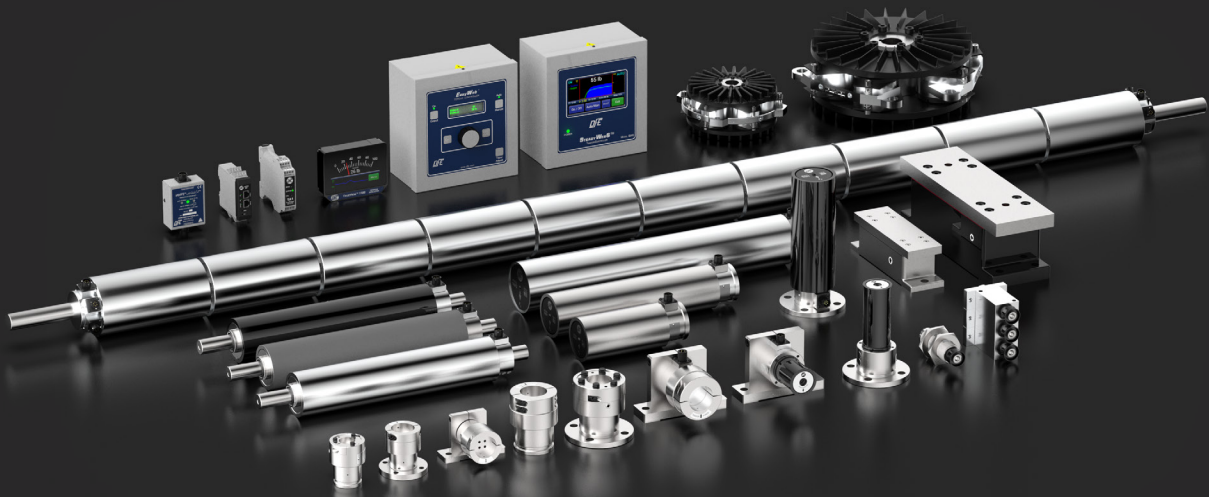




PRODUCT GUIDE

TENSION MEASUREMENT, DISPLAY & CONTROL



Tension Transducers • Amplifiers • Indicators
Controllers • Brakes • Idler Rolls

2023



Rapid Delivery



Responsive Tech Support



5 Year Warranty



Premiere Quality Assurance



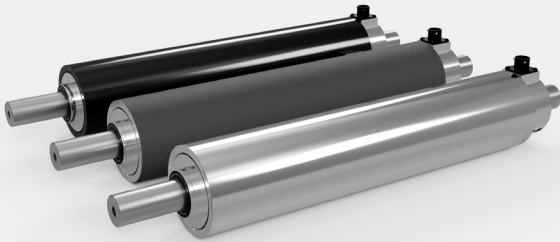
Manufactured In The USA

TENSION TRANSDUCERS

- Transducers / load cells measure actual tension in any moving web or filament process
- Output a proportional signal to a tension amplifier, indicator or controller
- Stainless steel and aluminum construction for high strength and corrosion resistance
- 5 year warranty - free of defects in material and workmanship



TENSION ROLL® TRANSDUCERS - MODEL TR

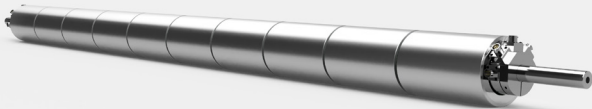


Ultimate performance and robust reliability set the Tension Roll® transducer apart from other sensing solutions on the market. A dead-shaft idler roller with tension sensors (load cells) integrated into each roll end, the Tension Roll® transducer is ideal for installation on original equipment or for retrofits since it arrives pre-assembled and ready-to-install between the facing sides of a machine frame.

- Aluminum, carbon steel and stainless steel roll shells available
- Load ratings: 12 - 400 lbs (55 - 1,800 N)
- Roll diameters: 2.25, 3, 4, 5 and 6 inches
- Roll lengths: 6 to 84 inches
- Custom roll finishes available



SEGMENTED TENSION ROLL® - MODEL STR



The Segmented Tension Roll® transducer is designed to measure the tension of multiple narrow webs running independently or multiple data points (2 per segment) across a continuous web width. Available with a support frame to minimize shaft deflection.

- Minimum roll segment length: 6 inches
- Maximum number of roll segments: 10



SHAFT-END TRANSDUCERS - MODEL C



The industry standard in cartridge-style tension load cells. The Model C transducer is available in a variety of sizes, mounting styles and load ratings. The Model C is sealed to prevent ingress from dust and water for long operating life and low maintenance.

- Dead shaft and live shaft models
- Five mounting styles: Screw, Flange, Pillow-Block, Through-Frame and Piloted-Flange
- Dual cantilevered sensing-beam for high accuracy
- Load ratings from 10 - 800 lbs (45 - 3,560 N)
- High overload capacity - up to 2,500 lbs (11,125 N)



NARROW WEB TRANSDUCERS - MODEL NW



The NW transducer combines a cantilevered idler roll and two tension transducers in one integral unit – for fast, easy installation, high accuracy and web tracking performance. Roll widths from 6 to 20 inches (152 - 508 mm). Choose single-bolt mounting or a four-bolt flange.

- Twin load cells and idler roll combined in one unit
- Load ratings from 12 - 400 lbs (55 - 1800 N)
- Optional digital display meter in the end of the roll
- Three roll diameters: 2.25", 3" and 3.5"
- Custom roll finishes available



VERY NARROW WEB TENSION TRANSDUCERS - MODEL VNW

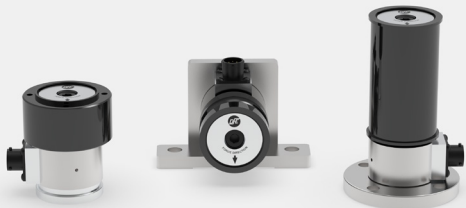


The VNW transducer measures process tension in narrow webs (up to four inches wide), ribbon or filament. It mounts cantilevered on process machinery for unwind/payoff, rewind/take-up or intermediate zone applications. Robust construction and impressive overload capability.

- Easy to install
- Provide your own wheel or select a DFE option
- Factory ribbon, filament and adapter wheels available
- Load ratings from 10 - 400 lbs (45 - 1,825 N)
- High overload capacity - up to 1200 lbs (5,338 N)



RIBBON FILAMENT TRANSDUCERS - MODEL RFA



Patterned after the legendary Model C transducer, the RFA Ribbon Filament tension transducer's cantilevered form factor is ideal for wire, plastic, rubber, metal, glass, composite and other flexible substrates. Three standard wheels are available - ribbon (1"-4" wide), filament and an adapter wheel which functions as a hub for mounting custom wheels. Three mounting styles are available: Screw, Flange, and Pillow-Block.

- Measure tension of any narrow web, ribbon or filament
- Small, versatile and easy-to-install
- Load ratings from 10 - 150 lbs (45 - 665 N)
- Overload capacity four times the load rating



LOW TENSION TRANSDUCERS - MODEL LT



Compact, durable transducers for measuring light tension in fiber, filament or ribbon winding applications. The dual cantilevered beam provides torsional stiffness, strength and accuracy. Available in stackable or threaded through-frame mounting designs.

- Measure low tension accurately in moving ribbon or filament
- Load ratings from 50g - 2000g (0.5 N - 19.6 N)
- Factory 1" ribbon and v-groove filament wheels available
- Custom wheel designs also available



HEAVY-DUTY TENSION TRANSDUCERS - MODEL F



Model F Series transducers mount under pillow-block bearings at each end of an idler roll shaft. Designed for use in demanding tension measurement environments, the F transducer shell has a one-piece aluminum base with a removable stainless steel top plate. A rubber seal between the base and top plate prevents water ingress and dust contamination. The transducer's electrical connector is located at the end of a pig-tail cable for simpler access during installation.

- Install under any standard pillow-block bearing
- Corrosion resistant for harsh environments
- Sealed against water intrusion — designed to meet IP65
- Tethered top plate for safety
- Load ratings from 100 - 10,000 lbs (445 - 44,500 N)
- Oversized top plate option to accommodate large bearing blocks
- All stainless steel versions also available

TENSION AMPLIFIERS

Tension amplifiers scale return signals from DFE load cells to proportional 0-10 VDC, 4-20 mA or digital values used by PLCs, motor drive systems and data loggers to control or monitor tension.

QUIK-CAL™ DIGITAL CALIBRATION

- No tension display needed
- No screwdriver needed
- No second person needed
- Eliminates drift associated with worn cal-pots



ETHERNET/IP™ AMPLIFIER - TA500

ODVA CE



The TA500-EIP tension amplifier is a compact, single channel tension transducer interface with EtherNet/IP™ compatibility. In addition to Ethernet connectivity, the TA500 provides simultaneous 0-10 VDC and 4-20 mA isolated tension outputs. Built-in diagnostic capability quickly identifies faulty load cells, incorrect wiring, calibration issues and amplifier ADC/DAC failure.

- DIN rail mount
- Web configuration and monitoring interface
- EDS file support
- ODVA certified
- CE-marked
- **EtherNet/IP**



TRUETENSION™ AMPLIFIER - TA1

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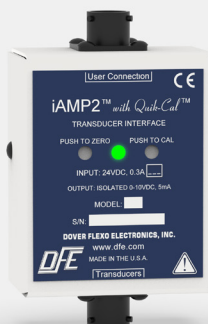
The TA1 TrueTension™ Amplifier is a compact, single-channel tension transducer interface. It can be used with DFE tension transducers (load cells) to monitor tension in any zone of web or filament processing machinery.

DFE's *Quik-Cal*™ push-button zero and calibration eliminates pot adjustments and associated drift to make calibrating the TA1 simple, fast and reliable. Powered by 24 VDC, the amplifier boosts a millivolt-level tension signal from the tension transducer (load cell) and outputs an isolated 0-10 VDC and 4-20 mA proportional signal to a PLC, drive or display meter. Built-in diagnostic capability quickly identifies faulty load cells, incorrect wiring, calibration issues and amplifier ADC/DAC failure.



iAMP2™ INLINE TENSION AMPLIFIER - TI22

CE



Simplify web tension measurement with iAmp2™ amplifier modules. These enclosed miniature tension amplifiers are powered by 24 VDC and output 0-10 VDC signals proportional to tension. The iAmp2™ connects to transducers and external devices via terminal strip or cannon-style connectors.

- Compact installation footprint
- Rapid, simple installation
- 0-10 VDC isolated signal output for PLC, drive or data logger
- Includes 0-1 mA isolated output for a tension meter
- CE-marked

TENSION INDICATORS

DFE touchscreen tension indicators amplify load cell return signals, display actual tension and provide proportional signal outputs able to interface with drive systems, PLCs, computers or data logging devices.

TRUEVIEW™ TENSION INDICATOR - 1100TV



The TrueView™ 1100 is an easy-to-use, rugged, touchscreen tension indicator designed for use with high-sensitivity semiconductor strain-gage load cells. It features a bright 500 nit, impact-resistant touch screen display suitable for industrial environments.

Housed in an alloy enclosure, it is machined from solid 6061-T6 billet aluminum for superior strength and durability. Engineered with flexibility in mind, DFE's newest indicator can be DIN rail-mounted, panel-mounted (with included bezel) or affixed to a vertical column with a band-style clamp. The TrueView™ 1100 is backward-compatible with all DFE tension transducers manufactured since 1974.

- Operator lockout code
- Simple 3 step calibration procedure
- Simultaneous 0-10 VDC and 4-20 mA isolated tension outputs

TRIVIEW™ LRT TENSION INDICATOR - T131



In addition to displaying average tension across the width of a running web, the TriView™ indicator also reads independent tension on both edges of a web process. This multi-zone monitoring allows the TriView™ to alert machine operators if manual adjustments are needed to equalize side-to-side tension and maintain optimum quality. Minimum and maximum tension limits can also be set to warn operators of potential web breaks, stretching or wrap-up incidents.

- *Quik-Cal™* Zero and Calibration saves setup time
- 5-inch, high-visibility touchscreen display interface
- High and low Tension Limit Switch (TLS) capability
- 0-10 VDC and 4-20 mA isolated tension outputs

EXPERIENCE THE 'DOVER DIFFERENCE'

Dover Flexo Electronics is the value and innovation leader in the industries we serve. We endeavor to deliver superior products to customers at reasonable prices with an emphasis on quality, performance, reliability and technical support. Our management team is committed to evaluating and modifying business operations, as needed, to ensure the company continues to deliver the highest quality products and services to customers.

Please contact us today to discuss your latest project requirements, or provide feedback from a recent customer experience.

Phone: 603.332.6150 Website: www.dfe.com E-mail: sales@dfecom



Rapid
Delivery



Responsive
Tech Support



5 Year
Warranty



Premiere Quality
Assurance



Manufactured
In The USA

All DFE products are manufactured in Rochester, NH, USA from a combination of US and globally-sourced materials.

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.

- Choice of output modes to be used with a pneumatic brake or clutch, eddy current clutch, electric brake or variable speed drive
- Large, easy-to-view tension displays
- Choice of metal enclosure or panel-mount form factors
- Standard emergency stop, auto/manual control modes, bumpless switching and soft start features



DIGITAL TENSION CONTROLLER - STEADYWEB 6™



With closed-loop load cell feedback, our flagship SteadyWeb 6™ tension controller maintains a precise tension setpoint in any zone to improve process consistency. The 5-inch color touchscreen display simplifies setup and operation, for quick access to job presets or setpoint adjustment.

- Choice of enclosure or panel-mount form factor
- 5-inch touchscreen display
- Storage and recall of up to 30 job setups
- 0-10 VDC, 4-20 mA, 0-24 VDC and pneumatic control output options
- Diameter, taper tension and acceleration compensation
- Diameter min/max alarm trip



DIGITAL TORQUE CONTROLLER - EASYWEB™



A budget-friendly open-loop controller, the EasyWeb™ calculates the change in roll diameter throughout a winding or unwinding process and adjusts the torque output of your drive, clutch or brake to compensate. This web tension management helps prevent breaking, stretching, wrinkling or curling. The EasyWeb™ uses an input signal from line-speed and roll-speed tachs or from an ultrasonic sensor or rider roll.

- For center-driven unwind or rewind applications
- Easy-to-use interface with OLED display, scroll knob and soft keys
- Choice of inputs and isolated control output
- Diameter min/max alarm
- Taper tension



DEAD SHAFT IDLER ROLLS

DFE's precision-machined idler rolls are manufactured to exacting standards and are perfect for installation on web presses and converting machinery.

Classic dead shaft idler rolls are available in 3, 4, 5 and 6 inch diameters. The classic idler design incorporates a robust 0.5 inch roll shell wall thickness and 1.25 inch shaft diameter. These attributes support performance in high tension applications or the need for periodic roll resurfacing.

Low-inertia dead shaft idler rolls deliver 40% reduced moment of inertia and are available in 3 inch diameter with 0.75 inch shafting. The cantilevered version is flange-mounted, matching the bolt circle and offset of our Narrow Web Tension Transducer (size 1 & 2).



- Standard 16 RMS roll finish, with custom roll surfaces available
- Shielded bearings

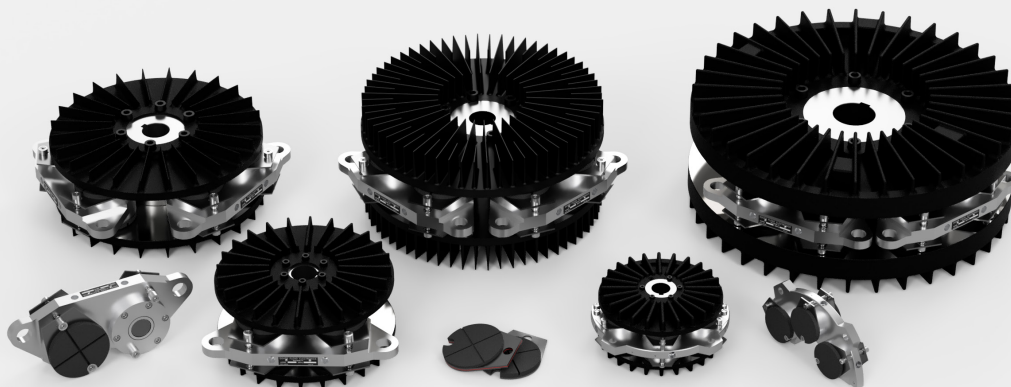
PNEUMATIC BRAKES

DFE brakes are an integral part of a high-performance unwind package, features include:

- Patented anti-squeal Silencer™ friction pads
- Limited-travel pistons that never scratch the disks
- Time-tested industrial design
- Stress-relieved, cast iron discs
- Hassle-free friction pad replacement with no tools required
- Asbestos-free friction pads available in high or low coefficients of friction



DUAL DISC PNEUMATIC BRAKES



DFE brakes are designed for hassle-free operation, enabling friction pad changes in seconds, without tools. Cylinders can be actuated individually. Piston return springs prevent diaphragm puncture, increasing brake reliability and longevity.

- Wide, adjustable torque range up to 17,990 lb-inches
- Available in five sizes to accommodate most applications
- Heat dissipation capacity from 5 to 60 hp
- 5 year warranty



BRAKE ACCESSORIES



- Brake safety guards
- Aluminum mounting plates
- Installation kits (bolts, spacers and washers)
- Friction pads and Silencer™ anti-squeal kits
- Pneumatic manifolds with slide-valves, control air supply to individual cylinders



CUSTOM-ENGINEERED SOLUTIONS

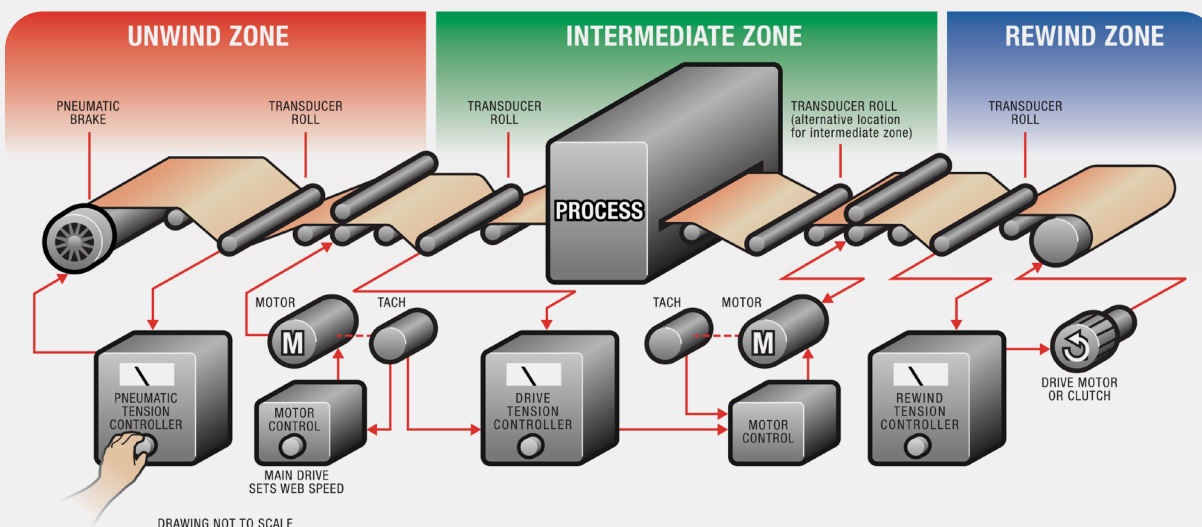
For special requirements that fall outside of our standard product offering, the DFE Special Product Request department provides additional engineering resources to create a design that delivers all of the features that you require for turn-key start-ups.

Recent requests include:

- Stackable fixtures for filament control applications
- Multiple indicators arrayed in a rugged enclosure
- Low-inertia Tension Roll® for ultra-light tension measurement
- Large diameter Tension Roll® with custom machined shaft ends
- Plasma-coated Tension Roll®
- Polyurethane coated, 10 segment Tension Roll®



TENSION ZONE DIAGRAM



REPLACEMENT PARTS & ACCESSORIES

To complement DFE's 5 Year Warranty, responsive Technical Support and the rest of our tension-free customer care program, you will find just what you need when it comes to spare parts and accessories. These items are listed in the instruction manuals for your Dover Flexo Electronics products. Order replacement parts quickly, simply and securely by calling or e-mailing our sales department.

- Budget-friendly repair services available
- Tension transducer interface cables
- Spare option boards and plug-in circuit cards
- Analog and digital tension meters
- Brake accessories, actuator assemblies and friction pads
- Fast turnaround
- Reasonable prices
- All major credit cards accepted

TYPICAL RUNNING TENSIONS OF COMMON WEB MATERIALS

Material	English		Metric		Material	English		Metric		Material	English		Metric	
	Weight (points)	Tension (lbs/lin. inch)	Weight (g/m ²)	Tension (kg/cm)		Tension (lbs/in/mil)	Tension (kg/cm/mm)	Copper Wire (15,000 psi)	Tension (lbs)		Tension (kg)	Tension (lbs)	Tension (kg)	
Paperboard	8	3.0	105	0.54	Aluminum Foils	0.5	3.52	#16 (.051 inches)	30.00	13.6	Run aluminum wire at ½ - 2/3 these values. 15,000 psi = 103.42 MPa 1 mil = 25.4 microns = 0.0254 mm			
	12	4.0	157	0.72	Cellophanes	0.75	5.27	#20 (.032 inches)	12.00	5.5				
	15	4.5	196	0.90	Acetate	0.5	3.52	#24 (.020 inches)	4.50	2.0				
	20	5.5	260	1.26	Myler (Polyester)	0.75	5.27	#28 (.013 inches)	1.75	0.79				
	25	6.5	326	1.62	Polyethylene	0.25	1.76	#30 (.010 inches)	1.25	0.57				
	30	8.0	391	1.98	Polypropylene	0.25	1.76	#34 (.006 inches)	0.50	0.23				
Paper (based on 3,000 sq. foot ream)					Polystyrene	1.0	7.03	#36 (.005 inches)	0.25	0.11				
	15	0.40	25	0.135	Saran	0.15	1.05	#40 (.003 inches)	0.10	0.045				
	20	0.50	30	0.180	Vinyl	0.25	1.76							
	30	0.75	50	0.270	Nylon	0.25	1.76							
	40	1.25	65	0.360	Wax Paper	1.0	7.03							
	60	2.00	100	0.540										
	80	3.00	130	0.720										

For laminated webs sum the tensions for the individual webs and add 0.1 lb/in. (0.018 kg/cm) of width.

