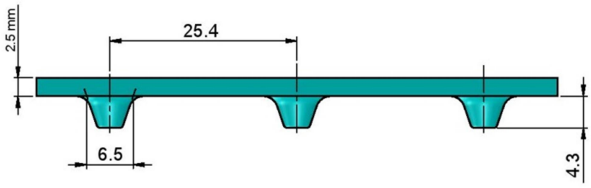
Mini SuperDrive™ - FMB-MSD-LTS

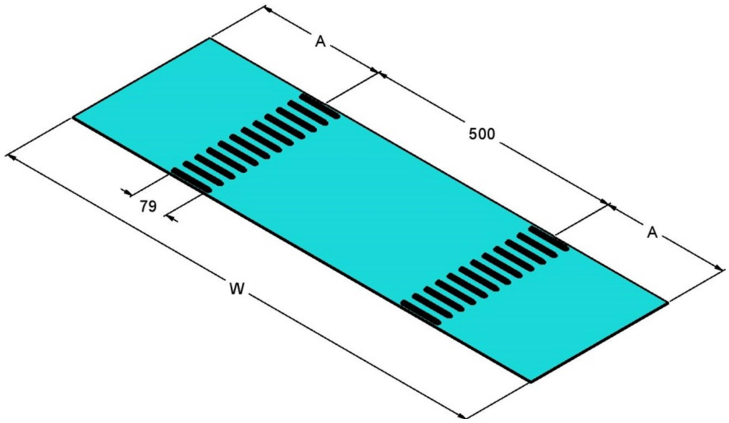
Flat, Positive Drive Smooth - and ITO50 Impression Top-Belt

Material:	**Volta MB LTS , Blue**
Hardness:	53D
Temp. Range:	-15°C to 60°C /5°F to 140°F
Certification:	FDA/USDA/USDA Dairy /EU Approved

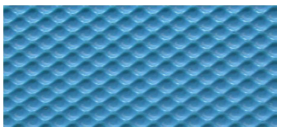
Coefficient of Friction (Dry):		
	Conveyor bed side	Smooth upper side
Steel:	0.5	0.8
Stainless Steel:	0.5	0.8
UHMW:	0.28	0.28



Base belt thickness=2.5mm
Pitch between Teeth = 25.4mm/1”
Tooth Height= 4.3mm
Tooth Base= 6.5mm



Tooth Width= 79mm/3.11”
Distance between teeth rows, center to center = 500 mm

Product:	**FMB-2.5-MSD-LTS**	**FMB-2.5-MSD-ITO50-LTS**
Surface		
Belt Thickness (mm):	2.5	
Belt Weight (kg/ m^2):	2.87 kg/m^2+0.07 kg/m (for each row of teeth only)	2.52 kg/m^2+0.07 kg/m (for each row of teeth only)
Belt Weight (lb/ ft^2):	0.59 lb/ft^2+0.047 lb/ft (for each row of teeth only)	0.52 lb/ft^2+0.047 lb/ft (for each row of teeth only)
Max Pull Force (kg/cm width)	3 kg/ cm width	
Max Pull Force (lb/in width)	16.8 lb / in width	
Belt Min Pulley Diameter (Normal Flex)	48 mm / 1.89”	
Belt Min Pulley Diameter (Back Flex)	65 mm / 2.56”	
Standard Belt Width	1200mm/47.24”; 1000mm/39.37”; 300mm/11.81”	

Belt Width

Belt Width	1200mm / 47.24”	1000mm / 39.37”	300mm / 11.81”
Rows of Teeth (N)	2		1
Distance between teeth rows (center to center)	500mm / 19.68”		-
Max.cut belt width with 1 row of teeth	700mm / 27.55”	500mm / 19.68”	300mm / 11.81”

Dimensions of Standard Pulleys

Standard width; drive pulley	100mm	4"
Standard width; tail pulley	150mm	6"
Standard width; support pulley	50mm	2"

Volta Pulleys

Number of Teeth	6		8		10		12	
Measurement	mm	inch	mm	inch	mm	inch	mm	inch
Pulley Outer Diameter	48.0	1.89	65	2.56	80	3.15	96.5	3.8
Standard Belt Pitch Diameter	50.5	1.98	67.5	2.65	82.5	3.24	99	3.89
Standard Bore Size (Square)*	20	3/4	25	1	40	1.5	40	1.5
Special Round Bore Diameter**	25	1	25	1	-	-	-	-
Max. Possible Square Bore Diameter	20	3/4	25	1	40	1.5	50	2
Max. Possible Round Bore Diameter	25	1	38	1.5	50	2	65	2.5
Sprocket Locking Device	Retainer Ring							

*Non-Standard Square Bores are available upon request: ¾”-20mm;1”-25mm;2”-50mm.

**Special Round Bore Sprockets (with keyway) are made from Acetal.

The pulley diameter and bore sizes in the above table relate to all pulley types (Drive, Tail, Support).

Pretension:

While for many applications, the belt does not require pre-tensioning, a low pre-tension value should be applied to ensure that the belt engages properly with the pulley.
For heavy loads, low pretention (up to 0.5%) is recommended.

Recommended Conveyor Structure:

-A slide bed made from longitudinal UHMW strips ensures a minimal friction between the belt & support.
-UHMW support strips to prevent belt off-tracking
-Support rollers/strips on the return side (slack side)
-Use only Volta Drive Pulley and Tail Pulley
- Ensure a maximum gap of 1/4" - 3/8" (6.3-9.5mm) between belt teeth and conveyor bed guide strips (a shorter conveyor can be fitted with a higher standard accuracy)
- Support Pulleys every 3"- 4" (75-100mm) between centers, according to the load
-The belt should not have more than 2" (50mm) unsupported on the edge (i.e. beyond the outermost UHMW strip) -
- A take-up device and snub roller are recommended

Belt Selection Procedure

1. **Calculate the belt Pull Force (horizontal transport):**

F=fs*(G1+G2)+fr*(G2+G3)+0.25*G4

F = Pull Force (kg) or (lb)
fs = Coefficient of friction of belt on slide bed
fr = Coefficient of friction of return rollers (bearing = 0.03/ bushing = 0.1)
G1 = Maximum load on the conveyor (kg) or (lb)
G2 = Belt weight (one direction) (kg) or (lb) - ½ of total lenght
G3 = Weight of supporting rollers (kg) or (lb)
G4 = Maximum accumulated weight (kg) or (lb)

2. **Calculate the allowed pull force (Fa) according to number of teeth in mesh:**

If the number of teeth in mesh is five or less, an adjustment must be made to the max. pull force.
Multiply the max. pull force by the factor K.

Teeth in Mesh	factor K	Comment
6 or more	1	(180° Arc of contact at standard 150mm / 6" pulley)
5	0.8	
4	0.6	(180° Arc of contact at standard 100mm / 4" pulley)

Fa = F x K

3. **Choose the belt width**

- Divide the calculated pull force by the belt width to get the pull force per unit width.

- Check that the calculated pull force per unit of width is less than the maximum permitted value allowing for the mesh factor (Fa).

4. Support pulleys:

- Support pulleys should be added according to the load to be carried and the belt width
- Use support pulleys at maximum distance of 150mm (center to center), The belt sides must be supported as noted above (c.f. recommended structure)
- If the calculated pull force per unit of width is over 50% of the allowed pull force for the belt, then the maximum distance between support pulleys should be 100mm (4") center to center
- Make sure that there are no depressions in the belt surface and position the support pulleys in such a way as to eliminate them.

Example:

An UHMW slide bed conveyor transporting packs of meat horizontally.

Confirm if a 18"(450 mm) wide MiniSD- belt is suitable for this application and select the drive pulley width.

Given Data	English-Imperial	Metric
Pack weight:	30 (lbs)	13.6 (Kg)
Maximum number of packs on belt:	10	10
Conveyor length:	50ft	15.2m
Return rollers weight (bushing):	10lbs	4.5Kg
Number of return idlers:	6	6
Pulley diameter:	3.15"	80 mm
Number of teeth in mesh:	5	5

Procedure:

1. Calculate the Pull Force

	English-Imperial	Metric
Maximum load:	G1=10*30=300 (lbs)	G1=10*13.6=136 (kg)
Belt weight - one direction:	G2=0.59*(18/12)*50+0.047*50= 46.6 lbs	G2=2.87*0.45*15.2+0.07*15.2= 20.7kg
Return idler weight:	G3=6*10=60 (lbs)	G3=6*4.5=27 (kg)
Accumulated weight:	G4=0	G4=0
F=fs*(G1+G2)+fr*(G2+G3)+0.25*G4		
	F=0.28*(300+46.6)+0.1*(46.6+60) = 107.708 lbs	F=0.28*(136+20.7)+0.1*(20.7+27) = 48.646 kg

2. Allow Pull Force according to number of teeth in mesh:

For 10 teeth sprockets at 180° Arc of contact - 5 teeth in mesh

English-Imperial	Metric
K=0.8 (5 teeth in mesh)	
Fa=0.8*16.8=13.44(lb/in)	Fa=0.8*3=2.4 (kg/cm)

3. Belt width:

Maximum allowed belt load:

English-Imperial	Metric
F(max) =13.44 *18= 241.9 (lbs)	F(max) =2.4*45 = 108 (kg)

The calculated Pull Force is less than the allowed Pull Force so the width - 18"(457mm)- is confirmed.

4. Support Pulleys:

According to above rules, the Support pulleys here must be at the most 100mm / 4" apart center to center (The calculated pull force per unit width is higher than 50% of the allowed pull force for the belt)