



M57
OWNERS MANUAL



For over 35 years, Ball Variometers, Inc. has been involved in the aviation industry. With your support and efforts, our instruments have become standards in the sport. From balloons to sailplanes you have trusted us with your flight information needs.

In 1998, our family owned business rededicated our efforts to providing you with a higher quality of service and product selection. Our goal was to make aviation safer. In the months that followed, our Development team redesigned the way we view our flying experience.

During the design process, with involvement from the FAA and internationally known aerospace laboratories, we began to experience something that was not listed on our “goal” statement. The people involved with our new technologies were having fun using our systems!

Our newly engineered instruments are already setting new industry standards. Combining Global Positioning Technology and mapping software we are starting a new era in flight instrumentation.

As fellow aviators, we hope that all your adventures are safe, and thank you for joining us in re-experiencing the fun of flying.

Ball Variometers, Inc.

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DESCRIPTION:

The M57 Flight Computer consists of the M57R Receiver, and the M57T Transmitter, which together provide necessary flight instrumentation for a Hot Air Balloon. The M57T Transmitter, mounted near the top of the Balloon Envelope senses envelope skin temperature and transmits the value by VHF radio signals to the M57R Receiver mounted in the Gondola. The M57R Receiver, receives the envelope temperature signal and displays that value on the “Flight Screen”. The M57R Receiver also incorporates functions of an Altimeter, a Vertical Velocity Indicator, and other useful in-flight functions, all being displayed on the “Flight Screen”. The “Flight Screen” is displayed by means of a graphics Liquid Crystal Display. Details are presented in the Display and Operation section.

The M57R Receiver optionally can record the flight data versus time in memory, optionally including GPS position data (when an optional Garmin GPS Receiver is connected to the M57R Receiver during flight) for up to 110 hours of flights. This memorized data is available for display on the M57R Receiver screen when the balloon is not in flight or when the M57R Receiver has been downloaded to a computer. Further details of the optional software are explained in the M57 Logbook Software manual.

The M57R Receiver Flight Screen Display can be in either Standard or Metric scale preset, or easily reset, at the Factory.

NOTE: No instrument can assure that you make safe judgments. That is up to you, the pilot, to do. Always leave yourself plenty of safety margin in all situations. Ball Variometers, Inc. accepts no responsibility for your in-flight decisions.

DISPLAY AND OPERATION:

M57T Transmitter

The M57T Transmitter is semi-permanently mounted on the outside surface of the envelope near the top girdle, with the temperature probe laid over the top girdle protruding into the envelope, the temperature sensor constrained by two (2) fastening strings so as to ride against the interior surface of the skin. While the M57T Transmitter is energized, the temperature of the sensor is transmitted to the M57R Receiver in the Gondola and displayed on the “Flight Screen”. When the sensor is exposed to a sudden change of gas temperature, the temperature display value settles in to the correct value in about 1 minute response time. It reads about 80% correct in 15 seconds.

Day Operation

With the “Day/Night” switch in the “Day” position, the M57T Transmitter is automatically activated when light shines on the photocell. In the first six seconds the M57T Transmitter starts a self-diagnostic systems check. If the system check passes, you will hear an intermitting audio signal (a 1/2 second audio tone approximately every 4 seconds). If the system check fails, a continuous audible alarm will start.

If the system check fails, the M57T Transmitter must be returned to Ball Variometers, Inc.

The M57T Transmitter will automatically *shut* off and the beeping will stop 5 minutes after light can no longer be detected (i.e., when the envelope is packed in its carry bag).

Night Operation

With the “Day/Night” switch in the “Night” position, the M57T Transmitter is *immediately* activated. In the first six seconds the M57T Transmitter starts a self diagnostic systems check. If the system check passes, you will hear an intermitting audio signal (a 1/2 second audio tone approximately every 4 seconds). If the system check fails, a continuous audible alarm will start.

If the system check fails, the M57T Transmitter must be returned to Ball Variometers, Inc.

The M57T Transmitter will *not* automatically shut off and the beeping will *not* stop 5 minutes after light can no longer be detected (i.e., when the envelope is packed in its carry bag). The “Day/Night” switch *must* be returned to the “Day” position to automatically shut off the M57T Transmitter. The M57T Transmitter will automatically shut off and the beeping will stop 5 minutes after light can no longer be detected.

M57R Receiver Flight Screen.

The M57R external description is shown in Figure 1.

This section is a quick review of the external parts of the Ball M57R Receiver (please refer to Figure 1 on the next page).

- (A) On-off switch
- (B) Row of control buttons
- (C) Liquid Crystal Display screen
- (D) Audio output port
- (E) 9-pin serial multipurpose port
- (F) Threaded hole or slot for mounting purposes

Special notes on selected items:

- (B) The control buttons are laid out so the left one (black) selects the main menu while the other (blue) buttons allow you to make certain selections.
- (E) This serial port is used for multiple functions:
 - 1 - Charging the M57R Receiver's internal NICAD batteries.
 - 2 - Connecting an external GPS receiver.
 - 3 - Connecting to a computer (See "Software" section of this manual).

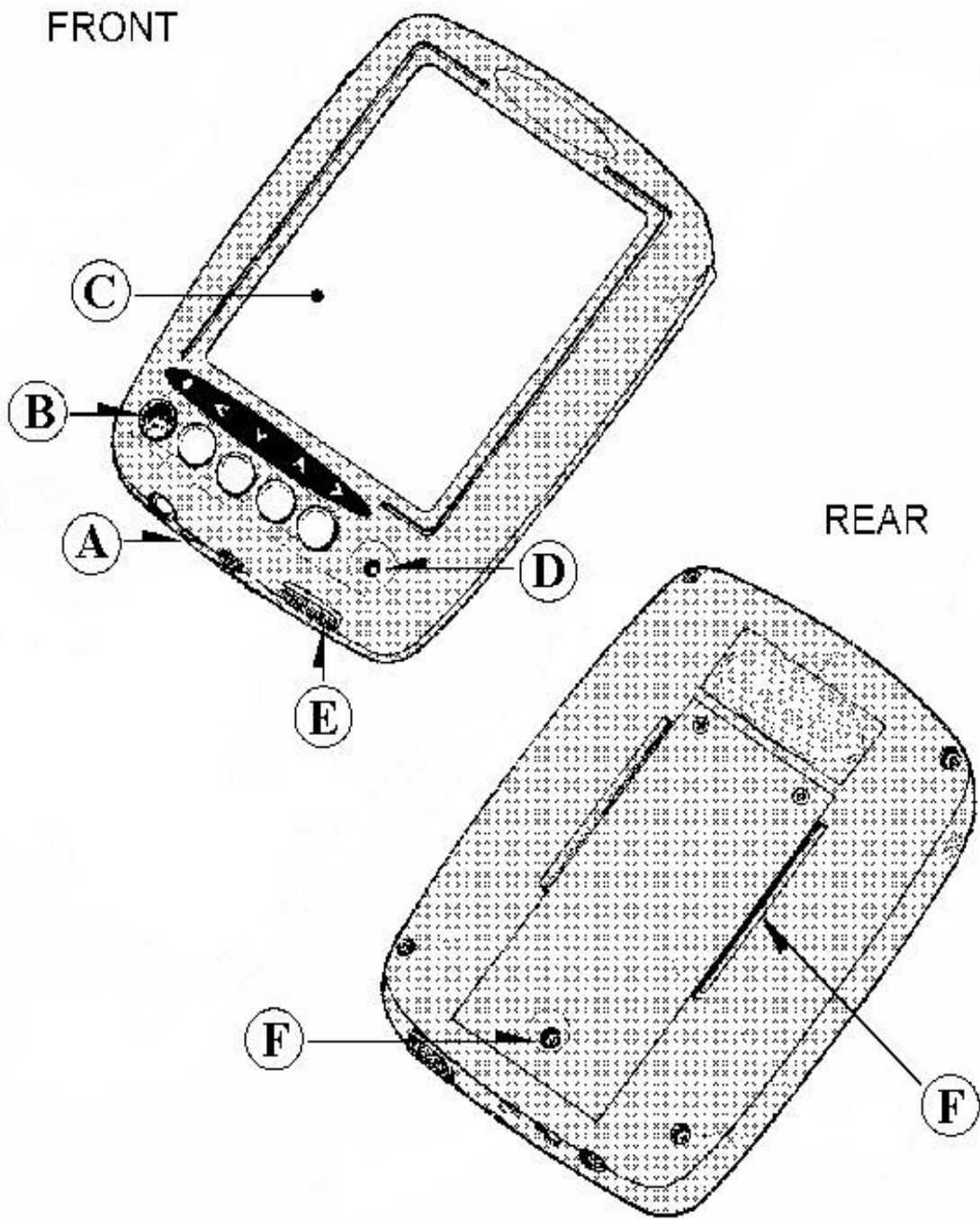


Figure 1

The M57R Receiver Flight Screen display is shown in Figures 2 and 3.

Activating the Ball M57R Receiver is performed by sliding the switch ((A) in Figure 1) to the right. In the first six seconds the M57R Receiver starts a self-diagnostic systems check. If the system check passes, you will see the Ball logo, ownership and balloon manufacturer's data displayed for approximately 6 seconds, then the "Flight Screen" will appear. If the system check fails, the Liquid Crystal Display screen will stay blank and an audible alarm will sound.

If the system check fails, the M57R Receiver must be returned to Ball Variometers, Inc.

To turn the instrument off, slide the switch ((A) in Figure 1) to the left. You can turn the instrument off in any display, but it will always return to the "Flight Screen" when turned on. It is best to pause 3 to 4 seconds before turning the unit back on once you turn it off. The reason for this is to let the components lose their charge. If you switch it off then on rapidly, you may get a jumbled display. If this happens turn the unit off... pause... then back on to return to proper display.

**The Flight Screen displays the variometer, altimeters, temperatures, barometer, batteries status and time clocks.
See figures 2 and 3.**

*NOTE: While in flight **only** the Flight Screen is accessible.
All other screens are locked out.*

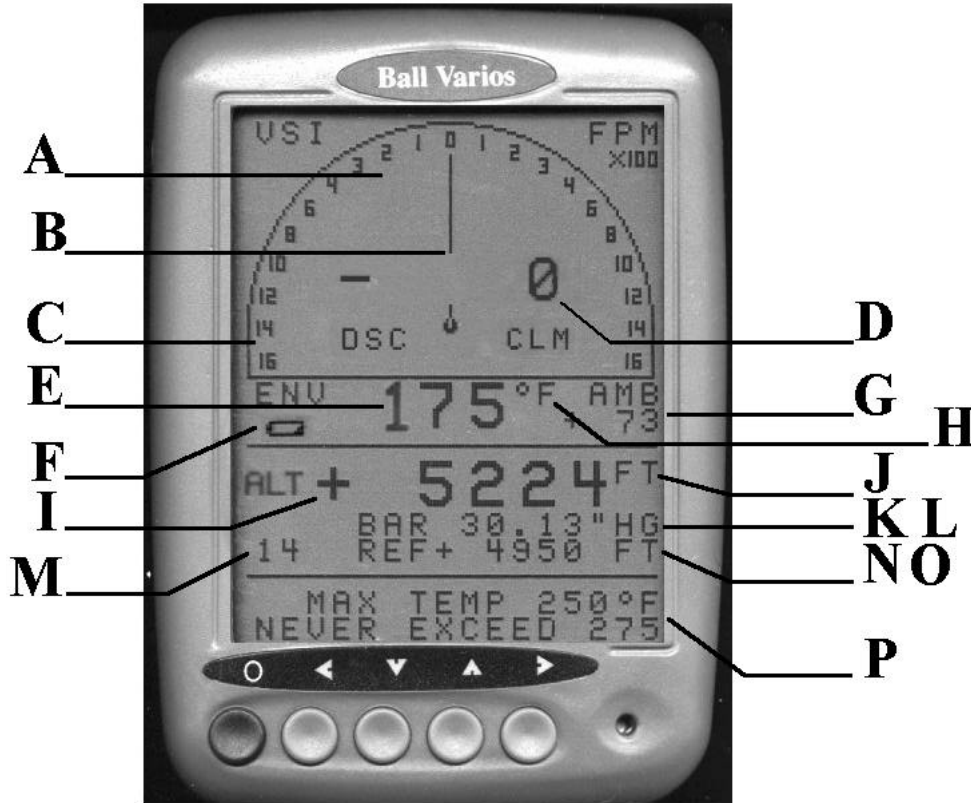


Figure 2

- | | |
|---|-------------------------------|
| (A) Variometer Trend | (I) MSL Altitude |
| (B) Analog Variometer Trend Needle | (J) MSL Scale |
| (C) Variometer Trend Scale. | (K) Barometric Pressure |
| (D) Digital Variometer | (L) Barometric Pressure Scale |
| (E) Envelope Temperature. | (M) M57R Receiver |
| (F) M57T Transmitter Low
Battery Charge Indicator. | (N) Reference Altimeter |
| (G) AMB Temperature | (O) Reference Altimeter Scale |
| (H) Temperature Scale | (P) Placard Max Temperatures |

- (A) **Variometer Trend** - Visual reference of Analog Vertical Velocity indicated by an Analog Variometer Trend Needle (B).
- (B) **Analog Variometer Trend Needle** - Indicator of Variometer Trend (A).
- (C) **Variometer Trend Scale** - Scale of Variometer Trend (A), numbers indicate Feet Per Minute X100 or Meters Per Second.
 - 1 - Displayed in upper right corner of screen “FPM X100” or “M/S” indicating standard or metric scale.
- (D) **Digital Variometer** - Visual reference of digital Vertical Velocity.
 - Climb rate indicated by a positive reading (“+” sign).
 - Descent rate indicated by a negative reading (“-” sign).
- (E) **Envelope Temperature** - Visual reference of Envelope Temperature displayed in degrees of Fahrenheit or Celsius scale.
 - 1 - Displayed to the right of the Envelope Temperature reading, °F or °C indicating Standard or Metric scale (H).
 - 2 - When Envelope Temperature exceeds 501°F or 260°C the display will indicate “+ + + +”.
 - 3 - When Envelope Temperature is below 1° F or -17°C the display will indicate “- - -”.
 - 4 - When envelope temperature reading is flashing, it’s indicating a low M57T Transmitter battery status simultaneously with the M57T Transmitter Low Battery Indicator (F).
 - The M57T Transmitter battery must be replaced preceding the next flight.**
 - 5 - When NO SIGNAL is displayed, The M57T Transmitter is not on or there is radio interference between the M57T Transmitter and the M57R Receiver. If there is radio interference, move away from the radio interference and the Envelope Temperature reading will return.
 - 6 - When NO SENSOR is displayed,
 - The M57T Transmitter must be returned to Ball Variometers, Inc.**

- (F) **M57T Transmitter Low Battery Indicator** - This indicator will display and flash simultaneously with the Envelope Temperature reading (E) indicating a low M57T Transmitter battery status.
- 1 - When M57T Transmitter Low Battery Indicator is displayed,
The M57T Transmitter battery must be replaced preceding the next flight.
 - 2 - When the M57T Transmitter Low Battery Indicator first appears, you have 2-3 hours of M57T Transmitter operation left.
- (G) **AMB Temperature** - Visual reference of approximate atmosphere Temperature displayed in degrees of Fahrenheit or Celsius.
- 1 - Displayed to the left of the AMB Temperature Indicator, °F or °C indicating Standard or Metric scale (H).
 - 2 - When AMB Temperature exceeds 105°F or 41°C the display will indicate “+ + +”.
 - 3 - When AMB Temperature is below -34°F or -37°C the display will indicate “- - -”.
- (H) **Temperature Scale** - When °F is displayed the Envelope and AMB Temperature readings are in degrees Fahrenheit and when the °C is displayed the Envelope and AMB Temperature readings are in degrees Celsius.
- (I) **MSL Altitude** - Indicated altitude based on Mean Sea Level, adjusted by Barometric Pressure offset (K). Altitude above mean sea level is indicated by a positive reading (“+” sign), and altitude below mean sea level is indicated by a negative reading (“-” sign).
- 1 - When MSL Altitude reading is flashing, it is indicating a low M57R Receiver battery status simultaneously with the Battery Charge Indicator (M).

The M57R Receiver batteries must be recharged preceding the next flight.

- (J) **MSL Scale** - Scale of MSL Altitude (I). When “FT” is displayed the MSL Altitude readings are in feet and when “MT” is displayed the MSL Altitude readings are in meters.
- (K) **Barometric Pressure** - Indicated Barometric Pressure.
- (L) **Barometric Pressure Scale** - Scale of Barometric Pressure (K). When “HG” is displayed the Barometric Pressure readings are in inches of mercury and when “HP” is displayed the Barometric Pressure readings are in millibars (Hecto Pascal).
- (M) **M57R Receiver Battery Charge Indicator** - The M57R Receiver batteries will normally last 15 hours a on full charge. This indicator displays the status of the M57R Receiver batteries in hours remaining.
- 1 - When the indicator is displaying 3 hours or less, the indicator will flash simultaneously with the MSL Altitude (I) reading.
- The M57R Receiver batteries must be recharged preceding the next flight.**
- 2 - If the M57R Receiver batteries are below 3 hours of remaining charge status, when the receiver is turned on, there will be a message “UNIT NEEDS RECHARGED” and the Flight Screen will not appear.
- The M57R Receiver batteries must be recharged preceding the next flight.**
- (N) **Reference Altimeter** - The Reference Altimeter is a separate altimeter adjustable by the operator to aid in determining AGL altitude from a determined point.
- (O) **Reference Altimeter Scale** - Scale of Reference Altimeter
- (N) When “FT” is displayed the Reference Altimeter readings are in feet, and when “MT” is displayed the Reference Altimeter readings are in meters.
- (P) **Max Temperatures Placard** - Maximum Allowable Envelope Temperatures determined by the Aircraft Manufacturers.

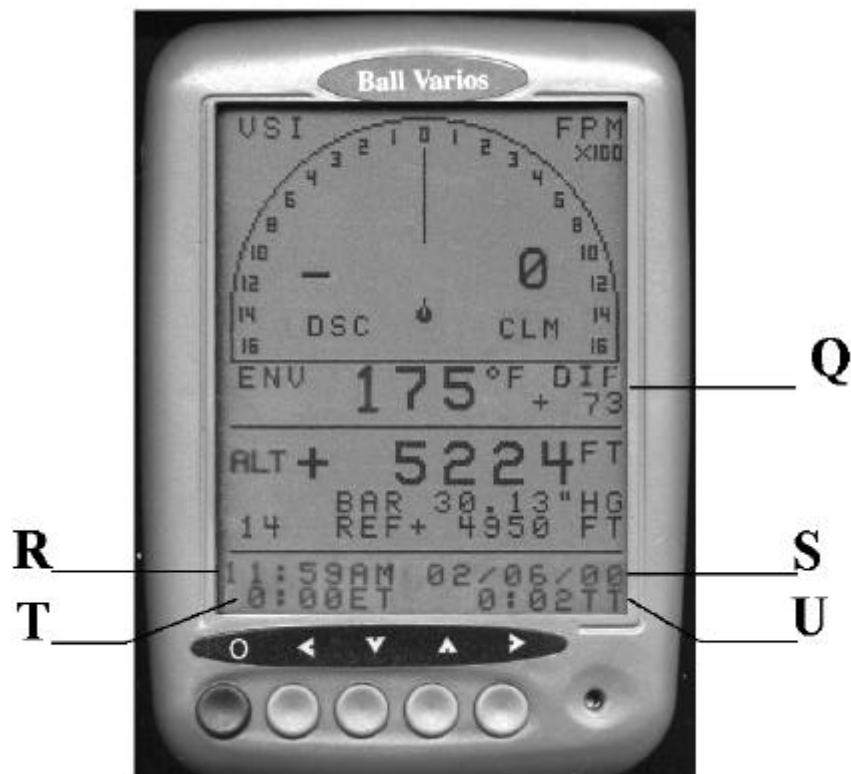


Figure 3

(Q) Differential Temperature

(R) Real Time Clock*

(S) Date*

(T) Elapsed Flight Time*

(U) Total Flight Time*

- (Q) **Differential Temperature** - Visual reference of Differential Temperature between Envelope and AMB Temperatures displayed in degrees of Fahrenheit or Celsius.
- 1 - Displayed to the left of the Differential Temperature Indicator, °F or °C indicating Standard or Metric scale (H).
 - 2 - When Differential Temperature exceeds 105°F or 41°C the display will indicate “+ + +”.
 - 3 - When Differential Temperature is below -34°F or -37°C the display will indicate “- - -”.
 - 4 - Pressing left (◀) button will toggle between AMB or Differential Temperature display.

**The following items display for approximately 8 seconds after pressing the (▶) button, then the Max Temperature Placard screen returns.*

- (R) **Real Time Clock*** - Displays time, factory set to Zulu Time (Greenwich Mean Time). The operator may set this to the operator's desired time.

- (S) **Date*** - Displays date, factory set to Zulu Time (Greenwich Mean Time).
This may be set by the operator to the operator's desired date.
- (T) **Elapsed Flight Time*** - Displays Elapsed Flight Time. The Flight Timer starts automatically when the Envelope Temperature exceeds 110°F (43°C) or the difference between the Envelope and AMB Temperature is greater than 45°F (7°C). The Flight timer automatically stops when the M57R Receiver is turned off.

***NOTE:** While the Flight Timer is operating only the Flight Screen is accessible.*

- (U) **Total Flight Time*** - Displays an accumulative total of all memorized Elapsed Flight Times.

Flight Screen Button Controls

The main Control Buttons ((B) in Figure 1) are used to adjust the Altimeters and Barometric Pressure.

The right (▶) button turns on the cursor and toggles the cursor between ALT, BAR, and REF (it also turns on the date and clock lines (R), (S), (T), and (U) in figure 3).

While the cursor is flashing, pressing the down (▼) or the up (▲) buttons will adjust the ATL, BAR, or REF settings respectively.

Continuously holding the down (▼) or the up (▲) buttons for a few seconds will increase the rate of change.

***Note:** To zero REF setting, press the down (▼) and the up (▲) buttons simultaneously.*

Pressing the left (◀) button will toggle between the AMB and Differential Temperature display.

Audio Output

An audio tone sounds each time a button is pressed to acknowledge button activation.

M57R Receiver Non-Flight Parameters.

The non-flight parameters are available when the Balloon is not in flight. They are accessed thru the Main Menu. To exit from the Flight Screen to the Main Menu screen hold the black button (●) down for about 3 seconds until the “MAIN MENU:” appears, shown in Figure 4. The parameters shown are selected by pressing the associated button.

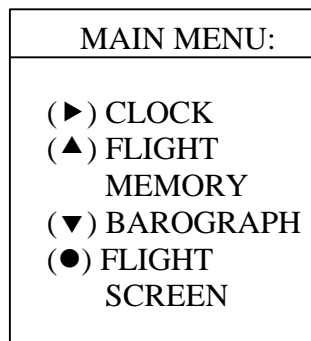


Figure 4

Setting the Clock

You can set the Clock from the MAIN MENU. Press the right (▶) button and you get the ADJUST CLOCK screen. Pressing the right (▶) button for SELECT moves the cursor from the day to the digits of the time (in hours and minutes). You can adjust either of these with the up (▲) and down (▼) buttons.

To change the month, simply cycle through the days (up for the next month or down for the previous month).

The left (◀) MODE button changes the date display from the U.S. convention (month, day, year) to the European convention (day, month, year).

The mode selected will be used on the memory and barograph readouts.

Flight Memory

The Ball M57R Receiver automatically records each flight and stores the last 256 flights in memory.

To access the memory screen, start from the MAIN MENU and press (▲) FLIGHT MEMORY. You will see the screen shown in figure 5.

FLIGHT MEMORY	
Flight number (1 is the most recent)	FLIGHT # 1
Date and starting time of flight	12/02/1995 03P07
Flight time in hours and minutes	DURATION 1:43
Maximum recorded MSL Altitude	MAX MSL: +5321 FT
Maximum recorded Reference Altitude	MAX REF + 283 FT
Maximum rate of Climb	MAX CLM: + 507 FPM
Maximum rate of Decent	MAX DSC: - 387 FPM
Highest recorded Envelope Temperature	MAX ENV: + 240 °F
Averaged Envelope Temperature	AVG ENV: + 210 °F
Averaged AMB Temperature	AVG AMB: + 70 °F
	(▼)(▲) SELECT FLIGHT
	(◀)(▶) VIEW TOTALS
	(●) PREVIOUS MENU

Figure 5

The flight number is shown in the upper right hand corner. This flight number is always # 1 when you call up the FLIGHT MEMORY screen and refers to your most recent flight. You can review other flights by pressing the up (▲) SELECT button, which cycles you to flight #2 (your second most recent) then flight #3 (third most recent, etc.). The memory records a flight every time the timer is activated. There are 256 flights available in memory. After you reach 256, flights continue to record with the 256th flight being overwritten.

Review Accumulative Totals by pressing the left (◀) and the right (▶) buttons. The Accumulative Totals consists of:

Flight Time - Total Hours
Number of Flights - Total Number of Flights
Max Msl - Maximum MSL Altitude
Max Clm - Maximum Climb Rate
Max Dsc - Maximum Descent Rate
Max Env - Maximum Envelope Temperature

Barograph Memory

This is an upgradeable feature that records data of past flights up to 110 hours of flight time.

To access the barograph memory function from the MAIN MENU, press the down (▼) BAROGRAPH button.

Flight View

The Barograph Screen displays which flights are in memory (for example 19 through 22.). Below the flight numbers, dates are indicated (for quick reference.). These are the flights recorded since you last cleared the barograph using the M57 Logbook Software. With the (▲) and (▼) SELECT buttons you can cycle thru to display any recorded flights. The last flight recorded will always be the highest number, this is the reverse of the sequence in Flight Memory. Once you have selected a flight, press the right (▶) VIEW TRACE button to first view flight data, and then press the right (▶) TOGGLE BAROGRAPH button to view the Barograph Trace.

The first screen displayed is the data of that flight. The first two lines provide the date of the flight, the starting time and the flight duration. The next seven lines give other flight data that is clearly labeled (this data is similar to the FLIGHT MEMORY, refer to that section for further descriptions.)

To view a Trace of your flight, press the right (▶) TOGGLE BAROGRAPH button. The Barograph Trace will expand vertically to fit the Display Screen. There are no reference marks on the vertical or horizontal axis, but the maximum altitude is at the top of the Display Screen and the minimum altitude is at the bottom. You can get the maximum altitude from your MAX ALT reading and judge the vertical scale. Likewise you can judge the horizontal scale from the flight duration.

To return to previous screen or exit the Barograph Trace Screen, press the black (●) button.

Power Supplies

M57T Transmitter

The Ball M57T Transmitter is powered by a 9 volt battery and is mounted just inside the battery cover located at the bottom of the M57T Transmitter, with easy access and replaceable by the owner/operator. The 9 Volt battery powering the M57T Transmitter lasts approximately 60 to 70 hours based on a Duracell Alkaline 9 volt battery, part # 9V MN1604. Any 9 volt battery may be used, however other 9 volt batteries may produce different durations.

M57R Receiver

The Ball M57R Receiver is powered by rechargeable NICAD batteries. The NICAD batteries powering the Ball M57R Receiver will last approximately 15 hours fully charged. Partial charges are normally not a problem, nor is it possible to overcharge the batteries with the Ball Chargers. Contrary to belief, the NICAD batteries can be discharged part way and then recharged with no side effects. However, NICAD batteries can form a memory if repeatedly discharged to the exact same point, *that is not likely to happen in this case.*

A more serious problem with NICAD batteries is discharging them completely. In this scenario, some of the cells may go to zero before the others, so reverse currents can set up in these zero cells which can do permanent damage. *However, the Ball M57R Receiver will automatically shut itself off before this point is reached.*

Charging the M57R Receiver

To charge the M57R Receiver, use the M57R Car Charger (Ball Part Number 11055) and the M57R Wall Charger (Ball Part Number 11050) together using the corresponding connections to charge by either AC or DC current.

For AC Current - Plug the M57R Car Charger into the M57R Receiver through the 9-pin serial multipurpose port (E in figure 1). Plug the M57R Car Charger into the M57R Wall Charger. Plug the M57R Wall Charger into an AC outlet.

For DC Current - Plug the M57R Car Charger into the M57R Receiver through the 9-pin serial multipurpose port (E in figure 1). Plug the M57R Car Charger into the cigarette lighter of a vehicle.

To achieve a full charge on the M57R Receiver, the M57R Receiver must be charged for approximately 5 hours with either AC or DC current. A full charge will net a 15 hour running time on the M57R Receiver.

To achieve a quick charge on the M57R Receiver, the M57R Receiver can be charged for approximately 15 minutes with either AC or DC current. A quick charge will net a 3 hour running time on the M57R Receiver.

With flights of long duration or flights in (40°F or 4°C) or lower temperature conditions, the M57R Receiver should be fully charged and a new 9 volt battery should be installed in the M57T Transmitter.

PRE-FLIGHT / POST-FLIGHT PROCEDURES

Pre-Flight

M57T Transmitter Pre-Flight

The M57T Transmitter is a rugged instrument, nonetheless care should be taken during envelope layout to avoid trampling or unduly rough treatment to the M57T Transmitter. Before inflation, check the M57T Transmitter to insure no damage, and that the sensing probe will be riding close to the inside surface of the Envelope Fabric.

Verify that the M57T Transmitter is operating by viewing the Temperature reading on the M57R Receiver. With regard to Day/Night procedures, follow instructions in the “Display and Operation” section in the beginning of this manual.

M57R Receiver and GPS Pre-Flight

Remove the M57R Receiver from the storage case and inspect for proper physical condition.

Turn on the power switch, check that the data displays on the Flight Screen are proper, including the Envelope Temperature transmitted from the M57T Transmitter.

Fasten the M57R Receiver to a burner upright in a convenient location where it is not likely to be bumped or interfere with activity. Fasten securely with the Velcro strap. Pull on the instrument horizontally and vertically to insure that in case of a hard landing it will not become a flying object.

For GPS coordinates and ground speed recording – Place the GPS Receiver in its mounting case directly under the M57R Receiver and fasten securely with its Velcro Strap. Pull on the GPS Receiver horizontally and vertically to insure that in case of a hard landing it will not become a flying object. Attach the M57 to GPS cable, from the rear port of the GPS Receiver to the 9-pin serial multipurpose port in the M57R Receiver and turn the GPS Receiver on.

NOTE: The GPS Receiver offers many features, refer to the GPS Receiver’s Owners Manual for operating instructions.

The GPS Receiver is set at the factory to transmit coordinates and ground speed data through the M57 to GPS cable, in any of its modes or screens.

The GPS Receiver stops transmitting the coordinates and ground speed data when the battery level is low.

Before takeoff, set the Barometric Pressure to the proper setting. Check that all other indicators are reading properly.

Post Flight

M57T Transmitter Post-Flight

If the M57T Transmitter “Night” switch was turned on for the flight, turn it off. Avoid any unduly rough handling such as knocking or trampling. Pack up with envelope in the normal packing procedure.

M57R Receiver and GPS Post-Flight

Check any flight memory data of interest. Turn off the power. Recharge the NICAD batteries as needed.

It is best to remove, both the M57R Receiver and the GPS Receiver, and store them in the storage case before packing the balloon system away to prevent any ground handling damage. Keep the M57R Receiver and the GPS Receiver away from moisture and extreme heat as you would all your flying equipment.

Avoid getting the M57T Transmitter and the M57R Receiver wet.

Although the M57R Receiver and the M57T Transmitter are very rugged, care should be taken not drop them on a hard surface or to submerge them in water. If a water landing is imminent, attempt to turn off the M57R Receiver before water contact. As soon as practical, open the wet instrument by removing the four screws at the rear corners (*if you land in salt water, rinse the inside of the instrument with fresh water*) and allow the instrument to dry thoroughly.

The instrument must be returned to Ball Variometers, Inc. to be checked for damage and returned to service.

If dirt or grease marks the casing, use a damp rag and possibly mild soap to clean it. Do not use solvents without testing them on a small area first. The Liquid Crystal Display screen is extremely tough, but can be scratched through rough handling. You can polish out scratches by using an auto body polish, but try not to get it under the edges, as it is hard to remove.

SPECIFICATIONS

M57Flight Computer

Weight:

M57R: 18.9 oz.

M57T: 7.6 oz. (with battery)

Size:

M57R Case: 5.9" H x 4.5" W x 1.4" T

M57R Screen: 3.8" H x 3.1" W

M57R Antenna: 2.0" L

M57T Case: 4.1" H x 2.6" W x 1.9" T

M57T Antenna: 6.0" L

In accordance with TSO-C8d, TSO-C10b, and TSO-C43c the operation limitations of the M57 are as follows. Instrument readings may not be reliable if these ranges are exceeded.

Operation Altitude: -1000 to 20,000 Feet
-304 to 6096 Meters

Vertical Airspeed: +/- 5000 ft/min
+/- 1525 mt/sec

Normal Operation:

M57R Receiver:

Ambient Temperatures: -4°F to 122°F
-20°C to 50°C

M57T Transmitter:

Ambient Temperatures: -30°F to 250°F
-35°C to 121°C

Survival Operation:

M57R Receiver:

Ambient Temperatures: -49°F to 158°F
-45°C to 70°C

M57T Transmitter:

Ambient Temperatures: -49°F to 300°F
-45°C to 148°C

CONTINUED AIRWORTHINESS

Maintenance of the M57 is on condition only. Periodic Maintenance of the M57 is not required.

M57 LOGBOOK SOFTWARE

While in flight the M57 automatically records GPS coordinates (latitude and longitude), ground speed, altitude, rates of ascent and descent, envelope temperature, AMB temperature, and flight duration. Once downloaded to your computer, the M57 software allows you to view your flight statistics in an easy to read graph format.

The Logbook Feature offers you an area to personalize each of your flights, with an abundance of “comment” space.

The Mapping Feature automatically merges your flight over the #1 selling mapping software, DeLORME.

The Database Search Feature incorporates 19 selectable search filters that display totals in 4 separate categories.

Any of the flight information can either be printed or saved to a file. To E-mail your flight, simply attach that saved file .

A sample flight has been included for demonstration purposes and to aid you through the tutorial process. From the menu bar, select FILE then SAMPLE FLIGHT to explore the M57 Software capabilities.

Installing the M57 Logbook Software

Auto Start / CD

Have the computer running and place the M57 Logbook Software CD in the CD drive. The software will start to install. (If the CD drive doesn't have auto start see “Non Auto Start / CD” below.) If the install program has to update the computer system files, it will update these files only after asking for permission. Press OK, and it will update the files and the computer will have to be restarted. (This may happen several times – follow the on screen prompts.) When your computer has restarted, press START → Run. Browse to find the CD drive and click Setup. Press OK and the software will install.

Non Auto Start / CD

Have the computer running and place the M57 Logbook Software CD in the CD drive. Press START → Run. Browse to find the CD drive and click Setup. Press OK and the software will start to install. If the install program has to update the computer system files, it will update these files only after asking for permission. Press OK, and it will update the files and the computer will have to be restarted. (This may happen several times – follow the on screen prompts). When your computer has restarted, press START → Run. Browse to find the CD drive and click Setup. Press OK and the software will install.

Once installation is complete, remove the M57 Logbook Software CD and install the Delorme Street Atlas software according to the manufacturers installation instructions.

Initial Startup

Click the Ball Variometer's logo from the START → PROGRAM → M57 Logbook Software → M57 Logbook Software.

The software will display a message to "Fill in the Aircraft Registration/ Pilot Information now?" *It is recommended that the Aircraft Registration/Pilot Information be filled in at this time.* If the "No" button is pressed, this information can be filled in at a later time. If the "Yes" button is pressed, fill in the name, press the "tab" key and fill in the address and so on. Press the "Save" button to save the Aircraft Registration/ Pilot Information. For your convenience, this information will be transferred to every flight that is downloaded from your instrument. The Aircraft Registration/Pilot Information can be edited at any time from the SETTING menu → Aircraft Registration/Pilot Information.

To finish the M57 Logbook Software Setup, plug the M57 Interface cable into a RS-232 Serial Port in the back of your computer (see the computer operation manual for more details.) Choose the COM Port (Communications Port), that corresponds to the RS-232 Port (most systems are COM 1.) Turn on and plug in the M57 instrument to the other end of the M57 Interface cable and press the "Establish Communications with the M57" button.

The M57 Instrument Display Screen and Warranty Information window will open, and has been combined for ease of operation during this setup process. The M57 Instrument Display Screen is the initial screen displayed for 3 seconds each time the M57 Instrument is turned on. The Warranty Information will be automatically saved to a small file named "BALL M57 WARRANTY" on your hard drive for your convenience.

The Warranty Information will need to be directed to Ball Variometers Inc. to complete the Warranty Registration. The Warranty Information can be E-Mailed, downloaded to a floppy disc / CD or in a printed format. Enter the Aircraft Registration Information, as you would like it to read on both the M57 Instrument Display Screen and on the Warranty Registration. Each line includes up to 16 characters.

ONLY Capital letters, numbers, commas and periods may be used.

NOTE - THIS IS A PERMANENT RECORD - PLEASE CHECK YOUR ACCURACY.

Select the Sample flight in the Logbook, or press the DOWNLOAD M57 menu item and follow the instructions on the screen (if there are flights on the M57 Instrument). Download time varies depending on how many flights are stored in the M57 Instrument barograph.

After the M57 Instrument has downloaded all the flights from the barograph, the software will display the message "Do you want to clear the M57 barograph?" If you click "Yes", the flights will be erased from the barograph. If you click "No", the flights will remain in the barograph memory. The M57 Instrument barograph stores up to 110 hours of flight memory.

The software will then display the message "Turn off and disconnect the M57 Instrument from the M57 Interface cable." At this point, you should turn off and unplug the M57 Instrument from the M57 Interface cable.

NOTE: The M57 Interface cable can be left attached to the computer.

Press the OK box and the "Logbook" window will show the date, time, and duration of each flight that has been downloaded from the M57 barograph. Highlight any of these flights, to view that flight.

There will be 3 windows showing: The Flight Log window will appear the 1st time that a new flight is opened. This window shows the information of the flight (date, time, flight duration, etc.) You may edit the pilot's name, aircraft type, and ID. You may also enter any of the other information you wish. Press the save box when you have finished entering your information. The top window is the Stats window that will show you all the statistics of the flight. The bottom window will show the Altitude trace, Envelope temperature trace, AMB temperature trace, GPS trace, and a Grid for the three traces. While the mouse is in the bottom window click the left mouse button and a black vertical line will appear that is used as a reference marker (a black dot is used to mark the GPS trace.) When this marker is activated you will see in the Stats window; time, altitude, envelope, and ambient temperature (GPS position and ground speed if a GPS was connected to the M57 Instrument during the flight.) Move the black marker by using the mouse and/or the left and right arrow key.

NOTE: When the arrow keys are used the climb rate/descent will show vertical airspeed at that point of the flight.

Click the left mouse button to turn off this black reference marker (and dot.)

Select the "Street Atlas Map" menu function and view your flight over the mapping software. (The Street Atlas Map program must be installed before pressing the menu item.)

Zoom Options - With the black reference marker (and black dot) on, zoom anywhere in the flight by pressing the right mouse button. The black marker is still movable by moving the mouse in the window or using the left and right arrow keys. By pressing the greater than or less than keys (><) the zoom screen moves forwards or backwards in the flight. Pressing the right mouse button again returns you back to the normal flight screen.

Click on the “Flight Log” menu function and the Flight Log window will appear. This window shows the information of the flight (date, time, flight duration, etc.) You may edit the pilot’s name, aircraft type, and ID. You may also enter any of the other information you wish. Press the save box when you have finished entering your information.

Close out the flight by pushing the “Close Flight” command button in the Stats window or “File” menu → “Close Flight” menu item and the software will bring you back to the “Logbook” screen. Pressing the “X” on the program screen, or “File” menu → “Exit” menu item will close the program.

Menus

File

Open Log

Click this menu item to open flights logs from other M57 Instruments that have been downloaded into your software.

Search Database

Click this menu item to search your database with any combination of the 19 selectable filters. Click the “Search” button. The flights that meet your search criteria are totaled and listed in order of occurrence.

Note: All search filters are “case” sensitive. CAPITOL and lower case letters be entered as they were entered in the Flight Log.

To view one of the listed flights, highlight that flight and left click on your mouse or press “Enter”.

To print your search results, click the “Print” button on the search screen.

Print

Click this menu item to print that displayed flight information.

Export Log

Click this menu item to export or *back-up* all the flight data downloaded from the M57 Instrument to floppy disks.

Import Log

Click this menu item to import or *restore* all the flight data downloaded from the M57 Instrument from floppy disks.

Export Flight

Click this menu item to export one flight (the flight that is displayed) to the hard drive or a floppy. To E-mail your flight, simply attach this saved file.

View Flight

Click this menu item to view one flight (.flt file from the hard drive, floppy, or E-mail.)

Import Flight

Click this menu item to import one flight (.flt file from the hard drive, floppy, or E-mail.)

Close Flight

Click this menu item to close the current flight that is being displayed.

Sample Flight

Click this menu item to view the sample flight.

Exit

Click this menu item to exit the software.

Settings**COM Port**

Click this menu item select which COM port (Communications Port) the M57 Instrument is connected to.

Aircraft Registration/Pilot Information

Click this menu item to enter or edit the Aircraft Registration/Pilot Information

View

Metric

Click this menu item to turn on and off the statistics in metric scale.

Grid

Click this menu item to turn on and off the Graph grid.

Altitude Graph

Click this menu to turn on and off the Altitude trace.

Envelope Temp Graph

Click this menu item to turn on and off the Envelope Temperature trace.

AMB Temp Graph

Click this menu item to turn on and off the AMB Temperature trace.

GPS Graph

Click this menu item to turn on and off the GPS trace.

Graph Legend

Click this menu item to open a window that shows the color key for each graph.

Flight Log

Click this menu item to see the “Logbook” screen, displaying flight date, time, flight duration and all the stats of that flight. You may edit the pilots’ name, aircraft type and ID. You may also enter any of the other information you wish. The “comment” section stores up to 5000 characters for your comments.

Download M57

Click this menu item to download the M57. Then follow the on screen prompts.

Street Atlas Map

Click this menu item to view your flight over a map. Street Atlas software must be installed before using this menu item.

Help

Tutorial

Click this menu item to view the Help screen on “how to” operate this software program.

Menus

Click this menu item to view the Help screen on what menu choices there are.

About

Click this menu item to view the version of this software.

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