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REPAIR INSTRUCTIONS



Ignition tool IGNITER

Serial number from 1109000000

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ISO 9001:2000

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1 Scope of applicability

These repair instructions are reserved exclusively for Leister service centres. Only experienced and qualified personnel trained by Leister Technologies AG, CH-6056 Kaegiswil, are allowed to do repair work on Leister tools. Additional national requirements relative to personnel carrying out repair work are to be observed by each service centre.

2 Safety precautions

A well-equipped working place (see "Equipment required for Leister repair service") is essential for doing qualified work. For safety reasons use only identical original Leister replacement parts for each type of tool when servicing.

Warning!




If you open the tool or remove its parts, except the ones they are accessible without using a tool, some live parts could appear. Its contact can cause danger to life! Insure tool is **disconnected from the line/mains** before any work is commenced!

Repaired tools must pass the Leister **test procedure** and any additional local requirements. Check with your local Statutory Authority for testing requirements.

3 Remarks

- If it is impossible to repair a tool, it should be returned immediately to the manufacturer, Leister Technologies AG, CH-6056 Kaegiswil, Switzerland, carriage paid to Kaegiswil. Leister will repair the tool within 24 hours after its arrival.
- When ordering spare parts use the order numbers of the spare parts list. When servicing use only identical original Leister replacement parts!

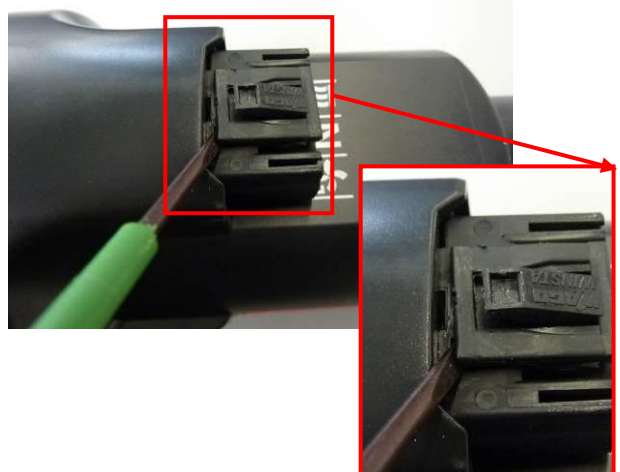

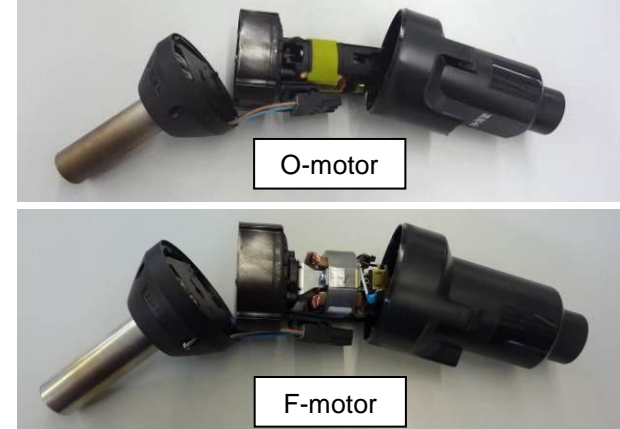
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4 Electronics

4.1 Open tool



Warning! Disconnect the tool from the line/mains **on all poles** (plug unplugged) while doing the component checks described in this chapter!

	<p>Remove strain relief</p>
	<p>Unscrew PT pan head screws KA35x20 (4x)</p>
 <div data-bbox="411 1635 566 1691" data-label="Caption">O-motor</div> <div data-bbox="411 1870 566 1926" data-label="Caption">F-motor</div>	<p>Remove handle</p>

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4.2 Housing

Replace housing if it is mechanically damaged (cracks, broken parts)

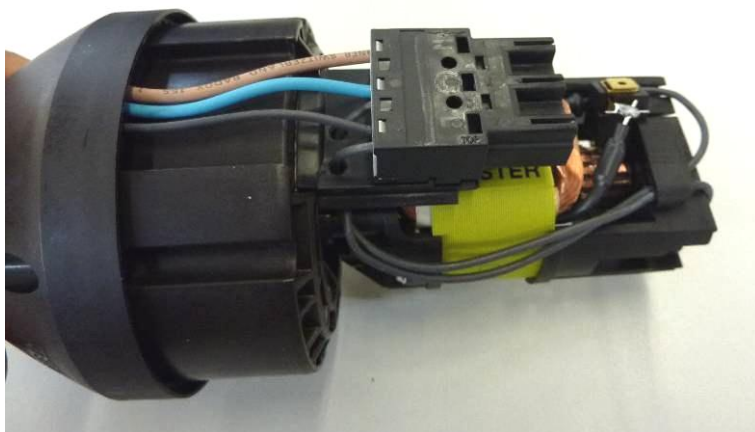
4.3 Power supply terminal

- Replace spring-type terminal if it is mechanically damaged (shows cracks) or refractory
- Clean power supply terminal by using a small brush if polluted *Visual inspection*

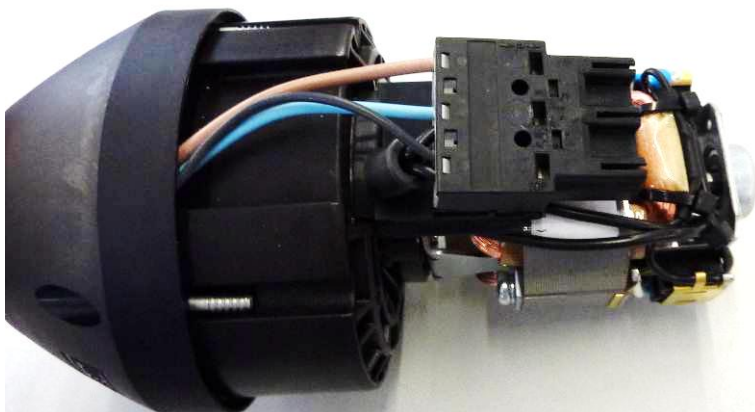
4.4 Wiring


- Check all flex wires for breaks, short circuits and mechanical damage
- Check correct wiring (compare with illustrations) *Visual inspection*
L (Fan): Black; N: Blue; L (Heat): Brown

O-motor:



F-motor:



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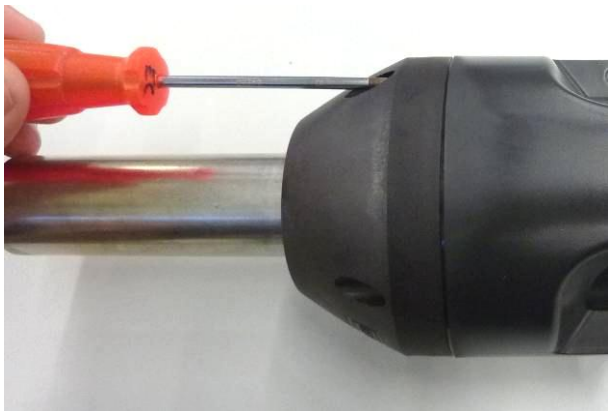

4.5 Electronic circuit board HCU 34D



Caution! The following test procedure sometimes requires the tool to be connected to the line/mains. Insure the tool is disconnected from the line/mains **on all poles** before any work is commenced!

- Check electronic circuit board for visual error indications (scorch marks and expanded/swelled parts) *Visual inspection*
- Perform function test (see test procedure)
- Caution! Heater tube and heating element might be hot!
Burn hazard!

4.6 Replacement of electronic circuit board HCU 34D

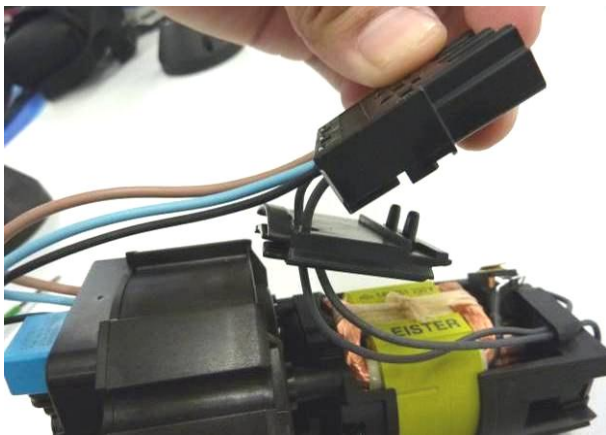
		Open tool (see chapter 4.1)
		Remove heater tube and heating element
 <div style="position: absolute; top: 664px; left: 270px; border: 1px solid red; padding: 2px;">1. Retain flange with forefinger</div> <div style="position: absolute; top: 781px; left: 195px; border: 1px solid red; padding: 2px;">2. Press on circuit board with thumb</div>		Remove heating element terminal

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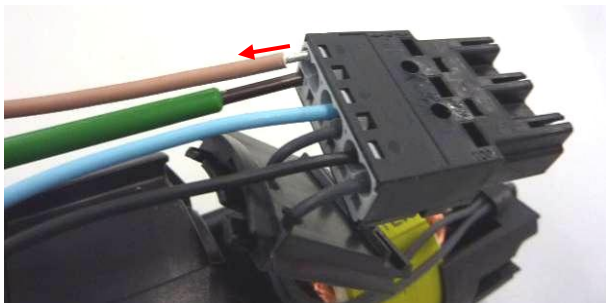
Igniter

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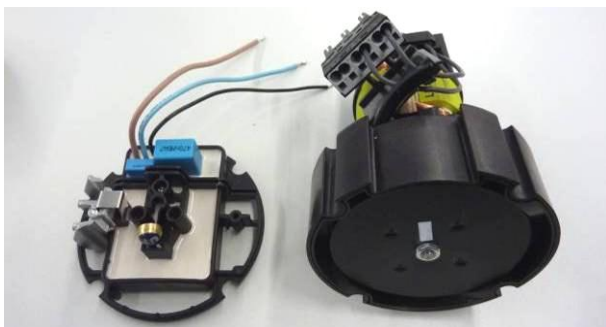
Loosen spring-type terminal with adapter from blower unit



Extract flex wires from spring-type terminal by using a screw driver




Clamp electronic circuit board and extract it from the blower unit



Assemble replacement electronic circuit board in reverse order

Recommended torque for KA35x20:

Torque: 1.20 Nm
Speed: 650^{1/min}

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5 Blower unit

5.1 Function test



Caution! The following test procedure sometimes requires the tool to be connected to the line/mains. Insure the tool is disconnected from the line/mains **on all poles** before any work is commenced!

Connect tool to rated voltage and switch it on. Blower must run steady-going and its power consumption may not exceed 100W. Switch the tool off and disconnect it from the line/mains!

Wattmeter



Notes

- An excessive noise of the blower unit indicates a bearing defect
→ Replace blower unit (O-motor see chapter 5.3.2, F-motor see chapter 5.4.1)
- A power consumption >100W of the blower unit indicates a commutator defect
→ Replace blower unit (O-motor see chapter 5.3.2, F-motor see chapter 5.4.1)
- Unsteady sound performance (jolting, loose contact)
→ Check carbon brushes (O-motor see chapter 5.3.1)


5.2 Check commutator

Visual check of commutator:

Visual inspction

- Worn out lamella
- Bluish discoloration
- Deep grooves (U-shaped)



Replace blower unit if the commutator is defective (see chapter 5.3.2)


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5.3 Blower unit with O-motor

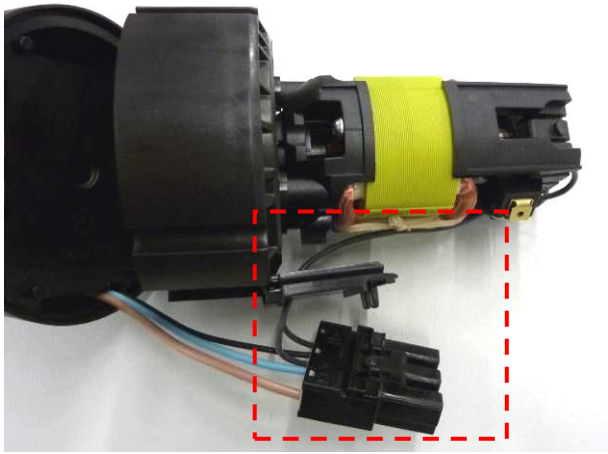
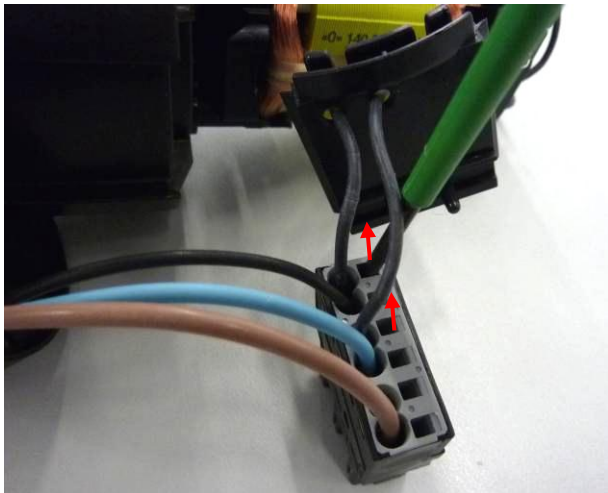
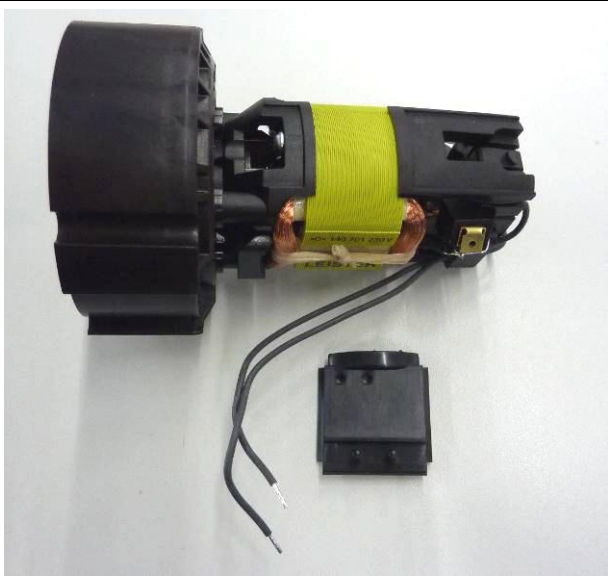
5.3.1 Check carbon brushes

Remove motor brushes, measure its length and replace them, if their length is 4 mm or even less. Check both brushes! If the carbon brushes are not to be replaced make sure to re-insert them the same way as removed (abrasion).

	Open tool (see chapter 4.1)
	<p>Carefully bend retaining clamps of both carbon brush holders open and extract carbon brushes</p> <p>Caution, springs are under tension!</p>
	Measure length of both carbon brushes

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5.3.2 Replace blower unit

	Open tool (see chapter 4.1)
	Loosen spring-type terminal with adapter from blower unit
	Extract both black flex wires to the motor from the spring-type terminal by using a screw driver
	Loosen flex wires to the motor from the adapter

Repair instructions

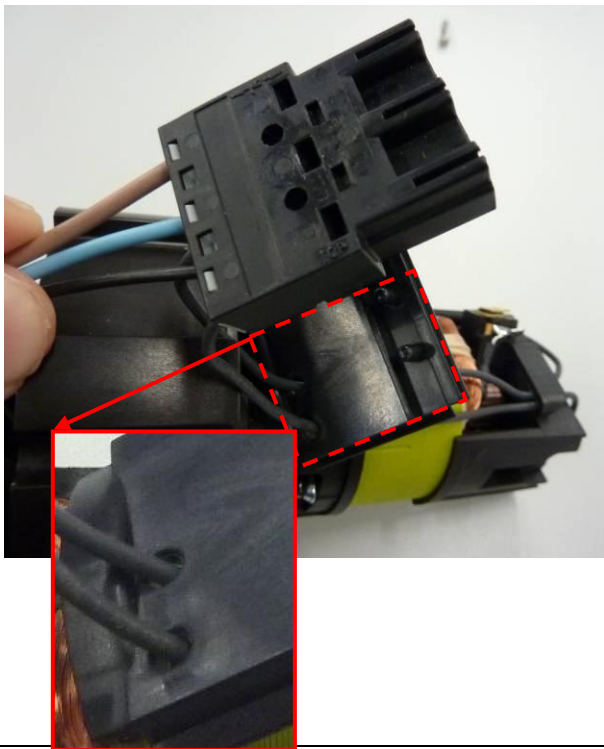
Igniter

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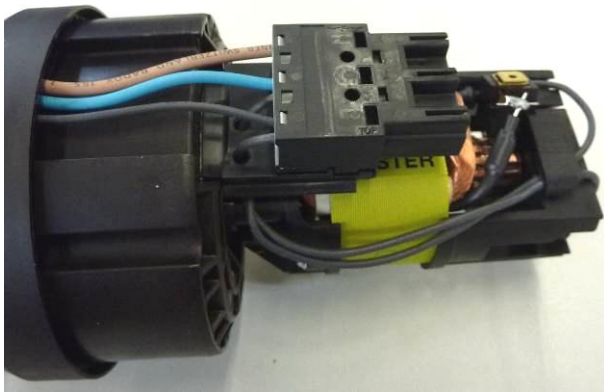
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Insert flex wires of the replacement motor into the rear guide bracket



Arrange flex wires of the motor through the provided holes next to the adapter and assemble them to the spring-type terminal

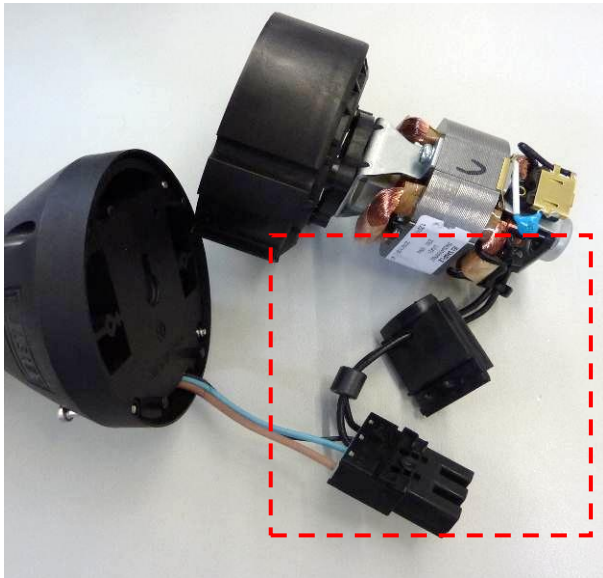
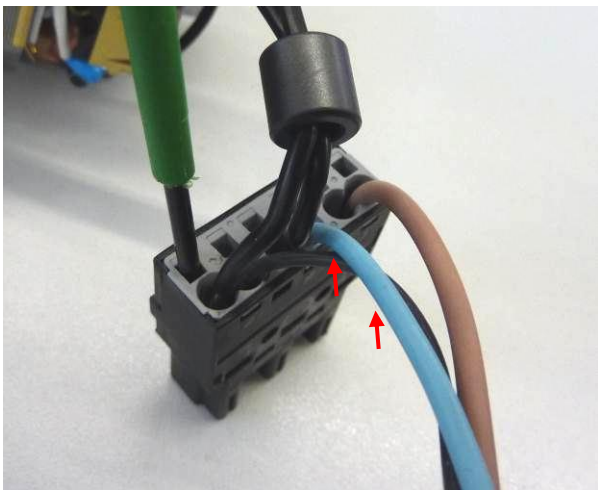
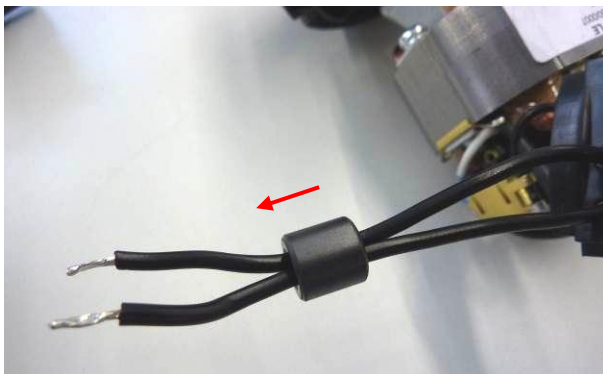



Connect spring-type terminal to the adapter and click it on the blower unit

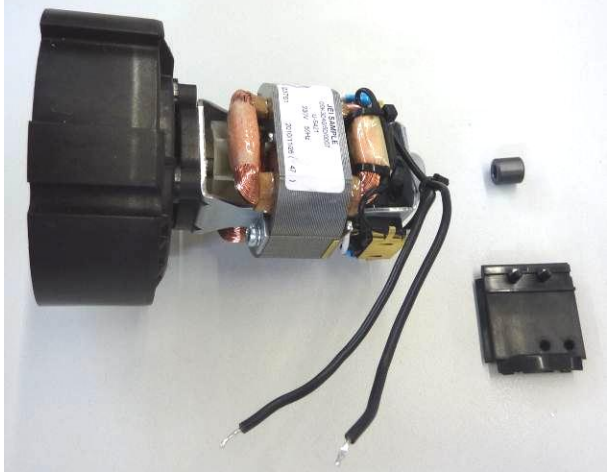
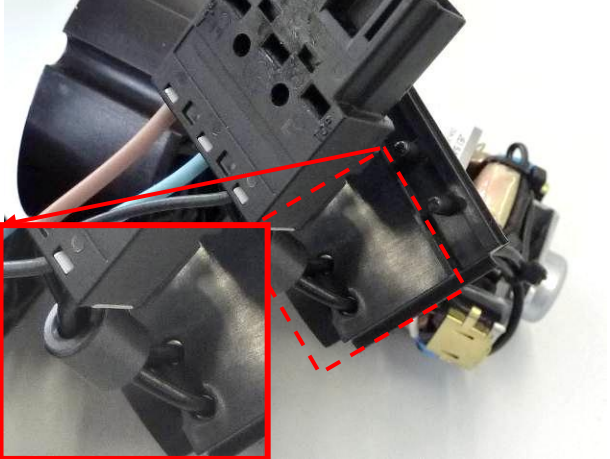
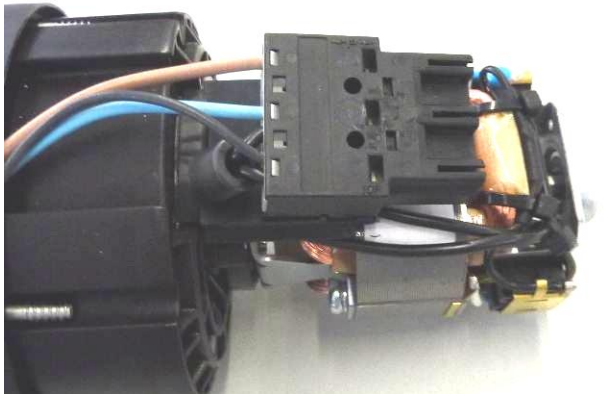
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5.4 Blower unit with F-motor

5.4.1 Replace blower unit

	Open tool (see chapter 4.1)
	Loosen spring-type terminal with adapter from blower unit
	Extract both black flex wires to the motor from the spring-type terminal by using a screw driver
	Extract ferrite core


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	<p>Loosen flex wires to the motor from the adapter</p>
	<p>Arrange flex wires of the motor through the provided holes next to the adapter, through the ferrite core and assemble them to the spring-type terminal</p>
	<p>Connect spring-type terminal to the adapter and click it on the blower unit</p>


5.5 Cleaning

Clean the tool up!

- The filter of the air intake must be cleaned if it is polluted or even clogged
- Clean fan impellers; if unbalance is detected, position impellers in such a way that the unbalance almost dissolves

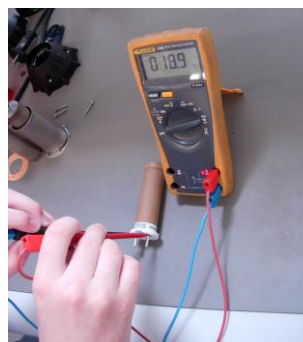
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6 Heating element


	<p>Unscrew PT pan head screws KA35x20 (4x) and remove heater tube including mica tube</p>
	<p>Heating element and gasket may be removed now</p>

- Do a visual inspection of the heating element; replace the heating element if it is either mechanically damaged or if any heating channels are clogged
- Check resistance of the heating element (see table below)

Ohmmeter




Voltage [V]	Power [W]	Resistance [Ω]	Voltage [V]	Power [W]	Resistance [Ω]
120	550	approx. 26	230	550	approx. 96
120	1050	approx. 14	230	1050	approx. 50
120	1500	approx. 10	230	1500	approx. 34

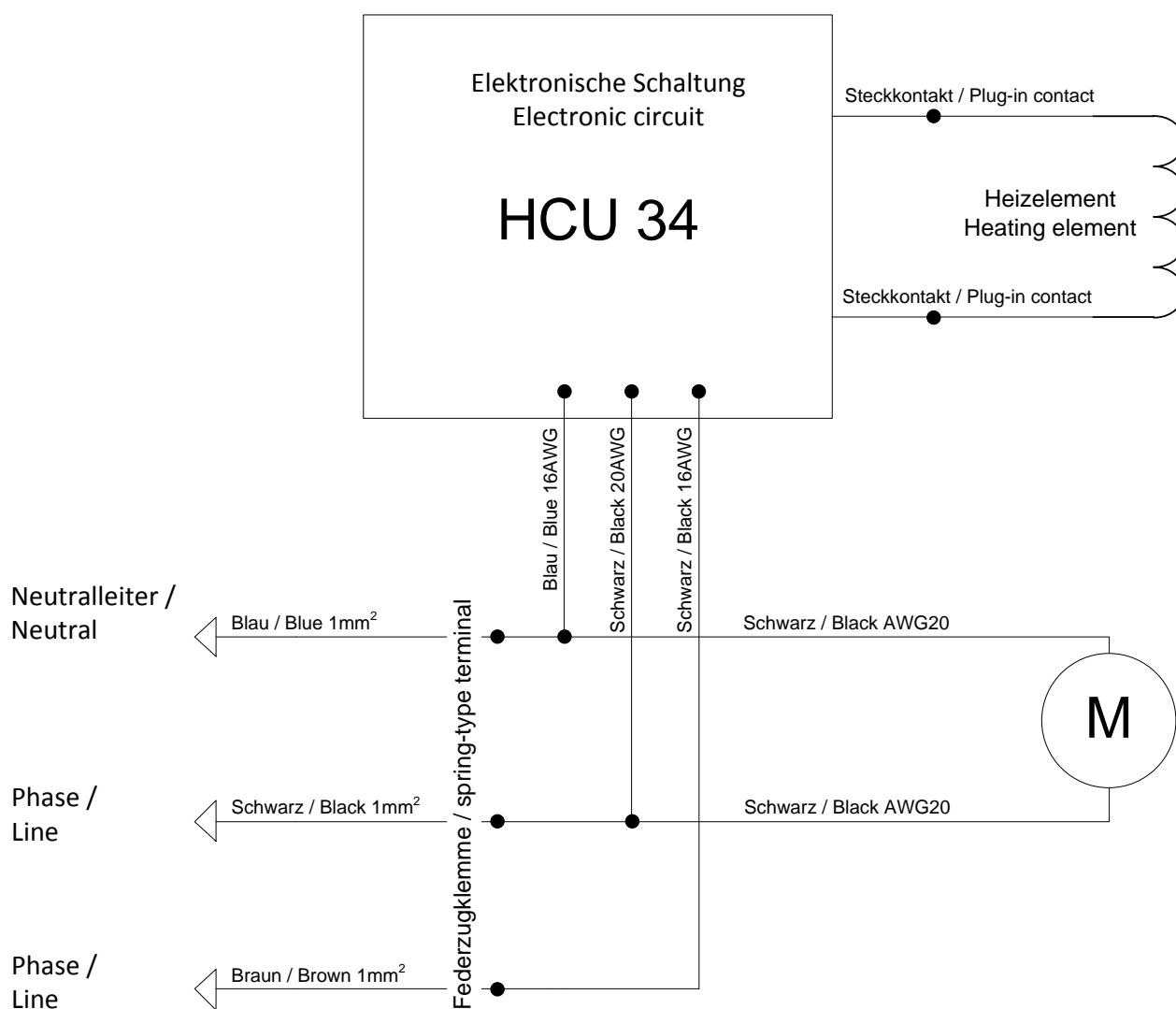
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7 Possible causes of errors

Error	Possible cause	Method of resolution
Tool does not heat, motor runs	Heating element defective	Replace heating element (chapter 6)
	Triac defective	Replace electronic circuit board (chapter 4.6)
	Temperature limit switch defective	
	Photo device defective	
Motor does not run	Carbon brushes got jammed	Extract carbon brushes and re-insert them the same way
	Carbon brushes essentially abraded	Replace carbon brushes (O-motor chapter 5.3.1)
	Commutator defective	Replace motor (O-Motor chapter 5.3.2, F-Motor chapter 5.4.1)
	Bearing defect	
	Flex wires of the motor not correctly connected	Check whether flex wires are connected correctly
Tool does not heat and motor does not run	Power supply cord not correctly plugged in	Check connection of spring-type terminal for power supply
Max. output temperature too low	Heating element with incorrect ratings	Replace heating element (chapter 6)
	Nozzle defective: Photo device receives interfering light	Replace nozzle
	Electronic circuit board defective	Replace electronic circuit board
Max. output temperature too high	Photo device polluted	Clean up photo device
	Heating element with incorrect ratings	Replace heating element (chapter 6)
Excessive noise	Bearing defect	Replace motor (O-motor chapter 5.3.2, F-motor chapter 5.4.1)
Power consumption of motor >100W	Commutator defective: <ul style="list-style-type: none"> Worn out lamella Bluish discoloration Deep grooves (U-shaped) 	Replace motor (O-motor chapter 5.3.2, F-motor chapter 5.4.1)
Unsteady sound performance (jolting, loose contact)	Carbon brushes essentially abraded or blocked	O-motor: Replace carbon brushes (chapter 5.3.1)
		F-motor: Replace motor (chapter 5.4.1)

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8 Wiring diagram



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9 Test procedure for Igniter (protection class II)

Insulation test

- Function check of high voltage tester:
Shorten tips → Signal lamp illuminates and horn sounds
- Connect tool to a short circuit receptacle
- Apply a high voltage of 3000V (release current 30mA) for 1 second between the short circuit receptacle and the heater tube; no flashover or breakdown must occur



Function test



- Connect L (Fan) and N to rated voltage → Motor runs, tool must not heat
- Check power consumption of the motor by using a wattmeter (< 100W)
- Check smooth running of the motor (bearings, commutator) and the impellers (vibrations, particles)
- Connect L (Fan), L (Heat) and N to rated voltage → Tool must heat on maximum heat output (rated power) for a short time
- Block air outlet, respectively reduce it essentially → electronic circuit must cut the power down (protection of the heating element); release air outlet and the heating power will increase
- Disconnect L (Heat) → Motor runs, tool must not heat; let the tool cool down
- Disconnect the tool from rated voltage


Checking completeness

- Check ratings of the nameplate: Type, voltage, current, power (must correspond with the above measurements)
- Check serial number (yymmddxxxx)
 - yy Year of production
 - mm Month of production
 - dd Day of production
 - xxxx Consecutive numbering
- All screws must be tightened
- Check for cleanliness and possible damages
- Shake the tool: Heating element may not strike against the heater tube

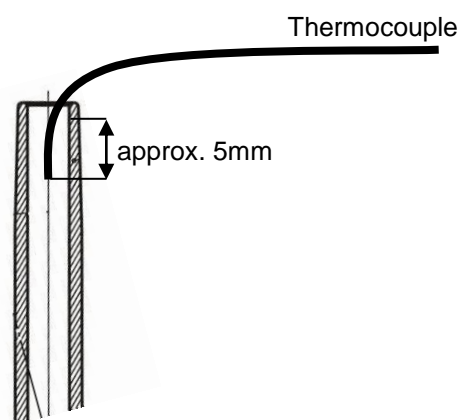
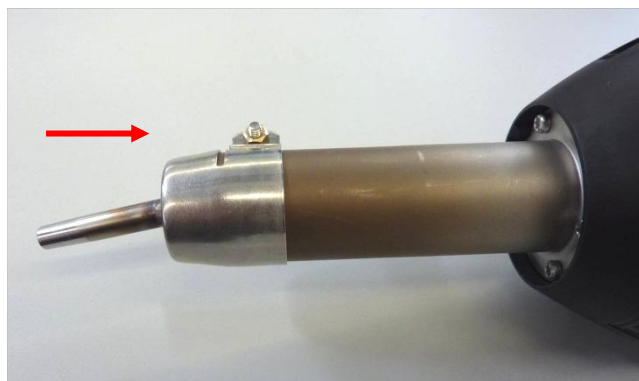
Additional test for repaired tools

Using a round nozzle \varnothing 5mm the maximum temperature must not exceed the value stated in the table.

Voltage [V]	Power [W]	Temperature [°C]
120/230	550	600..670
120/230	1050	590..650
120/230	1500	660..720

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Temperature measurement assembly



Carry out the temperature measurement approx. 5mm inside the nozzle in its center.

Position the tool in such a way that the photo device will not receive any interfering light (light bulb, sunlight, etc.). Clean the photo device up and check the correct ratings (voltage/power) of the heating element if the values stated in the table are exceeded. Check whether the mica tube is assembled and the correct ratings of the heating element, if the minimum values cannot be achieved.

10 Equipment required for Leister repair service

Mobile Equipment

- 1 protective earth conductor tester (e.g. Elabo)
- 1 high voltage tester up to 4000V (e.g. Elabo, Korntal)
- 1 temperature meter with temperature measurement probe (e.g. Fluke, Testo)
- 1 multimeter with following measurement options: (e.g. Fluke)
 - Current
 - Voltage
 - Resistance
 - Continuity (test buzzer)
- 1 rotational speed meter
- 1 water column
- 1 soldering iron
- 1 complete set of tools (screw drivers etc.)

Installed equipment

- ESD-protected working environment
- Transformer, possibly separated into variable and isolating transformer
 - Data: 3 x 0..500V
 - 3 x 30A
- 3 built-in voltmeters (500V)
- 3 built-in ammeters (30A) or wattmeters