

# COLEMAN® TELESCOPE

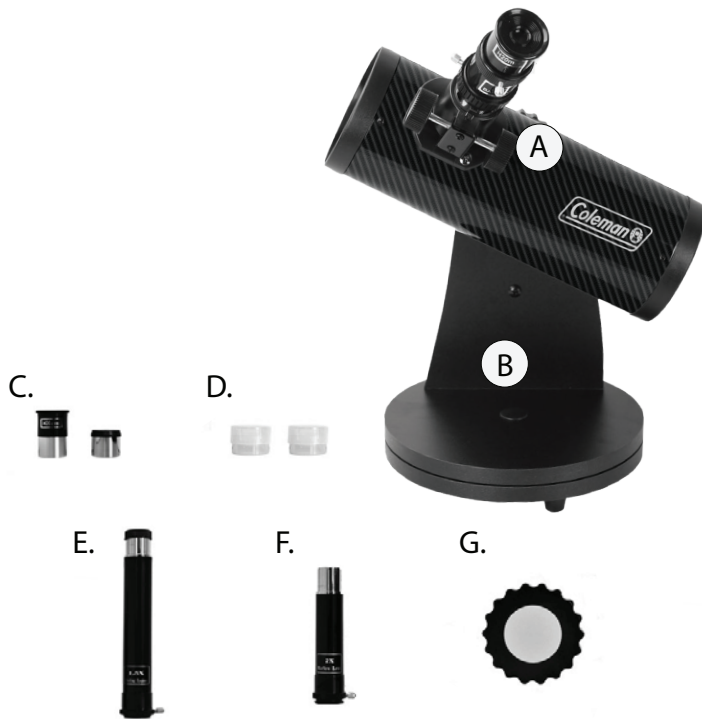
**CDB76CF**



## INSTRUCTIONS & OWNER'S MANUAL

*Please retain the packaging and instructions for further reference, as they contain important information.*

# PARTS LIST FOR CDB76CF Telescope:



- A. Telescope Optical Tube
- B. Dobsonian 360° Rotatable Base
- C. Eyepieces (H6, H20)
- D. Eyepiece Cases (2)
- E. 1.5x Erecting Lens
- F. 2x Barlow
- G. Tension Control Knob
- H. Astrowatch Software CD (not shown)
- I. Moon filter (not shown)

Please retain the packaging and instructions for further reference, as they contain important information.

**WARNING! DO NOT VIEW SUN THROUGH TELESCOPE!  
SERIOUS INJURY TO THE EYES MAY OCCUR**

***For use by an adult or under the supervision of an adult.***

In an effort to continually improve and update our products, specifications, colors, packaging, and/or contents of this manual may change without notice.



**WARNING!**  
**CHOKING HAZARD**  
Small parts. Not suitable for children under 3 years.



## INTRODUCTION:

***Congratulations*** on your purchase of the precision-crafted CDB76CF COLEMAN Dobsonian mount reflector telescope. With the proper care and handling of your telescope, you will enjoy years of viewing pleasure.

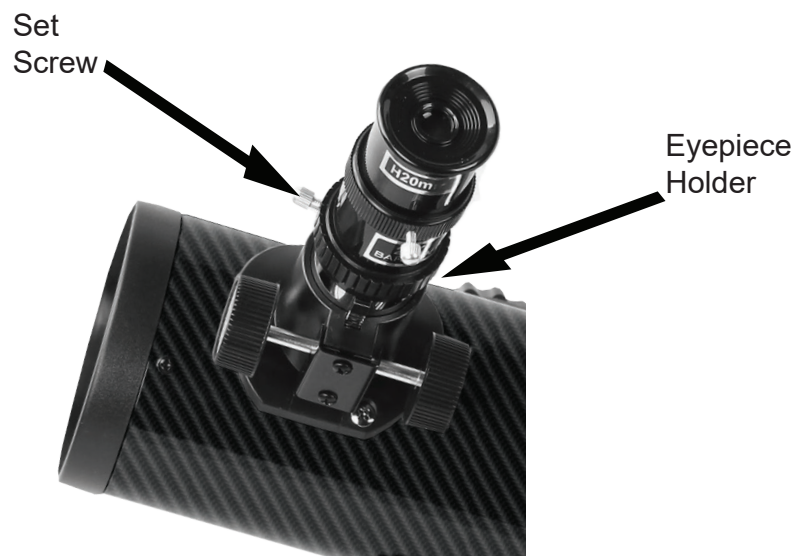
As an astronomical device, the CDB76CF telescope has been designed for both a beginner and advanced star gazer. It provides views of the moon and planets, as well as dozens of galaxies, star clusters, and nebulae.

As a terrestrial (land) telescope, the CDB76CF brings the world's natural wonders closer. It delivers superb scenic views and allows for observation of animals and landscapes at a distance. To obtain the best performance from your telescope, please carefully read this manual.

## ASSEMBLY:

Your telescope requires only minor assembly.

- 1) Carefully remove the telescope and accessories from the cardboard cartons and lay them on a table, floor or other flat surface in order to take an inventory of all the pieces. Keep your box for storage or in case you ever need to ship your telescope.
- 2) Your telescope has arrived with the telescope tube already attached to the Dobsonian base. Simply insert the H20mm or H6mm eyepiece into the eyepiece holder (See Fig. 1). Tighten the small set screw to hold the eyepiece securely in place. Do not over-tighten the screw.



(FIG. 1)

3) To position the telescope to the desired angle, loosen the Tension Control Knob and move the telescope tube up or down and/or swivel the telescope around the Dobsonian base. See (FIG. 2). When loosening or tightening the Tension Control Knob, add just enough friction to allow the tube to move easily when nudged, but to stay in position when not. It may be necessary to re-adjust the Tension Control Knob when accessories are added to, or removed from, the telescope tube.



FIG. 2)

4) A 2X Barlow lens is supplied to double the basic magnifying power provided by any of the eyepieces. In viewing situations where very high magnifying powers are desired, insert the 2X Barlow lens between the eyepiece and the focusing tube (See Fig. 3).



(FIG. 3)

## A. COMPLETE THE FOLLOWING SETTINGS IN DAYLIGHT:

- 1) Insert the H20mm eyepiece into the eyepiece holder. Position the telescope as described in number 3) above. Look at an easily recognizable, stationary object that is at least 100 feet away. Slightly loosen the Tension Control Knob to adjust the altitude of the telescope and/or rotate the telescope around its base to adjust the horizontal position. Turn the telescope on both its horizontal and vertical axis until the object is in the center of the field of view. Then bring the image into focus.
- 2) Firmly re-tighten the Tension Control Knob so that the telescope is locked in position.
- 3) Look through the eyepiece. If the object is not visible or centered in the telescope, simply loosen the Tension Control Knob and re-position the telescope until the object is properly centered.
- 4) All screws and knobs should be completely tightened as soon as the view through the telescope tube is aligned.
- 5) You may need to repeat this procedure to ensure a perfect alignment.

## B. ABOUT MAGNIFICATION:

The magnification power of a telescope indicates how much an image is enlarged or how big and close it appears to the viewer. The focal length of the eyepiece, combined with the focal length of the telescope, determines the magnification (power). To calculate the power of your telescope with any particular eyepiece, simply divide the focal length of the telescope (300mm) by the focal length of the eyepiece (indicated in “mm” on the eyepiece collar).

Example: 
$$\frac{300\text{mm (Focal Length of Telescope)}}{6\text{mm (Focal Length of Eyepiece)}} = 50\text{x Magnification (power)}$$

The 2X Barlow lens and interchangeable eyepieces provide the following magnification values:

<u>EYEPIECE</u>	<u>POWER</u>	<u>POWER WITH 1.5X ERECTING LENS</u>	<u>POWER WITH 2X BARLOW LENS</u>
20mm	15x	22.5x	30x
6mm	50x	75x	100x

When you are looking at astronomical objects, you are looking through a column of air that reaches to the edge of space, and that column of air seldom stays still. Similarly, when viewing over land (terrestrial viewing), you are often looking through heat waves radiating from the ground, homes, buildings, etc. Your telescope may be able to provide very high magnifications, but you often end up magnifying all the turbulence between the telescope and the object you wish to view. The level of magnification required depends on the object being observed.

Optimal performance is obtained if the magnification is typically not more than about 30x for every 10mm of objective lens diameter. Another good rule of thumb is that the usable magnification of a telescope is about 3x per mm of the aperture (for the CDB76CF, the aperture is 76mm) under good conditions. Thus, magnification of around 225x or less is ideal for a telescope with a 76mm diameter objective mirror (aperture) and is best for observing most celestial objects. A lower magnification power and a wider field of view are advisable for observing galaxies and nebulae. The highest magnification power should be used for highly detailed observations of the moon, Jupiter, Saturn, or any object that is quite bright.

The highest magnification power of the Barlow lens with a 6mm eyepiece combination should only be used for large or bright objects such as the moon and the brightest planets.

### C. ABOUT YOUR NEWTONIAN REFLECTOR TELESCOPE:

Your telescope is a Newtonian reflector. Light enters the open end of the tube and travels down to the opposite end where it strikes a specially curved mirror, known as the primary mirror. The focused image is reflected back up the tube to a small, flat mirror near the open tube end, called the secondary mirror. This secondary mirror reflects the focused image out through the side of the telescope tube to the eyepiece holder where it is enlarged for viewing through the eyepiece.

The primary mirror is a precision ground and polished component that is precisely positioned at one end of the optical tube. It is pre-aligned for maximum performance at the factory and should not need any adjustment. **Therefore, never adjust or remove any of the screws located at this end of the optical tube. Doing so will void your warranty and affect or damage the performance of your telescope**



(Fig. 4)

### D. USING YOUR TELESCOPE:

- 1) It is recommended to use your telescope outside or at times through open windows. Your view can be distorted by reflections in the glass of a closed window or at times by air currents of differing temperatures passing through an open window.
- 2) Let your telescope adjust to the outside temperature. Your telescope will perform much better if the temperature of the mirrors, eyepiece lenses, and the air inside the tube are the same as the outside temperature. It may take up to 30 minutes to equalize the temperatures when the difference in temperatures is extreme.

- 3) Find a location far from glaring light. If you live in an urban area, your viewing will probably improve the farther you move away from the city's lights. The sky glow of a town or city can dramatically reduce the telescope's performance and viewing capabilities.
- 4) Remove the dust cap from the end of the telescope nearest the eyepiece holder. (See Fig. 4 and 5). The open end of the optical tube is pointed toward the subject you wish to observe.



(Fig. 4)



(Fig. 5)

- 5) Begin your viewing session by using only the 20mm eyepiece. It will give you the widest angle and the brightest, sharpest views.
- 6) Focusing the telescope is easy. Slowly turn the focusing wheel one way or the other until the image in the eyepiece is sharp (See Fig. 6). The image usually has to be re-focused over time because of variations caused by temperature changes, flexures, etc. This often occurs with short focal ratio telescopes, particularly when they have not yet reached outside temperature. Re-focusing is almost always necessary when you change an eyepiece or add or remove a Barlow lens.



(Fig. 6)

When possible, avoid sudden temperature changes, as the moisture in the air will condense on the mirrors and eyepiece lenses. Should this occur after bringing your telescope indoors, remove the dust caps and allow the moisture to evaporate naturally. Point the telescope downward to minimize the collection of airborne dust. Once all of the moisture has evaporated, replace the dust caps.

### **E. A NOTE ON TERRESTRIAL VIEWING:**

You may notice that when you observe a terrestrial subject on land or water it appears upside down. To correct this, a 1.5x Image Erecting Lens is included with your telescope. This accessory is inserted in the eyepiece holder of the telescope between the eyepiece and the telescope. With the image erector, objects will appear in their proper orientation for terrestrial and land observation.

**NOTE: Use of the 2X Barlow lens with the 1.5x erecting lens accessory is not recommended.**

The image erecting lens provides 1.5x magnification, which means that the 20mm eyepiece will magnify objects from 15x to 22.5x when used in conjunction with the image erecting lens.

### **F. CARE AND CLEANING OF THE OPTICS:**

The optical components of a telescope will get dirty over time. Dirt or dust on a lens should be removed with the utmost care. A considerable amount of dirt or dust would have to accumulate on the optical surface before your view would be compromised.

- 1) Keeping dust caps on during storage and transport will reduce dust collection.
- 2) Condensation may collect on the optical surfaces when the telescope is not in use. Remove the dust caps and allow the moisture to evaporate naturally. Point the telescope downward to minimize the accumulation of airborne dust.
- 3) Once all moisture has evaporated, replace the dust caps.
- 4) Filtered, compressed air may be used to remove surface dust from lenses and mirrors. Remove the dust cap. Once removed, point the can away from the lens and gently expel some air and any condensation or dust that has accumulated on the discharge tube. Spray the lens or mirror with short bursts of air to carefully remove the dust particles. Clean eyepieces and optical surfaces with special lens paper only. Eyepieces should be handled with care. Avoid touching optical surfaces.

***DO NOT HOLD THE TRIGGER OF THE COMPRESSED AIR CAN FOR EXTENDED PERIODS BECAUSE PROPELLANT FROM THE CAN MIGHT ESCAPE AND DAMAGE THE OPTICAL SURFACES.***



If, after several attempts, you cannot remove the particles, take the telescope to an optical professional for cleaning.

If you keep the dust caps on your telescope when it is not in use and avoid handling the lenses or mirrors, only minimal optical maintenance of your telescope should be required. Extensive cleaning is usually only necessary every few years.

## **G. WHAT TO LOOK FOR IN THE NIGHT SKY:**

There is a whole universe of objects you could view at night, so where do you start? We recommend starting with the most prominent objects first.

### **• The Moon**

The moon is the easiest target to find at night. When the moon is in full position, it bathes the night with a silvery light that washes the sky of all but the brightest objects. The best time to view the moon is not when it is full, but rather when it is less than half full. The dividing line between dark and light on the moon, called the terminator, shows the best detail in the craters and mountains.

The included Moon Filter will thread directly onto the bottom of most eyepieces. Think of a Moon Filter like sunglasses for your telescope. Moon filters cut down glare and bring out more surface detail and provide better contrast.

### **• The Planets**

The planets, our solar system companions, range in size and substance from moon-size rocky bodies to giant gas balls, which could hold Earth 1,000 times over. To find the planets, you will need information about their times of visibility. The included Astronomical Software CD or an astronomy magazine will give you the locations of the planets as they change position from month to month. The Internet is also an excellent source of information, offering star charts, maps, and more!

The popular and more familiar constellations often provide the easiest landmarks to help find the planet's locations and paths of orbit. Most people have looked up at the sky at night and seen some of the planets without even realizing it. A planet looks like a bright star but does not twinkle like a star does; it looks like a tiny ball. Venus, Mars, Jupiter, and Saturn are the easiest planets to view. Mercury is dimmer, usually below the horizon, and more challenging to find.

Each of the planets provides interesting views. Venus is covered with clouds so all that is visible is an extremely bright light, the brightest next to the moon. However, Venus, like the moon, goes through phases. As it travels around the sun, different areas of its surface are illuminated, producing crescent shapes of varying sizes. Mars is the red planet. When it is above the horizon, it is noticeably red and stands out like a beacon in the night sky. The apparent brightness of Mars varies as the planet orbits around the sun and throughout its period of visibility, it will look brighter or dimmer depending on its distance from Earth.

Jupiter is the largest planet in our solar system and the second brightest next to Venus. Jupiter has many moons, four of which are often visible through your telescope when viewing conditions permit. As you watch them throughout the evening, you will see that they change position relative to each other and to Jupiter. It is possible with careful planning to actually see one of the moons disappear either in front of or behind Jupiter as it orbits around the planet. Another great feature of Jupiter is its cloud belt. Jupiter is alive with weather activity and its clouds have formed over time into belts visible through telescopes in the right atmospheric conditions.

Saturn, the second largest planet, is not as bright as Jupiter and so its moons are not as visible through small telescopes. The large rings that encircle Saturn are spectacular to observe, however. The planet and its rings appear pale yellow. The major division in the rings, the Cassini division, is possible to see if you keep the telescope firmly in position.

Uranus and Neptune are the last of the solar system's gas giants. They do not provide as spectacular a sight as Jupiter or Saturn, but are nonetheless rewarding to see.

*Beyond our solar system there are many more objects to be found. Galaxies, nebulae, and star clusters abound!*



## H. FREQUENTLY ASKED QUESTIONS:

### 1) How far can I see?

If you stand outside and look up at the night sky on a clear evening, you can see hundreds of stars without the aid of your telescope. The telescope is a light-gathering instrument that magnifies the view—providing significantly more detail and unveiling more stars, nebulae, and celestial objects. With the aid of a telescope, you will be able to enjoy exciting views of Saturn’s rings, Jupiter’s major moons, the Orion Nebula, and much more.

### 2) Why can’t I see anything through my telescope?

If you see only gray or black when looking through your telescope, even after searching for an object to view, it is very likely that you are using an eyepiece that is too powerful. To solve this problem always start with the lowest power eyepiece at first, and only insert the higher-power eyepiece after you have located an object.

### 3) When I use my high-power eyepiece, everything looks much darker. Why?

As magnification in a telescope increases, brightness diminishes. Conversely, brightness increases when magnification is reduced. If an image appears too dark or unclear, use a lower-powered eyepiece. Views of small, bright objects are superior to those of large, dark, or blurry ones! Atmospheric conditions, air currents, as well as light and air pollution also affect viewing quality.

### 4) As I look through my telescope, why do objects in the sky appear to move?

The constant rotation of the Earth makes things appear to move. Lower-power eyepieces will reduce this effect of movement considerably and allow you to observe an object for a longer duration before you have to readjust your telescope.

### 5) Whom do I contact for more information and product questions?

For any inquiries, parts, warranty or service information, please contact:

**Phone:** 800-441-1100

212-947-7100



**e-mail:** [customerservice@elitebrands.com](mailto:customerservice@elitebrands.com) **or** [support@elitebrands.com](mailto:support@elitebrands.com)

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