

HEWLETT  PACKARD

**INSTALLATION AND SERVICE
MANUAL**

**29400B-SERIES
CABINETS**

(FOR HP 3000-SERIES COMPUTER SYSTEMS)

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NOTE

This manual is not complete in itself. It must be used with the *Model 29400B-Series Cabinets Installation and Service Manual*, part no. 02940-90256.

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SAFETY SYMBOLS

The following is a list of key safety symbols used by Hewlett-Packard. All symbols are normally applied to the device requiring the symbol. They shall not be placed on removable parts likely to be detached or lost. In addition, there is a description of Warnings, Cautions, and Notes as used in Hewlett-Packard technical manuals.



Instruction Manual symbol: The apparatus will be marked with this symbol when it is necessary for the user to refer to the instruction manual in order to protect the apparatus against damage.



Indicates dangerous voltages.



Earth terminals. If the use of this symbol to denote a protective earth terminal is not permitted by National Standards, the symbol may be modified, e.g., by being placed inside a circle.

Warnings, Cautions and Notes. Any Warning and/or Caution must precede the text to which it applies, but a Note may either precede or follow the portion of text to which it pertains, as may befit the subject matter. Warnings, Cautions and Notes shall not contain, describe or set forth operating procedures, and shall not be numbered. When a Warning, Caution or Note consists of two or more paragraphs, the heading WARNING, CAUTION or NOTE, as the case may be, shall appear only above the first or top paragraph. Should it be necessary for a paragraph to be preceded by any two or all three of those headings, the order of their appearance must be: WARNING — CAUTION — NOTE. Such Warnings, Cautions and/or Notes inserted into the text must be kept brief, and shall be used only to emphasize critically important instructions.

WARNING

The symbol **WARNING** denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in injury or loss of life. Do not proceed beyond a WARNING sign until the indicated conditions are fully understood and met.

CAUTION

The symbol **CAUTION** denotes a hazard. It calls attention to an operating procedure, practice, or the like, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the equipment. Do not proceed beyond a CAUTION sign until the indicated conditions are fully understood and met.

NOTE: A Note is used to call special attention to some important operating procedure, condition, or the like.

Precautionary instructions necessitated by health hazards. When dangerous chemicals or other health hazards associated with the environment or with the equipment being used cannot be eliminated, the necessary precautionary instructions shall be given.

The following pages contain the safety symbol descriptions in FRENCH, GERMAN, SPANISH, ITALIAN, RUSSIAN, and JAPANESE. One of these languages may be more comfortable for you to read.

SYMBOLES DE SECURITE

Ce qui suit est une liste de symboles de sécurité primordiaux utilisés par Hewlett-Packard. Tous ces symboles se trouvent sur les appareils qui exigent leur utilisation. Ils ne seront pas placés sur des pièces démontables susceptibles d'être détachées ou perdues. De plus, il y a une description des Avertissements, des Précautions à Prendre et des Remarques, tels que les utilisent les manuels techniques de Hewlett-Packard.



Symbole du manuel d'instruction: Les appareils seront marqués de ce symbole quand leur utilisateur devra se référer au manuel d'instruction afin d'éviter de les endommager.



Indique des voltages dangereux.



Bornes de mise à la terre. Si l'utilisation de ce symbole, qui dénote une borne de mise à la terre de protection, n'est pas permise par les Standards Nationaux, on peut modifier le symbole par exemple en l'entourant d'un cercle.

Avertissements, Précautions à Prendre et Remarques. Tout Avertissement et/ou Précaution à Prendre doivent précéder le texte auquel ils s'appliquent, cependant une Remarque peut très bien précéder ou suivre la portion du texte qui la concerne, selon les exigences du sujet traité. Les Avertissements, les Précautions à Prendre et les Remarques ne contiendront, ne décriront, ni n'établiront de marches à suivre. Quand un Avertissement, une Précaution à Prendre ou une Remarque consiste de deux paragraphes ou plus, les titres AVERTISSEMENT, PRECAUTION A PRENDRE ou REMARQUE selon les cas, n'apparaîtront qu'au dessus du premier paragraphe ou paragraphe du haut. Au cas où un paragraphe devrait être précédé de deux de ces titres ou de tous les trois, leur ordre d'apparence devra être: AVERTISSEMENT — PRECAUTION A PRENDRE — REMARQUE. Les Avertissements, Précautions à Prendre et/ou Remarques insérés dans le texte devront être brefs et ne seront utilisés que pour accentuer les instructions d'une importance critique.

AVERTISSEMENT

WARNING

Le symbole **WARNING** dénote la possibilité d'un danger. Il attire l'attention sur une marche à suivre, un usage ou autre, dont l'ignorance ou la négligence pourrait causer mort ou blessure. Ne dépassez jamais le signe: AVERTISSEMENT avant d'avoir entièrement compris et rempli toutes les conditions indiquées.

PRECAUTION A PRENDRE

CAUTION

Le symbole **CAUTION** dénote la possibilité d'un danger. Il attire l'attention sur une marche à suivre, un usage ou autre, dont l'ignorance ou la négligence pourrait causer l'endommagement ou la destruction d'une partie ou de tout l'appareillage. Ne dépassez jamais un signe: PRECAUTION A PRENDRE avant d'avoir entièrement compris et rempli toutes les conditions indiquées.

REMARQUE: On se sert d'une remarque pour attirer l'attention sur quelque marche à suivre importante, condition ou autre.

Précautions nécessaires à la sauvegarde des usagers. Quand on ne peut pas éliminer l'usage de produits chimiques dangereux ou d'autres produits qui présenteraient des menaces à la sécurité du milieu ou de l'appareillage, les instructions de précaution à prendre seront données.

SICHERHEITSSYMBOL

Im Folgenden wird eine Liste der wichtigsten von Hewlett-Packard benutzten Sicherheitssymbole gegeben. Alle Symbole sind normalerweise dem Teil beigefügt, für das sie erforderlich sind. Sie sollten nicht an abnehmbaren Teilen angebracht werden, die möglicherweise entfernt werden oder verloren gehen. Außerdem wird eine Beschreibung der Schilder: Warnung, Vorsicht und Anmerkung, wie sie in Hewlett-Packard technischen Handbüchern benutzt werden, gegeben.



Handbuchbenutzungssymbol: Das Teil wird mit diesem Symbol markiert, wenn es für den Benutzer notwendig ist. Bezug zu nehmen auf das Instruktionshandbuch, um den Apparat vor Schaden zu bewahren.



Zeigt gefährliche Spannung an.



Erdklemmen. Wenn der Gebrauch dieses Symbol, das eine Schutzerdklemme bezeichnet, von nationalen Industrienormen nicht erlaubt ist, kann das Symbol verändert werden, indem man es in einen Kreis zeichnet.

Warnung, Vorsicht und Anmerkung. Jede Warnung oder/und Vorsicht muß dem Text vorausgehen, auf den sie sich beziehen, während eine Anmerkung dem betreffenden Text vorangehen oder folgen kann, je nach der Sachlage. Der Inhalt der Warnungen, Vorsichtsschilder und Anmerkungen sollte keine Handhabungsvorgänge beschreiben, beinhalten oder angeben, und sollte nicht nummeriert werden. Wenn eine Warnung, Vorsicht oder Anmerkung aus zwei oder mehr Paragraphen besteht, sollte der Hinweis WARNUNG, VORSICHT oder ANMERKUNG, je nach Fall, nur über dem ersten oder obersten Paragraphen erscheinen. Sollte es notwendig sein, daß ein Paragraph mit zwei oder allen drei Hinweisen bezeichnet wird, sollte folgende Reihenfolge eingehalten werden: WARNUNG — VORSICHT — ANMERKUNG. Solche Warnungen, Vorsichtshinweise und/oder Anmerkungen, die in den Text eingefügt werden, sollten kurz gehalten werden und nur dann benutzt werden, entscheidend wichtige Instruktionen zu verstärken.

WARNUNG

WARNING

Das Symbol **WARNING** bezeichnet eine Gefahr. Es weist auf einen Vorgang, eine Handhabung, o.ä. hin, die, wenn sie nicht korrekt durchgeführt oder befolgt werden, eine Verletzung oder den Tod zur Folge haben könnten. Man sollte ein Warnschild erst übergehen, wenn die angezeigten Umstände völlig verstanden sind und eingehalten wurden.

VORSICHT

CAUTION

Das Symbol **CAUTION** bezeichnet eine Gefahr. Es weist auf einen Handlungsvorgang, eine Handhabung, o.ä. hin, die, wenn sie nicht korrekt durchgeführt oder befolgt werden, eine Beschädigung oder die Zerstörung der gesamten Ausrüstung zur Folge haben könnten. Man sollte ein Vorsichtsschild erst übergehen, wenn die angezeigten Umstände völlig verstanden sind und eingehalten wurden.

ANMERKUNG: Eine Anmerkung wird dazu benutzt, um die Aufmerksamkeit besonders auf einen wichtigen Operationsablauf, Operationsbedingung, o.ä. zu lenken.

Anleitungen zu Vorsichtsmaßnahmen bei Gesundheitsschäden. Wenn gefährliche Chemikalien oder andere Gesundheitsgefahren, die mit der Umgebung oder der Ausrüstung verbunden sind, nicht beseitigt werden können, sollten notwendige Anleitungen zu Vorsichtsmaßnahmen gegeben werden.

SIMBOLOS RELACIONADOS CON LA SEGURIDAD

A continuación figura una lista de importantes símbolos relacionados con la seguridad que emplea la Hewlett-Packard, y que normalmente se colocan en los dispositivos que deben llevarlos. No han de colocarse en piezas desmontables que puedan desprenderse o perderse. Se incluye además una descripción de las Advertencias, Precauciones y Notas que se emplean en los manuales técnicos de Hewlett-Packard.



Símbolo de manual de instrucciones: Llevará marcado este símbolo todo aparato en que sea necesario que el usuario consulte el manual de instrucciones a fin de protegerlo contra posibles daños.



Indica la presencia de voltaje peligroso.



Terminales de tierra. Si las normas nacionales no permitieran el uso de este símbolo para indicar un terminal protector de tierra, puede modificarse el símbolo, incluyéndolo, por ejemplo, en el interior de un círculo.

Advertencias, Precauciones y Notas. Toda Advertencia y/o Precaución debe preceder al texto a que se refiere, pero en el caso de una Nota, la misma puede preceder a la parte del texto a que se refiere o ir a continuación de ella, según convenga al tema de que se trate. Las Advertencias, Precauciones y Notas no deberán contener, describir ni exponer procedimientos sobre funcionamiento, ni deberán tampoco numerarse. Cuando una Advertencia, Precaución o Nota tenga dos o más párrafos, el encabezamiento ADVERTENCIA, PRECAUCION o NOTA, según corresponda, aparecerá únicamente sobre el primer párrafo situado en posición superior. Si fuera necesario que un párrafo vaya precedido de dos de esos encabezamientos, o de los tres, deben aparecer en el siguiente orden: ADVERTENCIA — PRECAUCION — NOTA. Las Advertencias, Precauciones y/o Notas que se intercalen en el texto deberán ser breves y sólo se utilizarán para poner de relieve instrucciones de importancia crítica.

ADVERTENCIA

WARNING

El símbolo **WARNING** denota peligro. Avisa sobre un procedimiento, práctica o acción similar, que de no llevarse a cabo correctamente o siguiendo fielmente las instrucciones podría dar por resultado que se produjeran lesiones o pérdida de vidas humanas. Al encontrarse con un encabezamiento de ADVERTENCIA no debe proseguirse hasta haber comprendido plenamente las circunstancias señaladas y haber hecho lo necesario en relación con las mismas.

PRECAUCION

CAUTION

El símbolo **CAUTION** denota peligro. Avisa sobre un procedimiento de funcionamiento, práctica o acción similar, que de no llevarse a cabo correctamente o siguiendo fielmente las instrucciones podría dar por resultado que se dañara o destruyera total o parcialmente el equipo. Al encontrarse con un encabezamiento de PRECAUCION no debe proseguirse hasta haber comprendido plenamente las circunstancias señaladas y haber hecho lo necesario en relación con las mismas.

NOTA: Nota es el encabezamiento que se utiliza para señalar de manera especial algún procedimiento de funcionamiento, circunstancia o hecho similar que reviste importancia.

Instrucciones sobre precauciones que imponen determinados peligros para la salud. Cuando no sea posible eliminar los productos químicos de índole peligrosa, u otros peligros que constituyen una amenaza para la salud en relación con el ambiente o el equipo que se esté utilizando, se darán las instrucciones precautorias que sean necesarias.

SIMBOLI DI SICUREZZA

La seguente è una lista di simboli di sicurezza chiave usati dalla Hewlett-Packard. Tutti i simboli vengono di solito applicati al dispositivo a cui il simbolo si riferisce e non debbono essere posti su parti rimovibili atte ad essere facilmente distaccate o perdute. Inoltre, una descrizione di Avvisi, Cautele e Note, come specificati nei manuali tecnici della Hewlett-Packard, è qui di seguito riportata.



Símbolo Manual Instrucciones: Questo simbolo è impresso sull'apparato quando è necessario (per chi lo usa) riferirsi al Manuale d'Istruzione in modo da proteggere l'apparato stesso contro danni.



Indica voltaggio pericoloso.



Morsetti a massa. Se l'uso di tale simbolo per indicare un morsetto massa protettivo non è permesso dalle Norme Nazionali, il simbolo può essere modificato, ad esempio può essere posto entro un cerchio.

Avvisi, Cautele e Note. Ogni Avviso e/o Cautela deve precedere il testo a cui si riferisce, ma una Nota può sia precedere che seguire la parte del testo a cui è relativa, come ritenuto migliore. Avvisi, Cautele e Note non contengono, descrivono o stabiliscono procedure operative e non sono numerati. In caso l'Avviso, Cautela, o Nota consistano di due o più paragrafi, il titolo AVVISO, CAUTELA, o NOTA, a seconda del caso, appare solo sopra il primo paragrafo. Se dovesse essere necessario che il paragrafo sia proceduto da due o da tutti e tre detti titoli, l'ordine di presentazione deve essere il seguente: AVVISO — CAUTELA — NOTA. Tali Avvisi, Cautele, e/o Note, inseriti nel testo, debbono essere brevi, e debbono essere usati solo per mettere in evidenza istruzioni di importanza critica.

AVVISO

WARNING

Il simbolo **WARNING** indica un pericolo. Richiama attenzione ad una procedura, pratica, o simile che, se non correttamente effettuata o seguita, potrebbe risultare in infortunio o morte. Non procedere oltre un segnale Avviso fino a quando le condizioni indicate sono completamente comprese e rispettate.

CAUTELA

CAUTION

Il simbolo **CAUTION** indica un pericolo. Richiama attenzione ad una procedura, pratica, o simile che, se non correttamente effettuata o seguita, potrebbe causare danni o distruzione di parte o dell'intero apparato. Non procedere oltre un segnale Cautela fino a quando le condizioni indicate sono completamente comprese e rispettate.

NOTA: Una Nota viene usata per richiamare speciale attenzione ad una importante procedura operativa, una condizione, o simile.

Istruzioni precauzionali contro pericoli di salute. In caso sia impossibile eliminare sostanze chimiche pericolose o altri rischi alla salute, associati a condizioni ambientali od all'apparato in uso, necessarie istruzioni precauzionali saranno fornite.

СИМВОЛЫ БЕЗОПАСНОСТИ

Ниже приводятся основные символы безопасности, используемые фирмой Хьюлетт-Паккард. Все символы обычно прилагаются к прибору, требующему символа. Символы не следует помещать на съемные части, которые могут быть отделены от прибора или затеряны. Кроме того, ниже дается объяснение понятий «предупреждение», «предостережение», «замечание» в том виде, как они употребляются в технических руководствах фирмы Хьюлетт-Паккард.



Инструкционный символ: подобный знак ставится на аппарат в том случае, если требуется отослать потребителя к инструкции, чтобы предохранить аппарат от поломки.



Означает напряжение, опасное для жизни.



Зажимы заземления. В случае, если употребление этого знака, как знака обозначения защитных зажимов заземления, не допускается национальными стандартами, символ может быть модифицирован, например, помещен в круг.

Предупреждения, предостережения и замечания. Любые предупреждения и/или предостережения должны предшествовать тексту, к которому они прилагаются, в то время как замечания могут быть помещены как перед текстом, так и после него, в зависимости от содержания. Предупреждения, предостережения или замечания не должны содержать, описывать или рекомендовать операционные процедуры и не должны нумероваться. Если предупреждения, предостережения или замечания состоят из двух или более параграфов, заголовков ПРЕДУПРЕЖДЕНИЕ, ПРЕДОСТЕРЕЖЕНИЕ или ЗАМЕЧАНИЕ для каждого соответствующего случая должен стоять только перед первым или верхним параграфом. Если содержание параграфа требует любых двух или всех трех заголовков, они должны идти в следующем порядке: ПРЕДУПРЕЖДЕНИЕ — ПРЕДОСТЕРЕЖЕНИЕ — ЗАМЕЧАНИЕ. Подобные предупреждения, предостережения и/или замечания, помещенные в тексте, должны быть краткими и использованы исключительно для того, чтобы подчеркнуть критически важные указания.

ПРЕДУПРЕЖДЕНИЕ

Символ **WARNING** означает опасность. Он обращает внимание на такие процессы, действия и тому подобное, которые в случае их неправильного выполнения или отступления от них могут привести к ущербу для здоровья или потере жизни. Не следует продолжать операций до тех пор, пока условия, обозначенные знаком «предупреждение», не поняты до конца и не отвечают предъявленным требованиям.

ПРЕДОСТЕРЕЖЕНИЕ

Символ **CAUTION** означает опасность. Он обращает внимание на такие производственные процессы, действия и тому подобное, которые в случае их неправильного выполнения или отступления от них могут привести к поломке или разрушению отдельных блоков установки или всей установки в целом. Не следует продолжать операций до тех пор, пока означенные условия не поняты до конца и не отвечают предъявленным требованиям.

ЗАМЕЧАНИЕ: Замечания делаются в тех случаях, когда необходимо обратить особое внимание на некоторые важные производственные процессы, условия и тому подобное.

Предупредительные указания, обусловленные существующей опасностью для здоровья. В тех случаях, когда невозможно избежать применения вредных химикатов или изменить опасные для здоровья условия, ассоциированные с окружающей средой или с используемой техникой, должны применяться необходимые предупредительные инструкции.

安全記号

ヒューレット・パカードで使用されて居る主要な安全記号は次表に示される如くで、使用装置には×共通して居る。紛失する事がない様、これらの記号は取りはずし可能な部分には附着禁止になって居り、その他、ヒューレット・パカード技術教本に使用されて居る 警告、注意、及 註 の説明もある。

技術教本記号



この記号は、装置の損傷を防止する為、使用者に教本を参照させたい箇所に置かれる。

は、危険電圧の意。

は、アースの意。但し、国定基準法によりこの記号の使用が禁じられて居る場合には、この記号を丸印の中に入れてたりして、変更が加えられる。

警告、注意、及 註

警告 と 注意 とは、それに関係ある本文の前に置かれなくてはならないが、註 は場合によっては本文の後に置かれてもよい。警告、注意、及 註 の箇所には操作法の記述説明が含まれてはならず、又 番号が附着されてもならない。これらが二分節以上になる時には、警告、注意、及 註 の題字は最初の分節の前にもみ置かれる。もし二つ以上の題字が同一分節の前に置かれる時は、警告、注意、註 の順になる。これら 警告、注意、及 註 などとは簡潔たるべく特別に重要な項目を強調する目的のみで本文に挿入される。

WARNING

この記号は危険を意味し、もし使用法を誤れば生命に危険があると言う注意を促す。記述された条件がすべて満足される場合は 警告 の記号を通過してはならない。

CAUTION

この記号も危険を意味し、もし操作法を誤れば装置の部分品乃至全部に傷害があると言う注意を促す。記述された条件が十分に理解される場合は 注意 の記号を通過してはならない。

Note: 註 は特に重要な操作法、その他に関する注意を促す事が目的である。

保健面から必要となる予防策指令

危険薬品乃至環境及装置に関し、保健面での危険が避けられぬ場合、必要な予防策指令が与えられなくてはならない。

1. SCOPE

2. This manual contains supplementary data and installation information for 29400B-Series Cabinets which have been modified for use in HP 3000 Computer Systems. This supplementary data is to be used in conjunction with *Model 29400B-Series Cabinets Installation and Service Manual*, part no. 02940-90256. Reference is made to paragraphs in the cabinet manual.

3. GENERAL DESCRIPTION

4. METHOD OF SHIPMENT

5. Cabinets modified for HP 3000 Systems are an integral part thereof. Normally, there are at least three bays to a HP 3000 Computer System. An HP 3000 System is assembled and thoroughly tested at the factory. At shipment time, all electrical connections between bays, including power cables, are disconnected. Each bay is packed and shipped separately with equipment installed (except the anti-tip extendable legs which are shipped dismantled.) This includes power options. Upon receipt at user facility the individual bays are physically and electrically connected together, by HP customer engineer, to form a three or more bay configured cabinet and system.

6. PHYSICAL DIFFERENCES

7. Normally, HP 3000 System cabinets are model 29402B (56-inch vertical opening). All of these cabinets contain top covers of different notch configurations; full height mounting strips in rear columns; cable access bottom panel; front and rear doors; a special casting trim at top rear to accommodate door hinges; anti-tip base extension locking pin; no eye bolts; and a 1.75-inch high blank panel located at the rear base of the cabinet. Each bay has four casters. Refer to figure 1 for overall cabinet dimensions. Individual physical differences between bays are described in the following paragraphs.

8. **CPU BAY.** This is the primary bay which contains the Power Control Module and the EMERGENCY OFF switch. A special casting trim at the front top is provided for the EMERGENCY OFF switch. Included with this bay is one anti-tip base extendable leg, two removable side panels, a barrier panel on the left side, special casting trim at bottom for front and rear, and a front door. A blower unit is mounted at the lower front of the bay.

9. Normally, this bay contains high capacity auxiliary cooling. Therefore, a barrier is installed on the left side and a blower at the lower front. The blower case has a deflection plate at the rear that directs the air upward towards the equipment. The rated capacity of the blower is 800 cubic feet per minute (cfm).

10. The front door is left hinged, contains a color (blue) accent extrusion insert, an open fan grill, a key lock and the system control panel. Power for the system control panel is provided by the computer. The DC POWER ENABLE switch (30390-60007) located top front behind the front door controls +5 volts dc to the entire system.

11. **I/O BAY.** This bay does not contain side panels and extendable legs. Included is the hardware for connecting together bays 1 and 2 in the field. The front door has an open fan grill. A panel fan assembly is located at the front bottom. A Power Distribution Unit (figure 2) is mounted at the rear.

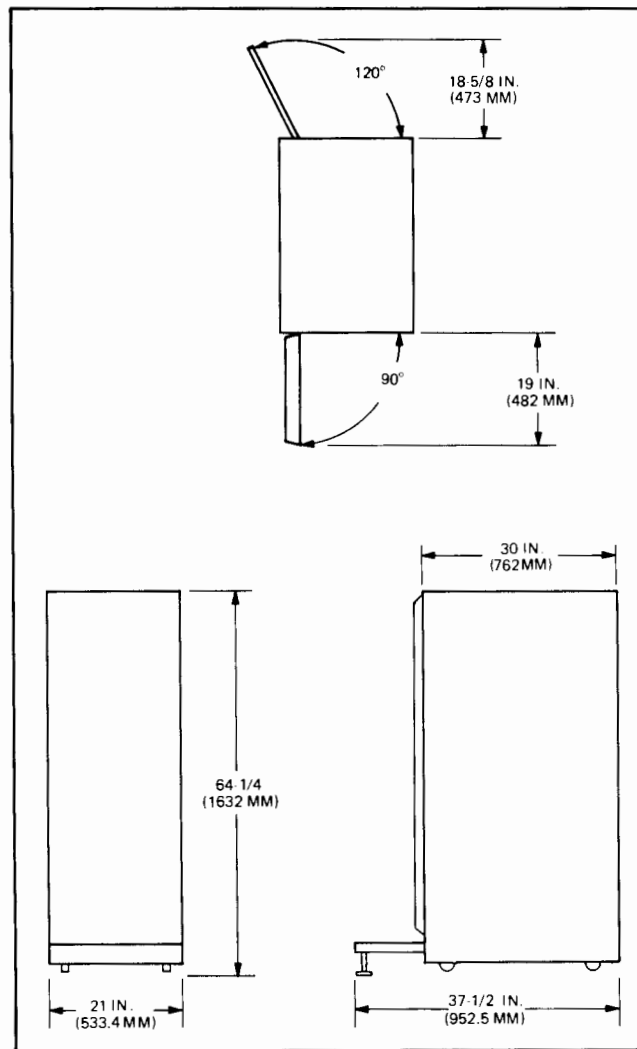
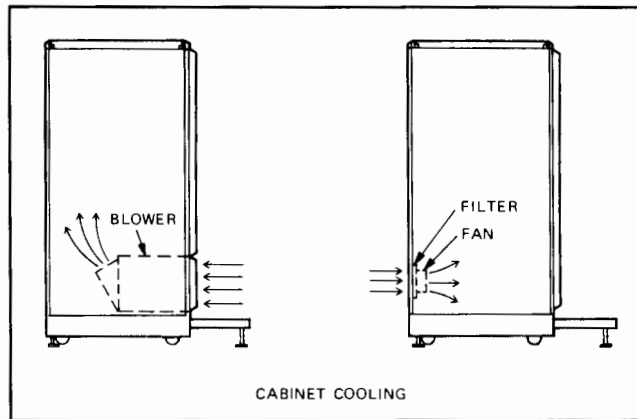
Note: If the system contains a HP 30102A Disc Subsystem, a Power Control Unit (PCU) will be mounted in the back of the bay.

12. **PERIPHERAL BAY.** The last bay contains a side panel and an extendable leg. Included is hardware for connecting the peripheral bay to the I/O bay in the field. The front door is a snap-on type with a closed fan grill. A panel fan assembly and a power distribution unit are mounted at the rear.

13. ELECTRICAL POWER DIFFERENCES.

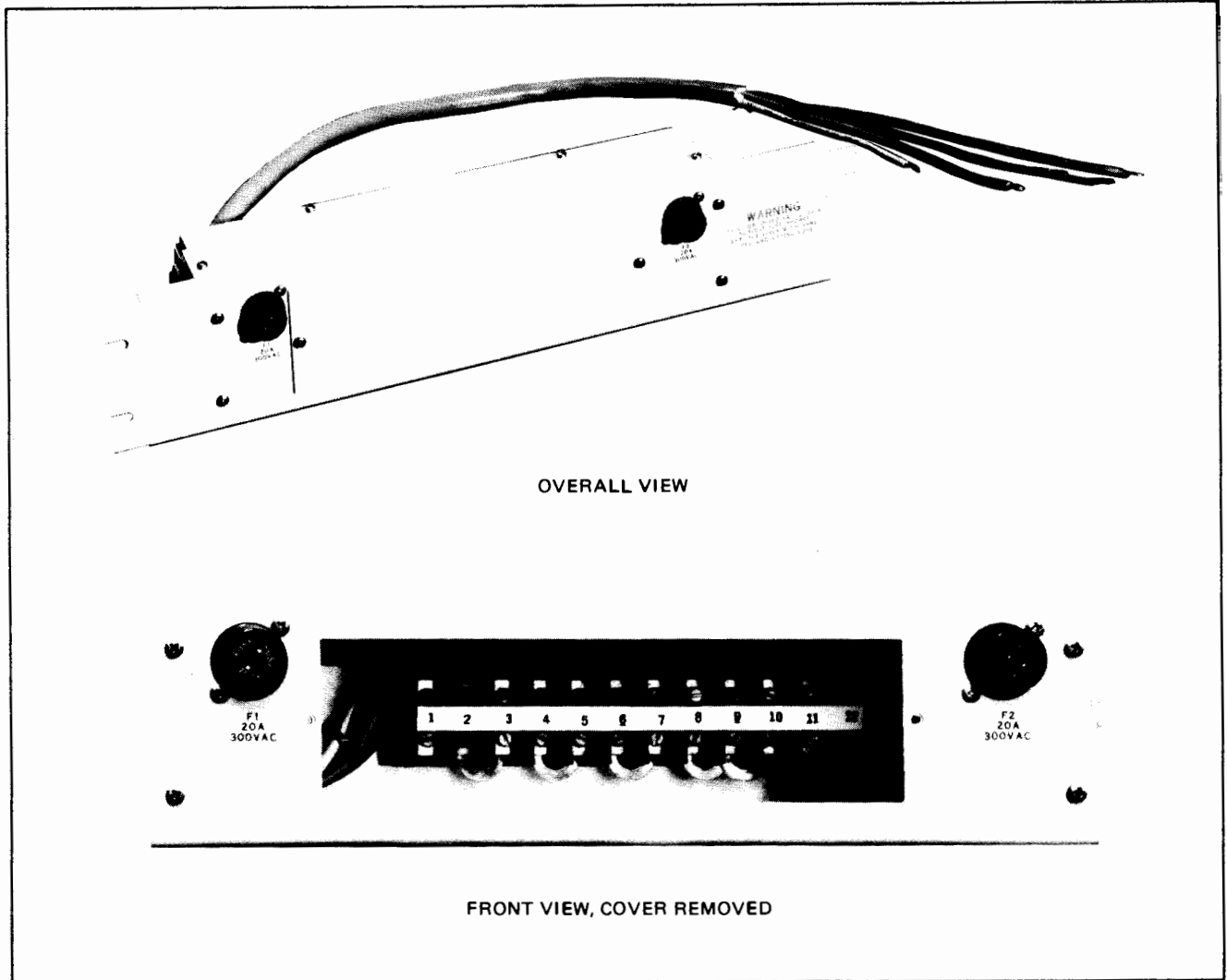
14. The power requirement of HP 3000 Computer Systems is higher than the standard power options offered by 29400B-Series Cabinets. Therefore, cabinets modified for HP 3000 Computer Systems contain a Power Control Module (PCM), part no. 30390-60002, and several Power Distribution Units (PDU), part no. 30390-60003, which have a greater power capability. In some systems a HP 30330A Power Control Unit (see figure 4) (PCU) may be provided to power disc subsystems when included in the system.

15. See figure 3. The primary unit is the PCM (see figure 4) which controls and distributes ac power to the CPU bay and to power distribution units (PDU's) in neighboring bays (up to 30 amperes per phase). When a PCU is included, it extends this 30-ampere limit by providing another circuit breaker of 30 amperes-per-phase capability through which main power can be routed.



7102-23

Figure 1. Overall Cabinet Dimensions



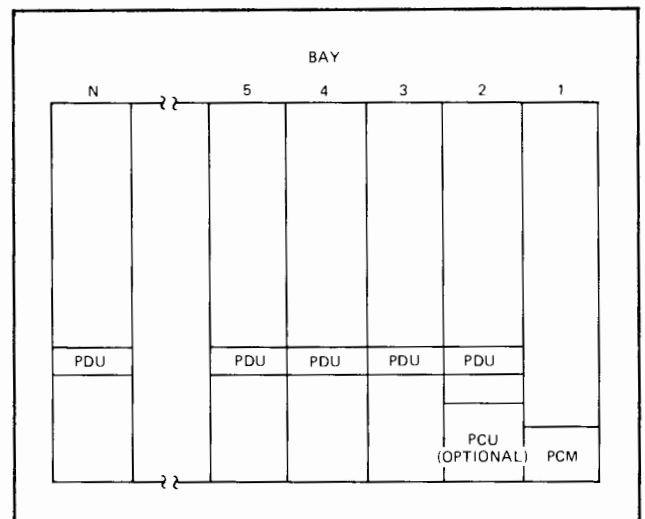
2217-7

Figure 2. Power Distribution Unit

16. In the PCM, main power is routed through a line filter to a circuit breaker. From the circuit breaker, main power is routed to a terminal block for connection to the PDU in the next bay, and through fuses for internal cabinet connection to the service strips. The cabinet can be configured for compatibility with various primary power sources. Refer to paragraph 24.

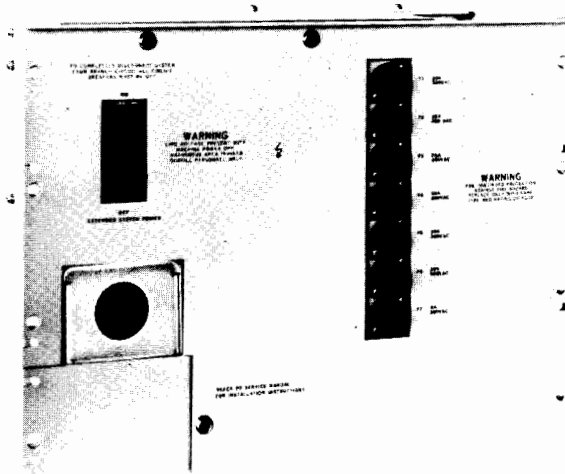
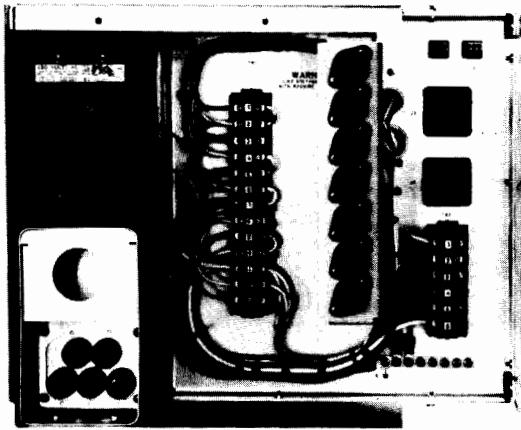
17. The PCM includes a 24-volt dc power supply that is used in conjunction with an emergency power off function. A second feature is a relay which can be used to provide a remote indication of emergency power off. Another feature is a pair of connectors, each connected to the +5 volt bus of the CPU power supply module. The connectors provide a convenient means of connecting a System Control Panel to the system.

18. The EMERGENCY OFF pushbutton switch is located in the front upper right corner (in the right end of the nameplate). When pressed, it applies +24 volts dc to a

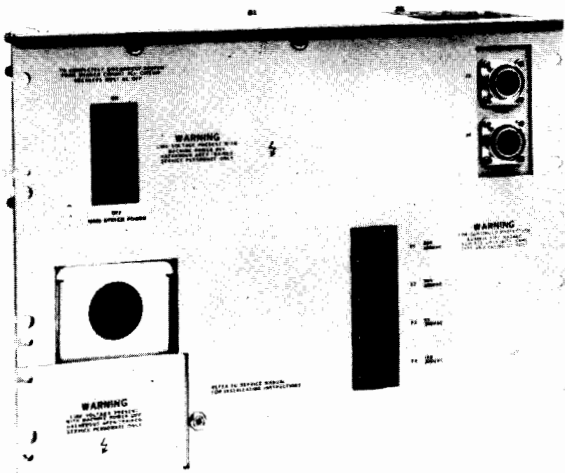
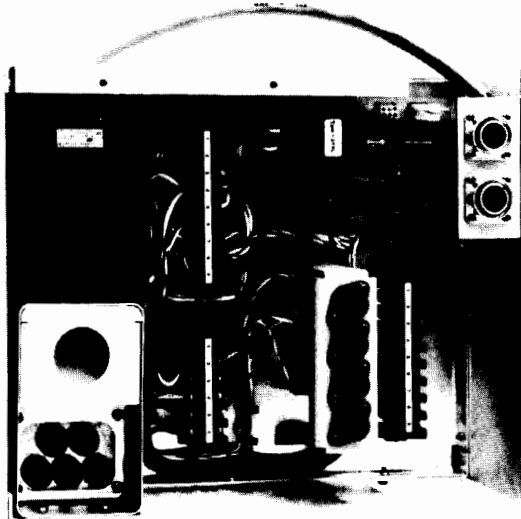


7102-24

Figure 3. Bay Numbering and Relative Position (Front View)



POWER CONTROL UNIT



POWER CONTROL MODULE

2237-1

Figure 4. HP 30330A Power Control Unit and Power Control Module

trip coil in the PCM power input circuit breaker, causing the breaker to open.

19. The DC ENABLE switch assembly which is located in the front upper left corner (behind the CPU bay door), consists of a two position toggle switch and an indicator lamp. The switch and the lamp are wired to the CPU module dc power supply. All dc power supply control lines in the system are also wired, in parallel, to the CPU module power supply. The switch and lamp provide on-standby control and indication for the system dc voltage.

20. Included in the electrical system are cooling fans and a blower located in the lower section of each bay to maintain internal cabinet temperature within the operating range of the system components. Air is drawn in through permanent, snap-in filters and exhausted through openings in the cabinet top cover and top rear panel. The cabinet internal temperature rise is less than 15 degrees Centigrade over ambient temperature when equipment power consumption per bay does not exceed 2000 watts. See figure 1.

21. For a complete description of an HP 30330A PCU, including maintenance instructions and diagrams and a replaceable parts list, refer to the *HP 30330A Power Control Unit*, and *Power Control Module Installation and Maintenance Manual*, part number 30330-90001.

22. UNPACKING AND HANDLING

CAUTION

The tilt-up and hoisting of a cabinet loaded with equipment must be done using the optional lifting fixture (40010A), otherwise damage to equipment and or cabinet may result.

23. Refer to the unpacking and handling instructions given in Section II of the *HP 29400B-Series Cabinets Installation and Service Manual*. Generally, open the crate and remove cabinet front doors. Tilt up or hoist cabinet with optional lifting fixture.

24. SITE REQUIREMENTS

25. POWER SOURCE

26. One of three types of main power is required for the cabinet. The PCM is limited by design to accommodate one of the following three types of power:

- a. 120/208 volts, 60 Hertz, 3 phase, 4 wire plus earth wire.
- b. 230 volts, 50 Hertz, 1 phase, 2 wire plus earth wire (system option 015).

- c. 120/240 volts, 60 Hertz, 1 phase, 3 wire plus earth wire (system option 025).

27. POWER CONDUIT



Note: Power connections from the power source to the cabinet shall be performed by the customers electrical contractor in accordance with local codes.

28. The means used to connect the cabinet to the power source must be furnished by the customer and must comply with local electrical codes. The minimum wire size recommended is number 8 AWG. The absolute minimum is number 10 AWG. The wires should be terminated with crimped or soldered ring lugs for connection to the line filter in the PCM. Standard 1-1/4 inch trade-sized conduit should be used to bring the wires to the cabinet. For ease of maintenance, the last 3 or 4 feet should be flexible conduit.

29. SPACE

30. A location for the cabinet should be selected that will afford adequate space for the doors to be fully opened. Refer to figure 1 for radius and angle of door swing.

31. INSTALLATION

WARNING

Connection to power mains is to be left until last to minimize danger due to accidental turn-on.

WARNING

Do not slide or swing out equipment, until all bays are connected and the anti-tip base extender legs are extended. Cabinet may tip over and injure personnel and/or damage equipment.

32. CABINET TIE-TOGETHER

33. To connect the various bays proceed as follows:
- a. Position bays in proper order adjacent to each other.
 - b. Tie bays together using hardware supplied in bays 2 and 3. Refer to paragraph 2-24 and figure 2-4 in the cabinet installation and service manual.

Table 1. PDU Strapping Connections

BAY POSITION RELATIVE TO PCM (e.g., PCM = 1)	INPUT VOLTAGE					
	120/208V 3 PH, 60 Hz			230V 1PH, 50 Hz	120/240V 1 PH, 60 Hz	
	2, 5, 8, 11, etc.	3, 6, 9, 12, etc.	4,7,10,13, etc.	2, 3, 4, 5, etc.	2, 4, 6, 8, etc.	3, 5, 7, 9, etc.
Strapping at TB1	2-3 4-5 6-7 8-9 9-10	1-2 4-5 7-8 8-9 10-11	1-2 3-4 6-7 8-9 9-10	1-2 5-6 9-10	1-2 3-4 6-7 7-8 9-10	1-2 3-4 6-7 8-9 9-10

34. POWER CONNECTION

WARNING

Dangerous line voltages, which could cause serious injury or death are present within the cabinet. Therefore, before performing the following procedures, ensure that power to the cabinet is shut off and will not be turned on by personnel unaware that work is being done on the cabinet.

35. POWER DISTRIBUTION UNIT. Connect each cabinet PDU as follows:

Note: Ensure that circuit breaker is off.

- a. Remove access plate (see figure 2) from PDU by removing two screws and two lockwashers.
- b. Configure PDU strapping connections in each bay according to available primary power and bay position relative to PCM bay as listed in table 1. TB1 is shown (not labeled) in figure 2. Figure 3 shows the orientation and numbering of bays relative to bay one, which contains the PCM.
- c. Attach cable to PDU in bay two and to PCM in bay one in accordance with table 2.
- d. Connect adjacent PDU's in accordance with figure 7.
- e. Replace access plate with two screws and two lockwashers.

Table 2. PDU-PCM Wiring Connections

WIRE	PDU	PCM
blk	TB1-1	TB3-6
red	TB1-3	TB3-7
orn	TB1-5	TB3-8
wht	TB1-12	TB3-9
grn-yel	earth bus	earth bus

36. POWER CONTROL MODULE. Connect primary power to the cabinet PCM as follows:

- a. Once the cabinet is positioned in the desired location, remove large and small panels from the PCM by removing nine screws, filler washers, and cup washers.
- b. Configure primary power strapping connections to accommodate available power source as listed in table 3. Terminal blocks are shown in figure 4.

Table 3. PCM Primary Power Terminal Block Strapping Configurations

TERMI- NAL BLOCK	120/208V, 3 PH, 60 Hz	230V 1PH, 50 Hz	120/240V 1 PH, 60 Hz
TB1	1 to 2	2 to 3	1 to 2
TB1	3 to 4	5 to 6	3 to 4
TB1	4 to 5	—	4 to 5
TB2	4 to 5	5 to 6	4 to 5

Note: The following step is to be performed only by an electrical contractor.

- c. Connect primary power cable wires to PCM line filter as shown in figure 5. Also, refer to figure 6, PCM schematic diagram.
- d. Disconnect all power connectors from all outlet service strips.
- e. Ensure that power mains and cabinet circuit breakers are turned off. Connect other end of primary power cable wires to power mains. When completed, turn on power mains.
- f. Using a suitable voltmeter, verify presence of appropriate primary power at each PCM terminal as listed in table 4. (See figure 5 for terminal identification.)
- g. Verify that EMERGENCY OFF lamp lights. (If lamp does not light, attempt to turn it on by pressing and releasing EMERGENCY OFF switch.)

CAUTION

When emergency off circuit is properly wired, the lamp will light. If attempt to light lamp fails, PCM circuit breaker should not be turned on. Damage to cabinet could occur if emergency off circuit is not operable.

Table 4. PCM Terminal Voltages at Line Filter

STRAPPING CONFIGURATION	PCM TERMINAL VOLTAGE
120/208-volt	208V between each phase 120V between each phase and neutral
230-volt	230V between phase A and neutral
120/240-volt	240V between phases A and B 120V between each phase and neutral

- h. Set circuit breaker to on (up) position and verify that voltage at receptacles on service strip corresponds to rated voltage for particular PCM strapping configuration (± 10 percent).

- i. Press and release EMERGENCY OFF switch and verify that:
 - (1) EMERGENCY OFF lamp goes off.
 - (2) Circuit breaker is tripped to off (down) position.
- j. Connect fans and instruments to outlet service strip.
- k. Press and release EMERGENCY OFF switch to enable resetting the circuit breaker (lamp should light).

CAUTION

Verify all fans are operating on both the card cages and cabinet bays, otherwise damage to equipment will result.

- l. Set circuit breaker to ON.

37. FIELD ADD-ONS

38. PCU ADDITION

39. The procedure for installation of a Power Control Unit to a HP 3000 Computer System in the field is given below. Reference is also made to *HP 30330A Power Control Unit and Power Control Module Installation and Maintenance Manual*, HP part no. 30330-90001.

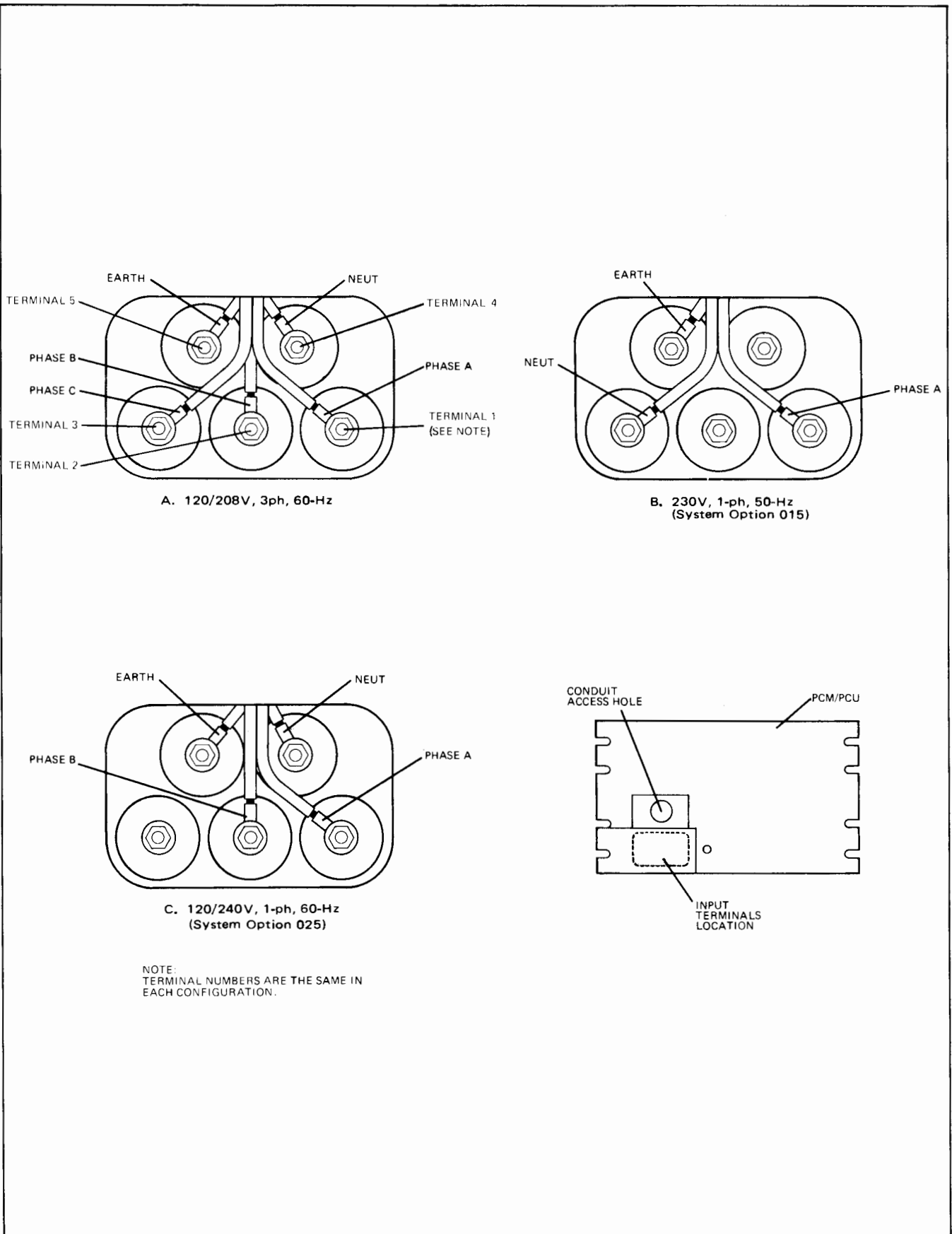
WARNING

Connection to power mains is to be left until last to minimize danger due to accidental main power turn-on.

- a. Set PCM circuit breaker to OFF in order to shut down system during installation of PCU.
- b. Remove 14-inch blank panel by removing four screws, cup washers, and filler cup washers.
- c. Mount PCU in space formerly occupied by 14-inch blank panel. (Mounting hardware supplied with PCU.)
- d. Remove large and small panels from PCU by removing eight screws, filler washers, and cup washers.

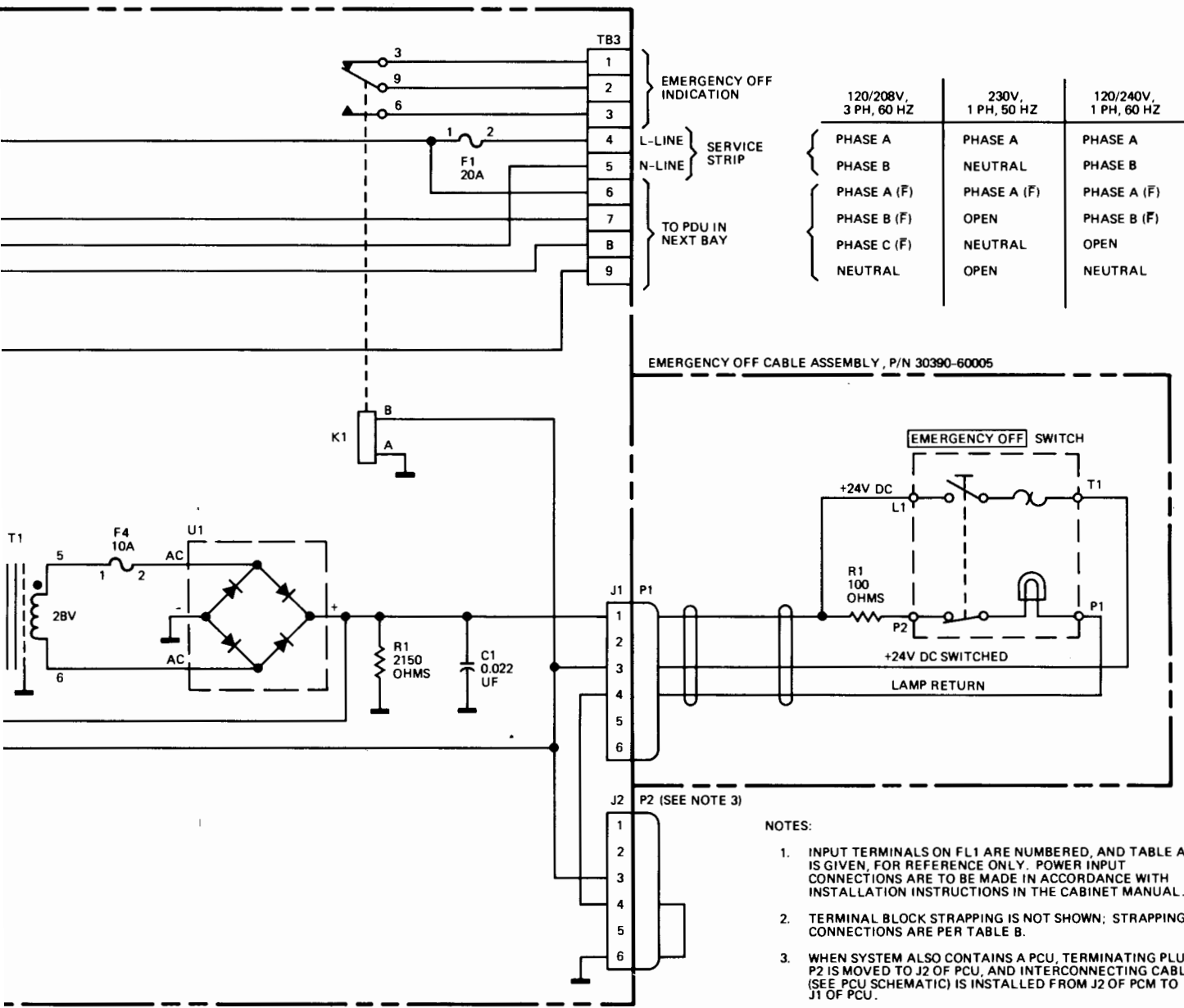
CAUTION

Ensure strapping is correct. Units to be housed within cabinet can be damaged by wrong voltage on connector assemblies.



7102-25

Figure 5. PCM Primary Power Input Connections on Line Filter



	120/208V, 3 PH, 60 HZ	230V, 1 PH, 50 HZ	120/240V, 1 PH, 60 HZ
PHASE A	PHASE A	PHASE A	PHASE A
PHASE B	PHASE B	NEUTRAL	PHASE B
PHASE A (F)	PHASE A (F)	PHASE A (F)	PHASE A (F)
PHASE B (F)	PHASE B (F)	OPEN	PHASE B (F)
PHASE C (F)	PHASE C (F)	NEUTRAL	OPEN
NEUTRAL	NEUTRAL	OPEN	NEUTRAL

NOTES:

1. INPUT TERMINALS ON FL1 ARE NUMBERED, AND TABLE A IS GIVEN, FOR REFERENCE ONLY. POWER INPUT CONNECTIONS ARE TO BE MADE IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS IN THE CABINET MANUAL.
2. TERMINAL BLOCK STRAPPING IS NOT SHOWN; STRAPPING CONNECTIONS ARE PER TABLE B.
3. WHEN SYSTEM ALSO CONTAINS A PCU, TERMINATING PLUG P2 IS MOVED TO J2 OF PCU, AND INTERCONNECTING CABLE (SEE PCU SCHEMATIC) IS INSTALLED FROM J2 OF PCM TO J1 OF PCU.
4. WIRES A, C, S, AND T ARE PART OF CB1; WIRES A AND T ARE SPLICED.
5. (F) MEANS NOT USED.
6. CB1 IS RATED AT 40A BY MANUFACTURER; IT IS DE-RATED TO 30A FOR THIS APPLICATION.

TABLE A. POWER INPUT CONNECTIONS

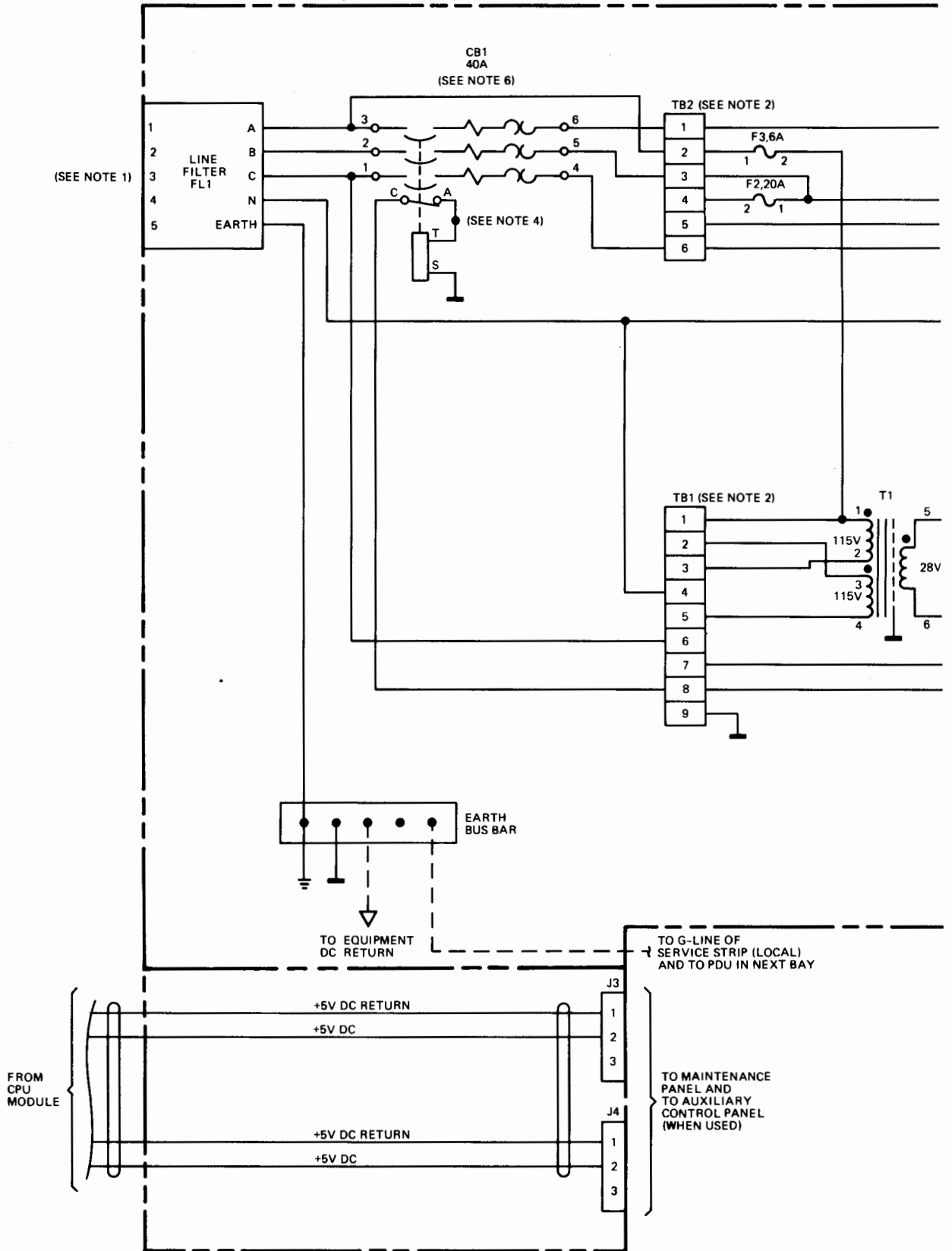
TERMINAL	120/208V, 3 PH, 60 HZ	230V, 1 PH, 50 HZ	120/240V, 1 PH, 60 HZ
1	PHASE A	PHASE A	PHASE A
2	PHASE B	NO CONN	PHASE B
3	PHASE C	NEUTRAL	NO CONN
4	NEUTRAL	NO CONN	NEUTRAL
5	EARTH	EARTH	EARTH

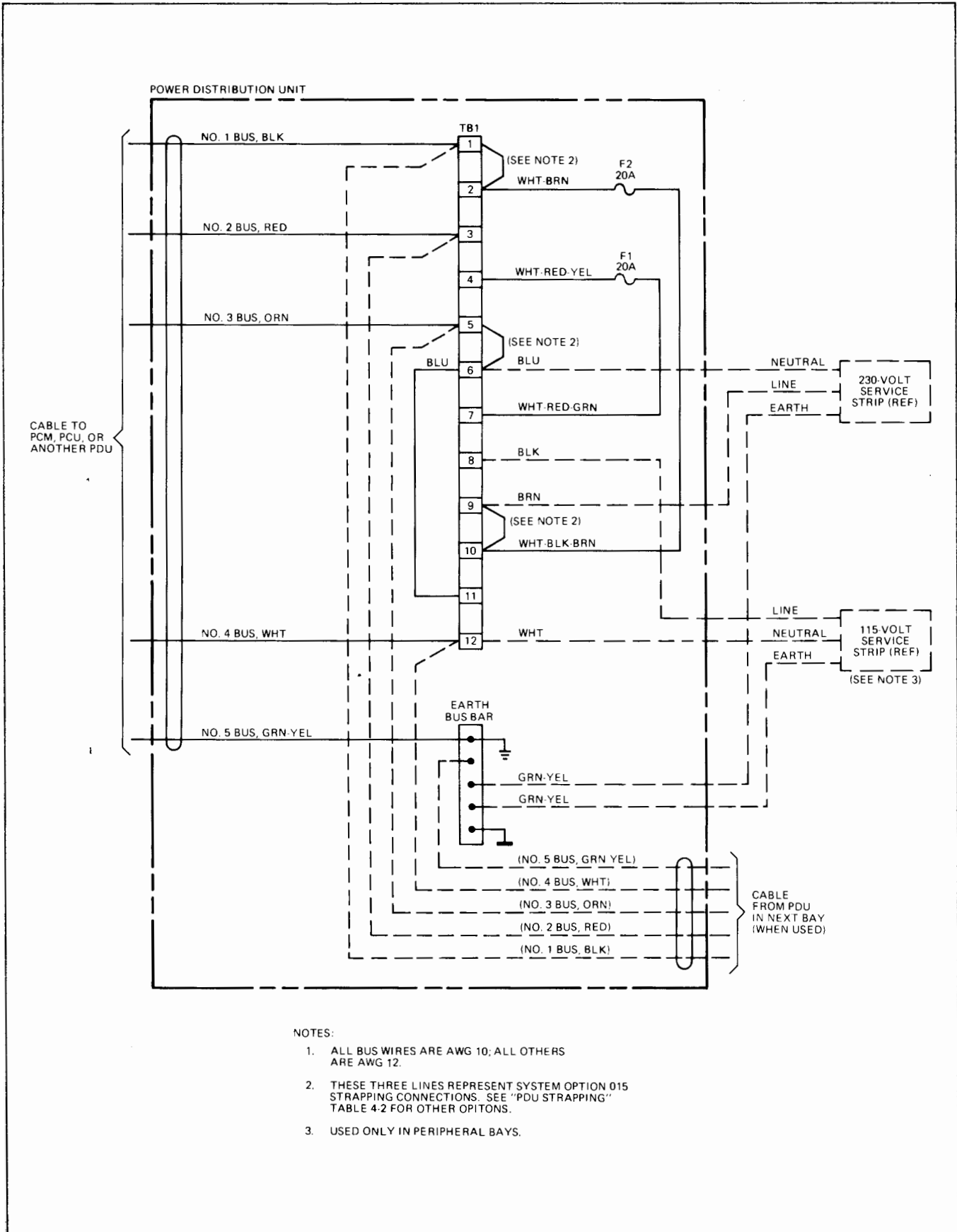
TABLE B. STRAPPING CONNECTIONS

TERMINAL BLOCK	120/208V, 3 PH, 60 HZ	230V, 1 PH, 50 HZ	120/240V, 1 PH, 60 HZ
TB1	1 - 2	2 - 3	1 - 2
TB1	3 - 4	5 - 6	3 - 4
TB1	4 - 5	---	4 - 5
TB2	4 - 5	5 - 6	4 - 5

Figure 6. Power Control Module Schematic Diagram

POWER CONTROL MODULE (PCM), P/N 30390-60002





NOTES:

1. ALL BUS WIRES ARE AWG 10; ALL OTHERS ARE AWG 12.
2. THESE THREE LINES REPRESENT SYSTEM OPTION 015 STRAPPING CONNECTIONS. SEE "PDU STRAPPING" TABLE 4-2 FOR OTHER OPITONS.
3. USED ONLY IN PERIPHERAL BAYS.

Figure 7. Power Distribution Unit Wiring Diagram

- e. Ascertain type of power available to cabinet and verify that factory PCU strapping connections are correct. (Refer to table 5.)

Table 5. PCU Strapping Connections

TERMI- NAL BLOCK	120/208V, 3 PH, 60 Hz	230V, 1 PH, 50 Hz	120/240V, 1 PH, 60 Hz
TB1	1 to 2	2 to 3	1 to 2
TB1	4 to 5	3 to 4	4 to 5
TB1	6 to 7	7 to 8	5 to 6
TB1	9 to 10	8 to 9	9 to 10

Note: The following step is to be performed only by customer's electrical contractor.

- f. Make power input connections to PCU in accordance with figure 5.
- g. Remove terminating plug P2 from J2 of PCM (or of last added PCU, as applicable) and mate it with J2 of new PCU.
- h. Connect J2 of PCM (or of last PCU, as applicable) to J1 of new PCU by means of interconnecting cable (figure 8) supplied with new PCU.

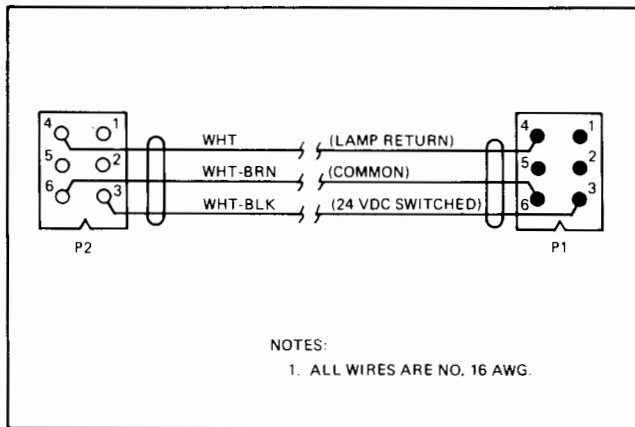


Figure 8. PCU-to-PCM/PCM Interconnecting Cable

Note: The following two steps are not applicable if PCU is added exclusively to power disc drive.

- i. Remove access plate from PDU.
- j. Disconnect service strip leads from PCU and reconnect to PCU in accordance with table 6.

Table 6. Service Strips Wiring to PCU

SERVICE STRIP	WIRE	TERMINAL
115V	blk	TB2-1
	wht	TB2-6
	grn-yel	earth bus bar
230V (CEE-22)	brn	TB2-1
	blu	TB2-2
	grn-yel	earth bus bar

Note: The following step is to be performed only by customer's electrical contractor.

- k. Ensure that power mains are turned off. Connect other end of power input wires to power mains. Upon completion, turn on power mains.
- l. Using a suitable voltmeter, verify appropriate ac voltage between each pair of phases (figure 5) and/or between each phase and neutral. Measured results is dependent on system power option selected.
- m. Verify that EMERGENCY OFF lamp lights. (If lamp does not light, attempt to turn it on by pressing and releasing EMERGENCY OFF switch.)

CAUTION

When emergency off circuit is properly wired, the lamp will light. If attempt to light lamp fails, PCU circuit breakers should not be turned on. Damage to cabinets could occur if emergency off circuit is not operable.

- n. Set circuit breaker on new PCU to on (up) position and verify that fan operates.
- o. Verify appropriate voltage is present at service strip outlets and at connectors J3 and J4.
- p. Press and release EMERGENCY OFF switch on front of main bay and verify that circuit breaker on new PCU and PCM have tripped to off (down) position.
- q. Press and release EMERGENCY OFF switch to enable resetting of circuit breakers.

40. CABINET ADDITION

41. The procedure for addition of a bay to an existing cabinet is given in paragraph 2-22 of the 29400B-Series Cabinets Installation and Service Manual. To connect power to the new bay, refer to paragraph 34 in this manual. Install the bay's front door last, if applicable.

42. MAINTENANCE

43. OPERATOR MAINTENANCE

44. The cabinet requires a minimum of operator maintenance. Table 7 lists the schedules for periodic inspection and cleaning of the cabinet.

Table 7. Operator Maintenance Schedule

ROUTINE	SCHEDULE
Inspection (paragraph 45)	Biweekly
Cleaning (paragraph 46)	Monthly

WARNING

Dangerous line voltages, which could cause serious injury or death are present within the cabinet. Therefore, before performing the following procedures, ensure that power to the cabinet is shut off and will not be turned on by personnel unaware that work is being done on the cabinet.

45. **INSPECTION.** The cabinet should be periodically inspected for signs of mechanical and electrical defects. Electrical components that show signs of overheating, frayed insulation, and other signs of deterioration should be checked and a thorough investigation made to verify proper operation. Mechanical parts should be inspected for excessive wear, looseness, misalignment, and corrosion.

46. **CLEANING.** The cabinet should be kept free of dust, moisture, grease, and foreign matter to ensure trouble-free operation of the system units. A dry, clean cloth, a soft bristle brush, or a cloth saturated with mild detergent solution or a similar cleaning compound may be used to clean the metal portion of the cabinet.

Note: Vacuum cleaners and other equipment that generate line noise should not be connected to the cabinet service strips while system components are in operation. Erratic system operation might result.

47. The filters for the cabinet fans should be cleaned to ensure that the cabinet remains free of dust. To clean the filters, vacuum only the outer surface.

48. **LUBRICATION.** The cabinet requires no lubrication.

49. TROUBLESHOOTING

50. Because the majority of the cabinet consists of mechanical parts, troubleshooting is confined to the power control module. Troubleshooting information for the PCM consists of a troubleshooting flowchart, test procedures, schematic diagram, and wire list.

WARNING

Dangerous line voltages are present at various points within the cabinet. Use extreme caution when working on the cabinet with the protective covers removed, or serious injury or death could result.

51. **TEST EQUIPMENT REQUIRED.** The only test equipment required for the following tests is a HP 427A Volt-Ohmmeter, or equivalent.

52. **TEST SEQUENCE.** The following tests are to be performed in the order referenced by the flowchart (figure 9); the steps in any test are to be performed in the order given. The flowchart is based on the premise that the unit under test is in its operational location, connected to a source of primary power, and the circuit breaker is off.

53. **DC OUTPUT TEST.** Check the dc output of the PCM by verifying that voltage between terminals 7(+) and 9(-) of TB1 is +26 volts dc \pm 10 percent.

54. **RELAY K1 TEST.** Check relay K1 in the PCM as follows:

- Connect ohmmeter between terminals 1 and 2 of TB3; verify that ohmmeter indicates a short circuit.
- Connect ohmmeter between terminals 2 and 3 of TB3; verify that ohmmeter indicates an open circuit.

WARNING

Terminal TB1-6 has 120 volts or 230 volts ac applied to it regardless of state of CB1. Use care in following step or serious injury or death could result.

- Connect a jumper between pins 7 and 8 of TB1.

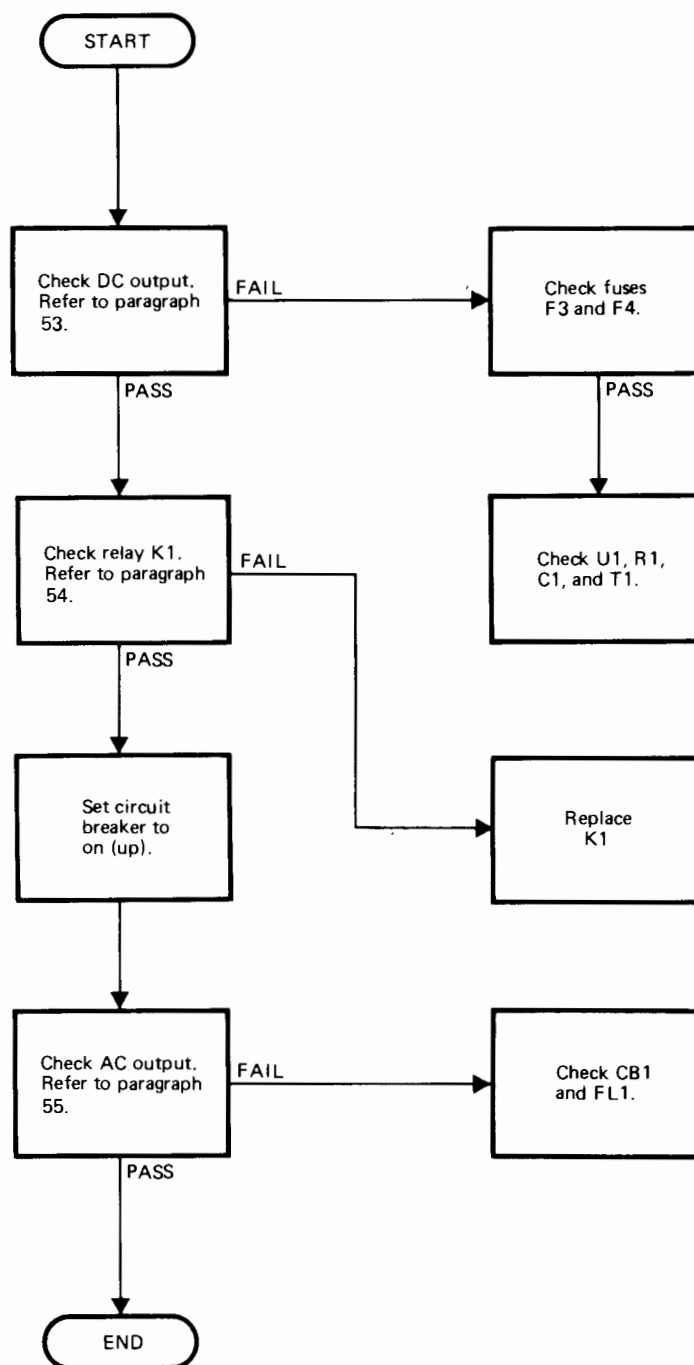


Figure 9. Power Control Module Troubleshooting Flowchart

- d. Verify that ohmmeter indicates a short circuit.
- e. Reconnect ohmmeter between terminals 1 and 2 of TB3; verify that ohmmeter indicates an open circuit.
- f. Disconnect jumper (step c) and ohmmeter.

55. AC OUTPUT TEST. Check the ac output of the PCM as follows:

- a. Visually inspect fuses F1 and F2; replace if blown.

Note: In the next step, voltage measurements are to be taken with respect to the specified NEUT terminal.

- b. Measure the voltage at the test terminals specified in table 8 for the type of primary power used.

Table 8. Power Control Module AC Output Voltages

PRIMARY POWER	PCM TB3 TERMINALS		NORMAL VOLTAGE ($\pm 10\%$)
	TEST	NEUT	
120/208V, 3 PH, 60 Hz	6,7,8	9	120V
230V, 1 PH, 50 Hz	6	8	230V
120/240V, 1 PH, 60 Hz	6,7	9	120V

56. REMOVAL AND REPLACEMENT

57. The following paragraphs contain information that pertains to the removal and replacement of cabinet mechanical and electrical parts. Parts location diagrams figures 10 through 13 should be used in conjunction with these procedures. Once removed, cabinet parts may be replaced by completing the removal procedure in reverse order.

58. FRONT AND REAR DOORS. The front and rear doors are equipped with spring-loaded hinge pins for fast removal and replacement. Refer to figure 10 for a detailed view of rear door hinge pins. Remove doors as follows:

- a. Unlock door and swing it fully open.
- b. Support weight of door with one hand and grasp upper hinge pin with other hand.
- c. Pull upper hinge pin down until free of hinge bracket; move door slightly ajar and release hinge pin.
- d. Grasp door and pull door away from cabinet.

59. POWER CONTROL MODULE. Remove the power control module from the cabinet as follows:

WARNING

Power input wires are to be disconnected from power mains prior to removal of unit to minimize danger due to accidental power turn-on.

Note: The following steps a, b, and c, are to be performed only by customer's electrical contractor.

- a. Turn off power mains; disconnect power input wires from power mains; turn power mains back on.
- b. Remove large and small cover panels from unit by removing nine screws, filler washers, and cup washers.
- c. Disconnect power input wires from the line filter FL1.

Note: Tag all wires disconnected in the following steps for ease of reconnection.

- d. Disconnect ac interconnecting cable (to PDU in adjacent bay) from PCM.
- e. Disconnect wires to PCM-bay service strips.
- f. Remove mounting hardware and pull PCM from cabinet.

Note: If different PCM is being installed, ensure that strapping connections in new module are same as those in old module.

60. POWER DISTRIBUTION UNIT. Remove power distribution unit from cabinet as follows:

WARNING

Ensure circuit breaker on PCM is off (down) before removing PDU.

- a. Remove access plate from PDU by removing two screws and lockwashers.
- b. Remove cover panel from PCM in adjacent bay.
- c. Disconnect ac interconnecting cable to PDU from the PCM.

- d. Disconnect all wires leaving PDU, except wires already disconnected at PCM end of cable.
- e. Remove mounting hardware and pull PDU from cabinet.

Note: If different PDU is being installed, ensure that strapping connections in new PDU are same as those in old PDU.

61. MAINTENANCE DIAGRAMS AND WIRE LIST.

62. Figure 6 is a schematic diagram for the power control module; figure 7 is a wiring diagram for the power distribution unit. Table 9 is a wire list for the power control module.

63. REPLACEABLE PARTS

64. The following tables contain information for ordering replacement parts for options C20, C21, C22, K01, K04, 301, 302, and 303 to the HP 29402B cabinet. Tables 10 through 13 list the replaceable parts. Figures 10 through 13 show the location of the listed parts. Index numbers for the parts in figures and tables correspond to disassembly sequence for the instrument or assembly. Assembly order is the reverse of the disassembly order.

65. REPLACEABLE PARTS LISTS

66. Tables 10 through 13 list the following information for each part:

- a. Hewlett-Packard part number.

- b. Description of the part. (Refer to list of abbreviations in table 14 for explanation of abbreviations used in the DESCRIPTION column.)
- c. Typical manufacturer of the part as a five-digit code. (Refer to table 15 for a listing of the manufacturers that correspond to the codes.)
- d. Manufacturer's part number.
- e. Total quantity of each part used in the instrument.

67. Items in the DESCRIPTION column of the replaceable parts lists are indented to indicate item relationships, as follows:

DESCRIPTION

- * Subassembly
- * Attaching Parts for Subassembly
- * * Subassembly Parts
- * * Attaching Parts for Subassembly Parts

68. ORDERING INFORMATION

69. To order replacement parts, address order or inquiry to the local Hewlett-Packard Field Office. Specify the following information for each part ordered:

- a. Instrument model and serial number.
- b. Hewlett-Packard part number for each part.
- c. Description of each part.
- d. Circuit reference designation (if applicable).

Table 9. Power Control Module Wire List

FROM	TO	SIZE (AWG)	COLOR	FROM	TO	SIZE (AWG)	COLOR
C1-R1	TB1-7	16	wht-red-gra	TB1-7	J1-1	—	—
CB1-1	FL1-C	10	wht-orn	TB1-7	U1-(+)	14	wht-red-gra
CB1-1	TB1-6	14	wht-orn	TB1-8	CB1-C	—	—
CB1-2	FL1-B	10	wht-red	TB1-8	J1-3	—	—
CB1-3	FL1-A	10	wht-blk	TB1-8	J2-3	—	—
CB1-3	TB2-2	14	wht-blk	TB1-8	XK1-B	16	wht-blk-red
CB1-4	TB2-6	10	orn	TB1-9	CB1-S	—	—
CB1-5	TB2-3	10	red	TB1-9	Earth bus	—	—
CB1-6	TB2-1	10	blk	TB1-9	J2-6	—	—
CB1-A	CB1-T (See note 1)		blk	TB1-9	XK1-A	16	grn
CB1-C	TB1-8		wht	TB1-9	U1-(-)	14	grn
CB1-S	TB1-9		blk	TB2-1	CB1-6	—	—
CB1-T	CB1-A (See note 1)		blk	TB2-1	XF1-1	12	blk
Chassis	T1-Shield (See note 4)		wht	TB2-1	TB3-6	10	blk
Earth bus	FL1-COM	8	grn-yel	TB2-2	CB1-3	—	—
Earth bus	TB1-9	14	grn	TB2-2	XF3-1	14	wht-blk
FL1-A	CB1-3	—	—	TB2-3	CB1-5	—	—
FL1-B	CB1-2	—	—	TB2-3	XF2-1	12	red
FL1-C	CB1-1	—	—	TB2-3	TB3-7	10	red
FL1-N	TB1-4	10	wht	TB2-4	XF2-2	12	wht-red-grn
FL1-COM	Earth bus	—	—	TB2-5	TB3-5	12	blu
J1-1	TB1-7	14	wht-red-gra	TB2-6	CB1-4	—	—
J1-3	TB1-8	14	wht-blk-red	TB2-6	TB3-8	10	orn
J1-4	J2-4	14	wht-grn	TB3-1	XK1-3	16	wht-brn-gra
J2-3	TB1-8	14	wht-blk-red	TB3-2	XK1-9	16	wht-vio
J2-4	J1-4	—	—	TB3-3	XK1-6	16	wht-orn-gra
J2-6	TB1-9	14	grn	TB3-4	XF1-2	12	brn
P2-4	P2-6	14	wht-grn	TB3-5	TB2-5	—	—
P2-6	P2-4	(See note 3)		TB3-6	TB2-1	—	—
R1-C1 (C1-R1)	TB1-7	—	—	TB3-7	TB2-3	—	—
T1-1	TB1-1		wht-blk	TB3-8	TB2-6	—	—
T1-2	TB1-3		wht-red	TB3-9	TB1-4	—	—
T1-3	TB1-2		yel	U1-AC	XF4-2	14	wht-blu-gra
T1-4	TB1-5		wht-vio	U1-AC	T1-6	—	—
T1-5	XF4-1	14	wht-gra	U1-(+)	TB1-7	—	—
T1-6	U1-AC	14	wht-blk-gra	U1-(-)	TB1-9	—	—
T1-Shield	Chassis	—	—	XF1-1	TB2-1	—	—
TB1-1	XF3-2	14	gra	XF1-2	TB3-4	—	—
TB1-1	T1-1	—	—	XF2-1	TB2-3	—	—
TB1-2	T1-3	—	—	XF2-2	TB2-4	—	—
TB1-3	T1-2	—	—	XF3-1	TB2-2	—	—
TB1-4	FL1-N	—	—	XF3-2	TB1-1	—	—
TB1-4	TB3-9	10	wht	XF4-1	T1-5	—	—
TB1-5	T1-4	—	—	XF4-2	U1-AC	—	—
TB1-6	CB1-1	—	—	XK1-3	TB3-1	—	—
TB1-7	C1-R1	—	—	XK1-6	TB3-3	—	—
				XK1-9	TB3-2	—	—
				XK1-A	TB1-9	—	—
				XK1-B	TB1-8	—	—

NOTES:

1. These two wires are crimp spliced together.
2. These wires are part of CB1.

3. P2 is terminating plug.
4. These wires are part of T1.

Table 10. HP 29402B Cabinet (Options C20, C21, C22, K01, K04, 301, 302, and 303) Replaceable Parts

FIG & INDEX NO	HP PART NO	DESCRIPTION	MFR CODE	MFR PART NO	ITEMS PER ASSY
10-					
1	29402B	CABINET, SINGLE-BAY, 56IN.	284801	29402B	1
	40015-60106	* DOOR, FRONT (SEE DOOR MANUAL, PART NO. 40015-90008)	284801	40015-60106	1
	40015-60107	* DOOR, FRONT (SEE DOOR MANUAL, PART NO. 40015-90008)	284801	40015-60107	1
	40015-60108	* DOOR, FRONT (SEE DOOR MANUAL, PART NO. 40015-90008)	284801	40015-60108	1
	40015-60101	* DOOR, FRONT (SEE DOOR MANUAL, PART NO. 40015-90008)	284801	40015-60101	1
	40015-60103	* DOOR, FRONT (SEE DOOR MANUAL, PART NO. 40015-90008)	284801	40015-60103	1
	02940-60107	* DOOR ASSEMBLY, REAR	284801	02940-60107	1
2	3110-0066	* PIN, HINGE	284801	3110-0066	2
3	1460-1085	* SPRING, COMPRESSION	284801	1460-1085	2
4	0400-0064	* BUSHING, SNAP	284801	0400-0064	2
5	2950-0007	* NUT, HEX, BRASS, NO. 5/16-32	284801	2950-0007	2
5	2190-0432	* WASHER, LOCK, HELICAL, 0.319 IN. ID, 0.575 IN. OD	284801	2950-0007	1
7	02940-01263	* CAM, LOCK	100001	0BD	1
8	2950-0152	* NUT, HEX, NO. 3/4-32	284801	2950-0152	1
9	2190-0051	* WASHER, LOCK, 0.757 IN. ID, 1.077 IN. OD	100001	0BD	1
10	1390-0344	* LOCK	284801	1930-0344	1
11	02940-01262	* PANEL, REAR DOOR	284801	02940-01262	1
12	02940-01250	* PANEL, SIDE, 56 IN. (ATTACHING PARTS)	284801	02940-01250	1
	0624-0212	* SCREW, TAPPING, POZI, NO. 6-32	100001	0BD	8
13	02940-01284	* PANEL, AIR BARRIER (ATTACHING PARTS)	204801	02940-01284	1
	0624-0212	* SCREW, TAPPING, POZI, NO. 6-32	100001	0BD	8
	DELETED				
14	1400-0493	* STRAP, CABLE, NYLON, 5.5 IN.	284801	1400-0493	9
15	1400-0484	* MOUNT, CABLE STRAP, PLASTIC	284801	1400-0484	5
17	2310-0107	* SCREW, MACHINE, PAN HEAD, POZI, NO. 8-32, 0.5 IN.	100001	0BD	5
18	2190-0017	* WASHER, LOCK, HELICAL, 0.168 IN. ID, 0.31 IN. OD	100001	0BD	5
19	3000-93067	* BRACKET, CARLE CLAMP	284801	3000-93067	5
20	0590-0818	* NUT, CHANNEL, NO. 8-32	284801	0590-0818	5
21	30390-00015	* BRACKET, DOOR HINGE (ATTACHING PARTS)	284801	30390-00015	5
	2690-0106	* SCREW, MACHINE, FLAT HEAD, POZI, NO. 10-32, 0.625 IN.	100001	0BD	1
	3050-0007	* WASHER, CUP, BRASS, 0.578 IN. OD	100001	0BD	1
	3050-0248	* WASHER, FILLER CUP, NYLON, NO. 10, 0.576 IN.	100001	0BD	1
	12661-01002	* PANEL, BLANK, 3-1/2 IN. (ATTACHING PARTS)	284801	12661-01002	1
	2840-0104	* SCREW, MACHINE, FLAT HEAD, POZI, NO. 10-32, 0.5 IN.	100001	0BD	4
	3050-0007	* WASHER, CUP, BRASS 0.578 IN. OD	100001	0BD	4
	3050-0248	* WASHER, FILLER CUP, NYLON, NO. 10, 0.576 IN. OD	100001	0BD	4
	12645-01002	* PANEL, BLANK, 10-1/2 IN.	284801	12645-01002	1

Table 10. HP 29402B Cabinet (Options C20, C21, C22, K01, K04, 301, 302, and 303) Replaceable Parts (Cont)

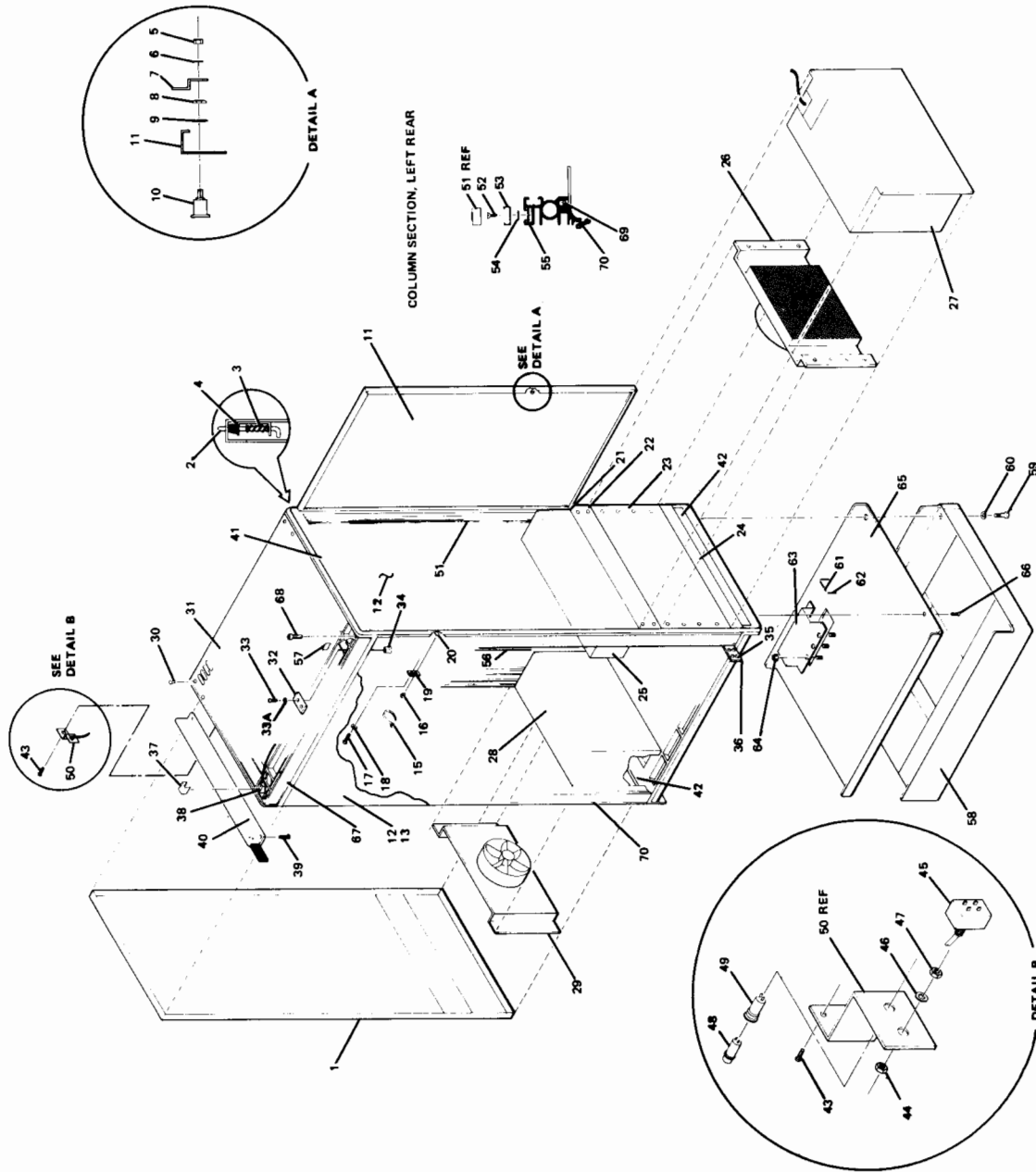
FIG A:	INDEX:HP PART NO :	DESCRIPTION	MFR :	MFR PART NO :	ITEMS PER ASSY
10-			CODE :		
		(ATTACHING PARTS)			
	26RU-0104	* SCREW, MACHINE, FLAT HEAD, POZI, NO. 10-32, 0.5 IN.	00000	0BD	4
	305U-0248	* WASHER, FILLER CUP, NYLON NO. 10, 0.576 IN. OD	00000	0BD	4
	305U-0007	* WASHER, CUP, BRASS 0.5781 IN. OD	00000	0BD	4
		--- X ---			
24	1268U-01002	* PANEL, BLANK, 1-3/4 IN.	28480	12680-01002	1
		(ATTACHING PARTS)			
	26RU-0104	* SCREW, MACHINE, FLAT HEAD, POZI, NO. 10-32, 0.5 IN.	00000	0BD	2
	305U-0007	* WASHER, CUP, BRASS 0.5781 IN. OD	00000	0BD	2
	305U-0248	* WASHER, FILLER CUP, NYLON NO. 10, 0.576 IN. OD	00000	0BD	2
		--- X ---			
25	3039U-60003	* POWER DISTRIBUTION UNIT (SEE FIGURE 12)	28480	30390-60003	1
		(ATTACHING PARTS)			
	26RU-0104	* SCREW, MACHINE, FLAT HEAD, POZI, NO. 10-32, 0.5 IN.	00000	0BD	4
	305U-0248	* WASHER, FILLER CUP, NYLON, NO. 10, 0.576 IN. OD	00000	0BD	4
	305U-0007	* WASHER, CUP, BRASS 0.5781 IN. OD	00000	0BD	4
		--- X ---			
26	3039U-60013	* FAN ASSEMBLY, 230 VAC (SEE FIGURE 13)	28480	30390-60013	1
		(ATTACHING PARTS)			
	26RU-0104	* SCREW, MACHINE, FLAT HEAD, POZI, NO. 10-32, 0.5 IN.	00000	0BD	8
	305U-0248	* WASHER, FILLER CUP, NYLON, NO. 10, 0.576 IN. OD	00000	0BD	8
	305U-0007	* WASHER, CUP, BRASS 0.5781 IN. OD	00000	0BD	8
		--- X ---			
27	3039U-60002	* POWER CONTROL MODULE (SEE FIGURE 11)	28480	30390-60002	1
		(ATTACHING PARTS)			
	26RU-0106	* SCREW, MACHINE, FLAT HEAD, POZI, NO. 10-32, 0.625 IN	00000	0BD	4
	305U-0007	* WASHER, CUP, BRASS, 0.5781 IN. OD	00000	0BD	4
	305U-0248	* WASHER, FILLER CUP, NYLON, NO. 10, 0.576 IN. OD	00000	0BD	4
		--- X ---			
28	316J-0258	* BLOWER	28480	3160-0258	1
		(ATTACHING PARTS)			
	26RU-0J92	* SCREW, MACHINE, PAN HEAD, NO. 10-32, 0.5 IN.	00000	0BD	4
	305U-0226	* WASHER, FLAT, NO. 10	00000	0BD	4
		--- X ---			
29	3039U-60013	* FAN ASSEMBLY, 230V (SEE FIGURE 13)	28480	30390-60013	1
		(ATTACHING PARTS)			
	26RU-0106	* SCREW, MACHINE, FLAT HEAD, POZI, NO. 10-32, 0.625IN.	00000	0BD	8
	305U-0007	* WASHER, CUP, BRASS, 0.5781 IN. OD	00000	0BD	8
	305U-0248	* WASHER, FILLER CUP, NO. 10, 0.576 IN. OD, NYLON	00000	0BD	8
		--- X ---			
30	695U-0075	* PLUG, HOLE, 0.438 IN.	28480	6960-0075	4
31	40011-00001	* COVER, TOP, TWO-SLOT	28480	40011-00001	1
	40011-00002	* COVER, TOP, FOUR-SLOT	28480	40011-00002	1
		(ATTACHING PARTS)			

Table 10. HP 29402B Cabinet (Options C20, C21, C22, K01, K04, 301, 302, and 303) Replaceable Parts (Cont)

INDEX	HP PART NO	DESCRIPTION	MFR	IMFR PART NO	ITEMS PER ASSY
110	2360-0196	* SCREW, MACHINE, FLAT HEAD, NO. 6-32, 0.375 IN.	100000	4	4
32	140011-20002	* CLAMP, PLATE (ATTACHING PARTS)	128480	40011-20002	2
33	0570-0083	* SCREW, CAP, HEX HEAD, NO. 5/16-18, 1.5 IN.	100000	4	4
33A	2190-0432	* WASHER, LOCK, HELICAL, 0.319 IN. ID, 0.575 IN. OD	100000	4	4
34	140011-20001	* INSERT, KNUOLED (ATTACHING PARTS)	128480	40011-20001	4
35	0380-0701	* STANDOFF (ATTACHING PARTS)	128480	0380-0701	4
2510-0102	* SCREW, MACHINE, PAN HEAD, POZI, NO. 8-32, 0.5 IN.	100000	4	4	
36	140011-20003	* BKACKET (ATTACHING PARTS)	128480	40011-20003	2
2940-0055	* SCREW, CAP, HEX HEAD, NO. 1/4-20, 0.625 IN.	100000	4	4	
2190-0032	* WASHER, LOCK, HELICAL, 0.255 IN. ID, 0.489 IN. OD	100000	8	8	
0590-0789	* NUT, CHANNEL, NO. 1/4-20, 0.406 IN.	128480	0590-0789	8	
30390-00037	* COVER, SWITCH	128480	30390-00037	1	
30390-60005	* SWITCH ASSEMBLY, EMERGENCY OFF	128480	30390-60005	1	
NO NUMBER	* LENS CAP	128480	NO NUMBER	1	
NO NUMBER	* LAMP, INCANDESCENT	128480	NO NUMBER	1	
2360-0196	* SCREW, MACHINE, FLAT HEAD, NO. 6-32, 0.375 IN.	100000	2	2	
02940-01258	* TRIM STRIP, TOP FRONT	128480	02940-01258	1	
02940-01018	* TRIM STRIP, TOP FRONT	128480	02940-01018	1	
02940-01259	* TRIM STRIP, TOP REAR (ATTACHING PARTS)	128480	02940-01259	1	
2360-0196	* SCREW, MACHINE, FLAT HEAD, NO. 6-32, 0.375 IN.	100000	2	2	
02940-01018	* TRIM STRIP, BOTTOM (ATTACHING PARTS)	128480	02940-01018	2	
2360-0196	* SCREW, MACHINE, FLAT HEAD, NO. 6-32, 0.375 IN.	100000	4	4	
2680-0104	* SCREW, MACHINE, FLAT HEAD, POZI, NO. 10-32, 0.5 IN.	100000	4	4	
30390-60007	* SWITCH ASSEMBLY, DC ENABLE	128480	30390-60007	1	
0590-0012	* NUT, KNUOLED, NO. 15/32-32, 0.6 IN. OD	100000	4	4	
3101-1051	* SWITCH, TOGGLE, SPDT	128480	3101-1051	1	
2190-0102	* WASHER, LOCK, 0.472 IN. ID, 0.607 IN. OD	100000	4	4	
2950-0035	* NUT, HEX, VU. 15/32-32	100000	4	4	
1450-0749	* LAMP, INCANDESCENT, 6V	100000	1450-0749	1	
1450-0167	* LAMP HOLDER	128480	1450-0167	1	
30390-00008	* BRACKET, SWITCH	128480	30390-00008	1	
1251-3225	* CONNECTOR ASSEMBLY, 230V, 9 CEE OUTLETS (ATTACHING PARTS)	128480	1251-3225	1	
2510-0106	* SCREW, MACHINE, FLAT HEAD, NO. 8-32, 0.5 IN.	100000	4	4	

Table 10. HP 29402B Cabinet (Options C20, C21, C22, K01, K04, 301, 302, and 303) Replaceable Parts (Cont)

FIG NO	HP PART NO	DESCRIPTION	MFR	PART NO	ITEMS PER ASSY
53	NO NUMBER	* CLAMP, CONNECTOR ASSEMBLY	28480	NO NUMBER	3
54	3050-0055	* WASHER, FLAT, NO. 8	100000	OBD	3
55	0590-0818	* NUT, CHANNEL, NO. 8-12	28480	0590-0818	3
56	1251-3224	* CONNECTOR ASSEMBLY, 120V, R NEMA OUTLETS (ATTACHING PARTS)	28480	1251-3224	1
57	2510-0106	* SCREW, MACHINE, FLAT HEAD, NO. P-32, 0.5 IN.	100000	OBD	3
58	3050-0055	* CLAMP, CONNECTOR ASSEMBLY	28480	NO NUMBER	3
59	0590-0818	* WASHER, FLAT, NO. 8	100000	OBD	3
60	0590-0818	* NUT, CHANNEL, NO. 8-32	28480	0590-0818	3
61	7120-3359	* PLATE, IDENTIFICATION	28480	7120-3359	1
62	NO NUMBER	* BASE ASSEMBLY, OPTION 002 (SEE FIGURE 5-3, MANUAL P/N 02940-90256)	28480	NO NUMBER	1
63	NO NUMBER	* BASE ASSEMBLY, STANDARD (SEE FIGURE 5-3, MANUAL P/N 02940-90256)	28480	NO NUMBER	1
64	2940-0221	* SCREW, CAP, HEX HEAD, NO. 3/8-16, 3 IN.	100000	OBD	4
65	2190-0035	* WASHER, LOCK, METALLIC, 0.382 IN. ID, 0.694 IN. OD	100000	OBD	4
66	02940-40003	* TRIM, CARLF GUARD, 4-7/8 IN.	28480	02940-40003	4
67	02940-40004	* TRIM, CARLF GUARD, 1-5/8 IN.	28480	02940-40004	4
68	02940-01256	* COVER, CARLF ACCESS (ATTACHING PARTS)	28480	02940-01256	1
69	2420-0001	* NUT, HEX, NO. 5-32, 0.312 IN.	100000	OBD	6
70	02940-01257	* COVER, BOTTOM (ATTACHING PARTS)	28480	02940-01257	1
71	2360-0196	* SCREW, MACHINE, FLAT HEAD, NO. 6-32, 0.375 IN.	100000	OBD	4
72	02940-21003	* FRAME (ATTACHING PARTS)	28480	02940-21003	2
73	3030-0370	* SCREW, CAP, HEX SOCKET HEAD, NO. 3/4-10, 2.5 IN.	28480	3030-0370	4
74	0590-0829	* STRIP, MOUNTING, 5.09 IN.	28480	0590-0829	32
75	02940-21089	* COLUMN, 50 IN.	28480	02940-21089	4



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Figure 10. HP 29402B Cabinet (Options C20, C21, C22, K01, K04, 301, 302, and 303) Exploded View

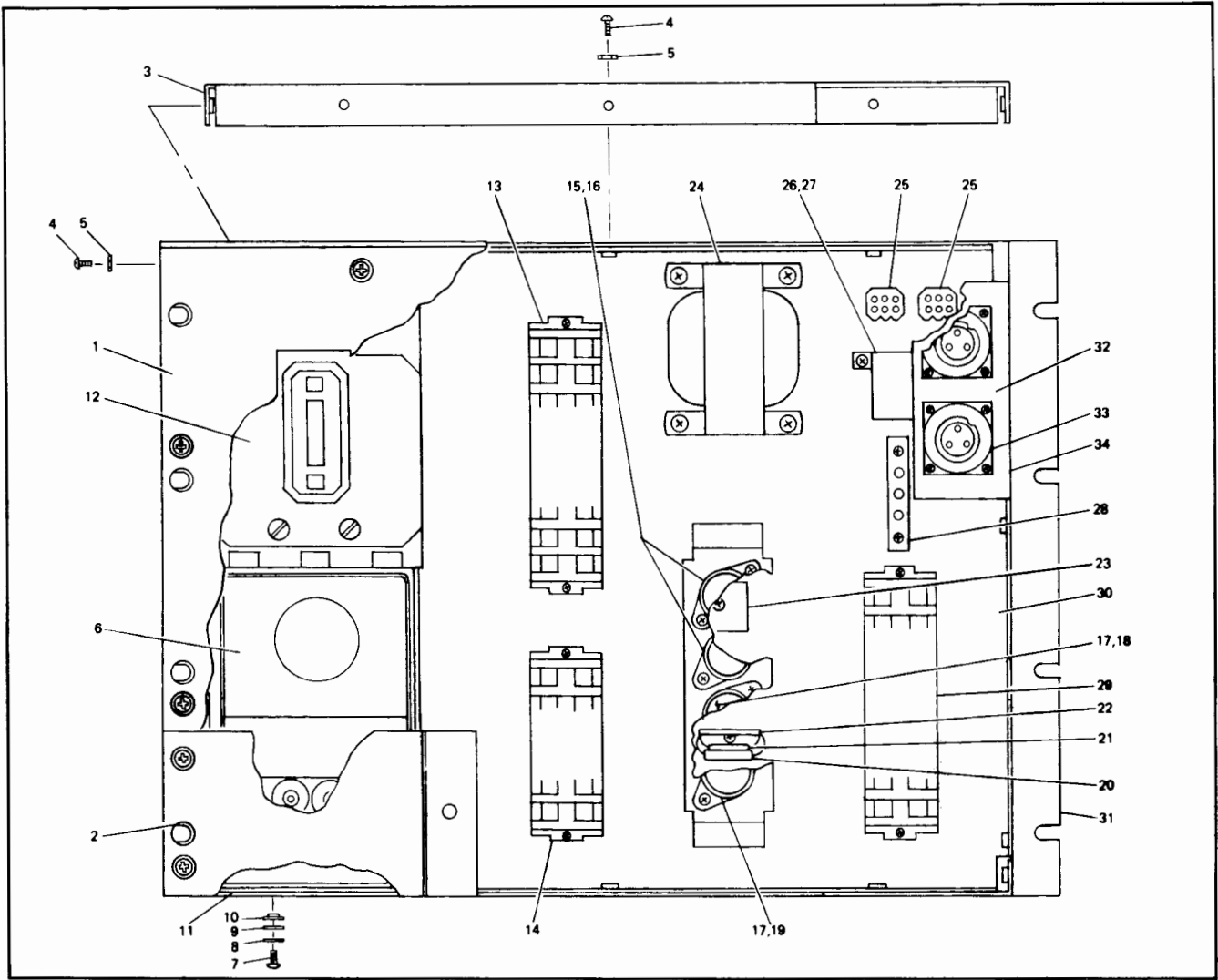
Table 11. Power Control Module Replaceable Parts

FIG & INDEX NO.	HP PART NO.	DESCRIPTION	MFR CODE	MFR PART NO.	UNITS PER ASSY
11-1	30390-60002	POWER CONTROL MODULE (27, figure 10)	28480	30390-60002	1
	30390-00021	* PANEL, front (Attaching Parts)	28480	30390-00021	1
	2680-0104	* SCREW, machine, pan head, no. 10-32, 0.5 in.	00000	OBD	6
	3050-0007	* WASHER, cup, no. 10	00000	OBD	6
	3050-0248	* WASHER, filler cup, no. 10 ---- x ----	00000	OBD	6
2	30390-00022	* PANEL, inspection (Attaching Parts)	28480	30390-00022	1
	2680-0104	* SCREW, machine, pan head, no. 10-32, 0.5 in.	00000	OBD	3
	3050-0007	* WASHER, cup, no. 10	00000	OBD	3
	3050-0248	* WASHER, filler cup, no. 10 ---- x ----	00000	OBD	3
3	30390-00029	* PLATE, top (Attaching Parts)	28480	30390-00029	1
4	2510-0107	* SCREW, machine, pan head, no. 8-32, 0.5 in.	00000	OBD	8
5	2190-0073	* WASHER, split lock, no. 8 ---- x ----	00000	OBD	8
6	No Number	* LINE FILTER ASSEMBLY (Attaching Parts)			1
7	2510-0107	* SCREW, machine, pan head, no. 8-32, 0.5 in.	00000	OBD	4
8	2190-0073	* WASHER, split lock, no. 8	00000	OBD	4
9	3050-0139	* WASHER, flat, no. 8	00000	OBD	4
10	3050-0152	* WASHER, shoulder, insulating, no. 8 ---- x ----	00000	OBD	4
	30390-20007	* * BOX, filter (Attaching Parts)	28480	30390-20007	1
	2510-0099	* * SCREW, machine, pan head, no. 8-32, 0.25 in.	00000	OBD	4
	2190-0073	* * WASHER, split lock, no. 8 ---- x ----	00000	OBD	4
	30390-00026	* * BRACKET, filter (Attaching Parts)	28480	30390-00026	1
	2510-0099	* * SCREW, machine, pan head, no. 8-32, 0.25 in.	00000	OBD	2
	2190-0073	* * WASHER, split lock, no. 8 ---- x ----	00000	OBD	2
	9135-0003	* * LINE FILTER, 250V, 50-60 Hz (FL1)	28480	9135-0003	1
11	30390-00023	* INSULATOR SHEET	28480	30390-00023	1
12	3105-0031	* CIRCUIT BREAKER, 40A (CB1) (Attaching Parts)	28480	3105-0031	1
	2520-0018	* SCREW, machine, slot head, no. 8-32, 3.5 in.	00000	OBD	4
	3050-0152	* WASHER, flat, no. 8	00000	OBD	4
	2190-0073	* WASHER, split lock, no. 8 ---- x ----	00000	OBD	4
13	No Number	* TERMINAL BLOCK ASSEMBLY (TB1) (Attaching Parts)			1
	2510-0107	* SCREW, machine, pan head, no. 8-32, 0.5 in.	00000	OBD	3
	2580-0004	* NUT, hex, no. 8-32 ---- x ----	00000	OBD	3
	0360-1094	* * END SECTION, terminal block	28480	0360-1094	1
	0360-1755	* * SECTION, terminal block	28480	0360-1755	9
14	No Number	* TERMINAL BLOCK ASSEMBLY (TB2) (Attaching Parts)			1
	2510-0107	* SCREW, machine, pan head, no. 8-32, 0.5 in.	00000	OBD	2
	2580-0004	* NUT, hex, no. 8-32 ---- x ----	00000	OBD	2
	0360-1094	* * END SECTION, terminal block	28480	0360-1094	1
	0360-1755	* * SECTION, terminal block	28480	0360-1755	6

Table 11. Power Control Module Replaceable Parts (Continued)

FIG & INDEX NO.	HP PART NO.	DESCRIPTION	MFR CODE	MFR PART NO.	UNITS PER ASSY
11-15	2110-0439	* FUSEHOLDER, 20A (XF1, 2)	28480	2110-0439	2
16	2110-0441	* FUSE, 20A (F1, 2)	00000	OBD	2
17	2110-0440	* FUSEHOLDER, 15A (XF3, 4)	28480	2110-0440	2
18	2110-0430	* FUSE, 6A (F3)	00000	OBD	1
19	2110-0442	* FUSE, 10A (F4)	00000	OBD	1
20	0160-0162	* CAPACITOR, fxd, my, 0.022 μ F, \pm 10%, 200 Vdcw (C1)	56289	292P22392-PTS	1
21	0698-3408	* RESISTOR, fxd, flm, 2.15k, \pm 1.0%, 1/2W (R1)	28480	0698-3408	1
22	0360-1588	* TIE POINT (Attaching Parts)	28480	0360-1588	1
	2360-0197	* SCREW, machine, pan head, no. 6-32, 0.375 in.	00000	OBD	1
	2190-0008	* WASHER, lock, ext-tooth, no. 6	00000	OBD	1
	2420-0001	* NUT, plain, hexagon, no. 6-32 - - - x - - -	00000	OBD	1
23	1906-0017	* DIODE ASSEMBLY (U1) (SEE NOTE) (Attaching Parts)	28480	1906-0017	1
	2360-0203	* SCREW, machine, pan head, no. 6-32, 0.625 in.	00000	OBD	1
	2190-0851	* WASHER, split lock, no. 6	00000	OBD	1
24	9100-2946	* TRANSFORMER, power (T1) (Attaching Parts)	28480	9100-2946	1
	2510-0103	* SCREW, machine, pan head, no. 8-32, 0.375 in.	00000	OBD	4
	2190-0073	* WASHER, split lock, no. 8	00000	OBD	4
	3050-0152	* WASHER, flat, no. 8 - - - x - - -	00000	OBD	4
25	1251-3139	* CONNECTOR (J1, 2)	28480	1251-3139	2
26	0490-0809	* RELAY (K1)	28480	0490-0809	1
27	0490-0810	* SOCKET, relay (XF1) (Attaching Parts)	28480	0490-0810	1
	2360-0201	* SCREW, machine, pan head, no. 6-32, 0.5 in.	00000	OBD	2
	2190-0851	* WASHER, split lock, no. 6	00000	OBD	2
	3050-0227	* WASHER, flat, no. 6 - - - x - - -	00000	OBD	2
28	30390-20009	* BUS BAR (Attaching Parts)	28480	30390-20009	1
	2150-0055	* SCREW, machine, pan head, no. 8-32, 0.625 in.	00000	OBD	2
	2580-0003	* NUT, hex, no. 8-32 - - - x - - -	00000	OBD	2
29	No Number	* TERMINAL BLOCK ASSEMBLY (TB3) (Attaching Parts)			1
	2510-0107	* SCREW, machine, pan head, no. 8-32, 0.5 in.	00000	OBD	3
	2580-0004	* NUT, hex, no. 8-32 - - - x - - -	00000	OBD	3
	0360-1094	* * END SECTION, terminal block	28480	0360-1094	1
	0360-1755	* * SECTION, terminal block	28480	0360-1755	9
30	30390-00017	* DECK PLATE (Attaching Parts)	28480	30390-00017	1
	2510-0107	* SCREW, machine, pan head, no. 8-32, 0.5 in.	00000	OBD	7
	2190-0073	* WASHER, split lock, no. 8 - - - x - - -	00000	OBD	7
31	30390-00020	* FRAME (Following Assembly is not part of PCM)	28480	30390-00020	1
32	30390-60014	* CABLE AND BRACKET ASSEMBLY (Option 301)	28480	30390-60014	1
	30390-60016	* CABLE AND BRACKET ASSEMBLY (Option K01) (Attaching Parts)	28480	30390-60016	1
	2360-0197	* SCREW, machine, pan head, no. 6-32, 0.375	00000	OBD	2
	2190-0006	* WASHER, split lock, no. 6 - - - x - - -	00000	OBD	2
33	1251-3298	CONNECTOR (Attaching Parts)	28480	1251-3298	#
	2360-0197	* * SCREW, machine, pan head, no. 6-32, 0.375 in.	00000	OBD	4
	2190-0851	* * WASHER, split lock, no. 6 - - - x - - -			
34	30390-00019	* * BRACKET, connector (Option 301)	28480	30390-00019	1
	30390-00061	* * BRACKET, connector (Option K01)	28480	30390-00061	1

#Quantity 1 for option K01 and 2 for option 301.



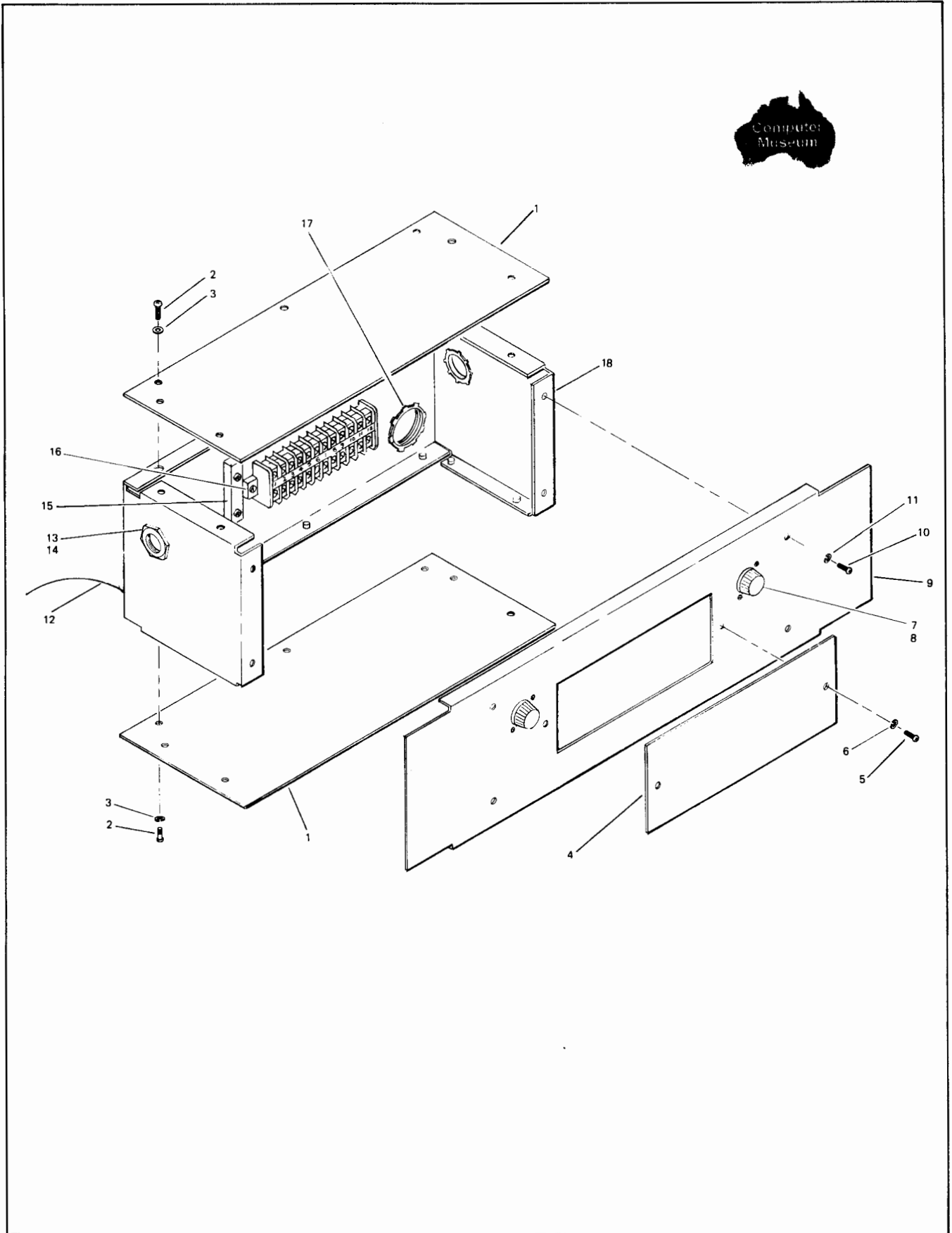
2237-58

Figure 11. Power Control Module Parts Location Diagram

NOTE: Diode Assembly part no. 1906-0017 and Diode assembly part no. 1906-0205 and directly interchangeable.

Table 12. Power Distribution Unit Replaceable Parts

FIG & INDEX NO.	HP PART NO.	DESCRIPTION	MFR CODE	MFR PART NO.	UNITS PER ASSY
12-1	30390-60003 30390-00013	POWER DISTRIBUTION UNIT (25, figure 10) * COVER, top and bottom (Attaching Parts)	28480 28480	30390-60003 30390-00013	2
2	2360-0195	* SCREW, machine, pan head, no. 6-32, 0.312 in.	00000	OBD	7
3	2190-0851	* WASHER, split lock, no. 6 --- x ---	00000	OBD	7
4	30390-00012	* COVER, front panel (Attaching Parts)	28480	30390-00012	1
5	2360-0195	* SCREW, machine, pan head, no. 6-32, 0.312 in.	00000	OBD	2
6	2190-0851	* WASHER, split lock, no. 6 --- x ---	00000	OBD	2
7	2110-0441	* FUSE (F1, 2)	28480	2110-0441	2
8	2110-0439	* FUSEHOLDER (XF1, 2)	28480	2110-0439	2
9	30390-00010	* PANEL, front (Attaching Parts)	28480	30390-00010	1
10	2360-0195	* SCREW, machine, pan head, no. 6-32, 0.312 in.	00000	OBD	4
11	2140-0851	* WASHER, split lock, no. 6 --- x ---	00000	OBD	4
12	30390-80006	* POWER CABLE ASSEMBLY	28480	30390-80006	1
13	0100-0459	* CHASE NIPPLE, conduit (Attaching Parts)	00000	OBD	2
14	0100-0433	* NUT, lock, 1/2 in. dia, conduit --- x ---	00000	OBD	2
15	30390-20009	* BUSBAR (Attaching Parts)	28480	30390-20009	1
	2510-0107	* SCREW, machine, pan head, no. 8-32, 0.5 in.	00000	OBD	2
	2190-0073	* WASHER, split lock, no. 8 --- x ---	00000	OBD	2
16	No Number	* TERMINAL BLOCK ASSEMBLY (TB1) (Attaching Parts)			1
	2360-0195	* SCREW, machine, pan head, no. 6-32, 0.312 in.	00000	OBD	3
	2190-0851	* WASHER, split lock, no. 6	00000	OBD	3
	2190-0006	* WASHER, flat, no. 6 --- x ---	00000	OBD	3
	0360-1094	** END SECTION, terminal block	28480	0360-1094	1
	0360-1755	** SECTION, terminal block	28480	0360-0342	12
17	0100-0437	* CABLE CLAMP, strain relief	00000	OBD	2
18	30390-00011	* CHASSIS	28480	30390-00011	1

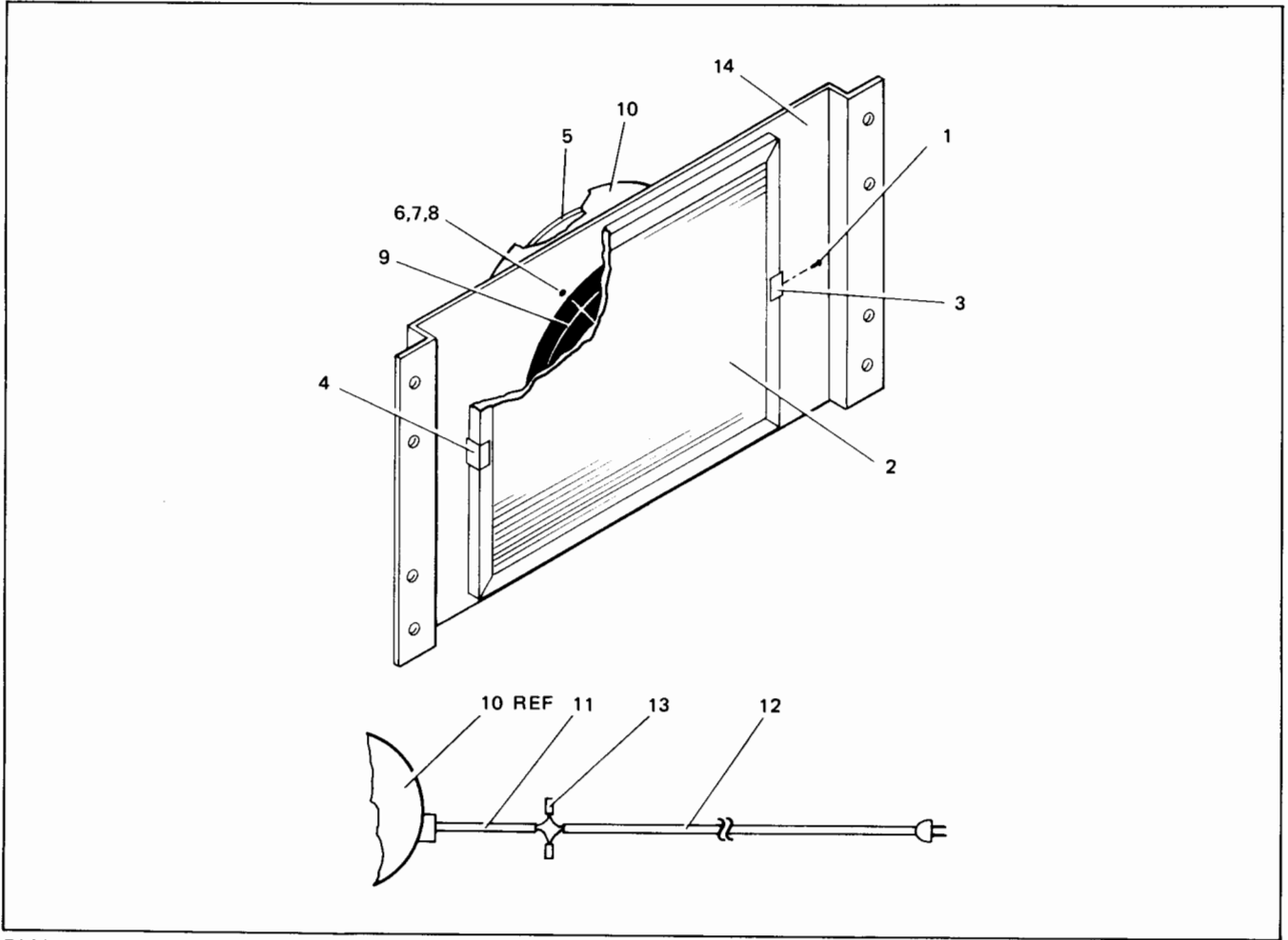


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Figure 12. Power Distribution Unit Exploded View

Table 13. Fan Assembly Replaceable Parts

FIG & INDEX NO.	HP PART NO.	DESCRIPTION	MFR CODE	MFR PART NO.	UNITS PER ASSY
13-	30390-60013	FAN ASSEMBLY, 230V (26, 29, figure 10)	28480	30390-60013	
1	0626-0001	*SCREW, no. 6-20, 0.250 in.	00000	OBD	1
2	3150-0097	*FILTER	28480	3150-0097	1
3	02940-00030	*BRACKET, filter (Attaching Parts)	28480	02940-00030	1
	2510-0107	*SCREW, pan head, no. 8-32, 0.5 in.	00000	OBD	1
	2580-0003	*NUT, hex, no. 8-32, 0.125 in. --- x ---	00000	OBD	1
4	02940-00214	*BRACKET, filter (Attaching Parts)	28480	02940-00214	1
	2510-0107	*SCREW, pan head, no. 8-32, 0.5 in.	00000	OBD	1
	2580-0003	*NUT, hex, no. 8-32, 0.125 in. --- x ---	00000	OBD	1
5	3160-0213	*GUARD, fan (Attaching Parts)	28480	3160-0213	2
	2510-0107	*SCREW, pan head, no. 8-32, 0.5 in.	00000	OBD	4
	3050-0139	*WASHER, flat, no. 8	00000	OBD	4
	2580-0003	*NUT, hex, no. 8-32, 0.125 in. --- x ---	00000	OBD	4
6	2510-0107	*SCREW, pan head, no. 8-32, 0.5 in.	00000	OBD	4
7	3050-0139	*WASHER, flat, no. 8	00000	OBD	4
8	2580-0003	*NUT, hex, no. 8-32, 0.125 in.	00000	OBD	4
9	3160-0213	*GUARD, fan	28480	3160-0213	1
10	3160-0211	*FAN, 230V	28480	3160-0211	1
11	8120-2343	*CABLE SET, fan	28480	8120-2343	1
12	8120-1861	*CABLE, power, 230V	28480	8120-1861	1
13	0362-0341	*SLEEVE, termination	98410	NC-2214	2
14	30390-00002	*PANEL, fan mounting	28480	30390-00002	1



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Figure 13. Fan Assembly Parts Location Diagram

Table 14. Reference Designations and Abbreviations

REFERENCE DESIGNATIONS		
A = assembly	K = relay	TB = terminal board
B = motor, synchro	L = inductor	TP = test point
BT = battery	M = meter	U = integrated circuit, non-repairable assembly
C = capacitor	P = plug connector	V = vacuum tube, photocell, etc.
CB = circuit breaker	Q = semiconductor device other than diode or integrated circuit	VR = voltage regulator
CR = diode	R = resistor	W = jumper wire
DL = delay line	RT = thermistor	X = socket
DS = indicator	S = switch	Y = crystal
E = Misc electrical parts	T = transformer	Z = tuned cavity, network
F = fuse		
FL = filter		
J = receptacle connector		
ABBREVIATIONS		
A = amperes	gra = gray	PCA = printed-circuit assembly
ac = alternating current	grn = green	PWB = printed-wiring board
Ag = silver	H = henries	phh = phillips head
Al = aluminum	Hg = mercury	pk = peak
ar = as required	hr = hour(s)	p-p = peak-to-peak
adj = adjust	Hz = hertz	pt = point
assy = assembly	hdw = hardware	prv = peak inverse voltage
b = base	hex = hexagon, hexagonal	PNP = positive-negative-positive
bp = bandpass	ID = inside diameter	pwv = peak working voltage
bpi = bits per inch	IF = intermediate frequency	porc = porcelain
blk = black	in. = inch, inches	posn = position(s)
blu = blue	I/O = input/output	pozi = pozidrive
brn = brown	int = internal	rf = radio frequency
brs = brass	incl = include(s)	rdh = round head
Btu = British thermal unit	insul = insulation, insulated	rms = root-mean-square
Be Cu = beryllium copper	impgrg = impregnated	rww = reverse working voltage
cp = characters per inch	incand = incandescent	rect = rectifier
coll = collector	ips = inches per second	r/min = revolutions per minute
cw = clockwise	k = kilo (10^3), kilohm	RTL = resistor-transistor logic
ccw = counterclockwise	lp = low pass	s = second
cer = ceramic	m = milli (10^{-3})	SB, TT = slow blow
com = common	M = mega (10^6), megohm	Se = selenium
crt = cathode-ray tube	My = Mylar	Si = silicon
CTL = complementary-transistor logic	mfr = manufacturer	scr = silicon controlled rectifier
cath = cathode	mom = momentary	sst = stainless steel
Cd pl = cadmium plate	mtg = mounting	stl = steel
comp = composition	misc = miscellaneous	spcl = special
conn = connector	met. ox. = metal oxide	spdt = single-pole, double-throw
compl = complete	mintr = miniature	spst = single-pole, single-throw
dc = direct current	n = nano (10^{-9})	Ta = tantalum
dr = drive	nc = normally closed or no connection	td = time delay
DTL = diode-transistor logic	Ne = neon	Ti = titanium
depc = deposited carbon	no. = number	tgl = toggle
dpdt = double-pole, double-throw	n.o. = normally open	thd = thread
dpst = double-pole, single-throw	np = nickel plated	tol = tolerance
em = emitter	NPN = negative-positive-negative	TTL = transistor transistor logic
ECL = emitter-coupled logic	NPO = negative-positive zero (zero temperature coefficient)	U(μ) = micro (10^{-6})
ext = external	NSR = not separately replaceable	V = volt(s)
encap = encapsulated	NRFR = not recommended for field replacement	var = variable
elctlt = electrolytic	OD = outside diameter	vio = violet
F = farads	OBD = order by description	Vdcw = direct current working volts
FF = flip-flop	orn = orange	W = watts
fth = flat head	ovh = oval head	ww = wirewound
flm = film	oxd = oxide	wht = white
fxd = fixed	p = pico (10^{-12})	WIV = working inverse voltage
filh = fillister head	PC = printed circuit	yel = yellow
G = giga (10^9)		
Ge = germanium		
gl = glass		
gnd = ground(ed)		

Table 15. Code List of Manufacturers

The following code numbers are from the Federal Supply Code for Manufacturers Cataloging Handbooks H4-1 and H4-2, and the latest supplements.

CODE NO.	MANUFACTURER	ADDRESS	CODE NO.	MANUFACTURER	ADDRESS
28480	Hewlett-Packard Company . . .	Palo Alto, Calif.	98410	E.T.C. Inc.	Cleveland, Ohio
56289	Sprague Electric Company . . .	North Adams, Mass.	00000	U.S.A. Common	Any supplier of U.S.

