



AIRCRAFT TOOL SUPPLY
VIDEO BORESCOPE MANUAL

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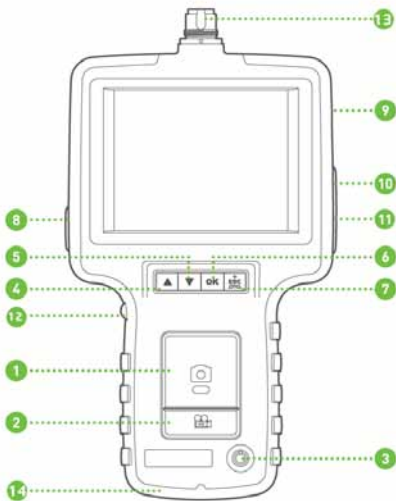
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VIDEO DISPLAY MODULE

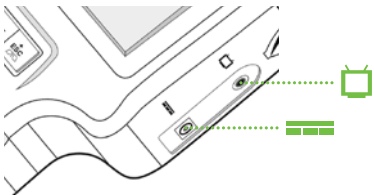


Product Overview



- 1 Record
- 2 Photo
- 3 Power
- 4 Previous
- 5 Next
- 6 **OK** OK / Menu
- 7 ESC / ZOOM / MIRROR
- 8 USB Port
- 9 SD Port
- 10 TV Out
- 11 AC Jack
- 12 Light Adjustment
- 13 Probe Connector
- 14 Strap Holder

Charging The Battery



Connect the AC adapter to the charging jack (≡) of the Display Unit and then plug the adapter into a 110V electrical outlet.

Note: Be sure to connect the AC adapter to the (lower) charging jack and not to the (upper) video port.



Red when charging



Green when charged

As the unit charges, a RED LED light will be visible through the Video Out port (🖥️). This light will turn GREEN when the unit is fully charged. A flashing battery icon will display in the lower left corner of the Display Unit if it's on during charging. The icon will stop flashing when the unit is fully charged.

Note: It will take approximately 3.5 hours to recharge the unit when the battery is fully depleted.

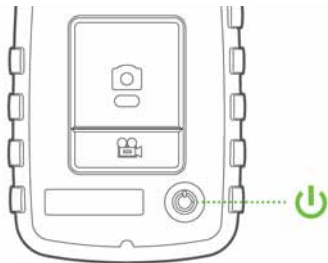


Getting Started



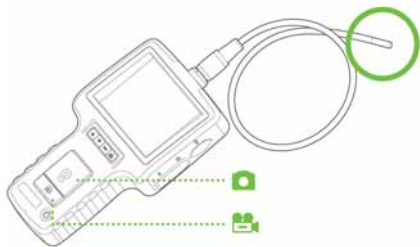
Step 1

Attach the probe to the display module by aligning the dots on the connectors and pressing them together firmly, then tighten the locking collar. DO NOT over-tighten - finger tight is all you need.





Step 2

Power up the display unit by holding down the power button until an image is displayed on the monitor (takes about 3 seconds) and then release the button.



Step 3

To take a picture, first direct the probe to the inspection area and then press the  button to capture an image. Press the  button to start recording a video, and press it a second time to stop and save the recording.



The Display Module Functions

The display module operates in three modes: Preview, Browse, and Manual.

Preview Mode (default)

This is the default mode at power-up. In preview mode you can view live images, as well as take pictures and record videos.

Browse Mode (image review)

Press either of the   keys to view photos and videos on the SD card and also to delete specific files.






Manual Mode (main menu)

Press OK to display the Main Menu. Use this mode to set your preferences and perform file management.

Note: The unit will return to Preview mode after 150 seconds without any input in Manual mode.

Multi-function Keys

Each button on the display unit performs a unique function depending on the mode of operation.

FUNCTION	IN PREVIEW MODE	IN BROWSE MODE	IN MANUAL MODE
	Switch to Browse Mode to view photos and videos	Move to previous photo or video	Move up in the main manual
	Switch to Browse Mode to view photos and videos	Move to next photo or video	Move down in the main manual
OK	switch to Manual Mode	Play/Pause video	Execute selected command
	Press once to Zoom in 2x. Press and hold 3 seconds for Mirror View	Return to Preview Mode	Return to Preview Mode
	Capture a photo	N/A	N/A
	Press once to start recording video, press again to stop recording	Delete photo	N/A

Menu Operations

Overview

Press the OK button to enter into Manual Mode and display the Main Menu. Next, use the ▲ ▼ keys and select the setting that needs to be adjusted.

The following section describes the function of each menu item.



DELETE ALL

Delete all files in the SD card.

AV OUTPUT

Activate to send the video signal out through the AV port. The monitor will turn black until you execute this command again.

DATE / TIME

To set up system date and time.

LANGUAGE

To select the operating language.

TV SYSTEM

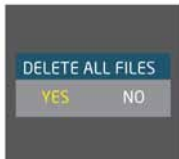
Set up your video format.

AUTO POWER OFF


Select 5, 10, 15, or 30 minutes to activate system auto power off setting.

Delete All files on the SD card

- Step 1 Press OK while in Preview mode to display the Manual Mode menu.
- Step 2 Use the ▲ ▼ keys to select the “DELETE ALL” command.
- Step 3 Press OK and you will be prompted to give a “yes” or “no” response.
- Step 4 Use the ▲ ▼ keys to select “YES”.
- Step 5 Press OK to delete all files.



Deleting a specific photo (Browse mode only)

- Step 1 Enter Browse mode, then press the ▲ ▼ keys to find the photo or video to delete.
- Step 2 Press  and you will be prompted to confirm deletion.
- Step 3 Press OK to delete selected file, or press ESC to skip.





AV OUTPUT

- Step 1 Plug in the AV cord into the AV socket located on the right side of the module and plug the other end of the cord into the “AV IN” socket of the external monitor.
- Step 2 Press OK to display the Main Menu.
- Step 3 Press the ▲ ▼ keys to select the “AV OUT” option.
- Step 4 Press OK to send the image to the external monitor.



Date/Time Setup

- Step 1 Press OK in Preview mode.
- Step 2 Press the ▲ ▼ keys to select the Date/Time setup option.
- Step 3 Press OK to activate.
- Step 4 Press  to increase the number or  to decrease.
- Step 5 Press ▼ for next adjustment.
- Step 6 Repeat step 4 and 5 until the correct time/date are set up.
- Step 7 Press OK to complete.



Setting Time Display

- Step 1 Press OK in Preview mode.
- Step 2 Press ▲ ▼ to select the “DATE/TIME” settings.
- Step 3 Press OK.
- Step 4 Next, press ▲ ▼ to select the “Display” option.
- Step 5 Press to toggle between ON and OFF.
- Step 6 Press OK to complete set up.
- Step 7 Press ESC to return to Preview mode.



w/o Time Display Off



with Time Display On

Language

- Step 1 Press OK in Preview mode.
- Step 2 Press ▲ ▼ to select the “LANGUAGE” setting.
- Step 3 Press OK.
- Step 4 Press ▲ ▼ to select the operating language.
- Step 5 Press OK.



TV System

- Step 1 Press OK in Preview mode.
- Step 2 Press ▲▼ to select to “TV SYSTEM” .
- Step 3 Press OK.
- Step 4 Press ▲▼ to select either NTSC or PAL.




Auto Power Off


- Step 1 Press OK in Preview mode.
- Step 2 Press ▲▼ to select the “AUTO POWER OFF ” option.
- Step 3 Press OK.
- Step 4 Press ▲▼ to select desired time length.
- Step 5 Press OK to activate, or select OFF to skip.

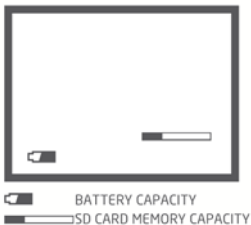


Operations

Power On/Off

Step 1 To turn on the system, press and hold the  button for 3 –5 seconds until the system starts up.

Step 2 Press and hold the  button for 3-5 seconds to turn the system off.



Taking Photos


Press the  button while in Preview Mode to take a photo.

Image Status : Returns to preview mode automatically after photo is taken.



Recording Video


Step 1 Press the  button to start recording video.

Image Status : Recording time will appear at the left bottom the screen.

Step 2 Press the  button again to stop recording.

Image Status : Recording time disappears.



Viewing Photo / Video



Step 1 Press   in Preview Mode to enter into Display mode.

Image Status : Displaying the latest photo /video.




Step 2 Press   repeatedly to view all photos and videos on the SD card.

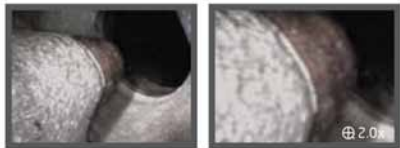
Image Status : All files will be stored chronologically.




NOTE : When viewing videos , the video will be played automatically until it ends and then the next photo or video will be displayed.



Zoom-In*


Press the  button once to zoom the screen to 2X magnification. While zoom is in effect, 2.0x will appear in the lower right corner of the screen.



Press  again to return to the original view.

Mirror effect*

Press and hold the  button for 3 seconds to flip the image horizontally. While in effect, the  icon will show on the bottom right of the screen.

Press and hold the  button again for 3 seconds to return to the original view.



Without Mirror effect



With Mirror effect

Specifications

Dimension	117.5 x 207 x 37mm
Weight	383g
Power	Rechargeable Li-Polymer Battery 3.7V Power supply AC 100-240V 50-60Hz Power consumption DC5.5 2A
Display	3.5" TFT LCD
Recording Medium	SD Card
Video Output Format	NTSC & PAL
Video Output Interface	AV out
Video Format	MPEG4 @ 30 fps
Still Image Format	JPEG
Charging Temperature	10°C - 40°C
Working & Storage Temperature	0°C - 60°C

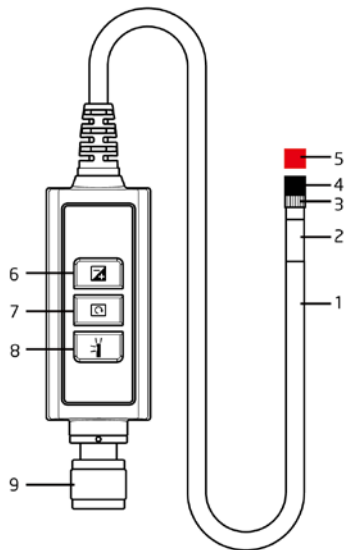


Cautions & Warnings

1. This product is designed for industrial use only.
2. Do not use this product for human or any other biological inspection.
3. Do not disassemble this product, it might cause shock hazard and damage the unit. It will also immediately void your warranty.
4. Use only recommended components or accessories.
5. Unauthorized accessories and components may cause damage to this product. It will also void your warranty.
6. To avoid danger, do not put the insert tube into any flammable liquid or gas. Oil Passed: Unleaded Gasoline, Machine Oil, Diesel, Brake Oil (DOT 4), Transmission Oil, Neutral Cleanser.
7. Do not use this product in a fuel tank or other dangerous environment such as a gasoline or alcohol storage tank.
8. Do not bend the insert tube over 180 degrees during usage or storage.
9. Do not remove the SD card while capturing photos or videos. This can cause a loss of the image or video recorded and may damage the SD card.
10. Avoid direct exposure to sunlight for long periods of time. Store the system in a cool, dry and well ventilated place.
11. Please charge the battery in room temperature between 10°C - 40°C (50°F - 104°F), to optimize charging capacity.



ATS-VS21
INSPECTOR
5.5mm Semi-Rigid Probe

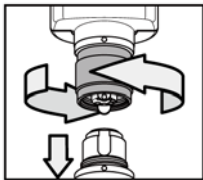


Product Overview

1. **Probe Shaft** - Semi-rigid metal shaft holds its shape to guide the camera head to the inspection area.
2. **Camera Head** - Light and camera.
3. **Locking Ring** - Locks accessories.
4. **Thread Ring** - Protects threads.
5. **Red Cap** - Protective cap.
6. **Image Boost Button** - Brightens image to assist viewing in dark areas.
7. **Image Rotation Button** - Rotates image 90°. The LED lights up when image is rotated and turns off when the image returns to its original position.
8. **Particle Free Button** - Works with mirror to eliminate dust spots.
9. **Coupling collar** - Locks probe to display module.

Getting Started

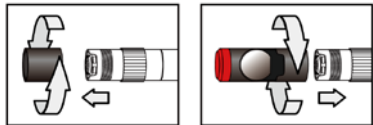
- Step 1: Connect the display module by aligning the dots of the probe to the connector on the module and tighten the screw nut.
- Step 2: Turn on the system until an image is displayed on the screen.



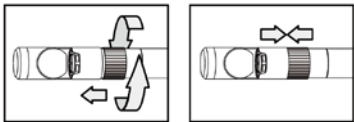
Installing Accessories

Mirror

- Step 1: Remove the Thread Ring and place it in a safe location.
- Step 2: Pull the locking ring back so that it completely clears the threads.
- Step 3: Screw the mirror onto the end of the probe until it is secure.

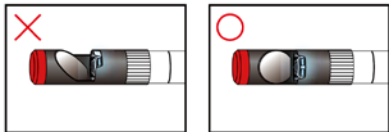


- Step 4: Make sure that the opening in the side of the mirror aligns to the side (lateral) LED lights.
- Step 5: Rotate the locking ring upwards to fix and tighten mirror.



Step 6: Press light button to activate side (lateral) LED light.

Step 7: Adjust the light intensity for best image quality while inspecting.



NOTE: It may be necessary to repeat step 4-5 to align the mirror adaptor if the LED light is shaded.



Cautions for Use

1. To avoid danger, do not put the probe tube into any flammable liquid or gas.
2. Do not bend the probe more than 90°, and always keep the probe in a large arc as possible for storage.
3. Do not use any corrosive liquid for cleaning, such as rubbing alcohol.
4. Do not disassemble the product. It might cause damage or electric shock.
5. Please use only recommended components or accessories, unapproved items may cause damage.
6. To protect camera, be sure to attach the thread ring when no accessories are used.
7. Avoid direct exposure to sun and store the system in a cool, dry and well-ventilated place.

Specifications

Brightness Control	Variable
Camera Head Length	23.3mm
Camera Head Material	Stainless steel
Tube Length (without tip)	1m
Tube Diameter	5.5mm
Resolution	VGA (640x480)
Light Source	White LED
Field Of View	60.7° (Diagonal)
Depth Of Field	10 ~ 60mm
Working Temperature	-20°C ~ 60°C
Storage Temperature	-20°C ~ 60°C
IP Protection	IP67

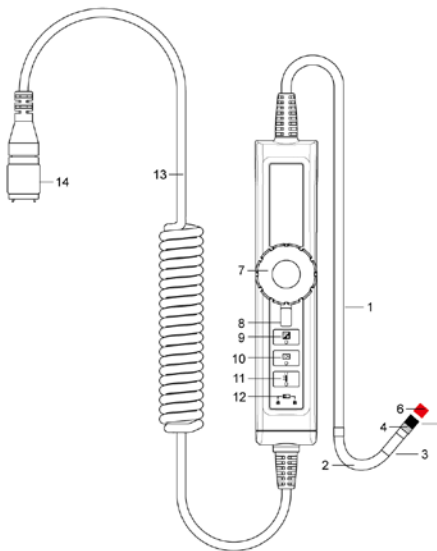
Notes



ATS-VS22
VOYAGER
6mm Articulating Probe

Product Overview

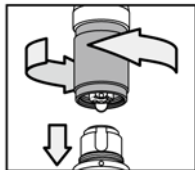
1. **Probe Shaft** - Coated flexible easily bends around contours to guide the camera head to the inspection area.
2. **Articulating Neck** - Stainless Steel braided neck swings through a 240° arc via the articulation control wheel.
3. **Camera Head** - Light and camera.
4. **Locking Ring** - Locks accessories.
5. **Thread Ring** - Protects threads.
6. **Red Cap** - Protective cap.
7. **Articulation Control Wheel** - Swings the camera head remotely.
8. **Articulation Lock Lever** - Prevents further articulation of the camera when in the locked position.
9. **Image Boost Button** - Brightens image to assist viewing in dark areas.



- 10. Image Rotation Button** - Rotates image 90°. The LED lights when image is rotated and turns off when the image returns to its original position.
- 11. Particle Free Button** - When pressed, activates the lateral lighting to eliminate dust-induced glares and spots from the mirror.
- 12. Button Lockout** - Prevents accidental actuation of the control buttons when in the “locked” position.
- 13. Connecting Cable** - Flexible coiled cable connects probe to the display module while providing freedom of movement.
- 14. Coupling collar** - Locks probe to display module.

Getting started

- Step 1: Connect Articulation probe to main system with the align dot then tighten the screw nut.
- Step 2: Turn on the system until the image is displayed.
- Step 3: After the system turns ON, you can start your inspections.



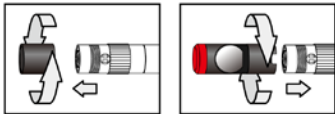
Installing Accessories

Mirror

Step 1: Rotating out thread protective ring.

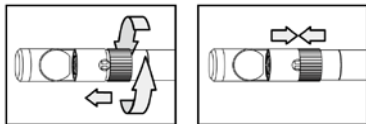
Step 2: Rotate fitting ring to bottom.

Step 3: Put the mirror into camera tip until the threading is screwed tight.

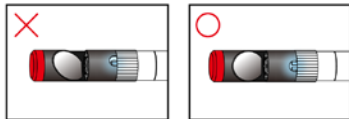


Step 4: Align the side LED opening with the mirror adaptor. The mirror adaptor needs to fit in the side LED opening.

Step 5: Rotate fitting ring upward to fix and tighten mirror.



NOTE: You might repeat step 4-5 to adjust the mirror adaptor if the LED light is shaded.



Operations

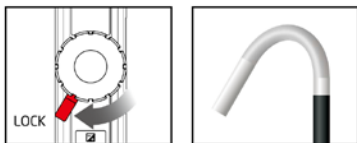
Articulation

Rotate the control wheel clockwise to bend the tip right and counter clockwise to bend left.



Lock

To fix the bending neck angle switch the lock shaft clockwise to the lock position.



Function Buttons



Boost Button

Use in dark environments to enhance the brightness.

NOTE: Please hold the probe steady to get clear images.



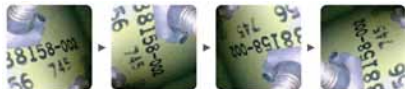
Before Boost



After Boost



Rotate Button

Four 90° view rotation to identify codes.



 +  **Particle Free Button**
The button works with the mirror to enable particle free function.



Without particle free



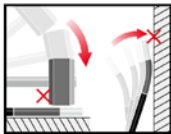
With particle free



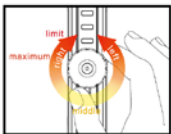
Cautions for Use

1. To avoid danger, do not put the probe tube into any flammable liquid or gas.
2. Do not articulate the tip more than 90°, and always return the tip to the neutral position (0°) before storage.
3. Do not use any corrosive liquid for cleaning, such as rubbing alcohol.
4. Do not disassemble the product. It might cause damage or electric shock.
5. Please use only recommended components or accessories, unapproved items may cause damage.
6. To protect camera, be sure to attach the thread ring when no accessories are used.
7. Avoid direct exposure to sun and store the system in a cool, dry and well-ventilated place.

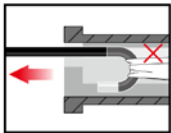
The articulating neck contains precision (and very delicate) components, DO NOT put under heavy load.



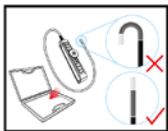
DO NOT rotate the articulation control wheel beyond its limits as this may cause permanent damage to your unit.



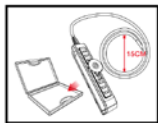
Never use the articulating neck as a HOOK.



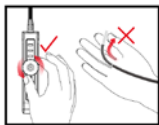
Please straighten the articulating neck every time before storage.



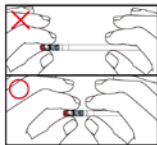
DO NOT coil the shaft tighter than a 6" (15cm) diameter circle while not in use.



NEVER bend the articulating neck directly, operate by control wheel only.



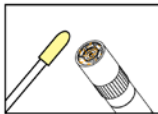
Do not over-tighten mirrors and other accessories. Finger-tight pressure is sufficient to secure them.



Please do not bend the probe excessively when operating. Use articulation to get to difficult areas.



Use the cleaning liquid and swab provided in the cleaning kit for camera head cleaning.



Specifications

Brightness Control	Variable
Camera Head Length	23.3mm
Camera Head Material	Stainless steel
Tube Length (without tip)	1m
Tube Diameter with Thread Ring	6mm
Resolution	VGA (640x480)
Light Source	White LED
Field Of View	60.7° (Diagonal)
Depth Of Field	10 ~ 60mm
Working Temperature	-20°C ~ 60°C
Storage Temperature	-20°C ~ 60°C
IP Protection	IP67
Articulation Angle	155° view angle

Notes

ACCESSORIES



ATS-VS22H Holding Tube



The optional ATS-VS22H Holding Guide Tube makes it easier to control the flexible probe of your videoscope. It provides a rigid metal sheath around the probe to both protect it, as well as allowing you to more easily maneuver the probe through and around obstacles. All functions, including full articulation (of the ATS-VS22), remains operational when using the tube.

Operating Instructions

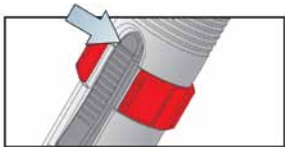
Step 1: Make sure the Display Module is turned off, and that the articulating tip of the probe (ATS-VS22) is in the neutral (0°) position.

Step 2: Carefully insert the tip of the probe into the Holding Tube handle and slide it through the guide tube until the end of the probe clears the guide tube.

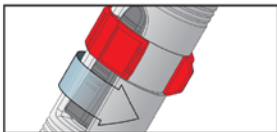


DO NOT force the probe into the Holding Tube. If it does not slide freely into place, inspect the Holding Tube for obstructions and/or damage. If the tube is damaged, do not attempt to use it.

Step 3: Press the grip button to secure the probe in the Holding Tube.



Step 4: While depressing the grip button, twist the locking collar into place to fix the probe in the Holding tube.



Specifications

Holder Dimensions	120mmx40mmx40mm
Length	540mm/990mm
Weight	220g

Cautions for use

1. DO NOT attempt to remove the probe when the holding tube is locked.
2. DO NOT bend the guide tube sharply. It may cause damage to the probe shaft.
3. DO NOT insert the probe into any flammable gas or liquid.

ATS-VS22B Field Bag



The optional ATS-VS22B is designed to hold and protect the Display Unit. It includes a set of harnesses that allows you to suspend the Display Unit for hands-free operation. A sun visor is also included to help improve visibility of the display screen outdoors.

Operating Instructions

Step 1: Make sure that the display unit is turned off and remove the probe assembly.



Step 2: Install the Display Unit in the bag, making sure that the probe connector extends from the top opening.



Step 3: Attach one harness strap to the upper set of rings, and the other strap to the lower rings.



Step 4: Raise the sun visor and secure it by using the Velcro fasteners attached to the visor straps and the top of the bag respectively.



Step 5: Wear the harness by placing the upper belt around your neck and the lower belt around your waist and adjust for comfort.

Step 6: Re-attach the probe assembly and adjust the bag fitting if necessary to ensure that all controls and displays are visible and accessible.

Limited Warranty Statement

Aircraft Tool Supply Company, Inc. (“ATS”) warrants that the ATS-VS21 and ATS-VS22 videoscopes described in this manual (and hereafter referred to collectively as “videoscope”) will be free from defects in materials and workmanship. The limited warranty term is one year beginning on the date of invoice, as further described in the following text.

Damage due to shipping the videoscope to you is covered under this limited warranty. Otherwise, this limited warranty does not cover damage due to external causes, including accident, abuse, misuse, problems with electrical power, servicing not authorized by ATS, usage not in accordance with product instructions, failure to perform required preventive maintenance, and problems caused by use of parts and components not supplied by ATS.

This limited warranty does not cover any items that are in one or more of the following categories: SD cards; external devices; accessories or parts added to the videoscope after it is shipped from ATS.

During the one-year period beginning on the in-

voice date, ATS will repair or replace a videoscope returned to our facility solely at our discretion.

To request limited warranty service, you must contact Aircraft Tool Supply by telephone at 1-800-248-0638 or by email at sales@aircraft-tool.com within the limited warranty period. If limited warranty service is required, ATS will provide further instructions on how to return your videoscope for service. You must ship the videoscope back to ATS in its original or equivalent packaging, prepay shipping charges, and insure the shipment or accept the risk of loss or damage during shipment. ATS will ship the repaired or replacement product to you freight prepaid if you use an address in the continental United States, where applicable. Shipments to other locations will be charged to you, or sent freight collect.

ATS owns all parts removed from repaired products. ATS uses new and reconditioned parts made by various manufacturers in performing limited warranty repairs and building replacement products. If ATS repairs or replaces a product, its limited warranty term is not extended.

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