

FAQ

Questions on mechanical malfunctions:

- >> Heavy vibrations of the machine
- >> Temperature of the bearing is too high
- >> Bearing noise
- >> False brinelling during machine downtime

Questions on common electrical malfunctions:

- >> Alternator shows no excitation

Electrical malfunctions of the control unit:

- >> Output voltage is too low
- >> Output voltage is too high
- >> Output voltage varies
- >> Instable parallel operation (static mode)
- >> Instable parallel operation (power factor controller)

Heavy vibrations of the machine

Unbalanced parts mounted on the shaft end (flywheel, belt drive)

- Dismount parts, (re-)balance all parts together by means of stroboscopic method.

Alignment not precise

- Check alignment, readjust clutch

System operates at resonance

- Measure vibrations over speed, draw resonance curve
- Change elastic mounts
- Change actuators
- Stiffen foundation
- Contact Hitzinger

Bearings defect.

- Check running-noise of the bearing; perform SPM measurement, change bearings

Vibration of prime mover too high

- Check elastic mounts, reduce vibration of main machine

Bearing temperature is too high

Too much grease inside the bearing

- Just regrease prescribed quantity
- Temperature should get lower itself
- Clean grease outflow ducts from old grease
- If necessary dismount bearing cover and remove excess grease

No grease inside bearing

- Regrease bearing (prescribed quantity) and take a close look if bearing works properly. Otherwise exchange bearing.

Bearing load is too high

- Check radial and axial forces (by belt drive or turbine runner)
- Contact Hitzinger

Tension of the bearing

- Check the alignment.
- Contact Hitzinger.

Bearing noise

Bearing is damaged (e.g. by transport)

- Remove bearing and let it be analyzed

Contaminations in grease

- Wash out bearings, renew grease, if necessary exchange bearings.

Bearings run dry

- Regrease bearings.

False brinelling during machine downtime

Vibration from outside are transferred to the bearing

- Isolate machine from outer vibrations.

Alternator has no excitation

Rotation speed too low

- Raise rotation speed to nominal speed

No or too low residual voltage for self excitation.

- Measure residual voltage
- Standard value at nominal speed phase to hase is 10% of nominal voltage
- If residual voltage is lower than 10% - shock excitation is necessary

Shock excitation:

- Disconnect AVR
- Accelerate alternator to nominal speed
- Take a 4.5V torch battery and connect the auxiliary voltage to the field of the exciter. Take care of the polarity check wiring diagram (terminal 6 pos / terminal 14 neg)



**When output voltage rises disconnect battery immediately!
Otherwise battery can explode !**

Short circuit or load of the alternator is too high

- Check wiring, disconnect load

AVR fuse defect or bad contacts

- Check fuse and contacts of the fuse holder. The fuse of the T21 AVR is directly at the PCB, the T17 AVR the fuse is in the lead-in wire of the auxiliary winding. (see wiring diagram)

If those actions show no success, consider a foreign excitation. So, the malfunction can be found faster. Please take the following steps:

Foreign excitation:

- Disconnect lead in wires of the exciter field at the terminal bar of the AVR
- Connect an external, potential free and adjustable DC source to the exciter field. Therefore you can use a 12V car battery in combination with a resistor or a adjustable transformer and a rectifier bridge.
- It is very important to have the right polarity - check wiring diagram (terminal 6 pos / terminal 14 neg)
- Accelerate alternator to nominal speed and excite with 20%-30% of the nominal exciter current which is stated at the rating plate. So, the nominal voltage must be reached approximately. The voltage of the auxiliary winding (see wiring diagram) should be about 100 V.
- Watch alternator voltage! do not adjust a too high voltage!
- If more than 30% of the nominal exciter current is needed or when the output voltage does not rise at all the failure must lie in the alternator itself. Perform error diagnosis according to the following steps for rotating rectifier bridge, overvoltage arrestor, polewheel, auxiliary winding and exciter field.
- If the exciter current and the voltage at the auxiliary winding are correct, the failure is located in the voltage regulator.



When foreign excitation is used, all electrical and mechanical safety regulations have to be obeyed. All consumers and sensitive devices have to be switched off because of the possibility of voltage peaks!

Defective rotating rectifier

- Disconnect rectifier and measure

Defective overvoltage arrestor

- Disconnect Overvoltage arrestor and measure.

Defective exciter rotor

- **Measure resistance of all three windings. Values have to be symmetric. Reference value lower than 0.1 Ohms measure isolation value.**

Defective polewheel or rectifier connection

- **Disconnect polewheel connectors from the rectifier and measure the resistance**

- Reference value 0.5 to 2 Ohm, depending on the type of the alternator. measure isolation value.

Defective auxiliary winding or wiring

- Disconnect the polewheel of the exciter field from the AVR (see wiring diagram) and measure the resistance.
- Reference value 4 to 10 Ohm, depending on the type of the alternator.
- Measure isolation value against earth.

Defective exciter field or wiring

- Disconnect exciter field from the AVR (see wiring diagram), measure resistance
- Reference value 4 to 10 Ohm, depending on the type of the alternator
- Measure isolation value against earth

WARNING



Measure resistance only when you are sure that the machine absolutely stands still.

Measure the insulation value only when all electrical and electronic devices are disconnected!

Output voltage is too low

Speed is too low

- Raise speed to nominal speed.

Voltage reference value is set too low

- Adjust potentiometer to nominal value.

Frequency in the area out of control area

- Raise speed to nominal speed.

Power factor regulator active in isolated

- Bridge control input from the PFR and disconnect signal line to the AVR.

Malfunction in the exciter system of the machine

- Error location as ("Alternator has no excitation").

AVR defect

- Exchange automatic voltage regulator.

Output voltage is too high

Cut off of the measurement circle

- Measure alternator voltage at the AVR terminals (see wiring diagrams), remove cut off.

Voltage reference value is set too high

- Adjust potentiometer to nominal value.

Cut off of the circle of current transformer for parallel operation

- Check current transformer and lines and change if necessary.

Cut off of the circle of reference values

- Check potentiometers and lines.

Leistungsfaktorregler im Inselbetrieb aktiviert

- Steuereingang am Leistungsfaktorregler brücken, Signalleitung zum Spannungsregler abklemmen.

AVR defect

- Exchange automatic voltage regulator.

Output voltage varies**Supply of the AVR has a wrong phase position to measurement voltage**

- Exchange connections of the AVR supply (auxiliary winding)

Prime mover instable (eg. torsional vibrations)

- Stabilize prime mover or change it.

Resonance between AVR and load (eg. Controlle drectifier, light-controller etc.)

- Change time constant if the AVR or of the load regulator
- Consultate Hitzinger

AVR defect

- Exchange automatic voltage regulator.

Instable parallel operation (static mode)**No current transformer (static) built in**

- Integrate current transformer and adkust static.

Static upside down

- Exchange connections of the current transformer (see wiring diagram).

Static value too low

- Raise static vaue with the potentiometer.

Fluctuation of mains voltage too high

- Improve mains condition or use PFR

Instable parallel operation (with PFR)**Power factor regulator not activatedv**

- Check wiring and control.

Zhase position between voltage- and current signal is the wrong way around

- Check wiring and change signal lines.

PFR defect

- Change PFR.