

Quick Reference
Fault-Finding

mecc alte

POWER
FROM WITHIN

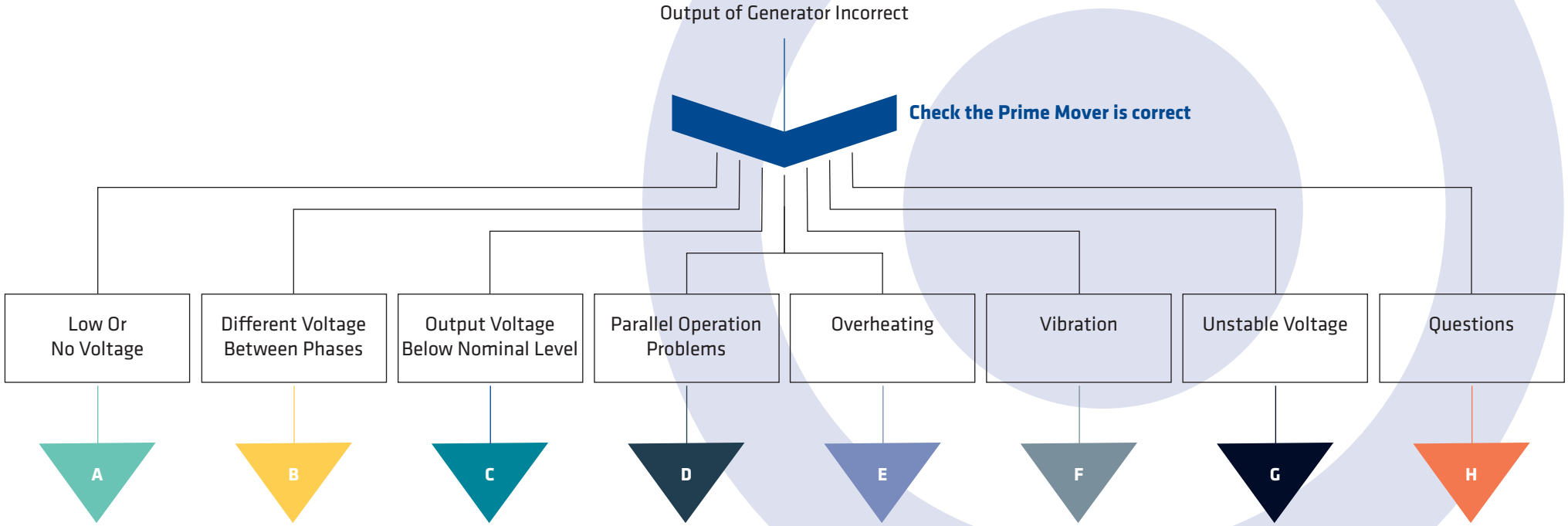
Our quick reference fault-finding guide will show you how to make a quick assessment next time you're experiencing problems with your alternator.

Simply identify the initial output problem and then click on the corresponding letter to take you through to the more detailed troubleshooting steps to diagnose the initial problem.

Download this guide and have it ready to open on your desktop next time your alternator is behaving in a way you don't expect.

If you've got more questions about what's happening with your alternator, contact one of the team at **info@meccalte.co.uk**

Troubleshooting

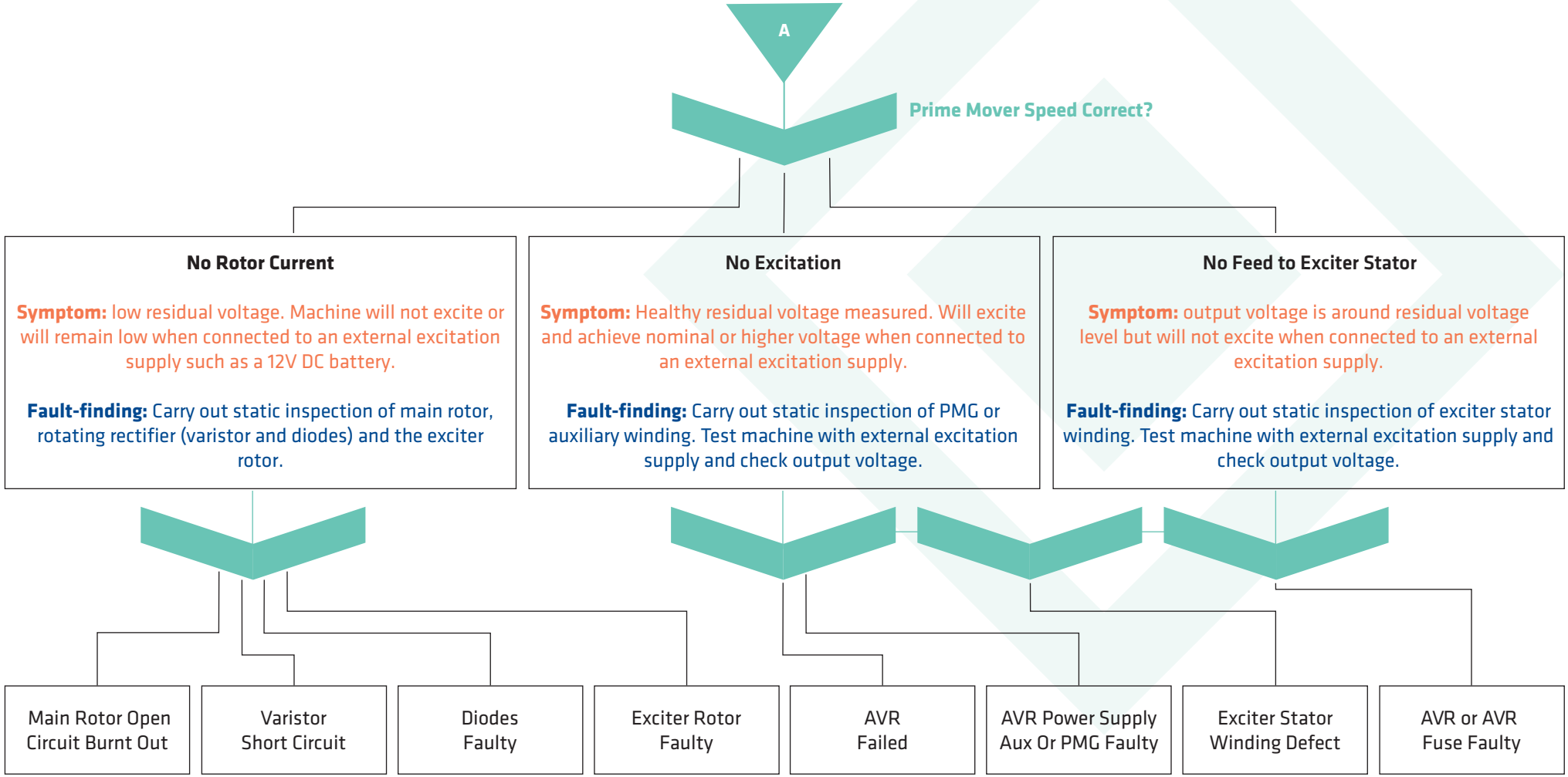


Check your generator set for the following symptoms to see if it is experiencing issues with low or no voltage.

- → Voltage on display lower than expected
- → Generator set shuts down due to under voltage or nominal voltage not reached
- → Load connected to generator set does not operate

TIP
Check your voltage at the origin/alternator terminal board, or incoming side of breaker to ensure values are accurate.

(A) Low Or No Voltage



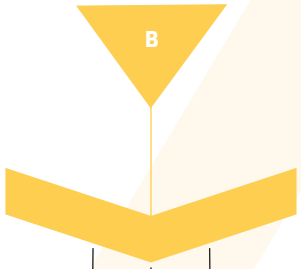
Check the display on your generator set to see if it is showing different voltage levels between phases.

TIPS

Check your voltage at the origin/alternator terminal board, or incoming side of breaker to ensure values are accurate. No load to be applied to the machine during initial testing.

Check all stator connections to ensure no loose or poor connections.

(B) Different Voltage Between Phases



Stator Misconnected

Symptom: Output voltage unbalanced.

Fault-finding: Check connection diagram to ensure wiring is correct. If new loads added or machine recently reconfigured, remove load or reconfigure to previous connection and re-test machine.

Stator Winding Failure

Symptom: Output voltage unbalanced.

Fault-finding: Carry out static winding inspection for resistance and insulation levels

Unbalanced Load

Symptom: Output voltage unbalanced.

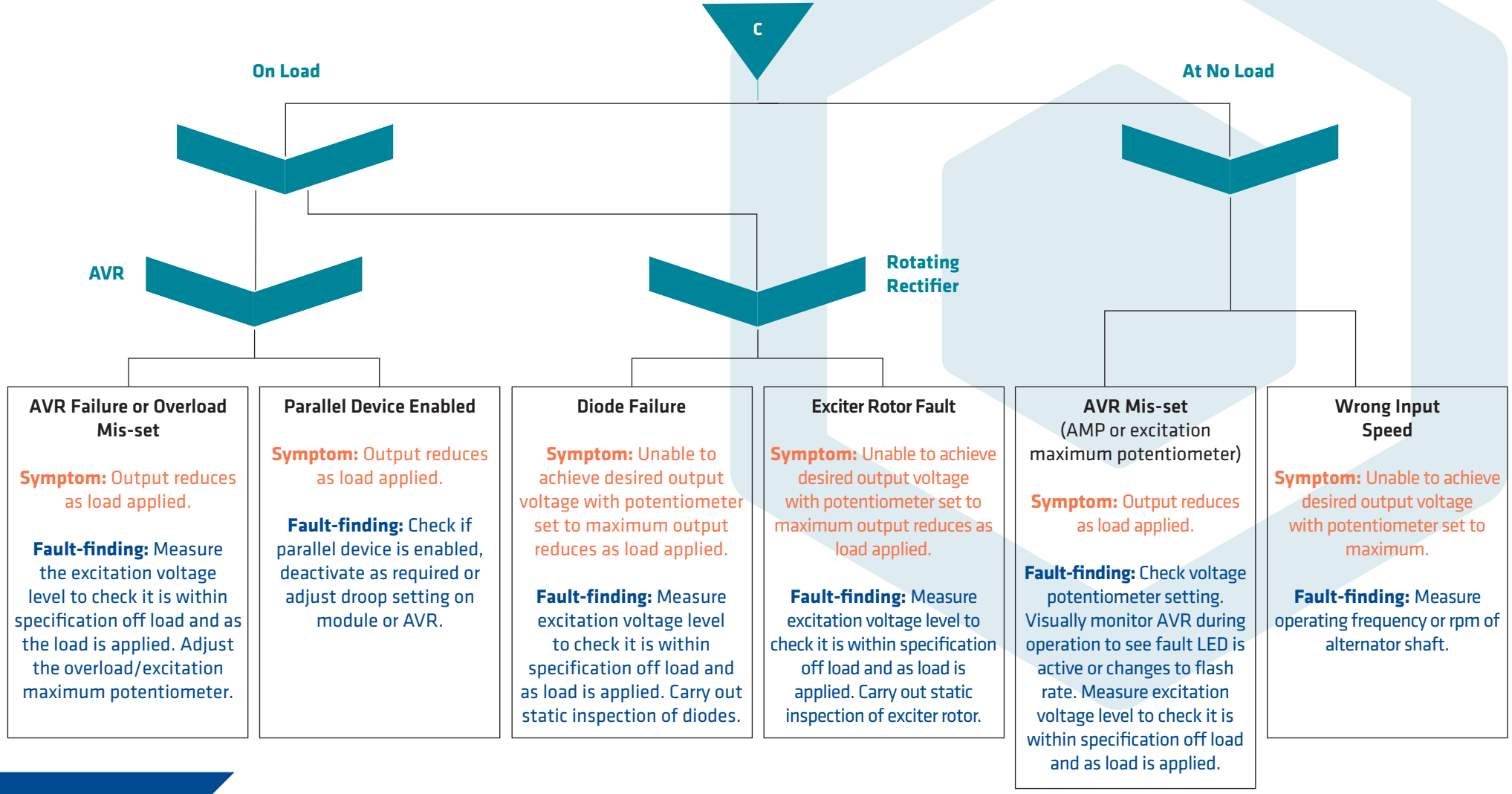
Fault-finding: Prove system by reducing level of unbalance by removing individual loads or add a balanced load

Check your generator set for the following symptoms to see if it is experiencing issues with its output voltage below nominal level.

- → Voltage on display lower than expected
- → Generating set shuts down due to under voltage or nominal voltage not reached
- → Load connected to generator set does not operate

TIP
Check your voltage at the origin/alternator terminal board, or incoming side of breaker to ensure values are accurate.

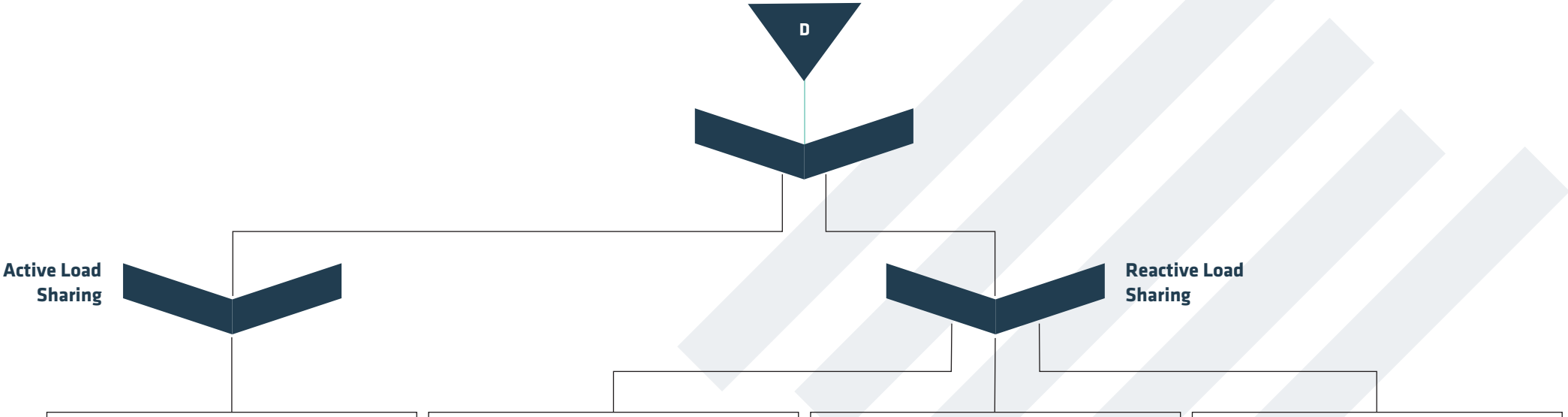
(C) Output Voltage Below Nominal Level



Check your generator set for the following symptoms to see if it is experiencing parallel operation problems

- → Generator set controller shows unstable voltage, kilowatts, voltage or current.
- → Machine shakes due to vibration

(D) Parallel Operation Problems



Engine Governor Incorrectly Set

Symptom: kW load sharing unbalanced or unstable.

Fault-finding: Check engine operating parameters. Check engine control via generator set controller. Measure operating frequency.

Parallel Device Missing or Not in Circuit

Symptom: Current is unstable on the system. Machine goes into a reverse power situation.

Fault-finding: Carry out a visual inspection to ensure parallel device is fitted and is active. Fit or activate device.

External Input Missing or Wrong

Symptom: Current is unstable on the system. Machine goes into a reverse power situation.

Fault-finding: Check control wiring is connected to AVR. Measure the input values to ensure it adjusts and is within the AVR required range. Check generator set controller adjusts machines output voltage.

Droop or Stability Mis-set

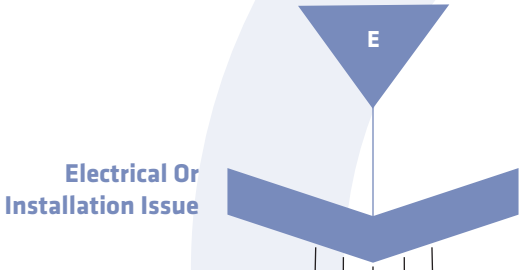
Symptom: Machine goes into a reverse power situation and the output voltage on machine is unstable.

Fault finding: Adjust droop/stability potentiometer.

Check your generator set for the following symptoms to see if it is experiencing problems with overheating.

- → Machine hot to the touch
- → Machine emits smoke
- → Machine emits an acrid smell

(E) Overheating



Ambient Temperature Too High

Symptom: Machine hot to touch. Output voltage becomes unstable.

Fault-finding: Reduce the machine's output capacity to match ambient temperature. Improve cooling system to bring machine to be within operating parameters.

Lack of Airflow

Symptom: Machine hot to touch. Machine emits smoke or an acrid smell.

Fault-finding: Remove air restrictions. Improve airflow system to bring machine to be within operating parameters.

Overload

Symptom: Machine hot to touch. Machine emits smoke or an acrid smell.

Fault-finding: Bring load level to be within machine's operating parameters.

High Excitation

Symptom: Machine hot to touch. Machine emits smoke or an acrid smell.

Fault finding: Check operating power factor of loading system. Check operating speed or frequency of alternator. Measure the excitation voltage level to check it is within specification off load and as load is applied. Carry out static inspection of diodes, exciter rotor and main rotor.

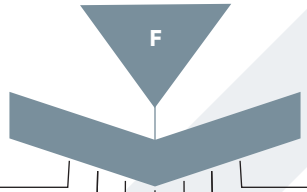
Slow Speed Running

Symptom: Machine hot to touch. Machine emits smoke or an acrid smell.

Fault finding: Measure operating frequency or rpm of alternator shaft.

Check the display on your generator set to see if it is visibly shaking. If it is, it's likely to be experiencing a vibration problem.

(F) Vibration



Balancing

Symptom: Machine visibly shakes.

Fault-finding: Measure vibration level to ensure it is within permitted levels. Rebalance the rotor.

Bearing Failure

Symptoms: Machine visibly shakes, emits noise or shows a high temperature on measuring device.

Fault-finding: Measure vibration level to ensure it is within permitted levels. Test bearing probe to ensure probe is functioning correctly. If open face bearing fitted, check bearing grease tube to ensure no blockages and grease bearing. If no improvement, replace the bearings.

Coupling Loose or Damaged

Symptom: Machine visibly shakes.

Fault-finding: Measure vibration level to ensure it is within permitted levels. Visually inspect coupling for wear or damage. Tighten or replace coupling.

Bolts Loose

Symptom: Machine visibly shakes.

Fault-finding: Measure vibration level to ensure it is within permitted levels. Visually inspect flywheel bolts, bell-housing bolts and feet bolts.

Short Circuit

Symptom: Machine visibly shakes.

Fault-finding: Run machine in an unloaded condition if load is applied. Carry out a static inspection of stator winding and auxiliary winding if installed within the stator.

Unbalanced Load

Symptom: Machine visibly shakes.

Fault-finding: Test machine off load or balance loading system.

Broken AVMS

Symptom: Machine visibly shakes.

Fault-finding: Visually inspect AVMS, replace damaged or broken AVMS.

Check the display on your generator set controller. If the voltage is not stable, your machine could be experiencing unstable voltage.

(G) Unstable Voltage



Unstable Engine Speed

Symptom: RPM and frequency fluctuate.

Fault finding: Measure operating frequency or rpm of alternator shaft.

AVR Stab Potentiometer Incorrectly Set

Symptom: Machine's output voltage unstable.

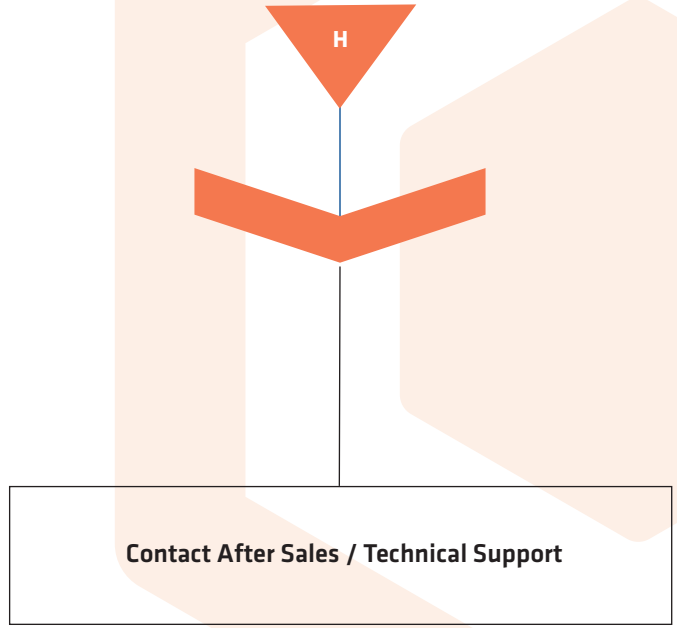
Fault finding: Calibrate the stability potentiometer on AVR.

High Harmonic Content of Load

Symptom: Machine's output voltage unstable.

Fault-finding: Run machine off load and check output voltage is stable. Test machine with low harmonic load. Apply passive loads to system to reduce harmonic level on system. Fit harmonic filter to load. Size machine to suit harmonic load capacity. Fit PMG to machine.

(H) Questions and Further Advice




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ALTERNATORS 1 – 5,000kVA
LOW VOLTAGE | MEDIUM VOLTAGE | HIGH VOLTAGE
Speak to the team
info@meccalte.co.uk
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