

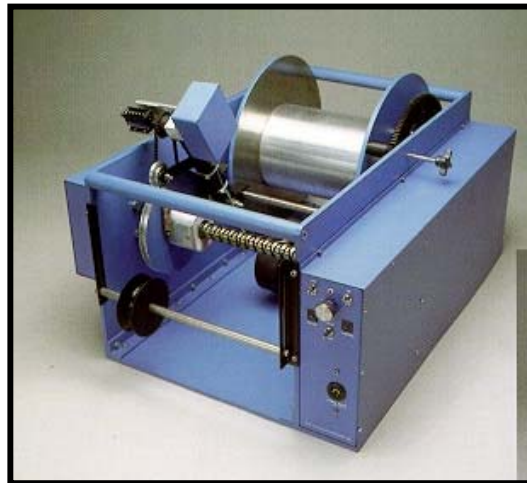


Design and Manufacture of Video Pipeline Inspection Systems
A Full Service Company
www.rstechserv.com

Mainline Cable Reel

Model 30-1000

OPERATIONS MANUAL



Made in USA

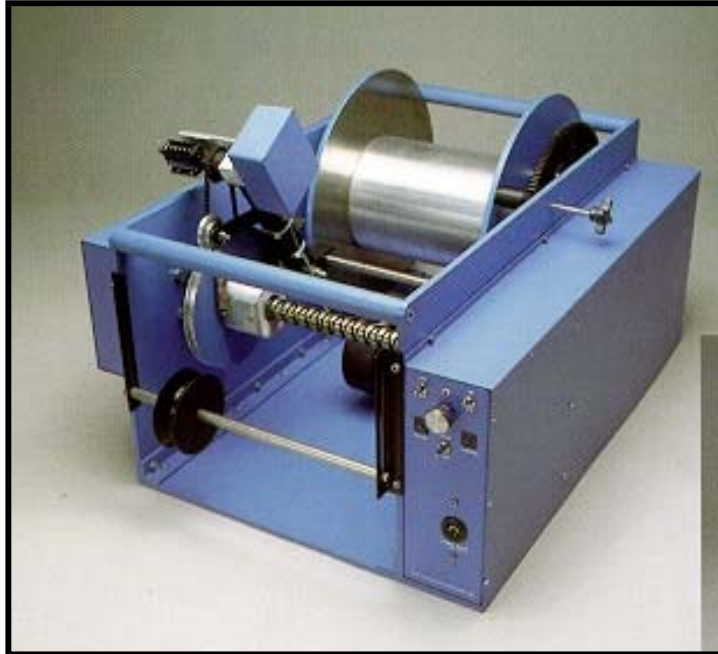
NOTICE

THOROUGHLY READ THE OPERATION'S MANUAL BEFORE OPERATING EQUIPMENT. SAFE OPERATION AND TOP PERFORMANCE CAN BE OBTAINED ONLY WITH PROPER OPERATION AND MAINTENANCE.

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Product Overview



The R.S.T. Mainline Cable Reel is a winch designed to be mounted in the rear of a vehicle. The cable reel is capable of running up to 2500' of single conductor cable or 1500' multi cable. The camera/tractor transmits video and other transducer signals through the cable to the Controller Power Supply. The functions of the camera/tractor are controlled by an auxiliary control box and the Controller Power Supply. The cable reels engineered to be run by the operator at the Controller Power Supply or independently at the reel. The cable reel has a manual footage counter and a counter wheel that sends a digital signal to the data capture equipment for footage overlay. The cable reel has high and low speeds for use in retrieval of camera equipment. A hand held controller can be plugged into the control panel of the cable reel. This gives the operator the ability to run the camera/tractor functions, aiding in the insertion or the retrieval of equipment at the manhole. This cable reel also has an electrical outlet that connects an optional remote power (tag line) winch. The Power Remote II functions are controlled by the cable reel controls on the reel or in the operating station.

Technical Specifications

The Mainline Cable Reel is designed with:

A drum capable of storing 2500-feet of armored single conductor cable and 1500-feet multi cable.

A permanently sealed mercury wetted slip ring assembly that is maintenance free and will produce a noise-free video transmission.

Automatic level wind, complete with a mounted footage counter.

Conveniently located controls.

Dimensions: (not to exceed)

36-inches in length

28.5-inches in width

19-inches in height.

The aluminum cable drum is supported by self-aligning, heavy duty pillow block bearings with grease fittings.

The Mainline Cable Reel is fabricated from aluminum plate that is powder coated for lasting corrosion protection.

VARIABLE SPEED MOTOR AND DUAL GEAR RATIOS

The cable drum is driven by:

A ¾-horsepower variable speed motor

A drive chain.

The LOW gear ratio, the HIGH gear ratio, and the NEUTRAL are electronically selected using a momentary selector switch.

A switch is used to disengage the cable drum from the drive assembly to allow the cable to be unreeled with minimum drag.

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.

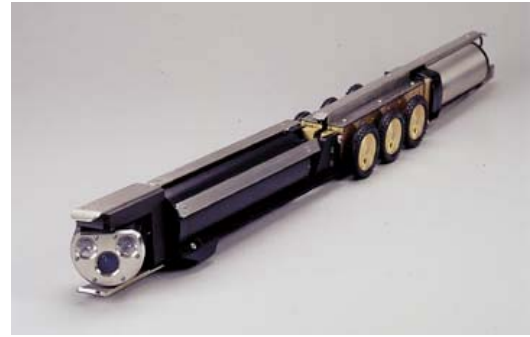
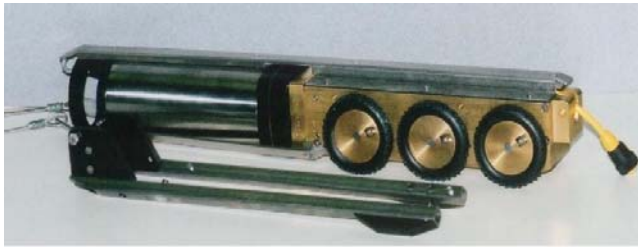
Inspect all transport, camera, lighting cables, and bridles before and after each use. Replace any broken, worn or frayed bridles or cables.



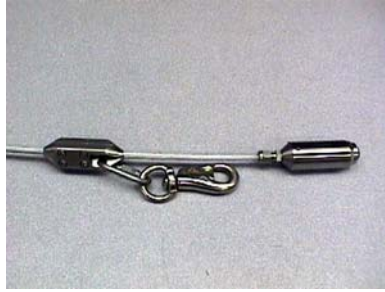
Always use care when near an open manhole, and when climbing in or out of a TV inspection vehicle. The tractor and camera assembly can be placed into the pipeline **without** personnel entering the manhole. Use proper lifting ropes, cranes and winches for lifting equipment in/out of pipes.

Equipment Compatibility

The RST Mainline Cable Reel is designed for use with the mainline series of equipment. This mainline reel is compatible with the pan and tilt mainline cameras, the mini mainline cameras, and the use of the mainline wheel tractor, crawlers, and storm drain tractors. The cable reel can also be upgraded for explosion proof equipment.



Watertight Interconnect Cable



Attaching the Transport to the Cable Reel: Sincon Cable

NOTE: Always inspect connector cable before use, and remove any moisture or debris found in the connector.

Locate indexing notch on the bullet connector and align with indexing tab on 3-pin adapter cable (306-30631).

Carefully tighten nut while gently rocking connector to seat for watertight connection.

Locate indexing notch on 6-pin adapter cable (306-30631) and align with indexing tab on bulkhead connector of tractor.

Carefully tighten nut while gently rocking connector to seat for watertight connection.

DO NOT OVER TIGHTEN.

Removable pigtail bullet assy.
(867-31751)



3-pin to 6-pin adapter cable
(306-30631)



Indexing tab

Bulkhead connector



3-pin to 6-pin adapter cable (306-30631)



Indexing notch

Pigtail and Cable Grip Connection (old style)

Remove the bulkhead protector ring and inspect bulkhead connector for damage. The pins should be straight and clean, with no cracks in the housing. (Reference photo #1)

Inspect the pigtail for damage. The connector should be clean inside, with no torn rubber.

Slip the bulkhead protector ring over the pigtail with the threaded end facing the connector end of the pigtail.

Align the indexing bump on the pigtail, to the notch on the nut of the bulkhead connector. This allows the large socket inside the pigtail to line up with the large pin on bulkhead connector. Press pigtail onto the bulkhead connector. Do not twist the pigtail. Lightly pinch the boot area to allow any trapped air out of the pigtail. (detailed picture of pigtail, ring, bulkhead)

Install bulkhead protector ring to the bulkhead connector. Only thread the protector ring until it stops. Do not tighten! (Reference photo #2)

With the pigtail installed, connect the swivel snap hook to the eyelet on the bridle. There should be no twist in the pigtail or the bridle.



To disconnect pigtail, turn off power, remove the bulkhead protector ring, and unplug the connector preferably using the pigtail removal tool.



Photo 1



Photo 2

Cable Grip Adjustment

Check the cable grip for proper adjustment. If adjustment is needed:

Clean out the cap screws on the cable grip as well as the cable.

Loosen the four cap screws on the cable grip.

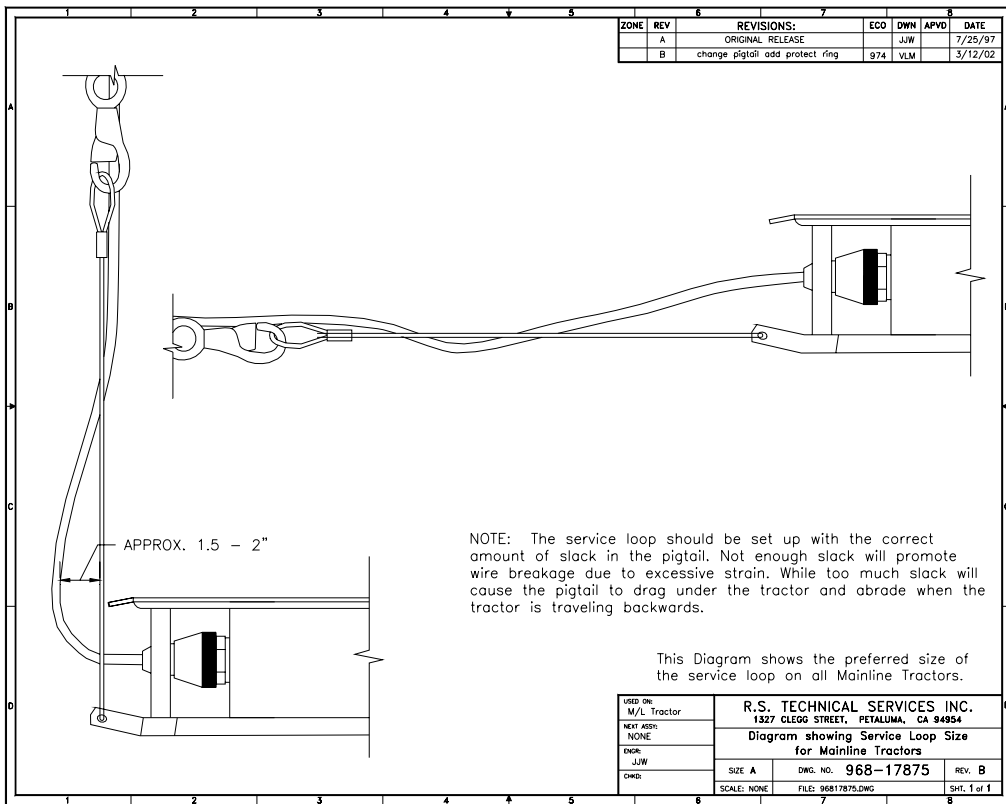
With the screws loose, it may be necessary to pop the cable grip on a hard surface to separate the halves from the cable.

Slide the cable grip to allow for proper slack. The cable grip should be adjusted to provide slack in the pigtail when the bridle is tight. There should be enough slack to allow the wire area to bend, but not enough to bend the boot area when the cable is raised at a 90-degree angle while loading and unloading the equipment.

Retighten the cap screws on the cable grip. The halves should be tightened evenly to prevent binding. Always use a cross pattern when tightening the cable grip.



WARNING! IMPROPER CABLE GRIP ADJUSTMENT IS ONE OF THE LEADING CAUSES OF PIGTAIL FAILURE!



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 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 fluctuate into the red zones, **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.

Cable Reel Operation

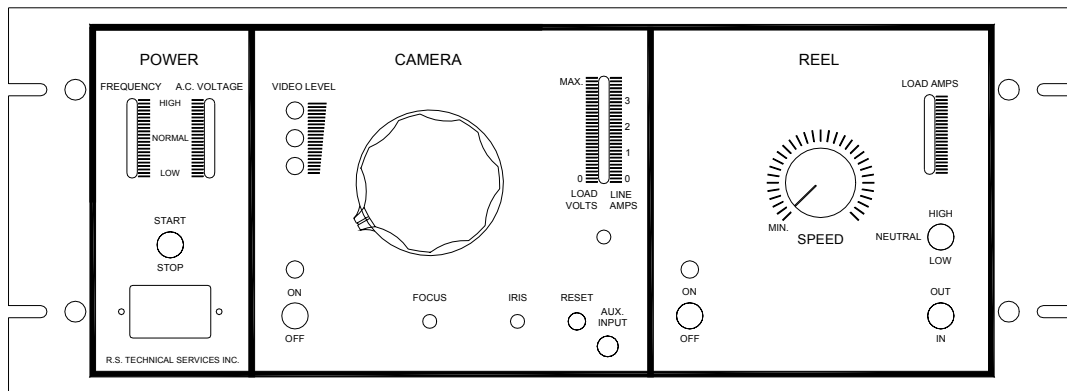
****Multi-conductor: consult operations manual for multi conductor controller power supply**

Ensure that the Camera ON/OFF switch is in the **OFF** position before connecting camera to tractor unit, or auxiliary control box to the Controller Power Supply.

Set the LIGHT INTENSITY control to “MINIMUM”, or full counter clockwise.

Set the REEL SPEED control to the ‘MINIMUM”, or full counter clockwise.

When power is applied to the controller power supply the Frequency and Voltage indicators will be in the normal range.



Controller Power Supply

The Mainline Cable Reel can be operated either from the Controller Power Supply or from the controls on the reel. The cable reel functions, for safety reasons, can be used only at one station at a time. To determine which station, the power must be turned on from that station. Again, for safety reasons, the power to the cable reel can be shut off at any time from either station.

The **In/Out** switch is used to control the direction of the reel, and to control the operation of the optional Power Remote Winch.

The speed of the Cable Reel/ Power Remote Winch can be adjusted in either the low or the high-speed ranges.

Low range is used when precise control is required.

High range is used for fast retrieval of cable.

Neutral (center position between **High** and **Low**) is used when the reel needs to be freewheeling.

To Operate the Cable Reel:

Turn the Speed control knob to “MIN”. Place the gear select switch to the “Neutral” position

Turn the power switch “On” at the location from which the reel will be controlled.

Select either **LOW** or **HIGH** speed range. (You will hear the gears engage)

Set the **In/Out** switch to the desired direction.

Start the reel by **slowly** turning the Speed knob to the right until the desired speed is reached.



Caution: **Always** pay close attention to what the cable reel is doing.

Do Not leave the reel unattended while running.

Personal injury or equipment damage could result from unattended operation.

When pulling the cable out from the cable reel, or using the tractor, the cable reel should **always** be in the **neutral** position.

To find the Neutral Position:

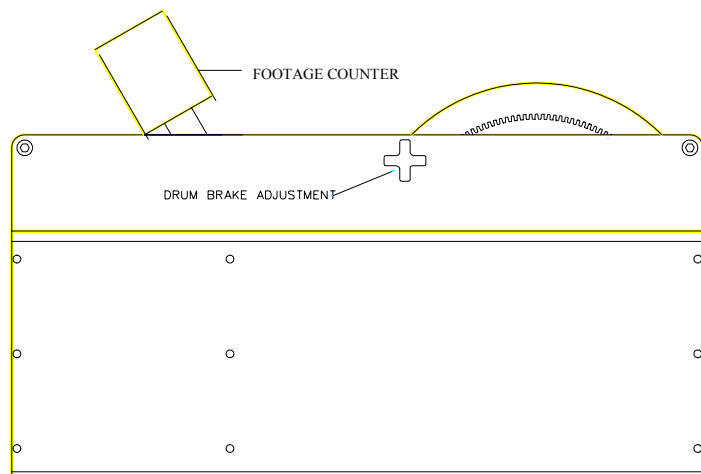
Set the **High/Low** switch to **Neutral** (center position)

Set the **In/Out** switch to **Out**.

Turn the Speed knob **slowly** the to the right until the motor starts turning and the engaged gear drops out. The motor will spin free without the drum turning. **The reel is now in Neutral.**

A manual brake is provided to prevent backlash of the cable while the reel is in neutral. The brake should be adjusted to be loose enough for free movement of the cable drum, but tight enough to stop the drum when cable is no longer being pulled

Always set the drum brake before moving the vehicle from one location to another.



Maintenance

Keep cable reel clean.

Inspect footage counter and footage wheel for dirt or where.

Inspect level wind shaft and lube.

Turn drag brake to check spring tension.

Inspect the wrap of the cable; adjust level wind shaft if needed. .

Inspect the power cable and watertight connections for damage.

Inspect the bridle, clamps, mounting hardware.

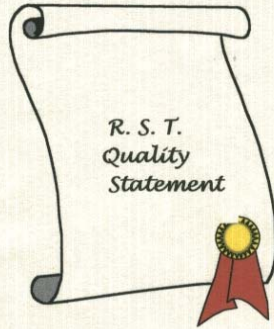
Inspect the bullet termination, adapter cables

Multi conductor connectors have extra length built into them so they can be re-terminated if damaged. Keep extra length tied up to keep from dragging.

6-pin camera power is 31" long, 6-pin crawler power is 29" long. Follow termination instructions in the re-termination kit.



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EACH PIECE OF R.S. TECHNICAL SERVICES, INC. MANUFACTURED EQUIPMENT IS SUBJECT TO STRICT STANDARDS OF QUALITY AND WORKMANSHIP ESTABLISHED BY OUR ENGINEERING AND QUALITY ASSURANCE DEPARTMENTS.

THROUGH A SYSTEMATIC INSPECTION PROGRAM, THE QUALITY ASSURANCE INSPECTION PROCEDURES ENSURE THAT ALL THE EQUIPMENT AND PARTS MEET OR EXCEED THOSE STANDARDS.

A handwritten signature in black ink, which appears to read 'Terry Perry'. The signature is written in a cursive style and is positioned above a horizontal line.

TERRY PERRY
QUALITY ASSURANCE MANAGER



Design and Manufacture of Video Pipeline Inspection Systems
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LIMITED WARRANTY POLICY

R.S. Technical Services, Inc. (RST) warrants all items of our manufacture for defects in materials and / or workmanship for one (1) year from date of receipt by the Customer.
(unless otherwise stated)

This policy is limited to items manufactured by RST. i.e. Camera, Reels, Controllers, Data Displays, Winches and Tractor Transport Vehicles.

In the event of any malfunction or failure of the equipment, the customer is required to request authorization from RST to return defective parts or components by calling the RST toll-free number- **1-800-767-1974** and requesting an MRA number. (see Figs. 1 & 1A for an example of the form.)

The returned parts or components shall include a packing list, part identity, and the reason for the return of the part.

Freight costs are the responsibility of the Customer unless otherwise agreed to by RST.

All in warranty equipment in need of repair shall be shipped to:

R.S. Technical Services, Inc.
1327 Clegg St.
Petaluma, CA 94954

OR

R.S. Technical Service, Inc
292 Midland Trail
Mt. Sterling, KY 40353

RST shall at our option, repair or replace any defective part or component in our service facility, or ship the customer a replacement component or part.

The customer shall return the defective part or component within ten (10) working days after receipt of the replacement for credit.

Not covered by this policy are expendable or wear-out items i.e. light bulbs, drive belts, cable connectors.

The generator, monitors, VCRs and air conditioner shall be covered by the Manufacturer's warranty and any services shall be referred to each Manufacturer's service organization.

No warranty shall be applicable to malfunctions due to damage, neglect, wear, misuse, or improper handling or repairs to any part of the equipment.

Improper repairs are deemed to be repairs made by persons other than factory authorized personnel or repairs not made in accordance with and covered by the manufacturer's service manuals, or repairs utilizing parts or materials not equal to those furnished by the manufacturer.

NOTE: Any un-authorized repairs of any RST equipment will invalidate the warranty.

The responsibility of R.S. Technical Services is set forth above.

RST shall not be liable for any consequential or incidental damages to persons or property resulting from use of or any breach of warranty expressed or implied, to this (these) products.



MERCHANDISE RETURN AUTHORIZATION (MRA) POLICY

All equipment sent in for repair or parts returned for replacement or credit MUST be accompanied by a completed Merchandise Return Authorization (MRA) form.

If equipment or parts are received by R.S. Technical Services, Inc. (R.S.T.), without an MRA form or with a partially completed form, the equipment or parts will be held until an MRA form is received.

Call either your Dealer or the R.S.T. Customer Service Department, whichever is appropriate, to obtain an MRA number.

The MRA form must contain all of the following information:

- MRA Number
- Date
- Business name
- Shipping address
- Billing address
- Serial Number(s) of the equipment
- Contact name
- Telephone number of contact person
- Fax number of contact person
- PO number
- Estimate requirements
- Detailed description of problem(s)
- If returning parts, indicate whether a warranty replacement or a credit is expected.

Provide the number of the invoice to be credited, model and serial numbers of the equipment being sent in for repairs.

ESTIMATE REQUIRED

If a customer has requested an estimate before the equipment is repaired, an estimate will be prepared as soon as possible. A Customer Service representative will then contact the customer to provide the estimate and obtain approval to proceed with the repair. Upon acceptance of the estimate, R.S.T. will repair the equipment. If the estimate is not accepted within 30 days, the equipment will be returned to the customer in the same condition in which it was received.

COD TERMS

If a customer is on COD terms, Customer Service will contact them to provide the cost of the repair or parts (including tax, freight and handling charges) and advise them the equipment or parts will be shipped COD. Upon receiving approval from the customer to proceed with the repair, R.S.T. will repair the equipment. If the customer decides not to have the equipment repaired, the equipment will be returned to the customer in the same condition in which it was received.

PARTS RETURN POLICY

R.S.T. will issue a full refund, (except freight), on parts returned within 90-days of the date of purchase with the provision that the parts were returned in new condition.

By completing the MRA form as indicated above, repairs and issuance of credits will be expedited, and loaners will become more available to customers.



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**THE FOLLOWING MRA FORM AND INSTRUCTIONS
ARE PROVIDED FOR YOUR CONVENIENCE**

MAKE COPIES OF THE FORM FOR YOUR USE.

FILL OUT THE FORM COMPLETELY AND OBTAIN AN MRA NUMBER

MAKE A COPY OF THE COMPLETED FORM FOR YOUR RECORDS

**INCLUDE THE ORIGINAL WITH THE EQUIPMENT OR PART (S) THAT ARE BEING
RETURNED.**



Design and Manufacture of Video Pipeline Inspection Systems
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SALES SERVICE PARTS

Merchandise Return Authorization (MRA)

Date _____

MRA #

R.S. Technical Services, Inc.

Customer Service Telephone: 1.800.801.1199

1327 Clegg Street, Petaluma, CA 94954

Customer Service Fax: 1.707.769.8806

SECTION I

Company Name _____

Shipping Address _____

City, State, Zip _____

Contact: _____ Telephone No: _____

Fax No: _____

SECTION II

If your merchandise **IS NOT** covered by warranty,
please check the appropriate box.

Expedite, no P.O. required

OR

Expedite, use P. O. #: _____

OR

Estimate required

Serial number(s) _____

SECTION III

What merchandise are you returning? _____

Why are you returning this merchandise? (Be specific. If more space is required, use the back of this page)

All merchandise sent in for repair, replacement or credit **MUST** be accompanied by a completed MRA form including the MRA number assigned by either R.S.T. or your Dealer.

If you are returning parts for credit, please indicate the invoice number to be credited.

This will expedite issuance of the credit.