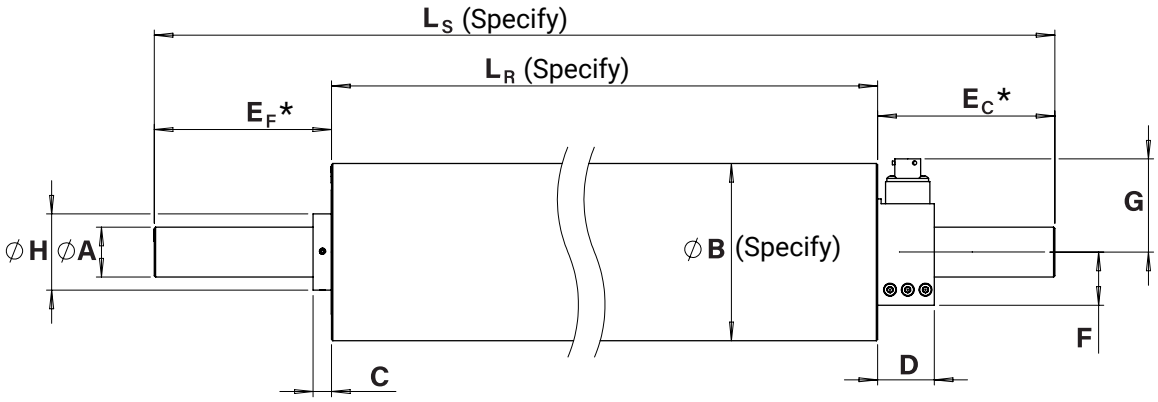
Tension Roll® Transducer Specification and Load Rating Worksheet

To be used in conjunction with Tension Roll® Transducer Data Sheet

Contact: _____ Phone: _____ Email: _____

Company: _____ Address: _____

Roll and Shaft Dimensions



		A	B			C	D	F	G	H
SIZE 0	in	1.000	2.25			0.33	1.17	R 2.20	1.96	1.56
	mm	25.40	57.1			8.5	29.8	55.9	49.8	39.7
SIZE 1	in	1.000	3.00			0.29	1.17	R 2.40	2.12	1.56
	mm	25.40	76.2			7.4	29.8	61.0	53.8	39.7
SIZE 2	in	1.125	4.00	5.00	6.00	0.41	1.28	R 2.40	2.10	1.72
	mm	28.57	101.6	127.0	152.4	10.4	32.5	61.0	53.4	43.7

Roll and Shaft Configuration

Shaft Length (Ls) _____

Roll Face Width (L_R) _____

Roll Diameter (B) _____

Shaft Extension, Connector End (E_C)* _____

Shaft Extension, Nonconnector End (E_F)* _____

Roll Material: Aluminum (Std), Steel, Stainless Steel _____

Roll Surface (16 RMS Std) _____

Load Rating (lbs) _____

Load rating should be higher than maximum Net force. See page 2 for Net force calculation or contact DFE for assistance.

Connector Position ☐6 (Std) ☐3 ☐9 ☐12

**E_C/E_F dimensions required if roll is not centered on the shaft.*

Options

Check all that apply, see data sheet for details.

☐ Drill & Tap Shaft Ends

☐ Black Hard Coat Anodized Roll Finish

☐ Natural Hard Coat Anodized Roll Finish

☐ PC915 Plasma Coat Roll Finish

Web Characteristics - *If more than one is used, give information for the two requiring the most and least tension.*

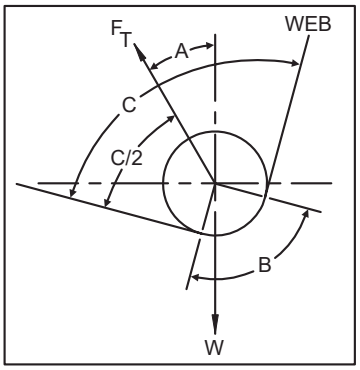
Total Web Tension (lbs), Max _____ Min _____ (if known)

Type of Web Material _____ (if known)

Max. Web Speed (fpm) _____ (if known)

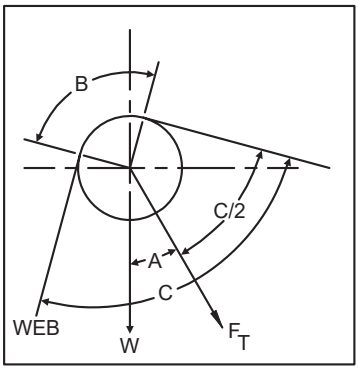
Formulas to Calculate Net Force

WRAP 1



$$\text{NET FORCE} = \frac{4T \sin\left(\frac{B}{2}\right) - W \cos(A)}{2}$$

WRAP 2



$$\text{NET FORCE} = \frac{4T \sin\left(\frac{B}{2}\right) + W \cos(A)}{2}$$

W = Idler Roll Weight
T = Maximum Web Tension
B = Wrap Angle = 180° - C°
A = Angle Between Tension Force F_T and Vertical

TABLE 1		
ANGLE	SINE	COSINE
0°	0.000	1.000
5°	0.087	0.996
10°	0.174	0.985
15°	0.259	0.966
20°	0.342	0.940
25°	0.423	0.906
30°	0.500	0.866
35°	0.574	0.819
40°	0.643	0.766
45°	0.707	0.707
50°	0.766	0.643
55°	0.819	0.574
60°	0.866	0.500
65°	0.906	0.423
70°	0.940	0.342
75°	0.966	0.259
80°	0.985	0.174
85°	0.996	0.087
90°	1.000	0.000

Value of W for Aluminum Rolls (lbs)			Notes
SIZE	**ROLL DIAMETER**	**FORMULA**	
SIZE 0	2.25 inch	W = 0.3 + 0.16 x LR	• LR = width of roll face (inches). • Any covering applied to the roll will affect the load rating calculation. • Consult factory for sizing of units with steel or stainless steel rolls. • Refer to the TR Transducer data sheets for length limitations, W formulas, options, and accessories. • For other roll materials, refer to data sheet.
SIZE 1	3 inch	W = 1.4 + 0.30 x LR	
SIZE 2	4 inch	W = 4.3 + 0.54 x LR	
	5 inch	W = 4.3 + 0.69 x LR	
	6 inch	W = 4.3 + 0.85 x LR	

Available Load Ratings					
SIZE 0	12 lbs	25 lbs	50 lbs	100 lbs	
SIZE 1	12 lbs	25 lbs	50 lbs	100 lbs	150 lbs
SIZE 2	25 lbs	50 lbs	100 lbs	200 lbs	400 lbs

Web Geometry and Roll Weight

W = roll weight _____ pounds

B = wrap angle _____ degrees or

C = angle between entering and exiting web _____ degrees

F_T = force on idler roll due to web tension. F_T is in the same direction as the arrow on the transducer.

A = angle between F_T and vertical axis _____ degrees