CHAIN MATERIALS

For more detailed material information, see page EM - MT - 9 or the Appendix located at the end of this manual.

Materials vary per chain series; see Product Catalog to determine standard versus special materials.

AS (Anti-Static)

⇨An electrically conductive acetal formulated to reduce or eliminate nuisance static charge

⇨**ALWAYS** contact Rexnord Application Engineering for assistance

BWR (Black Wear Resistant)

⇨BWR may extend chain life up to 5 times in comparison to other plastic materials in applications such as conveying rough machined parts

CR (Extreme Chemical Resistant)

⇨Fluorinated polymer which is chemically resistant to high concentrations of oxidizing agents, acids and bases

DUV, HUV & LUV (Ultraviolet Resistant)

⇨Specially formulated materials

⇨Used for outdoor applications with direct exposure to the sun or UV radiation

⇨DUV - Acetal, HUV - Polypropylene, LUV - Polyethylene

ESD (Electrostatic Dissipative)

⇨Polypropylene formulated for conveying sensitive products such as electronics and computer chips where controlling static charge or static decay is critical

⇨**ALWAYS** contact Rexnord Application Engineering for assistance

FR (Flame Retardant)

⇨Flame retardant polyester that meets the requirements of UL Standard 94 V-0 rated combustion

HP™ & WHP (High Performance)

⇨Patented blend of acetal specifically formulated for dry running conveyors due to excellent friction characteristics

HS (Heat Stabilized)

⇨Nylon resin designed for environments that contain hot water spray (rinser, sterilizer and pasteurizer applications)

HT, WHT, KHT, BHT, HTB & RHT (High Temperature)

⇨Polypropylene formulated for high temperature and general applications in both wet and dry conditions

⇨Excellent chemical resistance

LF & WLF (Low Friction)

⇨Patented blend of acetal provides good wear resistance and long service life due to the low coefficient of friction

MR (Melt Resistant)

⇨A nylon material with a high melting point used to prevent hot objects (product temperature up to 375° F (190° C)) from melting the top of the chain

P (Chemical Resistant)

⇨A polyester formulated to reduce or eliminate material degradation in applications where chemicals such as chlorine and phosphorous are present in moderate concentrations

PS™ (Platinum Series™)

⇨Patented blend of acetal specially formulated for high speed conveying applications

TC (Tough Composite)

⇨Specially formulated, high strength, toughened composite material

⇨Excellent for high speed case incline and decline conveyors

⇨Excellent impact and chemical resistance

UHS™ (Ultra High Strength)

⇨Patented polypropylene composite that allows for increased load carrying capacity and reduced stretch at elevated temperatures

⇨Ideal for heavy duty pasteurizer, sterilizer and cooler applications

WX (Abrasion Resistant)

⇨A nylon material formulated to be used in abrasive applications where chain is subjected to abrasives such as glass, sand and dirt

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CHAIN MATERIALS

WLT & BLT (Low Temperature)

⇨Polyethylene formulated to retain toughness, impact strength and ductility in both dry and wet conditions
⇨Good chemical resistance
⇨Available in white and blue

WSM, BSM & SMB (Cut Resistant)

⇨Tough acetal material formulated for abrasive and impact loading applications
⇨Cut resistant material commonly used in the meat processing industry on cutting, boning and trimming lines
⇨Available in white, black and blue

MICROBAN® ANTIMICROBIAL PRODUCT PROTECTION AND MICROBAN® ANTIMICROBIAL PRODUCT PROTECTION DETECTABLE MATERIALS

WHA & BHA (High Temperature Antimicrobial) ***

⇨Specially formulated polypropylene material that inhibits the growth of bacteria, mold and mildew that can cause degradation of the chain
⇨Developed specifically for chains used in food processing
⇨Available in white and blue

WLA & BLA (Low Temperature Antimicrobial) ***

⇨Specially formulated polyethylene material that inhibits the growth of bacteria, mold and mildewthat can cause degradation of the chain
⇨Developed specifically for chains used in food processing
⇨Available in white and blue

WSA, BSA & GSA (Cut Resistant Antimicrobial) ‡

⇨Specially formulated cut and abrasive resistant acetal material that inhibits the growth of bacteria, mold and mildew that can cause degradation of the chain
⇨Developed specifically for chains used in food processing
⇨Available in white, blue and gray

GLD & RLD (Low Temperature Detectable) ***

⇨A patented blend of polyethylene antimicrobial additive and non-ferrous metal particulate
⇨Allows for detection as it passes through a metal detector in dry and frozen food applications
⇨Available in gray and red

THD (High Temperature Detectable) ***

⇨A patented blend of polypropylene antimicrobial additive and non-ferrous metal particulate
⇨Allows for detection as it passes through a metal detector in dry and frozen food applications

CAUTION

Since materials vary in strength, refer to the Product Catalog for specific chain / material strengths when changing out materials.

These materials will not protect the user against food-borne illness. Formulated to inhibit the growth of bacteria, mold and mildew that may cause discoloration, odor or degradation of the Rex® MatTop® chain. Always maintain good hygiene, proper cleaning procedures are still required.
Microban is a registered trademark of Microban Products Company.

*** These materials meet the end-test requirements as specified by FDA 21 CFR 177.1520 (c), the FDA requirement for polyolefin materials intended for food contact. All components of these materials are either compliant for food contact as listed by the FDA or regulated by the EPA.

‡ All components used in the formulation of Microban Antimicrobial material have federal regulatory approval for food contact.

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FRICTION BETWEEN CHAIN AND PRODUCT (Fm)

NR denotes "not recommended"
Dash denotes "combination not tested"

Chain Material		Product Material						
Chain Material	Lubrication Condition	Aluminum	Glass	Returnable Glass Bottles	Non-Returnable Glass Bottles	Paper	Plastic (including PET)	Steel
AS	Dry	0.25	0.20	0.27	0.20	0.33	0.25	0.30
	Water	0.17	0.15	0.18	0.15	0.20	0.20	0.22
	Soap & Water	0.12	0.10	0.14	0.10	0.15	0.15	0.15
	Oil	-	-	-	-	-	-	0.10
BWR	Dry	0.25	0.20	0.27	0.20	0.33	0.25	0.30
	Water	NR	NR	NR	NR	NR	NR	NR
	Soap & Water	NR	NR	NR	NR	NR	NR	NR
	Oil	NR	NR	NR	NR	NR	NR	NR
CR	Dry	0.25	0.20	0.27	0.20	0.33	0.25	0.30
	Water	0.17	0.15	0.18	0.15	NR	0.20	0.22
	Soap & Water	0.12	0.10	0.14	0.10	NR	0.15	0.15
	Oil	-	-	-	-	NR	-	0.10
DUV	Dry	0.25	0.22	0.27	0.22	0.33	0.30	0.30
	Water	0.17	0.17	0.18	0.17	NR	0.25	0.22
	Soap & Water	0.12	0.10	0.14	0.10	NR	0.20	0.15
	Oil	-	-	-	-	NR	-	0.10
ESD	Dry	0.28	0.20	0.29	0.20	0.35	0.25	0.35
	Water	0.19	0.17	0.21	0.15	NR	0.20	0.25
	Soap & Water	0.16	0.10	0.14	0.10	NR	0.15	0.20
	Oil	-	-	-	-	NR	-	0.10
FR	Dry	0.25	0.20	0.27	0.20	0.33	0.33	0.30
	Water	0.17	0.15	0.18	0.15	NR	NR	0.22
	Soap & Water	0.12	0.10	0.14	0.10	NR	NR	0.15
	Oil	-	-	-	-	NR	NR	0.10
HP™, WHP	Dry	0.18	0.13	0.16	0.12	0.23	0.18	0.18
	Water	0.14	0.12	0.16	0.11	NR	0.16	0.16
	Soap & Water	0.12	0.10	0.14	0.10	NR	0.14	0.13
	Oil	-	-	-	-	NR	-	0.10
HS	Dry	0.25	0.20	0.27	0.20	0.33	0.25	0.30
	Water	0.17	0.15	0.18	0.15	NR	0.20	0.22
	Soap & Water	0.12	0.10	0.14	0.10	NR	0.15	0.15
	Oil	-	-	-	-	NR	-	0.10
HT, BHA, BHT, HTB, KHT, RHT, THD, WHA, WHT	Dry	0.28	0.20	0.29	0.20	0.35	0.25	0.35
	Water	0.19	0.17	0.21	0.15	NR	0.20	0.25
	Soap & Water	0.16	0.10	0.14	0.10	NR	0.15	0.20
	Oil	-	-	-	-	NR	-	0.10
HUV	Dry	0.28	0.20	0.29	0.20	0.35	0.25	0.35
	Water	0.19	0.17	0.21	0.15	NR	0.20	0.25
	Soap & Water	0.16	0.10	0.14	0.10	NR	0.15	0.20
	Oil	-	-	-	-	NR	-	0.10
LF, WLF	Dry	0.20	0.15	0.20	0.15	0.30	0.20	0.25
	Water	0.15	0.13	0.16	0.13	NR	0.18	0.20
	Soap & Water	0.12	0.10	0.14	0.10	NR	0.15	0.15
	Oil	-	-	-	-	NR	-	0.10
LUV	Dry	0.22	0.18	0.24	0.18	0.30	0.22	0.28
	Water	0.17	0.14	0.17	0.14	NR	0.18	0.22
	Soap & Water	0.12	0.10	0.14	0.10	NR	0.15	0.15
	Oil	-	-	-	-	NR	-	0.10
MR	Dry	0.25	0.20	0.27	0.20	0.33	0.25	0.30
	Water	NR	NR	NR	NR	NR	NR	NR
	Soap & Water	NR	NR	NR	NR	NR	NR	NR
	Oil	NR	NR	NR	NR	NR	NR	NR
P	Dry	0.25	0.20	0.27	0.20	0.33	0.25	0.30
	Water	0.17	0.15	0.18	0.15	NR	0.20	0.22
	Soap & Water	0.12	0.10	0.14	0.10	NR	0.15	0.15
	Oil	-	-	-	-	NR	-	0.10
PS™	Dry	0.18	0.12	0.16	0.16	0.23	0.16	0.18
	Water	0.14	0.12	0.16	0.16	NR	0.15	0.16
	Soap & Water	0.12	0.10	0.14	0.14	NR	0.14	0.13
	Oil	-	-	-	-	NR	-	0.10
TC	Dry	0.25	0.20	0.27	0.20	0.33	0.25	0.30
	Water	0.17	0.15	0.18	0.15	NR	0.20	0.22
	Soap & Water	0.12	0.10	0.14	0.10	NR	0.15	0.15
	Oil	-	-	-	-	NR	-	0.10
UHS™	Dry	0.28	0.35	0.47	0.35	0.40	0.30	0.35
	Water	NR	NR	NR	NR	NR	NR	NR
	Soap & Water	NR	NR	NR	NR	NR	NR	NR
	Oil	NR	NR	NR	NR	NR	NR	NR
WLT, BLA, BLT, GLD, RLD, WLA	Dry	0.22	0.18	0.24	0.18	0.30	0.22	0.28
	Water	0.17	0.14	0.17	0.14	NR	0.18	0.22
	Soap & Water	0.12	0.10	0.14	0.10	NR	0.15	0.15
	Oil	-	-	-	-	NR	-	0.10
WSM, BSA, BSM, GSA, SMB, WSA	Dry	0.25	0.20	0.27	0.20	0.33	0.25	0.30
	Water	0.17	0.15	0.18	0.15	NR	0.20	0.22
	Soap & Water	0.12	0.10	0.14	0.10	NR	0.15	0.15
	Oil	-	-	-	-	NR	-	0.10
WX	Dry	0.20	0.15	0.20	0.15	0.30	0.20	0.25
	Water	NR	NR	NR	NR	NR	NR	NR
	Soap & Water	NR	NR	NR	NR	NR	NR	NR
	Oil	NR	NR	NR	NR	NR	NR	NR

All values shown in this table were obtained through product testing. Actual values may be higher or lower depending on environmental conditions.

Fm for LBP3000 MatTop® chain (typically) = 0.10; Fm for LBP1503 MatTop® chain (typically) = 0.11

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FRICTION BETWEEN CHAIN AND WEARSTRIP (Fw)

Chain Material		Wearstrip Material		
Chain Material	Lubrication Conditions	Steel and Stainless Steel	UHMWPE	Nylatron®
AS	Dry	0.30	0.25	0.25
	Water	0.23	0.21	0.21
	Soap & Water	0.15	0.15	0.15
	Oil	0.10	0.10	0.10
BWR	Dry	0.28	0.22	0.22
	Water	NR	NR	NR
	Soap & Water	NR	NR	NR
	Oil	0.10	0.10	0.10
CR	Dry	0.30	0.25	0.25
	Water	0.23	0.21	0.21
	Soap & Water	0.15	0.15	0.15
	Oil	0.10	0.10	0.10
D, WD	Dry	0.30	0.25	0.25
	Water	0.23	0.21	0.21
	Soap & Water	0.15	0.15	0.15
	Oil	0.10	0.10	0.10
DUV	Dry	0.30	0.25	0.25
	Water	0.23	0.21	0.21
	Soap & Water	0.15	0.15	0.15
	Oil	0.10	0.10	0.10
ESD	Dry	0.35	0.30	0.30
	Water	0.25	0.25	0.25
	Soap & Water	0.20	0.20	0.20
	Oil	0.10	0.10	0.10
FR	Dry	0.30	0.25	0.25
	Water	0.23	0.21	0.21
	Soap & Water	0.15	0.15	0.15
	Oil	0.10	0.10	0.10
HP™, WHP	Dry	0.22	0.17	0.17
	Water	0.20	0.16	0.16
	Soap & Water	0.15	0.14	0.14
	Oil	0.10	0.10	0.10
HS	Dry	0.30	0.28	0.28
	Water	0.25	0.23	0.23
	Soap & Water	0.18	0.18	0.18
	Oil	0.10	0.10	0.10
HT, BHA, BHT, HTB, KHT, RHT, THD, WHA, WHT	Dry	0.35	0.30	0.30
	Water	0.25	0.25	0.25
	Soap & Water	0.20	0.20	0.20
	Oil	0.10	0.10	0.10
HUV	Dry	0.35	0.30	0.30
	Water	0.25	0.25	0.25
	Soap & Water	0.20	0.20	0.20
	Oil	0.10	0.10	0.10
LF, WLF	Dry	0.25	0.20	0.20
	Water	0.20	0.18	0.18
	Soap & Water	0.15	0.15	0.15
	Oil	0.10	0.10	0.10
LUV	Dry	0.28	0.23	0.28
	Water	0.22	0.20	NR
	Soap & Water	0.15	0.15	NR
	Oil	0.10	0.10	0.10
MR	Dry	0.30	0.28	0.28
	Water	NR	NR	NR
	Soap & Water	NR	NR	NR
	Oil	0.10	0.10	0.10
P	Dry	0.30	0.25	0.25
	Water	0.23	0.21	0.21
	Soap & Water	0.15	0.15	0.15
	Oil	0.10	0.10	0.10
PS™	Dry	0.18	0.17	0.17
	Water	0.16	0.16	NR
	Soap & Water	0.13	0.14	NR
	Oil	0.10	0.10	0.10
S	Dry	0.50	0.40	0.40
	Water	NR	NR	NR
	Soap & Water	NR	NR	NR
	Oil	0.20	0.20	0.20
TC	Dry	0.30	0.25	0.25
	Water	0.23	0.21	0.21
	Soap & Water	0.15	0.15	0.15
	Oil	0.10	0.10	0.10
UHS™	Dry	0.50	0.40	0.40
	Water	0.40	0.30	0.30
	Soap & Water	0.20	0.20	0.20
	Oil	0.20	0.20	0.20
WLT, BLA, BLT, GLD, RLD, WLA	Dry	0.50	0.40	0.40
	Water	0.40	0.30	0.30
	Soap & Water	0.20	0.20	0.20
	Oil	0.20	0.20	0.20
WSM, BSA, BSM, GSA, SMB, WSA	Dry	0.50	0.40	0.40
	Water	0.40	0.30	0.30
	Soap & Water	0.20	0.20	0.20
	Oil	0.20	0.20	0.20
WX	Dry	0.25	0.20	0.20
	Water	NR	NR	NR
	Soap & Water	NR	NR	NR
	Oil	0.10	0.10	0.10

NR denotes “not recommended”
Dash denotes “combination not tested”

Friction between chain and wearstrip (Fw) must be adjusted when inclining / declining.
See page EM - MF - 27 (Multiflex section) for more information.

All values shown in these tables were obtained through product testing. Actual values may be higher or lower depending on environmental conditions.

Contact Rexnord Application Engineering for more information 1.262.376.4800

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SPROCKET AND IDLER WHEEL DESIGNATIONS

Rexnord has developed a variety of sprocket and idler materials for various and unique applications. Sprockets are available in plastic and metallic varieties.

Plastic

Acetal

- Good corrosion and wear resistant properties
- One piece sprocket
- Temperature Range: -40° to +180° F (-40° to + 82° C)

Heat Stabilized Nylon

- Stabilized nylon based resin for environ ments that contain hot water spray rinser, sterilizer and pasteurizer applications
- Resists thermal degradation from 212° F (100° C) water spray
- Available in select one piece styles only
- Temperature Range: -40° to + 220°F (-40° to +104° C)

Glass Reinforced Nylon

- Split sprocket design for ease in assembly and disassembly
- Excellent wear resistant properties
- Temperature Range: -40° to +180° F (-40° to + 82° C)

Chemical Resistant

- Used in applications where chemical resistance is required (i.e. chlorine, phosphorous)
- PE: Temperature Range: -100° to +80° F (-73° to + 27° C)
- CR: Temperature Range: +40° to +240° F (+4° to +116° C)

KU and KUS (Machined Plastic)

- KU and KUS do not designate material
- Sprockets machined in a variety of plastic materials
- Flush side for ease in cleaning
- Sprockets come in a wide variety of pitch diameters and bore size

Metallic

Semi-Steel (Cast Iron)

- Used in non-corrosive, abrasive environments such as broken glass, metal chips
- One piece sprocket
- Temperature Range: -40 to +350° F (-40° to +177° C)

SS (Stainless Steel)

- Used in corrosive, abrasive environments such as vegetable processing, snack foods
- Available in select chains only
- Available in split and one piece designs
- Temperature Range: -100 to +800° F (-73° to + 427° C)

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WEARSTRIP MATERIALS

Proper chain and wearstrip selection will provide optimum life. Since a function of the wearstrip is to lower friction and to reduce wear, it is recommended to give careful consideration when selecting the material.

The following general guidelines will help in selecting the proper material for your application.

Acetal

⇨Not recommended for use with acetal chains; it is best not to run identical plastics together

Aluminum

⇨**NOT RECOMMENDED** due to poor wear resistance

Bronze and Brass

⇨Sometimes used with stainless steel chains

⇨Typically used for non-sparking and anti-static conditions

⇨For bronze - recommended one half hard temper (Rb 58)

⇨For brass - recommended one half hard (Rb 70 Min) to full hard (Rb 82) temper

Nylatron® (Nylon with Moly Filler)

⇨Recommended for dry applications due to low wear and low friction

⇨Especially suited for dry operation on thermoplastic side-flexing chain corners due to its high PV (Pressure-Velocity) rating

⇨Typically not recommended in wet applications because it will absorb moisture and expand (if used in wet applications, allow clearance for expansion and movement of fasteners)

Lubricant Impregnated Wood

⇨Commonly used in dry abrasive applications (i.e. glass, paper)

⇨Not recommended in wet applications

Steel

⇨Recommended for non-corrosive, abrasive or high temperature applications

⇨Abrasive particles are less likely to imbed in metal wearstrips in comparison to plastic

⇨A cold rolled plain carbon steel is recommended

⇨Heat treated grades - hardened to 25 to 30 Rc is recommended

Stainless Steel

⇨Recommended for corrosive, abrasive or high temperature applications

⇨Abrasive particles are less likely to imbed in metal wearstrips in comparison to plastic

⇨A cold rolled austenitic grade is recommended which offers the best corrosion resistant properties

⇨Recommended one quarter hard temper (25 to 35 Rc)

⇨Softer annealed grades of austenitic are **NOT RECOMMENDED**. Adverse interaction between the chain material and the soft stainless steel might develop. When this happens, the resulting wear debris consists almost entirely of finely divided stainless steel particles, nearly black in color, similar to molydisulfide or graphite. The wear of the stainless steel might be rapid while the thermoplastic chain by contrast exhibits only slight wear

⇨Martensitic stainless steel can also be used when heat treated (25 to 35 Rc); however, it is not as corrosion resistant as austenitic

⇨Hardness is more critical than grade for better wear resistance

Teflon®

⇨Recommended only for very low speed - low load applications

UHMWPE (Ultra High Molecular Weight Polyethylene)

⇨Recommended for dry or wet applications on straight or side-flexing conveyors

⇨Not recommended for abrasive conditions where particles may imbed in the surface and wear the chain

⇨Provide lower coefficient of friction than metals

⇨Not affected by moisture and more resistant to chemicals than nylon

⇨UHMWPE materials can be supplied with various fillers:

- Ceramic / glass
- Conductive
- Oil / wax

CAUTION

Wearstrip surface finish is a critical aspect for overall chain life. A surface finish of 32 µ-in Ra is recommended for metal wearstrips and 125 µ-in Ra

Contact Rexnord Application Engineering for more information 1.262.376.4800

LUBRICATION

Lubrication is recommended whenever the application permits. It not only reduces friction, thereby reducing chain tension; but also, greatly improves the wear life of the chain and wearstrips. Lubrication offers a constant cleaning effect of both the chain and wearstrip and can also reduce static.

General Recommendations

⇨Lubrication should contact both the chain and wearstrip

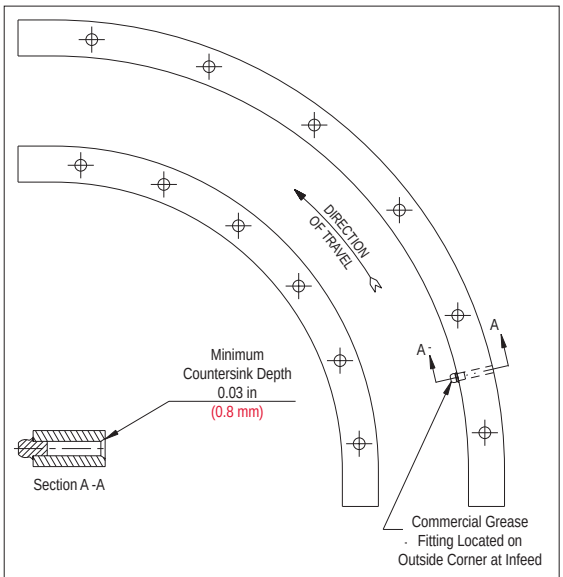
⇨When lubricating side-flexing Rex® MatTop® chains, the lubricant must be applied at the entrance of the outside corner track

General Types of Lubricants

⇨Water - Only utilize with corrosion resistant materials. Can be used as a general lubricant; however, it is not as effective as other types due to friction and chain cleaning properties

⇨Water soluble lubricants and soaps - Only utilize with corrosion resistant materials. These are excellent lubricants which also help clean the chain

⇨Oil base lubricants - These are vegetable, mineral oils or grease which offer high lubricity. Can be used with plastic or metal materials. Recommended to be used on all metal chains whenever practical. Food grade oils are available



Method of furnishing lubricant to chain thrust surface

Selective Lubrication

⇨In some applications, the presence of a lubricant cannot be tolerated. For these applications, it is recommended to utilize chains made of HP™ or PS™ acetal material with Nylatron® corners, which offers the lowest coefficient of friction

To eliminate or reduce lubrication, contact Rexnord Application Engineering to conduct a run dry survey. 1.262.376.4800.

For more information on lubrication types, compatibility, methods, contact a lubricant manufacturer.

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> Abrasive Applications
> Chemical Applications
> Dry Applications
> Extreme Temperature Applications
> Metal Detector Applications
> Metal Detectable Applications
> Impact Loading Applications
> High Speed Applications
> Long Length Conveyors / Pulsation Applications
> Static Environment Applications
> UV Applications

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ENVIRONMENTAL CONSIDERATIONS

Abrasive Applications

⇨Applications with the presence of dirt, sand, glass or metal particles can lead to premature wear of the conveying chain and wearstrips.

⇨Recommendations:

- Utilize wearstrips and chains with a hard wear surface
- If possible, use controls to minimize the amount of accumulation
- The use of WX chain material and metal sprockets can extend wearlife

Chemical Applications

⇨Make sure any chemicals or cleaners used on conveyors are compatible with chain, wearstrip and sprockets. See table on page EM - MT - 11 for more detailed compatibility information

Dry Applications

⇨Considerations to be taken when running dry:

- Product backline pressure
- Conveyor cleanliness
- Conveyor pulsation
- Increased component wear

Extreme Temperature Applications

⇨The recommended minimum and maximum operating temperatures for Rex® MatTop® chain and wearstrips can vary due to the presence of moisture

Material	Minimum Temperature Dry		Maximum Temperature Dry		Maximum Temperature Wet	
	°F	°C	°F	°C	°F	°C
Acetal	-40	-40	180	82	150	66
UHWMPE	-100	-73	180	82	160	71
Nylon	-40	-40	220	104	NR	NR
Stainless Steel	-100	-73	800	427	250	121
Steel	-40	-40	350	177	250	121
Lubricated Impregnated Wood	-50	-46	160	71	160	71

Metal Detector Applications

⇨Depending on the sensitivity of the metal detector, different materials can be used

Metal Detectable Applications

⇨Special materials are available with non-ferrous metal particulate that allow detection as they pass through a metal detector

Impact Loading Applications

⇨Polyethylene (LT) and Tough Composite (TC) materials are ideal for impact loading applications. A solid bed should be utilized in impact loading areas

High Speed Applications

⇨In any high speed application, the critical aspect of the conveyor is the corners. The concern with running the chain at high speeds is the PV (Pressure-Velocity) in the corners. If the PV limits are exceeded, the chain or corner track may become damaged due to the heat generated from the high speed and/or load. It is generally recommended to utilize Nylatron® corner tracks in conjunction with PS™ or HP™ materials or selective lubrication for these applications

Long Length Conveyors / Pulsation Applications

⇨Pulsation or "slip stick" of chain results in a jerking chain motion which can occur in long, slow speed and dry conveyors. Pulsation can create product stability problems in extreme cases. It can also result in premature chain elongation or the chain jumping drive sprocket teeth. As a general rule of thumb, it is recommended that conveyor lengths do not exceed 100 ft (30 m) per drive, regardless of loading. Rexnord also recommends a 150° minimum wrap on the head sprocket. If necessary, this can be maintained with the use of a snubber roller. However, if an application exceeds 100 ft (30 m), contact engineering for further assistance

Static Environment Applications

⇨Under certain conditions, thermoplastic can acquire a static nuisance charge. Static environments are classified as:

CAUTION

Class I: Static spark causes explosion - stainless steel chains are recommended

Class II: Static spark is a nuisance charge - low charge will provide slight shock or possible circuit damage

⇨All applications utilizing thermoplastic anti-static materials (i.e. AS, ESD) must be approved by Rexnord Application Engineering prior to quoting

Grounding is crucial for the system to reduce static charges.

UV Applications

⇨When conveyor chains are exposed to direct UV (Ultraviolet) or sunlight, UV stabilized materials should be utilized

Contact Rexnord Application Engineering for more information 1.262.376.4800

MATERIAL CHARACTERISTIC TABLE

Material Characteristics	HP™ WHP	LF WLF	WLT BLT GLD	HT BHT HTB KHT RHT THD WHT	BWR	AS	ESD	HS	P	CR	MR	DUV	HUV	LUV	FR	WSM BSM SMB	UHS™	WHA BHA	WSA BSA SMB	WLA BLA	TC	PS™	WX
Impact Resistant			■		■					■	■			■			■			■	■		■
Wear Resistant	■	■			■											■	■	■	■	■		■	■
Chemical Resistant*			■	■					■	■								■		■			
Strength	■	■		■	■			■		■	■	■	■			■	■		■			■	■
Low Frictional Characteristics	■	■																				■	
Capability to Run Dry in Corners	■	■			■																	■	■
Suitablity in Wet Environments	■	■	■	■				■	■	■		■	■	■	■	■	■	■	■	■	■	■	
Low Temperature Capability (to 40° F)	■	■	■		■			■			■	■		■		■			■	■		■	■
High Temperature Capabilities (to +180° F)	■	■		■	■	■	■	■	■	■	■	■	■			■		■	■			■	■
Ultra Violet Capabilities					■					■	■	■	■	■									■
Suitability for Class II (nuisance static)						■	■																
Suitability for Class I (exlosive static)																							
Non-magnetic Qualities	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Flame Retardance										■					■								
Capability to Convey Hot Products (to +375° F)											■												
FDA Approval	■	■	■	■					■	■						■		■	■	■		■	

HP™ = High Performance
WHP = White High Performance
LF = Low Friction
WLF = White Low Friction
BLT = Blue Low Temperature
HT = High Temperature
BHT = Blue High Temperature
HTB = Black High Temperature
KHT = Khaki High Temperature
RHT = Red High Temperature
WHT = White High Temperature
BWR = Black Wear Resistant
AS = Anti-Static
ESD = Electrostatic Dissipative
HS = Heat Stabilized
P = Chemical Resistant
CR = Chemical Resistant
MR = Melt Resistant
DUV = Ultraviolet Resistant
HUV = High Temperature Ultraviolet Resistant
LUV = Low Temperature Ultraviolet Resistant
FR = Flame Retardant
WSM = White Special Material
BSM = Black Special Material
SMB = Blue Cut Resistant Acetal
UHS™ = Ultra High Strength
WHA = White High Temerature with Microabn® Antimicrobial Product Protection
BHA = Blue High Temerature with Microabn® Antimicrobial Product Protection
WSA = White Special Material with Microabn® Antimicrobial Product Protection
BSA = Blue Special Material with Microabn® Antimicrobial Product Protection
GSA = Gray Special Materail with Microabn® Antimicrobial Product Protection
WLA = White Low Temerature with Microabn® Antimicrobial Product Protection
BLA = Blue Low Temerature with Microabn® Antimicrobial Product Protection
GLD = Gray Low Temperature Metal Detectable
RLD = Red Low Temperature Metal Detectable
THD = Tan Low Temperature Metal Detectable
TC = Tough Composite
PS™ = Platinum Series™
WX = Abrasion Resistant

*See Corrosion Resistance Guide on Page EM - TT - 11 for more details

Contact Rexnord Application Engineering for more information 1.262.376.4800

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SPECIAL APPLICATION CONSIDERATION

Pasteurizers / Coolers / Warmers

⇨Things to be taken into consideration include:

⇨Thermal expansion (see page EM - MT - 21 for details)

- Length and width
- Square or hex shafting

⇨Water flow

⇨Tracking

⇨Pasteurizer design manuals are available for more details utilizing 5997 or 9608 chains

CAUTION If double deck systems are utilized, careful consideration should be taken to ensure adequate clearance for product conveyability on the lower deck.

Vacuum Conveyors

⇨Things to be taken into consideration include:

- Percentage of open area required
- Hole patterns required
  - Footprint of product conveyed
- Standard vacuum chains are 5935, 4705 and 8505
- Other series available with drilled holes on a made-to-order (MTO) basis

NOTES

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CORROSION RESISTANT GUIDE

Common or Chemical Name	Carbon Steel	Austenitic	Acetal	Nylon & Nylatron®	Polyester	Chemically Resistant Fluorinated Polymer	Polypropylene	Polyethylene
	S	SS	AS, BSA, BSM, DUV, GSA, HP™, LF, PS™, SMB, WHP, WLF, WSA, WSM	BWR, HS, MR, WX	P, FR, TC	CR	BHA, BHT, ESD, HT, HTB, HUV, KHT, RHT, THD, UHS™, WHA, WHT	BLA, BLT, GLD, LUV, RLD, UHMWPE, WLA, WLT
Acetic Acid (over 5%-up to 50%)	U	M	U	M	S	S	S	S
Acetone	U	S	S	S	S	U	S	S
Alcohol	S	S	S	S	S	S	S	S
Ammonia	M	S	U	S	S	S	S	S
Beer	S	S	S	S	S	S	S	S
Beverages-Soft Drinks	S	S	S	S	S	S	S	S
Benzene	S	S	S	S	S	S	M	M
Brine (pickle)	U	M	M	M	S	S	S	S
Carbon Tetrachloride	M	M	S	S	S	U	M	M
Chlorine	U	U	U	U	S	S	S	S
Citric Acid	U	S	M	M	S	S	S	S
Cyclohexane	-	—	S	—	—	S	U	U
Ethyl Chloride	-	S	S	S	S	S	M	M
Formaldehyde	S	S	S	S	S	M	S	S
Formic Acid	U	U	U	U	S	S	S	S
Fruit Juices	U	S	S	S	S	S	S	S
Gasoline	S	S	S	S	S	S	M	M
Hexane	-	S	S	—	S	S	S	U
Hydrochloric Acid (up to 2%)	U	U	U	U	S	S	S	S
Hydrochloric Acid (up to 37%)	U	U	U	U	S	S	M	S
Hydrogen Peroxide	U	S	U	U	S	S	S	S
Iodine	U	U	U	U	U	M	M	M
Isopropanol (isopropyl alcohol)	S	S	S	S	S	S	S	S
Lactic Acid	U	S	S	M	S	M	S	S
Methylene Chloride	-	S	S	—	U	M	S	U
Milk	S	S	S	S	S	S	S	S
Muriatic Acid	U	U	U	U	S	S	M	S
Nitric Acid (low concentrations)	U	S	U	U	S	S	S	S
Oil (vegetable or mineral)	S	S	S	S	S	M	S	S
Ozonated Water	S	S	M	U	S	S	M	S
Paraffin	S	S	S	S	S	S	S	S
Phosphoric Acid (up to 10%)	U	S	U	U	S	S	S	S
Soap and Water	M	S	S	S	S	S	S	S
Sodium Chloride	U	M	S	S	S	S	S	S
Sodium Hydroxide (up to 25%)	U	S	S	U	U	M	S	S
Sodium Hypochlorite (Bleach)	U	U	U	U	S	S	S	S
Stearic Acid	U	S	M	S	S	S	S	S
Sulphuric Acid (up to 40%)	U	U	U	U	S	S	S	S
Toluene (Toluol)	S	S	M	S	S	M	S	U
Turpentine	-	S	S	S	S	S	S	U
Vegetable Juices	M	S	S	S	S	S	S	S
Vinegar	U	S	S	S	S	M	S	S
Water (fresh)	U	S	S	S	S	S	S	S
Whiskey	S	S	S	S	S	S	S	S
Wine	S	S	S	S	S	S	S	S
Xylene	S	S	S	S	S	S	U	M

Dash = Not Tested **M = Marginal** **U = Unsatisfactory** **S = Satisfactory**

General Rules of Thumb:

With acetal products, do not use cleaning or lubricating agents with a pH below 4 or above 10.

This table is based on data available by various material suppliers.

Contact Rexnord Application Engineering for more information 1.262.376.4800

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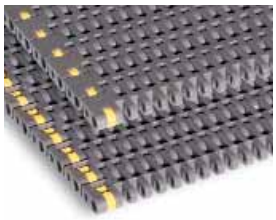
Rex® MatTop® CHAIN STYLES

Rex® MatTop® Chain Surface Styles



Solid Top

⇨Not necessarily 0% open area
⇨General use



Perforated Top

⇨Used where air or water flow is required
⇨Open area from 6 to 30%



Open Area

⇨Used where the maximum amount of air or water flow is required
⇨Open area larger than 30%



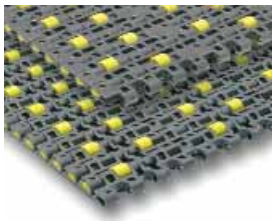
Raised Rib

⇨Used where very smooth head transfers are required
⇨Utilized with transfer combs



Textured Top

⇨Used to reduce products from sticking top the chain



LBP

⇨Low backline pressure used to minimize backline pressure between products



Transverse LBP

⇨Low backline pressure used to transfer products at 90°

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Rex® MatTop® CHAIN STYLES

Pin Retention Styles



Soldered Head

⇨Excellent pin retention
⇨Pins are not reusable
⇨Soldering iron required
⇨See table below for Rex® MatTop® chain pin soldering tips



Plug-Plug Plug-Blind

⇨Reusable pin
⇨No special tools required
⇨Pin access on one side of the chain for plug-blind design
⇨Pin access on both sides of the chain for plug-plug design



Plug-TAB

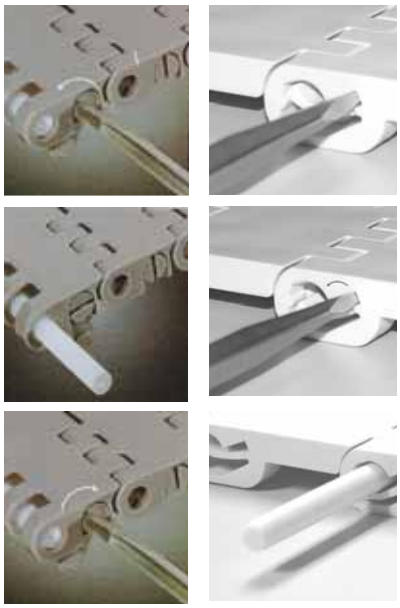
⇨Reusable pin
⇨No special tools required
⇨Plug access from top surface on both sides of chain
⇨Pin access on both sides of chain



Plug-No TAB

⇨Reusable pin
⇨Needle nose plier required
⇨Plug access from top surface on both sides of chain
⇨Pin access on both sides of chain

MatTop® Pin Soldering Tips		
Part Number	Description	Chain Series
114-2047-1	Solder Tip 3/16 in	2100, 5935, 5936, 6938
114-2128-1	Solder Tip 3/8 in	4705, 4706, 4707, 5966, 5996



TwistLock® Pin Retention

⇨Plugs are integral part of chain
⇨Reusable pin
⇨No special tools required
⇨Pin access on both sides of chain
⇨Patented design



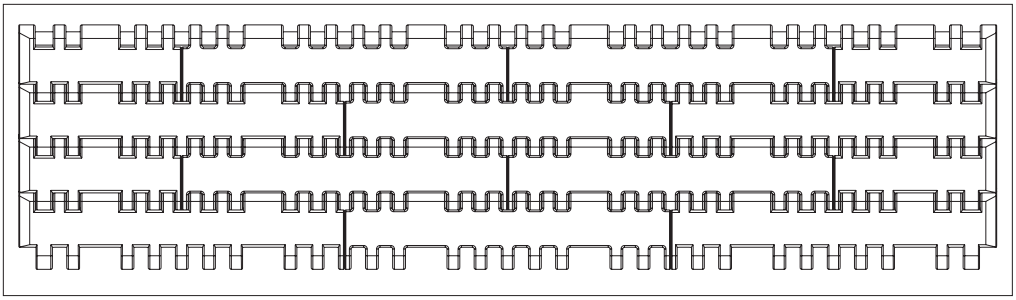
Offset Pin Hole

⇨No plugs
⇨Reusable pin
⇨No special tools required
⇨Pin access on both sides of the chain
⇨Patented design

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Rex® MatTop® CHAIN STYLES

Assembled to Width



⇨Width determined by customer order

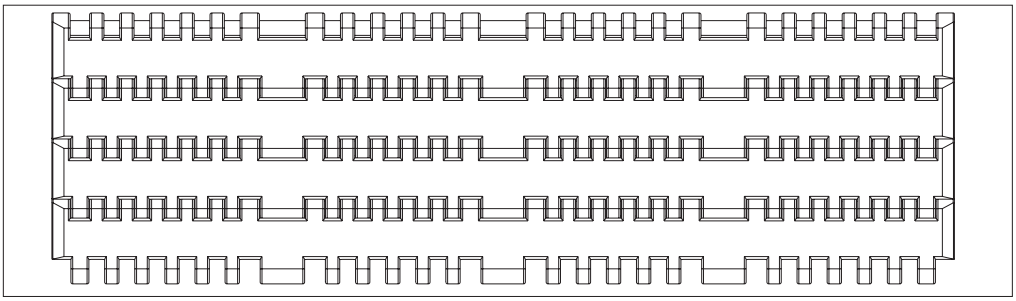
⇨Rexnord stocks families of modules

⇨Refer to table on page EM - MT - 54 for specific widths

⇨Bricked construction

⇨Assembled to customer order

Molded to Width (MTW)



⇨Available in standard Rex® TableTop® chain widths (i.e. 3-1/4 in, 4-1/2 in, 6 in, 7-1/2 in)

⇨Refer to table on page EM - MT - 54 for specific widths

⇨Available with or without Positrack™ tracking guides in some chain styles

⇨Stocked in 10 ft lengths

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CONVEYOR DESIGN RECOMMENDATIONS

Straight Running Configuration

⇨A long conveyor with a single drive is the simplest and most ideal design. Sometimes several short conveyors are required due to application constraints

Side-flexing Configuration

⇨Because a straight conveyor is not always possible due to flow processes, obstructions in the plant, the designer can incorporate a side-flexing conveyor, which traverses one or more curves

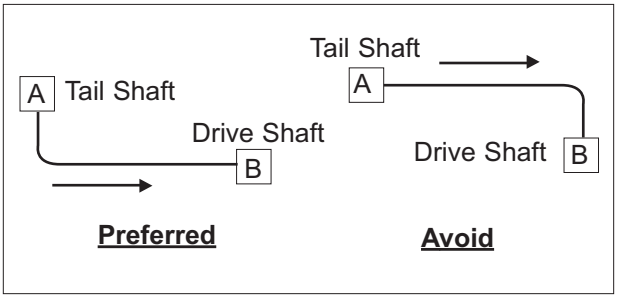
⇨When conveying products 90°, the following methods can be utilized:

- DTS® transfer (DynamicTransfer System™)
- Side-flexing Rex® TableTop® or Rex® MatTop® chain
- Deadplate transfer
- LBP chain with transverse rollers

For more information on transfer details (see page EM - MT - 23 - 28).
For transfers other than 90°, side-flexing chains must be utilized.

⇨When planning a side-flexing conveyor layout, the designer must consider the following factors that affect chain life:

- Minimize the number of corners and the angle of each corner whenever possible
- Selective lubrication in the corners should be considered for certain applications, which will prevent excessive noise and pre mature wear to the chain or corner
- When conveying from Point A to Point B, design the conveyor so that the drive is positioned furthest from the last corner (see drawing), resulting in lower chain tension and maximizing chain life



In general, the straight section between the corner and the drive shaft must be at least 18 in (457 mm) to allow adequate room for the catenary (see page EM - MT - 41). The tail shaft section should be at least 12 in (305 mm).

⇨When conveying products 90°, a single side-flexing conveyor offers the following advantages over two separate straight conveyors that have transfer plates between them:

- Eliminates deadplate transfers or turntables, preventing the product from slipping or stalling
- Minimizes tipping and jamming
- Decreases noise
- Reduces the cost of controls and maintenance by only requiring one drive motor

Incline / Decline Configuration

⇨General rules of thumb when designing incline or decline conveyors are as follows:

- Chain should not be pushed
- Catenary should be located after the drive shaft
- Drive shaft should be located at the top of the conveyor for incline conveyors
- Chains that use pushers, sideguards and high friction inserts need special requirements in the return section (see page EM - MT - 35-40 for examples)

Make sure that the entire chain path (carry, return, sprocket and catenary sag areas) has plenty of clearance for free chain travel. Make sure all frame and support members, piping, conduits and mounting hardware are well clear of chain path.

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CONVEYOR DESIGN RECOMMENDATIONS

Carry and Return Ways

⇨Guide clearance is critical for both straight and side-flexing chains, especially in extreme temperature applications (see page EM - MT - 21 for details). For guide clearance dimensions of side-flexing and Molded to Width (MTW) chains containing Positrack™ tracking guides, see tables on page EM - MT - 22 or the Product Catalog (8rxCAT-en)

✓ Offset rail, serpentine and chevron patterns are recommended to maximize chain life because they provide uniform wear across the full width of the chain.

⇨Rex® MatTop® chains can be supported in a variety of arrangements

CAUTION Allow for thermal expansion of chain (see page EM - MT - 21) and wearstrips (see page EM - MT - 32)

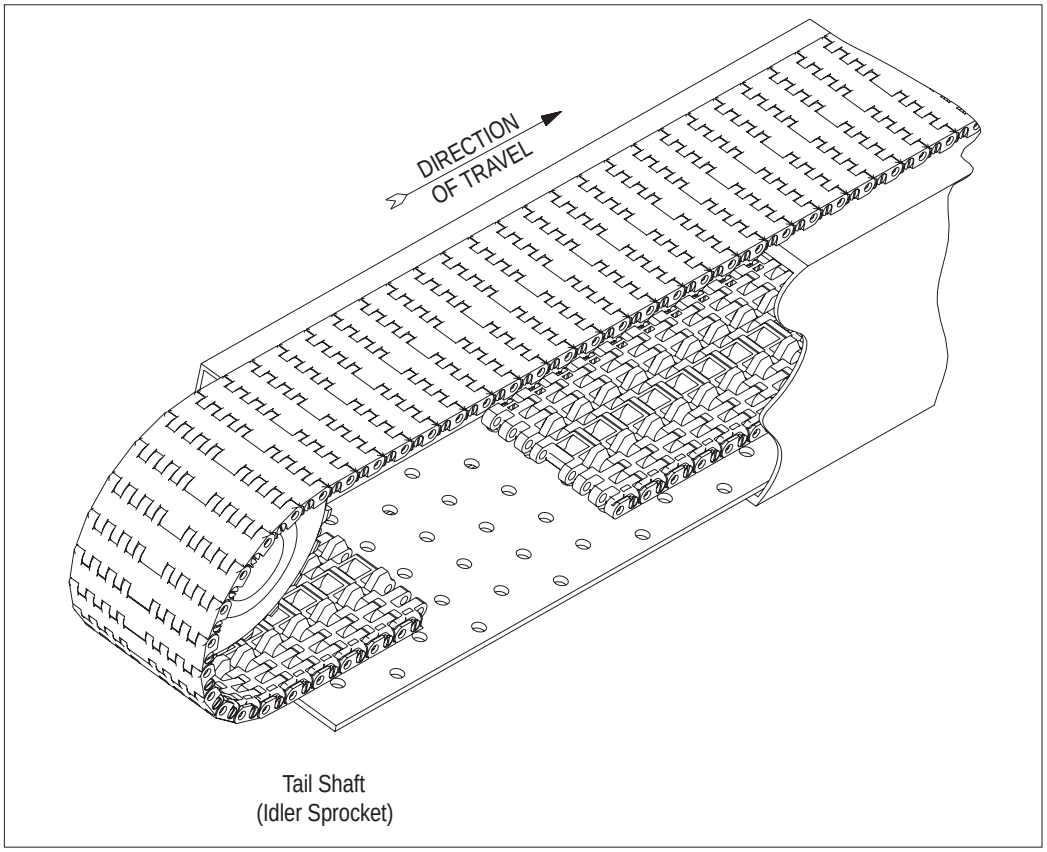
Full Width Sliding Carry or Return Ways

⇨Continuous sheets extend the full width of the chain and almost the entire length between the tail and drive sprockets

⇨Plates or sheets may be perforated with slots or holes to allow for drainage and the passage of foreign materials

⇨Not recommended as a return support for wet applications, since a "suction" can be created between the chain and bed

⇨Recommended in areas of high impact loading



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CONVEYOR DESIGN RECOMMENDATIONS

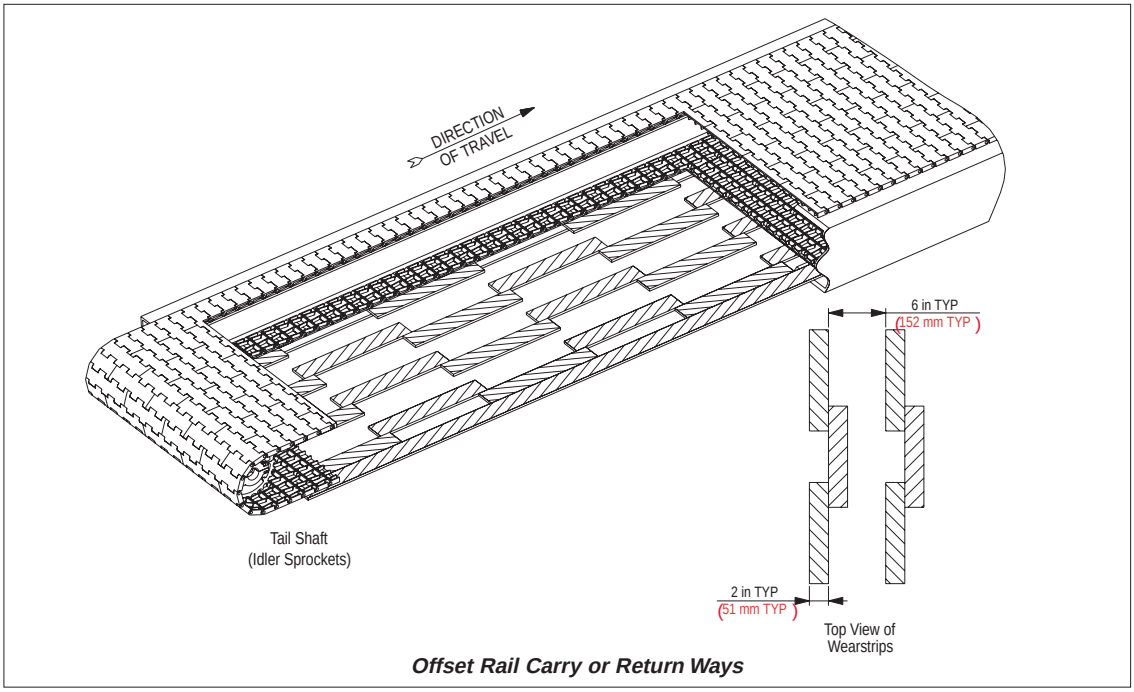
Carry and Return Ways

Offset Rail Style and Serpentine Carry or Return Ways

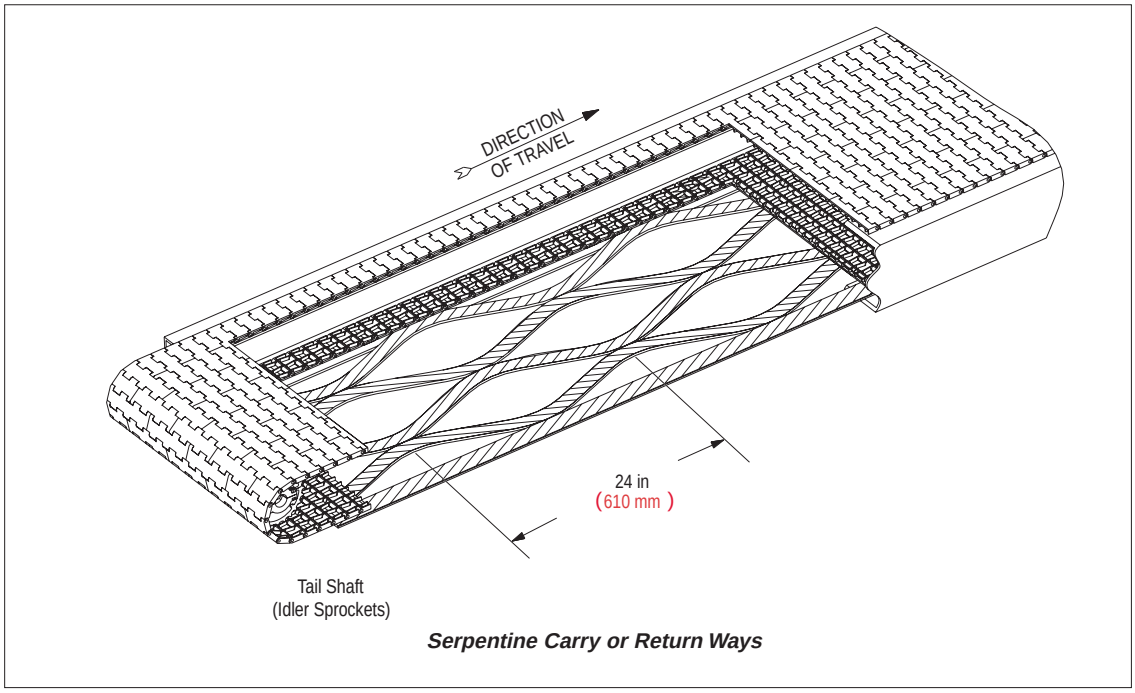
⇨The chain is fully supported

⇨Allows for drainage and the passage of foreign materials

⇨Offset rail, serpentine and chevron patterns are recommended to maximize chain life because they provide uniform wear across the full width of the chain



Offset Rail Carry or Return Ways



Serpentine Carry or Return Ways

Contact Rexnord Application Engineering for more information 1.262.376.4800

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CONVEYOR DESIGN RECOMMENDATIONS

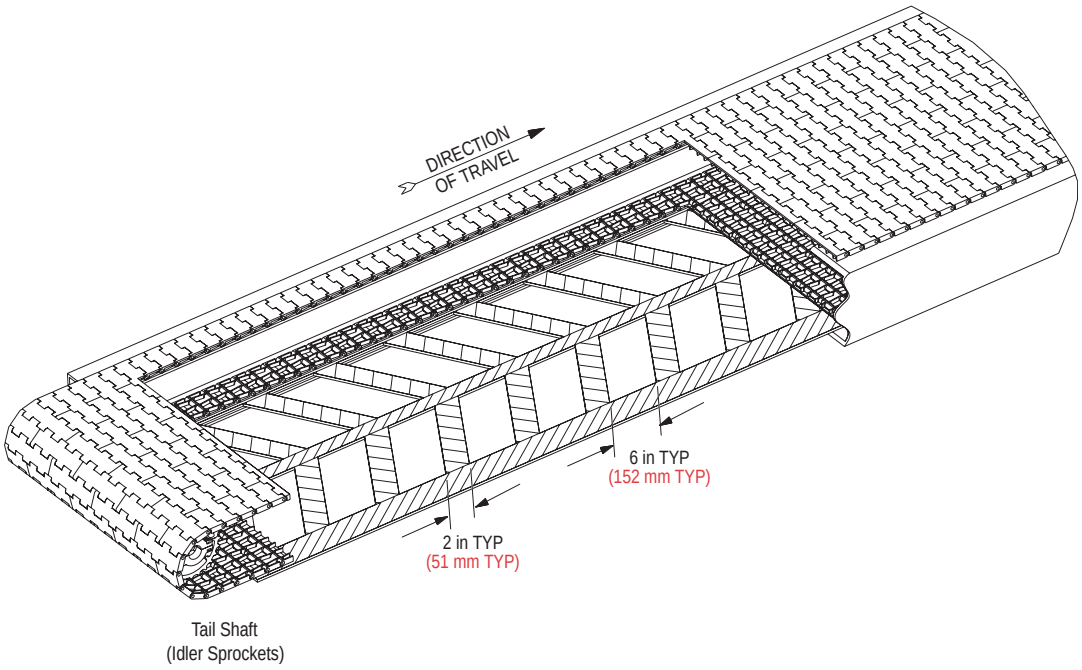
Carry and Return Ways

Chevron Carry or Return Ways

⇨The chain is fully supported

⇨Allows for drainage and the passage of foreign materials

⇨Offset rail, serpentine and chevron patterns are recommended to maximize chain life because they provide uniform wear across the full width of the chain



Chevron Carry or Return Ways

Other Recommendations

Chains with Attachments

⇨For chains with attachments, see page EM - MT - 35 - 40

⇨Offset can only be used for carry way and return

LBP Chains

⇨Offset rails, serpentine, and chevron should only be used in the carry ways

⇨Only use roller return ways for LBP MatTop® chains, see page EM - MT - 33

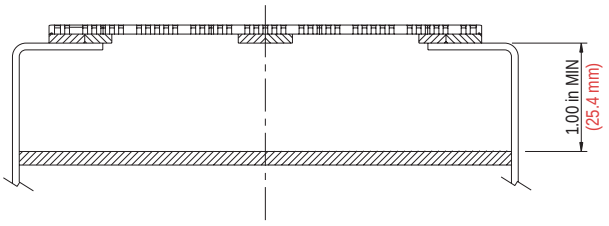
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CONVEYOR DESIGN RECOMMENDATIONS

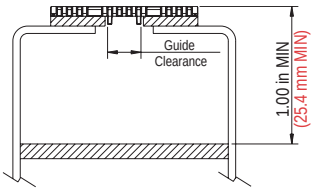
Carry Ways

⇨Guide clearance is critical for both straight and side-flexing chains. For guide clearance dimensions of individual chains, see tables on page EM - MT - 22 or Product Catalog (8rxCAT-en)

Straight Running



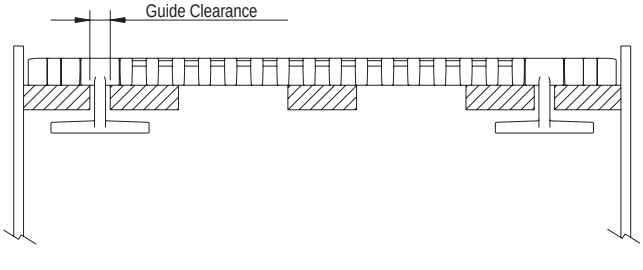
Typical Construction



Typical Construction with Positrack™ Tracking Guides

⇨Edge guides are recommended for LBP MatTop® chain with transverse rollers

TAB Style (4705/4706, 5935/5936, 7956 & 8505/8506)



8505TAB

⇨TABs hold chain down in incline or decline applications

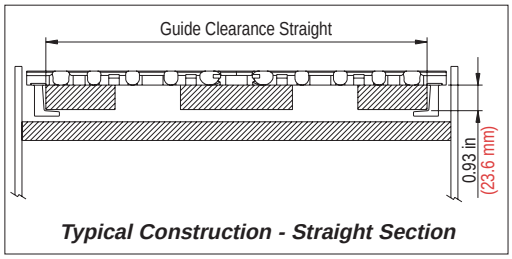
⇨TABs hold chain in place for vacuum applications

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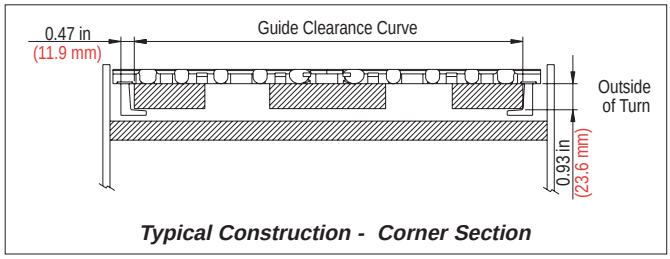
CONVEYOR DESIGN RECOMMENDATIONS

Carry Ways

Side-flexing - TAB Design (7956 Chain Series)



Typical Construction - Straight Section



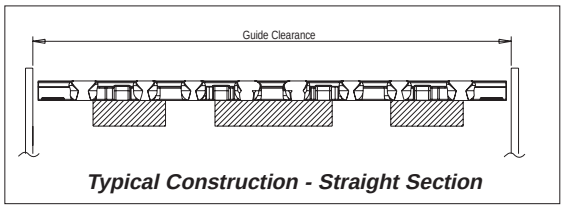
Typical Construction - Corner Section

⇨Positive retention

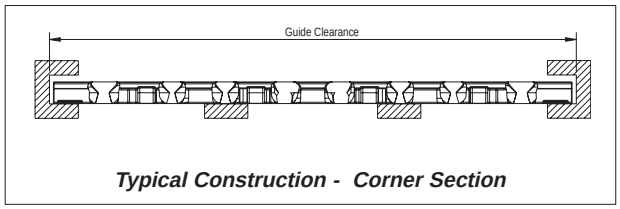
⇨TABs hold chain down in incline or decline applications

⇨For recommended guide clearances see page 22

⇨For further design recommendations, see the RexFlex™ 7956 design manual (8rx7956dm-en)



Typical Construction - Straight Section



Typical Construction - Corner Section

Side-flexing - No TAB Design (7956 Chain Series)

⇨No hold down in the straight sections

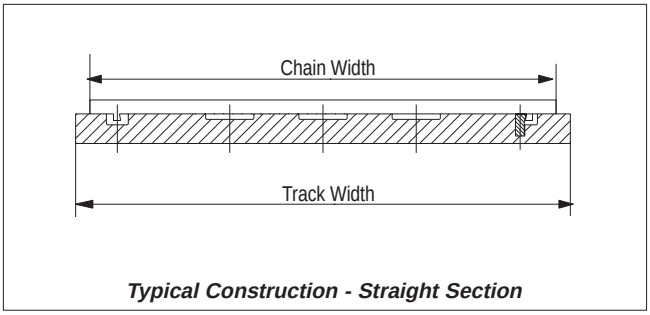
⇨Chain can be lifted in the straight section for ease in cleaning and in maintenance

⇨For recommended guide clearances see page 22

⇨For further design recommendations, see the RexFlex™ 7956 Design Manual (8rx7956dm-en)

Side-flexing - Positrack™ Design (7526 Chain Series)

⇨For further recommendations, see the 7526 section in the Product Catalog (8rxCAT-en)



Typical Construction - Straight Section

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CONVEYOR DESIGN RECOMMENDATIONS

Guide Clearance

⇨Room Temperature Applications:

- Guide Clearance (GC) = Chain Width + A

⇨Elevated Temperature Applications:

- Actual width increases by an amount that is dependent upon temperature, chain width and the plastic coefficient of thermal expansion

Coefficients of Thermal Expansion		
Material	inches / feet / F°	mm / m / C°
Acetal	0.0006	0.09
Polyethylene	0.0015	0.23
Polypropylene	0.0010	0.15
Nylon	0.0005	0.07

Standard Conveyor Guide Clearance			
Dimension "A"		Conveyor Length	
inches	mm	feet	m
0.38	9.7	Up to 30	Up to 9
0.63	16.0	30 to 50	9 to 15
0.75	19.1	Over 50	Over 15

Standard Conveyor Guide Clearance Calculation of GC at Elevated Temperatures

Example:

⇨Assume a 12 ft (3.6 m) wide, 45 ft (13.5 m) long pasteurizer operating at an average temperature of 190° F (88° C) and utilizing a polypropylene chain

⇨The increase in the width (Δ W) due to the temperature of 190° F (88° C) can be found as shown:

English:

Δ W = W (chain width) x CTE x Δ T

Δ W = 12 ft x 0.0010 in/ft/°F x (190-70° F)

Δ W = 1.44 in

Metric:

Δ W = W (chain width) x CTE x Δ T

Δ W = 3.6 m x 0.15 mm/m/°C x (88-21° C)

Δ W = 36.6 mm

⇨Allow for standard clearance, "A", based upon conveyor length.

⇨For a 45 ft (13.5 m) long conveyor, A = 0.63 in (16.0 mm) (from the Standard Conveyor Guide Clearance Table)

⇨The total GC for this example is:

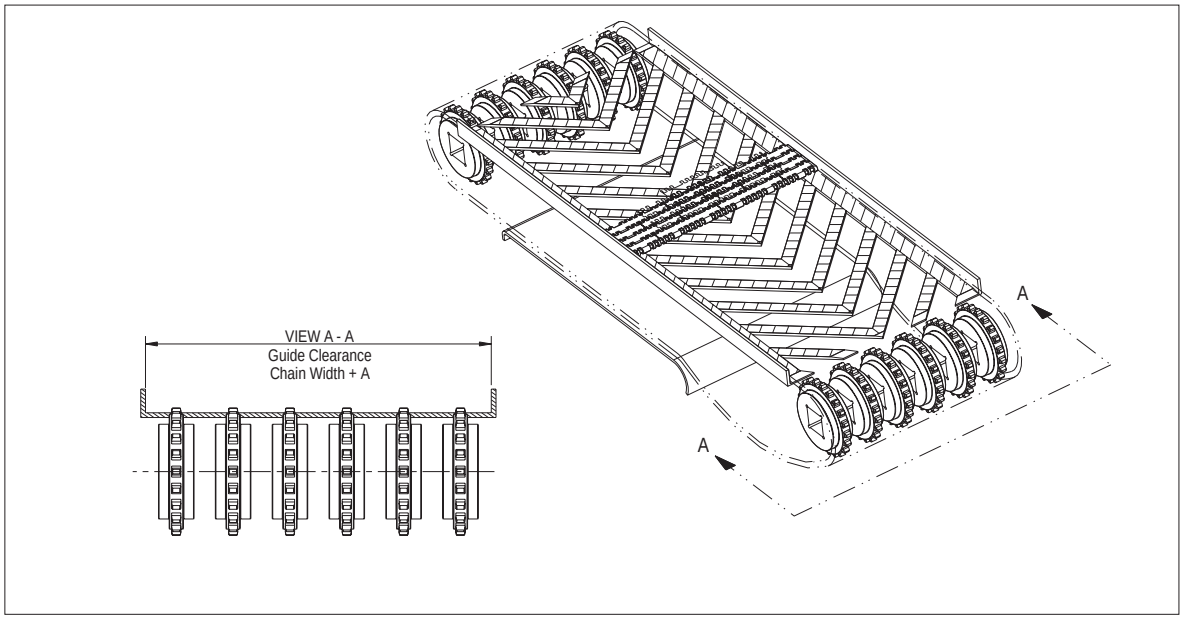
GC = Chain width at room temperature + expansion due to temperature + standard clearance (A)

English:

GC = 144 in + 1.44 in + 0.63 in = 146.07 in

Metric:

GC = 3658 mm + 36.6 mm + 16.0 mm
= 3710.6 mm



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Rex® MatTop® CHAIN GUIDE CLEARANCE TABLES

Molded to Width Rex® MatTop® Chains with Positrack™ Tracking Guides

⇨ Rex® MatTop® Chains with Positrack™ tracking guides are usually guided in a manner similar to Rex® TableTop® Chains

Chain Guide Clearance					
Chian Style		1505 DTS® PT	5705 (MTW) PT 5706 (MTW) PT 5705 DTS® PT	7705 (MTW) PT 7706 (MTW) PT 7705 (MTW) PT 7705 DTS® PT 7705 DTS®-R PT	8505 (MTW) PT 8506 (MTW) PT 8505 DTS® PT
Guide Clearance	in	2.13	1.75	1.75	1.75
	mm	54.1	44.5	44.5	44.5

Molded to Width RexFlex™ Chains

⇨Guide clearances are identical for straight and curve sections

Chain Style		7956TAB-6	7956TAB-12	7956TAB-15	7956TAB-18	7956TAB-24	7956TAB-30
Guide Clearance	in	4.70	10.60	13.50	16.60	22.60	28.60
	mm	119.4	269.4	342.9	421.6	574.0	726.4

Chain Style		7956 No TAB-6	7956 No TAB-12	7956 No TAB-15	7956 No TAB-18	7956 No TAB-24	7956 No TAB-30
Guide Clearance	in	6.20	12.20	15.20	18.20	24.20	30.20
	mm	157.5	309.9	386.1	462.3	614.7	767.1

Assembled to Width 7526 Chains

⇨For further recommendations, see the 7526 section in the Product Catalog (8rxCAT-en)

Assembled to Width Rex® MatTop® Chains with Positrack™ Tracking Guides

⇨For further recommendations, see the Product Catalog (8rxCAT-en)

Chain Guide Clearance			
Chain Style		7705 PT End Modules	8506 & 8506 PT End Modules
Guide Clearance	in	1.75	1.72
	mm	44.5	43.7

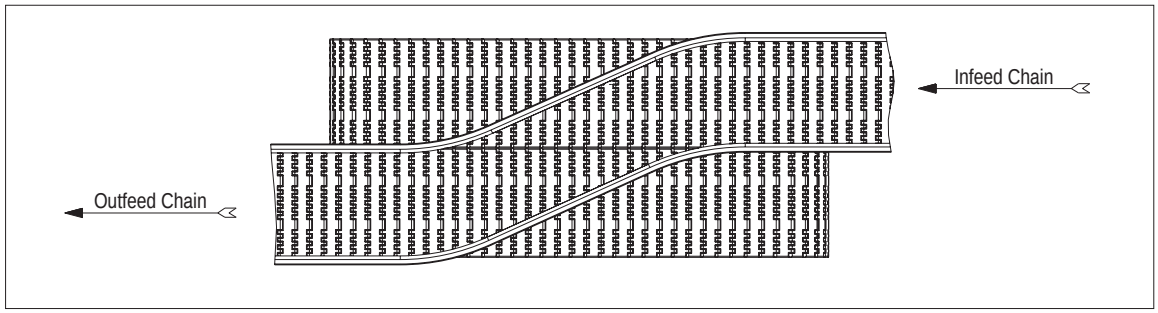
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CONVEYOR DESIGN RECOMMENDATIONS

Transfers

⇨In the operation of Rex® MatTop® chain conveyors, smooth transfer of the conveyed product from one chain to another is essential for product protection and prevention of downtime. The various methods are described below

Side Transfer



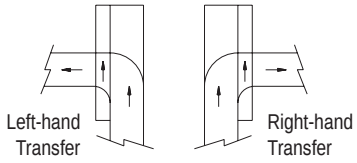
✓⇨Adjacent strands of chain should share a common wearstrip

⇨No stranded products

DTS® Transfer (DynamicTransfer System™)

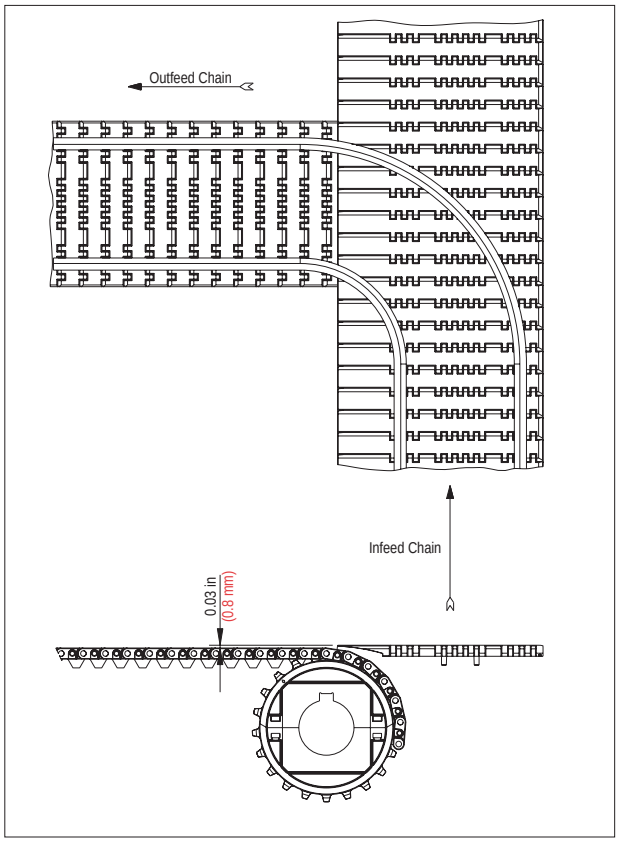
⇨DTS® is a self clearing transfer which eliminates stranded product

⇨See the diagram below for left-hand and right-hand transfers



CAUTION It is difficult to retrofit an existing deadplate transfer with DTS®.

- It is recommended to consult with a qualified OEM to discuss the retrofit details



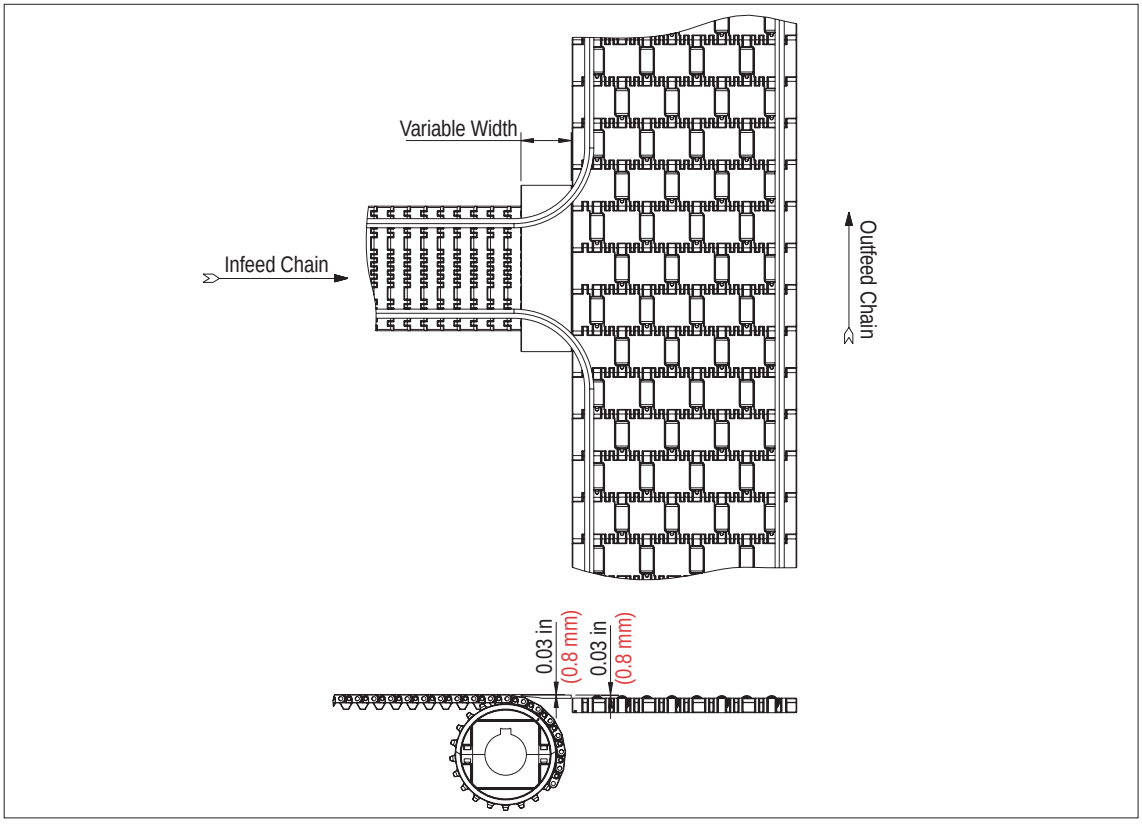
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CONVEYOR DESIGN RECOMMENDATIONS

Transfers

Transverse Roller Transfer

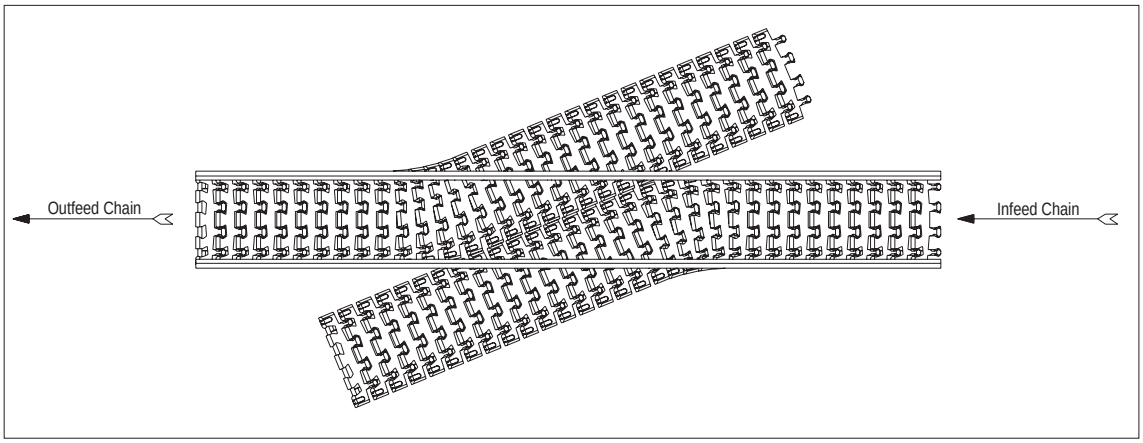


⇨Infeed chain is to be slightly higher than LBP MatTop® chain with transverse rollers

⇨Infeed and outfeed conveyors should be mounted as close as possible to each other

⇨Deadplate should be used if the gap between chains is greater than half of the product bottom surface area to prevent the product from dropping below the LBP chain

Inline Transfer



✓⇨Adjacent strands of chain should share a common wearstrip

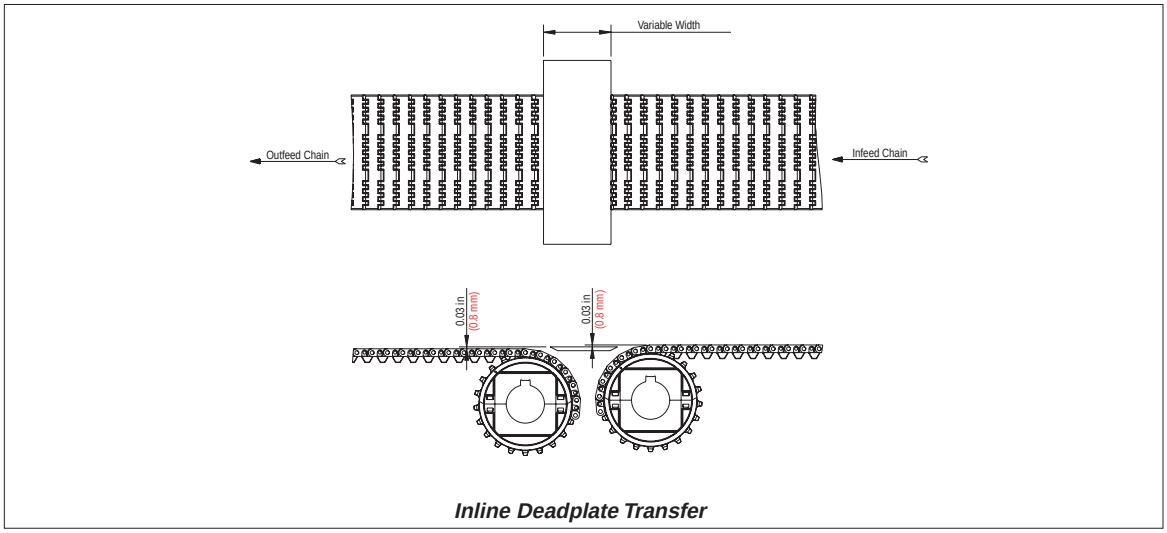
⇨Allows product to remain in straight line

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CONVEYOR DESIGN RECOMMENDATIONS

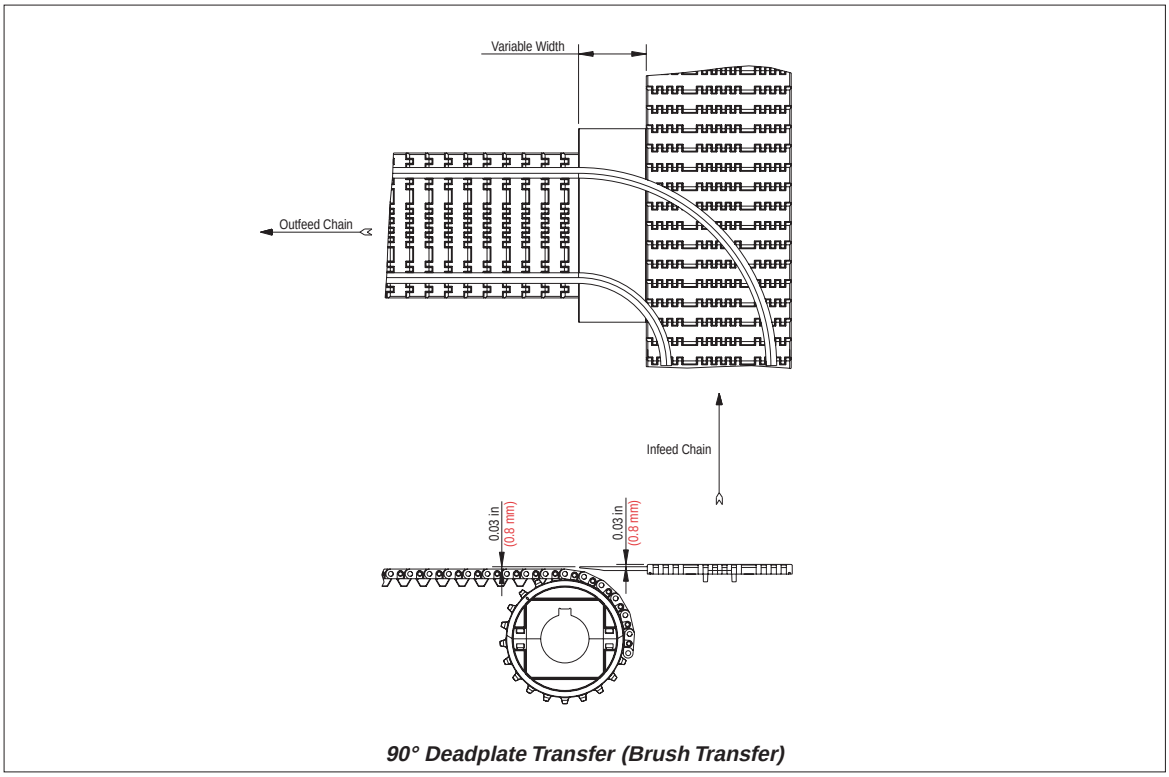
Transfers

Inline Deadplate Transfer



Inline Deadplate Transfer

90° Deadplate Transfer



90° Deadplate Transfer (Brush Transfer)

- ⇨For deadplate transfers, products should step down to the adjacent chain or deadplate surface (typically 0.03 in (0.8 mm) step is recommended)
- ⇨Deadplates to be mounted slightly higher than the top surface of the outfeed chain
- ⇨Deadplates should be as short as possible
- ⇨Deadplate transfers result in stranded product

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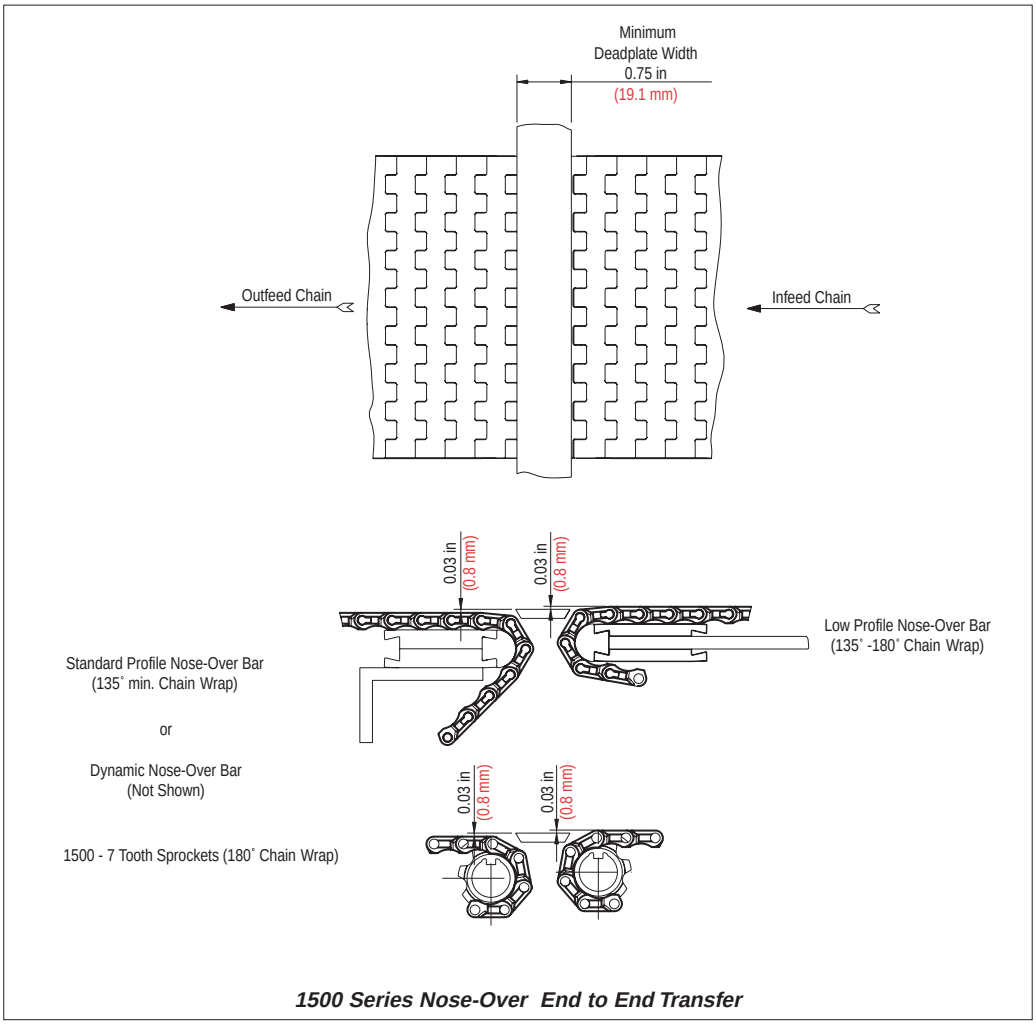
CONVEYOR DESIGN RECOMMENDATIONS

Transfers

1500 Series Nose-Over End to End Transfer

⇨Things to be taken into consideration include:

- Chordal action (small pitch is recommended)
- Drive configurations (see page EM - MT - 29 for details)
- Nose-over bar types:
  - Rotating shaft or dynamic
  - Sliding
- 1500 series nose-over bar design manuals are available for more details (8rxNOdm-en)



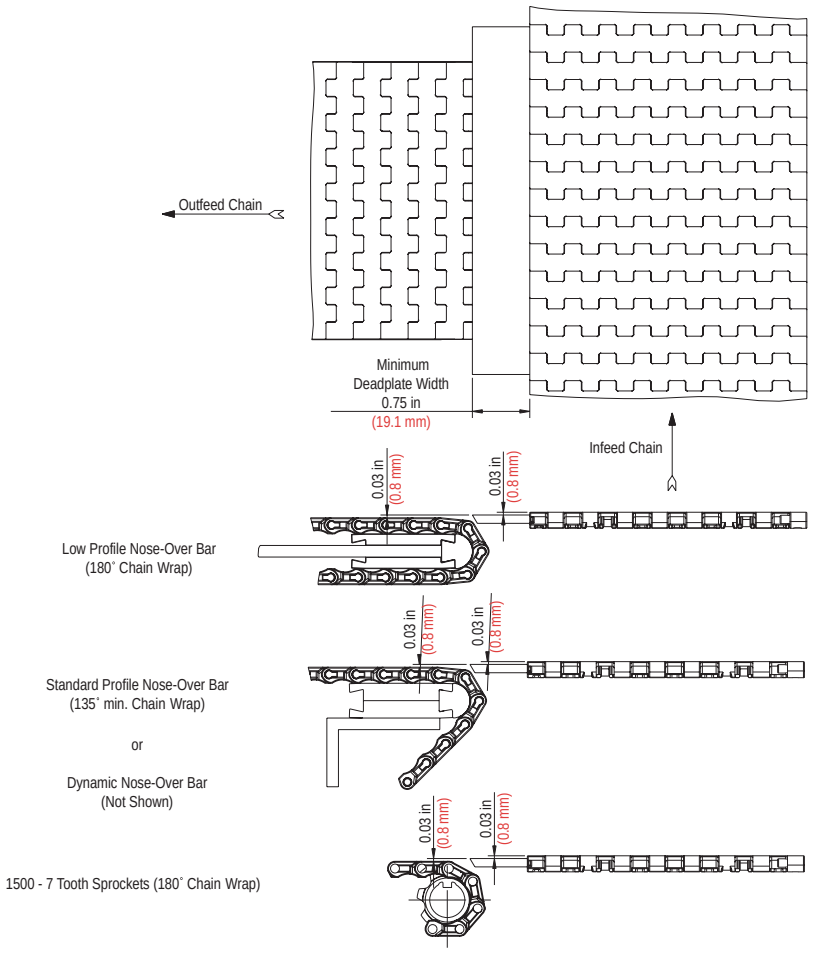
1500 Series Nose-Over End to End Transfer

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Transfers

1500 Series Nose-Over 90° Head to Side Transfer

See notes on page EM - MT - 26 for 1500 Series Nose-Over Bar details.



1500 Series Nose-Over 90° Head to Side Transfer

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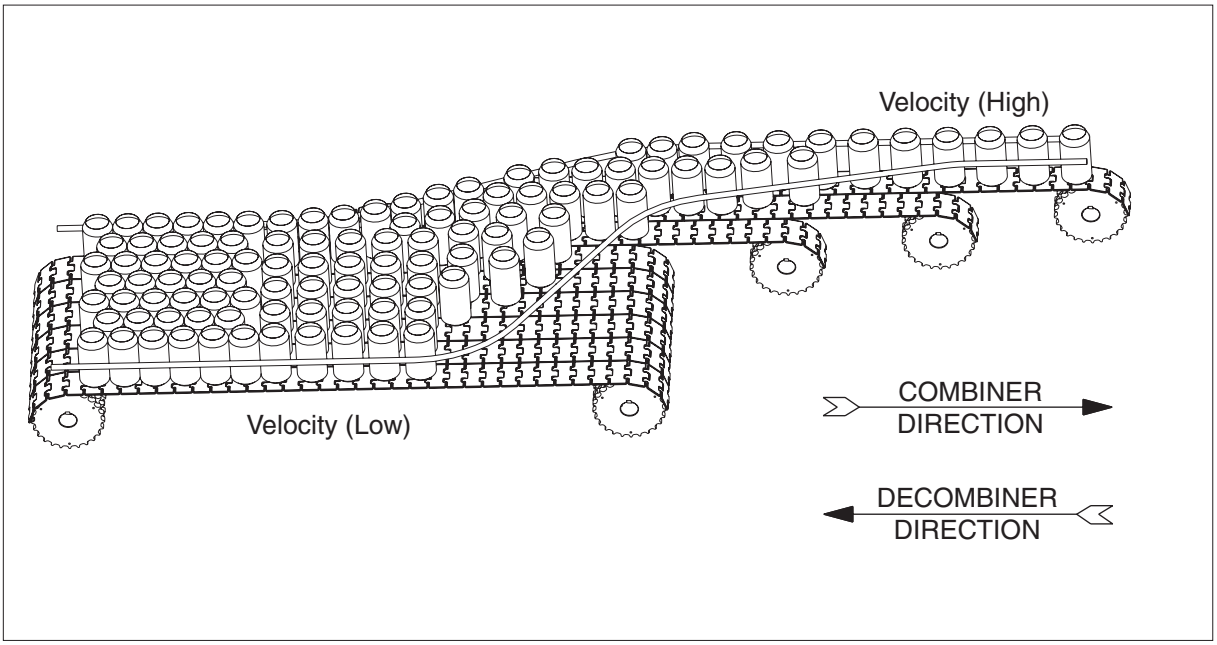
CONVEYOR DESIGN RECOMMENDATIONS

Transfers

Combiners / Decombiners

⇨Combiners take products from en masse (in mass) to single file

⇨Decombiners take products from single file to en masse (in mass)



For conveyors using multiple strands of chain, key all sprockets on the head shaft and key only one sprocket on the tail shaft, preferably the center strand.

CAUTION

If space permits, use enough lanes to keep speed differentials between adjacent strands to about 50 - 75 FPM (15 - 23 MPM), depending on product.

CAUTION

When several chains run side by side, such as on multiple width conveyors and combiners or decombiners, make sure the return chains do not interfere with each other.

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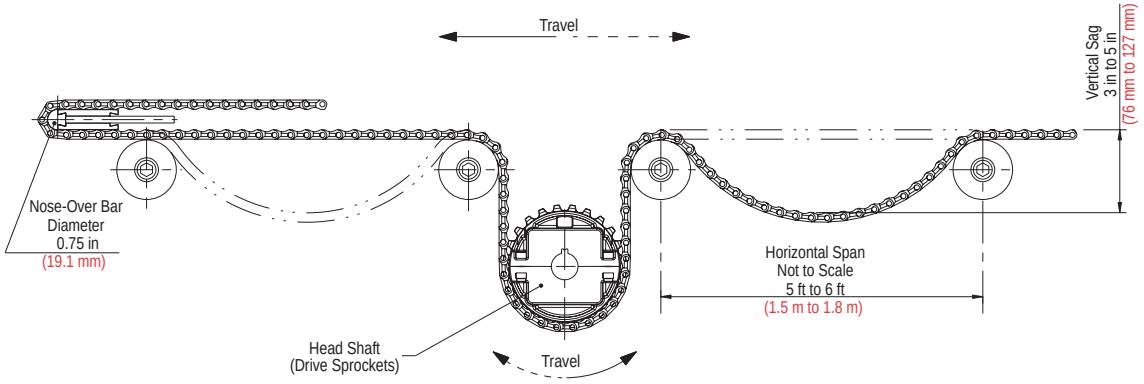
CONVEYOR DESIGN RECOMMENDATIONS

Alternate Drive Configurations

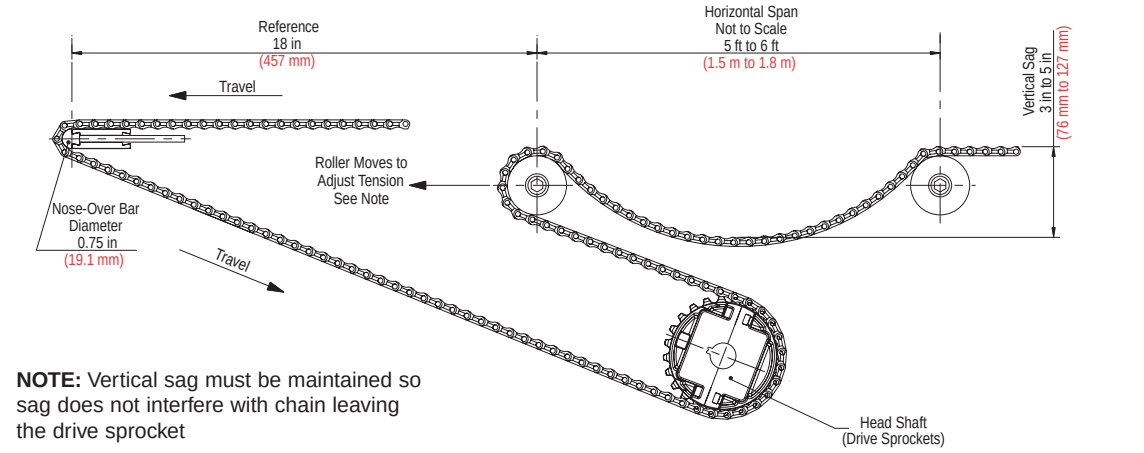
Nose-Over Bar Conveyors

⇨Catenary or take-up arrangements will vary based on drive configurations

⇨1500 series nose-over bar design manuals are available for more details (8rxNOdm-en)

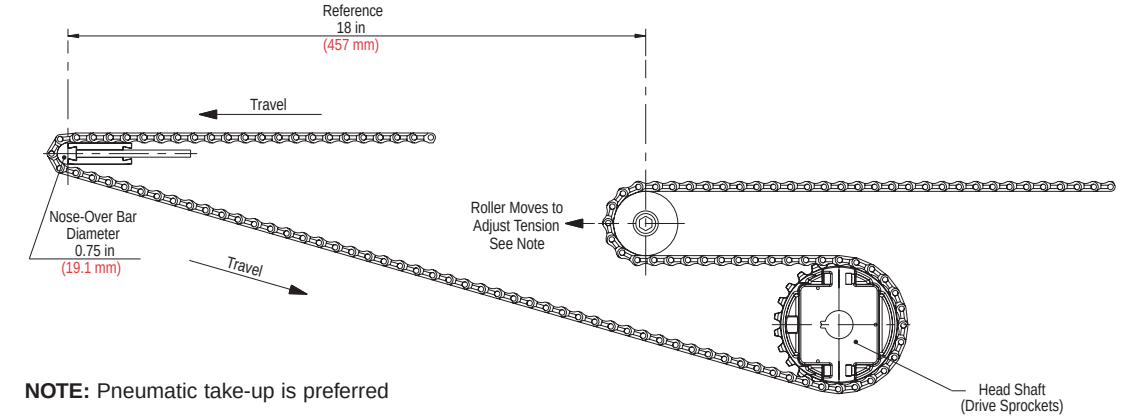


Bi-Directional



NOTE: Vertical sag must be maintained so sag does not interfere with chain leaving the drive sprocket

Uni-Directional



NOTE: Pneumatic take-up is preferred

Uni-Directional No Catenary

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CONVEYOR DESIGN RECOMMENDATIONS

Alternate Drive Configurations

Bi-Directional Bottom Drive Conveyors (for heavy duty service)

⇨Recommended roller spacing is 2 ft to 3 ft (0.5 m to 1 m), depending on speed and other considerations

Allow for thermal expansion or contraction (see page EM - MT - 21 for chain information or EM - MT - 52 for sprocket information).

⇨Idler Rollers

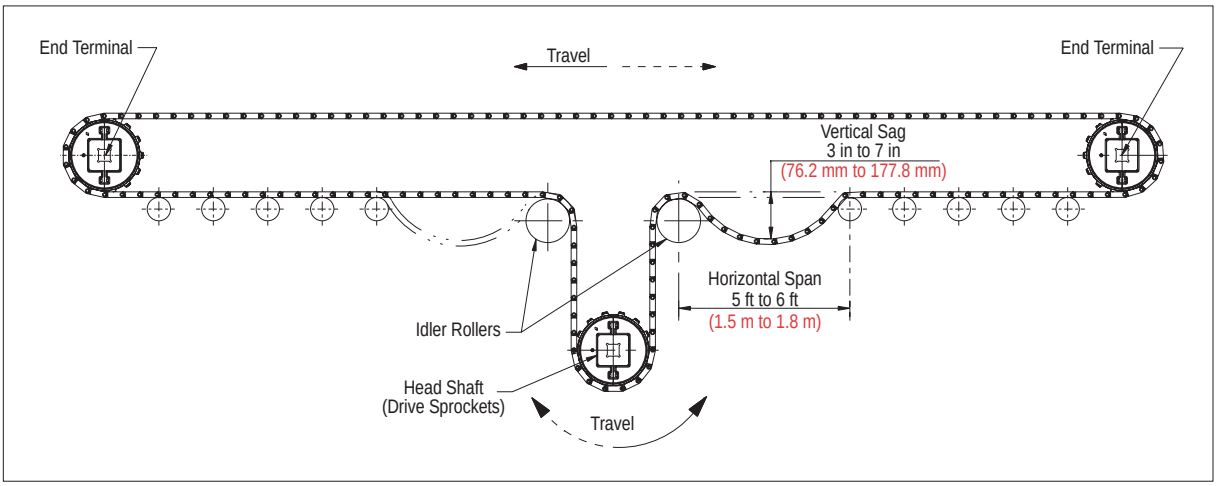
- Idler rollers can be continuous drums or a series of individual rollers
- If individual rollers are used, they should be positioned in line with the drive sprockets
- Rollers are recommended to be at least two times greater than the minimum back-flex radius of the chain

⇨Bottom Drive

- All sprockets must be keyed inline (see page EM - MT - 52)

⇨End Terminals

- For single strand, continuous width conveyors, key at least two sprockets, preferably the inner most sprockets



NOTES

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CONVEYOR DESIGN RECOMMENDATIONS

Alternate Drive Configurations

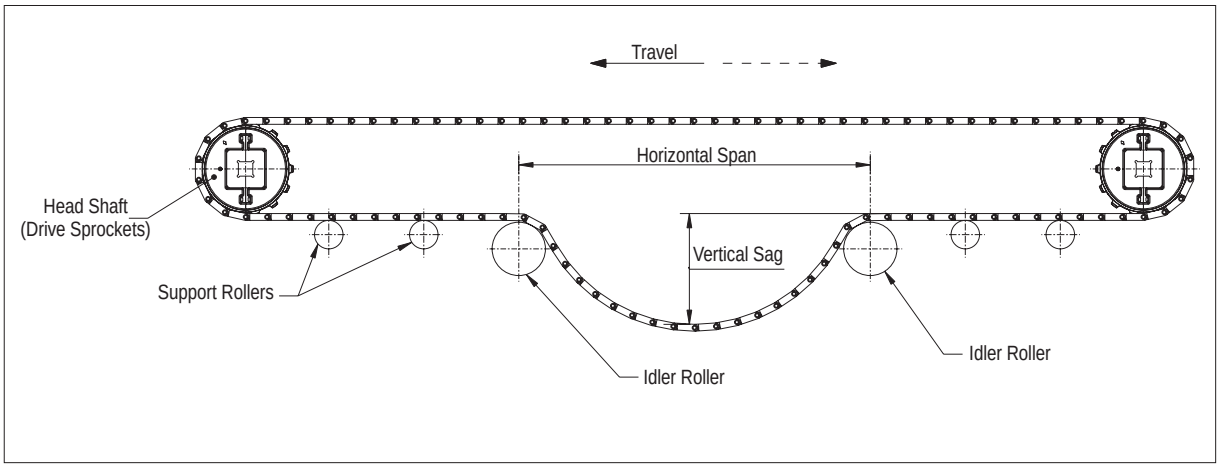
Bi-Directional End Drive Conveyors (for light duty service)

⇨The end drive method is **ONLY** recommended for very light duty service conveyors (10 ft to 20 ft (3 m to 6 m) centers) where the chain tension on the carry side can be balanced by the catenary tension

⇨Call Application Engineering to determine catenary dimensions for specific applications

⇨For applications beyond the capacity of the end drive method, use the bottom drive configuration

CAUTION Make sure the sprockets are properly aligned on the shaft (see page EM - MT - 52).



NOTES

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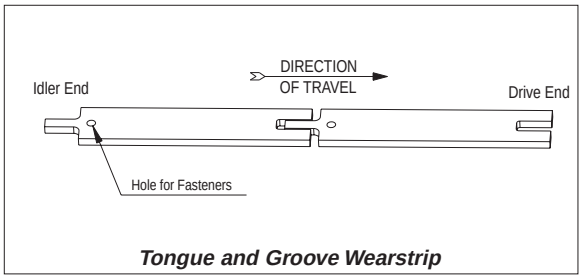
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CONVEYOR DESIGN RECOMMENDATIONS

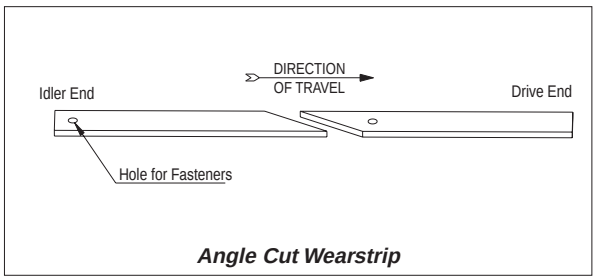
Return Ways

Wearstrip Considerations

⇨Wearstrips will contract and expand due to environmental conditions. Suggested methods to accommodate this are shown below

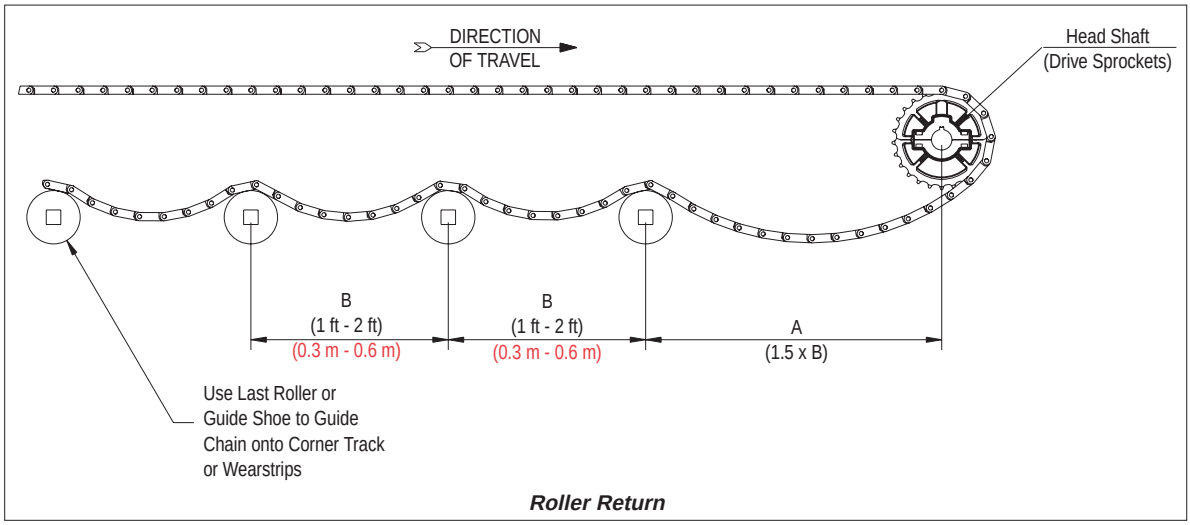


Tongue and Groove Wearstrip



Angle Cut Wearstrip

⇨The first roller should be located far enough away from the head sprocket to allow for proper catenary sag



Roller Return

Roller Return

⇨Dimension "A" should be 1.5 to 2 times greater than Dimension "B"

⇨Rollers are recommended to be at least two times greater than the minimum back-flex radius of the chain

Example: When using 4705 chain series, the roller minimum back-flex radius is 1.50 in (38.1 mm); therefore, the minimum roller diameter should be 3.00 in (76.2 mm).

CAUTION ⇨Insure rollers **ALWAYS** spin freely

⇨If rollers do not turn freely, uneven wear patterns or scalloping on the top carry surface can occur

⇨See table for minimum back-flex radii for specific chains

⇨For offset rail, serpentine and chevron wearstrip configurations, see page EM - MT - 17 - 18

Back-flex Radius Table		
Chain Style	Min. Back-flex Radius	
	in	mm
1505/1506	1.00	25.4
2011/2015/2016	3.43	87.0
2100	1.00	25.4
3003/3004	3.75	95.3
4705/4706	1.50	38.1
4707	2.00	50.8
5705/5706	1.50	38.1
5935/5936	1.00	25.4
5966	1.50	38.1
5995/5996/5988	1.50	38.1
5997	2.75	69.9
6085	2.00	50.8
6938	1.00	25.4
7526	0.59	15.0
7705/7706/7708	1.00	25.4
7725/7726	1.00	25.4
7956	6.00	152.4
8505/8506	1.00	25.4
8507	3.50	88.9
9608	1.50	38.1

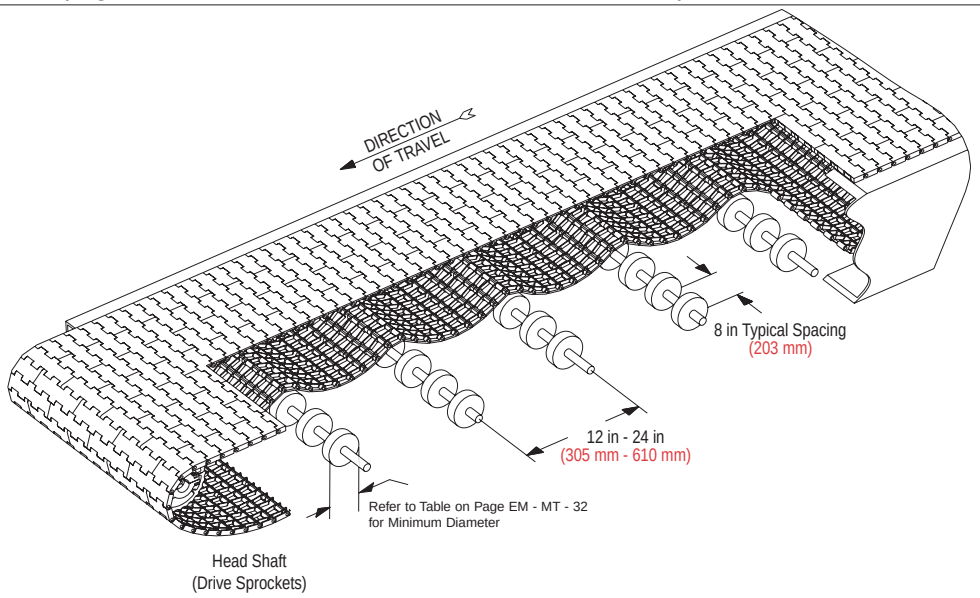
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Return Ways

Roller Return - Staggered Rollers

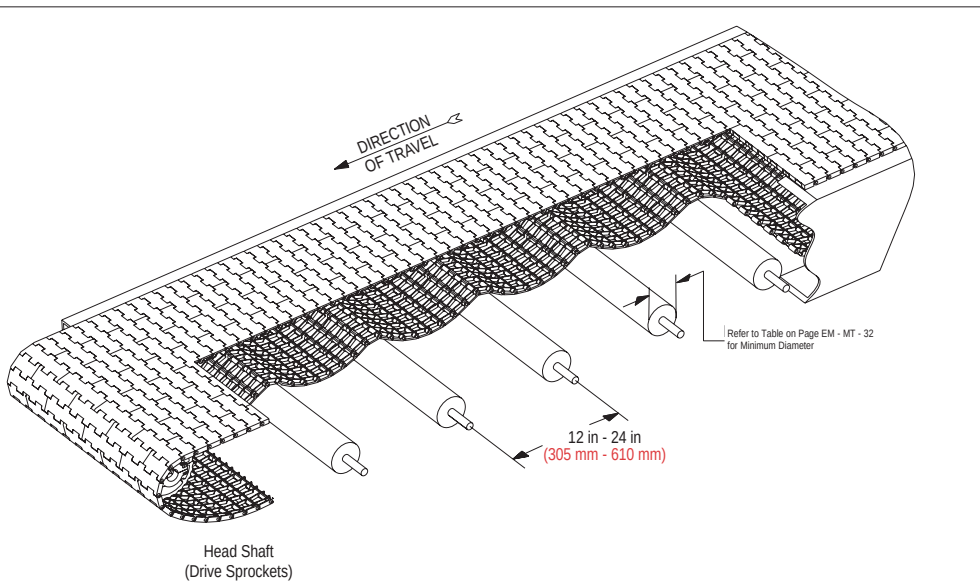
⇨See table on page EM - MT - 32 for minimum back-flex radii for specific chains



Staggered Rollers

Roller Return - Full Width Rollers

⇨See table on page EM - MT - 32 for minimum back-flex radii for specific chains



Full Width Rollers

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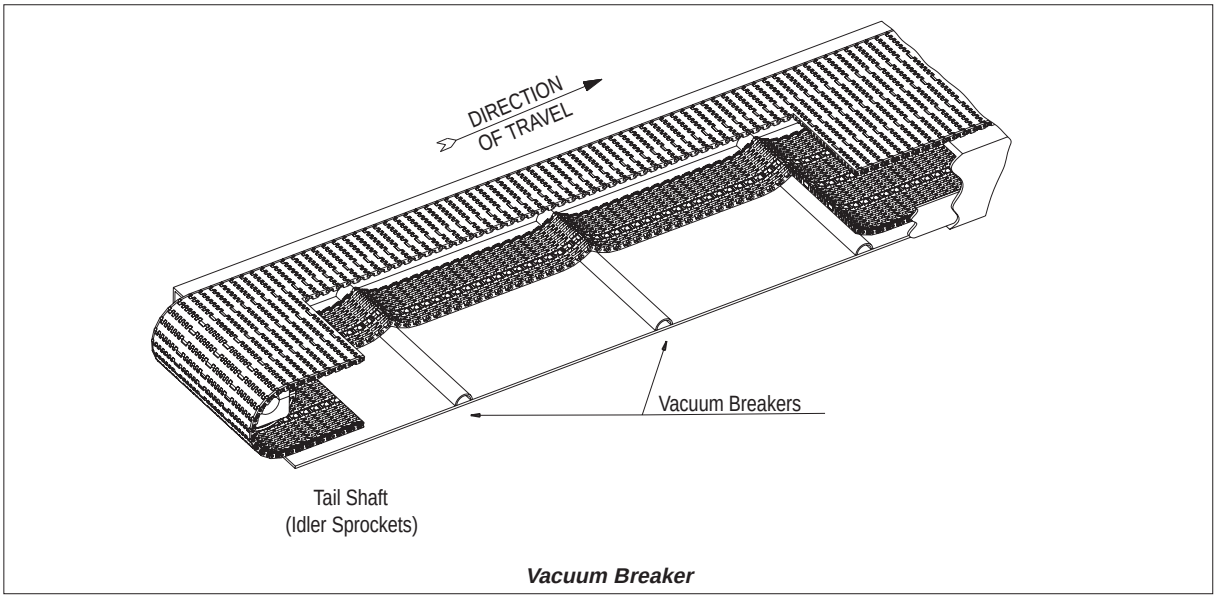
CONVEYOR DESIGN RECOMMENDATIONS

Return Ways

Vacuum Breaker

⇨Vacuum breakers can be utilized to reduce "suction" on solid bed returns in “wet” applications

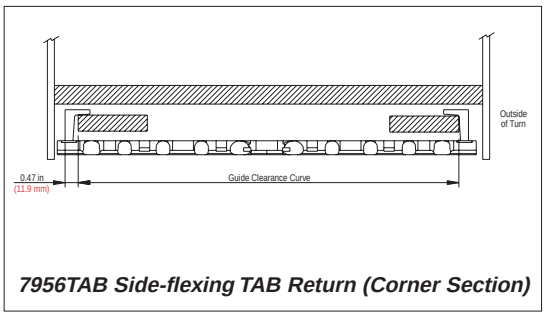
⇨Vacuum breakers are typically spaced 2 ft to 5 ft (0.6 m to 1.5 m) apart



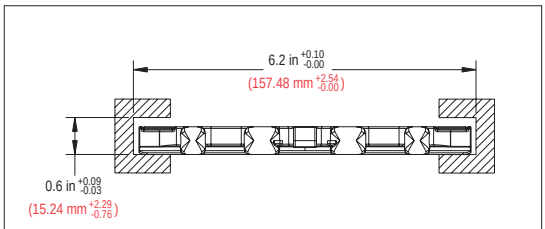
Vacuum Breaker

Curve Section - TAB & No TAB Design (7956 Chain Series)

⇨See Product Catalog (8rxCAT-en) for more information on available curves

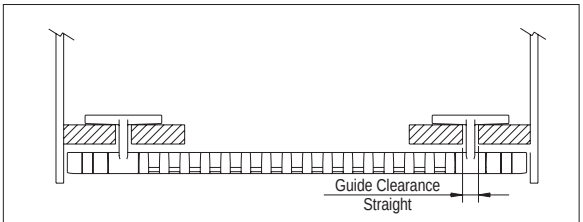


7956TAB Side-flexing TAB Return (Corner Section)



7956 No TAB Side-flexing Return (Corner Section)

Straight Section - TAB Return



TAB Return (Straight Section)

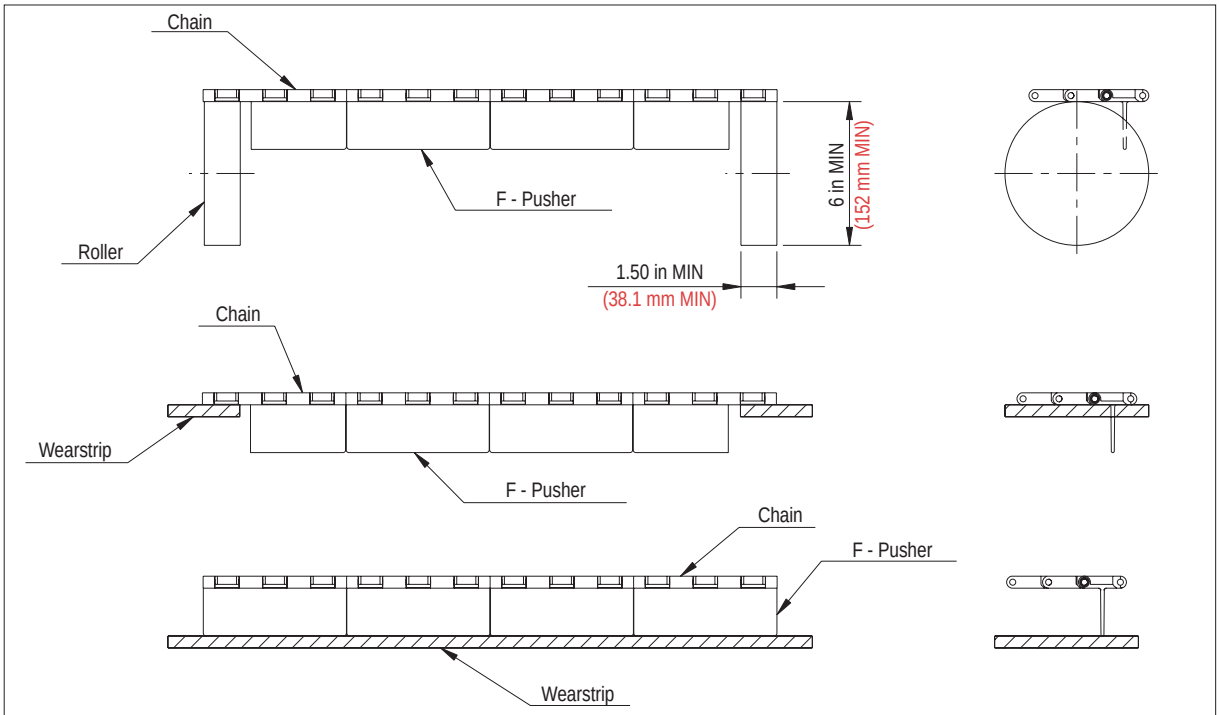
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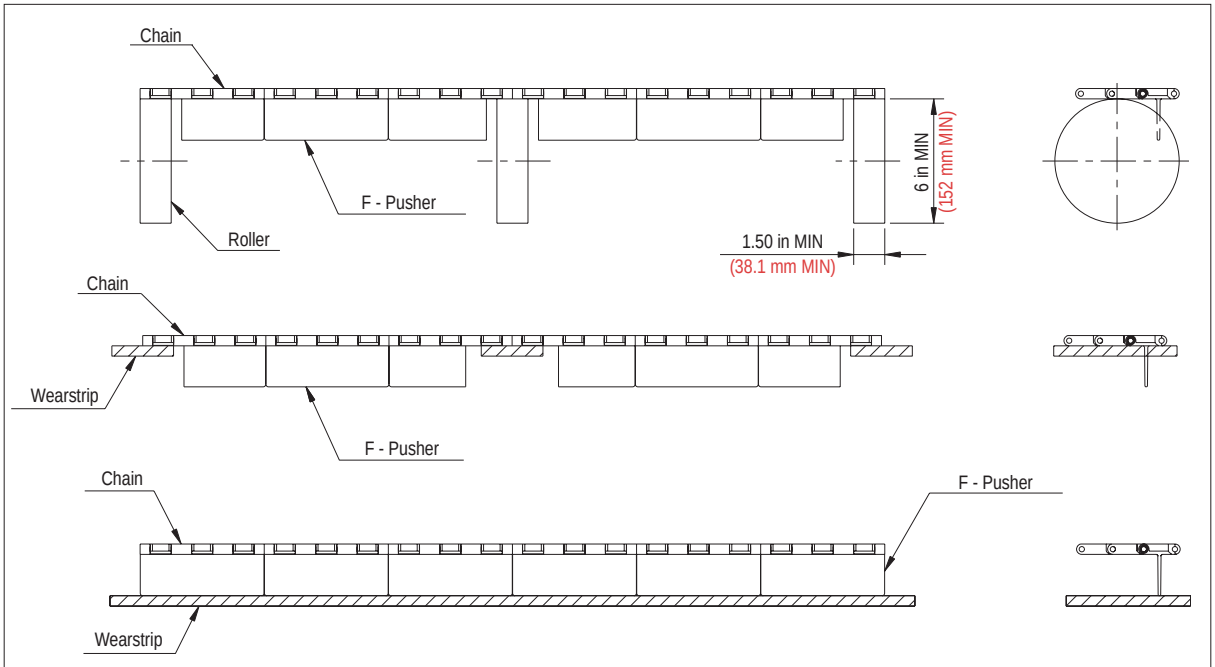
Return Ways

Supports for Chains with Pushers

⇨Allows for reduced top surface wear



For chains up to 24 in (610 mm) wide



For chains wider than 24 in (610 mm)

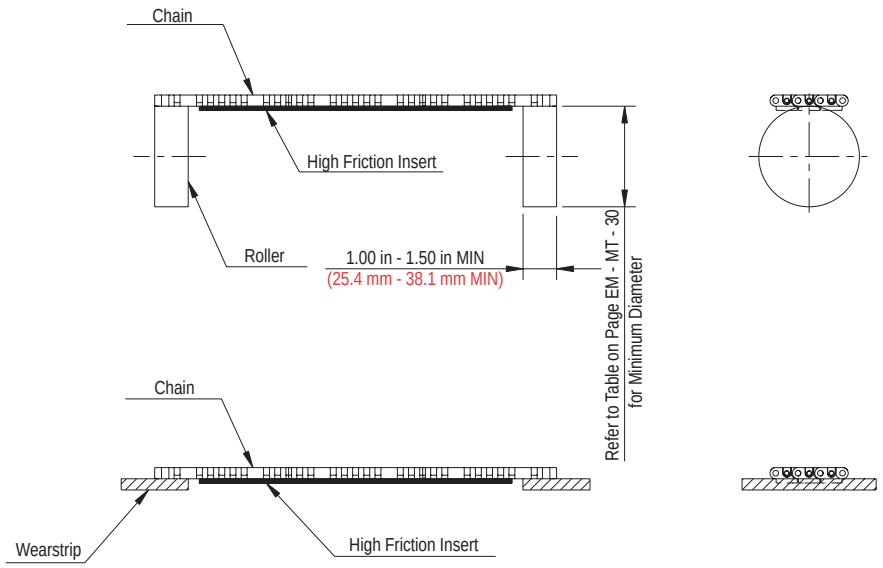
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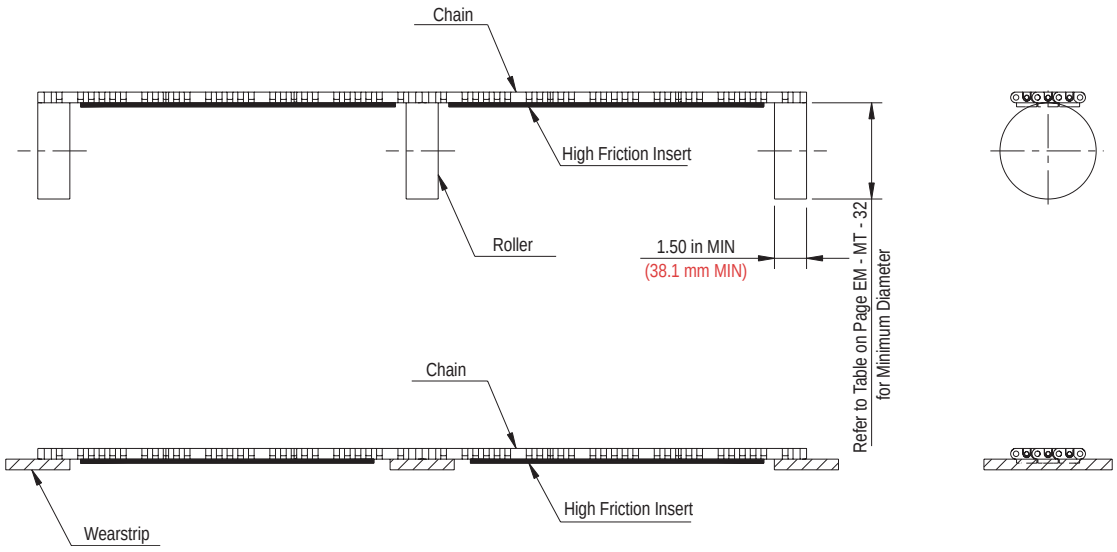
CONVEYOR DESIGN RECOMMENDATIONS

Return Ways

Supports for Chains with High Friction Inserts



For chains up to 24 in (610 mm) wide



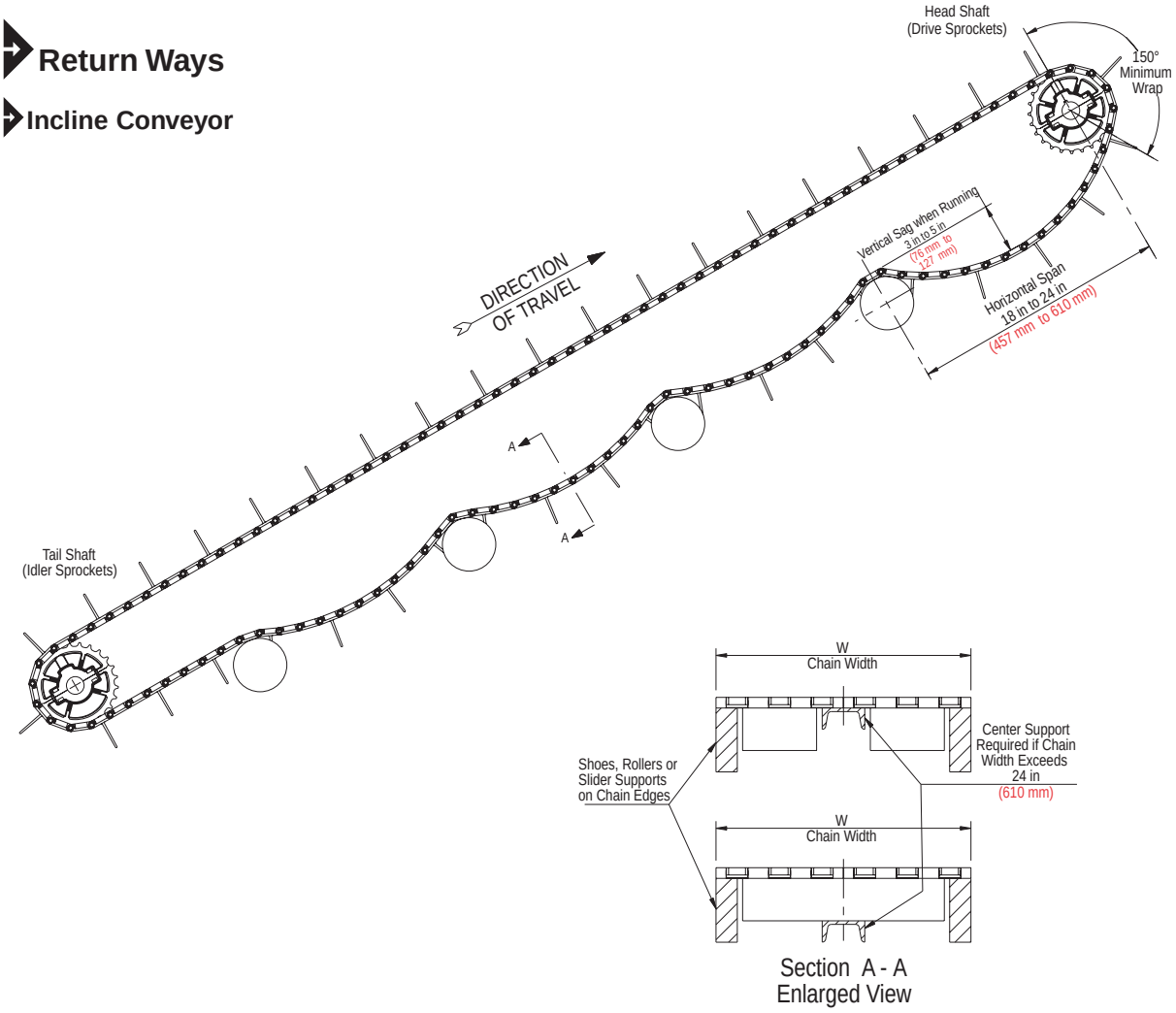
For chains wider than 24 in (610 mm)

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CONVEYOR DESIGN RECOMMENDATIONS

Return Ways

Incline Conveyor



Section A - A
Enlarged View

⇨The catenary position depends on the incline angle

⇨Rollers or shoes **MUST** meet the minimum back-flex radius requirements

⇨If the incline angle is severe, take-up units may need to be considered

- Spring or pneumatic take-up units are preferred

⇨Pusher indents provide surface area for return

⇨Notches within the pusher attachment help to extend the life of the pusher

⇨A pusher center return support is required for chains wider than 24 in (610 mm)

⇨Slider supports, shoes or rollers can be utilized in the return sections

⇨Sideguards can be utilized to capture product

⇨When abrasives are present, the use of drums or abrasion resistant idler sprockets should be considered

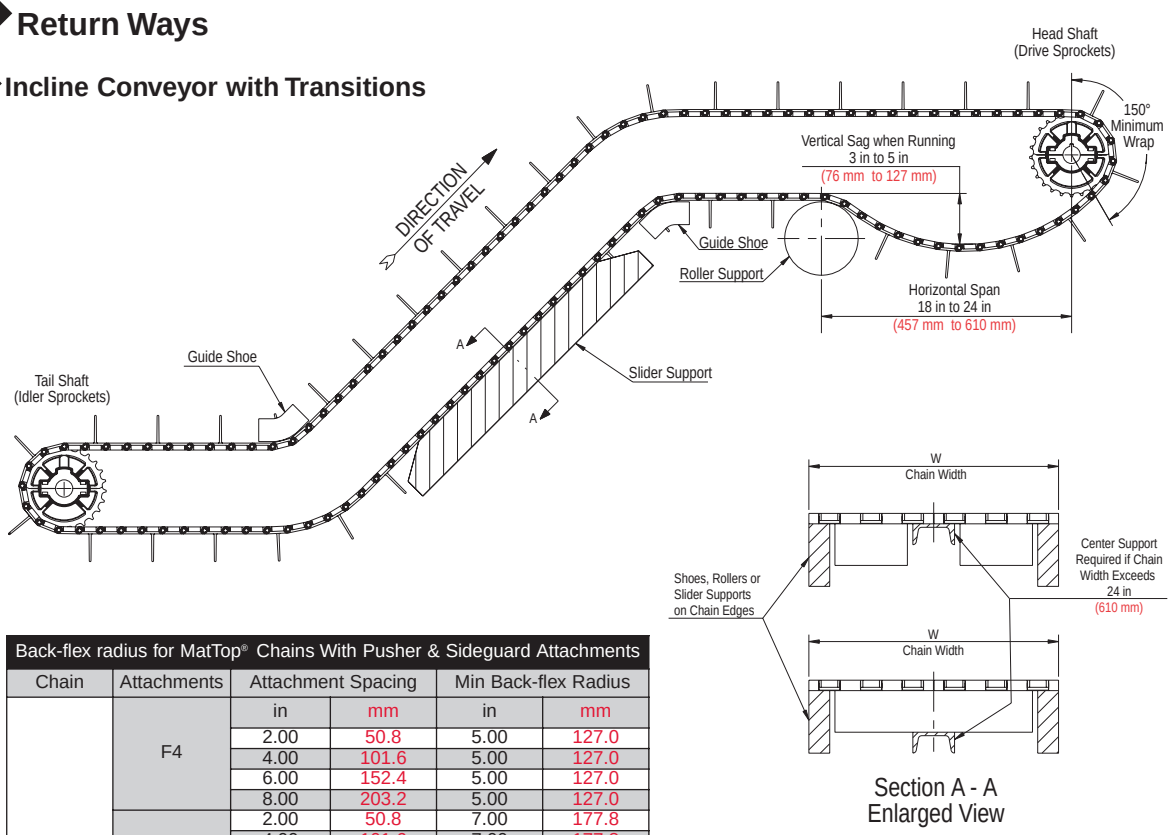
⇨Use guard or drip pans when required

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CONVEYOR DESIGN RECOMMENDATIONS

Return Ways

Incline Conveyor with Transitions



Section A - A
Enlarged View

Back-flex radius for MatTop® Chains With Pusher & Sideguard Attachments					
Chain	Attachments	Attachment Spacing		Min Back-flex Radius	
		in	mm	in	mm
2010 Series	F4	2.00	50.8	5.00	127.0
		4.00	101.6	5.00	127.0
		6.00	152.4	5.00	127.0
		8.00	203.2	5.00	127.0
	F6	2.00	50.8	7.00	177.8
		4.00	101.6	7.00	177.8
		6.00	152.4	7.00	177.8
		8.00	203.2	7.00	177.8
	C4/RC4	2.00	50.8	7.00	177.8
		4.00	101.6	6.00	152.4
		6.00	152.4	5.00	127.0
		8.00	203.2	4.50	114.3
	C6/RC6	2.00	50.8	10.00	254.0
		4.00	101.6	8.00	203.2
		6.00	152.4	7.50	190.5
		8.00	203.2	7.00	177.8
	SG2	-	-	6.00	152.4
	SG3	-	-	7.50	190.5
	SG4	-	-	9.00	228.6

⇨The catenary position depends on the incline angle
⇨Rollers or shoes **MUST** meet the minimum back-flex radius requirements
⇨In carry transition areas, the radius should be as large as possible
⇨If the incline angle is severe, take-up units may need to be considered
- Spring or pneumatic take-up units are preferred

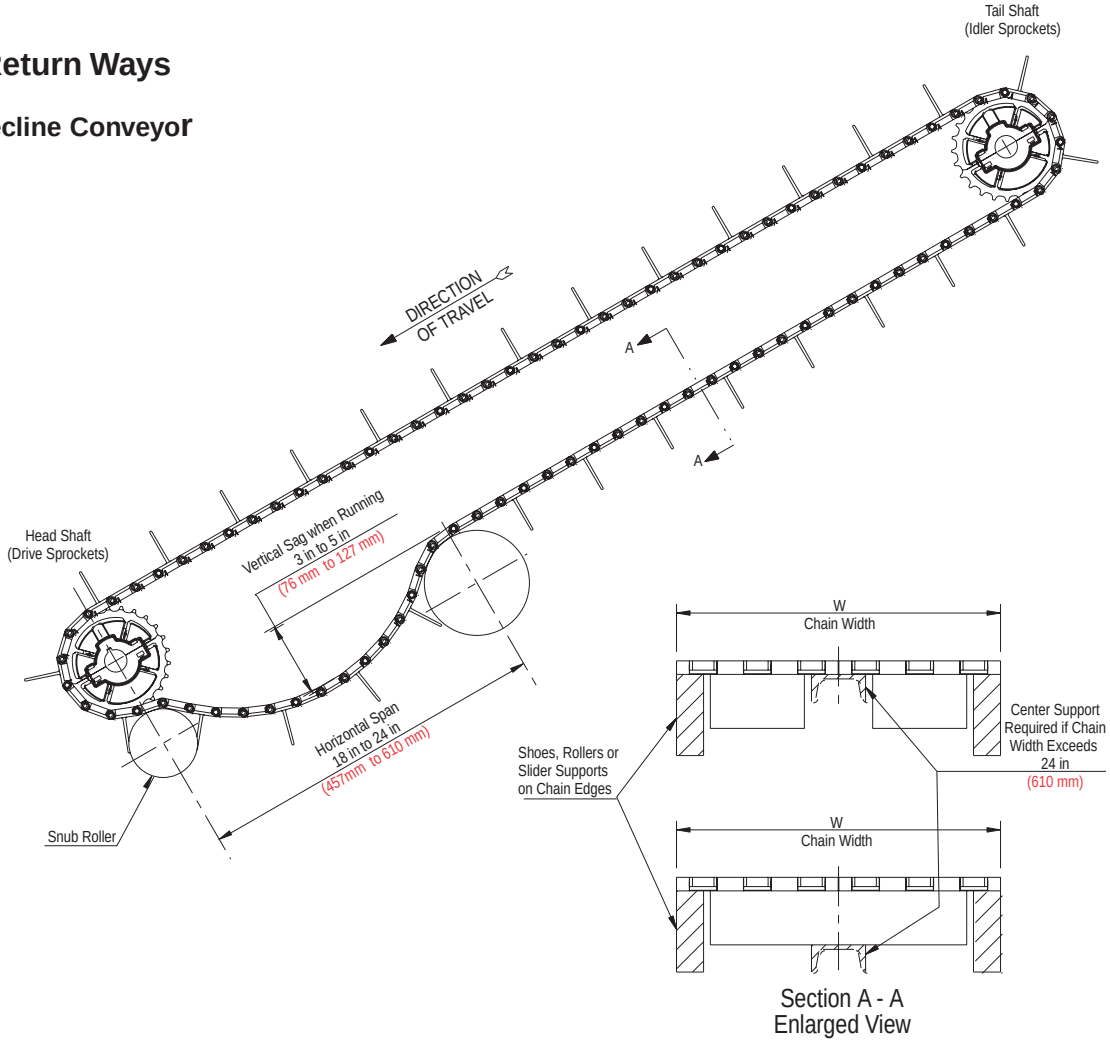
⇨Pusher indents provide surface area for return
⇨Notches within the pusher attachment help to extend the life of the pusher
⇨A pusher center return support is required for chains wider than 24 in (610 mm)
⇨Slider supports, shoes or rollers can be utilized in the return sections
⇨Sideguards can be utilized to capture product
⇨When abrasives are present, the use of drums or abrasion resistant idler sprockets should be considered
⇨Use guard or drip pans when required

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CONVEYOR DESIGN RECOMMENDATIONS

Return Ways

Decline Conveyor



Section A - A
Enlarged View

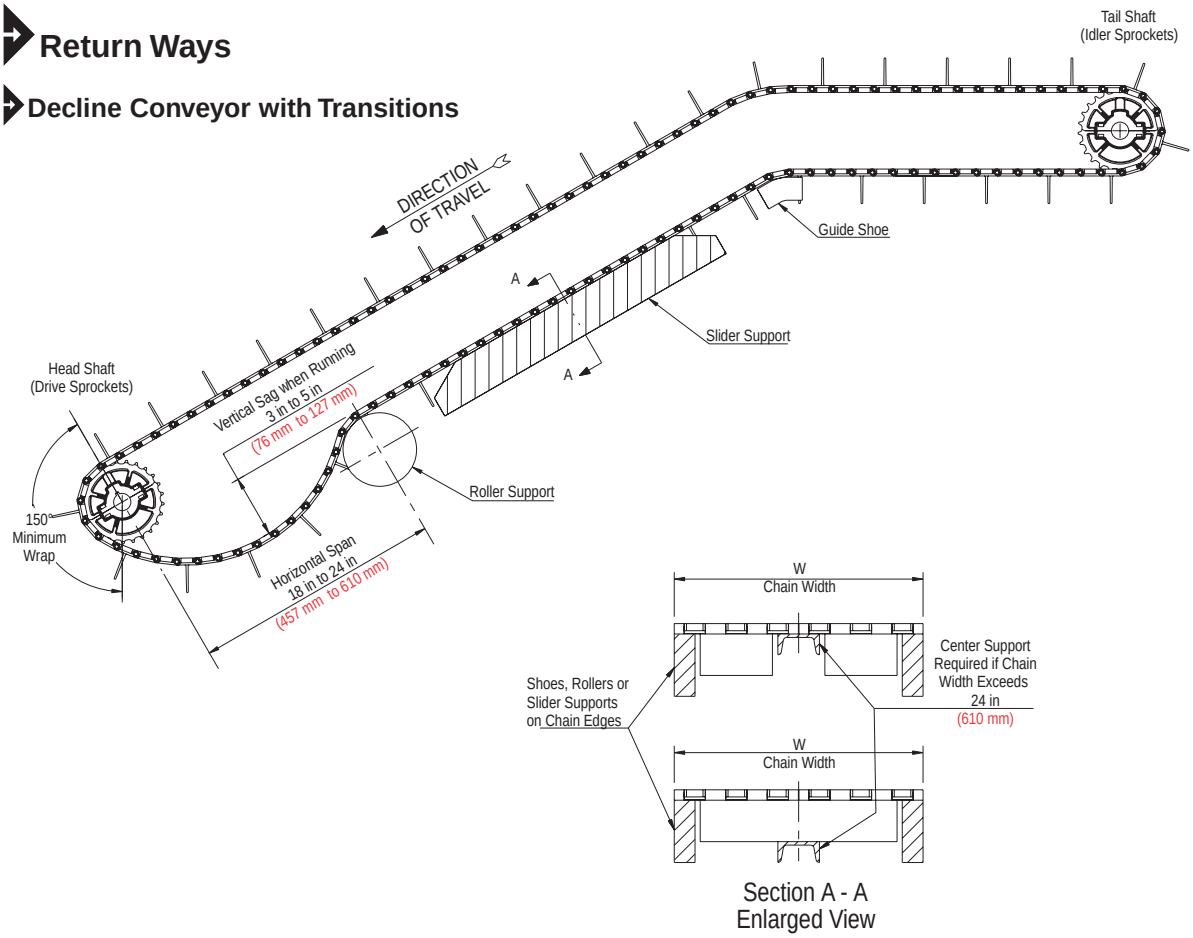
- ⇨A snubber roller can be utilized to maintain a 150° to 180° wrap on drive sprocket
- ⇨The catenary position depends on the incline angle
- ⇨Rollers or shoes **MUST** meet the minimum back-flex radius requirements
- ⇨In carry transition areas, the radius should be as large as possible
- ⇨If the decline angle is severe, take-up units may need to be considered
  - ⬟Spring or pneumatic take-up units are preferred
- ⇨Pusher indents provide surface area for return
- ⇨Notches within the pusher attachment help to extend the life of the pusher
- ⇨A pusher center return support is required for chains wider than 24 in (610 mm)
- ⇨Slider supports, shoes or rollers can be utilized in the return sections
- ⇨Sideguards can be utilized to capture product
- ⇨When abrasives are present, the use of drums or abrasion resistant idler sprockets should be considered
- ⇨Use guard or drip pans when required

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CONVEYOR DESIGN RECOMMENDATIONS

Return Ways

Decline Conveyor with Transitions



Section A - A
Enlarged View

⇨A snubber roller can be utilized to maintain a 150° to 180° wrap on drive sprocket

⇨The catenary position depends on the incline angle

⇨Rollers or shoes **MUST** meet the minimum back-flex radius requirements

⇨In carry transition areas, the radius should be as large as possible

⇨If the decline angle is severe, take-up units may need to be considered

- Spring or pneumatic take-up units are preferred

⇨Pusher indents provide surface area for return

⇨Notches within the pusher attachment help to extend the life of the pusher

⇨A pusher center return support is required for chains wider than 24 in (610 mm)

⇨Slider supports, shoes or rollers can be utilized in the return sections

⇨Sideguards can be utilized to capture product

⇨When abrasives are present, the use of drums or abrasion resistant idler sprockets should be considered

⇨Use guard or drip pans when required

⇨See table on page EM - MT - 32 for back-flex information

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CONVEYOR DESIGN RECOMMENDATIONS

Return Ways

Catenary Sag

⇨The function of the catenary is to allow a place for excess chain to accumulate

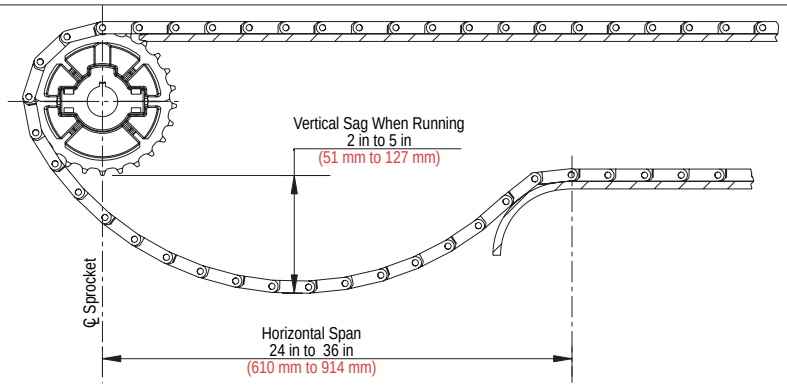
⇨Rex® MatTop® chains should never be run tight

⇨The catenary sag should be measured when running

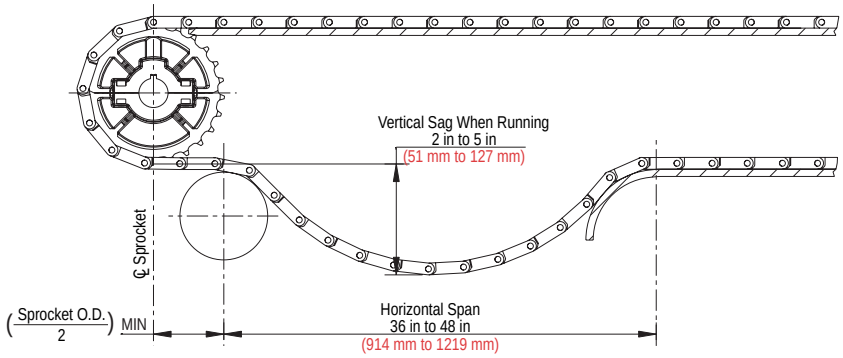
⇨If the catenary sag is excessive or increases due to wear, it should be adjusted by removing links to obtain the proper sag (2 pitches must be removed for LBP 3000 series chains and any chain with sidguards)

⇨Take-ups are typically not recommended

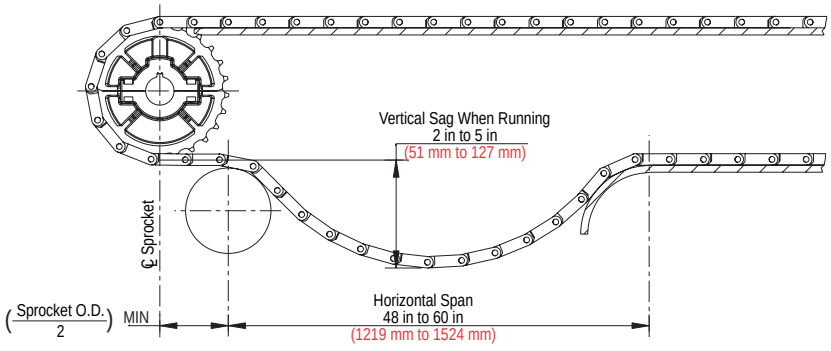
⇨The catenary sag should be located as close to the drive as possible



Conveyors with up to 40 ft (12 m) centers and top load up to 15 lbs/ft² (75 kg/m²)



Conveyors with up to 60 ft (18 m) centers and top load up to 20 lbs/ft² (100 kg/m²)



Conveyors with longer than 60 ft (18 m) centers and top load in excess of 20 lbs/ft² (100 kg/m²)

CAUTION

The catenary sag area must be free of all obstructions, such as frame cross-members, supports, drive components, that can damage chain or inhibit proper catenary sag.

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CONVEYOR DESIGN RECOMMENDATIONS

Return Ways

Entry Radius for Sliding Returns

CAUTION

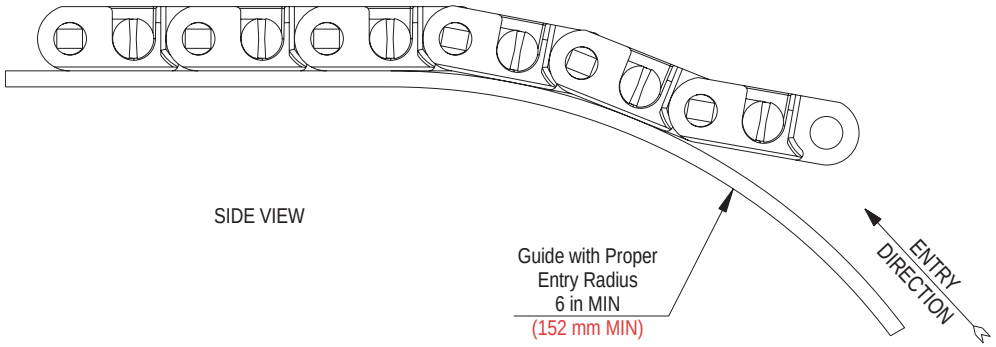
⇨Provide a generous entry radius to the return section which permits the chain to feed smoothly into the return ways

⇨The entry radius should be greater than the minimum back-flex radius of the chain (see table on page EM - MT - 32)

⇨Rexnord recommends a 6 in (152 mm) minimum entry radius to prevent non-uniform wear

⇨When returning 7956 chain on its TABs, guide the chain onto the return wearstrips using a guide shoe (see table on page EM - MT - 22 for proper guide clearance)

⇨At the entry of the return wearstrips, pro vide rounded corners to prevent catching or snagging of the chain flights



Entry Radius for Sliding Returns

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CONVEYOR DESIGN RECOMMENDATIONS

Sprocket and Wearstrip Location

⇨The distance from the end of the wearstrip to the sprocket shaft centerline should equal dimension "C"; otherwise, the wearstrip will interfere with the free articulation of the chain as it enters the sprocket

⇨The leading edges of the wearstrip should be beveled

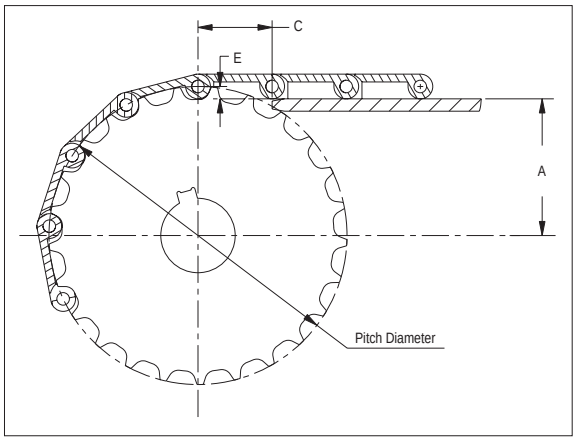
⇨The following formulas and dimensions used in conjunction with the figure will give the proper shaft and wearstrip positioning

Sprocket Location For Conventional Chains:

A = (Pitch Diameter/2) - E

C = One Chain Pitch (see table below)

"C" equals one chain pitch which ensures support under chain at all times.



Shaft Drop Values - For Conventional Chain					
Chain Series	Chain Number	"C" Dimension"		"E" Dimension"	
		in	mm	in	mm
1500	1505/1506	0.59	15.0	0.190	4.83
2010	2011/2015/2016	2.00	50.8	0.320	8.00
2100	2100	1.00	25.4	0.170	4.32
3000	3003/3004	2.50	63.5	0.438	11.11
4700	4705/4706	1.50	38.1	0.250	6.35
5700	5705/5706	1.50	38.1	0.250	6.35
5930	5935/5936	0.75	19.1	0.170	4.32
5966	5966	1.50	38.1	0.250	6.35
5990	5995/5996/5998	2.25	57.2	0.360	9.14
6085	6085	2.00	50.8	0.310	7.87
6938	6938	0.75	19.1	0.170	4.32
7526	7526	0.50	12.7	0.250	6.35
7705	7705/7706/7708	1.00	25.4	0.250	6.35
7720	7725/7726	1.00	25.4	0.250	6.35
7950	7956	1.25	31.8	0.250	6.35
8500	8505/8506	0.75	19.1	0.170	4.32
9600	9608	1.50	38.1	0.380	9.65

Example:
For a 5996 chain utilizing a 14T sprocket:

A = (Pitch Diameter/2) - E =
(10.111 in/2) - 0.360 in = 4.696 in
C = 2.25 in

Metric:
A = (Pitch Diameter/2) - E =
(256.82 mm/2) - 9.14 mm = 119.27 mm
C = 57.1 mm

✓ Tolerances

A = +0.03 in / -0.00 in (+0.8mm / -0.0 mm)
C = +0.25 in / -0.00 in (+6.3 mm / -0.0 mm)

CAUTION Above values are good only for sprockets mounted between support tracks. For sprockets mounted in line with support tracks:

$$C = \sqrt{\left(\frac{O.D.}{2}\right)^2 - (A-t)^2} + 0.125$$

A = (Pitch Diameter/2) - E
O.D. = Outside Diameter
t = Wearstrip Thickness

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CONVEYOR DESIGN RECOMMENDATIONS

Sprocket and Wearstrip Location

⇨The distance from the end of the wearstrip to the sprocket shaft centerline should equal dimension "C"; otherwise, the wearstrip will interfere with the free articulation of the chain as it enters the sprocket

⇨The leading edges of the wearstrip should be beveled

⇨The following formula and dimensions used in conjunction with the figure will give the proper shaft and wearstrip positioning

Sprocket Location For Raised Rib Chains:

A = (Pitch Diameter/2) - E

C = One Chain Pitch (see table below)

D = (Pitch Diameter/2) + F

T = Comb Thickness (see Product Catalog for dimensions)

"C" equals one chain pitch which ensures support under chain at all times.

Example:
For a 5997 chain utilizing a 14T sprocket:

A = (Pitch Diameter/2) - E
= (10.111 in/2) - 0.360 in = 4.696 in

B = 3.25 in

C = 2.25 in

D = (Pitch Diameter/2) + F
= (10.111in/2) + 0.610 in = 5.666 in

T = 0.25 in

Metric:

A = (Pitch Diameter/2) - E
= (256.82 mm/2) - 9.14 mm = 119.27 mm

B = 82.6 mm

C = 57.2 mm

D = (Pitch Diameter/2) + F
= (256.82 mm/2) + 15.49 mm = 143.90 mm

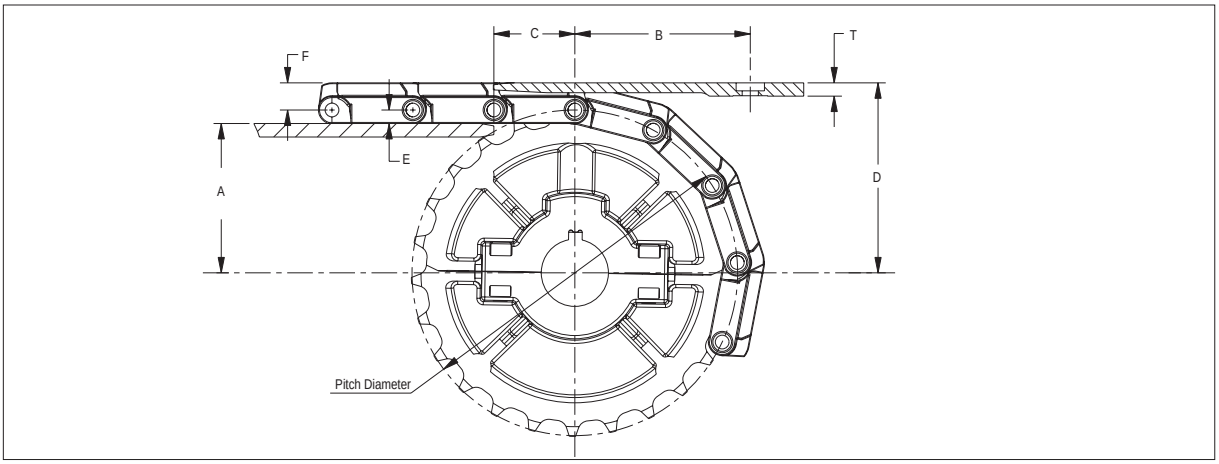
T = 6.4 mm

✓ Tolerances

A = +0.03 in / -0.00 in (+0.8mm / -0.0 mm)
C = +0.25 in / -0.00 in (+6.3 mm / -0.0 mm)
D = +0.00 in / -0.03 in (+0.0 mm / -0.8 mm)

✓ "B" dimension is flexible. One must ensure that the comb fingers extend beyond the sprocket centerline to avoid transfer problems.

CAUTION Mounting sprocket s in line with wearstrips is not recommended for chains using comb transfer plates.



Shaft Drop Values - For Conventional Chain								
Chain Series	"B" Dimension"		"C" Dimension"		"E" Dimension"		"F" Dimension"	
	in	mm	in	mm	in	mm	in	mm
4707	3.25	82.6	1.50	38.1	0.250	6.35	0.500	12.70
5997	3.25	82.6	2.25	57.2	0.360	9.14	0.610	15.49
8507	3.25	82.6	0.75	19.1	0.170	4.32	0.390	9.91

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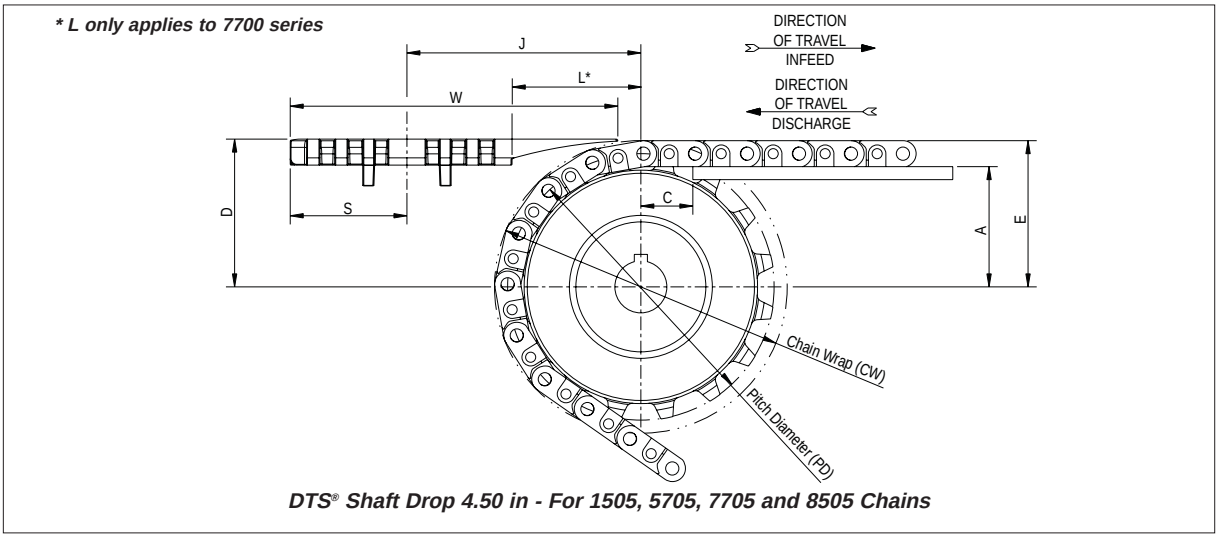
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Notes

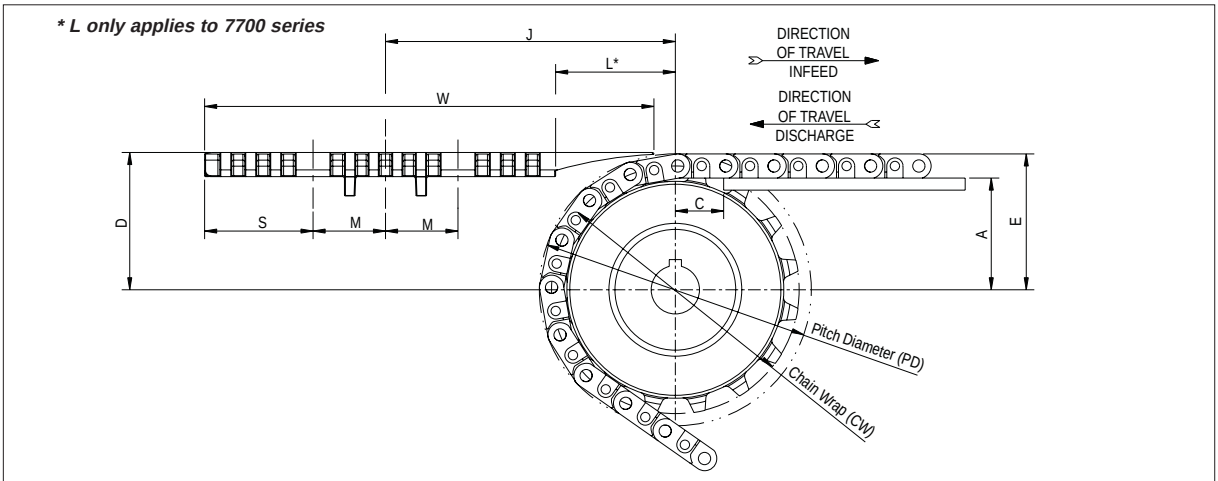
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CONVEYOR DESIGN RECOMMENDATIONS

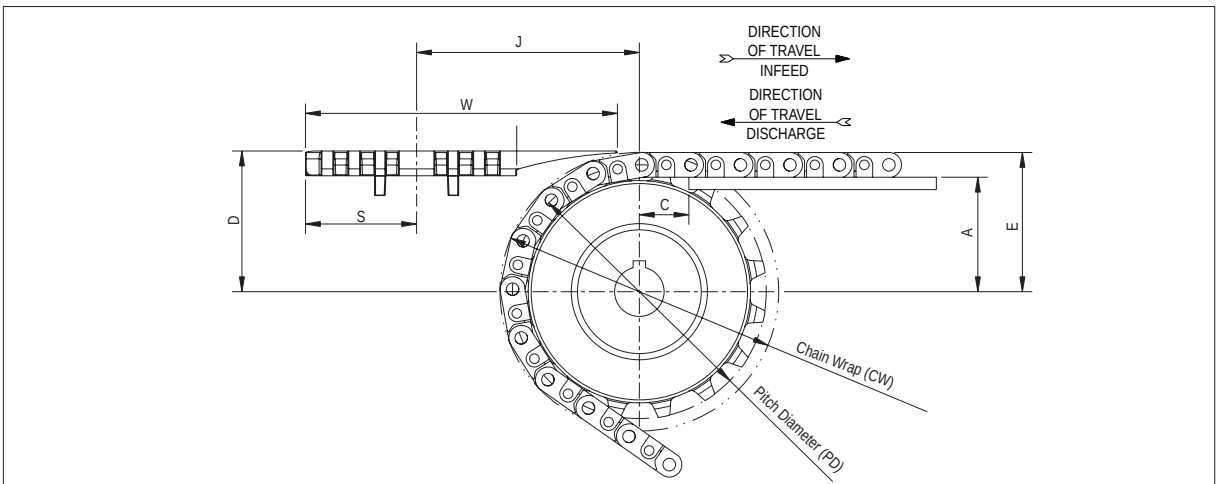
Sprocket Location for DTS® Chains



DTS® Shaft Drop 4.50 in - For 1505, 5705, 7705 and 8505 Chains



DTS® Shaft Drop 7.50 in - For 7705 Chain



DTS® Shaft Drop 7.50 in - For 8505 Chain

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CONVEYOR DESIGN RECOMMENDATIONS

Sprocket Location for DTS® Chains

1505 - 4.50 in Single Module DTS®

No. of Spkt.Teeth	PD	A	C	CW	D		E	J		S	W
					Infeed	Discharge		Infeed	Discharge		
24T	4.524	2.07	0.59	4.84	2.45	2.40	2.42	4.17	4.40	2.62	6.29
	114.9	52.6	15.0	122.9	62.2	61.0	61.5	105.9	111.8	66.5	159.8
32T	6.040	2.83		6.35	3.21	3.15	3.18	4.24	4.51		
	153.4	71.8		161.3	81.5	80.0	80.8	107.7	114.6		

5705 - 4.50 in Single Module DTS®

No. of Spkt.Teeth	PD	A	C	CW	D		E	J		S	W
					Infeed	Discharge		Infeed	Discharge		
21T	5.089	2.30	1.50	5.59	2.83	2.77	2.80	4.98	5.28	2.25	6.82
	129.3	58.4	38.1	142.0	71.9	70.4	71.1	126.5	134.1	57.2	173.2
23T	5.560	2.53		6.06	3.06	3.00	3.03	4.99	5.31		
	141.2	64.3		153.9	77.7	76.2	77.0	126.7	134.9		
25T	6.032	2.77		6.53	3.30	3.24	3.27	5.01	5.33		
	153.2	70.4		165.9	83.8	82.3	83.1	127.3	135.4		
27T	6.504	3.00		7.00	3.53	3.47	3.50	5.03	5.36		
	165.2	76.2		177.8	89.7	88.1	88.9	127.8	136.1		

7705 - 4.50 in & 7.50 in Single Module DTS®

No. of Spkt. Teeth	PD	A	C	CW	D		E	J				L		M	S	W
								4.50		7.50						
					Infeed	Discharge		Infeed	Discharge	Infeed	Discharge	Infeed	Discharge	7.50		
16T	5.126	2.31	1.00	5.63	2.84	2.78	2.81	4.58	4.84	6.08	6.34	2.56	2.82	1.50	2.25	6.30
	130.2	58.7	25.4	143.0	72.1	70.6	71.4	116.3	122.9	154.4	161.0	65.0	71.6	38.1	57.2	160.0
18T	5.759	2.63		6.26	3.16	3.10	3.13	4.61	4.88	6.11	6.38	2.59	2.86			
	146.3	66.8		159.0	80.3	78.7	79.5	117.1	124.0	155.2	162.1	65.8	72.6			
21T	6.710	3.11		7.21	3.64	3.58	3.61	4.65	4.94	6.15	6.44	2.63	2.92			
	170.4	79.0		183.1	92.5	90.9	91.7	118.1	125.5	156.2	163.6	66.8	74.2			
31T	9.885	4.69		10.39	5.22	5.16	5.19	4.77	5.12	6.27	6.62	2.75	3.10			
	251.1	119.1		263.9	132.6	131.1	131.8	121.2	130.0	159.3	168.1	69.9	78.7			

8505 - 4.50 in Single Module DTS®

No. of Spkt.Teeth	PD	A	C	CW	D		E	J		S	W
					Infeed	Discharge		Infeed	Discharge		
17T	4.120	1.89	0.75	4.46	2.26	2.20	2.23	4.44	4.67	2.32	6.30
	104.6	48.0	19.1	113.3	57.4	55.9	56.6	112.8	118.6	58.9	160.0
21T	5.079	2.37		5.42	2.74	2.68	2.71	4.50	4.75		
	129.0	60.2		137.7	69.6	68.1	68.8	114.3	120.7		
24T	5.800	2.73		6.14	3.10	3.04	3.07	4.53	4.79		
	147.3	69.3		156.1	78.7	77.2	78.0	115.1	121.7		
25T	6.040	2.85		6.38	3.22	3.16	3.19	4.54	4.81		
	153.4	72.4		162.2	81.8	80.3	81.0	115.3	122.2		
27T	6.521	3.09		6.87	3.46	3.40	3.43	4.56	4.84		
	165.6	78.5		174.5	87.9	86.4	87.1	115.8	122.9		

8505 - 7.50 in Single Module DTS®

No. of Spkt.Teeth	PD	A	C	CW	D		E	J		S	W
					Infeed	Discharge		Infeed	Discharge		
17T	4.120	1.89	0.75	4.46	2.26	2.20	2.23	6.10	6.33	3.66	9.30
	104.6	48.0	19.1	113.3	57.4	55.9	56.7	154.9	160.8	93.0	236.3
21T	5.079	2.37		5.42	2.74	2.68	2.71	6.16	6.41		
	129.0	60.2		137.7	69.6	68.1	68.8	156.5	162.8		
24T	5.800	2.73		6.14	3.10	3.04	3.07	6.19	6.46		
	147.3	69.3		156.0	78.7	77.2	78.0	157.2	164.1		
25T	6.040	2.85		6.38	3.22	3.16	3.19	6.20	6.48		
	153.4	72.4		162.1	81.8	80.3	81.0	157.5	164.6		
27T	6.521	3.09		6.87	3.46	3.40	3.43	6.23	6.51		
	165.6	78.5		174.5	87.9	86.4	87.1	158.2	165.4		

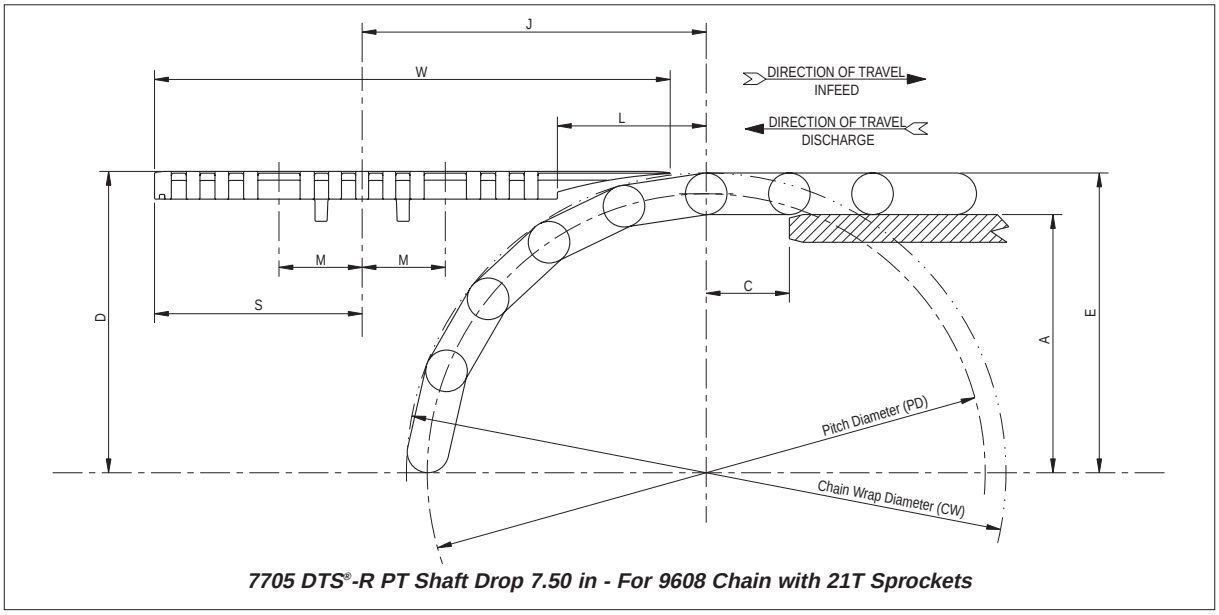
Black = Inches
Red = Millimeters

Contact Rexnord Application Engineering for more information 1.262.376.4800

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CONVEYOR DESIGN RECOMMENDATIONS

Sprocket Location for DTS® Chains



7705 DTS®-R PT Shaft Drop 7.50 in - For 9608 Chain with 21T Sprockets

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CONVEYOR DESIGN RECOMMENDATIONS

Sprocket Location for DTS® Chains

9608 - 7.50 in Single Module DTS®															
No. of Spkt.Teeth	PD	A	C	CW	D		E		J		L		M	S	W
					Infeed	Discharge	Infeed	Discharge	Infeed	Discharge	Infeed	Discharge			
21T	10.064	4.66	1.50	10.81	5.44	5.41	5.41	5.33	6.21	6.35	2.68	2.83	1.50	3.75	9.30
	255.6	118.4	38.1	274.7	138.1	137.4	137.4	135.4	157.7	161.3	68.2	71.9	38.1	95.1	236.2

Black = Inches
Red = Millimeters

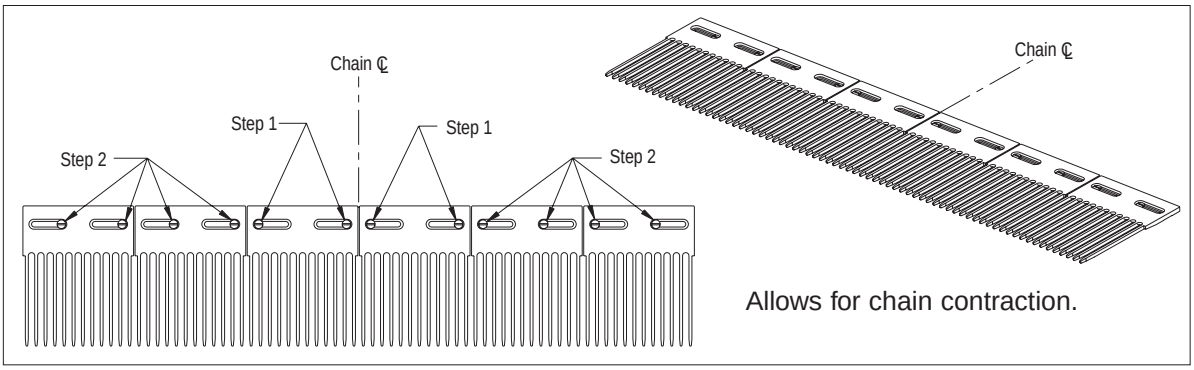
DTS®-C design manual is available for more details (8rxDTS-Cdm-en)

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CONVEYOR DESIGN RECOMMENDATIONS

Transfer Comb Installation

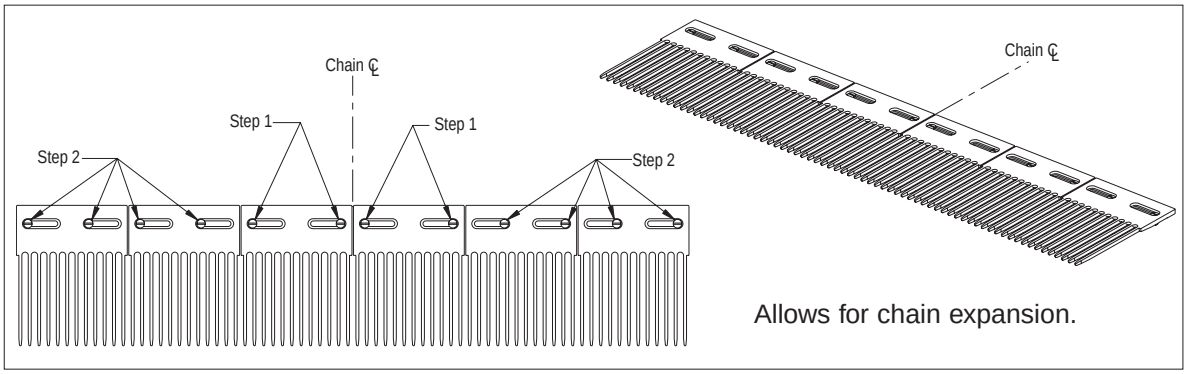
Low Temperature Application



STEP 1 Secure the two center most transfer plates in order to track the chain

STEP 2 Position the fasteners in the remaining transfer plates to the corresponding right side or left side of the slots to allow for contraction at low temperatures

High Temperature Application



STEP 1 Secure the two center most transfer plates in order to track the chain

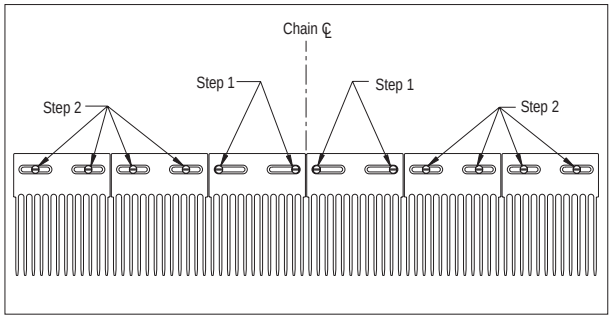
STEP 2 Position the fasteners in the remaining transfer plates to the corresponding right side or left side of the slots to allow for expansion at high temperatures

This arrangement will allow these transfer plates to move as required to accommodate changes in the chain width up to 1.50 in (38.1 mm).

Room Temperature Applications

STEP 1 Secure the two center most transfer plates in order to track the chain

STEP 2 The transfer plates to the left and right should have fasteners centered in the mounting slots



Combs

⇨A variety of styles and materials are available

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CONVEYOR DESIGN RECOMMENDATIONS

Shafting Recommendations for Rotating Shafts

Recommended Materials:

⇨Carbon steel - best for obtaining high hardness and good finish; used only in non corrosive environments
⇨Stainless Steel - good finish and chemical resistance; best for wash down or wet applications

Suggested Hardness:

⇨Shaft material and finish affects sprocket bore wear; typically the harder the shaft, the better the wear
⇨General recommendation is 25 to 30 Rc

Suggested Surface Finish:

⇨Surface finish of the shaft affects wear; rough surfaces will abrade the sprocket bores
⇨General recommendation is 63 µ-in Ra

Straightness Tolerance:

⇨General recommendation is within 1/32 inch (0.8 mm) over the shaft length

Twist Tolerance:

⇨General recommendation is maximum of 1/8 degree/ft (0.4 degree/m) of shaft length

TIR Tolerance (Total Indicator Run-out):

⇨General recommendation is maximum of 1/32 inch (0.8 mm)

✓ Shafting over 10 feet (3.0 m) long that meets the requirements listed above can be difficult to obtain. For this reason, two shafts can be coupled together to form the required length.

CAUTION In using split shafts, it is important to ensure that the shafts are coupled in time with respect to the sprocket keyway or the flats of the square.

Shafting Recommendations for Stationary Tail Shafts

Recommended Materials:

⇨Carbon Steel (dry environments only)
⇨Stainless Steel

Suggested Hardness:

⇨25 to 30 Rc

Suggested Surface Finish:

⇨63 µ-in Ra

✓ Rexnord recommends rotating shafts in bearings. If bearings are not used, the following are guidelines for operating Rex® MatTop® sprockets on stationary shafts:

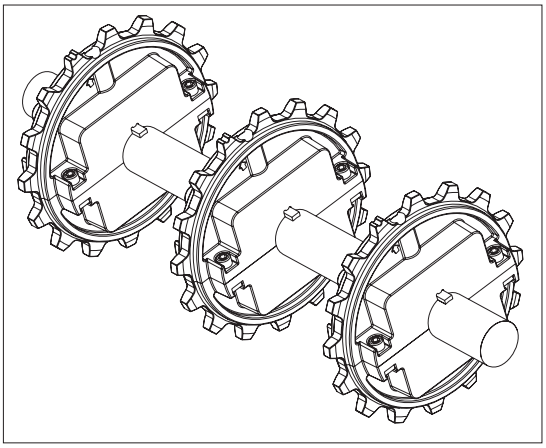
Sprocket	Max. Recommended Chain Speed	
	FPM	MPM
N - Acetal	0 - 50	0 - 15
UHMWPE	0 - 50	0 - 15
NS - Nylon, Split	0 - 50	0 - 30
LF Bushing (Idler Wheel)	0 - 50	0 - 90
Bronze Bushing	0 - 50	0 - 150
Bearings	Recommended for Speeds > 300	Recommended for Speeds > 90

Contact Rexnord Application Engineering for more information 1.262.376.4800

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CONVEYOR DESIGN RECOMMENDATIONS

Round Bore Sprockets

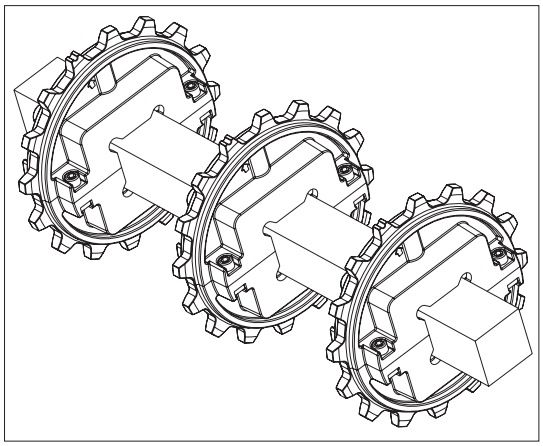


⇨Use round bore sprockets on conveyors operating at room temperature

⇨When installing the sprockets, make sure that all sprocket faces are positioned the same way on the shaft (shown above)

⇨After positioning all the sprockets in line with the sprocket tooth pockets in the chain, secure the sprockets with setscrews

Square and Hex Bore Sprockets

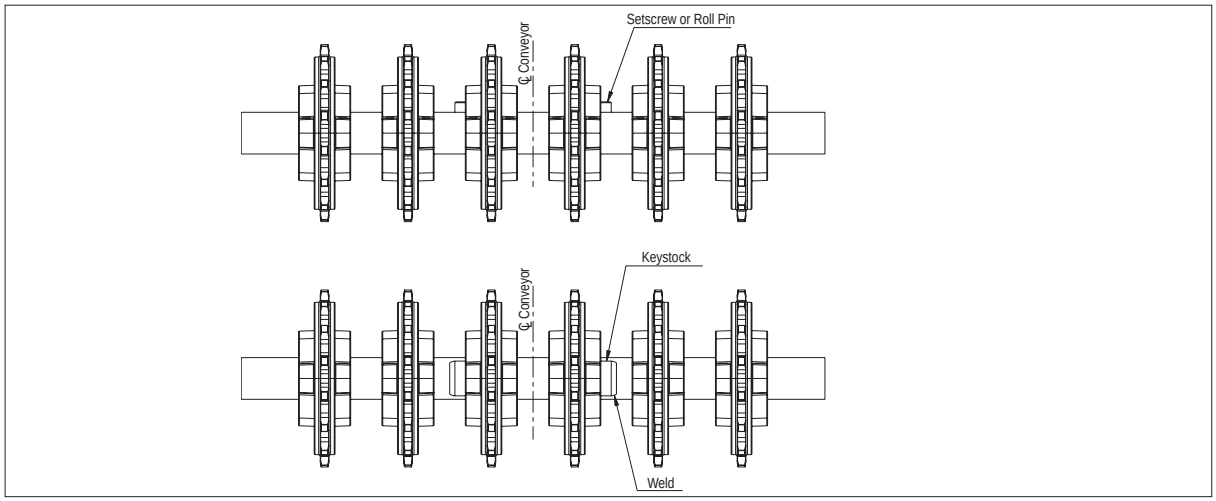


⇨Use square bore sprockets on conveyors intended for use at elevated or lower temperatures (warmer, pasteurizer, cooler and freezer applications)

⇨When installing the sprockets, make sure that all sprocket faces are positioned the same way on the shaft (shown above)

Locking Methods

⇨It is generally recommended to lock the center sprocket(s) to the shaft using setscrews or set collars. The other sprockets should "float" axially



✓ Close up view of the center sprocket(s) indicates the method of locking the sprocket to the shaft (i.e. keystock, roll pin, snap rings, set collars).

CAUTION For 6085 chains, lock all sprockets in place.

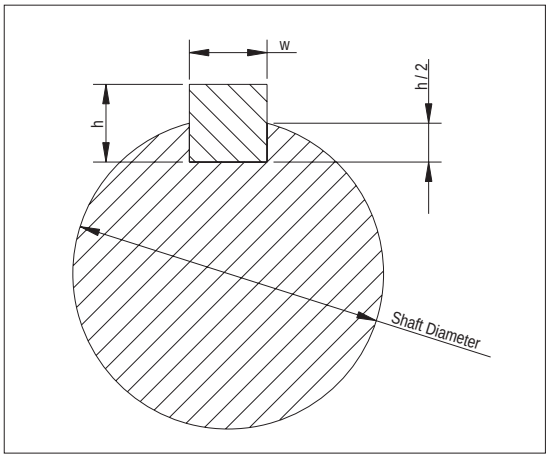
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Keyway and Setscrew Sizes

English:	KEYWAY			
Shaft Diameter	Key Width (w)	Key Height (h)	Keyseat Depth (h/2)	Setscrew Size
> 9/16" to 7/8"	3/16"	3/16"	3/32"	1/4-20
> 7/8" to 1-1/4"	1/4"	1/4"	1/8"	3/8-16
> 1-1/4" to 1-3/8"	5/16"	5/16"	5/32"	3/8-16
> 1-3/8" to 1-3/4"	3/8"	3/8"	3/16"	3/8-16
> 1-3/4" to 2-1/4"	1/2"	1/2"	1/4"	1/2-13
> 2-1/4" to 2-3/4"	5/8"	5/8"	5/16"	1/2-13

Metric:

Shaft Diameter	Key Width (w)	Key Height (h)	Keyseat Depth (h/2)	Setscrew Size
> 22mm to 30mm	8mm	7mm	3.5mm	M6 x 1
> 30mm to 38mm	10mm	8mm	4mm	M8 x 1.25
> 38mm to 44mm	12mm	8mm	4mm	M10 x 1.5
> 44mm to 50mm	14mm	9mm	4.5mm	M10 x 1.5
> 50mm to 58mm	16mm	10mm	5mm	M12 x 1.75
> 58mm to 65mm	18mm	11mm	5.5mm	M12 x 1.75



Keyed round bore sprockets are available with one setscrew as standard. Additional setscrews can be provided upon request. Metric keyed round bore sprockets are not supplied with setscrew as standard.

CAUTION

If multiple strands share a tail shaft, key only one sprocket and allow others to rotate. Collars should be utilized to prevent floating.

Split Sprocket Bore Nomenclature

Shaft Ready - Tight fit on the shaft with a keyway and setscrew.

Plain Bore - Same tight fit bore as a shaft ready bore, but without a keyway and setscrew.

Idler Bore - Round bore with a clearance fit (no keyway or setscrew). Designed to spin freely on the shaft.

Rough Stock Bore - Wide tolerance bore used for work in process. Not for use on any shaft. Must be further machined for actual use.

Over Sized Bore - Round bore with a slightly loose fit on the shaft with keyway but no setscrew. Designed to move laterally on the shaft during setup and still transmit torque through the keyway as a drive sprocket in the actual application. Not recommended for axial float in thermal applications.

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CONVEYOR DESIGN RECOMMENDATIONS

Available Chain Widths (MTW vs Standard vs Nonstandard)

Chain Series	MTW	Standard (uncut)		Nonstandard (cut)		Accessories		
	Molded to Width Chains	Minimum Chain Width	Chain Width Increment	Minimum Chain Width	Chain Width Increment	Pushers	Sideguards	Hold Down TABs
1503	——-	12 in	6 in	6 in	3 in	No	No	No
1505 / 1506	3 in, 6 in	3 in	3 in	4-1/2 in	3/4 in	Yes	Yes	No
1505 RubberTop™	——-	3 in	3 in	4-1/2 in	3/4 in	No	No	No
1505 DTS® Positrack™ Tracking Guides	4-1/2 in	——-	——-	——-	——-	No	No	Positrack™ Tracking Guides
2011	——-	8 in	2 in	6 in	2/3 in	Yes	Yes	No
2015	——-	6 in	2 in	4 2/3 in	2/3 in	Yes	Yes	No
2016	——-	8 in	2 in	6 in	2/3 in	Yes	Yes	No
2100	12 in, 13 in	——-	——-	3 in	1 in	Yes	No	No
3003/3004	——-	4-1/2 in	1-1/2 in	——-	——-	No	No	No
4705 / 4706	6 in	6 in	6 in	2 in	Any width possible	Yes	Yes	Yes (4705 Only)
4707	6 in	6 in	6 in	2 in	1 in	No	No	No
5705 / 5706	3-1/4 in, 4-1/2 in, 6 in, 7-1/2 in, 15 in	6 in	3 in	3 in	1 in	No	No	No
5705 / 5706 Positrack™ Tracking Guides	3-1/4 in, 4-1/2 in	——-	——-	——-	——-	No	No	Positrack™ Tracking Guides
5705 DTS® Positrack™ Tracking Guides	4-1/2 in	——-	——-	——-	——-	No	No	Positrack™ Tracking Guides
5935	——-	9 in	3 in	3 in	3/4 in	Yes	Yes	Yes
5936	——-	18 in	6 in	2-1/4 in	3/4 in	Yes	Yes	Yes
5966	——-	18 in	6 in	4-11/16 in (3 in possible)	Contact Rexnord Engineering	Yes	Yes	No
5995	——-	9 in	3 in	3 in	1/2 in	No	No	No
5996	——-	18 in	6 in	4-1/2 in	1/2 in	Yes	Yes	No
5997	——-	18 in	6 in	4-1/2 in	1/2 in	No	No	No
5998	——-	18 in	6 in	5 in	1/2 in	Yes	Yes	No
6085	3 in, 6 in	3 in	3 in	3-3/5 in	3/5 in	Yes	Yes	No
6938	3 in, 6 in	3 in	3 in	3-3/4 in	3/4 in	Yes	No	No
7526 Positrack™ Tracking Guides	——-	255 mm	50 mm	170 mm	17 mm	No	No	Positrack™ Tracking Guides
7705 / 7706	3-1/4 in, 4-1/2 in 6 in, 7-1/2 in, 15 in	6 in	3 in	5 in (3 in possible)	1/2 in	No	No	No
7705 / 7706 Positrack™ Tracking Guides	3-1/4 in, 4-1/2 in 7-1/2 in	——-	——-	——-	——-	No	No	Positrack™ Tracking Guides
7705 DTS® Positrack™ Tracking Guides	4-1/2 in, 7-1/2 in	——-	——-	——-	——-	No	No	Positrack™ Tracking Guides
7705 Metric	84 mm (Positrack™ Tracking Guides Only)	255 mm	85 mm	142 mm	Contact Rexnord Engineering	No	No	Positrack™ Tracking Guides
7705 RubberTop™	——-	9 in	3 in	9-1/2 in	1/2 in	No	No	No
7708	——-	9 in	3 in	5 in (3 in possible)	1/2 in	No	No	No
7725 / 7726	4-1/2 in	——-	——-	——-	——-	No	No	No
7956	6 in, 12 in, 15 in, 18 in, 24 in, 30 in”	——-	——-	——-	——-	No	No	Yes
8505 / 8506	2-1/3 in, 3-1/4 in, 85 mm, 4-1/2 in, 6in, 7-1/2 in, 12 in	18 in	6 in	2-1/3 in	1/3 in	Yes	Yes	Yes
8505 / 8506 Positrack™ Tracking Guides	3-1/4 in, 85 mm, 4-1/2 in, 6 in, 7-1/2 in	——-	——-	——-	——-	No	No	Positrack™ Tracking Guides
8505 DTS® Positrack™ Tracking Guides	4-1/2 in	——-	——-	——-	——-	No	No	Positrack™ Tracking Guides
8507	——-	——-	——-	3 in	1/3 in	No	No	No
9608	——-	18 in	6 in	5 in	1/2 in	No	No	No

Standard chains are typically less expensive.

Contact Rexnord Application Engineering for more information 1.262.376.4800

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Rex® MatTop® CALCULATION PROGRAM

The Rex® MatTop® Calculation Program is available to perform chain pull calculations for specific conveyor applications.

To obtain the most recent calculation program:

⇨Download from Technical Support at: http://www.rexnord.com/flattop

⇨Contact Application Engineering

Prior to performing chain pull calculations, the following information is needed:

⇨Chain style, material and width
Drive configuration (i.e. end drive, bottom drive)

⇨Wearstrip material

⇨Corner track material (if utilizing a side-flexing chain)

⇨Lubrication conditions (i.e. dry, water, soap & water, oil)

⇨Chain speed (FPM) or (MPM)

⇨Product weight (lbs/ft^2) or (kg/m^2)

⇨Product material

⇨Percent of time product accumulation occurs (i.e. slippage)

⇨Portion of conveyor where product accumulation occurs

⇨Conveyor layout with dimensions

⇨Change in elevation

⇨Sprocket pitch diameter

The calculation output sheet contains the following information:

⇨Maximum allowable headshaft chain tension (per temperature)

⇨Percent of allowable chain tension (per temperature)

⇨Number of sprockets required per shaft

⇨Tension per chain width

⇨Total horsepower required with an assumed gearbox efficiency of 100%

⇨Total torque required

⇨Minimum shaft diameter required

✓ If the percent of allowable chain tension is 100% or less, your conveyor application is within chain capacity.

CAUTION The horsepower requirement the program calculates is the "design horse power" that is required to power the conveyor based on the input parameters. Additional considerations should be made for the type of drive used, efficiency losses in the power train, as well as any gearbox manufacturer's recommendations.

The 7956 RexFlex™ should be run in the Rex® TableTop® Calculation Program

For a side-flexing conveyor, the calculation output sheet contains the following information:

⇨Calculated corner tension (PV)

⇨Maximum allowable corner tension

✓ If the calculated corner tension is less than the maximum allowable corner tension, your conveyor application is within chain PV capacity.

The Rex® MatTop® Calculation Program calculates the following:

⇨MatTop® conveyor and shafting analysis

⇨Catenary sag vs. length vs. tension

⇨Catenary sag vs. length vs. excess chain

⇨Product backline pressure (due to accumulation)

CAUTION The Rex® MatTop®Calculation Program does not take environmental conditions into consideration. This calculation program **ONLY** provides information on whether the chain is within capacity.

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IMPORTANT FORMULAS (English)

Conveyor Speed

Containers:

Single File:

Containers/ft = 12 in/ft ÷ Dia. or Length of Container (in)

FPM = CPM ÷ Containers/ft

Mass Flow:

Containers/ft^2 = 166.277 ÷ Dia.(in)^2

FPM = CPM ÷ Containers/ft^2 x (Width (in)/12 in/ft)

Note: For TableTop® Chain:
Conveyor Width (in) = # of Strands x Flight Width (in)

Bulk Flow:

lbs/min = TPH x 2000 lbs/ton ÷ 60 min/hour

FPM = lbs/min ÷ Density (lbs/ft^3) x H (ft) x W (ft)

Knowing Headshaft RPM:

FPM = Eff. Spkt Teeth (n) x Pitch (in) x RPM ÷ 12 in/ft
OR:
~ P.D. (in) x Pi x RPM ÷ 12 in/ft

Horsepower

HP = Chain Pull (lbs) x FPM ÷ 33,000
OR:
= Torque (ft/lb) x RPM ÷ 5252

Sprocket Dimensions

Spkt P.D. = Chain Pitch (in) ÷ SIN (180/N)

Product Weight

lbs/ft = Containers/ft x lbs/Container

For MatTop® Chain:
lbs/ft^2 = Containers/ft^2 x lbs/Container

For TableTop® Chain:
lbs/ft = Containers/ft^2 x lbs/Container x (Flight Width (in)/12in/ft)

lbs/ft^2 = Density (lbs/ft^3) x H (ft)

NOTES ON HORSEPOWER:
For TableTop® Chain:
Chain Pull = chain tension x # of strands
Where chain tension is in lbs

For MatTop® Chain:
Chain Pull = chain tension x chain width (ft)
Where chain tension is in lbs/ft of MatTop® chain width

Remember to apply appropriate service factors and take drive train efficiencies into account.

IMPORTANT FORMULAS (Metric)

Conveyor Speed

Containers:

Single File:

Containers/m = 1000 mm/m ÷ Dia. or Length of Container (mm)

m/min = CPM ÷ Containers/m

Mass Flow:

MatTop® Chain:
Containers/m^2 = 1,150,000 ÷ Dia.(mm)^2

m/min = CPM ÷ Containers/m^2 x (Width (mm)/1000 mm/m)

Note: For TableTop® Chain:
Conveyor Width (mm) = # of Strands x Flight Width (mm)

Bulk Flow:

kg/min = Tonnes/hour x 1000 kg/Tonne ÷ 60 min/hour

m/min = kg/min ÷ Density (kg/m^3) x H (m) x W (m)

Knowing Headshaft RPM:

m/min = Eff. Spkt Teeth (n) x Pitch (mm) x RPM ÷ 1000 mm/m
OR:
~ P.D. (mm) x Pi x RPM ÷ 1000 mm/m

Power

KW = Chain Pull (n) x m/min ÷ 60,000
OR:
= *Torque (N-m) x RPM ÷ 9550*

Sprocket Dimensions

Spkt P.D. = Chain Pitch (mm) ÷ SIN (180/n)

Product Weight

kg/m = Containers/m x kg/Container

For MatTop® Chain:
kg/m^2 = Containers/m^2 x kg/Container

For TableTop® Chain:
kg/m = Containers/m^2 x kg/Container x (Flight Width (mm)/1000mm/m)

kg/m^2 = Density (kg/m^3) x H (m)

NOTES ON POWER:
For TableTop® Chain:
Chain Pull = chain tension x # of strands
where chain tension is in newtons

For MatTop® Chain:
Chain Pull = chain tension x chain width (m)
where chain tension is in N/m of MatTop® chain width

Remember to apply appropriate service factors and take drive train efficiencies into account.

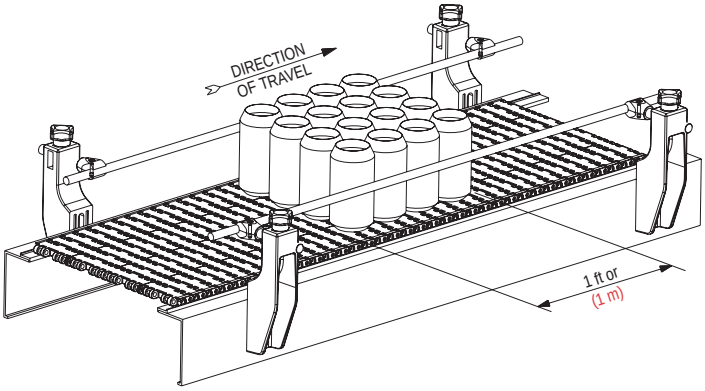
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Rex® MatTop® CALCULATION PROGRAM

Calculating Chain Speed, Given Production Output

Unit Handling

⇨When handling individual containers or packages, the speed of Rex® MatTop® Chain is deter mined using the same method as for Rex® TableTop® Chain (see pages EM - TT - (33 - 35)). Likewise, the product weight is figured in the same manner, with one exception: for en masse (in mass) conveyors, always use the product weight per area (ft^2 or m^2), regardless of the actual chain width



Example:

An incline dewatering belt must run tomatoes at a speed of 100 tons per hour (TPH) (90.7 tonnes per hour). The density of the tomatoes is 65 lbs/ft^3 (1041 kg/m^3). The chain width is 3.00 ft (0.91 m) and the estimated average height of the product on the incline is 0.25 ft (0.08 m).

⇨Initial chain selection = HUV5998-36 in w/ F4 Pusher Flights every 6th Pitch

English

$$\text{lbs/min} = \frac{\text{TPH} \times 2000 \text{ lbs/ton}}{60 \text{ min/hour}} = \frac{100 \times 2000}{60} = 3{,}333 \text{ lbs/min}$$

$$\text{Chain Speed (FPM)} = \frac{\text{lbs/min}}{\text{Density (lbs/ft}^3\text{)} \times \text{H (ft)} \times \text{W (ft)}} = \frac{3{,}333}{65 \times 0.25 \times 3.00} = 68 \text{ FPM}$$

Metric

$$\text{kg/min} = \frac{\text{Tonnes/hour} \times 1000 \text{ kg/tonne}}{60 \text{ min/hour}} = \frac{90.7 \times 1000}{60} = 1512 \text{ kg/min}$$

$$\text{Chain Speed (MPM)} = \frac{\text{kg/min}}{\text{Density (kg/m}^3\text{)} \times \text{H (m)} \times \text{W (m)}} = \frac{1512}{1041 \times 0.08 \times 0.91} = 20 \text{ MPM}$$

The actual conveyor speeds are usually about 10-15% faster than the calculated required speed in order to provide good "product take-away" from the adjacent machinery.

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Rex® MatTop® Calculation Program
> Calculating Chain Speed, Given Production Output
> Unit Handling
> Example

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Rex® MatTop® CALCULATION PROGRAM

Calculating Product Weight, Given Production Output

Bulk Handling

⇨For bulk product conveying, the chain speed depends on the production speed (tons per hour), the product density (weight or mass per unit of volume), the chain width and the estimated height of the product on the chain

When calculating chain tension, the weight of product per area (lbs/ft^2 or kg/m^2) is required.

Example:

An incline dewatering belt must run tomatoes at a speed of 100 tons per hour (TPH) (90.7 tonnes per hour). The density of the tomatoes is 65 lbs/ft^3 (1041 kg/m^3). The chain width is 3.00 ft (0.91 m) and the estimated average height of product on the incline is 0.25 ft (0.08 m).

⇨Initial chain selection = HUV5998-36 in w/ F4 Pusher Flights every 6th Pitch

English

lbs/ft = Density (lbs/ ft) x H (ft) = 65 x 0.25 = 16.3 lbs/ft

Metric

kg/m = Density (kg/m) x H (m) = 1041 x 0.08 = 83.3 kg/m

The actual conveyor speeds are usually about 10-15% faster than the calculated required speeds in order to provide good "product take-away" from the adjacent machinery.

NOTES

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MatTop® PRODUCT SIZES AND WEIGHTS

Typical Product Sizes and Weights

Content		Container Material	Container Size	Base Dimensions		Weight Full		Single File		En Masse	
				inches	mm	lbs	kg	lbs/ft	kg/m	lbs/ft²	kg/m²
Dairy	Milk	Paper	1/2 Pint	3 x 3	76.2 x 76.2	0.60	0.27	2.4	3.6		
		Paper	Pint	3 x 3	76.2 x 76.2	1.10	0.50	4.4	6.5		
		Paper	Quart	3-1/8 x 3-1/8	79.4 x 79.4	2.30	1.04	8.8	13.1		
		Paper	1/2 Gallon	4-1/8 x 4-1/8	104.8 x 104.8	4.50	2.04	13.1	19.5		
		Plastic	Gallon	6 x 6	152.4 x 152.4	8.90	4.04	17.8	26.5		
	Yogurt	Plastic	6 oz	2-5/8" Ø	66.7Ø	0.40	0.18	1.8	2.7	9.7	46.9
		Plastic	6 Pack / 4 oz Containers	5 x 7	127 x 177.8	1.57	0.71	3.8	5.6		
	Cottage Cheese	Plastic	1/2 lb	4 Ø	101.6Ø	0.60	0.27	1.8	2.7	6.2	30.3
		Plastic	1 lb	4-3/4 Ø	120.7Ø	1.10	0.50	2.8	4.1	8.1	39.4
		Plastic	2 lb	5 Ø	127Ø	2.30	1.04	5.5	8.2	15.3	74.4
Beverages	Concentrated Juice	Paper	12 oz	2-5/8 Ø	66.7Ø	1.00	0.45	4.6	6.8	24.1	117.2
	Juice	Plastic	Gallon	6 Ø	152.4Ø	1.17	0.53	2.3	3.5	5.4	26.3
		Glass	Gallon	6 Ø	152.4Ø	3.59	1.63	7.2	10.7	16.6	80.6
		Paper	6.75 oz Box (Tetra)	1-1/2 x 2-1/4	38.1 x 57.2	0.48	0.22	3.8	5.7		
		Plastic	10 Pack / 6.75 Boxes (Tetra)	3 x 10-1/2	76.2 x 266.7	4.87	2.21	19.5	29.0		
	Soft Drink	Aluminum	250 ml PET	2-5/64 Ø	52.9Ø	0.63	0.29	3.6	5.4	24.3	117.4
		Aluminum	12 oz	2.6 Ø	66.0Ø	0.85	0.39	3.9	5.8	20.9	101.8
		Plastic	500 ml PET	2-37/64 Ø	65.5Ø	1.16	0.53	5.4	8.0	29.0	141.0
		Plastic	20 oz PET	2-7/8 Ø	73.0Ø	1.37	0.62	5.7	8.5	27.6	134.1
		Plastic	1 Liter PET	3-3/16 Ø	81.0Ø	2.31	1.05	8.7	12.9	37.8	183.7
		Plastic	1-1/2 Liter PET	4-3/16 Ø	106.4Ø	3.40	1.54	9.7	14.5	32.2	156.7
		Plastic	2 Liter PET	4-1/2 Ø	114.3Ø	4.40	2.00	11.7	17.5	36.1	175.7
		Plastic	3 Liter PET	5-1/8 Ø	130.2Ø	6.38	2.89	14.9	22.2	40.4	196.3
	Beer	Glass	12 oz	2-1/2 Ø	63.5Ø	1.50	0.68	7.2	10.7	39.9	194.0
		Glass	12 oz Non-Returnable	2-3/4 Ø	69.9Ø	1.20	0.54	5.2	7.8	26.4	128.1
		Glass	16 oz Non-Returnable	2-3/4 Ø	69.9Ø	1.60	0.73	7.0	10.4	35.2	170.8
		Glass	32 oz	2-5/8 Ø	66.7Ø	3.40	1.54	15.5	23.1	82.0	398.6
		Glass	64 oz	3-5/8 Ø	92.1Ø	3.88	1.76	12.8	19.1	49.1	238.6
		Aluminum	12 oz	2.6 Ø	66.0Ø	0.85	0.39	3.9	5.8	20.9	101.8
		Paper	12 Pack / 12 oz Cans	10-3/4 x 7-3/4	273.1 x 196.9	10.40	4.72	11.6	17.3		
		Paper	12 Pack Fridge Pack	16 x 4-7/8	406.4 x 123.8	10.32	4.68	7.7	11.5		
		Paper	24 Pack / 12 oz Cans	16 x 10-3/4	406.4 x 273.1	20.16	9.14	15.1	22.5		
		Paper	24 Pack / 12 oz Cans (cube)	10-3/4 x 7-3/4	273.1 x 196.9	20.16	9.14	22.5	33.5		
		Paper	18 Pack / 12 oz Cans	16 x 7-3/4	406.4 x 196.9	14.69	6.66	11.0	16.4		
		Paper	30 Pack / 12 oz Cans	13-1/2 x 7-3/4	342.9 x 196.9	24.48	11.10	21.8	32.4		
	Wine / Champagne	Glass	750 ml	2-7/8 Ø	73.0Ø	2.88	1.31	12.0	17.9	57.9	281.9
		Glass	1.5 Liter	4-1/4 Ø	108.0Ø	6.37	2.89	18.0	26.8	58.6	284.9
		Glass	12 oz	2-1/2 Ø	63.5Ø	1.22	0.55	5.9	8.7	32.5	157.8
		Paper	4 Pack / 12 oz Bottles	5-1/8 x 5-1/4	130.2 x 133.4	5.07	2.30	11.9	17.7		
	Coffee	Metal	1/2 lb	4-1/8 Ø	104.8Ø	0.80	0.36	2.3	3.5	7.8	38.0
		Metal	1 lb	4-1/8 Ø	104.8Ø	1.30	0.59	3.8	5.6	12.7	61.7
		Metal	2 lb	5-1/4 Ø	133.4Ø	2.50	1.13	5.7	8.5	15.1	73.3
		Metal	3 lb	6-1/4 Ø	158.8Ø	3.80	1.72	7.3	10.9	16.2	78.6
Food	Baby Food	Glass	Regular	2-3/8 Ø	60.3Ø	0.56	0.25	2.8	4.2	16.5	80.3
	Baby Food	Glass	Junior	2-3/8 Ø	60.3Ø	0.80	0.36	4.0	6.0	23.6	114.8
	Soup	Metal	10.5 oz	2-5/8 Ø	66.7Ø	0.76	0.34	3.5	5.2	18.3	89.1
	Soup	Metal	18.5 oz	3-1/8 Ø	79.4Ø	1.33	0.60	5.1	7.6	22.6	110.0
	Soup	Metal	32 oz	4 Ø	101.6Ø	1.90	0.86	5.7	8.5	19.7	96.0
	Cracker	Paper	10 oz Box	2-1/4 x 5-1/4	57.2 x 133.4	0.72	0.33	3.8	5.7		
	Peanut Butter	Plastic	18 oz	3 Ø	76.2Ø	1.15	0.52	4.6	6.8	21.2	103.3
	Jelly	Glass	32 oz	3-5/16" Ø	84.1Ø	2.15	0.98	7.8	11.6	32.6	158.6
	Jelly	Glass	18 oz	2-5/8 Ø	66.7Ø	1.62	0.73	7.4	11.0	39.1	189.9
	Catsup	Plastic	24 oz	2-1/4 x 3-3/4	57.2 x 95.3	1.63	0.74	8.7	12.9		
	Apple Sauce	Glass	23 oz	3-5/16 Ø	84.1Ø	2.05	0.93	7.4	11.1	31.1	151.2
	Mayonaise	Glass	32 oz	4 Ø	101.6Ø	3.03	1.37	9.1	13.5	31.5	153.1
	Cereal	Paper	14 oz Box	2-3/8 x 7-1/2	60.3 x 190.5	1.06	0.48	5.4	8.0		
	Vegetable	Metal	14.5 oz	2-15/16 Ø	74.6Ø	1.04	0.47	4.2	6.3	20.0	97.5
	Tuna	Metal	12 oz Can	4 Ø	101.6Ø	0.88	0.40	2.6	3.9	9.1	44.5
	Tomato Sauce	Metal	29 oz	4 Ø	101.6Ø	2.07	0.94	6.2	9.2	21.5	104.6
Cleaners	Dish Soap	Plastic	25 oz	2-7/16 x 3-3/8	61.9 x 85.7	1.78	0.81	8.8	13.0		
	Liquid Laundry Soap	Plastic	22 oz	2 x 3-3/8	50.8 x 85.7	1.60	0.73	9.6	14.3		
	Liquid Laundry Soap	Plastic	32 oz	2-5/8 x 4-1/2	66.7 x 114.3	2.30	1.04	10.5	15.6		
	Liquid Laundry Soap	Plastic	100 oz	5-1/2 x 7-3/4	139.7 x 196	7.01	3.18	15.3	22.8		
	Liquid Bleach	Plastic	Quart	3-1/4 Ø	82.6Ø	2.40	1.09	8.9	13.2	37.8	183.5
	Liquid Bleach	Plastic	1/2 Gallon	4-3/4 Ø	120.7Ø	4.80	2.18	12.1	18.0	35.4	171.9
	Liquid Bleach	Plastic	Gallon	6-1/4 Ø	158.8Ø	9.50	4.31	18.2	27.1	40.4	196.5
	Liquid Bleach	Plastic	182 oz	7-1/4 Ø	184.2Ø	8.16	3.70	13.5	20.1	25.8	125.5
Toiletries	Toilet Paper	Paper	Individual Roll	4-1/4 Ø	108.0Ø	0.23	0.10	0.6	1.0	2.1	10.3
	Toilet Paper	Plastic	4 Pack	4-1/4 x 8-1/2	108 x 215.9	0.93	0.42	2.6	3.9		
	Toilet Paper	Plastic	24 Pack	12 x 15-1/2	304.8 x 393.7	5.67	2.57	5.7	8.4		
Automotive	Tire	Passenger	Typical	28 Ø	711.2 Ø	35.00	15.87				
	Tire	Truck	Typical	48 Ø	1219.2 Ø	150.00	68.03				

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