CraneSource™

Crane Components

Drawings and Specifications Book

Top Running & Under Running

This booklet has been developed as an estimating guide to assist Crane Builders in selecting the components required to quote cranes fabricated from wide flange and I-beams.

Specification Information

This CraneSource™ bulletin contains specifications and clearances for the popular CraneSource™ Crane Components used by crane builders throughout the world. These bridge components are available in a wide variety to meet the exact requirements of your crane application.

Index

Subject No. **Page**

Single Girder Components

Double Girder Top Running Components

SINGLE GIRDER UNDERHUNG FIXED AXLE COMPONENTS

1/2-10 TON

SPECIFICATIONS

CAPACITY: 1/2-10 Metric Ton

SERVICE CLASS: Meets the duty requirements of CMAA Class C Service

OPERATION: Indoor

WHEELS: Forged steel, compound tread hardened to 320 BHN, to run on either wide flange or I-beam runways

BUMPERS: Optional rubber conical type

TRAVERSE GEARING: Spur, heat-treated, alloy steel

TRAVERSE BRAKE: 50% Torque AC Disc type

TRAVERSE MOTOR: 30 minute rated with Class F insulation. Single or two speed

CONTROL: Magnetic contactor type, or Variable Frequency. Temperature actuated switches standard. Overload relays are optional

BEARINGS: Antifriction type throughout

END TRUCKS

The end trucks are rigid steel weldments, reinforced at the wheel axles. The wheels are solid forged steel and rotate on two lifetime-lubricated ball bearings. The single flange wheels have compound tread for operation on American standard taper tread or flat flange beams. The spur reduction at the truck is accomplished by a generous size alloy steel pinion meshing with the integral gear teeth on the driver wheels. Maximum wheel load is determined in accordance with CMAA Specification No. 74, dated 2000.

One Pair of End Trucks								
Rated Load Range (tonnes)	For Spans Thru (ft)	Runway Flange Width (in)	Runway Beam Depth Minimum	Catalog Number	Wheel Diameter (in)	Max. Wheel Load Per Pair (lbs)	Wheel Base	Shipping Weight (lbs)
1/2 thru 5	36	4-5/8 - 6	See page 12	446350-01	6-1/2	8500	4' - 6"	976
		6-1/8 - 7-1/2		446350-02				994
		7-5/8 - 9		446350-03				1010
		9-1/8 - 10-1/2		446350-04				1028
		10-5/8 - 12		446350-05				1044
	48	4-5/8 - 6		446350-06			6' - 0"	1096
		6-1/8 - 7-1/2		446350-07				1114
		7-5/8 - 9		446350-08				1130
		9-1/8 - 10-1/2		446350-09				1148
		10-5/8 - 12		446350-10				1164
	60	4-5/8 - 6		446350-11			7' - 6"	1216
		6-1/8 - 7-1/2		446350-12				1234
		7-5/8 - 9		446350-13				1250
		9-1/8 - 10-1/2		446350-14				1268
		10-5/8 - 12		446350-15				1284
6 thru 10	36	5-1/2 - 6		446353-01	8	16500	4' - 6"	1366
		6-1/8 - 7-1/2		446353-02				1384
		7-5/8 - 9		446353-03				1404
		9-1/8 - 10-1/2		446353-04				1422
		10-5/8 - 12		446353-05				1440
	48	5-1/2 - 6		446353-06			6' - 0"	1512
		6-1/8 - 7-1/2		446353-07				1530
		7-5/8 - 9		446353-08				1550
		9-1/8 - 10-1/2		446353-09				1568
		10-5/8 - 12		446353-10				1586
	60	5-1/2 - 6		446353-11			7' - 6"	1654
		6-1/8 - 7-1/2		446353-12				1672
		7-5/8 - 9		446353-13				1692
		9-1/8 - 10-1/2		446353-14				1710
		10-5/8 - 12		446353-15				1728

UNDERHUNG DRIVES

Drive units are comprised of an AC disc brake, motor, gear reducer and pinion mounted to the output shaft of the reducer. Two are required per crane. The gear reducers are spur geared with totally enclosed oil bath lubrication. The drive motors are TENV, 30 minute rated with class "F" insulation and temperature actuated switch for motor protection. Single speed motors are 1800 R.P.M., two speed motors are 1800/600 R.P.M. for a 3:1 speed ratio. Motors are provided with an adjustable, 50% torque A.C. disc brake.

Drive selection - sold in pairs. One pair required per crane - Specify voltage and desired speed.

Drive Catalog Number	Single or Two Speed Motor	Motor H.P.	Weight (lbs)	Speeds Available* (fpm)			
				65	95	115	135
Ratio				**13:1**	**9:1**	**7:1**	**6:1**
913460	Single	1/2	164	X	X	N/A	N/A
913462		3/4		X	X	X	X
913464		1	184	N/A	X	X	X
913466		1-1/2		N/A	N/A	X	X
913470	Two	1/2	174	X	X	N/A	N/A
913471		3/4		X	X	X	X
913472		1	194	N/A	X	X	X
913473		1-1/2		N/A	N/A	X	X

* Reference Speed/Capacity/HP selection chart for correct drive hp and ratio.
For speeds over 100 fpm do not use single speed control. If using 2 speed control for speeds over 100 fpm include a soft start with the control.

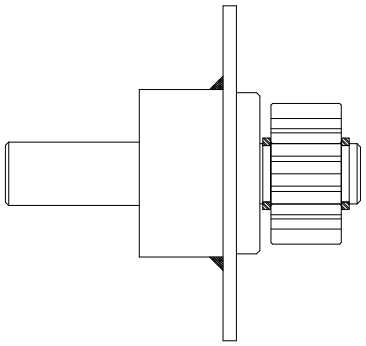
Drive Horsepower Requirements for US (short) Ton Cranes*					
Capacity (US Tons)	Span (ft)	Bridge Traverse Speed (fpm)			
		65	95	115	135
5	36	1/2	1/2	3/4	3/4
	48				
	60		3/4	1	1
10	36	3/4	1	1-1/2	1-1/2
	48				
	60				

Drive Horsepower Requirements for Metric Tonne Cranes*					
Capacity (Tonnes)	Span (ft)	Bridge Traverse Speed (fpm)			
		65	95	115	135
5	36	1/2	1/2	3/4	3/4
	48		3/4		1
	60			1	
10	36	3/4	1	1-1/2	1-1/2
	48				
	60				

* Required horsepower may change with decreased capacity and/or span.

HAND GEARED DRIVE COMPONENTS

The following components are used with the cataloged end trucks and Dealer supplied Cross Shaft and support steel to build Hand-Geared driven Single Girder Underhung Cranes.



HAND GEARED DRIVE ADAPTER ASSEMBLY

Catalog No. 229984-1

Mounts on end truck where gear reducer would normally be mounted. Supports pinion stub shaft and drive pinion. Price includes mounting bracket, mounting hardware, stub shaft and pinion.

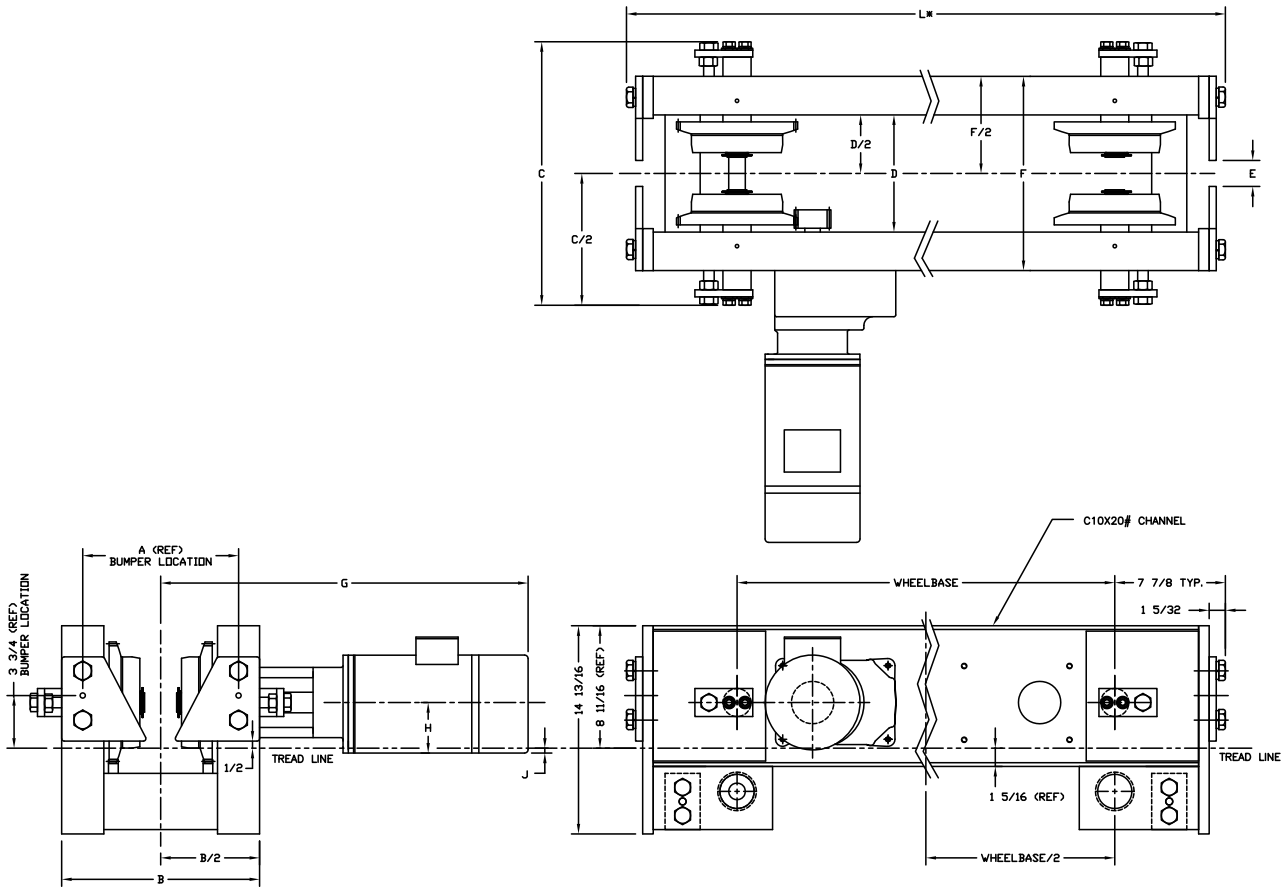
Cross Shaft Bearing, Coupling, Chain Wheel and Chain

Rated Load Range (tonnes)	For Spans Thru (ft)	Cross Shaft* Bearing Assembly		Cross Shaft* Coupling		Hand Chain Wheel & Guide 1 Assembly Required	Hand Chain With Open Link (36 ft)
		Number Required	Catalog Number	Number Required	Catalog Number		
1 thru 10	12	1	904625	2	8280	913115	8282
	22	2		2			
	28	3		3			
	36	4		3			
	42	5		4			
	48	6		4			
	52	7		4			
	60	8		4			

* Based on using a 1-3/16" diameter Cross Shaft (by others).

End Truck & Drive Dimensions

6½" WHEEL END TRUCK DIMENSIONS

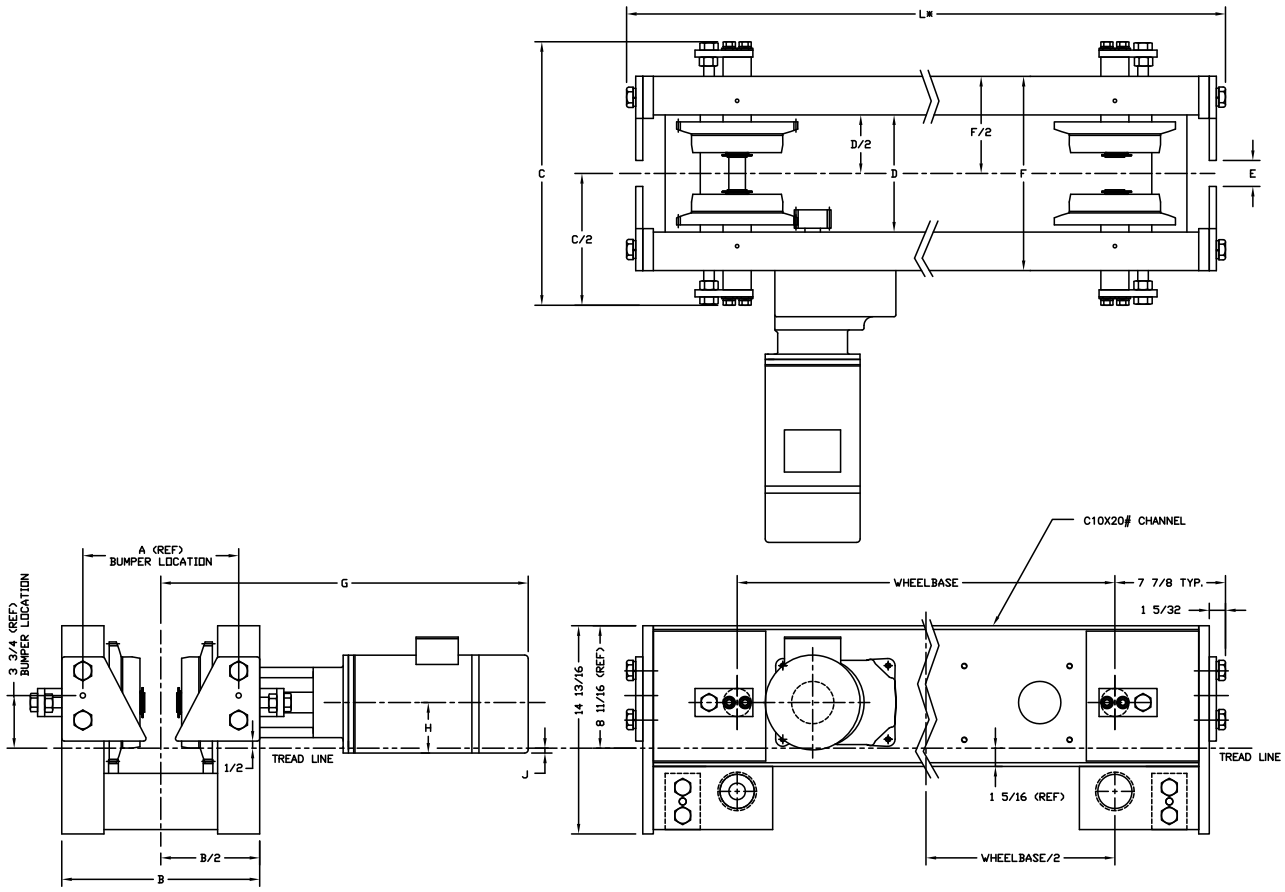


*Add 1-15/16" to overall length (L), when bumpers number 232553-01 are added.

Catalog No.	Wheel Base	A	B	C Max	D	E	F	L	Runway Flange Width (In.)
446350-01	4' - 6"	10 7/8	13 7/8	19 15/16	8 3/8	1 7/8	13 7/8	5' - 9-3/4"	4 5/8 - 6
446350-02		12 3/8	15 3/8	21 7/16	9 7/8	3 3/8	15 3/8		6 1/8 -7 1/2
446350-03		13 7/8	16 7/8	22 15/16	11 3/8	4 7/8	16 7/8		7 5/8 - 9
446350-04		15 3/8	18 3/8	24 7/16	12 7/8	6 3/8	18 3/8		9 1/8 - 10 1/2
446350-05		16 7/8	19 7/8	25 15/16	14 3/8	7 7/8	19 7/8		10 5/8 - 12
446350-06	6' - 0"	10 7/8	13 7/8	19 15/16	8 3/8	1 7/8	13 7/8	7' - 3-3/4"	4 5/8 - 6
446350-07		12 3/8	15 3/8	21 7/16	9 7/8	3 3/8	15 3/8		6 1/8 -7 1/2
446350-08		13 7/8	16 7/8	22 15/16	11 3/8	4 7/8	16 7/8		7 5/8 - 9
446350-09		15 3/8	18 3/8	24 7/16	12 7/8	6 3/8	18 3/8		9 1/8 - 10 1/2
446350-10		16 7/8	19 7/8	25 15/16	14 3/8	7 7/8	19 7/8		10 5/8 - 12
446350-11	7' - 6"	10 7/8	13 7/8	19 15/16	8 3/8	1 7/8	13 7/8	8' - 9-3/4"	4 5/8 - 6
446350-12		12 3/8	15 3/8	21 7/16	9 7/8	3 3/8	15 3/8		6 1/8 -7 1/2
446350-13		13 7/8	16 7/8	22 15/16	11 3/8	4 7/8	16 7/8		7 5/8 - 9
446350-14		15 3/8	18 3/8	24 7/16	12 7/8	6 3/8	18 3/8		9 1/8 - 10 1/2
446350-15		16 7/8	19 7/8	25 15/16	14 3/8	7 7/8	19 7/8		10 5/8 - 12

Dimensions are for estimating purposes only and are not certified engineering dimensions.

6½" WHEEL END TRUCK DIMENSIONS



HP	G Dimension for the Following Beam Flange Ranges					H	J
	4 5/8 - 6	6 1/8 - 7 1/2	7 5/8 - 9	9 1/8 - 10 1/2	10 5/8 - 12		
0.5	24 5/8	25 3/8	26 1/8	26 7/8	27 5/8	3 3/8	1/8
.5/.167	25 5/8	26 3/8	27 1/8	27 7/8	28 5/8		
0.75	24 5/8	25 3/8	26 1/8	26 7/8	27 5/8		
.75/.25	25 7/8	26 1/2	27 1/4	28	28 3/4		
1	24 5/8	25 3/8	26 1/8	26 7/8	27 5/8		
1/.33	26 3/8	27 1/8	27 7/8	28 5/8	29 3/8		
1.5	29 1/8	29 7/8	30 5/8	31 3/8	32 1/8		
1.5/.5	31 3/8	32 1/8	32 7/8	33 5/8	34 3/8	4	3/4

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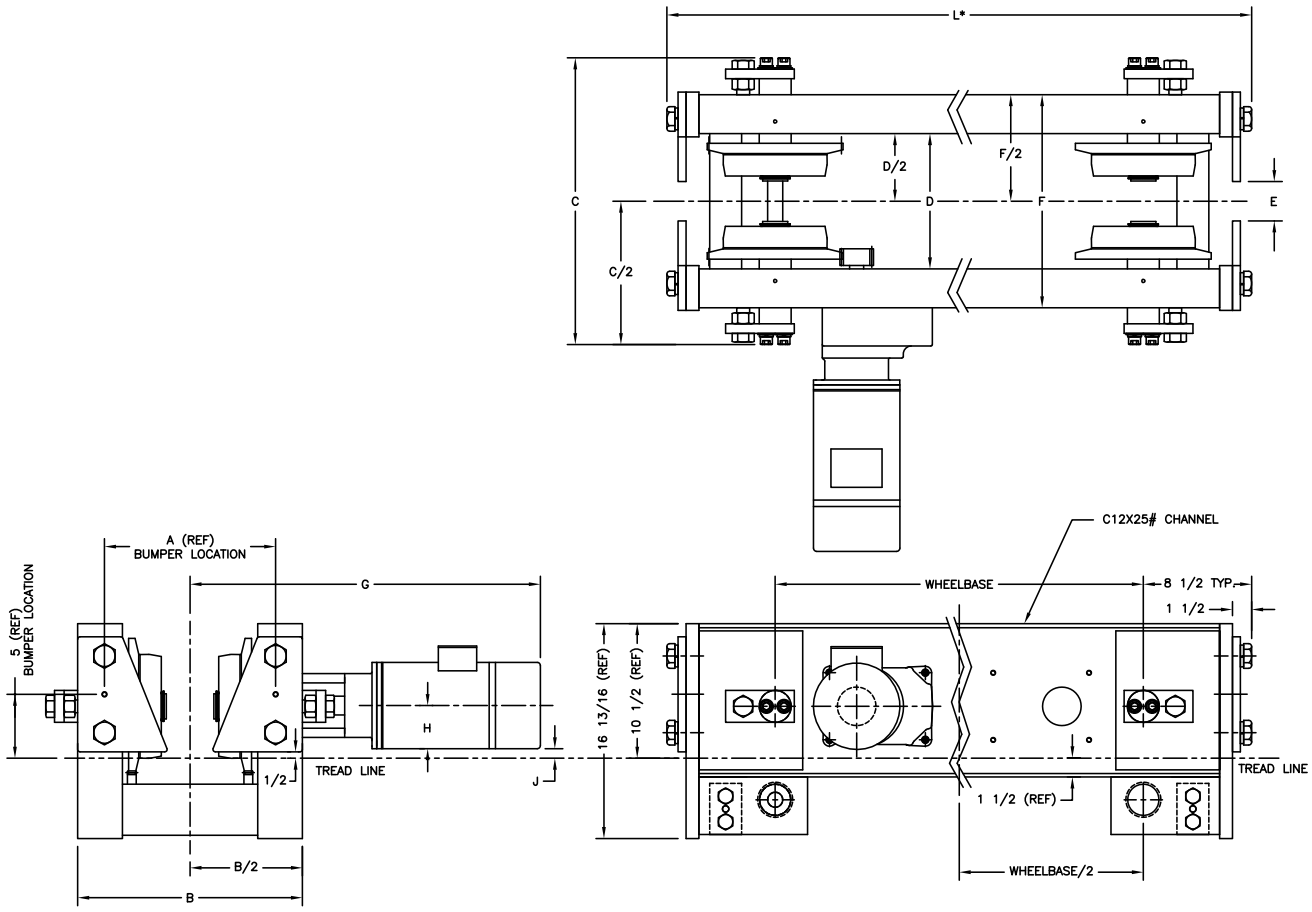
8" WHEEL END TRUCK DIMENSIONS

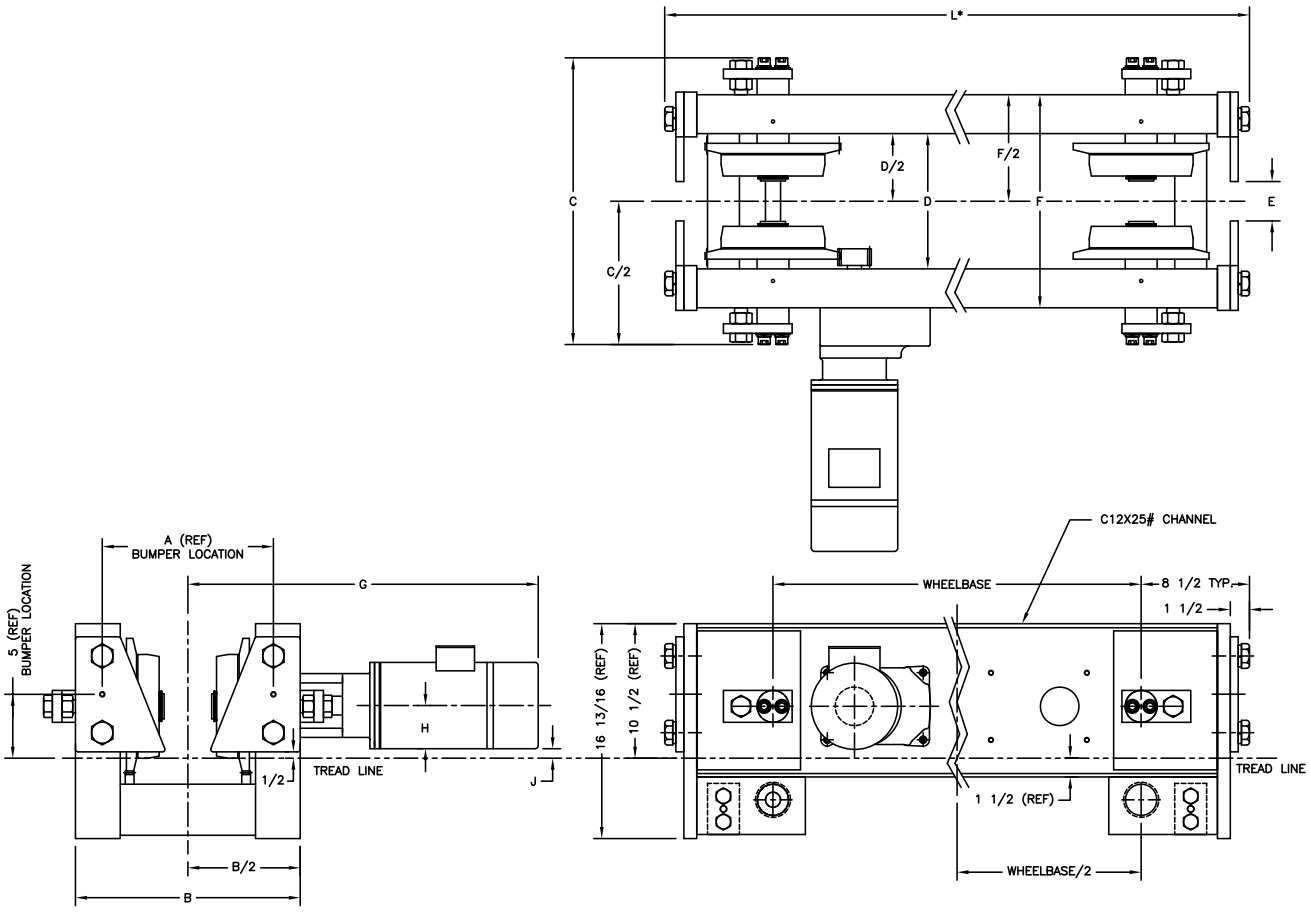


*Add 2-1/8" to overall length (L), when bumpers number 232553-02 are added.

Catalog No.	Wheel Base	A	B	C Max	D	E	F	L	Runway Flange Width (In.)
446353-01		10 11/16	14 7/8	21 7/16	8 3/8	7/8	14 3/8		5 1/2 - 6
446353-02		12 3/16	16 3/8	22 15/16	9 7/8	2 3/8	15 7/8		6 1/8 -7 1/2
446353-03	4' - 6"	13 11/16	17 7/8	24 7/16	11 3/8	3 7/8	17 3/8	5' - 11"	7 5/8 - 9
446353-04		15 3/16	19 3/8	25 15/16	12 7/8	5 3/8	18 7/8		9 1/8 - 10 1/2
446353-05		16 11/16	20 7/8	27 7/16	14 3/8	6 7/8	20 3/8		10 5/8 - 12
446353-06		10 11/16	14 7/8	21 7/16	8 3/8	7/8	14 3/8		5 1/2 - 6
446353-07		12 3/16	16 3/8	22 15/16	9 7/8	2 3/8	15 7/8		6 1/8 -7 1/2
446353-08	6' - 0"	13 11/16	17 7/8	24 7/16	11 3/8	3 7/8	17 3/8	7' - 5"	7 5/8 - 9
446353-09		15 3/16	19 3/8	25 15/16	12 7/8	5 3/8	18 7/8		9 1/8 - 10 1/2
446353-10		16 11/16	20 7/8	27 7/16	14 3/8	6 7/8	20 3/8		10 5/8 - 12
446353-11		10 11/16	14 7/8	21 7/16	8 3/8	7/8	14 3/8		5 1/2 - 6
446353-12		12 3/16	16 3/8	22 15/16	9 7/8	2 3/8	15 7/8		6 1/8 -7 1/2
446353-13	7' - 6"	13 11/16	17 7/8	24 7/16	11 3/8	3 7/8	17 3/8	8' - 11"	7 5/8 - 9
446353-14		15 3/16	19 3/8	25 15/16	12 7/8	5 3/8	18 7/8		9 1/8 - 10 1/2
446353-15		16 11/16	20 7/8	27 7/16	14 3/8	6 7/8	20 3/8		10 5/8 - 12

Dimensions are for estimating purposes only and are not certified engineering dimensions.

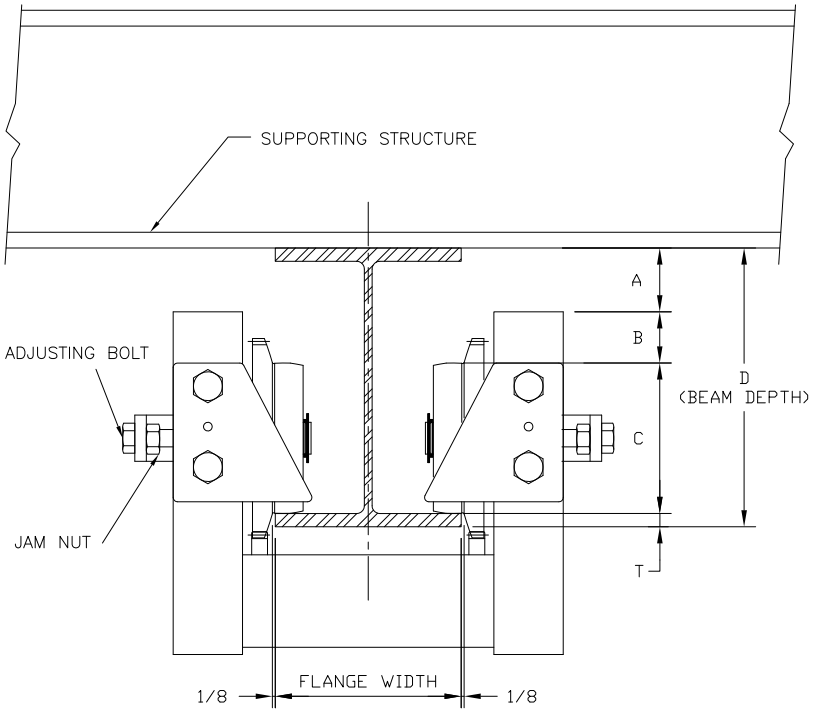
8" WHEEL END TRUCK DIMENSIONS



HP	G Dimension for the Following Beam Flange Ranges					H	J
	5 1/2 - 6	6 1/8 - 7 1/2	7 5/8 - 9	9 1/8 - 10 1/2	10 5/8 - 12		
0.5	24 5/8	25 3/8	26 1/8	26 7/8	27 5/8	3 3/8	11/16
.5/.167	25 5/8	26 3/8	27 1/8	27 7/8	28 5/8		
0.75	24 5/8	25 3/8	26 1/8	26 7/8	27 5/8		
.75/.25	25 7/8	26 1/2	27 1/4	28	28 3/4		
1	24 5/8	25 3/8	26 1/8	26 7/8	27 5/8		
1/.33	26 3/8	27 1/8	27 7/8	28 5/8	29 3/8		
1.5	29 1/8	29 7/8	30 5/8	31 3/8	32 1/8		
1.5/.5	31 3/8	32 1/8	32 7/8	33 5/8	34 3/8	4	1/16

Dimensions are for estimating purposes only and are not certified engineering dimensions.

END TRUCK DIMENSIONS
MINIMUM BEAM DEPTH DETERMINATION

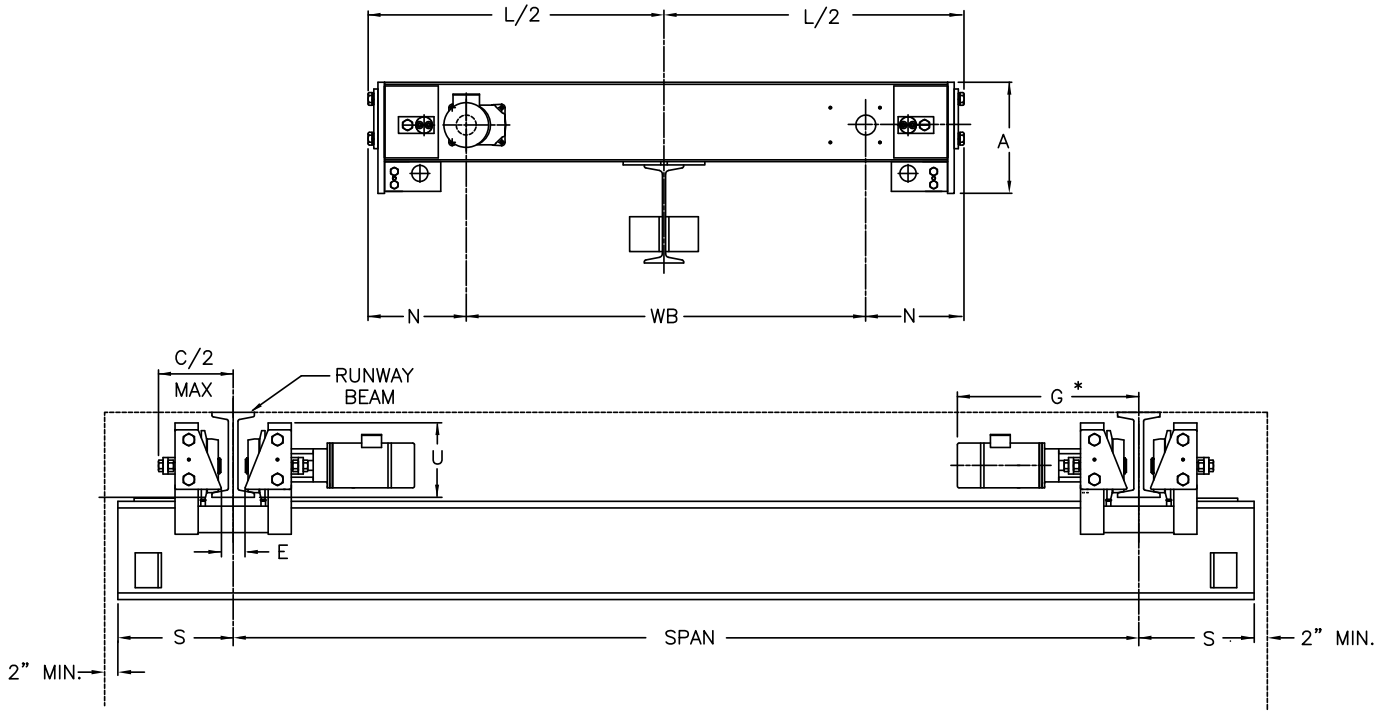


Dimension	6½" Wheel Diameter	8" Wheel Diameter
"A" Minimum	1/2"	1/2"
"B"	2-7/32"	2-15/32"
"C"	6-1/2"	8"
"T"	Actual Flange Thickness	
"D" Minimum Allowable Depth	9-7/32" + "T"	10-31/32" + "T"

Dimensions are for estimating purposes only and are not certified engineering dimensions.

Single Girder Underhung Outline Dimensions

DUAL DRIVE BRIDGE CRANE



Rated Load (tons)	Max. Span (ft)	End Truck Cat. No.	Wheel Base	Wheel Dia.	A	** E (min)	** C/2	*** N	S Std.	U	L/2
5	36	446350-01	4' - 6"	6-1/2"	14-13/16"	1-7/8	9-31/32	7-7/8	12"	8-11/16	2' - 10-7/8"
	48	446350-06	6' - 0"								3' - 7-7/8"
	60	446350-11	7' - 6"								4' - 4-7/8"
10	36	446353-01	4' - 6"	8"	16-13/16"	7/8	10 - 23/32	8-1/2	14"	10-1/2	2' - 11-1/2"
	48	446353-06	6' - 0"								3' - 8-1/2"
	60	446353-11	7' - 6"								4' - 5-1/2"

* Reference pages 8 thru 11 for motor size

** Varies with Runway Beam width & End Truck

*** Without bumpers

Dimensions are for estimating purposes only and are not certified engineering dimensions.

SINGLE GIRDER TOP-RUNNING FIXED AXLE COMPONENTS

1-15 TON

SPECIFICATIONS

CAPACITY: 1-15 Ton

SERVICE CLASS: Meets the duty requirements of CMAA Class C Service

OPERATION: Indoor

WHEELS: Steel with Flat Treads hardened to 400 - 450 BHN

BUMPERS: Rubber conical type

TRAVERSE GEARING: Spur, heat-treated alloy steel

TRAVERSE BRAKE: 50% torque, AC disc type

TRAVERSE MOTOR: 30 minute rated with Class F insulation. Single or two speed

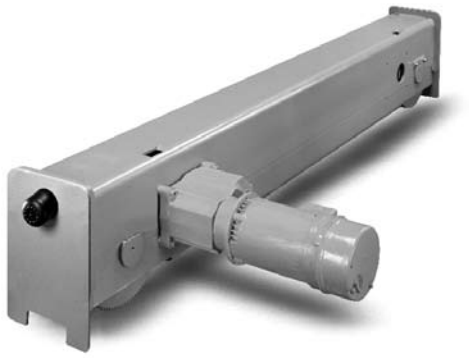
CONTROL: Magnetic contactor or variable frequency type. Temperature actuated switches standard. Overload relays are optional

BEARINGS: Antifriction type throughout

END TRUCKS

The truck frame is manufactured from a single piece solid ASTM A500 Grade B rectangular steel tube with 3/8" walls throughout for maximum strength and minimum width. The truck rail sweeps (fabricated from 3/8" thick A-36 steel plate) protect the bridge from loose objects on the runway rail head. Conical rubber bumpers are provided mounted as a standard.

Wheels are flat tread manufactured from 1045 steel and hardened to 400-450 BHN. The flat tread design allows the wheels to run on either ASCE type rail or square bar. Wheel bearings are life time lubricated ball bearings providing a minimum of 5,000 hours of L-10 bearing life. Maximum wheel load and bearing life are determined in accordance with CMAA Specification No. 74 dated 2000.



For Spans Thru (ft)	Catalog Number	Wheel Dia. (in)	Wheel Base	Weight less drive (lbs)	Maximum Actual Wheel Loads											
					25#	30#	40#		60#				80#			
					50 to 150 FPM	50 to 150 FPM	50 to 125 FPM	150 FPM	50 to 75 FPM	100 FPM	125 FPM	150 FPM	50 & 75 FPM	100 FPM	125 FPM	150 FPM
36	TRFA6054AR2	6	4' - 6"	744	11160	11870	13975	13485								
48	TRFA6072AR2		6' - 0"	840												
60	TRFA6090AR2		7' - 6"	938			13640									
36	TRFA8054AR3	8	4' - 6"	892		15845	18655	18655								
48	TRFA8072AR3		6' - 0"	1020												
60	TRFA8090AR3		7' - 6"	1148												
36	TRFA8054BR3		4' - 6"	892					26160	25400	23350	22170	28035	25400	23350	22170
48	TRFA8072BR3		6' - 0"	1020					23855	23855			23855	23855		
60	TRFA8090BR3		7' - 6"	1148					18830	18830	18830	18830	18830	18830	18830	18830
36	TRFA10054BR3	10	4' - 6"	1098					32730	32730	30520	28940	35085	33205	30520	28985
48	TRFA10072BR3		6' - 0"	1226					30480	30480	30480		30480	30480	30480	
60	TRFA10090BR3		7' - 6"	1354					23970	23970	23970	23970	23970	23970	23970	23970

Table Wheel Load Notes:

The **Maximum Actual Wheel Load** is calculated from the combination of all of the actual dead loads and live loads of the crane and hoist shall not exceed the maximum allowable wheel loads indicated based on the size of the runway rail and crane bridge travel speed.

For Spans Thru (ft)	Catalog Number	Wheel Dia. (in)	Wheel Base	Weight less drive (lbs)	Maximum Durability Wheel Loads											
					25#	30#	40#		60#				80#			
					50 to 150 FPM	50 to 150 FPM	50 to 125 FPM	150 FPM	50 & 75 FPM	100 FPM	125 FPM	150 FPM	50 & 75 FPM	100 FPM	125 FPM	150 FPM
36	TRFA6054AR2	6	4' - 6"	744	9004	9572	11255	10865								
48	TRFA6072AR2		6' - 0"	840												
60	TRFA6090AR2		7' - 6"	938			10985									
36	TRFA8054AR3	8	4' - 6"	892		12760	15005	15005								
48	TRFA8072AR3		6' - 0"	1020												
60	TRFA8090AR3		7' - 6"	1148												
36	TRFA8054BR3		4' - 6"	892					21010	20395	18755	17818	22510	20395	18755	17815
48	TRFA8072BR3		6' - 0"	1020					19155	19155			19155	19155		
60	TRFA8090BR3		7' - 6"	1148					15150	15150	15150	15150	15135	15135	15135	15135
36	TRFA10054BR3	10	4' - 6"	1098					26260	26260	24500	23275	35085	26645	24500	23275
48	TRFA10072BR3		6' - 0	1226					24460	24460	24460		24460	24460	24460	
60	TRFA10090BR3		7' - 6"	1354					19250	19250	19250	10250	19250	19250	19250	19250

Table Wheel Load Notes:

The **Maximum Equivalent Durability Wheel Load** is calculated from the combination of all of the actual dead loads and live loads of the crane and hoist that is then adjusted by the CMAA Specification #74 load service coefficient to determine the effective durability wheel load, Pe, shall not exceed the maximum allowable durability wheel load indicated based on the size of the runway rail and crane bridge travel speed.

FIXED AXLE DRIVES

Fixed axle drive units are comprised of an AC disc brake, motor, gear reducer and pinion mounted to the output shaft of the reducer. Two are required per crane. The gear reducers are spur geared with totally enclosed oil bath lubrication. The drive motors are TENV, 30 minute rated with class "F" insulation and temperature actuated switch for motor protection. Single speed motors are 1800 R.P.M., two speed motors are 1800/600 R.P.M. for a 3:1 speed ratio (except for the 1/2 hp motors used on 50 fpm drives which are 1200/600 R.P.M.) Motors are provided with an adjustable, 50% torque A.C. disc brake.

Drive selection - sold in pairs. One pair required per crane - Specify voltage and desired speed.

Drive Catalog Number	Single or Two Speed Motor	Motor H.P.	Weight (lbs)	Speeds Available* (fpm)				
				50	75	100	125	150
Ratio				**13:1**	**13:1**	**9:1**	**7:1**	**6:1**
913460	Single	1/2	164	X	X	X	N/A	N/A
913462		3/4		X	X	X	X	X
913464		1	184	X	X	X	X	X
913466		1-1/2		N/A	X	X	X	X
913468		2	204	N/A	N/A	X	X	X
913469		3		N/A	N/A	N/A	X	X
913470	Two	1/2	174	X	X	X	N/A	N/A
913471		3/4		X	X	X	X	X
913472		1	194	X	X	X	X	X
913473		1-1/2		N/A	X	X	X	X
913474		2	214	N/A	N/A	X	X	X
913475		3		N/A	N/A	N/A	X	X

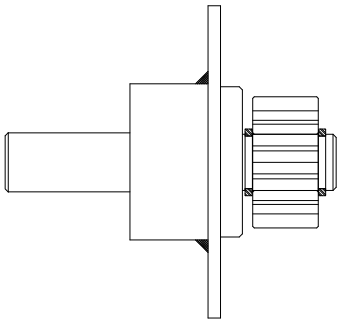
* Reference Speed/Capacity/HP selection chart for correct drive hp and ratio.
For speeds over 100 fpm do not use single speed control. If using 2 speed control for speeds over 100 fpm include a soft start with the control. 50 fpm 2 speed drives have a 2:1 speed ratio. All others have 3:1.

Drive Horsepower Requirements for US (short) Ton Cranes						
Capacity (US Tons)	Span (ft)	Bridge Traverse Speed (fpm)				
		50	75	100	125	150
1 - 5	36	1/2	1/2	1/2	3/4	3/4
	48			3/4		1
	60				1	
6 - 10	36		3/4	1	1-1/2	2
	48	3/4	1	1-1/2		
	60				2	
11 - 15	36		1-1/2			3
	48	1		2	3	
	60					

Drive Horsepower Requirements for Metric Tonne Cranes						
Capacity (Tonnes)	Span (ft)	Bridge Traverse Speed (fpm)				
		50	75	100	125	150
1 - 5	36	1/2	1/2	3/4	3/4	1
	48				1	
	60		3/4			1-1/2
6 - 10	36	3/4	1	1-1/2	1-1/2	2
	48				2	
	60		1-1/2			3
11 - 15	36	1		2		
	48				3	
	60					

HAND GEARED DRIVE COMPONENTS

The following components are used with the cataloged end trucks and Dealer supplied Cross Shaft and support steel to build Hand-Geared driven Single Girder Top-Running Cranes.



HAND GEARED DRIVE ADAPTER ASSEMBLY

Catalog No. 229984-1

Mounts on end truck where gear reducer would normally be mounted. Supports pinion stub shaft and drive pinion. Price includes mounting bracket, mounting hardware, stub shaft and pinion.

Cross Shaft Bearing, Coupling, Chain Wheel and Chain

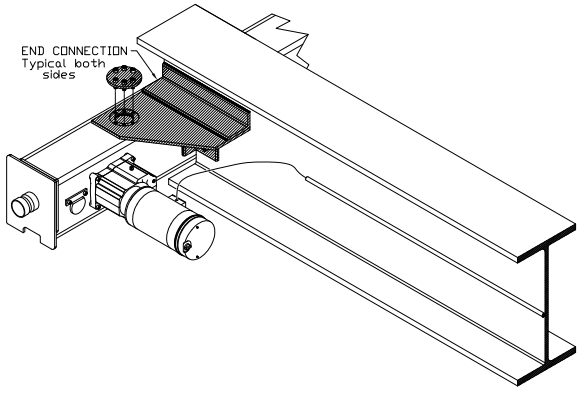
Rated Load Range (tonnes)	For Spans Thru (ft)	Cross Shaft* Bearing Assembly		Cross Shaft* Coupling		Hand Chain Wheel & Guide 1 Assembly Required	Hand Chain With Open Link (36 ft)
		Number Required	Catalog Number	Number Required	Catalog Number		
1 thru 10	12	1	904625	2	8280	913115	8282
	22	2		2			
	28	3		3			
	36	4		3			
	42	5		4			
	48	6		4			
	52	7		4			
	60	8		4			

* Based on using a 1-3/16" diameter Cross Shaft (by others).

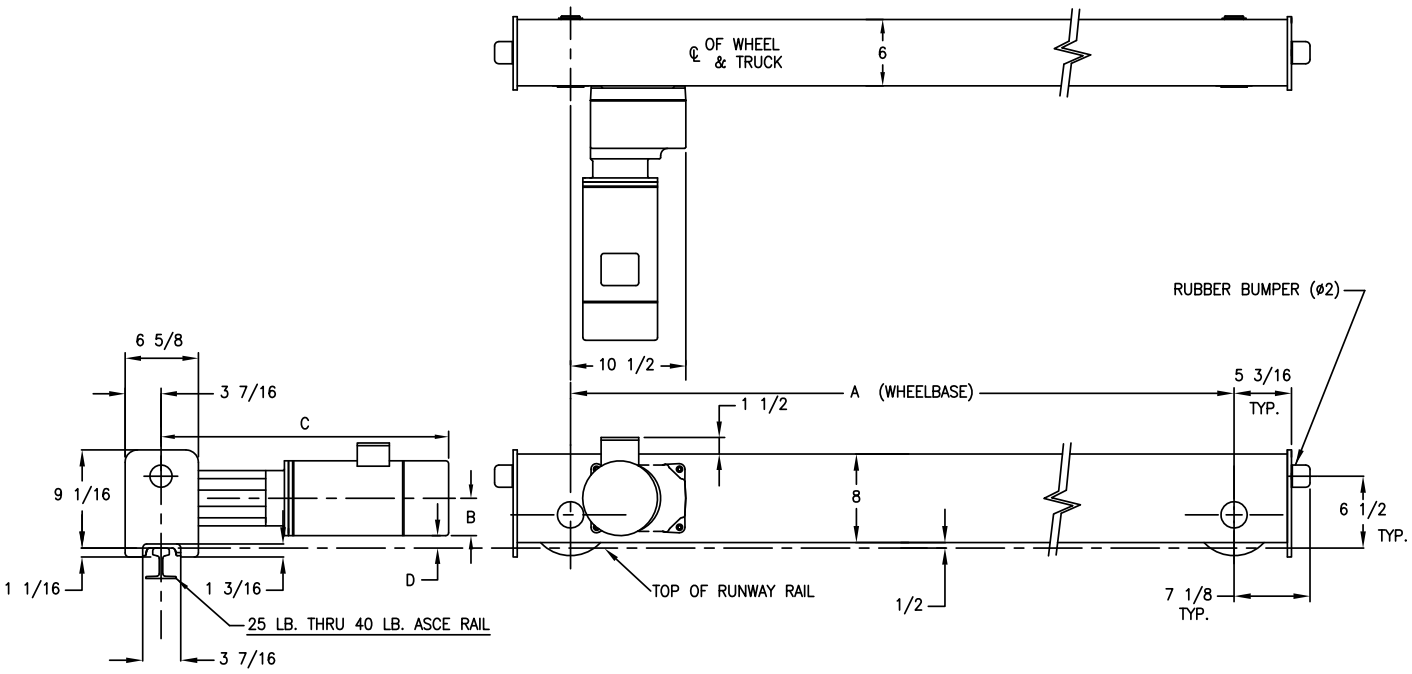
"WHALES TAIL" END CONNECTION KIT

Catalog No. 444697-10

The end connection kit contains the necessary plates, angles and connecting hardware to fabricate a welded or bolted connection at each end of a single girder crane. No diagonal bracing is required when using this kit. Order one kit per crane.



6" WHEEL END TRUCK DIMENSIONS



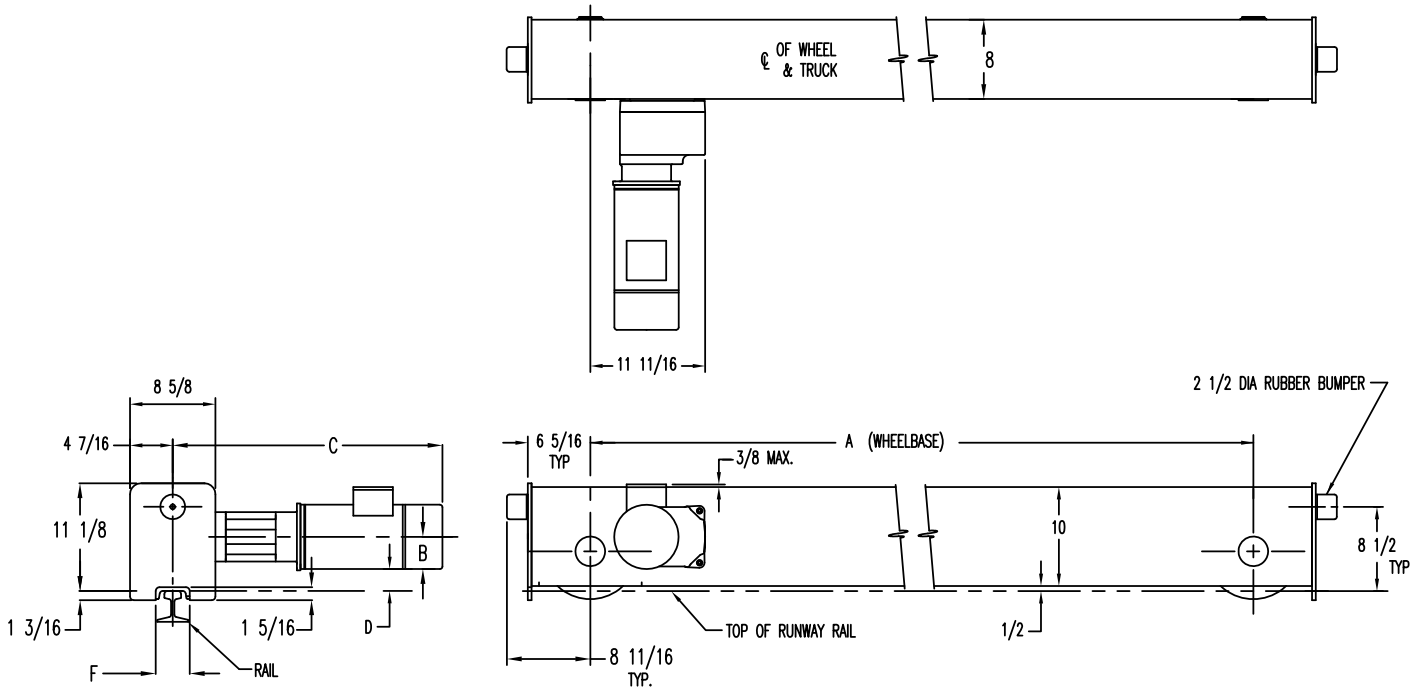
Truck Catalog Number	A Wheel Base
TRFA6054AR2	4' - 6"
TRFA6072AR2	6' - 0"
TRFA6090AR2	7' - 6"

Dimensions are for estimating purposes only and are not certified engineering dimensions.

Drive Motor H.P.	B*	C	D*
.5	3-3/8	23-1/4	1-1/8
.5/.167		24-1/4	
.75		23-1/4	
.75/.25		24-1/4	
1		25-3/4	
1/.33		27-3/4	
1.5			
1.5/.5	4	30	1/2
2	3-3/8	26-3/4	1-1/8
2/.66	4	30	1/2
3		27	
3/1		30	

* Not including conduit box

8" WHEEL END TRUCK DIMENSIONS



L.H. END TRUCK SHOWN
R.H. BUILD OPPOSITE

Drawing #: TRFATrk8SGDG

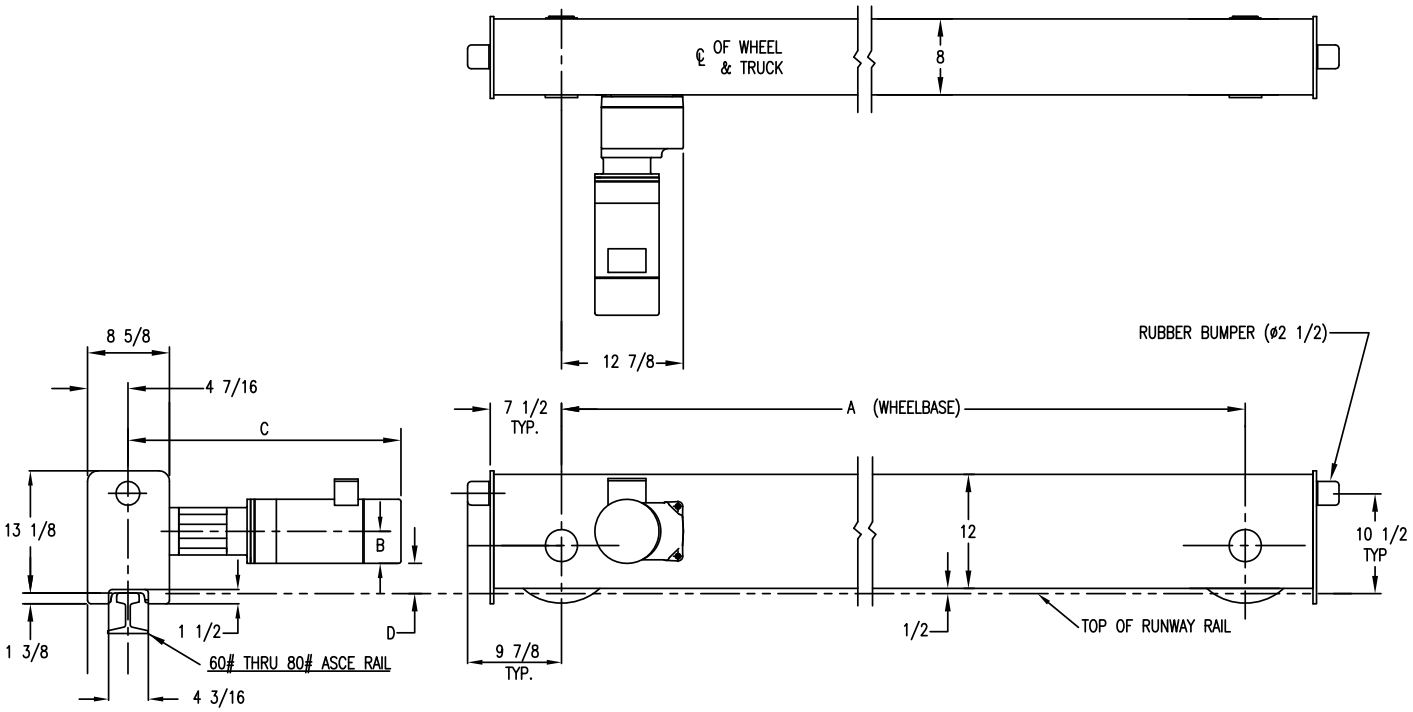
Truck Catalog Number	A Wheel Base	F	Rail
TRFA8054AR3	4' - 6"	3-7/16	30-40#
TRFA8072AR3	6' - 0"		
TRFA8090AR3	7' - 6"		
TRFA8054BR3	4' - 6"	4-3/16	60-80#
TRFA8072BR3	6' - 0"		
TRFA8090BR3	7' - 6"		

Dimensions are for estimating purposes only and are not certified engineering dimensions.

Drive Motor H.P.	B*	C	D*
.5	3-3/8	24-1/4	2-1/8
.5/.167		25-1/4	
.75		24-1/4	
.75/.25		25-1/4	
1		26-3/4	
1/.33		28-3/4	
1.5			
1.5/.5	4	31	1-1/2
2	3-3/8	27-3/4	2-1/8
2/.66	4	31	1-1/2
3		28	
3/1		31	

* Not including conduit box

10" WHEEL END TRUCK DIMENSIONS



L.H. END TRUCK SHOWN
R.H. BUILD OPPOSITE

Drawing #: TRFATrk10SG

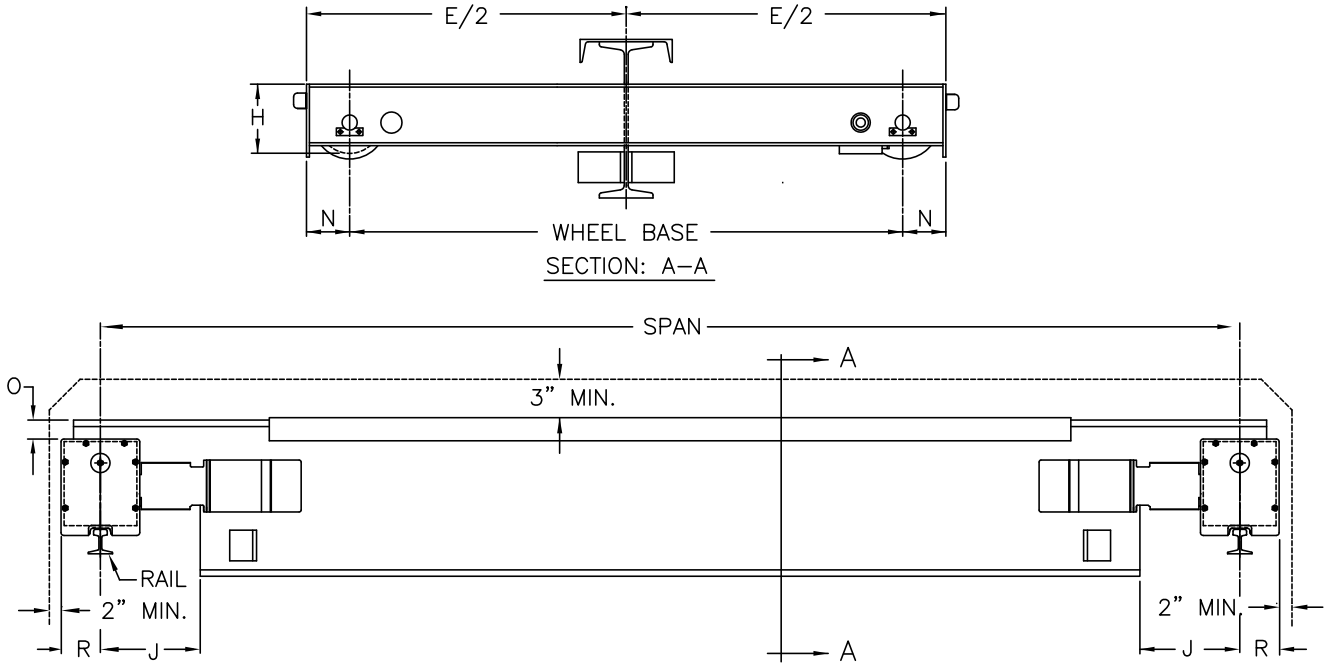
Truck Catalog Number	A Wheel Base
TRFA10054BR3	4' - 6"
TRFA10072BR3	6' - 0"
TRFA10090BR3	7' - 6"

Dimensions are for estimating purposes only and are not certified engineering dimensions.

Drive Motor H.P.	B*	C	D*
.5	3-3/8	24-1/4	3-1/8
.5/.167		25-1/4	
.75		24-1/4	
.75/.25		25-1/4	
1		26-3/4	
1/.33		28-3/4	
1.5			
1.5/.5	4	31	2-1/2
2	3-3/8	27-3/4	3-1/8
2/.66	4	31	2-1/2
3		28	
3/1		31	

* Not including conduit box

DUAL DRIVE BRIDGE CRANE



O Min.	For Beams Sized
5-1/2"	8" thru 12"
7"	14" thru 30"
12"	36" Beams only

Rated Load (tons)	Max Span (ft)	End Truck Catalog Number	Wheel Base	Wheel Diameter	J Max.	H	N	R	E/2	Rail Size	
										Min.	Max
5	36	TRFA6054AR2	4' - 6"	6	14	8-1/2	5-3/16	3-7/16	34-1/8	25	40
	48	TRFA6072AR2	6' - 0"		14				43-1/8		
	60	TRFA6090AR2	7' - 6"		15				52-1/8		
10	36	TRFA8054AR3, BR3	4' - 6"	8	15	10-1/2	6-5/16	4-7/16	35-13/16	25	105
	48	TRFA8072AR3, BR3	6' - 0"						44-13/16		
	60	TRFA8090AR3, BR3	7' - 6"						53-13/16		
15	36	TRFA10054BR3	4' - 6"	10	16	12-1/2	7-1/2	4-7/16	37-3/8	60	105
	48	TRFA10072BR3	6' - 0"						46-3/8		
	60	TRFA10090BR3	7' - 6"						55-3/8		

Dimensions are for estimating purposes only and are not certified engineering dimensions.

GIRDER SELECTIONS FOR SINGLE GIRDER TOP-RUNNING & UNDERHUNG CRANES

SPECIFICATIONS

FOR INDIVIDUAL DRIVES

FOR HAND-GEARED

DUAL (A-4) DRIVE

Girder Selection Charts
For U.S. (Short) and Metric Tons

The following girder selection charts were developed based on the following assumptions;

1. Section designation is in accordance with AISC.
2. Beam sizes listed are American standard (S) beams, wide flange (W) and channel (C) sections.
3. Use ASTM A 36 grade steel, first quality, free of rust and excessive mill scale
4. The bridge is designed in accordance with CMAA Specification 74, revised 1994 and is based on the following assumptions:

US Tons

Rated Load (tons)	Hoist plus Trolley Dead Load (lbs)	* Trolley Wheel Diameter (in)	Allowable Flange Width (in)	Allowable Flange Thickness (in)
1	500	4	9-1/8	11/16
2			11-1/4	
3	800		11	15/16
5	1100	6-1/2		1-5/32
7-1/2	1200			
10	2500	8	13-3/4	1-1/2
15	3200			

Metric Tons

Rated Load (tonnes)	Hoist plus Trolley Dead Load (kg)	* Trolley Wheel Diameter (in)	Allowable Flange Width (in)	Allowable Flange Thickness (in)
1	227	4	9-1/8	11/16
2			11-1/4	
3	363		11	15/16
5	499	6-1/2		1-5/32
7-1/2	544			
10	1134	8	13-3/4	1-1/2
15	1451			

* LTI four wheel trolleys (one per hoist)
Assumed equal trolley wheel loading (only true for t.v.l hoists)
DLFB, DLFT and HLF are assumed to be 1.1, 1.1 and .15 respectively
IFD is assumed to be .1
Assumed additional dead load (for cross conductors) is 6 #/Foot
The bridge is assumed to be an indoor bridge

5. No additional loading such as footwalks, platforms, cabs machinery, etc., is allowed
6. If any of the above assumptions are exceeded contact the factory for girder selection.
7. Girder substitution is allowed by going to an increased span, but **not** by going to an increased load.

Dual (A-4) Drive
U.S. (short) Tons

Span Thru (ft)		Sw/C			Ww/C	
	S	S	C	W	W	C
1 TON RATED LOAD						
10	7X 15.3	7X 15.3	6X 8.2	8X 18	8X 15	7X 9.8
12	8X 18.4	7X 15.3	6X 8.2	8X 18	8X 15	7X 9.8
14	8X 18.4	7X 15.3	6X 8.2	8X 21	8X 15	7X 9.8
16	10X 25.4	7X 15.3	6X 8.2	8X 21	8X 18	8X 11.5
18	10X 25.4	8X 18.4	7X 9.8	8X 21	8X 18	8X 11.5
20	12X 31.8	8X 18.4	7X 9.8	8X 24	12X 22	7X 9.8
22	12X 40.8	8X 18.4	10X 15.3	8X 28	12X 22	7X 9.8
24	12X 40.8	10X 25.4	7X 9.8	10X 30	12X 22	7X 9.8
26	12X 40.8	10X 25.4	7X 9.8	10X 33	12X 22	7X 9.8
28	— —	10X 25.4	7X 9.8	10X 33	12X 22	7X 9.8
30	— —	12X 31.8	8X 11.5	10X 39	12X 22	7X 9.8
32	— —	12X 31.8	8X 11.5	12X 40	12X 22	7X 9.8
34	— —	12X 31.8	8X 11.5	12X 45	12X 26	10X 15.3
36	— —	12X 31.8	8X 11.5	12X 45	12X 26	10X 15.3
38	— —	12X 40.8	7X 9.8	12X 50	14X 30	9X 13.4
40	— —	15X 42.9	8X 11.5	14X 53	14X 30	9X 13.4
42	— —	15X 42.9	8X 11.5	— —	14X 30	12X 20.7
44	— —	15X 42.9	9X 13.4	— —	16X 36	10X 15.3
46	— —	15X 42.9	9X 13.4	— —	16X 36	10X 15.3
48	— —	15X 42.9	12X 20.7	— —	16X 36	10X 15.3
50	— —	— —	— —	— —	18X 50	10X 15.3
52	— —	— —	— —	— —	18X 50	10X 15.3
54	— —	— —	— —	— —	18X 50	10X 15.3
56	— —	— —	— —	— —	18X 50	12X 20.7
58	— —	— —	— —	— —	18X 50	12X 20.7
60	— —	— —	— —	— —	21X 62	12X 20.7

Span Thru (ft)		Sw/C			Ww/C	
	S	S	C	W	W	C
3 TON RATED LOAD						
10	12X 40.8	12X 31.8	8X 11.5	12X 35	10X 39	12X 20.7
12	12X 40.8	12X 40.8	7X 9.8	12X 35	10X 39	12X 20.7
14	12X 40.8	12X 40.8	7X 9.8	16X 40	10X 39	12X 20.7
16	18X 54.7	12X 40.8	7X 9.8	14X 43	10X 39	12X 20.7
18	18X 54.7	12X 40.8	7X 9.8	14X 48	12X 40	12X 20.7
20	20X 66.0	12X 40.8	7X 9.8	14X 48	14X 43	12X 20.7
22	20X 66.0	12X 40.8	9X 13.4	14X 48	14X 43	12X 20.7
24	24X 80.0	12X 40.8	12X 20.7	12X 50	18X 50	10X 15.3
26	24X 80.0	18X 54.7	9X 13.4	14X 53	18X 50	10X 15.3
28	20X 86.0	18X 54.7	9X 13.4	12X 58	18X 50	10X 15.3
30	20X 96.0	18X 54.7	9X 13.4	12X 58	18X 50	10X 15.3
32	— —	18X 54.7	9X 13.4	14X 61	18X 50	10X 15.3
34	— —	18X 54.7	9X 13.4	16X 67	16X 50	12X 20.7
36	— —	18X 54.7	12X 20.7	14X 68	16X 50	12X 20.7
38	— —	18X 54.7	12X 20.7	14X 74	16X 50	12X 20.7
40	— —	20X 66.0	12X 20.7	16X 89	16X 57	12X 20.7
42	— —	20X 66.0	12X 20.7	16X 89	16X 57	12X 20.7
44	— —	20X 66.0	12X 20.7	— —	18X 60	12X 20.7
46	— —	20X 66.0	12X 20.7	— —	18X 60	12X 20.7
48	— —	20X 66.0	15X 33.9	— —	21X 62	12X 20.7
50	— —	20X 66.0	15X 33.9	— —	21X 68	12X 20.7
52	— —	20X 66.0	15X 33.9	— —	21X 62	15X 33.9
54	— —	24X 80.0	15X 33.9	— —	21X 68	15X 33.9
56	— —	24X 80.0	15X 33.9	— —	21X 68	15X 33.9
58	— —	24X 80.0	15X 33.9	— —	21X 73	15X 33.9
60	— —	24X 80.0	15X 33.9	— —	24X 76	15X 33.9

2 TON RATED LOAD						
10	10X 25.4	10X 25.4	7X 9.8	10X 26	12X 22	7X 9.8
12	12X 31.8	10X 25.4	7X 9.8	10X 26	12X 22	7X 9.8
14	12X 31.8	10X 25.4	7X 9.8	10X 30	12X 22	7X 9.8
16	12X 35.0	10X 25.4	8X 11.5	10X 30	12X 22	7X 9.8
18	12X 40.8	12X 31.8	8X 11.5	10X 30	10X 26	9X 13.4
20	12X 40.8	12X 31.8	8X 11.5	12X 35	16X 36	10X 15.3
22	12X 50.0	12X 31.8	8X 11.5	14X 38	16X 36	10X 15.3
24	— —	12X 31.8	8X 11.5	10X 39	16X 36	10X 15.3
26	— —	12X 31.8	9X 13.4	12X 40	16X 36	10X 15.3
28	— —	12X 40.8	7X 9.8	12X 45	16X 36	10X 15.3
30	— —	12X 40.8	7X 9.8	14X 48	16X 36	12X 20.7
32	— —	12X 40.8	9X 13.4	12X 50	12X 40	12X 20.7
34	— —	15X 42.9	8X 11.5	12X 53	12X 40	12X 20.7
36	— —	15X 42.9	9X 13.4	14X 61	14X 43	12X 20.7
38	— —	15X 42.9	9X 13.4	14X 61	14X 43	12X 20.7
40	— —	15X 42.9	10X 15.3	16X 67	18X 50	10X 15.3
42	— —	— —	— —	18X 76	18X 50	10X 15.3
44	— —	— —	— —	— —	18X 50	10X 15.3
46	— —	— —	— —	— —	16X 50	12X 20.7
48	— —	— —	— —	— —	18X 50	12X 20.7
50	— —	— —	— —	— —	18X 50	12X 20.7
52	— —	— —	— —	— —	21X 62	12X 20.7
54	— —	— —	— —	— —	21X 62	12X 20.7
56	— —	— —	— —	— —	21X 68	12X 20.7
58	— —	— —	— —	— —	21X 62	15X 33.9
60	— —	— —	— —	— —	21X 62	15X 33.9

5 TON RATED LOAD						
10	18X 54.7	12X 40.8	7X 9.8	16X 50	18X 50	10X 15.3
12	18X 54.7	12X 40.8	8X 11.5	16X 50	18X 50	10X 15.3
14	20X 66.0	12X 40.8	12X 20.7	14X 53	12X 50	12X 20.7
16	20X 66.0	18X 54.7	9X 13.4	16X 57	16X 50	12X 20.7
18	20X 66.0	18X 54.7	9X 13.4	16X 57	16X 50	12X 20.7
20	24X 80.0	18X 54.7	10X 15.3	18X 65	24X 62	10X 15.3
22	20X 86.0	18X 54.7	12X 20.7	18X 65	16X 57	12X 20.7
24	20X 86.0	20X 66.0	9X 13.4	18X 71	16X 57	12X 20.7
26	24X106.0	20X 66.0	9X 13.4	14X 74	16X 57	12X 20.7
28	24X106.0	20X 66.0	9X 13.4	16X 77	18X 60	12X 20.7
30	24X106.0	20X 66.0	9X 13.4	14X 82	18X 65	12X 20.7
32	— —	20X 66.0	10X 15.3	14X 82	18X 65	12X 20.7
34	— —	20X 66.0	12X 20.7	16X 89	18X 71	12X 20.7
36	— —	20X 66.0	15X 33.9	16X 89	18X 71	12X 20.7
38	— —	20X 66.0	15X 33.9	16X 100	18X 71	12X 20.7
40	— —	24X 80.0	12X 20.7	16X 100	21X 83	12X 20.7
42	— —	24X 80.0	15X 33.9	— —	21X 83	12X 20.7
44	— —	24X 80.0	15X 33.9	— —	21X 83	12X 20.7
46	— —	24X 80.0	15X 33.9	— —	21X 93	12X 20.7
48	— —	24X 80.0	15X 33.9	— —	21X 83	15X 33.9
50	— —	24X 80.0	15X 33.9	— —	21X 83	15X 33.9
52	— —	24X 80.0	15X 33.9	— —	21X 83	18X 42.7
54	— —	24X 90.0	15X 40.0	— —	24X 84	18X 42.7
56	— —	24X106.0	15X 33.9	— —	24X 94	15X 33.9
58	— —	24X106.0	15X 33.9	— —	24X 94	15X 33.9
60	— —	24X106.0	15X 40.0	— —	24X 94	18X 42.7

Dual (A-4) Drive
U.S. (short) Tons

Span Thru (ft)	S	Sw/C		W	Ww/C	
		S	C		W	C
7½ TON RATED LOAD						
10	20X 75.0	20X 66.0	9X 13.4	18X 65	16X 57	12X 20.7
12	24X 80.0	20X 66.0	9X 13.4	18X 71	16X 57	12X 20.7
14	24X 80.0	20X 66.0	9X 13.4	18X 71	18X 65	12X 20.7
16	20X 86.0	20X 66.0	10X 15.3	14X 82	18X 65	12X 20.7
18	24X 106.0	20X 66.0	12X 20.7	14X 82	18X 71	12X 20.7
20	24X 106.0	24X 80.0	10X 15.3	10X 88	18X 71	12X 20.7
22	24X 106.0	24X 80.0	10X 15.3	16X 89	21X 83	12X 20.7
24	24X 106.0	24X 80.0	12X 20.7	21X 93	21X 83	12X 20.7
26	24X 121.0	24X 80.0	12X 20.7	16X 100	21X 83	12X 20.7
28	— —	24X 80.0	15X 33.9	16X 100	21X 93	12X 20.7
30	— —	24X 80.0	15X 33.9	27X 114	21X 93	12X 20.7
32	— —	24X 90.0	15X 33.9	30X 132	21X 93	12X 20.7
34	— —	24X 106.0	12X 20.7	— —	21X 93	12X 20.7
36	— —	24X 106.0	12X 20.7	— —	21X 93	15X 33.9
38	— —	24X 106.0	12X 20.7	— —	21X 93	15X 33.9
40	— —	24X 106.0	12X 20.7	— —	21X 93	18X 42.7
42	— —	24X 106.0	15X 33.9	— —	27X 102	18X 42.7
44	— —	24X 106.0	15X 33.9	— —	27X 114	15X 33.9
46	— —	24X 106.0	15X 33.9	— —	27X 114	15X 33.9
48	— —	24X 106.0	15X 33.9	— —	27X 114	15X 33.9
50	— —	24X 106.0	15X 40.0	— —	27X 114	15X 33.9
52	— —	24X 121.0	15X 40.0	— —	27X 114	18X 42.7
54	— —	24X 121.0	18X 42.7	— —	30X 124	15X 33.9
56	— —	24X 121.0	18X 58.0	— —	30X 132	15X 33.9
58	— —	— —	— —	— —	30X 124	18X 42.7
60	— —	— —	— —	— —	30X 132	18X 42.7

Span Thru (ft)	S	Sw/C		W	Ww/C	
		S	C		W	C
15 TON RATED LOAD						
10	24X 106.0	24X106.0	12X 20.7	18X 119	18X 119	15X 33.9
12	— —	24X106.0	12X 20.7	21X 132	18X 119	15X 33.9
14	— —	24X106.0	12X 20.7	24X 146	18X 119	15X 33.9
16	— —	24X106.0	12X 20.7	24X 146	30X 132	15X 33.9
18	— —	24X106.0	15X 33.9	24X 146	30X 132	18X 42.7
20	— —	24X106.0	15X 33.9	24X 162	24X 146	18X 42.7
22	— —	24X121.0	18X 42.7	24X 162	24X 146	18X 42.7
24	— —	— —	— —	24X 162	24X 146	18X 58.0
26	— —	— —	— —	24X 162	24X 162	18X 42.7
28	— —	— —	— —	36X 182	24X 162	18X 42.7
30	— —	— —	— —	36X 194	24X 162	18X 42.7
32	— —	— —	— —	36X 194	24X 162	18X 42.7
34	— —	— —	— —	36X 210	24X 162	18X 58.0
36	— —	— —	— —	36X 210	36X 182	18X 42.7
38	— —	— —	— —	— —	36X 182	18X 42.7
40	— —	— —	— —	— —	36X 182	18X 42.7
42	— —	— —	— —	— —	36X 182	18X 51.9
44	— —	— —	— —	— —	36X 194	18X 42.7
46	— —	— —	— —	— —	36X 194	18X 42.7
48	— —	— —	— —	— —	36X 194	18X 42.7
50	— —	— —	— —	— —	36X 194	18X 58.0
52	— —	— —	— —	— —	36X 210	18X 42.7
54	— —	— —	— —	— —	36X 210	18X 42.7
56	— —	— —	— —	— —	36X 210	18X 42.7
58	— —	— —	— —	— —	36X 210	18X 58.0
60	— —	— —	— —	— —	— —	— —

10 TON RATED LOAD						
10	24X 80.0	20X 66.0	9X 13.4	21X 83	18X 71	12X 20.7
12	24X 86.0	20X 66.0	10X 15.3	16X 89	21X 83	12X 20.7
14	24X 106.0	24X 80.0	10X 15.3	21X 93	21X 83	12X 20.7
16	24X 106.0	24X 80.0	10X 15.3	16X 100	21X 93	12X 20.7
18	24X 106.0	24X 80.0	12X 20.7	16X 100	21X 93	12X 20.7
20	24X 106.0	24X 90.0	12X 20.7	18X 119	21X 93	12X 20.7
22	24X 121.0	24X 80.0	15X 33.9	18X 119	21X 93	15X 33.9
24	— —	24X 90.0	15X 33.9	18X 119	21X 93	15X 33.9
26	— —	24X 106.0	12X 20.7	24X 131	21X 93	18X 51.9
28	— —	24X 106.0	12X 20.7	21X 132	27X 114	15X 33.9
30	— —	24X 106.0	12X 20.7	33X 141	27X 114	15X 33.9
32	— —	24X 106.0	12X 20.7	24X 146	27X 114	18X 42.7
34	— —	24X 106.0	15X 33.9	24X 146	27X 114	18X 42.7
36	— —	24X 106.0	15X 33.9	24X 146	30X 132	15X 33.9
38	— —	24X 106.0	15X 40.0	24X 146	30X 132	15X 33.9
40	— —	24X 121.0	15X 40.0	24X 162	30X 132	15X 33.9
42	— —	24X 121.0	18X 42.7	24X 162	30X 132	18X 42.7
44	— —	— —	— —	— —	30X 132	18X 42.7
46	— —	— —	— —	— —	24X 146	18X 42.7
48	— —	— —	— —	— —	24X 146	18X 51.9
50	— —	— —	— —	— —	24X 162	18X 42.7
52	— —	— —	— —	— —	24X 162	18X 42.7
54	— —	— —	— —	— —	24X 162	18X 42.7
56	— —	— —	— —	— —	24X 162	18X 42.7
58	— —	— —	— —	— —	36X 170	18X 42.7
60	— —	— —	— —	— —	36X 170	18X 51.9

Dual (A-4) Drive
Metric Tons

Span Thru (ft)	S	Sw/C		W	Ww/C	
		S	C		W	C
1 TONNE RATED LOAD						
10	8X 18.4	7X 15.3	6X 8.2	8X 21	8X 15	7X 9.8
12	8X 18.4	7X 15.3	6X 8.2	8X 21	8X 15	7X 9.8
14	8X 23.0	7X 15.3	6X 8.2	8X 21	8X 18	8X 11.5
16	10X 25.4	8X 18.4	7X 9.8	8X 21	8X 18	8X 11.5
18	12X 31.8	8X 18.4	7X 9.8	8X 24	12X 22	7X 9.8
20	12X 31.8	8X 18.4	7X 9.8	8X 24	12X 22	7X 9.8
22	12X 40.8	10X 25.4	7X 9.8	8X 28	12X 22	7X 9.8
24	12X 40.8	10X 25.4	7X 9.8	10X 33	12X 22	7X 9.8
26	12X 50.0	10X 25.4	7X 9.8	10X 33	12X 22	7X 9.8
28	— —	10X 25.4	7X 9.8	10X 33	12X 22	7X 9.8
30	— —	12X 31.8	8X 11.5	10X 39	12X 22	7X 9.8
32	— —	12X 31.8	8X 11.5	12X 40	12X 22	8X 11.5
34	— —	12X 31.8	8X 11.5	12X 45	12X 26	10X 15.3
36	— —	12X 31.8	10X 15.3	14X 48	14X 30	9X 13.4
38	— —	15X 42.9	8X 11.5	12X 50	14X 30	9X 13.4
40	— —	15X 42.9	8X 11.5	24X 76	14X 30	9X 13.4
42	— —	15X 42.9	8X 11.5	— —	16X 36	10X 15.3
44	— —	15X 42.9	9X 13.4	— —	16X 36	10X 15.3
46	— —	15X 42.9	10X 15.3	— —	16X 36	10X 15.3
48	— —	— —	— —	— —	16X 36	12X 20.7
50	— —	— —	— —	— —	18X 50	10X 15.3
52	— —	— —	— —	— —	18X 50	10X 15.3
54	— —	— —	— —	— —	18X 50	12X 20.7
56	— —	— —	— —	— —	18X 50	12X 20.7
58	— —	— —	— —	— —	21X 62	12X 20.7
60	— —	— —	— —	— —	21X 62	12X 20.7

Span Thru (ft)	S	Sw/C		W	Ww/C	
		S	C		W	C
3 TONNE RATED LOAD						
10	12X 40.8	12X 40.8	7X 9.8	12X 35	10X 39	12X 20.7
12	12X 40.8	12X 40.8	7X 9.8	18X 40	10X 39	12X 20.7
14	18X 54.7	12X 40.8	7X 9.8	10X 45	12X 40	12X 20.7
16	18X 54.7	12X 40.8	7X 9.8	10X 45	14X 43	12X 20.7
18	18X 54.7	12X 40.8	8X 11.5	14X 48	14X 43	12X 20.7
20	20X 66.0	12X 40.8	10X 15.3	14X 48	18X 50	10X 15.3
22	20X 75.0	18X 54.7	9X 13.4	12X 50	18X 50	10X 15.3
24	24X 80.0	18X 54.7	9X 13.4	14X 53	18X 50	10X 15.3
26	20X 86.0	18X 54.7	9X 13.4	14X 53	18X 50	10X 15.3
28	20X 86.0	18X 54.7	9X 13.4	14X 61	18X 50	10X 15.3
30	— —	18X 54.7	10X 15.3	14X 61	16X 50	12X 20.7
32	— —	18X 54.7	12X 20.7	16X 67	16X 50	12X 20.7
34	— —	18X 54.7	12X 20.7	14X 68	16X 50	12X 20.7
36	— —	20X 66.0	9X 13.4	14X 74	16X 57	12X 20.7
38	— —	20X 66.0	10X 15.3	14X 82	16X 57	12X 20.7
40	— —	20X 66.0	12X 20.7	16X 89	16X 57	12X 20.7
42	— —	20X 66.0	12X 20.7	16X 89	18X 60	12X 20.7
44	— —	20X 66.0	12X 20.7	— —	18X 60	12X 20.7
46	— —	20X 66.0	15X 33.9	— —	18X 65	12X 20.7
48	— —	20X 66.0	15X 33.9	— —	21X 68	12X 20.7
50	— —	20X 66.0	15X 33.9	— —	21X 68	15X 33.9
52	— —	24X 80.0	15X 33.9	— —	21X 68	15X 33.9
54	— —	24X 80.0	15X 33.9	— —	21X 68	15X 33.9
56	— —	24X 80.0	15X 33.9	— —	21X 73	15X 33.9
58	— —	24X 80.0	15X 33.9	— —	24X 76	15X 33.9
60	— —	24X 80.0	15X 33.9	— —	24X 76	15X 33.9

2 TONNE RATED LOAD						
10	12X 31.8	10X 25.4	7X 9.8	10X 26	12X 22	7X 9.8
12	12X 31.8	10X 25.4	7X 9.8	10X 30	12X 22	7X 9.8
14	12X 35.0	10X 25.4	9X 13.4	10X 30	12X 22	7X 9.8
16	12X 40.8	12X 31.8	8X 11.5	10X 30	10X 26	12X 20.7
18	12X 40.8	12X 31.8	8X 11.5	12X 35	16X 36	10X 15.3
20	12X 40.8	12X 31.8	8X 11.5	12X 35	16X 36	10X 15.3
22	— —	12X 31.8	9X 13.4	10X 39	16X 36	10X 15.3
24	— —	12X 40.8	7X 9.8	12X 40	16X 36	10X 15.3
26	— —	12X 40.8	7X 9.8	14X 43	10X 39	12X 20.7
28	— —	12X 40.8	7X 9.8	12X 45	10X 39	12X 20.7
30	— —	12X 40.8	7X 9.8	12X 50	12X 40	12X 20.7
32	— —	15X 42.9	8X 11.5	12X 53	12X 40	12X 20.7
34	— —	15X 42.9	8X 11.5	12X 58	14X 43	12X 20.7
36	— —	15X 42.9	9X 13.4	14X 61	14X 43	12X 20.7
38	— —	15X 42.9	10X 15.3	14X 61	14X 43	12X 20.7
40	— —	15X 50.0	20X 20.7	18X 76	18X 50	10X 15.3
42	— —	— —	— —	18X 76	18X 50	10X 15.3
44	— —	— —	— —	— —	18X 50	10X 15.3
46	— —	— —	— —	— —	18X 50	12X 20.7
48	— —	— —	— —	— —	18X 50	12X 20.7
50	— —	— —	— —	— —	21X 62	12X 20.7
52	— —	— —	— —	— —	21X 62	12X 20.7
54	— —	— —	— —	— —	21X 68	12X 20.7
56	— —	— —	— —	— —	21X 62	15X 33.9
58	— —	— —	— —	— —	21X 62	15X 33.9
60	— —	— —	— —	— —	21X 62	15X 33.9

5 TONNE RATED LOAD						
10	18X 54.7	12X 40.8	8X 11.5	16X 50	12X 50	12X 20.7
12	20X 66.0	18X 54.7	9X 13.4	16X 57	12X 50	12X 20.7
14	20X 66.0	18X 54.7	9X 13.4	16X 57	16X 50	12X 20.7
16	20X 66.0	18X 54.7	9X 13.4	18X 60	16X 57	12X 20.7
18	24X 80.0	18X 54.7	12X 20.7	18X 65	16X 57	12X 20.7
20	24X 80.0	20X 66.0	9X 13.4	18X 65	16X 57	12X 20.7
22	20X 86.0	20X 66.0	9X 13.4	18X 71	16X 57	12X 20.7
24	20X 96.0	20X 66.0	9X 13.4	14X 74	18X 60	12X 20.7
26	24X 106.0	20X 66.0	9X 13.4	14X 82	18X 65	12X 20.7
28	24X 106.0	20X 66.0	10X 15.3	14X 82	18X 65	12X 20.7
30	24X 121.0	20X 66.0	12X20.7	16X 89	18X 71	12X 20.7
32	— —	24X 80.0	10X 15.3	16X 89	18X 71	12X 20.7
34	— —	24X 80.0	10X 15.3	16X 89	18X 71	12X 20.7
36	— —	24X 80.0	12X 20.7	16X 100	21X 83	12X 20.7
38	— —	24X 80.0	12X 20.7	16X 100	21X 83	12X 20.7
40	— —	24X 80.0	15X 33.9	— —	21X 83	12X 20.7
42	— —	24X 80.0	15X 33.9	— —	21X 83	12X 20.7
44	— —	24X 80.0	15X 33.9	— —	21X 93	12X 20.7
46	— —	24X 80.0	15X 33.9	— —	21X 93	12X 20.7
48	— —	24X 80.0	15X 40.0	— —	21X 83	18X 42.7
50	— —	24X 90.0	15X 40.0	— —	21X 93	15X 33.9
52	— —	24X 106.0	15X 33.9	— —	21X 93	15X 33.9
54	— —	24X 106.0	15X 33.9	— —	24X 94	15X 33.9
56	— —	24X 106.0	15X 33.9	— —	24X 94	15X 33.9
58	— —	24X 106.0	15X 40.0	— —	24X 94	18X 42.7
60	— —	24X 106.0	15X 40.0	— —	27X 102	18X 42.7

Dual (A-4) Drive
Metric Tons

Span Thru (ft)	S	Sw/C		W	Ww/C	
		S	C		W	C
7½ TONNE RATED LOAD						
10	24X 80.0	20X 66.0	9X 13.4	18X 71	18X 65	12X 20.7
12	24X 80.0	20X 66.0	9X 13.4	18X 71	18X 65	12X 20.7
14	20X 86.0	20X 66.0	12X 20.7	14X 82	18X 71	12X 20.7
16	24X 106.0	24X 80.0	10X 15.3	21X 83	18X 71	12X 20.7
18	24X 106.0	24X 80.0	10X 15.3	16X 89	21X 83	12X 20.7
20	24X 106.0	24X 80.0	12X 20.7	21X 93	21X 83	12X 20.7
22	24X 106.0	24X 80.0	12X 20.7	21X 93	21X 83	12X 20.7
24	24X 106.0	24X 80.0	15X 33.9	16X 100	21X 93	12X 20.7
26	— —	24X 80.0	15X 33.9	16X 100	21X 93	12X 20.7
28	— —	24X 106.0	12X 20.7	27X 114	21X 93	12X 20.7
30	— —	24X 106.0	12X 20.7	30X 132	21X 93	12X 20.7
32	— —	24X 106.0	12X 20.7	— —	21X 93	15X 33.9
34	— —	24X 106.0	12X 20.7	— —	21X 93	15X 33.9
36	— —	24X 106.0	12X 20.7	— —	21X 93	18X 42.7
38	— —	24X 106.0	12X 20.7	— —	27X 114	15X 33.9
40	— —	24X 106.0	15X 33.9	— —	27X 114	15X 33.9
42	— —	24X 106.0	15X 33.9	— —	27X 114	15X 33.9
44	— —	24X 106.0	15X 33.9	— —	27X 114	15X 33.9
46	— —	24X 121.0	15X 33.9	— —	27X 114	18x 42.7
48	— —	24X 121.0	18X 42.7	— —	30X 124	15X 33.9
50	— —	24X 121.0	18X 51.9	— —	30X 132	15X 33.9
52	— —	— —	— —	— —	30X 132	15X 33.9
54	— —	— —	— —	— —	30X 132	15X 33.9
56	— —	— —	— —	— —	30X 132	18x 42.7
58	— —	— —	— —	— —	30X 132	18x 42.7
60	— —	— —	— —	— —	30X 132	18x 58.0

Span Thru (ft)	S	Sw/C		W	Ww/C	
		S	C		W	C
15 TONNE RATED LOAD						
10	— —	24X 106.0	12X 20.7	12X 136	18X 119	15X 33.9
12	— —	24X 106.0	12X 20.7	12X 136	18X 119	18X 42.7
14	— —	24X 106.0	12X 20.7	24X 146	24X 146	18X 42.7
16	— —	24X 106.0	15X 33.9	21X 147	24X 146	18X 42.7
18	— —	24X 121.0	18X 42.7	24X 162	24X 146	18X 42.7
20	— —	— —	— —	24X 162	24X 162	18X 42.7
22	— —	— —	— —	24X 162	24X 162	18X 42.7
24	— —	— —	— —	36X 182	24X 162	18X 42.7
26	— —	— —	— —	36X 194	24X 162	18X 42.7
28	— —	— —	— —	36X 194	24X 162	18X 42.7
30	— —	— —	— —	36X 194	36X 182	18X 42.7
32	— —	— —	— —	36X 210	36X 182	18X 42.7
34	— —	— —	— —	36X 210	36X 182	18X 42.7
36	— —	— —	— —	— —	36X 182	18X 51.9
38	— —	— —	— —	— —	36X 194	18X 42.7
40	— —	— —	— —	— —	36X 194	18X 42.7
42	— —	— —	— —	— —	36X 194	18X 42.7
44	— —	— —	— —	— —	36X 194	18X 58.0
46	— —	— —	— —	— —	36X 210	18X 42.7
48	— —	— —	— —	— —	36X 210	18X 42.7
50	— —	— —	— —	— —	36X 210	18X 42.7
52	— —	— —	— —	— —	— —	— —
54	— —	— —	— —	— —	— —	— —
56	— —	— —	— —	— —	— —	— —
58	— —	— —	— —	— —	— —	— —
60	— —	— —	— —	— —	— —	— —

10 TONNE RATED LOAD						
10	20X 86.0	20X 66.0	12X 20.7	21X 93	21X 83	12X 20.7
12	24X 106.0	24X 80.0	10X 15.3	21X 93	21X 93	12X 20.7
14	24X 106.0	24X 80.0	10X 15.3	18X 119	21X 93	12X 20.7
16	24X 106.0	24X 80.0	12X 20.7	18X 119	21X 93	12X 20.7
18	24X 106.0	24X 80.0	15X 33.9	18X 119	21X 93	15X 33.9
20	— —	24X 106.0	12X 20.7	18X 119	21X 93	15X 33.9
22	— —	24X 106.0	12X 20.7	18X 119	21X 93	18X 51.9
24	— —	24X 106.0	12X 20.7	21X 132	27X 114	15X 33.9
26	— —	24X 106.0	12X 20.7	24X 146	27X 114	15X 33.9
28	— —	24X 106.0	12X 20.7	24X 146	27X 114	18X 42.7
30	— —	24X 106.0	15X 33.9	24X 146	30X 132	15X 33.9
32	— —	24X 106.0	15X 33.9	24X 146	30X 132	15X 33.9
34	— —	24X 106.0	15X 40.0	24X 162	30X 132	15X 33.9
36	— —	24X 121.0	18X 42.7	24X 162	30X 132	15X 33.9
38	— —	24X 121.0	18X 45.8	24X 162	30X 132	18X 42.7
40	— —	— —	— —	24X 162	24X 146	18X 42.7
42	— —	— —	— —	24X 162	24X 146	18X 51.9
44	— —	— —	— —	— —	24X 162	18X 42.7
46	— —	— —	— —	— —	24X 162	18X 42.7
48	— —	— —	— —	— —	24X 162	18X 42.7
50	— —	— —	— —	— —	24X 162	18X 42.7
52	— —	— —	— —	— —	36X 170	18X 42.7
54	— —	— —	— —	— —	36X 170	18X 42.7
56	— —	— —	— —	— —	36X 170	18X 42.7
58	— —	— —	— —	— —	36X 170	18X 51.9
60	— —	— —	— —	— —	36X 182	18X 51.9

HAND GEARED

Girder Selection Charts
For U.S. (Short) and Metric Tons

The following girder selection charts were developed based on the following assumptions;

1. Section designation is in accordance with AISC.
2. Beam sizes listed are American standard (S) beams, wide flange (W) and channel (C) sections.
3. Use ASTM A 36 grade steel, first quality, free of rust and excessive mill scale.
4. The bridge is designed in accordance with CMAA Specification 74, revised 1994 and is based on the following assumptions:

US Tons

Rated Load (tons)	Hoist plus Trolley Dead Load (lbs)	* Trolley Wheel Diameter (in)	Allowable Flange Width (in)	Allowable Flange Thickness (in)
1	500	4	9-1/8	11/16
2			11-1/4	
3	800		11	15/16
5	1100	6-1/2		1-5/32
7-1/2	1200			
10	2500	8	13-3/4	1-1/2
15	3200			

Metric Tons

Rated Load (tonnes)	Hoist plus Trolley Dead Load (kg)	* Trolley Wheel Diameter (in)	Allowable Flange Width (in)	Allowable Flange Thickness (in)
1	227	4	9-1/8	11/16
2			11-1/4	
3	363		11	15/16
5	499	6-1/2		1-5/32
7-1/2	544			
10	1134	8	13-3/4	1-1/2
15	1451			

* LTI four wheel trolleys (one per hoist)
Assumed equal trolley wheel loading (only true for t.v.l hoists)
DLFB, DLFT and HLF are assumed to be 1.1, 1.1 and .15 respectively
IFD is assumed to be 0.
Assumed additional dead load (for cross conductors) is 13 #/Foot
The bridge is assumed to be an indoor bridge.

5. No additional loading such as footwalks, platforms, cabs machinery, etc., is allowed
6. If any of the above assumptions are exceeded contact the factory for girder selection.
7. Girder substitution is allowed by going to an increased span, but **not** by going to an increased load.

Hand Geared
U.S. (short) Tons

Span Thru (ft)		Sw/C			Ww/C	
	S	S	C	W	W	C
1 TON RATED LOAD						
10	7X 15.3	7X 15.3	6X 8.2	8X 15	8X 15	7X 9.8
12	7X 15.3	7X 15.3	6X 8.2	8X 15	8X 15	7X 9.8
14	7X 15.3	7X 15.3	6X 8.2	8X 15	8X 15	7X 9.8
16	8X 18.4	7X 15.3	6X 8.2	8X 18	8X 15	7X 9.8
18	8X 23.0	8X 18.4	7X 9.8	8X 18	8X 18	8X 11.5
20	10X 25.4	8X 18.4	7X 9.8	8X 21	12X 22	7X 9.8
22	10X 25.4	10X 25.4	7X 9.8	10X 26	12X 22	7X 9.8
24	12X 31.8	10X 25.4	7X 9.8	10X 26	12X 22	7X 9.8
26	12X 31.8	10X 25.4	7X 9.8	10X 30	12X 22	7X 9.8
28	12X 35.0	10X 25.4	7X 9.8	10X 30	12X 22	7X 9.8
30	12X 40.8	12X 31.8	8X 11.5	14X 34	12X 22	7X 9.8
32	12X 40.8	12X 31.8	8X 11.5	12X 35	12X 22	7X 9.8
34	15X 42.9	12X 31.8	8X 11.5	14X 38	12X 26	9X 13.4
36	— —	12X 31.8	9X 13.4	12X 40	14X 30	9X 13.4
38	— —	12X 40.8	9X 13.4	14X 43	14X 30	9X 13.4
40	— —	15X 42.9	8X 11.5	14X 48	14X 30	9X 13.4
42	— —	15X 42.9	8X 11.5	14X 48	16X 36	10X 15.3
44	— —	15X 42.9	8X 11.5	14X 53	16X 36	10X 15.3
46	— —	15X 42.9	8X 11.5	21X 62	16X 36	10X 15.3
48	— —	— —	— —	21X 68	16X 36	12X 20.7
50	— —	— —	— —	24X 76	18X 50	10X 15.3
52	— —	— —	— —	24X 76	18X 50	10X 15.3
54	— —	— —	— —	— —	18X 50	10X 15.3
56	— —	— —	— —	— —	18X 50	10X 15.3
58	— —	— —	— —	— —	24X 62	10X 15.3
60	— —	— —	— —	— —	24X 62	10X 15.3

Span Thru (ft)		Sw/C			Ww/C	
	S	S	C	W	W	C
2 TON RATED LOAD						
10	10X 25.4	10X 25.4	7X 9.8	10X 19	12X 22	7X 9.8
12	10X 25.4	10X 25.4	7X 9.8	12X 22	12X 22	7X 9.8
14	10X 25.4	10X 25.4	7X 9.8	12X 22	12X 22	7X 9.8
16	10X 25.4	10X 25.4	7X 9.8	10X 26	12X 22	7X 9.8
18	12X 31.8	10X 25.4	7X 9.8	10X 26	12X 22	7X 9.8
20	12X 31.8	12X 31.8	8X 11.5	10X 30	10X 26	9X 13.4
22	12X 35.0	12X 31.8	8X 11.5	10X 30	16X 36	10X 15.3
24	12X 40.8	12X 31.8	8X 11.5	14X 34	16X 36	10X 15.3
26	12X 40.8	12X 31.8	8X 11.5	12X 35	16X 36	10X 15.3
28	12X 50.0	12X 31.8	8X 11.5	12X 40	16X 36	10X 15.3
30	— —	12X 40.8	7X 9.8	12X 40	16X 36	10X 15.3
32	— —	15X 42.9	8X 11.5	14X 43	16X 36	10X 15.3
34	— —	15X 42.9	8X 11.5	14X 48	12X 40	12X 20.7
36	— —	15X 42.9	8X 11.5	14X 53	14X 43	12X 20.7
38	— —	15X 42.9	8X 11.5	14X 61	14X 43	12X 20.7
40	— —	15X 50.0	9X 13.4	14X 61	18X 50	10X 15.3
42	— —	— —	— —	16X 67	18X 50	10X 15.3
44	— —	— —	— —	16X 67	18X 50	10X 15.3
46	— —	— —	— —	16X 67	18X 50	10X 15.3
48	— —	— —	— —	18X 76	18X 50	10X 15.3
50	— —	— —	— —	18X 76	18X 50	12X 20.7
52	— —	— —	— —	— —	24X 62	10X 15.3
54	— —	— —	— —	— —	24X 62	10X 15.3
56	— —	— —	— —	— —	21X 62	12X 20.7
58	— —	— —	— —	— —	21X 62	12X 20.7
60	— —	— —	— —	— —	24X 62	12X 20.7

Span Thru (ft)		Sw/C			Ww/C	
	S	S	C	W	W	C
3 TON RATED LOAD						
10	12X 31.8	12X 31.8	8X 11.5	10X 30	10X 39	12X 20.7
12	12X 35.0	12X 31.8	8X 11.5	10X 30	10X 39	12X 20.7
14	12X 40.8	12X 40.8	7X 9.8	12X 35	10X 39	12X 20.7
16	12X 40.8	12X 40.8	7X 9.8	12X 35	10X 39	12X 20.7
18	12X 40.8	12X 40.8	7X 9.8	12X 35	12X 40	12X 20.7
20	12X 40.8	12X 40.8	7X 9.8	14X 38	14X 43	12X 20.7
22	12X 40.8	12X 40.8	7X 9.8	16X 40	14X 43	12X 20.7
24	12X 50.0	12X 40.8	7X 9.8	14X 43	14X 43	12X 20.7
26	18X 54.7	15X 42.9	8X 11.5	12X 45	18X 50	10X 15.3
28	20X 66.0	15X 50.0	8X 11.5	14X 48	18X 50	10X 15.3
30	20X 66.0	18X 54.7	9X 13.4	14X 48	18X 50	10X 15.3
32	20X 66.0	18X 54.7	9X 13.4	14X 53	18X 50	10X 15.3
34	24X 80.0	18X 54.7	9X 13.4	14X 61	18X 50	10X 15.3
36	24X 80.0	18X 54.7	9X 13.4	18X 65	18X 50	10X 15.3
38	24X 80.0	18X 54.7	9X 13.4	16X 67	18X 50	10X 15.3
40	20X 86.0	18X 54.7	9X 13.4	16X 67	18X 50	10X 15.3
42	— —	18X 54.7	9X 13.4	16X 77	24X 62	10X 15.3
44	— —	18X 54.7	12X 20.7	16X 89	24X 62	10X 15.3
46	— —	20X 66.0	9X 13.4	16X 89	24X 62	10X 15.3
48	— —	20X 66.0	9X 13.4	27X 102	24X 62	10X 15.3
50	— —	20X 66.0	10X 15.3	27X 114	21X 62	12X 20.7
52	— —	24X 80.0	10X 15.3	27X 114	21X 62	12X 20.7
54	— —	24X 80.0	10X 15.3	27X 114	24X 62	12X 20.7
56	— —	24X 80.0	10X 15.3	30X 124	24X 68	12X 20.7
58	— —	24X 80.0	12X 20.7	— —	24X 68	12X 20.7
60	— —	24X 80.0	12X 20.7	— —	24X 68	12X 20.7

Span Thru (ft)		Sw/C			Ww/C	
	S	S	C	W	W	C
5 TON RATED LOAD						
10	12X 40.8	12X 40.8	7X 9.8	10X 45	18X 50	10X 15.3
12	12X 40.8	12X 40.8	7X 9.8	16X 45	18X 50	10X 15.3
14	15X 42.9	12X 40.8	7X 9.8	18X 46	18X 50	10X 15.3
16	18X 54.7	12X 50.0	8X 11.5	18X 46	18X 50	10X 15.3
18	18X 54.7	18X 54.7	9X 13.4	18X 46	16X 50	12X 20.7
20	18X 54.7	18X 54.7	9X 13.4	16X 50	16X 50	12X 20.7
22	18X 54.7	18X 54.7	9X 13.4	18X 55	24X 62	10X 15.3
24	20X 66.0	18X 54.7	9X 13.4	16X 57	24X 62	10X 15.3
26	20X 66.0	18X 54.7	9X 13.4	16X 57	24X 62	10X 15.3
28	24X 80.0	20X 66.0	9X 13.4	18X 65	16X 57	12X 20.7
30	24X 80.0	20X 66.0	9X 13.4	14X 68	16X 57	12X 20.7
32	24X 80.0	20X 66.0	9X 13.4	24X 76	18X 60	12X 20.7
34	20X 96.0	20X 66.0	9X 13.4	16X 77	18X 65	12X 20.7
36	24X 106.0	20X 66.0	9X 13.4	16X 77	18X 65	12X 20.7
38	24X 106.0	20X 66.0	9X 13.4	16X 89	18X 65	12X 20.7
40	24X 106.0	20X 66.0	9X 13.4	24X 94	18X 71	12X 20.7
42	24X 106.0	20X 66.0	10X 15.3	27X 102	18X 71	12X 20.7
44	— —	24X 80.0	10X 15.3	27X 114	21X 73	12X 20.7
46	— —	24X 80.0	10X 15.3	27X 114	21X 73	12X 20.7
48	— —	24X 80.0	10X 15.3	30X 124	21X 83	12X 20.7
50	— —	24X 80.0	12X 20.7	30X 132	21X 83	12X 20.7
52	— —	24X 80.0	12X 20.7	— —	24X 84	12X 20.7
54	— —	24X 90.0	12X 20.7	— —	24X 84	12X 20.7
56	— —	24X 80.0	15X 33.9	— —	24X 84	12X 20.7
58	— —	24X 106.0	12X 20.7	— —	24X 94	12X 20.7
60	— —	24X 106.0	12X 20.7	— —	24X 94	15X 33.9

Hand Geared
U.S. (short) Tons

Span Thru (ft)	S	Sw/C		W	Ww/C	
		S	C		W	C
7½ TON RATED LOAD						
10	20X 66.0	20X 66.0	9X 13.4	16X 57	16X 57	12X 20.7
12	20X 66.0	20X 66.0	9X 13.4	16X 57	16X 57	12X 20.7
14	20X 66.0	20X 66.0	9X 13.4	18X 65	16X 57	12X 20.7
16	20X 66.0	20X 66.0	9X 13.4	18X 65	18X 65	12X 20.7
18	20X 66.0	20X 66.0	9X 13.4	18X 65	18X 65	12X 20.7
20	20X 66.0	20X 66.0	9X 13.4	18X 71	18X 65	12X 20.7
22	24X 80.0	20X 66.0	9X 13.4	18X 71	18X 71	12X 20.7
24	24X 80.0	24X 80.0	10X 15.3	18X 71	18X 71	12X 20.7
26	24X 80.0	24X 80.0	10X 15.3	21X 83	18X 71	12X 20.7
28	20X 86.0	24X 80.0	10X 15.3	21X 83	21X 83	12X 20.7
30	24X 106.0	24X 80.0	10X 15.3	21X 83	21X 83	12X 20.7
32	24X 106.0	24X 80.0	10X 15.3	21X 93	21X 83	12X 20.7
34	24X 106.0	24X 80.0	10X 15.3	24X 94	21X 83	12X 20.7
36	24X 106.0	24X 90.0	10X 15.3	27X 102	21X 93	12X 20.7
38	— —	24X 106.0	12X 20.7	27X 114	21X 93	12X 20.7
40	— —	24X 106.0	12X 20.7	27X 114	21X 93	12X 20.7
42	— —	24X 106.0	12X 20.7	30X 132	21X 93	12X 20.7
44	— —	24X 106.0	12X 20.7	30X 132	21X 93	12X 20.7
46	— —	24X 106.0	12X 20.7	— —	24X 94	12X 20.7
48	— —	24X 106.0	12X 20.7	— —	27X 102	15X 33.9
50	— —	24X 106.0	12X 20.7	— —	27X 114	15X 33.9
52	— —	24X 106.0	12X 20.7	— —	27X 114	15X 33.9
54	— —	24X 106.0	15X 33.9	— —	27X 114	15X 33.9
56	— —	24X 106.0	15X 50.0	— —	27X 114	15X 33.9
58	— —	24X 121.0	18X 58.0	— —	27X 114	15X 33.9
60	— —	— —	— —	— —	27X 114	15X 33.9

Span Thru (ft)	S	Sw/C		W	Ww/C	
		S	C		W	C
10 TON RATED LOAD						
10	20X 66.0	20X 66.0	9X 13.4	18X 71	18X 71	12X 20.7
12	20X 66.0	20X 66.0	9X 13.4	18X 71	18X 71	12X 20.7
14	20X 66.0	20X 66.0	9X 13.4	21X 83	21X 83	12X 20.7
16	20X 75.0	20X 66.0	9X 13.4	21X 83	21X 83	12X 20.7
18	24X 80.0	24X 80.0	10X 15.3	21X 93	21X 83	12X 20.7
20	24X 80.0	24X 80.0	10X 15.3	21X 93	21X 93	12X 20.7
22	24X 80.0	24X 80.0	10X 15.3	21X 93	21X 93	12X 20.7
24	20X 86.0	24X 80.0	10X 15.3	21X 93	21X 93	12X 20.7
26	24X 106.0	24X 80.0	12X 20.7	21X 93	21X 93	12X 20.7
28	24X 106.0	24X 100.0	10X 15.3	27X 114	21X 93	12X 20.7
30	24X 106.0	24X 106.0	12X 20.7	27X 114	27X 114	15X 33.9
32	24X 121.0	24X 106.0	12X 20.7	27X 114	27X 114	15X 33.9
34	— —	24X 106.0	12X 20.7	27X 114	27X 114	15X 33.9
36	— —	24X 106.0	12X 20.7	18X 119	27X 114	15X 33.9
38	— —	24X 106.0	12X 20.7	24X 131	27X 114	15X 33.9
40	— —	24X 106.0	12X 20.7	24X 131	27X 114	18X 42.7
42	— —	24X 106.0	12X 20.7	21X 132	30X 124	15X 33.9
44	— —	24X 106.0	12X 20.7	24X 146	30X 124	15X 33.9
46	— —	24X 121.0	12X 20.7	24X 146	30X 132	15X 33.9
48	— —	24X 121.0	15X 40.0	24X 146	30X 132	15X 33.9
50	— —	— —	— —	24X 162	30X 132	15X 33.9
52	— —	— —	— —	24X 162	30X 132	15X 33.9
54	— —	— —	— —	36X 210	30X 132	15X 33.9
56	— —	— —	— —	36X 210	33X 141	15X 33.9
58	— —	— —	— —	— —	36X 150	18X 42.7
60	— —	— —	— —	— —	36X 170	18X 42.7

Span Thru (ft)	S	Sw/C		W	Ww/C	
		S	C		W	C
15 TON RATED LOAD						
10	20X 96.0	24X 106.0	12X 20.7	18X 119	16X 100	15X 33.9
12	24X 106.0	24X 106.0	12X 20.7	18X 119	27X 114	15X 33.9
14	24X 106.0	24X 106.0	12X 20.7	18X 119	18X 119	15X 33.9
16	24X 106.0	24X 106.0	12X 20.7	18X 119	18X 119	15X 33.9
18	24X 106.0	24X 106.0	12X 20.7	21X 132	30X 132	15X 33.9
20	24X 106.0	24X 106.0	12X 20.7	30X 132	30X 132	15X 33.9
22	24X 106.0	24X 106.0	12X 20.7	30X 132	30X 132	15X 33.9
24	— —	24X 106.0	12X 20.7	24X 146	24X 146	18X 42.7
26	— —	24X 121.0	15X 33.9	24X 146	24X 146	18X 42.7
28	— —	— —	— —	21X 147	24X 146	18X 42.7
30	— —	— —	— —	36X 160	24X 162	18X 42.7
32	— —	— —	— —	24X 162	24X 162	18X 42.7
34	— —	— —	— —	24X 162	24X 162	18X 42.7
36	— —	— —	— —	24X 162	24X 162	18X 42.7
38	— —	— —	— —	24X 162	24X 162	18X 42.7
40	— —	— —	— —	36X 170	24X 162	18X 42.7
42	— —	— —	— —	36X 182	36X 170	18X 42.7
44	— —	— —	— —	36X 194	36X 170	18X 42.7
46	— —	— —	— —	36X 194	36X 182	18X 42.7
48	— —	— —	— —	36X 210	36X 182	18X 42.7
50	— —	— —	— —	— —	36X 182	18X 42.7
52	— —	— —	— —	— —	36X 182	18X 42.7
54	— —	— —	— —	— —	36X 182	18X 42.7
56	— —	— —	— —	— —	36X 182	18X 51.9
58	— —	— —	— —	— —	36X 194	18X 42.7
60	— —	— —	— —	— —	36X 194	18X 42.7

Hand Geared
Metric Tons

Span Thru (ft)		Sw/C			Ww/C	
	S	S	C	W	W	C
1 TONNE RATED LOAD						
10	7X 15.3	7X 15.3	6X 8.2	8X 15	8X 15	7X 9.8
12	7X 15.3	7X 15.3	6X 8.2	8X 15	8X 15	7X 9.8
14	7X 15.3	7X 15.3	6X 8.2	10X 17	8X 15	7X 9.8
16	8X 18.4	7X 15.3	7X 9.8	8X 18	8X 18	8X 11.5
18	8X 23.0	8X 18.4	7X 9.8	8X 21	12X 22	7X 9.8
20	10X 25.4	8X 18.4	7X 9.8	10X 22	12X 22	7X 9.8
22	10X 25.4	10X 25.4	7X 9.8	10X 26	12X 22	7X 9.8
24	12X 31.8	10X 25.4	7X 9.8	10X 26	12X 22	7X 9.8
26	12X 31.8	10X 25.4	7X 9.8	10X 30	12X 22	7X 9.8
28	12X 40.8	10X 25.4	8X 11.5	10X 30	12X 22	7X 9.8
30	12X 40.8	12X 31.8	8X 11.5	14X 34	12X 22	7X 9.8
32	12X 40.8	12X 31.8	8X 11.5	12X 35	12X 22	8X 11.5
34	12X 50.0	12X 31.8	8X 11.5	12X 40	12X 26	9X 13.4
36	— —	12X 40.8	7X 9.8	14X 43	14X 30	9X 13.4
38	— —	15X 42.9	8X 11.5	14X 43	14X 30	9X 13.4
40	— —	15X 42.9	8X 11.5	14X 48	14X 30	9X 13.4
42	— —	15X 42.9	8X 11.5	14X 48	16X 36	10X 15.3
44	— —	15X 42.9	8X 11.5	21X 62	16X 36	10X 15.3
46	— —	15X 50.0	9X 13.4	21X 68	16X 36	10X 15.3
48	— —	— —	— —	21X 68	18X 50	10X 15.3
50	— —	— —	— —	24X 76	18X 50	10X 15.3
52	— —	— —	— —	— —	18X 50	10X 15.3
54	— —	— —	— —	— —	18X 50	10X 15.3
56	— —	— —	— —	— —	18X 50	12X 20.7
58	— —	— —	— —	— —	24X 62	10X 15.3
60	— —	— —	— —	— —	24X 62	10X 15.3

Span Thru (ft)		Sw/C			Ww/C	
	S	S	C	W	W	C
2 TONNE RATED LOAD						
10	10X 25.4	10X 25.4	7X 9.8	12X 22	12X 22	7X 9.8
12	10X 25.4	10X 25.4	7X 9.8	12X 22	12X 22	7X 9.8
14	10X 25.4	10X 25.4	7X 9.8	12X 22	12X 22	7X 9.8
16	12X 31.8	12X 31.8	8X 11.5	10X 26	12X 22	7X 9.8
18	12X 31.8	12X 31.8	8X 11.5	10X 30	16X 36	10X 15.3
20	12X 31.8	12X 31.8	8X 11.5	10X 30	16X 36	10X 15.3
22	12X 40.8	12X 31.8	8X 11.5	10X 30	16X 36	10X 15.3
24	12X 40.8	12X 31.8	8X 11.5	12X 35	16X 36	10X 15.3
26	12X 40.8	12X 40.8	7X 9.8	14X 38	16X 36	10X 15.3
28	— —	12X 40.8	7X 9.8	12X 40	16X 36	10X 15.3
30	— —	12X 40.8	7X 9.8	14X 43	12X 40	12X 20.7
32	— —	15X 42.9	8X 11.5	14X 48	12X 40	12X 20.7
34	— —	15X 42.9	8X 11.5	14X 48	14X 43	12X 20.7
36	— —	15X 42.9	8X 11.5	14X 53	14X 43	12X 20.7
38	— —	15X 42.9	8X 11.5	14X 61	18X 50	10X 15.3
40	— —	15X 50.0	12X 20.7	16X 67	18X 50	10X 15.3
42	— —	— —	— —	16X 67	18X 50	10X 15.3
44	— —	— —	— —	16X 67	18X 50	10X 15.3
46	— —	— —	— —	16X 67	18X 50	10X 15.3
48	— —	— —	— —	18X 76	18X 50	10X 15.3
50	— —	— —	— —	— —	24X 62	10X 15.3
52	— —	— —	— —	— —	24X 62	10X 15.3
54	— —	— —	— —	— —	24X 62	10X 15.3
56	— —	— —	— —	— —	21X 62	12X 20.7
58	— —	— —	— —	— —	21X 62	12X 20.7
60	— —	— —	— —	— —	24X 62	12X 20.7

Span Thru (ft)		Sw/C			Ww/C	
	S	S	C	W	W	C
3 TONNE RATED LOAD						
10	12X 40.8	12X 40.8	7X 9.8	10X 30	10X 39	12X 20.7
12	12X 40.8	12X 40.8	7X 9.8	12X 35	10X 39	12X 20.7
14	12X 40.8	12X 40.8	7X 9.8	12X 35	10X 39	12X 20.7
16	12X 40.8	12X 40.8	7X 9.8	14X 38	14X 43	12X 20.7
18	12X 40.8	12X 40.8	7X 9.8	16X 40	14X 43	12X 20.7
20	12X 40.8	12X 40.8	7X 9.8	18X 40	14X 43	12X 20.7
22	12X 50.0	12X 40.8	7X 9.8	10X 45	18X 50	10X 15.3
24	18X 54.7	12X 50.0	8X 11.5	16X 45	18X 50	10X 15.3
26	18X 54.7	18X 54.7	9X 13.4	14X 48	18X 50	10X 15.3
28	20X 66.0	18X 54.7	9X 13.4	14X 48	18X 50	10X 15.3
30	20X 66.0	18X 54.7	9X 13.4	14X 53	18X 50	10X 15.3
32	20X 75.0	18X 54.7	9X 13.4	18X 60	18X 50	10X 15.3
34	24X 80.0	18X 54.7	9X 13.4	18X 65	18X 50	10X 15.3
36	24X 80.0	18X 54.7	9X 13.4	16X 67	16X 50	12X 20.7
38	20X 86.0	18X 54.7	9X 13.4	16X 67	16X 50	12X 20.7
40	20X 96.0	20X 66.0	9X 13.4	16X 77	24X 62	10X 15.3
42	— —	20X 66.0	9X 13.4	16X 77	24X 62	10X 15.3
44	— —	20X 66.0	9X 13.4	16X 89	24X 62	10X 15.3
46	— —	20X 66.0	9X 13.4	24X 94	24X 62	10X 15.3
48	— —	20X 66.0	9X 13.4	27X 102	21X 62	12X 20.7
50	— —	20X 80.0	10X 15.3	27X 114	21X 62	12X 20.7
52	— —	24X 80.0	10X 15.3	27X 114	24X 62	12X 20.7
54	— —	24X 80.0	10X 15.3	30X 124	21X 68	12X 20.7
56	— —	24X 80.0	12X 20.7	— —	24X 76	12X 20.7
58	— —	24X 80.0	12X 20.7	— —	24X 76	12X 20.7
60	— —	24X 80.0	12X 20.7	— —	24X 76	12X 20.7

Span Thru (ft)		Sw/C			Ww/C	
	S	S	C	W	W	C
5 TONNE RATED LOAD						
10	12X 40.8	12X 40.8	7X 9.8	18X 46	18X 50	10X 15.3
12	12X 50.0	12X 40.8	7X 9.8	18X 46	12X 50	12X 20.7
14	18X 54.7	18X 54.7	9X 13.4	18X 46	16X 50	12X 20.7
16	18X 54.7	18X 54.7	9X 13.4	16X 50	16X 50	12X 20.7
18	18X 54.7	18X 54.7	9X 13.4	18X 55	14X 53	12X 20.7
20	18X 54.7	18X 54.7	9X 13.4	16X 57	24X 62	10X 15.3
22	20X 66.0	18X 54.7	9X 13.4	16X 57	16X 57	12X 20.7
24	20X 66.0	20X 66.0	9X 13.4	16X 57	16X 57	12X 20.7
26	20X 75.0	20X 66.0	9X 13.4	18X 60	16X 57	12X 20.7
28	24X 80.0	20X 66.0	9X 13.4	18X 65	18X 60	12X 20.7
30	24X 80.0	20X 66.0	9X 13.4	18X 71	18X 65	12X 20.7
32	20X 86.0	20X 66.0	9X 13.4	16X 77	18X 65	12X 20.7
34	24X 106.0	20X 66.0	9X 13.4	16X 77	18X 65	12X 20.7
36	24X 106.0	20X 66.0	9X 13.4	16X 89	18X 71	12X 20.7
38	24X 106.0	24X 80.0	10X 15.3	24X 94	18X 71	12X 20.7
40	24X 106.0	24X 80.0	10X 15.3	16X 100	18X 71	12X 20.7
42	24X 121.0	24X 80.0	10X 15.3	27X 114	21X 83	12X 20.7
44	— —	24X 80.0	10X 15.3	27X 114	21X 83	12X 20.7
46	— —	24X 80.0	10X 15.3	30X 124	21X 83	12X 20.7
48	— —	24X 80.0	12X 20.7	30X 132	21X 83	12X 20.7
50	— —	24X 80.0	12X 20.7	— —	24X 84	12X 20.7
52	— —	24X 80.0	12X 20.7	— —	24X 84	12X 20.7
54	— —	24X 80.0	15X 33.9	— —	24X 94	12X 20.7
56	— —	24X 106.0	12X 20.7	— —	24X 94	12X 20.7
58	— —	24X 106.0	12X 20.7	— —	24X 94	15X 33.9
60	— —	24X 106.0	15X 33.9	— —	27X 102	15X 33.9

Hand Geared
Metric Tons

Span Thru (ft)	S	Sw/C		W	Ww/C	
		S	C		W	C
7½ TONNE RATED LOAD						
10	20X 66.0	20X 66.0	9X 13.4	16X 57	16X 57	12X 20.7
12	20X 66.0	20X 66.0	9X 13.4	18X 65	18X 65	12X 20.7
14	20X 66.0	20X 66.0	9X 13.4	18X 65	18X 65	12X 20.7
16	20X 66.0	20X 66.0	9X 13.4	18X 71	18X 71	12X 20.7
18	24X 80.0	20X 66.0	9X 13.4	18X 71	18X 71	12X 20.7
20	24X 80.0	24X 80.0	10X 15.3	18X 71	18X 71	12X 20.7
22	24X 80.0	24X 80.0	10X 15.3	21X 83	21X 83	12X 20.7
24	24X 80.0	24X 80.0	10X 15.3	21X 83	21X 83	12X 20.7
26	24X 80.0	24X 80.0	10X 15.3	21X 83	21X 83	12X 20.7
28	20X 96.0	24X 80.0	10X 15.3	21X 83	21X 83	12X 20.7
30	24X 106.0	24X 90.0	10X 15.3	21X 93	21X 93	12X 20.7
32	24X 106.0	24X 106.0	12X 20.7	21X 93	21X 93	12X 20.7
34	24X 106.0	24X 106.0	12X 20.7	16X 100	21X 93	12X 20.7
36	24X 121.0	24X 106.0	12X 20.7	27X 114	21X 93	12X 20.7
38	— —	24X 106.0	12X 20.7	27X 114	21X 93	12X 20.7
40	— —	24X 106.0	12X 20.7	30X 124	24X 94	12X 20.7
42	— —	24X 106.0	12X 20.7	30X 132	27X 114	15X 33.9
44	— —	24X 106.0	12X 20.7	— —	27X 114	15X 33.9
46	— —	24X 106.0	12X 20.7	— —	27X 114	15X 33.9
48	— —	24X 106.0	12X 20.7	— —	27X 114	15X 33.9
50	— —	24X 106.0	12X 20.7	— —	27X 114	15X 33.9
52	— —	24X 106.0	15X 33.9	— —	27X 114	15X 33.9
54	— —	24X 121.0	15X 33.9	— —	27X 114	15X 33.9
56	— —	24X 121.0	15X 50.0	— —	30X 124	15X 33.9
58	— —	— —	— —	— —	30X 124	15X 33.9
60	— —	— —	— —	— —	30X 124	15X 33.9

Span Thru (ft)	S	Sw/C		W	Ww/C	
		S	C		W	C
10 TONNE RATED LOAD						
10	20X 66.0	20X 66.0	9X 13.4	21X 83	21X 83	12X 20.7
12	20X 66.0	20X 66.0	9X 13.4	21X 83	21X 83	12X 20.7
14	24X 80.0	24X 80.0	10X 15.3	21X 93	21X 83	12X 20.7
16	24X 80.0	24X 80.0	10X 15.3	21X 93	21X 93	12X 20.7
18	24X 80.0	24X 80.0	10X 15.3	21X 93	21X 93	12X 20.7
20	24X 80.0	24X 80.0	10X 15.3	21X 93	21X 93	12X 20.7
22	24X 106.0	24X 90.0	10X 15.3	21X 93	21X 93	12X 20.7
24	24X 106.0	24X 106.0	12X 20.7	27X 114	21X 93	18X 42.7
26	24X 106.0	24X 106.0	12X 20.7	27X 114	27X 114	15X 33.9
28	24X 106.0	24X 106.0	12X 20.7	27X 114	27X 114	15X 33.9
30	24X 106.0	24X 106.0	12X 20.7	27X 114	27X 114	15X 33.9
32	— —	24X 106.0	12X 20.7	30X 124	27X 114	15X 33.9
34	— —	24X 106.0	12X 20.7	30X 124	30X 124	15X 33.9
36	— —	24X 106.0	12X 20.7	21X 132	30X 124	15X 33.9
38	— —	24X 106.0	12X 20.7	33X 141	30X 124	15X 33.9
40	— —	24X 106.0	15X 33.9	24X 146	30X 132	15X 33.9
42	— —	24X 121.0	15X 33.9	24X 146	30X 132	15X 33.9
44	— —	— —	— —	24X 146	30X 132	15X 33.9
46	— —	— —	— —	24X 146	30X 132	15X 33.9
48	— —	— —	— —	24X 162	33X 141	15X 33.9
50	— —	— —	— —	24X 162	24X 146	18X 42.7
52	— —	— —	— —	36X 194	24X 162	18X 42.7
54	— —	— —	— —	36X 210	24X 162	18X 42.7
56	— —	— —	— —	— —	24X 162	18X 42.7
58	— —	— —	— —	— —	36X 170	18X 42.7
60	— —	— —	— —	— —	36X 170	18X 42.7

Span Thru (ft)	S	Sw/C		W	Ww/C	
		S	C		W	C
15 TONNE RATED LOAD						
10	24X 106.0	24X 106.0	12X 20.7	18X 119	18X 119	15X 33.9
12	24X 106.0	24X 106.0	12X 20.7	18X 119	18X 119	15X 33.9
14	24X 106.0	24X 106.0	12X 20.7	30X 132	30X 132	15X 33.9
16	24X 106.0	24X 106.0	12X 20.7	12X 136	30X 132	15X 33.9
18	24X 106.0	24X 106.0	12X 20.7	24X 146	24X 146	18X 42.7
20	— —	24X 106.0	12X 20.7	24X 146	24X 146	18X 42.7
22	— —	24X 121.0	15X 50.0	21X 147	24X 146	18X 42.7
24	— —	— —	— —	24X 162	24X 162	18X 42.7
26	— —	— —	— —	24X 162	24X 162	18X 42.7
28	— —	— —	— —	24X 162	24X 162	18X 42.7
30	— —	— —	— —	24X 162	24X 162	18X 42.7
32	— —	— —	— —	24X 162	24X 162	18X 42.7
34	— —	— —	— —	36X 170	24X 162	18X 42.7
36	— —	— —	— —	36X 182	36X 170	18X 42.7
38	— —	— —	— —	36X 182	36X 182	18X 42.7
40	— —	— —	— —	36X 182	36X 182	18X 42.7
42	— —	— —	— —	36X 182	36X 182	18X 42.7
44	— —	— —	— —	36X 194	36X 182	18X 42.7
46	— —	— —	— —	36X 210	36X 182	18X 42.7
48	— —	— —	— —	— —	36X 194	18X 42.7
50	— —	— —	— —	— —	36X 194	18X 42.7
52	— —	— —	— —	— —	36X 194	18X 42.7
54	— —	— —	— —	— —	36X 194	18X 42.7
56	— —	— —	— —	— —	36X 194	18X 42.7
58	— —	— —	— —	— —	36X 210	18X 42.7
60	— —	— —	— —	— —	36X 210	18X 42.7

DOUBLE GIRDER TOP-RUNNING FIXED AXLE COMPONENTS

3-15 TON

SPECIFICATIONS

CAPACITY: 3-15 Ton

SERVICE CLASS: Meets the duty requirements of CMAA Class C Service

OPERATION: Indoor

WHEELS: Steel with Straight Treads hardened to 400 - 450 BHN

BUMPERS: Rubber conical type

TRAVERSE GEARING: Spur, heat-treated alloy steel

TRAVERSE BRAKE: 50% torque, AC disc type

TRAVERSE MOTOR: 30 minute rated with Class F insulation. Single or two speed

CONTROL: Magnetic contactor type, or Variable Frequency. Temperature actuated switches standard. Overload relays are optional

BEARINGS: Antifriction type throughout

END TRUCKS

The truck frame is manufactured from a single piece solid ASTM A500 Grade B rectangular steel tube with 3/8" walls throughout for maximum strength and minimum width. The truck rail sweeps (fabricated from 3/8" thick A-36 steel plate) protect the bridge from loose objects on the runway rail head. Conical rubber bumpers are provided mounted as standard.

Wheels are flat tread manufactured from 1045 steel and hardened to 400-450 BHN. The flat tread design allows the wheels to run on either ASCE type rail or square bar. Wheel bearings are life time lubricated ball bearings providing a minimum of 5,000 hours of L-10 bearing life. Maximum wheel load and bearing life are determined in accordance with CMAA Specification No. 70 dated 2000.

8" TRUCKS						
For Spans Thru (ft)	Gage Range (in)	Wheel Base	Rail	*Durability Wheel Load (lbs)	Catalog Number	Weight (lbs) (Less Drive)
52' - 6"	48	7' - 6"	30#	12747	TRFA8090AR3	1148
60' - 0"	48 - 72	9' - 0"		12747	TRFA8108AR3	1276
60' - 0"	48 - 96	10' - 6"		12747	TRFA8126AR3	1404
52' - 6"	48	7' - 6"	40#	14990	TRFA8090AR3	1148
60' - 0"	48 - 72	9' - 0"		14990	TRFA8108AR3	1276
60' - 0"	48 - 96	10' - 6"		14990	TRFA8126AR3	1404
52' - 6"	48	7' - 6"	60#	20986	TRFA8090BR3	1148
60' - 0"	48 - 72	9' - 0"		20780	TRFA8108BR3	1276
60' - 0"	48	10' - 6"		15926	TRFA8126BR3	1404
60' - 0"	60 - 66	10' - 6"		18868	TRFA8126BR3	1404
60' - 0"	72 - 96	10' - 6"		20996	TRFA8126BR3	1404
52' - 6"	48	7' - 6"	80#	22485	TRFA8090BR3	1148
60' - 0"	48	9' - 0"		20780	TRFA8108BR3	1276
60' - 0"	66 - 72	9' - 0"		22485	TRFA8108BR3	1276
60' - 0"	48	10' - 6"		15926	TRFA8126BR3	1404
60' - 0"	60 - 66	10' - 6"		18868	TRFA8126BR3	1404
60' - 0"	72 - 96	10' - 6"		22485	TRFA8126BR3	1404

10" TRUCKS						
For Spans Thru (ft)	Gage (in)	Wheel Base	Rail	*Durability Wheel Load (lbs)	Catalog Number	Weight (lbs) (Less Drive)
52' - 6"	54	7' - 6"	30#	15934	TRFA10090AR4	1354
60' - 0"	60 - 72	9' - 0"		15934	TRFA10108AR4	1482
60' - 0"	60 - 96	10' - 6"		15934	TRFA10126AR4	1610
52' - 6"	54	7' - 6"	40#	18738	TRFA10090AR4	1354
60' - 0"	60 - 72	9' - 0"		18738	TRFA10108AR4	1482
60' - 0"	60 - 96	10' - 6"		18738	TRFA10126AR4	1610
52' - 6"	48	7' - 6"	60#	26233	TRFA10090BR4	1354
60' - 0"	48 - 72	9' - 0"		26233	TRFA10108BR4	1482
60' - 0"	48	10' - 6"		20500	TRFA10126BR4	1610
60' - 0"	60 - 66	10' - 6"		24300	TRFA10126BR4	1610
60' - 0"	72 - 9	10' - 6"		26233	TRFA10126BR4	1610
52' - 6"	48	7' - 6"	80#	28106	TRFA10090BR4	1354
60' - 0"	48	9' - 0"		26771	TRFA10108BR4	1482
60' - 0"	66 - 72	9' - 0"		28106	TRFA10108BR4	1482
60' - 0"	48	10' - 6"		20500	TRFA10126BR4	1610
60' - 0"	60	10' - 6"		24300	TRFA10126BR4	1610
60' - 0"	66 - 72	10' - 6"		28106	TRFA10126BR4	1610

*"Maximum Equivalent Durability Wheel Load (lbs.) by ASCE Rail" (Pe Allowable)

The above chart contains allowable **Equivalent Durability Wheel Load** in accordance with CMAA Specification #70.

The cataloged end trucks are designed for the crane capacities, spans and speeds listed in the price book. When the actual maximum calculated wheel load exceeds the allowable Equivalent Durability Wheel Load shown in the above table, the actual equivalent durability wheel load must be calculated in accordance with paragraph 4.13 of CMAA Specification #70.

FIXED AXLE DRIVES

Fixed axle drive units are comprised of an AC disc brake, motor, gear reducer and pinion mounted on the output shaft of the reducer. Two are required per crane.

The gear reducers are spur geared with totally enclosed oil bath lubrication. The drive motors are TENV, 30 minute rated with class "F" insulation and temperature actuated switch for motor protection. Single Speed motors are 1800 R.P.M., two speed motors are 1800/600 R.P.M. for a 3:1 speed ratio (except for 1/2 hp motors used on 50 fpm drives which are 1200/600 R.P.M.) Motors are provided with an adjustable, 50% torque A.C. disc brake.

Drive selection - sold in pairs. One pair required per crane - Specify voltage and desired speed.

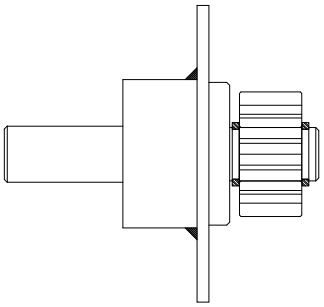
Drive Catalog Number	Single or Two Speed Motor	Motor H.P.	Weight (lbs)	Speeds Available* (fpm)				
				50	75	100	125	150
Ratio				13:1	13:1	9:1	7:1	6:1
913460	Single	1/2	164	X	X	N/A	N/A	N/A
913462		3/4		X	X	X	X	N/A
913464		1	184	X	X	X	X	X
913466		1-1/2		X	X	X	X	X
913468		2	204	N/A	X	X	X	X
913469		3		N/A	N/A	X	X	X
913470	Two	1/2	174	X	X	N/A	N/A	N/A
913471		3/4		X	X	X	X	N/A
913472		1	194	X	X	X	X	X
913473		1-1/2		X	X	X	X	X
913474		2	214	N/A	X	X	X	X
913475		3		N/A	N/A	X	X	X

*Reference Speed/Capacity/HP selection chart for correct drive hp and ratio. For speed over 100 fpm do not use single speed control. If using 2 speed control for speeds over 100 fpm include a soft start with the control. 50 fpm 2 speed drives have a 2:1 speed ratio. All others have 3:1

Drive Horsepower Requirements for US (short) Ton Cranes						
Capacity (US Tons)	Span (Feet)	Bridge Traverse Speed (fpm)				
		50	75	100	125	150
3 - 5	36	1/2	1/2	3/4	3/4	1
	48		3/4	1	1-1/2	1-1/2
	60	3/4	1	1-1/2		2
6 - 10	36				2	
	48	1	1-1/2	2		3
	60				3	
11 - 15	36					
	48					
	60	1-1/2	2	3		

HAND GEARED DRIVE COMPONENTS

The following components are used with the cataloged end trucks and Dealer supplied Cross Shaft and support steel to build Hand-Geared driven Double Girder Top-Running Cranes.



HAND GEARED DRIVE ADAPTER ASSEMBLY

Catalog No. 229984-1

Mounts on end truck where gear reducer would normally be mounted. Supports pinion stub shaft and drive pinion. Price includes mounting bracket, mounting hardware, stub shaft and pinion.

Cross Shaft Bearing, Coupling, Chain Wheel and Chain

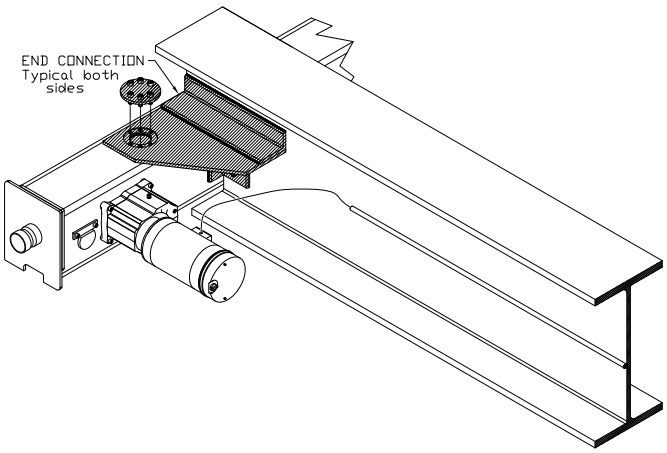
Rated Load Range (tonnes)	For Spans Thru (ft)	Cross Shaft* Bearing Assembly		Cross Shaft* Coupling		Hand Chain Wheel & Guide 1 Assembly Required	Hand Chain With Open Link (36 ft)
		Number Required	Catalog Number	Number Required	Catalog Number		
1 thru 10	12 22 28 36 42 48 52 60	1 2 3 4 5 6 7 8	904625	2 2 3 3 4 4 4 4	8280	913115	8282
11 thru 15	12 22 28 36 42 48 52 60	1 2 3 4 5 6 7 8	904625	2 2 3 3 4 4 4 4	8280	332189-3	8282

* Based on using a 1-3/16" diameter Cross Shaft (by others).

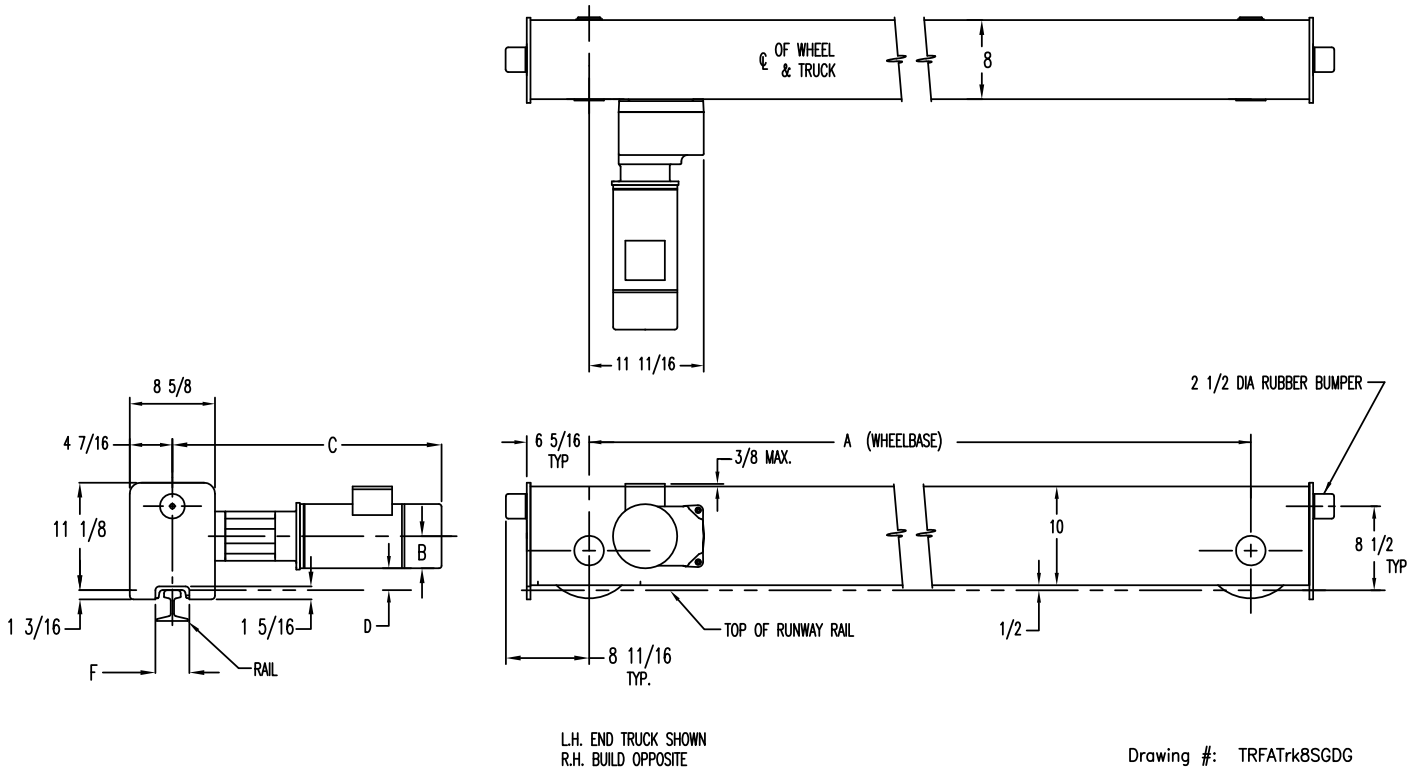
"WHALES TAIL" END CONNECTION KIT

Catalog No. 444697-10

The end connection kit contains the necessary plates, angles and connecting hardware to fabricate a welded or bolted connection at each end of a single girder crane. No diagonal bracing is required when using this kit. Order two kits per double girder crane.



8" WHEEL END TRUCK DIMENSIONS



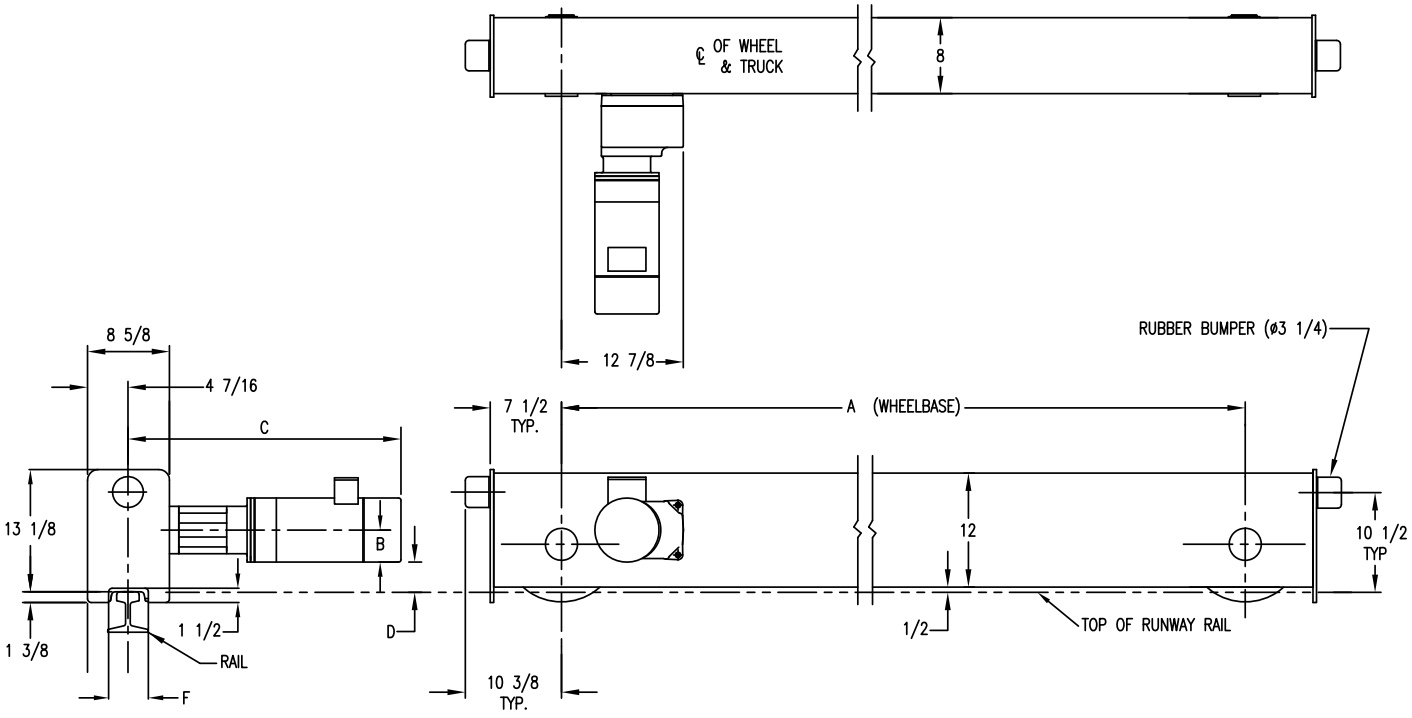
Truck Catalog Number	A Wheel Base	F	Rail
TRFA8090AR3	7' - 6"	3-7/16	30-40#
TRFA8108AR3	9' - 0"		
TRFA8126AR3	10' - 6"		
TRFA8090BR3	7' - 6"	4-3/16	60-80#
TRFA8108BR3	9' - 0"		
TRFA8126BR3	10' - 6"		

Dimensions are for estimating purposes only and are not certified engineering dimensions.

Drive Motor H.P.	B*	C*	D
.5	3-3/8	24-1/4	2-1/8
.5/.167		25-1/4	
.75		24-1/4	
.75/.25		25-1/4	
1		26-3/4	
1/.33		28-3/4	
1.5			
1.5/.5	4	31	1-1/2
2	3-3/8	27-3/4	2-1/8
2/.66	4	31	1-1/2
3		28	
3/1		31	

*Does not include junction box.

10" WHEEL END TRUCK DIMENSIONS



L.H. END TRUCK SHOWN
R.H. BUILD OPPOSITE

Drawing #: TRFATrk10DG

Truck Catalog Number	A Wheel Base	F	Rail
TRFA10090AR4	7' - 6"	4-3/16	30-40#
TRFA10108AR4	9' - 0"		
TRFA10126AR4	10' - 6"		
TRFA10090BR4	7' - 6"	3-7/16	60-80#
TRFA10108BR4	9' - 0"		
TRFA10126BR4	10' - 6"		

Dimensions are for estimating purposes only and are not certified engineering dimensions.

Drive Motor H.P.	B*	C*	D
.5	3-3/8	24-1/4	3-1/8
.5/.167		25-1/4	
.75		24-1/4	
.75/.25		25-1/4	
1		26-3/4	
1/.33		28-3/4	
1.5			
1.5/.5	4	31	2-1/2
2	3-3/8	27-3/4	3-1/8
2/.66	4	31	2-1/2
3		28	
3/1		31	

*Does not include junction box.

DOUBLE GIRDER TOP-RUNNING ROTATING AXLE COMPONENTS

3-50 TON

SPECIFICATIONS

CAPACITY: 3-50 Ton

SERVICE CLASS: Meets the duty cycle requirements of CMAA Class D Service

OPERATION: Indoor

WHEELS: Forged Steel hardened to 400-450 BHN

BUMPERS: Rubber conical type

TRAVERSE GEARING: Helical, heat-treated alloy steel

TRAVERSE BRAKE: 50% torque, AC disc type

TRAVERSE MOTOR: 30 minute rated with Class F insulation. Single or two speed

CONTROL: Magnetic contactor type. Temperature actuated switches standard. Overload relays are optional

BEARINGS: Spherical type roller bearings

END TRUCKS - 9" & 12"

The truck frame is a solid, one piece steel tube reinforced at the wheel axles forming a rigid, durable structure. The ends of the trucks are provided with heavy steel rail sweeps and rubber bumpers designed for crane service. Wheels are made of forged steel, flat tread with spherical roller bearings. They provide a minimum of 10,000 hours L-10 bearing life. Maximum wheel load and bearing life are determined in accordance with CMAA Specification No. 70, dated 2000.

For Spans Thru (ft)	Wheel Diameter (in) Flat Tread is Standard	Wheel Base** †	Weight Per Pair Less Drive (lbs)	*Maximum Equivalent Durability Wheel Load (lbs) By rail size (Pe Allowable) ***			
				ASCE 20#	ASCE 40#	ASCE 60# & 70# ARA-B 100#	ASCE 80# & 85# ARA-A 100# BETH 104# USS 105#
31' - 6"	9	4' - 6"	930	11,300	16,800	23,600	
42' - 0"		6' - 0"	1077				
45' - 6"		6' - 6"	1126				
49' - 0"		7' - 0"	1175				
52' - 6"		7' - 6"	1224				
56' - 0"		8' - 0"	1273				
59' - 6"		8' - 6"	1322				
63' - 0"		9' - 0"	1371				
66' - 6"		9' - 6"	1420				
70' - 0"		10' - 0"	1469				
63' - 0"	12	9' - 0"	2238		22,400	31,400	33,700
66' - 6"		9' - 6"	2299				
70' - 0"		10' - 0"	2360				
73' - 6"		10' - 6"	2421				
77' - 0"		11' - 0"	2482				
80' - 6"		11' - 6"	2543				
84' - 0"		12' - 0"	2604				
87' - 6"		12' - 6"	2665				
91' - 0"		13' - 0"	2726				

*The above chart contains allowable **Equivalent Durability Wheel Load** in accordance with CMAA Specification #70.

The cataloged end trucks are designed for the crane capacities, spans and speeds listed in the price book. When the actual maximum calculated wheel load exceeds the allowable Equivalent Durability Wheel Load shown in the above table, the actual equivalent durability wheel load must be calculated in accordance with paragraph 4.13 of CMAA Specification #70.

**Available in wheel bases from 3' - 6" to 10' - 0" for 9" wheel diameter trucks and 3' - 6" to 14' - 6" for 12" wheel diameter trucks. Call factory for wheel bases other than those listed.

*** Maximum allowable bending moment for 9" wheel diameter is 784,000 (in-lbs) and 12" wheel diameter is 1,234,000 (in-lbs).

† Minimum bridge end truck wheelbase is equal to 1/7 span or gage + 36" whichever is greater.

END TRUCKS - 15" & 18"

The truck frame is a solid, one piece steel tube reinforced at the wheel axles forming a rigid, durable structure. The ends of the trucks are provided with heavy steel rail sweeps and rubber bumpers designed for crane service. Wheels are made of forged steel, flat tread with spherical roller bearings. They provide a minimum of 10,000 hours L-10 bearing life. Maximum wheel load and bearing life are determined in accordance with CMAA Specification No. 70, dated 2000.

For Spans Thru (ft)	Wheel Diameter (in) Flat Tread is Standard	Wheel Base** †	Weight Per Pair Less Drive (lbs)	*Maximum Equivalent Durability Wheel Load (lbs) By rail size (Pe Allowable) ***			
				ASCE 20#	ASCE 40#	ASCE 60# & 70# ARA-B 100#	ASCE 80# & 85# ARA-A 100# BETH 104# USS 105#
70' - 0"	15	10' - 0"	3450		28,000	39,300	42,100
73' - 6"		10' - 6"	3525				
77' - 0"		11' - 0"	3600				
80' - 6"		11' - 6"	3675				
84' - 0"		12' - 0"	3750				
87' - 6"		12' - 6"	3825				
91' - 0"		13' - 0"	3900				
70' - 0"	18	10' - 0"	5050		33,700	47,200	50,500
73' - 6"		10' - 6"	5152				
77' - 0"		11' - 0"	5254				
80' - 6"		11' - 6"	5356				
84' - 0"		12' - 0"	5458				
87' - 6"		12' - 6"	5560				
91' - 0"		13' - 0"	5662				

*The above chart contains allowable **Equivalent Durability Wheel Load** in accordance with CMAA Specification #70.

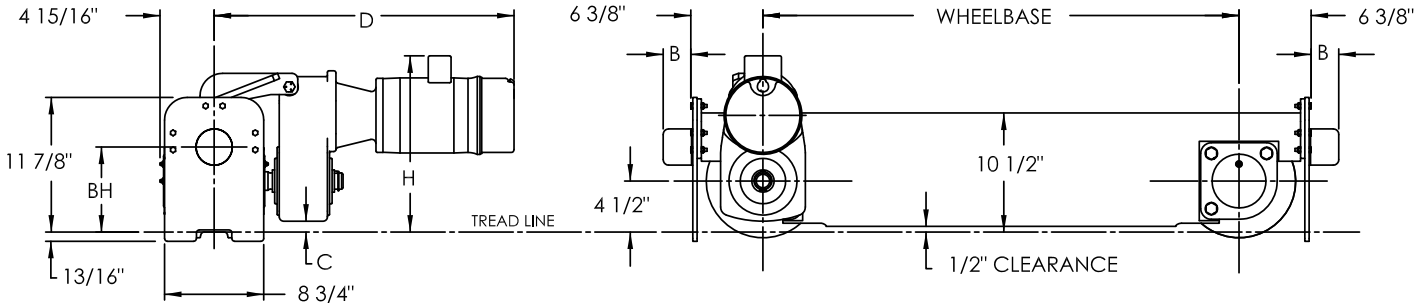
The cataloged end trucks are designed for the crane capacities, spans and speeds listed in the price book. When the actual maximum calculated wheel load exceeds the allowable Equivalent Durability Wheel Load shown in the above table, the actual equivalent durability wheel load must be calculated in accordance with paragraph 4.13 of CMAA Specification #70.

**Available in wheel bases from 3' - 6" to 14' - 6" for 15" and 18" wheel diameter trucks. Call factory for wheel bases other than those listed.

*** Maximum allowable bending moment for 15" wheel diameter is 1,907,000 (in-lbs) and 18" wheel diameter is 3,554,000 (in-lbs).

† Minimum bridge end truck wheelbase is equal to 1/7 span or gage + 36" whichever is greater.

9" WHEEL END TRUCK AND DRIVE DIMENSIONS
(FLAT TREAD IS STANDARD)



Bumper Size	Dimension "B" * (in)	Dimension "BH" (in)
R3	2.0	8-1/4
R4	2.5	7-1/2
R5	3.2	
R6	4.0	
R7	5.0	

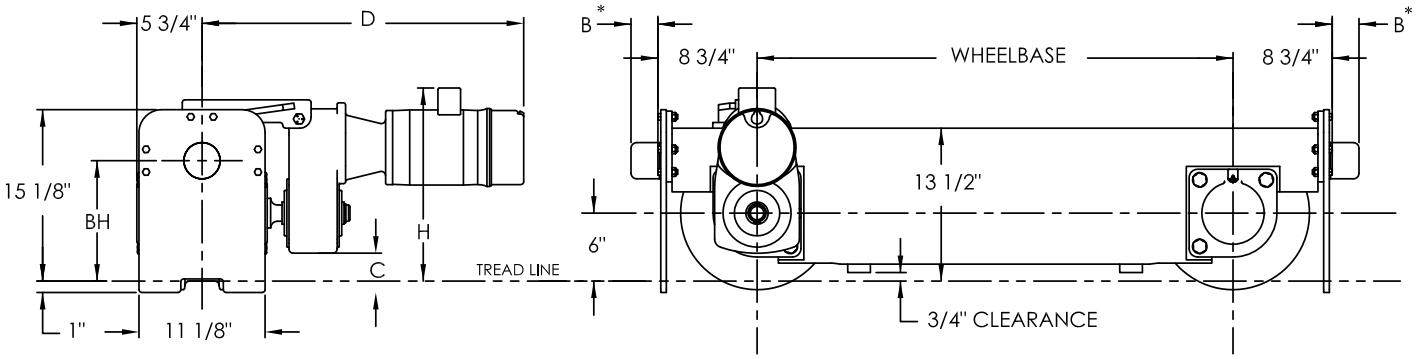
Note: Dimensions are for 30 minute single speed/VFC 230/460 volt motors only. Other voltages, minute ratings, or speed points may change these dimensions. Contact factory for assistance.

Dimensions are for estimating purposes only and are not certified engineering dimensions.

* Bumpers included in price. See pages 70-73 for selection of proper bumper.

Control Type	Speed (fpm)	HP	Dimension "D" (in)	Dimension "C" (in)	Dimension "H" (in)	Drive Weight Adder (per pair)
Single Speed / VFC	100	1	28-1/2	15/16	15-1/4	254
		1.5	27-1/2			262
		2	27-3/4		15-1/2	276
		3	36-3/16	1/4	19	482
	120	1	28-1/2	15/16	15-1/4	254
		1.5	27-1/2			262
		2	27-3/4		15-1/2	276
		3	36-3/16	1/4	19	482
	150	1	28-1/2	15/16	15-1/4	254
		1.5	27-1/2			262
		2	27-3/4		15-1/2	276
		3	36-3/16	1/4	19	482
	180	1	28-1/2	15/16	15-1/4	254
		1.5	27-1/2			262
		2	27-3/4		15-1/2	276
		3	35-1/2		17-3/4	406
	200	1	28-1/2		15-1/4	254
		1.5	27-1/2			262
		2	27-3/4		15-1/2	276
		3	35-1/2		17-3/4	406

12" WHEEL END TRUCK AND DRIVE DIMENSIONS
(FLAT TREAD IS STANDARD)



Bumper Size	Dimension "B" * (in)	Dimension "BH" (in)
R3	2.0	11-1/2
R4	2.5	
R5	3.2	
R6	4.0	10-5/8
R7	5.0	
R8	6.4	

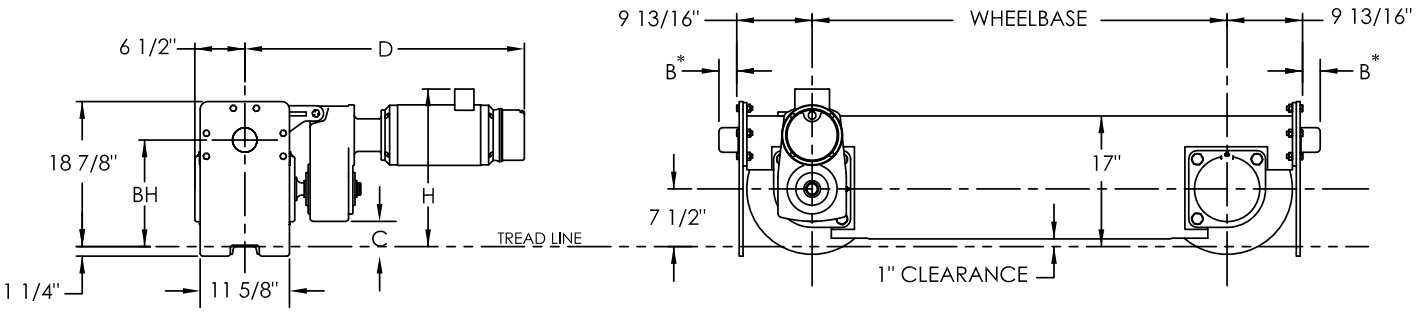
Note: Dimensions are for 30 minute single speed/VFC 230/460 volt motors only. Other voltages, minute ratings, or speed points may change these dimensions. Contact factory for assistance.

Dimensions are for estimating purposes only and are not certified engineering dimensions.

* Bumpers included in price. See pages 70-73 for selection of proper bumper.

Control Type	Speed (fpm)	HP	Dimension "D" (in)	Dimension "C" (in)	Dimension "H" (in)	Drive Weight Adder (per pair)
Single Speed / VFC	100	1.5	29-3/16	1-13/16	18-1/4	339
		2	30-3/16			353
		3	40-3/16	1-1/8	21-9/16	607
		5	42-15/16			639
	120	1.5	28-7/16	2-7/16	17-1/16	271
		2	30-3/16	1-13/16	18-1/4	353
		3	40-3/16	1-1/8	21-9/16	607
		5	42-5/16			639
	150	1.5	28-7/16	2-7/16	17-1/16	271
		2	29-7/16			285
		3	36-1/16	1-13/16	20-1/2	485
		5	42-15/16	1-1/8	21-9/16	639
	200	1.5	28-7/16	2-7/16	17-1/16	271
		2	29-7/16			285
		3	36-1/16	1-13/16	20-1/2	485
		5	42-15/16	1-1/8	21-9/16	639

15" WHEEL END TRUCK AND DRIVE DIMENSIONS
(FLAT TREAD IS STANDARD)



Bumper Size	Dimension "B" * (in)	Dimension "BH" (in)
R3	2.0	14-3/4
R4	2.5	
R5	3.2	
R6	4.0	13-7/8
R7	5.0	
R8	6.4	

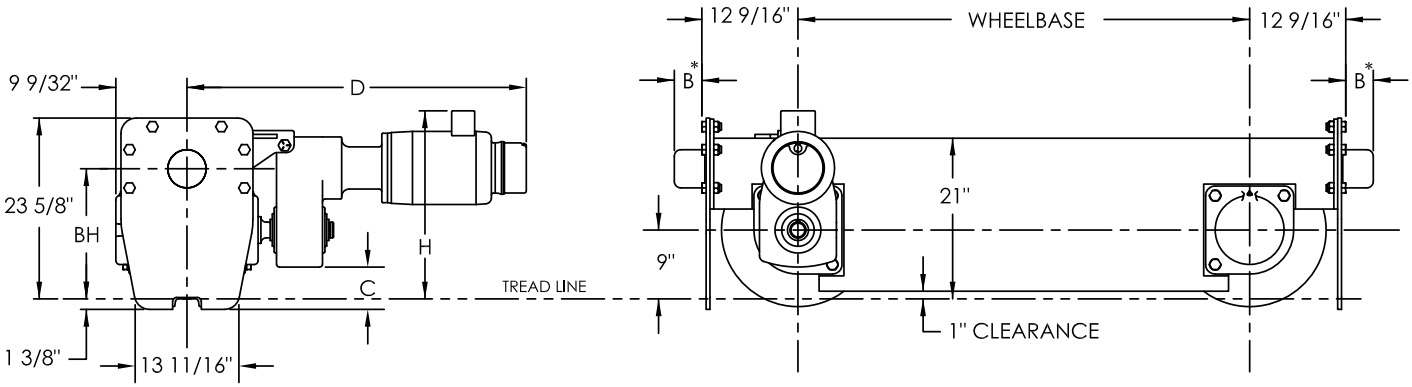
Note: Dimensions are for 30 minute single speed/VFC 230/460 volt motors only. Other voltages, minute ratings, or speed points may change these dimensions. Contact factory for assistance.

Dimensions are for estimating purposes only and are not certified engineering dimensions.

* Bumpers included in price. See pages 70-73 for selection of proper bumper.

Control Type	Speed (fpm)	HP	Dimension "D" (in)	Dimension "C" (in)	Dimension "H" (in)	Drive Weight Adder (per pair)
Single Speed / VFC	100	2	30-13/16	3-1/4	20-9/16	326
		3	41-13/16	2-5/8	23-1/8	618
		5	44	1-3/4	24-7/8	864
	120	2	30-13/16	3-1/4	20-9/16	326
		3	41-13/16	2-5/8	23-1/8	618
		5	43-15/16			648
		7.5	47-1/2	1-3/4	24-7/8	934
	150	2	30-13/16	3-1/4	20-9/16	326
		3	41-13/16	2-5/8	23-1/8	618
		5	43-15/16			648
		7.5	47-1/2	1-3/4	24-7/8	934
	200	2	30-13/16	3-1/4	20-9/16	326
		3	38-11/16		22-1/16	478
		5	43-15/16	2-5/8	23-1/8	648
		7.5	47-7/16			760
	250	2	30-13/16	3-1/4	20-9/16	326
		3	38-11/16		22-1/16	478
		5	40-13/16			508
		7.5	47-7/16	2-5/8	23-1/8	760
	300	2	30-13/16	3-1/4	20-9/16	326
		3	38-11/16		22-1/16	478
		5	40-13/16			508
		7.5	47-7/16	2-5/8	23-1/8	760

18" WHEEL END TRUCK AND DRIVE DIMENSIONS
(FLAT TREAD IS STANDARD)



Bumper Size	Dimension "B" * (in)	Dimension "BH" (in)
R3	2.0	17-11/16
R4	2.5	
R5	3.2	
R6	4.0	16-13/16
R7	5.0	
R8	6.4	

Note: Dimensions are for 30 minute single speed/VFC 230/460 volt motors only. Other voltages, minute ratings, or speed points may change these dimensions. Contact factory for assistance.

Dimensions are for estimating purposes only and are not certified engineering dimensions.

* Bumpers included in price. See pages 70-73 for selection of proper bumper.

Control Type	Speed (fpm)	HP	Dimension "D" (in)	Dimension "C" (in)	Dimension "H" (in)	Drive Weight Adder (per pair)
Single Speed / VFC	100	3	45-3/16	3-1/4	26-3/8	786
		5	50	2-1/4	27-9/16	1230
		7.5	53-1/2			1340
	120	3	45-3/16	3-1/4	26-3/8	786
		5	47-1/4			818
		7.5	53-1/2	2-1/4	27-9/16	1340
	150	3	44-3/4	4-3/16	24-9/16	614
		5	46-13/16			646
		7.5	50-3/4	3-1/4	26-3/8	928
		10	54-1/8	2-1/4	27-9/16	1372
	200	3	44-3/4	4-3/16	24-9/16	614
		5	46-13/16			646
		7.5	50-3/4	3-1/4	26-3/8	928
		10	51-3/8			960
	250	3	44-3/4	4-3/16	24-9/16	614
		5	46-3/16			646
		7.5	50-5/16			756
		10	51-3/8	3-1/4	26-3/8	960
	300	3	44-3/4	4-3/16	24-9/16	614
		5	46-13/16			646
		7.5	50-5/16			756
		10	54-1/8	2-1/4	27-9/16	1372

CONTROLS

FOR SINGLE OR DOUBLE GIRDER, UNDERHUNG OR TOP-RUNNING CRANES

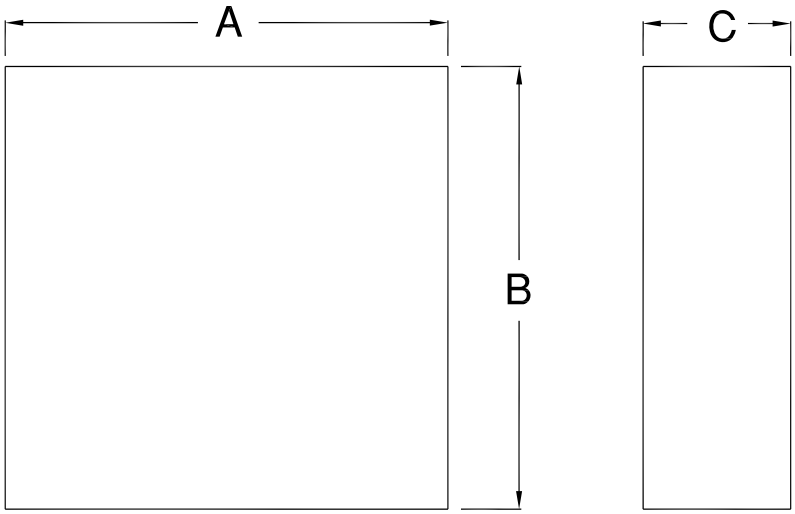
NEMA1 CONTROL PANELS

The control panel includes mainline contactor 115-volt control circuit with fused secondary, terminal strip, bridge fusing and reversing contactor. Controls are housed in a NEMA 1 panel hinged horizontal at the top. Push-button is not included. The mainline contactor is rated for 40 amps. The control transformer is rated for 20 VA.

For Maximum Total H.P.	Voltage	Single Speed		Two Speed		1 & 2 Speed Dimensions (in)		
		Catalog Number	Weight (lbs)	Catalog Number	Weight (lbs)	A	B	C
1	230	446003-11	50	446003-51	60	13	10	6.5
2		446003-21		446003-61				
4		446003-31		446003-71				
2	460	446003-13		446003-53				
4		446003-23		446003-63				
5		446003-33		446003-73				
2	575	446003-14		446003-54				
4		446003-24		446003-64				
7-1/2		446003-34		446003-74				

Separate NEMA 3R Fused Disconnect

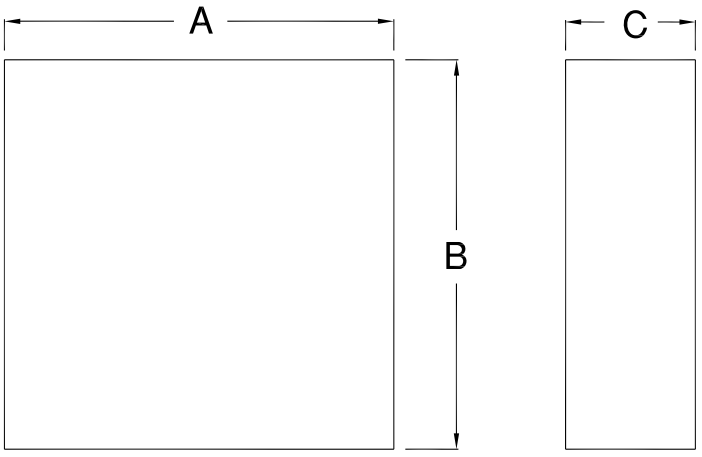
Volts	Amps	Catalog Number	Weight (lbs)	A (in)	B (in)	C (in)
208/230	60	913090	25	8.875	16	10.25
460/575	30	913091		8.75	12.875	8.75



NEMA 4/12 SINGLE AND TWO SPEED CONTROL PANELS

The control panel includes mainline contactor, in-door manual disconnect, 115-volt control circuit with fused secondary, terminal strip, bridge fusing and reversing contactor. Controls are housed in a NEMA 4/12 panel hinged horizontal at the bottom. Push-button is not included. The mainline contactor and disconnect are rated for 30 amps in panels through 3 hp and 60 amps in panels rated for 5-10 hp. The control transformers are rated for 75 VA in the 1-3 hp panels and 100 VA in the 5-10 hp panels.

For Maximum Total HP	Voltage	Single Speed Panel		Two Speed Panel		1 & 2 Speed Dimensions (in)		
		Catalog Number	Weight (lbs)	Catalog Number	Weight (lbs)	A	B	C
1	230	444231-21	75	444232-21	85	20	16	8.8
2		444231-22		444232-22				
3		444231-23	115	444232-23	125			
5		444231-25		444232-25		24	20	10.8
7.5		444231-27		444232-27				
10		444231-29		444232-29				
1	460	444231-41	75	444232-41	85	20	16	8.8
2		444231-42		444232-42				
3		444231-43	115	444232-43	125			
5		444231-45		444232-45		24	20	10.8
7.5		444231-47		444232-47				
10		444231-49		444232-49				
1	575	444231-51	75	444232-51	85	20	16	8.8
2		444231-52		444232-52				
3		444231-53	115	444232-53	125			
5		444231-55		444232-55		24	20	10.8
7.5		444231-57		444232-57				
10		444231-59		444232-59				

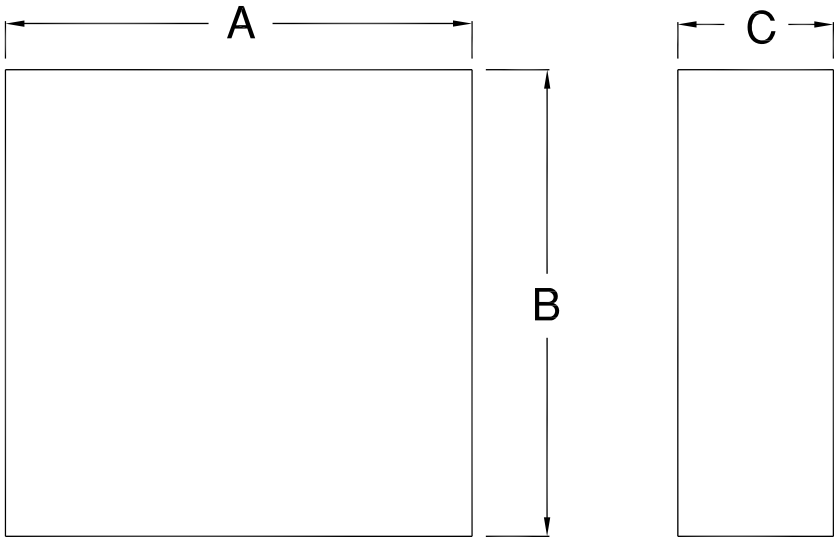


NEMA 4/12 VARIABLE FREQUENCY CONTROL PANELS

The control panel includes mainline contactor, in-door manual disconnect, 115-volt control circuit with fused secondary, terminal strip, bridge fusing. Controls are housed in a NEMA 4/12 panel hinged horizontal at the bottom. Push-button is not included. The mainline contactor and disconnect are rated for 30 amps in panels through 5 hp and 60 amps in panels rated for 7.5-10 hp. The control transformers are rated for 300 VA in all panels.

Electromotive P3							
For Max. total h.p.	Volts	Drive Size	Catalog Number	Weight (lbs)	Panel Dimensions* (in)		
					A	B	C
1	200 to 230 volts	P3	448550-21	80	20	16	8.5
2			448550-22				
3			448550-23				
5			448550-25	105			
7.5			448550-27				
10			448550-29				
1	380 to 460 volts	P3	448550-41	80	24	20	10.5
2			448550-42				
3			448550-43				
5			448550-45	105			
7.5			448550-47				
10			448550-49				

* 3 hp panel for 460 volts is 24 W x 20 H x 10.5 D



ELECTRONIC ACCELERATION CONTROL

The Shaw-Box® Electronic Acceleration Control (EAC) is a solid state device with adjustments for torque and time to provide controlled acceleration. The EAC is less load sensitive than ballast resistors and provides more controlled acceleration.

ADJUSTABLE EAC				
Voltage	Total Motor H.P.	Catalog Number		Shipping WT (lbs.)
		1 Speed	2 Speed	
208-230	1 - 2 3 - 6	913186 913188	913186 913188	10
460	1 - 4 10	913186 913188	913186 913188	

Weights are each

BUMPERS

FOR SINGLE OR DOUBLE GIRDER, TOP OR UNDER-RUNNING, FIXED OR ROTATING AXLE END TRUCKS

STANDARD AND OPTIONAL RUBBER BUMPER SIZES

Fixed Axle Trucks
CraneSource fixed axle end trucks are provided with rubber bumpers as standard, optional for under-hung trucks. The sizes of the standard bumpers provided, or available, per fixed axle end truck are listed below. Also listed are the dimensions for the bumper sizes used. We have standardized on bumper sizes based on the most common capacities; spans and speeds of cranes built using these end trucks. However, for some applications a larger, or smaller, bumper may be desired.

Rotating Axle Trucks
Rotating axle trucks include bumpers in the price but the size must be selected per application based on the information found on pages 70 & 71.

The following pages contain formulas and charts that can be used to verify or select the exact bumper required for a specific application. If you wish to have a standard bumper changed to one of the other bumpers offered, this can be done at an additional charge by simply calling our Customer Service Department.

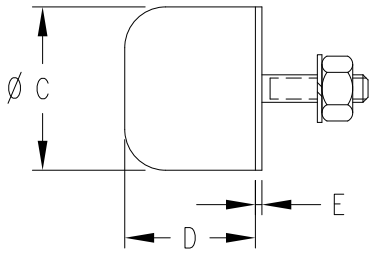
Fixed Axle Top-Running Trucks

Standard Bumpers By Truck Catalog Number				
Catalog Number	Wheel Diameter	Wheel Base	Rail Size Range	Bumper Code
Single Girder				
444691-51	6	4' - 6"	25 - 40	R2
444691-52		6' - 0"		
444691-53		7' - 6"		
444695-51	8	4' - 6"	30 - 40	R3
444695-52		6' - 0"		
444695-53		7' - 6"		
444695-61		4' - 6"	60 - 80	
444695-62		6' - 0"		
444695-63		7' - 6"		
444696-51	10	4' - 6"		
444696-52		6' - 0"		
444696-53		7' - 6"		
Double Girder				
444695-53	8	7' - 6"	30 - 40	R3
444695-54		9' - 0"		
444695-55		10' - 6"		
444695-63		7' - 6"	60 - 80	
444695-64		9' - 0"		
444695-65		10' - 6"		
444696-56	10	7' - 6"		R4
444696-57		9' - 0"		
444696-58		10' - 6"		

Fixed Axle Underhung End Trucks

Wheel Diameter	Wheel Base	Bumper Code
6-1/2"	4' - 6"	R1
	6' - 0"	
	7' - 6"	
8"	4' - 6"	R2
	6' - 0"	
	7' - 6"	

Bumper Dimensions



Bumper	E.A.C.	Dia. (in)	Length (in)	"D"	"E"
R1	38	1.6	1.38	1.3	0.08
R2	75	2.0	1.68	1.6	
R3	145	2.5	2.12	2.0	0.12
R4	290	3.2	2.62	2.5	
R5	578	4.0	3.36	3.2	0.16
R6	1155	5.0	4.16	4.0	
R7	2310	6.4	5.24	5.0	0.24
R8	4550	8.0	6.64	6.4	

Dimensions:

"C" is the Diameter
"D" is the Bumper Length
"E" is the Base Plate

DETERMINATION OF BUMPER SIZES

When determining the size of a bumper for a crane, trolley, hoist or other moving equipment, the magnitude of the energy to be stopped, expressed in foot-pounds (ft.-lbs.) must be established.

This energy is a function of the weight of the equipment and the travel speed at which impact occurs, expressed in ft. - lbs.

The second consideration is the deceleration, expressed in ft./sec.^{2}

OSHA (spec. 1910/179), CMAA (spec. NO70, as amended) and other agencies have established MINIMUM guidelines for decelerating and stopping cranes.

They are:

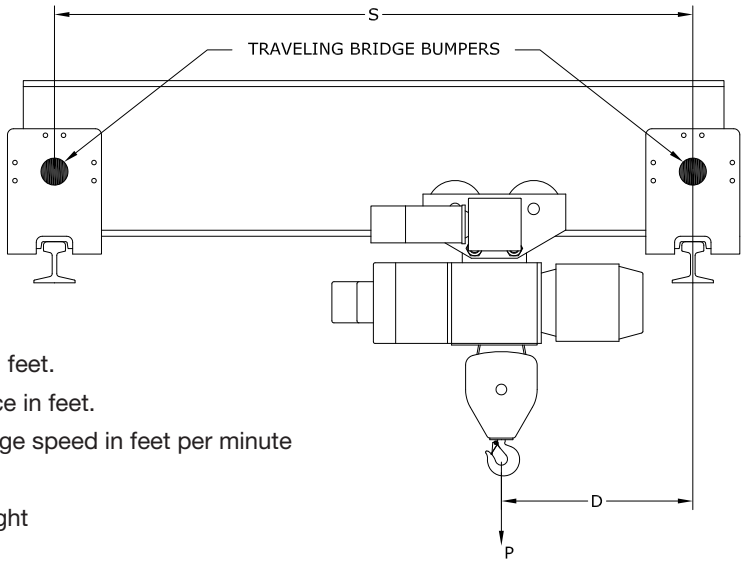
FOR THE CRANE BRIDGE: OSHA

The bumpers, usually two, must be large enough to absorb the impact energy (ft.-lbs.) at 40% of full speed. Deceleration must not exceed 3.0 ft. sec.^{2} at 20% of full speed.

You may decide that this minimum protection is not sufficient for your equipment and substitute CMAA or your own higher speed values. The following steps to determine bumper size in conjunction with our energy absorption, deflection and maximum force curves will allow you to calculate bumper size.

The final force curve will show you the load imposed upon your structure to which the bumper is mounted.

ENERGY CALCULATION FOR BRIDGE



S = Traveling bridge span in feet.

D = Load to support distance in feet.

VB = Maximum traveling bridge speed in feet per minute

WB = Bridge only weight

WT = Trolley & Hoist only weight

DETERMINATION OF TRAVELING BRIDGE BUMPER SIZE (OSHA)

1. Determine the traveling bridge weight less load (WB), and trolley weight (WT) in pounds from manufacturers specifications.
2. With the trolley against its stops at the end of the traveling bridge, determine the minimum distance (D) in feet from the center of gravity of the trolley to the centers of the traveling bridge bumpers. Use manufacturers specifications if available.
3. Determine the distance (S) in feet between the traveling bridge bumpers.
4. Determine the traveling bridge maximum speed (VB) in feet per minute from manufacturers specifications.
5. Determine the traveling bridge energy (BE) at impact at 40% of full speed by using.

$$BE\ 40\% = \frac{(0.4 \times VB)^2}{231840} \times \left[\frac{WB}{2} + WT - \frac{WT \times D}{S} \right] = \text{ft.-lbs.}$$

6. Select a bumper (from the bumper dimension chart on page 70) with an energy absorption capacity (E.A.C) equal or greater than BE calculated in Step 5.

7. In a similar manner calculate the energy (ft.-lbs.) at 20% full speed.

$$BE\ 20\% = \frac{(0.2 \times VB)^2}{231840} \times \left[\frac{WB}{2} + WT - \frac{WT \times D}{S} \right] = \text{ft.-lbs.}$$

With your calculated energy absorption requirement (ft.-lbs.), from step 7, enter the diagram's left upper corner on a line **which represents the chosen bumper size.**

Interpolate and pinpoint the energy requirement **"BE"** on this line and draw a vertical line down until you intersect the curve in the left diagram.

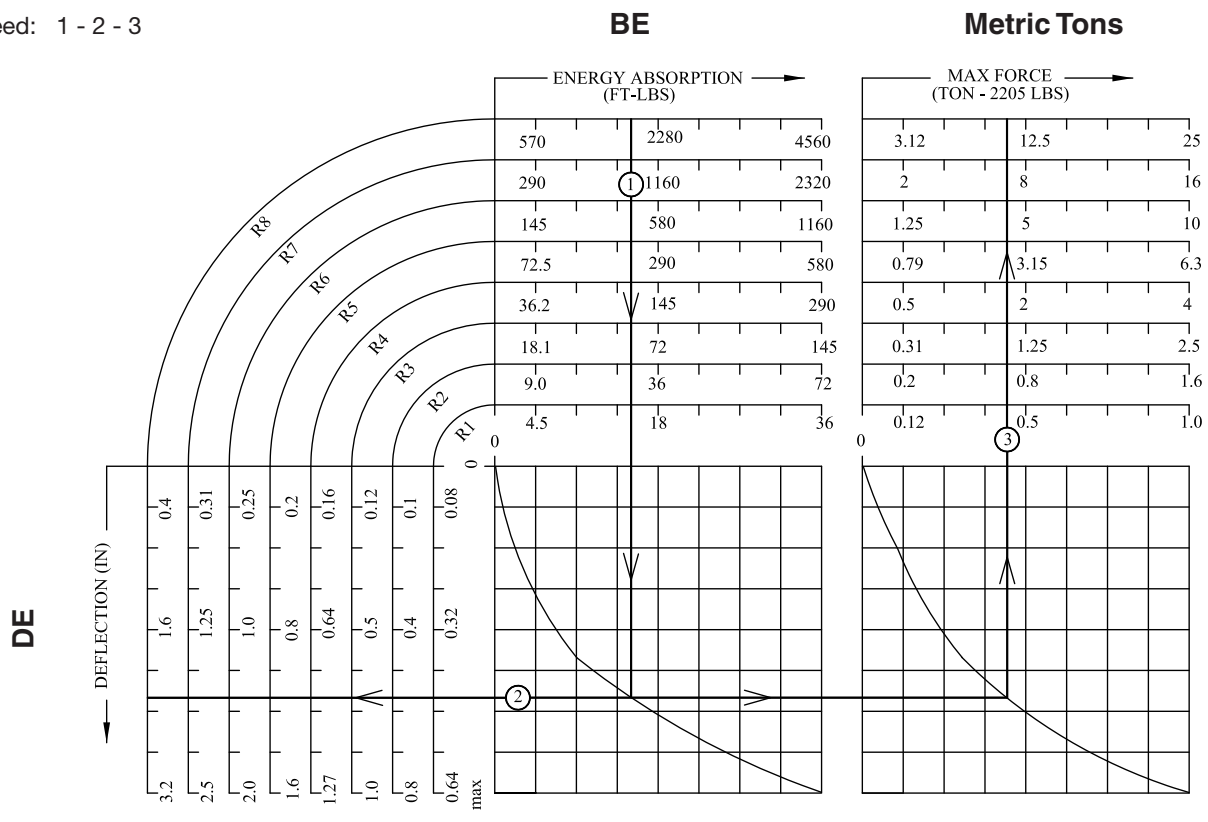
From this intersection draw a horizontal line to the left and to the right.

Where the left line intersects with the **chosen bumper line** the deflection (DE in inches) for your deceleration calculation is shown.

Where the line intersects with the curve in the right diagram draw another line straight up until you again intersect with your **chosen bumper** (size) **line.**

You can read your maximum force on the point of intersection, (tonnes) at 20%.

Proceed: 1 - 2 - 3



DECELERATION REQUIREMENT FOR BRIDGE (OSHA)

8. Determine deceleration (a) by using:

$$a = \frac{(0.2 \times VB)^2}{600 \times DE} = \text{ft.sec.}^2$$

DE (deflection) in inches will be found on the deflection scale of the maximum force diagram for the bumper selected in step 6 and the energy absorption determined in step 7.

The result of this calculation must be 3.0 ft. sec.^{2} or less.

NOTES

For additional information contact your Lift-Tech representative or Lift-Tech headquarters direct.

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⚠ WARNING

To Avoid Injury:

- Do not exceed working load limit, load rating, or capacity.
- Do not use to lift people or loads over people.
- Read and follow all instructions.