Operator Instructions for Tension Links

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Introduction

This instruction manual refers to the Interface Inc. range of tension links and includes instructions for both cabled and telemetry options. Before installing or operating any Interface tension link, this and any reference documents should be read and understood.

These instructions must be retained and incorporated in the technical documentation for the machine or partly completed machinery into which the tension link is installed.

Markings CE

Each tension link will be marked with an individual serial number and CE label. The WLL (Working Load Limit) or SWL (Safe Working Load) will be shown as standard embossed on the link.

Electromagnetic Compatibility (EMC)

The electromagnetic compatibility of the load cell device can only be assessed in conjunction with the entire installation, including its control systems. The machine builder who installs this partly completed machinery into a machine is responsible for compliance with the EMC directive.

Tension Link Type/Model Number

- WTSTL *Wireless Tension Link Load Cell*
- ITL *Wired Tension Link Load Cell*

Suppler

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Service

(Repair, Support)
Interface Inc. (address as above)

Installation and Operation

To ensure safe and trouble free installation of the load cell measuring device, the tension link must be properly transported and stored, professionally installed and commissioned.

Unpacking

Before removing the tension link, inspect the packaging for signs of damage and immediately inform the supplier if any damage is found. Unpack the tension link carefully, taking special care with cables and be aware to the possibility of damaging low range devices by mishandling. Ensure that calibration and instruction information is not inadvertently discarded.

Checks Prior to Installation

- If the tension link is fitted with a cable and gland, check that the cable is held securely by the gland.
- If the tension link is fitted with a connector, check the connector is secure to the pin, check the plug and socket for any damage and check that the connector mates correctly.

- Check the cable for damage, such as cuts or abrasions, especially where the cable enters the gland or connector assembly.
- Check that all parts (as defined by the general arrangement drawing); cable assembly, anti-rotation bracket, split pins, nuts, washers, spacers, bobbins etc. are present.
- Check that all parts (as defined by the general arrangement drawing); cable assembly, anti-rotation bracket, split pins, nuts, washers, spacers, bobbins etc. are present.
- If the tension link is fitted with a telemetry module, check that the 2 off AAA batteries are correctly installed, that the two RED clips on the telemetry housing are closed and that the battery cover is secure.

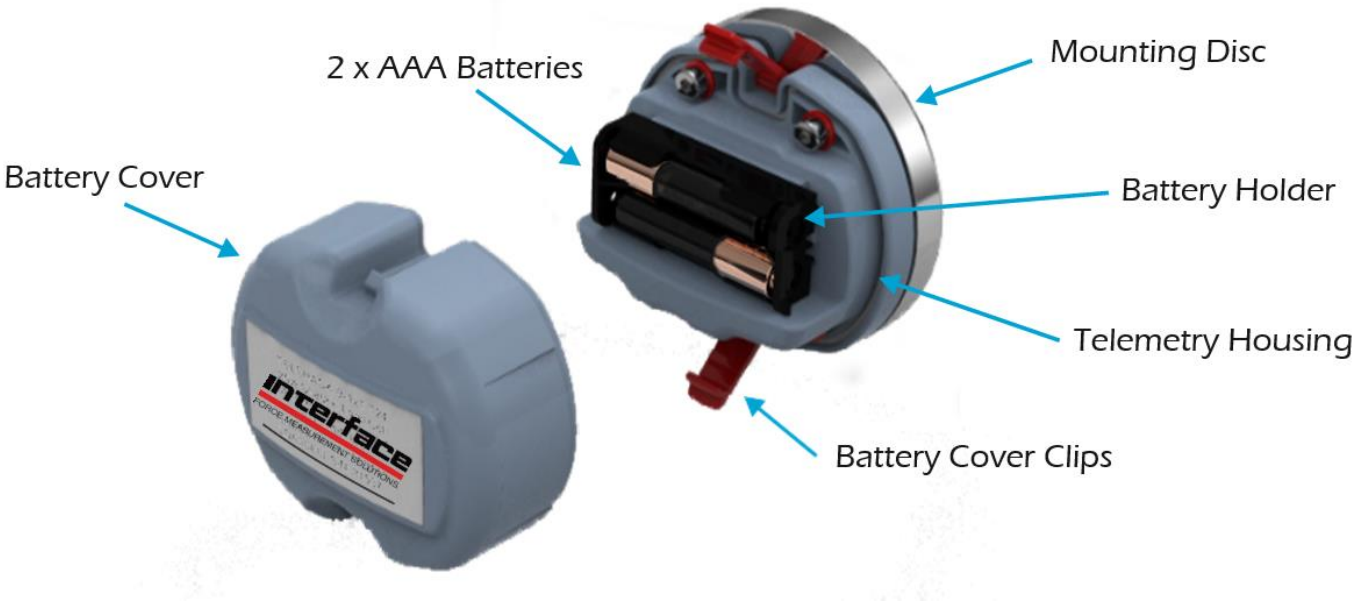


FIGURE 1

Installation

Tension links are normally classified as portable devices, and so the correct installation is critical to ensuring product life cycle. To avoid damage or loss of accuracy during installation, the following points should be followed.

- The direction of the load applied to a link should be linear as shown in figures 2 & 3.
- Ensure the link pin does not experience torque or bending forces during operation.
- The tension link should only be loaded in tension using the ØC holes as shown see figure 2 & 3. See figure 4 for two common examples of installations.
- For optimal performance a tight tolerance with the ØC loading holes is recommended.
- If the tension link is fitted with a telemetry unit then ensure that a clear line-of–sight between the transmitter and receiver is maintained and that objects or structures are kept at least one metre away from antennae wherever possible. The installer should also first read the Wireless Telemetry User Manual which can be found at the following web address:

  https://www.interfaceforce.com/product-category/wireless-telemetry-system/

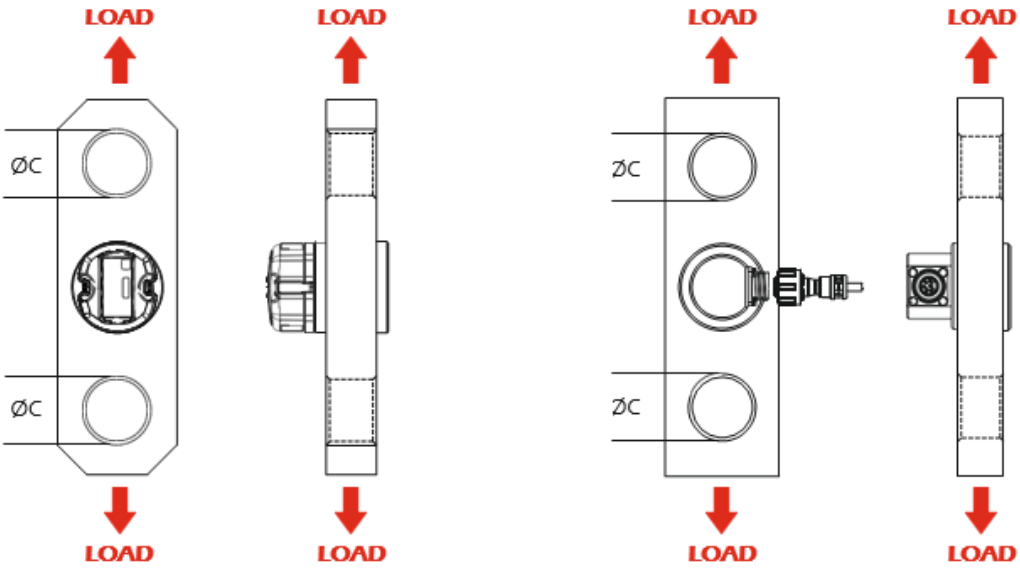


FIGURE 2

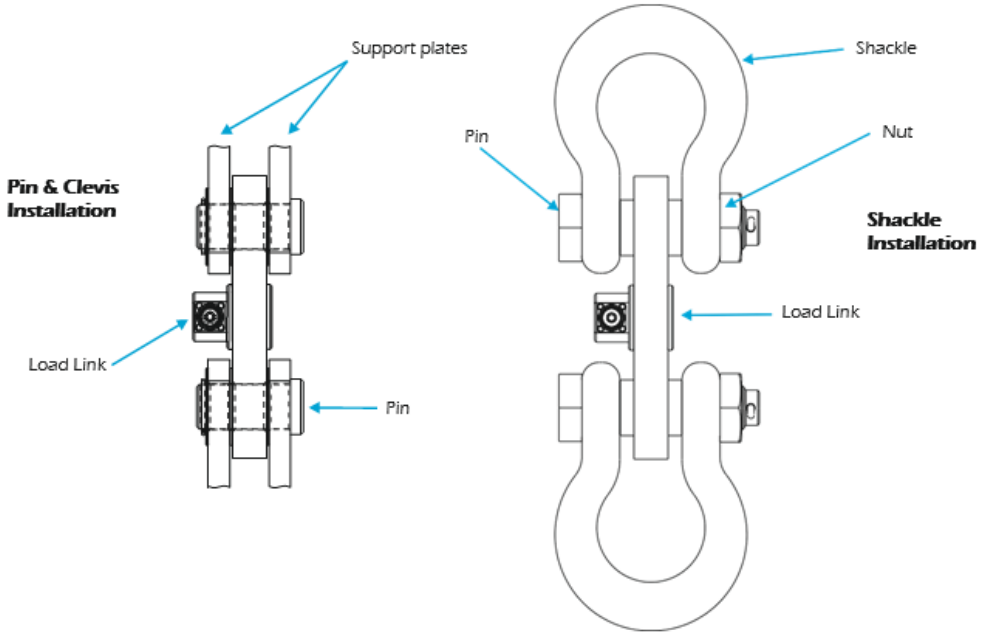


FIGURE 3

Wiring and Electrical Checks

The correct connection of the tension link to an instrument is critical to achieving and maintaining its performance and reliability:

- Wiring connections are given on the calibration certificate supplied with each tension link.
- Where a screened cable is fitted, that screen should be connected as indicated in the manual for the instrument the tension link is connected to.
- If a screened cable is fitted, the screen should be connected as specified by the manual of the instrument or signal conditioning board (including internally mounted boards) to which the tension link is connected to.
- Cable length should not be added or removed from the tension link, as this could alter the calibration figures.
- If a junction box is to be used, check the connections are of good quality, secure, clean and the enclosure is free

of moisture.
- Tension link cabling must be kept away from high power cables and equipment, high output RF equipment, inductive loads and generators. **Cables must not be run alongside power cables**.

Tension Link Output

The electrical output of the tension link should only be connected to instrumentation with a high enough input impedance, preferably 1Mohm or greater, in order to prevent loading effects on the output sensitivity of the tension link. Interface offers a wide range of digital and analog instruments ensuring compatibility.
When setting up your tension link, the following points should be acknowledged:

- The zero load output given on the calibration certificate is the output of the tension link with no load applied. This includes the removal of the load caused by any lifting accessories.
- The load on an installed tension link will comprise of the load of your assembly (including sheaves blocks, shackles, ropes, hooks, slings etc.) and the active load (load lifted). Therefore, the output with no active load will be greater than the zero output indicated on the calibration certificate.
- The output from the tension link can be in various forms, 4-20mA, 0-10V, mV/V etc. See the calibration certificate for details.

Checks after Installation

With the tension link installed, check the displayed output is not negative, as this may indicate either a fault, or that a compressive force is being applied to the tension link. See Figures 2 and 3 for details of correct loading.

When applying a load to the tension link the output should increase in the positive direction. Use the calibration certificate for reference, to compare the output observed at certain loads. If these are not the same, check the following:
a) All electrical connections are correct, i.e. to an instrument or a junction box etc.
b) If a connector is fitted, ensure that it is fully mated.

Calibration

All Interface tension links are calibrated in traceable test machines, configured to best simulate normal loading conditions.

We endeavor to match the loading conditions that would be experienced in service, but it is not possible to totally simulate the on-site structure for every tension link manufactured. For this reason, and optimum system accuracy, calibration in the final assembly is recommended. On-site calibration should be performed in accordance with the manual for the instrument to which the tension link is connected to.

Warnings/Hazards

Tension links are highly stressed devices, and commonly have safety factors between three and five times the rated capacity under static conditions. Fatigue applications and environmental factors can contribute to reducing this margin. The user should determine the effect of any substance to the exposed tension link materials. Where a corrosive environment is present, tension links can often be manufactured from corrosion resistant materials, or alternatively, isolation barriers can be employed between the corrosive environment and the tension link.

The following points should be followed to avoid potentially hazardous situations:

- Do not weld near to installed tension links. Leakage currents may destroy the tension link circuits.
- Tension links are sealed units and must not be dismantled. Damaged tension links should be returned to Interface

for any repairs and re-calibration.

- The accuracy of the system is dependent upon the correct installation of the tension link.
- Tension links must not be handled or carried by the cable.
- Tension links must not be subjected to shock loads, such as using a hammer to force an assembly together (fitting clevis pins into the mounting holes).
- The tension link must never be placed in a potentially explosive environment, unless the product is suitably certified (ATEX or IECEx).

Inspection and Repair

Repair

Only Interface personnel are authorised to carry out a repair or service to their products. All repairs or services will be carried out in the premises of Interface. The unit is not serviceable outside of Interface premises.

Inspection

All Interface tension links should be subject to periodic inspection, which should include, but is not exclusive to the following checks:

- Completion of the checks after installation.
- Check output at zero load (shift in zero offset). Verify against calibration certificate.
- Inspect to see if the tension link has been damaged/worn or chemically attacked (from a corrosive environment or lubricants etc.).
- For cabled versions, verify the integrity of the cable.
- After any serious operating incident, repeat first four checks above.
- For tension links fitted with a telemetry module, check that the batteries are correctly installed. The battery holder shows pictorially the correct orientation.
- For tension links fitted with a telemetry module, check for any signs of water ingress to the battery compartment and for any battery corrosion.
- In the unlikely event of this device failing, fit new batteries (if applicable) and re-test. Only when this has been done should you report the fault. When reporting the fault, give a full description of the problem and the type of application the device is being used for.

Tension Link Specification

Interface tension links have datasheets which can be found at the following website address:

https://www.interfaceforce.com/product-category/wireless-telemetry-system/

Cable Gland and Connector Configurations

All cable gland wiring colors or connector pin details are shown on the Calibration Certificate supplied.

The removal or replacement of the cable gland or bulkhead connector or any adjustment or repair must either be performed by Interface or by a suitably qualified and approved engineer.

Examples of cable gland and connector arrangements:

Cable Gland Versions

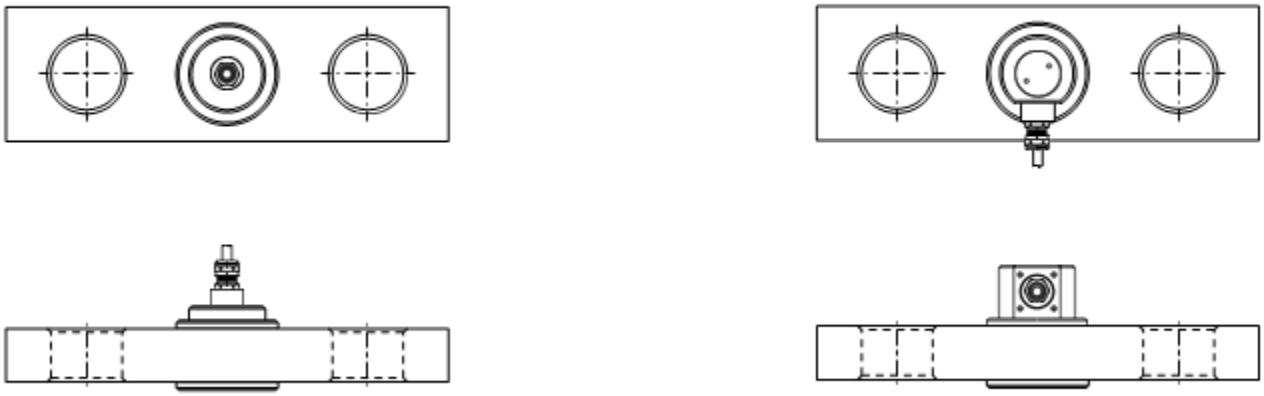


FIGURE 4

Cable With Hose Protection Versions

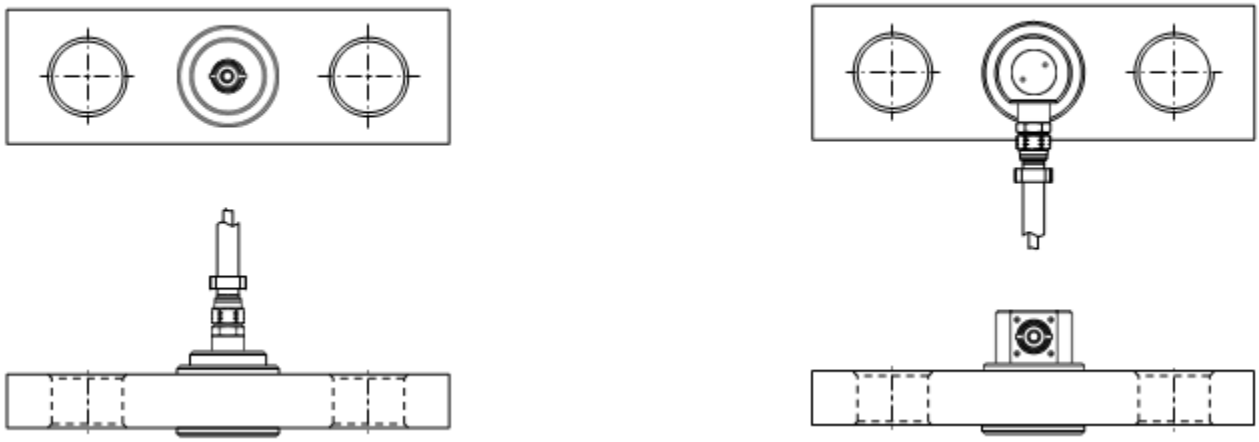
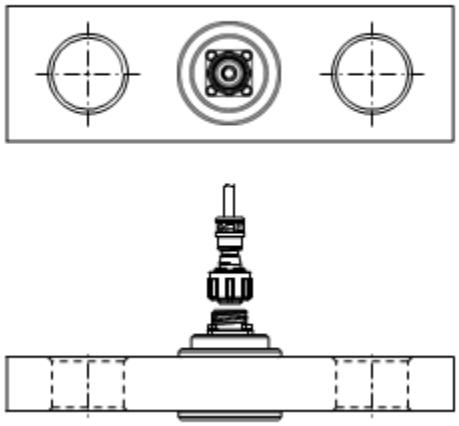


FIGURE 5

Connector Versions



Standard TLL

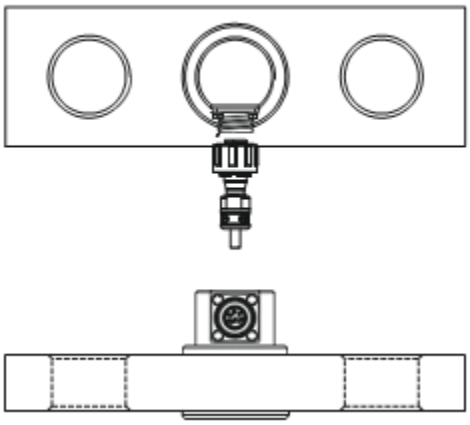


FIGURE 6

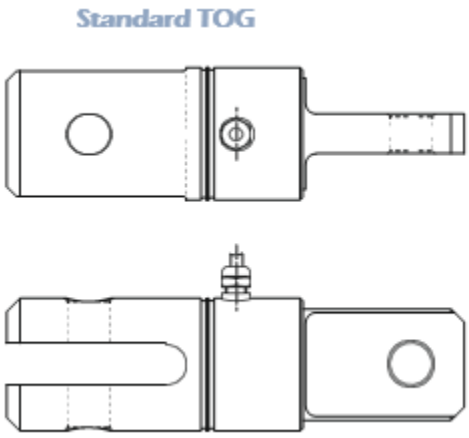


FIGURE 7

Mating Connector Assemblies

- Check both halves of the connector for any damage or obstructions.
- Align the connector assembly and mate the two halves, press firmly to ensure they are fully engaged.
- Tighten the locking sleeve, finger tight only to complete the mating process.
- Always fully disengage the locking sleeve before attempting to de-mate the connector

Tension Link Output Options

The tension link can be fitted with a variety of built in (in-cell) signal conditioning pcbs, to offer either analog, voltage, current signals or RS485 digital signals (in various protocols). When a wireless signal is required, the tension link can be fitted with a WTS-BS-1 Telemetry Module.

Telemetry

The WTS product range uses high performance two-way radio communication. Each tension link fitted with the telemetry module requires either a WTS-BS-1-HA handheld device, digital/analog interface or a base station and PC to communicate with.

Warranty

All Telemetry products from Interface Inc., ('Interface') are warranted against defective material and workmanship for a period of (1) one year from the date of dispatch. If the 'Interface' product you purchase appears to have a defect in material or workmanship or fails during normal use within the period, please contact your Distributor, who will assist you in resolving the problem. If it is necessary to return the product to 'Interface' please include a note stating name, company, address, phone number and a detailed description of the problem. Also, please indicate if it is a warranty repair. The sender is responsible for shipping charges, freight insurance and proper packaging to prevent breakage in transit. 'Interface' warranty does not apply to defects resulting from action of the buyer such as mishandling, improper interfacing, operation outside of design limits, improper repair or unauthorized modification. No other warranties are expressed or implied. 'Interface' specifically disclaims any implied warranties of merchantability or fitness for a specific purpose. The remedies outlined above are the buyer's only remedies. 'Interface' will not be liable for direct, indirect, special, incidental or consequential damages whether based on the contract, tort or other legal theory. Any corrective maintenance required after the warranty period should be performed by 'Interface' approved personnel only.

Revision History		
Author	**Revision**	**Release Date**
B	A	09/12/2018