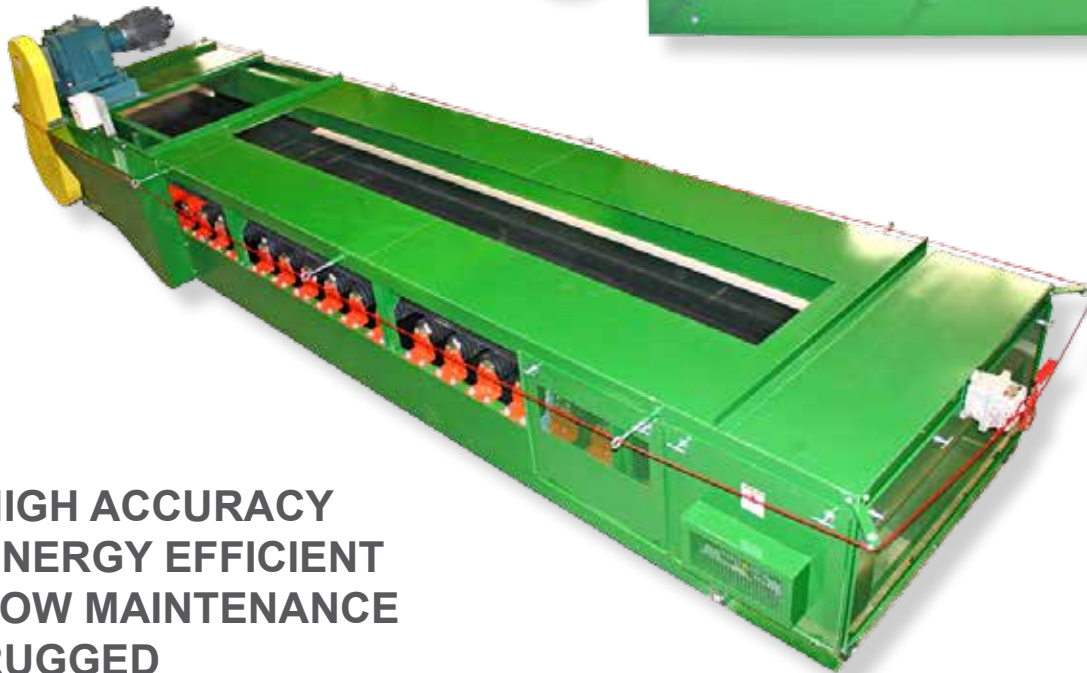


## HEAVY INDUSTRY WEIGH BELTS MODELS MD & MDL



- HIGH ACCURACY
- ENERGY EFFICIENT
- LOW MAINTENANCE
- RUGGED

# MODEL MDL HEAVY INDUSTRY WEIGH BELT

## HIGH CAPACITY WEIGH BELT FEEDERS

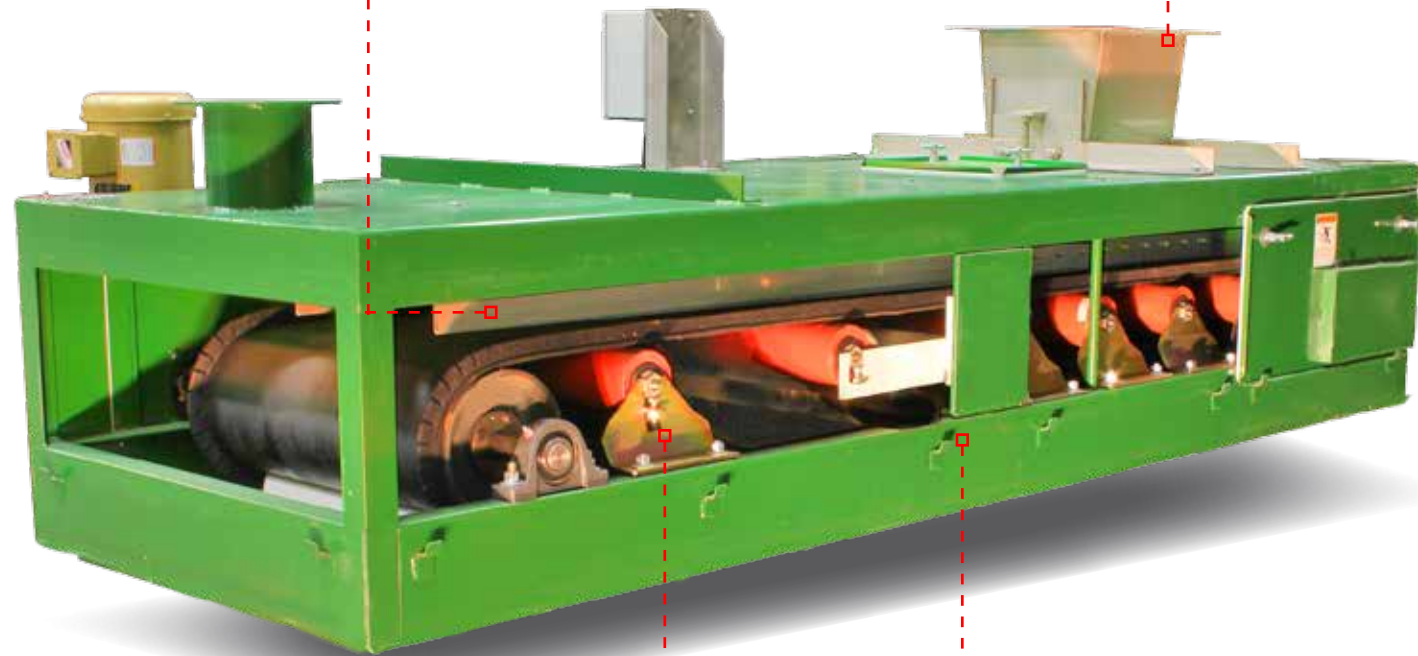
### FULL LENGTH ADJUSTABLE SKIRT BOARDS:

Installation of skirt boards along the entire length of the conveyor totally confines the material flow channel which helps control dust. Skirt boards are tapered and flared from the inlet to the discharge to prevent pinching of material between the skirt and the belt.



### INLET CHUTE:

A major factor in achieving uniform withdrawal from storage bins. THAYER takes very careful consideration of the inlet section design based on a given material density, particle size and handling characteristics. The correct design allows for maximum efficiency and low energy consumption.



### PRECISION HEAVY-DUTY IDLERS:

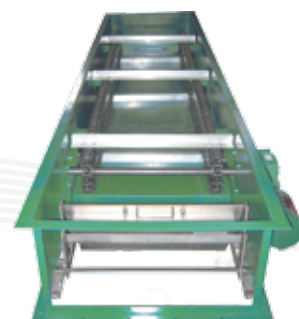
Precision scale idlers are mounted on individual CEMA brackets, permitting removal to either side without major framework disassembly or belt removal. Idler alignment is critical to minimize transmission of any belt tension force to the scale.

### SLACK BELT DESIGN:

Low belt tension increases belt life, produces more stable measurement and eliminates the need for belt tracking devices.



Shown with drag scavenger bottom

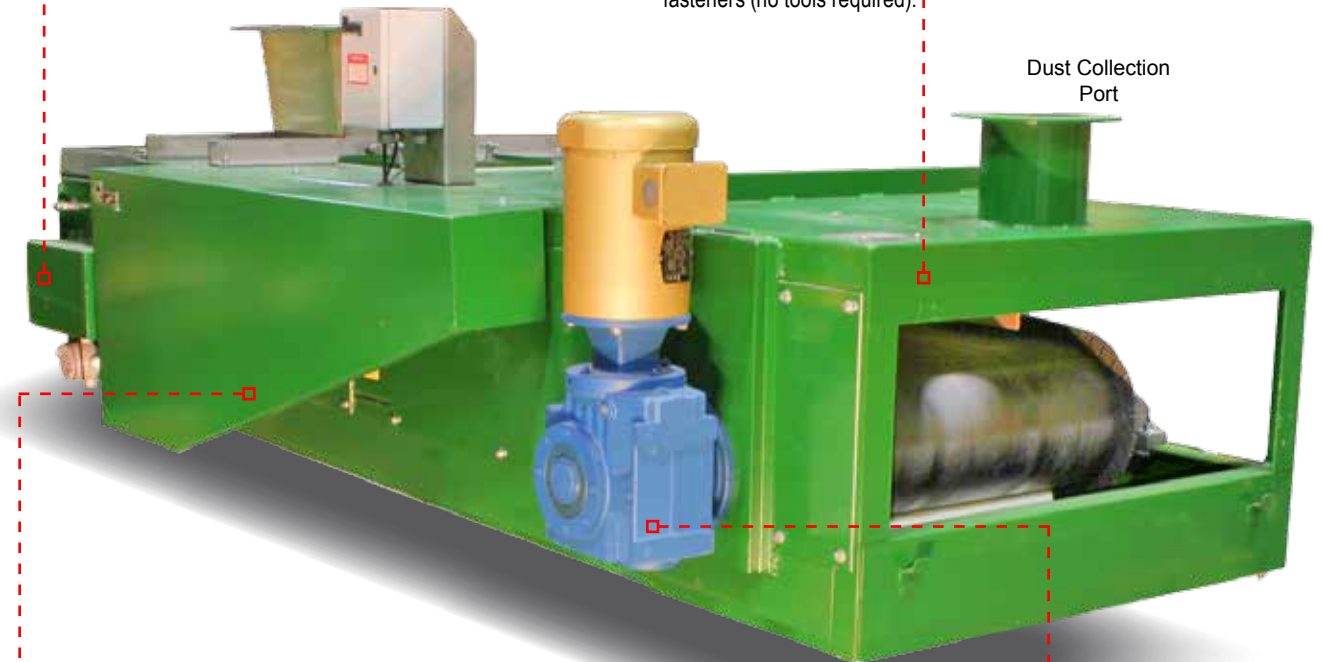


### BELT TRAVEL PULSER:

Speed sensing is digital and accurate over an infinite speed range. Rugged speed sensor is coupled directly to the feeder tail pulley not the drive pulley and measures belt speed or belt travel.

### WELDED FRAME, QUICK REMOVAL ACCESS PANELS:

THAYER weigh belts are of welded, not bolted, construction. A rigid, welded and box frame construction resists deflection and deformation under heavy loads. Frame distortion adversely affects scale measurement performance. Easy removable covers for access, designed to meet EPA and OSHA standards. Side panels, if included, are removed with quick-release fasteners (no tools required).



Dust Collection Port

### SCALE LOCATED OUTSIDE THE MATERIAL HANDLING AREA:

Thayer's scale is not mounted between the strands of the belt, but in a location outside of the material handling area such that an idler supporting the belt (the weigh idler) transmits the load to the scale. This design has several benefits. The scale is not prone to damage, is out of the way for cleaning, and is not subject to tare build-up that would change the weight, causing incorrect calibration. Thayer's scales can take high load direct overloads that are caused by operating personnel or by the occasional particle pinching that can occur between the conveyor and the side skirt.

### AUTOMATED TEST WEIGHT LIFTER:

Thayer's Automated Test Weight Lifter (ATWL) mechanism provides a means for applying a known test weight to allow completely automatic calibration. The calibration sequence can be initiated via the weigh belt instrument keypad or via a contact closure. A self-checking software algorithm in the weigh belt instrumentation prevents erroneous calibration. Test weight calibration eliminates the need for test chains.



### DRIVE SYSTEM:

Horse power requirement calculations are performed by computer. Also computerized is the selection of shafts, drive chain, gear box and motor. Head and tail pulley are selected in accordance with CEMA standards, with lagging as required. Direct drive and chain drive are available.

- Long term accuracy and repeatability with low cost of ownership.
- Load transducer located external to the material flow channel.
- Weigh bridge is insensitive to the accumulation of weight that accompanies tare build-up.
- Heavy duty, welded boxed frame construction easily accommodates legs and dust removal/scavenger systems as well as length and incline variation without significant changes in configuration.

# MODEL MD HEAVY INDUSTRY WEIGH BELT

## HIGH CAPACITY WEIGH BELT FEEDERS

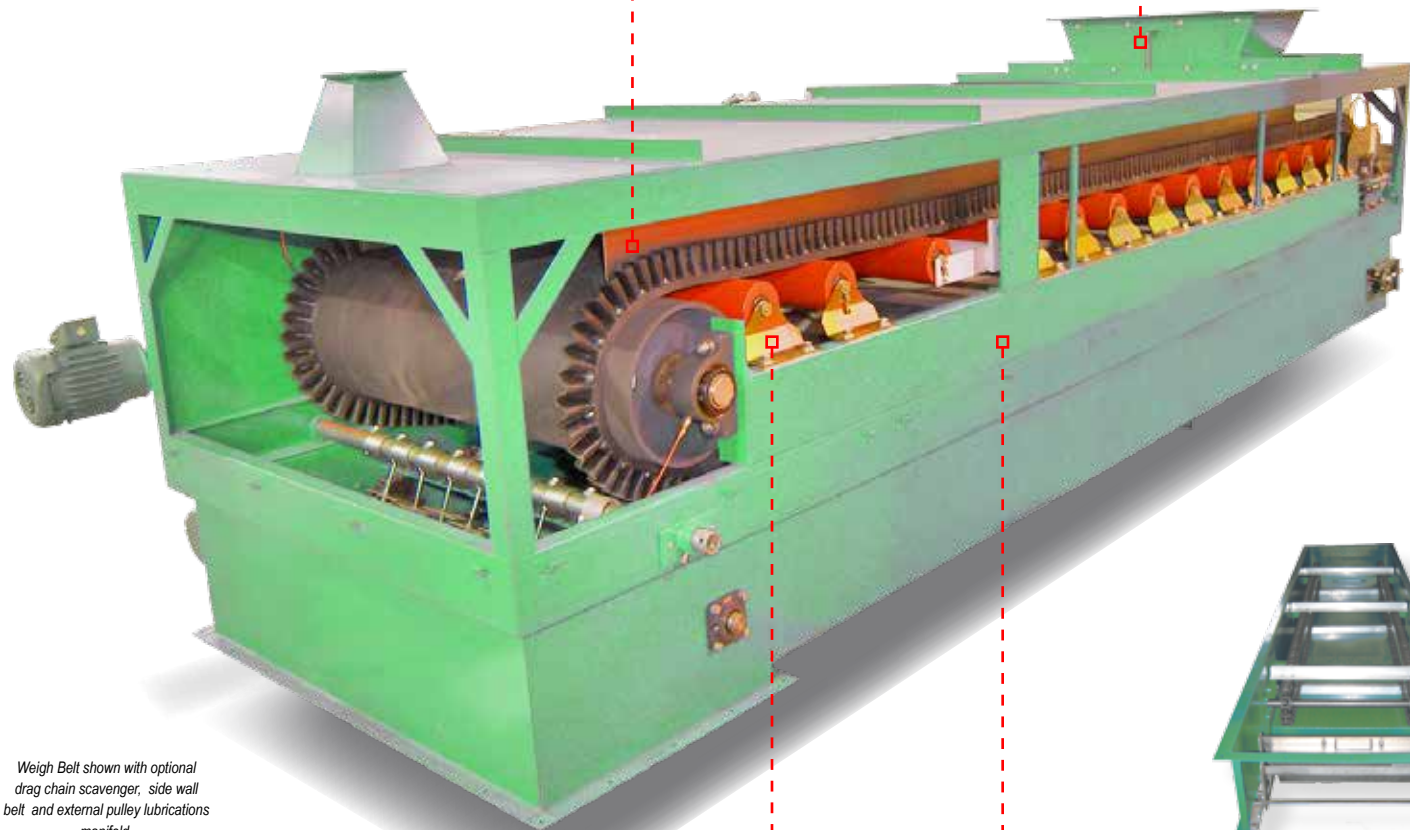


### INLET CHUTE:

A major factor in achieving uniform withdrawal from storage bins. THAYER takes very careful consideration of the inlet section design based on a given material density, particle size and handling characteristics. The correct design allows for maximum efficiency and low energy consumption.

### FULL LENGTH ADJUSTABLE SKIRT BOARDS:

Installation of skirt boards along the entire length of the conveyor totally confines the material flow channel which helps control dust. Skirt boards are tapered and flared from the inlet to the discharge to prevent pinching of material between the skirt and the belt.



Weigh Belt shown with optional drag chain scavenger, side wall belt and external pulley lubrications manifold.

### PRECISION HEAVY-DUTY IDLERS:

Precision scale idlers are mounted on individual CEMA brackets, permitting removal to either side without major framework disassembly or belt removal. Idler alignment is critical to minimize transmission of any belt tension force to the scale.

### SLACK BELT DESIGN:

Low belt tension increases belt life, produces more stable measurement and eliminates the need for belt tracking devices.

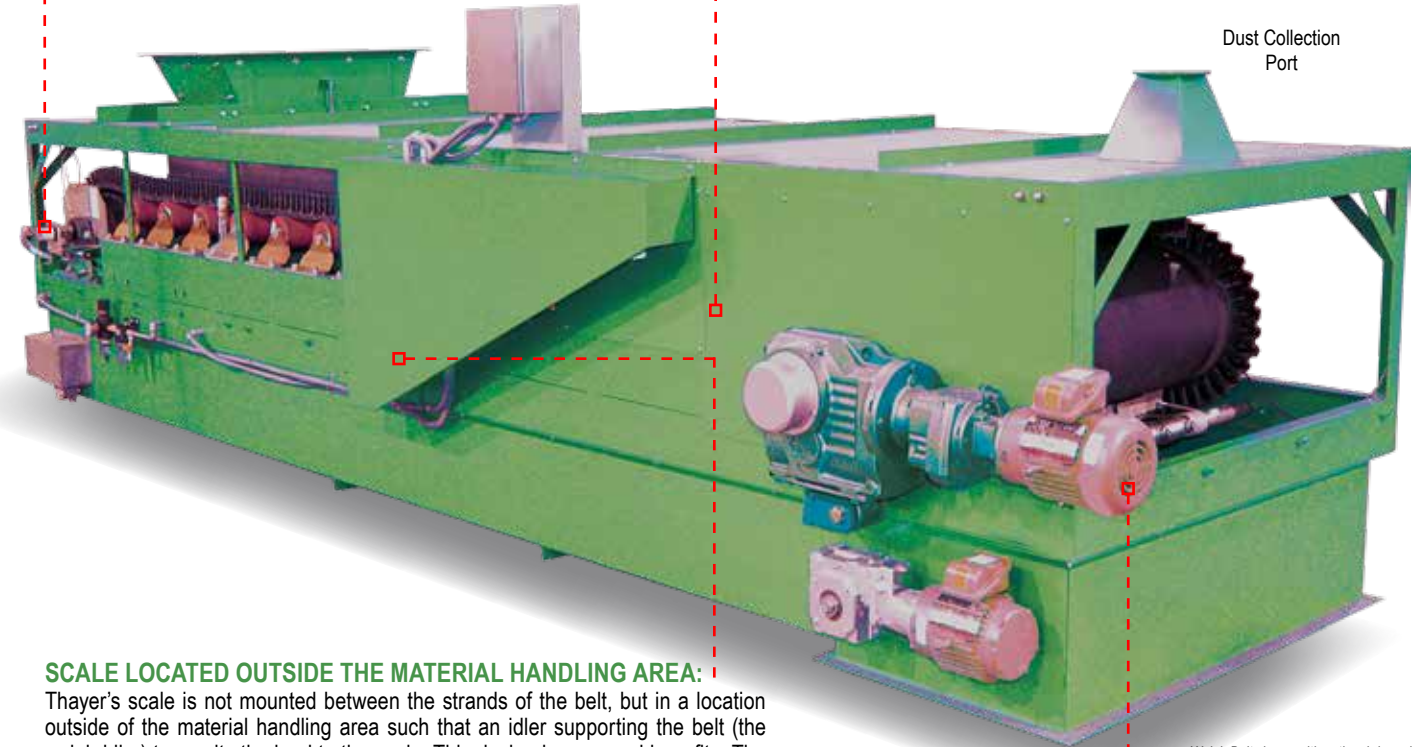


### BELT TRAVEL PULSER:

Speed sensing is digital and accurate over an infinite speed range. Rugged speed sensor is coupled directly to the feeder tail pulley not the drive pulley and measures belt speed or belt travel.

### WELDED FRAME, QUICK REMOVAL ACCESS PANELS:

THAYER weigh belts are of welded, not bolted, construction. A rigid, welded and box frame construction resists deflection and deformation under heavy loads. Frame distortion adversely affects scale measurement performance. Easy removable covers for access, designed to meet EPA and OSHA standards. Side panels, if included, are removed with quick-release fasteners (no tools required).



Dust Collection Port

### SCALE LOCATED OUTSIDE THE MATERIAL HANDLING AREA:

Thayer's scale is not mounted between the strands of the belt, but in a location outside of the material handling area such that an idler supporting the belt (the weigh idler) transmits the load to the scale. This design has several benefits. The scale is not prone to damage, is out of the way for cleaning, and is not subject to tare build-up that would change the weight, causing incorrect calibration. Thayer's scales can take high load direct overloads that are caused by operating personnel or by the occasional particle pinching that can occur between the conveyor and the side skirt.

### AUTOMATED TEST WEIGHT LIFTER:

Thayer's Automated Test Weight Lifter (ATWL) mechanism provides a means for applying a known test weight to allow completely automatic calibration. The calibration sequence can be initiated via the weigh belt instrument keypad or via a contact closure. A self-checking software algorithm in the weigh belt instrumentation prevents erroneous calibration. Test weight calibration eliminates the need for test chains.



### DRIVE SYSTEM:

Horse power requirement calculations are performed by computer. Also computerized is the selection of shafts, drive chain, gear box and motor. Head and tail pulley are selected in accordance with CEMA standards, with lagging as required. Direct drive and chain drive are available.

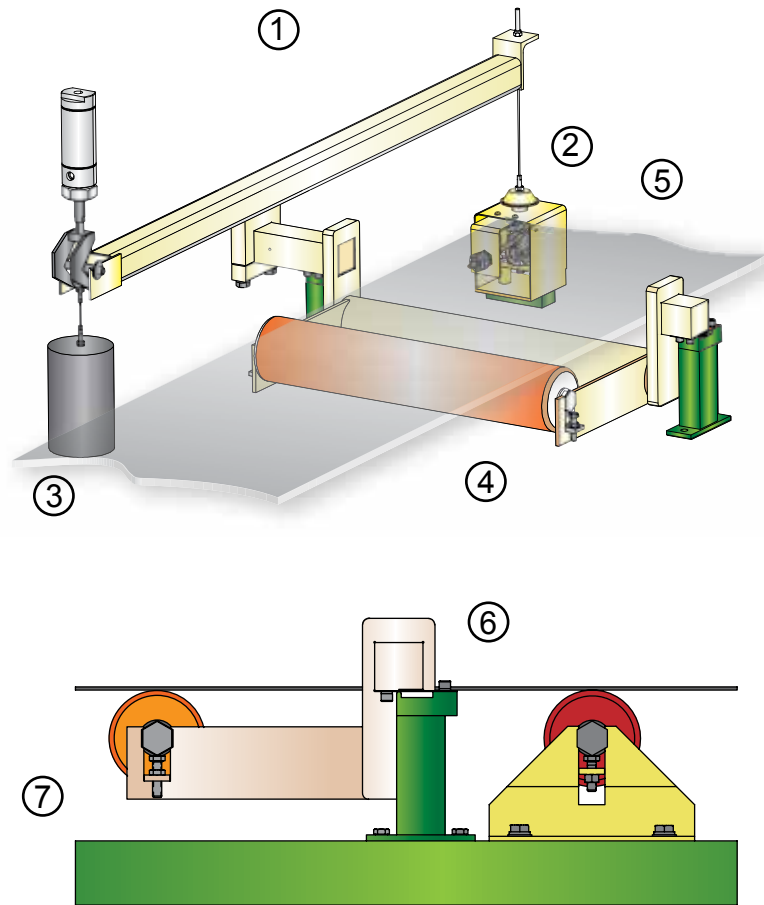
Weigh Belt shown with optional drag chain scavenger, side wall belt and external pulley lubrications manifold.

## THAYER'S UNIQUE MODEL D SCALE

The Model D Scale represents a significant improvement in Heavy Duty Weigh Belt load sensing, offering users a combination of benefits found in no other design. Originally developed during the 1970's for the cement industry where 30 day intervals between zero checks are common. Steadily improved over the years.

### Principle design objectives include:

- ① A simple structural configuration to accommodate a single weigh idler placed between the belt strands within an enclosed material handling zone, while accommodating a single load cell and an automated test weight assembly and their associated wiring and piping completely outside of the enclosed material handling zone.
- ② Load Cell connected to receive a pure tension force proportional to the belt loading sensed by the weigh idler, and accordingly isolated from any and all destructive and error producing side forces. Load cell can be removed, tested, and replaced if necessary while feeder is used as a conveyor. Realignment of idlers NOT required after replacement.
- ③ Automated test weight assembly located compactly without complex attachment means, eliminating the need for human intervention, reducing downtime, increasing calibration precision, and eliminating operator's selection of incorrect test load.
- ④ Structural configuration providing maximum sensitivity to loading sensed at the location of the weigh idler.
- ⑤ Structural configuration providing minimal sensitivity to loading sensed at the location of the Torque Tube as a result of material spillage and build up.
- ⑥ Structural configuration providing minimal sensitivity to drag forces at the location of the weigh idler.
- ⑦ Weigh idler and adjacent idlers to include vertical alignment means.



Thayer Scale's Models MD and MDL Weigh Belts are widely recognized mainline industrial continuous weigh belt feeders. They can be used with an open loop belt drive to gravimetrically totalize and measure the flow of material, or with closed control as a feeder and regulate the flow to a constant or varying set point.

The Model MDL bridges the gap between standard low capacity and high capacity weigh feeders. Some materials are too abrasive for standard low capacity feeders, lump sizes can be too large or flow rates slightly exceed specified limits, resulting in low accuracy and constant maintenance problems. These applications often can't be reliably handled by larger, high capacity weigh feeders because the relatively low flow rates fall below specified limits. (for example: feeding 1.5" lumps of coal @ 2 STPH). The Model MDL is as ruggedly built as our capacity weigh feeders, to withstand abrasive materials, but is designed to operate at flow rates just beyond the limits of our low capacity feeders.

The Model MD is an extremely rugged weigh feeder that was originally designed for the harsh environment of the cement industry but can be used in a wide variety of applications. The Model MD is the ideal weigh feeder when medium to high feed rates are required, handling high bulk density and small through large particle size materials.

The Model MD can be subjected to extreme environmental conditions-such as abrasive dusts, corrosive fumes, wide temperature fluctuations and vibrations-without any detrimental effects on performance or accuracy.

Unlike conventional weight sensing systems wherein the weigh idler is directly coupled to a series of load cells, the Model MD and MDL weigh belts incorporate a unique Force Measurement Suspension System (FMSS) interposed between the weigh idler and a single load transducer. The FMSS is a NET weighing system that counter-balances dead load so that the entire range of the load transducer is available for weighing the material. The FMSS also prevents erroneous horizontal force vectors from being interpreted as changes in weight for unsurpassed resolution and weight measurement repeatability.

When connected to the THAYER family of instrumentation, the MD and MDL Weigh Belts can be consistently and accurately calibrated and the measurements can be presented to operators and supervisory controls in a variety of data handling methods.

The instrumentation can control the flow of material as a master feeder or as a slave proportioning its feed rate to some other master signal.

## OPTIONAL FEATURES



Full length adjustable skirt boards



Special inlet configurations to promote material flow and lower motor HP



Optional segmented, spring loaded belt scraper



Optional abrasion resistant liners



Optional Winged Tail Pulley prevents material build-up



Optional pulley and idler lubrication manifold mounted external to the enclosure



Option "V-Plow" prevents material from building up on underside of belt



Optional High Side Wall Belt with Full Length Adjustable Skirt Boards



Optional Safety Pull Cord Switch



Optional Hazardous Area Requirements



Optional Pneumatic Tail Pulley Tensioner



Choice of LVDT or Strain Gauge Load Cells

### MODEL MDL

#### Feed Rate:

•Up to 70 Tons/hr (63 M-tons/hr)  
@ a bulk density of 100 lb/ft<sup>3</sup> (1.6 gr/cm<sup>3</sup>)

#### Density Range:

•20 to 200 lb/ft<sup>3</sup> (0.32 to 3.2 gr/cm<sup>3</sup>)

#### Particle Size:

•Up to 1.5" (38 mm)

#### Volumetric Capacity:

•18" - 1,765 ft<sup>3</sup>/hr (50 M<sup>3</sup>) @ 70 ft/min  
•24" - 2,815 ft<sup>3</sup>/hr (80 M<sup>3</sup>) @ 70 ft/min

### MODEL MD

#### Feed Rate:

•Up to 500 Tons/hr (453 M-tons/hr)  
@ a bulk density of 100 lb/ft<sup>3</sup> (1.6 gr/cm<sup>3</sup>)

#### Density Range:

•20 to 200 lb/ft<sup>3</sup> (0.32 to 3.2 gr/cm<sup>3</sup>)

#### Particle Size:

•Up to 4" (102 mm)

#### Volumetric Capacity:

•30" - 4,250 ft<sup>3</sup>/hr (120 M<sup>3</sup>) @ 70 ft/min  
•36" - 4,750 ft<sup>3</sup>/hr (134 M<sup>3</sup>) @ 70 ft/min  
•42" - 6,000 ft<sup>3</sup>/hr (170 M<sup>3</sup>) @ 70 ft/min  
•48" - 7,250 ft<sup>3</sup>/hr (205 M<sup>3</sup>) @ 70 ft/min  
•54" - 8,450 ft<sup>3</sup>/hr (239 M<sup>3</sup>) @ 70 ft/min

#### Weight Measurement System:

•Mass-counterbalanced LVDT or strain gauge Load Cell.

#### Speed Measurement System:

•Direct coupled digital pulse transmitter mounted to tail pulley shaft.

#### Motor:

•0.5 to 5.0 HP, 180 VDC Arm, 200 V Field, TENV, 230 or 460 VAC, 3 ph, 50/60 hz.  
Optional motors available.

#### Turndown:

•20:1

#### Drive Reducer:

•C faced, coupled to motor, right angle, worm & gear type, service factor 1.5, complies with A.G.M. standards.  
Optional reducers available.

#### Weigh Belt Enclosure:

•Frame completely surrounds flow channel with top panel (removable side panels, total enclosure, drag chain clean out, hinged drop doors on bottom optional).

#### Contact Material:

•304 Stainless Steel (AR steel optional).

#### Non-contact Material:

•Enamel painted mild steel (epoxy paint optional)

#### Temperature Limits:

•Ambient 0° - 130° F (-18° - 54° C)  
Process Material 0° - 200° F (-18° - 93° C)

#### Accuracy (Combined Error):

•0.25-1.0% of set rate (@ 2 sigma) based on a minimum sample of 1 minute or 2 circuits of the belt, whichever is greater.

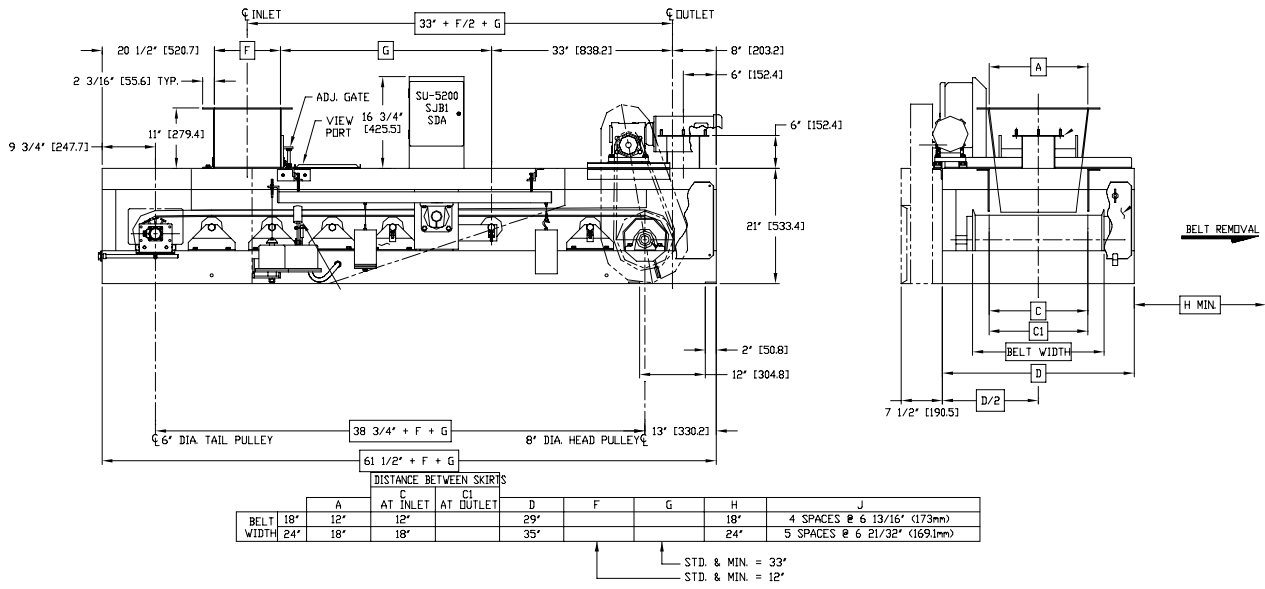
#### Belt:

•Two ply polyester carcass with SBR top cover, raised 1.0" (25 mm) flanges, rated for material temperature up to 200° F (93° C) (high temperature belt optional).

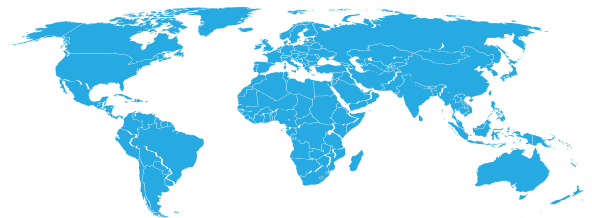
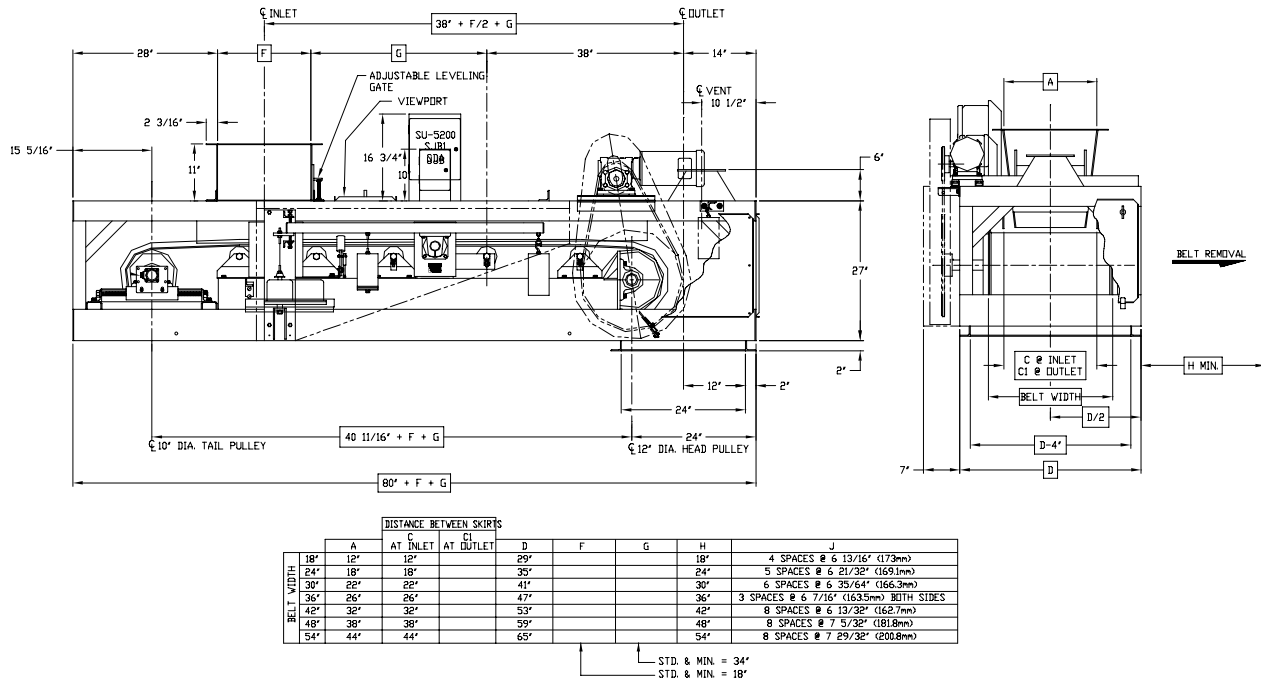
#### Options:

•Explosion proof design.  
•Automated Test Weight Lifter (ATWL)- provides for complete automatic zero and span calibration.

# MODEL MDL



# MODEL MD



THAYER® and the THAYER logo are Registered Trademarks of Hyer Industries, Inc.  
© Hyer Industries, Inc. 2004. All rights reserved

**THAYER SCALE-HYER INDUSTRIES, INC.**  
91 Schoosett St., Pembroke, MA 02359  
Ph: 781-826-8101 Fax: 781-826-7944  
e-Mail: Sales@ThayerScale.com  
WEB: www.ThayerScale.com