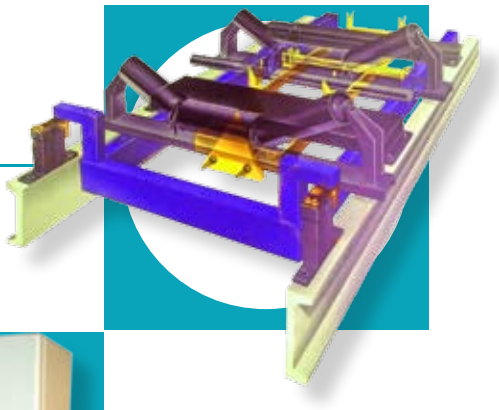
THAYER SCALE

PROCESS MEASUREMENT & CONTROL EQUIPMENT

Model 2RF-6A Belt Scale

EXTREMELY ACCURATE & RELIABLE



OPERATOR FRIENDLY EASY TO USE

ROBUST STATE-OF-THE-ART ELECTRONICS

FORCE MEASUREMENT SUSPENSION SYSTEM

Superior Performance in an economical package

The THAYER 2RF-6A Belt Scale is designed for high accuracy (1/4% typical) inventory control and totalization. The weighbridge features exclusive rocking flexure suspension in the approach configuration. Measurement sensitivity is high, deflection is low, and the load cell is isolated from the error-inducing effects of extraneous lateral forces, off-center loading, foundation distortion, inclination hold-back forces, and high sporadic shocks and overloads. Tare load is mass counterbalanced to create superior signal to noise ratio in weight sensing, orders of magnitude better than belt scale designs supporting full tare load on the load sensor.

THAYER 2 Idler Rocking Flexure Belt Scale Features & Benefits

- Depth of suspension member is 6 inches to meet deflection criterion.
- Mass counterbalance weights are used to counterbalance the dead load of the main frame weigh idlers and conveyor belt. The use of the mass counterbalance permits maximum utilization of the load cell.
- Special pentagonal (5-sided) tubular stringers employed to meet combination needs of tensional/bending rigidity and low material build-up area.
- Patented rocking-flexure primary pivot is wearless and uniquely accommodates a distorting foundation (as is characteristic of typical conveyor structures).
- Isolation lever suspended by stainless steel pre-stressed aircraft cable protects load cell from extraneous forces that arise from distorting foundation and serves to provide means to optimize load cell utilization factor.
- Patented calibration method utilizing a controlled belt travel interval makes one-shot adjustment possible.
- Unique test weight system eliminates need for test chains.
- A typical equipment package includes scale suspension, load sensor and belt speed transmitter.

ISOLATION LEVER AND "FMSS" MASS-COUNTERBALANCE

Unique technology provides isolation from all force vectors except material weight.

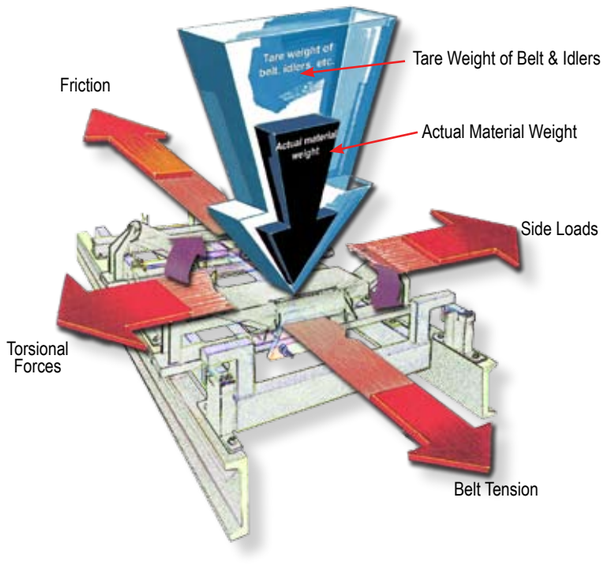
The scale provides for complete mass counterbalancing of the dead load (idlers and belt) of the conveyor permitting the load sensor to react only to the net material load. This unique system is not affected by dirt, shocks or vibration, and can withstand overloads in excess of 1,000 pounds without causing damage or affecting calibration. The highly advanced and extremely robust sensing technology is based on the marriage of the weight transducer, embedded temperature sensing and proprietary linearizing and temperature compensating algorithms.

LOAD CELL UTILIZATION FACTOR

The performance of a load cell and its instrumentation is specified on the basis of the load cell's rated output. If the load cell is supporting a quantity of dead-weight (i.e. idlers, belting, suspension system) and has been further oversized to accommodate problems of overloads, off-center conveying, shock and vibration and negative integration, then the amount of range left to do the job of weighing is only a fraction of the cell's rated output. The percentage of the load cell's rated output reserved for the actual job of weighing material is called the LOAD CELL UTILIZATION FACTOR.

Thayer "RF" Belt Scales with "FMSS" Force Measurement Suspension System mass counter balance technology assures better than 80% Load Cell Utilization.
Provides :

- Field adjustable mechanical TARE balancing of dead loads typically as high as 200 times NET loads, thereby providing the full utilization of the load cell force range.
- Reduces deflection of load receptor to a fraction of load cell deflection.
- Reduces zero shifting as a result of foundation distortion.
- Provides preferred access location of load cell for inspection or removal.
- Simplifies the application of test weights for calibration/performance verification.
- Provides for lower signal velocity and acceleration under dynamic conditions.



CALIBRATION MADE EASY

CALIBRATION

A belt scale should be thought of as a precision instrument and its performance should be quickly and easily checked. Thayer Scale can provide an accurate reliable calibration using a calibrating weight instead of test chains for all scale capacities. Thayer Scale developed and patented the first automatic calibration system in 1971.

The 2RF-6A uses a test weight in the form of a round bar which resides in one of two positions ("V" notches) on an intermediate lever between the approach-retreat suspension and the load cell itself. This bar provides tare counterbalance in its "zero" position, and simulated calibration loading in its "span" position. This method of "test weight" application is referred to as the "moveable-poise" method, in contrast to the additive weight method.

For belt scale calibration, the test weight represents a specific pounds per ft. loading value and the system instrumentation provides an automatic belt length measurement. This combination produces accurate, repeatable calibrations free from human error. Unlike electronic calibration which simply simulates a load cell output to the instrumentation, the test weight mechanically exercises the scale mechanism. Thayer's unique suspension design assures that the test weight will accurately load the scale, with one weight at less than 60 lb. while representing 80-100% of full scale load. Because the need for test chains is eliminated, calibration time is reduced to a matter of minutes and can be performed by one person.

THAYER TEST WEIGHT USING "SEE-SAW" SECONDARY LEVER

(Used where belt loading exceeds 300 lb. per idler)

On high capacity scales where it is impractical to apply the test weight directly to the end of the weighbridge because of the physical size of the test weight, a special arrangement of the secondary lever is used.

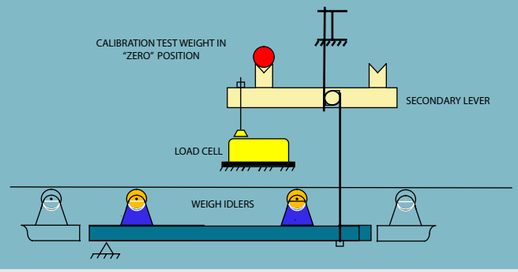
In this configuration, the test weight provides tare mass counter-balance in its "storage" position on the secondary lever and a test load of known value in its "calibrate" position. By taking advantage of ratios in the secondary lever, smaller, easily manageable test weight(s) can be used to produce significantly higher loading values. This method of applying the test weight does not introduce error on inclined conveyors. Since the test weight is on the scale at all times, its moments due to the sine component remains constant regardless of the test weight's position on the lever.

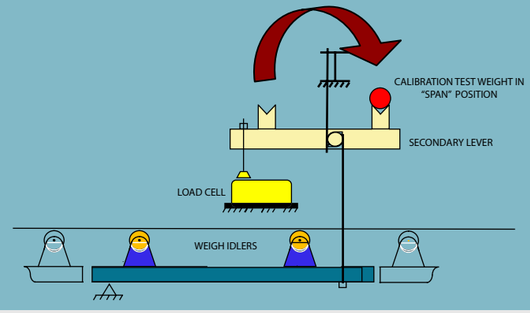
The weight is always present on the secondary lever, which also serves as a means to counterbalance dead loads and control the force range presented to the load cell. In the movable poise weight design the weight resides in either one of two locating "V" notches, but is never added or subtracted from the lever itself.

In one position, the weight serves as "counterbalancing" weight for a portion of the dead load. In the other position, the weight serves as the calibration test load. This unique method, whereby the movement of the weight alone affords the means to apply a large effective test load, is the only practical and economical system known for calibrating "heavily loaded" conveyor scales.

Key advantages:

- Test Weight more manageable. One man operation.
- Loading effect independent of conveyor incline.
- Longitudinal restraining elements not falsely loaded.





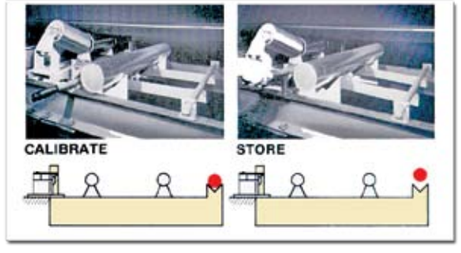
THAYER test Weight Lift and Storage Assembly

Scale in 1967 to provide a safe and convenient method of accurately applying the calibration weight. It provides a repeatable result and eliminates one of the problems associated with test weights which were related to the inconsistent placement of the test weights.

The test weight lift and storage assembly provides a safe, convenient method of placing the calibration weight on the scale weighbridge accurately -- test after test. It also provides a convenient storage area that prevents loss or damage to the test standard.

Provides these advantages:

- Safe -- Eliminates need to go between belt strands.
- Easy -- Permits one man to operate.
- Convenient Storage -- Prevents loss or damage.
- Repeatability -- Weight is always positioned in the same location test after test.

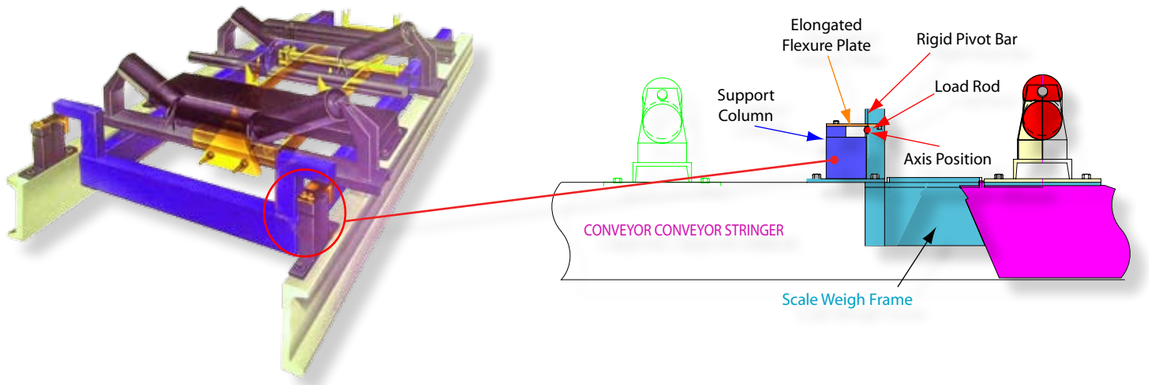


THAYER's RF Flexure Suspension (patented)

The axis position is permanent, being held in its horizontal position by the flexure plate and in its vertical position by the load rod which bears on the flexure plate, which in turn is bolted to the bottom side of the square and elevated suspension extension shaft.

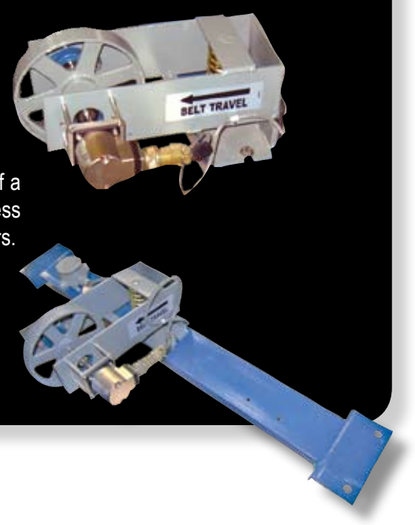
There is insignificant rotational hysteresis. While the load rod may be likened to a dull knife edge (it is round), the flexure plate bearing surface directly in contact can rock without sliding through small rotational displacement.

The reaction to lateral forces creates an insignificant moment transfer to the weigh suspension (this is part of the patent). Since the flexure plate (which is hardened blue tempered steel) is also the upper bearing block of the pivot, tensile or compressive forces reacting to lateral forces therein have no moment arm distance to operate.



Precision Belt Speed Measurement

Accurate belt speed measurement requires the use of a precision wheel and pulser. A spring is used to maintain proper contact pressure of the wheel with the tension side of the belt in all operating conditions. The THAYER belt travel pulser assembly includes a precision cast/machined wheel with a "pre-calibrated" circumferential tolerance of ± 0.05% and a high resolution digital transtmitter. The transmitter produces pulses equivalent to 1/100 to 1/200 of a foot of belt travel. The speed pick-up wheel has a narrow face width so it is less susceptible to material build-up, which can result in speed measuring errors. Since belt stretch is not constant throughout the length of the conveyor, and therefore, can affect speed measurement, the speed pickup produces a more accurate speed signal than that which is produced by tail pulley mounted speed encoder.



MADE IN USA

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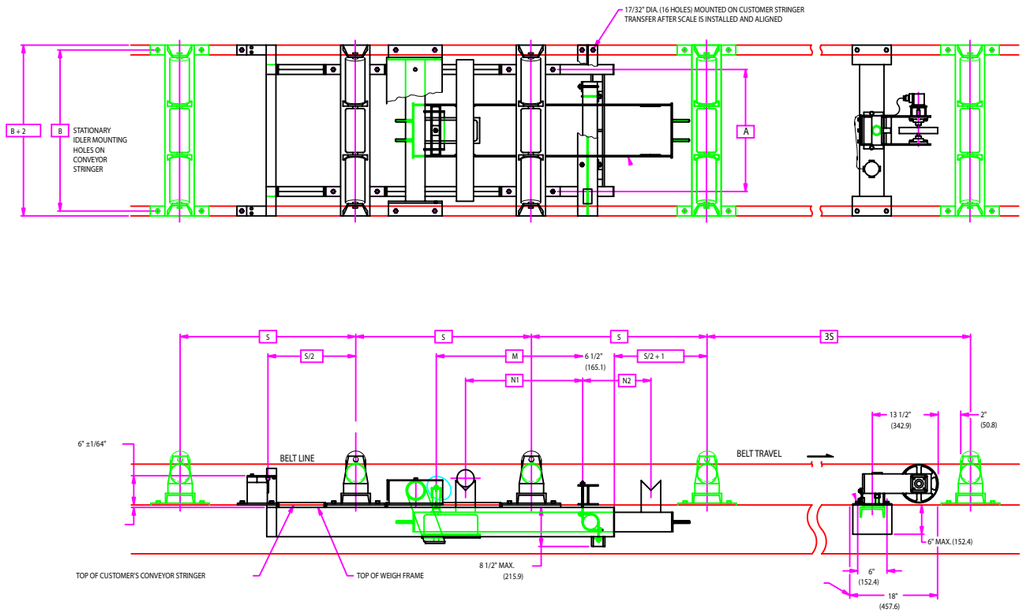
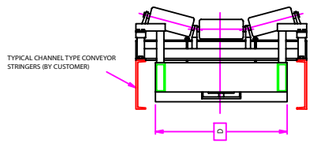
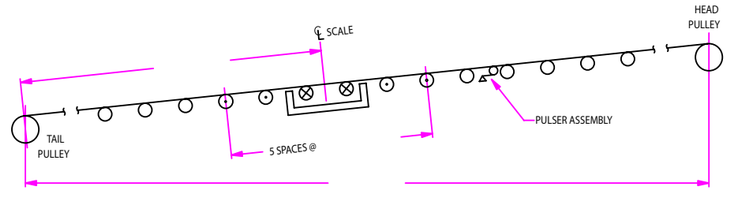
THAYER SCALE 2RF-6A BELT SCALE





MODEL NUMBER	BELT WIDTH	A	B	D
2RF-6A-24	24" (609.6)	25" (635)	33" (838.2)	27" (685.8)
2RF-6A-30	30" (762)	29" (736.6)	39" (990.6)	33" (838.2)
2RF-6A-36	36" (914.4)	33" (838.2)	45" (1143)	39" (990.6)
2RF-6A-42	42" (1066.8)	39" (990.6)	51" (1295.4)	45" (1143)
2RF-6A-48	48" (1219.2)	45" (1143)	57" (1447.8)	51" (1295.4)
2RF-6A-54	54" (1371.6)	51" (1295.4)	63" (1600.2)	57" (1447.8)
2RF-6A-60	60" (1524)	57" (1447.8)	69" (1752.6)	63" (1600.2)



PROFILE

⊙ SCALE QUALITY IDLER
⊗ MODIFIED SCALE QUALITY IDLER