DOVER FLEXO ELECTRONICS manufactures and services a full line of tension measurement and control products for wide and narrow web. We are the leader in developing and supporting web tension control products and technology.
Dover Flexo Electronics (DFE) manufactures and services a full line of tension measurement and control products for materials processing industries. We are a leader in developing closed-loop web tension control products & technology.

DFE serves manufacturers in converting, flexible packaging, paper, foil, tag & label, wire & cable, extruded products, business forms, commercial printing, food processing and the OEMs serving those industries. Any continuous manufacturing process that involves web, ribbon or filament can benefit from DFE’s application experience and broad assortment of product solutions.

Since 1974 DFE has been the natural choice for upgrading existing machinery with modern, efficient tension control. Improvements in productivity and lower operating costs due to reductions in material waste can pay for the investment in a tension control system in as little as a few weeks. OEMs and machinery builders also choose DFE to incorporate the most reliable, easy-to-use tension devices into their equipment.

If you don’t find what you need in this product guide, please contact us. Our skilled application engineers are ready to assist you in identifying the critical areas of your process. They can then recommend equipment—standard, modified or custom engineered—that will fit your budget and solve your tension problems.

With over 100 years of combined experience in delivering control solutions for web presses and machines, our dedicated technical staff can even help you integrate DFE tension control products with auxiliary equipment from other vendors, including drives and/or clutches.

If you’re looking for a single tension control source that delivers the best value available anywhere, then you’ll find what you need at DFE.

- Leadership in product innovation, reliability and custom tension measurement solutions since 1974
- Fastest delivery in the industry
- 5 Year Product Warranty
- ISO 9001 Quality Assurance
- 24/7 Technical Support
- Superior, hassle-free customer service
- R&D Technical Support Center
- All products designed and Made in the USA
- Credit card acceptance
- Technical resource library at www.dfe.com
Dover Flexo Electronics, Inc. warrants its’ products to be free of defects in material and workmanship for 5 years from date of original shipment.

During the warranty period the Company will repair or replace defective products free of charge if such products are returned with all shipping charges prepaid and if, upon examination, the product is shown to be defective. This warranty shall not apply to products damaged by abuse, neglect, accident, modification, alteration or mis-use.

For a copy of the full warranty, please contact DFE or visit www.dfe.com.

DFE’s Tension-Free 5 Year Warranty

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**Typical Running Tensions of Common Web Materials**

<table>
<thead>
<tr>
<th>Material</th>
<th>English</th>
<th>Metric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paperboard</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight (points)</td>
<td>3.0</td>
<td>105</td>
</tr>
<tr>
<td>Tension (lbs/in. mil)</td>
<td>4.0</td>
<td>157</td>
</tr>
<tr>
<td>Weight (g/m²)</td>
<td>4.5</td>
<td>196</td>
</tr>
<tr>
<td>Tension (kg/cm/micron)</td>
<td>5.5</td>
<td>260</td>
</tr>
<tr>
<td>8</td>
<td>6.5</td>
<td>326</td>
</tr>
<tr>
<td>12</td>
<td>8.0</td>
<td>391</td>
</tr>
<tr>
<td>15</td>
<td>0.40</td>
<td>25</td>
</tr>
<tr>
<td>20</td>
<td>0.50</td>
<td>30</td>
</tr>
<tr>
<td>30</td>
<td>0.75</td>
<td>50</td>
</tr>
<tr>
<td>40</td>
<td>1.25</td>
<td>65</td>
</tr>
<tr>
<td>60</td>
<td>2.00</td>
<td>100</td>
</tr>
<tr>
<td>80</td>
<td>3.00</td>
<td>130</td>
</tr>
<tr>
<td>Paper (based on 3,000 sq. foot ream)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight (points)</td>
<td>0.40</td>
<td>25</td>
</tr>
<tr>
<td>Tension (lbs/in. mil)</td>
<td>0.50</td>
<td>30</td>
</tr>
<tr>
<td>Weight (g/m²)</td>
<td>0.75</td>
<td>50</td>
</tr>
<tr>
<td>Tension (kg/cm/micron)</td>
<td>1.25</td>
<td>65</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material</th>
<th>English</th>
<th>Metric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum Foils</td>
<td>1.0</td>
<td>0.0070</td>
</tr>
<tr>
<td>Cellophanes</td>
<td>0.5</td>
<td>0.0053</td>
</tr>
<tr>
<td>Acetate</td>
<td>0.5</td>
<td>0.0035</td>
</tr>
<tr>
<td>Mylar (Polyester)</td>
<td>0.75</td>
<td>0.0052</td>
</tr>
<tr>
<td>Polyethylene</td>
<td>0.25</td>
<td>0.0018</td>
</tr>
<tr>
<td>Polypropylene</td>
<td>0.25</td>
<td>0.0018</td>
</tr>
<tr>
<td>Polystyrene</td>
<td>1.0</td>
<td>0.0070</td>
</tr>
<tr>
<td>Saran</td>
<td>0.15</td>
<td>0.0007</td>
</tr>
<tr>
<td>Vinyl</td>
<td>0.25</td>
<td>0.0007</td>
</tr>
<tr>
<td>Nylon</td>
<td>0.25</td>
<td>0.0018</td>
</tr>
<tr>
<td>Wax Paper</td>
<td>1.0</td>
<td>0.0070</td>
</tr>
</tbody>
</table>

For laminated webs sum the tensions for the individual webs and add 0.1 lb/in. (.018 kg/cm) of width.

<table>
<thead>
<tr>
<th>Material</th>
<th>English</th>
<th>Metric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper Wire (15,000 psi)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#16 (.051 inches)</td>
<td>30.00</td>
<td>13.6</td>
</tr>
<tr>
<td>#20 (.032 inches)</td>
<td>12.00</td>
<td>5.5</td>
</tr>
<tr>
<td>#24 (.020 inches)</td>
<td>4.50</td>
<td>2.0</td>
</tr>
<tr>
<td>#28 (.013 inches)</td>
<td>1.75</td>
<td>0.79</td>
</tr>
<tr>
<td>#30 (.010 inches)</td>
<td>1.25</td>
<td>0.57</td>
</tr>
<tr>
<td>#34 (.006 inches)</td>
<td>0.50</td>
<td>0.23</td>
</tr>
<tr>
<td>#36 (.005 inches)</td>
<td>0.25</td>
<td>0.11</td>
</tr>
<tr>
<td>#40 (.003 inches)</td>
<td>0.10</td>
<td>0.045</td>
</tr>
</tbody>
</table>

Run aluminum wire at ½ to 2/3 these values.

15,000 psi = 103.42 MPa
1 mil = 25.4 microns
**Quik-Cal™ Push-Button Zero Set and Calibration Set**

One of the new labor-saving features of DFE’s tension indicator and controller products is **Quik-Cal™** technology. With **Quik-Cal™**, the indication and control electronics use front-panel push buttons instead of potentiometers for zero and calibration settings.

Each button is pressed once during the calibration procedure for one second and the settings are stored automatically. The new Ti17C and Ti18C tension indicators come standard with **Quik-Cal™**, and the Ti17C is shown here to illustrate the ease-of-use in completing the ZERO and CALIBRATION procedure once the indicator is mounted and connected to tension transducer(s).

**ZERO Set**

**Press button for 1 second to ZERO the output.**

Because an output signal is generated by the weight of the transducer roll in the system, we can negate the roll weight output component in a procedure called ‘zeroing’. To set the indicator output to ZERO when there is no tension, the ZERO button is pressed for one second.

With **Quik-Cal™** the zeroing step can even be eliminated altogether, if desired. The tension indicator can be adjusted so that it automatically sets the output to ZERO when power is turned on.

**CAL Set**

**Press button for 1 second to CALIBRATE.**

Once the indicator is zeroed, calibration is completed by hanging a known weight on a cord passing over the transducer roll following the same path as the web.

When the **CAL** button on the front of the indicator is pushed and held for one second, the calibration setting is stored. The indicator automatically multiplies the calibration weight by the preset calibration ratio to calculate the full-scale output of the indicator, and the indicator is calibrated and ready for operation.

**What’s Calibration Ratio?**

The **calibration ratio** is the maximum tension divided by the weight used for calibration.

The standard calibration ratio is 10% (1:10). So, if a 15-pound weight is hung for calibration, and the CAL button is pushed, the indicator will store that value as 10% of its full output. Then 150 pounds of tension on the transducer roll (15 lbs x 10) during operation will result in the indicator producing its full-scale output.

If the optional calibration ratio of 25% is selected instead, the same 15-pound calibration weight will represent 25% of the indicator’s full output. In this case, only 60 pounds of operating tension (15 lbs x 4) on the transducer roll would generate the indicator’s full output signal.

**Stability**

Another benefit of **Quik-Cal™** technology is inherent stability. The ZERO and CALIBRATION settings are stored digitally, so there is no drift over time and temperature variations, as there can be with potentiometers.
Tension Transducers

With over 74,000 units sold, DFE tension transducers are the industry standard. These devices measure actual web tension in almost any moving web or filament. Transducers output an accurate signal to an amplifier, indicator or controller. All DFE transducers have rugged stainless steel and aluminum construction for reliability and corrosion resistance.

Items shown with the CE mark have been tested and have met the requirements of the Low Voltage Directive (73/23/EEC) and the EMC Directive (89/336/EEC) established by the member states of the European Union.

If you don’t see a transducer that fits your needs exactly, please call or e-mail us. We can manufacture custom transducers to fit almost any tension measurement application.

General Purpose Transducers  Model C

- Dead shaft and live shaft models
- Five mounting styles
- Dual cantilevered sensing-beam for high accuracy
- Load ratings from 10 - 800 lbs (45 - 3560N; 4.5 to 364 Kg)

The industry standard in tension transducers. Completely sealed to protect inside from dust and water. Recessed seals are protected from damage. Available in three frame sizes and both live-shaft and dead-shaft versions. Choose from five mounting styles: screw, flange, pillow-block, thru-frame and piloted flange. Ask for the data sheet on these rugged, time-proven transducers.

Tension Roll® Transducers  Model TR

- Transducers and idler roll in one, easy-to-install unit
- Fast, hassle-free installation-like any dead-shaft idler roll
- Aluminum, steel or stainless steel rolls in many surface finishes
- One electrical cable
- Roll diameters of 2.25", 3", 4" and up

Tension transducers and dead-shaft idler roll are combined in one integral unit. No assembly required. Faster, easier, and less expensive to install than separate roll and transducers. Only one transducer cable—eliminates cable crossing between machine frames. Face widths to 120 inches (3050mm). Load ratings from 12 to 400 pounds (55 to 1800N; 5.4 to 182 Kg).

Roll Shell Transducers  Model RS

- Converts a simple metal tube into a tension-sensing idler roll
- Simple to install-Unit clamps into tube
- No shaft needed
- Accommodates axial thermal expansion up to 1/4" (0.64cm) in hot environments
- Two frame sizes

Based on the Model C transducer. A Roll Shell Transducer locks into the inner diameter at each end of an aluminum or steel tube to create a simple-to-install tension-sensing roll. Special expanding connector collet allows easy insertion of transducer into roll. Once tightened, the collet fastens the transducer firmly into the tube. Load ratings from 10 - 800 lbs. (44N - 3559N; 4.5 - 364Kg)
Narrow Web Transducers Model NW

- For narrow web machines with single-side frame
- Transducers and idler roll combined into one unit
- Load ratings from 12 - 100 lbs. (55 - 450N; 25 - 45 Kg) with wide operating range
- Optional tension display on roll end
- Three roll diameters: 2.25", 3" and 3.5"

Specially designed transducer combines a cantilevered idler roll and two tension transducers in one unit—for fast, easy installation and high accuracy. Construction provides strength, corrosion-resistance and positive overload protection. Choice of roll widths accommodate narrow webs from 6" (152 mm) up to 20" (508 mm) wide. Choose a single-bolt mounting or four-bolt flange.

Wire, Cable or Ribbon Transducers Model RFA

- Measure tension of any narrow ribbon or filament
- Small, versatile and easy-to-install
- Special wheels are available
- Load Ratings from 10 - 150 lbs (45 - 665N; 4.5 - 68 Kg) with wide operating range

Designed to measure tension in any moving ribbon or filament. Ideal for ribbons or filaments of wire, plastic, rubber, metal, glass, composite or other materials. Three standard wheels available—for ribbon, for filament, or adapter model for custom requirements. Three mounting styles available: Screw, Flange and Pillow-Block.

Heavy-Duty Tension Transducers Model F

- Install under any standard pillow block bearing
- Two frame sizes
- Corrosion resistant for harsh environments
- Sealed against water intrusion—designed to meet IP65
- Tethered top plate for safety
- Load ratings from 50 - 5000 lbs (450 - 22250N)

The F transducer is a heavy duty, flat transducer designed to accurately measure web tension in machines having live shaft idler rolls. One F transducer mounts under the pillow block bearing at each end of the roll shaft. Designed for use in demanding tension measurement environments, such as paper processing, these transducers are built to last. The F transducer shell is a single-piece aluminum base with a removable stainless steel top plate. FH transducers are used in applications with the tension force direction parallel to the top plate. FV are for use in applications with the main force component perpendicular to the transducer top plate.
Tension Amplifiers and Indicators

Dover Flexo Electronics offers a wide variety of tension amplifiers and indicators. While amplifiers and indicators both manage tension signals from DFE transducers to measure actual tension and display it on an analog or digital meter, the tension amplifiers do not include a tension display meter as part of their standard package. A tension indicator comes with a built-in tension display meter.

Voltage and current outputs for amplifiers and indicators are proportional to tension. They can be used to interface with drive systems, controllers, computers, or recorders. A tension amplifier or indicator can also be used as a reference to control tension manually. Options are available to customize these devices to fit special requirements.

**TrueView™ Tension Indicators**
Models Ti 23 & Ti 24

- Compact size—fits almost anywhere
- Actual tension displayed on large analog or optional digital meter
- 0-10VDC or 4-20 mA isolated outputs proportional to tension
- Full enclosure and panel mount versions

A general-purpose indicator for measurement and display of total web tension. Available in a rugged steel enclosure or as an open chassis unit for mounting in an operator panel. The Ti 23 operates on 115/230 VAC, and the Ti 24 works on 24 VDC. Quik-Cal™ zero and calibration push buttons mean faster setup out-of-the-box with no pot adjustments. The optional Tension Limit Switch serves as an alarm trigger for web break prevention.

**Left-Right-Total Tension Indicator**
Ti 15

- Large meter displays left, right, or total web tension
- Large, easy-grip rotary dial to toggle displayed channels
- Optional Tension Limit Switch for setting alarm conditions
- Optional data acquisition module for tracking tension throughout process

In addition to displaying total tension across the width of a running web, the Ti 15 indicator shows actual tension on left or right web edge. The tension is measured continuously on all three channels and out-of-spec readings alert the machine operator to make adjustments to equalize side-to-side tension and optimize total tension. For web break prevention, min and max limits can be set to activate an alarm.

**EasyView™ Tension Indicator**
Model Ti 25

- Small unit fits almost anywhere—with large 2.5 inch tension display
- Includes additional tension output for data logging, PLC, or variable speed drives
- Choose analog or digital tension display, with full enclosure or panel mount
- Uses Quik-Cal™ technology for stability and easy setup

The simplest way to achieve reliable tension readout all in a device small enough to fit in your palm. The inexpensive and compact EasyView™ connects to your tension transducers and displays actual total web tension in units you select. Unit uses Quik-Cal™ technology for fast, reliable setup out-of-the-box with no potentiometer adjustments.
**TrueTension™ Amplifiers Ti 17C/Ti 18C**

- Low-cost, ultra-stable component for tension measurement
- 0-10VDC or 4-20mA isolated outputs proportional to tension
- Quik-Cal™ push-button zero and calibration
- CE marked*. Meets European low voltage and EMC directives
- Choice of mounting styles, including DIN rail mounting

Connect the Ti17C amplifier to any DFE tension transducer and output a tension signal to a PLC, drive, controller or other device. The Ti17C operates on 115/230 VAC, and the Ti18C works on 24 VDC. Quik-Cal™ zero and calibration push buttons mean faster setup out-of-the-box with no pot adjustments. The optional Tension Limit Switch serves as an alarm trigger for web break prevention. Ti17C beats the competition in head-to-head tests for output stability.

* CE marked for full enclosure version with cover.

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**iAmp2™ Inline Tension Amplifier Ti 22**

- Compact tension transducer amplifier (83 x 66 x 35 mm)
- Saves space, expense and installation time
- Converts 0-500 mV transducer signal to 0-10 VDC isolated output for PLC, motor drive or other controller
- Includes 0-1 mA isolated output for tension meter

Simplify web tension measurement with iAmp2™ amplifier modules. These enclosed miniature tension amplifiers are powered by 24 VDC and output 0-10 Volt isolated signals proportional to tension. Units include Quik-cal™ push-button Zero and Calibrate feature. Take the output directly to a PLC or motor drive. iAmp2 connects to DFE transducers and external devices via terminal strip or standard cable connections.

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**TwinAmp Dual Tension Amplifier Ti 27/Ti 28**

- Two separate 0-10VDC isolated tension outputs
- Quik-Cal™ push-button zero and calibration
- Choice of 24 Vdc (Ti 28), 115 Vac or 230 Vac (Ti 27) power inputs

The TwinAmp™ Tension Amplifier is a rack-mount transducer interface for monitoring tension in any two tension-sensing zones simultaneously. Two independent, isolated amplifier circuits are included on one card saving you space and money. IEC/ANSI/IEEE type 2 plug-in card installs into standard size 3U 19 inch rack or into optional mounting module. Each amplifier includes an additional signal output for a tension meter. From transducers in the web path, you can take both 0-10V tension output signals to a PLC, or to drives or control devices.

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**FireGuard™ Intrinsically Safe Tension Amplifier Ti 13**

- U/L listed
- Reduces risk of fire and explosion
- Easily adjusted with zero and calibration circuitry
- Contains a power supply for one or two transducers
- Protected in a compact, steel enclosure

An intrinsically safe interface between transducers and a tension controller, drive system or computer. The UL listed FireGuard™ reduces risk of fire or explosion in plant environments where combustible vapor may be present. Used when tension transducers and analog tension meter (optional) are located in a hazardous Class I Division 1 or 2 area. Can be used with drive systems, computers, PLC’s or DFE controllers. Outputs include 0 to +10V undamped isolated, and a 0 to 1 mA damped meter output.
Automatic Tension Controllers

Set your desired tension and the controller will maintain it. Easy-to-configure DFE controllers automatically compensate for variations in roll diameter, speed, and web material characteristics. Interchangeability of internal modular components between different controllers for features and options means fewer replacement components to stock.

Available Outputs on Tension Controllers

- **D** 0-10 Vdc compensated output for use with adjustable speed DC and AC drives. Electrically isolated.
- **V** 0-90 Vdc output. For use with all types of electrical brakes and clutches, including eddy current clutches. Also available with 24 and 45 VDC output.
- **P** 0-75 psi output for use with pneumatic clutches and brakes

Digital Tension Controller

- 4.3-inch Graphic User Interface
- Menu scroll knob and soft–key selections
- Storage and recall for up to 30 job setups
- 100–240 Vac or 24 Vdc power input
- Automatic excitation voltage detection
- Isolated control outputs (+/- 10V or 4–20 mA)
- Ethernet connectivity for remote PC access
- Full enclosure or panel–mount

With closed-loop digital PID control the SteadyWeb™5 maintains set tension on the web in any zone to improve process consistency. The large, bright LCD display with color graphics simplifies setup so you can get machine operators trained in less time. The large front-panel knob allows quick and easy navigation and tension adjustment.

Standard Analog Controller

- Quick installation and setup
- Choice of control output including 0-75 psi pneumatic, 0-90 VDC, 45 VDC, 24 VDC, or 0-10 VDC isolated/ non-isolated
- 0-10 Volts DC tension signal output
- Rugged steel enclosure for superior protection
- Many options available

DFE’s flagship full-featured analog tension controller, renowned for its reliability, versatility, and ease-of-use. For use in unwind, intermediate, or rewind tension zones. Optional functions include taper tension, dual transducer inputs, DC and pulse tachometer inputs, and more. System status lights allow the operator to see the operating mode at a glance.

Low-cost Analog Controller

- Low-cost, automatic tension controller for unwind and rewind zones
- Compact size for quick, easy installation anywhere
- Controls electric or pneumatic clutches and brakes

Low-cost, automatic tension controller. Provides the superior performance of the SteadyWeb controller and the basic, required control features for most unwind and rewind applications. No frills package includes analog tension meter and user’s choice of outputs: 0-75 psi pneumatic, 0-90 VDC, 45 VDC, or 24 VDC and 0-10 VDC isolated and non-isolated.

Rewind Splicer System

- Tension controller with automatic rewind splice sequencing in one package
- Simple to install because all controls are in one enclosure
- Easy-to-use— one-button splicing

Complete automatic turret rewind control system for automating a flying splice sequence. Combines advanced SteadyWeb™ tension control, core speed matching controls, flying-splice sequencing circuitry and a user-friendly interface. Turret rotation, knife firing, core speed matching, and tension control are coordinated all at the touch of a button.
Pneumatic Tension Brakes

Dover brakes are an integral part of a high-performance unwind package. All of our brakes feature a limited travel piston that never contacts the disk, ductile iron disk construction, and expanded disk surface for rapid heat dissipation.

Our asbestos-free friction pads are available in several coefficients of friction. No tools are required to change the friction pads, making brake maintenance quick and “hassle free”.

Heavy Duty Dual Disk Brake

- Heavy-duty brake for unwind applications
- Wide torque range (14 up to 17,990 lb-in)
- Large heat dissipation capacity
- Hassle-free friction pad removal/installation – no tools required
- No Squealing Warranty

With DFE’s Dual Disk Brakes worn friction pads can be changed in seconds, without tools. Limited travel pistons prevent disks from being scored. The cylinders can be actuated individually. The return spring cannot puncture the diaphragm. Available in five standard sizes. Brakes fit easily in place of other dual disk brakes. DFE’s universal style actuators can retrofit brakes by other manufacturers.

Dual Disk Brake

- Torque range from 3 lb.-in. with one cylinder up to 1,000 lb.-in. with six cylinders.
- Cylinders can be actuated individually.
- A range of pad friction coefficients is available to suit the application.
- Replace worn pads in seconds, without tools.

Same high-performance as Dover’s Heavy-Duty dual disk brakes, but smaller and with a lower torque range. Easy to install and use, the 60 series brake was designed for lower tension unwind application in the converting, printing, composite, wire and filament industries. The brake can be configured for use with one cylinder or up to six cylinders.

Brake Valves & Guards

Along with the brake disk and hub assembly, the mounting plate, universal actuators and pads pictured above, other accessories are also provided with your standard brake installation package. These items include a brake guard and pneumatic air valves.

The brake guard is a solid metal protective safety device to prevent people and objects from touching the brake when in motion or hot.

Valves, and two-valve and four-valve assemblies, control the air supply for actuators.

Replacement Parts & Accessories

To complement DFE’s 5-Year Warranty, 24/7 Technical Support and the rest of our standard customer care program, you will find just what you need when it comes to spare parts and accessories. Order replacement parts quickly, simply and securely by calling with a credit card.

- Fast turnaround
- Reasonable prices
- Major credit cards accepted

- Idler Rolls to your specs
- Tension transducer interface cables
- Spare option boards and plug-in circuit cards
- Analog and digital tension meters
- Brake accessories, actuator assemblies and pads
- And much more…
Custom Engineered Application Solutions

At DFE we base our entire success on our ability to deliver the most rugged, accurate and reliable control solutions on the market, whether they come off-the-shelf or custom-designed. A free application analysis from DFE will determine whether or not a standard solution is appropriate. The products pictured represent a few DFE specials that were manufactured to fit into less common applications.

**Segmented Tension Roll**

A segmented Tension Roll® transducer designed to measure independent tension of 2 or more narrow webs running in parallel on a machine. For converters performing inline slitting and winding of film and other extensible materials, gauge band variations across the substrate add a dimension of process variability that can make close control of tension on the resulting web strands critical. Roll face segment widths and spacing vary to your specification.

**Tension Controller / Drive Package**

This is a special version of DFE’s WebHandler™ 3 Tension Controller with a built-in motor drive. This product option was developed in response to one of DFE’s customers, a medical packaging converter that had been experiencing tension stability problems on three pacing rolls of their Mark Andy 4150 B flexo board press. The controller/drive combo helped improve the customer’s job setup time and print registration.

**“Steamroller” Tension Roll Transducer**

An application where the maximum bend radius of the substrate was a critical design factor. This special Tension Roll transducer with extended range, a 16-inch diameter roll and a 12-inch roll face was required in an application involving the chemical milling of very thin stainless steel strips. Certain coating processes also limit the bend radius of the substrate.

**8-Pak Multi-Channel Indicator**

The 8-Pak Multi-Channel Indicator, is a compact web tension display device for use on a multi-station web press, or on converting and winding machinery. Eight backlit LCD graphic displays on the front panel of the 8-Pak Indicator read out tension from 8 tension transducer (sensor) inputs which can be monitored simultaneously. The digital meters simulate analog dial readouts and are labeled to correspond to multiple transducer-outfitted idler roll positions in a machine’s web path.

**NW2™ Narrow Web Tension Transducer with Indicator Option**

DFE is continuously improving the standard line of tension products to satisfy customer desires. The built-in LED tension display, which started out as a special product request, was added to the Narrow Web transducer line as a standard option because enough customers wanted it as a feature on their transducers. Don’t be afraid to ask for what you want.
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