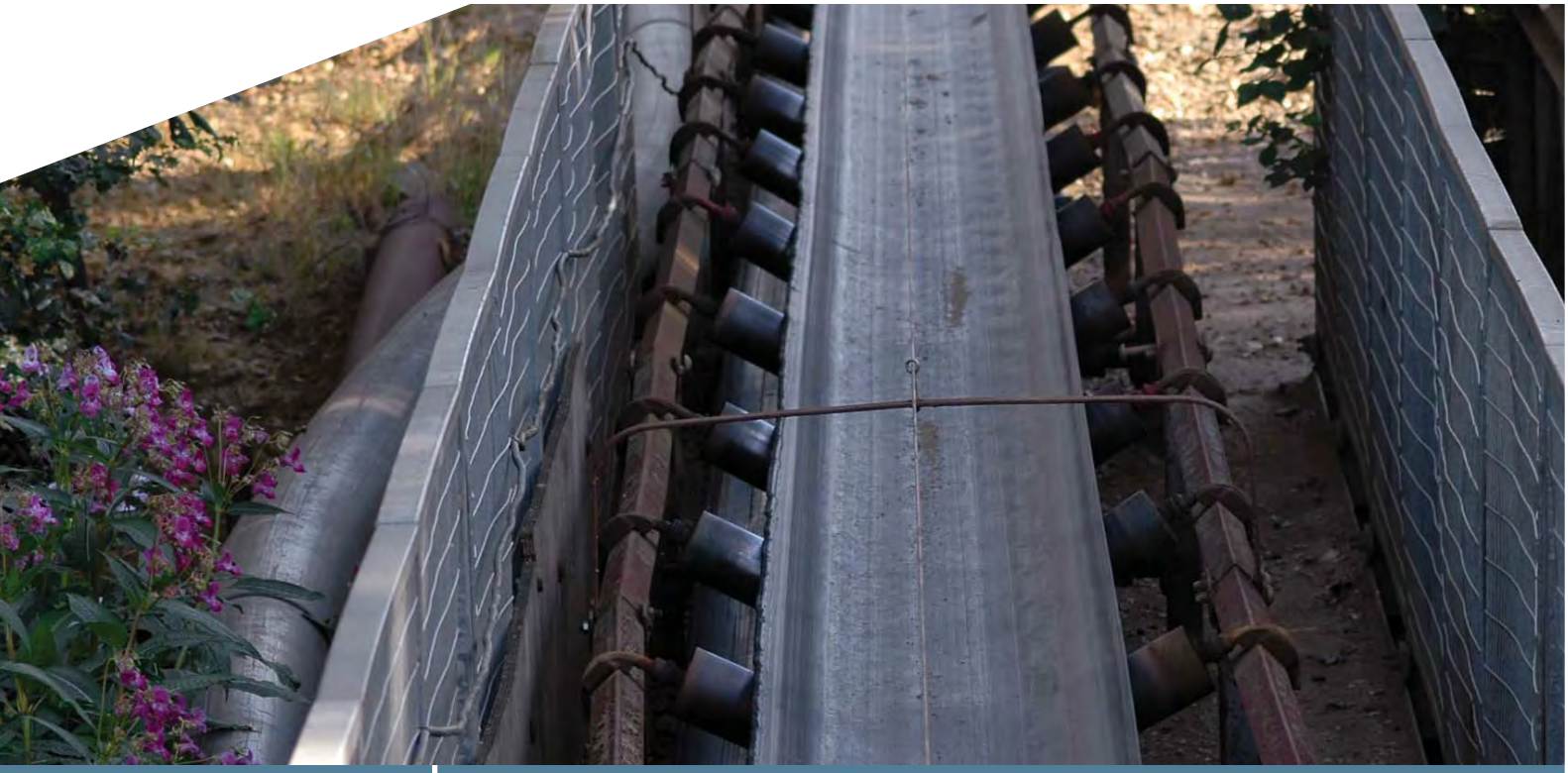
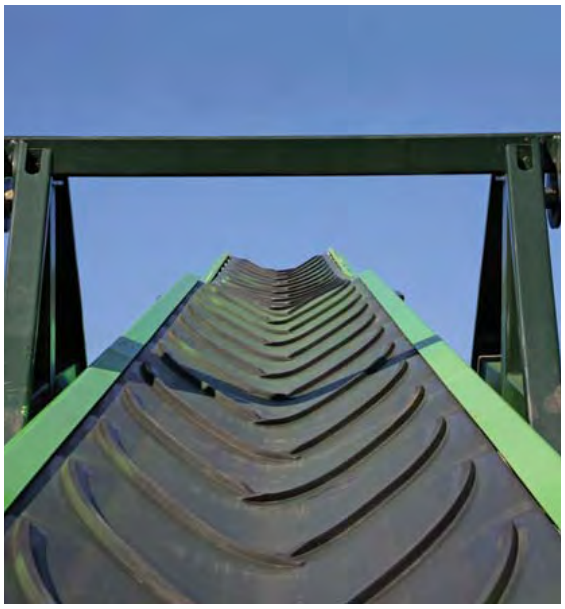


Limberoller Conveyor Belt Idlers

COOPER Interconnect



Solutions
You Can Trust

DESIGN AND CONSTRUCTION ADVANTAGES

Exclusive design and construction of Limberoller Idler assemblies provide these outstanding advantages:

1. **Continuous Belt Support -** The single flexible roll of the Limberoller idler supports the belt across its entire width. There are no unsupported gaps or sharp angles in the belt, as with steel idlers.

2. **Long Bearing Life** - The Limberoller idler uses only two bearings, and they are in sealed housings mounted up and away from contaminants.

3. **Smooth Flow of Material, Reduced Spillage -** Regardless of trough angle, material slope angle and speed of conveyor, the belt is cushioned for bumpless ride with a minimum amount of spillage.

4. **Rugged -** The Limberoller idler allows rougher handling without damage; its resistance to impact is excellent.

5. **Heat Resistant -** Limberoller idlers have done an outstanding job of handling of hot materials, like sintered coke and coke breeze. Bearings are out of the way, not under the belt where heat is greatest.

6. **Corrosion Resistant -** Rubber is highly resistant to weathering and attack by oil, grease and most chemicals.

7. **Self-Cleaning -** Because the idler flexes as it turns on its axis, material does not build-up and cling to it. Sticky materials, such as sugar, iron ore, clay and superphosphate, are readily handled.

8. **Reduced Belt Wear -** Because the idler is selfcleaning, no hard particles remain on it to tear belts. The resiliency of the idler reduces damage at impact points, particularly loading areas. The idler's continuous contact with the belt helps prevent nonuniform belt wear and resultant reduction of belt life. There is no “anvil effect” of the belt being crushed between the load and steel idlers.

9. **Superior Belt Alignment -** With use of the Limberoller idler, off-center belt tracking as a result of material build-up is avoided. With ordinary idlers this can occur, even when the conveyor is perfectly installed and maintained.

10. **Lightweight -** Limberoller idlers weigh considerably less than steel idlers. A Limberoller idler can be readily handled by one man, whereas a steel idler usually requires two men when idler replacement is required.

11. **Reduced Maintenance and Conveyor Downtime -** Sealed bearing housings eliminate lubricating problems. Simple design and lightweight allows rapid installation. Spillage is kept to a minimum, reducing housekeeping costs. Long service life means that high production rates can be maintained.

12. **Long Idler Life -** The resilient rubber design does not allow the build-up of spilled material. The bearings are double sealed; therefore, dirt penetration of the bearings is greatly reduced, allowing effective functioning of the idler during its entire life.

Basic Design Principles

All of the Limberoller series, troughing and return idlers, utilize only two bearings per idler. One bearing is located at each end of the central shaft.

The troughing idler is suspended from these end mounted bearings, so that it forms a catenary that uniformly supports the conveyor belt. As the belt moves over the idler, the friction between the belt and the rubber causes the idler to revolve on its own axis.

Bearings are placed in metal housings, that can be sealed or lubricated externally, at the user's option. The sealed metal housing helps protect vital moving parts from contaminants.

Limberoller Troughing Idlers

The Limberoller Troughing Idler consists of a steel wire rope that is completely encapsulated in rubber. The elastomer is molded to the rope, under heat and pressure, so that a virtually impervious sheath of rubber completely covers the rope. This basic design varies depending on belt width, by configuration of the molded rubber jacket.

There are four series of Limberoller troughing idler assemblies: 100, 150, 300 and 350. The 100 and 150 Series utilize double-row ball bearings. The bearing housing for the 100 and 150 Series idlers are slotted so that they will fit into a rigid mounting.

LR-100 SERIES IDLER

LR-150 SERIES IDLER

The 300 and 350 Series feature tapered roller bearing in a trunnion type housing that fits into an oarlock type support. This oarlock and trunnion design gives the idler freedom of motion in the direction of belt loading and travel.

LR-300 SERIES IDLER

LR-350 SERIES IDLER

Limberoller Return Idlers

The Limberoller Return Idler consists of a solid steel shaft that is completely encapsulated in rubber by the same means as the troughing idler. This design varies, depending on belt width, by the configuration of the molded rubber jacket.

There are three series of Limberoller return idlers: 106, 107 and 307. They use a double row ball bearing at each end of the shaft.

The bearing housing of all bearing series are slotted so that they will fit in specially designed hanger and support brackets.

LR-106 RETURN

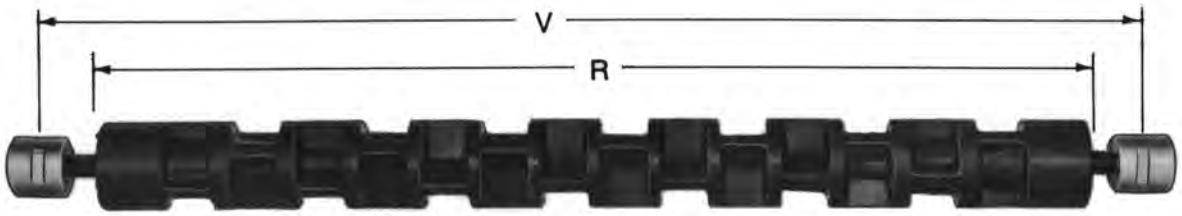
LR-107 RETURN

LR-307 RETURN

LIMBEROLLER TROUGHING IDLERS

LR-100 AND LR-150 SERIES
Troughing Idlers with Double Row Ball Bearings

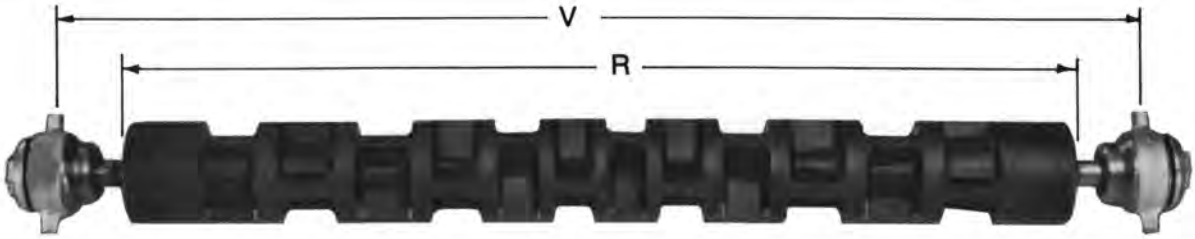
LR-150 Waffle weave illustration
LR-100 Is donut style



Belt Width Inches	Roll Dia Inches	Approx. Weight Pounds	LR-100 SERIES			LR-150 SERIES			
			Part Number	V	R	Part Number	Regreasable	V	R
16	3	8	500984-289	23 3/16	19	—	—	—	—
18	3	8	X984-25	—	—	500984-347	500984-348	25 3/8	21
20	3	8½	—	—	—	500984-349	500984-350	27 3/8	23
24	3	9	X984-29	—	—	500984-351	500984-352	31 3/8	27
26	3	10	X984-12	33 13/16	29	—	—	—	—
30	3	10	—	—	—	500984-353	500984-354	36½	33
36	3	11½	—	—	—	500984-355	500984-356	42 9/16	39
42	3½	20½	X984-33A	49 3/16	44 7/8	—	—	—	—
48	3½	22½	X984-37A	55 5/16	51	—	—	—	—
54	3½	24½	X984-48A	61 11/16	57 3/8	—	—	—	—
60	3½	26½	X984-42A	70 13/16	66½	—	—	—	—

LR-300 AND LR-350 SERIES
Troughing Idlers with Tapered Roller Bearing

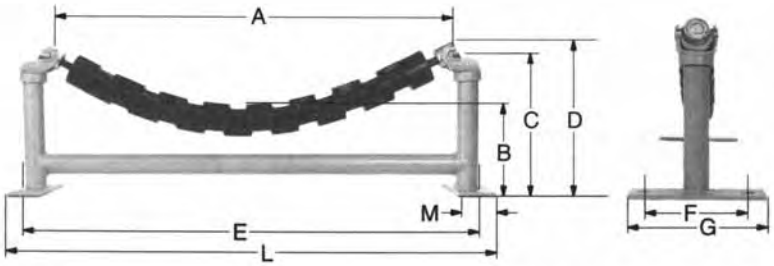
LR-350 Waffle weave illustration
LR-300 Is donut style



Belt Width Inches	Roll Dia Inches	Approx. Weight Pounds	LR-300 SERIES			LR-350 SERIES			
			Part Number	V	R	Part Number	Regreasable	V	R
18	3	8½	—	—	—	500984-308	500984-309	25 15/16	21
20	3	9	—	—	—	500984-331	500984-335	27 15/16	23
24	3	10	—	—	—	500984-314	500984-315	31 15/16	27
30	3	11	—	—	—	500984-320	500984-321	37 1/16	33
36	3	12	—	—	—	500984-338	500984-342	43 1/8	39
42	3½	23	500984-290	48 1/16	44 7/8	—	—	—	—
48	3½	25	500984-291	54 13/16	51	—	—	—	—
54	3½	27	500984-292	61 3/16	57 3/8	—	—	—	—
60	3½	29	500984-293	70 5/16	66½	—	—	—	—

LIMBEROLLER TROUGHING BRACKETS

BRACKETS
Standard Oarlock



Belt Width Inches	Trough Angle Degrees	STANDARD DUTY		IMPACT DUTY		Dimensions in Inches									
		Bracket No.*	Weight Lbs.	Bracket No.*	Weight Lbs.	A	B	C	D	E	F	G	L	M	BOLT
16	10	525064-224	17	—	—	23½	7½	7⅞	8 1⁄16	25	4½	7	27⅛	3½	½
16	20	525064-225	17	—	—	22¾	7½	9½	10 5⁄16	25	4½	7	29	3½	½
18	10	525064-53	17½	525072-201	23	25 13⁄16	7½	7⅞	8 1⁄16	27	4½	7	31½	3	½
18	20	525064-54	17½	525072-202	23	24¾	7½	9 13⁄16	10⅝	27	4½	7	30⅞	3	½
18	25	525064-55	17½	525072-171	23	24¼	7½	10 7⁄16	11¼	27	4½	7	29½	2½	½
20	10	525064-58	18	525072-203	24½	27¾	7½	7 13⁄16	8⅝	29	4½	7	31⅛	3½	½
20	20	525064-59	18	525072-204	24½	26¾	7½	9 13⁄16	10⅝	29	4½	7	31⅞	3	½
20	25	525064-60	18	525072-172	24½	26 1⁄16	7½	10 13⁄16	11⅝	29	4½	7	32½	3	½
24	10	525064-63	19	525072-205	25	31⅝	7½	8 7⁄32	9	33	4½	7	35¼	4	½
24	20	525064-64	19	525072-206	25	30¾	7½	10 7⁄32	11	33	4½	7	35	3	½
24	25	525064-65	19	525072-173	25	30 1⁄16	7½	11¼	12 1⁄16	33	4½	7	35½	2½	½
24	35	525064-66	19	525072-183	25	27⅞	7½	13 5⁄16	14⅛	33	4½	7	35⅞	3½	½
26	10	525064-68	20	—	—	33⅝	7½	8 9⁄16	9⅜	35	4½	7	40	3½	½
26	20	525064-69	20	—	—	32½	7½	10 11⁄16	11½	35	4½	7	38⅞	3	½
26	25	525064-70	20	525072-174	26	31 11⁄16	7½	11⅞	12⅝	35	4½	7	38½	3	½
26	35	525064-71	20	525072-184	26	29¾	7½	13¾	14 9⁄16	35	4½	7	38	3½	½
30	10	525064-73	22	525072-207	28½	36¾	8¼	9¼	10 1⁄16	39	7½	10	41½	3	½
30	20	525064-74	22	525072-165	28½	35¾	8¼	11⅜	12 3⁄16	39	7½	10	41¼	2½	½
30	25	525064-75	22	525072-175	28½	34¾	8¼	12 13⁄16	13⅝	39	7½	10	41¼	3	½
30	35	525064-76	22	525072-185	28½	32 13⁄16	8¼	14¾	15 9⁄16	39	7½	10	42 3⁄16	5	½
36	10	525064-78	26	525072-208	35	42⅞	8¼	9⅛	9 15⁄16	45	7½	10	47½	3	½
36	20	525064-79	26	525072-166	35	41 13⁄16	8¼	11¾	12 9⁄16	45	7½	10	47⅞	3	½
36	25	525064-80	26	525072-176	35	40¾	8¼	13⅛	13 15⁄16	45	7½	10	48	3½	½
36	35	525064-81	26	525072-186	35	38⅝	8¼	15 7⁄16	16¼	45	7½	10	47	4	½
42	20	525064-84	49	525072-167	64	47⅛	8¾	12¾	13 13⁄16	51	7½	10	54⅛	3½	½
42	25	525064-85	49	525072-177	64	46⅛	8¾	14 1⁄16	15⅛	51	7½	10	54	4	½
42	35	525064-86	49	525072-187	64	43 13⁄16	8¾	16 13⁄16	17⅞	51	7½	10	53¾	5	½
48	20	525064-89	52	525072-168	69	53 5⁄16	8¾	12⅞	13 15⁄16	57	7½	10	60¼	4½	½
48	25	525064-90	52	525072-178	69	52 3⁄16	8¾	14 9⁄16	15⅝	57	7½	10	61	3½	½
48	35	525064-91	52	525072-188	69	49½	8¾	17 9⁄16	18⅝	57	7½	10	60⅛	5	½
54	20	525064-94	55	525072-169	74	59 9⁄16	9	13¾	14 13⁄16	63	7½	10	67	4	½
54	25	525064-95	55	525072-179	74	58⅜	9	15⅜	16 7⁄16	63	7½	10	65¾	3½	½
54	35	525064-96	55	525072-189	74	55⅜	9	18¾	19 13⁄16	63	7½	10	65	5½	½
60	20	525064-99	58	525072-170	79	68 5⁄16	9	14½	15 9⁄16	69	7½	10	76½	5	⅝
60	25	525064-100	58	525072-180	79	67 5⁄16	9	16 3⁄16	17¼	69	7½	10	74½	4	⅝
60	35	525064-101	58	525072-190	79	63 15⁄16	9	20 1⁄16	21⅛	69	7½	10	72	4	⅝

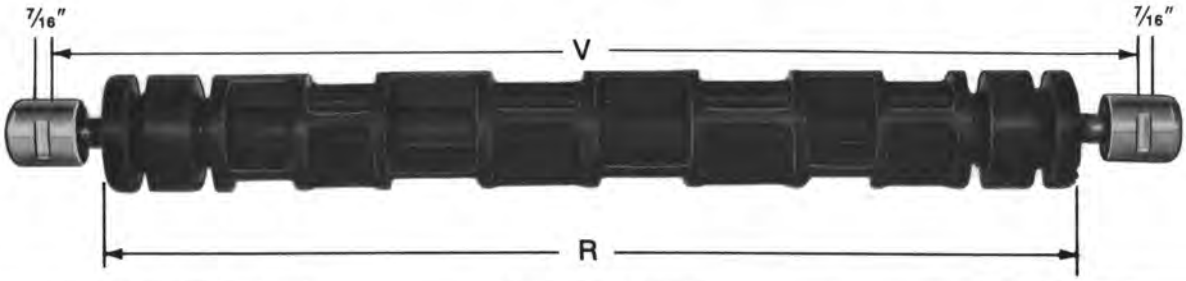
***100 and 150 Series Idlers require 2 adapters per bracket:**
16" through 26" P/N 1500368
42" through 60" P/N 376067-1

For Hook & Eye style brackets order per the part numbers above but **add "A" suffix.**

LIMBEROLLER RETURN IDLERS

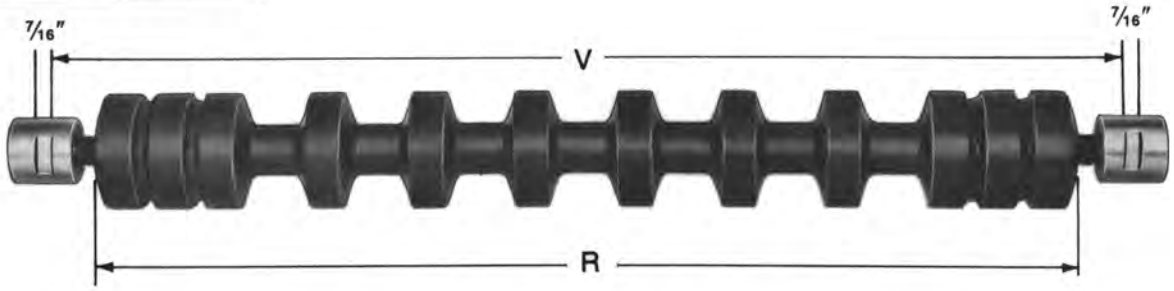
LR-106 AND LR-307 SERIES
Solid Shaft Return Idlers With Double Row Ball Bearings. For High Impact or Heavy Duty. 3½" Roll Dia.

LR-106 Waffle weave illustration
LR-307 Is donut style



Belt Width Inches	Roll Dia Inches	Approx. Weight Pounds	LR-106 SERIES				LR-307 SERIES		
			Part Number	Regreasable	V	R	Part Number	V	R
18	1¼	15	500984-387A	500984-388A	24 15/16	21¾	—	—	—
20	1¼	17	500984-389A	500984-390A	26 15/16	23¾	—	—	—
24	1¼	18½	500984-391A	500984-392A	30 15/16	27¾	—	—	—
30	1¼	21½	500984-393A	500984-394A	36 15/16	33¾	—	—	—
36	1¼	24	500984-395A	500984-396A	42 15/16	39¾	—	—	—
42	1½	36	—	—	—	—	520102-5	48 11/16	46½
48	1½	42	—	—	—	—	520102-7	54 11/16	52½
54	1½	44½	—	—	—	—	520102-9	60 11/16	58½
60	1½	47	—	—	—	—	520102-11	66 11/16	64½

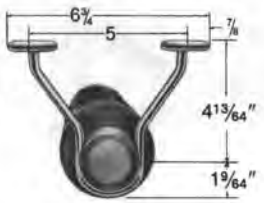
LR-107 SERIES
Solid Shaft Return Idlers With Double Row Ball Bearings. 3½" Roll Dia.

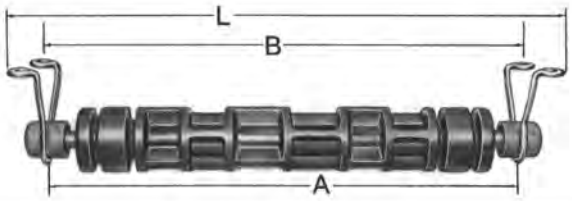


Belt Width Inches	Roll Dia Inches	Approx. Weight Pounds	LR-107 SERIES			
			Part Number	Regreasable	V	R
26	1¼	17	X5525-4A	X5525-12A	32 15/16	30½
42	1½	33	X5525-7A	X5525-15A	48 15/16	46½
48	1½	38	X5525-8A	X5525-16A	54 15/16	52½

LIMBEROLLER RETURN BRACKETS

HANGER BRACKETS for LR-106 and LR-107 Series

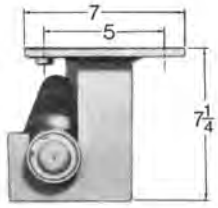


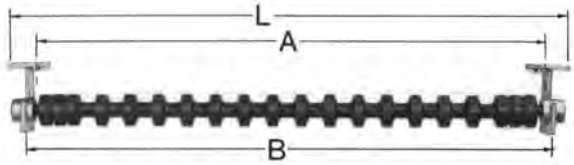


Dimensions In Inches				
Belt Width	STANDARD DUTY RETURN HANGER BRACKETS*			
	Part No.	A	B	L
18	1500409	24 15/16	27	28 7/16
20	1500409	26 15/16	29	30 7/16
24	1500409	30 15/16	33	34 7/16
26	1500409	32 15/16	35	36 7/16
30	1500409	36 15/16	39	40 7/16
36	1500409	42 15/16	45	46 7/16
42	1500409	48 15/16	51	52 7/16
48	1500409	54 15/16	57	58 7/16

*Two (2) required per idler. Weight: 4 oz ea.

HANGER BRACKETS for LR-307

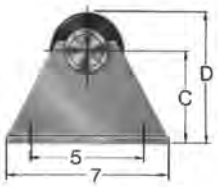


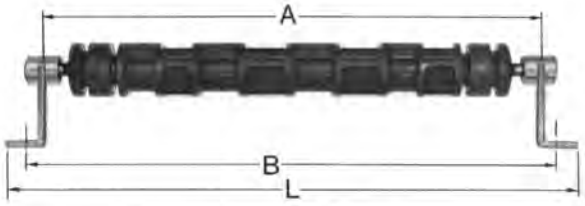


RETURN HANGER BRACKET**				
Belt Width	Part No.	Dimensions In Inches		
		A	B	L
42	3500164	51	48 1/16	52½
48	3500164	57	54 1/16	58½
54	3500164	63	60 1/16	64½
60	3500164	69	66 1/16	70½

*Two (2) required per idler.

TOP MOUNT BRACKETS for LR-106 and LR-107 Series





Dimensions In Inches						
Belt Width	TOP MOUNT BRACKETS*					
	Part No.	A	B	C	D	L
18	378725	24 15/16	27	4	5¾	28 15/16
18	378725-1	24 15/16	27	5	6¾	28 15/16
18	378725-2	24 15/16	27	8¼	10	28 15/16
20	378725	26 15/16	29	4	5¾	30 15/16
20	378725-1	26 15/16	29	5	6¾	30 15/16
20	378725-2	26 15/16	29	8¼	10	30 15/16
24	378725	30 15/16	33	4	5¾	34 15/16
24	378725-1	30 15/16	33	5	6¾	34 15/16
24	378725-2	30 15/16	33	8¼	10	34 15/16
26	378725	32 15/16	35	4	5¾	36 15/16
26	378725-1	32 15/16	35	5	6¾	36 15/16
26	378725-2	32 15/16	35	8¼	10	36 15/16
30	378725	36 15/16	39	4	5¾	40 15/16
30	378725-1	36 15/16	39	5	6¾	40 15/16
30	378725-2	36 15/16	39	8¼	10	40 15/16
36	378725	42 15/16	45	4	5¾	46 15/16
36	378725-1	42 15/16	45	5	6¾	46 15/16
36	378725-2	42 15/16	45	8¼	10	46 15/16
42	378725	48 15/16	51	4	5¾	52 15/16
42	378725-1	48 15/16	51	5	6¾	52 15/16
42	378725-2	48 15/16	51	8¼	10	52 15/16
48	378725	54 15/16	57	4	5¾	58 15/16
48	378725-1	54 15/16	57	5	6¾	58 15/16
48	378725-2	54 15/16	57	8¼	10	58 15/16

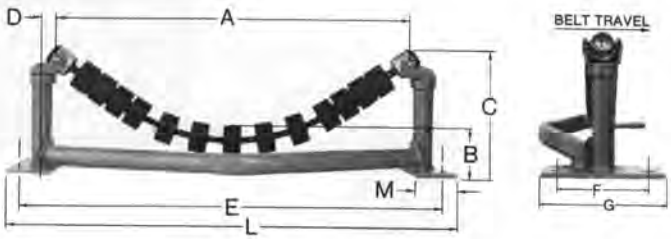
*Two (2) required per idler.

TRAINING BRACKETS

Training brackets are available for both troughing and return idlers. Refer to the factory for details

LIMBEROLLER TROUGHING IDLER
SPECIAL BRACKETS

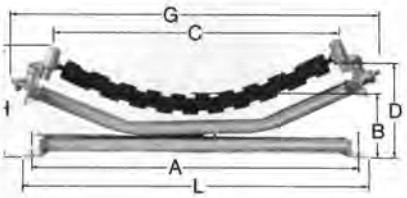
LOW BOY BRACKETS

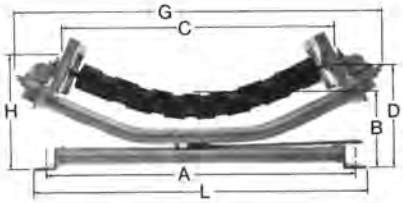


Belt Width Inches	Trough Angle Degrees	Part no.	Weight Lbs.	BRACKET ONLY Dimensions in Inches									
				A	B	C	D	E	F	G	L	M	BOLT
16	20	520100-7	17	23¾	4⁷⁄₁₆	7¼	1⁹⁄₁₆	25	4½	7	29	3½	½
16	25	520100-8	17	22¹⁄₁₆	4⁷⁄₁₆	8¹⁄₁₆	1⁹⁄₁₆	25	4½	7	28½	3	½
18	20	520100-17	17½	24¾	4⁷⁄₁₆	7⁹⁄₁₆	1⁹⁄₁₆	27	4½	7	30⅞	3	½
18	25	520100-18	17½	24⅛	4⁷⁄₁₆	8⁵⁄₁₆	1⁹⁄₁₆	27	4½	7	29½	2½	½
20	20	520100-27	18	26⅞	4⁷⁄₁₆	7⅝	1⁹⁄₁₆	29	4½	7	32⅞	3	½
20	25	520100-28	18	26¹⁄₁₆	4⁷⁄₁₆	8⁹⁄₁₆	1⁹⁄₁₆	29	4½	7	32½	3	½
24	20	520100-37	19	30¾	4⁷⁄₁₆	8¼	1⁹⁄₁₆	33	4½	7	35	3	½
24	25	520100-38	19	30¹⁄₁₆	4⁷⁄₁₆	9¼	1⁹⁄₁₆	33	4½	7	35½	2½	½
24	35	520100-39	19	27⅛	4⁷⁄₁₆	11¹⁄₁₆	1⁹⁄₁₆	33	4½	7	35⅞	3½	½
26	20	520100-47	20	32½	4⁷⁄₁₆	8⁷⁄₁₆	1⁹⁄₁₆	35	4½	7	38⅞	3	½
26	25	520100-48	20	31¹¹⁄₁₆	4⁷⁄₁₆	9⅝	1⁹⁄₁₆	35	4½	7	38½	3	½
26	35	520100-49	20	29¾	4⁷⁄₁₆	11½	1⁹⁄₁₆	35	4½	7	38	3½	½
30	20	520100-57	22	35¾	4⁷⁄₁₆	8⅜	1⁹⁄₁₆	39	7½	10	41¼	3½	½
30	25	520100-58	22	34¾	4⁷⁄₁₆	9¹³⁄₁₆	1⁹⁄₁₆	39	7½	10	41¼	3	½
30	35	520100-59	22	32¹³⁄₁₆	4⁷⁄₁₆	11¾	1⁹⁄₁₆	39	7½	10	42³⁄₁₆	4½	½
36	20	520100-67	26	41¹³⁄₁₆	4⁷⁄₁₆	8¾	1⁹⁄₁₆	45	7½	10	47⅞	3	½
36	25	520100-68	26	40¾	4⁷⁄₁₆	10⅛	1⁹⁄₁₆	45	7½	10	48	3½	½
36	35	520100-69	26	38⅝	4⁷⁄₁₆	12⁷⁄₁₆	1⁹⁄₁₆	45	7½	10	47	4	½
42	20	520100-77	49	47⅛	4⁷⁄₁₆	9½	1⅞	51	7½	10	54⅛	3½	½
42	25	520100-78	49	46⅛	4⁷⁄₁₆	10¹³⁄₁₆	1⅞	51	7½	10	54	4	½
42	35	520100-79	49	43¹³⁄₁₆	4⁷⁄₁₆	13⁷⁄₁₆	1⅞	51	7½	10	53¾	5	½
48	20	520100-87	52	53⅜	4⁷⁄₁₆	9⅝	1⅞	57	7½	10	60¼	4½	½
48	25	520100-88	52	52¾	4⁷⁄₁₆	11⁵⁄₁₆	1⅞	57	7½	10	61	3½	½
48	35	520100-89	52	49½	4⁷⁄₁₆	14¹⁵⁄₁₆	1⅞	57	7½	10	60⅛	5	½
54	20	520100-97	55	59⅜	4⁷⁄₁₆	10¼	1⅞	63	7½	10	67	4	½
54	25	520100-98	55	58⅜	4⁷⁄₁₆	11⅞	1⅞	63	7½	10	65¾	3½	½
54	35	520100-99	55	55⅜	4⁷⁄₁₆	15¼	1⅞	63	7½	10	65	5½	½
60	20	520100-107	58	68¹⁵⁄₁₆	4⁷⁄₁₆	11	1⅞	69	7½	10	76½	5	½
60	25	520100-108	58	67⅝	4⁷⁄₁₆	12¹¹⁄₁₆	1⅞	69	7½	10	74½	4	½
60	35	520100-109	58	63¹⁵⁄₁₆	4⁷⁄₁₆	16⅜	1⅞	69	7½	10	72	4	½

LIMBEROLLER TROUGHING IDLER TRAINING BRACKETS

BRACKETS
Training and Reversible
18" thru 36"

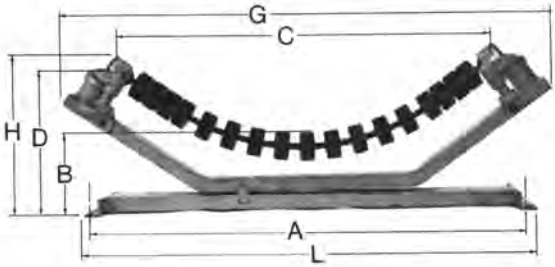




Belt Width Inches	Trough Angle Degrees	Training Part No.	Reversible Training Part No.	Wt. Lbs.	Dimensions in Inches												
					A	B	C	D	E	F	G	H	J	*K	L	BOLT	Clear Dia.
18	25	525068-13	520107-13	58	27	8	24¼	10⁹⁄₁₆	4½	7	32¾	12¹³⁄₁₆	12½	13	28½	½	34
20	25	525068-17	520107-17	60	29	8	26⅛	10¹⁵⁄₁₆	4½	7	34⁹⁄₁₆	13¾	12½	13⅜	30½	½	35¾
24	25	525068-21	520107-21	64	33	8	30	11⅜	4½	7	38½	13⅝	12½	13⅝	34½	½	39⁹⁄₁₆
24	35	525068-22	520107-22	64	33	8	28¹⁵⁄₃₂	13	4½	7	37⅞	15	12½	14⅞	34½	½	38¹⁵⁄₁₆
26	25	525068-25	520107-25	66	35	8	32⅛	11⅞	4½	7	40⁹⁄₁₆	13¹¹⁄₁₆	12½		36½	½	41⁹⁄₁₆
26	45	525068-26	520107-26	66	35	8	30¹¹⁄₁₆	13⁹⁄₁₆	4½	7	40⅛	15⁵⁄₁₆	12½		36½	½	41⅛
30	25	525068-29	520107-29	70	39	8¾	34⅞	12¾	7½	10	43⅜	15	14	14⅛	40½	½	44⁵⁄₁₆
30	45	525068-30	520107-30	70	39	8¾	32¹³⁄₁₆	15	7½	10	42⅜	17	14	16¾	40½	½	43⁵⁄₃₂
36	25	525068-33	520107-33	76	45	8¾	40¹³⁄₁₆	13⅜	7½	10	49⁵⁄₁₆	15⅝	14	14⅞	46½	½	50⅛
36	45	525068-34	520107-34	76	45	8¾	38⅝	15¹³⁄₁₆	7½	10	48	17¹³⁄₁₆	14	17⅝	46½	½	48⅞

*Dimension applies to reversible training bracket only.
Part Number for Guide Roll is RA82189.
NOTE: Oarlock adapter 1500368 must be used on 26" belt width.

BRACKETS
Training
42" thru 60"

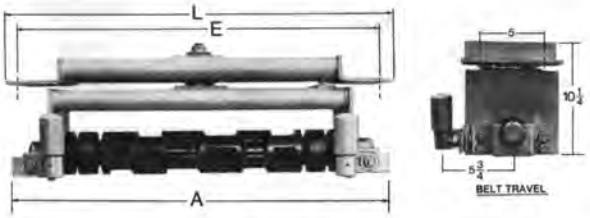


TRAINING BRACKET														
Belt Width Inches	Trough Angle Degrees	Part No.	Wt. Lbs.	Dimensions in Inches										
				A	B	C	D	E	F	G	H	J	L	BOLT	Clear Dia.
42	25	525068-37	168	51	9¼	46¼	14⁵⁄₁₆	7½	10	54¾	16⁷⁄₁₆	14	54	½	55½
42	35	525068-38	168	51	9¼	44	16⅞	7½	10	53⅜	18⅞	14	54	½	54⁵⁄₃₂
48	25	525068-41	176	57	9¼	52½	14½	7½	10	61	16¾	14	61	½	61²¹⁄₃₂
48	35	525068-42	176	57	9¼	50⅛	17⅞	7½	10	59⅞	19⅞	14	61	½	60⅛
54	25	525068-45	184	63	9½	58½	15⁹⁄₁₆	7½	10	67	17¹³⁄₁₆	14	66	½	67⅝
54	35	525068-46	184	63	9½	55⅞	18⅞	7½	10	65¼	20⅞	14	66	½	65⅞
60	25	525068-49	192	69	9½	67⅜	16⁹⁄₁₆	7½	10	75⅞	18¹³⁄₁₆	14	72	½	76¹³⁄₃₂
60	35	525068-50	192	69	9½	64¾	19⅞	7½	10	74⅛	21⅞	14	72	½	74¹³⁄₁₆

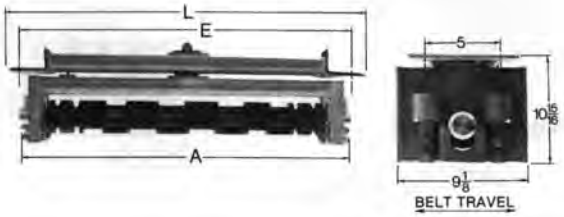
Oarlock adapter 376067-1 must be used on 42"-60" belt width.

LIMBEROLLER RETURN IDLER TRAINING BRACKETS

BRACKETS
Return training for LR-106 and LR-107 Series

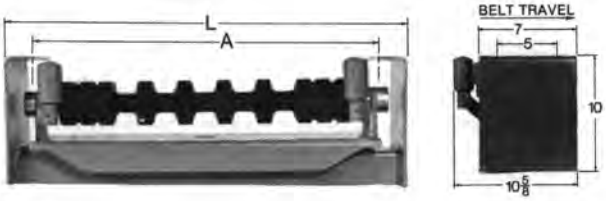


RETURN TRAINING BRACKET				
Belt Width Inches	Part No.	Dimensions in Inches		
		A	E	L
18	520110-1	27 7/16	27	29 1/2
20	520110-2	29 7/16	29	31 1/2
24	520110-3	33 7/16	33	35 1/2
30	520110-4	39 7/16	39	41 1/2
36	520110-5	45 7/16	45	47 1/2
42	520110-6	51 7/16	51	53 1/2
48	520110-7	57 7/16	57	59 1/2



REVERSIBLE RETURN TRAINING BRACKET				
Belt Width Inches	Part No.	Dimensions in Inches		
		A	E	L
18	520108-1	27 7/16	27	29 1/2
20	520108-2	29 7/16	29	31 1/2
24	520108-3	33 7/16	33	35 1/2
26	520108-4	35 7/16	35	37 1/2
30	520108-5	39 7/16	39	41 1/2
36	520108-6	45 7/16	45	47 1/2
42	520108-7	51 7/16	51	53 1/2
48	520108-8	57 7/16	57	59 1/2

BRACKETS
for LR-307 Series



RETURN TRAINING BRACKET			
Belt Width Inches	Part No.	Dimensions in Inches	
		A	L
42	520103-3	51	53 3/8
48	520103-4	57	59 3/8
54	520103-5	63	65 3/8
60	520103-6	69	71 3/8

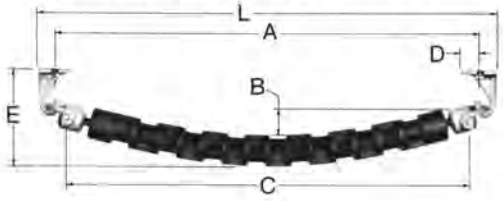
LIMBEROLLER RETURN IDLER BEARINGS

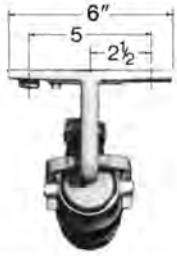
LR-106,LR-107 SERIES BEARING COMPONENTS	
Description	Part No.
SNAP RING	1500131
BEARING CAP (PLAIN)	86096
BEARING CAP (GREASE)	A93128
O-RING	1500394
SNAP RING	89782
BEARING	1500398
SPACER	1500449
HOUSING	1500399
BEARING	1500398
SNAP RING	1500131

LR-307 SERIES BEARING COMPONENTS	
Description	Part No.
BEARING	90240
SNAP RING	902095-118
SEAL	90886
BEARING CAP(PLAIN)	90620
BEARING CAP (GREASE)	A93129
SNAP RING	902868-218

LIMBEROLLER RETURN IDLER HANGER BRACKETS

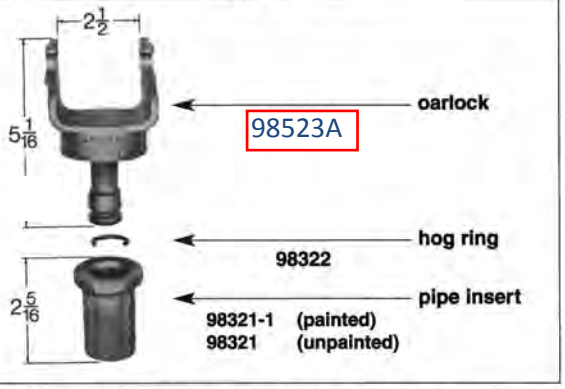
HANGER BRACKETS
For Return Duty





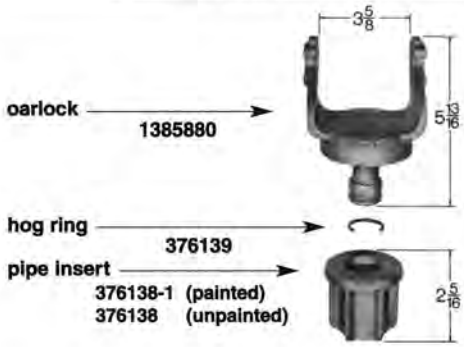
*HANGER BRACKETS FOR RETURN DUTY			DIMENSIONS IN INCHES					
Belt Width Inches	Bracket (Two Required) Part No.	Bearing Hooks (Two Required) Part No.	A	B	C	D	E	L
18	377996-1	377297	27	⅞	25 1⁵⁄₁₆	¾	6⅞	31
20	377996-1	377297	29	1 1⁄₁₆	27 3⁄₃₂	¾	7 1⁄₁₆	33
24	377996-1	377297	33	1 3⁄₁₆	31¼	¾	7 3⁄₁₆	37
30	377996-2	377297	39	1⅜	36¾	1⅛	7 3⁄₁₆	42¼
36	377996-2	377297	45	1½	42 13⁄₁₆	1⅛	7 5⁄₁₆	48¼

STANDARD DUTY OARLOCK ASSEMBLY 18" to 36"



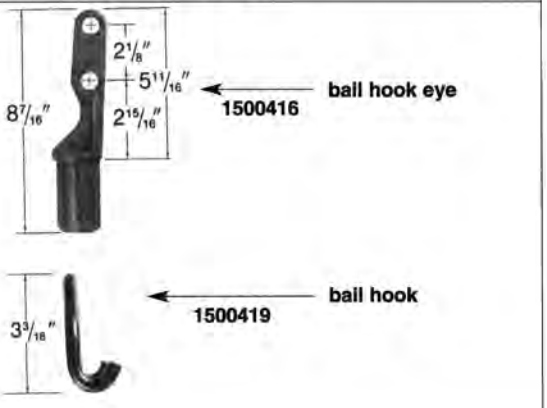
NOTES: 1) Pipe inserts for 16" thru 36" idlers fit 1½" pipe.
2) Impact Duty pipe inserts are made for Heavy-Duty pipe Part No. 1500107.
3) Oarlocks are included with brackets.
4) Pipe insert weight: 10 oz. ea.; Oarlock weight: 1 lb. 10 oz ea.
5) Oarlock assembly A98320-1 (oarlock and hog ring only).

STANDARD DUTY OARLOCK ASSEMBLY 42" to 60"

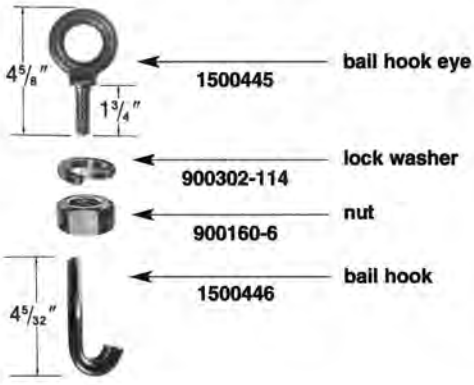


NOTES: 1) Pipe inserts for 42" thru 60" idlers fit 2½" pipe.
2) Impact Duty pipe inserts are made for Heavy-Duty pipe Part No. 1500108.
3) Oarlocks are included with brackets.
4) Pipe insert weight: 1 lb. 13 oz. ea.; Oarlock weight: 3 lbs. 8 oz ea.
5) Oarlock assembly A376387-2 (oarlock and hog ring only).

STANDARD HOOK AND EYE ASSEMBLY 16" to 36"



STANDARD HOOK AND EYE ASSEMBLY 42" to 60"



LIMBEROLLER TROUGHING IDLER BEARINGS

LR-100 SERIES BEARING COMPONENTS

16" AND 26"	
Description	**Part No.**
SNAP RING	905641-74
BEARING ASSEMBLY	86098
SNAP RING	85085
"0" RING SEAL	87317
BEARING CAP (PLAIN)	86096
BEARING CAP (GREASE)	86096
SNAP RING	1500131
OARLOCK ADAPTER (1)	1500368

42" THROUGH 60"	
Description	**Part No.**
BEARING ASSEMBLY	A98097
(INCLUDES BUSHING)	95478
THRUST WASHER	1500191
NUT	1500379
"0" RING SEAL	90886
BEARING CAP (PLAIN)	90620
SNAP RING	902868-218
OARLOCK ADAPTER (1)	376067

LR-150 SERIES BEARING COMPONENTS

Description	Part No.
SNAP RING	905641-74
BEARING ASSEMBLY	86098
SNAP RING	85085
"0" RING	87317
BEARING CAP (PLAIN)	86096
BEARING CAP (GREASE)	A93128
SNAP RING	1500131
OARLOCK ADAPTER	1500368

LR-300 SERIES BEARING COMPONENTS

Description	Part No.
* BEARING HOUSING	1500113
* BEARING SEAL	1500410
* BEARING CUP	960198-1
SNAP RING	89782
BEARING BUSHING	1500110
BEARING CONE	950198-1
RETAINER RING	1500111
THRUST WASHER	1500151
NUT	1500379
BEARING CAP	1500112

*complete assembly part number 3500287

LR-350 SERIES BEARING COMPONENTS

Description	Part No.
* BEARING HOUSING	1500340
BEARING HOUSING (GREASE)†	3500487
* BEARING CuP†	960076-1
* BEARING SEAL †	1500410
SPACER	1500116
BEARING CONE	950076-1
NUT	1500379
"0" RING SEAL	98557
BEARING CAP	1500367

*complete assembly part number 3500289
†complete grease assembly part number 3500289-1

TROUGHING IDLERS WITHOUT BEARINGS

Belt Width Inches	LR-350 SERIES	LR-300 SERIES	LR-150 SERIES	LR-100 SERIES
	Part No.	Part No.	Part No.	Part No.
16	—	—	—	3500100
18	3500310-1	—	3500343-1	—
20	3500332-1	—	3500344-1	—
24	3500311-1	—	3500345-1	—
26	—	—	—	A86381
30	3500285-1	—	3500346-1	—
36	3500333-1	—	3500347-1	—
42	—	3500127	—	3500127
48	—	3500128	—	3500128
54	—	3500129	—	3500129
60	—	3500130	—	3500130

TROUGHING IDLERS WITHOUT BEARINGS

Belt Width Inches	LR-106 SERIES	LR-107 SERIES	LR-307 SERIES
	Part No.	Part No.	Part No.
18	3500362	—	—
20	3500363	—	—
24	3500364	—	—
26	—	A90724-2	—
30	3500365	—	—
36	3500366	—	—
42	—	A90734-5	A90734-13
48	—	A90734-6	A90734-14
54	—	—	A90734-7
60	—	—	A90734-8

LIMBEROLLER IDLER INSTALLATION

It is essential that the brackets be installed in a straight line and square with the center line of the conveyor. **Upon installation, if the Limberoller idler does not contact the troughed belt completely across its width as illustrated at the top of (Figure 1), it is essential that one or more adjustments be made:**

1. The bracket can be shimmed.
2. Belt tension can be reduced.
3. If idler overload is not evident, the spacing between idlers can be increased to drop the belt.

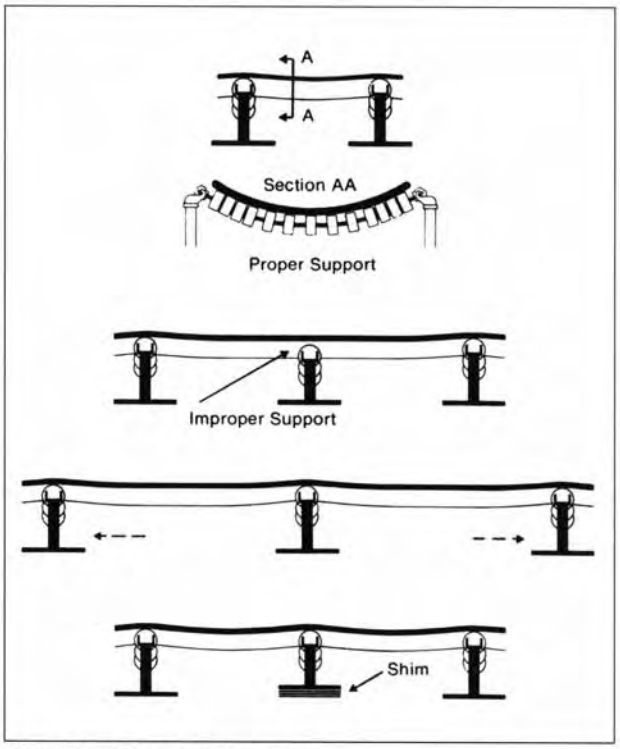


Figure 1 Belt contact correction

When installing a Limberoller idler next to a conventional steel idler roll, the backing dimension, height of the center disc of the Limberoller idler, should be ½ inch to 1 inch higher than the center roll of the steel idler, as measured from the deck to the top of the roller **(Figure 2).**

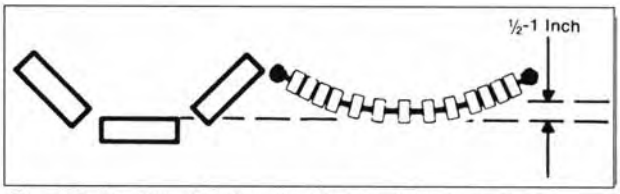


Figure 2 Position of Limberoller idler in relation to steel roll

Height of the head and tail pulleys also is important. Many conveyors are so designed that the tops of the pulleys are higher than the top center of the idlers. This must be avoided with Limberoller idlers. This can be corrected by shimming the bracket as illustrated in **(Figure 3). The top of the center Limberoller disc should be the same height as the top of the pulley.** The bracket next to the head and tail pulleys should be as far away as possible and still prevent spillage.

If the bracket is too close to the tailor head pulley, the belt moving from or to the pulley is under too much tension to allow troughing at the initial Limberoller idler. See Transition Table Page 22 and refer to belt manufacturers recommendations.

Generally a lighter weight belt can be used with Limberoller idlers that can be employed with steel idlers because of excellent support and wear resistance of Limberoller idlers. If a belt is so stiff that it will not trough **(Figure 4)** a Crouse-Hinds Molded Products representative should be consulted before proceeding further with the installation.

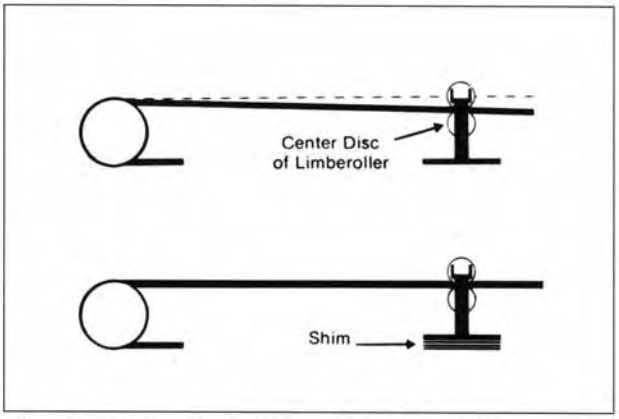


Figure 3 Relationship of Limberoller idler and pulleys

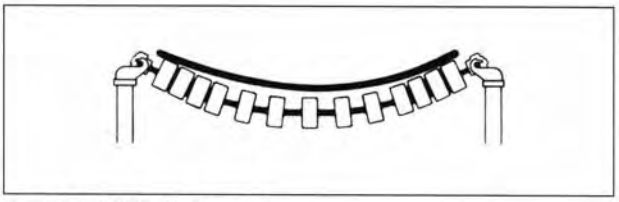


Figure 4 Stiff belt alignment

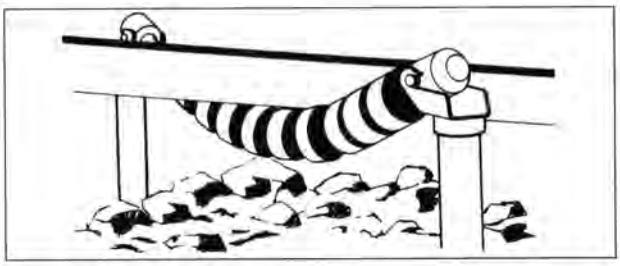


Figure 5 Poor housekeeping practices

Bad housekeeping, poor loading, or poor design sometimes permits a large abrasive lump to lodge between a deck plate and the Limberoller idler **(Figure 5)** and machine off neoprene.

VERTICAL CURVES

When the Limberoller is used in a vertical curve situation (both concave and convex), extra care must be taken to space the idlers in a manner so that the belt and belt load does not load the idlers in the curve beyond its rated capacity.

A convex vertical curve can easily load an idler beyond rated capacity if the idlers are not spaced closer in the vertical curve than on normal run. A normal rule would be to space the idlers at half the spacing through the convex vertical curve than on the rest of the conveyor. Sharp bends must be avoided when possible and belt tension should be reduced to avoid the belt edge digging into idlers. This can be done by reducing the troughing angle to 10°.

A concave curve that is too sharp or belt tensions too great, will cause the belt to lift off the Limberoller idler. If a limberoller is driven only by the edges of the belt and it does not support the belt across its entire width, it will cause the Limberoller idler to wear prematurely.

Refer to the CEMA handbook when designing vertical curves in conveyors and follow their recommendations.

IMPACT AREAS

The relative capability of a conveyor system to handle impact loads is a function of many things. Limberoller idlers have impact capability. The limitations for Limberollers are a function of the following parameters: density of material (lbs./ft.^{3}) , lump size, belt speed, idler spacing, free fall height and bracket selection.

These parameters will affect the life of any conveyor system and obviously the idler. Typically, the idlers in impact zones should be spaced on one foot (1 ft.) centers and the free fall height should always be minimized (never to exceed 4 ft.), for optimum system and component life. Actual spacing and free fall height will vary with the density of the material, lump size, and belt speed. Impact brackets should always be applied in impact zones.

When considering Limberollers for impact duty, please consult the factory for guidance with the above mentioned parameters well defined.

TEMPERATURE LIMITATIONS

The ambient temperature range of the Limberoller idler is -20 degrees F. to +200 degrees F.

IDLER FRICTION

The Limberoller idler requires force on the periphery of the idler to turn the roll as do all idlers. The importance of belt contact across the width of the entire idler cannot be stressed enough since the idler turns as a unit and not as three separate rollers.

The Limberoller idler with no load takes an average force of 3 pounds to turn over when it is new. The idler turn over force increases as the troughing angle increases and decreases as troughing angle decreases due to the design of the catenary idler.

This force must be accounted for when calculating idler spacing with an empty belt and loaded belt. A belt weight and spacing should be chosen in that **a force of at least** 3 pounds per idler is the load on an unloaded belt.

The designer of a conveyor should use an ai value of 2.93 in computation of K_X for the CEMA horsepower formula.

NOTE: See Table I.

Table I

The following table computes the K_X values for various idler spacings, belt weights, and belt loads.

Belt Weight Plus Material Wt. in LBS. per Ft.		Idler Spacing Si (Ft.)	K_X For Limberoller a_i=2.93
20	Typical Limberoller Installation	5.5	.546
25		5.0	.603
30		4.5	.672
50		4.0	.767
100		3.5	.906
150		3.0	1.080

CORRECT LOADING OF LIMBEROLLER IDLERS

The idlers must be loaded correctly for proper rotation. Under normal conditions (dry) it will take a load of approximately 3 pounds per idler to rotate the idler. When the friction force between the idler and the belt is decreased by wet conditions, the load per idler must be increased. In most cases the load per idler must be increased by a factor of 2 for rotation. If the frictional force is further reduced by a slippery substance such as silicone, wet clay, or oil, an increase in the load per idler by a factor of 3 is required.

The chart below gives relative values for proper loading of the belt under various conditions.

BELT CONDITION	MIN. LOAD PER IDLER IN LBS.
Normal (dry)	3
Wet	6
Slippery	9+

In order to achieve the correct load conditions, it is usually necessary to increase the spacing between idlers.

In determining requirements for idler troughing angles, always determine requirements for loading by the average load to be carried in tons per hour. The average load should fill the selected belt width to 80% of capacity at the selected speed.

Table II

BELT WIDTH (inches)	MATERIAL WEIGHT TYPICAL IDLER SPACING IN FEET*						RETURN IDLERS
	30 Lbs.	50 Lbs.	75 Lbs.	100 Lbs.	125 Lbs.	150 Lbs.	
18	6 Ft.	5 Ft.	5 Ft.	5 Ft.	4½ Ft.	4½ Ft.	10Ft.
20	5½ Ft.	5 Ft.	5 Ft.	4½ Ft.	4½ Ft.	4 Ft.	
24	5 Ft.	5 Ft.	4½ Ft.	4 Ft.	4 Ft.	4 Ft.	
30	5 Ft.	5 Ft.	4½ Ft.	4 Ft.	4 Ft.	4 Ft.	
36	5 Ft.	5 Ft.	4 Ft.	4 Ft.	3½ Ft.	3½ Ft.	
42	4½ Ft.	4½ Ft.	4 Ft.	3½ Ft.	3½ Ft.	3 Ft.	
48	4½ Ft.	4 Ft.	4 Ft.	3½ Ft.	3½ Ft.	3 Ft.	
54	4½ Ft.	4 Ft.	3½ Ft.	3½ Ft.	3 Ft.	3 Ft.	
60	4 Ft.	4 Ft.	3½ Ft.	3 Ft.	3 Ft.	2½ Ft.	

*NOTE: AT LOADING POINTS SPACING IS NORMALLY 1 FT. CENTERS

TO FIND WEIGHT OF MATERIAL CARRIED ON A LINEAL FOOT OF BELT USE

$$\frac{33.3 \times TPH}{FPM} = \text{LBS. PER LINEAL FT.}$$

TPH = TONS PER HOUR
FPM = FEET PER MINUTE

Table III

Recommended Minimum Transition Distance
(W Equals Belt Width)

Percent of Belt Rated Operating Tension	Reduced Ply Belting			High Tension Belt		
	10°	25°	35°	10°	25°	35°
75-100	1W	1.2W	2.2W	1.3W	2W	2.9W
50-75	.8W	1.2W	2.0W	1.1W	2W	2.6W
Less 50	.6W	.9W	1.9W	.9W	1.7W	2.2W

BEARING LIFE

Bearing selection on Limberoller idlers is based on load ratings which will give 15,000 hours of life under rated conditions.

The following table gives the recommended load per idler and belt speeds which meet the conditions for **15,000** hours of life.

Table III

RECOMMENDED TOTAL LOADS/IDLER AT VARIOUS BELT SPEEDS IN FEET PER MINUTE

Series	Troughing Angle	50	100	200	300	400	500	600	Max. Load/ Idler Lbs.
LR 350 18" to 36"	10° 25° 35°	254 500 500	206 500 500	166 412 500	148 368 488	136 338 450	126 312 416	120 298 396	500
LR 150 18" to 36" LR 100 16" & 26"	10° 25° 35°	366 500 500	290 500 500	230 500 500	202 500 500	182 452 500	170 422 500	160 200 500	500
LR 100 42" - 60"	10° 25° 35°	550 1000 1000	436 1000 1000	344 856 1000	302 750 998	274 682 906	254 632 840	240 596 794	1000
LR 300 42" - 60"	10° 25° 35°	928 1000 1000	754 1000 1000	612 1000 1000	542 1000 1000	496 1000 1000	464 1000 1000	440 1000 1000	1000
LR 106 Return	18" to 36"	262	208	164	144	130	120	114	500
LR 107 Return LR 106 Double Row	16", 26", 42" to 60" 18" to 36"	500	500	500	500	500	500	500	500
LR 307 Return	42" to 60"	1000	1000	1000	1000	1000	962	906	1000

Bearing life is affected by various service factors which include all operating conditions. Naturally, the more severe the service the shorter the life due to bearing failure.

It is recommended that when idlers are used in severe conditions, dust, water, grit, acid, etc., that a lubrication program be set up and followed. The user should also order relubricatable bearings. Flushing of the bearings with grease to clear contaminants should be performed at regular intervals.

Table V

The following table represents typical applications and the recommended field service. Actual service Intervals or preventive maintenance programs will need to be established for each installation.

The present lubricant and recommended grease is Shell Alvania E/P #2 or its equivalent.

CONDITION	RECOMMENDED LUBRICATION INTERVAL
Water and/or acid wash	Weekly
Fine Abrasive Grit	Every 2 weeks
Sand & Gravel	Every 2 months
Rock, Dusty	Every 2 months
Cement Dust	Weekly
Clean, Non-Abrasive	Pack Yearly
24 Hour Duty	Monthly Relubrication
Hi-Speed Duty (Above 500 FPM)	Monthly
Fertilizer Pack	Yearly

LIMBEROLLER RATING vs. CEMA RATINGS

Based on load ratings

Table VI

IDLER	BEARING TYPE	BELT WIDTH	LOAD RATING	EQUIVALENT CEMA RATING
TROUGHING	LR 350	18"-36"	500 lbs.	EXCEEDS B5
TROUGHING	LR 300	42"-60"	1000 lbs.	C4 TO C6
TROUGHING	LR 100	16" & 26"	500 lbs.	EXCEEDS B5
TROUGHING	LR 150	18"-36"	500 lbs.	EXCEEDS B5
TROUGHING	LR 100	42"-60"	1000 lbs.	C4 TO C6
RETURN	LR 106 SINGLE ROW	18"-36"	250 lbs.	A5
RETURN	LR 106 DOUBLE ROW	8"-36"	500 lbs.	EXCEEDS B5
RETURN	LR 107	16" & 26" 42"-48"	500 lbs.	EXCEEDS B5
RETURN	LR 307	42"-60"	1000 lbs.	C4 TO C6

BELT SPEED vs. LUMP SIZE

Generally the larger the material lump, the slower the belt speed. Recommendations are shown in the table below which was obtained from the CEMA handbook, page 36.

Table VII

Material being conveyed	Belt Speeds* (fpm)	Belt width (inches)
Grain or other free-flowing, nonabrasive material	500 700 800 1000	18 24-30 36-42 48-96
Coal, damp clay, soft ores, overburden and earth, fine-crushed stone	400 600 800 1000	18 24-36 42-60 72-96
Heavy, hard, sharp-edged ore, coarse-crushed stone	350 500 600	18 24-36 Over 36
Foundry sand, prepared or damp; shakeout sand with small cores, with or without small castings (not hot enough to harm belting)	350	Any width
Prepared foundry sand and similar damp (or dry abrasive) materials discharged from belt by rubber-edged plows	200	Any width
Nonabrasive materials discharged from belt by means of plows	200, except for wood pulp, where 300 to 400 is preferable	Any width
Feeder belts, flat or troughed, for feeding fine, nonabrasive, or mildly abrasive materials from hoppers and bins	50 to 100	Any width

*Maximum Limberoller speed is 600 fpm

Table VIII

CHARACTERISTICS OF MATERIALS

	Av. Wt. (lbs. per cu. ft.)	Angle of Repose (degrees)	Size & Flowability (See Key)
Alumina	60	22	2B
Ammonium nitrate	45		*
Asbestos ore	81		4B
Asbestos shred	20-25		5D
Ashes, dry	35-40	40	4D
Ashes, wet	45-50	50	3D
Asphaltum	80-85		
Bakelite & similar Plastics (Powered)	35-45		2B
Bauxite, run of mine	80-90	31	4C
Bentonite, crude	35-40		4D
Bentonite, 100 mesh & under	50-60		1B
Brickwork (solid)	115		4D
Caliche	100		*
Carbon black, pellets	25		2A
Carbon black, powder	4-6		*
Carborundum, 3 inch and under	100		4B
Cement, Portland	90-100	39	1B
Cement, clinker	80-95	30-40	4C
Charcoal	18-25	35	4C
Chrome ore (Chromite)	125-140		4B
Cinders	40-45	35	*
Cinders, blast furnace	57	35	*
Cinders, coal	40	35	*
Clay, dry in lump, loose	60-70	35	4C
Coal, anthracite, egg	60	27	3B
Coal, anthracite, pea	60	35	2C
Coal, bituminous, sized	50	35	*
Coal, bituminous, run of mine	50	38	4C
Coal, bituminous, slack, dry	40-45	40	3D
Coal, bituminous, slack, wet	50	45	3D
Coffee, green bean	32	25	3B
Coke, mixed	23-32	18	4D
Coke, breeze	25-34	30-45	3C
Coke, petroleum	35-40	4C	
Concrete-			
cinder with Portland cement	115		4B
sand and gravel, Portland cement	150		4B
mix, wet	115-125		4B
Copper ore	120-160		*
Copperas	50		*
Cryolite, dust	75-90		1C
Cullet	80-120		4C
Dolomite, crushed	90-100		4B
Earth, common loam, dry loose	73	35	2C
Earth, common loam, moist	75-85	45	2D
Earth, mud, fluid	110		1A
Feldspar, — ½"	65-70	38	2C
Flue dust, blast furnace	110-125		*
Flourspar	80		3D
Glass, batch	90-100		4B
Gneiss	96		
Grains			
Barley (48 lb/bu)	38	23	2A
Corn, shelled (56 lb/bu)	45 21		3B
Flour, wheat (196 lb/bbl)	35-40		1D
Oats (32 lb/bu)	26	21	3B
Rye (56 lb/bu)	44	23	2A
Wheat (60 lb/bu)	48	28	3B
Granite	90-100		4B
Gravel, bank run	90-100	38	4C
Gravel, dry, screened	90-100		4B
Greenstone, broken	107		4D
Gypsum, irregular lumps	80-90	30	4B
Ilmenite, ore (nelsonite)	80		2B
Ilmenite, concentrate	150-155		*
Iron ore	120-180	35	*
Lignite, air-dried	45-50		*
Lime, ground	60	43	2D
Lime, pebble	50-55	30	4C
Limestone, broken	90-100	38	2B
Limestone, coarse, sized	95-100		3B
Limestone	75-85		1D

	Av. Wt. (lbs. per cu. ft.)	Angle of Repose (degrees)	Size & Flowability (See Key)
Manganese ore	125-140	39	*
Marble	95-105		4B
Meat scraps	50-55		5C
Metals			
Aluminum	165	31	
Brass, cast	512		
Copper, cast	542		
Cast iron	446		
Cast iron chips	130-200		3D
Wrought iron	485		
Steel	490		
Steel Chips, crushed	100-150		4B
Lead	710	30	*
Zinc	438	38	*
Mill Scale	125-150		5D
Molybdenum ore	100		*
Nickel ore	100		*
Paper pulp	60-62		*
Phosphate, rock	90-100	25-30	4B
Phosphate, pebble	100	40	2C
Potash ore, — 6"	75-85		2B
Potash ore, — 14 mesh	68-75		2B
Quartz, broken	95-100		4B
Rice, hulled or polished	45-48	20	2A
Salt, rock, crushed — ¾"	80		2B
Salt, granulated	70-80	25	4B
Sand, dry	90-110	35	2C
Sand, damp	110-130	45	2D
Sand, foundry	90	39	4C
Sandstone, quarried and piled	82		4C
Shale, crushed	90	39	3C
Sinter	100-135		*
Slag, furnace, crushed	80	25	1B
Slag, granulated	60-65	25	3B
Slate, crushed — ½"	80-90	28	3B
Soybeans	46	21-28	3B
Sugar, raw	55-65		2C
Sugar, refined	50-55		2B
Sulphur, ore	87		*
Sulphur, lumpy	75-85		4B
Sulphur, powdered	50-55		2B
Titanium Dioxide, dry, fine	50-55		*
Titanium sponge	60-70		5D
Traprock, crushed	105-110		4C
Trisodium phosphate, granular	60	26	2B
Trisodium phosphate, pulverized	50	40	2C
Triple super phosphate	50-55		2C
Wood and Wood Products			
Hardwood (solid)	35-75		
Softwood (solid)	25-40		
Woodchips, hard	15-30		5D
Woodchips, soft	12-20		5D
Woodchips, cooked	35		5D
Bark	10-20	45	5D
Hog fuel, 40% moisture	16-22		5D
Woodflour	16-36		*
Sawdust	10-13	36	*
Zinc ore, crushed	160	38	*

*Consult Crouse-Hinds Molded Products.

KEY

Size	Very fine — 100 mesh and under	1
	Fine — ⅛ inch and under	2
	Granular-Under ½ inch	3
	Lumpy — containing lumps over ½ inch	4
	Irregular — stringy, interlocking, mats together	5
Flowability	Very free flowing — angle of repose less than 20 degrees	A
	Free flowing — angle of repose 20 degrees to 30 degrees	B
	Average flowing — angle of repose 30 degrees to 45 degrees	C
	Sluggish — angle of repose 45 degrees and over	D

Table IX

BELT CAPACITY TABLE — TROUGHING ANGLE 25° SURCHARGE ANGLE 20°

Tons per hour **Table calculated On 20° Surcharge.**

Belt Width	Weight Per Cu. Ft. Of Mat'l. (Lbs.)	LBS. Ft.	50 FPM	100 FPM	150 FPM	200 FPM	250 FPM	300 FPM	350 FPM	400 FPM	450 FPM	500 FPM	600 FPM
16"	25	3	5	11	16	22	27	33					
	35	5	7	15	23	30	38	46					
	50	7	10	21	32	43	54	65					
	75	10	16	32	49	65	82	98					
18"	25	4	7	14	21	28	36	43	50	57			
	35	6	10	20	30	40	50	60	70	80			
	50	9	14	28	43	57	72	86	100	115			
	75	14	21	43	64	86	108	129	151	172			
20"	25	6	9	18	27	36	46	55	64	73			
	35	8	12	25	38	51	64	77	90	103			
	50	12	18	36	55	73	92	110	128	147			
	75	18	27	55	82	110	138	165	193	220			
24"	25	9	13	27	41	55	69	83	97	111	125	139	166
	35	13	19	39	58	78	97	117	136	156	175	195	234
	50	18	27	55	83	110	138	166	193	221	249	277	332
	75	27	41	83	124	166	208	249	291	332	374	416	499
	100	36	55	110	166	221	276	332	387	443	498	553	664
	125	46	69	138	207	277	346	415	485	554	623	693	881
	150	55	83	166	249	332	416	499	582	665	748	832	998
30"	25	15	22	45	67	90	113	135	158	180	203	226	271
	35	21	31	63	94	126	158	189	221	252	284	316	379
	50	30	45	90	135	180	225	270	315	360	405	451	541
	75	45	67	135	203	270	338	406	473	541	609	677	812
	100	60	90	180	270	360	451	541	631	721	811	902	1082
	125	75	112	225	338	451	564	676	789	902	1015	1128	1353
	150	90	135	270	406	541	677	812	947	1083	1218	1354	1624
36"	25	22	33	66	100	133	167	200	233	267	300	334	400
	35	31	46	93	140	187	234	280	327	374	421	468	561
	50	44	66	133	200	266	333	400	466	533	600	667	800
	75	66	100	200	300	400	500	600	700	800	900	1001	1201
	100	88	133	266	400	533	667	801	934	1068	1201	1335	1602
	125	111	166	333	500	667	834	001	1168	1385	1502	1669	2002
	150	133	200	400	600	801	1001	1201	1402	1602	1802	2003	2403
42"	25	30	46	92	138	185	231	277	324	370	416	463	555
	35	43	64	129	194	259	324	388	453	518	583	648	777
	50	61	92	185	277	370	463	555	643	740	833	926	1111
	75	92	138	277	416	555	694	833	972	1111	1250	1389	1666
	100	123	185	370	555	740	926	1111	1296	1481	1666	1852	2222
	125	154	231	463	694	926	1157	1389	1620	1852	2083	2315	2778
	150	185	277	555	833	1111	1389	1666	1944	2222	2500	2778	3333
48"	25	40	61	122	184	245	307	368	429	491	522	614	736
	35	57	86	172	258	344	430	516	602	688	774	860	1032
	50	81	122	245	368	491	614	736	859	982	1105	1228	1473
	75	122	184	368	552	736	921	1105	1289	1473	1657	1842	2210
	100	163	245	491	736	982	1227	1473	1719	1964	2210	2455	2947
	125	204	307	614	921	1228	1535	1842	2149	2456	2763.	3070	3684
	150	245	368	736	1105	1473	1842	2210	2578	2947	3315	3684	4420
54"	25	52	78	157	235	314	393	471	550	628	707	786	943
	35	73	110	220	330	440	550	660	770	880	990	1000	1220
	50	104	157	314	471	628	785	942	1099	1257	1414	1571	1885
	75	157	235	471	707	943	1179	1414	1650	1886	2122	2358	2829
	100	209	314	528	943	1257	1571	1886	2200	2515	2829	3143	3772
	125	261	393	786	1179	1572	1965	2358	2751	3144	3537	3930	4716
	150	314	471	943	1414	1886	2358	2829	3301	3772	4244	4716	5659
60"	25	65	97	195	293	391	489	587	685	783	881	979	1174
	35	91	137	274	411	548	685	822	959	1096	1233	1371	1645
	50	130	195	391	587	782	978	1174	1369	1565	1761	1957	2348
	75	195	293	587	880	1174	1468	1761	2055	2348	2642	2936	3523
	100	260	391	782	1174	1565	1957	2348	2740	3131	3523	3914	4697
	125	325	489	978	1467	1957	2446	2936	3425	3914	4404	4893	5872
	150	391	587	1174	1761	2349	2936	3523	4111	4698	5285	5873	7046

Table X

BELT CAPACITY TABLE — TROUGHING ANGLE 35° SURCHARGE ANGLE 20°

Tons per hour

Table calculated On 20° Surcharge.

Belt Width	Weight Per Cu. Ft. Of Mat'l. (Lbs.)	LBS. Ft.	50 FPM	100 FPM	150 FPM	200 FPM	250 FPM	300 FPM	350 FPM	400 FPM	450 FPM	500 FPM	600 FPM
24"	25	11	17	34	51	68	85	102	119	136	153	170	204
	35	15	23	47	71	95	119	142	166	190	214	238	285
	50	22	34	68	102	136	170	204	238	272	306	340	408
	75	34	51	102	153	204	255	306	357	408	459	510	612
	100	45	68	135	203	271	339	407	475	543	611	679	815
	125	56	85	170	255	340	425	510	595	680	765	850	1020
	150	67	102	204	306	408	510	612	714	816	918	1020	1224
30"	25	18	27	55	83	111	139	166	194	222	250	278	333
	35	25	38	77	116	155	194	233	272	311	350	389	466
	50	37	55	111	166	222	277	333	388	444	499	555	666
	75	55	83	166	249	333	416	499	583	666	749	833	999
	100	73	111	221	332	443	554	665	776	887	998	1109	1331
	125	92	138	277	416	555	694	832	971	1110	1249	1388	1665
	150	111	166	333	499	666	833	999	1166	1332	1499	1666	1999
36"	25	27	41	82	123	164	205	246	287	328	369	411	493
	35	38	57	115	172	230	287	345	402	460	517	575	690
	50	54	82	164	246	328	411	493	575	657	739	822	986
	75	82	123	246	369	493	616	739	863	986	1109	1233	1479
	100	109	164	328	493	657	821	986	1150	1315	1479	1643	1972
	125	136	205	411	616	822	1027	1233	1438	1644	1849	2055	2466
	150	164	246	493	739	986	1233	1479	1726	1972	2219	2466	2959
42"	25	38	57	114	171	228	285	342	399	456	513	570	684
	35	53	79	159	239	319	399	478	558	633	718	798	957
	50	75	113	227	341	455	569	683	797	911	1025	1139	1366
	75	113	170	341	512	683	854	1025	1196	1367	1538	1709	2050
	100	151	227	455	683	911	1139	1366	1594	1822	2050	2278	2733
	125	189	284	569	854	1139	1424	1709	1994	2279	2564	2849	3418
	150	227	341	683	1025	1367	1709	2051	2393	2735	3077	3419	4102
48"	25	50	75	151	226	302	377	453	528	604	679	755	906
	35	70	105	211	317	422	528	634	739	845	951	1057	1268
	50	100	151	302	453	604	755	906	1057	1208	1359	1510	1812
	75	150	226	453	679	906	1132	1359	1585	1812	2038	2265	2718
	100	201	302	603	905	1207	1509	1811	2113	2415	2717	3019	3623
	125	251	377	755	1132	1510	1887	2265	2642	3020	3397	3775	4530
	150	301	453	906	1359	1812	2265	2718	3171	3624	4077	4530	5436
54"	25	64	96	193	289	386	483	579	676	772	869	966	1159
	35	90	135	270	405	540	676	811	946	1081	1216	1352	1622
	50	128	193	386	579	772	966	1159	1352	1545	1738	1932	2318
	75	193	289	579	869	1159	1449	1738	2028	2318	2608	2898	3477
	100	257	386	772	1159	1545	1932	2318	2705	3091	3478	3864	4637
	125	321	483	966	1449	1932	2415	2898	3381	3864	4347	4830	5796
	150	386	579	1159	1738	2318	2898	3477	4057	4636	5216	5796	6955
60"	25	80	120	240	361	481	602	722	842	963	1083	1204	1444
	35	112	168	337	505	674	843	1011	1180	1348	1517	1686	2023
	50	160	240	481	722	962	1203	1444	1684	1925	2166	2407	2888
	75	240	361	722	1083	1444	1805	2166	2527	2888	3249	3611	4333
	100	320	481	962	1444	1925	2406	2888	3669	3851	4332	4813	5776
	125	400	601	1203	1805	2407	3009	3610	4212	4814	5416	6018	7221
	150	481	722	1444	2166	2888	3611	4333	5055	5777	6499	7222	8666

BELT CAPACITIES

When computing belt capabilities (tons per hr.), the tables shown below should be used as a guide. The tables are calculated with a 20° surcharge, for computing various surcharge angles, multiply capacity by appropriate factor in table XI.

Table XI

Surcharge Angle	Multiply Capacity By
0°	.68
5°	.76
10°	.83
15°	.92
20°	1.00
25°	1.08
30°	1.17

Table XI
COMPARISON OF TROUGHED IDLER CAPACITIES
20° Surcharge

Troughing Angle	Typical TPH	Percent Increased Capacity Over 10°	Percent Increased Capacity Over 20°	Percent Increased Capacity Over 25°
0°	90	—	—	—
20°	105	16%	—	—
25°	117	30%	11%	—
35°	135	50%	29%	15%

EXAMPLE: Increasing troughing angle from 20° to 25° would yield an increase of 11% total tons per hour.

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