# FTA1100-J
# DIESEL ENGINE FIRE PUMP CONTROLLERS

## STANDARD SUBMITTAL PACKAGE

Firetrol®

NOTE: The drawings included herein are for standard controllers. Actual "as built" drawings may differ from those seen here.

ASCO Power Technologies®

SBP1100J(B)

# FTA1100J Diesel Engine Fire Pump Controllers
# Product Description


***Description*** – Firetrol® combined automatic and manual Mark IIXG based diesel engine fire pump controllers are intended for starting and monitoring fire pump diesel engines. They are suitable for use with both mechanical and electronic type engines. The controller is available for 12 or 24 volt negative ground systems, using lead acid or Nickel-Cadmium batteries. The controller monitors, displays and records fire pump system information.

***Approvals –*** Firetrol fire pump controllers are listed by Underwriters' Laboratories, Inc., in accordance with UL218, *Standard for Fire Pump Controllers*, CSA, *Standard for Industrial Control Equipment* (cUL), and approved by Factory Mutual. They are built to meet or exceed the requirements of the approving authorities as well as NEMA and the latest editions of NFPA 20, *Installation of Centrifugal Fire Pumps*, and NFPA 70, *National Electrical Code*.

***Standard Features –*** The following are included as standard with each controller:

- AC Line & Battery circuit breakers
- Manual-Off-Auto selector switch
- Manual test push-button
- Two manual crank push-buttons
- Two 10 Amp battery chargers with 4 stage charging cycle, selectable AC voltage (110 / 220), selectable DC voltage (12 / 24), and selectable battery type (Lead Acid, Ni-Cad 9/18 Cell, Ni-Cad 10/20 Cell)
- Door mounted display/interface panel featuring a 128 x 64 pixel backlit LCD graphical display, Membrane Type User Control Push-buttons and easy to read LED Indicators for:
  - *AC POWER AVAILABLE*
  - *ALARM*
  - *MAIN SWITCH IN AUTO*
  - *MAIN SWITCH IN MANUAL*
  - *SYSTEM PRESSURE LOW*
  - *ENGINE RUNNING*
  - *ENGINE FAIL TO START*
  - *ENGINE TEMPERATURE HIGH*
  - *ENGINE OIL PRESSURE LOW*
  - *ENGINE OVERSPEED*
  - *ENGINE ALTERNATE ECM*
  - *ENGINE FUEL INJECTOR MALFUNCTION*
  - *FUEL LEVEL LOW*
  - *AUTOMATIC SHUTDOWN DISABLED*
  - *CHARGER MALFUNCTION*
  - *BATTERY #1 TROUBLE*
  - *BATTERY #2 TROUBLE*
- Minimum Run Timer / Off Delay Timer
- Programmable Daylight Saving Time Option
- Weekly Test Timer
- Engine Run Time Meter
- Digital Pressure Display
- USB Host Controller and Port
- Solid State Pressure Transducer
- Data Log
- Event Log (3000 events)
- Simultaneous Display of Battery Voltages, Charging Rates, AC Volts, Pressure and Alarm Messages
- Disk Error Message
- Disk Near Full Message
- Pressure Error Message
- Fail to Start Message
- Low Suction Pressure Message
- Crank Cycle Status Indication (Displays Cranking Battery, Number of Starting Attempts and Crank/Rest Time Remaining)
- 300 psi (20.7 bars) wet parts (solid state pressure transducer, solenoid valve, plumbing) for fresh water applications
- NEMA Type 2 enclosure (IEC IP22)
- Each standard controller comes with user set options for:
  - AC Power Loss Start
  - Low Pressure Aud.
  - Main Sw. Mis-Set
  - Pump Run Alarm
  - User Defined Input
  - Low Pump Rm Temp
  - Relief Valve Open
  - High Reservoir
  - Interlock Alarm
  - Low Suction
  - Manual Test
  - Remote Start
  - Weekly Test Setup
  - Low Reservoir
  - High Fuel Level

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# FTA1100J Diesel Engine Fire Pump Controllers Specifications

**Diesel Engine Fire Pump Controller**

The fire pump controller shall be a factory assembled, wired and tested unit and shall conform to all the requirements of the latest edition of NFPA 20, *Standard for the Installation of Stationary Pumps for Fire Protection* and NFPA 70, *National Electrical Code*.

The controller shall be listed by Underwriters Laboratories, Inc., in accordance with UL218, *Standard for Fire Pump Controllers*, CSA, and Canadian Standards Association CSA-C22.2, *Standard for Industrial Control Equipment (cULus) and* approved by Factory Mutual.

The controller shall be:

□ 12 Volt
□ 24 Volt

and shall be compatible with either mechanical or electronic type engines.

The controller components shall be housed in a NEMA Type 2 (IEC IP22) drip-proof, wall mounted enclosure.

**Operator Interface**

The fire pump controller shall feature an operator interface with user keypad. The interface shall monitor and display motor operating conditions, including all alarms, events, and pressure conditions. All alarms, events, and pressure conditions shall be displayed with a time and date stamp. The display shall be a 128x64 Backlit LCD capable of customized graphics. The display and interface shall be NEMA rated for Type 2, 3R, 4, 4X, and 12 protection and shall be fully accessible without opening the controller door. The display and user interface shall utilize multiple levels of password protection for system security. A minimum of 3 password levels shall be provided.

**Digital Status/Alarm Messages**

The digital display shall indicate text messages for the status and alarm conditions of:

- Engine Run
- Minimum Run Time /Off Delay Time
- Engine Fail to Start
- Low Suction Pressure
- Manual Engine Crank
- Disk Error
- Disk Near Full
- Pressure Error
- Sequential Start Time
- Crank/Rest Time - Cycle
- Remote Start
- System Battery Low
- Drive Not Installed

The Sequential Start Timer, Minimum Run Timer/Off Delay Timer and Crank/Rest time shall be displayed as numeric values reflecting the value of the remaining time.

**LED Visual Indicators**

LED indicators, visible with the door closed, shall indicate:

- AC Power Available
- Alarm
- Main Switch In Auto
- Main Switch In Manual
- System Pressure Low
- Engine Running
- Engine Fail To Start
- Engine Temperature High
- Engine Oil Pressure Low
- Engine Overspeed
- Engine Alternate ECM
- Engine Fuel Injector Malfunction
- Fuel Level Low
- Automatic Shutdown Disabled
- Charger Malfunction
- Battery #1 Trouble
- Battery #2 Trouble

**Data Logging**

The digital display shall monitor the system and log the following data:

- Motor Calls/Starts
- Pump Total Run Time
- Last Pump Run time
- Controller Power On Time
- Last Pump Start
- Minimum System Pressure
- Maximum System Pressure
- Last High Temp.
- Last Low Oil Pressure
- Last Engine Overspeed
- Last Low Fuel Level
- Last Charger Fail
- Last Battery Trouble
- Last Overspeed
- Battery #1 Volts (Min., Now, Max.)
- Battery #2 Volts (Min., Now, Max.)
- Battery #1 Amps (Min., Now, Max.)
- Battery #2 Amps (Min., Now, Max.)

**Event Recording**

*Memory* - The controller shall record all operational and alarm events to system memory. All events shall be time and date stamped and include an index number. The system memory shall have the capability of storing 3000 events and allow the user access to the event log via the user interface. The user shall have the ability to scroll through the stored messages in groups of 1, 10.

**USB Host Controller**

The controller shall have a built-in USB Host Controller. A USB port capable of accepting a USB Flash Memory Disk shall be provided. The controller shall save all operational and alarm events to the flash memory on a daily basis. Each saved event shall be time and date stamped. The total amount of historical data saved shall solely depend on the size of the flash disk utilized. The controller shall have the capability to save settings and values to the flash disk on demand via the user interface.

**Solid State Pressure Transducer**

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The controller shall be supplied with a solid state pressure transducer with a range of 0-300 psi (0-20.7 bar) ±1 psi. The solid state pressure switch shall be used for both display of the system pressure and control of the fire pump controller. Systems using analog pressure devices or mercury switches for operational control will not be accepted.

The START, STOP and SYSTEM PRESSURE shall be digitally displayed and adjustable through the user interface. The pressure transducer shall be mounted inside the controller to prevent accidental damage. The pressure transducer shall be directly pipe mounted to a bulkhead pipe coupling without any other supporting members. Field connections shall be made externally at the controller coupling to prevent distortion of the pressure switch element and mechanism.

**Operation**

A digitally set On Delay (Sequential Start) timer shall be provided as standard. Upon a call to start, the user interface shall display a message indicating the remaining time value of the On Delay timer.

The controller shall be field programmable for manual stop or automatic stop. If set for automatic stopping, the controller shall allow the user to select either a Minimum Run Timer or an Off Delay Timer. Both timers shall be programmable through the user interface.

The controller shall include an AC Power Loss start timer to start the engine in the event of AC Power failure.

A weekly test timer shall be provided as standard. The controller shall have the ability to program the time, date, and frequency of the weekly test. In addition, the controller shall have the capability to display a preventative maintenance message for a service inspection. The message text and frequency of occurrence shall be programmable through the user interface.

A Lamp Test feature shall be included. The user interface shall also have the ability to display the status of the system inputs and outputs.

An Audible Test feature shall be included to test the operation of the audible alarm device.

**Seismic Certification**

The controller shall be certified to meet or exceed the requirements of the 2006 International Building Code and the 2010 California Building Code for Importance Factor 1.5 Electrical Equipment for Sds equal to 1.88 or less severe seismic regions. Qualifications shall be based upon successful tri-axial shake-table testing in accordance with ICC-ES AC-156. Certification without testing shall be unacceptable. Controller shall be clearly labeled as rated for installation in seismic areas and a Certificate of Conformance shall be provided with the controller.

**Battery Chargers**

The controller shall include two fully automatic, 200 amp hour, 4 step battery chargers. The chargers shall feature a qualification stage, in which the batteries are examined by the charger to insure that they are not defective and are capable of accepting a charge. The battery charger shall feature:

- Selectable AC Power Voltage
- Selectable Battery Voltage
- Selectable Battery Type
- Charge Cycle Reset Push-button

The controller shall be a Firetrol brand.

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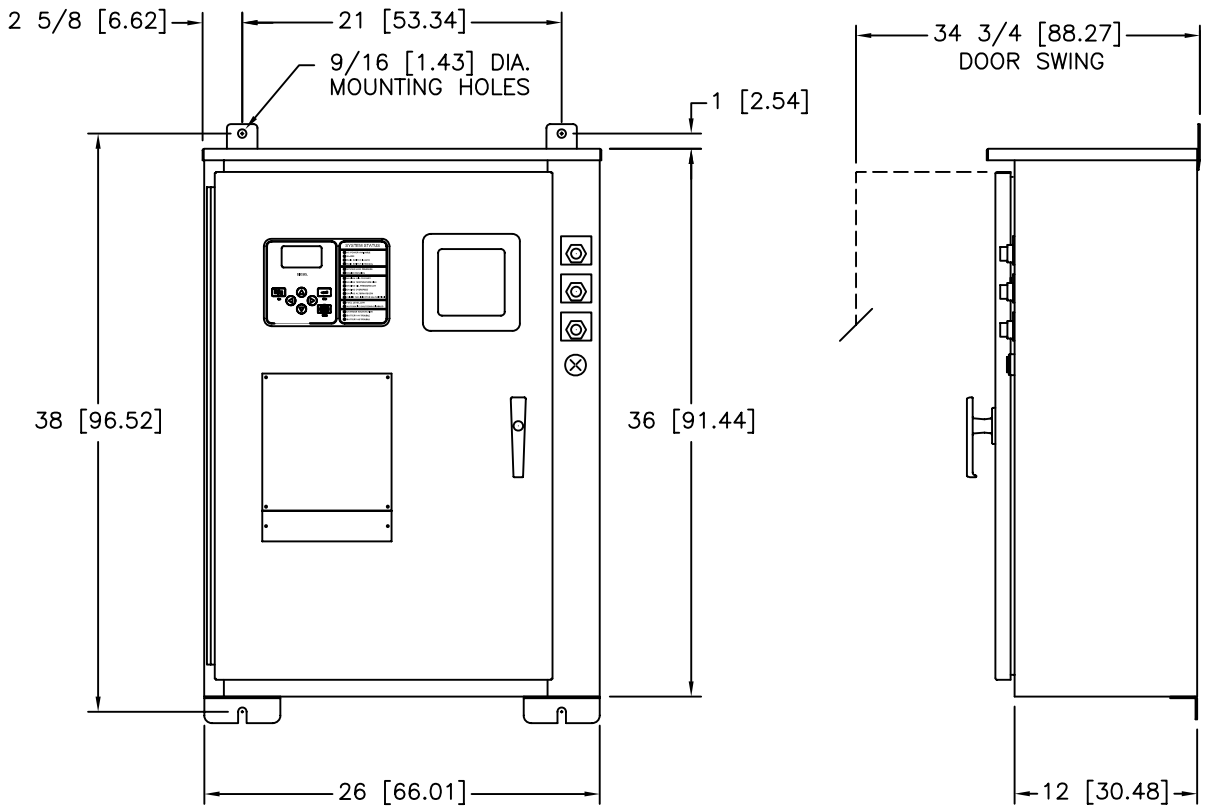
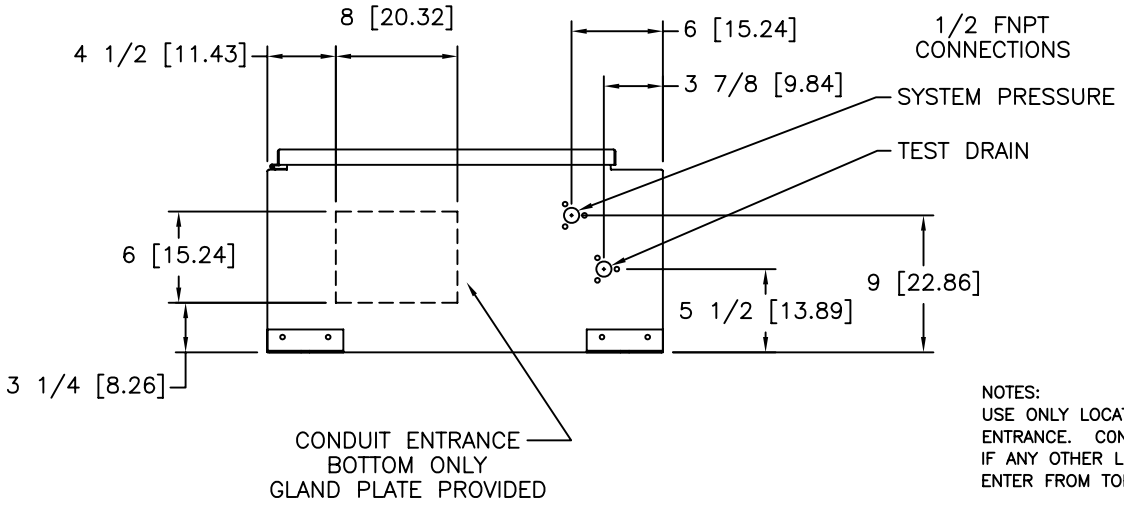
**Firetrol.com**


SP1100-50(B)




NOTES:
USE ONLY LOCATIONS SHOWN FOR CONDUIT ENTRANCE. CONTROLLER WARRANTY IS VOID IF ANY OTHER LOCATION IS USED. DO NOT ENTER FROM TOP.

NOT TO BE USED AS A JUNCTION BOX. DO NOT ROUTE ENGINE HEATER WIRING THROUGH CONTROLLER.

DO NOT INSTALL IN AMBIENT TEMPERATURES BELOW 41°F (5°C)

DIMENSIONS SHOWN ON THIS DRAWING ARE APPLICABLE FOR NEMA TYPES 2/3R/4/4X/12

ALL DIMENSIONS – INCHES [CM]
SHIPPING WEIGHT – POUNDS [KG]

FOR CONTROLLERS WITH 12" [30.5] FLOOR MOUNTING LEGS MODIFICATION –N31 RE: DRAWING DD1100–21

FOR CONTROLLERS WITH 6" [15.24] BASE MOUNTING LEGS MODIFICATION –N32 RE: DRAWING DD1100–22

| APPROXIMATE SHIPPING WEIGHT |
|---|
| 200 [90.7] |

| | REV. TO | ECN NO. | BY | APP. | DATE |
|---|---|---|---|---|---|
| CHANGED PRESSURE FITTING AND CONDUIT ENTRANCE DIMENSIONS | C | 228698 | JC | TEF | 08-20-10 |
| UPDATED TO MARK IIXG USER INTERFACE | B | 225152 | JC | TEF | 11-11-09 |

DIMENSIONS AND SHIPPING WEIGHT | FTA1100–J

DIESEL ENGINE FIRE PUMP CONTROLLER
WALL MOUNT

THIRD ANGLE PROJECTION

| | BY | DATE |
|---|---|---|
| DRAWN BY | TEF | 12–14–02 |
| CHECKED | | |
| PROJECT APPROVAL | | |
| FINAL APPROVAL | TEF | 12–14–02 |

MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP–I–003. FOR PLASTIC PARTS SEE MP–I–055

ASSEM. REF. NO.



ASCO® ASCO POWER TECHNOLOGIES, L.P.
FLORHAM PARK, NEW JERSEY 07932 U.S.A.

COMPUTER GENERATED DRAWING

SCALE 1:1 | SIZE A

DWG. NO. DD1100-20

DRAWING REV. C | ECN NO. 228698 | SHEET 1 OF 1

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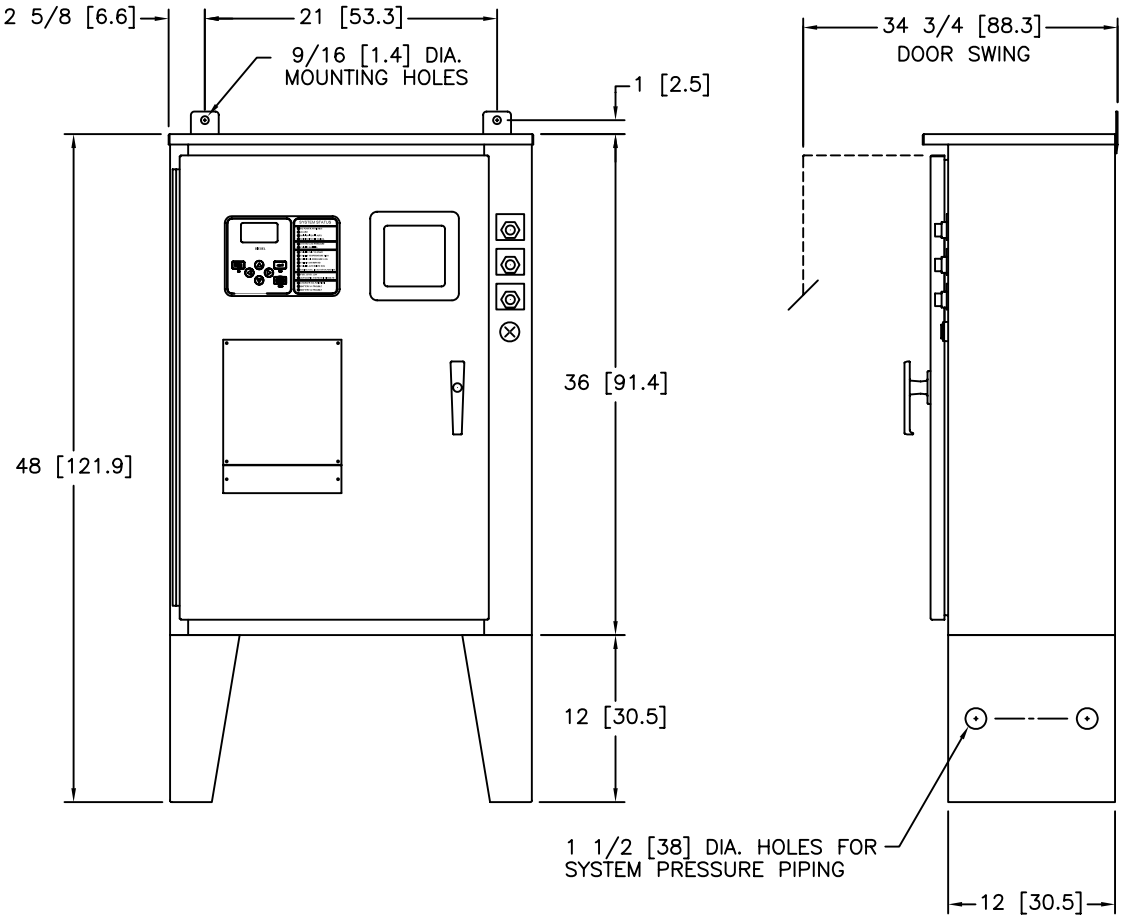


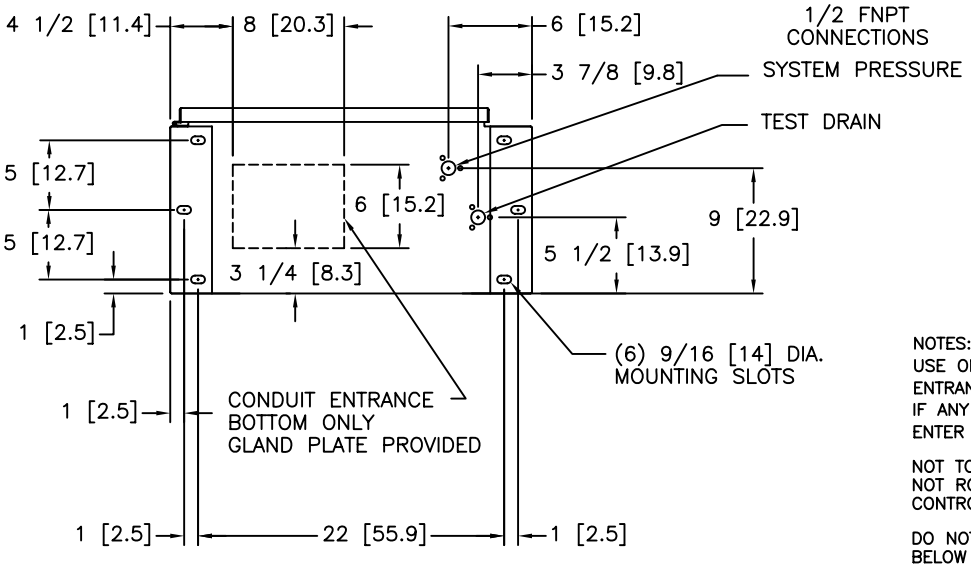


| APPROXIMATE SHIPPING WEIGHT |
|---|
| 200 [90.7] |

NOTES:
USE ONLY LOCATIONS SHOWN FOR CONDUIT ENTRANCE. CONTROLLER WARRANTY IS VOID IF ANY OTHER LOCATION IS USED. DO NOT ENTER FROM TOP.

NOT TO BE USED AS A JUNCTION BOX. DO NOT ROUTE ENGINE HEATER WIRING THROUGH CONTROLLER.

DO NOT INSTALL IN AMBIENT TEMPERATURES BELOW 41°F (5°C)

DIMENSIONS SHOWN ON THIS DRAWING ARE APPLICABLE FOR NEMA TYPES 2/3R/4/4X/12

ALL DIMENSIONS – INCHES [CM]
SHIPPING WEIGHT – POUNDS [KG]

| | REV. TO | ECN NO. | BY | APP. | DATE |
|---|---|---|---|---|---|
| CHANGED PRESSURE FITTING AND CONDUIT ENTRANCE DIMENSIONS | B | 228698 | JC | TEF | 08-20-10 |
| UPDATED TO MARK IIXG USER INTERFACE | A | 225152 | JC | TEF | 11-11-09 |

DIMENSIONS AND SHIPPING WEIGHT FTA1100-J
DIESEL ENGINE FIRE PUMP CONTROLLER
WITH MODIFICATION N31 (12" MOUNTING LEGS)

THIRD ANGLE PROJECTION

| | BY | DATE |
|---|---|---|
| DRAWN BY | RW | 11-17-03 |
| CHECKED | | |
| PROJECT APPROVAL | | |
| FINAL APPROVAL | TEF | 11-17-03 |

MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-1-003. FOR PLASTIC PARTS SEE MP-1-055

ASSEM. REF. NO.



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COMPUTER GENERATED DRAWING

SCALE 1:1 SIZE A

DWG. NO. DD1100-21

DRAWING REV. B ECN NO. 228698 SHEET 1 OF 1

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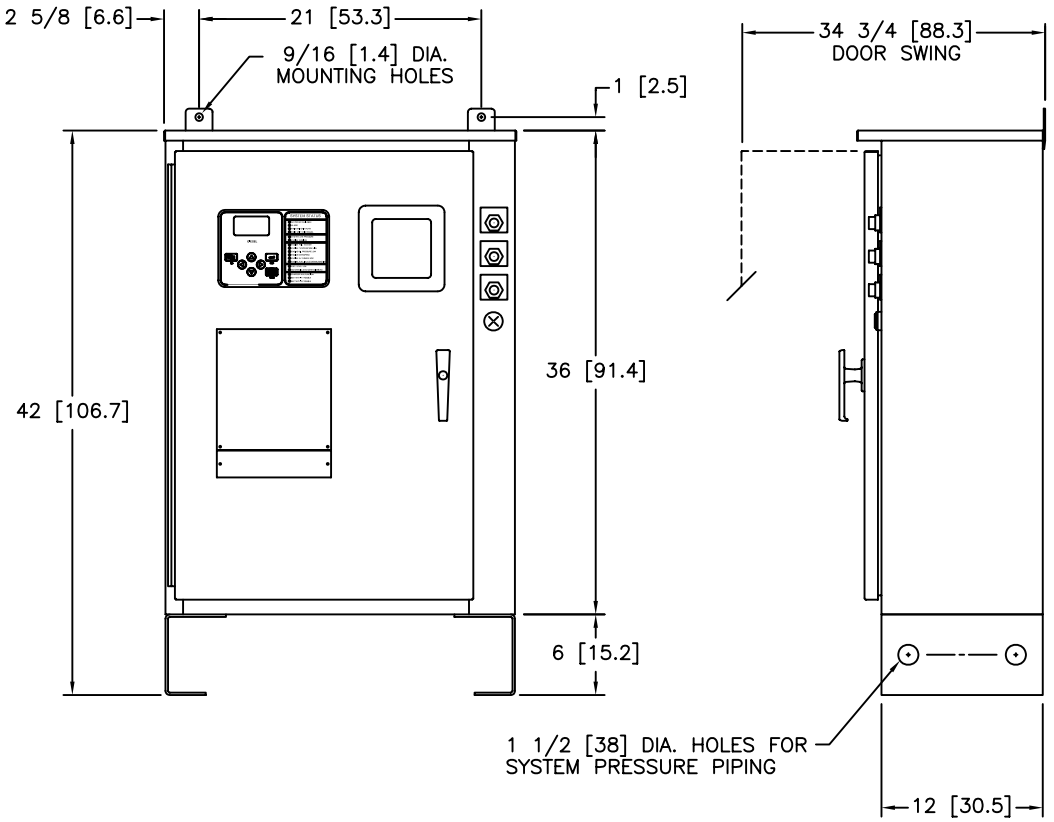


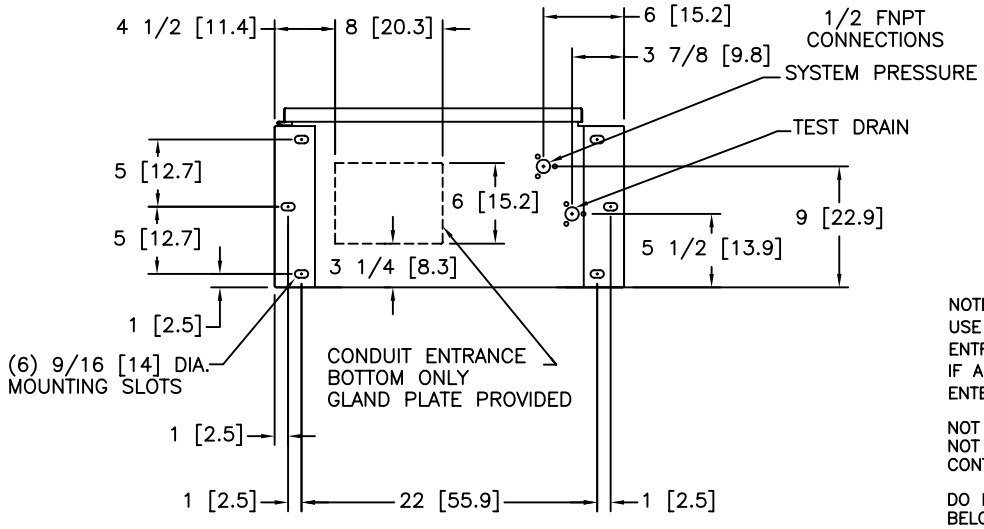


NOTES:

USE ONLY LOCATIONS SHOWN FOR CONDUIT ENTRANCE. CONTROLLER WARRANTY IS VOID IF ANY OTHER LOCATION IS USED. DO NOT ENTER FROM TOP.

NOT TO BE USED AS A JUNCTION BOX. DO NOT ROUTE ENGINE HEATER WIRING THROUGH CONTROLLER.

DO NOT INSTALL IN AMBIENT TEMPERATURES BELOW 41°F (5°C)

DIMENSIONS SHOWN ON THIS DRAWING ARE APPLICABLE FOR NEMA TYPES 2/3R/4/4X/12

ALL DIMENSIONS – INCHES [CM]
SHIPPING WEIGHT – POUNDS [KG]

| APPROXIMATE SHIPPING WEIGHT |
|---|
| 200 [90.7] |

| | REV. TO | ECN NO. | BY | APP. | DATE |
|---|---|---|---|---|---|
| CHANGED PRESSURE FITTING AND CONDUIT ENTRANCE DIMENSIONS | B | 228698 | JC | TEF | 08-20-10 |
| UPDATED TO MARK IIXG USER INTERFACE | A | 225152 | JC | TEF | 11-11-09 |

DIMENSIONS AND SHIPPING WEIGHT | FTA1100-J

DIESEL ENGINE FIRE PUMP CONTROLLER
WITH MODIFICATION N32 (6" BASE MOUNTING LEGS

THIRD ANGLE PROJECTION

| | BY | DATE |
|---|---|---|
| DRAWN BY | RW | 01-17-03 |
| CHECKED | | |
| PROJECT APPROVAL | | |
| FINAL APPROVAL | TEF | 01-07-03 |

MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-I-003. FOR PLASTIC PARTS SEE MP-I-055

ASSEM. REF. NO.



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COMPUTER GENERATED DRAWING

SCALE 1:1 | SIZE A

DWG. NO. DD1100-22

DRAWING REV. B | ECN NO. 228698 | SHEET 1 OF 1

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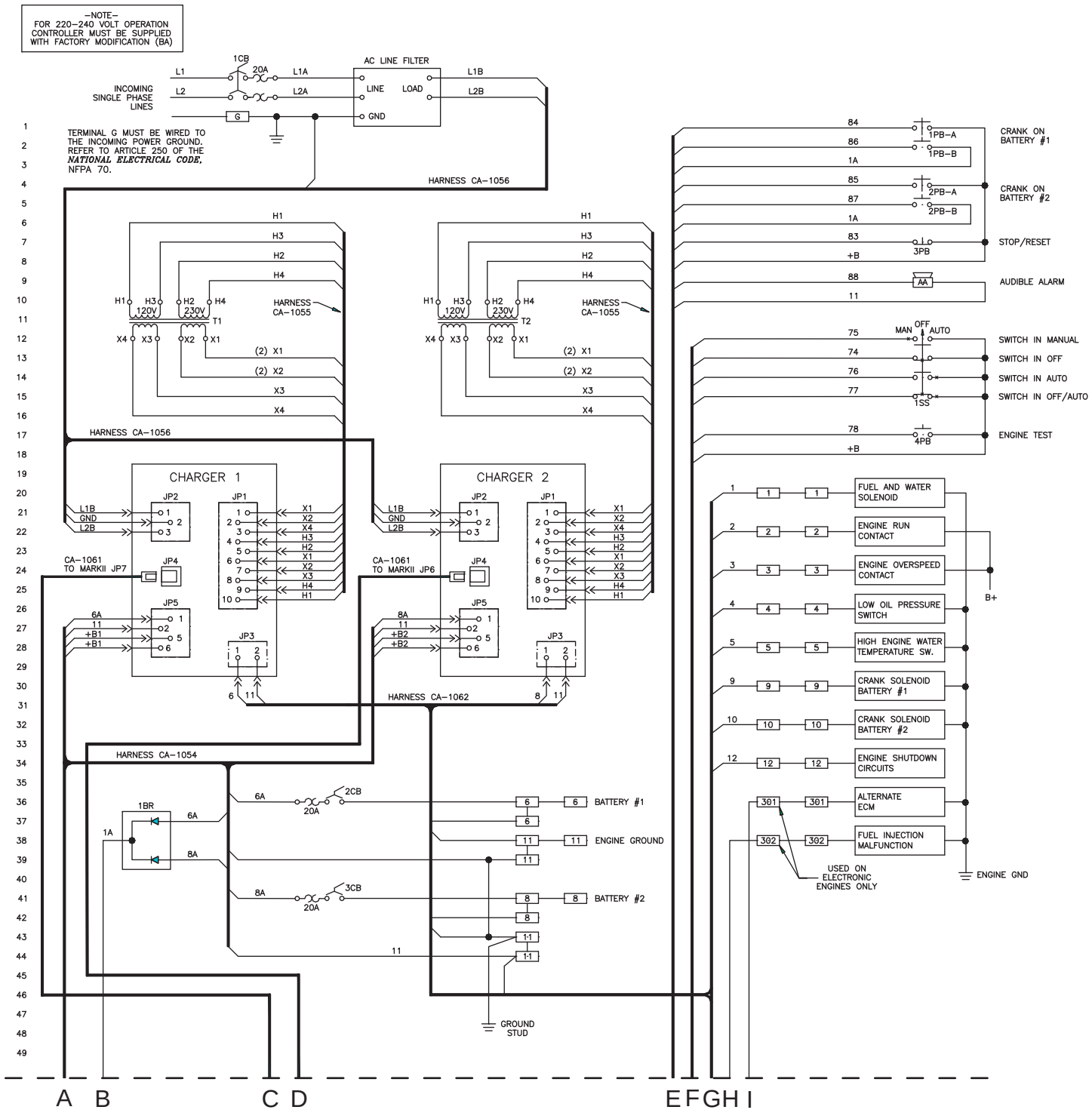


TO PAGE 2

| | | | | | | |
|---|---|---|---|---|---|---|
| REVISED PRESSURE TRANSDUCER | | | REV. TO F | ECN NO. 229677 | BY GFD | APP. GFD | DATE 11-12-10 |
| WIRING SCHEMATIC | FTA1100-J | | | | | |
| MARK IIxg DIESEL ENGINE FIRE PUMP CONTROLLER - STANDARD WIRING SCHEMATIC | | | | | | |

THIRD ANGLE PROJECTION

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| | BY | DATE |
|---|---|---|
| DRAWN BY | TEF | 11-04-02 |
| CHECKED | | |
| PROJECT APPROVAL | | |
| FINAL APPROVAL | TEF | 11-04-02 |

MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP–I–003. FOR PLASTIC PARTS SEE MP–I–055

ASSEM. REF. NO.



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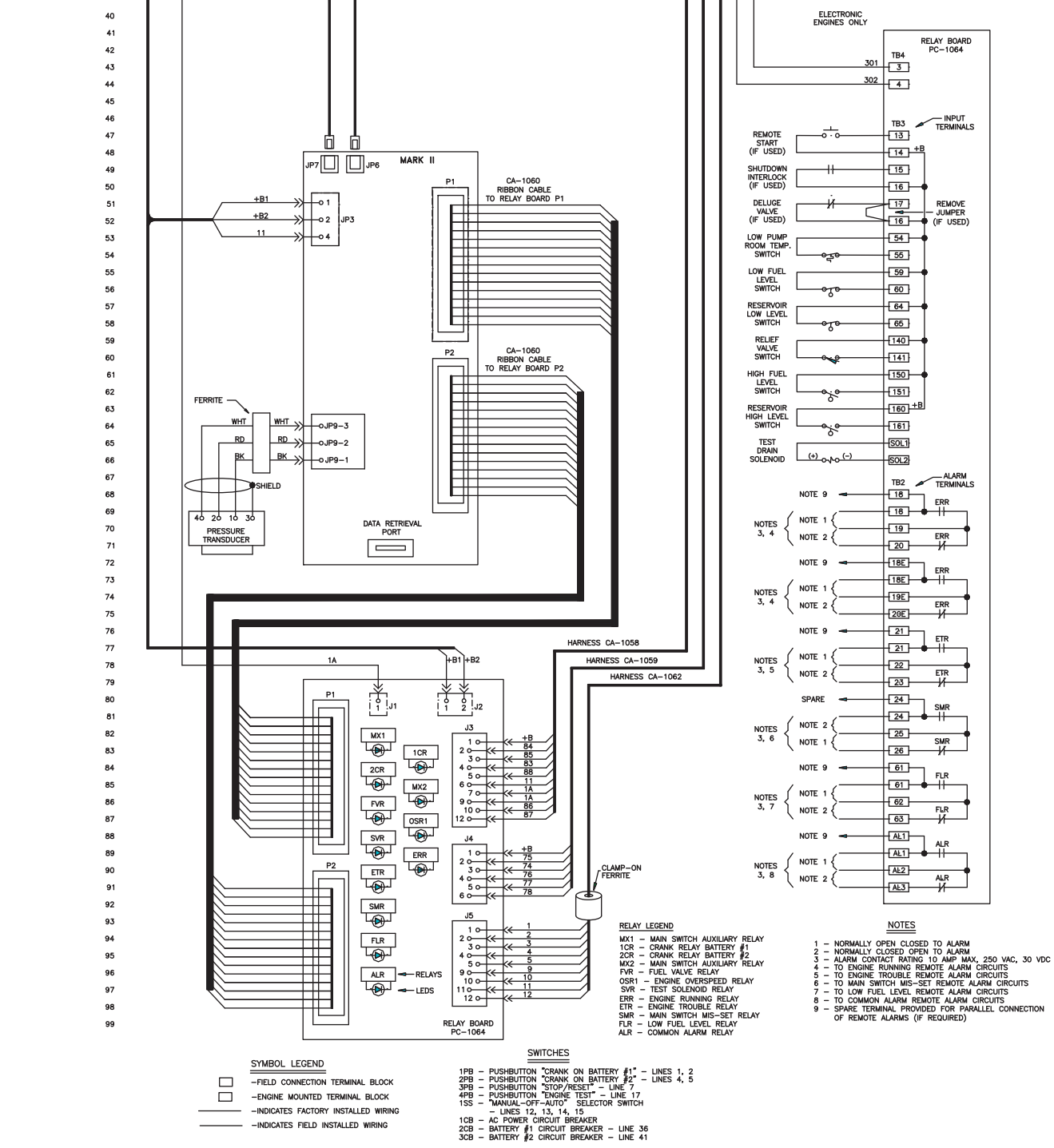
COMPUTER GENERATED DRAWING

SCALE 1:1 SIZE A

DWG. NO. **WS1100-20**

DRAWING REV. F ECN NO. 229677 SHEET 1 OF 2

FROM PAGE 1




SYMBOL LEGEND

- —FIELD CONNECTION TERMINAL BLOCK
- —ENGINE MOUNTED TERMINAL BLOCK
- —INDICATES FACTORY INSTALLED WIRING
- —INDICATES FIELD INSTALLED WIRING

RELAY LEGEND

MX1 – MAIN SWITCH AUXILIARY RELAY
1CR – CRANK RELAY BATTERY #1
2CR – CRANK RELAY BATTERY #2
MX2 – MAIN SWITCH AUXILIARY RELAY
FVR – FUEL VALVE RELAY
OSR1 – ENGINE OVERSPEED RELAY
SVR – TEST SOLENOID RELAY
ERR – ENGINE RUNNING RELAY
ETR – ENGINE TROUBLE RELAY
SMR – MAIN SWITCH MIS-SET RELAY
FLR – LOW FUEL LEVEL RELAY
ALR – COMMON ALARM RELAY

SWITCHES

1PB – PUSHBUTTON "CRANK ON BATTERY #1" – LINES 1, 2
2PB – PUSHBUTTON "CRANK ON BATTERY #2" – LINES 4, 5
3PB – PUSHBUTTON "STOP/RESET" – LINE 7
4PB – PUSHBUTTON "ENGINE TEST" – LINE 17
1SS – "MANUAL-OFF-AUTO" SELECTOR SWITCH – LINES 12, 13, 14, 15
1CB – AC POWER CIRCUIT BREAKER
2CB – BATTERY #1 CIRCUIT BREAKER – LINE 36
3CB – BATTERY #2 CIRCUIT BREAKER – LINE 41

NOTES

1 – NORMALLY OPEN CLOSED TO ALARM
2 – NORMALLY CLOSED OPEN TO ALARM
3 – ALARM CONTACT RATING 10 AMP MAX, 250 VAC, 30 VDC
4 – TO ENGINE RUNNING REMOTE ALARM CIRCUITS
5 – TO ENGINE TROUBLE REMOTE ALARM CIRCUITS
6 – TO MAIN SWITCH MIS-SET REMOTE ALARM CIRCUITS
7 – TO LOW FUEL LEVEL REMOTE ALARM CIRCUITS
8 – TO COMMON ALARM REMOTE ALARM CIRCUITS
9 – SPARE TERMINAL PROVIDED FOR PARALLEL CONNECTION OF REMOTE ALARMS (IF REQUIRED)

| REVISED PRESSURE TRANSDUCER | REV. TO | ECN NO. | BY | APP. | DATE |
|---|---|---|---|---|---|
| | F | 229677 | GFD | GFD | 11-12-10 |

WIRING SCHEMATIC | FTA1100-J

MARK IIxg DIESEL ENGINE FIRE PUMP CONTROLLER - STANDARD WIRING SCHEMATIC

THIRD ANGLE PROJECTION

| | BY | DATE |
|---|---|---|
| DRAWN BY | TEF | 11-04-02 |
| CHECKED | | |
| PROJECT APPROVAL | | |
| FINAL APPROVAL | | |
| | TEF | 11-04-02 |

MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-I-003. FOR PLASTIC PARTS SEE MP-I-055

ASSEM. REF. NO.



ASCO® ASCO POWER TECHNOLOGIES, L.P.
FLORHAM PARK, NEW JERSEY 07932 U.S.A.

COMPUTER GENERATED DRAWING

SCALE 1:1 | SIZE A

DWG. NO. **WS1100-20**

DRAWING REV. F | ECN NO. 229677 | SHEET 2 OF 2

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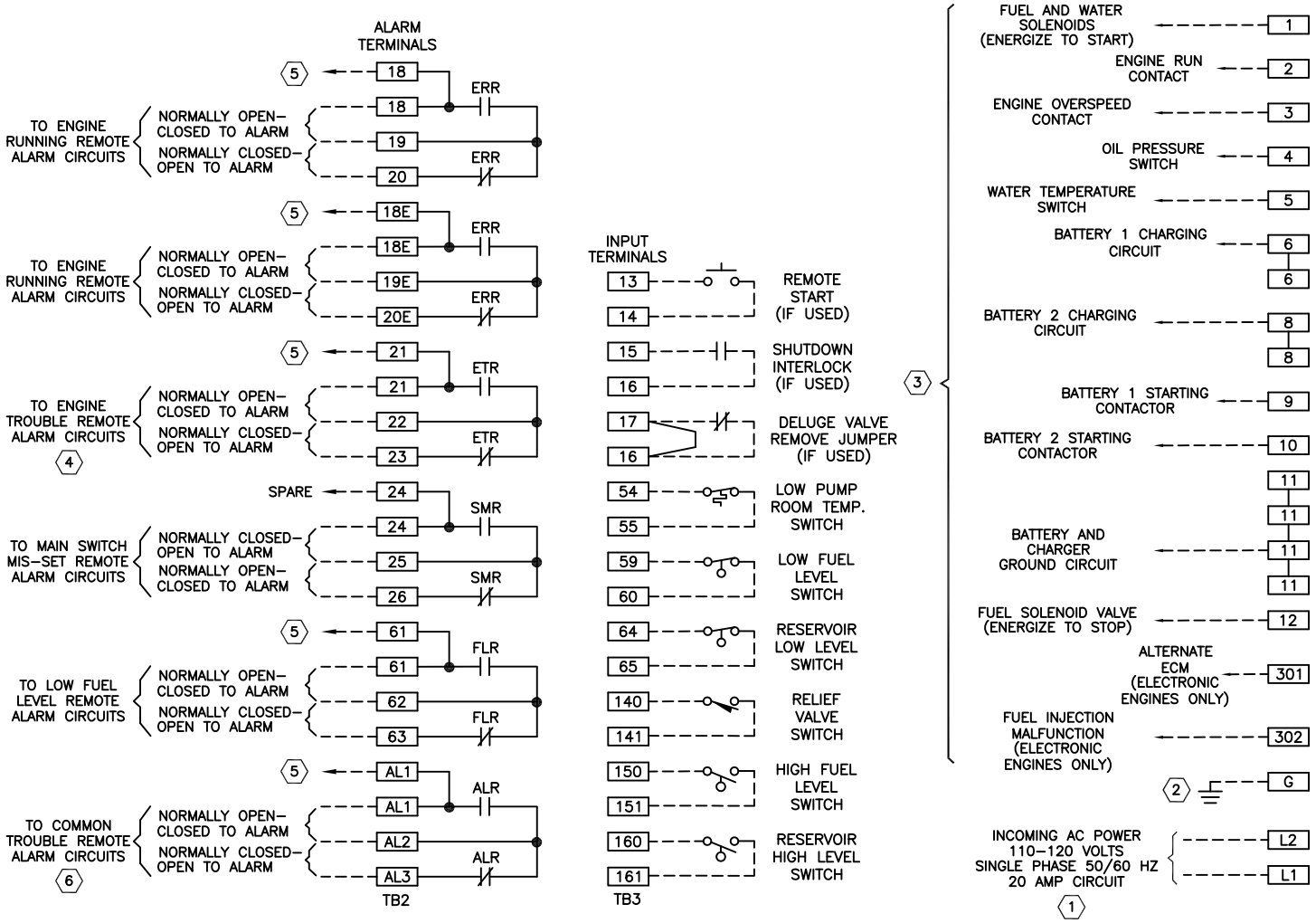


**–WIRE SIZES–**
**COPPER CONDUCTORS ONLY**

USE #14 AWG WIRE [16 MWG] MINIMUM FOR ALL ELECTRICAL CONNECTIONS EXCEPT FOR BATTERY CHARGER CONNECTIONS. (BATTERY CHARGERS CONNECTED TO TERMINALS 6, 8 AND 11) ON TERMINALS 6, 8 AND 11 USE THE FOLLOWING INFORMATION TO DETERMINE WIRE SIZES:

| LINEAR FEET (IN CONDUIT RUN) FROM CONTROLLER TO TERMINAL BLOCK ON ENGINE | MINIMUM WIRE SIZE |
|---|---|
| 0' – 25' (7.63m)<br>25' – 50' [7.62m – 15.24m] | #10 AWG [6 $MM^2$]<br>#8 AWG [10 $MM^2$] |

| TERMINALS AND TIGHTENING TORQUE | | |
|---|---|---|
| TERMINAL TYPE | WIRE SIZE | TIGHTENING TORQUE |
| POWER TERMINALS 45 AMP (G, 1–12, 301, 302) | #14–8 AWG [2.5–10 $MM^2$] | 14.2 in–lb [1.6 Nm] |
| CONTROL AND ALARM TERMINALS | #14–12 AWG [2.5–4 $MM^2$] | 5.6 in–lb [.6 Nm] |
| CIRCUIT BREAKERS | #14–4 AWG [2.5–25 $MM^2$] | 17.5 in–lb [2 Nm] |

**–NOTES–**

(1) IF CONTROLLER IS ARRANGED FOR OPERATION ON 220–240 VOLTS (MODIFICATION –BA) CONNECT TO THESE TERMINALS

(2) TERMINAL G MUST BE WIRED TO INCOMING LINE BONDED GROUND. REFER TO ARTICLE 250, ***NATIONAL ELECTRICAL CODE***, NFPA70.

(3) TERMINALS 1 THROUGH 12, 301, & 302 CONNECT TO LIKE NUMBERED TERMINALS ON THE ENGINE TERMINAL BLOCK. SOME ENGINES MAY NOT USE ALL TERMINALS. REFER TO ENGINE MANUFACTURER'S WIRING DIAGRAM FOR CORRECT CONNECTIONS.

(4) ENGINE TROUBLE ALARM CIRCUITS OPERATE IF ANY ONE OR MORE OF THE FOLLOWING TROUBLES OCCUR: ENGINE OVERSPEED, LOW OIL PRESSURE, HIGH WATER TEMPERATURE, BATTERY CHARGER OR BATTERY FAILURE, FAILED TO START, STARTING CONTACTOR COIL FAILURE, AND FUEL INJECTION MALFUNCTION (ELECTRONIC ENGINES ONLY).

(5) SPARE TERMINAL PROVIDED FOR PARALLEL CONNECTION OF REMOTE ALARMS (IF REQUIRED).

(6) COMMON TROUBLE ALARM CIRCUIT OPERATES WHEN ANY ALARM OCCURS.

**–GENERAL NOTES–**

ALL ALARM CONTACTS ARE RATED FOR PILOT CIRCUIT DUTY, 250 VAC, 30 VDC MAXIMUM, 10 AMPERES, NON–INDUCTIVE.

THIS FIELD CONNECTION DIAGRAM IS FOR DIESEL ENGINES LISTED FOR DRIVING CENTRIFUGAL FIRE PUMPS SUPPLIED BY THE FOLLOWING MANUFACTURERS:

CATERPILLAR, INC., ENGINE DIVISION, PEORIA, IL
CLARKE DETROIT DIESEL–ALLISON, INC. CINCINNATI, OH
CUMMINS ENGINE CO., INC., COLUMBUS, IN
DEUTZ CORP., NORCROSS, GA.
KIRLOSKAR CUMMINS, LTD., PUNE, INDIA

FOR ENGINES OR MANUFACTURERS NOT LISTED ABOVE, CONSULT THE FACTORY.

PRESSURE SYSTEM CONNECTION 1/2" FNPT

| REVISED NOTE 4 & DESCRIPTION OF ENGINE TERMINALS 1 & 12 | D | 229677 | GFD | GFD | 11/12/10 |
|---|---|---|---|---|---|
| PROJECT NAME: | REV. TO SHEET | ECN NO. | BY | APP. | DATE |

FIELD CONNECTIONS — FTA1100–J

MARK II DIESEL ENGINE FIRE PUMP CONTROLLER – STANDARD FIELD CONNECTION DRAWING

THIRD ANGLE PROJECTION

| | BY | DATE |
|---|---|---|
| DRAWN BY | TEF | 12/14/02 |
| CHECKED | | |
| PROJECT APPROVAL | | |
| FINAL APPROVAL | TEF | 12/14/02 |

MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP–I–003. FOR PLASTIC PARTS SEE MP–I–055

ASSEM. REF. NO.



ASCO® ASCO POWER TECHNOLOGIES, L.P.
FLORHAM PARK, NEW JERSEY 07932 U.S.A.

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SCALE 1:1 | SIZE A

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