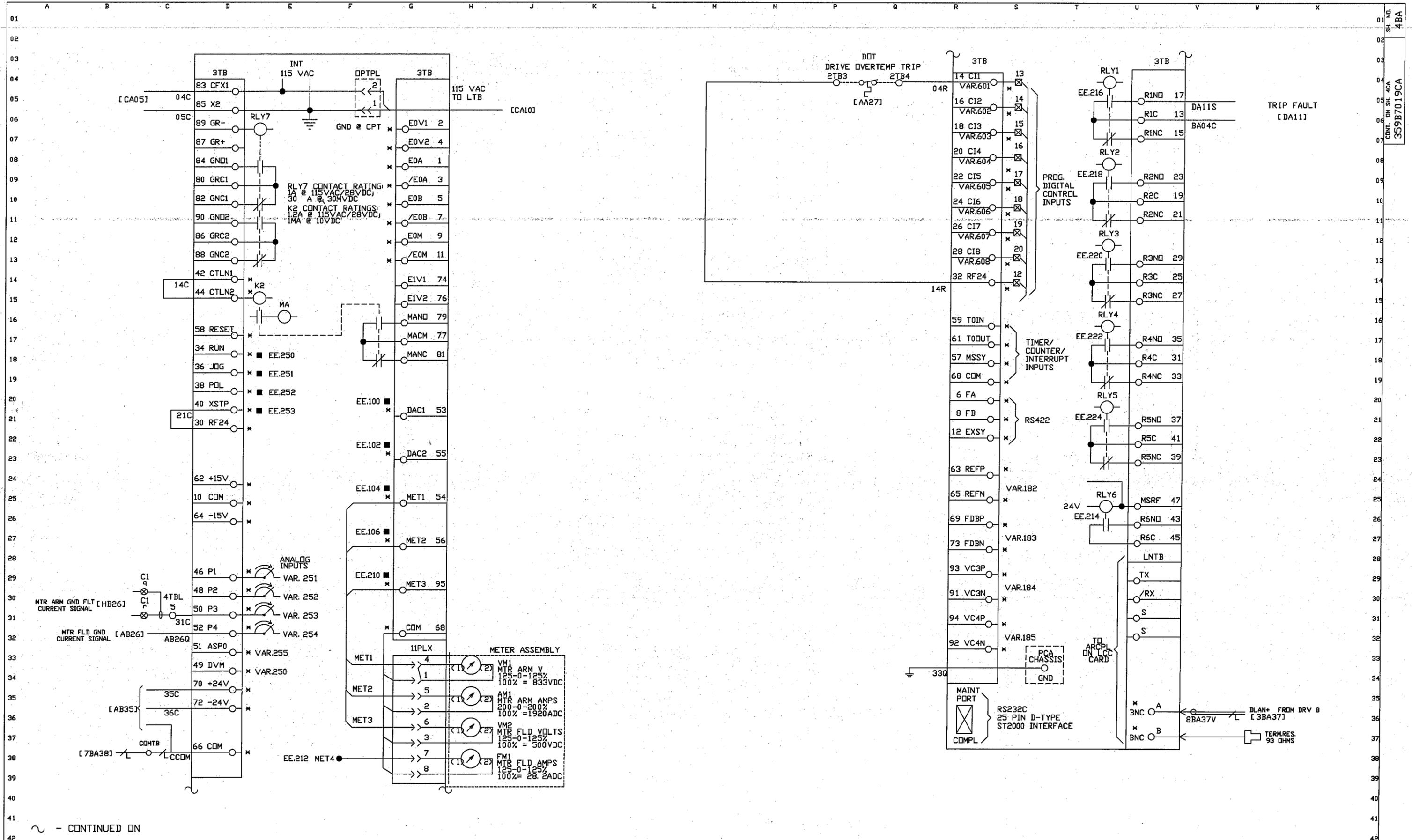
● OUTPUT MODULE  
 CAT. NO 246B2380AA G01  
 INCLUDES LOAD RESISTOR, RC FILTER  
 AND CROWBAR CIRCUITS

NOTE:  
 1-2 IS  
 INTERPRETED  
 AS 2TB (1).

REVISION NO. 2	REVISION DATE Nov 26 03	REVISED BY PS	ENGINEERING D WALLACE	TECHNICIAN D WALLACE	ISSUE DATE 12/9/02	SHOP ORDER ZTG038	REQUISITION 84702084	GENERAL ELECTRIC - ENGINEERING SERVICES	ELEMENTARY DIAGRAM GRIFFON PORT MOTOR FIELD EXC CONVERTER	359B7019CA CONT. ON SH. 4AB	SH. NO. 4AA
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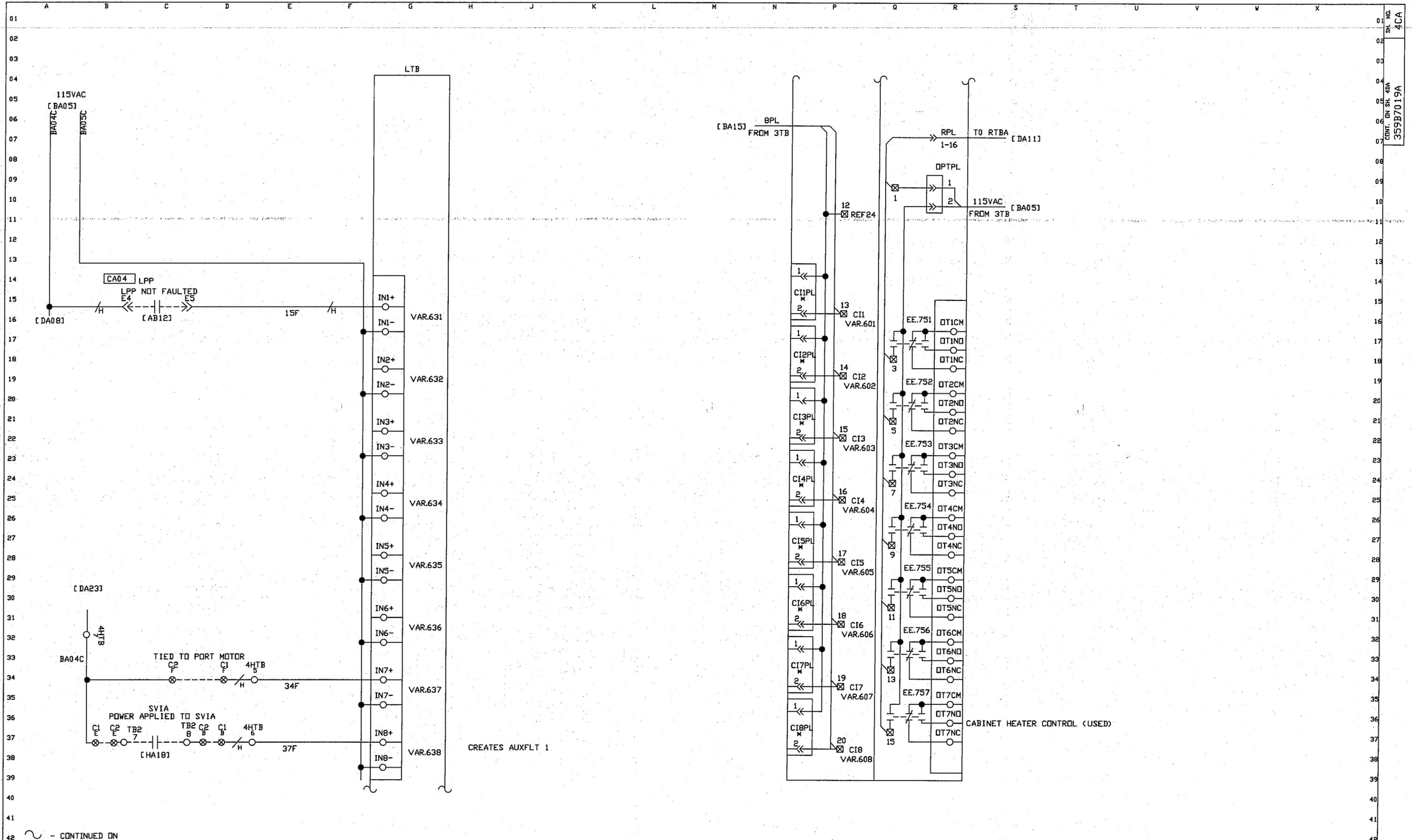


REVISION NO. 2	REVISION DATE Sept 25 03	REVISED BY PS	ENGINEERING D WALLACE	TECHNICIAN D WALLACE	ISSUE DATE 12/9/02	SHOP ORDER ZTG038	REQUISITION 84702084	GENERAL ELECTRIC - ENGINEERING SERVICES	ELEMENTARY DIAGRAM GRIFFON PORT MOTOR FIELD EXC. LINE FILTER AND GND FLT MONITOR	359B7019CA CONT. ON SH. 4BA	SH. NO. 4AB
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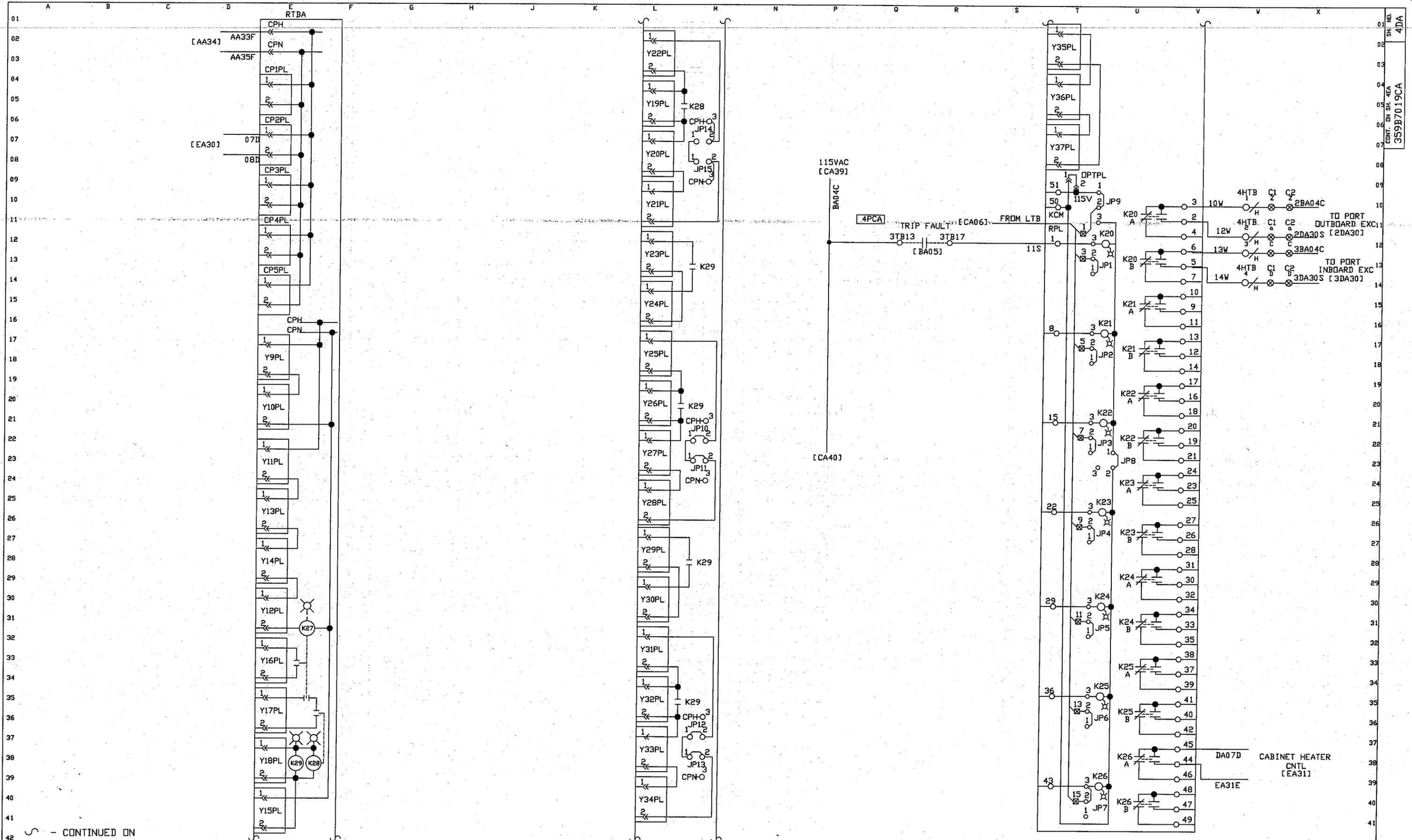


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REVISION NO. 3	REVISION DATE Nov 7 03	REVISED BY PS	ENGINEERING D WALLACE	TECHNICIAN D WALLACE	ISSUE DATE 12/09/02	SHOP ORDER ZTG038	REQUISITION 84702084	GENERAL ELECTRIC - ENGINEERING SERVICES	ELEMENTARY DIAGRAM GRIFFON PORT MOTOR FIELD EXC CONTROL IFC/3TB RELAYS	359B7019CA CONT. ON SH. 4CA	SH. NO. 4BA
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REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	ISSUE DATE	SHOP ORDER	REQUISITION	GENERAL ELECTRIC - ENGINEERING SERVICES	ELEMENTARY DIAGRAM GRIFFON PORT MOTOR FIELD EXC GF2000 INPUTS/OUTPUTS (LAN TB)	359B7019A CONT. ON SH. 4DA	SH. NO. 4CA
2	Nov 7 03	PS	D WALLACE	D WALLACE	12/12/02	ZTG043	84702084				



REVISION NO. 2	REVISION DATE Nov 7 03	REVISED BY PS	ENGINEERING D WALLACE	TECHNICIAN D WALLACE	ISSUE DATE 12/12/02	SHOP ORDER ZTG038	REQUISITION 84702084	GENERAL ELECTRIC - ENGINEERING SERVICES	ELEMENTARY DIAGRAM GRIFFON PORT MOTOR FIELD EXC GF2000 RELAY TB	359B7019CA CONT. ON SH. 4EA	SH. NO. 4DA
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RTBA

RTBA

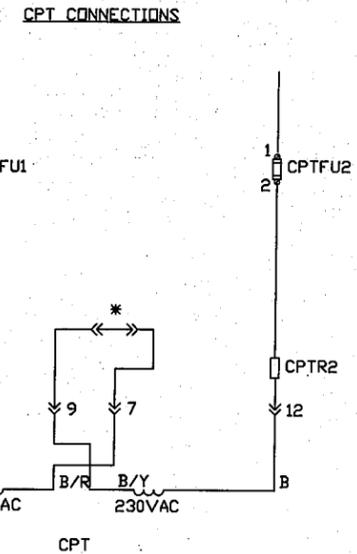
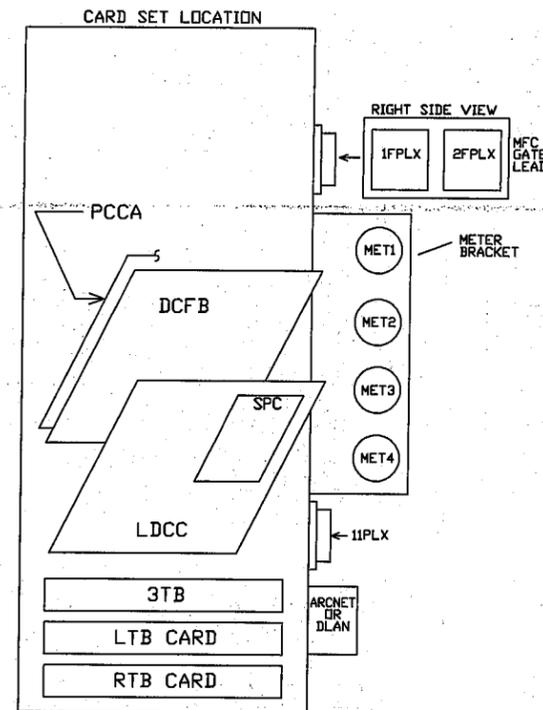
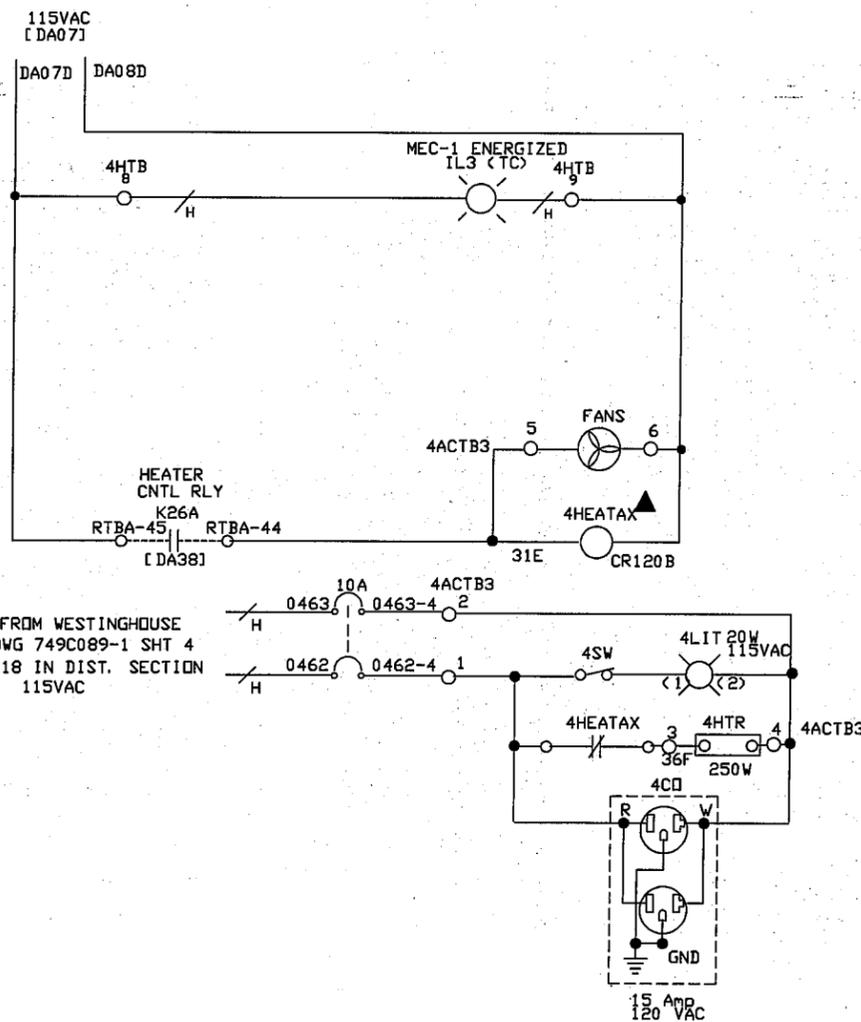
SH. NO. 4DA  
CONT. ON SH. 4EA  
359B7019CA

- CONTINUED ON

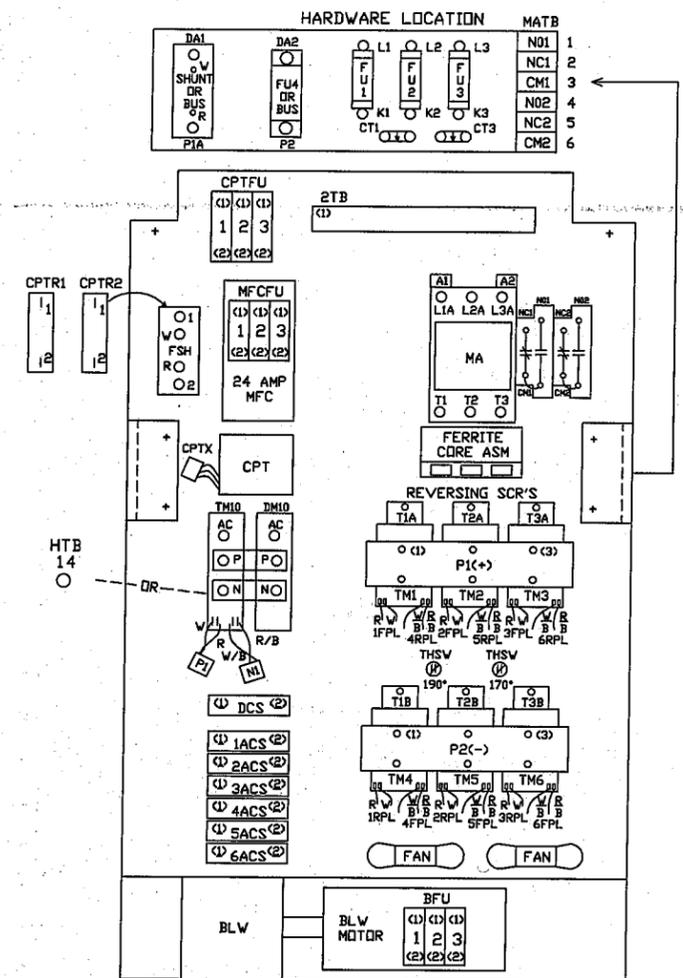
HARDWARE DRAWINGS - G-FRAME DRIVES

ME2000 DIGITAL ADJUSTABLE SPEED DRIVES

SH. NO. 4EA  
CONT. ON SH. 4HA  
359B7019CA

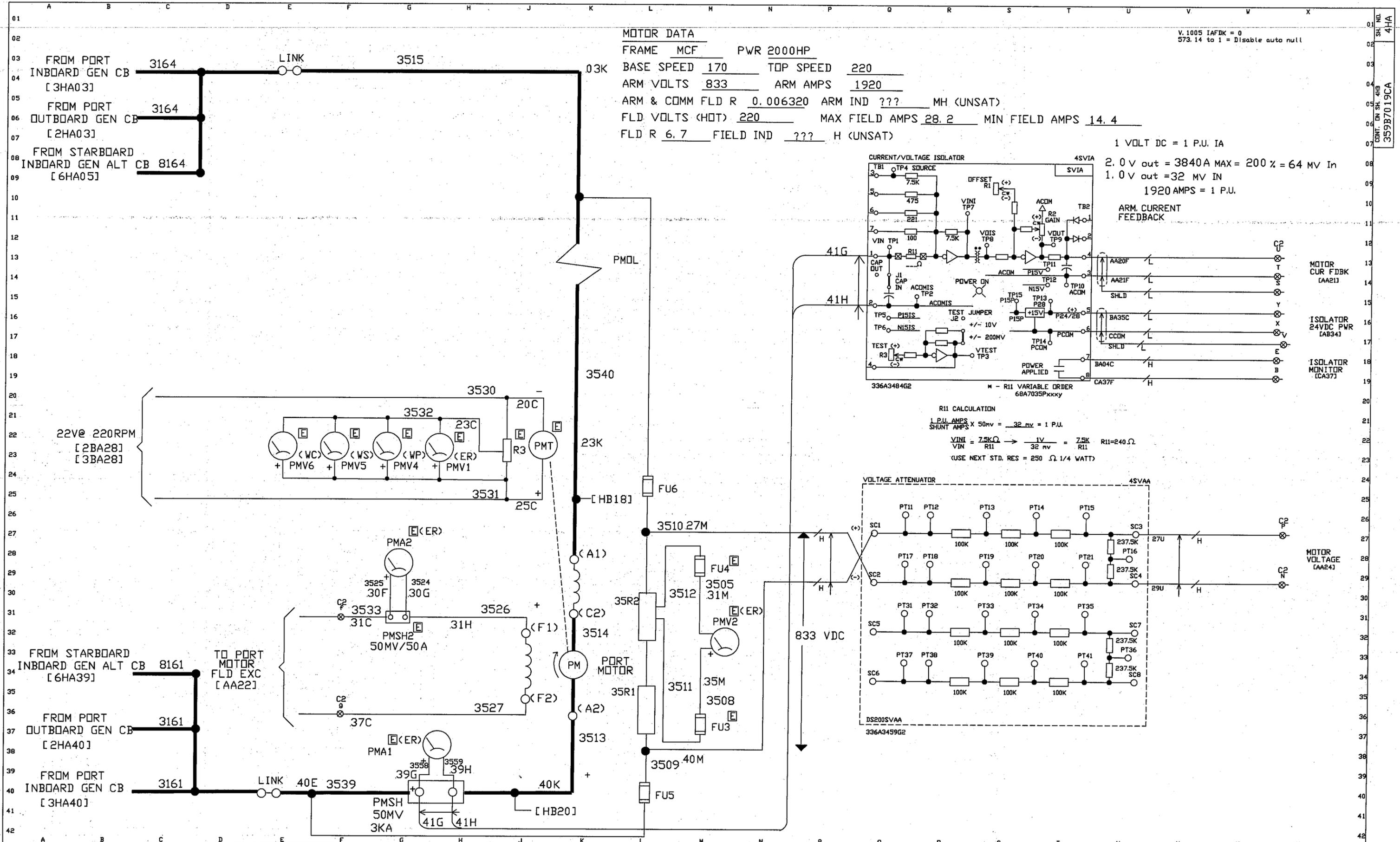


CPT  
\* - 460VAC CONNECTIONS SHOWN ABOVE  
- FOR 230VAC - REMOVE CONNECTING JUMPER BETWEEN 9-7. CONNECT AS FOLLOWS:  
- 9 TO CPTFU2-2  
- 7 TO CPTFU1-2



OPTIONAL CPT  
4.6 AMP OUTPUT

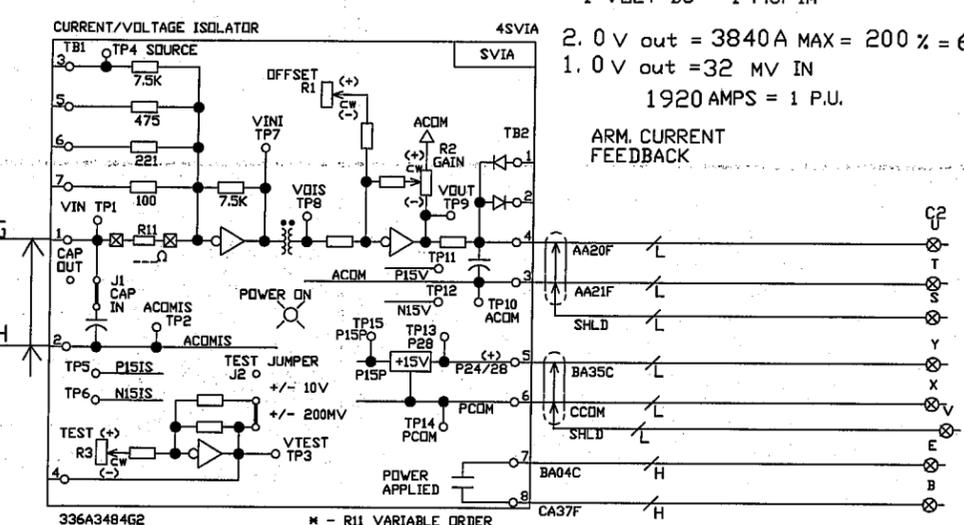
	230 VAC	460 VAC	575 VAC
FU1	8A	4A	3.2A
FU2	8A	4A	3.2A
FU3	5A	5A	5A



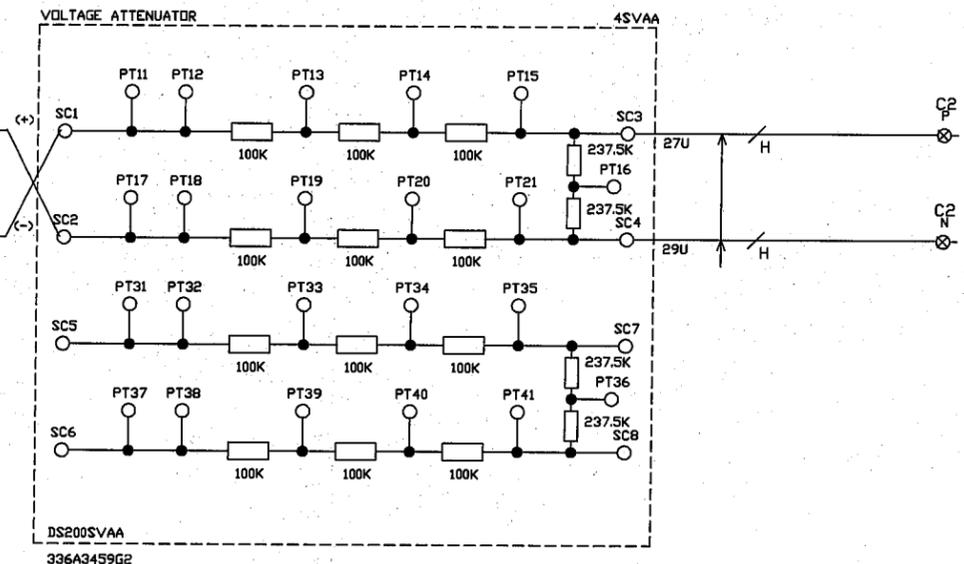
**MOTOR DATA**  
 FRAME MCF PWR 2000HP  
 BASE SPEED 170 TOP SPEED 220  
 ARM VOLTS 833 ARM AMPS 1920  
 ARM & COMM FLD R 0.006320 ARM IND ??? MH (UNSAT)  
 FLD VOLTS (HOT) 220 MAX FIELD AMPS 28.2 MIN FIELD AMPS 14.4  
 FLD R 6.7 FIELD IND ??? H (UNSAT)

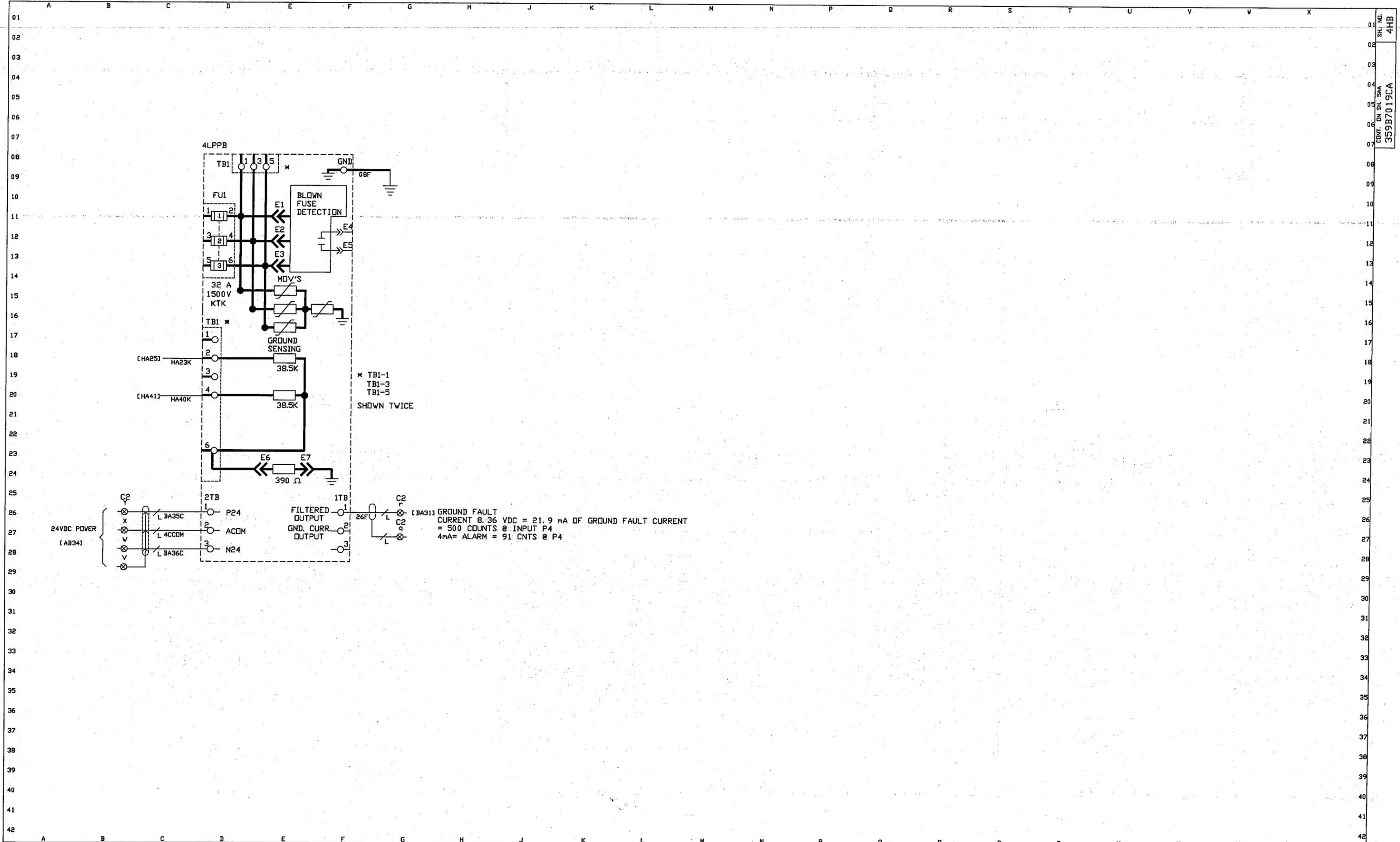
V.1005 IAFBK = 0  
 573.14 to 1 = Disable auto null

1 VOLT DC = 1 P.U. IA  
 2.0 V out = 3840A MAX = 200% = 64 MV In  
 1.0 V out = 32 MV IN  
 1920 AMPS = 1 P.U.



**R11 CALCULATION**  
 $1 \text{ P.U. AMPS} \times 50 \text{ mV} = 32 \text{ mV} = 1 \text{ P.U.}$   
 $\frac{V_{INI}}{V_{IN}} = \frac{7.5K \Omega}{R_{11}} \rightarrow \frac{1V}{32 \text{ mV}} = \frac{7.5K}{R_{11}} \quad R_{11} = 240 \Omega$   
 (USE NEXT STD. RES = 250  $\Omega$  1/4 WATT)

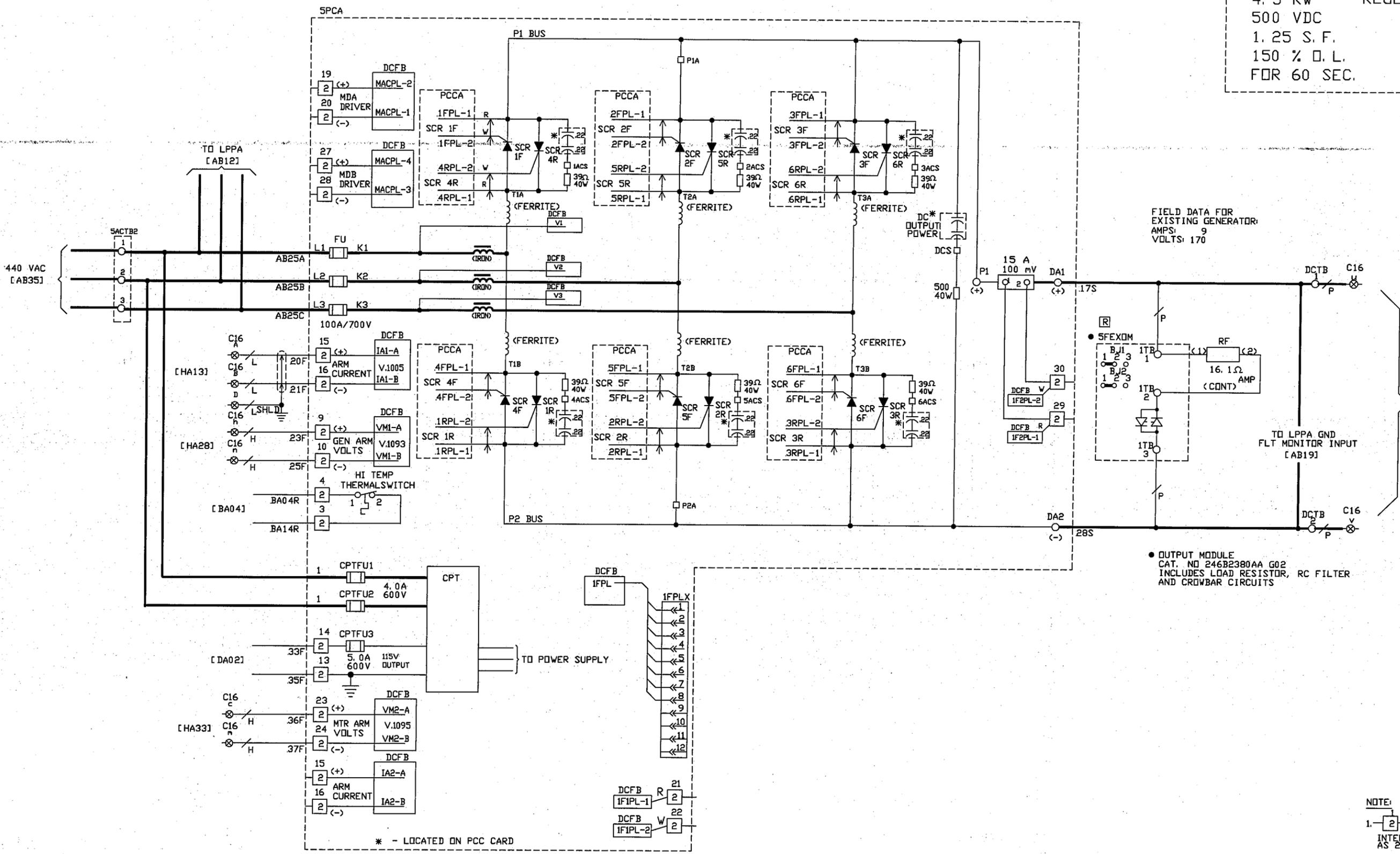




SH. NO. 4HB  
 359B7019CA  
 CONT. ON SH. 5AA

REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	ISSUE DATE	SHOP ORDER	REQUISITION	GENERAL ELECTRIC - ENGINEERING SERVICES		ELEMENTARY DIAGRAM	359B7019CA	SH. NO.
2	Sept 11 03	PS	D WALLACE	D WALLACE	12/9/02	ZTG038	84702084	GENERAL ELECTRIC - ENGINEERING SERVICES		GRIFTON PORT MOTOR FIELD EXC. MTR GND FLT MONITOR	CONT. ON SH. 5AA	4HB

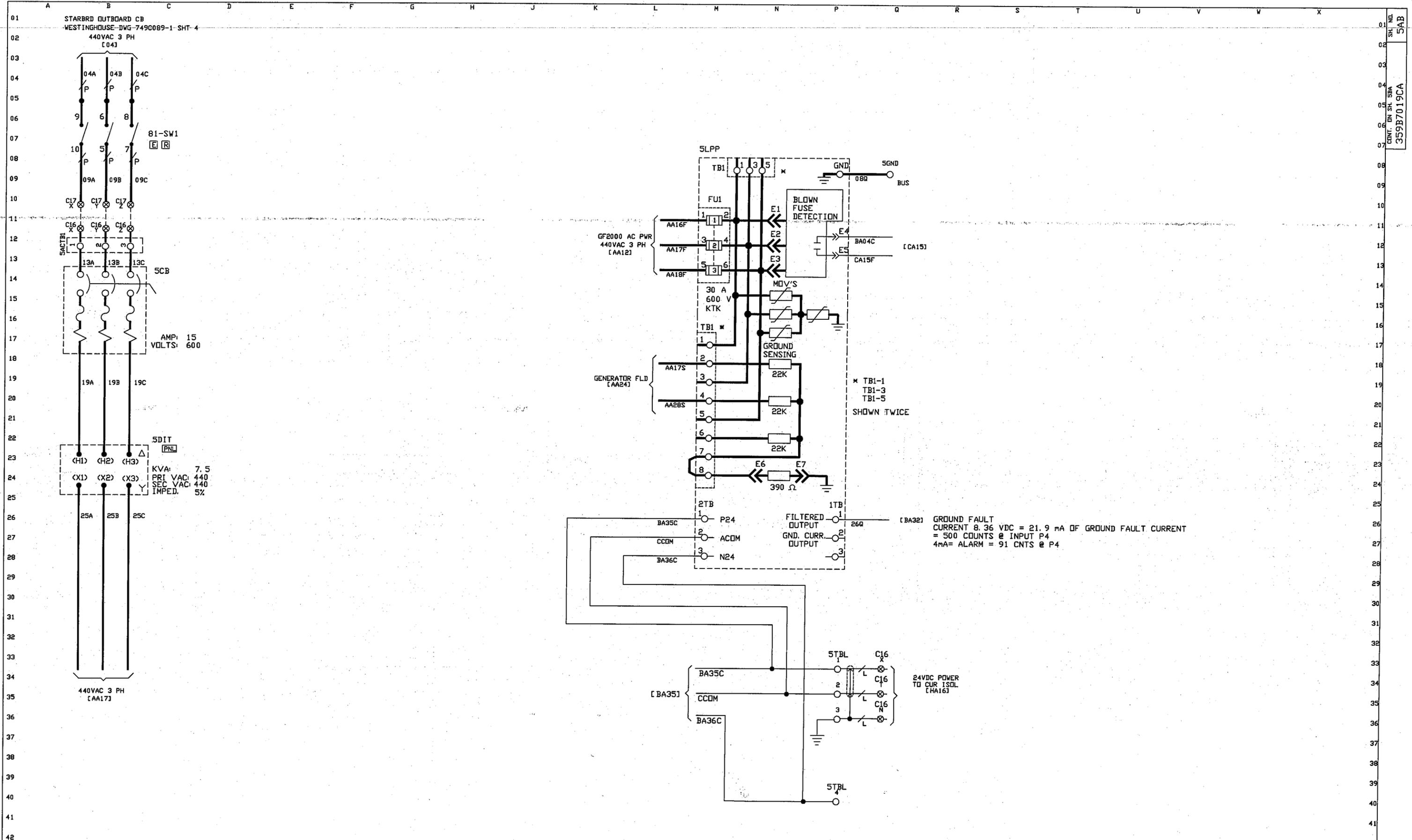
MODEL NO. 3VZTG038CD005  
 SEE GEH-6148  
 GF2000 G-FRAME  
 4.5 KW REGEN.  
 500 VDC  
 1.25 S. F.  
 150 % O. L.  
 FOR 60 SEC.



FIELD DATA FOR EXISTING GENERATOR:  
 AMPS: 9  
 VOLTS: 170

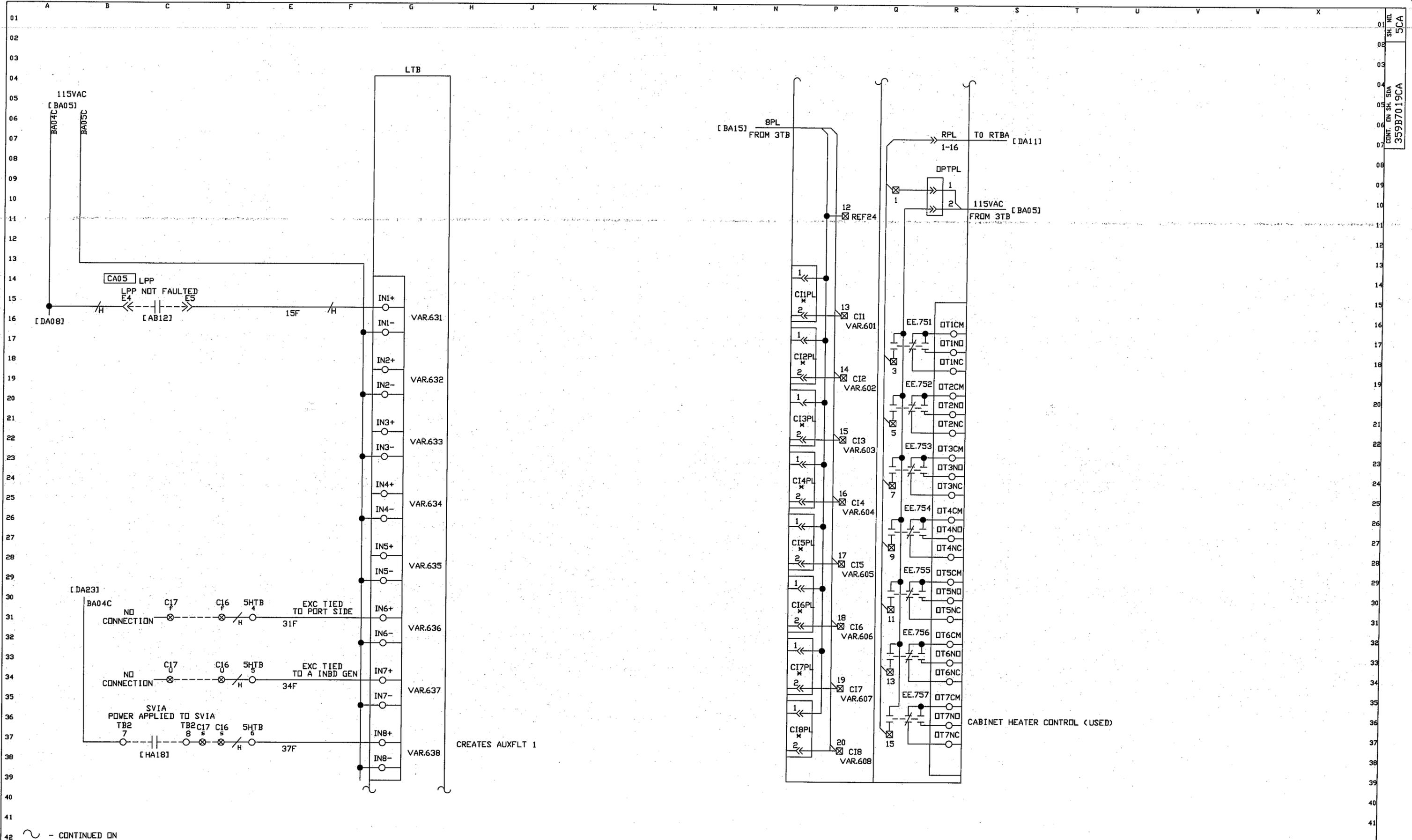
● OUTPUT MODULE  
 CAT. NO 246B2380AA G02  
 INCLUDES LOAD RESISTOR, RC FILTER  
 AND CROWBAR CIRCUITS

NOTE:  
 1. [2] IS INTERPRETED AS 2TB (1).

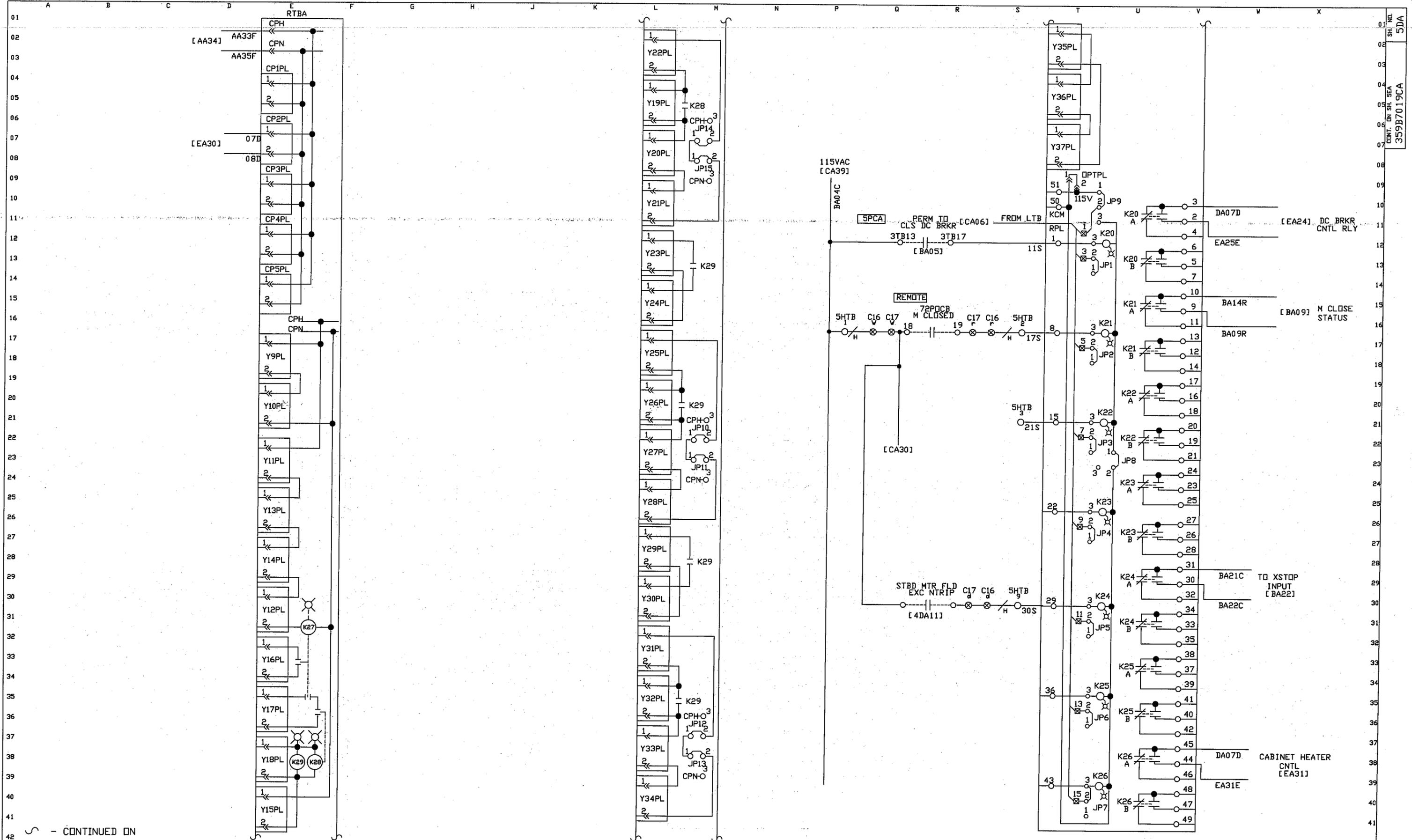


REVISION NO. 3	REVISION DATE Sept 25 03	REVISED BY PS	ENGINEERING D WALLACE	TECHNICIAN D WALLACE	ISSUE DATE 12/9/02	SHOP ORDER ZTG038	REQUISITION 84702084	GENERAL ELECTRIC - ENGINEERING SERVICES	ELEMENTARY DIAGRAM GRIFFON STARBOARD OUTBOARD GEN EXC. LINE FILTER AND GND FLT MONITOR	359B7019CA CONT. ON SH. 5BA	SH. NO. 5AB
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REVISION NO. 2	REVISION DATE June 23 03	REVISED BY PS	ENGINEERING D WALLACE	TECHNICIAN D WALLACE	ISSUE DATE 12/12/02	SHOP ORDER ZTG038	REQUISITION 84702084	GENERAL ELECTRIC - ENGINEERING SERVICES	ELEMENTARY DIAGRAM GRIFFON STARBOARD OUTBOARD GEN EXC GF2000 INPUTS/OUTPUTS (LAN TB)	359B7019CA CONT. ON SH. 5DA	SH. NO. 5CA
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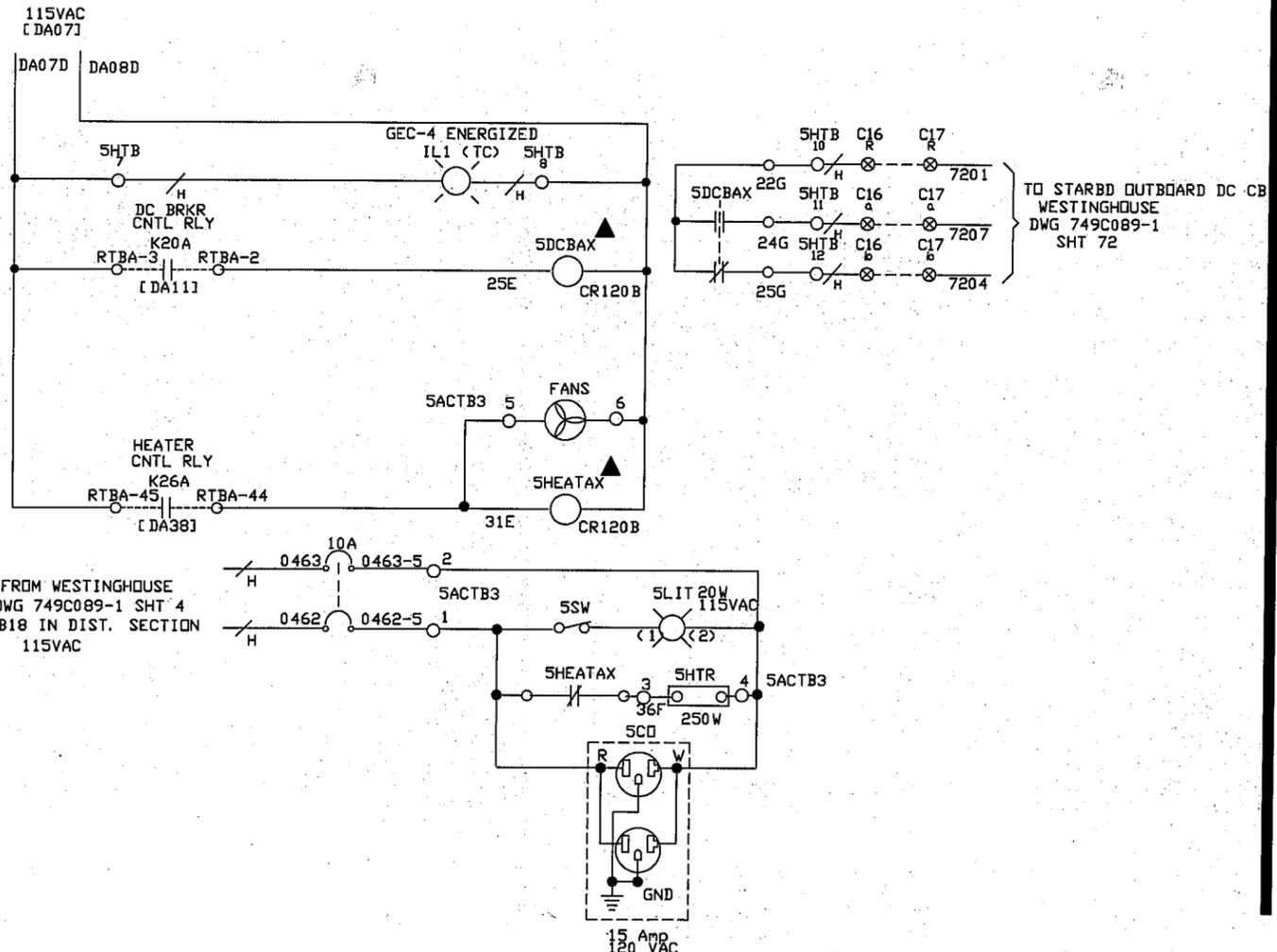
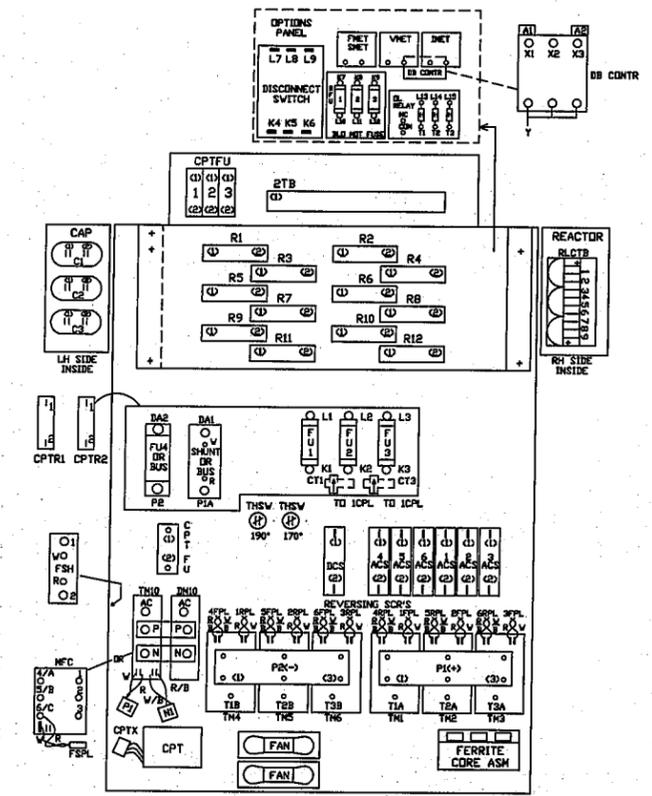
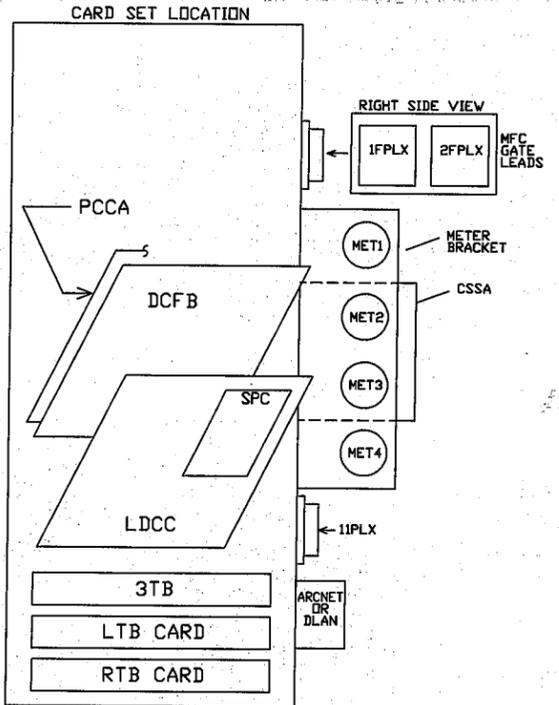
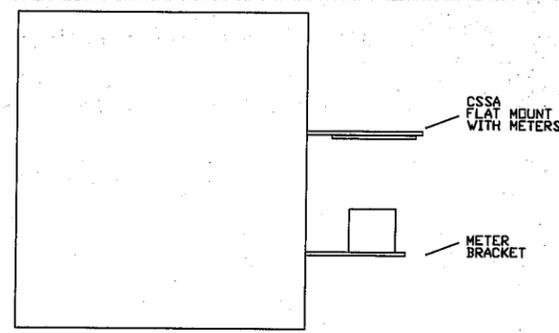


REVISION NO. 2	REVISION DATE Nov 26 03	REVISED BY PS	ENGINEERING D WALLACE	TECHNICIAN D WALLACE	ISSUE DATE 12/12/02	SHOP ORDER ZTG038	REQUISITION 84702084	GENERAL ELECTRIC - ENGINEERING SERVICES	ELEMENTARY DIAGRAM GRIFFON STARBOARD OUTBOARD GEN EXC GF2000 RELAY TB	359B7019CA CONT. ON SH. 5EA	SH. NO. 5DA
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HARDWARE DRAWINGS - G-FRAME DRIVES

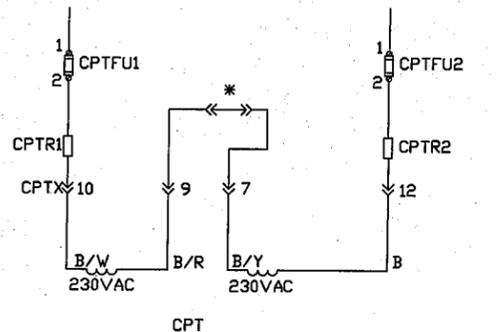
GF2000 DIGITAL ADJUSTABLE SPEED DRIVES

SH. NO. 5EA  
CONT. ON SH. 5HA  
359B7019CA



TO STARBD OUTBOARD DC CB  
WESTINGHOUSE  
DWG 749C089-1  
SHT 72

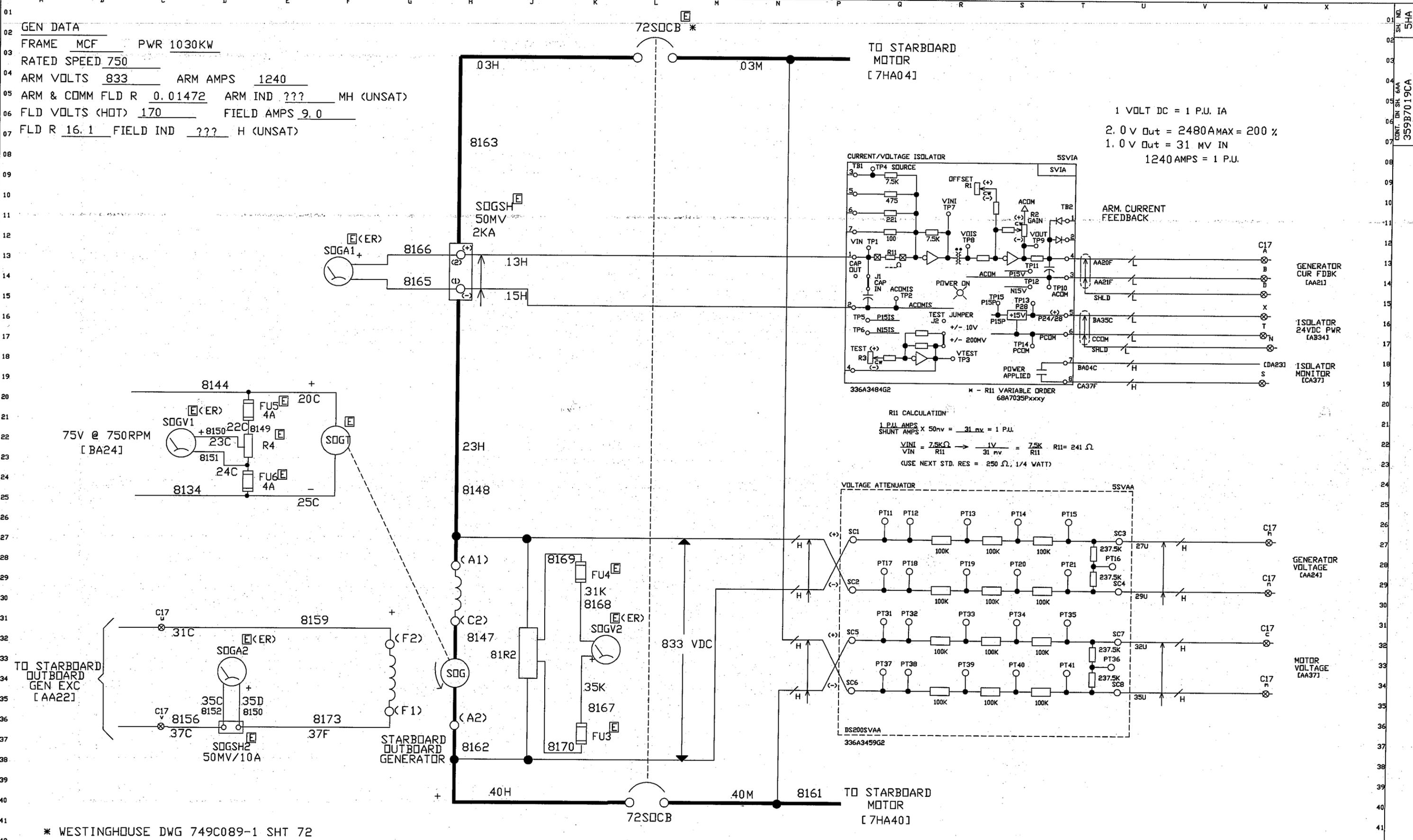
CPT CONNECTIONS



OPTIONAL CPT  
4.6 AMP OUTPUT

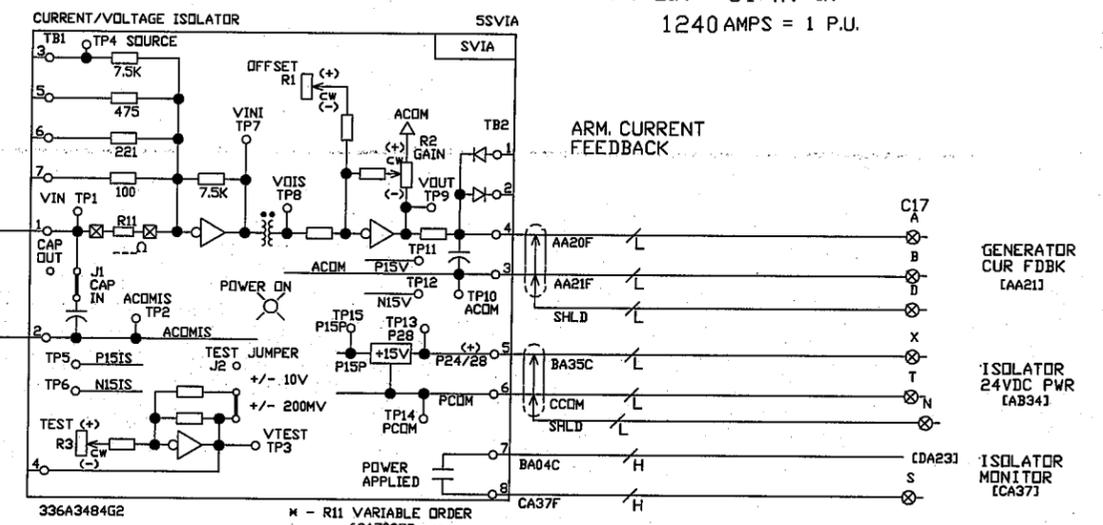
	230 VAC	460 VAC	575 VAC
FU1	8A	4A	3.2A
FU2	8A	4A	3.2A
FU3	5A	5A	5A

\* - 460VAC CONNECTIONS SHOWN ABOVE  
- FOR 230VAC - REMOVE CONNECTING JUMPER  
BETWEEN 9-7. CONNECT AS FOLLOWS:  
- 9 TO CPTFU2-2  
- 7 TO CPTFU1-2

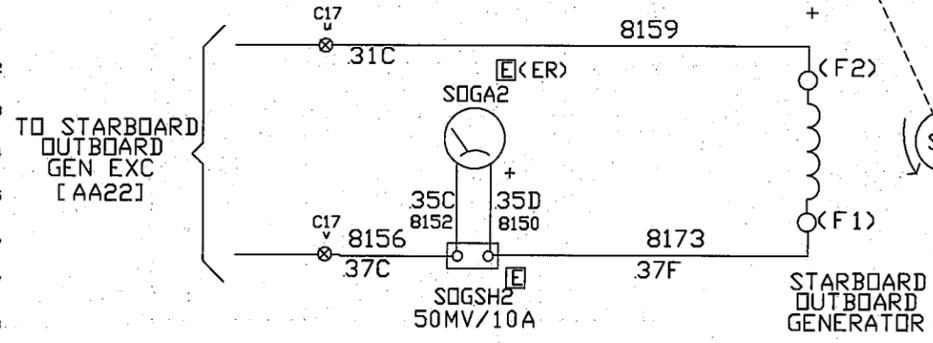
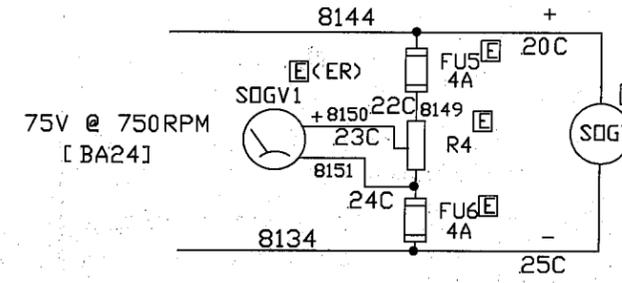
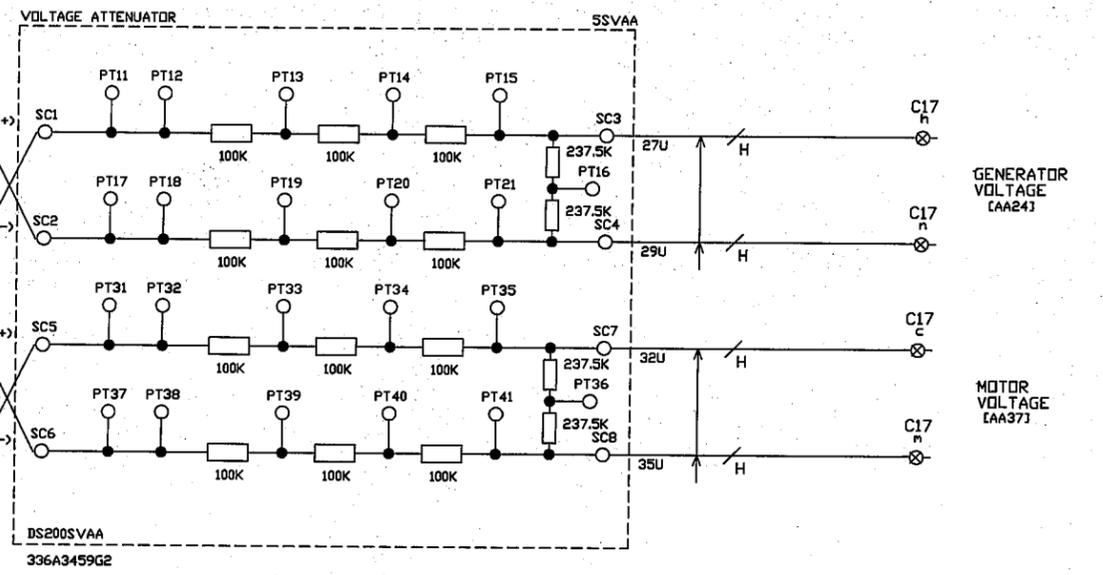


GEN DATA  
 FRAME MCF PWR 1030KW  
 RATED SPEED 750  
 ARM VOLTS 833 ARM AMPS 1240  
 ARM & COMM FLD R 0.01472 ARM IND ??? MH (UNSAT)  
 FLD VOLTS (HOT) 170 FIELD AMPS 9.0  
 FLD R 16.1 FIELD IND ??? H (UNSAT)

1 VOLT DC = 1 P.U. IA  
 2.0 V Out = 2480A MAX = 200 %  
 1.0 V Out = 31 MV IN  
 1240 AMPS = 1 P.U.



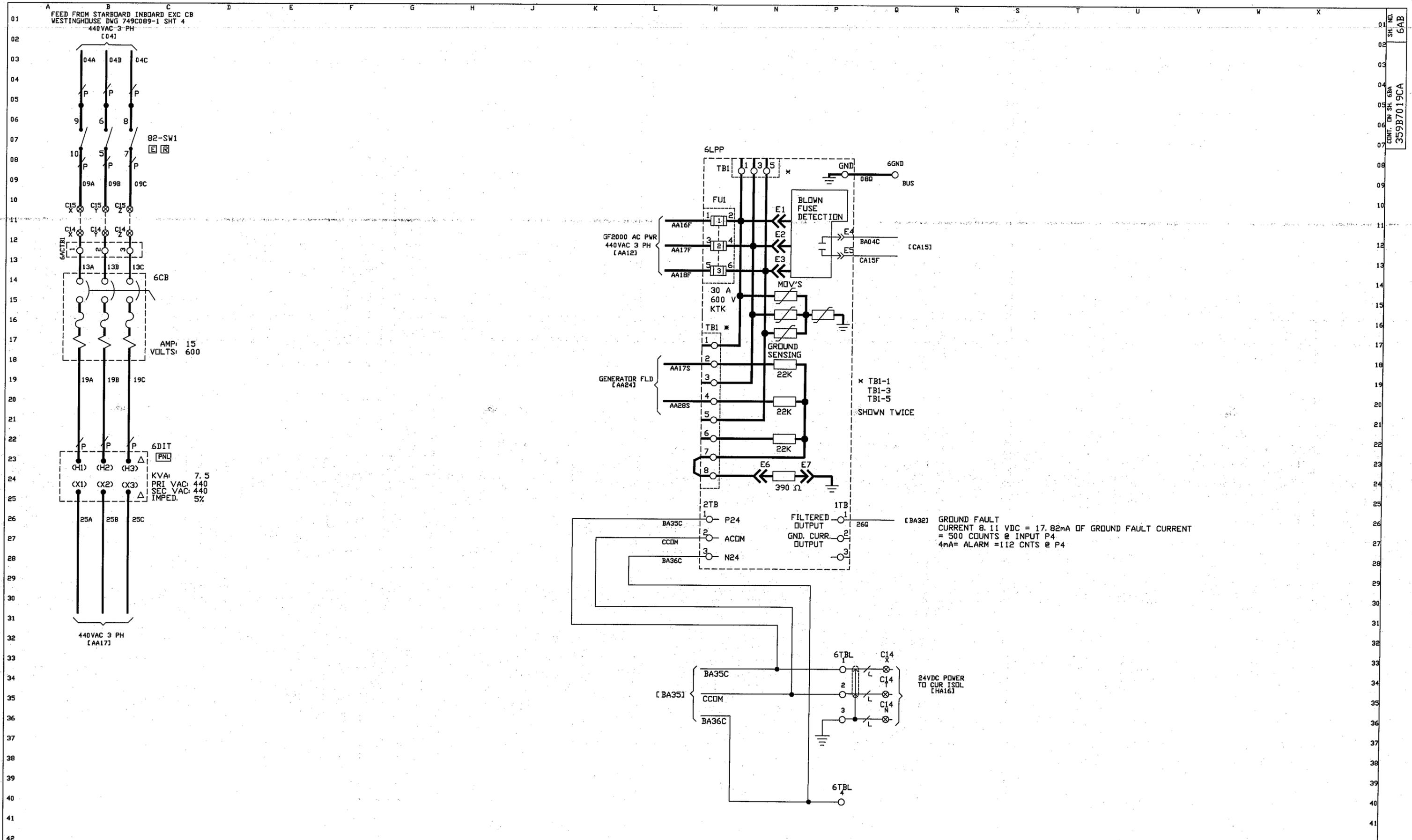
**R11 CALCULATION**  
 $1 \text{ P.U. AMPS SHUNT AMPS} \times 50 \text{ mV} = 31 \text{ mV} = 1 \text{ P.U.}$   
 $\frac{V_{INI}}{V_{IN}} = \frac{7.5K \Omega}{R_{11}} \rightarrow \frac{1 \text{ V}}{31 \text{ mV}} = \frac{7.5K}{R_{11}} \quad R_{11} = 241 \Omega$   
 (USE NEXT STD. RES = 250  $\Omega$ , 1/4 WATT)



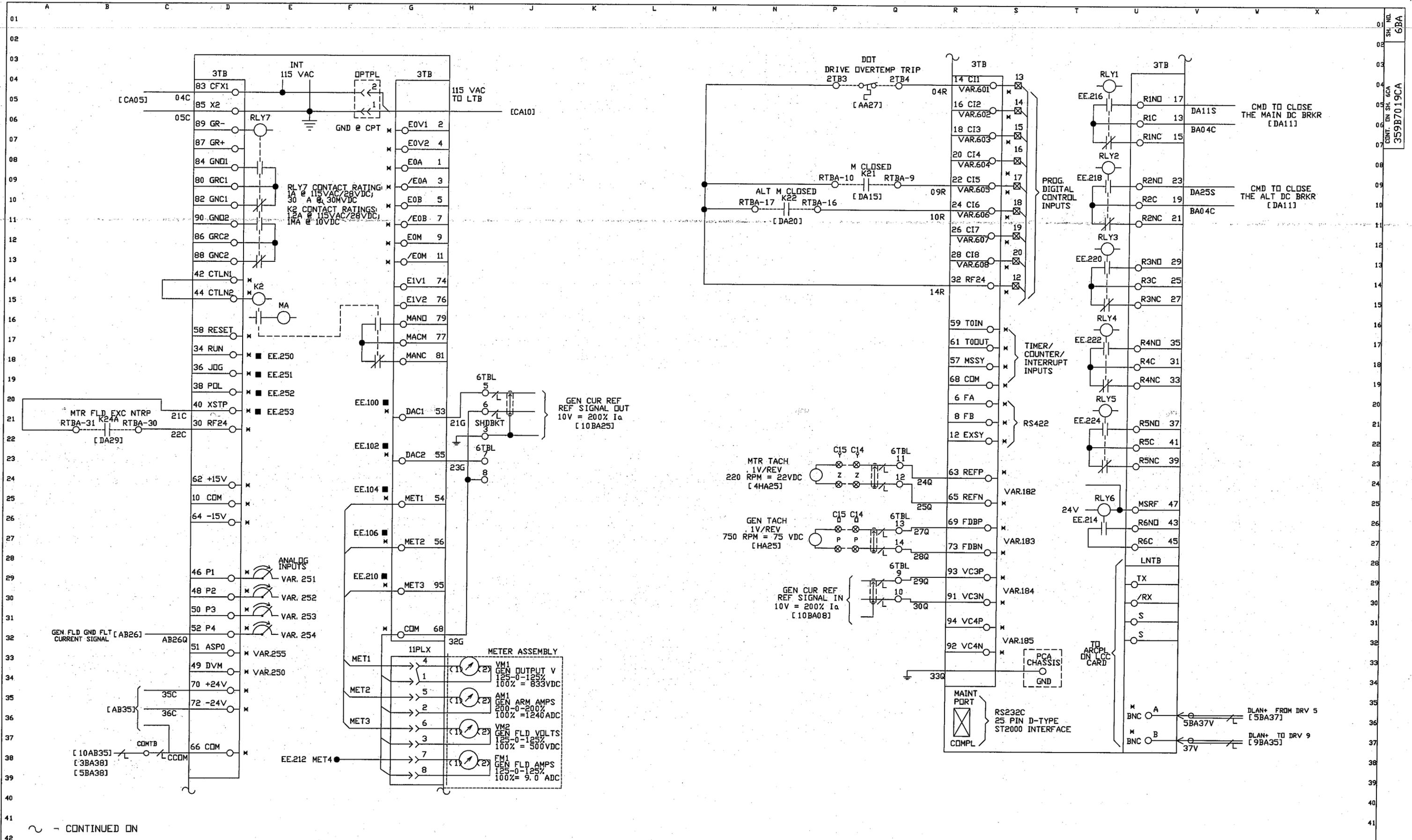
\* WESTINGHOUSE DWG 749C089-1 SHT 72

REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	ISSUE DATE	SHOP ORDER	REQUISITION	GENERAL ELECTRIC - ENGINEERING SERVICES		ELEMENTARY DIAGRAM	359B7019CA	SH. NO.
3	Nov 26 03	PS	D. WALLACE	D. WALLACE	12/9/02	ZTG038	84702084	GRIFTON STARBOARD OUTBOARD GEN EXC.		CONT. ON SH. 6AA	5HA	

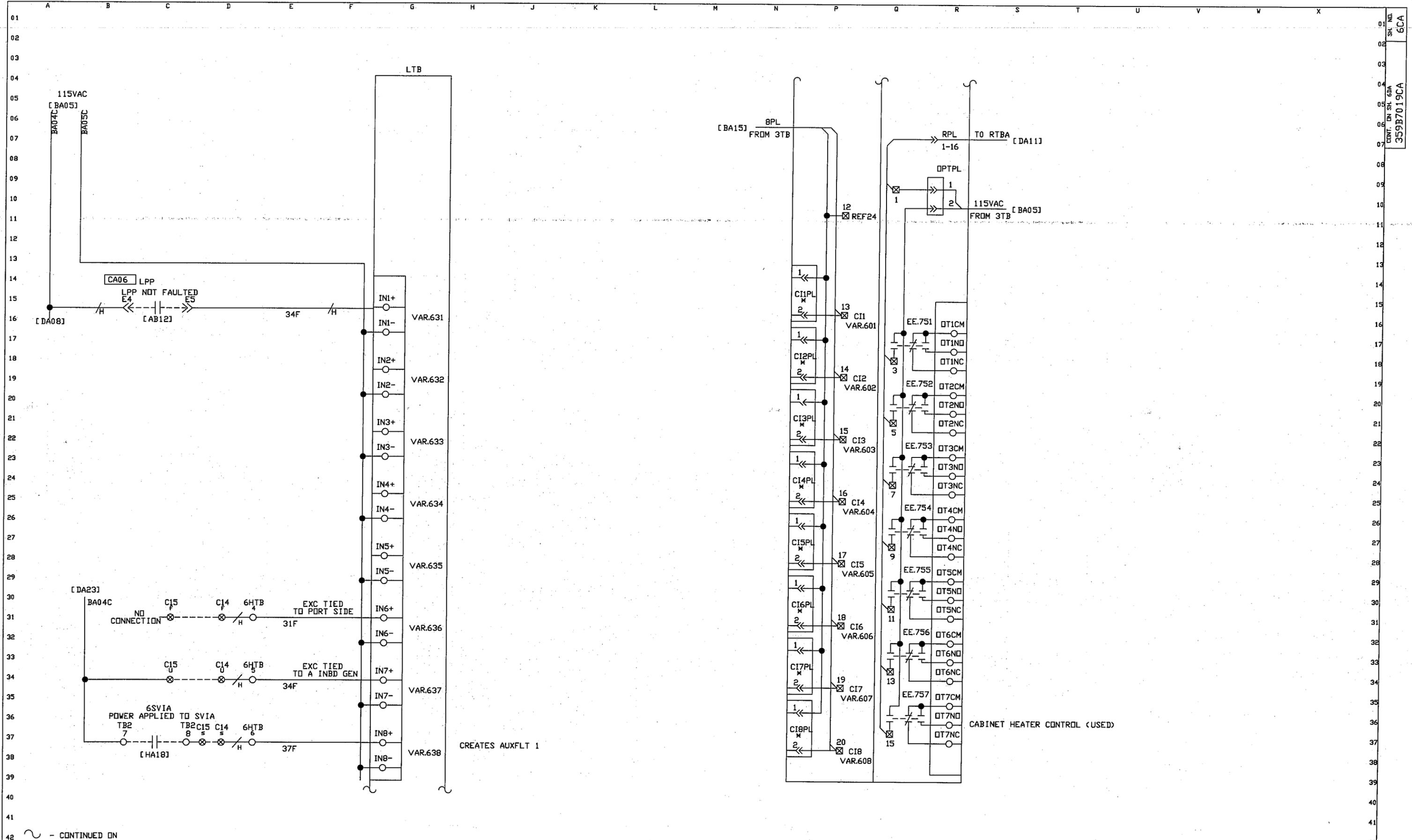




REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	ISSUE DATE	SHOP ORDER	REQUISITION	GENERAL ELECTRIC - ENGINEERING SERVICES	ELEMENTARY DIAGRAM	359B7019CA	SH. NO.
3	Sept 25 03	PS	D WALLACE	D WALLACE	12/9/02	ZTG038	84702084	GENERAL ELECTRIC - ENGINEERING SERVICES	GRIFTON STARBOARD INBOARD GEN EXC. LINE FILTER AND GND FLT MONITOR	CONT. ON SH. 6BA	6AB

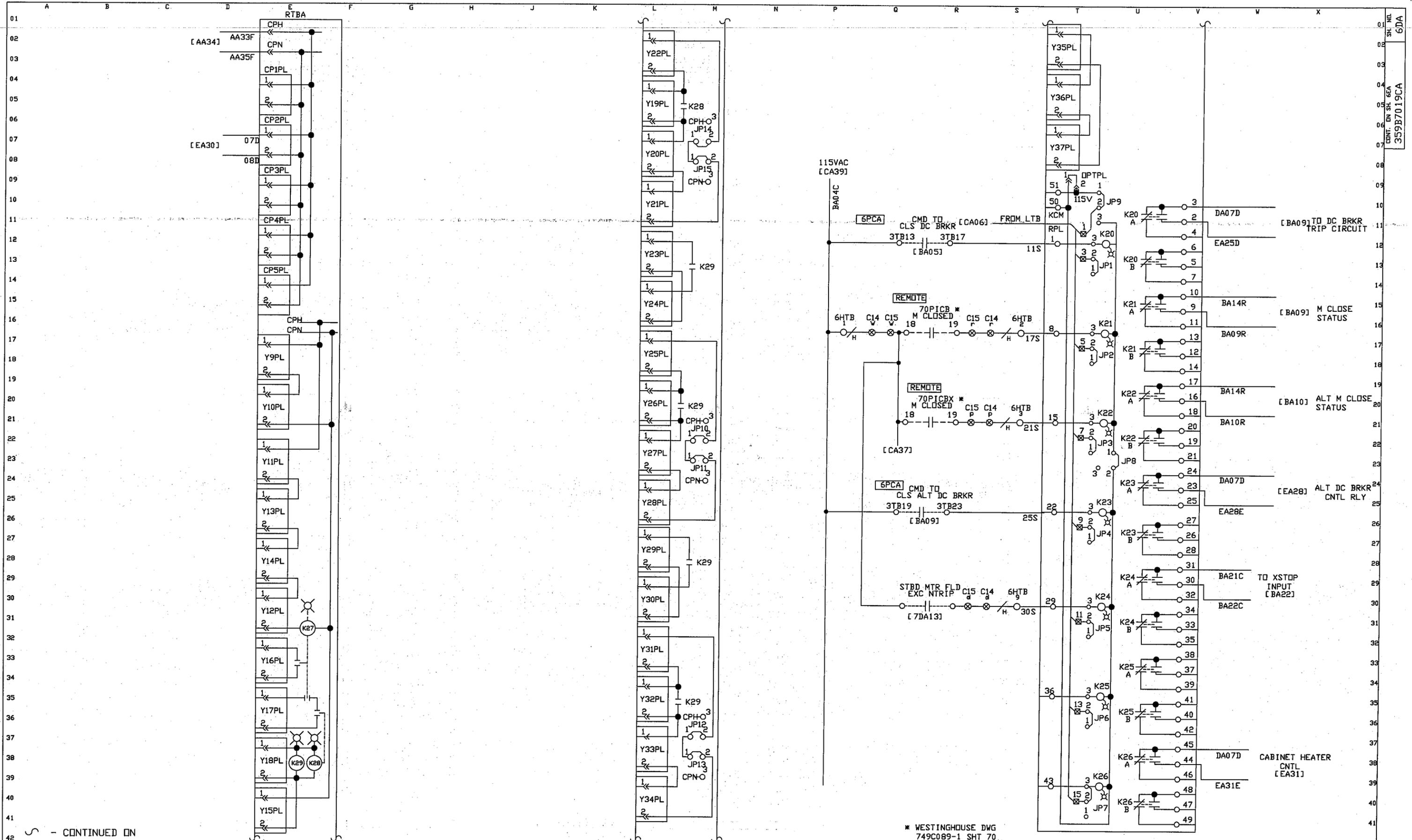


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REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	ISSUE DATE	SHOP ORDER	REQUISITION	GENERAL ELECTRIC - ENGINEERING SERVICES		ELEMENTARY DIAGRAM	359B7019CA	SH. NO.
2	June 23 03	PS	D WALLACE	D WALLACE	12/12/02	ZTG038	84702084	GENERAL ELECTRIC - ENGINEERING SERVICES		GRIFTON STARBOARD INBOARD GEN EXC GF2000 INPUTS/OUTPUTS (LAN TB)	CONT. ON SH. 6DA	6CA

SH. NO. 6CA  
 CONT. ON SH. 6DA  
 359B7019CA



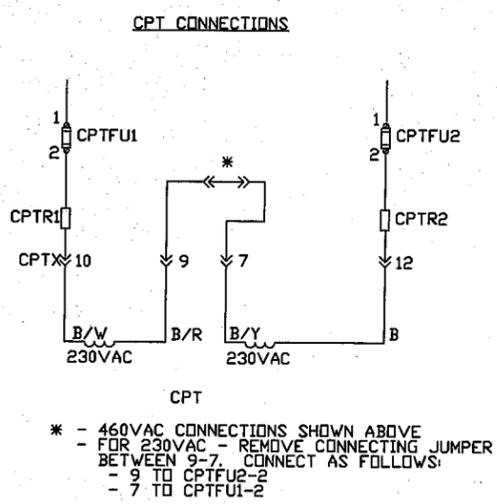
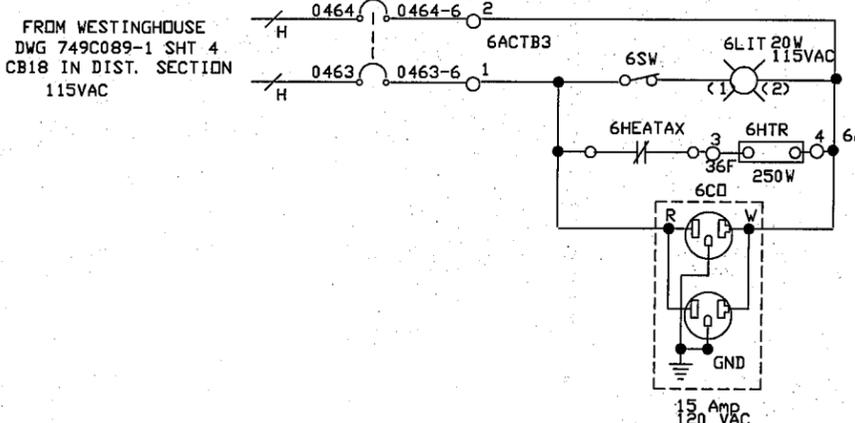
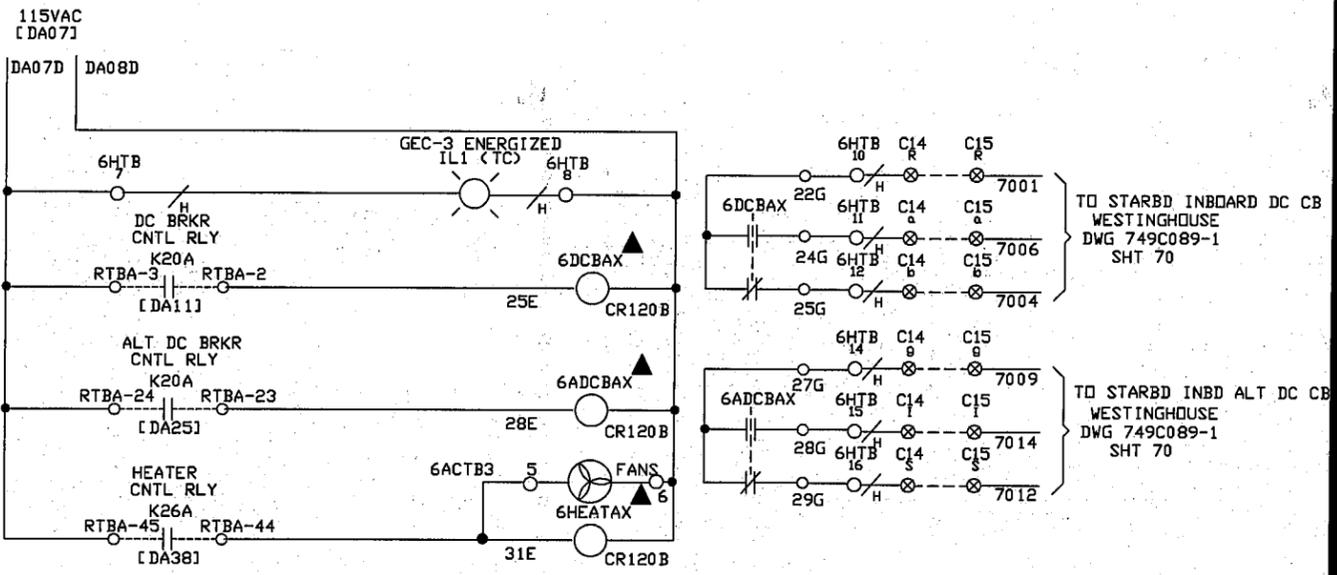
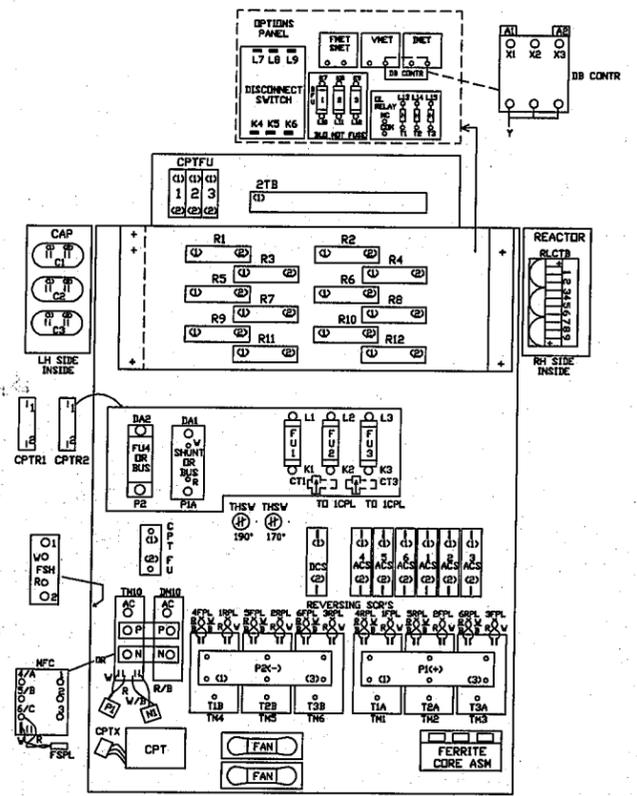
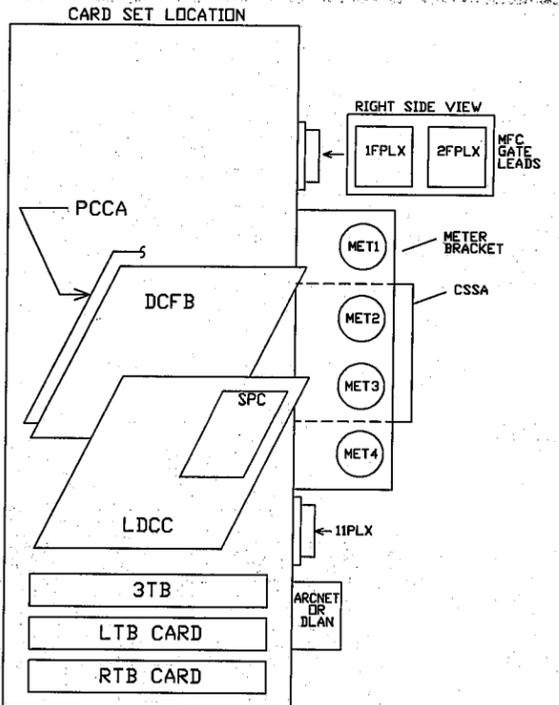
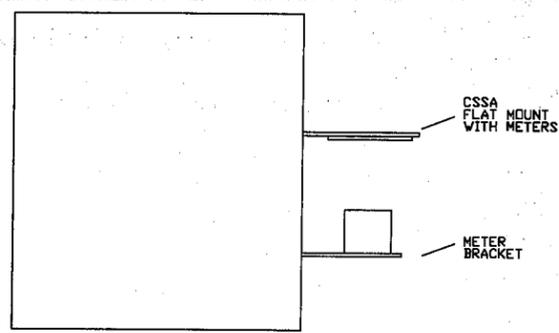
- CONTINUED ON

REVISION NO. 2	REVISION DATE Nov 7 03	REVISED BY PS	ENGINEERING D WALLACE	TECHNICIAN D WALLACE	ISSUE DATE 12/12/02	SHOP ORDER ZTG038	REQUISITION 84702084	GENERAL ELECTRIC — ENGINEERING SERVICES	ELEMENTARY DIAGRAM GRIFFON STARBOARD INBOARD GEN EXC GF2000 RELAY TB	359B7019CA CONT. ON SH. 6EA	SH. NO. 6DA
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RTBA

RTBA

HARDWARE DRAWINGS - G-FRAME DRIVES  
GF2000 DIGITAL ADJUSTABLE SPEED DRIVES



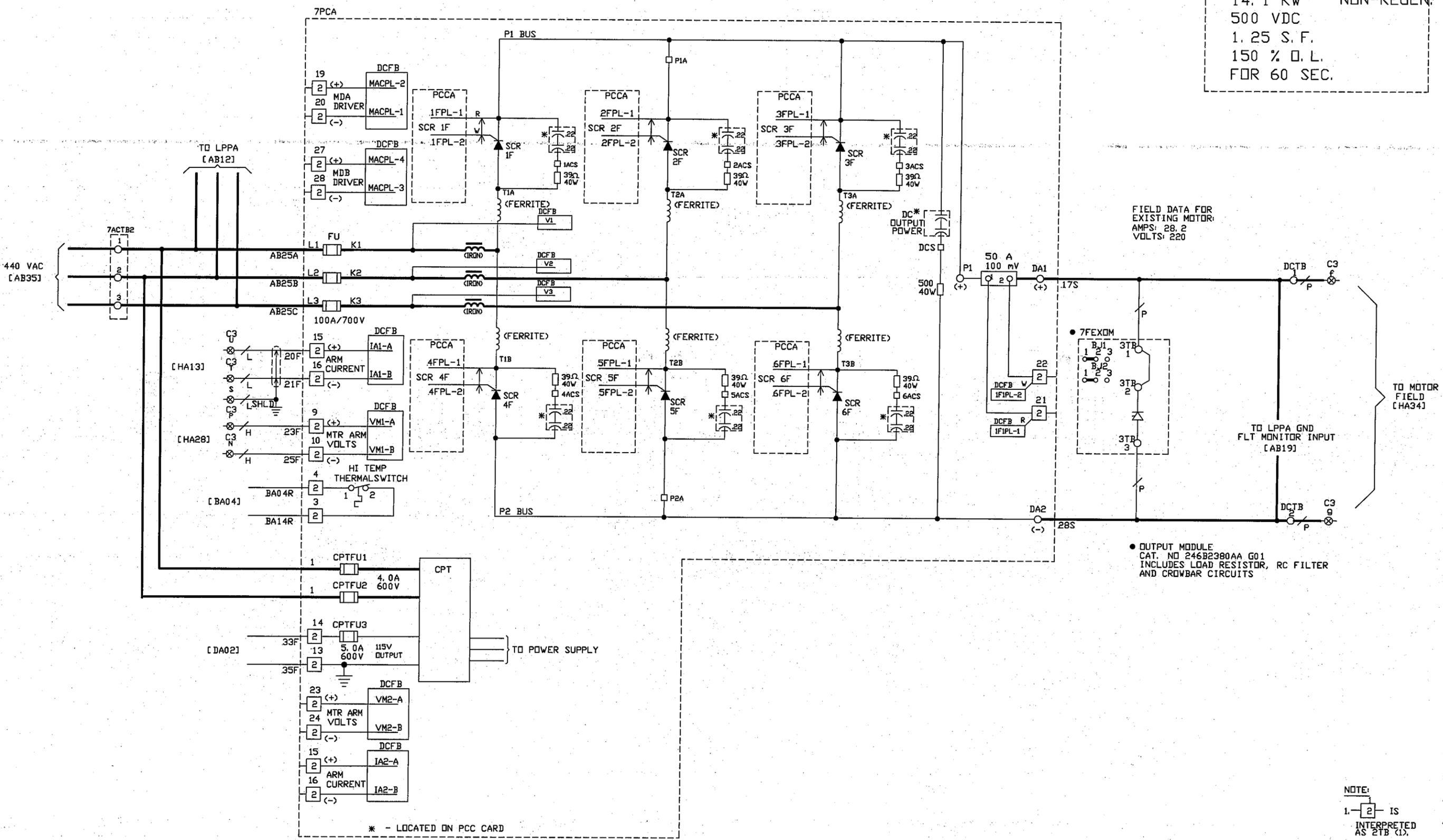
OPTIONAL CPT  
4.5 AMP OUTPUT

	230 VAC	460 VAC	575 VAC
FU1	8A	4A	3.2A
FU2	8A	4A	3.2A
FU3	5A	5A	5A

\* - 460VAC CONNECTIONS SHOWN ABOVE  
- FOR 230VAC - REMOVE CONNECTING JUMPER BETWEEN 9-7, CONNECT AS FOLLOWS:  
- 9 TO CPTFU2-2  
- 7 TO CPTFU1-2



MODEL NO. 3VZTG038CD007  
 SEE GEH-6150  
 ME2000 G-FRAME  
 14.1 KW NON-REGEN.  
 500 VDC  
 1.25 S.F.  
 150 % O.L.  
 FOR 60 SEC.

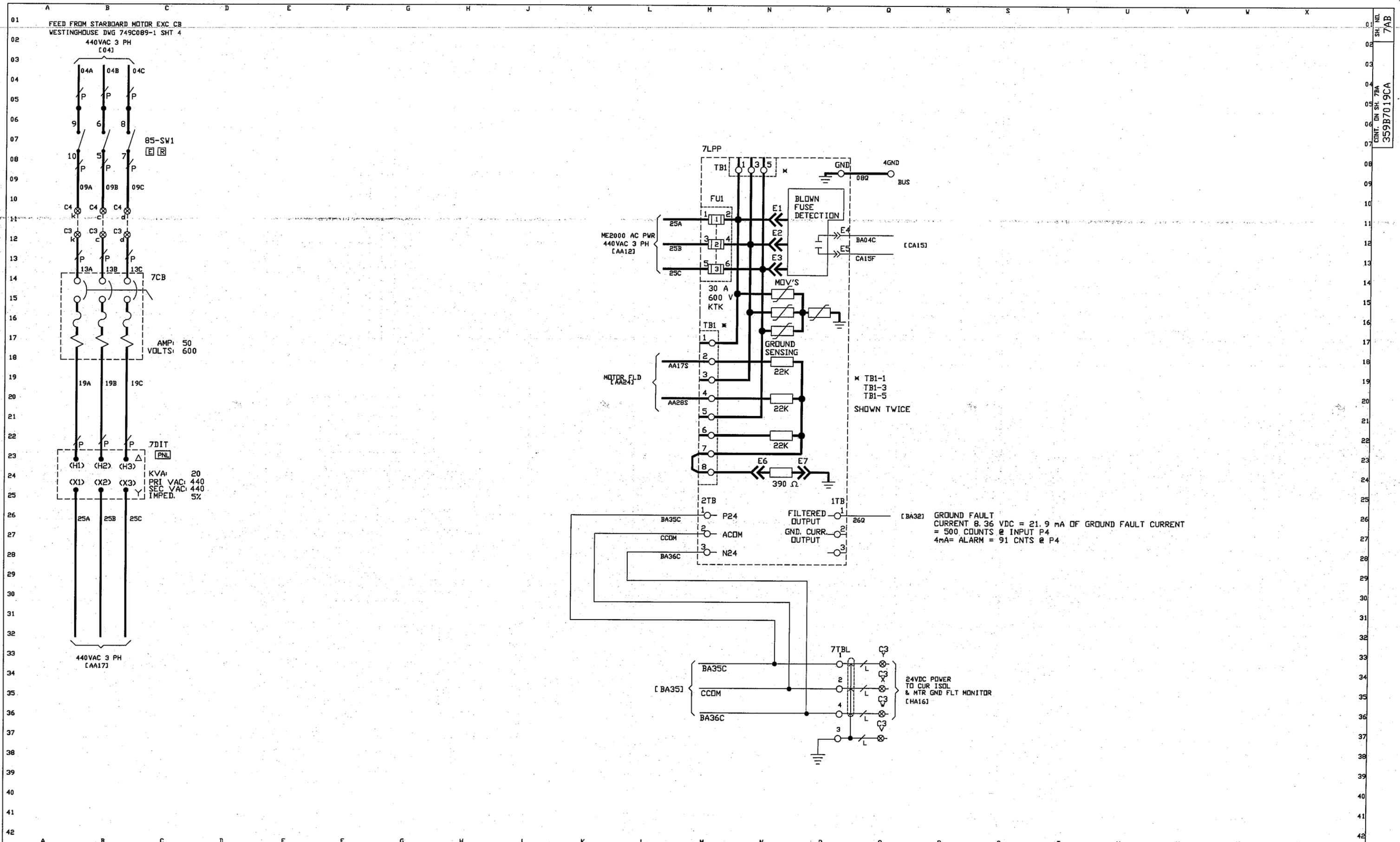


FIELD DATA FOR EXISTING MOTOR:  
 AMPS: 28.2  
 VOLTS: 220

● OUTPUT MODULE  
 CAT. NO 246B2380AA G01  
 INCLUDES LOAD RESISTOR, RC FILTER  
 AND CROWBAR CIRCUITS

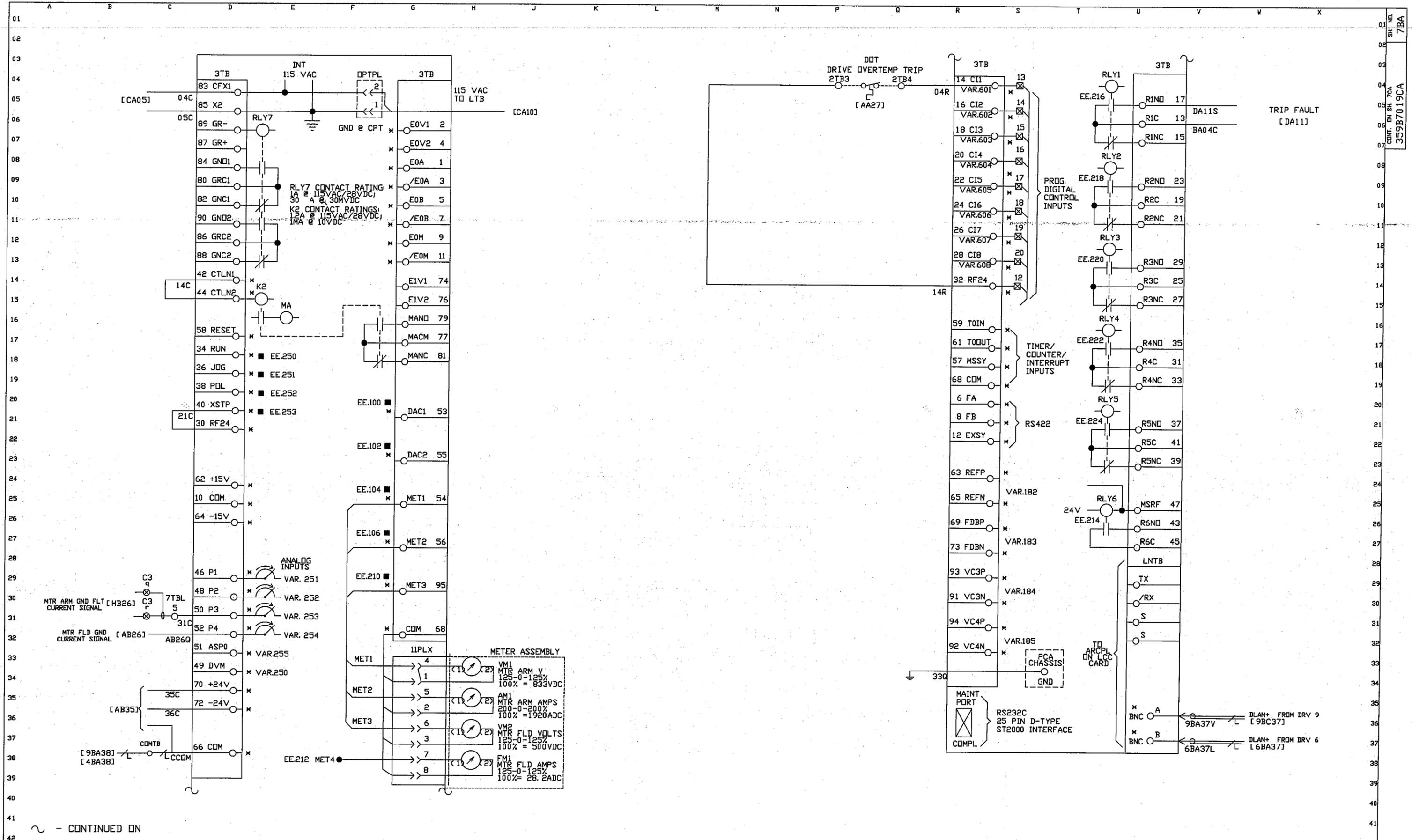
NOTE:  
 1-2 IS  
 INTERPRETED  
 AS 2TB (1).

REVISION NO. 2	REVISION DATE Nov 26 03	REVISED BY PS	ENGINEERING D WALLACE	TECHNICIAN D WALLACE	ISSUE DATE 12/9/02	SHOP ORDER ZTG038	REQUISITION 84702084	GENERAL ELECTRIC - ENGINEERING SERVICES	ELEMENTARY DIAGRAM GRIFFON STARBOARD MOTOR FIELD EXC CONVERTER	359B7019CA CONT. ON SH. 7AB	SH. NO. 7AA
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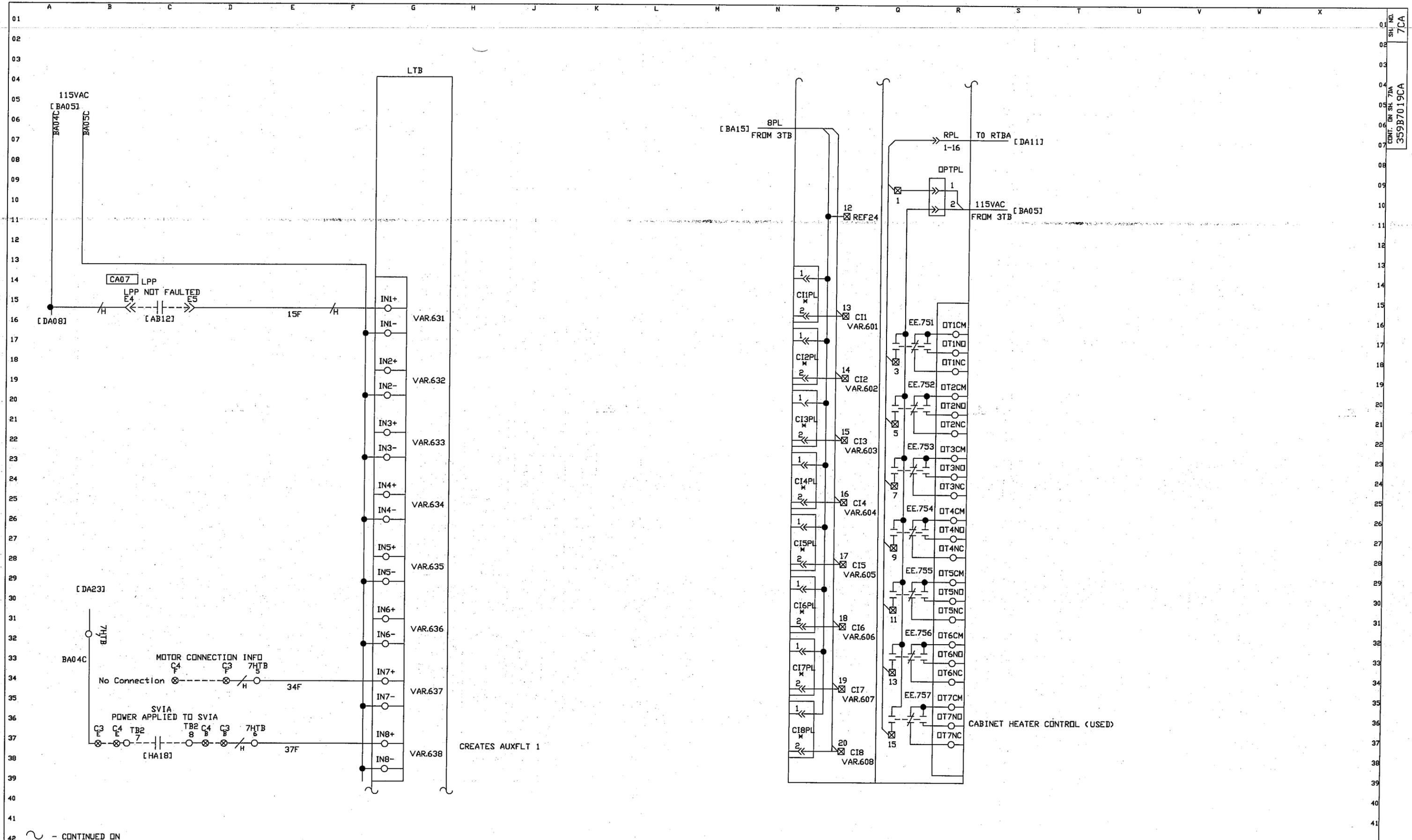
REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	ISSUE DATE	SHOP ORDER	REQUISITION	GENERAL ELECTRIC - ENGINEERING SERVICES		ELEMENTARY DIAGRAM	359B7019CA	SH. NO.
3	Sept 25 03	PS	D WALLACE	D WALLACE	12/9/02	ZTG038	84702084	GENERAL ELECTRIC - ENGINEERING SERVICES		GRIFTON STARBOARD MOTOR FIELD EXC. LINE FILTER AND GND FLT MONITOR	CONT. ON SH. 7BA	7AB

SH. NO. 7AB  
 CONT. ON SH. 7BA  
 359B7019CA

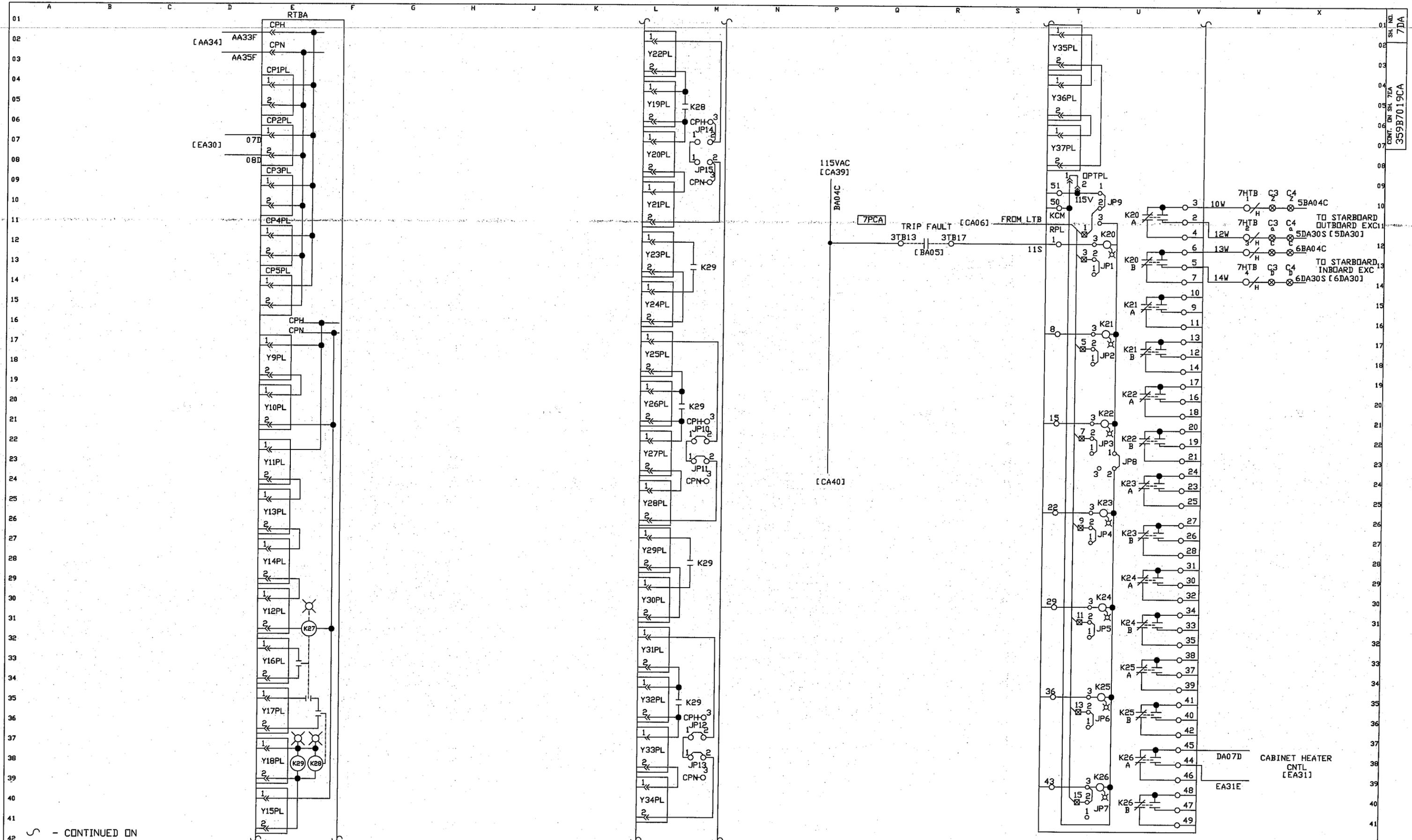


~ - CONTINUED ON

REVISION NO. 3	REVISION DATE June 25 03	REVISED BY PS	ENGINEERING D WALLACE	TECHNICIAN D WALLACE	ISSUE DATE 12/09/02	SHOP ORDER ZTG038	REQUISITION 84702084	GENERAL ELECTRIC - ENGINEERING SERVICES	ELEMENTARY DIAGRAM GRIFFON STARBOARD MOTOR FIELD EXC CONTROL IFC/3TB RELAYS	359B7019CA CONT. ON SH. 7CA	SH. NO. 7BA
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REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	ISSUE DATE	SHOP ORDER	REQUISITION	GENERAL ELECTRIC - ENGINEERING SERVICES		ELEMENTARY DIAGRAM	359B7019CA	SH. NO.
2	Nov 7 03	PS	D WALLACE	D WALLACE	12/12/02	ZTG038	84702084			GRIFFON STARBOARD MOTOR FIELD EXC GF2000 INPUTS/OUTPUTS (LAN TB)	CONT. ON SH. 7DA 7CA	7CA

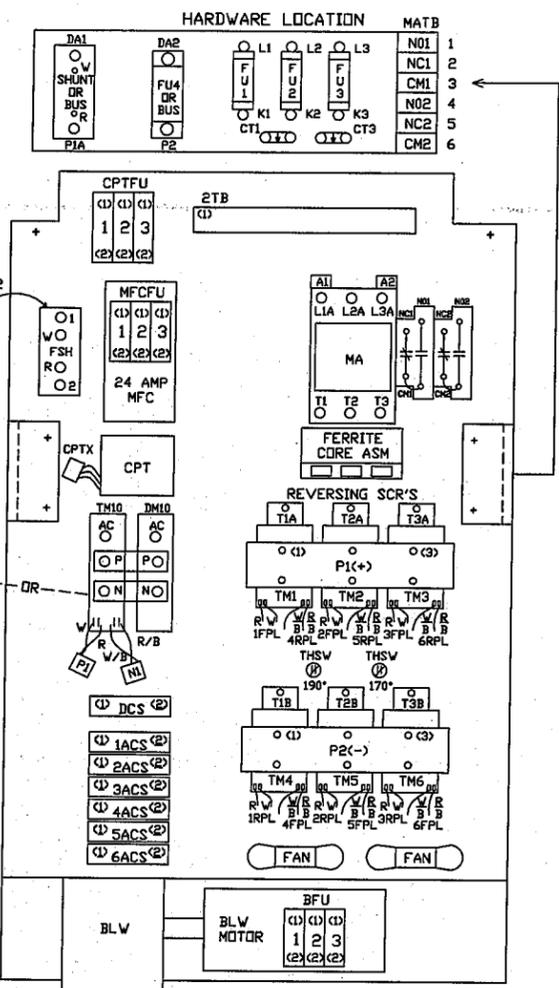
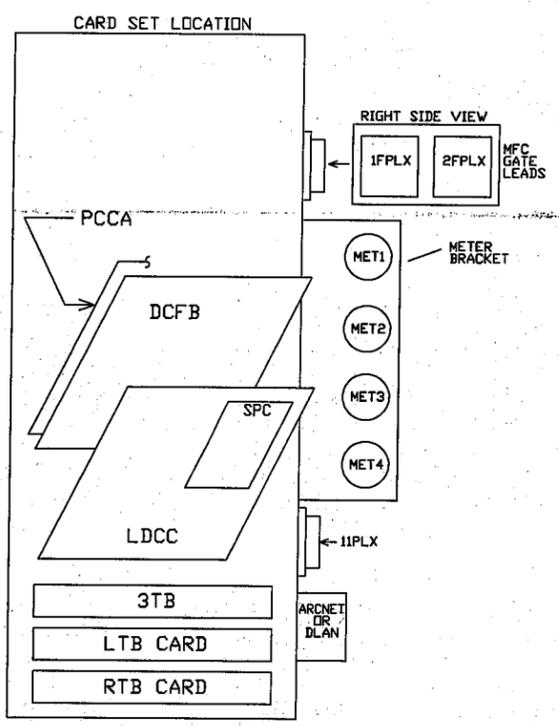
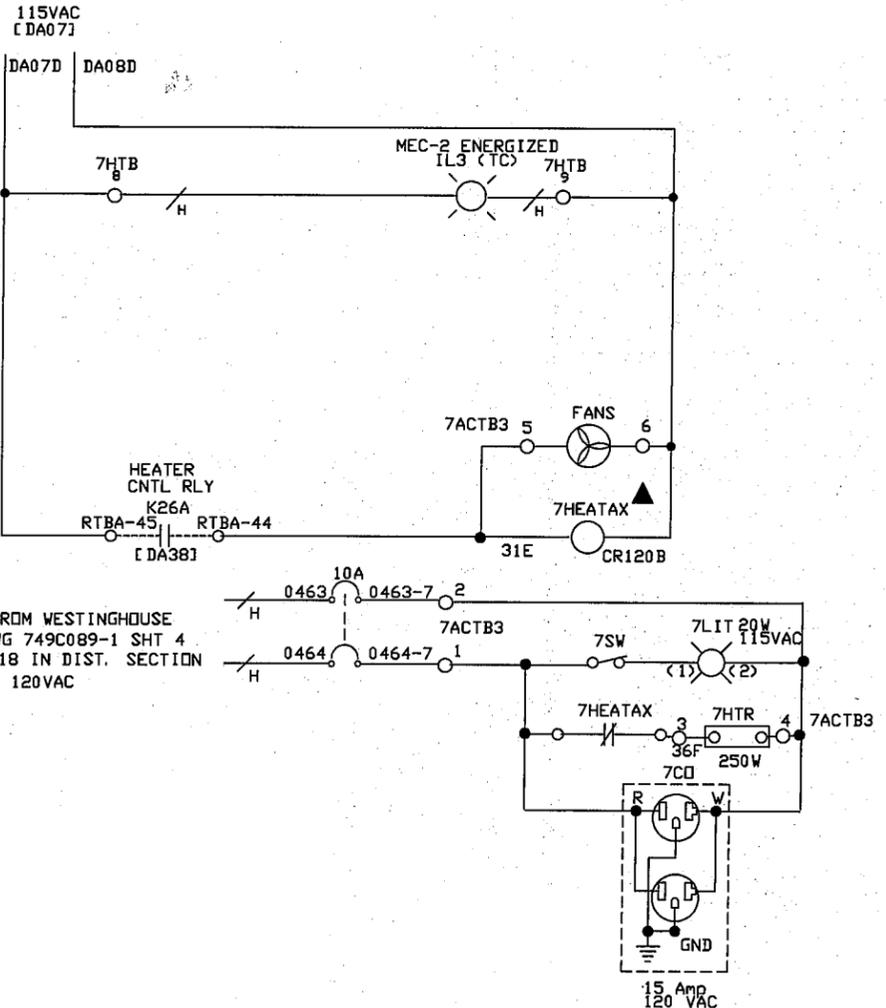


REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	ISSUE DATE	SHOP ORDER	REQUISITION	ELEMENTARY DIAGRAM	SH. NO.
2	Nov 7 03	PS	D WALLACE	D WALLACE	12/12/02	ZTG038	84702084	GRIFTON STARBOARD MOTOR FIELD EXC GF2000 RELAY TB	7DA

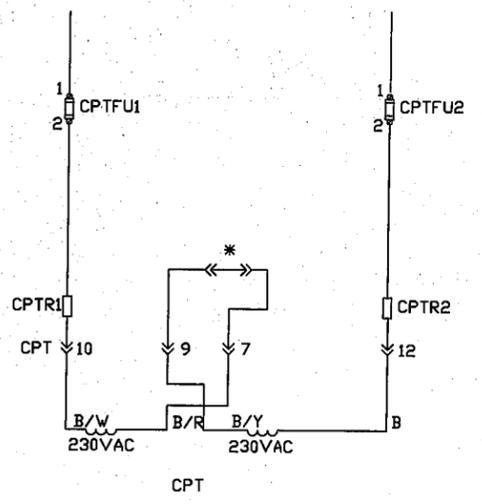
HARDWARE DRAWINGS - G-FRAME DRIVES

ME2000 DIGITAL ADJUSTABLE SPEED DRIVES

CONT. ON SH. 7HA  
359B7019CA  
SH. NO. 7EA



CPT CONNECTIONS



OPTIONAL CPT  
4.5 AMP OUTPUT

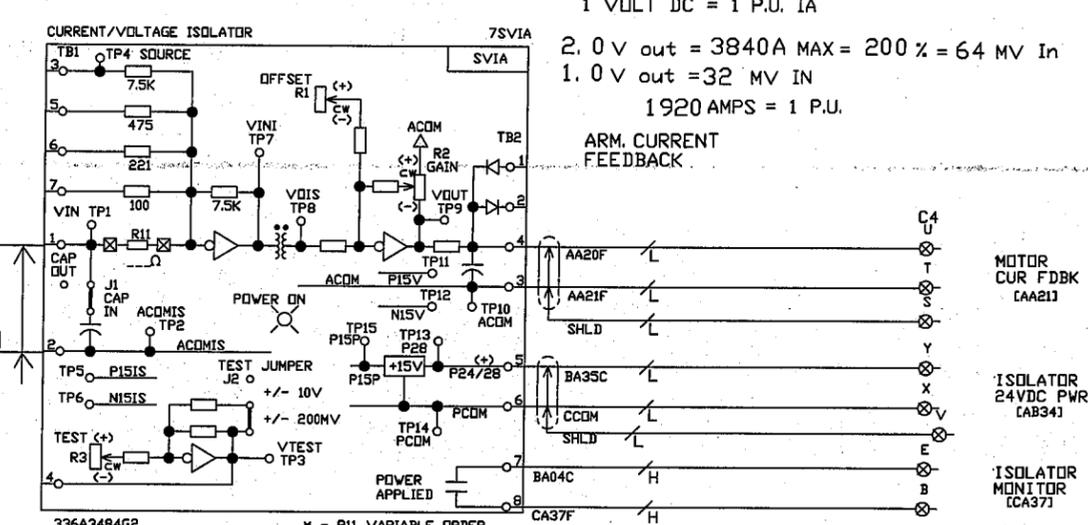
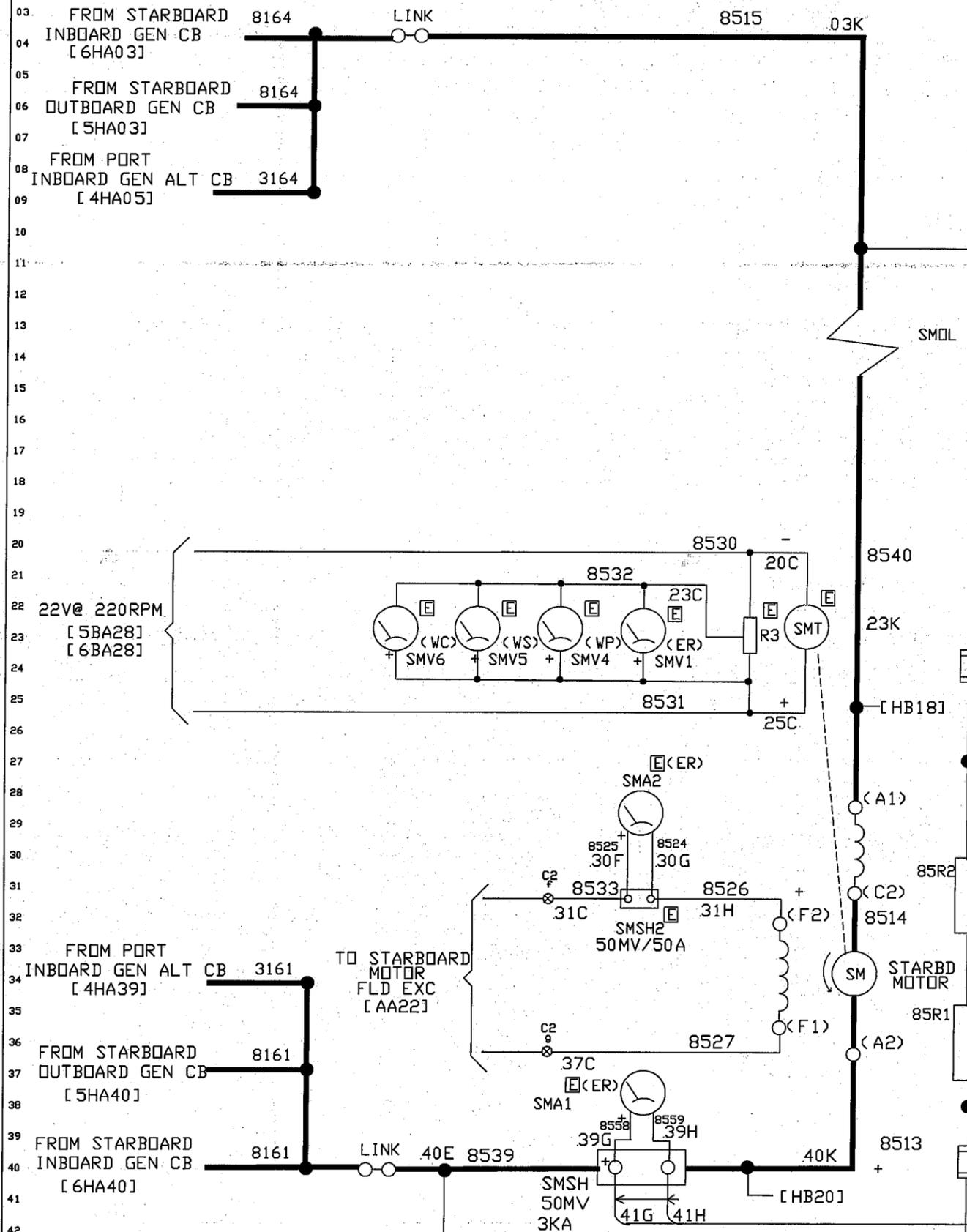
	230 VAC	460 VAC	575 VAC
FU1	8A	4A	3.2A
FU2	8A	4A	3.2A
FU3	5A	5A	5A

\* - 460VAC CONNECTIONS SHOWN ABOVE  
 - FOR 230VAC - REMOVE CONNECTING JUMPER BETWEEN 9-7. CONNECT AS FOLLOWS:  
 - 9 TO CPTFU2-2  
 - 7 TO CPTFU1-2

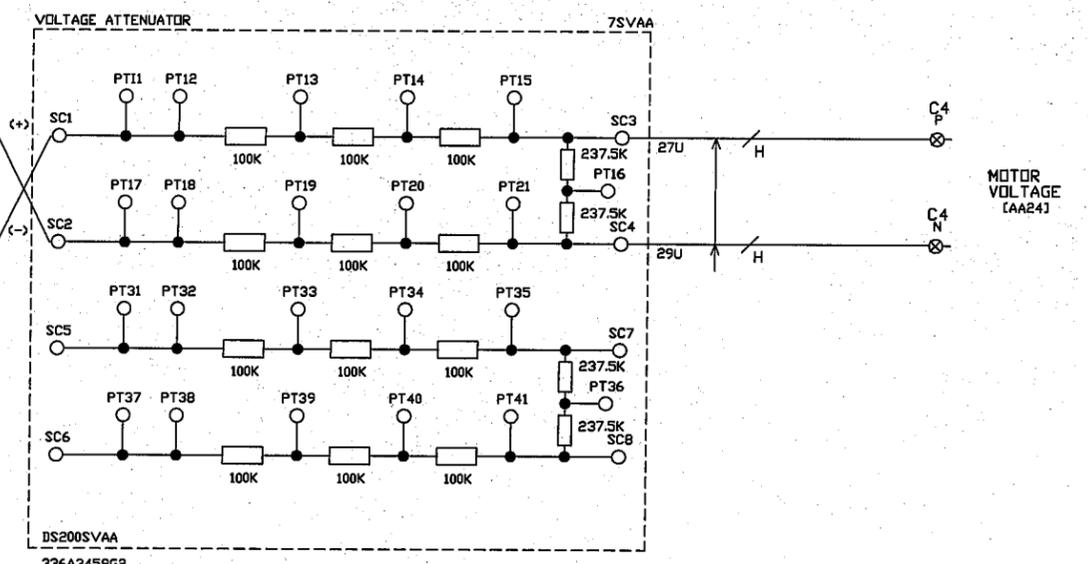
MOTOR DATA

FRAME MCF PWR 2000HP  
 BASE SPEED 170 TOP SPEED 220  
 ARM VOLTS 833 ARM AMPS 1920  
 ARM & COMM FLD R 0.006320 ARM IND ??? MH (UNSAT)  
 FLD VOLTS (HOT) 220 MAX FIELD AMPS 28.2 MIN FIELD AMPS 14.4  
 FLD R 6.7 FIELD IND ??? H (UNSAT)

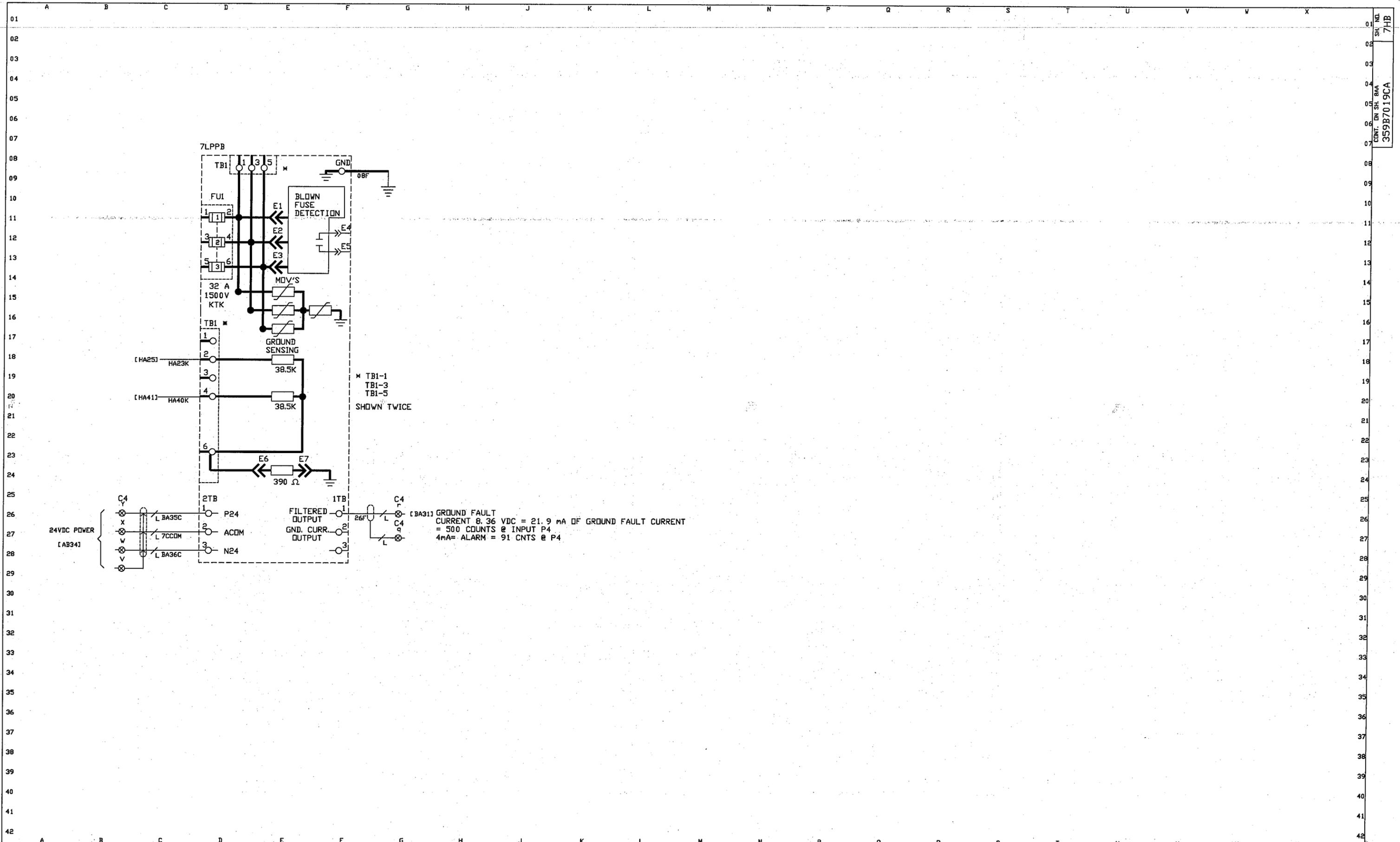
V. 1005 IAFDK = 0  
 573.14 to 1 = Disable auto null



R11 CALCULATION  
 $1 \text{ P.U. AMPS} \times 50 \text{ mv} = 32 \text{ mv} = 1 \text{ P.U.}$   
 $\frac{VINI}{R11} = \frac{7.5K \Omega}{32 \text{ mv}} = \frac{1V}{32 \text{ mv}} = 7.5K \Omega \quad R11=240 \Omega$   
 (USE NEXT STD. RES = 250  $\Omega$  1/4 WATT)



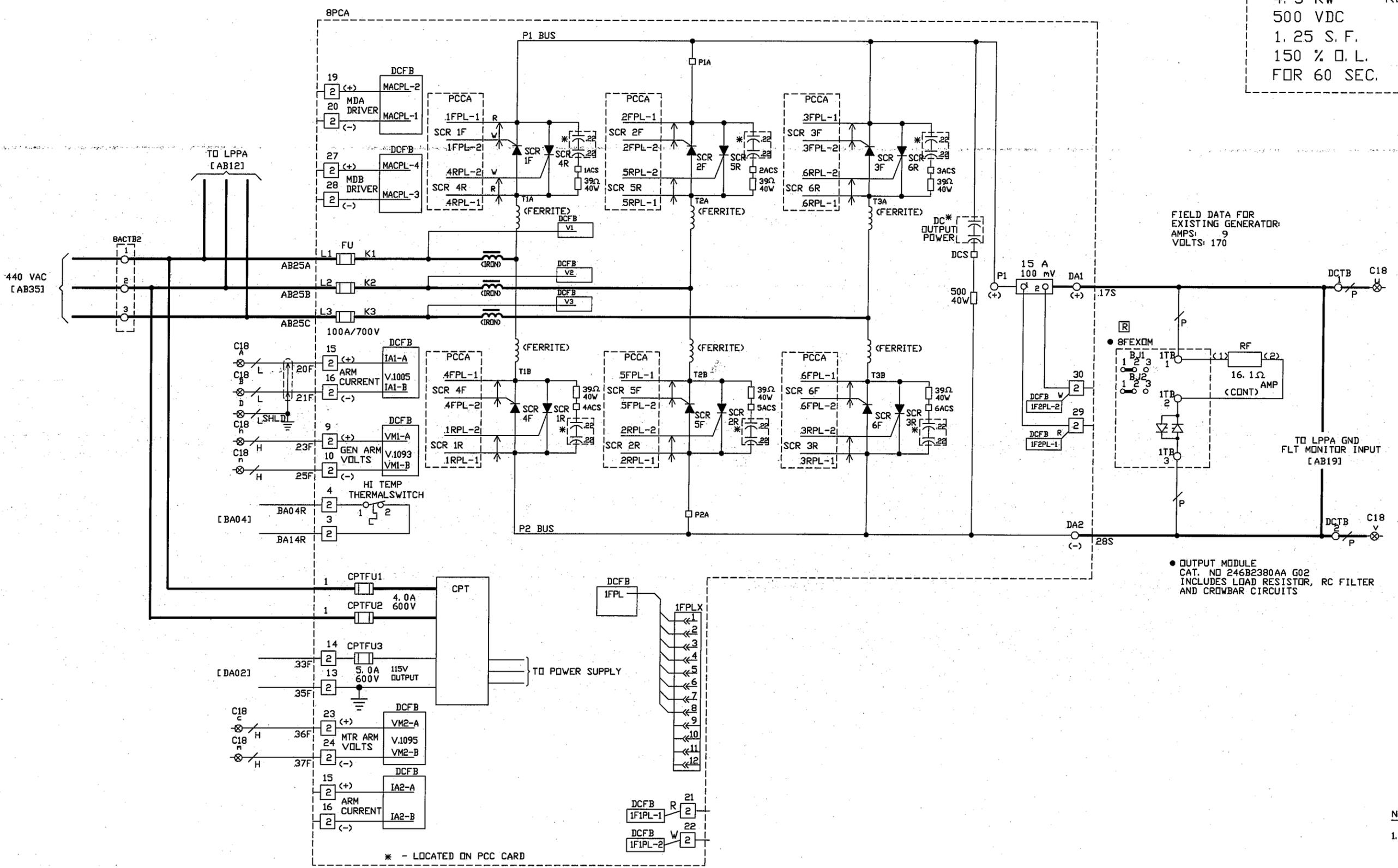
REVISION NO. 2	REVISION DATE Nov 17 03	REVISED BY PS	ENGINEERING D. WALLACE	TECHNICIAN D. WALLACE	ISSUE DATE 12/9/02	SHOP ORDER ZTG038	REQUISITION 84702084	GENERAL ELECTRIC - ENGINEERING SERVICES	ELEMENTARY DIAGRAM GRIFFON STARBOARD MOTOR ARMATURE CIRCUIT	359B70 19CA CONT. ON SH. 7HB	SH. NO. 7HA
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REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	ISSUE DATE	SHOP ORDER	REQUISITION	GENERAL ELECTRIC - ENGINEERING SERVICES		ELEMENTARY DIAGRAM	359B7019CA	SH. NO.
2	Sept 11 03	PS	D WALLACE	D WALLACE	12/9/02	ZTG038	84702084	GENERAL ELECTRIC - ENGINEERING SERVICES		GRIFTON STARBOARD MOTOR FIELD EXC. MTR GND FLT MONITOR	CONT. ON SH. 8AA	7HB

SH. NO. 7HB  
 CONT. ON SH. 8AA  
 359B7019CA

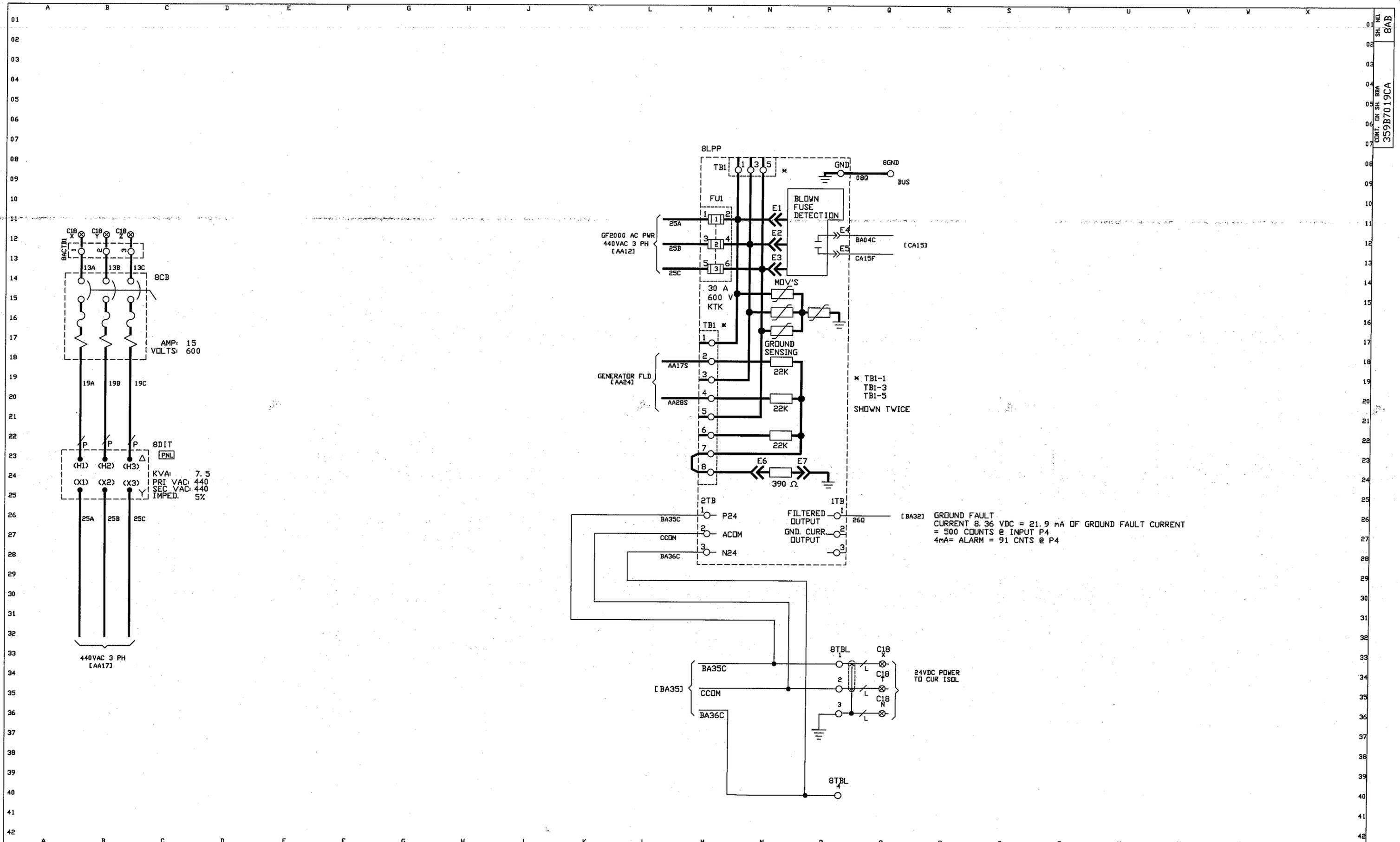
MODEL NO. 3VZTG038CD008  
 SEE GEH-6148  
 GF2000 G-FRAME  
 4.5 KW REGEN.  
 500 VDC  
 1.25 S. F.  
 150 % O. L.  
 FOR 60 SEC.



FIELD DATA FOR EXISTING GENERATOR:  
 AMPS: 9  
 VOLTS: 170

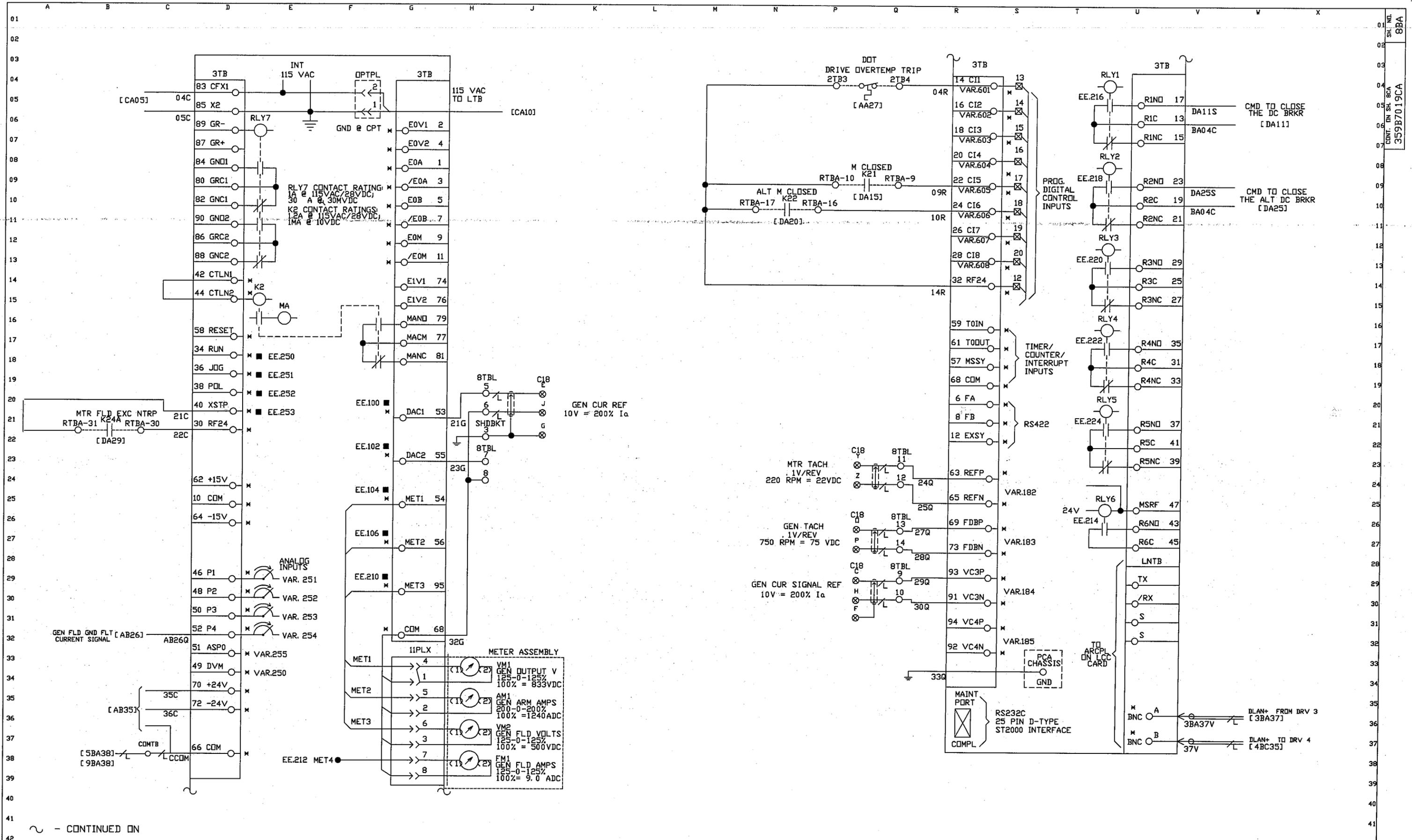
OUTPUT MODULE  
 CAT. NO 246B2380AA G02  
 INCLUDES LOAD RESISTOR, RC FILTER  
 AND CROWBAR CIRCUITS

NOTE:  
 1. 2 IS INTERPRETED AS 21B (1).



REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	ISSUE DATE	SHOP ORDER	REQUISITION	GENERAL ELECTRIC - ENGINEERING SERVICES		ELEMENTARY DIAGRAM	359B7019CA	SH. NDL
3	June 23 03	PS	D WALLACE	D WALLACE	12/9/02	ZTG038	84702084	GENERAL ELECTRIC - ENGINEERING SERVICES		GRIFTON SPARE GEN EXC. LINE FILTER AND GND FLT MONITOR	359B7019CA CONT. DN SH. 8BA	8AB

SH. NDL  
8AB  
359B7019CA  
CONT. DN SH. 8BA

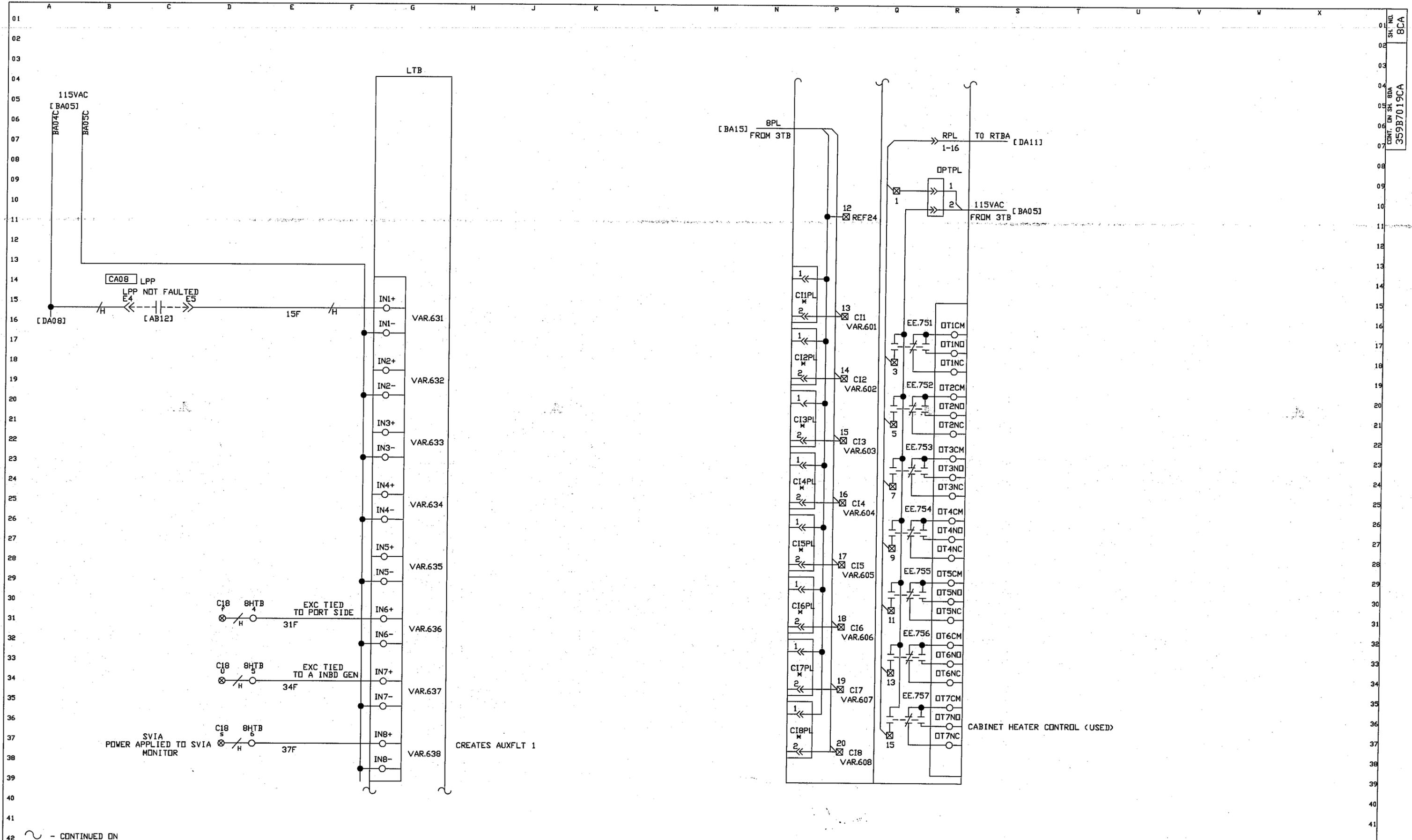


REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	ISSUE DATE	SHOP ORDER	REQUISITION	ELEMENTARY DIAGRAM	359B7019CA	SH. NO.
4	Nov 26 03	PS	D WALLACE	D WALLACE	12/09/02	.ZTG038	84702084	GRIFTON SPARE GEN EXC CONTROL IFC/3TB RELAYS	CONT. ON SH. 8CA	8BA

GENERAL ELECTRIC - ENGINEERING SERVICES

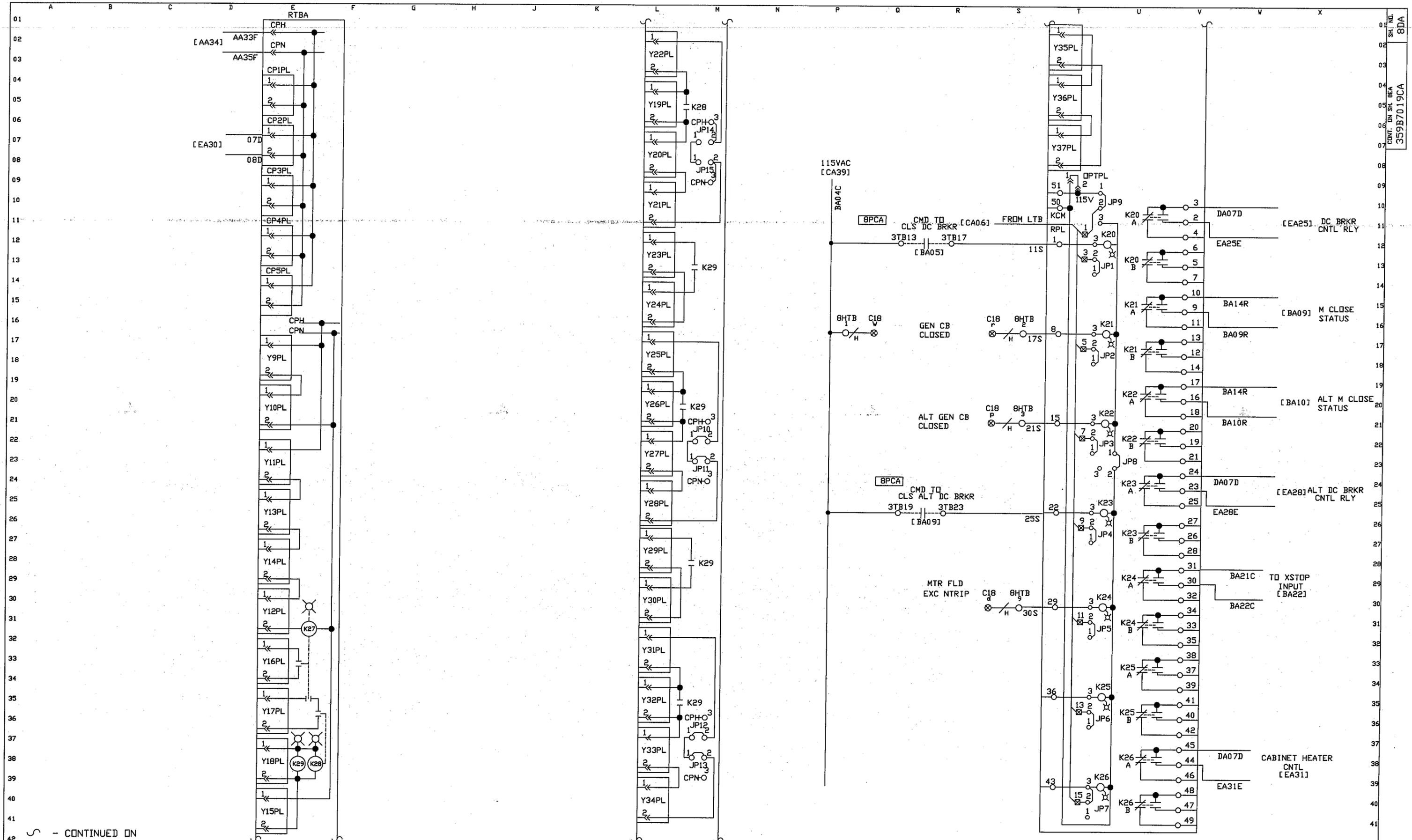
359B7019CA

8BA



REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	ISSUE DATE	SHOP ORDER	REQUISITION	GENERAL ELECTRIC - ENGINEERING SERVICES		ELEMENTARY DIAGRAM	359B7019CA	SHL NO.
2	June23 03	PS	D WALLACE	D WALLACE	12/12/02	ZTG038	84702084			GRIFFON SPARE GEN EXC GF2000 INPUTS/OUTPUTS (LAN TB)	CONT. ON SH. 8DA 8CA	8CA

SHL NO. 8CA  
 CONT. ON SH. 8DA  
 359B7019CA

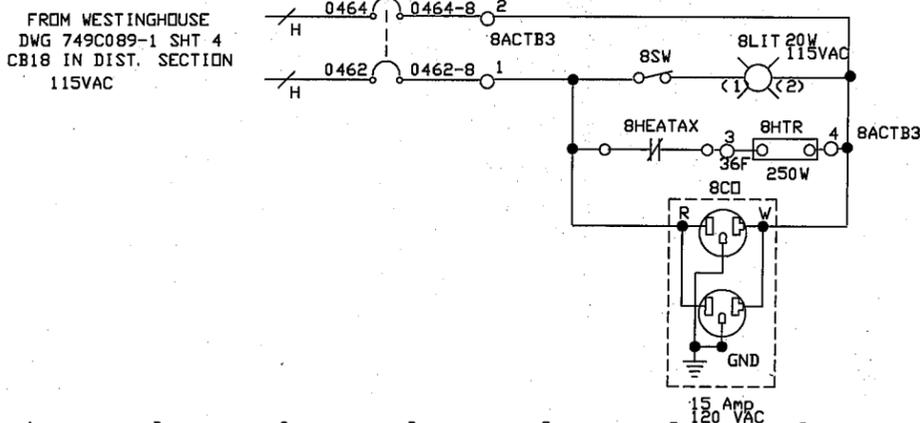
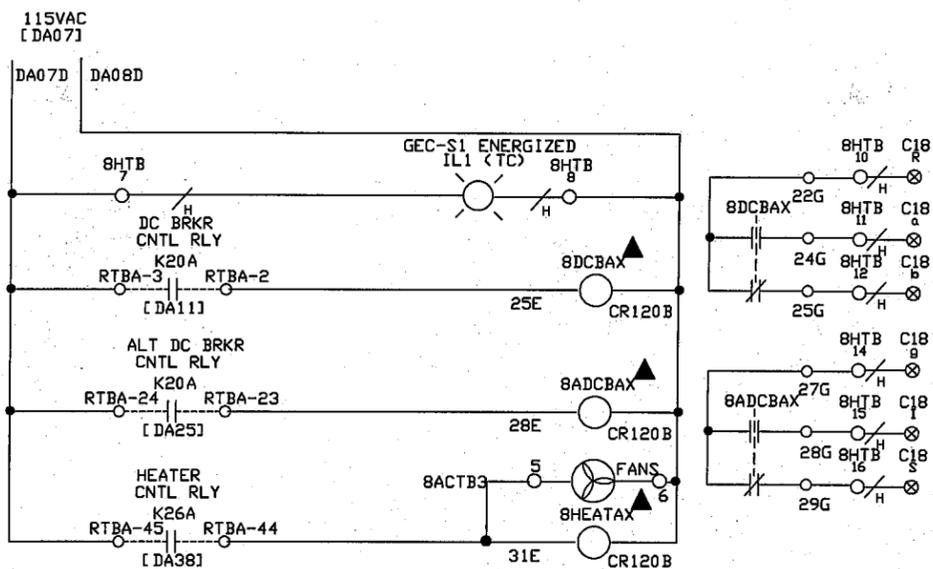
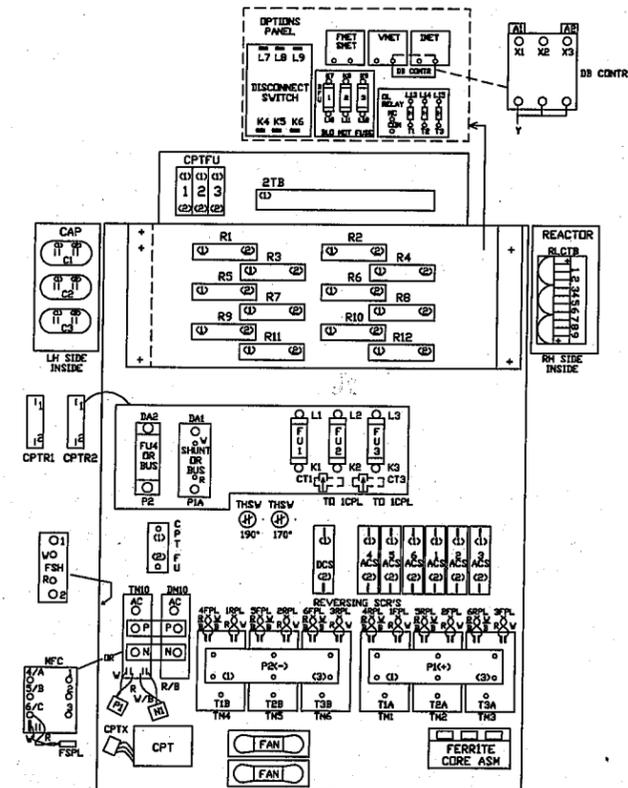
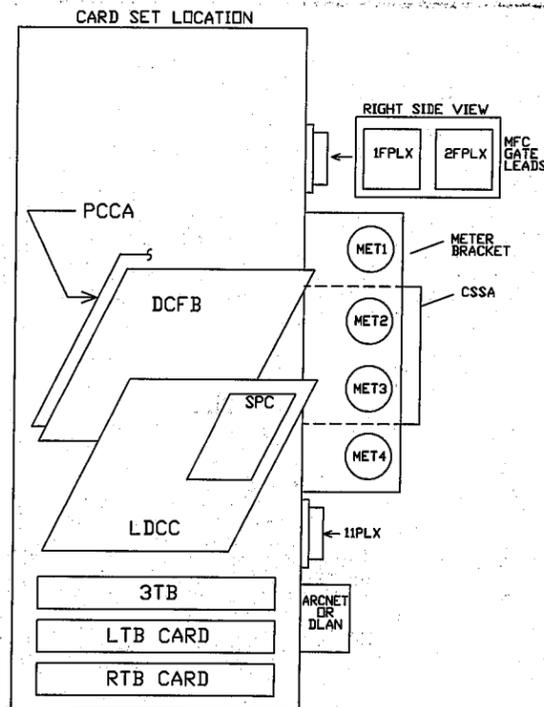
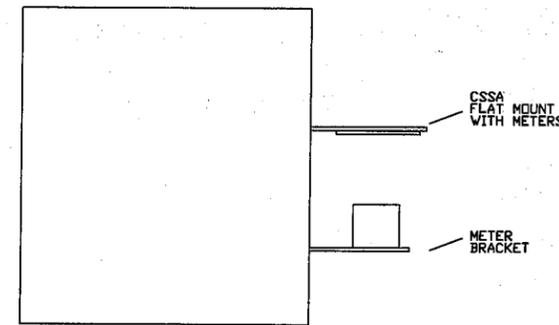


REVISION NO. 2	REVISION DATE Nov 7 03	REVISED BY PS	ENGINEERING D WALLACE	TECHNICIAN D WALLACE	ISSUE DATE 12/12/02	SHOP ORDER ZTG038	REQUISITION 84702084	GENERAL ELECTRIC - ENGINEERING SERVICES	ELEMENTARY DIAGRAM GRIFFON SPARE GEN EXC GF2000 RELAY TB	359B7019CA CONT. ON SH. 8EA	SH. NO. 8DA
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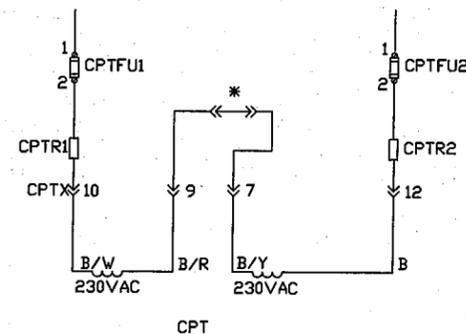
HARDWARE DRAWINGS - G-FRAME DRIVES

GF2000 DIGITAL ADJUSTABLE SPEED DRIVES

SH. NO. 8EA  
 359B7019CA  
 CONT. ON SH. 9AA



CPT CONNECTIONS



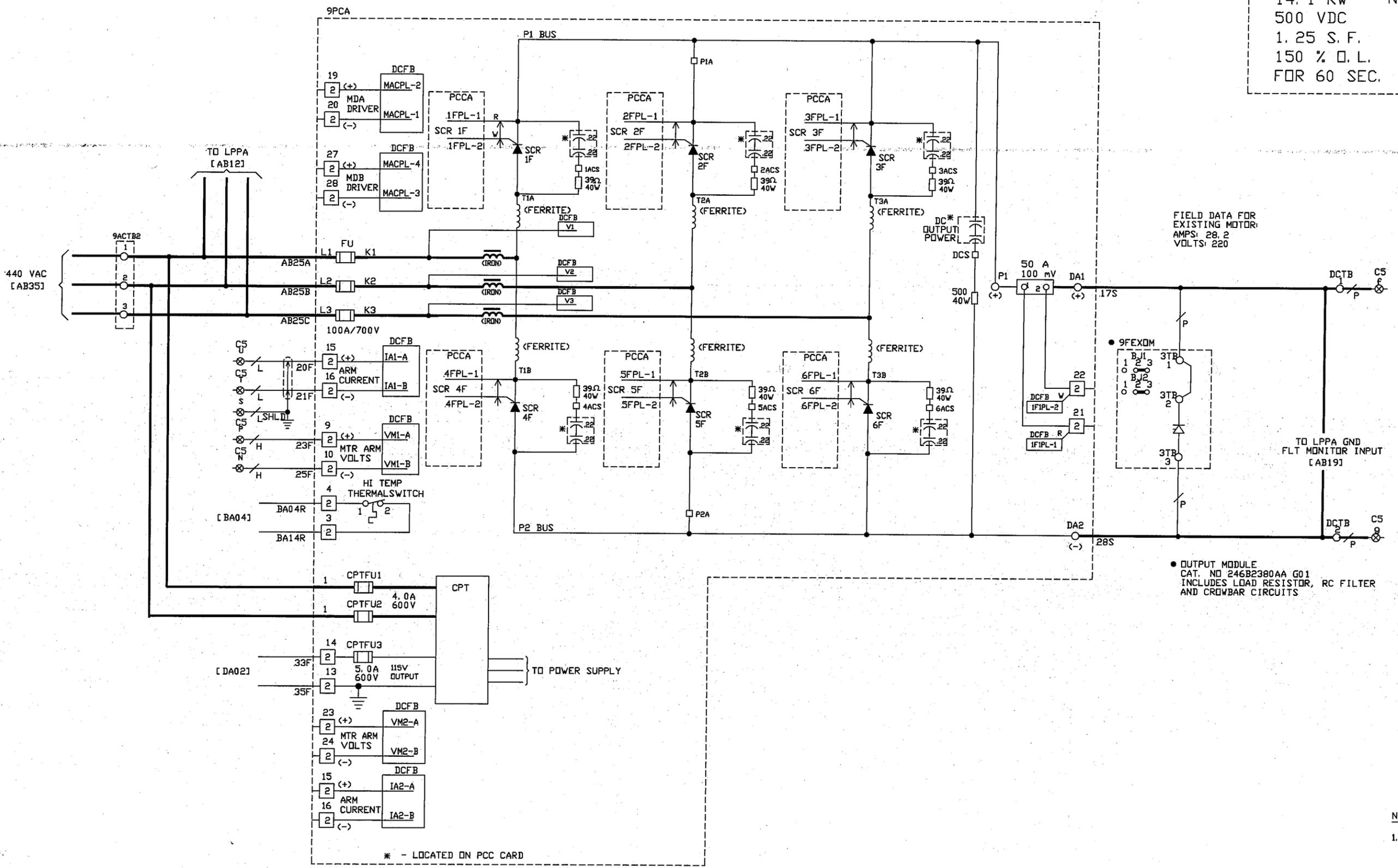
OPTIONAL CPT  
4.5 AMP OUTPUT

	230 VAC	460 VAC	575 VAC
FU1	8A	4A	3.2A
FU2	8A	4A	3.2A
FU3	5A	5A	5A

\* - 460VAC CONNECTIONS SHOWN ABOVE  
 - FOR 230VAC - REMOVE CONNECTING JUMPER  
 BETWEEN 9-7. CONNECT AS FOLLOWS:  
 - 9 TO CPTFU2-2  
 - 7 TO CPTFU1-2

MODEL NO. 3VZTG038CD009  
 SEE GEH-6150  
 ME2000 G-FRAME  
 14.1 KW NON-REGEN.  
 500 VDC  
 1.25 S. F.  
 150 % O. L.  
 FOR 60 SEC.

SH. NO. 9AA  
 CONT. ON SH. 9AB  
 359B7019CA

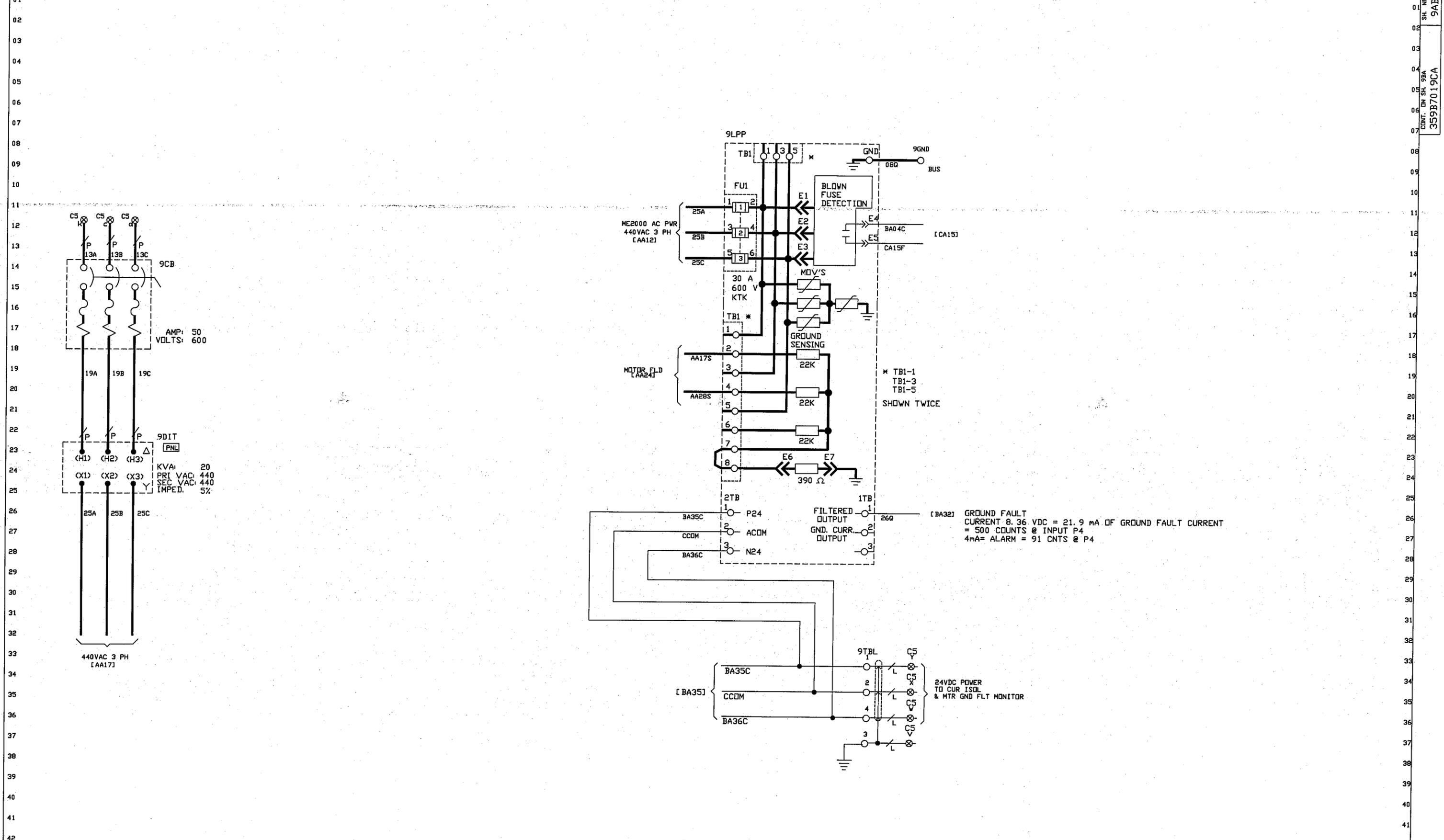


FIELD DATA FOR EXISTING MOTOR:  
 AMPS: 28.2  
 VOLTS: 220

● OUTPUT MODULE  
 CAT. NO 246B2380AA G01  
 INCLUDES LOAD RESISTOR, RC FILTER  
 AND CROWBAR CIRCUITS

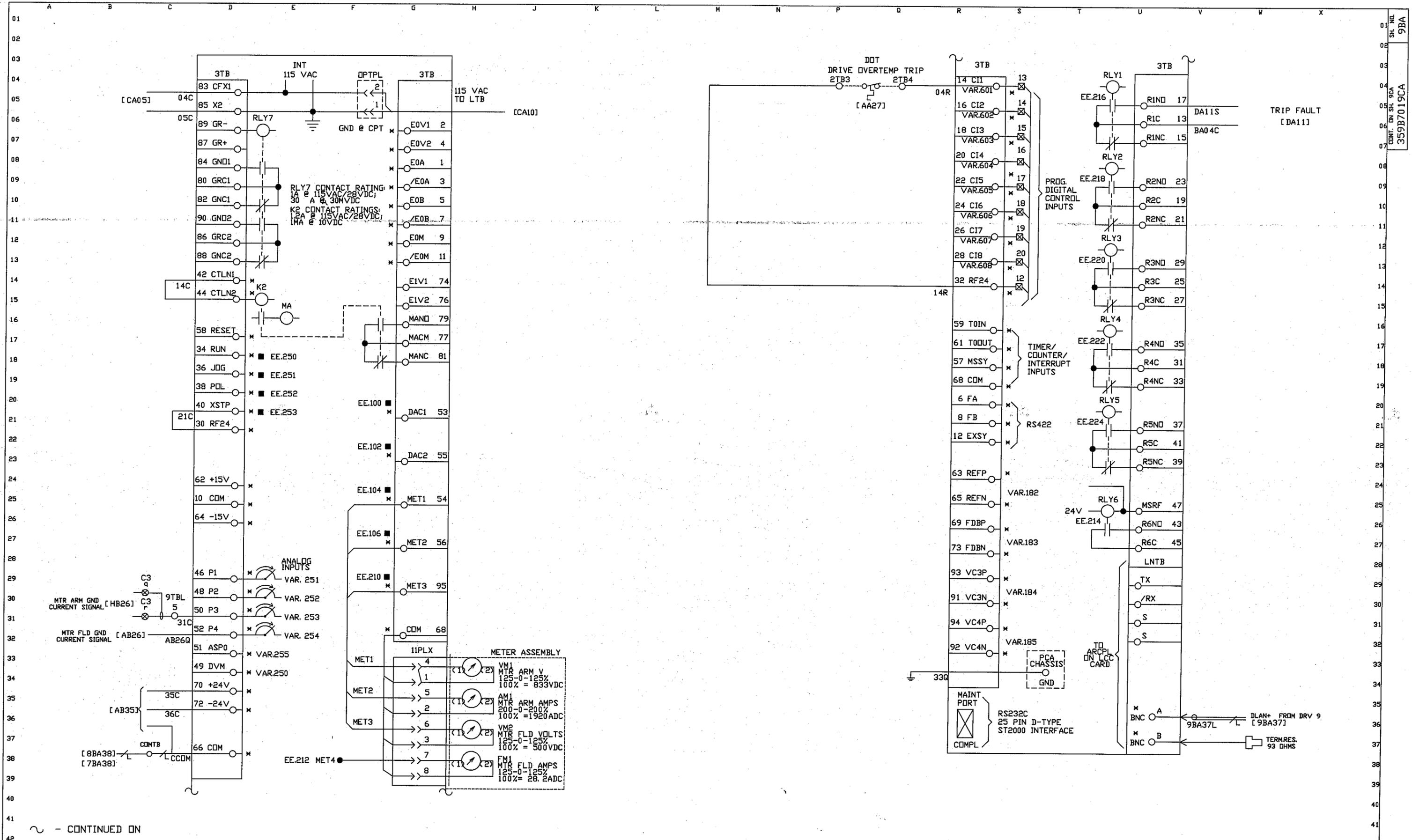
NOTE:  
 1-2 IS  
 INTERPRETED  
 AS 2TB (1).

REVISION NO. 2	REVISION DATE June 20 03	REVISED BY PS	ENGINEERING D WALLACE	TECHNICIAN D WALLACE	ISSUE DATE 12/9/02	SHOP ORDER ZTG038	REQUISITION 84702084	GENERAL ELECTRIC - ENGINEERING SERVICES	ELEMENTARY DIAGRAM GRIFFON SPARE MOTOR FIELD EXC CONVERTER	359B7019CA CONT. ON SH. 9AB	SH. NO. 9AA
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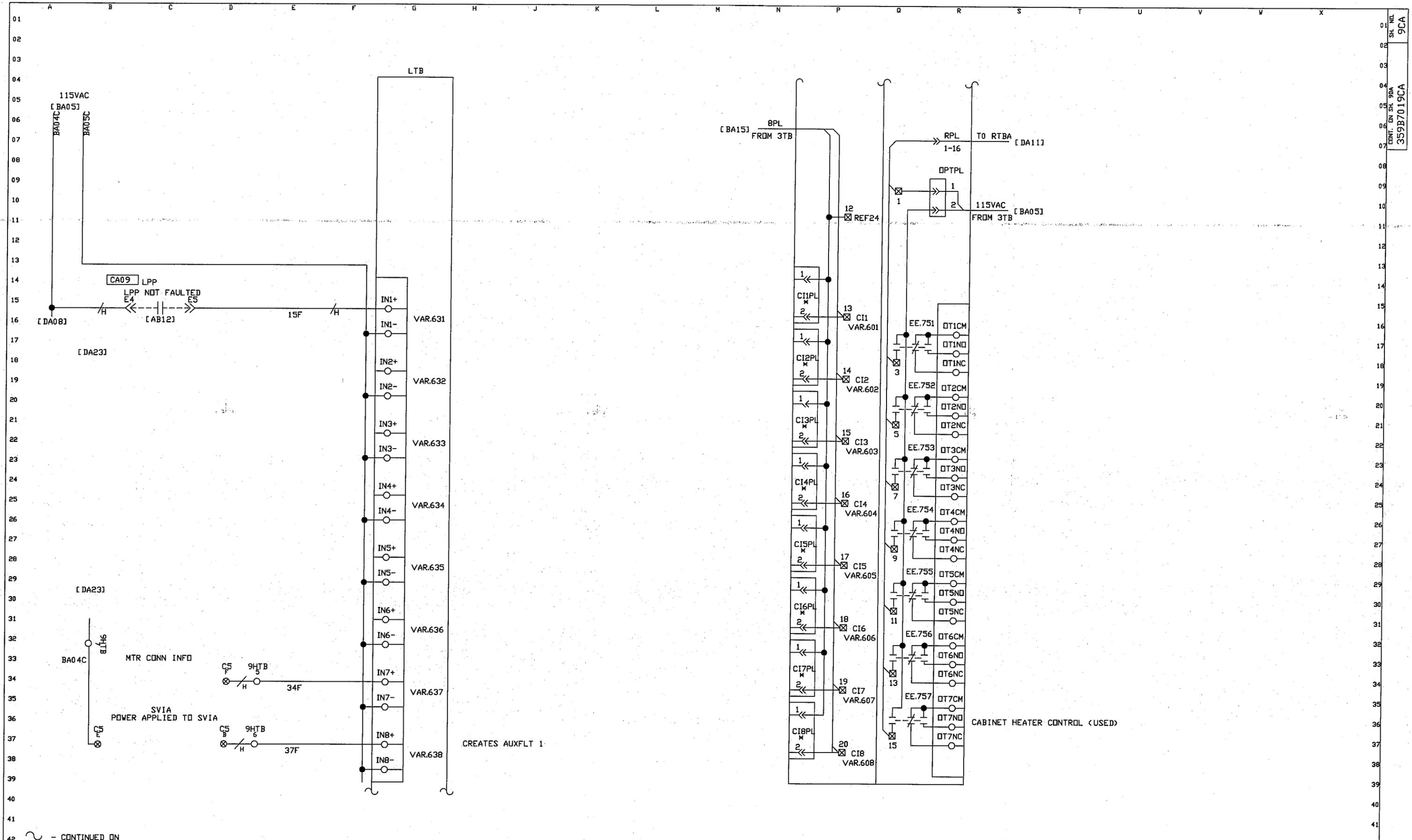
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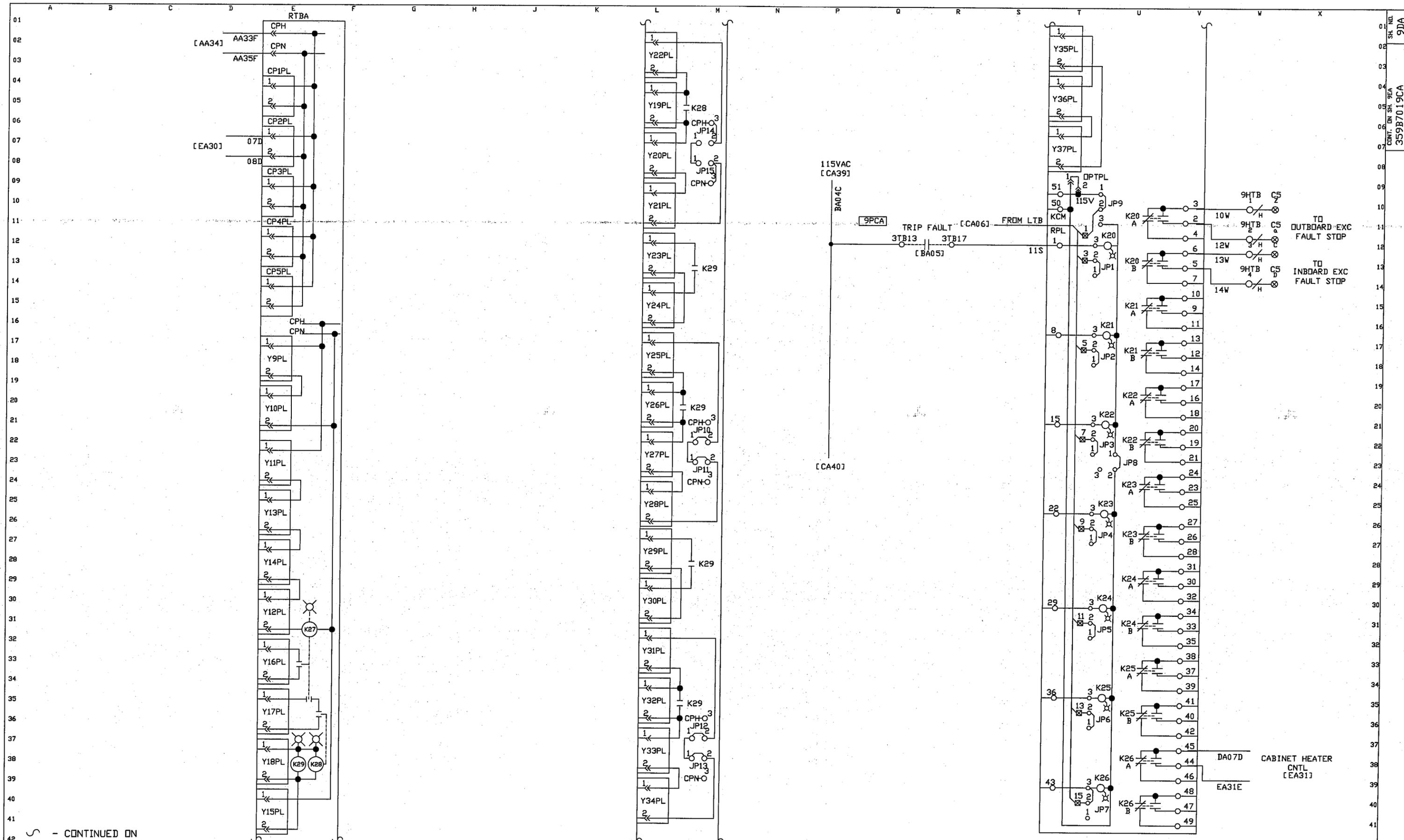
REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	ISSUE DATE	SHOP ORDER	REQUISITION	GENERAL ELECTRIC - ENGINEERING SERVICES	ELEMENTARY DIAGRAM GRIFFON SPARE MOTOR FIELD EXC CONTROL IFC/3TB RELAYS	359B7019CA CONT. ON SH. 9CA	SH. NO. 9BA
3	Nov 7 03	PS	D WALLACE	D WALLACE	12/09/02	ZTG038	84702084				9BA

~ - CONTINUED ON

SH. NO. 9BA  
CONT. ON SH. 9CA  
359B7019CA



REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	ISSUE DATE	SHOP ORDER	REQUISITION	GENERAL ELECTRIC - ENGINEERING SERVICES		ELEMENTARY DIAGRAM	SH. NO.
2	Nov 7 03	PS	D WALLACE	D WALLACE	12/12/02	ZTG038	84702084	359B7019CA		GRIFTON SPARE MOTOR FIELD EXC GF2000 INPUTS/OUTPUTS (LAN TB)	9CA



REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	ISSUE DATE	SHOP ORDER	REQUISITION	GENERAL ELECTRIC - ENGINEERING SERVICES		ELEMENTARY DIAGRAM	359B7019CA	SH. NO.
2	Sept 7 03	PS	D WALLACE	D WALLACE	12/12/02	ZTG038	84702084			GRIFFON SPARE MOTOR FIELD EXC GF2000 RELAY TB	CONT. ON SH. 9EA 9DA	9DA

RTBA

RTBA



MOUNTED IN THE  
STARBOARD OUTBOARD EXC CABINET

3VZTG038DI010

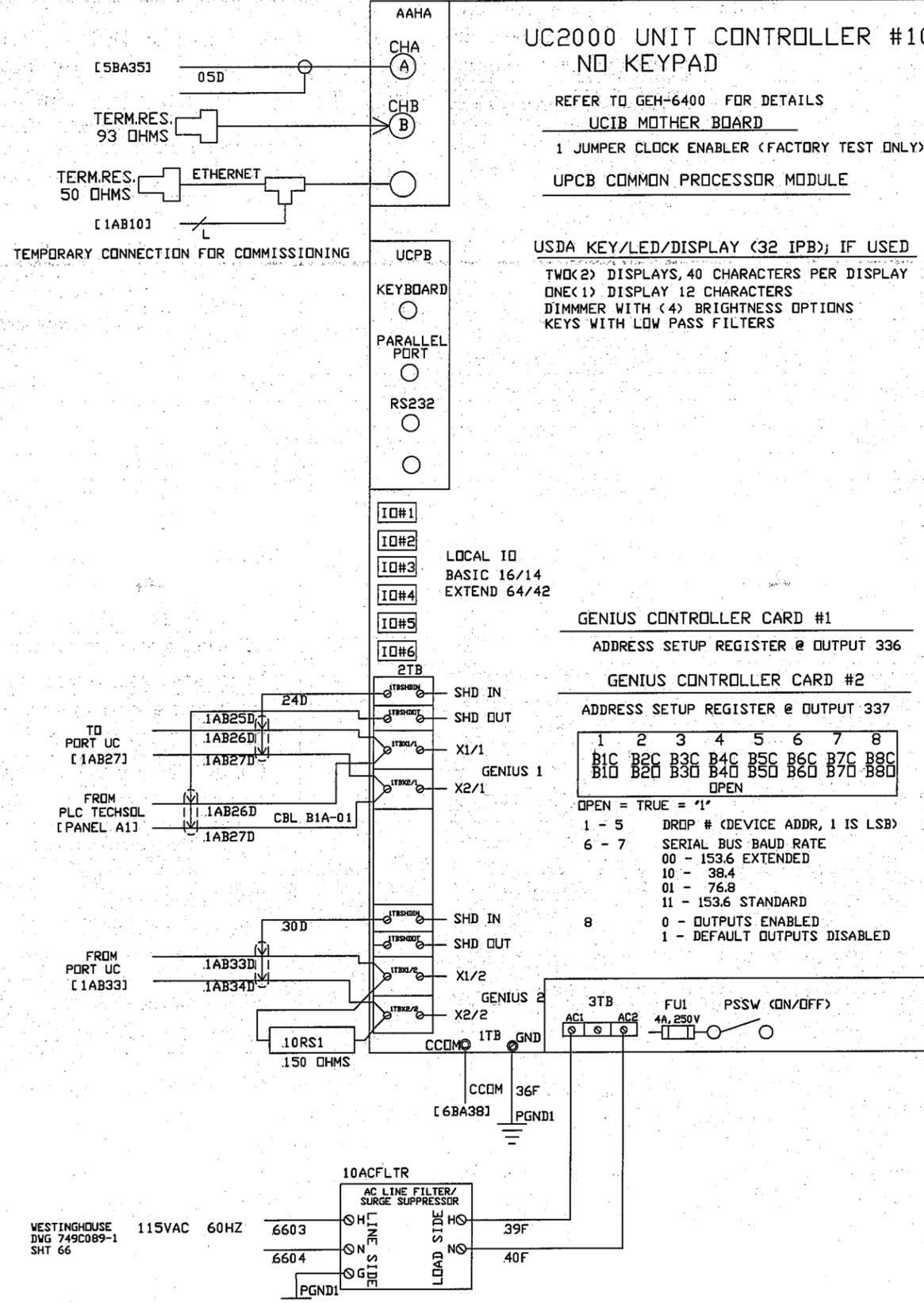
SBUC2K

UC2000 UNIT CONTROLLER #10  
NO KEYPAD

REFER TO GEH-6400 FOR DETAILS  
UCIB MOTHER BOARD  
1 JUMPER CLOCK ENABLER (FACTORY TEST ONLY)  
UPCB COMMON PROCESSOR MODULE

USDA KEY/LED/DISPLAY (32 IPB) IF USED  
TWO(2) DISPLAYS, 40 CHARACTERS PER DISPLAY  
ONE(1) DISPLAY 12 CHARACTERS  
DIMMER WITH (4) BRIGHTNESS OPTIONS  
KEYS WITH LOW PASS FILTERS

CARDS  
DS215UC1BAZZ01A  
GENIUS BUS - IC660ELB912J  
ARCNET - DS200PANAH2ADD  
PS - DS200UPSAG1AGD  
ARCNET DRIVER - DS200AAHAH1AED



GENIUS CONTROLLER CARD #1  
ADDRESS SETUP REGISTER @ OUTPUT 336

GENIUS CONTROLLER CARD #2  
ADDRESS SETUP REGISTER @ OUTPUT 337

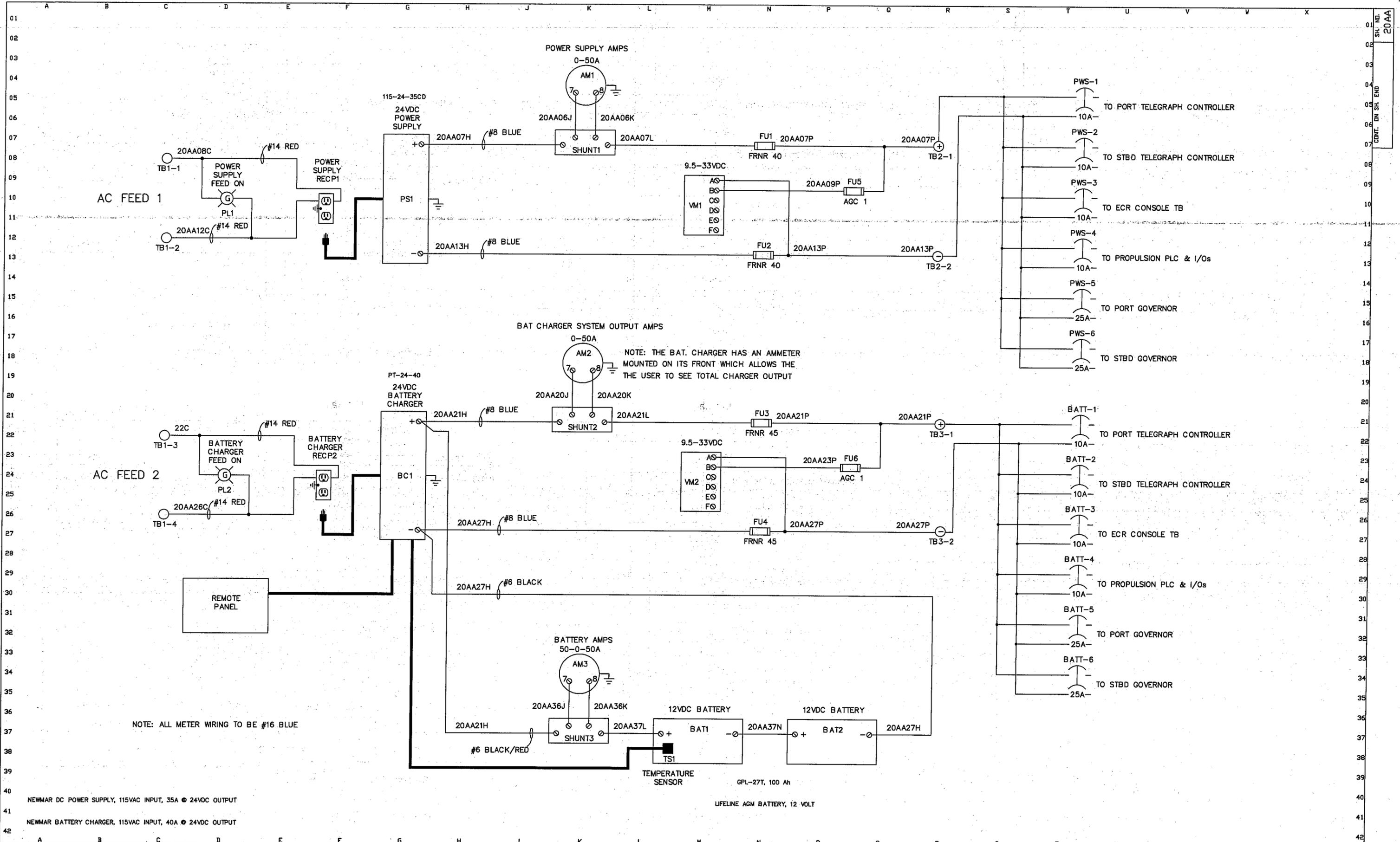
1	2	3	4	5	6	7	8
B1C	B2C	B3C	B4C	B5C	B6C	B7C	B8C
B1D	B2D	B3D	B4D	B5D	B6D	B7D	B8D
OPEN							

OPEN = TRUE = '1'  
 1 - 5 DROP # (DEVICE ADDR, 1 IS LSB)  
 6 - 7 SERIAL BUS BAUD RATE  
 00 - 153.6 EXTENDED  
 10 - 38.4  
 01 - 76.8  
 11 - 153.6 STANDARD  
 8 0 - OUTPUTS ENABLED  
 1 - DEFAULT OUTPUTS DISABLED

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REVISION NO.	REVISION DATE	REVISED BY	ENGINEERING	TECHNICIAN	ISSUE DATE	SHOP ORDER	REQUISITION	GENERAL ELECTRIC - ENGINEERING SERVICES		ELEMENTARY DIAGRAM GRIFFIN 24 VDC SYSTEM 24VDC POWER SUPPLY SCHEMATIC	SH. NO.
2	Nov 6 03	PS	KELT0UR	GE/TECHSQL	Aug 1 03	K2781	847-02084			CONT. ON SH. END	20AA

## PROPULSION CONTROL SYSTEM

CCGS GRIFFON

HULL 664

RE-DRAWN WESTINGHOUSE ELEMENTARY DIAGRAMS

(SHEETS RE-DRAWN FROM WESTINGHOUSE ELEMENTARY DIAGRAMS 749C089")

*October 2003*

DWG 749C089-1

As Commissioned Nov 14 2003

REV. 1	Sept 23 03 PS	4	DRAWN S. ROYAL	CHKD C.M.	 TECHSOL Inc. 400, Mgr Gouveau Quebec, Qué. G1K 9J9	GENERAL ELECTRIC Industrial Systems	PROPULSION CONTROL TITLE SHEET	749C089-1	CONT. ON SH. 2	1	SH. No.
2	Nov 10 03 PS	5	DATE 02-10-01								
3		6									

## INDEX

SHEET DESCRIPTION

1	TITLE SHEET
2	INDEX
4	COMMON CONTROL DISTRIBUTION
11	PROPULSION AUXILIARIES CONTROL AND INDICATION
12	COMMON CONTROL XFMR 12T1 - SPARE CIRCUITS
16	PORT 120V CONTROL DISTRIBUTION
20	PICB and PICBX BREAKER CONTROL
22	POCB BREAKER CONTROL
66	STBD 120V CONTROL DISTRIBUTION
70	SICB and SICBX BREAKER CONTROL
72	SOCB BREAKER CONTROL

REV. 1	Sept 23 03 PS	4
2	Nov 10 03 PS	5
3		6

DRAWN  
S. ROYALCHKD  
C.-M.

DATE

02-10-01

TECHSOL Inc.  
400, Mgr Gauvreau  
Quebec, Que.  
G1K 9J9GENERAL ELECTRIC  
Industrial SystemsPROPULSION CONTROL  
INDEX SHEET

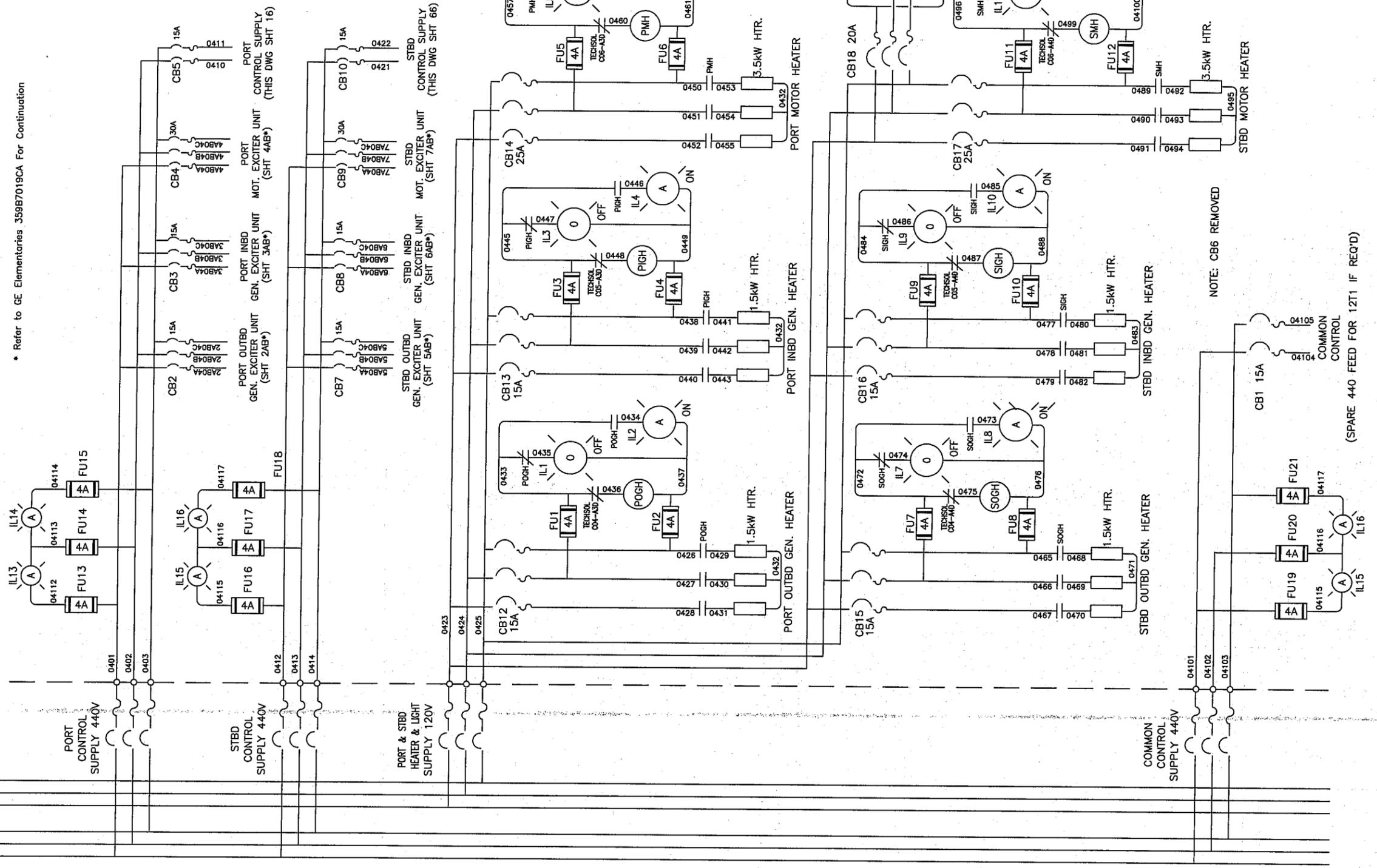
749C089-1 CONT. ON SH. 4

PRINTS TO

SH. No. 2

PROPULSION CONTROL DISTRIBUTION

SHIP'S EM. BOARD + SS  
440 VAC  
115 VAC



\* Refer to GE Elementaries 359B7019CA For Continuation

THE 440V BUSS IS FED FROM 3 BREAKERS IN THE EM. GEN. ROOM. THE 120V FEED IS FROM THE SHIP SERVICE BOARD IN THE E-ROOM REFER TO DOT 766401 SINGLE LINE

NOTE: CB6 REMOVED

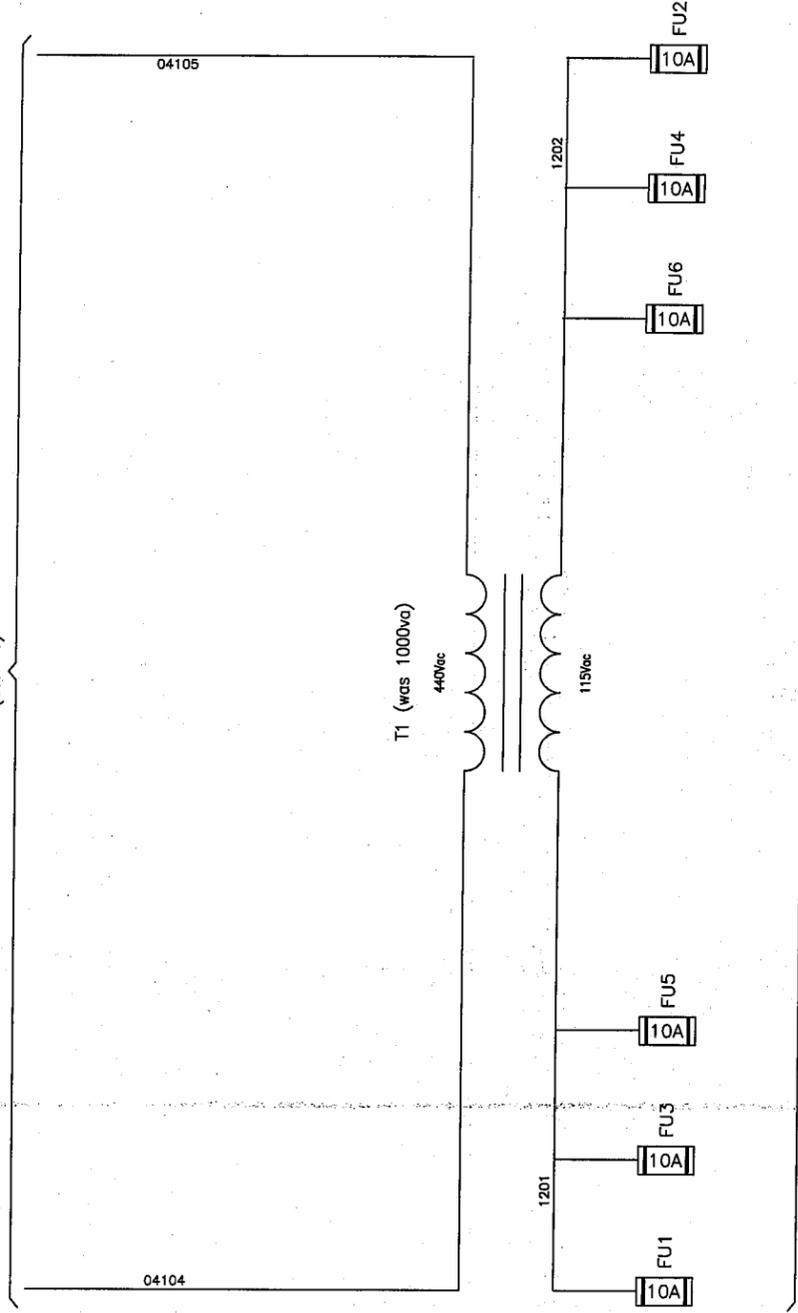
(SPARE 440 FEED FOR 12T1 IF REQ'D)

REV. 1	Sept 23 03 PS	4	CHKD	GENERAL ELECTRIC	PROPULSION CONTROL	PRINTS TO
2	Nov 10 03 PS	5	S. ROYAL	Industrial Systems	COMMON CONTROL DISTRIBUTION	
3		6	DATE	TECHSOL Inc.		
			02-10-01	400, Mgr Gauvreau		
				Quebec, Que.		
				GIK 9J9		
						749C089-1 CONT. ON SH. 11
						SH. No. 4



NOT IN SERVICE - POSSIBLE FUTURE USE

COMMON CONTROL SUPPLY 4CB1  
(SHT 4)



POSSIBLE FUTURE USE

NOTE: XFMR 12T1 (1000VA) WILL BE REMOVED. 4CB1 WILL BE INSTALLED FOR SPARE USE. ONE OF THE XFMR'S FROM SHT 16 or 66 WILL BE RETAINED IN CASE WE REQUIRE IT FOR USE ON THIS SHEET. KEEP THESE FUSES AVAILABLE.

REV. 1	Sept 24 03	PS	4
2			5
3			6

DRAWN  
S. ROYAL

CHKD  
C.M.

DATE  
02-10-01

TECHSOL Inc.  
400, Mgr Gauvreau  
Quebec, Quf.  
G1K 9J9



GENERAL ELECTRIC  
Industrial Systems

PROPULSION CONTROL  
COMMON CONTROL XFMR 12T1

749C089-1 CONT. ON SH. 16

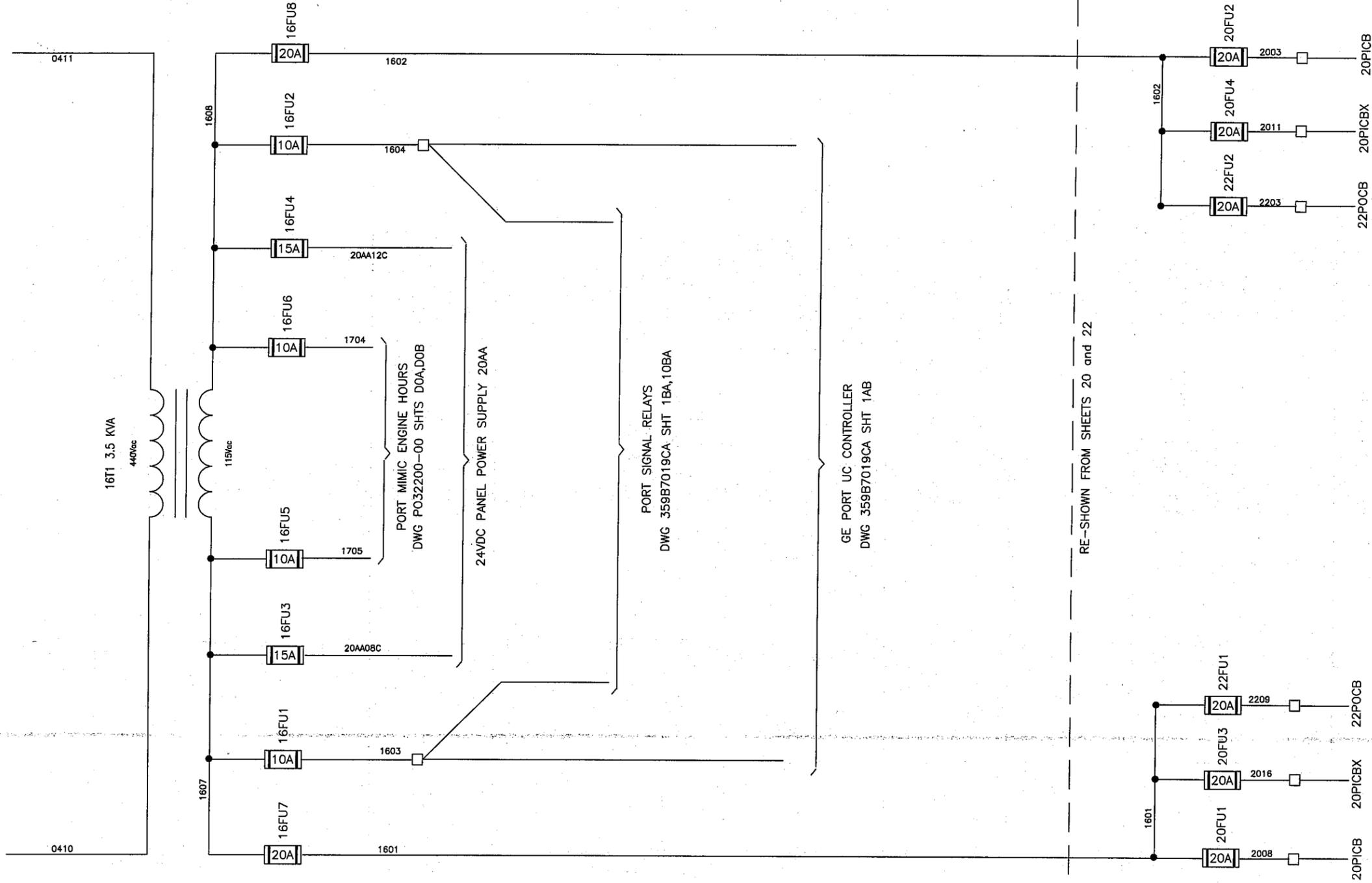
PRINTS TO

12

SH. No.

□ TB IN DIST. SECTION

PORT CONTROL SUPPLY 4CB5  
(SHT 4)



RE-SHOWN FROM SHEETS 20 and 22

20PICB, 20PICBX and 22POCB 120V CONTROL  
(SHT 20, 22)

REV.	DATE	DESCRIPTION	CHKD	DATE
1	Sept 24 03 PS	4	S. ROYAL	C.M.
2	Nov 10 03 PS	5		
3		6		02-10-01



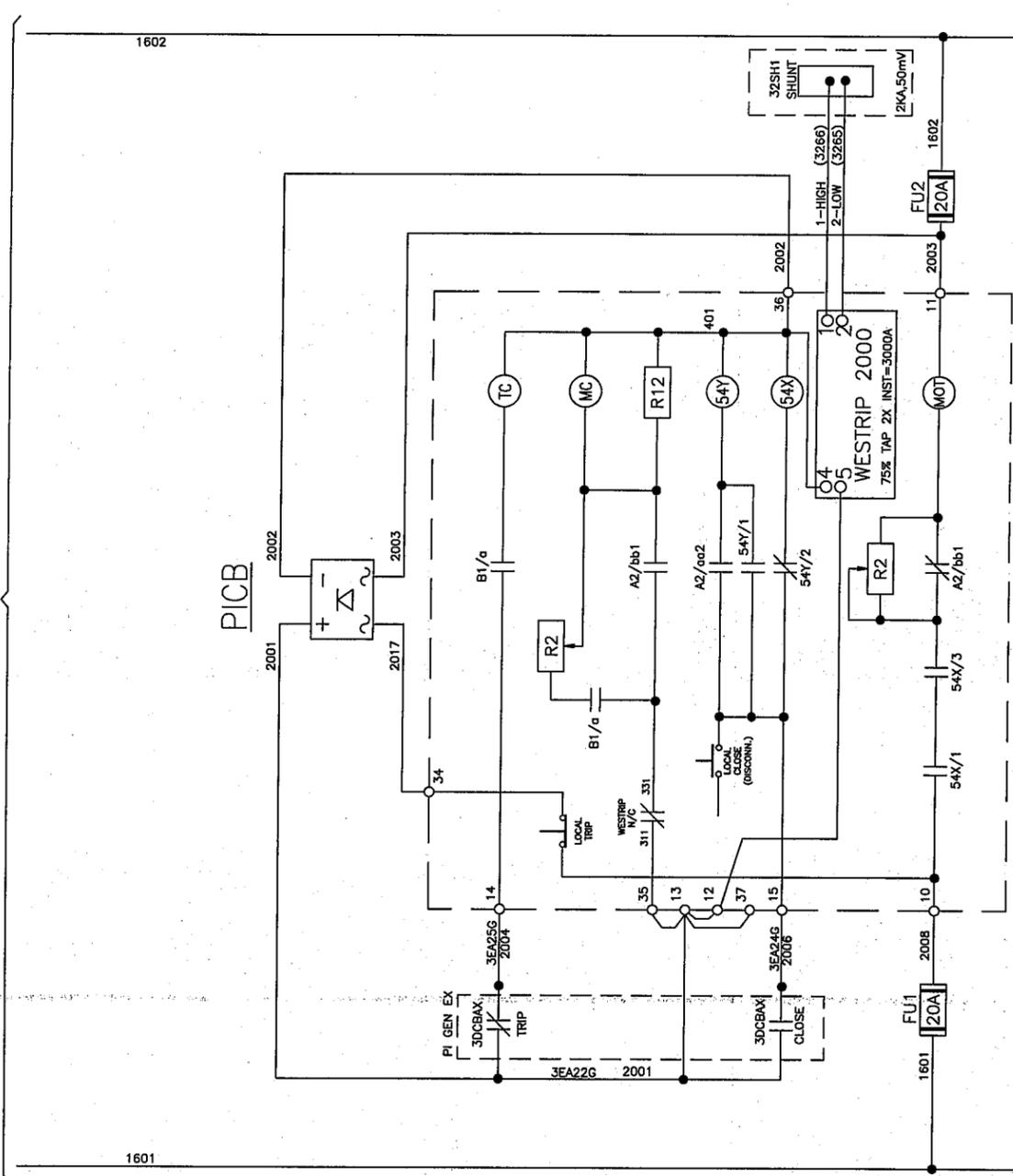
GENERAL ELECTRIC  
Industrial Systems

PROPULSION CONTROL  
PORT 120V CONTROL DISTRIBUTION

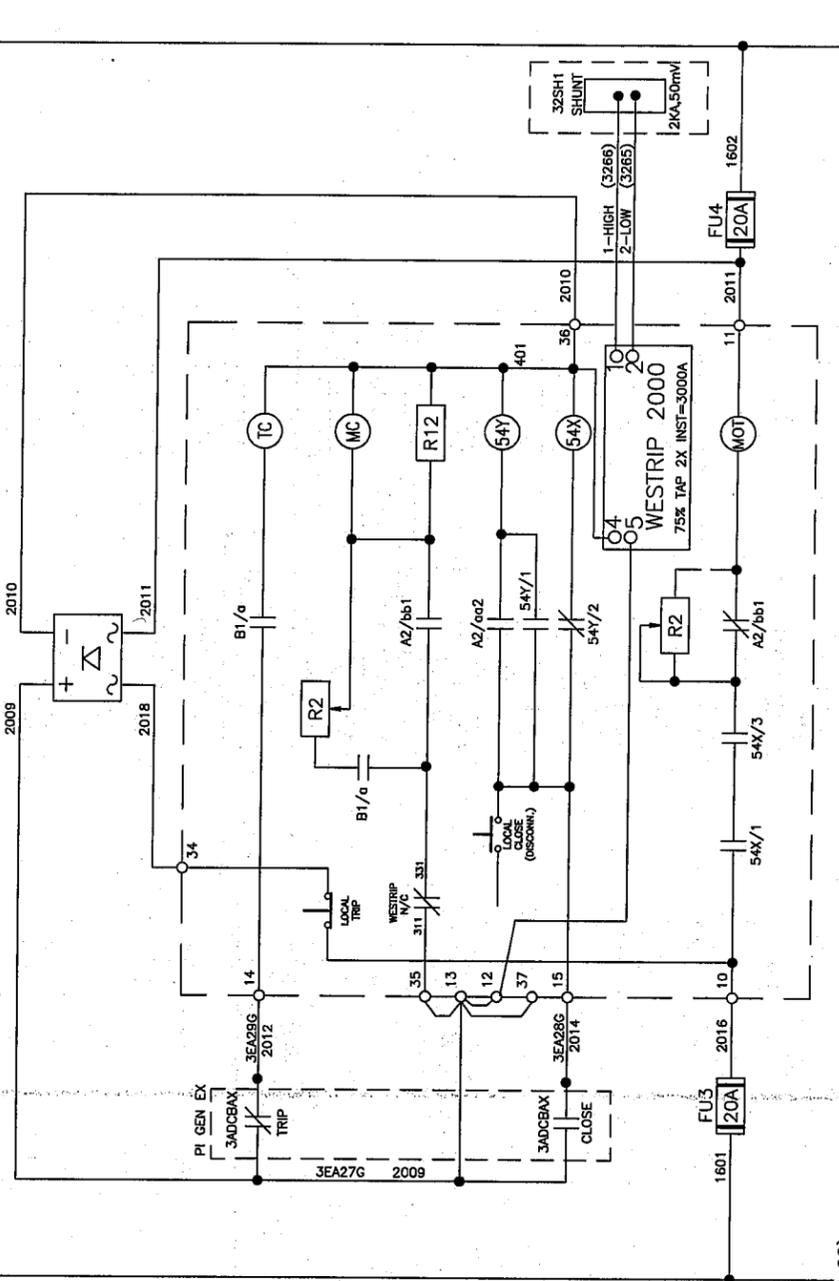
749C089-1 CONT. ON SH. 20

SH. No. 16

PORT CIRCUIT BREAKER BUS  
(SHT 16)



PICBX



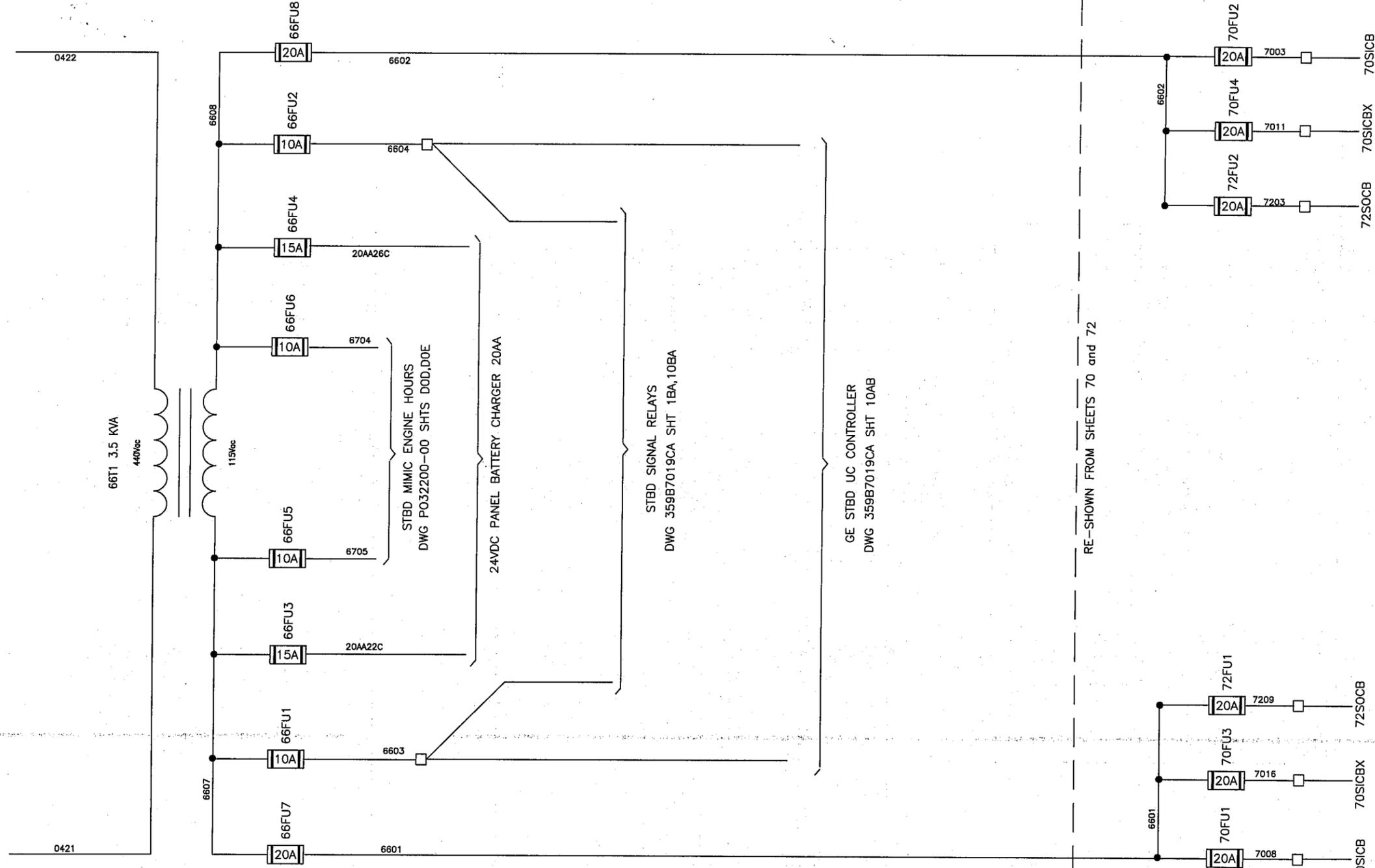
Main Circuit Breaker TB

REV. 1	Sept 24 03 PS	4	CHKD		 TECHSOL Inc. 400, Mgr Gauvreau Quebec, Que. G1K 9J9	GENERAL ELECTRIC Industrial Systems	PROPULSION CONTROL PICB AND PICBX BREAKER CONTROL	PRINTS TO		
REV. 2	Oct 1 03 PS	5	DRAWN	S. ROYAL				DATE	02-10-01	749C089-1 CONT. ON SH. 22
REV. 3	Nov 10 03 PS	6								SH. No. 20



□ TB IN DIST. SECTION

STBD CONTROL SUPPLY 4CB10  
(SHT 4)



RE-SHOWN FROM SHEETS 70 and 72

70SICB, 70SICBX and 72SOCB 120V CONTROL  
(SHT 70, 72)

REV. 1	Sept 24 03 PS	4	CHKD	
2	Nov 10 03 PS	5	DRAWN	S. ROYAL
3		6	DATE	02-10-01



TECHSOL Inc.  
400, Mgr Gauvreau  
Quebec, Que.  
G1K 9J9

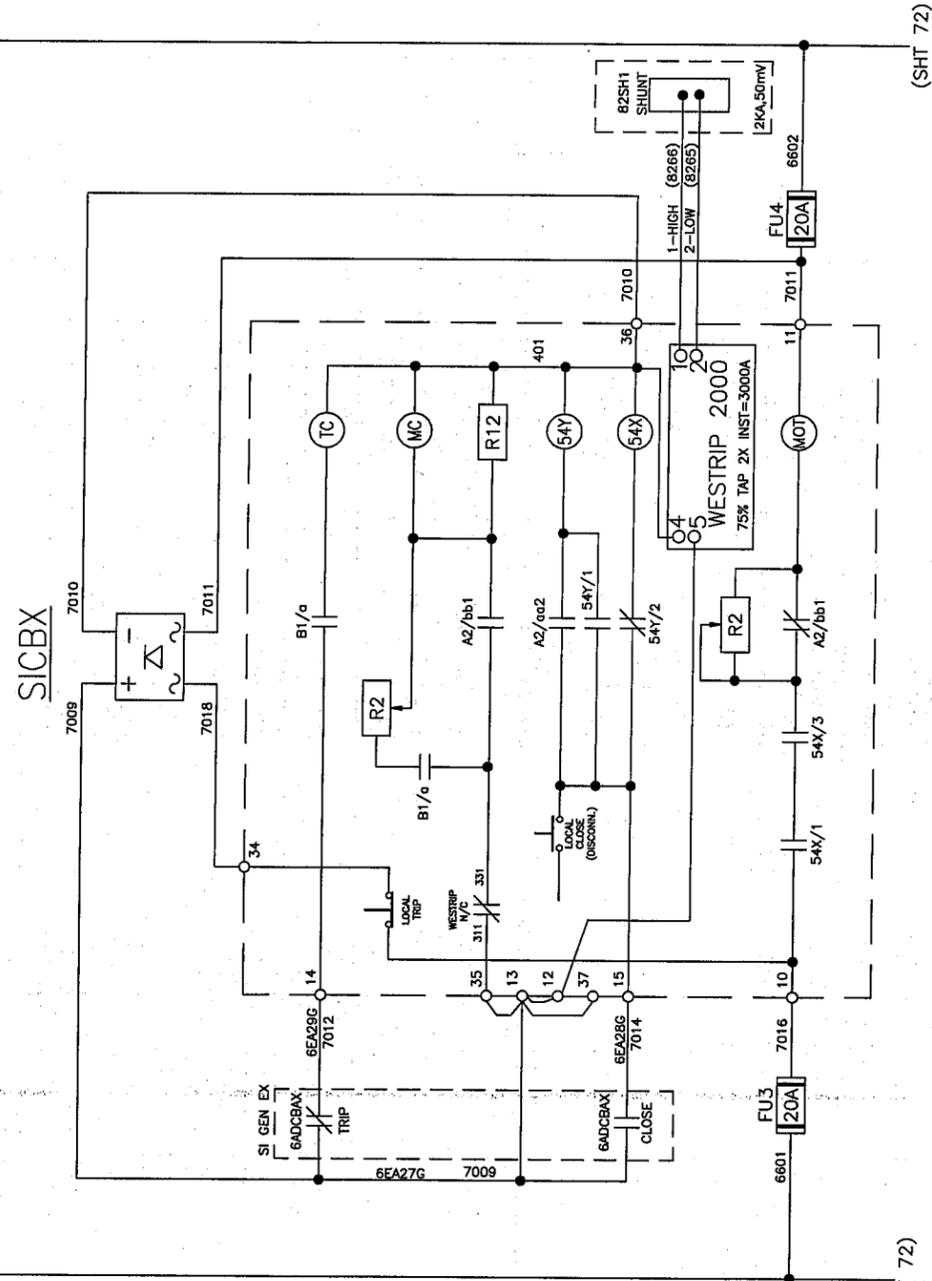
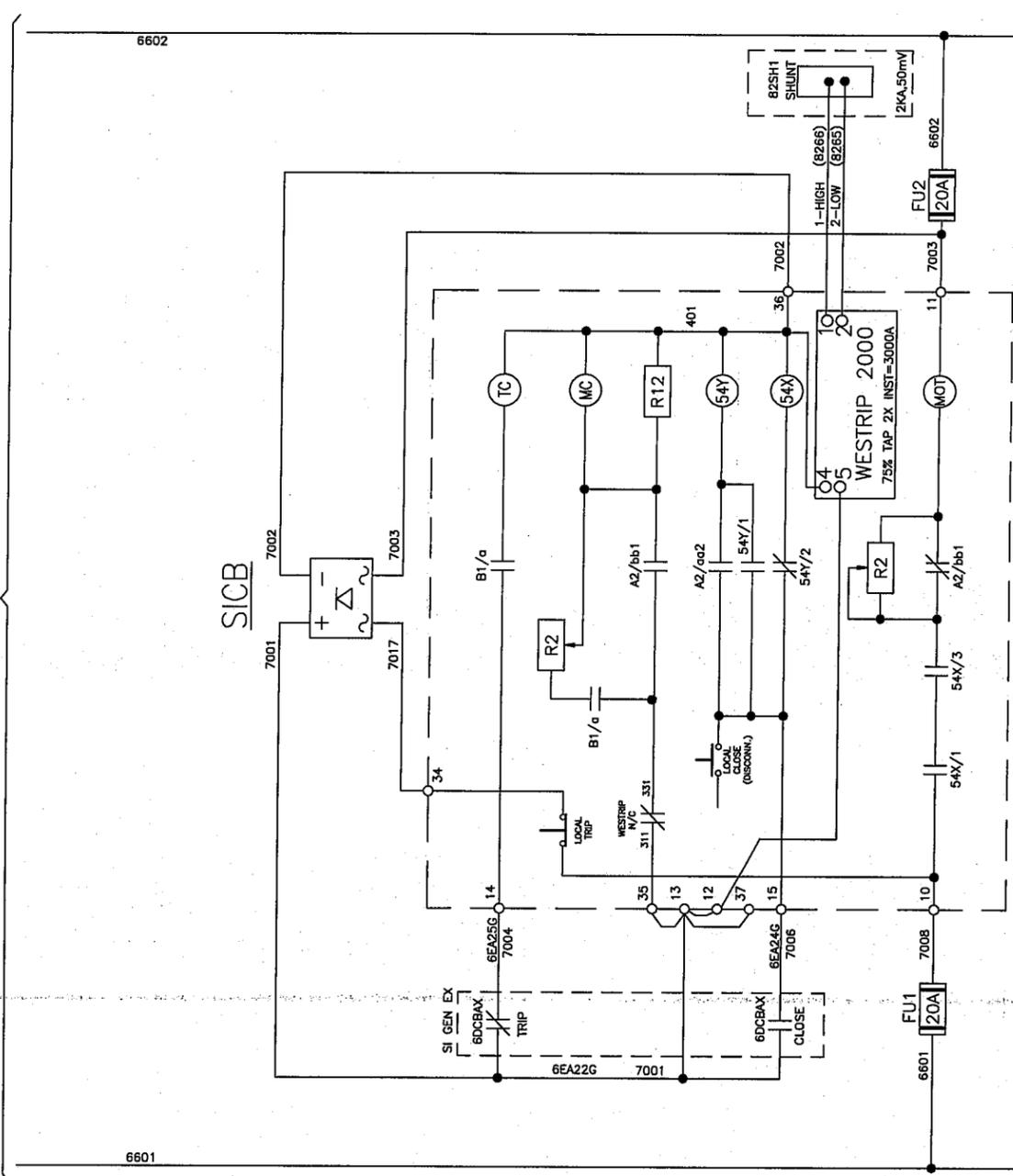
GENERAL ELECTRIC  
Industrial Systems

PROPULSION CONTROL  
STBD 120V CONTROL DISTRIBUTION

749C089-1 CONT. ON SH. 70

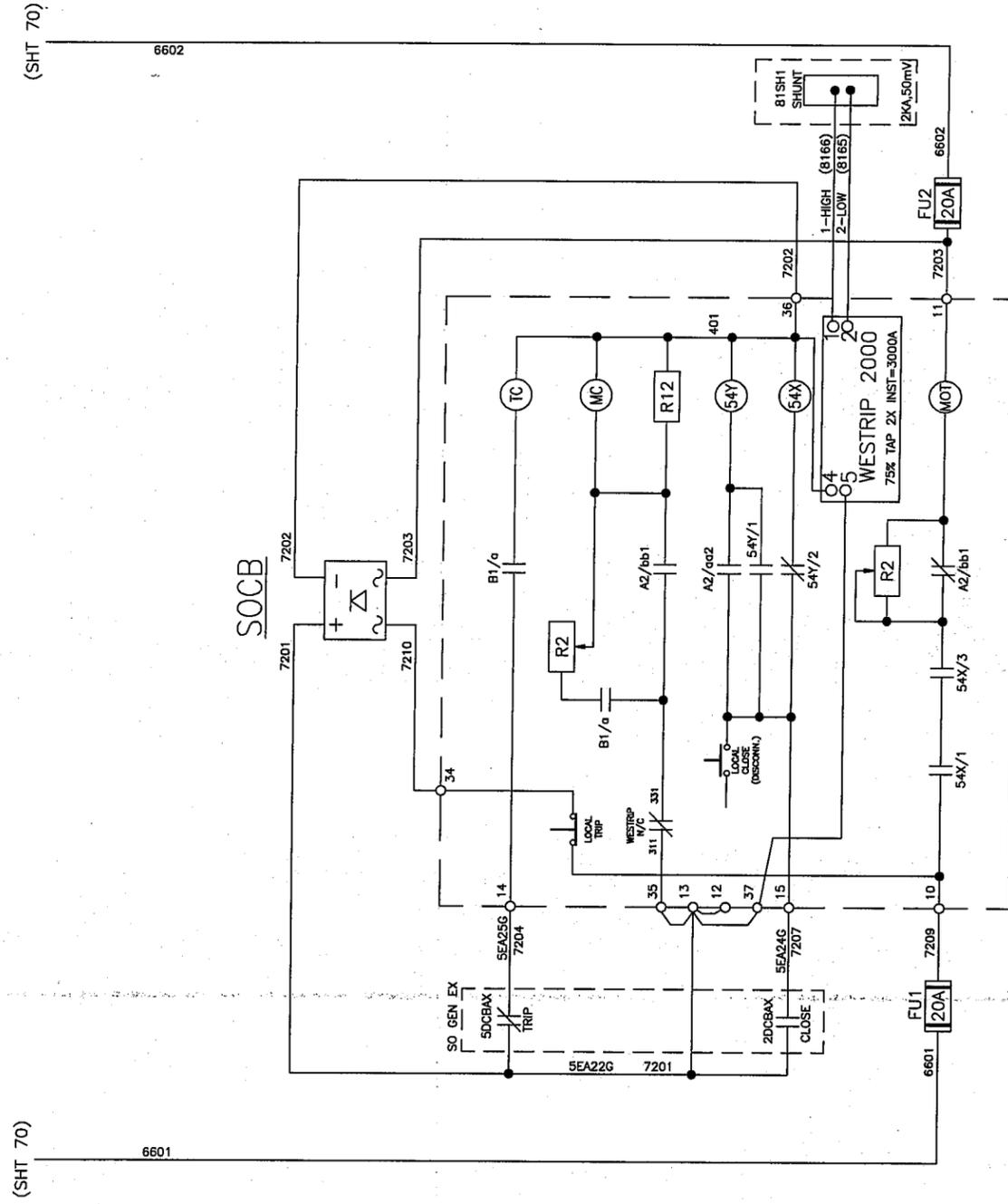
66  
SH. No.

STBD CIRCUIT BREAKER BUS  
(SHT 66)



—○— Main Circuit Breaker TB

REV. 1	SEPT 25 03 PS	4	CHKD	GENERAL ELECTRIC		PROPULSION CONTROL	PRINTS TO
2	OCT 1 03 PS	5	S. ROYAL	Industrial Systems		SICB AND SICBX BREAKER CONTROL	
3	NOV 10 03 PS	6	C.M.	TECHSOL Inc.		749C089-1 CONT. ON SH. 72	70
			DATE	400, Mgr. Gauthreau			SH. No.
			02-10-01	Quebec, Que.			
				G1K 9J9			



(SHT 70)

(SHT 70)

○ Main Circuit Breaker TB

REV. 1	Sept 24 03 PS	4	CHKD		 TECHSOL Inc. 400, Mgr Gauvreau Quebec, Que. G1K 9J9	GENERAL ELECTRIC Industrial Systems	PROPULSION CONTROL SOCB BREAKER CONTROL	PRINTS TO	
2	Oct 1 03 PS	5	C.M.					749C089-1 CONT. ON SH. END	72
3	Nov 10 03 PS	6	DATE	02-10-01					SH. No.

H. M. STEIN SOHN GmbH  
Automation

Gr. Mühlenstraße 49  
24217 Schöenberg  
Germany

Tel.: 04344 / 307 - 0  
Fax: 04344 / 307 - 290

Customer : TECHSOL ELECTROTECHNIQUE      Shipyard : PORT WELLER DRY DOCK  
Order No. : 030775      Hull No : 664  
System : A067 DOUBLE EOT-SYSTEM      Ship's Name : CCGS GRIFFON  
  
Owner : CANADIAN COAST GUARD

Responsible For Project : J.Dittmer

Created : 20.01.2003  
Last Revision : 24.11.2003  
By : S. ROYAL

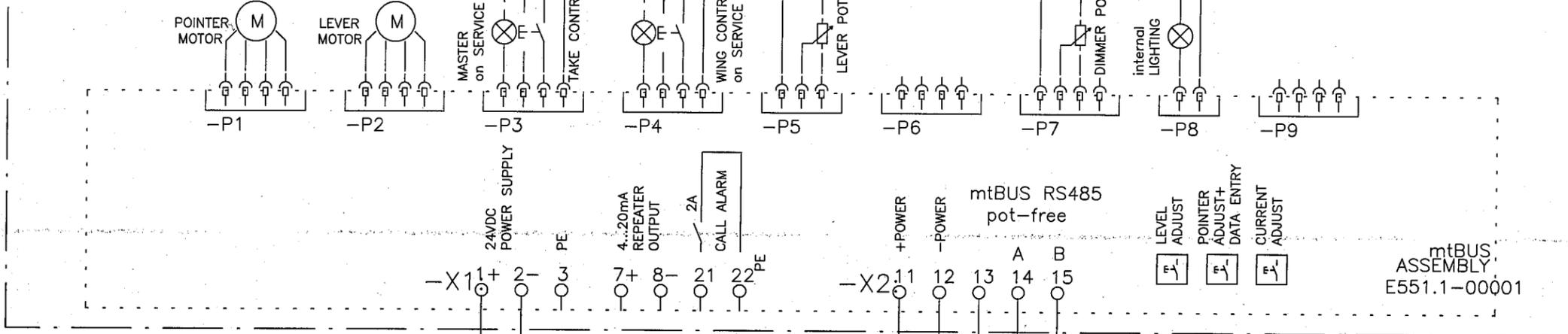
Projectname : A067\_030775

Directory : serv-gm2\Projekte22\Projects\Projects2003\030775  
Number Of Pages : 16

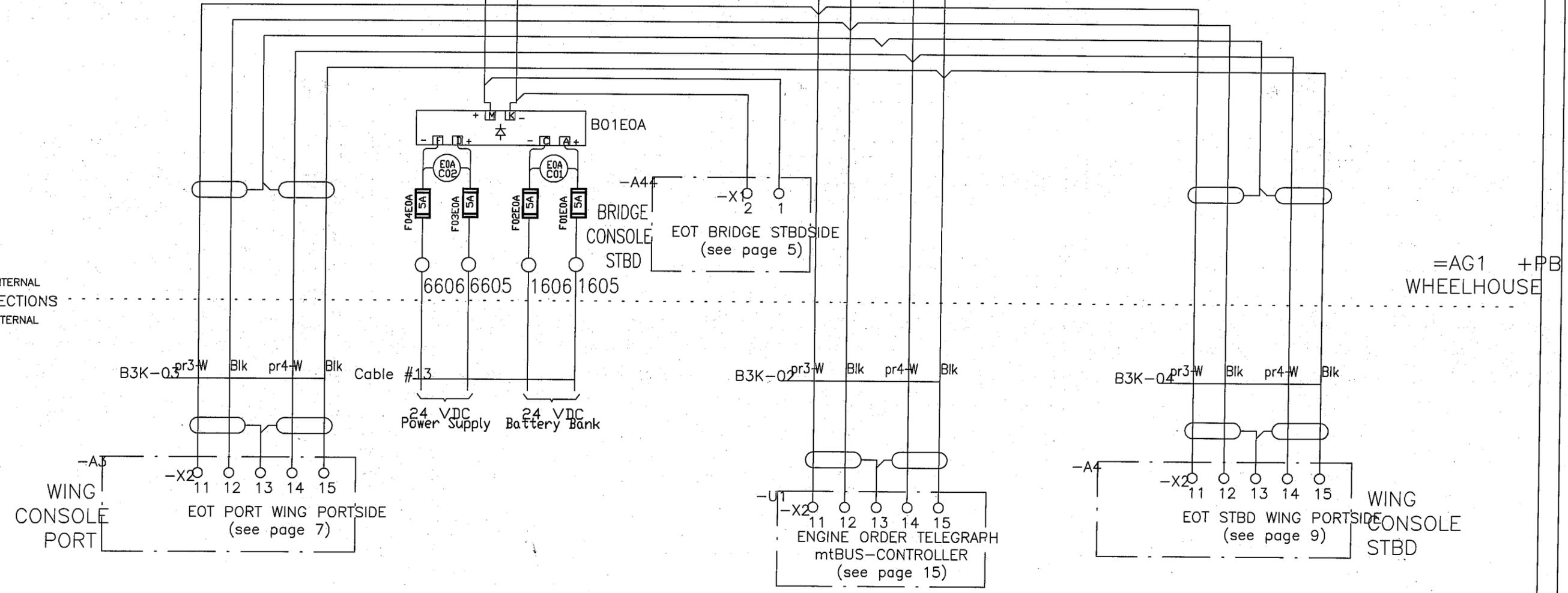


-A2 EOT BRIDGE PORTSIDE  
Maschinentelegraf

TYPE : A067.4343-4X1-0611



INTERNAL CONNECTIONS  
EXTERNAL



2 - AS FITTED	03.11.24	S.Royal
1	03.08.06	S.Royal
REVISION	DATE	NAME

DATE	15.05.2003
DESIGN	Dittmer
CHECK	
PR	J.Dittmer

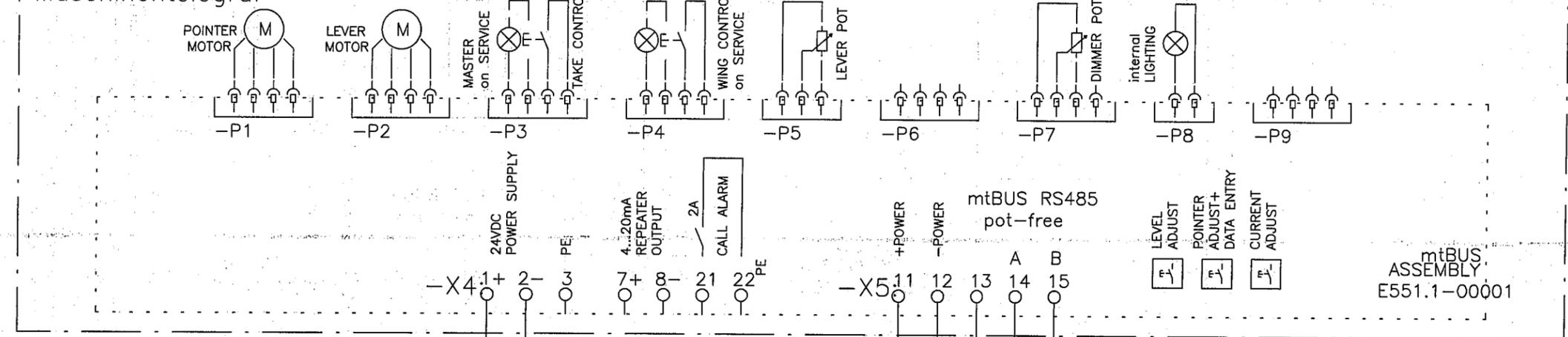
A067 DOUBLE EOT-SYSTEM  
M/E REMOTE CONTROL BRIDGE TELEGRAPH

CUSTOMER	TECHSOL ELECTROTECH.	030775-	=	+ A067
ORDER NUMBER				TYP - STAND
WERFT	HULNEUBAU	PAGE:	3	OF: 16



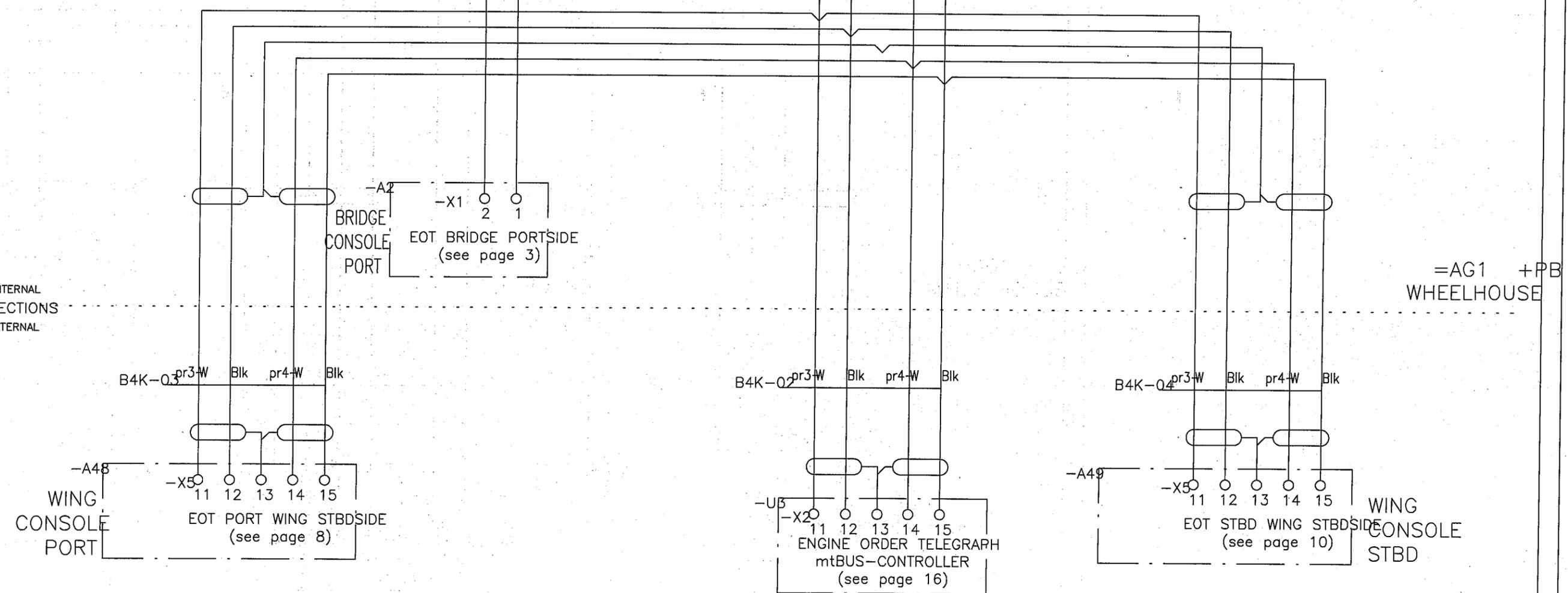
-A44 EOT BRIDGE STBDSIDE  
Maschinentelegraf

TYPE : A067.4343-4X1-0611



mtBUS ASSEMBLY  
E551.1-00001

INTERNAL CONNECTIONS  
EXTERNAL



ECR-CONSOLE

2 - AS FITTED	03.11.24	S.Royal
1	03.08.06	S.Royal
REVISION	DATE	NAME

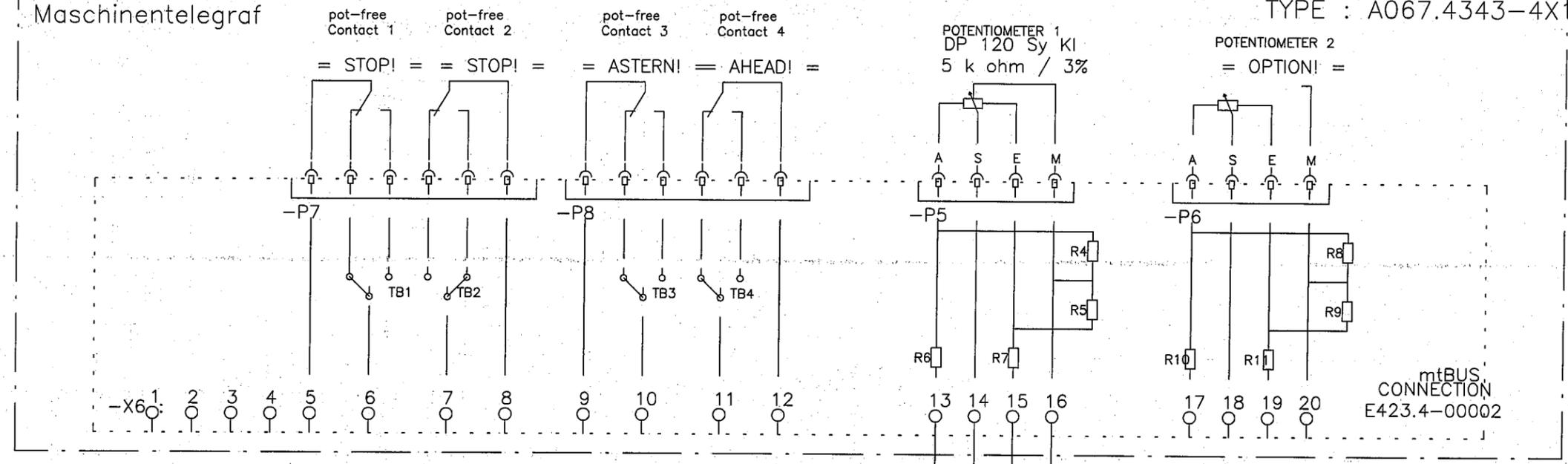
DATE	15.05.2003
DESIGN	Dittmer
CHECK	
PR	J.Dittmer

A067 DOUBLE EOT-SYSTEM  
M/E REMOTE CONTROL BRIDGE TELEGRAPH

CUSTOMER	TECHSOL ELECTROTECH.	030775	=	+ A067
ORDER NUMBER				TYP - STAND
WERFT	HULINEUBAU	PAGE:	5	OF: 16

-A4/ EOT BRIDGE STBDSIDE  
Maschinentelegraf

TYPE : A067.4343-4X1-0611



INTERNAL CONNECTIONS  
EXTERNAL

=AG1 +PB  
WHEELHOUSE

B4K-02 pr1 Wpr2 Bpr2 Wpr1 B

-MEC/1

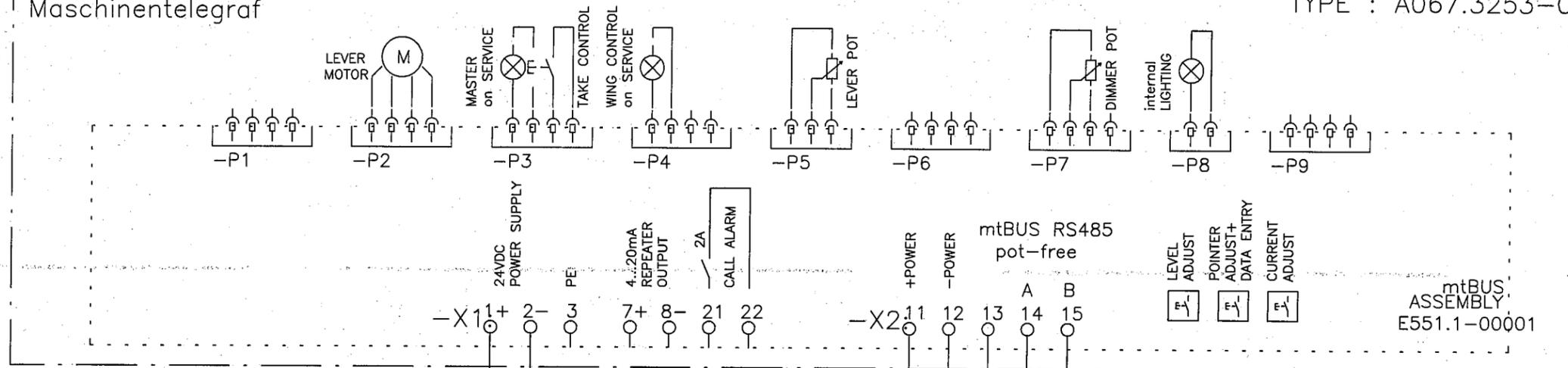
MAIN ENGINE REMOTE CONTROL SYSTEM  
(see DWG P032200-00)

ECR-CONSOLE

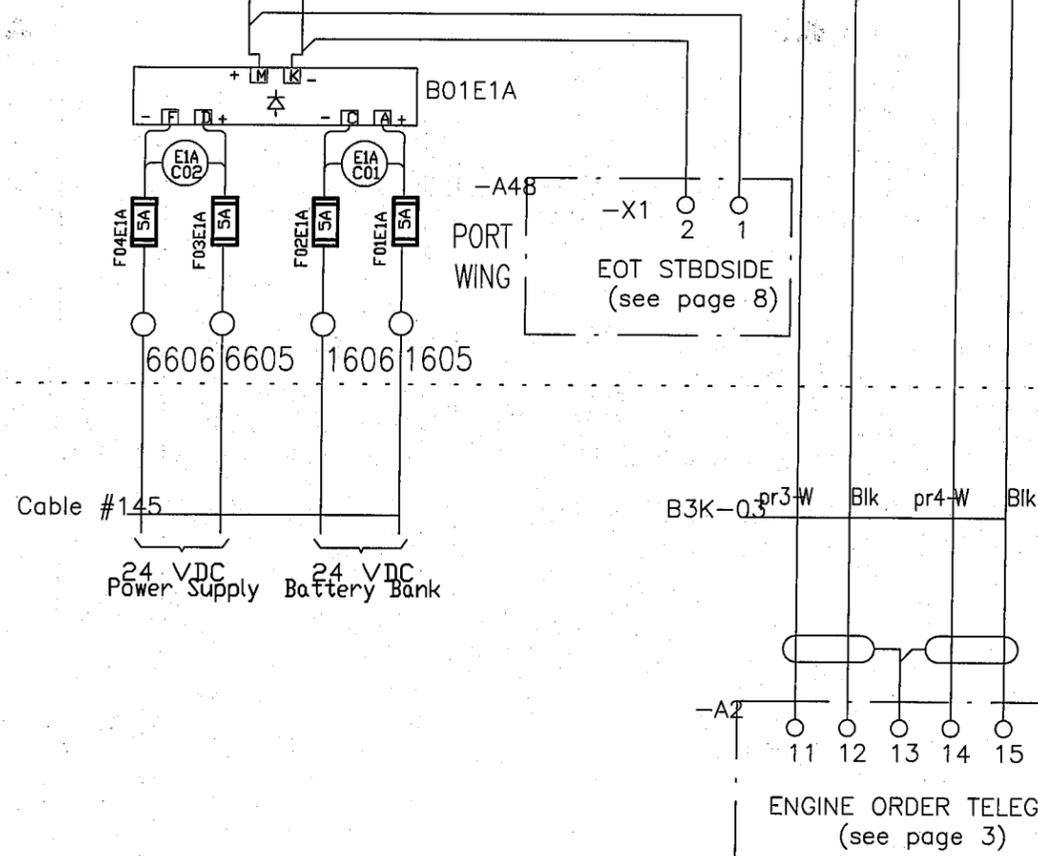
2 - AS FITTED 03.11.24 S.Royal			DATE 15.05.2003	A067 DOUBLE EOT-SYSTEM	CUSTOMER	030775	=	+ A067
1 03.08.06 S.Royal			DESIGN Dittmer		TECHSOL ELECTROTECH.	ORDER NUMBER		TYP - STAND
REVISION	DATE	NAME	CHECK PR J.Dittmer	M/E REMOTE CONTROL BRIDGE TELEGRAPH	WERFT	HULINEUBAU	PAGE:	6 OF: 16

-A3 EOT PORT WING PORTSIDE  
Maschinentelegraf

TYPE : A067.3253-000-0611



INTERNAL CONNECTIONS  
EXTERNAL



=AG1 +PC01  
WING PORTSIDE

WHEELHOUSE CONSOLE

2 - AS FITTED	03.11.24	S.Royal
1	03.08.06	S.Royal
REVISION	DATE	NAME

DATE	15.05.2003
DESIGN	Dittmer
CHECK	
PR	J.Dittmer

A067 DOUBLE EOT-SYSTEM  
M/E REM.CONTROL PORT WING TELEGRAPH

CUSTOMER  
TECHSOL ELECTROTECH.

030775  
ORDER NUMBER

=

+ A067  
TYP - STAND

WERFT

HULINEUBAU

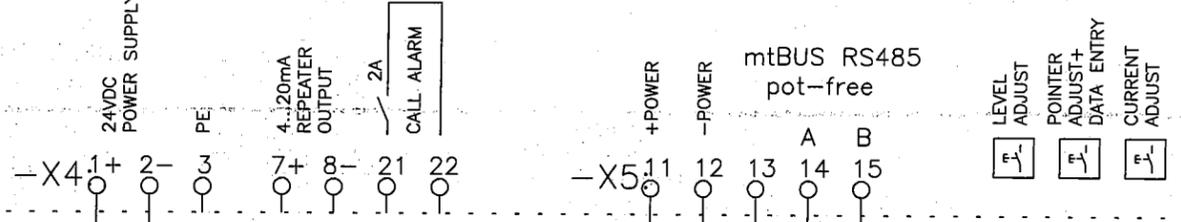
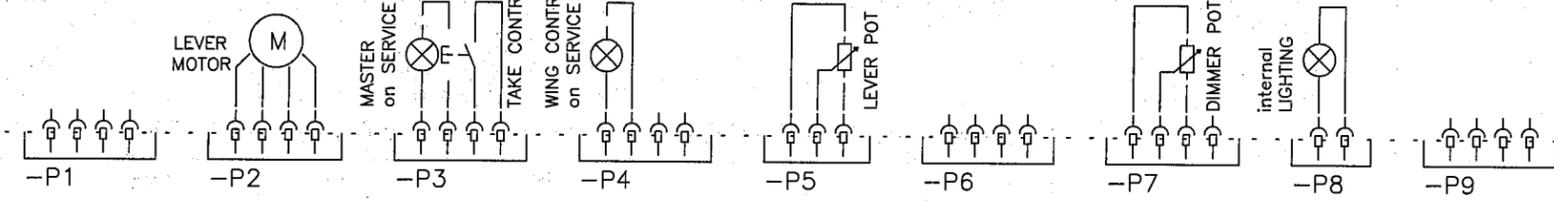
PAGE:

7 OF:

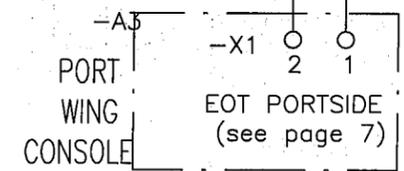
16

-A48 EOT PORT WING STBDSIDE  
Maschinentelegraf

TYPE : A067.3253-000-0611



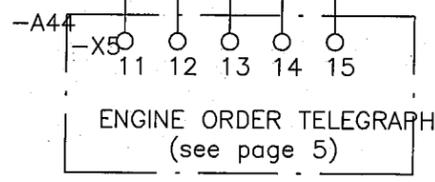
mtBUS ASSEMBLY  
E551.1-00001



INTERNAL CONNECTIONS  
EXTERNAL

=AG1 +PC01  
WING PORTSIDE

B4K-03 pr3-W Blk pr4-W Blk



WHEELHOUSE CONSOLE

2 - AS FITTED	03.11.24	S.Royal
1	03.08.06	S.Royal
REVISION	DATE	NAME

DATE	15.05.2003
DESIGN	Dittmer
CHECK	
PR	J.Dittmer

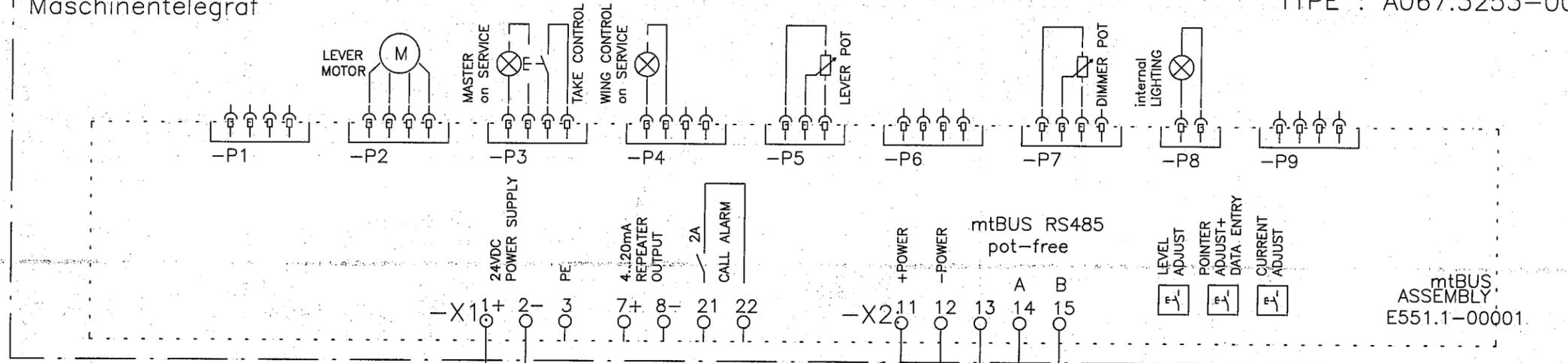
A067 DOUBLE EOT-SYSTEM  
M/E REM.CONTROL PORT WING TELEGRAPH

CUSTOMER  
TECHSOL ELECTROTECH.

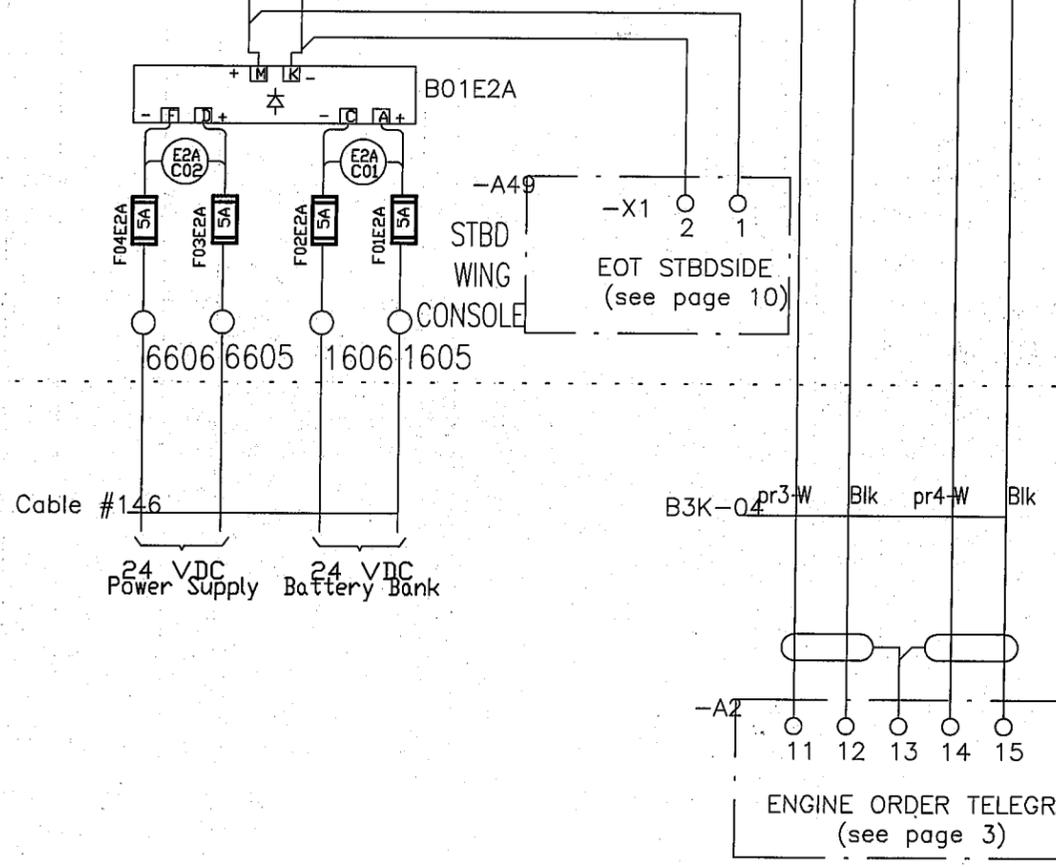
030775	=	+ A067
ORDER NUMBER		TYP - STAND

-A4 EOT STBD WING PORTSIDE  
Maschinentelegraf

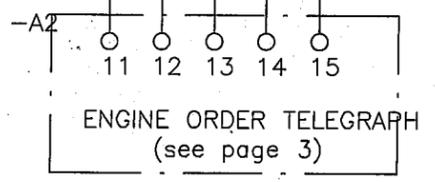
TYPE : A067.3253-000-0611



INTERNAL CONNECTIONS  
EXTERNAL



=AG1 +PC02  
WING STBDSIDE

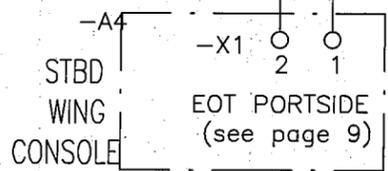
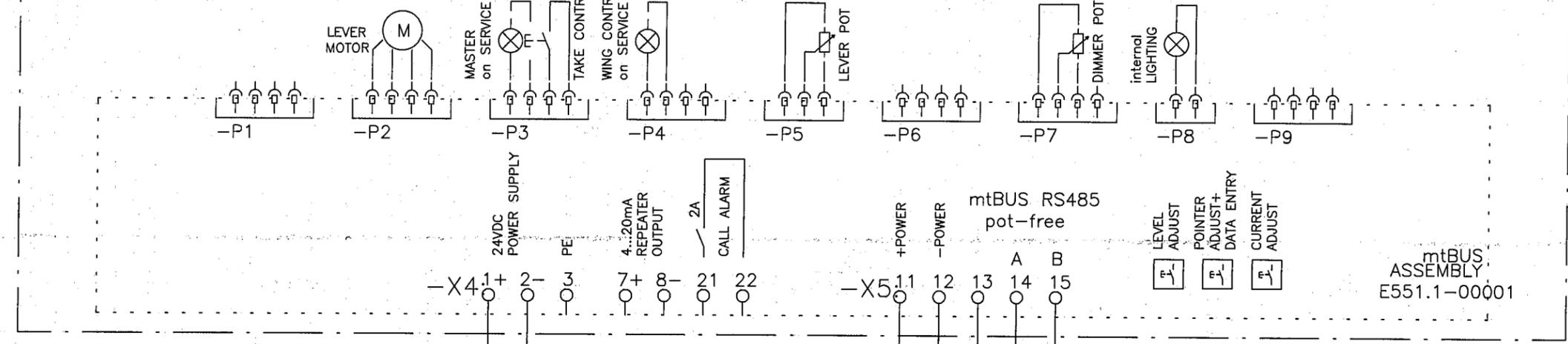


WHEELHOUSE CONSOLE

2 - AS FITTED	03.11.24	S.Royal	DATE	15.05.2003	A067 DOUBLE EOT-SYSTEM M/E REM.CONTROL PORT WING TELEGRAPH	CUSTOMER	030775	=	+ A067
1	03.08.06	S.Royal	DESIGN	Dittmer		TECHSOL ELECTROTECH.	ORDER NUMBER		TYP - STAND
REVISION	DATE	NAME	CHECK	J.Dittmer				WERFT	HULINEUBAU
			PR						PAGE: 9 OF: 16

-A49 EOT STBD WING STBDSIDE  
Maschinentelegraf

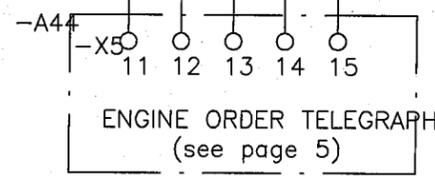
TYPE : A067.3253-000-0611



INTERNAL CONNECTIONS  
EXTERNAL

=AG1 +PC02  
WING STBDSIDE

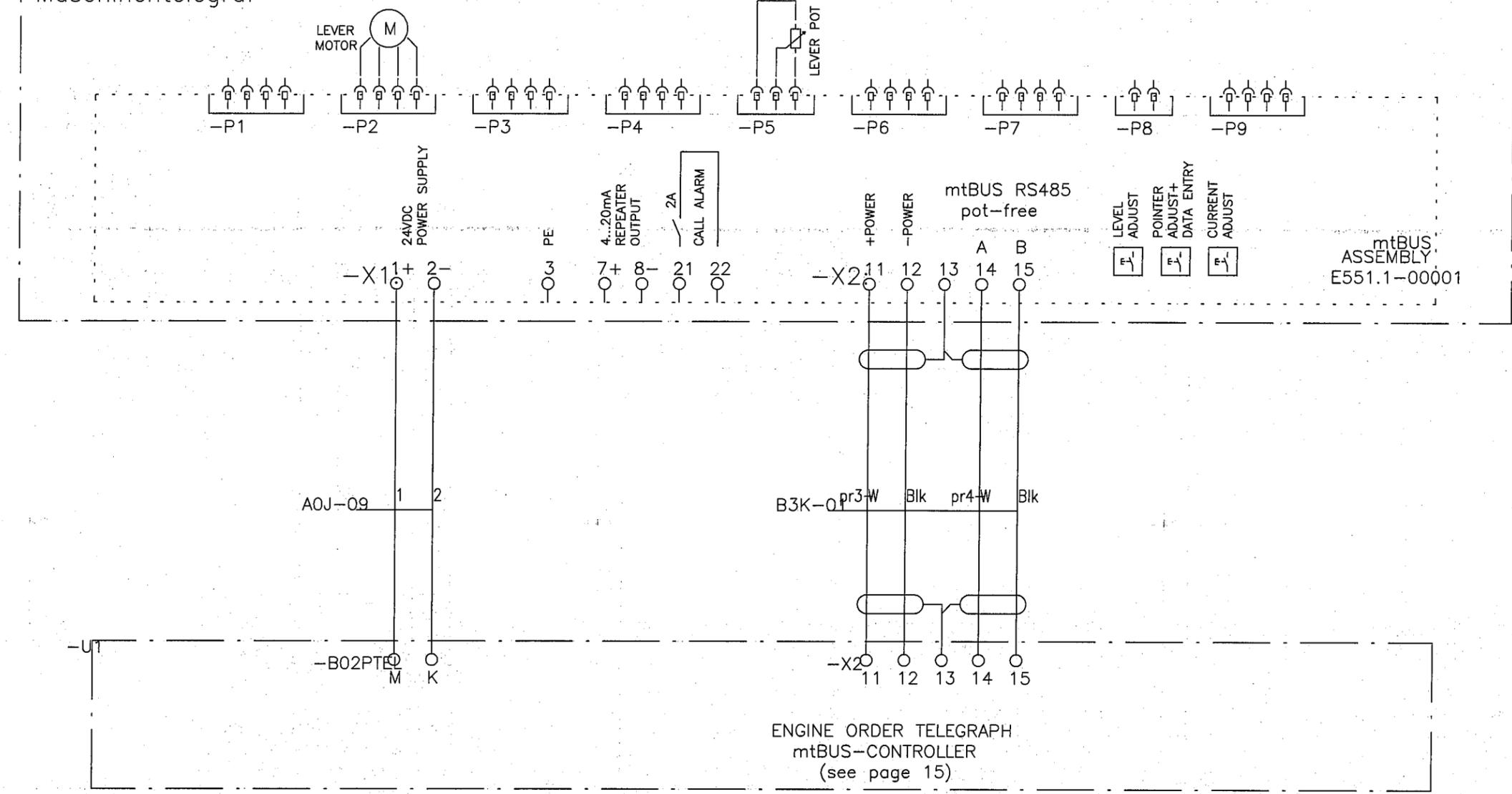
B4K-04 pr3-W Blk pr4-W Blk



WHEELHOUSE CONSOLE

2 - AS FITTED	03.11.24	S.Royal	DATE	15.05.2003	A067 DOUBLE EOT-SYSTEM M/E REM.CONTROL PORT WING TELEGRAPH	CUSTOMER	030775	=	+ A067
1	03.08.06	S.Royal	DESIGN	Dittmer		TECHSOL ELECTROTECH.	ORDER NUMBER		TYP - STAND
REVISION	DATE	NAME	CHECK						
			PR	J.Dittmer					
						WERFT	HULINEUBAU	PAGE:	100F: 16

-A1 EOT ECR PORTSIDE Maschinentelegraf TYPE : A067.4160-4X1-0610



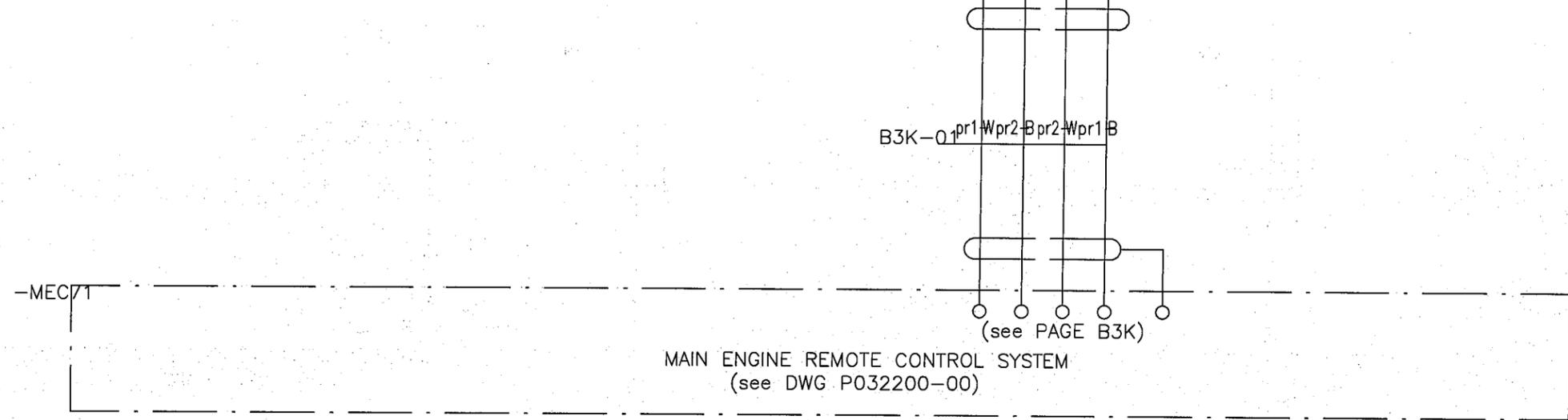
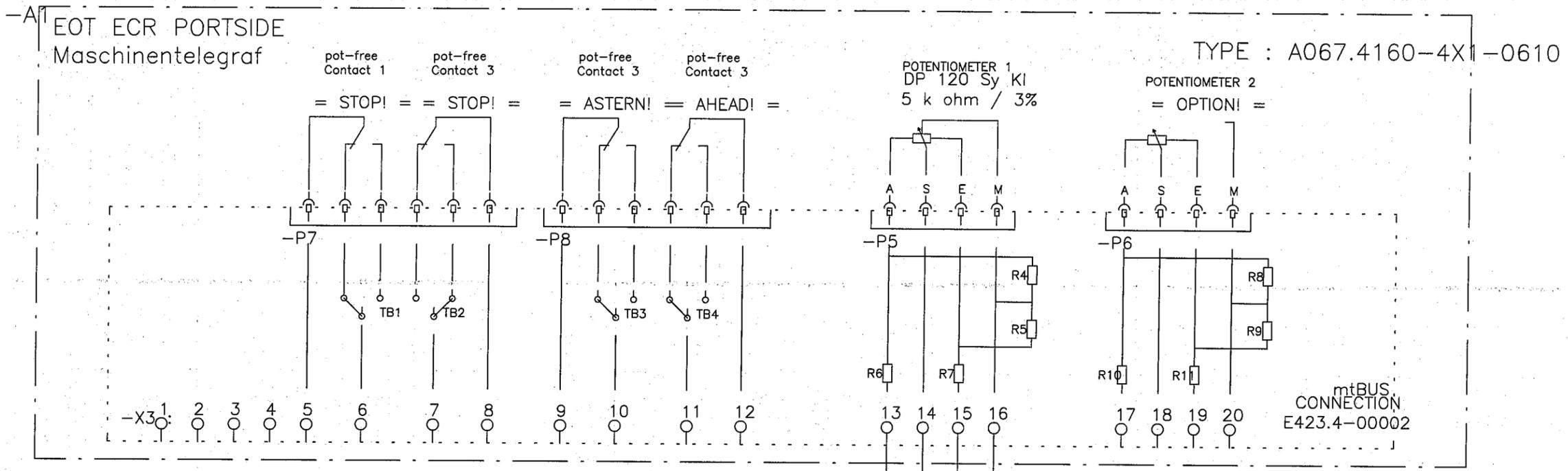
mtBUS ASSEMBLY E551.1-00001

ENGINE ORDER TELEGRAPH mtBUS-CONTROLLER (see page 15)

ECR-CONSOLE

=AG1 +PA ECR-CONSOLE

2 - AS FITTED	03.11.24	S.Royal	DATE	15.05.2003	A067 DOUBLE EOT-SYSTEM M/E REMOTE CONTROL ECR TELEGRAPH	CUSTOMER	030775	=	+ A067
1	03.08.06	S.Royal	DESIGN	Dittmer		TECHSOL ELECTROTECH.	ORDER NUMBER		TYP - STAND
REVISION	DATE	NAME	CHECK						
			PR	J.Dittmer					
						WERFT	HULLNEUBAU	PAGE:	11 OF: 16



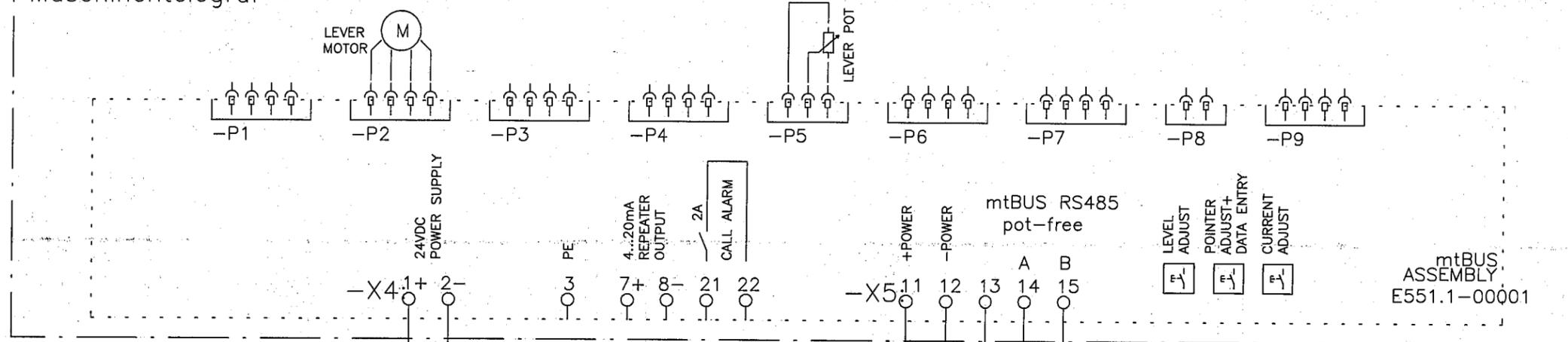
INTERNAL  
CONNECTIONS  
EXTERNAL

=AG1 +PA  
ECR-CONSOLE

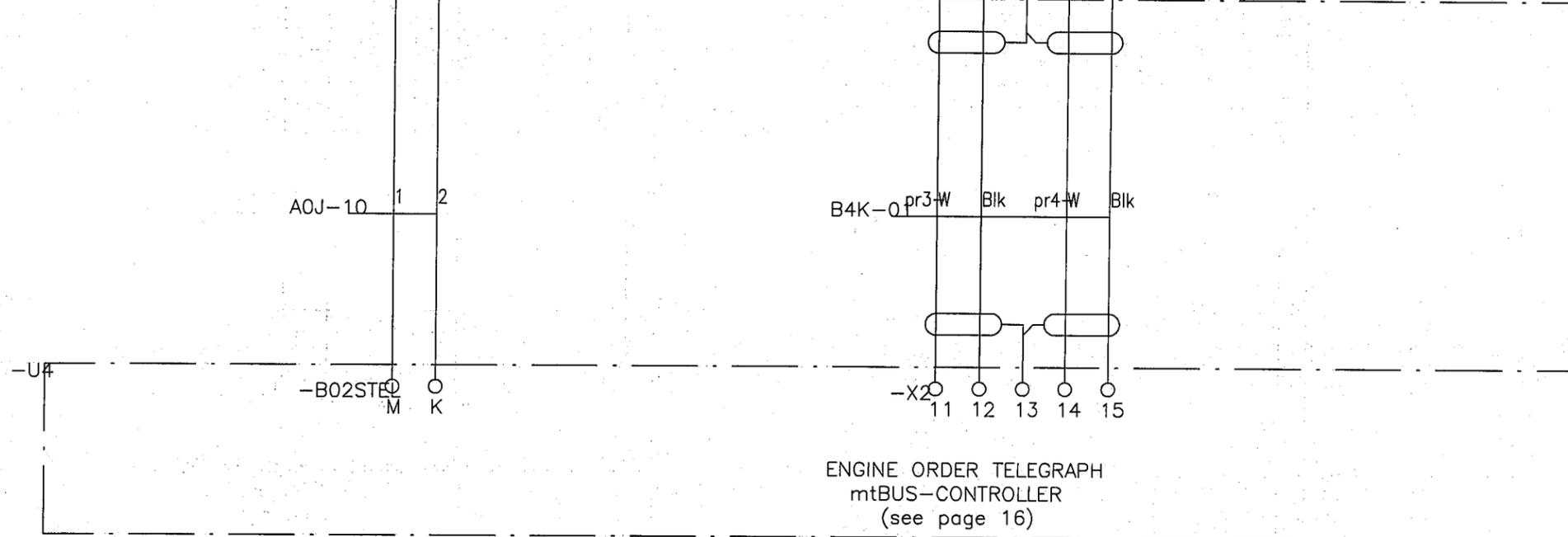
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1	03.08.06	S.Royal	DESIGN	Dittmer		TECHSOL ELECTROTECH.	ORDER NUMBER		TYP - STAND
REVISION	DATE	NAME	CHECK						
			PR	J.Dittmer					
						WERFT	HULNEUBAU	PAGE:	12 OF: 16

-A50  
EOT ECR STBDSIDE  
Maschinentelegraf

TYPE : A067.4160-4X1-0610



mtBUS  
ASSEMBLY  
E551.1-00001



ENGINE ORDER TELEGRAPH  
mtBUS-CONTROLLER  
(see page 16)

ECR-CONSOLE

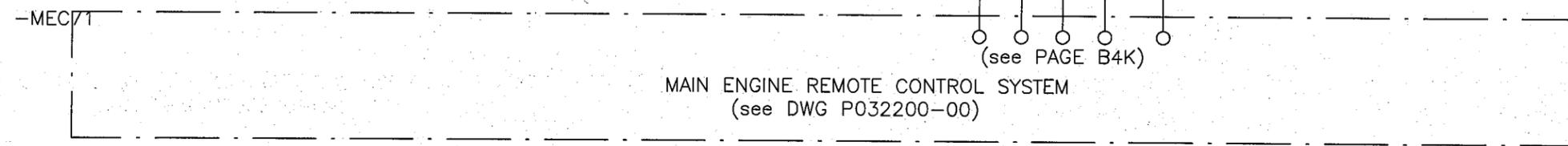
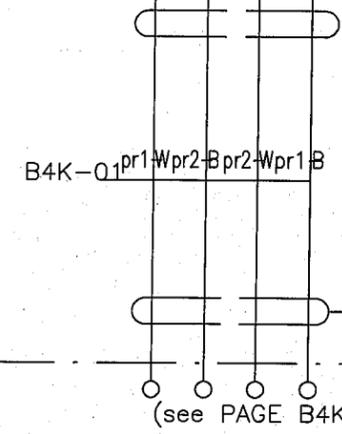
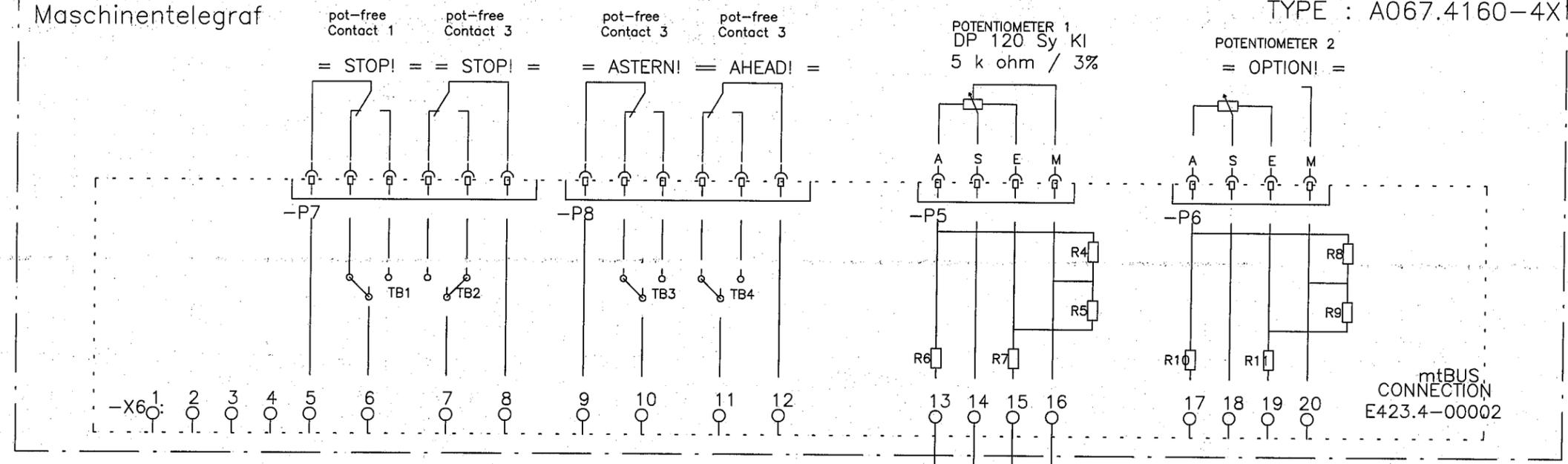
=AG1 +PA  
ECR-CONSOLE

INTERNAL  
CONNECTIONS  
EXTERNAL

2 - AS FITTED	03.11.24	S.Royal	DATE	15.05.2003	A067 DOUBLE EOT-SYSTEM M/E REMOTE CONTROL ECR TELEGRAPH	CUSTOMER	030775	=	+ A067
1	03.08.06	S.Royal	DESIGN	Dittmer		TECHSOL ELECTROTECH.	ORDER NUMBER		TYP - STAND
REVISION	DATE	NAME	CHECK	J.Dittmer					
			PR	J.Dittmer		WERFT	HULINEUBAU	PAGE:	130F: 16

-A51 EOT ECR STBDSIDE  
Maschinentelegraf

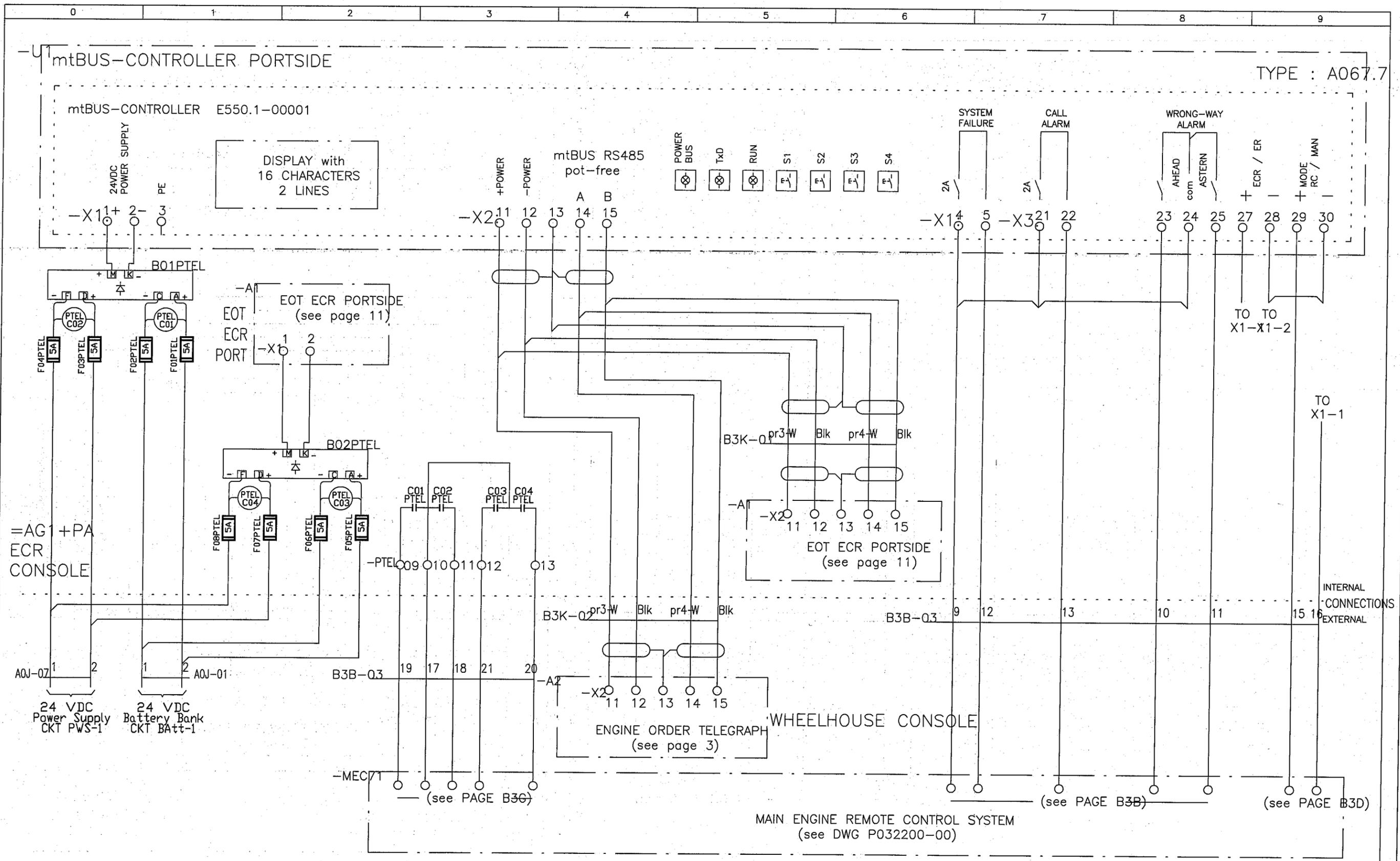
TYPE : A067.4160-4X1-0610



=AG1 +PA  
ECR-CONSOLE

INTERNAL CONNECTIONS  
EXTERNAL

2 - AS FITTED 03.11.24 S.Royal			DATE	15.05.2003	A067 DOUBLE EOT-SYSTEM	CUSTOMER	030775	=	+ A067
1 03.08.06 S.Royal			DESIGN	Dittmer		TECHSOL ELECTROTECH.	ORDER NUMBER		TYP - STAND
REVISION	DATE	NAME	CHECK		M/E REMOTE CONTROL ECR TELEGRAPH			WERFT	HULINEUBAU
			PR	J.Dittmer				PAGE:	14 OF: 16



2	AS FITT	03.11.24	S.Royal
1		03.08.06	S.Royal
REVISION	DATE	NAME	

DATE	19.05.2003
DESIGN	Dittmer
CHECK	
PR	J.Dittmer

A067 DOUBLE EOT-SYSTEM  
M/E REM. CONTROL mtBUS-CONTROLLER

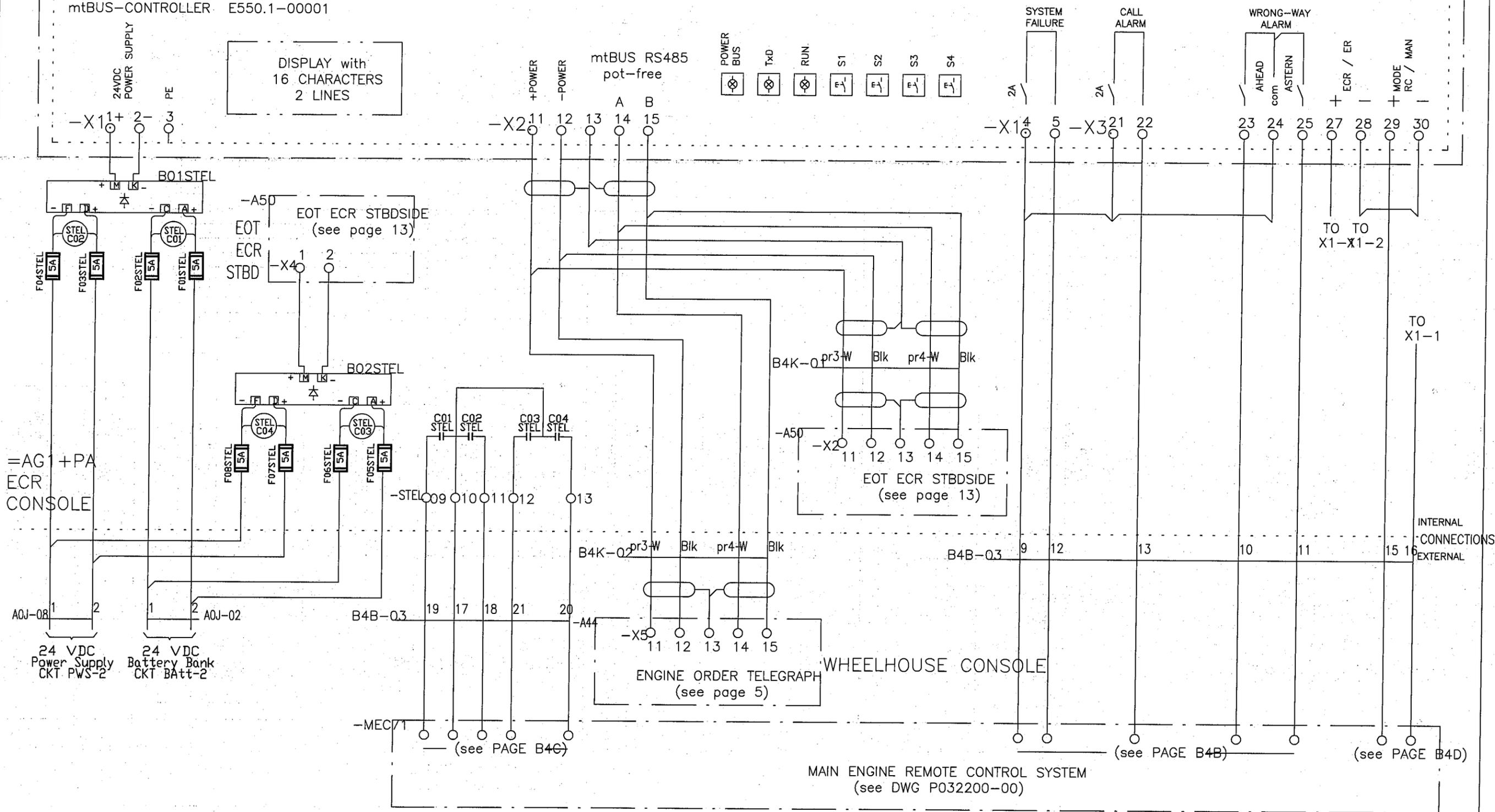
CUSTOMER	TECHSOL ELECTROTECH.	030775	=	+ A067
ORDER NUMBER				TYP - STAND
WERFT	HULLNEUBAU	PAGE:	15	OF: 16

-U3 mtBUS-CONTROLLER STBDSIDE

TYPE : A067.7

mtBUS-CONTROLLER E550.1-00001

DISPLAY with  
16 CHARACTERS  
2 LINES



2 - AS FITTED	03.11.24	S.Royal
1	03.08.06	S.Royal
REVISION	DATE	NAME

DATE	19.05.2003
DESIGN	Dittmer
CHECK	
PR	J.Dittmer

A067 DOUBLE EOT-SYSTEM  
M/E REM. CONTROL mtBUS-CONTROLLER

CUSTOMER  
TECHSOL ELECTROTECH

030775

ORDER NUMBER

+ A067

TYP - STAND

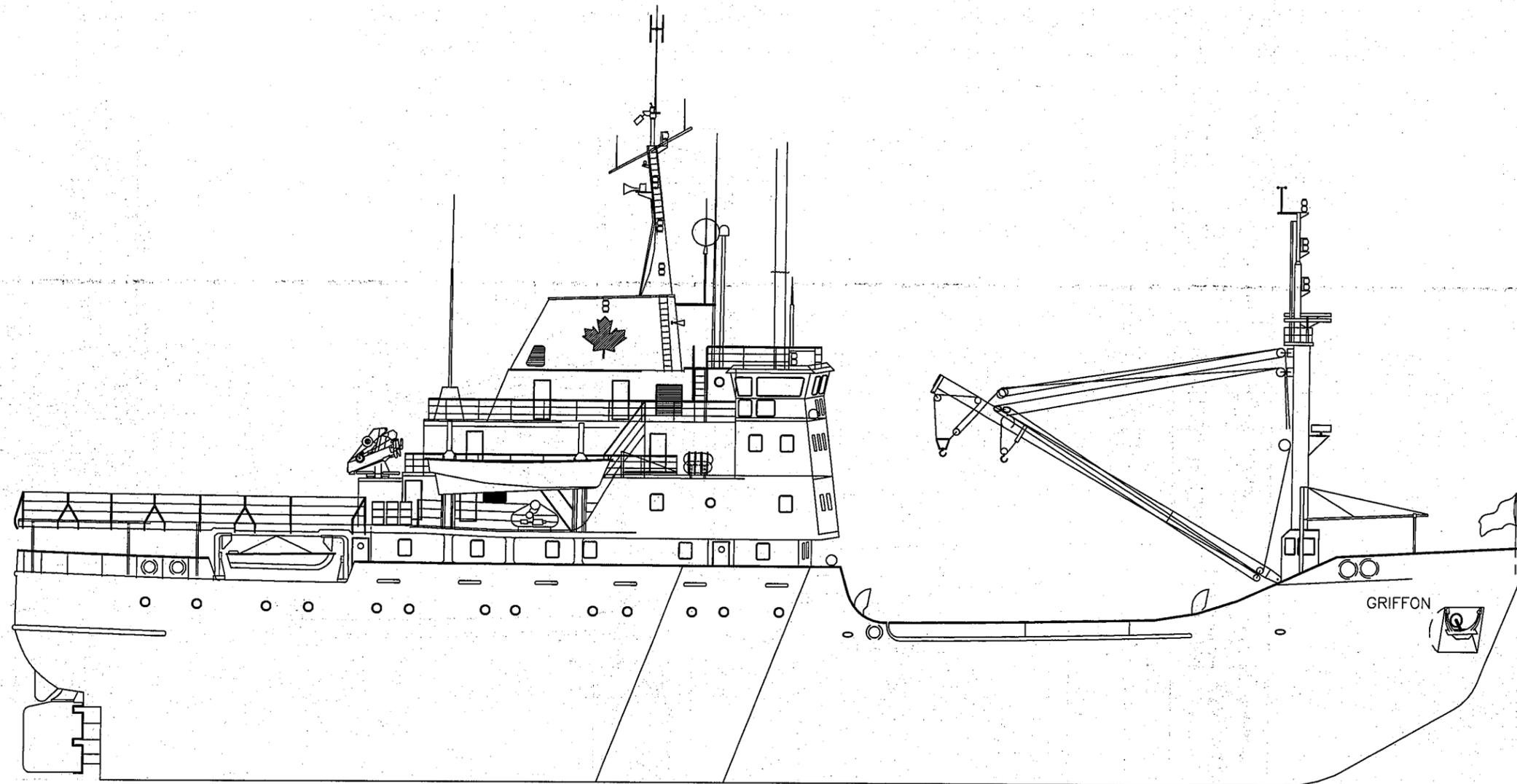
WERFT

HULINEUBAU

PAGE:

160F:

16



# PROPULSION CONTROL SYSTEM

## CCGS GRIFFON

ELEMENTARY SYSTEM AND WIRING DIAGRAMS

OCTOBER 01, 2002

CONFIDENTIAL



400, Mgr. Gauvreau  
 Qu?bec (Qu?bec)  
 G1K 9J9  
 Tel : (418) 688-2230  
 Fax: (418) 688-2233

REV.	1	AS FITTED (by Ser)	4	TECHSOL Inc. 400, Mgr Gauvreau Quebec, Qu?c. G1K 9J9		GENERAL ELECTRIC Industrial Systems Salem, Virginia	ELEMENTARY DIAGRAM PROPULSION CONTROL SYSTEM	PRINTS TO	A0 SH. No.	
	2		5							P032200-00 CONT. ON SH. A0A
	3		6							
DRAWN		CHKD	DATE							
S.ROYAL		C.M.	02-10-01							

INDEX TO SECTION A (ELEMENTARY)

01- 02- 03- 04- 05- 06- 07- 08- 09- 10- 11- 12- 13- 14- 15- 16- 17- 18- 19- 20- 21- 22- 23- 24- 25- 26- 27- 28- 29- 30- 31- 32- 33- 34- 35- 36- 37- 38- 39- 40- 41- 42- 43- 44- 45- 46- 47- 48- 49- 50- 51- 52- 53-	A B C D E F G H J K L M N P Q R S T U V	DESCRIPTION	1 SHEET	DESCRIPTION	2 SHEET	DESCRIPTION	3 SHEET	DESCRIPTION	4 SHEET	DESCRIPTION	5 SHEET	DESCRIPTION
		<u>INDEXES, GENERAL &amp; PLC</u>		<u>PORT CONTROL MIMIC</u>		<u>STBD CONTROL MIMIC</u>						
A		SECTION A INDEX	A	NINTH GENIUS COMMUNICATION MODULE	A	TENTH GENIUS COMMUNICATION MODULE						
B		SECTION B INDEX	B	DIGITAL INPUTS BANK #1	B	DIGITAL INPUTS BANK #1						
C		SECTION C INDEX	C	DIGITAL INPUTS BANK #2	C	DIGITAL OUTPUTS BANK #1						
D		SECTION D INDEX	D	DIGITAL OUTPUTS BANK #1	D	DIGITAL OUTPUTS BANK #2						
E		SECTION E INDEX	E	DIGITAL OUTPUTS BANK #2	E	DIGITAL OUTPUTS BANK #3						
F		REVISIONS DESCRIPTION	F	DIGITAL OUTPUTS BANK #3	F							
G		LEGEND OF SYMBOL	G		G							
H		SYSTEM CONFIGURATION LAYOUT	H		H							
J		STATIONS INTERCONNECTIONS SUPPLY	J		J							
JA		STATIONS INTERCONNECTIONS DATA	K		K							
JB		GENERAL ONE-LINE DIAGRAM	L		L							
K		PLC MASTER AND SUPPLY LAYOUT	M		M							
L		PLC SLAVE AND SUPPLY LAYOUT										
M		WESTINGHOUSE CABLE NUMBERS CROSS-REF										
N		WESTINGHOUSE DEVICES NUMBERS CROSS-REF										
		<u>PORT CONTROL</u>		<u>STBD CONTROL</u>								
A		ELEVENTH GENIUS COMMUNICATION MODULE	A	TWELVETH GENIUS COMMUNICATION MODULE								
B		DIGITAL INPUTS BANK #1	B	DIGITAL INPUTS BANK #1								
C		DIGITAL INPUTS BANK #2	C	DIGITAL INPUTS BANK #2								
D		DIGITAL OUTPUTS BANK #1	D	DIGITAL OUTPUTS BANK #1								
E		VOLTAGE ANALOG INPUTS BANK #1	E	VOLTAGE ANALOG INPUTS BANK #1								
F		VOLTAGE ANALOG OUTPUTS BANK #1	F	VOLTAGE ANALOG OUTPUTS BANK #1								
G			G									
K		ANALOG INPUT CALIBRATION BOARD #1	K	ANALOG INPUT CALIBRATION BOARD #1								
L			L									
M		PORT OUTBOARD ENGINE GOVERNOR	M	STBD OUTBOARD ENGINE GOVERNOR								
N		PORT INBOARD ENGINE GOVERNOR	N	STBD INBOARD ENGINE GOVERNOR								

PRINTS TO: AOA SH. No.

ELEMENTARY DIAGRAM PROPULSION CONTROL SYSTEM P032200-00 CONT. ON SH. AOB

GENERAL ELECTRIC Industrial Systems Salem, Virginia

TECHSOL Inc. 400, Mgr Gauvreau Quebec, Qué. G1K 9J9

CHKD C.M. DATE 02-10-01

DRAWN S.ROYAL

REV. 1 AS FITTED (by SeF) 2 3 4 5 6

01- 02- 03- 04- 05- 06- 07- 08- 09- 10- 11- 12- 13- 14- 15- 16- 17- 18- 19- 20- 21- 22- 23- 24- 25- 26- 27- 28- 29- 30- 31- 32- 33- 34- 35- 36- 37- 38- 39- 40- 41- 42- 43- 44- 45- 46- 47- 48- 49- 50- 51- 52- 53-	A B C D E F G H J K L M N P Q R S T U V	INDEX TO SECTION B (LOCAL PANEL CABLING & WIRING)				PRINTS TO -01 -02 -03 -04 -05 -06 -07 -08 -09 -10 -11 -12 -13 -14 -15 -16 -17 -18 -19 -20 -21 -22 -23 -24 -25 -26 -27 -28 -29 -30 -31 -32 -33 -34 -35 -36 -37 -38 -39 -40 -41 -42 -43 -44 -45 -46 -47 -48 -49 -50 -51 -52 -53	AOB SH. No.
0 SHEET		DESCRIPTION	1 SHEET	DESCRIPTION	2 SHEET	DESCRIPTION	ELEMENTARY DIAGRAM PROPULSION CONTROL SYSTEM P032200-00 CONT. ON SH. AOC
3 SHEET		DESCRIPTION	4 SHEET	DESCRIPTION	5 SHEET	DESCRIPTION	
		<u>ONELINES &amp; PLC COMMUNICATION</u>			<u>PORT CONTROL MIMIC</u>		
A			A	NINTH GENIUS COMMUNICATION MODULE	A	TENTH GENIUS COMMUNICATION MODULE	
B			B	DIGITAL INPUTS BANK #1	B	DIGITAL INPUTS BANK #1	
C			C	DIGITAL INPUTS BANK #2	C	DIGITAL OUTPUTS BANK #1	
D		PANEL 1 ONELINE DIAGRAM	D	DIGITAL OUTPUTS BANK #1	D	DIGITAL OUTPUTS BANK #2	
E		PANEL 2 ONELINE DIAGRAM	E	DIGITAL OUTPUTS BANK #2	E	DIGITAL OUTPUTS BANK #3	
F		PANEL 3 ONELINE DIAGRAM	F	DIGITAL OUTPUTS BANK #3	F		
G		PANEL 4 ONELINE DIAGRAM	G		G		
H			H		H		
J		GENIUS COMMUNICATION DIAGRAM	J		J		
JA							
JB							
JC							
JD							
JE							
K			K		K		
L			L		L		
M			M		M		
		<u>PORT CONTROL</u>			<u>STBD CONTROL</u>		
A		ELEVENTH GENIUS COMMUNICATION MODULE	A	TWELVETH GENIUS COMMUNICATION MODULE	A		
B		DIGITAL INPUTS BANK #1	B	DIGITAL INPUTS BANK #1	B		
C		DIGITAL INPUTS BANK #2	C	DIGITAL INPUTS BANK #2	C		
D		DIGITAL OUTPUTS BANK #1	D	DIGITAL OUTPUTS BANK #1	D		
E		VOLTAGE ANALOG INPUTS BANK #1	E	VOLTAGE ANALOG INPUTS BANK #1	E		
F		VOLTAGE ANALOG OUTPUTS BANK #1	F	VOLTAGE ANALOG OUTPUTS BANK #1	F		
G			G		G		
H			H		H		
J			J		J		
K		ANALOG INPUT CALIBRATION BOARD #1	K	ANALOG INPUT CALIBRATION BOARD #1	K		
M		PORT OUTBOARD ENGINE GOVERNOR	M	STBD OUTBOARD ENGINE GOVERNOR	L		
N		PORT INBOARD ENGINE GOVERNOR	N	STBD INBOARD ENGINE GOVERNOR	M		

GENERAL ELECTRIC  
Industrial Systems  
Salem, Virginia

TECHSOL Inc.  
400, Mgr Gouveau  
Quebec, Que.  
G1K 9J9



CHKD  
C.M.  
DATE  
02-10-01

DRAWN  
S. ROYAL  
4  
5  
6

REV.  
1 AS FITTED (by Set)  
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3

01- 02- 03- 04- 05- 06- 07- 08- 09- 10- 11- 12- 13- 14- 15- 16- 17- 18- 19- 20- 21- 22- 23- 24- 25- 26- 27- 28- 29- 30- 31- 32- 33- 34- 35- 36- 37- 38- 39- 40- 41- 42- 43- 44- 45- 46- 47- 48- 49- 50- 51- 52- 53-	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V									
INDEX TO SECTION C (EXTERNAL I/Os CABLING & WIRING)																													
0 SHEET			DESCRIPTION							1 SHEET			DESCRIPTION							2 SHEET			DESCRIPTION						
			<u>INDEXES, GENERAL &amp; PLC</u>										<u>PORT CONTROL MIMIC</u>										<u>STBD CONTROL MIMIC</u>						
A B C										A B C			DIGITAL INPUTS BANK #1							A B C			DIGITAL INPUTS BANK #1 DIGITAL OUTPUTS BANK #1						
D E F										D E F			DIGITAL OUTPUTS BANK #1 DIGITAL OUTPUTS BANK #2 DIGITAL OUTPUTS BANK #3							D E F			DIGITAL OUTPUTS BANK #2 DIGITAL OUTPUTS BANK #3						
G H J										G H J										G H J									
K L M										K L M										K L M									
3 SHEET			DESCRIPTION							4 SHEET			DESCRIPTION							5 SHEET			DESCRIPTION						
			<u>PORT CONTROL</u>										<u>STBD CONTROL</u>																
A B C			DIGITAL INPUTS BANK #1							A B C			DIGITAL INPUTS BANK #1							A B C									
D E F			DIGITAL OUTPUTS BANK #1 VOLTAGE ANALOG INPUTS BANK #1							D E F			DIGITAL OUTPUTS BANK #1 VOLTAGE ANALOG INPUTS BANK #1							D E F									
G H J										G H J										G H J									
M N			PORT OUTBOARD ENGINE GOVERNOR PORT INBOARD ENGINE GOVERNOR							M N			STBD OUTBOARD ENGINE GOVERNOR STBD INBOARD ENGINE GOVERNOR							K L M									

PRINTS TO  
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ELEMENTARY DIAGRAM  
PROPULSION CONTROL SYSTEM  
P032200-00 CONT. ON SH. A0D

GENERAL ELECTRIC  
Industrial Systems  
Salem, Virginia

TECHSOL Inc.  
400, Mgr Gouvreau  
Quebec, Qué.  
G1K 9J9

**TECHSOL**

CHKD C.M.  
DRAWN S.ROYAL  
DATE 02-10-01

REV. 1 AS FITTED (by Set)	4	5
2	5	6
3		

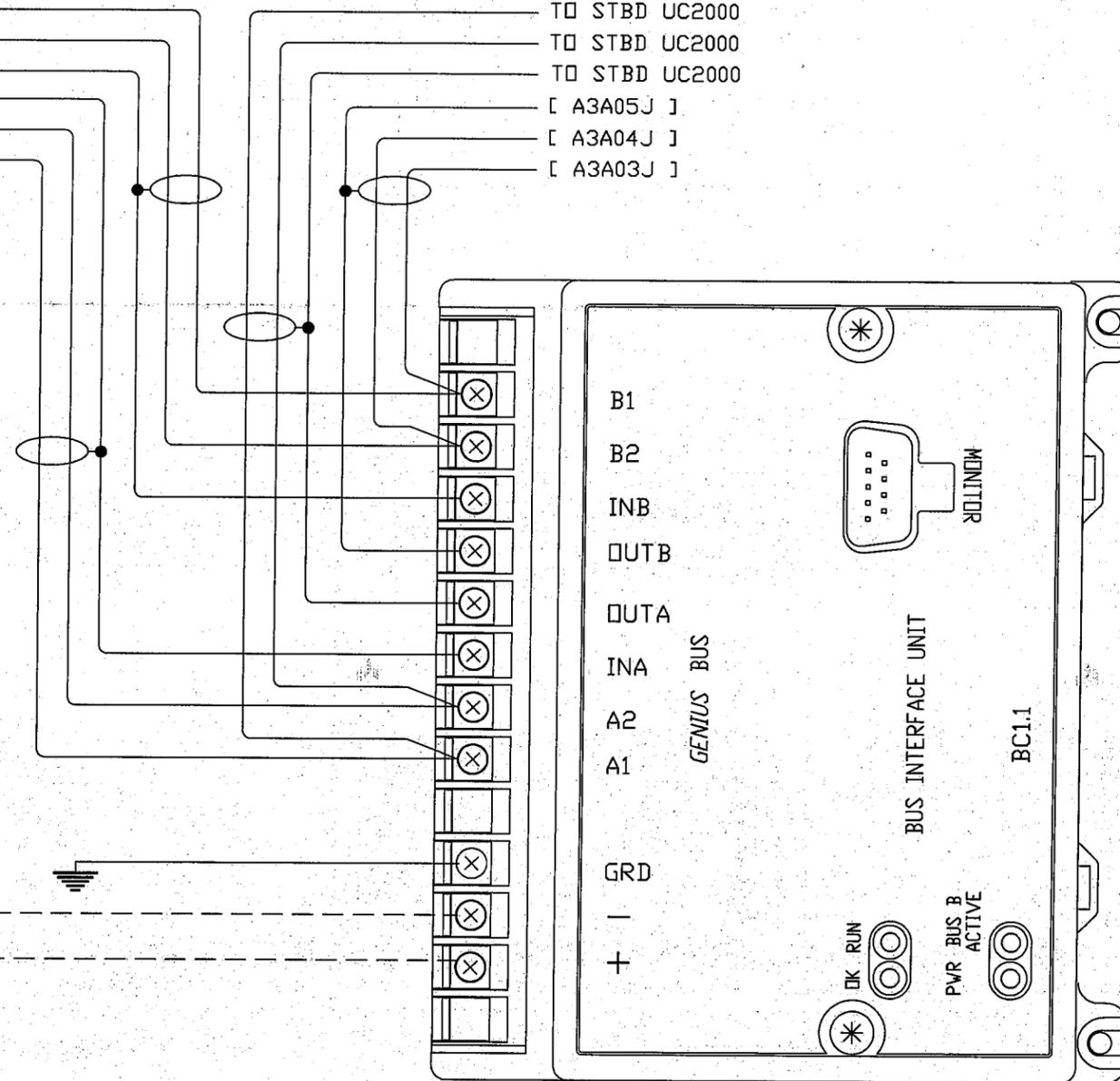
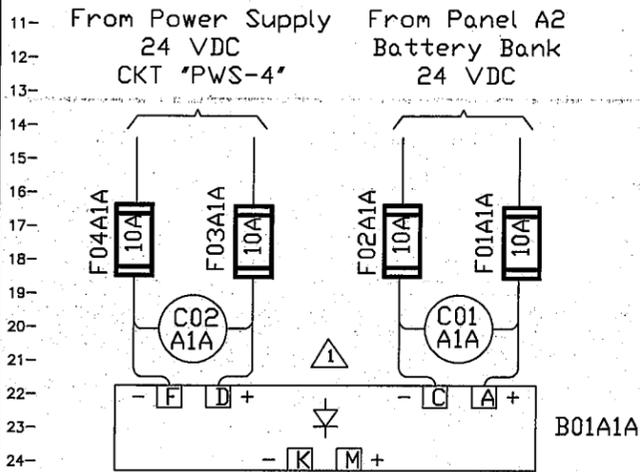
PROPULSION CONTROL SYSTEM, CCGS GRIFFON

REV.	AS FITTED (by Ser)	1	2	3	4	5	6	DATE	02-10-01	C.M.	S.ROYAL	CHKD	TECHSOL Inc.	400, Mgr. Gouvreau	Quebec, Qué.	61K 9/9	GENERAL ELECTRIC	Industrial Systems	Salem, Virginia	P032200-00	CONT. ON SH. AON	SH. No.	AOM
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REV.	WEIGHINGHOUSE 749C308-1 Drawing	PROPULSION CONTROL P032200-00 Drawing	WEIGHINGHOUSE 749C308-1 Drawing	EXCITER Drawing
1	4 CB	4	4	4
2	4 CB	4	4	4
3	4 CB	4	4	4
4	4 CB	4	4	4
5	4 CB1	4	4	4
6	4 CB2	4	4	4
7	4 CB3	4	4	4
8	4 CB4	4	4	4
9	4 CB5	4	4	4
10	4 CB6	4	4	4
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15	4 CB11	4	4	4
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23	4 CB19	4	4	4
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295	4 CB291	4	4	4
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297	4 CB293	4	4	4
298	4 CB294	4	4	4
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301	4 CB297			

Located Behind ECR Mimic (PORT)

- [ A0L37M ] TO STBD UC2000
- [ A0L36M ] TO STBD UC2000
- [ A0L35M ] TO STBD UC2000
- [ A3A05N ] [ A3A05J ]
- [ A3A04N ] [ A3A04J ]
- [ A3A03N ] [ A3A03J ]



33G  
35G

Genius Bus Address : 01

- [ A1B11B ] [ A1C09B ] [ A1D11B ] [ A1E11B ] [ A1F09B ] [ A1G09B ] [ A1H09B ] [ D0A08B ] [ D0C08B ] [ D2A08H ]
- [ A1B13B ] [ A1C11B ] [ A1D13B ] [ A1E13B ] [ A1F11B ] [ A1G11B ] [ A1H11B ] [ D0A09B ] [ D0C09B ] [ D2A10H ]

⚠ Techsol Module, Inside Port Mimic Panel  
Part # TM-H001

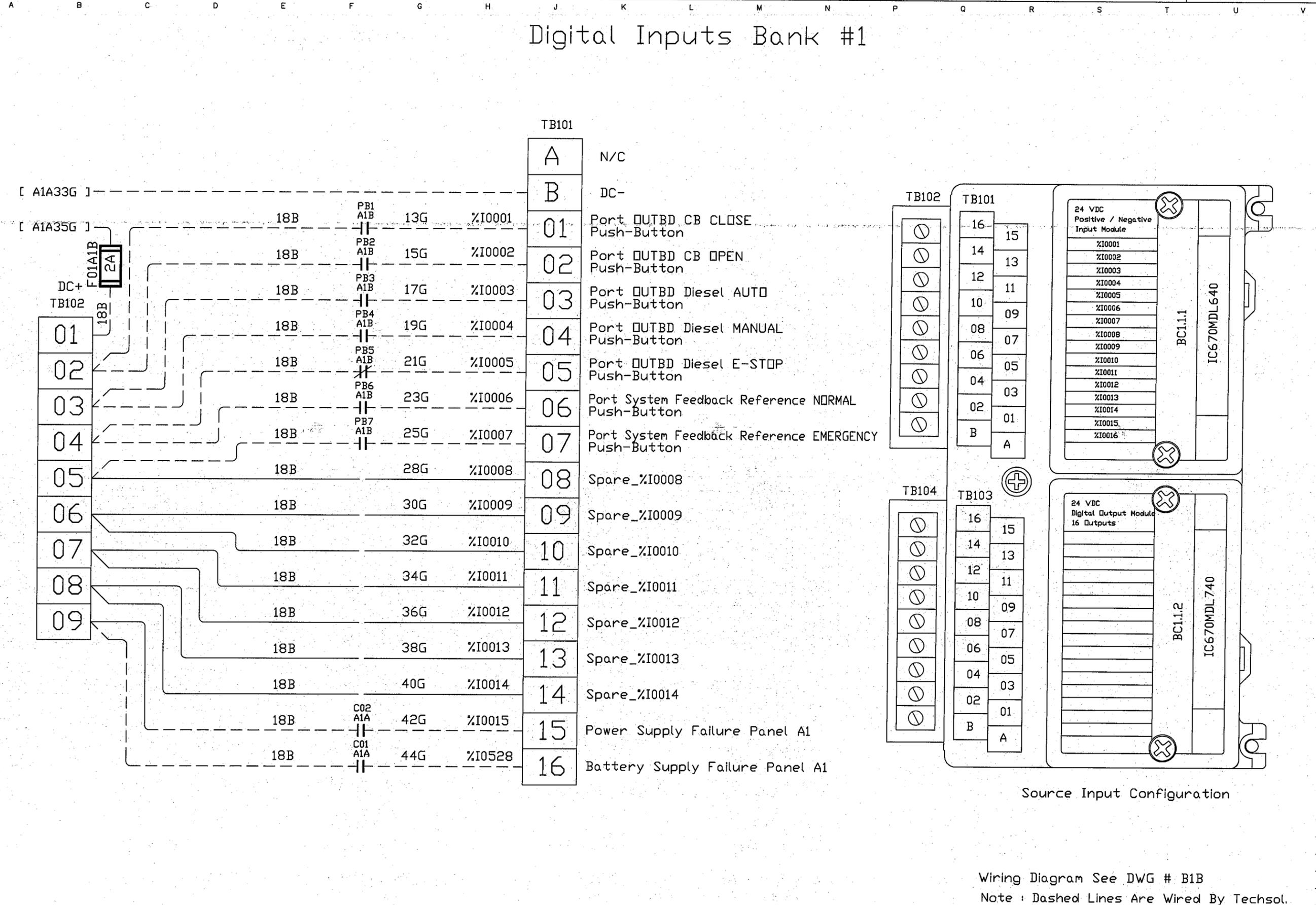
Wiring Diagram See DWG # B1A

Note : Dashed Lines Are Wired By Techsol.

REV.	1	AS FITTED (by Ser)	2	3
DRAWN	S.ROYAL	DATE	02-10-01	
CHKD	C.M.			
TECHSOL Inc. 400, Mgr. Gouveau Quebec, Que. G1K 9J9		GENERAL ELECTRIC Industrial Systems Salem, Virginia		
ELEMNTARY DIAGRAM PROPULSION CONTROL SYSTEM		P032200-00 CONT. ON SH. A1B		
PRINTS TO		A1A SH. No.		

# Digital Inputs Bank #1

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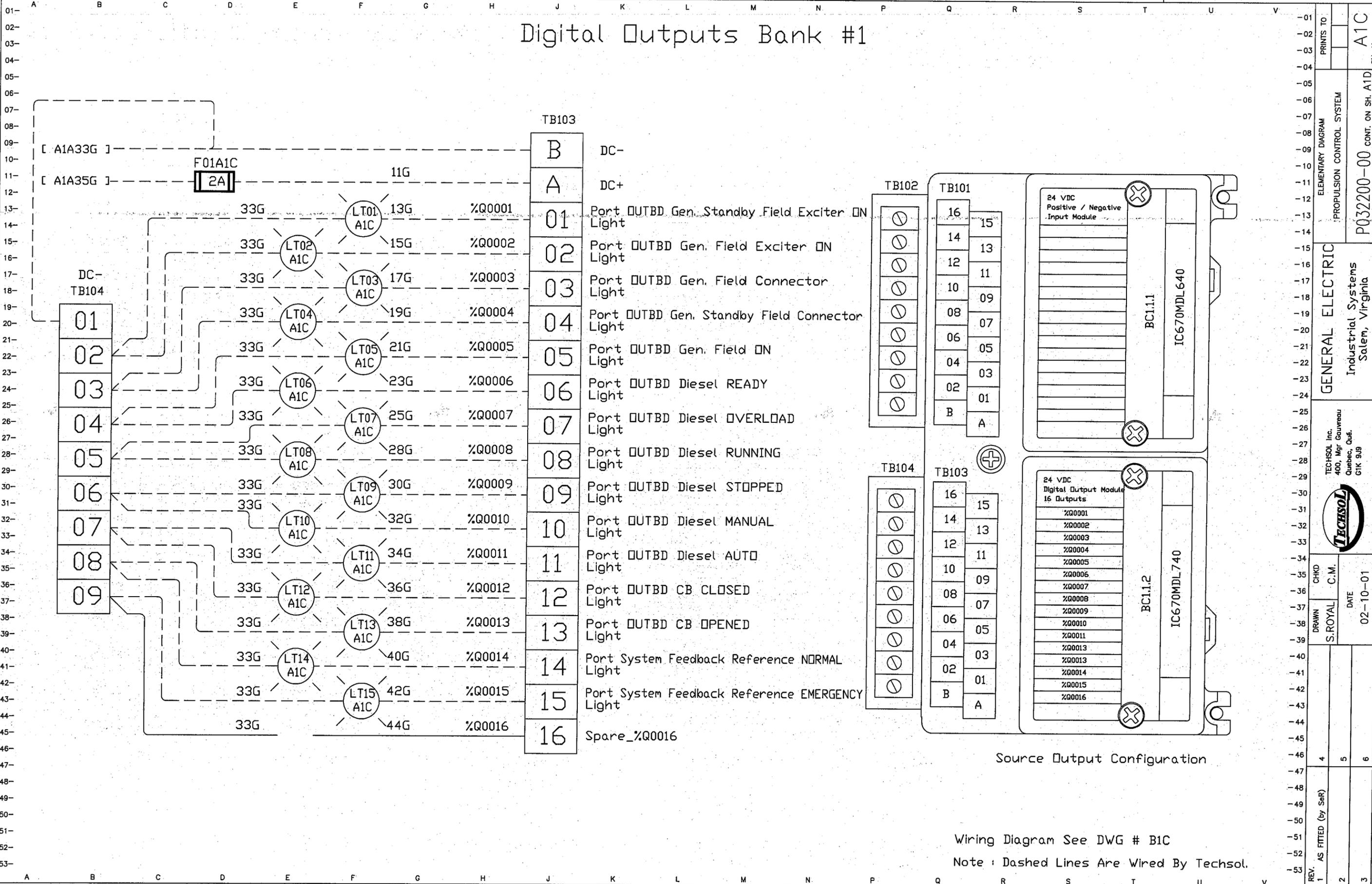


Source Input Configuration

Wiring Diagram See DWG # B1B  
Note : Dashed Lines Are Wired By Techsol.

PRINTS TO		ELEMENTARY DIAGRAM		PROPULSION CONTROL SYSTEM		SH. No.	A1B	
1	2	3	4	5	6	DATE	02-10-01	
REV.	AS FITTED (by Ser)	DRAWN	S. ROYAL	CHKD	C.M.	TECHSOL Inc.	400, Mgr Couvreur Quebec, Que. G1K 9J9	
							GENERAL ELECTRIC	Industrial Systems Salem, Virginia
							P032200-00	CONT. ON SH. A1C

# Digital Outputs Bank #1

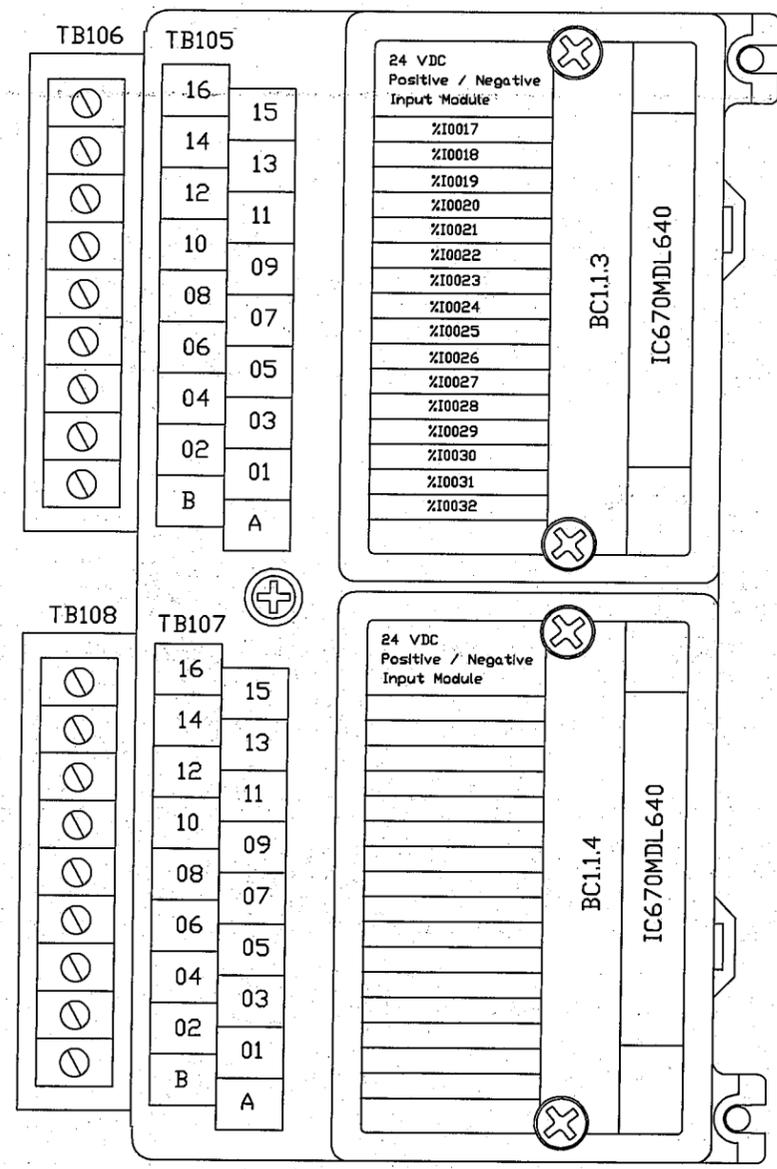
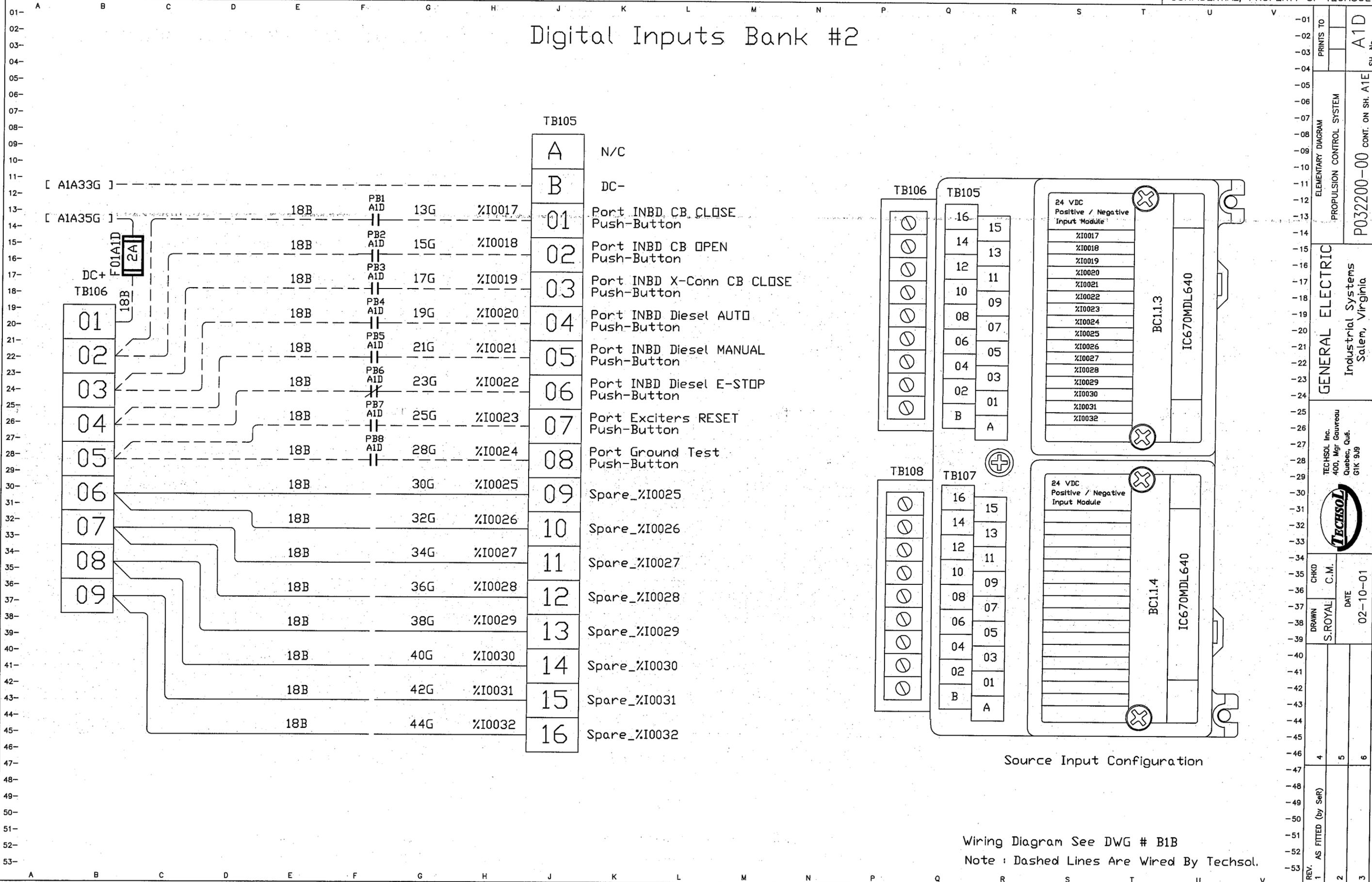


Source Output Configuration

Wiring Diagram See DWG # B1C  
 Note : Dashed Lines Are Wired By Techsol.

PRINTS TO		A1C
ELEMENTARY DIAGRAM		
PROPULSION CONTROL SYSTEM		
GENERAL ELECTRIC		
Industrial Systems		
Salem, Virginia		
TECHSOL Inc.		
400, Mgr Gouvreau		
Quebec, Qué.		
G1K 919		
CHKD		
C.M.		
DATE		02-10-01
DRAWN	S.ROYAL	
REV.	AS FITTED (by Ser)	
1		
2		
3		

# Digital Inputs Bank #2



Source Input Configuration

Wiring Diagram See DWG # B1B  
 Note : Dashed Lines Are Wired By Techsol.

PRINTS TO: A1D SH. No.

ELEMENTARY DIAGRAM: PROPULSION CONTROL SYSTEM

GENERAL ELECTRIC Industrial Systems Salem, Virginia

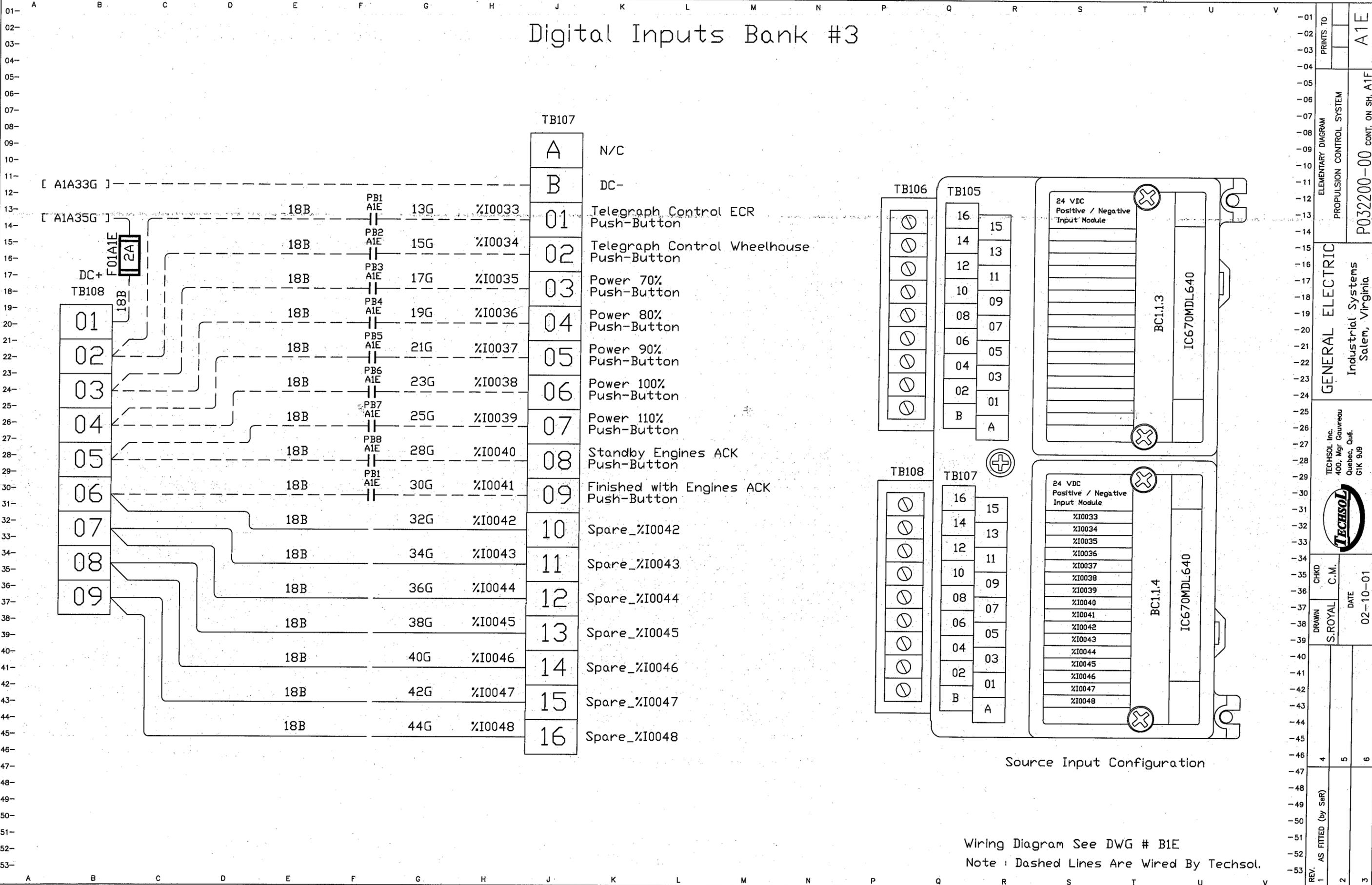
TECHSOL Inc. 400, Mgr Gouvreau Quebec, Qu. G1K 9J9

CHKD: S.ROYAL C.M. DATE: 02-10-01

REV. 1 AS FITTED (by SeF) 4 5 6

P032200-00 CONT. ON SH. A1E

# Digital Inputs Bank #3



Source Input Configuration

Wiring Diagram See DWG # B1E  
 Note : Dashed Lines Are Wired By Techsol.

-01		PRINTS TO		A1E	SH. No.
-02					
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GENERAL ELECTRIC  
 Industrial Systems  
 Salem, Virginia

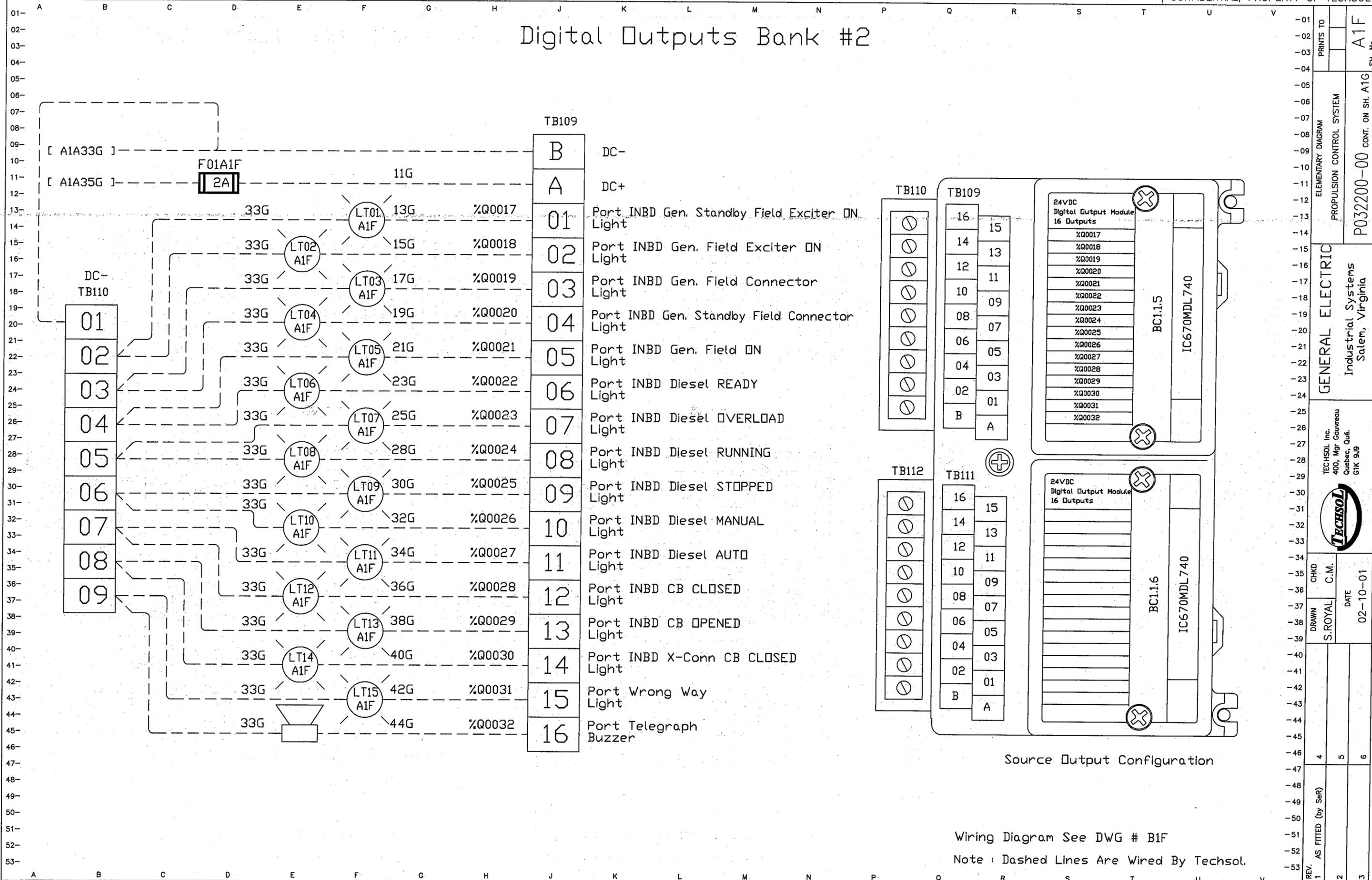
TECHSOL Inc.  
 400, Mgr. Gouveau  
 Quebec, Qué.  
 G1K 9J9



CHKD  
 S. ROYAL  
 DATE  
 02-10-01

REV.	1	AS FITTED (by Set)	4	5	6
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# Digital Outputs Bank #2



Source Output Configuration

Wiring Diagram See DWG # B1F

Note : Dashed Lines Are Wired By Techsol.

PRINTS TO: A1F SH. No.

ELEMENTARY DIAGRAM: PROPULSION CONTROL SYSTEM

CONT. ON SH. A1G

P032200-00

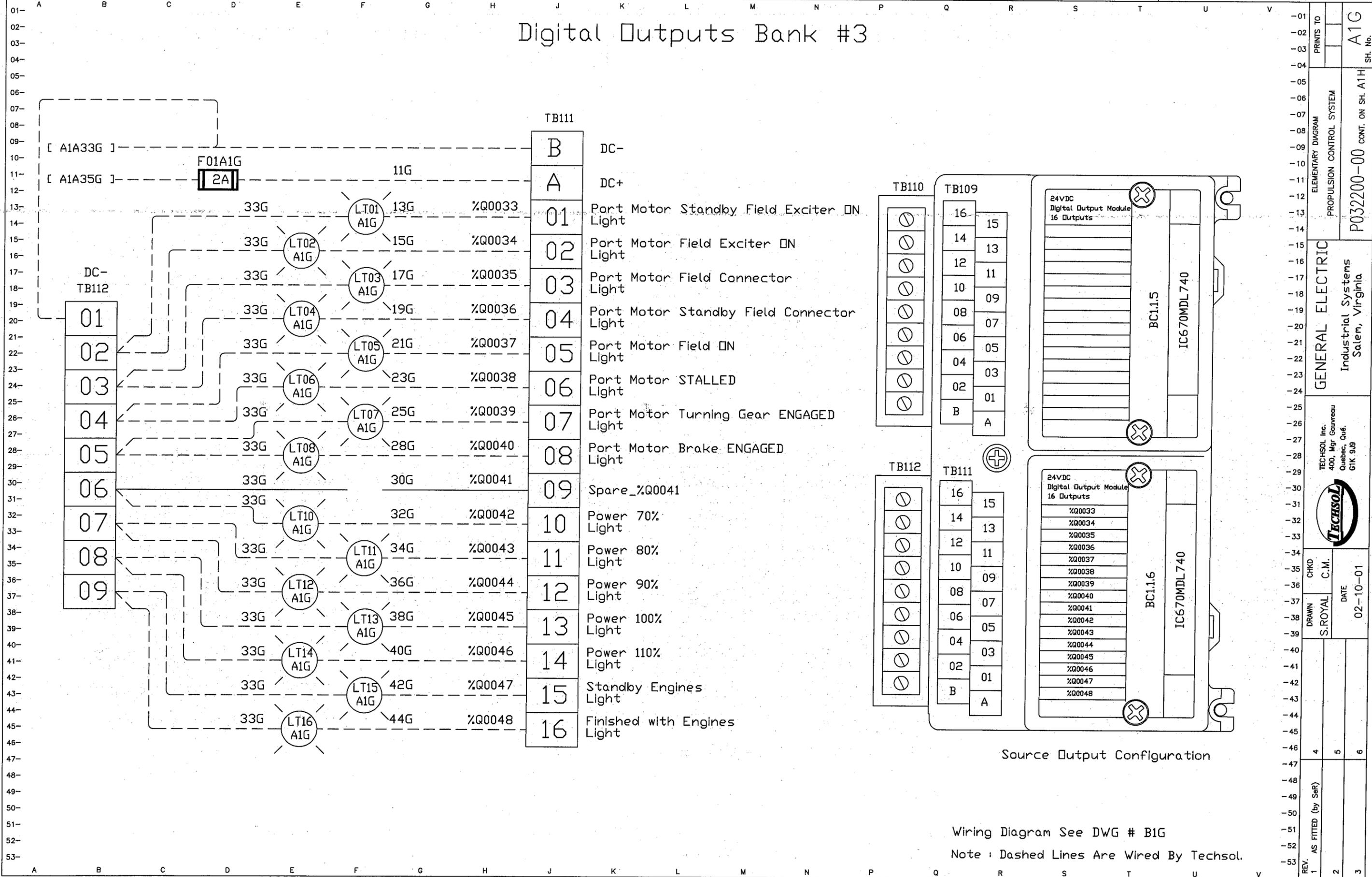
GENERAL ELECTRIC  
Industrial Systems  
Salem, Virginia

TECHSOL Inc.  
400, Mgr. Gouveau  
Quebec, Que.  
G1K 9J9

CHKD: S. ROYAL  
C.M. DATE: 02-10-01

REV. 1 AS FITTED (by Ser) 2 3

# Digital Outputs Bank #3



Wiring Diagram See DWG # B1G  
 Note : Dashed Lines Are Wired By Techsol.

PRINTS TO: A1G SH. No.

ELEMENTARY DIAGRAM: PROPULSION CONTROL SYSTEM

CONT. ON SH. A1H

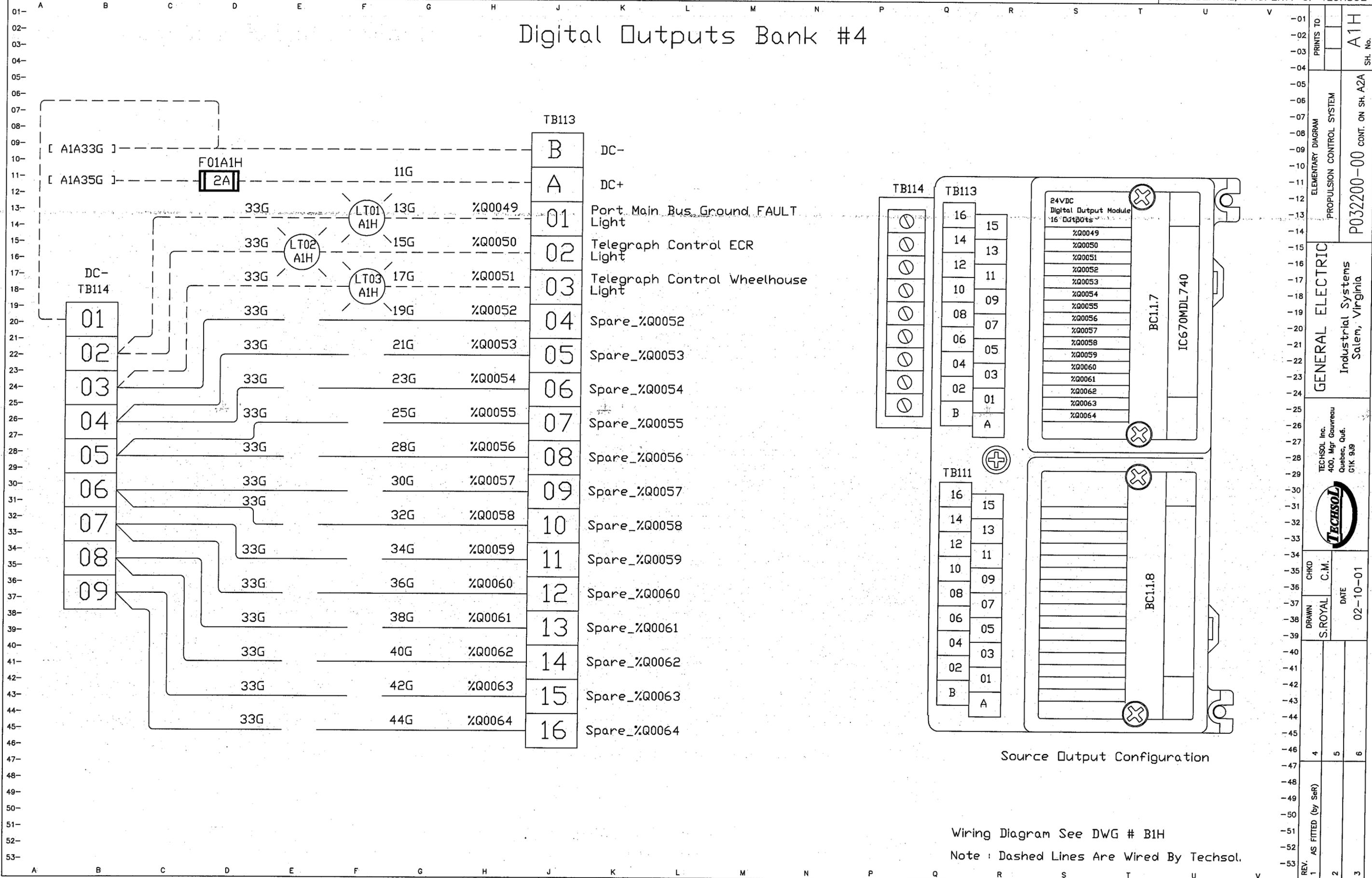
GENERAL ELECTRIC  
 Industrial Systems  
 Salem, Virginia

TECHSOL Inc.  
 400, Mgr. Gouvreau  
 Quebec, Que.  
 G1K 9J9

CHKD: S. ROYAL C.M. DATE: 02-10-01

REV. 1 AS FITTED (by Ser) 2 3

# Digital Outputs Bank #4



Source Output Configuration

Wiring Diagram See DWG # B1H  
 Note : Dashed Lines Are Wired By Techsol.

PRINTS TO

A1H SH. No.

CONT. ON SH. A2A

ELEMENTARY DIAGRAM  
PROPULSION CONTROL SYSTEM

GENERAL ELECTRIC  
Industrial Systems  
Salem, Virginia

TECHSOL Inc.  
400, Mgr. Couvreur  
Quebec, Que.  
G1K 9J9

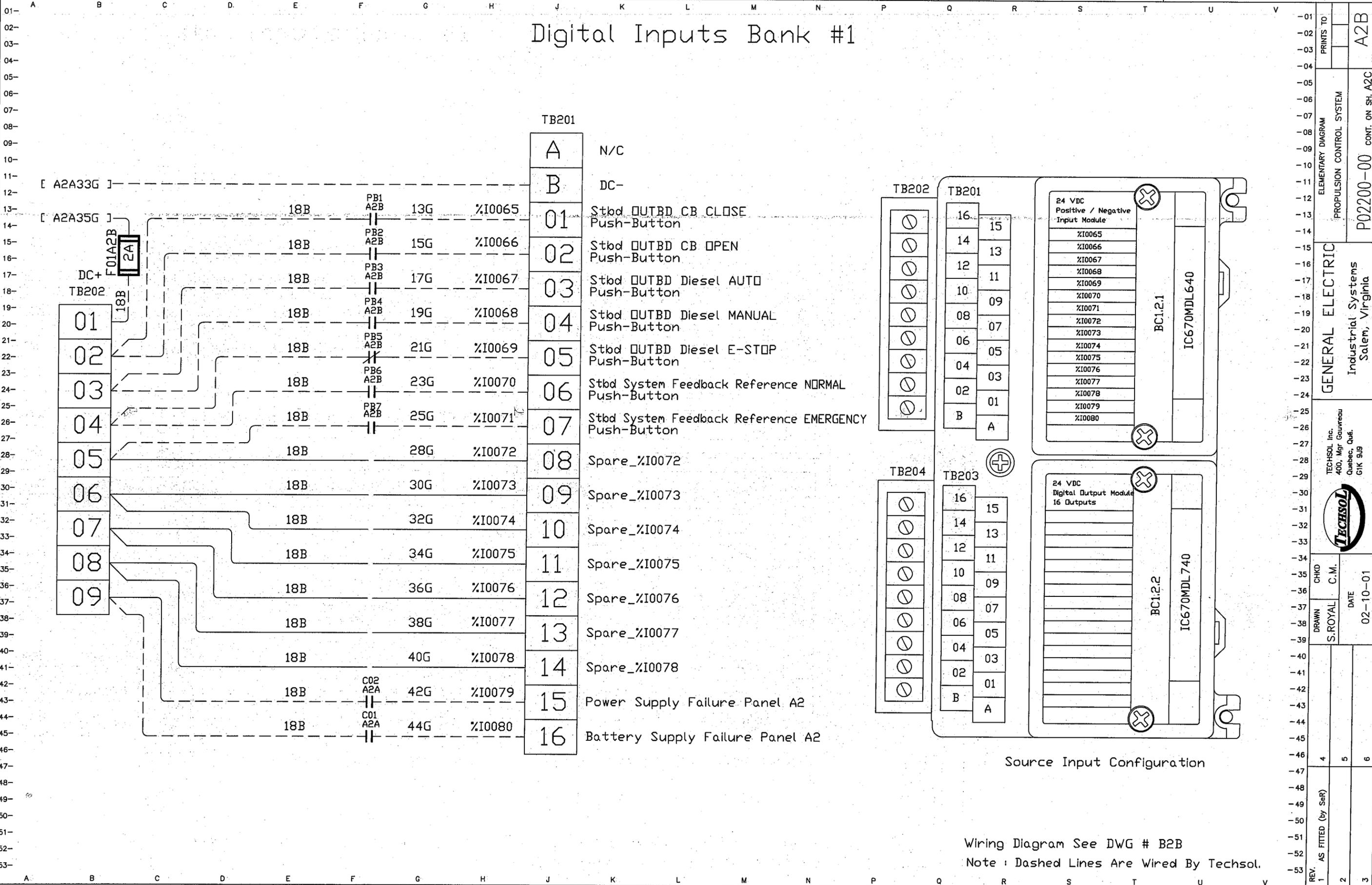
CHKD  
C.M.

DRAWN  
S.ROYAL

DATE  
02-10-01



# Digital Inputs Bank #1



Source Input Configuration

Wiring Diagram See DWG # B2B  
 Note : Dashed Lines Are Wired By Techsol.

PRINTS TO: A2B SH. No.

ELEMENTARY DIAGRAM: PROPULSION CONTROL SYSTEM

GENERAL ELECTRIC Industrial Systems Salem, Virginia

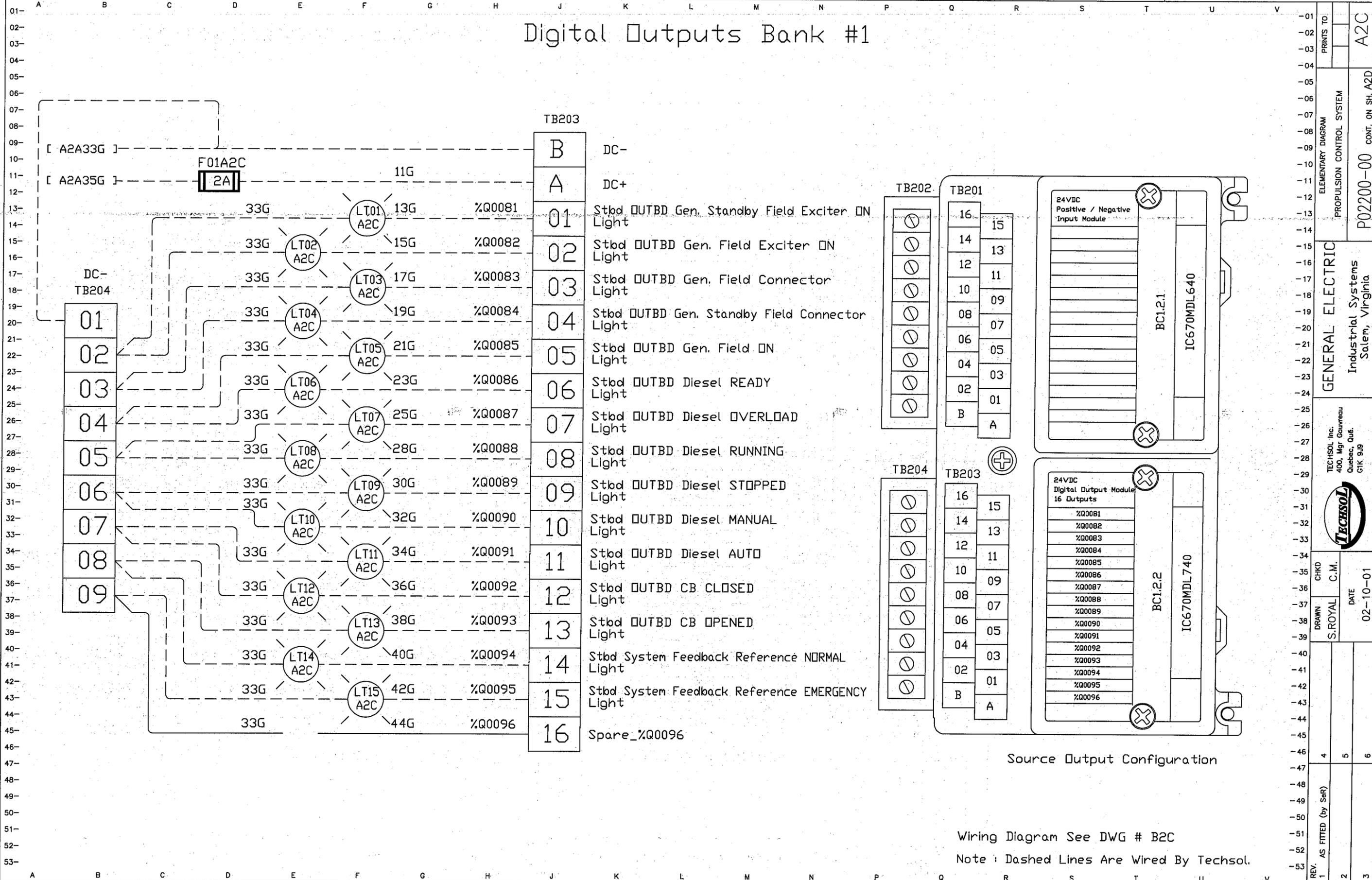
TECHSOL Inc. 400, Mgr. Couvreur Quebec, Que. G1K 9J9

CHKD: S. ROYAL C.M. DATE: 02-10-01

REV. AS FITTED (by Ser) 1 2 3

P02200-00 CONT. ON SH. A2C

# Digital Outputs Bank #1



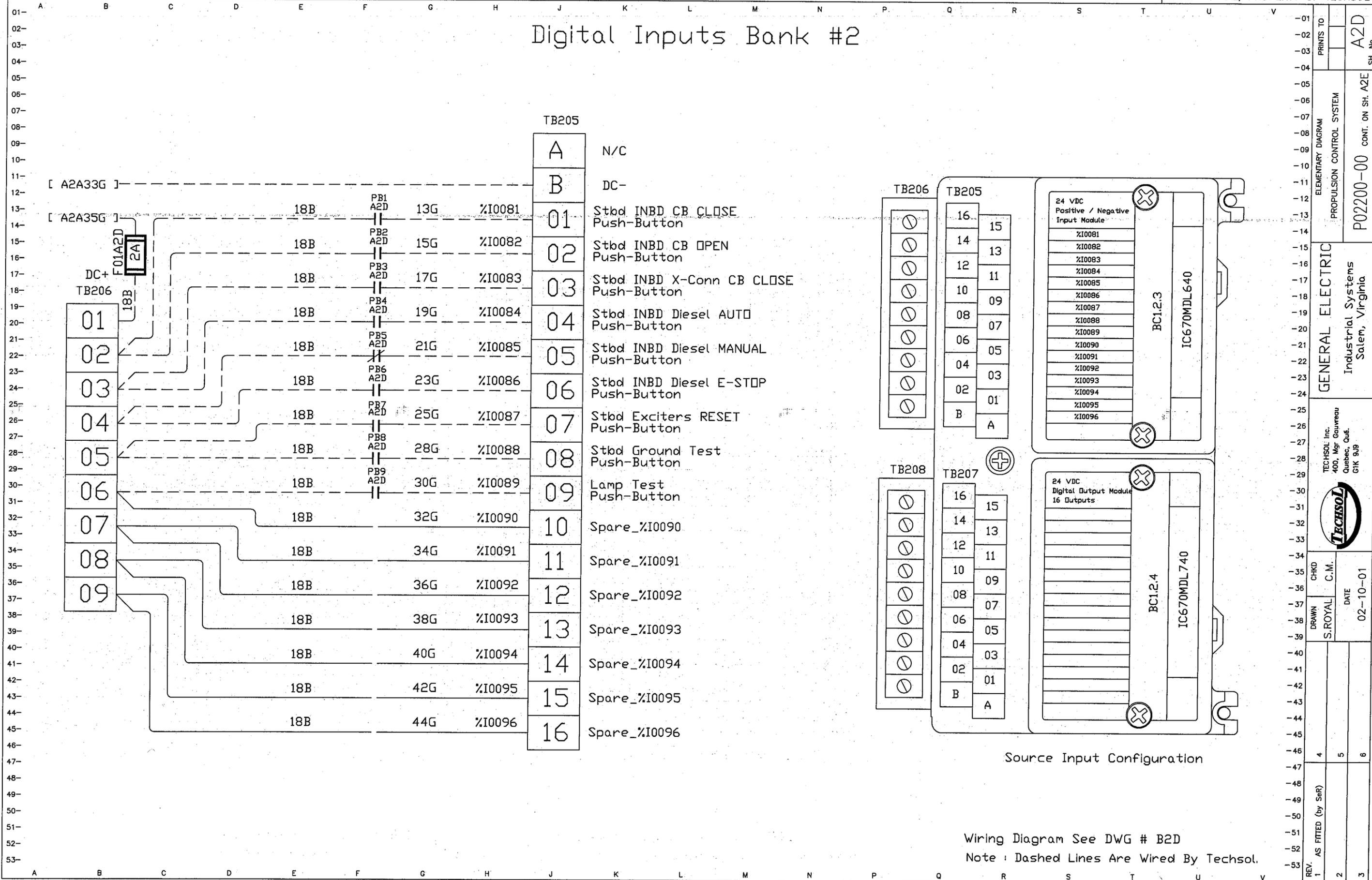
Source Output Configuration

Wiring Diagram See DWG # B2C

Note : Dashed Lines Are Wired By Techsol.

PRINTS TO	A2C
SH. No.	A2C
ELEMENTARY DIAGRAM	PROPULSION CONTROL SYSTEM
GENERAL ELECTRIC	Industrial Systems
Salem, Virginia	
TECHSOL, Inc.	400, Mgr. Coarreau
Quebec, Que.	
G1K 9J9	
CHKD	C.M.
DRAWN	S.ROYAL
DATE	02-10-01
REV.	AS FITTED (by Ser)
1	2
3	

# Digital Inputs Bank #2



Wiring Diagram See DWG # B2D  
 Note : Dashed Lines Are Wired By Techsol.

PRINTS TO: A2D SH. No.

ELEMENTARY DIAGRAM: PROPULSION CONTROL SYSTEM

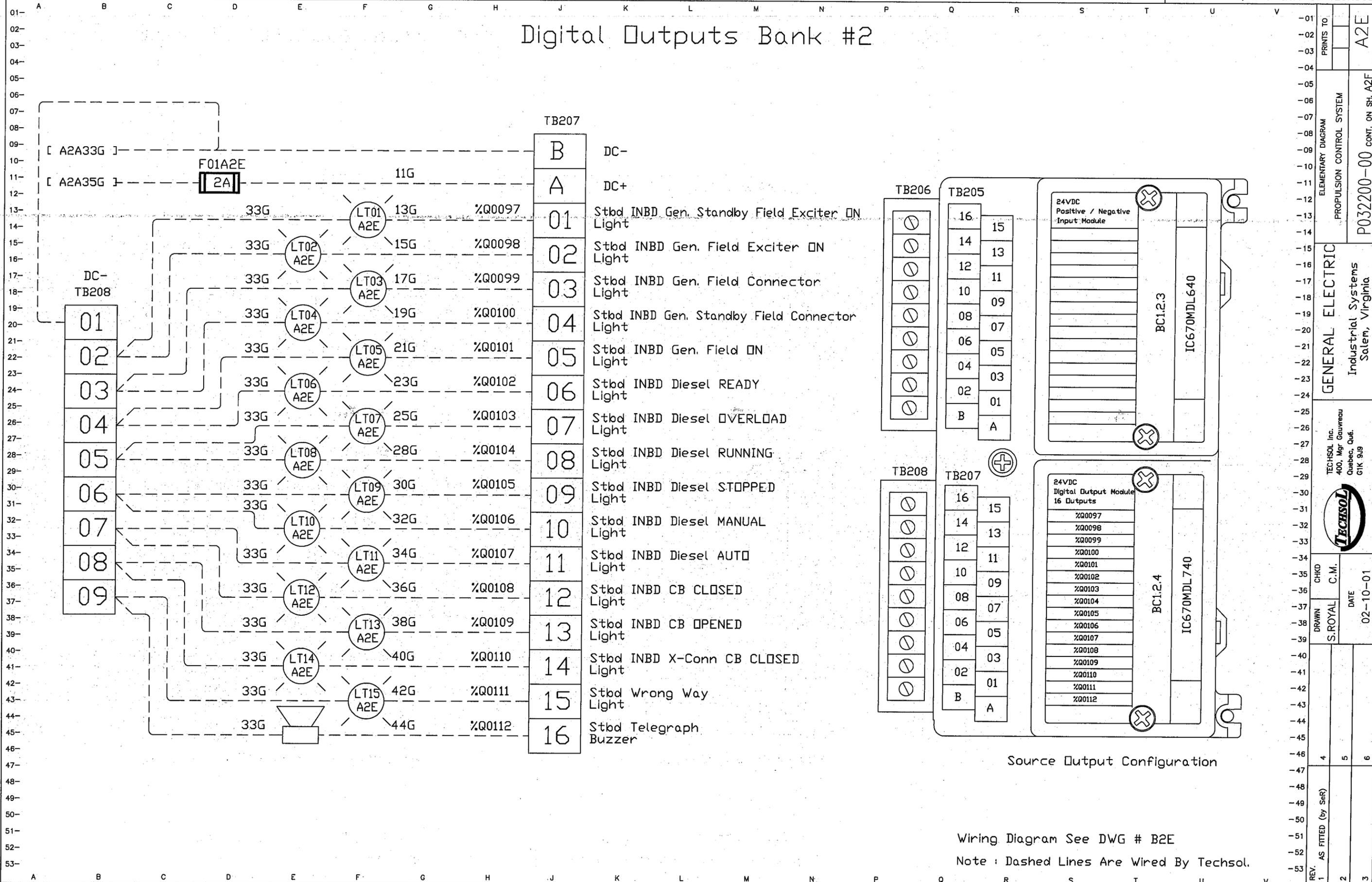
GENERAL ELECTRIC Industrial Systems Salem, Virginia

TECHSOL Inc. 400, Mgr. Gouvreau Quebec, Que. G1K 9J9

CHKD: S. ROYAL DATE: 02-10-01

REV. AS FITTED (by Ser) 1 2 3

# Digital Outputs Bank #2



Wiring Diagram See DWG # B2E  
 Note : Dashed Lines Are Wired By Techsol.

PRINTS TO: A2E SH. No.

ELEMENTARY DIAGRAM PROPULSION CONTROL SYSTEM

GENERAL ELECTRIC Industrial Systems Salem, Virginia

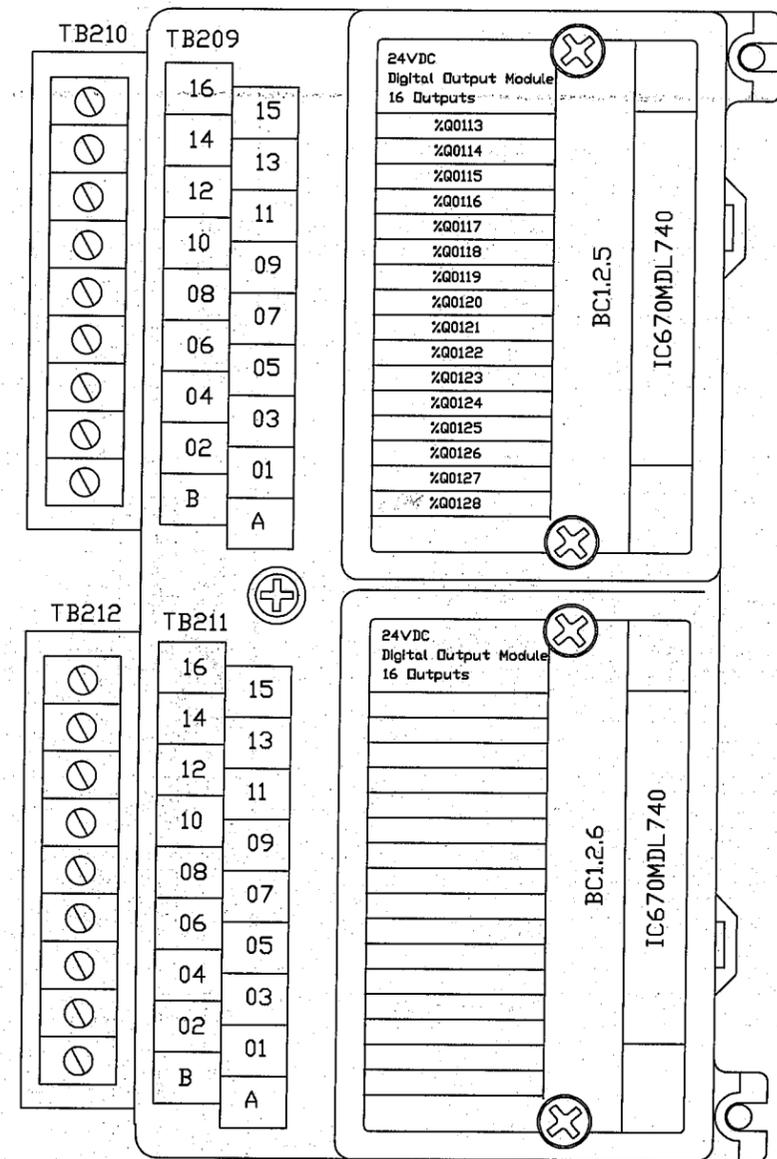
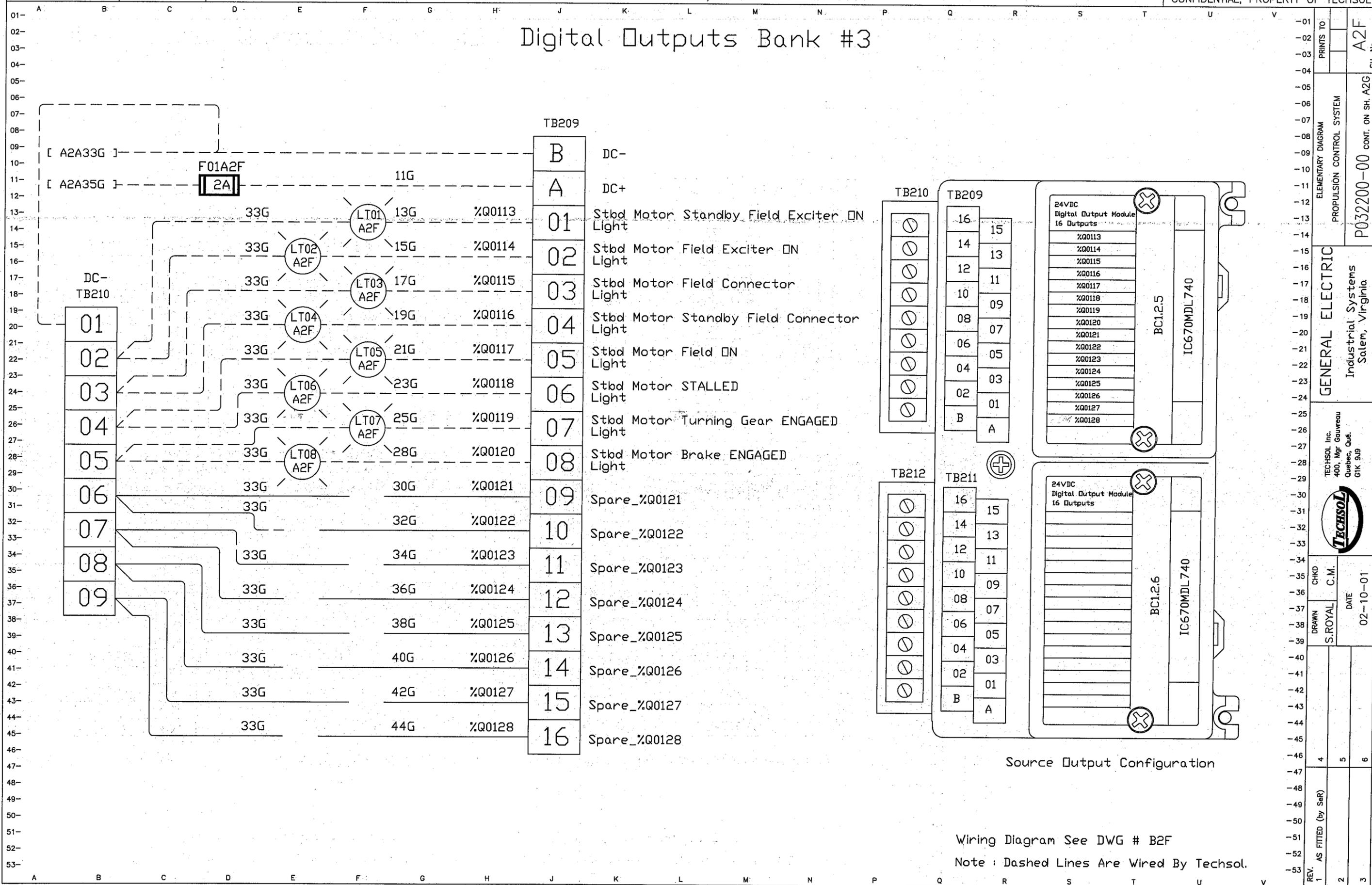
TECHSOL Inc. 400, Mgr. Couvreur Quebec, Que. G1K 9J9

CHKD C.M. DATE 02-10-01

DRAWN S.ROYAL

REV. 1 AS FITTED (by Ser) 2 3

# Digital Outputs Bank #3



Source Output Configuration

Wiring Diagram See DWG # B2F  
 Note : Dashed Lines Are Wired By Techsol.

PRINTS TO: A2F SH. No.

ELEMENTARY DIAGRAM: PROPULSION CONTROL SYSTEM

CONT. ON SH. A2G

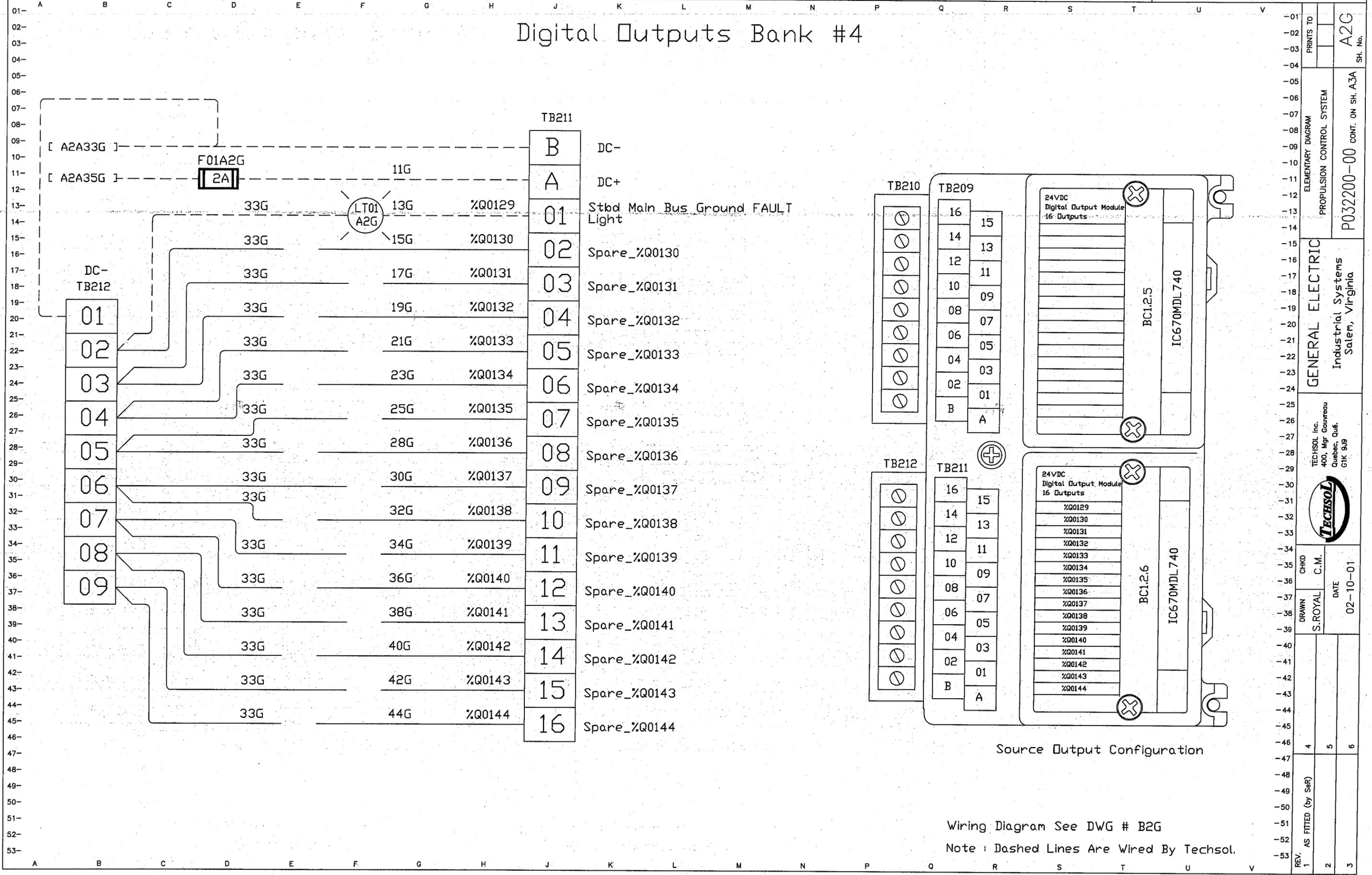
GENERAL ELECTRIC Industrial Systems Salem, Virginia

TECHSOL Inc. 400, Mgr. Gouvreau Quebec, Que. G1K 9J9

CHKD: S. ROYAL C.M. DATE: 02-10-01

REV. 1 AS FITTED (by SeR) 2 3 4 5 6

# Digital Outputs Bank #4



Source Output Configuration

Wiring Diagram See DWG # B2G

Note : Dashed Lines Are Wired By Techsol.

PRINTS TO: A2G SH. No.

ELEMENTARY DIAGRAM: PROPULSION CONTROL SYSTEM

CONT. ON SH. A3A

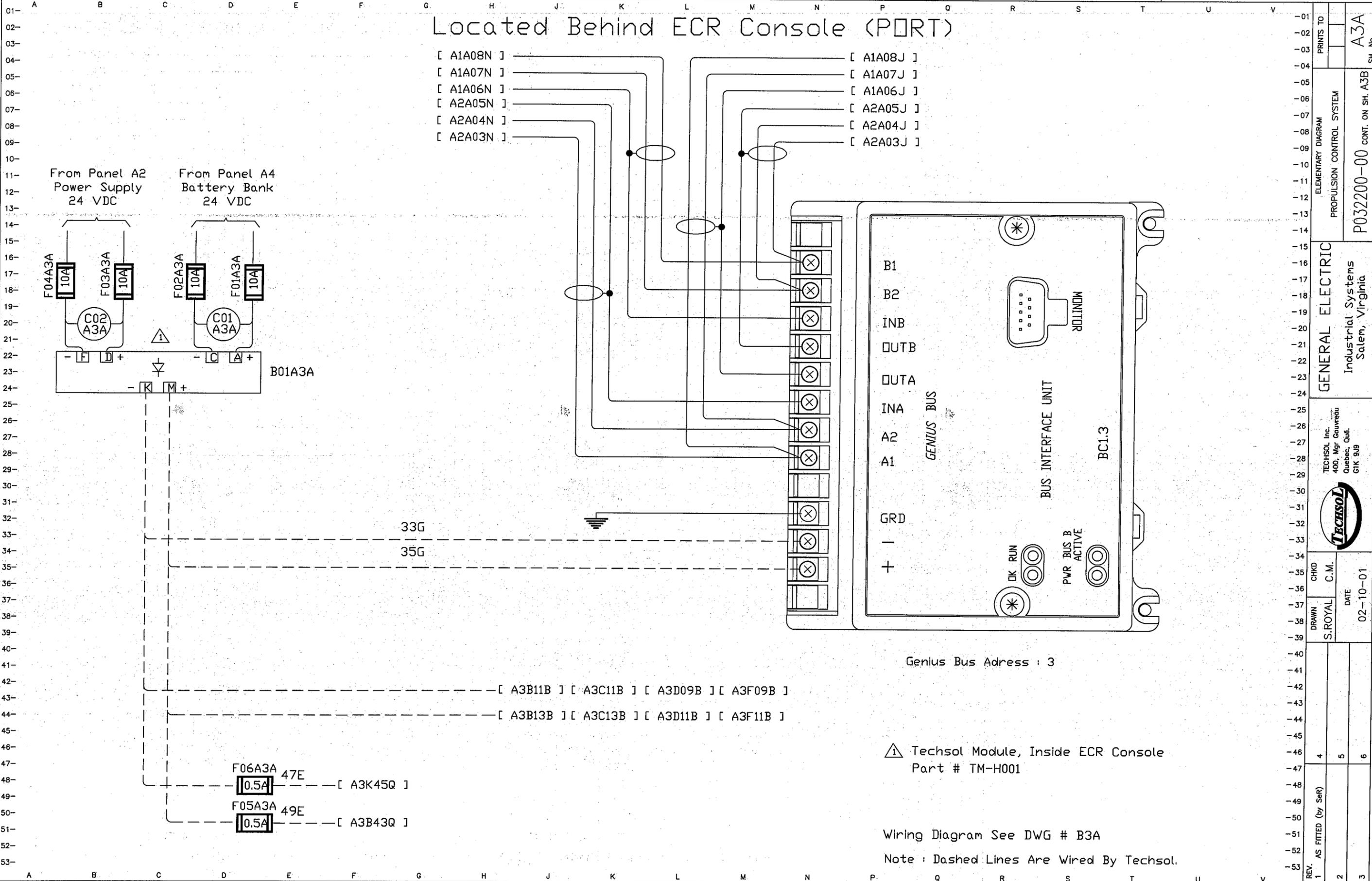
P032200-00

GENERAL ELECTRIC  
Industrial Systems  
Salem, Virginia

TECHSOL Inc.  
400, Mgr. Coarreau  
Quebec, Que.  
G1K 9J9

CHKD: C.M.  
DATE: 02-10-01

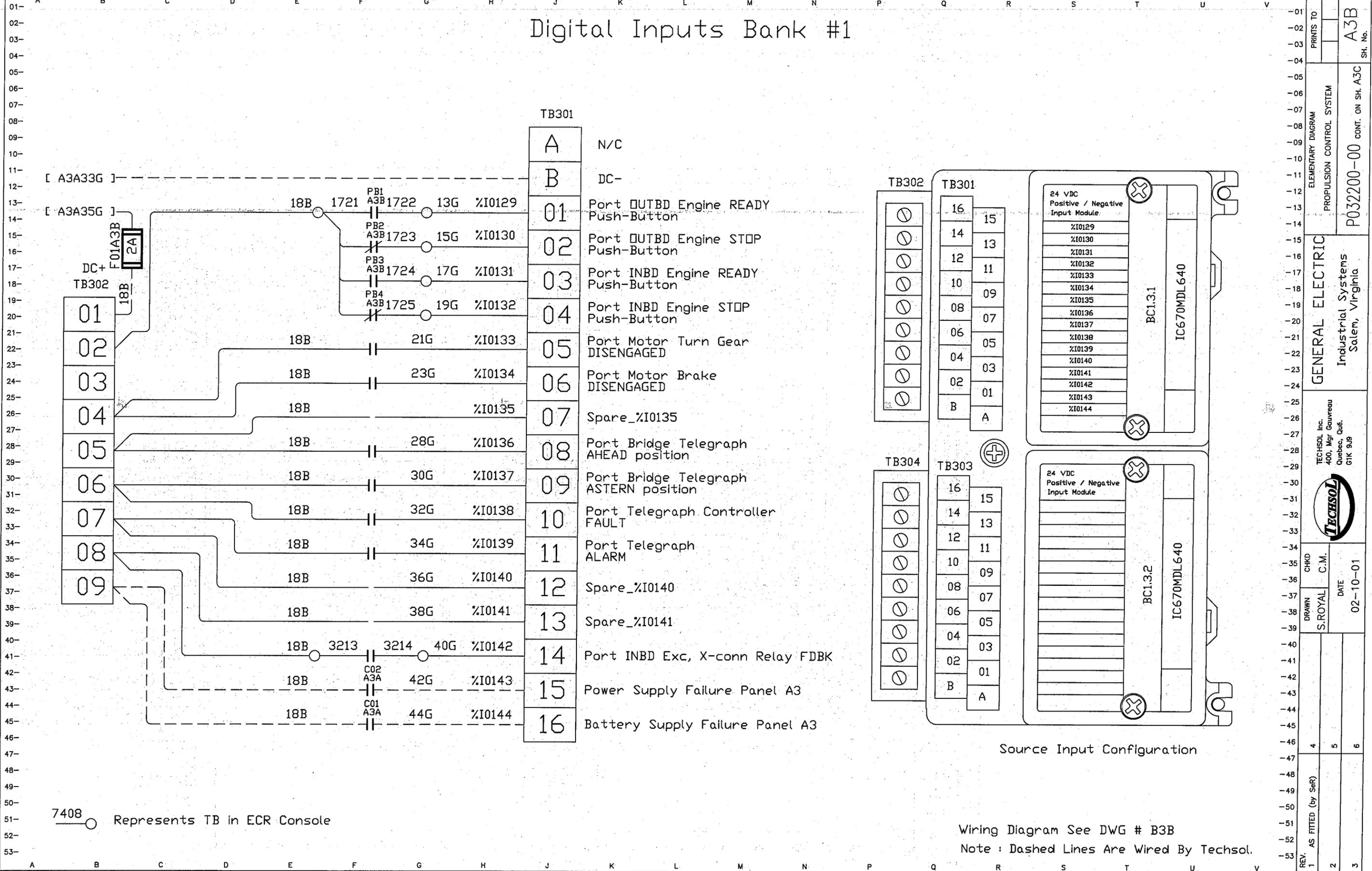
REV. AS FITTED (by Ser) 1 2 3



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53-

PRINTS TO			A3A
ELEMENTARY DIAGRAM	PROPULSION CONTROL SYSTEM		
P032200-00 CONT. ON SH. A3B			
GENERAL ELECTRIC Industrial Systems Salem, Virginia			
TECHSOL Inc. 400, Mgr Gouvéreau Quebec, Qué. G1K 9J9			
CHKD	C.M.	DATE	02-10-01
DRAWN	S.ROYAL		
REV.	AS FITTED (by Ser)		
1			
2			
3			

# Digital Inputs Bank #1



Source Input Configuration

Wiring Diagram See DWG # B3B  
 Note : Dashed Lines Are Wired By Techsol.

7408 Represents TB in ECR Console

PRINTS TO	A3B
ELEMENTARY DIAGRAM	PROPULSION CONTROL SYSTEM
SH. No.	P032200-00 CONT. ON SH. A3C
GENERAL ELECTRIC	Industrial Systems Salem, Virginia
TECHSOL Inc.	400, Mgr. Gouvreau Quebec, Qué. G1K 9J9
CHKD	C.M.
DATE	02-10-01
REV.	AS FITTED (by Ser)
1	4
2	5
3	6

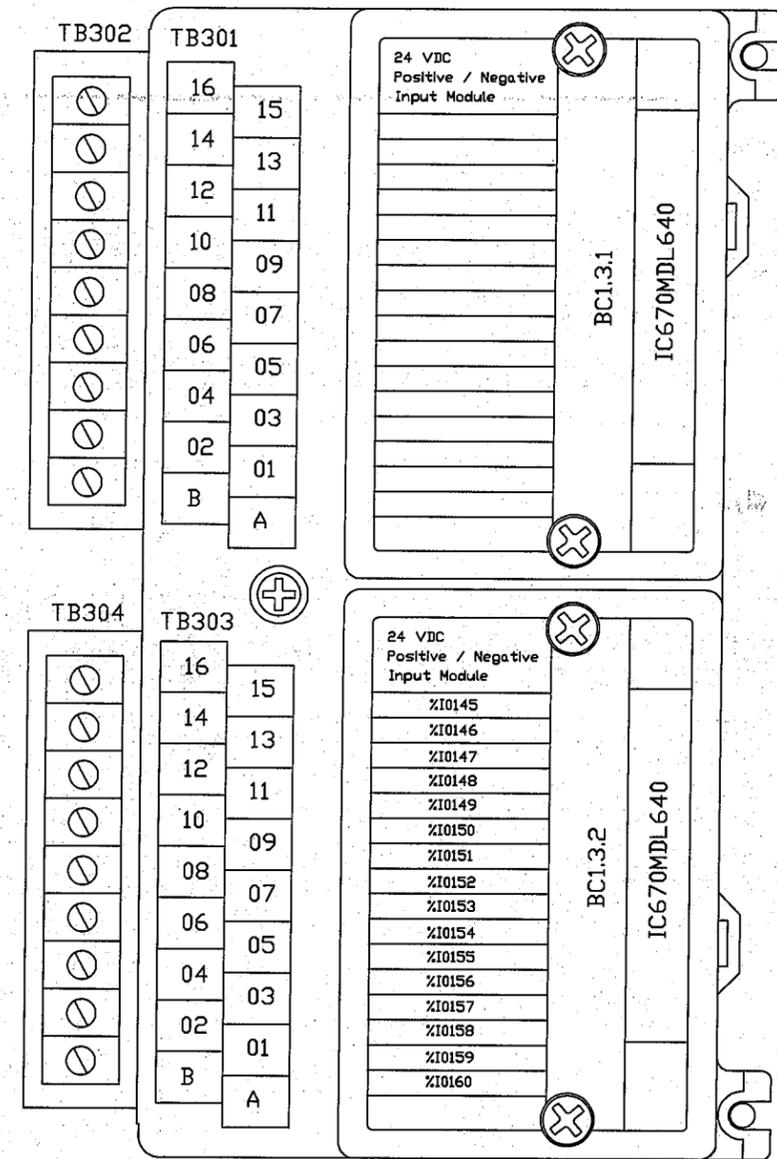
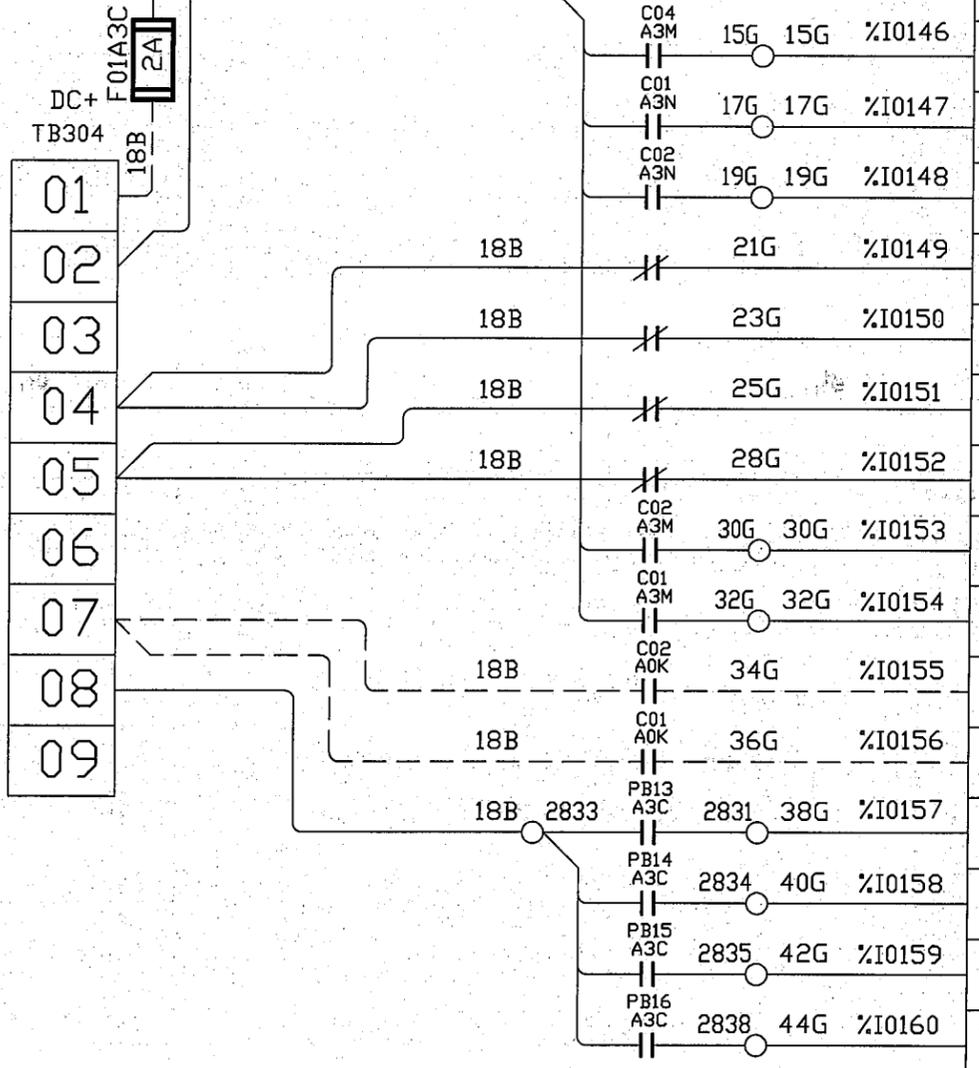
# Digital Inputs Bank #2

TB303

A	N/C
B	DC-
01	Port OUTBD Engine RUNNING
02	Port OUTBD Engine FAULT
03	Port INBD Engine RUNNING
04	Port INBD Engine FAULT
05	Port OUTBD Engine OVERSPEED
06	Port OUTBD Engine LOW Lube Oil
07	Port INBD Engine OVERSPEED
08	Port INBD Engine LOW Lube Oil
09	Power Supply Failure Port Governor Controllers
10	Battery Supply Failure Port Governor Controllers
11	Power Supply Failure Panel A0K
12	Battery Supply Failure Panel A0K
13	Telegraph Control ACK (at WH) Push-Button
14	Standby Engines (at WH) Push-Button
15	Finished with Engines (at WH) Push-Button
16	Telegraph Control REQ (at WH) Push-Button

[ A3A33G ]

[ A3A35G ]



Source Input Configuration

7408 Represents TB in ECR Console

Wiring Diagram See DWG # B3C  
Note: Dashed Lines Are Wired By Techsol.

PRINTS TO: A3C SH. No.

ELEMENTARY DIAGRAM PROPULSION CONTROL SYSTEM

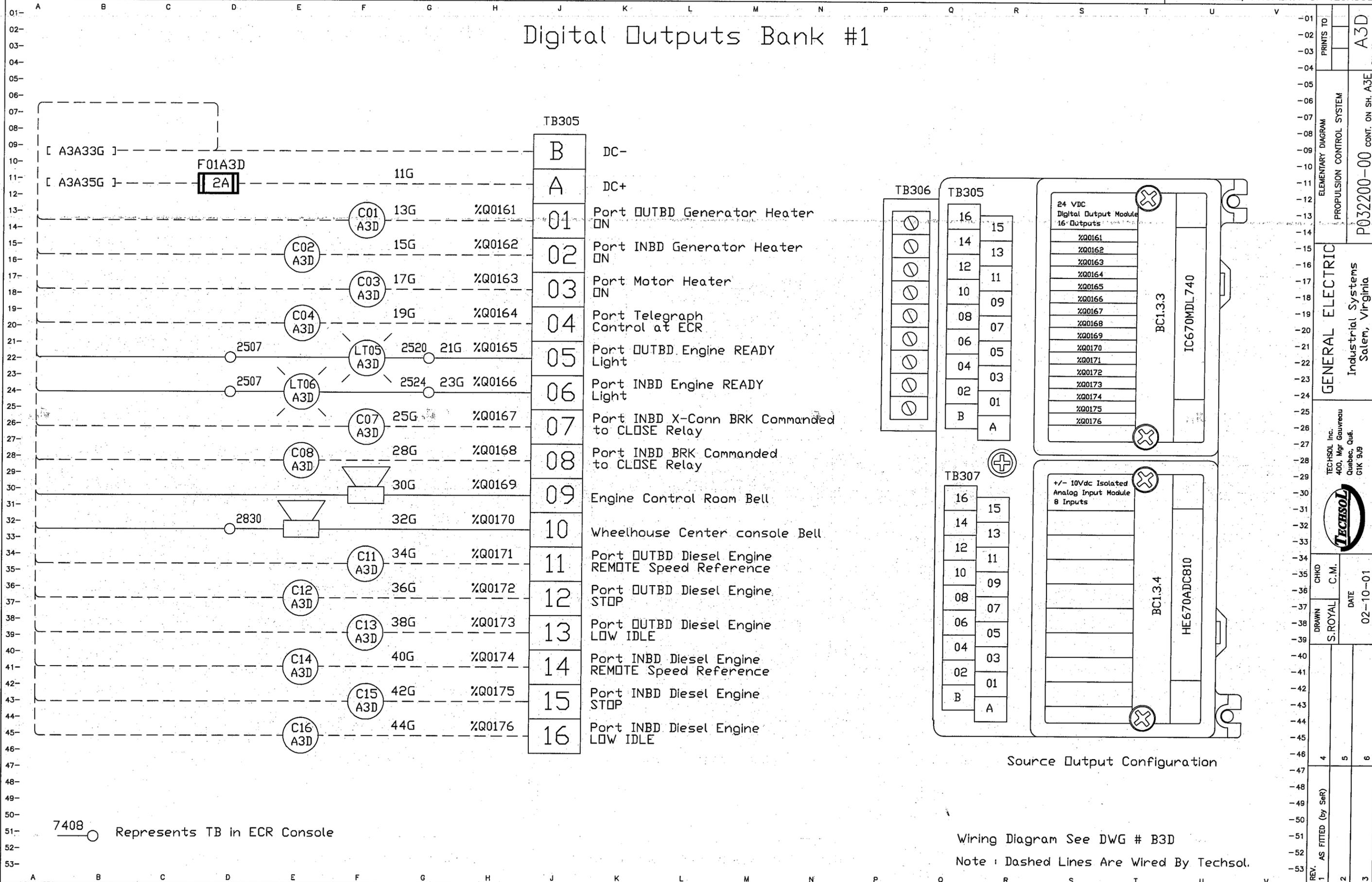
GENERAL ELECTRIC Industrial Systems Salem, Virginia

TECHSOL Inc. 400, Mgr Courveau Quebec, Que. G1K 9J9

CHKD S. ROYAL C.M. DATE 02-10-01

REV. 1	AS FITTED (by Ser)	4	5	6
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# Digital Outputs Bank #1



Source Output Configuration

Wiring Diagram See DWG # B3D  
 Note : Dashed Lines Are Wired By Techsol.

PRINTS TO: A3D SH. No.

ELEMENTARY DIAGRAM: PROPULSION CONTROL SYSTEM

GENERAL ELECTRIC Industrial Systems Salem, Virginia

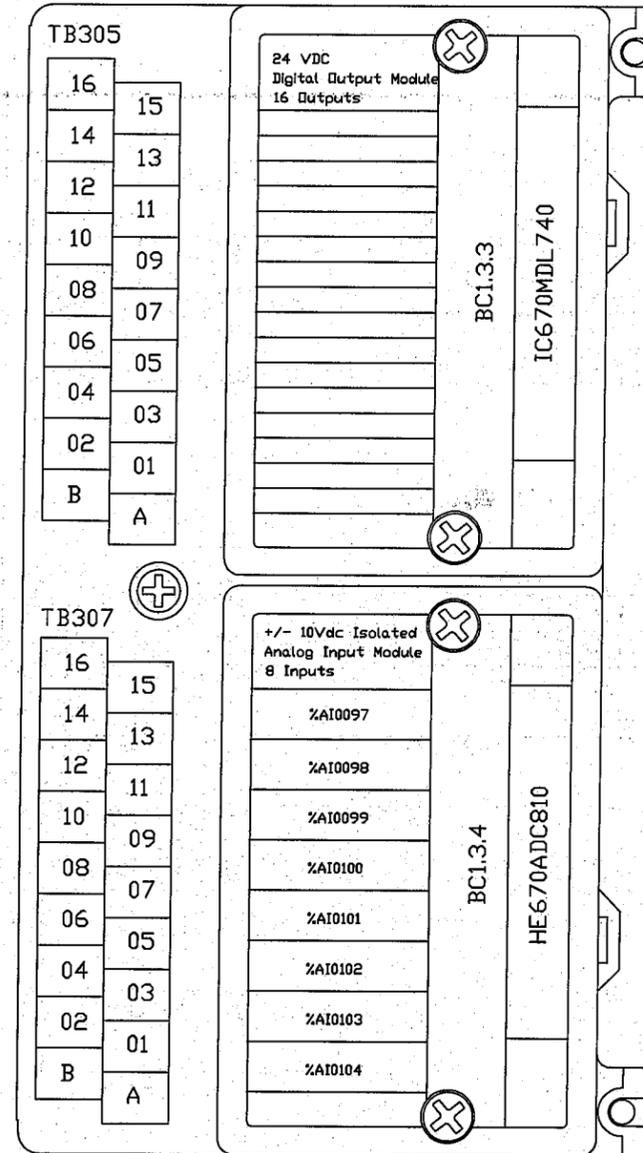
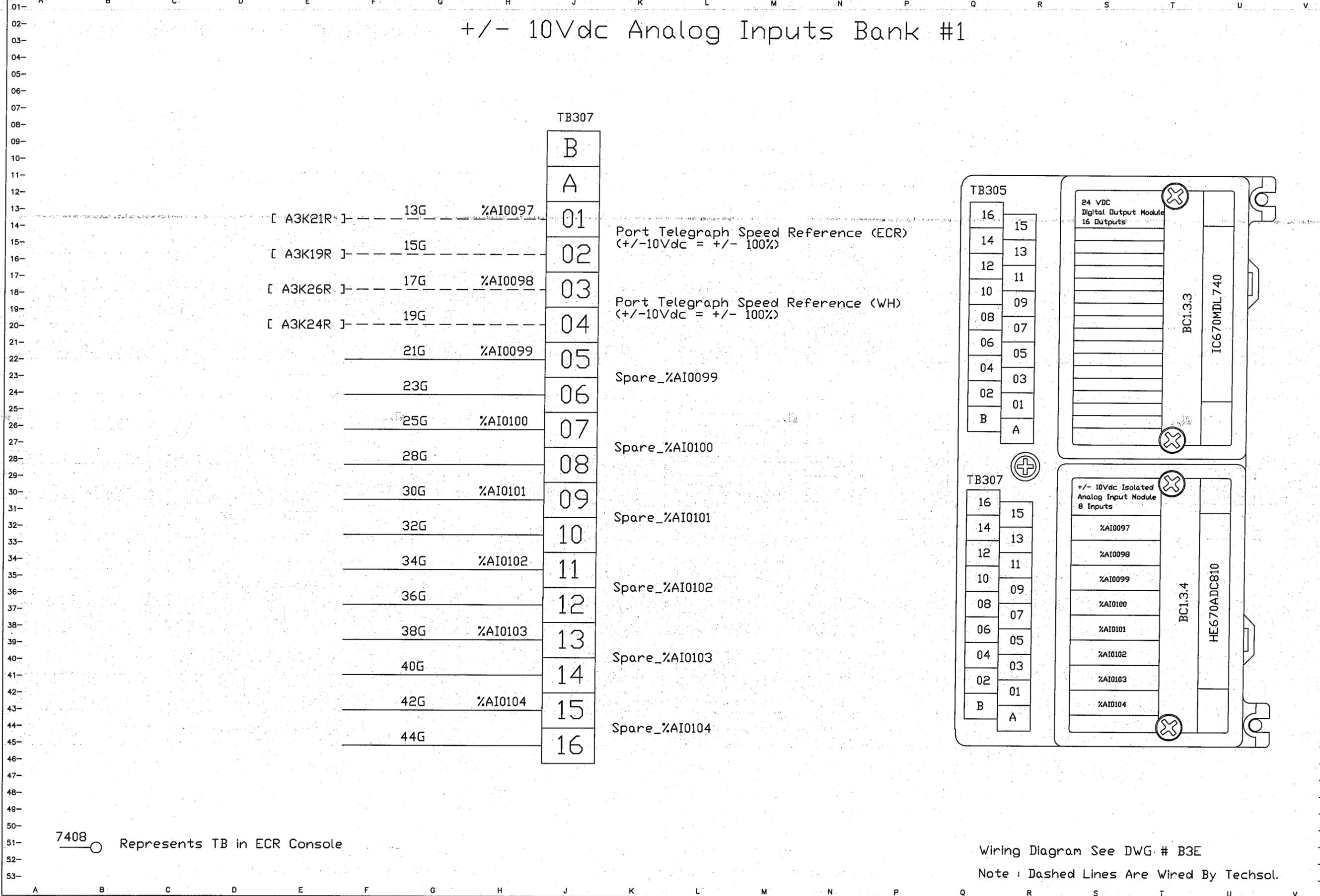
TECHSOL Inc. 400, Mgr. Gouveau Quebec, Que. G1K 9J9

CHKD: S. ROYAL C.M. DATE: 02-10-01

REV. 1 AS FITTED (by SeR) 2 3

P032200-00 CONT. ON SH. A3E

+/- 10Vdc Analog Inputs Bank #1



7408 Represents TB in ECR Console

Wiring Diagram See DWG # B3E  
 Note : Dashed Lines Are Wired By Techsol.

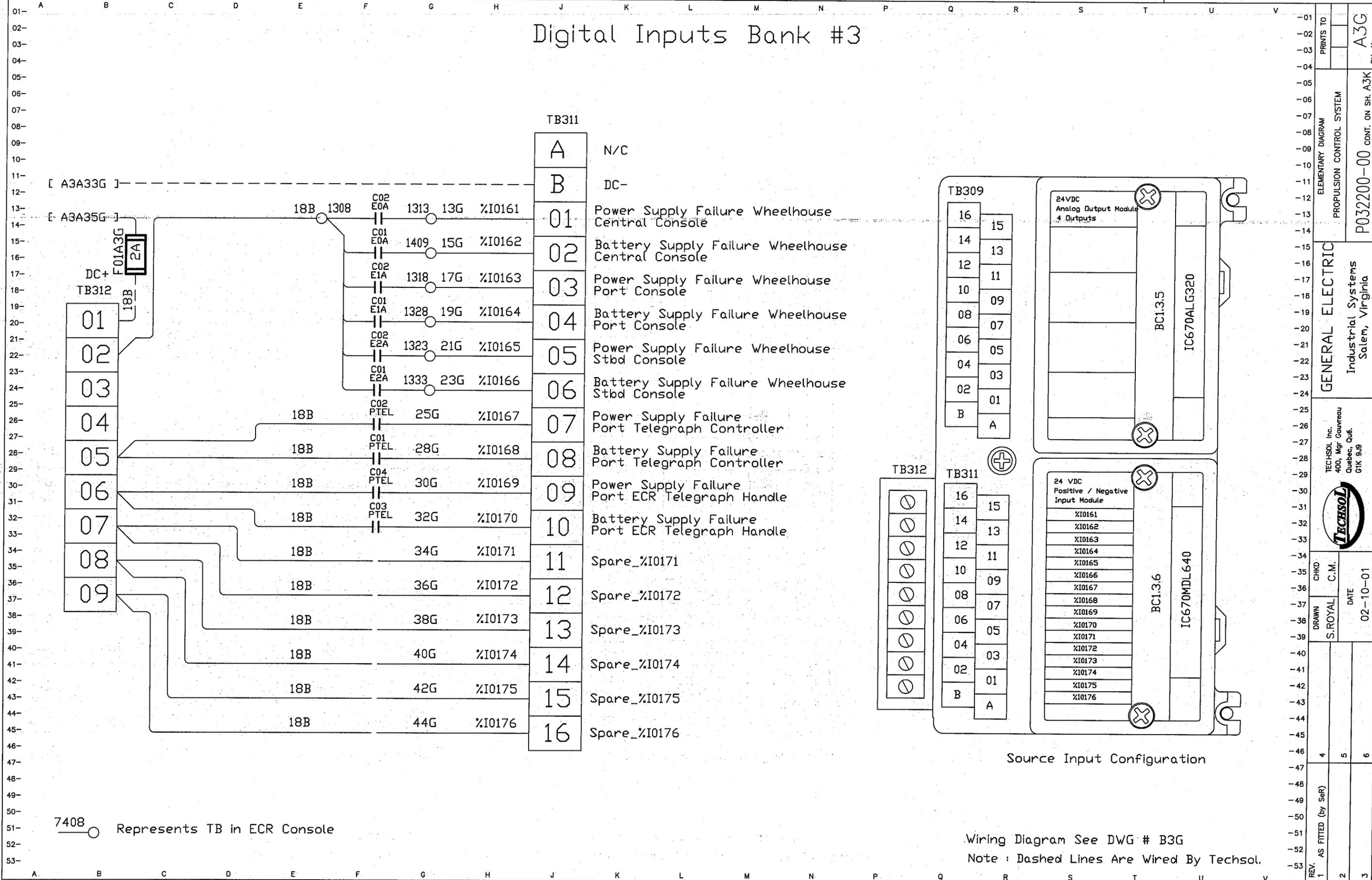
PRINTS TO			
ELEMENTARY DIAGRAM			
PROPULSION CONTROL SYSTEM			
GENERAL ELECTRIC			
Industrial Systems			
Salem, Virginia			
TECHSOL Inc.			
400, Mgr Gouvreau			
Quebec, Que.			
G1K 9J9			
CHKD			
C.M.			
DATE			
02-10-01			
REV.			
1 AS FITTED (by SeR)	4	5	6
2			
3			

P032200-00 CONT. ON SH. A3F

SH. No. A3E



# Digital Inputs Bank #3



Wiring Diagram See DWG # B3G  
 Note : Dashed Lines Are Wired By Techsol.

PRINTS TO: A3G SH. No.

ELEMENTARY DIAGRAM: PROPULSION CONTROL SYSTEM

GENERAL ELECTRIC Industrial Systems Salem, Virginia

TECHSOL Inc. 400, Mgr Gouveau Quebec, Que. G1K 9J9

CHKD: S. ROYAL C.M. DATE: 02-10-01

REV. 1 AS FITTED (by SeF) 2 3

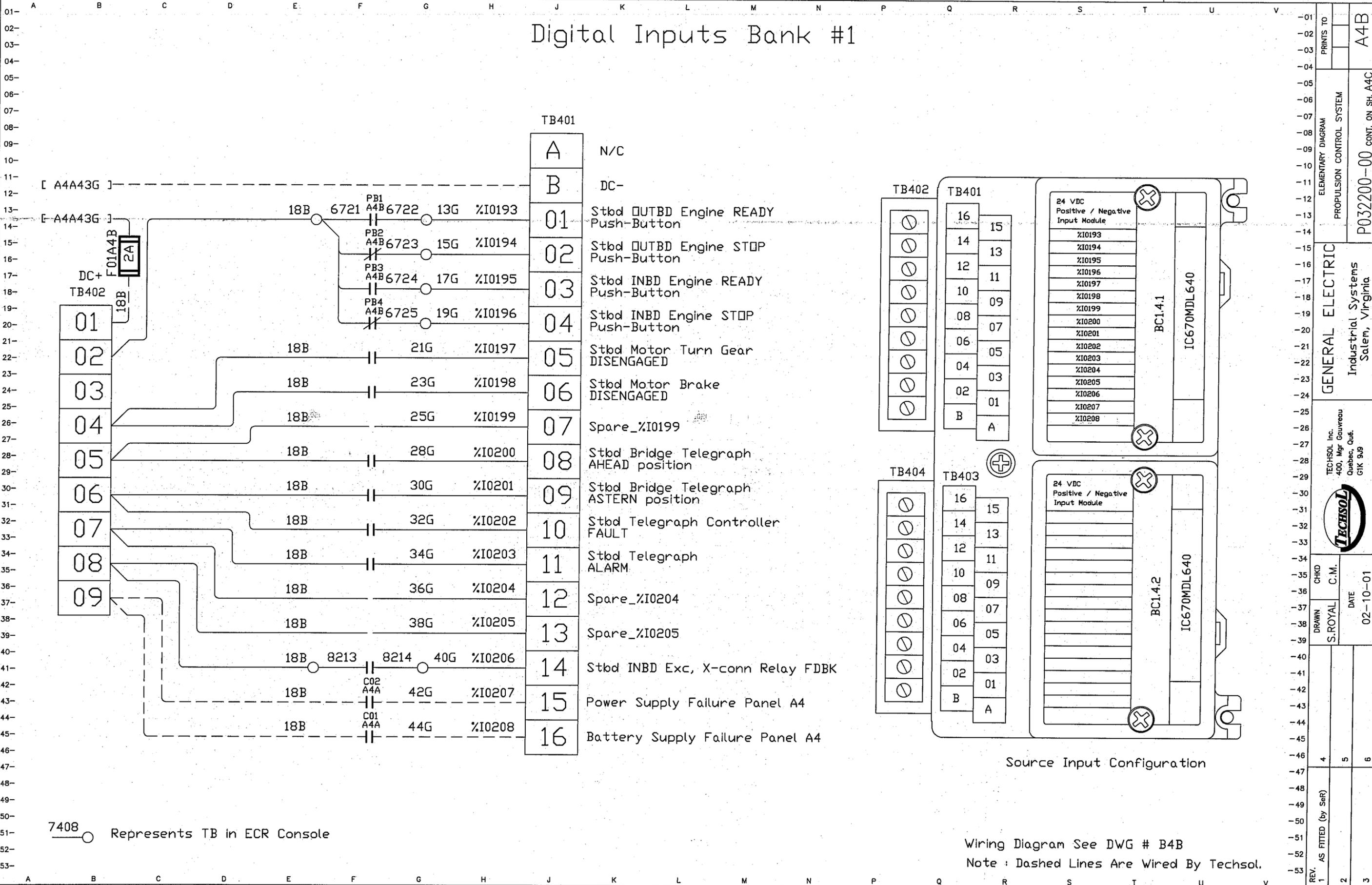




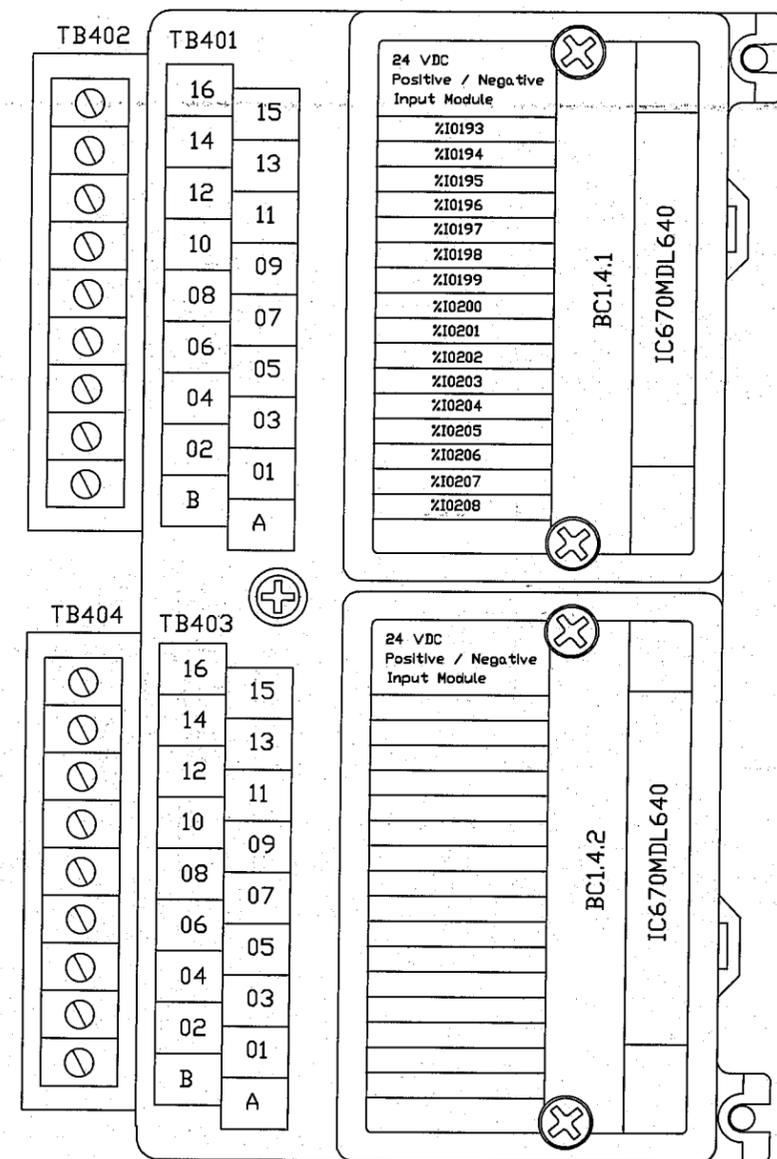




# Digital Inputs Bank #1



7408 Represents TB in ECR Console

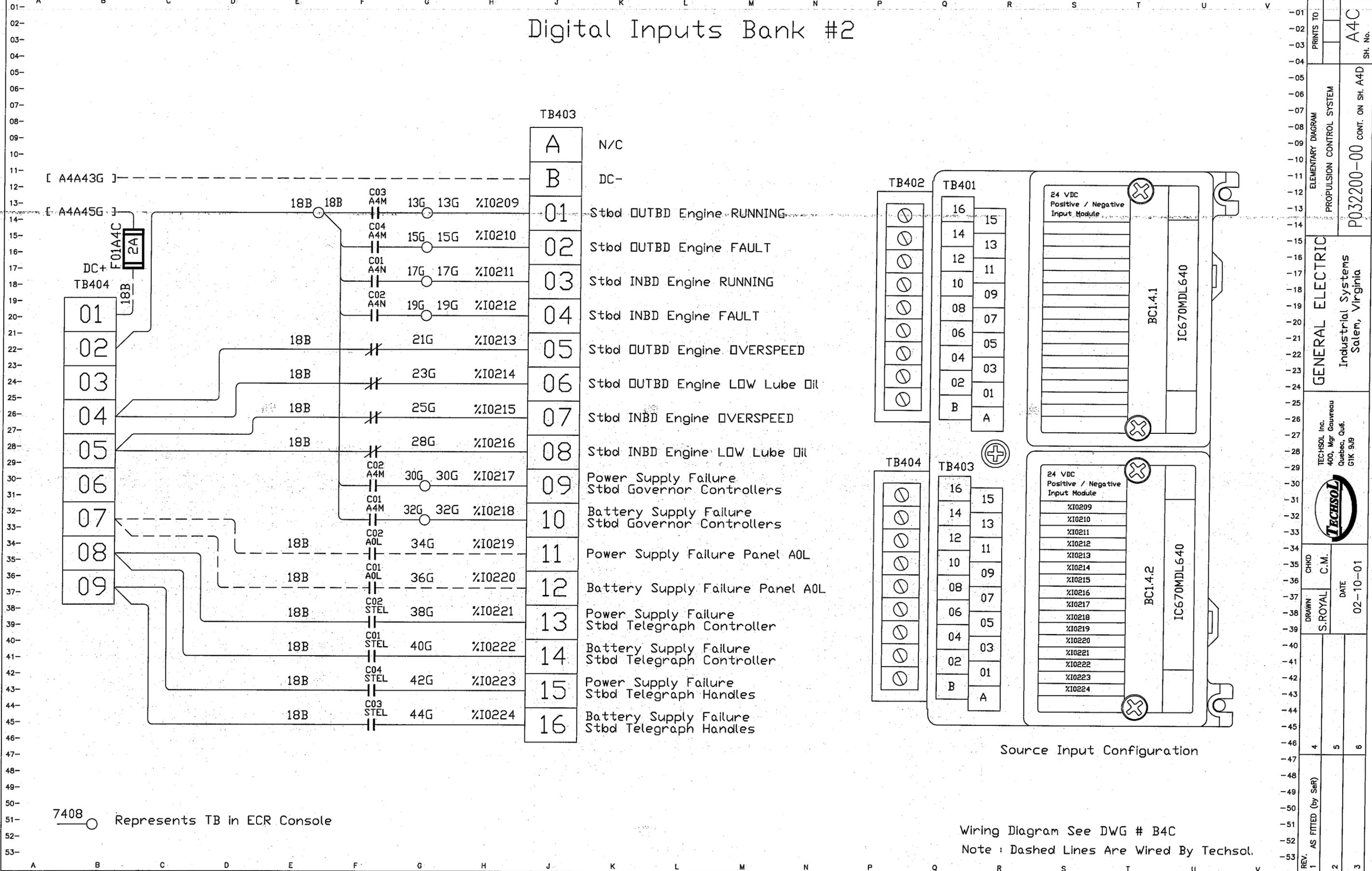


Source Input Configuration

Wiring Diagram See DWG # B4B  
Note: Dashed Lines Are Wired By Techsol.

PRINTS TO	A4B
SH. No.	A4B
ELEMENTARY DIAGRAM	PROPULSION CONTROL SYSTEM
GENERAL ELECTRIC	Industrial Systems Salem, Virginia
TECHSOL Inc. 400, Mgr. Couvreur Quebec, Que. G1K 9J9	
CHKD	C.M.
DATE	02-10-01
AS FITTED (by Ser)	4
	5
	6

# Digital Inputs Bank #2



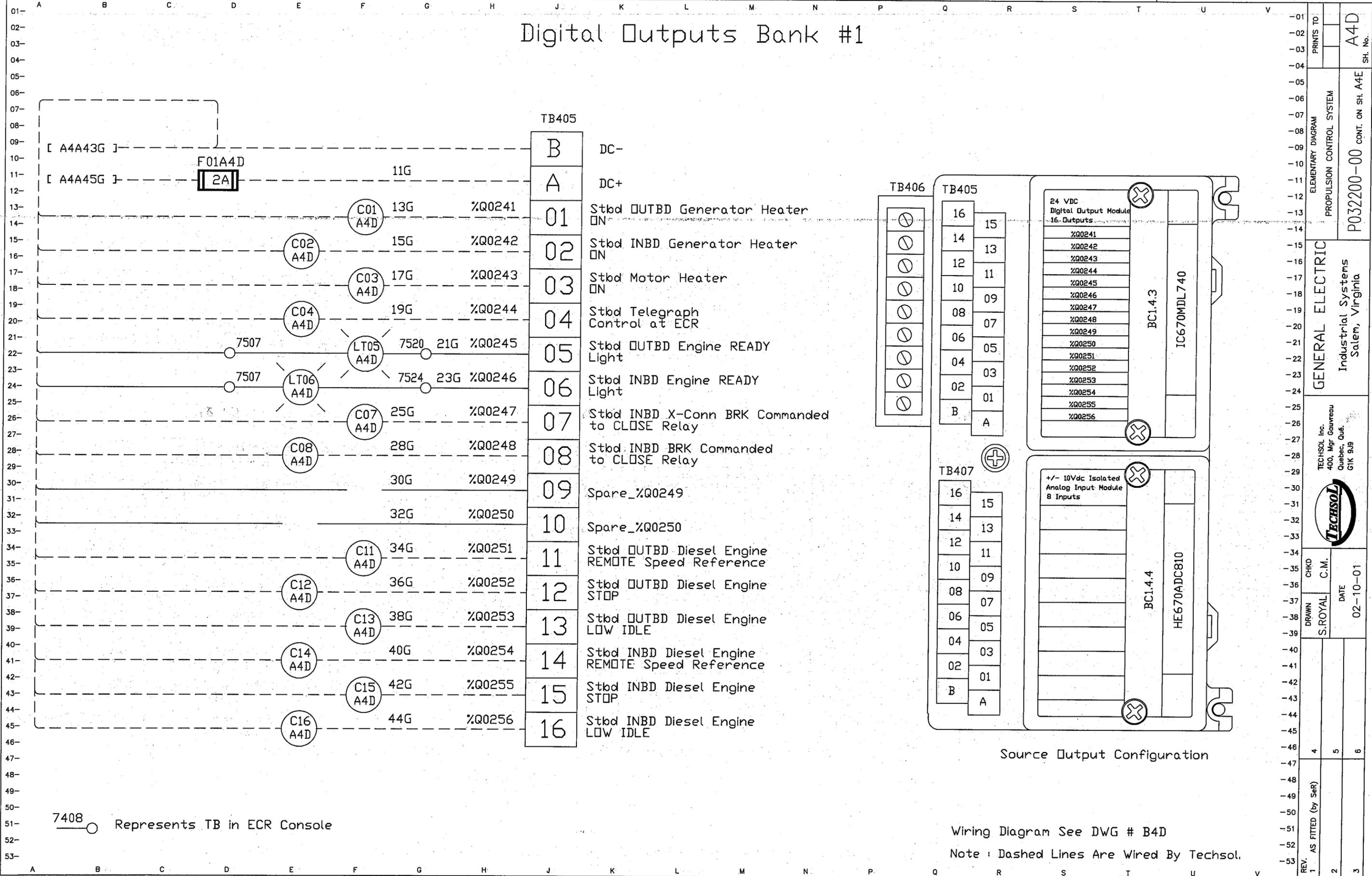
Source Input Configuration

Wiring Diagram See DWG # B4C  
Note: Dashed Lines Are Wired By Techsol.

7408 Represents TB in ECR Console

PRINTS TO	A4C
ELEMENTARY DIAGRAM	PROPULSION CONTROL SYSTEM
SH. No.	P032200-00 CONT. ON SH. A4D
GENERAL ELECTRIC	Industrial Systems Salem, Virginia
TECHSOL Inc.	400, Mgr Gouveau Quebec, Que. G1K 9J8
CHKD	C.M.
DRAWN	S.ROYAL
DATE	02-10-01
REV.	AS FITTED (by SeR)
1	4
2	5
3	6

# Digital Outputs Bank #1



7408 Represents TB in ECR Console

Wiring Diagram See DWG # B4D

Note : Dashed Lines Are Wired By Techsol.

PRINTS TO: A4D SH. No.

ELEMENTARY DIAGRAM: PROPULSION CONTROL SYSTEM

GENERAL ELECTRIC Industrial Systems Salem, Virginia

TECHSOL Inc. 400, Mgr. Gouvreau Quebec, Que. G1K 9J9

CHKD: S. ROYAL C.M. DATE: 02-10-01

REV. 1 AS FITTED (by SeR) 2 3

P032200-00 CONT. ON SH. A4E





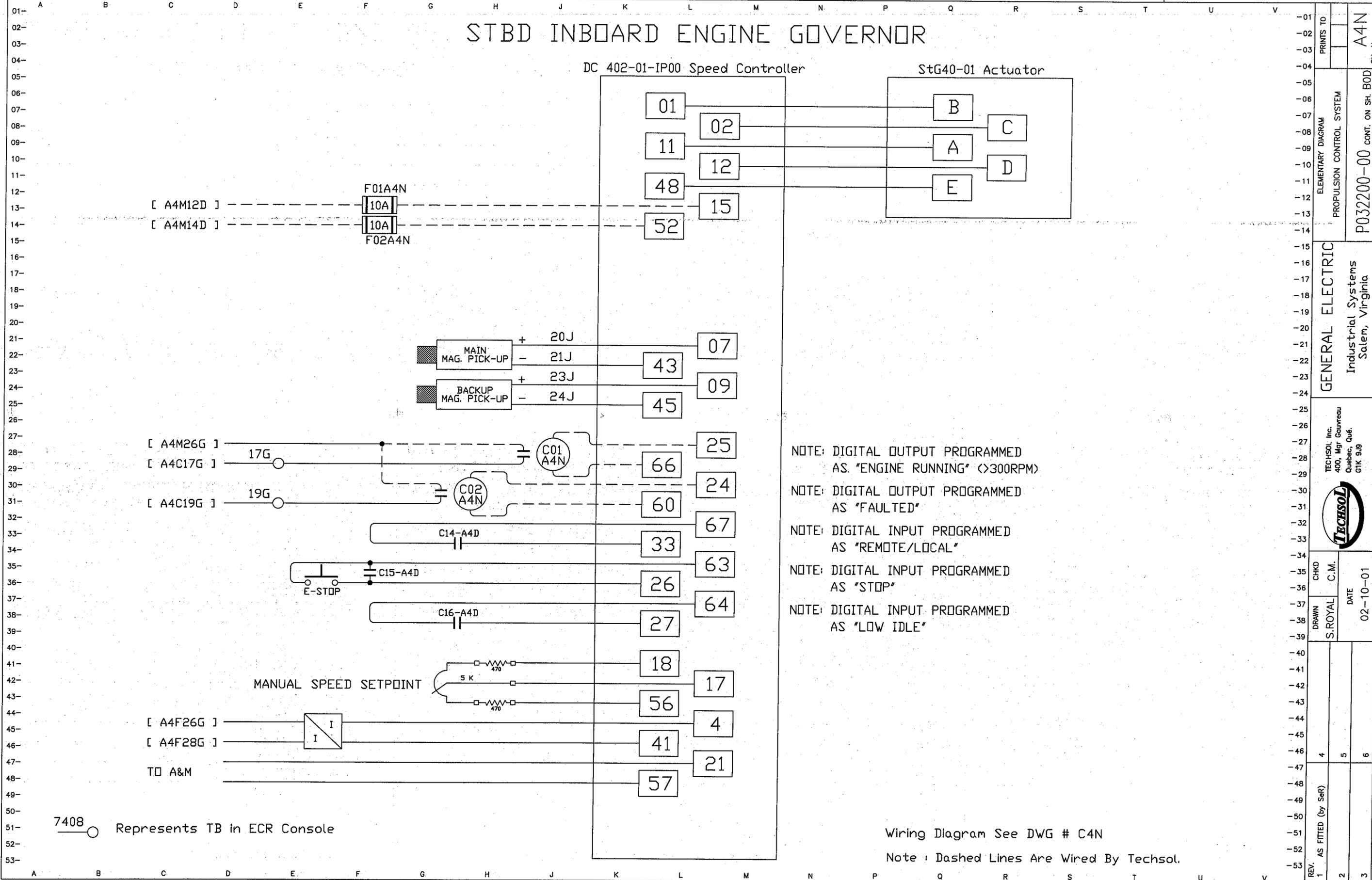




# STBD INBOARD ENGINE GOVERNOR

DC 402-01-IP00 Speed Controller

StG40-01 Actuator



- NOTE: DIGITAL OUTPUT PROGRAMMED AS "ENGINE RUNNING" (>300RPM)
- NOTE: DIGITAL OUTPUT PROGRAMMED AS "FAULTED"
- NOTE: DIGITAL INPUT PROGRAMMED AS "REMOTE/LOCAL"
- NOTE: DIGITAL INPUT PROGRAMMED AS "STOP"
- NOTE: DIGITAL INPUT PROGRAMMED AS "LOW IDLE"

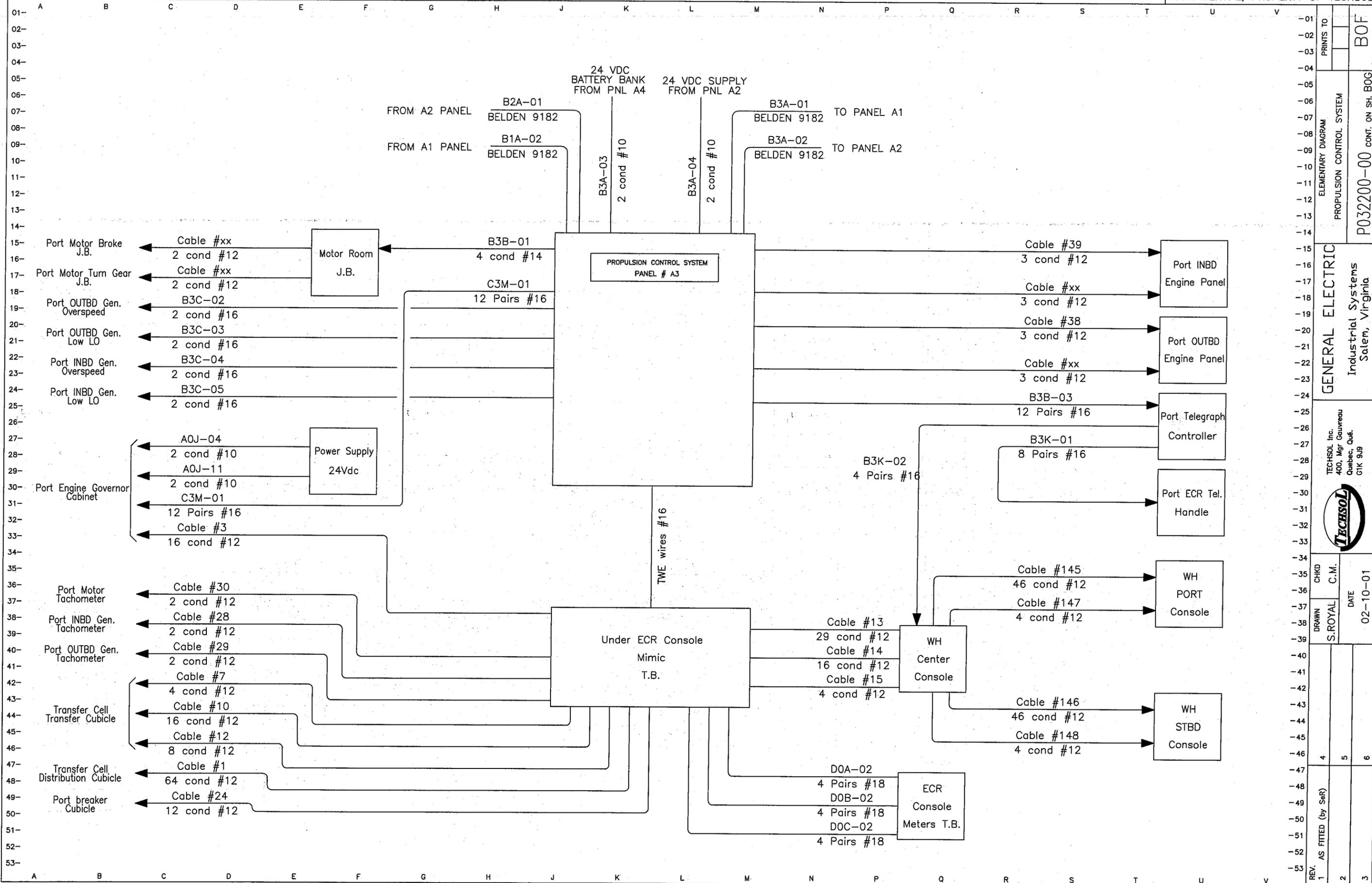
7408 Represents TB in ECR Console

Wiring Diagram See DWG # C4N  
 Note : Dashed Lines Are Wired By Techsol.

PRINTS TO	A4N
SH. No.	A4N
ELEMENTARY DIAGRAM	PROPULSION CONTROL SYSTEM
GENERAL ELECTRIC	Industrial Systems Salem, Virginia
TECHSOL Inc. 400, Mgr. Couvreur Quebec, Que. G1K 9J9	
CHKD S. ROYAL	C.M. DATE 02-10-01
REV. AS FITTED (by Set)	4 5 6







PRINTS TO			
ELEMENTARY DIAGRAM			
PROPULSION CONTROL SYSTEM			
GENERAL ELECTRIC			
Industrial Systems			
Salem, Virginia			
TECHSOL Inc.			
400, Mgr Courveau			
Quebec, Que.			
G1K 9J9			
CHKD			
C.M.			
DATE			
02-10-01			
AS FITTED (by Ser)			
1			
2			
3			

P032200-00 CONT. ON SH. BOG

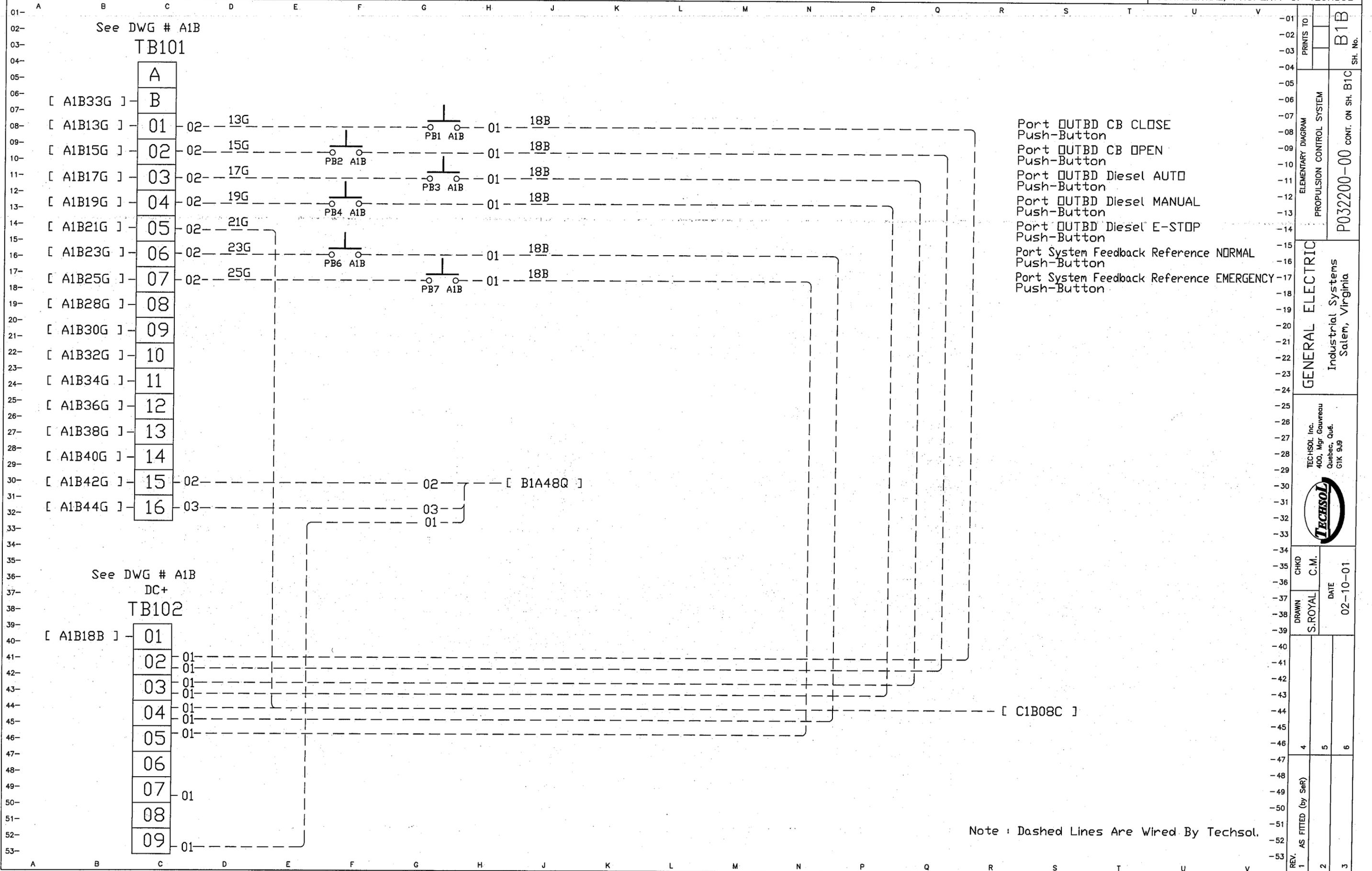
SH. No. BOF









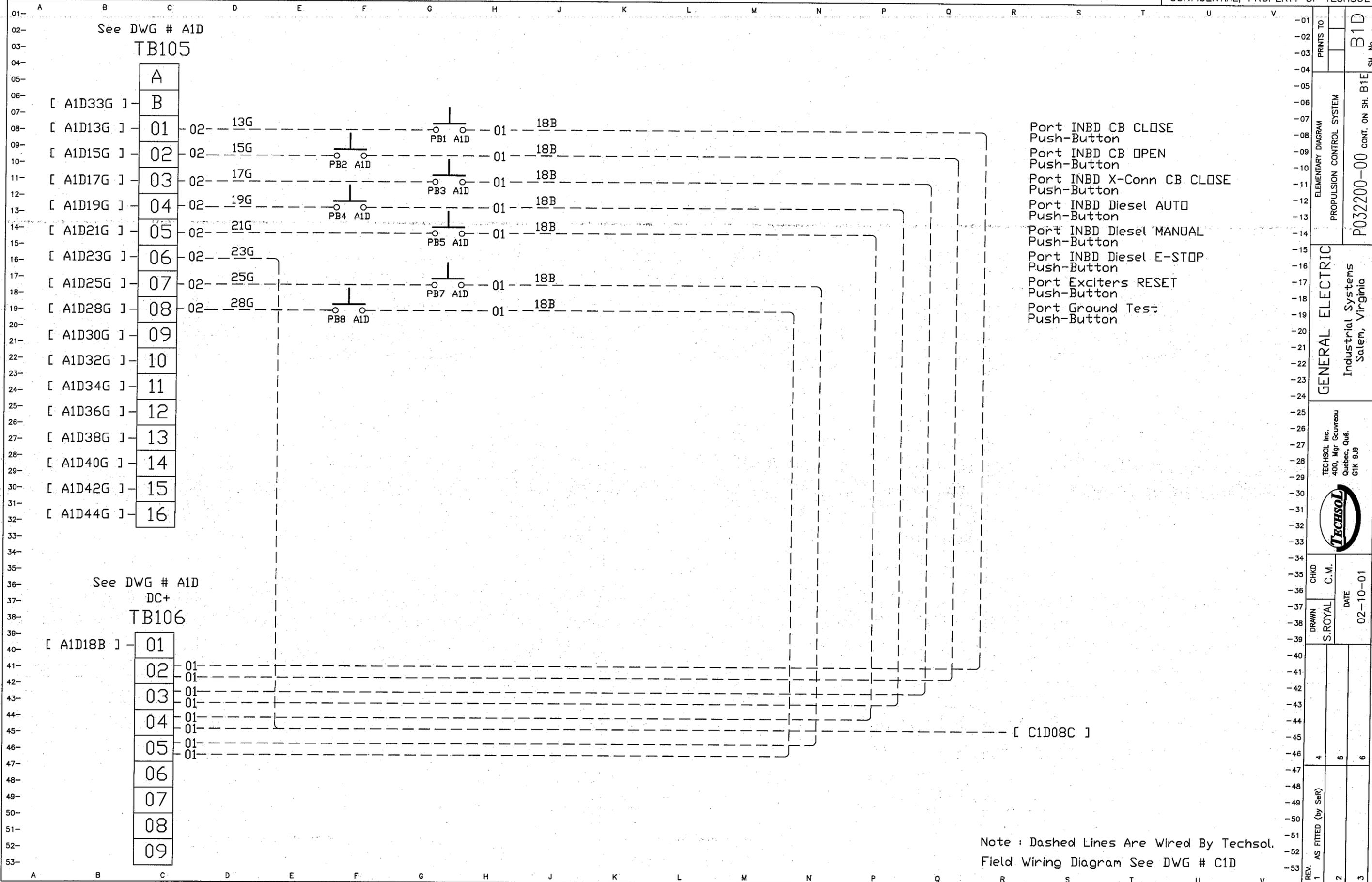


- Port OUTBD CB CLOSE Push-Button
- Port OUTBD CB OPEN Push-Button
- Port OUTBD Diesel AUTO Push-Button
- Port OUTBD Diesel MANUAL Push-Button
- Port OUTBD Diesel E-STOP Push-Button
- Port System Feedback Reference NORMAL Push-Button
- Port System Feedback Reference EMERGENCY Push-Button

PRINTS TO	B1B	
ELEMENTARY DIAGRAM	PROPULSION CONTROL SYSTEM	
	P032200-00 CONT. ON SH. B1C	
GENERAL ELECTRIC		
Industrial Systems Salem, Virginia		
TECHSOL Inc. 400, Mgr. Gouvreau Quebec, Que. G1K 9J9		
CHKD	C.M.	DATE
DRAWN	S.ROYAL	02-10-01
REV.	AS FITTED (by Ser)	
1	4	5
2		6
3		

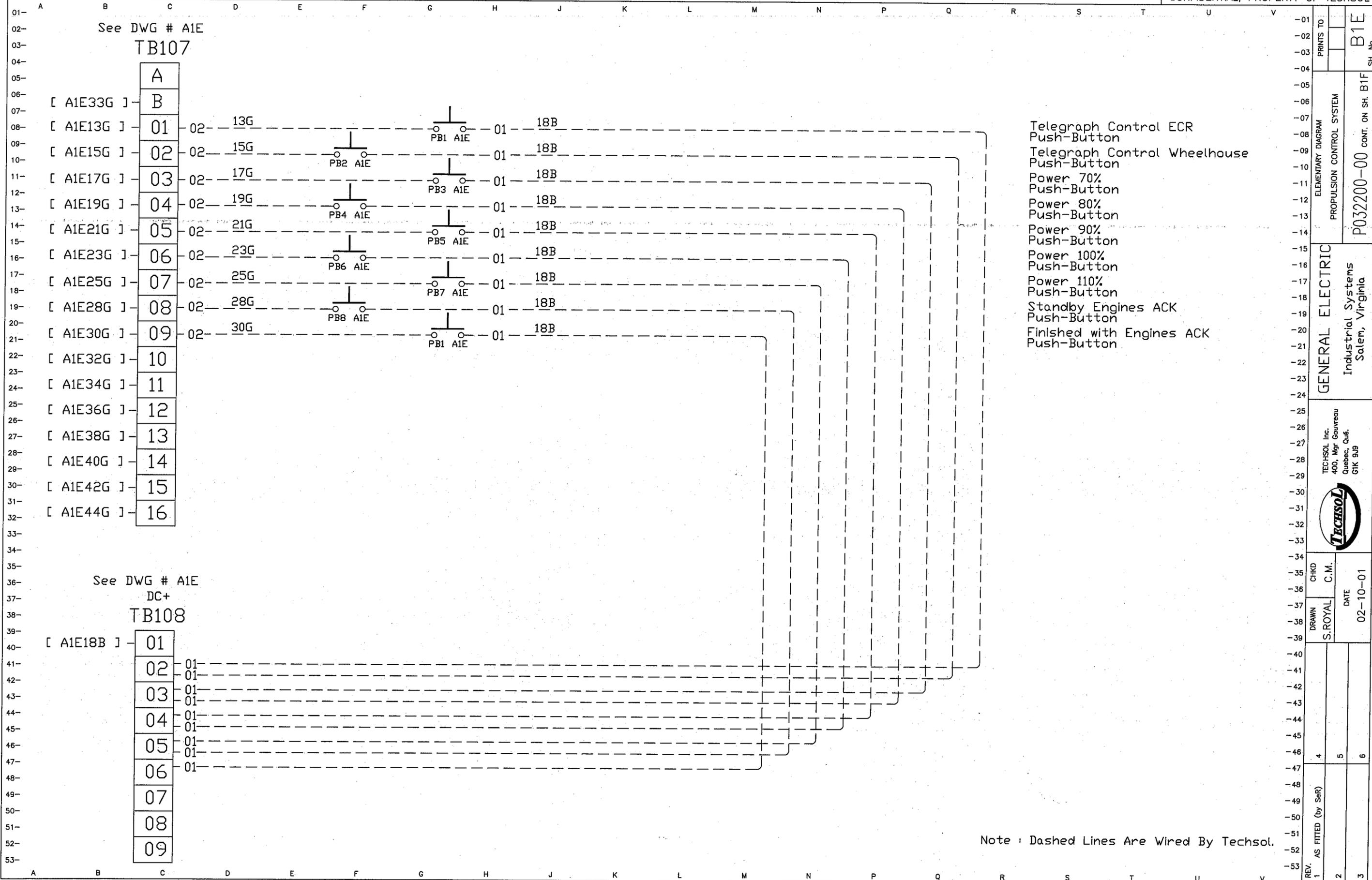
Note : Dashed Lines Are Wired By Techsol.





PRINTS TO	B1D			
SH. No.	P032200-00 CONT. ON SH. B1E			
ELEMENTARY DIAGRAM	PROPULSION CONTROL SYSTEM			
GENERAL ELECTRIC	Industrial Systems Salém, Virginia			
TECHSOL Inc.	400, Mgr Couvreur Quebec, Qué. G1K 9J9			
CHKD	C.M.	DATE	02-10-01	
DRAWN	S.ROYAL			
REV.	AS FITTED (by Set)	4	5	6

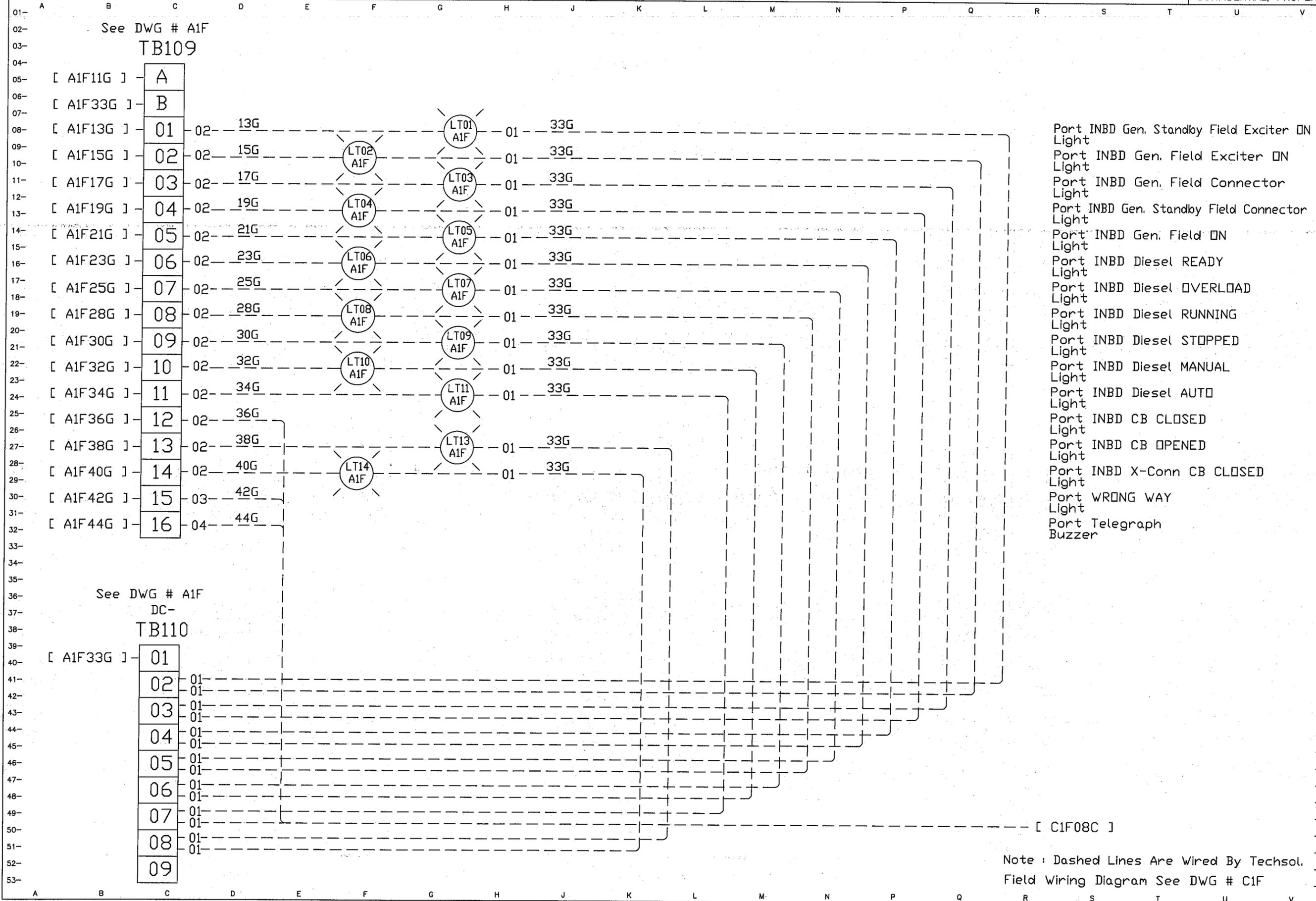
Note : Dashed Lines Are Wired By Techsol.  
Field Wiring Diagram See DWG # C1D



Telegraph Control ECR  
 Push-Button  
 Telegraph Control Wheelhouse  
 Push-Button  
 Power 70%  
 Push-Button  
 Power 80%  
 Push-Button  
 Power 90%  
 Push-Button  
 Power 100%  
 Push-Button  
 Power 110%  
 Push-Button  
 Standby Engines ACK  
 Push-Button  
 Finished with Engines ACK  
 Push-Button

PRINTS TO	B1E
SH. No.	B1E
ELEMENTARY DIAGRAM	PROPULSION CONTROL SYSTEM
GENERAL ELECTRIC	Industrial Systems Salem, Virginia
TECHSOL Inc. 400, Mgr. Gouveau Quebec, Que. G1K 9J9	
CHKD C.M.	
DATE	02-10-01
AS FITTED (by Set)	1 2 3
REV.	1 2 3

Note : Dashed Lines Are Wired By Techsol.



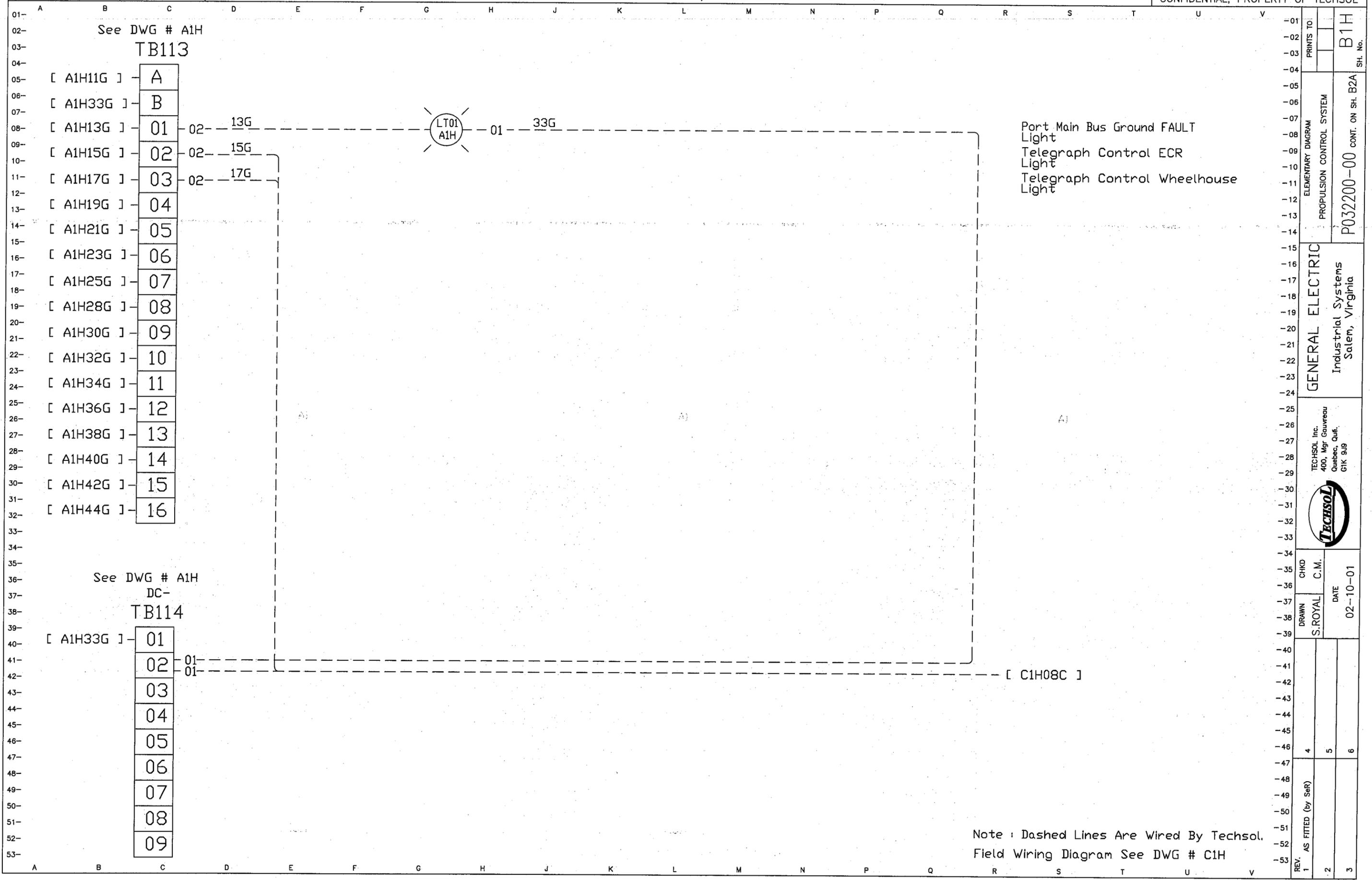
- Port INBD Gen. Standby Field Exciter ON Light
- Port INBD Gen. Field Exciter ON Light
- Port INBD Gen. Field Connector Light
- Port INBD Gen. Standby Field Connector Light
- Port INBD Gen. Field ON Light
- Port INBD Diesel READY Light
- Port INBD Diesel OVERLOAD Light
- Port INBD Diesel RUNNING Light
- Port INBD Diesel STOPPED Light
- Port INBD Diesel MANUAL Light
- Port INBD Diesel AUTO Light
- Port INBD CB CLOSED Light
- Port INBD CB OPENED Light
- Port INBD X-Conn CB CLOSED Light
- Port WRONG WAY Light
- Port Telegraph Buzzer

[ C1F08C ]

Note : Dashed Lines Are Wired By Techsol.  
Field Wiring Diagram See DWG # C1F

PRINTS TO	B1F	
ELEMENTARY DIAGRAM	PROPULSION CONTROL SYSTEM	
	P032200-00 CONT. ON SH. B1G	
GENERAL ELECTRIC	Industrial Systems Salern, Virginia	
	TECHSOL Inc. 400, Mgr Gouvreau Quebec, Que. G1K 9J9	
CHKD	C.M.	DATE
DRAWN	S. ROYAL	02-10-01
REV.	AS FITTED (by Ser)	
1	4	5
2		6
3		

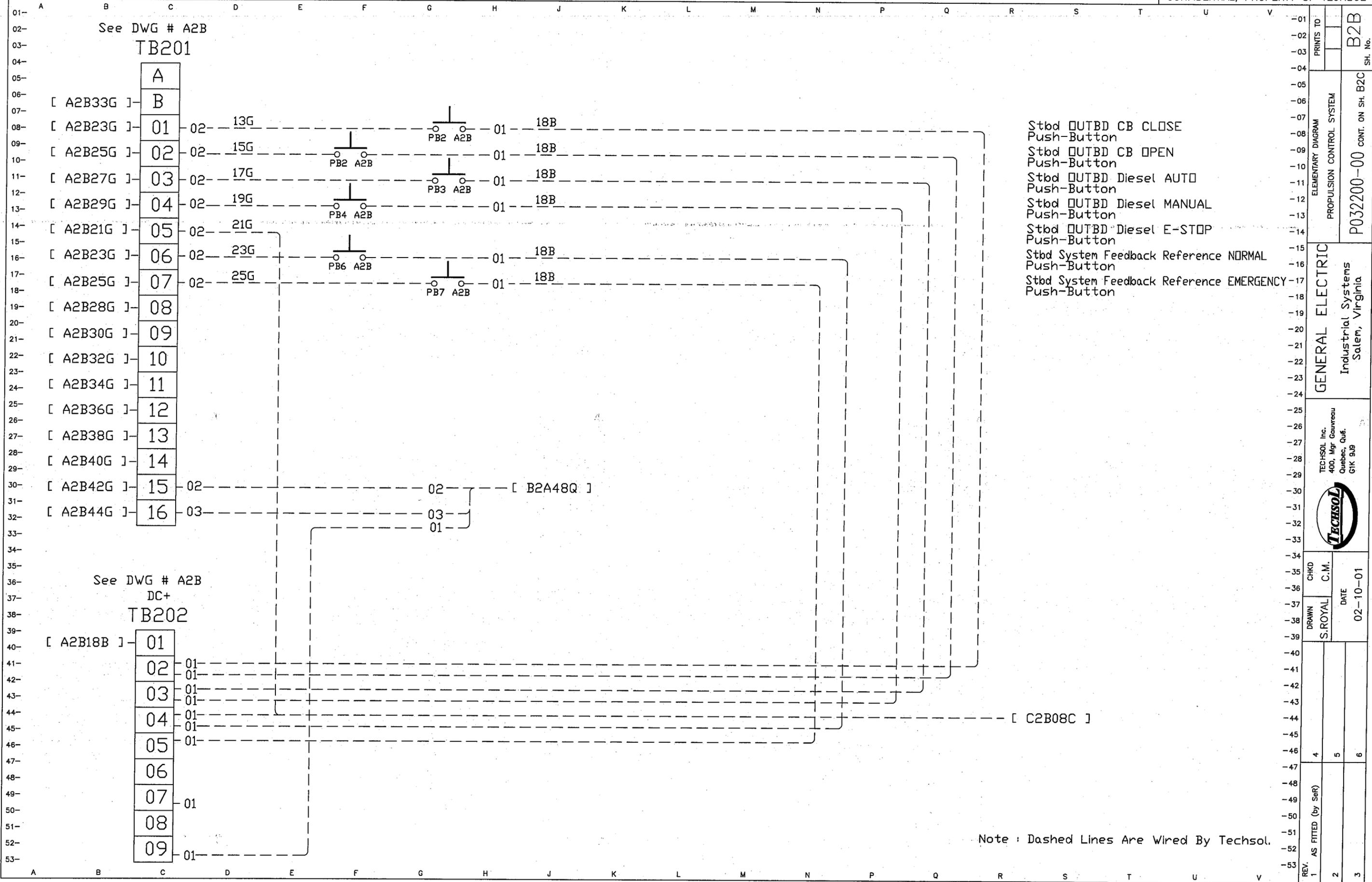




PRINTS TO:	B1H
SH. No.	B1H
ELEMENTARY DIAGRAM	PROPULSION CONTROL SYSTEM
GENERAL ELECTRIC Industrial Systems Salem, Virginia	
TECHSOL Inc. 400, Mgr. Gouvreau Quebec, Que. G1K 9J9	
CHKD	C.M.
DATE	02-10-01
DRWN	S.ROYAL
REV.	AS FITTED (by SeR)
1	2
4	5
	6

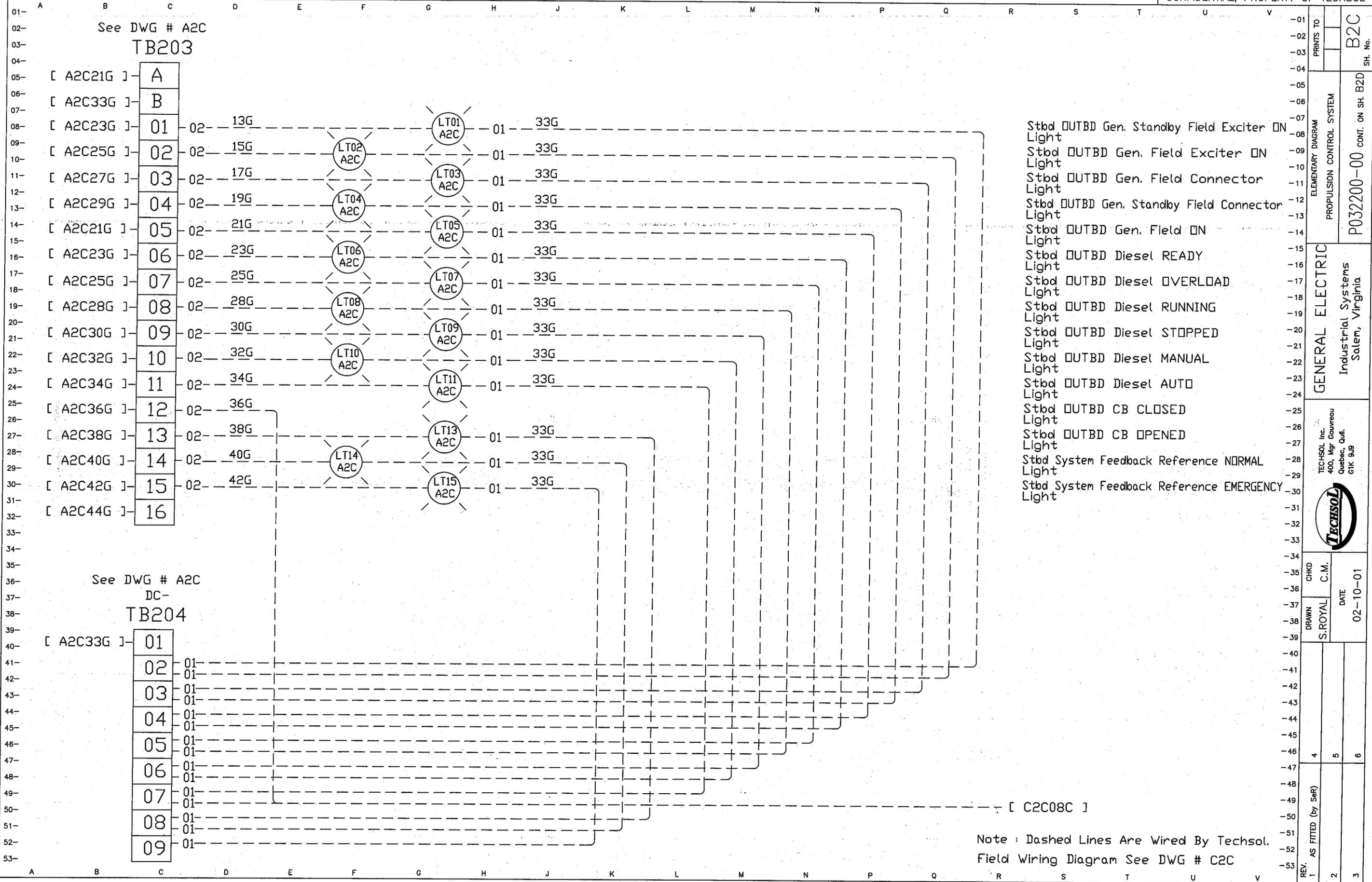
Note : Dashed Lines Are Wired By Techsol.  
Field Wiring Diagram See DWG # C1H



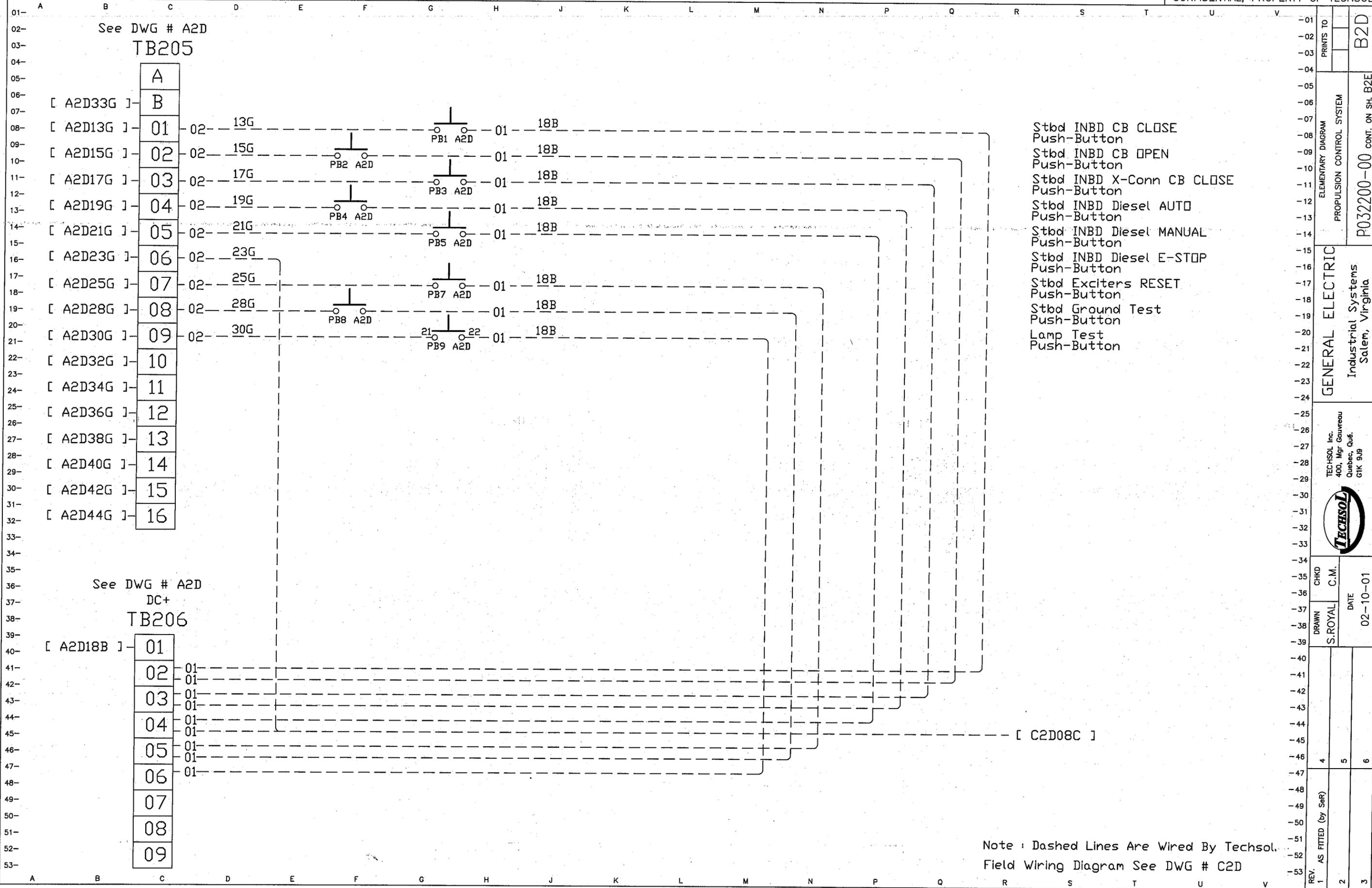


Note : Dashed Lines Are Wired By Techsol.

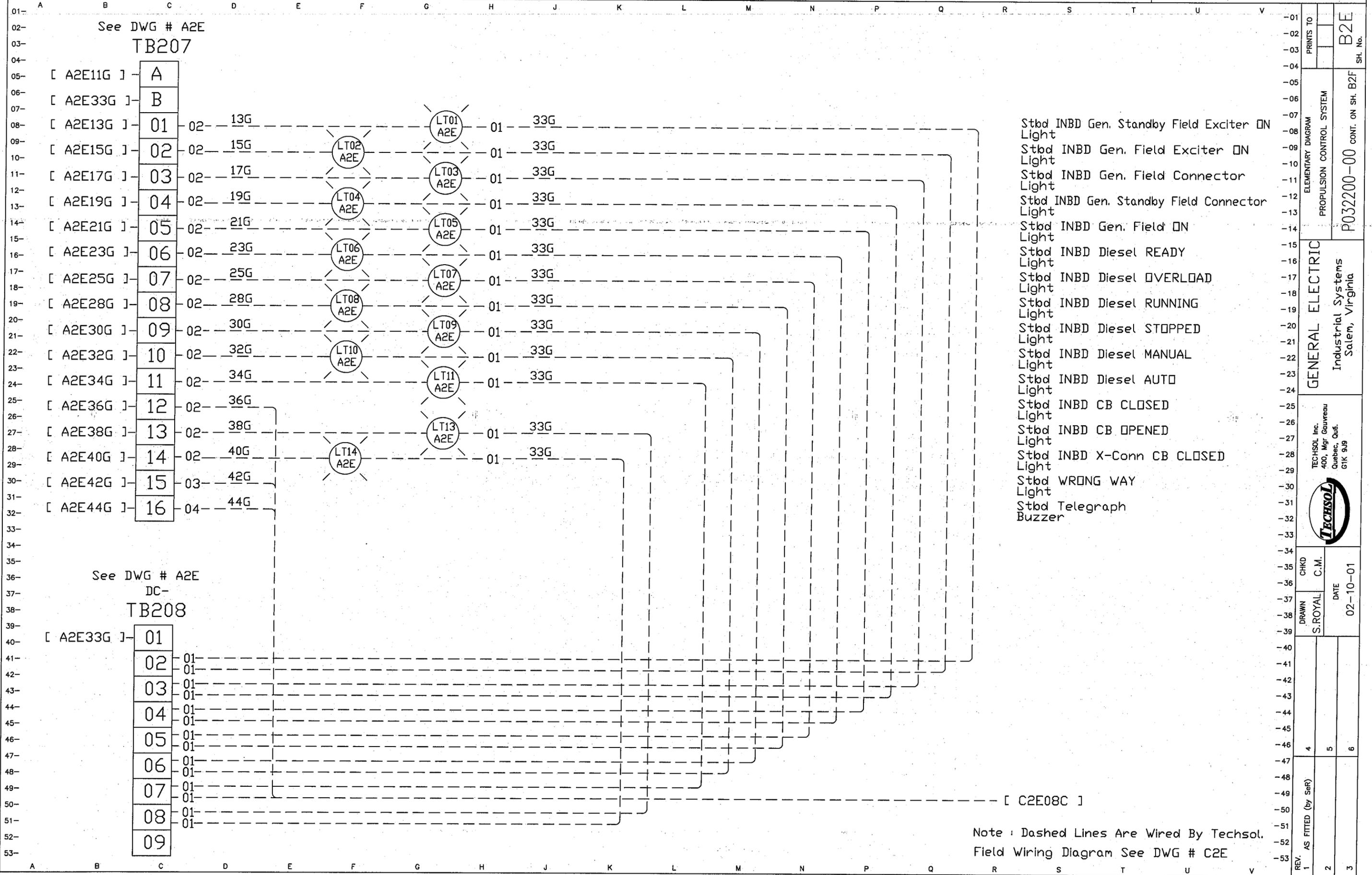
PRINTS TO	B2B
SH. No.	B2B
ELEMENTARY DIAGRAM	PROPULSION CONTROL SYSTEM
CONT. ON SH. B2C	P032200-00
GENERAL ELECTRIC	Industrial Systems Salem, Virginia
TECHSOL Inc. 400, Mgr Gaurreau Quebec, Que. G1K 9J9	
CHKD	C.M.
DATE	02-10-01
DRAWN	S.ROYAL
REV.	1 AS FITTED (by Ser)
	2
	3



PRINTS TO	B2C	
SH. No.		
CONT. ON SH. B2D		
ELEMENTARY DIAGRAM		
PROPULSION CONTROL SYSTEM		
P032200-00		
GENERAL ELECTRIC		
Industrial Systems		
Salem, Virginia		
TECHSOL Inc.		
400, Mgr Gouveau		
Quebec, Que.		
G1K 9/9		
CHKD	C.M.	DATE
DRAWN	S.ROYAL	02-10-01
REV.	AS FITTED (by SaR)	
1	4	5
2		6
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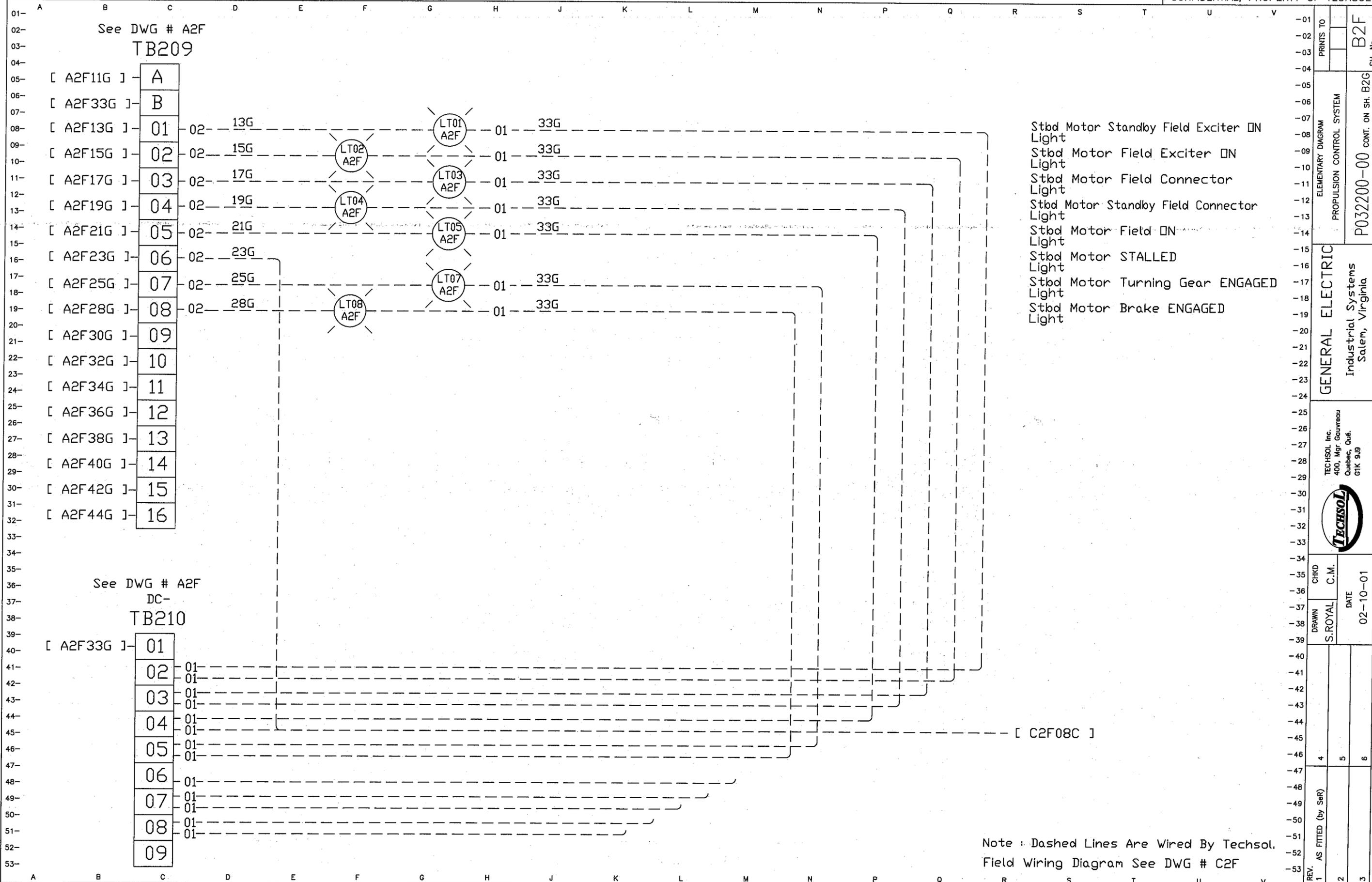


Note : Dashed Lines Are Wired By Techsol.  
Field Wiring Diagram See DWG # C2D

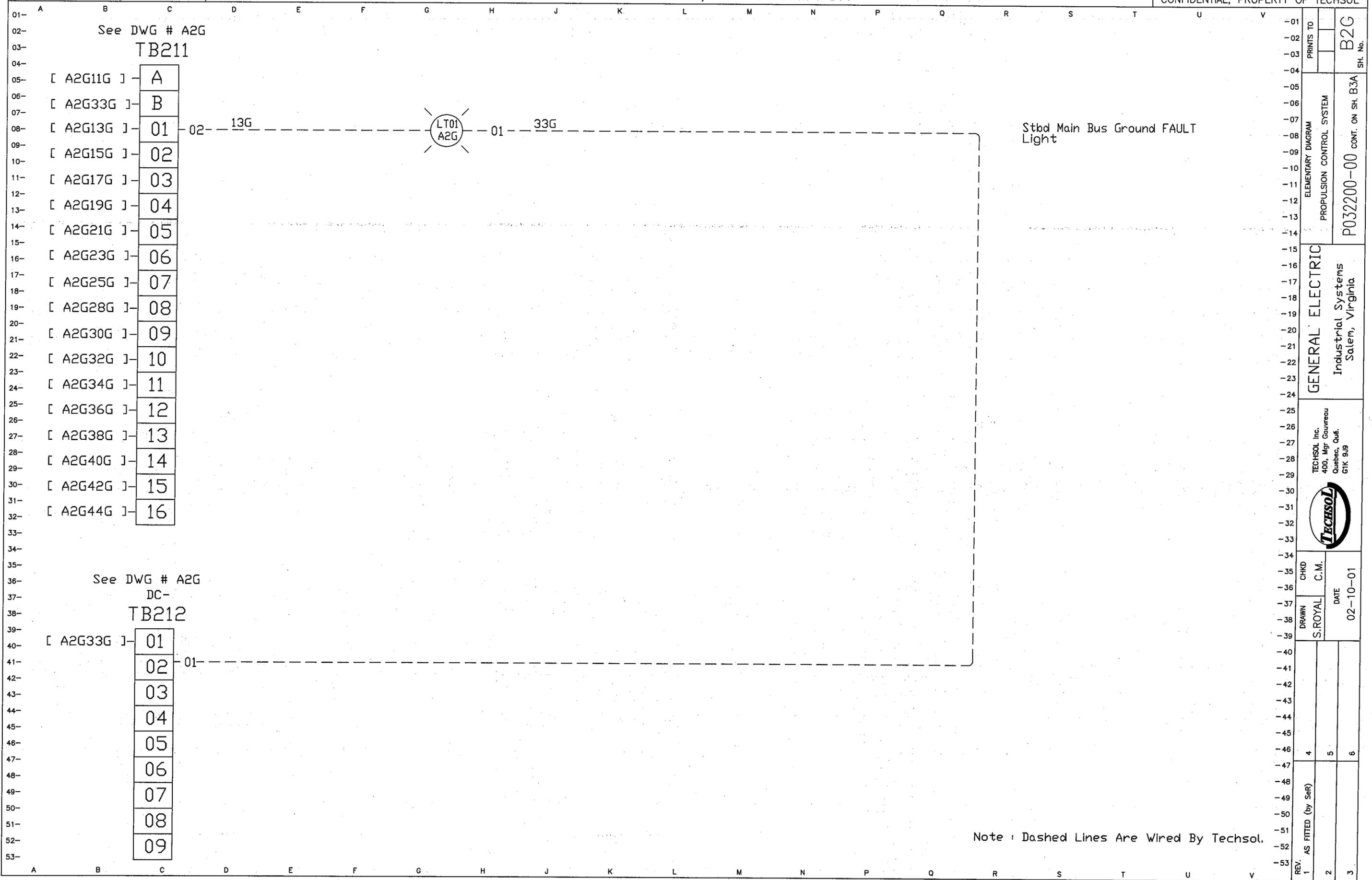


- 01 Stbd INBD Gen. Standby Field Exciter ON Light
- 02 Stbd INBD Gen. Field Exciter ON Light
- 03 Stbd INBD Gen. Field Connector Light
- 04 Stbd INBD Gen. Standby Field Connector Light
- 05 Stbd INBD Gen. Field ON Light
- 06 Stbd INBD Diesel READY Light
- 07 Stbd INBD Diesel OVERLOAD Light
- 08 Stbd INBD Diesel RUNNING Light
- 09 Stbd INBD Diesel STOPPED Light
- 10 Stbd INBD Diesel MANUAL Light
- 11 Stbd INBD Diesel AUTO Light
- 12 Stbd INBD CB CLOSED Light
- 13 Stbd INBD CB OPENED Light
- 14 Stbd INBD X-Conn CB CLOSED Light
- 15 Stbd WRONG WAY Light
- 16 Stbd Telegraph Buzzer

PRINTS TO	B2E	SH. No.	B2E
ELEMENTARY DIAGRAM		PROPULSION CONTROL SYSTEM	
GENERAL ELECTRIC		Industrial Systems Salem, Virginia	
TECHSOL Inc. 400, Mgr Gouveau Quebec, Que. G1K 9J9		CHKD	C.M.
DRAWN	S. ROYAL	DATE	02-10-01
REV.	1	AS FITTED (by S&R)	2
	4		5
			6



Note : Dashed Lines Are Wired By Techsol.  
Field Wiring Diagram See DWG # C2F



Std Main Bus Ground FAULT Light

Note : Dashed Lines Are Wired By Techsol.

01	PRINTS TO	B2G
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53		

ELEMENTARY DIAGRAM  
PROPULSION CONTROL SYSTEM

GENERAL ELECTRIC  
Industrial Systems  
Salem, Virginia

TECHSOL Inc.  
400, Mgr Gauvreau  
Quebec, Que.  
G1K 9J9

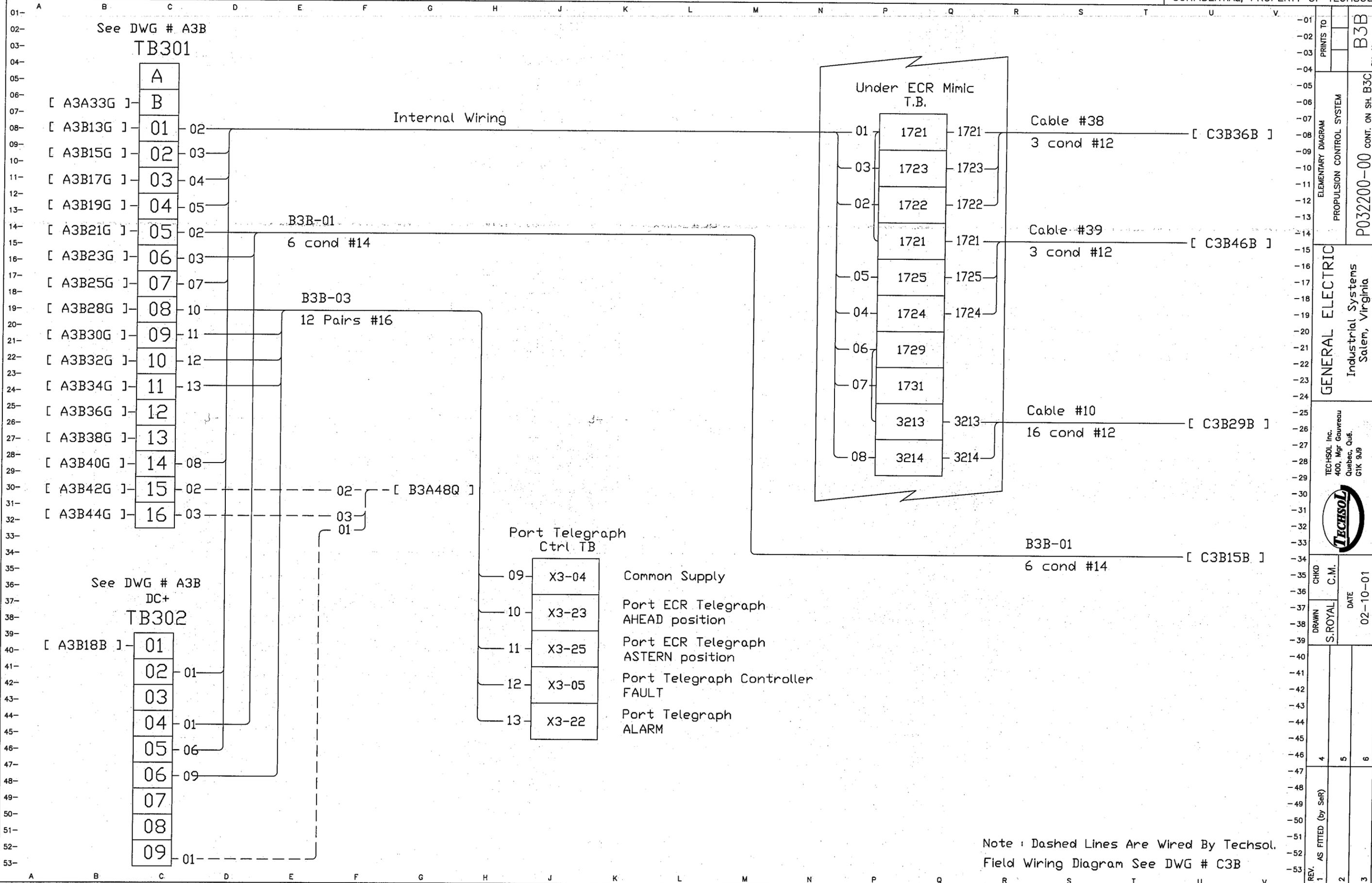


CHKD  
C.M.  
DATE  
02-10-01

DRAWN  
S.ROYAL

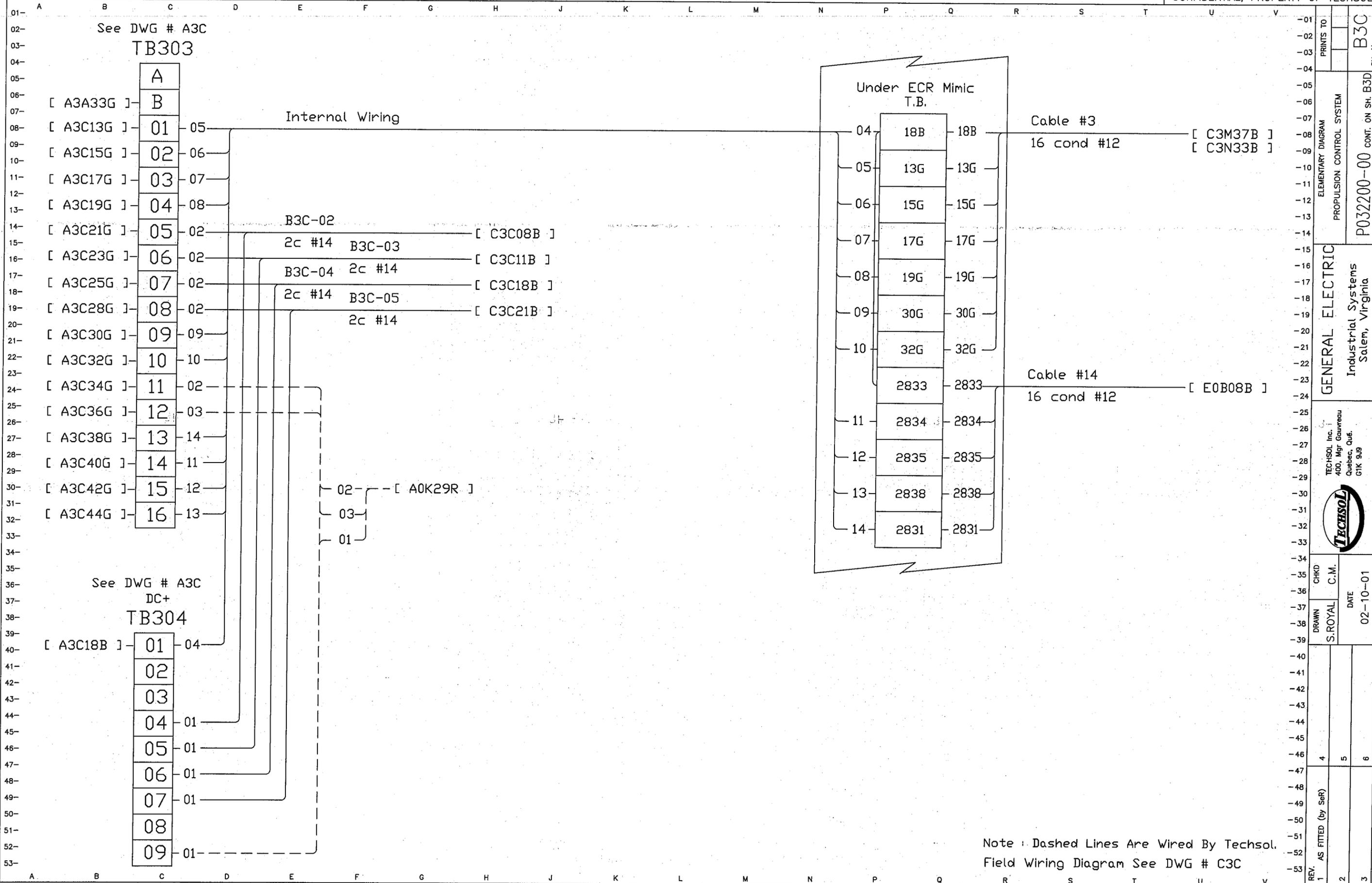
REV. 1 AS FITTED (by Ser) 4  
2 5  
3 6





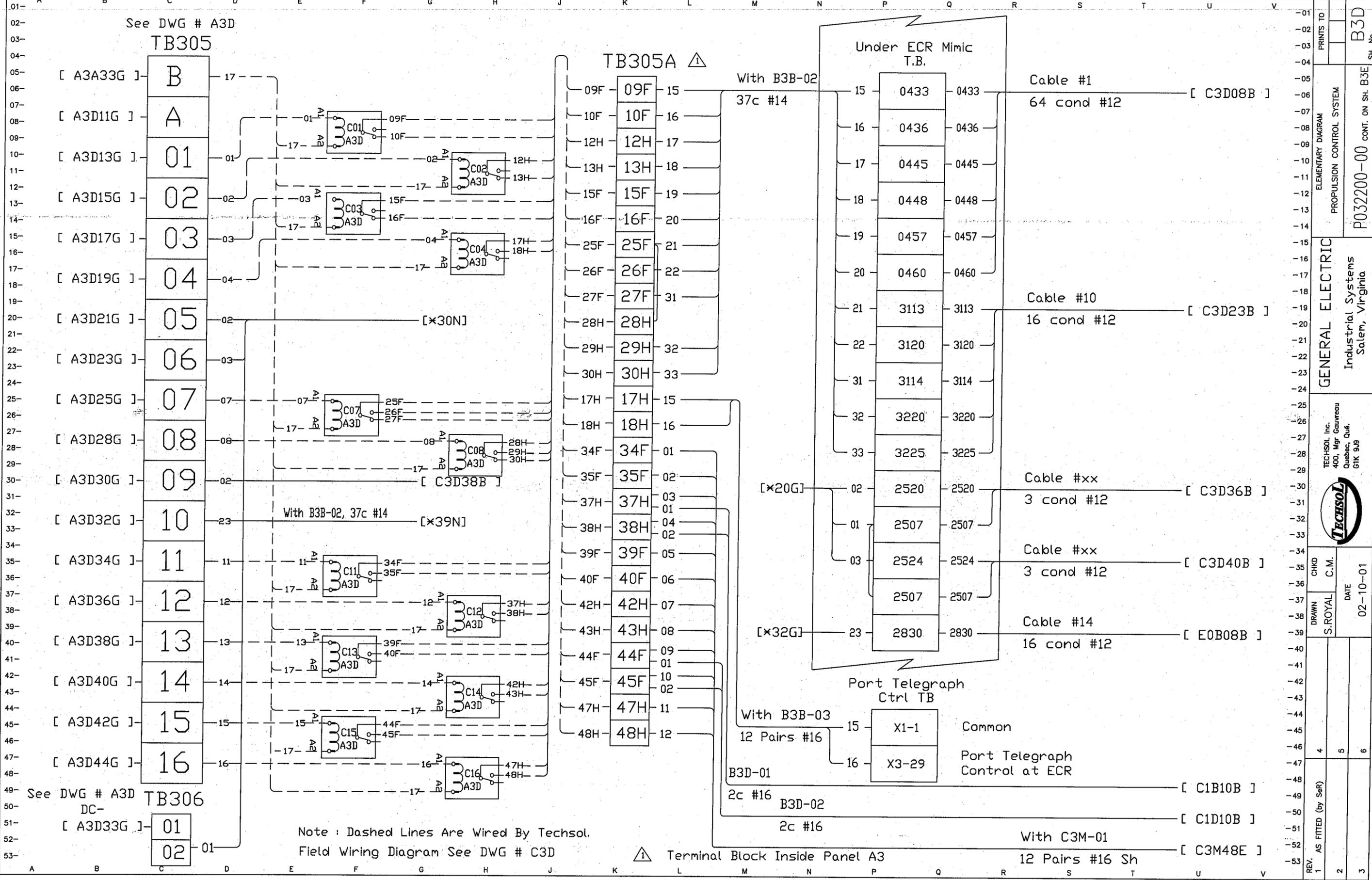
Note: Dashed Lines Are Wired By Techsol.  
Field Wiring Diagram See DWG # C3B

PRINTS TO	B3B
SH. No.	B3B
ELEMENTARY DIAGRAM	PROPULSION CONTROL SYSTEM
REV. 1	AS FITTED (by SeF)
REV. 2	
REV. 3	
CHKD	C.M.
DRAWN	S.ROYAL
DATE	02-10-01
TECHSOL Inc. 400, Mgr Gouveau Quebec, Qué. G1K 9J9	
GENERAL ELECTRIC Industrial Systems Salem, Virginia	
P032200-00 CONT. ON SH. B3C	



Note: Dashed Lines Are Wired By Techsol.  
Field Wiring Diagram See DWG # C3C

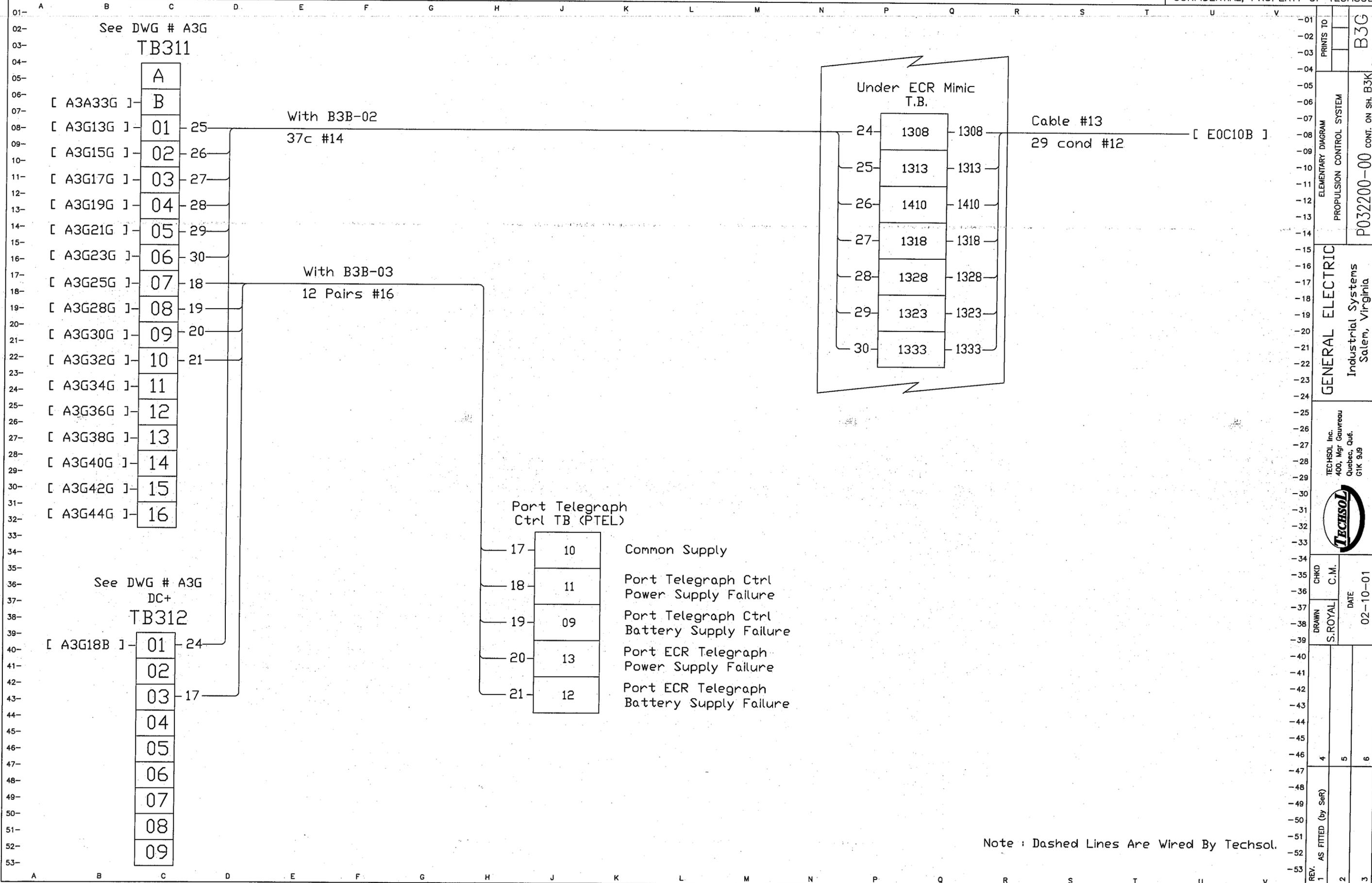
PRINTS TO	B3C	
ELEMENTARY DIAGRAM	PROPULSION CONTROL SYSTEM	
	P032200-00 CONT. ON SH. B3D	
GENERAL ELECTRIC Industrial Systems Salem, Virginia		
TECHSOL Inc. 400, Mgr Gouveau Quebec, Qué. G1K 9J9		
CHKD	C.M.	DATE
DRAWN	S.ROYAL	02-10-01
REV.	AS FITTED (by SeF)	
1	4	5
2		6
3		



PRINTS TO	B3D
ELEMENTARY DIAGRAM	PROPULSION CONTROL SYSTEM
GENERAL ELECTRIC	Industrial Systems Salem, Virginia
TECHSOL Inc. 400, Mgr Gouveau Quebec, Qué. G1K 9J9	
CHKD	C.M.
DRAWN	DATE
S.ROYAL	02-10-01
REV. 1	AS FITTED (by SeF)
2	
3	

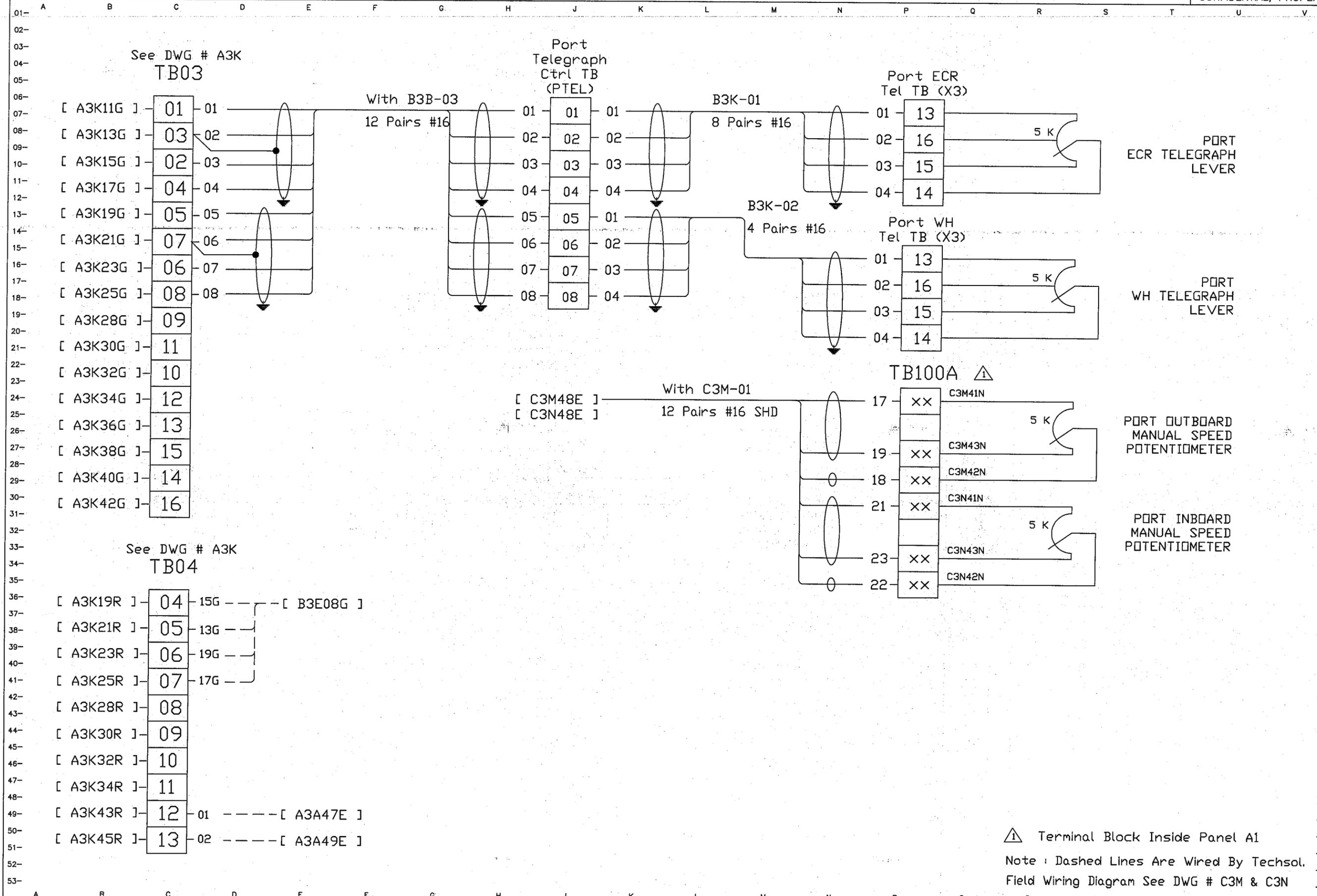






Note : Dashed Lines Are Wired By Techsol.

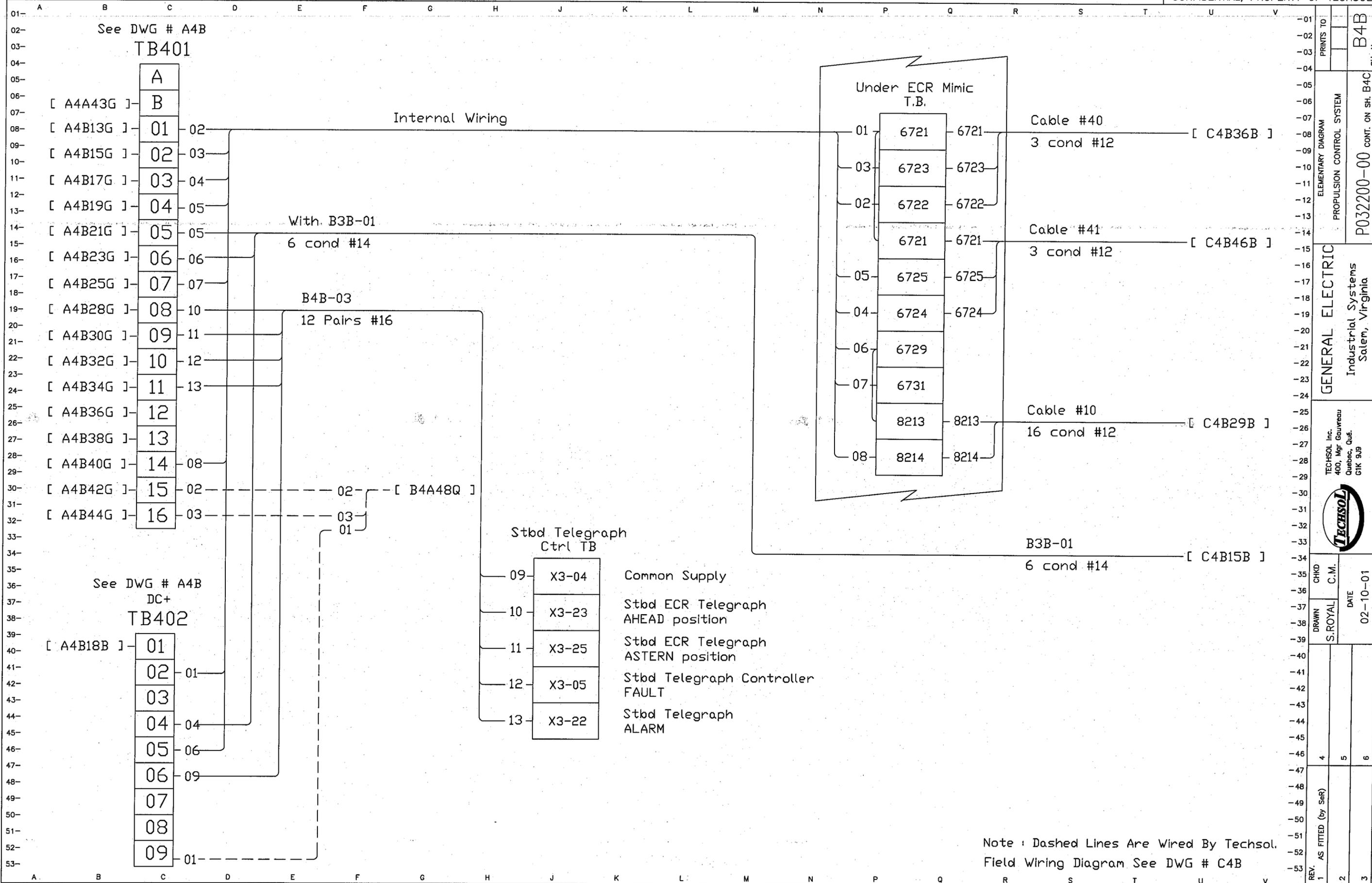
PRINTS TO	B3G	
ELEMENTARY DIAGRAM	PROPULSION CONTROL SYSTEM	
	P032200-00 CONT. ON SH. B3K	
GENERAL ELECTRIC	Industrial Systems	
	Salem, Virginia	
TECHSOL Inc.	400, Mgr Gaurreau	
	Quebec, Que.	
CHKD	C.M.	
	DATE	
DRAWN	S.ROYAL	
	DATE	
REV.	1 AS FITTED (by SeF)	
	2	
REV.	3	
	4	
REV.	5	
	6	



⚠ Terminal Block Inside Panel A1  
 Note: Dashed Lines Are Wired By Techsol.  
 Field Wiring Diagram See DWG # C3M & C3N

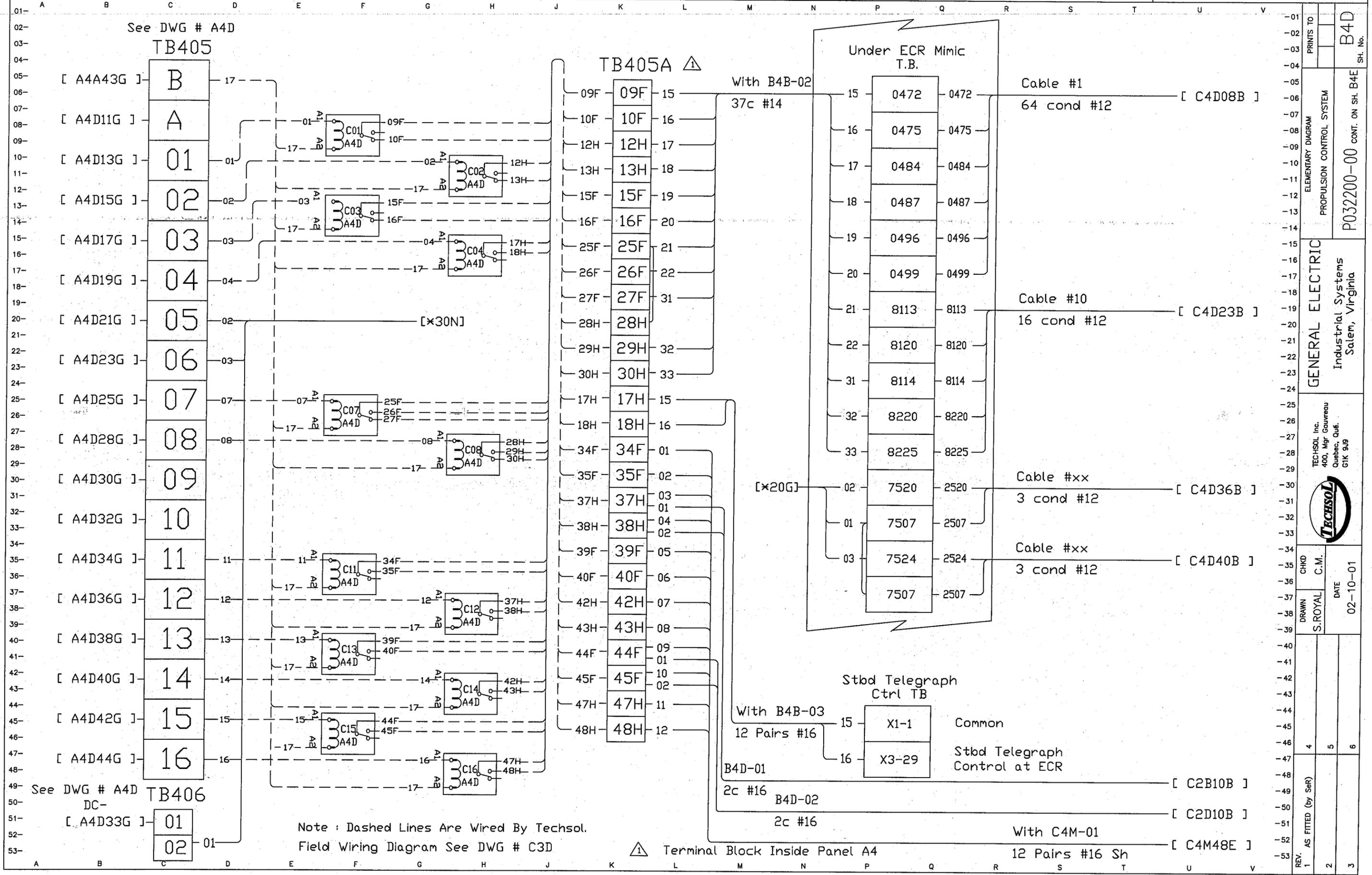
PRINTS TO		B3K
SH. No.		
ELEMENTARY DIAGRAM		
PROPULSION CONTROL SYSTEM		
P032200-00 CONT. ON SH. B4A		
GENERAL ELECTRIC		
Industrial Systems		
Salem, Virginia		
TECHSOL Inc.		
400, Mgr. Gouveau		
Quebec, Que.		
G1K 9J9		
CHKD		
C.M.		
DRAWN		
S.ROYAL		
DATE		
02-10-01		
REV.		
1 AS FITTED (by SeR)		
2		
3		





PRINTS TO	B4B
ELEMENTARY DIAGRAM	PROPULSION CONTROL SYSTEM
GENERAL ELECTRIC	Industrial Systems Salem, Virginia
TECHSOL Inc. 400, Mgr Gouveau Quebec, Que. G1K 9J9	
CHKD	C.M.
DRAWN	S.ROYAL
DATE	02-10-01
REV. 1 AS FITTED (by Set)	2
	3
	4
	5
	6

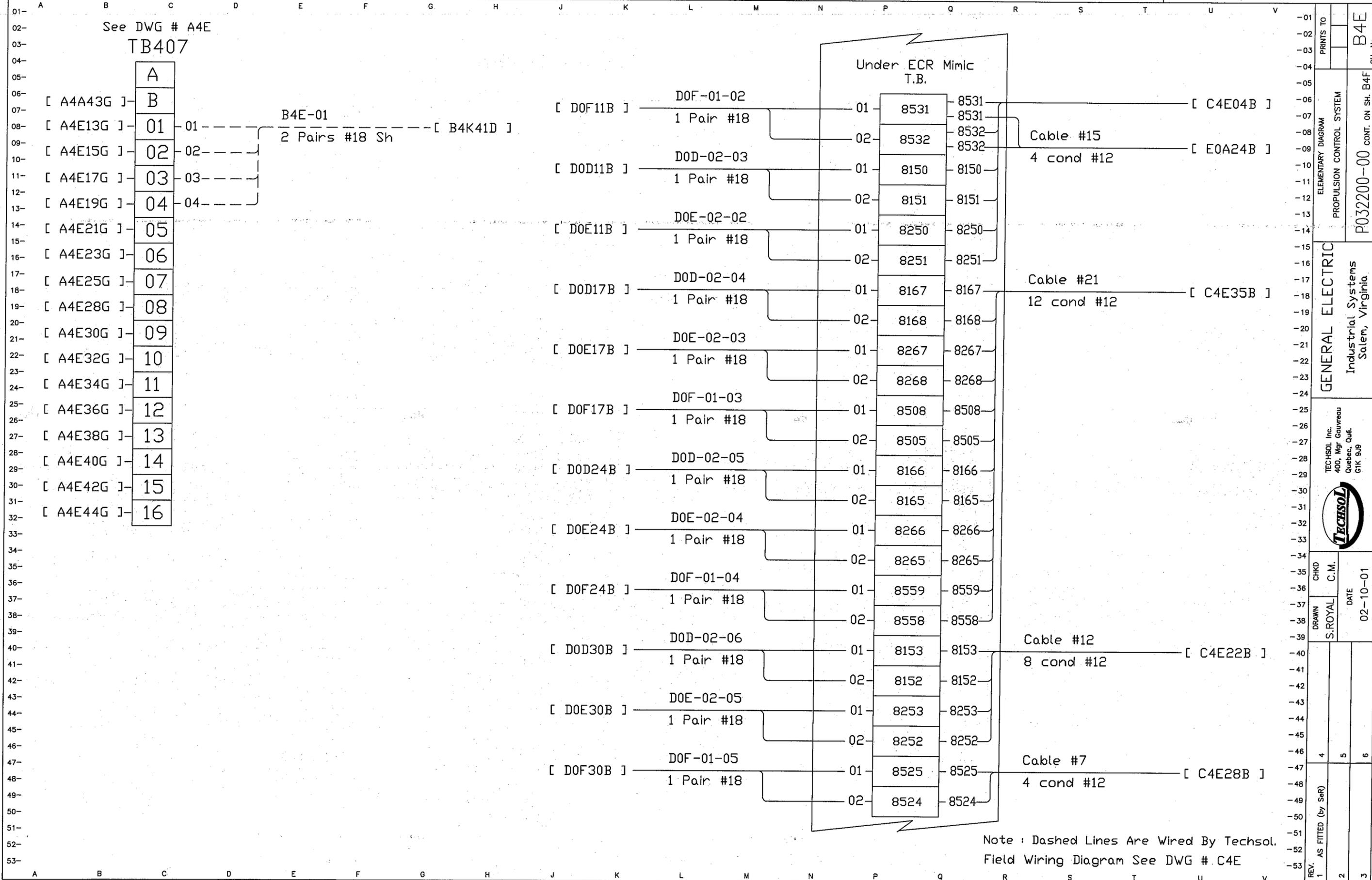




Note: Dashed Lines Are Wired By Techsol.  
Field Wiring Diagram See DWG # C3D

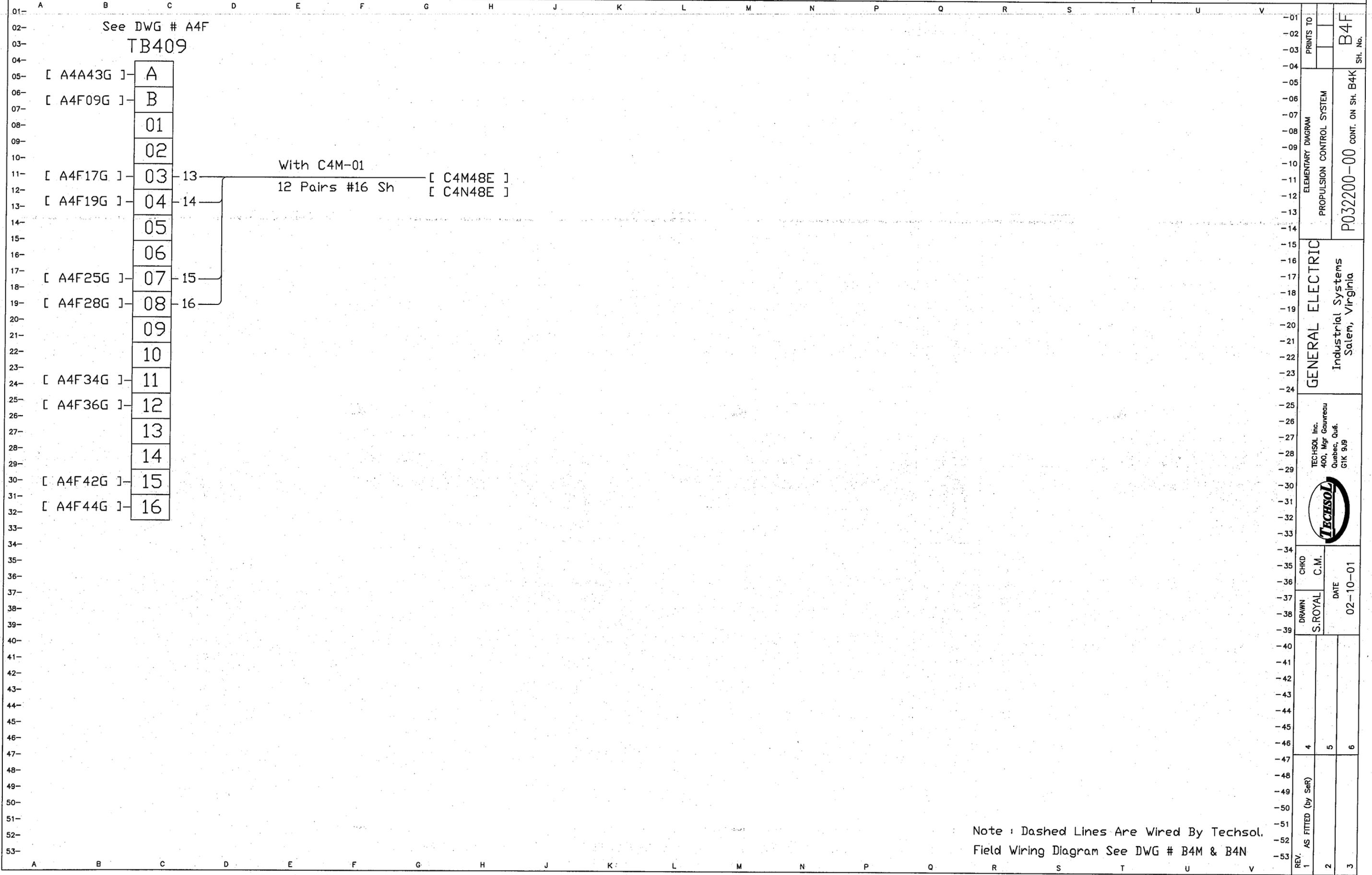
Terminal Block Inside Panel A4

PRINTS TO	B4D
SH. No.	B4E
ELEMENTARY DIAGRAM	PROPULSION CONTROL SYSTEM
GENERAL ELECTRIC	Industrial Systems Salem, Virginia
TECHSOL Inc.	400, Mgr Gouveau Quebec, Que. G1K 9J9
CHKD	C.M.
DATE	02-10-01
DRAWN	S.ROYAL
REV.	AS FITTED (by Ser)
1	4
2	5
3	6



PRINTS TO	
ELEMENTARY DIAGRAM	
PROPULSION CONTROL SYSTEM	
GENERAL ELECTRIC	
Industrial Systems	
Salem, Virginia	
TECHSOL Inc.	
400, Mgr. Gouveau	
Quebec, Que.	
G1K 9J9	
CHKD	
C.M.	
DATE	02-10-01
DRAWN	
S.ROYAL	
REV.	
1 AS FITTED (by Ser)	
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3	
4	
5	
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SH. No. B4E  
P032200-00 CONT. ON SH. B4F



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GENERAL ELECTRIC  
Industrial Systems  
Salem, Virginia

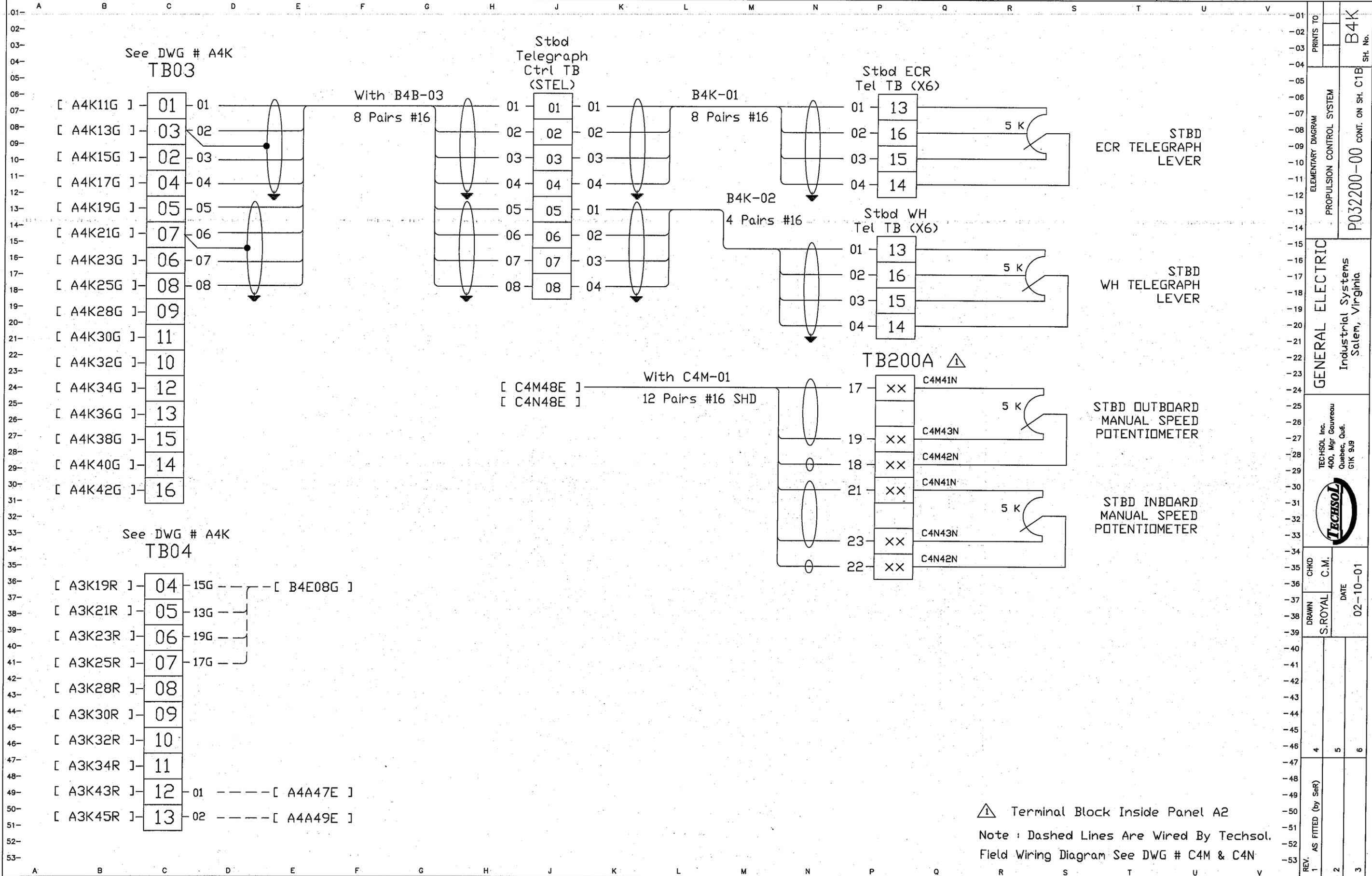
TECHSOL Inc.  
400, Mgr Gouveau  
Quebec, Que.  
G1K 9J9



CHKD  
C.M.  
DATE  
02-10-01

REV.	1	AS FITTED (by Ser)	4	5	6
DRAWN	S. ROYAL				

Note : Dashed Lines Are Wired By Techsol.  
Field Wiring Diagram See DWG # B4M & B4N



PRINTS TO B4K SH. No.

ELEMENTARY DIAGRAM  
PROPULSION CONTROL SYSTEM  
P032200-00 CONT. ON SH. C1B

GENERAL ELECTRIC  
Industrial Systems  
Salem, Virginia

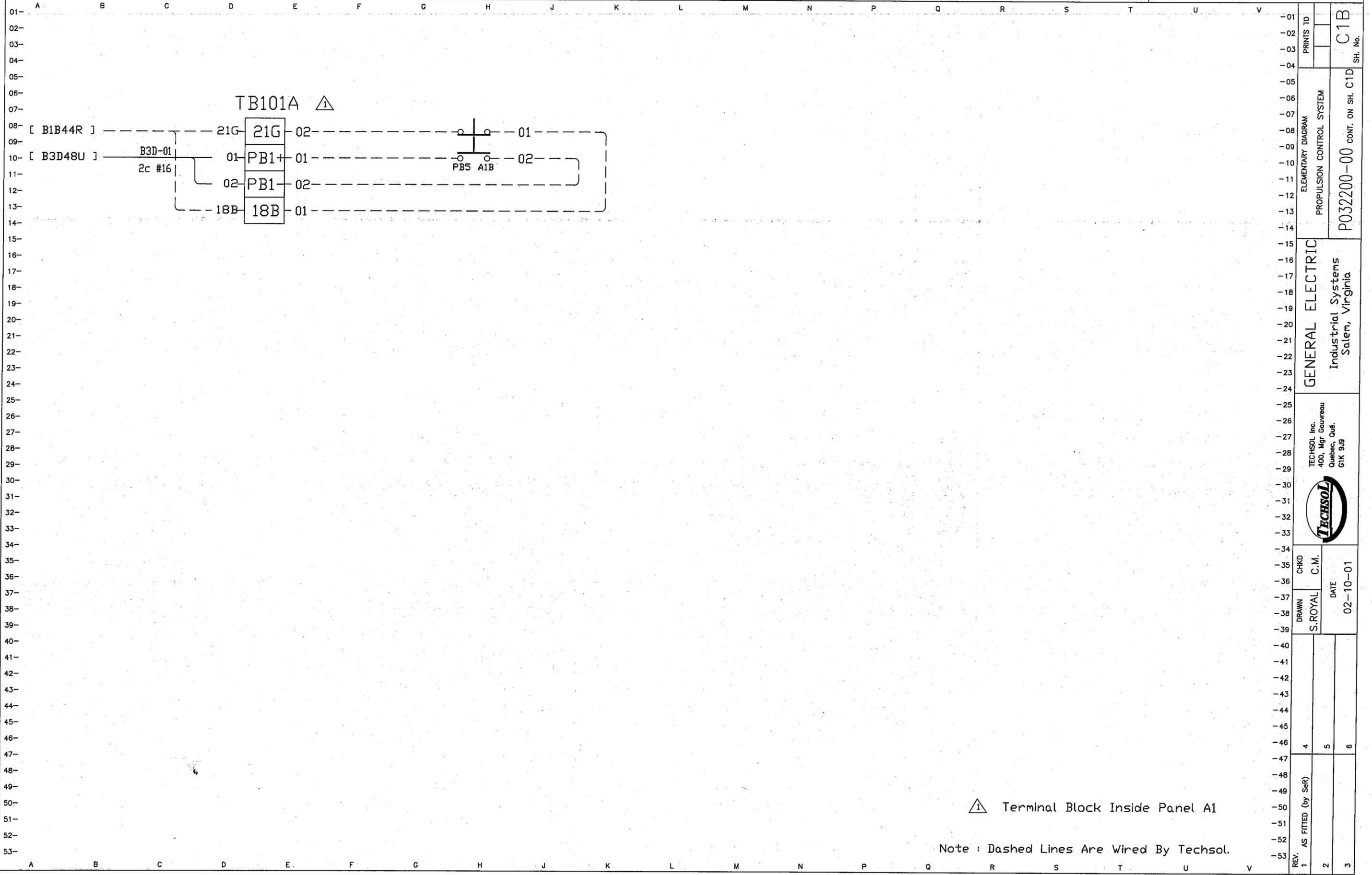
TECHSOL Inc.  
400, Mgr Gouverneur  
Quebec, Que.  
G1K 9J9



CHKD C.M.  
DRAWN S. ROYAL  
DATE 02-10-01

REV.	1	AS FITTED (by Ser)
	2	
	3	

△ Terminal Block Inside Panel A2  
Note: Dashed Lines Are Wired By Techsol.  
Field Wiring Diagram See DWG # C4M & C4N



△ Terminal Block Inside Panel A1

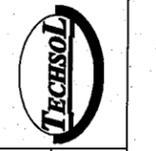
Note : Dashed Lines Are Wired By Techsol.

PRINTS TO  
C1B  
SH. No.

ELEMENTARY DIAGRAM  
PROPULSION CONTROL SYSTEM  
P032200-00 CONT. ON SH. C1D

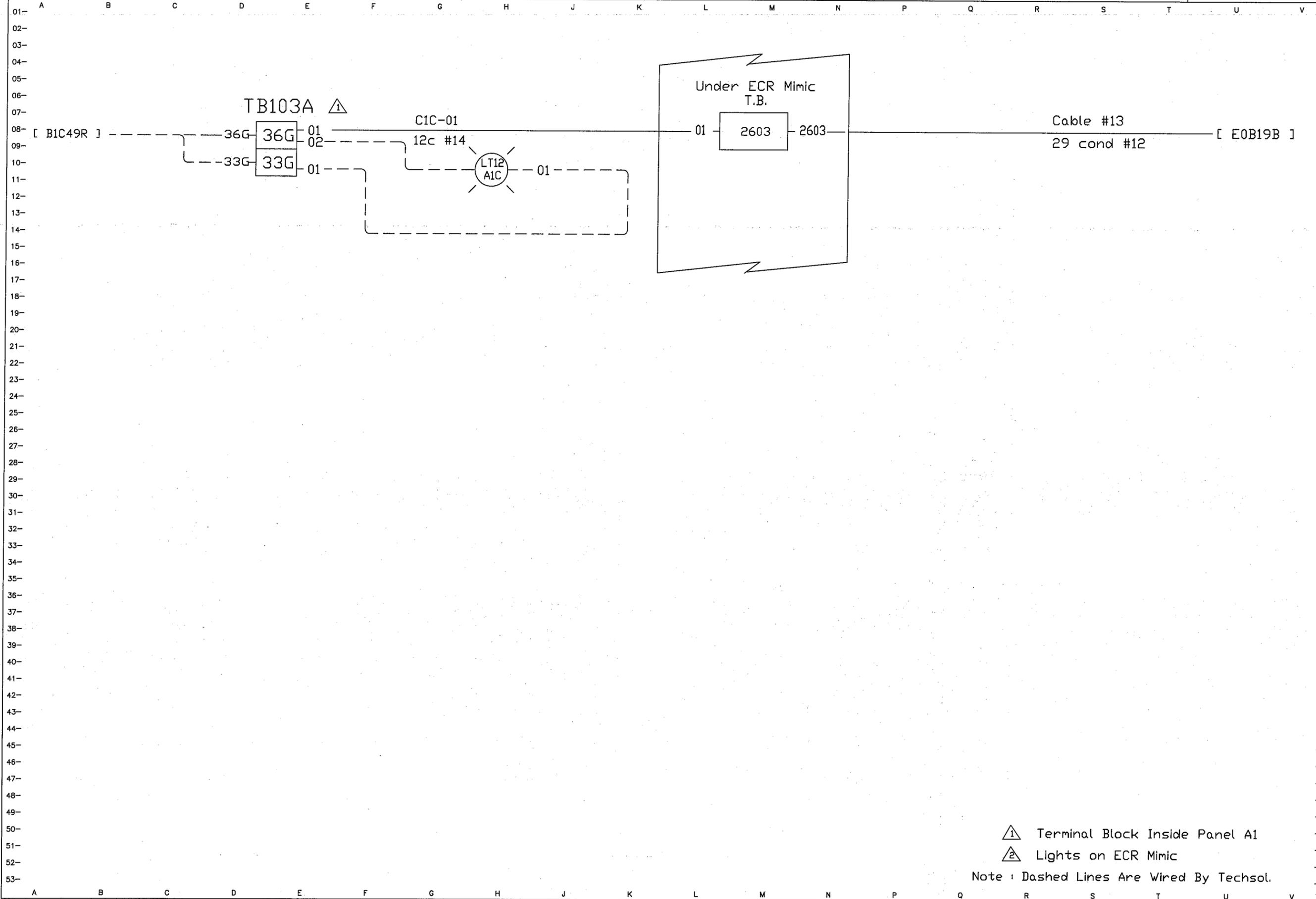
GENERAL ELECTRIC  
Industrial Systems  
Salem, Virginia

TECHSOL Inc.  
400, Mgr. Gouvreau  
Quebec, Que.  
G1K 9J9



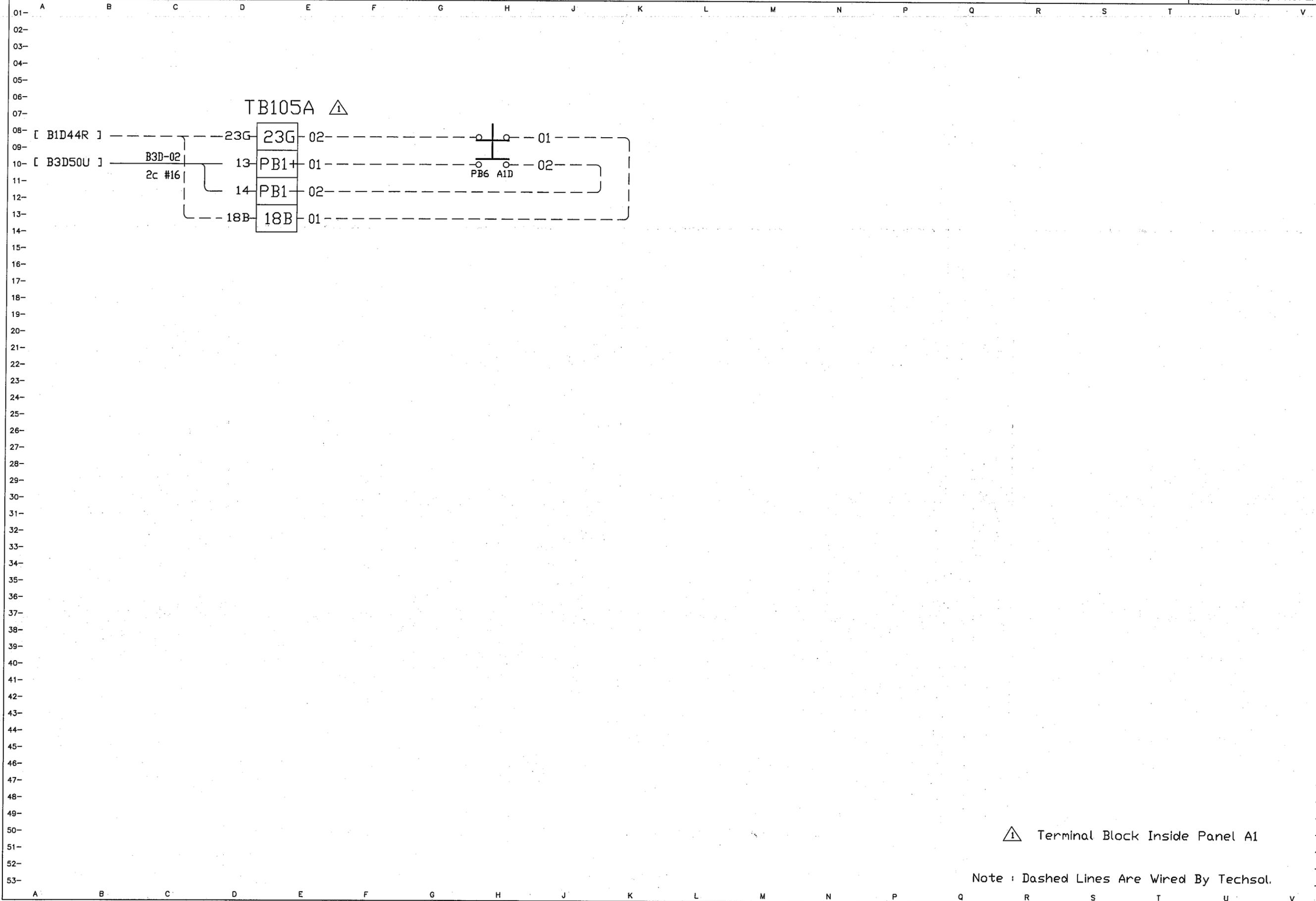
CHKD  
C.M.  
DRAWN  
S.ROYAL  
DATE  
02-10-01

REV.	1	AS FITTED (by Ser)	4	5	6
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⚠ Terminal Block Inside Panel A1  
 ⚡ Lights on ECR Mimic  
 Note : Dashed Lines Are Wired By Techsol.

PRINTS TO	C1C
SH. No.	
ELEMENTARY DIAGRAM	
PROPULSION CONTROL SYSTEM	
P032200-00 CONT. ON SH. C1D	
GENERAL ELECTRIC	
Industrial Systems	
Salem, Virginia	
TECHSOL Inc.	
400, Mgr. Couvreur	
Quebec, Qué.	
G1K 9J8	
TECHSOL	
CHKD	
C.M.	
DATE	02-10-01
DRAWN	
S.ROYAL	
REV.	
1 AS FITTED (by Ser)	
2	
3	
4	
5	
6	



△ Terminal Block Inside Panel A1

Note : Dashed Lines Are Wired By Techsol.

01-	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	-01
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53-																					-53

PRINTS TO  
C1D  
SH. No.

ELEMENTARY DIAGRAM  
PROPULSION CONTROL SYSTEM  
P032200-00 CONT. ON SH. C1F

GENERAL ELECTRIC  
Industrial Systems  
Salem, Virginia

TECHSOL Inc.  
400, Mgr. Couvrecu  
Quebec, Que.  
G1K 9J9

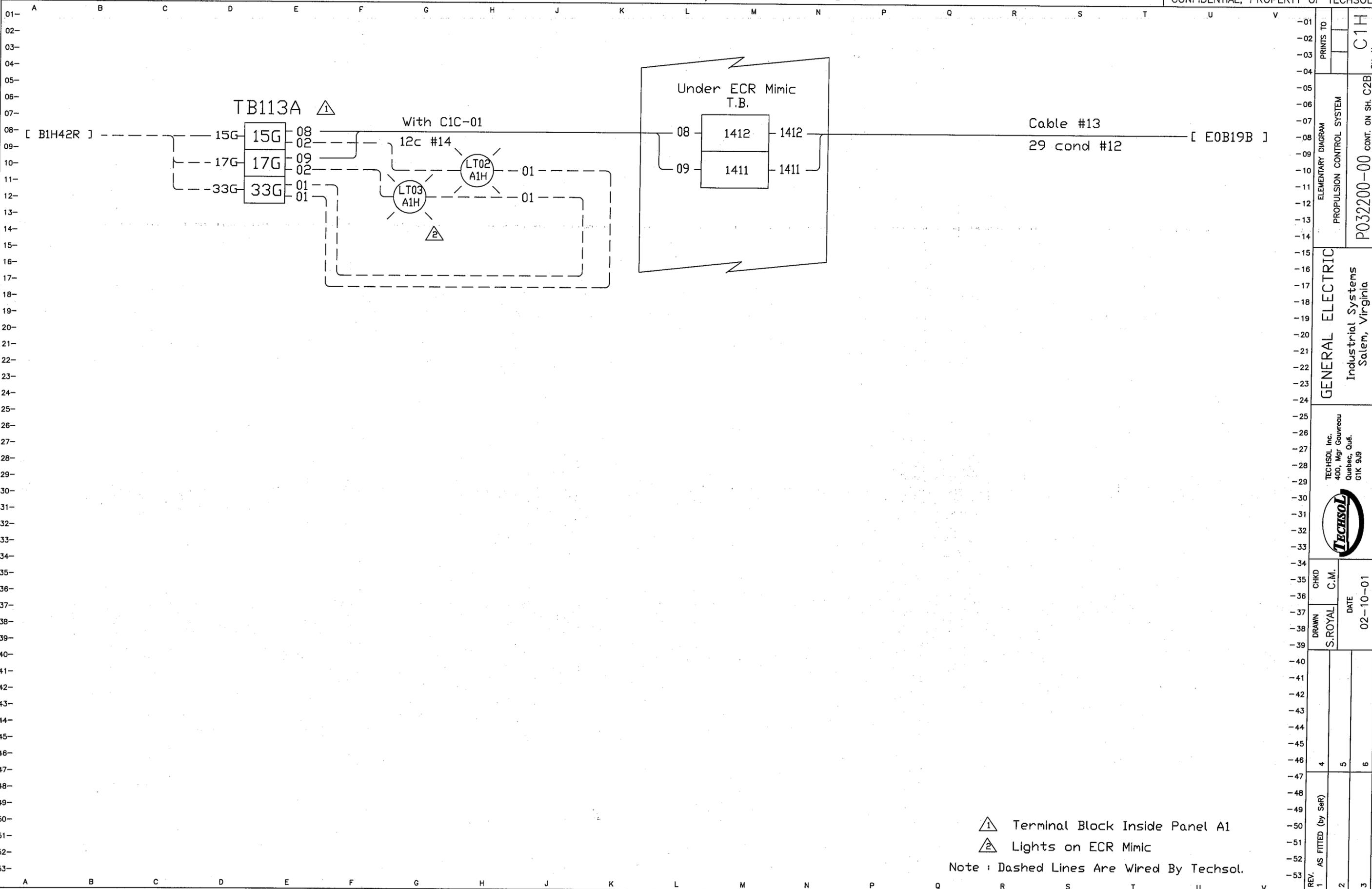


CHKD	C.M.	DATE
S.ROYAL		02-10-01

REV.	AS FITTED (by Set)	4	5	6
1				
2				
3				







△ Terminal Block Inside Panel A1  
 △ Lights on ECR Mimic  
 Note : Dashed Lines Are Wired By Techsol.

PRINTS TO	C1H
SH. No.	
ELEMENTARY DIAGRAM	PROPULSION CONTROL SYSTEM
P032200-00 CONT. ON SH. C2B	
GENERAL ELECTRIC	Industrial Systems Salem, Virginia
TECHSOL Inc. 400, Mgr Gouvreau Quebec, Qué. G1K 9J9	
CHKD	C.M.
DATE	02-10-01
DRAWN	S.ROYAL
REV.	AS FITTED (by SeF)
1	4
2	5
3	6





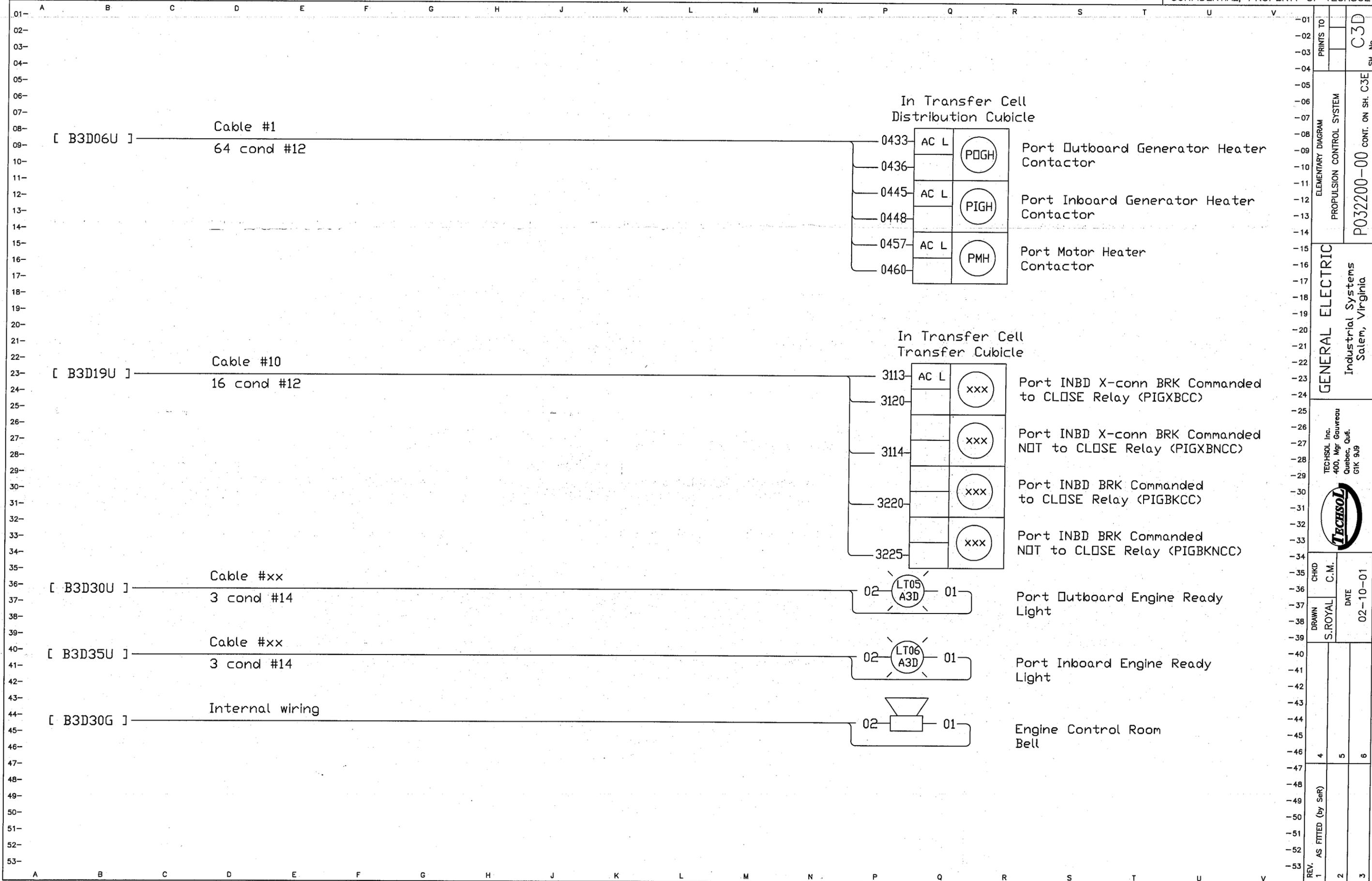






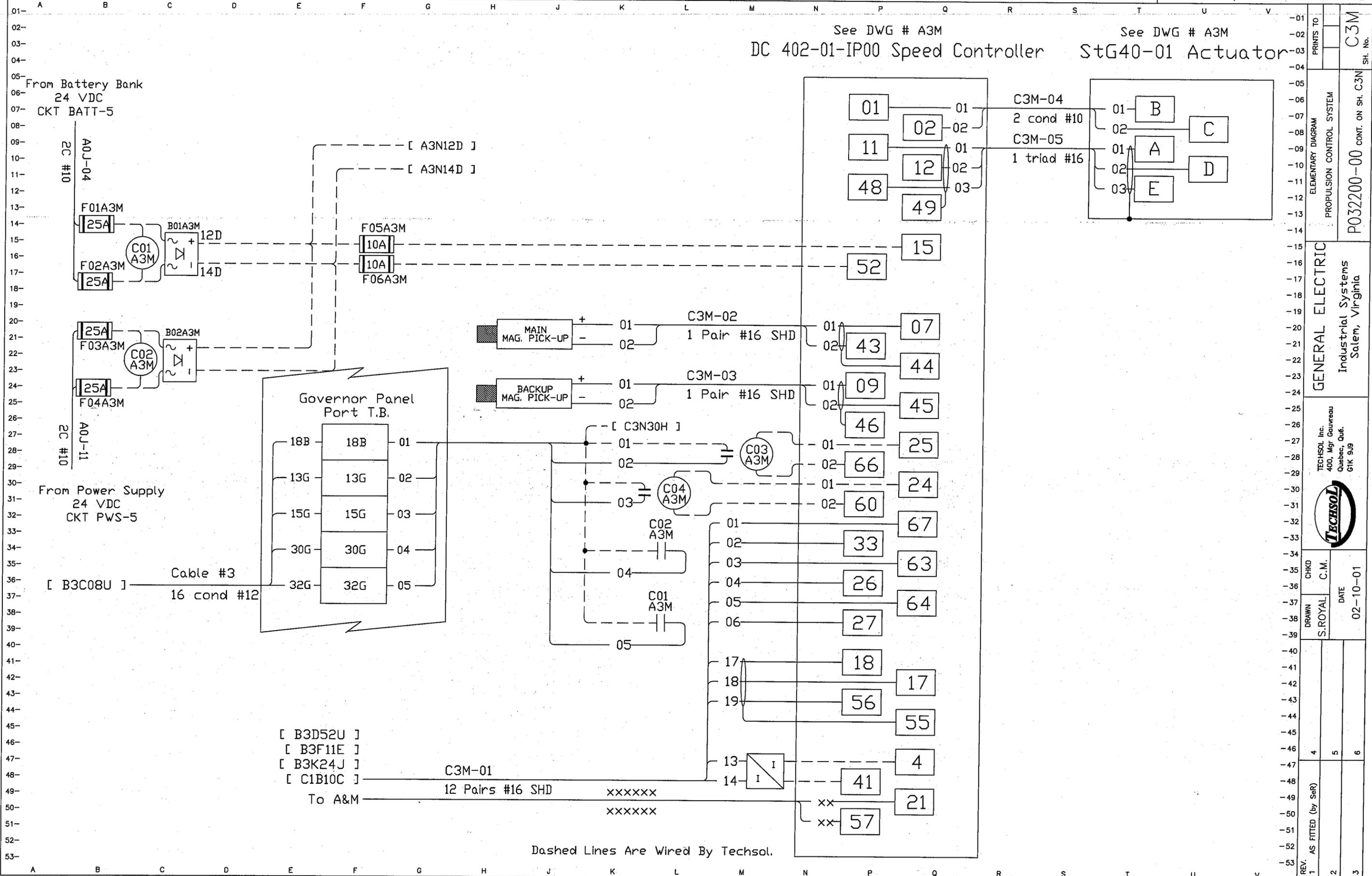








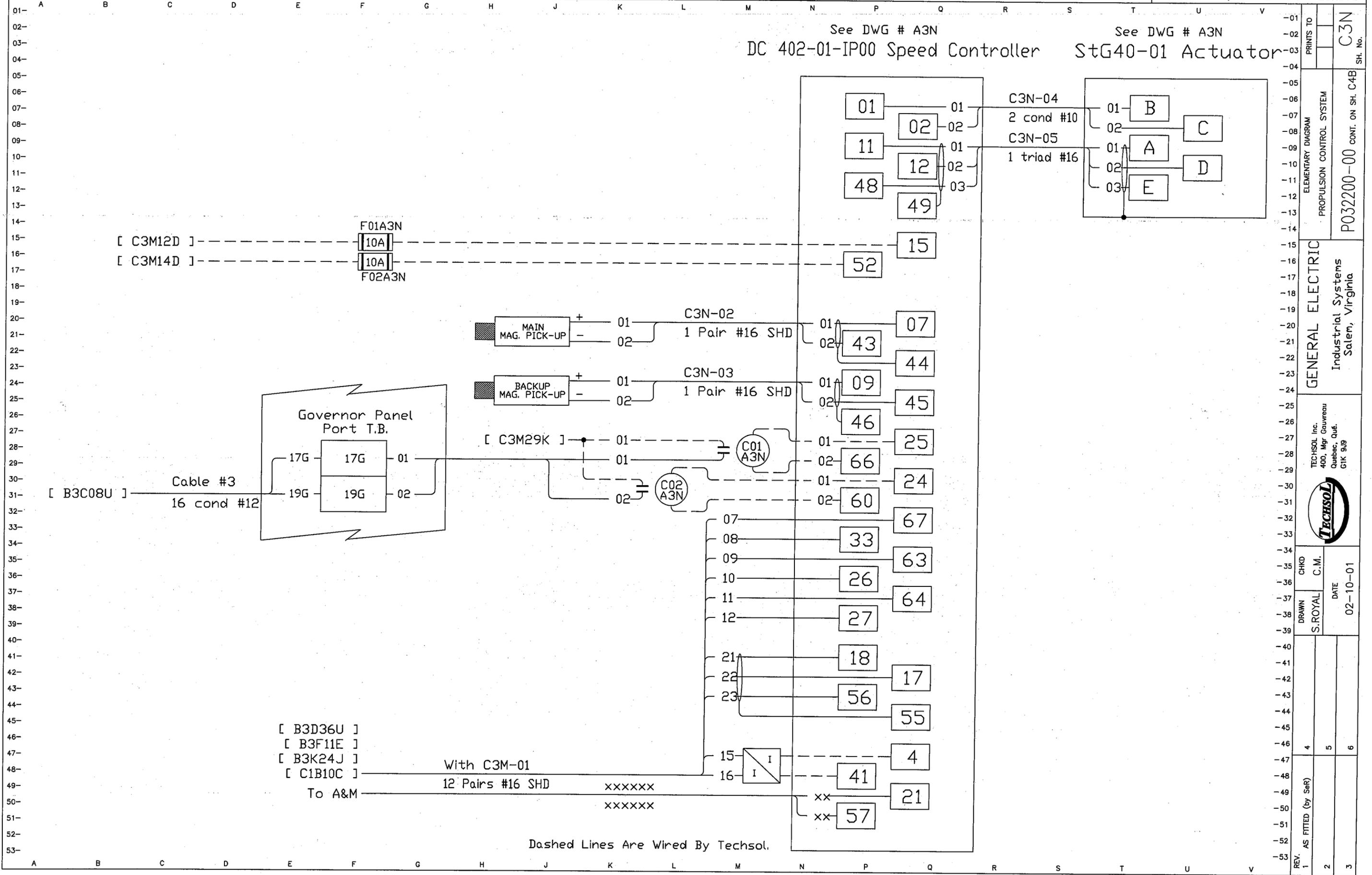
See DWG # A3M  
 DC 402-01-IP00 Speed Controller StG40-01 Actuator



Dashed Lines Are Wired By Techsol.

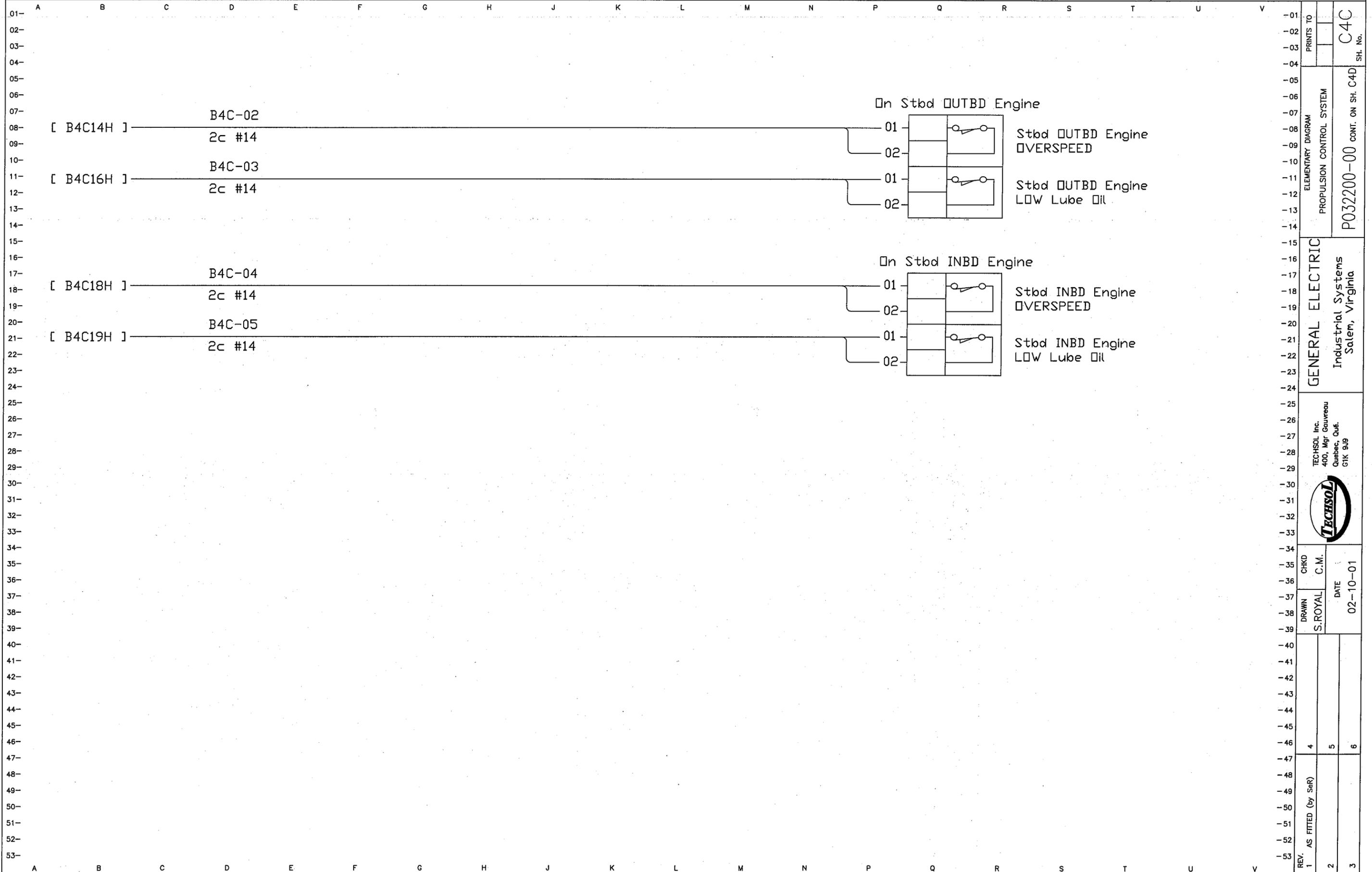
PRINTS TO	C3M
SH. No.	C3M
ELEMENTARY DIAGRAM	PROPULSION CONTROL SYSTEM
GENERAL ELECTRIC	Industrial Systems
Salem, Virginia	
TECHSOL Inc.	400, Mgr Gouveau
Quebec, Que.	
G1K 9J9	
CHKD	C.M.
DATE	02-10-01
REV. 1	AS FITTED (by SeF)
2	
3	

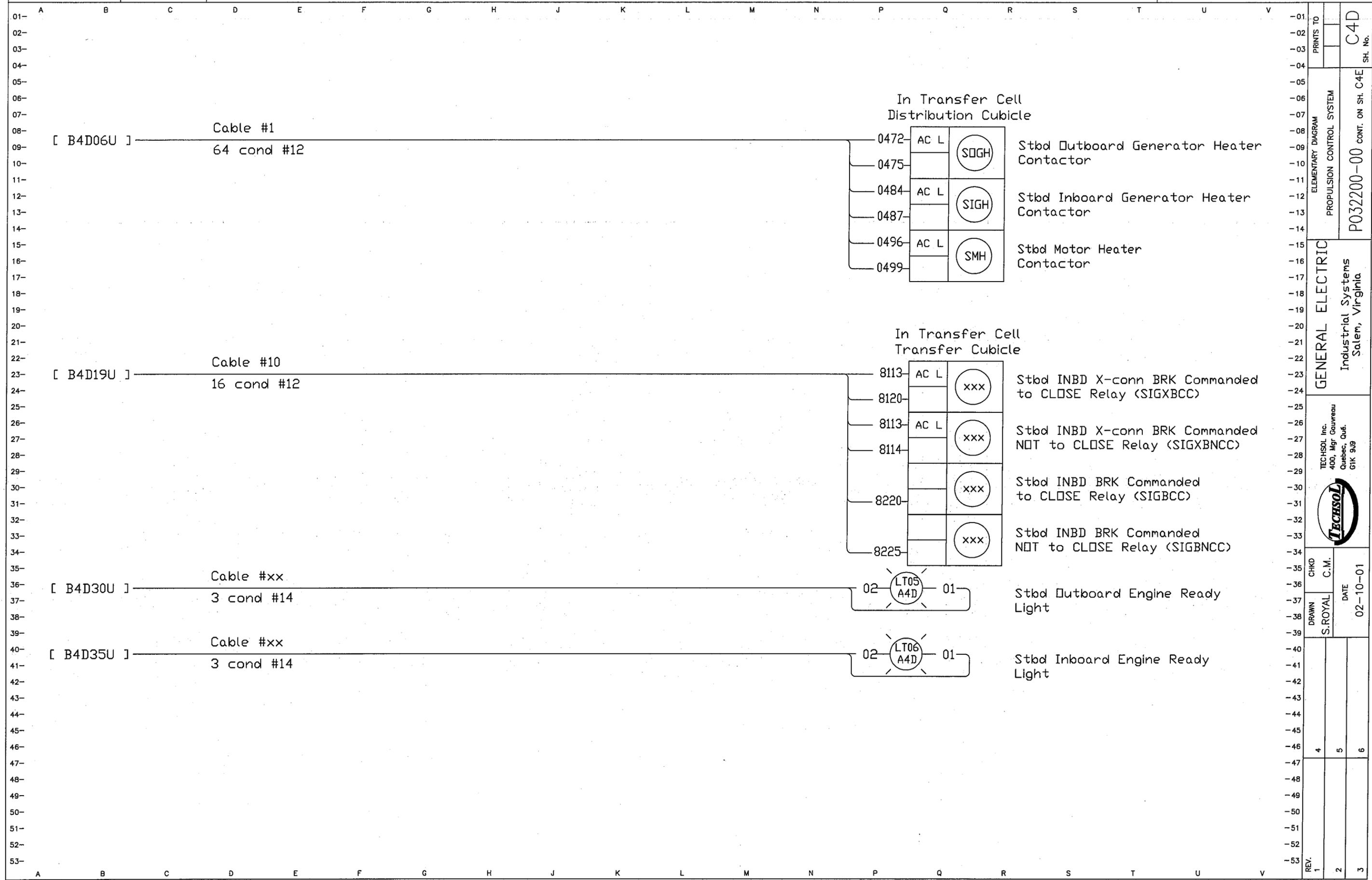
See DWG # A3N  
 DC 402-01-IP00 Speed Controller      StG40-01 Actuator



PRINTS TO	C3N
SH. No.	
ELEMENTARY DIAGRAM	
PROPULSION CONTROL SYSTEM	
P032200-00 CONT. ON SH. C4B	
GENERAL ELECTRIC	
Industrial Systems	
Salem, Virginia	
TECHSOL Inc.	
400, Mgr Gouverneur	
Quebec, Que.	
G1K 9J9	
CHKD	
C.M.	
DATE	02-10-01
DRAWN	
S.ROYAL	
REV.	
1 AS FITTED (by Ser)	4
2	5
3	6







PRINTS TO: C4D SH. No.

ELEMENTARY DIAGRAM PROPULSION CONTROL SYSTEM P032200-00 CONT. ON SH. C4E

GENERAL ELECTRIC Industrial Systems Salem, Virginia

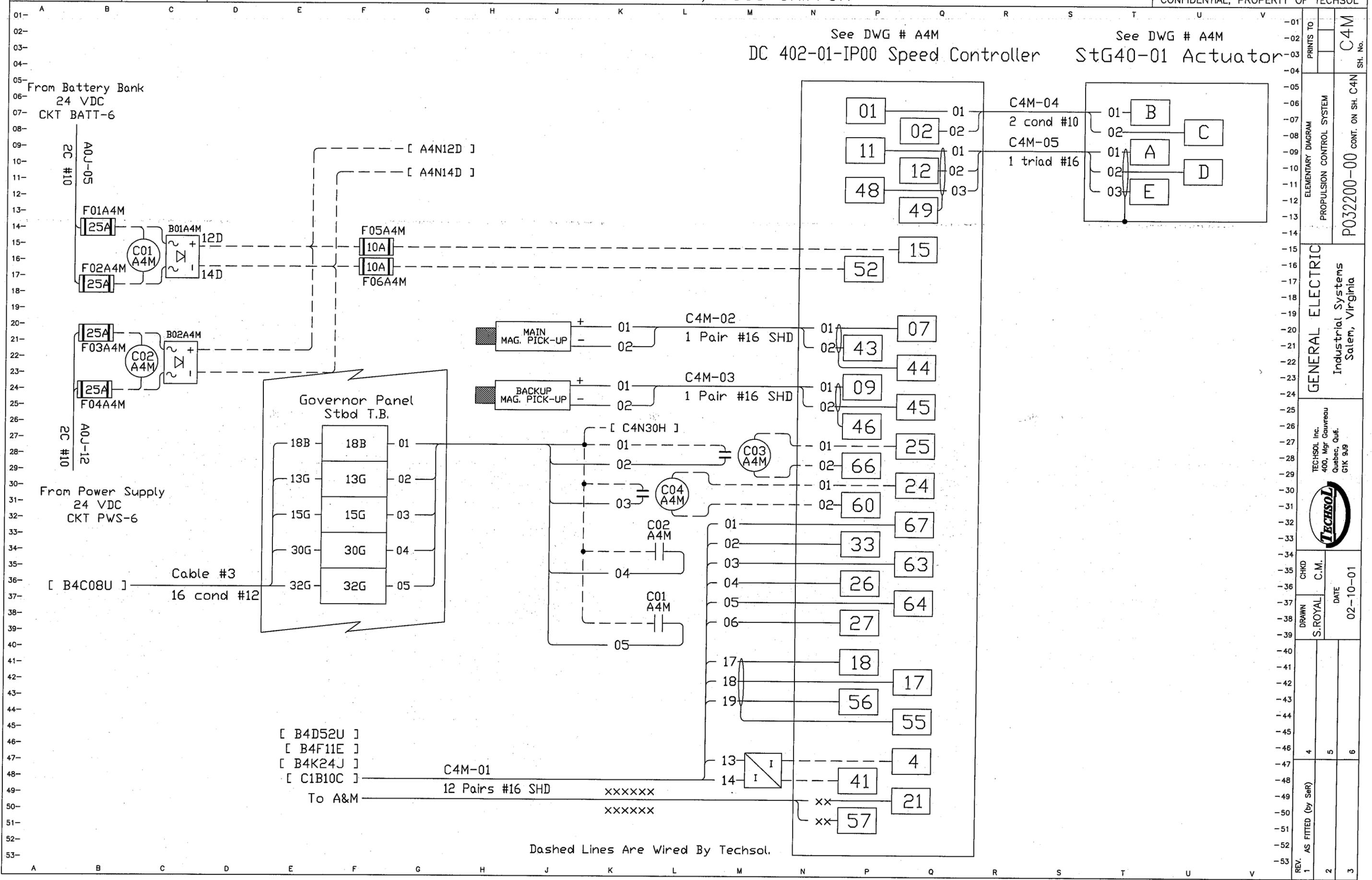
TECHSOL Inc. 400, Mgr Gaurveau Quebec, Qué. G1K 9J9

CHKD	C.M.	DATE
		02-10-01

REV.	1	2	3
DRAWN	S.ROYAL		
CHKD			
	4	5	6



See DWG # A4M  
 DC 402-01-IP00 Speed Controller StG40-01 Actuator



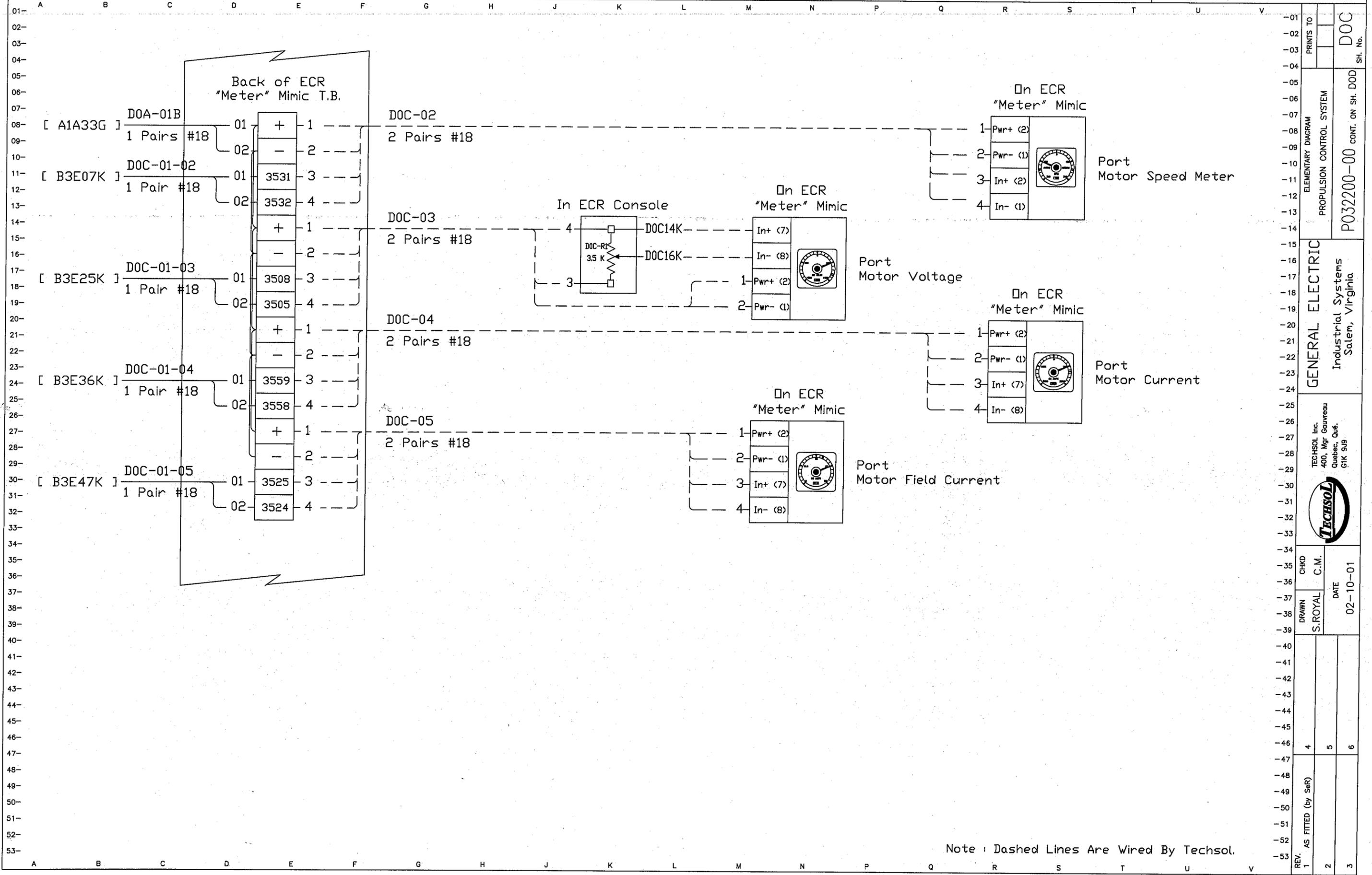
PRINTS TO	C4M
ELEMENTARY DIAGRAM	
PROPULSION CONTROL SYSTEM	
SH. No.	P032200-00 CONT. ON SH. C4N
GENERAL ELECTRIC	Industrial Systems Salem, Virginia
TECHSOL Inc.	400, Mgr Gaurveou Quebec, Que. G1K 9J9
CHKD	C.M.
DATE	02-10-01
REV.	1 AS FITTED (by Ser)
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Dashed Lines Are Wired By Techsol.









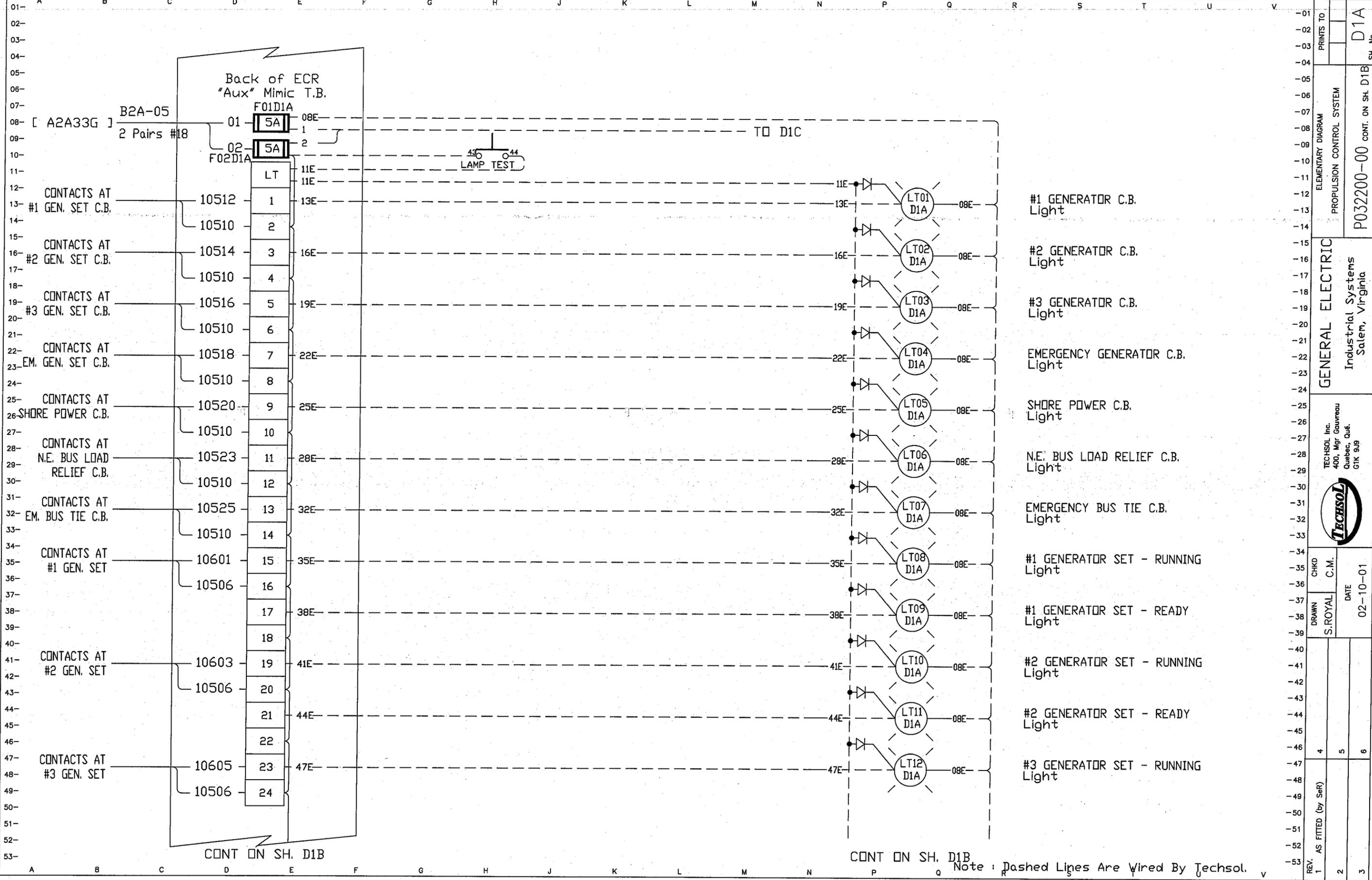
Note : Dashed Lines Are Wired By Techsol.

PRINTS TO			
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P032200-00 CONT. ON SH. DOD			
ELEMENTARY DIAGRAM			
PROPULSION CONTROL SYSTEM			
GENERAL ELECTRIC			
Industrial Systems Salem, Virginia			
TECHSOL inc. 400, Mgr Gauthreau Quebec, Que. G1K 5J9			
CHKO	C.M.	DATE	
S. ROYAL		02-10-01	
REV.	AS FITTED (by SeR)		
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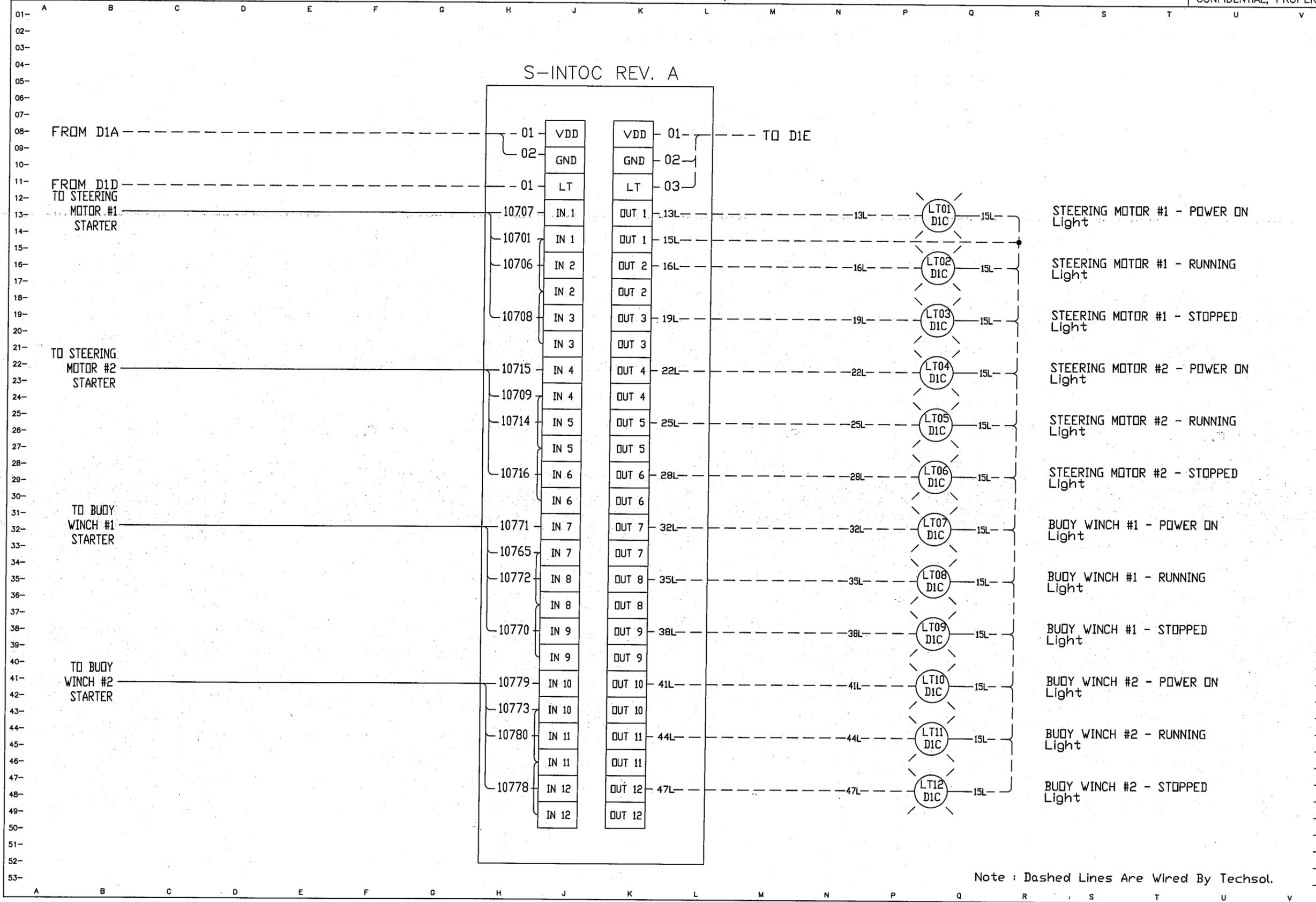




PRINTS TO	D1A
SH. No.	D1A
ELEMENTARY DIAGRAM	PROPULSION CONTROL SYSTEM
GENERAL ELECTRIC	Industrial Systems Salen, Virginia
TECHSOL Inc.	400, Mgr Gouveau Quebec, Qué. G1K 9J9
CHKD	C.M.
DATE	02-10-01
REV. 1	AS FITTED (by Set)
REV. 2	
REV. 3	



PROPULSION CONTROL SYSTEM, CCGS GRIFFON



Note : Dashed Lines Are Wired By Techsol.

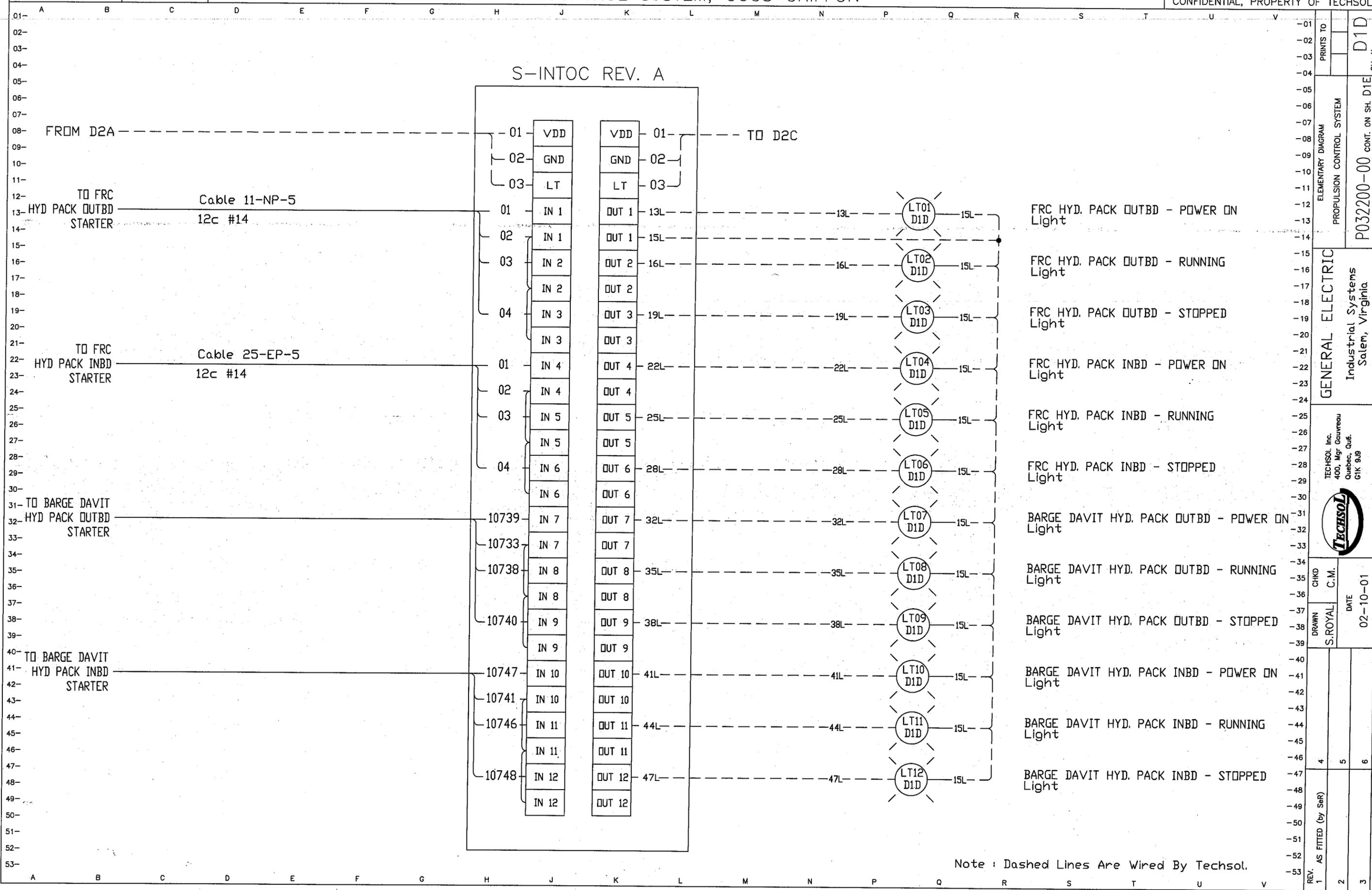
-01	PRINTS TO	D1C
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ELEMENTARY DIAGRAM  
PROPULSION CONTROL SYSTEM  
P032200-00 CONT. ON SH. D1D

GENERAL ELECTRIC  
Industrial Systems  
Salem, Virginia

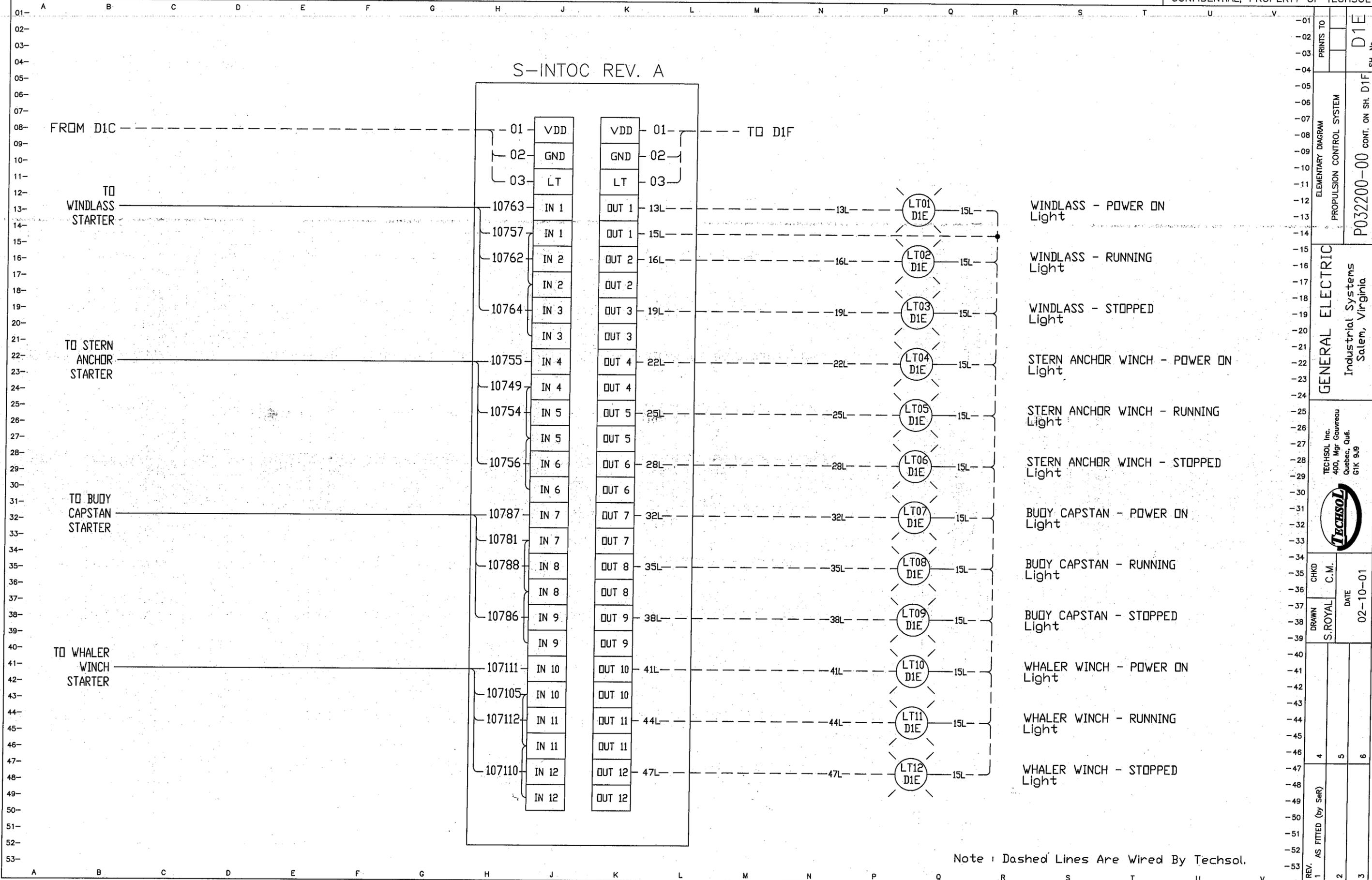
TECHSOL Inc.  
400, Mgr Gaurveau  
Quebec, Qué.  
G1K 9J9

CHKD	C.M.	DATE
		02-10-01
DRAWN		
S.ROYAL		
REV.	AS FITTED (by Ser)	
1	2	3

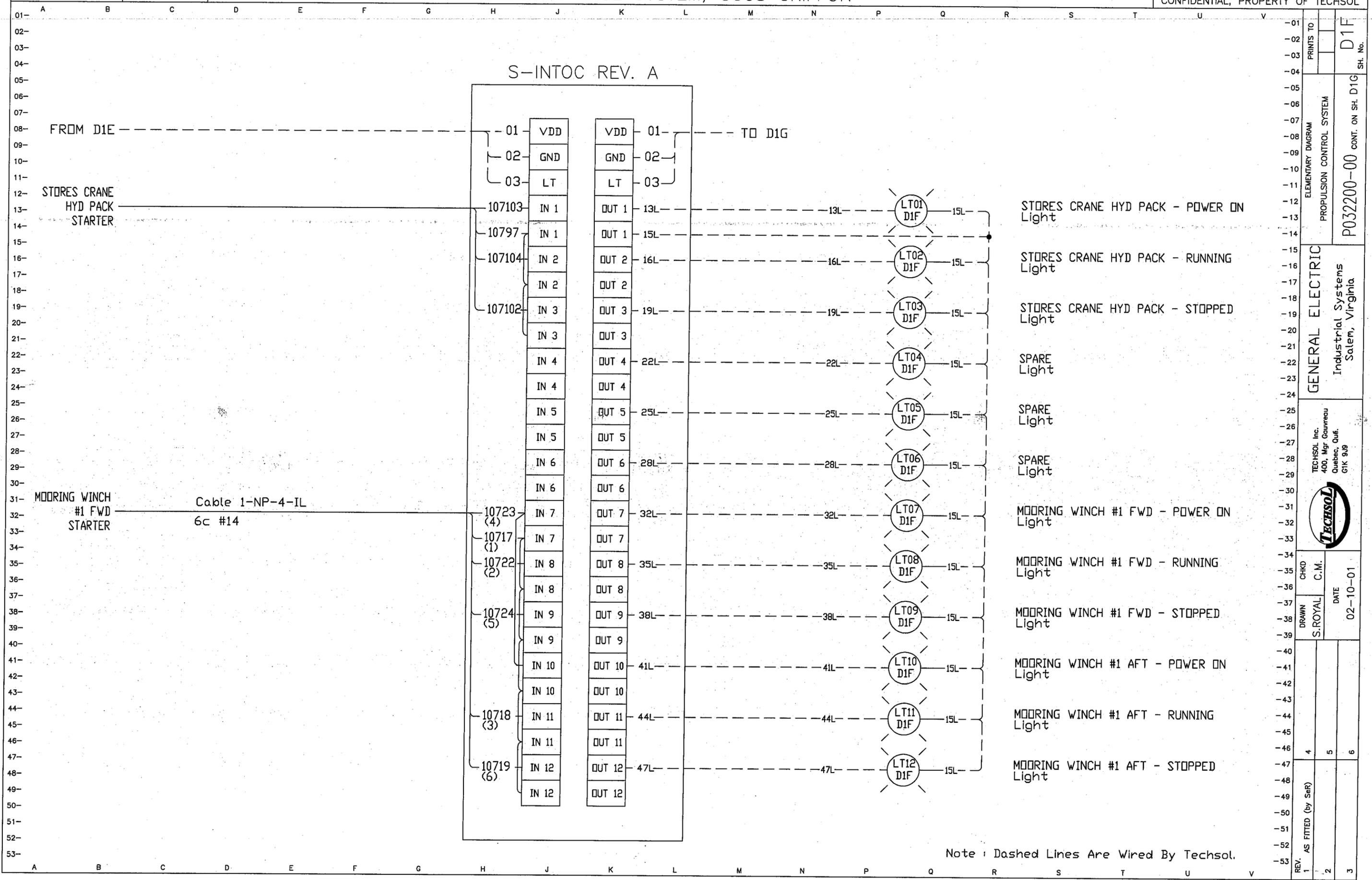


Note : Dashed Lines Are Wired By Techsol.

PRINTS TO	D1D
SH. No.	D1D
ELEMENTARY DIAGRAM	PROPULSION CONTROL SYSTEM
P032200-00 CONT. ON SH. D1E	
GENERAL ELECTRIC Industrial Systems Salern, Virginia	
TECHSOL Inc. 400, Mgr Gouvreau Quebec, Que. G1K 9J9	
CHKD	C.M.
DATE	02-10-01
DRAWN	S.ROYAL
REV.	AS FITTED (by Ser)
1	4
2	5
3	6



REV. 1	AS FITTED (by Set)	DRAWN S. ROYAL	CHKD C.M.	DATE 02-10-01				
				DATE 02-10-01				
				ELEMENTARY DIAGRAM PROPULSION CONTROL SYSTEM		PRINTS TO D1E SH. No.		
				GENERAL ELECTRIC Industrial Systems Salern, Virginia		P032200-00 CONT. ON SH. D1F		
				TECHSOL Inc. 400, Mgr Gouveau Quebec, Que. G1K 9J9				



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ELEMENTARY DIAGRAM  
 PROPULSION CONTROL SYSTEM  
 P032200-00 CONT. ON SH. D1G

GENERAL ELECTRIC  
 Industrial Systems  
 Salem, Virginia

TECHSOL Inc.  
 400, Mgr. Gauthreau  
 Quebec, Que.  
 G1K 9J9

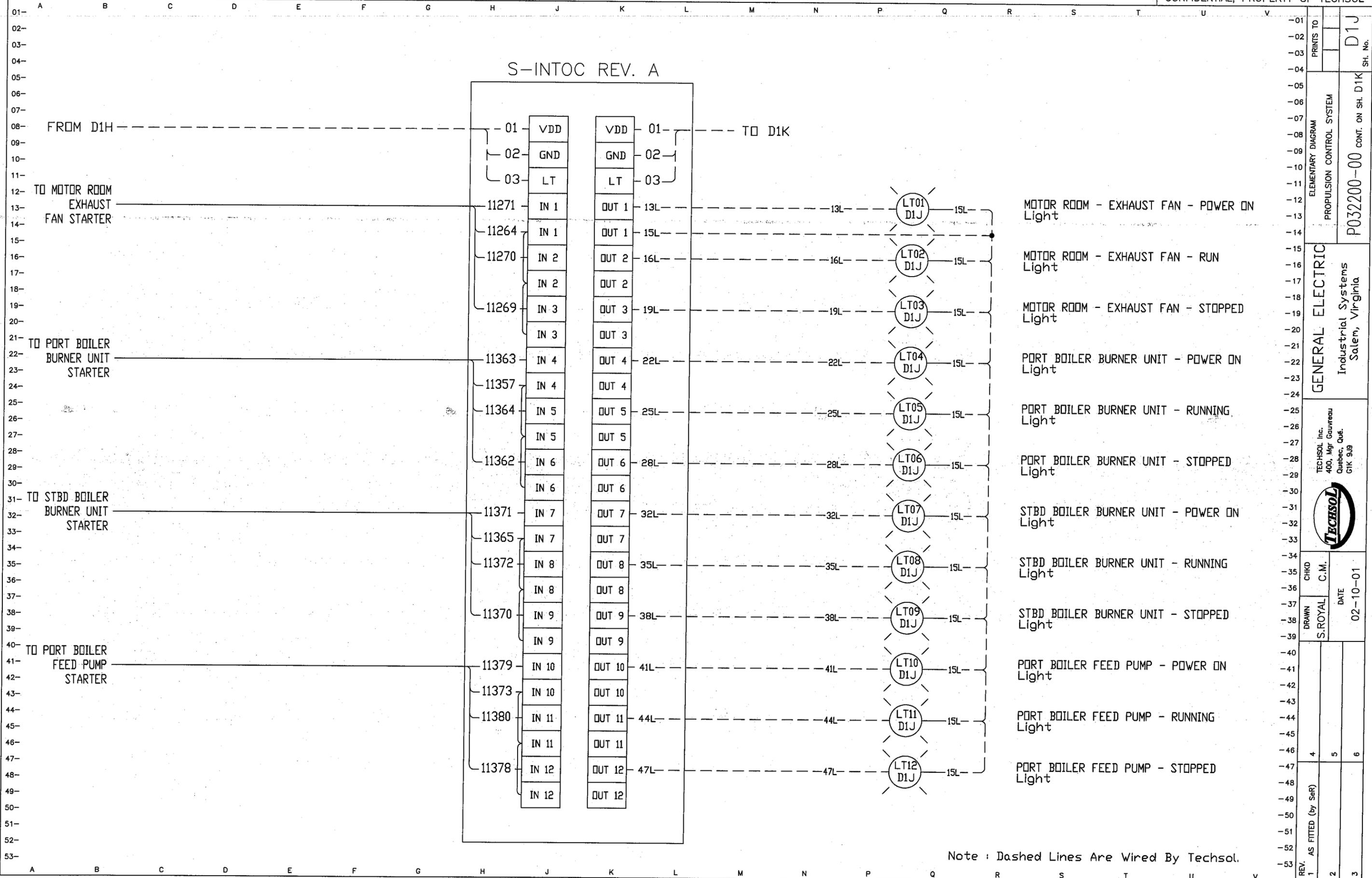
CHKD C.M.  
 DRAWN S.ROYAL  
 DATE 02-10-01

REV. 1 AS FITTED (by SeR)  
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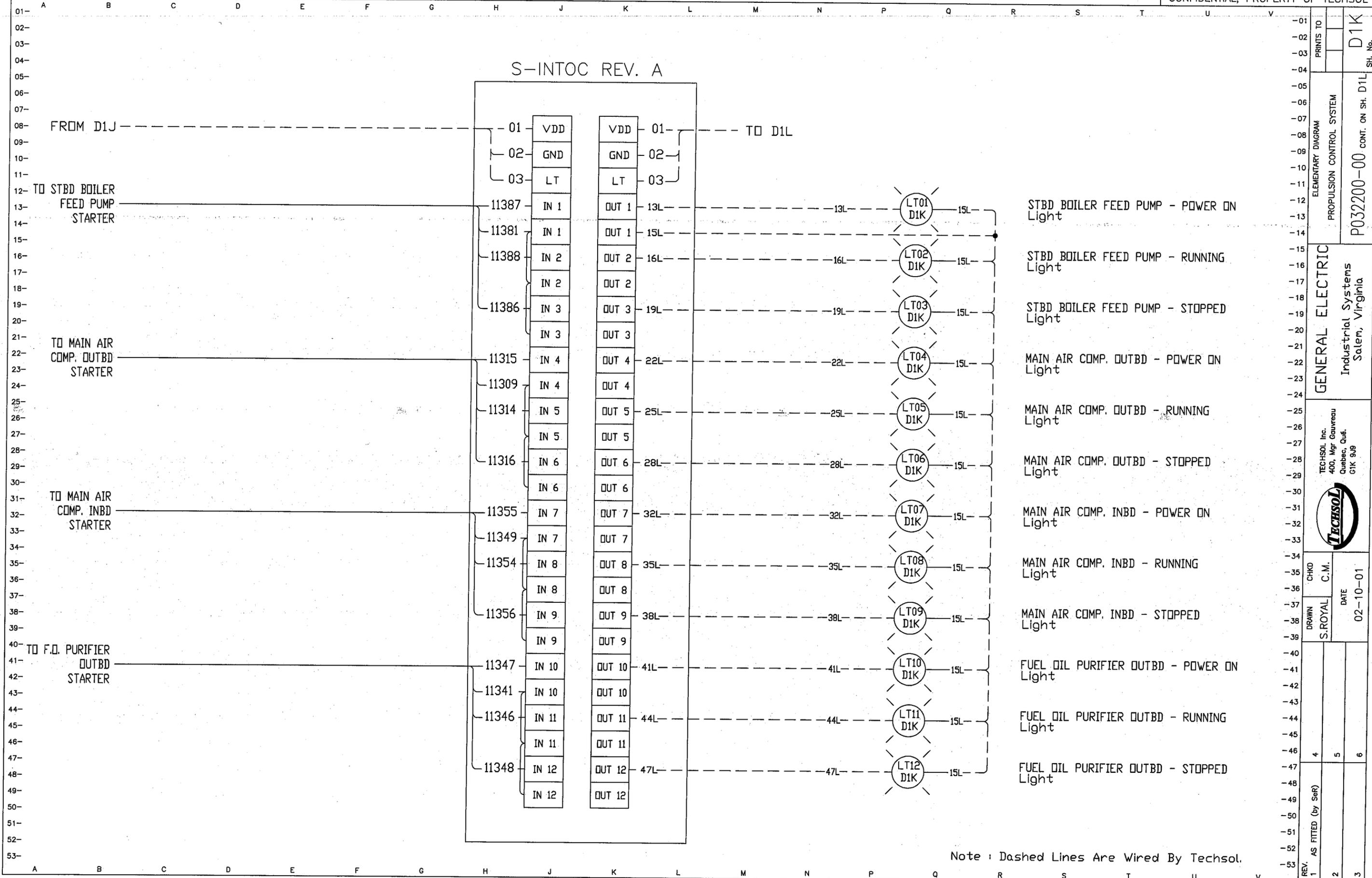
SH. No. D1F





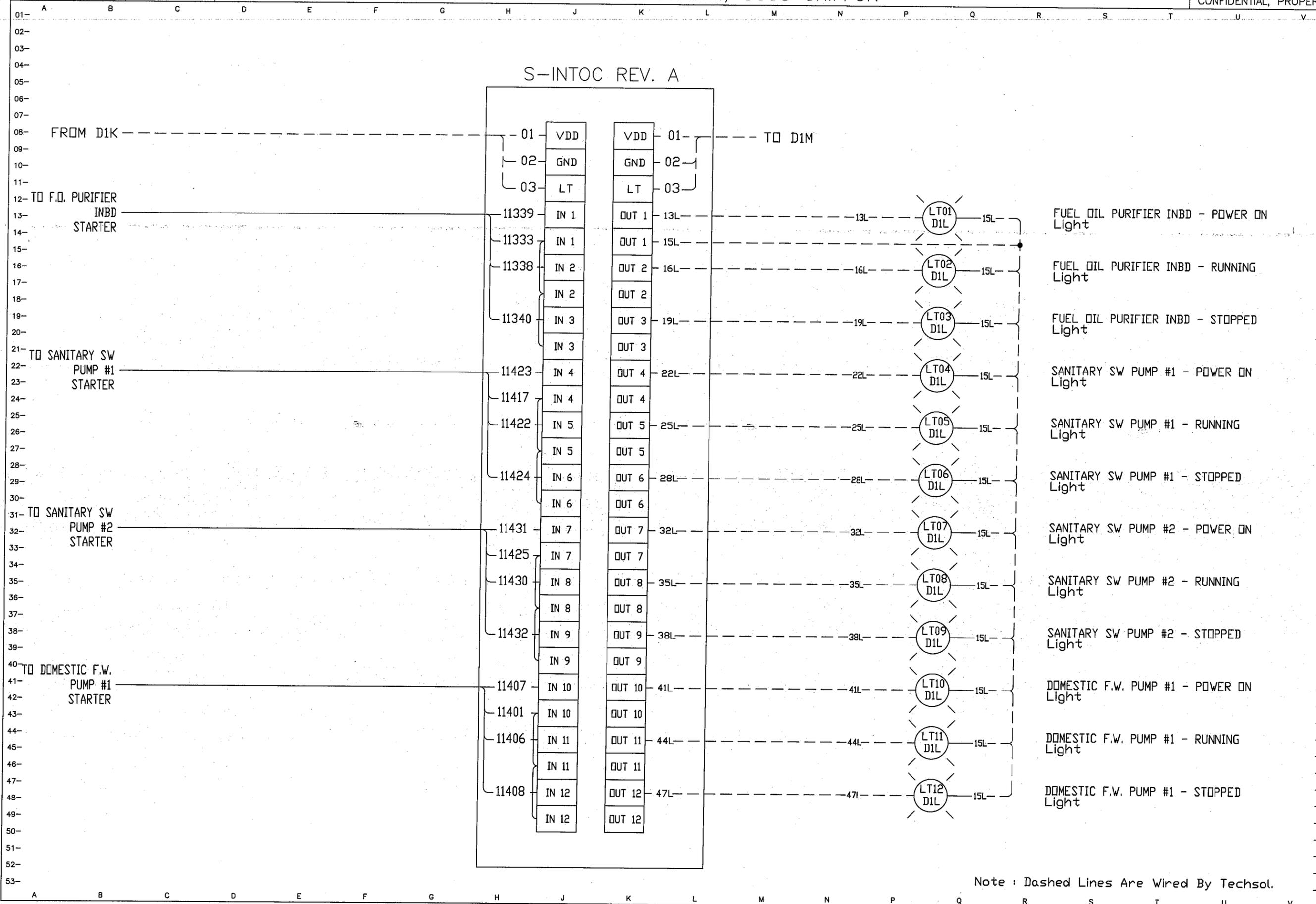


REV. 1	DRAWN S. ROYAL	CHKD C.M.	DATE 02-10-01	PRINTS TO	D1J	SH. No.
2	3	4	5	6	7	8
AS FITTED (by SeR)				ELEMENTARY DIAGRAM		
PROPULSION CONTROL SYSTEM				P032200-00 CONT. ON SH. D1K		
GENERAL ELECTRIC				Industrial Systems Salem, Virginia		
TECHSOL Inc. 400, Mgr Gauvreau Quebec, Qué. G1K 9J9						



Note : Dashed Lines Are Wired By Techsol.

REV.	1	AS FITTED (by Self)	2	3	4	5	6
DRAWN	S. ROYAL	CHKD	C.M.	DATE	02-10-01		
				TECHSOL Inc. 400, Mgr. Gauvreau Quebec, Que. G1K 9J9			
				<b>GENERAL ELECTRIC</b> Industrial Systems Salern, Virginia			
				ELEMENTARY DIAGRAM PROPULSION CONTROL SYSTEM			
				PRINTS TO D1K SH. No.			
				P032200-00 CONT. ON SH. D1L			



Note : Dashed Lines Are Wired By Techsol.

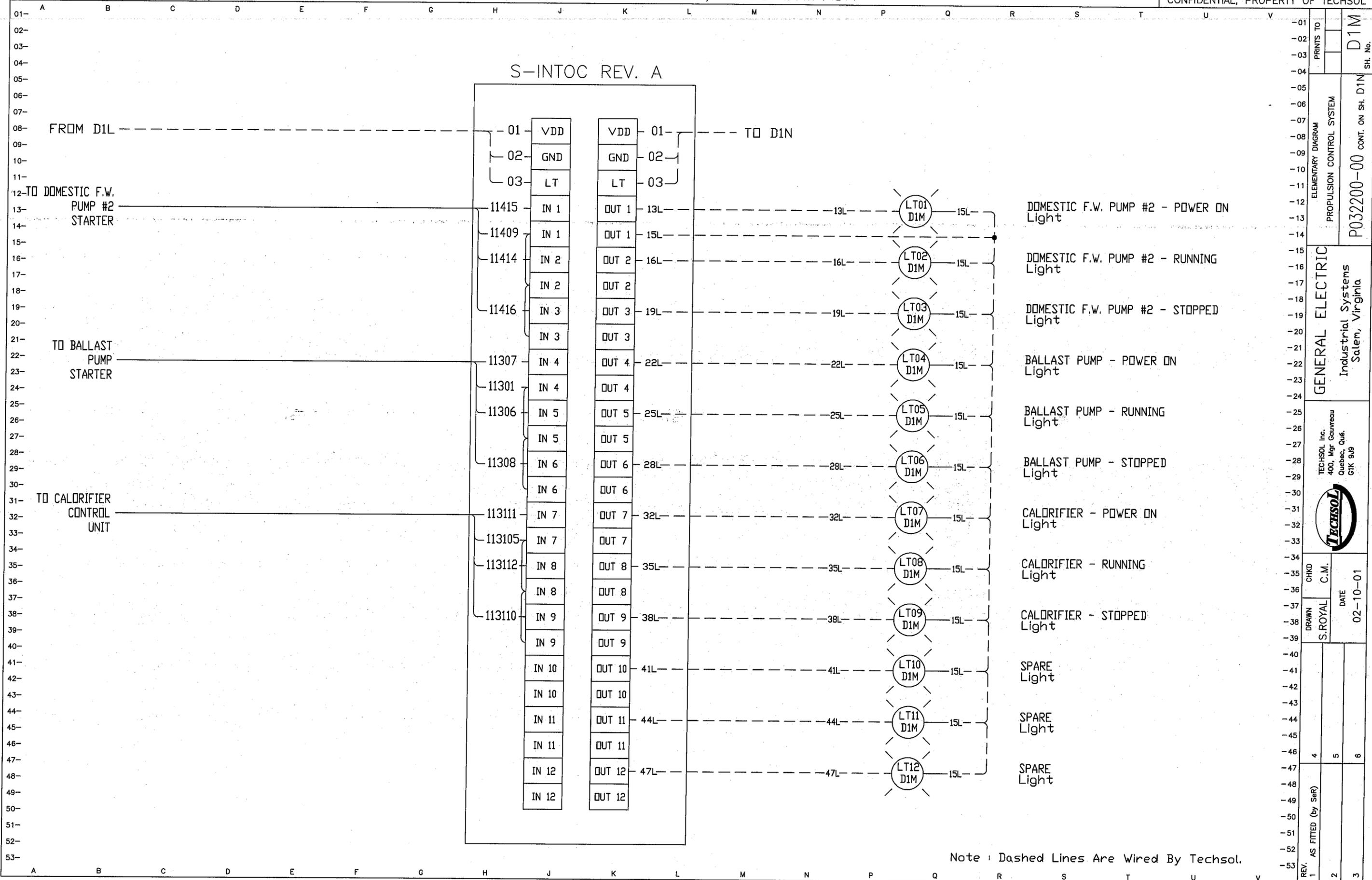
-01	PRINTS TO	D1L	SH. No.
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-52			
-53			

**GENERAL ELECTRIC**  
Industrial Systems  
Salern, Virginia

TECHSOL Inc.  
400, Mgr Gaurreau  
Quebec, Que.  
G1K 9J9

**TECHSOL**

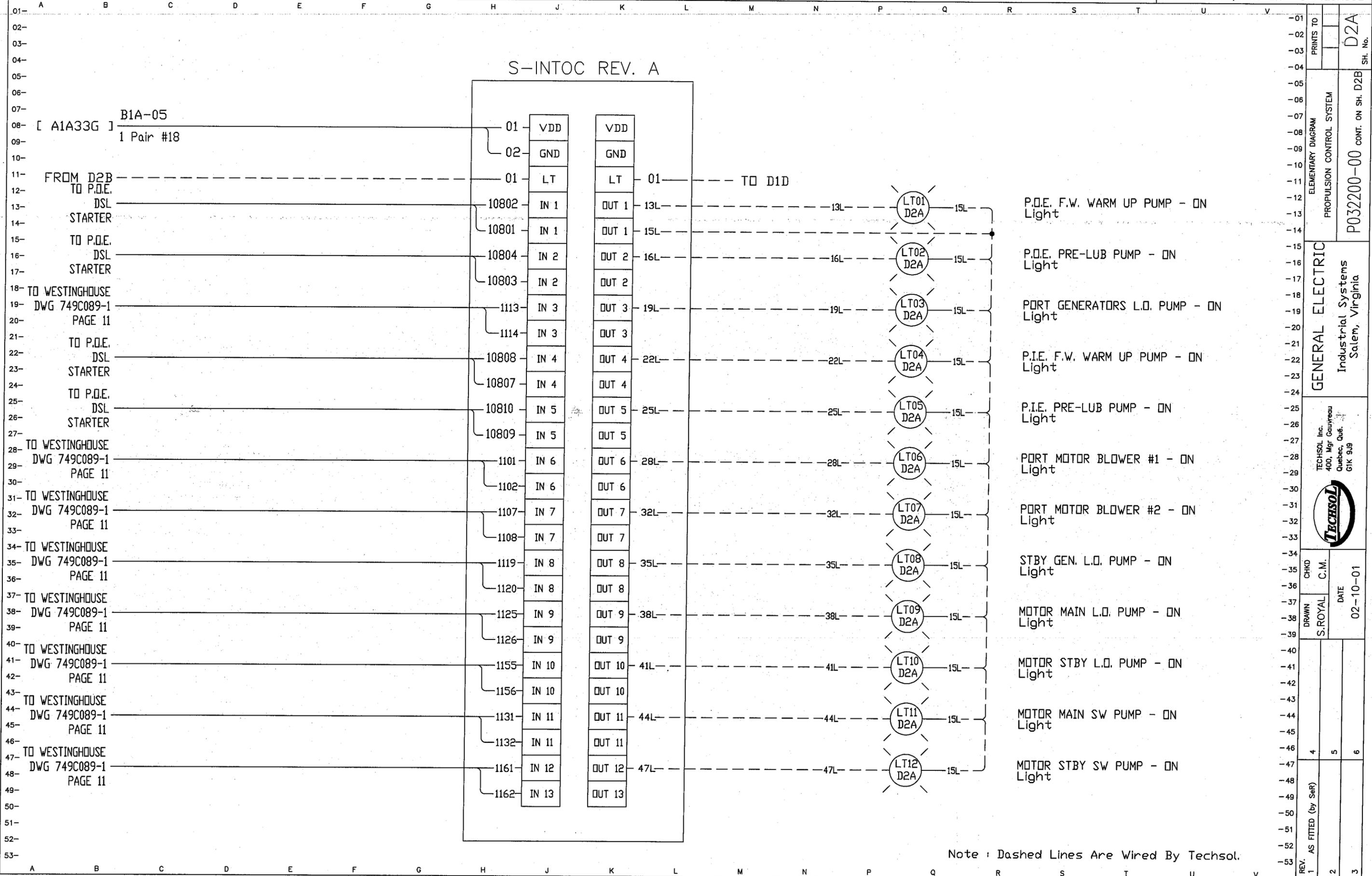
CHKD	C.M.	DATE
S. ROYAL		02-10-01



Note : Dashed Lines Are Wired By Techsol.

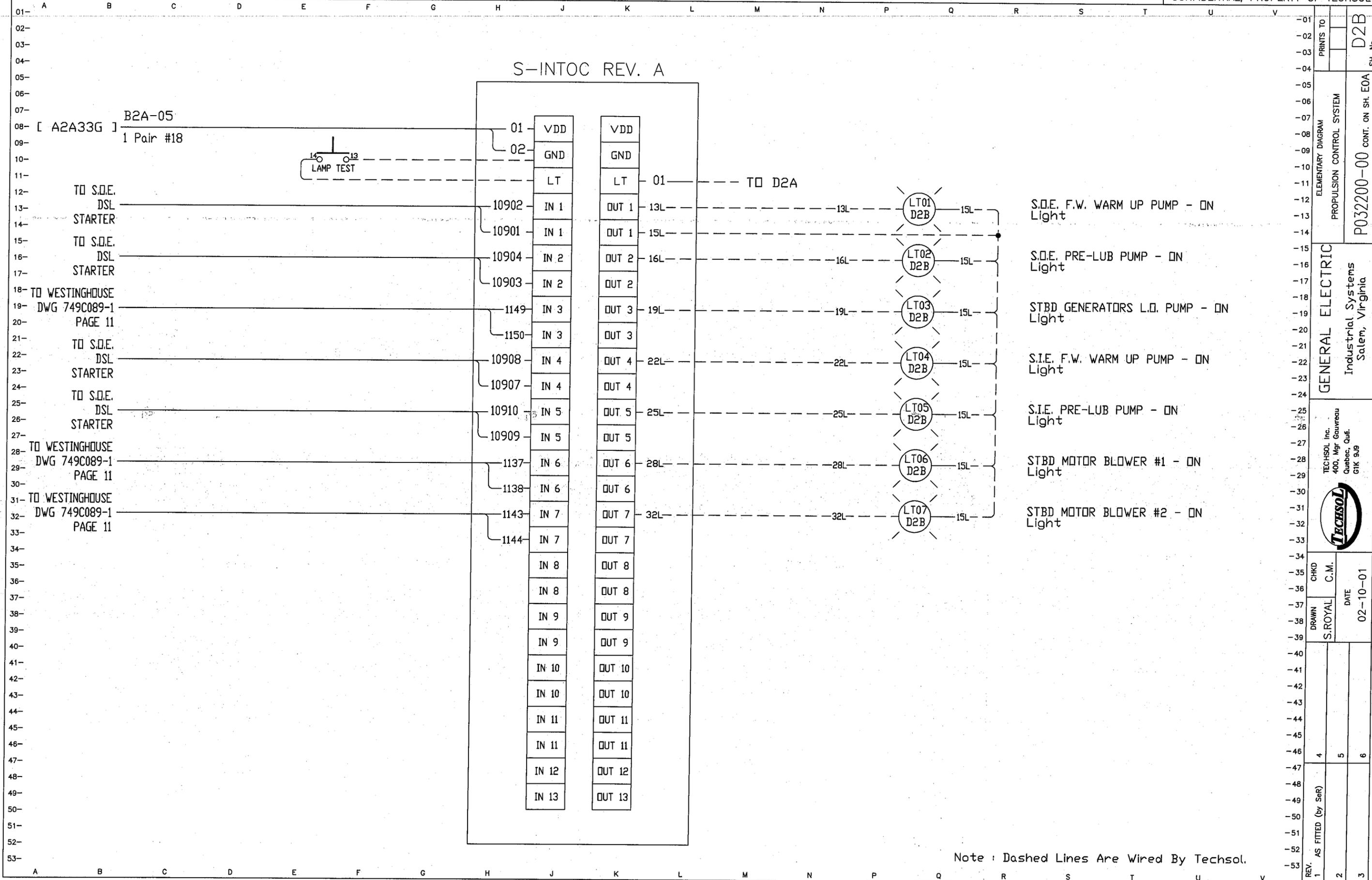
REV.	1	AS FITTED (by Set)	2	3
DRAWN	S. ROYAL	DATE	02-10-01	
CHKD	C.M.			
 TECHSOL Inc. 400, Mgr Courveau Quebec, Que. G1K 9J9				
GENERAL ELECTRIC		Industrial Systems Salem, Virginia		
ELEMENTARY DIAGRAM		PROPULSION CONTROL SYSTEM		
PRINTS TO		D1M		
P032200-00		CONT. ON SH. D1N		





Note : Dashed Lines Are Wired By Techsol.

01-	02-	03-	04-	05-	06-	07-	08-	09-	10-	11-	12-	13-	14-	15-	16-	17-	18-	19-	20-	21-	22-	23-	24-	25-	26-	27-	28-	29-	30-	31-	32-	33-	34-	35-	36-	37-	38-	39-	40-	41-	42-	43-	44-	45-	46-	47-	48-	49-	50-	51-	52-	53-
PRINTS TO		D2A		SH. No.		D2A		SH. No.		ELEMENTARY DIAGRAM		PROPULSION CONTROL SYSTEM		P032200-00		CONT. ON SH. D2B		GENERAL ELECTRIC		Industrial Systems		Salem, Virginia		TECHSOL Inc.		400, Mgr Gouveau		Quebec, Que.		G1K 9J9		CHKO		C.M.		DATE		02-10-01		DRAWN		S.ROYAL										



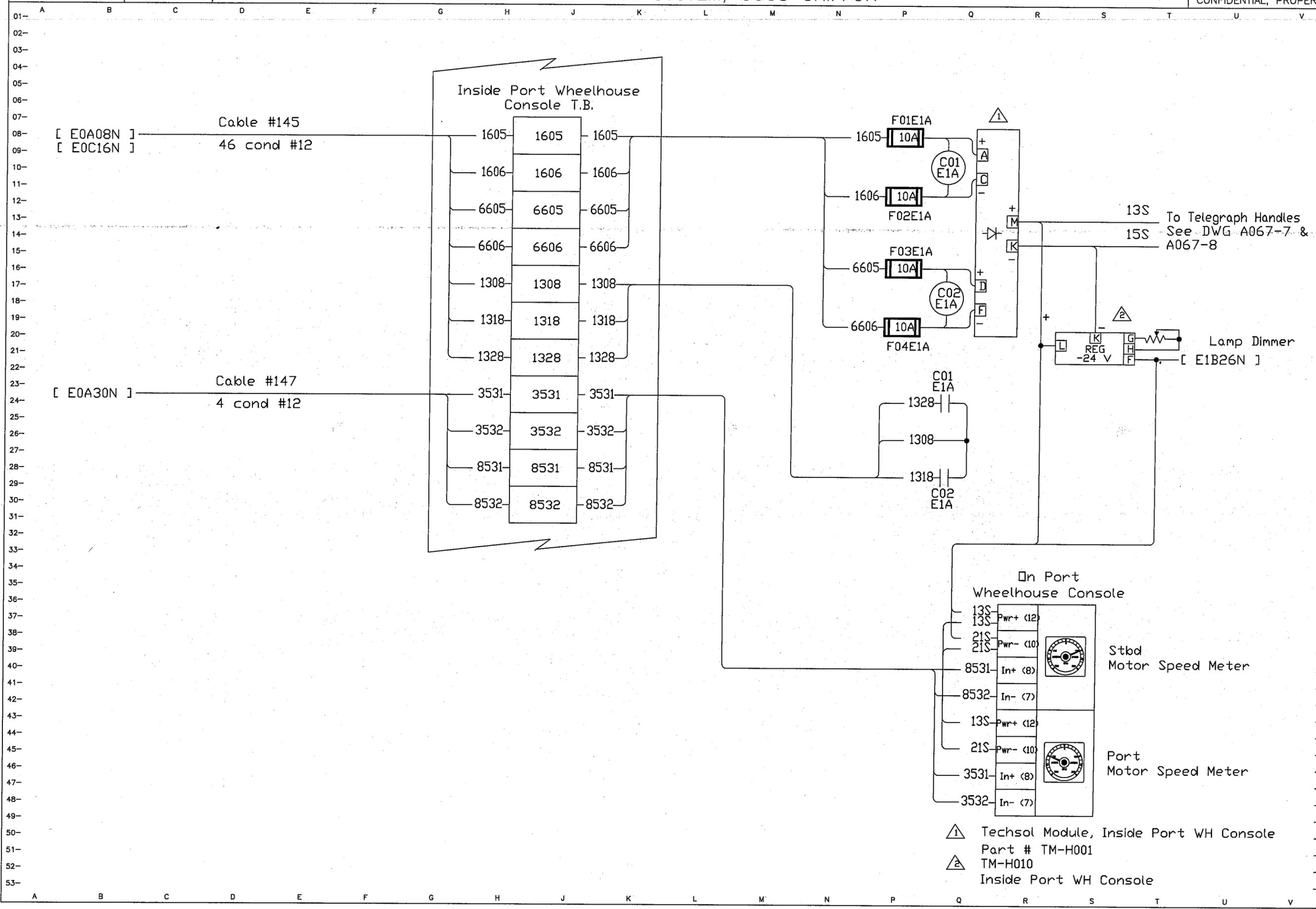
Note : Dashed Lines Are Wired By Techsol.

PRINTS TO		D2B	SH. No.
ELEMENTARY DIAGRAM	PROPULSION CONTROL SYSTEM	P032200-00 CONT. ON SH. EOA	
<b>GENERAL ELECTRIC</b>			
Industrial Systems Salem, Virginia			
TECHSOL Inc. 400, Mgr Gaurreau Quebec, Que. G1K 9J9			
CHKD	C.M.	DATE	
DRAWN	S. ROYAL	4	02-10-01
REV.	AS FITTED (by Ser)	4	5
1		5	6









⚠ Techsol Module, Inside Port WH Console  
 Part # TM-H001  
 ⚡ TM-H010  
 Inside Port WH Console

PRINTS TO	E1A	
ELEMENTARY DIAGRAM	PROPULSION CONTROL SYSTEM	
	P032200-00 CONT. ON SH. E1B	
GENERAL ELECTRIC		
Industrial Systems Salem, Virginia		
TECHSOL Inc. 400, Mgr Gaurneau Quebec, Que. G1K 9J9		
CHKD	C.M.	DATE
DRAWN	S.ROYAL	02-10-01
REV.	AS FITTED (by Ser)	
1		
2		
3		





