

ORIGINAL

Operating Instruction

Compressor unit with Direct Current Motor

KC 100/ 1.3.3.1 12 V

Manufacturer:

Koci Elektromaschinen GbR
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Germany

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1. Introduction

These operating instructions are applicable for the following compressor unit:

KC 100/ 1.3.3.1 12 V

Please read these operating instructions carefully to enable a safe operation.

1.1 Owner's Responsibility

These operating instructions are part of the product. The owner/ operator has to consider on own authority:

- Operating and maintenance staff has access to these operating instructions always.
- All advices and safety regulations have to be fulfilled during shutdown and operating.
- These operating instructions have to be retained for further utilization.

1.2 Copyright

The duplication of text, technical data, drawings or similar is prohibited and demands the agreement of the manufacturer.
Technical changes at the compressor unit stay reserved for the manufacturer.

1.3 General Advices

The company Koci Elektromaschinen GbR determined that requirements regarding to

- spare parts an their delivery
- information for reparation
- questions about technical issues of the compressor

only can be handled with the correct type or machine number. If you did not purchase the compressor directly from the manufacturer please first contact your provider.

Additionally it is prohibited to remove the appliance rating plate.

EC – Declaration of Conformity

We declare the compliance of the product:

Description: compressor unit with direct current motor

Type: KC 100/ 1.3.3.1 12 V

Machine no.: _____

with the following requirements:

EC – Directives: 2006/42/EG – machine-directive
2006/95/EG – low voltage directive
2009/19/EG – electromagnetic compatibility directive
in consideration of electric/ electronic subassemblies for the utilization of back fitting components in motor vehicles

DEKRA certificate number 200614931
2009/19/EG – electromagnetic compatibility directive

HAMANN CONSULT AG sound level gauging

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Kurort Jonsdorf, 2nd January 2010

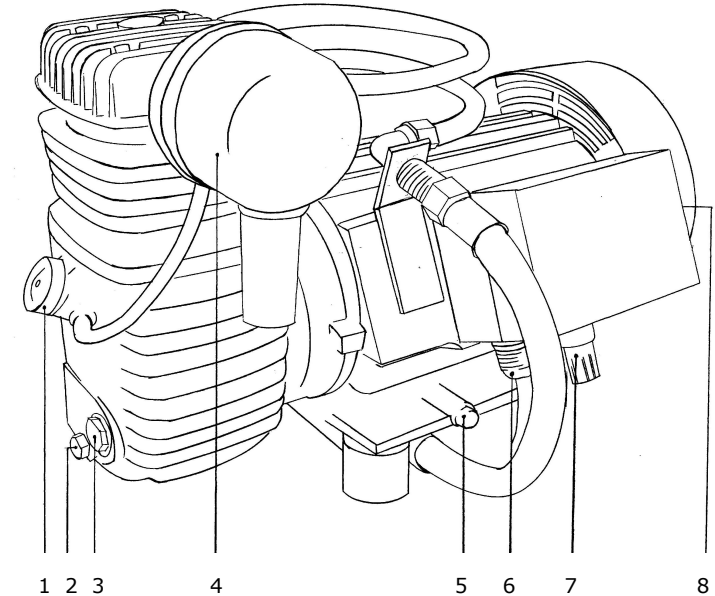
2. Guarantee and Complaints

The legal foundation of our guarantee management is the German Civil Code. But please consider the following regulations:

- Work carried out on our compressors under guarantee is only done in our workshop as a matter of principle because the machines are classified as easy to transport. In case of contact by others any guarantee claim can not be asserted.
- Equally guarantee does not apply, if the compressor has been modified or altered without consultation and approval by our company.
- The guarantee is limited to the compressor only and includes material and manufacturing faults.
- Faults resulting from natural wear and tear, improper use, installation or insufficient maintenance are disregarded. Wear and tear elements are:
 - Solenoid discharge valve
 - Non-return valve
 - Pressure switch
 - Air filter
 - Fuses
 Furthermore the tube cooler is excluded from guarantee in case of traceable use as carry handle, what is not allowed and results destruction of itself.
- We reserve the right to determine how and by whom the repairs are to be made.
- Costs that may arise as an after-effect of the compressor's breakdown will not be accepted by our company.

3. Technical Information

3.1 Components Account



- 1 oil filler neck
- 2 oil drain plug
- 3 oil level eye
- 4 air filter and intake manifold
- 5 cable entry for battery 31 -
- 6 main terminal 30 +
- 7 cable entry
- 8 fine-wire fuse 12 V or 24 V

3.2 Technical Description

The compressor unit with DC motor is a compact, powerful unit in block manner, which is composed of two main parts, the single cylinder – compressor and the DC motor as a drive source. Furthermore, we would like to mention following principal technical details that are integrated into the compressor and contribute to increased safety and functionality.

General area:

- intake silencer with air filter
- tube cooler
- 4 rubber mounts for vibration damping
- compressed air tank/ pressure container (delivery on request)

Field electric machine

- power relay
- suppression equipment
- thermostats
- low voltage protection
- operating voltage independent of the control voltage
- security protection by timing relay against false engaging from the outside of the compressor
- ensure a low control current

An integrated momentum balance in the engine reduces vibration and provides a quiet and low-wear run.

For further noise reduction the compressor units are fixed on four rubber mounts and completed with an intake silencer and an exhaust box on the discharge valve.

3.3 Technical Data

Compressor Unit KC 100/1.3.3.1 12 V

Maximum working pressure:	bar	10
Inlet volume:	l/min	75
Effect. capacity at 6 bar:	l/min	52
Compressor speed:	rpm	1500
Motor rating:	kW	0,5
Power consumption:	A	48
System of protection:	IP	66
Shielded:		yes
Oil filling (SAE 5W 30)	l	0,13
Weight:	kg	20
Noise level:	dB(A)	84
Dimension (LxWxH):	kg	390 x 255 x 320

4. Reference of Utilization

4.1 conventional Utilization

The compressor units with DC motor are designed for versatile applications in which a compressed air supply is needed to permanent disposition.

- automotive, electrical and special vehicle
- agriculture and forestry
- construction branch
- railway
- boat building
- mining
- vehicle service - tyre service

The compressor is provided solely for production of compressed air. Any other use is considered improper. The manufacturer is not responsible for any damages resulting from improper utilization – the risk carries the operator by himself.

Correct use includes also the compliance with the manufacturer's regulations of installation, operating and maintenance.

4.2 unconventional Utilization

The compressor unit must not be used in hazardous areas - it is **not** protected EX.

Without additional air treatment compressed air from oil lubricated compressors is not suitable for the filling of breathing air equipment and use in dentistry or for operations where compressed air comes directly into contact with food.

Compressed air must **never** be directed at people. The concentrated energy causes a life-threatening situation.

5. Commissioning

5.1 Location and Assembly References

- Before the initial start-up the compressor unit must be screwed tightly on its location
- The compressor unit must be protected from dust and dirt to ensure the conventional functionality.
- The connection of the compressor should be chosen in accordance to the guidelines for the installation of air lines with a slight incline towards the boiler.
- Enough cooling should be provided.
- In case of installation in a car, the cooling direction must no work against the airflow.
- The connection of the compressor unit should be done with a flexible hose connection.
- Please use the rubber mounts for placement and storing.
- The device has IP66 (splash-proof). To ensure this, please protect the air supply (flexible hose connection towards air filter) from intensive water contact.
- The environment is not allowed to be humid or wet and no gases or liquids should be places nearby the compressor.

Attention: The compressor unit possesses an under voltage protection and a lock-out feature of about 10 seconds.

5.2 Installation – electrical

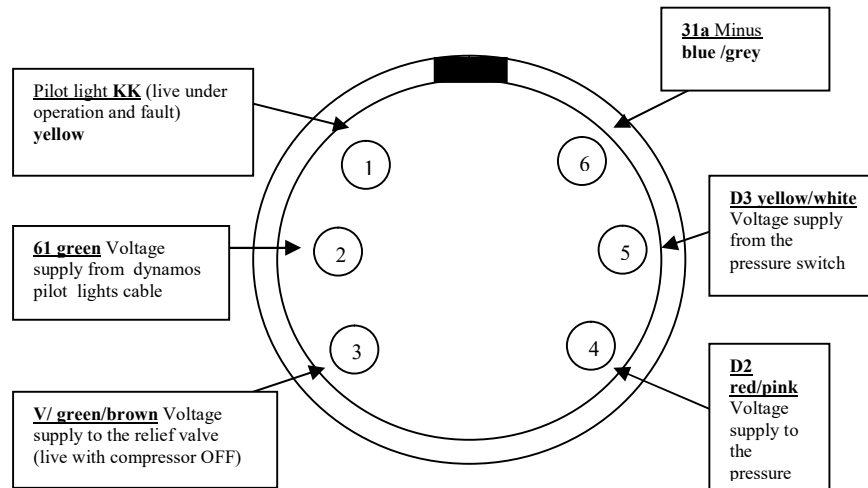
It is the responsibility of the operator/ owner to ensure that the compressor is wired professionally. Any electrical work should be carried out by a competent electrician and installed to meet all applicable local and national codes and regulations.

Therefore please read the following regulations carefully:

- Current, voltage and polarity of the power system must match the information on the appliance rating plate of the motor.
- The fuse regarding to the control lead (plus) should have (61) 2A.
- safety fuse in the lead-in: 80 A
- The cross-sectional area of the lead-in must be chosen in such a way that, when the compressor is operating, the voltage on the terminal board or power relay does not fall below the necessary operating voltage. (12 V)
- Cu wire in mm²:

	Cu wire	Cu wire > 1m length
KC 100/ 1.3.3.1 12 V	10,0	16,0

- The oil level on the compressor block must be checked. The oil level must be within the red circle of the oil level eye.



6. Maintenance

We advise the owner/ operator that the following maintenance guideline has to be kept necessarily.

General reference notes for any maintenance work

Please be sure that the compressor unit is switched off completely. Pressure leading lines have to be exhausted – drain the pressure in the container. Work on power-operated equipment must be carried out only by trained personnel or by specialists.

Compressor block

Check the oil level every six months – the oil level is not allowed to fall below the red circle in the oil level eye.

Attention:

If the oil level has dropped below the lower mark, oil must be refilled necessarily as it is determined by the oil regulations. Under no circumstances should more oil be filled than displayed in the max. oil level of the oil level eye.

- Switch off the compressor.
- Do an oil change every 500 operational hours or at least once per year.
- Unscrew the oil drainage screw and drain off all the oil in warm condition.
- Collect the oil in a receptacle and dispose of it correctly.
- The casing should be rinsed out with a small amount of new oil and then fill up with new oil.
- If due to unfavourable operating conditions water is discovered in the oil – this can be indentified by a milky coloration in the oil level eye – the oil must be changed immediately.
- Please consider using a sieve or the original can when refilling the oil.

Oil regulation: HD – Oil SAE 5 W30

Cylinder head and valves

- The cylinder head is to be unscrewed after 3.000 operating hours, the function of the valves is to be checked and please clean the plate of the valve.
- Complete valve plates and/ or cylinder heads can be delivered from store. The compressor should be rebuilt after about 10.000 operating hours

Clean and replace air filter

- The changeable insert in the air filter cap and the filter itself are made of foam material.
- The filter should be replaced if a notable layer of dust is discovered on the filter or after 500 operating hours at least.

Maintenance of the bearings and carbon brushes of the DC motor

- The motor bearings are permanently lubricated and do not require re-lubrication.
- Under normal operating conditions, with system and surrounding temperatures of about 25 °C, the bearings should be replaced by new ones after about 10.000 hours of operation (rebuild).
- Increased wear of the bearings is to be expected if the surrounding temperature is much higher, approx. 40 °C, whereby changing the bearings is recommended after about 5.000 operating hours.
- The bearings should be replaced after three years regardless of the number of operating hours.
- The carbon brushes are to be replaced as needed by the manufacturer or a specialist.
- If the commutator has shrunk considerably or if it is no longer round, it is necessary to rework this by the manufacturer or a specialist.

Torque specification

Please consider the following torque specifications during maintenance or assembly of replacement parts:

- | | | |
|--------------------------------|----|-------|
| ▪ E-connections KC 100 | M5 | 3 Nm |
| ▪ E-connections KC 200 | M8 | 10 Nm |
| ▪ oil drain plug | | 15 Nm |
| ▪ oil level eye | | 2 Nm |
| ▪ cylinder head and cylinder | M6 | 15 Nm |
| ▪ bearing shield and crankcase | M5 | 5 Nm |
| ▪ blower wheel | M6 | 3 Nm |
| ▪ rubber mount | | 20 Nm |
| ▪ cam plate | M8 | 30 Nm |
| ▪ lid beneath | M5 | 2 Nm |

7. Troubleshooting

Before you start working on the compressor please be sure it is totally turned off and secured against re-insetting. Please do not forget to check that there is no remaining voltage.

Only qualified staff is allowed to work on the compressor's electrical system.

Where is the fault?

Fault and Remedy

Operating voltage to contact terminal 30 relay (+), D+ (61) no control voltage – (31), control light is off

Pre-fuse is defective: Change fuse no voltage from the alternator: Check alternator, properly not connected. Check electrical system of the vehicle

Operating voltage to contact terminal 30 relay (+), No operating voltage to Plug D (Fuse F1) – (31), control light is off

Check Fuse F1: Change fuse, Bend contacts in fuse holder. no voltage from alternator, properly not connected, Check electrical system of the vehicle

Motor sometimes switches off but can be back on after a short while.

If motor doesn't run: please send in for repair
 Loose contact: Check fault on controls switched
 Automatic reconnection lock has been triggered: Check electrical system of the vehicle. Switch off control switch and switch on again after c. 10 seconds.

Compressor running too slowly, not enough power, check operating voltage at contact terminal 30 relay (+), control light is on

Operating voltage at terminal 30 relay (+) contacts terminal 31 (-) at motor
 If voltage drop at the cable, use cable of greater sectional diameter. Check electrical system on the vehicle

Compressor does not work at all.

Main fuse defect. Please first investigate the reason before replacing the fuse.

If there are any faults not appearing in this table or that you can not repair, please do not hesitate to contact our company.

8. Safety Regulations – Environment Protection

Explanation of the compressor's danger sign:



Caution:
**Hot Surface – please touch only
with safety gloves!**

8.1 Safety regulations

The European standards provide the most important regulation that the owner/ operator has to care about.

Furthermore we recommend considering the following:

- Be sure that no flames or sparks appear in the surroundings of the compressor.
- It is not allowed to switch on the compressor without the fan cover as protection from rotating parts. The fan cover has to be screwed tightly after any maintenance or reparation.
- Ensure that the compressor only intakes clean air without any detrimental mixture.
- Never use the tube cooler as carry handle because of possible damage (breakage) increasing the loss of performance and possibility of injuries.
- During operation of the compressor, the tube cooler's surface is very hot – only touch with safety gloves.

8.2 Environment Protection

Replacement parts, operating and auxiliary materials are to be disposed of according to the corresponding environmental regulations.

9. Placing out of Operation

9.1 Storing

Please consider the following advices:

- The storage should be dry to avoid corrosion.
- Temperatures under 0 °C could damage the compressor, if water would remain in the inside.

9.2 Transport

Please avoid destruction of the compressor using these advices:

- During the transport the compressor must be standing.
- It must be screwed tightly on the four rubber mounts.
- Use a wood pallet to give more stability.
- Never let oil drain out of the compressor during the transport.

10. Replacement Parts