

# INCA

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Design & Manufacture of:  
Custom-built switchboards  
Electronic control equipment  
AC/DC pumping controls  
Installation & service

**INCA MODEL**

**FPC12D-2008**

**DIESEL FIRE PUMP CONTROL  
PANEL**

**USER MANUAL**

**Inca Reference FPC12D-2008**

**Software Version 3.6**

Technical Support  
Pumps and Mechanicals – Pump Supplier  
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## Control Panel Overview

The FPC12D-2008 Fire pump controller is designed to control 12v diesel driven fire pump units. It can be operated manually via push buttons on the panel facia from either battery or via remote pressure switch. The control panel complies to AS 2941-2008 (Australian Standards 2941) and includes indicating lights, switches and displays as required. The panel is suitable for all engine types up to 225 continuous cranking amps, 600A for 30 secs with adjustment of flywheel teeth number & engine over speed RPM being the only alterations, required. The panel is also pre wired for remote stop controls.

### Panel Connections

#### 240V Main Supply

Terminals A & N – 240VAC Supply

#### Jacking Pump Connections

Terminals JP & JPN – 240V Jacking Pump, Terminal JPS & JPS – Jacking Pump Pressure Switch

#### Engine Wiring Terminals

Terminals 1&3 – Control Battery (1 Being Negative)

Terminals 1&2 – Starting Battery (1 Being Negative)

Terminals 24 & 25 - Diesel Start Pressure Switch

Terminals 6 – To Auto Start Solenoid Coil (Sol A)

Terminals 7 – To Control start Solenoid coil (Sol B)

Terminals 9 – To regulator / Alternator Excitation

Terminals 15 – To water cooling solenoid

Terminals 13 & 14 – Magnetic Pickup

Terminals A2 – Regulator / Alternator Charge current

Terminals A3 – To Temperature Sender

Terminals A4 – To oil Pressure Sender

Terminals 11 & 1 – Remote 12VDC 400mA (Max) Alarm (1 Being Negative)

Terminals 24V & 10 – Low Fuel Float Switch (If Installed)

Terminals 39 & 40 – Remote Stop Pushbutton

Terminals 40 – Stop Solenoid (Sol C)

#### F.I.B Voltage Free Contacts

Relay Terminal No's (11 & 12 N/C) (11 & 14 N/O)

Relay 1 – Engine run

Relay 2 – Common Fault

Relay 3 – Mains supply power fail

#### Circuit Breaker Legend:

CB1 = Control Battery Control Circuit

CB2 = Starting Battery Control Circuit

CB3 = Instrumentation (6A)

#### Battery Chargers

The panel is equipped with automatic battery chargers that provide 7A Continuous boost charge when battery voltage is low and trickle charge when maintaining battery float voltage. The charger has an on/off switch which illuminates when turned on and the LED that is red when voltage recovers to just below float level.

Note: If batteries Are dead flat (below 3 volts)

The charger will not charge and the battery will require a boost from a separate battery to bring voltage up to sensing level above 3V.

#### Panel Facia

The front of the control panel houses Indicating lights meters and switches that display and control the panel function.

#### Indication

240VAC Supply On

Will indicated mains power is available

Engine Run

Will indicate when engine is running above 400 rpm

Low Fuel level

Will Indicated fuel is low in fuel tank

Auto start isolated

Will indicate that the auto start circuit has been isolated (key switch on panel facia)

Engine fail to start

Will indicate the engine has had 6 attempts at starting (15 secs on 15 secs off)

Alarm silenced

Will indicate when the alarm has been muted

Control battery low voltage

Will Indicated that the control battery voltage has fallen below 11V (adjustable)

Start battery low voltage	Will indicate that starting the starting battery is lower than 11V (adjustable)
Control battery Charger Fail	Will Indicated that the control battery charger has failed
Start battery low voltage	Will indicate that the starting battery charger has failed
Engine Over speed	Will indicate that the engine has run faster than the set overspeed
setting	
Low oil Pressure	Will indicate the engine is low in oil or oil pressure
High Temperature	Will indicate the engine is running above the set water temperature alarm setting
Pump Ready to Start	Will indicate the pump is able to be automatically started

### Battery current charging Meters

On the panel facia there are ammeters indicating the battery charge current for each battery (Control battery and starting battery)

### Auto start isolation switch

The auto start isolation switch isolates the automatic start circuit when selected to off, when selected in auto the automatic start circuit will start the engine when a signal is received from the pressure switch

### Gauge

On the panel facia there are 1 engine instrument gauges that monitor the engine

- Engine charge current Ammeter

### Audible alarm

The panel has an audible alarm that sound when a fault condition has been registered and is silenced when the mute button on the face of the XLe tacho is pressed. Faults to bring up the alarm are:

- AC Supply fail
- Engine running
- Low fuel level
- Auto start isolated
- Engine fail to start
- Control battery low voltage
- Starting batter low voltage
- Control battery charger fail
- Starting battery charger fail
- Engine over speed
- Low oil pressure
- High engine temperature

### Inca model XLe Tacho

The control panel is fitted with an XLe tacho that controls and monitors the engine speed, battery voltages, oil pressure & engine temperature.

### Display

In the top line of the display is the engine speed in RPM,

Total hours running time in the second line,

The third line displays the control battery voltage

The forth line displays the starting battery voltage.

The engine temperature is displayed in the top right of the screen, (Please note that the temperature will 0deg until temperature is above 35deg or engine is not running)

The engine oil pressure gauge is in the bottom right corner of the screen

### Lamp and alarm Test push button

On the front of the XLe lower left is a lamp and alarm test button this button will operate all lights and the audible alarm when pressed to insure all lights and alarm are working.

### Mute Push button

On the front of the XLe lower right is the alarm mute push button by pressing the mute button, will silence the audible alarm and will stay in this muted status until the fault is reset.

### Engine Over speed

On the front of the XLe in the centre bottom is the engine over speed test button. This button will simulate an engine running at over speed & shut it down.

Just above the test button is the Over speed reset button, the engine will not go back to automatic until the reset button has been operated

### Calibrating the XLe Tacho

The XLe Tacho has several parameters that can be adjusted by the operator they include Flywheel teeth numbers, Engine Over speed, Engine low oil pressure shutdown, Engine high temperature shutdown

### Entering calibration mode

To enter calibration mode press and hold the F1 button for five seconds (set number of teeth) should now be displayed

### Set number of teeth

This is where you enter the number of teeth counted on the flywheel EG: 120 teeth.

To change this value you must first press the enter button. The number in the screen will now be highlighted. Simply enter the desired number eg 112 & then press the enter button to accept.

Follow the prompts on the right hand side of screen to move to the next page

### Engine Over Speed

This is where you enter the RPM value at which you want the engine to shut down at under an over speed condition, example 3000RPM

To change this value you must first press the enter button. The number in the screen will now be highlighted. Simply enter the desired number e.g. 3000 & then press the enter button to accept.

Follow the prompts on the right hand side of screen to move to the next page

### Low oil Pressure On

This is the value at which the panel will alarm at if the oil pressure is low plus a 5second delay Example: 150kpa.

To change this value you must first press the enter button. The number in the screen will now be highlighted. Simply enter the desired number e.g. 150 & then press the enter button to accept.

Follow the prompts on the right hand side of screen to move to the next page

### Low oil Pressure Off

This is the value at which the low pressure alarm will reset at Example: 200kpa.

To change this value you must first press the enter button. The number in the screen will now be highlighted. Simply enter the desired number e.g. 200 & then press the enter button to accept.

Follow the prompts on the right hand side of screen to move to the next page

### High Temperature On

This is the value at which the panel will alarm at if the engine temperature is high Example: 80deg.

To change this value you must first press the enter button. The number in the screen will now be highlighted. Simply enter the desired number e.g. 80 & then press the enter button to accept.

Follow the prompts on the right hand side of screen to move to the next page

### High Temperature Off

This is the value at which the high temperature alarm will reset at Example: 70deg.

To change this value you must first press the enter button. The number in the screen will now be highlighted. Simply enter the desired number e.g. 70deg & then press the enter button to accept.

Follow the prompts on the right hand side of screen to move to the next page