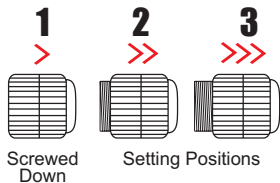


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E6B Flight Computer Rotating BEZEL (E6B Outer Dial)

CHRONOGRAPH HANDS



Screw Down Crown and Pushbuttons

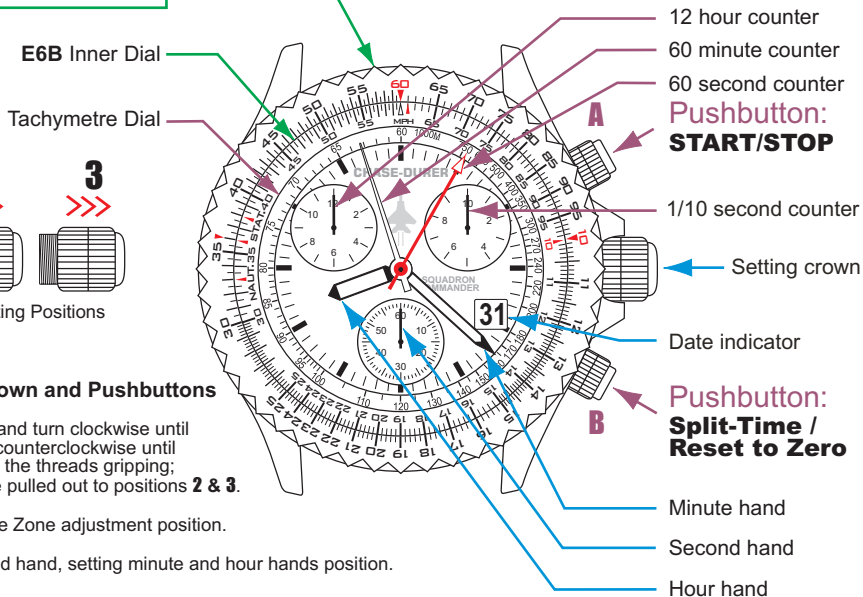
1 > Push crown in and turn clockwise until tight. Turn crown counterclockwise until you no longer feel the threads gripping; crown can now be pulled out to positions **2** & **3**.

2 >> Date and Time Zone adjustment position.

3 >>> Stops second hand, setting minute and hour hands position.

WARNING: Crown must be locked down in position **1** at all times, use positions **2** & **3** for adjustments only. Pushbuttons do not screw down;
Do not operate pushbuttons under water!

NOTE - Failure to screw down Crown to resist moisture will void your warranty

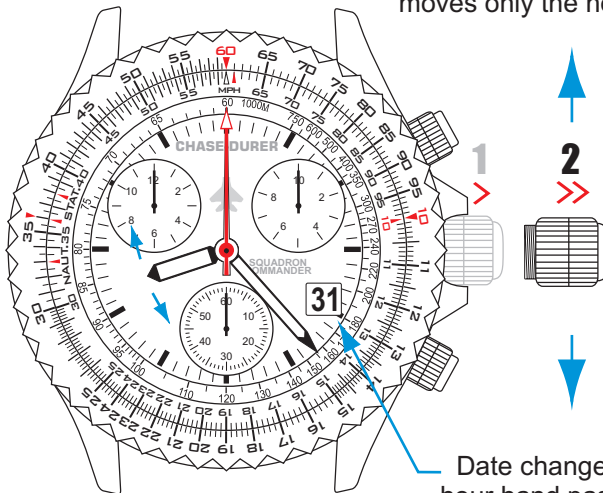


WATCH HANDS

Setting Date and Time Zone

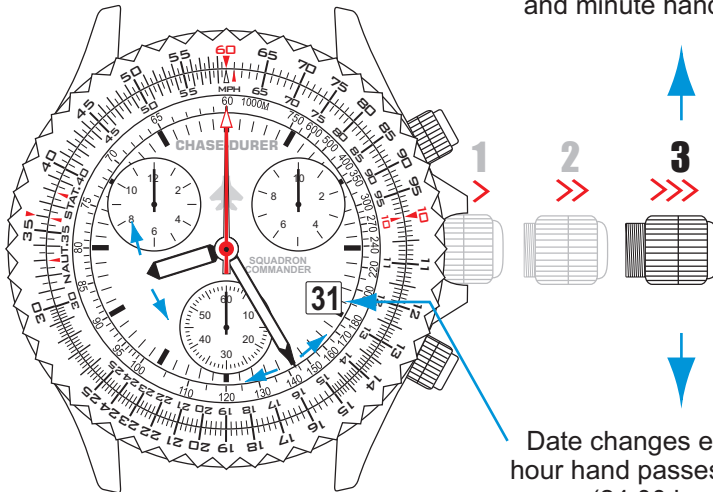
2.

Setting crown in position **2** moves only the hour hand



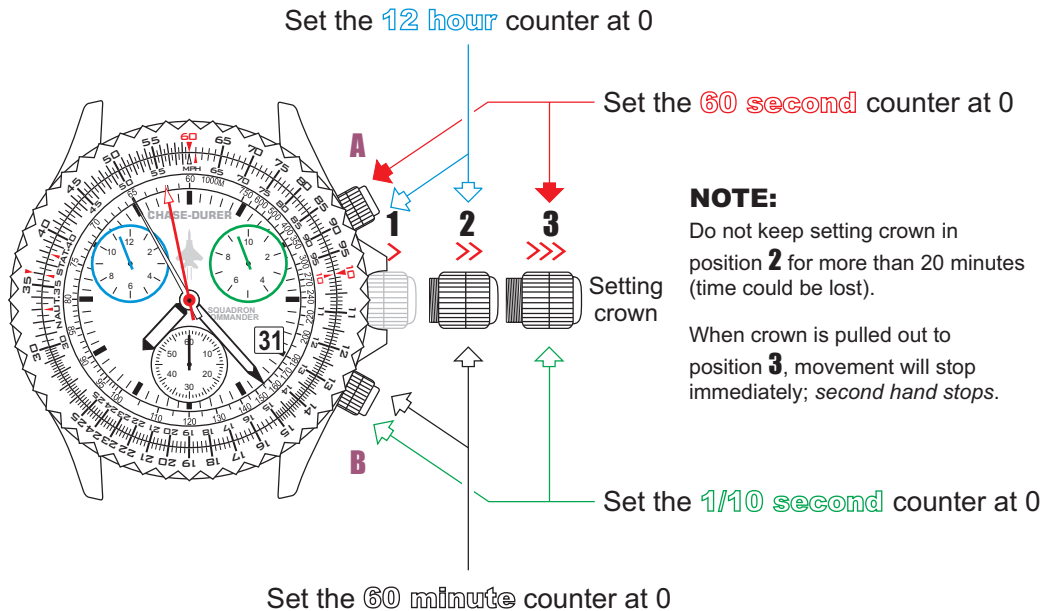
Date changes each time hour hand passes midnight (24:00 hours)

Setting Crown in position **3**
Stops Second Hand
and adjusts both hour
and minute hands



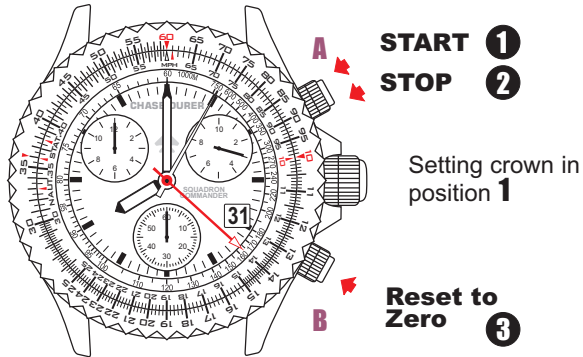
Date changes each time
hour hand passes midnight
(24:00 hours)

The chronograph hands can be set at zero or another time zone.



Note: Press **PUSHBUTTONS** longer than 1 second to advance hands quickly

1 to **3** order of functions



ADD FUNCTION: Order in which pushbuttons should be pressed.



A

1
START

2
STOP
Read

3
START

4
STOP
Read

• • •

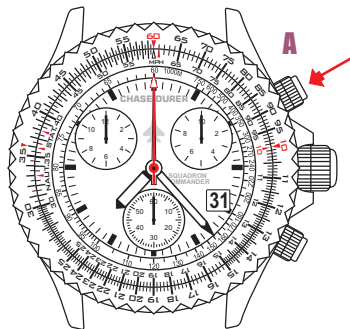


B

X Reset to zero

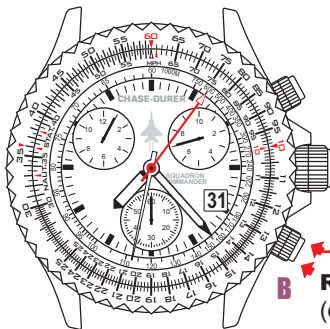
1 to **7** order of functions

Note* Step **2** (or **4**) may be repeated as many times as necessary; Step **6** is the final reading.



START 1

Crown set in position **1**



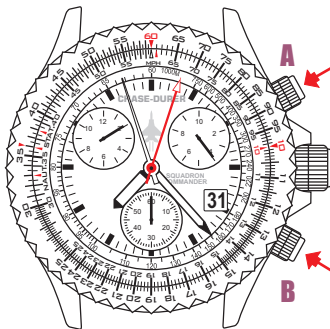
SPLIT 2 4
 Read
TIME 2
 1 hour
 32 minutes
 06 seconds
 7/10 second

RESTART 5
 (catching up)



SPLIT 1 2
 Read
TIME 1
 0 hour
 20 minutes
 26 seconds
 5/10 second

RESTART 3
 (catching up)



STOP 6
 Read
LAST TIME
 2 hours
 57 minutes
 03 seconds
 4/10 second

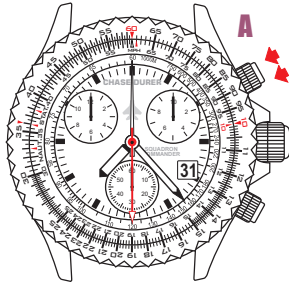
Reset to **7**
 Zero

Using the TACHYMETRE scale

The TACHYMETRE dial is mainly used to compute an *average* speed after noting how long it takes to travel a fixed distance (like one mile or one kilometer), but it can also be used to compute many other things.

The dial is a logarithmic scale that uses this formula to compute: **TACHYMETRE DIAL = 3600 / Elapsed Time In Seconds**

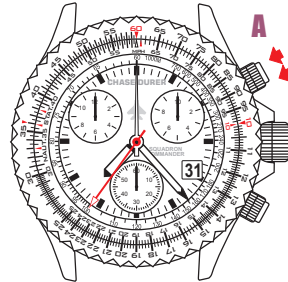
The chronograph second hand indicates 1/10, 1/4, 1/2, 1, 10, 100 or 1,000 etc. units (miles, objects, pounds etc.). When stopped, the second hand points to the number on the TACHYMETRE scale by which the number of units (1, 10, 100 or 1,000 etc.) must be multiplied to obtain per-hour production rate or per-hour speed.



START/STOP

Example No. 1 – A car covers one mile in **30** seconds. The second hand, stopped as the mile marker is passed, reads **120** on the TACHYMETRE scale. Average speed of the car is 120×1 , or **120** miles per hour.

Although decimal units (100 liters, 1 mile, 10 kilometers) make computing simple, in practice, the TACHYMETRE scale can be used to calculate velocities and production rates from any number of units.

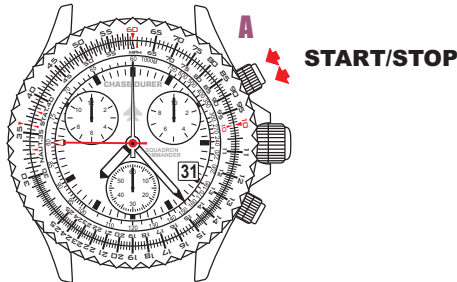


START/STOP

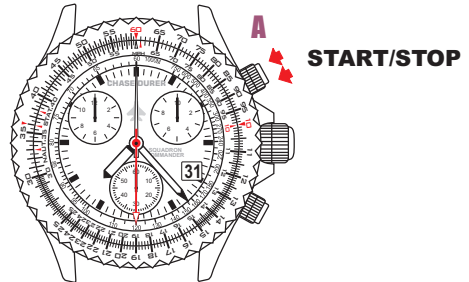
Example No. 2 – To measuring something much slower, such as a bicycle, you must use a shorter distance because the elapsed time must fall within the **7.2 - 60** second range.

For this example, it took **36** seconds for a cyclist to travel **1/4** of a mile. Reading the TACHYMETRE dial displays a speed of **100mph**, but the cyclist only traveled **1/4** of a mile, so the actual speed would be **1/4** of that or an average speed of **25mph** over the quarter mile.

*NOTE - The scale is valid for elapsed times from **4.8** seconds to **60** seconds. If the duration of the event is outside this range, then the answer on the dial is not valid. Short durations of **under eight seconds** can be extremely difficult to time accurately. Some of the following examples show ways to get around this limitation.*



Example No. 3 – A copier makes **10** copies in **45** seconds. The sweep second hand was thus stopped at the 45-second mark, which coincides with the figure **80** on the TACHYMETRE scale. The hourly rate of this copier is 80×10 , or **800** copies.



Example No. 4 – A manufacturing production line timed for **30** seconds produces **72** parts. Stopped at the 30-second mark, the chronograph second hand points to **120** on the TACHYMETRE scale; the production rate of the machine is 120×72 , or **8,640** parts per hour.

More Examples:

Suppose you wanted to measure the speed of a jet airplane. After traveling **10** kilometers, you noted that **40** seconds had elapsed. The TACHYMETRE dial displays **90**, but you traveled **10** kilometers, so the answer would be **10** times that, or **900** km/hour.

You can also measure other things, like fuel consumption. Suppose a pound of fuel took **48** seconds to burn. The chronograph second hand indicates on the TACHYMETRE dial that you are burning **75** pounds of fuel per hour.

The **E6B** Flight Computer is based on the principle of the slide rule. The unit of measurement is the base 10 logarithms (\log_{10}). These instructions cover only the basics of using the **E6B** Flight Computer Bezel/slide rule. A more complete description may be found in your public library or on the internet.

How to read the scale

The most important technique to master is reading the scale. The numbered tick marks can represent a range of values. For example, on the scale on the face of the watch, the numeral **30** to the left of the letters "NAUT" can represent 30, or 300 or 3000 or 3.0. The nine tick marks between the **30** and **35** each represent 1/10 of the distance between 30 and 35, or 300 and 350, or 3000 and 3500, or 3.0 and 3.5. So for 3.0 and 3.5 each one of the tick marks represents .05; for 30 and 35, 0.5; for 300 and 350, 5; for 3000 and 3500, 50. You can see it is important that you keep track of the range that each interval represents.

How to use the E6B Flight Computer Bezel

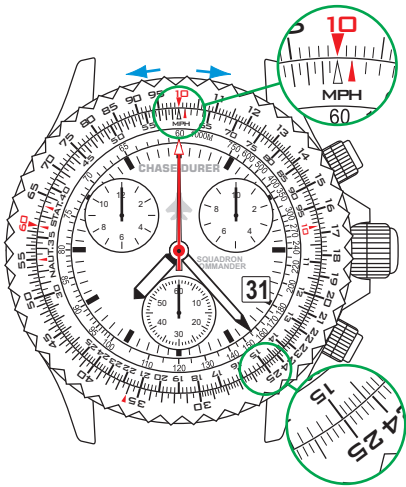
When doing calculations, the rotating bezel will represent the time and the face/dial the units (distance, pounds, gallons, etc.)

☉ Let's try an example:

You're in your car on the freeway traveling at **60** miles-per-hour. You've been traveling for **2.5** hours. How far have you gone?

☉ Solution:

Turn the bezel so that the red numeral **10** on the bezel (which represents 1 hour) is directly over the "60" on the face at 12 o'clock (which represents the 60 miles traveled in 1 hour). Directly below the numeral **25** (2.5 hours) on the bezel you should see the numeral **15** on the face. The **15** represents the significant digits of the answer and we must decide whether there should be *none*, 1 or 2 zeros after the 15.



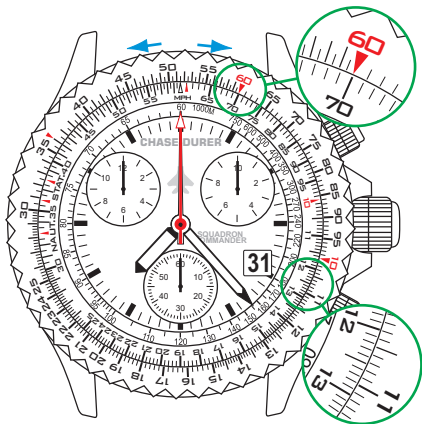
You can probably guess how many, because 15 miles in 2.5 hours is obviously too little and 1500 is obviously too much. So the answer must be 150 miles.

⊙ Let's try another example:

Again, you're going down the freeway at 70 miles-per-hour. You've been traveling at that speed for 110 minutes. How far have you traveled?

⊙ Solution:

Turn the bezel so that the numeral **60** (which represents 60 minutes) on the bezel is right above the number **70** (which represents 70 miles-per-sixty minutes). Now find the numeral **11** on the bezel and look directly below it on the face. You will note that the **11** is between the numerals **12** and **13** on the face. We must now interpolate. First we must decide whether the numerals **12** and **13** on the face represent 12 and 13, 120 and 130, 1200 and 1300, etc. It's obvious that 12 is too little and 1200 is too big, but sometimes it's not so obvious. So here's another method.



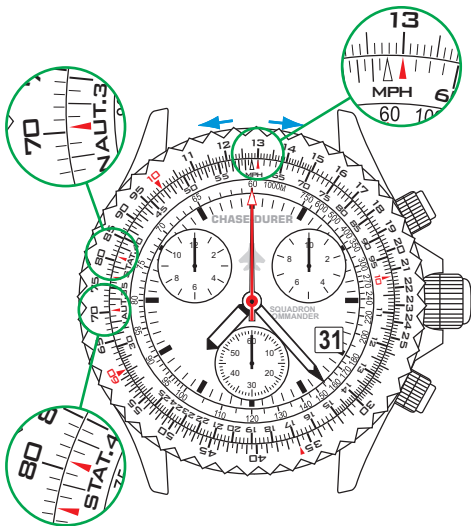
At 70 miles-per-hour (70 miles in 60 minutes), you would have to travel over 14 hours to go further than 1000 miles. 14 hours is 840 minutes. So the answer must have more than 2 and less than 4 digits. In other words, it must have 3 digits until you get above 14 hours or 840 minutes.

After using the Flight Computer for a while these mental/estimates will become second nature (i.e. intuitive). Now that we've done the mental calculation, we know that the answer must have 3 digits. Therefore **12** must represent the number 120 and **13** must represent the number 130. Since there are nine ticks between the **12** and **13**, there are ten divisions between them. Since they represent the difference between the numbers 120 and 130, which is 10, each tick must represent 1. Since the numeral **11** on the bezel is above the eighth tick after

the **12** on the face, it represents **8**. Therefore the distance traveled in **110** minutes at **70** miles-per-hour is **120 + 8** or **128** miles.

How to calculate distance and fuel usage

Now that you know a few of the basics, you can start using the Flight Computer to estimate your distance or fuel usage in relation to time. Simply select the numeral on the bezel that represents the time interval and set the bezel so that number is directly above the numeral on the face that represents the number of miles, kilometers, nautical miles or pounds of fuel traveled or used in that time period. Then, as time passes, you locate the lapsed time on the bezel and look directly below it for the approximate distance traveled, fuel usage, etc.



How to convert basic units

The Flight Computer is provided with red arrows on the face for converting to and from nautical miles, statute miles and kilometers. The Red arrow above the "A" in "STAT" on the face is for statute miles. The red arrow above the "U" in "NAUT" on the face is for nautical miles.

The red arrow above the "H" in MPH is for kilometers.

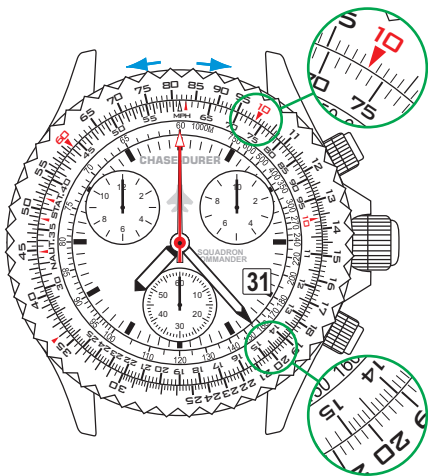
To convert, for example, **13** KM. to statute and nautical, move the bezel so that the numeral **13** on the bezel is directly above the red arrow (above/right of the "H" in "MPH") on the face. The statute miles in **13** KM. is found on the bezel directly above the red arrow above the "A" in "STAT" on the face, which is the numeral **8.1**.

Thus **8.1** statute miles equals **13** KM. If you look directly above the red arrow above the "U" in "NAUT" you will see the numeral **7.05**. This is the number of nautical miles in **8.1** statute miles and **13** KM.

Other conversions

You can also do other conversion calculations on the Flight Computer. You can, for example, convert pounds of aviation gasoline, kerosene, or JP-4 to gallons. You can also convert from gallons to pounds. Simply move the bezel so that the **10** is over the numeral on the face that represents the number of pounds in 1 gallon of that type of liquid (see the conversion table on next page), find the number of gallons you're converting on the bezel and look directly below that at the corresponding number on the face. That is the number of pounds!

The example below converts **20** gallons of oil (petroleum) to pounds. The Conversion Table shows **1 gallon = 7.35 pounds**, so setting the **10** on the bezel over **7.35** and looking under **20** on the bezel shows **147** pounds on the watch face scale.



NOTE!

Use the Flight Computer only to estimate fuel usage and travel distance. Do not rely on it for navigation purposes. Its purpose is to allow you to keep track of approximate fuel usage or distance traveled over time and to estimate equivalent kilometers, statute and or nautical miles. Any other use is outside the design parameters of the Flight Computer and is not recommended.

Conversion Table

1 GALLON = POUNDS

alcohol 6.55

aviation gasoline 6.00

garbage 4.01

gasoline (auto) 6.14

jet fuel (JP-4) 6.50

kerosene 6.67

oil (lubricating) 7.59

oil (petroleum) 7.35

1 BARREL = This Amount

(U.S. oil) 5.62 cu. ft.

(U.S. oil) 42 U.S. gal.

ONE (1) = This Amount

knot 51.44 cm/sec

knot 1.69 ft/sec

knot .514 m/sec

knot 1.15 stat mi/hr

ONE (1) = This Amount

foot 30.48 cm

foot .167 fathoms

foot .305 meters

meter .547 fathoms

meter 3.28 feet

kilometer 3280.84 ft.

kilometer .621 stat miles

kilometer .540 naut miles

kilometer 1093.6 yards

nautical mile 1012.7 fathoms

nautical mile 6076.12 feet

nautical mile 1.85 kilometers

nautical mile 1852 meters

nautical mile 1.15 stat miles

nautical mile 1 minute of lat.

nautical mile 1 minute of Great Circle

SQUADRON COMMANDER Technical Specifications

- ◆ SWISS Made, 27-jewel precision ETA 251.262 quartz movement.
- ◆ Chronograph: 1/10th second, 60 minutes & 12-hour elapsed time; lap time.
- ◆ Soft slide bi-directional E6B navigational slide rule bezel for calculation of speed and fuel consumption.
- ◆ Tachymetre.
- ◆ Super-LumiNova advanced illumination system on hands & indexes.
- ◆ Case in polished solid 316L stainless steel.
- ◆ Screw-locked crown.
- ◆ Screw-in back.
- ◆ Water resistant to 100m/330 feet.
- ◆ Scratch resistant sapphire crystal.
- ◆ Diameter - 40mm.
- ◆ Bracelet in solid 316L stainless steel or leather strap.
- ◆ Deployment buckle with double lock security clasp.
- ◆ Serial numbered.
- ◆ 2 year limited international warranty.

