

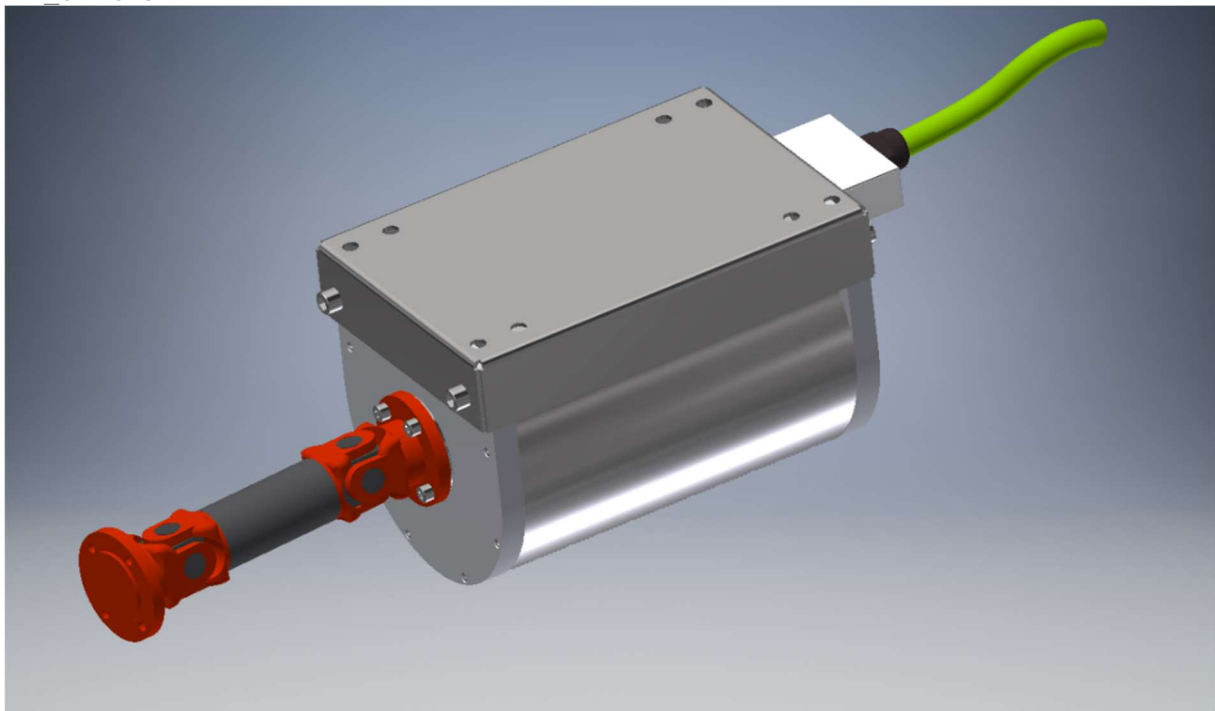
**Di-Tec**

VAPMACHINE MOBILPOWER BUSCLEANER

# MOBILPOWER

## Instructions & Safety information

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**DI-TEC GmbH / S.r.l.**

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## 1. Safety precautions

### Introduction

Before using the generating set, it is necessary to read the Manual of the alternator, and to follow the recommendations below with all the warnings and precautions indicated.

Safe and efficient functioning can be achieved only if the machines are used correctly, according to the instructions provided by the relevant use and maintenance manuals, and safety recommendations.

The electric generator is a component that is mechanically coupled to another machine. It is therefore the responsibility of the person conducting the installation to guarantee that during operation there is an adequate level of protection against the danger of contact with moving parts that remain uncovered and that a dangerous combination arises for people or things.

**Additional protection measures must be implemented and guaranteed by the person responsible for installation where more restrictive protection conditions are required.**



#### DANGER

The rotating electric machines are machines with dangerous parts as they are powered and moving during functioning. Therefore, improper use, the removal of guards and the disconnection of protection devices, the lack of inspections and maintenance can cause death or serious harm to people or things.

The instructions provided therefore report the information to use by qualified staff, which must have:

- Specific technical training and experience.
- Knowledge of technical standards and applicable laws.
- Knowledge of general safety indications at national, local and plant level.
- Capacity to recognize and avoid any possible danger.

The instructions provided must also be integrated with legislative specifications and the technical standards in force and do not replace any plant standard and any additional indications, even non-legislative, issued for safety purposes.

Machinery with special use or with manufacturing variants can differ in detail from those described.

**The safety precautions contained in this paragraph must be closely complied with during maintenance operations to prevent harm to people or things.**

**The electric machine processes must be conducted on the authorization of the safety manager, with the machine stopped.**

### Precautions

- Before measuring insulation resistance of the stator windings, disconnect all the control devices from the terminal box.
- Ensure the windings are completely dry of any trace of the solvents used for cleaning when measuring insulation resistance. The presence of humidity or solvents alter the insulation values.
- To clean, use dry air
- Before restarting the machine after a fault, carefully inspect and analyse the machine to identify the fault.

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## Warnings

- Contact with electric voltage can cause death. Always operate with maximum care in compliance with all the safety rules.
- The operating machine has rotating parts. The rotating parts can cause serious harm to people, always maintain a safe distance. Before intervening on an operating machine, pay attention that no equipment accidentally falls on the rotating parts.
- Do not remove tire terminal board cover before the alternator has come to a complete stop, and before deactivating the starting system of the generating set.
- Do not touch the frame either when the motor is working and just after its stop, as dangerous high temperature areas may be found. Use the individual protection devices.
- Calibration of the voltage regulators (with machine operating on no load condition) must be performed exclusively by qualified staff using an insulated screwdriver and wearing individual protection devices (goggles and protective gloves in particular).
- An earthing fault on the machines can cause death or serious harm to people. Always ensure the presence of earthing connections and their compliance with standards.
- Never use the machine at high rotation speed over its specific features. Non-compliance with this precaution can lead harm to things.
- The machine must be installed in compliance with safety standards. All the rotating parts must be protected with appropriate covers to avoid accidental contact. Never install the machine in surroundings where inflammable vapours or explosive powder is present, unless this is explicitly permitted by machine specifications.
- Prolonged surges can cause excess temperatures in windings and develop dangerous gas. For winding faults, for safety reasons open all the electric connections. Do not go near the machine until the gas enclosed by the fault has dispersed. Before intervening on the machine, wait until it is completely cooled.
- Never use water during a fire. Open all the electric connections and use a CO2 extinguisher.
- The generating set maintenance must be carried out exclusively by competent and qualified personnel. Compliance with these interventions guarantees the electric and mechanical efficiency of the machine over time.
- Never remove and always use the safety guards installed on the machines or the plant (responsibility of plant manager).
- Do not wear loose garments when working near the universal shaft.

## 2. MobilPower description

### Technical data sheet MobilPower 20KVA

MODEL	300206	GENERATOR 20KVA
SET COMPLETE	300300	
1	300206	Generator
1	300219	Drive shaft
1	300207	Mounting bracket
1	300220	Electric cabinet
1	300225	Cooling system complete
1	300210	Ground rod

### Performance details

Performance max. 1h	20 KVA	
Continuous output	16 KVA	
Voltage	400/230V +/- 5%	
Frequency	50Hz	
speed	1500 U/min	
Direction of rotation	L or R	
Cooling system	Water with antifreeze	ca.40%
Temperature protection	Klixon 110°C	Must be connected
Shaft drive	SAE 87- 4-8	
Torque value	130Nm	
Safety insulation	IP67	splash proof
Shunt can be charged with 10kw e.g. Oil pump		

**Mechanical features:** Casing and covers are made of aluminium alloy, which holds out against vibrations. The shaft is made of high-tensile steel. The rotor is particularly sturdy to hold out against the runaway speed of the drive motors. Bearings have lifelong lubrication.



**INSTALLATION AND START UP:** The following start up and control operators should be carried out only by qualified personnel.



Mistakes or oversights concerning earthing may have fatal effects.

## 3. Assembling instructions



Qualified personnel should carry out assembling after reading the manual.

The generator must be mounted professionally and with enough ground clearance under the vehicle. The shaft is mounted between the power take off and the generator. Install the ventilator and the connect for input air, in dry.



The rotating universal shaft is a danger. Do not work in the area of the shaft when they are rotating. Save the vehicle against accidental switching at assembly and maintenance work

The generator and all the parts supplied where carefully checked and tested on their function before delivery and a stress test was subjected.

The installer of the generator is therefore responsible to securing a proper functioning.



**Before each operation** ensure that

- a) the system with **fault current prot. switch** is grounded using the supplied grounding rod.
- b) the system with **insulation guard** is placed with the car body to ground.

If these precautions are not observed, this can cause deadly consequences!



The following **procedure** must be followed when turning on or off:

On every operation must be guaranteed that the frequency and the voltage is correct (50Hz / 400V).

**Switching on:** First, the PTO of the vehicle must be turned on, then the circuit breakers can be turned on at the control box of the MobilPower.

**Switching off:** First, the circuit breakers of the MobilPower must be disabled, then the PTO can be switched off.

**Operating temperature in the generator: max. 110 ° C**

## Usage



**Power cables connections should be carried out by qualified personnel when the machine is completely stopped and the power cable is disconnected.**

Voltage and output frequency: 400V 50Hz



With the system protection **insulation-monitoring**, the **warning value** ( $R_{vw}$ ), and the **alarm value** ( $R_{AL}$ ) **must be adjusted** by qualified personnel, depending on resistance measurement on the vehicle!  
Please read the **operating instructions** of the insulation-monitoring device IL 5880.

## 4. Maintenance and inspection

The MobilPower – alternators will be delivered as fully finished power units, are ready for use greased and balanced. To guarantee the characteristics specified in the documentation the condition upon delivery may not be changed.

Basically, the MobilPower is maintenance free due to the brushless construction. Anyway, we recommend controlling and to maintain certain components of the construction.

The maintenance-cycle of the drive shafts depends particularly on the application conditions.

Above-average load, variations in temperature and the effect of dirt and water render it necessary to observe shorter maintenance intervals to guarantee the safe and efficient application.

We recommend coordinating the inspection intervals of the drive shafts with the ones of other machine parts or with the service intervals of the machine or of the vehicle.



Inspection and maintenance are required at least once a year.

In rare use, the generator must be run at least once a month for a half hour under load.

The following components must be checked during inspection / maintenance:

- Drive shaft: see maintenance instructions
- Check hose connections for leakage
- Check mounts and clamps
- Fan: check

## 5. Drive shaft

### Safety instructions

The operator has to take corresponding safety precautions that will exclude dangers to persons and material by rotating drive shafts or their components.

The user or operator has to observe the legal safety regulations and has to make arrangements before beginning the maintenance-work:

- On working on the drive-shafts the **drive has to be in quiescent condition** – set down engine and secure, so that the drive can't be activated unauthorised by a third person.
- Installation, assembly and maintenance work may be performed only by **competent personnel**.
- When installing and disassembling and when transporting of the drive shafts don't reach into the joints to avoid contusions caused by **tilting flanges or components**. Take suitable measures to avoid that drive-shafts-shares **slide apart unintentionally** and cause injuries or damage.
- Fast mode or/and long shafts should be lined with protection devices like safety shackle and guard and protected against touching or point potential dangers explicitly out.
- Don't place weights onto shafts in standstill, don't place, hang or fasten tools or other objects on the shafts.

To avoid damages or dangers observe the following basic information:

- The permitted **operating speed** may not be exceeded.
- Don't exceed the **permitted angle of deflection**.
- In case of shafts with **length extension** the maximum permitted X-value may not be exceeded. It is recommended to use 1/3 of the complete length extension.
- The drive shaft has to be checked regularly for modified **running noises** and **vibrations** and if necessary to check the changing of the **joint slackness** and of the length extension in standstill.

- The **balance status** of drive shafts may not be changed.
- Don't make modifications or unauthorized repairs without the **written approval** of the manufacturer, as dangers for humans and material result and any claim of warranty becomes void.
- Drive shafts may not be cleaned with **pressure water** or **steam jet** to avoid damage of the seals and to prevent the penetration of water and dirt.
- When cleaning don't use **aggressive cleanser**.
- **Protect plastics-coated profiles** and sliding surfaces against mechanical, thermal and chemical damages. Sliding surfaces for seals have to be covered before colouring.
- The drive shafts may only be installed in fluid or solid media with written approval of the manufacturer.
- **Local heating** of the drive shafts (e.g. flame cleaning of colour residues) must not be carried out to avoid significant changes of the true running characteristics.

## General maintenance information

The drive shafts will be delivered as fully finished power units, are ready for use greased and balanced. To guarantee the characteristics specified in the documentation the condition upon delivery may not be changed. The maintenance-cycle of the drive shafts depends particularly on the application conditions. Above-average load, variations in temperature and the effect of dirt and water render it necessary to observe shorter maintenance intervals to guarantee the safe and efficient application. We recommend coordinating the inspection intervals of the drive shafts with the ones of other machine parts or with the service intervals of the machine or of the vehicle. Inspection and maintenance are required at least once a year



In general, we recommend relubrication of the hinges every 500 hours or every 3 months.

## Lubrication guidelines and Lubricants

The cardan-drive-shafts are normally equipped with three cone-grease-nipples DIN 71412. Thereby every joint will be greased over per grease nipple; the third nipple serves for relubrication of the spline profile. This nipple is omitted for plastic-coated length extensions.

For relubrication of the drive shafts use only **lithium-saponified greases** of consistency class 2 with penetration 265/295 and drop point approx. 180°C. The lubrications may not contain **MoS<sub>2</sub>**-additives.

- Before lubricating clean grease nipples!
- The relubrication of the spline-length-extension should be carried out at compressed length
- 5 min or in the shortest operation status (vehicle loaded). Non-observance may result in excess axial forces.
- Air vent may not be taken off or be replaced by standard grease nipples.
- The lubricant may not be pressed in with excessive pressure or with hard lubrication impact. Max. permitted lubrication pressure: 20 bar.
- The cross units have to be relubricated over the grease nipples in the centre of the cross or on the bottom of a bearing housing of the cross. It must be ensured that grease has been pressed in until it leaks from all four seals of each bearing.
- This is the only way to ensure that all four bearings have received fresh grease.
- Some versions of double drive-shafts are equipped with a grease nipple on the centre piece of the joint, over which both cross joints can be relubricated at the same time through lubrication ducts (central lubrication).
- Drive shafts that are stored more than 6 months have to be lubricated before starting

## Control information

- Fittings and connection flanges have to be checked for firm connection.
- Drive shafts should be checked in operation for abnormal noises or vibrations, to determine the cause and initiate repair work.

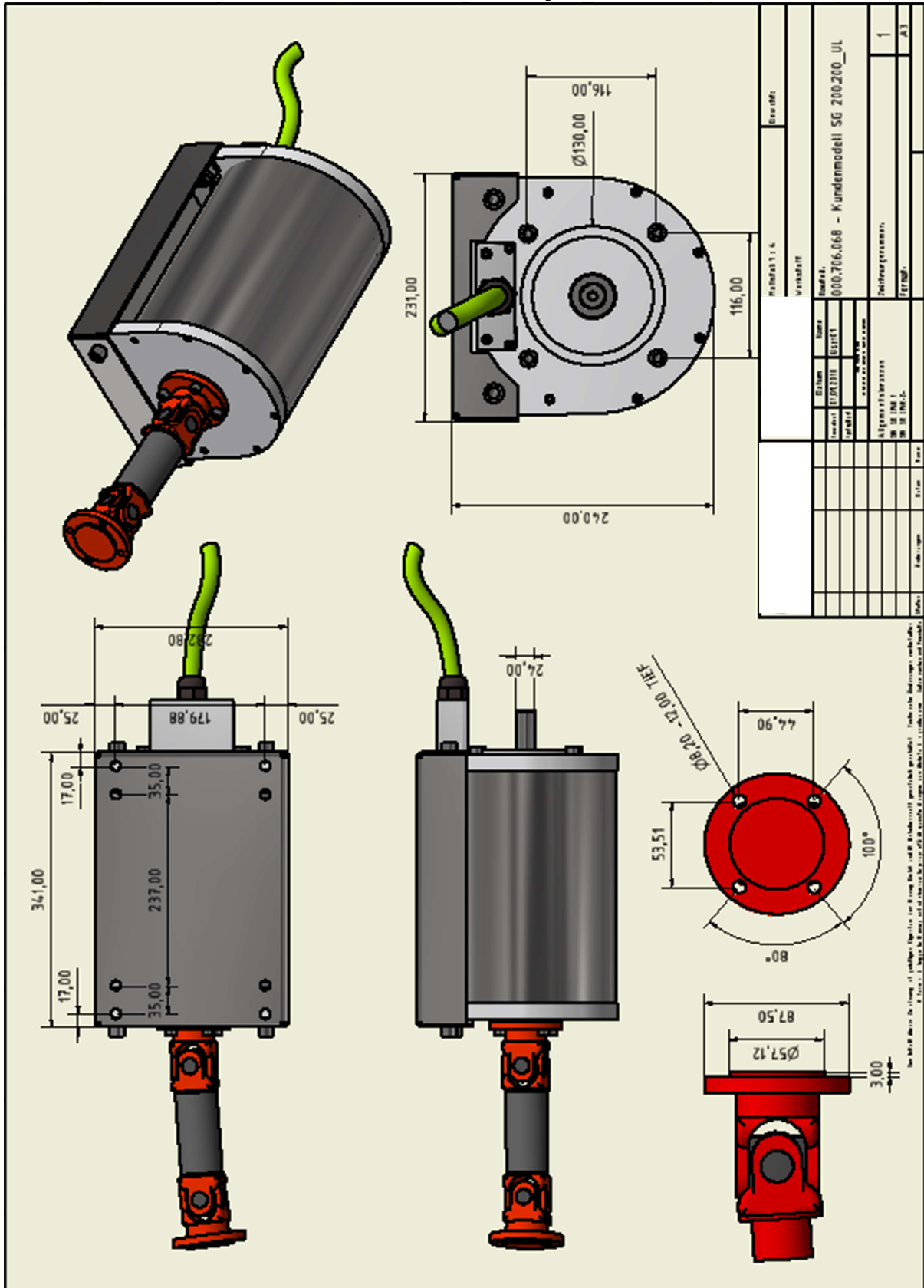


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- Before lubrication, check the driveshaft for looseness in the joints or splines.
  - The connection side of the drive shaft flanges and companion flanges must be cleaned before installation. They must not be greased or oiled.
  - Corrosion inhibitors and paint residues must be thoroughly removed. Possible light transportation damage should be corrected (knicks and scratches).
  - Companion flanges have to be checked for face and OD run out.

## 6. Trouble shooting

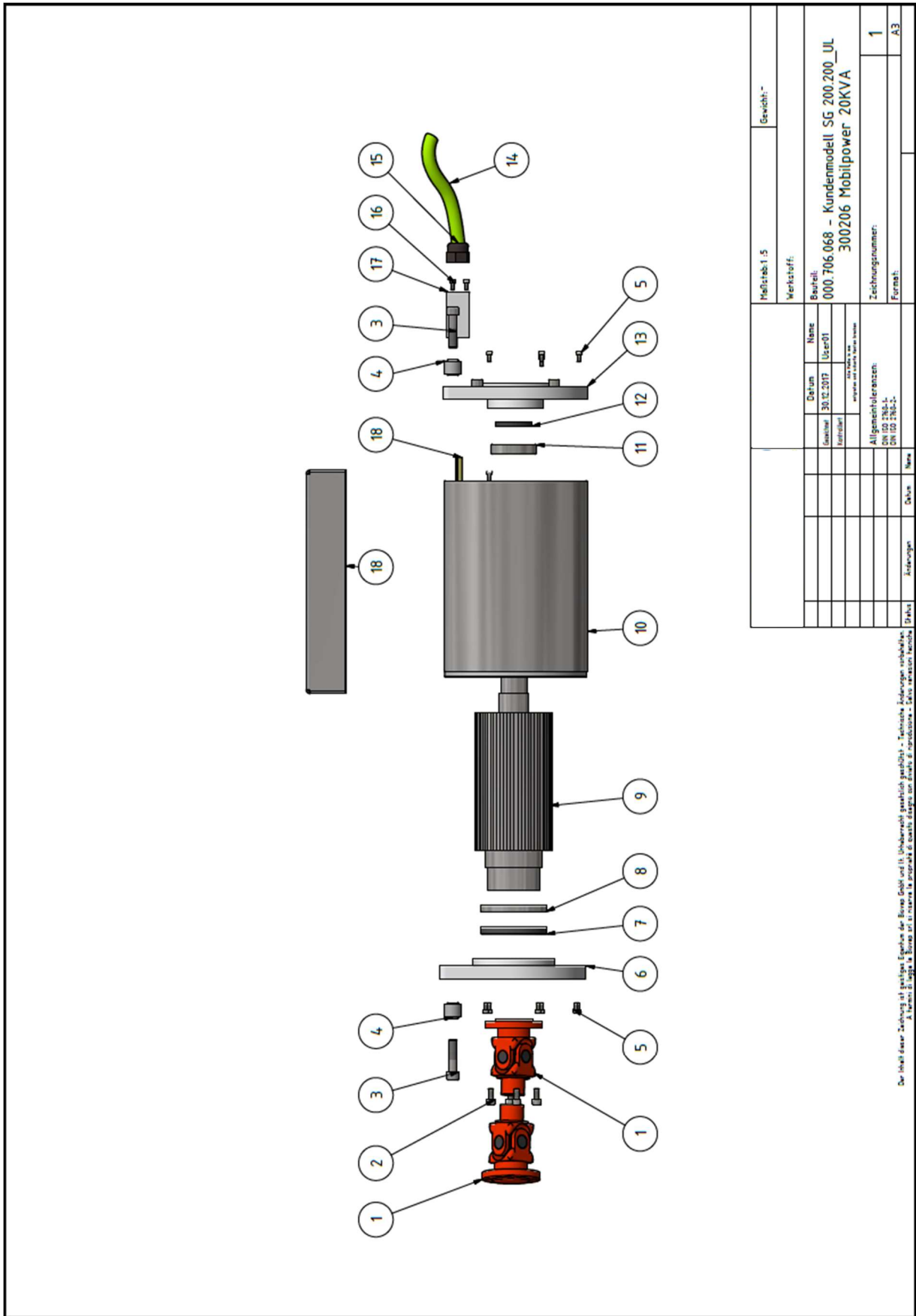
Fault	Causes	Solution
<b>Alternator does not excite</b>	<ol style="list-style-type: none"> <li>1. Connection break</li> <li>2. Insufficient speed</li> <li>3. Windings breakdown</li> <li>4. Broken compound</li> </ol>	<ol style="list-style-type: none"> <li>1. Reset the connection</li> <li>2. Adjust speed regulator of the main engine</li> <li>3. Check winding resistance and replace damaged parts</li> <li>4. Replace compound</li> </ol>
<b>Low no-load voltage</b>	<ol style="list-style-type: none"> <li>1. Low speed</li> <li>2. Winding failure</li> <li>3. Broken compound</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust rotating speed of the main engine</li> <li>2. Check resistance and replace damaged parts</li> <li>3. Replace compound</li> </ol>
<b>Correct no-load voltage but too low with load</b>	<ol style="list-style-type: none"> <li>1. Low speed with load</li> <li>2. Compound is broken</li> <li>3. Load is too high</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust rotating speed of the main engine</li> <li>2. Replace compound</li> <li>3. Reduce the load</li> </ol>
<b>Noisy functioning</b>	<ol style="list-style-type: none"> <li>1. Wrong coupling</li> <li>2. Short circuit in windings or on load</li> <li>3. Faulty bearing</li> </ol>	<ol style="list-style-type: none"> <li>1. Check and correct coupling</li> <li>2. Check windings and loads</li> <li>3. Replace faulty bearing</li> </ol>
<b>Load breaking</b>	<ol style="list-style-type: none"> <li>1. Load is too high</li> <li>2. Defective temperature sensor</li> <li>3. Insufficient cooling</li> <li>4. Broken ventilator</li> <li>5. The insulation guard triggers</li> <li>6. The FI-protection switch triggers</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce the load</li> <li>2. Replace temperature sensor</li> <li>3. Control cooling liquid</li> <li>4. Replace ventilator</li> <li>5. Control the Electric install. + Reset</li> <li>6. Control the Electric install. + Reset</li> </ol>

## 7. Assembly



## 8. Spare parts

Nr.	Units	Cod.	Description	
1	1	300219	Drive shaft SAE/87/-----	length indicated
2	8	300218	M8 x 20 12.9	
3	4	300217	M10 x 50 10.9	
4	4	300216	Rubber buffers	
5	16	300215	M5 x 20 8.8	
6	1	300201	Bearing flange ahead	
7	1	300214	Shaft seal 80x100x10	
8	1	300213	Ball bearing 6916 2RS	
9	1	300205	Rotor	
10	1	300200	Stator with cooling jacket	
11	1	300212	Ball bearings 63008 2RS	
12	1	300211	Shaft seal 40x55x7	
13	1	300202	Bearing flange behind	
14	1	300210	Kabel 5x6mm <sup>2</sup> HO7 / 7mt	3Ph+N+PE
15	1	300209	Cable gland	
16	4	300208	M5 x 100 8.8	
17	1	300221	Cable terminal box	
18	1	300207	Mounting bracket	



Meßstab: 1:5		Gewicht: -	
Werkstoff:			
Bauteil:		000.706.068 - Kundenmodell SG.200.200_UL	
Artikelnr.:		300206 Mobilpower 20KVA	
Datum:		30.12.2017	
Name:		User01	
Gezeichnet:		User01	
Geprüft:		User01	
Allgemeintoleranzen:		ISO 2768-L	
Zeilung:		1	
Form:		A3	

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## 9. Flowchart refrigeration & electrical connection MobilPower 20KVA

Nr.	Cod.	unit	description
1	300222	1	Expansion tank
2	300208	1	cooler
3	300209	1	Pump 230V 50Hz 30W 1L/min
4	300206	1	Mobilpower 20KVA
5	300223	1	Cooling fan 230V 50Hz 20W
6	300224	1	Cooling supply silicone 6x9 10mt

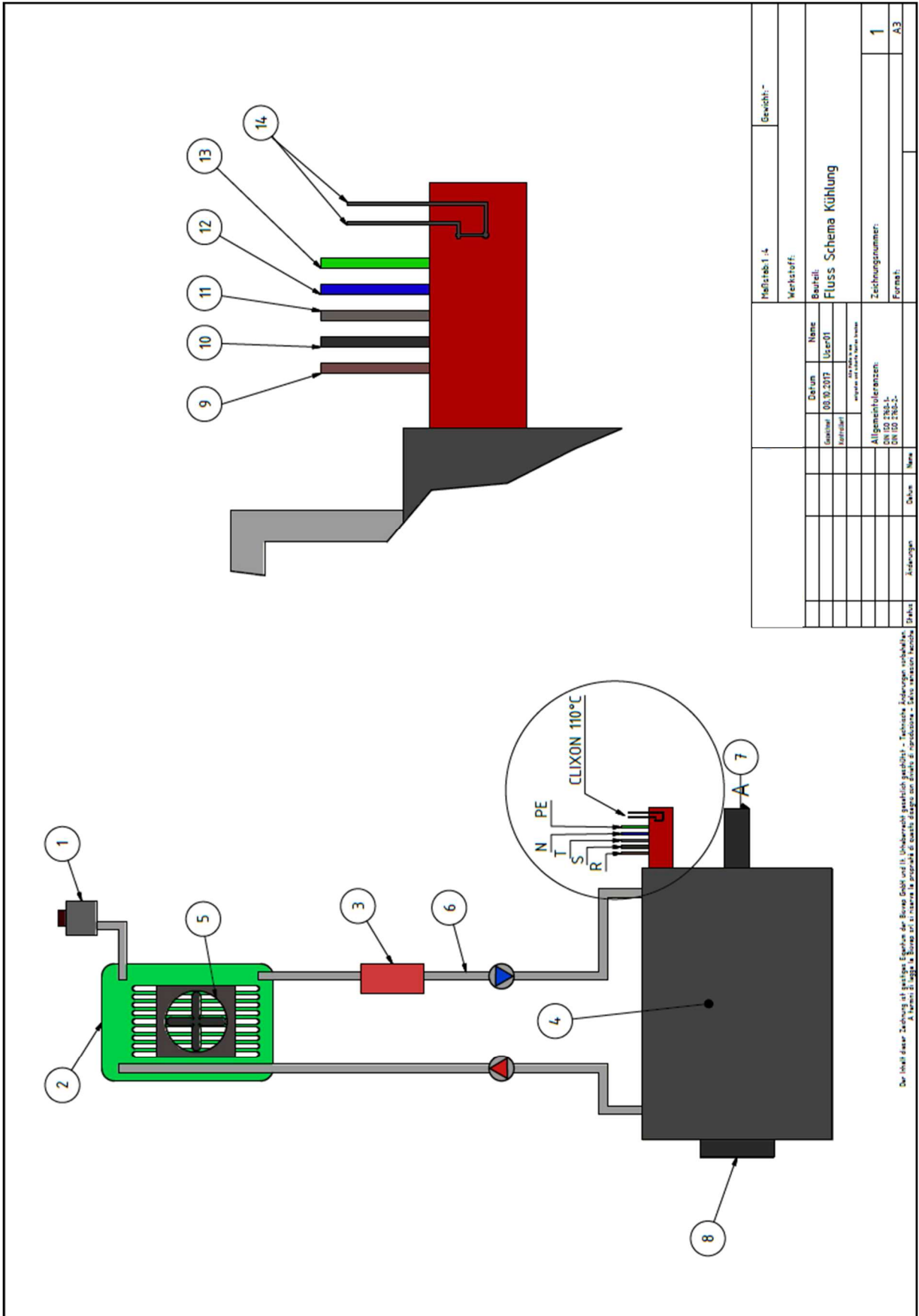
### Drive connection

7			connection hydraulic pump D24
8			connection drive shaft SAE 87/4/8

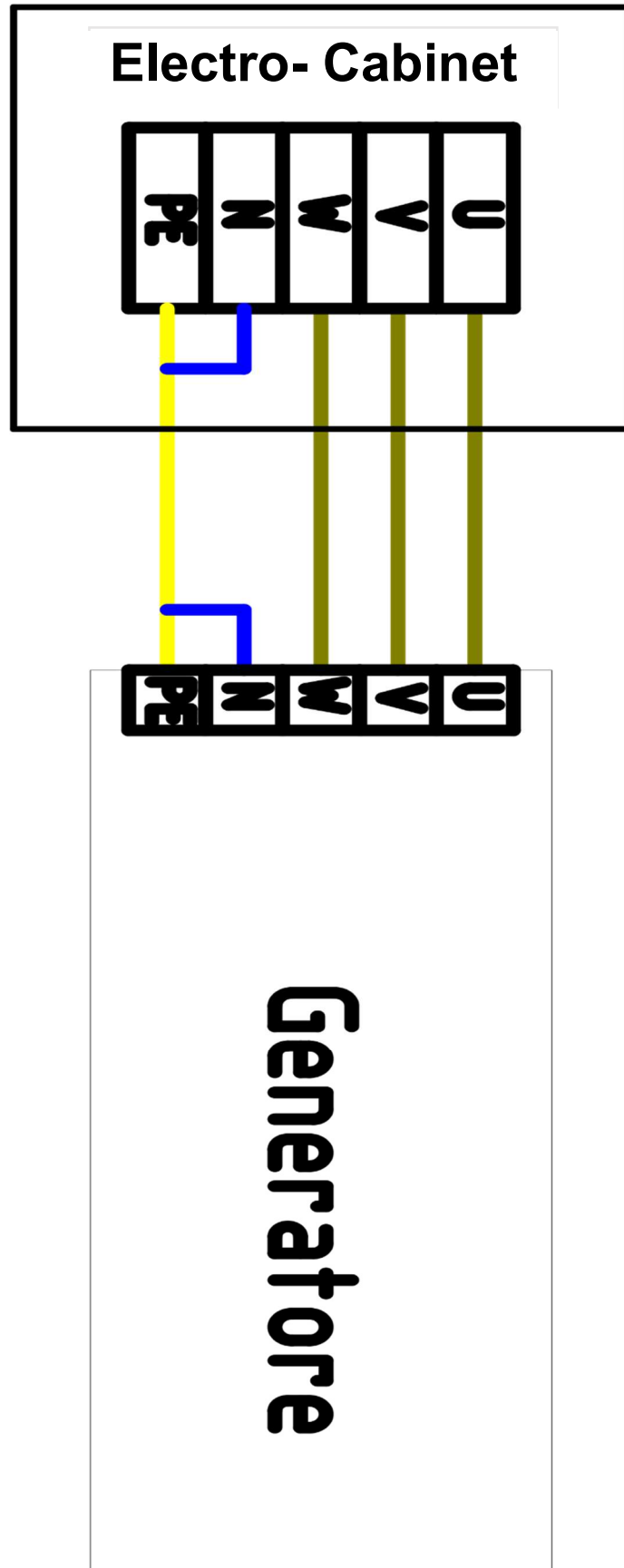
### Electrical connection

9			Brown ( R ) L1
10			Black ( S ) L2
11			Grey ( T ) L3
12			Blue ( N ) neutral conductor
13			Yellow-Green ( PE ) protective conductor
14			Klixon Thermal protection opener 110°C





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 - Keine Verantwortung für die





**FABRIKANTERKLÄRUNG**

Der unterfertigte Martin Dissertori, wohnhaft in IT 39044  
Neumarkt, Brennerstraße 15, technischer Leiter der  
Firma:

DI-TEC GMBH in Auer, IT 39040, Nationalstr. 61  
erklärt:

Der MobilPower erfüllt die EU-Normen und ist im Besitz  
der europäischen CE-Zertifizierung 2004/104 CE  
(Aktualisierungen: 2005/49 CE, 2005/83 CE, 2006/28  
CE

und entspricht auch folgenden Normen:  
98/37 EWG Maschinenrichtlinien  
2006/95/EG elektrische Betriebsmittel

**DICHIARAZIONE DEL FABBRICANTE**

Il sottoscritto Martin Dissertori residente in  
IT 39044 Egna Via Brennero 15, responsabile tecnico  
della ditta:

DI-TEC SRL in Ora, IT 39040, Via nazionale 61  
dichiara:

Il MobilPower è conforme alle norme EU e ha ottenuto  
la certificazione Europea CE 2004/104 CE  
(Aggiornamenti: 2005/49 CE, 2005/83 CE, 2006/28 CE

ed è conforme anche alle seguenti direttive:  
98/37 CEE Direttiva Macchine  
2006/95/EG Direttiva Bassa Tensione

**MANUFACTURER'S DECLARATION**

Martin Dissertori, resident in IT 39044 Egna,  
Via Brennero 15, technical manager of the company:

DI-TEC SRL in IT 39040 Ora, Via nazionale 61  
declares:

MobilPower correspond to all EU regulations and has  
the

European CE-certification 2004/104 CE  
(Updates: 2005/49 CE, 2005/83 CE, 2006/28 CE

and accords also to the following directives:  
98/37 CEE Machines Directive  
2006/95/EG Low Tension Directive



Egna, \_\_\_\_\_



**Der Generator muss vor jeder Inbetriebnahme mithilfe der beigelegten Erdungsstange geerdet werden!**

**L'alternatore deve essere collegato a terra tramite la pertica zincata prima di ogni messa in funzione!**

**The generator must be grounded with the zinced rod before each start-up.**

