BALL Owner's Manual

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Welcome

We congratulate you on the purchase of your BALL watch. You will soon be wearing on your wrist an excellent tribute to American railroad history. All BALL watches are completely Swiss-made and rigorously built in mind for you - an explorer. Our mission: On the wrist of every direct, no nonsense life adventurer in search of his or her destiny. We are single-minded in our commitment to this vision.

At Ball Watch Company, we are focused on building the mightiest, superior watches that endure adverse conditions. Indeed, it has been our love and tradition since 1891. In the process, we faithfully create a family enterprise that genuinely fosters our humanity and have fun in all our endeavors.

Thank you for your trust and confidence in us.

Faithfully yours,

Ball Watch Company Management

Brand Spirit

Freedom. Represents what humans live for: Free will and the chance to pursue their dreams.

The American Railroads brought freedom to the country, the opportunity to travel and explore the new frontiers. The powerful locomotives sparked the spirit of adventure in the American people, while the men of the railroads were the heroes of the machine age. Ball Watch Company proudly served the men of the railroads then, just as we support the world-class explorers of today.

BALL'S TIME

Webb C. Ball was born in Fredericktown, Ohio on October 6, 1847. In the early years, Mr. Ball was recognized as having an interest in accurate time. When Standard Time was adopted in 1883, Mr. Ball was the first Cleveland jeweler to use the time signals sent from the Naval Observatory in Washington D.C., bringing accurate time to Cleveland. For many years, as people walked past his store, they would pull out their watches and set the time. The phrase, "BALL'S TIME", came to mean the absolute correct time all over Northern Ohio.

Webster Clay Ball, founder of Ball Watch Company

Webb C. Ball was instrumental in establishing watch standards and the inspection system that required all watches and clocks used on the railroads to be checked by competent watchmakers. It is important to recognize and applaud Webb C. Ball for inventing the first successful system to be accepted on a broad scale. It was his system that set the standards for the railroads; it was his system that helped establish accuracy and uniformity in timekeeping. It was his system that resulted in railroad time and railroad watches being recognized as STANDARD, whenever accuracy in time was required.

Performance

At Ball Watch Company, all watches are made to live up to our motto:

Since 1891, accuracy under adverse conditions.

Case:
The case material used in our collections ranges from superior quality, high-grade stainless steel to titanium coated with Diamond-Like Carbon. BALL Engineer, Engineer Master II, and Engineer Hydrocarbon series automatic watches are specially equipped with an antimagnetic soft iron inner jacket.

Crystal:
The crystal is made of anti-glare sapphire (AL_2O_3) with Moths hardness 9. Knoop hardness, parallel to C-axis, 1,670 to 2,000 kgf/mm^2. Heat conductivity at 100°C is 0.06 cal/cm-sec-°C. Its dielectric strength is at 20,800 kg/cm^2.

Shock-resistant:
All BALL watches are constructed to withstand at least 5,000Gs impact test, which is carried out on a machine to simulate the effect of a free fall onto a hard wooden floor from a height of one meter. The Engineer Hydrocarbon series undergoes a more rigorous 7,500Gs impact test, to ensure its impeccable shock resistance.

Movement:
BALL has worked with top Swiss movement manufacturers to build our precise and dependable movements under the most rigorous conditions. BALL watches are then adjusted and modified to Ball Standard.

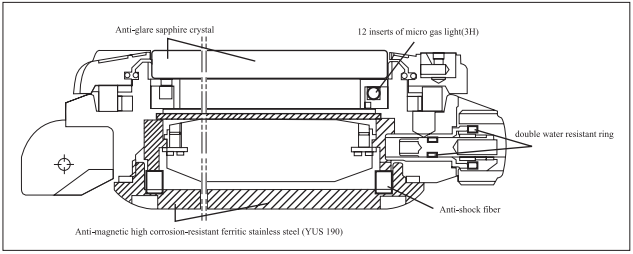
Illumination:
It is the self-powered micro gas tube (^{3}H) that gives the watch excellent legibility even in dark and adverse conditions. This light source on all BALL watches does not require batteries or re-exposure, and lasts for up to 25 years. For the Engineer Hydrocarbon series, the markings on the bezel are filled with luminous paint, which does need light exposure for illumination.

Water-resistant:
The water resistance of BALL watches ranges from 30m to 1,000m, depending on the model chosen. The test is conducted by immersing the watch completely in distilled water containing a wetting agent of 1% by weight and at the relevant testing pressure for at least 5 minutes. The watch must show no evidence of leakage in order to pass the test. The water resistance of a timepiece will be impaired if the crown is not properly screwed-in. The patented crown protection system of the Engineer Hydrocarbon ensures the crown returns to its proper position.

Magnetism

The Greeks first observed the phenomenon of magnetism around 600 B.C. The natural magnet Fe_3O_4, a black ferrous oxide, was discovered in the province of Magnesia in Turkey.

Magnetic fields produced by natural magnets are generally too weak to disturb the accuracy of a mechanical watch. The same is not true, however, of man-made magnetic fields. So where are we at risk to enter magnetic fields in daily life? Near televisions, stereo systems and radios in our living room. In the countless small electric motors used throughout our households. In the doors of cars, refrigerators or cabinets. In the telephone or computer monitor on your office desk. And in locomotives. Even brief contact with these items is enough to magnetize a mechanical watch.



BALL case construction to protect against magnetic fields

BALL Engineer Hydrocarbon, Engineer Master II, and Engineer II watches are equipped with superb antimagnetic cases constructed with corrosion-resistant ferric stainless steel materials. Furthermore, the inner workings of the watch are protected by a soft iron inner jacket consisting of a back plate, a ring surrounding the movement and the dial. This special alloy, reinforced by the shape of the case, prevents magnetic fields from penetrating as far as the movement and having an adverse effect on its accuracy.

What does the term “antimagnetic” actually mean? The existing standard is defined thusly: If a mechanical watch does not stop when exposed to a magnetic field of 4,800 A/m and subsequently does not deviate by more than 30 seconds per day, it can be called “antimagnetic.” BALL watches certainly surpass this standard, particularly the Engineer Hydrocarbon series with standard protection of 12,000 A/m.

Swiss Night Reading Technology

How to read time from watches in dark environments has been a topic of much research in the watch industry. Applying luminous paints to dial and hands - activated first by radium, then by tritium - has been standard practice since the First World War but did not really satisfy the manufacturers. After a quarter-century in research and development work, Ball Watch Company is proud to present an innovative Swiss laser technology that is considered the best alternative available today. It is the self-powered micro gas tube known as (^{3}H) that gives the watch its excellent dark reading capability in any adverse conditions. They provide superior night reading capability that is 100 times brighter than the current tritium-based luminous paints. ^{3}H gas tubes do not require batteries, recharging by an outside light source, or the use of a press-button, and glow continuously for up to 25 years. You can read off time from the watch quickly and safely in brightest daylight or deepest night without adapting your eyes to the ambient light.

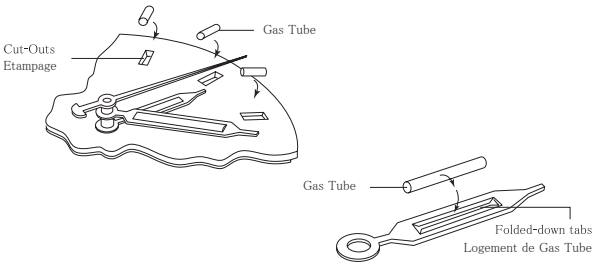


Diagram of gas tube attachment to hands and dial

The Swiss technology, ^{3}H, captures tritium safely in a very stable form, as a pure gas sealed in a hollow body of mineral glass. Its exterior walls are coated with a luminescent material, which gives off cold light when activated by electrons emitted by the tritium. Light production is the same as in a TV tube, when the electrons of the cathode ray beam hit the screen. The small, precise, lightweight ^{3}H tubes can now be efficiently produced by means of a CO_2 laser. Their attachment to the hands and the dial is accomplished in way that minimizes any risk of breakage.

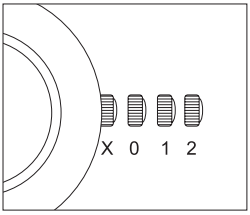
Operating instructions

[Please see Online User Manual in the Customer Service section at www.ballwatch.com for the latest information.]

1. Automatic Watch

MODELS: All, except those specifically listed below

Functions of the crown



X = Normal position
0 = Manual winding position
1 = Date adjustment
2 = Setting the time

• Manual Winding: If the watch has not been worn for a long period of time, wind the movement before setting the time. Unscrew the crown to position [0], then turn the crown clockwise 20 to 30 times.

• Time Setting: To set the time, unscrew the crown and pull out to position [2]. Push the crown back into position [X] when the correct time is reached. When setting the time, please ensure that the date display is also set correctly. It should advance at midnight. If it advances at noon, you will need to turn the hands forward 12 hours.

• Date Setting: After months with less than 31 days, you need to set the date to the first day of the next month. To do so, unscrew the crown and pull it out to position [1]. Turn the crown clockwise to set date. On watches with Day function, turn the crown counter-clockwise to set the Day.

• To prevent damage to the date-switching mechanism, we advise not to manually reset the date between 9pm and 3am.

• Always remember to screw down the crown after adjustment, to ensure water resistance and prevent possible damage to the movement.

Remarks:
Automatic watches acquire their energy from an oscillating weight that is activated in response to the movements of your wrist. Depending on the model, the power reserve ranges from 38 to 48 hours. Manual winding is only necessary if the watch has not been worn for a long period of time, or if it has stopped.

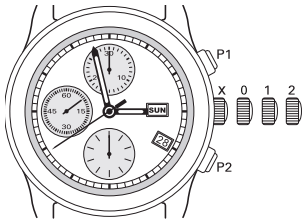
Depending on the type of movement, the accuracy of a mechanical movement may vary one to two minutes per week. Accuracy is strongly influenced by the way the watch is worn.

2. Automatic Chronograph

MODELS: CM1010, CM1020, CM1030, CM1052, CM1068, DC1016, DC1026, DC1028

See instructions for "Automatic Watch" above, with the following changes.

Position [X]: Running position
Position [0]: Manual winding
Position [1]: Correction of date and day
Position [2]: Time setting with stop-second



Chronograph function: First ensure that the crown is in position [X] and that the chronograph hands are reset to zero.

• [P1]. Upper Start/Stop control push-button. This push-button enables you to start and stop the chronograph function. Pressing once starts the central second hand. As soon as the second hand has revolved once around the dial the minute hand is set into action. Pressing again stops these hands and a third push sets the chronograph function working again.

• [P2]. Lower return-to-zero push-button. After stopping the chronograph by pressing the upper control push-button [P1], press the lower push-button [P2] to reset the counters to zero. This push-button only functions when the counters are stopped.

• Running second hand: Most Ball chronographs feature running seconds in the subdial at 9 o'clock. The Trainmaster Cannonball (CM1052) features running seconds at the unusual 3 o'clock position.

• Chronograph second hand: Start and stop by pressing the upper push-button [P1]. Reset to zero by pressing lower push-button [P2].

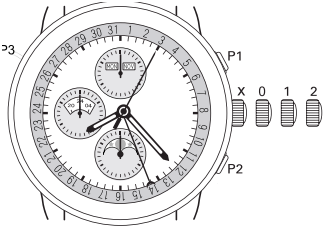
• Minute counter: Indicates the minutes elapsed from the start time by moving forward one unit for each complete revolution of the second hand. Reset to zero by pressing push-button [P2].

• Hour counter: Indicates the hours elapsed from the start time by moving forward one unit for each two complete revolutions of the minute counter. Reset to zero by pressing push-button [P2].

3. Automatic Chronograph with Moon Phase display
MODELS: CM1036

See instructions for "Automatic Chronograph" above, with the following changes.

Position [X]: Running position
Position [0]: Manual winding
Position [1]: Correction of month, day, and moon phase display
Position [2]: Time setting with stop-second



3 Push-buttons:
Push-button at 2 o'clock [P1]: Start-stop of chronograph
Push-button at 4 o'clock [P2]: Return to zero of chronograph
Pusher at 10 o'clock [P3]: Day correction

Chronograph function: First ensure that the crown is in position [X] and that the chronograph hands are reset to zero.

• 24-hour hand: The red hand displays the time in 24-hour military time and day/night in the subdial at 9 o'clock.

• Moon Phase display: Subdial at 6 o'clock indicates the phases of the Moon over a 29 ½ day period. Adjust Moon Phase by turning

counter-clockwise at Position [2]. It is recommended to first set the correct date, then start from either full moon or new moon then advance forward the appropriate number of days. Please consult “Moon Phase” for more details.

• Date display: Subdial at 12 o’clock indicates the Day and Month, while a hand displays the Date on the outer chapter ring. Adjust Date by turning clockwise at Position [2]. Adjust Month by rotating through 31 days until the month changes. Adjust Day by pressing [P3] until the correct Day is shown. To prevent damage to the date-switching mechanism, we advise not to manually reset the date between 9pm and 3am.

4. Single-button Chronograph
MODELS: CM1032, CM1038

See instructions for “Automatic Chronograph” above, with the following changes.

Push-button at 2 o’clock [P1]: Start/Stop & Reset of chronograph

• [P1]. Upper Start/Stop/Reset control push-button
This push-button enables you to control all chronograph functions. Pressing once starts the central second hand. Pressing a second time stops the hand and a third push resets the chronograph hand to zero again.

5. Automatic Chronograph with GMT display
MODELS: DC2036

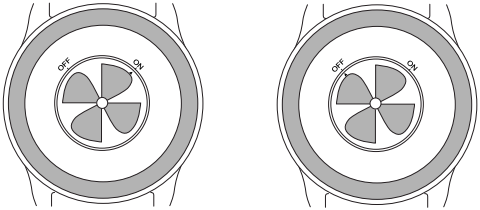
See instructions for "Automatic Chronograph" above, with the following changes.

• Date Setting: Unscrew the crown and pull it out to position [1]. Turn the crown clockwise to set date. To prevent damage to the date-switching mechanism, we advise not to manually reset the date between 9pm and 3am. Ensure that the date change takes place at midnight and not at noon.

• Set the time of the second time zone: Turn the crown counter-clockwise until the correct time for the second time zone appears on the dial. Turn the GMT hand slowly in one-hour increments to avoid damage to the movement.

• Set the local time: In position [2], turn the crown clockwise or counter-clockwise.

6. BALL Amortisér© shock-absorbing system



By locking the rotor of the automatic movement, the BALL Amortisér© shock-absorbing system reduces the risk of damage during high-impact activities.

When the BALL Amortisér is locked in the On position, the rotor cannot spin, which protects the movement in case of shock. In this setting, the watch operates like a manually-wound watch.

When the BALL Amortisér is unlocked in the Off position, the rotor spins freely and can wind the automatic movement.

The Amortisér© device, patented and exclusive to BALL Watch, secures the movement against extreme shocks. This feat of micromechanics is characterized by a ring of protection, both protecting magnetically and enveloping the movement to absorb shocks in combination with a locking mechanism for the automatic rotor. On the caseback, the form of an airplane propeller operates the lock that secures the oscillating mass of the watch movement for the wearer. These ingenious systems protect the mechanism against not only lateral impact but also vertical impact.

7. Chronograph Scales

Pulsemeter: Measures human pulse or respiration rate.

The wearer can find the correct respiration / pulse per minute by recording the time needed for the listed number of pulsations.

Description of Operation

Please refer to the "Automatic Chronograph" instructions above to reset the chronograph counter to zero position.

Trainmaster Pulsemeter (CM1010):
The dial is marked 'Graduated For 30 Pulsations.'

At the beginning of a pulsation, start the chronograph counter by pressing push button [P1]. Press again when the 30 pulsations/respirations have been recorded. If after the 30th pulse, the operator stops the chronograph counter at 20 seconds, reading from the stopped second hand on the pulsemeter scale will result in a pulsation rate of 90 beats per minute.

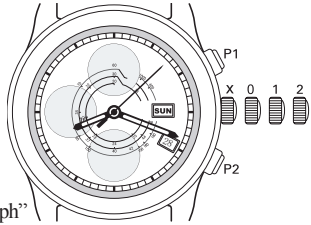
Trainmaster Pulsemeter Chronometer (CM1010), Trainmaster Pulsemeter Pro (CM1038) and Trainmaster Doctor's Chronograph (CM1032):
The dial is marked 'Graduated For 15 Pulsations.'

At the beginning of a pulsation, start the chronograph counter by pressing push button [P1]. Press again when the 15 pulsations/respirations have been recorded. If after the 15 pulses, the operator stops the chronograph counter at 10 seconds, reading from the stopped second hand on the pulsemeter scale will result in a pulsation rate of 90 beats per minute.

Combined with the single-button chronograph to allow for quicker measurement of pulse and respiration rates, the 15-pulse scale also minimizes human error due to reaction time to ensure a more accurate reading.

Tachymeter: Computes speed over a given distance.

The wearer can find the correct speed per hour by recording the time needed to travel the distance.



Description of Operation

Please refer to the "Automatic Chronograph" instructions above to reset the chronograph counter to zero position.

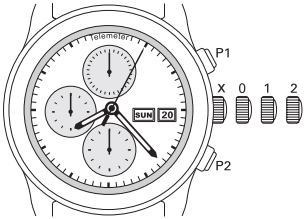
To compute the speed of a car over a certain distance, press the top chronograph button [P1] to start timing. At the end of the fixed distance, press the button again. If the time elapsed is 45 seconds, the second hand should point to the figure 80 on the Tachymeter scale. If the fixed distance is a kilometer then the car is traveling 80 kilometers per hour.

The Fireman Skylab (CM1092) and Fireman Storm Chaser (CM2092) have a tachymeter scale on the outer bezel for measurement of elapsed times up to 1 minute.

The inner spiral of the Trainmaster Pulsemeter (CM1010) is a tachymeter scale capable of measuring elapsed time of up to 3 minutes. If for example, the time elapsed is 1 minute 30 seconds, the second hand will point to the figure 40 on the 2nd ring of the Tachymeter scale. Over a distance of 1 mile, the car is thus traveling at 40MPH.

Telemeter: Measures distance between the observer and a situation that is both visually and audibly observable.

The telemeter scale is based on the speed of sound through air, approximately 340 meters per second. It has been used to measure the distance to lightning or the distance to artillery fire.



Description of Operation

Please refer to the "Automatic Chronograph" instructions above to reset the chronograph counter to zero position.

The Engineer Master II Telemeter (CM1020) and Fireman Storm Chaser (CM2092) can measure time accumulated to 30 minutes with the minute counter beneath the 12 o'clock position. The push- buttons [P1] and [P2] are screw-in type; they have to be unscrewed in order to function.

Start the chronograph by pressing push-button [P1] on the optical signal (a flash of lightning) and then stop the counter when the audio signal (thunder) is heard. The distance will be indicated on the telemetric scale in kilometers, pointed by the position of the chronograph second hand.

Compass: Displays direction based on time and position of the Sun.

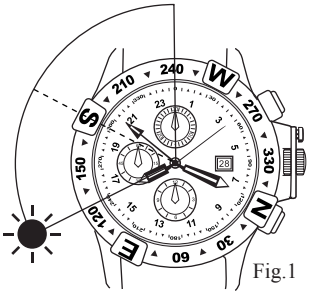


Fig.1

Fig.2

The Engineer Hydrocarbon Spacemaster Orbital (DC2036) can be used as a compass synched to the Sun or to store relative position with a separate compass.

First remove the watch from the wrist and turn it until the local hour hand points at the Sun. Find the point halfway between the hour hand and 12 o'clock. Turn the outer compass bezel to set South to that point, then all other cardinal points are displayed on the compass bezel. Please note, in the Southern hemisphere, the point between the Sun and 12 o'clock will instead be North. (See Figure 1)

Adjust the time backward one hour during Daylight Saving Time.

When using to determine relative position, first turn the watch so that the N marking on the inner bezel faces North, then turn the outer compass bezel to the necessary offset (e.g. 10°) from the inner bezel. (See Figure 2)

8. Linear Triple Calendar
MODELS: CM1030, CM1032

The Triple Date function may also be known as the Month, Day, Date feature. The Trainmaster Racer and Trainmaster Doctor's Chronograph introduce a BALL in-house development, the Linear Triple Calendar function. This feature shows the Month, Day and Date in a row at the 3 o'clock position for ease of use.

To set the functions, unscrew the crown and pull it out to position 1.

• Date setting: Turn the crown clockwise until the correct Date is reached.

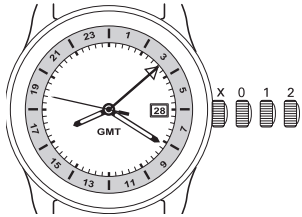
• Day setting: Turn the crown counter-clockwise until the correct Day is reached.

• Month setting: The Month function is set in the same manner as the Date. By rotating the Date through all 31 days, the Month wheel will move forward to the next Month.

To prevent damage to the date-switching mechanism, we advise not to manually reset the Linear Triple Calendar between 9pm and 3am.

9. GMT

MODELS: DG1016, DG1020, GM1020, GM1032, GM1038, GM1050, GM1068



See instructions for "Automatic Watch" above, with the following changes.

• Date Setting: Unscrew the crown and pull it out to position [1]. Turn the crown counter-clockwise to set date. To prevent damage to the date-switching mechanism, we advise not to manually reset the date between 9pm and 3am. Ensure that the date change takes place at midnight and not at noon.

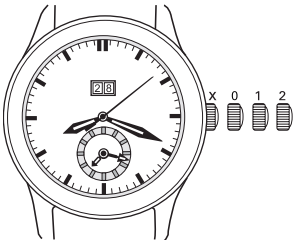
• Set the time of the second time zone: Turn the crown clockwise until the correct time zone appears on the dial. Turn the GMT hand in one-hour increments to prevent wear on the movement.

On the Engineer Master II GMT II (GM1032), the 2nd time zone will move forward in one-hour increments in the red window at 9 o'clock. On all other Ball GMTs, the 2nd time zone is displayed as a red GMT hand.

• Set the local time: In position [2], turn the crown forwards or backwards.

10. Dual Time

MODELS: GM1056, GM2086



For the Dual Time models, the big date aperture is shown under the 12 o'clock position, while the second time zone indicator is located at 6 o'clock.

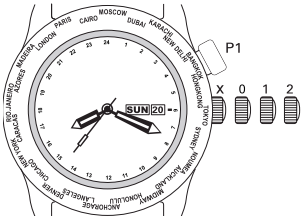
See instructions for "Automatic Watch" above, with the following changes.

• Date setting: From position [2], turn the crown counter-clockwise until the correct date is displayed in the date aperture, then push the crown back to position [1]. It is necessary to correct the date after every month with less than 31 days.

• Time setting: At position [3], the second hand is stopped. To set the time for the Second Time Zone, turn the crown clockwise until the correct time is shown; both hour and minute hands of local and second time zone will move when the crown is turned clockwise. Then, to set the Local Time, turn the crown counter-clockwise. The second time zone hour hand will be locked at the set time, only the minute hand will move to synchronize the time setting of the local time zone.

11. World Time

MODELS: DG2022 , GM1020



See instructions for “Automatic Watch” above, with the following changes.

In position [2], turning the crown clockwise will advance the local time and the World Time disc. Turning the crown counter-clockwise will reverse only the local time; the World Time disc remains unchanged.

• Set the time of the second time zone: Turn the crown clockwise until the correct time is displayed at the top of the World Time disc. Then, turn the crown counter-clockwise until the correct local time is displayed.

• On the Engineer Master II Diver Worldtime, it is possible to rotate the City disc to set the city of your choice at 12 o’clock. Set the City disc to match the World Time disc: Use the crown at 2 o’clock to set the City disc to match the World Time disc. The World Time disc moves counter-clockwise, so the City disc should be adjusted to match. The City disc moves in units of 15 minutes, 4 clicks per hour. For example, if it is 3:15am in Paris, set the City disc one click counter-clockwise of 3.

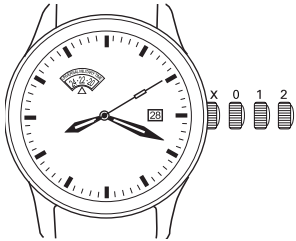
• Set the local time: In position [2], turn the crown clockwise or counter-clockwise.

• If the date changes while setting the World Time disc, please do not use the crown to manually correct the date for at least 12 hours. The pin is engaged and could be damaged.

• To ensure optimal water resistance, the crowns must be fully screwed down before diving.

12. 24-Hour Window (UTC or UMT Indication)

MODELS: GM1020, NM1092



The Trainmaster Cleveland Express Dual Time and Fireman Night Train share a 24-hour indicator at 11 o'clock. This indication is tied to the main time zone and thus shows 24-hour UTC or UMT time.

• Time setting: At position [1], the second hand is stopped. Turn the crown forward to set the local time, ensuring that the 24-hour window properly displays day or night.

The white or red-colored triangle below the 24-hour indicator is the BALL Date Warning System.

13. Date Warning System

MODELS: GM1020, NM1092

Beneath the 24-hour indicator of the Trainmaster Cleveland Express Dual Time and Fireman Night Train, the BALL Date Warning System helps the wearer to avoid damage to the movement.

Between the hours of 9pm and 3am, the date function of an automatic wristwatch is engaged and manually setting the date at these hours can damage the mechanism. The triangular window of the Date Warning System will turn red from 9 to 3 to visually warn the wearer.

14. Chronometer Certificate

A Chronometer is an extremely accurate watch. It takes its name from the Greek words chronos + metron meaning “to measure time”. A BALL chronometer is a highly accurate, mechanical watch whose precision has been tested and verified by The Swiss Official Chronometer Control (Contrôle Officiel Suisse des Chronomètres, or COSC, in French).

Before issuing the certificate, COSC conducts elaborate precision tests on each BALL movement using cameras and computers and analyzes the data. COSC performs seven different tests. Failure to meet the minimum standard in any one of the tests means that a movement is rejected. Here is a brief summary of the testing procedures:

※ *Test 1*
Mean Daily Rate: After 10 days of tests, the mean daily rate of the movement must be within the range of -4 to +6 seconds per day. COSC determines the mean daily rate by subtracting the time indicated by the movement 24 hours earlier from the time indicated on the day of observation.

※ *Test 2*
Mean Variation in Rates: COSC observes the movement rate in five different positions (two horizontal, three vertical) each day over 10 days for a total of 50 rates. The mean variation in rates can be no more than 2 seconds.

※ *Test 3*

Greatest Variation in Rates: The greatest of the five variations in rates in the five positions can be no more than 5 seconds per day.

※ *Test 4*

Horizontal and Vertical Difference: COSC subtracts the average of the rates in the vertical position (on the first and second days) from the average of the rates in the horizontal position (on the ninth and tenth days). The difference must be no more than -6 to +8 seconds.

※ *Test 5*

Greatest Deviation in Rates: The difference between the greatest daily rate and the mean daily test rate can be no more than 10 seconds per day.

※ *Test 6*

Rate Variation Due to Temperature: COSC tests the movement's rate at 8 degrees Celsius (46 degrees Fahrenheit) and at 38 degrees C (100 degrees F). It subtracts the cold temperature rate from the hot temperature rate and divides by 30. The variation must be no more than 0.6 seconds per day.

※ *Test 7*

Resumption of the rate: This is obtained by subtracting the average mean daily rate of the first two days of testing from the mean daily rate of the last test day. The resumption of rate can be no more than 5 seconds.

15. Power Reserve

MODELS: NM1056

The display at bottom is the power reserve indicator. It shows the remaining power reserve in the watch in hours. If the watch is not worn, or during periods of low activity, the hand of the power reserve indicator will wind down.

The Trainmaster Power Reserve features a power reserve indicator that displays the remaining power reserve on a hand. The indicator will turn counter-clockwise as the power diminishes. During manual winding or when the watch is worn, the reserve indicator will move clockwise.

On the Trainmaster Power Glow, the linear power reserve indicator will move slowly to the left, disappearing completely when the watch stops. During manual winding or when the watch is worn, the reserve indicator will move toward the right.

The natural movements of your arms wind the watch up automatically and the energy will be stored up as power reserve. Manual winding is only necessary if you stop wearing your watch for several days or it is stopped.

Remarks:
Do not overwind the watch. Manual winding should be stopped when the power reserve indicator reaches the end of the scale. Continued winding could damage the movement.

16. Moon Phase
MODELS: NM1082

The Engineer Master II Moon Phase (NM1082) is the first moon phase watch illuminated with the stunning ^{3}H micro gas tubes. The moon phase wheel is activated by a 59-tooth gear, which shows the changes of the Moon's phases as it goes through two of its 29.5-day cycles. The moon phase disc is easily set via Position [1] of the crown.

Set the Moon Phase display by turning to the nearest Full or New Moon, then moving forward by the appropriate number of days.

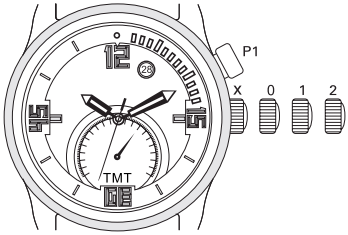
	2010 DATE	*2011* DATE	*2012* DATE	*2013* DATE
Jan	☾ 16 ● 31	☾ 5 ● 20	● 10 ☾ 24	☾ 13 ● 27
Feb	☾ 15	☾ 4 ● 19	● 8 ☾ 23	☾ 11 ● 26
Mar	● 1, 30 ☾ 17	☾ 6 ● 20	● 9 ☾ 24	☾ 13 ● 28
Apr	☾ 16 ● 29	☾ 5 ● 18	● 7 ☾ 23	☾ 12 ● 26
May	☾ 15 ● 28	☾ 5 ● 17	● 6 ☾ 22	☾ 11 ● 25
Jun	☾ 14 ● 27	☾ 3 ● 16	● 5 ☾ 21	☾ 10 ● 24
Jul	☾ 13 ● 26	☾ 3 ● 15	● 4 ☾ 21	☾ 10 ● 23
Aug	☾ 11 ● 25	☾ 1,30 ● 14	● 2 ☾ 19	☾ 8 ● 21
Sep	☾ 10 ● 24	● 13 ☾ 29	● 1, 30 ☾ 17	☾ 7 ● 20
Oct	☾ 9 ● 23	● 12 ☾ 28	☾ 17 ● 30	☾ 6 ● 19
Nov	☾ 7 ● 22	● 11 ☾ 26	☾ 15 ● 29	☾ 5 ● 18
Dec	☾ 7 ● 22	● 11 ☾ 26	☾ 14 ● 29	☾ 4 ● 18

☾ New moon ● Full moon

Kindly note that the Ball Moon Phase is only calibrated for the Northern Hemisphere.

17. TMT

MODELS: DT1016, DT1020, DT1026, NT1050



The TMT watches can measure temperature from negative 35°C to positive 45°C (-30 to 110°F) with the indicator at 6 o'clock. The temperature recorded by the TMT is precise and instantaneous but it records the temperature inside the watchcase, which is inevitably affected by the temperature of the wearer's wrist. To reveal the actual environmental temperature, the watch should be taken off for about 10 minutes until the inside of the watch reaches the ambient temperature. When worn over a wetsuit or parka, the TMT should immediately display ambient temperature without any distortion due to body heat.

The temperature scale in degrees Celsius [°C] can be easily converted into Fahrenheit scale following this simple formula: °F = °C x $^{9}/_{5}$ + 32. The temperature conversion scale can be found on the caseback of the TMT models.

18. Rotating Bezel

The Engineer Hydrocarbon series features a unidirectional rotating outer bezel incorporated with LumiNova for night reading. The bezel is painted with 60 minutes elapsed time notation. The 60 minutes bezel can be used for timing events by setting the zero dot at the current minute.

The bidirectional rotating outer bezel of the Engineer Hydrocarbon GMT models is painted with 24-hour GMT notation. To use the GMT bezel, simply turn the bezel until the local hour matches the red GMT hand.

The Engineer Master II Diver models feature another Ball breakthrough, the first inner divers' bezel incorporated with ^{3}H micro gas tubes. The inner bezel rotates to measure duration. To ensure optimal water resistance on certain models, the crown must then be screwed down before diving.

19. Patented Crown Protection System

A special crown protection system was designed for the Engineer Hydrocarbon series to guarantee its exceptional water resistance. A protective plate is placed around the crown, which ensures the crown must be screwed back to its original secured position after time adjustment.

To unlock the crown protector, depress the button and rotate the bar counter-clockwise. The crown can then be unscrewed for adjustment or winding.

After fully screwing down the crown, move the crown protector into place by pushing down firmly until it locks.

Caring for your BALL watch

Like a car engine, we recommend that you have your mechanical BALL watch checked, cleaned and lubricated by us or a BALL Authorized Service Center every three to five years. This regular maintenance will prevent movement wear due to the drying of lubricating oils.

Your BALL watch requires a certain amount of care. A few basic recommendations will help you to ensure its reliability and keep it looking new.

• Magnetic Fields: The BALL Engineer, Engineer Master & Engineer Hydrocarbon collections are all equipped with soft iron inner antimagnetic case for improved resistance. Nevertheless, please avoid placing your watch on refrigerators or loudspeakers as they generate powerful magnetic fields.

• Shocks: Although your BALL watch has been built to withstand shock according to the highest standard in the industry, extreme impact against this precision instrument should still be avoided. A strong impact on the winding crown or the crystal can impair the water resistance.

• Cleaning: Be sure to rinse your watch regularly with fresh water, especially after it has been in salt water. This will help preserve its appearance and running condition.

• Strap: Our straps are made of finest calf, crocodile or alligator leather and are protected against humidity. To prolong the life of your leather strap, please avoid contact with water and dampness to prevent discoloration and deformation. Should the strap be immersed in salt water, we suggest that you rinse it with fresh water to prevent further damage. Please also avoid contact with greasy substances and cosmetic products, as leather is permeable.

Optimum Safety

Man has always been exposed to natural radiation arising from the earth as well as from outer space. The radiation we receive from outer space is called cosmic radiation or cosmic rays. On average, our radiation exposure due to all natural sources amounts to about 2.4 mSv a year - though this figure can vary widely, depending on the geographical location. Even in homes and buildings, there are also radioactive elements in the air.

The wearer of an intact BALL watch is never exposed to any radiation. Even the hypothetical and unlikely accident entailing the simultaneous release of all tritium contained in ^{3}H gas tubes would present a very minor internal irradiation. In that case, the wearer is exposed to a dose 30,000 times lower than the one due to average background radiation as stated above. It is evident that it does not make sense to speak of a risk at all for such minor exposure.

Disposal and After-Sales Service

For environmental protection, we recommend you to send your BALL watch to your local service center or our Swiss factory for disposal. If there is a defect with one of the lights or a part containing a light source, the watch should be returned for repair either to our factory or to the designated service center.

BALL International Warranty

Built to exceed traditional Swiss watchmaking standards, your BALL watch is warranted by Ball Watch Company for a period of twenty-four months from the date of purchase under the terms and conditions of this warranty. You are cordially invited to register at our web site www.ballwatch.com during the initial 24-month period after purchase for free extended twelve months warranty to effectively cover your BALL watch by a total of thirty-six months warranty period. The international warranty covers material and manufacturing defects. The warranty will only be valid when the warranty card is dated, fully and correctly completed and stamped by a BALL Authorized Dealer.

During the warranty period and by presenting the valid warranty card, you are entitled to have any manufacturing defect repaired free of charge. In the event that repairs are unable to restore the normal conditions, Ball Watch Company guarantees its replacement by a BALL watch of identical or similar characteristics. The warranty for the replacement watch ends twenty-four months after the date of replacement of the replaced watch.

The international warranty does not extend to the bracelet or crystal nor does it cover any damage done to the watch and the movement by humidity entering the watch because of a handling error. The normal wear and tear and aging of the watch will not be covered under this warranty. We reserve the right to relinquish all responsibilities under this guarantee for repair if the watch is tampered with or damaged by unauthorized persons other than BALL Authorized Service Centers.

International After-Sales Service Centers

North America

U.S.A. BALL WATCH USA
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Tel: 8620-87552522

If you have any further inquiries on your BALL watch, please use our Enquiry Form in the Customer Service section at www.ballwatch.com or contact your local Distributor.