





Omega 1666 Movement Parts (1)

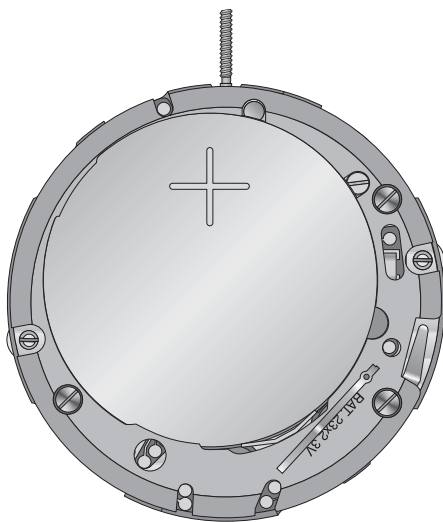
Compiled by EmmyWatch - <https://www.emmywatch.com>

	Technical Guide	TG-19-C-069-E	A
	Produced by: pelrom	Date: 19.11.2009	

CALIBRE 1666

	Version A	Version B	Version C
13 1/4''' Ø 30.60 mm			
Versions:	Trimmer	Limited edition	Heat-compensated
Height on movement	6.90 mm		
Number of jewels	9		

EMMY WATCH
VINTAGE RESTORATIONS



Exclusive OMEGA movement, Multi-function quartz. Luxury decoration, côtes de Genève, gilded engravings. Display of hour, minute and second in centre. Digital display: hours, minutes and seconds, date, alarm, mission elapsed time, mission elapsed alarm, universal time, universal time alarm, countdown, chronograph.



	Page
Calibre 1666	1
General information for calibre 1666	
Major points / Standard movement exchange / Mandatory tools	3
Spare parts list for calibre 1666	4
Specific information for calibre 1666	5-17
CS Test (Customer services) / Operations to enter into CS test mode / Rate adjustment	5
Operating procedure / Sample calculation	6
Test description	7
Electrical tests	8
Operating instructions / Functions	9
Time / Hours	10
Hands	11
Date (change the date) / Alarm	12
Alarm / Mission elapsed time	13
Mission elapsed time alarm	14
Universal time / Set the universal time	15
Universal time alarm	16
Countdown / Start and stop of the countdown / Chronograph	17

EMMYWATCH
VINTAGE RESTORATIONS



General information for calibre 1666

Major points

Information on the battery (ref. 1449953E20)

3 V	Lithium
Ø 23 mm	H 2 mm
Renata	CR2320
Varta	CR2320
Energizer	CR2320

Standard movement exchange

Follow [Working Instruction 31](#) for standard movement exchanges.

Complete movement

Exchanges	
Version A	Complete movement version A: only with version C

Mandatory tools:

Hand fitting

Movement holder for hand fitting

Ref.

502 110 0715

Tools

Plastic tweezers

502 310 0051

Full hand-fitting set

507 0011

Screwdriver for push-piece screw

502 220 0051

Nasa caseback plastic fitting

502 T98 0011

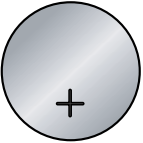
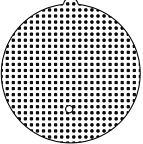

Metal fitting to remove hands

502 T98 0021

EMMY WATCH
VINTAGE RESTORATIONS



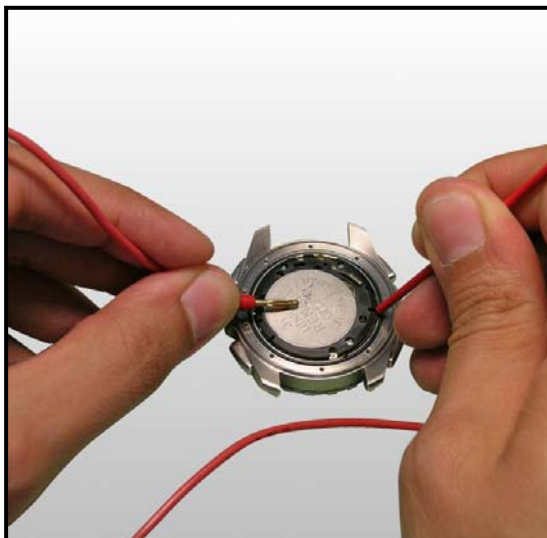
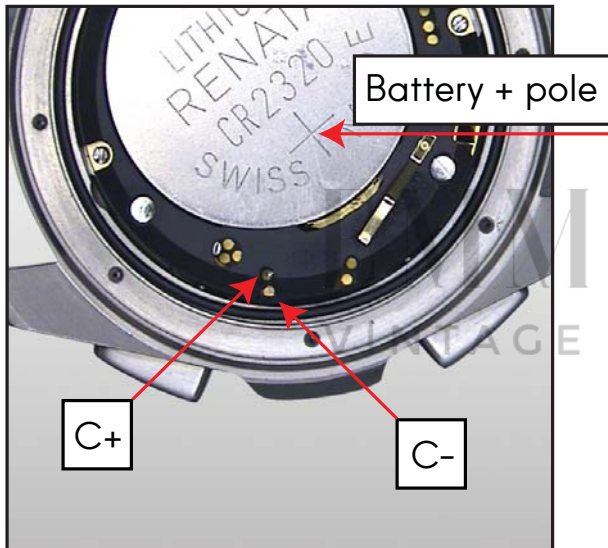
Spare parts list for calibre 1666

Battery	Version	Reference
	1666A	1449953E20
	1666B	limited version
	1666C	1449953E20
Battery insulator	Version	Reference
	1666A	722166620651
	1666B	limited version
	1666C	722166620651
Time setting stem switch	Version	Reference
	1666A	
	1666B	722166651020
	1666C	

EMMYWATCH
VINTAGE RESTORATIONS



Fig. 1.0



1.0 CS Test (Customer services)

1.1 Operations to enter into CS test mode :

1. Remove the battery
2. Wait for the LCD segments to disappear.
3. Hold the crown pressed in.
4. Insert the battery, the LCD displays «TEST 0».
5. Release the crown, test 0 is carried out.
6. Press the crown to perform the next test, the LCD displays the number of the next test «TEST X» (see p. 7).
7. Release the crown to carry out the test.

Rate adjustment

Test 1 displays the current value of the rate correction.

This correction is calculated then saved in the movement during production tests.

This test is also used to modify this correction value if necessary. Every connection between the battery's + pole and the C+ or C- test points increases or decreases the correction value and therefore adjusts the watch rate.



Operating procedure

1. Measure the rate with an integration time of 960 seconds (sixteen minutes).
The rate is measured with the stem pulled out to position 2.
Test mode « magnetic » (rate measure of step motor).
2. Perform steps 1 to 5 of chapter 1.1 (operation to enter into CS test mode).
3. Press the crown once, the LCD displays «TEST 1».
4. Release the crown, the LCD displays C and the current correction value.
5. Perform corrections C+ or C- according to the formula below (see the two examples).
6. Press P1, P2, P3 or P4 to adjust the new value.
7. The LCD displays the new correction value.
8. If the value displayed does not conform, perform corrections on C+ or C- then press P1, P2, P3 or P4 to adjust and display the new value.
9. Press the crown twelve times, the LCD displays «F».
10. Wait for four seconds; the watch returns to time mode.

Formula:

$$\left(\frac{\text{Measured error} \times 1000}{10.986} \right) = \text{Number of pulses}$$

Comment:

When there is a positive number of pulses use C+
When there is a negative number of pulses use C-

EMMYWATCH
VINTAGE RESTORATIONS

Sample calculation :

Current correction value		089
Measured rate error		+0.1s/day
Calculation to be made	$\left(\frac{0.1 \times 1000}{10.986} \right)$	= 9
There must be 9 connections between C+ and the battery's + pole		
New correction value to be stored in the movement 089+9 = 098		

Sample calculation :

Current correction value		175
Measured rate error		-0.2s/day
Calculation to be made	$\left(\frac{-0.2 \times 1000}{10.986} \right)$	= 18
There must be 18 connections between C- and the battery's + pole		
New correction value to be stored in the movement 175-18 = 157		



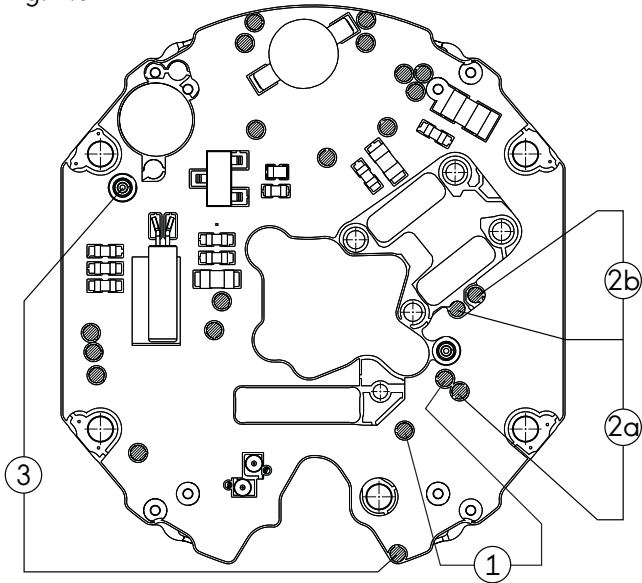
Test description:

Identification	Test no.	Test description
IDENTIFICATION	Test 0	Software identification display.
Rate adjustment	Test 1	Displays the current value of the rate correction. This correction is calculated then saved in the movement during production tests. This test is also used to modify this value if necessary. Every connection between the battery's + pole and the C+ test point (respectively C-) accelerates the rate by decrementing the value (respectively slows down the rate by incrementing the value). This connection can be made using a conductor tool (tweezers, wire, etc.):
RUN MODE	Test 2	Display all the LCD segments and put μC into RUN mode.
HALT MODE	Test 3	Disable the LCD driver and put μC into HALT mode.
BUZZER MODE	Test 4	Trip the BUZZER at a frequency of 2700 Hz.
CW seconds motor	Test 5	The seconds motor is moved forward one pitch clockwise every time P1, P2, P3 or P4 is pressed.
CW minutes motor	Test 6	The minutes motor is moved forward one pitch clockwise every time P1, P2, P3 or P4 is pressed.
CCW minutes motor	Test 7	The minutes motor is moved backward one pitch clockwise every time P1, P2, P3 or P4 is pressed.
CW minutes and seconds motor	Test 8	The seconds motor moves forward at a frequency of 32 Hz and the minutes motor at a frequency of 0.26 Hz (30 second pitches for one minute pitch).
LAMPE	Test 9	Activates the light.
Even LCD segments	Test A	Displays all the even LCD segments. This test checks whether two tracks next to one another are short-circuited.
Odd LCD segments	Test B	Displays all the odd LCD segments. This test checks whether two tracks next to one another are short-circuited.
EOL	Test C	Indicates the battery's voltage level. - Higher than 2.6 V - Buzzer release
		- Between 2.4 V and 2.6 V - Buzzer engaged at a frequency of 2000Hz
		- Lower than 2.4 V - Buzzer engaged at a frequency of 2700 Hz

How to leave the test:		
F TEST	Exit	Reset the watch after about four seconds; the watch restarts in standard Time mode. To restart in CS test mode (test 0), hold the crown pressed in.



Fig. 1.0



1.0 Electrical tests

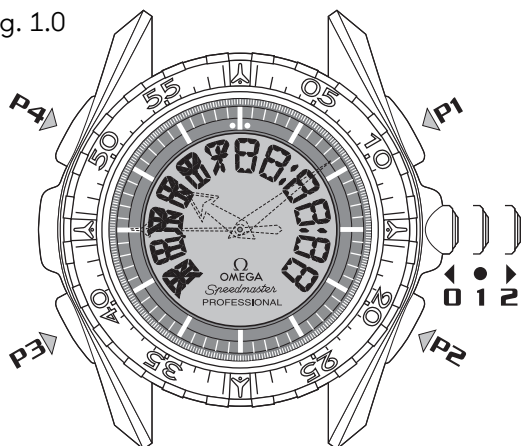
Measurements in movement without battery enclosure.

For measurements with battery enclosure, measurement 3 is made directly on the piezzo contact spring.

Position	Setting of apparatus	Measurement	Test	Remarks
1	10 K Ω	2.6 - 3.4 K Ω	Condition of seconds motor coil	Measurement without battery, voltage supply 0.2 V
2a	10 K Ω	2.8 - 3.8 K Ω	Condition of minutes motor coil	Ohmmeter with a test voltage higher than 0.4 V unsuitable
2b	10 K Ω	2.8 - 3.8 K Ω		
3	10 K Ω	0.12 - 0.15 Ω	Condition of alarm coil	Recommended voltage 0.2 V Ambient temperature
-	-	3V	Battery voltage	To be tested outside of the movement



Fig. 1.0



1.0 Operating instructions

Functions

The crown is the main command button for passing from one function to another. In neutral position 1, it guarantees the watch's water-resistance.

A short press on the crown makes the next function appear ; when pulled to position 2, the crown gives access to the functions commanded by push buttons P1, P2 and P3.

The different functions succeed one another in the following order:

1. TIME
2. DATE
3. ALARM
4. MISSION ELAPSED TIME (M)
5. MISSION ELAPSED TIME ALARM (MA)
6. UNIVERSAL TIME (UT)
7. UNIVERSAL TIME ALARM (UA)
8. COUNTDOWN (CD)
9. CHRONOGRAPH (CH)

EMMYWATCH
VINTAGE RESTORATIONS

NB:

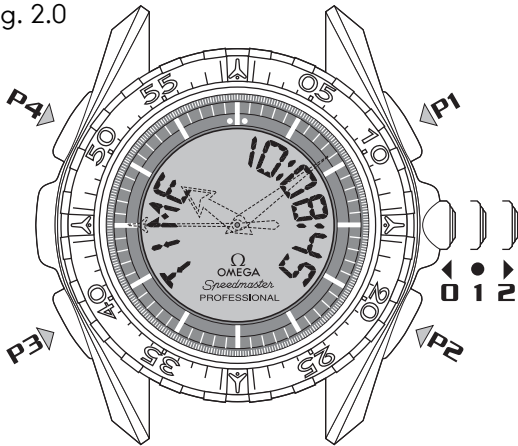
The displays are only in English.

When the crown is in neutral position 1, the screen may be lit at any time using push button P3. To save energy when the light is used, the seconds hand stops and then catches up when the light is turned off. The push button P4 can be used at any time to access to MISSION ELAPSED TIME (M).

A second press on P4 or the crown makes the previous function return. A press of more than 3 seconds clears the screen. A press on the crown or a push button makes the previous function return.



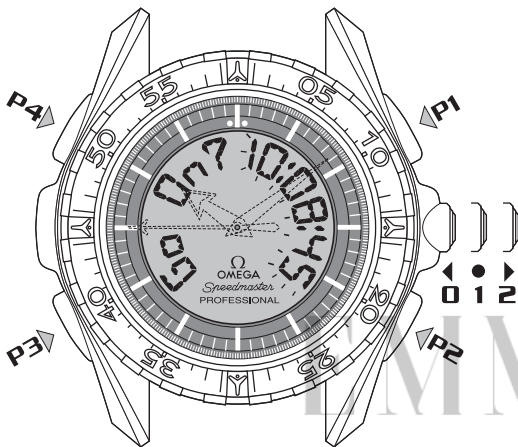
Fig. 2.0



2.0 TIME

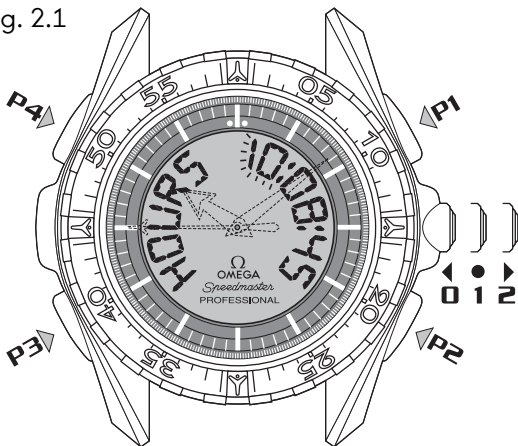
To set the digital time :

- Press the crown until **TIME** is displayed.
- Pull out the crown to position 2 : **Co On ?** appears.
- Press P1, the seconds (**SEC**) blink.
- Press P2 to add or P3 to subtract seconds.
- Press P1, the minutes (**MN**) blink.
- Press P2 to add or P3 to subtract minutes.
- Press P1, the hours (**HOURS**) blink.
- Press P2 to add or P3 to subtract hours.
- Push the crown back into position 1.



OMEGA WATCH
VINTAGE RESTORATIONS

Fig. 2.1



2.1 HOURS

Shortcut to the hours :

The hours can be changed directly (e.g. change of time zone).

- Press the crown until **TIME** is displayed.
- Press the crown for more than 3 seconds: **HOURS** is displayed and the hour blinks.
- Press P2 to add or P3 to subtract hours.
- Press the crown again.



Fig. 2.2



2.2 HANDS

To Synchronize the Hands with the Digital Time. This is done only after the correct digital time is set (**TIME**).

- Press P4 for more than 3 seconds to clear the screen.
- Pull out the crown to position 2. **Go On ?** and the digital time are displayed.
- Press P1 : digital time stops and **HandS** is displayed.
- Press P2 to make the seconds hand move forward, to synchronize it with the digital seconds.
- Press P1, **HandMs** displayed.
- Press P2 to make the minute hand move forward or P3 to make it move backward, to synchronize it with the digital minutes.
- Press P1, **HandHis** displayed.
- Press P2 to make the hour hand move forward or P3 to make it move backward, to synchronize it with the digital hour.
- Push the crown into position 1. The hands catch up to the correct time. Press the crown again to return to the previous function.

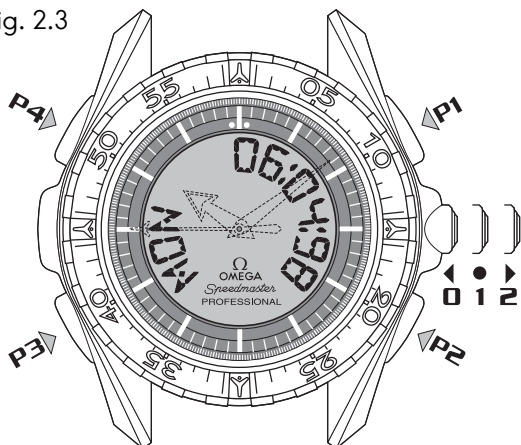
EMMY WATCH
VINTAGE RESTORATIONS

Attention

The minute hand jumps by ½ minute. If the seconds are situated between 30 and 59 seconds, the minute hand should be positioned between two minute-scale marks.



Fig. 2.3



2.3 DATE

To Change the Date :

- Press the crown until the DATE function is displayed.
- Pull the crown to position 2 : **Co On ?** is displayed and the date, month and year blink.
- Press P1, **YEAR** is displayed and the year blinks ; Press P2 to add or P3 to subtract years.
- Press P1, **MONTH** is displayed and the month blinks ; Press P2 to add or P3 to subtract months.
- Press P1, **DAY** is displayed and the date blinks ; Press P2 to add or P3 to subtract from the date. The day of the week displayed is adjusted automatically by the perpetual calendar.
- Press P1, then press P2 or P3 for **D-M**(date-month) or **MD**(monthdate).
- Push the crown back into position 1.

Fig. 2.4



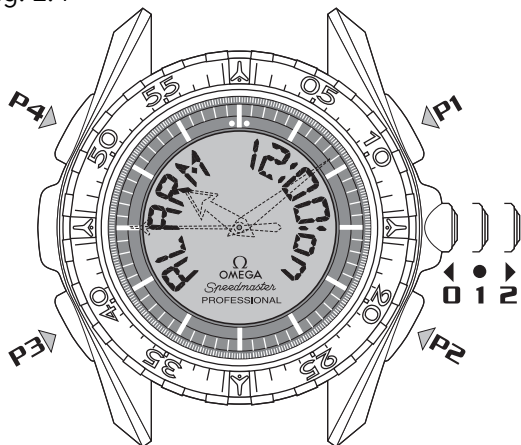
2.4 ALARM

The **ALARM** function rings every 24 hours for 20 seconds. When the alarm rings, the **ALARM** function is displayed. If the alarm ring is not stopped, a second alarm rings one minute later for 15 seconds.

- Press on the crown until **ALARM** is displayed.
- Press on the crown during 3 seconds or pull it into position 2. **MN** is displayed and the minutes blink.
- Press P2 to add or P3 to subtract minutes.



Fig. 2.4

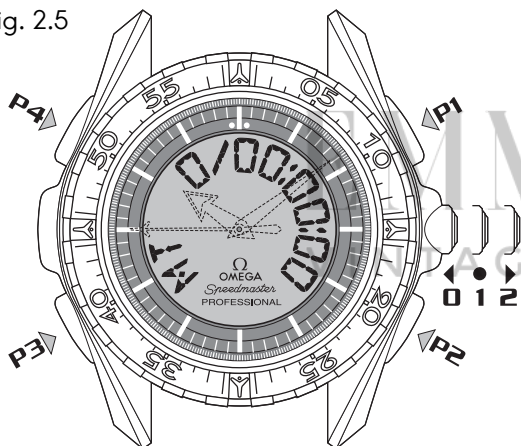


2.4 ALARM

- Press P1 : **HOURS** is displayed and the hours blink.
- Press P2 to add or P3 to subtract hours.
- Press the crown into position 1. The **ALARMs** automatically set and **ON** is displayed.
- Press the crown or a push button to stop the alarm.
- Press P1 for more than one second to set the alarm (**on** is displayed and sound signal is heard) or to stop the alarm (**OF** is displayed).
- Alarm ring : press P2 for more than 3 seconds to test the sound of the alarm ring.

2.5 MISSION ELAPSED TIME (M)

Fig. 2.5



Description

With this chronograph function, the elapsed time of a mission of long duration can be timed. Already elapsed days, hours, minutes and seconds can be programmed before the function is started.

- Press the crown until **M** is displayed
- Pull out the crown to position 2: **Go On ?** is displayed. Press P1 and **RESET ?** is displayed : press P2 or P3 for return-to-zero.

To start timing at the beginning of the mission

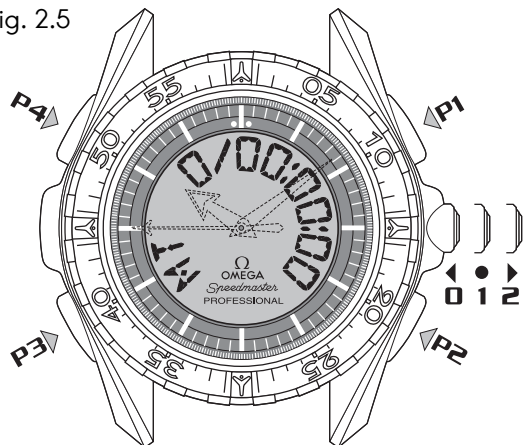
- Push the crown back into position 1
- Press P1 to start the timing

Adding already elapsed time

- Press P1, the seconds (**SEC**) blink.
- Press P2 to add or P3 to subtract seconds.
- Press P1, the minutes (**MN**) blink.
- Press P2 to add or P3 to subtract minutes.
- Press P1, the hours (**Hour s**) blink.



Fig. 2.5



2.5 MISSION ELAPSED TIME (M)

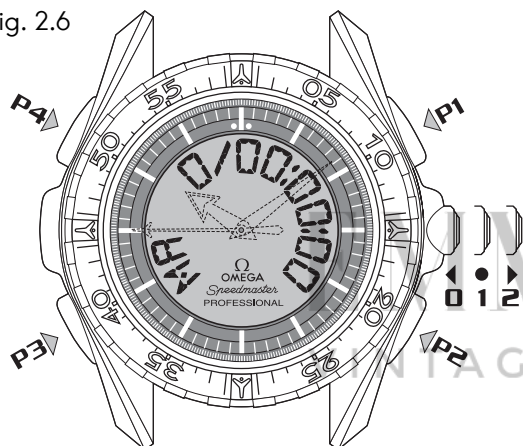
- Press P2 to add or P3 to subtract hours.
- Press P1, the day number (**DAYS**) blinks.
- Press P2 to add or P3 to subtract days.
- Push the crown back into position 1.
- Press P1 to start the timing.

The chronograph is stopped in several steps

- Pull the crown into position 2.
- Press P1 and **RESET ?** is displayed.
- Push the crown into position 1.

The timing is stopped.

Fig. 2.6



2.6 MISSION ELAPSED TIME ALARM (MA)

Description

This alarm rings once, for 15 seconds, at a specified day and time. When the alarm rings, the MISSION ELAPSED TIME ALARM (**MA**) function is displayed. If the alarm ring is not stopped, a second alarm rings one minute later for 15 seconds.

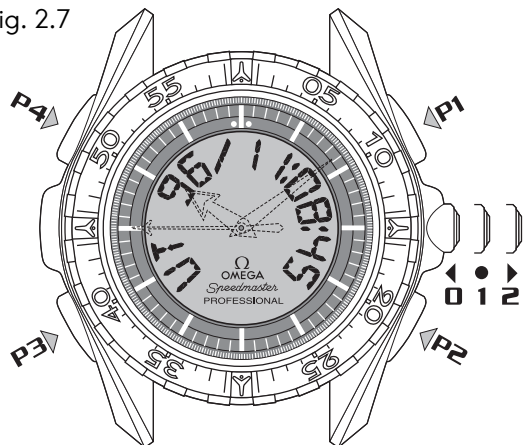
- Press the crown until **MA** is displayed.
- Push the crown during 3 seconds or pull it to position 2. The seconds (**SEC**) blink.
- Press P2 to add or P3 to subtract seconds.
- Press P1, the minutes (**MN**) blink. Press P2 to add or P3 to subtract minutes.
- Press P1, the hours (**HOURS**) blink.
- Press P2 to add or P3 to subtract hours.
- Press P1, the day number (**DAYS**) blinks.
- Press P2 to add or P3 to subtract days.
- Push the crown back into position 1.

The MISSION ELAPSED TIME ALARM (**MA**) function starts automatically.

- Press P1 for more than one second to set the alarm (sound signal is heard) or to stop the alarm (**CF** is displayed).
- Alarm ring: press P2 for more than 3 seconds to test the sound of the alarm ring.



Fig. 2.7



2.7 UNIVERSAL TIME (UT)

Universal Time

The UNIVERSAL TIME (UT) function makes it possible to display either GMT or a second time zone. In addition to 24 hour time, the number of the day of the year is displayed, as calculated by the perpetual calendar in the DATE function.

To set the Universal Time

- Press the crown until **UT** is displayed.
- Pull out the crown to position 2: **Go On ?** is displayed.
- Press P1, the seconds (**SEC**) blink.
- Press P2 to add or P3 to subtract seconds.
- Press P1, the minutes (**MIN**) blink.
- Press P2 to add or P3 to subtract minutes.
- Press P1, the hours (**HOURS**) blink.
- Press P2 to add or P3 to subtract hours.
- Press P1, the +/- sign of the **OFFS** value blink (see NB).
- Push the crown back into position 1.

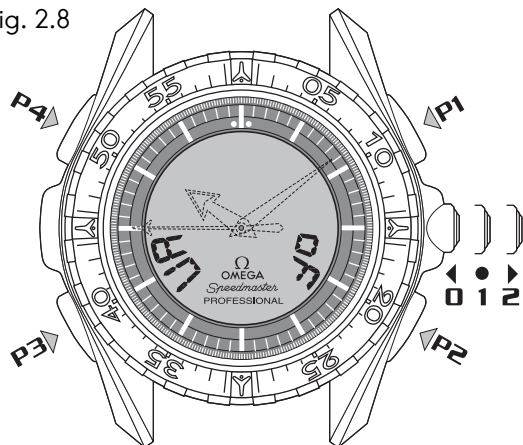
NB

The **OFFS** + HH:MM value indicates the time zone difference. Press P2 or P3 to change the +/- sign to indicate if the local time (**TIME**) is situated east (+) or west (-) of the Greenwich meridian.

EMMY VINTAGE RESTORATIONS



Fig. 2.8



2.8 UNIVERSAL TIME ALARM (UA)

Description

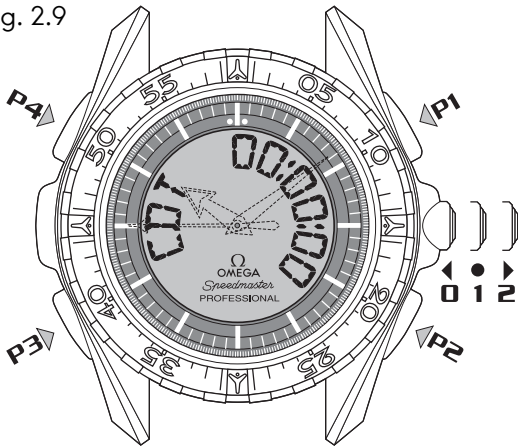
This alarm rings once, for 15 seconds, at a specified day and time. When the alarm rings, UNIVERSAL TIME ALARM (UA) function is displayed. If the alarm ring is not stopped, a second alarm rings one minute later for 15 seconds.

- Press the crown until UA is displayed.
- Push the crown during 3 seconds or pull it to position 2. The seconds (SEC) blink.
- Press P2 to add or P3 to subtract seconds.
- Press P1, the minutes (MN) blink.
- Press P2 to add or P3 to subtract minutes.
- Press P1, the hours (HOURS) blink.
- Press P2 to add or P3 to subtract hours.
- Press P1, the day number (DAYS) blinks.
- Press P2 to add or P3 to subtract days.
- Push the crown back into position 1.
- The UNIVERSAL TIME ALARM (UA) function starts automatically.
- Press P1 for more than one second to set the alarm (sound signal is heard) or to stop the alarm (CF is displayed).
- Alarm ring: press P2 for more than 3 seconds to test the sound of the alarm ring.

EMMY WATCH
VINTAGE RESTORATIONS



Fig. 2.9



2.9 COUNTDOWN (CDT)

To program the countdown time (maximum countdown 99:59:59;)

- Press the crown until **CDT 00:00:00** is displayed.
- Push the crown during 3 seconds or pull it to position 2. The seconds (**SEC**) blink.
- Press P2 to add or P3 to subtract seconds.
- A (-) sign indicates the time to be counted down.
- Press P1, the minutes (**MN**) blink.
- Press P2 to add or P3 to subtract minutes.
- Press P1, the hours (**HOURS**) blink.
- Press P2 to add or P3 to subtract hours.
- Push the crown into position 1.

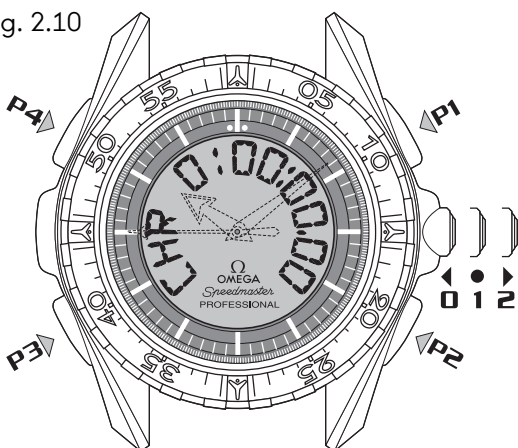
Start and stop of the countdown

- Press P1 to start the countdown for the time programmed.
- Press P1 to stop the sound signal.
- Press P2 to automatically reload the countdown time; press P1 to start the countdown.

The last five seconds are signaled by a brief sound signal. As soon as the programmed time is exceeded, a long sound signal rings every two seconds for around 15 seconds and the digital display blinks. The Countdown continues to record the time elapsed since the completion of the programmed countdown (as indicated by the + sign).

EMMY VINTAGE RESTORATIONS

Fig. 2.10



2.10 CHRONOGRAPH (CHR)

Description

The chronograph function times short time intervals to 1/100 second.

After 99 hours, 59 minutes, 59 and 99 hundredths seconds the timing stops and returns automatically to zero.

- Press the crown until **CHR 0:00:00.00** is displayed.
- Cumulated time: press P1 start-stop, start-stop, etc.
- Split times: press P1 start, then P2 split, then P2 again to continue the timing.
- Stop: Press P1.
- Return-to-zero: Press P2 after pressing P1 for stop.

