

Max Power Engine Models

Model	Serial Number	Engine
MP 25 / 8E1	21-*****	Isuzu 4LE2T
MP 40 / 8B1	22-*****	Kubota V3300-BG
MP 45 / 8E1	23-*****	Isuzu 4LE2X
MP 65 / 8B1	24-*****	Isuzu BJ-4JJ1T
MP 65 / 8C1	24-*****	Kubota V-3800
MP 125 / 8B1	26-*****	Isuzu 4HK1X
MP 150 / 8B1	27-*****	Isuzu 6HK1X
MP 150 / 8E1	27-*****	John Deere 606HFG05

Power Rating

KVA	KW	Single Phase KW	Standby KVA	Standby KW
25	20	14	27.5	22
45	36	26	48.5	38.8
65	50	37	67	53.6
125	100	72	137	110
150	120	87	165	132

Fuel Tank Capacity

<u>25 Kva</u>	<u>45 Kva</u>	<u>65 Kva</u>	<u>100 Kva</u>	<u>125 Kva</u>	<u>150 Kva</u>
50 Gal	106 Gal	106 Gal	198 Gal	198 Gal	215 Gal

Fuel Consumption GAL/HR

	<u>25 kva</u>	<u>45 kva</u>	<u>65 kva</u>	<u>100 kva</u>	<u>125 kva</u>	<u>150 kva</u>
<u>Full Load</u>	1.7	2.6	3.6	5.9	7.2	8.6
<u>75% Load</u>	1.3	2.1	2.8	4.7	5.8	6.5
<u>50% Load</u>	1	1.5	2	3.2	4	4.7
<u>Run Time Full Load</u>	29.4 Hrs.	40.8 Hrs	29.4 Hrs.	33.6 Hrs.	27.5 Hrs.	25 Hrs.

Testing for low voltage:

AVR Connection :

All readings were taken with the unit running in three phase 480, and all AVR plugs properly connected.

Readings for 9 Pin Connector

- Pin 1 (Wire 3) Ground
- Pin 2 (Wire 4) 139.8 VAC
- Pin 3 (Wire E3) 241.4 VAC
- Pin 4 (Wire J) 85.2 VAC
- Pin 5 (Wire K) 92.6 VAC
- Pin 6 N/A
- Pin 7 (Wire U) 139.8 VAC

- Pin 8 (Wire V) 141.5 VAC
- Pin 9 N/A

Wires 3 and E3 are AVR Sensing	(.3 Ohms)
Wire 3 and 4 are AVR Power	(.3 Ohms)
Wires V and U are Auxiliary Windings	(1.7 Ohms)
Wires J and K are Exciter Stator Windings	(14-22 Ohms)

All black AVR's have a white button labeled "CPR" on them. This is to ensure the protection of the AVR should be an over voltage or back feed. If the generator is not producing voltage or if it is low and cannot be adjusted, check to see if this button has tripped. Use only the index finger to check the button. Button should be flush when good and not protruding out when it has tripped. If you use a pen or screwdriver , you can depress the button too far and break the AVR. All White or clear AVR's have a CP located off the AVR next to the main breaker.

Forced Excitation Method

Supplying 12v to the Exciter stator we can re-magnetize the PMG within the generator rotor. This may need to be done after a new installation of a generator end, Low frequency and voltage or no frequency and voltage at all. You will need two wires long enough to reach from the battery to the 9 pin connector from the AVR and find the "J and K" wires. You will attach one wire to J and one to K, be sure they are securely attached and then close to the control panel. One person will need to hold the wires separately near the battery while the other starts the unit. Once the unit is at 1800 RPM , you can attach the J wire to the positive terminal and then K to the negative terminal on the battery for three seconds.

While this is being done the second person should be watching the voltage meter on the control panel, you should see it reach near 500 volts. After the three seconds is up, remove the wires from the battery, shut down the unit, remove the wires from the 9 pin connector and plug back in the AVR. Then you may start the unit again and see if your

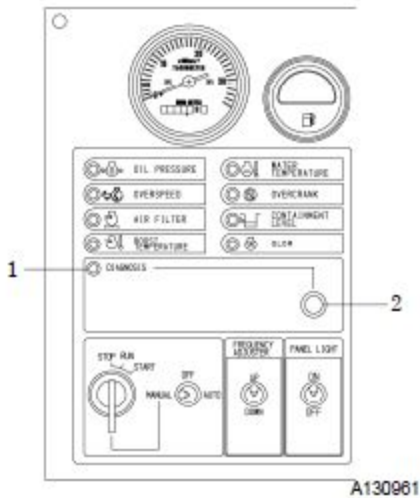
frequency and voltage comes back. Depending on the loss of magnetism in the PMG, it may take up to three attempts.

Average Rating per Model

Voltage	25	45	65	100	125	150	400
<u>Single Phase</u> <u>120v</u>	60 amps L1-N L3-N	108 Amps L1-N L3-N	152 Amps L1-N L3-N	242 Amps L1-N L3-N	300 Amps L1-N L3-N	361 Amps L1-N L3-N	2-20 Amp Receptacle
<u>Single Phase</u> <u>240V</u>	60 Amps	108 Amps	152 Amps	242 Amps	300 Amps	361 amps	3-50 Amp Receptacle
<u>Three Phase</u> <u>208V</u>	65 Amps	119 Amps	167 Amps	264 Amps	328 Amps	394 Amps	1049 Amps
<u>Three Phase</u> <u>240V</u>	60 Amps	108 Amps	152 Amps	242 Amps	300 Amps	361 Amps	962 Amps
<u>Three Phase</u> <u>480V</u>	30 Amps	54 Amps	76 Amps	120 Amps	150 Amps	180 Amps	410 Amps

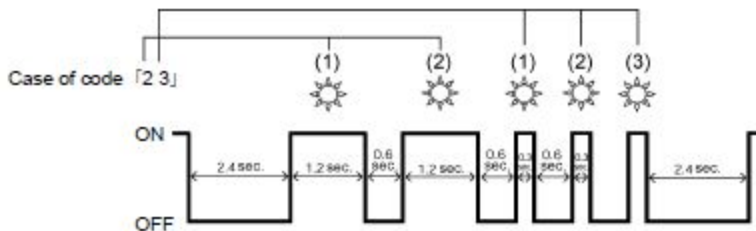
Engine Trouble Diagnosis Function:

When the engine fails, the diagnosis lamp “1” on the rear monitor panel. For the fault code or details of trouble, press the diagnosis switch “2” and then the blinking pattern will appear (flash code).

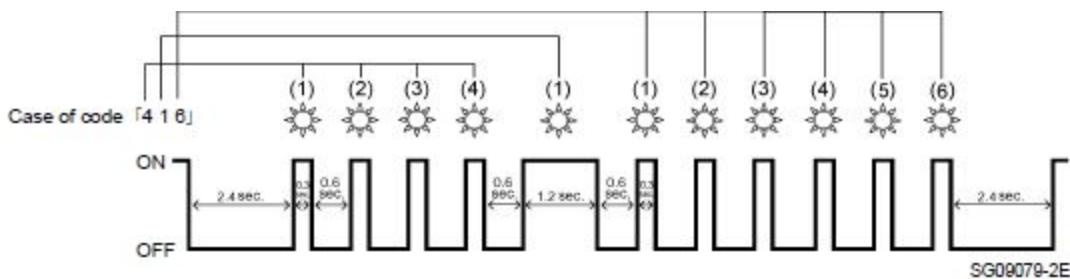


1. Turn the starter switch to the “RUN” position.
2. Continue pressing diagnosis switch “2”
3. When the engine has shut down, it will display trouble conditions with blinking patterns of diagnosis lamp “1” while diagnosis switch is pressed.

[Example of blinking pattern (Flash code)]



* Long interval blinking 2 times and short interval blinking 3 times means flash code (23).



*Short interval blinking 4 times and long interval blinking 1 time and short interval blinking 6 times means flash code (416). Long interval blink: approx 1.2 seconds & short interval blinking: approx 0.3 seconds.

DTC Fault Codes

14-Cam Sensor Fault: Cam Sensor signal fault .Unable to identify cylinder at stop.

15-Crank Sensor Fault : Crank sensor fault. Possible short circuit in wiring.

16-Cam Sensor Out of Phase: Camshaft gear installation angle is out of phase or damaged.

19-Starter Cut Relay Fault :Starter circuit to relay has failed. Check either starter for power output or relay functionality.

22-Intake Air Pressure Sensor Fault: Sensor in intake may have a short circuit in harness or sensor.

23-Engine Coolant Temp Sensor Fault:Low voltage or High voltage fault. Short circuit / break in sensor or harness.

32-Boost Pressure Sensor Fault: Low voltage or High voltage fault. Short circuit / break in sensor or harness.

34-Charge Circuit Fault: ECU charge circuit 1 & 2 failed (Internal, burnout, or open circuit etc..)

36-A/D Conversion Fault: A/D conversion fault. Lost signal

44-EGR Position Fault:Open or short breakage within the sensor. Check harness for additional breakage.

45-EGR Valve Control Fault: Trouble/open circuit or valve engaged. Valve could also be stuck in the open position on the motor side. Due to carbon build up.

51-CPU Fault:CPU Fault.

52-CPU Monitoring IC Fault: CPU monitoring IC fault.

53-ROM Fault: ROM Fault

54-EEPROM Fault: EEPROM Fault.

55-Voltage Fault in 5V Power Supply: Power supply wiring short to sensor, or breakage element/circuit for power regulation inside ECM.

66-Glow Relay Fault: Stuck open, short circuit or damage to the relay or harness.

67-Glow Lamp Fault: Stuck open, short circuit or damage to the relay or harness.

71-Barometric Pressure Sensor Fault: Short circuit or deterioration of the switch. Check harness for short circuit.

77-Check engine lamp fault: Lamp fault/ short circuit to wire or lamp.

118- Common rail pressure fault (1st & 2nd stage): Common Rail abnormal increase in pressure.

151-Common rail pressure fault: Excessive pressure feed in pump. Abnormal increase.

158-Injection nozzle common 1 drive system fault: Open/short circuit in injection common. 1 side electrical wiring, EDU output part fault.

159-Injection nozzle common 2 drive system fault: Open/short circuit in injection common. 1 side electrical wiring, EDU output part fault.

211-Fuel temperature sensor fault: Caused by either a low voltage or high voltage fault. Check circuit in sensor or harness.

225-Pressure Limiter open: Pressure limiter is stuck open.

227-No pump pressure feed: Check for any areas of fuel leakage. Low fuel feed is the cause of low pressure to common rail.

245-Common rail pressure sensor fault: This could be a low voltage or high voltage issue. Check for additional short circuits in sensor and or harness. Break in circuitry.

247-SCV drive system open circuit, +B short or ground short: Open/short circuit of SCV/harness.

271-Open circuit injection nozzle #1 drive system: Open /short circuit in electrical wiring No. 1 cylinder injection.

272-Open circuit injection nozzle #2 drive system: Open /short circuit in electrical wiring No. 2 cylinder injection.

273-Open circuit injection nozzle #3 drive system: Open /short circuit in electrical wiring No. 3 cylinder injection.

274-Open circuit injection nozzle #4 drive system: Open /short circuit in electrical wiring No. 4 cylinder injection.

294-Engine oil pressure sensor fault: Low voltage or High voltage. Short circuit in sensor or harness.

295-Boost temperature sensor fault: Low voltage or High voltage. Check for any breaks within the harness, circuit or sensor.

416-Main relay system fault (Not enter): Check ground connection or short circuit in the harness. Check relay to verify it is working correctly. Harness +B short, relay on anchoring.

542-Overheat: Overheating conditions. Check all applicable temperatures.

543-Overrun: Engine speed abnormally high.

How to delete diagnostic trouble code (DTC)

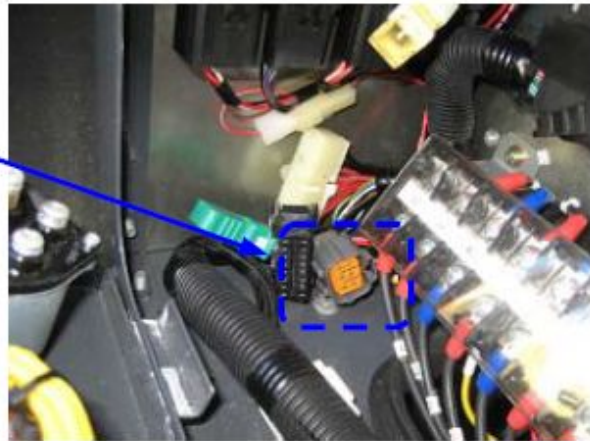
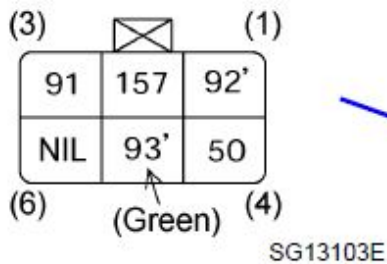
When the diagnostic trouble code (DTC) is memorized in the engine control module (ECM) in case of system trouble. Even after the problem has been fixed, the memory of

the diagnostic trouble code (DTC) will not be deleted. It is necessary to compulsorily delete this memory, according to the following procedures.

When clearing the memory:

1. Switch ON starter switch. Fault diagnosis lamp goes out after lighting for 3 seconds.
2. Continue pressing the diagnosis switch. (Keep pressing until section 6).
3. To ground: [green line color] No. 5 terminal of 6-pole connector of the left corner of the control panel inside.
4. Wait for more than 3 seconds in the grounding.
5. Remove the jumper wire that was grounded.
6. Switch OFF diagnosis switch. (Turn off)
7. Switch OFF starter switch. (Wait for more than 10 seconds)

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SG14159

Left corner portion inside control panel

Confirmation memory has been cleared

1. Switch ON starter switch. Fault diagnosis lamp goes out after lighting for 3 seconds for the lamp bulb checkout.
2. Continue pressing the diagnosis switch.
3. Fault diagnosis lamp will blink below if its memory is clear.

- a. While your pressing diagnosis switch, diagnosis lamp- repeat continuously, "it will light 0.3 seconds on and 2.4 seconds off".
4. Switch OFF diagnosis switch. (Turn off)
5. Switch OFF starter switch.

While connecting the diagnostic service tool (E-IDSS), code can be deleted by the tool.

Voltage is very high or cannot be adjusted:

- Speed should be about 1,875 min (-1), for 62.5 Hz during no load operation.
 - Adjust the speed to the specified speed with the speed adjusting bolt
- Check the resistance in the AVR resistor hand trimmer.
 - Defective resistor in hand trimmer. Needs to be replaced.
- Is AC voltage at AVR input terminal (3-E3) proper?
 - Check for a break in the wire and replace it if needed.
- Is DC voltage at AVR connector proper (J-K)?
 - If voltage is high then there is a fault in the AVR. Replace AVR.

Voltage Fluctuates:

- Is there any unbalance between single-phase load phase?
 - Use single-phase load by balancing it among phases, or increase generator capacity.
- Are revolutions stabilized 1,800 rpm min (-1)?
 - Use single-phase load by balancing it among phases, or increase generator capacity.
- Any faulty connection found in the control panel?
 - If connections are loose or broken then make needed repairs.
- Check whether the stability of AVR is correctly adjusted or not.
 - If stability is not correct then make needed adjustments.
- Disconnect each connection between the generator and control panel. And when magnetized forcibly, the generated voltage between phases is balanced?
 - Either there is a fault in the wiring and if so then repair or there is a fault in the AVR.

Load Cannot be Operated:

- Generated voltage and frequency are normal?
 - If frequency and voltage are not normal then make necessary adjustments
- Circuit breaker (MCB) is “ON”?
 - Close Main Circuit Breaker. (If the circuit breaker immediately trips then check the applied load).
- When MCB is on, is specified voltage found among output terminals R, S, T & O connection.
 - Fault in MCB contact or selector switch.
- Any looseness in output terminals R, S, T (U, V, W) and O connection
 - If “Yes”, then retighten or correct. If “NO”, then check the cable for load.

Voltage drops when load is applied:

- When the load is applied, how is generator RPM?
 - If speed is normal then refer to “Generator low voltage or voltage too low” above.
 - If the unit has a loss of RPM check fuel and air filters.
- Check whether load starting kva exceeds rated output of generator?
 - If the load capacity is too high, reduce the load capacity to suit the generator capacity. Use a higher kva generator that suits load capacity.
- Any problem in load or cable such as short-circuit or loose connections?
 - If the problem is in circuit or wire then correct the problem.

Loss of engine oil pressure or low oil pressure:

- Check engine oil level.
 - If oil level is low, add the correct grade of oil to the engine .
- Check/Replace oil filter.
- Check engine oil pressure.
 - If pressure tests are good then check the oil pressure switch. Replace defective switch.
- Check wiring harness to engine oil pressure switch.
 - Check for any breaks in the circuit or loose connections.

Engine coolant temperature rises on display in monitor, and engine will stop:

- Check water quantity and quality in the radiator coolant.
 - If coolant level is low, top off.
 - If coolant is of poor quality, then flush and replace.
- Check radiator for debris and obstructions
- Check for loose or missing fan belt
- Inspect and test the water temp switch. If faulty, then replace it.
- Check wiring connection to water temp switch.
 - If wire connection is loose, broken, or corroded, it may cause a poor connection.

Any abnormal shutdown or sometimes stops without a cause shown:

*(Excluding cases of faulty contact of starter switch and/or broken fuses)

- Check wire connections to the emergency stop switch.
- Check the connection of the engine control module (ECM)
- Check for loose ground connections or corrosion

At start up, the starter rotates slowly:

- Check the battery voltage. (Normal Voltage: at least 12V or 24V)
 - If battery is not at 12V or 24V recharge battery. **Caution: do not charge the battery if battery is currently frozen.**
 - Load-test battery to specified CCA. **Battery must be at full charge before load-testing.**
 - Check acid in battery cells. If acid is low, add **distilled** water.

- ❑ Check battery cable for loose connections and corrosion.
 - ❑ If the cable is found to be faulty then replace the terminal or complete cable.
 - ❑ If corrosion is found, clean corrosion and reattach cable.
- ❑ If the battery is in working order and connections are good, then proceed to the starter.
 - ❑ If all proceeding tests are good, inspect the starter for damaged or worn out bearing(s) in the bendix. Replace starter.

Unit will not speed up to rated speed:

- ❑ Check the air filter.
 - ❑ If the filter is clogged then clean it or replace it.
- ❑ Check fuel filter
 - ❑ Clean or replace the filter if dirty.
- ❑ Check fuel lines for any air
 - ❑ If air is in the fuel lines, bleed the fuel lines until air is no longer in the lines and check for cracks in the lines and hoses.
- ❑ Check fuel pressure
 - ❑ If fuel pressure is low, check for a blockage or restriction in the fuel lines.
 - ❑ If all fuel lines are clear, replace the feed pump.
- ❑ Check for proper turbo boost pressure
 - ❑ Check for air leaks on hoses and air pipes
 - ❑ Check for restriction in intercooler
- ❑ Check if the controller is functioning properly.
 - ❑ Check all cables for faulty connections to the controller.
- ❑ If filters, fuel pressure, and controller are performing well, then root cause could be within the engine assembly.
 - ❑ Check compression pressure, valve clearance, turbocharger, supply pump, injector, common rail and other mechanical trouble, etc.

** For the detailed counter measurements, refer to the "Troubleshooting manual", "Service manual" published by Isuzu motors.*

List of service filters per model:

25 KVA "8E1" ISUZU 4IE2				
AIR FILTER	110634	21-	"8E1"	25
OIL FILTER	111646	21-	"8E1"	25
MAIN FUEL FILTER	112896	21-	"8E1"	25
PRE FUEL FILTER	111647	21-	"8E1"	25
PRE FUEL FILTER	111648	21-	"8E1"	25
25 KVA "8B1" ISUZU BV-4LE1				
AIR FILTER	104070	Power Pro	"8B1"	25
FUEL FILTER	112814	Power Pro	"8B1"	25
OIL FILTER	111646	Power Pro	"8B1"	25
PRE FUEL FILTER	113009	Power Pro	"8B1"	25
O-RING PRE FUEL FILTER	113024	Power Pro	"8B1"	25
40 KVA "8B1" KUBOTA V3300				
AIR FILTER	110634	Power Pro	"8B1"	40
OIL FILTER	111752	Power Pro	"8B1"	40
FUEL FILTER	111753	Power Pro	"8B1"	40
PRE FUEL FILTER	114361	Power Pro	"8B1"	40
45 KVA "8B1" ISUZU BU-4JJIT				
AIR FILTER	110739	Power Pro	"8B1"	45
OIL FILTER	111654	Power Pro	"8B1"	45
FUEL FILTER	112896	Power Pro	"8B1"	45
FUEL FILTER GASKET	112896	Power Pro	"8B1"	45
PRE FUEL FILTER	111656	Power Pro	"8B1"	45
PRE FUEL FILTER	111655	Power Pro	"8B1"	45
45 KVA "8E1" ISUZU 4LE2X				
AIR FILTER	110634	23-	"8E1"	45
OIL FILTER	111650	23-	"8E1"	45

FUEL FILTER	112896	23-	"8E1"	45
PRE FUEL FILTER	111648	23-	"8E1"	45
PRE FUEL FILTER	111647	23-	"8E1"	45

65 KVA "8B1" ISUZU BJ-4JJIX

AIR FILTER	110739	Power Pro	"8B1"	65
OIL FILTER	111654	Power Pro	"8B1"	65
FUEL FILTER	112896	Power Pro	"8B1"	65
PRE FUEL FILTER	111656	Power Pro	"8B1"	65
PRE FUEL FILTER	111655	Power Pro	"8B1"	65

65 KVA "8E1" ISUZU BR-4JJIXAGD-03

AIR FILTER	116463	24-	"8E1"	65
AIR FILTER (INNER)	110877	24-	"8E1"	65
OIL FILTER	111654	24-	"8E1"	65
FUEL FILTER (MAIN)	898312-9180	24-	"8E1"	65
PRE FUEL FILTER	111656	24-	"8E1"	65

65 KVA "8C1" KUBOTA V3300 TIER 4

AIR FILTER	110739	24-	"8C1"	65
OIL FILTER	111752	24-	"8C1"	65
FUEL FILTER	111772	24-	"8C1"	65
PRE FUEL FILTER	111753	24-	"8C1"	65
FUEL SEPERATOR	112825	24-	"8C1"	65

125 KVA "8B1" ISUZU 4HK1X

AIR FILTER	111010	26-	"8B1"	125
OIL FILTER	112897	26-	"8B1"	125
FUEL FILTER	112896	26-	"8B1"	125
PRE FUEL FILTER	111656	26-	"8B1"	125
PRE FUEL FILTER	111655	26-	"8B1"	125

150 KVA "8B1" ISUZU 6HK1X				
AIR FILTER	110880	27-	"8B1"	150
OIL FILTER	112897	27-	"8B1"	150
FUEL FILTER	112896	27-	"8B1"	150
PRE FUEL FILTER	111656	27-	"8B1"	150
PRE FUEL FILTER	111655	27-	"8B1"	150
150 KVA "8E1" JOHN DEERE 6068HFG05				
AIR FILTER	110880	27-	"8E1"	150
OIL FILTER	116469	27-	"8E1"	150
FUEL FILTER	116470	27-	"8E1"	150
PRE FUEL FILTER	116471	27-	"8E1"	150

**Check engine operators manual for specific recommended lubricants.*

**Additional warranty information & claim forms can be obtained on Allmand.com.*

**Please contact Allmand Tech line for additional help and troubleshooting @ (308) 995-3431 / Parts (800) 562-1373.*

