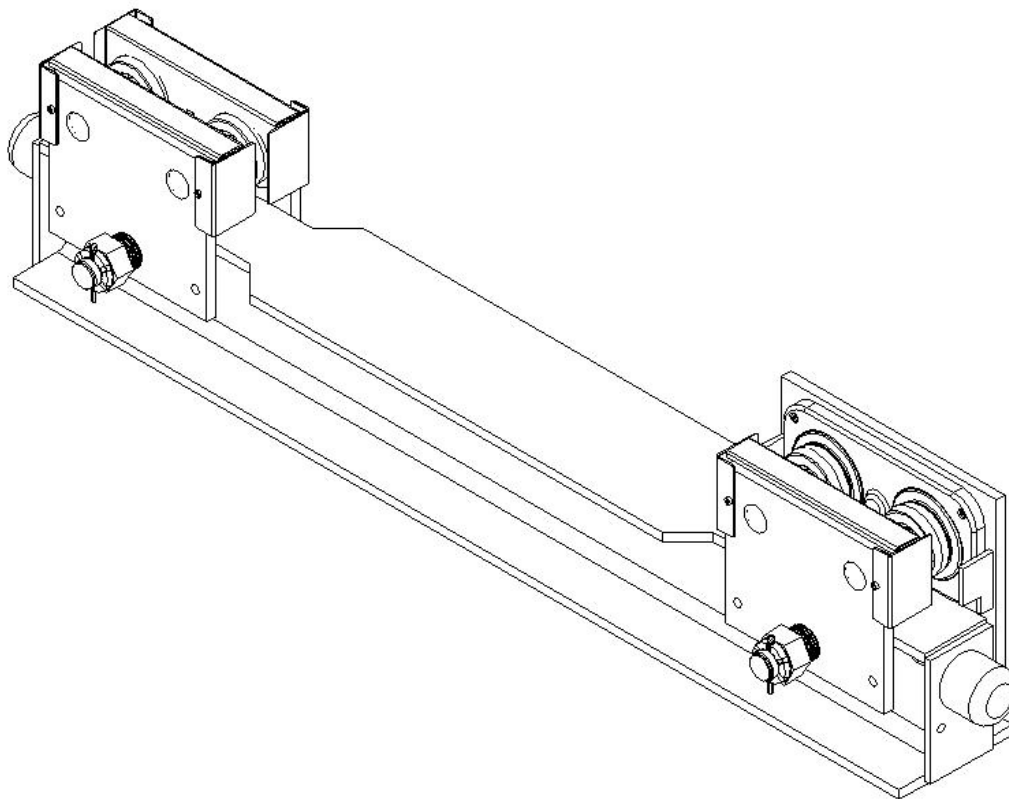




RU & RH Under Running End Trucks



Technical Guide



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1 General

The RU and RH end trucks are a new series of under running end trucks designed to use the GEK gear drive.

The main difference between the RU end truck and the RH end truck is the design of the frame. The frame on the RU end truck is the traditional I-beam where as the frame on the RH end truck is a fabricated U-shaped structure to get better headroom.

A four-wheel articulating trolley is mounted to each end of the frame for an eight-wheel arrangement.

2 Selection Criteria

The maximum allowable wheel loads for the end trucks are determined by these criteria:

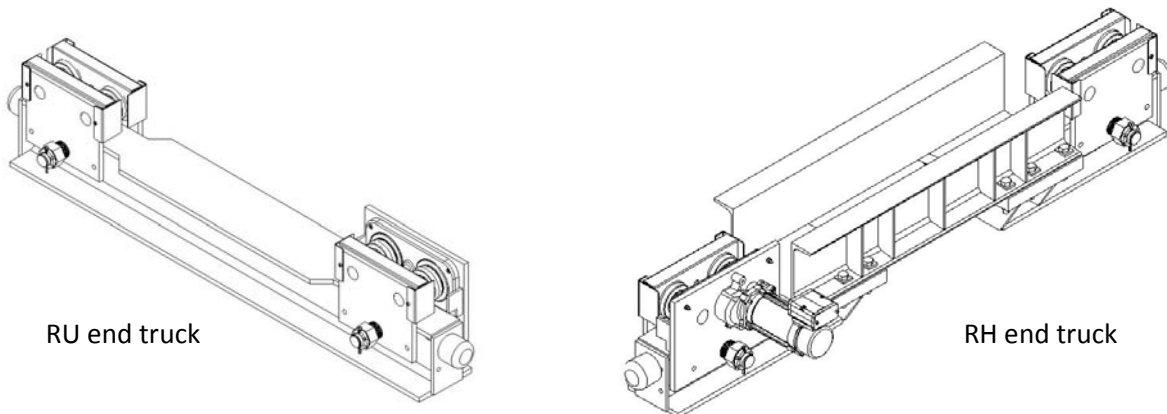
- Properties of the truck structure or frame
- Permissible surface pressure between wheel and rail
- Maximum bearing capacity
- Service life of the bearings

When selecting the end trucks for the crane application, the following checks should be made:

- Wheel loading not to exceed allowed value
- Structure loading not to exceed allowed loading value
- Bridge girder connection
- Actual flange width of the runway beam matches the flange width range of the end truck

3 Frame

The I-beam frame on the RU end truck will sit below the bottom flange of the runway beam. The U-shaped frame on the RH end truck is designed in such a way that part of the frame will wrap around the lower part of the runway beam as this design shortens the headroom.



4 End Truck Drawing

End truck outline drawings in PDF are available on R&M's website (www.rmhoist.com). AutoCAD drawings are available by request or from QuoteMaster® through DAS.



5 Articulating Trolleys and Wheels

The end truck is equipped with two four-wheel trolleys. In the standard arrangement, one of the trolleys includes the drive mounting plate with two drive wheels. The other wheels on the end truck are idler wheels. A second GEK gear drive can be added to the second trolley set on the end truck as an option. With this option, the idler wheels and side plate are replaced with drive wheels and a drive mounting plate.

The standard wheel has a single flange and crown tread. The crown tread on the wheel is suitable for flat or tapered beam flanges.

Patented track wheels can be furnished as an option. The flange width range for patented track wheels varies slightly from the flange width range for standard wheels. This is noted in the **Specifications** section. The wheel hardness for patented track wheels is 415 BHN.

The material of the standard wheel is GJS700-2 / EN-JS1070 (ductile iron) and the wheel hardness is approximately 280 BHN.

The wheel bearings are anti-friction and permanently lubricated.

Safety lugs that will prevent the end truck from dropping more than one inch [25 mm] in case of axle failure are integral part of the trolley plates.

Covers over the drive and idler wheels are provided as standard.



6 Specifications

Wheelbase range	<u>RU models</u>	<u>Wheelbase, mm</u>		<u>RH models</u>	<u>Wheelbase, mm</u>	
	RU08	1200, 1400, 1800, 2300, 2800		RH10	1400, 1800, 2300, 2800	
	RU10	1200, 1400, 1800, 2300, 2800, 3200, 3500		RH13	1400, 1800, 2300, 2800, 3200, 3500	
	RU13	1200, 1400, 1800, 2300, 2800, 3200, 3500				
	RU20	1800, 2300, 2800, 3200, 3500, 4000				
Wheels	<u>RU model</u>	<u>Wheel diameter</u>		<u>RH models</u>	<u>Wheel diameter</u>	
	RU08	80 mm		RH10	100 mm	
	RU10	100 mm		RH13	125 mm	
	RU13	125 mm				
	RU20	200 mm				
Ductile iron - material GJS700-2 (standard wheel), crown tread and flanged						
Runway beam flange width range	<u>Model</u>	<u>Flange width range</u>				
	RU08	73-120 mm 2.87" – 4.72"	121-168 mm 4.76" – 6.61"	169-216 mm 6.65" – 8.5"	217-264 mm 8.54" – 10.39"	265-313 mm 10.64" – 12.32"
	RU10	82-130 mm	131-178 mm	179-226 mm	227-274 mm	275-322 mm
	RH10	3.23" – 5.12"	5.16" – 7"	7.05" – 8.9"	8.94" – 10.79"	10.83" – 12.68"
	RU13	100-179 mm	180-259 mm	260-343 mm		
	RH13	3.93" – 7.03"	7.06" – 10.19"	10.23" – 13.5"		
	RU20	127-210 mm	211-314 mm	315-418 mm		
RU20	5" – 8.25"	8.31" – 12.38"	12.43" – 16.5"			
Crown tread wheel accepts a flat or tapered flange						
Patented track	<u>Model</u>	<u>Flange width range</u>				
	RU08	63-110 mm 2.48" – 4.33"	111-158 mm 4.37" – 6.22"			
	RU10	61-109 mm	110-157 mm			
	RH10	2.4" – 4.29"	4.33" – 6.18"			
	RU13	64-143 mm	144-223 mm			
RH13	2.51" – 5.63"	5.67" – 8.78"				
Truck frame construction	<u>I-beam frame</u>			<u>U-shape, fabricated frame</u>		
	RU08, RU10, RU13, RU20	Integrated wheel axle failure support on wheel plates		RH10, RH13		
Gear Drive	GEK gear and inverter-duty motor (limited two-speed pole change motors and bridge speeds) One drive (two wheels) per end truck as standard. Nominal VFD speeds: 65, 80, 100, 130 fpm [20, 25, 32, 40 m/min]					
Joint type	See <i>Possible Girder Connections</i> for more information					
	<u>Joint type</u>	<u>Bolted connection with joint plate</u>		<u>Applicable end truck</u>		
Continued on next page	SA3	4-bolt connection, M16 bolt (flange width ≤ 300 mm)		RU08		
	SB4	4-bolt connection, M20 bolt (flange width ≤ 410 mm)		RU10		
	SC3	8-bolt connection, M20 bolt (flange width ≤ 310 mm)		RU13		
	SC4	8-bolt connection, M20 bolt (flange width ≤ 410 mm)		RU13		
	SC5	8-bolt connection, M20 bolt (flange width ≤ 510 mm)		RU13		
	SD3	12-bolt connection, M20 bolt (flange width ≤ 310 mm)		RU20		
	SD4	12-bolt connection, M20 bolt (flange width ≤ 410 mm)		RU20		
	SD5	12-bolt connection, M20 bolt (flange width ≤ 510 mm)		RU20		
	HB4	4-bolt connection, M20 bolt (flange width ≤ 410 mm)		RH10		
	HC3	8-bolt connection, M20 bolt (flange width ≤ 310 mm)		RH13		
	HC4	8-bolt connection, M20 bolt (flange width ≤ 410 mm)		RH13		
	HC5	8-bolt connection, M20 bolt (flange width ≤ 510 mm)		RH13		
		<u>Joint type</u>	<u>Bolted connection without joint plate</u>		<u>Applicable end truck</u>	
		BA1	4-bolt connection, M16 bolt, (flange width < 203 mm)		RU08	
		BA2	4-bolt connection, M16 bolt, (flange width < 253 mm)		RU08	
	BA3	4-bolt connection, M16 bolt, (flange width < 310 mm)		RU08		
	BB2	4-bolt connection, M20 bolt, (flange width < 265 mm)		RU10		
	BB3	4-bolt connection, M20 bolt, (flange width < 315 mm)		RU10		
	BB4	4-bolt connection, M20 bolt, (flange width < 415 mm)		RU10		
	BB5	4-bolt connection, M20 bolt, (flange width < 450 mm)		RU10		
	BC3	8-bolt connection, M20 bolt, (flange width < 315 mm)		RU13		
	BC4	8-bolt connection, M20 bolt, (flange width < 415 mm)		RU13		
	BC5	8-bolt connection, M20 bolt, (flange width < 450 mm)		RU13		
	BD5	12-bolt connection, M20 bolt, (flange width < 400 mm)		RU20		
	KBx, x = 2, 3, 4, 5	4-bolt connection, M20 bolt		RH10		
	KCx, x = 3, 4, 5	8-bolt connection, M20 bolt		RH13		



Joint type	<u>Joint type</u>	<u>Welded connection without joint plate</u>	<u>Applicable end truck</u>
	WA_ WB_ WC_ WD_		RU08 RU10 RU13 RU20
	<u>Joint type</u>	<u>Special joint</u>	<u>Applicable end truck</u>
	000	Special joint - design required by others	RU08, RU10, RU13, RU20 RH10, RH13
Bumpers	Bumpers are standard and sized by QuoteMaster [®] according to the load.		
Options	Patented track wheel	Rail cleaning device	Guide rollers (bolt on)
	Anti-tipping rollers	Second drive for end truck	
Surface treatment	Primer only (RAL 7038 gray for frame)		

7 Possible Girder Connections

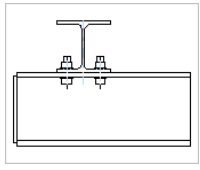
7.1 RU End Trucks

The RU end trucks do not come with joint plates unless specified. Profile girders can be mounted to the RU end truck without a joint plate (B or W joint type) or with a joint plate (S joint type). Box girders will always mount to the end truck with a joint plate (S joint type). QuoteMaster® will suggest the joint type for the girder connection for the crane application.

7.1.1 B Joint Type – Bolted Connection, No Joint Plate

The B joint type is when the profile girder gets bolted directly to the frame of the RU end truck without a joint plate. Box girders cannot be mounted to the RU end truck without a joint plate.

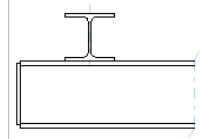
B Joint Type

		RU08	RU10	RU13	RU20
Girder Position	Joint Illustration	Joint types (BA1, BA2, BA3, BB2, BB3, BB4, BB5, BC3, BC4, BC5, BD3) no joint plates			
	No joint plate bolted connection	Profile girder	Profile girder	Profile girder	Profile girder
STD		Joint type: BA1 Max flange width, 203 mm	Joint type: BB2 Max flange width, 265 mm	Joint type: BC3 Max flange width, 315 mm	Joint type: BD3 Max flange width, 400 mm
		Joint type: BA2 Max flange width, 253 mm	Joint type: BB3 Max flange width, 315 mm	Joint type: BC4 Max flange width, 415mm	
		Joint type: BA3 Max flange width, 320 mm	Joint type: BB4 Max flange width, 415 mm	Joint type: BC5 Max flange width, 450 mm	
			Joint type: BB5 Max flange width, 450 mm		

7.1.2 W Joint Type – Welded Connection, No Joint Plate

The W joint type is when the profile girder gets welded directly to the frame of the RU end truck without a joint plate. Box girders cannot be mounted to the RU end truck without a joint plate.

W Joint Type

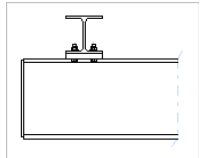
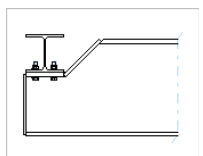
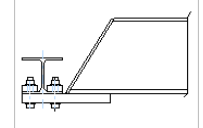
		RU08	RU10	RU13	RU20
Girder Position	Joint Illustration	Joint types (WA_, WB_, WC_, WD_) no joint plates			
	No joint plate; welded connection	Profile girder	Profile girder	Profile girder	Profile girder
STD		Joint type: WA_	Joint type: WB_	Joint type: WC_	Joint type: WD_

7.1.3 S Joint Type - Joint Plate

A joint plate could be needed to reinforce the connection between the girder and the end truck. The joint plate also allows for more girder mounting positions like those illustrated in the table below. The S joint type can be used for profile or box girders.

The girder gets welded to the joint plate.

The joint plate will be mounted to the end truck when joint plates are specified. Any other plates needed to reinforce the connection are not included.

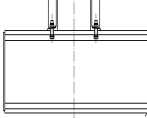
		RU08		RU10		RU13		RU20	
		Joint types (SA3, SB4, SC3, SC4, SC5, SD3, SD4, SD5) with joint plates							
Girder	Joint Illustration	Profile girder	Box girder	Profile girder	Box girder	Profile girder	Box girder	Profile girder	Box girder
Position	Bolted joint plate	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
STD		Joint type: SA3 Max flange width, 300 mm		Joint type: SB4 Max flange width, 410 mm		Joint type: SC3 Max flange width, 310 mm		Joint type: SD3 Max flange width, 310 mm	
						Joint type: SC4 Max flange width, 410 mm		Joint type: SD4 Max flange width, 410 mm	
						Joint type: SC5 Max flange width, 510 mm		Joint type: SD5 Max flange width, 510 mm	
MED		Joint type: SA3 Max flange width, 300 mm		Joint type: SB4 Max flange width, 410 mm		Joint type: SC3 Max flange width, 310 mm		Joint type: SD3 Max flange width, 310 mm	
						Joint type: SC4 Max flange width, 410 mm		Joint type: SD4 Max flange width, 410 mm	
						Joint type: SC5 Max flange width, 510 mm		Joint type: SD5 Max flange width, 510 mm	
HIGH		Joint type: SA3 Max flange width, 300 mm		Not available		Not available		Not available	

7.2 RH End Trucks

The RH end trucks do not come with joint plates unless specified. Profile girders can be mounted to the RU end truck without a joint plate (K joint type) or with a joint plate (H joint type). Box girders will always mount to the end truck with a joint plate (H joint type). QuoteMaster® will suggest the joint type for the girder connection for the crane application.

7.2.1 K Joint Type – Bolted Connection, No Joint Plate

The K joint type is when the profile girder gets bolted directly to the frame of the RH end truck without a joint plate. Profile girders cannot be welded directly to the RH end truck frame without joint. Box girders cannot be bolted or welded to the RH end truck without a joint plate.

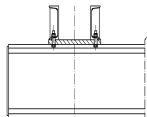
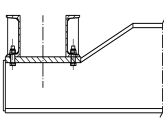
		RH10		RH13	
		Joint types (KB2...KB5, KC3...KC5) with joint plates			
Girder Position	Joint Illustration	Profile girder	Box girder	Profile girder	Box girder
	Bolted connection; no joint plate	Yes	No	Yes	No
STD		Joint type: KB2 Max flange width, 265 mm		Joint type: KC3 Max flange width, 347 mm	
		Joint type: KB3 Max flange width, 315 mm		Joint type: KC4 Max flange width, 447 mm	
		Joint type: KB4 Max flange width, 415 mm		Joint type: KC5 Max flange width, 500 mm	
		Joint type: KB5 Max flange width, 450 mm			

7.2.2 H Joint Type - Joint Plate

A joint plate could be needed to reinforce the connection between the girder and the end truck. The joint plate also allows for more girder mounting positions like those illustrated in the table below. The H joint type can be used for profile or box girders.

The girder gets welded to the joint plate.

The joint plate will be mounted to the end truck when joint plates are specified. Any other plates needed to reinforce the connection are not included.

		RH10		RH13	
		Joint types (HB4, HC3, HC4, HC5) with joint plates			
Girder Position	Joint Illustration	Profile girder	Box girder	Profile girder	Box girder
	Bolted joint plate	Yes	Yes	Yes	Yes
STD		Joint type: HB4 Max flange width, 410 mm		Joint type: HC3 Max flange width, 310 mm	
				Joint type: HC4 Max flange width, 410 mm	
				Joint type: HC5 Max flange width, 510 mm	
MED		Joint type: HB4 Max flange width, 410 mm		Joint type: HC3 Max flange width, 310 mm	
				Joint type: HC4 Max flange width, 410 mm	
				Joint type: HC5 Max flange width, 510 mm	

8 Bumpers (Buffers)

Bumpers are sized to meet the crane specifications.

Bumpers bolt to each end of the end truck frame and are available in rubber or polyurethane.

The bumper code is included as part of the product code for the end truck.

Suitable Bumper types for RH and RU end trucks

Code	Description	Dia./mm	Length/mm	Material	End truck
A	D1801	63	53	Rubber	RU08, RU10, RU13, RU20, RH10, RH13
B	D2240	80	68	Rubber	RU08, RU10, RU13, RU20, RH10, RH13
C	D2241	100	85	Rubber	RU08, RU10, RU13, RU20, RH10, RH13
D	D2242	125	105	Rubber	RU13, RH13, RU20
K	PUR80*80	80	80	Polyurethane	RU08, RU10, RU13, RU20, RH10, RH13
G	PUR100*100	100	100	Polyurethane	RU08, RU10, RU13, RU20, RH10, RH13
E	PUR100*150	100	150	Polyurethane	RU08, RU10, RU13, RU20, RH10, RH13
M	PUR125*125	125	125	Polyurethane	RU13, RH13, RU20
F	PUR125*190	125	190	Polyurethane	RU13, RH13, RU20

9 Recommended Bolt Tightening Torque

See the table in the **Specifications** section for the bolt sized used for the joint type.

M16 bolt: 220 ft-lb (300 Nm)

M20 bolt: 425 ft-lb (580 Nm)

10 Joint Sample Drawing

A joint sample drawing can be obtained by running the crane calculation through QuoteMaster®. The information in the joint sample drawing will be specific to the joint type that is called out in the calculation. It will include the dimensions for any other plates needed for the connection, the location of the bolt holes, and the weld callouts as needed.

A joint sample drawing is not available for any special joint design.

