Dear JCB Customer

Even if you have operated this type of equipment before, it is very important that your new machines operations and functions are explained to you by a JCB Dealer Representative following delivery of your new machine.

Following the installation you will know how to gain maximum productivity and performance from your new product.

Please contact your local JCB dealer if the Installation Form has not yet been completed with you.

Your Local JCB Dealer is:

OPERATOR MANUAL

THIS MANUAL SHOULD ALWAYS STAY WITH THE MACHINE

GENERATOR SET - G60RX TO G115QX SERIAL NUMBER 1650000 TO 1699999

ENGLISH - 9811/4600 - ISSUE 1 - JUN 2009

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A4-6-Range - Printed In England

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Introduction

Machine Model and Serial Number

This manual provides information for the following model(s) in the JCB machine range:

- G60RX
- G65X
- G65QX
- G80RX
- G90X
- G90QX
- G100RX
- G115X
- G115QX

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Component Identification

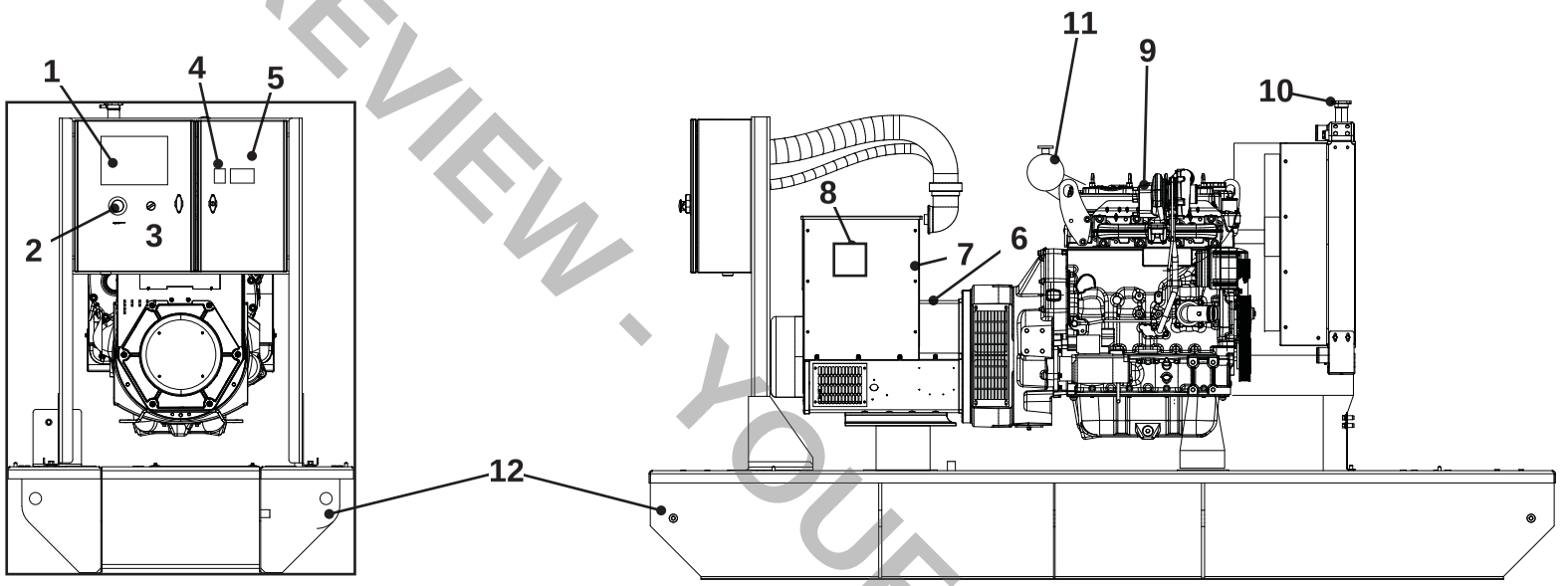


Fig 1.

Table 1. Component Key

1	Control Panel
2	Emergency Stop
3	Panel On/Off Switch
4	Earth Leakage Relay (option)
5	Circuit Breaker
6	Alternator
7	Alternator Terminal Box
8	Automatic Voltage Regulator
9	Engine
10	Coolant Cap
11	Exhaust
12	Air Filter
13	Base with Integrated Fuel Tank

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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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Service Schedule Checklist

Table 2. Service Schedules

		Interval (hrs.)						At Least Annually
	Operation	**10**	**50**	**500**	**1000**	**2000**	**6000**	
Coolant Quality and Level	- Check	☐	☐	☐	☐	☐	☐	☐
Oil Level	- Check	☐	☐	☐	☐	☐	☐	
Water Separator and Engine Fuel Filter	- Drain		☐	☐	☐	☐	☐	
Oil and Filter	- Change			☐	☐	☐	☐	☐
Air Cleaner Dust Valve	- Change			☐	☐	☐	☐	☐
Air Cleaner Outer Element	- Change			☐	☐	☐	☐	☐
Water Separator Fuel Filter	- Change			☐	☐	☐	☐	☐
Engine Fuel Filter	- Change			☐	☐	☐	☐	☐
Front End Accessory Drive (FEAD) Belt Condition	- Check			☐	☐	☐	☐	☐
Engine Mounting Bolts for Tightness	- Check			☐	☐	☐	☐	☐
All Hoses - Condition	- Check			☐	☐	☐	☐	☐
Radiator	- Check		☐	☐	☐	☐	☐	☐
Cooling System	- Drain and Refill					☐	☐	☐
Breather Gauze	- Clean					☐	☐	
Valve Clearances	- Check and Adjust					☐	☐	
Oil Filler and Dipstick Seals	- Check and Adjust					☐	☐	
Air Cleaner Inner Element	- Change					☐	☐	
Rocker Cover and Injector Seals	- Change					☐	☐	
Injectors	- Change						☐	
Injector(s) Leak Off Rail	- Change						☐	
High Pressure Fuel Lines	- Inspect						☐	
Front End Accessory Drive (FEAD) Belt	- Change						☐	☐
Alternator Terminal and Cable Inspection	- Check				☐	☐	☐	
Battery Terminals and Voltage	- Check			☐	☐	☐	☐	☐

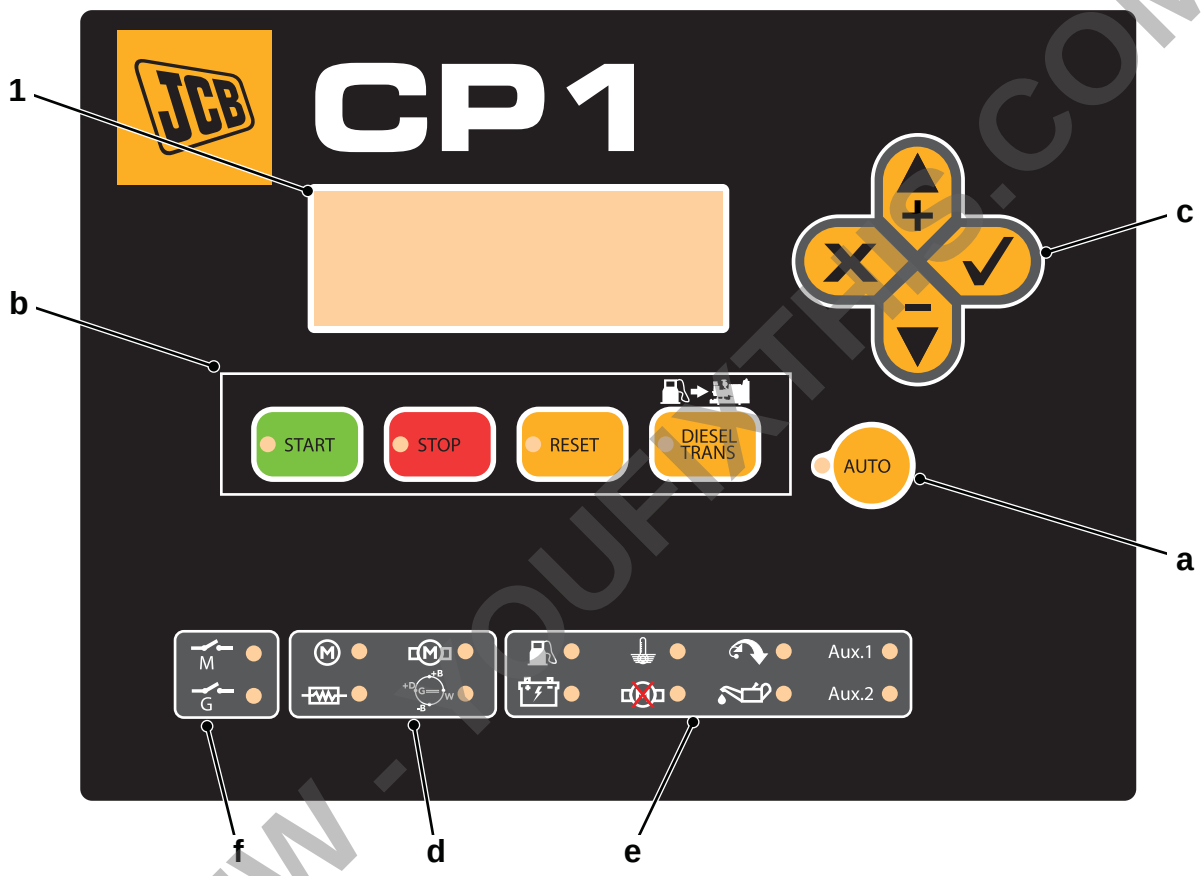
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Control Panel Front Views

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



T037950

Fig 13. 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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Control Panel Push Buttons

Operating mode buttons



Automatic mode: The control panel monitors the status of the generating set and controls its working process and the programmable inputs.

LED on:

Automatic mode running.

LED flashing:

Automatic mode blocked.

LED off:

Manual mode running.

The user controls the device.



Test mode button (CP2 Only). The device starts the engine and monitors and controls its working process.



Block mode button (CP2 Only). The device monitors the status, but disables the engine from starting.



Manual mode button (CP2 Only). The user controls the device.

Command buttons



Start engine push button (manual mode only).

One press will start the engine.

LED ON: Engine starting



Stop engine push button (manual mode only).

Press once, a cooling phase begins and the engine stops.

Press twice, the engine stops immediately.

LED ON: The engine is in stopping phase (with or without cooling-down)

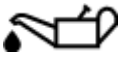
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Alarms

Engine Alarms

Table 6.

Description	LED in the front panel		Type	Action
High coolant temperature		LED flashes	Alarm	Immediate engine stop with no cooling
Low oil pressure		LED flashes	Alarm	Immediate engine stop with no cooling
Emergency stop			Alarm	Immediate engine stop with no cooling
Battery charge alternator failure (engine running)		LED off	Warning	Engine does not stop
Start failure		LED flashes		
Low coolant level		LED flashes	Alarm	Immediate engine stop with no cooling
Fuel storage		LED flashes	Warning	Engine does not stop
Overspeed		LED on	Alarm	Immediate engine stop with no cooling
Loss of speed			Alarm	Engine stop with cooling
Low battery voltage			Warning	No stop
High coolant temperature by sensor		LED on	Warning	Engine does not stop
Low oil pressure by sensor		LED on	Warning	Engine does not stop

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Electrical Characteristics

Symbol	Parameter	Conditions	Min	Normal	Max	Unit
Feeding (terminals 8/36V, –BAT, +BAT)						
8/36V	Power supply voltage of the unit		8		36	VDC
+BAT	Power supply voltage of the outputs		8		36	VDC
I_{BAT}	Feeding force	8/36V=12V			100	mA
I_{BAT}	Feeding force	8/36V=24V			50	mA
P^{BAT}	Power consumption				1,2	W
CAN Bus (terminals CANL, CANH)						
V_{IN}	CANH and CANL input voltage		-27		+40	V
DR_{CAN}	Transmission speed			50		Kbps
L_{CAN}	Bus length				500	m
Nodos	Number of nodes on the bus				20	
Digital inputs PNP (terminals MAN)						
V_{IN}	Voltage input		-0,7		40	V
V_{IL}	Low level voltage input				1	V
V_{IH}	High level voltage input		5			V
I_{IL}	Low level power supply current	V_{IN} = 0V		0	100	uA
I_{IH}	High level power supply current	V_{IN} = 12 to 24V		0,8	1	mA
Digital inputs NPN (terminals RC, BPA, ATA, NA, AE, IA, PEM, ENT1, ENT2, ENT3)						
V_{IN}	Low level voltage input		-0,7		40	V
V_{IL}	High level voltage input				1	V
V_{IH}	Low level power supply voltage		5			V
I_{IL}	High level power supply current	V_{IN} = 0V		2	2,5	mA
I_{IH}	Low level current input	V_{IN} = 12 to 24V		0	100	uA
High speed digital inputs (terminals PCK)						
V_{IN}	Input voltage				30	VAC
I_{IN}	Input power supply	V_{IN}=12VAC		2,6	3	mA
F_{IN}	Input frequency	V_{IN}=12VAC		3600		Hz
Analog inputs (terminals NC, P, T, TC, DI, GND)						
V_I	Voltage input				5	V
R_{NC}	Fuel level resistance		0		400	Ohm
R_P	Pressure resistance		0		200	Ohm
R_T	Coolant temperature resistance		0		4000	Ohm
R_{TC}	Oil temperature resistance		0		4000	Ohm
DI	Alternator voltage		0		40	V

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Type MX321 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 6. (72)*.

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 Excitation Interruption Link

Excitation circuit breaker closed. If this option not fitted, K1 - K2 linked at auxiliary terminal block.

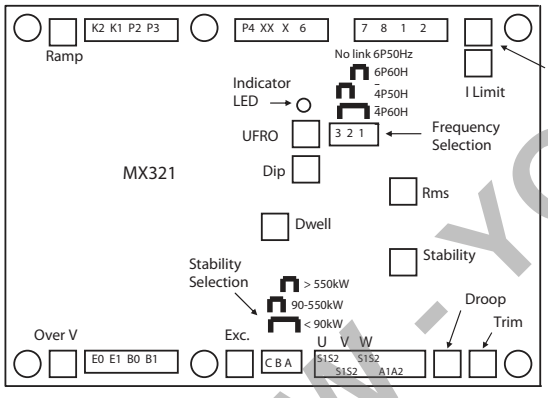


Fig 6.

Protection

It is the responsibility of the end user and his contractors/ subcontractors to ensure that the overall system protection meets the needs of any inspectorate, local electricity authority or safety rules, pertaining to the site location.

⚠ WARNING

A qualified electrical engineer must Install the system. Failure can result in damage to equipment and personnel.

ENG-8-6_1

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Engine - Identifying the Engine

Engine Identification Plate

Typical Engine Identification Number

Engine data labels **13B** are located on the cylinder block and rocker cover (if fitted). The data label contains important engine information and includes the engine identification number.

A typical engine identification number is explained as follows:

SA	320/40001	U	00001	04
1	2	3	4	5

1 Engine Type

S = 4.4 litre series

A = naturally aspirated

B = turbocharged

C = turbocharged and intercooled

E = electronic common rail fuel injection

2 Engine part number

3 Country of manufacture

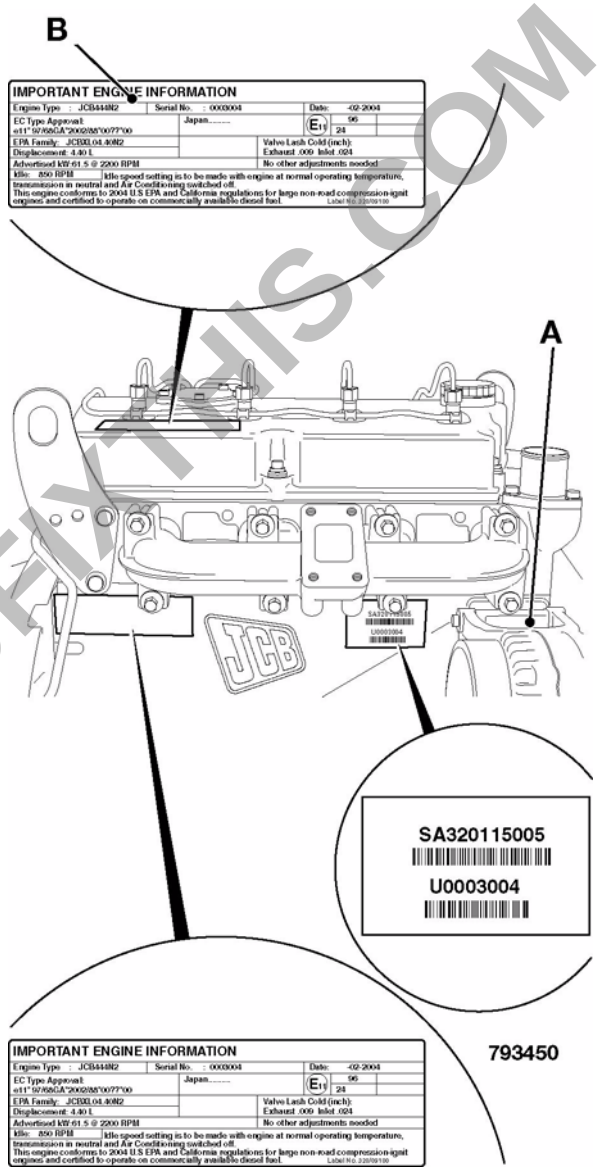
U = United Kingdom

4 Engine serial number

5 Year of manufacture

The last three parts of the engine identification number are stamped on the cylinder block at position **13A** as follows:

U 00001 04



793450

Fig 13.

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