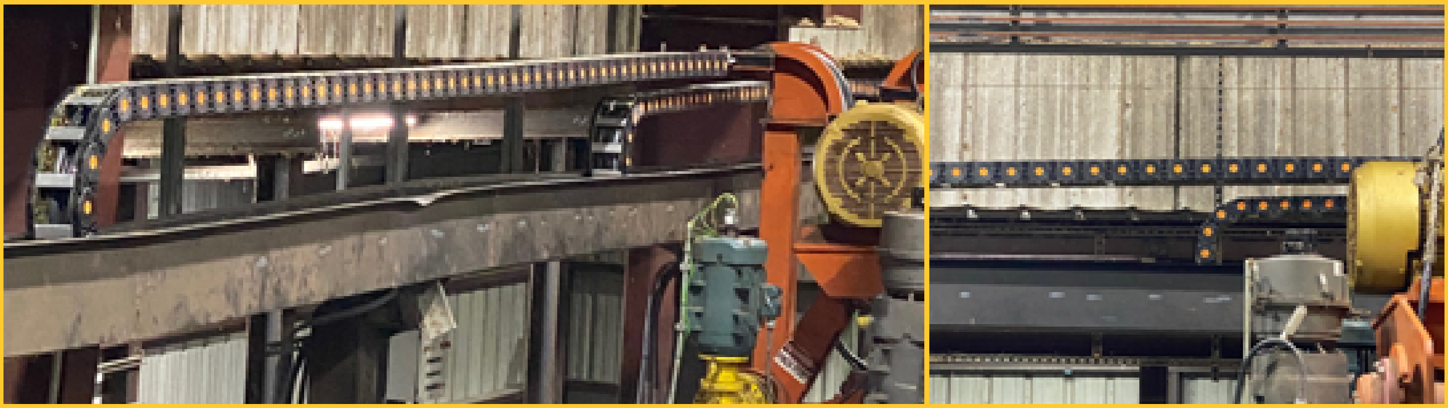
DYNATECT™
DYNAMIC EQUIPMENT PROTECTION

CABLE & HOSE MANAGEMENT SOLUTIONS FOR LONG TRAVEL APPLICATIONS



UNSUPPORTED SPAN IN CABLE CARRIER OPERATION

WHAT IS CONSIDERED LONG TRAVEL?

An application is considered long travel when a cable carrier exceeds its rated unsupported span. Unsupported span is a function of the type of cable carrier (steel or plastic), the total weight of the carrier, its fill weight (cables/hoses), and travel distance. Every cable carrier has an unsupported span. As the unsupported span of the carrier is exceeded, the carrier begins to sag. At this point, the carrier needs additional support or guidance to operate safely and reliably.

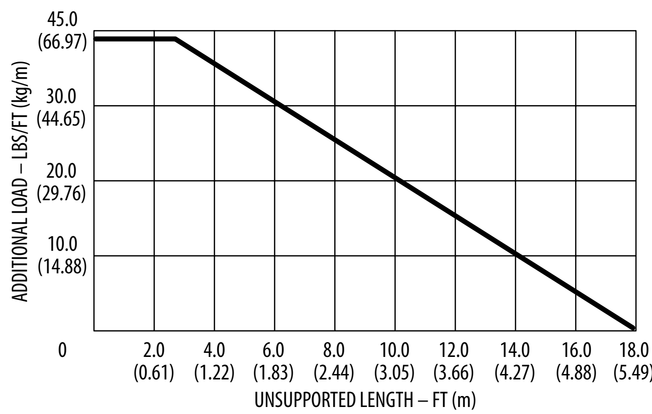
In plastic carrier systems, support guidance is required when sag reaches the point where the upper (moving) section of the carrier contacts the lower section. Metal cable carrier systems tend to have longer unsupported spans than plastic carriers.


Dynatect's Nylatrac NXL Series

WEIGHT LOAD CHARTS

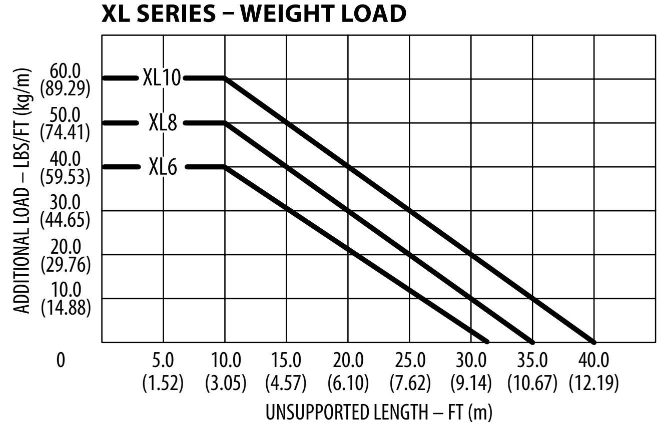
Consult manufacturer's cable carrier specifications for maximum unsupported span.

NXL SERIES – WEIGHT LOAD




Dynatect's Gortrac XL Series

XL SERIES – WEIGHT LOAD



GUIDE TROUGHS

The most common method of support in plastic carrier applications where unsupported spans are exceeded is to install a guide trough to prevent lateral movement during travel.

In a center mounted application, the trough consists of two sections: deep and shallow. As the carrier begins to travel from the retracted position, it initially sags and rides on itself. When the gliding section passes the center point, it transitions to the shallow trough segment.


Cable carrier manufacturers can provide guide trough layout drawings.

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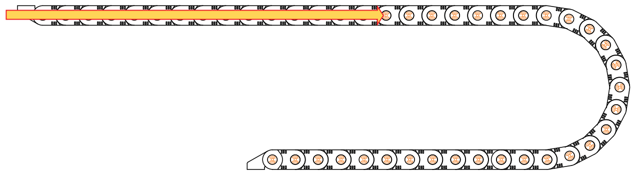
GUIDE TROUGHS

LOWERED MOUNTING HEIGHT

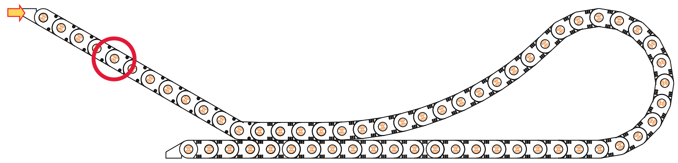
An important consideration for applications requiring plastic carriers in a guide trough is the bending moment that occurs at the moving end as the carrier is pushing, particularly when high velocities/accelerations and heavy fill weights are introduced.

A potential solution for this problem is lowering the mounting height of the carrier, thereby reducing the bending moment. In a lowered mounting height design, the moving end begins gliding immediately as it begins to push. The lowered mounting height is achieved by adding reverse bend links, extending the depot ('K' dimension) of the carrier. Dynatect can run tow force calculations on an application to determine whether a lowered mounting height is advisable.

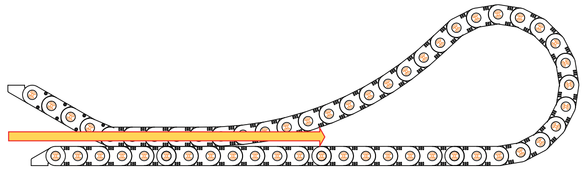
If the moving end cannot be lowered due to application restrictions, a "push plate" may be utilized. If the moving end cannot be mounted at the recommended mounting height, a push plate provides additional support to the carrier system at the bending moment that occurs at the moving end as the carrier is pushing.



When the carrier performs under normal operation without sag, force is applied in a straight trajectory along the moving section.



As sag is introduced, the mass of the carrier falls below the force plane, creating a bending moment on the links at the moving end.

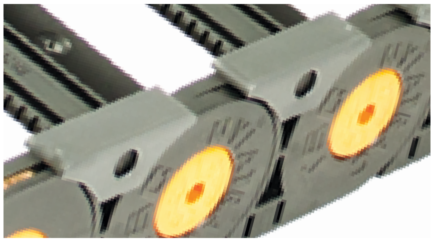


In a long travel carrier system configured for a lowered mounting height, the sag is eliminated, redirecting the force vector back to a straight trajectory. Furthermore, the loading that the carrier introduces as it is dragged over the bottom carrier section is replaced with a more even wear pattern. The force is distributed over the entire system instead of just the first few links at the moving end.

MODULAR LOW-FRICTION SLIDERS

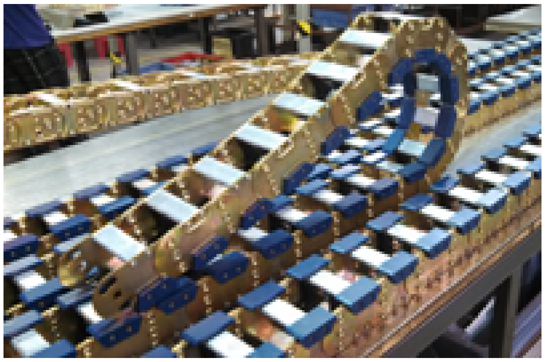
Modular slider components are often used in long travel applications in which chain bands glide on each other.

Sliders are manufactured from special plastic material that is highly wear resistant and offers extremely good coefficient of friction values. Not only do they reduce tow force and wear, but they are removable and easy to replace.



GLIDE BLOCKS FOR STEEL CARRIERS

Although not common, glide blocks can be added to steel cable carriers.

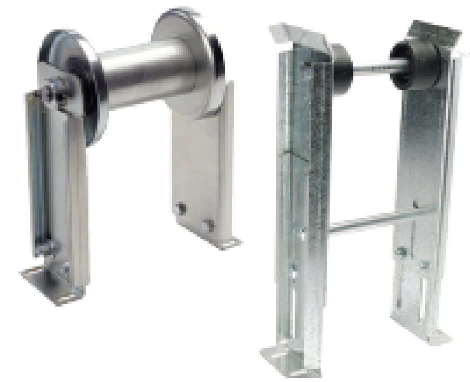


SUPPORT ROLLERS

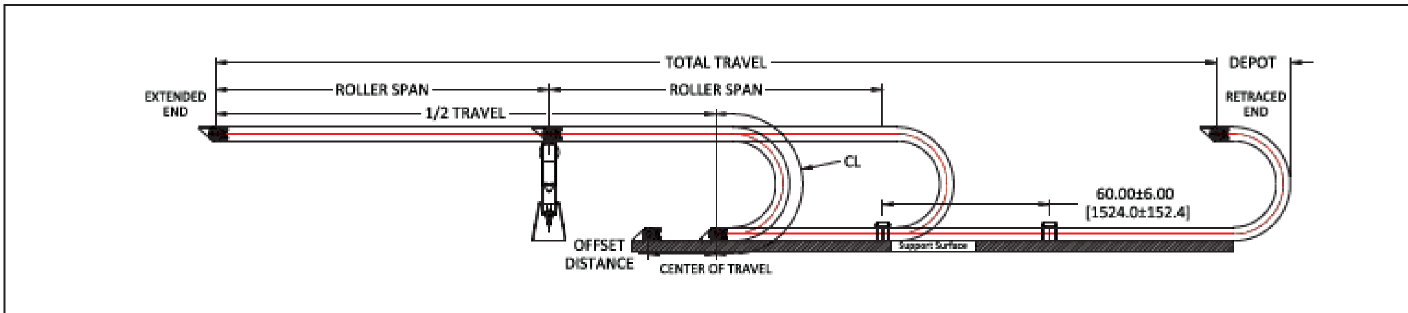
Stationary support rollers are available for unsupported spans that exceed the maximum lengths listed on a specific track series load chart.

Support Rollers for Metal Carriers: Single support roller systems provide a 50% increase in total travel capability. Double support roller systems provide a 100% increase in total travel capability.

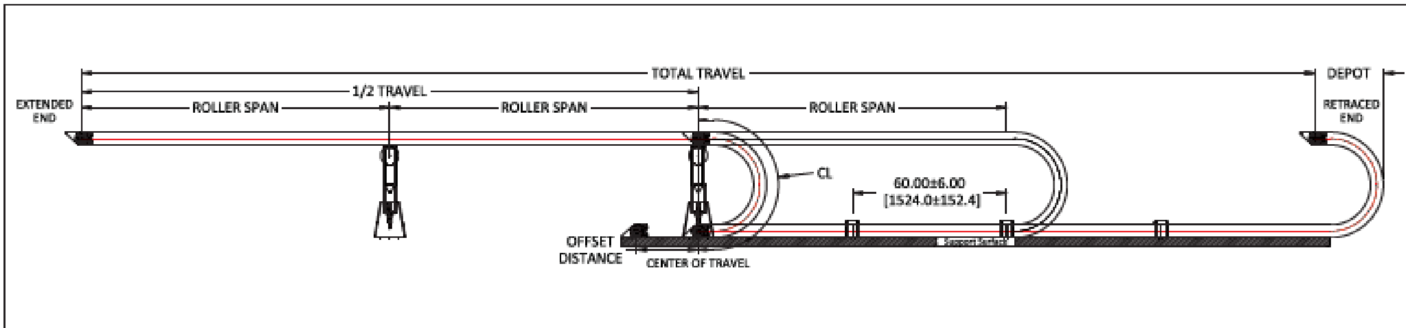
Support Rollers for Plastic Carriers: Single support roller systems provide a 25% increase in total travel capability. Double support roller systems provide a 75% increase in total travel capability.

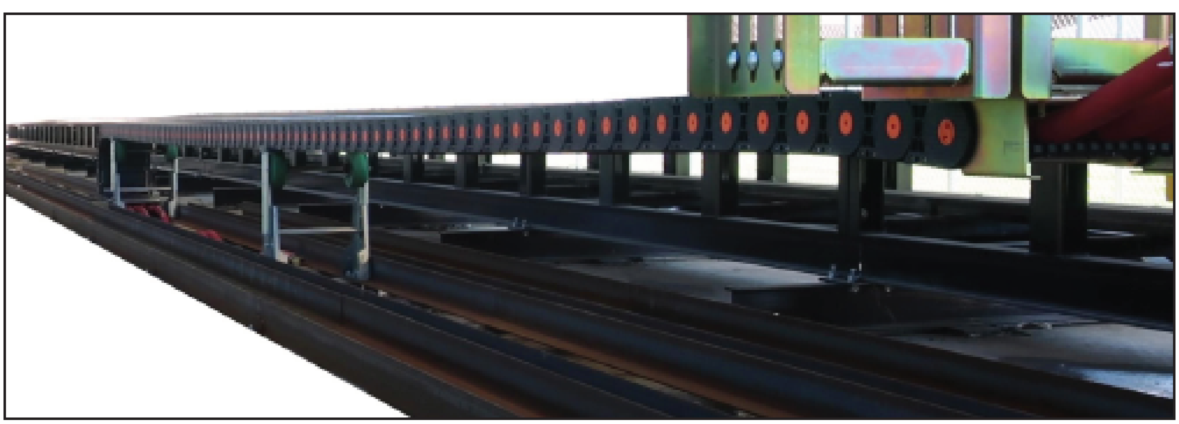


SINGLE SUPPORT ROLLER SYSTEM



DOUBLE SUPPORT ROLLER SYSTEM





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ARTICULATING ROLLER SUPPORT (ARS) LONG TRAVEL SYSTEM

A LONG TRAVEL SOLUTION FOR PLASTIC CARRIERS THAT ELIMINATES GUIDE TROUGHS

Dynatect's ARS Long Travel Support System is the evolution of 50 years of experience. Its unique, patented design adds articulating rollers that are positioned to support a standard plastic carrier and provide travels up to 300 feet without a guide trough.

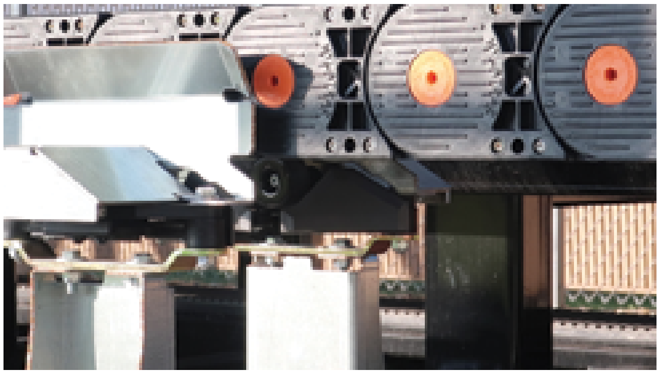
For comparably sized systems, the ARS Long Travel Support System **features**:

- Lower total cost of ownership (TOC)
- Eliminates up to 50% of the force required to push and pull in most applications
- Up to 2X travel than any other roller solution without a guide trough
- 50% less average installation time than long travel systems with guide troughs
- Priced typically 10% less than long travel systems with guide troughs
- Capable of operating speeds up to 5 feet per second
- Reduces retracted storage area
- Allows for greater acceleration than traditional gliding long travel solutions
- Significantly improves safety factors in high tow force applications
- Eliminates up to 20% of the weight of a combined plastic carrier and trough in most applications

Dynatect has a variety of long travel carrier solutions that **eliminate**:

- Guide troughs and associated installation and maintenance costs
- Glide shoes; wear blocks; integral or mechanically actuated rollers
- Push plates, rail extenders, and modified tow arm and mounting requirements
- Wear and tow force spikes from alignment/failure of the above accessories

The ARS system eliminates the need for guide troughs and associated wear in travels up to 300 feet while reducing tow force and installation time by an average of 50%.



ARS SYSTEM PERFORMANCE VERSUS GUIDE TROUGH

	PLASTIC + GUIDE TROUGH	ARS SYSTEM
Low Initial Cost	1.0x	0.9x
Low Install Time	Default	Better
Low Maintenance (TOC)	Default	Better
Low Noise	Default	Better
Operating Space Required	Equivalent	Equivalent
High Particulate/Chips	Default	Better
Gliding Friction	1.0x	0.1x
Pivot Point Wear	Uneven	Even
High Speed	Equivalent	Equivalent
Braking-Force	Equivalent	Equivalent
Overall System Weight	1.0x	0.8x

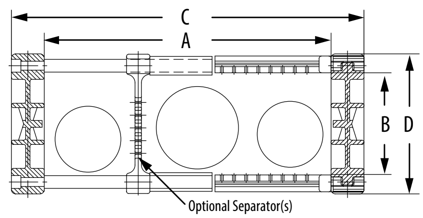
(ARS) LONG TRAVEL SYSTEM - SPECIFICATIONS

SPECIFICATIONS FOR NYLATRAC® TS & TL SERIES

LINK DIMENSIONS

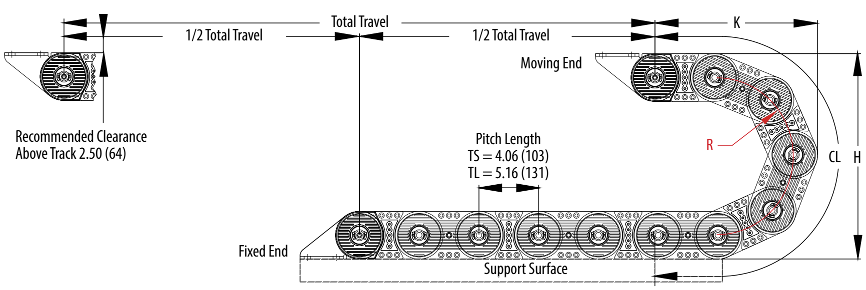
MODEL NO.	A - CAVITY WIDTH inches (mm)	*B - CAVITY HEIGHT inches (mm)	C - OUTER WIDTH inches (mm)	D - OUTER HEIGHT inches (mm)
TS	Customer Specified	2.13 - 2.38 (54 - 60)	TS = A + 1.52 (39)	3.25 (83)
TL	Customer Specified	2.88 - 3.05 (73 - 76)	TL = A + 1.94 (49)	4.13 (105)

*Depends on crossbar style



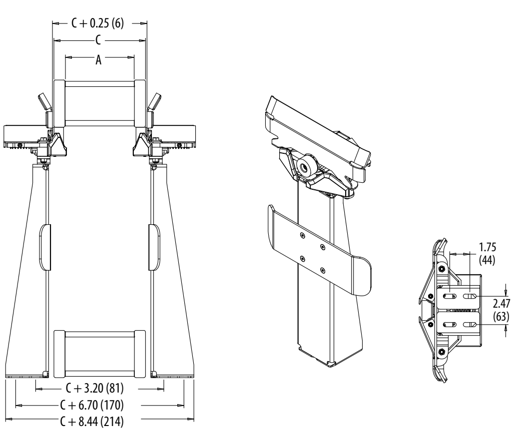
CURVE HEIGHTS

SERIES - HEIGHT	R inches (mm)	H (CURVE HEIGHT) inches (mm)	K inches (mm)	CL inches (mm)
TS - 170	6.81 (173)	16.88 (429)	12.50 (318)	29.53 (750)
TS - 200	8.31 (211)	19.88 (505)	14.00 (356)	34.24 (870)
TS - 245	10.56 (268)	24.38 (619)	16.25 (413)	41.31 (1049)
TS - 275	12.13 (308)	27.50 (699)	17.81 (452)	46.22 (1174)
TS - 360	16.13 (410)	35.50 (902)	21.81 (554)	58.78 (1493)
TL - 200	7.94 (202)	20.00 (508)	16.70 (424)	35.25 (895)
TL - 237	9.81 (249)	23.75 (603)	18.50 (470)	41.00 (1041)
TL - 275	11.75 (298)	27.63 (702)	20.50 (521)	47.00 (1194)
TL - 350	15.63 (397)	35.38 (899)	24.40 (620)	59.00 (1499)



Travel/2 + CL (+ Offset Distance From Center*) = Length (Dynatect recommends mounting the stationary end of the carrier at the center of travel, minimizing the required length. In cases where center mounting is not possible, add the distance offset from center to the carrier length calculation.)

ARTICULATING WHEEL SET DIMENSIONS



CROSSBAR STYLES	WEIGHT - lb/ft (kg/m)
Round Bar (RB)	TS-RB = 2.45 (3.65) / TL-RB = 3.42 (5.09)
Poly Roller (PR)	TS-PR = 2.69 (4.00) / TL-PR = 3.72 (5.54)
*Aluminum Flat Bar (AF)	TS-AF = 4.93 (7.34) / TL-AF = 5.21 (7.76)
*Plastic Lid (PL)	TS-PL = 4.33 (6.44) / TL-PL = 5.21 (7.75)
*Aluminum Armor Plate (AP)	TS-AP = 6.39 (9.51) TL-AP = 7.56 (11.25)

*Snap-in bar/lid options available on outside radius only.

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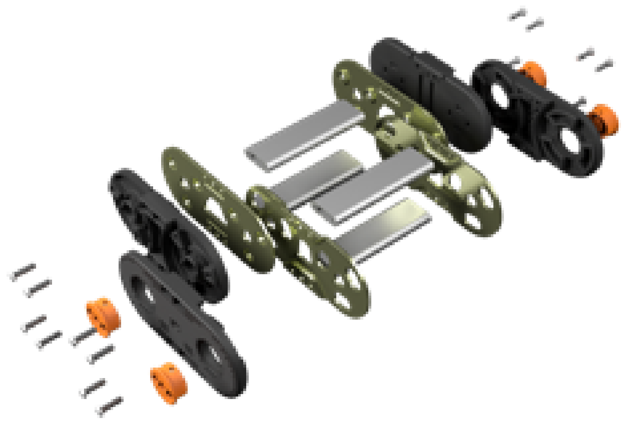
HYBRID CARRIER LONG TRAVEL SYSTEM

A LONG TRAVEL SOLUTION THAT ELIMINATES GUIDE TROUGHS

Dynatect's Hybrid Travel Support System is the evolution of 50 years of experience. Its unique, patented design consists of a modular plastic carrier with a metallic insert, delivering a truly revolutionary solution for long travel cable and hose management.

For comparably sized systems, the Hybrid Long Travel Support System **features**:

- Lowest total cost of ownership (TCO) than any long travel carrier solution
- Eliminates up to 50% of the force required to push and pull in most applications
- Less space required than any long travel carrier solution
- Up to 2X unsupported travel than any plastic carrier solution
- 50% less average installation time than long travel systems with guide troughs
- Price 10% less than long travel systems with guide troughs
- The only long travel carrier solution that completely **eliminates**:
  - Guide troughs and associated installation and maintenance costs
  - Glide shoes; wear blocks; integral or mechanically actuated rollers
  - Push plates, rail extenders, and modified tow arm and mounting requirements
  - Wear and tow force spikes from alignment/failure of the above accessories
- Capable of operating speeds up to 5 ft./second
- Reduces retracted storage area
- Allows for greater acceleration than traditional gliding long travel solutions
- Significantly improves safety factors in high tow force applications
- Eliminates up to 50% of the weight of a combined plastic carrier and trough in most applications



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HYBRID CARRIER LONG TRAVEL SYSTEM

A LONG TRAVEL SOLUTION THAT ELIMINATES GUIDE TROUGHS

FULL TRAVEL DISTANCES IN FEET*

	PLASTIC	HYBRID		
TRACK SIZE	Un-supported	Un-supported	Single Roller	Double Roller
NXL	27	57	75	100
TL	21	37	48	63
TS	17	28	37	50

*Travel distances are based on: carriers with 12" wide aluminum flat bars including 5 cavity separators, and 5lb/ft loading.`

IDEAL TRAVEL RANGE FOR HYBRID CARRIER SOLUTION**

For each carrier size, the following full travel distances are ideal for the Hybrid Long Travel Support System:

TRACK SIZE	HYBRID ONLY	HYBRID WITH 1 OR 2 SUPPORTS
NXL	28-56 ft.	57-100 ft.
TL	22-36 ft.	37-65 ft.
TS	18-28 ft.	29-50 ft.

**Calculations are based on: NXL, TL and TS carriers with 12" wide aluminum flat bars including 5 cavity separators and 5lb/ft. loading.

HYBRID LONG TRAVEL PERFORMANCE COMPARISON

	HYBRID	HYBRID + SUPPORT ROLLER	PLASTIC + GUIDE TROUGH
Low Initial Cost	0.9x	1.0x	1.0x
Low Install Time	Best	Better	Default
Low Maint (TCO)	Best	Better	Default
Low Noise	Best	Better	Default
Operating Space Required	0.8x	0.9x	1.0x
High Contamination	Best	Better	Default
Gliding Friction	0.0x	0.1x	1.0x
Pivot Point Wear	Even	Even	Uneven
High Speed	Equivalent	Equivalent	Equivalent
Corrosion Resistance	Equivalent	Equivalent	Equivalent
Snap-in shelving/separation	Equivalent	Equivalent	Equivalent
Braking-Force	1.3x	1.3x	1.0x
Snap-In Bar & Lid Options	None	None	Full
Low Radius Options	Fewer	Fewer	Full

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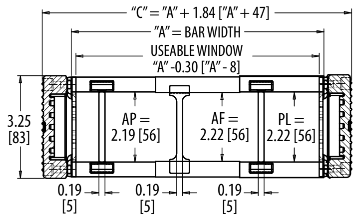
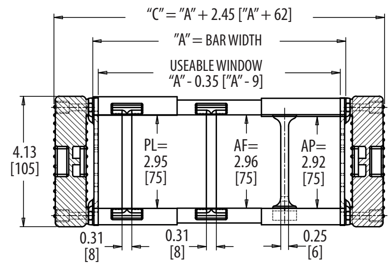
HYBRID SPECIFICATIONS

FOR NYLATRAC® HYBRID (HTS/HTL/NXL SERIES)

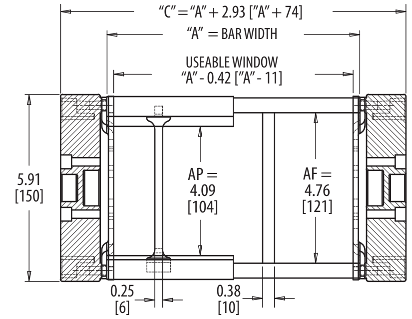
HTS CROSS SECTION



HTL CROSS SECTION

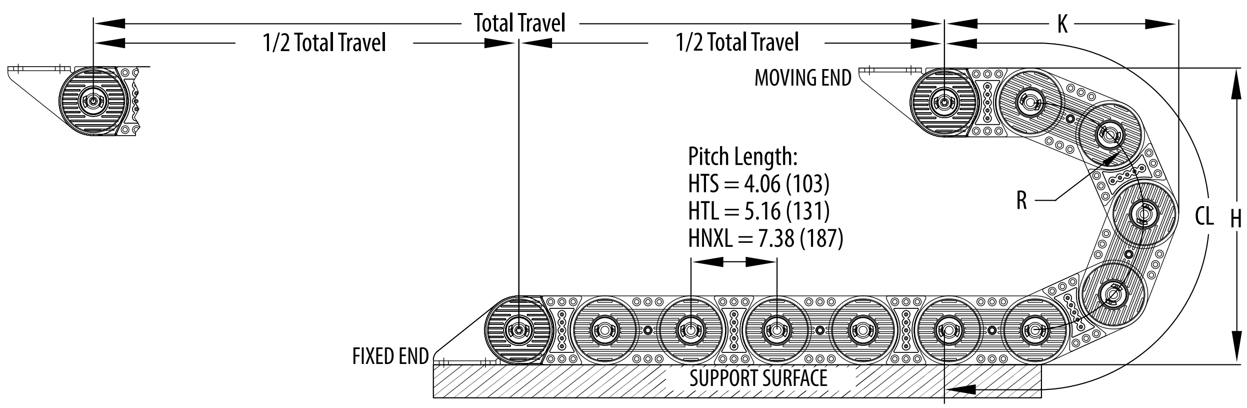


HNXL CROSS SECTION



CURVE HEIGHTS

SERIES - HEIGHT	R inches (mm)	H inches (mm)	K inches (mm)	CL inches (mm)	RECOMMENDED MOUNTING HEIGHT	RECOMMENDED CLEARANCE HEIGHT
HTS-170	6.64 (168.7)	16.53 (419.9)	12.22 (310.4)	28.441 (722.4)	17.50 (445.0)	19.50 (495.0)
HTS-200	7.98 (202.7)	19.2 (487.7)	13.46 (341.9)	32.504 (825.6)	20.25 (515.0)	22.25 (565.0)
HTS-245	9.99 (253.7)	23.19 (589.0)	16.35 (415.3)	40.63 (1032.0)	24.25 (615.0)	26.25 (665.0)
HTS-275	11.35 (288.3)	25.92 (658.4)	17.59 (446.8)	44.693 (1135.2)	27.00 (685.0)	29.00 (735.0)
HTS-360	15.06 (382.5)	33.34 (846.8)	21.54 (547.1)	56.882 (1444.8)	34.25 (870.0)	36.25 (920.0)
HTL-200	8.28 (210.3)	20.68 (525.4)	15.65 (397.5)	36.19 (919.2)	21.75 (550.0)	23.75 (605.0)
HTL-237	10.38 (263.7)	24.85 (631.1)	16.98 (431.4)	41.36 (1050.5)	25.75 (655.0)	27.75 (705.0)
HTL-275	12.45 (316.3)	28.90 (734.1)	20.95 (532.2)	51.7 (1313.2)	30.00 (760.0)	32.00 (815.0)
HTL-350	16.80 (426.8)	37.72 (958.0)	23.60 (599.3)	62.04 (1575.8)	38.75 (985.0)	40.75 (1035.0)
HTL-415	20.73 (526.4)	45.51 (1156.0)	29.10 (739.0)	77.55 (1969.8)	46.50 (1180.0)	48.50 (1230.0)
HTL-525	27.70 (703.5)	59.51 (1511.6)	35.43 (899.9)	98.23 (2495.0)	60.50 (1535.0)	62.50 (1590.0)
HNXL-272	10.8 (274.3)	27.18 (690.4)	23.02 (584.7)	51.723 (1313.8)	28.75 (730.0)	31.25 (795.0)
HNXL-319	13.32 (338.3)	32.37 (822.2)	25.20 (640.0)	59.112 (1501.4)	33.75 (855.0)	36.25 (920.0)
HNXL-366	15.71 (399.0)	37.19 (944.6)	27.48 (698.0)	66.501 (1689.1)	38.75 (985.0)	41.25 (1050.0)
HNXL-413	18.21 (462.5)	42.24 (1072.9)	29.71 (754.6)	73.89 (1876.8)	43.75 (1110.0)	46.25 (1175.0)
HNXL-460	20.68 (525.3)	47.22 (1199.4)	31.97 (812.0)	81.279 (2064.5)	48.75 (1240.0)	51.25 (1300.0)
HNXL-600	28.38 (720.9)	62.67 (1591.8)	38.6 (980.4)	103.116 (2627.5)	64.25 (1630.0)	66.75 (1695.0)



Travel/2 + CL (+ Offset Distance From Center*) = Length (Dynatect recommends mounting the stationary end of the carrier at the center of travel, minimizing the required length. In cases where center mounting is not possible, add the distance offset from center to the carrier length calculation.)

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for Equipment and People

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