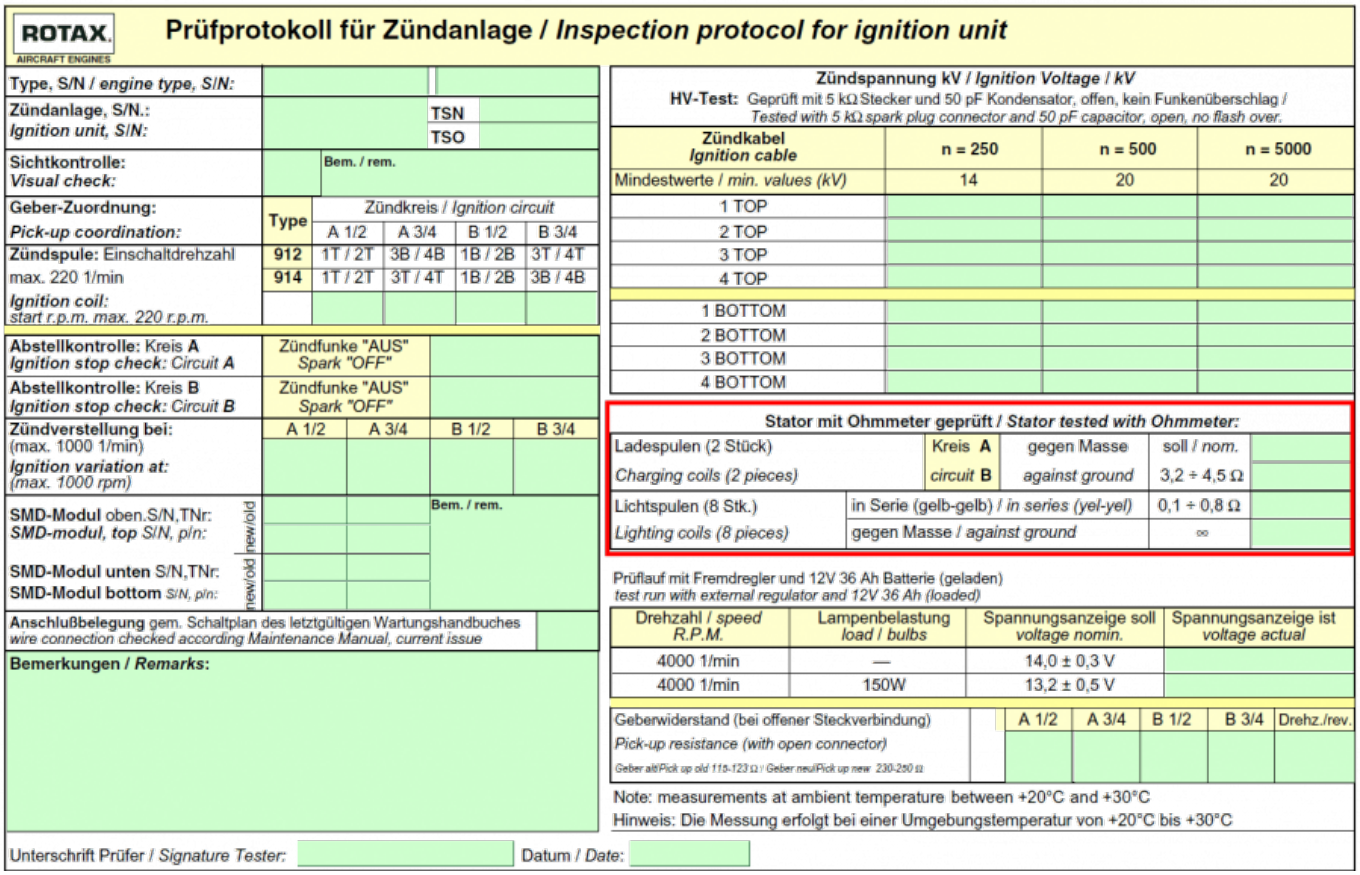
Check the internal generator

... there is another way, as in the manual ...
applies only to 912 / 914 !

If you search long enough in the Heavy Maintenace Manual and, above all, know what you are looking for, you will find the following illustration:



ROTAX AIRCRAFT ENGINES — **Prüfprotokoll für Zündanlage / *Inspection protocol for ignition unit***

Type, S/N / *engine type, S/N:*	
Zündanlage, S/N.: / *Ignition unit, S/N:*	TSN / TSO
Sichtkontrolle: / *Visual check:*	Bem. / rem.

Geber-Zuordnung: / *Pick-up coordination:*	Type	Zündkreis / *Ignition circuit* A 1/2	A 3/4	B 1/2	B 3/4
Zündspule: Einschaltdrehzahl	912	1T / 2T	3B / 4B	1B / 2B	3T / 4T
max. 220 1/min	914	1T / 2T	3T / 4T	1B / 2B	3B / 4B
Ignition coil: start r.p.m. max. 220 r.p.m.					

Abstellkontrolle: Kreis A / *Ignition stop check: Circuit A*	Zündfunke "AUS" / *Spark "OFF"*			
Abstellkontrolle: Kreis B / *Ignition stop check: Circuit B*	Zündfunke "AUS" / *Spark "OFF"*			
Zündverstellung bei: (max. 1000 1/min) / *Ignition variation at: (max. 1000 rpm)*	A 1/2	A 3/4	B 1/2	B 3/4

	new/old			Bem. / rem.
SMD-Modul oben.S/N,TNr: / *SMD-modul, top S/N, p/n:*	new/old			
SMD-Modul unten S/N,TNr: / SMD-Modul bottom *S/N, p/n:*	new/old			

Anschlußbelegung gem. Schaltplan des letztgültigen Wartungshandbuches / *wire connection checked according Maintenance Manual, current issue*

Bemerkungen / *Remarks*:

Zündspannung kV / *Ignition Voltage / kV*

HV-Test: Geprüft mit 5 kΩ Stecker und 50 pF Kondensator, offen, kein Funkenüberschlag / *Tested with 5 kΩ spark plug connector and 50 pF capacitor, open, no flash over.*

Zündkabel / *Ignition cable*	n = 250	n = 500	n = 5000
Mindestwerte / *min. values (kV)*	14	20	20
1 TOP			
2 TOP			
3 TOP			
4 TOP			
1 BOTTOM			
2 BOTTOM			
3 BOTTOM			
4 BOTTOM			

Stator mit Ohmmeter geprüft / *Stator tested with Ohmmeter:*

Ladespulen (2 Stück) / *Charging coils (2 pieces)*	Kreis A / *circuit B*	gegen Masse / *against ground*	soll / *nom.* 3,2 ÷ 4,5 Ω	
Lichtspulen (8 Stk.) / *Lighting coils (8 pieces)*	in Serie (gelb-gelb) / *in series (yel-yel)*	gegen Masse / *against ground*	0,1 ÷ 0,8 Ω / ∞	

Prüflauf mit Fremdregler und 12V 36 Ah Batterie (geladen) / *test run with external regulator and 12V 36 Ah (loaded)*

Drehzahl / *speed R.P.M.*	Lampenbelastung / *load / bulbs*	Spannungsanzeige soll / *voltage nomin.*	Spannungsanzeige ist / *voltage actual*
4000 1/min	—	14,0 ± 0,3 V	
4000 1/min	150W	13,2 ± 0,5 V	

Geberwiderstand (bei offener Steckverbindung) / *Pick-up resistance (with open connector)*	A 1/2	A 3/4	B 1/2	B 3/4	Drehz./rev.
Geber alt/Pick up old 115-123 Ω / Geber neu/Pick up new 230-250 Ω					

Note: measurements at ambient temperature between +20°C and +30°C
Hinweis: Die Messung erfolgt bei einer Umgebungstemperatur von +20°C bis +30°C

Unterschrift Prüfer / *Signature Tester:* Datum / *Date:*

the charging coils

... are the two coils that generate the current for the two ignition circuits and can actually only be tested with the ohmmeter, as described in the figure, without much effort. Testing with the ohmmeter is also quite reliable.
These coils make the ignition system independent of all other power sources, so that the engine always runs unless the ignition circuits are switched off.

the light coils

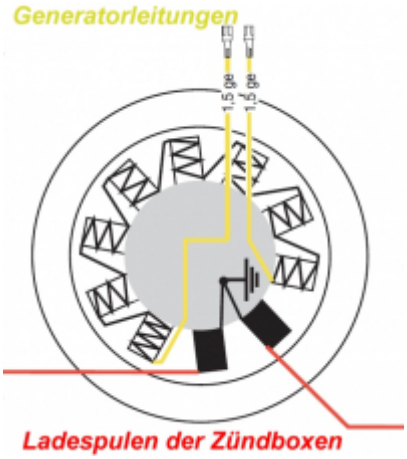
.... generate the power to supply the entire aircraft.

Their testing is described in the manual as checking the resistance of the two coils in series and a short circuit to ground.
And anyone who has ever tested a resistance of 0.1 ÷ 0.8 Ω with a multimeter knows that you can forget that.
All that remains is to see if you can detect any discoloration of the coils.
To do this, however, you must at least remove the black ignition cover in the plane and try to see the coils through the holes in the magnet hub.

The only thing that helps here is a test method that is common in the motorcycle sector:
Measure the AC voltage generated by the coils without load

This is simple for motorcycles.
Disconnect the generator leads and check the voltage applied to the individual coils at a specified engine speed.
There are usually three coils, as three-phase alternators are used almost exclusively in motorcycles.

With the Rotax, we have 8 coils without a connection to ground, so consequently a simple alternator.
The test is very simple here.
The two yellow cables that come from the alternator and are connected to the regulator are disconnected from the regulator/rectifier and checked with the multimeter.
First, the resistance is measured - but this is not meaningful.



Caution: Danger to life!

Working with a running propeller is life-threatening !
Anyone working on a running aircraft engine should always be aware of this and work with extreme concentration.
If in doubt, do not carry out the following procedure!

Measure the AC voltage in the propeller wind according to the following table.
For this purpose, the multimeter set to over 100 volts AC voltage is connected to both yellow wires.
The two wires are **not** connected to the controller - i.e. without load.
The most reliable results are at 3000 - 4000 rpm.

Speed 1/min	AC voltage V
1700	12 - 13
2000	14 - 15
2500	17,5 - 18,5

Speed 1/min	AC voltage V
3000	21 - 23
4000	27 - 29
5000	34 - 36

The values were determined during test series on the dynamometer and are not official data from the manufacturer

If the measured values deviate significantly, the alternator is defective and must be replaced. You will usually also notice a discoloration of the coils.