CP1 and CP2 Wiring Diagrams

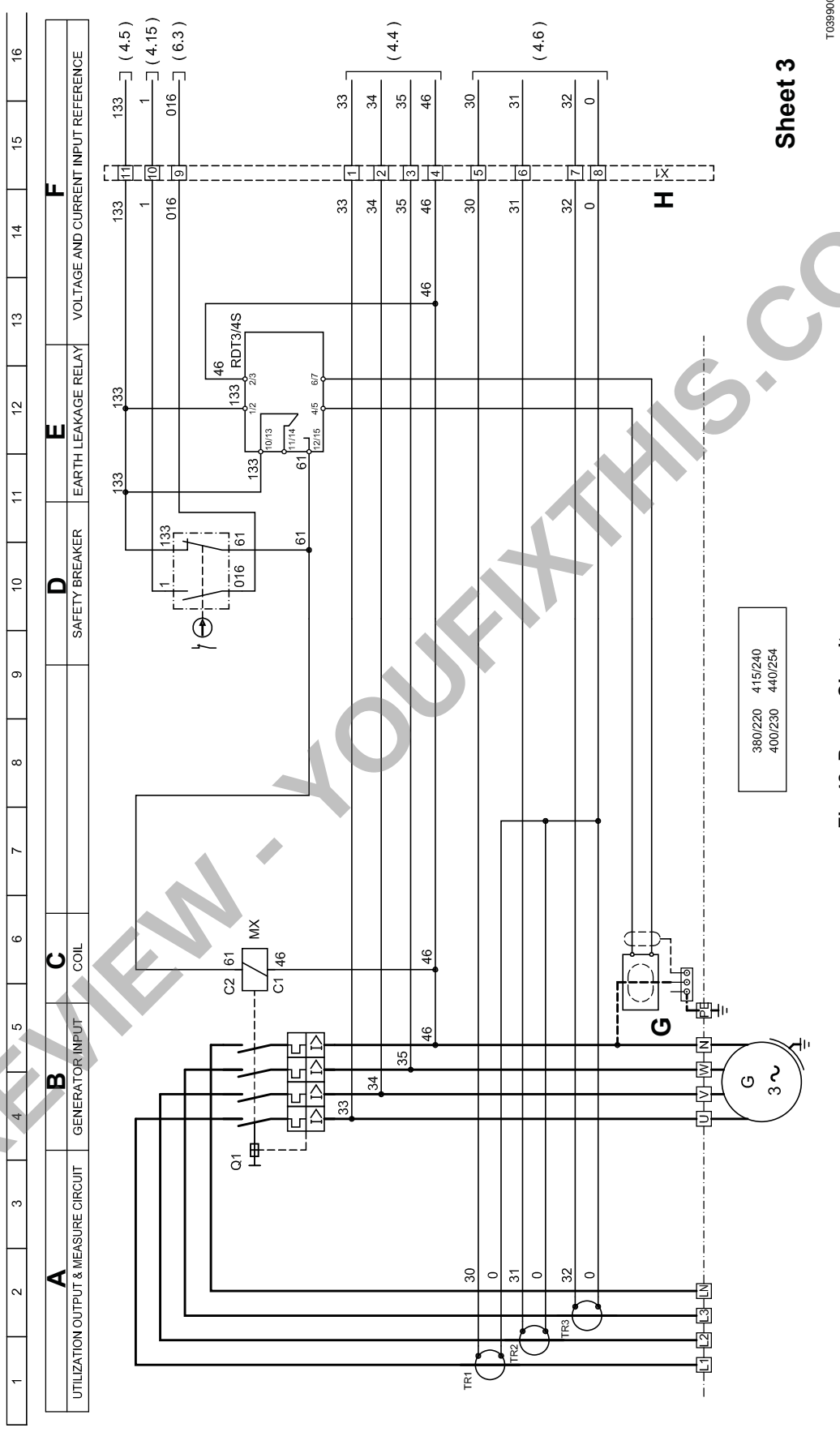


Fig 48. Power Circuit

⇒ *Table 38. Component Key (122)*

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Engine

Introduction



T038450

Fig 12.

This symbol indicates information for the 3TNV76 Indirect Injection engine.



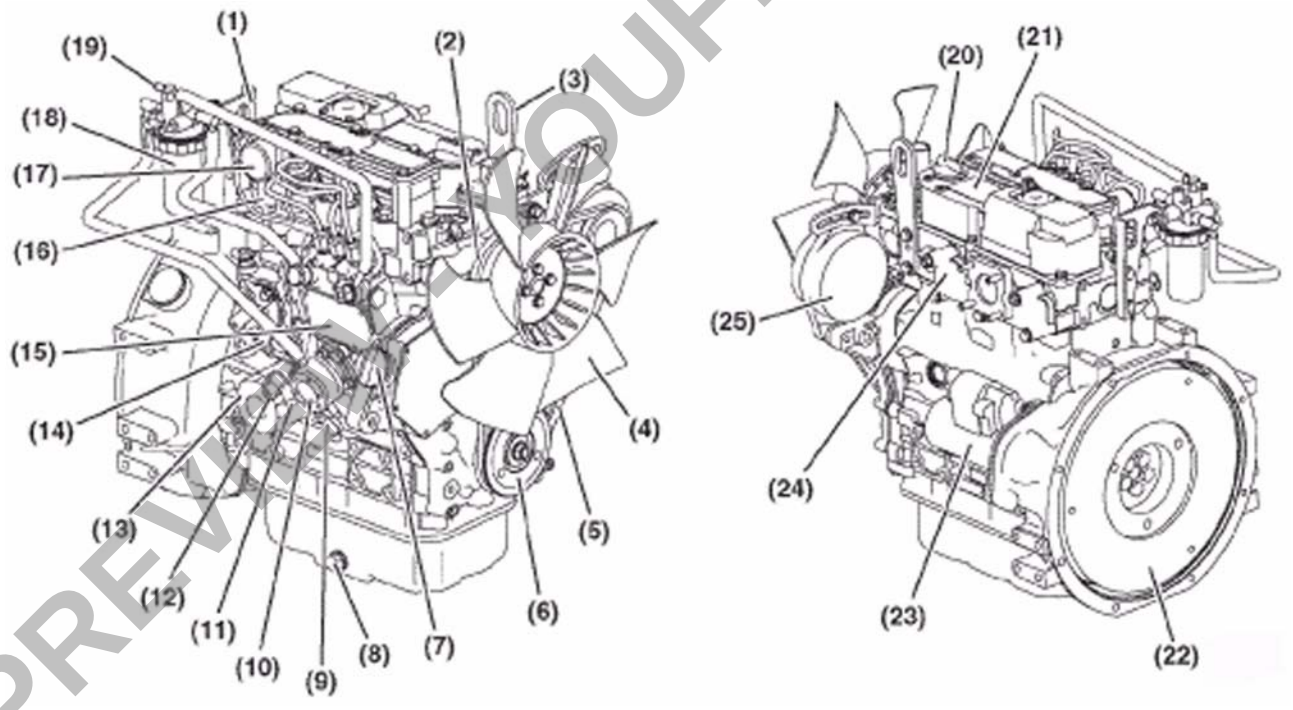
T038460

Fig 13.

This symbol indicates information for the Direct Injection engine with the following model numbers:

- 3TNV88
- 4TNV84T
- 4TNV88
- 4TNV98
- 4TNV98T

Component Identification



T038440

Fig 14. 3TNV76

Major Components 3TNV76

⇒ *Fig 14. (81)*

1 Lifting Eye (Flywheel End)

2 Engine Coolant Pump

3 Lifting Eye (Engine Cooling Fan End)

4 Engine Cooling Fan

5 V-Belt

6 Crankshaft V-Pulley

7 Side Filler Port (Engine Oil)

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Fault Finding Charts

A Charts
⇨ *Engine - Will Not Start or Difficult to Start (No Exhaust Smoke) (111)*
⇨ *Engine - Will Not Start or Difficult to Start (Exhaust Smoke) (111)*
⇨ *Engine - Will Not Crank or Cranks Slowly (111)*
⇨ *Engine - Starts then Stops (112)*
⇨ *Engine - Poor Running (112)*
⇨ *Engine - Poor Running at Idle (112)*
⇨ *Engine - Noise Excessive (113)*
⇨ *Engine - Compression Knocks (113)*
⇨ *Engine - Reduced Power Output (113)*
⇨ *Engine - RPM Surges (114)*
⇨ *Engine - Vibration Excessive (114)*
⇨ *Engine - Exhaust Smoke Excessive (Black Smoke) (114)*
⇨ *Engine - Exhaust Smoke Excessive (White/Blue Smoke) (114)*

B Charts
⇨ *Fuel - Consumption Excessive (115)*
⇨ *Fuel/Oil - Leaking from Exhaust Manifold (115)*

C Charts
⇨ *Lubricating Oil - Consumption Excessive (116)*
⇨ *Lubricating Oil - Contaminated (116)*
⇨ *Lubricating Oil - Pressure Low (116)*
⇨ *Lubricating Oil - Pressure High (117)*

D Charts
⇨ *Coolant - Loss (118)*
⇨ *Coolant - Over Temperature (118)*
⇨ *Coolant - Under Temperature (118)*
⇨ *Coolant - Contaminated (119)*

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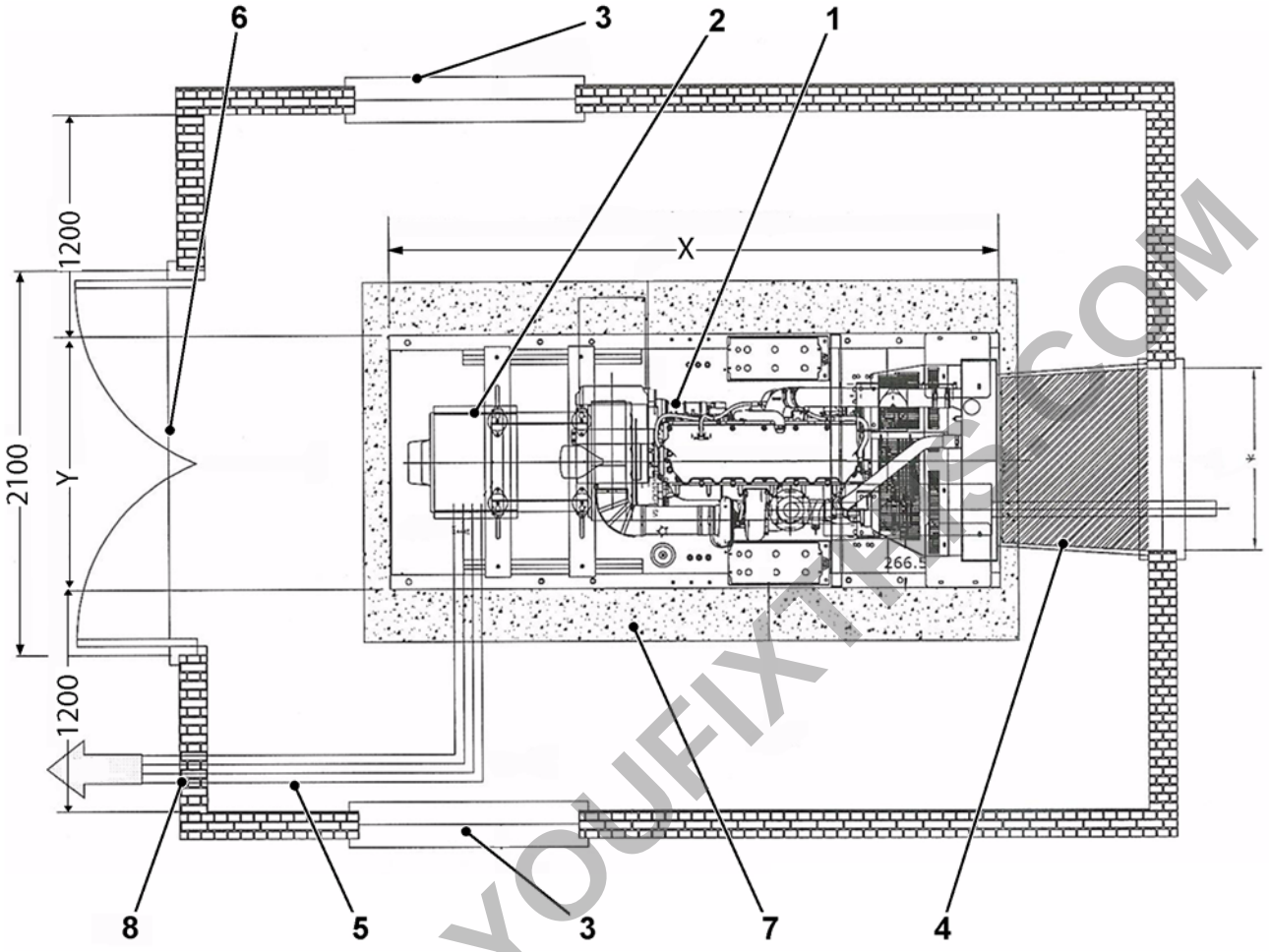


Fig 7. Open Generator Set - Plan View

X Generator set length + 200 mm

Y Generator set width + 200 mm

1 Generator Set

2 Control Panel.

3 Air inlet grille.

4 Hot air outlet duct.

5 Cable Conduit.

6 Access door.

7 Concrete base.

8 Cable exit.

Note: *Details may vary according to model of generator set.*

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7 Contact LED of activated LT contactor (green). This signal activates when you close the voltage-free contact and it stops when you open this contact.

8 Engine running LED (M) (green). Indicates that the engine is working.

9 Emergency stop LED (red). This LED comes on when you push the emergency stop button. It will only go off once you release the emergency stop button and reset the controller.

10 Over speed LED (red). This LED becomes active depending on two conditions:

a During the over speed programming to indicate that the programming was successful and

b When the internal over speed protection device trips. In this case the controller starts a programmable stop cycle and the optical warning will continue until you reset the controller.

11 Low oil pressure LED (BPA) (red). Indicates that the engine pressure switch has detected an anomaly. This condition activates a programmable stop cycle. The LED will remain lit until this alarm condition is reset.

12 High water temperature LED (HWT) (red). Indicates that the engine temperature switch has detected an anomaly. This condition activates a programmable stop cycle. The LED will remain lit until this alarm condition is reset.

13 Unintended stop. LED (red). Indicates that the engine has stopped without any order from the controller.

14 Fail to start LED (red). Indicates that the controller completed 5 attempts to start the engine but the generator set did not start.

15 Power supply LED (ON) (green). This optical signal indicates that the controller is ON.

Operation Modes

Before switching on the panel, make sure that the power supply terminals are properly connected and the mode selection key **B** is set to STOP.

Start the generator set by setting the off/on switch **A** to ON. The control panel will do an internal diagnostic check and check the function of the LEDs. The panel will stay on hold as long as the mode selection mode key is set to STOP.

Turn the key to the left to select manual mode (MAN).

Turn the key to the right to select automatic mode (AUT).

Stop Mode

This mode demands the generator set to stop.

Important: *You cannot stop the generator set by switching off the control panel or pressing the reset button. You can only stop the engine by turning the key to STOP.*

Manual Mode

This mode demands an immediate engine start. It carries out a warm-up cycle for a preset time period.

Engine protections are active anytime. Load connection (generator set contactor closing), is carried out automatically after 20 seconds in order to stabilize the generator set. From that moment on, the contactor remains in the same position until the generator set is stopped or any associated alarm is set off.

if the generator set stops, you must activate the stop mode before attempting to restart in manual mode.

Automatic Mode

In this mode, the start sequence will only commence when the of the voltage-free contact is closed. When this contact is closed, the controller demands 5 attempts to start in sequence as long as there is no engine running detection. Every attempt is 5 seconds long and the time between attempts is 10 seconds.

When the voltage-free contact opens, the controller demands the engine to stop and returns to stand-by mode.

Note: *The generator set will stop if the controller is disconnected, resets, or the DC power supply fails. In*

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Control Panel Front Views

The panel has a backlit display and different LEDs to indicate the device status. Different push buttons allow the user to command and program the panel.

CP1

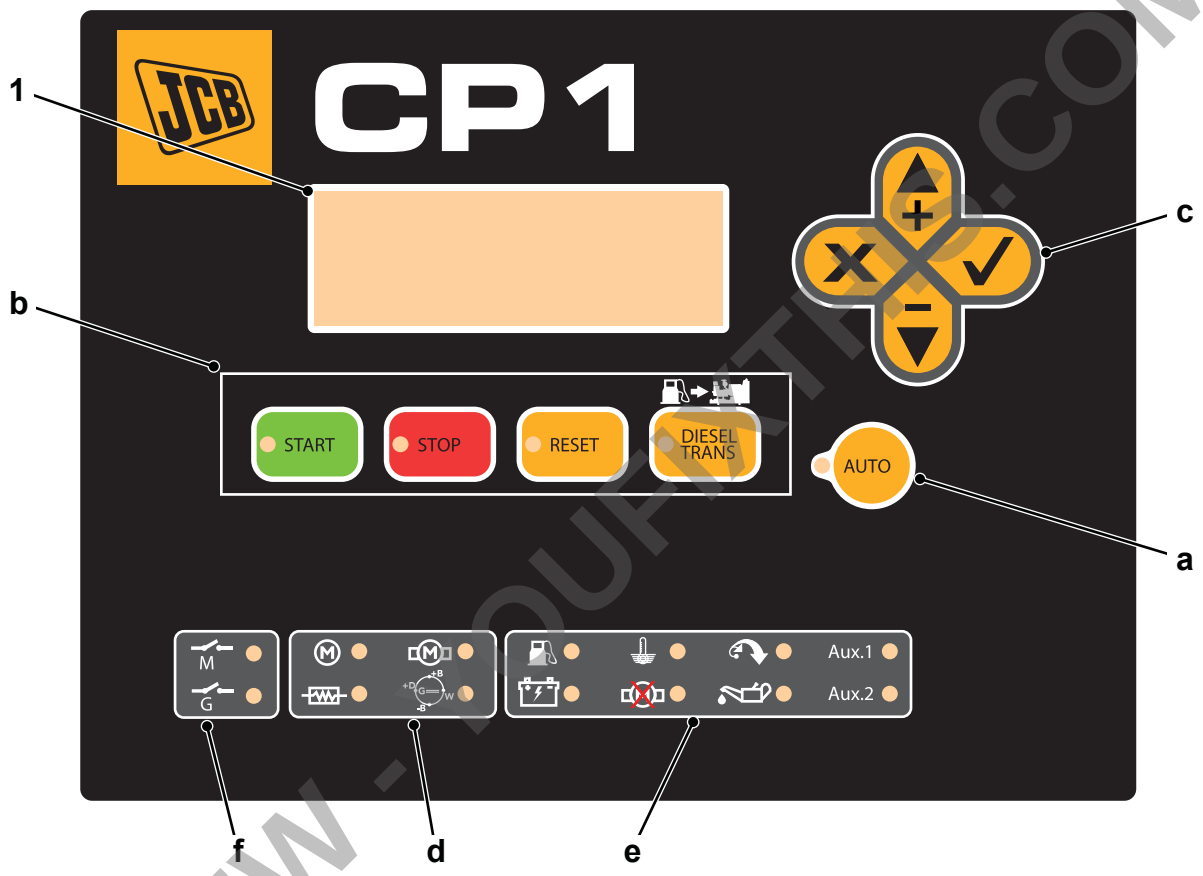


Fig 14. CP1

1 Backlit display (4 lines of 20 digits).

Note: *The display turns off the backlighting after 10 minutes if no pulse from the keyboard is detected.*

2 Control board push buttons.

a Operating mode buttons.

b Command buttons.

c Display buttons.

3 Data LEDs

d ENGINE status LEDs.

e ALARMS LEDs.

f CONTACTORS status LEDs.

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Important Information

T1-015

The Operator Manual

⚠ WARNING

Study the Operator Manual before starting the machine. You must understand and follow the instructions in the Operator Manual. You must observe all relevant laws and regulations. If you are unsure about anything, ask your JCB dealer or employer. Do not guess, you or others could be killed or seriously injured.

INT-1-1-1_2

Do not operate the machine without an Operator Manual.

Treat the Operator Manual as part of the machine. Keep it clean and in good condition. Replace the Operator Manual immediately if it is lost, damaged or becomes unreadable.

Safety Warnings



This safety alert system identifies important safety messages in this manual. When you see this symbol, be alert, your safety is involved, carefuly read the message that follows, and inform other operators.

In this publication and on the machine, there are safety notices. Each notice starts with a signal word. The signal word meanings are given below.

⚠ DANGER

Denotes an extreme hazard exists. If proper precautions are not taken, it is highly probable that the operator (or others) could be killed or seriously injured.

INT-1-2-1

⚠ WARNING

Denotes a hazard exists. If proper precautions are not taken, the operator (or others) could be killed or seriously injured.

INT-1-2-2

⚠ CAUTION

Denotes a reminder of safety practices. Failure to follow these safety practices could result in injury to the operator (or others) and possible damage to the machine.

INT-1-2-3

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Contents **Page No.**

Introduction
Machine Model and Serial Number 1
About This Manual 2
Cross References 2
Component Identification 3
Data plate 4
Important Information 5
The Operator Manual 5
Safety Warnings 5
Safety, Yours and Others 6
Checklists 7
General Safety 7
Operating Safety 8
Maintenance Safety 9

Installation
Unpacking 13
Site Installation 14
Outdoor Installations. 15
Indoor installations 16
Generator Set Room 16
Basic Elements to be considered 21

Routine Maintenance
Service Requirements 22
Health and Safety 23
Lubricants 23
Service Schedules 25
Introduction 25
How to Use the Service Schedules 25
Service Schedule Checklist 26
Battery 27
Connection and Disconnection (battery arrangement) 27
Charging the Battery 27
Battery Maintenance 27
Battery Life 27
Cooling System 28
Checking and Adding Coolant 28
Coolant Mixtures 28
Cleaning the Radiator 29
Pre Start Checks 30
Checks After Running 31
Cleaning 32

KS1 Digital Control Panel
Introduction 33
Features 33
Components 34
Operation Modes 35
Data 36

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Contents **Page No.**

CP1 and CP2 Digital Control Panels
Introduction 37
The panel provides the following readings of the electric mains supply: 37
The panel provides the following engine features information: 37
The panel controls the following functions of the engine: 37
Password 38
Control Panel Front Views 39
CP1 39
CP2 40
Control Panel Push Buttons 41
Operating mode buttons 41
Command buttons 41
Display Buttons 42
Contactors Buttons (CP2 only) 42
Data LEDs 43
Engine Status LEDs 43
Alarm LEDs 43
Electric Power Status LEDs 44
Starting and Stopping - Manual Mode 45
Starting 45
Stopping 45
Starting and Stopping - Automatic Mode 46
Operational Modes 47
Test Mode (CP2 only) 47
Block Mode (CP1 only) 47
Block Mode (CP2 only) 47
Activation of Contactors (CP2 only) 48
Linking Generators and Transfer Panels 48
Alarms 49
Engine Alarms 49
Generator Set Alarms 50
Mains Alarms (CP2 only) 50
Transfer Fuel Pump (Optional) 51

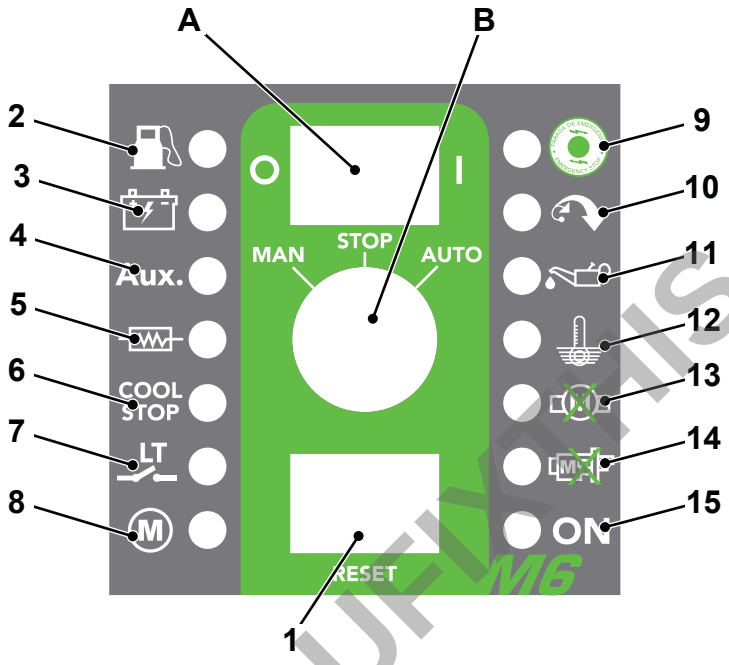
ATP1 Digital Control Panel (option)
Introduction 52
The automatic transfer panel provides the following readings of the electric mains supply: 52
Outputs to allow Monitoring of Controller Operating Conditions 52
Control Panel Front View 53
Control Panel Push Buttons 54
Operating mode buttons 54
Command buttons 55
Display Buttons 55
Contactors Buttons 55
Data LEDs 56
Starting and Stopping - Manual Mode 57
Starting 57
Stopping 57
Starting and Stopping - Automatic Mode 58
Introduction 58
Starting 58
Stopping 58

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Components

The panel has an ON/OFF switch, a RESET button, a key for selecting MANUAL; STOP or AUTOMATIC mode and 14 LEDs.



T038060

Fig 12.

Modes

A - Off/On switch (12V DC)

B - Mode Selection Key (MAN STOP AUTO).

In **MAN** position the control panel will give the order to start the engine (1 attempt to start).

In **STOP** position, the controller will stop the genset.

In **AUT** position, the controller will remain in automatic mode and will control as follows: if free voltage contact closes, the controller will start the genset. If the contact opens, the genset will stop.

Alarms

1 Reset button. Press to reset the control panel.

2 Fuel reserve LED (yellow). Indicates low fuel level in the tank.

3 Battery charger failure LED (D+) (yellow). Indicates that the alternator is not charging the battery.

4 Auxiliary alarm LED (AUX) (yellow). Indicates that the alarm condition established in the auxiliary input of the controller has been detected. This LED remains lit during the time that we have this alarm condition.

5 Pre-heating LED (yellow). This LED starts blinking in 1 second intervals approx. during the pre-heating cycle carried out before every attempt to start the engine.

6 Cooling stop LED (COOL STOP) (yellow). This LED starts blinking in 1 second intervals (approx.) when the controller orders a stop cycle and continues to blink until this cycle comes to an end.

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Type MX341 AVR - Option

The following 'jumper' connections on the AVR should be checked to ensure they are correctly set for the generating set application. For location of selection links ⇨ *Fig 5. (71)*.

1 Frequency Selection Terminals

50 Hz operation	LINK 2-3
60 Hz operation	LINK 1-3

2 Stability Selection Terminals

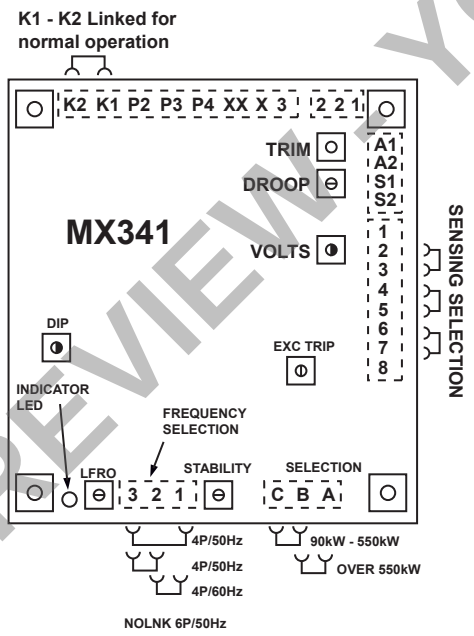
Frame UC22	LINK A-C
Frame UC27	LINK B-C

3 Sensing Selection Terminals

LINK 2-3
LINK 4-5
LINK 6-7

4 Excitation Interruption Link

LINK K1-K2



C082980

C082980

Fig 5.

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Table 14.

Engine Model	**4TNV98T**		
Version	CL		
Type	Vertical In-line Diesel Engine		
Combustion System	Direct Injection		
Aspiration	Turbocharged		
Number of Cylinders	4		
Bore x Stroke	98 x 110 mm (3.858 x 4.331 in)		
Displacement	3.319 litres (202.502 in^3)		
Continuous Rated Output	RPM (min)	**1500**	**1800**
	hp SAE	50.8	61.2
	kW	37.9	45.6
	PS	51.5	62.0
Max. Rated Output (Nett)	RPM (min)	**1500**	**1800**
	hp SAE	56.2	67.6
	kW	41.9	50.4
	PS	57.0	68.5
High Idling	RPM (min)	1600 ± 25	1895 ± 25
Engine Weight (dry) with flywheel housing	258 kg (568.9 lb)		
PTO Position	Flywheel End		
Direction of Rotation	Counter clockwise Viewed from Flywheel End		
Cooling System	Liquid-Cooled with Radiator		
Lubricating System	Forced Lubrication with Trochoid Pump		
Normal Oil Pressure at Rated Engine Speed	3.9 - 4.9 bar (57 - 71 lbf/in^2)		
Normal Oil Pressure at Low Idle Speed (minimum)	0.6 bar (8.5 lbf/in^2)		
Dimensions (L x W x H) without radiator	719 x 4575 x 804 mm (28.31 x 22.64 x 31.65 in.)		

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