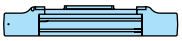
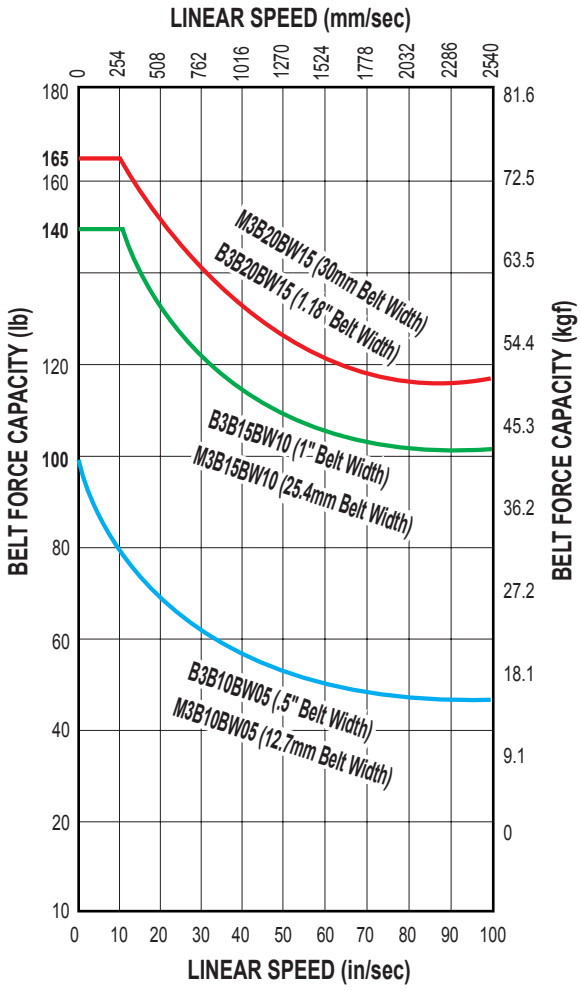
BELT PERFORMANCE



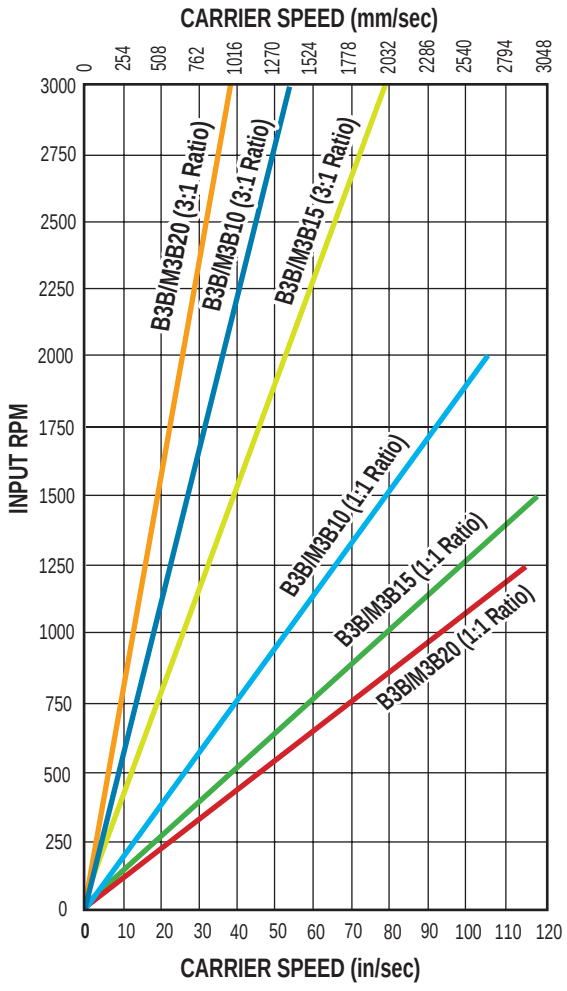
B3B/M3B Series
- Belt force and speed capacities
- Belt specifications

BELT FORCE AND SPEED CAPACITIES

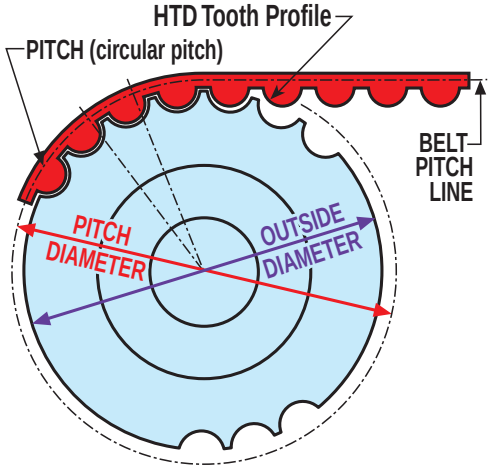
BELT LOAD FOR B3B/M3B ACTUATORS



BELT SPEED FOR B3B/M3B ACTUATORS



BELT SPECIFICATIONS



STYLE:	HTD Tooth
TOOTH PITCH:	5mm
BELT MATERIAL:	Neoprene body with Fiberglass tension members
CHARACTERISTICS:	For higher speed, higher load applications Heavy duty drive and idler pulley bearings

OVERALL SERIES SPECIFICATIONS

B3B/M3B BELT, INERTIA AND BREAKAWAY TORQUE SPECIFICATIONS

B3B ENGLISH ACTUATORS								
ACTUATOR SERIES	BELT WIDTH (in)	BELT WEIGHT (lb/in)	BELT DEAD LENGTH (in)	WHEEL PITCH DIA. (in)	PULLEY WHEELS INERTIA (lb-sq in)	INERTIA ($lb\text{-}in^2$) BASE ACTUATOR	INERTIA ($lb\text{-}in^2$) PER/INCH OF STROKE	BREAKAWAY TORQUE (LB-IN)
B3B10	.50	.0028	20.10	1.003	.031	0.2846	0.0016	5.000
B3B15	1.00	.0056	30.80	1.504	.303	1.3917	0.0017	10.000
B3B20	1.18	.0066	31.90	1.754	.651	2.6607	0.0114	15.625

M3B METRIC ACTUATORS								
ACTUATOR SERIES	BELT WIDTH (mm)	BELT WEIGHT (g/cm)	BELT DEAD LENGTH (mm)	WHEEL PITCH DIA. (mm)	PULLEY WHEELS INERTIA ($kg\text{-}sq\ M \times 10^{-6}$)	INERTIA ($kg\text{-}m^2 \times 10^{-6}$) BASE ACTUATOR	INERTIA ($kg\text{-}m^2 \times 10^{-6}$) PER/mm OF STROKE	BREAKAWAY TORQUE (N-m)
M3B10	12.7	1.27	510.5	25.5	0.000009	83.25	0.47	0.56
M3B15	25.4	2.54	782.3	38.2	0.0000886	407.07	0.50	1.13
M3B20	29.9	2.99	810.3	44.6	0.0001905	778.25	0.33	1.77

GENERAL ACTUATOR SPECIFICATIONS

B3B ENGLISH ACTUATORS							
ACTUATOR SERIES	MAXIMUM STROKE (in)	CARRIER WEIGHT (lb)	BASE WEIGHT (lb) (Including Carrier)	WEIGHT PER/in OF STROKE (lb)	STRAIGHTNESS & FLATNESS (in) [1] (Constrained)	TEMP. RANGE [2] (F°)	IP RATING [3]
B3B10	292	0.85	7.54	.388	0.00067 x L*	40 - 130	44
B3B15	292	1.56	25.12	.394	0.00067 x L*	40 - 130	44
B3B20	292	2.14	35.40	.714	0.00067 x L*	40 - 130	44

M3B METRIC ACTUATORS							
ACTUATOR SERIES	MAXIMUM STROKE (mm)	CARRIER WEIGHT (kg)	BASE WEIGHT (kg)	WEIGHT PER/mm OF STROKE (g)	STRAIGHTNESS & FLATNESS (mm) (Constrained)	TEMP. RANGE* (C°)	IP RATING**
M3B10	7417	0.40	1.00	6.43	0.00067 x L*	4 - 54	44
M3B15	7417	0.70	3.96	7.04	0.00067 x L*	4 - 54	44
M3B20	7417	0.97	6.52	12.75	0.00067 x L*	4 - 54	44

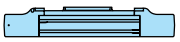
[1] The listed values relating to straightness/flatness are intended for reference purposes only, and not as an engineering standard of absolute tolerance for a given actuator. Appropriate installation is the single most important factor in reducing such deviation, so good engineering practices such as measurement, mapping, etc. must be employed in applications with stringent straightness/flatness requirements.

[2] Heat generated by the motor and drive should be taken into consideration as well as linear velocity and work cycle time. For applications that require operation outside of the recommended temperature range, contact the factory.

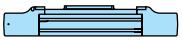
[3] Protected against ingress of solid particles greater than .039 in (1mm) and splashing water.

** "L" is maximum distance between supports— See the support recommendation diagram on page C-34.*

LARGE FRAME MOTORS AND SMALLER SIZE ACTUATORS: Cantilevered motors need to be supported, if subjected to continuous rapid reversing duty and/or under dynamic conditions.



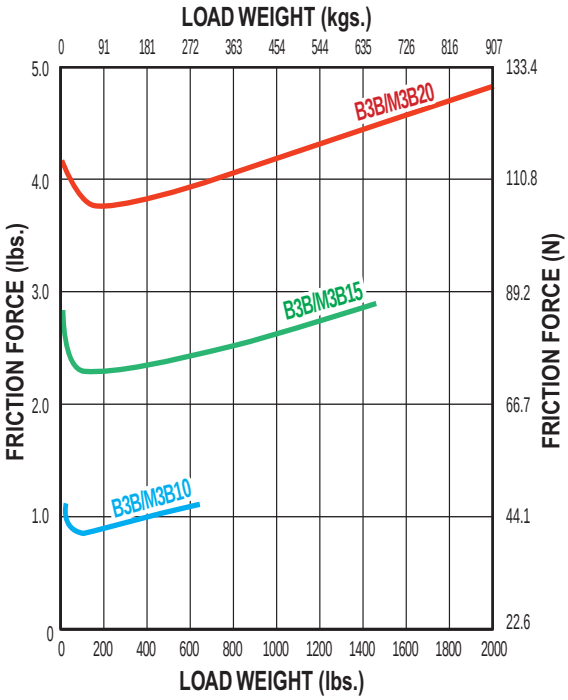
OVERALL SERIES SPECIFICATIONS



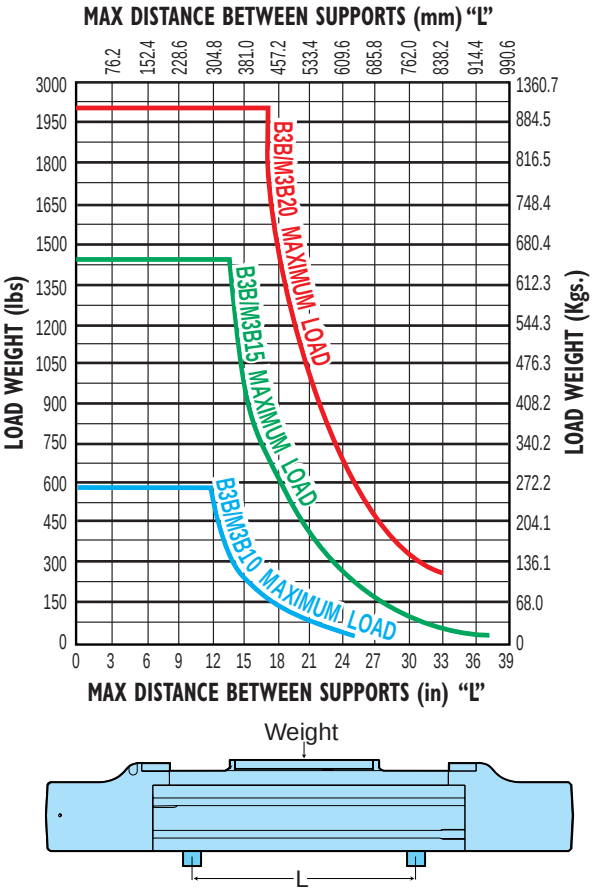
RODLESS

B3B/M3B Series
- Friction force
- Support recommendations

FRICTION FORCE

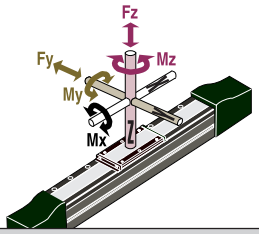
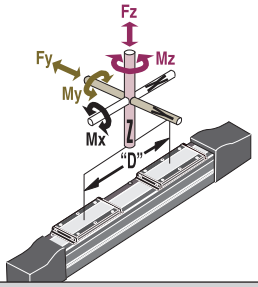
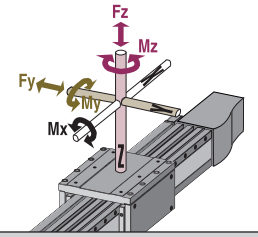
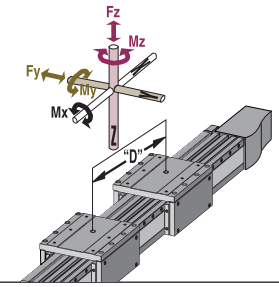


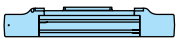
SUPPORT RECOMMENDATIONS



OVERALL SERIES SPECIFICATIONS

DYNAMIC BENDING MOMENTS AND LOADS

	MAXIMUM BENDING MOMENTS AND LOADS		ENGLISH			METRIC		
STANDARD CARRIER			**B3B10**	**B3B15**	**B3B20**	**M3B10**	**M3B15**	**M3B20**
	**Mx Moment** (Roll)	(lb-in : N-m)	250	859	1662	28.2	97.1	187.8
	My Moment (Pitch)	(lb-in : N-m)	269	1033	1472	30.4	116.7	166.3
	Mz Moment (Yaw)	(lb-in : N-m)	156	596	850	17.9	67.3	96.0
	Fy Load (Radial)	(lb : N)	341	840	1159	1517	3738	5158
	Fz Load (Lateral)	(lb : N)	591	1454	2008	2630	6470	8936
AUXILIARY CARRIER: Increases rigidity, load-carrying capacity and moments			**B3B10**	**B3B15**	**B3B20**	**M3B10**	**M3B15**	**M3B20**
	**Mx Moment** (Roll)	*(lb-in : N-m)	500	1718	3324	56.5	194.1	375.6
	My Moment (Pitch)	*(lb-in : N-m)	2825	11,734	16,265	319.2	1325.8	1837.8
	Mz Moment (Yaw)	*(lb-in : N-m)	1630	6779	9388	184.2	765.9	1060.8
	Fy Load (Radial)	(lb : N)	682	1680	2318	3035	7476	10315
	Fz Load (Lateral)	(lb : N)	1182	2908	4016	5260	1294	17871
	Minimum Dimension 'D'	(in : mm)	4.88	8.07	8.10	124.0	205.0	205. 7
DUAL 180° CARRIER: Allows 90° rotation of load, adds load bearing surface			**B3B10**	**B3B15**	**B3B20**	**M3B10**	**M3B15**	**M3B20**
	**Mx Moment** (Roll)	(lb-in : N-m)	657	2468	4527	74.2	278.9	511.2
	My Moment (Pitch)	(lb-in : N-m)	312	1192	1700	35.3	134.7	192.1
	Mz Moment (Yaw)	(lb-in : N-m)	538	2066	2944	60.8	233.4	332.6
	Fy Load (Radial)	(lb : N)	1182	2908	4016	5260	1294	17871
	Fz Load (Lateral)	(lb : N)	682	1680	2318	3035	7476	10315
AUXILIARY DUAL 180° CARRIER: Substantially increases moment and loads			**B3B15**	**B3B20**	**M3B10**	**M3B15**	**M3B20**	
	**Mx Moment** (Roll)	*(lb-in : N-m)	1314	4936	9054	147	553	1014
	My Moment (Pitch)	*(lb-in : N-m)	3328	13558	18776	373	1518	2103
	Mz Moment (Yaw)	*(lb-in : N-m)	5768	23468	32530	646	2628	3643
	Fy Load (Radial)	(lb : N)	2364	5816	8032	1072	2638	3643
	Fz Load (Lateral)	(lb : N)	1364	3360	4636	619	1524	2103
	Minimum Dimension 'D'	(in : mm)	4.88	8.07	8.10	124.0	205.0	205.7



RODLESS

B3B/M3B Series

- Bending moments and loads

The Dual 180° carrier requires its own proprietary tube supports and foot mounts. See dimensional information. Breakaway torque will also increase when using the Auxiliary carrier or the Dual 180° carrier options. When ordering, determine your working stroke and enter this value into the configuration string. Overall actuator length will automatically be calculated.

Deflection Considerations: In applications where substantial Mx or My moments come into play, deflection of the cylinder tube, carrier and supports must be considered. The deflection factors shown in the Load Deflection charts on the following page, are based on cylinder mounted with tube supports at minimum recommended spacing. If more rigidity is desired, refer to the Auxiliary or Dual Carrier options.

Loads shown in table are at minimum "D" dimension, for ratings with longer "D" dimension see graph on page C-37.

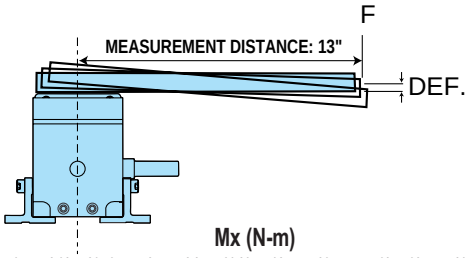
LOAD DEFLECTION

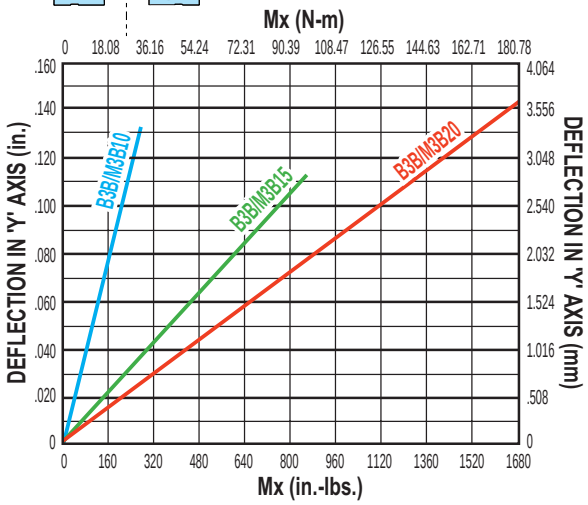
Y-AXIS DEFLECTION

Figures calculated with the following considerations:

1.) Tube supports spaced at minimum distances for each bore size

2.) Measurement distance from F to center of carrier is 13 inches



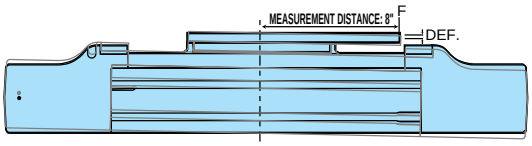


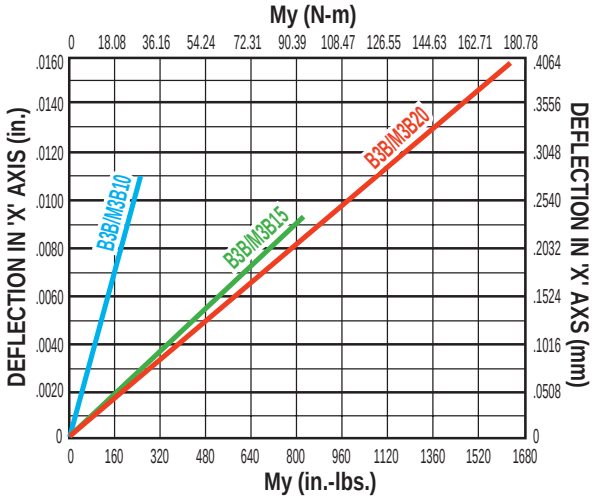
X-AXIS DEFLECTION

Figures calculated with the following considerations:

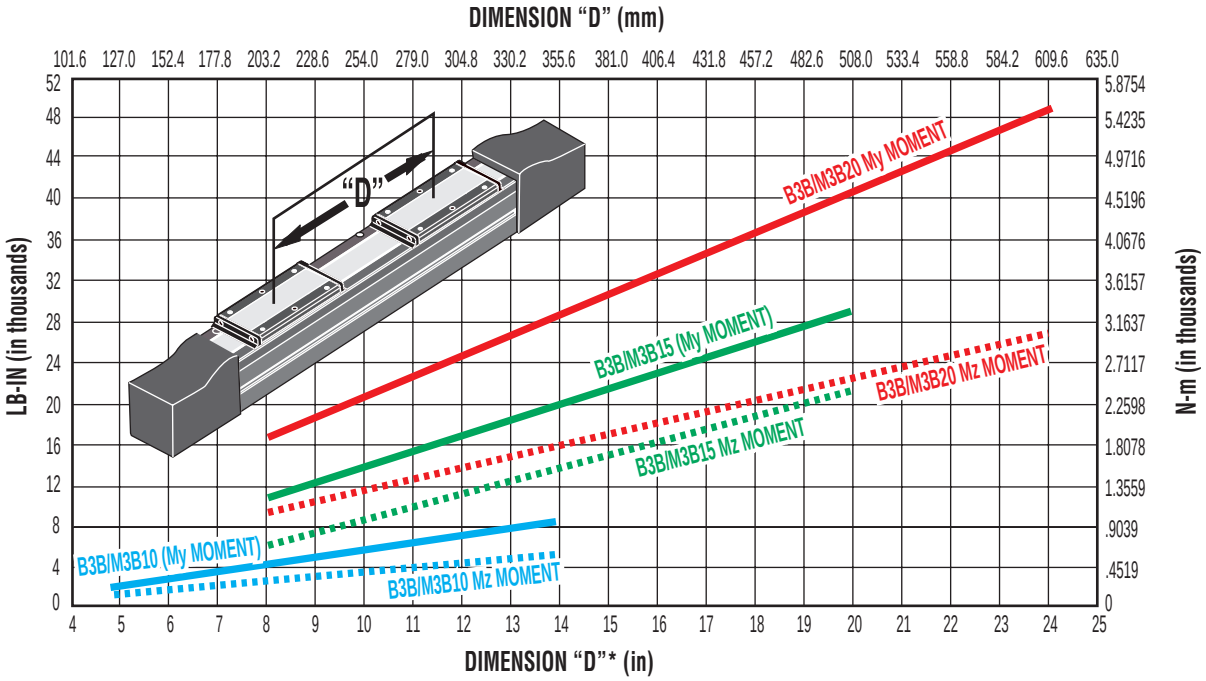
1.) Tube supports spaced at minimum distances for each bore size

2.) Measurement distance from F to center of carrier is 8 inches





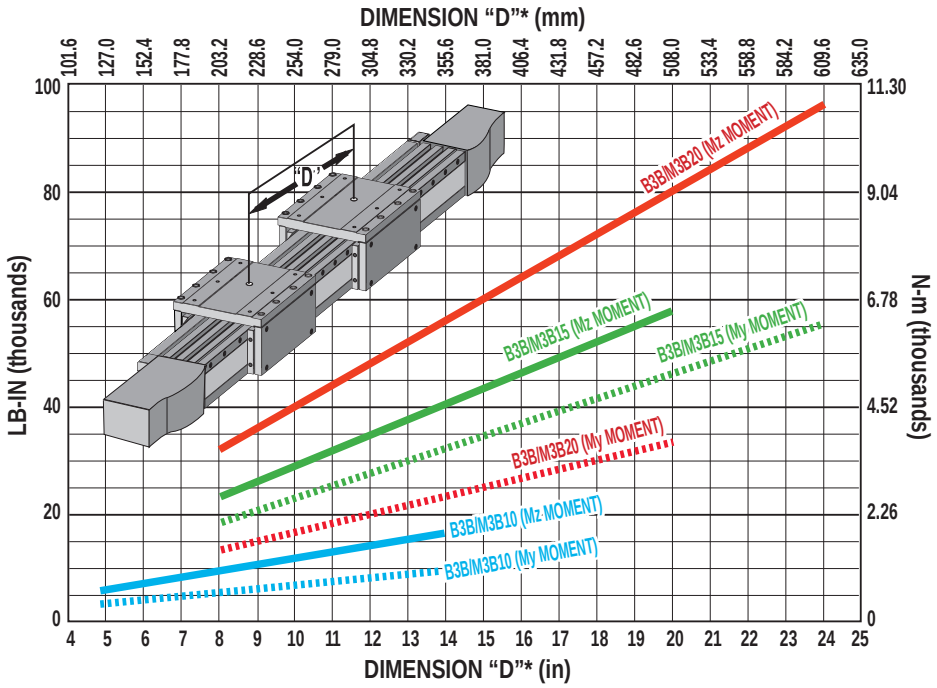
AUXILIARY CARRIER: BENDING MOMENT AT 'D' DISTANCE



Rates shown on charts were calculated with these assumptions:
1.) Coupling between carriers is rigid.
2.) Load is equally distributed between carriers.
3.) Coupling device applies no misalignment loads to carriers.

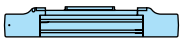
* Customer must specify Dimension "D" (Distance between carrier center lines) in configuration string.

AUXILIARY DUAL 180° CARRIER: BENDING MOMENT AT 'D' DISTANCE



Rates shown on charts were calculated with these assumptions:
1.) Coupling between carriers is rigid.
2.) Load is equally distributed between carriers.
3.) Coupling device applies no misalignment loads to carriers.

* Customer must specify Dimension "D" (Distance between carrier center lines) in configuration string.



RODLESS

B3B/M3B Series
- Auxiliary carrier specifications
- Auxiliary dual 180° carrier specifications