



SuperDrive™

The Hygienic Positive-Drive Belt

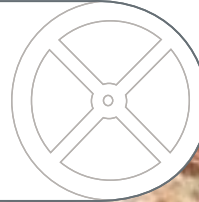
Patent Pending

VOLTA Belting Technology Ltd.

transport belting

round belts

quality belting



fabrications



Product Benefits

- Ease and **effectiveness** of cleaning
- Positive drive to **eliminate slippage**
- **No off-tracking**
- Long **operating** life
- **Ease** of **installation**
- Cost **savings**
- Increased **productivity**

Superdrive typical industries:



Poultry/Turkey



Beef/Pork

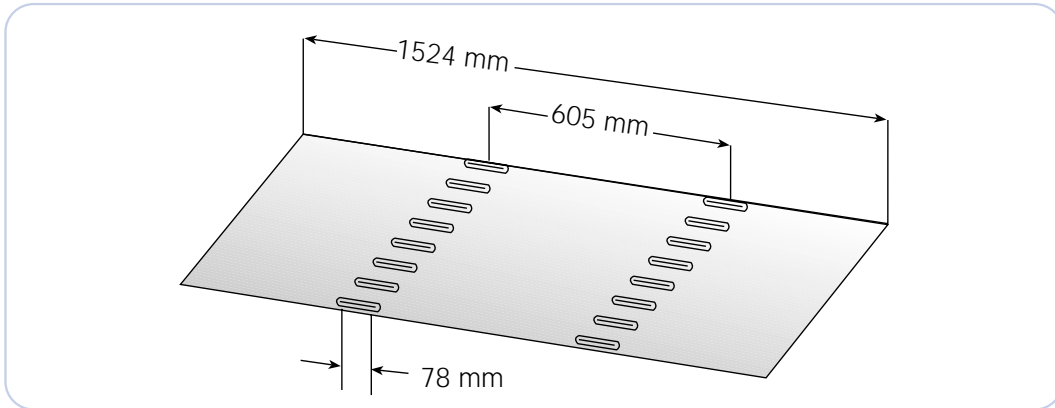
And other suitable applications

flat belts

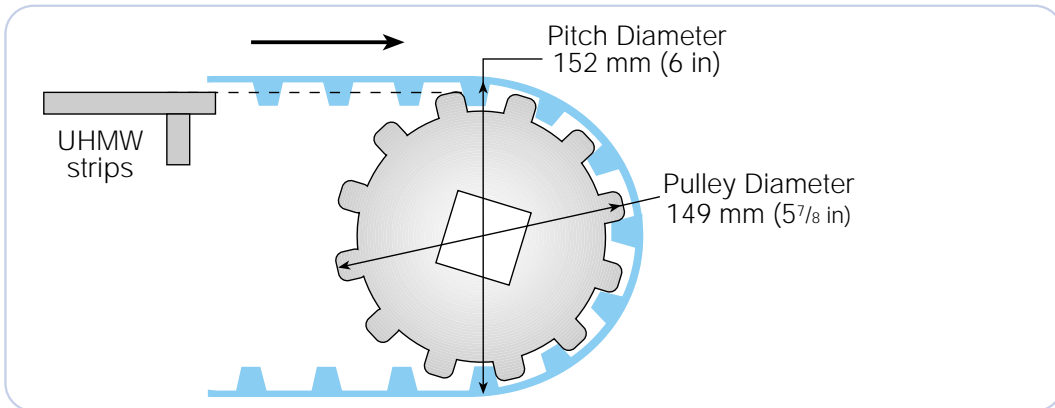
Technical Data:

Product:	FHW-3-SD	FHB-3-SD
Description:	Flat, solid	Flat, solid
Material:	VOLTA HW, white	VOLTA HB, blue
Hardness:	55D	55D
Temp. Range:	-20° C to +75° C -5° F to +170° F	-20° C to +75° C -5° F to +170° F
	FDA/USDA/3A Dairy	FDA/USDA

Coefficient of Friction f_s (dry):	steel	Stainless steel	UHMW
	0.4	0.4	0.2



	Metric	English
Standard Belt Width:	1524 mm	60 in
Distance between rows of teeth:	605 mm	23 4/5 in
Belt weight: kg/m ² lb/ft ²	3.6 kg/m ² +0.180 kg/m (for each row of teeth only) 0.74 lb/ft ² +0.121 lb/ft (for each row of teeth only)	
Maximum pull force:	7 kg/cm belt width 39.2 lb/in belt width	



	Metric	English
Pulley pitch diameter:	152 mm	6 in
Pulley outside diameter:	149 mm	5 7/8 in
Standard drive and tail pulley width:	190+10 mm	7.5+3/8 in
Standard support pulley width:	95+5 mm	3 +3/16 in
Square hole dimension:	38.1 mm	1.5 in
Minimum pulley for snub roller:	100 mm	4 in

Pulley Selection Table (one row of teeth)

Pulley type	For Pull Force (kg) up to:	For Pull Force (lb) up to:
Standard Pulley	203	448
Standard Pulley + 2 Support Pulleys	343	756
Standard Pulley + 4 Support Pulleys	483	1065

Pretension Requirements:

The SuperDrive belt requires no pretension on most applications. On applications with heavy loads, VOLTA recommends a pretension of no more than 0.3%.

Recommended Conveyor Construction:

- Slidebed made of strips of UHMW or stainless steel, to ensure a low coefficient of friction and prevention of off-tracking.
- Support rollers/strips on the return (slack) side of the belt.
- VOLTA drive and tail pulleys.
- Additional support rollers according to the load on the conveyor.
- Tension device.
- Snub roller according to the application.

Belt Selection Procedure

1. Calculate the belt pull force (horizontal transport)

$$F = f_s * (G1+G2) + f_r (G2+G3) + 0.25G4$$

F = Pull Force in kilograms or lb

f_s = Coefficient of Friction of the belt on the slidebed

f_r = Coefficient of Friction of the support rollers

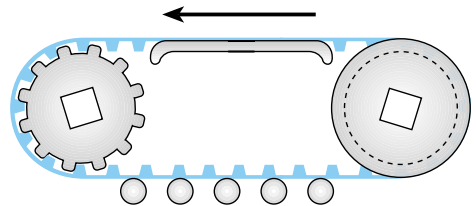
Bearings: $f_r = 0.03$; Bushings: $f_r = 0.1$

G1 = Maximum load on the conveyor in kilograms or lb

G2 = Belt weight (one direction) in kilograms or lb

G3 = Weight of the support rollers in kilograms or lb

G4 = Maximum accumulated weight in kilograms or lb on the conveyor



2. Choose the belt width

Divide the calculated pull force by the belt width to determine the pull force per unit width of belt. Check that the calculated pull force per unit width of belt is less than the maximum recommended pull force for the belt.

NOTE: Depending on the application and the load on the belt, it is possible for the SuperDrive belt to be wider than the drive and tail pulleys.

3. Choose the Drive pulley and tail pulley width from pulley selection table.

Example Calculations:

Assuming a stainless steel slidebed conveyor transporting meat packages horizontally.

Determine if an 18" (450 mm) belt is suitable for the application and also select the pulley widths.

Given:

Package weight:	13.6 kg	30 lbs
Maximum number of packages on the belt:	30 pieces	30 pieces
Conveyor length:	15.2 m	50 ft
Support rollers (bushing type):		
Support roller weight:	4.5 kg	10 lbs
Number of support rollers:	6	6
Pulley pitch diameter:	152 mm	6 in

Procedure:

1. Calculate the Pull force:

Maximum Load:

$$G1 = 30 * 13.6 = 408 \text{ kg}$$

$$G1 = 30 * 30 = 900 \text{ lbs}$$

Belt weight (one direction):

$$G2 = 3.6 * 0.45 * 15.2 + (0.180 * 15.2)$$

$$G2 = 0.74 * (18/12) * 50 + (0.121 * 50)$$

$$G2 = 27.4 \text{ kg}$$

$$G2 = 61.5 \text{ lbs}$$

Support roller weight:

$$G3 = 6 * 4.5 = 27 \text{ kg}$$

$$G3 = 6 * 10 = 60 \text{ lbs}$$

Accumulated weight:

$$G4 = 0$$

$$G4 = 0$$

$$F = f_s * (G1+G2) + f_r (G2+G3) + 0.25G4$$

$$F = 0.4 * (408 + 27.4) + 0.1 * (27.4 + 27) = \mathbf{179.6 \text{ kg}}$$

$$F = 0.4 * (900 + 61.5) + 0.1 * (61.5 + 60) = \mathbf{396.75 \text{ lbs}}$$

2. Verify Belt Width:

45 cm

18 inch

Maximum allowed Belt Load:

$$F_{max} = 7 * 45 = 315 \text{ kg}$$

$$F_{max} = 39.2 * 18 = 705.6 \text{ lbs}$$

315 kg (705.6 lbs) > 179.6 kg (396.75 lbs), therefore 45 cm (18 in) belt width is ok.

3. Pulley selection: According to the pulley selection table, we can use a standard Drive and Tail pulley without support pulleys.

The allowed pull force for the standard pulley 203 kg (448 lbs) is greater than the calculated pull force 179.6 kg (396.75 lbs).



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flat belts

special belts

Belt Splicing Instructions:



1 Place the belt on a work surface with the teeth up. Lay the Adapter Jig over the teeth with the surface marked CUTTING at the point to be cut. Cut the belt using the side of the Adapter jig marked CUTTING.



2 Attach the Double Sided tape on the WELD edge of both adapters. DO NOT remove the protective paper.



3 Mount the clamps (4 each) on the two jigs on the edge marked CUTTING.



4 Position the belt on the jig with the belt teeth in the jig cutouts and the belt end over the double sided tape. Ensure that the belt is straight and tighten the two Star knobs to secure the belt in position.



5 Check that the belt is mounted correctly. Remove the protective paper from the Double sided tape and press the belt onto the tape. Repeat the procedure for the second jig.



6 Remove the two (2) bars from the FBW pliers and set the jig onto the FBW base. Remount the bar and tighten the Star knobs to secure the belt and jig in position. Repeat the process with the opposite belt end.



7 With both adapter jigs mounted in the FBW tool continue welding the belt as usual for H materials.

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