EPENDABLE POWER FORA ORLDONTHEMOVE,

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FOR INFORMATION CONCERNING OUR APPOINTED AGENTS IN AUSTRIA, FINLAND, IRELAND, NORWAY, SWEDEN AND OUR FACILITIES IN OTHER OVERSEAS MARKETS PLEASE CONTACT OUR EXPORT DEPARTMENT

FOR FURTHER INFORMATION ON FULL RANGE OF CHLORIDE MOTIVE POWER PRODUCTS ANO SERVICES ASK FOR THE FOLLOWING LEAFLETS

Subject	Publication Reference
BATTERIES/CHARGERS/ANCILLARIES	
Battery Selection Guide	MP
Battery Rental Package	MP72
Classic Batteries	MP50
Classic 15 Batteries	MP61
Classic 25 Batteries	MP52
Classic SO Batteries	MP53
Trekker Monobloc and Compact Batteries	МРИ
Maintenance Free Batteries	MP81
Batteries and Chargers for AGV's	MP56
Batteries and Chargers for Cleaning	MP59
Dryfit	MP64
Toppmg-Up Equipment	MP55
Aquajet	MP203
21 Series Charger Range	MP300
21 CM Chargers	MP301
21 Superchargers	MP302
21 Overnight Chargers	MP3O3
Low Maintenance System	MP304
21 MF Chargers	MP
Classic Chargers	MP
SERVICE	MP65

CHLORIDE MOTIVE POWER

Batteries • Chargers - Service

CENTRAL SALES OFFICE AND EXPORT DEPARTMENT

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TELEPHONE: 01204 64111. FAX: 01204 62981. TELEX: 635759 CHLORH G

\C COMPAGNIE EUROPEENNE D'ACCUMULATEURS

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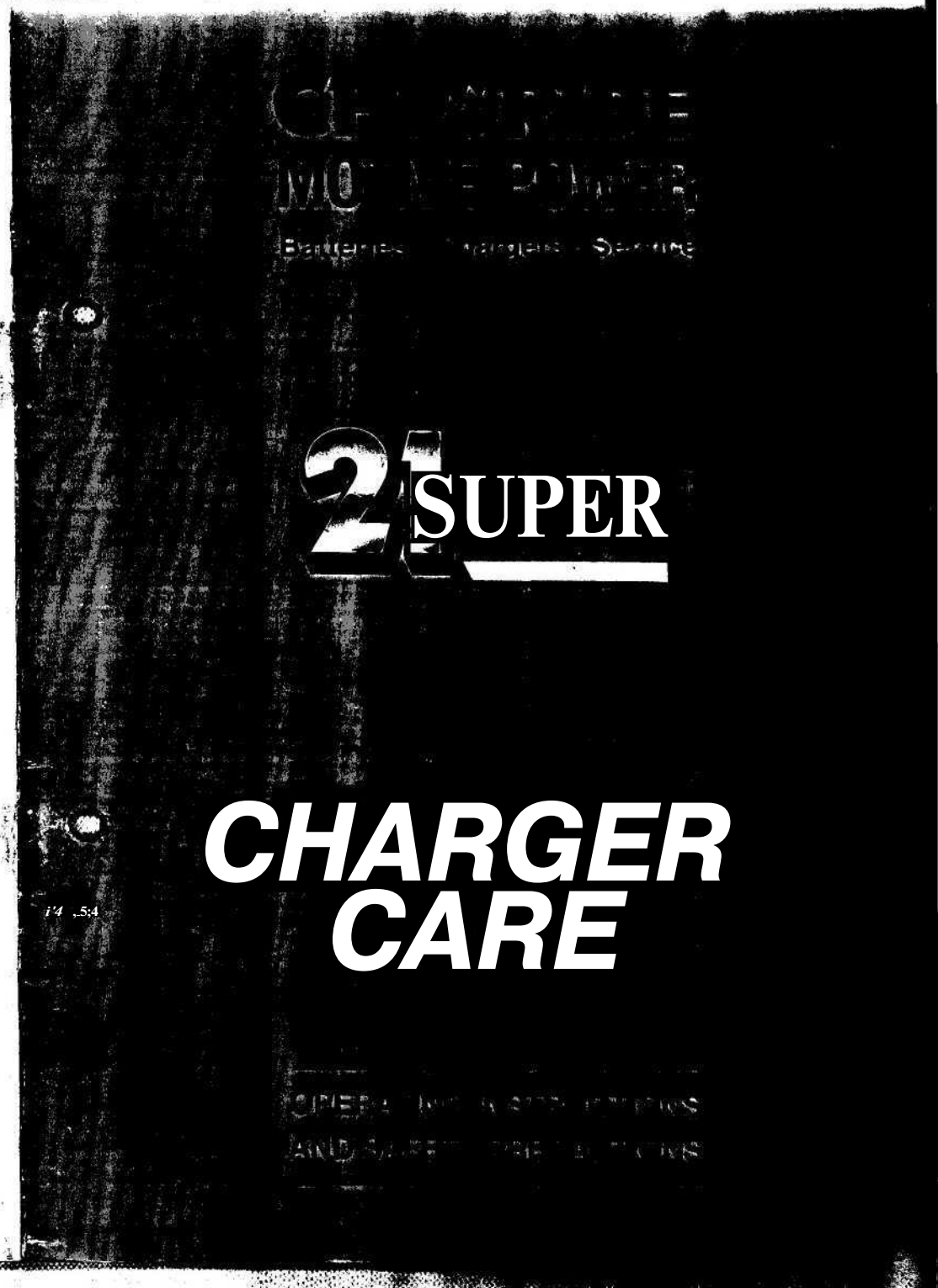


INSTALLATION

1. Installation shall only be carried out by suitably qualified personnel and in accordance with local and national wiring regulations.
2. 4 hand operated supply disconnection device shall allow the whole charger to be disconnected from the power suppjy for maintenance or repair work.
3. The power transformer in the charger will have a relatively highjin-rush current due to magnetisation of the core. This in-rush current lasts only a fraction of a second, but may be sufficient to trip certain distribution circuit breakers, particularly those having magnetic short circuit trips. Because of this it is necessary to use a distribution circuit breaker having thermal but not magnetic trips (must be Glass 3 or 4) or H.R.C. fuses.
   This should be borne in mind when choosing appropriate equipment.
4. Choose a cool, dry, well ventilated location away from corrosive fumes and steamy atmospheres.
5. Remove all materials used for packing and make a routine ® inspection to check for any obvious damage which might have occurred during transit.
6. Check by reference to the charger rating plate that the equipment is suitable for the intended mains supply and the battery to be charged.
7. Battery lead lengths should not be altered without prior consultation with Service personnel.

INSTALLATION

Example

A 21 Super 24V 45 is suitable for connection to a single phar supply and for charging a lead acid battery of 24 volts at an initial current of 45 amps.

8. Position the charger with a minimum clearance at the sides and rear of 100mm (4 inches). Allow a minimum overhead clearance of 300mm (12 inches).
9. Ensure that the instrument panel is fully accessible.
10. Check that the charging connector polarity is correct an that it matches the polarity of the connector used for th(battery. The charger output positive should connectto t battery positive and the charger output negative should connect to the battery negative. Polarity reversal shall require the visit of the service Engineer to replace the C line fuse.
11. The Table on page 4 details the correct type of semi; conductor fuse to be fitte.d to the charger in relation to i' output current. It is extremely important that these ratin are not exceeded. Note: Fuse ratings given are not applicable to TR rated chargers.
12. The mains current required by the charger is stipulated the equipment rating plate. The table on page 5 gives guidance as to the current rating of mains supply, i cables.Unless other approved methods are used to.ea the equipment, the earth terminal adjacent to the input cable terminals should be connected to earth via a conductor of appropriate rating shown in the table on page 5.

FUSE SELECTION TABLES

Single Phase		Three Phase	
Amps(D.C)	0/P Fuse	Amps (D.C.)	0/P Fuse
15	LET 35	15	LET 35
20	LET 35	20	LET 35
25	LET 50	25	LET 35
30	LET 50	30	LET 35
35	LET 63	35	LET 50
40	LET 63	40	LET 50
45	LET 80	45	LET 50
50	LET 80	50	LET 50
55	LET100	55	LET 63
60	LET 100	60	LET 63
65	LET 125	65	LET 80
70	LET 125	70	LET 80
75	LET 125	75	LET 80
80	LET 125	80	LET 80
85	LET 160	85	LET 100
90	LET 160	90	LET 100
95	LET 160	95	LET 100
100	LET 160	100	LET 100
110	LET 180	11.0	LET 125
120	LET 180	120	LET 125
изо	LMT200	130	LET 160
140	LMT200	140	LET 160
150	LMT250	150	LET 160
160	LMT250	160	LET 160
170	LMT315	170	LMT200
180	LMT315	180	LMT200
190	LMT315	190	LMT200
200	LMT315	200	LMT200

INSTALLATION

Multicore PVC Insulated Cables Non-armoured Cross Section Sq. mm	Input Current (Amps)		Min. Earth Conductor Sq. mm
	Single Phase	Three Phase	
1.0	13.0	11.5	1.0
1.5	16.5	15.0	1.5
2.5	23.0	20.0	2.5
4.0	30.0	27.0	4.0
6.0	38.0	34.0	6.0
10.0	52.0	46.0	10.0
16.0	69.0	62.0	16.0
25.0	90.0	80.0	16.0
35.0	111.0	99.0	16.0

(Extract from 16th ecШюд4ЕЕ wiring regulations. For other cable t consult the appropriate table or obtain data from your supplie.

On single phase chargers, remove the door panel and transfc stud terminal safety cover. With reference to Figure 1 .connec transformer stud terminal to correspond with the nominal vak the mains voltage, i.e. 220V or 240V. The correct mains tapp must also be selected on the smaller P.C.B. mounted auxiliar transformers found on the micro controller and thyristor boarc Fig. 2.

(Note: Neutral termination, auxiliary wire no. 2 must be **the** uppermost connection).

On three phase chargers,remove the door panel and transfo; stud terminal cover. With reference to Figure 3, connect **the** transformer stud terminals to correspond with the nominal va the mains voltage, i.e. 380V or 415V. This equipment is **not** sensitive to phase rotation.

FIGURED f
Single Phase Charger
Plains termination point and 220V/240V tapping selection

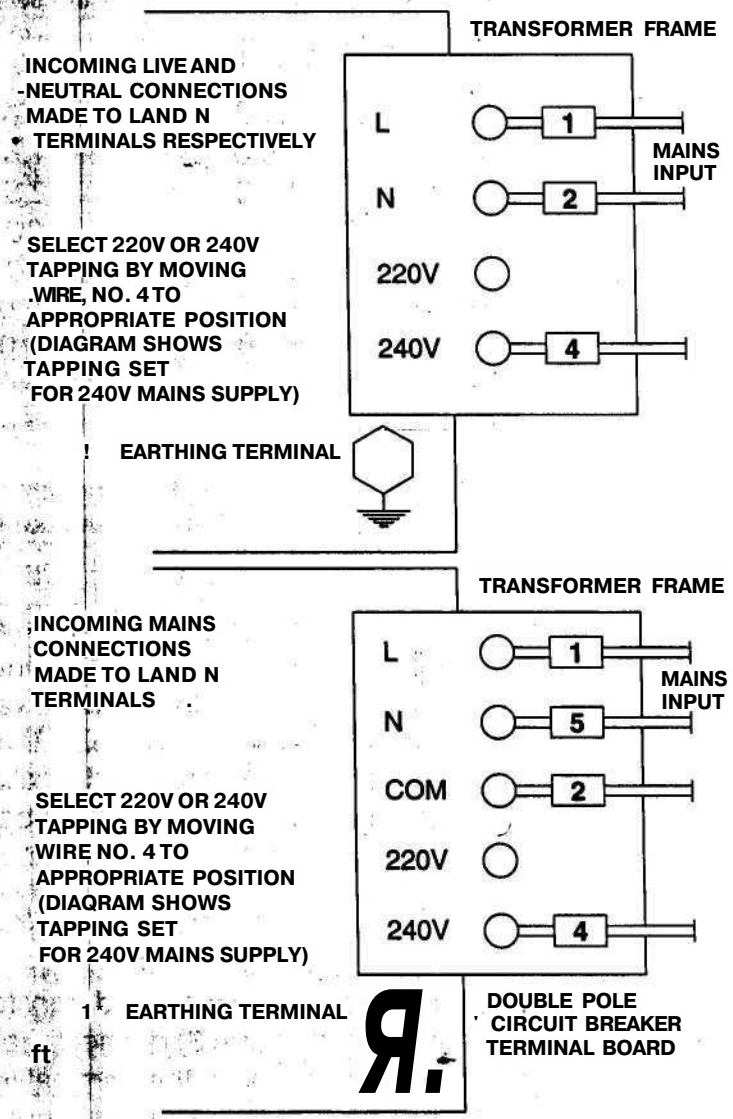


FIGURE 2
Single Phase Charger
Adjustment of the firing pcb and micro pcb for 220V and 240V supply

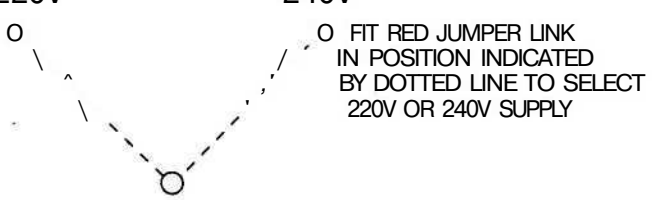
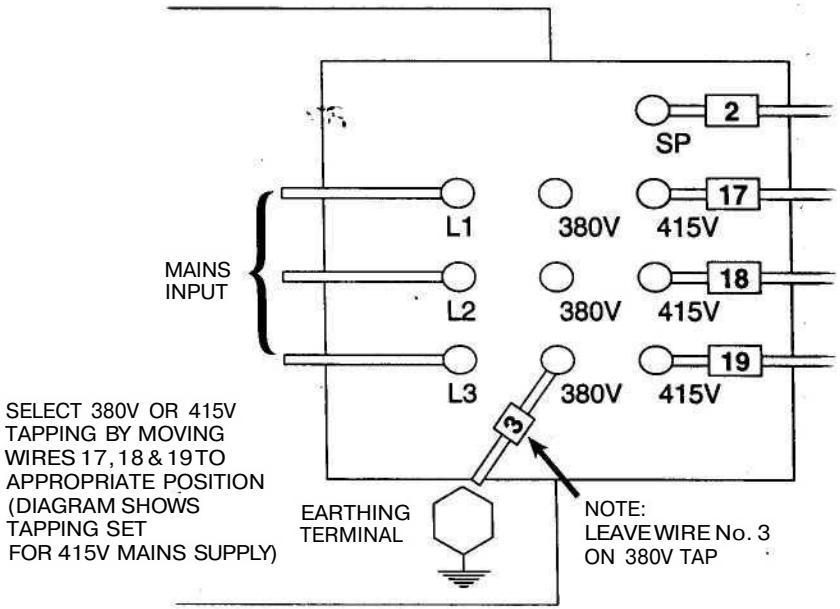


FIGURE 3
Three Phase Charger
Mains termination point and 380V/415V tapping selection



Note: On three phase chargers microcontroller pcb voltage select tapping to be left on 220V.

INSTALLATION

13. Before connecting the mains supply, ensure that the supply is isolated and that the circuit breaker mounted on the charger front panel is in the 'OFF' position.

14. A cable clamp is provided to secure the mains supply cable. In the case of single phase 220/240 volts supply, the Live connection should be terminated at L and the Neutral at N.On three phase chargers, line connections should be made to terminals marked L1, L2 and L3.

15. The input cable should be routed through the rear of the charger, Alternatively, the base or side panels may be pierced to take a cable bush or conduit fixing. Do.not route the cable through the top cover.

16. If there is any doubt regarding the earthing and connection of mains supply to the charger, the local electricity supply authority should be consulted.

17. When the charger has been correctly connected, replace the transformer stud safety cover and door, then check that *$6* circuit breaker on the charger front panel is in the **'OFF'** position.

Energise the charger by switching the remote isolator to the 'ON' position and the equipment is now ready for use.

MAINTENANCE

1. Ensure that the battery is suitably matched to the charg output and the application required.

2. Ensure that the circuit breaker mounted on the charger front panel is in the 'OFF position. #>

3. Insert the charger plug in the battery socket.

4. Switch the mains circuit breaker to the 'ON' position. Ti charger will perform a self-test routine, during which ali lamps in the display will be illuminated and after a dela approximately three seconds, the charging current will flow, indicated by the display with current increasing frc right to left.

5. When the battery is 80% charged the amber '80% ' charged' lamp wilj.jjjuminate. The output current will nc decrease depending on battery voltage.

6. When the battery is fully charged, the green '100% charged' lamp will illuminate, indicating that the battery ready for use. The amber '80% charged' lamp will be extinguished.

7. Before disconnecting the battery from the charger, ens that the circuit breaker mounted on the charger front p: is switched to the 'OFF' position.

8. Remove the charging plug from the battery socket.

MAINTENANCE

iotes

(a) If for any reason it is necessary to disconnect the battery during fie charge cycle, the mains circuit breaker must be switched to the 'OFF position before disconnection is made.

p) Vrjeji the '100% charged' lamp is on, the battery should be left connected to the charger until required. Under these conditions the battery will receive periods of nB^ier^g.9hmge to Maintain rt in the fully charged owiditicfi. During these charge periods the '100% charged' lamp will be illuminated and the output current will be indicated on the display.

(c) If at the end of charge the amber '80% charged' lamp is flashing band the green 'charged' lamp is on, the charger is indicating a sulphated battery condition. Cycling of the battery may be required to restore maximum capacity.

(d) If ajfjhej end of charge, the green 'charged' lamp is flashing and charging current has fallen to zero, this is an indication thatian{override time has operated. (Two fail safe timers ajejncprporated in the controller).

For this condition service attention will be required.

3) At appropriate intervals, give due attention to battery maintenance, particularly with regard to the correct electrolyte level, as recommended by the manufacturer.

OPERATION

1. Safety Precautions

The charger must be isolated at a remote point before an of the panels are removed. Do not forget to disconnect tr battery from the charger.

Remember - switching off the circuit breaker on the charger front panel will leave the mains termination boarc in a 'LIVE' condition. To prevent this occurrence, always switch off the remote isolator feeding the charger, lock it i the 'OFF' position using a padlock. A voltage indicator must be used to prove the presence of voltage at the inp terminals once the safety cover has been removed withir the charger. This voltage indicator must be proved to be working before and after testing for voltage presence. Suitable notification should be erected at the point of isolation to prevent inadvertent re-connection of the main supply.

The charger will require little attention, but the following schedule is recommended.

2. Every Month

(a) Check the condition of charging cables paying particular attention to the points where cable may be severely flexed, i.e. at the entry to charger case and charging plugs and sockets.

(b) Check condition of charging plugs and sockets for wear and any evidence of overheating, which could ultimately lead to charger malfunction.

OPERATION

3. **Every Three Months**

(a) Check for any external panel damage.

(b) Isolate charger from battery and mains power at distribution point, remove door panel and check:

(i) There is no obstruction to ventilation of case. Any dust that has settled on internal components should be removed using a soft brush and vacuum cleaner.

(ii) Condition and operation of moving parts.

(iii) All electrical connections are sound and that components are in good condition. The discolouration of connecting cables or components may be the result of overheating due to loose connections or an incipient component fault. Steps should be taken to rectify the situation including the replacement of any parts thought to be in a dangerous condition.

(c) Refit and securely fix all safety covers and panels.

FAULTDIAGNOSISANDREPAI

Battery charging faults will fall into one of three categories./

1. Complete failure.
2. Undercharging.
3. Overcharging.

In the following three sections (1, 2, and 3) the fault finding procedure is explained, firstly in written form then in diagrammatic form.

Adherence to the test sequence will generally locate the faul: area, but if the problem persists, consult your local CMP Batteries representative.

1. No **Charge**

(a) This is indicated by the current display showing zer Remember that the battery must be connected, the circuit breaker closed and about 3 seconds elapsec before charging current can flow.

(b) If the red 'supply on' lamp is not illuminated, then th an indication that the mains supply has failed. This be readily checked by testing for voltage at the cha transformer stud input terminals.

(c) If there is no voltage present, then check the distribution system. Should the supply fuse have blown, then before replacing it look for and rectify any possible, fault which could be an earth fault or short circuit component in the charger.

(d) If, jwhen mains voltage is available, the red 'supply on' ,,.larpp does not light, check the wiring to and condition 6 f jjhe control circuit fuse located inside the instrument ; panel, adjacent to the circuit breaker. Should the fuse have blown, then before replacing it look for and rectify, any possible fault.

(e) If the fuse is intact and mains is available, check the wiring and connections to the micro-controller and display board.

(f) If these connections are secure and mains voltage is present on the microboard, replace the microboard/display board assembly.

(gVJf tfie red 'power on' LED illuminates, but the green ;; *LEp* on the thyristor board is not illuminated after ; approximately 3 seconds, check that the battery ^vojtage is in the range 1.5 to 3.1 volts per cell.

(hj. If *ijne* battery voltage is correct, check whether the output fuse has blown. Should the fuse have blown, \ the,n before replacement, look for and rectify any possible fault, which could be reverse polarity of the battery.

(i) If the green LED on the thyristor board illuminates a' a 3 second delay, then extinguishes after several seconds without any charging current flowing, checl AC voltage is available at the AC terminals of the rectifier while the green LED is ON.

(j) If no AC volts are measured at the input to the rectif check for AC volts at the transformer secondary anc primary. If no volts are measured at the transformer primary, check the wiring and connection to the transformer and repair, as necessary.

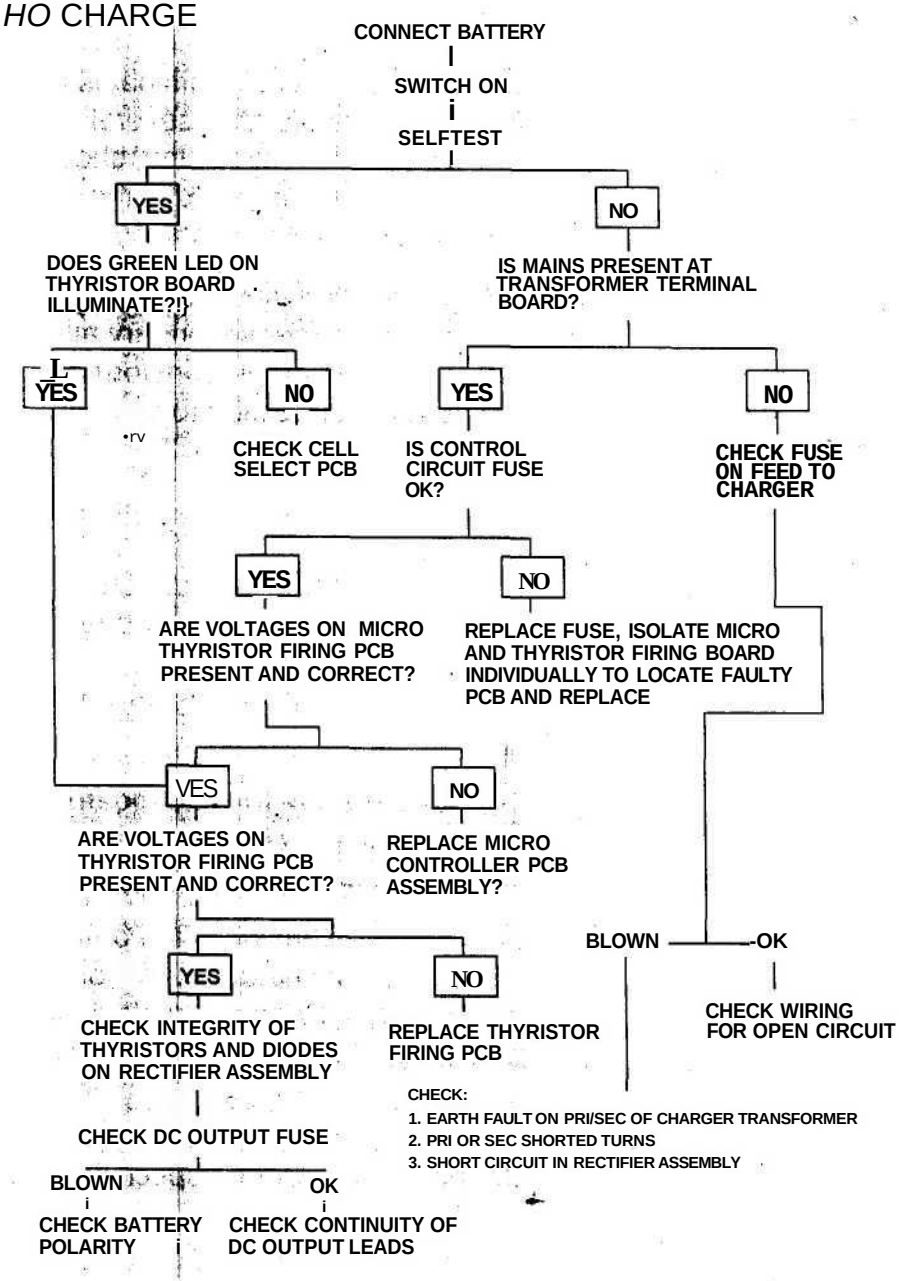
*(k) If AC volts are measured at the rectifier AC terminal while the green LED on the thyristor board is illuminated, check whether a demand signal from ttv micro control circuit is present on the thyristor boarc there is no demand, check wiring from the microcontroller to the firing board. If necessary, cha: the microcontroller.

*(l) If a demand signal is present on the thyristor board while the green LED is illuminated, check the rectifi and, if necessary, replace the thyristor board.

*(m) If charging current is still not present while the greer LED on the thyristor board is illuminated, then the rectifier stack may be damaged. Repair or replace, necessary, paying particular attention to the thyristc

* Note that tests (k), (l) and (m) will require specialist equipment.

HO CHARGE



2. Undercharging

Indicated by low battery specific gravities at the end of charge and/or by the battery failing to complete its normr amount of work.

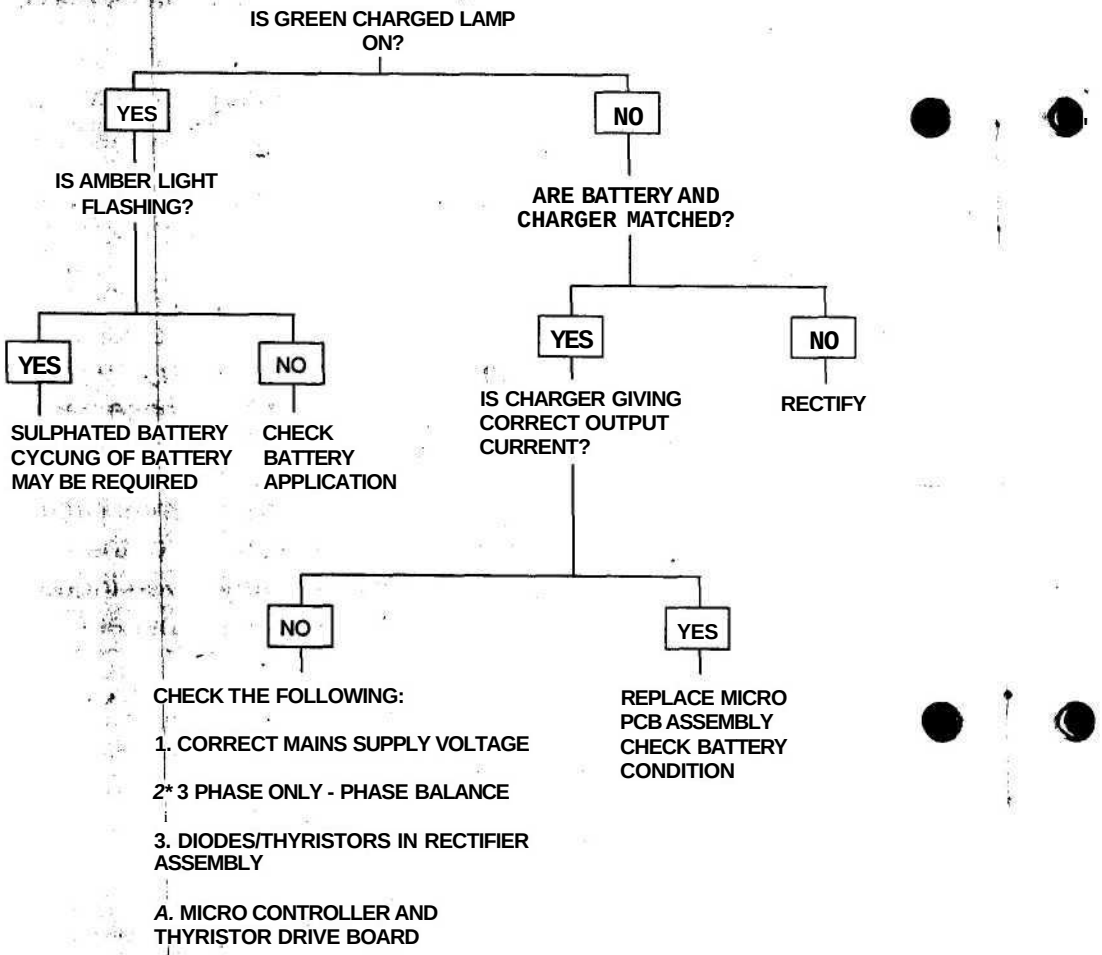
(a) Check that the charger output is matched to the battc capacity for the required charging time.

(b) Check that the charger is giving its correct output current.

(c) If the output current is less than it should be, then possibly a diode or thyristor in the rectifier stack has failed. In the case of a three phase charger, the phas may be badly out of balance or that one phase has failed.

(d) If a charge is beiftg terminated by the override circui[1] (i.e. green '100% charged' lamp flashing), or the battery is not receiving sufficient charge even though the green 'charged' lamp lights up, check battery condition.

UNDERCHARGE



FAULT DIAGNOSIS AND REPAI

3. Overcharge

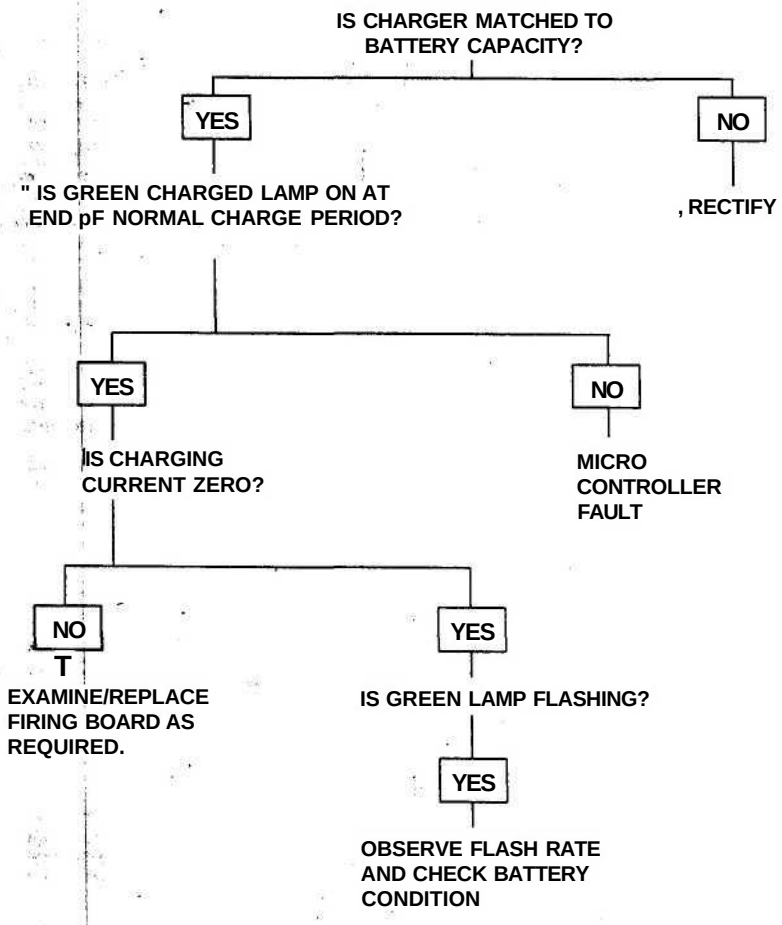
Indicated by excessive battery temperatures at the end c' charge and excessive electrolyte loss.

(a) Check that the charger is matched to the battery capacity, and that the charger is giving its correct output.

(b) When the green 'charged' lamp is on at the end of the charging period, check whether the green LED on the thyristor board is extinguished.

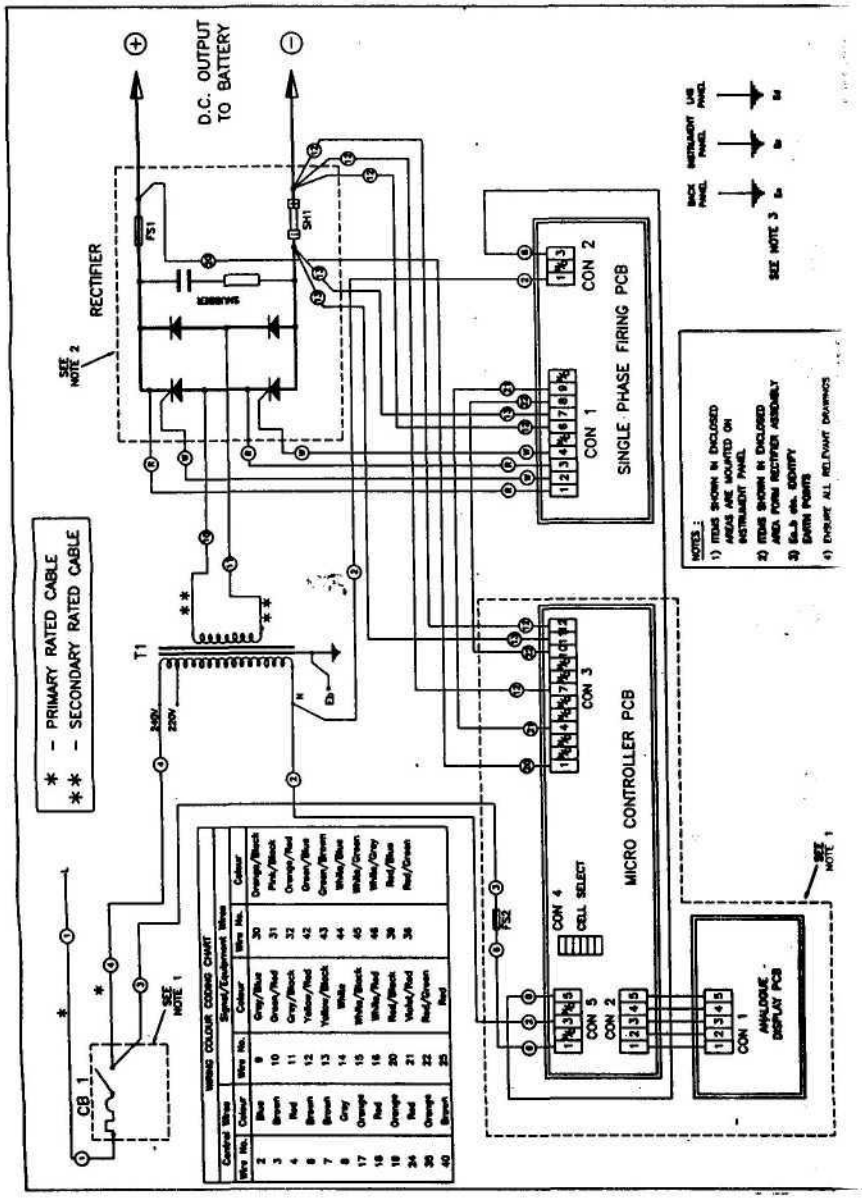
FAULT DIAGNOSIS AND REPAIR

OVERCHARGE



WIRING DIAGRAMS

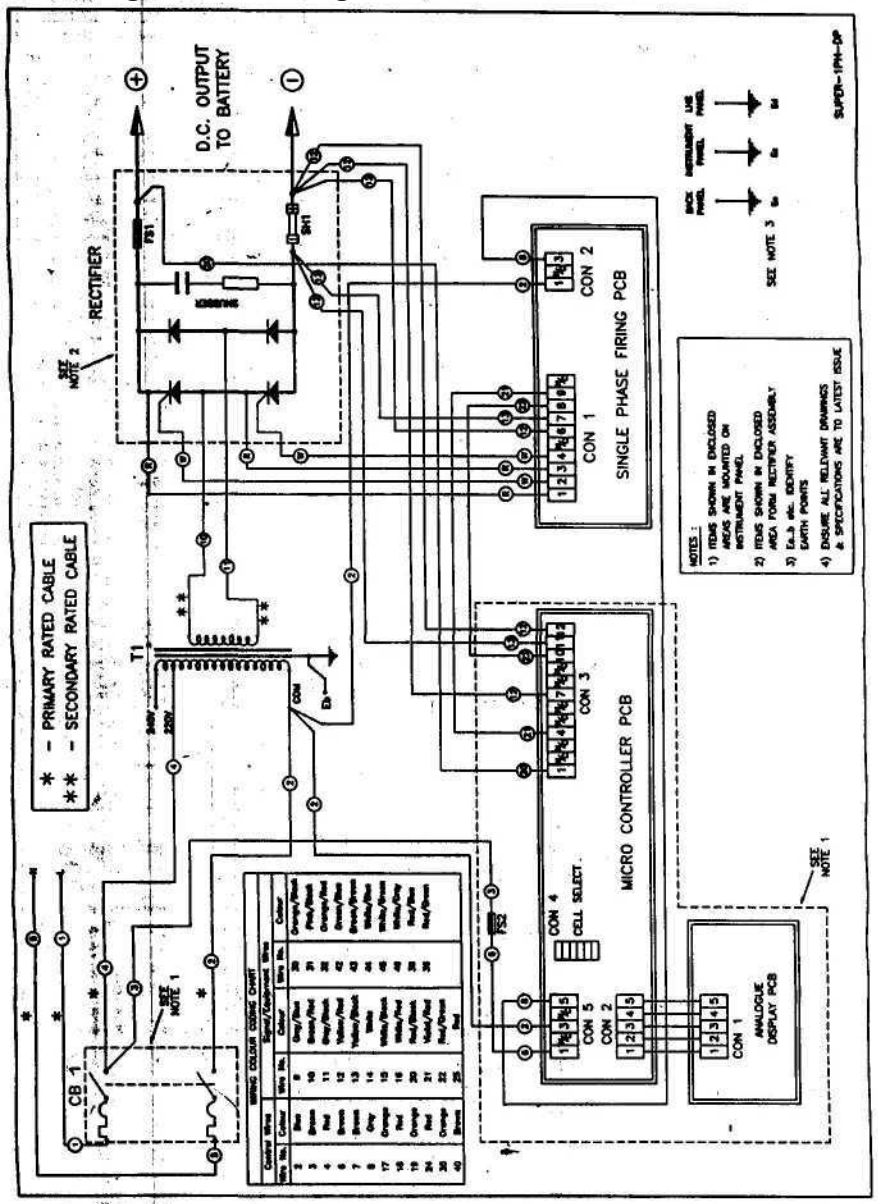
21S Single Phase Wiring Diagram



Super-

WIRINGDIAGRAMS

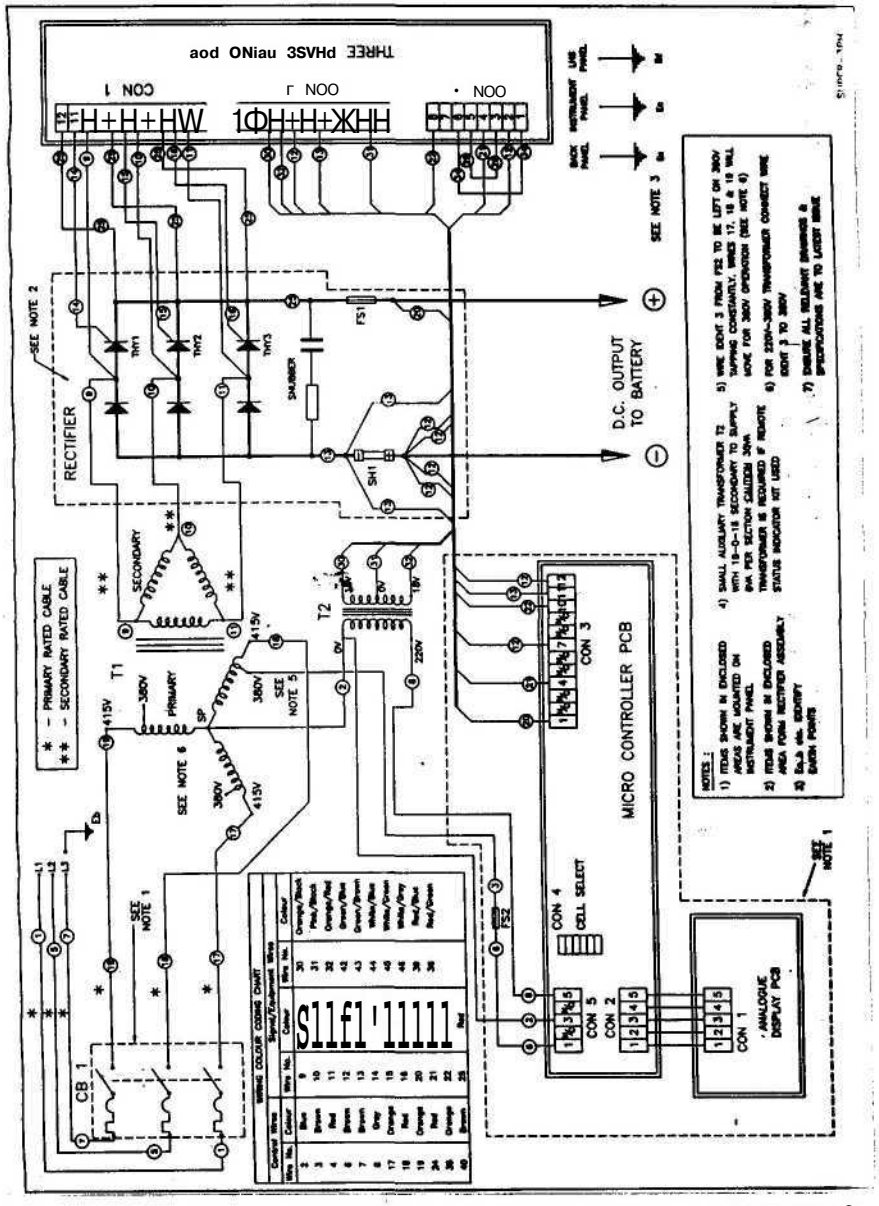
21S Single Phase Diagram - **Double Pole** Circuit Breaker



Super-1PH-DP

WIRINGDIAGRAMS

23S Three Phase Wiring Diagram



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GENERALINFORMATION

1. **Charger Output Characteristics**

   Controlled current followed by a taper.

2. **Matching of Battery and Charger**

   Each [charger is designed to recharge a lead acid battery of a specific voltage and ampere hour capacity in a given time.

   In the^event of over or under charging, it is important to ensure that the charger is correctly matched to the battery and is rated to charge in the required time.

AFTER SALES SERVICE

GUARANTEE

Each charger is guaranteed for 12 months from the date of f installation.

SPARES AND REPAIRS

The companies listed on the back of this booklet are respon for service in their respective areas.

If you have any queries regarding the charger or its operatic or you have need for spares and repairs, please contact the company covering your area, quoting to them the charger ty and serial number.