



# montalvo k-beb

## Tension Transducers For Idler Roll Shafts

Performance Profile 88TR1-1E

### Precise, Accurate Control of Tension Measurement

Montalvo/K-BEB transducers can be used on any moving web. Printing presses, slitters, rewinders, laminators, coaters, as well as most other web processing equipment may utilize Montalvo/K-Beb transducers for tension sensing of virtually any substrate.

These patented transducers are used in pairs, mounted on the ends of an idler guide roll with a non-rotating shaft. Standard transducers are also provided to allow for live shaft applications.

The transducers produce an output signal proportional to the tension of the web as it passes over the guide roll. These signals are summed together resulting in an average tension across the entire web. Over-load stops virtually eliminate damage to the transducers.

### Unique Joint Design

Accuracy of any transducer is its ability to measure web tension only. The unique Montalvo/K-Beb joint design assures this performance.

The joint design allows for shaft bending, misalignment and changes in shaft length due to temperature variations without adverse effects on tension measurement.

### Montalvo/K-Beb Advantages

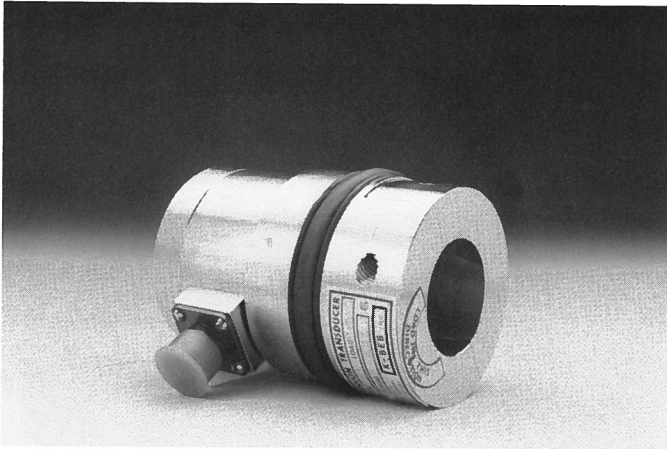
When you install Montalvo/K-BEB transducers in your equipment, you are receiving the finest tension control load cell system in the web industry today. The accurate, high output signal and durability of these transducers result in:



Tension Transducers in four sizes: 2, 3, 1 & 0

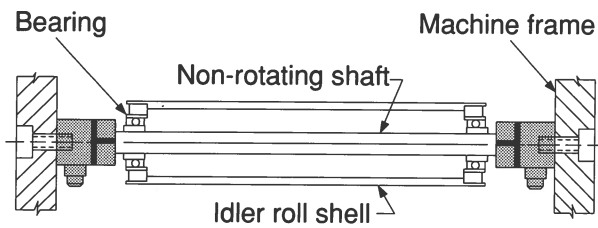
- Faster production runs
- Better registration
- Reduced waste and labor
- No temperature compensation required
- Fast payback time
- Choice of four mounting styles
- Choice of 12 load ratings in four sizes
- High sensitivity
- Large temperature range
- Live shaft transducers available
- Two year warranty

# Montalvo/K-Beb Tension Transducers Mounting Style and Dimensions

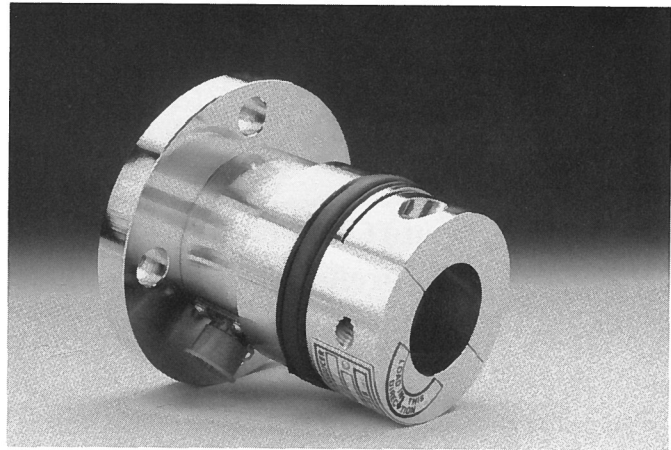
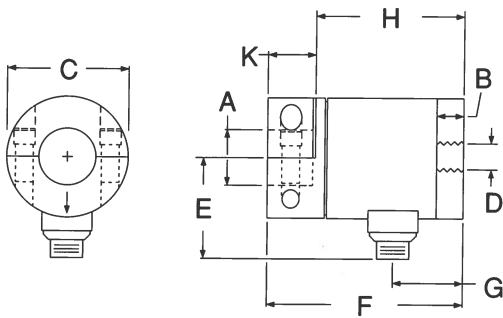


Model S-2

## Mounting Style S

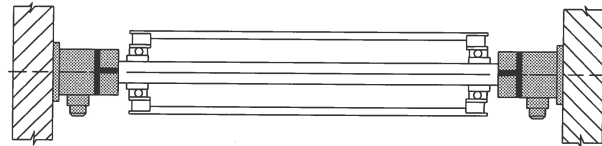


## Dimensions

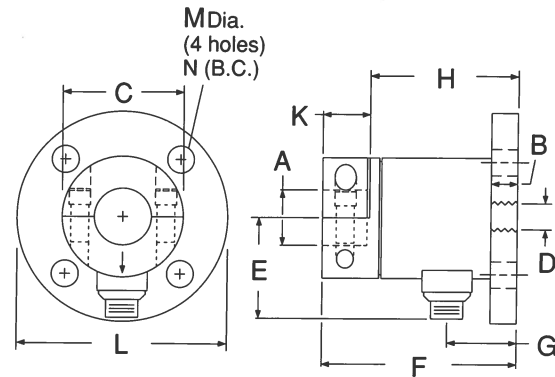


Model FL-2

## Mounting Style FL



## Dimensions

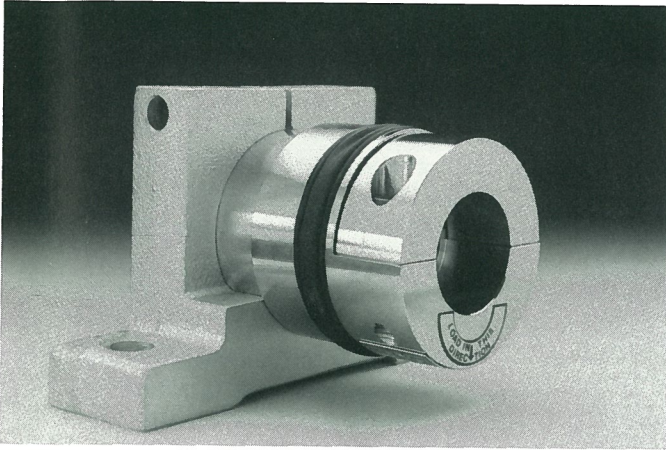


Size	A	B	C	D
0	0.875	0.37	1.75	3/8-16
1N	1.500	0.50	2.812	1/2-13
2N	1.500	0.50	2.812	5/8-11
3	2.250	0.937	4.625	1-12

Size	A	B	C	D	E	F
0	0.875	0.37	1.75	3/8-16	1.87	3.00
1N	1.500	0.50	2.812	1/2-13	2.31	3.63
2N	1.500	0.50	2.812	5/8-11	2.31	4.00

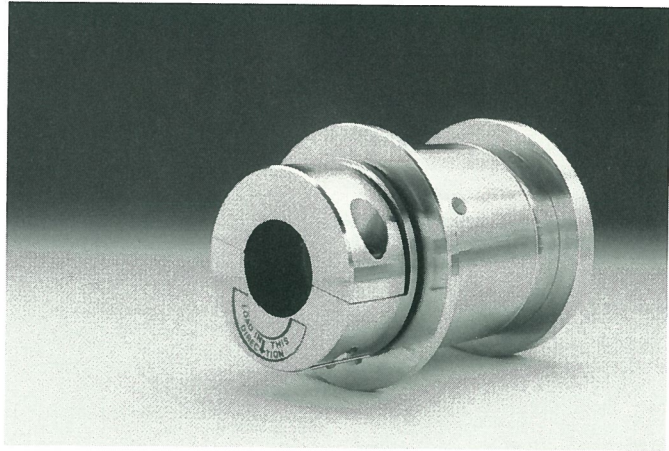
Size	E	F	G	H	K
0	1.87	3.00	0.96	2.44	0.56
1N	2.31	3.63	1.20	2.66	0.97
2N	2.31	4.00	1.20	3.03	0.97
3	3.25	5.00	2.00	4.00	1.00

Size	G	H	K	L	M	N
0	0.96	2.44	0.56	3.12	0.34	2.50
1N	1.20	2.66	0.97	4.00	0.375	3.250
2N	1.20	3.03	0.97	4.50	0.531	3.500



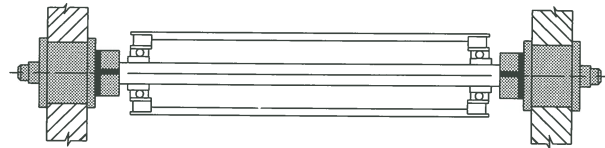
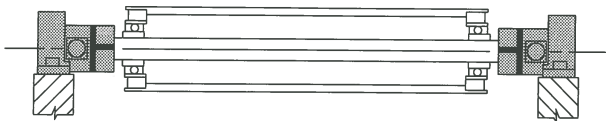
Model PB-2

**Mounting Style PB**



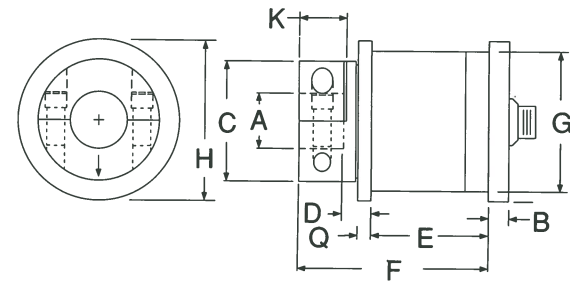
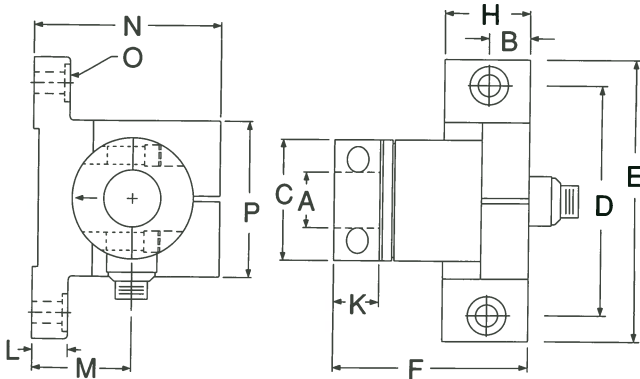
Model BR-2

**Mounting Style BR (size 2 only)**



**Dimensions**

**Dimensions**



Size	A	B	C	D	E	F
0	0.875	1.12	1.75	3.25	4.25	3.31
1N	1.500	0.875	2.812	4.00	5.25	3.63
2N	1.500	0.875	2.812	5.00	6.00	4.00

Size	A	B	C	D	E
2	1.250	0.37	2.60	0.42	2.467

Size	F	G	H	K	Q
2	4.00	2.834	3.50	0.97	0.188

Size	H	K	L	M	N	O	P
0	1.87	0.56	0.37	1.25	2.5	0.391	2.0
1N	1.75	0.97	0.75	2.06	3.87	0.531	3.5
2N	1.75	0.97	0.75	2.06	3.87	0.531	3.5

Montalvo/K-Beb manufactures a complete line of transducers. **UPB** transducers for mounting **Under Pillow Block** bearings are described in Bulletin 88UPB-1E. **NWT** or **Narrow Web Transducers** are for use with narrow webs such as label printing machines and are described in Bulletin 88NWTT-1E

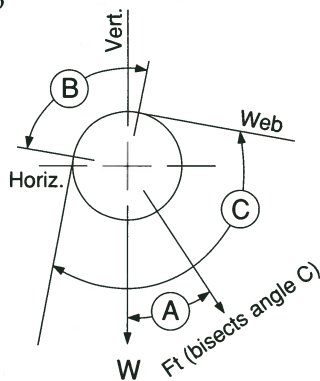
# Performance Profile: Montalvo/K-Beb Tension Transducers



## Selection of Load Rating Specifications

The following information is required to determine the transducer load rating:

- B=Wrap angle
- W=Weight of guide roll
- T=Maximum tension
- Ft=Force due to tension
- A=Angle between Ft and vertical axis
- C=Angle between entering and exiting web



$$\text{Load Rating} = \frac{4T \sin(B/2) + W \cos(A)}{2}$$

If Ft points above the horizontal axis, then  $+W \cos(A)$  becomes  $-W \cos(A)$   
Note:  $B=180^\circ-C$

Once the load rating has been calculated, a standard load rating size may be selected. If the calculated value lies between two standard load ratings, use the next larger size rating.

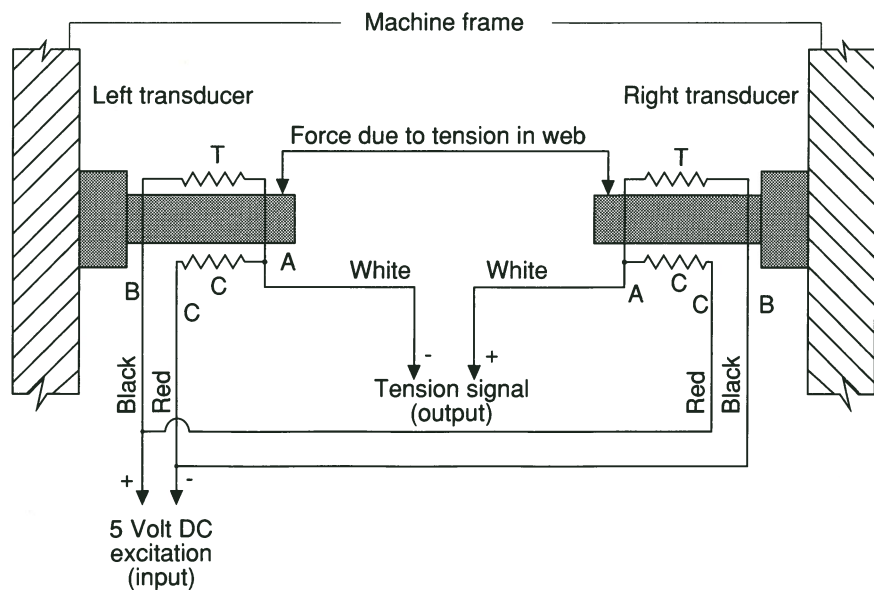
Angle (degrees)	SINE	COSINE
0	.000	1.000
5	.087	.996
10	.174	.985
15	.259	.96
20	.342	.940
25	.423	.906
30	.500	.866
35	.574	.819
40	.643	.767
45	.707	.707
50	.767	.643
55	.819	.574
60	.866	.500
65	.906	.423
70	.940	.342
75	.966	.259
80	.985	.174
85	.996	.087
90	1.000	.000

- Excitation: ..... 5 volts, D.C.
- Output: ..... 250 mv, nominal
- Repeatability: .....  $\pm 1/4\%$  full span (FS) maximum
- Combined linearity and hysteresis: .....  $\pm 1/2\%$  FS maximum
- Temperature range: .....  $-10^\circ\text{F}$  to  $+200^\circ\text{F}$
- Temperature coefficient: ..... 0.02% per  $^\circ\text{F}$  typical
- Finish: ..... nickel plated
- Overload stops: ..... Adjustable, factory set at 110%
- Deflection: ..... 0.001" to 0.003" typical, at full load
- Alignment: ..... 1/16" (.062) per ft. max transducer axis misalignment
- Connector: ..... Amphenol MS3102A-10SL-3P
- Dust and splash resistant
- Standard connector position for Types S and FL is 6 o'clock. Type PB is furnished with connector found on back of transducer. Inside shaft coupling, load direction arrow points to 6 o'clock position.

## Bore Sizes:

- Size 0:** 7/8" standard bore. Bushings are available for smaller shafts. Standard load ratings: 5, 20, 25, 50 lbs.
- Size 1:** 1-1/2" or 1-1/4" standard bore. Bushings are available for smaller shafts. Standard load ratings: 50, 75, 100, 150.
- Size 2:** 1-1/2" or 1-1/4" standard bore. Bushings are available for smaller shafts. Standard load ratings: 50, 75, 100, 150, 250, 300, 400, 500, 1000 lbs.
- Size 3:** 2-1/2" standard bore. Bushings are available for smaller shafts. Standard load rating: 1000, 1500, 2500 lbs.

## Principles of Operation



The tension (T) and compression (C) strain gauges are connected in a bridge configuration. As the tension force (Ft) bends the beams slightly, the gauge resistances change, producing an output signal which is proportional to web tension.

U.S. Patent 4052891/Canadian Patent 1107381/Manufactured by K-Beb Mfg. Co., Inc.