Belt Weighing

4

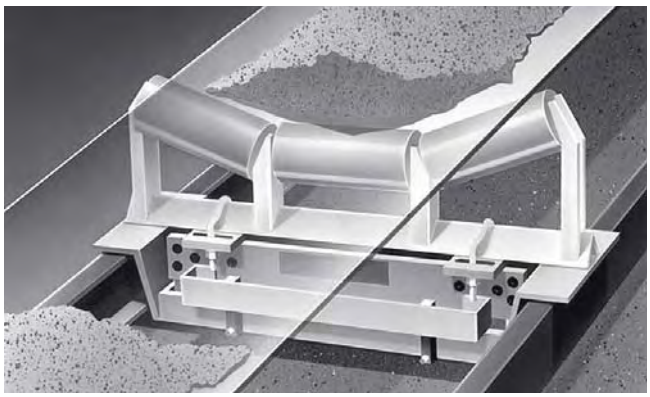
Introduction

Overview

Belt scales help maximize the use of raw materials, control inventories, and aid in the manufacturing of a consistent product. Milltronics belt scales from Siemens are easy to install, and require little maintenance. They produce repeatable, accurate results. These belt scales show minimal hysteresis and superior linearity, and ignore side loading. Load cell overload protection is a feature of the belt scale design. With use of approved intrinsically safe barrier strips, all belt scales can be used in hazardous locations.

Typical System

A typical belt scale system has a weigh bridge structure supported on load cells, an electronic integrator, and a belt speed sensor. The load cells measure the material weight on the belt, and send a signal to the integrator. The integrator also receives input in the form of electrical pulses from a belt speed sensor connected to a tail or bend pulley. Using these two sources of data, the integrator calculates the rate of material transferred along the belt using the equation weight x speed = rate.

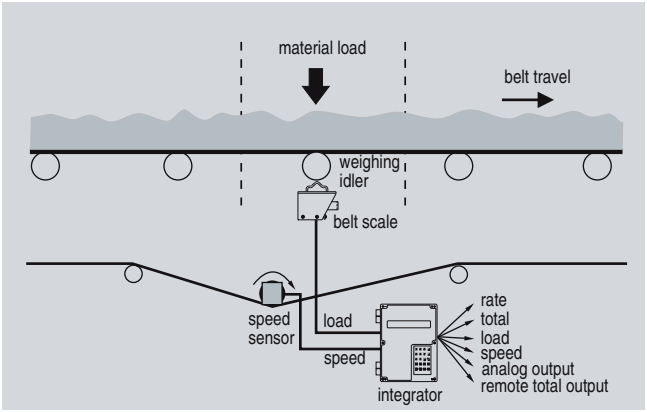


Belt scale operation

Mode of operation

Siemens Milltronics belt scales only measure the vertical component of the applied force. As material moves down the conveyor belt and travels over the belt scale, it exerts a force proportional to the material load through the suspended idler directly to the load cells. The resulting force applied in each load cell is sensed by its strain gauges. When the strain gauges are excited by voltage from the electronic integrator, they produce an electrical signal proportional to belt loading, which is then applied to the integrator.

The vertical movement of the load cells is limited by the positive overload stop incorporated into the design of the belt scale or load cells. The stops protect the load cells from failure in the event of extreme overload forces.



Installation Tips

Position the scale

Locate the scale close to the tail section of the conveyor belt where tension is minimal and more consistent. Mount the scale on rigid mountings, away from equipment that may produce measurement disturbing vibrations. Avoid variable tension points, transition points, or slope change. The ideal location is a horizontal, even belt section, but you can achieve good results on slopes if the idlers are properly aligned. If the conveyor curves, locate the scale a proper distance from the tangent points of the curve. For concave curved conveyors, the recommended minimum distance is 12 m (40 ft) from the tangent points of the curve. With convex conveyors, the minimum distance is 6 m (20 ft) on the approach side, and 12 m (40 ft) on the retreat side. Be sure to install the scale a sufficient distance from the infeed section (at least one idler space) so the material has time to settle properly on the belt.

Reduce variable belt tension

With temperature variations, load, and other circumstances, the belt tension will change. To maintain proper tension, a gravity take-up is recommended. This is a weight designed to take up slack on the belt. A gravity take-up should move freely and place consistent tension on the belt. The use of screw take-ups should be limited to conveyors with pulley centers to 18.3 m (60 ft) or less. The amount of weight should conform to the conveyor design specifications.

Align the idlers

Precise idler alignment is essential. At least two idlers on each side of the scale should be aligned with the belt scale; use three or more for high accuracy applications. To check alignment, use wire, string, or fishing line across the top outer edges of the rollers and tighten enough to eliminate sag. Adjust the height of the rollers with shims until they are all even, or at least within ±0.8 mm (1/32”). All of the scale-area idlers should be the same type (size, diameter, style, trough angle, and manufacture) and should be spaced at equal distances. Locate training idlers a minimum of 9 m (30 ft) from the belt scale idler.

Install speed sensors

The speed sensor should be attached to the tail pulley or bend pulley shaft so the connection does not slip. It is important that the speed sensor be properly mounted as described in the instruction manual and free of excessive vibration. Whenever possible, mount the speed sensor on a solid face pulley. The use of wing- or beater-type pulleys is not recommended.

Wheel driven speed sensors, that are applied to the return strand of the belt, should be located close to a return idler to ensure a stable drive surface.

Wire the scale

Follow good instrumentation wiring practices to protect the load cell and speed sensor signals from radio frequency interference and induction. Use terminal blocks, shielded cable, and grounded metal conduit for all wiring.

Technical specifications

Criteria	Typical industries	Typical applications	Maximum capacity	Maximum belt speed	Loading range	Accuracy[1]		Approvals
						Value	Specified Range	
Milltronics MLC	Animal feed, fertilizers, food processing, tobacco	Secondary industries	50 t/h (55 STPH) at max. belt speed	2.0 m/s (400 fpm)	Light	± 0.5 ... 1 %	25 ... 100 %	CE, C-TICK
Milltronics MBS	Aggregates, mining, animal feed	Aggregates, medium-duty	1500 t/h (1650 STPH) at max. belt speed	3.0 m/s (600 fpm)	Moderate	± 1 %	33 ... 100 %	CE, C-TICK
Milltronics MUS	Aggregates, agricultural, mining, cement	Aggregates, medium- to heavy-duty	5000 t/h (5500 STPH) at max. belt speed	3.0 m/s (600 fpm)	Light to heavy	± 0.5 ... 1 %	25 ... 100 %	CE, C-TICK
Milltronics MCS	Aggregates	Mobile crushers, aggregates, screening plants, heavy-duty	2400 t/h (2640 STPH) at max. belt speed	3.0 m/s (600 fpm)	Light to heavy	± 0.5 ... 1 %	25 ... 100 %	CE, CSA/FM, ATEX, IECEx, C-TICK
Milltronics MSI	Cement, chemicals, coal, food processing, mineral processing, mining	Industrial heavy-duty, SABS approval	12000 t/h (13200 STPH) at max. belt speed	5.0 m/s (984 fpm)	Moderate to heavy	± 0.5 % or better	20 ... 100 %	SABS, MID, OIML, Measurement Canada, CE, CSA/FM, ATEX, IECEx, C-TICK
Milltronics MMI	Cement, chemicals, coal, food processing, mineral processing, mining	Industrial heavy-duty, NTEP, Measurement Canada approval	12000 t/h (13200 STPH) at max. belt speed	5.0 m/s (984 fpm)	Moderate to heavy	MMI-2 (2 idler): ± 0.25 % or better MMI-3 (3 idler): ± 0.125 % or better	20 ... 100 % 25 ... 100 %	NTEP, MID, OIML, Measurement Canada, CE, CSA/FM, ATEX, IECEx, C-TICK
WD600	Food, pharmaceutical and tobacco industries	Process and load-out control Light- to medium-duty	Up to 50 t/h	2.0 m/s (400 fpm) maximum	Light to moderate	± 0.5 ... 1 %	25 ... 100 %	CE, meets FDA/USDA requirements for food processors, C-TICK

[1] Accuracy subject to: On factory approved installations the belt scale system's totalized weight will be within the specified accuracy when compared to a known weighed material test sample. The test rate must be within the specified range of the design capacity and held constant for the duration of the test. The minimum material test sample must be equivalent to a sample obtained at the test flow rate for three revolutions of the belt or at least ten minutes running time, whichever is greater.

SIEMENS

Belt Scale Application Questionnaire

Customer information

Contact: _____ Prepared By: _____

Company: _____ Date: _____

Address: _____ Notes on the Application: _____

City: _____ Country: _____ _____

State/Province: _____ Zip/Postal Code: _____ _____

Phone: ( ) _____ E-mail: _____ Fax: ( ) _____

Material

Material being measured: _____ **Particle size:** _____ mm / inch / mesh

Corrosive state of material: ☐ High ☐ Moderate ☐ Not corrosive

Conveyor

(Supply sketch where possible) Sketch attached ☐

Application: ☐ Inventory ☐ Load out ☐ Control ☐ Blending ☐ Legal for trade

Feed rate: _____ minimum t/hr or kg/hr or lb/hr or LTPH or STPH **Accuracy required:** +/- _____ %

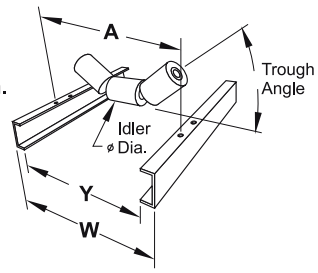
_____ maximum t/hr or kg/hr or lb/hr or LTPH or STPH **Constant feed rate** ☐ Yes ☐ No

Electrical classification at scale location: _____

Profile: ☐ Horizontal ☐ Incline / Decline _____ Degrees ☐ Variable Incline _____ Degrees ☐ Curved

Belt speed: _____ minimum m/sec. or ft/min. **Belt length:** _____ m / ft.

_____ maximum m/sec. or ft/min. **Belt width:** _____ mm / in.



Tail pulley dia.: _____ mm / in. **Idler spacing:** _____ mm / in.

Idler diameter: _____ mm / in. **A** idler mounting centres _____ mm / in.

Y drop in clearance _____ mm / in.

Trough angle: _____ Degrees **W** conveyor frame width _____ mm / in.

Integrator Requirements

(indicate all that apply) **Power available:** _____

Inputs required:	Outputs required:	Communications:
☐ 4 to 20 mA (specify) _____	☐ 4 to 20 mA	☐ AB Remote I/O
☐ PID	☐ PID	☐ DeviceNet
☐ LVDT	☐ Remote totalizer	☐ PROFIBUS DP
☐ Load Cells (#): _____	☐ Relays (#): _____	☐ RS-232 / RS-485 Modbus

Products suggested: _____

Preferred Belt Scale Model: ☐ MBS ☐ MUS ☐ MCS ☐ MSI ☐ MMI ☐ MLC ☐ WD600

Preferred Construction: ☐ Painted mild steel ☐ 304 SS ☐ 316 SS ☐ Other (specify) _____

 www.siemens.com/processautomation Form# 2-406R12

Overview

Milltronics MLC is a low-capacity scale for light belt loading.

Benefits

- Unique parallelogram style load cell design
- Designed for light product loading
- Compact and easy to install
- System includes weighing idler
- Stainless steel option
- Low cost of ownership

Application

The MLC is suitable for monitoring such products as fertilizer, tobacco, animal feed pellets, or sugar.

The MLC's patented use of parallelogram style load cells results in fast reaction to vertical forces, ensuring instant response to product loading. This enables it to provide outstanding accuracy and repeatability even with very light loading. The MLC may be easily installed in existing flat belt conveyors or belt feeders.

Operating with Milltronics BW100, BW500, or SIWAREX FTC microprocessor-based integrators, the MLC provides indication of flow rate, total weight, belt load and belt speed of bulk solids materials on a belt conveyor. A speed sensor monitors conveyor belt speed for input to the integrator. When used in conjunction with Milltronics BW500 integrator with PID controller, the MLC may also be used in the food industry as part of a pre-feed control system for extruders, cookers and de-hydrators.

Technical specifications

Mode of operation	
Measuring principle	Strain gauge load cell measuring load on flat belt conveyor idler
Typical application	Monitor fertilizer, tobacco, animal feed pellets, sugar, cereal
Performance	
Accuracy[1)]	± 0.5 to 1.0 % of totalization over 25 to 100 % operating range
Medium conditions	
Max. material temperature	+85 °C (+185 °F)
Belt design	
Belt width	• 450 to 1200 mm in metric sizes • 18 to 48" in Imperial sizes
Belt speed	2.0 m/s (400 fpm) maximum[2)]
Capacity	Up to 50 t/h (55 STPH)
Conveyor incline	• ± 20° from horizontal, fixed incline • Up to ± 30° with reduced accuracy
Idlers	
Conveyor idler	Horizontal
Idler diameter	50 or 60 mm or 1.90"
Idler spacing	0.5 to 1.5 m (1.6 to 5.0 ft)
Load cell	
Construction	17-4 PH (1.4568) stainless steel construction with 304 (1.4301) stainless steel cover
Degree of protection	IP67
Excitation	10 V DC nominal, 15 V DC maximum
Output	2 mV/V excitation at rated load cell capacity
Non-linearity	0.03 % of rated output
Hysteresis	0.05 % of rated output
Non-repeatability	0.03 % of rated output
Capacity	10 or 20 lbs
Overload	150 % of rated capacity, ultimate 300 % of rated capacity
Temperature	• -40 to +85 °C (-40 to +185 °F) operating range • -10 to +60 °C (+14 to +140 °F) compensated
Mounting dimensions	Identical for all capacities
Hazardous locations	Consult the factory
Approvals	CE, C-TICK, GOST

1) Accuracy subject to: On factory approved installations the belt scale system's totalized weight will be within the specified accuracy when compared to a known weighed material test sample. The test rate must be within the specified range of the design capacity and held constant for the duration of the test. The minimum material test sample must be equivalent to a sample obtained at the test flow rate for three revolutions of the belt or at least ten minutes running time, whichever is greater.

2) Contact Siemens application engineering for consideration of higher belt speeds.

Milltronics MLC

Selection and Ordering data		Order No.
Milltronics MLC Belt Scale Low-capacity scale for light belt loading that comes complete with a weighing idler.	C)	**7MH7126-** ■■■■
Belt width/Scale construction		
Polyester painted mild steel		
18" (457 mm)		**1 A**
24" (610 mm)		**1 B**
30" (762 mm)		**1 C**
36" (914 mm)		**1 D**
42" (1067 mm)		**1 E**
48" (1219 mm)		**1 F**
500 mm (20")		**1 G**
650 mm (26")		**1 H**
800 mm (32")		**1 J**
1000 mm (39")		**1 K**
1200 mm (47")		**1 L**
450 mm (18")		**1 M**
Stainless steel 304 (1.4301)		
18" (457 mm)		**2 A**
24" (610 mm)		**2 B**
30" (762 mm)		**2 C**
36" (914 mm)		**2 D**
42" (1067 mm)		**2 E**
48" (1219 mm)		**2 F**
500 mm (20")		**2 G**
650 mm (26")		**2 H**
800 mm (32")		**2 J**
1000 mm (39")		**2 K**
1200 mm (47")		**2 L**
450 mm (18")		**2 M**
Load cell capacity		
10 lb (4.55 kg)		**A**
20 lb (9.09 kg)		**B**
Not specified		**X**
Weighing idler dImensions		
50 mm (1.96")[1]		**1**
60 mm (2.40")[2]		**2**
1.90" (48.2 mm)[3]		**5**
Further designs Please add "**-Z**" to Order No. and specify Order code(s).		Order Code
Stainless Steel tag [69 x 38 mm (2.7 x 1.5")], Measuring-point number / identification (max 16 characters), specify in plain text.		**Y15**
Acceptance test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and ISO 9000		**C11**

Selection and Ordering data		Order No.
Instruction manual		
English	C)	**7ML1998-5FF01**
German	C)	**7ML1998-5FF31**
Belt Scale Application Guidelines		
• English	C)	**7ML1998-5GA01**
• French	C)	**7ML1998-5GA11**
• German	C)	**7ML1998-5GA31**
• Spanish	C)	**7ML1998-5GA21**
Note: The instruction manual should be ordered as a separate item on the order.		
This device is shipped with the Siemens Milltronics manual CD containing the complete instruction manual library.		
Spare parts		
Load cell, 10 lb (4.55 kg), 17-4 PH (1.4568) stainless steel construction with 304 (1.4301) stainless steel cover, includes hardware		**7MH7725-1AA**
Load cell, 20 lb (9.09 kg), 17-4 PH (1.4568) stainless steel construction with 304 (1.4301) stainless steel cover, includes hardware		**7MH7725-1AB**
Milltronics MLC calibration weight [Stainless Steel 304 (1.4301)]		
For scales with belt width of 18" or 500 mm or 450 mm		
1.05 lbs (0.47 kg)		**7MH7724-1AL**
1.63 lbs (0.73 kg)		**7MH7724-1AM**
2.35 lbs (1.06 kg)		**7MH7724-1AN**
3.21 lbs (1.45 kg)		**7MH7724-1AP**
For scales with belt width of 24" or 650 mm		
1.38 lbs (0.62 kg)		**7MH7724-1AQ**
2.15 lbs (0.97 kg)		**7MH7724-1AR**
3.11 lbs (1.41 kg)		**7MH7724-1AS**
4.24 lbs (1.91 kg)		**7MH7724-1AT**
For scales with belt width of 30" or 800 mm		
1.72 lbs (0.77 kg)		**7MH7724-1AU**
2.67 lbs (1.21 kg)		**7MH7724-1AV**
3.85 lbs (1.73 kg)		**7MH7724-1AW**
5.26 lbs (2.37 kg)		**7MH7724-1AX**
For scales with belt width of 36" or 1000 mm		
2.05 lbs (0.92 kg)		**7MH7724-1AY**
3.19 lbs (1.44 kg)		**7MH7724-1BA**
4.56 lbs (2.07 kg)		**7MH7724-1BB**
6.29 lbs (2.83 kg)		**7MH7724-1BC**
For scales with belt width of 42" or 1000 mm		
2.38 lbs (1.07 kg)		**7MH7724-1BD**
3.71 lbs (1.67 kg)		**7MH7724-1BE**
5.35 lbs (2.41 kg)		**7MH7724-1BF**
7.31 lbs (3.29 kg)		**7MH7724-1BG**
For scales with belt width of 48" or 1200 mm		
2.72 lbs (1.22 kg)		**7MH7724-1BH**
4.23 lbs (1.92 kg)		**7MH7724-1BJ**
6.06 lbs (2.75 kg)		**7MH7724-1BK**
8.34 lbs (3.75 kg)		**7MH7724-1BL**

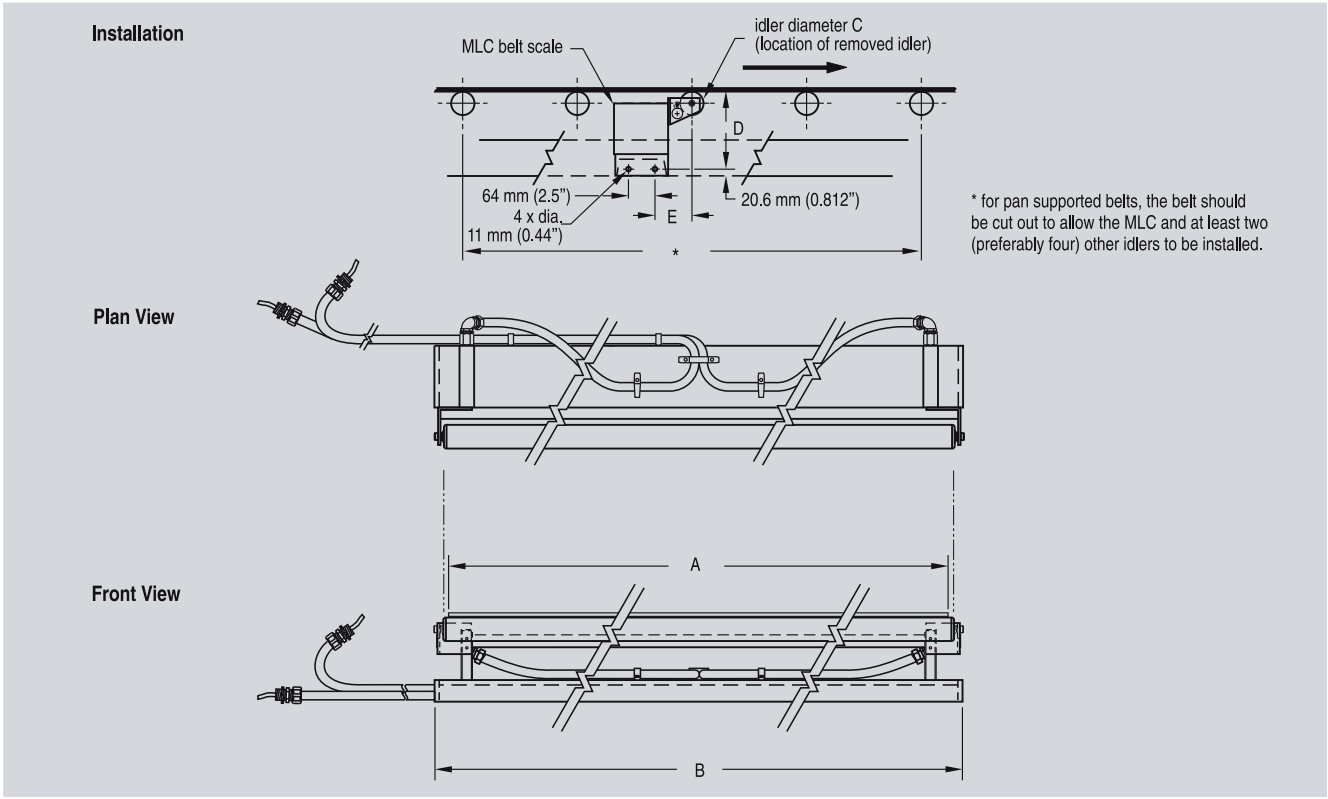
[1] Available with Belt width/Scale construction options 1G to 1M and 2G to 2M only

[2] Available with Belt width/Scale construction options 1G to 1M

[3] Available with Belt width/Scale construction options 1A to 1F and 2A to 2F only

C) Subject to export regulations AL: N, ECCN: EAR99.

Dimensional drawings

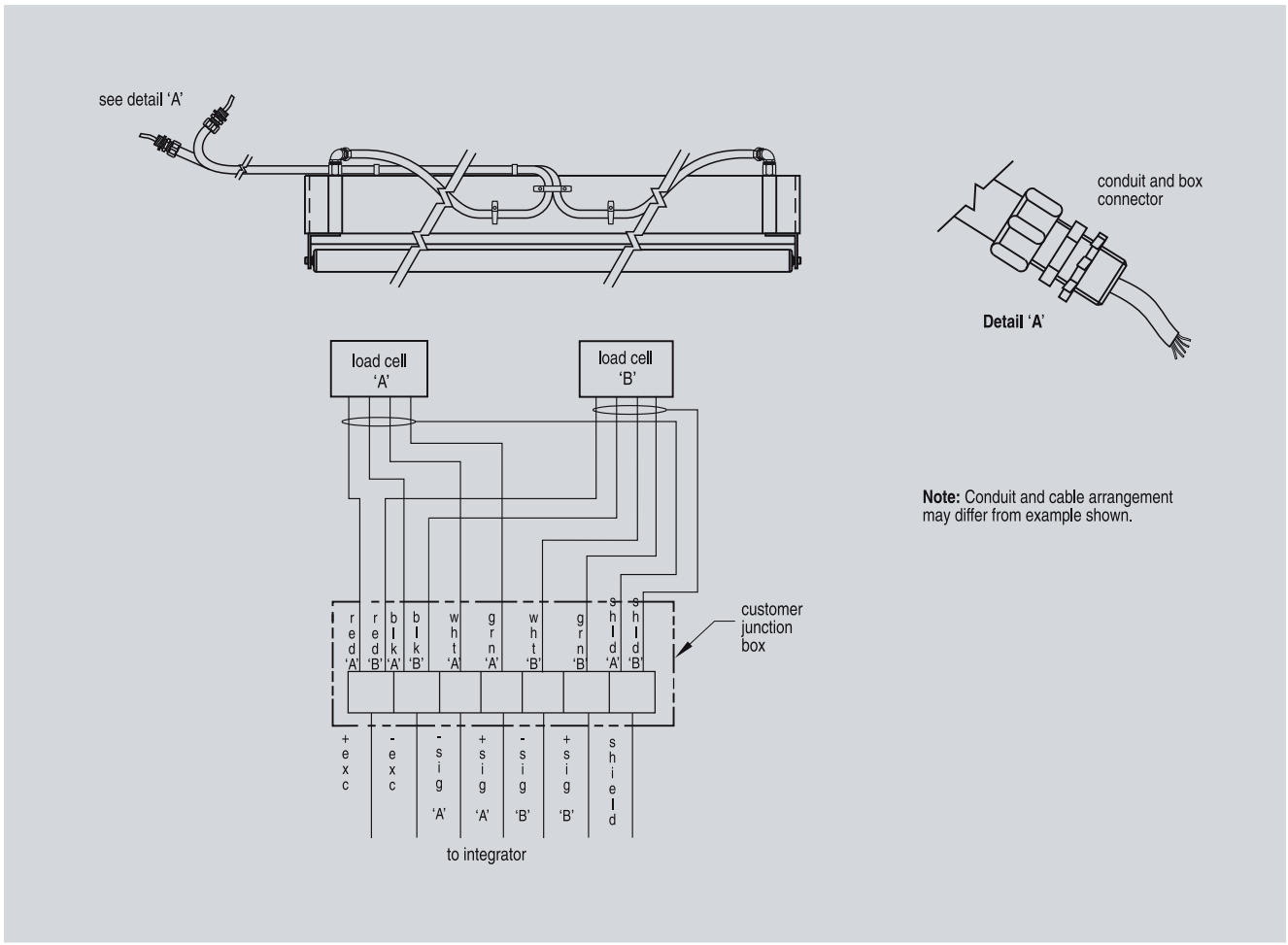


MLC dimensions

Imperial Designs					
Scale Size	**'A' Roller Width**	**'B' Dimension**	**'C' Dimension**	**'D' Dimension**	**'E' Dimension**
18" (457 mm)	18" (457 mm)	19" (483 mm)	1.90" (48.3 mm)	6.19" (157 mm)	3.5" (89 mm)
24" (610 mm)	24" (610 mm)	25" (635 mm)	1.90" (48.3 mm)	6.19" (157 mm)	3.5" (89 mm)
30" (762 mm)	30" (762 mm)	31" (787 mm)	1.90" (48.3 mm)	6.19" (157 mm)	3.5" (89 mm)
36" (914 mm)	36" (914 mm)	37" (940 mm)	1.90" (48.3 mm)	6.19" (157 mm)	3.5" (89 mm)
42" (1067 mm)	42" (1067 mm)	43" (1092 mm)	1.90" (48.3 mm)	6.19" (157 mm)	3.5" (89 mm)
48" (1219 mm)	48" (1219 mm)	49" (1245 mm)	1.90" (48.3 mm)	6.19" (157 mm)	3.5" (89 mm)

Metric Designs					
Scale Size	**'A' Roller Width**	**'B' Dimension**	**'C' Dimension**	**'D' Dimension**	**'E' Dimension**
450 mm (17.72")	450 mm (17.72")	500 mm (19.69")	50 mm (1.97")	158 mm (6.22")	96 mm (3.78")
500 mm (19.69")	500 mm (19.69")	550 mm (21.65")	50 mm (1.97")	158 mm (6.22")	96 mm (3.78")
650 mm (25.59")	650 mm (25.59")	700 mm (27.56")	50 mm (1.97")	158 mm (6.22")	96 mm (3.78")
800 mm (31.50")	800 mm (31.50")	850 mm (33.46")	50 mm (1.97")	158 mm (6.22")	96 mm (3.78")
1000 mm (39.37")	1000 mm (39.37")	1050 mm (41.34")	60 mm (2.36")	163 mm (6.42")	96 mm (3.78")
1200 mm (47.24")	1200 mm (47.24")	1250 mm (49.21")	60 mm (2.36")	163 mm (6.42")	96 mm (3.78")

Schematics



MLC connections

Overview

Milltronics MBS is a basic, modular, medium-duty belt scale providing dynamic weighing information for process indication. Idler not included with belt scale.

Benefits

- Unique modular design
- Simple installation
- Low cost
- Easy retrofit

Application

Milltronics MBS is used with aggregates, sand, or minerals, animal feeds or grains, providing basic continuous in-line weighing at a minimal cost. With no cross bridge, this versatile unit will fit most conveyor widths and standard idlers, and product build-up is reduced.

The construction and easy assembly of the MBS ensure quick delivery to meet even the tightest of schedules. Where scales are moved from conveyor to conveyor, the MBS also provides unmatched flexibility.

Operating with Milltronics BW100, BW500, or SIWAREX FTC microprocessor-based integrators, the MBS provides indication of flow rate, total weight, belt load, and speed of bulk solids materials on a belt conveyor. A speed sensor monitors conveyor belt speed for input to the integrator.

Technical specifications

Mode of operation	
Measuring principle	Heavy duty strain gauge load cells measuring load on belt conveyor idlers
Typical applications	• Monitor feed rates of fractionated stone, sand, animal feeds, grains • Track daily production totals
Performance	
Accuracy[1]	± 1 % of totalization over 33 to 100% operating range, application dependent
Medium conditions	
Max. material temperature	+70 °C (+158 °F)
Belt design	
Belt width	• Standard duty up to 1000 mm (CEMA width up to 42") • Refer to outline dimension section
Belt speed	Up to 3.0 m/s (600 fpm)[2]
Capacity	Up to 1500 t/h (1650 STPH) at maximum belt speed
Conveyor incline	• ± 20° from horizontal, fixed incline • Up to ± 30° with reduced accuracy[3]
Idlers	
Idler profile	• Flat to 35° • To 45° with reduced accuracy[3] 50 to 150 mm (2 to 6")
Idler diameter	50 to 150 mm (2 to 6")
Idler spacing	0.6 to 1.5 m (2.0 to 5.0 ft)
Load cell	
Construction	Aluminum
Degree of protection	IP66
Excitation	10 V DC nominal, 15 V DC max.
Output	2 ± 0.02 mV/V excitation at rated load cell capacity
Non-repeatability	0.01 % of rated output
Non-linearity	0.02 % of rated output
Hysteresis	0.02 % of rated output
Capacity	30, 50, 100 kg (66, 110, 220 lbs)
Overload	150 % of rated capacity, ultimate 200 % of rated capacity
Temperature	• -30 to +70 °C (-22 to +158 °F) operating range • -10 to +40 °C (+15 to +105 °F) compensated
Weight	12 kg (26 lbs), 6 kg (13 lbs) per side
Interconnection wiring (to integrator)	• < 150 m (500 ft) 18 AWG (0.75 mm²) 6 conductor shielded cable • > 150 m (500 ft) to 300 m (1000 ft) 18 to 22 AWG (0.75 to 0.34 mm²) 8 conductor shielded cable
Hazardous locations	Consult the factory
Approvals	CE, C-TICK

[1] Accuracy subject to: On factory approved installations the belt scale system's totalized weight will be within the specified accuracy when compared to a known weighed material test sample. The test rate must be within the specified range of the design capacity and held constant for the duration of the test. The minimum material test sample must be equivalent to a sample obtained at the test flow rate for three revolutions of the belt or at least ten minutes running time, whichever is greater.

[2] Contact Siemens application engineering for consideration of higher belt speeds.

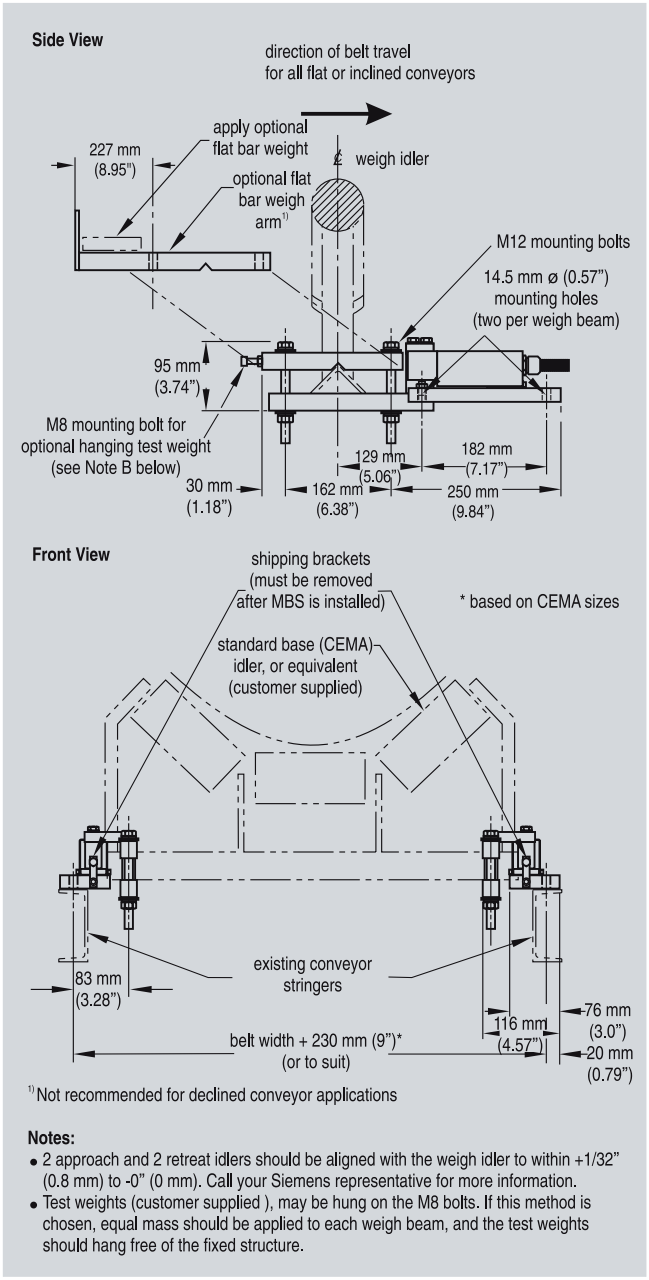
[3] Review by Siemens application engineer required.

Milltronics MBS

Selection and Ordering data		Order No.
Milltronics MBS Belt Scale A basic, modular, medium-duty belt scale providing dynamic weighing information for process indication.	C)	**7MH7121-** **1 ■ ■ ■ 0**
Scale construction		
Standard [up to 1000 mm (42") belt width]		**1**
Load cell capacity		
30 kg (66 lbs)		**A B**
50 kg (110 lbs)		**A C**
100 kg (220 lbs)		**A E**
Not specified		**X X**
Fabrication		
Polyester painted mild steel		**1**
Polyester painted mild steel, for use with flat bar calibration		**2**
Further designs		Order Code
Please add "**-Z**" to Order No. and specify Order code(s).		
Stainless Steel tag [69 x 38 mm (2.7 x 1.5")], Measuring-point number / identification (max 16 characters), specify in plain text.		**Y15**
Acceptance test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and ISO 9000		**C11**
Instruction manual		Order No.
English	C)	**7ML1998-5JN01**
French	C)	**7ML1998-5JN11**
German	C)	**7ML1998-5JN31**
Belt Scale Application Guidelines		
• English	C)	**7ML1998-5GA01**
• French	C)	**7ML1998-5GA11**
• German	C)	**7ML1998-5GA31**
• Spanish	C)	**7ML1998-5GA21**
Note: The instruction manual and application guidelines manual should be ordered as separate lines on the order.		
This device is shipped with the Siemens Milltronics manual CD containing the complete instruction manual library.		
Spare parts		
Load cell, 30 kg (66 lbs), aluminum		**7MH7725-1BK**
Load cell, 50 kg (110 lbs), aluminum		**7MH7725-1BL**
Load cell, 100 kg (220 lbs), aluminum		**7MH7725-1BM**
Calibration Weights		
Flat bar/MWL retrofit kit	C)	**7MH7723-1HA**
Calibration test arm assembly, c/w one 8.2 kg (18 lb) calibration weight		**7MH7723-1FR**
Calibration test arm assembly, c/w two 8.2 kg (18 lb) calibration weights		**7MH7723-1FS**
MBS/MCS calibration arm c/w idler clip (holds up to two 8.2 kg (18 lb) weights		**7MH7726-1AD**
Calibration weight, 8.2 kg (18 lb)		**7MH7724-1AA**
6.0 lb / 2.7 kg		**7MH7724-1AB**
Milltronics flat bar calibration weights, see page 4/52 Note: The calibration arm and weights should be ordered as separate lines on the order.		

C) Subject to export regulations AL: N, ECCN: EAR99.

Dimensional drawings



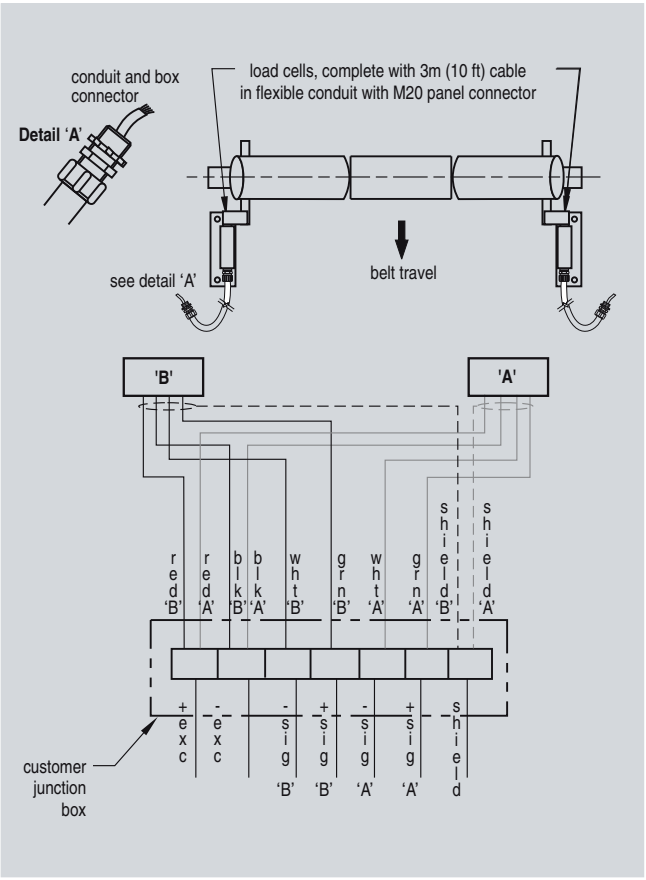
1) Not recommended for declined conveyor applications

Notes:

- 2 approach and 2 retreat idlers should be aligned with the weigh idler to within +1/32" (0.8 mm) to -0" (0 mm). Call your Siemens representative for more information.
- Test weights (customer supplied), may be hung on the M8 bolts. If this method is chosen, equal mass should be applied to each weigh beam, and the test weights should hang free of the fixed structure.

MBS dimensions

Schematics



MBS connections

4

Milltronics MUS

Overview

Milltronics MUS is a modular designed, medium- to heavy-duty belt scale for process indication.
Idler not included with belt scale.

Benefits

- Unique modular design
- Simple installation
- Low cost
- Easy retrofit

Application

Milltronics MUS operates with products like aggregates, sand, or minerals, providing continuous in-line weighing at a minimal cost. With no cross bridge, this versatile unit will fit most conveyor widths and standard idlers, and product build-up is reduced.

The construction and easy assembly of the MUS ensures quick delivery to meet even the tightest of schedules. Where scales are moved from conveyor to conveyor, the MUS also provides unmatched flexibility.

Operating with Milltronics BW100, BW500, or SIWAREX FTC microprocessor-based integrators, the MUS provides indication of flow rate, total weight, belt load, and speed of bulk solids materials on a belt conveyor. A speed sensor monitors conveyor belt speed for input to the integrator.

Technical specifications

Mode of operation	
Measuring principle	Heavy duty strain gauge load cells measuring load on belt conveyor idlers
Typical applications	• Monitor fractionated stone on secondary surge belts and recirculating loads • Track daily production totals
Measurement accuracy	
Accuracy[1)]	± 0.5 to 1 % of totalization over 25 to 100 % operating range, application dependent
Medium conditions	
Max. material temperature	+ 65 °C (+150 °F)
Belt design	
Belt width	• Standard duty up to 1000 mm (CEMA width up to 42") • Heavy-duty up to 1524 mm (CEMA width up to 60") • Refer to outline dimension section
Belt speed	Up to 3.0 m/s (600 fpm)[2)]
Capacity	Up to 5000 t/h at maximum belt speed
Conveyor incline	• ± 20° from horizontal, fixed incline • Up to ± 30° with reduced accuracy[3)]
Idlers	
Idler profile	• Flat to 35° • To 45° with reduced accuracy[3)]
Idler diameter	50 to 180 mm (2 to 7")
Idler spacing	0.6 to 1.5 m (2.0 to 5.0 ft)
Load cell	
Construction	Nickel plated alloy steel
Degree of protection	IP66
Excitation	10 V DC nominal, 15 V DC max.
Output	2 mV/V excitation at rated load cell capacity
Non-linearity and hysteresis	0.02 % of rated output
Non-repeatability	0.01 % of rated output
Capacity	
• Standard duty ranges	20, 30, 50, 75, 100 kg
• Heavy-duty ranges	50, 100, 150, 200, 500 kg
Overload	150 % of rated capacity, ultimate 200 % of rated capacity
Temperature	• -40 ... +65 °C (-40 ... +150 °F) operating range • -10 ... +40 °C (+15 .. +105 °F) compensated
Weight	Standard duty up to 44 lbs (20 kg), 22 lbs (10 kg) per side Heavy-duty up to 64 lbs (30 kg), 32 lbs (15 kg) per side
Interconnection wiring (to integrator)	• < 150 m (500 ft) 18 AWG (0.75 mm²) 6 conductor shielded cable • > 150 m (500 ft) to 300 m (1000 ft) 18 ... 22 AWG (0.75 .. 0.34 mm²) 8 conductor shielded cable
Hazardous locations	Consult the factory
Approvals	CE, C-TICK, GOST, CMC

1) Accuracy subject to: On factory approved installations the belt scale system's totalized weight will be within the specified accuracy when compared to a known weighed material test sample. The test rate must be within the specified range of the design capacity and held constant for the duration of the test. The minimum material test sample must be equivalent to a sample obtained at the test flow rate for three revolutions of the belt or at least ten minutes running time, whichever is greater.

2) Contact Siemens application engineering for consideration of higher belt speeds.

3) Review by Siemens application engineer required.

Selection and Ordering data		Order No.
Milltronics MUS Belt Scale Modular design, medium- to heavy-duty scale for process indication. Flat bar calibration weights are optional and should be ordered as separate items.	C)	**7MH7123-** ■■■■ **0**
Scale construction		
Standard for belt width up to 1000 mm (42"), nickel plated steel load cells		**1**
Heavy-duty for belt width up to 1524 mm (60"), nickel plated steel load cells		**2**
Load cell capacity		
Standard Duty Scale Load Cell		
20 kg (44.1 lb)[1]		**A A**
30 kg (66.1 lb)[1]		**A B**
50 kg (110.2 lb)[1]		**A C**
75 kg (165.3 lb)[1]		**A D**
100 kg (220.4 lb)[1]		**A E**
Not specified		**X X**
Heavy-Duty Scale Load Cell		
50 kg (110.2 lb)[2]		**B A**
100 kg (220.4 lb)[2]		**B B**
150 kg (330.7 lb)[2]		**B C**
200 kg (440.9 lb)[2]		**B D**
300 kg (661.4 lb)[2]		**B E**
500 kg (1102.3 lb)[2]		**B F**
Fabrication		
Polyester painted mild steel		**1**
Further designs		Order Code
Please add "**-Z**" to Order No. and specify Order code(s).		
Stainless Steel tag [69 x 38 mm (2.7 x 1.5")], Measuring-point number / identification (max. 16 characters), specify in plain text.		**Y15**
Acceptance test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and ISO 9000		**C11**

Instruction manual		Order No.
English	C)	**7ML1998-5CQ02**
French	C)	**7ML1998-1CQ11**
Spanish	C)	**7ML1998-1CQ21**
German	C)	**7ML1998-5CQ31**
Dutch	C)	**7ML1998-1CQ41**
Additional instruction manuals		
Belt Scale Application Guidelines		
• English	C)	**7ML1998-5GA01**
• French	C)	**7ML1998-5GA11**
• Spanish	C)	**7ML1998-5GA21**
• German	C)	**7ML1998-5GA31**

Note: The instruction manual and application guidelines manual should be ordered as separate items on the order.

This device is shipped with the Siemens Milltronics manual CD containing the complete instruction manual library.

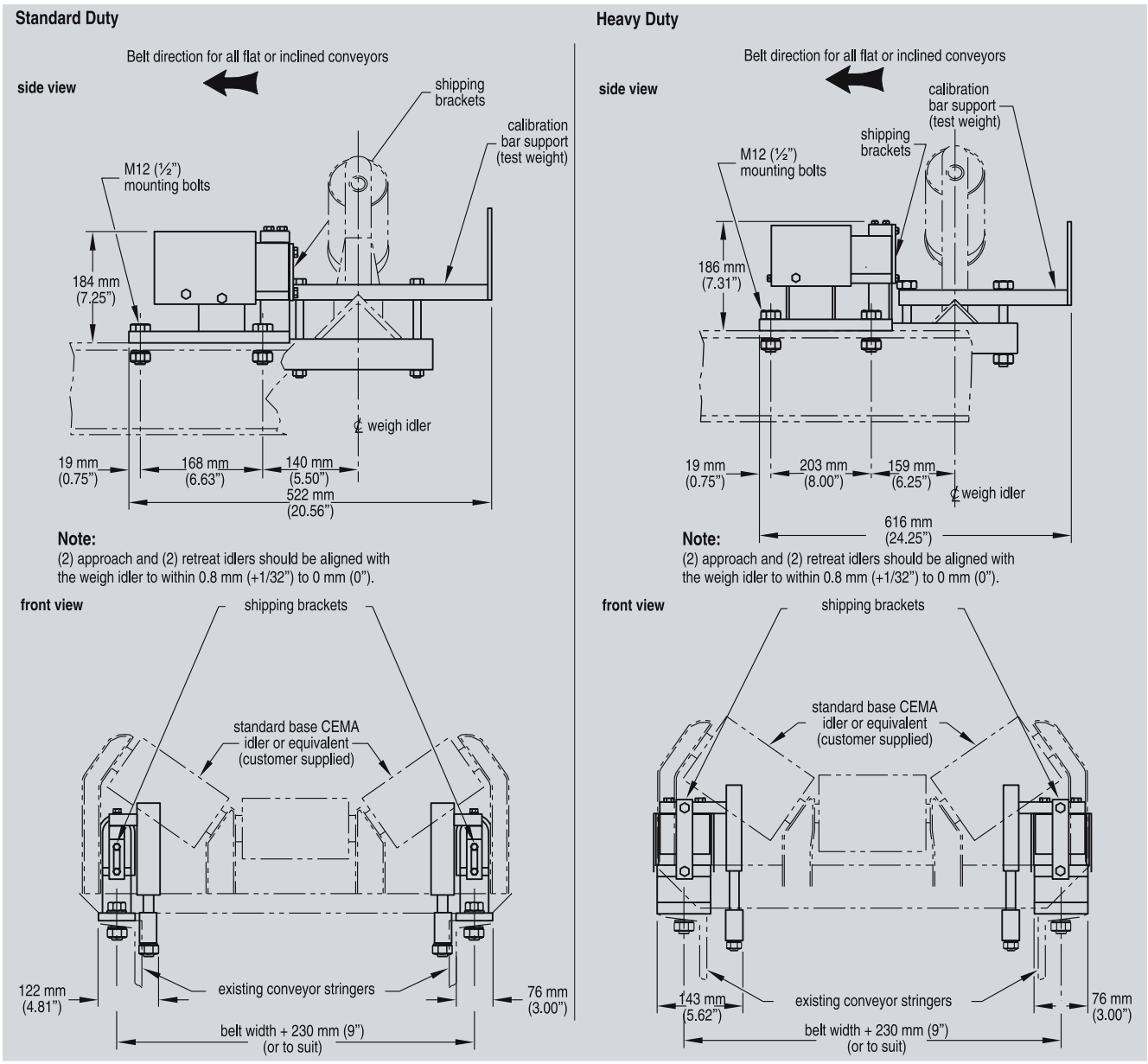
Selection and Ordering data		Order No.
Milltronics MUS Belt Scale Modular design, medium- to heavy-duty scale for process indication. Flat bar calibration weights are optional and should be ordered as separate items.	C)	**7MH7123-** ■■■■ **0**
Spare parts		
Standard Duty Scale Load Cell		
20 kg (44.1 lb)		**7MH7725-1CP**
30 kg (66.1 lb)		**7MH7725-1CQ**
50 kg (110.2 lb)		**7MH7725-1CR**
75 kg (165.3)		**7MH7725-1CS**
100 kg (220.5 lb)		**7MH7725-1CT**
Heavy-Duty Scale Load Cell		
50 kg (110.2 lb)		**7MH7725-1CU**
100 kg (220.5 lb)		**7MH7725-1CV**
150 kg (330.7 lb)		**7MH7725-1CW**
200 kg (440.9 lb)		**7MH7725-1CX**
300 kg (661.4 lb)		**7MH7725-1CY**
500 kg (1120.3 lb)		**7MH7725-1DA**
Rock Guard, MUS Standard Duty Scale, spare	C)	**7MH7723-1DM**
Calibration Weights		
Milltronics flat bar calibration weights, see page 4/52		

[1] For use with scale construction option 1 only

[2] For use with scale construction option 2 only

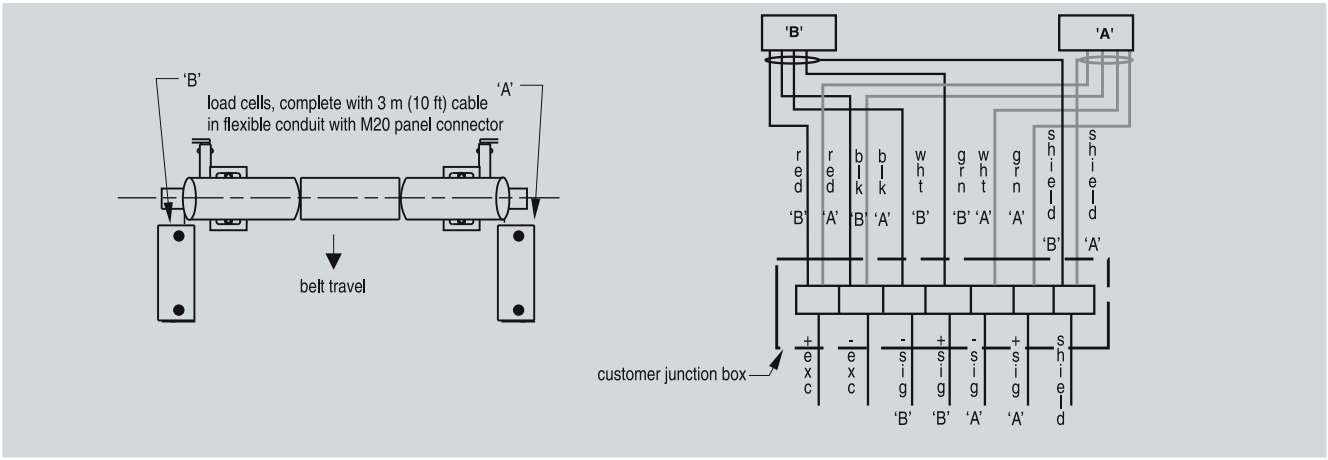
C) Subject to export regulations AL: N, ECCN: EAR99.

Dimensional drawings



MUS dimensions

Schematics



MUS connections

Milltronics MCS

Overview

Milltronics MCS is a compact, rugged, modular, heavy-duty belt scale for use in mobile crushers and aggregate screening plants.

Benefits

- Rugged design
- Low profile
- Easy retrofit
- Low cost
- Stainless steel load cells

Application

Milltronics MCS provides continuous, in-line weighing at minimal cost. The stainless steel load cells ensure long-term, consistent, reliable measurement.

The modular construction and easy assembly of the MCS ensures quick delivery to meet even the tightest of schedules.

Operating with Milltronics BW100, BW500, or SIWAREX FTC microprocessor-based integrators, the MCS provides indication of flow rate, total weight, belt load, and belt speed of bulk solids materials on a belt conveyor.

To complete the weighing system, include a speed sensor to monitor conveyor belt speed for input to the integrator. On mobile crushing equipment, the TASS speed sensor is a compact, rugged speed sensor designed for use with the MCS.

Technical specifications

Mode of operation	
Measuring principle	Strain gauge load cells measuring load on belt conveyor idlers
Typical application	Mobile crusher systems
Measurement accuracy	
Accuracy[1]	• ± 0.5 to 1 % of totalization over 25 to 100 % operating range, application dependent • ± 2 % of totalization over 25 to 100% operating range on mobile crusher applications
Belt design	
Belt width	• Up to 1600 mm (60" CEMA) width • Refer to the outline dimension section
Belt speed	Up to 4 m/s (800 fpm)[2]
Capacity	Up to 2400 t/h (2640 STPH) at maximum belt speed
Conveyor incline	• ± 20° from horizontal, fixed incline • up to ± 30° with reduced accuracy[3]
Idlers	
Idler profile	• Flat to 35° • To 45° with reduced accuracy[3]
Idler diameter	100 to 150 mm (4 to 6")
Idler spacing	0.6 to 1.2 m (2.0 to 4.0 ft)
Load cell	
Construction	17-4 PH (1.4568) stainless steel construction with 304 (1.4301) stainless steel cover
Degree of protection	IP67
Excitation	10 V DC nominal, 15 V maximum
Output	2 mV/V excitation at rated load cell capacity
Non-linearity and hysteresis	0.02 % of rated output
Non-repeatability	0.01 % of rated output
Capacity	25, 50, 100, 250, 500 lb stainless steel
Overload	150 % of rated capacity, ultimate 300 % of rated capacity
Temperature	• -40 to +75 °C (-40 to +167 °F) operating range • -18 to +65 °C (0 to +150 °F) compensated
Weight	Up to 20 kg (44 lbs), 10 kg (22 lb) per side
Interconnection wiring (to integrator)	• < 150 m (500 ft) 18 AWG (0.75 mm²) 6 conductor shielded cable • > 150 m (500 ft) to 300 m (1000 ft) 18 to 22 AWG (0.75 to 0.34 mm²), 8 conductor shielded cable
Approvals	• CSA/FM Class II, Div. 1, Groups E,F,G and Class III • ATEX II 2D, Ex tD A21 IP65 T90 °C • IECEx Ex tD A21 IP65 T90 °C • CE, C-TICK, GOST

[1] Accuracy subject to: On factory approved installations the belt scale system's totalized weight will be within the specified accuracy when compared to a known weighed material test sample. The test rate must be within the specified range of the design capacity and held constant for the duration of the test. The minimum material test sample must be equivalent to a sample obtained at the test flow rate for three revolutions of the belt or at least ten minutes running time, whichever is greater.

[2] Contact Siemens application engineering for consideration of higher belt speeds

[3] Review by Siemens application engineer required.

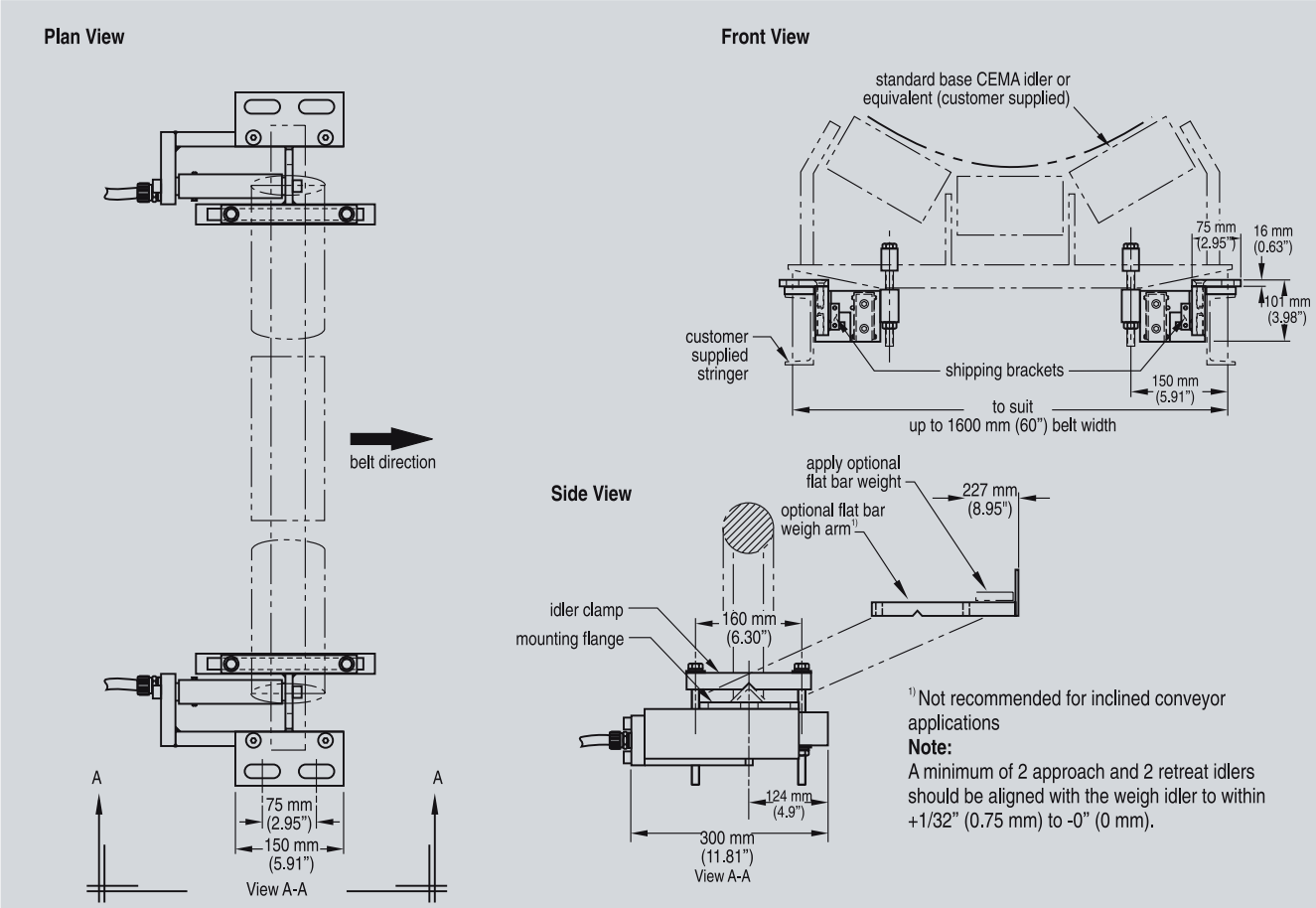
Selection and Ordering data		Order No.
Milltronics MCS Belt Scale A compact, rugged, modular, heavy-duty belt scale for use in mining and aggregate screening plants	C)	**7MH7125-** ■■■■ **0**
Scale construction		
Standard duty [up to 1000 mm (42") belt width]		**1**
Hazardous Duty CSA/FM Class II, Div. 1, Groups E,F,G and Class III, ATEX II 2D, IECEx, CE, C-TICK		**2**
Load cell capacity		
50 lb (22.7 kg) (use not recommended for mobile crushers)		**A A**
100 lb (45.5 kg) (use not recommended for mobile crushers)		**A B**
250 lb (113.6 kg)		**A C**
500 lb (226.8 kg)		**A D**
25 lb (11.3 kg) (use not recommended for mobile crushers)		**A E**
Not specified		**B B**
Fabrication		
Polyester painted mild steel		**1**
Polyester painted mild steel, for use with flat bar calibration		**2**
Further designs		Order Code
Please add "**-Z**" to Order No. and specify Order code(s).		
Stainless Steel tag [69 x 38 mm (2.7 x 1.5")], Measuring-point number / identification (max 16 characters), specify in plain text.		**Y15**
Acceptance test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and ISO 9000		**C11**
Instruction manual		Order No.
MCS Belt Scale, Multi-language	C)	**7ML1998-5HN63**
Belt Scale Application Guidelines		
• English	C)	**7ML1998-5GA01**
• French	C)	**7ML1998-5GA11**
• German	C)	**7ML1998-5GA31**
• Spanish	C)	**7ML1998-5GA21**
Hazardous location certificates	C)	**7ML1998-5KH81**
Note: The instruction manual should be ordered as a separate item on the order.		
This device is shipped with the Siemens Milltronics manual CD containing the complete instruction manual library.		
Spare parts		
Stainless steel load cell [17-4 PH (1.4568) stainless steel construction with 304 (1.4301) stainless steel cover]		
25 lb (11.3 kg)	C)	**7MH7725-1DR**
50 lb (22.7 kg)	C)	**7MH7725-1DH**
100 lb (45.4 kg)	C)	**7MH7725-1DJ**
250 lb (113.4 kg)	C)	**7MH7725-1DK**
500 lb (226.8 kg)	C)	**7MH7725-1DS**
25 lb (11.3 kg), CSA/FM/ATEX/IECEx	C)	**7MH7725-1DQ**
50 lb (22.7 kg), CSA/FM/ATEX/IECEx	C)	**7MH7725-1DL**
100 lb (45.4 kg), CSA/FM/ATEX/IECEx	C)	**7MH7725-1DM**
250 lb (113.4 kg), CSA/FM/ATEX/IECEx	C)	**7MH7725-1DN**
500 lb (226.8 kg), CSA/FM/ATEX/IECEx	C)	**7MH7725-1DP**

Selection and Ordering data		Order No.
Milltronics MCS Belt Scale A compact, rugged, modular, heavy-duty belt scale for use in mining and aggregate screening plants	C)	**7MH7125-** ■■■■ **0**
Calibration Weights		
Flat bar/MWL retrofit kit	C)	**7MH7723-1HA**
Calibration (Test) Arm Assembly, with one 18 lb calibration weight	C)	**7MH7723-1FR**
Calibration (Test) Arm Assembly, with two 18 lb calibration weight	C)	**7MH7723-1FS**
MBS/MCS Calibration Arm with idler clip (holds up to 2 of 8.2 kg weights)	C)	**7MH7726-1AD**
Calibration weight, 18 lb (8.2 kg)	C)	**7MH7724-1AA**
Calibration weight, 6 lb (2.7 kg)	C)	**7MH7724-1AB**
Milltronics flat bar calibration weights, see page 4/52		
Note: Calibration accessories should be ordered as a separate item on the order.		

C) Subject to export regulations AL: N, ECCN: EAR99.

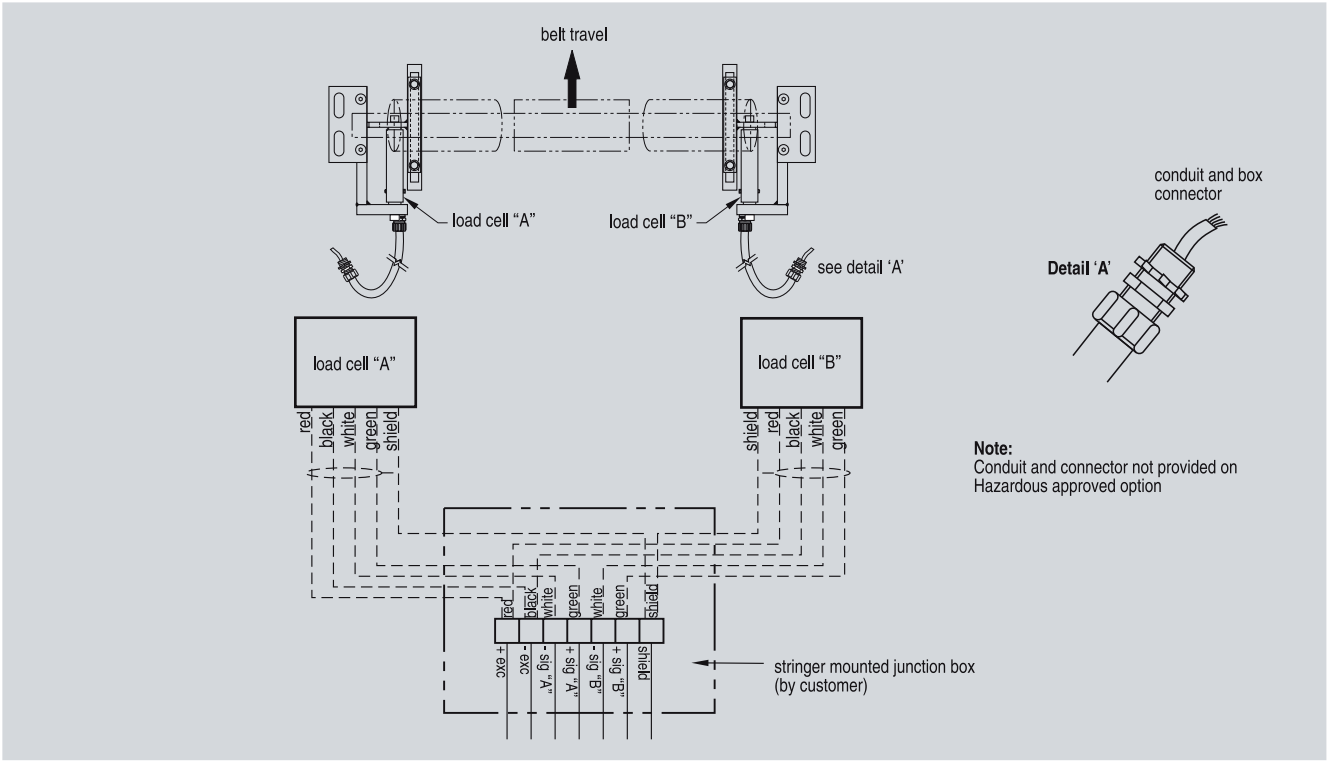
Note: Calibration weight and calibration weight bracket are not included in MCS belt scale.

Dimensional drawings



MCS dimensions

Schematics



MCS connections

Milltronics MSI and MMI

Overview

Milltronics MSI is a heavy-duty, high accuracy full-frame single idler belt scale used for process and load-out control.

Idler not included with belt scale.

Milltronics MMI is a heavy-duty, high accuracy multiple idler belt scale used for critical process and load-out control.

Idler not included with belt scale.

Benefits

Milltronics MSI Belt Scale

- Outstanding accuracy and repeatability
- Unique parallelogram style load cell design
- Fast reaction to product loading; capable of monitoring fast-moving belts
- Rugged construction
- SABS approval (South Africa), OIML, MID, and Measurement Canada

Milltronics MMI Belt Scale

- Exceptional accuracy and repeatability
- Unique parallelogram style load cell design
- Suitable for uneven or light product loading
- Capable of monitoring fast moving belts
- Low cost of ownership
- NTEP, OIML, MID and Measurement Canada approved

Application

Milltronics MSI Belt Scale

Milltronics MSI belt scale provides continuous in-line weighing on a variety of products in primary and secondary industries. It is proven in a wide range of tough applications from extraction (in mines, quarries and pits), to power generation, iron and steel, food processing and chemicals. The MSI is suitable for monitoring such diverse products as sand, flour, coal, or sugar.

The MSI's patented use of parallelogram-style load cells results in fast reaction to vertical forces, ensuring instant response to product loading. This enables it to provide outstanding accuracy and repeatability even with uneven loading and fast belt speeds.

Operating with Milltronics BW100, BW500, or SIWAREX FTC microprocessor-based integrators, the MSI provides indication of flow rate, totalized weight, belt load, and belt speed of bulk solid materials. A speed sensor monitors conveyor belt speed for input to the integrator.

The MSI is installed in a simple drop-in operation and may be secured with just four bolts. An existing idler is then attached to the MSI dynamic beam. With no moving parts, maintenance is kept to a minimum, with just periodic calibration checks required.

Milltronics MMI Belt Scale

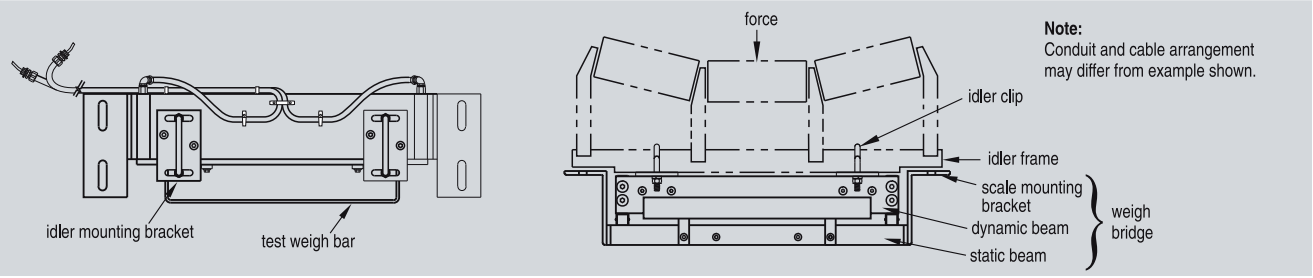
Milltronics MMI belt scale consists of two or more MSI single idler belt scales installed in series. It provides high accuracy continuous in-line weighing on a variety of products in primary and secondary industries. The MMI system is proven in a wide range of tough applications from extraction to power generation, iron and steel, food processing and chemicals. The MMI is suitable for monitoring such diverse products as fertilizer, sand, grain, flour, coal, or sugar.

The MMI's patented use of parallelogram-style load cells results in fast reaction to vertical forces, ensuring instant response to product loading. This enables it to provide outstanding accuracy and repeatability even with uneven or light loading, short idler spacing and fast belt speeds. Operating with Milltronics BW500 or SIWAREX FTC integrator (for custody transfer applications), the MMI provides indication of flow rate, total weight, belt load and belt speed of bulk solids materials on a belt conveyor. A speed sensor monitors conveyor belt speed for input to the integrator.

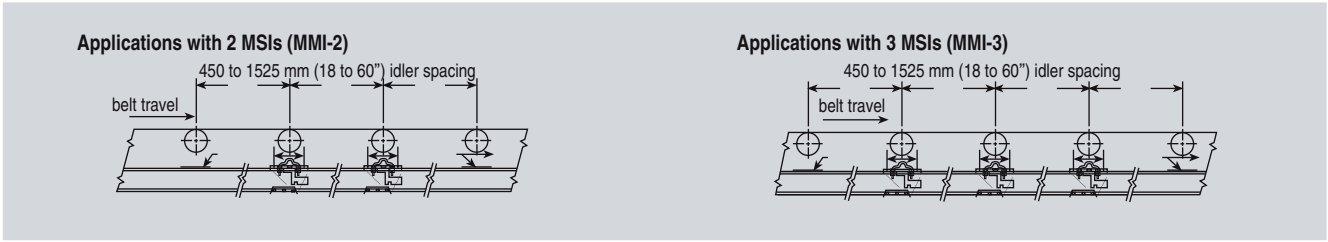
The MMI is installed in a simple drop-in operation and may be secured with just eight bolts and existing idler sets, secured to the dynamic beam. With no moving parts, maintenance is kept to a minimum, with just periodic calibration checks required.

Design

Mounting



MSI/MMI mounting



Mounting (two or more MSI units)

Technical specifications

Mode of operation	
Measuring principle	Strain gauge load cells measuring load on belt conveyor idler(s)
Typical application	
• MSI	Control in fractionated stone blending tunnels
• MMI	Custody transfer
Measurement accuracy	
Accuracy[1)]	
• MSI	± 0.5 % or better of totalization over 20 to 100 % operating range
• MMI-2 (2 idler)	± 0.25 % or better of totalization over 20 to 100 % operating range
• MMI-3 (3 idler)	± 0.125 % or better of totalization over 25 to 100 % operating range
Note: Available with system specification option D only.	
Medium conditions	
Material temperature	-40 to +75 °C (-40 to +167 °F)
Belt design	
Belt width	• 18 to 96" in CEMA sizes • Equivalent to 500 to 2000 mm in metric size • Refer to dimensions section
Belt speed	Up to 5 m/s (1000 fpm)[2)]
Capacity	Up to 12000 t/h (13200 stph) at maximum belt speed. Please contact a Siemens representative for higher rates.
Conveyor incline	• ± 20° from horizontal, fixed incline • Up to ± 30° with reduced accuracy[3)]

Idlers	
Idler profile	• Flat to 35° • Up to 45° with reduced accuracy[3)]
Idler diameter	50 to 180 mm (2 to 7")
Idler spacing	0.5 to 1.5 m (1.5 to 5.0 ft)
Load cell	
Construction	17-4 PH (1.4568) stainless steel construction with 304 (1.4301) stainless steel cover.
Degree of protection	IP67
Excitation	10 V DC nominal, 15 V DC maximum
Output	2 ± 0.002 mV/V excitation (nominal) at rated load cell capacity
Non-linearity and hysteresis	0.02 % of rated output
Non-repeatability	0.01 % of rated output
Capacity	
• maximum ranges	50, 100, 250, 500, 750, 1000, 1250, 1500 lbs
Overload	150 % of rated capacity, ultimate 300 % of rated capacity
Temperature	• -40 to +75 °C (-40 to +167 °F) operating range • -18 to +65 °C (0 to +150 °F) compensated
Weight	See dimensions section
Interconnection wiring (to integrator, per MSI)	< 150 m (500 ft) 18 AWG (0.75 mm²) 6 conductor shielded cable > 150 m (500 ft) to 300m (1000 ft) 18 to 22 AWG (0.75 to 0.34 mm²), 8 conductor shielded cable

Milltronics MSI and MMI

Approvals	• CSA/FM Class II, Div. 1, Groups E,F,G and Class III • ATEX II 2D Ex tD A21 IP65 T90 °C • IECEx Ex tD A21 IP65 T90 °C • CE, C-TICK, GOST, CMC
Metrology Approvals	Measurement CanadaCanada, MID, OIML, SABS[4], NTEP[5]

1) Accuracy subject to: On factory approved installations the belt scale system's totalized weight will be within the specified accuracy when compared to a known weighed material test sample. The test rate must be within the specified range of the design capacity and held constant for the duration of the test. The minimum material test sample must be equivalent to a sample obtained at the test flow rate for three revolutions of the belt or at least ten minutes running time, whichever is greater.

2) Contact Siemens application engineering for consideration of higher belt speeds.

3) Review by Siemens application engineer required.

4) MSI only.

5) MMI only.

Selection and Ordering data		Order No.
Milltronics MSI Belt Scale A heavy-duty, high-accuracy single idler belt scale for process and load-out control. For Milltronics MMI belt scale system, two or more MSI belt scales are required. Calibration weights are required and ordered as separate items.	C)	**7MH7122-** ■■■■■ - ■■
Scale construction		
Standard duty		**1**
Hazardous Duty CSA/FM Class II, Div. 1, Groups E,F,G and Class III, ATEX II 2D, IECEx, CE, C-TICK		**2**
Belt width and 'A' dimension		
18", 'A' = 27" (686 mm)		**A A**
19", 'A' = 28" (711 mm)		**A B**
20", 'A' = 29" (737 mm)		**A C**
21", 'A' = 30" (762 mm)		**A D**
22", 'A' = 31" (787 mm)		**A E**
23", 'A' = 32" (813 mm)		**A F**
24", 'A' = 33" (838 mm)		**A G**
25", 'A' = 34" (864 mm)		**A H**
26", 'A' = 35" (889 mm)		**A J**
27", 'A' = 36" (914 mm)		**A K**
28", 'A' = 37" (940 mm)		**A L**
29", 'A' = 38" (965 mm)		**A M**
30", 'A' = 39" (991 mm)		**A N**
31", 'A' = 40" (1016 mm)		**A P**
32", 'A' = 41" (1041 mm)		**A Q**
33", 'A' = 42" (1067 mm)		**A R**
34", 'A' = 43" (1092 mm)		**A S**
35", 'A' = 44" (1118 mm)		**A T**
36", 'A' = 45" (1143 mm)		**A U**
37", 'A' = 46" (1168 mm)		**A V**
38", 'A' = 47" (1194 mm)		**A W**
39", 'A' = 48" (1219 mm)		**B A**
40", 'A' = 49" (1245 mm)		**B B**
41", 'A' = 50" (1270 mm)		**B C**
42", 'A' = 51" (1295 mm)		**B D**
43", 'A' = 52" (1321 mm)		**B E**
44", 'A' = 53" (1346 mm)		**B F**
45", 'A' = 54" (1372 mm)		**B G**
46", 'A' = 55" (1397 mm)		**B H**
47", 'A' = 56" (1422 mm)		**B J**
48", 'A' = 57" (1448 mm)		**B K**
49", 'A' = 58" (1473 mm)		**B L**
50", 'A' = 59" (1499 mm)		**B M**
51", 'A' = 60" (1524 mm)		**B N**
52", 'A' = 61" (1549 mm)		**B P**
53", 'A' = 62" (1575 mm)		**B Q**
54", 'A' = 63" (1600 mm)		**B R**
55", 'A' = 64" (1626 mm)		**B S**
56", 'A' = 65" (1651 mm)		**B T**
57", 'A' = 66" (1676 mm)		**B U**
58", 'A' = 67" (1702 mm)		**B V**
59", 'A' = 68" (1727 mm)		**B W**
60", 'A' = 69" (1753 mm)		**C A**
61", 'A' = 70" (1778 mm)		**C B**
62", 'A' = 71" (1803 mm)		**C C**
63", 'A' = 72" (1829 mm)		**C D**
64", 'A' = 73" (1854 mm)		**C E**
65", 'A' = 74" (1880 mm)		**C F**
66", 'A' = 75" (1905 mm)		**C G**
67", 'A' = 76" (1930 mm)		**C H**
68", 'A' = 77" (1956 mm)		**C J**

Selection and Ordering data		Order No.
Milltronics MSI Belt Scale A heavy-duty, high-accuracy single idler belt scale for process and load-out control. For Milltronics MMI belt scale system, two or more MSI belt scales are required. Calibration weights are required and ordered as separate items.	C)	**7MH7122-** ■■■■■ - ■■
69", 'A' = 78" (1981 mm)		**C K**
70", 'A' = 79" (2007 mm)		**C L**
71", 'A' = 80" (2032 mm)		**C M**
72", 'A' = 81" (2057 mm)		**C N**
73", 'A' = 82" (2083 mm)		**C P**
74", 'A' = 83" (2108 mm)		**C Q**
75", 'A' = 84" (2134 mm)		**C R**
76", 'A' = 85" (2159 mm)		**C S**
77", 'A' = 86" (2184 mm)		**C T**
78", 'A' = 87" (2210 mm)		**C U**
79", 'A' = 88" (2235 mm)		**C V**
80", 'A' = 89" (2261 mm)		**C W**
81", 'A' = 90" (2286 mm)		**D A**
82", 'A' = 91" (2311 mm)		**D B**
83", 'A' = 92" (2337 mm)		**D C**
84", 'A' = 93" (2362 mm)		**D D**
85", 'A' = 94" (2388 mm)		**D E**
86", 'A' = 95" (2413 mm)		**D F**
87", 'A' = 96" (2438 mm)		**D G**
88", 'A' = 97" (2464 mm)		**D H**
89", 'A' = 98" (2489 mm)		**D J**
90", 'A' = 99" (2515 mm)		**D K**
91", 'A' = 100" (2540 mm)		**D L**
92", 'A' = 101" (2565 mm)		**D M**
93", 'A' = 102" (2591 mm)		**D N**
94", 'A' = 103" (2616 mm)		**D P**
95", 'A' = 104" (2642 mm)		**D Q**
96", 'A' = 105" (2667 mm)		**D R**
Load cell capacity		
Not specified		**0**
50 lb (22.7 kg)		**1**
100 lb (45.4 kg)		**2**
250 lb (113.4 kg)		**3**
500 lb (226.8 kg)		**4**
750 lb (340.2 kg)		**5**
1000 lb (453.6 kg)		**6**
1250 lb (567 kg)[1]		**7**
1500 lb (680.4 kg)[1]		**8**

[1] Available with Fabrication options 11 and 41 only, and with System specification option A only.

C) Subject to export regulations AL: N, ECCN: EAR99.

Milltronics MSI and MMI

Selection and Ordering data		Order No.
Milltronics MSI Belt Scale A heavy-duty, high-accuracy single idler belt scale for process and load-out control. For Milltronics MMI belt scale system, two or more MSI belt scales are required. Calibration weights are required and ordered as separate items.	C)	**7MH7122-** ■■■■■ - ■■
Fabrication		
Polyester painted mild steel		**1 1**
Electro-galvanized mild steel:		
18" to 29" (457.2 to 736.6 mm)		**1 2**
30" to 41" (762 to 1041.4 mm)		**1 3**
42" to 53" (1066.8 to 1346.2 mm)		**1 4**
54" to 65" (1371.6 to 1651 mm)		**1 5**
66" to 77" (1676.4 to 1955.8 mm)		**1 6**
78" to 89" (1981.2 to 2260.6 mm)		**1 7**
90" to 96" (2786 to 2438.4 mm)		**1 8**
Stainless steel 304 (1.4301), for belt width scales:		
18" to 29" (457.2 to 736.6 mm)		**2 1**
30" to 41" (762 to 1041.4 mm)		**2 2**
42" to 53" (1066.8 to 1346.2 mm)		**2 3**
54" to 65" (1371.6 to 1651 mm)		**2 4**
66" to 77" (1676.4 to 1955.8 mm)		**2 5**
78" to 89" (1981.2 to 2260.6 mm)		**2 6**
90" to 96" (2786 to 2438.4 mm)		**2 7**
Stainless steel 316 (1.4401), for belt width scales:		
18" to 29" (457.2 to 736.6 mm)		**3 1**
30" to 41" (762 to 1041.4 mm)		**3 2**
42" to 53" (1066.8 to 1346.2 mm)		**3 3**
54" to 65" (1371.6 to 1651 mm)		**3 4**
66" to 77" (1676.4 to 1955.8 mm)		**3 5**
78" to 89" (1981.2 to 2260.6 mm)		**3 6**
90" to 96" (2786 to 2438.4 mm)		**3 7**
Polyester painted mild steel (compatible with MWL weight calibration system)		**4 1**
System specification		
Standard MSI and MMI		**A**
NTEP Certified MMI[1) 2) 3)]		**B**
OIML/MID Certified[3) 4)]		**C**
MSI for MMI-3 ±0.125% accuracy[4)]		**D**
Further designs Please add "**-Z**" to Order No. and specify Order code(s).		Order Code
Stainless Steel tag [69 x 38 mm (2.7 x 1.5")], Measuring-point number / identification (max 16 characters), specify in plain text.		**Y15**
Acceptance test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and ISO 9000		**C11**

Instruction manual		Order No.
MSI Manuals		
English	C)	**7ML1998-5CY02**
German	C)	**7ML1998-5CY32**
French	C)	**7ML1998-1CY11**
Spanish	C)	**7ML1998-1CY21**
MMI Manuals		
English	C)	**7ML1998-5DR03**
German	C)	**7ML1998-5DR33**
Belt Scale Application Guidelines		
• English	C)	**7ML1998-5GA01**
• French	C)	**7ML1998-5GA11**
• German	C)	**7ML1998-5GA31**
• Spanish	C)	**7ML1998-5GA21**
Hazardous location certificates	C)	**7ML1998-5KH81**

Note: The instruction manual and application guidelines manual should be ordered as separate items on the order.

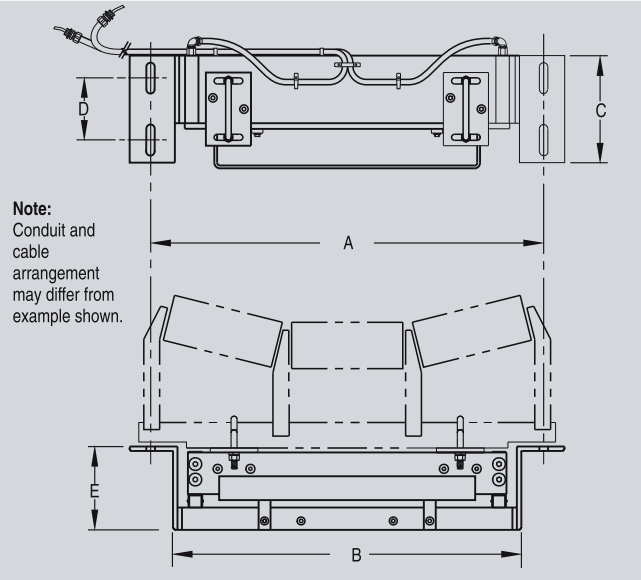
This device is shipped with the Siemens Milltronics manual CD containing the complete instruction manual library.

Selection and Ordering data		Order No.
Spare parts		
Flat bar/MWL retrofit kit	C)	**7MH7723-1FW**
Stainless steel load cell [17-4 PH (1.4568) stainless steel construction with 304 (1.4301) stainless steel cover]		
50 lb (22.7 kg)	C)	**7MH7725-1AC**
100 lb (45.4 kg)	C)	**7MH7725-1AD**
250 lb (113.4 kg)	C)	**7MH7725-1AE**
500 lb (226.8 kg)	C)	**7MH7725-1AF**
750 lb (340.2 kg)	C)	**7MH7725-1AG**
1000 lb (453.6 kg)	C)	**7MH7725-1AH**
1250 lb (567 kg)	C)	**7MH7725-1EA**
1500 lb (680.4 kg)	C)	**7MH7725-1EB**
100 lb (45.4 kg), NTEP, OIML/MID	C)	**7MH7725-1DB**
250 lb (113.4 kg), NTEP, OIML/MID	C)	**7MH7725-1DC**
500 lb (226.8 kg), NTEP, OIML/MID	C)	**7MH7725-1DD**
750 lb (340.2 kg), NTEP, OIML/MID	C)	**7MH7725-1DE**
1000 lb (453.6 kg), NTEP, OIML/MID	C)	**7MH7725-1DF**
50 lb (22.7 kg), CSA/FM/ATEX/IECEx	C)	**7MH7725-1DT**
100 lb (45.4 kg), CSA/FM/ATEX/IECEx	C)	**7MH7725-1DU**
250 lb (113.4 kg), CSA/FM/ATEX/IECEx	C)	**7MH7725-1DV**
500 lb (226.8 kg), CSA/FM/ATEX/IECEx	C)	**7MH7725-1DW**
750 lb (340.2 kg), CSA/FM/ATEX/IECEx	C)	**7MH7725-1DX**
1000 lb (453.6 kg), CSA/FM/ATEX/IECEx	C)	**7MH7725-1DY**
1250 lb (567 kg), CSA/FM/ATEX/IECEx	C)	**7MH7725-1EE**
1500 lb (680.4 kg), CSA/FM/ATEX/IECEx	C)	**7MH7725-1EF**
Idler Clip		
5" (127 mm) for 27" to 62" (686 mm to 1575 mm) 'A' dimensions		**7MH7723-1BT**
7" (178 mm) for 63" to 74" (1600 mm to 1880 mm) 'A' dimensions		**7MH7723-1DF**
Calibration Weights		
6.0 lb / 2.7 kg		**7MH7724-1AB**
18 lb / 8.2 kg		**7MH7724-1AA**
Milltronics flat bar calibration weights, see page 4/52		

1) Two MSI are required to make the NTEP approved MMI
2) Approval available with load cell options 2 to 6 only and applicable BW500 "legal for trade" version
3) Complete specification data sheet on page 4/4 and submit with order
4) Includes metrological approved loadcells

C) Subject to export regulations AL: N, ECCN: EAR99.

Dimensional drawings



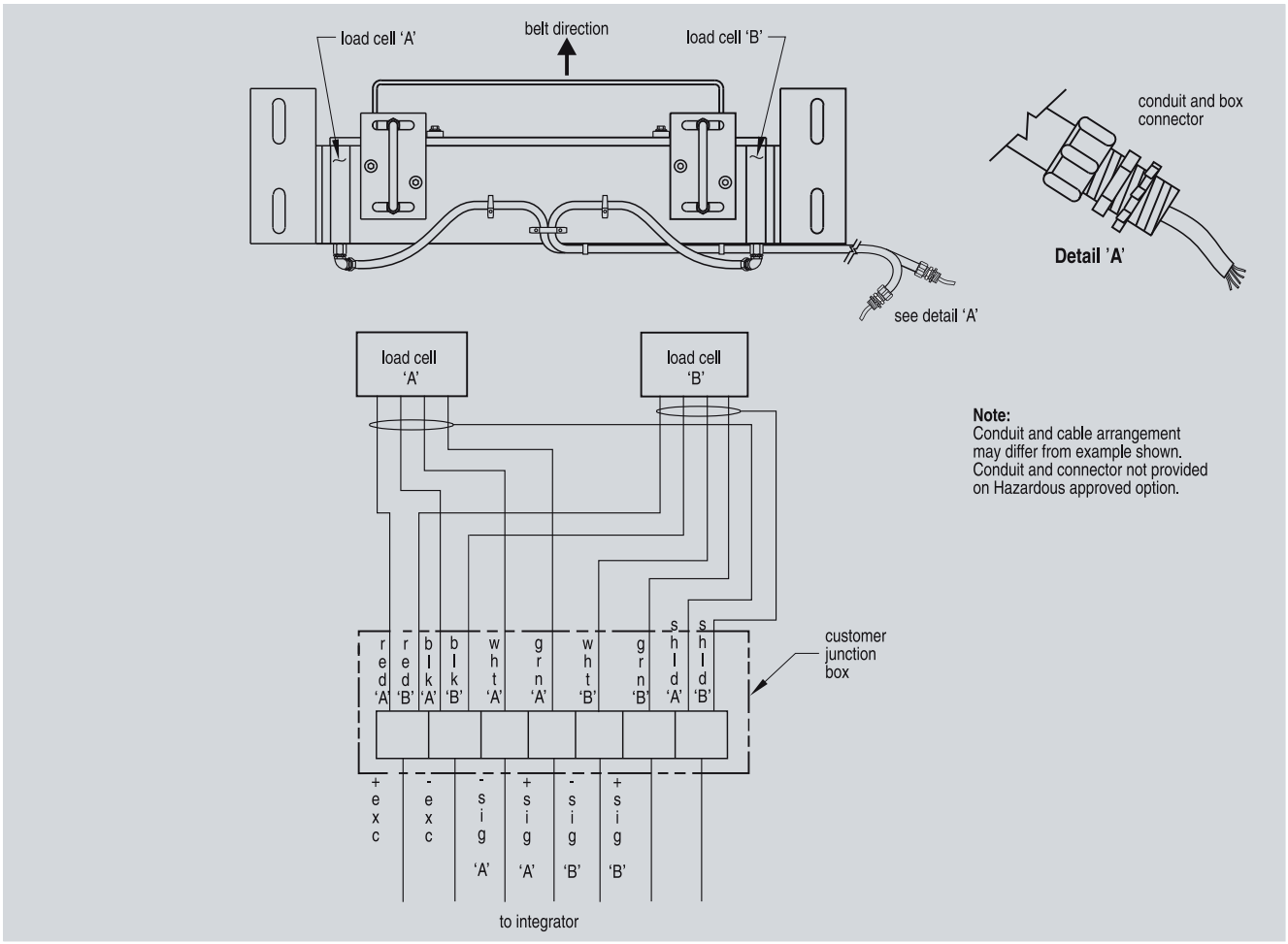
MSI dimensions

Conveyor belt width	Mounting scale width 'A'	Minimum drop-in width 'B'	'C'	'D'	'E'	Weight (approx.)
18" (457 mm)	27" (686 mm)	23.25" (591 mm)	9.5" (241 mm)	5.5" (140 mm)	7" (178 mm)	82 lbs (37 kg)
20" (508 mm)	29" (737 mm)	25.25" (641 mm)	9.5" (241 mm)	5.5" (140 mm)	7" (178 mm)	85 lbs (39 kg)
24" (610 mm)	33" (838 mm)	29.25" (743 mm)	9.5" (241 mm)	5.5" (140 mm)	7" (178 mm)	90 lbs (41 kg)
30" (762 mm)	39" (991 mm)	35.25" (895 mm)	9.5" (241 mm)	5.5" (140 mm)	7" (178 mm)	99 lbs (45 kg)
36" (914 mm)	45" (1143 mm)	41.25" (1048 mm)	9.5" (241 mm)	5.5" (140 mm)	7" (178 mm)	107 lbs (49 kg)
42" (1067 mm)	51" (1295 mm)	47.25" (1200 mm)	9.5" (241 mm)	5.5" (140 mm)	7" (178 mm)	116 lbs (53 kg)
48" (1219 mm)	57" (1448 mm)	53.25" (1353 mm)	9.5" (241 mm)	5.5" (140 mm)	7" (178 mm)	125 lbs (57 kg)
54" (1372 mm)	63" (1600 mm)	59.25" (1505 mm)	12" (305 mm)	8" (203 mm)	7" (178 mm)	175 lbs (79 kg)
60" (1524 mm)	69" (1753 mm)	65.25" (1657 mm)	12" (305 mm)	8" (203 mm)	7" (178 mm)	193 lbs (88 kg)
66" (1676 mm)	75" (1905 mm)	71.25" (1810 mm)	12" (305 mm)	8" (203 mm)	8" (203 mm)	229 lbs (104 kg)
72" (1829 mm)	81" (2057 mm)	77.25" (1962 mm)	12" (305 mm)	8" (203 mm)	8" (203 mm)	247 lbs (112 kg)

Other widths available - check configuration information. Sizes are from 18" (457 mm) to 96" (2438 mm) in 1" (25.4 mm) increments.
All sizes are nominal.

Note: Dimension B must be approx. 3/8" or 10 mm less than Y dimension of the conveyor (see Application Questionnaire on page 4/4).

Schematics



MSI/MMI connections

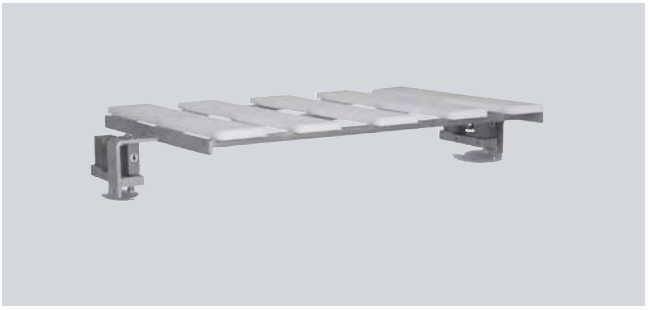
More information

NTEP/Measurement Canada/OIML & MID Specification Data

Please complete and submit the relevant details listed below when ordering NTEP, Measurement Canada, or OIML & MID approval options	**Value**
NTEP	
Maximum rated capacity (TPH)	
Minimum rated capacity (TPH)	
Belt speed (FPM)	
Scale division (tons)	
Maximum loading (lbs/ft)	
Measurement Canada	
Rate	
Speed (m/s, FPM)	
Test load (kg/m, lb/ft)	
OIML & MID	
Accuracy class (0.5 or 1)	
Totalization scale interval (tonnes)	
Belt speed (m/s)	
Maximum flow rate (MTPH)	
Minimum flow rate (MTPH)	
Minimum totalized load (tonnes)	
Product to be weighed	
Maximum capacity (tonnes)	
Weigh length (m)	
Control value (kg)	
Speed range of displacement (m/s)	
Operating frequency (cycles/hour)	
Ratio between minimum net load and maximum capacity	
Zero testing should have a duration of at least (____) revolutions	

Milltronics WD600

Overview



Milltronics WD600 is a light- to medium-duty slider bed belt scale used for process and load-out control in manufacturing, including the food, pharmaceutical and tobacco industries.

Benefits

- Simple installation
- Long weigh span for more retention time on load cells

Application

WD600 works with an existing flat belt conveyor and the selected Siemens integrator. As material is moving along the conveyor belt and travels over the belt scale, it exerts a force proportional to the material load through the suspended weighbridge to the load cells.

WD600 reacts only to the vertical component of the applied force. The resulting movement in each load cell is sensed by its strain gauges. When the strain gauges are excited by voltage from the electronic integrator, they produce an electrical signal proportional to weight, which is then applied to the integrator.

The vertical movement of the load cells is limited by the positive overload stop incorporated into the design of the load cell mount.

Technical specifications

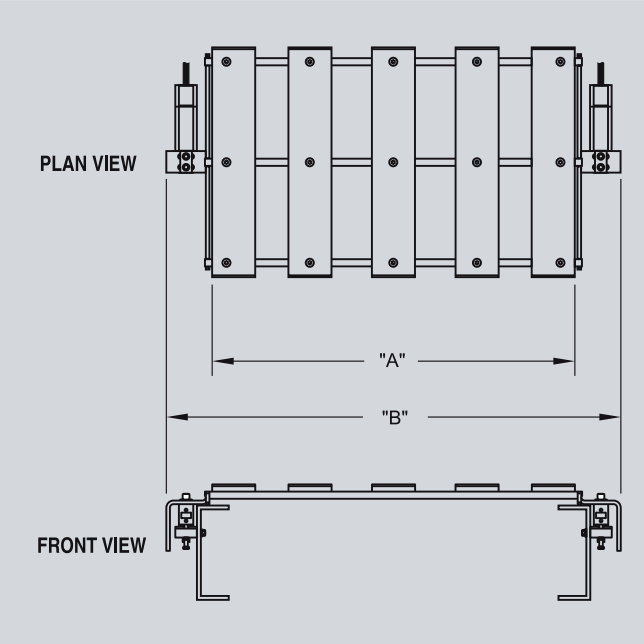
Accuracy[1]	• ± 0.5 to 1 % totalization over 25 ... 100 % operating range, application dependent
Belt width	• 12, 18, 24, 30, 36, 42, 48" (300, 450, 600, 750, 900, 1000, 1200 mm)
Belt speed	• 2.0 m/s (400 fpm) maximum[2]
Capacity	Up to 50 t/h
Conveyor incline	• ± 20° from horizontal, fixed incline • Up to ± 30° with reduced accuracy[3]
Conveyor idler/slider profile	• horizontal
Loading	• Minimum 1.0 kg/m (0.6 lbs/ft) • Maximum 60 kg/m (40 lbs/ft)
Load cell	
Construction	17-4 PH (1.4568) stainless steel or Nickel plated alloy steel
Degree of protection	• stainless steel: IP68 • nickel plated alloy steel: IP66
Excitation	10 V DC nominal, 15 V DC maximum
Output	2 mV/V
Non-linearity	0.02 % of rated output
Non-repeatability	0.01 % of rated output
Capacity	stainless steel range: 6, 12, 30 kg nickel-plated range: 10, 15, 20, 30 kg
Overload	150 % of rated capacity
Temperature	• -40 to +65 °C (-40 to +150 °F) operating range • -10 to +40 °C (15 to +105 °F) compensated
Scale construction	• stainless steel construction • UMHW - PE sliders
Hazardous locations	Consult the factory
Approvals	CE, meets FDA/USDA requirements for food processing, C-TICK

[1] Accuracy subject to: On factory approved installations the belt scale system's totalized weight will be within the specified accuracy when compared to a known weighed material test sample. The test rate must be within the specified range of the design capacity and held constant for the duration of the test. The minimum material test sample must be equivalent to a sample obtained at the test flow rate for three revolutions of the belt or at least ten minutes running time, whichever is greater.

[2] Contact Siemens application engineering for consideration of higher belt speeds.

[3] Review by Siemens application engineer required.

Dimensional drawings



WD600 dimensions

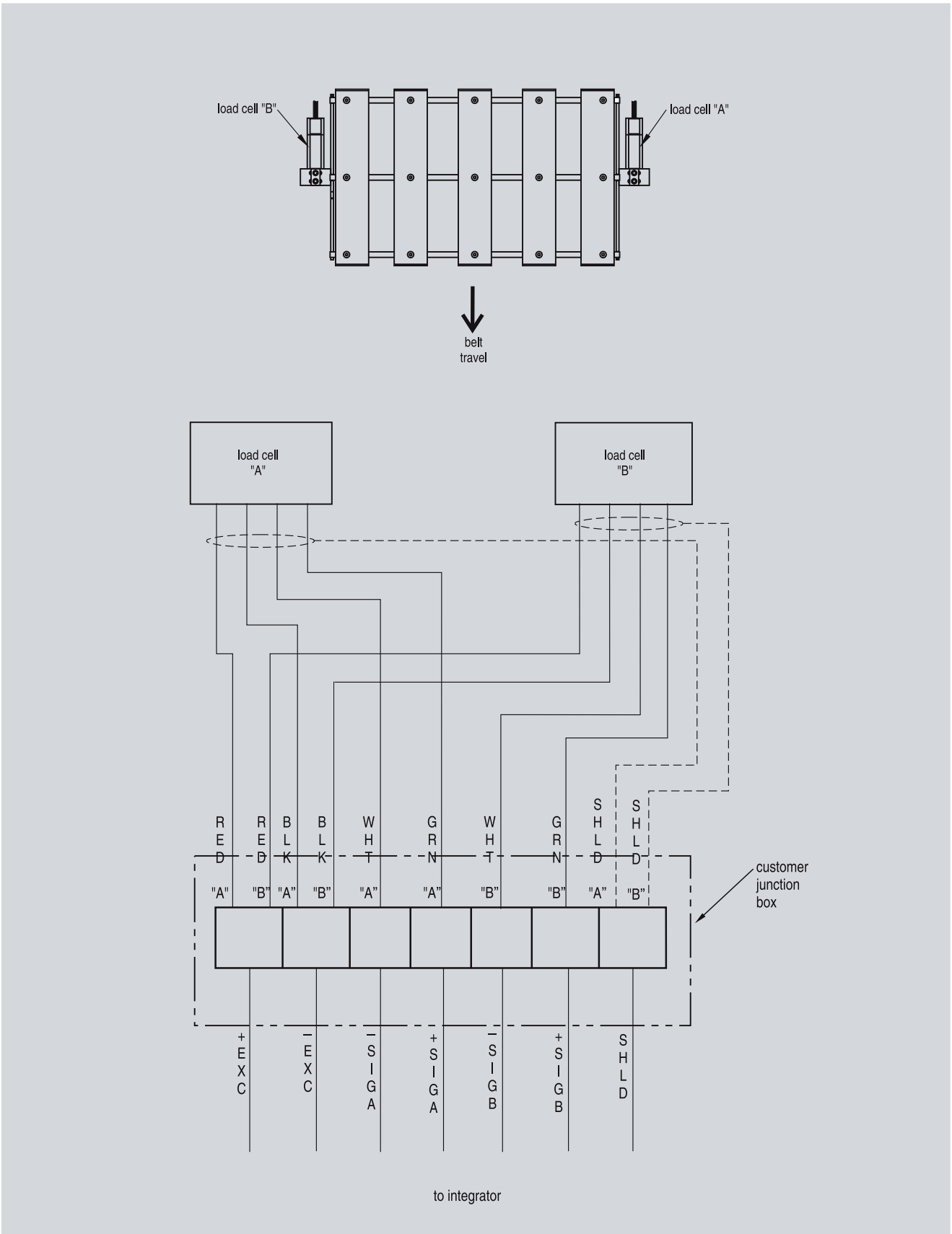
Belt Width	A	B
12" (300 mm)	13.25" (330 mm)	20.25" (510 mm)
18" (450 mm)	19.25" (485 mm)	26.25" (665 mm)
24" (600 mm)	25.25" (640 mm)	32.25" (815 mm)
30" (750 mm)	31.25" (790 mm)	38.25" (970 mm)
36" (900 mm)	37.25" (945 mm)	44.25" (1120 mm)
42" (1000 mm)	43.25" (1095 mm)	50.25" (1275 mm)
48" (1200 mm)	49.25" (1250 mm)	56.25" (1425 mm)

Selection and Ordering data		Order No.
Milltronics WD600 A low- to medium- capacity scale for light to medium belt loading. 304 stainless steel construction with UHMW poly-ethelene sliders. Load cells are available in nickle plated, or stainless steel. Two calibration weights are required and are ordered as separate line item. Refer to Calibration weights.	C)	**7MH7185-** **A0**
Belt width		
12" (300 mm)		**1**
18" (450 mm)		**2**
24" (600 mm)		**3**
30" (750 mm)		**4**
36" (900 mm)		**5**
42" (1000 mm)		**6**
48" (1200 mm)		**7**
Load cell capacity		
Nickel plated		
10 kg (22 lb)		**D**
15 kg (33.1 lb)		**E**
20 kg (44 lb)		**F**
30 kg (66.2 lb)		**G**
Stainless steel		
6 kg (13.2 lb)		**H**
12 kg (26.4 lb)		**J**
30 kg (66.2 lb)		**K**
Further designs Please add "**-Z**" to Order No. and specify Order code(s).		Order Code
Stainless Steel tag [69 x 38 mm (2.7 x 1.5")], Measuring-point number / identification (max 16 characters), specify in plain text.		**Y15**
Acceptance test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and ISO 9000		**C11**
Instruction manual		Order No.
English	C)	**7ML1998-5KM01**
German	C)	**7ML1998-5KM31**
Belt Scale Application Guidelines		
• English	C)	**7ML1998-5GA01**
• French	C)	**7ML1998-5GA11**
• German	C)	**7ML1998-5GA31**
• Spanish	C)	**7ML1998-5GA21**
Note: The instruction manual should be ordered as a separate line on the order.		
This device is shipped with the Siemens Milltronics manual CD containing the complete instruction manual library.		

Selection and Ordering data		Order No.
Milltronics WD600 A low- to medium- capacity scale for light to medium belt loading. 304 stainless steel construction with UHMW poly-ethelene sliders. Load cells are available in nickle plated, or stainless steel. Two calibration weights are required and are ordered as separate line item. Refer to Calibration weights.	C)	**7MH7185-** **A0**
Spare parts		
Load cells		
Stainless steel		
6 kg (13.2 lb)		**7MH7725-1EG**
12 kg (26.4 lb)		**7MH7725-1EH**
30 kg (66.2 lb)		**7MH7725-1EJ**
Nickel plated		
10 kg (22 lb)		**7MH7725-1EK**
15 kg (33.1 lb)		**7MH7725-1EL**
20 kg (44 lb)		**7MH7725-1EM**
30 kg (66.2 lb)		**7MH7725-1EN**
Calibration Hanger Weights		
200 g (0.4 lb)		**7MH77241AF**
500 g (1.1 lb)		**7MH77241AG**
1000 g (2.2 lb)		**7MH77241AH**
2000 g (4.4 lb)		**PBD-20568-10**
3500 g (7.7 lb)		**PBD-20568-80**
5000 g (11 lb)		**PBD-20568-20**
7500 g (16.5 lb)		**PBD-20568-30**
8500 g (18.7 lb)		**PBD-20568-40**
10000 g (22 lb)		**PBD-20568-50**
12000 g (26.5 lb)		**PBD-20568-60**
15000 g (33.1 lb)		**PBD-20568-70**

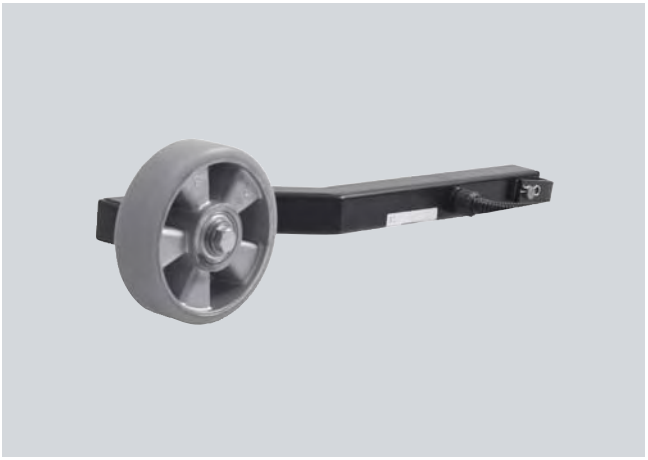
C) Subject to export regulations AL: N, ECCN: EAR99.

Schematics



WD600 connections

Overview



Milltronics TASS is a compact low-profile, wheel-driven return belt speed sensor, ideal for use on mobile crushers and in constricted spaces.

Benefits

- Rugged design
- Easy, low cost installation
- Compact, low-profile speed sensor
- IP65 rated

Application

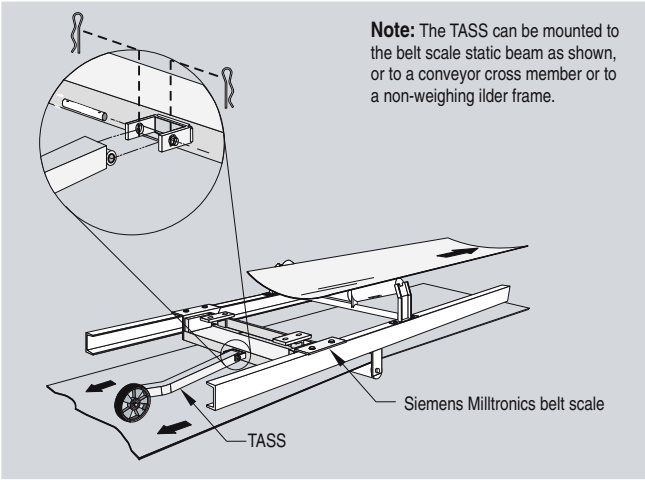
Milltronics TASS speed sensor operates in conjunction with a conveyor belt scale, providing signals to an integrator (Milltronics BW100, BW500, or SIWAREX FTC) which computes the rate of material being conveyed. The trailing arm speed sensor monitors conveyor belt speed, with the output signal transmitted by cable connection to the integrator.

Easily installed close to the belt scale assembly, the TASS provides a signal generated as the wheel rotates on the return belt. Pulses are generated by the internal proximity switch detecting the rotation of the five spoked wheel. The TASS is mounted to the static beam of the belt scale or to a structural cross member via a pivoting bracket assembly.

The TASS is a compact, low-profile, rugged speed sensor, most often used on mobile crusher applications where space is limited. The TASS output can be applied to any Milltronics belt scale integrator.

Design

Installation



TASS Installation

Technical specifications

Mode of operation	
Measuring principle	Proximity sensor provides pulse to integrator
Typical application	Mobile crusher
Input	• Bi-directional wheel rotation • 25 to 350 rpm
Output	• Inductive proximity sensor • Open collector, NPN, sinking output, max. 200 mA • Pulses: 5 per revolution • 9.947 pulses/m, 3.03 pulses/ft
Rated operating conditions	
Operating temperature	-25 to +70 °C (-13 to +158 °F)
Degree of protection	IP67
Design	
Trailing arm assembly	Painted mild steel
Wheel	160 mm (6.3") diameter cast aluminum with polyurethane tread
Power supply	10 to 35 V DC, 15 mA at 24 V DC maximum
Wiring	
Brown	+ Excitation (10 to 35 V DC)
Black	+ Signal
Blue	- Common
Interconnection wiring (to integrator)	• 2 m, 3 conductor shielded PVC cable, 3 x 0.25 mm^2 (23 AWG), protected with 1000 mm of flexible conduit • 300 m (1000 ft) maximum cable run
Approvals	CE, C-TICK

Milltronics TASS

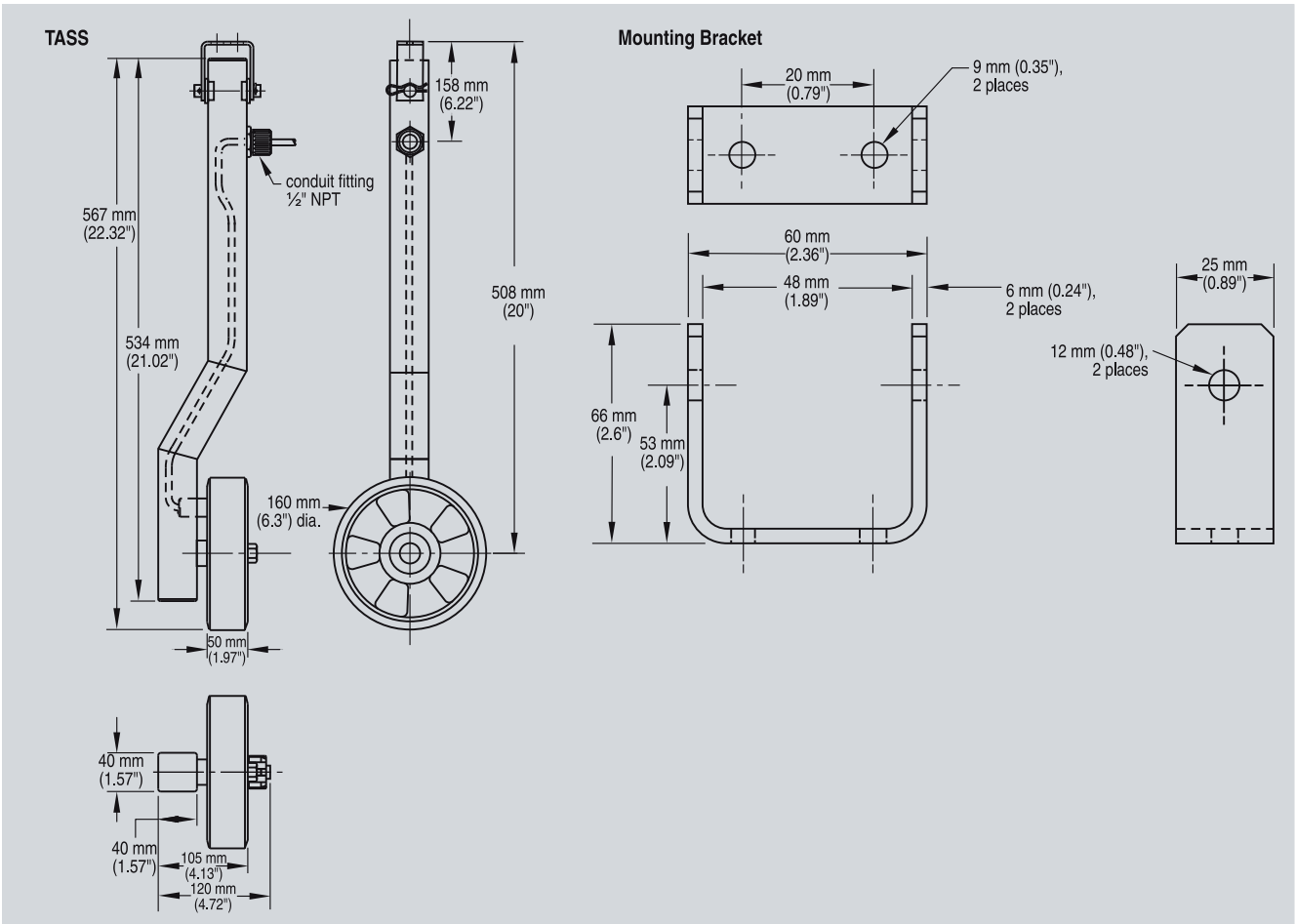
Selection and Ordering data		Order No.
Milltronics TASS Speed Sensor Compact, low-profile, wheel driven return belt speed sensor for belt conveyors; ideal for use on mobile crushers and in constricted spaces.	C)	**7MH7131-** **0**
Model		
5 pulses per revolution		**1**
Fabrication		
Standard, polyester painted mild steel		**A**
Stainless steel 304 (1.4301)		**B**
Note: Wheel is aluminum for all versions		
Mounting options		
Complete with standard mounting kit		**A**
Approvals		
CE, C-TICK		**1**

Selection and Ordering data		Order No.
Further designs Please add "**-Z**" to Order No. and specify Order code(s).		Order Code
Stainless Steel tag [69 x 38 mm (2.7 x 1.5")] Measuring-point number / identification (max 16 characters), specify in plain text.		**Y15**
Acceptance test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and ISO 9000		**C11**
Instruction manual		Order No.
TASS Instruction Manual, Multi-language Note: The instruction manual should be ordered as a separate item on the order.	C)	**7ML1998-5HL61**
This device is shipped with the Siemens Milltronics manual CD containing the complete instruction manual library.		
Spare parts		
TASS Wheel		**7MH7723-1AN**
TASS Proximity Switch		**7MH7723-1AP**
TASS Wheel, stainless steel sealed bearing		**7MH7723-1GW**

C) Subject to export regulations AL: N, ECCN: EAR99.

4

Dimensional drawings



TASS dimensions

Overview

Milltronics RBSS is a high resolution, wheel-driven return belt speed sensor.

Benefits

- Rugged design
- IP67 rated
- Easy, low cost installation
- Accurate belt speed detection

Application

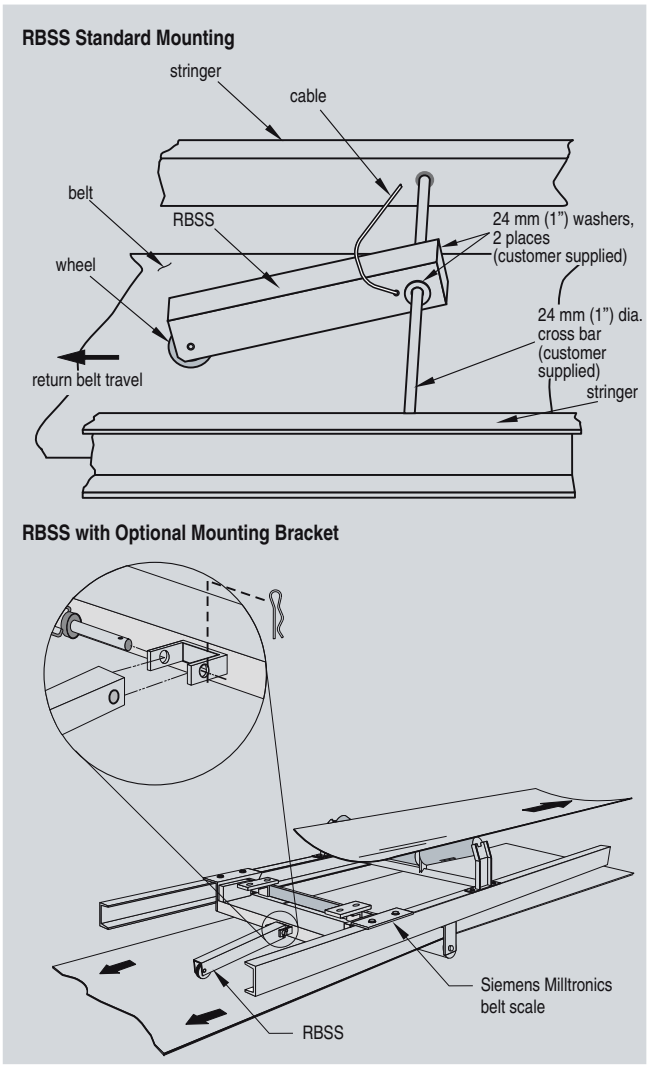
Milltronics RBSS monitors conveyor belt speed, with the output signal transmitted by cable connection to the integrator (Milltronics BW100, BW500, or SIWAREX FTC).

Easily installed close to the belt scale assembly, the RBSS provides a signal generated as the wheel on the sensor rotates on the return belt. To secure this cost-effective unit in place, position a cross bar between stringers - either just before or after a return belt idler, or use the optional mounting bracket. The weight of the RBSS ensures positive rotation of the wheel in the middle of the return belt, and pulses from the magnetic sensor are generated by the rotation of the 60 toothed speed sprocket driven by the wheel.

The RBSS output can be applied to any Milltronics belt scale integrator.

Design

Installation



RBSS installation

4

Milltronics RBSS

Technical specifications

Mode of operation	
Measuring principle	Proximity sensor provides pulse to integrator
Typical application	Aggregate belt conveyors
Input	Wheel rotation 2 to 450 rpm, bi-directional
Output	• 60 pulses per revolution, 2 to 450 Hz, 150.4 pulses/m (4.58 pulses/ft) • RBSS: open collector sinking output, max. 17 mA • RBSS IS: load current, 0 to 15 mA
Rated operating conditions	
Ambient temperature	• RBSS: -40 to +105 °C (-40 to +220 °F) • RBSS IS: -25 to +100 °C (-14 to +212 °F)
Degree of protection	IP67
Design	
Trailing arm	Painted mild steel
Sensor wheel	127 mm (5") diameter, polyurethane tread
Power supply	• RBSS: 4.5 ... 28 V DC, 16 mA • RBSS IS: 5 ... 25 V DC from IS Switch Isolator
Interconnection wiring (to integrator)	• RBSS: 3 m, 3 conductor 22 AWG shielded cable - 300 m (1000 ft) maximum cable run • RBSS IS: 2 m, 2 conductor 26 AWG PVC covered cable - 300 m (1000 ft.) maximum cable run to IS switch isolator - 300 m (1000 ft.) maximum cable run from IS switch isolator and integrator
Approvals	
RBSS	CE, C-TICK[1]
RBSS IS (with suitable IS switch isolator or Switch Amplifier)[2]	• ATEX II12 G EEx ia IIC T6 • CSA/FM Class I, Div. 1, Groups A, B, C, and D, Class II, Div. 1, Groups E, F, and G, Class III (system approval) • CE, C-TICK[2]
Proximity Switch Approval Ratings (Pepperl+Fuchs #NJ0.8-5GM-N)	• ATEX II 1 G EEx ia IIC T6 • CSA/FM Class I, Div. 1, Groups A, B, C, and D, Class II, Div. 1, Groups E, F, and G, Class III (system approval)
Optional Switch Isolator (required for RBSS IS)[3]	
• Pepperl+Fuchs #KFA5-SOT2-Ex2 or #KFA6-SOT2-Ex2	• ATEX II (1) G [EEX ia] IIC • CSA/FM: Class 1, Div. 1, Groups A, B, C, and D. Class II, Div. 1, Groups E, F, and G, Class III

[1] EMC performance available upon request.

[2] Approvals for RBSS IS are based on internally mounted NAMUR slotted proximity switch (Pepperl+Fuchs #NJ0.8-5GM-N) and use of suitable IS Switch Isolator (Amplifier). Please see RBSS instruction manual for more information.

[3] Approval ratings for the Proximity Switch and IS Switch Isolator are the property of Pepperl+Fuchs. Copies of these Approval Certificates may be obtained at http://www.siemens.com/processautomation.

Selection and Ordering data

		Order No.
Milltronics RBSS Speed Sensor A high resolution wheel-driven return belt speed sensor	C)	**7MH7134-**
Model		
60 pulses per revolution		**2**
Fabrication		
Standard, polyester painted mild steel		**A**
Mounting options		
With mounting kit		**B**
Approvals		
CE, C-TICK, ATEX II 1 G, EEx ia IIC T6 and CSA/FM Class I, Div. 1, Groups A, B, C and D, Class II Div. 1, Groups E, F and G CLASS III[1]		**2**
CE, C-TICK		**3**
Switch isolator		
Not required		**0**
115 V AC[2]		**1**
230 V AC[2]		**2**

Further designs	Order Code
Please add "**-Z**" to Order No. and specify Order code(s).	
Stainless Steel tag [69 x 38 mm (2.7 x 1.5")], Measuring-point number / identification (max 16 characters), specify in plain text.	**Y15**
Acceptance test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and ISO 9000	**C11**

Instruction manual		Order No.
RBSS Instruction Manual, Multi-language Note: The instruction manual should be ordered as a separate item on the order.	C)	**7ML1998-5GX63**
This device is shipped with the Siemens Milltronics manual CD containing the complete instruction manual library.		

Spare parts		
Wheel, 127 dia-polyurethane, sealed bearing	C)	**7MH7723-1FX**
Proximity Switch	C)	**7MH7723-1GA**
Switch, inductive, NJ0.8-5GM-N (Approvals option 2) [2]	C)	**7MH7723-1AS**
P & F Switch Isolator, 115 V AC[2]		**7MH7723-1EB**
P & F Switch Isolator, 230 V AC[2]		**7MH7723-1EC**
Wheel and shaft, 152 mm dia.[3]	C)	**7MH7723-1EN**
60 tooth gear[3]	C)	**7MH7723-1EQ**
Bearing (two required)[3]	C)	**7MH7723-1ER**

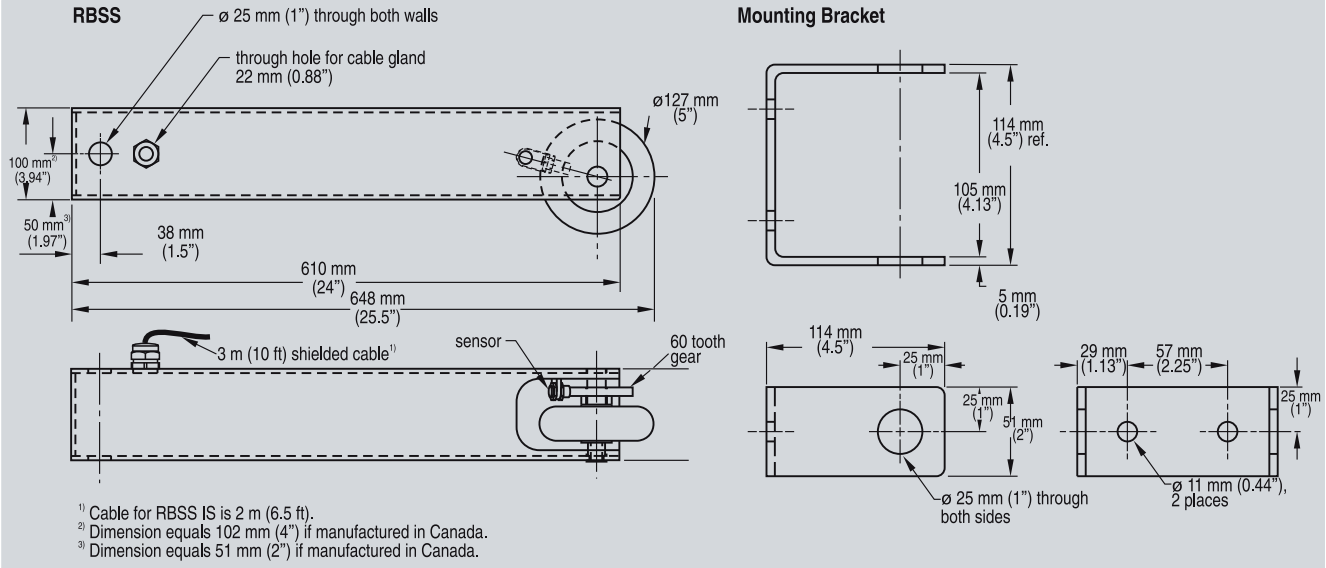
[1] Approvals option 2 requires use of Switch Isolator to interface with the belt-scale integrator.

[2] Required with RBSS IS

[3] For use with old style RBSS PBD-51033452

C) Subject to export regulations AL: N, ECCN: EAR99.

Dimensional drawings



[1] Cable for RBSS IS is 2 m (6.5 ft).
[2] Dimension equals 102 mm (4") if manufactured in Canada.
[3] Dimension equals 51 mm (2") if manufactured in Canada.

RBSS dimensions

4

SITRANS WS100

Overview

SITRANS WS100 speed sensor is a compact, medium-resolution, pulley shaft-driven belt speed sensor with magnetic mounting. It is ideal for aggregate and mineral processing industries.

Benefits

- Small, light-weight
- Good resolution for accurate measurement, suitable for varying shaft speeds
- Long bearing life

Application

SITRANS WS100 speed sensor operates in conjunction with a conveyor belt scale, providing a signal to an integrator (Milltronics BW100 or BW500, or SIWAREX FTC module) which computes the rate of material being conveyed. It is lightweight at 1.22 kg (2.68 lbs) and durable, for easy installation and prolonged bearing life.

The WS100 converts shaft rotation into a pulse train of 8 pulses per revolution. These pulses are typically fed into a Milltronics belt scale integrator. The integrator interprets the pulses and uses them in the calculation of belt speed, flow rate, and material totalization. In non-belt scale applications, the WS100 can be used to monitor rotational speed when directly connected to a PLC.

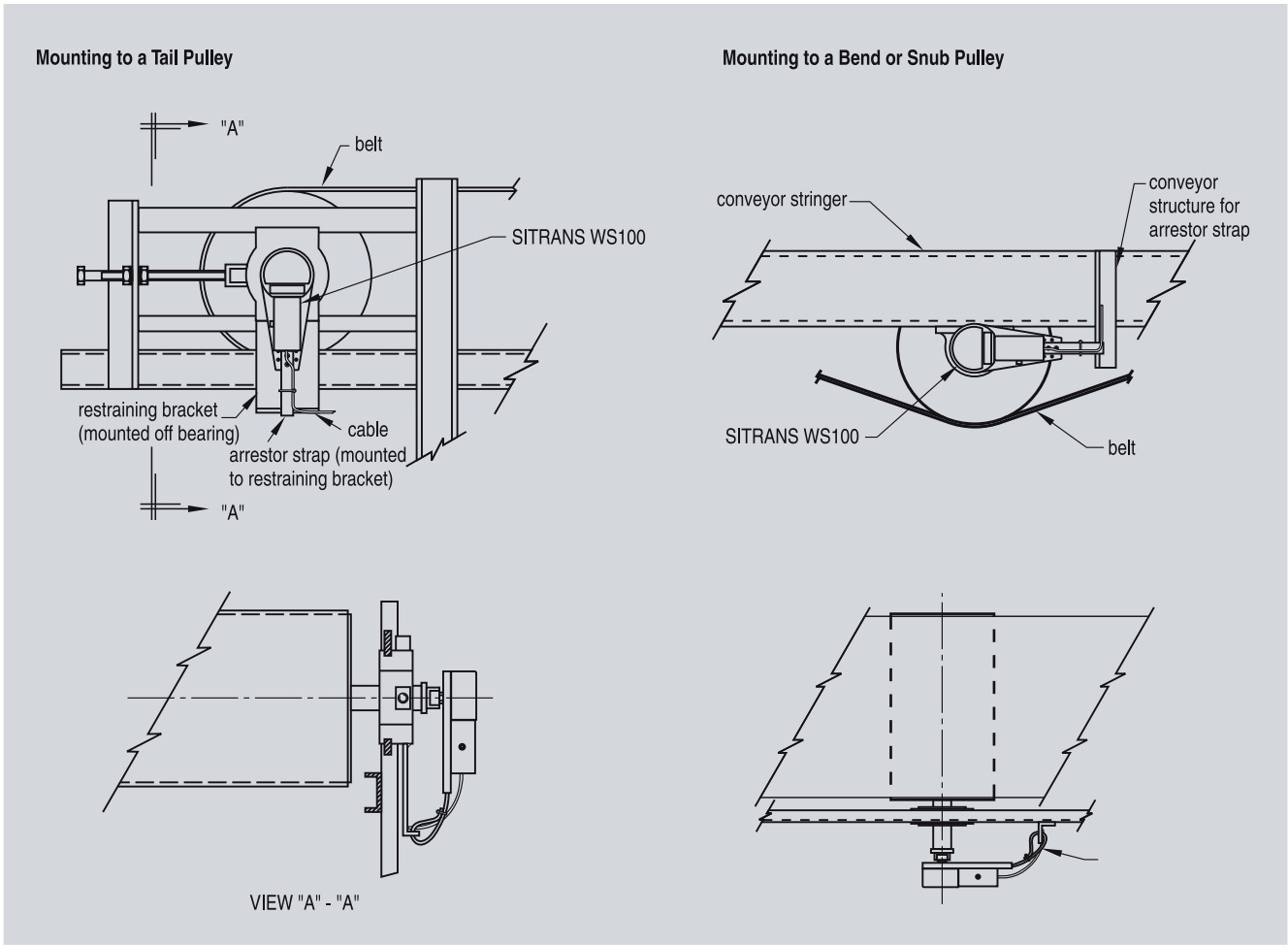
The WS100 IS (Intrinsically Safe) version contains an inductive proximity switch which transmits the pulses via a Switch Isolator for hazardous area locations.

Design

The input shaft on the SITRANS WS100 is coupled to the rotating shaft on a belt-driven pulley with a tapped hole, and is externally supported. The unit's flexible arresting strap stops it from rotating with the shaft, without causing bearing stress, and can be fitted to any rigid member close to the sensor.

When mounting, ensure the unit and the pulley shaft are concentric to avoid stresses on the unit's bearings.

For mounting using the magnetic connector, ensure the face of the rotating shaft on the belt driven pulley is flat, and has no burrs or damage that may prevent flush mounting of the magnetic connector. Attach the SITRANS WS100 speed sensor to the shaft; the magnetic connector will center itself as the belt driven pulley rotates.



WS100 installation

SITRANS WS100

Technical specifications

Mode of operation	
Measuring principle	Proximity sensor provides pulse to integrator
Typical application	Aggregate belt conveyors
Input	shaft rotation 15 to 1500 rpm, bi-directional shaft rotation 15 to 300 rpm, bi-directional with magnetic connector
Output	• 8 pulses per revolution • 0 to 200 Hz, 0 to 40 Hz with magnetic connection • WS100 standard: open collector sinking output, 25 mA • WS100 IS: load current, 0 to 15 mA • Integrator minimum usable frequency 2 Hz
Rated operating conditions	
Standard	-40 to +110 °C (-40 to +230 °F)
Intrinsically Safe	-25 to +100 °C (-14 to +212 °F)
Degee of protection	IP67
Enclosure	polypropylene base and target enclosure with 304 (1.4301) stainless steel access cover 304 (1.4301) stainless steel shaft, bearings and hardware
Power	
Standard	4.5 to 28 V DC, 16 mA
Intrinsically Safe	5 to 25 V DC from IS Switch Isolator
Cable	
Standard	• 3 m (10 ft), 3 conductor 22 AWG (0.324 mm²), PVC shielded cable • 300 m (1000 ft) maximum cable run
Intrinsically Safe	• 2 m (6.5 ft), 2 conductor 26 AWG (0.129 mm²), PVC covered cable • 300 m (1000 ft) maximum cable run to IS switch isolator • 300 m (1000 ft) maximum cable run from IS switch isolator and integrator
Certificates and approvals	
Standard	CE, C-TICK
Intrinsically Safe	CE, ATEX and CSA approved, Pepperl + Fuchs Proximity Switch and IS Switch Isolator

Selection and Ordering data

		Order No.
SITRANS WS100 Speed Sensor	C)	**7MH7176-**
A compact, medium-resolution, pulley shaft-driven belt speed sensor with magnetic mounting; ideal for aggregate and mineral processing industries.		
Model		
8 PPR		**1**
Fabrication		
Polycarbonate construction with 304 stainless steel sensor cover		**A**
Mounting		
M12X1.75 threaded shaft		**A**
Magnetic connector		**B**
Approvals		
Standard CE, C-TICK		**0**
CE, C-TICK, ATEX II 1 G, EEx ia IIC T6 and CSA/FM Class 1, Div. 1, Groups A, B, C and D, Class II Div. 1, Groups E, F and G[1], Class III		**1**
Switch Isolator		
Not required		**0**
115 V AC (required with IS option 1)		**1**
230 V AC (required with IS option 1)		**2**

Further designs	Order Code
Please add "**-Z**" to Order No. and specify Order code(s).	
Stainless Steel tag [69 x 38 mm (2.7 x 1.5")], Measuring-point number / identification (max 16 characters), specify in plain text.	**Y15**
Acceptance test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and ISO 9000	**C11**

Instruction manual		Order No.
SITRANS WS100, English	C)	**7ML1998-5LU01**
SITRANS WS100, German	C)	**7ML1998-5LU31**
Note: The instruction manual should be ordered as a separate item on the order.		
This device is shipped with the Siemens Milltronics manual CD containing the complete instruction manual library.		

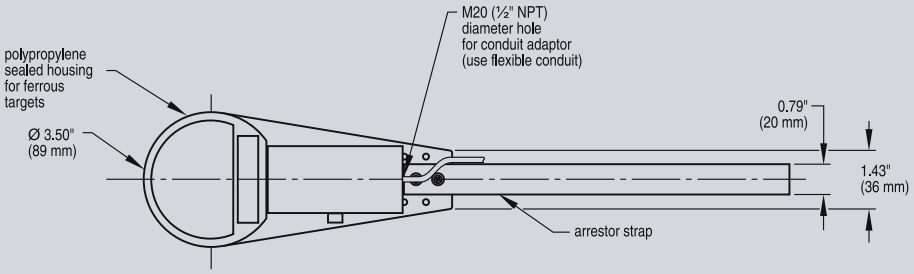
Spare Parts		
Switch, Standard Magnetic Pickup	C)	**7MH7723-1GA**
Switch, inductive, NJO.8-5GM-N for Approvals option 1	C)	**7MH7723-1AS**
WS100 Magnetic Connector	C)	**7MH7723-1GF**
P & F Switch Isolator, 115 V AC, required for Approvals option 1		**7MH7723-1EB**
P & F Switch Isolator, 230 V AC, required for Approvals option 1		**7MH7723-1EC**

[1] Approvals option 1 requires use of Switch Isolator to interface with the belt-scale integrator.

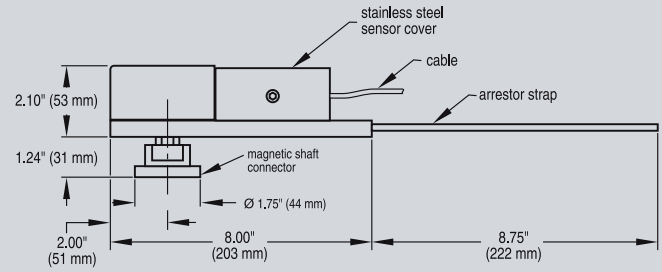
C) Subject to export regulations AL: N, ECCN: EAR99.

Dimensional drawings

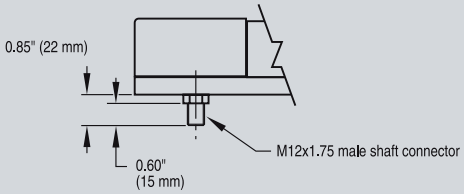
Dimensions



Magnetic shaft connector option



Male shaft connector option



WS100 dimensions

4

SITRANS WS300

Overview

SITRANS WS300 is a low- to high-resolution shaft-driven speed sensor.

Benefits

- Light and rugged design, IP65 rated
- Compact and economical
- Easy, low-cost installation
- Accurate belt speed detection
- Optional resolutions for measurement over a range of belt speeds
- Corrosion resistant

Application

SITRANS WS300 speed sensor operates in conjunction with a conveyor belt scale, providing a signal to an integrator which computes the rate of material being conveyed. At only 1.22 kg (2.68 lbs), it is one of the lightest and most durable units ever developed for monitoring conveyor belt speed. With its rugged cast aluminium housing, it is suitable for outdoor installation, and its low weight prolongs bearing life.

It is directly coupled to a rotating tail or bend pulley shaft to ensure accurate belt-travel readout, eliminating problems caused by belt slippage or material build-up. The WS300 converts shaft rotation into a pulse train of 32, 256, 1000, or 2000 pulses per revolution using a high precision rotary optical encoder. The digital signal is transmitted as speed input to any Siemens integrator for calculation of belt speed, flow rate and totalized weight.

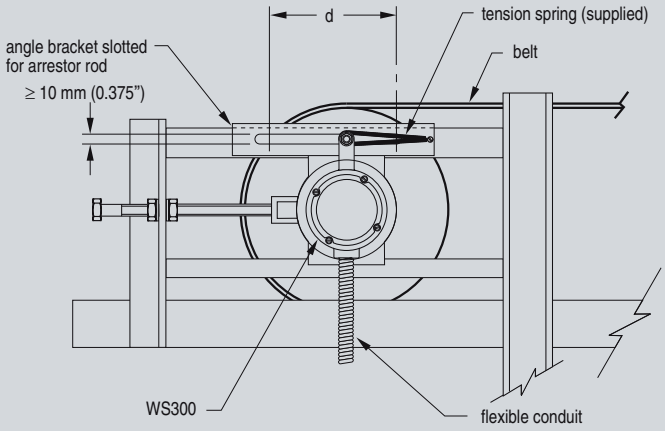
This low- to high-resolution speed sensor provides a frequency signal proportional to the shaft speed, enabling a range of speeds to be read accurately. The quadrature type shaft encoder prevents erroneous speed signals due to vibration or shaft oscillation. The WS300 is easily mounted and is bi-directional for either clockwise or counter-clockwise belt travel.

The IS version uses an inductive proximity switch detecting rotating targets.

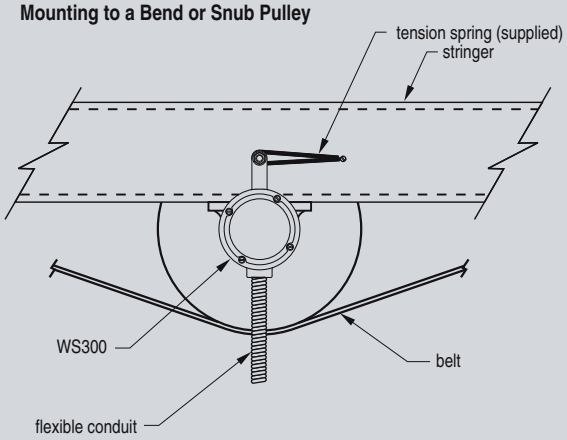
Design

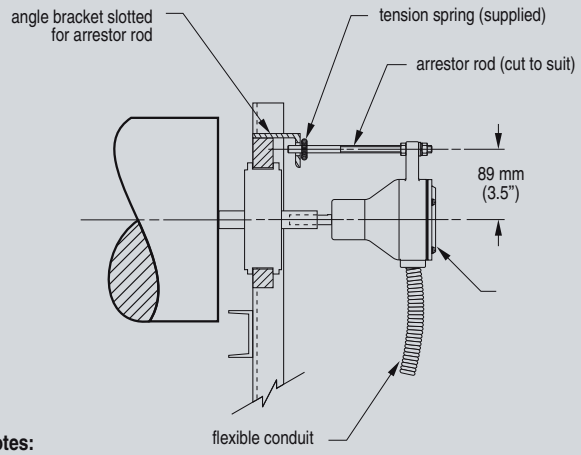
Mounting

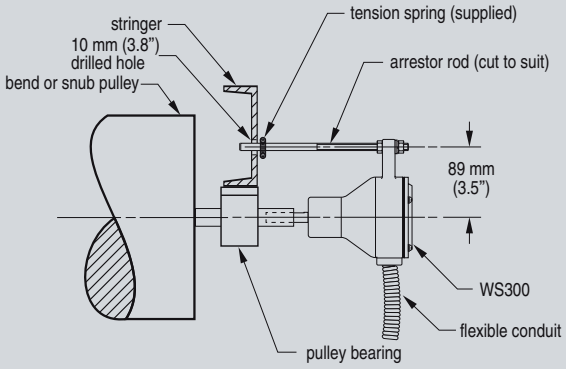
Mounting to a Tail Pulley



Mounting to a Bend or Snub Pulley





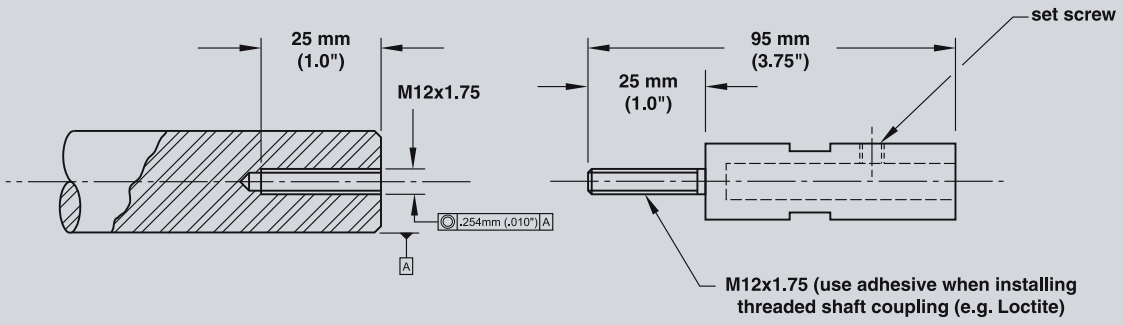


Notes:
Distance 'd' is the take-up travel on the tail pulley.
When adjusting the belt take-up, ensure that there is play on the arrestor rod.
If the arrestor rod is pushed against the end of its travel slot, premature bearing wear may result.

Notes:
When mounting to a bend or a snub pulley only,
a 3/8" (10 mm) drilled hole is required for the arrestor rod.

WS300 mounting

Mounting using optional threaded shaft coupling



WS300 mounting using threaded shaft coupling

SITRANS WS300

Technical specifications

Mode of operation	
Measuring principle	Standard: pulse from shaft rotation using high precision rotary optical encoder IS: pulse from inductive proximity switch
Typical application	When a low- to high-resolution speed sensor is required
Input	Shaft rotation 0.5 to 2000 rpm, bi-directional, resolution dependent
Output	• Unidirectional open collector sinking output • standard: +10 to +30 V DC, 25 mA max. • IS: load current, 0 to 15 mA • 32, 256, 1000, or 2000 pulses per revolution (ppr) • 32 ppr: 2000 max. rpm, 1066 Hz • 256 ppr: 2000 max. rpm, 8530 Hz • 1000 ppr: 900 max. rpm, 15000 Hz • 2000 ppr: 450 max. rpm, 15000 Hz
Rated operating conditions	
Ambient temperature	Standard: -40 to +55 °C (-40 to +131 °F) IS: -25 to +60 °C (-13 to +140 °F)
Degree of protection	NEMA 4X, Type 4X, IP65
Design	
Enclosure	• Rated NEMA 4X, Type 4X, IP65 • Painted aluminum • Stainless Steel (Optional)
Power supply	• Standard: +10 to +30 V DC, 60 mA max. • IS: +5 to +16 V DC, 25 mA max. (from IS Switch Isolator)
Cable	
Recommended	• Standard: 3-wire shielded, 0.82 mm^2 (18 AWG) • IS: 2-wire shielded 0.324 mm^2 (22 AWG) • Max. run 305 m (1000 ft)

Approvals	
WS300 Standard	
General	• CE, C-TICK
Hazardous	• CSA/FM Class II, Div.1, Groups E, F, G; Class III • ATEX II 2D Ex tD A21 IP65 T70 °C • IECEx Ex tD A21 IP65 T70 °C
WS300 IS (with suitable IS switch isolator or switch amplifier)[1]	
General	• CE, C-TICK
Hazardous	• IS Rating based on Switch and Isolator Approvals below
Proximity Switch Approval Ratings (Pepperl+Fuchs #NJ0.8-5GM-N)	• ATEX II 2G EEx ia IIC T6 • CSA/FM Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G (system approval)
Optional Switch Isolator (required for WS300 IS) [2] (Pepperl+Fuchs #KFA5-SOT2-Ex2 or #KFA6-SOT2-Ex2)	• ATEX II (1) G [EEX ia] IIC • CSA/FM: Class 1, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G

1) Approvals for WS300 IS are based on internally mounted NAMUR proximity switch (Pepperl+Fuchs #NJ0.8-5GM-N) and use of suitable IS Switch Isolator (Amplifier). Please see WS300 instruction manual for more information.

2) Approval ratings for the Proximity Switch and IS Switch Isolator are the property of Pepperl+Fuchs. Copies of these Approval Certificates may be obtained at http://www.siemens.com/continuous-weighing.

Selection and Ordering data		Order No.
SITRANS WS300 Speed Sensor A medium- to high-resolution shaft-driven speed sensor used used with Milltronics belt scales.	C)	**7MH7177-** ▢▢▢▢▢ **0**
Resolution (pulses per revolution)		
32		**1**
256		**2**
1000		**3**
2000[1]		**4**
Enclosure		
Polyester painted aluminum, NEMA 4X		**A**
304 (1.4301) stainless steel, NEMA 4X		**B**
Approvals		
CSA/FM Class II, Div. 1, Groups E, F, G and Class III ATEX II 2D, Ex tD A21 IP65 T70 °C, CE, C-TICK, IECEx, Ex tD A21 IP65 T70 °C		**A**
CSA/FM Class I, Div. 1, Groups A, B, C, D, and Class II, Div. 1, Groups E, F, G, ATEX II 1G, EEx ia IIC T6, CE, C-TICK[2) 3)]		**B**
CE, C-TICK		**D**
Connections		
Standard, up to 2 integrators		**1**
Multiple, up to 10 integrators		**2**
Switch Isolator		
Not required		**0**
115 V AC		**1**
230 V AC		**2**
Further designs Please add "**-Z**" to Order No. and specify Order code(s).		Order Code
Acrylic coated, stainless steel tag [13 x 45 mm (0.5 x 1.75")]: Measuring-point number/identification (max. 16 characters), specify in plain text		**Y17**
Acceptance test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and ISO 9000		**C11**
Operating Instructions		Order No.
English	C)	**7ML1998-5ML01**
German	C)	**7ML1998-5ML31**
Note: The Operating Instructions should be ordered as a separate item on the order.		

Selection and Ordering data		Order No.
SITRANS WS300 Speed Sensor A medium- to high-resolution shaft-driven speed sensor used used with Milltronics belt scales.	C)	**7MH7177-** ▢▢▢▢▢ **0**
Spare parts		
Circuit card 32 PPR, up to 2 integrators		**7MH7723-1GK**
Circuit card 32 PPR, up to 10 integrators		**7MH7723-1GL**
Circuit card 256 PPR, up to 2 integrators		**7MH7723-1GM**
Circuit card 256 PPR, up to 10 integrators		**7MH7723-1GN**
Circuit card 1000 PPR, up to 2 integrators		**7MH7723-1GP**
Circuit card 1000 PPR, up to 10 integrators		**7MH7723-1GQ**
Circuit card 2000 PPR, up to 2 integrators		**7MH7723-1JL**
Circuit card 2000 PPR, up to 10 integrators		**7MH7723-1JM**
Circuit card 32 PPR, IS		**7MH7723-1HC**
Rubber coupling		**7MH7723-1CM**
Coupling hub for 32, 256 PPR versions		**7MH7723-1CN**
Coupling hub for 1000, 2000 PPR versions		**7MH7723-1GR**
Enclosure cover		**7MH7723-1CJ**
Enclosure bearing assembly		**7MH7723-1CK**
Enclosure cover, stainless steel		**7MH7723-1GS**
Enclosure bearing assembly, stainless steel		**7MH7723-1GT**
Threaded shaft coupling		**7MH7723-1GH**
Arrestor rod		**7MH7723-1FV**
Cable for speed sensor connection to termination box (order per meter)		**7MH7723-1JP**
Cable for IS speed sensor connection to termination box (order per meter)		**7MH7723-1JQ**
Pepperl+Fuchs IS switch isolator, 115 V AC		**7MH7723-1EB**
Pepperl+Fuchs IS switch isolator, 230 V AC		**7MH7723-1EC**

1) Available with Approval option D only

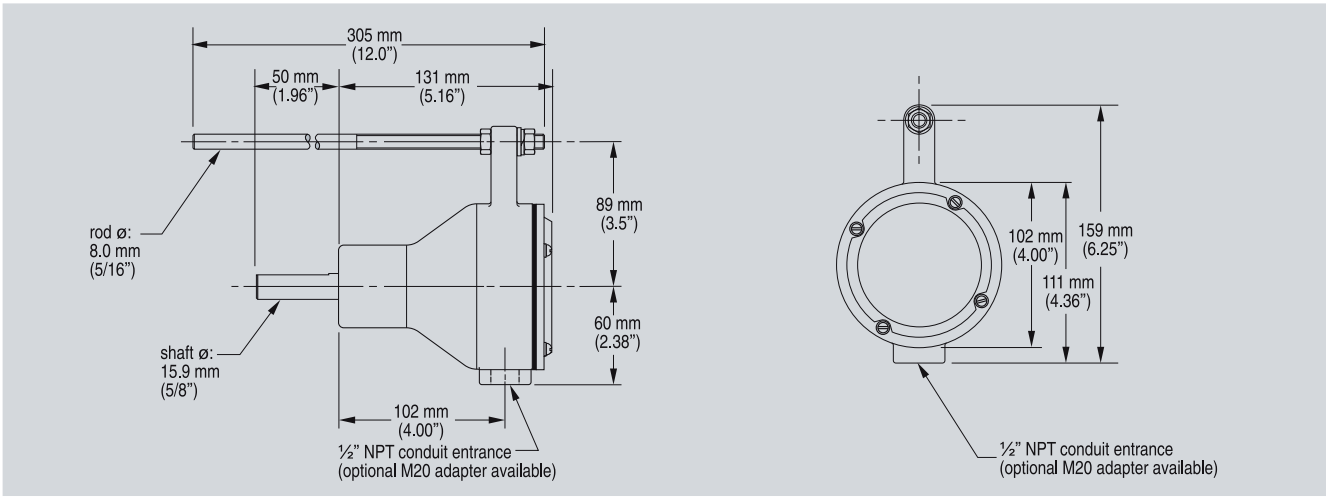
2) The Approval Ratings for the Proximity Switch and the IS Switch Isolator are the property of Pepperl+Fuchs. For current approvals, go to: http://www.am.pepperl-fuchs.com.

3) Approval option B requires use of Switch Isolator to interface with the belt scale integrator, and is available with Resolution option 1, and Connections option 1 only.

C) Subject to export regulations AL: N, ECCN: EAR99.

SITRANS WS300

Dimensional drawings



WS300 dimensions

Schematics (Standard)

Connections

Description	Terminal
+10 to +30 V DC	1
speed out-CW	2
speed out-CCW	3
common	4
ground	GND

- Determine the pulley shaft rotation on the end of the pulley shaft to which the WS300 is attached.
- If the pulley shaft is rotating clockwise, connect the appropriate wire to terminal 2. If the pulley shaft is rotating counter-clockwise, connect the appropriate wire to terminal 3.
- Do not connect terminals 2 and 3 at the same time.
- Connection between the WS300 standard unit and the integrator should be made with three-wire shielded, 0.82 mm^2 (18 AWG) cable.
- Ground shield of cable at integrator only.
- Connect shield to appropriate terminal at the integrator.

Terminal Connections to Siemens Milltronics Integrators

WS300	1 +V	2 CW	3 CCW	4 Cmn	GND
Milltronics BW100	8	7	7	6	N/C
Milltronics BW500	19	16	16	17	N/C

Terminal Connections to SIWAREX FTC Integrator

WS300	1 +V	2 CW	3 CCW	4 Cmn	GND
SIWAREX FTC	24 V (back-plane bus	X1.9 (CI+)	X1.9 (CI+)	X1.10 (CI- and Com-mon)	N/C

Schematics (IS)

Connections

Description	Terminal
+5 to +16 V DC, 25 mA max. (from IS Switch Isolator)	1
speed out	2
ground	GND

- Only terminals 1 and 2 are required; rotation in a clockwise or counter-clockwise direction is not required.
- To connect the switch isolator, use two-wire shielded 0.324 mm^2 (22 AWG) cable. Use the same cable to connect the switch isolator to the integrator.
- Ground shield of cable at integrator only.
- Connect shield to appropriate terminal at the integrator.

Terminal Connections to Siemens Milltronics Integrators

WS300 IS	IS Switch Isolator Terminal	Integrator
1	1	
2	3	
	7	speed signal input
	8	- excitation

Terminal Connections to SIWAREX FTC Integrator

WS300 IS	IS Switch Isolator Terminal	FTC
1	1	
2	3	
	7	CI+
	8	IL+

Connect CI- to Common

Overview

Return belt driven pulley provides rotation for shaft-driven speed sensors. 4.5” size is self-cleaning.

Benefits

- Heavy-duty design for high belt tension
- Self cleaning 114 mm (4.5") diameter option
- Steel drum 152 mm (6") diameter option
- Steel drum 152 mm (6") with 6 mm (¼") rubber lagged option
- Spherical self aligning pillow block bearings
- Fast installation, easy maintenance

Application

Milltronics bend pullies provide constant belt contact for use with Siemens speed sensors. Designed for use in rugged operating environments common to mining, aggregates, cement, minerals, and other process insdustries. They ensure concentric speed sensor rotation to reduce pre-mature bearing failure. The use of a bend pulley driven speed sensor ensures no modification is required on any existing conveyor shaft. Options include stainless steel construction, epoxy painting, polymer bearings, self cleaning style, and lagged style.

Technical specifications

Typical application	Mining, aggregates, cement, minerals, and other process insdustries
Medium conditions	
Operating temperature	-40 to +110 °C (-40 to +230 °F)
Shaft material	Mild steel 304 (1.4301) stainless steel, option
Pulleys	
Self cleaning rubber disc style	114 mm (4.5") diameter
Steel drum	152 mm (6") diameter
Steel drum	152 mm (6") diameter with 6 mm (¼") rubber lagged option
Bearings	• Heavy-duty self aligning pillow block bearings, standard • Polymer self aligning pillow block bearings option
Belt speed	
Self cleaning	1.79 m/s (350 fpm) max.
Drum	3 m/s (600 fpm)
Approvals	CE, C-TICK

Milltronics Bend Pulleys

Selection and Ordering data		Order No.
Milltronics Bend Pulley, 4.5" and 6" diameter Return belt driven pulley provides rotation for shaft-driven speed sensors. 4.5" size is self-cleaning.	C)	**7MH7170-** ■■■■ **0**
Size		
4.5" diameter self cleaning[1]		**1**
6" diameter		**2**
Belt width and 'A' dimension		
18", A=27" (686 mm), 20", A=29" (737 mm)		**A**
24", A=33" (838 mm)		**B**
30", A=39" (991 mm)		**C**
36", A=45" (1143 mm)		**E**
42", A=51" (1295 mm)		**G**
48", A=57" (1448 mm)		**H**
54", A=63" (1600 mm)		**K**
60", A=69" (1753 mm)		**L**
66", A=75" (1905 mm)		**M**
500 mm, A= 29" (740 mm) to 31.5" (800 mm)		**N**
650 mm, A= 35" (890 mm) to 37.6" (954 mm)		**P**
800 mm, A= 41" (1040 mm) to 43.5" (1104 mm)		**Q**
800 mm, A= 43' (1090 mm) to 45.4" (1154 mm)		**R**
1000 mm, A= 48.8" (1240 mm) to 51.3" (1304 mm)		**S**
1200 mm, A= 56.6" (1440 mm) to 59.2" (1504 mm)		**T**
1400 mm, A= 64.6" (1640 mm) to 67.1" (1704 mm)		**U**
1450 mm, A= 66.5" (1690 mm) to 69.0" (1754 mm)		**V**
1600 mm, A= 72.4" (1840mm) to 74.9" to (1904 mm)		**W**
Finish		
Standard, polyester painted mild steel		**A**
316 (1.4401) stainless steel[2]		**B**
316 (1.4401) stainless steel[3]		**C**
Epoxy painted[4]		**D**
Epoxy painted, with corrosion resistant bearings[4]		**E**
Bearings		
Imperial size		**0**
Metric size		**1**
No bearings		**2**
Instruction manual		
English Note: The instruction manual should be ordered as a separate item on the order. This device is shipped with the Siemens Milltronics manual CD containing the complete instruction manual library.	C)	**7ML1998-5DE01**

[1] Available with belt width and 'A" dimension options A to H and N to V only

[2] 316 (1.4401) stainless steel shaft on 4.5" diameter models only

[3] With corrosion resistant bearings, 316 (1.4401) stainless steel shaft on 4.5" diameter models only

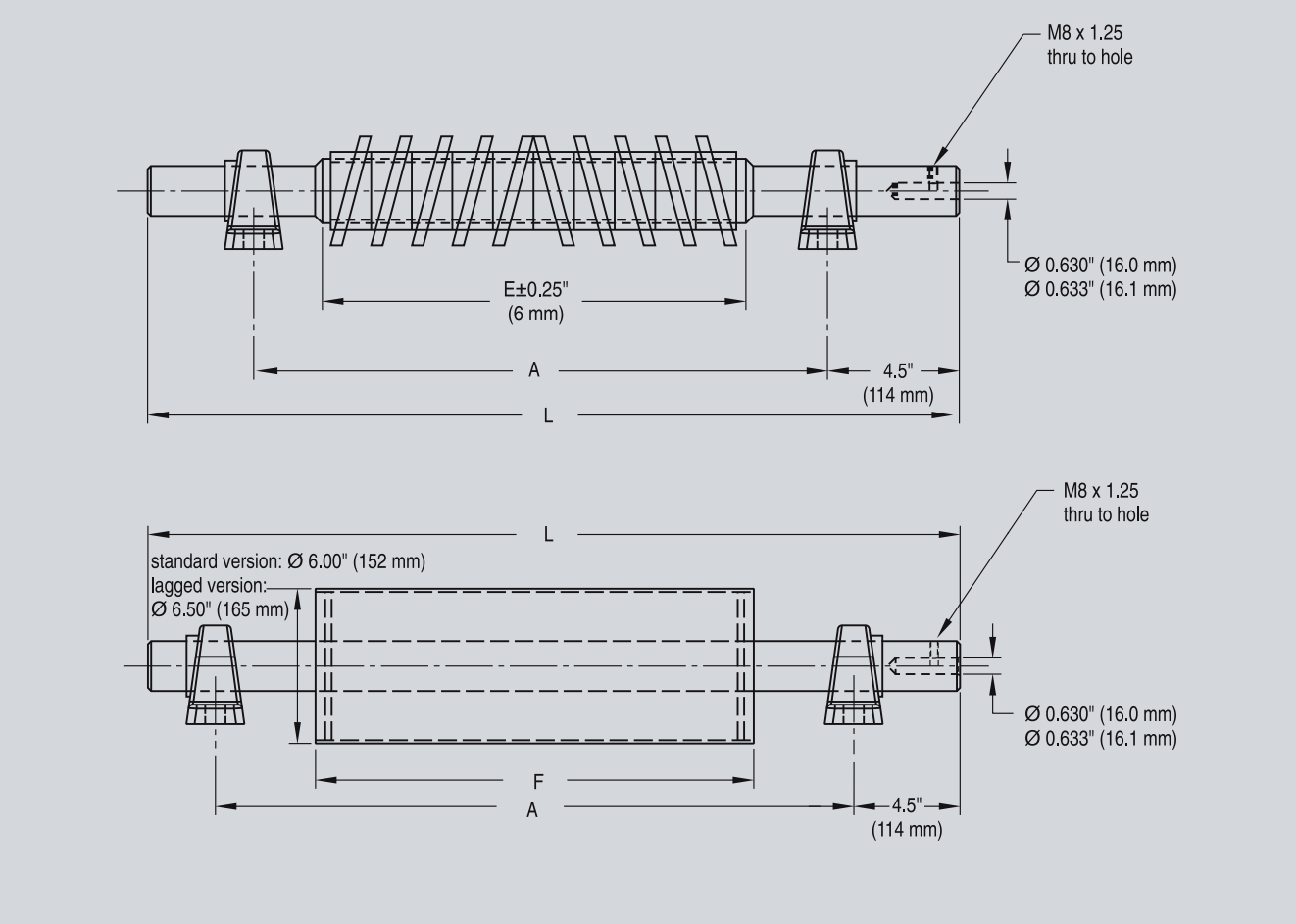
[4] For 6" diameter models only

C) Subject to export regulations AL: N, ECCN: EAR99.

Selection and Ordering data		Order No.
Milltronics Bend Pulley, 6" diameter with 1/4" lagging Return belt driven pulley provides rotation for shaft-driven speed sensors The lagging offers self-cleaning advantages and ensures positive rotation.	C)	**7MH7171-** ■■■■ **0**
Size		
6" diameter with 1/4" lagging		**3**
Belt width and 'A' dimension		
18", A=27" (686 mm), 20", A=29" (737 mm)		**A**
24", A=33" (838 mm)		**B**
30", A=39" (991 mm)		**C**
36", A=45" (1143 mm)		**E**
42", A=51" (1295 mm)		**G**
48", A=57" (1448 mm)		**H**
54", A=63" (1600 mm)		**K**
60", A=69" (1753 mm)		**L**
66", A=75" (1905 mm)		**M**
500 mm, A= 29" (740 mm) to 31.5" (800 mm)		**N**
650 mm, A= 35" (890 mm) to 37.6" (954 mm)		**P**
800 mm, A= 41" (1040 mm) to 43.5" (1104 mm)		**Q**
800 mm, A= 43' (1090 mm) to 45.4" (1154 mm)		**R**
1000 mm, A= 48.8" (1240 mm) to 51.3" (1304 mm)		**S**
1200 mm, A= 56.6" (1440 mm) to 59.2" (1504 mm)		**T**
1400 mm, A= 64.6" (1640 mm) to 67.1" (1704 mm)		**U**
1450 mm, A= 66.5" (1690 mm) to 69.0" (1754 mm)		**V**
1600 mm, A= 72.4" (1840mm) to 74.9" to (1904 mm)		**W**
Finish		
Standard, polyester painted mild steel		**A**
316 (1.4401) stainless steel		**B**
316 (1.4401) stainless steel with corrosion resistant bearings		**C**
Bearings		
Imperial size		**0**
Metric size		**1**
No bearings		**2**
Instruction manual		
English Note: The instruction manual should be ordered as a separate item on the order. This device is shipped with the Siemens Milltronics manual CD containing the complete instruction manual library.	C)	**7ML1998-5DE01**

C) Subject to export regulations AL: N, ECCN: EAR99.

Dimensional drawings

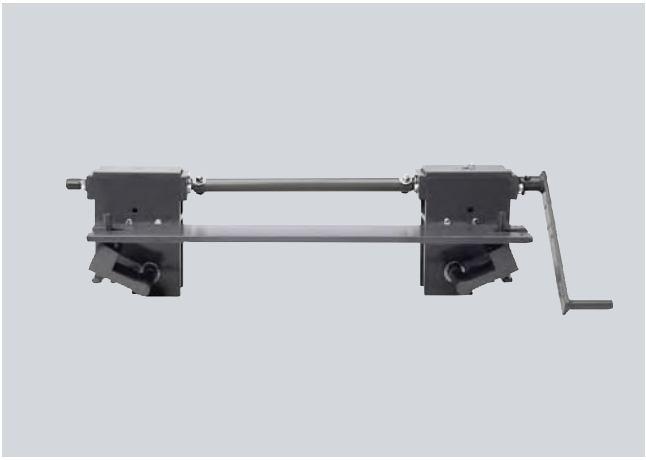


Bend pulley dimensions

Belth Size	E	A	L	F
18", 20"	18" (460 mm)	27" (686 mm), 29" (737 mm)	34.5" (876 mm)	20" (508 mm)
24"	24" (610 mm)	33" (838 mm)	40.5" (1029 mm)	26" (660 mm)
30"	30" (762 mm)	39" (991 mm)	46.5" (1181 mm)	32" (812 mm)
36"	36" (915 mm)	45" (1143 mm)	52.5" (1334 mm)	38" (965 mm)
42"	42" (1066 mm)	51" (1295 mm)	58.5" (1486 mm)	44" (1118 mm)
48"	48" (1220 mm)	57" (1448 mm)	64.5" (1638 mm)	51" (1296 mm)
54"		63" (1600 mm)	70.5" (1791 mm)	57" (1448 mm)
60"		69" (1753 mm)	76.5" (1943 mm)	63" (1600 mm)
66"		75" (1905 mm)	82.5" (2096 mm)	69" (1752 mm)
500 mm	19.7" (500 mm)	29" (737 mm)	36.5" (927 mm)	21.7" (551 mm)
650 mm	25.6" (650 mm)	35" (890 mm)	42.5" (1080 mm)	27.6" (701 mm)
800 mm	31.5" (800 m)	41" (1040 mm)	48.5" (1232 mm)	33.5" (851 mm)
800 mm	31.5" (800 m)	43" (1090 mm)	50.5" (1283 mm)	33.5" (851 mm)
1000 mm	39.4" (1000 mm)	48.8" (1240 mm)	56.3" (1430 mm)	41.4" (1052 mm)
1200 mm	47.2" (1200 mm)	56.6" (1440 mm)	68.1" (1730 mm)	50.2" (1275 mm)
1400 mm		64.6" (1640 mm)	72.5" (1842 mm)	58.1" (1476 mm)
1450 mm		66.5" (1690 mm)	74.5" (1892 mm)	60.1" (1527 mm)
1600 mm		72.4" (1840 mm)	83.9" (2131 mm)	66" (1676 mm)

Milltronics MWL Weight Lifter

Overview



Milltronics MWL Weight Lifter is a mechanical calibration weight lifter for MSI, MMI, and MUS belt scales.

Benefits

- Safe and easy application of belt scale reference weights with the operator remaining external to the conveyor
- Modular construction, easily adaptable to different conveyor widths
- Low profile allowing easy fit into belt conveyor
- Easy to install and apply
- Easy to store drive handle that can be applied to left or right side of MWL
- Security pin used to ensure safe storage of weight
- Can be used with new and existing applications

Application

Milltronics MWL mechanically raises and lowers the static weights and then stores the weights securely above the belt scale calibration arms, and allows the operator to lower and apply them safely without having to lean into the conveyor. The MWL is manually operated, and uses a high mechanical advantage to enable weights up to 340 kg (750 lbs) to be applied with very limited effort. The crank handle uses twelve rotations for full range of motion, and can be removed and stored for safety with the locking ball-pin which secures the MWL when it is not in use.

Two lifting arms support a base-bar weight above the calibration (test) weight brackets of the belt scale: either flat bar or round bar style calibration weights are applicable. Locating notches in the base-bar weight engage the calibration weights securely on the lifting arms in the stored position, and the gear drive locks the lifting arms in place.

Installation is easy, just four bolt holes to drill after locating the MWL gear modules (LH and RH) on the conveyor with respect to the belt scale. After running the MWL empty to ensure proper alignment, and then tightening mounting bolts, you are ready for the loading of the calibration weights. This is the last time that they will have to be lifted by hand.

Technical specifications

Mode of operation	
Principle of operation	Mechanical gear drive
Typical application	Belt scale calibration
Medium conditions	
Max. ambient temperature	+65 °C (+150 °F)
Belt design	
Belt width	• MBS: up to 1000 mm or 42" CEMA width • MCS: up to 1600 mm or 60" CEMA width • MUS-STD Standard Duty: up to 1000 mm or 42" CEMA width • MUS-HD Heavy-Duty: up to 1600 mm or 60" CEMA width • MSI: 18 to 96" CEMA belt width
Idlers	20° or more troughed idlers
Idler spacing	Minimum of 610 mm (24")
Calibration weight capacity	Up to 340 kg (750 lbs)
Crank arm	
Mechanical advantage	20:1
Number of revolutions required for raising or lowering	12
Mounting dimensions	See reverse for standard and heavy-duty MUS, MBS, MCS, and MSI/MMI belt scales
Approvals	The MWL is in compliance with Directive 98/37/EC, CE, C-TICK

Selection and Ordering data — Order No.

Milltronics MWL Weight Lifter C) **7MH7218-**
A mechanical calibration weight lifter for MSI, MMI, MBS, MCS, and MUS belt scales[1]
For use with MSI, ensure MSI fabrication option 4 1 is selected.

Actuation

Manually	1

Belt Width and 'A' dimension

18", 'A' = 27" (686 mm)	A A
19", 'A' = 28" (711 mm)	A B
20", 'A' = 29" (737 mm)	A C
21", 'A' = 30" (762 mm)	A D
22", 'A' = 31" (787 mm)	A E
23", 'A' = 32" (813 mm)	A F
24", 'A' = 33" (838 mm)	A G
25", 'A' = 34" (864 mm)	A H
26", 'A' = 35" (889 mm)	A J
27", 'A' = 36" (914 mm)	A K
28", 'A' = 37" (940 mm)	A L
29", 'A' = 38" (965 mm)	A M
30", 'A' = 39" (991 mm)	A N
31", 'A' = 40" (1016 mm)	A P
32", 'A' = 41" (1041 mm)	A Q
33", 'A' = 42" (1067 mm)	A R
34", 'A' = 43" (1092 mm)	A S
35", 'A' = 44" (1118 mm)	A T
36", 'A' = 45" (1143 mm)	A U
37", 'A' = 46" (1168 mm)	A V
38", 'A' = 47" (1194 mm)	A W
39", 'A' = 48" (1219 mm)	B A
40", 'A' = 49" (1245 mm)	B B
41", 'A' = 50" (1270 mm)	B C
42", 'A' = 51" (1295 mm)	B D
43", 'A' = 52" (1321 mm)	B E
44", 'A' = 53" (1346 mm)	B F
45", 'A' = 54" (1372 mm)	B G
46", 'A' = 55" (1397 mm)	B H
47", 'A' = 56" (1422 mm)	B J
48", 'A' = 57" (1448 mm)	B K
49", 'A' = 58" (1473 mm)	B L
50", 'A' = 59" (1499 mm)	B M
51", 'A' = 60" (1524 mm)	B N
52", 'A' = 61" (1549 mm)	B P
53", 'A' = 62" (1575 mm)	B Q
54", 'A' = 63" (1600 mm)	B R
55", 'A' = 64" (1626 mm)	B S
56", 'A' = 65" (1651 mm)	B T
57", 'A' = 66" (1676 mm)	B U
58", 'A' = 67" (1702 mm)	B V
59", 'A' = 68" (1727 mm)	B W
60", 'A' = 69" (1753 mm)	C A
61", 'A' = 70" (1778 mm)	C B
62", 'A' = 71" (1803 mm)	C C
63", 'A' = 72" (1829 mm)	C D
64", 'A' = 73" (1854 mm)	C E
65", 'A' = 74" (1880 mm)	C F
66", 'A' = 75" (1905 mm)	C G
67", 'A' = 76" (1930 mm)	C H
68", 'A' = 77" (1956 mm)	C J
69", 'A' = 78" (1981 mm)	C K
70", 'A' = 79" (2007 mm)	C L
71", 'A' = 80" (2032 mm)	C M
72", 'A' = 81" (2057 mm)	C N
73", 'A' = 82" (2083 mm)	C P

Selection and Ordering data — Order No.

Milltronics MWL Weight Lifter C) **7MH7218-**
A mechanical calibration weight lifter for MSI, MMI, MBS, MCS, and MUS belt scales[1]
For use with MSI, ensure MSI fabrication option 4 1 is selected.

74", 'A' = 83" (2108 mm)	C Q
75", 'A' = 84" (2134 mm)	C R
76", 'A' = 85" (2159 mm)	C S
77", 'A' = 86" (2184 mm)	C T
78", 'A' = 87" (2210 mm)	C U
79", 'A' = 88" (2235 mm)	C V
80", 'A' = 89" (2261 mm)	C W
81", 'A' = 90" (2286 mm)	D A
82", 'A' = 91" (2311 mm)	D B
83", 'A' = 92" (2337 mm)	D C
84", 'A' = 93" (2362 mm)	D D
85", 'A' = 94" (2388 mm)	D E
86", 'A' = 95" (2413 mm)	D F
87", 'A' = 96" (2438 mm)	D G
88", 'A' = 97" (2464 mm)	D H
89", 'A' = 98" (2489 mm)	D J
90", 'A' = 99" (2515 mm)	D K
91", 'A' = 100" (2540 mm)	D L
92", 'A' = 101" (2565 mm)	D M
93", 'A' = 102" (2591 mm)	D N
94", 'A' = 103" (2616 mm)	D P
95", 'A' = 104" (2642 mm)	D Q
96", 'A' = 105" (2667 mm)	D R
No width parts[2]	X X

Weight type

None	0 0
For use with flat bar weights (weights not included)	1 1
Width's based on belt width	
3" integrated round bar weight (18 to 29", 15.9 to 22.7 kg)	3 1
3" integrated round bar weight (30 to 41", 26.8 to 33.6 kg)	3 2
3" integrated round bar weight (42 to 53", 37.7 to 44.5 kg)	3 3
3" integrated round bar weight (54 to 65", 48.6 to 58.6 kg)	3 4
3" integrated round bar weight (66 to 77", 59.5 to 69.5 kg)	3 5
3" integrated round bar weight (78 to 89", 70.4 to 80.4 kg)	3 6
3" integrated round bar weight (90 to 96", 81.3 to 86.8 kg)	3 7
4" integrated round bar weight (18 to 29", 23.3 to 34.3 kg)	4 1
4" integrated round bar weight (30 to 41", 42.7 to 53.7 kg)	4 2
4" integrated round bar weight (42 to 53", 62.1 to 73.1 kg)	4 3
4" integrated round bar weight (54 to 65", 81.5 to 99.3 kg)	4 4
4" integrated round bar weight (66 to 77", 100.9 to 118.6 kg)	4 5
4" integrated round bar weight (78 to 89", 120.3 to 138.0 kg)	4 6
4" integrated round bar weight (90 to 96", 139.6 to 149.3 kg)	4 7
5" integrated round bar weight (18 to 29", 32.9 to 49.3 kg)	5 1
5" integrated round bar weight (30 to 41", 63.2 to 79.6 kg)	5 2
5" integrated round bar weight (42 to 53", 93.5 to 109.9 kg)	5 3

Milltronics MWL Weight Lifter

Selection and Ordering data		Order No.
Milltronics MWL Weight Lifter A mechanical calibration weight lifter for MSI, MMI, MBS, MCS, and MUS belt scales[1] **For use with MSI, ensure MSI fabrication option 4 1 is selected.**	C)	**7MH7218-**
5" integrated round bar weight (54 to 65", 123.7 to 151.5 kg)		**5 4**
5" integrated round bar weight (66 to 77", 154.0 to 181.8 kg)		**5 5**
5" integrated round bar weight (78 to 89", 184.3 to 212.1 kg)		**5 6**
5" integrated round bar weight (90 to 96", 214.6 to 229.7 kg)		**5 7**
6" integrated round bar weight (18 to 29", 44.5 to 67.6 kg)		**6 1**
6" integrated round bar weight (30 to 41", 88.2 to 111.2 kg)		**6 2**
6" integrated round bar weight (42 to 53", 131.8 to 154.8 kg)		**6 3**
6" integrated round bar weight (54 to 65", 175.4 to 215.3 kg)		**6 4**
6" integrated round bar weight (66 to 77", 219.0 to 258.9 kg)		**6 5**
6" integrated round bar weight (78 to 89", 262.6 to 302.5 kg)		**6 6**
6" integrated round bar weight (90 to 96", 306.2 to 328.0 kg)		**6 7**
Fabrication		
Standard, polyester painted mild steel Other materials available upon request.		**1**
Electro galvanized mild steel		**2**
Further designs		Order Code
Please add "**-Z**" to Order No. and specify Order code(s).		
Stainless Steel tag [69 x 38 mm (2.7 x 1.5")], Measuring-point number / identification (max 16 characters), specify in plain text.		**Y15**
Acceptance test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and ISO 9000		**C11**
Instruction manual		Order No.
English	C)	**7ML1998-5CR02**
German Note: The instruction manual should be ordered as a separate line on the order.	C)	**7ML1998-5CR31**
Spare parts		
MWL handle shaft extension		**7MH7726-1AM**
MWL module LH unit		**7MH7723-1GU**
MWL module RH unit		**7MH7723-1GV**
MWL handle		**7MH7723-1GX**
MWL retrofit kit (for for Milltronics MSI, MMI belt scales)	C)	**7MH7723-1FW**
MWL retrofit kit (for for Milltronics MBS, MCS belt scales)	C)	**7MH7723-1HA**

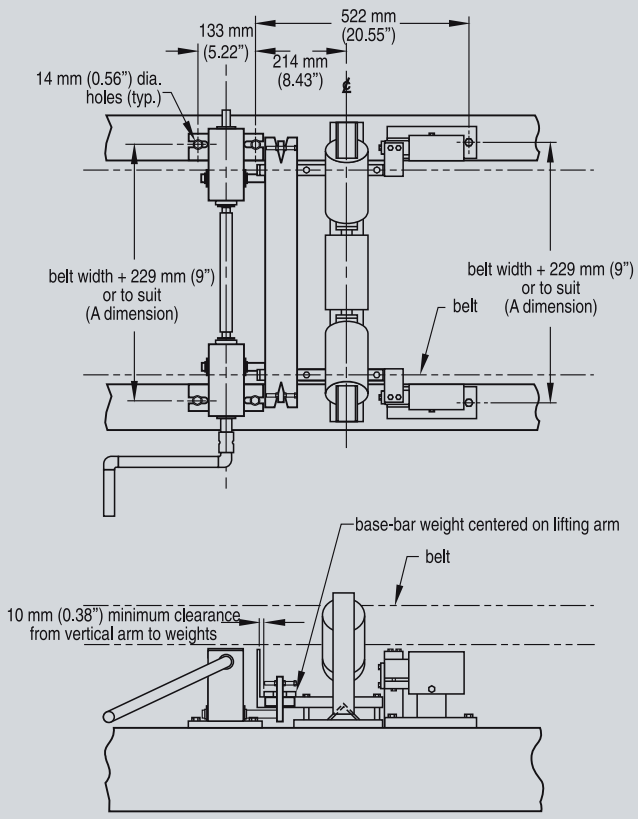
[1] One MWL is required for each scale (MMI-2 requires 2 MWL)

[2] Available with weight type option 00 only

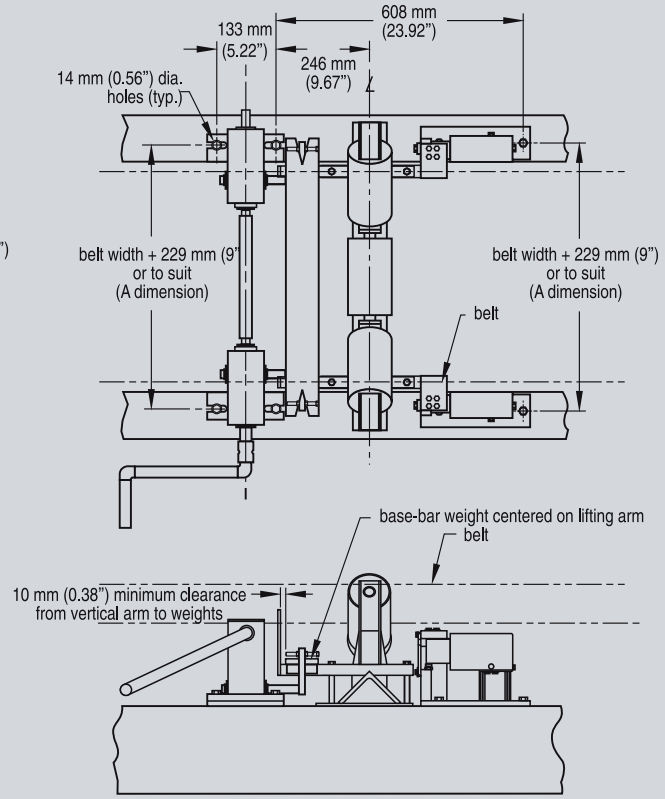
C) Subject to export regulations AL: N, ECCN: EAR99.

Dimensional drawings

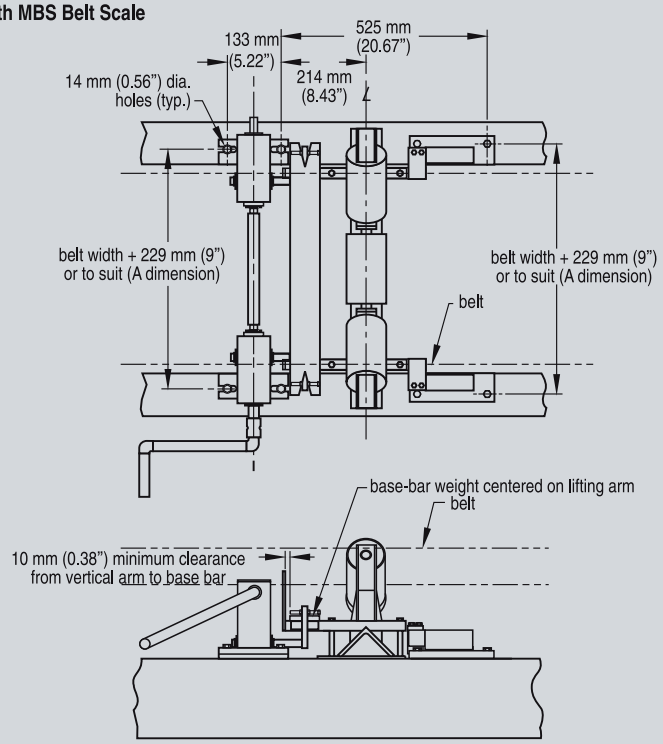
MWL with MUS - STD Standard Duty Belt Scale



MWL with MUS - HD Heavy Duty Belt Scale



MWL with MBS Belt Scale



MWL dimensions

Miltronics Flat Bar Calibration Weights

Selection and Ordering data		Order No.
Milltronics flat bar calibration weights Designed for use with Milltronics belt scales. Length of bar weight is A dimension minus 3" (76 mm). Listed weight is an approximation.	C)	**7MH7127-** ■■■■
Bar width, belt width and A dimension, weight		
3", 18", A=27" (686 mm), 4.63 kg		**1 A A**
3", 24", A=33" (838 mm), 5.78 kg		**1 A G**
3", 30", A=39" (991 mm), 6.94 kg		**1 A N**
3", 36", A=45" (1143 mm), 8.10 kg		**1 A U**
3", 42", A=51" (1295 mm), 9.25 kg		**1 B D**
3", 48", A=57" (1448 mm), 10.41 kg		**1 B K**
3", 54", A=63" (1600 mm), 11.57 kg		**1 B R**
3", 60", A=69" (1753 mm), 12.73 kg		**1 C A**
3", 66", A=75" (1905 mm), 13.89 kg		**1 C G**
3", 72", A=81" (2057 mm), 15.05 kg		**1 C N**
3", 78", A=87" (2210 mm), 16.21 kg		**1 C U**
3", 84", A=93" (2362 mm), 17.37 kg		**1 D D**
3", 90", A=99" (2515 mm), 18.53 kg		**1 D K**
3", 96", A=105" (2667 mm), 19.69 kg		**1 D R**
4", 18", A=27" (686 mm), 6.17 kg		**2 A A**
4", 24", A=33" (838 mm), 7.71 kg		**2 A G**
4", 30", A=39" (991 mm), 9.26 kg		**2 A N**
4", 36", A=45" (1143 mm), 10.80 kg		**2 A U**
4", 42", A=51" (1295 mm), 12.34 kg		**2 B D**
4", 48", A=57" (1448 mm), 13.89 kg		**2 B K**
4", 54", A=63" (1600 mm), 15.42 kg		**2 B R**
4", 60", A=69" (1753 mm), 16.97 kg		**2 C A**
4", 66", A=75" (1905 mm), 18.52 kg		**2 C G**
4", 72", A=81" (2057 mm), 20.07 kg		**2 C N**
4", 78", A=87" (2210 mm), 21.62 kg		**2 C U**
4", 84", A=93" (2362 mm), 23.17 kg		**2 D D**
4", 90", A=99" (2515 mm), 24.72 kg		**2 D K**
4", 96", A=105" (2667 mm), 26.27 kg		**2 D R**
Fabrication		
Standard, polyester painted mild steel		**1**

C) Subject to export regulations AL: N, ECCN: EAR99.

Overview

Roller test chains are used for belt scale calibration when material tests are not practical. All test chains are bushed. Minimum length is 4 feet (1.2 m).

Benefits

- Heavy-duty design for rugged applications and long life
- Precision machined components for accurate calibration
- Bushed rollers to ensure rotation during calibration
- Alternative to material tests when they are not possible

Application

Milltronics calibration test chains provide simulated material flow on a conveyor belt for use with belt scale calibration. Designed for use in environments where material tests cannot be performed, test chains come in a variety of capacity options for use in any application. They ensure constant and uniform belt loading similar to material being conveyed, and can be stored on a storage reel for quick and easy application. The use of a calibration test chain ensures that production totals are guaranteed.

Technical specifications

Mode of operation	
Principle of operation	rides on carrying side of belt to simulate material loading
Medium conditions	
Max. ambient temperature	+65 °C (+150 °F)
Design	
Belt loading to meet any application	5 lb/ft (7.4 kg/m) to 100 lb/ft (148.8 kg/m)
Length	Made to suit conveyor design
Idler	Flat to 45° troughed idlers
Mounting	Connected to conveyor at start and end of chain at both sides for uniform loading. Storage and application with test chain storage reel.
Approvals	CE, C-TICK

Selection and Ordering data

	Order No.
Milltronics test chains	C) **7MH7161-**
Roller test chains are used for belt scale calibration when material tests are not practical. All test chains are bushed. Minimum length is 4 feet (1.2 m).	**0 ■■■ 0**
5 lb/ft (7.4 kg/m), 6" pitch	
4 ... 7 ft (1.2 ... 2.1 m)	**A A 1**
8 ... 11 ft (2.4 ... 3.4 m)	**A A 2**
12 ... 15 ft (3.7 ... 4.6 m)	**A A 3**
16 ... 19 ft (4.9 ... 5.8 m)	**A A 4**
20 ... 23 ft (6.1 ... 7.0 m)	**A A 5**
24 ... 27 ft (7.3 ... 8.2 m)	**A A 6**
28 ... 31 ft (8.5 ... 9.4 m)	**A A 7**
32 ... 35 ft (9.8 ... 10.7 m)	**A A 8**
7.5 lb/ft (11.2 kg/m), 6" pitch	
4 ... 7 ft (1.2 ... 2.1 m)	**B B 1**
8 ... 11 ft (2.4 ... 3.4 m)	**B B 2**
12 ... 15 ft (3.7 ... 4.6 m)	**B B 3**
16 ... 19 ft (4.9 ... 5.8 m)	**B B 4**
20 ... 23 ft (6.1 ... 7.0 m)	**B B 5**
24 ... 27 ft (7.3 ... 8.2 m)	**B B 6**
28 ... 31 ft (8.5 ... 9.4 m)	**B B 7**
32 ... 35 ft (9.8 ... 10.7 m)	**B B 8**
10 lb/ft (14.9 kg/m), 4" pitch	
4 ... 7 ft (1.2 ... 2.1 m)	**C C 1**
8 ... 11 ft (2.4 ... 3.4 m)	**C C 2**
12 ... 15 ft (3.7 ... 4.6 m)	**C C 3**
16 ... 19 ft (4.9 ... 5.8 m)	**C C 4**
20 ... 23 ft (6.1 ... 7.0 m)	**C C 5**
24 ... 27 ft (7.3 ... 8.2 m)	**C C 6**
28 ... 31 ft (8.5 ... 9.4 m)	**C C 7**
32 ... 35 ft (9.8 ... 10.7 m)	**C C 8**
15 lb/ft (22.3 kg/m), 4" pitch	
4 ... 7 ft (1.2 ... 2.1 m)	**D D 1**
8 ... 11 ft (2.4 ... 3.4 m)	**D D 2**
12 ... 15 ft (3.7 ... 4.6 m)	**D D 3**
16 ... 19 ft (4.9 ... 5.8 m)	**D D 4**
20 ... 23 ft (6.1 ... 7.0 m)	**D D 5**
24 ... 27 ft (7.3 ... 8.2 m)	**D D 6**
28 ... 31 ft (8.5 ... 9.4 m)	**D D 7**
32 ... 35 ft (9.8 ... 10.7 m)	**D D 8**
20 lb/ft (29.8 kg/m), 4" pitch	
4 ... 7 ft (1.2 ... 2.1 m)	**E E 1**
8 ... 11 ft (2.4 ... 3.4 m)	**E E 2**
12 ... 15 ft (3.7 ... 4.6 m)	**E E 3**
16 ... 19 ft (4.9 ... 5.8 m)	**E E 4**
20 ... 23 ft (6.1 ... 7.0 m)	**E E 5**
24 ... 27 ft (7.3 ... 8.2 m)	**E E 6**
28 ... 31 ft (8.5 ... 9.4 m)	**E E 7**
32 ... 35 ft (9.8 ... 10.7 m)	**E E 8**
25 lb/ft (37.2 kg/m), 4" pitch	
4 ... 7 ft (1.2 ... 2.1 m)	**F F 1**
8 ... 11 ft (2.4 ... 3.4 m)	**F F 2**
12 ... 15 ft (3.7 ... 4.6 m)	**F F 3**
16 ... 19 ft (4.9 ... 5.8 m)	**F F 4**
20 ... 23 ft (6.1 ... 7.0 m)	**F F 5**
24 ... 27 ft (7.3 ... 8.2 m)	**F F 6**
28 ... 31 ft (8.5 ... 9.4 m)	**F F 7**
32 ... 35 ft (9.8 ... 10.7 m)	**F F 8**

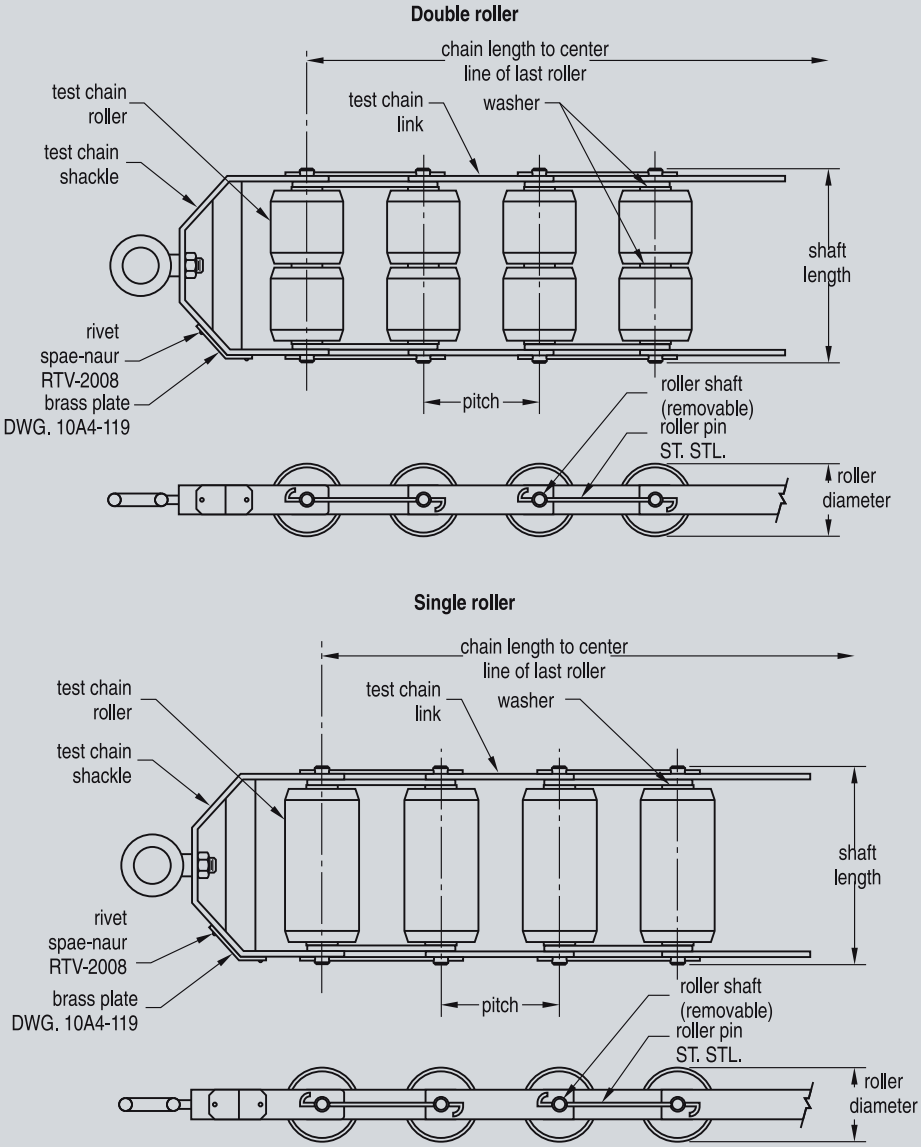
Milltronics Test Chains

Selection and Ordering data		Order No.
Milltronics test chains	C)	**7MH7161-**
Roller test chains are used for belt scale calibration when material tests are not practical. All test chains are bushed. Minimum length is 4 feet (1.2 m).		**0 ■■■ 0**
30 lb/ft (44.6 kg/m), 4" pitch		
4 ... 7 ft (1.2 ... 2.1 m)		**GG 1**
8 ... 11 ft (2.4 ... 3.4 m)		**GG 2**
12 ... 15 ft (3.7 ... 4.6 m)		**GG 3**
16 ... 19 ft (4.9 ... 5.8 m)		**GG 4**
20 ... 23 ft (6.1 ... 7.0 m)		**GG 5**
24 ... 27 ft (7.3 ... 8.2 m)		**GG 6**
28 ... 31 ft (8.5 ... 9.4 m)		**GG 7**
32 ... 35 ft (9.8 ... 10.7 m)		**GG 8**
35 lb/ft (52.1 kg/m), 4" pitch		
4 ... 7 ft (1.2 ... 2.1 m)		**HH 1**
8 ... 11 ft (2.4 ... 3.4 m)		**HH 2**
12 ... 15 ft (3.7 ... 4.6 m)		**HH 3**
16 ... 19 ft (4.9 ... 5.8 m)		**HH 4**
20 ... 23 ft (6.1 ... 7.0 m)		**HH 5**
24 ... 27 ft (7.3 ... 8.2 m)		**HH 6**
28 ... 31 ft (8.5 ... 9.4 m)		**HH 7**
32 ... 35 ft (9.8 ... 10.7 m)		**HH 8**
40 lb/ft (59.5 kg/m), 4" pitch		
4 ... 7 ft (1.2 ... 2.1 m)		**JJ 1**
8 ... 11 ft (2.4 ... 3.4 m)		**JJ 2**
12 ... 15 ft (3.7 ... 4.6 m)		**JJ 3**
16 ... 19 ft (4.9 ... 5.8 m)		**JJ 4**
20 ... 23 ft (6.1 ... 7.0 m)		**JJ 5**
24 ... 27 ft (7.3 ... 8.2 m)		**JJ 6**
28 ... 31 ft (8.5 ... 9.4 m)		**JJ 7**
32 ... 35 ft (9.8 ... 10.7 m)		**JJ 8**
45 lb/ft (67.0 kg/m), 4" pitch		
4 ... 7 ft (1.2 ... 2.1 m)		**KK 1**
8 ... 11 ft (2.4 ... 3.4 m)		**KK 2**
12 ... 15 ft (3.7 ... 4.6 m)		**KK 3**
16 ... 19 ft (4.9 ... 5.8 m)		**KK 4**
20 ... 23 ft (6.1 ... 7.0 m)		**KK 5**
24 ... 27 ft (7.3 ... 8.2 m)		**KK 6**
28 ... 31 ft (8.5 ... 9.4 m)		**KK 7**
32 ... 35 ft (9.8 ... 10.7 m)		**KK 8**
50 lb/ft (74.4 kg/m), 4" pitch		
4 ... 7 ft (1.2 ... 2.1 m)		**LL 1**
8 ... 11 ft (2.4 ... 3.4 m)		**LL 2**
12 ... 15 ft (3.7 ... 4.6 m)		**LL 3**
16 ... 19 ft (4.9 ... 5.8 m)		**LL 4**
20 ... 23 ft (6.1 ... 7.0 m)		**LL 5**
24 ... 27 ft (7.3 ... 8.2 m)		**LL 6**
28 ... 31 ft (8.5 ... 9.4 m)		**LL 7**
32 ... 35 ft (9.8 ... 10.7 m)		**LL 8**
60 lb/ft (89.3 kg/m), 6" pitch		
4 ... 7 ft (1.2 ... 2.1 m)		**NN 1**
8 ... 11 ft (2.4 ... 3.4 m)		**NN 2**
12 ... 15 ft (3.7 ... 4.6 m)		**NN 3**
16 ... 19 ft (4.9 ... 5.8 m)		**NN 4**
20 ... 23 ft (6.1 ... 7.0 m)		**NN 5**
24 ... 27 ft (7.3 ... 8.2 m)		**NN 6**
28 ... 31 ft (8.5 ... 9.4 m)		**NN 7**
32 ... 35 ft (9.8 ... 10.7 m)		**NN 8**

Selection and Ordering data		Order No.
Milltronics test chains	C)	**7MH7161-**
Roller test chains are used for belt scale calibration when material tests are not practical. All test chains are bushed. Minimum length is 4 feet (1.2 m).		**0 ■■■ 0**
70 lb/ft (104.2 kg/m), 6" pitch		
4 ... 7 ft (1.2 ... 2.1 m)		**PP 1**
8 ... 11 ft (2.4 ... 3.4 m)		**PP 2**
12 ... 15 ft (3.7 ... 4.6 m)		**PP 3**
16 ... 19 ft (4.9 ... 5.8 m)		**PP 4**
20 ... 23 ft (6.1 ... 7.0 m)		**PP 5**
24 ... 27 ft (7.3 ... 8.2 m)		**PP 6**
28 ... 31 ft (8.5 ... 9.4 m)		**PP 7**
32 ... 35 ft (9.8 ... 10.7 m)		**PP 8**
80 lb/ft (119.1 kg/m), 6" pitch		
4 ... 7 ft (1.2 ... 2.1 m)		**QQ 1**
8 ... 11 ft (2.4 ... 3.4 m)		**QQ 2**
12 ... 15 ft (3.7 ... 4.6 m)		**QQ 3**
16 ... 19 ft (4.9 ... 5.8 m)		**QQ 4**
20 ... 23 ft (6.1 ... 7.0 m)		**QQ 5**
24 ... 27 ft (7.3 ... 8.2 m)		**QQ 6**
28 ... 31 ft (8.5 ... 9.4 m)		**QQ 7**
32 ... 35 ft (9.8 ... 10.7 m)		**QQ 8**
90 lb/ft (133.9 kg/m), 6" pitch		
4 ... 7 ft (1.2 ... 2.1 m)		**RR 1**
8 ... 11 ft (2.4 ... 3.4 m)		**RR 2**
12 ... 15 ft (3.7 ... 4.6 m)		**RR 3**
16 ... 19 ft (4.9 ... 5.8 m)		**RR 4**
20 ... 23 ft (6.1 ... 7.0 m)		**RR 5**
24 ... 27 ft (7.3 ... 8.2 m)		**RR 6**
28 ... 31 ft (8.5 ... 9.4 m)		**RR 7**
32 ... 35 ft (9.8 ... 10.7 m)		**RR 8**
100 lb/ft (148.8 kg/m), 6" pitch		
4 ... 7 ft (1.2 ... 2.1 m)		**SS 1**
8 ... 11 ft (2.4 ... 3.4 m)		**SS 2**
12 ... 15 ft (3.7 ... 4.6 m)		**SS 3**
16 ... 19 ft (4.9 ... 5.8 m)		**SS 4**
20 ... 23 ft (6.1 ... 7.0 m)		**SS 5**
24 ... 27 ft (7.3 ... 8.2 m)		**SS 6**
28 ... 31 ft (8.5 ... 9.4 m)		**SS 7**
32 ... 35 ft (9.8 ... 10.7 m)		**SS 8**
Further models		Order code
Please add "-Z" to Order No. and specify Order codes(s)		
Total length		
Enter the total length in plain text description: Y01: Total length ... ft		**Y01**
Instruction manual		Order No.
English	C)	**7ML1998-5JD01**
German	C)	**7ML1998-5JD31**
Note: The instruction manual should be ordered as a separate item on the order.		
This device is shipped with the Siemens Milltronics manual CD containing the complete instruction manual library.		

C) Subject to export regulations AL: N, ECCN: EAR99.

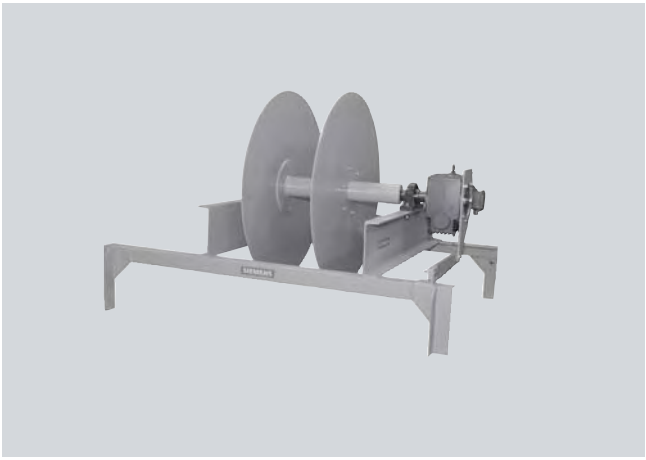
Dimensional drawings



Milltronics test chain dimensions

Milltronics Test Chain Storage Reels

Overview



Test chain storage reels are used to store roller test chains. All test chain storage reels come with a geared brake motor.

Benefits

- Mounts to existing conveyor structure above belt
- Motorized application and retraction of test chains for calibration
- Fast and easy calibration

Application

Milltronics calibration test chain storage reels provide motorized application and retraction of test chains. Complete with an AC motorized storage reel, test chain reels ensure safe and quick use of calibration test chains. Designed for use in environments where material tests cannot be performed, test chain storage reels are available in any belt width to meet existing customer conveyor geometry. For linearity tests dual compartment reels are available for different chain weight calibration. Test chain storage reels have a brake integral to the motor ensuring that test chains do not un-reel during power outages or material running.

Technical specifications

Medium conditions	
Operating temperature	-10 to +60 °C (+14 to +140 °F)
Design	• polyester painted structural steel • 10 mm (3/8") galvanized rope provided for chain spooling • self aligning pillow block bearings
Reel	up to 1524 mm (60") chain application at 7 to 10 RPM
Drive motor	TEFC, AC, three phase motor with shaft mounted helical bevel gear reducer
Approvals	CE, C-TICK

Selection and Ordering data

		Order No.
Milltronics test chain storage reels	C)	**7MH7163-**
Test chain storage reels are used to store roller test chains. All test chain storage reels come with a geared brake motor.		
Compartment size		
5 inches (127 mm) for chain sizes: 5 lb/ft (7.4 kg/m), 10 lb/ft (14.9 kg/m)		**0**
6 inches (152 mm) for chain sizes: 7.5 lb/ft (11.2 kg/m)		**1**
7 inches (178 mm) for chain sizes: 15 lb/ft (22.3 kg/m), 20 lb/ft (29.8 kg/m), 25 lb/ft (37.2 kg/m)		**2**
8 inches (203 mm) for chain sizes: 30 lb/ft (44.6 kg/m), 35 lb/ft (52.1 kg/m)		**3**
11 inches (279 mm) for chain sizes: 40 lb/ft (59.5 kg/m), 45 lb/ft (67.0 kg/m), 50 lb/ft (74.4 kg/m)		**4**
12 inches (305 mm) for chain sizes: 55 lb/ft (81.9 kg/m), 60 lb/ft (89.3 kg/m)		**5**
13 inches (330 mm) for chain sizes: 70 lb/ft (104.2 kg/m)		**6**
14 inches (356 mm) for chain sizes: 80 lb/ft (119.1 kg/m), 100 lb/ft (148.8 kg/m)		**7**
16 inches (406 mm) for chain sizes: 90 lb/ft (133.9 kg/m)		**8**
C dimension		
25" (635 mm)		**AA**
26" (660 mm)		**AB**
27" (686 mm)		**AC**
28" (711 mm)		**AD**
29" (737 mm)		**AE**
30" (762 mm)		**AF**
31" (787 mm)		**AG**
32" (813 mm)		**AH**
33" (838 mm)		**AJ**
34" (864 mm)		**AK**
35" (889 mm)		**AL**
36" (914 mm)		**AM**
37" (940 mm)		**AN**
38" (965 mm)		**AP**
39" (991 mm)		**AQ**
40" (1016 mm)		**AR**
41" (1041 mm)		**AS**
42" (1067 mm)		**AT**
43" (1092 mm)		**AU**
44" (1118 mm)		**AV**
45" (1143 mm)		**AW**
46" (1168 mm)		**BA**
47" (1194 mm)		**BB**
48" (1219 mm)		**BC**
49" (1245 mm)		**BD**
50" (1270 mm)		**BE**
51" (1295 mm)		**BF**
52" (1321 mm)		**BG**
53" (1346 mm)		**BH**
54" (1372 mm)		**BJ**
55" (1397 mm)		**BK**
56" (1422 mm)		**BL**
57" (1448 mm)		**BM**
58" (1473 mm)		**BN**
59" (1499 mm)		**BP**
60" (1524 mm)		**BQ**
61" (1549 mm)		**BR**
62" (1575 mm)		**BS**
63" (1600 mm)		**BT**

Selection and Ordering data		Order No.
Milltronics test chain storage reels	C)	**7MH7163-**
Test chain storage reels are used to store roller test chains. All test chain storage reels come with a geared brake motor.		
64" (1626 mm)		**BU**
65" (1651 mm)		**BV**
66" (1676 mm)		**BW**
67" (1702 mm)		**CA**
68" (1727 mm)		**CB**
69" (1753 mm)		**CC**
70" (1778 mm)		**CD**
71" (1803 mm)		**CE**
72" (1829 mm)		**CF**
73" (1854 mm)		**CG**
74" (1880 mm)		**CH**
75" (1905 mm)		**CJ**
76" (1930 mm)		**CK**
77" (1956 mm)		**CL**
78" (1981 mm)		**CM**
79" (2007 mm)		**CN**
80" (2032 mm)		**CP**
81" (2057 mm)		**CQ**
82" (2083 mm)		**CR**
83" (2108 mm)		**CS**
84" (2134 mm)		**CT**
85" (2159 mm)		**CU**
86" (2184 mm)		**CV**
87" (2210 mm)		**CW**
88" (2235 mm)		**DA**
89" (2261 mm)		**DB**
90" (2286 mm)		**DC**
91" (2311 mm)		**DD**
92" (2337 mm)		**DE**
93" (2362 mm)		**DF**
94" (2388 mm)		**DG**
95" (2413 mm)		**DH**
96" (2438 mm)		**DJ**
97" (2464 mm)		**DK**
98" (2489 mm)		**DL**
99" (2515 mm)		**DM**
100" (2540 mm)		**DN**
101" (2565 mm)		**DP**
102" (2591 mm)		**DQ**
103" (2616 mm)		**DR**
104" (2642 mm)		**DS**
105" (2667 mm)		**DT**
3 Phase motor voltage		
230/460V 60Hz		**1**
200/400V 50Hz		**2**
575V 60Hz		**3**
190/380V 50Hz		**4**
190/380V 60Hz		**5**
220V 60Hz		**6**
415V 50Hz		**7**
Reel type		
Single compartment for 1 calibration test chain		**0**
Double compartment for 2 calibration test chains		**1**

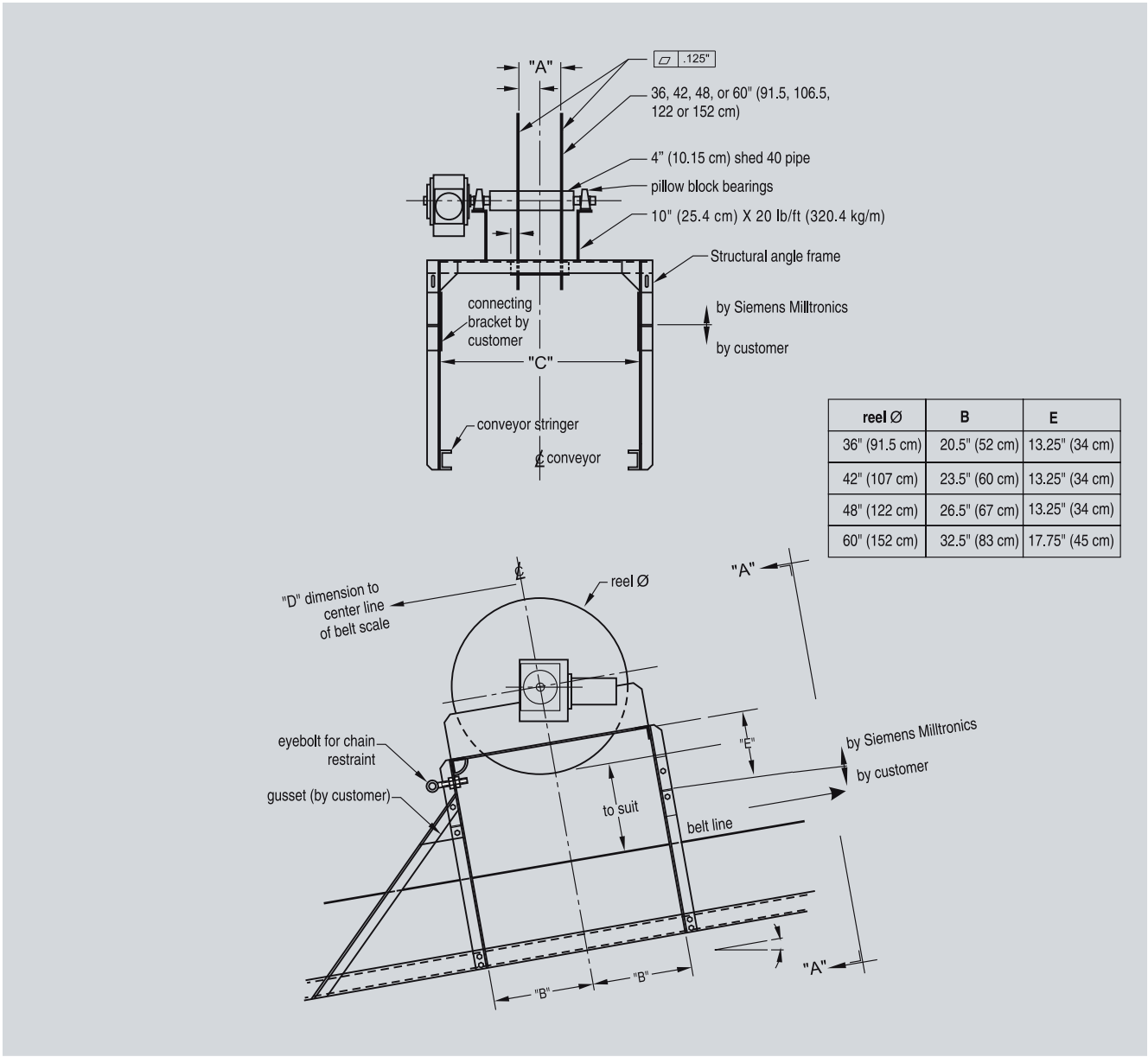
Selection and Ordering data		Order No.
Milltronics test chain storage reels	C)	**7MH7163-**
Test chain storage reels are used to store roller test chains. All test chain storage reels come with a geared brake motor.		
Reel diameter/motor mount location		
36" (914 mm) / right hand access		**0**
42" (1067 mm) / right hand access		**1**
48" (1219 mm) / right hand access		**2**
60" (1372 mm) / right hand access		**3**
36" (914 mm) / left hand access		**4**
42" (1067 mm) / left hand access		**5**
48" (1219 mm) / left hand access		**6**
60" (1372 mm) / left hand access		**7**
Motor power		
0.75 hp (0.56 kw)		**A**
1 hp (0.75 kw)		**B**
1.5 hp (1.12 kw)		**C**
2 hp (1.5 kw)		**D**
3 hp (2.24 kw)		**E**
5 hp (3.73 kw)		**F**
7.5 hp (5.59 kw)		**G**
10 hp (7.5 kw)		**H**
15 hp (11.19 kw)		**J**
20 hp (14.91 kw)		**K**
Instruction manual		
English	C)	**7ML1998-5JD01**
German	C)	**7ML1998-5JD31**
Note: The instruction manual should be ordered as a separate item on the order.		
This device is shipped with the Siemens Milltronics manual CD containing the complete instruction manual library.		

C) Subject to export regulations AL: N, ECCN: EAR99.

4

Milltronics Test Chain Storage Reels

Dimensional drawings



reel Ø	B	E
36" (91.5 cm)	20.5" (52 cm)	13.25" (34 cm)
42" (107 cm)	23.5" (60 cm)	13.25" (34 cm)
48" (122 cm)	26.5" (67 cm)	13.25" (34 cm)
60" (152 cm)	32.5" (83 cm)	17.75" (45 cm)

Milltronics test chain storage reel dimension

Selection and Ordering data

		Order No.	
Totalizer			
150 x 150 x 100D NEMA 4 /IP65 Enclosure	C)	**7MH7723-1GG**	
Ticket Printers			
Ticket printer, TM-U295, 100 to 240 V		**7MH7726-1AK**	
Roll printer			
TMU220B, 100 to 240 V (required for German and Spanish printing)	C)	**7MH7726-1AT**	
Printer cables for TM-U295 and TMU220B, RS-232, DB25 to open end		**7MH7726-1AH**	
RS-485 to RS-232 DB25 male converters for TM-U295 and TMU220B printer	C)	**7MH7726-1AJ**	
Chart recorder	C)	**7MH7726-1AL**	
Totalizer with Hi/Low alarm lights, 584 x 483 x 203D NEMA 4 /IP65 Enclosure			
Terminal box load cell / speed sensor, 150 x 150 x 100 NEMA 4 /IP65 Enclosure			
Mild steel	C)	**7MH7726-1AB**	
Stainless steel	C)	**7MH7726-1AC**	
Mild steel, 4 load cell	C)	**7MH7726-1AQ**	
Stainless steel, 4 load cell	C)	**7MH7726-1AR**	
Note: for MMI-3 standard and 4 load cell, terminal boxes are required.			
Belt scale connection cable (order per meter)		**7MH7723-1JR**	
Note: For use with 1 or 2 load cell belt scales, for 4 or 6 load cell belt scales use 2 cables. This cable is intended for less than 150 m (500 ft)			

		Order No.	
Inclinometer			
Celesco Model IT9420		**7MH7726-1AP**	
Belt scale spare load cells			
For Milltronics Torque shaft belt scale (MTS), model CD or CFT, mounting hardware included			
50 lb (22.7 kg)	C)	**7MH7725-1BA**	
75 lb (34 kg)	C)	**7MH7725-1BB**	
100 lb (45.4 kg)	C)	**7MH7725-1BC**	
150 lb (68 kg)	C)	**7MH7725-1BD**	
300 lb (136.1 kg)	C)	**7MH7725-1BE**	
500 lb (226.8 kg)	C)	**7MH7725-1BF**	
750 lb (340.2 kg)	C)	**7MH7725-1BG**	
1000 lb (453.6 kg)	C)	**7MH7725-1BH**	
1500 lb (680.4 kg)	C)	**7MH7725-1BJ**	
For MSI belt scale with round static beam,low-profile, mounting hardware included, model 60048-XXX-0137 or 60048-XXX-0129			
25 lb (11.3 kg)	C)	**7MH7725-1AJ**	
50 lb (22.7 kg)	C)	**7MH7725-1AK**	
100 lb (45.4 kg)	C)	**7MH7725-1AL**	
200 lb (90.7 kg)		**7MH7725-1AM**	
400 lb (181.4 kg)		**7MH7725-1AN**	
500 lb (226.8 kg)	C)	**7MH7725-1AP**	
1000 lb (453.6 kg)		**7MH7725-1AQ**	
For retrofitting current and older version of MSI with Group 4, mounting hardware included, Sensortronics 60048-xxx-0138, or RTI. Model 6500			
50 lb (22.7 kg)	C)	**7MH7725-1AC**	
100 lb (45.4 kg)	C)	**7MH7725-1AD**	
250 lb (113.4 kg)	C)	**7MH7725-1AE**	
500 lb (226.8 kg)	C)	**7MH7725-1AF**	
750 lb (340.2 kg)	C)	**7MH7725-1AG**	
1000 lb (453.6 kg)	C)	**7MH7725-1AH**	

Milltronics Belt Scale Peripherals

		Order No.	
For retrofitting older version of MSI C462 (transducers incorporated), mounting hardware included			
50 lb (22.7 kg)		**PBD-23900005**	
100 lb (45.4 kg)		**PBD-23900010**	
250 lb (113.4 kg)		**PBD-23900012**	
For retrofitting older MMW & MCS belt scales that do not have a conduit adaptor, belt scale mounting hardware included			
50 lb	C)	**7MH7725-1BN**	
100 lb	C)	**7MH7725-1BP**	
250 lb	C)	**7MH7725-1BQ**	
For retrofitting older MIC belt scale, mounting hardware included			
25 lb		**Replace with 50 lb**	
50 lb (22.7 kg)		**PBD-61009735**	
100 lb (45.4 kg)		**PBD-61009731**	
250 lb (113.4 kg)		**PBD-61009732**	
500 lb (226.8 kg)		**PBD-61009733**	
1000 lb (453.6 kg)		**PBD-61009734**	
2000 lb (907.2 kg)		**PBD-61009737**	
Kit, 2 Idler Cable Suspension		**PBD-61010081**	
Kit, 2 Idler Cable Suspension, Heavy Duty		**PBD-61010082**	
Kit, 4 Idler Cable Suspension, Heavy Duty		**PBD-61010742**	
Kit, 4 Idler Cable Suspension, Magnum		**PBD-61010743**	
Kit, 4 Idler Cable Suspension, Standard		**PBD-61010741**	
Right Pivot Assembly		**PBD-20150020**	
Left Pivot Assembly		**PBD-20150015**	
Bearing Assembly		**PBD-51010202**	
Shock Washers		**PBD-54000161**	
Bearing Flange 1 3/16		**PBD-20250015**	
For MUS HD aluminum model 7MH71202, mounting hardware included			
50 kg (110.2 lb)	C)	**7MH7725-1BW**	
100 kg (220.4 lb)	C)	**7MH7725-1BX**	
150 kg (330.7 lb)	C)	**7MH7725-1BY**	
200 kg (440.9 lb)	C)	**7MH7725-1CA**	
300 kg (661.4 lb)	C)	**7MH7725-1CB**	
500 kg (1102.3 lb)	C)	**7MH7725-1CC**	
For WD600 model 7MH7185			
25 lb (11.3 kg)		**PBD-23900224**	
50 lb (22.7 kg)		**PBD-23900225**	