



Design and Manufacture of Video Pipeline Inspection Systems
A Full Service Company
www.rstechserv.com

Omni Star LED Pan and Tilt Zoom Color Camera

Model 10-1660

INSTALLATION MANUAL



Made in USA

IMPORTANT SAFETY NOTICE

Fire Safety Conditional Approvals

A fire safety conditional approval must be issued by an appropriate licensed electrical engineer for use of this sewer camera in areas of a sewer that have been demonstrated by testing and monitoring not to fall under the “Fire Safety Approval” requirement in Section 2540.2 of Title 8 of the California Code of Regulations. Testing and monitoring will be considered by the California Division of Occupational Safety and Health, to be sufficient for this purpose if all measurements indicate that the sewer atmosphere is below 10% of the lower explosive limit (LEL) and if the user meets all of the following additional conditions:

- (1) Before each use, inspects cable and electrical equipment for damage or wear that could compromise safety;
- (2) Test operates the sewer camera and associated electrical equipment in a dry location away from any potential exposure to hazardous conditions to determine whether the equipment functions normally and without any problems, such as sparking, loose connections, or other similar safety problems;
- (3) Tests for the existence of a hazardous atmosphere prior to opening any sewer access point using a multi-gas tester, and before energizing the equipment, conducts a test of the sewer atmosphere at the access point estimated to be closest to the end point of the camera work;
- (4) Provides continuous monitoring in the alarm mode at the access point from which the work is performed at all times while the sewer inspection camera is energized in the sewer;
- (5) De-energizes all electrical equipment and uses mechanical ventilation of a measurement exceeding 10% of the LEL is obtained;

and Discontinues use of all electrical equipment if the sewer environment cannot be maintained below 10%.

Table of Contents:

<i>PAGE 4</i>	Product Overview
<i>PAGE 5</i>	Operator and Equipment Safety
<i>PAGE 6</i>	Attaching Watertight Connectors
<i>PAGE 7</i>	Attaching Omnistar to 6” Crawler
<i>PAGE 10</i>	System Power
<i>PAGE 12</i>	Maintenance

Product Overview



The Omni Star LED Zoom Pan and Tilt Camera from R.S. Technical Services designed to be transported by the mainline transport (or skidded) and powered by R.S. Technical Services single conductor (sincon) and multi conductor cable. The compact camera is adaptable for use in sanitary sewer, storm sewer, and fresh water pipelines with diameters of 6" to 24". The camera transmits video and other transducer signals through the sincon cable to the Controller Power Supply. An auxiliary control box or hand held control box and the Controller Power Supply control the functions of the Omni Star Zoom color camera.

For optimum performance, The camera must be clean and properly maintained.

Operate transport with the flow.

The pipe should be clean as possible.

Water flow should be minimal.

Due to some uniquely challenging locations, it may be necessary to operate in difficult situations, which can reduce the efficiency of the equipment.

Operator and Equipment Safety

It is important to be familiar with operations, maintenance, and safety issues when working with RST equipment.



Read the entire manual before operating the equipment.

To prevent personal injury or damage to equipment, **turn off Camera power**. When making electrical connections, width adjustments and when maintaining the tractor or camera, disconnect all power to the control station before servicing.

Inspect all transport, camera, lighting cables, and bridles before and after each use. Replace any broken, worn or frayed bridles or cables.



Always use care when near an open manhole, and when climbing in or out of a TV inspection vehicle. The tractor and camera assembly can be placed into the pipeline **without** personnel entering the manhole. Use proper lifting ropes, cranes and winches for lifting equipment in/out of pipes.

Water Resistance Interconnect Cable.

ATTACHING CAMERA to TRACTOR 6-PIN

Make sure camera and Tractor are clean before assembly.

Place camera inside tractor cradle lining up mounting holes.

Bend cradle forks in a 90-degree angle to get access to mounting bolts.

Start 2 screws in front mounting holes by hand.

Start 2 screws in rear mounting holes by hand.

Tighten front and rear screws using Allen wrench. (5/32, long arm)

NOTE: Always tighten front screws first.

Return assembled cradle to its tractororing position.

Locate indexing notch on camera power cable and align with indexing tab on bulkhead connector.

Align connectors and carefully tighten nut while gently rocking connector to seat for watertight connection. (Ref. photo below)

DO NOT OVER TIGHTEN.

Bulkhead connector



Indexing tab

Camera power cable

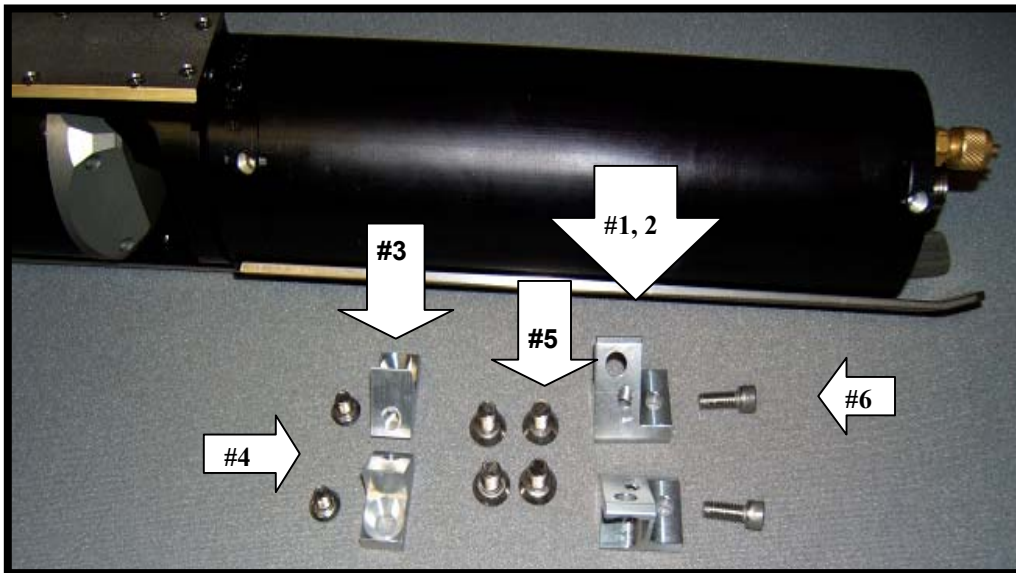


Indexing notch

Omnistar camera to 6 inch crawler installation

The *(optional)* installation kit to include:

#1	1 ea	451-34242	Right rear bracket
#2	1 ea	451-34243	Left rear bracket
#3	2 ea	451-34261	Front bracket
#4	4 ea	301-34287	1/4-20 x 3/8" undercut flat head screw
#5	6 ea	301-34290	5/16-18 x 1/2" undercut flat head screw
#6	3 ea	301-11005	1/4-20 x 5/8" socket head cap screw
#7	3 ea	301-11188	1/4-20 x 3/4" flat head screw
#8	3 ea	301-34289	1/4-20 x 1" flat head screw



TIP

Use the camera riser plate as a fixture to align the mounting brackets, see Figure 4.

Installation to crawler base plate, 6 inch pipe inspection set-up

Use the 5/16-18 x 1/2" undercut flat head screws to mount the brackets onto the camera as shown in Figure 1.



Figure 1

Place the camera onto the crawler base plate. Use two 1/4-20 x 5/8" socket head cap screws to fasten the rear brackets to the base plate. Start the screws but do not tighten.

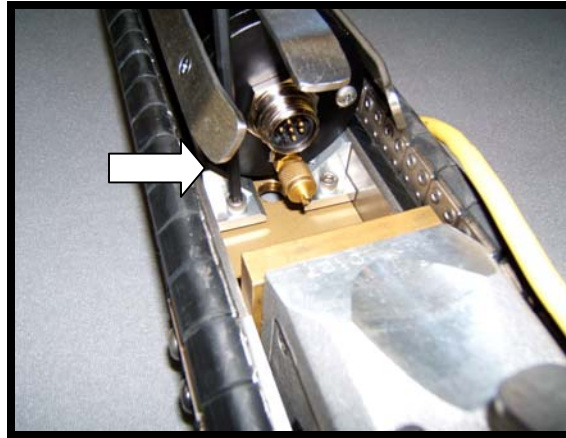


Figure 2

Place the crawler and camera on their backs. Use two 1/4-20 x 3/8" undercut flat head screws to fasten the front brackets to the base plate. Start the screws but do not tighten.

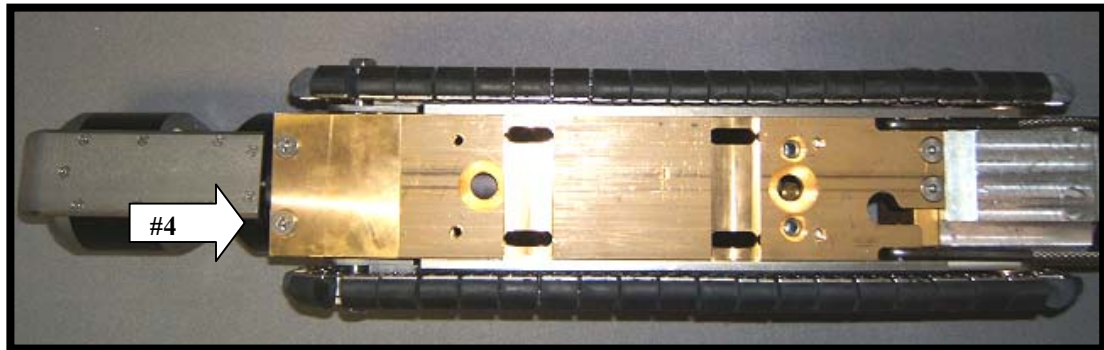
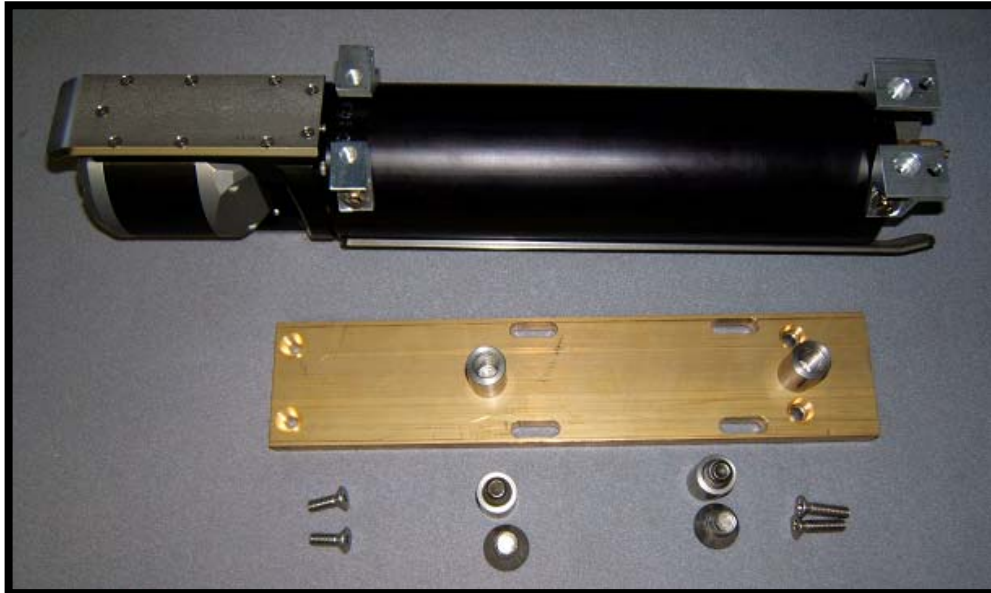


Figure 3

Carefully tighten the all screws. Make sure that the camera is seated flat against the base plate.

Installation to crawler camera riser plate, 8 to 15 inch pipe inspection set-up

Use the 5/16-18 x 1/2" undercut flat head screws to mount the brackets onto the camera as shown in Figure 1.



Place the camera on its back. Place the riser plate onto the camera. Use two 1/4-20 x 1" flat head screws to fasten the rear brackets to the base plate. Start the screws but do not tighten. Use two 1/4-20 x 3/4" flat head screws to fasten the front brackets to the base plate. Start the screws but do not tighten.

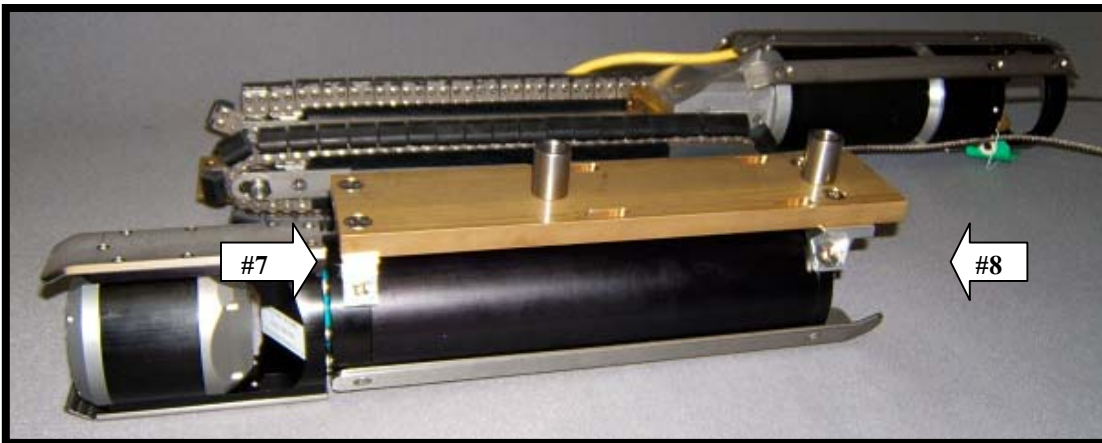


Figure 4

Carefully tighten the screws. Make sure that the camera is seated flat against the plate.

System Power



CAUTION: NEVER HOOK UP OR DISCONNECT ANY EQUIPMENT WITH POWER TURNED ON!

The Inspection System requires a steady supply of 120VAC to operate properly. Before starting of the generator or connecting shore power, make sure that ALL equipment inside the vehicle has been turned **OFF**. Turn down the controls for camera power and cable reel speed. After all equipment has been checked, connect the shore power cord.

If a generator is to be used, allow the generator to warm up for a few minutes.

Note: Diesel generators use a different control panel that is separate from the controller power supply. Refer to the appropriate generator operators manual for starting.

Verify that the voltage and frequency indicators on the controller power supply are in the green normal zone.



Caution: Before turning on any equipment, plug the keyboard into the data collection system. Plug the Auxiliary Control Box into the Auxiliary Control jack on the controller power supply.



Caution: If the voltage or frequency fluctuates into the red zones on the controller power supply, DO NOT turn on any of the equipment in the truck. Check shore power or the generator for proper operation, or have them checked by a qualified technician.



Caution: Route cords away from traffic or wet areas to avoid tripping on power cords.

Placing the equipment into the line

Locate the back of the truck so that the cable reel lines up in the direction of the pipeline to be inspected. Allow room to work around the opening while carrying the equipment.

Follow cable grip, bridle, and watertight connection instructions. Re-check the pipeline size and extension adjustments. Do not let cable “loop” at the location where it enters pipeline. Use guide poles with hook to keep the tractor stable as it enters pipeline.



Caution: Maintain control of equipment while lowering and lifting from manhole.

Most equipment damage occurs when camera is lowered into hole.

Pull camera/tractor far enough into pipeline to clear the bridle or cable grip.

Set the cable guide. Use double roller and/or single rollers, for protecting the cable and allowing it to slide down the hole without drag on the line. Use enough poles to clear top of the manhole by 2 feet.



Caution: Watch out for people, power lines and traffic when handling the downhole pole

Lowering camera/tractor into line

Put cable reel into “freewheel” and reel off enough cable so camera and tractor can be lowered into the bottom of the manhole. Place lowering rope ring under the top front runner or front of camera. Support weight of tractor and camera with the cable in one hand and rope in the other.

NOTE: RST skycrane can be used in place of the cable and rope method.

Slowly lower the front of camera into manhole to clear manhole ring. Lower tractor and camera to the bottom of manhole facing camera in the direction of the pipeline to be inspected. When tractor and camera are resting on bottom of the manhole, release the rope ring and remove it from the manhole. Check all camera and tractor functions again before proceeding. Move tractor forward so the rear of the tractor and the cable connections are fully inside the pipe. The use of guide poles with a hook on the end will help to keep the tractor stable as it enters the pipeline.

Install the down hole pole, double roller, and top manhole roller. The use of double roller and/or single roller is for protecting the cable and allowing it to slide down the hole without drag on the line.

Remove any slack from the cable and reset the footage counter. It is best to do this by hand or with cable reel set to low speed.

Maintenance

Each time the camera is removed from the pipeline, wash the entire assembly.

Inspect camera cradle and hardware.

Inspect camera lens for scratches and cracks.

Turn camera on and check light bulbs.

Inspect the power cable and watertight connections for damage.

Inspect the bridle, clamps, skids, rails, and mounting hardware.