

OPERATION MANUAL

TRACKMASTER PRO CHRONOGRAPH

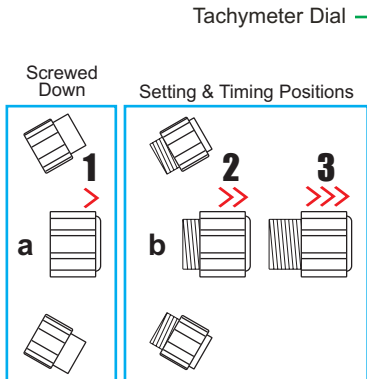


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Bidirectional Tachymeter Bezel

CHRONOGRAPH HANDS

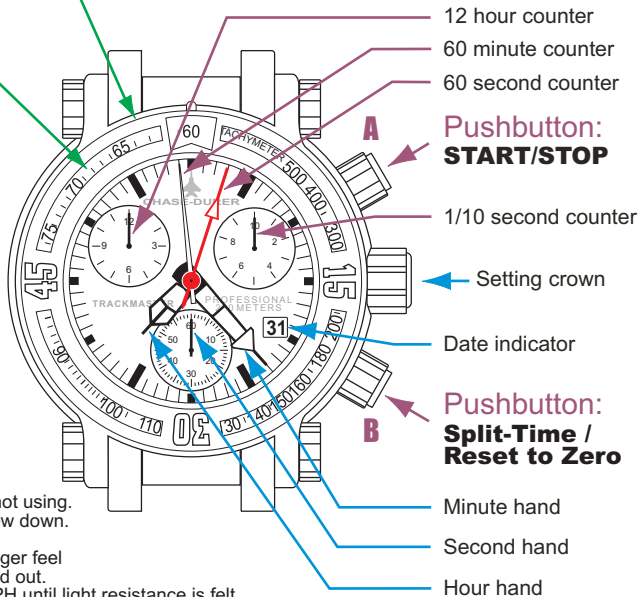


Screw Down Crown and Pushbuttons

- Push in and turn Crown clockwise until tight. Turn Pushbuttons clockwise until tight when not using. Pushbuttons do not require pushing in to screw down.
- Turn Crown counterclockwise until you no longer feel the threads gripping; Crown can now be pulled out. Unscrew Pushbuttons to use CHRONOGRAPH until light resistance is felt.

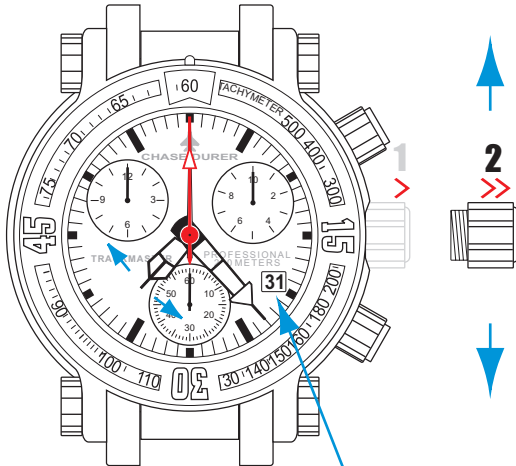
WARNING: Crown should be locked down in position 1 at all times, use position 2 & 3 for adjustments only. *Do not operate pushbuttons under water!*

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



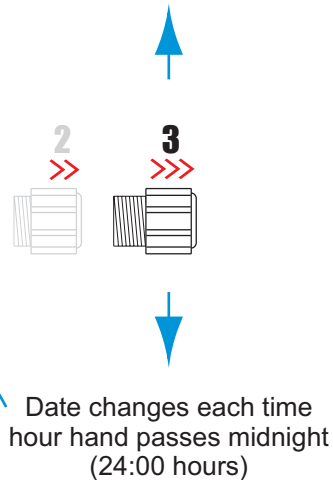
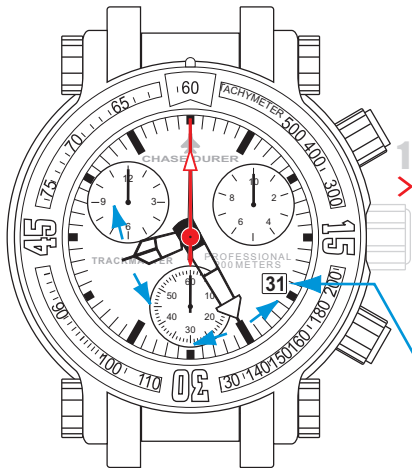
WATCH HANDS

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*

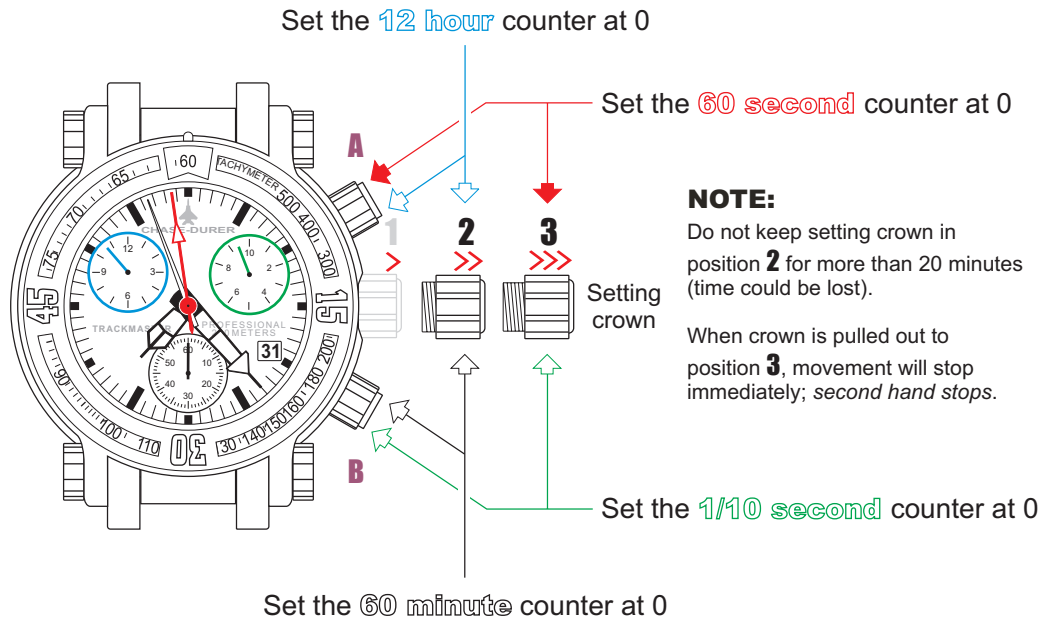


Date changes each time
hour hand passes midnight
(24:00 hours)

Resetting Chronograph Hands to Zero

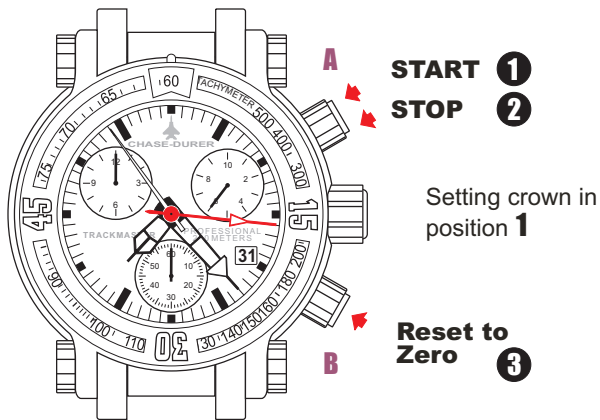
4.

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

• • •



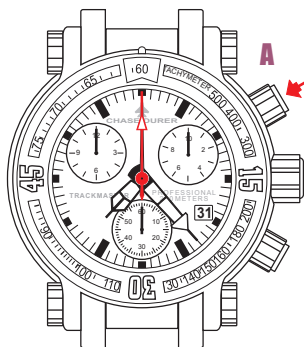
B

X

Reset to zero

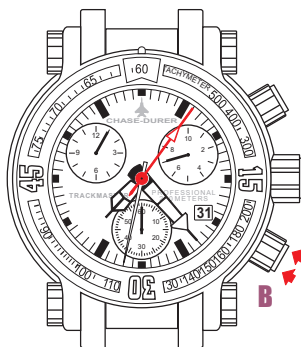
1 to 7 order of functions

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



START 1

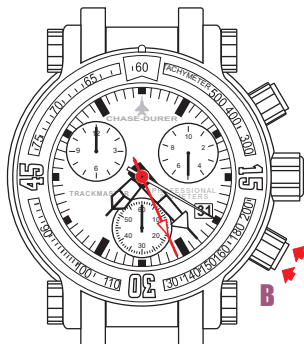
Crown set in position 1



SPLIT 2 4

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

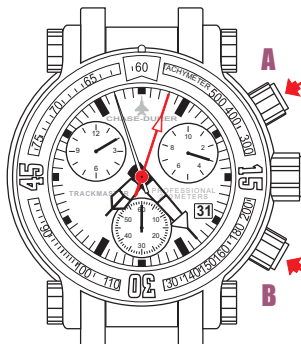
RESTART 5
(catching up)



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
3/10 second

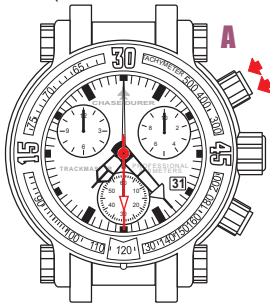
Reset to **7**
Zero

Using the TACHYMETER scale

The TACHYMETER 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: **TACHYMETER DIAL = 3600 / Elapsed Time In Seconds**

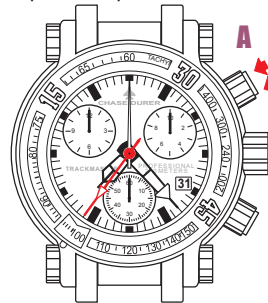
The chronograph second hand indicates 1/10, 1/4, 1/2, 1, 10, 100 or 1,000 etc. units (miles, objects, pounds etc.). When stopped, the second hand points to the number on the TACHYMETER scale by which the number of units (1, 10, 100 or 1,000 etc.) must be multiplied to obtain per-hour production rate 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 TACHYMETER 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 TACHYMETER scale can be used to calculate velocities and production rates from any number of units.

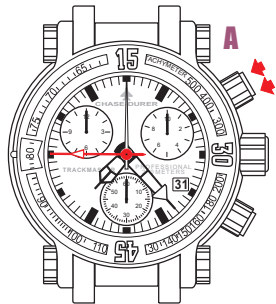


START/STOP

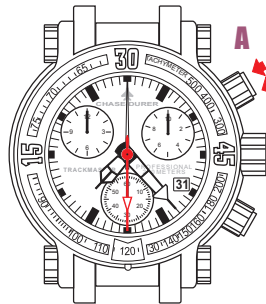
Example No. 2 – To measuring something much slower, such as a bicycle, you must use a shorter distance because the elapsed time must fall within the **7.2 - 60** second range.

For this example, it took **36** seconds for a cyclist to travel **1/4** of a mile. Reading the TACHYMETER 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.



START/STOP



START/STOP

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 TACHYMETER 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 TACHYMETER 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 TACHYMETER 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 TACHYMETER 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 **17.4** seconds. Distance of lightning strike point is:

$$\begin{aligned} 17.4s \times 1,129ft &= 19,644ft \\ 17.4s \times 376yds &= 6,542yds \\ 17.4s \times 344m &= 5,986meters \end{aligned}$$

OR:

$$\begin{aligned} 17.4s / 4.68s &= 3.72 \text{ miles} \\ 17.4s / 2.66s &= 6.54 \text{ thousand yards} \\ 17.4s / 2.91s &= 5.98 \text{ kilometers} \end{aligned}$$

TRACKMASTER PROFESSIONAL CHRONOGRAPH

Technical Specifications

- ◆ SWISS Made, 27-jewel precision ETA 251.262 quartz movement.
- ◆ Chronograph: 1/10th second, 60 minutes & 12-hour elapsed time; lap time.
- ◆ Bidirectional Tachymeter bezel with tactile indicator at the 60m position.
- ◆ Case in solid 316L stainless steel.
- ◆ Screw-locked crown and pushers.
- ◆ Screw-in back.
- ◆ Water resistant to 200m/660 feet.
- ◆ Carbon Fiber dial.
- ◆ Super-LumiNova advanced illumination system on hands & indexes.
- ◆ Scratch resistant sapphire crystal.
- ◆ Diameter - 44mm.
- ◆ Bracelet is a combination of brushed solid 316L stainless steel and black steel featuring a deployment buckle with double lock security clasp.
- ◆ Limited Edition of 999 and Serial numbered.
- ◆ 2 year limited international warranty.

ETA Cal. 251.262

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