






**NARROW WEB CANTILEVER TENSION
SENSORS - TYPE CFL**

In accordance with Nexen's established policy of constant product improvement, the specifications contained in this manual are subject to change without notice. Technical data listed in this manual are based on the latest information available at the time of printing and are also subject to change without notice.

Technical Support: 800-843-7445
(651) 484-5900

www.nexengroup.com

	<div data-bbox="557 525 852 577"> DANGER</div> <p>Read this manual carefully before installation and operation. Follow Nexen's instructions and integrate this unit into your system with care. This unit should be installed, operated and maintained by qualified personnel ONLY. Improper installation can damage your system, cause injury or death. Comply with all applicable codes.</p>	
---	---	---

This document is the original, non-translated, version.

Conformity Declaration: In accordance with Appendix II B of CE Machinery Directive (2006/42/EC):

A Declaration of Incorporation of Partly Completed Machinery evaluation for the applicable EU directives was carried out for this product in accordance with the Machinery Directive. The declaration of incorporation is set out in writing in a separate document and can be requested if required.

This machinery is incomplete and must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the applicable provisions of the Directive.

Nexen Group, Inc.
560 Oak Grove Parkway
Vadnais Heights, Minnesota 55127

ISO 9001 Certified

Copyright 2009 Nexen Group, Inc.

Table of Contents

General Information	4
Installation	5
Electrical Connections	6
Temperature Compensation	7
Troubleshooting	7
Service Assistance and Repair	8
Replacement Parts	8
Warranty	9

GENERAL INFORMATION

RECEIVING AND UNPACKING

Handle and unpack the equipment carefully. Upon arrival, check the shipment against the packing list. Any damage should be reported immediately to the carrier and to your authorized Nexen Web Handling Distributor.

Equipment which will not be installed immediately should be stored in a clean, dry location. Precautions should be taken to prevent moisture, dust, and dirt from accumulating in storage and installation area.

PRECAUTIONS

Shipping and Handling

The Tension Sensor must be removed when a machine is shipped.

The Tension Sensor must be completely surrounded by a soft foam cushion when being transported.

Overloading and Overvoltage

Repetitive overloading above the maximum Force, shock, or severe overloading should be avoided because they will damage the unit.

The excitation voltage should not exceed 6VDC or AC (RMS). Excessive voltage can destroy the semiconductor strain gages.

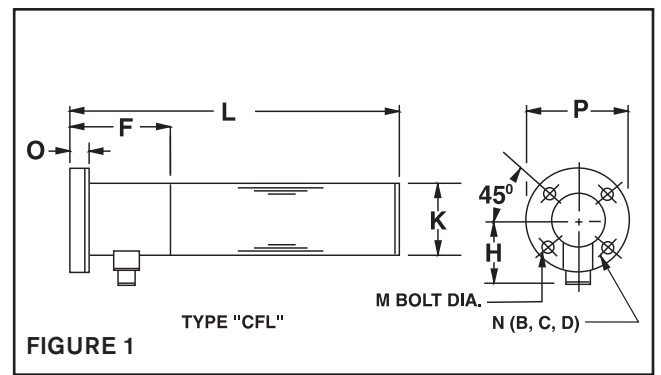
The voltage between the gage and beam or base (ground) should not exceed a peak of 50VDC or AC. Exceeding this voltage can cause an insulation breakdown between the gage and the beam.

SPECIFICATIONS

Gage Resistance	240 ohms per gage nominal
Excitation Voltage.....	6.0 VDC or VAC (RMS) nominal
Output Signal at Rated Maximum Force	250mV nominal
Output Impedance.....	SIZE 1 Approximately 850 ohms at 77° F
SIZE 2 and 4 Approximately 120 ohms at 77° F	
Required Input Impedance of Tension Amplifier	5000 ohms
Insulation Breakdown Voltage Gage to Beam	50V peak
Operating Temperature.....	0° F to +150° F
Maximum Roller Speed.....	4000 RPM

DESCRIPTION

The Type CFL Tension Sensor was designed to measure tension in webs having a width of up to 14 inches. Sensing beams to which semiconductor strain gages are bonded form a half bridge circuit. With these high signal output gages, a very small force on the roller is shown as a change in the tension output signal. See Figure 1 and Table 1 for mounting dimensions.



DIMENSIONS IN INCHES ALLOW 2.5 IN. CLEARANCE FOR CONNECTOR								
SIZE	F	H	K	L	M	N	O	P
1T	1.73	2.00	2.00	5.33	5/16	2.75	0.38	3.38
2T	2.73	2.00	2.00	10.83	5/16	3.75	0.62	3.38
4T	3.73	2.45	2.90	19.83	5/16	3.75	0.62	4.50

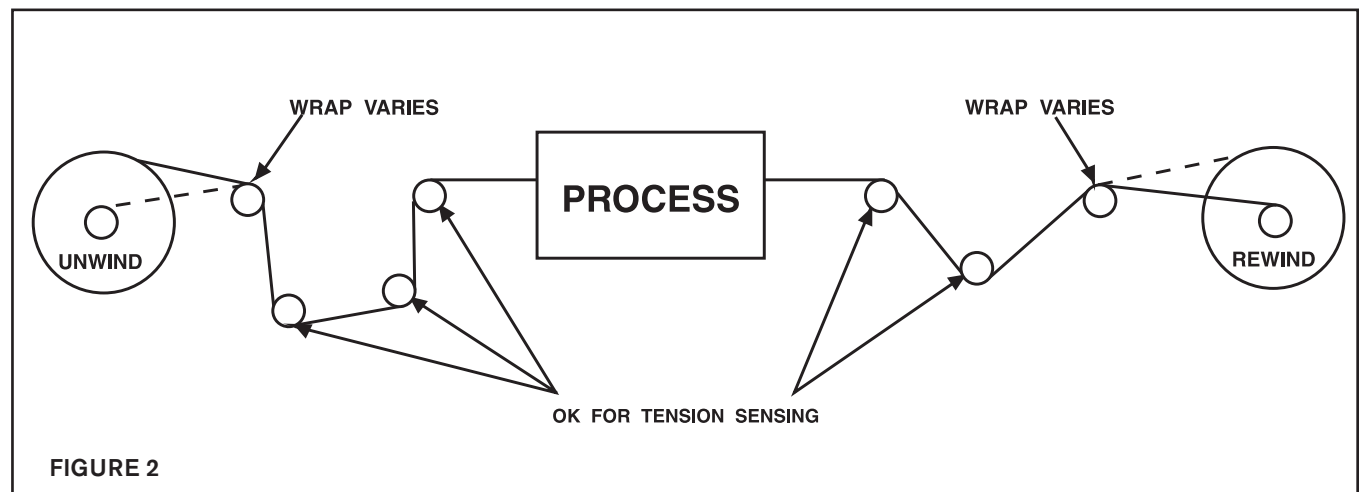
TABLE 1

INSTALLATION

SELECTION OF SENSOR MOUNTING LOCATION

NOTE

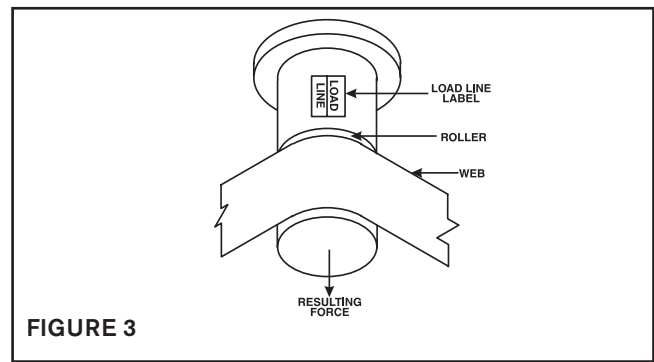
When selecting a sensor mounting location, keep in mind the tension sensing roll must not be mounted where the web wrap can vary. Any change in wrap angle will be sensed by the sensor as a change in tension and indicated as such on the indicator (See Figure 2).



GENERAL INSTALLATION INFORMATION

Mount the base of the sensor so the force applied by the web will be perpendicular to the load line label (See Figure 3).

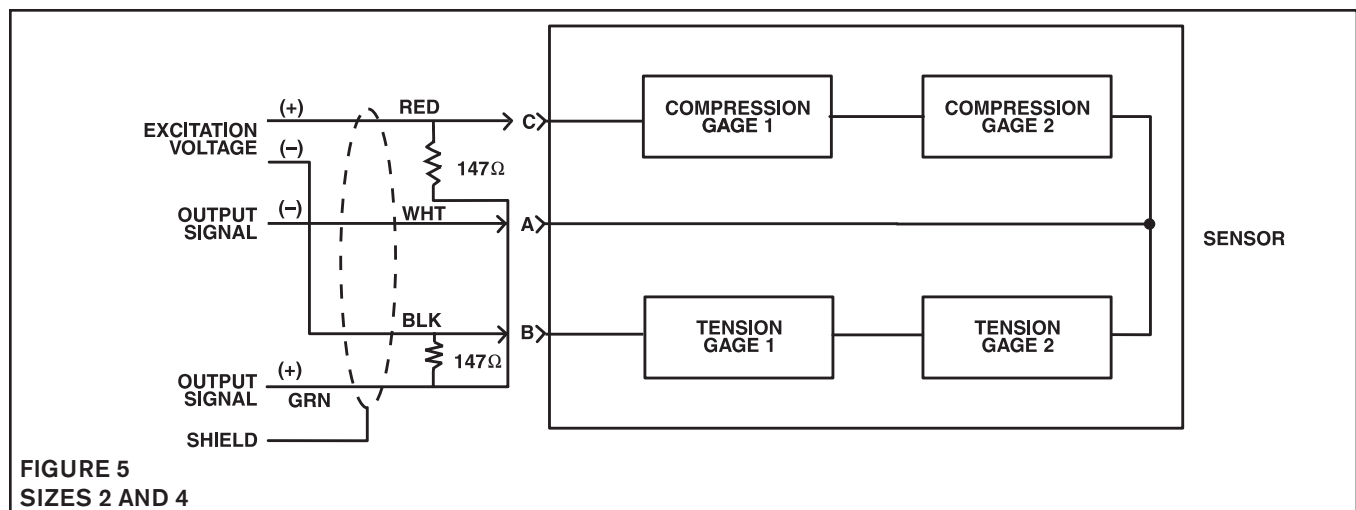
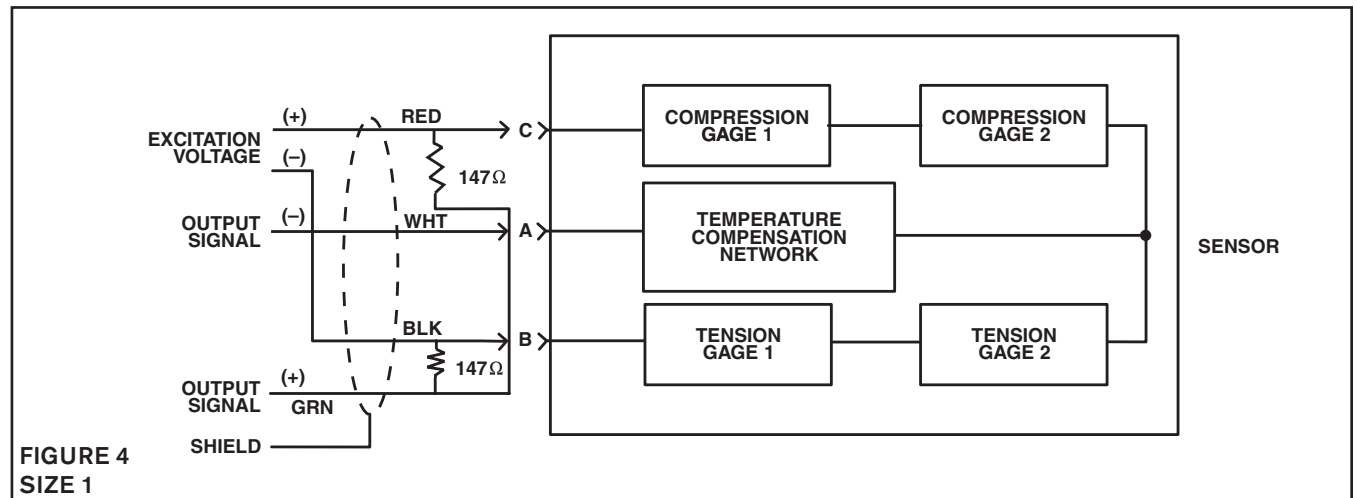
If present mounting holes are to be used or if for some reason new holes cannot be drilled, the sensor can be rotated 90° in either direction. If the load line label is not lined up with the applied force, some sensitivity will be lost.



ELECTRICAL CONNECTIONS

Use the cables provided with the sensors and the installation wiring diagram supplied with the Nexen tension indicator or controller for making the transducer connections. Make certain the cables do not interfere with the web path and they are away from gearing or other moving parts. Use only the Nexen supplied cables which include half bridge resistors in the cable connector shell.

These wiring diagrams are for reference only (See Figures 4 and 5). All of the Nexen indicators and controls will accept a half bridge input as shown in Figures 4 and 5.



TEMPERATURE COMPENSATION

Size 1 Tension Sensors are supplied with a temperature compensation network which is in series with the output signal lead. The compensation circuit is designed to be used with a tension amplifier which has an input impedance of 5K ohms.

If other than the input impedances given above are used, drift will occur in the tension amplifier output when the transducer temperature changes. Size 2 and 4 Tension Sensors use a beam material that does not require temperature compensation.

TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	SOLUTION
Low output signal.	Sensor has too large a rated maximum Force for the application.	Replace with a lower rated maximum Force sensor or increase the web wrap angle.
Output signal fails to increase with added load.	Sensor is overloaded and is hitting the mechanical stop.	Replace the Sensor with one having a higher rated maximum Force or reduce the load. (This may be accomplished by reducing the web wrap angle).
Wrong polarity of output signal.	Sensor may be incorrectly oriented.	Make certain the web force is being applied to the top side of the transducer which is identified by the load line label (See Figures 2 and 3). If rotation is impossible, interchange the sensor's Output Signal leads (green and white) at the tension meter or controller (See Figure 4 and 5).
No output signal.	Connecting cable might be crimped, cut, or making bad connection.	Check to see all connections have been made completely. Check for places where the connection cable might be crimped or cut. Replace cables if necessary.
Very high output with no load.	Faulty sensor or bad connections.	Check cable and connector for good connections and check continuity of cable with an ohmmeter. Check for proper wiring to transducer. Check sensor gage resistance as given in Tables 2 and 3 at room temperature with no load applied.

SENSOR GAGE RESISTANCE CHECK (WITH CABLE REMOVED)	
MEASUREMENT	RESISTANCE
Pin B to Pin C	480 ohms \pm 72 ohms
Pin A to Pin B	700 to 1400 ohms
Pin A to Pin C	Equal to Pin A to Pin B \pm 12 ohms

TABLE 2
SIZE 1

SENSOR GAGE RESISTANCE CHECK (WITH CABLE REMOVED)	
MEASUREMENT	RESISTANCE
Pin B to Pin C	480 ohms \pm 72 ohms
Pin A to Pin B	240 ohms \pm 36 ohms
Pin A to Pin C	Equal to Pin A to Pin B \pm 12 ohms

TABLE 3
SIZES 2 AND 4

SERVICE ASSISTANCE AND REPAIR

CAUTION
Disassembly by improperly trained personnel may result in additional damage to the unit. Contact the factory if repairs become necessary.

For additional service assistance, please obtain the Nexen part number and serial number from the nameplate. Contact your authorized Nexen Web Handling Representative.

REPLACEMENT PARTS

Contact your authorized Nexen Web Handling Distributor for parts availability. This unit is not field serviceable. The only field replaceable component is the cable.

PART NUMBER	DESCRIPTION
30517	Cable Assembly with Resistors

WARRANTY

Warranties

Nexen warrants that the Products will (a) be free from any defects in material or workmanship for a period of 12 months from the date of shipment, and (b) will meet and perform in accordance with the specifications in any engineering drawing specifically for the Product that is in Nexen's current product catalogue, or that is accessible at the Nexen website, or that is attached to this Quotation and that specifically refers to this Quotation by its number, subject in all cases to any limitations and exclusions set out in the drawing. NEXEN MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND ALL IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. This warranty applies only if: (a) the Product has been installed, used and maintained in accordance with any applicable Nexen installation or maintenance manual for the Product; (b) the alleged defect is not attributable to normal wear and tear; (c) the Product has not been altered, misused or used for purposes other than those for which it was intended; and (d) Buyer has given written notice of the alleged defect to Nexen, and delivered the allegedly defective Product to Nexen, within one year of the date of shipment.

Exclusive Remedy

The exclusive remedy for the Buyer for any breach of any warranties provided in connection with this agreement will be, at the election of Nexen: (a) repair or replacement with new, serviceably used, or reconditioned parts or products; or (b) issuance of credit in the amount of the purchase price paid to Nexen by the Buyer for the Products.

Agent's Authority

Buyer agrees that no agent, employee or representative of Nexen has authority to bind Nexen to any affirmation, representation, or warranty concerning the Products other than those warranties expressly set forth herein.

Limitation on Nexen's Liability

TO THE EXTENT PERMITTED BY LAW NEXEN SHALL HAVE NO LIABILITY TO BUYER OR ANY OTHER PERSON FOR INCIDENTAL DAMAGES, SPECIAL DAMAGES, CONSEQUENTIAL DAMAGES OR OTHER DAMAGES OF ANY KIND OR NATURE WHATSOEVER, WHETHER ARISING OUT OF BREACH OF WARRANTY OR OTHER BREACH OF CONTRACT, NEGLIGENCE OR OTHER TORT, OR OTHERWISE, EVEN IF NEXEN SHALL HAVE BEEN ADVISED OF THE POSSIBILITY OR LIKELIHOOD OF SUCH POTENTIAL LOSS OR DAMAGE. For all of the purposes hereof, the term "consequential damages" shall include lost profits, penalties, delay damages, liquidated damages or other damages and liabilities which Buyer shall be obligated to pay or which Buyer may incur based upon, related to or arising out of its contracts with its customers or other third parties. In no event shall Nexen be liable for any amount of damages in excess of amounts paid by Buyer for Products or services as to which a breach of contract has been determined to exist. The parties expressly agree that the price for the Products and the services was determined in consideration of the limitation on damages set forth herein and such limitation has been specifically bargained for and constitutes an agreed allocation of risk which shall survive the determination of any court of competent jurisdiction that any remedy herein fails of its essential purpose.

Inspection

Buyer shall inspect all shipments of Products upon arrival and shall notify Nexen in writing, of any shortages or other failures to conform to these terms and conditions which are reasonably discoverable upon arrival without opening any carton or box in which the Products are contained. Such notice shall be sent within 14 days following arrival. All notifications shall be accompanied by packing slips, inspection reports and other documents necessary to support Buyer's claims. In addition to the foregoing obligations, in the event that Buyer receives Products that Buyer did not order, Buyer shall return the erroneously shipped Products to Nexen within thirty (30) days of the date of the invoice for such Products; Nexen will pay reasonable freight charges for the timely return of the erroneously shipped Products, and issue a credit to Buyer for the returned Products at the price Buyer paid for them, including any shipping expenses that Nexen charged Buyer. All shortages, overages and nonconformities not reported to Nexen as required by this section will be deemed waived.

Limitation on Actions

No action, regardless of form, arising out of any transaction to which these terms and conditions are applicable may be brought by the Buyer more than one year after the cause of action has accrued.

nexen[®]

Nexen Group, Inc.
560 Oak Grove Parkway
Vadnais Heights, MN 55127

800.843.7445
Fax: 651.286.1099
www.nexengroup.com

ISO 9001 Certified