

**R S Technical Services, Inc.**  
Design and Manufacture of Video Pipeline Inspection Systems  
A Full Service Company  
SALES SERVICE PARTS

# Mini Tractor

## Standard

### Model 32-3000

# INSTALL MANUAL



Made in the USA



# Table of Contents

<b>PAGE 3</b>	<b>Product Information</b>
<b>PAGE 4</b>	<b>Technical Specifications</b>
<b>PAGE 5</b>	<b>Operator and Equipment Safety</b>
<b>PAGE 6</b>	<b>Equipment Compatibility</b>
<b>PAGE 7</b>	<b>Accessories</b>
<b>PAGE 8</b>	<b>Options</b>
<b>PAGE 9</b>	<b>Assembling Camera to Tractor</b>
<b>PAGE 18</b>	<b>Attaching Tractor to Reel</b>
<b>PAGE 11</b>	<b>Placement of the Truck</b>
<b>PAGE 12</b>	<b>Retrieval of the Equipment</b>
<b>PAGE 13</b>	<b>Maintenance</b>

## **Product Overview**

### **MIGHTY MINI TRACTOR, STANDARD**



The RST Mini Tractor is a four-wheel drive inspection vehicle developed for 4-inch lines. It has an adjustable (manual) camera mounting for central viewing in lines up to 12 inches with an optional set of tires. The Mini Tractor is designed to transport R.S.T. 1300 series cameras. It can be supplied with a dedicated camera or with a dual-purpose camera used with the R.S.T. Push Cable System. The Push Cable Cameras already in field need on a minor factory modification to allow use of the Mini Tractor to transport them. The camera can be used with either device.

The compact, easy to use unit is adaptable for use in sanitary sewer, storm sewer, and water main pipelines 4 inch to 10 inches (by using the optional larger tires). The weight of the Mini Tractor can be adjusted to improve traction if needed. Using Sincon cable, the unit travels three-speed in forward, with freewheel for practical operation. The Mini Tractor is controlled by the auxiliary control box or the hand held control box and the Controller Power Supply. For optimum performance, the Mini Tractor must be clean and properly maintained.

The Mini Tractor should be setup to the proper width adjustment for the diameter pipe being inspected. The Mini Tractor must be clean and properly maintained. Operate transport with the flow. Water flow should be minimal.

The pipeline should be clean as possible.

# Technical Specifications: MINI TRACTOR

PERFORMANCE INFORMATION	
Minimum Pipeline Size	4-inches
Maximum Pipeline Size	10-inches to 12-inches
Range	Up to 500-feet (depending on pipeline conditions)
Nominal Pulling Force	50 pounds with optimum traction
Speed	Up to 25-feet per minute with 2-1/2-inch tires
Power Requirement	90 to 120 Volts from Camera Cable
Motor Type	Permanent Magnet
Drive System	4-Wheel Drive with 3 speed changes
Drive Type	Internal Gear and Chain with freewheel
Tire Size	2-1/2-inch High Traction Tires are standard issue
Camera Mount	Cantilevered Sleeve
Lighting System	Internal Camera Lights
PHYSICAL INFORMATION	
Length	15-inches
Width	3-1/4-inches
Height	3-inches
Weight	14-pounds, no camera, with 2-1/2- inch wheels 16-pounds with camera, with 2-1/2- inch wheels 18-pounds, no camera, with 3-1/2- inch wheels 20-pounds with camera, with 3-1/2- inch wheels

# Operator and Equipment Safety

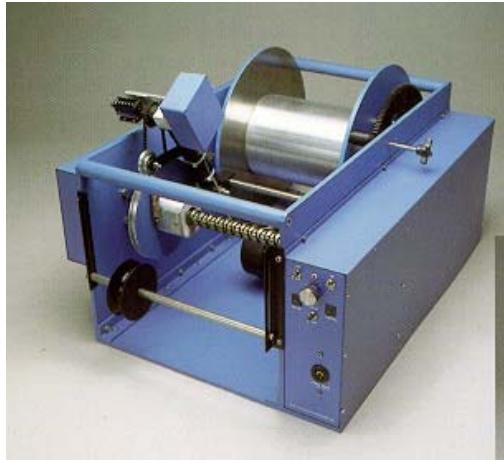
It is important to be formalized with operations, maintenance and to know the safety issues when working with RST equipment.



1. Read the entire manual before operating the equipment.
2. To prevent personal injury or damage to equipment, **turn off power**, disconnect all power to the control station and the transport/camera/lights when making electrical connections, width adjustments or performing maintenance.
3. Inspect all transport, camera, lighting cables and bridles before and after each use. Replace any broken, worn or frayed bridles or cables.
4. Verify all system power is **off** before connecting or disconnecting cables.
5. Always use care when near or at an open manhole. Always use care when climbing in or out of a TV truck. Always use proper lifting ropes, cranes and winches for lifting equipment in/out of pipes.
6. The use of downhole equipment will extend the life of your sincon cable and give you more footage on a run.

# Equipment Compatibility

The R.S. Technical Service Mini Tractor is designed for use with mainline vehicle mounted systems as well as Portable Mainline systems. This transport requires the use of a power unit, control box, cable reel and camera.



It may be possible for the RST Mini Tractor to operate with other brands of inspection equipment. Contact your dealer or RST for possible applications.

# Accessory Kits for Mini Tractor

The RST Mini Tractor generally comes with the following accessories:

## 840-30967 KIT, ACCESSORIES, MINI TRACTOR

1	701-30543	BOX, TOOL, PLASTIC, W/TRAY	1.0 EA.
2	701-15593	BAG,PLASTIC,2.5 X 3,4 MIL 1000/CS	1.0 EA.
3	316-16857	WASHER,FLT,#6,.438OD,.040T	5.0 EA.
4	301-12007	MSCR,PAN,PHH,6-32X.37 SS	5.0 EA.
5	301-11653	MSCR,PAN,PHH,6-32X.25 SS	5.0 EA.
6	560-16073	ADPTR,CBL,10",TNCf > 3PIN MALE PIGTAIL	1.0 EA.
7	867-30925	ASSY, WHEEL ,HEX DRIVE,W/3.5" KNOBBY TIRE, MINI TRACTOR V2	4.0 EA.
8	867-30926	ASSY,CBL,3 PIN MALE(SCREW-ON) - 3 PIN FEM (PUSH-ON)PIGTAIL	1.0 EA.

# Options

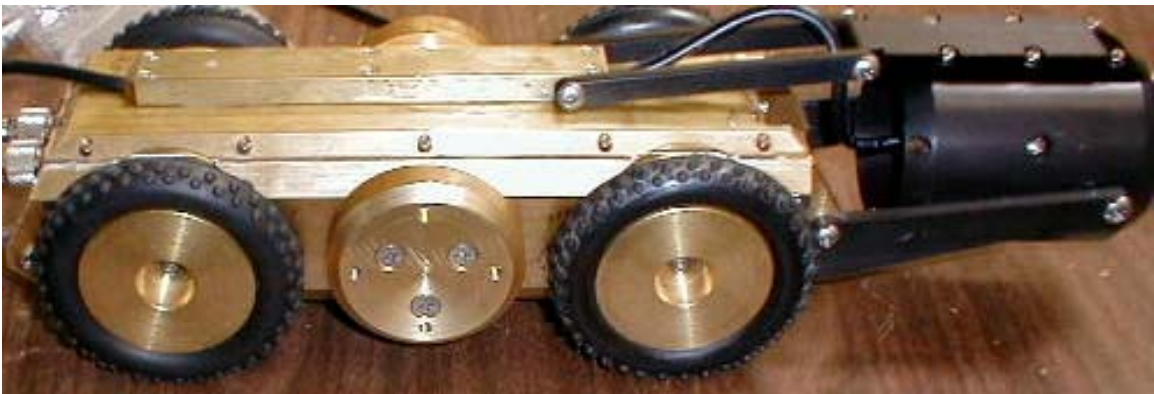
A Dedicated Color Mini Camera

A Dual Purpose Color Mini Camera that can be used with a Push Cable Reel.

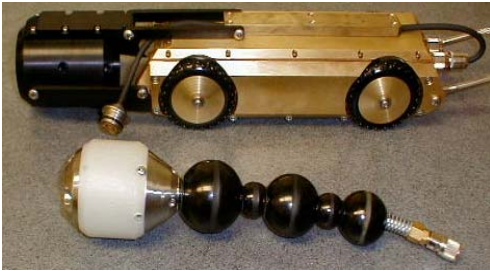
Alternative Tire types

Alternative Cable types

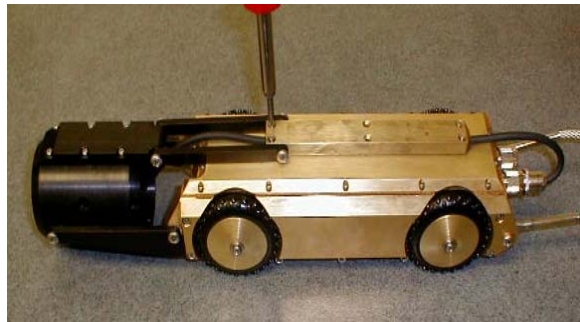
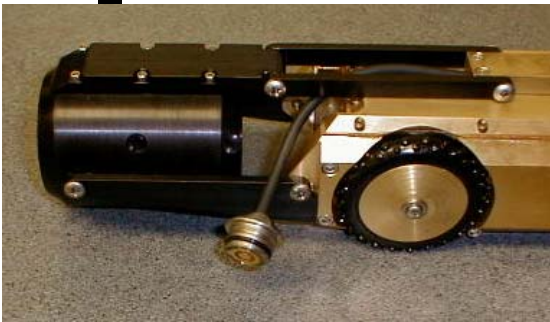
Addition bolt on weight.



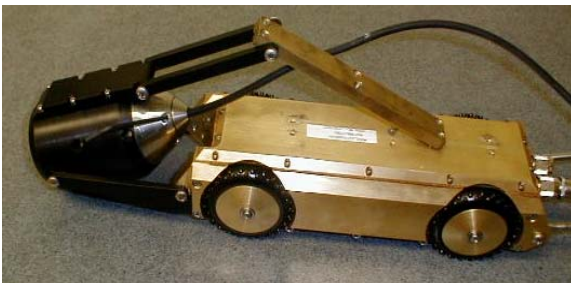
# Assembling Camera to Tractor



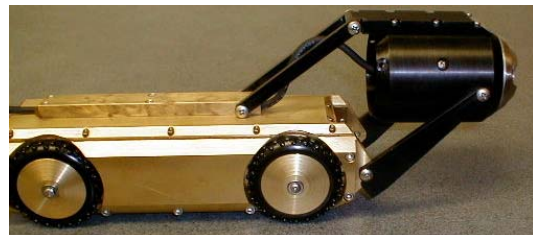
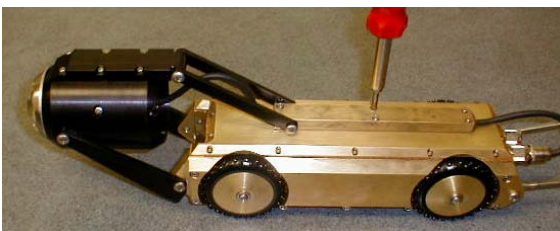
Take sleeve and tail off camera.



Remove the 6 screws holding on the top rail



Slide camera in sleeve, plug into tail, tighten screws. Slide camera forward, lines up holes tighten screws.



Raise camera tube. Pull slack in camera power cable.  
Replace 6 screws holding the top rail.

Adjust camera height for size of pipe.

## Attaching Tractor to Reel



**Always handle  
cables.**

560-16073  
3-PIN  
ADAPTOR  
CABLE

before

3-PIN  
BULLET  
PIGTAIL

1 pigtail and camera power

806-21760  
3-PIN PUSH ON TO  
3-PIN SCREW ON



Adjust slack in bridle cables after attaching camera power connectors. Pull on cable grip to make bridles taut and power cables slack. Tighten the 4 SHCS in the cable grip assembly.



## Placement of Inspection Truck

- 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 pig tail instructions.
- Re-check the pipeline size and extension adjustments.
- Do not let cable “loop” at the location where it enters pipeline.

### Placing the equipment in line

Bridles  
Taut

Power cables  
slack

- Slowly lower the front or mini tractor into manhole to clear manhole ring.
- Lower mini tractor to the bottom of manhole facing camera in the direction of the pipeline to be inspected.

**Caution: Maintain control of equipment while loading and unloading into manhole.**

**Most equipment damage occurs when camera is lowered into hole.**

- When mini tractor and camera are resting on bottom of manhole, release the rope ring and remove it from the manhole.
- Check all **Tighten Screws on cable grip** mini tractor functions again before proceeding. Move mini tractor forward until the mini tractor and the cable connections are fully inside the cable grip.
- Use guide poles with hooks to keep the Mini Tractor stable as it enters pipeline.

- Set up down-hole poles, shoes and manhole roller. 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**

- Remove any slack from the cable. It is best to do this by hand or with cable reel set to low speed.
- Reset the footage counter.
- Release the drag brake on the cable reel.
- Set cable reel in the free wheel.

### **Begin inspection**

## **Retrieval of the Equipment**

### **Ending the Run**

- Make sure mini tractor is in “free wheel”.
- Use low speed while retrieving mini tractor.
- Use care when removing camera from line.
- Pull mini tractor out of pipe into manhole so that front of camera is clear of pipe.
  - Remove rollers and poles to make room to lift mini tractor and camera from manhole.
  - Lift mini tractor and camera assembly from manhole using the rope and cable.
  - Keep the camera clear of any ladders or drop lines.
- When mini tractor and camera are out of hole:
  - Turn down light power on camera
  - Turn off camera power
  - Wash unit over hole
  - Wipe down and store the cable, camera, and mini tractor.



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



**Caution: You must maintain control of the equipment at all times while loading and unloading. Most equipment damage occurs when camera is loaded into the hole.**

## Maintenance

- Each time the Mini Tractor is removed from the pipeline the entire assembly should be washed cleaned.
- Inspect Mini Tractor tires and axles seals for damage. Replace if necessary.
- Inspect the power cable, bridle, and connector to make sure they have not been damaged.
- Inspect the camera clamps, and mounting hardware.
- Inspect bridle, rails, and pigtail connections.
- Inspect the camera and its operations

