

# STEADYWEB™ TENSION CONTROLLER Data Sheet

Dover offers a variety of analog SteadyWeb™ tension controllers. They are used to operate pneumatic or electric brakes and clutches, eddy current clutches, and DC and AC drives. A large selection of standard and optional features makes SteadyWeb™ controllers the most advanced and versatile in the industry. They all feature wide tension control range without recalibration. The SteadyWeb™ controller is fully automatic. The operator sets the tension set point control to the desired tension. The transducers measure actual tension. The controller compares actual

tension with desired tension and adjusts torque output of the brake, clutch, or drive to make actual tension the same as desired tension. The controller automatically compensates for speed changes, roll diameter changes and other factors to maintain desired tension. Web tension is displayed on a large analog or digital meter so the operator can see it easily at a glance. SteadyWeb™ controllers feature soft start and bumpless auto/manual switching. Sample/hold and multiply/divide circuits provide smooth operation during flying splices on either unwind or rewind.

## BENEFITS

- Automatic tension control - no manual adjustments needed
- Simple to use and operate - no special skills or training required.
- Large, easy-to-read meter, displays actual web tension.
- Helps reduce or eliminate web breakage, registration, and stretching problems.
- Helps reduce product waste.
- Permits higher running speed without losing control of web
- Wide tension range without recalibration.
- Fast and easy to install - quick start up.
- Economical, with a fast payback.
- Compatible with automated factory systems.
- Produces consistent tension, roll after roll.

## OUTPUT VERSIONS

### P

0-75 psi (0 to 5.17 bar) output for use with pneumatic brakes and clutches. Most commonly used in the unwind and rewind zones. System includes internal air filter and regulator (80-120 psi input pressure).

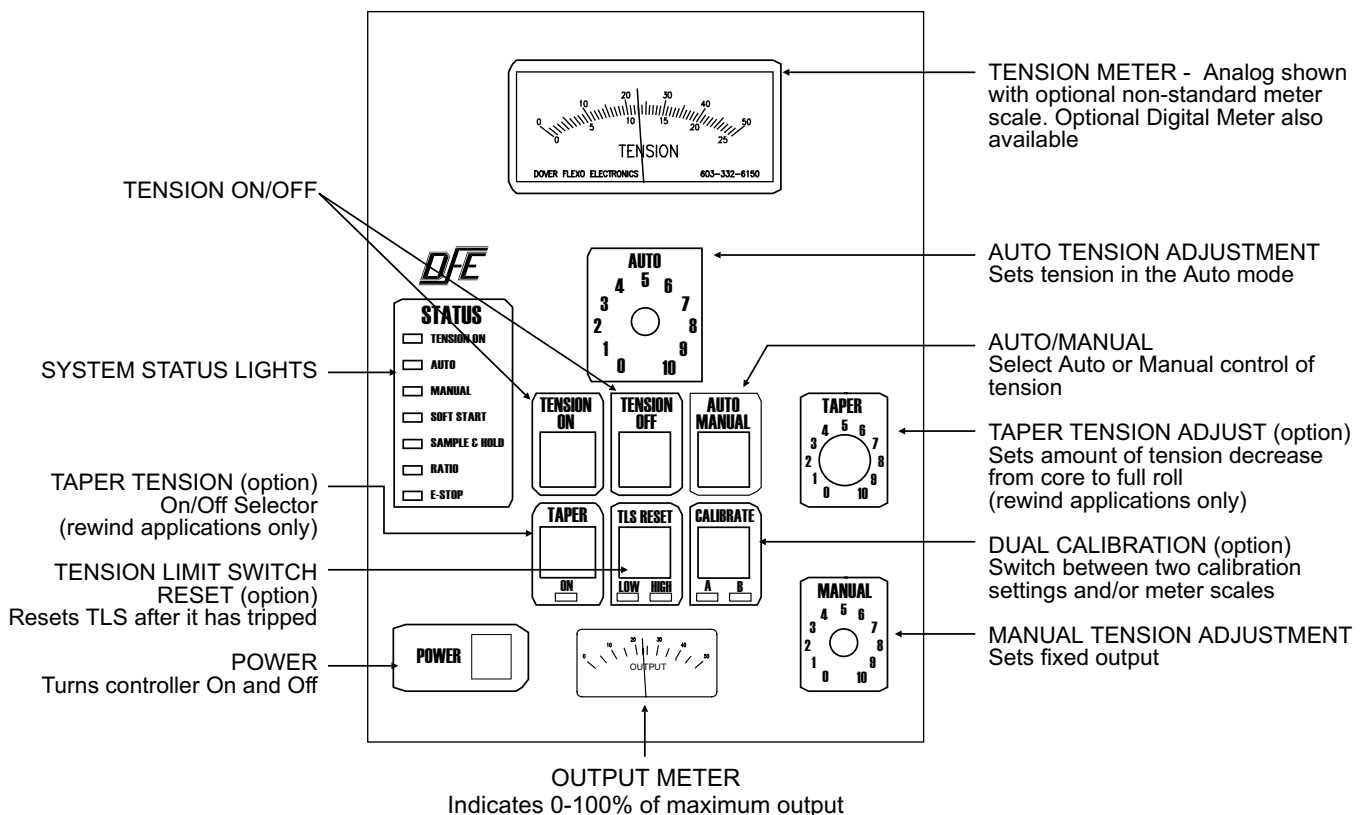
### V

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. Commonly used in the unwind or rewind zones.

### D

0-10 Vdc compensated output for use with adjustable speed DC and AC drives. The output is electrically isolated for compatibility and reliability. Used in all tension zones; unwind, rewind, and intermediate.

## FRONT PANEL WITH STANDARD AND OPTIONAL FEATURES



## STANDARD FEATURES

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- **0-10 Volt Tension Output.** Used to interface with computers or other control systems.
- **4-20mA Tension Output.** Used to interface with computers or other control systems and tension displays.
- **Emergency Stop.** Stops the tension controlled device quickly in an emergency situation. Upon a contact closure, controller goes to full output or zero output.
- **Meter Damping.** Eliminates rapid tension meter fluctuations and displays an average tension.
- **Switch Selectable Output Direction.** Select between normal and reverse output. Increases output when tension exceeds set point. Used in intermediate applications where transducers are located after nip rolls.
- **Ratio Output Up or Down.** Multiplies or divides the control output during flying splice operations.
- **Remote Tension On/Off.** Accommodates additional tension On/Off buttons in remote locations.
- **Remote Tension Set Point.** Allows location of Auto tension set point pot outside the controller.
- **Sample and Hold.** Used in flying splice applications. Upon a contact closure, output is maintained at constant level until contact is opened.
- **Soft Start.** Used on unwinds only. Insures control output is low when machine starts. Actuated in 3 ways: Tension Level, Remote Contact Closure, and Tachometer Speed Signal (optional, tach card required).
- **Standard Meter Scales.** 0-1, 5, 10, 25, 50, 100, 150, 250, 500, or 1000.

## OPTIONS

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- **230V Power Input.**
- **24V Output OR 45V Output (V only).**
- **Attached Power Cord (APC).** A heavy duty 3 conductor power cord wired to the device by DFE.
- **Additional Tension Meter (ATM).** An additional meter to the standard one in the enclosure. Usually installed remotely by the customer. Provided loose, no enclosure furnished by DFE.
- **Additional Tension Meter in Enclosure (ATME).** Mount the auxiliary tension meter in an enclosure.
- **Bipolar 10 Volt Output (B10).** -10V to +10V output. Usually a controller output.
- **Blank Meter Scale (BMS).** No numbers on analog tension meter scale, only scale divisions.
- **Chassis Configuration (CC).** No operator devices, just enclosure with PCB attached to blank cover panel.
- **Dual Calibration (DC).** Allows two calibration settings.
- **Digital Meter. (DM)** 4 1/2 digit red LED, 1"(25mm) high, in place of analog meter.
- **Dual Transducer Input. (DTI)** Accepts tension inputs from two different transducer sources.
- **Extended Range output (XRE).** Makes the transducers twice as sensitive (transducer must also have XR option).
- **External Taper Adjustment (XTA).** Taper adjustment pot. is moved from internal circuit card to front panel for easy adjustment.
- **Metric Pneumatic Fittings (MPF).** Metric size air fittings in place of inch size.
- **Negative 10 Volt Output (N10).** Output goes from 0 to -10V, instead of from 0 to +10V.
- **Nonstandard Meter Scale (NMS).** DFE stocks many analog meter scales. We will make up a nonstock scale upon request.
- **Remote Tension Meter in Enclosure (RME).** A standard tension meter in an enclosure for remote mounting.
- **Remote Operator Panel (ROP).** Enclosure with a blank cover panel, and 6 foot harness (different lengths optional) to the front panel with all operator devices.
- **Remote Pneumatics. (RPA)** A separate bracket housing the pneumatic components (P only).
- **Remote Pneumatic Assembly in Enclosure (RPE)** Servo valve, filter, regulator remotely installed in an enclosure.
- **Remote Tension Amplifier. (RTA)** The controllers internal amplifier is not used and is replaced by a remotely located amplifier. Accepts a 0-10Vdc signal.
- **Reverse Output (RO).** Output increases when tension exceeds setpoint.
- **Speed Follow by DC Tach (SFD).** Output is mostly determined by a DC tach speed signal and is trimmed by the transducer signal. Used to activate Soft Start.
- **Speed Follow by Pulse Tach (SFP).** Output is mostly determined by a pulse tach speed signal and is trimmed by the transducer signal. Used to activate Soft Start.
- **Tension Limit Switch. (TLS)** Relay actuates at a pre-set adjustable trip point. Can be used as a web break detector.
- **Tension On Relay (TOR).** Turning tension on actuates an SPDT relay for customer use.
- **Taper Tension.** Tension tapers with diameter increase as calculated electronically using inputs from: **two DC tachs (TTD), two pulse tachs. (TTP),** or as sensed by a **follower roll or ultrasonic sensor (TTF).** For rewinds only.

*All option cards are available in kits and may be purchased separately. A kit includes mounting hardware and instructions.*

## SPECIFICATIONS:

- **Power Input:** P and D = 120/230 Volts 60/50Hz Single Phase @ 1 amp, V = 120/230 Volts 60/50Hz Single Phase @ 5 amps
- **Output Control Range:** P = 0 to 75 psi (0 to 5.17 bar), V = 90 Vdc, 45 Vdc, 24 Vdc, all @ 4 amps, and D = 0-10 Volts dc (isolated)
- **Tension Signal Output:** 0 to 10 Vdc, or 4 to 20mA with 500 Ohm maximum load
- **Enclosure:** NEMA Type 1, Steel
- **Weight:** 26 lbs. (11.8 kg)
- **Air Connections (P only):** In: 3/8" (9.5 mm) compression fitting for plastic tubing (5/16", 8 mm optional), Out: 1/4" (6 mm) compression fitting for plastic tubing
- **Internal Air Filter (P only):** 5 micron with 1/2 pint bowl and automatic drain
- **Transducer Power Supply:** 5 Vdc, regulated, 10 Vdc with extended range
- **Transducer Signal:** 500 millivolts dc per pair at rated load, 1 Vdc with extended range
- **Mating Transducer Cable Connectors:** Amphenol MS3106A-10SL-3S
- **Zero Range:** 95% of transducer rating, minimum
- **Calibration Range:** 25:1
- **Temperature Range:** 32°F to 104°F (0°C to 40° C)
- **System Accuracy:** 1% to 3% typical
- **Tension Meter:** Heavy-duty, 2% accuracy with flame proof front or optional 4 1/2 digit digital with 1" (25mm) display
- **Maximum Output Adjustment Range:** 0% to 100%
- **Minimum Output Adjustment Range:** 0% to 20% of maximum
- **Manual Output Range:** 0% to 100% of rated output
- **Output Multiplier Range (ratio):** 1:10
- **Output Divider Range (ratio):** 10:1
- **Tension Limit Switch relay contacts (option):** SPDT, rated at 10A@ 30Vdc, 10A@ 250Vac
- **Taper Tension Range (option):** 0% -100% adjustable
- **Taper Tension Inputs (option):** code TTD (using DC tachs = Maximum of 3 Vdc to 250 Vdc switch selectable, code TTP (using Pulse tachs) = 300Hz to 40,000Hz at maximum line speed, and code TTF (external voltage) = 0-10 Vdc core to full roll

## ORDERING INFORMATION

You may order by description, or by matching the labeled digits with your choices.

**Example: SW2P-R-100-DM,XRE,**

**SW2X - X - XXX - OPTIONS (Separated by commas)**

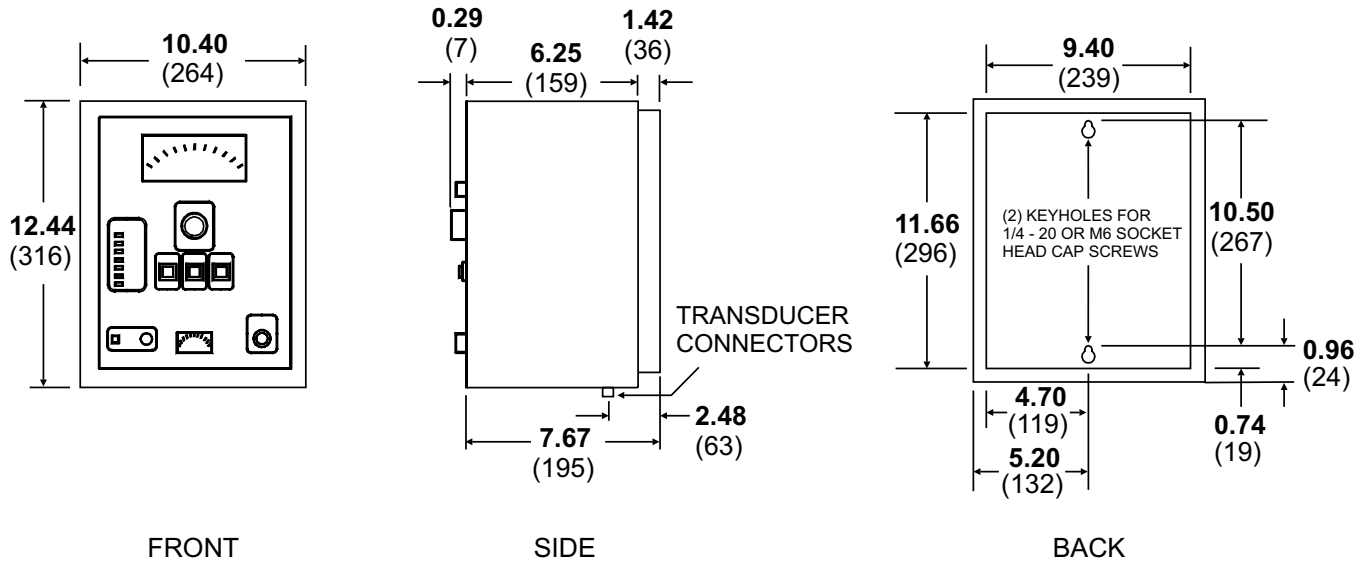
OUTPUT	ZONE	METER SCALE	OPTIONS
P = Pneumatic V = Electric D = Drive	U = Unwind R = Rewind I = Intermediate	1 = 0-1 5 = 0-5 10 = 0-10 25 = 0-25 50 = 0-50 100 = 0-100 150 = 0-150 250 = 0-250 500 = 0-500 1000 = 0-1000	230 = 230 Volt Power Input 24 = 24 Vdc Output 45 = 45 Vdc Output APC = Attached Power Cord ATM = Additional Tension Meter ATME = Additional Tension Meter in Enclosure B10 = Bipolar 10V Output BMS = Blank Meter Scale CC = Chassis Configuration DC = Dual Calibration <sup>2</sup> DM = Digital Meter DTI = Dual Transducer Input MPF = Metric Pneumatic Fittings N10 = Negative 10V Output NMS = Non-Standard Meter Scale RME = Remote Meter in Enclosure RO = Reverse Output ROP = Remote Operator Panel RPA = Remote Pneumatic Assembly RPE = Remote Pneumatic Assy in Enclosure RTA = Remote Tension Amplifier SFD = Speed Follow by DC Tach SFP = Speed Follow by Pulse Tach TLS = Tension Limit Switch TOR = Tension On Relay TTD = Taper Tension by DC Tach TTP = Taper Tension by Pulse Tach TTF = Taper Tension by Diameter Follower XRE = Extended Range <sup>1</sup> XTA = External Taper Adjustment Z = Special (SPR)

Notes: 1. Transducers must have XR option. 2. Show both meter scales separated by a backslash if DC option is selected.

# DIMENSIONS inches (mm)

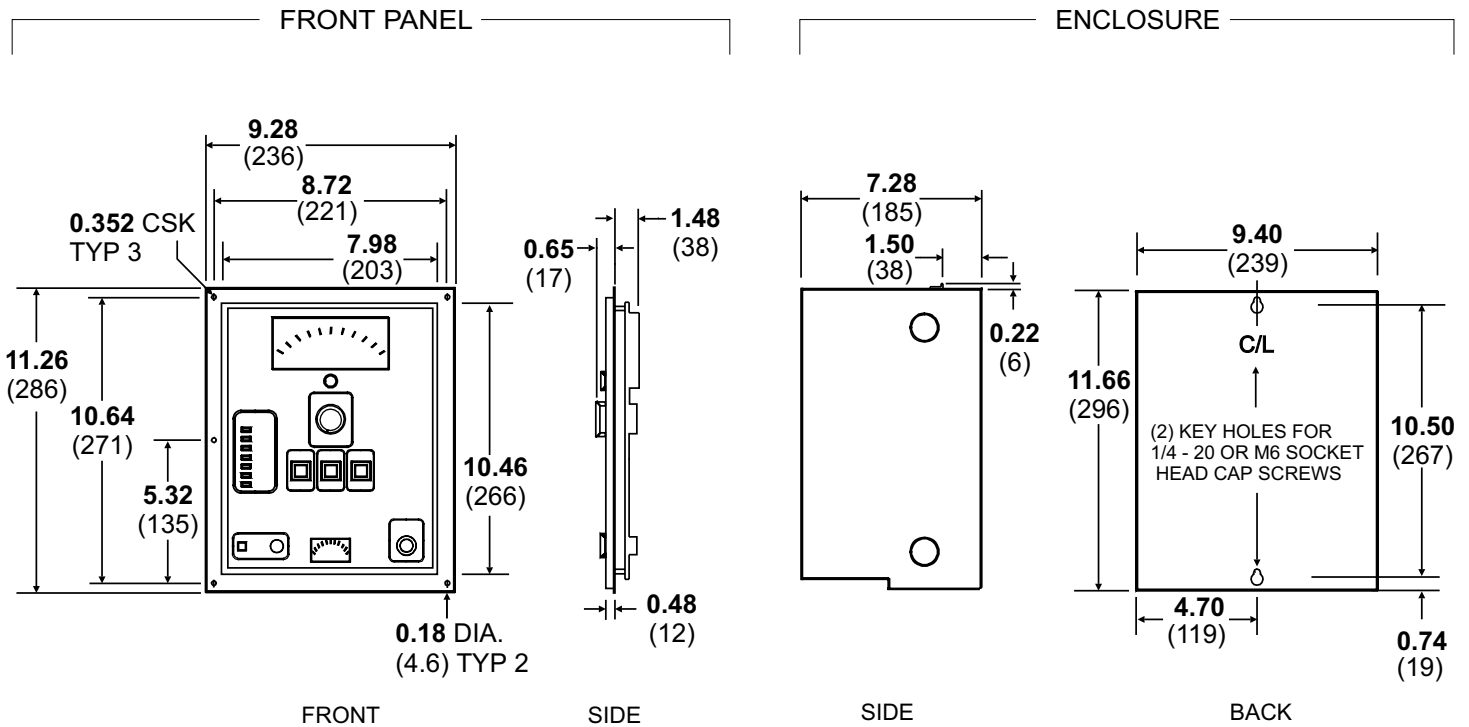
## STANDARD STEADYWEB - ALL VERSIONS

Note: Allow 0.75" (19mm) clearance on the top for the cover to be removed (req. to open), and 5" (127mm) clearance on the left side for the controller to open completely.



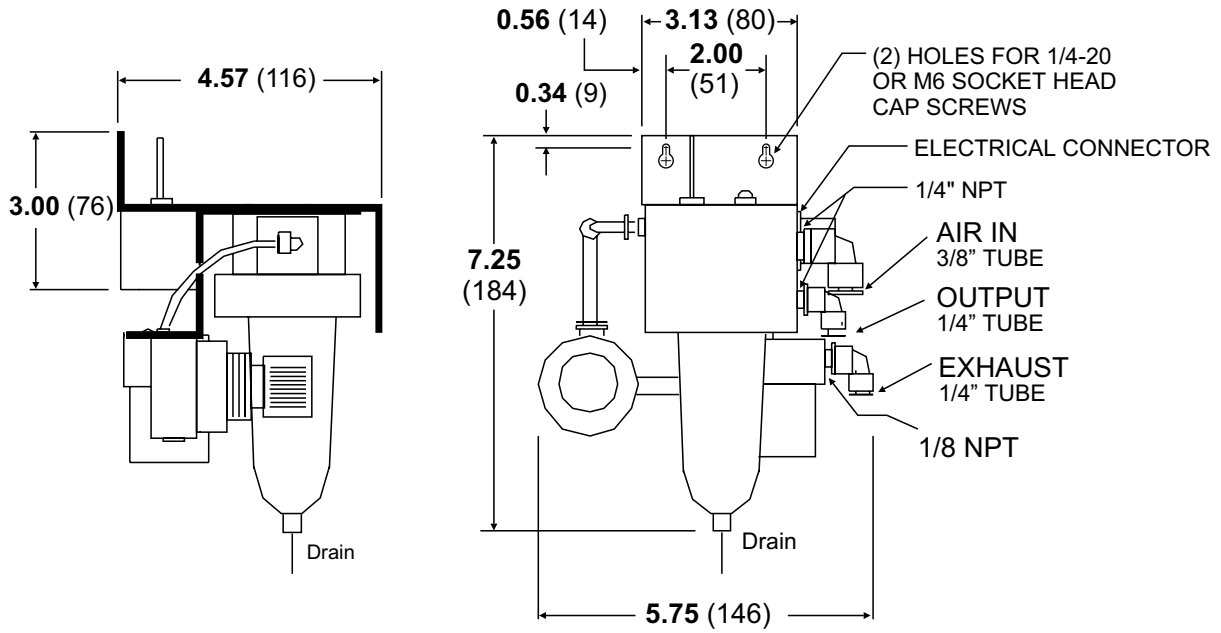
## REMOTE OPERATOR PANEL AND CHASSIS CONFIGURATION

Remote Operator Panel includes Front Panel, enclosure with blank cover panel, and cable connecting the two.  
 Chassis includes just the enclosure, with PCB attached to blank cover panel.



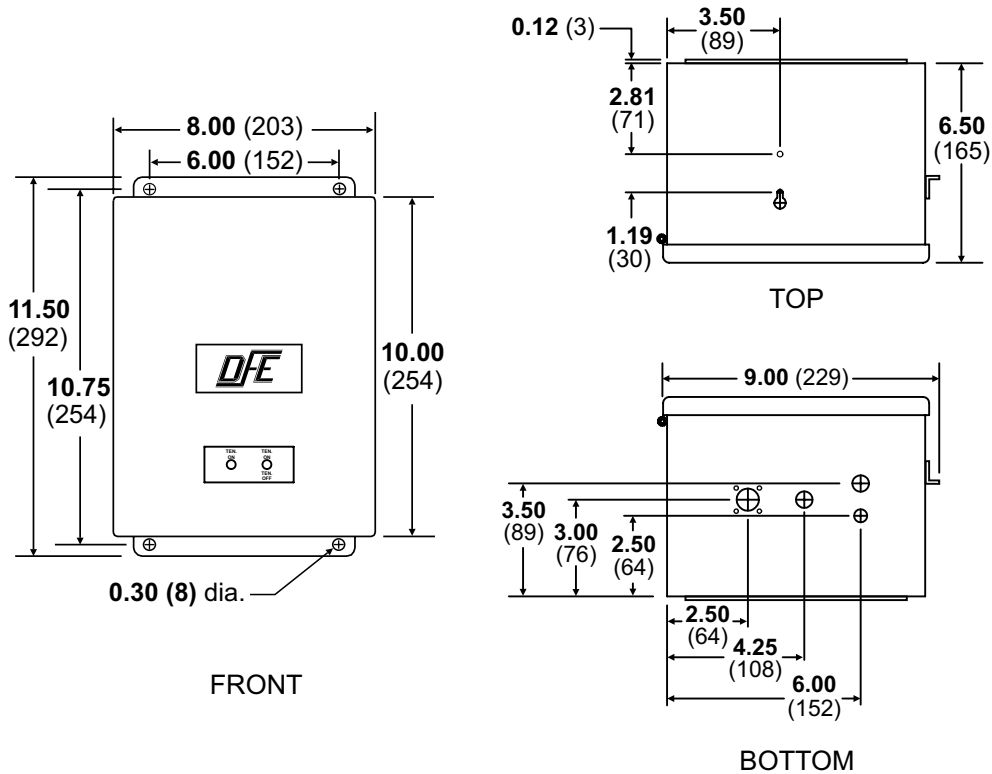
## DIMENSIONS OF THE REMOTE PNEUMATIC ASSEMBLY (RPA)

inches (mm)



## DIMENSIONS OF THE REMOTE PNEUMATIC ASSEMBLY ENCLOSURE (RPE)

inches (mm)



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