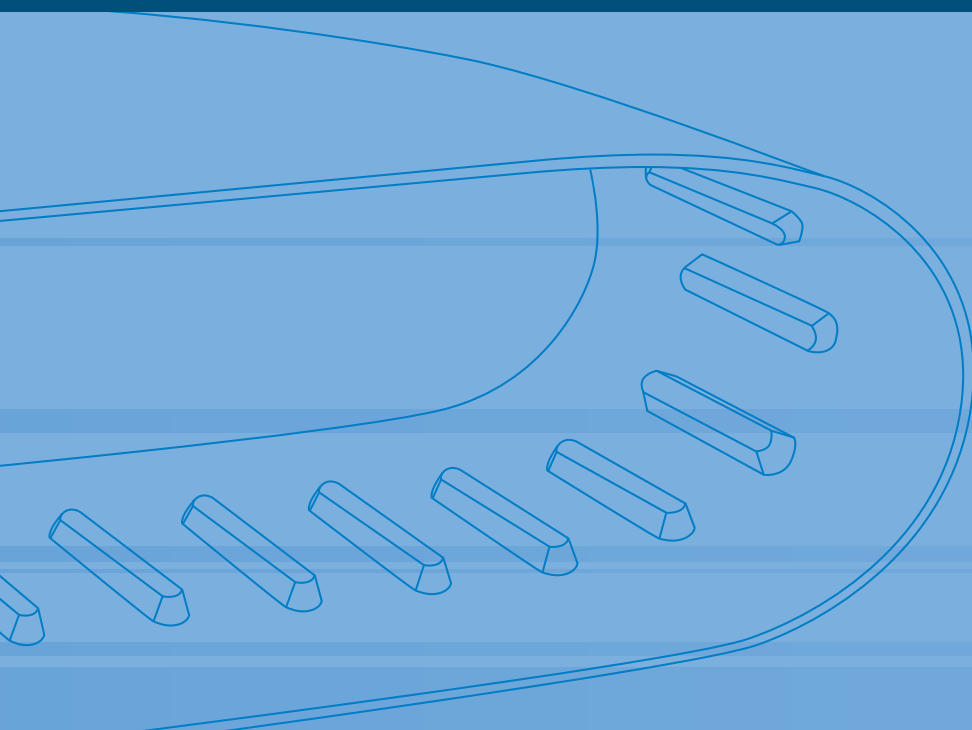




SuperDrive™

The Hygienic Positive-Drive Belt



The Next Step in Belting



SuperDrive™ Benefits

Think Positive - Think SuperDrive™

The SuperDrive™ innovative belt design has integral teeth on the drive-side and a smooth, homogeneous TPE conveying surface. This special design combines positive-drive belting benefits with our renowned high-quality hygienic standards.

SuperDrive™ has been running in the most demanding food processing applications worldwide and has proven itself to be the best choice where hygiene and conveying efficiency are important. So why think modular when you can think SuperDrive™?

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

Hygienic and Easy to Clean

The SuperDrive™ conveyor belt is the leading hygienic, positive-drive conveyor belt on the market.

- Homogenous structure - no ply construction, no modular components or joints.
- The SuperDrive™ belt with integral driving teeth is produced in a continuous process, providing an extremely smooth drive and conveying surface.
- The SuperDrive™ belt is highly resistant to cuts and abrasion due to the materials used during manufacturing.
- The homogeneous feature of the SuperDrive™ lowers the debris build-up and displacement to a minimum.
- The SuperDrive™ pulleys are made from solid and abrasion resistant material. The uniform homogeneous structure of the pulley eliminates crevices that may harbor bacteria and dirt.

Volta's SuperDrive™ belt hygienic feature eliminates nesting places for bacteria and microbes making it easier to clean. There is no need to remove the belt for soaking or to add expensive in-process washdown systems.

Mechanical Benefits

- Integral teeth - the teeth provide positive drive to eliminate slippage and transfer maximum output from the motor to the belt. Since the teeth are an integral part of the belt, they have no weld points that may break under load.
- The unique design of the teeth allows them to function as a guide for the belt. This special feature completely eliminates off-tracking and belt damage.



FHW-3: SD Trough conveyor



FHB-3-SD: Shows the tail pulley and slidebed

SuperDrive™

- The positive-drive feature does not usually require tensioning of the belt, reducing maintenance to a minimum and considerably extends the belt's life.
- The SuperDrive™ has no mechanical parts such as modular sections or pins. The homogenous structure of the belts allows a smooth, quiet and reliable operation.
- The SuperDrive™ belt will not break like the modular belts offered on the market. Thus, prevents incorporation of belt fragments into the end-product and expensive recalls.

These features improve the belt's operating life by reducing belt tension and damage. Low belt tension eliminates a complicated tension device, and enables a simpler and lighter conveyor construction.

The Bottom Line

The combined benefits of the SuperDrive™ conveyor belt add up to an excellent solution for cost and safety-conscious customers. This is how you will benefit:

- The SuperDrive™ is NSF/FDA/USDA/3A Dairy certified.
- Volta materials and technology provide a belt that prevents build-up of bacteria and microbes.
- Time reduction required for cleaning and sanitizing the belt and, therefore, reducing downtime and man-power requirements - cost savings.
- Reduction in the quantities of water, detergents and chemical processing required for cleaning .
- Ensures maximum product shelf-life due to low bacteria counts and reduces contamination of products.
- Light weight, easy to clean and simpler conveyor construction.
- Reduced conveyor maintenance costs.
- Reduced waste caused by product sticking to the belt or being wedged in modular components.
- Reduced noise levels.



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



FHW-3-SD at accumulation point on poultry processing line

The SuperDrive™ improves your hygiene and reduces the downtime on your production. A winning combination that makes your bottom line look better.



SuperDrive™ components



SuperDrive™ Applications

Cooked Chicken after Chilling



Belt Type: FMB-3-SD

Raw Chicken Transfer



Belt Type: FHW-3-SD

Frozen Sausage Links



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

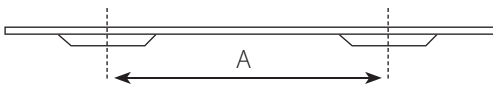
Technical Data

The SuperDrive™ product line includes belts of two different hardnesses. The FHW-SD and FHB-SD are Shore hardness 55D while the FMW-SD and FMB-SD are Shore hardness 53D. 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
- FMW-3-SD and FMB-3-SD are designed for shorter conveyors with lighter loads and where fabrications or sidewalls are required to carry products on inclines.
- It is highly recommended to use 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.

Table 1: Volta SuperDrive™ Products

Product	FHW-SD	FHB-SD	FMW-SD	FMB-SD
Description	Flat, solid		Flat, solid	
Material	Volta HW, white		Volta HB, blue	
Thickness	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 mm (23.82")		"A"=613 mm (24.13")	
				
Standard Belt Width	1524 mm (60")			
Certification	NSF/USDA / FDA / 3A Dairy			

* FHW/ FHB 4, FMB 4 are available but these are non-standard items. For availability, please contact your Volta distributor.

Accessories

Drive, Tail, Support Pulleys and Locking Collars

In addition to the SuperDrive™ conveyor belt, Volta may provide drive, tail, support pulleys and locking collars. The pulleys are manufactured from materials certified by the FDA as suitable for food contact. We maintain inventory of all standard items. If you have a requirement for an item not listed, please contact your Volta sales representative for availability.

Other conveyor components such as UHMW strips and quick release take-ups are available on the open market.

Drive Pulley

SuperDrive™ standard pulley diameters are 100 mm (4"), 150 mm (6") and 200 mm (8") with a square bore (Figure 2). Other dimensions are available on request. For more information consult your local Volta dealer.

Our pulleys are manufactured from abrasion resistant materials that ensure a long and reliable operating life. All pulleys are FDA approved.

Bore Description

The SuperDrive™ pulleys (drive, tail and support) are available with either a standard bore or round corner bore (Figure 3). 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.

Tools

The SuperDrive™ conveyor belt can be closed endless using either the FBW or FT Welding Systems (see Splicing the SuperDrive™, page 12). Both tools are easy to use and provide a weld that maintains the normal strength of the belt.

We recommend using Hinge Lace when belt removal is frequently carried out. For FMW-SD/ FMB-SD, we offer the new Volta Hinge Lace (see page 12).

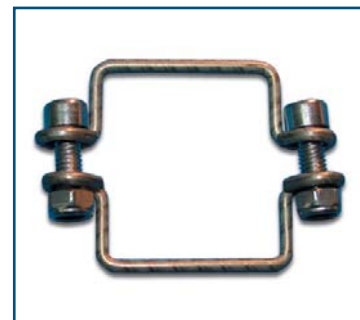


Figure 1: Square locking collar



Figure 2: SuperDrive™ drive pulley

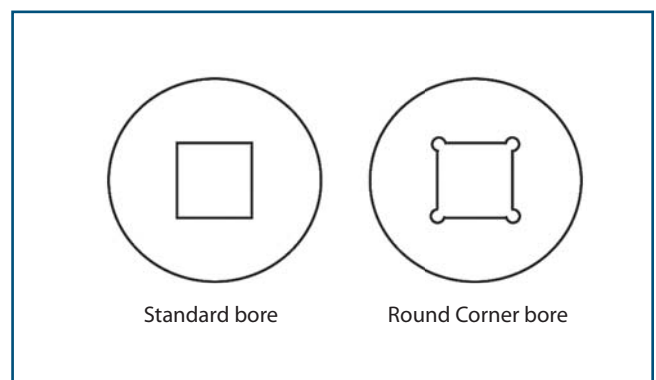


Figure 3: Pulley bore patterns

* For more information, please contact your local Volta distributor.



Accessories

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.

Pulleys

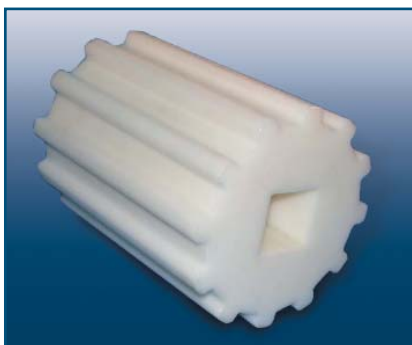
Standard Pulleys Supplied by Volta

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.

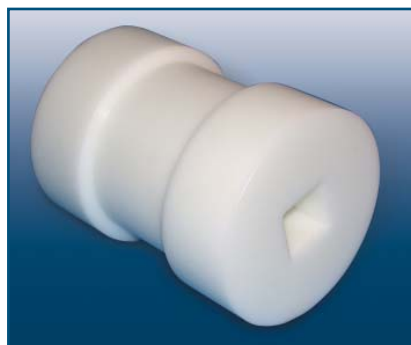
Table 2 shows the specifications for drive, tail and support pulleys supplied by Volta Belting. The pulleys are designed to be secured on the conveyor shaft using locking collars, although they may be secured to the shaft by other methods.

Table 2: 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")		199.7 mm	7.86"			
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"			



Drive Pulley



Tail Pulley



Support Pulley

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 (Figure 4). 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.

Structural Components

Shafts

Our drive, tail and support pulleys are designed to mount on square shafts (Figure 5). The SuperDrive™ pulleys are available with typical shaft dimensions (1½" or 40 mm). Other sizes of square and round bores are available upon request.

We also supply locking collars for the pulleys. If a different method of securing the pulleys is desired, kindly follow best mechanical practices.

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.



Figure 4: Volta SuperDrive™ pulley on motorized pulley



Figure 5: SuperDrive™ drive pulley with typical square shaft



Figure 6: Example of quick release take-up mechanism



Conveyor Construction

UHMW Strips on Conveyor Slidebed

The use of UHMW 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. The UHMW 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 (Figure 6) the release of belt tension without losing belt alignment.
- Use of telescoping side supports (see Figure 8).

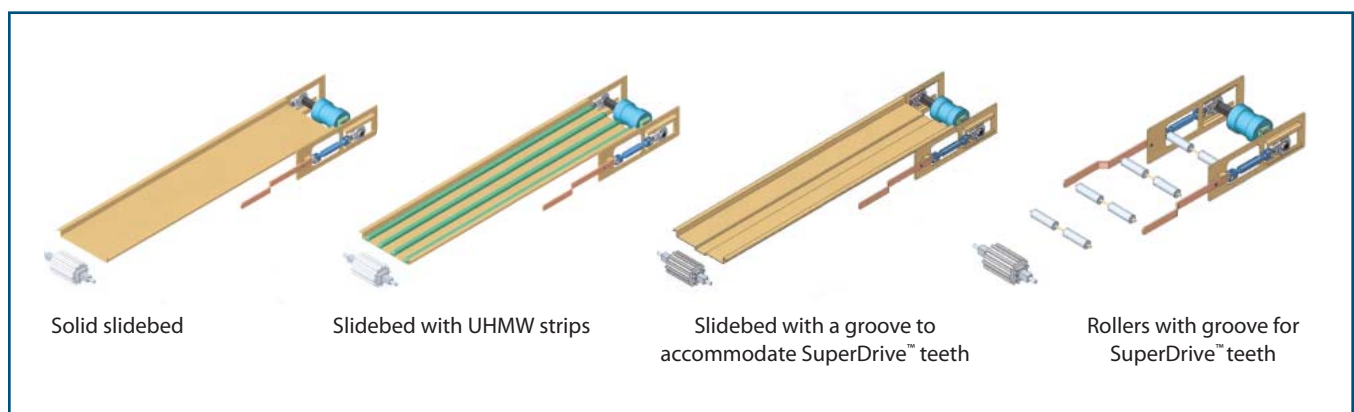


Figure 7: Optional slidebed structures

Drawings of Optional Conveyor Designs



Figure 8: Optional conveyor constructions

Conveyor Construction

“Z” or Swanneck Conveyor Construction

The “Z” or swanneck conveyor (Figures 9 - 11) 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 current belts by using either a shoe, roller or set of small rollers (Figure 11).

To boost your Z Conveyor performance, we recommend using Volta Fabrications, such as our Sidewalls and Cleats, which are manufactured from our unique homogenous TPE materials and are especially designed to be fully compatible with the SuperDrive™ belt. Because of its homogenous characteristics, we may manufacture special cleats such as Scoop Cleats. Volta Sidewalls and Cleats are highly resistant to cutting, tearing, oils, chemicals and abrasion.

Volta homogenous flat belts are an ideal and strong base for a full range of fabrications. The combination of our belt fabrications made from high quality materials and our versatile tools ensure that the fabricated belt will last for a long time, eliminating breakage of cleats or sidewalls, or delaminating of guides.



Figure 9: Cheese processing



Figure 10: “Z” conveyor

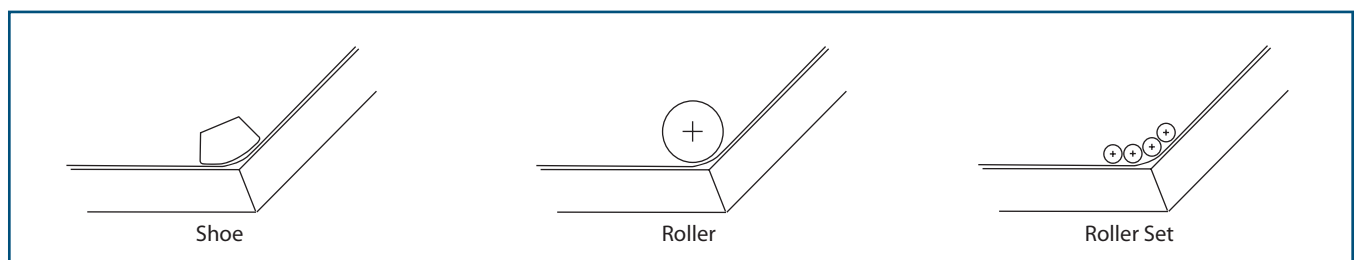


Figure 11: Swanneck conveyor direction change options



Splicing the SuperDrive™

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 FT Welding Kit or FBW Welding Kit for this procedure (Figures 12 and 13). These tools are designed for use with all our 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.

Lacing

There are occasions when it may be necessary to splice the SuperDrive™ belt using lace. We recommend using a belt welded with Volta Hinge Lace (Figure 14), 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.

Note: The spacing at the splice can be reduced by up to 5 mm without adversely affecting belt operation. However, the distance between the teeth should never be increased.

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.



Figure 12: FBW welding kit



Figure 13: FT electrode welding kit

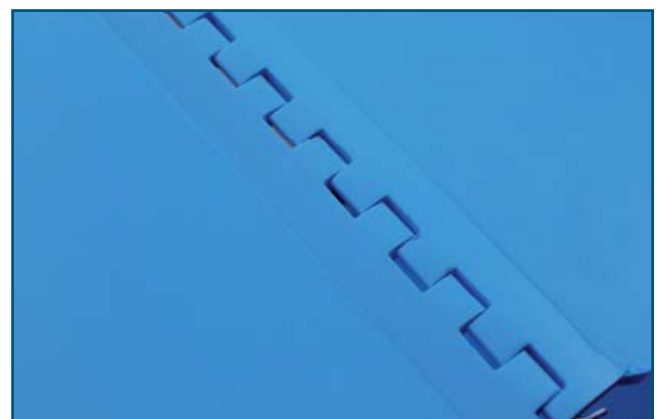


Figure 14: Closing belt with Volta hinge lace

* For more information, please refer to our SuperDrive™ Technical Manual or contact your local Volta distributor.

Frequently Asked Questions

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 brochure and SuperDrive™ Calculation Software (Excel). You can receive a copy of the brochure and calculator from your local Volta representative.

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 no 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.

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. All FBW models can weld SuperDrive™ belts with the aid of adaptors. The FBW-721 and 1061 are designed for use without adapters. 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.



Frequently Asked Questions

Can the SuperDrive™ be laced?

Yes lace can be used. Refer to the “Splicing the SuperDrive™” section of this manual. Please note that when using metal lacing for splicing the SuperDrive™ belt the pull force calculations provided by Volta are not applicable.

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 number of belt 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)?”)

Can you supply me with retrofit instructions for my conveyor?

The Conveyor Construction section of this manual provides general information for retrofitting conveyors.

Can the SuperDrive™ be used with a motorized pulley?

Yes, the SuperDrive™ can be used with motorized pulleys. Contact your local dealer about receiving pulleys and technical support.

What pulley sizes are available for the SuperDrive™?

The standard pulley diameters are 100 mm (4”) and 150 mm (6”). For other diameters contact your Volta distributor.

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.

Frequently Asked Questions

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.

What is the minimum pulley diameter for the SuperDrive™ when cleats are welded to the SuperDrive™?

The MPD is 150 mm (6").

Can the SuperDrive™ be used on Z-Type (swanneck) and telescoping conveyors?

Yes. See the "Conveyor Construction" section of this manual and the SuperDrive Technical Manual.

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 is 100 mm (4").

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™ material stain?

The SuperDrive™ belt will stain seldom depending on the nature of the conveyed substances.

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.

Reasons to Use SuperDrive™ Belt

- Unique and versatile design - combines high hygienic standards with positive-drive benefits
- Extremely smooth surface prevents the accumulation of bacteria and microbes
- Positive-drive feature does not require tensioning of the belt
- Integral teeth guide the belt preventing off-tracking, belt and damage of products
- Low costs in maintenance and sanitation
- NSF/USDA/ FDA/ 3A Dairy approved



Remember: Volta SuperDrive™ belt drastically improves your hygiene and reduces your production downtime.



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