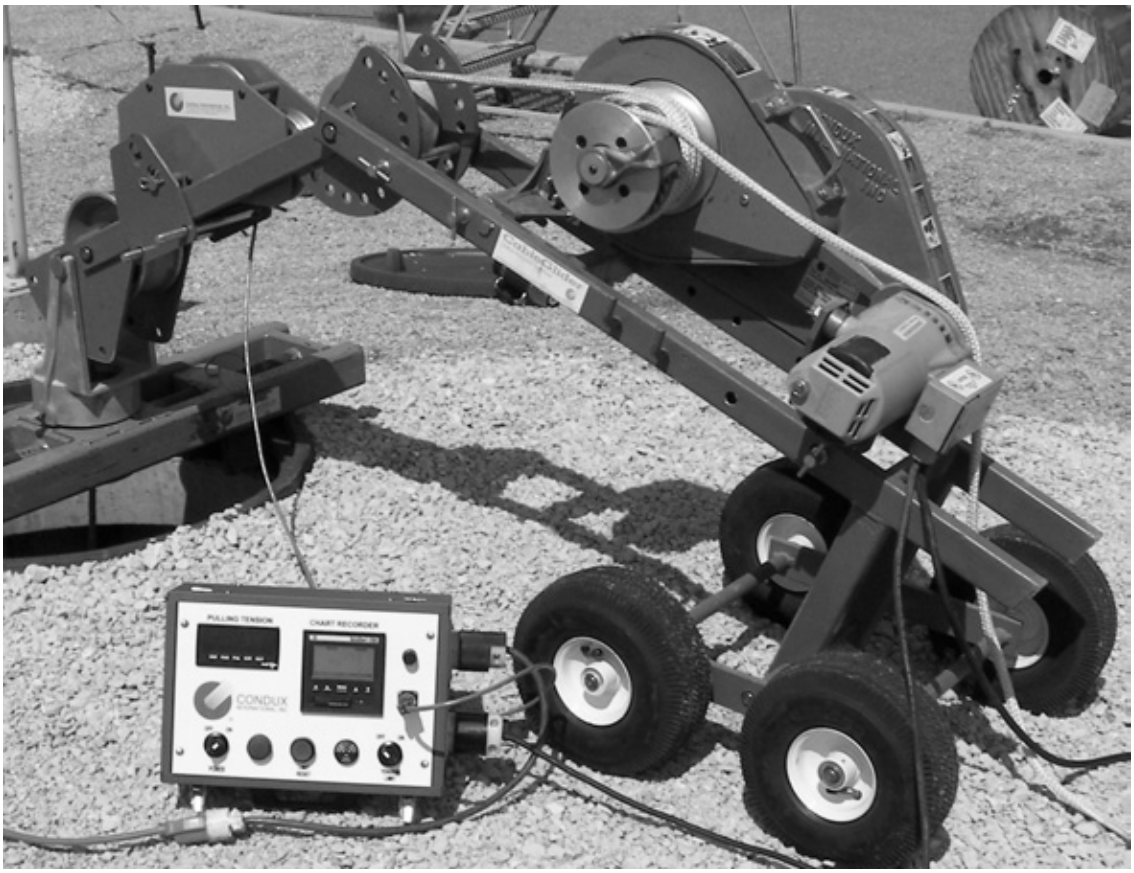
USER'S GUIDE & SAFETY MANUAL

Running Line Tensiometer



CONDUX

ISO 9001:2008
CERTIFIED

Important Safety Notice

WARNING: When using electric tools, basic safety precautions should always be followed to reduce the risk of fire, and personal injury, including the following:
Read and understand all procedure and safety instructions before using the Condux Running Line Tensimeter. Observe all safety information on this page and note specific safety requirements as explained by procedures called out in this manual. Failure to follow these instructions could result in serious personal injury or death.

ADVERTENCIA

Favor de leer y comprender todas las instucciones de operación y seguridad antes de usar la máquina. Si Ud. No comprende las instrucciones favor de consultarle a su jefe.

!WARNING: Electrical equipment is hazardous. Train personnel to use basic safety precautions. Misuse can result in serious personal injury or death

!CAUTION: Wear personnel protective equipment: hard hat, safety glasses, safety shoes, and leather work gloves

!WARNING: Read all instructions before using a Condux Running Line Tensiometer. Observe all safety information on this page, and note specific safety requirements as explained by procedures called out in this manual. Failure to follow these instructions could result in serious personnel injury or death. Save this user's guide for future reference

Favor de leer y comprender todas las instrucciones de operacion y seguridad antes de usar la maquina. Si Ud. No comprende las instrucciones favor de consultarie a su jefe.

Save this user's guide for future reference

CONDUX®

If you have questions on:

Safety – Operations – Applications

Call 1-800-533-2077

Table of Contents

1 General Information

General Product Use

A. The Condux Running Line Tensiometer, used with the Condux CableGlider® cable puller (or other rope capstan pullers) will give accurate measurements of the force exerted on a cable as it is installed. It consists of two components: the Mechanical Sensing Unit (which mounts directly to the cable puller) and the Electronic Control Box.

!CAUTION: Electronic Control Box and Mechanical Sensing Unit are specifically calibrated as sets. Sets are identified by matching the last three serial number digits on each unit. Mixing non-matching units will result in faulty operation.

Operator Qualifications

A. Operator must know the required safety directives to run the product that are pertinent to the country where it is being used.
B. Operator in charge of the product and installation project must be appropriately dressed, avoiding large clothes, hanging jewelry or whatever might become entangled in the moving parts
C. Operator must also wear the necessary protective equipment such as gloves, boots, helmet, etc.
D. Operator must carefully follow all advisements contained in the instruction manual or on the machine

Operator must have work area kept clean of obstacles that might inhibit a safe working area.

Maintenance Qualification

A. Periodically inspect product for wear and tear.
B. Authorized and trained personnel must do all maintenance operations. Trained personnel are defined as people who have received qualified training from the using company or from the manufacturer

2 Safe Operating Practices

Important Safety Instructions

Electrical Requirement

1. This RLT should be grounded while in use to protect the operator from electric shock The RLT is equipped with a 3-conductor cord and 3-prong grounding type plug to fit the proper grounding type receptacle. The green conductor in the cord is the grounding wire. Never connect the green wire to a live terminal. If necessary, an adapter is available for connecting 3-prong plugs to 2-prong receptacles. The adapter's green-colored lug must be connected to a permanent ground, such as a properly grounded outlet box.

Extension Cords

2. Use only 3-wire extension cords that have 3-prong grounding-type plugs and 3-pole receptacles that accept the pullers plug.

Outdoor Use Extension Cords

3. If used outdoors, the extension cord must be marked with the suffix W-A following the cord type designation (e.g., STJW-A).

4. Use an extension cord with the proper wire size for the length of the cord. An undersized cord will cause a drop in line voltage, resulting in loss of power and overheating (See Chart below).

Total Amps	0-2.0	2.1-3.4	3.5-5.0	5.1-7.0	7.1-12.0	12.1-16.0	16.1-20.0
Ext. Cord Length	Wire Size						
25 ft.(8 m)	18	18	18	18	16	14	12
50 ft. (15 m)	18	18	18	16	14	12	10
75 ft. (23 m)	18	18	16	14	12	10	8
100 ft. (30 m)	18	16	14	12	10	8	8
150 ft. (46 m)	16	14	12	12	8	8	6
200 ft. (61 m)	16	14	12	10	8	6	4
300 ft. (91 m)	14	12	10	8	6	4	4
400 ft. (122 m)	12	10	8	6	4	4	2
500 ft. (152 m)	12	10	8	6	4	2	2
600 ft. (183 m)	10	8	6	4	2	2	1
800 ft. (244 m)	10	8	6	4	2	1	0
1000 ft. (305 m)	8	6	4	2	1	0	0

5. Position the cord so that it will be clear any rotating parts and will not be a trip hazard to the operator.

Do not Abuse Electrical Cord

6. Never lift or carry the RLT by the cord, and never yank the cord to disconnect it from the receptacle. Keep the cord away from heat, oil, and sharp edges

7. Do not use the RLT if the switches or buttons are malfunctioning. Have them replaced by an authorized service center.

Disconnect Tools

8. Always disconnect the power when not in use and before installing, removing, or servicing the RLT.

Keep Work Area Clean

9. Cluttered areas invite injuries.

Consider Work Area Environment

10. Do not use the RLT in wet or damp locations, and do not expose it to rain

11. Keep the work area well-lit

12. Do not use the RLT in the presence of flammable liquids or gases.

Guard Against Electric Shock

13. Guard against shock, while operating the RLT, by preventing bodily contact with grounded surfaces (e.g., metal pipes)

Keep Children Away

14. Do not let anyone but the operator to touch the RLT or the extension cord; all visitors should be kept a safe distance away from the work area.

Store Idle Tools

15. When not in use, the RLT should be stored in a dry, secure area-out of the reach of children.

Do not Force Tool

16. Use the RLT only for its designed use; do not force the RLT to perform beyond its capabilities.

Dress Properly

17. Do not wear loose clothing or jewelry; they can become caught in moving parts.

Use Safety Glasses

18. Work gloves, non-skid safety boots, safety glasses, and a hard hat should always be worn.

19. Operators with long hair, should contain their hair beneath their hard hat.

Do not Overreach

20. Keep proper footing and balance at all times.

Maintain RLT with Care

21. Follow instructions for changing accessories. Inspect the RLTs plugs regularly, and if damaged, have it replaced by an authorized service center. Inspect extension cords periodically, and if damaged, replace them. Keep the RLT dry, clean and free from oil and grease.

Stay Alert

22. Watch what you are doing, Use common sense. Do not operate the RLT when you are tired.

Check for Damaged Parts

23. Before further use of the RLT, any damaged part should be carefully inspected to determine that it will operate properly and perform its intended function. Check for proper alignment of moving parts and verify that there is no binding. Ensure all mounting hardware is securely fastened. Any damaged part should be properly repaired or replaced by an authorized service center.

Avoid Unintentional Starting

24. Do not carry the RLT if it is plugged in, and be sure the switch is off before plugging in the power cord.

Secure Work

25. Secure the conduit to its associated structure before pulling any cable through it.

SAVE THESE INSTRUCTIONS

RLT Operation:

Condux RLT's are designed for safe operation, but these safety precautions should be practiced:

1. Stay clear of the area directly behind the puller while in operation
2. Use only 10 gauge 3 wire extension cords.

Rope Guidelines:

Four Safety Rules When Working With Rope

1. **RIGHT ROPE FOR THE JOB:** Use adequate size rope recommended to accommodate your pulling load.
2. **CORRECT HANDLING AND USAGE**: Observe the recommended working load. Make sure all pulleys, fairleads, etc. are proper size and free of grit and rust. Avoid knots or severe bending that will reduce rope strength. Store rope in accordance with manufacturer's recommendations.

3. **DOWNGRADE OR DISCARD**: When rope has been subjected to forces or conditions that reduce its strength, it should immediately be downgraded (used in less demanding or less critical applications) or discarded. It is both poor economics and unsafe to use rope beyond its normal lifetime.
4. **STAY CLEAR OF ROPE**: Never allow anyone to stand in line with or within 30 degrees on either side of the rope under tension.

WARNING: Rope under tension may break.
Stand at least 30 degrees to either side

What to Look for When Inspecting Rope

1. **RUST:** Contact on surfaces with rust will cause a significant loss of strength in a short time. Discoloration is the key.
2. **DIRT & GRIT**: Using the rope in mud, sand, or dirt will allow particles into the construction, causing the strength of the rope to deteriorate rapidly. What to look for: caked on mud, grease with sand and dirt, or sand in outer construction.
3. **CUT OR PULLED STRANDS**: (braid no braid) When any of the jacket strands are cut, rope should be downgraded. Careful attention should be given to pulled strands and all strands should be worked back into the rope. If in doubt, downgrade rope to a less demanding application.
4. **WORN STRANDS**: When the fibers show extreme wear in any given area, rope should be replaced or downgraded.
5. **HARDNESS OR STIFFNESS**: When rope is very hard or stiff it usually indicates the rope has been overloaded or subjected to intense heat. Rope should be downgraded or discarded.
6. **NYLON ROPE**: Nylon suffers approximately 15% strength loss when wet. This factor should be considered when selecting rope.
7. **DOWNGRADING**: A rope's history is important. Anytime the rope has been subjected to sustained loads, shock loads, or loads three times the recommended working load, the rope should be downgraded or discarded.

3 Equipment Set Up

Installation of the Mechanical Sensing Unit

The Mechanical Sensing Unit is designed to mount directly to the frame of Condux CableGlider® cable pullers. Two distinct mounting mechanisms are used for three cable puller models. Be aware of which model of CableGlider that your tensiometer is to be used with (CableGlider STD, HD, and Plus) and follow the specific instructions for the model. The Mechanical Sensing Unit can also be used with other rope capstan cable pullers; however, mounting will vary.

INSTALLATION ON CABLEGLIDER STD

Attach the Mechanical Sensing Unit to the CableGlider STD model using a mounting bracket over the frame of the upper arm of the cable puller and pin to hold in place (See Figure 1). The Mechanical Sensing Unit attaches to the mounting bracket with one pin.

INSTALLATION ON CABLEGLIDER PLUS

Attach the Mechanical Sensing Unit to the CableGlider Plus model using a mounting bracket between the frame of the first arm of the cable puller and pin to hold in place (See Figure 2). The Mechanical Sensing Unit attaches to the mounting bracket with one pin

INSTALLATION ON CABLEGLIDER HD

Attach the Mechanical Sensing Unit to the CableGlider HD model by using a mounting arm (included) and two pins (included). Pin the support arm to the Mechanical Sensing unit. Mount this assembly to the cable pullers midsection adjustment plate. (See Figures 3).

INSTALLATION ON OTHER ROPE CAPSTAN PULLERS

Securely fix the mechanical sensing unit to the cable puller frame to prevent the unit from "walking with the rope" Approximately 200 pounds (900 N) of force will be required to hold the mechanical sensing unit in place.

Figure 1 STD Puller

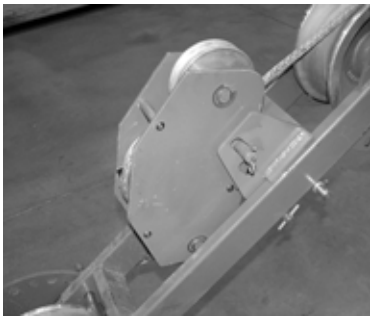


Figure 2 PLUS Puller

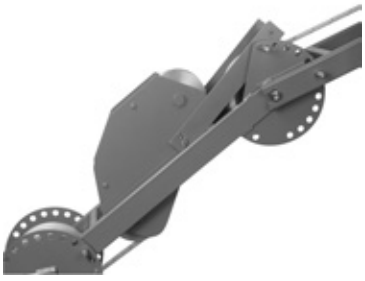


Figure 3 HD Puller

Rope Installation

!CAUTION: Running Line Tensiometer is not for use with steel cables of steel rope.

Rope must follow a straight path over the cable puller sheaves and through the tensiometer. Avoid contact between rope and cable puller frame**.**

Install rope without removing Mechanical Sensing Unit side plates or removing the sensing unit form the puller. Simply insert through the unit (See Figure 4). Arrows indicate direction of travel for inserting rope.

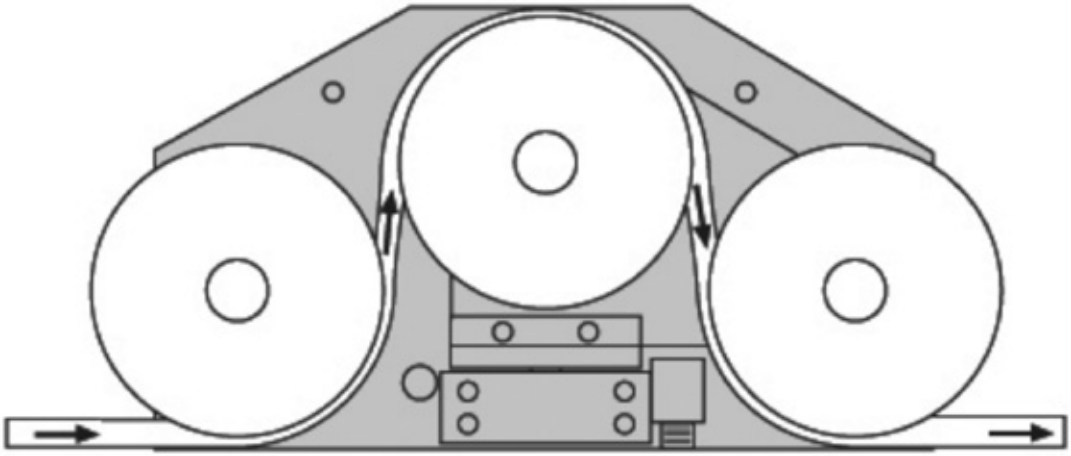


Figure 4

Electronics Connection

!DANGER: The Electronic Control Box is an electrical device. Electric shock hazards exist that could result in severe personal injury or death. Observe the following precautions:

- **Do not expose Electronic Control Box or puller to water.**
- **Do not remove cover of Electronic Control Box (no user-serviceable parts inside). Refer servicing to qualified personnel.**
- **The Electronic Control Box power switch should be in the off position before connecting or disconnecting any cords.**

Connect one end of the sensing cord from the Electronic Control Box to the load cell mounted on the Mechanical Sensing Unit (See Figure 5). The 5-pin female connector on the end of the cord mates with the male receptacle located on the mechanical sensing unit. Connect the other end of the cord to the Electronic Control Box (See Figure 6). Before making these connections, ensure the receptacles are free of dirt and moisture. **Do not modify this cord's length**.

Tighten the connector collars over the threaded portion of the receptacles. This prevents the cord from coming loose during operation. This cord is necessary to measure the tensions sensed by the load cell.

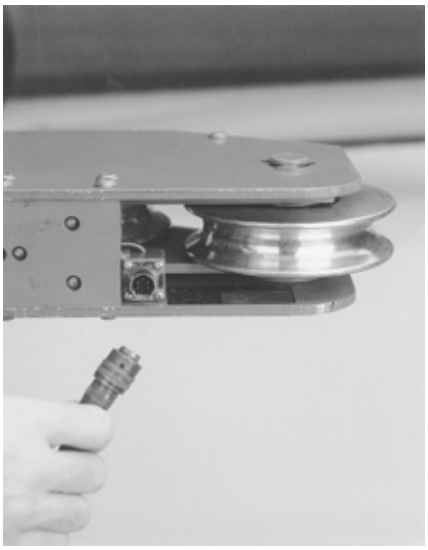


Figure 5

Figure 6

Power Connection

Electrical power is supplied to the Electronic Control Box through the power cords located on the side of the unit. Located directly adjacent to the inlet is an outlet intended to supply power to the cable puller. Plug your puller into this outlet! The outlet can be programmed to stop the puller when an overload occurs or it can supply uninterrupted power. With power supplied to the inlet, the outlet is energized.

!CAUTION: The cable puller must be connected through the outlet on the Electronic Control Box for the programmed limiter and automatic shut-off to function.

Setting Electronic Tension Control

The Condux Running Line Tensiometer has been designed to give the operator continuous tension information and automatic shut-off control during a pull. The Electronic Control Box features an LED Display, Digital Graph Display, 64MB Flash Card. A programmable overload set point with both visual and audible alarms is designed to disengage the cable puller should an overload occur. Navigator software is provided so pulling information can be downloaded on any computer running Windows 2000® or XP®.

1. Turn the power switch on the Electronic Control Box to the on position (See Figure 7). Be sure that the sensor cords are properly connected.

Figure 7

2. Select unit of measure pounds (Lb) or newtons (N). This must be done with no load on the RLT. On the RLT the display reads newtons and the chart recorder records in kilenewtons (See Figure 8)

Figure 8

!DANGER: The Main Power switch supplies power to the indicator and chart recorder. When a power supply is connected to the electronic control box, portions of it are energized. Follow all electrical equipment precautions.

3. **Set the cable Tension Limit**. Press the "PAR" Button (See Figure 9) until SP-1 shows on the on the LED Screen. Press the "F1" button to increase the pull value or the "F2" to decrease the pull value. Holding "RST" while pressing the "F1" or "F2" buttons will change the value by 1000. Once pull value is set, press the "PAR" button until "End" appears.

Figure 9

4. **Zero the display**. By pressing the "RST" button.
5. **Alarms**: When Tension Limiter switch is in the "OFF" position the audio alarm will sound and the light will come on when the tension limit is reached. When the Tension

Limiter switch is in the “ON” position the puller will stop pulling when the tension limit is reached (See Figure 10)

Figure 10

Chart Recorder Set Up

The Digital Chart Recorder is the next generation Solid State Data Recorder/Panel Recorder. This instrument has all the capability of a traditional paper recorder – variable chart speeds, the ability to review historic data, see trends and more. All pull data is stored on the 64MB Compact Flash Card that comes with the unit.

1. **Name File** Press “MENU” button to enter the Menu screen. Use ▲ and ▼ arrows to scroll to RECORD MODE and press menu. Next, scroll to “NAME FILE” and press MENU. Use the ▲ and ▼ buttons to scroll through letters and the ◄ and ► buttons to move spaces. (See Figures 11-14). Once the name is set press “MENU” button to go back to Record Mode. From Record Mode, ◄ or ► will return to Menu screen. Pressing ◄ or ►again will return to charting screen.

Figure 11

Figure 12

Figure 13

Figure 14

2. **Set to Record Mode**: If you are already in the Record Mode screen, use the ▲ and ▼ buttons to scroll to "ON". If you are starting from the charting screen, press "MENU" and scroll to Record Mode. Press "MENU" again to enter Record Mode, and scroll to ON. Push the "MENU" button to put a check mark next to "ON". Your unit is now ready to record. The red light on the Chart Recorder panel should turn on when unit is recording. Press the ◄ or ► to return to the Menu screen. Press ◄ or ► again to get back to the charting screen.

   NOTE: **The recorder is time based, meaning if the recorder is not switched to OFF between pulls, the data recorder will report long time periods of zeros**.

3. **Set Sample Rate**: Press the "MENU" button and the menu screen will appear. Using the ▲ and ▼button, scroll to SAMPLE RATE. Press the "MENU" button and your list of sample rate options will appear. Select the sample rate you desire and press "MENU" to select. Press the ◄ or ► buttons twice to get back to the charting screen.

Data Download Instructions

The Running Line Tensiometers come with accessories for downloading your pull data: Navigation software, 64MB Flash Card, card reader and USB cable.

Downloading data to your computer via USB Cord

1. Connect Recorder to PC or laptop with supplied USB cord
2. Turn ECB on ***and make sure that Record Mode has been turned to OFF***.
3. Open Navigator software on PC
4. In Navigator software select "FILE" and "USE RECORDER"
5. Select Open to pull in pulling data from recorder.
6. Select your file and click "OK"

Downloading data to your computer via Flash Card

1. Plug card reader into the PC's USB connection.
2. ***Make sure that Record Mode has been turned to OFF***. Remove Flash Card from ECB recorder and install into the card reader.
3. In Navigator software select open
4. A file screen will appear. Locate the removable drive and select pull data file.
5. Double click pull data file to load into Navigator software.

See Navigator Software manual for additional information.

4 Operation Instructions

To Operate the Running Line Tensiometer Safely and efficiently, the user must have a working knowledge of the Condux CableGlider Puller.

!WARNING: Read and Understand the "Cableglider User's Guide and Safety Manual" before operating the CableGlider Cable Puller or Running Line Tensiometer.

EQUIPMENT PREPARATION

1. Verify that the rope is properly inserted in the sheave grooves
2. Manually tension the rope.
3. Verify that the Mechanical Sensing Unit does not interfere with the cable puller Frame
4. Turn the Electronic Control Box power switch to ON.
5. Verify that the tension limit has been set correctly
6. Verify that the tension limit control is ON, if overload control is required.
7. Verify that Chart Recorder has been set to record, if desired.

CABLE PULLING PROCEDURES

1. Press the foot switch to start the puller. Slowly remove any slack or excess pull line. Attend the line coming off the capstan to avoid any tangles, and keep some tension on the line so that the capstan grips the pull line.
2. Stand at least 3 to 4 feet (0.9 to 1.2 m) away and at a 30 degree angle from the cable puller capstan. Wear gloves to avoid rope burns and abrasions.

!CAUTION: Always wear protective equipment: hard hat, safety glasses, safety shoes, and work gloves.

!WARNING : Stay clear of the rotating capstan. Severe personal injury or death could result from entanglement with it or the pull line. Follow these safety precautions.

- **Do not wrap the pull line around a hand, arm, foot, or leg.**
- **Always be ready to release the pull line.**

3. When the TENSION LIMIT CONTROL is ON, the puller will stop pulling if the cable tension exceeds the programmed limit of the ELECTRONIC CONTROL BOX and the puller is plugged into the Electronic Control Box. Take foot off of foot switch and release pull line the cable tension will slowly release.

!CAUTION: Many pull lines build up tension from stretching. Never approach or service a pull line under tension. Always release tension before proceeding.

4. If the pulling operation exceeds the electronic tension limit, correct the cause for high tension before continuing the pull.

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5 Appendices

Recommended Working Load for Rope

The recommended working load is determined by taking the average tensile strength of new rope under laboratory conditions, and dividing by a factor to determine the maximum load that should be applied to the rope. The factor varies with type of fiber and construction. This factor usually is sufficient to assure you of a comfortable safety margin, however, there are exceptions.

Synthetic fibers are susceptible to degradation and damage in many ways that are controllable by the manufacturer. Therefore, it is imperative that the rope be inspected before use, and if it shows signs of excessive wear it should be replaced.

Double Braided Cable Pulling Rope

Part Number	Dia (in)	Length (Ft)	Strength (lbs)	Working Load (lbs)
08090903	5/8	300	16,300	2,780
08090906	5/8	600	16,300	2,780
08090912	5/8	1200	16,300	2,780
08091103	7/8	300	25,000	5,000
08091106	7/8	600	25,000	5,000
08091112	7/8	1200	25,000	5,000

Calibration

!NOTE: The Condux Running Line Tensiometer, as with many measuring devices, must be calibrated regularly to ensure its accuracy.

We recommend both the Mechanical Sensing Unit and the Electronic Control Box be returned to Condux at least once a year for calibration.

Call Condux Customer Service for a Return Material Authorization number. Follow the instructions on the RMA and ship both ***the Mechanical Sensing Unit and the Electronic*** **Control Box**, freight prepaid, to:

Condux International, Inc.
145 Kingswood Drive
Mankato, MN 56001 USA

The running line tensiometer will be calibrated and shipped back within 48 hours of receipt. There may be a nominal charge for the recalibration of your running line tensiometer.

Troubleshooting Guide

Problem:	Solution:
Digital display is not functioning	• Turn Electronic Control Box pwer switch ON • Check all electrical connections
Numbers on digital display start counting up and do not stop with no load on the rope.	• Load cell is not properly connected to the electronic control box. Verify all connections are made and are tight
Cable puller does not stop when programmed tension limit is reached.	• TENSION LIMIT CONTROL if OFF. Turn to the ON position. • Tension limit is not set to desired load. Press “PAR” and then use the UP and DOWN arrows to set the desired value. • Puller is not plugged into the Electronic Control Box.
Cable puller stops before line tension reaches preset load limit programmed into the Electronic Control Box.	• Tension limit is not set to desired load. Press “PAR” and then use the UP and DOWN arrows to set the desired value.

Replacement Parts

Replacement/Repair Part	**Part Number**
User Guide and Safety Manual	08677378
Fuse, 250 Volt-20 AMP	02289664
Switch, On/Off	02289665
Cord Load Cell	08677375
Light, Red Pilot Indicator	02289666
Alarm, Buzzer ECB	02289667
Button, Alarm Reset ECB	02289668
Char Recorder	08677372

6 Warranty Information

Condux International, Incorporated extends the following warranty to the original purchaser of these goods for use, subject to the qualifications indicated:

Condux International, Incorporated warrants to the original purchaser for use that the goods or any component thereof manufactured by Condux International will be free from defects in workmanship for a period of 1 year form the date of purchase, provided such goods are installed, maintained, and used in accordance with Condux's written instructions.

Components not manufactured by Condux International but used within the assembly provided by Condux International are subject to the warranty period as specified by the individual manufacturer of said component, provided such goods are installed, maintained, and used in accordance with Condux's and the original manufactures written instructions.

Condux's sole liability and the purchaser's sole remedy for a failure of goods under this limited warranty, and for any and all claims arising out of the purchase and use of goods, shall be limited to the repair or replacement of the goods that do not conform to this warranty.

To obtain repair of replacement service under the limited warranty, the purchaser must contact the factory for a Return Material Authorization (RMA), Once obtained, send the RMA along with the defective part or goods, transportation prepaid, to:

Condux International, Inc.
145 Kingswood Drive
Mankato, MN 56001 USA

THERE ARE NO EXPRESS WARRANTIES COVERING THESE GOODS OTHER THAN AS SET FORTH ABOVE. THE IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE ARE LIMITED IN DURATION TO ONE YEAR FROM DATE OF PURCHASE

CONDUX ASSUMES NO LIABILITY IN CONNECTION WITH THE INSTALLATION OR USE OF THIS PRODUCT, EXCEPT AS STATED IN THIS LIMITED WARRANTY, CONDUX WILL IN NO EVENT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES

CONDUX®

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