

Food Conveyor Belting



MECTROL®



Gates Mectrol

DESIGN LEADERSHIP AND SERVICE

Reflecting 25 years of synchronous timing belt experience, the Gates Mectrol food belt product line represents the “next generation” of food processing belting. Features such as embedded tension cords to eliminate stretch, a robust pin splice design for quick belt fastening and removal, a coextrusion process to reduce surface “sinks” and a “split tooth” weld for greater weld strength are all examples of Gates Mectrol’s design leadership.

While the products are evolving quickly, one constant through all this is Gates Mectrol’s position as *the* service leader. The short lead times and ability to expedite orders same day sets Gates Mectrol apart.

Reinforced Urethane Food Belting

Advantages

- Easy to clean
 - Reduces risk of microbial contamination
 - 43% less surface area to clean than plastic modular belting
 - Appropriate for Clean In Place (CIP) cleaning protocol
- These blue belts are “green”
 - Significant cleaning water savings, cleaning labor savings and wastewater reduction
 - 600 gallons in annual water savings for every foot of 24” wide plastic modular belting replaced
 - Half the cleaning time of plastic modular belting
 - 30% lighter than plastic modular belting
 - Less energy used
 - Easier on motor bearings
- Belt construction
 - Kevlar® tension members stabilize belt properties under all lengths, loads and temperatures
 - No retensioning, due to stretch, needed
- Innovative belt joining technology
 - Robust, “split tooth” joining process eliminates service callbacks



Easily Cleaned In Place

Gates Mectrol Food Belts

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Gates Mectrol Food Belts

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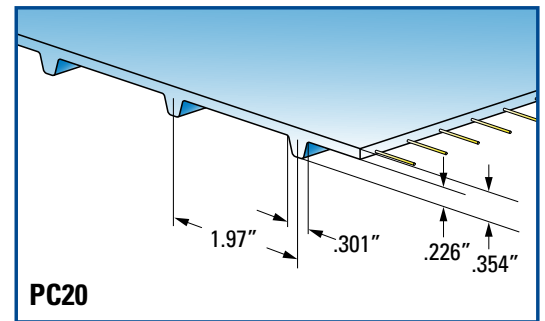
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Food Belt Product Line

GATES MECTROL FOOD CONVEYOR BELTING

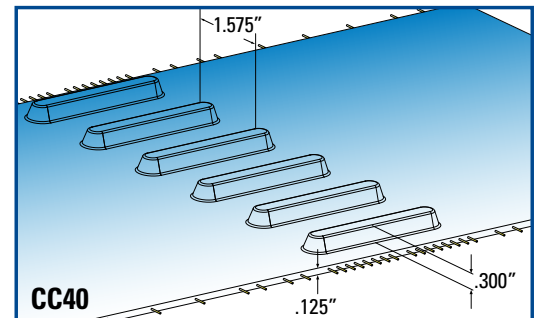
PosiClean® Food Conveyor Belting

- 2" pitch (PC20) for standard to high loads
- 1" pitch (PC10) for improved transfer between conveyors
- Special construction belts for cold temperature and heavier loads
- Direct replacement of most 1" and 2" pitch plastic modular belt
- Full width drive tooth distributes torque over entire belt width making this belt appropriate for high load applications
- Widths up to 36"



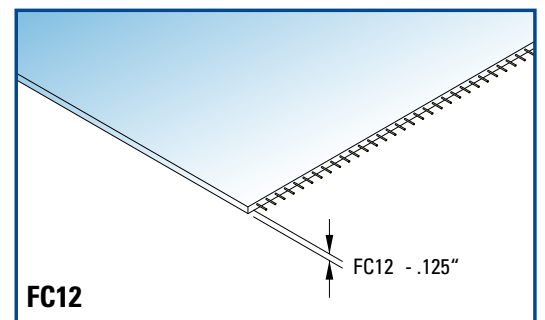
CenterClean™ Food Conveyor Belting

- Drive teeth only in the center three inches of the belt (or two tracks of teeth for belt widths greater than 30")
- Pitch length of 1.575" (40 mm)
- Appropriate for troughing applications
- Widths up to 48"



FlatClean™ Food Conveyor Belting

- Appropriate for troughing applications
- Widths up to 60"



PosiClean® Belting

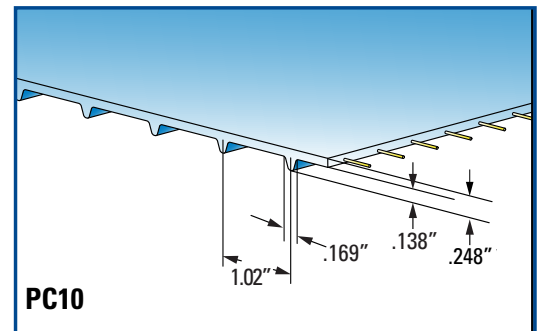
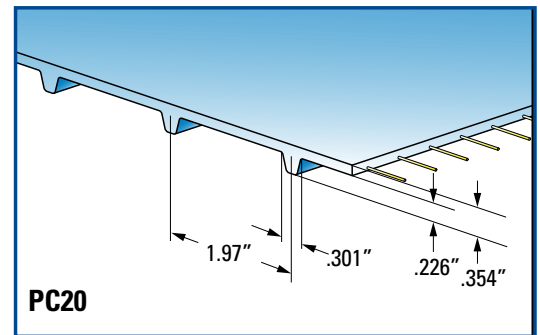
POSICLEAN® BELTING is an easy to clean, positive drive replacement for plastic modular belt in the food processing industry. PosiClean belting has sealed Kevlar® tension members to limit belt stretch and a tooth construction that extends across the full belt width for better torque distribution.

APPLICATION CHARACTERISTICS

- Replacement for plastic modular belt
 - Easier cleaning
 - No hinges or pins to break and possibly contaminate product
 - Quieter operation
 - 30% less weight
- Less labor and cleaning water than plastic modular belt
- Formulated for wash down environments
- Full width drive tooth distributes torque over entire belt width making this belt appropriate for high load applications

FEATURES

- Direct replacement of most 1" and 2" pitch plastic modular belt
- Smooth surface allows cleaning to microbiological level and clean-in-place process
- Sealed edges and tension members prevent ingress of microbes
- Kevlar® tension members provide high strength, low stretch
 - Stabilize belt under all lengths, loads and temperatures
- Tough polyurethane construction
 - Water and chemical resistant
 - Meets FDA material requirements for wet food contact
- Welded endless or spliced with stainless steel or plastic lacing
- USDA accepted for meat, poultry and dairy processing equipment



PosiClean® Belting

POSICLEAN BELTING SPECIFICATIONS

Belt Options	PC20			PC10 Standard
	Standard	Hi Torque	Cold Temp	
Designator	KV-FDA	HDK-FDA	HDK-R6	KV-FDA
Cords/Inch	2	4	2	2
Pitch (nominal)	1.97" (50 mm)	1.97" (50 mm)	1.97" (50 mm)	1.02" (26 mm)
Hardness - Shore A	95	95	85	95
Surface Textures	Smooth & Inverted Pyramid			Smooth & Inverted Pyramid
Specific Belt Weight (lbs/ft/in)	0.089	0.089	0.089	0.063
Specific Belt Stiffness (lbs/inch)	7400	11800	7400	7400
Min. Sprocket Dia. Service Temp Above 25°F	3.76" (95.5 mm)	3.76" (95.5 mm)	3.76" (95.5 mm)	2.0" (50.8 mm)
Min. Sprocket Dia. Service Temp Below 25°F	6.27" (159.3 mm)	6.27" (159.3 mm)	6.27" (159.3 mm)	3.25" (82.6 mm)
Min. Back Bend Dia. Above 25°F	6" (152.4 mm)	6" (152.4 mm)	6" (152.4 mm)	3.5" (88.9 mm)
Min. Back Bend Dia. Below 25°F	10" (254.0 mm)	10" (254.0 mm)	10" (254.0 mm)	5" (127.0 mm)
Service Temperature Range	-4° to 158° F (-20° to 70°C)	-4° to 158° F (-20° to 70°C)	-10° to 158° F (-23° to 70°C)	+15° to 160° F (-9° to 71°C)
Ultimate Belt Strength (lbs/in of width)	265	502	528	294
Coefficient of Friction (dynamic/static)				
Urethane vs. UHMW - Dry	0.20 / 0.30	0.20 / 0.30	0.54 / 0.69	0.20 / 0.30
Urethane vs. UHMW - Wet	0.35 / 0.58	0.35 / 0.58	-	0.35 / 0.58
Urethane vs. Stainless Steel - Dry	0.38 / 0.41	0.38 / 0.41	0.64 / 0.68	0.38 / 0.41
Urethane vs. Stainless Steel - Wet	0.40 / 0.57	0.40 / 0.57	-	0.40 / 0.57
Coefficient of Thermal Expansion (in/in/°F) (mm/mm/°C)	1.09 x 10-4 1.96 x 10-4	1.09 x 10-4 1.96 x 10-4	1.09 x 10-4 1.96 x 10-4	1.09 x 10-4 1.96 x 10-4
Color	PosiBlue, PosiWhite	PosiBlue	PosiBlue	PosiBlue, PosiWhite
Min. and Max. Width	5"/36" (127/914 mm)	5"/36" (127/914 mm)	5"/36" (127/914 mm)	4"/36" (102/914 mm)
Std. Roll Length	200' (61 m)	200' (61 m)	200' (61 m)	200' (61 m)

PosiClean Series Part Number Nomenclature

PC20	3000 /	2400	
			Width: 24.00 "
			Length: 300.0" (PC 10 must be in increments of 1.02", PC20 must be in increments of 1.97")
			Pitch: PC10, PC20 ("HDK" for PC20 4 cord per inch, "R6" for Cold Temp.)

PosiClean® Belting

Max. Allowable Tension (lbs per inch width)¹ based on Splicing Option

Joining Options	PC20			PC10 Standard
	Standard	Hi Torque	Cold Temp	
Platen Weld - 30 mm x 70 mm Finger	50	64	46	35
Platen Weld - Split Tooth	40	40	37	31
Butt Weld	31	31	30	31
PosiLace™	26	26	26	N/A
Flexco® UX1SS Clipper® Wire Hooks	31	41	37	31
Flexco® APF150 Alligator® Plastic Rivet	25	25	23	N/A
Flexco® APF100 Alligator® Plastic Rivet	N/A	N/A	N/A	25
Flexco® RS125 Alligator® Ready Set™ Staple	26	26	23	N/A
Flexco® RS62 Alligator® Ready Set™ Staple	N/A	N/A	N/A	26

¹ Max allowable set as the lower of 25% yield strength or 2% stretch of weld or splice

PosiClean Slit Width Tolerances

Up To and Including 15.75"	15.76" to 23.62"	> 23.63" or more
+0.00 to -.125"	+0.00 to -.1875"	+0.00 to -.25"

PosiClean Belting Master Rollstock Width Tolerances

18"	36"
+/- 0.0625"	+0.125" / -0.375"

PosiClean Belt Length Tolerances

PC10	
Cut	+1.0" / -.0"
Rollstock	+/- 1%
PC20	
Cut	+2.0" / -.0"
Rollstock	+/- 1%

PosiClean® Sprockets

PosiClean Sprocket Specifications

			PC20				
Tooth Count			6	8	10	12	16
Outside Diameter (Nominal*)		inch	3.7	4.9	6.2	7.5	10.0
		mm	94	129	157	191	254
Width (Nominal)		inch	1.3	1.3	1.3	1.3	1.3
		mm	32.0	32.0	32.0	32.0	32.0
Bore Size	Imperial	square, in	1.5	1.5	1.5	1.5	1.5
		round, in	1	1	1	1	1
	Metric	square, mm	40	40	40	40	40
		round, mm	30	30	30	30	30
In Stock (Square Bore Only)	(F = Flange, NF = No Flange)		F, NF	F, NF	F, NF	F, NF	F, NF
Weight	(lbs)		.32	.68	.57	1.7	3.1

PC10				
6	8	10	12	20
1.9	2.5	3.2	3.8	6.4
48	64	81	97	163
1	1	1	1	1
25.4	25.4	25.4	25.4	25.4
N/A	N/A	1.5	1.5	1.5
1	1	N/A	N/A	N/A
N/A	N/A	40	40	40
30	30	N/A	N/A	N/A
		NF	NF	NF
.06	.12	.17	.30	.99

* Imperial keyway sizes on round bores conform to ANSI standard B17.1 - 1967 (R1989); metric keyway sizes conform to BS 4235: Part 1: 1972 (1986)

For pulleys with flanges, add .196" to outside diameter to get flange diameter.

Notes:

- Injection molded pulleys - acetal, machined pulleys - UHMW-PE
- Sprockets must be locked into position on the shaft.
- PC10 belting can run on some competitor's plastic modular belting with 8, 10, 12 and 20 tooth sprockets.
- PC20 belting can run on some competitor's plastic modular belting with 8, 10 and 12 tooth sprockets.



PosiClean Sprocket & Support Guidelines (PC10 and PC20)

Belt Width	6" (152 mm)	9" (221 mm)	12" (305 mm)	15" (381 mm)	18" (451 mm)	21" (533 mm)	24" (610 mm)	27" (686 mm)	30" (672 mm)	36" (914 mm)
Min. No. Sprockets Max. 5" (127 mm) spacing center to center	3	3	4	4	5	6	6	7	7	8
No. of Sprockets for max. allow. tension Max. 3" (76 mm) spacing center to center	3	4	5	6	7	8	9	10	11	13
Min. No. Carryway Supports 6" (152 mm) spacing center to center	2	3	3	4	4	5	5	6	6	7

CenterClean™ Belting

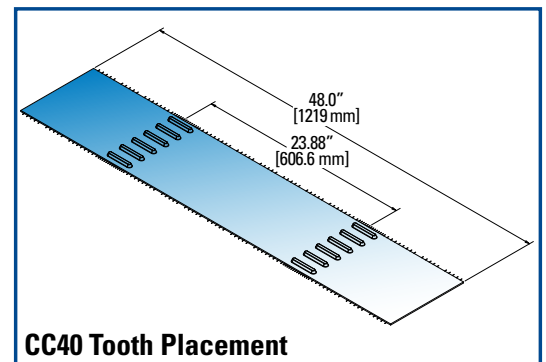
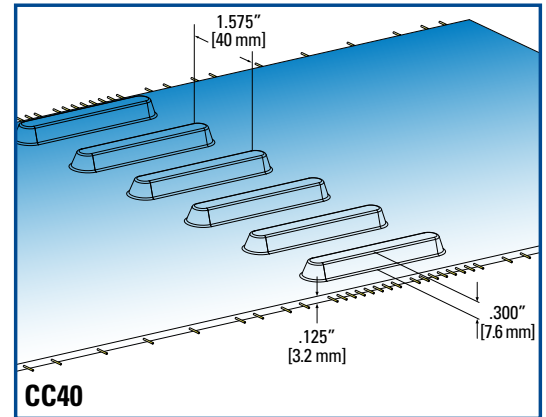
CENTERCLEAN 40 belting has drive teeth only in the center three inches of the belt and a pitch length of 1.575" (40 mm). The center position of teeth makes this belt appropriate for self-tracking and troughing applications as well as lighter load general processing.

APPLICATION CHARACTERISTICS

- Formulated for wash down environments
- Troughing conveyor
- Self-centering design

FEATURES

- Smooth surface allows cleaning to microbiological level and clean-in-place process
- Sealed edges and tension members prevent ingress of microbes
- Kevlar® tension members provide high strength, low stretch
 - Stabilize belt under all lengths, loads and temperatures
- Tough polyurethane construction
 - Water and chemical resistant
 - Meets FDA material requirements for wet food contact
- Welded endless or spliced with stainless steel or plastic lacing
- USDA accepted for meat, poultry and dairy processing equipment



CenterClean belts are constructed with flexible urethane and sealed Kevlar® tension members. This construction allows CenterClean belts to be troughed or run on small diameter pulleys with minimal belt stretch.

CenterClean™ Belting

CENTERCLEAN™ BELTING SPECIFICATIONS

Belt Options	CC40
Average Cords/inch	2
Pitch (nominal)	1.575" (40 mm)
Hardness - Shore A	95
Surface Textures	Smooth & Inverted Pyramid
Specific Belt Weight (lbs/ft/in)	0.078
Specific Belt Stiffness (lbs/inch)	7400
Min. Sprocket Dia. service temperature above 25°F	4.9" (124 mm)
Min. Sprocket Dia. service temperature below 25°F	5.9" (150 mm)
Min. Back Bend Dia. above 25°F	6" (152 mm)
Min. Back Bend Dia. below 25°F	10" (254 mm)
Service Temperature Range	15° to 160° F (-9° to 71° C)
Coefficient of Friction (dynamic/static)	
Urethane vs. UHMW - Dry	0.20 / 0.30
Urethane vs. UHMW - Wet	0.35 / 0.58
Urethane vs. Stainless Steel - Dry	0.38 / 0.41
Urethane vs. Stainless Steel - Wet	0.40 / 0.57
Coefficient of Thermal Expansion (in/in/°F) (mm/mm/°C)	1.09 x 10 ⁻⁴ 1.96 x 10 ⁻⁴
Color	PosiBlue, PosiWhite
Min. and Max. Width	6" / 48" (152 / 1219 mm)
Std. Roll Length	200' (61 m)

CenterClean Maximum Allowable Belt Tension (lbs) based on Splice Option and Belt Width

Joining Options	Width Ranges						
	Single Track				Dual Track		
	6" - 9"	>9" - 12"	>12" - 17"	>17" - 36"	>30" - 39"	>39" - 42"	>42" - 60"
Butt Weld (between the teeth)	239	275	317	344	724	766	793
PosiLace	155	179	206	223	471	498	515
UX1SS Mechanical	239	275	317	344	724	766	793
APF150 Mechanical	139	160	184	199	419	443	458
RS125 Mechanical	290	334	385	417	878	929	961

CenterClean™ Belting

CenterClean Series Part Number Nomenclature

CC40	2998 /	2400	
			Width: 24.00"
			Length: 299.8" (Must be in increments of 1.575")
			Pitch:

CenterClean Slit Width and Tooth Center Tolerances

+/- 0.125"

CenterClean Belting Master Rollstock Width Tolerances

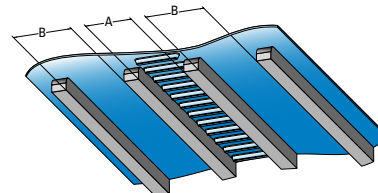
+0" / -.375"

CenterClean Belt Length Tolerances

Cut	+1.5" / -.0"
Rollstock	+/- 1%

CenterClean Carryway Support Guidelines

Distance Between Parallel Wear Strips Guiding Belt Teeth, Dim. A	3.15"
Distance Between Parallel Wear Strips Not Guiding Belt Teeth, Dim. B	4" - 6"



CenterClean Sprocket Specifications

	CC40								
		10	11	12	13	15	16	17	20
Number of Teeth									
Nom. Outside Diameter	inch	4.9	5.4	5.9	6.4	7.4	7.9	8.4	9.9
	mm	124	137	150	163	188	201	213	251
Nominal Width	inch	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
	mm	165	165	165	165	165	165	165	165
Imperial Square Bore - Dimension	inch	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Material	UHMW-PE								



Notes: CC40 belts run on most 40 mm pitch sprockets.
Sprockets must be locked into position on the shaft.

FlatClean™ Belting

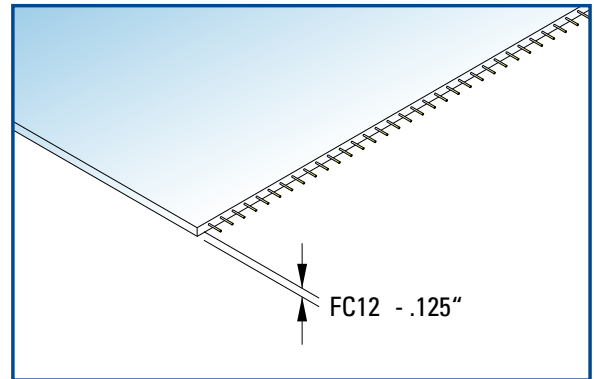
FLATCLEAN is a USDA approved, polyurethane flat belt reinforced with Kevlar® tensile members. The combination of a non-fraying polyurethane jacket material with sealed tensile members minimizes belt stretch, reduces retensioning and extends belt life.

APPLICATION CHARACTERISTICS

- Standard to high loads, particularly well suited for cleated belts
- Troughing
- Wash down environments

FEATURES

- Sealed edges and tension members prevent ingress of microbes
- Kevlar® tension members provide high strength, low stretch and are cut and abrasion resistant
 - Eliminate need to retension conveyor
 - Stabilize belt under all lengths, loads and temperatures
- Smooth surface and non-fraying edges allow cleaning to a microbiological level
- Welded endless or spliced with stainless steel lacing
- Tough polyurethane construction
 - Water and chemical resistant
 - Meets FDA material requirements for wet food contact
- FC12 is an all-purpose flat belt appropriate for most applications, 2" minimum pulley diameter
- FC9 is a specialty belt for lighter loads. It has a 1" minimum pulley diameter.
- USDA accepted for meat, poultry and dairy processing equipment



FlatClean™ Belting

FLATCLEAN™ BELTING SPECIFICATIONS

Belt Options			FC12			FC9IPR
Designator			FC12	FC12IP		
Surface Finish	Top		Smooth	Inverted Pyramid		Smooth
	Running Side		Smooth	Smooth		Inverted Pyramid
Thickness			0.125" / (3.0 mm)	0.125" / (3.0 mm)		0.125" / (3.0 mm)
Hardness, Shore A	Top (Medium Blue)		95	95		90
	Running Side (PosiBlue)		95	95		95
Cords/inch			2.0	2.0		2.5
Tensile Force for 1% Elongation (k1 Relaxed) per Unit of Width			5.4 N/mm	5.4 N/mm		4.5 N/mm
Ultimate Belt Strength (lbs/inch width)			265	265		203
Specific Belt Weight (lbs/ft/in)			0.065	0.065		0.048
Specific Belt Stiffness (lbs/inch)			7400	7400		4410
Min. Pulley Dia. Service Temperature Above 25°F			2.0" (51 mm)	2.0" (51 mm)		1.0" (26 mm)
Min. Pulley Dia. Service Temperature Below 25°F			3.0" (76 mm)	3.0" (76 mm)		2.0" (51 mm)
Min. Back Bend Dia. Above 25°F			2.0" (51 mm)	2.0" (51 mm)		2.0" (51 mm)
Min. Back Bend Dia. Below 25°F			3.0" (76 mm)	3.0" (76 mm)		3.0" (76 mm)
Service Temperature Range			+15° to 160° F (-9° to 71°C)	+15° to 160° F (-9° to 71°C)		+15° to 160° F (-9° to 71°C)
Coefficient of Friction (Dynamic/Static)						
TPU vs. UHMW	Dry	Top	0.20/0.30	0.20/0.30	Smooth	0.49/0.61
	Wet	Top	0.35/0.58	0.35/0.58	Smooth	0.50/0.65
TPU vs. Steel	Dry	Top	0.38/0.41	0.38/0.41	Smooth	0.89/1.21
	Wet	Top	0.40/0.57	0.40/0.57	Smooth	0.75/1.20
TPU vs. UHMW	Dry	Running Side	N/A	0.11/0.21	Inverted Pyramid	0.19/0.25
	Wet	Running Side	N/A	0.14/0.23	Inverted Pyramid	0.24/0.27
TPU vs. Steel	Dry	Running Side	N/A	0.22/0.27	Inverted Pyramid	0.40/0.35
	Wet	Running Side	N/A	0.23/0.28	Inverted Pyramid	0.42/0.36
Coefficient of Thermal Expansion	in/in/°F		1.09 x 10-4	1.09 x 10-4		1.09 x 10-4
	[mm/mm/°C]		1.96 x 10-4	1.96 x 10-4		1.96 x 10-4
Color	Top		PosiBlue, PosiWhite	PosiBlue, PosiWhite		Medium Blue
	Running Side					PosiBlue
Min. and Max. Width			4" / 60" (102 / 1524 mm)	4" / 60" (102 / 1524 mm)		4" / 48" (102 / 1219 mm)
Std. Roll Length			300' (91 m)	300' (91 m)		300' (91 m)

FlatClean Series Part Number Nomenclature

FC12IP	3000 /	2400
Width: 24.00 "		
Length: 300.0"		
Designator: FC9 ("IPR" for Inverted Pyramid Running Side)		
FC12 ("IP" for Inverted Pyramid One Side)		

FlatClean™ Belting

FlatClean Belting Max. Allowable Tension (lbs per inch width)¹

Joining Options	FC9IPR	FC12	FC12IP
Platen Weld - 20 mm x 70 mm Finger	30	48	48
PosiLace™	N/A	NR*	NR*
Flexco® UX1SS Clipper® Wire Hooks	33	59	59
Flexco® APF100 Alligator® Plastic Rivet	27	N/A	N/A
Flexco® APF150 Alligator® Plastic Rivet	N/A	34	34
Flexco® RS62 Alligator® Ready Set™ Staple	31	N/A	N/A
Flexco® RS125 Alligator® Ready Set™ Staple	N/A	51	51

¹ Max allowable set as the lower of 25% yield strength or 2% stretch of weld or splice

* Contact Applications for specific requests.

FlatClean Slit Width Tolerances

Up To and Including 15.75"	15.76" or more
- 0.0625"	+/- 0.125"

FlatClean Belting Master Rollstock Width Tolerances

48"
+0 / - 0.25"

FlatClean Belt Length Tolerances

Cut	+1.0" / -.0"
Rollstock	+/- 1%

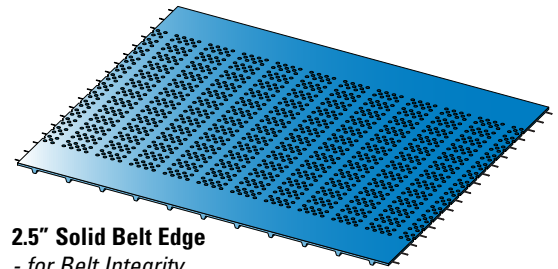
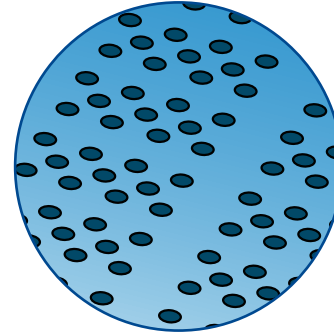
Dewatering Belt

DEWATERING BELT serves common produce processing applications such as fruits and vegetables.

- Embedded Kevlar® cord prevents belt stretch
- Longer life than mesh belting
- USDA approved and EU compliant
- Two belt constructions

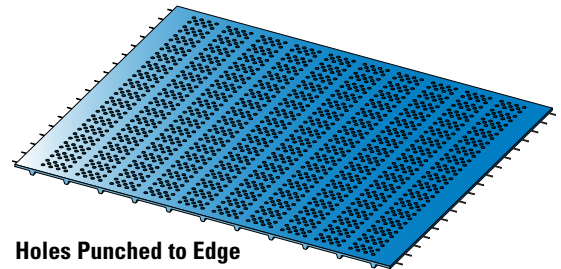
Belting Specifications

Belt Options	PC20 Modified
Designator	KV-FDA
Cords/Inch	1
Pitch (nominal)	1.97" (50 mm)
Hardness - Shore A	95
Surface Textures - Smooth & Inverted Pyramid	
Specific Belt Weight (lbs/ft/in)	0.089
Specific Belt Stiffness (lbs/inch)	3700
Min. Sprocket Dia. Service Temp Above 25°F	3.76" (95.5 mm)
Min. Sprocket Dia. Service Temp Below 25°F	6.27" (159.3 mm)
Min. Back Bend Dia. Above 25°F	6" (152.4 mm)
Min. Back Bend Dia. Below 25°F	10" (254.0 mm)
Service Temperature Range	-4° to 158° F (-20° to 70°C)
Ultimate Belt Strength (lbs/in of width)	132
Coefficient of Friction (dynamic/static)	
Urethane vs. UHMW - Dry	0.33 / 0.42
Urethane vs. UHMW - Wet	0.35 / 0.58
Urethane vs. Stainless Steel - Dry	0.52 / 0.57
Urethane vs. Stainless Steel - Wet	0.40 / 0.57
Coefficient of Thermal Expansion (in/in/°F)	1.09 x 10-4
(mm/mm/°C)	1.96 x 10-4
Color	PosiBlue
Std. Roll Stock Length	200' (61 m)



2.5" Solid Belt Edge
- for Belt Integrity

Opening	3/16" Dia. 11% Max.
Widths Available	14" to 18" and 32" to 36"



Holes Punched to Edge
- for Maximum Drainage

Opening	3/16" Dia. 15%
	1/4" Dia. 19%
Widths Available	5" to 36" in 1"

Max. Allowable Tension (lbs per inch width)¹ based on Splicing Option

Joining Options	
Butt Weld - Split Tooth	40
PosiLace™	26

¹ Max allowable set as the lower of 25% yield strength or 2% stretch of weld or splice

Dewatering Belt

PosiClean Sprocket Specifications

		PC20					
Tooth Count			6	8	10	12	16
Outside Diameter (Nominal*)		inch	3.7	4.9	6.2	7.5	10.0
		mm	94	126	158	189	253
Width (Nominal)		inch	1.3	1.3	1.3	1.3	1.3
		mm	32.0	32.0	32.0	32.0	32.0
Bore Size	Imperial	square, in	1.5	1.5	1.5	1.5	1.5
		round, in	1	1	1	1	1
	Metric	square, mm	40	40	40	40	40
		round, mm	30	30	30	30	30
In Stock(Square Bore Only)	(F = Flange, NF = No Flange)		F, NF	F, NF	F, NF	F, NF	F, NF
Weight		(lbs)	.32	.68	.57	1.7	3.1

* Imperial keyway sizes on round bores conform to ANSI standard B17.1 - 1967 (R1989);
metric keyway sizes conform to BS 4235: Part 1: 1972 (1986)

For pulleys with flanges, add .196" to outside diameter to get flange diameter.

Notes:

- Injection molded pulleys - acetal, machined pulleys - UHMW-PE
- Sprockets must be locked into position on the shaft.
- PC20 belting can run on some competitor's plastic modular belting with 8, 10 and 12 tooth sprockets.



PosiClean Sprocket & Support Guidelines

Belt Width	9" (221 mm)	12" (305 mm)	15" (381 mm)	18" (451 mm)	21" (533 mm)	24" (610 mm)	27" (686 mm)	30" (672 mm)	36" (914 mm)
Min. No. Sprockets <i>Max. 5" (127 mm) spacing center to center</i>	3	4	4	5	6	6	7	7	8
No. of Sprockets for max. <i>allow. tension Max. 3" (76 mm) spacing center to center</i>	4	5	6	7	8	9	10	11	13
Min. No. Carryway Supports <i>6" (152 mm) spacing center to center</i>	3	3	4	4	5	5	6	6	7

Fabrication

STRAIGHT CLEATS

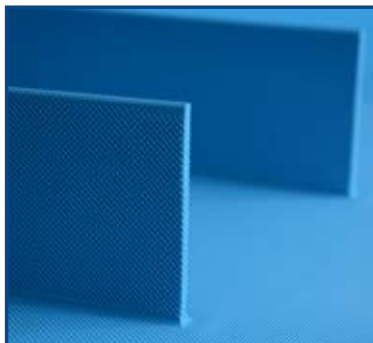
Cleats, also called “profiles” or “flights”, can be added to any Gates Mectrol Food Grade Belt to move product up an incline. Maximum belt width is 39”.

Cleat Specifications

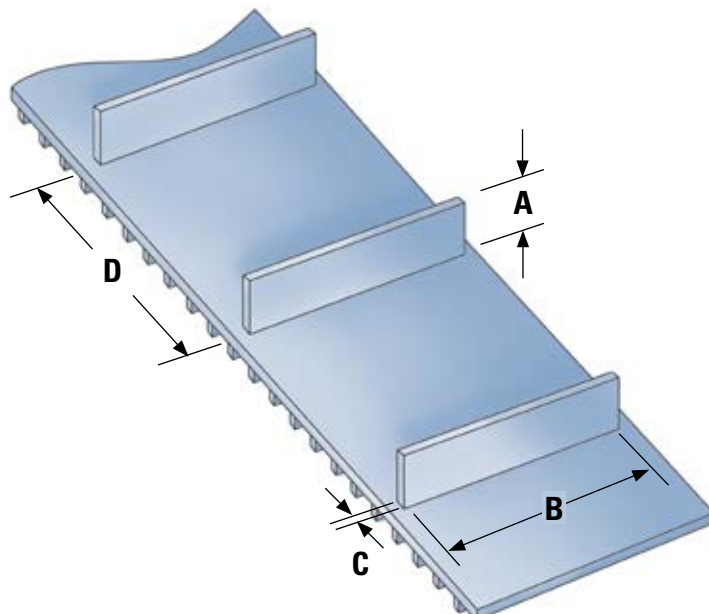
Cleat Dimensions		
Height “A”	0.25” (6 mm)	Height Tolerance ± 0.063 ” (1.5 mm)
	1” (25 mm)	
	1.5” (38 mm)	
	2” (51 mm)	
	3” (76 mm)	
	4” (102 mm)	
* Length (Width Across Belt) “B”	6” (152 mm) to 36” (0.9 m)	Length Tolerance ± 0.063 ” (1.5 mm)
Thickness “C”	0.197” (5 mm) Std.; 7 mm available	Thickness Tolerance ± 0.020 ” (0.5 mm)
Durometer	95 Shore A	
Color	PosiBlue, PosiWhite	
Surface Textures	Smooth and Inverted Pyramid	
Welding Tolerances		
Minimum Belt Length	80” (2.0 m)	
Minimum Cleat Spacing “D”	3.94” (100 mm)	
Cleat Spacing	Spacing Must Be Multiple of Belt Pitch Length	
Cleat Location	PC20 ± 0.063 ” (1.5 mm)	Over Tooth or Halfway Between Teeth
	CC40 ± 0.125 ” (3.1 mm)	Halfway Between Teeth
	PC10 ± 0.063 ” (1.5 mm)	Over Tooth
	FC12 ± 0.125 ” (3.1 mm)	
Cleat Centering Tolerance	± 0.063 ”	
Cleat Alignment Tolerance	PC10/PC20 Parallel To Belt Teeth ± 0.005 ” per inch (± 0.13 per mm) of Profile Length	
	CC40/FC12 Perpendicular To Belt Edge ± 0.010 ” per inch of Profile Length	
Multiple Cleats Across Belt	Maximum of 3 Profiles Across Belt, Pattern Must Be Symmetrical to Belt Centerline, 1.5” (38 mm) or 2” (51 mm) Separation Between Profiles	
Maximum Belt Width	39”	
Belt Sections Allowed	PC20, FC12, PC10, CC40	

Note: See belt specifications for minimum sprocket diameter and minimum back bend diameter.

* Max profile width across belt of 36”. Also, covers cases of multiple profiles and the spacing between them.



Inverted Pyramid Surface



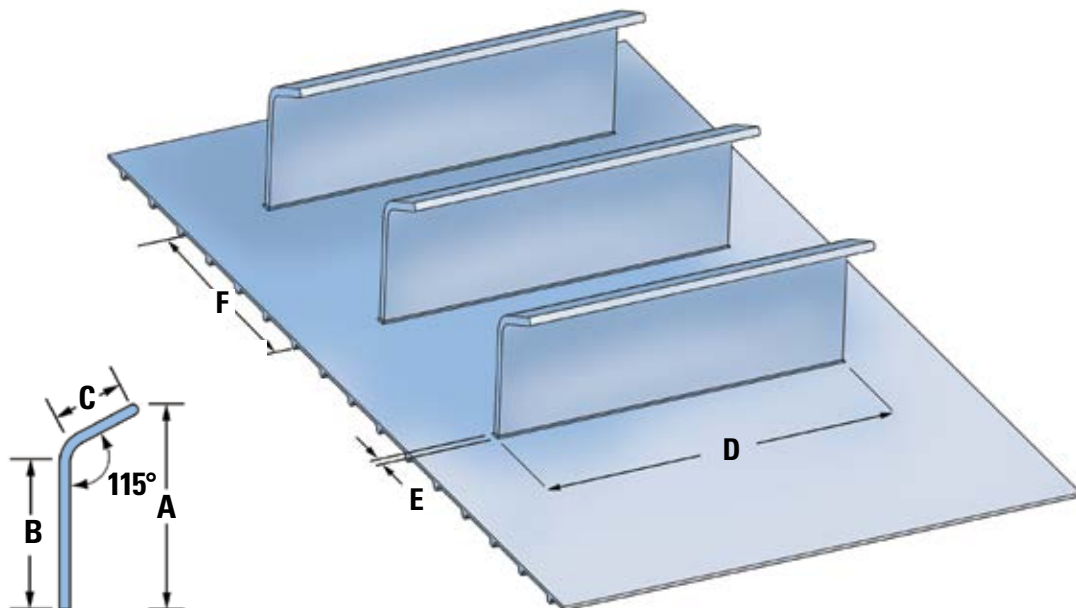
Fabrication

SCOOP CLEATS

Scoop Cleat Specifications

Scoop Cleat Dimensions							
Overall Height "A"	2.5"	3"	3.5"	4"	5"	6"	Height Tolerance +0.375"/ -0"
Vertical Height "B"	1.5" (ref.)	2" (ref.)	2.5" (ref.)	3" (ref.)	4" (ref.)	5" (ref.)	
Scoop Length "C"	2" (ref.)	2" (ref.)	2" (ref.)	2" (ref.)	2" (ref.)	2" (ref.)	
* Length (Width Across Belt) "D"	4" (101 mm) Min. Up to 36" (0.9 mm) Max.						Length Tolerance ±0.063" (1.60 mm)
Thickness "E"	0.276" (7 mm) Reference						
Durometer	95 Shore A						
Color	PosiBlue, PosiWhite						
Surface Textures	Smooth and Inverted Pyramid (IP on 3.5" only)						
Scoop Welding Tolerances							
Minimum Belt Length	80"						
Minimum Cleat Spacing "F"	3.94"						
Cleat Spacing	Spacing Must Be Multiple of Pitch Length						
Cleat Location	PC20: ±0.063 (1.5 mm)						Over or Halfway Between Teeth
	CC40: ±0.125" (3.1 mm)						Halfway Between Teeth
Cleat Centering Tolerance	±0.063						
Multiple Cleats Across Belt	Maximum of 3 Cleats Across Belt Width; Pattern Must Be Symmetrical to Belt Centerline and 1.5" to 2" Separation Between Cleats						
Maximum Belt Width	39"						
Belt Sections Allowed	PC20, CC40						
Profile Loading							
Scoop Cleat with Overall Height 6"	0.9 lbs per Inch of Cleat Length						
Scoop Cleat with Overall Height 5"	1.2 lbs per Inch of Cleat Length						
Scoop Cleat with Overall Height 4"	1.6 lbs per Inch of Cleat Length						
Scoop Cleat with Overall Height 3.5"	1.9 lbs per Inch of Cleat Length						
Scoop Cleat with Overall Height 3"	2.9 lbs per Inch of Cleat Length						
Scoop Cleat with Overall Height 2.5"	4.0 lbs per Inch of Cleat Length						

* Max profile width across belt of 36". Also, covers cases of multiple profiles and the spacing between them.



Fabrication

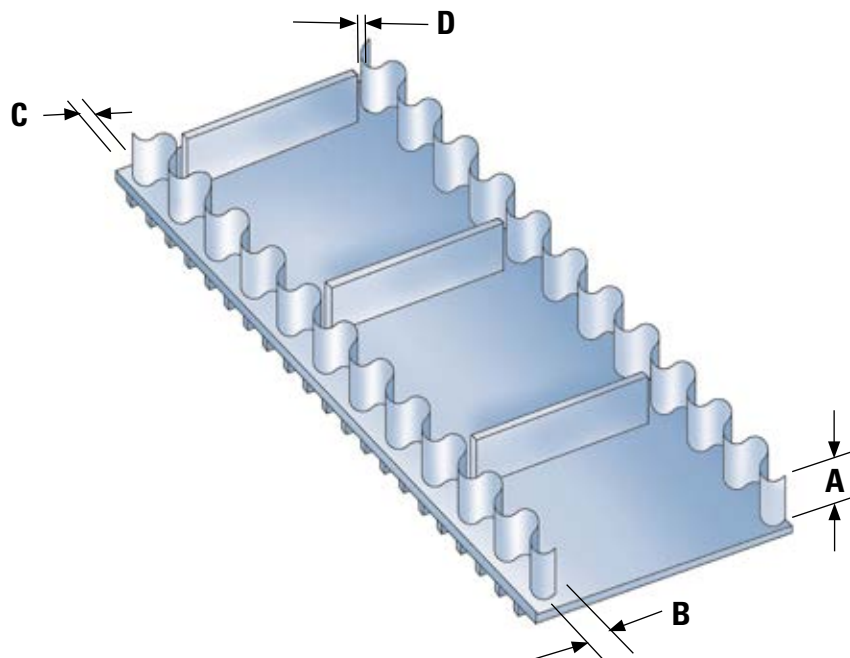
SIDEWALLS

Corrugated sidewalls can be added to any Gates Mectrol Food Grade Belt to contain product.

Sidewall Specifications

Sidewall Dimensions		
Height "A"	1.38 - 4.33" (35 - 110 mm)	Height Tolerance $\pm 0.25"$ (± 6.4 mm)
Length (Width Across Belt) "B"	1.57" (40 mm)	Length Tolerance $\pm 0.20"$ (± 5 mm)
Thickness	0.079" (2.0 mm) Nominal	Thickness Tolerance $\pm 0.015"$ (0.4 mm)
Durometer	85 Shore A	
Color	PosiBlue, PosiWhite	
Surface Textures	Smooth and Inverted Pyramid	
Sidewall Tolerances		
Minimum Belt Length	80" (2.0 m)	
Maximum Belt Length	140' (42.7 m)	
* Minimum Belt Width	8" (200 mm)	
Maximum Belt Width	48" (1219 mm)	
Minimum Distance: Belt Edge to Sidewall "C"	0.25" $\pm 0.075"$ (6 mm ± 2 mm)	
Minimum Distance: Cleat and Sidewall "D"	0.375" $\pm 0.075"$ (9.5 mm ± 2 mm)	
Minimum Sprocket Diameter Type, Which Ever is Greater	2.5x Sidewall Height or Minimum Diameter Recommendation for Belt and Fastener	
Minimum Back Bend Diameter	1.5x Sidewall Height or Minimum Diameter Recommendation for Belt, Whichever is Greater	
Sidewall Loop Alignment	Sidewalls Are Not Timed - Loops Will Not Line Up	
Sidewall End Weld	Aligned Tab or Opposed Tab	
Belt Sections Allowed	FC12, PC20, PC10, CC40	

* For belts with 2 sidewalls.



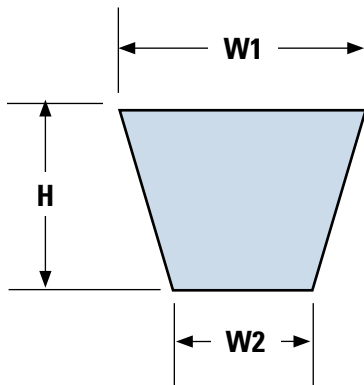
Fabrication

V-GUIDES

V-Guide Specifications

Size		W1	W2*	Height	Durometer (Shore A)	Min. Pulley Dia.	Color
Metric	Nearest English						
K6	000	0.236" (6 mm)	0.157" (4 mm)	0.157" (4 mm)	78	2.0"	PosiBlue
K8	Z	0.313" (8 mm)	0.157" (4 mm)	0.197" (5 mm)	78	2.0"	PosiBlue
K10	0	0.394" (10 mm)	0.236" (6 mm)	0.236" (6 mm)	78	2.5"	PosiBlue
	A Modified	0.472" (12 mm)	0.354" (9 mm)	0.217" (5.5 mm)	78	3.0"	PosiBlue
K13	A	0.512" (13 mm)	0.276" (7 mm)	0.315" (8 mm)	78	3.0"	PosiBlue
K17	B	0.669" (17 mm)	0.394" (10 mm)	0.433" (11 mm)	78	4.5"	PosiBlue
V-Guide Length Capabilities							
Minimum Belt Length		80" (2.0 m)					
Maximum Belt Length		140' (42.7 m)					

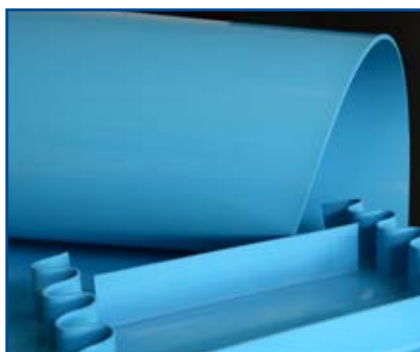
* For reference only



Fabrication

FABRICATION ACCESSORIES

Part	Part Number	Description	
Straight Cleat Master Sheet	IRF1006	5 mm x 6" X 62" w/ Rounded Edge One Side, 95 Durometer, Blue	
Sidewall Roll Stock	BUF620-152	2 mm Thick x 6" Tall x 64 meters, 85 Durometer, Blue	
V-Guides			
Metric	Nearest English		
K6	000	K6 SolidBlue V-Guide	78 Durometer, PosiBlue Color, 1000' Spool
K8	Z	K8 SolidBlue V-Guide	78 Durometer, PosiBlue Color, 1000' Spool
K10	0	K10 SolidBlue V-Guide	78 Durometer, PosiBlue Color, 1000' Spool
	A Modified	K13 SolidBlue V-Guide	78 Durometer, PosiBlue Color, 1000' Spool
K13	A	A SolidBlue	78 Durometer, PosiBlue Color, 1000' Spool
K17	B	K17 SolidBlue V-Guide	78 Durometer, PosiBlue Color, 500' Spool



Cleat Master Sheet



Sidewall Rollstock



V-Guides, Spooled

Joining

SPLICING

Note: Fastener strength ratings are specific to the belt to which they are applied. See Maximum Allowed Tension specifications in belting specifications tables.

- **Finger Weld** – uses a 30 mm x 70 mm tapered finger and a platen press weld. The shear strength provided by the overlapping tension members provides for the highest maximum allowable belt tension.



Finger Weld

- **Split Tooth Weld** – The preferred straight cut splice for PosiClean is the “split tooth” platen weld. The weld of a straight cut through a tooth is stronger than that of a straight cut between teeth because

- 1) The weld surface area is 3x to 4x greater through the tooth than between the teeth
- 2) There is less belt flexing at the tooth and, therefore, less stress.

Preparing belt ends with a straight cut requires simple tooling and is done easily and quickly. Tapered finger welds can also be used for field welds but require finger punch tooling. Conventional butt welding in the web is also acceptable.



Split Tooth Weld

Joining

SPLICING ACCESSORIES

Assembly or Part	Part Number	Description
Flexco AERO Splice Press Weld Kit (Bottom Pad / 4 Filler Strips)		
PC20 - 24" Press (Aero 600)	16339	PC20 Silicone Rubber Weld Pad 10" x 28"
PC20 - 36" Press (Aero 900)	16325	PC20 Silicone Rubber Weld Pad 10" x 40"
PC20 - 48" Press (Aero 1200)	16327	PC20 Silicone Rubber Weld Pad 10" x 52"
PC20 - 60" Press (Aero 1500)	16329	PC20 Silicone Rubber Welding Pad 10" x 64"
PC10 - 24" Press (Aero 600)	16338	PC10 Silicone Rubber Welding Plate 10" x 28"
PC10 - 36" Press (Aero 900)	16330	PC10 Silicone Rubber Welding Pad 10" x 40"
PC10 - 48" Press (Aero 1200)	16337	PC10 Silicone Rubber Welding Pad 10" x 52"
PC10 - 60" Press (Aero 1500)	16331	PC10 Silicone Rubber Welding Pad 10" x 64"
CC40 - 24" Press (Aero 600)	16336	CC40 Silicone Rubber Welding Pad 10" x 28"
CC40 - 36" Press (Aero 900)	16332	CC40 Silicone Rubber Welding Pad 10" x 40"
CC40 - 48" Press (Aero 1200)	16335	CC40 Silicone Rubber Welding Pad 10" x 52"
CC40 - 60" Press (Aero 1500)	16333	CC40 Silicone Rubber Welding Pad 10" x 64"
CC40 Dual Lug - 60" Press (Aero 1500)	16334	CC40 Dual Lug Silicone Rubber Welding Pad 10" x 64"
Inverted Pyramid Textured Sheet - 24" Press (Aero 600)	15065	Inverted Pyramid Textured Si-Rubber Pad 10" x 28" x .09"
Inverted Pyramid Textured Sheet - 36" Press (Aero 900)	15066	Inverted Pyramid Textured Si-Rubber Pad 10" x 40" x .09"
Inverted Pyramid Textured Sheet - 48" Press (Aero 1200)	16222	Inverted Pyramid Textured Si-Rubber Pad 10" x 52" x .09"
Inverted Pyramid Textured Sheet - 60" Press (Aero 1500)	15068	Inverted Pyramid Textured Si-Rubber Pad 10" x 63" x .09"
PC20 Silicone Filler Strip	ASILPC20	
PC10 Silicone Filler Strip	ASILPC10	
CC40/FC12 Silicone Filler Strip	ASIL1-8	
Belt Cutter		
Factory Split Tooth Belt Cutter (up to 48" width)	15602	for PC10 and C20 only
Field Split Tooth Belt Cutter (up to 36" width)	GM05730	for PC10 and C20 only
Welding Foil		
Blue 95 Durometer 1.5" x .012" Thick	15826	250' Length
White 95 Durometer 1.5" x .012" Thick	15765	250' Length
PosiLace Pin	APOSILACEPIN	0.125" Dia., 96" Length
PosiLace Locking Collar Tool	16787	Tool to Form Locking Pin Collar



Bottom Weld Pad Kit



Factory Split Tooth Belt Cutter



Field Split Tooth Belt Cutter



Welding Foil



PosiLace Locking Collar Tool

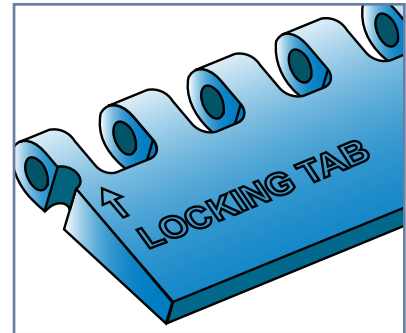
Joining

MECHANICAL FASTENING

- PosiLace™ Fastening Pin – allows for fast, tool-free belt installations for lightweight to medium load applications (up to 26 lbs. PIW)
 - Features
 - Self-locking pin that can be removed without damage to belt or pin
 - Ease of cleaning
 - Draft angles incorporated into the hinge loop design allow for any foreign material to be easily flushed out
 - Low profile design to allow for use with scrapers
 - Designed to reduce food contamination risk through hinge loop breakage
 - In an overload situation, unlike plastic modular belting, the locking pin will fail first (begin to fall out) before the hinge loops break
 - Minimum pulley diameter – 6.27" (159 mm)
 - Attachment options
 - Can be factory prepped or field welded using a Flexco AMIGO™ press
 - Also offered with 12" extensions so that it can be welded using a platen press



PosiLace™



- Other Recommended Mechanical Fasteners – From wire hooks to metal staples, standard conveyor fasteners are available for those situations when quick assembly/disassembly is required. Belt ends must be cut properly prior to installing mechanical fasteners to ensure proper pulley mesh.



Flexco® UX1SS Clipper® Wire Hooks



Flexco® Alligator® Plastic Rivet



Flexco® Alligator® Ready Set™ Staple

Joining

Max. Allowable Tension (lbs per inch width)¹ based on Splicing Option

	PC10/PC20	PC20 Cold Temp	CC40	FC9	FC12
PosiLace™	26	26	See Page 14	N/A	NR*
Flexco® UX1SS Clipper® Wire Hooks	31	37		33	59
Flexco® APF150 Alligator® Plastic Rivet	N/A	23		N/A	34
Flexco® APF100 Alligator® Plastic Rivet	25	N/A		27	N/A
Flexco® RS125 Alligator® Ready Set™ Staple	N/A	23		N/A	51
Flexco® RS62 Alligator® Ready Set™ Staple	26	N/A		31	N/A

¹ Max allowable set as the lower of 25% yield strength or 2% stretch of weld or splice

* Contact Applications for specific requests.

Minimum Sprocket/Pulley Diameter for Mechanically Spliced Belts

	PC10	PC20	CC40	FC9	FC12
PosiLace™	NR	6.2" (159 mm)	6.4" (163 mm) <small>(13 teeth)</small>	NR	NR
Flexco® UX1SS Clipper® Wire Hook	3.2" (82 mm)	6.2" (159 mm)	NR	3.0" (76 mm)	3.0" (76 mm)
Flexco® APF100 Alligator® Plastic Rivet	3.2" (82 mm)	NR	NR	3.0" (76 mm)	NR
Flexco® APF150 Alligator® Plastic Rivet	NR	6.2" (159 mm)	6.4" (163 mm)	NR	3.0" (76 mm)
Flexco® RS62 Alligator® Ready Set™ Staple	3.2" (82 mm)	NR	NR	3.0" (76 mm)	NR
Flexco® RS125 Alligator® Ready Set™ Staple	NR	6.2" (159 mm)	6.4" (163 mm)	NR	3.0" (76 mm)

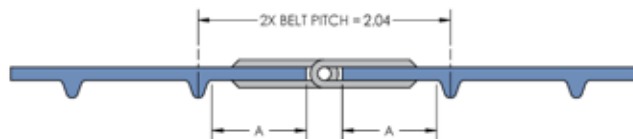
NR= Not Recommended

Note: Fastener strength ratings are specific to the type of belt being spliced.

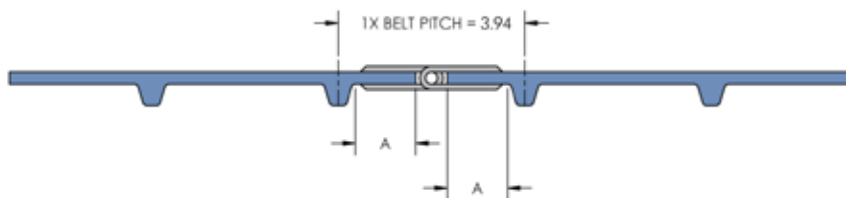
See the *Max. Allowable Tension Charts* found on the previous pages for fastener strength ratings.

Joining

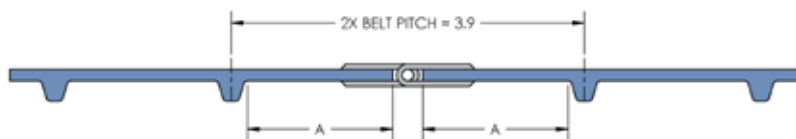
Mechanical Fastening Preparation Dimensions



PC10 Lacing	Dimension A
Flexco® UX1SS Clipper® Wire Hook	0.85" (21.5 mm)
Flexco® APF100 Alligator® Plastic Rivet	0.79" (20 mm)
Flexco® RS62 Alligator® Ready Set™ Staple	0.79" (20 mm)

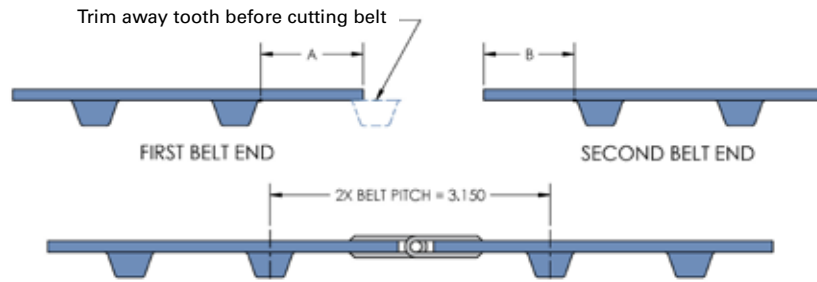


PC20 Lacing	Dimension A
Flexco® UX1SS Clipper® Wire Hook	0.73" (18.5 mm)

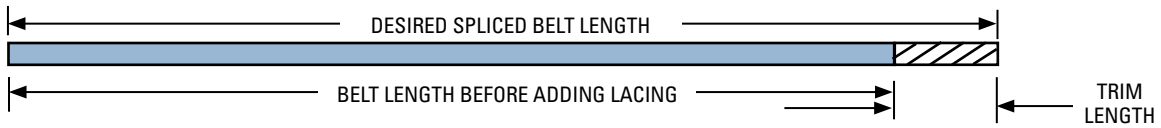


PC20 Lacing	Dimension A
Flexco® APF150 Alligator® Plastic Rivet	1.65" (42 mm)
Flexco® RS125 Alligator® Ready Set™ Staple	1.65" (42 mm)

Joining



CC40 Lacing	Dimension A	Dimension B
Flexco® APF150 Alligator® Plastic Rivet	1.18" (30 mm)	1.05" (26.5 mm)
Flexco® RS125 Alligator® Ready Set™ Staple	1.18" (30 mm)	1.05" (26.5 mm)



FC9/12 Belt Length Before Adding Lacing = Desired Spliced Belt Length - Trim Length	
	Trim Length
Flexco® UX1SS Clipper® Wire Hook	0.22" (5.5 mm)
Flexco® APF100/150 Alligator® Plastic Rivet	0.28" (7.0 mm)
Flexco® RS62/125 Alligator® Ready Set™ Staple	0.39" (10 mm)



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Food Belt Conveyor Design Guidelines

DRIVE CONFIGURATION

Head Drive Configuration (pull)

- Most common configuration.
- The conveying side of the belt is traveling (pulled) toward the drive (powered) sprockets. See Figure 1.

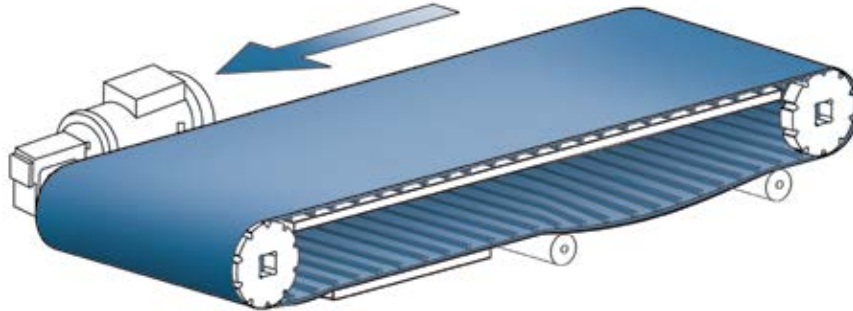


Figure 1

Tail Drive Configuration (push)

- The conveying side of the belt is traveling (pushed) away from the drive (powered) sprockets. See Figure 2
- Belt needs to be under tension at all times to prevent it from jumping the drive sprocket grooves.
- Maximum recommend conveyor length: 15 feet (4.6m).

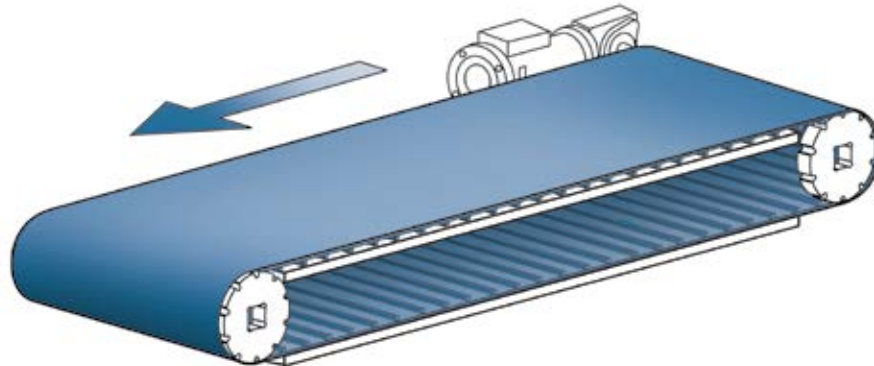


Figure 2

Food Belt Conveyor Design Guidelines

Center Drive Configuration

- Gates Mectrol does not recommend this drive configuration because belt tracking can be difficult.
- The drive sprockets in this configuration are not placed at the conveyor ends but within the conveyor span length. See Figure 3. It is used typically for bi-directional conveyors.
- Back bend rollers need to be flanged to assist belt tracking.
- Carryway support, see Basic Straight Line Conveyor guidelines
- This configuration is not suitable for belts with cleats and/or corrugated side walls.

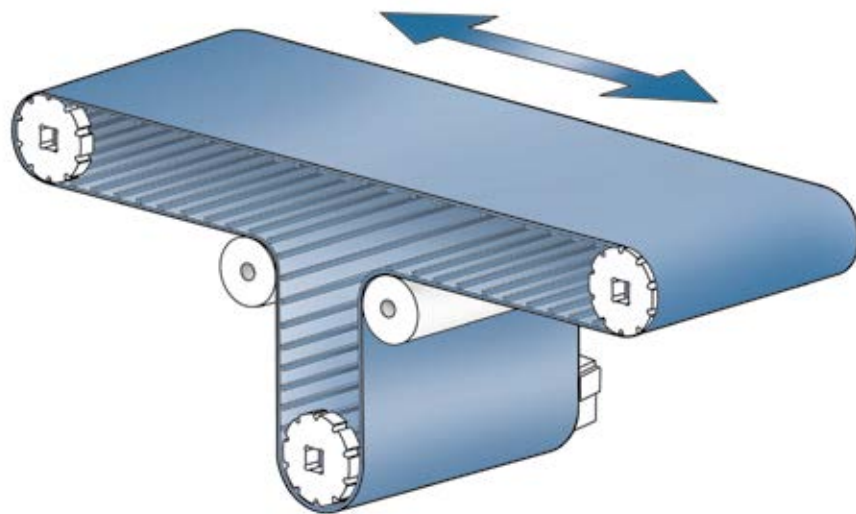


Figure 3

Food Belt Conveyor Design Guidelines

Center Drive Configuration Specifications

	PC10	PC20	CC40
Drive sprocket - Minimum diameter	12 Tooth 3.8" (97 mm)	10 Tooth 6.2" (158 mm)	12 Tooth 5.9" (150 mm)
Back-bending roller - Minimum diameter <25°C (77°F)	3.5" (89 mm)	6" (150 mm)	6" (150 mm)
Back-bending roller - Minimum diameter >25°C (77°F)	5" (125 mm)	8" (200 mm)	8" (200 mm)
Minimum Flange Height	0.375" (10 mm)	0.500" (13 mm)	0.375" (10 mm)*

* If the drive pulley does not capture the belt teeth laterally

DRUM MOTOR (MOTORIZED PULLEY)

- Motorized pulleys, designed for Gates Mectrol Food Grade Belts, are available from major manufacturers of these conveyor drives.
- Motorized pulleys, by the nature of their design, are well suited for meeting conveyor sanitation requirements.

BASIC STRAIGHT LINE (HORIZONTAL OR INCLINE) CONVEYOR

Components

1. Drive Sprocket
2. Idler (Tail) Sprocket
3. Carryway Support
4. Returnway Support Rail
5. Returnway Support Roller

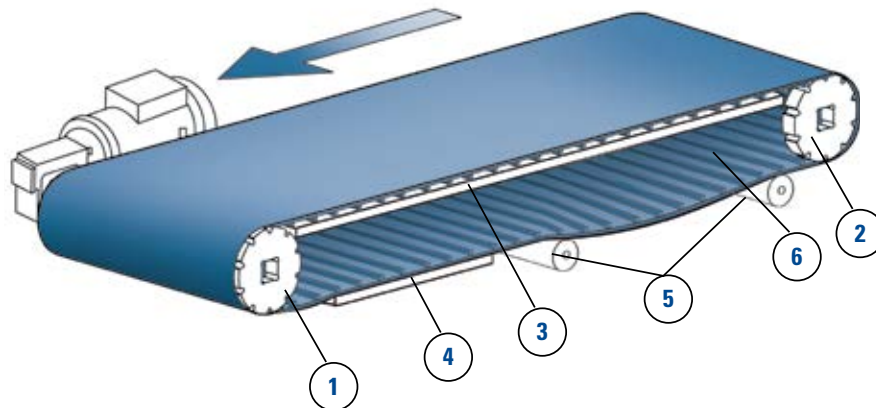


Figure 4

Food Belt Conveyor Design Guidelines

Belt Guiding and Tracking

- The conveyor frame must be rigid, square and aligned in all planes for the Gates Mectrol food grade belts to track properly.
- PosiClean
 - PosiClean belts are not self-tracking designs. External guides along the belt edges are required. Guides can be stationary or rollers. Surfaces on stationary guides that contact the belt should be made of UHMW-PE. Conveyor side rails or frames can serve as stationary guides.
 - Minimum heights of guides or roller flanges, Dim. A
 - PC10: .375" (9.5 mm) (~1.5x belt thickness)
 - PC20: .500" (12.7 mm)
- Minimum recommended gap between belt edge and conveyor sidewall, 0.125"

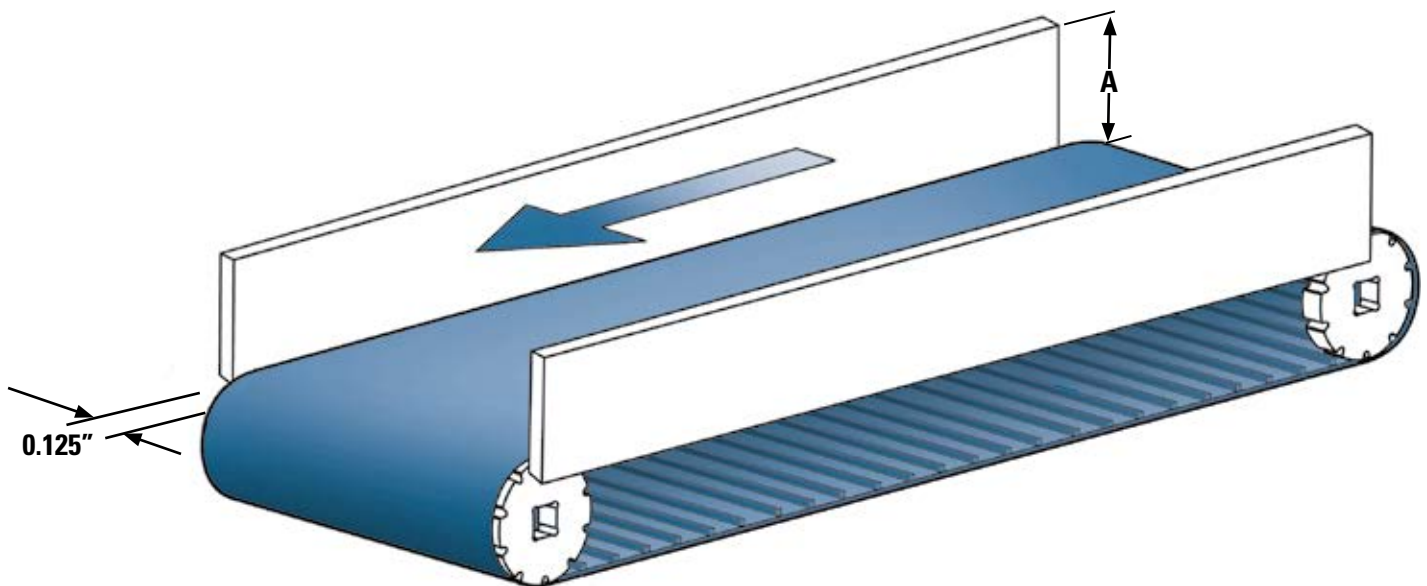


Figure 5

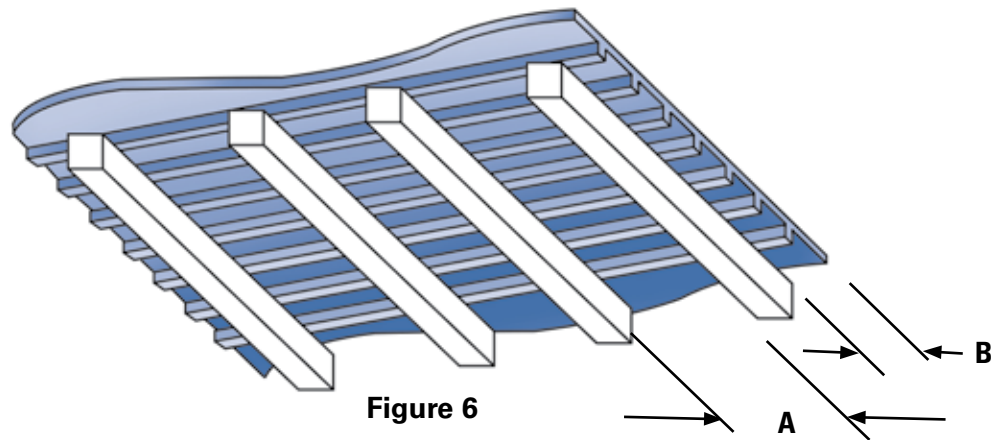
- CenterClean
 - CenterClean is guided by the belt teeth by the carryway support. See dimension C in Figure 7
- FlatClean
 - V-Guides: See page 25 for available V-guides and minimum recommended pulley diameters.

Food Belt Conveyor Design Guidelines

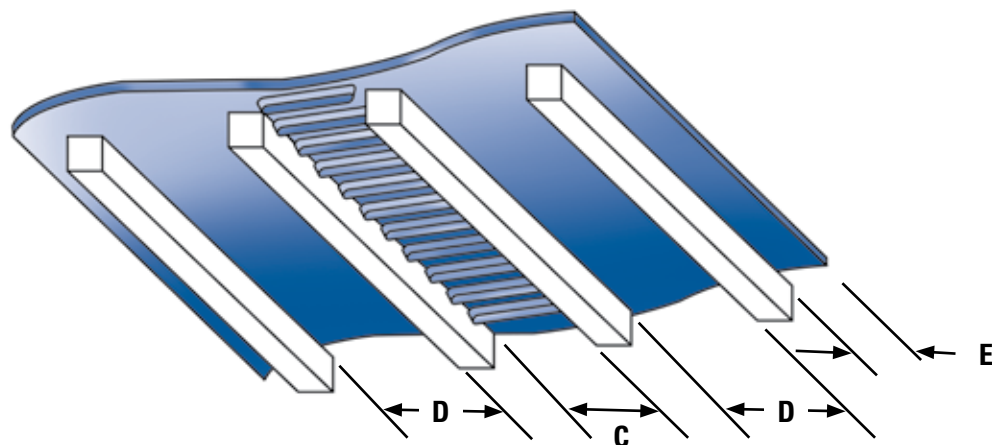
Belt Guiding and Tracking (continued)

Carryway Support

- Continuous support rails, parallel to the belt length, made of UHMW-PE or acetal (POM), is the preferred carryway support for PosiClean, CenterClean and FlatClean belts. Gates does not recommend stainless steel support rails.
- Joints in support rails: downstream rail should be slightly lower than the joining upstream rail or have a beveled end to prevent damage to belt teeth or underside of the belt.
- Rail width minimum: 1.25" (32 mm)
- Spacing recommended for parallel support rails:
 - PosiClean , PC10 and PC20, Figure 6
 - Distance between rails, Dim. A : 4" - 6" (100 - 150 mm)
 - Distance from belt edge to outer rail, Dim. B: 0.5" - 2" (15 - 50 mm)



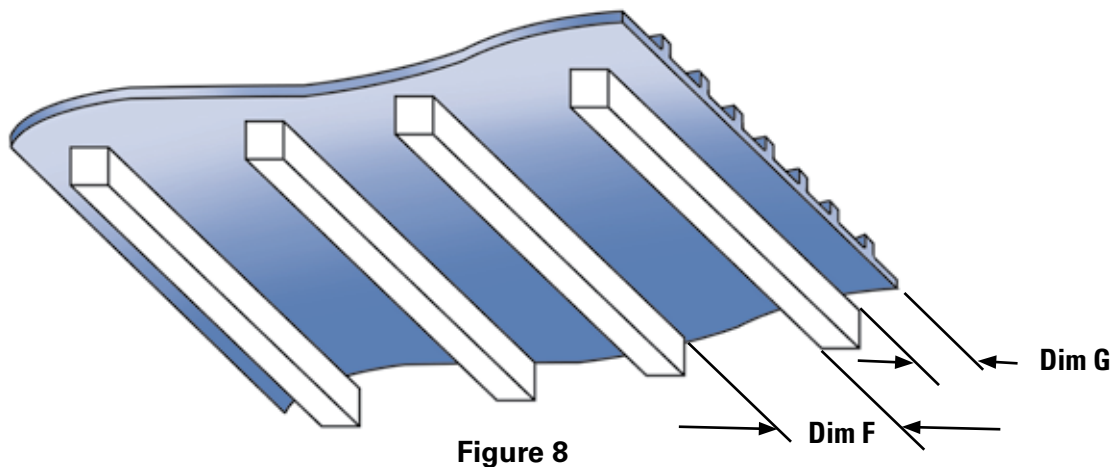
- Spacing recommended for parallel support rails:
 - CenterClean, CC40, Figure 7
 - Distance between rails guiding belt teeth, Dim C: 3.15" (80.0 mm)
 - Distance between rails not guiding belt teeth, Dim D: 4" - 6" (100 - 150 mm)
 - Distance from belt edge to outer rail, Dim E: 0.5" - 2" (15 - 50 mm)
 - FlatClean, FC12
 - Distance between rails: 4 - 6" (100 - 150 mm)
 - Distance from belt edge to outer rail: 0.5 - 2" (15 - 50 mm)



Food Belt Conveyor Design Guidelines

Returnway Support

- Returnway supports can be continuous rails that are parallel to the belt length (reference figure 7), intermittent supports such as rollers or stationary bars that are perpendicular to the belt length, or a combination of both. The belt contact surfaces of stationary supports should be made of UHMW-PE or acetal (POM).
- Continuous rails
 - Rail width: 1" – 2" (25 – 50 mm)
 - Joints in support rails: downstream rail should be slightly lower than the joining upstream rail to prevent damage to belt teeth or underside of the belt.
 - Rail Spacing, Figure 8
 - Distance between rails, Dim. F : 6" - 12" (150 - 300 mm)
 - Distance from belt edge to outer rail, Dim. G: 2" – 3" (50 – 75 mm)



- Support rollers or stationary bars
 - Width: same width as the belt
 - Minimum radius:
 - PC10, FC12: 1" (25 mm)
 - PC20, CC40: 1.5" (37 mm)
 - Typical spacing of roller shafts or stationary bars: 36" – 60" (1 - 1.5 meters)
 - Typical catenary sag between supports: 2" - 5" (50 – 125 mm)

Food Belt Conveyor Design Guidelines

Snub roller

- Belt manufacturers that don't embed cord tension members in their belt look to reduce belt stretch by using a higher durometer resin. These harder, stiffer urethane grades make it more difficult to achieve the proper wrap around the drive sprocket and improving the wrap angle is important because it increases the drive torque and prevents ratcheting or skipping teeth. These same belt manufacturers often recommend positioning a snub roller up against the drive sprocket to overcome the belt stiffness. Gates Mectrol believes putting a roller against the drive sprocket unnecessarily creates a dangerous pinch point and compromises belt sanitation. Such a roller only needs to aid the belt in wrapping the drive sprockets 180° or more and should be positioned away from the drive sprocket.
- We recommend the use of snub rollers at the drive sprockets for:
 - Applications involving both heavy loads with little or no belt pretension. Loads are considered heavy if the calculated belt tensions at 50% or more of the belt rating.
 - Applications utilizing the minimum recommended sprocket diameter with little or no belt pretension.

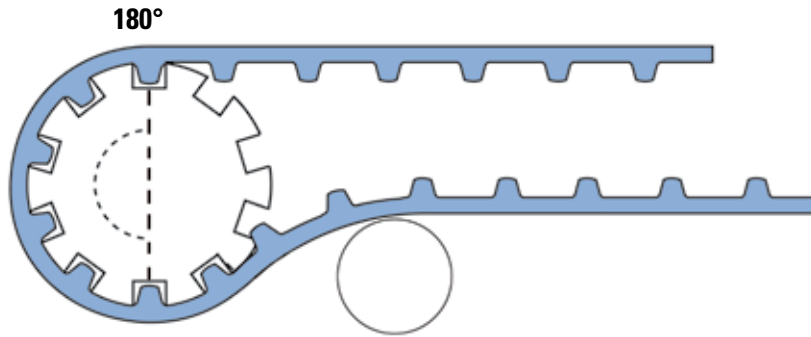


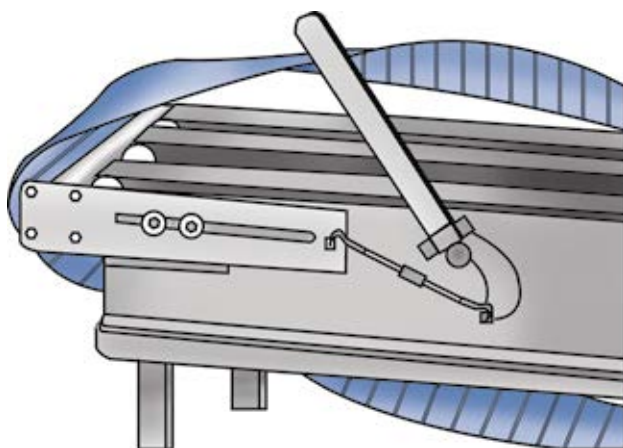
Figure 9

- Snub roller dimensions:
 - Width: same width as the belt
 - Minimum diameter:
 - PC10
 - above 25°F (-4°C): 3.5" (89 mm)
 - at or below 25°F (-4°C): 5" (125 mm)
 - PC20, CC40
 - above 25°F (-4°C) : 6" (150 mm)
 - at or below 25°F: 10" (250 mm)
 - FC12
 - above 25°F (-4°C): 3" (75 mm)
 - at or below 25°F: 4.5" (114 mm)

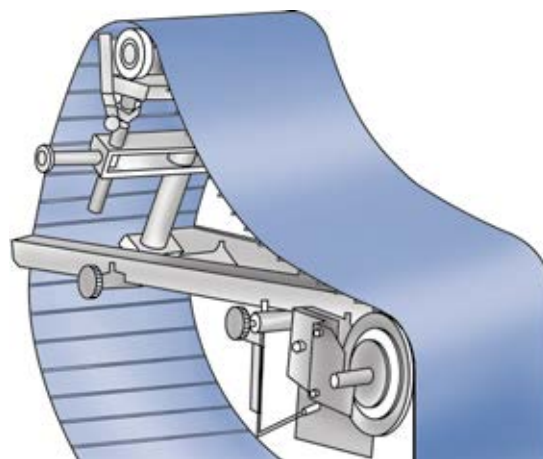
Food Belt Conveyor Design Guidelines

Tensioning Device (Tensioner/Take- Up)

- Gates Mectrol recommends that conveyors be installed with quick release tensioners or pivot arm to allow the belt to be cleaned on the conveyor thus eliminating the need for belt removal during the cleaning process. Such tensioners allow the belt to be quickly slacked off in order that it can be lifted in order to clean the underside of the belt and the conveyor carryway.
 - A tensioning device or tensioner allows the belt to be slack while it is installed onto the conveyor. It is also necessary for adjusting the belt tracking.
 - Recommended minimum take-up travel: 5" – 8" (125 – 200 mm)



Quick Release
Tensioner



Pivot Arm

Food Belt Conveyor Design Guidelines

STRAIGHT LINE (HORIZONTAL OR INCLINE) CONVEYOR WITH CLEATS

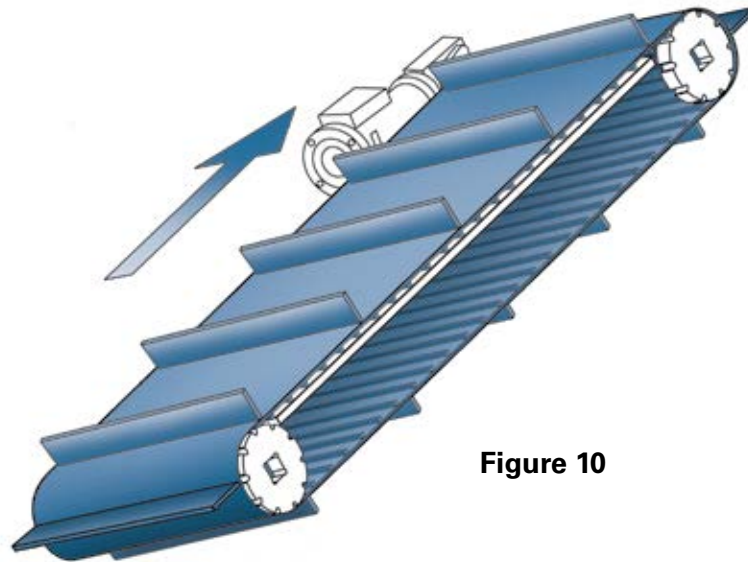


Figure 10

General

- Cleat geometries and specifications
 - See pages 21 and 22.
- Minimum Drive and Idler Sprocket Diameters
 - See belt and mechanical splice data found on pages 11, 14, 18, 19 and 29 .

Carryway Support

- See Horizontal Basic Conveyor Construction on pages 34 and 35.

Returnway Support

- **Maximum recommended belt width without center support: 18"**
- Returnway support can be continuous rails that are parallel to the belt length, support rollers, or a combination of both.
- Conveyors with center returnway supports require split cleats, see Figures 11 and 12.
- Continuous rails
 - Recommend that continuous support rails contact the belt conveying surface and not the top of the cleats and be made of UHMW-PE or acetal (POM). See Figure 11
 - Minimum width for outer rails: 1.25" (32 mm)
 - Recommended distance from rails to cleat, 0.25" (6 mm). Guides return side of belt without binding.

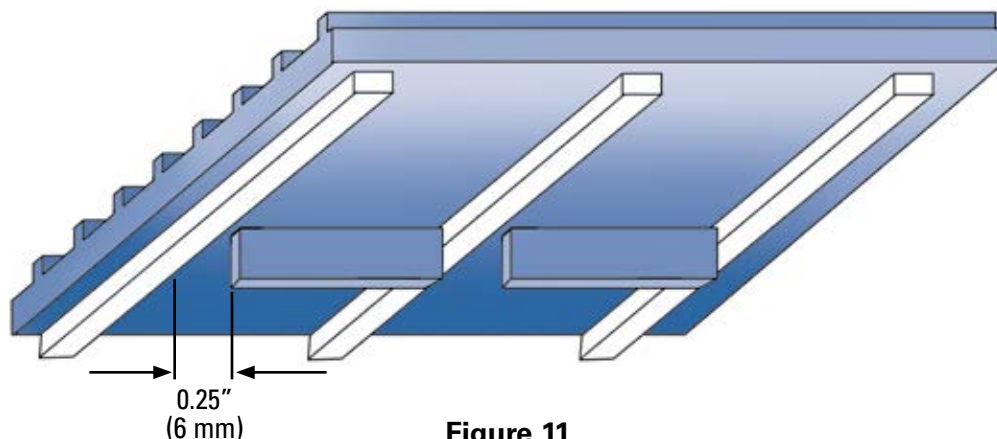


Figure 11

Food Belt Conveyor Design Guidelines

- Support Rollers

- Dynamic support rollers can be used if conveyor has center returnway rollers. See Figure 12
- Roller Width: 1" minimum (25 mm)
- Minimum roller diameter:
 - PC10, FC12 : 2" (50 mm)
 - PC20, CC40: 3" (75 mm)
 - Large enough so cleats can clear roller shaft
- Recommended clearances, Figure 13
 - Recommended distance from rollers to cleat, 0.25" (6 mm). Prevents belt and cleats from binding on support rollers.
- Typical spacing along belt length: 36" – 60" (1 - 1.5 meters)
- Typical catenary sag between supports: 2" - 5" (50 – 125 mm)

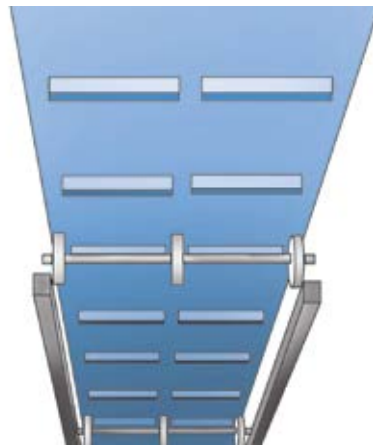


Figure 12

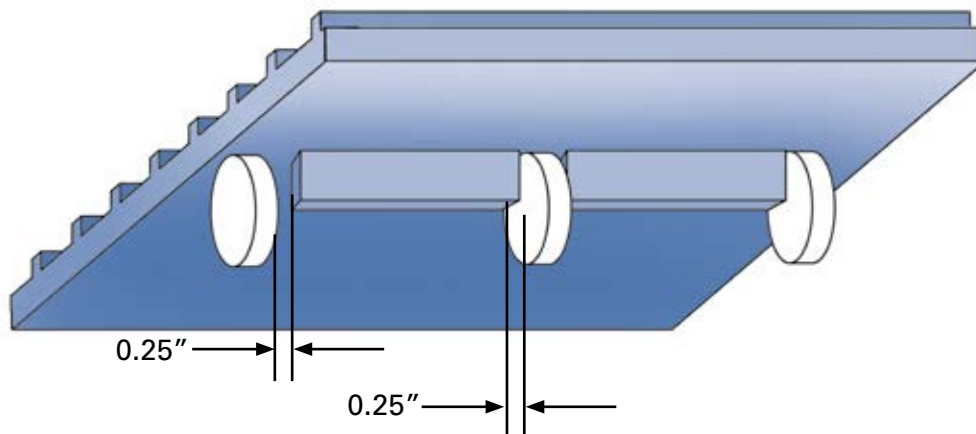
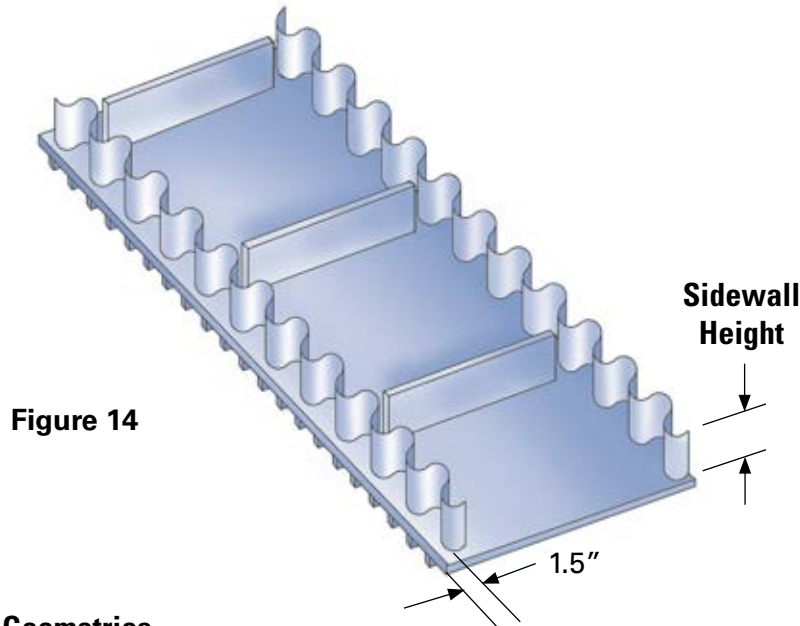


Figure 13

Food Belt Conveyor Design Guidelines

STRAIGHT LINE CONVEYOR WITH CORRUGATED SIDEWALLS



Corrugated Sidewall Geometries

- See page 23 for sidewall specifications
 - Note: Sidewall loops will not necessarily line up.
- Suggested corrugated sidewall height: 0.5" above height of cleats.

Minimum Sprocket/Pulley Diameter

- Minimum sprocket diameter = 2.5 x Sidewall Height or minimum diameter recommendation for belt and fastener type, whichever is greater.
- Minimum back bend diameter = 1.5 x Sidewall Height or minimum diameter recommendation for belt type, whichever is greater.

Carryway Support

- See Horizontal Basic Conveyor Construction, pages 38 and 39.

Returnway Support

- Recommended 1.5" sidewall indent.
- Recommend continuous support rails: contacting the base belt and not the top of the cleats, arranged parallel to the belt length, and made of UHMW-PE or acetal (POM). See Figure 15.
- Minimum width for outer rails: 1.25" (32 mm)
- Recommended distance from outer rails to sidewall: 0.25" (6 mm). Prevents belt and sidewall from binding on guide rails.

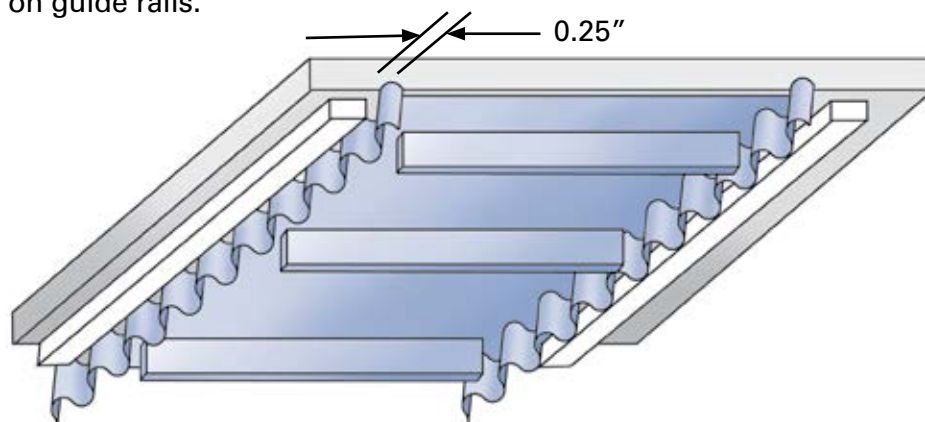


Figure 15

Food Belt Conveyor Design Guidelines

- Dynamic rollers can be used in place of stationary rails provided the belt has sufficient stiffness across its width.
 - Roller Width: 1" minimum (25 mm)
 - Minimum roller diameter:
 - Large enough so corrugated sidewalls and cleats can clear roller shaft
 - PC10, FC12: 2" (50 mm)
 - PC20, CC40: 3" (75 mm)
 - Recommended clearances
 - Recommended distance from outer rollers to corrugated sidewall: 0.25" (6 mm).
 - Typical spacing along belt length: 36" – 60" (1 - 1.5 meters)
 - Typical catenary sag between supports: 2" - 5" (50 – 125 mm)

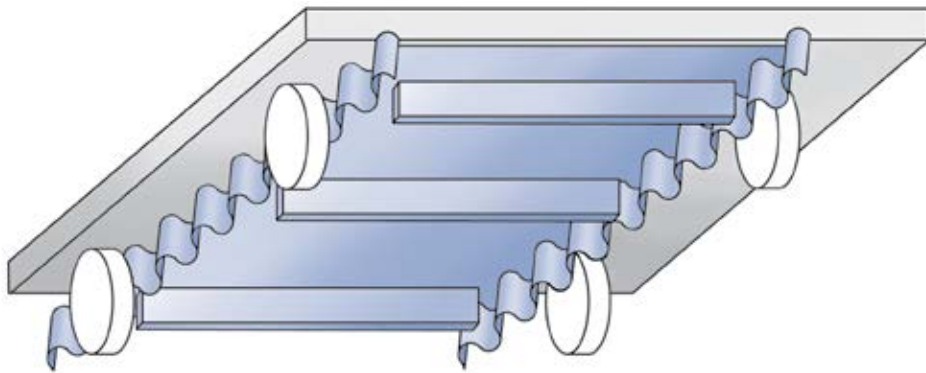


Figure 16

Food Belt Conveyor Design Guidelines

Z-CONVEYOR (GOOSE NECK)

We strongly **recommend using PosiClean PC20** for Z-conveyors. PosiClean's greater lateral stiffness and its distribution of loads across the full belt width help minimize the tendency of the belt to pull out from under the hold downs in the carryway transition areas. We **do not recommended CenterClean** for Z-conveyors.

Components

1. Drive sprockets
2. Transition sprockets
3. Transition hold down rollers
4. Transition rollers
5. Idler tail sprockets with take-up
6. Carryway support rails
7. Returnway support rails
8. Transition hold down
9. Transition support rail

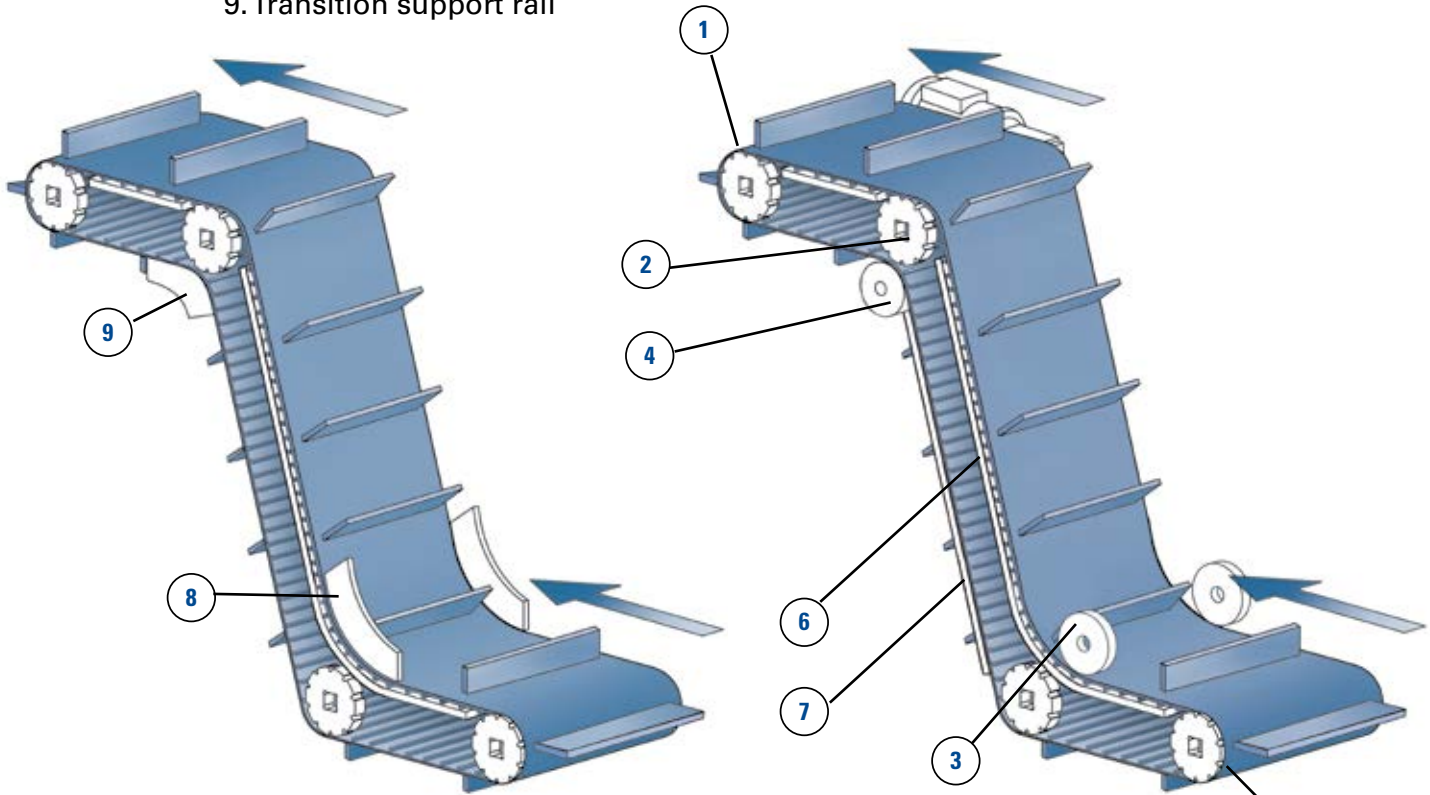
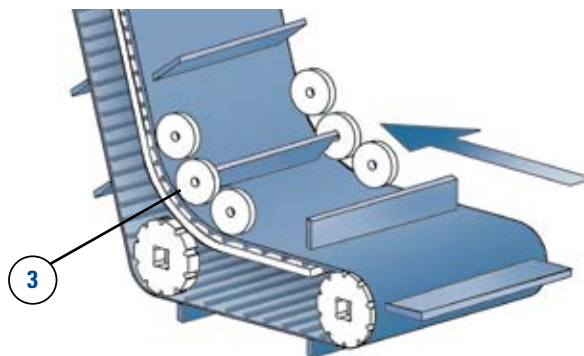


Figure 17

Figure 18



Food Belt Conveyor Design Guidelines

Carryway Transition - Horizontal to Incline

- **Gates Mectrol strongly recommends dynamic rollers as hold downs in the carryway transition area, especially for dry applications.**
- Hold Down Rollers
 - Roller minimum width: 1.5" (38 mm)
 - Rollers minimum diameter **without** corrugated belt sidewalls
 - PC10
 - above 25°F: 3.5" (89 mm)
 - at or below 25°F: 5" (125 mm)
 - PC20
 - above 25°F : 6" (150 mm)
 - at or below 25°F: 10" (250 mm)
 - Rollers minimum diameter **with** corrugated belt sidewalls:
 - Minimum diameter = 1.5 x Sidewall Height or minimum diameter recommendation for belt type without sidewalls listed above, whichever is greater.
 - Recommended clearance between roller and cleat or corrugated sidewall: 0.25" (6 mm)
- Hold Down Shoes
 - **Gates Mectrol does not recommend the use of hold down shoes.**
 - Hold Down Shoes are only to be used if the interface between shoe and belt is lubricated (e.g. wet) and the conveyance loads are light.
 - Hold down shoe minimum radius: 6" (150 mm)
 - Minimum width: 1.5" (38 mm)
 - Clearances
 - Clearance between shoe and cleats or side walls, Figure 19, Dim. O: 0.25" (6 mm)
 - Clearance between base of shoe and belt conveying surface, Fig. 19, Dim. P: .063" (1.5 mm)

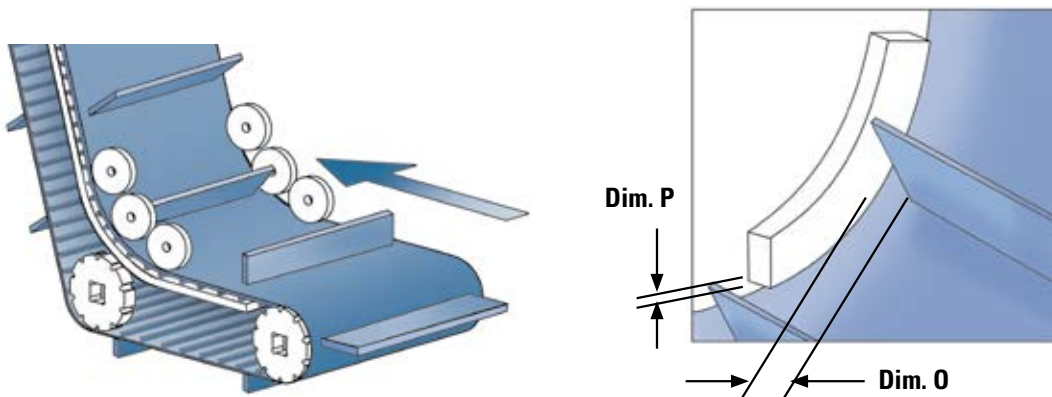


Figure 19

Food Belt Conveyor Design Guidelines

Carryway Transition- Incline to Horizontal

- **Gates Mectrol strongly recommends sprockets in this transition area to reduce the frictional drag and belt wear, especially for dry applications.**
 - Transitions sprockets
 - Minimum sprocket diameters: see belt data on pages 12,15 and 20.
 - Maximum sprocket spacing: see PosiClean Sprocket and Support Guidelines on page 12.
 - Transition rails are only to be used if the interface between the rails and belt is lubricated (e.g. wet) and the conveyance loads are light.
 - Minimum radius: 6" (150 mm)
 - Minimum width: 1.25" (32 mm)
 - Maximum rail spacing: 6" (150 mm)

Returnway Transition – Horizontal to Decline

- **Gates Mectrol strongly recommends dynamic rollers in this transition area to reduce the frictional drag and belt wear, especially for dry applications.**
- Transition Roller design guidelines: see Hold Down Rollers, page 47.
- Transition Support Rail Transition rails are only to be used if the interface between the rails and belt is lubricated (e.g. wet) and the conveyance loads are light.
 - Minimum radius: 6" (150 mm)
 - Minimum width: 1.5" (38 mm)
 - Clearance between rail and cleats or side walls: .25" (6 mm)
 - For clarification see Figure 11 for cleats and Figure 15 for corrugated belt sidewalls.

Returnway Transition – Decline to Horizontal

- **Gates Mectrol strongly recommends sprockets in this transition area to reduce the frictional drag and belt wear, especially for dry applications.**
- Transitions sprockets
 - Minimum sprocket diameters: see belt data on pages 10, 14, 17 and 19.
 - Number of drive sprockets: see PosiClean Sprocket and Support Guidelines on page 12.
- Transition rails are only to be used if the interface between the rails and belt is lubricated (e.g. wet) and the conveyance loads are light.
 - Minimum radius: 6" (150 mm)
 - Minimum width: 1.25" (32 mm)
 - Maximum rail spacing: 6" (150 mm)

Carryway Support

- See Basic Straight Line Conveyor guidelines, page 36.

Returnway Support

- See Straight Line Conveyor with Cleats pages 42 and 43. For Straight Line Conveyor with Corrugated Sidewalls, see pages 44 and 45.

Food Belt Conveyor Design Guidelines

Drive Sprockets

- Gates strongly recommends that drive sprockets are located at the discharge end of the conveyor, i.e., the conveyor is a head drive configuration.
- Minimum diameter to ensure sufficient torque transmission
 - PC10: number of teeth – 12, diameter - 3.8" (97 mm)
 - PC20: number of teeth – 10, diameter – 6.2" (157 mm)
- Maximum sprocket spacing: see PosiClean Sprocket and Support Guidelines on page 12.

Tail Sprockets

- Minimum Idler Sprocket Diameters: see pages 10,14, 17 and 19.
- Maximum sprocket spacing: 6" (152 mm).

Conveyor Sidewalls (fixed to conveyor frame) acting as hold downs

- Thickness, minimum: 1" (25 mm)
- Clearances: see hold down shoe dimensions on page 47.

RECIPROCATING CONVEYOR (TELESCOPING , SHUTTLE OR RETRACTABLE)

This design is **not recommended for belts with cleats or corrugated sided walls**. Experience has shown that the belt performs best with a full width back bend roller.

- Gates Mectrol recommends using PosiClean for reciprocating conveyors. We do not recommend CenterClean.
- Follow the guidelines in the section on Basic Horizontal Straight Line Conveyor for this conveyor design. Below are some additional guidelines for the reciprocating section of the conveyor.

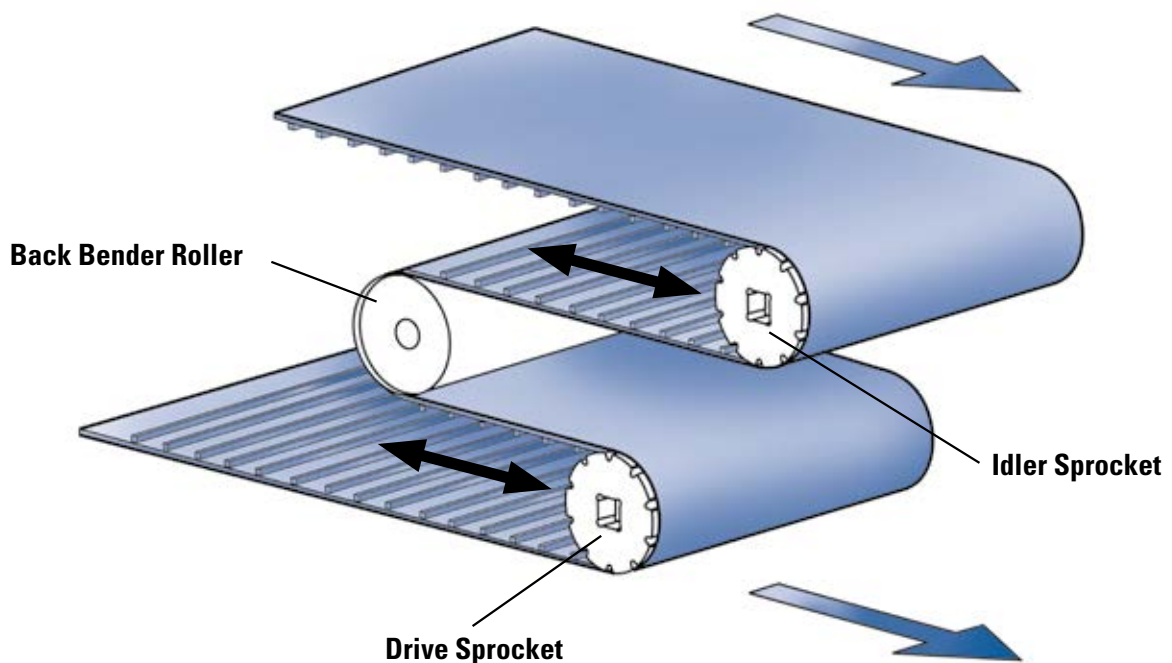


Figure 20

Food Belt Conveyor Design Guidelines

Belt Tracking

- The belt will not track properly in the reciprocating section if the shafts are not parallel to each other and perpendicular to the belt travel.
- We recommend that the back bend idler have flanges or guides are placed along the belt edges between the idler sprockets and back bend roller or placed between the back bend roller and the drive sprockets.
- Surfaces on stationary guides that contact the belt edges should be made of UHMW-PE or acetal (POM).

Back Bend Roller

- Minimum diameter:
 - PC10
 - above 25°F (-4°C): 3.5" (89 mm)
 - at or below 25°F (-4°C): 5" (125 mm)
 - PC20
 - above 25°F (-4°C): min 6" (150 mm)
 - at or below 25°F (-4°C): 10" or 8" (250 or 200 mm)
- Minimum flange heights:
 - PC10: 0.375" (10 mm)
 - PC20: 0.500" (13 mm)

Sprockets

- Minimum Drive and Idler Sprocket Diameters: see pages 10, 14, 17 and 19.
- Number of Drive and Idler Sprockets: on 3" (76 mm) centers. This ensures even distribution of the belt load.

Tension

- Reciprocating conveyors work best with some pre-tension. Gates Mectrol Kevlar® reinforced belts are ideally suited for working under tension.
 - Tensioning Device (Take-Up): see page 41.

TROUGHED CONVEYORS

- Conveyor must be at least 5 feet long for troughing applications
- We only recommend using CenterClean for troughing applications.
- The belt needs to be pre-tensioned to trough and transmit torque properly. This requires that the conveyor have a tensioning device. A quick tensioning system is recommended.

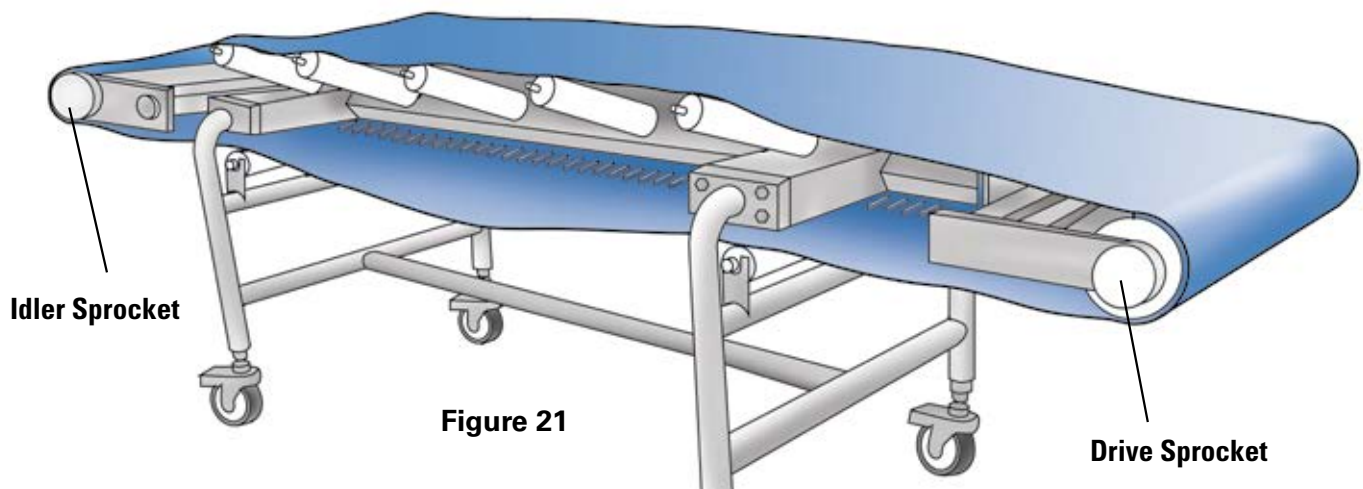


Figure 21

Food Belt Conveyor Design Guidelines

Carryway Support

- The center of the belt, in the area of the teeth, must be firmly supported with a slider bed or support rails on either side of the belt teeth. Slider bed and support rails should be made of UHMW-PE or acetal (POM).
- The center of the belt on either side of the belt teeth must be supported.
- Support rollers are recommended to reduce the belt drag, particularly in dry applications. Support roller options include 2 angled rollers ('rabbit ears') with UHMW-PE center support rails, see Figure 22. We do not recommend 2 angle rollers without any center support, see Figure 23

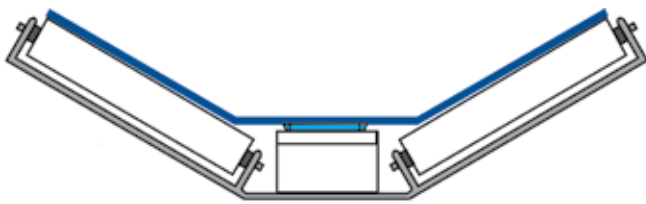


Figure 22

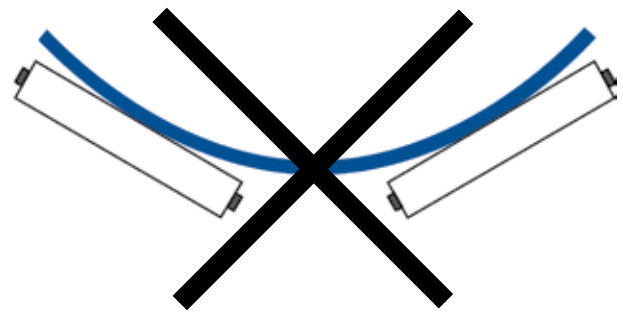


Figure 23

- Minimum Roller Diameter: 4" (100 mm)
- Roller length: extend beyond the belt edges
- Typical spacing of roller shafts: 16" – 28" (406 – 711 mm)
- Guidelines for transitioning the belt from flat to trough shape see Transition Length section below.
- Support rails can be used for wet applications but the belt contact surfaces must be made of UHMW-PE or acetal (POM). Rails with round belt contact surfaces are not recommended.
 - Rail faces must be tangent or conform to trough shape to minimize belt abrasion. Figure 24 shows a support rail that pivots to conform to the trough shape. Figure 25 shows rail surfaces tangent to the troughing belt.



Figure 24

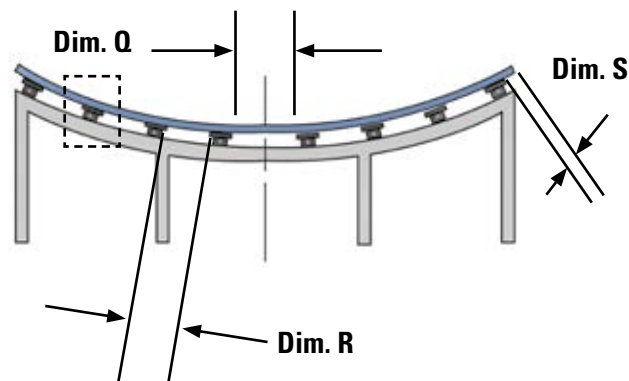


Figure 25

Food Belt Conveyor Design Guidelines

- Rail width, minimum: 1.25" (32 mm)
- Spacing, see Figure 25.
 - Distance between rails guiding belt teeth 3.15" (80.0 mm), Dim. Q.
 - Distance between rails not guiding belt teeth 3" – 4" (75 – 100 mm), Dim. R.
 - Distance from belt edge to outer rail 0.5" – 1" (15 – 25 mm), Dim. S.
- Guidelines for transitioning the belt from flat to trough shape see Transition Length section below.

Transition Length (L) – distance for transitioning the belt from flat to trough shape, typically between the pulleys (drive/idler) and the beginning of the trough.

- Minimum transition length for a given trough (β) is:

$$L = T_c \times W$$

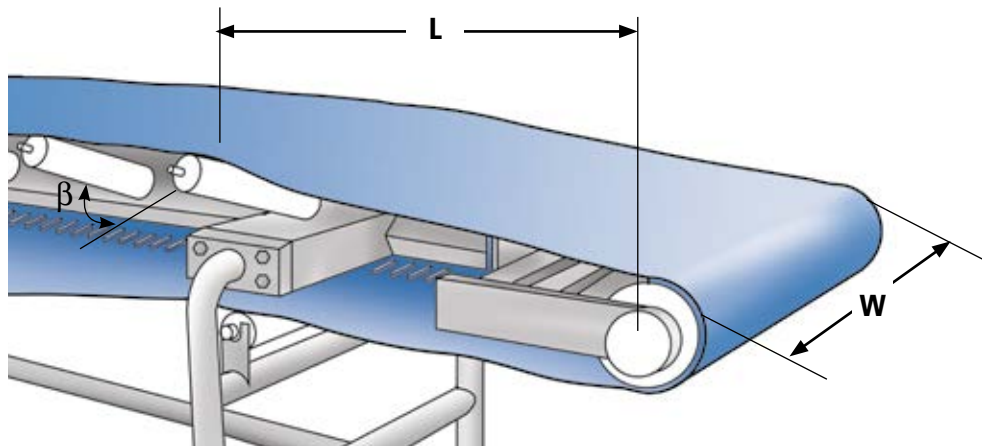


Figure 26

- Where W = Belt Width
- T_c = Troughing Constant
- β = Troughing Angle

Troughing Angle β	10° - 20°	>20° - 40°
Troughing Constant T _c	1.5	2

Table 1

Note: Maximum recommended trough angle: (β) 40°.

Belt Width

- Widths less than 12" (300 mm) are not recommended because they will not easily form the trough shape.
- Widths less than 20" (500 mm) will not easily trough more than 30° per side (see trough angle β in Figure 26).

Returnway Support

- See Basic Straight Line Conveyor page 36.

Food Belt Conveyor Design Guidelines

Pulleys

- At least 80% of the belt width must be directly supported by the driver and idler pulley assemblies, because of the high tension in the belt sides and edges that result from troughing.
 - One piece full width pulleys that fully support the belt edges (see Figure 27) are ideal for these applications.
 - Pulley assemblies with individual support rollers and drive/idler pulley (see Figure 28) can also be used.
 - The outer support rollers must support the belt edges.
 - The sum of the roller and pulley widths for a pulley assembly must be 80% or more of the belt width.

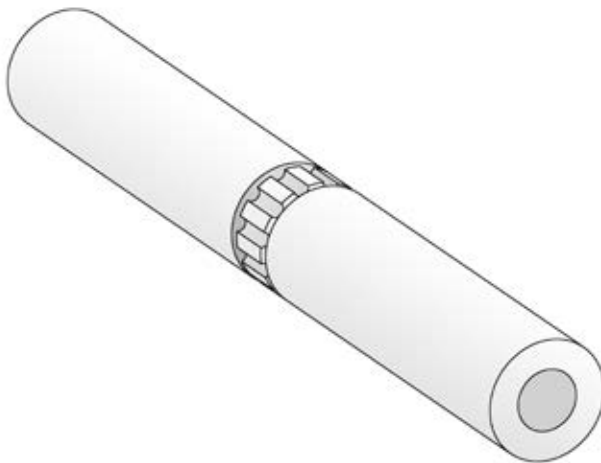


Figure 27

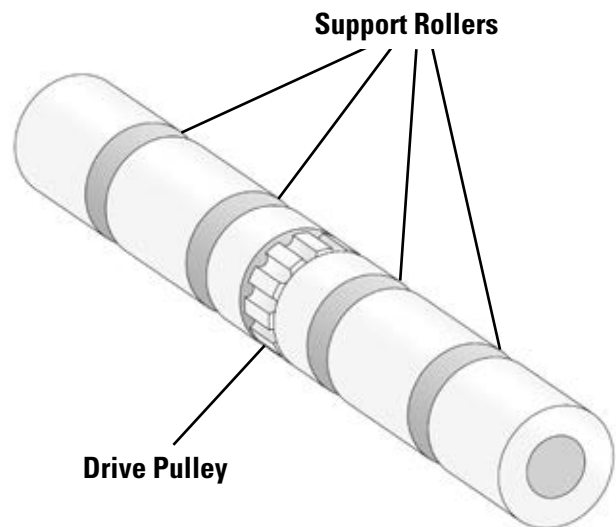


Figure 28



Food Belt Support Materials

INSTALLATION CHECKLIST	56
CERTIFICATES	58
BELT SANITATION	60
Recommended Sanitation Procedures	60
Common Sanitation Chemicals	60
CHEMICAL RESISTANCE CHART	61
SAFETY POLICY	68
CONTACTS	70

Food Belt Installation Checklist



Food Belt Installation Checklist

Application Surveyor

Name: _____ Phone: _____
 Company Name: _____ Email: _____

Site Location

Name: _____
 Address: _____

Application

Briefly describe what is being conveyed, what type of belt is being replaced and why a Gates Mectrol belt has been selected.
 Conveyor Speed (FPM)
 Product Weight

Environmental

Temperature Range _____ ° to _____ °
 Product Temp (Degrees F or C) _____
 Wet or Dry Application _____
 Chemical Resistance Concerns _____
 Abrasives _____ Yes or No

Input

Comments

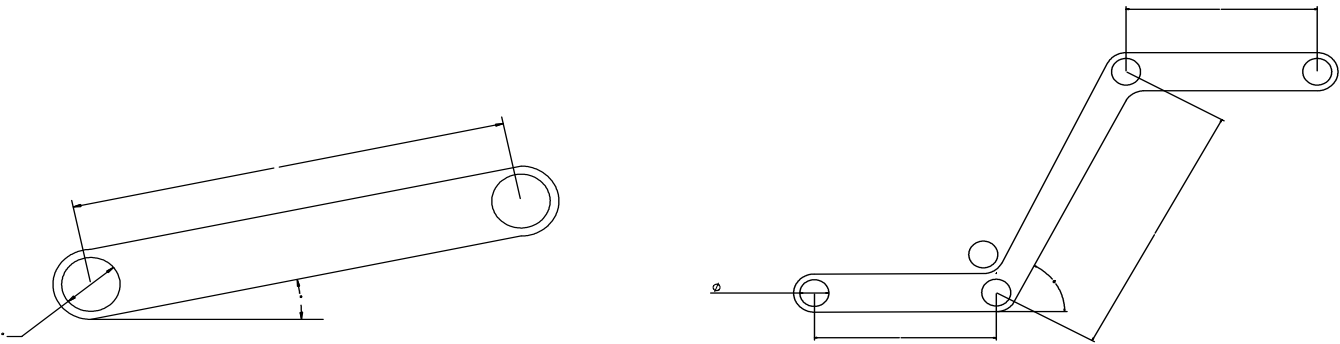

Belt

Belt Type (FC9IPR, FC9IPT, FC12, FC12IP, PC10, PC20, CC40)
 Conveyor Frame Width To Accept Belt _____
 Belt Width (inches/mm) _____
 Belt Length (inches/mm) _____
 Splice Type _____
 Mechanical (e.g. RS, APF, PosiLace) _____
 Finger Weld _____
 Butt Weld _____
 Catenary Sag Present _____ Yes or No
 How Much _____
 Straight Cleats / If So What And Where _____ Yes or No
 Height (5mm thick only avail.) 0.25", 0.5", 0.75", 1", 1.5", 2", 3", 4"
 Spacing _____
 Offset From Edge (inches/mm) _____
 Scoop Cleats (7 mm thick) _____ Yes or No
 Overall Height 3.5", 4", 5"
 Spacing _____
 Sidewalls _____ Yes or No
 Height (inches/mm) 1.4" to 4.3"
 Offset From Edge (inches/mm) _____
 V-Guide _____ Yes or No
 What Type K6, K8, K13, A, B, C
 Location In Width (inches/mm) _____
 Other Belt Features _____
 Ground Teeth (Field welded belts with ground teeth require special tooling) _____ Yes or No
 As Specified _____

Sprockets

Replacing existing sprockets? _____
 # of Sprockets _____
 Bore Type (Round or Square) _____ R or S
 Square Dimension (inches/mm) _____
 Round Dimension (inches/mm) _____
 Keyway Dimension (inches/mm) _____
 Number of Teeth or diameter _____
 Face Width (inches/mm) _____
 Any Back Idlers _____ Yes or No
 Diameter of Back Bend (in/mm) _____
 Smallest In Conveyor (inches/mm) _____
 Drum Motor / Motorized Pulley _____ Yes or No

Food Belt Installation Checklist

Food Belt Installation Checklist		
	Input	Comments
Conveyor		
OEM / Check Nameplate		
Bed Type (Wear Strip, Slider Bed, or Roller)		
Wear Strips		
Number Across Conveyor Width		
Spacing		
Pattern (parallel, chevron)		
Material		
Slider Bed		
Dimensions (inches/mm)		
Material		
Roller		
Number of Rollers		
Spacing of Rollers		
Returnway (wear strip, rollers, stationary bar)		
How is belt guided		
Conveyor Sidewalls/Fenders -height		
Troughing		
Side Wear Strips	Yes or No	
Drivetype / Head / Tail / Center		
Backend Diameter, (inches/mm)	Yes or No	
Total Load On Belt (lbs.)		
Conveying What :		
Inclined		
Angle of Incline		
Z Conveyor Transition Guide	Shoe or roller	
Guide Material		
Angle of Belt Wrap On Drive Pulley		
Tensioning Device (Take Up) Avail.	Yes or No	
Type		
Total Travel		
Extended Distance When Center Distance Was Measured		
Installation		
Who Will Do Installation?		
Power Available:	1 Ø 115VAC / 20A min.; 1 Ø 230VAC / 16A min.; 3 Ø 230VAC / 8A min.; 3 Ø 460VAC / 8A min.	
Note: Extension Cord Max. Length is 50'		
Where Will Field Welder Be Placed?		
Is Conveyor Difficult to Access?	Yes or No	
Additional Information / Conveyor Sketch		
		
<p>GATES MECTROL, INC. 9 Northwestern Drive Salem, NH 03079, U.S.A. Tel. +1 (603) 890-1515 Tel. +1 (800) 394-4844 Fax +1 (603) 890-1616</p>		
<p>Application Engineering: Tel. +1 (800) 505-8494 email: apps@gatesmectrol.com</p> <p>www.gatesmectrol.com </p>		
GM_Food Belt_Checklist_10-2014		

Food Belt Certifications

CERTIFICATES

- FDA compliance for wet food contact requirements 21CFR177.2600
- USDA certificate for hygiene requirements for meat and poultry processing equipment
- USDA certificate for dairy equipment
- EU compliance

**UNITED STATES DEPARTMENT OF AGRICULTURE
MARKETING AND REGULATORY PROGRAMS
AGRICULTURAL MARKETING SERVICE**

EQUIPMENT ACCEPTANCE CERTIFICATE

Firm: Gates Mectrol
9 Northwestern Drive
Salem, New Hampshire 03079

Model Designation: Belting Material
FlatClean®
FC1P, FC12, and FC12P

July 16, 2014
Date of Issuance

July 15, 2019
Date of Expiration

U.S. Department of Agriculture
Marketing and Regulatory Programs
Agricultural Marketing Service
Dairy Grading Branch
1400 Independence Ave., SW
Washington, DC 20250-0230

The issuance of this form is based on U.S. Department of Agriculture, Dairy Grading Branch, Equipment Design Review Section, evaluation of the equipment listed above for compliance with:
NSF/ANSI/A-14159-3 - 2010 Hygiene Requirements for the Design of Belt Conveyors Used in Meat and Poultry Processing

This form does not limit USDA's responsibility to take appropriate action in cases in which evidence of non-compliance, improper maintenance, or non-sanitary conditions have been observed.

 United States Department of Agriculture 

DA-161 (09-04) Do not print previous editions.

**UNITED STATES DEPARTMENT OF AGRICULTURE
MARKETING AND REGULATORY PROGRAMS
AGRICULTURAL MARKETING SERVICE**

EQUIPMENT ACCEPTANCE CERTIFICATE

Firm: Gates Mectrol
9 Northwestern Drive
Salem, New Hampshire 03079

Model Designation: Belting Material
FlatClean®
FC1P, FC12, and FC12P

April 21, 2014
Date of Issuance

April 20, 2019
Date of Expiration

U.S. Department of Agriculture
Marketing and Regulatory Programs
Agricultural Marketing Service
Dairy Grading Branch
1400 Independence Ave., SW
Washington, DC 20250-0230

The issuance of this form is based on U.S. Department of Agriculture, Dairy Grading Branch, Equipment Design Review Section, evaluation of the equipment listed above for compliance with:
USDA Dairy Equipment Guidelines

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 United States Department of Agriculture 

DA-161 (09-04) Do not print previous editions.

**UNITED STATES DEPARTMENT OF AGRICULTURE
MARKETING AND REGULATORY PROGRAMS
AGRICULTURAL MARKETING SERVICE**

EQUIPMENT ACCEPTANCE CERTIFICATE

Firm: Gates Mectrol
9 Northwestern Drive
Salem, New Hampshire 03079

Model Designation: Belting Material
PosiClean & FC12

July 12, 2007
Date of Issuance

July 11, 2020
Date of Expiration

U.S. Department of Agriculture
Marketing and Regulatory Programs
Agricultural Marketing Service
Dairy Grading Branch
1400 Independence Ave., SW
Washington, DC 20250-0230

The issuance of this form is based on U.S. Department of Agriculture, Dairy Grading Branch, Equipment Design Review Section, evaluation of the equipment listed above for compliance with:
USDA Dairy Equipment Guidelines

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 United States Department of Agriculture 

DA-161 (09-04) Do not print previous editions.

**UNITED STATES DEPARTMENT OF AGRICULTURE
MARKETING AND REGULATORY PROGRAMS
AGRICULTURAL MARKETING SERVICE**

EQUIPMENT ACCEPTANCE CERTIFICATE

Firm: Gates Mectrol
9 Northwestern Drive
Salem, New Hampshire 03079

Model Designation: Belting Material
PosiClean® PC10 and PosiClean® PC20

August 4, 2015
Date of Issuance

August 5, 2020
Date of Expiration

U.S. Department of Agriculture
Marketing and Regulatory Programs
Agricultural Marketing Service
Dairy Grading Branch
1400 Independence Ave., SW
Washington, DC 20250-0230

The issuance of this form is based on U.S. Department of Agriculture, Dairy Grading Branch, Equipment Design Review Section, evaluation of the equipment listed above for compliance with:
USDA Dairy Equipment Guidelines

This form does not limit USDA's responsibility to take appropriate action in cases in which evidence of non-compliance, improper maintenance, or non-sanitary conditions have been observed.

 United States Department of Agriculture 

DA-161 (09-04) Do not print previous editions.

**UNITED STATES DEPARTMENT OF AGRICULTURE
MARKETING AND REGULATORY PROGRAMS
AGRICULTURAL MARKETING SERVICE**

EQUIPMENT ACCEPTANCE CERTIFICATE

Firm: Gates Mectrol
9 Northwestern Drive
Salem, New Hampshire 03079

Model Designation: Belting Material
CenterClean® and PostClean® (designations PC10 & PC20)

April 22, 2015
Date of Issuance

April 21, 2019
Date of Expiration


 U.S. Department of Agriculture
 Marketing and Regulatory Programs
 Agricultural Marketing Service
 Dairy Grading Branch
 1400 Independence Ave., SW
 Washington, DC 20250-0230

The issuance of this form is based on U.S. Department of Agriculture, Dairy Grading Branch, Equipment Design Review Section, evaluation of the equipment listed above for compliance with:

NSF/ANSI-A 14159-3 - 2010 Hygiene Requirements for the Design of Belt Conveyors Used in Meat and Poultry Processing

This form does not limit USDA's responsibility to take appropriate action in cases in which evidence of non-compliance, improper maintenance, or non-sanitary conditions have been observed.




DA-181 (09-04) Do not use previous editions.

**UNITED STATES DEPARTMENT OF AGRICULTURE
MARKETING AND REGULATORY PROGRAMS
AGRICULTURAL MARKETING SERVICE**

EQUIPMENT ACCEPTANCE CERTIFICATE

Firm: Gates Mectrol
9 Northwestern Drive
Salem, New Hampshire 03079

Model Designation: Belting Material
CenterClean 40 and PostLace®

September 17, 2015
Date of Issuance

September 18, 2020
Date of Expiration


 U.S. Department of Agriculture
 Marketing and Regulatory Programs
 Agricultural Marketing Service
 Dairy Grading Branch
 1400 Independence Ave., SW
 Washington, DC 20250-0230

The issuance of this form is based on U.S. Department of Agriculture, Dairy Grading Branch, Equipment Design Review Section, evaluation of the equipment listed above for compliance with:

USDA Dairy Equipment Guidelines, June 2001

This form does not limit USDA's responsibility to take appropriate action in cases in which evidence of non-compliance, improper maintenance, or non-sanitary conditions have been observed.




DA-181 (09-04) Do not use previous editions.

**UNITED STATES DEPARTMENT OF AGRICULTURE
MARKETING AND REGULATORY PROGRAMS
AGRICULTURAL MARKETING SERVICE**

EQUIPMENT ACCEPTANCE CERTIFICATE

Firm: Gates Mectrol
9 Northwestern Drive
Salem, New Hampshire 03079

Model Designation: Belting Material
PostLace®

April 21, 2015
Date of Issuance

April 20, 2019
Date of Expiration


 U.S. Department of Agriculture
 Marketing and Regulatory Programs
 Agricultural Marketing Service
 Dairy Grading Branch
 1400 Independence Ave., SW
 Washington, DC 20250-0230

The issuance of this form is based on U.S. Department of Agriculture, Dairy Grading Branch, Equipment Design Review Section, evaluation of the equipment listed above for compliance with:

NSF/ANSI-A 14159-3 - 2010 Hygiene Requirements for the Design of Belt Conveyors Used in Meat and Poultry Processing

This form does not limit USDA's responsibility to take appropriate action in cases in which evidence of non-compliance, improper maintenance, or non-sanitary conditions have been observed.




DA-181 (09-04) Do not use previous editions.

**EU "Declaration of Compliance" statement
for Materials and Articles in Contact with Food**

Products: Belts PostClean® PC10 and PC20, FlatClean® FC12, CenterClean® CC40; this also includes attached sidewalls and cleats.

Intended applications: belting applications with all dry, aqueous, acidic and fatty foods in which the belt temperature does not exceed 70°C or 160°F for periods less than 16 minutes.

Framework regulation (EC) No. 1831/2003: (Applicable to all food contact materials)
It is confirmed that the above listed polyurethane belting products comply with the applicable requirements of Regulation (EC) No. 1831/2003 on Materials and Articles Intended to come into contact with food, including Article 3 (General Requirements) and Article 17 (Traceability).

Good Manufacturing Practice Regulation (EC) No. 2023/2006: (Applicable to all food contact materials)
These belting products are manufactured under a quality assurance system which meets the requirements of Regulation (EC) no. 2023/2006 on Good Manufacturing Practice for materials and articles intended to come into contact with food.

Commission regulation (EU) No. 1020/11 on plastic materials intended to come into contact with food:
These belting products are in compositional compliance with EU Regulation 1020/11 including its updates 1282/2011, 1183/2012, 2020/14 and 1742/2015.

Dual use food additives:
No migratory dual use food additives or authorised food flavourings covered respectively by Regulation (EC) No. 1333/2008 or Regulation (EC) No. 1334/2008 or their implementing measures are used in the manufacture of the belting.

Migration Testing:
The overall migration and specific migration of substances subject to restriction do not exceed the legal limits (calculated as 6 g/m² belting per kg of food).

Test Substance	Food Types	Testing Condition
10% ethanol (Simulant A)	All solid foods	DMG - 2 hours at 70 °C or equivalent, Repeat Use
3% acetic acid (Simulant D)		
95% ethanol (Simulant D2)		
vegetable oil substitute		

No potentially associated primary aromatic amines were detected in a 2 hours at 70°C test with 3% acetic acid. (Limit of detection 0.010 mg/kg)

Migration modelling undertaken has established that in use of the belting, the polyurethane will act as a functional barrier preventing potential migration of any filler finishes from the embedded fibres into food.

This compliance statement is based on information received from material suppliers, migration testing undertaken according to Directive 82/711/EEC, 85/372/EEC and Regulation 1020/11, mathematical migration modelling and quality control systems in place at Gates Mectrol.

This Declaration is for the products specified above and is valid for two years. An updated statement will be provided if the information on which the declaration is based changes or regulatory requirements impact on its validity.

Date: 26 March 2015

Gerhard Finkenwirth
 Technical Manager
GATES MECTROL
 9 Northwestern Drive
 Salem, NH 03079 USA
 Telephone: 603.880.1515
 Fax: 603.880.1616
 www.gatesmectrol.com

Food Belt Sanitation

BELT SANITATION

Gates Mectrol food conveyor belting is designed to be easy to clean and specifically for Clean-in-Place sanitation procedures. It does not require soaking and immersion to achieve proper sanitation levels. In order to achieve maximum belt life, immersion in chemical solution for sanitation is not recommended.

Recommended Sanitation Procedures

1. Remove large food residues by mechanical means (scraper/brushes etc.)
2. Rinse conveyor with hot water to further remove food soils, preferably belt is not under tension
 - Approximately 60°C/140°F (avoid boiling water for safety and belt life)
 - Note: high water pressure may atomize water and make pathogens airborne
3. Apply cleaning detergent to the conveyor and belt
 - Usually alkaline/surfactant combination
4. Rinse conveyor with hot water (approximately 60°C/140°F)
 - Note: high water pressure may atomize water and make pathogens airborne
5. Apply sanitizer (germicide) to reduce microorganisms to safe level
6. Rinse with water if necessary
 - Dependent on sanitizer toxicity level

Common Sanitizing Chemicals

- *Sodium hyperchlorite (bleach)* is a common sanitizer used in the food processing industry. It attacks all families of thermoplastic polyurethane to some degree. In order to maximize belt life, the time that the bleach solution resides on the belt should be minimized and the solution should be at room temperature. Gates Mectrol belt jackets are made of polyether based thermoplastic polyurethane (TPU). This family of TPUs are more resistant to attack by the typical chemicals used in the food industry including sodium hypochlorite than the commonly used polyester based thermoplastic polyurethanes.

- Guidelines for Use of Sodium Hypochlorite on Gates Mectrol Food Conveyor Belting

- Maximum concentration level: 2,000 ppm of available chlorine

Note: If concentration levels exceed 200 ppm of available chlorine, the belt must be rinsed with potable water after the application of the sodium hypochlorite per US Government regulations 21 CFR Part 178.

- Maximum residence time on belt for contraction levels exceeding 200 ppm : 20 minutes
- Maximum solution temperature: 90°F (32°C)

- *Sodium hydroxide (caustic soda)* is found in many cleaning/sanitizing solutions. Sodium hydroxide does not affect the jacket material (polyether based TPU) of Gates Mectrol's food belting.
- *Quaternary ammonium compound (Quats)* is a common sanitizer in the food industry. This sanitizer does not attack Gates Mectrol's food belting.

Food Belt Chemical Resistance

CHEMICAL RESISTANCE CHART

This chart is only provided as a general guide and not a qualified guarantee of chemical compatibility. The chemical resistance on Gates Mectrol belts can be affected by chemical concentration, contact longevity and food contact / environmental temperature. Gates Mectrol food conveyor belting does not require soaking and immersion to achieve proper sanitation levels. Immersion in chemical solution for sanitation is not recommended for our food conveyor belting in order to achieve maximum belt life. Our belting is designed for Clean-In-Place sanitation.

Food Conveyor Belting Chemical Resistance

PRODUCT/CHEMICAL	Excellent	Good	Limited	Not Recommended
Acetic Acid				X
20% Acetic Acid			X	
3% Acetic Acid	X			
Acetic Anhydride				X
Acetone				X
Acetylene	X			
Aluminum Chloride	X			
Aluminum Sulphate	X			
Ammonium Carbonate	X			
Ammonium Chloride		X		
Ammonium Hydroxide		X		
Ammonium Nitrate	X			
Ammonium Nitrite	X			
Ammonium Phosphate	X			
Ammonium Sulphate	X			
Ammonium Sulfide	X			
Amyl Acetate				X
Amyl Alcohol	X			
Aniline				X
Animal Oils & Fats	X			
Barium Chloride	X			
Barium Hydroxide	X			
Barium Sulfide	X			

Food Belt Chemical Resistance

Food Conveyor Belting Chemical Resistance

PRODUCT/CHEMICAL	Excellent	Good	Limited	Not Recommended
Beer	X			
Beet Sugar Liquors	X			
Benzene			X	
0.5% Bleach (sodium hypochlorite)		X		
Borax	X			
Boric Acid	X			
Brake Fluid			X	
Butter	X			
Butyl Acetate				X
Calcium Bisulfite				X
Calcium Chloride	X			
Calcium Hydroxide	X			
5% Calcium Hypochlorite	X			
Calcium Nitrate	X			
Calcium Sulfide	X			
Caliche (Sodium Nitrate)				X
Cane Sugar	X			
Carbon Bisulfide		X		
Carbon Dioxide	X			
Carbon Monoxide	X			
Carbon Tetrachloride		X		
Castor Oil	X			
10% Caustic Soda (Sodium Hydroxide)	X			
Cheese	X			
Chlorine Gas, Dry				X
Chlorine Gas, Wet				X
Chloroacetic Acid				X
Chlorobenzene				X
Chromic Acid				X
Citric Acid	X			

Food Belt Chemical Resistance

Food Conveyor Belting Chemical Resistance

PRODUCT/CHEMICAL	Excellent	Good	Limited	Not Recommended
Coconut Oil	X			
Copper Chloride	X			
Copper Sulphate	X			
Corn Oil	X			
Cottonseed Oil				X
Cresol				X
Creosote		X		
Cyclohexane		X		
Cyclohexanone				X
Diethyl Ether		X		
Dimethyl Acetamide				X
Dimethyl Formamide				X
Dimethyl Sulphoxide				X
Diethyl Phthalate (DOP)	X			
Epichlorohydrin				X
Ethanol		X		
Ethyl Acetate				X
Ethyl Cellulose				X
Ethylene Chloride				X
Ethylene Dichloride				X
Ethylene Glycol	X			
Ethylene Oxide	X			
Ferric Chloride		X		
Ferric Sulphate		X		
Fertilizer		X		
Fish Oil	X			
Flour	X			
Fluosilicic Acid		X		

Food Belt Chemical Resistance

Food Conveyor Belting Chemical Resistance

PRODUCT/CHEMICAL	Excellent	Good	Limited	Not Recommended
40% Formaldehyde Solution		X		
Formic Acid				X
Fruit Acids	X			
Furfural			X	
Gasoline		X		
Glucose	X			
Glue	X			
Glycerine	X			
Hexane	X			
Hexanol	X			
Hydraulic Oils		X		
Hydrazine				X
Hydrocyanic Acid				X
Hydroflouric Acid, Anhydrous				X
Hydrogen	X			
Hydrogen Peroxide	X			
Hydrogen Sulphide		X		
Iodine				X
Isoctane	X			
Isopropyl Alcohol			X	
.5% Javelle Water (Bleach)		X		
Kerosene		X		
Lacquer Solvents				X
Lactic Acid	X			
Lard	X			

Food Belt Chemical Resistance

Food Conveyor Belting Chemical Resistance

PRODUCT/CHEMICAL	Excellent	Good	Limited	Not Recommended
Lineolic Acid		X		
Linseed Oil		X		
Lubricating Oils		X		
Magnesium Chloride	X			
Magnesium Hydroxide		X		
Magnesium Sulfate	X			
Meat & Bone Meal	X			
Methyl Alcohol (Methanol)			X	
Methyl Isobutyl Ketone			X	
Methyl Ethyl Ketone (MEK)				X
Methylene Chloride				X
Milk	X			
Mineral Oils	X			
Mineral Spirits			X	
Molasses	X			
Mustard	X			
Naphthalene			X	
20% Nitric Acid				X
3% Nitric Acid				X
Nut Oil	X			
Oils & Fats	X			
Oleic Acid	X			
Oleum				X
Olive Oil	X			
Oxalic Acid		X		
Ozone				X
Palm Kernel Oil	X			

Food Belt Chemical Resistance

Food Conveyor Belting Chemical Resistance

PRODUCT/CHEMICAL	Excellent	Good	Limited	Not Recommended
Palmitic Acid		X		
Peanut Oil	X			
Pentane	X			
Petroleum		X		
Phenol				X
Phosphoric Acid, Diluted	X			
20% Nitric Acid, 4% HF Pickling Solution				X
1% Nitric Acid, 4% HF Pickling Solution		X		
Potassium Chloride	X			
Potassium Dichromate		X		
Potassium Hydroxide		X		
Potassium Nitrate	X			
Potassium Sulphate	X			
Pyradine				X
SAE 10 Oil	X			
Salt Water	X			
3% Sodium Sulfit		X		
0.5% Sodium Hypochlorite		X		
10% Sodium Hydroxide (Caustic Soda)	X			
Soy Bean Oil	X			
15% Stannous Chloride		X		
Steam 100 - 110° C			X	
Stearic Acid	X			
Styrene				X
Sulphur Dioxide, Liquid				X
Sulphur Dioxide, Gas				X
20% Sulphuric Acid				X
3 % Sulphuric Acid		X		
Sulphurous Acid		X		
Sugar	X			

Food Belt Chemical Resistance

Food Conveyor Belting Chemical Resistance

PRODUCT/CHEMICAL	Excellent	Good	Limited	Not Recommended
10% Tannic Acid	X			
Tartaric Acid	X			
Tetrahydrofuran				X
Toluene			X	
Tomato Juice	X			
Tomatoes, Ketchup	X			
Tetrachloroethylene			X	
3% Triethanolamine		X		
Trisodium Phosphate	X			
Tung Oil	X			
Turpentine			X	
3% Urea	X			
Urine	X			
Vegetable Oils & Fats	X			
Vinegar	X			
Water 22°C to 70°C	X			
Water 100°C (212° F)			X	
Whiskey/Wine	X			
Xylene			X	
Zinc Chloride		X		
Zinc Sulphate		X		

Food Belt Safety Procedures

SAFETY POLICY

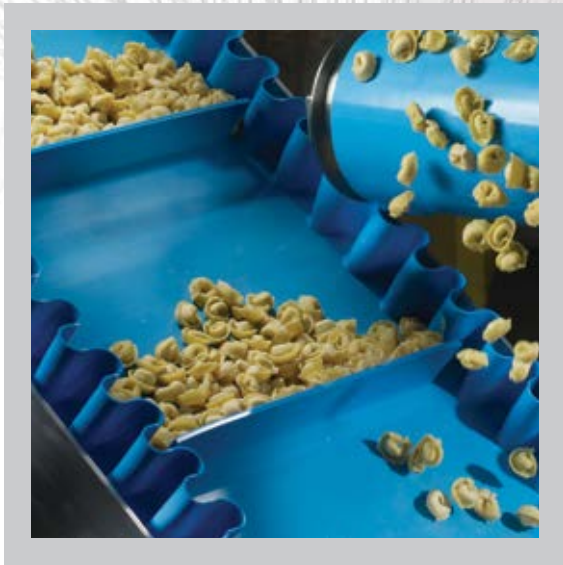
WARNING! Be Safe! Gates Mectrol belting is reliable when used safely and within Gates Mectrol application recommendations. However, there are specific USES THAT MUST BE AVOIDED due to the risk of serious injury or death. These prohibited misuses include:

Lift Systems

Do not use Gates belts or pulleys in applications that depend solely upon the belt to raise/lower, support or sustain a mass without an independent safety backup system. Gates belt drives systems are not intended for use in applications requiring special "Lift" or "Proof" type chains with minimum tensile strength or certified/test tensile strength requirements.

Braking Systems

Do not use Gates belts or pulleys in applications that depend solely upon the belt to slow or stop a mass or to act as a brake without an independent safety backup system. Gates belt drive systems are not intended to function as a breaking device in "emergency stop" systems.



USA
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