## 1.0 Installation

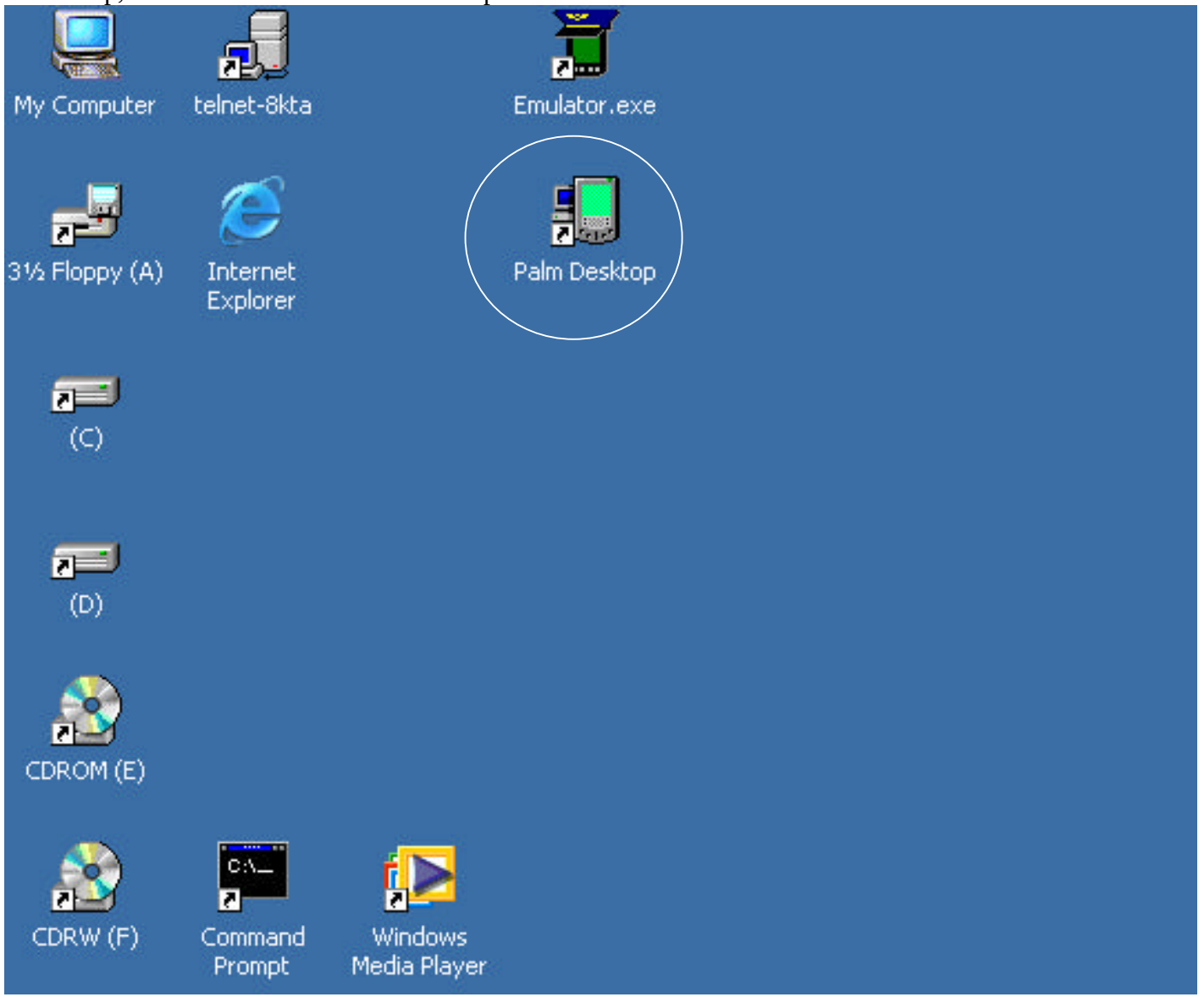
Two files are required:
E6B.prc - E6B application.
Mathlib.prc - Math Library support required by E6B.prc

To Install, involke Palm DeskTop and select install Icon on the left hand side. Click the “Install” button on the “Install Tool” window and browse to the locations where E6B.prc and Mathlib.prc arelocated.

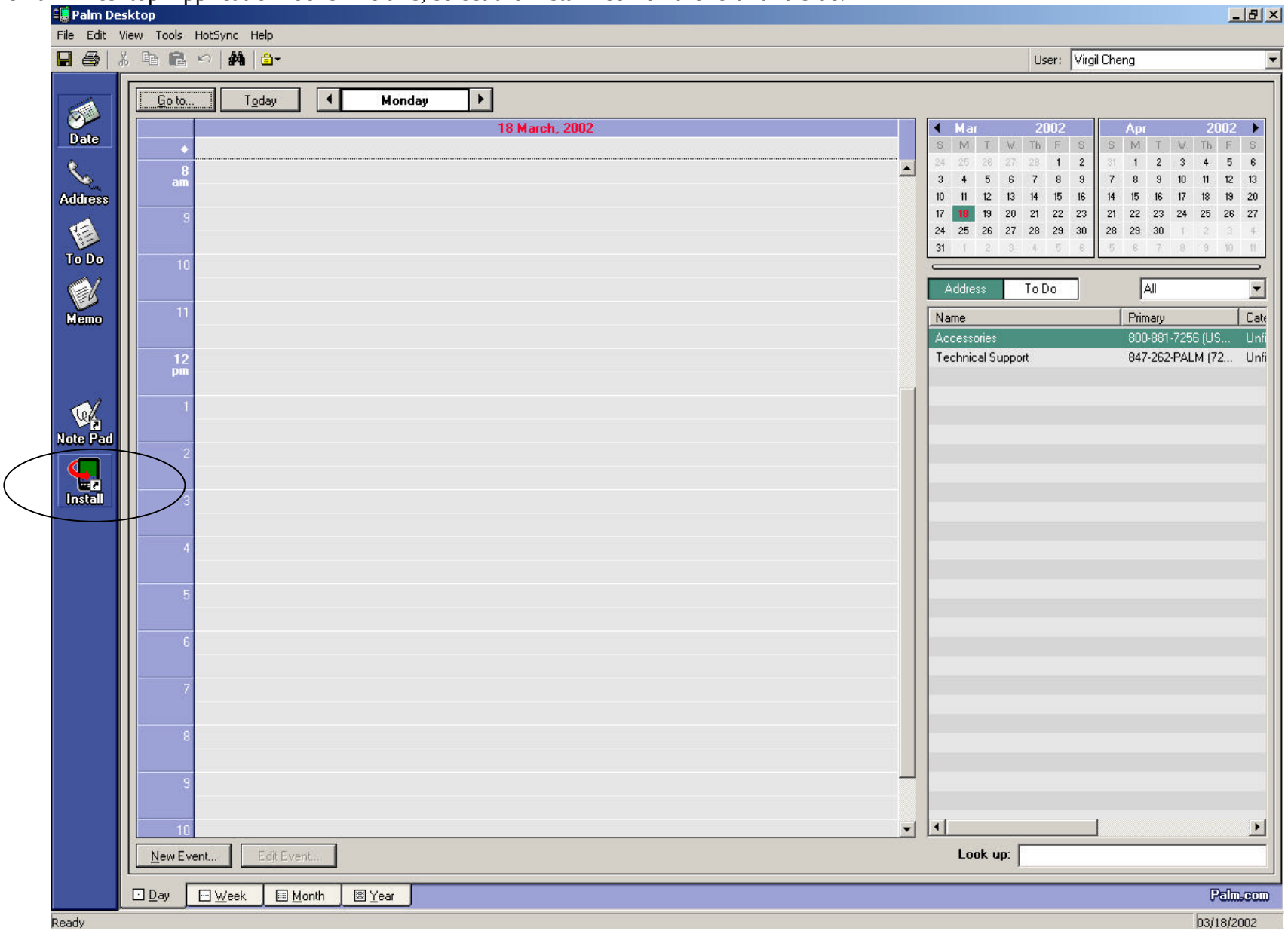
Quit the Palm DeskTop and press the “HotSync” button on the Palm device cradle. Wait untiltransfer complete. Installation is now complete.

1.1 Detailed Installation screens

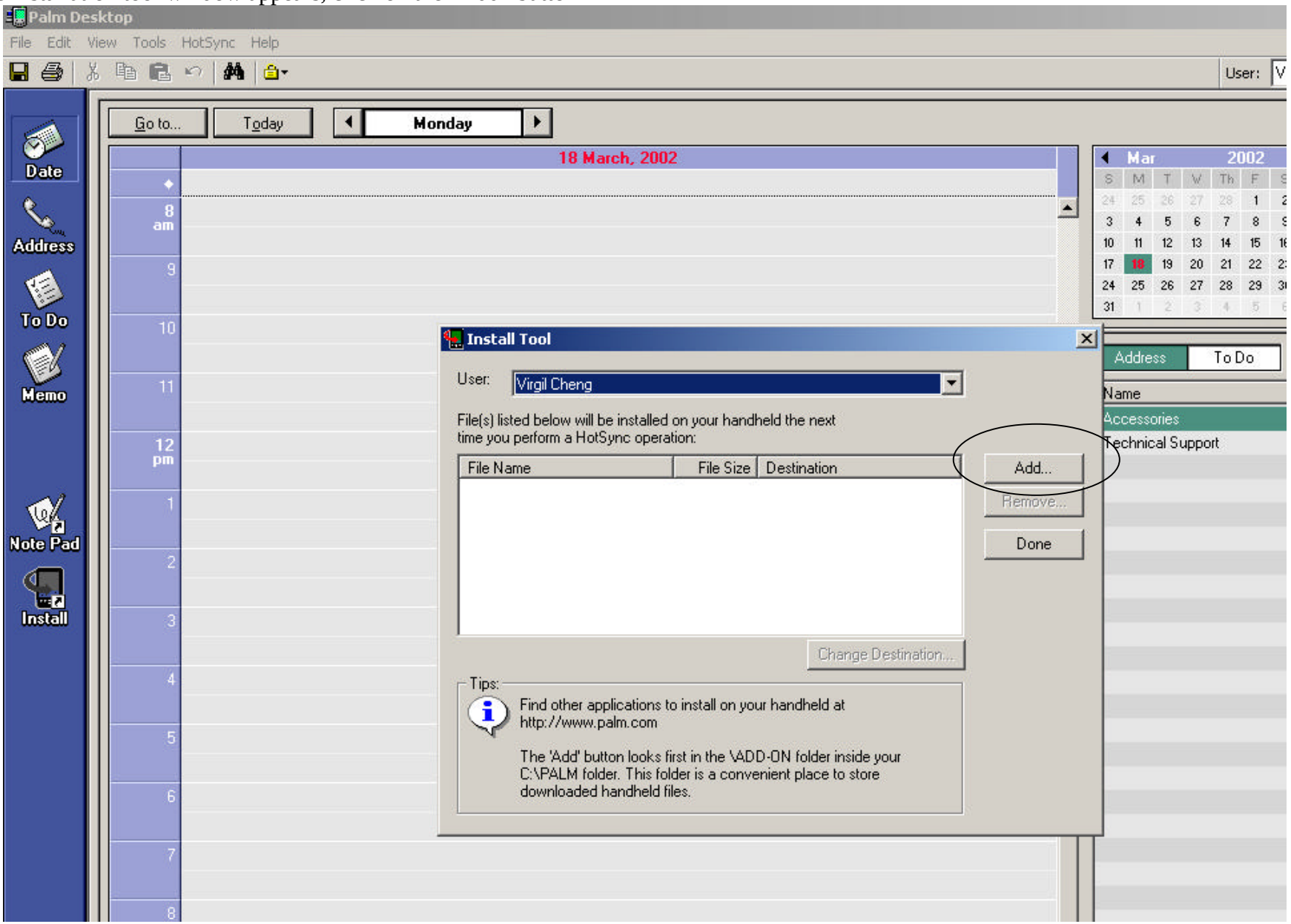
1.1.1 On your computer desktop, double click on the Palm Desktop Icon.



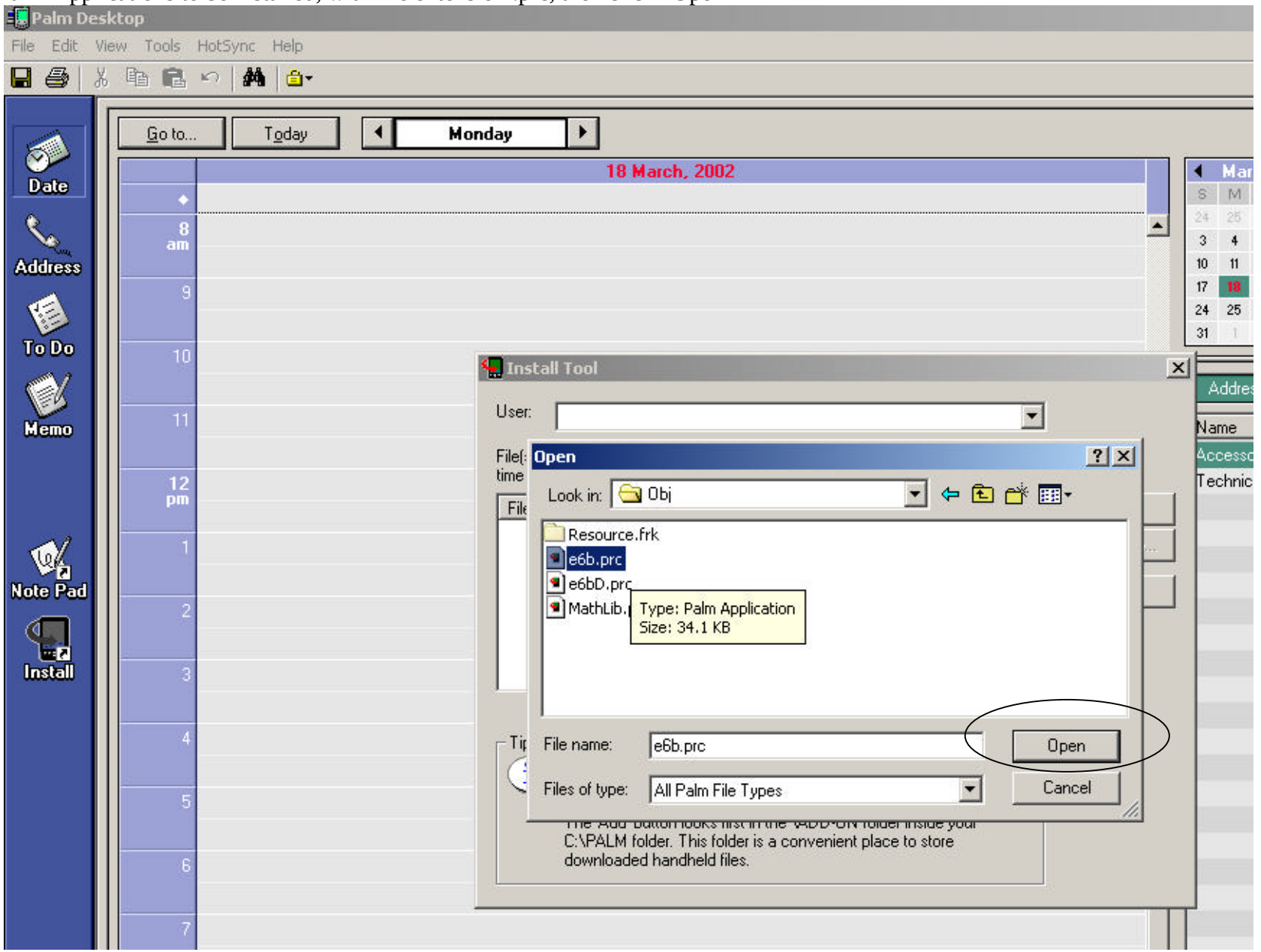
1.1.2 The Palm Desktop Application looks like this, select the Install Icon on the left hand side.



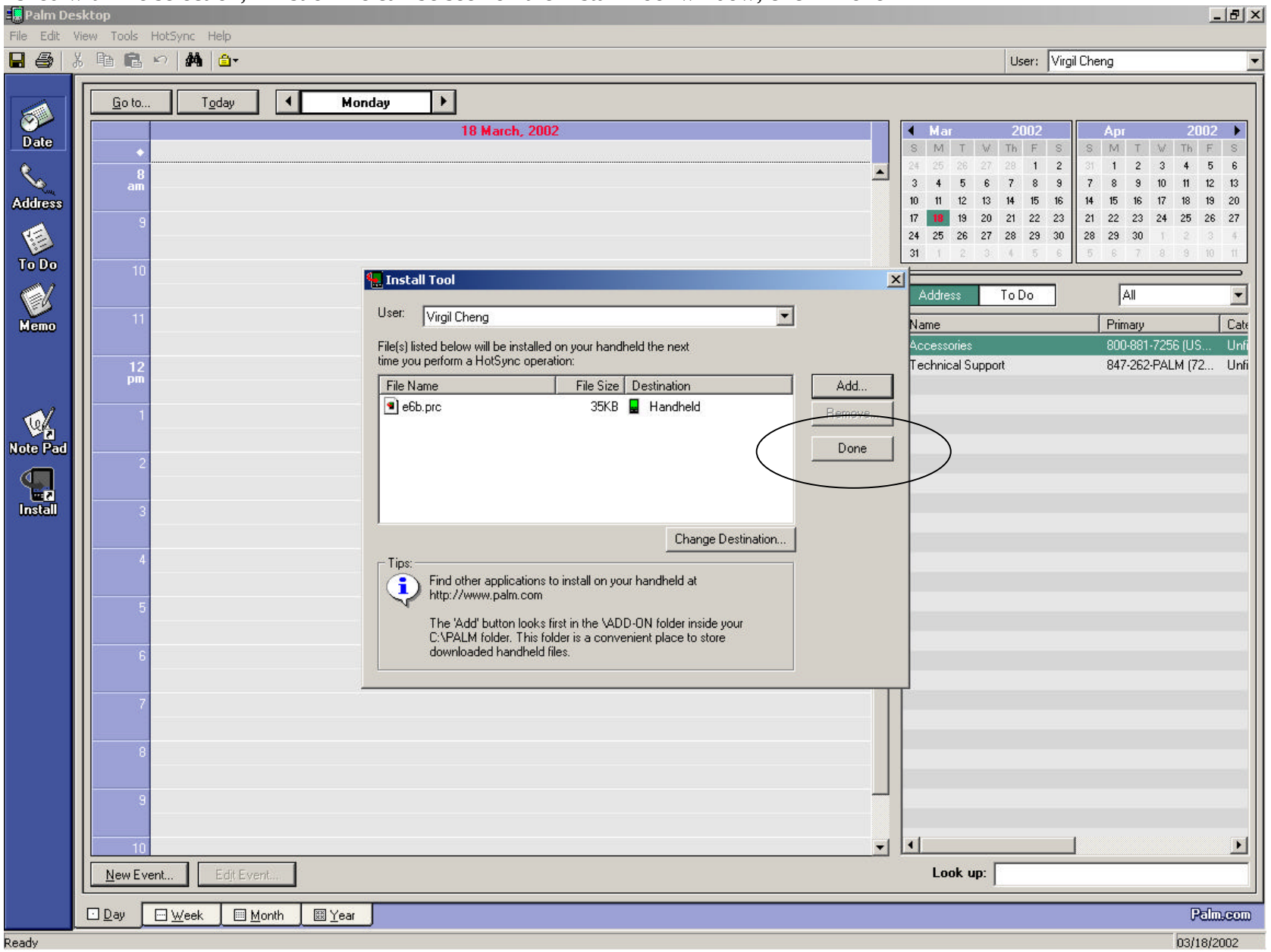
1.1.3 The installation tool window appears, click on the “Add” button



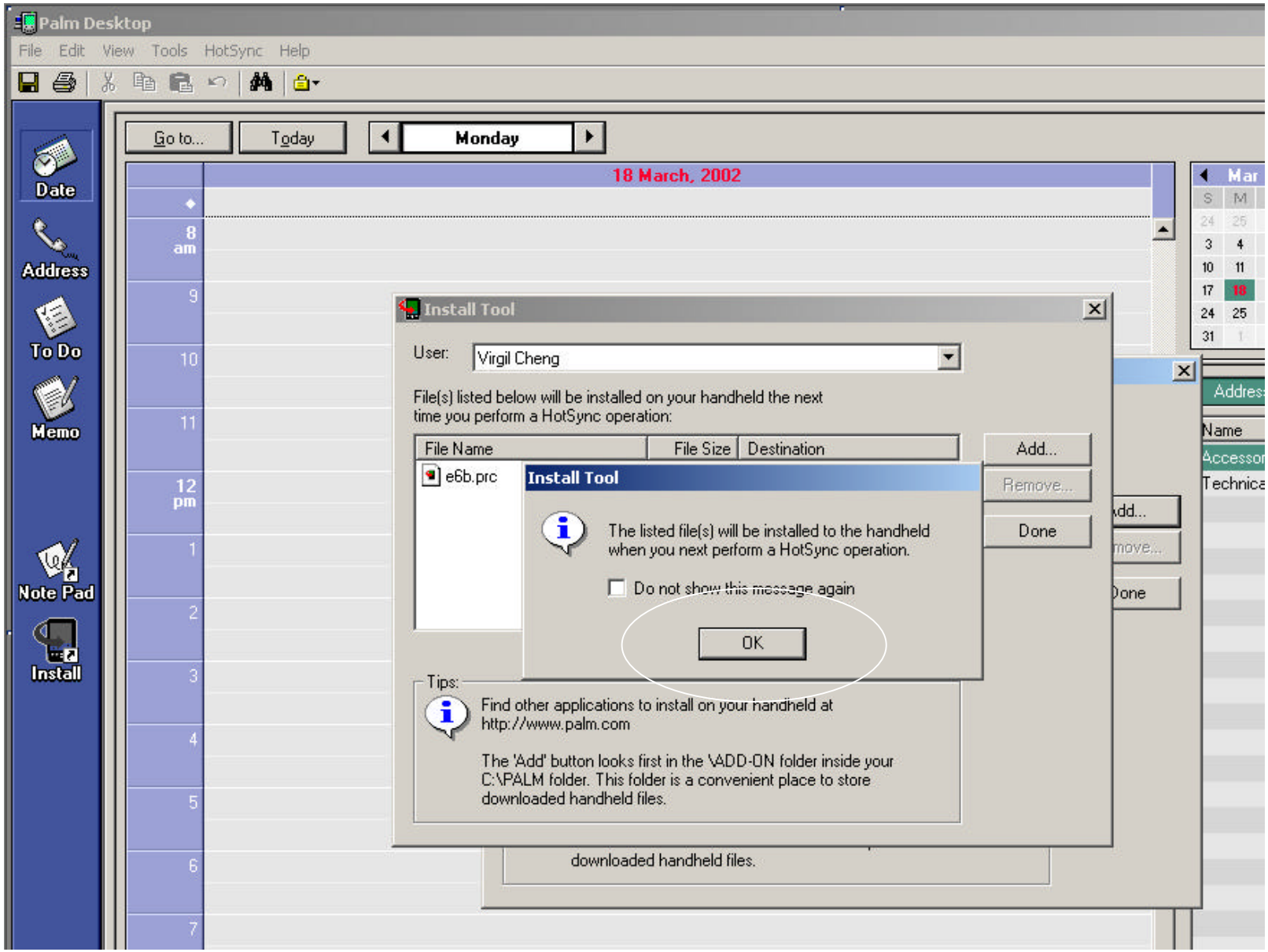
1.1.4 Select Palm Applications to be installed, with file extension .prc, then click “Open”



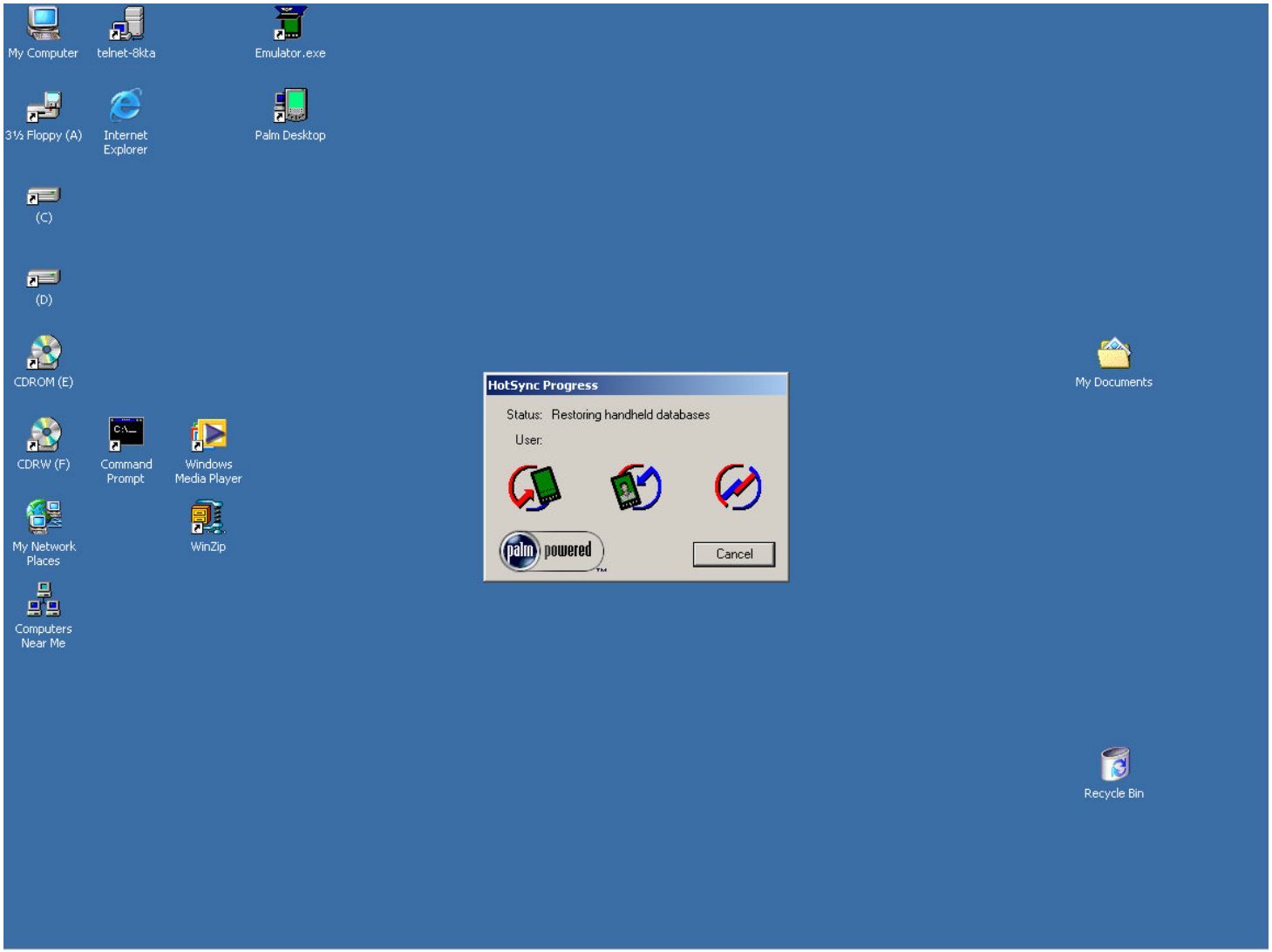
1.1.5 After finished with file selection, A list of file can be seen on the Install Tool window, click “Done”



1.1.6 A message confirmation is then displayed, click “OK”



1.1.7 When the “HotSync” Button on the cradle is pressed, the following screen will pop up. A message will be shown when complete.

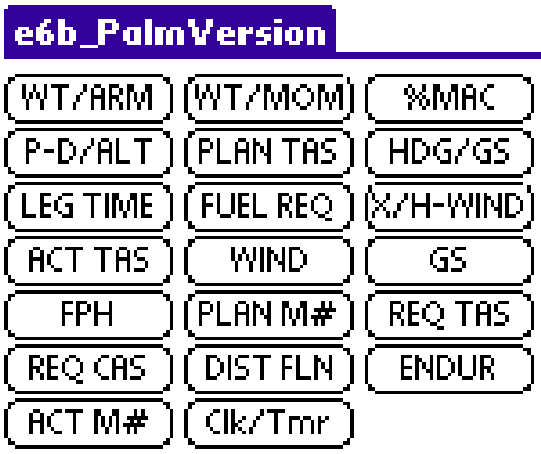


2.0 Running E6B on PalmOS

The palm screen with the E6B icon can be found on the application list.


Click on the E6B icon to start application

3.0 The E6B Main Application screen




The E6B Main application sceen looks like this

**SPORTY'S E6B**
**ELECTRONIC FLIGHT COMPUTER SOFTWARE**

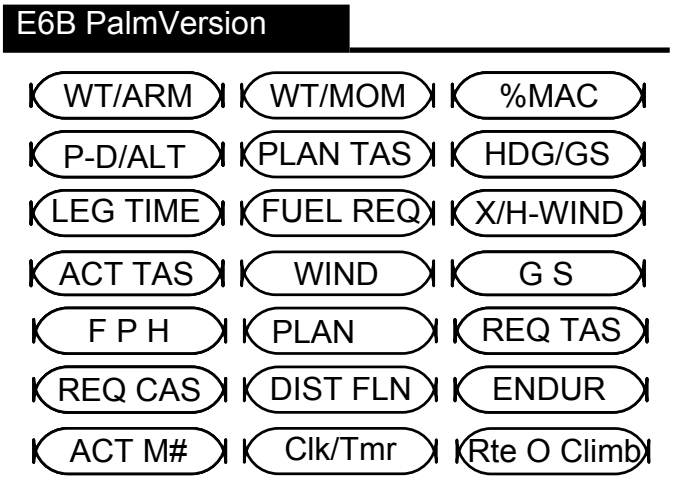
Sporty's E6B Flight Computer software is designed to perform 20 aviation functions and 14 standard conversions, and includes timer and clock functions. This manual is designed to offer an introduction to the operation of the E6B software. For each calculation, a sample problem has been given.

We hope that you enjoy your Sporty's E6B Flight Computer software. Its use has been made easy through direct path menu selection and calculation prompting. As you will soon learn, it is one of the most useful and versatile of all aviation computers.

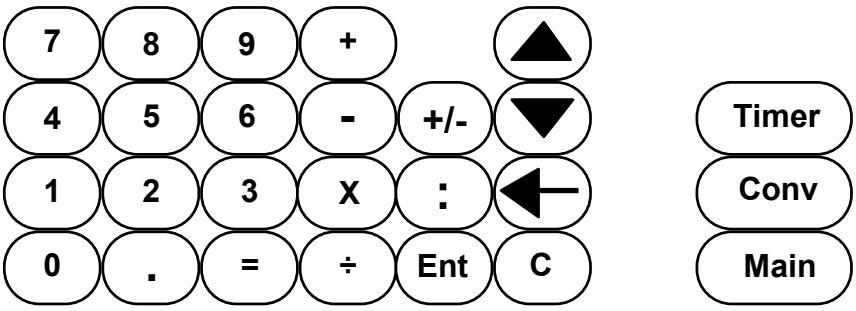

Version 03A

**CONTENTS**

**DISPLAY SCREEN**




The figure above shows the main menu. To choose a function, press the appropriate button with the stylus pen. The display will change to the function showing the values to be entered at the top, the calculated values shown below the line and the entry keypad (shown below) at the bottom of the screen.





Your E6B software performs all of the basic arithmetic functions with the keys shown above (addition, subtraction, multiplication, and division). These functions, as well as any conversions, can be performed at any time while performing an aviation function. The E6B software will display up to eight digits of the answer. The button should be used to compute any arithmetic function.

**AVIATION FUNCTIONS**

The aviation functions are displayed on the main menu. Your E6B software will automatically save computed values from one aviation function to another. To override this option, key in the new value when prompted. The E6B software will save true airspeed, groundspeed, time, and fuel per hour calculations. It will also save cumulative weight and balance totals.

**PROMPTS AND LABELS**

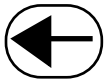
| | | | |
|---|---|---|---|
| **WT:** | Weight | **I°C:** | Indicated Temperature in Celsius |
| **W SPD:** | Wind Speed | **MOM:** | Moment |
| **RWY:** | Runway | **CG:** | Center of Gravity |
| **X-WIND:** | Crosswind | **GS:** | Groundspeed |
| **H-WIND:** | Headwind | **HDG:** | Heading |
| **W DIR:** | Wind Direction | **P ALT:** | Pressure Altitude |
| **ARM:** | Arm | **T°C:** | Temperature in Celsius |
| **CAS:** | Calibrated Airspeed | **CRS:** | Course |
| **TAS:** | True Airspeed | **RF:** | Reduction Factor |
| **MACH#:** | Mach Number | **GW:** | Gross Weight |
| **D ALT:** | Density Altitude | **DIST:** | Distance |
| **%MAC:** | Percent Mean Aerodynamic Chord | **HOME:** | Home Time Clock Label |
| **FPH:** | Fuel Per Hour | **TIME:** | Time |
| **I ALT:** | Indicated Altitude | **MAC:** | Mean Aerodynamic Chord |
| **FUEL:** | Fuel | **LOCAL:** | Local Time Clock Label |
| **°C:** | Temperature in Celsius Label | **FEET:** | Feet |
| **NAUT:** | Nautical | **CONV:** | Conversion Function |
| **RGR:** | Required Gradient Rate | **MROC:** | Minimum Rate of Climb |

**LEMAC:** Leading Edge Mean Aerodynamic Chord

**ZULU:** Coordinated Universal Time Clock Label

**BARO:** Altimeter Setting in Inches in Mercury (Barometer)

**SPECIAL FUNCTION KEYS**

| | |
|---|---|
| Clk/Tmr | Displays clocks and timer. |
| **Main** | Returns to main menu. |
| **Conv** | Converts the value between units of measurement. |
| **Timer** | Imports current value from timer onto current number entry line. |
| **Ent** | Accepts the entered number. |
| **=** | Totals calculator functions. |
|  | Deletes last digit entered. |
| **C** | Clears current number entry line. |
|  | Moves cursor between number entry lines. |
| **+/-** | Changes a positive value to a negative and a negative value to a positive. A negative number will be denoted with a minus sign in front of the number. |

**CONVERSIONS**

Conversions may be made at any time during any function. For example, if a calculation prompts for the temperature in Celsius and only 68° Fahrenheit is available, enter 68 as the value, press (Conv), press (F ► C). 20.00 will be displayed on the top line. Press (Return) to accept this value and return to the calculation. Conversions can be calculated for:

| | |
|---|---|
| Nautical Miles → Statute Miles | Nautical Miles → Statute Miles |
| Nautical Miles → Kilometers | Kilometers → Statute Miles |
| Feet → Meters | Meters → Feet |
| Pounds → Kilograms | Kilograms → Pounds |
| Gallons → Liters | Liters → Gallons |
| Fahrenheit → Celsius | Celsius → Fahrenheit |
| Hours → Hours, Minutes, Seconds | Hours, Minutes, Seconds → Hours |

There are no conversion keys for kilometers to statute miles or statute miles to kilometers. To convert from kilometers to statute miles, first convert kilometers to nautical miles, then nautical miles to statute miles. To convert statute miles to kilometers, first convert from statute miles to nautical miles, then nautical miles to kilometers.

## CLOCKS AND TIMER

The E6B software has three clocks that run simultaneously. They are labeled as Zulu, Home and Local. The independent timer is below the clocks. To display, press (Clk/Tmr).

To set 11:25:00 on Zulu clock, tap ♦ under the hour position until 11 is displayed. Tap ♦ under the minutes position until 25 is displayed. Press (Set) to start the clock. This also synchronizes the minutes and seconds of the Home and Local clocks with the Zulu clock.

Set the hours for the Home and Local clocks using ♦, then synchronize the minutes and seconds by tapping (Set) on the Zulu clock.

A time can be entered in the timer by using ♦. To activate the timer, tap (Up) to start the timer counting up or tap (Down) to start counting down. (Stop) pauses the timer. (Reset) returns the timer to 0:00:00. An indicator to the right of the timer indicates if the timer is counting up (▲) or counting down (▼). ■ indicates the timer is stopped.

Next to this indicator is a **+** or **-**. When the timer is counting down and reaches 0:00:00, this changes from **+** to **-** to show the timer is now counting how much time has passed since reaching zero. The count down timer can be used as a reminder when to switch fuel tanks, to fly a non-precision approach (**LEG TIME** function) or measuring groundspeed from one checkpoint to another checkpoint (**GS**).

Any function requiring time to be entered, the timer may be used by tapping (**Timer**), (**Ent**) when prompted for time.

## ADDING AND SUBTRACTING TIME

Time can be entered into the E6B software in either hours or hours, minutes and seconds. To enter in hours, simply key in a normal decimal number. For example, entering **2.75** hours is the same as entering **02:45:00.**

To key in time in hours, minutes and seconds mode, the (**:**) must be used. For example, to enter 3 hours, 14 minutes and 25 seconds, tap 3, (**:**), 1, 4, (**:**), 2, 5. The display will read 3:14:25.

To key in 5 minutes even, the leading zeroes must be used: tap 0, (**:**), 0, 5. The display will read 0:05.

Time can be added in either mode; times from different modes can also be added without converting. For example, to add 3.45 hours and 2:45:00 :

Enter in 3.45 and tap (**+**)

Enter in 2:45 and tap (**=**)

The diplay will read 6.2. Answers will always appear in hours. Use the conversion function (H ► HMS) to change to hours, minutes and seconds. The display will read 6:12:00.

**PRESSURE AND DENSITY ALTITUDE**
**(P-D/ALT)**

This function will compute the pressure and density altitude given the indicated altitude, barometric pressure (altimeter setting in inches of Mercury), and temperature in Celsius. In this example, indicated altitude is 10,000 feet, the barometer is 29.94 inches, and the temperature is 5°C.

Tap (P-D/ALT) from the main menu. The display will prompt for **IAlt**. Key in **10000** and press (Ent)

The display will prompt for **BARO**. Key in **29.94** and press (Ent)

The display will prompt for **T°C**. Key in **5** and press (Ent)

The display will read:

| | |
|---|---|
| IAlt | 10000 |
| BARO | 29.94 |
| T°C | 5 |
| PAlt | 9980 |
| DAlt | 11088 |

---

**FLIGHT PLAN TRUE AIRSPEED**
**(PLAN TAS)**

This function is used to calculate true airspeed for preflight planning. It will compute the density altitude, mach number and true airspeed in knots, given the pressure altitude, temperature, and calibrated airspeed in knots. In this example, pressure altitude is 10,000 feet, temperature is 2°C, and CAS is 200 knots.

Tap (PLAN TAS) from the main menu. The display will prompt for **PAlt.** Key in **10000** and press (Ent)

The display will prompt for **T°C**. Key in **2** and press (Ent)

The display will prompt for **CAS**. Key in **200** and press (Ent)

The display will read:

| | |
|---|---|
| PAlt | 10000 |
| T°C | 2 |
| CAS | 200 |
| DAlt | 10770 |
| Mach# | 0.36 |
| TAS | 234.7 |

**HEADING AND GROUNDSPEED**
**(HDG/GS)**

This function will compute heading and groundspeed given wind direction, wind speed, course, and true airspeed. In this example, the wind is from 270° at 20, course is 180°, and true airspeed is 185.

Tap (HDG/GS) from main menu. The display will prompt for **WDir**. Key in **270** and press (Ent).

The display will prompt for **WSpd**. Key in **20** and press (Ent).

The display will prompt for **CRS**. Key in **180** and press (Ent).

The display will prompt for **TAS**. Key in **185** and press (Ent).

The display will read:

| | |
|---|---|
| WDir | 270 |
| WSpd | 20 |
| CRS | 180 |
| TAS | 185 |
| HDG | 186.2 |
| GS | 183.9 |

---

**LEG TIME**
**(LEG TIME)**

This function computes the time required to fly a particular distance given distance and groundspeed. In this example, distance is 25 and groundspeed is 185.

Tap (LEG TIME) from the main menu. The display will prompt for **Dist.** Key in **25** and press (Ent)

The display will prompt for **GS**. Key in **185** and press (Ent)

The display will read:

| | |
|---|---|
| Dist | 25 |
| GS | 185 |
| Time | 0.1351351 |
| | 0:08:06 |

Note: The calculated time is displayed in both hours and hours, minutes, seconds.

**FUEL REQUIRED**
**(FUEL REQ)**

This function calculates fuel requirements given time and fuel per hour consumption. In this example, flying time is 3 hours 15 minutes and fuel per hour consumption is 14 gallons.

Tap (FUEL REQ) from the main menu. The display will prompt for **Time.** Key in **3 hours, 15 minutes.** Tap 3, (:), 1, 5 and press (Ent)

The display will prompt for **FPH.** Key in **14** and press (Ent)

The display will read:

| | |
|---|---|
| Time | 3:15 |
| FPH | 14 |
| Fuel | 45.5 |

Note: The Fuel Required function computes the fuel consumption only. It does not take required fuel reserves into account.

---

**CROSSWIND, HEADWIND AND TAILWIND**
**(X/H-WIND)**

This function computes the crosswind component and headwind or tailwind component given wind direction, wind speed and runway number. In this example, the wind is from 270° at 20, and the runway number is 30. Note that the runway heading of 30 should be entered, not 300.

Tap (X/H-WIND) from the main menu. The display will prompt for **WDir**. Key in **270** and press (Ent)

The display will prompt for **WSpd**. Key in **20** and press (Ent)

The display will prompt for **RWY**. Key in **30** and press (Ent)

The display will read:

| | |
|---|---|
| WDir | 270 |
| WSpd | 20 |
| RWY | 30 |
| H-Wind | -17.3 |
| X-Wind | -10 |

Right crosswinds are shown as positive numbers, while left crosswinds are shown as negative numbers. A positive value for H-WIND denotes a tailwind, while a negative value denotes a headwind.

**ACTUAL TRUE AIRSPEED**
**(ACT TAS)**

This function calculates true airspeed, mach number and density altitude given pressure altitude, indicated temperature in Celsius and calibrated airspeed. In this example, the pressure altitude is 10,000 feet, temperature is 3°C, and calibrated airspeed is 200.

Tap (ACT TAS) from main menu. The display will prompt for **PAlt**. Key in **10000** and press (Ent).

The display will prompt for **I°C**. Key in **3** and press (Ent).

The display will prompt for **CAS**. Key in **200** and press (Ent).

The display will read:

| | |
|---|---|
| PAlt | 10000 |
| I°C | 3 |
| CAS | 200 |
| DAlt | 10039.6 |
| Mach# | 0.36 |
| TAS | 232 |

---

**WIND SPEED AND DIRECTION**
**(WIND)**

This function calculates wind speed and direction given course, true airspeed, groundspeed, and heading. In this example, the course is 355°, true airspeed is 200, groundspeed is 170, and the heading is 350°.

Tap (WIND) from main menu. The display will prompt for **CRS**. Key in **355** and press (Ent).

The display will prompt for **TAS**. Key in **200** and press (Ent).

The display will prompt for **GS**. Key in **170** and press (Ent).

The display will prompt for **HDG**. Key in **350** and press (Ent).

The display will read:

| | |
|---|---|
| CRS | 355 |
| TAS | 200 |
| GS | 170 |
| HDG | 350 |
| WDir | 324.2 |
| WSpd | 34 |

**GROUNDSPEED**
**(GS)**

This function calculates groundspeed given distance and time. In this example, distance is 18, and time is 7 minutes.

Tap (G S) from the main menu. The display will prompt for **Dist.** Key in **18** and press (**Ent**)

The display will prompt for **Time.** Key in **7 minutes.** Tap 0, (**:**), 0, 7 and press (**Ent**)

The display will read:

| | |
|---|---|
| Dist | 18 |
| Time | 0:07 |
| GS | 154.3 |

NOTE: Time can be imported from the timer for groundspeed calculations. This can be done by tapping (**Timer**), (**Ent**) when the computer prompts for time.

---

**FUEL PER HOUR**
**(FPH)**

This function computes fuel per hour given time and total fuel consumed. In this example, time is 3 hours 15 minutes, and fuel consumed is 45.5 gallons.

Tap (F P H) from the main menu. The display will prompt for **Fuel.** Key in **45.5** and press (**Ent**)

The display will prompt for **Time.** Key in **3 hours, 15 minutes.** Tap 3, (**:**), 1, 5 and press (**Ent**)

The display will read:

| | |
|---|---|
| Fuel | 45.5 |
| Time | 3:15 |
| FPH | 14 |

**FLIGHT PLAN MACH NUMBER**
**(PLAN M#)**

This function will compute the true airspeed given the temperature in Celsius and the mach number. In this example, temperature is -20°C and the Mach# is 0.85.

Tap (PLAN M#) from the main menu. The display will prompt for **T°C.** Key in **20**, press (+/-) and press (Ent).

The display will prompt for **Mach#.** Key in **0.85** and press (Ent)

The display will read:

| | |
|---|---|
| T°C | -20 |
| Mach# | .85 |
| TAS | 527.2 |

---

**REQUIRED TRUE AIRSPEED**
**(REQ TAS)**

Required True Airspeed is a planning function used to maintain a certain groundspeed and course in order to arrive at a desired point at a specific time. It will compute true airspeed and heading given wind direction and speed, course, and groundspeed. In this example, the wind is from 270° at 15, course is 355°, and groundspeed is 225 kts.

Tap (REQ TAS) from main menu. The display will prompt for **WDir**. Key in **270** and press (Ent).

The display will prompt for **WSpd**. Key in **15** and press (Ent).

The display will prompt for **CRS**. Key in **355** and press (Ent).

The display will prompt for **GS**. Key in **225** and press (Ent).

The display will read:

| | |
|---|---|
| WDir | 270 |
| WSpd | 15 |
| CRS | 355 |
| GS | 225 |
| TAS | 226.8 |
| HDG | 351.2 |

**REQUIRED CALIBRATED AIRSPEED**
**(REQ CAS)**

This function calculates the calibrated airspeed, corresponding mach number, and density altitude given the pressure altitude, temperature in Celsius, and true airspeed. In this example, pressure altitude is 10,000 feet, temperature is 2°C, and the true airspeed is 200.

Tap (REQ CAS) from main menu. The display will prompt for **PAlt**. Key in **10000** and press (Ent).

The display will prompt for **T°C**. Key in **2** and press (Ent).

The display will prompt for **TAS**. Key in **200** and press (Ent).

The display will read:

| | |
|---|---|
| PAlt | 10000 |
| T°C | 2 |
| TAS | 200 |
| DAlt | 10769.5 |
| Mach# | 0.31 |
| CAS | 170.4 |

---

**DISTANCE FLOWN**
**(DIST FLN)**

This function calculates for distance given time and groundspeed. In this example, the groundspeed is 185 and time is 15 minutes.

Tap (DIST FLN) from the main menu. The display will prompt for **GS.** Key in **185** and press (Ent)

The display will prompt for **Time.** Key in **15 minutes.** Tap 0, (:), 1, 5 and press (Ent)

The display will read:

| | |
|---|---|
| GS | 185 |
| Time | 0:15 |
| Dist | 46.3 |

**ENDURANCE**
**(ENDUR)**

This function calculates endurance given the total fuel on board and the fuel per hour consumption. In this example, fuel on board is 74, and fuel per hour is 14.

Tap (ENDUR) from the main menu. The display will prompt for **Fuel.** Key in **74** and press (**Ent**)

The display will prompt for **FPH**. Key in **14** and press (**Ent**)

The display will read:

| | |
|---|---|
| Fuel | 74 |
| FPH | 14 |
| Time | 5.2857143 |
| | 5:17:09 |

Note: The calculated time is displayed in both hours and hours, minutes, seconds.

---

**ACTUAL MACH NUMBER**
**(ACT M#)**

This function calculates true airspeed given the indicated temperature and mach number. It differs from the PLAN M# function only in that indicated temperature is used. In this example, the indicated temperature is -17°C and the mach number is 0.85.

Tap (ACT M#) from the main menu. The display will prompt for **I°C.** Key in **17**, press (**+/-**) and press (**Ent**)

The display will prompt for **Mach#.** Key in **0.85** and press (**Ent**)

The display will read:

| | |
|---|---|
| I°C | -17 |
| Mach# | .85 |
| TAS | 502.2 |

**PERCENT MAC**
**(%MAC)**

This function computes the center of gravity in terms of percentage of mean aerodynamic chord, or the percentage distance of the center of gravity from the average distance between the leading edge to the trailing edge of the wing. Leading edge mean aerodynamic chord, the center of gravity, and the mean aerodynamic chord. In this example, leading edge mean aerodynamic chord (LEMAC) is 22.29, the CG is 37.27, and the mean aerodynamic chord (MAC) is 61.4.

Tap (%MAC) from the main menu. The display will prompt for **LEMAC.** Key in **22.29** and press (Ent)

The display will prompt for **CG.** Key in **37.27** and press (Ent)

The display will prompt for **MAC.** Key in **61.4** and press (Ent)

The display will read:

| | |
|---|---|
| LEMAC | 22.29 |
| CG | 37.27 |
| MAC | 61.4 |
| %MAC | 24.4 |

The total for %MAC should be checked against the aircraft's approved operating limits.

---

**WEIGHT/ARM**
**(WT/ARM)**

This function is an easy method to compute the proper loading of the aircraft. The E6B software will retain and display cumulative totals for center of gravity, (CG), gross weight (GW), and moment (MOM). This will allow you to continue keying in weight and ARM values for to obtain running totals. In the WT/ARM mode, the E6B software continuously prompts for new WT and ARM values.

ARM is the distance in inches from the datum line to the center of gravity of an item. The datum line is an imaginary line established by the manufacturer from which all ARM measurements are taken. The moment is the product of arm and weight, divided by the reduction factor. The reduction factor is a constant of 1 for WT/ARM calculations. The computer will always assume RF=1.

In this example, aircraft empty weight is 2467, arm is 76.7", and the reduction factor is 1.

Tap (WT/ARM) from main menu. The display will prompt for **WT**. Key in **2467** and press (Ent).

The display will prompt for **ARM**. Key in **76.7** and press (Ent).

The display will read:

| | |
|---|---|
| WT | 2467 |
| ARM | 76.7 |
| CG | 76.7 |
| MOM | 189218.9 |
| GW | 2467 |

After keying in the airplane's empty weight and arm, the next step is to calculate the weight and balance for the aircraft at takeoff. For this example, we'll assume the following load:

| Item | Weight | Arm |
|---|---|---|
| Fuel | 72.5 gal (6 lbs./gal.) | 75 |
| Front passengers | 340 | 75 |
| Rear passengers | 340 | 115 |
| Baggage | 18 | 164 |

With display from the previous page shown:

Key in **72.5** (X) **6** (=) ; **WT** will display **435**. Press (Ent)

Key in **ARM** of **75**. Press (Ent)

New totals will appear for MOM, CG and GW. The passengers and baggage can be added onto the total in the same manner the fuel was added above. The final calculations can be used to confirm that the weight and CG are within the aircraft's operating limitations.

When finished, the cumulative totals will be displayed. The display will read:

| | |
|---|---|
| WT | 18 |
| ARM | 164 |
| CG | 80.39 |
| MOM | 289395.9 |
| GW | 3600 |

Weight can also be moved or subtracted. Suppose one of the rear passengers can't make the trip:

Key in **WT** of **170** and press (+/-); Press (Ent)

Key in **ARM** of **115**. Press (Ent)

The display will read:

| | |
|---|---|
| WT | -170 |
| ARM | 115 |
| CG | 78.67 |
| MOM | 269845.9 |
| GW | 3430 |

**WEIGHT/MOMENT**
**(WT/MOM)**

This function is similar to the (WT/ARM) function. However, flight manuals for some aircraft describe weight and balance problems in terms of moments. Sporty's E6B software will retain and display cumulative totals for center of gravity, gross weight and moment given weight and moment for each item and reduction factor. The reduction factor for this example is 100. As an example, use the following table for entry:

| ITEM | WEIGHT | MOM/100 |
|---|---|---|
| Empty weight | 3472 | 1220 |
| Seat #1 | 170 | 63 |
| Seat #2 | 160 | 59 |
| Seat #3 | 100 | 68 |
| Seat #4 | 120 | 82 |
| Baggage, nose compartment | 100 | -31 |
| Baggage, rear compartment | 60 | 74 |
| Fuel, main tanks | 600 | 210 |
| Fuel, auxiliary tanks | 378 | 178 |

Tap (WT/MOM) from main menu. The display will prompt for **WT**. Key in **3472** and press (Ent).

The display will prompt for **MOM**. Key in **1220** and press (Ent).

The display will prompt for **RF**. Key in **100** and press (Ent).

The display will read:

| | |
|---|---|
| WT | 3472 |
| MOM | 1220 |
| RF | 100 |
| CG | 35.14 |
| GW | 3472 |

Enter remaining weights and moments. Since the RF has already been keyed in, the computer will not prompt for RF after the first entry. The E6B software will keep running totals for moment, center of gravity and gross weight.

When finished, the display will read:

| | |
|---|---|
| WT | 378 |
| MOM | 1923 |
| RF | 100 |
| CG | 37.27 |
| GW | 5160 |

Totals for moment, center of gravity, and gross weight should then be checked against the aircraft's approved operating limits.

---

**REQUIRED RATE OF CLIMB**
**(Rte O Climb)**

This function calculates required rate of climb (common in departure procedures) in feet per minute given groundspeed and required climb gradient in feet per mile. In this example, the groundspeed is 80 and the required climb gradient is 330 feet per mile.

Tap (Rte O Climb) from the main menu. The display will prompt for **GS**. Key in **80** and press (Ent).

The display will prompt for **RGR**. Key in **330** and press (Ent).

The display will read:

| | |
|---|---|
| GS | 80 |
| RGR | 330 |
| MROC | 434.5 |

## APPENDIX A
## SAMPLE PROBLEMS

### TIME

4:45:00 + 2:15:30 = CONV H->HMS = 07:00:30
6.7 - 5:20:00 = CONV H->HMS = 01:22:00

### CONVERSIONS

25 pounds to kilograms .....11.3398
12 kilograms to pounds .....26.4554
30 feet to meters .....9.144
100 meters to feet .....328.084
32° Fahrenheit to Celsius..... 0°
100° Celsius to Fahrenheit ..... 212°
100 nautical miles to kilometers .....185.2
50 kilometers to nautical miles .....26.9978
9.5125 hrs to hms .....9:30:45
12:30:30 hms to hrs .....12.5083
87 nautical miles to statute miles .....100.117
115 statute miles to nautical miles .....99.9322
1 U.S. gallon to liters.....3.78541
10 liters to U.S. gallons .....2.64172

| | INPUT | | OUTPUT |
|---|---|---|---|

**%MAC** (use CG from WT/MOM problem)

| | | | |
|---|---|---|---|
| LEMAC | 285.6 | | |
| CG | 308.08 | %MAC | 27.8 |
| MAC | 81.0 | | |

**P-D/ALT**

| | | | |
|---|---|---|---|
| IAlt | 10000 | PAlt | 9920 |
| BARO | 30.00 | DAlt | 11014 |
| T°C | 5 | | |

**PLAN TAS**

| | | | |
|---|---|---|---|
| PAlt | 12000 | DAlt | 13219 |
| T°C | 2 | Mach# | 0.37 |
| CAS | 195 | TAS | 237.7 |

**HDG/GS**

| | | | |
|---|---|---|---|
| WDir | 270 | | |
| WSpd | 20 | HDG | 349.1 |
| CRS | 355 | GS | 192.2 |
| TAS | 195 | | |

**APPENDIX A (cont.)**
**SAMPLE PROBLEMS**

| INPUT | | OUTPUT | |
|---|---|---|---|
| **LEG TIME** | | | |
| Dist | 25 | Time | 0.1282051 |
| GS | 195 | | 0:07:42 |
| **FUEL REQ** | | | |
| Time | 02:45:00 | Fuel | 38.5 |
| FPH | 14 | | |
| **X/H-WIND** | | | |
| WDir | 270 | H-Wind | -17.3 |
| WSpd | 20 | X-Wind | -10 |
| RWY | 30 | | |
| **ACT TAS** | | | |
| PAlt | 12000 | DAlt | 12367.9 |
| I°C | 2 | Mach# | 0.37 |
| CAS | 195 | TAS | 234.5 |
| **WIND** | | | |
| CRS | 355 | | |
| TAS | 195 | WDir | 307.8 |
| GS | 175 | WSpd | 27.8 |
| HDG | 349 | | |
| **GS** | | | |
| Dist | 32 | GS | 128 |
| Time | 00:15:00 | | |
| **FPH** | | | |
| Fuel | 33 | FPH | 12 |
| Time | 02:45:00 | | |
| **PLAN M#** | | | |
| T°C | -45 | TAS | 482.8 |
| Mach# | 0.82 | | |

**APPENDIX A (cont.)**
**SAMPLE PROBLEMS**

| INPUT | | OUTPUT | |
|---|---|---|---|
| **REQ TAS** | | | |
| WDir | 270 | | |
| W Spd | 20 | TAS | 194.8 |
| CRS | 355 | HDG | 349.1 |
| GS | 192 | | |
| **REQ CAS** | | | |
| PAlt | 8000 | DAlt | 9457 |
| T°C | 12 | Mach# | 0.28 |
| TAS | 185 | CAS | 160.7 |
| **DIST FLN** | | | |
| GS | 220 | Dist | 476.7 |
| Time | 02:10:00 | | |
| **ENDUR** | | | |
| Fuel | 70 | Time | 5 |
| FPH | 14 | | 5:00:00 |
| **ACT M#** | | | |
| I°C | -52 | TAS | 451.7 |
| Mach# | 0.82 | | |
| **Rte O Climb** | | | |
| GS | 70 | MROC | 460.8 |
| RGR | 400 | | |

**WEIGHT/ARM**

| | WT | ARM | MOM | GW |
|---|---|---|---|---|
| empty | 2467 | 76.7 | 189218 | 2467 |
| fuel | 444 | 75.0 | 222518 | 2911 |
| front seat | 340 | 75.0 | 248018 | 3251 |
| 2nd row | 0 | 115 | | |
| 3rd row | 0 | 148 | | |
| baggage | 100 | 164 | 264418 | 3351 |

CG = 78.91

## APPENDIX A (cont.)
## SAMPLE PROBLEMS

**WEIGHT/MOMENT**
Payload computations

| ITEM | WEIGHT (pounds) | MOMENT /1000 |
|---|---|---|
| Basic operating weight | 8916 | 2809.0 |
| Cabin | | |
| Seat 3 | 170 | 37.7 |
| Seat 4 | 160 | 35.5 |
| Seat 5 | 190 | 50.5 |
| Seat 6 | 110 | 29.3 |
| Baggage | | |
| Nose | 60 | 4.4 |
| Tail cone | 110 | 50.8 |
| Zero fuel weight | 9716 | 3017.2 |
| + Fuel | 5424 | 1644.1 |
| = Ramp weight | 15140 | 4661.3 |
| — Taxi fuel | -200 | -61.8 |
| = Takeoff gross weight | 14940 | 4599.5 |
| — En Route fuel | -2000 | -612.9 |
| = Landing weight | 12940 | 3986.6 |

CG = 308.08

## WEIGHT AND MEASURE CONVERSIONS

| | | |
|---|---|---|
| 1 inch | = | 2.54 centimeters |
| 1 centimeter | = | 0.3937 inches |
| 1 statute mile | = | 1.61 kilometers |
| 1 kilometer | = | 0.62 statute miles |
| 1 U.S. gallon | = | 0.833 Imperial gallons |
| 1 Imperial gallon | = | 1.201 U.S. gallons |
| 1 liter | = | 0.22 Imperial gallons |
| 1 Imperial gallon | = | 4.55 liters |
| 1 ounce | = | 28.35 grams |
| 1 gram | = | 0.035 ounces |
| 1 inch of Mercury | = | 33.86 millibars |
| 1 millibar | = | 0.0295" of Mercury |

## TROUBLESHOOTING & INFORMATION

Improper input of data will cause incorrect answers. Read the operating instructions to ensure that you are entering problems correctly. Also be sure that units agree, i.e., all units in statute miles, nautical miles, or kilometers.

NOTE: Sporty's E6B software is an instruction and information aid, and is not an avionics instrument.