



Marketing Manual **SuperDrive™**





Think Positive Think SuperDrive™

SuperDrive™, the newest generation homogeneous positive drive belt, globally applauded as the best choice where hygiene control and conveying efficiency are essential. This distinctive design combines positive drive benefits with Volta's firm commitment to superior quality, increasing hygiene standards and productivity dramatically.



Fully extruded integrated teeth on the drive side function as a positive drive system and simultaneously serve as a built in guide mechanism reducing tensioning and off-tracking.

The homogeneous character makes sure that there are no crevices where bacteria may harbor making cleaning simple and increasing product life considerably. Volta's eco friendly belts allow drastic reduction in water usage and converts cleaning time to precious production time.



“We've found that the process of cleaning conveyor belts is easier and far more effective when performed on Volta Belting products such as the SuperDrive™.”

Mr. David Kernoghan of Johnson Diversey

“In regard of hygiene for food products, I think Volta belt is the best at present, because it's very convenient in installation, easy to clean and especially there is no space for bacteria to harbor on the belt, so the belt does not leave the bad odor caused by bacteria.”

Mr. Thai Hoang Hung Director of Sea Food Plant, after installing and processing on many new SuperDrive™ belts.



Material Features:

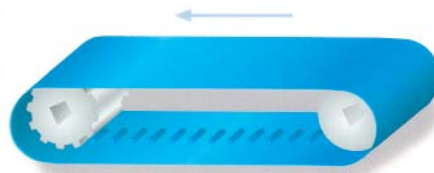
- Smooth homogenous non-porous surfaces prevent bacteria build-up resulting in maximum product shelf-life.
- No plies, edge fraying or modular components or hinges that can break apart and find their way into your final product.
- Non absorbent of water, oils or chemicals.
- Smooth surface prevents product sticking, considerably reducing waste.
- Not absorbent of smells.
- Wide operating temperature range.
- Lightweight conveyor belt.
- FDA/USDA AMS Equipment Acceptance Certificate in compliance with NSF/ANSI/3A 14159-3 – 2005 for Meat and Poultry Processing and USDA Dairy Equipment Review Guidelines for selected products.

Mechanical Benefits:

- Teeth are an integral part of the belt eliminating breakages at weak points and increasing the life of the belt.
- Extruded teeth and pulley system positively drive and track the belt creating a smooth running production line.
- Minimal pretension reduces strain on the belt and elongation.
- Reduces noise levels to a minimum.
- Easy to install and form a strong base for quality heat welded fabrications.
- Lightweight conveyor belt, cutting back on motor energy usage.



Drive Pulley



Drive Pulley

Tail Pulley



Tail Pulley

SuperDrive™ components



"Z" or Swanneck Conveyors



FHW-3-SD Integral teeth function as a guide for the belt

SuperDrive™ is able to simply combine several vital advantages that can put your product into the first-class position of which it is worth. Huge water & energy savings, converting cleaning & maintenance downtime into production time and the extended life of your belt make sure that the long term bottom line results will bring a smile to your face.

The Bottom Line



Technical Data:

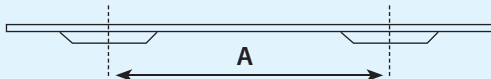
The SuperDrive™ product line includes belts of two different hardnesses. The FHW-SD and FHB-SD are 55D Shore hardness while the FMW-SD and FMB-SD are 53D Shore hardness. This range of products provides effective, efficient solutions to a wide range of applications:

- FHW-SD and FHB-SD are designed for long conveyors with particularly heavy loads and for use in harsh chemical conditions.
The 4 mm FHB-SD is suitable for cutting and chopping on the belt. Various textured tops are available.
- FMW-3-SD and FMB-3-SD are designed for shorter conveyors with lighter loads and where fabrications or sidewalls are needed.
Various textured tops are available.
- We highly recommend using FMW-3-SD and FMB-3-SD with bigger pulleys for low temperature applications.



The technical information for each set of belts is shown in the table below.

3mm belt

Product	FHW-SD	FHB-SD	FMW-SD	FMB-SD	
Description	Flat, solid		Flat, solid	Flat, solid	
Material	Volta HW, white		Volta HB, blue	Volta MW, beige	Volta MB, blue
Thickness	3 mm (1/8")		3 mm (1/8")	3 mm (1/8")	3 mm (1/8")
Hardness	55D			53D	
Temperature Range	-20° to +75° C / -5° to +170° F			-20° to +60° C / -5° to +140° F	
Maximum Pull Force per Unit of Belt Width	7 kg/cm			6.25 kg/cm	
	39.2 lbs/in			35 lbs/in	
Minimum Pulley Diameter (normal flex)	100 mm (4")			80 mm (3 1/4")	
Minimum Pulley Diameter (back flex)	150 mm (6")			100 mm (4")	
Coefficient of Friction	Steel :	0.40	Steel:	0.50	
	Stainless Steel:	0.40	Stainless Steel:	0.50	
	UHMW:	0.20	UHMW:	0.28	
Distance Between Rows of Teeth (center to center)	"A" = 605+/-2mm / 23.81 +/-0.08in			"A" = 613+/-2mm / 24.13 +/-0.08in.	
					
Standard Belt Width	1524 mm (60")				
Certification	USDA / FDA				

Important note:

Different textured impression tops are available. Contact your local dealer for further details.



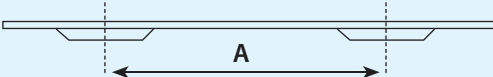
Technical Data:



The SuperDrive™ 4 mm (SD-4) is ideal for applications where special demands are required

- Longer Conveyor Lines
- Greater Impact
- Heavier Loads
- Extremely Harsh Applications
- Cut and abrasion resistant

4mm belt

Product	FHW-SD	FHB-SD	FMW-SD	FMB-SD
Description	Flat, solid	Flat, solid	Flat, solid	Flat, solid
Material	Volta HW, white	Volta HB, blue	Volta MW, beige	Volta MB, blue
Thickness	4 mm (5/32")	4 mm (5/32")	4 mm (5/32")	4 mm (5/32")
Hardness	55D		53D	
Temperature Range	-20° to +75° C / -5° to +170° F		-20° to +60° C / -5° to +140° F	
Maximum Pull Force per Unit of Belt Width	9 kg/cm		8 kg/cm	
	50.4 lbs/in		44.8 lbs/in	
Minimum Pulley Diameter (normal flex)	120 mm (4¾")			
Minimum Pulley Diameter (back flex)	150 mm (6")			
Coefficient of Friction	Steel :	0.40	Steel:	0.50
	Stainless Steel:	0.40	Stainless Steel:	0.50
	UHMW:	0.20	UHMW:	0.28
Distance Between Rows of Teeth (center to center)	"A" = 605+/-2mm / 23.81 +/-0.08in		"A" = 613+/-2mm / 24.13 +/-0.08in.	
				
Standard Belt Width	1524 mm (60")			
Certification	USDA / FDA			

Important note:

Different textured impression tops are available. Contact your local dealer for further details.

Technical note:

Please make sure that you order the pulley suitable for the 4mm SuperDrive™ belts.



Accessories:

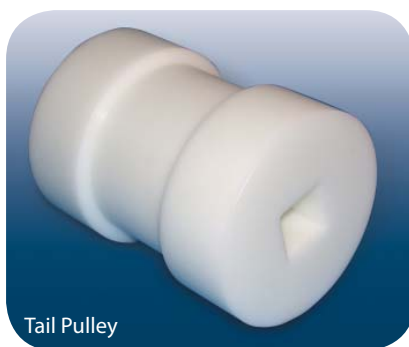
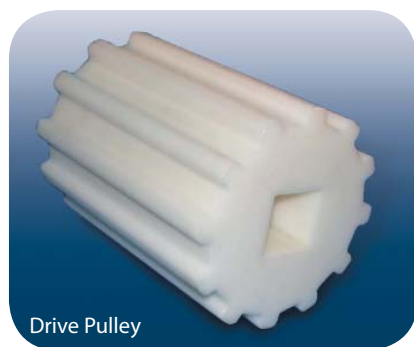
Drive, Tail, Support Pulleys and Locking Collars

In addition to the belt, we may supply pulleys manufactured from food contact approved materials. The pulleys include the Drive pulley, Tail pulley and Support pulleys. The Drive and Tail pulleys are used with all SuperDrive™ installations. The Support pulleys are designed to support the belt for heavy loads or when the belt is significantly wider than the drive and tail pulleys.

Table 2 shows the specifications for Drive, Tail and Support pulleys supplied by Volta Belting. The pulleys are designed to be secured on the conveyor shaft using Locking Collars, although they may be secured to the shaft by other methods.

SuperDrive™ pulley specifications

	Designation		# Teeth	O.D. +0.05 mm (0.002") -0.00 mm (0.0")		Square Shaft Dimension Availability		Pulley Face Width
	Metric	English		Metric	English	Metric	English	
Drive	100 mm	(4")	8	100.5 mm	3.96"	40 mm	1½ "	200 mm (8")
	150 mm	(6")	12	151.4 mm	5.96"			
	200 mm	(8")	16	202.9 mm	7.98"			
Tail	100 mm	(4")	none	100.5 mm	3.96"	40 mm	1½ "	200 mm (8")
	150 mm	(6")		151.4 mm	5.96"			
	200 mm	(8")		202.9 mm	7.98"			
Support	100 mm	(4")	none	100.5 mm	3.96"	40 mm	1½ "	100 mm (4")
	150 mm	(6")		151.4 mm	5.96"			
	200 mm	(8")		202.9 mm	7.98"			



Locking Collars

Volta standard metal, Square plastic (UVHM) and Round plastic (UVHM) Locking Collars, are specifically designed to hold your SuperDrive™ Drive, Tail and Support pulleys in place and make sure that the belt teeth are aligned with the pulley at all times. These Locking Collars can be assembled without dismantling the shaft. Please contact your local dealer for more information.

Bore Description

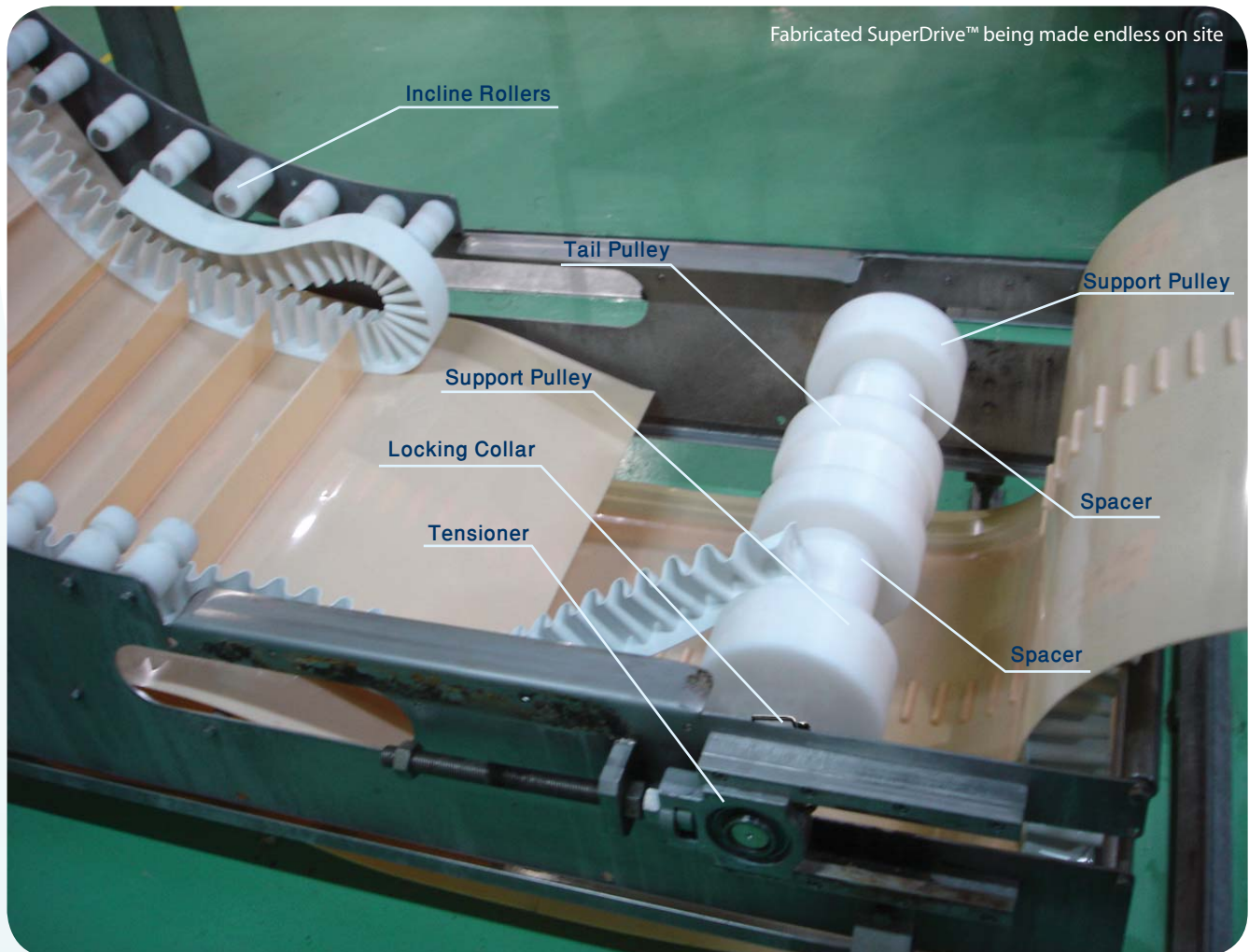
The SuperDrive™ pulleys (drive, tail and support) are available with either a standard bore or round corner bore (Figure 1). The round corner bore is designed to provide a channel for water to carry debris away during washdown.

Other sizes of square and round bores are available upon request.



Conveyor Construction:

The following pages contain general information that we have acquired relating to best practices for construction of conveyors to be used with the SuperDrive™. This information is not to be considered as complete or all inclusive. Each conveyor should be designed based on the needs and requirements of the application. For more detailed information, see our SuperDrive™ Technical Manual.



Quick Release Take-Up

We recommend using the Quick Release Take-Up on SuperDrive™ conveyors (Figure 6). This simplifies both the mounting of the belt and removal for cleaning and maintenance. The quick release allows the belt tension to be released and returned to its correct position without having to realign the belt. Consult your local conveyor manufacturer for the type best suited to your needs.



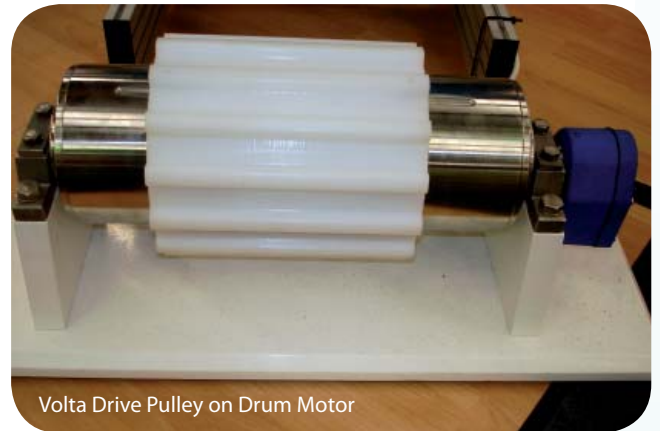
Conveyor Construction:

Motorized Pulley

Motorized pulleys are highly efficient conveyor drive systems where the motor, gearbox and bearings are totally enclosed within a drum motor shell. Power from the motor is transmitted through the gearbox, which is coupled to a geared rim fixed to the drum end housing.

It is especially useful on fish factory ships, meat and poultry processing lines and in the production of milk and dairy products. In these applications, the fact that the motor and gears are enclosed within the drum, makes it impervious to high pressure cleaning. This is a major benefit in food processing where hygiene is of the utmost importance. An added benefit when using SuperDrive™ is that it creates a conveying system that is hygienic and easily cleaned, while withstanding the high pressure and temperature of water used in cleaning food processing facilities.

We cooperate with several of the best known motorized pulley manufacturers to develop drum motors fitted with pulleys and teeth suitable to the SuperDrive™ conveyor belt. Please contact your local Volta distributor for more information.

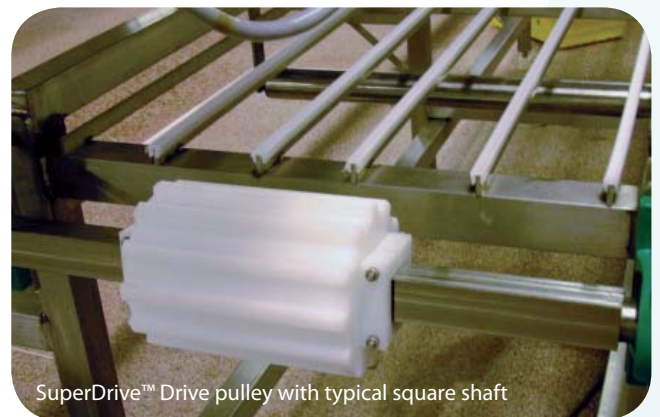


Volta Drive Pulley on Drum Motor

Shafts

Our Drive, Tail and Support pulleys are designed to mount on square shafts. The SuperDrive™ pulleys are available with typical shaft dimensions (1½" or 40 mm).

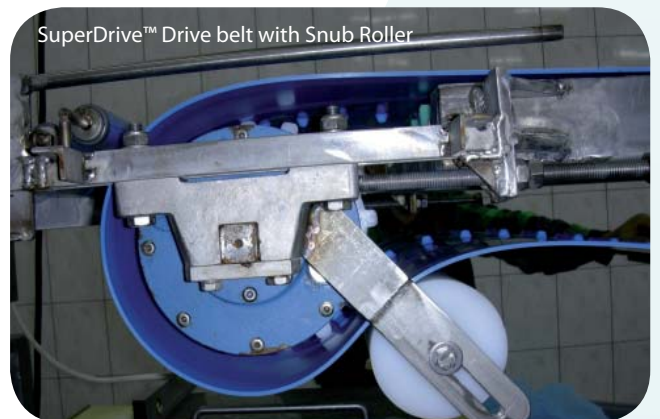
Other sizes of square and round bores are available upon request.



SuperDrive™ Drive pulley with typical square shaft

Snub Rollers

We recommend using the snub roller when working with heavy loads or where the belt is intended to operate without tension. The snub roller can be placed close or even touching the Drive pulley. The purpose is to prevent slack around the Drive pulley. Using Snub Rollers increases the arc of contact on the Drive pulley, therefore, reducing the odds of the belt jumping under heavy loads.



SuperDrive™ Drive belt with Snub Roller

Conveyor Construction:

UHMW Strips on Conveyor Slidebed

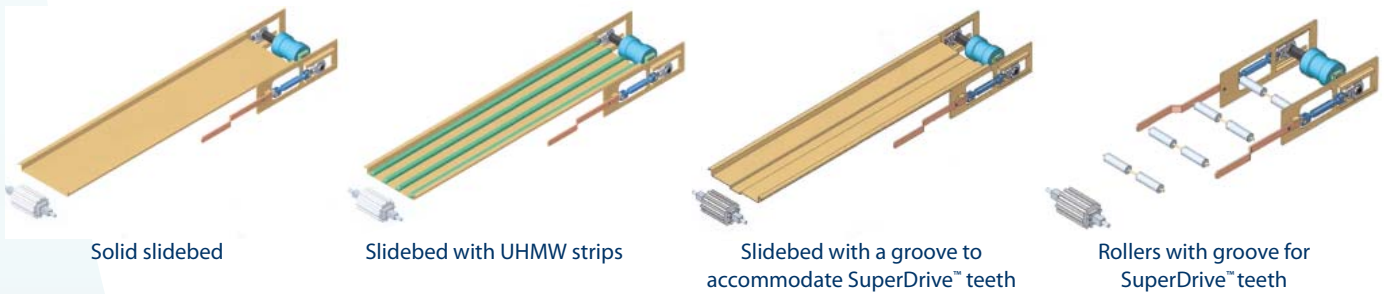
The use of UHMW (Ultra High Molecular Weight) strips is highly recommended especially when working with FMW-SD and FMB-SD belts. The UHMW strips reduce the coefficient of friction between the belt and the slidebed. This increases the load that the belt is capable of carrying. These strips also ensure a fully tracked belt by providing guides for the teeth. The UHMW strips are useful when retrofitting a modular or standard conveyor.

Conveyors Requiring Removal of the Belt for Cleaning

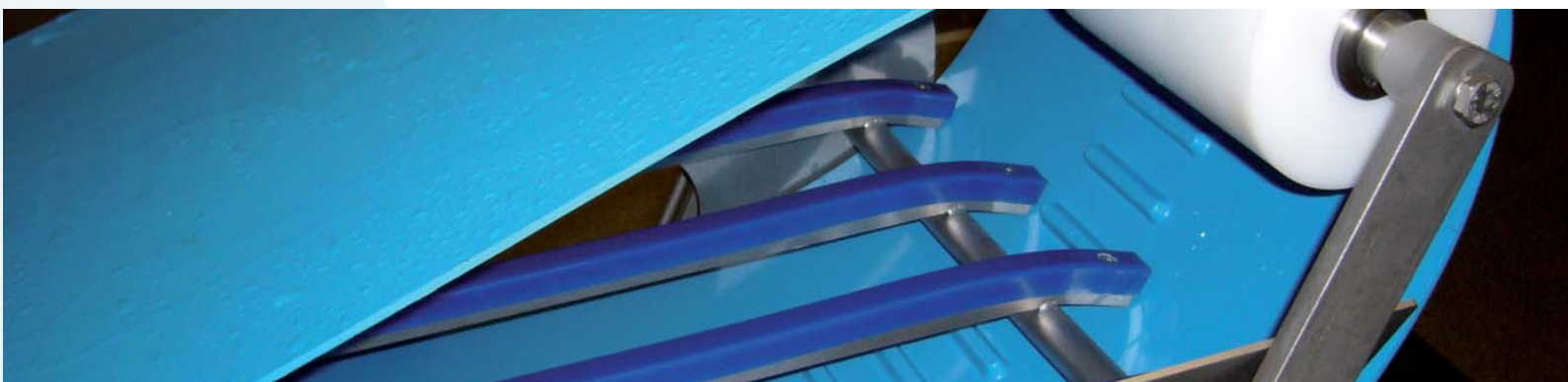
There are a number of options for conveyor construction that allow the belt to be removed from the conveyor without being opened. These common features are:

- Quick release take-up device permits the release of belt tension without losing belt alignment.
- Use of telescoping side supports.

Drawings of Optional Slidebed Structures



Drawings of Optional Conveyor Designs



Conveyor Construction:

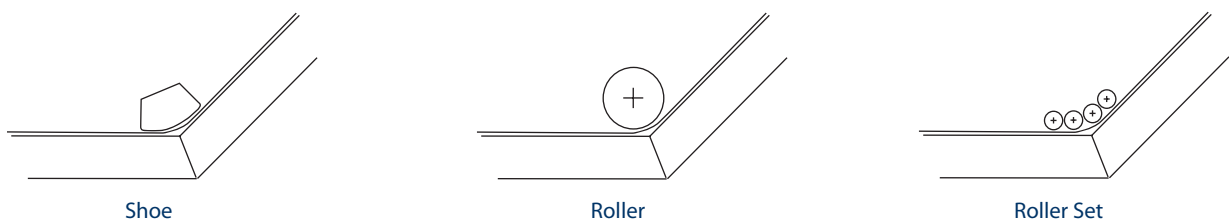
"Z" or Swanneck Conveyor Construction

The "Z" or Swanneck conveyor is commonly used for lifting the product from a lower to an upper level within the factory.

Reasons to use SuperDrive™ in this application:

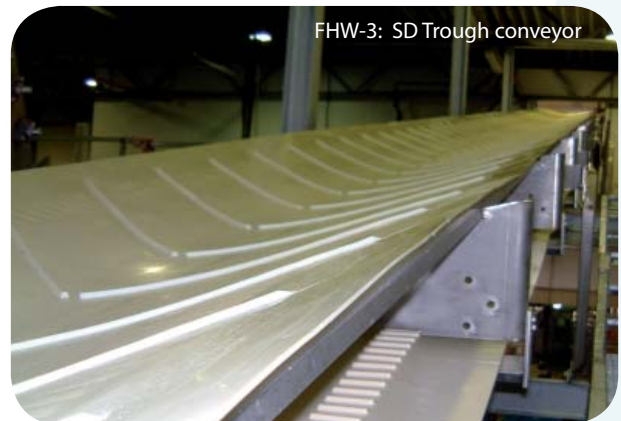
- The SuperDrive™ belt is relatively stiff across the belt and will not bend in the middle when the belt changes from a horizontal to an angled direction.
 - SuperDrive™ operates without tension, therefore, eliminates problems of holding the belt in place.
- The direction change (horizontal to angle) can be dealt with as with regular belts by using either a shoe, roller or set of small rollers.

Swanneck conveyor direction change options



To boost your Z Conveyor performance, we recommend Volta quality heat welded fabrications. Sidewalls and various Cleats types manufactured from our unique homogeneous TPE material especially designed to be fully compatible with the SuperDrive™ belt.

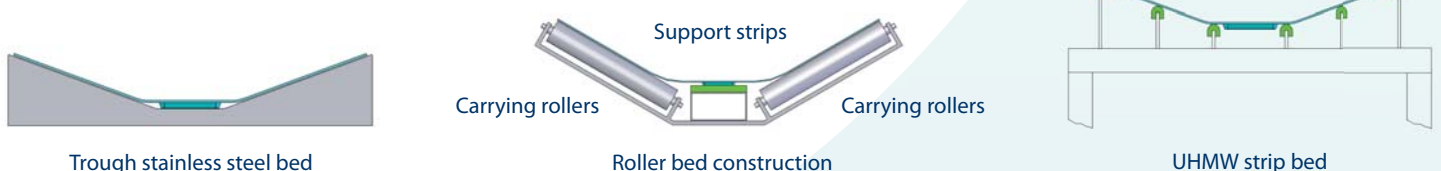
Volta homogeneous flat belts are an ideal and strong base for a full range of fabrications, that are highly resistant to cutting, tearing, oils, chemicals and abrasion. The combination of our belt fabrications made from high quality materials and our versatile tools ensure that the fabricated belt is virtually unbreakable and provides a long service life.



Trough Conveyors

The SuperDrive™ belt can be used in trough conveyors. The belt teeth are usually positioned at the center of the belt. When designing the trough conveyor ensure that this part of the belt is firm and cannot be bent.

Trough Bed Construction Options





SuperDrive™ Splicing Tools:

Making The SuperDrive™ Belt Endless

The SuperDrive™ conveyor belt is manufactured with a series of teeth as an integral part of the belt. These teeth are designed to mesh with the teeth on the SuperDrive™ Drive pulley. To ensure efficient performance, it is necessary to maintain the spacing between the teeth in the region of the splice.

We recommend using our Flat electrode (FT) Welding Kit or Flat Butt Welding (FBW) Welding Kit for this procedure. These tools are designed for use with all Volta belts and materials. They are also designed to maintain the correct spacing between the teeth on the SuperDrive™ belt. Please refer to Volta Tools Catalog or your local Volta distributor for more information.



FBW welding kit



FT electrode welding kit

Lacing

There are occasions when it may be necessary to splice the SuperDrive™ belt using lace. We recommend using Volta Hinge Lace, although other types and brands may be used as well. When working with lace, make sure that you work according to the recommendations of the lace manufacturer. The distance between the teeth at the splice must be the same as the distance between the teeth on the rest of the belt.

With some lacing products, it may be necessary to remove one tooth completely, such as the Volta Hinge Lace or Alligator brand model RS65 and RS125. After mounting the lace, the belt will have a gap of one tooth. The loss of one tooth will not affect the operation of the belt.

The Volta Hinge Lace is manufactured from our M materials and is welded to the belt ensuring a clean and reliable joint to the belt. The Hinge Lace is compatible only with FMW-SD and FMB-SD belts.



Closing belt with Volta Hinge Lace

Hinge Lace Specifications

	Volta LMW-U	Volta LMB-U
Description	Flat toothed strip	Flat toothed strip
Material	Volta MW, beige	Volta MB, blue
Hardness	95A	95A
Working Temp Range	-20°C to 60°C -5°F to 140°F	-20°C to 60°C -5°F to 140°F
Dimensions	5 x 16 mm - 0.2 in x 0.63 in	5 x 16 mm - 0.2 in x 0.63 in
Max Length	3.05 m - 10 ft	3.05 m - 10 ft
Max Pull Force	3 kg/cm - 16.8 lb/in	3 kg/cm - 16.8 lb/in
Min Pulley/ Back Bending for SD	80 mm/ 4 in.	80 mm/ 3¼ in.
Hinge Pin	Stainless Steel: 1.2 - 1.4 mm, Polyester: 1.2 mm diameter / FDA approved	



Frequently Asked Questions:

How much pretension is required on the SuperDrive™ for best operation?

The SuperDrive™ can work with little or no pretension (in most cases you probably could get away with no pretension at all). In spite of this we recommend the installation of a tension device. The maximum pretension needed should be not more than 0.3%.

If the SuperDrive™ doesn't require pretension, why do we need a tension device (take-up)?

As stated above, the SuperDrive™ requires hardly any pretension on most applications. The tension device has two functions on the conveyor. The first is to facilitate the mounting and splicing of the belt. Secondly, the quick release tension device makes belt and conveyor cleaning easier. Opening the quick release tension device provides slack between the belt and the pulleys to make cleaning more efficient. At the conclusion of cleaning, closing the quick release tension device returns the belt to its correct pretension and alignment without additional adjustments.

What is the recommended length of the take-up?

This is dependent on a number of factors of the application including: length of the conveyor, method of cleaning, structure of the conveyor. As a minimum, we recommend using a take-up of at least 5-8 inches (130 - 200 mm).

Does the SuperDrive™ material elongate? What is the maximum elongation that will occur?

When installed and operated according to Volta's instructions, there should be little or no elongation of the belt.

How do I calculate the correct belt length for the SuperDrive™?

The belt length for the SuperDrive™ is calculated the same as for any conveyor belt with one exception. With standard flat belting you first reduce the distance between the shafts to their minimum. Then measure the distance between the shafts and add $\frac{1}{2}$ the circumference of the drive pulley and $\frac{1}{2}$ the circumference of the tail pulley. Errors in splicing/welding are corrected by cutting a few millimeters from the belt and resplicing/rewelding. With the SuperDrive™, an error in welding will necessitate removing two teeth from the belt (approximately 80 mm / 3.14 in.) in order to maintain the correct spacing between the teeth. For this reason, when measuring the conveyor belt length, the take-up should be extended to $\frac{3}{4}$ of its maximum position and then the distance should be measured between the shafts. This will leave sufficient room for applying pretension if required.

What is the maximum Load possible on the SuperDrive™?

The maximum load possible with the SuperDrive™ is dependent on a number of factors. In order to understand these and to calculate the load possible for a given application, check our Technical Data and SuperDrive™ Calculation Software (Excel). Contact your local Volta representative for further information.

How do I splice the SuperDrive™ in the field? Are there Do's and Don't's unique to the SuperDrive™?

We have developed tools for welding Volta flat belts. Both the FBW (Flat Butt Welding Tool) and FT Electrode Welding Kit, can weld SuperDrive™ belts. When using the FT Electrode Welder you should use the appropriate 9 mm electrode (i.e. EVHW-9 or EVHB-9 for FHW-SD/FHB-SD and EVMW-9 or EVMB-9 for welding the FMW-SD and FMB-SD).

The only specific recommendation deals with the replacement of damaged belt sections. The replacement section should be made long enough that the two welds are never on the pulley at the same time. This dimension is greater than $\frac{1}{2}$ the circumference of the larger pulley.

What is the maximum catenary sag allowed for the SuperDrive™?

In general, belt sag will not affect the operation of the SuperDrive™ belt. Depending on the amount of sag, a few of the teeth will not mesh with the pulley teeth on the return side of the conveyor. We recommend that a maximum number of belt teeth mesh with the pulley teeth. As long as the belt section immediately after the Drive pulley does not vibrate and cause teeth to jump during conveyor operation the belt is OK.

Since many conveyors carrying reinforced belts have a conventional type take-up (i.e. screw), what do we do? How does this affect the SuperDrive™?

The take-up is a tension device. This should cause no problems with the assembly or operation of the SuperDrive™. (see the answer to: "If the SuperDrive™ doesn't require pretension, why do we need to install a tension device (take-up)?")



Frequently Asked Questions:

What are the roller support requirements for carryway (slidebed) and return?

The carryway (slidebed) should have a variation of one of the pictures from the **"Conveyor Construction"** section of this manual to maximize the efficiency of the conveyor. The return rollers should meet standard conveyor construction requirements.

What is the proper installation of the Pulleys and Locking Collars?

The Drive and Tail pulleys are secured in place on the shaft using the Locking Collars supplied. These are standard mechanical parts and do not require special assembly instructions. For those customers who do not want to use the Locking Collars supplied with the SuperDrive™ pulleys, Volta has prepared a document with possible alternatives. Ask your dealer for information. It should be emphasized that we recommend using only Volta supplied parts.

What is the correct installation for the Support pulley?

The positioning of the Support pulleys is dependent upon the conveyor construction and belt width. The correct position for the Support pulley is where there is no depression in the belt between the Support pulley and the drive/tail pulley while the conveyor is operating. The Support pulley, when required, should initially be positioned midway between the Drive/Tail pulley and the shaft end. If there is a depression, the Support pulley should be moved closer to the Drive/Tail pulley. The Support pulley should be approximately 100 mm (4") from the Drive/Tail pulleys.

How do I clean the SuperDrive™?

The SuperDrive™ should be cleaned in accordance with standard Volta instructions. A copy of Volta's cleaning instructions is available from your local Volta representative.

What is the maximum water temperature that can be used to clean the SuperDrive™?

The water temperature should not exceed 80° C (176° F).

Can cleats be fabricated on the SuperDrive™ belt?

Yes they can. We recommend that when fabricating cleats they be positioned over the teeth and not between them.

Can the SuperDrive™ be used on a conveyor with a center drive system?

Yes.

What is the maximum backflex allowed for the SuperDrive™?

For SuperDrive™ belts without fabrications, the backflex MPD for:

3mm thick 'M' material SD belt it is 100mm and for 'H' material it is 150mm.

4mm thick 'M' Material SD belt it is 150mm and for 'H' material it is 160mm.

Is there a maximum backflex wrap allowed for the SuperDrive™?

No. As long as the belt does not touch itself.

Can the SuperDrive™ be used on a trough type conveyor?

Yes. But we recommend using only very shallow troughs that have 2 side elevations and is flat in the center for the teeth length.

Will the SuperDrive™ develop edge waves?

The waves at the edge of the belt are typically caused by an off-tracking condition where the belt edge comes into contact with the conveyor's frame. Because the SuperDrive™ eliminates off-tracking, you should experience no waves on the edges of the belt. The condition may also be caused by certain maintenance practices. For example, the use of broom handles to hold the belt up during cleaning with hot water. If these are left while the belt cools, waves will remain where the broom handles were.

What is the maximum offset from the center line allowed for the drive pulley?

It is preferred that the SuperDrive™ operate with the Drive pulley in the center of the conveyor to ensure correct and efficient operation.

SuperDrive™ Applications:

Cooked Chicken after Chilling



Belt Type: FMB-3-SD

Raw Chicken Transfer



Belt Type: FHW-3-SD

Potato Processing



Belt Type: FHW-3-SD

Frozen Meat Blocks



Belt Type: FHW-3-SD

Fish Processing



Belt Type: FHW-3-SD

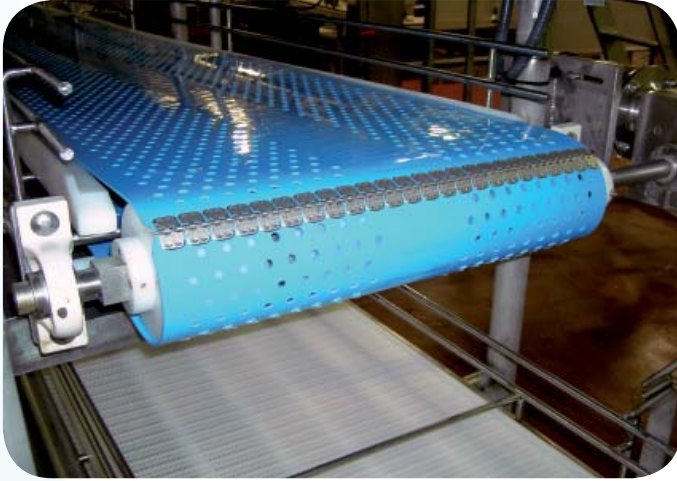
Seafood Processing



Belt Type: FMW-3-SD

SuperDrive™ Applications:

Perforated Belts



Belt Type: FHB-3-SD

Cheese Freezing Process



Belt Type: FMB-3-SD

Garlic Processing - Bath Tub



Belt Type: FMB-3-SD

Potatoes Processing



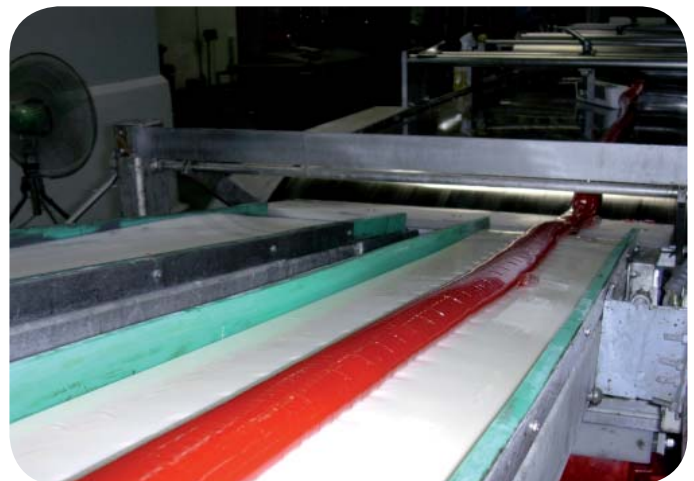
Belt Type: FHW-3-SD

Peanut Intake Process



Belt Type: FMW-3-SD

High Temperature Candy Mass



Belt Type: FHW-3-SD

SuperDrive™, The Next Step in Belting...

- Unique and versatile design - combines high hygienic standards with positive-drive benefits.
- Extremely smooth surface prevents the accumulation of bacteria and prevents contamination.
- Positive-drive feature does not require tensioning of the belt.
- Integral teeth guide the belt preventing off-tracking.
- Huge savings in water and cleaning downtime.
- FDA/USDA AMS Equipment Acceptance Certificate in compliance with NSF/ANSI/3A 14159-3 – 2005 for Meat and Poultry Processing and USDA Dairy Equipment Review Guidelines for selected products.



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