OPERATION MANUAL

BATTERY CHARGER

DFC-10P
DFC-50P
DFC-450P
DFC-650P
1: INTRODUCTION

This machine is designed to charge lead-acid storage batteries suitable for commercial and passenger vehicles, motorcycles, boats, etc.

The user should insure that the charger is suitable to charge the battery requiring charging and that the charger is set to the correct voltage. Depending on the model charger this may be 6v, 12v or 24v.

All RÖHR battery chargers have temperature protection that will activate in the event of the machine reaching maximum operating limit. Should the output current exceed the maximum operating limit, the fuse on the panel is likely to blow, this would need replacing before further use.

2: TECHNICAL DATA

<table>
<thead>
<tr>
<th>MODEL</th>
<th>INPUT VOLTAGE (V)</th>
<th>OUTPUT VOLTAGE (V)</th>
<th>CHARGING CURRENT (A)</th>
<th>MAX CHARGING CURRENT (A)</th>
<th>FUNCTION</th>
<th>STARTING CURRENT (A)</th>
<th>CHARGING INPUT POWER (W)</th>
<th>STARTING INPUT POWER (W)</th>
<th>BATTERY CAPACITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFC-10P</td>
<td>230</td>
<td>6/12</td>
<td>5/8</td>
<td>10</td>
<td>Charge</td>
<td>N/A</td>
<td>250</td>
<td>N/A</td>
<td>20-150ah</td>
</tr>
<tr>
<td>DFC-50P</td>
<td>230</td>
<td>12/24</td>
<td>20/30</td>
<td>45</td>
<td>Charge/Start</td>
<td>130</td>
<td>950</td>
<td>6400</td>
<td>50-350ah</td>
</tr>
<tr>
<td>DFC-450P</td>
<td>230</td>
<td>12/24</td>
<td>40/50</td>
<td>70</td>
<td>Charge/Start</td>
<td>300</td>
<td>1200</td>
<td>8500</td>
<td>100-700ah</td>
</tr>
<tr>
<td>DFC-650P</td>
<td>230</td>
<td>12/24</td>
<td>60/70</td>
<td>100</td>
<td>Charge/Start</td>
<td>480</td>
<td>2200</td>
<td>12000</td>
<td>120-1000ah</td>
</tr>
</tbody>
</table>
2: Safety Guidelines

1. Please read and understand these instructions carefully before operating the device! Please observe the safety guidelines carefully in order to prevent damages through improper use!
2. Please keep this manual available for future reference. If this device is passed on to third parties, the manual must be passed on with it.
3. Only use this device indoors and for its intended use.
4. We do not offer any warranty for damages resulting from improper use or incorrect operation.
5. Before the first use, please check whether the main voltage type and current comply with the indicated data on the type plate.
6. This device is not intended to be used by persons (including children) with limited physical, sensory or mental aptitude or lack of experience and/or knowledge, unless they are supervised by a person responsible for their safety or have received instruction from this person as to how the device is used.
7. ELECTRIC SHOCK HAZARD! Do not attempt to repair the unit yourself. In case of device failures, repairs must be done by qualified experts.
8. Please check main plug and power cable regularly. If the power cable for this device is damaged, it has to be replaced by the manufacturer or its customer service or another qualified person in order to prevent hazards.
9. Prevent damages to the power cable by avoiding squeezing or bending it or rubbing it on sharp edges. Also keep the power cable away from hot surfaces and open flames.
10. ATTENTION! DANGER TO LIFE! While cleaning, never immerse the device in water or other liquids.
11. Under no circumstances should the housing be opened.
12. It is forbidden to use the device if damaged or defective.
13. Do not charge disposable batteries!
14. Do not charge faulty or damaged batteries.
15. Do not charge a frozen battery.
16. Protect the device against the elements, especially rainfall. Use the device in well ventilated premises only.
17. Never leave the device connected to a power supply when not in use.
18. When charging batteries emit gasses which might be explosive. Avoid contact with sparks and fire.
19. Do not use the device in potentially explosive areas.
20. Make sure the battery charger is disconnected from a power source when connecting leads to a battery.
21. Never place a battery right under or on top of the battery charger. Place the battery charger as far away from the battery as possible. The battery charger may be a source of sparks or generate an electric arc.
22. Never place the battery charger under the bonnet.
23. Models with wheels should be stored upright.
24. ATTENTION: always make sure the car and battery manufacturers permit the use of a battery charger jump start function to start the engine!
3. Battery Monitoring and Maintenance

The battery MUST be disconnected from the vehicle’s electric system before connecting the battery to the battery charger. Failure to do so may extensively damage the vehicle and or chargers electric systems. Please read the instructions in the manuals supplied with your vehicle, radio, car phone, etc.
Charger Functions and Controls

All Röhr Battery Chargers have advanced safety features built-in with Surge Protection and accessible Fuses.

Charger functions may vary between models.

For details on Battery Charging Procedure, please see page 5.

Changing Voltage:
Your Charger will have either a switch or terminals to swap between out voltages.
For models with a switch - flick between the desired output voltage dependant to your battery
For models with terminals - Negative Wire is hard wired and cannot be swapped. Swap between Positive 12/24V output terminal to match your batteries requirements.

Variable Amp (A) output:
For models with variable dial - Turn the dial clock-wise to increase the Amp output to match the current of your battery. Higher numbers indicate a higher Ampage. (See Fig.2)
For models with variable switch - flick the switch to a higher number to set higher Ampage output. This may be illustrated by a MIN and MAX symbol. (See fig.1)

MIN/MAX Modes:
The operation of the charger is user-friendly with a two-level switch: MIN for normally discharged batteries, MAX for deep discharged batteries at the lower limit.

Charge/Start Function:
For models with Start Function - You can choose between two main operation modes:

- Primary function is used for battery charging

- Secondary Feature is used to start motors directly
Fig.1 - Panel Controls for the DFC-450P

1 - Ammeter - Indicated Current/Load
2 - ‘1-2’ Function - Adjusts Ampere Output
3 - MIN MAX - Changes Mode to charge normal/fully discharged batteries
4 - Charging/Starting Mode - Choose between these two modes dependant on intended purpose.
5 - ON / OFF - Toggles Power to the unit.
6 - 12 Volt Positive Terminal
7 - 24 Volt Positive Terminal
8 - Negative Terminal
9 - Fuse Housing

Fig.2 - Panel Controls for the DFC-650P

1 - LCD Ammeter - Indicated Current/Load
2 - Power Indicator Light
3 - Operation Dial - Turn Left for Start Function. Right for charging currents. Higher numbers indicate higher Ampere output
4 - Timer - Used to control charging duration
5 - 12 Volt Positive Terminal
6 - 24 Volt Positive Terminal
7 - Negative Terminal
8 - Fuse Housing
To charge the battery, proceed as follows:

Figure 1: Remove the battery filling plugs (if fitted).
Figure 2: Check the level of acid in your battery. Top up with distilled water if necessary.
Caution! Battery acid is corrosive, wash off acid splashes immediately and thoroughly with plenty of water and consult a doctor if necessary.
Danger! Hazardous electrolytic gas may arise during charging. It is imperative, therefore, to avoid sparks and open flames during charging. Beware of the risk of explosion!
Figure 3: First connect the red charging lead to the positive pole of the battery.
Figure 4: Connect the black charging lead to the negative pole of the battery.
Figure 5: Once the battery is connected to the charger you can connect the charger to a 230V/50Hz socket-outlet. Do not connect the charger to a socket-outlet with any other supply voltage.
Figure 6: The only way to determine the exact condition of the battery (level of charge) is to measure the acid density with an acidimeter.
Please note: gases are released during the charging Operation (bubbling on the surface of the battery liquid).
Make sure the room is well ventilated.
Acid density values (kg/at 20℃)
1.28 battery charged
1.21 battery half charged
1.16 battery empty
Figure 7: Switch off and remove the power plug from the socket-outlet.
Figure 8: Disconnect the black charging lead from the negative pole of the battery.
Figure 9: Disconnect the Red charging lead from the positive pole of the battery.
Figure 10: Screw or press the battery plugs back in into position.

4 Overload protection
Figure 11: The flat fuse provides protection from polarity reversal and short-circuiting. A defective fuse has to be replaced with an identical fuse.
An automatic circuit-breaker interrupts the charging in the event of thermal overloading.
The circuit-breaker switches on again automatically after a cooling interval.

4. Servicing and cleaning the battery and charger
a) Make sure that your battery is fitted securely in the vehicle.
b) Check that the battery is properly connected to the vehicle’s electric system after charging.
c) Keep the battery clean and dry. Apply a little acid-free and acid-resistant grease (Vaseline) to the terminals.
d) The level of acid in non-maintenance-free batteries should be checked about every 4 weeks. Top up with distilled water as necessary.
e) Keep the charger in a dry room. Remove any signs of corrosion from the charging terminals.
f) Should the battery charger develop a function failure, consult a specialist or contact the supplier for advice and or repair.
We hereby declare that the machine described below complies with the relevant basic safety and health requirements of the EU Directives, both in its basic design and construction as well as in the version put into circulation by us. This declaration shall cease to be valid if the machine is modified without our prior approval.

The undersigned: Michael S McQuaide
as authorised by: Union Mart Ltd
Declares that
Description: Battery Charger
Conforms to the following directives and standards:
• Low Voltage Directive 2014/35/EU
• Electromagnetic Compatibility 2014/30/EU
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And Complies with the provisions of the following standards:
--
Notified body: I S E T SRL
The technical documentation is kept by: Union Mart Ltd
Date: 14/03/2018
Signed:

[Signature]

Michael S McQuaide
Managing Director
Name and address of the manufacturer:
Union Mart Ltd, Company No. 8384155. Registered address: Unit C3,
Deacon Trading Estate, Chicken Hall Ln, Eastleigh SO50 6RS, United Kingdom.