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INSTRUCTION MANUAL

Regulated Digital DC Power Supply

# Protek

## Regulated Digital DC Power Supply

Model 3003B (30V / 3A Single Output)
Model 3005B (30V / 5A Single Output)
Model 3006B (60V / 1.5A Single Output)
Model 3015B (30V / 1.5A Dual Independent Output)
Model 3032B (30V / 3A Dual Independent Output)
Model 3033B (30V / 1.5A x 2, 5V / 5A x 1 Fixed, Triple Output)

Protek

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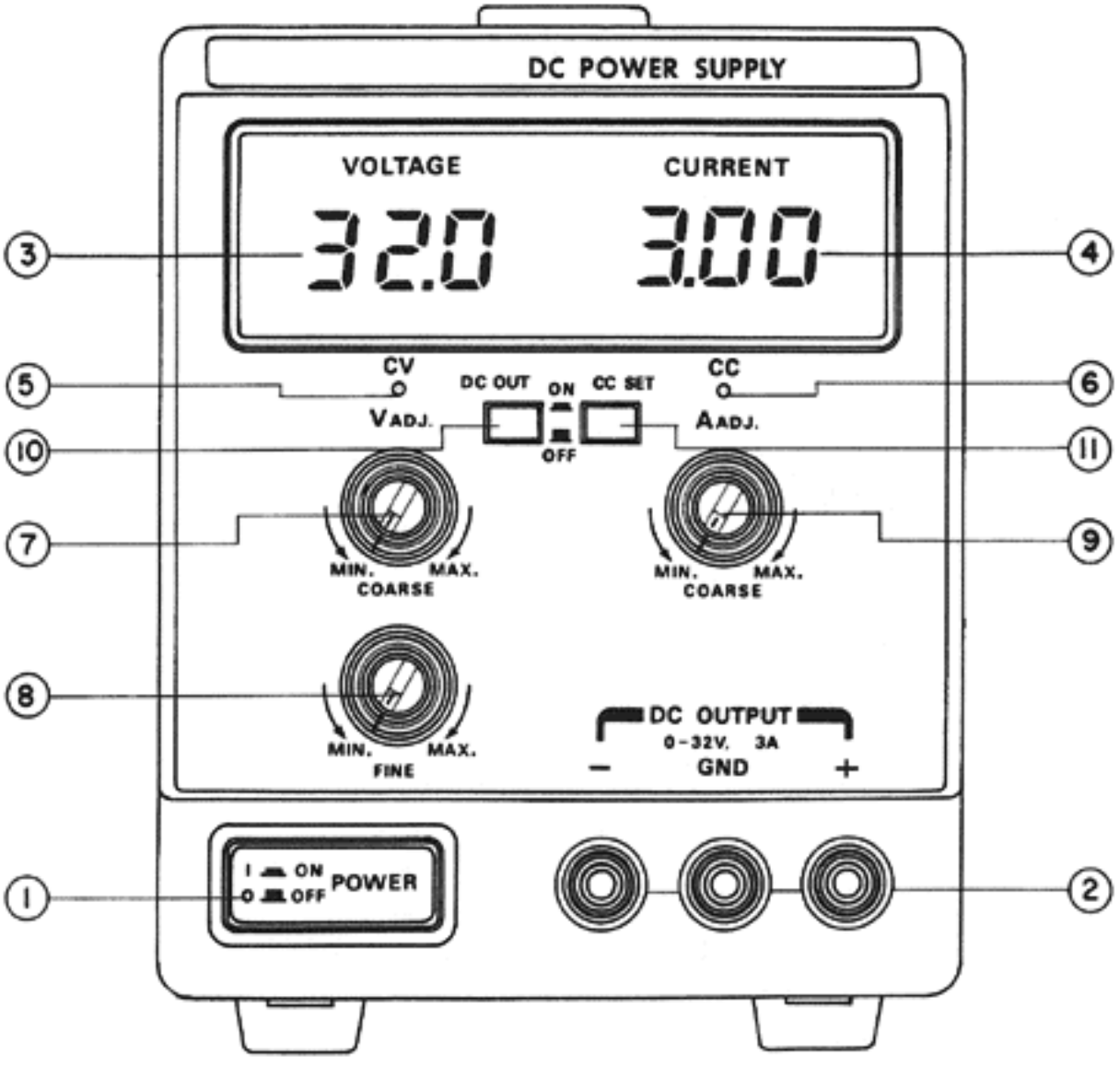


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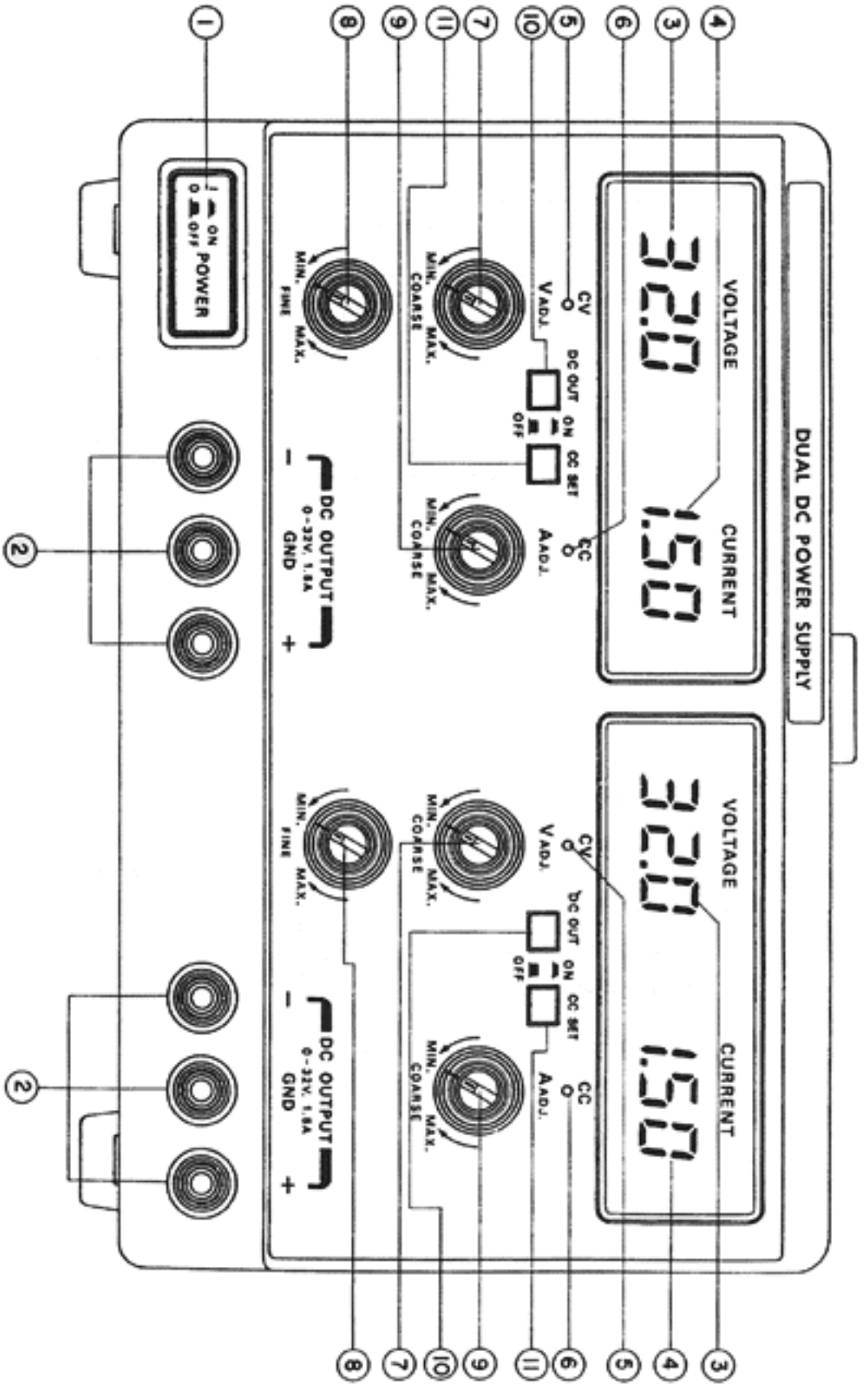


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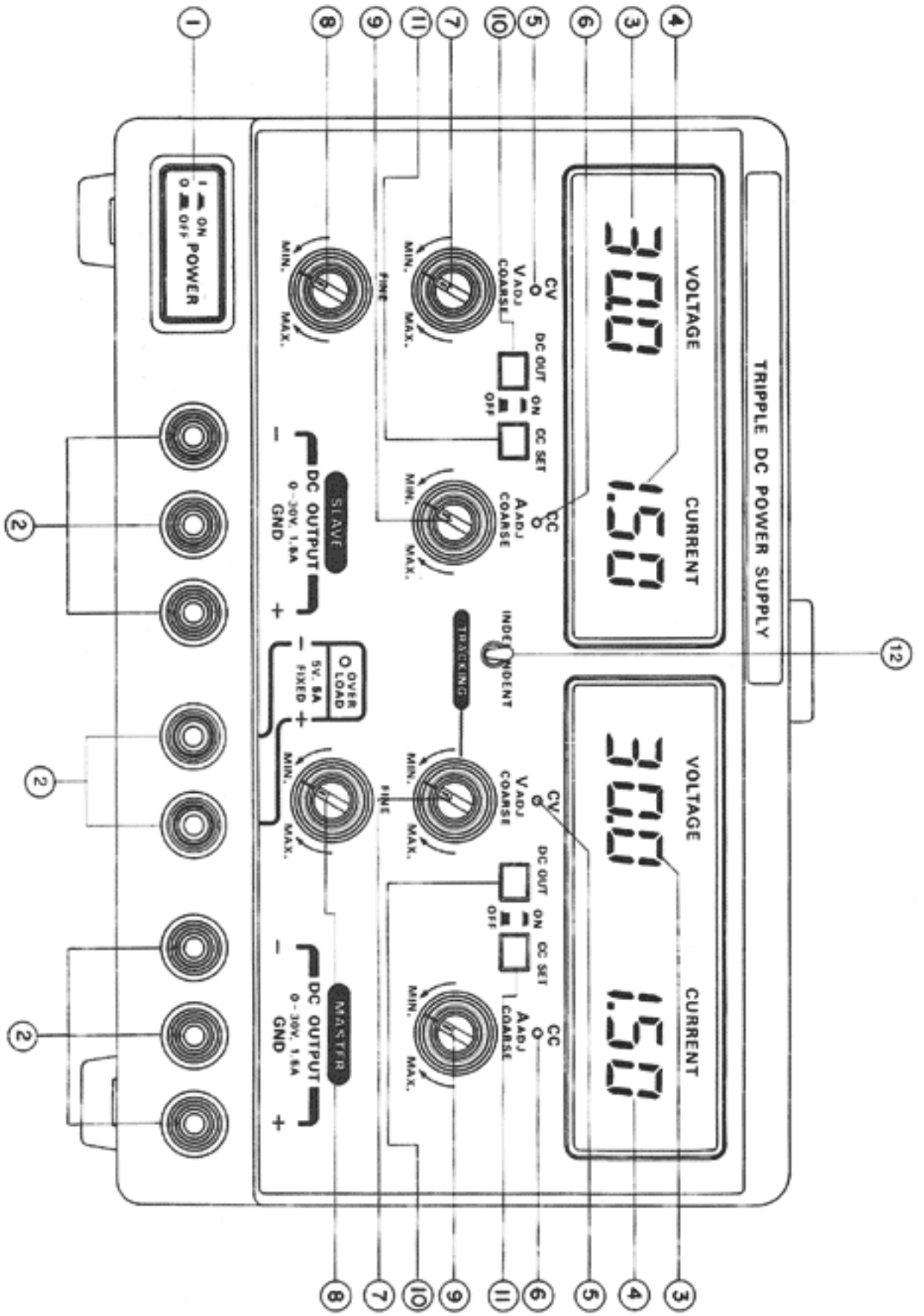


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# 1. DESCRIPTION

## CONTROLS AND INDICATORS

①. POWER SWITCH: on/off switch.

②. OUTPUT TERMINAL: positive polarity (+) is red, negative polarity (-) is black, earth and chassis ground is green.

③. DIGITAL VOLT METER: indicates the output voltage.

④. DIGITAL CURRENT METER: indicates the output current.

⑤. CV LAMP: lights when the power turn on and constant voltage operation.

⑥. CC LAMP: lights when this unit in constant current operation.

⑦. VOLT ADJ (COARSE) KNOB: for the coarse adjustment of the output voltage.

⑧. VOLT ADJ (FINE) KNOB: for the fine adjustment of the output voltage.

⑨. AMP ADJ KNOB: for the adjustment of the output current.

⑩. DC OUTPUT SWITCH: on/off swich for the DC OUTPUT.

⑪. CC SET SWITCH: current limiting set-up without output terminal shorting or various loads, and provide current limiting value preview faclity.

⑫. INDEPENDENT/TRACKING SWITCH(TRIPLE ONLY): Covering from independent applying of S1 and S2 outputs to a serial connect. In tracking mode, because (-) of S2 and (+) of S1 are internally connected, it is output inbetween (+) of S2 and (-) of S1. In case short pins are used inbetween (-) terminal and ground, eliminate short pins from output terminals of S1 and S2.

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# 2. SPECIFICATION

| MODEL | 3003 | 3005 | 3006 | 3015 | 3032 | 3033 |
|---|---|---|---|---|---|---|
| Output DC voltage<br>Output DC current | 0-30V<br>0-3A | 0-30V<br>0-5A | 0-60V<br>0-1.5A | 0-30V<br>0-1.5A<br>DUAL | 0-30V<br>0 - 3A<br>DUAL | 0 - 30V<br>0 - 1.5A<br>DUAL<br>5V, 5A FIXED |
| Load Regulation (Load Effect) | ≤ 0.02% + 2mV<br>≤ 0.05% + 5mA | | | | | |
| Line Regulation (Source Effect) | ≤ 0.02% + 2mV<br>≤ 0.05% + 0.25mA | | | | | |
| Ripple & Noise V, A | ≤ 0.2mV(rms), 4mV(p-p)<br>≤ 2mA(rms), 10mA(p-p) | | | | | |
| Tracking Error | | | | | | ± (0.5% rdg + 1dgt) |
| Fixed 5V, 5A<br>Output V, A | | | | | | 5V ± 2.5%<br>5A ± 2.5% |
| Ripple & Noise | | | | | | 2mV (rms) |
| Line & Load Regulation | | | | | | 0.1% ± 5mV |
| Digital Display<br>V, A, Accuracy | 3 dgts<br>3 dgts<br>± (0.5% rdg+ldgt) | | | | | |
| Temperature V<br>Coefficient A | ≤ 0.05%+2mV/°C<br>≤ 0.1% + 2mA/°C | | | | | |
| Temperature Range | 0 to 35 °C for rated output.<br>derate current 1% per degree C between 35 - 40°C. | | | | | |
| Dimension (mm)<br>W x H x D | 124 x 160 x 326 | | | 234 x 160 x 326 | | |
| Weight (kg) | 5 kg | | | 7.5 kg | | |

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# 3. OPERATION

WARNING: Before connecting line power to your power supply, make sure that the AC input voltage is correct for your power source.

## TURN-ON CHECKOUT PROCEDURE.

a) Turn A-adj control fully counter clockwise.
b) Set AC power switch push to on position, digital display and CV lamp should light.
c) Turn VOLTAGE controls fully counter clockwise to ensure that output decreases to OV dc then fully clockwise to ensure that output voltage increase to the maximum output voltage.
d) While depressing CC SET push button, turn the CURRENT control fully counter clockwise and then fully clockwise to ensure that the current limit value can be set from zero to maximum rated value.
e) Connect load to output terminals.

## CONSTANT VOLTAGE OPERATION

To set up a power supply for a constant voltage operation, proceed as follows:

a) Turn on power supply and adjust V-adj control for desired output voltage (output terminals open). CV lamp should light.
b) While depressing CC SET push button, adjust A-adj control for maximum output current allowable (current limit). During actral operation, if a load change causes the current limit to be exceeded, the power supply will automatically crossover to constant current mode and output voltage will drop proportionately.
c) Push-on DC OUT push button switch for DC voltage output.

## CONSTANT CURRENT OPERATION

To set up a power supply for a constant current operation, proceed as follows:

a) Turn A-adj control fully counter clockwise to ensure that output decreases to 0 A, and then on power supply.
b) Adjust V-adj control (no load connected) for maximum output voltage allowable(voltage limit), as determined by load conditions. During actual operation, if a load change causes the voltage limit to be exceeded, the power supply will automatically crossover to constant voltage operation at the preset voltage limit and output current will drop proportionately.
c) Adjust A-adj control for desired output current while depressing CC SET button.
d) Push-on DC OUT push button switch for DC voltage output.

## CONNECTING LOADS

The output of the supply is isolated from earth ground. Either output terminal may be grounded or the output can be floated up to 240 volts off ground.

## TRACKING OPERATION (MODEL 3033 ONLY)

To select a tracking operation output as follows:

a) Set independent and tracking select switch to tracking position.
b) Depressing CC SET push button switch and adjust A-adj control of the each for maximum output current allowable(current limit), as determined by load conditions.
c) Adjust V-adj controls (COARSE, FINE) of the MASTER for desired output voltage. This time, V-adj controls (COARSE and FINE) of the SLAVE should be set on maximum.
d) Connect load using the negative (black) terminal of the SLAVE supply and the positive(red) terminal of the MASTER supply.
e) Push DC OUT switch of both.

# 4. MAINTENANCE

WARNING: The following instructions are for use by qualified personnel only. To avoid electrical shock, do not perform any servicing other then contained in the operating instructions unless you are qualified to do so.

## Fuse Replacement

If the AC fuse blows, the CV or CC lamp will not light and the power supply will not operate. If the DC fuse blows, the CV or CC lamp and digital display is light but DC OUTPUT will not operate. The fuse should not normally open unless a problem has developed in the unit. Try to determine and correct the cause of the blown fuse, then replace only with a fuse of the correct rating and type.
The fuse is located on the rear panel.

## Line Voltage Conversion

The primary winding of the power transformer is tapped to permit operation from 115,230 VAC, 50/60 Hz line voltage. Conversion from one line voltage to anther is done by AC select switch on the rear panel.
The line voltage to switch the unit was factory setted. To convert to a different line voltage, perform the following procedure;

a) Make sure the power cord is unplugged.
b) Change the AC selects switch to the desired line voltage position.
c) A change in line voltage may also require a corresponding change of fuse value. Install the correct fuse value as listed on rear panel.

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# 5. CALIBRATION ADJUSTMENT

## ADJUSTMENT OF THE RATING VOLTAGE.

a) Connect digital multimeter across output terminals of supply and set the DC volt position.
b) Turn on supply and push on DC OUT push button switch.
c) Adjust voltage controls (COARSE, FINE) fully clockwise.
d) Adjust S203 for a reading of rate volts x 1.05 on the digital multimeter.
e) Adjust S401 until digital multimeter reads exactly maximum rated output voltage.
f) Push-off DC OUT push button switch and adjust S202 until front panel meter reads exactly digital multimeter reading.

## ADJUSTMENT OF THE RATING CURRENT

a) Connect load resistor and digital multimeter with series and set the range to DC 20 Amp position.
b) Turn on supply.
c) Adjust voltage controls and current control to minimum (fully counter-clockwise).
d) Adjust S201 for reading of 0 Amps on the digital multimeter.
e) Adjust voltage controls and current control to maximum (fully clock-wise).
f) Adjust S501 until front panel meter reads exactly digital multimeter reading.
g) Push on CC SET push button switch.
h) Adjust S204 until digital multimeter exactly the maximum rated output current.

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