

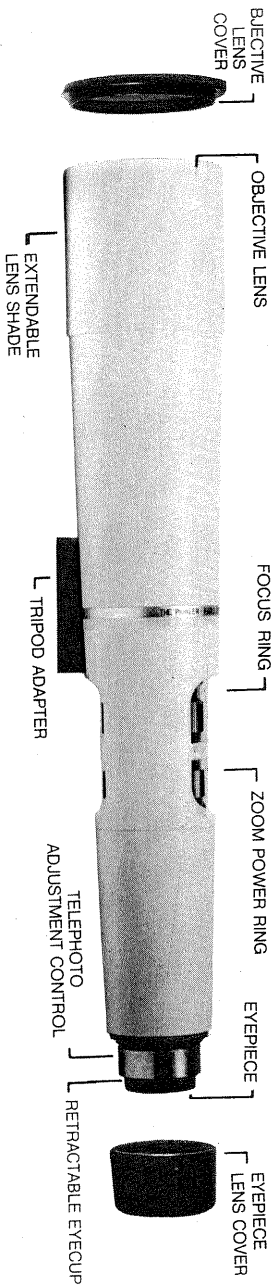
CELESTRON®

**15-60X60mm
ZOOM SPOTTING SCOPE
MODEL # 52200**

CELESTRON INTERNATIONAL

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15-60 x 60 ZOOM SPOTTING SCOPE



Power: 15x - 60x
 Objective Lens: 60mm
 Eye Relief: 15mm
 Length: 438mm (17 1/4")
 Weight: 1375gms (48oz)
 Focus Range: 24feet-infinity

Power	15 x	20 x	25 x	30 x	40 x	50 x	60 x
Field of View at 1000yds.	156' 3.0°	117' 2.2°	93' 1.8°	77' 1.5°	58' 1.1°	47' 0.9°	40' 0.8°
Exit Pupil	4mm	3mm	2.4mm	2mm	1.5mm	1.2mm	1mm

Congratulations! you are now the proud owner of the **CELESTRON 15-60x60 ZOOM SPOTTING SCOPE**.

This is one of the most versatile 60mm field scopes in the world.

Whether your interest lies in sports or nature this scope offers the finest optical quality together with the versatile 15x-60x Zoom Lens guaranteed to give breathtaking close-up images.

Please read the following instructions to assure sharp clear observations:

1. MOUNTING

The tripod Adapter provides a convenient means of fastening to any standard photographic tripod, car window mount, or shooter's stand. For best viewing results, mount your scope on a firm support to prevent movement of the scope. Movement makes the viewed scene appear to dance or vibrate at high magnifications. A firm mount will also help you to locate, track and keep objects in the field of view.

2. LENS SHADE

Unscrew and remove the lens caps from the objective lens and the eyepiece. The lens shade may be extended by pulling it out from the end of the scope. The lens shade reduces glare & improves contrast.

3. FOCUSING

The spotting scope used as a telescope will focus from 24 feet to infinity at any power setting with rotation of the Focus Ring.

Make sure the Telephoto Adjustment Control is turned counter-clockwise as far as it will go.

The depth of field (visual distance over which the image is seen in sharp focus), and the area

covered, is greater at the lower powers. However, if the instrument is initially focused at a low power you may find that additional focus adjustment is required as power is increased. Some users may have difficulty re-focusing after zooming rapidly to a higher power. This can be caused by the eye's inability to adjust quickly enough to the new magnification. It will help to look away momentarily, then resume focusing.

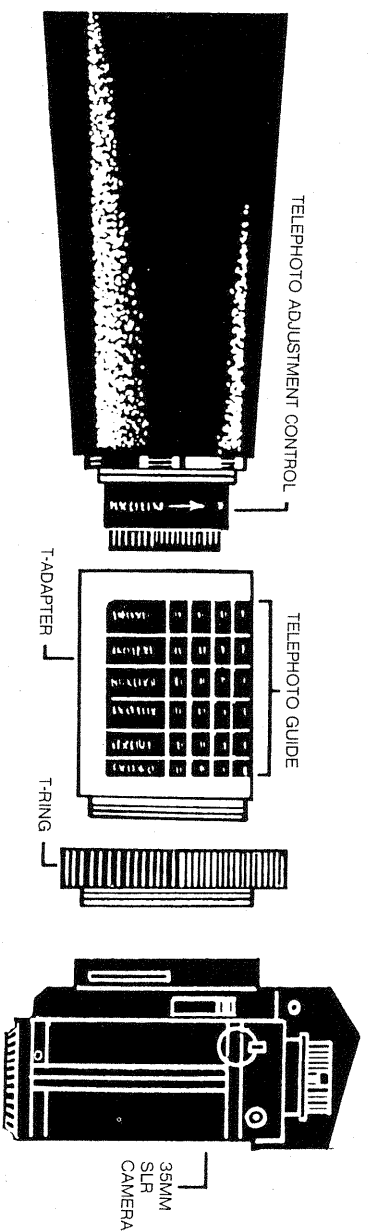
4. USE WITH EYEGLASSES

By the use of its retractable eyecup, the scope affords the user the same eye relief (distance from the eye to the eyepiece at which a full field of view is seen) with or without eyeglasses. Turn knurled eyecup clockwise for use with eyeglasses — counter-clockwise for normal use. Except in cases of astigmatism, most users will choose to remove their eyeglasses since the focus adjustment accommodates for near and far sightedness.

5. CHANGING POWER

To change magnification, rotate the Zoom Power Ring to the desired power as indicated by the white engraved scale.

As you zoom from low power to high power under low light conditions, you may notice a decrease in image brightness. This is normal. All magnifying optical instruments show a decrease in image brightness as magnification is increased. Most VIEWING is done with powers between 15 & 30.



ZOOM TELEPHOTO LENS ADAPTATION FOR SINGLE LENS REFLEX CAMERAS WITH REMOVABLE LENS

HOW TO USE YOUR SPOTTING SCOPE AS A 1000mm to 4000mm ZOOM TELEPHOTO CAMERA LENS

With the addition of 2 OPTIONAL accessories the SCOPE will attach to a 35mm single lens reflex camera that has a removable lens. It then becomes an integral part of the camera's optical system and functions as an extra powerful zoom lens.

The two accessories needed for this are: a) T-Adapter (Model #93628) and b) T-Ring for your particular BRAND OF CAMERA.

TO ASSEMBLE

- a) Turn telescope's Telephoto Adjustment Control clockwise all the way until it stops, then screw the T-Adapter over the eyepiece.
- b) Adapt the T-Ring to your 35mm SLR body and then attach to the T-Adapter.

TO USE

Film: Films with higher ASA ratings are recommended. The faster the shutter speed, the sharper your picture.

Preliminary procedures:

Mount the spotting scope on a sturdy tripod or shooter's stand. A car window mount can be used but it is recommended that the camera not be operated while the car motor is running since the slightest tremor at even the Scopes lowest magnification can ruin image sharpness.

Shield the scope from wind as much as possible and *always* use a cable release or the camera's self-timer to make an exposure.

After setting up, locate the subject through the camera's viewfinder in the usual way with the scope at its *lowest magnification*. This gives the widest field of view. Once located, you can frame the picture as desired with the Zoom Power Ring in the same manner as when using it as a SPOTTER, then use the focusing system of the scope to bring the subject into sharp focus.

Minimum focus distance as a telephoto lens is 80 feet.

LENS CHARACTERISTICS

Coupling the scope to a camera creates a completely new lens system, the essential characteristics of which are controlled largely by the scope—with one exception: it does not incorporate a variable aperture(f/stop) control. In this new system each of the scopes 7 power settings has its own effective f/stop as shown on the T-Adapter, and any increase or decrease in the amount of light transmitted to the film at any one power setting must be made by a change in the camera's shutter speed.

HOW TO DETERMINE SHUTTER SPEED

The following reference chart can be used for shutter speeds only under bright, sunny conditions.

If your camera's shutter speeds do not match these calibrations, and if the difference is very slight, the next higher speed indicated on your camera's dial should be used. Underexposure in both black and white, and color film (particularly color film) is recommended.

POWER	Approximate focal Length or Telephoto Effect	Approximate Effective F/Stop	Approximate Shutter Speeds		
			ASA400	ASA800	ASA1600
15x	1000mm	f/16	1/500	1/1000	1/1000
20x	1400mm	f/22	1/200	1/500	1/1000
25x	1700mm	f/28	1/125	1/200	1/500
30x	2000mm	f/32	1/125	1/250	1/500
40x	2700mm	f/45	1/60	1/125	1/250
50x	3400mm	f/56	1/30	1/60	1/125
60x	4000mm	f/64	1/30	1/60	1/125

CAMERAS WITH BUILT-IN METERING SYSTEM

Set camera's film speed dial to the ASA rating of film being used. Turn Zoom Power Ring on scope to desired magnification (telephoto effect), and check chart printed on T-Adapter for matching f/stop, determine shutter speed in usual way.

If the camera's meter will not give a reading, increase the film's ASA setting unit it does. Remember to make a note of this higher setting—the laboratory will need to know it when you bring in the film for processing. Also, keep in mind that all subsequent pictures on the same roll must be taken at this same ASA rating—roll film cannot be processed by individual frames.

CAMERAS REQUIRING EXTERNAL METERING DEVICES

Set the light meter's ASA index to rating of film being used. Select magnification and note f/stop as explained above. If, as in many cases the smallest f/stop shown on your light meter is f/45 and you need a reading for f/56 or f/64, refer to the Light Extension Scale or increase the ASA setting as previously explained.

REMINDER

After use as a telephoto lens, the Telephoto Adjustment Control must be turned all the way counter-clockwise to resume use as a spotting scope.

QUESTIONS & ANSWERS

QUESTION

Can I use lens filters on my spotting scope?

ANSWER

Yes, any standard 67mm diameter threaded filter will screw on to the objective lens exactly as does the lens cap.

In long range telephotography, ground haze can diffuse the light between camera and subject resulting in a hazy appearing picture, lacking in contrast, and in color it will have a noticeable blue cast. An Ultra Violet (haze cutting) filter will help to reduce the problem.

QUESTION

Will heatwaves affect the image?

ANSWER

Yes, warm temperature conditions can cause the image to quiver or "dance" resulting in a blurred effect. This is not due to a defective scope, but rather the effects of heat mirage.

QUESTION

Can I take pictures of the moon?

ANSWER

Yes, since the moon is illuminated by the sun, you can use the exposures shown in the instructions under "HOW TO DETERMINE SHUTTER SPEED."

It is important to realize that exposure time increases as the moon wanes, with 10 times normal exposure necessary in its crescent stage.

QUESTION

Can I look at the Sun?

ANSWER

No, do not point this instrument at the Sun as serious eye damage may result.

● CAUTION:

DO NOT ATTEMPT to disassemble or repair any part of this instrument. If you have any problems or questions, contact CELESTRON.

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CARE AND STORAGE

When not in use, store your spotting scope, with the projective caps on, in a moisture free environment. Avoid touching lenses. To clean the lenses, use an optical cleaning kit.

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