

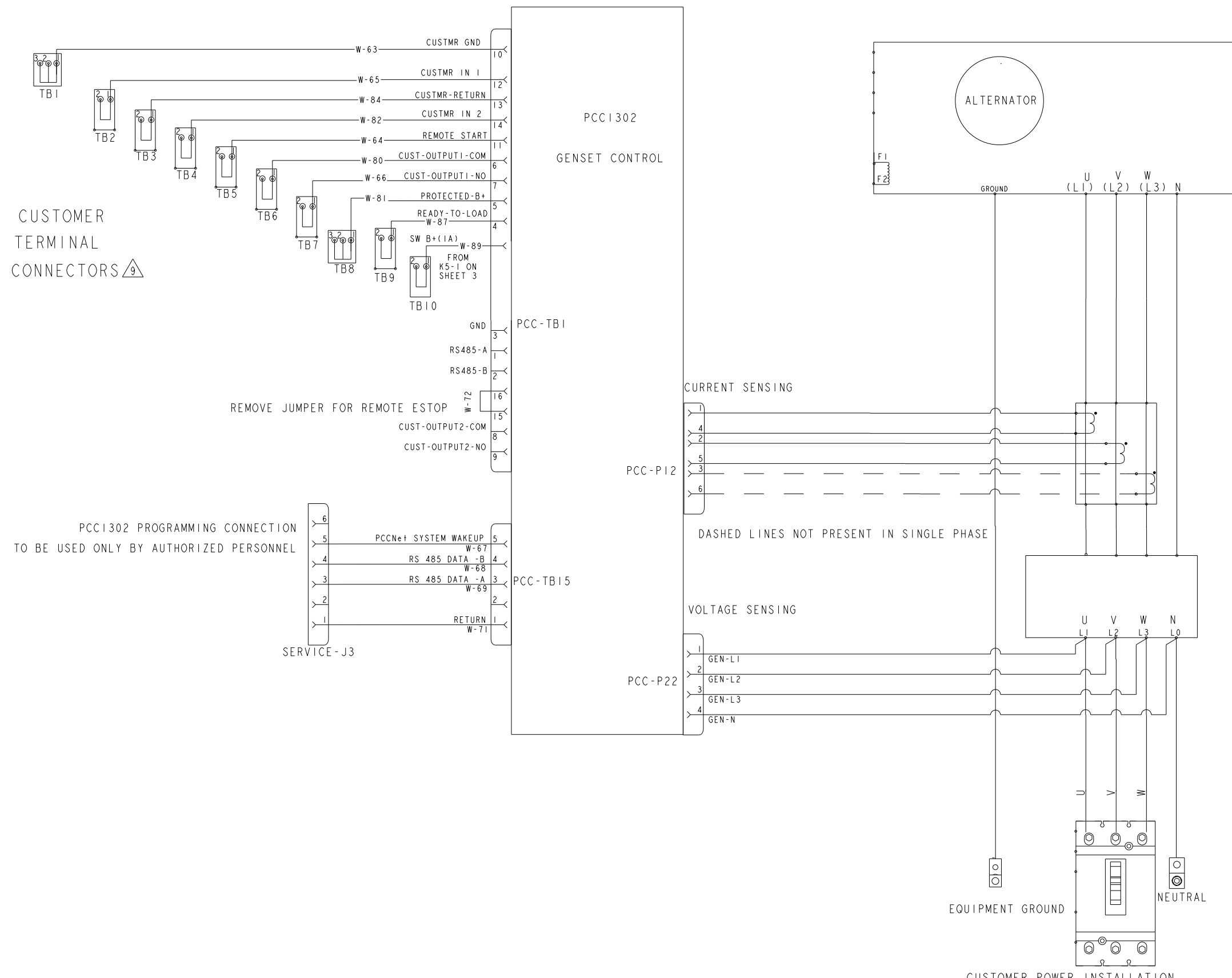
REL NO	LTR	NO	REVISION	DWN	CKD	APVD	DATE
ECO-164916	J	1	ADD NOTE 10.	JPR	JB	J BUTLER	20SEP16
		2	SEE SHEET 3	JPR	JB	J BUTLER	20SEP16
		3	SEE SHEET 3	JPR	JB	J BUTLER	20SEP16

- NOTES:-
- ALL CIRCUIT ARE SHOWN DE-ENERGIZED
 - PAGE 1= CUSTOMER CONNECTIONS FOR CONTROL & POWER CONNECTIONS TO CIRCUIT BREAKER
 - PAGE 2= ENGINE CONTROL MODULE (ECM) INTERFACE TO ENGINE SENSORS, COILS, STARTER, BATTERY, BATTERY CHARGING ALTERNATOR, LOW COOLANT LEVEL (OPTIONAL), FUEL PRESSURE SWITCH (OPTIONAL)
 - PAGE 3= PCC1302 INTERFACE. DISPLAY AND BARGRAPH (OPTIONAL)
 - PAGE 4= ALTERNATOR INTERFACE SHUNT EXCITATION & PERMANENT MAGNET EXCITATION (PMG)
 - PAGE 5= ALTERNATOR INTERFACE ELECTRONIC BOOST SYSTEM (EBS) EXCITATION
 - PAGE 6= OPTIONS: AUX101, AC RELAYS, BATTERY CHARGER, SECONDARY CIRCUIT BREAKER, COOLANT HEATER & ALTERNATOR HEATER.
 - PAGE 7= SINGLE RA TRANSFER SWITCH / MULTIPLE RA TRANSFER SWITCHES / OTEC AND RSS TRANSFER SWITCHES.

CUSTOMER CONNECTIONS		
TERMINAL NAME (WAGO)	SIGNAL NAME	DESCRIPTION
TB1	CUSTOMER GROUND	CUSTOMER GROUND (3A)
TB2	CUSTOMER INPUT 1	DISCRETE SWITCH CONNECT THE OTHER SIDE OF SWITCH TO TB3
TB3	CUSTOMER INPUT RETURN	CUSTOMER INPUT SWITCH RETURN SIGNAL
TB4	CUSTOMER INPUT 2	DISCRETE SWITCH CONNECT THE OTHER SIDE OF SWITCH TO TB3
TB5	REMOTE START	ACTIVE LOW (GND) CONNECT THE REMOTE START RETURN TO TB1
TB6	CUSTOMER OUTPUT1-COM	CUSTOMER OUTPUT1 RELAY CONTACT COMMON
TB7	CUSTOMER OUTPUT1	NORMALLY OPEN RELAY CONTACT RATINGS: 3.5A, 30VDC
TB8	PROTECTED B+	CUSTOMER FUSED BATTERY OUTPUT (3A)
TB9	READY TO LOAD	LOW SIDE DRIVER OUPUT RATINGS: 250MA, 1A INRUSH, 30VDC, 100 uA OFF STATE LEAKAGE
TB10	SWITCHED B+	ACTIVE HIGH WHEN GENERATOR IS RUNNING 12VDC (1A MAX)

10. THE CRANK SENSOR IS INTENTIONALLY CONNECTED TO PIN 33 ON THE ECM CALLED CAM 1, AND THE CAM SENSOR TO PINS 1 & 2 ON THE ECM CALLED CRK_POS & CRK_NEG. THIS IS DUE TO INTERNAL HARDWARE AND NAMING OF PINS ON THE ECM.

ALTERNATOR VOLTAGE WIRING
 SEE DIAGRAMS:
 A044D428 FOR CA125 & CA135 ALTERNATORS
 A044D432 FOR CA115 ALTERNATORS
 USE OUTER CIRCUIT BREAKER POLES FOR SINGLE PHASE
 SEE INSIDE THE BREAKER BOX AND ON THE BREAKER FOR LUG TORQUE



CUSTOMER TERMINAL CONNECTORS

PCC1302 PROGRAMMING CONNECTION TO BE USED ONLY BY AUTHORIZED PERSONNEL

REMOVE JUMPER FOR REMOTE ESTOP

CURRENT SENSING

DASHED LINES NOT PRESENT IN SINGLE PHASE

VOLTAGE SENSING

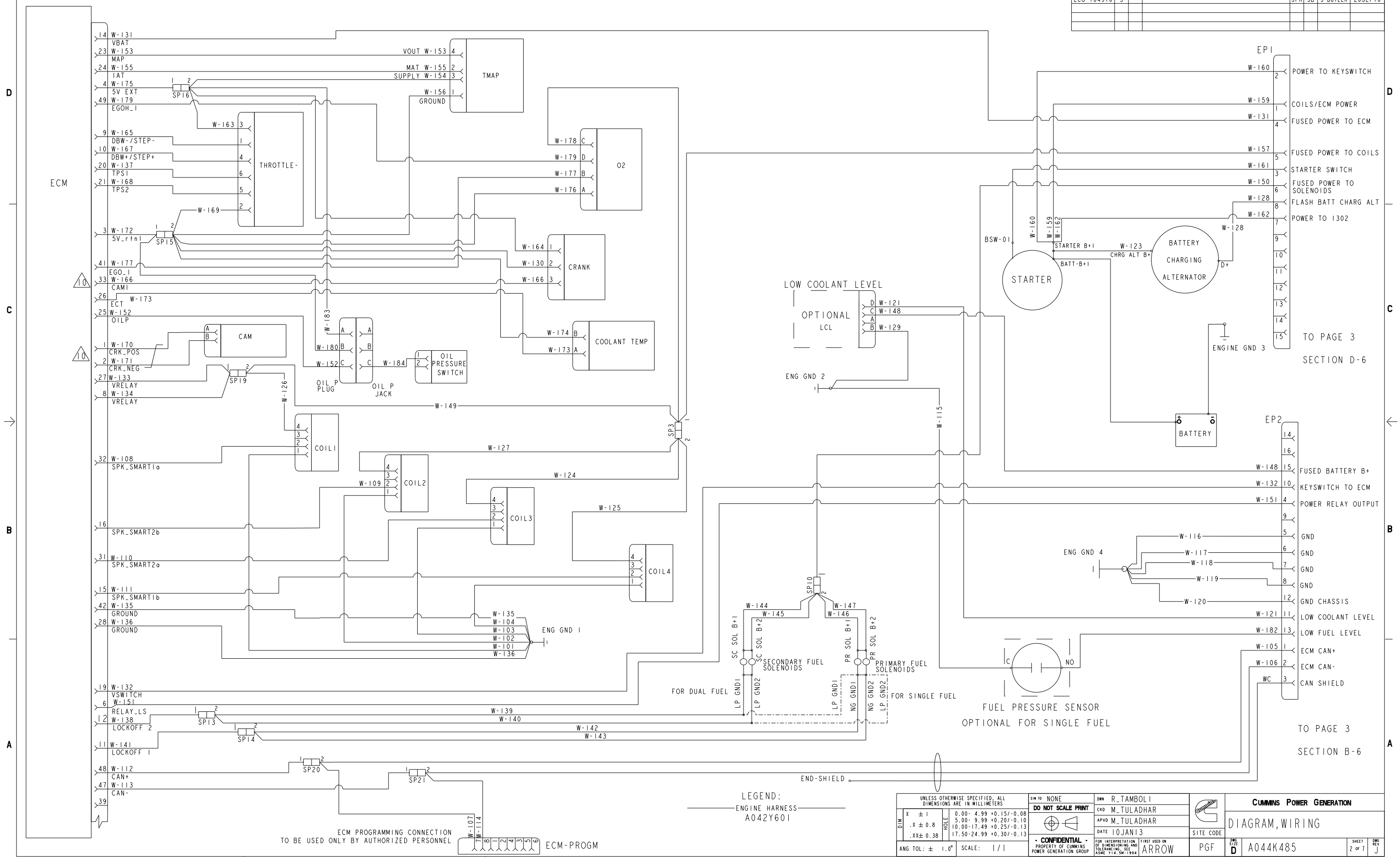
EQUIPMENT GROUND

NEUTRAL

CUSTOMER POWER INSTALLATION

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS		SM TO NONE	DWN R_TAMBOLI		CUMMINS POWER GENERATION
DO NOT SCALE PRINT			CKD M_TULADHAR		
DIM	X ± 1	0.00- 4.99 +0.15/-0.08	APVD M_TULADHAR	SITE CODE	DIAGRAM, WIRING
	.X ± 0.8	5.00- 9.99 +0.20/-0.10	DATE 10JAN13		
	.XX ± 0.38	10.00-17.49 +0.25/-0.13			
		17.50-24.99 +0.30/-0.13			
ANG TOL:	± 1.0°	SCALE: 1/1	FOR INTERPRETATION OF DIMENSIONS AND TOLERANCING, SEE ASME Y14.5M-1994	PGF	SHEET 1 OF 7
			ARROW	D	REV J

REL NO	LTR	NO	REVISION	DWN	CKD	APVD	DATE
ECO-164916	J	--	---	JPR	JB	J BUTLER	20SEP16



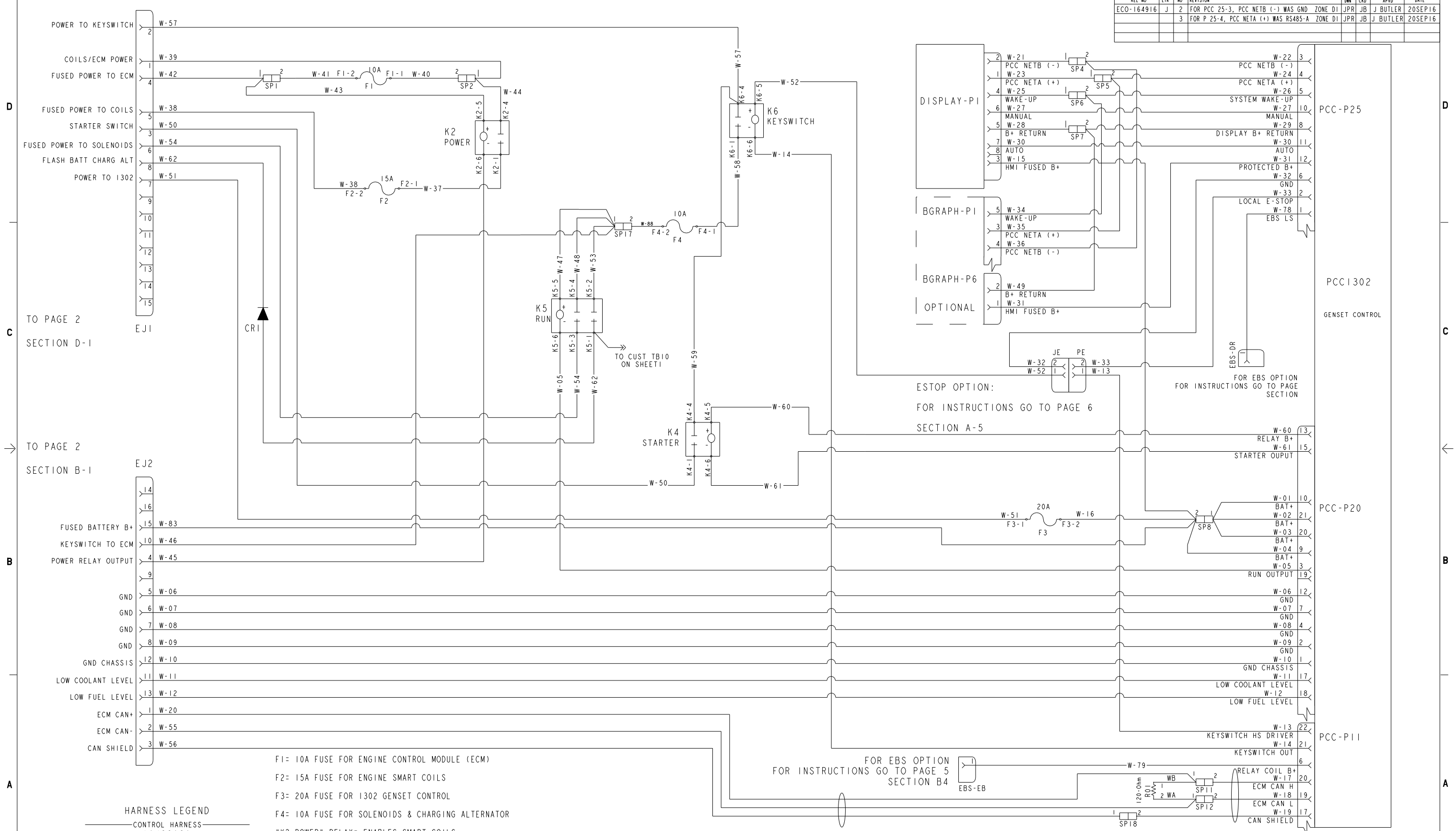
TO PAGE 3
SECTION D-6

TO PAGE 3
SECTION B-6

LEGEND:
ENGINE HARNESS
A042Y601

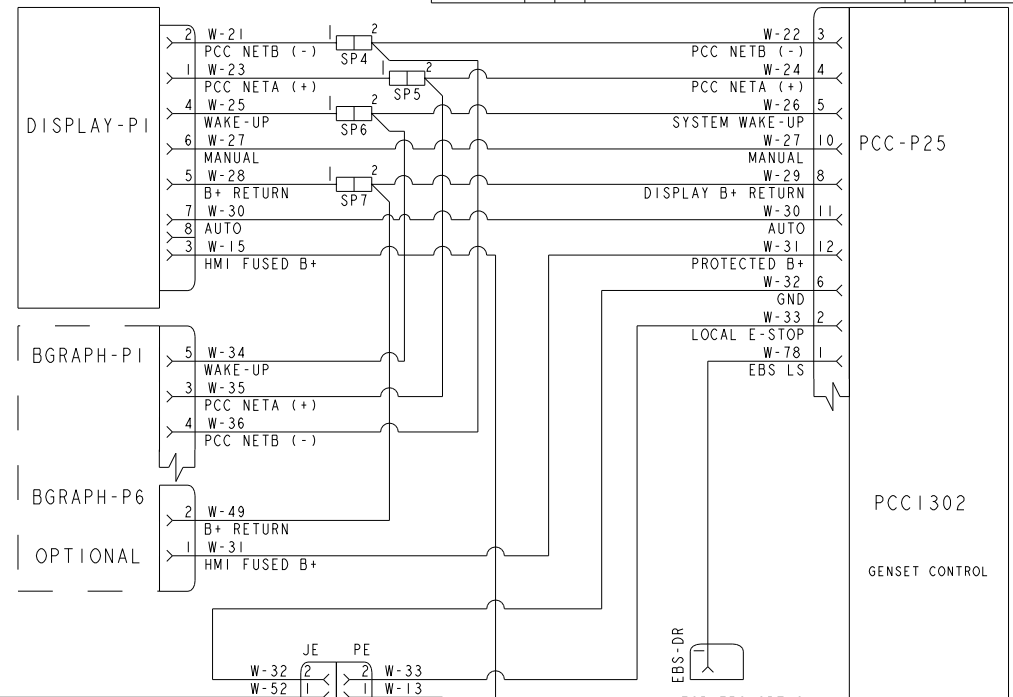
UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS		SH TO NONE	DWN R_TAMBOLI		CUMMINS POWER GENERATION	
DO NOT SCALE PRINT		CKD M_TULADHAR	DIAGRAM, WIRING			
DIM	NOTE	DATE 10JAN13	APVD M_TULADHAR	SITE CODE	SHEET 2 OF 7	
X ± 1	0.00-4.99 +0.15/-0.08	DATE 10JAN13	DATE 10JAN13	PGF	Dwg REV J	
.X ± 0.8	5.00-9.99 +0.20/-0.10	DATE 10JAN13	DATE 10JAN13	PGF	Dwg REV J	
.XX ± 0.38	10.00-17.49 +0.25/-0.13	DATE 10JAN13	DATE 10JAN13	PGF	Dwg REV J	
ANG TOL: ±	1.0°	DATE 10JAN13	DATE 10JAN13	PGF	Dwg REV J	
SCALE: 1/1		DATE 10JAN13	DATE 10JAN13	PGF	Dwg REV J	
- CONFIDENTIAL -		DATE 10JAN13	DATE 10JAN13	PGF	Dwg REV J	
PROPERTY OF CUMMINS POWER GENERATION GROUP		DATE 10JAN13	DATE 10JAN13	PGF	Dwg REV J	
FIRST USED ON		DATE 10JAN13	DATE 10JAN13	PGF	Dwg REV J	
FOR INTERPRETATION OF DIMENSIONS AND TOLERANCING, SEE ASME Y14.5M-1994		DATE 10JAN13	DATE 10JAN13	PGF	Dwg REV J	

REL NO	LTR	NO	REVISION	DWN	CKD	APVD	DATE
ECO-164916	J	2	FOR PCC 25-3, PCC NETB (-) WAS GND_ZONE DI	JPR	JB	J BUTLER	20SEP16
		3	FOR P 25-4, PCC NETA (+) WAS RS485-A_ZONE DI	JPR	JB	J BUTLER	20SEP16



- F1= 10A FUSE FOR ENGINE CONTROL MODULE (ECM)
- F2= 15A FUSE FOR ENGINE SMART COILS
- F3= 20A FUSE FOR I302 GENSET CONTROL
- F4= 10A FUSE FOR SOLENOIDS & CHARGING ALTERNATOR
- "K2 POWER" RELAY= ENABLES SMART COILS
- "K4 STARTER" RELAY= ENABLES STARTER
- "K5 RUN" RELAY= ENABLES SOLENOIDS, AND FLASHES BATTERY CHARGING ALTERNATOR
- "K6 KEYSWITCH" RELAY= PROVIDES BATTERY POWER TO K5 AND SIGNALS ECM

HARNES LEGEND
CONTROL HARNES
A043G986



ESTOP OPTION:
FOR INSTRUCTIONS GO TO PAGE 6
SECTION A-5

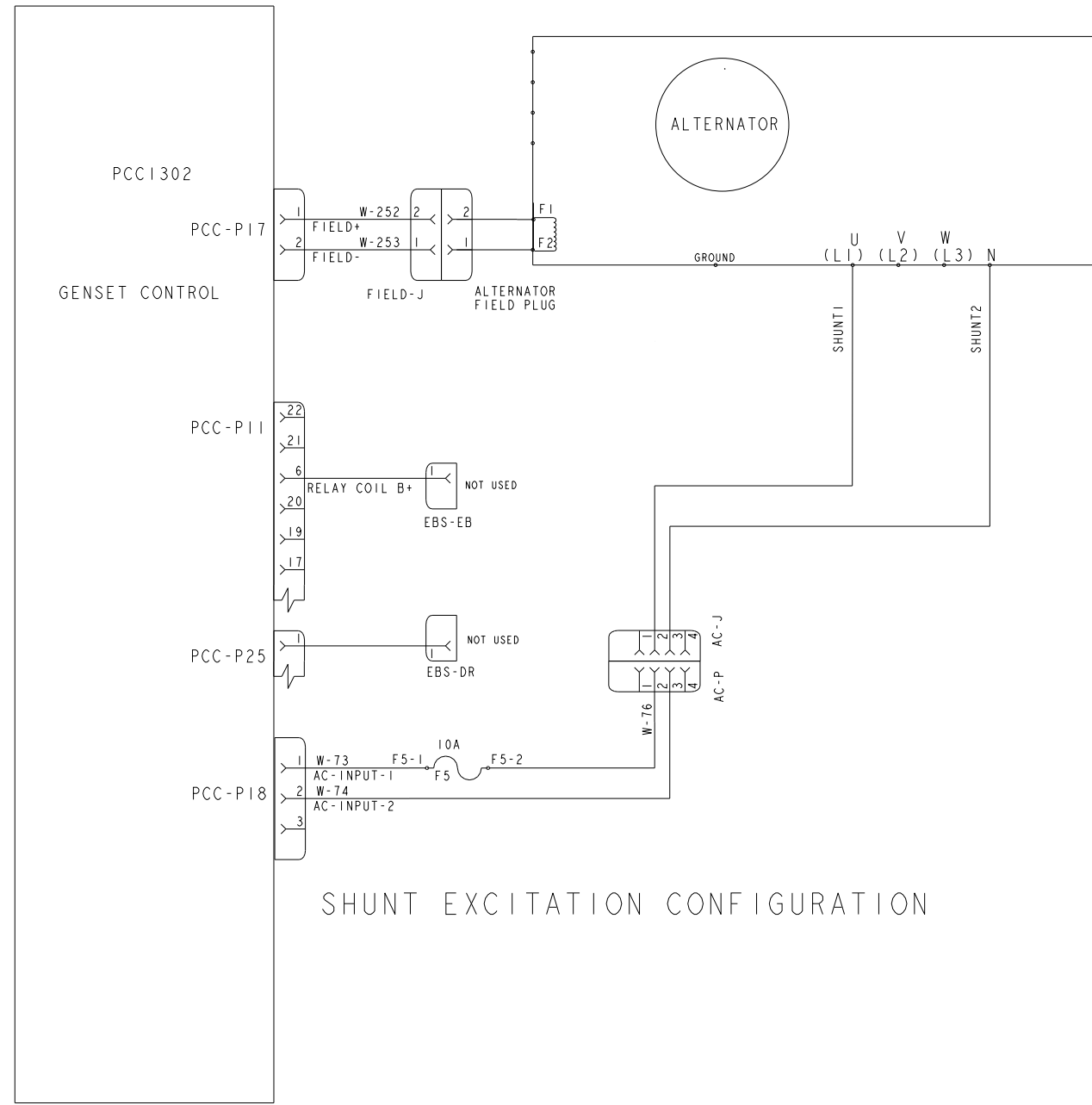
FOR EBS OPTION
FOR INSTRUCTIONS GO TO PAGE 5
SECTION B4

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS		SM TO NONE	DWN R_TAMBOLI		CUMMINS POWER GENERATION
DO NOT SCALE PRINT		CKD M_TULADHAR	APVD M_TULADHAR		
DIM	X ± 1	0.00- 4.99 +0.15/-0.08	DATE 10JAN13	SITE CODE	DIAGRAM, WIRING
	.X ± 0.8	5.00- 9.99 +0.20/-0.10			
	.XX ± 0.38	10.00-17.49 +0.25/-0.13			
		17.50-24.99 +0.30/-0.13			
ANG TOL:	± 1.0°	SCALE: 1/1	FOR INTERPRETATION OF DIMENSIONS AND TOLERANCING, SEE ASME Y14.5M-1994	PGF	A044K485
			ARROW	SHEET 3 OF 7	REV J

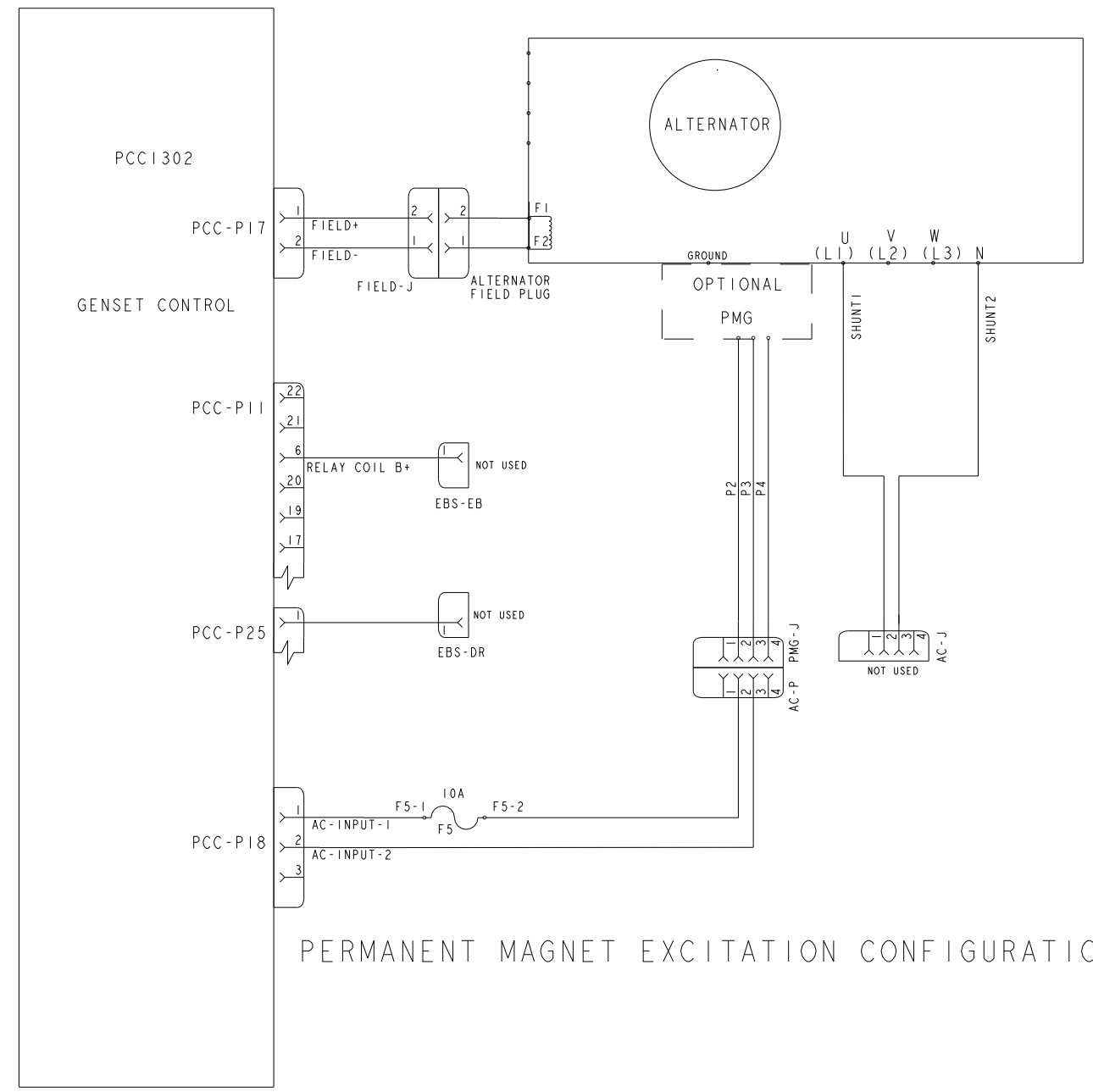
TO PAGE 2
SECTION D-1

TO PAGE 2
SECTION B-1

REL NO	LTR	NO	REVISION	DWN	CKD	APVD	DATE
ECO-164916	J	--	---	JPR	JB	J BUTLER	20SEP16



SHUNT EXCITATION CONFIGURATION



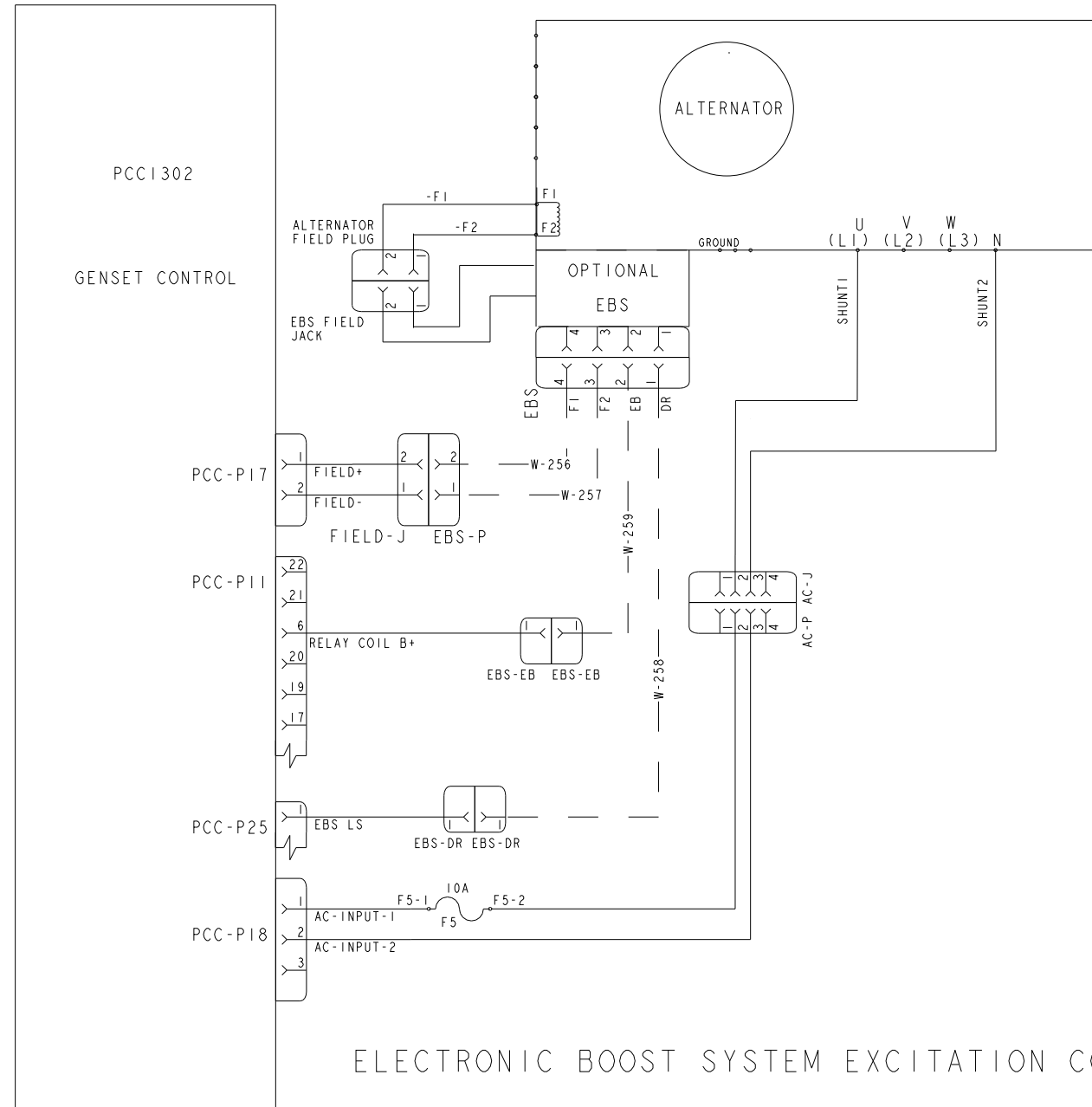
PERMANENT MAGNET EXCITATION CONFIGURATION

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS		DIM TO NONE		DWN R_TAMBOLI		CUMMINS POWER GENERATION	
DO NOT SCALE PRINT		DO NOT SCALE PRINT		CKD M_TULADHAR		DIAGRAM, WIRING	
DATE 10JAN13		DATE 10JAN13		APVD M_TULADHAR		SITE CODE	
ANG TOL: ± 1.0°		SCALE: 1/1		FIRST USED ON ARROW		PGF	
- CONFIDENTIAL -		- CONFIDENTIAL -		PART NO. A044K485		SHEET 4 OF 7	

REL NO	LTR	NO	REVISION	DWN	CKD	APVD	DATE
ECO-164916	J	--	---	JPR	JB	J BUTLER	20SEP16

HARNESS LEGEND

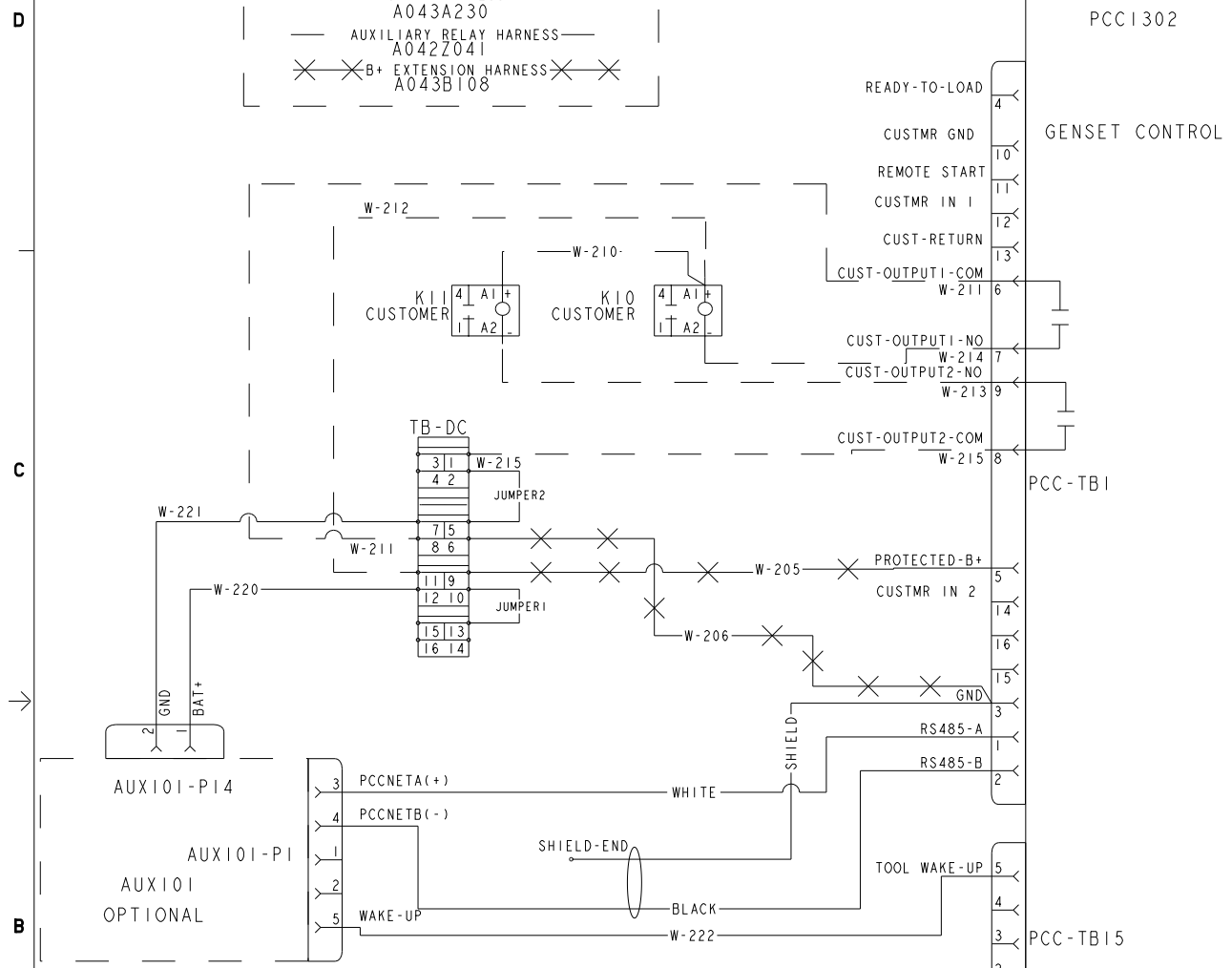
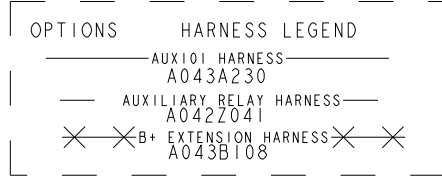
CPG EBS HARNESS
A049Y191



ELECTRONIC BOOST SYSTEM EXCITATION CONFIGURATION

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS		DIM TO NONE		DWN R_TAMBOLI		CUMMINS POWER GENERATION	
DO NOT SCALE PRINT		DO NOT SCALE PRINT		CKD M_TULADHAR		DIAGRAM, WIRING	
DATE 10JAN13		DATE 10JAN13		APVD M_TULADHAR		SITE CODE	
ANG TOL: ± 1.0°		SCALE: 1/1		PGF		SHEET 5 of 7	
- CONFIDENTIAL -		FIRST USED ON		ARROW		Dwg FILE A044K485	
PROPERTY OF CUMMINS POWER GENERATION GROUP		FOR INTERPRETATION OF DIMENSIONS AND TOLERANCING, SEE ASME Y14.5M-1994				REV J	

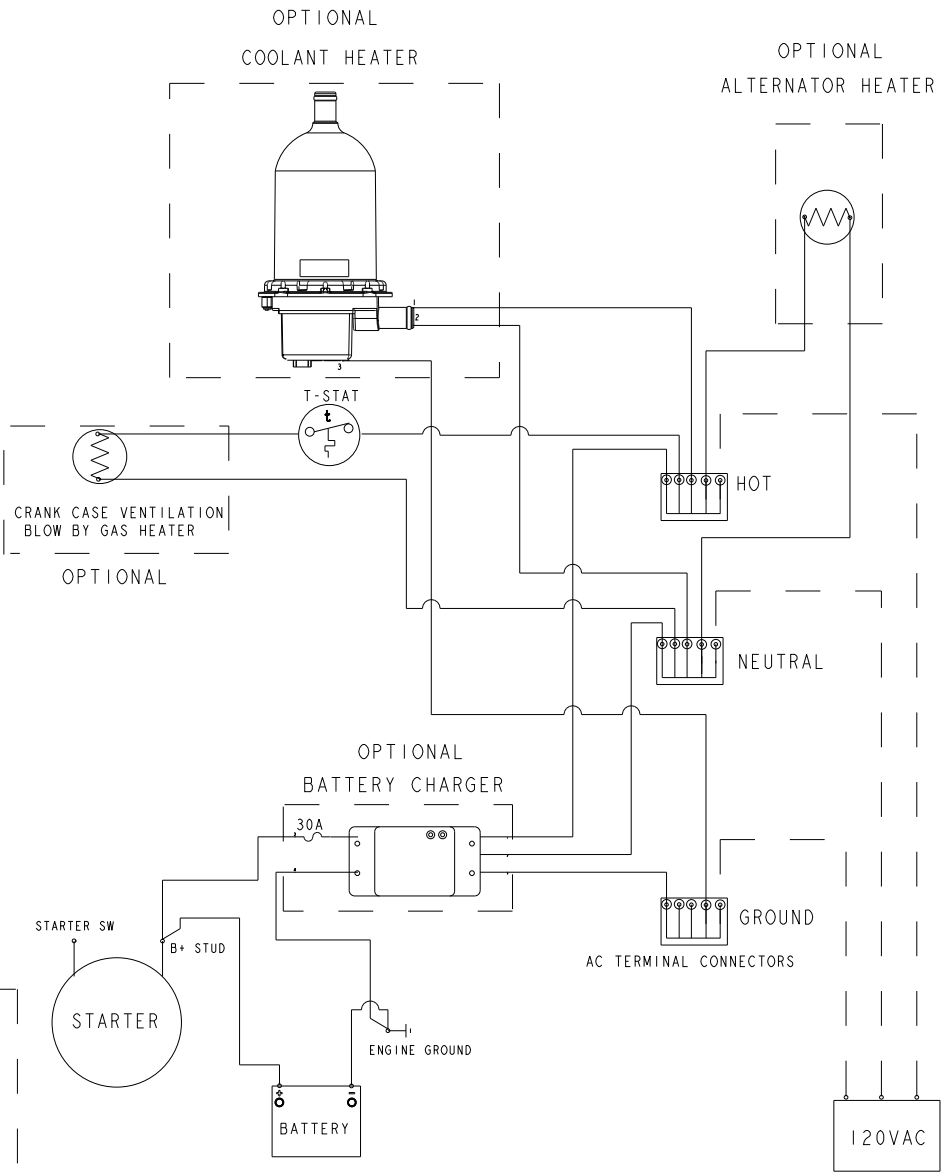
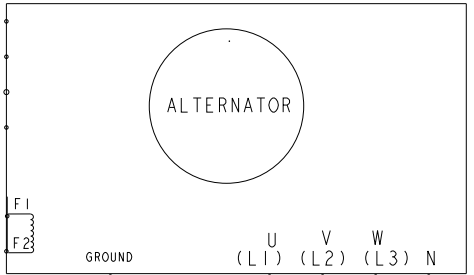
REL NO	LTR	NO	REVISION	DWN	CKD	APVD	DATE
ECO-164916	J	--	---	JPR	JB	J BUTLER	20SEP16



FOR PCC1302 INTERFACE WITH ALTERNATOR

REFER TO:

- SHUNT CONNECTION- PAGE 4
- FOR PMG CONNECTION-PAGE 4
- FOR EBS CONNECTION-PAGE 5



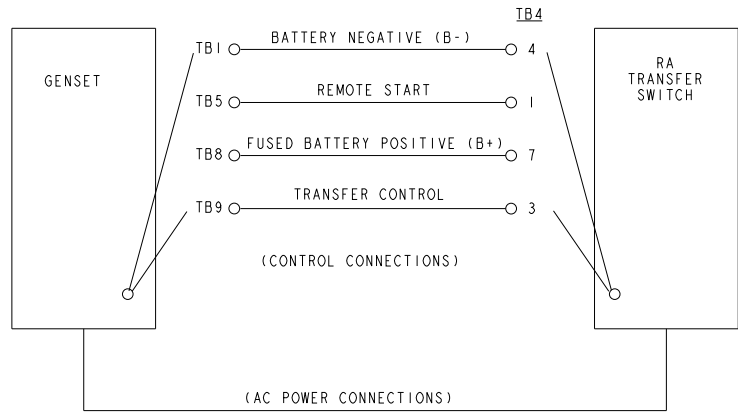
120VAC INPUT & GROUND
CUSTOMER PROVIDED CIRCUIT
BACKED FROM GENERATOR SUCH
THAT CCV HEATER IS POWERED FROM
BOTH UTILITY & GENERATOR SOURCES.

FOLLOW NATIONAL ELECTRICAL CODE
FOR INSTALLATION.

NOTE:
FOR CANADIAN MARKET, CONNECT THE COOLANT HEATER POWER
CORD PLUG TO 120 VAC RECEPTACLE.

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS		DIM TO NONE		DWN R_TAMBOLI			CUMMINS POWER GENERATION	
DO NOT SCALE PRINT				CKD M_TULADHAR			DIAGRAM, WIRING	
DIM X ± 1 0.00- 4.99 +0.15/-0.08 .X ± 0.8 5.00- 9.99 +0.20/-0.10 .XX ± 0.38 10.00-17.49 +0.25/-0.13 17.50-24.99 +0.30/-0.13		HOLE .XX ± 0.38		DATE 10JAN13		SITE CODE		
ANG TOL: ± 1.0°		SCALE: 1/1		FOR INTERPRETATION OF DIMENSIONS AND TOLERANCING, SEE ARROW FIRST USED ON		PGF		
				- CONFIDENTIAL - PROPERTY OF CUMMINS POWER GENERATION GROUP		SHEET 6 OF 7 D A044K485		

QUIET CONNECT WITH SINGLE RA TRANSFER SWITCH

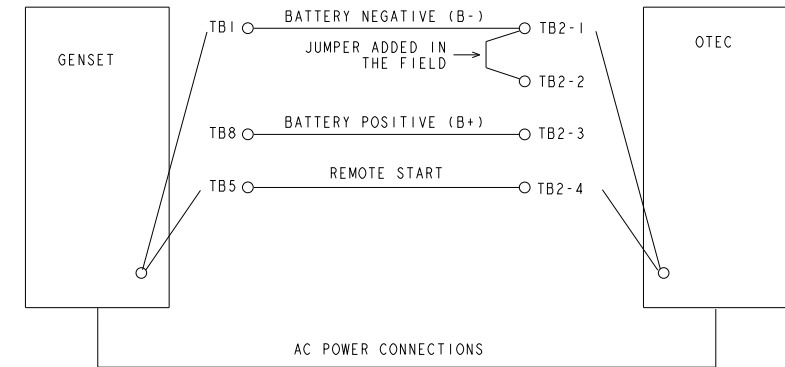


NOTES:

1. ALWAYS USE SEPARATE CONDUITS FOR POWER AND CONTROL WIRING.
2. TB9 IN GENSET IS ALSO LABELLED "READY TO LOAD" AND TB1-4.
3. CONTROL WIRES TO BE 14 GA OR 16 GA STRANDED COPPER, MAXIMUM RUN IS 200 FEET ONE WAY.

REL NO	LTR	NO	REVISION	DWN	CKD	APVD	DATE
ECO-164916	J	--	---	JPR	JB	J BUTLER	20SEP16

QUIET CONNECT WITH OTEC AND RSS TRANSFER SWITCHES

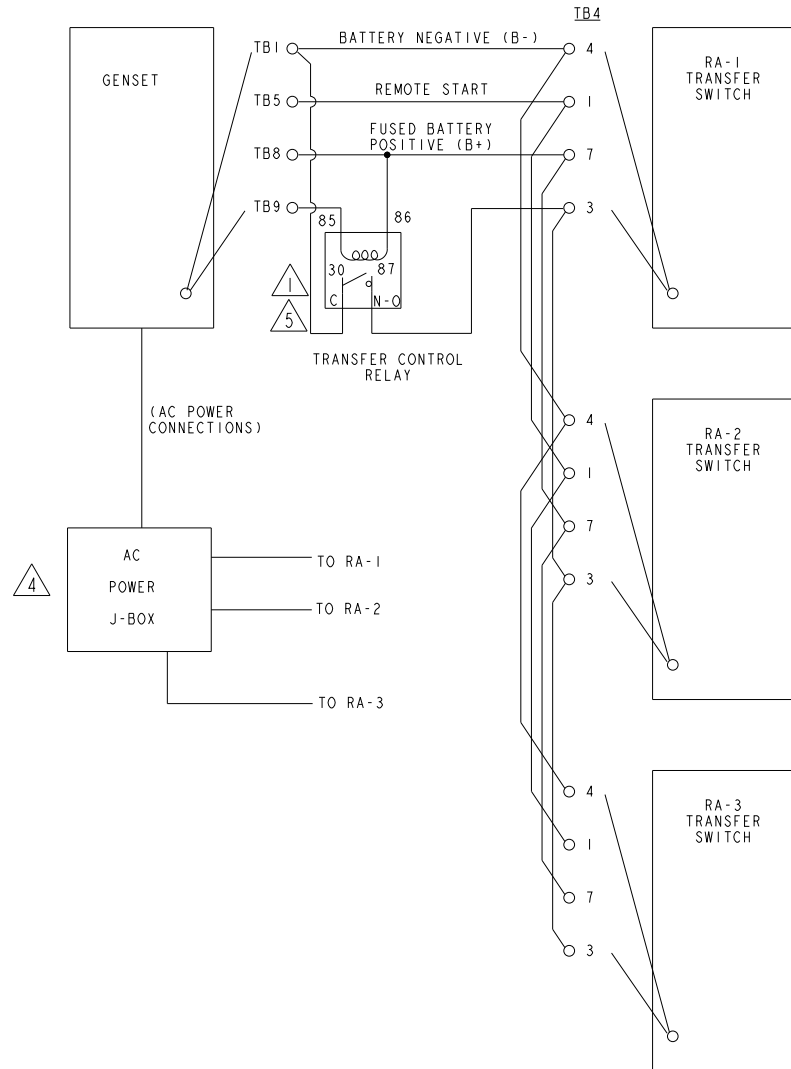


NOTES:

1. ALWAYS USE SEPARATE CONDUITS FOR POWER AND CONTROL WIRING.
2. CONTROL WIRES TO BE 14 GA OR 16 GA STRANDED COPPER, MAXIMUM RUN IS 200 FEET ONE WAY.
- 3 ONLY APPLIES TO RSS TRANSFER SWITCHES WITH CONTROL.

- RSS100-6866
- RSS200-6867
- RSS100-6634
- RSS200-6655
- RSS100-6992
- RSS200-6993
- RSS100-7040
- RSS200-7041

QUIET CONNECT WITH MULTIPLE RA TRANSFER SWITCHES (UPTO 3)



NOTES:

1. INSTALL INTERPOSING RELAY 0307-2817-01 OR EQUIVALENT FOR MORE THAN 1 SWITCH
2. USE FASTON CONNECTORS 0332-1993 OR EQUIVALENT FOR RELAY CONNECTIONS.
3. DAISY CHAIN FROM SWITCH TO SWITCH.
- 4 USE APPROPRIATELY SIZED TERMINAL BOX FOR POWER CONDUCTORS. LUGS ARE RATED FOR 1 CONDUCTOR ONLY.
- 5 INTERPOSING RELAY CAN BE INSTALLED IN GENSET OR RA-1.
6. ALWAYS USE SEPARATE CONDUITS FOR POWER AND CONTROL WIRING.
7. CONTROL WIRES TO BE 14 GA OR 16 GA STRANDED COPPER, MAXIMUM RUN IS 200 FEET ONE WAY.

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS		DIM TO NONE		DWN R_TAMBOLI		CUMMINS POWER GENERATION	
DIM	X ± 1	HOLE	0.00- 4.99 +0.15/-0.08	DO NOT SCALE PRINT	CKD M_TULADHAR	DIAGRAM, WIRING	
	.X ± 0.8		5.00- 9.99 +0.20/-0.10		APVD M_TULADHAR		
	.XX ± 0.38		10.00-17.49 +0.25/-0.13		DATE 10JAN13		
			17.50-24.99 +0.30/-0.13		SITE CODE		
ANG TOL:	± 1.0°	SCALE:	1/1	- CONFIDENTIAL -	PGF	A044K485	
				FOR INTERPRETATION OF DIMENSIONS AND TOLERANCING, SEE ASME Y14.5M-1994	ARROW	7 of 7	

Part A044K485 J

Description	Legacy Name	External Regulations	Application Status	Release Phase Code	Security Classification	Alternates
DIAGRAM,WIRING	A044K485	None	Production Only	Production	Confidential	

Part Specifications :A044K485 J

Name	Description	Legacy Name
A030B356	SPECIFICATION,MATERIAL	CES10903
A044K486	DRAWING,ENGINEERING	A044K486