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INSTRUCTION MANUAL
Model GTS
Load Cells For
Under Pillow Block Applications

Introduction

The Model GTS load cell is designed to be mounted under standard inch and metric pillow block bearings. All GTS load cells are pre-drilled and tapped to accept standard inch and metric pillow block bearings. Top Plate Adapter Kits are also available to accommodate special mounting requirements. GTS load cells are compatible with all MAGPOWR Tension Readouts and Controls.

DO NOT HAMMER ON THE GTS LOAD CELL
DO NOT DISASSEMBLE THE LOAD CELL – THERE IS NOTHING INSIDE IT THAT YOU CAN REPAIR

Installation of GTS Load Cells

1. Select a mounting location where the wrap angle of the web does not change.

2. GTS load cells are designed to be mounted under standard, self-aligning pillow block bearings, which support an idler roll shaft. Two GTS load cells should be used to measure tension on one idler roll. Mount the load cells on opposite sides of the machine, on a clean and flat surface of the machine frame. The load cells can be mounted in any orientation.

3. OBSERVE THE WRAP ANGLE OF THE WEB, AND INSURE THAT THE RESULTANT FORCE DUE TO WEB TENSION IS IN THE “YES” ZONE AS INDICATED ON THE LABEL. If not, turn the load cell around and recheck the direction of the resultant force.

   NOTE: If the resultant force is “upward” (away from the load cell), reverse the black (-s) and white (+s) signal leads at the readout or control terminal block.

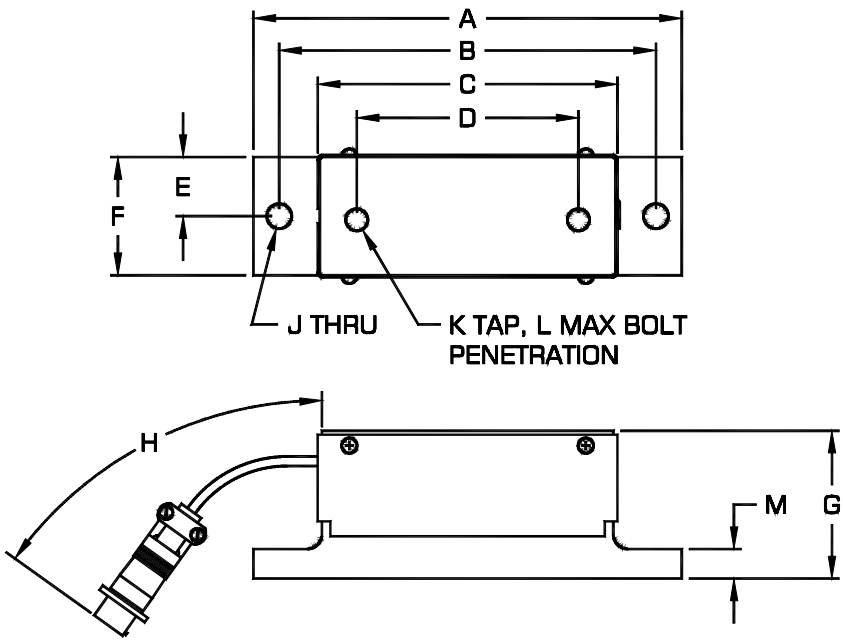
4. When installing the pillow block bearing, DO NOT EXCEED THE SPECIFIED MAXIMUM BOLT PENETRATION. Model GTSA maximum bolt penetration = 0.63 in. (16 mm); Model GTSB maximum bolt penetration = 1.0 in. (25.4 mm). IF YOU EXCEED THE SPECIFIED MAXIMUM BOLT PENETRATION, YOU WILL DAMAGE THE SENSING ELEMENT.

5. If the shaft is exposed to higher temperatures during operation, an expansion type pillow block bearing must be used to accommodate shaft expansion.

6. The sensing roll must be concentric and balanced for high speed operation.

7. Connect the load cell to the MAGPOWR readout or control with shielded cable.

850A193-1
2/03 Rev. B



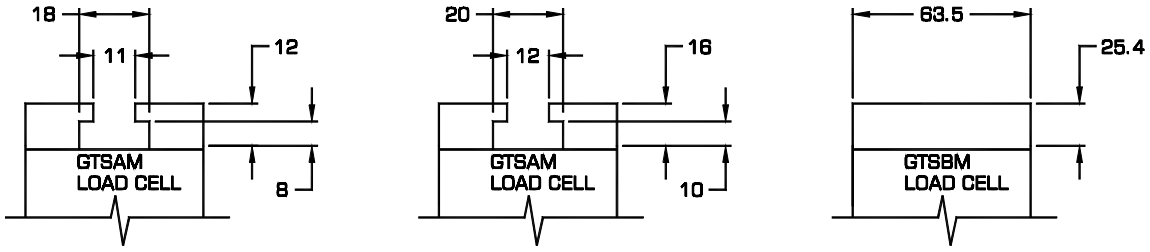
Dimensions

INCH MODEL DIMENSIONS (INCHES)

Model	A	B	C	D	E	F	G	H	J	K	L	M
GTSA	7.25	6.375	5.0	3.750	1.00	2.00	2.50	6	.422	3/8-16	.63	.50
GTSB	11.19	10.000	8.0	6.250	1.25	2.50	3.88	12	.500	7/16-14	1.00	1.00

METRIC MODEL DIMENSIONS (MILLIMETERS)

Model	A	B	C	D	E	F	G	H	J	K	L	M
GTSAM	184	162	127	95	25	51	64	152	11	M10X1.5	16	13
GTSBM	284	254	203	159	32	64	98	305	13	M12X1.75	25	25

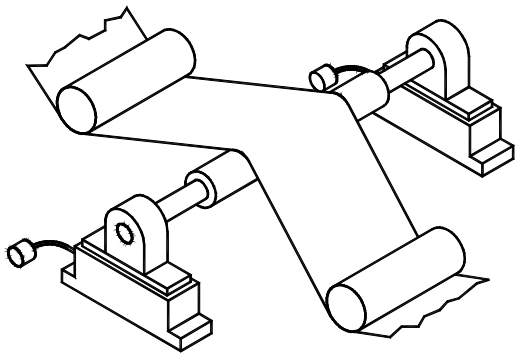


TA1 (INSTALLED DIMENSIONS)
T-SLOT TOP PLATE ADAPTER
(FOR SIZE "A" LOAD CELL ONLY)

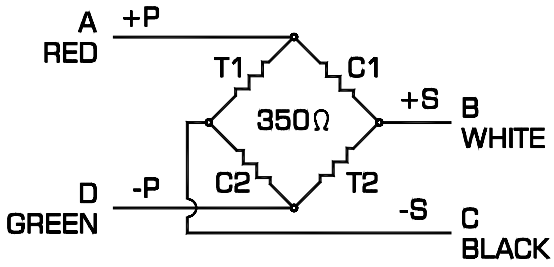
TA2 (INSTALLED DIMENSIONS)
T-SLOT TOP PLATE ADAPTER
(FOR SIZE "A" LOAD CELL ONLY)

TA3 (INSTALLED DIMENSIONS)
BLANK TOP PLATE ADAPTER
(FOR SIZE "B" LOAD CELL ONLY)

LENGTH OF "T-SLOT" ADAPTERS IS 127 mm



Specifications



Gage Resistance:	350 ohm
Excitation Voltage:	10 vdc nominal
Output Signal:	21 mvdc nominal per load cell at full load rating
Operating Temperature:	-30ºC to 95ºC
Temperature effect on zero:	0.02% of rating per ºC
Combined on-linearity and hysteresis:	0.5% of full scale maximum
Repeatability:	0.2% of full scale maximum
Overload stops:	Internal at 105 to 150% of full load rating
Deflection at full load:	All GTSA = .015 in. (.38 mm); GTSB 220 & 550 = .009 in. (23 mm) GTSB 1100 = .006 in. (.15 mm); GTSB 2200 = .015 in. (.38 mm)
Weight:	GTSA = 3 lb. (1.4 kg); GTSB = 7.5 lb. (3.4 kg); TA1 = .3 lb. (.14 kg); TA2 = .4 lb. (.18 kg); TA3 = 1.9 lb. (.9 kg)
Cable Connector:	PT01P-10-6P-SR; MAGPOWR mating cable assembly part number SC15, or mating connector 12A36-1 (pin A, + power; pin B, + signal; pin C, -signal; pin D, -power)
Climate Class:	3K3 (EN60721)

GTS Model Numbers

Inch Series:

Model No.	Force Rating
GTSA11	11 lb
GTSA22	22 lb
GTSA55	55 lb
GTSA110	110 lb
GTSB220	220 lb
GTSB550	550 lb
GTSB1100	1100 lb
GTSB2200	2200 lb

Metric Series:

Model No.	Force Rating
GTSA5M	5 kg
GTSA10M	10 kg
GTSA25M	25 kg
GTSA50M	50 kg
GTSB100M	100 kg
GTSB250M	250 kg
GTSB500M	500 kg
GTSB1000M	1000 kg

Top Plate Adapter Kits

Due to the large number of metric pillow blocks, and in keeping with metric practices, mounting adapter kits are available for the metric series load cells. Order one kit for each load cell. Load Cells are pre-tapped to receive the correct adapter kit.

Model No.	Description
TA1	11 mm T-Slot Kit for GTSAM; includes 2 rails and 4 screws
TA2	12 mm T-Slot Kit for GTSAM; includes 2 rails and 4 screws
TA3	Blank Top Plate Kit for GTSBM; includes plate and 4 screws

Installation of Adapter Kits

The TA1 and TA2 T-Slot Adapter Kits can be installed on any GTSAM load cell. Each Adapter Kit includes the (4) metric hex head cap screws required for installation, and every GTSAM load cell is made with the appropriate tapped holes.

TA1 and TA2 Installation:

> Position the (2) T-Slot rails over the (4) mounting holes in the top of the GTSAM load cell, and install the (4) screws through the counterbored holes in each rail.

The TA3 Blank Top Plate Kit can be installed on any GTSBM load cell. Each TA3 Adapter Kit includes the (4) metric hex head cap screws required for installation, and every GTSBM load cell is made with the appropriate tapped holes.

TA3 Installation:

> Position the TA3 Adapter over the (4) mounting holes in the top of the GTSBM load cell, and install the (4) screws through the counterbored holes in the plate.

NOTE: The TA3 Adapter Kit must be installed after the pillow block bearing mounting holes have been drilled and tapped in it. DO NOT drill and tap the holes with the TA3 Adapter Kit installed on the GTSBM load cell.

Sizing

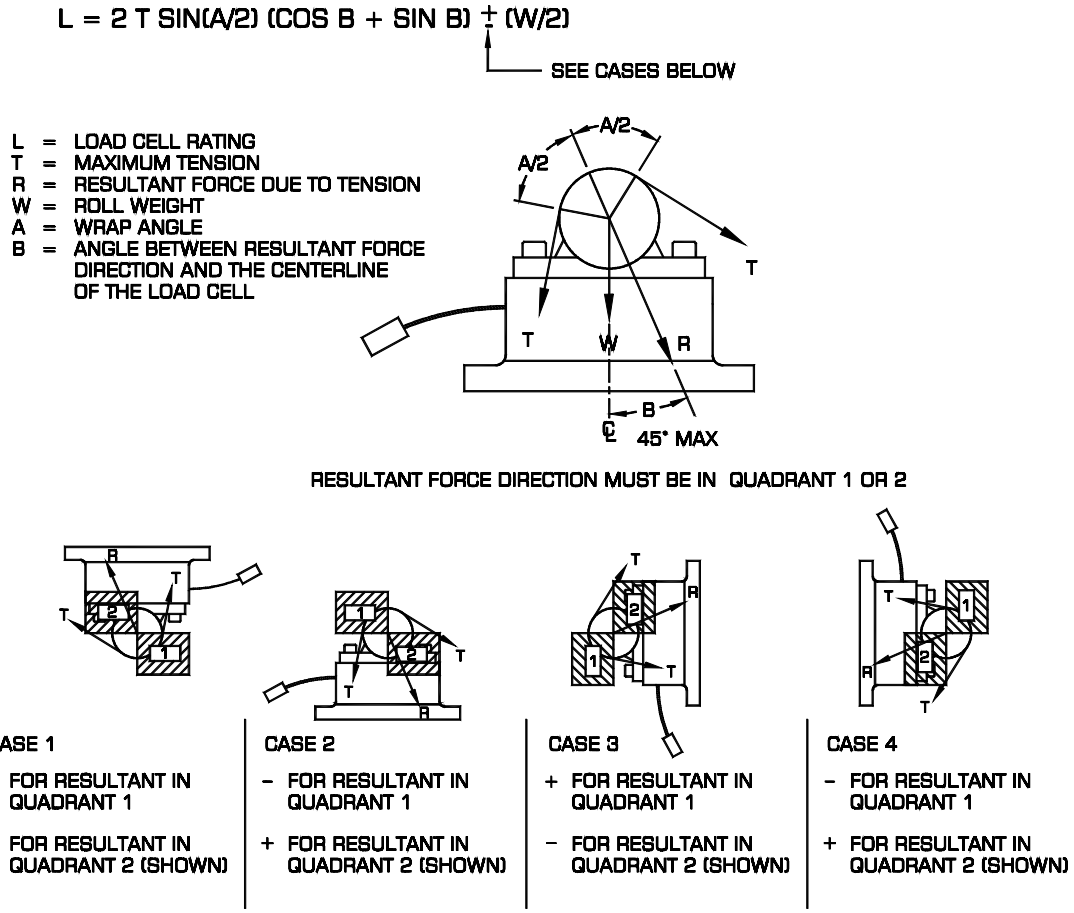
To properly size any model GTS load cell select the case (which resembles your application) from the examples shown below. Using your known maximum tension, roll weight, and angles as shown, apply the equation to calculate a "load rating" L. Select a load cell with a load rating greater than that calculated.

Degrees	Sine	Cosine	Degrees	Sine	Cosine
0	.0000	1.000	50	.7660	.6428
5	.0872	.9962	55	.8192	.5736
10	.1736	.9848	60	.8660	.5000
15	.2588	.9659	65	.9063	.4226
20	.3420	.9397	70	.9397	.3420
25	.4226	.9063	75	.9659	.2588
30	.5000	.8660	80	.9849	.1736
35	.5736	.8192	85	.9962	.0872
40	.6428	.7660	90	1.000	.0000
45	.7071	.7071			

Example:

In case 2 below, T = 150 lbs., A = 180º, B = 30º, w = 50 lbs.

then L = 2T sin (A/2)(cos B + sin B)+w/2
L = 2(150)sin 90º (cos 30º + sin30º)+25
L = 2(150)(1)(.866 + .500)+25
L = 435 lbs.
Select a pair of GTSB550 load cells



NOTES:
Angle B cannot exceed 45º
The second term (roll weight "W") of the equation must not exceed 50% of the selected load cell rating. If it does exceed 50%, select the next larger load cell rating.
When the resultant force (R) is pulling in a direction away from the load cell, the signal leads must be reversed at the terminal block of the control.