

HEWLETT-PACKARD

K E Y B O A R D

VOL. 6 NO. 1



OVERVIEW

If you have a need to handle large amounts of data, you may have wished for a large auxiliary memory in conjunction with your calculator. With 2.4 megabytes of storage capacity, the recently-announced Model 9880A/B Mass Memory systems designed for use with the Model 9830A Calculator may be the answer to your need. The article on page 2 describes the new mass memory, and several business applications using it are illustrated by the articles starting on page 5.

Photographs of the awards to winners of the first 9800 System Application Contest appear in this issue. Due to the enthusiastic response to the contest, a new one will be conducted in 1974. Details are given on the rear cover.

Watch for The Crossroads--John Nairn's new *KEYBOARD* series which will appear in each issue

starting with Vol. 6 No. 2. This will deal with a number

of calculator-mathematics-related topics to enable calculator users to optimize the use of their systems.

Please remember that any program, programming tip, or calculator application article you care to submit will be reviewed, and published if it is of significant interest. Each contribution should be fully documented and include a Program Submittal Form, which is found in the back of most program pacs.

AB Sperry

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NEW EUROPEAN FIELD EDITOR

Ed Hop of the Hewlett-Packard manufacturing facility in Böblingen, Germany, is the new *KEYBOARD* field editor for Europe. We wish to extend a hearty welcome to Ed as a member of the *KEYBOARD* staff. European readers should send all their future correspondence and contributions of programs and programming tips to Ed.

APPLICATIONS INFORMATION FOR HEWLETT-PACKARD CALCULATORS

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Introducing the Mass Memory:



**Add-On Capability Designed
Specifically for the Model 30 Calculator
by Donna Kimble***

The desire for speed and accuracy in calculations prompted scientists and engineers to develop high-speed, sophisticated programmable calculators, like the HP Model 9830A. The problem of limited storage space, however, has always been frustrating. A calculator with the capability of manipulating large amounts of information accurately and quickly, when there is no equally fast and accurate method of permanently storing this information, is analogous to a powerful navy in a land-locked country.

The HP 9880 Mass Memory Subsystem represents a revolutionary solution to this problem in the programmable calculator industry. Use of the Mass Memory Subsystem helps fulfill the Model 30's potential, providing the user with the kind of storage and speed unavailable in any self-contained calculator today.

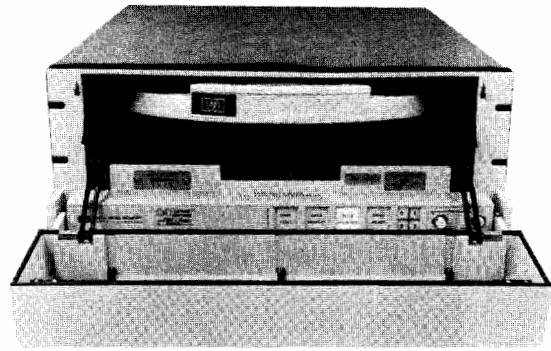
A vast amount of information can be stored and accessed on each platter used with the Mass Memory. In fact, the information contained on one platter (2.4 million bytes) would require a tape cassette over 1 3/4 miles long or a stack of data processing cards over 17 feet high! More than three hundred thousand 12-digit items can fit onto one platter.

As in most programming applications, time is an important and sometimes crucial parameter. When connected to the Mass Memory Subsystem, a Model 30 calculator can transfer an entire program almost before the user can exhale--so he never has to hold his breath! The Mass Memory is safe, efficient and fast. For example, a 10 by 10 full precision matrix or a 1000 word program can be stored permanently in one second.

A complete Mass Memory System includes a 9830A Calculator, a printer or typewriter, and the Mass Memory Subsystem, described above. The subsystem itself actually consists of a ROM, a controller, interface cables and a 9867A or 9867B Mass Memory Drive. While both drives contain a removable memory platter, called a cartridge, the 9867B Drive also has a fixed platter which doubles its storage capacity. Of course, additional cartridges can be purchased and used with either Mass Memory Drive. In fact, any of the subsystem components can be ordered separately and up to four platters (9.6 million bytes of storage) can be connected to one system.

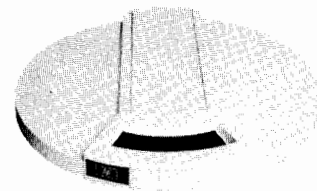
*Calculator Products Division, Hewlett-Packard Company, Loveland, Colorado

THE MASS MEMORY DRIVE

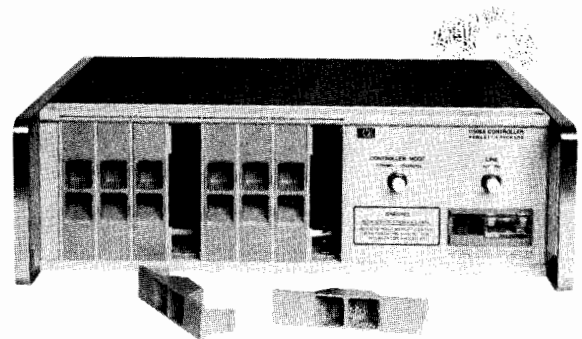


9867A/B MASS MEMORY DRIVE UNIT SELECT allows up to four mass memory platters to be accessed in a single system.

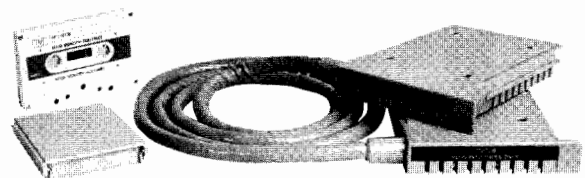
DATA PROTECT SWITCH, when ON, prevents data from being changed or erased.



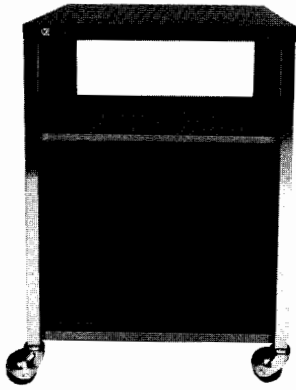
HP 12869A INTERCHANGEABLE MEMORY CARTRIDGE allows the user to lock important information safely in a cabinet overnight.



HP 11305A MASS MEMORY CONTROLLER provides interface for any combination of up to four calculators and up to four mass memory platters.



HP 11273B READ ONLY MEMORY AND INTERFACE CABLE provides Model 30 language commands for operation of the Mass Memory System.



HP 11304A MASS MEMORY CART (optional) provides support for the Mass Memory Drive, Model 9867A or 9867B and the controller, plus recommended upright storage for up to five memory cartridges.

The Mass Memory ROM

With more than 25 new BASIC statements and commands, the Mass Memory ROM provides a language which is both easy to use and flexible. For example, files are stored on the Mass Memory by name. To find out what files are stored on your system there is a CATALOG command.

| NAME | TYPE | ORIGIN | | ABSOLUTE LENGTH(R) | CURRENT LENGTH(W) |
|-------|------|--------|--------|--------------------|-------------------|
| | | TRACK | RECORD | | |
| OLIB2 | D | 274 | 10 | 752 | |
| DLIB2 | D | 338 | 8 | 752 | |
| T1 | D | 152 | 4 | 100 | |
| T2 | D | 160 | 8 | 100 | |
| T3 | D | 159 | 8 | 100 | |
| T4 | D | 177 | 4 | 100 | |
| RPKEY | K | 401 | 7 | 1 | 160 |
| RP | P | 401 | 8 | 1 | 180 |
| RP1 | P | 401 | 9 | 8 | 1968 |
| RP2 | P | 402 | 5 | 3 | 736 |
| RP3 | P | 402 | 8 | 10 | 2494 |
| RP4 | P | 403 | 6 | 2 | 401 |

Although the Plug-in Mass Memory ROM is a standard Model 30 1K ROM, an additional 7K ROM is stored on every initialized memory cartridge for a total Read-Only-Memory of 8K words. This means that the Mass Memory ROM is actually larger than the basic Model 30 Calculator Read-Only-Memory, so that the capabilities of the Model 30 Calculator are more than doubled by the addition of the 9880 Mass Memory Subsystem.

When a command requires use of part of the 7K Mass Memory ROM, that portion is brought into a reserved area (300 words) of user read-write memory in the calculator for execution.

A simplified training cassette program is provided with every Mass Memory Subsystem. It is intended to supplement the instruction manual so that the user can become familiar with the Mass Memory as quickly as possible. Additional, more extensive training programs are available through local HP sales offices.

A general-purpose Mass Memory Data Base Routines Pac provides programs to copy, sort, and enter data in files. Other program pacs are now available or will be available soon for Structural Engineering, Accounts Receivable/Billing, Inventory Control, Accounts Payable and Payroll Applications.

For more information, fill out and return the postcard included in this issue of *KEYBOARD*. ■

Mass Memory Accounting Systems

by Bert Desmond and
Ron Vernon *

The addition of the HP 9880A/B Mass Memory to the HP Calculator product line opens up commercial applications that were limited by cassettes. The advantages of the Mass Memory system in commercial applications are as follows:

- Capacity
- Speed
- Easy operation

Capacity

The storage capacity of a Mass Memory platter is the equivalent of 32 magnetic tape cassettes. The advantage of this capacity is in storing data. For example, in Inventory Control, up to 1700 inventory items may be stored on a Mass Memory platter along with all the programs to operate the system and a backup copy of the inventory items.

Speed

The speed of the Mass Memory can best be illustrated by comparing it to the tape cassette. It takes approximately one second to load a 1,000 word program stored on the Mass Memory. It would take at least fifteen seconds to load the same program from a magnetic tape and it could take up to two minutes depending on where it is located on the tape.

The speed of retrieving either programs or data from the Mass Memory is constant and fast.

In addition, by using what is called random data files on the Mass Memory, one record of information can be retrieved from a data file as fast as any other record. In other words, information retrieval time is the same for any location.

The speed makes the systems user oriented because the calculator is operating more efficiently and the speed makes it possible to develop applications that would be unreasonable on a tape cassette system.

*Calculator Products Division, Hewlett-Packard Company, Loveland, Colorado

Easy Operation

There are many features of the Mass Memory system that reflect easy operation.

First, all program and data files are referred to by a name entered by the user. The user can use a name that reflects the function of the file.

Second, alphanumeric and simple numeric variables are as easy to store as numeric arrays.

Third, backup copies of important program and data files can be copied easily from one platter to another in a multi-platter system or to magnetic tapes.

In summary, the 9880A/B Mass Memory has increased the storage capabilities of a calculator system, significantly reduced the time used for program and data retrieval, and made these capabilities very easy to use.

Accounting Systems

Three general accounting applications program pacs are available on the Mass Memory: Accounts Payable, Accounts Receivable-Billing, and Inventory Control.

Each of the systems operates with a 9830A programmable calculator with 7616 bytes of memory, a String Variables ROM, a 9880B Mass Memory system and either a 9866A Thermal Printer or a 9861A Typewriter.

Each system resides on a single Mass Memory platter. The common features on each system are:

- Ease of operation
- Expandability

Ease of Operation

Emphasis is placed on using the Special Function keys and the 32-character display. When adding information into the system such as adding parts to the inventory file, press the key labeled, ADD PARTS. The display shows the appropriate question about the part followed by a question mark. The information is entered through the typewriter-like keyboard of the 9830A and shown on the display.

play. If an error is made entering the information, press the CLEAR key and enter the information again.

It is even easier to generate reports. Press the appropriate key to obtain the desired report. Using either a high speed thermal printer or a typewriter, the report is generated automatically. At the end of every page, printing stops for three seconds while the display shows, "TEAR PAPER NOW", giving the user the opportunity to page the report.

In any accounting system, it must be easy to make backup copies of important files. For example, if a company has its inventory stored on a Mass Memory and something happens such as the user destroying the inventory file, all of this data then would have to be manually reentered into the system. The accounting systems utilize both platters in the 9880B system. The data from the removable cartridge can be transferred down onto the lower fixed platter simply by pressing the Special Function key labeled BACK-UP. The system is then powered down, the removable cartridge is taken out, another removable cartridge is inserted into the drive, and the information is transferred from the fixed platter to the removable platter. This provides the user with two removable platters with the same information on them.

The Accounting Systems are designed to be operated by a clerk who knows the accounting functions. The user does not need to know any programming or go to any special schools.

The systems operate in a typical office environment — no special air conditioned rooms or separate power supplies.

Expandability

Programs and data files for each Accounting System are stored on removable Mass Memory platters. Each Accounting System has a fixed amount of storage space. If the application of a business exceeds the limits of a platter, there is a solution.

By separating the information into categories that fit into the capacity of a single platter, the package can still be used. That is, use two platters if a business has requirements that exceed the storage limits of a single platter.

The following articles give details on the Accounting Systems programs for the Mass Memory. ●

Accounts Payable with the 9880B Mass Memory System

by Bert Desmond and
Ron Vernon

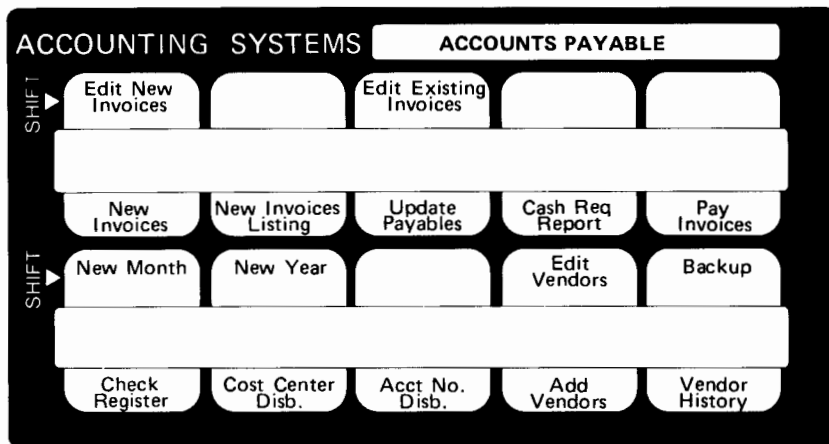


Figure 1

Careful control of Accounts Payable helps a business maintain a good credit rating by paying bills on time and it reduces the cash flow out of the business by taking advantage of early payment discounts.

The Accounts Payable system provides a company:

- Management reports to help anticipate future liabilities and take advantage of discounts
- Disbursement reports on both

- accrual and cash basis
- The ability to make partial payments to selected invoices to balance cash available with cash requirements
- Check writing capability.

The system emphasizes easy operation through the Special Function keys and the 32-character display. The Accounts Payable template that fits over the Special Function keys is shown in Figure 1.

Management Reports

The Accounts Payable system allows a company to see its future liabilities. Press the key labeled, 'CASH REQ REPORT' to see the outstanding invoices. The user has the option of either listing all the outstanding invoices or only those due on or before a specified date.

Figure 2 shows a listing of the outstanding invoices as of January 15, 1974.

To make payment on some of the outstanding invoices, press the PAY INVOICES key. The display will show 'ENTER CUTOFF DATE (M/D/Y)'. This criterion is then used to select those invoices that are due on or before this date for payment. The user then has the opportunity to either pay all of these invoices, partially pay some of the invoices, or delete some of them.

Cost center and account number disbursement reports are available at the touch of a key. Accrual basis reports are generated at the option of the user when the system is updated with new invoices. Figure 3 shows an accrual basis Cost Center Disbursement Report.

Cash basis disbursement reports are based on the most recently printed checks. To obtain a cash basis Cost Center Disbursement Report, press the key labeled, 'COST CENTER DISB.' An Account Number Disbursement Report is generated when the ACCT NO DISB. key is pressed. Figure 4 shows a cash basis account number disbursement report.

Other Features

In addition to the reports mentioned above, the system provides a listing of all vendors showing month-to-date and year-to-date payments.

An accounting system should make allowance for operator mistakes such as misspellings or entering incorrect information. The Accounts Payable package allows the user to correct or edit the vendor file, existing invoices file, and the new invoices file by pressing the appropriately labeled key.

The Accounts Payable system has room for 750 vendors and 750 outstanding invoices per Mass Memory platter.

For more information on the system, contact your local Hewlett-Packard representative.



CASH REQUIREMENTS REPORT
THRU: 01/15/74

| DUE DATE | VENDOR NO. | INVOICE NO. | TOTAL AMT. | DISCOUNT | PARTIAL PAYMENT | NET AMT. |
|----------|------------|-------------|------------|----------|-----------------|----------|
| 01/15/74 | 10010 | 2564 | 125.00 | 0.00 | 0.00 | 125.00 |
| 01/13/74 | 10020 | 2525 | 654.00 | 12.57 | 0.00 | 641.43 |
| 01/02/74 | 10040 | 52 | 100.00 | 0.00 | 0.00 | 100.00 |
| 12/31/73 | 10050 | 1000 | 1524.23 | 0.00 | 0.00 | 1524.23 |
| 01/01/74 | 10060 | 943 | 100.00 | 0.00 | 0.00 | 100.00 |
| | | | 2503.23 | 12.57 | 0.00 | 2490.66 |

Figure 2

COST CENTER DISBURSEMENT
(ACCRUAL BASIS)
JANUARY 31, 1974

| COMPANY NAME (PAYEE) | COST CENTER | ACCT. NO. | PAYMENT |
|----------------------|-------------|-----------|----------|
| FRANK YOCKEY | 4243 | 6020 | 100.00 |
| JEFF OSBORNE | 4243 | 6020 | 185.00 |
| COST CENTER TOTAL | | | 285.00 |
| BERT DESMOND | 4342 | 6010 | 21.00 |
| BOB JEWETT | 4342 | 6020 | 7349.00 |
| COST CENTER TOTAL | | | 7370.00 |
| RON VERNON | 4343 | 6010 | 125.00 |
| JEFF OSBORNE | 4343 | 6020 | 641.43 |
| KAY PIERSOL | 4343 | 6020 | 100.00 |
| PAT WELCH | 4343 | 6020 | 1524.23 |
| COST CENTER TOTAL | | | 2390.66 |
| | | TOTAL | 10045.66 |

Figure 3

ACCOUNT NUMBER DISBURSEMENT
(CASH BASIS)
JANUARY 31, 1974

| COMPANY NAME (PAYEE) | ACCT. NO. | COST CENTER | PAYMENT |
|----------------------|-----------|-------------|---------|
| RON VERNON | 6010 | 4343 | 125.00 |
| ACCOUNT NUMBER TOTAL | | | 125.00 |
| FRANK YOCKEY | 6020 | 4243 | 100.00 |
| JEFF OSBORNE | 6020 | 4343 | 641.43 |
| KAY PIERSOL | 6020 | 4343 | 100.00 |
| PAT WELCH | 6020 | 4343 | 1524.23 |
| ACCOUNT NUMBER TOTAL | | | 2365.66 |
| | | TOTAL | 2490.66 |

Figure 4

Accounts Receivable-Billing with the 9880B Mass Memory System

by Bert Desmond and
Ron Vernon

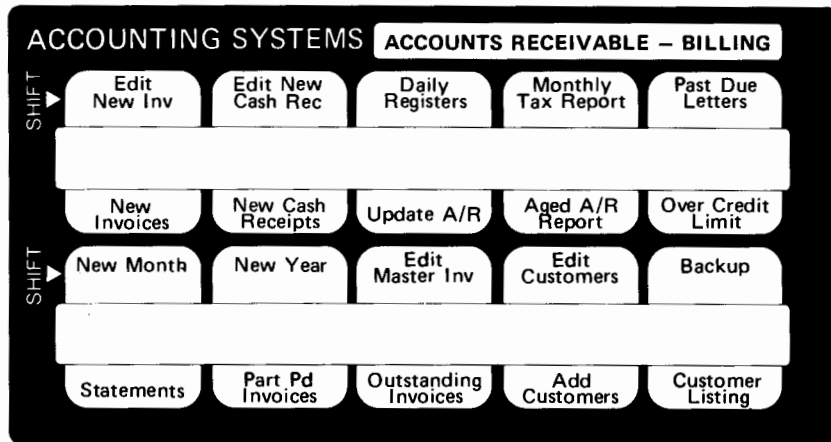


Figure 1

A major problem for business is increasing the cash flow into the firm as a result of sales. There are two main contributors to the problem. The first is the time lag between shipping a product and billing the customer. The second contributor is minimizing the time a customer lets the bill go unpaid.

The Accounts Receivable-Billing package provides for:

- Fast billing
- Orderly follow-up of receivables

Figure 1 shows the template used by the Accounts Receivable-Billing system. The system emphasizes ease of operation through the Special Function keys and the 32-character display.

Fast Billing

The billing information on new invoices is entered by pressing the NEW INVOICES key. The display shows the questions for customer number, invoice number, amount billed, freight, service, discounts allowed and finance charges.

When all the new invoices are entered, the UPDATE A/R key is pressed and the new invoices are entered into the system.

Customer statements are generated automatically by pressing the STATEMENTS key. (Figure 2 shows a statement.)

By generating statements as the information is available, the time delay using end of the month billing is reduced and cash flow into the company is increased.

Orderly Follow-up of Receivables

With the press of a key operation, valuable management reports for keeping control of receivables are available upon request.

For a report on the status of all the receivables, press the OUTSTANDING INVOICES key.

This report lists all the outstanding invoices by customer. The information details the date the customer was billed, the total bill, any partial payments, adjustments, finance charges and the net balance due.

Control totals are printed to provide a balance check on the outstanding invoices.

For a listing of all invoices with a partial payment, press the PART PD INVOICES key. If a customer has made partial payment towards an invoice, the date of the most recent payment is printed. This gives management an insight into the effort a customer is making towards paying the bill. (Figure 3 is the Partially Paid Invoices Report.)

To see those customers who may be over extending their credit, press the

key labeled, 'OVER CREDIT LIMIT'. This report lists only those customers who have exceeded their credit limit.

Press the Special Function key labeled, 'AGED A/R' to obtain a breakdown of the outstanding invoices. Each invoice is categorized as either current, 30 to 59 days, 60 to 89 days, and 90 days or more overdue. (Figure 4 is the Aged Accounts Receivable Report.)

The total dollar amount and percent in each category is printed.

Press the Accounting Systems key labeled PAST DUE LETTERS to remind customers of their delinquent invoices. This program generates past due letters for outstanding invoices that were billed before a date entered by the user.

For each past due invoice, a finance charge, if one was specified when originally entering the invoice, is calculated and added to the outstanding balance.

Other Features

A sensible accounting system should be designed so errors can be easily corrected. The Accounts Receivable-Billing System is designed so that any of the files — customer file, outstanding invoices file, new invoices file and new cash receipts file — can be corrected or edited by pressing the appropriately labeled edit key and answering the questions shown in the display.

In any accounting application, it is essential that the history of the system can be traced.

Audit trails, that is, reports which allow a user to trace the flow of an invoice through the system, are generated automatically. Whenever the Accounts Receivable-Billing system is updated, a dated Cash Receipts Transaction Register and a New Invoices Transaction Register are generated to provide audit trails. (Figure 5 shows a Cash Receipts Transaction Register.)

The system has room for 800 customers and 800 outstanding invoices per Mass Memory platter.

Summary

The purpose of this article is to introduce the reader to the capabilities of the Mass Memory Accounts Receivable-Billing system.

For more complete information, contact your local Hewlett-Packard representative.

PIERSOL ENTERPRISES

DECEMBER 6, 1973

SOLD TO:
PIERSOLS PANTRY
1235 MARKET STREET
SPRINGFIELD, PA 19064

SHIP TO:
PIERSOLS PANTRY
1235 MARKET STREET
SPRINGFIELD, PA 19064

Dear Sir:

Per the attached documents, please remit the following:

Your Purchase Order Number: 466
Invoice Number: 7000

| | | |
|---------------------|----|--------|
| Price of Goods | \$ | 152.14 |
| Freight | | 12.50 |
| Service | | 14.00 |
| | | ===== |
| City Tax | | 3.04 |
| State Tax | | 4.56 |
| | | ===== |
| Total | \$ | 186.24 |
| Less 1.00% Discount | | |
| If paid in 10 days | | 1.66 |
| Total | \$ | 184.58 |



Terms: 1.00% 10 days, net 30 days from date of statement.

Finance charge: 1.20% per month (14.40% annual) will be added to all past due accounts.

Very truly yours,

K.P. PIERSOL
CONTROLLER

Figure 2

PARTIALLY PAID INVOICES
DECEMBER 6, 1973

| CUSTOMER NUMBER | INVOICE NUMBER | AMOUNT BILLED | AMOUNT PAID | DATE PAID | ADJUST-MENTS | FINANCE CHARGE | BALANCE DUE |
|-----------------|----------------|---------------|-------------|-----------|--------------|----------------|-------------|
| ===== | ===== | ===== | ===== | ===== | ===== | ===== | ===== |
| 1040 | 2500 | 706.25 | 125.00 | 11/01/73 | 0.00 | 35.76 | 617.01 |
| 1090 | 4002 | 160.24 | 120.00 | 11/16/73 | -0.46 | 0.00 | 39.76 |
| 1140 | 789 | 2185.00 | 1189.00 | 12/06/73 | 0.00 | 0.00 | 996.00 |
| 1140 | 1250 | 581.02 | 81.02 | 11/12/73 | 0.00 | 41.21 | 541.21 |
| 1170 | 1500 | 683.50 | 600.00 | 11/12/73 | -0.50 | 46.99 | 129.99 |
| 1400 | 6000 | 2016.55 | 2000.00 | 12/06/73 | 0.00 | 0.00 | 16.55 |
| TOTAL | | 6332.56 | 4115.02 | | -0.98 | 123.96 | 2340.52 |

Figure 3

AGED ACCOUNTS RECEIVABLE REPORT
DECEMBER 6, 1973

| CUSTOMER NAME | INVOICE NUMBER | TOTAL OUT | <30 DAYS | 30-59 DAYS | 60-89 DAYS | >=90 DAYS |
|----------------------|----------------|-----------|----------|------------|------------|-----------|
| ===== | ===== | ===== | ===== | ===== | ===== | ===== |
| ANDERSONS DAIRY | 5000 | 297.11 | 297.11 | 0.00 | 0.00 | 0.00 |
| | 6589 | 638.35 | 638.35 | 0.00 | 0.00 | 0.00 |
| CUSTOMER TOTAL | | 935.46 | 935.46 | 0.00 | 0.00 | 0.00 |
| ASMUS BOOK NOOK | 3000 | 26.50 | 0.00 | 0.00 | 26.50 | 0.00 |
| BALOG'S BAR | 2589 | 687.25 | 0.00 | 0.00 | 687.25 | 0.00 |
| BARNEY'S BOUTIQUE | 2500 | 617.01 | 0.00 | 617.01 | 0.00 | 0.00 |
| BRADEN'S ART SHOP | 4002 | 39.76 | 39.76 | 0.00 | 0.00 | 0.00 |
| PIERSONS PANTRY | 7000 | 186.24 | 186.24 | 0.00 | 0.00 | 0.00 |
| THE FARMHOUSE | 7001 | 516.68 | 516.68 | 0.00 | 0.00 | 0.00 |
| CHURCHILL FORMS | 1750 | 265.00 | 0.00 | 0.00 | 0.00 | 265.00 |
| CONNELL PIZZA PALACE | 789 | 996.00 | 996.00 | 0.00 | 0.00 | 0.00 |
| | 1250 | 541.21 | 0.00 | 0.00 | 0.00 | 541.21 |
| | 1260 | 681.03 | 0.00 | 681.03 | 0.00 | 0.00 |
| CUSTOMER TOTAL | 2589 | 591.00 | 0.00 | 0.00 | 591.00 | 0.00 |
| | | 2809.24 | 996.00 | 681.03 | 591.00 | 541.21 |
| BLASS GLASS FACTORY | 1500 | 129.99 | 0.00 | 0.00 | 0.00 | 129.99 |
| EAGLE'S BIRD STORE | 5002 | 285.29 | 285.29 | 0.00 | 0.00 | 0.00 |
| GARLON'S GARAGE | 7002 | 19.54 | 19.54 | 0.00 | 0.00 | 0.00 |
| GUERRERO TAX DODGE | 4003 | 185.14 | 185.14 | 0.00 | 0.00 | 0.00 |
| HELLER SPORT SHOP | 5001 | 55.67 | 55.67 | 0.00 | 0.00 | 0.00 |
| GOMDRRAH INN | 6000 | 16.55 | 16.55 | 0.00 | 0.00 | 0.00 |
| HEAVENLY HALOS | 10000 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| TOTAL | | 6776.32 | 3237.33 | 1298.04 | 1304.75 | 936.20 |
| PERCENT | | 100 | 47.87 | 19.16 | 19.25 | 13.92 |

Figure 4

CASH RECEIPTS REGISTER
DECEMBER 6, 1973

| CUSTOMER NUMBER | INVOICE NUMBER | ADJUSTMENTS | DATE PAID | CASH RECEIVED |
|-----------------|----------------|-------------|-----------|---------------|
| ===== | ===== | ===== | ===== | ===== |
| 1030 | 1526 | 0.00 | 12/05/73 | 789.22 |
| 1140 | 789 | 0.00 | 12/06/73 | 1189.00 |
| 1400 | 6000 | 0.00 | 12/06/73 | 2000.00 |
| TOTAL | | 0.00 | | 3978.22 |

Figure 5

Inventory Control with the 9880B Mass Memory System

by Bert Desmond and
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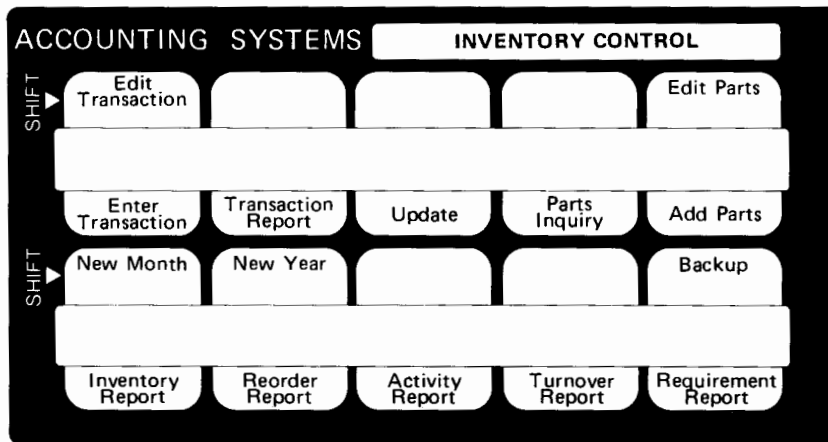


Figure 1

The proper control of inventory is essential for a business. Carrying too little inventory may slow down production and delay deliveries due to parts shortages. Too large an investment in inventory utilizes cash that could be spent elsewhere in the business.

The Inventory Control system gives a business:

- Management reports to help make inventory decisions
- Immediate inquiry into the status of any item in the inventory.

Figure 1 shows the template for the Inventory Control system. The system emphasizes easy operation through the Special Function keys and the 32-character display.

Management Reports

The problem of proper levels of inventory can be analyzed through several reports.

Press the Inventory Control key labeled, 'INVENTORY REPORT' to see the status of each part. This report shows the unit price, quantity on hand, value on hand, the quantity on order and the unit of measure for each item.

For a listing of items that may have to be ordered, press the key labeled, 'REORDER REPORT'. This report lists only those items where the quantity on hand is less than the minimum quantity. For each of these items, the report shows the quantity on hand, the quantity on order, the lead time for delivery, and the slack (quantity on hand + quantity on order less the minimum quantity). Figure 2 shows the Reorder Report.

To see information on the month-to-date and year-to-date issues and receipts, press the ACTIVITY REPORT key. Through an analysis of usage from this report and information on the lead time for delivery of parts, guidelines for the minimum quantity on hand can be established. Figure 3 is the Activity Report.

To give management a tool for establishing proper inventory levels, a turnover report is available. For selected items in the inventory, the report shows the average year-to-date turnover.

When a company receives a quantity order for a certain number of parts that are needed for a manufacturing process, the impact of removing these parts from inventory can be seen with the Requirement Report. After touching the Requirement Report key, the system asks for entries of part number and quantity. Up to fifty parts can be entered. The report shows the parts required, the quantity on hand, the quantity on order, the slack and the lead time. This allows the user to determine if there are enough parts available to meet the objective.

Other Features

In addition to the management reports mentioned above, the system provides reports on vendor order information, customer order information and a report of processed transactions as an audit trail.

When the inventory is updated, three reports are automatically generated: a Customer Order Report, a Vendor Order Report, and the Processed Transaction Report.

Figure 4 is the Customer Order Report. This report shows the total cost, the total sales, the gross profit and percent profit for each customer on all parts issued from inventory.

The Vendor Order Report shows the amount of each order by vendor.

The Processed Transaction Report shows the latest transactions entered into the system sorted by transaction code and part number. Figure 5 is the Processed Transaction Report.

The Inventory Control is designed for sensible operation. The parts file and the transactions file can be corrected or edited by pressing the appropriately labeled edit key and answering the questions shown in the display.

The system has room for 1700 items per Mass Memory platter.

Summary

The purpose of this article is to show the capabilities of the Mass Memory Inventory Control System. For more complete information, contact your local Hewlett-Packard representative.

REORDER REPORT
6 DECEMBER 1973

| PART NUMBER | UNIT PRICE | MINIMUM QUANTITY | QUANTITY ON HAND | QUANTITY ON ORDER | SLACK | LEAD TIME |
|-------------|------------|------------------|------------------|-------------------|-------|-----------|
| ===== | ===== | ===== | ===== | ===== | ===== | ===== |
| 11627301283 | 81.01 | 349 | 182 | 173 | -74 | 51 |
| 24742325453 | 9.91 | 370 | 275 | 319 | 224 | 56 |
| 27867254463 | 65.80 | 441 | 22 | 436 | 17 | 83 |
| 31133835642 | 24.27 | 193 | 84 | 125 | 16 | 17 |
| 40583355768 | 50.97 | 720 | 46 | 30 | -644 | 39 |
| 42868354368 | 58.37 | 939 | 347 | 427 | -165 | 53 |
| 46181672283 | 45.64 | 845 | 256 | 375 | -214 | 94 |
| 50265684044 | 41.34 | 699 | 341 | 224 | -134 | 19 |
| 55395791356 | 96.35 | 344 | 183 | 368 | 119 | 31 |
| 68654793394 | 4.96 | 754 | 340 | 331 | -83 | 84 |
| 74752444755 | 82.14 | 866 | 33 | 280 | -553 | 57 |
| 77774953448 | 62.86 | 685 | 114 | 6 | -565 | 4 |
| 84856201773 | 80.24 | 873 | 518 | 492 | 137 | 22 |
| 84872037503 | 89.52 | 921 | 639 | 441 | 159 | 37 |
| 94300486475 | 24.79 | 564 | 44 | 317 | -203 | 23 |

Figure 2

ACTIVITY REPORT
6 DECEMBER 1973

| PART NUMBER | UNIT PRICE | MTD ISSUE | ISSUE DATE | MTD REC | RECEIPT DATE | YTD ISSUE | YTD REC |
|-------------|------------|-----------|------------|---------|--------------|-----------|---------|
| ===== | ===== | ===== | ===== | ===== | ===== | ===== | ===== |
| 00146673853 | 98.23 | 339 | 11/20/73 | 341 | 11/25/73 | 3377 | 3188 |
| 04603234607 | 20.74 | 126 | 11/05/73 | 60 | 11/09/73 | 1209 | 586 |
| 11627301283 | 81.01 | 719 | 11/26/73 | 393 | 11/23/73 | 6691 | 3603 |
| 20133756263 | 27.47 | 362 | 11/29/73 | 400 | 11/17/73 | 3516 | 3670 |
| 21854897860 | 34.84 | 522 | 11/13/73 | 425 | 11/15/73 | 5193 | 4190 |
| 22377244049 | 1.16 | 622 | 11/10/73 | 220 | 11/25/73 | 5889 | 2171 |
| 22955529912 | 24.53 | 58 | 11/24/73 | 472 | 11/22/73 | 547 | 4524 |
| 23215259496 | 49.00 | 332 | 11/18/73 | 50 | 11/26/73 | 3114 | 462 |
| 24742325453 | 9.91 | 430 | 11/03/73 | 424 | 11/05/73 | 4190 | 4185 |
| 26213244016 | 59.57 | 322 | 11/21/73 | 446 | 11/20/73 | 2956 | 4304 |
| 26932654375 | 85.01 | 292 | 11/27/73 | 130 | 11/05/73 | 2764 | 1238 |
| 27428305126 | 9.64 | 410 | 11/24/73 | 542 | 11/09/73 | 4082 | 5210 |
| 27867254463 | 65.80 | 167 | 11/10/73 | 629 | 11/04/73 | 1573 | 6068 |
| 29259883740 | 24.98 | 715 | 11/25/73 | 502 | 11/02/73 | 6871 | 4908 |
| 31133835642 | 24.27 | 468 | 11/29/73 | 292 | 11/22/73 | 4462 | 2808 |
| 40583355768 | 50.97 | 167 | 11/11/73 | 271 | 11/10/73 | 1656 | 2608 |
| 42536785494 | 77.13 | 538 | 11/06/73 | 7 | 11/27/73 | 5313 | 64 |
| 42868354368 | 58.37 | 62 | 11/29/73 | 174 | 11/26/73 | 577 | 1580 |
| 46181672283 | 45.64 | 298 | 11/22/73 | 499 | 11/11/73 | 2908 | 4665 |
| 49263537088 | 60.33 | 487 | 11/23/73 | 399 | 11/01/73 | 4764 | 3605 |
| 50265684044 | 41.34 | 168 | 11/28/73 | 626 | 11/25/73 | 1597 | 5688 |
| 52668121848 | 78.98 | 522 | 11/14/73 | 365 | 11/06/73 | 4877 | 3604 |
| 52745882204 | 67.39 | 621 | 11/13/73 | 460 | 11/03/73 | 5695 | 4574 |
| 55119356845 | 70.35 | 531 | 11/17/73 | 95 | 11/29/73 | 5016 | 889 |
| 55232808634 | 37.93 | 303 | 11/24/73 | 636 | 11/04/73 | 2922 | 6139 |
| 55395791356 | 96.35 | 662 | 11/10/73 | 705 | 11/21/73 | 6161 | 7015 |
| 62406073793 | 77.23 | 583 | 11/14/73 | 297 | 11/26/73 | 5554 | 2949 |
| 66294631232 | 2.40 | 582 | 11/10/73 | 673 | 11/29/73 | 5819 | 6601 |
| 68654793394 | 4.96 | 515 | 11/03/73 | 564 | 11/18/73 | 4710 | 5344 |
| 70855574568 | 64.85 | 499 | 11/28/73 | 262 | 11/07/73 | 4776 | 2543 |
| 71688687514 | 27.03 | 414 | 11/12/73 | 217 | 11/09/73 | 4123 | 2077 |
| 74752444755 | 82.14 | 13 | 11/06/73 | 13 | 11/23/73 | 117 | 123 |
| 77774953448 | 62.86 | 443 | 11/25/73 | 678 | 11/27/73 | 3994 | 6692 |
| 84676579185 | 67.80 | 284 | 11/21/73 | 579 | 11/26/73 | 2687 | 5767 |
| 84856201773 | 80.24 | 527 | 11/02/73 | 236 | 11/05/73 | 4986 | 2151 |
| 84872037503 | 89.52 | 480 | 11/05/73 | 223 | 11/15/73 | 4770 | 2220 |
| 88657505140 | 69.85 | 249 | 11/21/73 | 629 | 11/05/73 | 2360 | 5824 |
| 94300486475 | 24.79 | 418 | 11/20/73 | 399 | 11/10/73 | 3975 | 3676 |

Figure 3

CUSTOMER ORDER REPORT
6 DECEMBER 1973

| CUSTOMER NUMBER | PART NUMBER | QTY ISSUED | SELLING PRICE | GROSS SALE | UNIT COST | TOTAL VALUE | GROSS PROFIT | % PFT |
|-----------------|-------------|------------|---------------|------------|-----------|-------------|--------------|-------|
| 1112223 | 00146673853 | 1 | 120.00 | 120.00 | 98.40 | 98.40 | 21.60 | 21.9 |
| 12345678 | 20133756263 | 3 | 35.00 | 105.00 | 27.47 | 82.41 | 22.59 | 27.4 |
| | 23215259496 | 3 | 65.00 | 195.00 | 49.45 | 148.34 | 46.66 | 31.5 |
| | 27867254463 | 3 | 80.00 | 240.00 | 65.80 | 197.40 | 42.60 | 21.6 |
| CUSTOMER TOTAL | | | | 540.00 | | 428.15 | 111.85 | |
| 44444444 | 26213244016 | 5 | 75.00 | 375.00 | 59.57 | 297.85 | 77.15 | 25.9 |
| | 50265684044 | 5 | 50.00 | 250.00 | 41.34 | 206.70 | 43.30 | 20.9 |
| CUSTOMER TOTAL | | | | 625.00 | | 504.55 | 120.45 | |
| TOTAL ORDER | | | | 1285.00 | | 1031.10 | 253.90 | |

Figure 4



PROCESSED TRANSACTIONS
6 DECEMBER 1973

| PART NUMBER | TRANS CODE | QUANTITY | UNIT PRICE | DATE | CUSTOMER/VENDOR NUMBER | SELLING/PURCHASE UNIT PRICE |
|----------------|------------|----------|------------|----------|------------------------|-----------------------------|
| 00146673853 | 1 | 100 | 99.00 | 12/06/73 | | |
| 11627301283 | 1 | 50 | 85.00 | 12/06/73 | | |
| 23215259496 | 1 | 40 | 50.00 | 12/06/73 | | |
| 46181672283 | 1 | 75 | 46.50 | 12/05/73 | | |
| 77774953448 | 1 | 25 | 65.00 | 12/06/73 | | |
| TOTAL RECEIPTS | | 5 | | | | |
| 00146673853 | 2 | 1 | | 12/06/73 | 1112223 | 120.00 |
| 20133756263 | 2 | 3 | | 12/06/73 | 12345678 | 35.00 |
| 23215259496 | 2 | 3 | | 12/06/73 | 12345678 | 65.00 |
| 26213244016 | 2 | 5 | | 12/06/73 | 44444444 | 75.00 |
| 27867254463 | 2 | 3 | | 12/06/73 | 12345678 | 80.00 |
| 50265684044 | 2 | 5 | | 12/06/73 | 44444444 | 50.00 |
| TOTAL ISSUES | | 6 | | | | |
| 27428305126 | 3 | 100 | | | 11111111 | 16.00 |
| 40583355768 | 3 | 150 | | | 11111111 | 51.00 |
| 66294631232 | 3 | 500 | | | 22554477 | 2.45 |
| 84676579195 | 3 | 50 | | | 87878787 | 68.00 |
| 94300486475 | 3 | 50 | | | 87878787 | 25.00 |
| TOTAL ORDERS | | 5 | | | | |

Figure 5