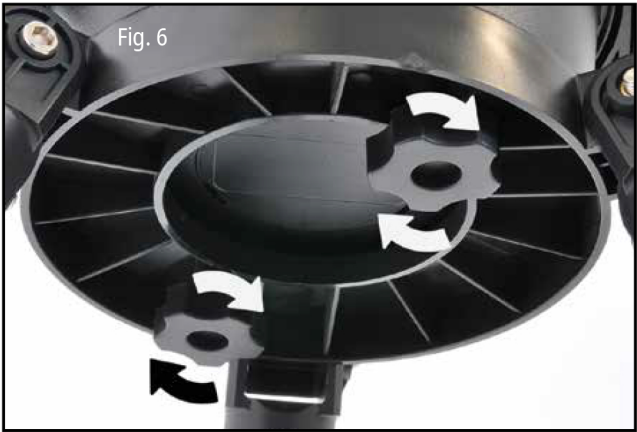
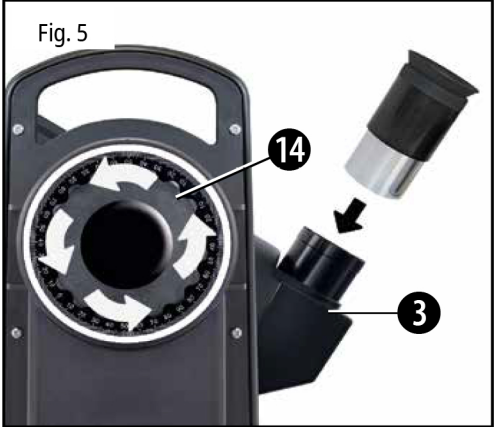
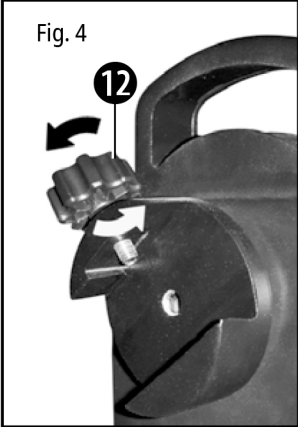
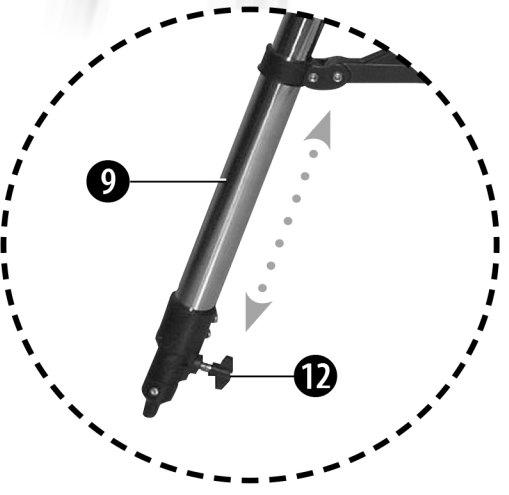
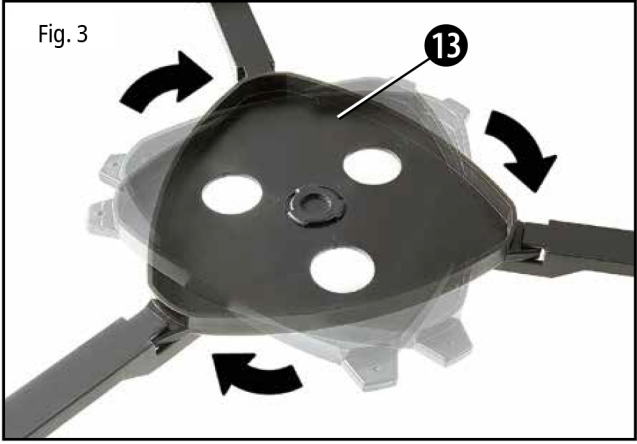
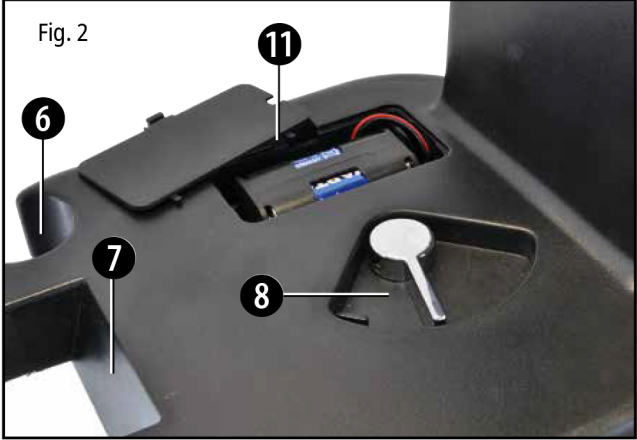


Space Explorer MC 90/1250 automatic Maksutov-Cassegrain

Art.-Nr. 9621805



Fig. 1



Further information



<http://www.bresser.de/download/9621805>

(EN) CAUTION:
 Never attempt to observe the sun with this telescope. Make sure children do not attempt to observe the sun with the telescope. Observing the sun directly, even for a short time, may cause blindness.
 Packing materials, like plastic bags and rubber bands, should be kept out of the reach of children.

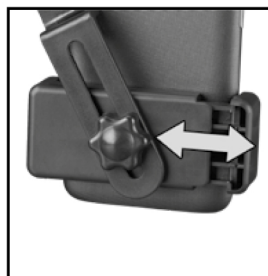
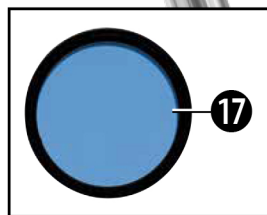
Fig. 7



Fig. 8



Fig. 9



About this Instruction Manual

Please read the safety instructions in this manual carefully. To avoid damage to the unit and the risk of injury, only use this product as described in the manual. Keep the instruction manual handy so that you can easily look up information on all the functions.



CAREFUL

You will find this symbol before every section of text that deals with the risk of minor to severe injuries resulting from improper use.



ATTENTION

You will find this symbol in front of every section of text which deals with the risk of damage to property or the environment.

Intended Use

This product is intended only for private use. It was developed for the magnified display of things in nature.

General Warning



RISK OF BLINDNESS

Never use this device to look directly at the sun or in the direct proximity of the sun. Doing so may result in a risk of blindness.



CHOKING HAZARD

Children should only use the device under adult supervision. Keep packaging material, like plastic bags and rubber bands, out of the reach of children, as they pose a choking hazard.



FIRE RISK

Do not place the device, particularly the lenses, in direct sunlight. The concentration of light could cause a fire.



RISK OF ELECTRIC SHOCK

This device contains electronic components which operate via a power source (power supply and/or batteries). Children should only use the device under adult supervision. Only use the device as described in the manual; otherwise, you run the risk of an electric shock.



RISK OF CHEMICAL BURN

Keep batteries out of the reach of children! Make sure you insert the batteries correctly. Empty or damaged batteries could cause burns if they come into contact with the skin. If necessary, wear adequate gloves for protection.



RISK OF FIRE/EXPLOSION

Do not expose the device to high temperatures. Use only the recommended batteries. Do not short-circuit the device or batteries, or throw them into a fire. Excessive heat or improper handling could trigger a short-circuit, a fire or an explosion.



ATTENTION

Do not disassemble the device. In the event of a defect, please contact your dealer. The dealer will contact the Service Centre and can send the device in to be repaired, if necessary.



Privacy Protection

This device is intended only for private use. Please heed the privacy of other people. Do not use the device to look into apartments, for example.

Parts overview (No. 1-8)

- ① Telescope tube
- ② Tube opening
- ③ Eyepiece connection
- ④ Focus wheel
- ⑤ Handbox
- ⑥ Eyepiece holder
- ⑦ Handbox tray
- ⑧ Azimuthal lock
- ⑨ Tripod
- ⑩ LED viewfinder (only with Art.No. 90-62100)
- ⑪ Battery compartment
- ⑫ Locking screw
- ⑬ Accessory tray
- ⑭ Altitude locking knob
- ⑮ Dust cover
- ⑯ Eyepieces
- ⑰ Moon filter
- ⑱ Compass
- ⑲ Star map

Handbox (No. 9)

- ① Red light source
- ② Handbox display
- ③ Plus/minus key
- ④ Illumination
- ⑤ Centre key
- ⑥ Arrow keys
- ⑦ Number pad
- ⑧ Mini-USB port¹
- ⑨ RJ-45 port¹
- ⑩ RJ-22 port¹

¹NOTE:

The ports of the handbox (8, 9 and 10) are prepared for future developments, but are not active at the moment. Currently there are no additional accessories (e.g. serial cable etc) available. Information about new developments for this product can be found on our website under www.bresser.de/download/automatic_telescopes

Software Download:

www.bresser.de/download/Stellarium

Part I – Construction

1. General/Location

Before you begin assembly, choose a suitable location for your telescope. It is best to build the telescope in a place where you have a clear view of the skies, a stable footing and sufficient space around you.

Before beginning assembly, remove all the parts from the packaging, and, using the diagram, check to make sure no parts are missing.

2. Tripod

Take the tripod (9) out of the box. Carefully open the legs and place the tripod on a level surface place and lock the accessory tray (13) on the centre knob and rotate until it snaps in place (No. 3).

Note: Please do not forget to remove the accessory tray before collapsing the tripod.

3. Telescope

Loosen the screw (12) in the dovetail mount so that it is completely retracted (No. 4). Place the telescope with the dovetail in the mount and tighten the screw. Make sure that the National Geographic logo is upright.

4. Altitude knob

Loosen the vertical knob by rotating it anticlockwise, align the optical telescope tube (1) horizontally and retighten the knob (No. 5).

5. Mount

Place the mount base's mounting holes on the tripod's mounting screws and tighten them (No. 6).

6. Eyepiece

Remove one eyepiece from its eyepiece holder (6) and slide it into the eyepiece connection (3). Tighten the holding screws (No. 5). Start with the lowest magnification eyepiece, which has the highest focal length printed on it (e.g. 20 mm or 25 mm, depending on your model) to locate objects and find the correct focus. If you have the object you want to view centred in the field of view, switch to a higher magnification by using an eyepiece with shorter focal length. After changing the eyepiece, it might be necessary to adjust the focus again (see section 8).

7. Dust cover

Remove the dust cover (15) that protects the objective lens of the optical tube opening (2).

8. Focus wheel

To get objects into focus, your telescope is equipped with a precise focus control. When you use the telescope for the first time, you might need to turn the focus wheel (4) multiple times to achieve a focused image. To try it out, pick a landmark or a building far away in daylight or bright twilight, and turn the focus wheel until the object comes into focus. Remember, objects to be observed cannot be closer than 20 metres away.

9. LED viewfinder (only included with 90-62100)

The telescope with Art. No. 90-62100 is equipped with a LED viewfinder (10). The LED viewfinder projects a red dot on the visor to help you point at objects. For the first use, remove the plastic cover on the battery so the LED can be switched on. To use the viewfinder, you need to align the finder to the telescope optic. To achieve this, point the telescope at a landmark or building that is a few hundred metres away and centre this object in the field of view while using an eyepiece with a low magnification (e.g. 20 mm or 25 mm). Switch on the LED viewfinder and adjust it using the alignment screws of the viewfinder.

Part II – Handbox

1. Batteries

Remove the cover of the battery compartment (11), located on the top side of the mount's base, and insert the batteries in the battery holder (No. 2). Use 6 AA batteries and make sure the polarities are aligned correctly. Place the holder into the compartment and cover it. Do not use rechargeable batteries.

2. Handbox

Ensure that the on/off switch is in the off position (No. 8). Remove the handbox from the handbox tray (7), and plug one end of the cable into the port labelled with "HBX" and the other one into the RJ-45 port of the handbox. Flip the switch to the on position. The handbox display should light up, accompanied by a sound.

3. Setup

Time and Date

After turning on the handbox, you will be prompted to enter the date and time. Do so by navigating with the arrow keys and entering the numbers with the number pad (7) on the handbox. When done, press the centre key (5), located between the arrow keys.

Daylight saving time

If the daylight saving time is in effect, select status:on. If daylight saving time is not in effect, select status:off.

Location

When asked for your location, you can either choose a city near you by selecting the 'Country & City' option or enter your GPS coordinates by selecting 'Custom Site'.

a) Country & City

Select the country where you are by using the up and down arrow keys. Then select the city by using the left and right arrow keys. When done, use the centre key (5) to select the location.

b) Custom Site

Enter the details of your location as follows:

Name: Enter a custom name for your location.

Lon: Enter the longitudinal coordinate of your location.

Lat: Enter the latitudinal coordinate of your location.

Zone: Enter the time zone of your location.

Example:

Name:

Berlin ; Lon: E013° 25` ;

Lat: N52° 30` ; Zone: E01

Time zone east of Greenwich:

E01-E12

Time zone west of Greenwich:

W01-W12

Greenwich time zone (GMT):

E00 oder W00

OTA (Optical Tube Assembly) Zero

Here you will be asked to provide the orientation of the telescope.

In the 'Azi.' field, enter '000'.

In the 'Alt.' field, enter '00'.

Open the Altitude and Azimuthal locking knobs. Adjust the telescope so that the tube opening (2) is pointing directly north and is level. It is recommended that you use the included compass (18) and bubble level to make sure the device is positioned accurately. You can put the compass into the eyepiece connection (3). Then retighten the locking knobs.

STANDARD TIME ZONES OF THE WORLD



4. Alignment

In order to use your telescope's Go To mode, you must align the telescope properly so it knows where it is pointing when it is turned on. There are three ways to align your telescope: one-, two- and three-star alignment.

Step 1: To start the alignment, press the centre key (5) on the handbox and select the first menu option, 'Telescope Align'. There you will be able to choose between one-, two- and three-star alignment.

The more stars you use for the alignment the higher the slewing precision of your telescope will be.

One-Star Alignment:

Step 2: After you select this option, you will be prompted to select a target star. The software will select a star that is very visible in the night sky. If you happen to know of a star you can see with the naked eye, you can choose it by pressing the up and down arrow keys and then selecting it with the centre key (5). In most cases, you will want to select the first option presented to you. Do so by pressing the centre key (5).

Step 3: The telescope will now slew to that star and will prompt you to centre it in the field of view, which you can do by using the arrow keys. The star you're focusing on is the brightest star in the region your telescope is pointing at. When the star is centred, confirm the position with the centre key (5). The telescope is now aligned.

Two- and Three-Star Alignment:

The procedure is similar to one-star alignment. The only difference is that you'll have to repeat steps 2 and 3 twice or thrice depending on the type of alignment you've chosen.

Note: If you have aligned the telescope, don't move it manually. Use the arrow keys on the handbox to make adjustments. If you do move it manually or change the tripod orientation, the telescope has to be realigned.

5. Further Adjustment:

Target Sync:

With this method, you can further improve the alignment of the telescope. After slewing to a star target you know, you can centre the object precisely in the field of view. Press the centre key (5) and select 'Telescope Align', then 'Target Sync'. The telescope will align to that target and have more precise positioning for further targets you want to observe.

Backlash Correction:

You can improve the precision of the telescope by training the backlash correction of the axis. This must be done separately for each axis and is not necessary for most cases.

Simply go to the main menu by pressing the centre key (5) and select 'Telescope Align' and then 'RA Bklash Corr.' to adjust the right ascension axis (horizontal axis) or 'DEC Bklash Corr.' to adjust the declination axis (vertical axis). Then follow the on-screen instructions.

Part III – Menus

Initial Start:

- Welcome screen
- Date and Time
- Daylight saving
 - Status: off
 - Status: on
- Custom Site
 - Name:
 - Lon:
 - Lat:
 - Zone:
- Country & City
 - Country: up and down
 - City: left and right
- OTA Zero

Main Menu Overview:

- **Telescope Align**
 - One Star Align Aligns the telescope with a single star
 - Two Star Align Aligns the telescope with two stars
 - Three Star Align Aligns the telescope with three stars
 - Target Sync Further improves the alignment of the telescope
 - RA Bklash Corr. Calibrate RA axis backlash
 - DEC Bklash Corr. Calibrate DEC axis backlash

• Navigation

- Solar System Object catalogue of the solar system
- Constellation Catalogue with the stellar constellations
- Famous Star Famous star catalogue
- Messier Catal. Catalogue with bright deep-sky objects
- NGC Catalog. Extensive catalogue with broad variety
- IC Catalogue Catalogue with faint objects
- Sh2 Catalog. Catalogue with faint objects
- Bright Star Cat Catalogue with bright stars
- SAO Star Catal. Extensive star catalogue
- Customer Objects Allows you to store your own objects
- Input RA and DEC Insert a custom point in the sky
- Custom Land Goal Insert a custom land target

• Utilities

- Current Objects Currently visible objects
- Object Rise/Set Rising and setting time of an object
- Curr. Lunar Phase The current lunar phase
- Timer Timer function
- Alarm Set up an alarm
- Eyepiece FOV Field of view of the eyepiece
- Eyepiece Magn. Magnification of the eyepiece
- Display Illumin. Display brightness
- Parkposition Slew to park position

• Setup

- Time and Date Enter time and date
- Daylight Saving Enable/disable daylight saving
- Site Setting Set the current location
 - Country & City Set the current location according to a city
 - Custom Site Set the current location by using GPS coordinates
- Sky/Land Switch between sky and land targets
 - Sky Target Setting for sky observation
 - Land Target Setting for land target observation
- AZ / EQ Switch between Azimuthal and equatorial mounting
- Alt Telescope Alt./AZ mount type
- Equ Telescope EQ mount type
- Telescope Mount Configure telescope mount settings
- Tracking Rate Set the tracking rate
 - Star Speed
 - Solar Speed
 - Moon Speed
 - Customize Speed
- Language Change the language
- Telescope Model Reset to factory settings
- Reset

Part IV – Observation

After aligning the telescope, the motors in the mount will begin to move the telescope so that the Earth's rotation is compensated for and the objects stay in the field of view of the telescope.

Note: If you have aligned the telescope, don't move it manually. Use the arrow keys on the handbox to make adjustments. If you do move it manually or change the tripod position, the telescope has to be realigned.

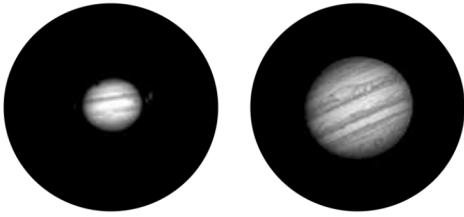
Once you have aligned the telescope, you can slew to every object in the night sky. This is done by pressing the **centre key (5)** on the handbox and selecting the '**Navigation**' option from the menu.

Select the object catalogue you prefer from the menu by using the arrow keys. Press the centre key (5) to confirm your selection.

When you select an object catalogue, the first object of the catalogue will be displayed. You can change the currently displayed object by pressing the up and down arrow keys.

Select the object you want to view with the telescope by pressing the centre key (5). The telescope will then slew to that position.

Example: Let's observe Jupiter.



Jupiter is visible in different parts of the world at different times depending on location, time of year and local conditions.

If it is visible from your location and the telescope is aligned, you can navigate to Jupiter by following these steps. Press the centre key (5) on your handbox and select the 'Navigation' option. Move the selection bar with the arrow keys, then press the centre key (5) for confirmation.

Next, select the 'Solar System' menu option and scroll with the arrow keys to find Jupiter. Select **Jupiter** by pressing the centre key (5).

Once you select Jupiter, your telescope will automatically slew towards Jupiter. When the telescope reaches Jupiter's position, a loud beeping noise will let you know that the telescope is done moving. You may then begin your observation.

Formula for calculating magnification:
 Focal length (Telescope) ÷ Focal length (Eyepiece) = Magnification

Examples:

350 mm	÷	20 mm	=	17.5X
350 mm	÷	10 mm	=	35X
1250 mm	÷	25 mm	=	50X
1250 mm	÷	12.5 mm	=	100X

Possible observation targets

The following section details several interesting and easy-to-find celestial objects you may want to observe through your telescope.

The moon

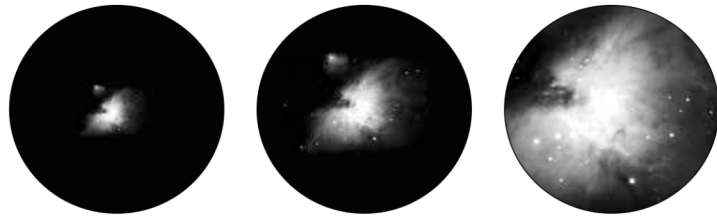
The moon is Earth's only natural satellite.

Diameter: 3,476 km
 Distance: 384,400 km from Earth (average)



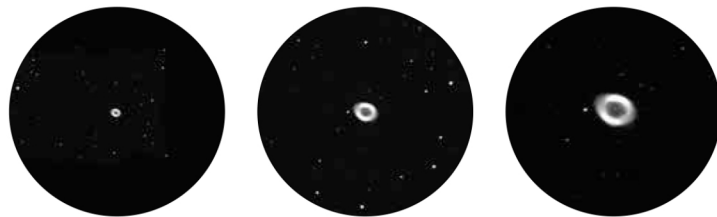
The moon has been known to humans since prehistoric times. It is the second brightest object in the sky, after the sun. Because the moon circles the Earth once per month, the angle between the Earth, the moon and the sun is constantly changing; one sees this change in the phases of the moon. The time between two consecutive new moon phases is about 29.5 days (709 hours).

Constellation Orion: The Orion Nebula (M 42)
 Right Ascension: 05^h 35^m (hours : minutes)
 Declination: -05° 22' (Degrees : minutes)
 Distance: 1,344 light years from Earth



Though it is more than 1,344 light years from Earth, the Orion Nebula (M 42) is the brightest diffuse nebula in the sky. It is visible even with the naked eye and a worthwhile object for telescopes of all types and sizes. The nebula consists of a gigantic cloud of hydrogen gas with a diameter of hundreds of light years.

Constellation Lyra: The Ring Nebula (M 57)
 Right Ascension: 18^h 53^m (hours : minutes)
 Declination: +33° 02' (Degrees : minutes)
 Distance: 2,412 light years from Earth



The famous Ring Nebula (M57) in the Lyra constellation is often viewed as the prototype of a planetary nebula. It is one of the magnificent features of the Northern Hemisphere's summer sky. Recent studies have shown that it is probably comprised of a ring (torus) of brightly shining material that surrounds the central star (only visible with larger telescopes), and not a gas structure in the form of a sphere or an ellipse. If you were to look at the Ring Nebula from the side, it would look like the Dumbbell Nebula (M 27). When viewed from Earth, we are looking directly at the pole of the nebula.

**Constellation Vulpecula (Little Fox):
 The Dumbbell Nebula (M 27)**
 Right Ascension: 19^h 59^m (hours : minutes)
 Declination: +22° 43' (Degrees : minutes)
 Distance: 1,360 light years from Earth



The Dumbbell Nebula (M 27) was the first planetary nebula ever discovered. On 12 July 1764, Charles Messier discovered this new and fascinating class of objects. We see this object almost directly from its equatorial plane. If we could see the Dumbbell Nebula from one of its poles, we would probably see the shape of a ring, something very similar to what we know as the Ring Nebula (M 57). In reasonably good weather, we can see this object well, even with low magnification.



Notes on cleaning

Before cleaning the device, disconnect it from the power supply by removing the plug or batteries.

Clean the eyepieces and lenses only with a soft, lint-free cloth, like a microfibre cloth. Do not apply excess pressure to the cloth to avoid scratching the lenses.

Protect the device from dust and moisture. Store it in the supplied bag or transportation packaging. The batteries should be removed from the unit if it has not been used for a long time.



EC Declaration of Conformity

Bresser GmbH has issued a "Declaration of Conformity" in accordance with applicable guidelines and corresponding standards. The full text of the EU declaration of conformity is available at the following internet address:
www.bresser.de/download/9062000/CE/9062000_CE.pdf
www.bresser.de/download/9062100/CE/9062100_CE.pdf



UKCA Declaration of Conformity


Bresser GmbH has issued a „Declaration of Conformity“ in accordance with applicable guidelines and corresponding standards. The full text of the UKCA declaration of conformity is available at the following internet address:
www.bresser.de/download/9062000/UKCA/9062000_UKCA.pdf
www.bresser.de/download/9062100/UKCA/9062100_UKCA.pdf


Bresser UK Ltd. • Suite 3G, Eden House, Enterprise Way, Edenbridge,
Kent TN8 6HF, United Kingdom



DISPOSAL

Dispose of the packaging materials properly, according to their type, such as paper or cardboard. Contact your local waste-disposal service or environmental authority for information on the proper disposal.

 Do not dispose of electronic devices in the household garbage!
As per Directive 2002/96/EC of the European Parliament on waste electrical and electronic equipment and its adaptation into German law, used electronic devices must be collected separately and recycled in an environmentally friendly manner.
Empty, old batteries must be disposed of at battery collection points by the consumer. You can find out more information about the disposal of devices or batteries produced after 6 January 2006 from your local waste-disposal service or environmental authority.

 In accordance with the regulations concerning batteries and rechargeable batteries, disposing of them in the normal household waste is explicitly forbidden. Please make sure to dispose of your used batteries as required by law – at a local collection point or in the retail market. Disposal in domestic waste violates the Battery Directive.

Batteries that contain toxins are marked with a sign and a chemical symbol.



¹ battery contains cadmium

² battery contains mercury

³ battery contains lead

Warranty

The regular warranty period is 2 years and begins on the day of purchase. To benefit from an extended voluntary warranty period as stated on the gift box, registration on our website is required.

You can consult the full warranty terms as well as information on extending the warranty period and details of our services at www.bresser.de/warranty_terms.

Service

DE AT CH BE

Bei Fragen zum Produkt und eventuellen Reklamationen nehmen Sie bitte zunächst mit dem Service-Center Kontakt auf, vorzugsweise per E-Mail.

E-Mail: service@bresser.de
Telefon*: +49 28 72 80 74 210

BRESSER GmbH
Kundenservice
Gutenbergstr. 2
46414 Rhede
Deutschland

*Lokale Rufnummer in Deutschland (Die Höhe der Gebühren je Telefonat ist abhängig vom Tarif Ihres Telefonanbieters); Anrufe aus dem Ausland sind mit höheren Kosten verbunden.

GB IE

Please contact the service centre first for any questions regarding the product or claims, preferably by e-mail.

E-Mail: service@bresseruk.com
Telephone*: +44 1342 837 098

BRESSER UK Ltd.
Suite 3G, Eden House
Enterprise Way
Edenbridge, Kent TN8 6HF
United Kingdom

*Number charged at local rates in the UK (the amount you will be charged per phone call will depend on the tariff of your phone provider); calls from abroad will involve higher costs.

FR BE

Si vous avez des questions concernant ce produit ou en cas de réclamations, veuillez prendre contact avec notre centre de services (de préférence via e-mail).

E-Mail: sav@bresser.fr
Téléphone*: 00 800 6343 7000

BRESSER France SARL
Pôle d'Activités de Nicopolis
314 Avenue des Chênes Verts
83170 Brignoles
France

*Prix d'un appel local depuis la France ou Belgique

NL BE

Als u met betrekking tot het product vragen of eventuele klachten heeft kunt u contact opnemen met het service centrum (bij voorkeur per e-mail).

E-Mail: info@bresserbenelux.nl
Telefoon*: +31 528 23 24 76

BRESSER Benelux
Smirnoffstraat 8
7903 AX Hoogeveen
The Netherlands

*Het telefoonnummer wordt in het Nederland tegen lokaal tarief in rekening gebracht. Het bedrag dat u per gesprek in rekening gebracht zal worden, is afhankelijk van het tarief van uw telefoon provider; gesprekken vanuit het buitenland zullen hogere kosten met zich meebrengen.

ES IT PT

Si desea formular alguna pregunta sobre el producto o alguna eventual reclamación, le rogamos que se ponga en contacto con el centro de servicio técnico (de preferencia por e-mail).

E-Mail: servicio.iberia@bresser-iberia.es
Teléfono*: +34 91 67972 69

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P.I. Ventorro del Cano
28925 Alcorcón Madrid
España

*Número local de España (el importe de cada llamada telefónica dependen de las tarifas de los distribuidores); Las llamadas desde el extranjero están ligadas a costes suplementarios..