

# OPERATION MANUAL

## COMBAT COMMAND AUTOMATIC CHRONOGRAPH

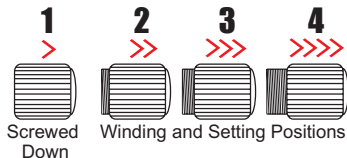


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## Bezel with Minute Index Marks

## 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 - 4**.

**2 >>** Winding position.

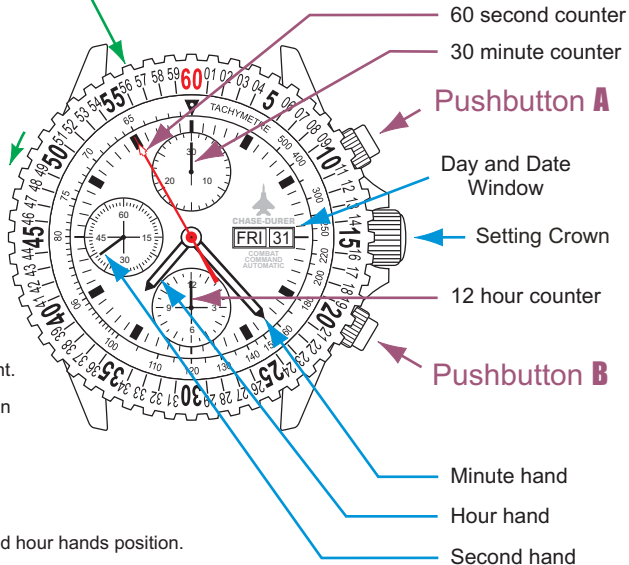
**3 >>>** Day and Date adjustment position.

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

**WARNING:** Crown must be locked down in position **1** at all times, use positions **2 - 4** for winding and adjustments only.

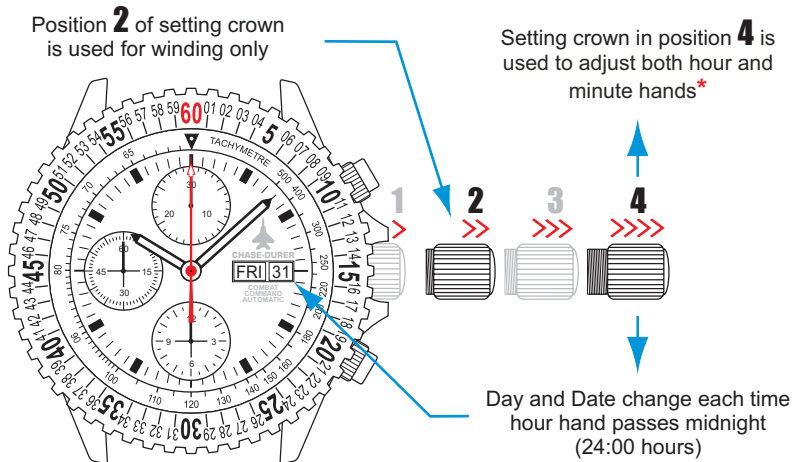
Pushbuttons do not screw down; *Do not operate pushbuttons under water!*

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



## WATCH HANDS

**NOTE:** If your watch stops, it must be wound by turning the crown clockwise approximately 25 full turns. Although the watch is automatic, the mainspring may not have enough reserve to keep it running accurately. Once wound, the normal movement of wearing the watch will provide enough power to keep accurate time.

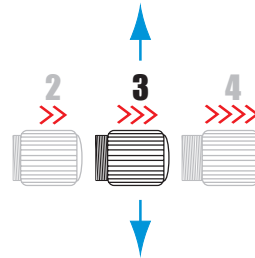
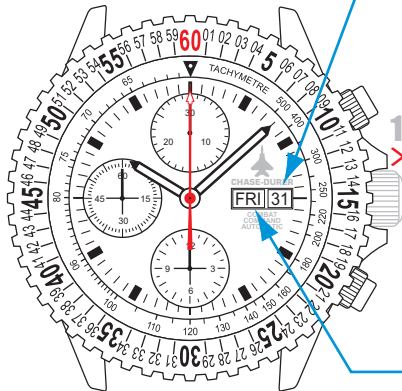


\*Setting crown in position **4** Stops the Second Hand to allow synchronizing with a time signal. There are many accurate sources for this time signal including shortwave radio frequencies that continuously announce **GMT (UTC)** and the internet.

**Note** - When setting the time, pay attention to the Day/Date window to make sure you are setting the time correctly for AM or PM. The Day and Date begin changing at 11PM (23:00 hours).

Day and Date change each time the hour hand passes midnight (24:00 hours)

Turn crown forward in position **3** to set the **Date**

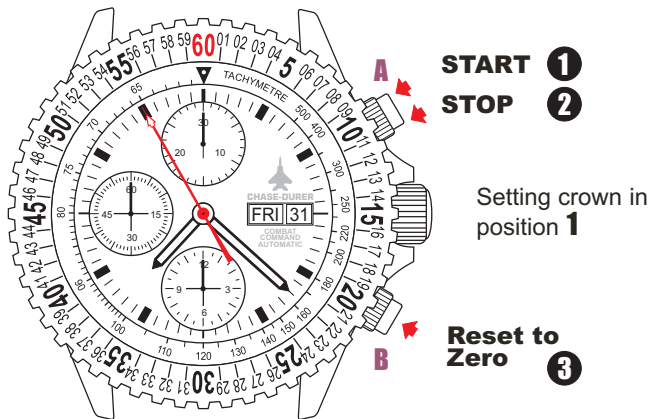


Turn crown backward in position **3** to set the **Day**

## - Important Note -

When setting Day and Date, the minute and hour hands must **not** be positioned between 8PM (20:00) and 3AM (03:00). During this time the date mechanism is engaged and adjusting it may cause damage to the gear.

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**

## 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**

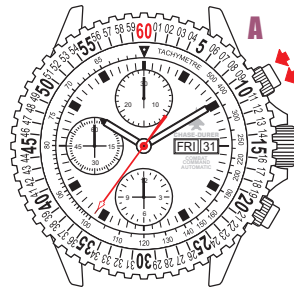
The chronograph second hand indicates 1/10, 1/4, 1/2, 1, 10, 100 or 1,000 etc. units (miles, objects, pounds etc.). When stopped, the second hand points to the number on the TACHYMETRE scale by which the number of units (1, 10, 100 or 1,000 etc.) must be multiplied to obtain per-hour production rate 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  $120 \times 1$ , 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.

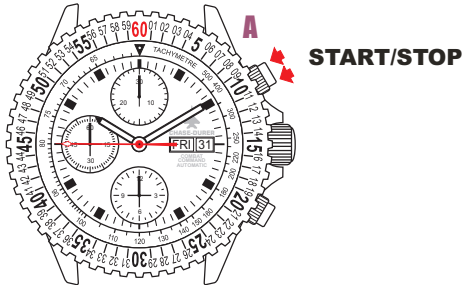


**START/STOP**

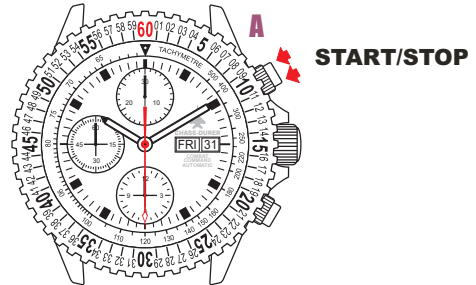
**Example No. 2** – To measuring something much slower, such as a bicycle, you must use a shorter distance because the elapsed time must fall within the **7.2 - 60** second range.

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 **100**mph, 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 **25**mph over the quarter mile.

*NOTE - The scale is valid for all elapsed times from **7.2** seconds to **60** seconds. If the duration of the event is outside this range, then the answer on the dial is not valid. 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  $80 \times 10$ , 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  $120 \times 72$ , 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.

At **68°F (20°C)**, sound travels at **344m** or **376yds / 1,129ft** per second in air at sea level.

Therefore, at **68°F (20°C)** sound will travel:

**1 mile** (1,760 yards / 5,280 feet) in **4.68** seconds  
**1,000 yards** in **2.66** seconds  
**1 kilometer** in **2.91** seconds

To estimate the distance to an event (such as an explosion, muzzle flash, lightning, etc.), measure the time from the visual flash to the sound and multiply the seconds by the per second speed.

For example the measured lightning to thunder time at **68°F** is **10** seconds. **10 x 344m** or **376yds / 1,129ft** would produce **3,440m** or **3,760yds / 11,290ft. (2.14miles)**

Alternately, you can divide the measured time at **68°F** by **4.68** to get miles (**10s / 4.68 = 2.14miles**), or **2.66** for thousand yard distance, or by **2.91** for kilometers.

### NOTE:

At **32°F (0°C)**, sound travels at **332m** or **363yds / 1,089ft** per second in air at sea level.

Therefore, at **32°F (0°C)** sound will travel:

**1 mile / 1,760 yards / 5,280 feet** in **4.85** seconds  
**1,000 yards** in **2.75** seconds  
**1 kilometer** in **3.01** seconds



**Example:** Sea level temp is **68°F** and lightning to thunder measured time is **18** seconds. Distance of lightning strike point is:

$$18s \times 1,129ft = 20,322ft$$

$$18s \times 376yds = 6,768yds$$

$$18s \times 344m = 6,192meters$$

OR:

$$18s / 4.68s = 3.85 \text{ miles}$$

$$18s / 2.66s = 6.77 \text{ thousand yards}$$

$$18s / 2.91s = 6.18 \text{ kilometers}$$

## COMBAT COMMAND AUTOMATIC

### Technical Specifications

- ◆ SWISS Made, ETA VALJOUX 7750 25-jewel automatic movement; 28,800 pulsations per hour; Incabloc anti-shock system; Nivaflex 1 spring, tight tolerances of adjustment.
- ◆ Minimum 42-hour power reserve.
- ◆ Chronograph: 60 seconds, 30 minutes & 12-hour elapsed time.
- ◆ Case and bracelet in solid 316L stainless steel.
- ◆ Deployment buckle with double lock security clasp.
- ◆ Screw-locked crown & screw-in exhibition back.
- ◆ Unidirectional, ratcheted count-up bezel.
- ◆ Tachymetre
- ◆ Calendar day and date windows.
- ◆ Super-LumiNova advanced illumination system on hands & indexes.
- ◆ Scratch-resistant sapphire crystal.
- ◆ Water resistant to 100m/330 feet.
- ◆ Diameter - 40mm.
- ◆ Serial numbered.
- ◆ 2 year limited international warranty.

## ETA Valjoux 7750

### **CHASE-DURER**

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