ZJ-12571-A

INSTRUCTION MANUAL FOR LD-100W Type

POWER REGULATOR

Attached material and accessories	(1) A copy of Instruction Manual. (2) Two shorting pins (3) Two 2-ampere fuses and two 5-ampere fuses.
Adjustments & calibrations duly carried out at the time of delivery	(1) Specifications for A.C. 200 Volts (to be short-circuited by shorting pins U_2-V_1) (2) Current clamp value at 3.8 amperes (to be adjustable by CUR·MAX) (3) Constant voltage control (4) Voltmeter Indication

MITSUBISHI ELECTRIC CORPORATION, HIMEJI WORKS

1. Outline of Power Regulator

LD-100W Type Power Regulator is a power regulating system equipped with a built-in insulated transformer, which provides with a variable D.C. output voltage by means of the power transistor chopper device therein duly employed after current rectification at lowered voltages. This Power-Unit, when used together with Mitsubishi-make powder clutch brake device, supplies in a stable manner the coil voltage at any selected level.

2. Characteristics

This Power Regulator employs the voltage feed-back system by using the power transistor type chopper device instead of the conventional sliding-type voltage regulator, and is featured by the following characteristics:

(1) Voltage setting in a wide range of values becomes stably available against fluctuations in the line voltage or loads.

(2) Compact and light-weight design of the system makes it possible to install it on the ground or floor or mount it on the panel.

(3) The system can accommodate a wide range of loads from very small current capacity to a large capacity.

(4) The system is designed to be used commonly both for 200- and for 100-volts and can be switched to either of the voltages by a simple switching operation.

(5) Current limiting circuit is built in the system in order to prevent excessive current from flowing in when the coil temperature is low or cold, and as and when the current exceeds a set value, the voltage will come down automatically.

(6) Output interrupting circuit is built in the system in order to prevent the loaded coil from burning-out or from being damaged by short-circuit.

3. Specifications and functions

(1) Control method: Pulse band switching-type regulating system, using the power transistor with insulated transformer (Switching frequency is about 2.5 kHz.)

(2) Input voltage:
① A.C. 200/200/220 volts ± 10% at 50/60/60 Hz.
② A.C. 100/100/110 volts ± 10% at 50/60/60 Hz.

Voltage can be changed by changing the position of the shorting pins (provided as accessories).

(3) Voltage setting:
① Constant voltage control (D.C. 0.24 to 29.0 volts)
② Voltmeter indication (D.C. 30 volts/FS at 5 kilo-ohms)

(4) Current clamp:
① Current is set as constant current clamp, which can be adjusted by CUR·MAX volume and made variable from a minimum of 0.25 amperes to a maximum of 3.8 amperes.
② Over-current interruption function is built in and can serve as a protection against load short circuit.

(5) Weight: About 6.5 Kilo-grams

(6) Structure:
① Designed to install on the ground or floor or mount on the panel or board.

4. Cautions for practical use

(1) Parallel connection to the loads and switching to external circuit

As the system employs the constant voltage method, the output voltage can remain stable to any variable loads. However, in the event that the current exceed a given setting value of the current clamp (CUR·MAX), the voltage will not go up.

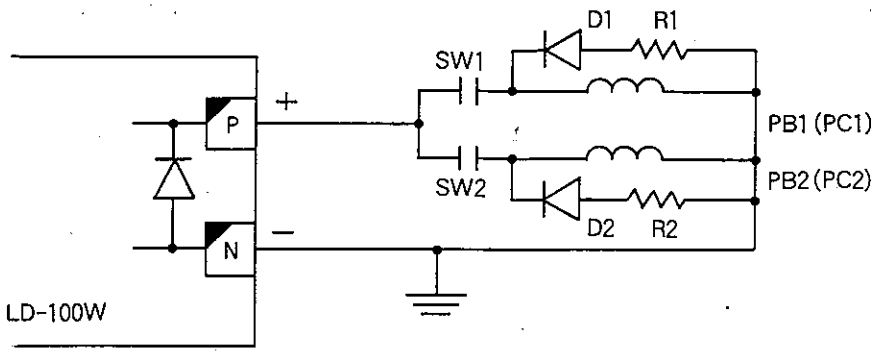

Fig.1

D_1 and D_2 are protective diodes rated at direct current 200 volts, pressure-resistant at 5-ampere direct current.

R_1 and R_2 are protective resistances to be provided by the customer, rated at 10 watts - 47 ohms.

PB_1 (PC_1) and PB_2 (PC_2) are powder brake or clutch.

① Either one or both of the two can be used. (In case both of the two are used, please keep caution on the current value.)

② [N] terminal should be arranged for common use.

③ When the grounding is required, please use [N] terminal for the purpose. [P] and [N] terminals are normally insulated.

④ Protection of the contact for switching to the external circuit should be provided by the customer.

(2) Change of A.C. input voltage

When the power line system is switched to 100-volts, please change the connection of the short circuit contact.

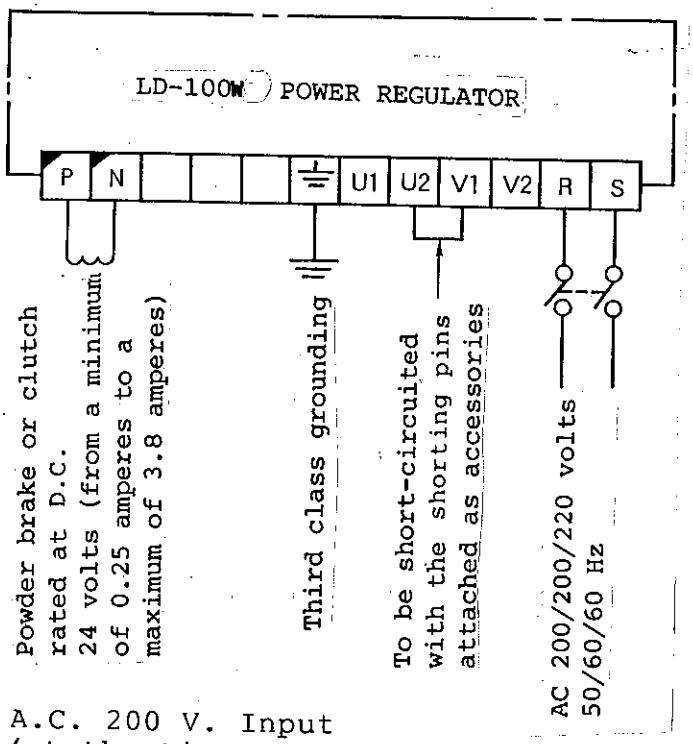

Fig.2 A.C. 200 V. Input
(at the time of delivery)

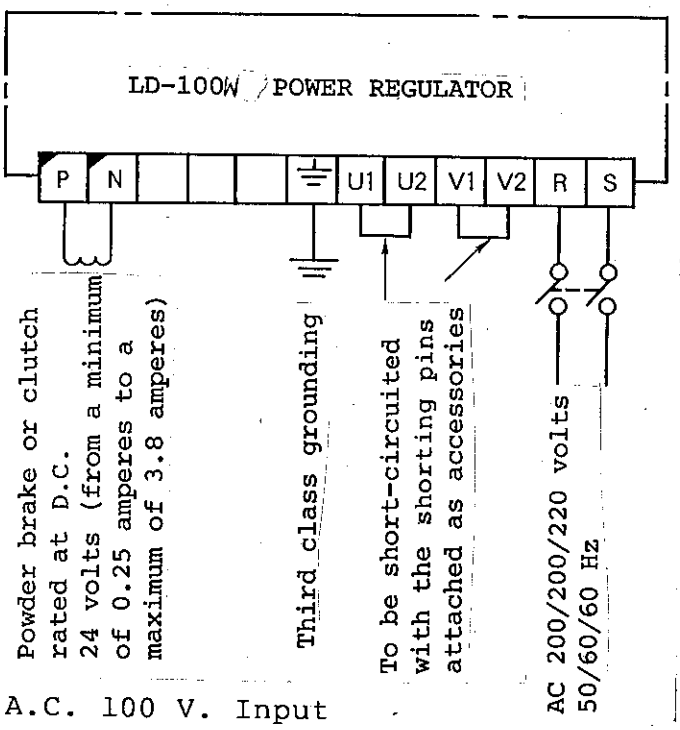

Fig.3 A.C. 100 V. Input

(3) Characteristics of Torque-Adjusting-Knob

Because of the characteristics of Torque-Adjusting-Knob for the voltage setting value, please refer to the reading on the output voltage meter, since the scale of the said Adjusting Knob, serves as a mere reference.

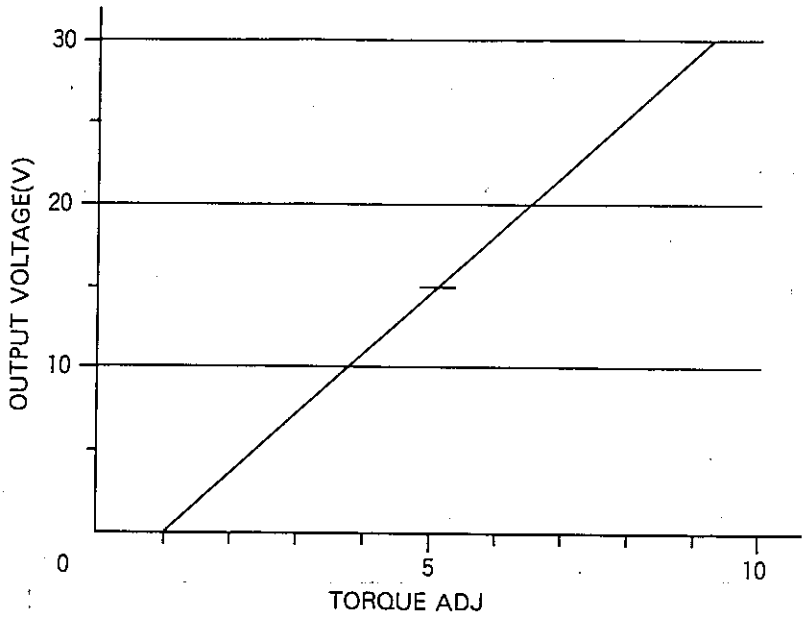

Fig.4

(4) Range of stable performance at constant voltage

The boundaries of the setting range available for the stable output voltage (between [P] and [N] terminals) by the Torque Adjusting nob which corresponds to the input voltage (between [R] and [S] terminals) will depend upon the load charged at respective moments. However, they are generally as shown in Fig. 5.

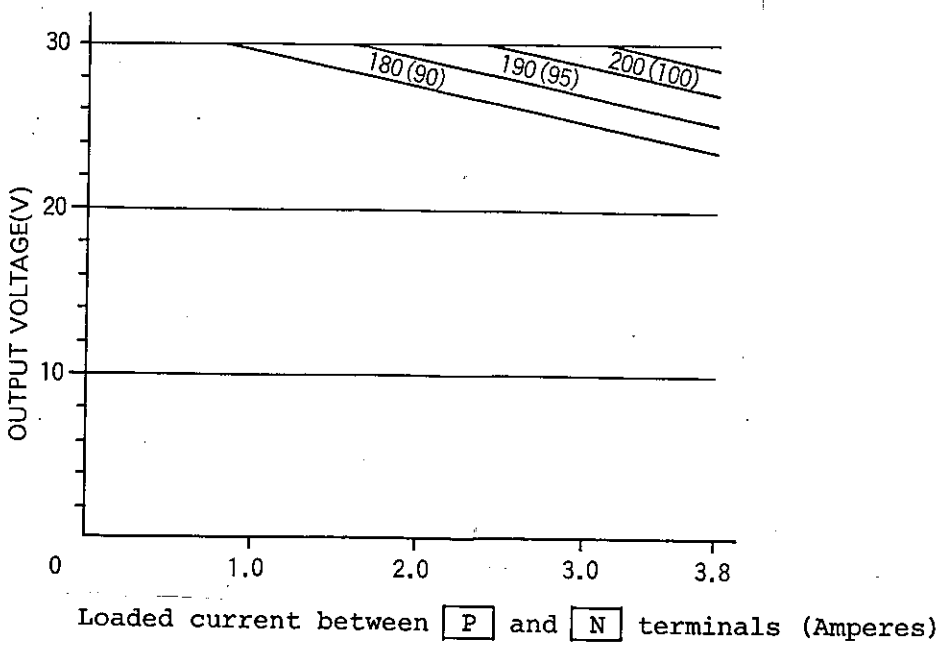

Fig.5

As and when the Torque-Adjusting-Knob is turned beyond these boundaries, the voltage will tend to become less stable and will not increase. Therefore, please check the input voltage applied.

(5) Charge in the current clamp values

Current clamp value setting can function as a protection for the Power Regulator. With the Torque-Adjusting-Knob at the maximum control position, turn the volume switch, RV3, located at the end of a hole in CUR·MAX, so that the output voltage may come to a required or setting level. When the coil temperature is relatively lower than that normally reached at a rating of 24 volts or exceeds 75 degrees centigrade, the indication of the voltmeter may in cases show lower or higher reading than actually is. However, this does not mean any irregularity.

With the Torque-Adjusting-Knob kept at a maximum control position, the coil temperature continues to increase, at

the same time the voltage value follows a gradual upward movement. However, the voltage remains stable within a range where it does not go beyond a given current clamp value.

(6) Heat discharge from the Power Regulator when installed on the ground or floor

Holes are provided on both sides of the Power Regulator for ventilation purpose. Please place the Power Regulator in an appropriate distance from other objects near by so that adequate ventilation or air flow may be maintained.

(7) Mounting of the Power Regulator on the panel

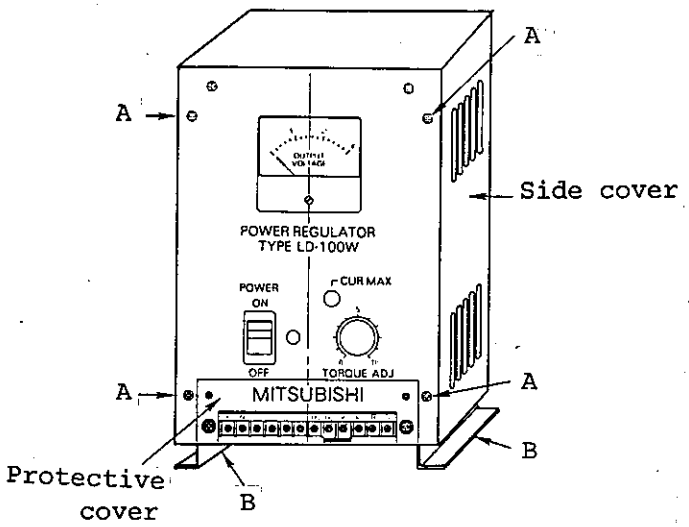

Fig. 6

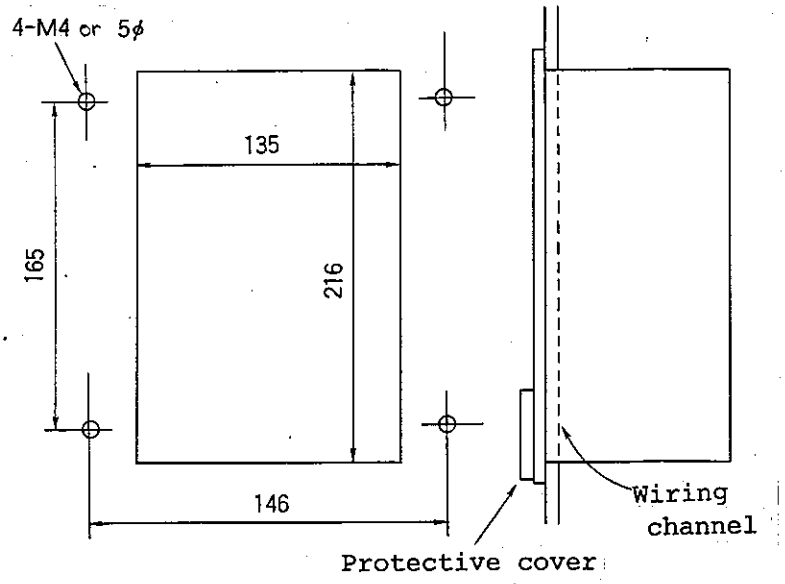

Fig. 7

Take out the cover by unscrewing the fixing screws (A) on the panel board and fixtures (B), and then the Power Regulator can be mounted on the panel.

Panel dimensions are as shown in Fig. 7.

[Caution] In accordance with the instruction in 4-(2), please determine the A.C. input voltage in advance.

(8) Replacement of fuse(s)

The Power Regulator is equipped with two 2-ampere fuses for A.C. input (F1 and F2) and one 5-ampere fuse for D.C. output (F3).

By unscrewing the chassis fixing screws (D) on the panel board, the fuse(s) on the printed circuit board(E) can be checked and examined.

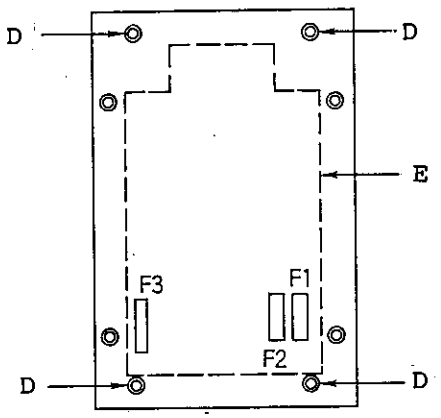

Fig. 8

(A) When the power switch lamp is is not lit, please check 2-ampere fuses F1 and F2.

[Caution] As the overcurrent protection may be in operation in accordance with the instruction as in paragraph (9), please confirm whether the instruction in paragraph (9) is followed.

(B) When the output power is not available, yet, the power switch lamp is on and the voltmeter shows any indication, please check a 5-ampere fuse F3.

(9) Release of overcurrent protection

When the continuation current develops at about six amperes or more due to short circuit, grounding or overload, the fuse(s) will melt. As the momentary current flows in, the built-in output interruption circuit will be energized and the power switch lamp will be turned off. In this case, turn the power switch to "off" position and eliminate any cause or causes for short circuit, grounding or overload. After that procedure, turn the power switch from "off" to "on" position, then the system will be restored to normal.

(10) Others

① This Power Regulator cannot be used together with ZKX-type Touch Lever.

② This system is designed for the loads including the inductance. The Power Regulator is not guaranteed for its use at pure (or forward) resistance, inductive load at one-tenth of one henry or less, and/or at capacitive load.

③ Please take care of the wire connection so that the voltage drop due to the conductor resistance between [P]-[N] terminals and between load terminals for common use and due to contact resistance by slip ring, etc. may be reduced to a minimum. Some care will be required when the return conductor is arranged for any common use.

④ Switching operation of A.C. input at [R] and [S] terminals is designed for 500,000 time repetition in the light of the life of built-in relay devices. Therefore, it is recommended to use Off and On switching operation of D.C. output at [P] and [N] terminals when you are required so many times of repetitive switching operation.

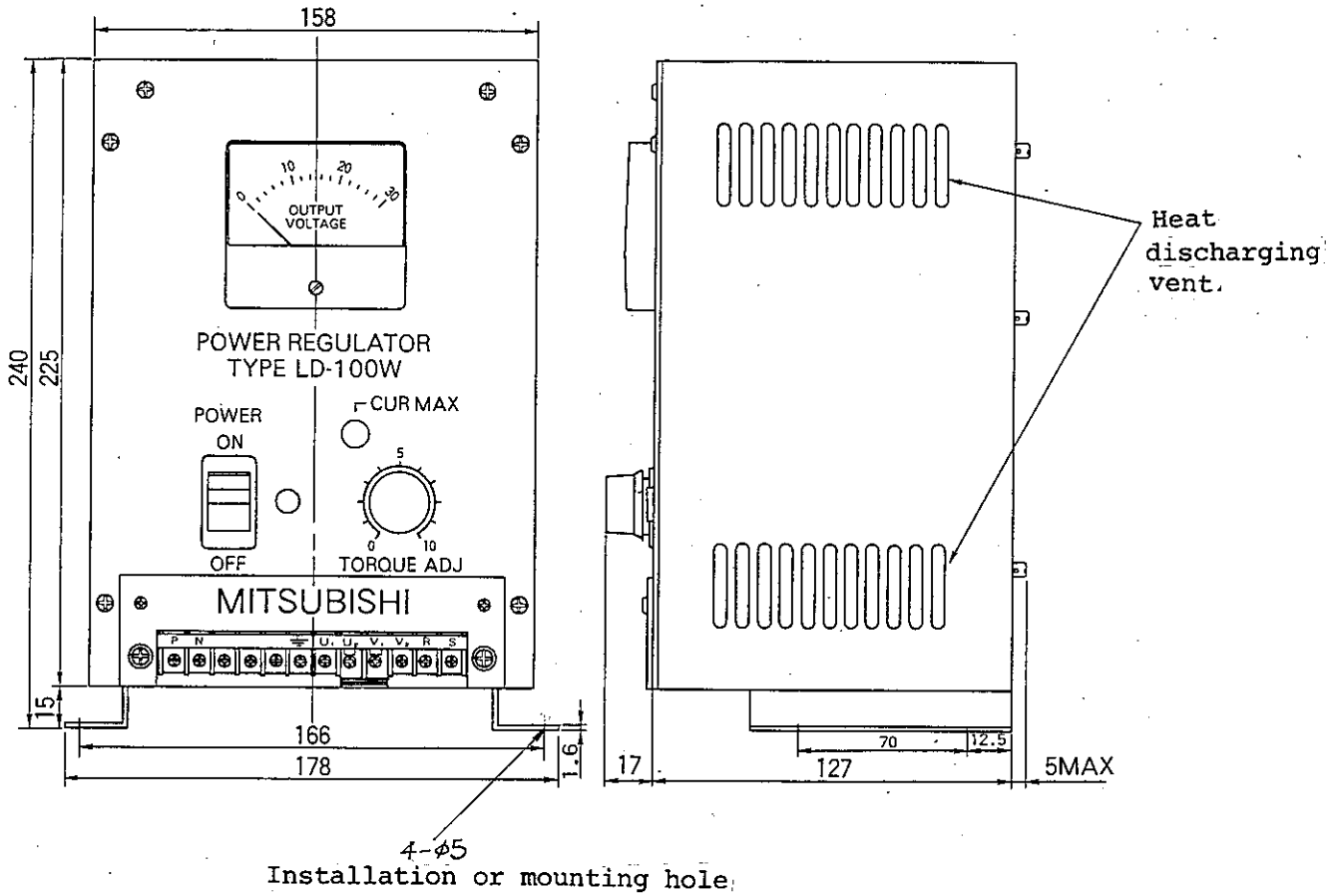

Fig. 9