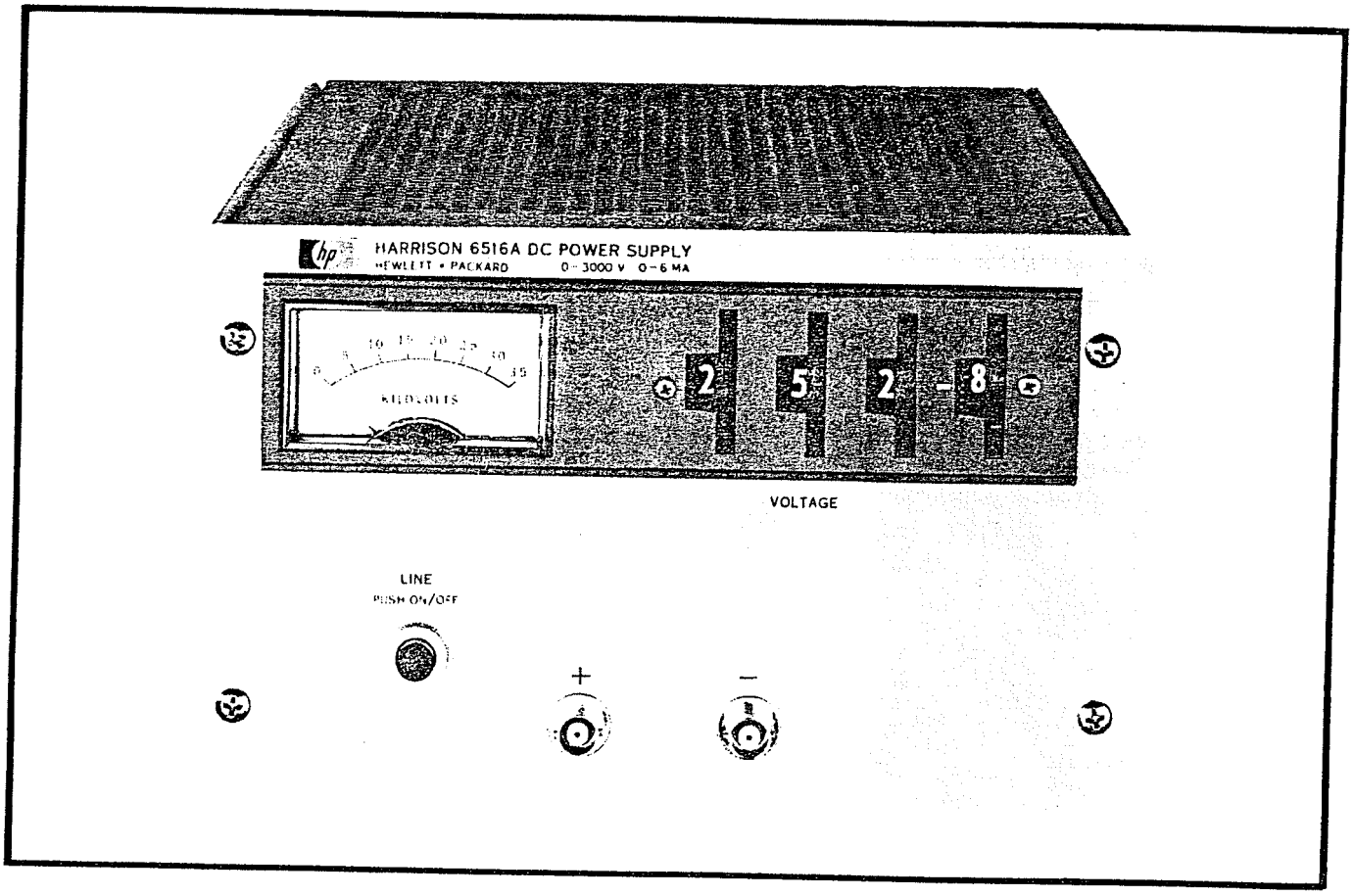

Figure 1-1. DC Power Supply, Model 6516A

SECTION I
GENERAL INFORMATION

1-1 DESCRIPTION

1-2 This instrument (Figure 1-1) is an all semiconductor high voltage supply suitable for either bench or relay rack operation. It is a compact, well-regulated, Constant Voltage/Current Limited supply that will furnish 3,000 volts at 6 milliamps or can be adjusted throughout the output voltage range. It is designed for applications requiring extreme stability, regulation, and insensitivity to ambient temperature variations.

1-3 This supply utilizes a series regulated "piggy-back" circuit technique that consists of placing a well-regulated low voltage power supply in series with a less well-regulated supply having a greater voltage capability. The well-regulated "piggy-back" supply continuously compensates for any ripple, load regulation, or line regulation deficiencies of the main power source and adjusts the voltage across its series regulator so that the total output voltage remains constant despite disturbances in the main voltage source.

1-4 OVERLOAD PROTECTION

1-5 The voltage thumbwheel switches select the constant voltage level; an internal potentiometer selects the current limit level. The supply will automatically crossover from constant voltage to current limit operation and vice versa if the output current or voltage exceeds these preset levels. Detailed characteristics of the output current limiting are given in Paragraph 3-5.

1-6 The power supply is protected from reverse voltage (positive voltage applied to negative terminal) by an internal protection diode that shunts current across the output terminals when this condition exists, clamping the reverse voltage. Protection from reverse current (current forced into the power supply in the direction opposite to the output current) must be provided by preloading the power supply (Paragraph 3-15). The power supply cannot accept reverse current without damage.

1-7 COOLING

1-8 Convection cooling is used; no fan is required. The power supply has no moving parts except for the meter movement.

1-9 OUTPUT TERMINALS

1-10 Output power is available via two UG-931/U connectors mounted on the front panel of the supply. Mating connectors (UG-932/U) are supplied with the unit. The output terminals are isolated from the chassis and either the positive or the negative terminal may be connected to the chassis by shorting the center pin to the case of the applicable UG-931/U connector, or by grounding a wire from the connector to the chassis. The power supply is insulated to permit operation up to 1,000 volts dc off ground, i.e. the maximum potential between either output terminal and ground shall not exceed 4KVdc.

1-11 SPECIFICATIONS

1-12 Detailed specifications for the power supply are given in Table 1-1.

1-13 OPTIONS

1-14 Options are factory modifications of a standard instrument that are requested by the customer. The following options are available for the instrument covered by this manual. Where necessary, detailed option information (operation, alignment, etc.) is included throughout the manual.

Option No.	Description
05	50Hz Input Modification. Factory modification includes the substitution of 60Hz with 50Hz magnetic component as indicated at the end of the parts list in Section VI. In addition, the overvoltage protection adjustment is rechecked, refer to Section V.
18	230Vac ±10%, Single-Phase Input. Factory modification includes the installation of a 230 volt input transformer to replace the standard 115 volt transformers as indicated at the rear of the parts list in Section VI.

1-15 ACCESSORIES

1-16 The accessories listed in the following chart may be ordered with the power supply or separately

from your local hp sales office. (Refer to list at rear of manual for addresses.) Additional information on accessories is given in Section II.

hp Part No.	Description
14515A	Rack Kit for Mounting one $5\frac{1}{4}$" H supply in a standard 19" EIA rack. (Refer to Section II for details.)
14525A	Rack Kit for mounting two $5\frac{1}{4}$" H supplies in a standard 19" EIA rack. (Refer to Section II for details.)

1-17 INSTRUMENT IDENTIFICATION

1-18 Hewlett-Packard power supplies are identified by a three-part serial number tag. The first part is the power supply model number. The second part is the serial number prefix, which consists of a number-letter combination that denotes the date of a significant design change. The number designates the year, and the letter A through L designates the month, January through December, respectively. The third part is the power supply serial number; a different sequential number is assigned to each power supply.

1-19 If the serial number prefix on your power supply does not agree with the prefix on the title page of this manual, use the change page that is included to update the manual to the proper serial number. Where applicable, backdating information is given in an appendix at the rear of the manual.

1-20 ORDERING ADDITIONAL MANUALS

1-21 One manual is shipped with each power supply. Additional manuals may be purchased from your local hp sales office (see list at rear of this manual for addresses). Specify the model number, serial number prefix, and hp stock number provided on the title page.

Table 1-1. Specifications

OUTPUT:
0-3000Vdc, 0-6 milliamperes.

INPUT:
115Vac ±10%, single phase, 57-63Hz, 1A, 40W.

LOAD REGULATION:
Less than 0.01% or 16mV (whichever is greater) output voltage change for a full load to no load change in output current.

LINE REGULATION:
Less than 0.01% or 16mV (whichever is greater) output voltage change for a 10% change in the nominal line voltage.

RIPPLE AND NOISE:
Less than 2mVrms, 5mV p-p.

TEMPERATURE RANGES:
Operating: 0 to 55°C. Storage: -20 to +85°C.

TEMPERATURE COEFFICIENT:
Less than 0.02% +2mV output voltage change per °C after 30 minute warm-up.

STABILITY:
Less than 0.05% +5mV total drift for 8 hours after 30 minute warm-up and with 3°C ambient variation.

OUTPUT IMPEDANCE:
Less than 32 ohms from dc to 30Hz.
Less than 8 ohms from 30Hz to 100kHz.
Less than 2 ohms from 100kHz to 1MHz.

TRANSIENT RECOVERY TIME:
Less than 100μ seconds is required for output voltage to recover to within 0.01% or 16mV of the nominal output voltage following a full load change in output current. The nominal output voltage is defined as the mean between the no load and full load voltage.

OVERLOAD PROTECTION:
An all electronic, continuously acting current limit protects the power supply for all overloads regardless of how long imposed, including a direct short circuit across the output terminals.

CONTROLS:
An in-line 4-digit (thumbwheel) voltage programmer permits control of the output voltage; resolution is 1V.

METER:
The front panel meter is a 0-3500V voltmeter.

OUTPUT TERMINALS:
The dc output of the supply is floating; thus, the supply can be used as either a positive or negative source. Terminals for +OUT, -OUT, and GND are provided on the front of the supply.

COOLING:
Convection cooling is employed. The supply has no moving parts.

SIZE:
$8\frac{1}{2}$" W x $5\frac{1}{4}$" H x 16" D. Two of the units can be mounted side by side in a standard 19" relay rack.

WEIGHT:
17 lbs. net, 20 lbs. shipping.

FINISH:
Light gray front panel with dark gray case.

POWER CORD:
A 3-wire 5-foot power cord is provided with each unit.