



AlignCam[®] System with TeleView[®] v2.0

Manual for Models
8420, 8430, 8440 & 8450
Teleview Software v2.0



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8420, 8430, 8440 & 8450
Teleview Software v2.0



Brunson Instrument Company


8000 E 23rd Street
Kansas City, MO 64129

www.brunson.us
info@brunson.us

Tel 816-483-3187
Fax 816-241-1945

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*Thank you for
purchasing a
Brunson AlignCam®.*

*Remember that our
customer support does not
stop after shipment of a
product—we are here to help
you with any measurement
challenges that you
may have.*

System Components



*Case contents
for models 8420,
8430, 8440 and
8450. Model
8420 is shown.*

- 1.** Durable plastic case with protective foam for optical components
- 2.** USB Cable to connect the CCD camera to a computer: USB 3.0, 5 meters long
- 3.** CCD camera attached to the telescope lens adapter assembly
- 4.** Jump drive containing the TeleView® installation and support files
- 5.** Two (2) plastic end caps [*pictured on camera*] to protect the optics if camera is removed from the assembly

Overview

If your application has different requirements than those discussed here, consult with our Customer Service staff using the contact information printed on the inside front cover of this manual.

This manual applies to the Brunson Instrument Company **Model 8420, 8430, 8440 and 8450 Camera Kits**.

Each camera kit is designed to work with a specific type of Brunson instrument. See the table below for the AlignCam systems and their corresponding instruments.

AlignCam Model	Instrument Type
8420	2022, 2022-02, 2024, 2024-02, C47280
8430	2062
8440	Precision Levels (545 series), Jig Transits (771, 75, 76 series)
8450	2030, 2024BL

This kit has everything to outfit an instrument having a standard eyepiece with a camera system that outputs a video image to a computer running Microsoft Windows 10 or 11. Windows 7 or 8.1 may work depending upon the system configuration. Windows 7 does not support USB 3.0, so performance could be severely affected.

If purchasing an instrument and/or computer along with an AlignCam, your installation may not require all of the procedures described below.

System Requirements

The computer system requirements to run TeleView are relatively simple. The minimal requirements are:

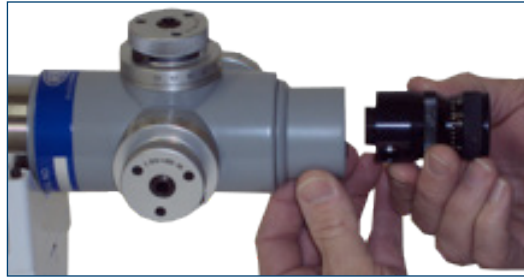
- Windows 10 or 11, 32- or 64-bit
- 2.6 GHz Processor
- 4 GB RAM Memory
- At least one USB 3.0 port

Hardware Assembly

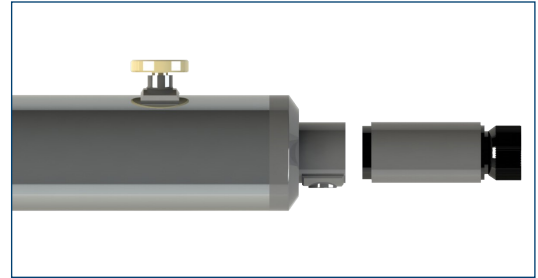
Step One: Mount the instrument in a V-block or other secure fixture in preparation for taking measurements as shown below.

Step Two: Unscrew the eyepiece assembly from the telescope. Images of the eye piece removal for each camera kit is shown on the next page.

Seal the eyepiece assembly in a clean plastic bag to protect the open optics from dirt and airborne debris.



8420 AlignCam eyepiece removal.



8430 AlignCam eyepiece removal.



8440 AlignCam eyepiece removal.

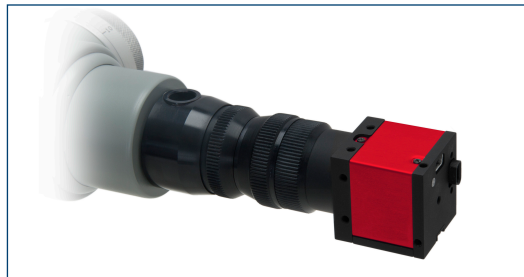


8450 AlignCam eyepiece removal.

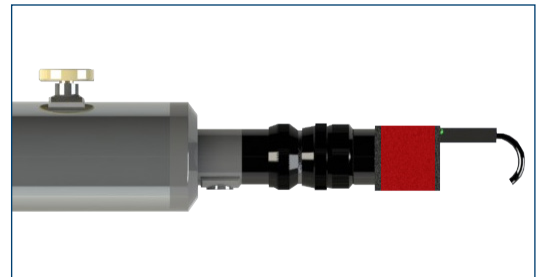
There may be some space between the lens adapter assembly and the main body of the telescope. This is normal.

Step Three: Remove the CCD camera and lens adapter assembly from the plastic case. Pull the plastic cap off the threaded end of the lens adapter assembly.

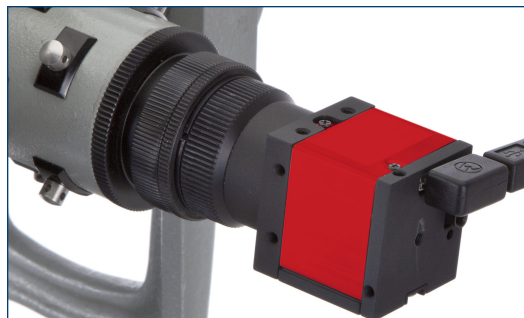
Step Four: Attach the CCD camera and lens adapter assembly by threading it on to the telescope body. Images of each attachment are shown below.



8420 AlignCam attachment.



8430 AlignCam attachment.



8440 AlignCam attachment.

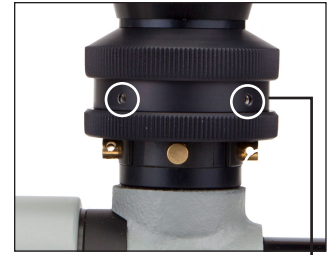


8450 AlignCam attachment.

*TeleView
Software must
be installed
and running.
See Software
Installation
section.*

***8450 Only**

Step Five: The 8450, when purchased with a 2030 or 2024BL, comes delivered so that when installed on said instrument the reticle is centered in the camera image. If purchased separately, installed on a different instrument, or simply over time, the image may need to be re-centered. To do this, use two 0.050" allen wrenches to adjust the four sets screws in the lens adapter. Higher level centering can be achieved by digitally zooming in the camera image displayed in the software.



*Centering Adjustment Screws
shown in white circles*

Software Installation

Attention:

- Be sure you are logged in as an administrator when installing the software.
- Be ready to connect the camera during installation when instructed to do so.
- If you subsequently wish to install TeleView version 1.00 - 1.04 on a machine which has TeleView 1.10 (or newer) installed, you **must** run the uninstaller supplied with TeleView prior to starting the install of the older version (TeleView 1.00 - 1.04). Installing Version 1.00 – 1.04 on a machine with a newer version installed is not recommended and may lead to unpredictable behaviors.

To install TeleView® on a Windows machine:

Insert the jump drive into a USB port on your computer. Open the TeleView folder and double click on the executable file '**Setup_x.xx.exe**', where x.xx indicates the software revision.

When you double-click the installation file, a security dialog may pop up, depending upon the user account control settings on your computer. Click the 'Yes' button to allow the changes.

Follow the prompts in the TeleView installation dialogs. You will be asked to agree to the software license, as well as indicate your preferences for some optional settings.

It's important to note that at one point during the installation, you will be instructed to connect the camera so that TeleView can install the camera drivers. It's best not to start the installation unless you have the camera available.

Connecting the Camera

*The camera requires
at least a USB 3.0
port (blue connector).*



To obtain the highest video transfer rates, we recommend connecting the cameras directly to the USB ports on the motherboard itself.

Registering the Key File

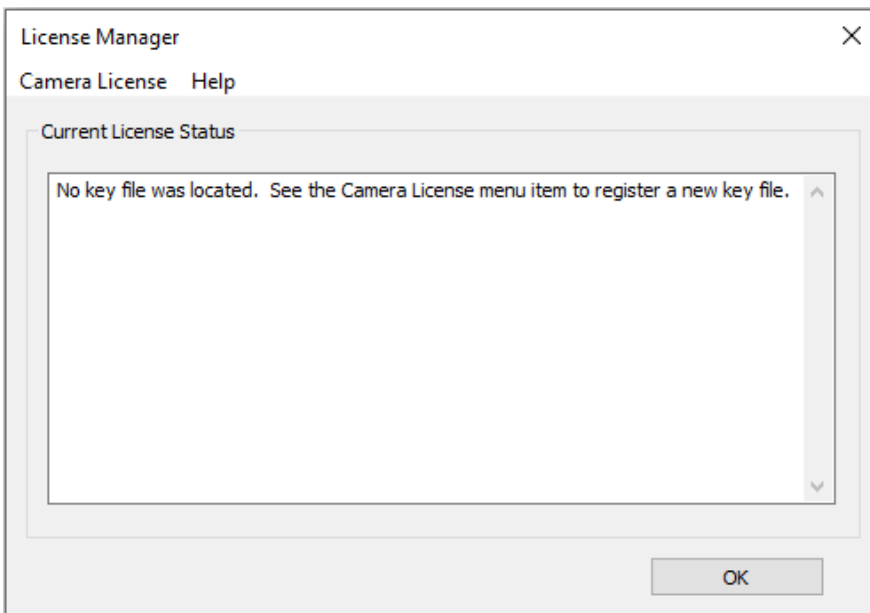
The first time that TeleView is used, a key file must be registered to enable the software. Each camera has a unique key file associated with it.

To register a key file during your initial TeleView start-up:

Connect the camera and launch TeleView. A License Manager dialog box should appear, indicating that no key file can be found which matches the connected camera. (If the License Manager dialog is not displayed, go to Help / Start License Manager.) Select the “Camera License” menu item on the License Manager dialog, then select “Register Key File”. You will be asked to navigate to the location of the key file (ending in ‘.bkey’) - it’s originally provided on a USB thumb drive or may be emailed to you. Open the file associated with your camera serial number. The rest of the registration process will be handled automatically.

You may have received one of two types of key file. A ‘p-type’ key file has no expiration date. An ‘e-type’ key file expires on a given date. If you have an e-type key file, and its expiration date is approaching, a message will be displayed when TeleView is started to indicate how many days are left on the key.

This key file registration process must be done a) each time TeleView is installed on a new computer, b) when an expired e-type key file is replaced with a new key file, or c) you wish to use a different camera. The key files are matched to the camera serial number, so you must have key files present for each camera that you wish to use.



When TeleView is launched, it automatically searches for any connected camera, and starts a live video stream. If a camera is connected after TeleView has been launched, it will be detected automatically as well.

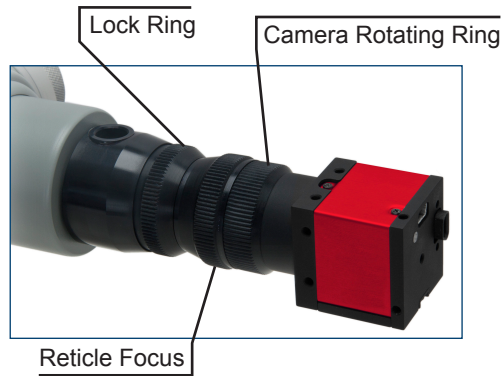
There is no need to press ‘OK’, as this dialog will close automatically when complete. The Camera Tab will then display the live video stream.

The camera may be disconnected or reconnected at any time, the software simply reconnects when the camera is available.

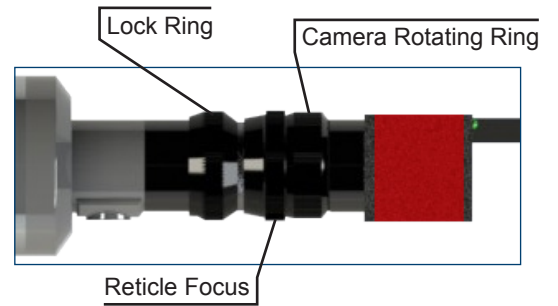
Focusing the Camera

Focusing the camera correctly is very similar to focusing the standard eyepiece. There are two parts: focusing the reticle image (*cross hairs*) and focusing the target image. Each is described as follows.

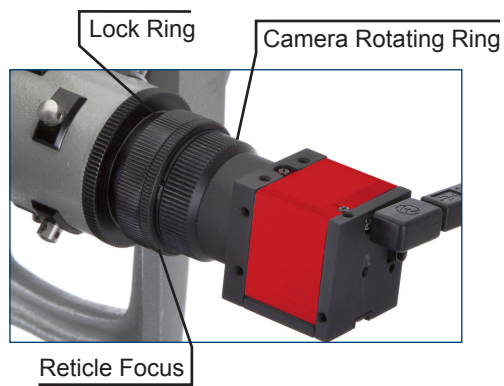
AlignCam Model 8420



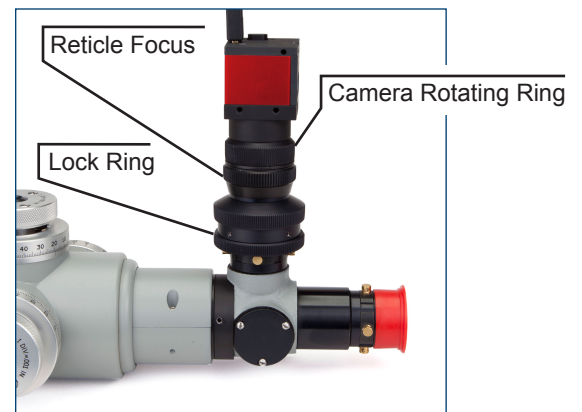
AlignCam Model 8430



AlignCam Model 8440



AlignCam Model 8450



If the Lock Ring is in the way, rotate it CW until it seats against the adapter body to allow full travel of the Reticle Focus ring.

The images on the previous page illustrates the camera adapter adjustments.

Reticle Focus: Rotating ring used to adjust the sharpness of the reticle.

Lock Ring: Threaded ring used to lock the focus setting when proper reticle focus is achieved.

Camera Rotating Ring: Rotational control to orient the camera image for a user-friendly view on the computer monitor.

Point the telescope at a white or other light colored object. This provides a good background to clearly view the black reticle.

Rotate the Reticle Focus ring until the reticle comes sharply into focus on the computer monitor.

Rotate the Lock Ring until it seats against the Reticle Focus ring to prevent inadvertent movement once the focus has been adjusted.

Focusing the Target Image

Point the instrument at the target of interest, and rotate the instrument's focusing knob until the target image is sharp and clear. Since the measurement process is primarily concerned with proper focus at the center of the reticle, optimize the target image focus in this area.

Most likely, the target image is clocked off in some arbitrary orientation on the monitor. Correct this by turning Camera Rotating Ring to orient the reticle and target image 'upright' as viewed on the monitor.

The telescope and camera are now focused correctly and ready to take measurements.

Using TeleView®

TeleView provides a simple digital interface that allows users to easily view a measurement session on a computer monitor and save viewed images as common image file types. The software menu items are documented below.

There are two tabs on the main window:

Camera View tab: Displays a live video stream or, if the image is 'frozen', the last image captured by the camera when the stream was frozen.

File View tab: Displays image files that have been loaded from disk.

File Menu

Open Image: Navigate to a saved image and open it (*switches automatically to the File View tab for viewing*).

Save Image As: Save any image currently being viewed (*on either the Camera Tab or the File View tab*) to disk. The image is saved as currently viewed on the screen, whether zoomed, rotated, etc.

Close Image: Available only on the File View tab, closes an open image without saving.

Preferences: Customize the default settings for saving images.

Exit: Exit the TeleView program.

Display Menu

Freeze Image: When checked, toggles the video streaming off to capture a single frame on the Camera View tab. Click again to return to a live streaming image.

Rotate Image 180: Rotates the orientation of the image by 180 degrees.

Zoom: Accesses sub menu with the following options: Fit to Window, Zoom In, Zoom Out, Define Zoom Center, and Cancel Zoom Center.

Here is an explanation of the zoom commands:

Fit to Window: Fits the entire camera image into the available window size without altering the aspect ratio of the image.

Zoom In: Incrementally zooms into the center of the screen unless an alternative zoom center point has been defined. The mouse wheel may also be used to control this function.

Zoom Out: Incrementally zooms out from the center of the screen unless an alternative zoom center point has been defined. The mouse wheel may also be used to control this function.

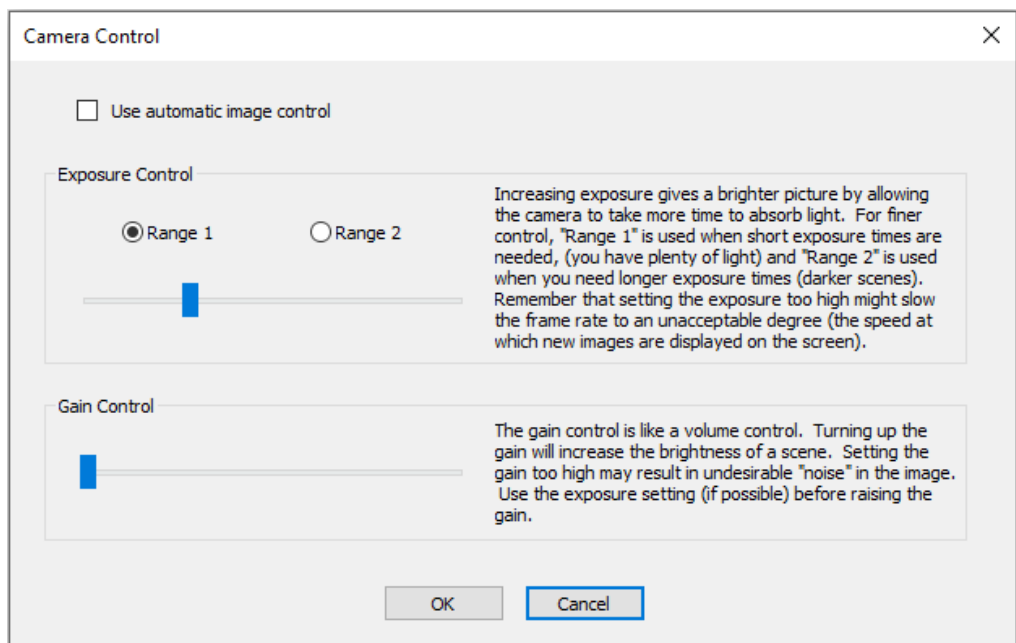
Define Zoom Center: Use this to zoom in towards a selected point. A green cross hair will appear when this option is invoked, showing the location of the current zoom center. Select a new zoom center by clicking anywhere in the viewing area. This will move the green cross hair to the new Zoom Center. If you wish to see the current location of the zoom center but don't wish to change it, click Define Zoom Center, but cancel the command by clicking anywhere outside of the image.

Cancel Zoom Center: Returns the zoom center to its default location at the center of the image. This function is available only if a zoom center point has been previously defined.

Increase the gain as a last resort, due to the fact that increasing the gain will also increase image noise.

Camera Menu

Adjust Exposure: Sometimes the camera's auto-exposure capabilities do not result in a desirable target image, e.g. when the field of view is dominated by objects which are much brighter or much darker than the target you are trying to see.



Therefore, TeleView gives you manual control over the image brightness. To use this functionality, click "Adjust Exposure" under the "Camera" menu. This opens a Camera Control dialog. For manual control, uncheck the "Use automatic image control" checkbox. You will then have manual control over exposure time and gain.

The Exposure Control slider bar allows you to adjust the exposure time. The greater the exposure time, the brighter the image. There are two ranges available for setting exposure times. When the "Range 1" radio button is selected, the slider is calibrated for the bottom half of the exposure time range (shorter exposure times, used when lighting conditions are bright). When the "Range 2" radio button is selected, the slider is instead calibrated for the top half of the exposure time range (longer exposure times, used in darker lighting conditions). This arrangement maximizes your control over exposure times.

Remember that as exposure times increase, the camera may adjust its frame rate downward. That is, if you tell the camera to take a long time gathering light for a given image, the camera may be forced to slow down the speed with which images are updated (the frame rate). So, if your lighting conditions require you to set an exposure time very high, the camera may adjust the frame rate downward to unacceptably slow speeds.

That's where the Gain Control comes in. This slider is like an image light "volume control". If you find that you have to adjust the exposure time too high, and it's slowing the image update rate down too much, use the gain control instead to brighten the image.

The rule is to try (first) to use exposure time to achieve a proper image. But if you begin to slow down the frame rate too much, reduce the exposure time a little and use the gain control instead. The reason that gain takes a backseat to exposure time is that increasing the gain can introduce extra "noise" in the system, which shows up like "static" in the image. (TeleView does, however, use an industrial camera having low noise specifications to keep this from being a big problem.)

Information: Displays a dialog containing camera-specific information that may be valuable for system support questions.

Help Menu

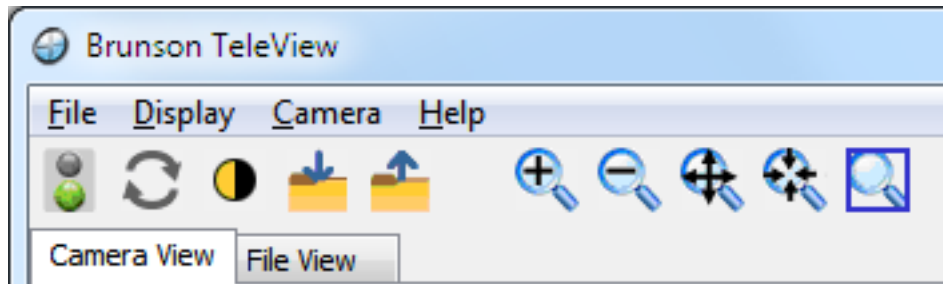
About: Displays software version and copyright date information.











User's Manual: Displays this PDF user manual.

Start License Manager: Opens the License Manager dialog, allowing you to manage key files which authenticate the TeleView software.

Tool Bar Button Legend

For convenience, a toolbar replicates some of the functions which are accessible via the menu.



-  Freeze Image / Return to Live video stream
-  Rotate Image 180°
-  Adjust image exposure
-  Save Image As
-  Open image from folder
-  Zoom In
-  Zoom Out
-  Define Zoom Center
-  Cancel Zoom Center (return to default location in center of image)
-  Fit-to-Screen

Remote Monitor

The camera system may be set up to run in 'remote monitor' mode, meaning a mobile device can be wirelessly connected to the computer to provide a remote viewing screen. A simple network must be created to accomplish this. The following instructions detail the necessary steps. Please note all previous set-up instructions must be completed prior to creating the network.

Network Connections

Locate the wireless router in the area where the mobile device will be used and connect to power.

Connect one end of the Ethernet cable to a blue LAN port on the back of the wireless router. Connect the other end of this cable to the computer running TeleView.

Click on the network icon in the computer's startup tray to confirm that the currently connected network is 'TeleView'.

Mobile Device Setup: Kindle Fire

This remote monitor system includes a Kindle Fire as the mobile device. It has been preconfigured to auto-scan for available wireless networks.

If a security code is required, type in 'brunson1'.

The desired wireless network is 'TeleView'. To confirm this connection, click the Wi-Fi icon in the upper right corner of the screen. Click the resulting Wi-Fi icon. Confirm that Wireless Networking is 'ON'. Click on the 'TeleView' wireless network, then 'Connect'.

Click the return arrow at the bottom of the screen to view the applications. Scroll until 2X application is shown and click it. A listing of available computers will be shown, and those live on the TeleView network will be highlighted.

Click on the TeleView computer icon. The Kindle screen will display the TeleView computer screen. The image in the TeleView software is now available anywhere the Kindle travels within the boundary of the wireless network signal.

Mobile Device Exit: Kindle Fire

To release control of the screen back to the TeleView computer, click the paper icon at the bottom of the Kindle screen, then click the MORE caret in the pop-up, followed by DISCONNECT in the drop down list.

This spawns a 'Disconnect' dialog box. Click OK to release control back to the TeleView computer.

Warranty Information

All goods are sold by Brunson Instrument Company without any implied warranties of merchantability or fitness for use and without any other warranties, expressed or implied, except as set forth below.

Any goods manufactured by Brunson Instrument Company, and found by Brunson Instrument Company, to be defective in material or workmanship will be repaired, or at Brunson Instrument Company's option, replaced, for the original purchaser only, provided the goods are returned with authorization to and by Brunson Instrument Company, transportation prepaid, within one year of the original shipment from Brunson Instrument Company. This warranty does not apply to goods, which have been subjected to alteration or servicing, rough handling, misuse, negligent use, fire damage, water damage, or other casualty or to ordinary wear and tear.

Repair or replacement of the defective products, as provided above, is the sole remedy of the purchaser of products covered by this warranty and is the complete statement of Brunson Instrument Company's liability with respect to such products. Brunson Instrument Company shall have no other or further liability with respect to such products, whether in tort, negligence, contract, theory of strict tort liability or other theory.

Limited life time warranty for horizontal and vertical axis ball bearings: trunnion and spindle bearings manufactured by Brunson Instrument Company, and found by Brunson Instrument Company to be defective in material or workmanship, will be repaired or replaced at Brunson Instrument Company's option for the original purchaser only, provided the instrument for which the bearings were returned, with authorization to and by Brunson Instrument Company, transportation prepaid with documentation to support that the instrument has been fully serviced by an authorized Brunson Instrument Company service representative at least at a minimum of three – and a maximum of five – year intervals from the date of original shipment at the time of purchase from Brunson Instrument Company, and the instrument has not been subjected to alteration, rough handling, misuse, negligent use, fire damage, water damage or any other casualty.

The repair or replacement of the defective products, as provided above, is the sole remedy of the purchaser of products covered by this warranty as the complete statement of Brunson Instrument Company's liability with respect to such products. Brunson Instrument Company shall have no other or further liability with respect to such products, whether in tort, negligence, contract, theory of strict tort liability, or other theory.

Adjustments, calibrations, repairs, lamps, fuses, and batteries are specifically excluded from the foregoing statements.

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