

Project: Transportador sacos 50Kg

Location:

Description:

Comments: RESULTADOS DEL DISEÑO DEL TRANSPORTADOR

ANEXO 1**OVERLAND**
CONVEYOR COMPANY, INC**Belt Analyst™****General**

Belt Width	in	24,0
Belt Speed	fpm	105
Load	stph	66
Low Temp	F	82
Total Mass	slugs	207
Total HS Inertia	lb-ft^2	1

Calculation Methodology CEMA Universal (6th)

Friction Force	lbf	67
Lift Force	lbf	189
Misc Drag	lbf	595

Equivalent DIN f Friction Factor 0,0333

Equivalent DIN C Friction Factor 9,87

Idlers

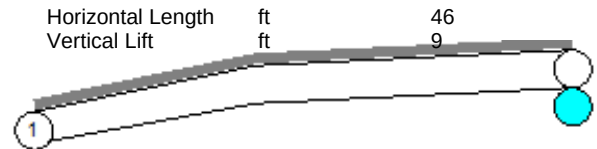
		Carry	Return
Specification		CEMA5	CEMA5
Description		B4	B4
Estimated No of Idlers		11	4
No of Rolls		1	1
Angle	Deg	0	0
Roll Diameter	in	4	4
Type		Fixed	Fixed
Rotating Weight	lbs	18,3	16,3
Bearing Type		Roller	Roller
Rating	lbf	410	190
Max Actual Load	lbf	114	76
Max Calc Load	lbf	121	79
RPM		100	100
Min L10 Life	Hrs	8.781.882	2.735.715
Average L10 Life	Hrs	8.898.498	2.735.715
Vert. Misalign	in	0,125	0,125
Angl. Install Tol.	in	0,500	0,500
Forward Tilt	Deg	0,000	0,000
Mfg. Tolerance	in	0,100	0,100
Idler/Belt Friction		0,50	0,50
Seal Drag - Kis	in-lbf	1,50	1,50
Speed Factor - Kiv	in-lbf/rpm	0,0000	0,0000
Load Factor - Ciw	in-lbf/lbf	0,0014	0,0014
Drag Multiplier		1,00	1,00
Kt Multiplier		1,01	1,01

Takeup

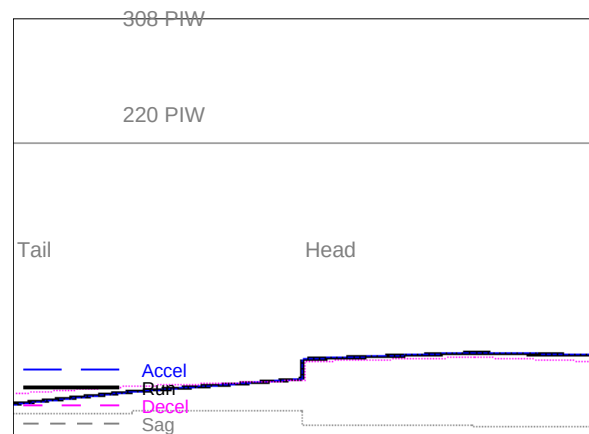
Type		Manual
Tension	lbf	1.566
No of Pulleys		1
Weight		
Takeup Req'd for ...		Sag
Running	lbf	1.410
Accelerating	lbf	1.200
Decelerating	lbf	1.006
Selected Due To		Run Sag
Approx Carriage Travel Due to ...		(Refer to Belt Manufacturer)
Run Tensions	ft	0,0
Accel Tensions	ft	0,0
Decel Tensions	ft	0,0
Permanent	ft	0,2
Total	ft	0,2

Material

Description		Sacos
Density	lb/ft^3	55
Surcharge Angle	Deg	38
Actual Area	in^2	54,9
Percent Loaded	%	82
Edge Distance	in	3,1
Bed Depth	in	4,5
Lump Size	in	6,0
Chute Drop Hght	ft	8,0
Impact Energy	ft-lbf	69

Profile**Belt**

Type		Fabric- US
Description		2-220
Cover Gauge	in	0,250 x 0,250
Cover Rubber Constants		CEMA default
Standard Rating	lbf / PIW	5280 / 220
Safety/Design Factor		10,00
Elastic Modulus	PIW	20.000
Belt Weight	lb/ft	7,6
Apparent Length	ft	99
Max Run Ten	lbf / PIW / %	1.701 / 71 / %32
Max Accel Ten	lbf / PIW / %	1.708 / 71 / %32
Max Decel Ten	lbf / PIW / %	1.618 / 67 / %31
Ave Run Ten	lbf / PIW / %	1.359 / 57 / %26
Ave Accel Ten	lbf / PIW / %	1.359 / 57 / %26
Ave Decel Ten	lbf / PIW / %	1.359 / 57 / %26
Min Run Ten	lbf / PIW / %	832 / 35 / %16
Min Accel Ten	lbf / PIW / %	817 / 34 / %15
Min Decel Ten	lbf / PIW / %	1.010 / 42 / %19



Number		1			
Location		7			
Number of Drives		1			
Total Nameplate	hp	5			
Power Ratio		1,00			
Efficiency		0,90			
Wrap Angle	Deg	180			
Synchronous	RPM	1800			
High Spd Inertia	lb-ft^2	0			
<u>Running</u>					
Required	hp	3			
% Nameplate		60,1			
Eff Tension	lbf	851			
Friction Factor		0,35			
Wrap Factor		0,50			
Slip Ratio		3,00			
Actual T1/T2 Ratio		2,00			
<u>Breakaway</u>					
Brkwy Frict Mult		1,50			
Rqr'd Brkwy Torq	% FLT	84			
Motor Peak Torque	% FLT	225			
<u>Acceleration</u>					
Start Time	Sec	5,0			
Start Torque, Avg	% FLT	65			
Eff Tension	lbf	875			
Friction Factor		0,40			
Wrap Factor		0,40			
Slip Ratio		3,51			
Actual T1/T2 Ratio		2,04			
<u>Stopping</u>					
Est. Drift Time	Sec	0,4			
Brk. Stop Time	Sec				
Brake Torque	ft-lbf				
Brake Eff Ten	lbf				
Brake Ratio					
Friction Factor		0,40			
Wrap Factor		0,40			
Slip Ratio		3,51			
Actual T1/T2 Ratio		1,54			

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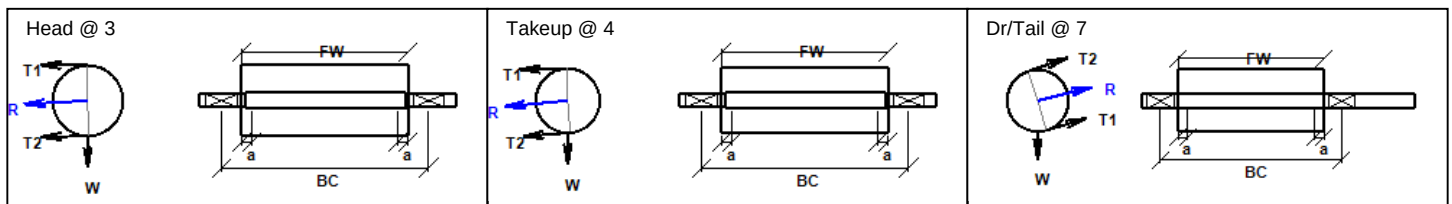
Output

Pt	Descr	X (ft)	Y (ft)	Run Tension (lbf)	Accel Tension (lbf)	Decel Tension (lbf)	Min Sag Tension (lbf)	Idler Drag (in-lbf)	Idler Align (in-lbf)	Belt Dfrm (in-lbf)	Mat'l Trmp (in-lbf)	Misc Drag (lbf)	Mass (slugs)
1	Carry	0,0	0,0	832	817	1.010	675	0,59	0,26	0,15	0,30		21
2	Carry	19,1	6,5	1.042	1.034	1.135	711	0,59	0,26	0,15	0,28	116	28
3	Head	46,4	8,7	1.256	1.258	1.233						311	3
4	Takeup	46,4	7,9	1.566	1.570	1.530						27	3
5	Return	46,5	7,0	1.593	1.598	1.543	472	0,08	0,06	0,03		120	8
6	Return	19,2	4,8	1.701	1.708	1.618	454	0,08	0,06	0,03			6
7	Dr/Tail	0,2	-0,8	1.661	1.670	1.555						21	138

DIN f 0,0333
Din C 9,87

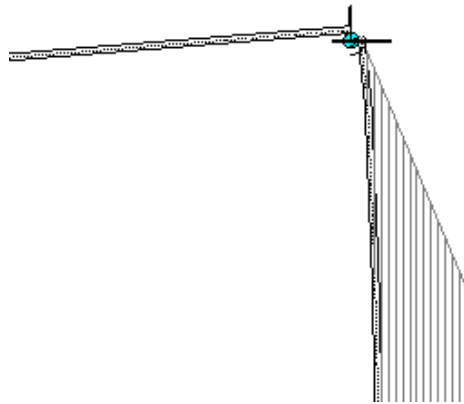
Pulleys

	1	2	3
Description	Head	Takeup	Dr/Tail
Label			
Location	3	4	7
Same as Pulley No.			
Tension T1 (lbf)	1.256	1.566	1.660
Tension T2 (lbf)	1.566	1.592	832
T1 Incoming Angle (Deg)	0,3	-1,1	163,4
Wrap Direction	Clockwise	Clockwise	Clockwise
Wrap Angle (Deg)	178,7	176,5	177,8
T2 Outgoing Angle (Deg)	178,9	175,4	-18,8
Pulley Weight (lbs)	137	137	149
Resultant Force R (lbf)	2.826	3.166	2.451
Resultant Force Angle (Deg)	266,7	264,7	76,0
Pulley Diameter (in)	10,0	10,0	10,0
Face Width FW (in)	26,0	26,0	26,0
Lagging Gauge (in)	0,50		0,50
Lagging Type	Plain		Diamond
Pulley RPM	36	40	36
Hub Identifier	XT 25	XT 25	XT 25
Inset A (in)	0,0	0,0	0,0
Shaft Diameter (in)	2,4375	2,4375	2,4375
Bearing Centers BC (in)	32,3	32,3	32,3
Shaft Length (in)	40,1	40,1	48,7
Shaft Material	1045	1045	1045
Keyway Type	Profiled	None	Profiled
Turndown Radius (in)	0,2	0,2	0,0
Bearing Bore (in)	1,9685	1,9685	2,4375
Bearing Identifier	SNL 513-611	SNL 513-611	SAF22515
Bearing Type	Roller	Roller	Roller
Bearing Seal Type	basic	basic	basic
Overhung Load (lbf)			
Overhung Angle (Deg)			
Overhung Dimension C (in)			
Shaft Deflection	0,0015	0,0017	0,0013
Shaft Safety Factor	3,27	2,33	3,69
Hub Safety Factor	1,81	1,62	2,09
Turndown Safety Factor	3,16	2,87	1000,00
Bearing L10 Life (hrs x 1000)	20.254	12.604	34.102
Backstop Required??			Yes
Req Backstop Rating (ft-lbf)			936
Backstop Torque (ft-lbf)			56



Vertical Curves

Minimum Radius Due To ...									
Location	Type	Radius (ft)		Belt Tension (lbf)	Lift (ft)	Edge Ten (ft)	Center Ten (ft)	Idler Load (lbf)	Idler Spacing (ft)
2 (also 6)	Convex on Carry	100	Run	1.042		14	97	156	4,0
			Accel	1.034		9	100	156	4,0
			Drift	1.135		10	76	160	4,0
6 (also 2)	Convex on Return	100	Run	1.701		0	0	246	7,7
			Accel	1.708		0	0	247	7,7
			Drift	1.618		0	0	238	8,0



Material Discharge Trajectory

Interval	X Dist- in	Y Drop- in
1	12,0	33,8
2	24,0	135,1
3	36,0	304,1
4	48,0	540,6
5	60,0	844,6
6	72,0	1216,3
7	84,0	1655,5
8	96,0	2162,3
9	108,0	2736,6
10	120,0	3378,5
11	132,0	4088,0
12	144,0	4865,1
13	156,0	5709,7
14	168,0	6621,9
15	180,0	7601,7

Vertical Bankboard

Pulley Center to Top of Material			
X-Dimension	in	667,0	
Y-Dimension	in	0,0	
Pulley Center to Bottom of Material			
X-Dimension	in	667,0	
Y-Dimension	in	0,0	

Horizontal Bankboard

Pulley Center to Top of Material			
X-Dimension	in	16,6	
Y-Dimension	in	-115,0	
Pulley Center to Bottom of Material			
X-Dimension	in	12,1	
Y-Dimension	in	-115,0	

Belt -

Specification	Fabric- US	Carcass	2-220
Standard Rating (PIW)	220	Adjusted Rating (PIW)	220
Top Cover Gauge (in)	0,250	Bottom Cover Gauge (in)	0,250
Rubber Type	CEMA default	Max belt Width (in)	42
Min belt Width (in)	14	Weight (lb/ft)	7,6
Modulus (PIW)	20.000	Accel/Decel Limit	%140

	Run	Accel	Decel
Min Safety Factor	10,00	7,14	7,14
Actual Safety Factor	31,06	30,93	32,70
Local Tension Limits	%115		
Min Local S.F.	8,70	6,21	6,21
Actual Local SF	18,18	18,28	17,13
Highest Local Tension Location	Tail	Tail	Tail
	Transition	Transition	Transition
Lowest Tension Allowable (PIW)	0,00	0,00	0,00
Lowest Local Tension (PIW)	6,10	5,46	13,57
Lowest Local Tension Location	Tail	Tail	Tail
	Transition	Transition	Transition
Dynamic Splice Efficiency	0,330		
Min Splice Dynamic SF	2,87	2,05	2,05
Actual Splice SF	6,00	6,03	5,65

Head Transition	Run	Accel	Decel
Head Transition Point	3		
Length (in)	24,0		
Trough Depth	%50		
Tension At Head (lbf)	1.256	1.257	1.236
Highest Local Stress (PIW)	67	67	66
Local (S.F.)	32,92	32,89	33,32
Splice (S.F.)	10,87	10,85	11,00
Low Tension (PIW)	36	36	35
Tail Transition	Run	Accel	Decel
Tail Transition Point	1		
Length (in)	24,0		
Trough Depth	%0		
Tension At Tail (lbf)	832	816	1.011
Highest Local Stress (PIW)	121	120	128
Local (S.F.)	18,18	18,28	17,13
Splice (S.F.)	6,00	6,03	5,65
Low Tension (PIW)	6	5	14

Head Transition



Tail Transition



Case Summary

Loading	Base
Tension Diagram	
Load (stph)	66
Percent Loaded	81,8
Ambient Teperature (F)	82,0
Total Friction Force (lbf)	67
Lift Force (lbf)	189
Misc Drag (lbf)	594
Equivalent Friction Coefficient	0,0333
Total Nameplate (5 hp)	
Percent Running Power	60,1
Start Time (sec)	5,0
Starting Torque	65,3
Stopping Belt Travel (ft)	0,4
Stopping Discharge (lbs)	7,91
Belt Rating: 220 PIW	
Average Running S.F.	31,1
Average Starting S.F.	30,9
Average Stopping S.F.	32,7
Local Running S.F.	18,2
Local Starting S.F.	18,3
Local Stopping S.F.	17,1
Splice Running S.F.	6,0
Splice Starting S.F.	6,0
Splice Stopping S.F.	5,7
Normal TU Tension 1.566 lbf Requirement	Run Sag
Pulley Resultant Force (lbf)	
1 - Head	2825,8
2 - Takeup	3166,1
3 - Dr/Tail	2451,4