

# Cat® C32

## Diesel Generator Sets



Image shown may not reflect actual configuration

Bore – mm (in)	145 (5.7)
Stroke – mm (in)	162 (6.4)
Displacement – L (in <sup>3</sup> )	32.1 (1959)
Compression Ratio	15.0:1
Aspiration	TA
Fuel System	EUI
Governor Type	ADEM™ A4

Standby 60 Hz ekW (kVA)	Mission Critical 60 Hz ekW (kVA)	Prime 60 Hz ekW (kVA)	Continuous 60 Hz ekW (kVA)	Emissions Performance
1000 (1250)	1000 (1250)	910 (1137)	830 (1038)	U.S. EPA Certified for Emergency Stationary Applications (Tier 2)

### Standard Features

#### Cat® Diesel Engine

- Designed and tested to meet the U.S. EPA Emergency Stationary (Tier 2) emissions
- Reliable and consistent performance proven in thousands of applications worldwide

#### Generator Set Package

- Accepts 100% block load in one step and meets NFPA 110 loading requirements
- Conforms to ISO 8528-5 G3 load acceptance requirements.
- Reliability is verified through prototype testing, which includes torsional vibration, fuel consumption, oil consumption, transient performance, and endurance testing

#### Alternators

- Superior motor starting capability minimizes the need for oversizing the generator
- Designed to match the performance and output characteristics of Cat diesel engines

#### Cooling System

- Cooling systems available to operate in ambient temperatures up to 50°C (122°F)
- Tested to ensure proper generator set cooling

#### EMCP 4 Control Panels

- User-friendly interface and navigation
- Scalable system to meet a wide range of installation requirements
- Expansion modules and site specific programming for specific customer requirements

#### Warranty

- 24 months/1000-hour warranty for standby and mission critical ratings
- 12 months/unlimited hour warranty for prime and continuous ratings
- Extended service protection is available to provide extended coverage options

#### Worldwide Product Support

- Cat dealers have over 1,800 dealer branch stores operating in 200 countries
- Your local Cat dealer provides extensive post-sale support, including maintenance and repair agreements

#### Financing

- Caterpillar offers an array of financial products to help you succeed through financial service excellence
- Options include loans, finance lease, operating lease, working capital, and revolving line of credit
- Contact your local Cat dealer for availability in your region

## Optional Equipment

### Engine

#### Air Cleaner

- Single element
- Dual element
- Heavy duty

#### Muffler

- Industrial grade (15 dB)

#### Starting

- Standard batteries
- Oversized batteries
- Standard electric starter
- Dual electric starter
- Jacket water heater

### Alternator

#### Output voltage

- 220V
- 480V
- 240V
- 600V
- 380V
- 2400V
- 400V
- 4160V

#### Temperature Rise (over 40°C ambient)

- 150°C
- 125°C/130°C
- 105°C
- 80°C

#### Winding type

- Random wound
- Form wound

#### Excitation

- Self excited
- Internal excitation (IE)
- Permanent magnet (PM)

#### Attachments

- Anti-condensation heater
- Stator and bearing temperature monitoring and protection

### Power Termination

#### Type

- Bus bar
- Circuit breaker
- 400A
- 800A
- 1200A
- 1600A
- 2000A
- 2500A
- 3000A
- 3200A
- UL
- IEC
- 3-pole
- 4-pole
- Manually operated
- Electrically operated

#### Trip Unit

- LSI
- LSI-G
- LSI-G-P

### Factory Enclosure

- Weather protective
- Sound attenuated

#### Attachments

- Cold weather bundle
- DC lighting package
- AC lighting package
- Motorized louvers

### Fuel Tank

- Sub-base
- 1000 gal (3875 L)
- 2000 gal (7570 L)
- 3600 gal (13627 L)

### Control System

#### Controller

- EMCP 4.2B
- EMCP 4.3
- EMCP 4.4

#### Attachments

- Local annunciator module
- Remote annunciator module
- Expansion I/O module
- Remote monitoring software

### Charging

- Battery charger – 10A

### Vibration Isolators

- Rubber
- Spring
- Seismic rated

### Cat Connect

#### Connectivity

- Ethernet
- Cellular
- Satellite

### Extended Service Options

#### Terms

- 2 year (prime)
- 3 year
- 5 year
- 10 year

#### Coverage

- Silver
- Gold
- Platinum
- Platinum Plus

### Ancillary Equipment

- Automatic transfer switch (ATS)
- Uninterruptible power supply (UPS)
- Paralleling switchgear
- Paralleling controls

### Certifications

- UL 2200 Listed
- CSA
- IBC seismic certification
- OSHPD pre-approval

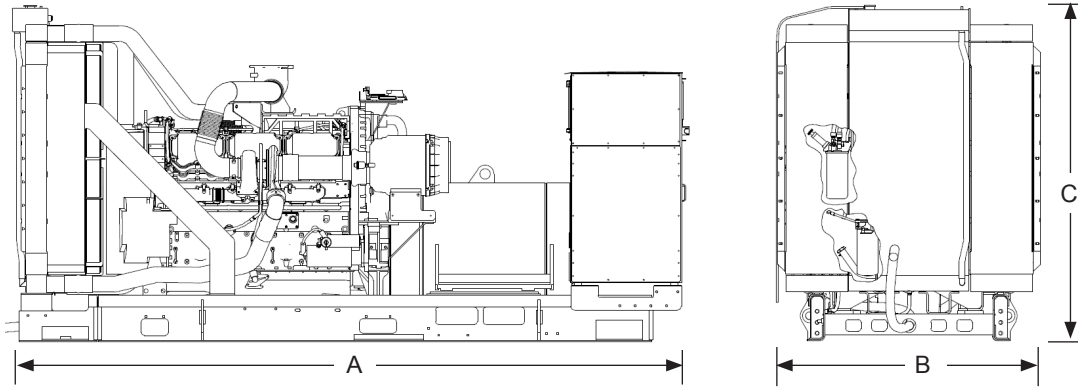
**Note:** Some options may not be available on all models. Certifications may not be available with all model configurations. Consult factory for availability.

**Package Performance**

<b>Performance</b>	<b>Standby</b>	<b>Mission Critical</b>	<b>Prime</b>	<b>Continuous</b>
Frequency	60 Hz	60 Hz	60 Hz	60 Hz
Gen set power rating with fan	1000 ekW	1000 ekW	910 ekW	830 ekW
Gen set power rating with fan @ 0.8 power factor	1250 kVA	1250 kVA	1138 kVA	1038 kVA
Fueling strategy	EPA ESE (Tier 2)	EPA ESE (Tier 2)	EPA ESE (Tier 2)	EPA ESE (Tier 2)
Performance number	DM9933-03	EM0449-00	DM9934-04	DM9935-03
<b>Fuel Consumption</b>				
100% load with fan – L/hr (gal/hr)	272.1 (71.9)	272.1 (71.9)	248.6 (65.7)	232.1 (61.3)
75% load with fan – L/hr (gal/hr)	213.4 (56.4)	213.4 (56.4)	197.0 (52.0)	176.5 (46.6)
50% load with fan – L/hr (gal/hr)	144.7 (38.2)	144.7 (38.2)	134.2 (35.5)	122.9 (32.5)
25% load with fan – L/hr (gal/hr)	82.6 (21.8)	82.6 (21.8)	78.5 (20.7)	73.4 (19.4)
<b>Cooling System</b>				
Radiator air flow restriction (system) – kPa (in. water)	0.12 (0.48)	0.12 (0.48)	0.12 (0.48)	0.12 (0.48)
Radiator air flow – m <sup>3</sup> /min (cfm)	1175 (41494)	1175 (41494)	1175 (41494)	1175 (41494)
Engine coolant capacity – L (gal)	55.0 (14.5)	55.0 (14.5)	55.0 (14.5)	55.0 (14.5)
Radiator coolant capacity – L (gal)	36.0 (9.0)	36.0 (9.0)	36.0 (9.0)	36.0 (9.0)
Total coolant capacity – L (gal)	91.0 (23.5)	91.0 (23.5)	91.0 (23.5)	91.0 (23.5)
<b>Inlet Air</b>				
Combustion air inlet flow rate – m <sup>3</sup> /min (cfm)	87.6 (3094.1)	87.6 (3094.1)	83.7 (2954.5)	80.0 (2825.6)
<b>Exhaust System</b>				
Exhaust stack gas temperature – °C (°F)	476.4 (889.5)	476.4 (889.5)	459.5 (859.1)	461.2 (862.1)
Exhaust gas flow rate – m <sup>3</sup> /min (cfm)	228.4 (8065.3)	228.4 (8065.3)	212.1 (7488.7)	204.8 (7231.2)
Exhaust system backpressure (maximum allowable) – kPa (in. water)	6.7 (27.0)	6.7 (27.0)	6.7 (27.0)	6.7 (27.0)
<b>Heat Rejection</b>				
Heat rejection to jacket water – kW (Btu/min)	352 (20033)	352 (20033)	327 (18624)	307 (17468)
Heat rejection to exhaust (total) – kW (Btu/min)	1024 (58206)	1024 (58206)	933 (53072)	896 (50940)
Heat rejection to aftercooler – kW (Btu/min)	288 (16385)	288 (16385)	255 (14526)	230 (13082)
Heat rejection to atmosphere from engine – kW (Btu/min)	127 (7238)	127 (7238)	116 (6625)	114 (6486)
Heat rejection from alternator – kW (Btu/min)	55 (3131)	55 (3131)	50 (2846)	45 (2561)
<b>Emissions* (Nominal)</b>				
NOx mg/Nm <sup>3</sup> (g/hp-h)	2348.6 (4.93)	2348.6 (4.93)	2293.5 (4.81)	1969.0 (4.23)
CO mg/Nm <sup>3</sup> (g/hp-h)	62.1 (0.13)	62.1 (0.13)	59.2 (0.12)	52.5 (0.11)
HC mg/Nm <sup>3</sup> (g/hp-h)	5.5 (0.01)	5.5 (0.01)	7.0 (0.02)	12.7 (0.03)
PM mg/Nm <sup>3</sup> (g/hp-h)	7.2 (0.02)	7.2 (0.02)	6.6 (0.02)	7.1 (0.02)
<b>Emissions* (Potential Site Variation)</b>				
NOx mg/Nm <sup>3</sup> (g/hp-h)	2841.6 (5.97)	2841.6 (5.97)	2775.2 (5.83)	2382.5 (5.11)
CO mg/Nm <sup>3</sup> (g/hp-h)	116.1 (0.24)	116.1 (0.24)	110.6 (0.23)	98.1 (0.21)
HC mg/Nm <sup>3</sup> (g/hp-h)	10.3 (0.03)	10.3 (0.03)	13.2 (0.03)	24.1 (0.06)
PM mg/Nm <sup>3</sup> (g/hp-h)	14.1 (0.04)	14.1 (0.04)	12.9 (0.03)	13.9 (0.04)

\*mg/Nm<sup>3</sup> levels are corrected to 5% O<sub>2</sub>. Contact your local Cat dealer for further information.

## Weights and Dimensions



Dim "A" mm (in)	Dim "B" mm (in)	Dim "C" mm (in)	Dry Weight kg (lb)
4165 (164.0)	1684 (66.3)	2162 (85.1)	6668 (14,700)

**Note:** For reference only. Do not use for installation design. Contact your local Cat dealer for precise weights and dimensions.

## Ratings Definitions

### Standby

Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

### Mission Critical

Output available with varying load for the duration of the interruption of the normal source power. Average power output is 85% of the mission critical power rating. Typical peak demand up to 100% of rated power for up to 5% of the operating time. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

### Prime

Output available with varying load for an unlimited time. Average power output is 70% of the prime power rating. Typical peak demand is 100% of prime rated kW with 10% overload capability for emergency use for a maximum of 1 hour in 12. Overload operation cannot exceed 25 hours per year.

### Continuous

Output available with non-varying load for an unlimited time. Average power output is 70-100% of the continuous power rating. Typical peak demand is 100% of continuous rated kW for 100% of the operating hours.

### Applicable Codes and Standards

AS 1359, CSA C22.2 No. 100-04, UL 142, UL 489, UL 869, UL 2200, NFPA 37, NFPA 70, NFPA 99, NFPA 110, IBC, IEC 60034-1, ISO 3046, ISO 8528, NEMA MG1-22, NEMA MG1-33, 2014/35/EU, 2006/42/EC, 2014/30/EU.

**Note:** Codes may not be available in all model configurations. Please consult your local Cat dealer for availability.

### Data Center Applications

- ISO 8528-1 Data Center Power (DCP) compliant per DCP application of Cat diesel generator set prime power rating.
- All ratings Tier III/Tier IV compliant per Uptime Institute requirements.
- All ratings ANSI/TIA-942 compliant for Rated-1 through Rated-4 data centers.

### Fuel Rates

Fuel rates are based on fuel oil of 35° API [16°C (60°F)] gravity having an LHV of 42,780 kJ/kg (18,390 Btu/lb) when used at 29°C (85°F) and weighing 838.9 g/liter (7.001 lbs/U.S. gal.)

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 The International System of Units (SI) is used in this publication.

# ATTACHMENTS



## ULCERT UL 2200 LISTING

### INCLUDES THE FOLLOWING:

#### ALTERNATOR

Alternator insulation system is UL Recognized (UL 1446). PMG and AREP alternators are available. Automatic voltage regulators are UL Recognized.

#### WIRE HARNESS

AC, DC, and power harnesses are made with UL Listed wire and UL Listed terminals.

#### CONTROL PANEL

Control panels are comprised of UL Listed and UL Recognized components. EMCP is UL Recognized.

#### CIRCUIT BREAKER

Output circuit breaker is 100% rated and UL Listed.

#### TESTING

All UL Listed sets are designed and rigorously tested in accordance with UL Standard for Safety, UL 2200.

#### LABELING

Labeling meets UL requirements.

#### MECHANICAL OPTIONS

Mechanical options do not require UL Listing and, therefore, are not affected. The exceptions to this are:

#### FUEL TANKS

If a fuel tank is ordered with the unit, it must be UL Listed. Two versions are available: 24 hour integral (FCUL2) and 24/48 hour sub-base (FSBT)

#### ENCLOSURES

Factory installed enclosures meet UL requirements. Weatherproof and sound attenuated versions are available.

### ELECTRICAL OPTIONS

The table below shows electrical options that meet UL requirements:

EBH	Battery Heater
EOS	Lube Oil Sump Heater
WCA1	Low Coolant Level Shutdown
WSS1	Low Coolant Temperature Alarm
AH1H	Anti-Condensation Heater
WHH	Coolant Heater
GOVE5	Electronic Governor (Fully Adjustable)
FSS1	Critical Low Fuel Level Shutdown
FSS2	Low Fuel Level Alarm
FSS5	Critical High Fuel Alarm
PBC5UL	UL Listed Battery Charger
PBC10NU	NFPA Battery Charger, UL Listed

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*Picture shown may not reflect actual configuration*

### Full range of attachments

- Wide range of system expansion attachments, designed specifically to work with the EMCP 4
- Flexible packaging options for easy and cost effective installation

### World wide product support

- Cat dealers provide extensive pre and post sale support
- Cat dealers have over 1,600 dealer branch stores operating in 200 countries

### Features

- A 33 x 132 pixel, 3.8 inch, white backlit graphical display denotes text alarm/event descriptions, set points, engine and generator monitoring, and is visible in all lighting conditions.
- Textual display with support for 26 languages
- Advanced engine monitoring is available on systems with an ADEM™ controller.
- Integration with the CDVR and IVR provides enhanced system performance
- Fully featured power metering, protective relaying, engine and generator parameter viewing, and expanded AC metering are all integrated into this controller.
- Real-time clock allows for date and time stamping of diagnostics and events in the control's logs as well as service maintenance reminders based on engine operating hours or calendar days. Up to 40 diagnostic events are stored in the non-volatile memory

## EMCP 4.2B GENERATOR SET CONTROLLER

The Cat® EMCP 4.2B offers fully featured power metering, protective relaying and engine and generator control and monitoring. Engine and generator controls, diagnostics, and operating information are accessible via the control panel keypads; diagnostics from the EMCP 4 optional modules can be viewed and reset through the EMCP 4.2B.

### Features

- Ability to view and reset diagnostics on EMCP 4 optional modules via the control panel removes the need for a separate service tool for troubleshooting
- Set points and software stored in non-volatile memory, preventing loss during a power outage
- Five levels of security allow for configurable operator privileges
- Programmable security levels for groups of setpoints.
- Programmable kW Relays (3)
- Programmable weekly exerciser timer
- Dealer configurable resistive maps
- Default overview screen
- Real (kW) Load histogram
- Auto mains failure
- Programmable logic functionality
- Selectable units
  - Temperature: °C or °F
  - Pressure: psi, kPa, bar
  - Fuel Consumption: Liter/hr or Gal/hr (U.S. or U.K.)

## Standard Features

- Voltage (L-L, L-N)
- Current (Phase)
- Average Volt, Amp, Frequency
- kW, kVAr, kVA (Average, Phase, %)
- Power Factor (Average, Phase)
- kW-hr, kVAr-hr (total)
- Excitation voltage and current (with CDVR)
- Desired Voltage, Excitation Command, Operating Mode (with IVR)
- Generator stator and bearing temp (with optional module)
- kW load histogram

## Generator Protection

- Generator phase sequence
- Over/Under voltage (27/59)
- Over/Under frequency (81 O/U)
- Reverse Power (kW) (32)
- Reverse Reactive Power (kVAr) (32RV)
- Overcurrent (50/51)
- Thermal Damage Curve

## Engine Monitoring

- Coolant temperature
- Oil pressure
- Engine speed (RPM)
- Battery voltage
- Run hours
- Crank attempt and successful start counter
- Enhanced engine monitoring (with electronic engines)

## Engine Protection

- Control switch not in auto (alarm)
- High coolant temp (alarm and shutdown)
- Low coolant temp (alarm)
- Low coolant level (alarm)
- High engine oil temp (alarm and shutdown)
- Low, high, and weak battery voltage
- Overspeed
- Overcrank
- Low Oil Pressure

## Control

- Run / Auto / Stop control
- Speed and voltage adjust
- Local and remote emergency stop
- Remote start/stop
- Cycle crank

## Inputs & Outputs

- Two dedicated digital inputs
- Three analog inputs
- Six programmable digital inputs
- Eight relay out
- Two programmable digital outputs

## Communications

- Primary and accessory CAN data links
- RS-485 annunciator data link
- Modbus RTU (RS-485 Half duplex)

## Language Support

Arabic, Bulgarian, Czech, Chinese, Danish, Dutch, English, Estonian, Finnish, French, German, Greek, Hungarian, Italian, Icelandic, Japanese, Latvian, Lithuanian, Norwegian, Polish, Portuguese, Romanian, Russian, Spanish, Swedish, Turkish

## Environmental

- Control module operating temperature: -40°C to 70°C
- Display operating temperature: -20°C to 70°C
- Humidity: 100% condensing 30°C to 60°C
- Storage temperature: -40°C to 85°C
- Vibration: Random profile, 24-1000 Hz, 4.3G rms

## Standards

- UL Recognized
- CSA C22.2 No.100,14, 94
- Complies with all necessary standards for CE Certification
  - 98/37/EC Machinery Directive
  - BS EN 60204-1 Safety of Machinery
  - 89/336/EEC EMC Directive
  - BS EN 50081-1 Emissions Standard
  - BS EN 50082-2 Immunity Standard
  - 73/23/EEC Low Voltage Directive
  - EN 50178 LVD Standard
- IEC529, IEC60034-5, IEC61131-3
- MIL STND 461

## Optional Modules

### CAN annunciator



The EMCP 4 CAN Annunciator serves to display generator set system alarm conditions and status indications.

The annunciator has been designed for use on the accessory communication network and may be used in either local (package mounted) or remote (up to 800 feet) application. A maximum of four annunciators may be used with a single EMCP.

### RS-485 annunciator



The EMCP 4 RS-485 Annunciator serves to display generator set system alarm conditions and status indications. The annunciator has been designed for use on the long distance annunciator datalink and is used for remote (up to 4000 feet) application.

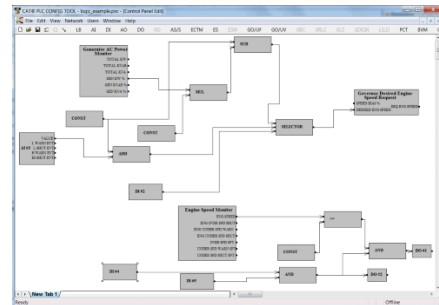
The remote monitoring software allows the user to configure data monitoring and data acquisition processes for monitoring, graphing, and logging of generator set data.

### Remote monitoring software



The EMCP remote monitoring software package is a PC based program which allows the user to monitor and control a generator set, and is capable of running on a Windows based operating system. The remote monitoring software allows the user to configure data monitoring and data acquisition processes for monitoring, graphing, and logging of generator set data.

### Programmable logic software



The EMCP programmable logic software package is a PC based program which allows the configuration of the programmable logic blocks, and is capable of running on a Windows based operating system. The programmable logic software allows the user to configure logic to change the operation of the EMCP control and interfaces within a limited scope.



## Optional Modules (Continued)

### Digital input/output module



The Digital Input/Output (DI/O) module serves to provide expandable Input and Output event capability of the EMCP 4 and is capable of reading 12 digital inputs and setting 8 relay outputs.

The DI/O module has been designed for use on the accessory Communication Network and may be used in either local (package mounted) or remote (up to 800 feet) application.

### RTD module

The RTD module serves to provide expandable generator temperature monitoring capability of the EMCP 4 and is capable of reading up to eight type 2-wire, 3-wire and 4-wire RTD inputs.

The RTD Module has been designed for use on the Accessory Communication Network and may be used in either local (package mounted) or remote (up to 800 feet) application. A maximum of one RTD Module may be used with a single EMCP 4.

### Thermocouple module

The thermocouple module serves to provide expandable engine and generator temperature monitoring capability of the EMCP 4 and is capable of reading up to twenty Type J or K thermocouple inputs.

The thermocouple module has been designed for use on the primary communication network for engine information and the accessory communication network for generator information. It may be used in either local (package mounted) or remote (up to 800 feet) application. A maximum of one thermocouple modules may be used with a single EMCP 4 on each datalink.

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CIRCUIT DESCRIPTION TABLE Model: 3901189.DGM		
CIRCUIT #	COLOR	DESCRIPTION
12	WH	AREP 12
9	WH	AREP 9
10	WH	AREP 10
11	WH	AREP 11
14	WH	PMG A
16	WH	PMG C
15	WH	PMG B
14	WH	PMG A
A11	RD	ANALOG INPUT 1 (+)
A11	BK	ANALOG INPUT 1 (-)
A12	RD	ANALOG INPUT 2 (+)
A12	BK	ANALOG INPUT 2 (-)
SH1	CU	ANLG INP SHIELD 2
SH2	CU	ANLG INP SHIELD 1
F5	BU	EXCITER 5+
F6	WH	EXCITER 6-
AC199	WH	AC NEUTRAL
AC200	GN	CUSTOMER AC GROUND
AC718	WH	CB-JWH L2 TO RLY
AC702	WH	JWH RLY TO HTR L2
AC701	WH	JWH RLY TO HTR L1
AC717	WH	CB-JWH L1 TO RLY
AC720	WH	CB-ALH L2 TO HTR
AC703	WH	ALT HTR RLY TO HTR L1
AC704	WH	RLY TO HTR L1
AC705	WH	RLY TO HTR L2
AC719	WH	CB-ALH L1 TO RLY
AC102	WH	AC LINE INPUT L2
AC101	WH	AC LINE INPUT L1
AC103	WH	CB TO RLY L1
AC104	WH	CB TO RLY L2
AC105	WH	GFCI L1
AC106	WH	GFCI L2
AC107	WH	CB TO L1
AC108	WH	POWER SUPPLY LI
AC109	WH	AC STANDARD L2
101	WH	UNFUSED BTRY (+)
103	WH	+24V BTRY (EMCP)
104	WH	+24V BTRY (ADEM)
106	WH	+24V ALTERNATOR
108	WH	+24V BTRY
148	WH	+24V BTRY FUSED
154	WH	POWER SUPPLY +V
200	WH	GROUND
203	WH	-24V BTRY (EMCP)
208	WH	-24V
229	WH	CLEAR GROUND
C249	WH	POWER SUPPLY
304	WH	ENGINE CRANK
344	WH	E-STOPS LINK 1
345	WH	E-STOPS LINK 2
347	WH	REMOTE E-STOP LINK
348	WH	REMOTE E-STOP
390	WH	ADEM KEY SWITCH
A309	WH	FUEL ENABLE
A338	WH	JWH REMOTE T-STAT SIGNAL
A339	WH	JWH REMOTE T-STAT RETURN
A380	SH	RS485 ANN. SHLD
E486	WH	SENSING VOLTAGE - PHASE A
E487	WH	SENSING VOLTAGE - PHASE B
E488	WH	SENSING VOLTAGE - PHASE C
E494	WH	CT SENSING - PHASE A
E495	WH	CT SENSING - PHASE B
E496	WH	CT SENSING - PHASE C
E497	WH	DROPP SENSING CT
E498	WH	CT RETURN COMMON
F409	WH	SENSING VOLTAGE NEUTRAL
F410	WH	DROPP SENSING CT RETURN
F412	WH	BUSS PHASE A
F413	WH	BUSS PHASE B
F430	WH	GROUND FAULT
F434	WH	GENERATOR PHASE A
F435	WH	GENERATOR PHASE B
F436	WH	GENERATOR PHASE C
G407	RD	RS485 ANN. B (+)
G408	BK	RS485 ANN. A (-)
G409	GY	RS485 ANN. REF
G410	WH	BUSS N
G419	WH	GND FAULT RESET N/C

4

CIRCUIT DESCRIPTION TABLE Model: 3901189.DGM		
CIRCUIT #	COLOR	DESCRIPTION
G420	WH	GND FAULT 4 POLE SW LINK
E553	WH	MOTOR
E560	WH	RLY7 SPARE - CW
E561	WH	RLY7 SPARE - NC
E562	WH	RLY7 SPARE - ND
E563	WH	RLY8 SPARE - CM
E564	WH	RLY8 SPARE - NC
E565	WH	RLY8 SPARE - ND
F526	WH	HEATER/MOTOR RELAY
F541	SH	ANLG INP SHLD 1
F548	WH	+5V ANLG SNSR SUPP
A666	WH	LIGHTS +
A667	WH	LIGHTS -
A774	WH	E-STOP
A779	WH	CB BELL ALARM N/D
A780	WH	CB BELL ALARM N/C
A782	WH	CB BELL ALARM COMMON
E722	WH	S-SPD
E723	BK	D-SPD
L729	WH	CB UNDER VOLTAGE SIGNAL TO CB
M755	GN	CAN (J1939) (-)
M756	YL	CAN (J1939) (+)
M757	SH	CAN (J1939) REF
N702	WH	PMG PHASE A / AREP 11
N703	WH	PMG PHASE B / AREP 9 / SH T4
N704	WH	PMG PHASE C / AREP 12
N705	WH	EXCITER (+)
N706	WH	EXCITER (-)
N713	WH	+/- 10VDC INPUT (A)
N714	WH	+/- 10VDC INPUT (B)
N715	WH	FAULT RESET
N716	WH	EXCITATION DISABLE
N717	WH	VAR/VP ENABLE
N718	WH	VOLTS ADJUST COMMON
N719	WH	VOLTS ADJUST RAISE
N720	WH	VOLTS ADJUST LOWER
N752	WH	ALARM OUTPUT DRIVER
P733	WH	ANALOG INPUT 1 (+)
P734	WH	ANALOG INPUT 1 (-)
W709	WH	CKT BRKR AUX CONTACT (COMMON)
X710	WH	CKT BRKR AUX CONTACT (ND)
X711	WH	CKT BRKR AUX CONTACT (NC)
X713	WH	CKT BRKR CLOSE
B79	WH	REMOTE START
B92	GN	CAT DATA LINK (-)
B93	YL	CAT DATA LINK (+)
P853	WH	BRKR SHUNT TRIP
P854	WH	BRKR SHUNT TRIP
X860	WH	STARTER MAGNETIC SWITCH CB
X861	WH	STARTER MAGNETIC SWITCH PSI
X863	WH	STARTER MAGNETIC COIL (+)
F874	WH	TIMMER TO SWITCH +24V
J904	WH	FAULT SHUTDOWN DRIVER
J905	WH	DRIVER SUPPLY (SD)
L923	WH	SPEED BRICK 1
L932	WH	SPEED BRICK 2
L941	WH	SPEED BRICK 3
L950	WH	MOTOR LIMIT SW (NC)
R951	RD	MODBUS (+)
R952	BK	MODBUS (-)
R953	GY	MODBUS REF
R956	WH	RLY3 SPARE
R957	WH	RLY4 SPARE
R958	WH	RLY5 SPARE (COM SD)
R959	WH	RLY6 SPARE (GR SW)
Y983	WH	DI-01 (LOW COOLANT)
Y984	WH	DI-02 (FUEL LEAK)
Y985	WH	DI-03 SPARE
Y986	WH	DI-04 SPARE
Y987	WH	DI-05 SPARE (BTRY CHGR FAIL)
Y988	WH	DI-06 SPARE (GND FAULT)

3

SYMBOL	DESCRIPTION	ABBREV	COLOR
●	BLADE, SPADE, RING, OR SCREW TERMINAL	RD	RED
—	CIRCUIT CONNECTED	WH	WHITE
+	CIRCUIT NOT CONNECTED	DR	ORANGE
⊥	EARTH GROUND	YL	YELLOW
→	CONNECTOR	CL	CLEAR
→	ATTCH WIRE, CABLE & COMPONENT	BK	BLACK
CBL-XXX	MULTI-CONDUCTOR CABLE	GY	GRAY
⊗	NORMALLY CLOSED CIRCUIT	CU	COPPER
⊙	NORMALLY OPEN CIRCUIT	BR	BROWN
		GN	GREEN
		BU	BLUE
		GN, YL	GREEN/YELLOW
		VI	VIOLET
		BK, WH	BLACK/WHITE

HARNES DESCRIPTION TABLE		
IDENT	PART NUMBER	DESCRIPTION
AH	399-9190	ALTERNATOR SPACE HEATER HARNES
AN	399-9192	RS485 ANNUNCIATOR HARNES
AX	399-9196	CB AUX CONTACTS HARNES
BA	461-6374	RTD HARNES
CA	502-8965	MOTORIZED DAMPERS HARNES-C13
CC	502-8962	SOURCE LIGHTS HARNES
CD	502-8963	20A GFCI (POWER CENTER) HARNES
CE	502-8966	20A GFCI (CONTROL) HARNES
CF	502-8964	ENCLOSURE SPACE HEATER HARNES
CG	502-8968	COLD WEATHER BATTERY HARNES
CH	502-8970	MOTORIZED DAMPERS HARNES-C15 & C18
CK	523-9094	MOTORIZED DAMPER SWITCH HARNES
CW	502-8960	L0AD CENTER HARNES
EM	399-9211	EM-10 JUMPER HARNES
EN	390-1198	ENGINE INTERFACE HARNES
EN	449-0626	ENGINE HARNES (C9 ENGINE)
EP	N/A	EPIC FIELD INTERCONNECTION
ER	399-9218	BATTERY CHARGER HARNES
ET	390-1219	ENCLOSURE E-STOP HARNES
EV	399-9212	EM-10 PWM HARNES
FF	399-9201	SHUNT TRIP CONTROL HARNES
FL	399-9200	FUEL TANK OPTIONS HARNES
FT	399-9202	SHUNT TRIP HARNES
GR	399-9204	GEN ALARM RELAYS HARNES
JP	390-1201	JACKET WATER HEATER CORD
JW	399-9208	JACKET WATER HEATER HARNES
PG	443-0637	IVR WITH PMG HARNES
PL	390-1192	EMCP 4.2 INTERFACE HARNES
RA	N/A	REMOTE ANNUNCIATOR REPRESENTATION
RC	399-9210	SHORE POWER CONTROL HARNES
RF	399-9197	R-FRAME CB HARNES
VA	399-9216	AC SENSING HARNES
R	453-9691	OPTIONAL DID MODULE
DS	443-7021	OPTIONAL DEVICE SERVER
GF	399-9197	OPTIONAL GROUND FAULT INDICATION HARNES AS
YH	453-9692	HARNES AS
DC	N/A	OPTIONAL DEVICE SERVER
JK	121-3365	LOW COOLANT LVL HARNES C18PD
SM	525-8343	JUMPER HARNES STARTER MOTOR C18PD
T	541-1578	PLG6xxx HARNES

2

- NOTE A: REMOVE AND DISCARD THIS JUMPER WHEN INSTALLING REMOTE E-STOP OPTION. REPLACE WITH REMOTE E-STOP WIRES.
- NOTE B: RELOCATE TERMINATING RESISTOR FROM TERMINAL STRIP TO FURTHER REMOTE ANNUNCIATOR OR REMOTE I/D MODULE TO EXTEND ACCESSORY DATA LINK TO ADD REMOTE ANNUNCIATOR(S) AND REMOTE I/D MODULES.
- NOTE C: REMOVE AND DISCARD THIS JUMPER WHEN INSTALLING ENCLOSURE E-STOP. REPLACE WITH ENCLOSURE E-STOP WIRES.
- NOTE D: TERMINAL BLOCK RAIL IS F1W 250 A TO 800 A CIRCUIT BREAKERS AND IS LOCATED EXTERNAL TO THE CIRCUIT BREAKER. 1200 A CIRCUIT BREAKER HAS TERMINALS LOCATED ON THE CIRCUIT BREAKER. SECOND BREAKER (250 A-800 A) USES THE SECOND SET OF AUX AND SHUNT HARNES.
- NOTE E: USE PIN 24 WITH SECOND CIRCUIT BREAKER
- NOTE F: SUPPLY APPROPRIATE VOLTAGE AND SIZE THE WIRE AWG ACCORDINGLY
- NOTE G: MCP: E1TB / E1-CBT FOR GEN 1  
E2TB / E2-CBT FOR GEN 2  
GCP: E1B - E-CTB
- NOTE H: REQUIRES EMCP4.2 PROGRAMMING
- NOTE J: ONLY ONE TYPE OF SPEED BIAS SHOULD BE USED: IF THE ANALOG SPEED BIAS IS USED THE, SPEED PDT ON THE EPIC PANEL WILL NOT OPERATE. IF THE PWM SPEED BIAS IS USED, THE SPEED BRICK (9X-9591) IS REQUIRED
- NOTE K: \*YU\* COIL HAS TO BE POWERED FOR THE BREAKER TO OPERATE, REMOVING POWER TO \*YU\* COIL WILL TRIP THE BREAKER.

CROSS REF, SHEET INDEX & NOTES

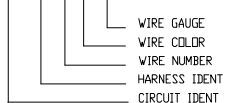
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INDEX TABLE	
SHEET INDEX	DESCRIPTION
1	CROSS REF, SHEET INDEX & NOTES
2	COMPONENT LAYOUT
3	CUSTOMER CONNECTION
4	AC - WIRING
5	INPUT/OUTPUT - WIRING
6	ENGINE INTERFACE - WIRING
7	COMMUNICATION - WIRING
8	DC/CIRCUIT BREAKERS OPTIONAL - WIRING
9	AC/SHORE POWER OPTIONAL - WIRING C9
10	AC/SHORE POWER OPTIONAL - WIRING C15 & C18
11	OPTIONS-DID MODULE AND GROUND FAULT
12	OPTIONAL DEVICE SERVER
13	COLD WEATHER OPTIONAL-C13
14	COLD WEATHER OPTIONAL-C15 & 18
15	EPIC FIELD INTERCONNECTION
16	TELEMATICS PLG601 & PLG641
17	BREAKER CIRCUIT (250 A) J FRAME

F-F	(03B1)
E-E	(02B1)
D-D	(02C1)
C-C	(02C1)
B	(03A2)
A	(03A4)
IDENT	SH/LDC
SECTION, VIEW, AND DETAIL INDEX	

WIRE NAME DEFINITION

XXXX-XX# XX-XX-XX-UL

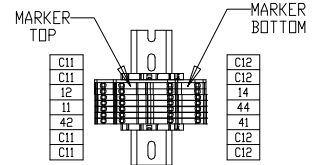
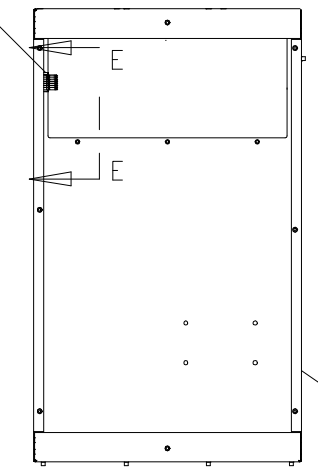
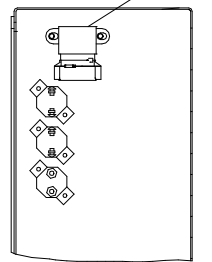
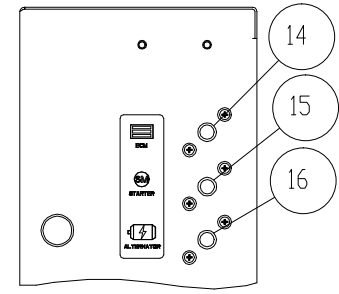
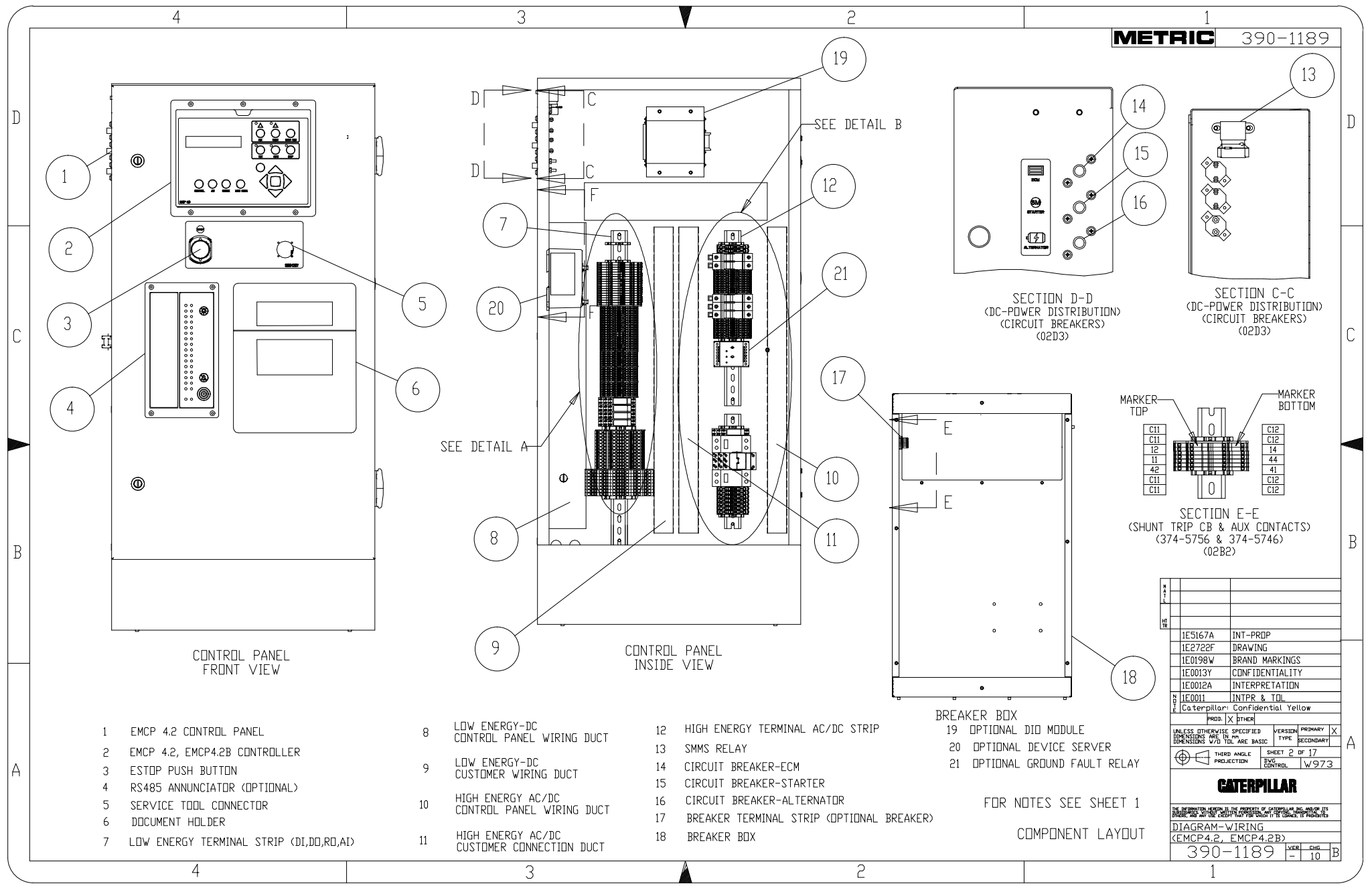


A	B	C	D	E	F	G	H	I	J	K	L	M	N	UNLESS OTHERWISE SPECIFIED		VERSION	PRIMARY TYPE	SECONDARY TYPE
														THIRD ANGLE PROJECTION	DWG CONTROL			
															<input checked="" type="checkbox"/>			

CATERPILLAR

DIMENSIONS UNLESS OTHERWISE SPECIFIED ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED.	
DIAGRAM - WIRING (EMCP4.2, EMCP4.2B)	
390-1189	10
VER	CHE

1



CONTROL PANEL FRONT VIEW

CONTROL PANEL INSIDE VIEW

BREAKER BOX

- 1 EMCP 4.2 CONTROL PANEL
- 2 EMCP 4.2, EMCP4.2B CONTROLLER
- 3 ESTOP PUSH BUTTON
- 4 RS485 ANNUNCIATOR (OPTIONAL)
- 5 SERVICE TOOL CONNECTOR
- 6 DOCUMENT HOLDER
- 7 LOW ENERGY TERMINAL STRIP (DI,DO,RO,AI)

- 8 LOW ENERGY-DC CONTROL PANEL WIRING DUCT
- 9 LOW ENERGY-DC CUSTOMER WIRING DUCT
- 10 HIGH ENERGY AC/DC CONTROL PANEL WIRING DUCT
- 11 HIGH ENERGY AC/DC CUSTOMER CONNECTION DUCT

- 12 HIGH ENERGY TERMINAL AC/DC STRIP
- 13 SMMS RELAY
- 14 CIRCUIT BREAKER-ECM
- 15 CIRCUIT BREAKER-STARTER
- 16 CIRCUIT BREAKER-ALTERNATOR
- 17 BREAKER TERMINAL STRIP (OPTIONAL BREAKER)
- 18 BREAKER BOX

- 19 OPTIONAL DIO MODULE
- 20 OPTIONAL DEVICE SERVER
- 21 OPTIONAL GROUND FAULT RELAY

FOR NOTES SEE SHEET 1

COMPONENT LAYOUT

REV				
DATE				
HT				
	1E5167A	INT-PRDP		
	1E2722F	DRAWING		
	1E0198W	BRAND MARKINGS		
	1E0013Y	CONFIDENTIALITY		
	1E0012A	INTERPRETATION		
	1E0011	INTPR & TOL		
	Caterpillar: Confidential Yellow			
	PROD.	<input checked="" type="checkbox"/>	OTHER	
	UNLESS OTHERWISE SPECIFIED	VERSION	PRIMARY	<input checked="" type="checkbox"/>
	DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED	TYPE	SECONDARY	
	TOLERANCES UNLESS OTHERWISE SPECIFIED			
	THIRD ANGLE PROJECTION	SHEET	2 OF 17	
		DWG CONTROL	W973	
<b>CATERPILLAR</b>				
<small>ALL INFORMATION CONTAINED HEREIN IS THE PROPERTY OF CATERPILLAR INC. AND IS TO BE KEPT CONFIDENTIAL AND NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM.</small>				
DIAGRAM - WIRING (EMCP4.2, EMCP4.2B)				
390-1189				
	VER	CHG		
	-	10		

MARKERS

S-	SPD
D-	SPD
CDL	+
CDL	-
A13	SH
A13	SS
RME	S-A
RME	S-B
ENE	S2
DI-	01
DI-	03
DI-	05
RLY	3
RLY	6
RLY	7CM
RLY	8NO
RLY	8NC

MARKER TOP

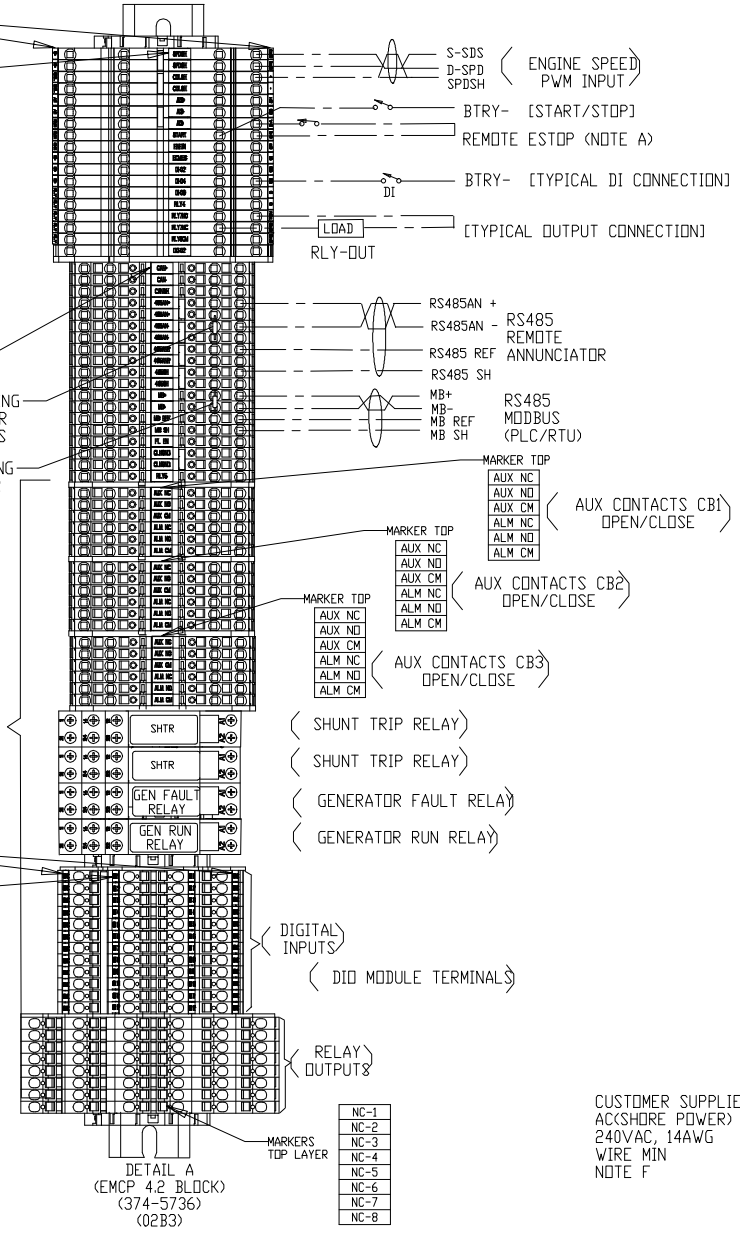
SPDSH
SPDSH
CDLSH
CDLSH
A13+
A13-
A13-
START
ENES1
ECMES
DI-02
DI-04
DI-06
RLY4
RLY7NO
RLY7NC
RLY8CM
DD-02

MARKER TOP

CAN+
CAN-
CANSH
485AN+
485AN-
485AN-
485AN-
485ANR
485ANR
485SH
485SH
MB+
MB-
MB REF
MB SH
FL EN
CLNGND
CLNGND
RLYS

MARKERS CENTER LAYER

DIN1	DIN1
DIN2	DIN2
DIN3	DIN3
DIN4	DIN4
DIN5	DIN5
DIN6	DIN6
DIN7	DIN7
DIN8	DIN8
DIN9	DIN9
DIN10	DIN10
DIN11	DIN11
DIN12	DIN12
ND-1	ND-1
ND-2	ND-2
ND-3	ND-3
ND-4	ND-4
ND-5	ND-5
ND-6	ND-6
ND-7	ND-7
ND-8	ND-8



MARKERS BOTTOM LAYER

DIN-C	DIN-C
DIN-C	DIN-C
DIN-C	DIN-C
DIN-C	DIN-C
DIN-C	DIN-C
DIN-C	DIN-C
DIN-C	DIN-C
DIN-C	DIN-C
DIN-C	DIN-C
DIN-C	DIN-C
DIN-C	DIN-C
DIN-C	DIN-C
C-1	C-1
C-2	C-2
C-2	C-2
C-3	C-3
C-4	C-4
C-5	C-5
C-6	C-6
C-7	C-7
C-7	C-7
C-8	C-8

MARKERS TOP LAYER

NC-1
NC-2
NC-3
NC-4
NC-5
NC-6
NC-7
NC-8

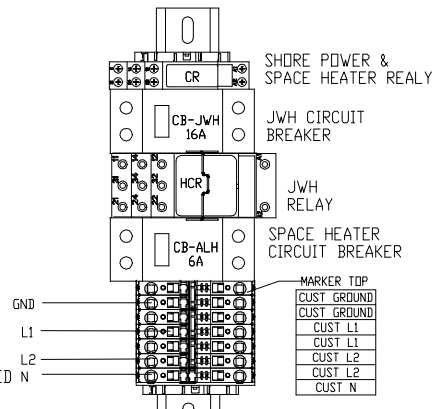
CUSTOMER SUPPLIED AC(SHORE POWER) 240VAC, 14AWG WIRE MIN NOTE F

DC POWER FUSES CONTROLS

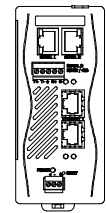
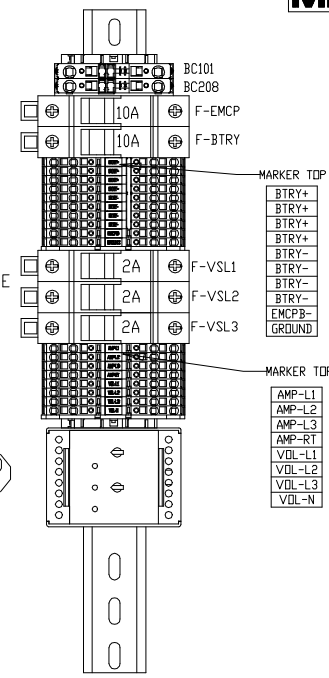
AC VOLTAGE SENSING FUSES

(OPTIONAL GROUND) FAULT RELAY

AC OPTIONAL SHORE POWER



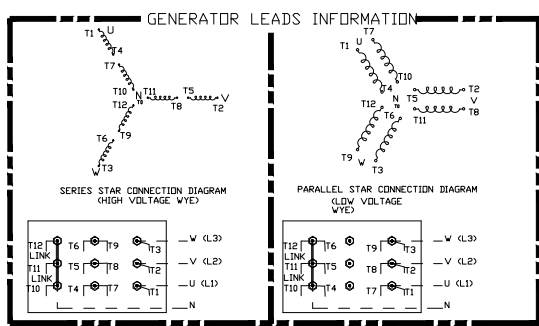
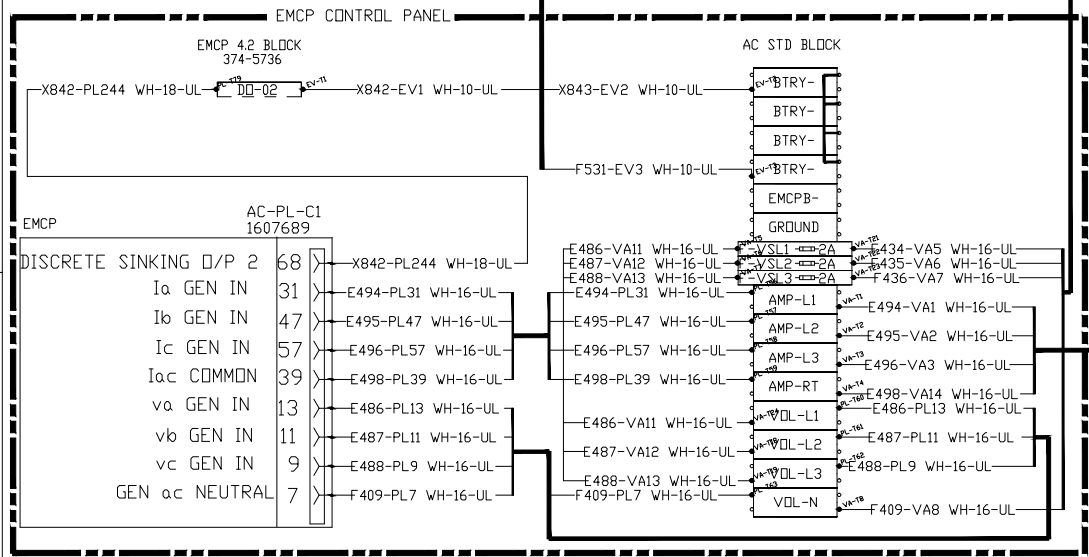
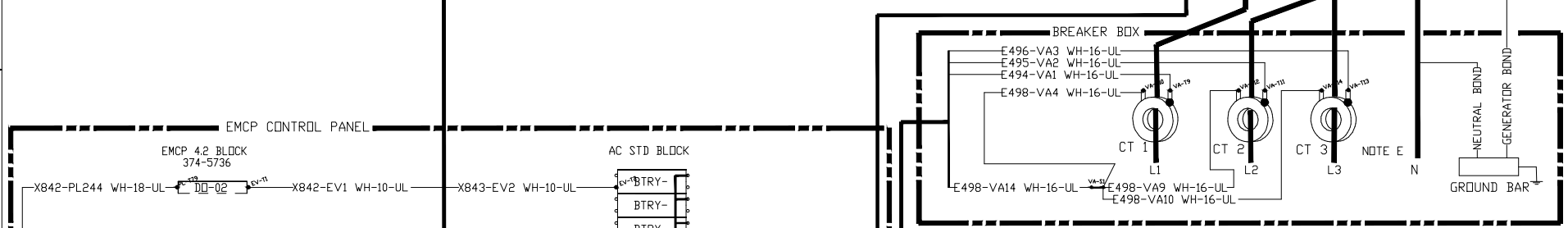
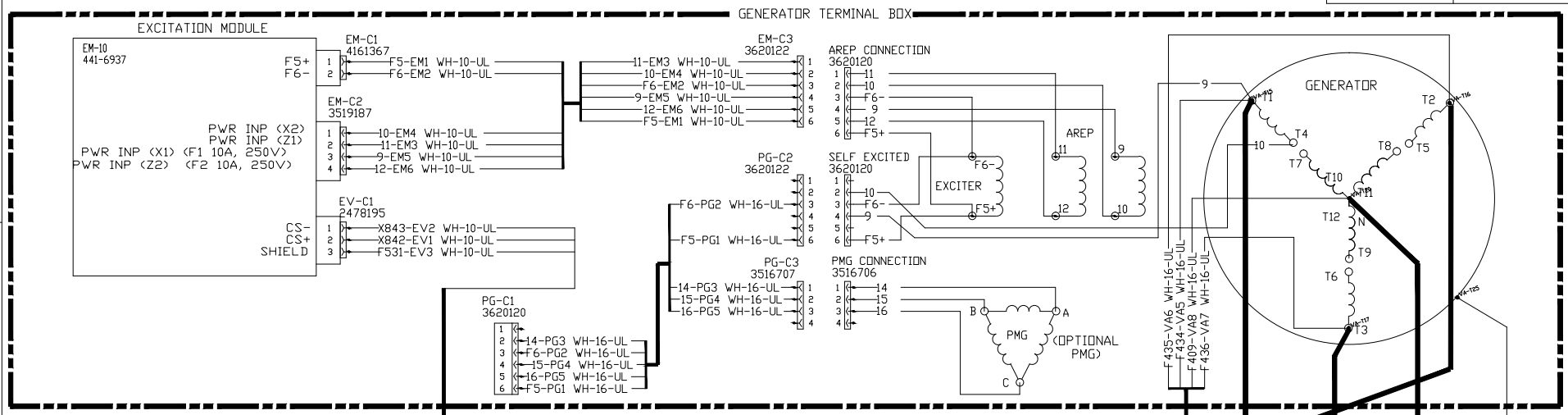
DETAIL B (AC STD. BLOCK) (374-5735) (02D2)



SECTION F-F (OPTIONAL DEVICE SERVER) (02D3)

1E5167A	INT-PRDP
1E2722F	DRAWING
1E0198W	BRAND MARKINGS
1E0013Y	CONFIDENTIALITY
1E0012A	INTERPRETATION
1E0011	INTPR & TOL
Caterpillar Confidential Yellow	
PROD. X OTHER	
UNLESS OTHERWISE SPECIFIED	VERSION PRIMARY
DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED	TYPE SECONDARY
THIRD ANGLE PROJECTION	SHEET 3 OF 17
DWG CONTROL	W973
<b>CATERPILLAR</b>	
DIAGRAM-WIRING (EMCP4.2, EMCP4.2B)	
390-1189	VER - 10

FOR NOTES SEE SHEET 1 CUSTOMER CONNECTION



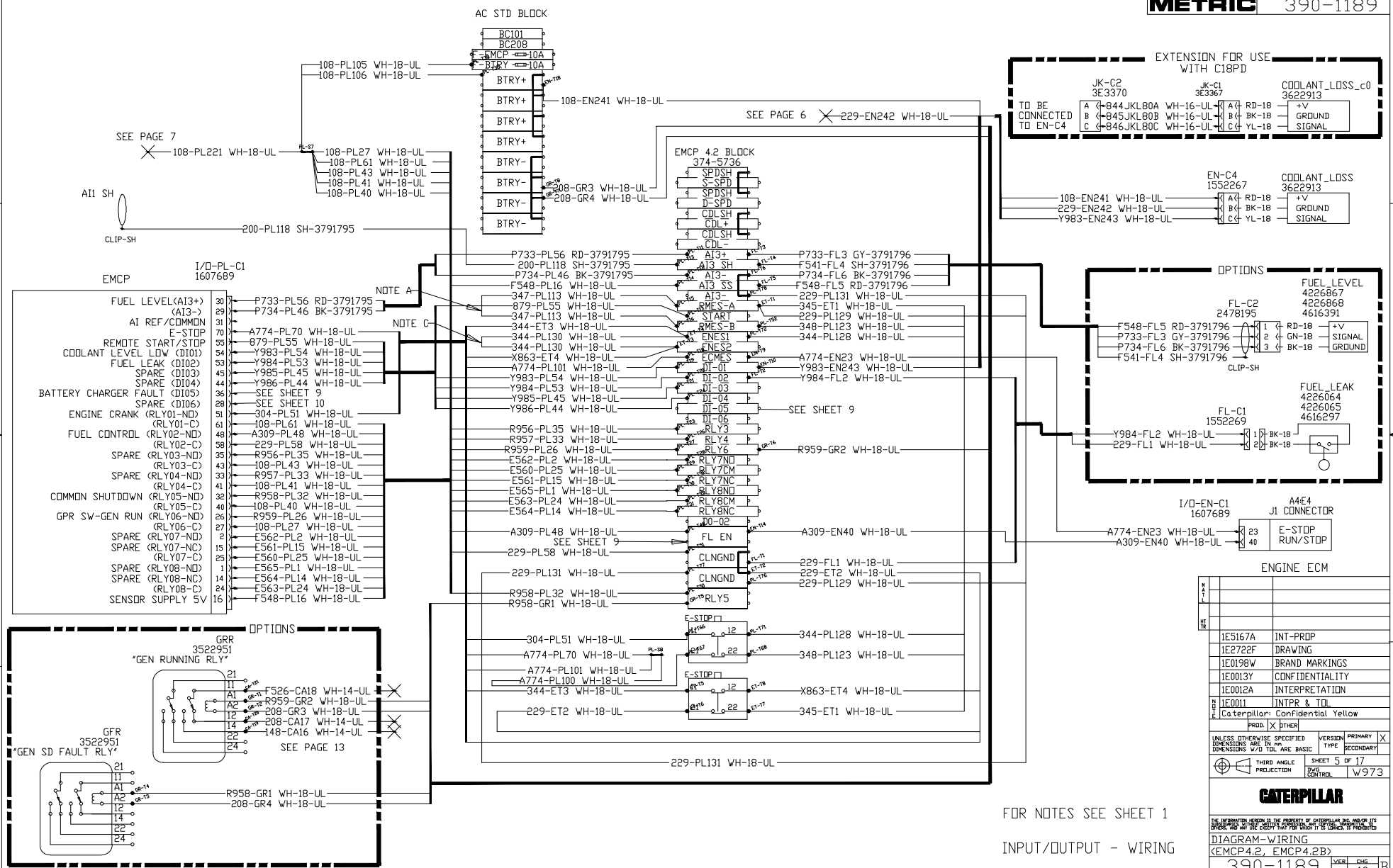
1E5167A	INT-PRDP
1E2722F	DRAWING
1E0198W	BRAND MARKINGS
1E0013Y	CONFIDENTIALITY
1E0012A	INTERPRETATION
1E0011	INTPR & TOL
Caterpillar: Confidential Yellow	
Prod. <input checked="" type="checkbox"/> OTHER	
UNLESS OTHERWISE SPECIFIED	VERSION PRIMARY
DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED	TYPE SECONDARY
THIRD ANGLE PROJECTION	SHEET 4 OF 17
DWG. EBY/MLD	W973
<b>CATERPILLAR</b>	
FOR NOTES SEE SHEET 1	
AC - WIRING	
DIAGRAM-WIRING (EMCP4.2, EMCP4.2B)	
390-1189	VER. CHE
	10

4

3

2

1



**EXTENSION FOR USE WITH C18PD**

TO BE CONNECTED TO EN-C4	JK-C2 3E3370	JK-C1 3E3367	COOLANT_LOSS_c0 3622913
A	7-844JKL90A WH-16-UL	4	RD-18
B	4-845JKL80B WH-16-UL	8	BK-18
C	3-846JKL80C WH-16-UL	4	YL-18

**EN-C4 1552267**

108-EN241 WH-18-UL	4	RD-18	+V
229-EN242 WH-18-UL	8	BK-18	GROUND
Y983-EN243 WH-18-UL	4	YL-18	SIGNAL

**OPTIONS**

**FUEL LEVEL**  
4226867  
4226868  
4616391

FL-C2 2478195

1	RD-18	+V
2	GN-18	SIGNAL
3	BK-18	GROUND

**FUEL LEAK**  
4226064  
4226065  
4616297

FL-C1 1552269

1	BK-18	
2	BK-18	

**I/O-EN-C1 1607689**

23	A4E4	J1 CONNECTOR
40		E-STOP RUN/STOP

**ENGINE ECM**

IE5167A	INT-PRDP
IE2722F	DRAWING
IE0198W	BRAND MARKINGS
IE0013Y	CONFIDENTIALITY
IE0012A	INTERPRETATION
IE0011	INTPR & TOL

Prod.  OTHER

UNLESS OTHERWISE SPECIFIED	VERSION	PRIMARY	<input checked="" type="checkbox"/>
DIMENSIONS ARE IN INCHES BASIC	TYPE	SECONDARY	
DIMENSIONS IN MILLIMETERS ARE IN PARENTHESES			
THIRD ANGLE PROJECTION	SHEET 5 OF 17		
DWG CONTROL	W973		

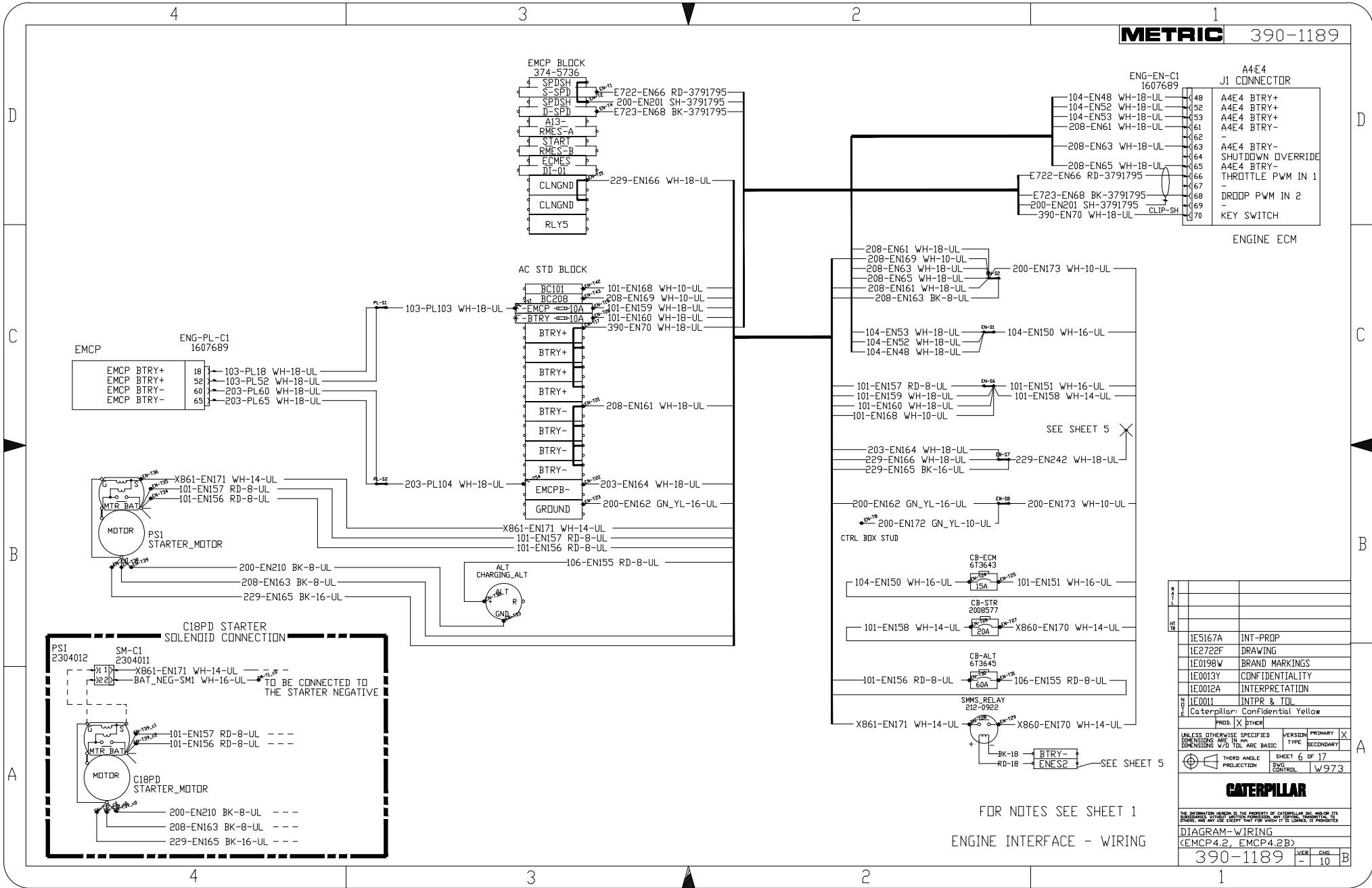
**CATERPILLAR**

DIAGRAM-WIRING  
(EMCP4.2, EMCP4.2B)

390-1189

VER	CHK
-	10

FOR NOTES SEE SHEET 1  
INPUT/OUTPUT - WIRING



REV	DESCRIPTION	DATE
1	ISSUED	
2		
3		
4		

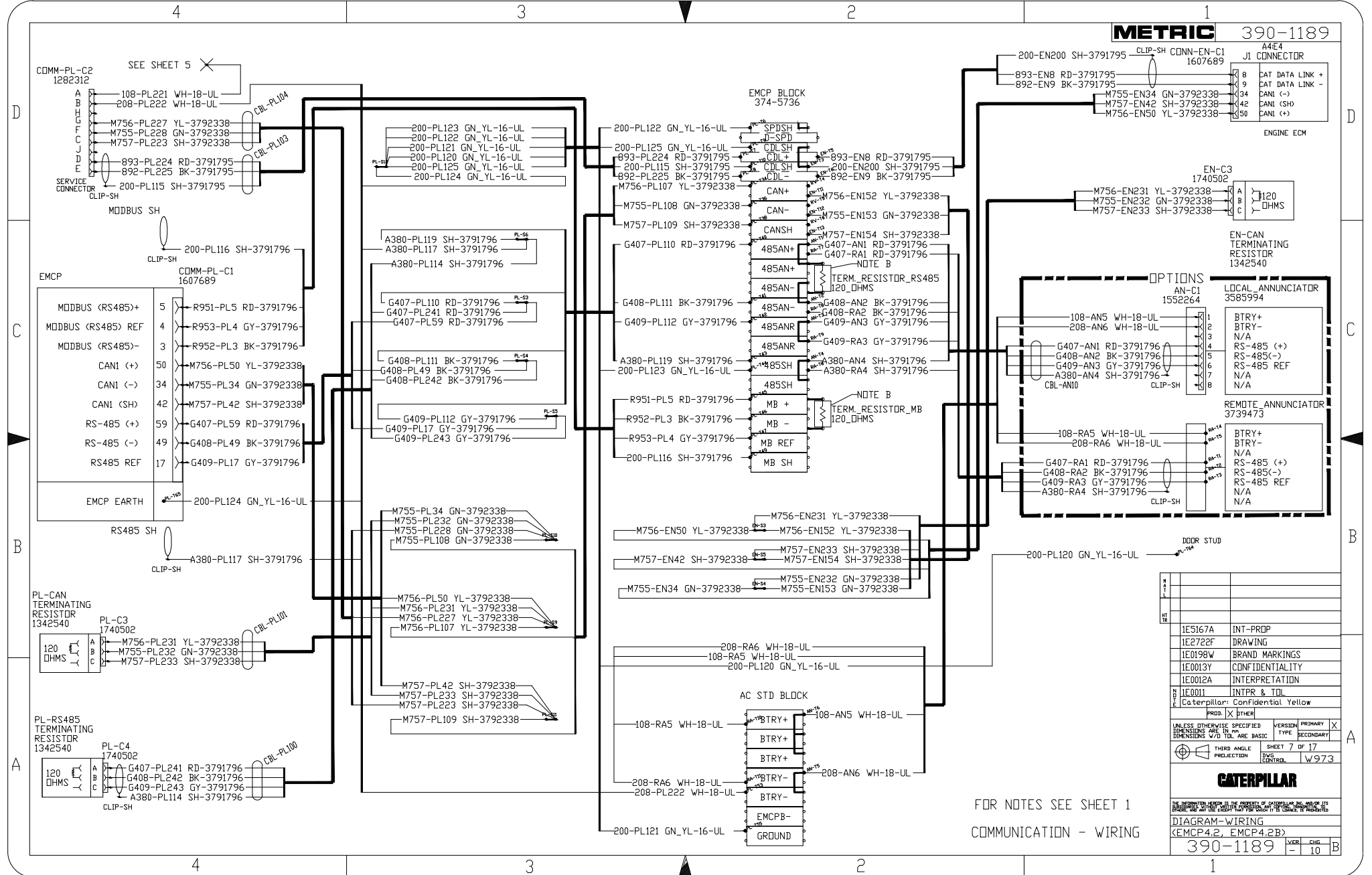
  

NO	DESCRIPTION	DATE
1	1E5167A INT-PRDP	
2	1E2722F DRAWING	
3	1E0198W BRAND MARKINGS	
4	1E0013Y CONFIDENTIALITY	
5	1E0012A INTERPRETATION	
6	1E0011 INTPR & TOL	

PROD:  OTHER

UNLESS OTHERWISE SPECIFIED	VERSION	PRIMARY
DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED	TYPE	SECONDARY
THIRD ANGLE PROJECTION	SHEET 6 OF 17	
3/16" CONTROL	W973	

FOR NOTES SEE SHEET 1  
ENGINE INTERFACE - WIRING



1E1567A	INT-PRDP
1E2722F	DRAWING
1E0198W	BRAND MARKINGS
1E0013Y	CONFIDENTIALITY
1E0012A	INTERPRETATION
1E0011	INTPR & TOL
Caterpillar: Confidential Yellow	
PROD. <input checked="" type="checkbox"/>	OTHER
UNLESS OTHERWISE SPECIFIED	VERSION PRIMARY
DIMENSIONS ARE IN INCHES	TYPE SECONDARY
TOLERANCES UNLESS OTHERWISE SPECIFIED	
THIRD ANGLE PROJECTION	SHEET 7 OF 17
DWG. CONTROL	10973



FOR NOTES SEE SHEET 1  
COMMUNICATION - WIRING

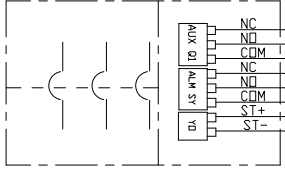
DIAGRAM - WIRING	
(EMCP4.2, EMCP4.2B)	
390-1189	VER. 10



4 3 2 1

BREAKER BOX

T4/T5/T6 FRAME BREAKER  
(250/400/600/800 A)



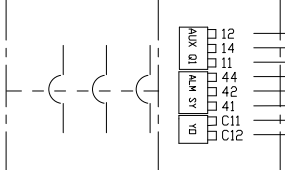
12  
14  
11  
96  
98  
95  
C1  
C2

CB RAIL  
374-5746  
374-5756

NOTE D

X711-AX1 WH-18-UL  
X710-AX2 WH-18-UL  
X709-AX3 WH-18-UL  
A780-AX4 WH-18-UL  
A779-AX5 WH-18-UL  
A782-AX6 WH-18-UL  
P854-FT1 WH-18-UL  
P853-FT2 WH-18-UL

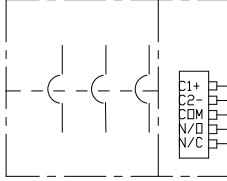
T7 FRAME BREAKER  
(1200 A)



X711-AX1  
X710-AX2  
X709-AX3  
NC  
ND  
A780-AX4  
A779-AX5  
A782-AX6  
CDM  
ST+  
ST-  
P854-FT1  
P853-FT2

CB2 AND CB3 USES THE SAME HARNESS  
AND SIMILAR LANDING LOCATIONS AS  
T-FRAME CBI BREAKER  
SEE SHEET 17

R FRAME  
(1600/2000/2500/3000 A)

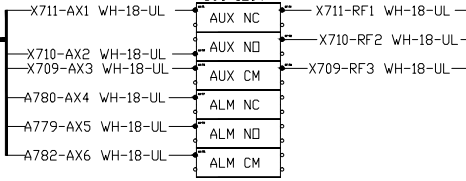


R-FRAME CB 3E3388  
RF-C1 1552264

1  
2  
3  
4  
5  
6  
7  
8

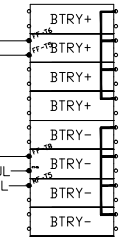
P854-RF5 WH-18-UL  
P853-RF4 WH-18-UL  
X709-RF3 WH-18-UL  
X710-RF2 WH-18-UL  
X711-RF1 WH-18-UL

CB AUX CONTACTS  
390-1204



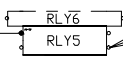
X711-AX1 WH-18-UL  
X710-AX2 WH-18-UL  
X709-AX3 WH-18-UL  
A780-AX4 WH-18-UL  
A779-AX5 WH-18-UL  
A782-AX6 WH-18-UL  
X711-RF1 WH-18-UL  
X710-RF2 WH-18-UL  
X709-RF3 WH-18-UL

AC STD BLOCK



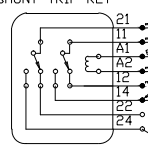
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108-FF4 WH-18-UL  
208-FF3 WH-18-UL  
P853-FT2 WH-18-UL  
P853-RF4 WH-18-UL

EMCP BLOCK  
374-5736



R958-FF2 WH-18-UL

SHTR 3522951  
\*SHUNT TRIP RLY\*

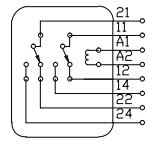


21  
11  
A1  
A2  
12  
14  
22  
24

108-FF4 WH-18-UL  
108-FF1 WH-18-UL  
R958-FF2 WH-18-UL  
208-FF3 WH-18-UL  
P854-FT1 WH-18-UL  
P854-RF5 WH-18-UL

NOTE E

SHTR 1 3522951  
\*SHUNT TRIP RLY\*



21  
11  
A1  
A2  
12  
14  
22  
24

RELAY USED FOR CB3 WIRING  
AND CONNECTIONS ARE SIMILAR  
AS T-FRAME CBI

FOR NOTES SEE SHEET 1  
DC/CIRCUIT BREAKERS OPTIONAL - WIRING

REV			
DATE			
BY			
CHKD			
APP'D			
TITLE			
DESCRIPTION			
1E5167A	INT-PRDP		
1E2722F	DRAWING		
1E0198W	BRAND MARKINGS		
1E0013Y	CONFIDENTIALITY		
1E0012A	INTERPRETATION		
1E0011	INTPR & TOL		
Caterpillar: Confidential Yellow			
PROD. <input checked="" type="checkbox"/> OTHER			
UNLESS OTHERWISE SPECIFIED	VERSION	PRIMARY	<input checked="" type="checkbox"/>
DIMENSIONS ARE IN INCHES BASIC	TYPE	SECONDARY	
THIRD ANGLE PROJECTION		SHEET 8 OF 17	
DWG CONTROL		W973	
<b>CATERPILLAR</b>			
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DIAGRAM-WIRING (EMCP4.2, EMCP4.2B)			
390-1189			
VER	CHK		
-	10		

4 3 2 1

D

D

C

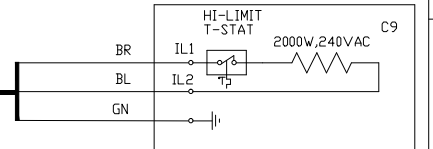
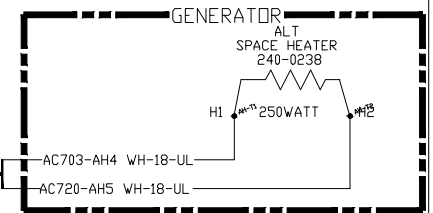
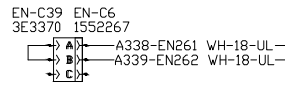
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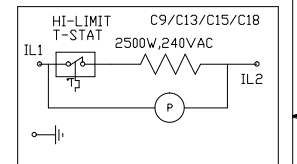
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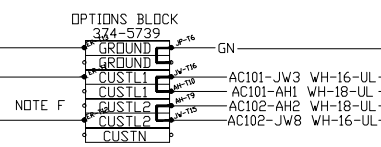
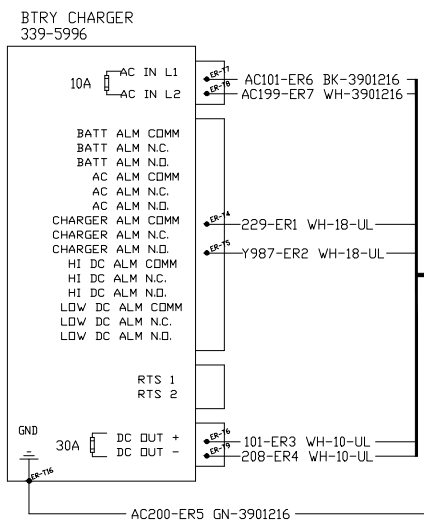
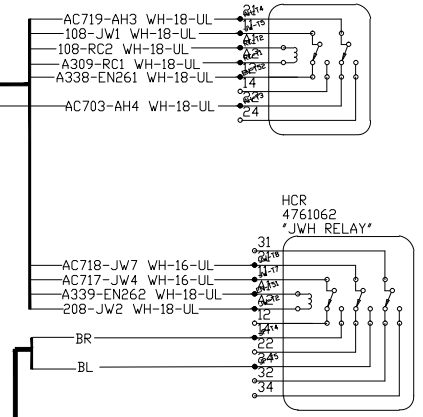
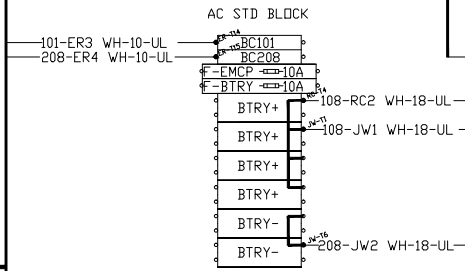
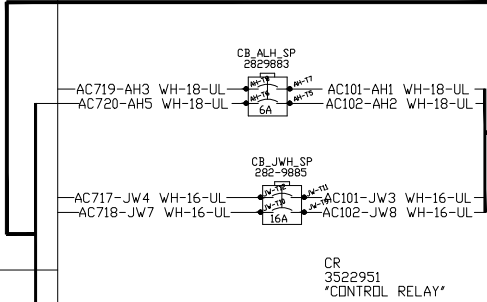
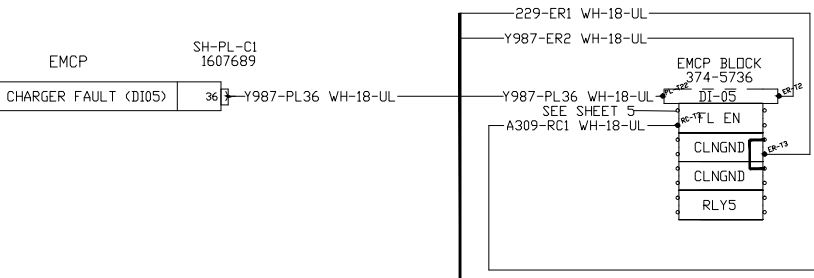
A



JACKET WATER HEATER  
449-0763 (C9, 2000 WATT, 240VAC)



JACKET WATER HEATER-PUMP  
463-2449  
(C9/C13/C15/C18,2500W,240VAC)



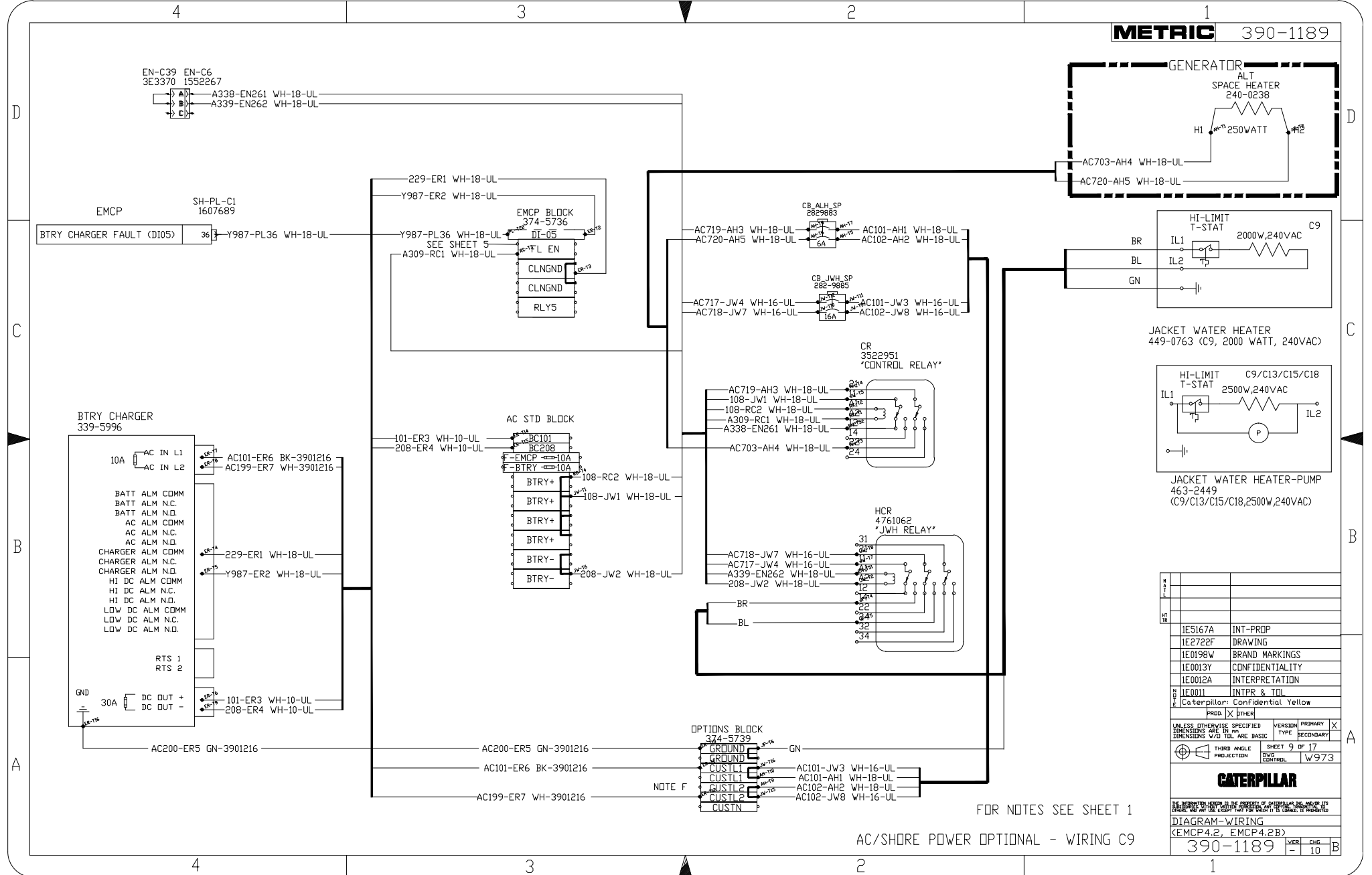
IE5167A	INT-PRDP
IE2722F	DRAWING
IE0198W	BRAND MARKINGS
IE0013Y	CONFIDENTIALITY
IE0012A	INTERPRETATION
IE0011	INTPR & TDL
Caterpillar: Confidential Yellow	
PRD	<input checked="" type="checkbox"/> OTHER
UNLESS OTHERWISE SPECIFIED	
DIMENSIONS	TYPE PRIMARY
DIMENSIONS W/O TOL	TYPE SECONDARY
THIRD ANGLE PROJECTION	SHEET 9 OF 17
DWG CONTROL	W973

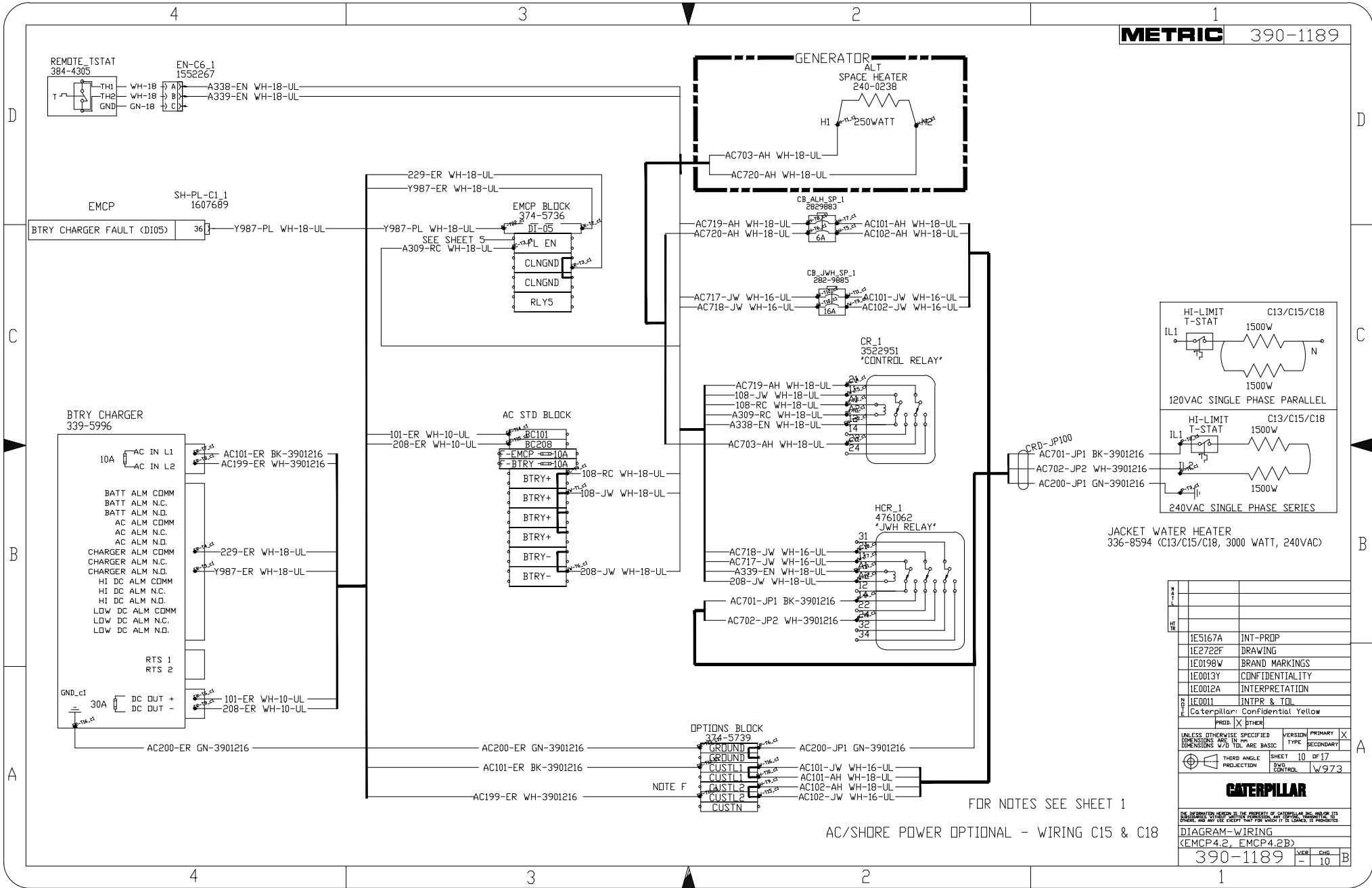
CATERPILLAR

DIAGRAM-WIRING  
(EMCP4.2, EMCP4.2B)  
390-1189

FOR NOTES SEE SHEET 1

AC/SHORE POWER OPTIONAL - WIRING C9

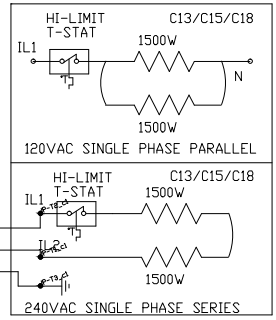




NOTE F

FOR NOTES SEE SHEET 1

AC/SORE POWER OPTIONAL - WIRING C15 & C18



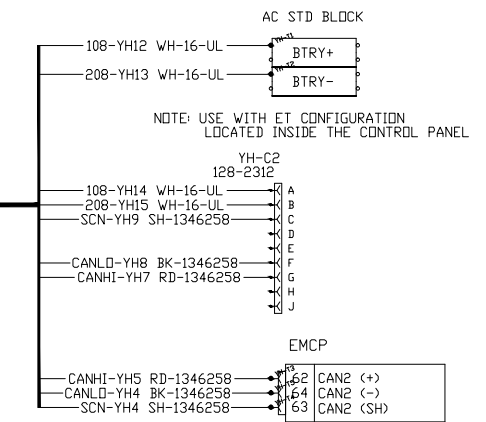
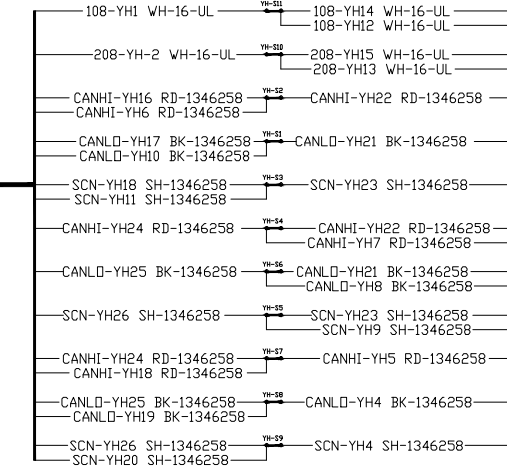
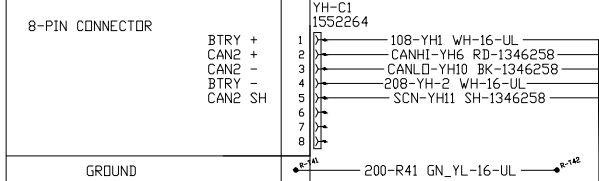
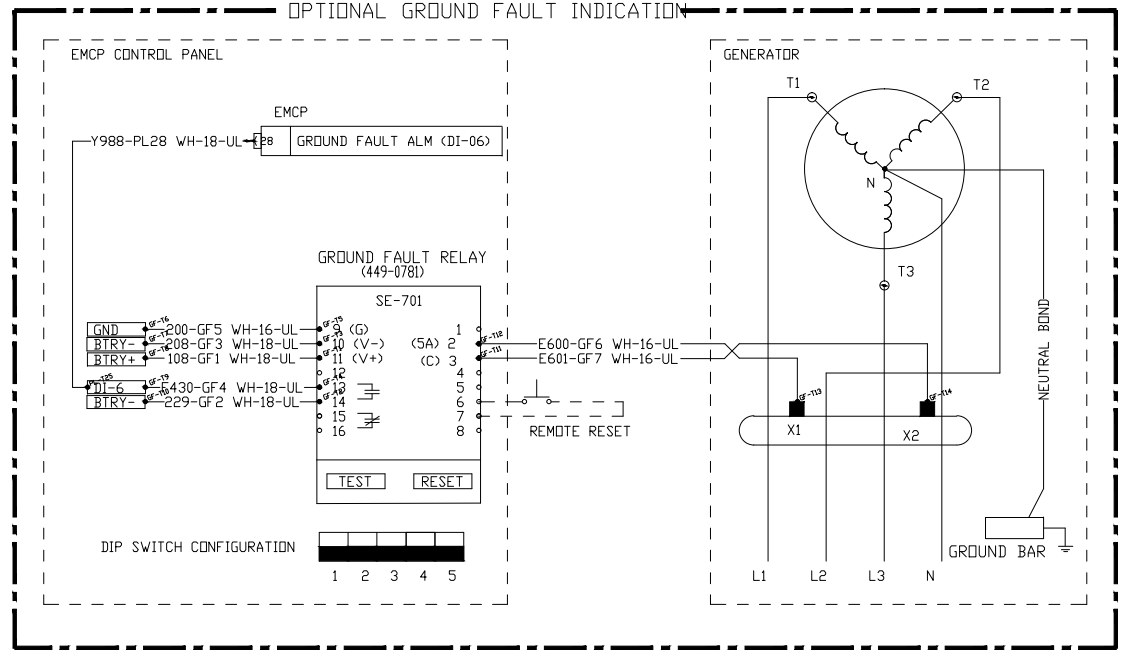
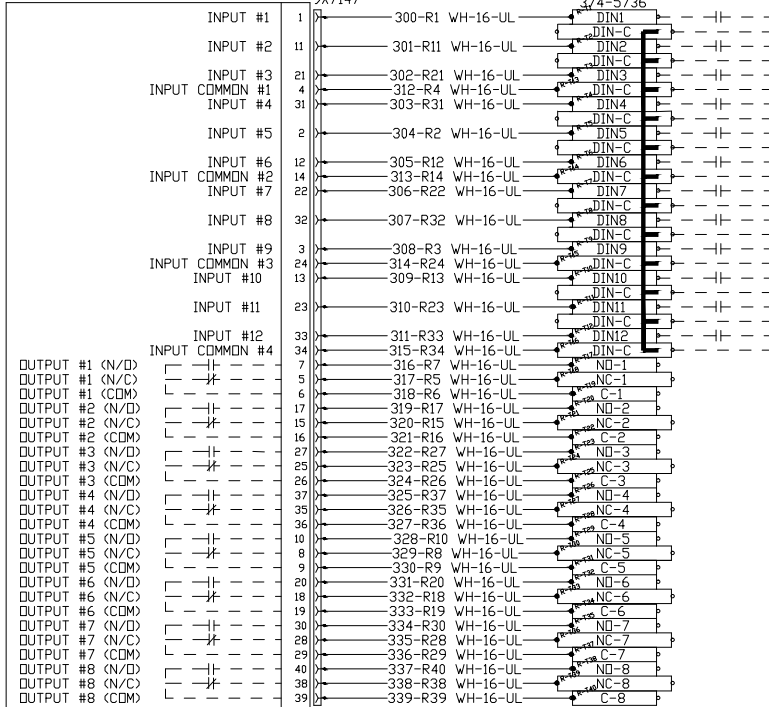
JACKET WATER HEATER  
 336-8594 (C13/C15/C18, 3000 WATT, 240VAC)

REV				
DATE				
DESCRIPTION				
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1E2722F	DRAWING			
1E0198W	BRAND MARKINGS			
1E0013Y	CONFIDENTIALITY			
1E0012A	INTERPRETATION			
1E0011	INTPR & TDL			
Caterpillar: Confidential Yellow				
PRD. <input checked="" type="checkbox"/> OTHER				
UNLESS OTHERWISE SPECIFIED	VERSION	PRIMARY		
DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED	TYPE	SECONDARY		
THIRD ANGLE PROJECTION	SHEET	10	OF 17	
	DWG. CONTROL.	W973		
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DIAGRAM-WIRING (EMCP4.2, EMCP4.2B)				
390-1189				
	VER	CHK		
	-	10		

DISCRETE I/O MODULE  
234-0275

OPTIONAL DIO MODULE

OPTIONAL GROUND FAULT INDICATION



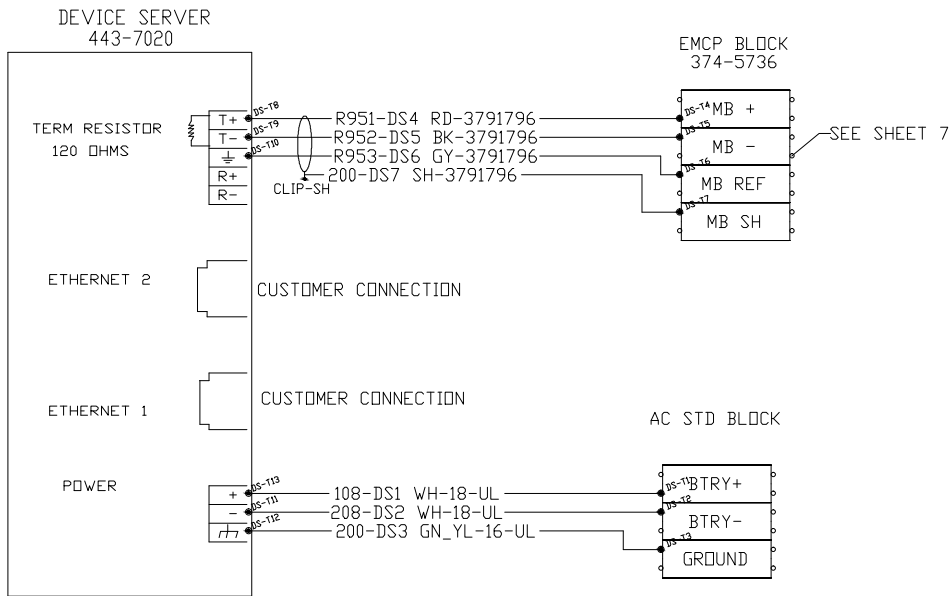
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1		
2		
3		
4		
5		

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1E2722F	DRAWING
1E0198W	BRAND MARKINGS
1E0013Y	CONFIDENTIALITY
1E0012A	INTERPRETATION
1E0011	INTPR & TDL
Caterpillar: Confidential Yellow	
PRD: [X]	OTHER
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES BASIC	
THIRD ANGLE PROJECTION	SHEET 11 OF 17
DWG CONTROL	W973
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DIAGRAM-WIRING (EMCP4.2, EMCP4.2B)	
390-1189	LVER: CHS
-	10

FOR NOTES SEE SHEET 1

OPTIONS-DIO MODULE AND GROUND FAULT

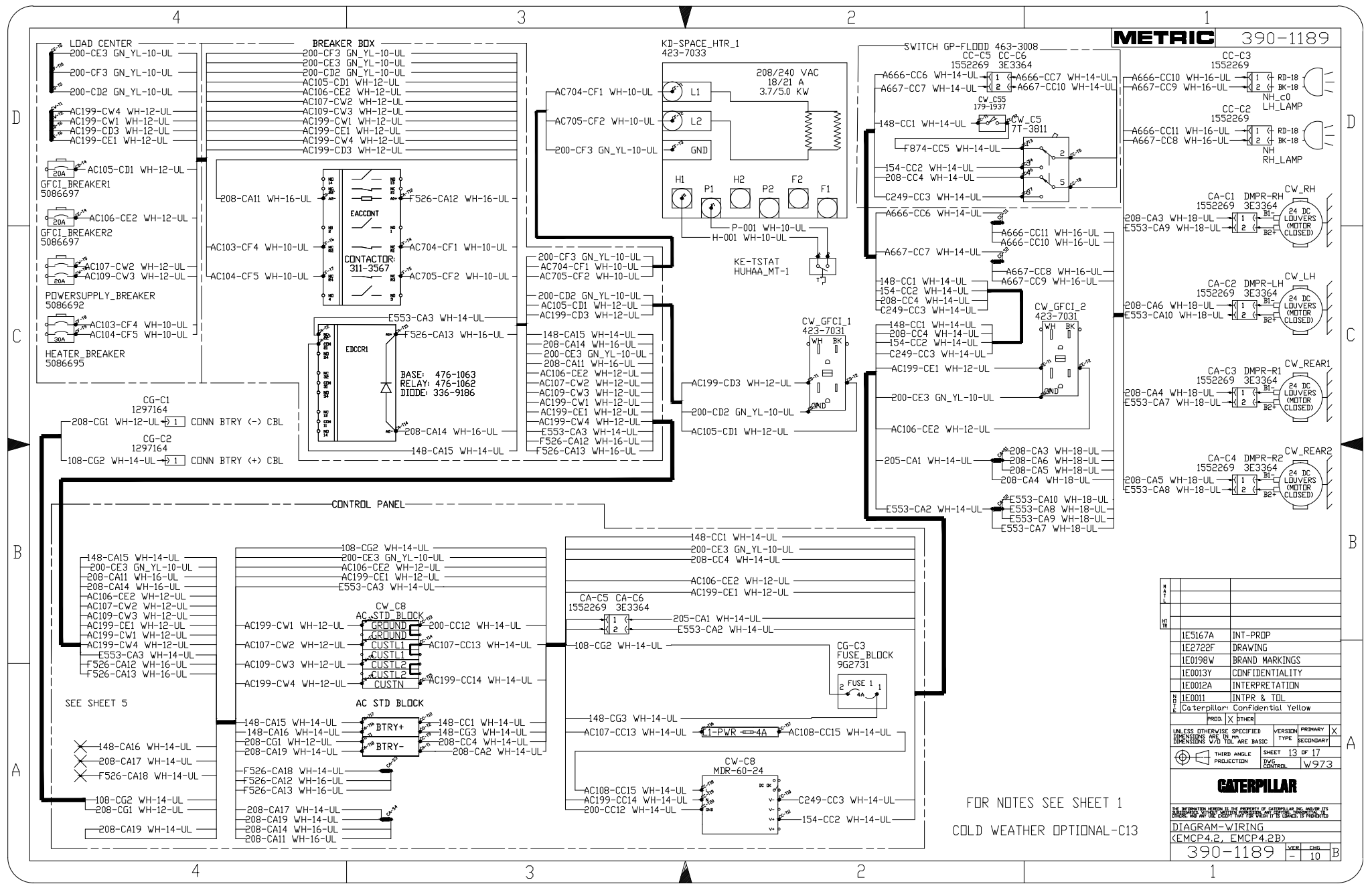
OPTIONAL DEVICE SERVER - 1



SEE SHEET 7

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DATE				
DESCRIPTION				
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1E2722F	DRAWING			
1E0198W	BRAND MARKINGS			
1E0013Y	CONFIDENTIALITY			
1E0012A	INTERPRETATION			
1E0011	INTPR & TOL			
Caterpillar: Confidential Yellow				
PRD. <input checked="" type="checkbox"/> OTHER				
UNLESS OTHERWISE SPECIFIED		VERSION	PRIMARY	<input checked="" type="checkbox"/>
DIMENSIONS ARE IN INCHES		TYPE	SECONDARY	
DIMENSIONS W/O TOL ARE BASIC				
THIRD ANGLE PROJECTION		SHEET	12 OF 17	
DWG CONTROL		REV	1	973
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USE ONLY FOR THE ORIGINAL APPLICATION. FOR ALL OTHERS, IT IS				
DIAGRAM-WIRING				
(EMCP4.2, EMCP4.2B)				
390-1189				
VER	CHK			
-	10			

FOR NOTES SEE SHEET 1  
OPTIONAL DEVICE SERVER



**METRIC** 390-1189

REV	DATE	DESCRIPTION

NO	DESCRIPTION	DATE
1E15167A	INT-PRDP	
1E2722F	DRAWING	
1E0198W	BRAND MARKINGS	
1E0013Y	CONFIDENTIALITY	
1E0012A	INTERPRETATION	
1E0011	INTPR & TOL	

PROD.  OTHER  
 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES BASIC THIRD ANGLE PROJECTION SHEET 13 OF 17 DWG CONTROL W973

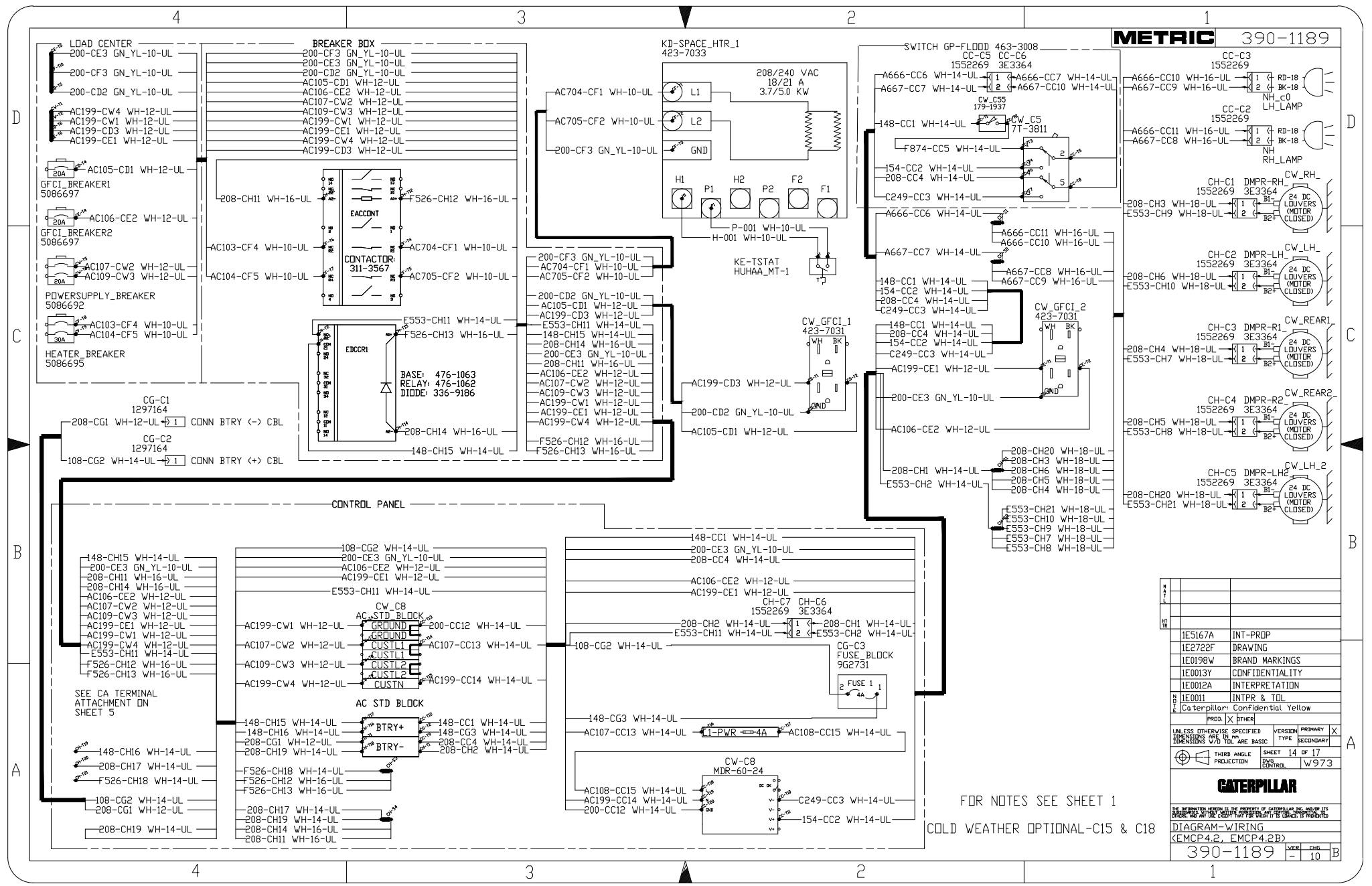
**CATERPILLAR**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES BASIC THIRD ANGLE PROJECTION SHEET 13 OF 17 DWG CONTROL W973

DIAGRAM-WIRING (EMCP4.2, EMCP4.2B)

390-1189 -10 B

FOR NOTES SEE SHEET 1  
COLD WEATHER OPTIONAL-C13



**METRIC** 390-1189

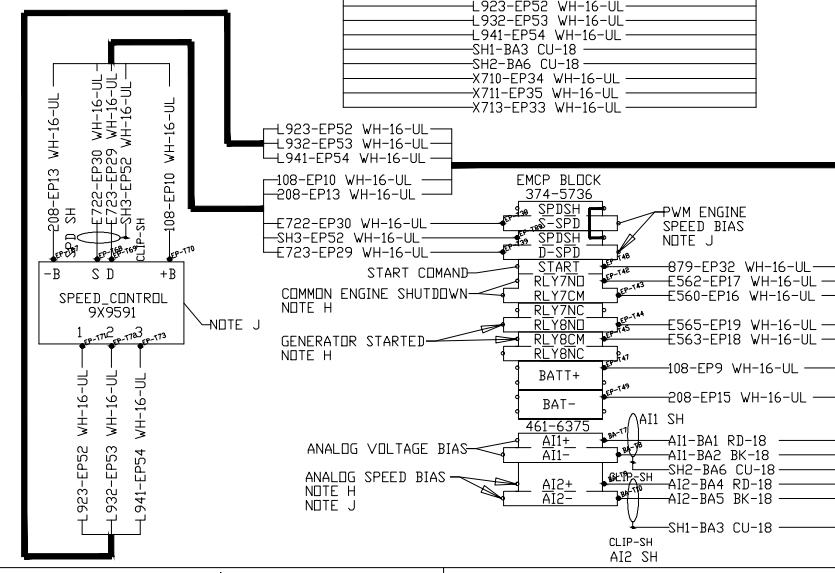
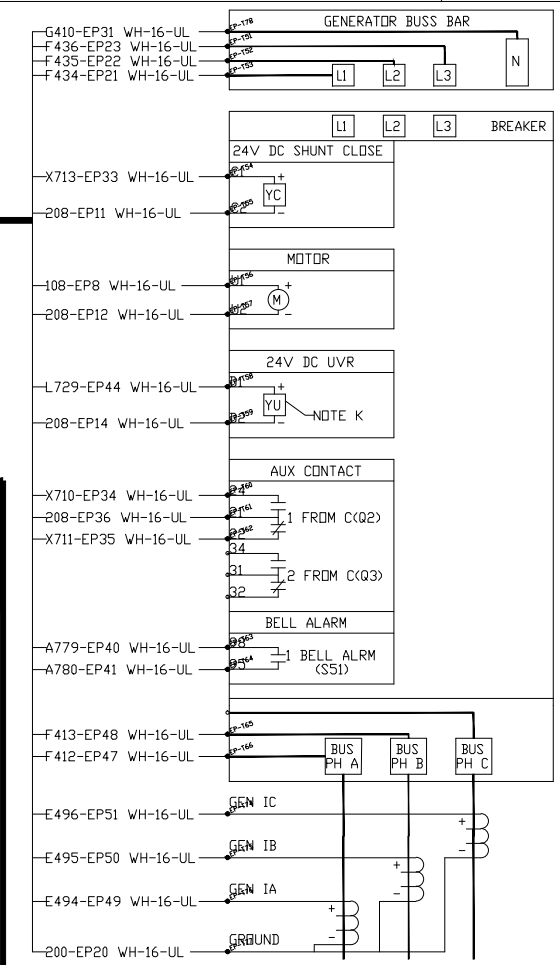
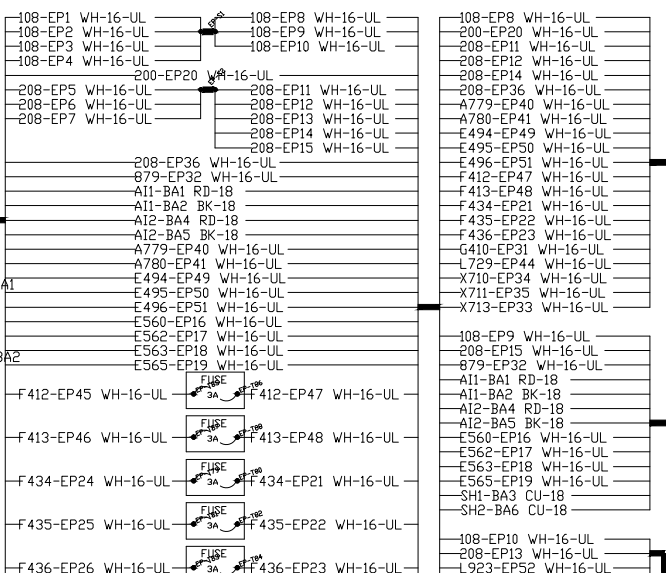
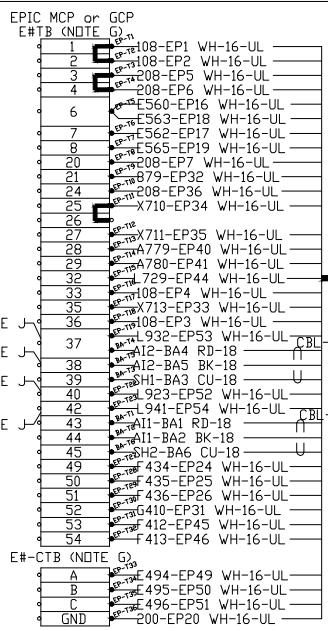
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1E2722F	DRAWING
1E0198W	BRAND MARKINGS
1E0013Y	CONFIDENTIALITY
1E0012A	INTERPRETATION
1E0011	INTPR & TOL
Caterpillar: Confidential Yellow	
PRD.	<input checked="" type="checkbox"/> OTHER
UNLESS OTHERWISE SPECIFIED	VERSION PRIMARY
DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED	TYPE SECONDARY
THIRD ANGLE PROJECTION	SHEET 14 OF 17
DWG. CONTROL	1/973

**CATERPILLAR**

FOR NOTES SEE SHEET 1  
COLD WEATHER OPTIONAL-C15 & C18

DIAGRAM-WIRING  
(EMCP4.2, EMCP4.2B)  
390-1189

VER. 10



1E1517A	INT-PRDP
1E2722F	DRAWING
1E0198W	BRAND MARKINGS
1E0013Y	CONFIDENTIALITY
1E0012A	INTERPRETATION
1E0011	INTPR & TOL
Caterpillar Confidential Yellow	
PROD.	<input checked="" type="checkbox"/> OTHER

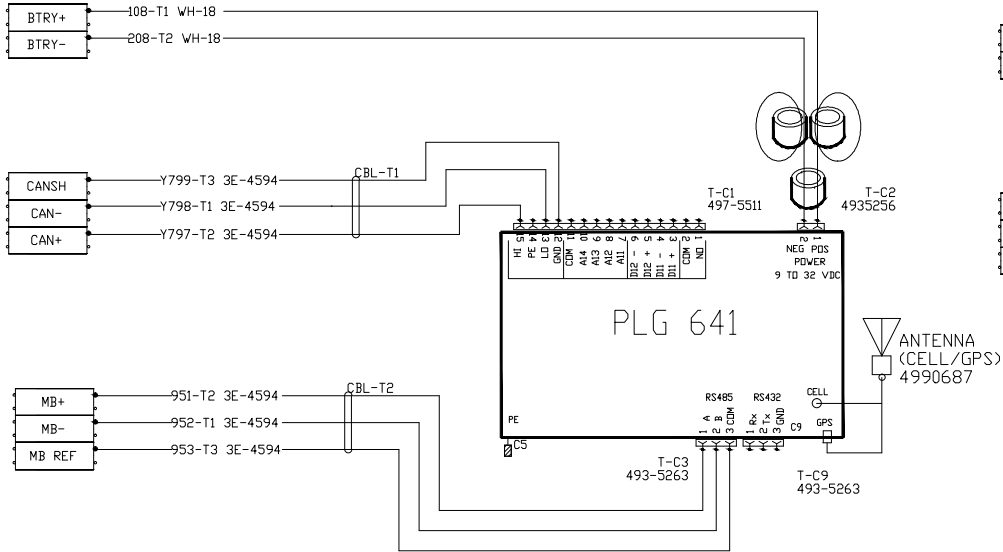
UNLESS OTHERWISE SPECIFIED	VERSION	PRIMARY	SECONDARY
DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED	A		
THIRD ANGLE PROJECTION	DWG. CONTROL	SHEET 15 OF 17	W973



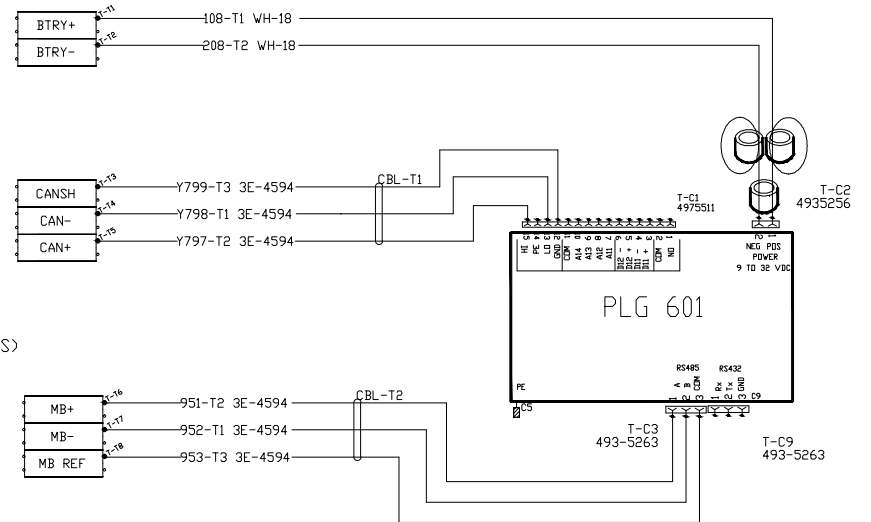
FOR NOTES SEE SHEET 1  
FOR MORE REFERENCE SEE DIAGRAM  
EPIC FIELD INTERCONNECTION  
390-1189 VER. 10



TELEMATICS



TELEMATICS



REV			
DATE			
BY			
CHK			
1E5167A	INT-PRDP		
1E2722F	DRAWING		
1E0198W	BRAND MARKINGS		
1E0013Y	CONFIDENTIALITY		
1E0012A	INTERPRETATION		
1E0011	INTPR & TOL		
Caterpillar Confidential Yellow			
PROD. <input checked="" type="checkbox"/> OTHER			
UNLESS OTHERWISE SPECIFIED		VERSION	PRIMARY
DIMENSIONS ARE IN "A"		TYPE	SECONDARY
DIMENSIONS W/D TOL. ARE BASIC			
THIRD ANGLE		SHEET	16 OF 17
PROJECTION		DWG	CONTROL
			W973
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DIAGRAM-WIRING			
(EMCP4.2, EMCP4.2B)			
390-1189	VER	CHK	B
	-	10	

FOR NOTES SEE SHEET 1

TELEMATICS PLG601 & PLG641

4

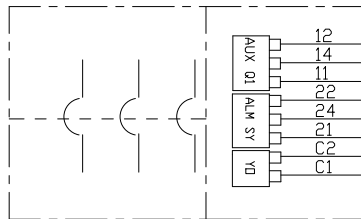
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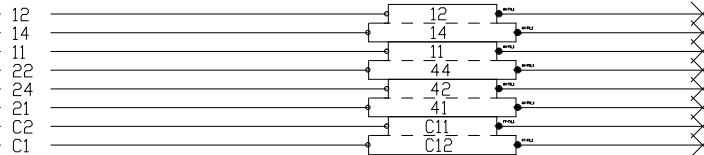
1

**METRIC** 390-1189

BREAKER (250 A) J FRAME



CB RAIL  
374-5746  
374-5756



SEE SHEET 8

REV					
DATE					
DESCRIPTION					
1E5167A	INT-PRDP				
1E2722F	DRAWING				
1E0198W	BRAND MARKINGS				
1E0013Y	CONFIDENTIALITY				
1E0012A	INTERPRETATION				
1E0011	INTPR & TOL				
Caterpillar: Confidential Yellow					
PROD.	<input checked="" type="checkbox"/>	OTHER			
UNLESS OTHERWISE SPECIFIED		VERSION	PRIMARY	<input checked="" type="checkbox"/>	
DIMENSIONS ARE IN		TYPE	SECONDARY		
DIMENSIONS W/D TOL		AGE BASIC			
THIRD ANGLE	SHEET 17 OF 17				
PROJECTION	3/16	CONFID.	w973		
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DIAGRAM-WIRING					
(EMCP4.2, EMCP4.2B)					
390-1189				VER	CHK
				-	10

FOR NOTES SEE SHEET 1

BREAKER CIRCUIT (250 A) J FRAME

4

3

2

1

# C27-C32

## Enclosures



Image shown may not reflect actual configuration.

## Sound Attenuated Enclosures for C27 and C32 Generator Sets

These sound attenuated, factory installed enclosures are designed for safety and aesthetic value. Rugged construction provides weather protection and the ability to withstand exposure to the elements.

### Features

#### Robust/Highly Corrosion-Resistant Construction

- Environmentally friendly, polyester powder-baked paint in Caterpillar yellow
- Zinc plated or stainless steel fasteners
- 14-gauge steel construction
- Pitched roof for improved rain ingress protection
- Critical grade internally mounted muffler/exhaust system
- Vibration spring isolators
- 75 dBA at 7 m

#### Excellent Access

- Control panel mounted on left side or right side of package
- Large cable entry area for ease of installation
- Left-hand or right-hand bottom entry access to power cable bus or circuit breaker
- Double doors on both sides
- Lube oil and coolant drains piped to exterior of enclosure and terminated drain valves

#### Options

- Interior AC lighting system and AC receptacles (interior and exterior)
- AC distribution box
- Interior DC lighting system with automatic shutoff timer
- Cold-weather bundle, including motorized louvers (powered closed), backdraft dampers, and enclosure space heater
- Caterpillar Yellow (default), white, grey, or beige paint
- 1000, 2000, and 3600 gallon fuel tanks
- 120 mph wind loading

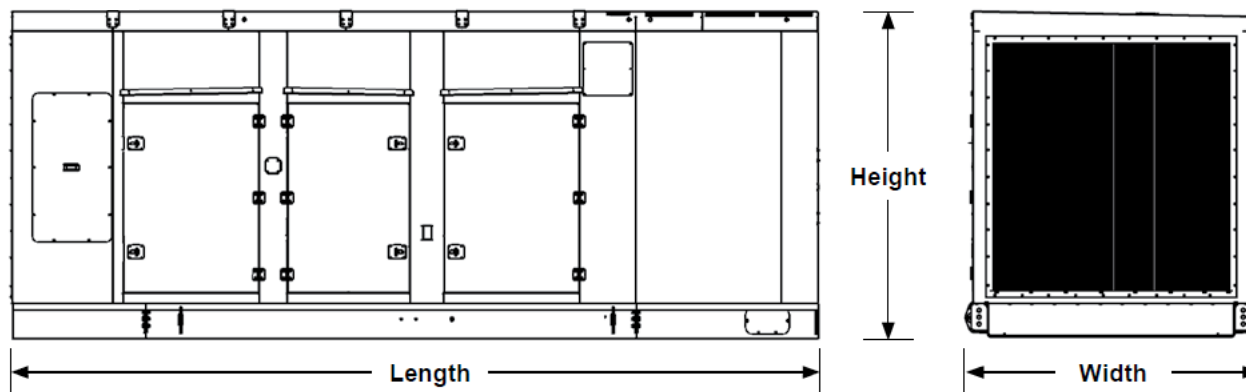
#### Security and Safety

- Lockable access doors with standard key use
- Cooling fan and battery charging alternator fully guarded
- Oil fill and battery can only be reached via lockable access
- External fuel connections
- Externally mounted emergency stop button
- Designed for spreader-bar lifting to ensure safety

#### Certifications

- UL Listed
- Seismic certification per applicable building codes: IBC 2000, IBC 2003, IBC 2006, IBC 2009, IBC 2012, CBC 2007
- IBC certifiable for 120 mph wind loading
- Tested and analyzed in accordance with: ASCE 7-98, ASCE 7-02, ASCE 7-05, ICC-ES AC-156

## Enclosure Weights and Dimensions



**Note:** For reference only – do not use for installation design. Please contact your dealer for exact weights and dimensions.

Enclosure Base Options	Weight		Length		Width		Height	
	kg	lbs	mm	in	mm	in	mm	in
With Lifting Base	3500	7716	7010	276	2554	101	2844	112
With 1000 gal integral tank base	5920	13,051	7645	301	2554	101	3213	127
With 2000 gal integral tank base	6050	13,338	7645	301	2554	101	3213	127
With 3600 gal tank with lifting base	7000	15,432	9750	384	2554	101	3759	148

\*Weight does not include package generator set weight.

	Generator Set Wights**	
	kg	lbs
C27 Open Generator Set	6622	14,600
C32 Open Generator Set	6668	14,700

\*\*Dry Weight

**Note:** For reference only - do not use for installation design. Please contact your dealer for exact weights and dimensions.

**LET'S DO THE WORK.™**

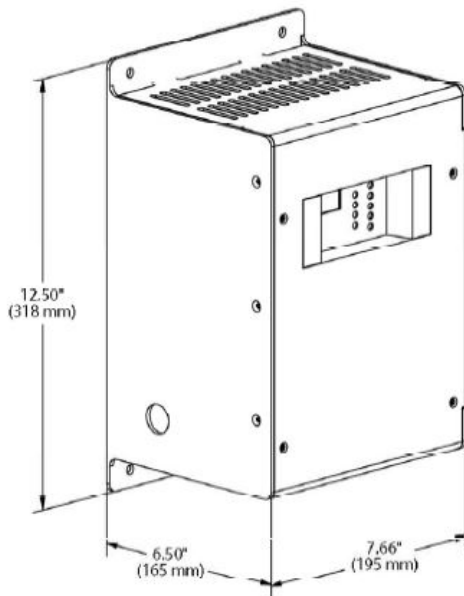


Image Shown may not Reflect Actual Package.

## UL 10 Amp Battery Charger

This battery charger offers accurate, automatic charging of lead-acid and nickel cadmium batteries. The output voltage automatically adjusts to changing input, load, battery and ambient conditions. This prevents battery over-charging and consequent loss of battery electrolyte.

Standard features include AC line compensation, precision voltage regulation, current limiting, automatic 2-rate charging, voltmeter and ammeter, temperature compensation and UL Listing.

The user interface is easy to understand with digital metering, NFPA 110 alarms and a battery fault alarm.

## Features

- Electronically current limited at 105% of rated output
- Alarm system
- Digital display
- Lightning and voltage transient protection
- Protection of connected equipment against load dump protection
- Constant voltage, current limited, 4-rate automatic equalization
- IP 20 housing
- Temperature compensation
- On board temperature sensor with remote port
- Auto AC line compensation
- Output regulated by sensed battery voltage

## Standards

- C-UL listed to UL 1236
- NFPA 70, NFPA 110
- CSA 22.2 No 107 certified
- CE DOC to EN 60335
- IBC Seismic Certification

## Specifications

Input supply	110 – 120 V 208 – 240 V
AC and DC fuses	2 input and 2 output)
Output voltage	24V
Output amps	10
Frequency	50 / 60 Hz
Operating temperature	-20°C ( -4°F) to +60°C (140°F)
Housing constructed of rustproof anodized Aluminum	

Dimensions			
Width	Depth	Height	Weight
195 mm (7.66 in)	165 mm (6.5 in)	318 mm (12.5 in)	10.4 kg (23 lb)

NFPA 110 alarm package as follows:

- AC on                      Green led (indication)
- AC fail                    Red led and form C contact (2A)
- Float mode                LED
- Fast charge               LED
- Temp comp active        LED
- Low battery volts        Red led and Form C conta
- High Battery Volts       Red led and Form C conta
- Charger fail               Red led and Form C conta
- Battery fault              Red led and Form C conta
- Battery disconnected
- Battery polarity reversed
- Mismatched charger battery voltage
- Open or high resistance charger to battery connection
- Open battery cell or excessive internal resistance

### Feature Codes:

BTC1024 BTC1028 BTC1035 BTC1025 BTC1032

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## Jacket Water Heater with Pump Diesel Gensets: C27, C32

Caterpillar offers a factory installed Jacket Water Heater for improved cold-starting capability.

The Jacket Water Heater with the pump is a complete coolant preheater with thermostat, pump and all required controls.

Forced circulation of the coolant delivers uniform heating throughout the entire engine, reduces wear from Cold spots and offers a significant reduction in electrical consumption.

The Jacket Water Heater operates automatically when provided contacts are supplied with a 24 Volt DC signal from the engine.

### Features

- Factory Installed
- Complete with hoses, thermostat and pump
- Base frame mounting minimizes engine induced vibration
- Automatically disconnected when engine is running via the generator space heater relay
- Supplied with UL recognized components
- Thermostat is factory pre-set to 54°C (130°F)

### Heater Design Description

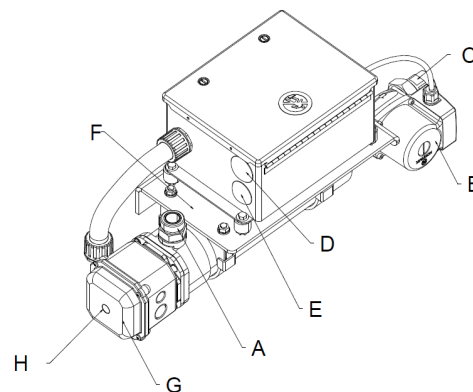
The jacket water heater package is designed to efficiently pre-heat the engine by heating and circulating the engine's coolant.

This design results in the following benefits

- Increase life of heater hoses, engine seals, and heating elements.
- Improve heat transfer efficiency from elements to engine coolant.
- More uniform engine temperature distribution
- Application of a thermostat with a reduced thermal differential.
- Lower customer utility costs and increased heater reliability.
- Heater thermostat's setpoint is preset from the factory

### Heater Operation / Wiring

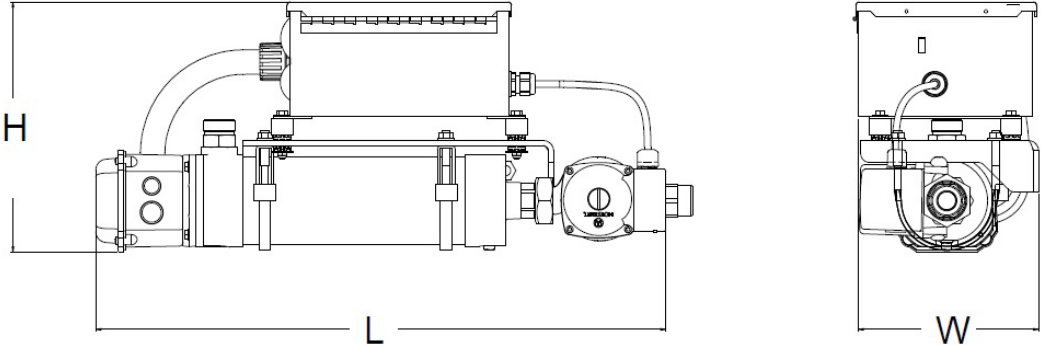
A 32 L/pm (10 gpm) pump is located at the heater outlet to push the coolant through the heater. A fixed thermostat is located inside the heater tank near the outlet of the heater and responds to the temperature of the coolant entering the tank. The figure below shows the general heater design.



- |                              |                            |
|------------------------------|----------------------------|
| A. Discharge port            | E. Control wiring entrance |
| B. pump / motor              | F. Mounting Base           |
| C. Suction (behind unit)     | G. Element assembly        |
| D. Power in writing entrance | H. Thermostat              |

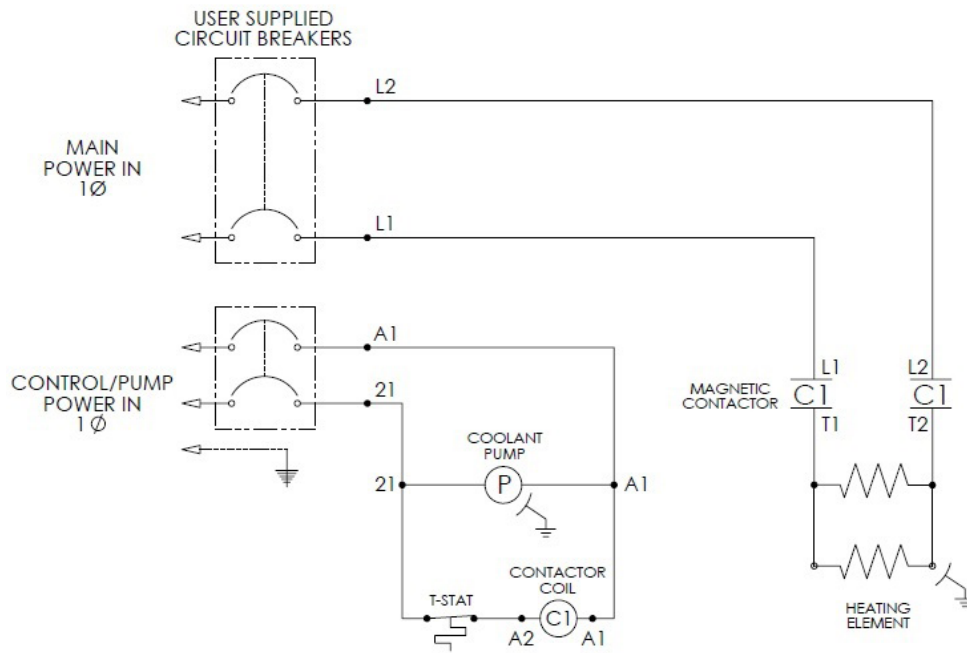
## Specifications

	Voltage	
	240	220
Ratings	9 kW	9 kW
Frequency	60	50
Phase	Single	Single
Amps	37.5A	41A
Flow Rate	38 L/pm(10 GPM)	38 L/pm(10 GPM)
Pump Rating	240 VAC 97W	220VAC 90W
Fixed Thermostat	38°C - 54°C (100°F - 130°F)	
Length	694.8 mm (27.3")	
Width	213.7 mm (8.4")	
Height	290.6 mm (11.4")	
Weight	18.84 Kg (41.54 lbs)	



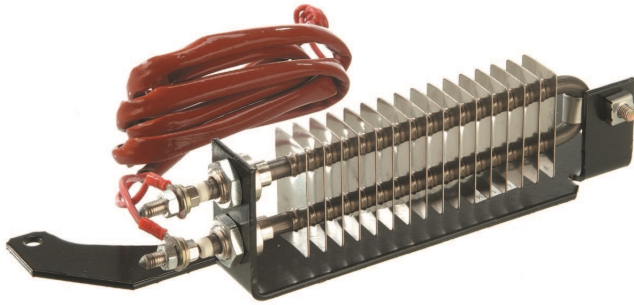


## Wiring Diagram



Materials and specifications are subject to change without notice. The International System of Units (SI) is used in this publication.  
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## Generator Space Heater

for 1400 Frame\*

\*excluding 3512C

Picture shown may not reflect actual configuration

### GENERAL DESCRIPTION

Humidity is a natural enemy of generators and all electrical equipment.

Space heaters are design<sup>ed</sup> to protect generator windings from abnormally high humidity conditions when the generator is idle. The heater maintains the air around the windings at a suitable temperature to prevent winding corrosion due to condensation.

Generator space heaters use electrical resistance and are located within the generator stator housing.

Space heaters are particularly recommended for generator sets located in a low ambient and/or high humidity environment. As a further benefit, space heaters provide an excellent method of drying out a generator after long transit or storage.

Because space heaters are required only during non-operative periods, they require availability of a power source separate from the generator set itself.

When the generator set is not running the heater automatically connects to the AC supply through a power relay mounted in the control panel. Upon receiving a start signal the AC supply is automatically disconnected by the power relay and automatically reconnected when the start signal is removed.

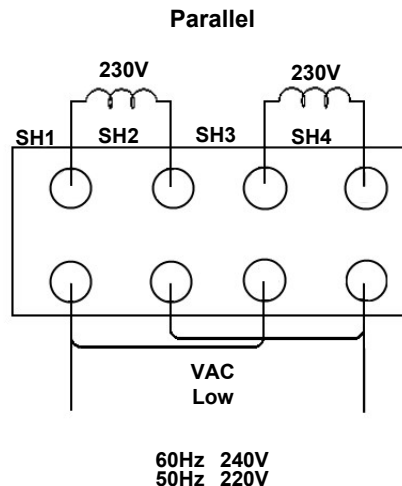
The 1400 frame space heater uses two heating elements.

Heating elements available in two voltages: 127V and 230V.

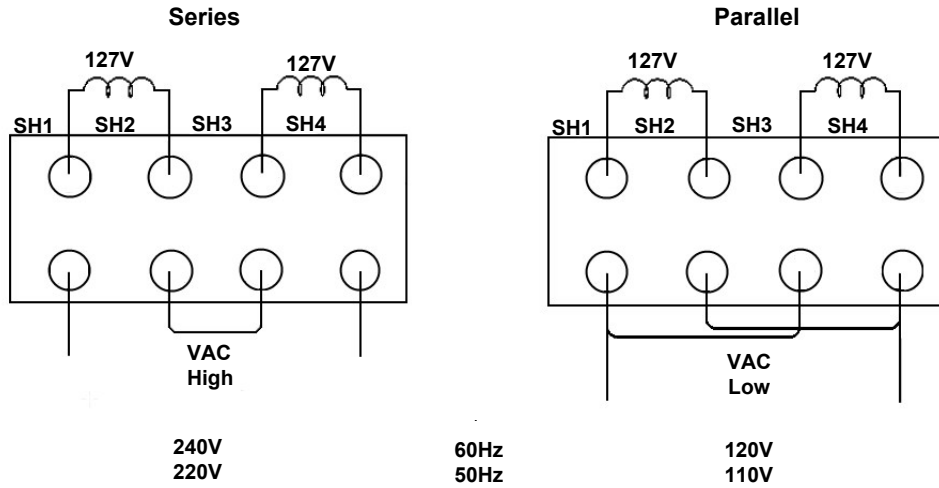
Heater elements electrical data:

- Voltage - 230V, Power - 500W.
- Voltage - 127V, Power - 500W.

### 230V Space Heater Connection Diagram



### 127V Space Heater Connection Diagram



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Picture shown may not reflect actual configuration

## Features

- Moisture and fungus protection
- Clear indication of breaker status
- Reinforced insulation
- Shunt trip
- Auxiliary contacts
- Load side extension bars
- Maintenance-free operation
- Exceptional characteristics under short-circuit conditions
- Adjustable trip settings

## NS-Frame

- Federal Specification W-C-375B/GEN
- NEMA AB1
- UTE, VDE, BS, CEI, UNE

## Molded Case and Insulated Case Circuit Breakers:

C27-C175 North America built packages (50/60Hz)

### L-Frame

400A (UL)

### P-Frame

800-1200A (UL)

### R-Frame

1600-3000A (UL)

### NS-Frame

1600-3200A (IEC)

### NW-Frame

1200-5000A (UL), 1600-5000A (IEC)

## Conformity with International Standards

Circuit Breakers have been designed to comply with the international standard IEC 60947-2 as well as these other major standards:

### L-Frame

UL 489

CSA 22.2 No 5

Federal Specification W-C-375B/GEN

NEMA AB1

NMX J-266

CCC

CE Marking

### P-Frame & R-Frame

UL 489

IEC Standard 60947-2

CSA 22.2 No 5-02

Federal Specification W-C-375B/GEN

NEMA AB1

NMX J-266

UTE, VDE, BS, CEI, UNE

### NW-Frame

UL 489

NEMA AB1

CSA 22.2 No. 5096

NMX J-266-ANCE

ANSI C37.13, C37.16, C37.17, C37.50

UL 1066 (cULus Listed)

NEMA SG3

## Standard Features

### Standards

- UL-CSA
  - L-Frame
  - P-Frame
  - R-Frame
  - NW-Frame
- IEC
  - NS-Frame

### Shunt trip

- The shunt trip provides a means of tripping the circuit breaker electronically
- Shunt trip ratings
- Voltage: 24VDC
- Coil Burden (Holding/Inrush): 4.5/200 VA
- Power Consumption: 4.5 VA

### Auxiliary contacts

The auxiliary contacts provide a means of remote circuit breaker position indication and consists of (1) Form C Contact (1 Normally open and 1 Normally closed contact) with the following current ratings:  
6A @ 240-480 VAC, 50/60Hz

### Trip units

All circuit breakers come equipped with True RMS Current Sensing. The trip units for each of the circuit breaker ratings sample the current waveform to provide true RMS protection through the 15th harmonic. This true RMS sensing gives accurate values for the magnitude of a nonsinusoidal waveform. Therefore, the heating effects of harmonically distorted waveforms are accurately evaluated. The trip system comes equipped with a set of current transformers (CT's) to sense current, a trip unit to evaluate the current, and a tripping solenoid to trip the circuit breaker. Additionally, each trip unit comes equipped with Active Thermal Imaging which is active 20 minutes before and after tripping.

### Customer cable connections

Connections include bus for installation flexibility.

## Optional Features

### Electrically-operated Circuit Breakers

Circuit breakers that are electrically-operated come with a two-step stored energy mechanism and come standard with a motor assembly. Motor assemblies provide on and off control from remote locations. These assemblies contain a spring-charging motor, a shunt trip, and shunt close. Motor Assembly Voltage Rating: 24-30VDC

### Undervoltage trip

Undervoltage trip option trips the circuit breaker when the voltage drops to a value between 35% and 70% of the control voltage. An attempt to close the circuit breaker when the UV is not energized produces no movement in the main contacts. Closing is allowed when the supply voltage of the UV trip reaches 85% of the rated voltage.

- Voltage Rating: 24-30VAC/VDC
- Operating Threshold:
  - Opening: 0.35 to 0.7Vn
  - Closing: 0.85 Vn
- Power Consumption: 4.5VA
- Circuit Breaker Response Time at Vn: 50ms +/- 10

**Circuit Breakers Table**

Cat® Part Number	Frame and Rating (Amps)	IEC/UL	No. Poles	Operation	Trip Unit	Circuit Breaker Characteristics	Options	Instantaneous Override (kA RMS) +/- 10%
4213235	400A L-Frame MCCB	UL	3P	MO	3.3S LSI	Table 10	1 Aux Contact, Shunt Trip	–
4213237	400A L-Frame MCCB	UL	3P	MO	6.3A LSIG	Table 10	1 Aux Contact, Shunt Trip	–
4213239	400A L-Frame MCCB	UL	4P	MO	6.3A LSIG	Table 11	1 Aux Contact, Shunt Trip	–
2449744	800A NS-Frame MCCB	IEC	4P	MO	5.0A LSI	Table 2	1 Aux Contact, Shunt Trip	–
2449794	800A P-Frame MCCB	UL	3P	EO	5.0A LSI	Table 1	1 Aux Contact, Shunt Trip	24
2449802	800A P-Frame MCCB	UL	3P	EO	6.0A LSIG	Table 1	1 Aux Contact, Shunt Trip	–
2449984	800A P-Frame MCCB	UL	3P	EO	5.0P LSI-P	Table 1	1 Aux Contact, Shunt Trip, Modbus	24
5858066	800A P-Frame MCCB	UL	3P	EO	5.0P LSI-P	Table 1	1 Aux Contact, Shunt Trip, Modbus	24
2449742	1200A P-Frame MCCB	UL	3P	EO	5.0A LSI	Table 1	1 Aux Contact, Shunt Trip	24
2449746	1200A P-Frame MCCB	UL	3P	EO	6.0A LSIG	Table 1	1 Aux Contact, Shunt Trip	24
2449766	1200A P-Frame MCCB	UL	3P	EO	6.0H LSIG-H	Table 1	1 Aux Contact, Shunt Trip, Modbus	24
2449770	1200A P-Frame MCCB	UL	3P	EO	6.0P LSIG-P	Table 1	1 Aux Contact, Shunt Trip, Modbus	24

Circuit Breakers Table (Continued)

Cat® Part Number	Frame and Rating (Amps)	IEC/UL	No. Poles	Operation	Trip Unit	Circuit Breaker Characteristics	Options	Instantaneous Override (kA RMS) +/- 10%
2449988	1200A P-Frame MCCB	UL	3P	EO	5.0P LSI-P	Table 1	1 Aux Contact, Shunt Trip, Modbus	24
3834673	1200A NW-Frame ICCB	UL	3P	EO	5.0A LSI	Table 7	4 Aux Contacts, Shunt Trip, UV	40
3834674	1200A NW-Frame ICCB	UL	3P	EO	6.0A LSI-G	Table 7	4 Aux Contacts, Shunt Trip, UV	40
5858050	1200AP-Frame MCCB	UL	3P	EO	6.0P LSI-G-P	Table 1	1 Aux Contact, Shunt Trip, Modbus	24
5858067	1200A P-Frame MCCB	UL	3P	EO	5.0P LSI-P	Table 1	1 Aux Contact, Shunt Trip, Modbus	24
2449764	1250A NS-Frame MCCB	IEC	4P	EO	5.0A LSI	Table 3	1 Aux Contact, Shunt Trip	-
2449765	1250A NS-Frame MCCB	IEC	4P	EO	6.0A LSI-G	Table 3	1 Aux Contact, Shunt Trip	-
2449767	1250A NS-Frame MCCB	IEC	4P	EO	6.0P LSI-G-P	Table 3	1 Aux Contact, Shunt Trip, Modbus	-
2449772	1600A NS1600 MCCB	IEC	3P	EO	5.0A LSI	Table 3	1 Aux Contact, Shunt Trip	-
2449773	1600A NS1600 MCCB	IEC	3P	EO	6.0A LSI-G	Table 3	1 Aux Contact, Shunt Trip	-
2449775	1600A NS1600 MCCB	IEC	3P	EO	6.0P LSI-G-P	Table 3	1 Aux Contact, Shunt Trip, Modbus	-
2449776	1600A NS1600 MCCB	IEC	3P	MO	5.0A LSI	Table 4	1 Aux Contact, Shunt Trip	-

Circuit Breakers Table (Continued)

Cat® Part Number	Frame and Rating (Amps)	IEC/UL	No. Poles	Operation	Trip Unit	Circuit Breaker Characteristics	Options	Instantaneous Override (kA RMS) +/- 10%
2449777	1600A NS1600 MCCB	IEC	3P	MO	6.0A LSI	Table 4	1 Aux Contact, Shunt Trip	–
2449779	1600A NS1600 MCCB	IEC	3P	MO	6.0P LSI	Table 4	1 Aux Contact, Shunt Trip, Modbus	–
2449784	1600A NS1600 MCCB	IEC	4P	EO	5.0A LSI	Table 3	1 Aux Contact, Shunt Trip	–
2449785	1600A NS1600 MCCB	IEC	4P	EO	6.0A LSI	Table 3	1 Aux Contact, Shunt Trip	–
2449787	1600A P-Frame MCCB	IEC	4P	EO	6.0P LSI	Table 3	1 Aux Contact, Shunt Trip, Modbus	–
2449788	1600A NS1600 MCCB	IEC	4P	MO	5.0A LSI	Table 4	1 Aux Contact, Shunt Trip	–
2449789	1600A NS1600 MCCB	IEC	4P	MO	6.0A LSI	Table 4	1 Aux Contact, Shunt Trip	–
2449791	1600AP-Frame MCCB	IEC	4P	MO	6.0P LSI	Table 4	1 Aux Contact, Shunt Trip	–
2449864	1600A R-Frame MCCB	UL	3P	MO	5.0A LSI	Table 6	1 Aux Contact, Shunt Trip	57
2449865	1600A R-Frame MCCB	UL	3P	MO	6.0A LSI	Table 6	1 Aux Contact, Shunt Trip	57
2449867	1600A R-Frame MCCB	UL	3P	MO	6.0P LSI	Table 6	1 Aux Contact, Shunt Trip, Modbus	57
2449870	1600A NW-Frame ICCB	UL	3P	EO	5.0A LSI	Table 7	4 Aux Contact, Shunt Trip	40



Circuit Breakers Table (Continued)

Cat® Part Number	Frame and Rating (Amps)	IEC/UL	No. Poles	Operation	Trip Unit	Circuit Breaker Characteristics	Options	Instantaneous Override (kA RMS) +/- 10%
2449871	1600A NW-Frame ICCB	UL	3P	EO	6.0A LSIG	Table 7	4 Aux Contact, Shunt Trip	40
2449872	1600A NW-Frame ICCB	UL	3P	EO	6.0H LSIG-H	Table 7	4 Aux Contact, Shunt Trip	40
2449873	1600A NW-Frame ICCB	UL	3P	EO	6.0P LSIG-P	Table 7	4 Aux Contact, Shunt Trip, Modbus	40
2449991	1600A R-Frame MCCB	UL	3P	MO	5.0P LSI-P	Table 6	1 Aux Contact, Shunt Trip, Modbus	57
2449996	1600A NW-Frame ICCB	UL	3P	EO	5.0P LSI-P	Table 7	4 Aux Contact, Shunt Trip, Modbus	40
3115765	1600A NW-Frame ICCB	UL	3P	EO	5.0A LSI	Table 7	4 Aux Contacts, Shunt Trip, UV	40
3115766	1600A NW-Frame ICCB	UL	3P	EO	6.0A LSIG	Table 7	4 Aux Contacts, Shunt Trip, UV	40
3407174	1600A R-Frame MCCB	UL	3P	MO	6.0A LSIG	Table 9	1 Aux Contact, Shunt Trip	48
3775313	1600A NW-Frame ICCB	IEC	3P	EO	5.0A LSI	Table 13	4 Aux Contacts, Shunt Trip, UV	40
3775314	1600A NW-Frame ICCB	IEC	3P	EO	6.0A LSIG	Table 13	4 Aux Contacts, Shunt Trip, UV	40
3853411	1600A R-Frame MCCB	UL	3P	MO	5.0A LSI	Table 9	1 Aux Contact, Shunt Trip	48
3853414	1600AR- Frame MCCB	UL	3P	MO	6.0P LSIG-P	Table 9	1 Aux Contact, Shunt Trip, Modbus	48

Circuit Breakers Table (Continued)

Cat® Part Number	Frame and Rating (Amps)	IEC/UL	No. Poles	Operation	Trip Unit	Circuit Breaker Characteristics	Options	Instantaneous Override (kA RMS) +/- 10%
4448345	1600A NS-Frame MCCB	IEC	3P	MO	5.0A LSI	Table 4	1 Aux Contact, Shunt Trip	–
4448346	1600A NS-Frame MCCB	IEC	3P	MO	6.0A LSI	Table 4	1 Aux Contact, Shunt Trip	–
4448353	1600A NS-Frame MCCB	IEC	3P	EO	5.0A LSI	Table 4	2 Aux Contact, UV	–
4448354	1600A NS-Frame MCCB	IEC	3P	EO	6.0A LSI	Table 4	2 Aux Contact, UV	–
4860754	1600A NS-Frame MCCB	IEC	3P	EO	5.0A LSI	Table 3	2 Aux Contact, Shunt Trip	–
4860755	1600A NS-Frame MCCB	IEC	3P	EO	6.0A LSI	Table 3	2 Aux Contact, Shunt Trip	–
5805751	1600A R-Frame MCCB	UL	3P	MO	5.0P LSI-P	Table 9	2 Aux Contacts, Comms, Shunt Trip	–
5858063	1600A R-Frame MCCB	UL	3P	MO	6.0P LSI-P	Table 6	1 Aux Contact, Shunt Trip, Modbus	57
5858068	1600A R-Frame MCCB	UL	3P	MO	5.0P LSI-P	Table 6	1 Aux Contact, Shunt Trip, Modbus	57
5858071	1600A R-Frame MCCB	UL	3P	MO	6.0P LSI-P	Table 9	1 Aux Contact, Shunt Trip, Modbus	48
2449792	2000A NS2000 MCCB	IEC	3P	MO	5.0A LSI	Table 4	1 Aux Contact, Shunt Trip	–
2449793	2000A NS2000 MCCB	IEC	3P	MO	6.0A LSI	Table 4	1 Aux Contact, Shunt Trip	–

**Circuit Breakers Table (Continued)**

<b>Cat® Part Number</b>	<b>Frame and Rating (Amps)</b>	<b>IEC/UL</b>	<b>No. Poles</b>	<b>Operation</b>	<b>Trip Unit</b>	<b>Circuit Breaker Characteristics</b>	<b>Options</b>	<b>Instantaneous Override (kA RMS) +/- 10%</b>
449795	2000A NS2000 MCCB	IEC	3P	MO	6.0P LSIG-P	Table 4	1 Aux Contact, Shunt Trip, Modbus	–
2449800	2000A NS2000 MCCB	IEC	4P	MO	5.0A LSI	Table 4	1 Aux Contact, Shunt Trip	–
2449803	2000A NS2000 MCCB	IEC	4P	MO	6.0P LSIG-P	Table 4	1 Aux Contact, Shunt Trip, Modbus	24
2449868	2000AR- Frame MCCB	UL	3P	MO	5.0A LSI	Table 6	1 Aux Contact, Shunt Trip	57
2449869	2000A R-Frame MCCB	UL	3P	MO	6.0A LSIG	Table 6	1 Aux Contact, Shunt Trip	57
2449874	2000A NW-Frame ICCB	IEC	3P	EO	5.0A LSI	Table 5	4 Aux Contact, Shunt Trip	40
2449875	2000A NW-Frame ICCB	IEC	3P	EO	6.0A LSIG	Table 5	4 Aux Contact, Shunt Trip	40
2449876	2000A NW-Frame ICCB	IEC	3P	EO	6.0P LSIG-P	Table 5	4 Aux Contact, Shunt Trip, Modbus	40
2449877	2000A NW-Frame ICCB	IEC	4P	EO	5.0A LSI	Table 5	4 Aux Contact, Shunt Trip	–
2449878	2000A NW-Frame ICCB	IEC	4P	EO	6.0A LSIG	Table 5	4 Aux Contact, Shunt Trip	–
2449879	2000A NW-Frame ICCB	IEC	4P	EO	6.0P LSIG-P	Table 5	4 Aux Contact, Shunt Trip, Modbus	–
2449880	2000A NW-Frame ICCB	UL	3P	EO	5.0A LSI	Table 7	4 Aux Contact, Shunt Trip	40

Circuit Breakers Table (Continued)

Cat® Part Number	Frame and Rating (Amps)	IEC/UL	No. Poles	Operation	Trip Unit	Circuit Breaker Characteristics	Options	Instantaneous Override (kA RMS) +/- 10%
449881	2000A NW-Frame ICCB	UL	3P	EO	6.0A LSI	Table 7	4 Aux Contact, Shunt Trip	40
2449882	2000A NW-Frame ICCB	UL	3P	EO	6.0A LSI	Table 7	4 Aux Contact, Shunt Trip	40
2449883	2000A NW-Frame ICCB	UL	3P	EO	6.0P LSI-P	Table 7	4 Aux Contact, Shunt Trip, Modbus	40
2449917	2000A R-Frame MCCB	UL	3P	MO	6.0H LSI-H	Table 6	1 Aux Contact, Shunt Trip, Modbus	57
2449918	2000A R-Frame MCCB	UL	3P	MO	6.0P LSI-P	Table 6	1 Aux Contact, Shunt Trip, Modbus	57
2449993	2000A R-Frame MCCB	UL	3P	MO	5.0P LSI-P	Table 6	1 Aux Contact, Shunt Trip, Modbus	57
2449997	2000A NW-Frame ICCB	UL	3P	EO	5.0P LSI-P	Table 7	4 Aux Contact, Shunt Trip	40
3115770	2000ANW-Frame ICCB	IEC	3P	EO	5.0A LSI	Table 5	4 Aux Contact, Shunt Trip	40
3115771	2000A NW-Frame ICCB	IEC	3P	EO	6.0A LSI	Table 5	4 Aux Contact, Shunt Trip	40
3115772	2000A NW-Frame ICCB	IEC	3P	EO	6.0P LSI-P	Table 5	4 Aux Contact, Shunt Trip, Modbus	40
3687990	2000A NW-Frame ICCB	UL	3P	EO	5.0A LSI	Table 7	4 Aux Contact, Shunt Trip	40
3853415	2000A R-Frame MCCB	UL	3P	MO	5.0A LSI	Table 9	1 Aux Contact, Shunt Trip	48

Circuit Breakers Table (Continued)

Cat® Part Number	Frame and Rating (Amps)	IEC/UL	No. Poles	Operation	Trip Unit	Circuit Breaker Characteristics	Options	Instantaneous Override (kA RMS) +/- 10%
3853416	2000A R-Frame MCCB	UL	3P	MO	6.0A LSI	Table 9	1 Aux Contact, Shunt Trip	48
3853417	2000A R-Frame MCCB	UL	3P	MO	6.0P LSI-P	Table 9	1 Aux Contact, Shunt Trip, Modbus	48
3946004	2000A NW-Frame ICCB	UL	3P	EO	6.0A LSI	Table 7	4 Aux Contact, Shunt Trip	40
3946005	2000A NW-Frame ICCB	UL	3P	EO	6.0P LSI-P	Table 7	4 Aux Contact, Shunt Trip, Modbus	40
4448347	2000A NS-Frame MCCB	IEC	3P	MO	5.0A LSI	Table 4	1 Aux Contact, Shunt Trip	-
4448348	2000A NS-Frame MCCB	IEC	3P	MO	6.0A LSI	Table 4	1 Aux Contact, Shunt Trip	-
4675944	2000A NW-Frame ICCB	UL	3P	EO	5.0P LSI-P	Table 7	4 Aux Contact, Shunt Trip, UV	40
5805746	2000A R-Frame MCCB	UL	3P	MO	5.0P LSI-P	Table 9	2 Aux Contacts, Comms, Shunt Trip	-
5858055	2000A NS2000 MCCB	IEC	3P	MO	6.0P LSI-P	Table 4	1 Aux Contact, Shunt Trip, Modbus	-
5858058	2000A NS2000 MCCB	IEC	4P	MO	6.0P LSI-P	Table 4	1 Aux Contact, Shunt Trip, Modbus	24
5858064	2000A R-Frame MCCB	UL	3P	MO	6.0P LSI-P	Table 6	1 Aux Contact, Shunt Trip, Modbus	57
5858069	2000AR-Frame MCCB	UL	3P	MO	5.0P LSI-P	Table 6	1 Aux Contact, Shunt Trip, Modbus	57

Circuit Breakers Table (Continued)

Cat® Part Number	Frame and Rating (Amps)	IEC/UL	No. Poles	Operation	Trip Unit	Circuit Breaker Characteristics	Options	Instantaneous Override (kA RMS) +/- 10%
5858072	2000A R-Frame MCCB	UL	3P	MO	6.0P LSI	Table 9	1 Aux Contact, Shunt Trip, Modbus	48
2449804	2500A NS2500 MCCB	IEC	3P	MO	5.0A LSI	Table 4	1 Aux Contact, Shunt Trip	–
2449805	2500A NS2500 MCCB	IEC	3P	MO	6.0A LSI	Table 4	1 Aux Contact, Shunt Trip	–
2449807	2500A NS2500 MCCB	IEC	3P	MO	6.0P LSI	Table 4	1 Aux Contact, Shunt Trip, Modbus	–
2449812	2500A NS2500 MCCB	IEC	4P	MO	5.0A LSI	Table 4	1 Aux Contact, Shunt Trip	–
2449813	2500A NS2500 MCCB	IEC	4P	MO	6.0A LSI	Table 4	1 Aux Contact, Shunt Trip	–
2449815	2500A NS2500 MCCB	IEC	4P	MO	6.0P LSI	Table 4	1 Aux Contact, Shunt Trip, Modbus	–
2449884	2500A NW-Frame ICCB	IEC	3P	EO	5.0A LSI	Table 5	4 Aux Contact, Shunt Trip	65
2449885	2500A NW-Frame ICCB	IEC	3P	EO	6.0A LSI	Table 5	4 Aux Contact, Shunt Trip	65
2449886	2500A NW-Frame ICCB	IEC	3P	EO	6.0P LSI	Table 5	4 Aux Contact, Shunt Trip, Modbus	65
2449887	2500A NW-Frame ICCB	IEC	4P	EO	5.0A LSI	Table 5	4 Aux Contact, Shunt Trip	–
2449888	2500A NW-Frame ICCB	IEC	4P	EO	6.0A LSI	Table 5	4 Aux Contact, Shunt Trip	–

Circuit Breakers Table (Continued)

Cat® Part Number	Frame and Rating (Amps)	IEC/UL	No. Poles	Operation	Trip Unit	Circuit Breaker Characteristics	Options	Instantaneous Override (kA RMS) +/- 10%
2449889	2500A NW-Frame ICCB	IEC	4P	EO	6.0P LSIG-P	Table 5	4 Aux Contact, Shunt Trip, Modbus	-
2449890	2500A NW-Frame ICCB	UL	3P	EO	5.0A LSI	Table 8	4 Aux Contact, Shunt Trip	65
2449891	2500A NW-Frame ICCB	UL	3P	EO	6.0A LSIG	Table 8	4 Aux Contact, Shunt Trip	65
2449893	2500ANW-Frame ICCB	UL	3P	EO	6.0P LSIG-P	Table 8	4 Aux Contact, Shunt Trip, Modbus	65
2449919	2500A R-Frame MCCB	UL	3P	MO	5.0A LSI	Table 6	1 Aux Contact, Shunt Trip	57
2449920	2500A R-Frame MCCB	UL	3P	MO	6.0A LSIG	Table 6	1 Aux Contact, Shunt Trip	57
2449921	2500A R-Frame MCCB	UL	3P	MO	6.0H LSIG-H	Table 6	1 Aux Contact, Shunt Trip, Modbus	57
2449922	2500A R-Frame MCCB	UL	3P	MO	6.0P LSIG-P	Table 6	1 Aux Contact, Shunt Trip, Modbus	57
2449995	2500A R-Frame MCCB	UL	3P	MO	5.0P LSI-P	Table 6	1 Aux Contact, Shunt Trip, Modbus	57
2449998	2500A NW-Frame ICCB	UL	3P	EO	5.0P LSI-P	Table 8	4 Aux Contact, Shunt Trip, Modbus	65
3853418	2500A R-Frame MCCB	UL	3P	MO	5.0A LSI	Table 9	1 Aux Contact, Shunt Trip	48
3853425	2500A R-Frame MCCB	UL	3P	MO	6.0A LSIG	Table 9	1 Aux Contact, Shunt Trip	48

Circuit Breakers Table (Continued)

Cat® Part Number	Frame and Rating (Amps)	IEC/UL	No. Poles	Operation	Trip Unit	Circuit Breaker Characteristics	Options	Instantaneous Override (kA RMS) +/- 10%
3853427	2500A R-Frame MCCB	UL	3P	MO	6.0P LSI-G-P	Table 9	1 Aux Contact, Shunt Trip, Modbus	48
3946006	2500A NW-Frame ICCB	IEC	3P	EO	5.0A LSI	Table 5	4 Aux Contact, Shunt Trip	–
3946007	2500A NW-Frame ICCB	IEC	3P	EO	6.0A LSI-G	Table 5	4 Aux Contact, Shunt Trip	–
3946008	2500A NW-Frame ICCB	IEC	3P	EO	6.0P LSI-G-P	Table 5	4 Aux Contact, Shunt Trip, Modbus	–
3946009	2500A NW-Frame ICCB	IEC	4P	EO	5.0A LSI	Table 5	4 Aux Contact, Shunt Trip	–
3946010	2500A NW-Frame ICCB	IEC	4P	EO	6.0A LSI-G	Table 5	4 Aux Contact, Shunt Trip	–
3946011	2500A NW-Frame ICCB	IEC	4P	EO	6.0P LSI-G-P	Table 5	4 Aux Contact, Shunt Trip, Modbus	–
3946012	2500ANW-Frame ICCB	UL	3P	EO	5.0A LSI	Table 8	4 Aux Contact, Shunt Trip	65
3946013	2500A NW-Frame ICCB	UL	3P	EO	6.0A LSI-G	Table 8	4 Aux Contact, Shunt Trip	65
3946014	2500A NW-Frame ICCB	UL	3P	EO	6.0P LSI-G-P	Table 8	4 Aux Contact, Shunt Trip, Modbus	65
4448349	2500A NS-Frame MCCB	IEC	3P	MO	5.0A LSI	Table 4	1 Aux Contact, Shunt Trip	–
4448350	2500A NS-Frame MCCB	IEC	3P	MO	6.0A LSI-G	Table 4	1 Aux Contact, Shunt Trip	–



**Circuit Breakers Table (Continued)**

<b>Cat® Part Number</b>	<b>Frame and Rating (Amps)</b>	<b>IEC/UL</b>	<b>No. Poles</b>	<b>Operation</b>	<b>Trip Unit</b>	<b>Circuit Breaker Characteristics</b>	<b>Options</b>	<b>Instantaneous Override (kA RMS) +/- 10%</b>
4675945	2500A NW-Frame ICCB	UL	3P	EO	5.0P LSI-P	Table 8	4 Aux Contacts, Shunt Trip, UV, Modbus	65
5858059	2500A NS2500 MCCB	IEC	3P	MO	6.0P LSIG-P	Table 4	1 Aux Contact, Shunt Trip, Modbus	–
5858060	2500A NS2500 MCCB	IEC	4P	MO	6.0P LSIG-P	Table 4	1 Aux Contact, Shunt Trip, Modbus	–
5858065	2500A R-Frame MCCB	UL	3P	MO	6.0P LSIG-P	Table 6	1 Aux Contact, Shunt Trip, Modbus	57
5858070	2500A R-Frame MCCB	UL	3P	MO	5.0P LSI-P	Table 6	1 Aux Contact, Shunt Trip, Modbus	57
5858073	2500A R-Frame MCCB	UL	3P	MO	6.0P LSIG-P	Table 9	1 Aux Contact, Shunt Trip, Modbus	48
2449900	3000A NW-Frame ICCB	UL	3P	EO	5.0A LSI	Table 8	4 Aux Contact, Shunt Trip	65
2449901	3000A NW-Frame ICCB	UL	3P	EO	6.0A LSIG	Table 8	4 Aux Contact, Shunt Trip	65
2449903	3000A NW-Frame ICCB	UL	3P	EO	6.0P LSIG-P	Table 8	4 Aux Contact, Shunt Trip, Modbus	65
2449999	3000A NW-Frame ICCB	UL	3P	EO	5.0P LSI-P	Table 8	4 Aux Contact, Shunt Trip, Modbus	65
3946021	3000A NW-Frame ICCB	UL	3P	EO	5.0A LSI	Table 8	4 Aux Contacts, Shunt Trip, UV	65
3946022	3000ANW- Frame ICCB	UL	3P	EO	6.0A LSIG	Table 8	4 Aux Contacts, Shunt Trip, UV	65

Circuit Breakers Table (Continued)

Cat® Part Number	Frame and Rating (Amps)	IEC/UL	No. Poles	Operation	Trip Unit	Circuit Breaker Characteristics	Options	Instantaneous Override (kA RMS) +/- 10%
3946023	3000A NW-Frame ICCB	UL	3P	EO	6.0P LSIG-P	Table 8	4 Aux Contacts, Shunt Trip, UV, Modbus	65
4543485	3000A R-Frame MCCB	UL	3P	MO	5.0A LSI	Table 9	1 Aux Contact, Shunt Trip	–
4543486	3000A R-Frame MCCB	UL	3P	MO	5.0P LSI-P	Table 9	1 Aux Contact, Shunt Trip	–
4543487	3000A R-Frame MCCB	UL	3P	MO	6.0A LSIG	Table 9	1 Aux Contact, Shunt Trip	–
4543488	3000A R-Frame MCCB	UL	3P	MO	6.0P LSIG-P	Table 9	1 Aux Contact, Shunt Trip, Modbus	–
5858074	3000A R-Frame MCCB	UL	3P	MO	5.0P LSI-P	Table 9	1 Aux Contact, Shunt Trip, Modbus	–
5858075	3000A R-Frame MCCB	UL	3P	MO	6.0P LSIG-P	Table 9	1 Aux Contact, Shunt Trip, Modbus	–
2449816	3200A NS3200 MCCB	IEC	3P	MO	5.0A LSI	Table 4	1 Aux Contact, Shunt Trip	–
2449817	3200A NS3200 MCCB	IEC	3P	MO	6.0A LSIG	Table 4	1 Aux Contact, Shunt Trip	–
2449819	3200A NS3200 MCCB	IEC	3P	MO	6.0P LSIG-P	Table 4	1 Aux Contact, Shunt Trip, Modbus	–
2449820	3200A NS3200 MCCB	IEC	4P	MO	5.0A LSI	Table 4	1 Aux Contact, Shunt Trip	–
2449821	3200A NS3200 MCCB	IEC	4P	MO	6.0A LSIG	Table 4	1 Aux Contact, Shunt Trip	–

Circuit Breakers Table (Continued)

Cat® Part Number	Frame and Rating (Amps)	IEC/UL	No. Poles	Operation	Trip Unit	Circuit Breaker Characteristics	Options	Instantaneous Override (kA RMS) +/- 10%
2449823	3200A NS3200 MCCB	IEC	4P	MO	6.0P LSIG-P	Table 4	1 Aux Contact, Shunt Trip, Modbus	–
2449894	3200A NW-Frame ICCB	IEC	3P	EO	5.0A LSI	Table 5	4 Aux Contact, Shunt Trip	–
2449895	3200A NW-Frame ICCB	IEC	3P	EO	6.0A LSIG	Table 5	4 Aux Contact, Shunt Trip	–
2449896	3200ANW- Frame ICCB	IEC	3P	EO	6.0P LSIG-P	Table 5	4 Aux Contact, Shunt Trip, Modbus	–
2449897	3200A NW-Frame ICCB	IEC	4P	EO	5.0A LSI	Table 5	4 Aux Contact, Shunt Trip	–
2449898	3200A NW-Frame ICCB	IEC	4P	EO	6.0A LSIG	Table 5	4 Aux Contact, Shunt Trip	–
2449899	3200A NW-Frame ICCB	IEC	4P	EO	6.0P LSIG-P	Table 5	4 Aux Contact, Shunt Trip, Modbus	–
3946015	3200A NW-Frame ICCB	IEC	3P	EO	5.0A LSI	Table 5	4 Aux Contact, Shunt Trip	–
3946016	3200A NW-Frame ICCB	IEC	3P	EO	6.0A LSIG	Table 5	4 Aux Contact, Shunt Trip	–
3946017	3200A NW-Frame ICCB	IEC	3P	EO	6.0P LSIG-P	Table 5	4 Aux Contact, Shunt Trip, Modbus	–
3946018	3200A NW-Frame ICCB	IEC	4P	EO	5.0A LSI	Table 5	4 Aux Contacts, Shunt Trip, UV	–
3946019	3200A NW- Frame ICCB	IEC	4P	EO	6.0A LSIG	Table 5	4 Aux Contacts, Shunt Trip, UV	–

Circuit Breakers Table (Continued)

Cat® Part Number	Frame and Rating (Amps)	IEC/UL	No. Poles	Operation	Trip Unit	Circuit Breaker Characteristics	Options	Instantaneous Override (kA RMS) +/- 10%
3946020	3200A NW-Frame ICCB	IEC	4P	EO	6.0P LSIG-P	Table 5	4 Aux Contact, Shunt Trip, Modbus	–
4448351	3200A NS-Frame MCCB	IEC	3P	MO	5.0A LSI	Table 4	1 Aux Contact, Shunt Trip	–
4448352	3200A NS-Frame MCCB	IEC	3P	MO	6.0A LSIG	Table 4	1 Aux Contact, Shunt Trip	–
5858061	3200A NS3200 MCCB	IEC	3P	MO	6.0P LSIG-P	Table 4	1 Aux Contact, Shunt Trip, Modbus	–
5858062	3200A NS3200 MCCB	IEC	4P	MO	6.0P LSIG-P	Table 4	1 Aux Contact, Shunt Trip, Modbus	–
2449904	4000A NW-Frame ICCB	IEC	3P	EO	5.0A LSI	Table 5	4 Aux Contact, Shunt Trip	170
2449905	4000A NW-Frame ICCB	IEC	3P	EO	6.0A LSIG	Table 5	4 Aux Contact, Shunt Trip	170
2449906	4000ANW- Frame ICCB	IEC	3P	EO	6.0P LSIG-P	Table 5	4 Aux Contact, Shunt Trip, Modbus	170
2449907	4000A NW-Frame ICCB	IEC	4P	EO	5.0A LSI	Table 5	4 Aux Contact, Shunt Trip	170
2449908	4000A NW-Frame ICCB	IEC	4P	EO	6.0A LSIG	Table 5	4 Aux Contact, Shunt Trip	170
2449909	4000A NW-Frame ICCB	IEC	4P	EO	6.0P LSIG-P	Table 5	4 Aux Contact, Shunt Trip, Modbus	170
2449910	4000A NW-Frame ICCB	UL	6P	EO	5.0A LSI	Table 8	4 Aux Contact, Shunt Trip	170

Circuit Breakers Table (Continued)

Cat® Part Number	Frame and Rating (Amps)	IEC/UL	No. Poles	Operation	Trip Unit	Circuit Breaker Characteristics	Options	Instantaneous Override (kA RMS) +/- 10%
2449911	4000A NW-Frame ICCB	UL	6P	EO	6.0A LSIG	Table 8	4 Aux Contact, Shunt Trip	170
2449913	4000A NW-Frame ICCB	UL	6P	EO	6.0P LSIG-P	Table 8	4 Aux Contact, Shunt Trip, Modbus	170
2527378	4000A NW-Frame ICCB	UL	6P	EO	5.0P LSI-P	Table 8	4 Aux Contact, Shunt Trip, Modbus	170
3946024	4000A NW-Frame ICCB	IEC	3P	EO	5.0A LSI	Table 5	4 Aux Contacts, Shunt Trip, UV	170
3946025	4000A NW-Frame ICCB	IEC	3P	EO	6.0A LSIG	Table 5	4 Aux Contacts, Shunt Trip, UV	170
3946026	4000A NW-Frame ICCB	IEC	3P	EO	6.0P LSIG-P	Table 5	4 Aux Contact, Shunt Trip, Modbus	170
3946027	4000A NW-Frame ICCB	UL	6P	EO	5.0A LSI	Table 8	4 Aux Contacts, Shunt Trip, UV	170
3946028	4000A NW-Frame ICCB	UL	6P	EO	6.0A LSIG	Table 8	4 Aux Contacts, Shunt Trip, UV	170
3946029	4000A NW-Frame ICCB	UL	6P	EO	6.0P LSIG-P	Table 8	4 Aux Contact, Shunt Trip, Modbus	170
4448355	4000A NW-Frame ICCB	IEC	3P	EO	5.0 LSI	Table 5	4 Aux Contacts, Shunt Trip, UV	170
4448356	4000A NW-Frame ICCB	IEC	3P	EO	6.0A LSIG	Table 5	4 Aux Contacts, Shunt Trip, UV	170
4448357	4000ANW- Frame ICCB	IEC	3P	EO	6.0P LSIG-P	Table 5	4 Aux Contacts, Shunt Trip, UV	170

Circuit Breakers Table (Continued)

Cat® Part Number	Frame and Rating (Amps)	IEC/UL	No. Poles	Operation	Trip Unit	Circuit Breaker Characteristics	Options	Instantaneous Override (kA RMS) +/- 10%
4675947	4000A NW-Frame ICCB	UL	6P	EO	5.0P LSI-P	Table 8	4 Aux Contacts, Shunt Trip, UV, Modbus	170
4860756	4000A NW-Frame ICCB	IEC	3P	EO	5.0 LSI	Table 5	4 Aux Contacts, Shunt Trip	170
4860757	4000A NW-Frame ICCB	IEC	3P	EO	6.0A LSIG	Table 5	4 Aux Contacts, Shunt Trip	170
4860758	4000A NW-Frame ICCB	IEC	3P	EO	6.0P LSIG-P	Table 5	4 Aux Contacts, Shunt Trip	170
2449914	5000A NW-Frame ICCB	IEC	6P	EO	5.0A LSI	Table 12	4 Aux Contact, Shunt Trip	170
2449915	5000A NW-Frame ICCB	IEC	6P	EO	6.0A LSIG	Table 12	4 Aux Contact, Shunt Trip	170
2449916	5000A NW-Frame ICCB	IEC	6P	EO	6.0P LSIG-P	Table 12	4 Aux Contact, Shunt Trip, Modbus	170
2449974	5000A NW-Frame ICCB	UL	6P	EO	5.0A LSI	Table 8	4 Aux Contact, Shunt Trip	170
2449975	5000A NW-Frame ICCB	UL	6P	EO	6.0A LSIG	Table 8	4 Aux Contact, Shunt Trip	170
2449977	5000A NW-Frame ICCB	UL	6P	EO	6.0P LSIG-P	Table 8	4 Aux Contact, Shunt Trip, Modbus	170
2527379	5000A NW-Frame ICCB	UL	6P	EO	5.0P LSI-P	Table 8	4 Aux Contact, Shunt Trip, Modbus	170
3946030	5000A NW-Frame ICCB	IEC	6P	EO	5.0A LSI	Table 12	4 Aux Contacts, Shunt Trip, UV	170

Circuit Breakers Table (Continued)

Cat® Part Number	Frame and Rating (Amps)	IEC/UL	No. Poles	Operation	Trip Unit	Circuit Breaker Characteristics	Options	Instantaneous Override (kA RMS) +/- 10%
3946031	5000A NW-Frame ICCB	IEC	6P	EO	6.0A LSIG	Table 12	4 Aux Contacts, Shunt Trip, UV	170
3946032	5000A NW-Frame ICCB	IEC	6P	EO	6.0P LSIG-P	Table 12	4 Aux Contact, Shunt Trip, Modbus	170
3946033	5000A NW-Frame ICCB	UL	6P	EO	5.0A LSI	Table 8	4 Aux Contacts, Shunt Trip, UV	170
3946034	5000ANW- Frame ICCB	UL	6P	EO	6.0A LSIG	Table 8	4 Aux Contacts, Shunt Trip, UV	170
3946035	5000A NW-Frame ICCB	UL	6P	EO	6.0P LSIG-P	Table 8	4 Aux Contact, Shunt Trip, Modbus	170
4675948	5000A NW-Frame ICCB	UL	6P	EO	5.0P LSI-P	Table 8	4 Aux Contacts, Shunt Trip, UV, Modbus	170

Circuit Breakers Characteristics

<b>Model</b>		P-Frame	
<b>Number of Poles</b>		3	
<b>Rated Current (Amps)</b>		800-2500A (UL)	
<b>Voltage Rating (VAC)</b>		600UL/ 690 IEC	
<b>Interrupt Rating (UL/CSA) (60Hz) - kA RMS</b>		<b>240V</b>	65
		<b>480V</b>	35
		<b>600V</b>	18
<b>IEC 60947-2 Rating (50/60Hz) - kA RMS</b>	<b>I<sub>cu</sub></b>	<b>240V</b>	50
		<b>380/415V</b>	35
	<b>I<sub>cs</sub></b>	<b>240V</b>	25
		<b>380/415V</b>	20

Table 1

<b>Model</b>		NS-Frame MO	
<b>Number of Poles</b>		3 & 4	
<b>Rated Current (Amps)</b>		630-800A (IEC)	
<b>Voltage Rating (VAC)</b>		690 (IEC)	
<b>IEC 60947-2 Rating (50/60Hz) - kA RMS</b>	<b>I<sub>cu</sub></b>	<b>240V</b>	85
		<b>380/415V</b>	50
	<b>I<sub>cs</sub></b>	<b>240V</b>	50
		<b>380/415V</b>	50

Table 2

<b>Model</b>		NS-Frame EO	
<b>Number of Poles</b>		3 & 4	
<b>Rated Current (Amps)</b>		1250-1600A (IEC)	
<b>Voltage Rating (VAC)</b>		690 (IEC)	
<b>IEC 60947-2 Rating (50/60Hz) - kA RMS</b>	<b>I<sub>cu</sub></b>	<b>240V</b>	50
		<b>380/415V</b>	50
	<b>I<sub>cs</sub></b>	<b>240V</b>	37
		<b>380/415V</b>	37

Table 3

<b>Model</b>		NS-Frame MO	
<b>Number of Poles</b>		3 & 4	
<b>Rated Current (Amps)</b>		1600-3200A (IEC)	
<b>Voltage Rating (VAC)</b>		690 (IEC)	
<b>IEC 60947-2 Rating (50/60Hz) - kA RMS</b>	<b>I<sub>cu</sub></b>	<b>240V</b>	85
		<b>380/415V</b>	70
	<b>I<sub>cs</sub></b>	<b>240V</b>	65
		<b>380/415V</b>	52

Table 4

<b>Model</b>		NW-Frame	
<b>Number of Poles</b>		3 & 4	
<b>Rated Current (Amps)</b>		2000A - 4000A (IEC)	
<b>Voltage Rating (VAC)</b>		690 IEC	
<b>IEC 60947-2 Rating (50/60Hz) -kA RMS</b>	<b>240V</b>	65	
	<b>440V</b>	65	
	<b>690V</b>	65	

Table 5



Circuit Breakers Characteristics (Continued)

<b>Model</b>		R-Frame	
<b>Number of Poles</b>		3	
<b>Rated Current (Amps)</b>		1600-3000A (UL)	
<b>Voltage Rating (VAC)</b>		600UL/ 690 IEC	
<b>Interrupt Rating (UL/CSA) (60Hz) - kA RMS</b>		<b>240V</b>	65
		<b>480V</b>	35
		<b>600V</b>	18
<b>IEC 60947-2 Rating (50/60Hz) - kA RMS</b>	<b>Icu</b>	<b>240V</b>	50
		<b>380/415V</b>	35
	<b>Ics</b>	<b>240V</b>	25
		<b>380/415V</b>	20

Table 6

<b>Model</b>		R-Frame	
<b>Number of Poles</b>		3	
<b>Rated Current (Amps)</b>		1600-3000A (UL)	
<b>Voltage Rating (VAC)</b>		600UL/ 690 IEC	
<b>Interrupt Rating (UL/CSA) (60Hz) - kA RMS</b>		<b>240V</b>	100
		<b>480V</b>	65
		<b>600V</b>	25
<b>IEC 647-2 Rating (50/60Hz) - kA RMS</b>	<b>Icu</b>	<b>240V</b>	65
		<b>380/415V</b>	50
	<b>Ics</b>	<b>240V</b>	35
		<b>380/415V</b>	25

Table 9

<b>Model</b>		NW-Frame	
<b>Number of Poles</b>		3 & 4	
<b>Rated Current (Amps)</b>		1200-2000A (UL)	
<b>Voltage Rating (VAC)</b>		600UL	
<b>Interrupt Rating (UL/CSA) (60Hz) - kA RMS</b>		<b>240V</b>	65
		<b>480V</b>	65
		<b>600V</b>	50

Table 7

<b>Model</b>		L-Frame	
<b>Number of Poles</b>		3	
<b>Rated Current (Amps)</b>		400A (UL)	
<b>Voltage Rating (VAC)</b>		600UL/ 525 IEC	
<b>Interrupt Rating (UL/CSA) (60Hz) - kA RMS</b>		<b>240V</b>	65
		<b>480V</b>	35
		<b>600V</b>	18
<b>IEC 647-2 Rating (50/60Hz) - kA RMS</b>	<b>Icu</b>	<b>240V</b>	65
		<b>380/415V</b>	35
	<b>Ics</b>	<b>220V</b>	65
		<b>380/415V</b>	35

Table 10

<b>Model</b>		NW-Frame	
<b>Number of Poles</b>		3 & 4	
<b>Rated Current (Amps)</b>		2500-5000A (UL)	
<b>Voltage Rating (VAC)</b>		600UL	
<b>Interrupt Rating (UL/CSA) (60Hz) - kA RMS</b>		<b>240V</b>	100
		<b>480V</b>	100
		<b>600V</b>	85

Table 8

**Circuit Breakers Characteristics (Continued)**

<b>Model</b>		L-Frame
<b>Number of Poles</b>		3
<b>Rated Current (Amps)</b>		400A (UL)
<b>Voltage Rating (VAC)</b>		600UL/ 525 IEC
<b>Interrupt Rating (UL/CSA) (60Hz) - kA RMS</b>	<b>240V</b>	200
	<b>480V</b>	200
	<b>600V</b>	100
<b>IEC 647-2 Rating kA RMS</b>	<b>240V</b>	150
	<b>480V</b>	75
	<b>690V</b>	20

Table 11

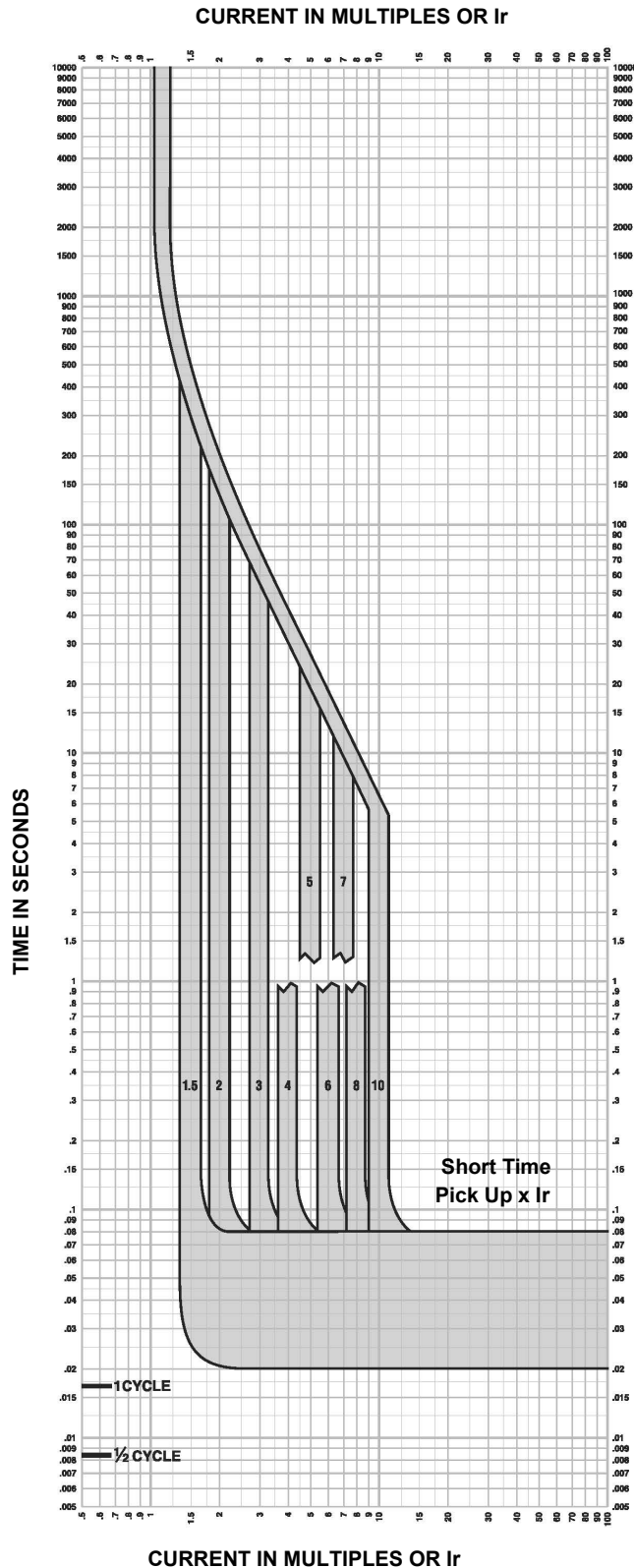
<b>Model</b>		NW-Frame
<b>Number of Poles</b>		3
<b>Rated Current (Amps)</b>		1600A (IEC)
<b>Voltage Rating (VAC)</b>		690 IEC
<b>kAIC</b>	<b>240V</b>	42
	<b>440V</b>	42
	<b>690V</b>	42

Table 13

<b>Model</b>		NW-Frame
<b>Number of Poles</b>		3
<b>Rated Current (Amps)</b>		5000A (IEC)
<b>Voltage Rating (VAC)</b>		690 IEC
<b>kAIC</b>	<b>240V</b>	100
	<b>440V</b>	100
	<b>690V</b>	100

Table 12

## L-Frame Long-Short Trip Curve



### 3.3S Long Time/Short Time Trip Curve 250A, 400A L-Frame

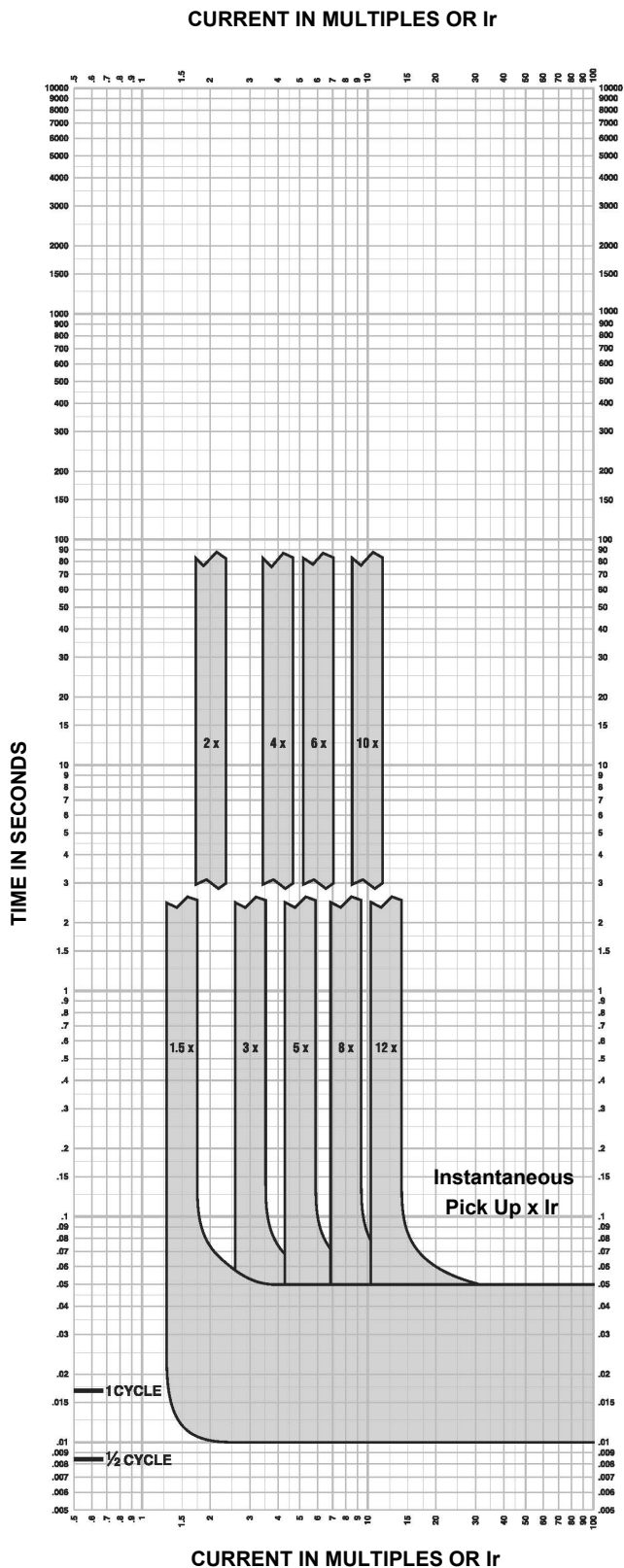
The time-current curve information is to be used for application and coordination purposes only.

Notes:

1. There is a thermal-imaging effect that can act to shorten the long-time delay. The thermal imaging effect comes into play if a current above the long-time delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in a shorter time than normal. The amount of time delay reduction is inverse to the amount of time that has elapsed since the previous overload. Approximately 20 minutes is required between overloads to completely reset thermal-imaging.
2. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.

Curves apply from -35°C to +70°C (-31°F to +158°F) ambient temperature.

## L-Frame Instant Trip Curve



### 3.3/3.3S Instantaneous Trip Curve 250A L-Frame

The time-current curve information is to be used for application and coordination purposes only.

Notes:

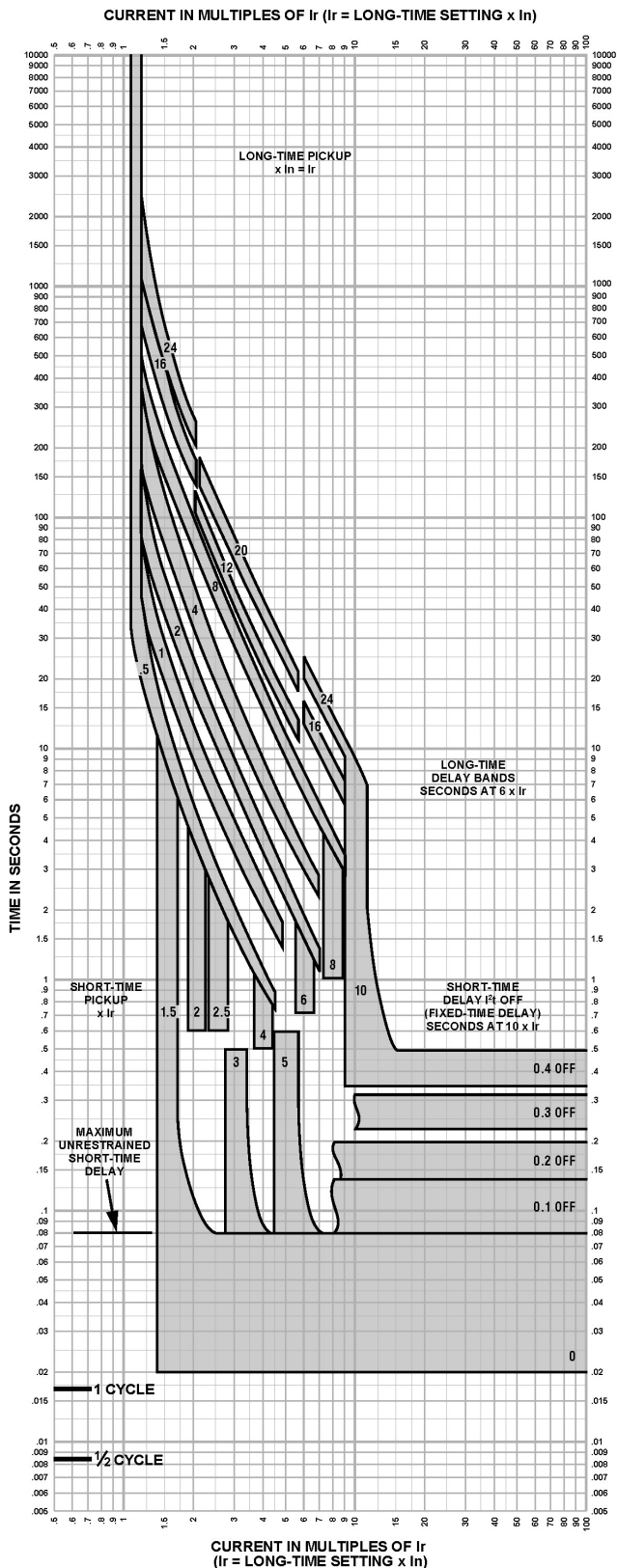
1. There is a thermal-imaging effect that can act to shorten the long-time delay. The thermal imaging effect comes into play if a current above the long-time delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in a shorter time than normal. The amount of time delay reduction is inverse to the amount of time that has elapsed since the previous overload.

Approximately 20 minutes is required between overloads to completely reset thermal-imaging.

2. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.

3.  $I_n$  = Maximum dial setting of  $I_r$ . 250A L-Frame:  
 $I_n = 250A = \text{Max } I_r$  setting Curves apply from  $-35^\circ\text{C}$  to  $+70^\circ\text{C}$  ( $-31^\circ\text{F}$  to  $+158^\circ\text{F}$ ) ambient temperature.

P, R, NS-Frame Long-Short Trip Curve and NW-Frame Long-Short Trip Curve



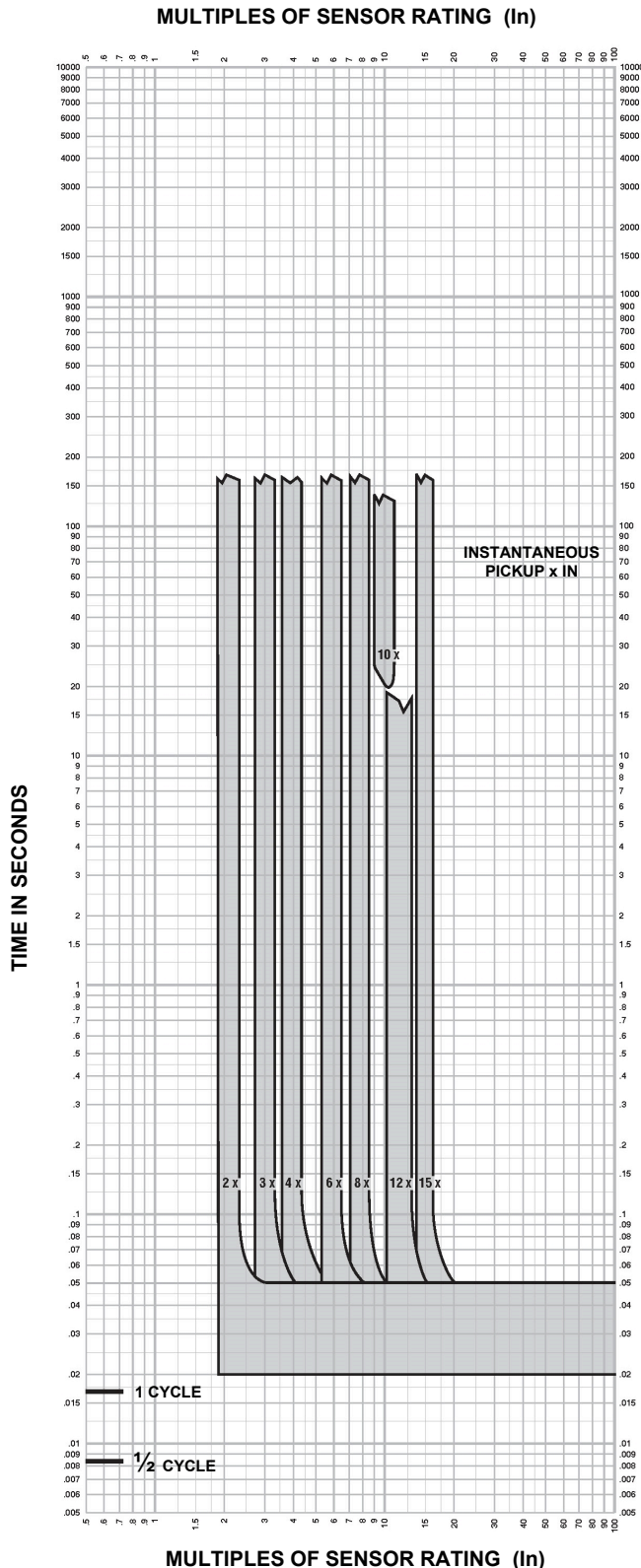
Long-time Pickup and Delay Short-time Pickup and I<sup>2</sup>t OFF Delay

The time-current curve information is to be used for application and coordination purposes only. Curves apply from -30°C to +60°C ambient temperature.

Notes:

1. There is a thermal-imaging effect that can act to shorten the long-time delay. The thermalimaging effect comes into play if a current above the long-time delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in a shorter time than normal. The amount of time delay reduction is inverse to the amount of time that has elapsed since the previous overload. Approximately 20 minutes is required between overloads to completely reset thermal-imaging.
2. The end of the curve is determined by the interrupting rating of the circuit breaker.
3. With zone-selective interlocking on, short-time delay utilized and no restraining signal, the maximum unrestrained short-time delay time band applies regardless of the setting.
4. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.
5. For a withstand circuit breaker, instantaneous can be turned OFF. See Page 22 for instantaneous trip curve. See tables on pages 03-18 for instantaneous override values..
6. Overload indicator illuminates at 100%.

## P, R, NS-Frame Instant Curve and NW-Frame Instant Trip Curve



### Instantaneous Pickup 2x–15x and OFF

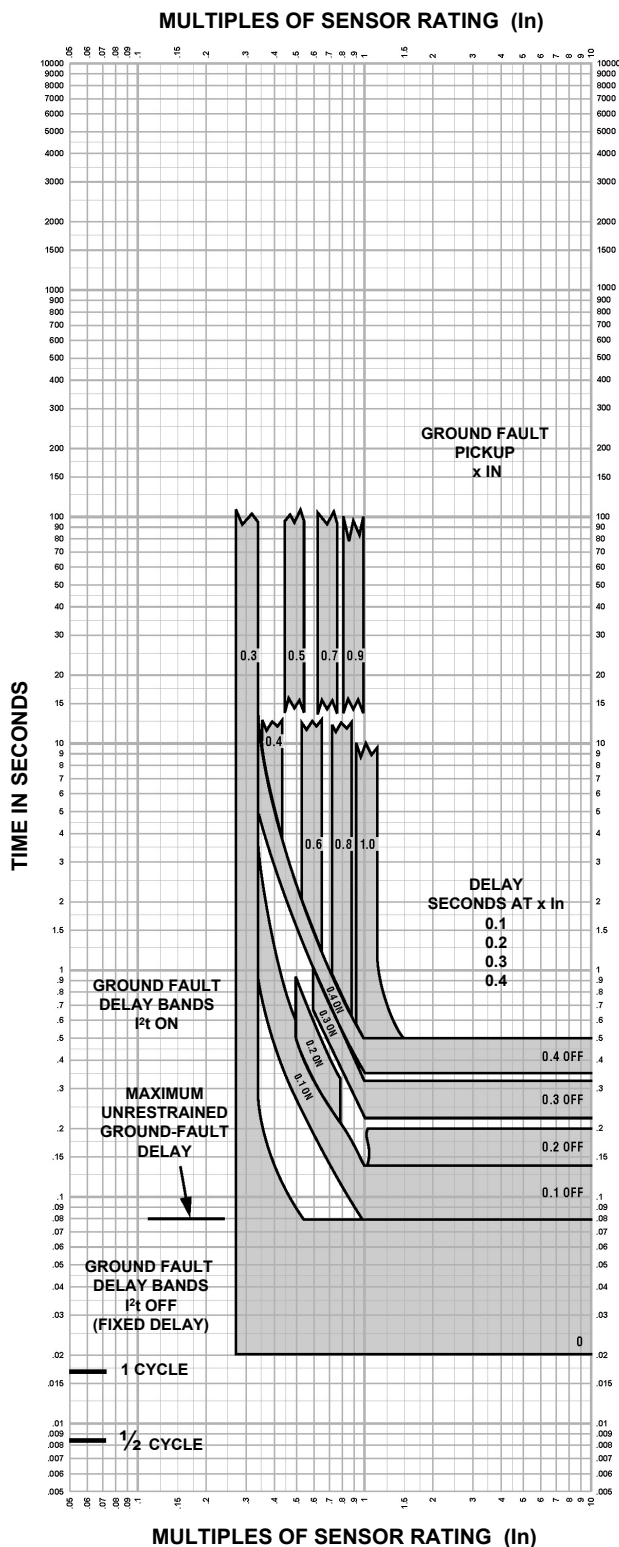
The time-current curve information is to be used for application and coordination purposes only.

Curves apply from -30° to +60°C ambient temperature.

Notes:

1. The end of the curve is determined by the interrupting rating of the circuit breaker.
2. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.
3. The instantaneous region of the trip curve shows maximum total clearing times. Actual clearing times in this region can vary depending on the circuit breaker mechanism design and other factors. The actual clearing time can be considerably faster than indicated. Contact your local Sales Office for additional information.
4. For a withstand circuit breaker, instantaneous can be turned OFF. See tables on pages 03-18 for instantaneous override values.
5. See page 22 for long-time pickup, long-time delay, short-time pickup, and short time delay trip curves.

## P, R, NS-Frame Gound Curve and NW-Frame Ground Fault Trip Curve



### Ground-fault I<sup>2</sup>t OFF and ON In ≤ 400 A

The time-current curve information is to be used for application and coordination purposes only.

Curves apply from -30°C to +60°C ambient temperature.

Materials and specifications are subject to change without notice.  
 CAT, CATERPILLAR, LET'S DO THE WORK, their respective logos, "Caterpillar Corporate Yellow", the "Power Edge" and Cat "Modern Hex" trade dress as well as corporate and product identity used herein, are trademarks of Caterpillar and may not be used without permission.

Effective with sales to the first user on or after August 1, 2016

# CATERPILLAR LIMITED WARRANTY

## Industrial, Petroleum, Locomotive, and Agriculture Engine Products and Electric Power Generation Products

### Worldwide

Caterpillar Inc. or any of its subsidiaries ("Caterpillar") warrants new and remanufactured engines and new and rebuild electric power generation products sold by it (including any products of other manufacturers packaged and sold by Caterpillar), to be free from defects in material and workmanship.

This warranty does not apply engines sold for use in on-highway vehicle or marine applications; engines in machines manufactured by or for Caterpillar; C175, 3500 and 3600 series engines used in locomotive applications; 3000 Family engines, C0.5 through C4.4 and ACERT™ (C6.6, C7, C7.1, C9, C9.3, C11, C13, C15, C18, C27, and C32) engines used in industrial, mobile agriculture and locomotive applications; or Cat<sup>®</sup> batteries; or Electric Power Generation Products manufactured or assembled in India. These products are covered by other Caterpillar warranties.

This warranty is subject to the following:

#### Warranty Period

- For industrial engines, engines in a petroleum applications or Petroleum Power Systems (excluding petroleum fire pump application), or engines in a Locomotive application, or Uninterruptible Power Supply (UPS) systems, the warranty period is 12 months after date of delivery to the first user.
- For engines used in petroleum fire pump and mobile agriculture applications the warranty period is 24 months after date of delivery to the first user.
- For controls only (EPIC), configurable and custom switchgear products, and automatic transfer switch products, the warranty period is 24 months after date of delivery to the first user.
- For new CG132, CG170 and CG260 series power generation products the warranty period is 24 months/16,000 hours, whichever comes first, after date of delivery to first user.
- For electric power generation products other than CG132, CG170 and CG260 series in prime or continuous applications the warranty period is 12 months. **For standby applications the warranty period is 24 months/1000 hours.** For emergency standby applications the warranty period is 24 months/400 hours. All terms begin after date of delivery to the first user.
- For Caterpillar rebuild electric power generation products the warranty period is 12 months, but not to exceed 24 months from shipment of rebuilt electric power generation product from Caterpillar.
- For all other applications the warranty period is 12 months after date of delivery to the first user.

#### Caterpillar Responsibilities

If a defect in material or workmanship is found during the warranty period, Caterpillar will, during normal working hours and at a place of business of a Cat dealer or other source approved by Caterpillar:

- Provide (at Caterpillar's choice) new, Remanufactured, or Caterpillar approved repaired parts or assembled components needed to correct the defect.

**Note:** New, remanufactured, or Caterpillar approved repaired parts or assembled components provided under the terms of this warranty are warranted for the remainder of the warranty period applicable to the product in which installed as if such parts were original components of that product. Items replaced under this warranty become the property of Caterpillar.

- Replace lubricating oil, filters, coolant, and other service items made unusable by the defect.
- Provide reasonable and customary labor needed to correct the defect, including labor to disconnect the product from and reconnect the product to its attached equipment, mounting, and support systems, if required.

For new 3114, 3116, and 3126 engines and, new and Caterpillar rebuild electric power generation products (which includes the following: any new products of other manufacturers packaged and sold by Caterpillar)

- Provide travel labor, up to four hours round trip, if in the opinion of Caterpillar, the product cannot reasonably be transported to a place of business of a Cat dealer or other source approved by Caterpillar (travel labor in excess of four hours round trip, and any meals, mileage, lodging, etc. is the user's responsibility).

For all other products:

- Provide reasonable travel expenses for authorized mechanics, including meals, mileage, and lodging, when Caterpillar chooses to make the repair on-site.

#### User Responsibilities

The user is responsible for:

- Providing proof of the delivery date to the first user.
- Labor costs, except as stated under "Caterpillar Responsibilities," including costs beyond those required to disconnect the product from and reconnect the product to its attached equipment, mounting, and support systems.

- Travel or transporting costs, except as stated under "Caterpillar Responsibilities."
- Premium or overtime labor costs.
- Parts shipping charges in excess of those that are usual and customary.
- Local taxes, if applicable.
- Costs to investigate complaints, unless the problem is caused by a defect in Caterpillar material or workmanship.
- Giving timely notice of a warrantable failure and promptly making the product available for repair.
- Performance of the required maintenance (including use of proper fuel, oil, lubricants, and coolant) and items replaced due to normal wear and tear.
- Allowing Caterpillar access to all electronically stored data.

#### Limitations

Caterpillar is not responsible for:

- Failures resulting from any use or installation that Caterpillar judges improper.
- Failures resulting from attachments, accessory items, and parts not sold or approved by Caterpillar.
- Failures resulting from abuse, neglect, and/or improper repair.
- Failures resulting from user's delay in making the product available after being notified of a potential product problem.
- Failures resulting from unauthorized repairs or adjustments, and unauthorized fuel setting changes.
- Damage to parts, fixtures, housings, attachments, and accessory items that are not part of the engine, Cat Selective Catalytic Reduction System or electric power generation product (including any products of other manufacturers packaged and sold by Caterpillar).
- Repair of components sold by Caterpillar that is warranted directly to the user by their respective manufacturer. Depending on type of application, certain exclusions may apply. Consult your Cat dealer for more information.

(Continued on reverse side...)



This warranty covers every major component of the products. Claims under this warranty should be submitted to a place of business of a Cat dealer or other source approved by Caterpillar. For further information concerning either the location to submit claims or Caterpillar as the issuer of this warranty, write Caterpillar Inc., 100 N. E. Adams St., Peoria, IL USA 61629.

Caterpillar's obligations under this Limited Warranty are subject to, and shall not apply in contravention of, the laws, rules, regulations, directives, ordinances, orders, or statutes of the United States, or of any other applicable jurisdiction, without recourse or liability with respect to Caterpillar.

*A) For products operating outside of Australia, Fiji, Nauru, New Caledonia, New Zealand, Papua New Guinea, the Solomon Islands and Tahiti, the following is applicable:*

**NEITHER THE FOREGOING EXPRESS WARRANTY NOR ANY OTHER WARRANTY BY CATERPILLAR, EXPRESS OR IMPLIED, IS APPLICABLE TO ANY ITEM CATERPILLAR SELLS THAT IS WARRANTED DIRECTLY TO THE USER BY ITS MANUFACTURER.**

**THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, EXCEPT CATERPILLAR EMISSION-RELATED COMPONENTS WARRANTIES FOR NEW ENGINES, WHERE APPLICABLE. REMEDIES UNDER THIS WARRANTY ARE LIMITED TO THE PROVISION OF MATERIAL AND SERVICES, AS SPECIFIED HEREIN.**

**CATERPILLAR IS NOT RESPONSIBLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.**

**CATERPILLAR EXCLUDES ALL LIABILITY FOR OR ARISING FROM ANY NEGLIGENCE ON ITS PART OR ON THE PART OF ANY OF ITS EMPLOYEES, AGENTS OR REPRESENTATIVES IN RESPECT OF THE MANUFACTURE OR SUPPLY OF GOODS OR THE PROVISION OF SERVICES RELATING TO THE GOODS.**

**IF OTHERWISE APPLICABLE, THE VIENNA CONVENTION ON CONTRACTS FOR THE INTERNATIONAL SALE OF GOODS IS EXCLUDED IN ITS ENTIRETY.**

For personal or family use engines or electric power generation products, operating in the USA, its territories and possessions, some states do not allow limitations on how long an implied warranty may last nor allow the exclusion or limitation of incidental or consequential damages. Therefore, the previously expressed exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights, which vary by jurisdiction. To find the location of the nearest Cat dealer or other authorized repair facility, call (800) 447-4986. If you have questions concerning this warranty or its applications, call or write:

In USA and Canada: Caterpillar Inc., Engine Division, P. O. Box 610, Mossville, IL 61552-0610, Attention: Customer Service Manager, Telephone (800) 447-4986. Outside the USA and Canada: Contact your Cat dealer.

*B) For products operating in Australia, Fiji, Nauru, New Caledonia, New Zealand, Papua New Guinea, the Solomon Islands and Tahiti, the following is applicable:*

**THIS WARRANTY IS IN ADDITION TO WARRANTIES AND CONDITIONS IMPLIED BY STATUTE AND OTHER STATUTORY RIGHTS AND OBLIGATIONS THAT BY ANY APPLICABLE LAW CANNOT BE EXCLUDED, RESTRICTED OR MODIFIED ("MANDATORY RIGHTS"). ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED (BY STATUTE OR OTHERWISE), ARE EXCLUDED. WITHOUT LIMITING THE FOREGOING PROVISIONS OF THIS PARAGRAPH, WHERE A PRODUCT IS SUPPLIED FOR BUSINESS PURPOSES, THE CONSUMER GUARANTEES UNDER THE CONSUMER GUARANTEES ACT 1993 (NZ) WILL NOT APPLY.**

**NEITHER THIS WARRANTY NOR ANY OTHER CONDITION OR WARRANTY BY CATERPILLAR, EXPRESS OR IMPLIED (SUBJECT ONLY TO THE MANDATORY RIGHTS), IS APPLICABLE TO ANY ITEM CATERPILLAR SELLS THAT IS WARRANTED DIRECTLY TO THE USER BY ITS MANUFACTURER.**

**IF THE MANDATORY RIGHTS MAKE CATERPILLAR LIABLE IN CONNECTION WITH SERVICES OR GOODS, THEN TO THE EXTENT PERMITTED UNDER THE MANDATORY RIGHTS, THAT LIABILITY SHALL BE LIMITED AT CATERPILLAR'S OPTION TO (a) IN THE CASE OF SERVICES, THE SUPPLY OF THE SERVICES AGAIN OR THE PAYMENT OF THE COST OF HAVING THE SERVICES SUPPLIED AGAIN AND (b) IN THE CASE OF GOODS, THE REPAIR OR REPLACEMENT OF THE GOODS, THE SUPPLY OF EQUIVALENT GOODS, THE PAYMENT OF THE COST OF SUCH REPAIR OR REPLACEMENT OR THE ACQUISITION OF EQUIVALENT GOODS.**

**CATERPILLAR EXCLUDES ALL LIABILITY FOR OR ARISING FROM ANY NEGLIGENCE ON ITS PART OR ON THE PART OF ANY OF ITS EMPLOYEES, AGENTS OR REPRESENTATIVES IN RESPECT OF THE MANUFACTURE OR SUPPLY OF GOODS OR THE PROVISION OF SERVICES RELATING TO THE GOODS.**

**CATERPILLAR IS NOT LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES UNLESS IMPOSED UNDER MANDATORY RIGHTS.**

**IF OTHERWISE APPLICABLE, THE VIENNA CONVENTION ON CONTRACTS FOR THE INTERNATIONAL SALE OF GOODS IS EXCLUDED IN ITS ENTIRETY.**

*C) For products supplied in Australia:*

**IF THE PRODUCTS TO WHICH THIS WARRANTY APPLIES ARE:**

- I. PRODUCTS OF A KIND ORDINARILY ACQUIRED FOR PERSONAL, DOMESTIC OR HOUSEHOLD USE OR CONSUMPTION; OR**
- II. PRODUCTS THAT COST AUD 40,000 OR LESS,**

**WHERE THOSE PRODUCTS WERE NOT ACQUIRED FOR THE PURPOSE OF RE-SUPPLY OR FOR THE PURPOSE OF USING THEM UP OR TRANSFORMING THEM IN THE COURSE OF PRODUCTION OR MANUFACTURE OR IN THE COURSE OF REPAIRING OTHER GOODS OR FIXTURES, THEN THIS SECTION C APPLIES.**

**THE FOLLOWING MANDATORY TEXT IS INCLUDED PURSUANT TO THE AUSTRALIAN CONSUMER LAW AND INCLUDES REFERENCES TO RIGHTS THE USER MAY HAVE AGAINST THE DIRECT SUPPLIER OF THE PRODUCTS: OUR GOODS COME WITH GUARANTEES THAT CANNOT BE EXCLUDED UNDER THE AUSTRALIAN CONSUMER LAW. YOU ARE ENTITLED TO A REPLACEMENT OR REFUND FOR A MAJOR FAILURE AND COMPENSATION FOR ANY OTHER REASONABLY FORESEEABLE LOSS OR DAMAGE. YOU ARE ALSO ENTITLED TO HAVE THE GOODS REPAIRED OR REPLACED IF THE GOODS FAIL TO BE OF ACCEPTABLE QUALITY AND THE FAILURE DOES NOT AMOUNT TO A MAJOR FAILURE. THE INCLUSION OF THIS TEXT DOES NOT CONSTITUTE ANY REPRESENTATION OR ACCEPTANCE BY CATERPILLAR OF LIABILITY TO THE USER OR ANY OTHER PERSON IN ADDITION TO THAT WHICH CATERPILLAR MAY HAVE UNDER THE AUSTRALIAN CONSUMER LAW.**

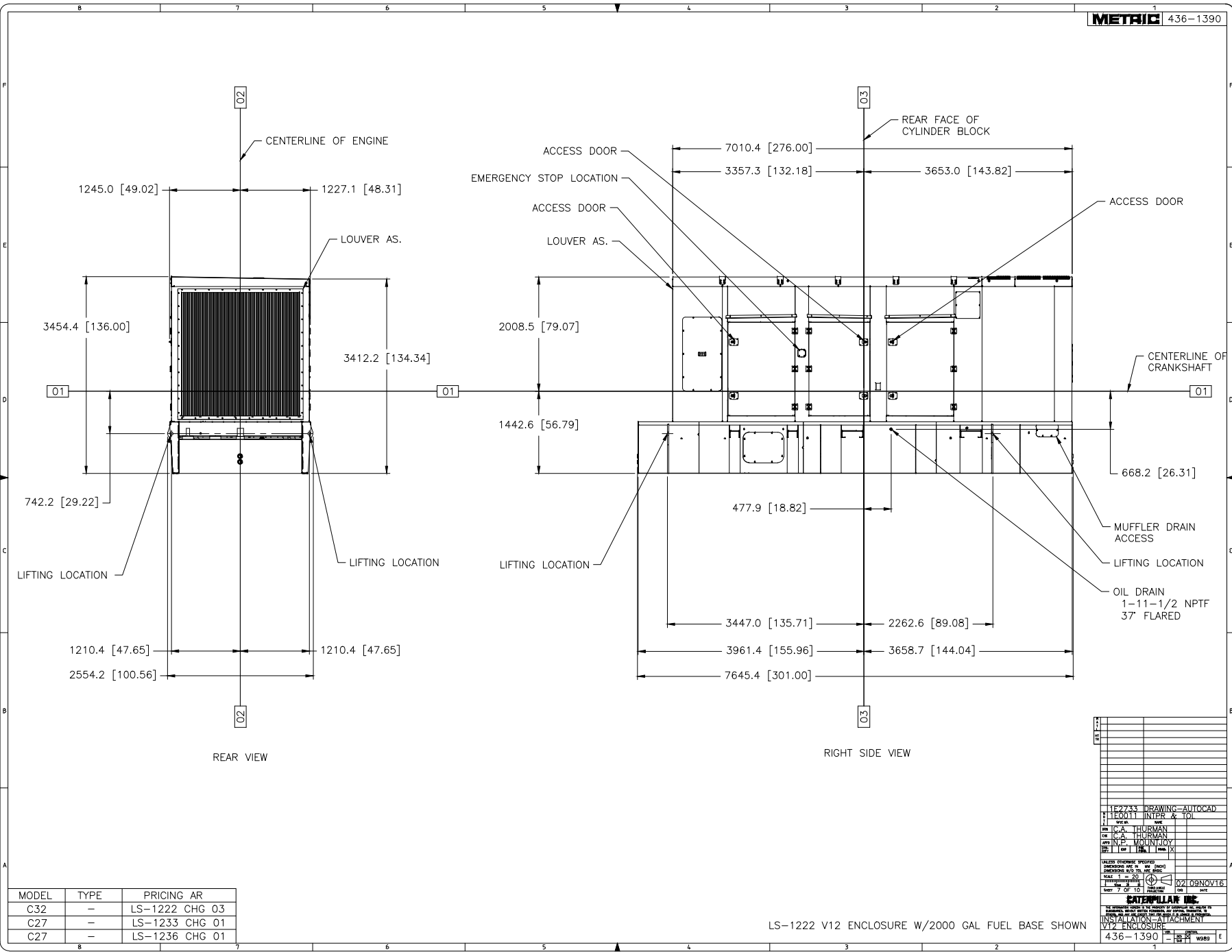
**TO THE EXTENT THE PRODUCTS FALL WITHIN THIS SECTION C BUT ARE NOT OF A KIND ORDINARILY ACQUIRED FOR PERSONAL, DOMESTIC OR HOUSEHOLD USE OR CONSUMPTION, CATERPILLAR LIMITS ITS LIABILITY TO THE EXTENT IT IS PERMITTED TO DO SO UNDER THE AUSTRALIAN CONSUMER LAW TO, AT ITS OPTION, THE REPAIR OR REPLACEMENT OF THE PRODUCTS, THE SUPPLY OF EQUIVALENT PRODUCTS, OR THE PAYMENT OF THE COST OF SUCH REPAIR OR REPLACEMENT OR THE ACQUISITION OF EQUIVALENT PRODUCTS.**

**THE WARRANTY SET OUT IN THIS DOCUMENT IS GIVEN BY CATERPILLAR INC. OR ANY OF ITS SUBSIDIARIES, 100 N. E. ADAMS ST, PEORIA, IL USA 61629, TELEPHONE 1 309 675 1000, THE USER IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH MAKING A CLAIM UNDER THE WARRANTY SET OUT IN THIS DOCUMENT, EXCEPT AS EXPRESSLY STATED OTHERWISE IN THIS DOCUMENT, AND THE USER IS REFERRED TO THE BALANCE OF THE DOCUMENT TERMS CONCERNING CLAIM PROCEDURES, CATERPILLAR RESPONSIBILITIES AND USER RESPONSIBILITIES.**

**TO THE EXTENT PERMISSIBLE BY LAW, THE TERMS SET OUT IN THE REMAINDER OF THIS WARRANTY DOCUMENT (INCLUDING SECTION B) CONTINUE TO APPLY TO PRODUCTS TO WHICH THIS SECTION C APPLIES.**

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12223 DRAWING-AUTOCAD  
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 DATE: 11/16/16  
 DESIGNED BY: C.A. THURMAN  
 FOR: G.A. THURMAN  
 APPR: M.P. MOUNJOY  
 DATE: 11/16/16

SCALE: 1" = 20'  
 SHEET: 7 OF 10  
 DATE: 02/09/NOV16

**CATERPILLAR INC.**  
 INSTALLATION ATTACHMENT  
 V12 ENCLOSURE  
 436-1390

MODEL	TYPE	PRICING AR
C32	-	LS-1222 CHG 03
C27	-	LS-1233 CHG 01
C27	-	LS-1236 CHG 01

LS-1222 V12 ENCLOSURE W/2000 GAL FUEL BASE SHOWN



