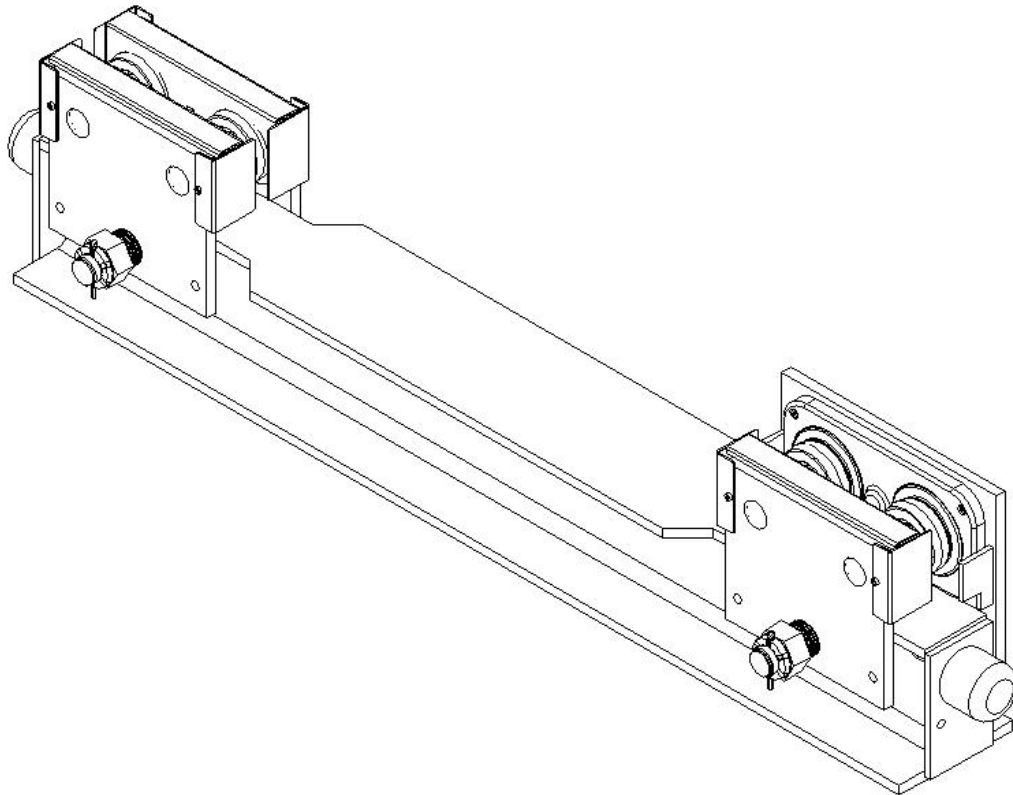




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RU & RH End Trucks  
Technical Guide  
May 2009

# 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.

The main difference between the RU end truck and the RH end truck is the frame. On the RU end truck, the frame is the traditional I-beam. On the RH end truck, the frame is a fabricated U-shaped structure. A four-wheel articulating trolley is mounted to each end of the frame for an eight-wheel arrangement. The GEK gear is used to drive the end truck.

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

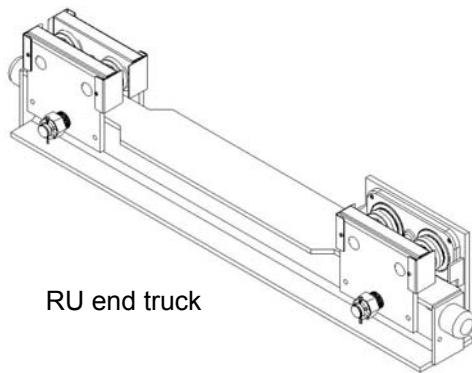
- Properties of the truck structure or frame
- Permissible surface pressure between wheel and rail
- Maximum bearing capacity
- Service life of the bearings

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

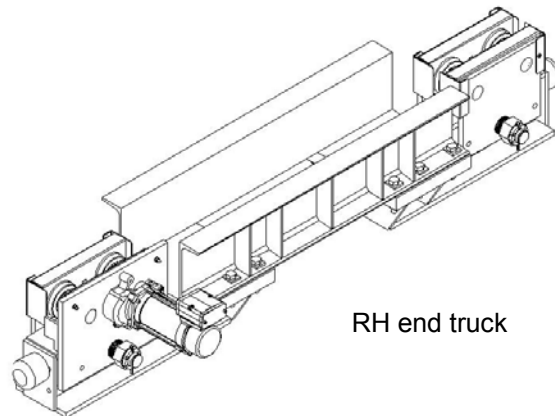
- Wheel loading not to exceed allowed value
- Structure loading not to exceed allowed loading value
- Bridge girder connection
- Actual flange width of the runway beam matches the flange width range of the end truck

## 2 Frame

The entire I-beam will be below the bottom flange of the runway beam. The U-shaped frame is designed in such a way that part of the frame will wrap around the bottom portion of the runway beam. This design shortens the headroom.



RU end truck



RH end truck

## 3 Articulating Trolleys, and Wheels

One GEK drive is standard on each end truck. Two drive wheels on the same side plate receive the output shaft of the GEK drive. All the other wheels on the end truck are idler wheels. A second GEK drive can be added to the end truck as an option. In this case, a drive-wheel plate assembly is mounted on the second articulating trolley.

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 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.

Rail sweeps 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.



## 4 Specifications

### 4.1 RU and RH End Trucks

<b>Wheelbase range</b>	<u>RU models</u> RU08 RU10 RU13	<u>Wheelbase, mm</u> 1200, 1400, 1800, 2300, 2800 1200, 1400, 1800, 2300, 2800, 3200, 3500 1200, 1400, 1800, 2300, 2800, 3200, 3500	<u>RH models</u> RH10	<u>Wheelbase, mm</u> 1400, 1800, 2300, 2800
<b>Wheels</b>	<u>RU model</u> RU08 RU10 RU13	<u>Wheel diameter</u> 80 mm 100 mm 125 mm	<u>RH models</u> RH10	<u>Wheel diameter</u> 100 mm
Ductile iron - material GJS700-2 (standard wheel), crown tread, and flanged				
<b>Runway beam flange width range</b>	<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"
	RU10	82-130 mm 3.23" – 5.12"	131-178 mm 5.16" – 7"	179-226 mm 7.05" – 8.9"
	RU13	100-179 mm 3.93" – 7.03"	180-259 mm 7.06" – 10.19"	260-343 mm 10.23" – 13.5"
	RH10	82-130 mm 3.23" – 5.12"	131-178 mm 5.16" – 7"	179-226 mm 7.05" – 8.9"
				217-264 mm 8.54" – 10.39"
				227-274 mm 8.94" – 10.79"
				275-322 mm 10.83" – 12.68"
				275-322 mm 10.83" – 12.68"
Crown tread wheel accepts a flat or tapered flange				
<b>Patented track</b>	<u>Model</u>	<u>Flange width range</u>	<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 2.4" – 4.29"	RH10	61-109 mm 2.4" – 4.29"
	RU13	64-143 mm 2.51" – 5.63"		110-157 mm 4.33" – 6.18"
				144-223 mm 5.67" – 8.78"
<b>Truck frame construction</b>	<u>I-beam frame</u> RU08, RU10, RU13		<u>U-shape frame</u> RH10	
Integrated wheel axle failure support on wheel plates				
<b>Bridge Drive</b>	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]			
<b>Joint type</b>	See Possible Girder Connections for more information			
	<u>Connection type</u>	<u>Bolted connection with joint plate</u>		<u>Applicable end truck</u>
	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
	HB4	4-bolt connection, M20 bolt (flange width ≤ 410 mm)		RH10
	<u>Connection 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
	KBx, x = 2, 3, 4, 5	4-bolt connection, M20 bolt		RH10
	<u>Connection type</u>	<u>Welded without joint plate</u>		<u>Applicable end truck</u>
	WA_			RU08
	WB_			RU10
	WC_			RU13
<b>Bumpers</b>	Bumpers are standard and sized by QuoteMaster® according to the load.			
<b>Options</b>	Patented track wheel	Rail cleaning device		
	Anti-tipping rollers	Second drive for end truck		
	Guide rollers (bolt on)			
<b>Surface treatment</b>	Primer only (RAL 7038 gray for frame)			

## 5 Possible Girder Connections

### 5.1 RU End Trucks

QuoteMaster® will suggest the joint type for the girder connection for the crane application. Some of the joints for profile girders do not need a joint plate. The joints for box girders always use a joint plate. The RU end trucks do not come with joint plates unless specified.

#### 5.1.1 No Joint Plate Connection

A profile girder like a commercial beam can be bolted or welded directly to the frame of the RU end truck without a joint plate. Box girders are not connected directly to the end truck frame. A joint plate is used to connect a box girder to the end truck.

##### Bolted joint – No joint plate

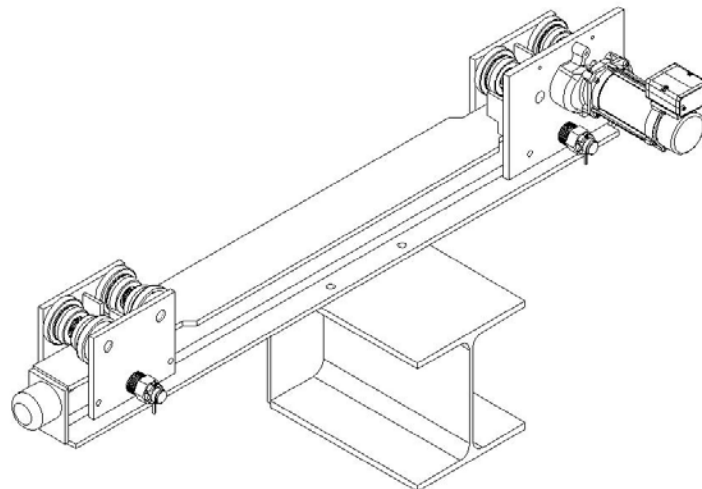
Girder Position	Joint Illustration	RU08	RU10	RU13
		Profile girder	Profile girder	Profile girder
STD		Joint types (BA1, BA2, BA3, BB2, BB3, BB4, BB5, BC3, BC4, BC5) no joint plates		
		Joint type: BA1 Max girder flange width, 203 mm	Joint type: BB2 Max girder flange width, 265 mm	Joint type: BC3 Max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

##### Welded joint – No joint plate

Girder Position	Joint Illustration	RU08	RU10	RU13
		Profile girder	Profile girder	Profile girder
STD		Joint types (WA_, WB_, WC_) no joint plates		
		Joint type: WA_	Joint type: WB_	Joint type: WC_

#### Joint Sample Drawing

A joint sample drawing can be obtained through QuoteMaster® by running the crane calculation. The drawing is detailed and specific; it will include the size and location of the holes for the bolts.



### 5.1.2 Joint Plate Connection

A joint plate may be needed to reinforce the connection of a profile girder to the end truck, or to connect the girder in the various girder positions as illustrated in the table below. A joint plate is always used to connect a box girder to the end truck.

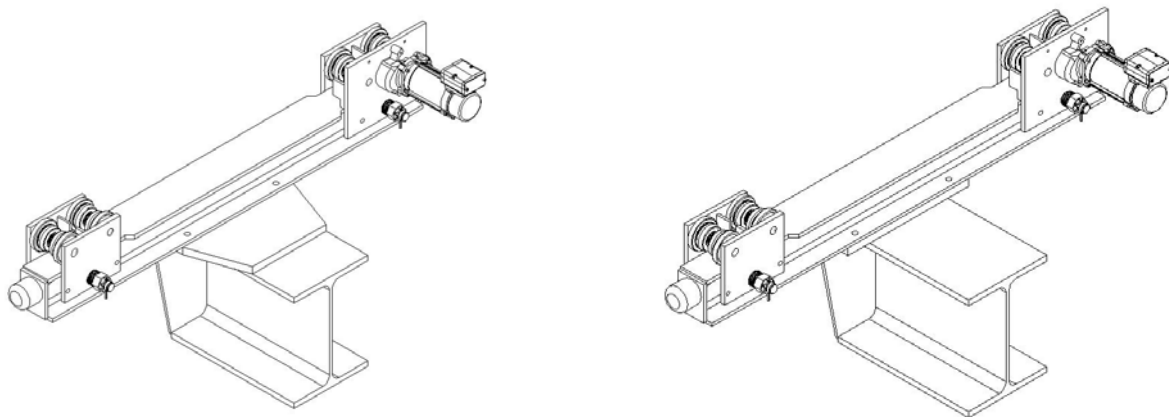
The joint plate can accept a profile girder or a box girder. The girder will be welded to the joint plate.

When joint plates are specified, the hardware and joint plate are provided and mounted on the end truck. Any other plates that are needed for the connection are not included.

Girder Position	Joint Illustration	RU08		RU10		RU13	
		Profile	Box girder	Profile	Box girder	Profile	Box girder
	Joint plate - bolted	Yes	Yes	Yes	Yes	Yes	Yes
STD		Joint type: SA3 Max girder flange width, 300 mm		Joint type: SB4 Max girder flange width, 410 mm		Joint type: SC3 Max girder flange width, 310 mm	
						Joint type: SC4 Max girder flange width, 410 mm	
						Joint type: SC5 Max girder flange width, 510 mm	
MED		Joint type: SA3 Max girder flange width, 300 mm		Joint type: SB4 Max girder flange width, 410 mm		Joint type: SC3 Max girder flange width, 310 mm	
						Joint type: SC4 Max girder flange width, 410 mm	
						Joint type: SC5 Max girder flange width, 510 mm	
HIGH		Joint type: SA3 Max girder flange width, 300 mm		High position - Not available for the RU10 end truck		High position - Not available for the RU13 end truck	

### Joint Sample Drawing

A joint sample drawing can be obtained through QuoteMaster<sup>®</sup> by running the crane calculation. The drawing is detailed and specific; it will include the dimensions for the joint plate and any other plates needed for the connection, and the size and location of the holes for the bolts.

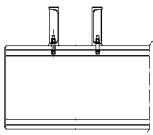


## 5.2 RH End Trucks

QuoteMaster® will suggest the joint type for the girder connection for the crane application. Some of the joints for profile girders do not need a joint plate. The joints for box girders always use a joint plate. The RH end trucks do not come with joint plates unless specified.

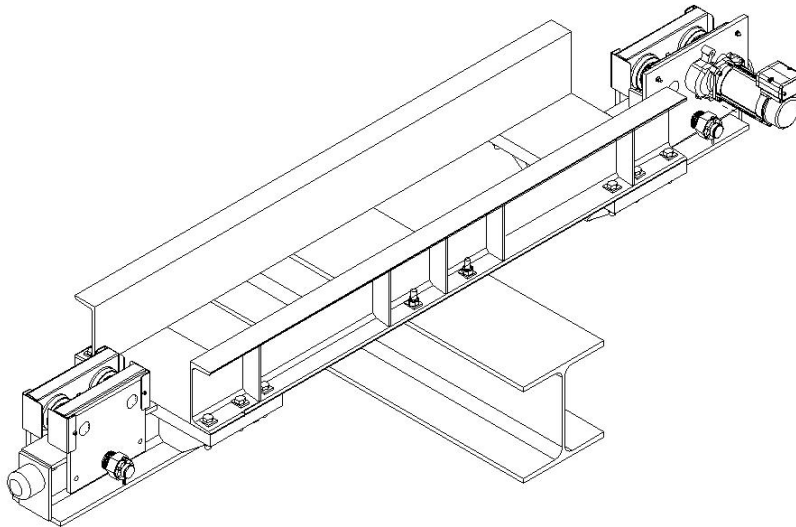
### 5.2.1 No Joint Plate Connection

A profile girder like a commercial beam can be bolted (not welded) directly to the frame of the RH end truck without a joint plate. Box girders are not connected directly to the end truck frame. A joint plate is used to connect a box girder to the end truck.

		RH10			
		Joint types (KB2, KB3, KB4, KB5) with joint plates			
Girder Position	Joint Illustration	Profile girder	Box girder		
	Bolted – no joint plate	Yes	No		
STD		Joint type: KB2 Max flange width, 265 mm			
		Joint type: KB3 Max flange width, 315 mm			
		Joint type: KB4 Max flange width, 415 mm			
		Joint type: KB5 Max flange width, 450 mm			

### Joint Sample Drawing

A joint sample drawing can be obtained through QuoteMaster® by running the crane calculation. The drawing is detailed and specific; it will include the size and location of the holes for the bolts.

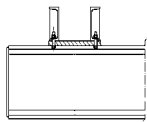
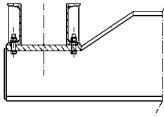


### 5.2.2 Joint Plate Connection

A joint plate may be needed to reinforce the connection of a profile girder to the end truck, or to connect the girder in the various girder positions as illustrated in the table below. A joint plate is always used to connect a box girder to the end truck.

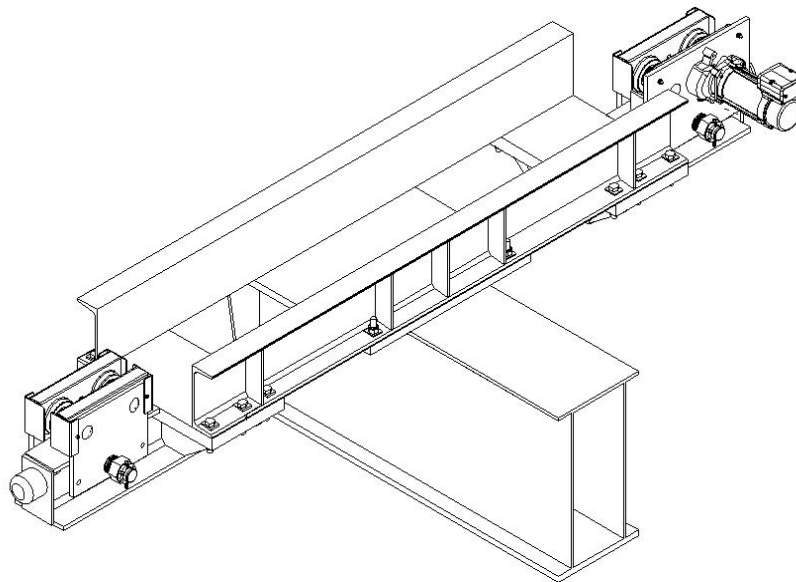
The joint plate can accept a profile girder or a box girder. The girder will be welded to the joint plate.

When joint plates are specified, the hardware and joint plate are provided and mounted on the end truck. Any other plates that are needed for the connection are not included.

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

### Joint Sample Drawing

A joint sample drawing can be obtained through QuoteMaster<sup>®</sup> by running the crane calculation. The drawing is detailed and specific; it will include the dimensions for the joint plate and any other plates needed for the connection, and the size and location of the holes for the bolts.





## 6 Bumpers (Buffers)

Bumpers are standard and sized by QuoteMaster® according to the load.

Bumpers are bolted 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*

<b>CODE</b>	<b>Dia./mm</b>	<b>Length/mm</b>	<b>Material</b>	<b>End truck</b>
A	63	53	Rubber	RU08, RU10, RU13, RH10
B	80	68	Rubber	RU08, RU10, RU13, RH10
C	100	85	Rubber	RU08, RU10, RU13, RH10
D	125	105	Rubber	RU13
G	100	100	Polyurethane	RU08, RU10, RU13, RH10