

English
7.6.2007

COMPLETE ASSEMBLY INSTRUCTION FOR CRANES

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R&M Materials Handling, Inc.
 4501 Gateway Boulevard
 Springfield, Ohio 45502
 P.: (937) 328-5100
 FAX: (937) 325-5319



Read the instructions supplied with the product before installation and commissioning.



Keep the instructions in a safe place for future reference.

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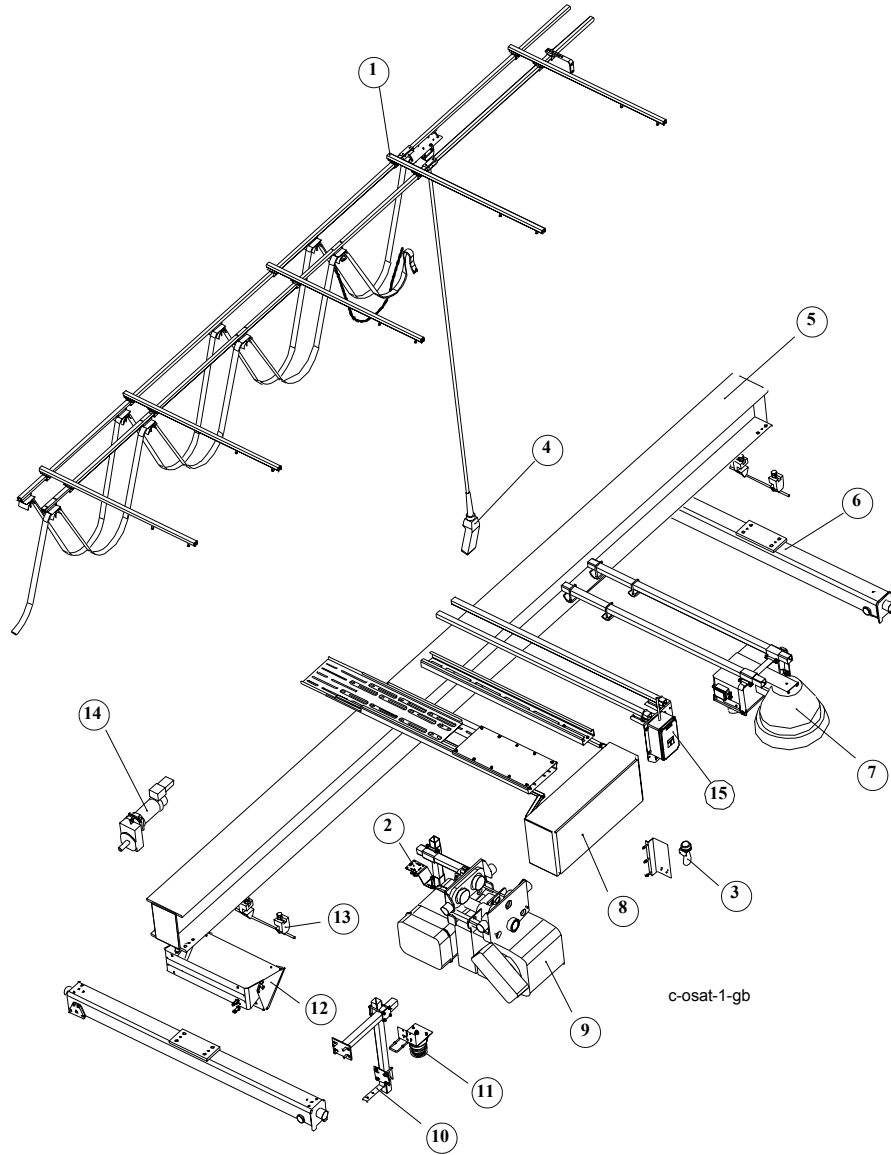
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1 Crane components

1.1 Single girder crane (Wire rope hoist)



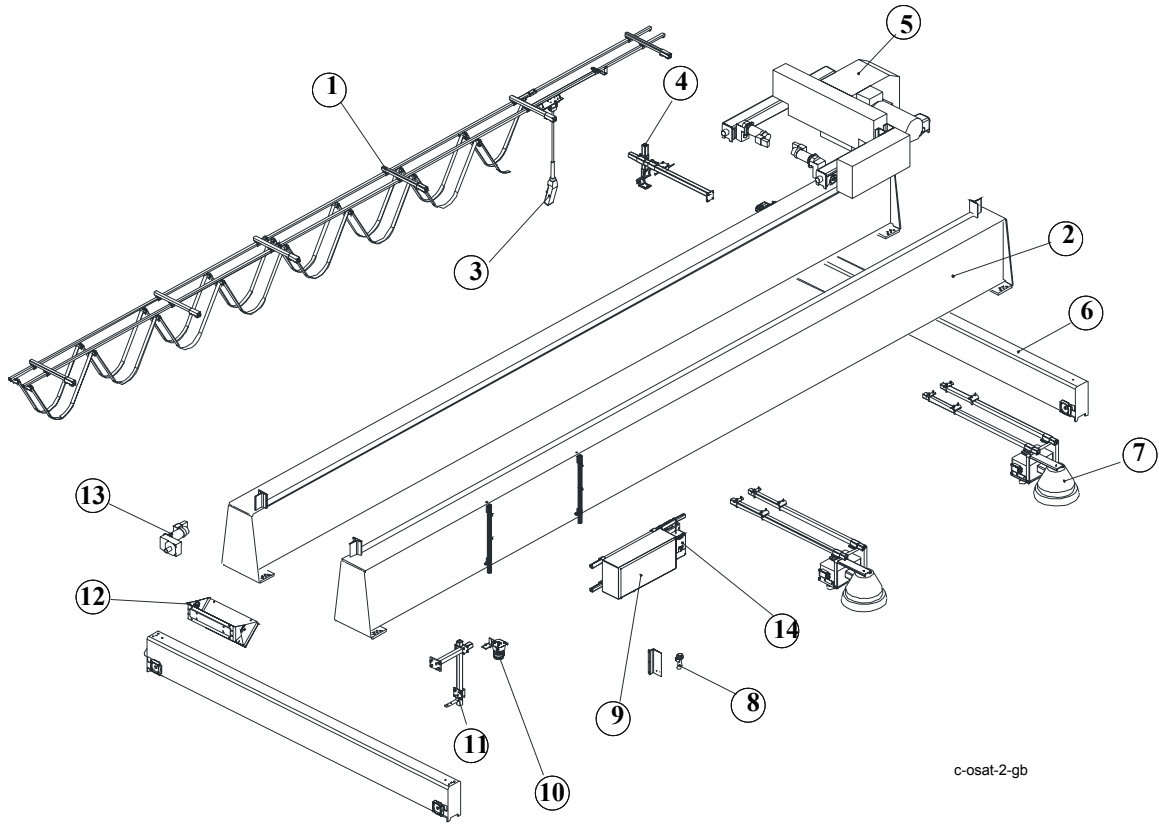
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Pos.	Name	Pos.	Name
1	Festoon assembly	9	Hoist
2	Hoist power towing arm	10	Crane power towing arm
3	Horn (option)	11	Flashing light (option)
4	Pendant (option)	12	Load display (option)
5	Main girder	13	Buffer stop
6	End carriage	14	Bridge traveling machinery
7	Light (option)	15	Radio (option)
8	Bridge panel		



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1.2 Double girder crane (Wire rope hoist)



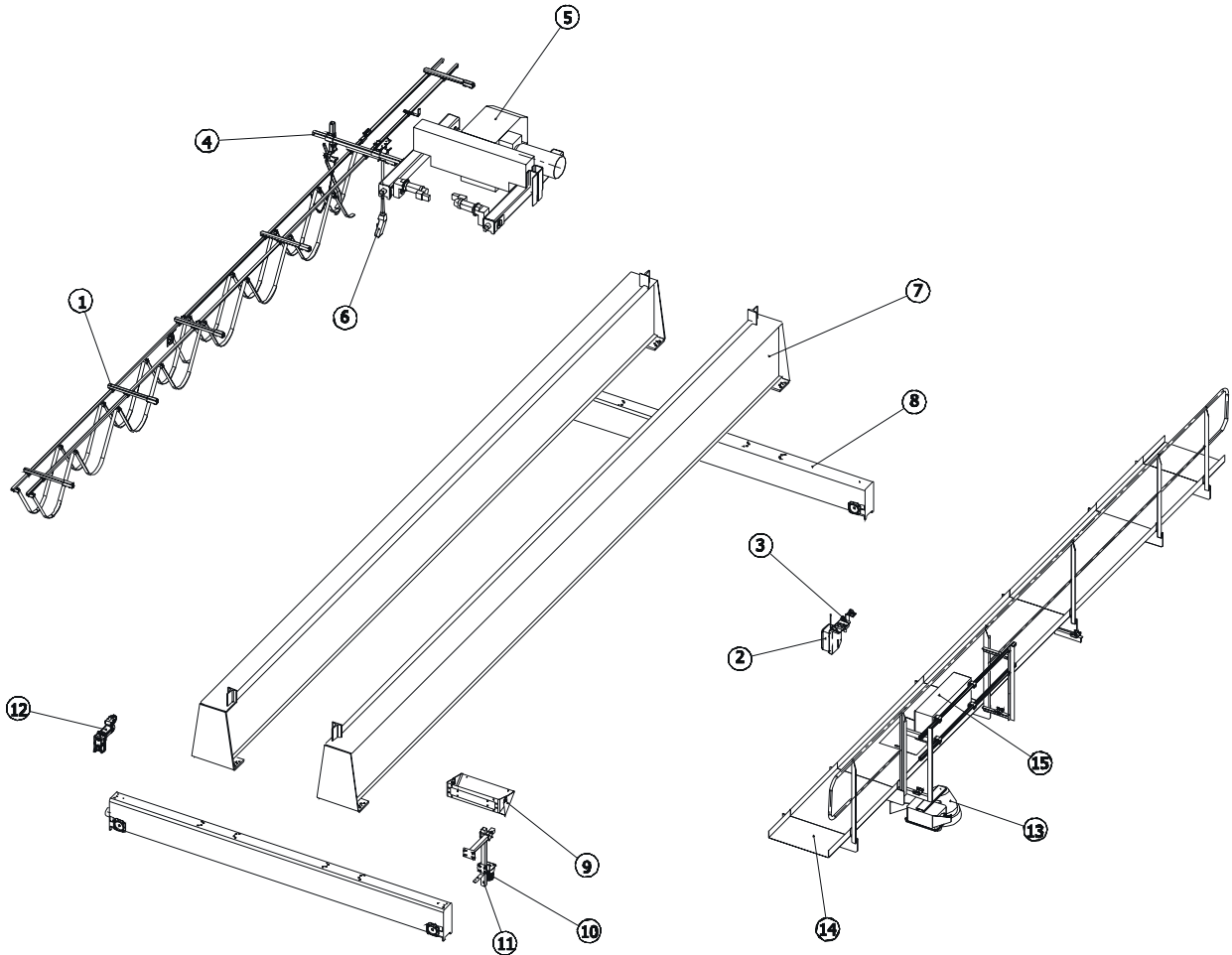
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Pos.	Name	Pos.	Name
1	Festoon assembly	8	Horn (option)
2	Main girders	9	Bridge panel
3	Pendant (option)	10	Flashing light (option)
4	Hoist power towing arm	11	Crane power towing arm
5	Hoist	12	Load display (option)
6	End carriage	13	Bridge traveling machinery
7	Light (option)	14	Radio (option)



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1.3 Double girder crane with a service platform (Wire rope hoist)

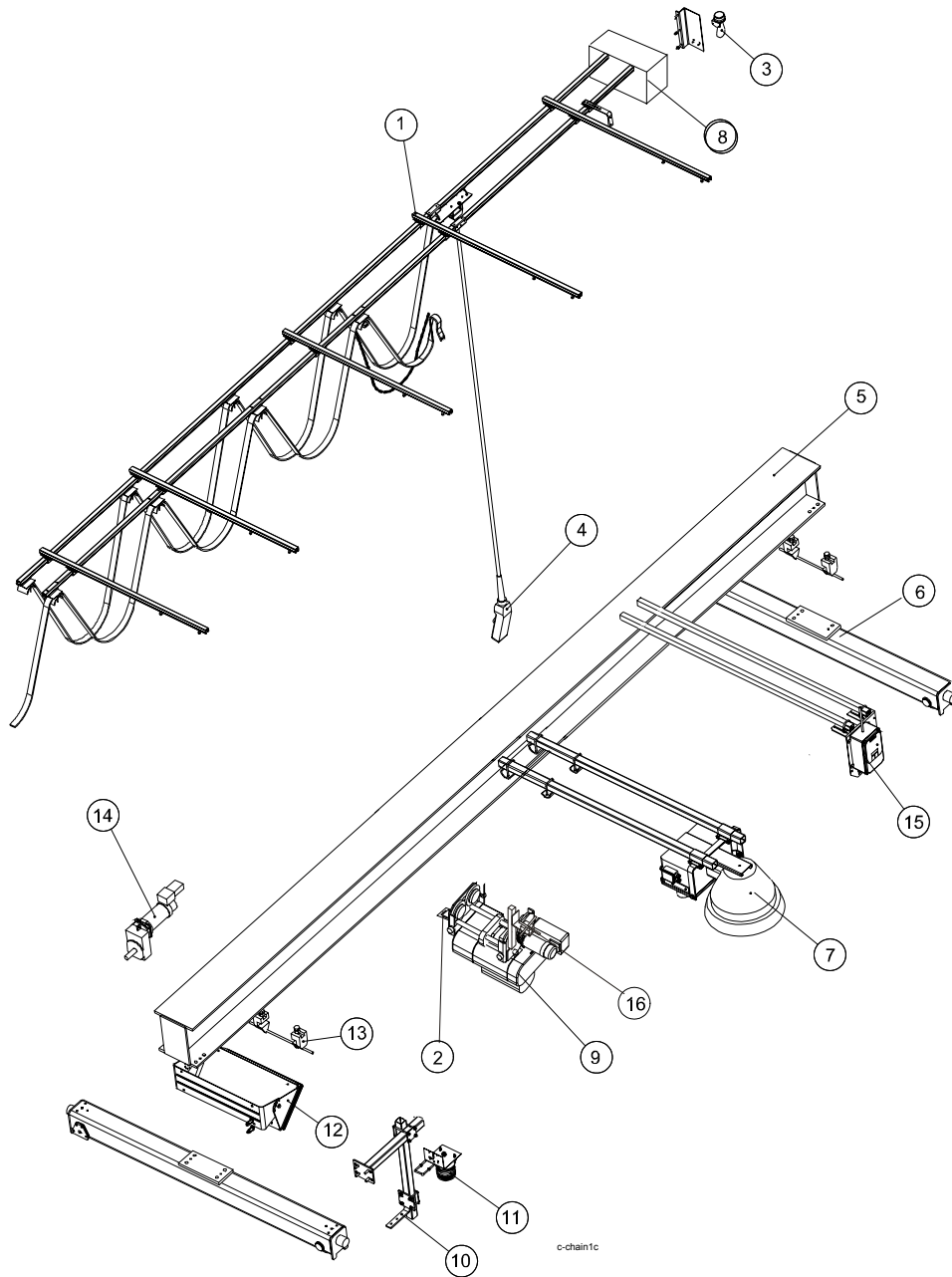


Pos.	Name	Pos.	Name
1	Festoon assembly	9	Load display (option)
2	Radio (option)	10	Flashing light (option)
3	Horn (option)	11	Crane power towing arm
4	Hoist power towing arm	12	Bridge traveling machinery
5	Hoist	13	Light
6	Pendant (option)	14	Service platform (option)
7	Main girders	15	Bridge panel
8	End carriage		



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1.4 Single girder crane (Chain hoist)



Pos.	Name	Pos.	Name
1	Festoon assembly	9	Hoist
2	Hoist power towing arm	10	Crane power towing arm
3	Horn (option)	11	Flashing light (option)
4	Pendant (option)	13	Buffer stop
5	Main girder	14	Bridge traveling machinery
6	End carriage	15	Radio (option)
7	Light (option)	16	Travelling limit switch (option)
8	Bridge panel		

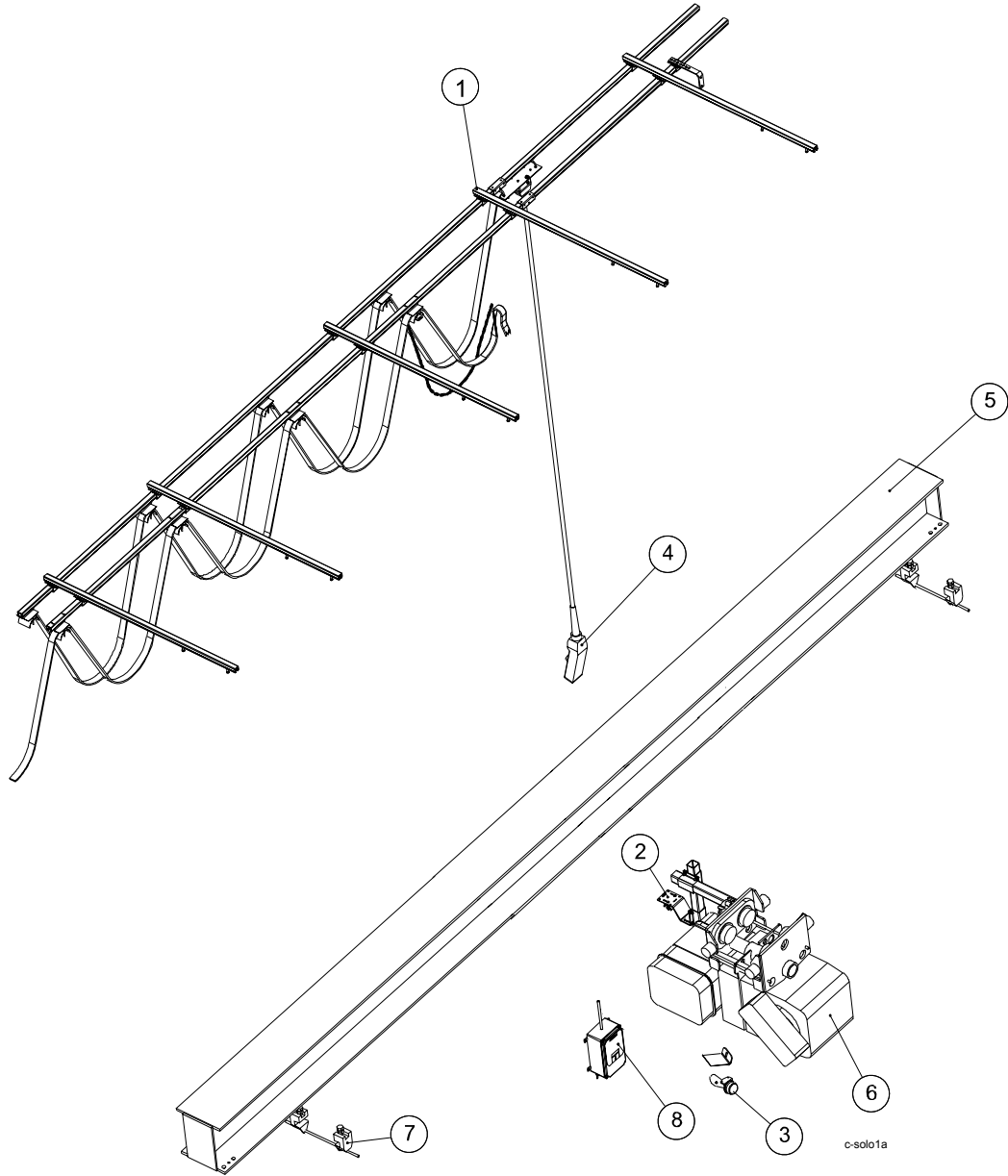


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1.5 Solo hoist, pendant in festoon (Wire rope hoist)



Pos.	Name		
1	Festoon assembly		
2	Hoist power towing arm		
3	Horn (option)		
4	Pendant (option)		
5	Main girder		
6	Hoist		
7	Buffer stop		
8	Radio (option)		

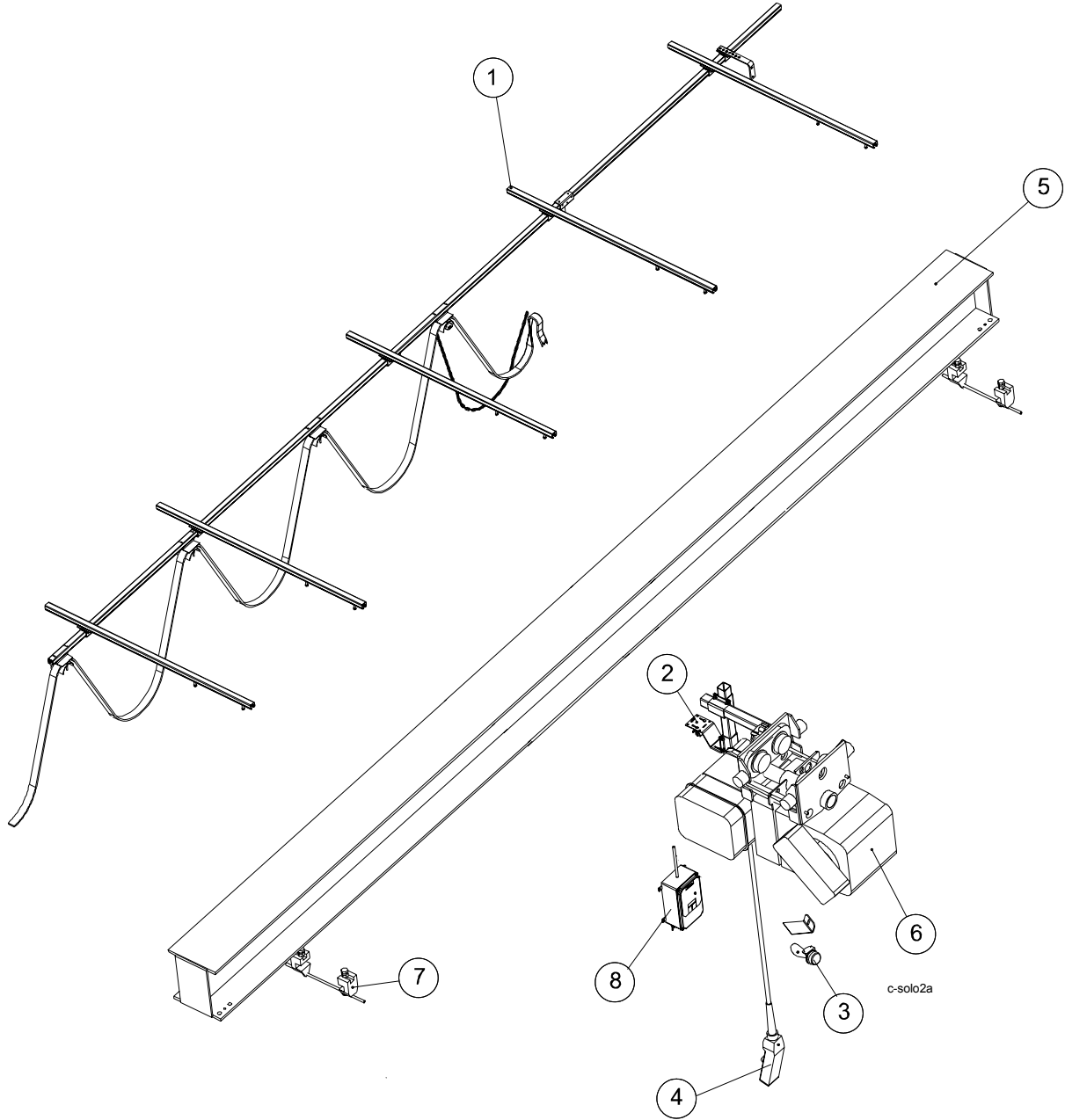


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1.6 Solo hoist, pendant fixed in hoist (Wire rope hoist)



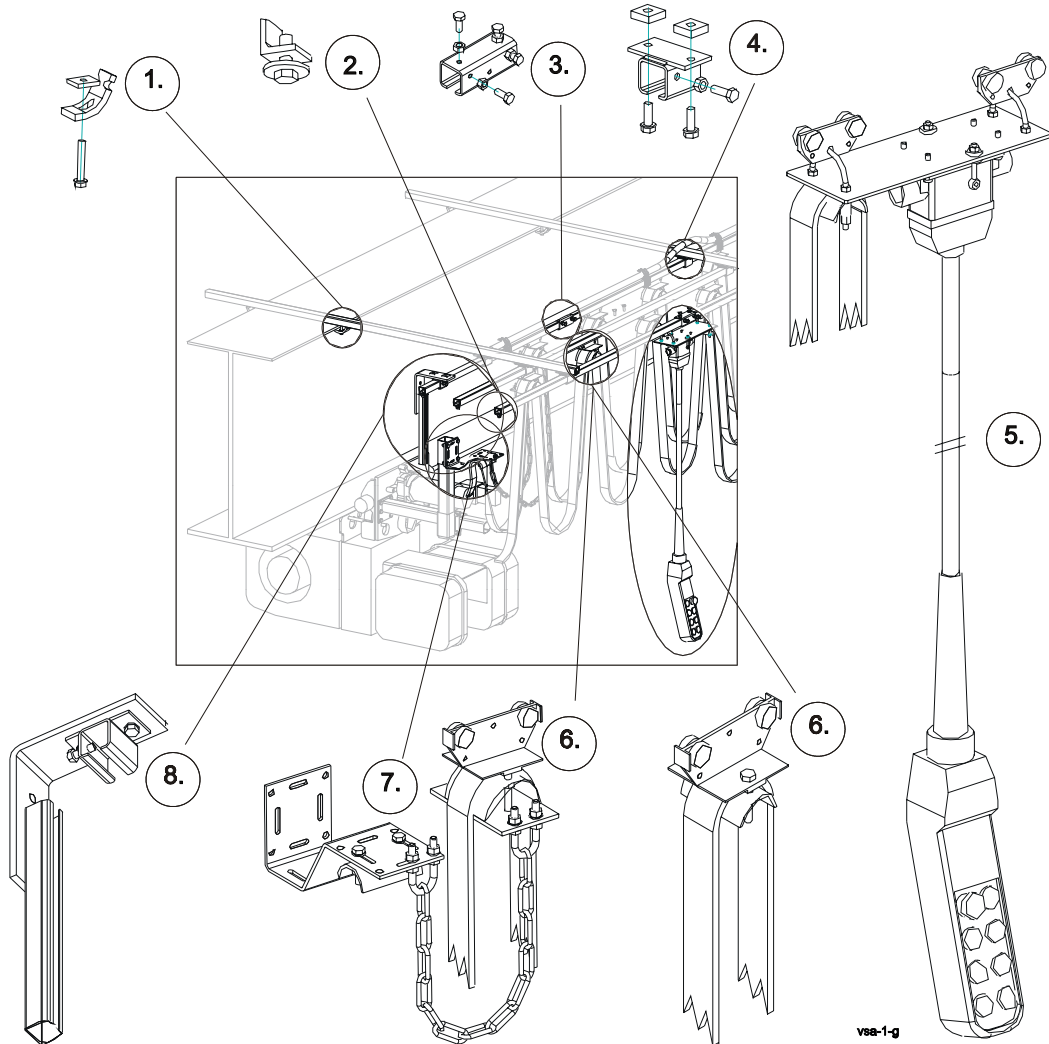


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Pos.	Name		
1	Festoon assembly		
2	Hoist power towing arm		
3	Horn (option)		
4	Pendant (option)		
5	Main girder		
6	Hoist		
7	Buffer stop		
8	Radio (option)		

2 Festoon assembly

2.1 Single girder crane (Wire rope hoist)



Pos.	Name	Specification	Amount
1	Beam clip	KC-020181 or KC-020180	
2	End stop	KC-023215	
3	Track coupler	KC-024105 or KC-023210	
4	Track support bracket	KC-023226 or KC-024122	
5	Pendant trolley (option)		
6	Cable trolley		
7	Hoist towing arm assembly		
8	Limit switch trigger and adapter	QA-L210W30 and KC-023201	

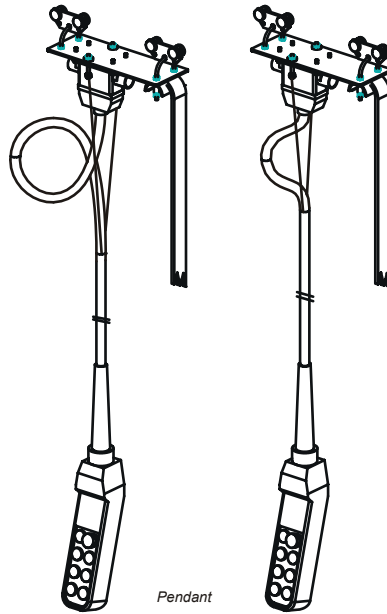
Part number seven (7) is an assembly, which includes a current collector, a cable saddle, two pieces of arced fasteners, a chain and a plate for a cable trolley.



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To notice when assembling a festoon

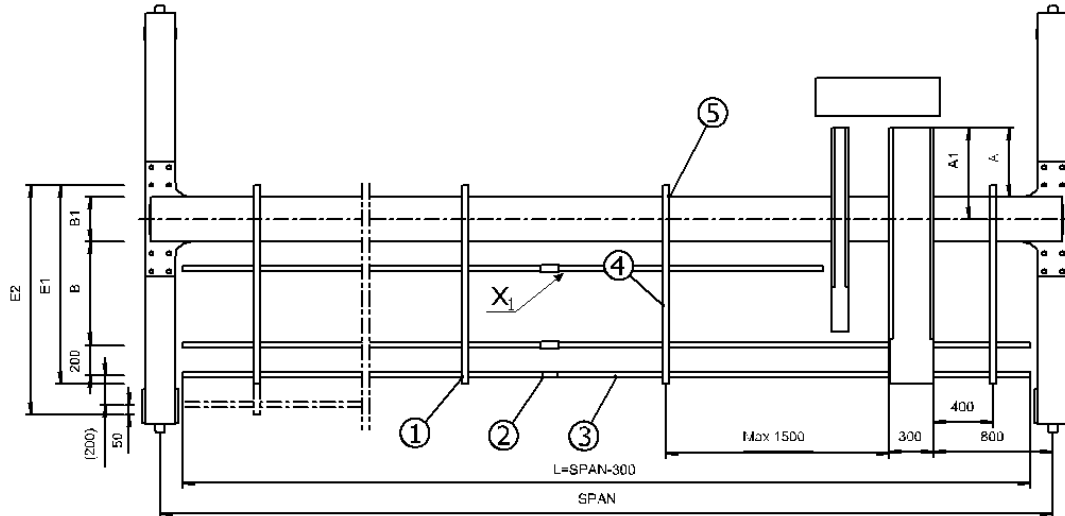
- Make sure that the joint (part no. 3) is smooth for trolley (part no. 6) to travel.
- Pendant trolley will be assembled in the outer c-rail from the crane.
- Tighten strain relief wires on both sides of the plug so that the pendant cable is either on loop or on pleat. When looped, there will be better possibilities on adjusting the cable length.
- Tighten the wire clamp.





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2.2 C-rail assembly of hoist power supply; Single girder crane (Wire rope hoist)



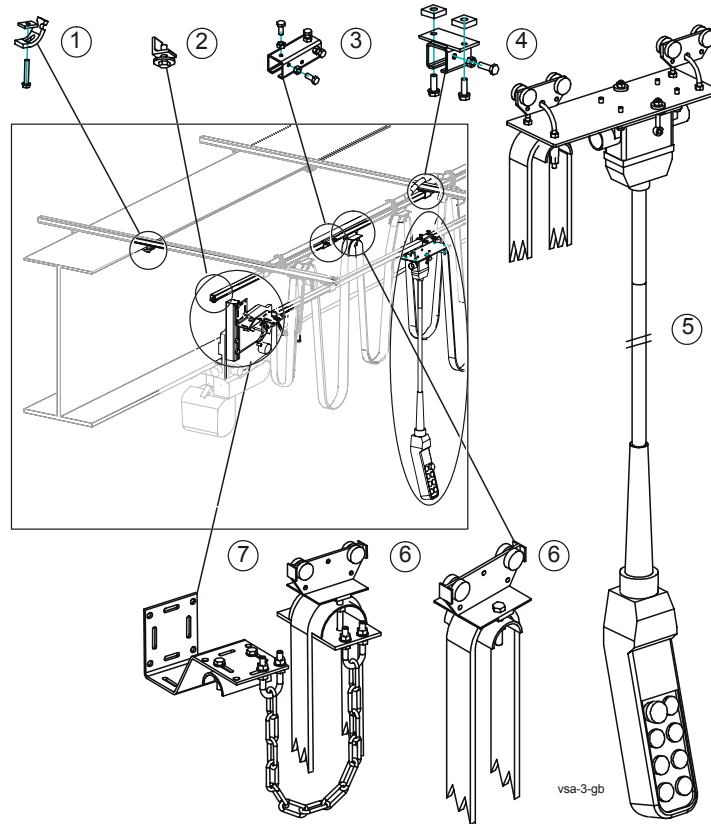
Low headroom hoist					
Hoist	Flange B1	A	B	E1	E2
Drum diam. 303 mm	≤250	560	620	1340	1520
Drum diam. 303 mm	>250	560	620	1520	1800
Drum diam. 355 mm	≤300	630	640	1340	1520
Drum diam. 355 mm	>300	630	640	1520	1800
Drum diam. 406 mm	≤360	730	730	1520	1800
Drum diam. 406 mm	>360	730	730	1800	2000

Pos.	Name
1	Track support
2	Track joint
3	C-rail
4	Support arm
5	Beam clip

Normal headroom hoist					
Hoist - Ropes	Flange B1	A1	B	E1	E2
Drum diam. 303 mm -R2/R4	≤270	530	660	1340	1520
Drum diam. 303 mm -R2/R4	>270	530	660	1520	1800
Drum diam. 355 mm -R2/R4	≤270	600	720	1340	1520
Drum diam. 355 mm -R2/R4	>270	600	720	1520	1800
Drum diam. 406 mm -R2x	≤270	750	840	1520	1800
Drum diam. 406 mm -R2x	>270	750	840	1800	2000
Drum diam. 608 mm -R4/R24/R26/R28	≤360	1020	950	1800	2000
Drum diam. 608 mm -R4/R24/R26/R28	>360	1020	950	2000	2200
Drum diam. 608 mm -R6/R8	≤450	1050	920	1800	2000
Drum diam. 608 mm -R6/R8	>450	1050	920	2000	2200
Drum diam. 608 mm -R2/R22	≤360	970	1000	1800	2000
Drum diam. 608 mm -R2/R22	>360	970	1000	2000	2200
Hoist - Ropes	Flange B1	A1	B	E1	E2
Drum diam. 355 mm -R6/R8	≤270	720	660	1340	1520
Drum diam. 355 mm -R6/R8	>270	720	660	1520	1800
Drum diam. 406 mm -R2/R4	≤270	720	720	1340	1520
Drum diam. 406 mm -R2/R4	>270	720	720	1520	1800
Drum diam. 406 mm -R6/R8	≤270	790	810	1520	1800
Drum diam. 406 mm -R6/R8	>270	790	810	1800	2000

X₁) Optional C-rail for an alternative route of the cable of traveling machinery

2.3 Single girder crane (Chain hoist)



Pos.	Name	Specification	Amount
1	Beam clip	KC-020181 or KC-020180	
2	End stop	KC-023215	
3	Track coupler	KC-024105 or KC-023210	
4	Track support bracket	KC-023226 or KC-024122	
5	Pendant trolley (option)		
6	Cable trolley		
7	Towing arm assembly		

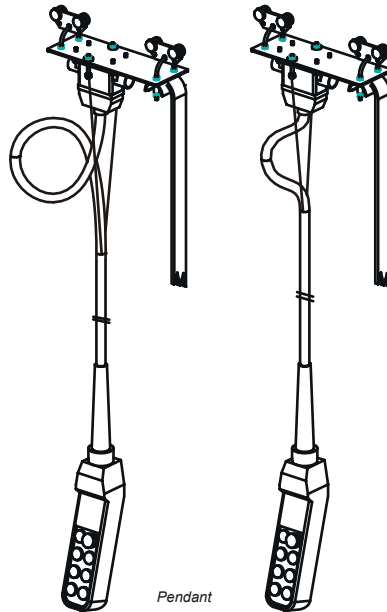
Part number seven (7) is an assembly, which includes a current collector, a cable saddle, two pieces of arced fasteners, a chain and a plate for a cable trolley.



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To notice when assembling a festoon

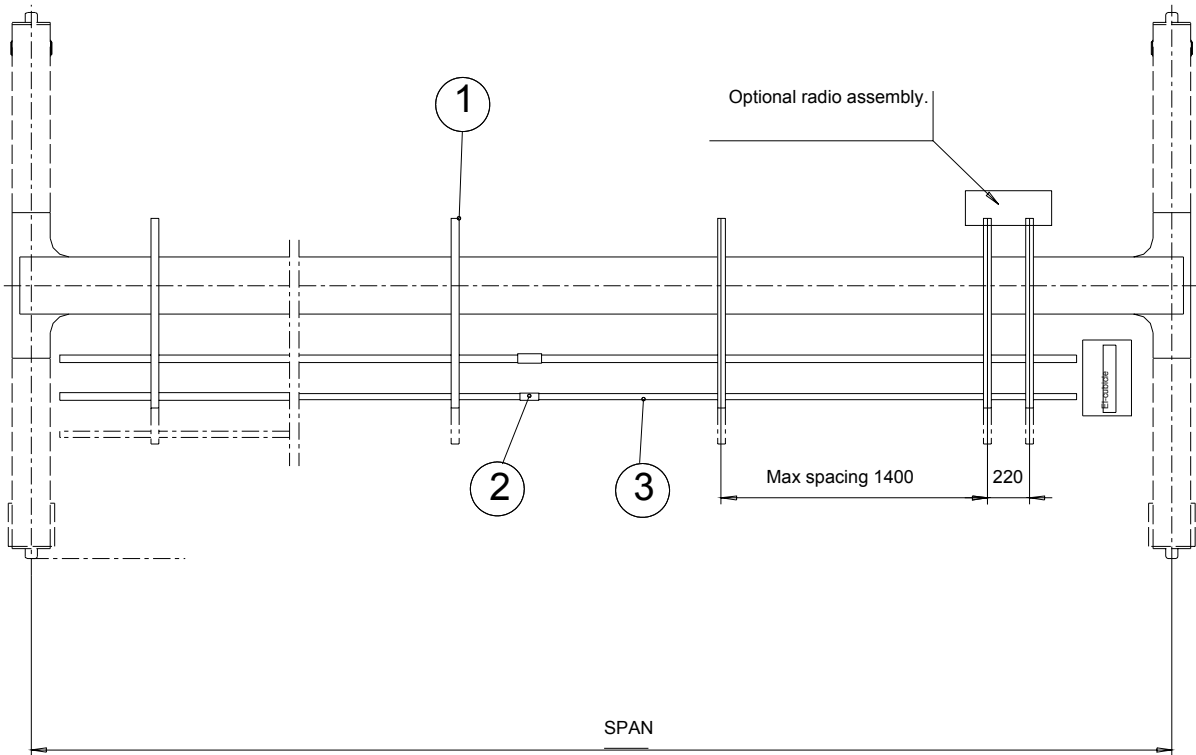
- Make sure that the joint (part no. 3) is smooth for trolley (part no. 6) to travel.
- Pendant trolley will be assembled in the outer c-rail from the crane.
- Tighten strain relief wires on both sides of the plug so that the pendant cable is either on loop or on pleat. When looped, there will be better possibilities on adjusting the cable length.
- Tighten the wire clamp.





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2.4 C-rail assembly of hoist power supply; Single girder crane (Chain hoist)

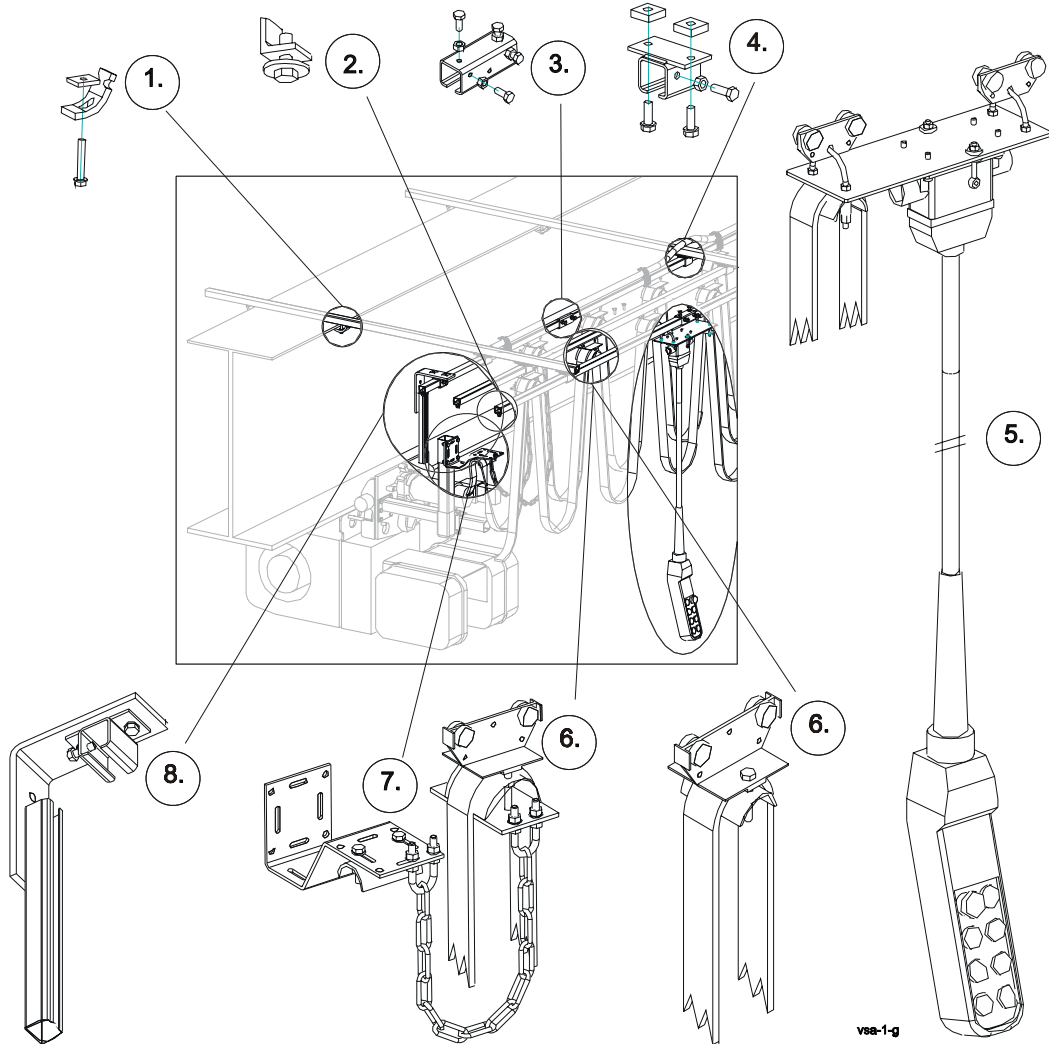


Pos.	Name
1	Track support
2	Track joint
3	C-rail



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2.5 Solo hoist with moveable pendant (Wire rope hoist)



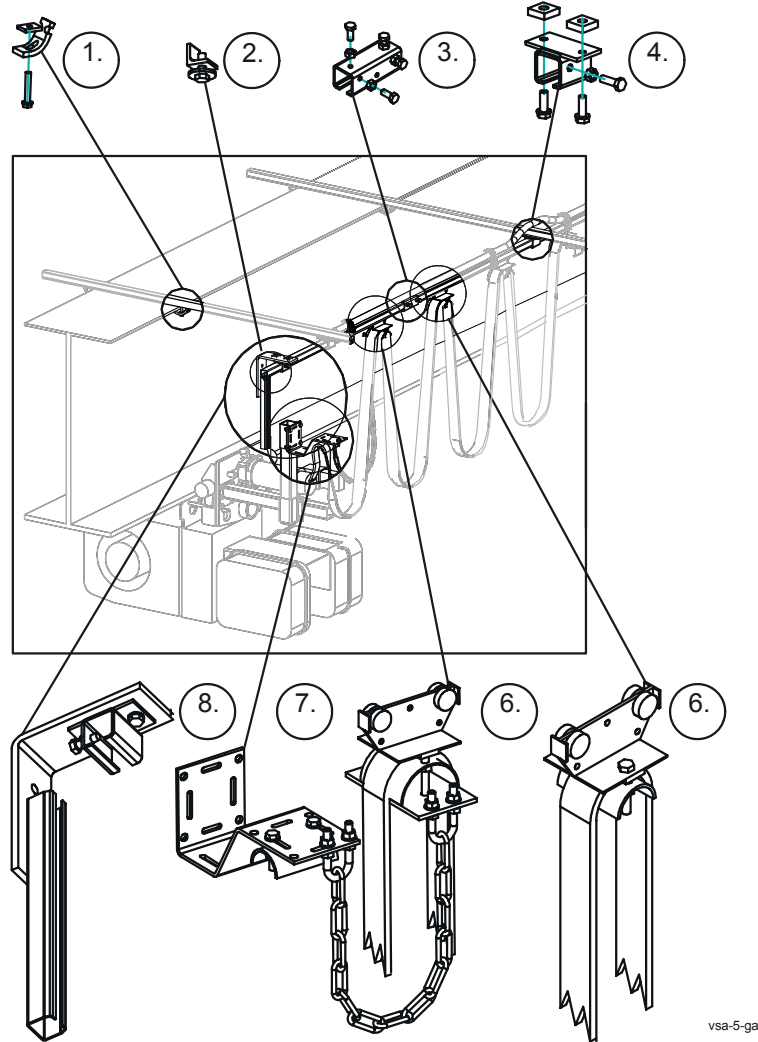
Pos.	Name	Specification	Amount
1	Beam clip	KC-020181 or KC-020180	
2	End stop	KC-023215	
3	Track joint	KC-024105 or KC-023210	
4	Track support bracket	KC-023226 or KC-024122	
5	Pendant trolley (option)		
6	Cable trolley		
7	Towing arm assembly		
8	Limit switch trigger and adapter	QA-L210W30 and KC-023201	

Part number seven (7) is an assembly, which includes a current collector, a cable saddle, two pieces of fixing plates, a chain and a plate for a cable trolley.



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2.6 Solo hoist ,pendant fixed to hoist (Wire rope hoist)

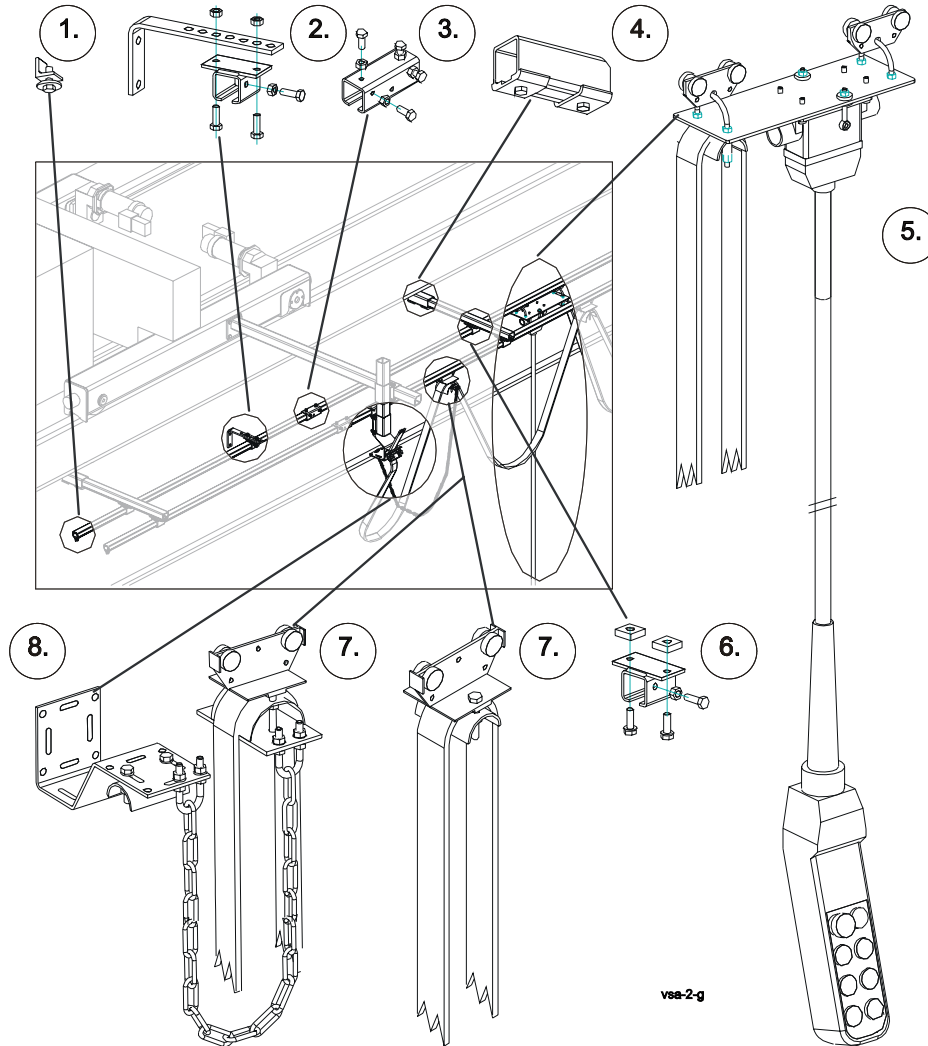


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Pos.	Name	Specification	Amount
1	Beam clip	KC-020181 or KC-020180	
2	End stop	KC-023215	
3	Track joint	KC-024105 or KC-023210	
4	Track support bracket	KC-023226 or KC-024122	
6	Cable trolley		
7	Towing arm assembly		
8	Limit switch trigger and adapter	QA-L210W30 and KC-023201	

Part number seven (7) is an assembly, which includes a current collector, a cable saddle, two pieces of fixing plates, a chain and a plate for a cable trolley.

2.7 Double girder crane (Wire rope hoist)



Pos.	Name	Specification	Amount
1	End stop	KC-023215	
2	Limit switch trigger	QA-L210W30 and KC-023201	
3	Track joint	KC-024105 or KC-023210	
4	Bracket for support arm	KC-020286	
5	Pendant trolley (option)		
6	Track support bracket	KC-023226 or KC-024122	
7	Cable trolley		
8	Towing arm assembly		

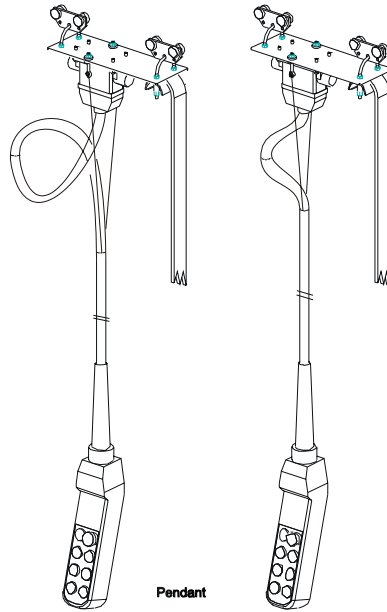
- Part number eight (8) is an assembly, which includes a current collector, a cable saddle, two pieces of fixing plates, a chain and a plate for a cable trolley.
- Part number 4 is not included in standard delivery



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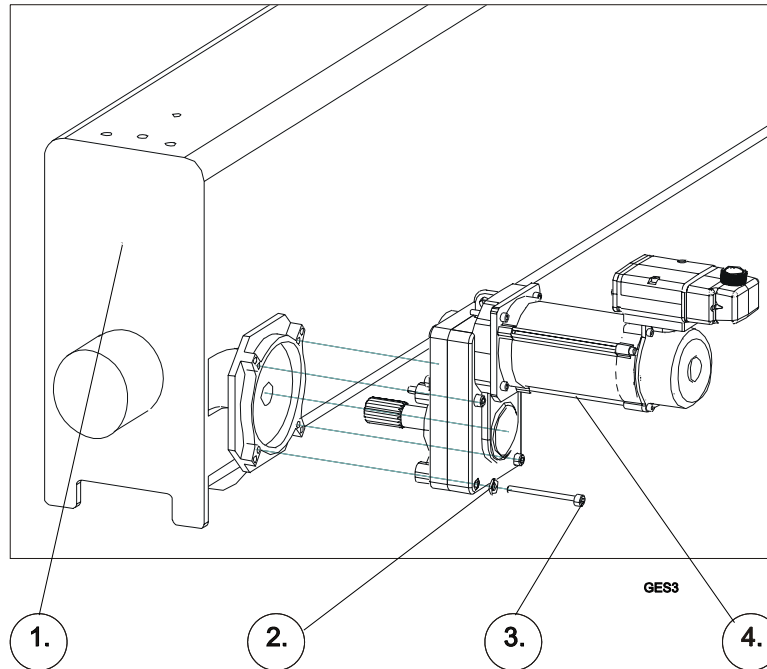
To notice when assembling a festoon

- Make sure that the joint (part no. 3) is smooth for trolley (part no. 7) to travel.
- Pendant trolley will be assembled in the inner c-rail from the crane.
- Tighten strain relief wires on both sides of the plug so that the pendant cable is either on loop or on pleat. When looped, there will be better possibilities on adjusting the cable length.
- Tighten the wire clamp.



3 Traveling machinery assembly

3.1 Machinery sizes 3-5

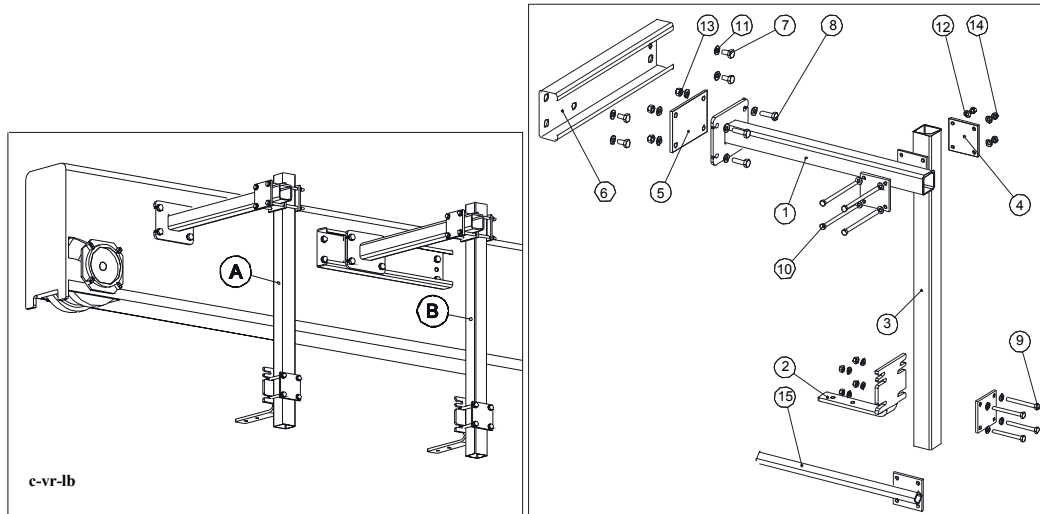


Pos.	Name	Specification	Amount
1	End carriage		2
2	Washer	DIN125-A8-A3G (Machinery sizes 3 and 4) DIN6796-A12-A3G (Machinery size 5)	8+8
3	Screw	DIN912-M8x85-8.8-A3G (Machinery size 3) DIN912-M8x100-8.8-A3G (Machinery size 4) DIN912-M12x140-8.8-A3G (Machinery size 5)	8+8
4	Traveling machinery		2

- Clean splines and mounting flanges from dirt and rust protection wax and grease the shaft lightly before assembly.
- You can use a plastic hammer to slide drive in. Do not use any metal or lead hammer.
- Tightening torques M8-8.8 23 Nm, M12-8.8 77 Nm.
- Remove the protection pin from the breather plug.

4 Crane towing arm assembly

4.1 Crane Towing Arm



Pos.	Name	Specification	Fixing variation	Amount
1	Towing arm	CQW-L558	A & B	1
2	Towing arm	CQP-L195W120H135	A & B	1
3	Tube	CQ-L1500W50H50T2	A & B	1
4	Fixing Plate	CQP-L80W80H6	A & B	4
5	Fixing Plate (option)	CQP-L150W105H6	B	1
6	C-Profile (option)	CQP-L500W50H120	B	1
7	Screw	DIN933-M10x20-8.8-A3G	A & B	4
8	Screw	DIN933-M10x35-8.8-A3G	B	4
9	Screw	DIN931-M8x80-8.8-A3G	A & B	4
10	Screw	DIN931-M8x140-8.8-A3G	A & B	4
11	Washer	DIN125-A10-A3G	A / B	4 / 12
12	Washer	DIN125-A8-A3G	A & B	16
13	Nut	DIN985-M10-8-A3G	B	4
14	Nut	DIN985-M8-8-A3G	A & B	8
15	Towing arm (option)*	CQP-L440W41H80	A & B	1

A) Fixing variation with direct connection to end carriage. When conductor rail power supply type is used either part number 2 or its fixing parts won't be needed. It will not matter to the place of the end carriage where the towing arm is attached if the power supply is flat cable- or the conductor rail type. The cranes towing arm is fixed by the part number 7 to the end carriage.

B) Variation with the optional fixing part (part number 6).

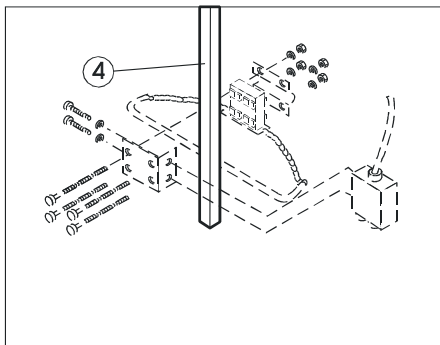
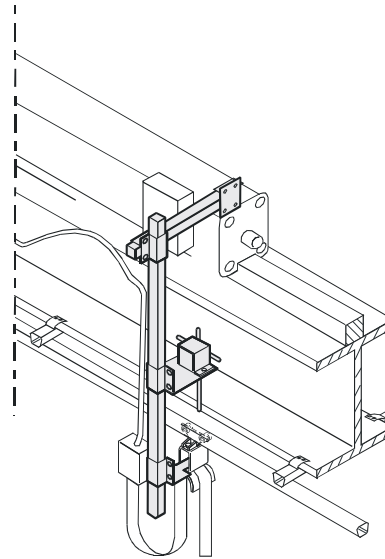
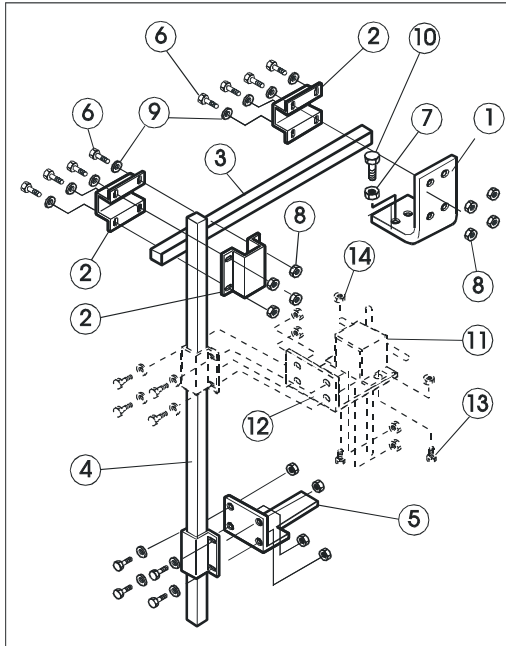
- If necessary cut off excess length of square tubes.
- There will be several attaching possibilities in the end carriage for the towing arm. Choose the best suited for the case.
- Notice the differences between variations in the part list.

* For assembly use either Towing arm part no 2 or 15 (alternative parts).

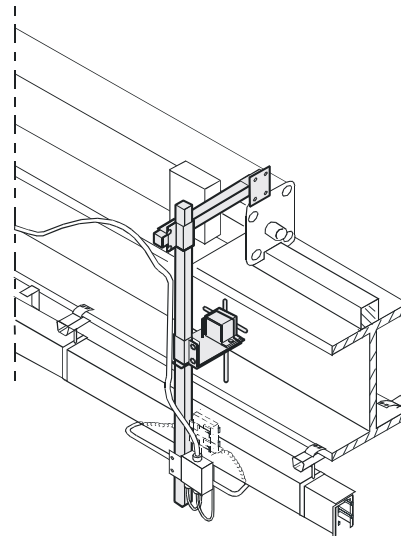


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4.2 Crane Towing Arm (Old layout)



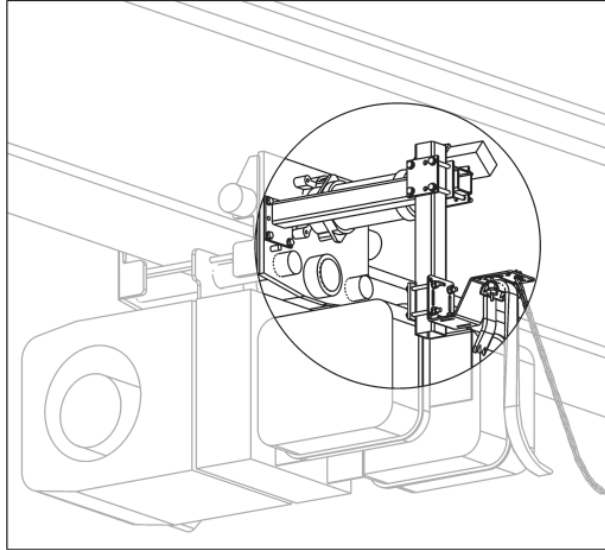
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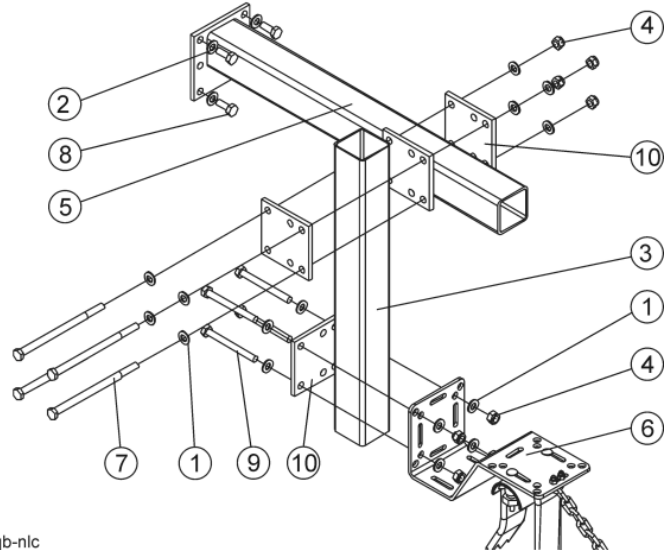
Pos.	Name	Pos.	Name
1	Fixing plate	8	Nut
2	Clamp	9	Washer
3	Tube	10	Screw
4	Tube	11	Limit switch (optional)
5	Towing arm	12	Fixing plate (optional)
6	Screw	13	Screw (optional)
7	Washer	14	Nut (optional)

5 Hoist power towing arm assembly

5.1 Normal headroom hoist, girder height ≤ 400 mm (Wire rope hoist)

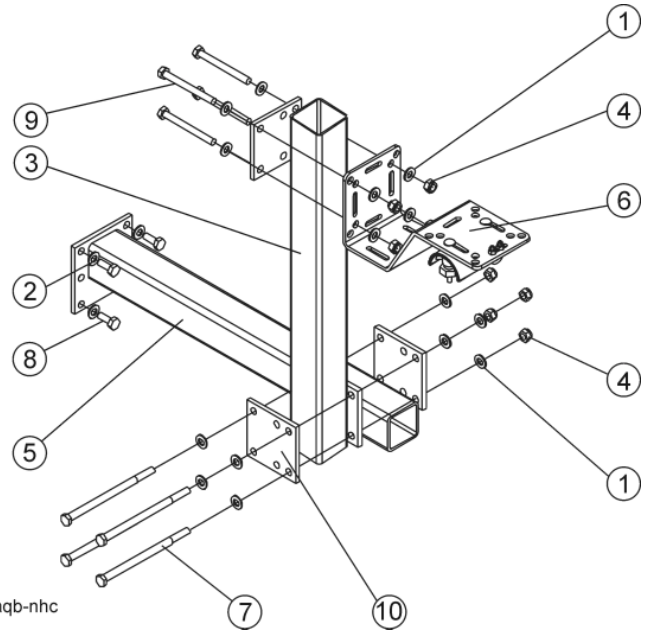
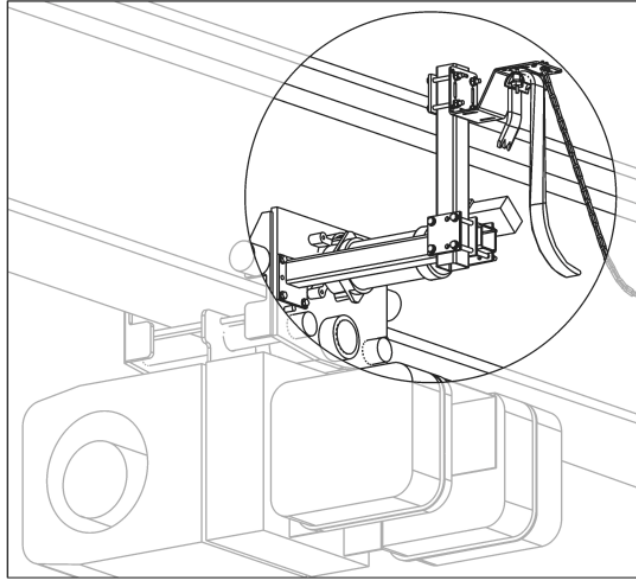


vr-qaqb-nlc



Pos.	Name	Specification	Amount
1	Washer	DIN125-A8-A3G	16
2	Washer	DIN127-A8-A3G	4
3	Tube	CQ-L420W50H50T2	1
4	Nut	DIN985-M8-8-A3G	8
5	Towing arm	CQ-L450	1
6	Towing arm assembly		1
7	Screw	DIN931-M8x140-8.8-A3G	4
8	Screw	DIN933-M8x25-8.8-A3G	4
9	Screw	DIN931-M8x80-8.8-A3G	4
10	Fixing plate	CQP-L80W80H6	4

5.2 Normal headroom hoist, girder height >400 mm (Wire rope hoist)



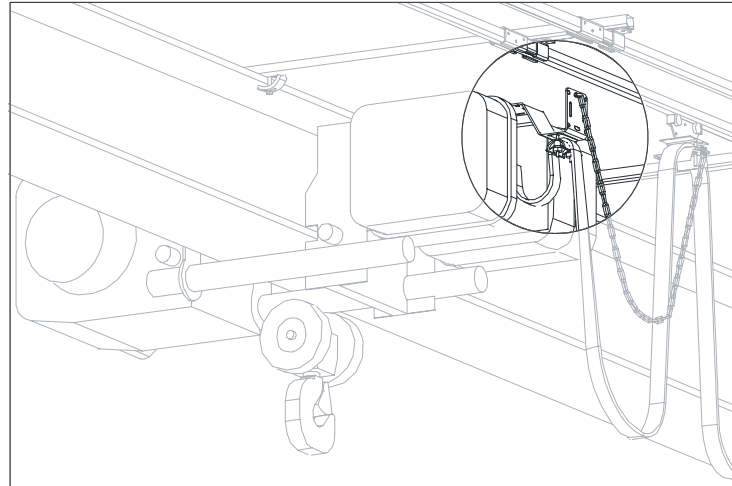
vr-qaqb-nhc

Pos.	Name	Specification	Amount
1	Washer	DIN125-A8-A3G	16
2	Washer	DIN127-A8-A3G	4
3	Tube	CQ-L420W50H50T2	1
4	Nut	DIN985-M8-8-A3G	8
5	Towing arm	CQ-L450	1
6	Towing arm assembly		1
7	Screw	DIN931-M8x140-8.8-A3G	4
8	Screw	DIN933-M8X25-8.8-A3G	4
9	Screw	DIN931-M8x80-8.8-A3G	4
10	Fixing plate	CQP-L80W80H6	4

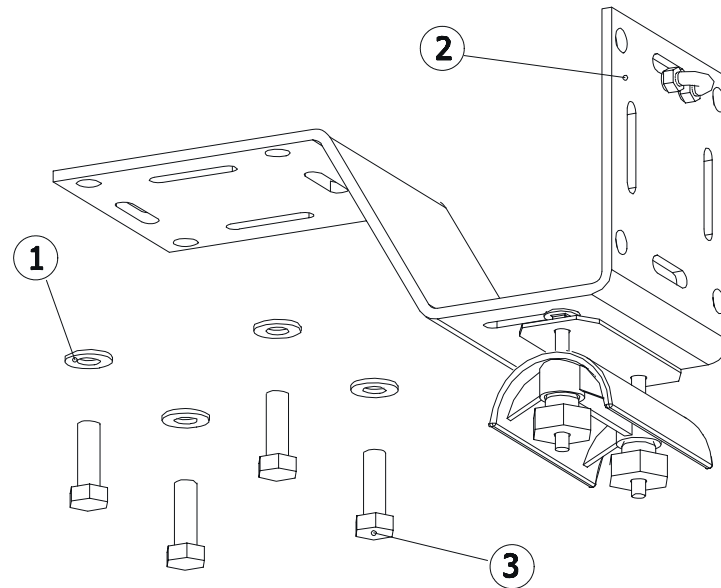


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5.3 Low headroom hoist (drum diam. 303 mm or 355 mm), girder height ≤500 mm (Wire rope hoist)



vr-qaqb-llb

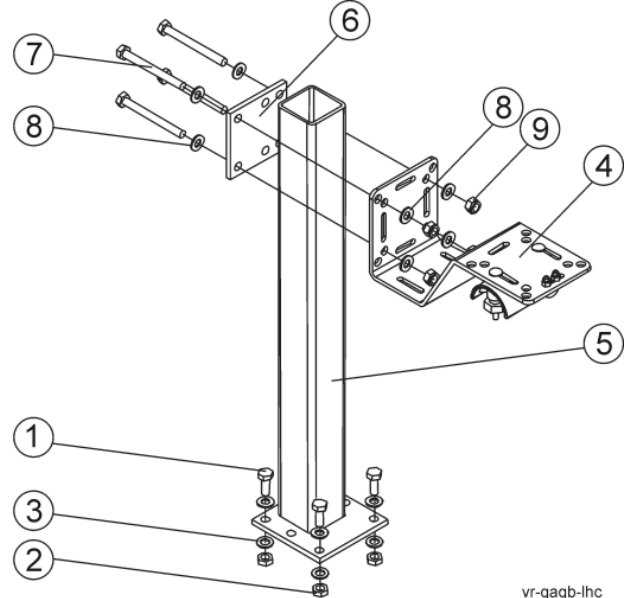
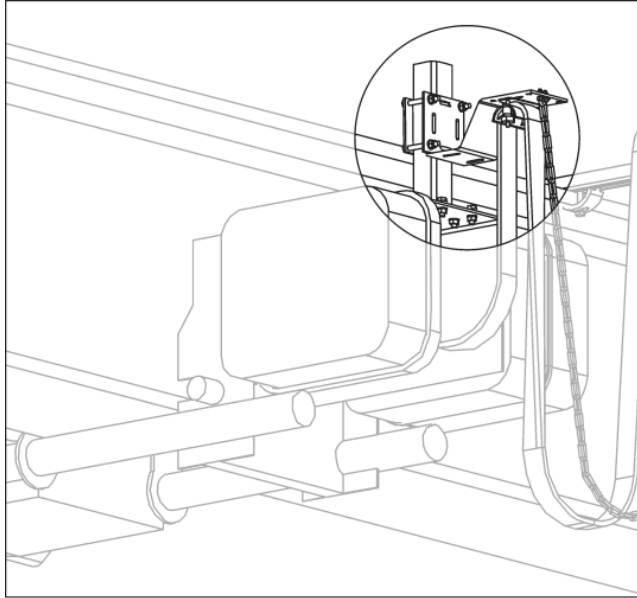


Pos.	Name	Specification	Amount
1	Washer	DIN127-A8-A3G	4
2	Assembly		1
3	Screw	DIN933-M8X12-8.8-A3G	4



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5.4 Low headroom hoist (drum diam. 303 mm or 355 mm), girder height >500 mm (Wire rope hoist)



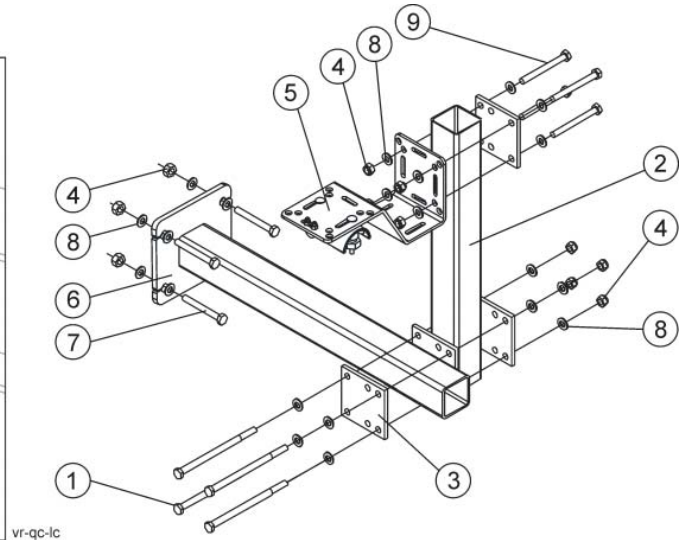
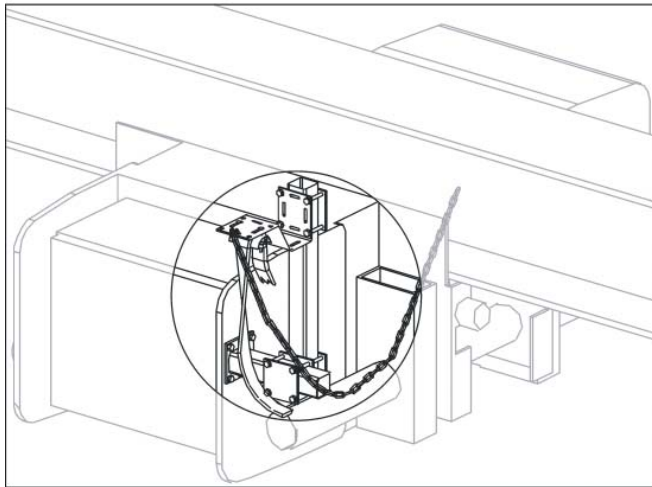
vr-qaqb-lhc

Pos.	Name	Specification	Amount
1	Screw	DIN933-M8x25-8.8-A3G	4
2	Nut	DIN985-M8-8-A3G	4
3	Washer	DIN125-A8-A3G	8
4	Towing arm	CQT-D/L/N/J (-10N1)	1
5	Tube	CQ-L	1
6	Fixing Plate	CQP-L80W80H6	1
7	Screw	DIN931-M8x80-8.8-A3G	4
8	Washer	DIN125-A8-A3G	4
9	Nut	DIN985-M8-8-A3G	4



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5.5 Low headroom hoist (drum diam. 406 mm) (Wire rope hoist)

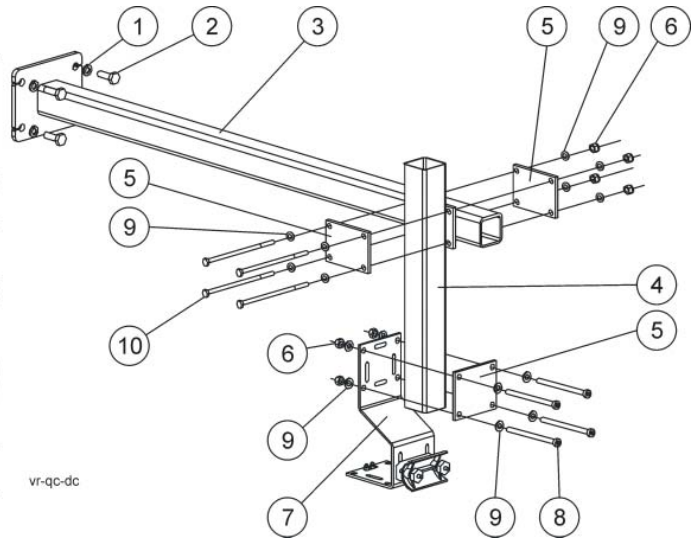
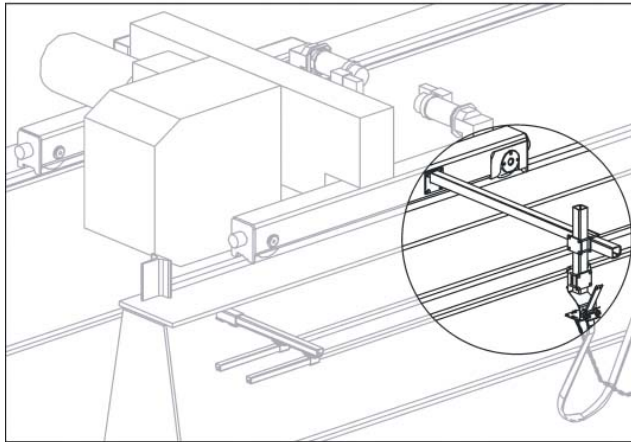


Pos.	Name	Specification	Amount
1	Screw	DIN931-M8x140-8.8-A3G	4
2	Tube	CQ-L...	1
3	Fixing plate	CQP-L80W80H6	4
4	Nut	DIN985-M8-8-A3G	12
5	Towing arm assembly	CQT-D/L/N/J	1
6	Towing arm	CQ-L250	1
7	Screw	DIN933-M8x40-8.8 or DIN933-M8x90-8.8	4
8	Washer	DIN125-A8-A3G	24
9	Screw	DIN931-M8x80-8.8-A3G	4



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5.6 Double girder trolley (Wire rope hoist)



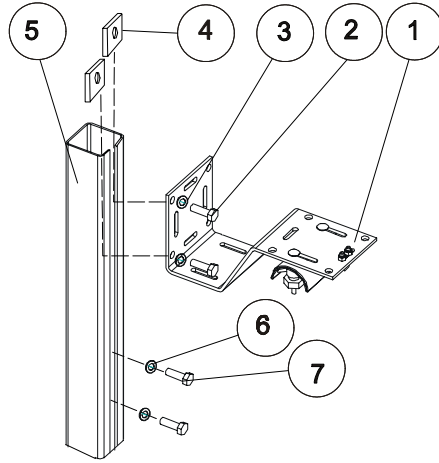
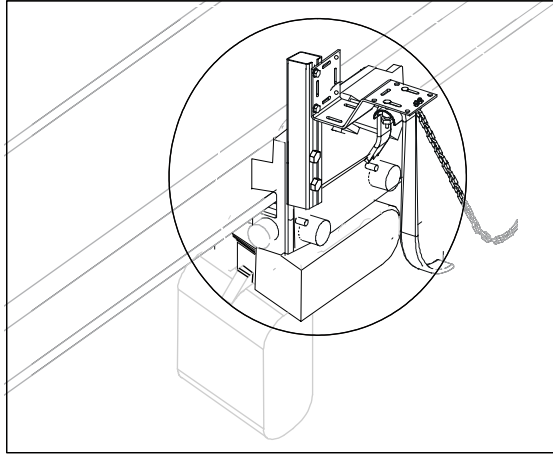
vr-qc-dc

Pos.	Name	Specification	Amount
1	Washer	DIN127-A10-A3G	4
2	Screw	DIN933-M10x30-8.8-A3G	4
3	Towing arm	CQT-L	1
4	Tube	CQ-L550W50H50T2	1
5	Fixing plate	CQP-L80W80H6	4
6	Nut	DIN985-M8-8-A3G	8
7	Towing arm assembly	CQT-D/L/N	1
8	Screw	DIN931-M8x80-8.8-A3G	4
9	Washer	DIN125-A8-A3G	16
10	Screw	DIN931-M8X140-8.8-A3G	4



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5.7 Normal headroom hoist (Chain hoist)



vr-chain

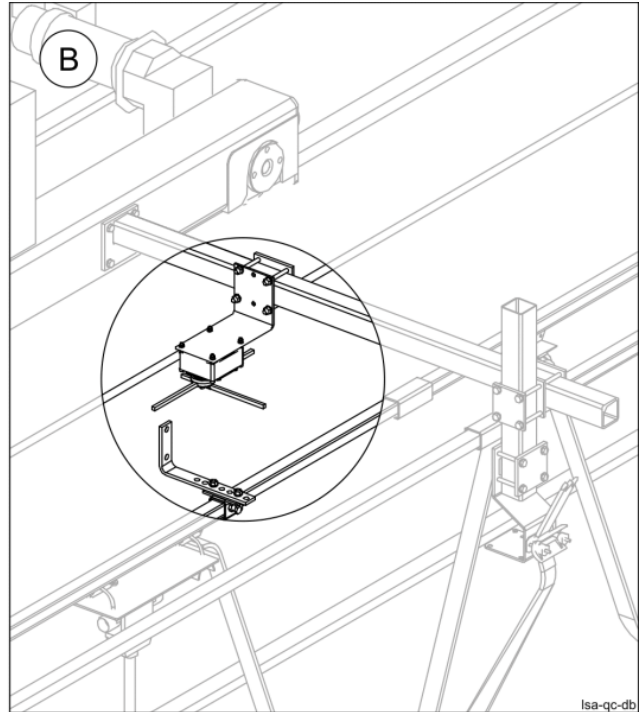
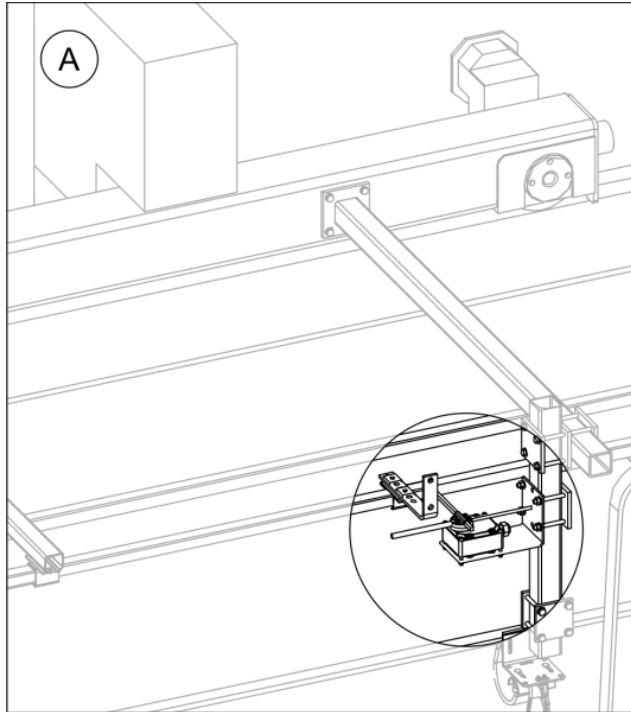
Pos.	Name	Specification	Amount
1	Assembly		1
2	Screw	DIN912-M8X25-8.8-A3G	2
3	Washer	DIN125-A8-A3G	2
4	Nut	CQ-L25W25TB	8
5	Support	CQ-L450W40H40	1
6	Washer	DIN440-D28/9X3-A3G	2
7	Screw	DIN912-M8X50-8.8-A3G	2



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6 Traveling limit switch assembly

6.1 Double girder trolley (Wire rope hoist)



Limit switch part list			
Pos.	Name	Specification	Amount
	Limit switch	XC...	1
	Fixing plate	QA-L162W110H93	1
	Fixing plate	CQP-L80W80H6	1
	Fixing part set	CQA	1
Limit switch trigger part list			
Pos.	Name	Specification	Amount
	Trigger	QA-L210W30	2 or 4
	Adapter	KC-020275-0250	2 or 4
Trigger fixing part			
Pos.	Name	Specification	Amount
	Track support bracket	KC-023222 or KC-024155	2 or 4

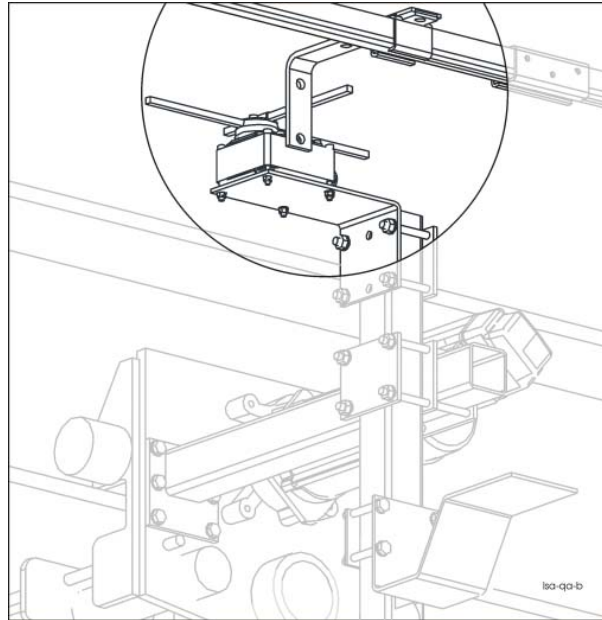
Hoist limit switch can be assembled to the horizontal or to the vertical square tube of hoist towing arm. Choose the best fitting place.

Notice the direction of limit switch; above or under the fixing plate.



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6.2 Normal headroom trolley (Wire rope hoist)



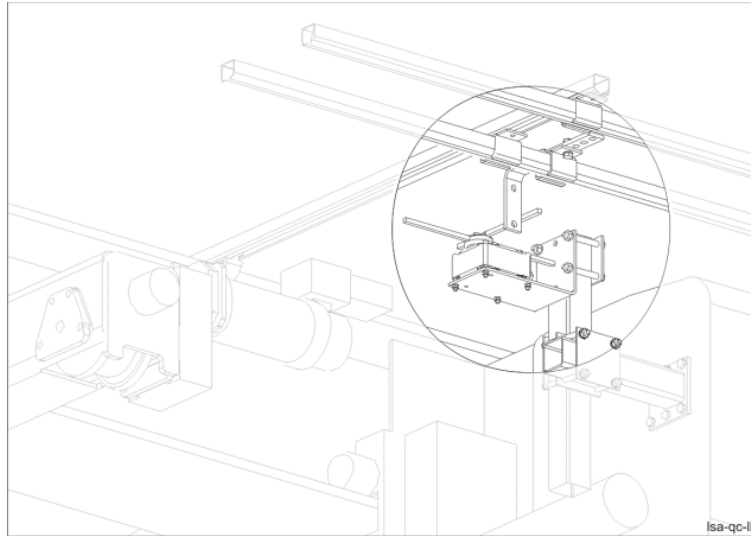
Limit switch part list			
Pos.	Name	Specification	Amount
	Limit switch	XC...	1
	Fixing plate	QA-L162W110H93	1
	Fixing plate	CQP-L80W80H6	1
	Fixing part set	CQA	1
Limit switch trigger part list			
Pos.	Name	Specification	Amount
	Plate	QA-L210W30	2 or 4
	C-rail	KC-020275-0250	2 or 4
Trigger fixing part			
Pos.	Name	Specification	Amount
	Track support bracket	KC-023222	2 or 4
Adapters Fixing part			
Pos.	Name	Specification	Amount
	Nut; Square	CQ-W25H25T8	4 or 8
	Screw	DIN933-M10x20-8.8-A3G	4 or 8
	Washer	DIN127-A10	4 or 8

Depending on girder height assemble the limit switch above or below the horizontal tube of the hoist towing arm. Trigger will be assembled to the inner c-rail of the crane.



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6.3 Low headroom hoist (drum diam. 406 mm) (Wire rope hoist)



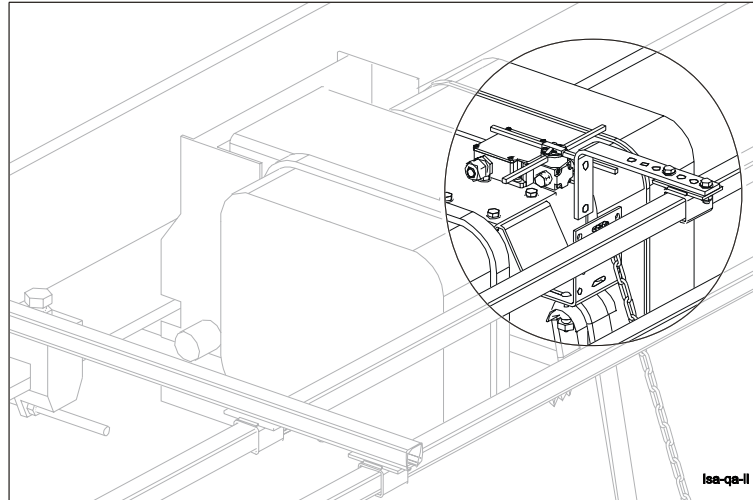
Limit switch part list			
Pos.	Name	Specification	Amount
	Limit switch	XC...	1
	Fixing plate	QA-L162W110H93	1
	Fixing plate	CQP-L80W80H6	1
	Fixing part set	CQA	1
Limit switch trigger part list			
Pos.	Name	Specification	Amount
	Plate	QA-L210W30	2 or 4
	C-rail	KC-020275-0250	2 or 4
Trigger fixing part			
Pos.	Name	Specification	Amount
	Track support bracket	KC-023222	2 or 4
Adapters Fixing part			
Pos.	Name	Specification	Amount
	Nut; Square	CQ-W25H25T8	4 or 8
	Screw	DIN933-M10x20-8.8-A3G	4 or 8
	Washer	DIN127-A10	4 or 8

Hoist limit switch trigger will be assembled to inner c-rail of the crane.



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6.4 Low headroom hoist (drum diam. 303 mm or 355 mm), girder height ≤ 500 mm (Wire rope hoist)



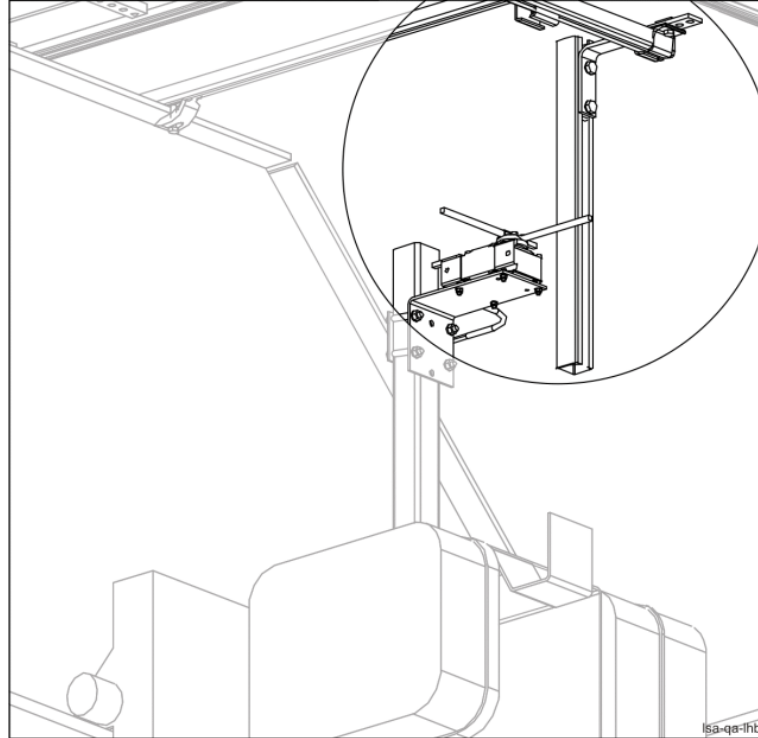
Limit switch part list			
Pos.	Name	Specification	Amount
	Limit switch	XC...	1
	Fixing part set	CQA	1
Limit switch trigger part list			
Pos.	Name	Specification	Amount
	Trigger	QA-L210W30	2 or 4
	Adapter	KC-023201-250	2 or 4
Trigger fixing part			
Pos.	Name	Specification	Amount
	Track support bracket	KC-023222	2 or 4
Adapters Fixing part			
Pos.	Name	Specification	Amount
	Nut; Square	CQ-W25H25T8	4 or 8
	Screw	DINM10X20-8,8	4 or 8
	Washer	DIN127-A10	4 or 8

Limit switch is ready assembled to the hoist. Trigger will be assembled to the inner c-rail of the crane.



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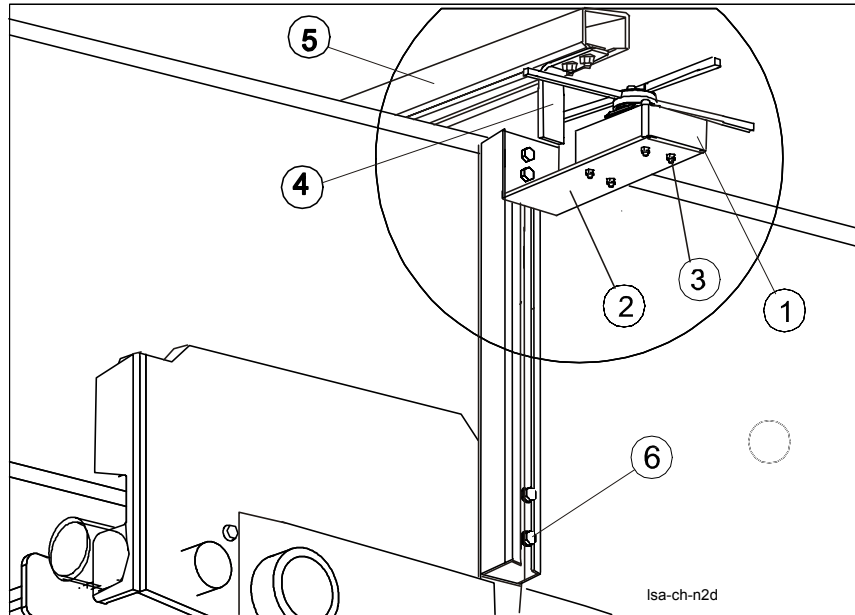
6.5 Low headroom hoist (drum diam. 303 mm or 355 mm), girder height > 500 mm (Wire rope hoist)



Limit switch part list			
Pos.	Name	Specification	Amount
	Limit switch	XC...	1
	Fixing plate	QA-L162W110H93	1
	Fixing plate	CQP-L80W80H6	1
	Fixing part set	CQA	1
Limit switch trigger part list			
Pos.	Name	Specification	Amount
	Plate	QA-L210W30	2 or 4
	C-rail	KC-020275-0250	2 or 4
Trigger fixing part			
Pos.	Name	Specification	Amount
	Track support bracket	KC-023222	2 or 4
Adapters Fixing part			
Pos.	Name	Specification	Amount
	Nut; Square	CQ-W25H25T8	4 or 8
	Screw	DIN933-M10x20-8.8-A3G	4 or 8
	Washer	DIN127-A10	4 or 8

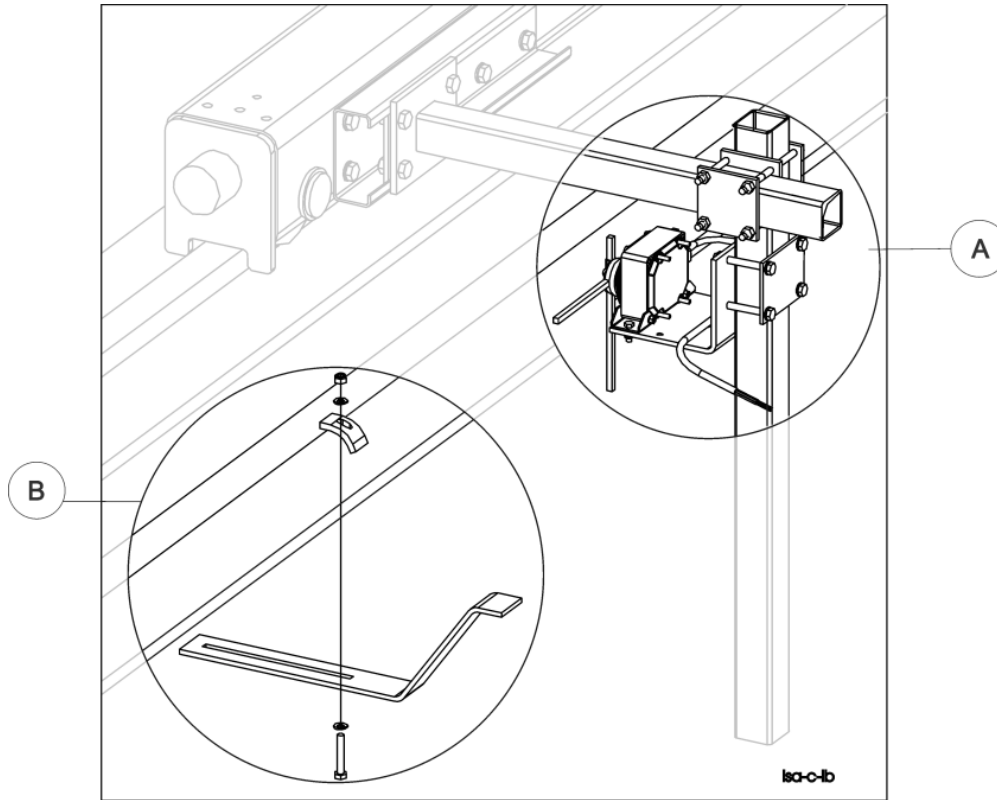
Trigger will be assembled to the inner c-rail of the crane.

6.6 Normal headroom trolley (Chain hoist)



Limit switch part list			
Pos.	Name	Specification	Amount
1	Limit switch	XC...	1
2	Fixing plate	QA-L162W110H93	1
Limit switch trigger part list			
Pos.	Name	Specification	Amount
4	Trigger	QA-L210W30	2
	Screw	DIN933-M10X20-8.8-A3G	4
	Nut	CQ-L25W25T8	4
Trigger support			
Pos.	Name	Specification	Amount
5	C-rail	KC-020276-650	2
Support fixing part list			
Pos.	Name	Specification	Amount
6	Screw	DIN912-M8X50-8.8-A3G	2
	Washer	DIN440-D28/9X3-A3G	2

6.7 Crane limit switch assembly



Limit switch part list			
Pos.	Name	Specification	Amount
A	Limit switch	XC...	1
	Fixing plate	CQK-W146H116T6	1
	Fixing plate	CQP-L80W80H6	4
Trigger fixing part			
Pos.	Name	Specification	Amount
B	Trigger	CQK-L463W80H145T5 or CQK-W463H140T5	2 or 4
	Beam clip	KC-020180-08	2 or 4
Fixing set			
Pos.	Name	Specification	Amount
A+B	Limit switch assembly set	L109	1

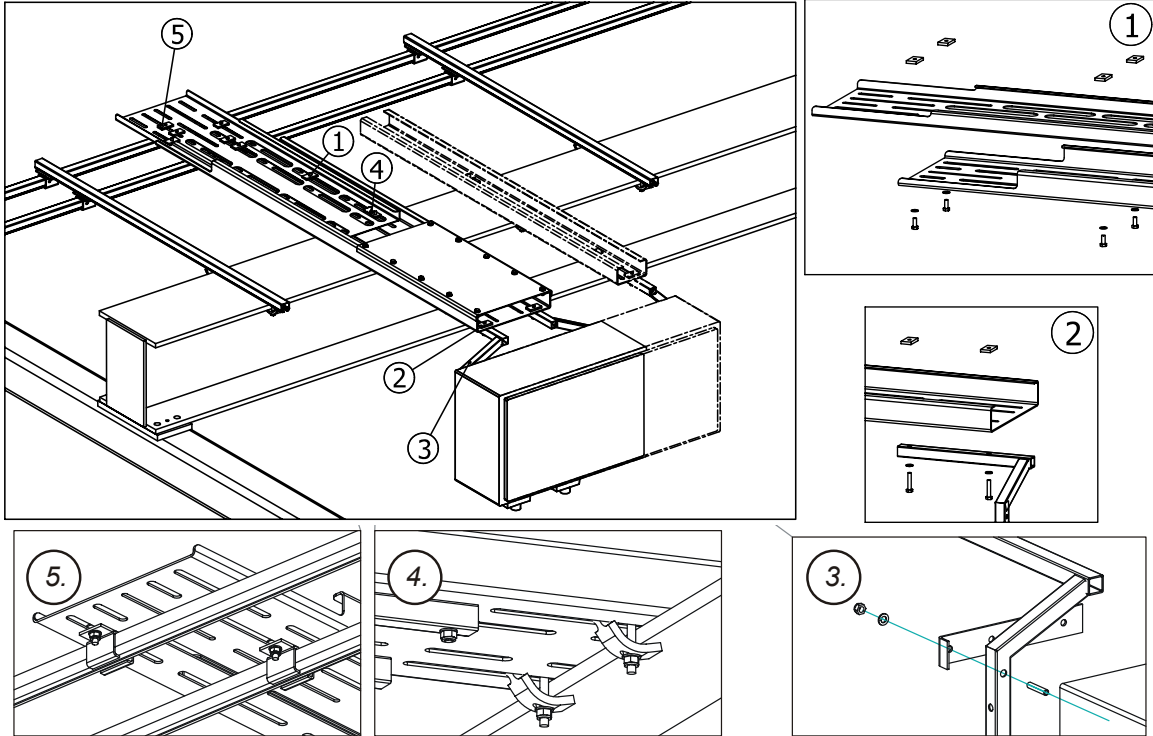
Assemble the crane limit switch to cranes towing arm. The trigger is to be assembled to the runway beam.



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7 Bridge panel assembly

7.1 Single girder crane



Cable way extension			
Pos. 1	Name	Specification	Amount
	Screw	DIN933-M8x20-8.8-A3G	4
	Washer	DIN125-A8-A3G	4
	Locking plate	CQ-W25T6L45	4
Fixing bridge panel brackets			
Pos. 2	Name	Specification	Amount
	Cable way	CQP-S...	1 or 2
	Screw	DIN933-M8x45-8.8-A3G	4
	Washer	DIN125-A8-A3G	4
	Locking plate	CQ-W25T6L45	4

Fixing bridge panel			
Pos. 3	Name	Specification	Amount
	Fixing part	CQP-S...	2 or 3
	Support	CQP-S-L240W23H40T3	4 or 6
	Screw (Threadlocking)	DIN913-M8x40-A3G	4 or 6
	Washer	DIN125-A8-A3G	4 or 6
	Nut	DIN985-M8-8-A3G	4 or 6



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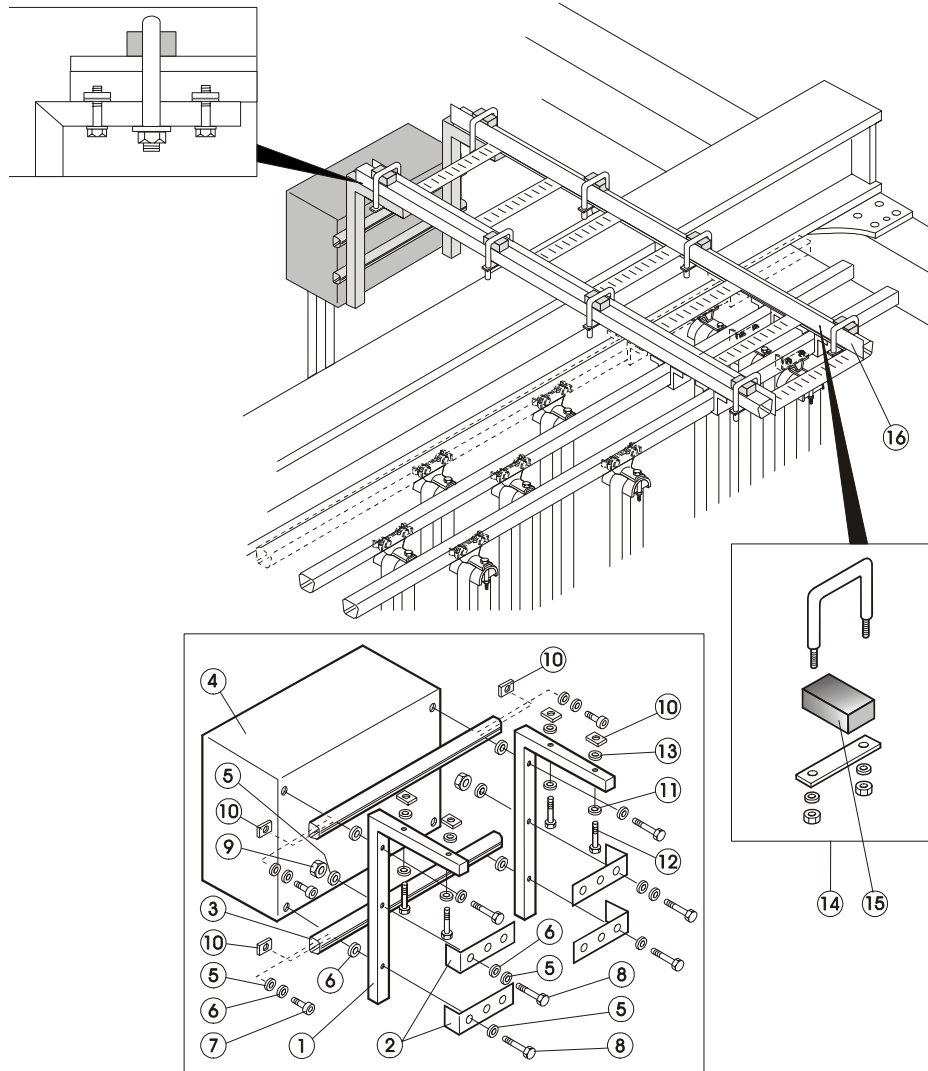
Fixing cable way to the girder			
Pos. 4	Name	Specification	Amount
	Beam clip	KC-020180-08	4
Fixing cable way to the c-rail			
Pos. 5	Name	Specification	Amount
	Track support bracket	KC-023226	2

- In small sized bridge panels will be used one piece of a cableway, then only two fixing parts will be needed.



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7.2 Single girder crane (Old layout)



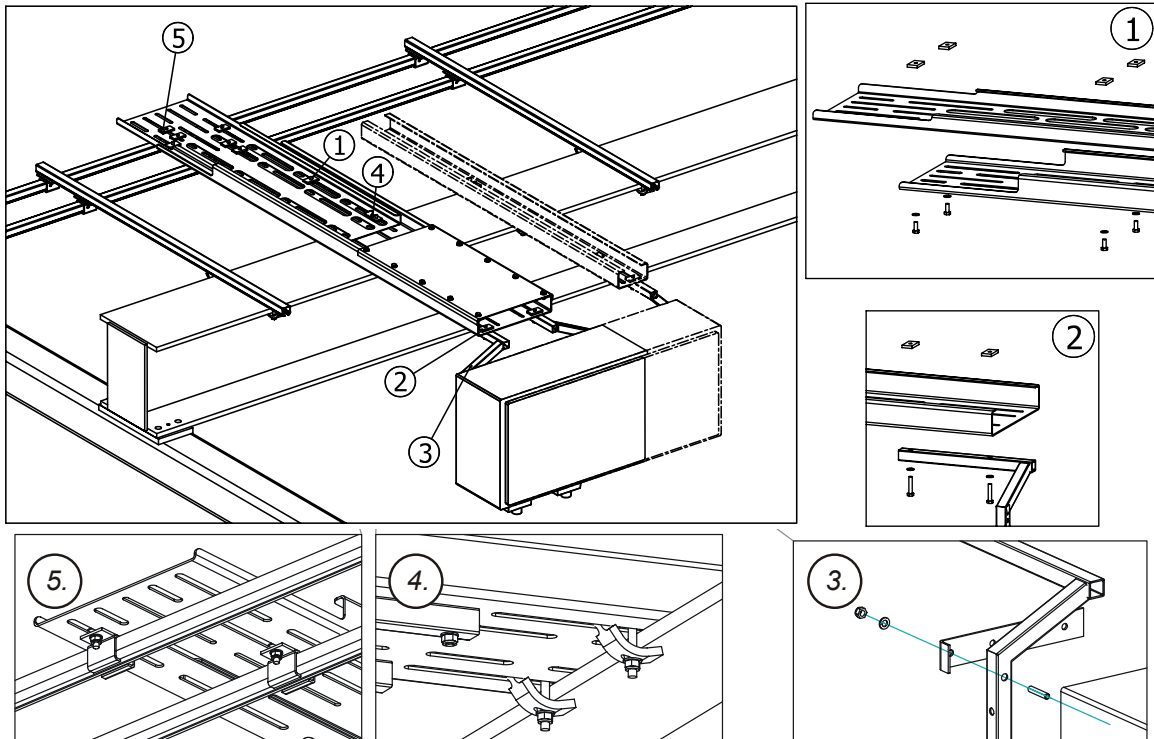
AIMCEN03

Pos.	Name	Pos.	Name
1	Frame	9	Nut
2	Cable fastener	10	Square nut
3	C-rail	11	Washer
4	Bridge panel	12	Screw
5	Washer	13	Spring washer
6	Spring washer	14	Clamp
7	Screw	15	Rubber
8	Screw	16	Ladder



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7.3 Single girder crane (Chain hoist)



Cable way extension			
Pos. 1	Name	Specification	Amount
	Screw	DIN933-M8x20-8.8-A3G	4
	Washer	DIN125-A8-A3G	4
	Locking plate	CQ-W25T6L30	4
Fixing bridge panel brackets			
Pos. 2	Name	Specification	Amount
	Cable way	CQP-S...	1 or 2
	Screw	DIN933-M8x45-8.8-A3G	4
	Washer	DIN125-A8-A3G	4
	Locking plate	CQ-W25T6L30	4

Fixing bridge panel			
Pos. 3	Name	Specification	Amount
	Fixing part	CQP-S...	2 or 3
	Support	CQP-S-L240W23H40T3	4 or 6
	Screw (Threadlocking)	DIN913-M8x40-A3G	4 or 6
	Washer	DIN125-A8-A3G	4 or 6
	Nut	DIN985-M8-8-A3G	4 or 6



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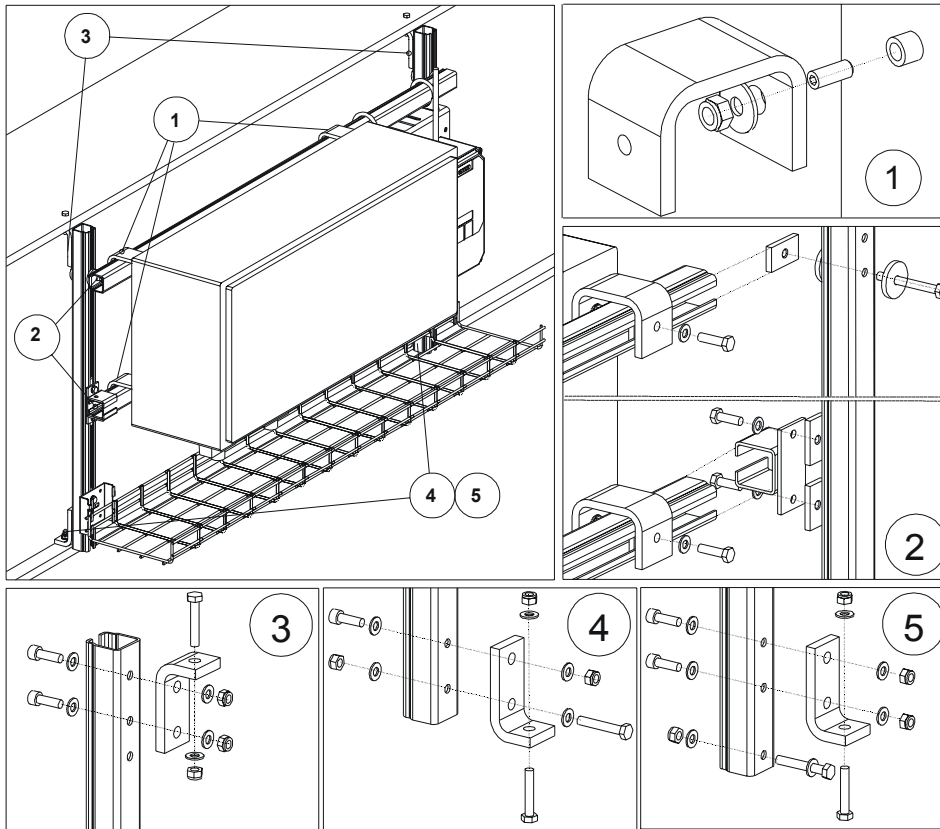
Fixing cable way to the girder			
Pos. 4	Name	Specification	Amount
	Beam clip	KC-020180-08	4
Fixing cable way to the c-rail			
Pos. 5	Name	Specification	Amount
	Track support bracket	KC-023226	2

- In small sized bridge panels will be used one piece of a cableway, then only two fixing parts will be needed.



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7.4 Double girder crane (Wire rope hoist)



Note!
 Positions 4 and 5 are alternative fixing types.

Name	Specification	Amount		
Fixing bridge panel; Position 1				
Fixing plate	CQP-L81W50H58T8	4/6/8		
Screw (Thread locking)	DIN913-M8x20-8.8-A3G	4/6/8		
Washer	DIN9021-8-A3G	4/6/8		
Nut	DIN985-M8-8-A3G	4/6/8		
Fixing c-rail; Position 2				
C-rail	KC-020276	2		
Nut; Square	CQ-W25T6L45	10/12/14		
Screw	DIN933-M8x25-8.8-A3G	8/10/12		
Screw	DIN933-M8X70-8.8-A3G	2		
Washer	DIN125-A8-A3G	8/10/12		
Washer	QA-D9D36D5	4		
Track support	KC-024122	2		
Fixing angle bars		Position	3	4/5
Fixing plate	QA-L90W40H45T10	2	2	2
Screw	DIN933-M8X45-8.8-A3G	2	2	4
Screw	DIN933-M8X50-8.8-A3G	-	2	-
Screw	DIN912-M8X25-8.8-A3G	4	2	4
Washer	DIN125-A8-A3G	12	12	16
Nut	DIN985-M8-8-A3G	6	6	8

Note!

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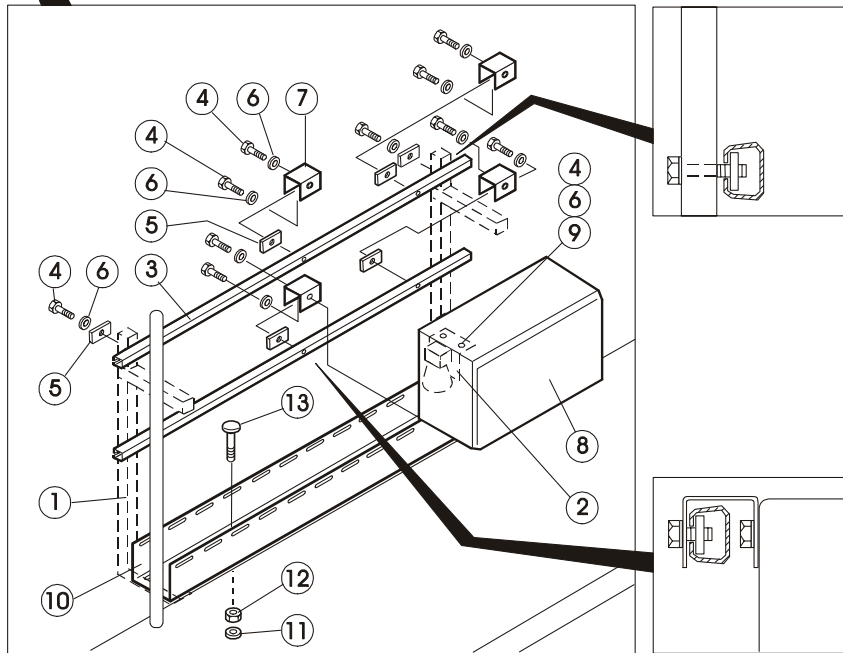
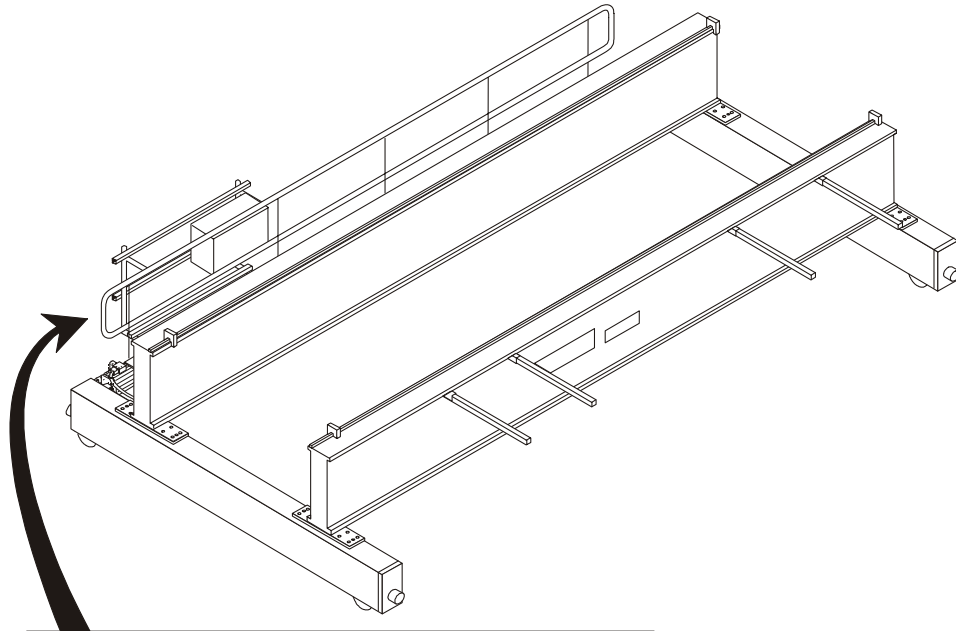
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Amounts are case-specific. They vary by number and type of bridge panel(s) and amount of vertical c-rails required.



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7.5 Double girder crane (Old layout) (Wire rope hoist)



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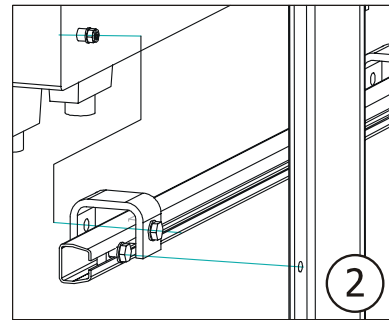
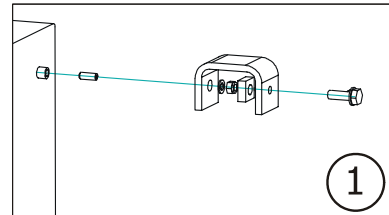
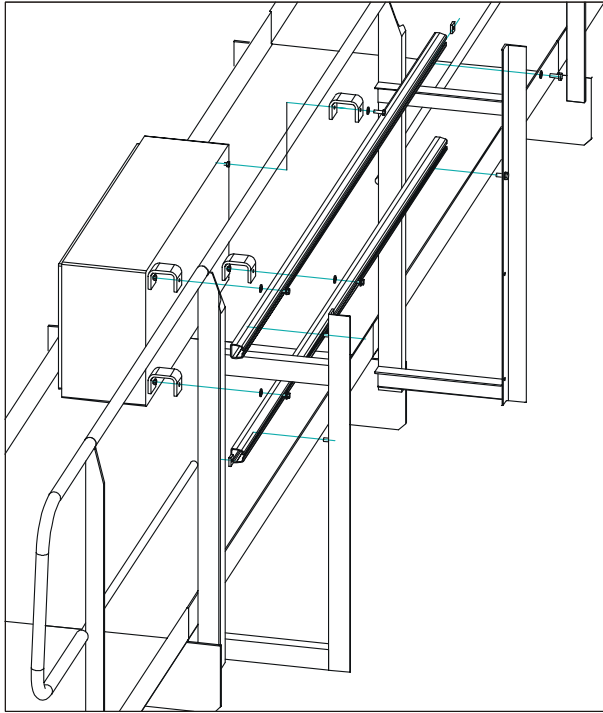
Pos.	Name	Pos.	Name
1	Frame	7	Fixing plate
2	Horn (optional)	8	Bridge panel
3	Tube	9	Fixing plate
4	Screw	10	Cable trunk
5	Square nut	11	Washer
6	Washer	12	Nut



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	13	Screw
--	----	-------

7.6 Double girder crane with a service platform (Wire rope hoist)



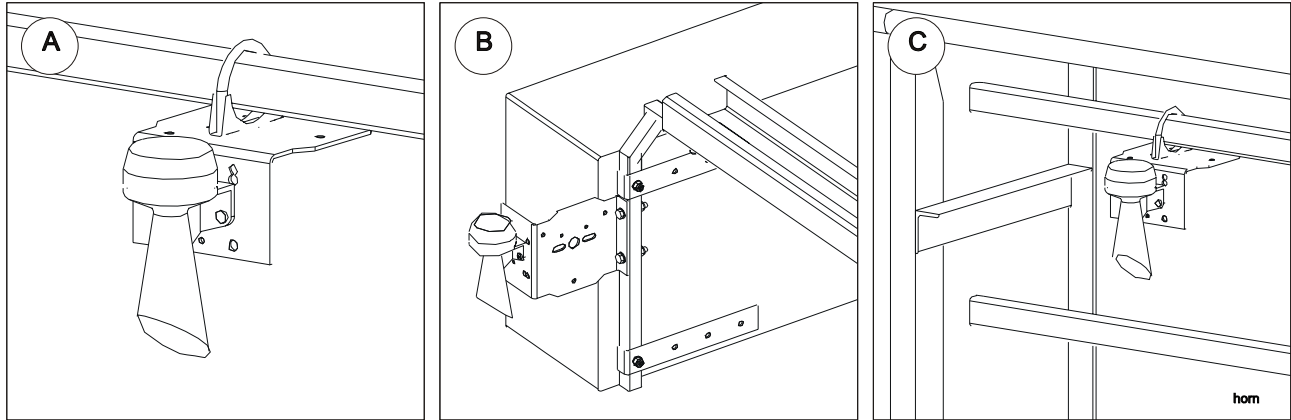
Fixing bridge panel			
Pos. 1	Name	Specification	Amount
	Fixing plate	CQP-L81W50H58T8	4/6/8
	Screw (Threadlocking)	DIN913-M8x20-8.8-A3G	4/6/8
	Washer	DIN9021-8-A3G	4/6/8
	Nut	DIN985-M8-8-A3G	4/6/8
Fixing c-rail			
Pos.2	Name	Specification	Amount
	C-rail	KC-020276-(650/850/1340/1520/1800/2000/2200)	2
	Nut; Square	CQ-W30L25T6	8/10/12
	Screw	DIN933-M8x20-8.8-A3G	8/10/12
	Washer	DIN125-A8-A3G	8/10/12



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8 Horn assembly

8.1 Crane



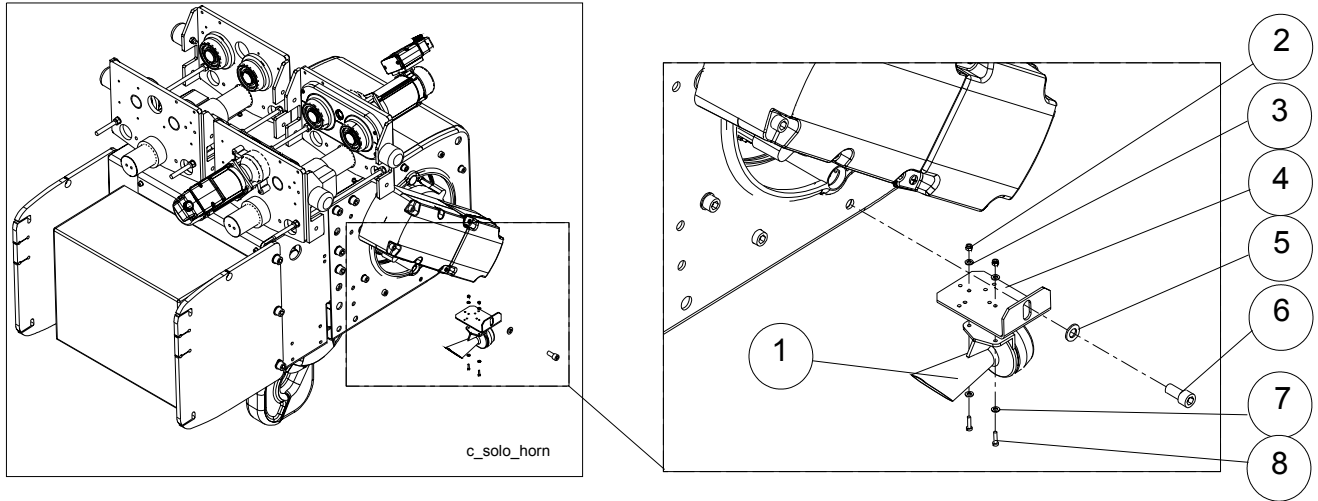
A.	The horn can be fixed to the console of the festoon assembly as near as possible to the bridge panel.
B.	In single girder cranes the horn can be assembled to the bridge panel bracket.
C.	If there is a service platform on the crane the horn can be assembled to the C-rail or handrail nearby the bridge panel

Signal horn assembly includes all the fixing part to each different fixing variation.



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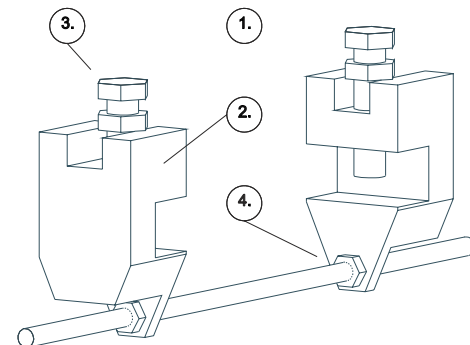
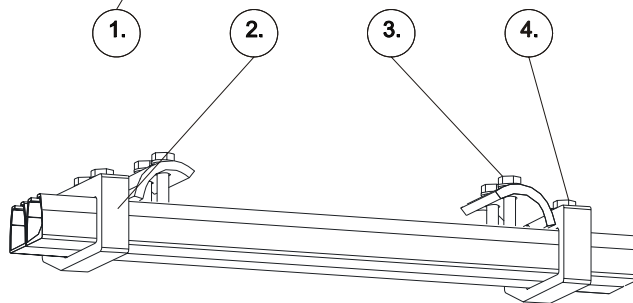
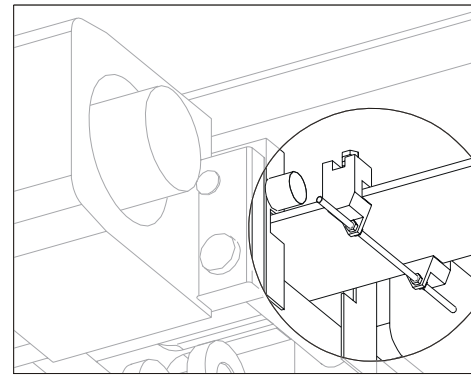
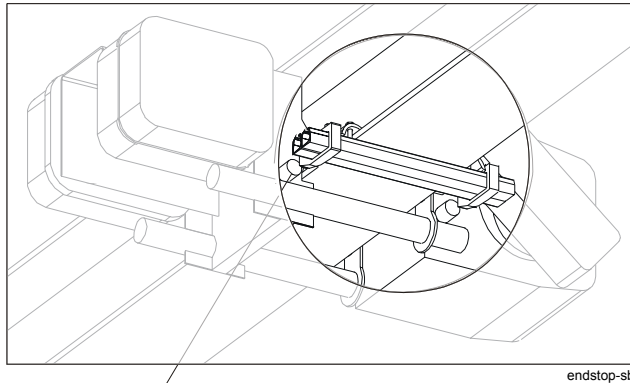
8.2 Solo hoist



Pos.	Name	Specification	Amount
1	Horn		
2	Nut	DIN985-M4-8-A3G	2
3	Washer	DIN125-A5-A3G	4
4	Fixing plate	QA-L125W80H42	1
5	Washer	Washer of frame end plate fixing screw	
6	Screw	Fixing screw of hoist frame end plate	
7	Screw	DIN84-M4X16-4.8-A2F	2

9 Buffer stop assembly for single girder crane

9.1 Wire rope hoist



Low headroom hoist (drum diam. 303 mm)

Low headroom hoists (drum diam. 355 mm and 406 mm) and Normal headroom hoists (drum diam. 303 mm, 355 mm and 406 mm)

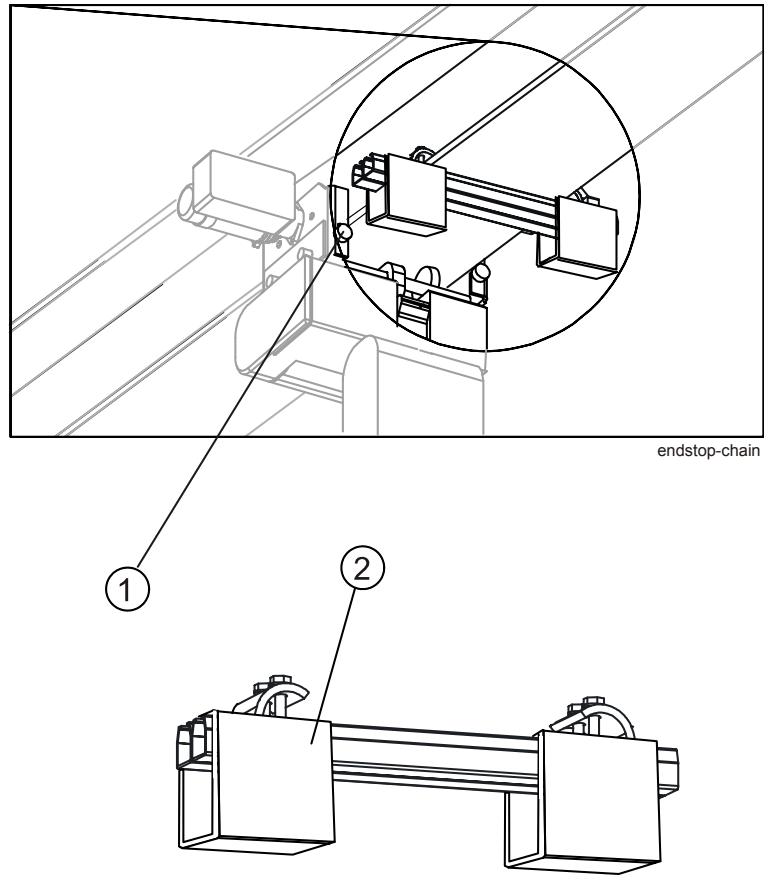
To assemble the buffer stops:

- Make sure that the buffer hits center (1) of the buffer stop.
- Check, that the buffer stops (2) will stop the hoist on both ends of the crane, not the cable trollies!
- At first, tighten screws (3) to correct torque and ensure them with locking nuts if so equipped.
- Then tighten nuts (4) to correct torque.
- Tightening torques:
 - M10 45 Nm
 - M12 77 Nm
 - M20 170 Nm



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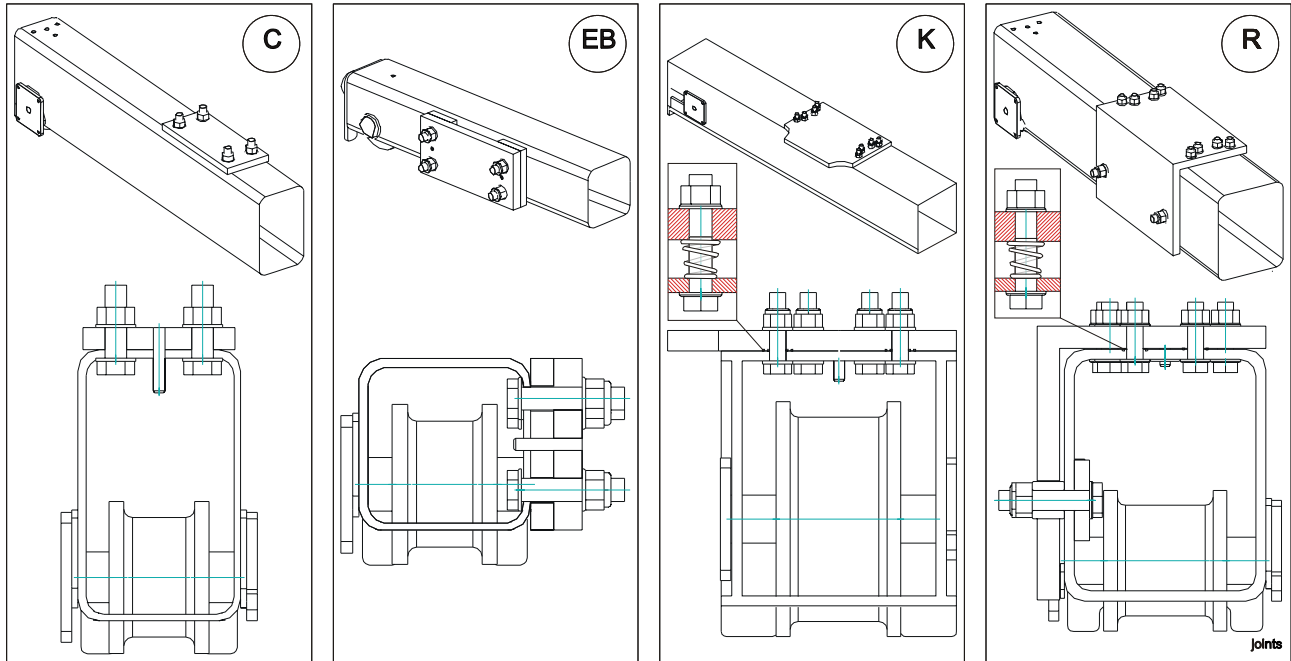
9.2 Chain hoist



To assemble the buffer stops:

- Make sure that the buffer hits center (1) of the buffer stop.
- Check, that the buffer stops (2) will stop the hoist on both ends of the crane, not the cable trollies!
- Tightening torques:
 - M10 45 Nm
 - M12 77 Nm
 - M20 170 Nm

10Joint plate assembly



Pos.	Connection	Friction rings
EB	Side connection	No
C, C-Gantry	Top connection	No
P, L, K	Top connection	Yes
R, S	Top connection / Side connection	Top yes, side no

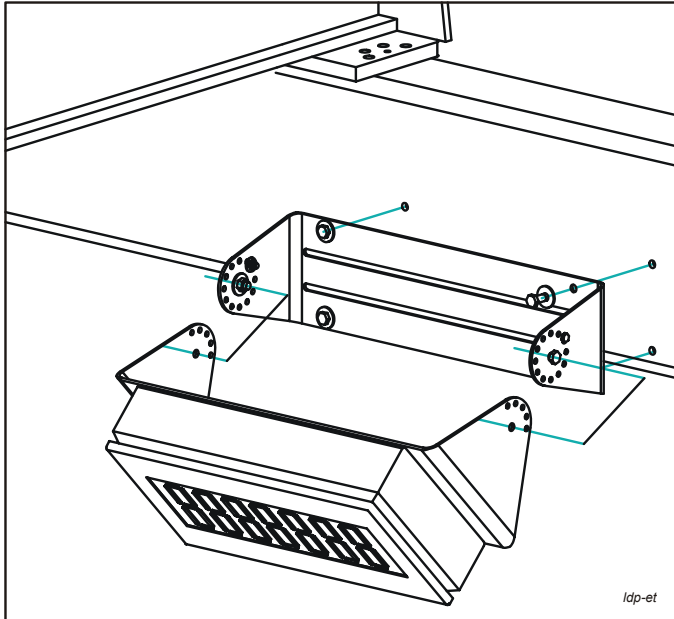
Tightening torque	
Screw size	Tightening torque
M16-10.9	280 Nm
M20-8.8	385 Nm
M20-10.9	550 Nm

- Check that joint surfaces are free from dirt, dust and loose particles. Only shop primer paint is allowed.
- Place friction rings around screw holes at top of end carriage.
- Reset spring pins into the holes at joint plates so that pin head penetrates the plate about 10-20 mm below bottom surface.
- Place joint plate above the end carriage. Make sure, that spring pins contact with corresponding holes at the end carriage top plate. Drive pins trough both plates with a hammer and proper tool. Make sure, that friction rings are kept in position during assembly.
- Assemble screws and nuts.
- Assemble joint plate into final position and tighten screws with correct torque.
- Retighten screws after test runs at assembly site.

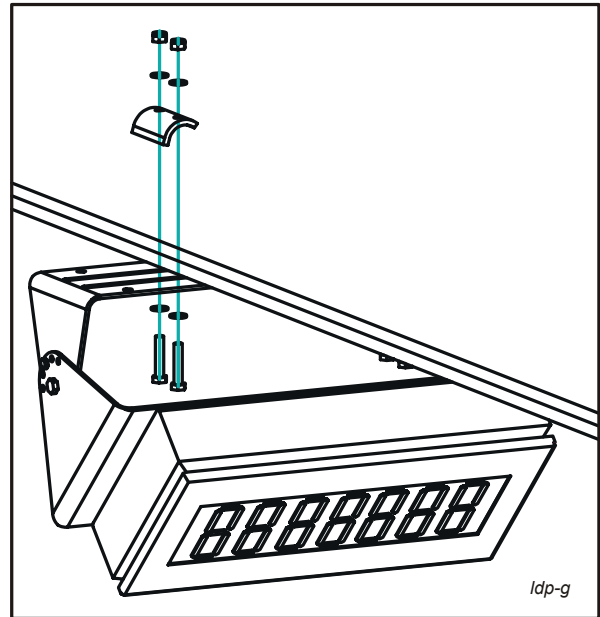


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11Load display assembly



Fixing to an end truck Drill 4xM10 tapped holes for assembly



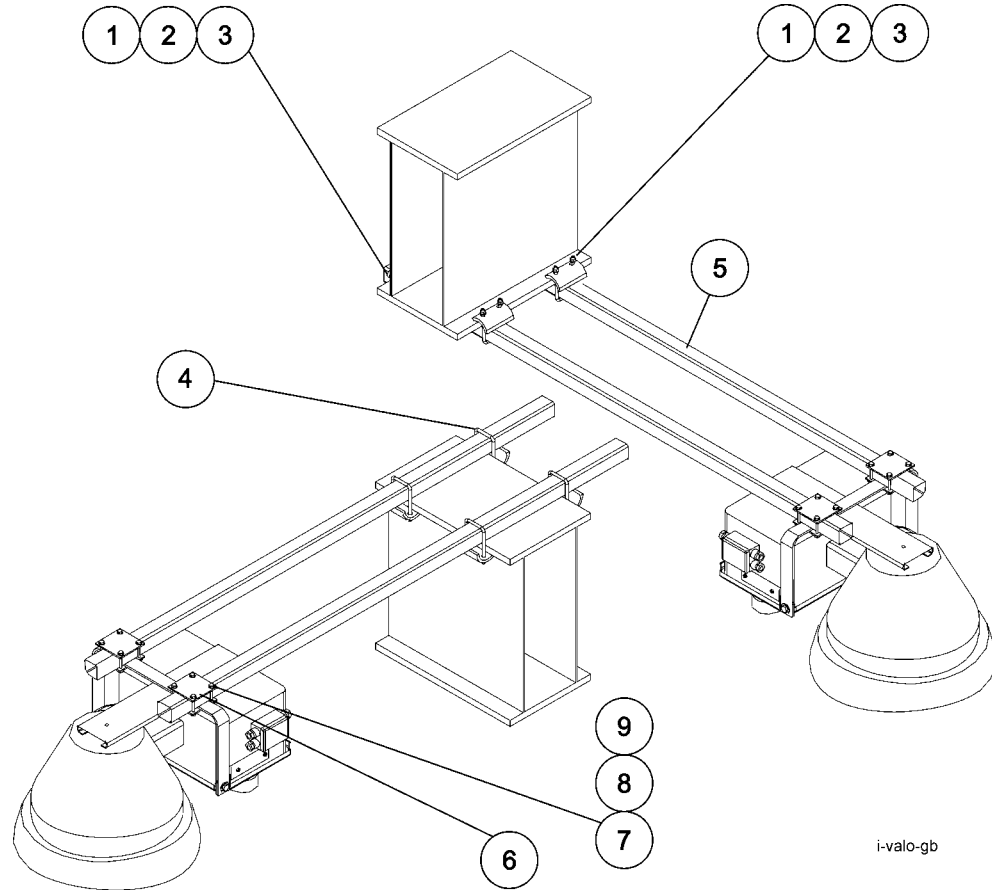
Fixing to a bottom flange of a main box girder

Pos.	Name	Specification	Amount
	Fixing part set	CQ-012	1

Assemble the load display as close as possible to the bridge panel.

12Crane light assembly

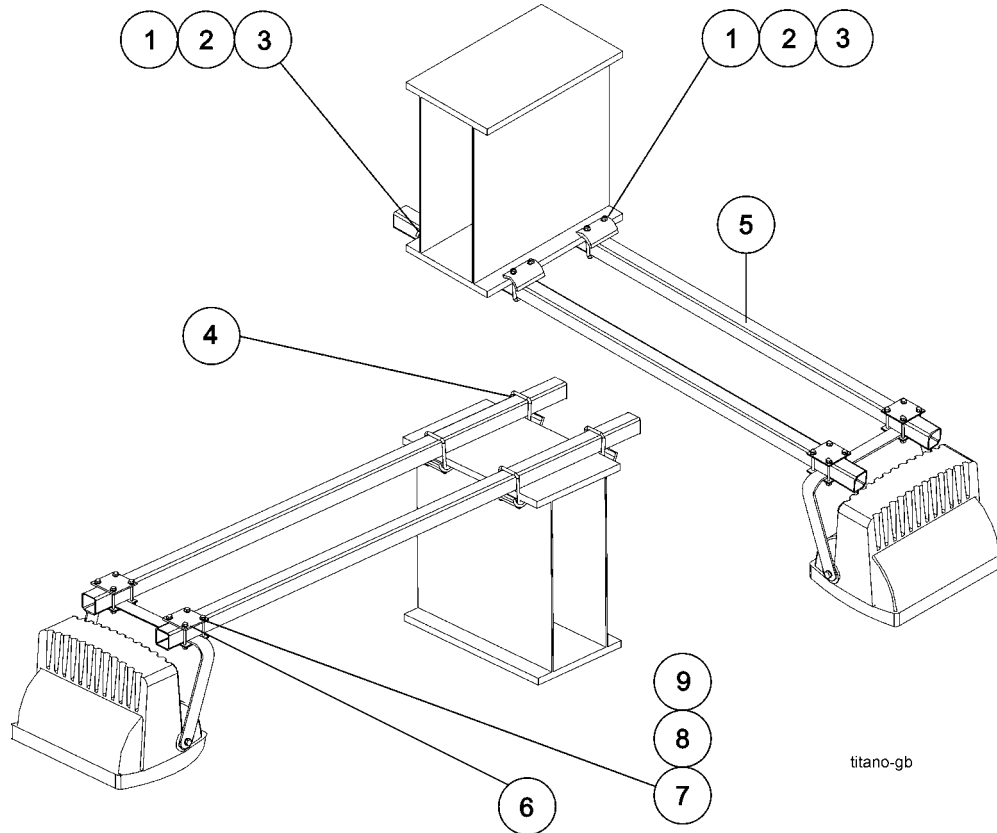
12.1 I-Valo light, fixing to a flange of a main girder



Pos.	Name	Specification	Amount
1	Nut	DIN985-M8-8-A3G	8
2	Washer	DIN126-A8-A3G	8
3	Plate	CQ-W58H100T8	4
4	Fixing part	CQX-M8D8L104	4
5	Tube	CQ-W50H50T4 1700 (1) / CQ-L1000W50H50T2 (2)	2
6	Fixing Plate	CQP-L80W80H6	4
7	Screw	DIN931-M8x90-8.8-A3G	8
8	Nut	DIN985-M8-8-A3F	8
9	Washer	DIN126-A8-A3G	16

Tubes (part no 5) variation 1 is for assembly fixed to the upper flange, variation 2 is for assembly fixed to the lower flange.

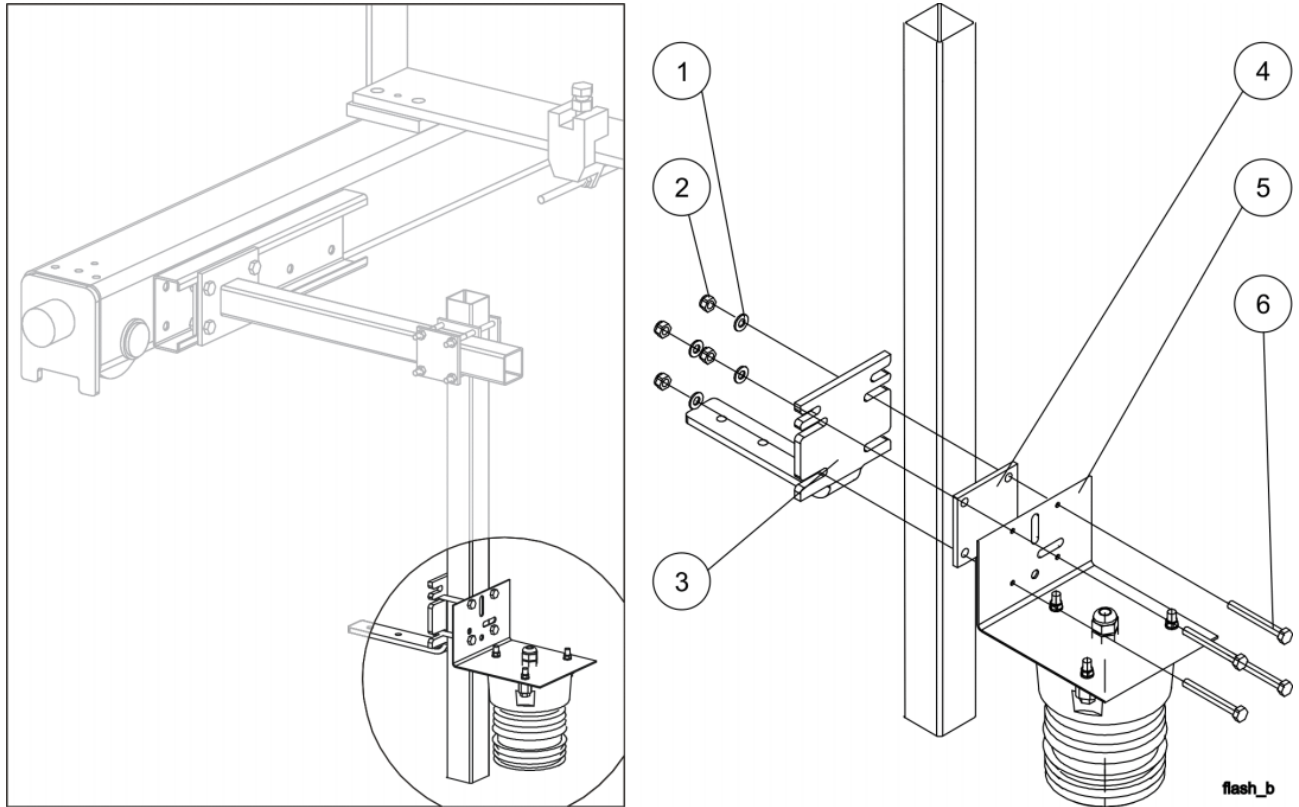
12.2 Titano light, fixing to a flange of a main girder



Pos.	Name	Specification	Amount
1	Nut	DIN985-M8-8-A3G	8
2	Washer	DIN126-A8-A3G	8
3	Plate	CQ-W58H100T8	4
4	Fixing part	CQX-M8D8L104	4
5	Tube	CQ-W50H50T4 1700 (1) / CQ-L1000W50H50T2 (2)	2
6	Fixing Plate	CQP-L80W80H6	4
7	Screw	DIN931-M8x80-8.8-A3G	8
8	Nut	DIN985-M8-8-A3F	8
9	Washer	DIN126-A8-A3G	16

Tubes (part no 5) variation 1 is for assembly fixed to the upper flange, variation 2 is for assembly fixed to the lower flange.

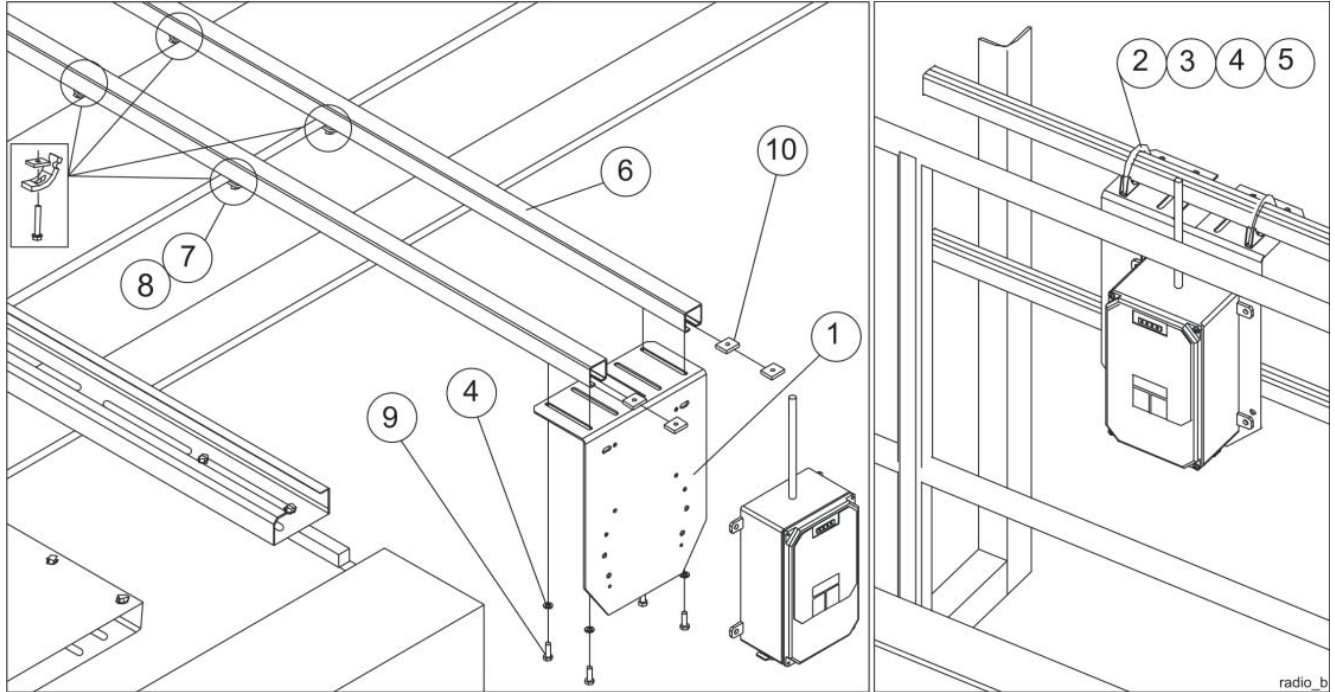
13 Flashing light assembly



Pos.	Name	Specification	Amount
1	Washer	DIN125-A8-A3G	8
2	Nut	DIN985-M8-8-A3G	4
3	Crane towing arm	CQP-L195W150H135	1
4	Plate	CQP-L80W80H6	1
5	Fixing plate	EN10025-S235JR-2MM 170X102	1
6	Screw	DIN931-M8x80-8.8-A3G	4

- In conductor rail type of power supply the towing arm (part number 3) is not needed. Instead of towing arm, use the plate (part number 4).

14Radio assembly



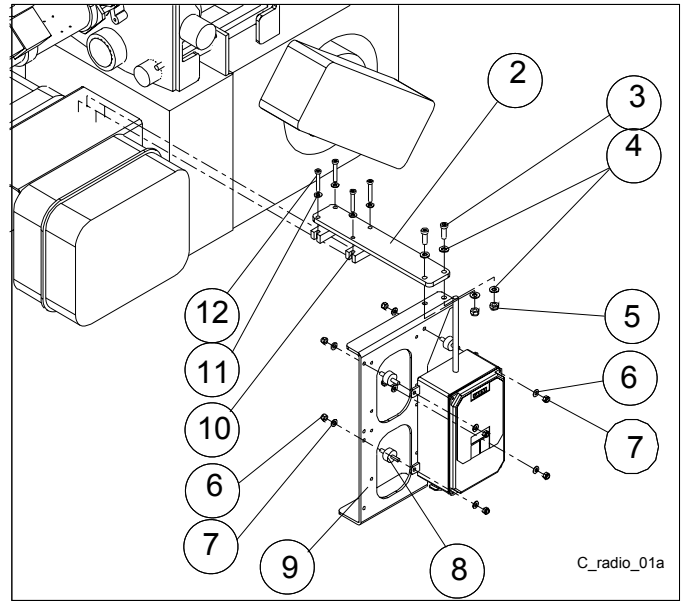
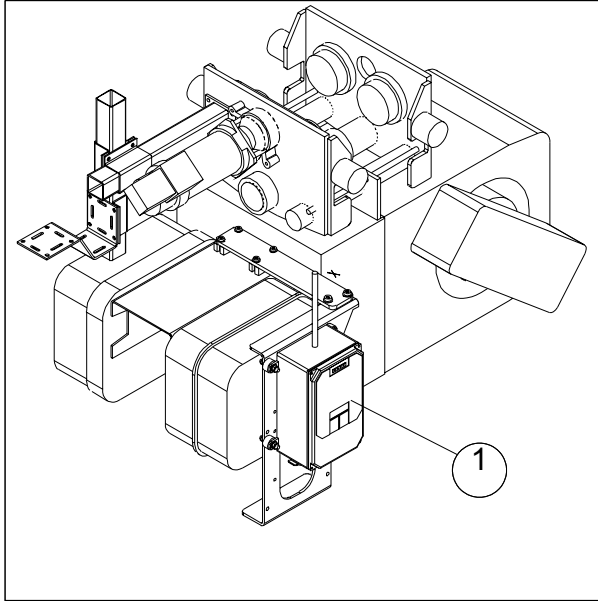
Pos.	Name	Specification	Amount
1	Bracket	CQ-L128W280H378T3	1
2	Fastener	CQ-D42/85182306	2
3	Fastener	CQ-D51/85182309	2
4	Washer	DIN127-AB-A3G	4
5	Washer	DIN125-AB-A3G	4
6	Rail; C-Rail	KC-020276-1800	2
7	Beam Clip	KC-020181-08	4
8	Beam Clip	KC-020180-08X36	4
9	Screw	DIN933-MBX25-8.8-A3G	4
10	Fixing Part	CQ-W25T6L30	4

- When assembling radio to the crane without a service platform it can be fixed to two C-rail supports next to bridge panel in single girder crane and to bridge panel mounting rail next to bridge panel in double girder crane.
- Otherwise radio will be fixed to the service platforms hand rail.
- Use rubber bushings for mounting the radio. They are included in radios scope of supply.



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15Radio assembly (solo)



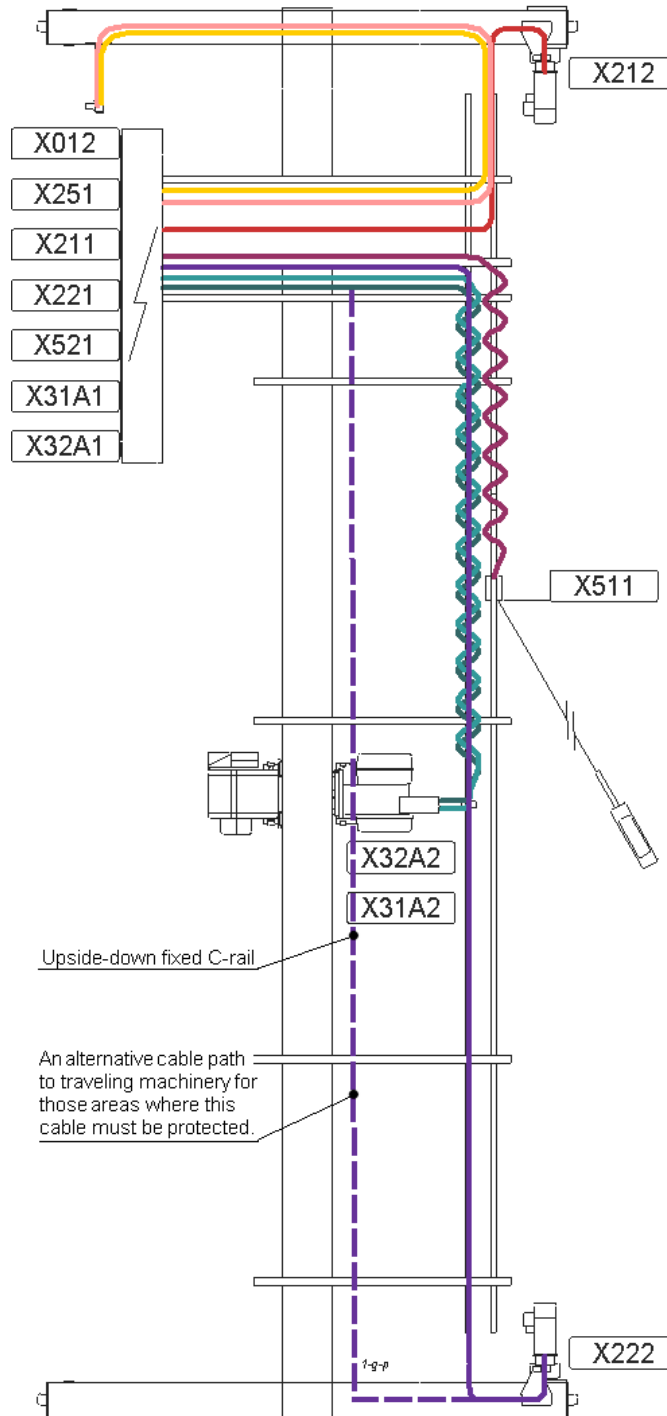
Pos.	Name	Specification	Amount
1	Radio		1
2	Support plate	QA-L374W70H10-7021	1
3	Screw	DIN912-M10X30-8.8-A3G	2
4	Washer	Din125-A10-A3G	4
5	Nut	DIN985-M10-8-A3G	2
6	Washer	Included in radio delivery	8
7	Nut	Included in radio delivery	8
8	Rubber bushing	Included in radio delivery	4
9	Support plate	QA-L374W70H10-7021	1
10	Plate	QAN-L70W30H20	2
11	Washer	DIN125-A8-A3G	4
12	Screw	DIN912-M8X50-8.8-A3G	4



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16 Cable plugs and paths

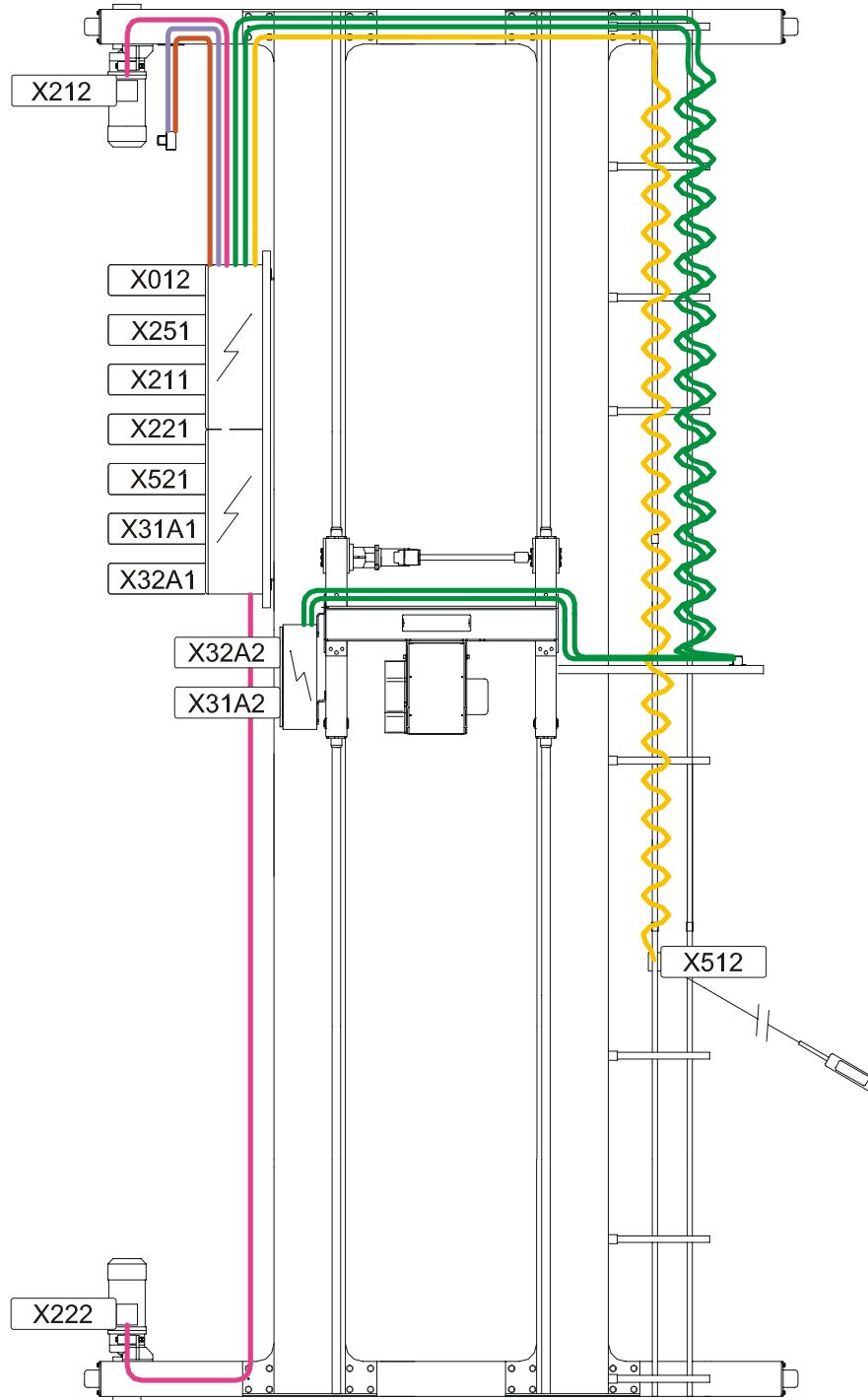
16.1 Single girder crane plug layout and cable paths (Wire rope hoist)





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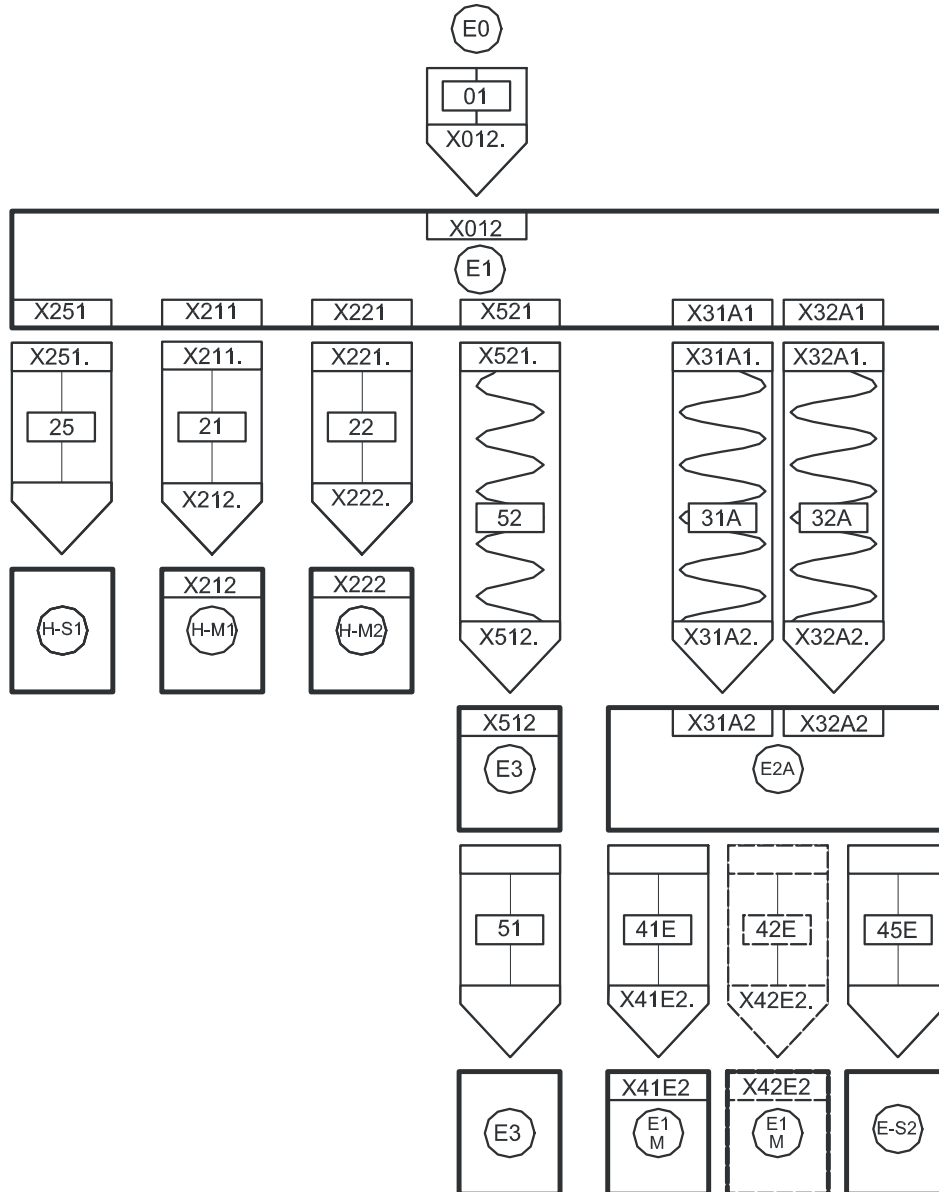
16.2 Double girder crane plug layout and cable paths (Wire rope hoist)





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16.3 Plug diagram, (Wire rope hoist)

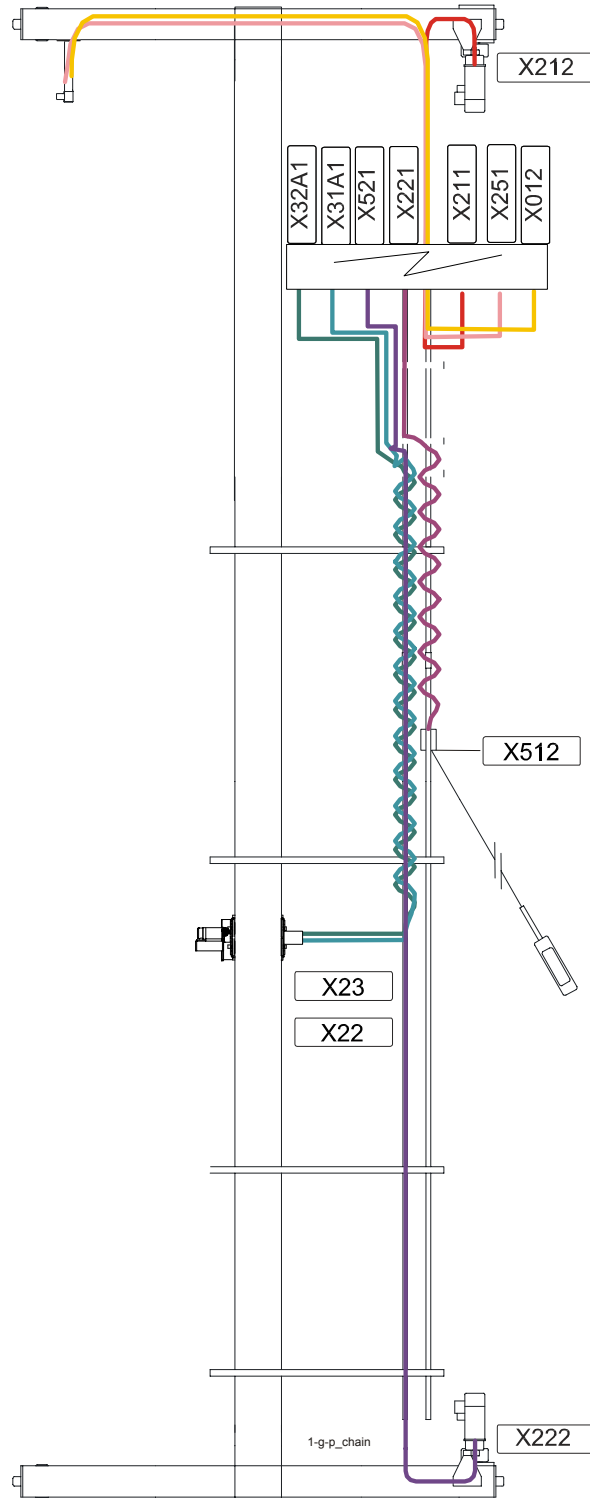


Symbol	Definition	Symbol	Definition
E0	Crane power supply	E3	Push Button trolley and push button
E1	Bridge panel	E2A	Hoist panel
H-S1	Crane limit switch	EM1	Hoist traveling motor 1
H-M1	Crane traveling motor 1	EM2	Hoist traveling motor 2
H-M2	Crane traveling motor 2	E-S2	Hoist limit switch



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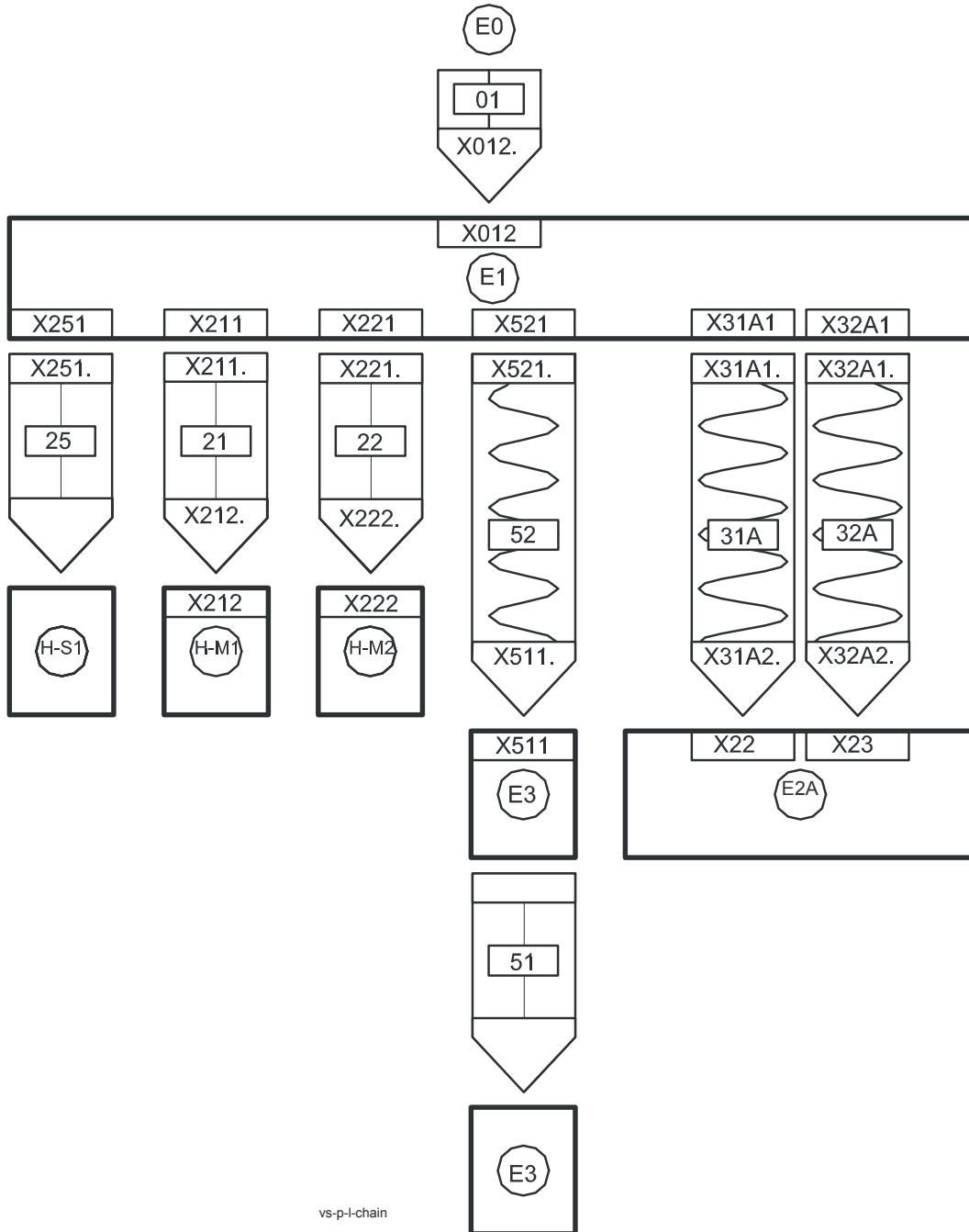
16.4 Single girder crane plug layout and cable paths (Chain hoist)





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16.5 Plug diagram (Chain hoist)



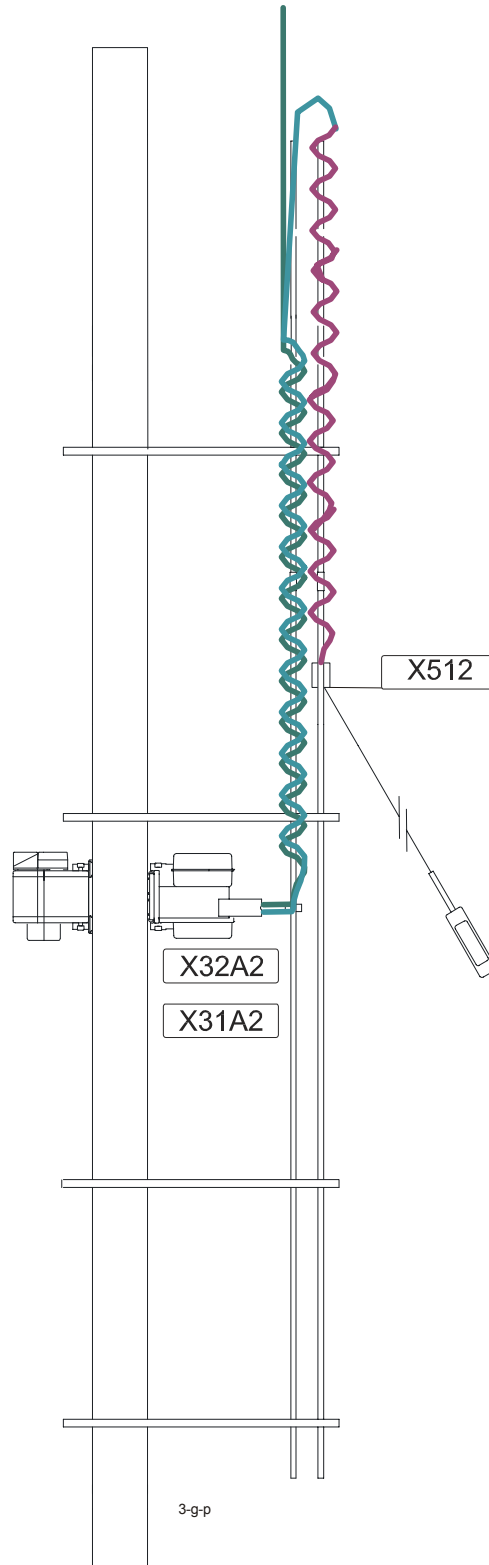
vs-p-l-chain

Symbol	Definition	Symbol	Definition
E0	Crane power supply	E3	Push Button trolley and push button
E1	Bridge panel	E2A	Hoist panel
H-S1	Crane limit switch	EM1	Hoist traveling motor 1
H-M1	Crane traveling motor 1	EM2	Hoist traveling motor 2
H-M2	Crane traveling motor 2	E-S2	Hoist limit switch



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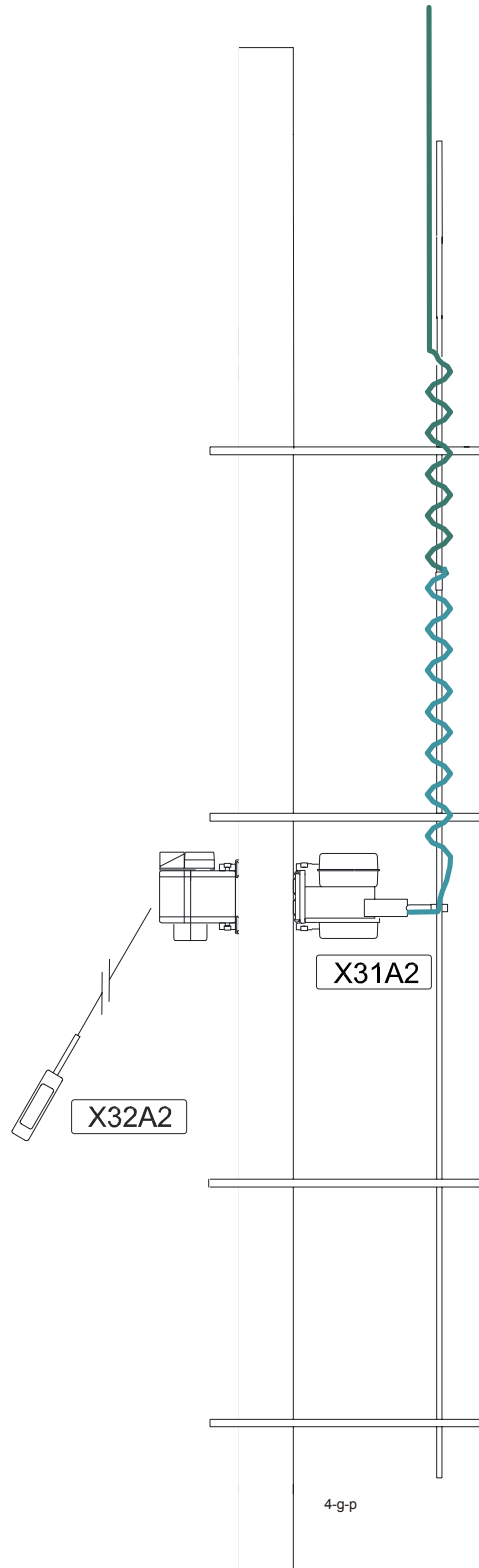
16.6 Solo hoist with moveable pendant plug layout and cable paths (Wire rope hoist)





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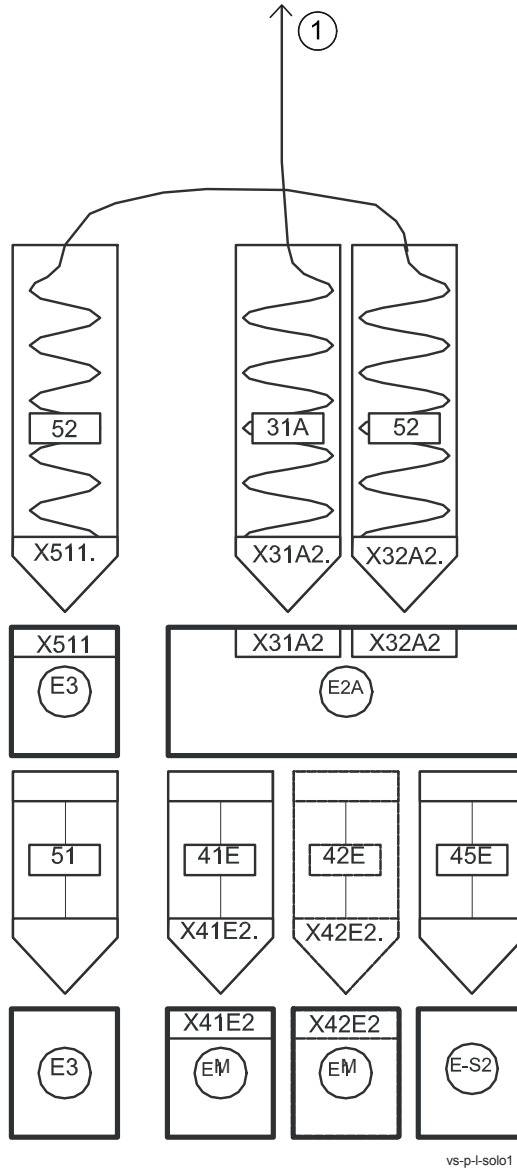
16.7 Solo hoist with fixed pendant plug layout and cable paths (Wire rope hoist)





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16.8 Plug diagram, movable pendant (Wire rope hoist)

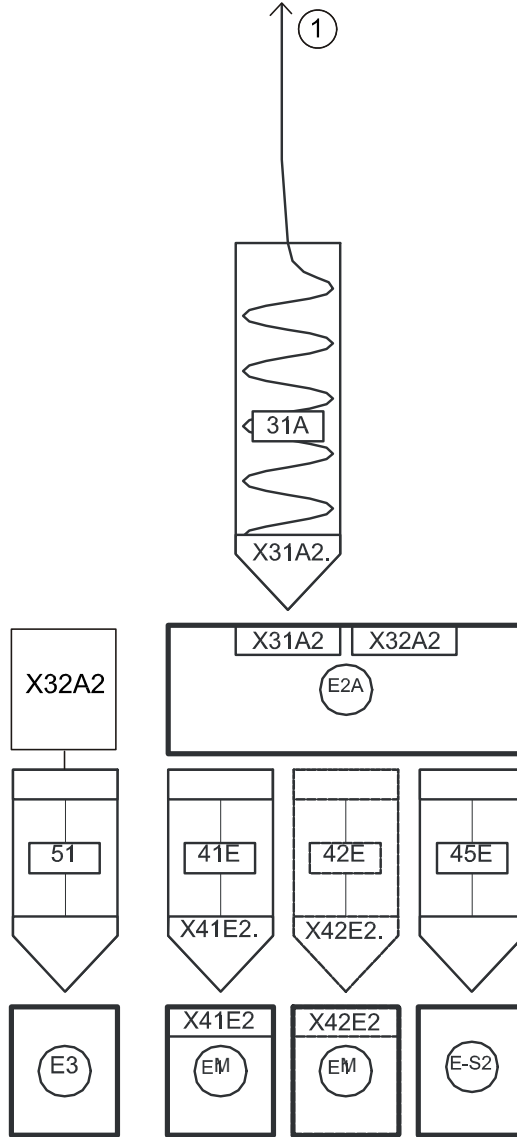


Symbol	Definition	Symbol	Definition
1	To the power supply	EM1	Hoist traveling motor 1
E3	Push Button trolley and push button	EM2	Hoist traveling motor 2
E2A	Hoist panel	E-S2	Hoist limit switch



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16.9 Plug diagram, fixed pendant (Wire rope hoist)



vs-p-l-solo2

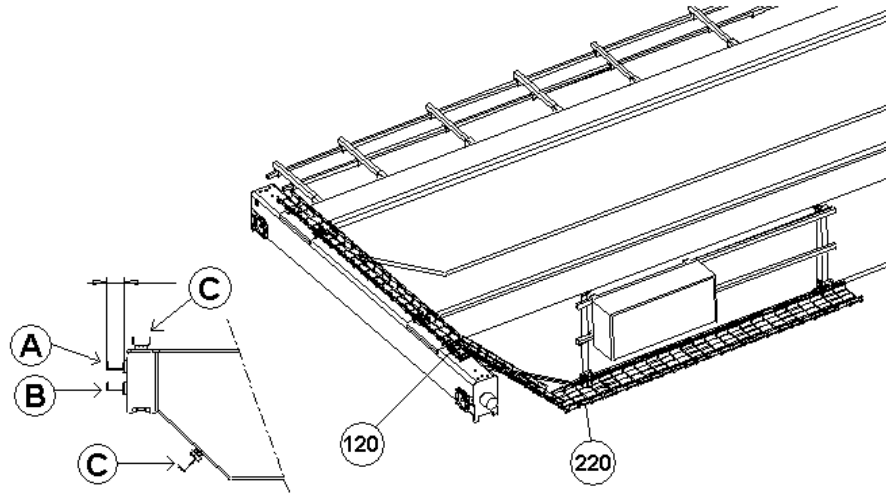
Symbol	Definition	Symbol	Definition
1	To the power supply	EM2	Hoist traveling motor 2
E2A	Hoist panel	E-S2	Hoist limit switch
EM1	Hoist traveling motor 1		



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17Crane cable ways

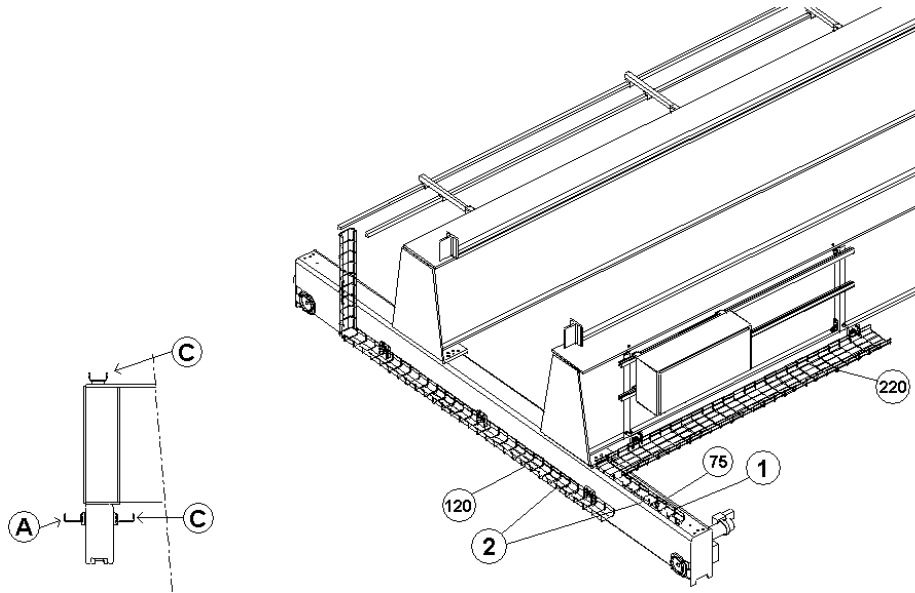
17.1 Assembly examples



- A. Primary cable channel mounting location
- B. Additional cable way if needed
- C. Alternative cable channel mounting location
- 120. Cable way width 120 mm
- 220. Cable way width 220 mm



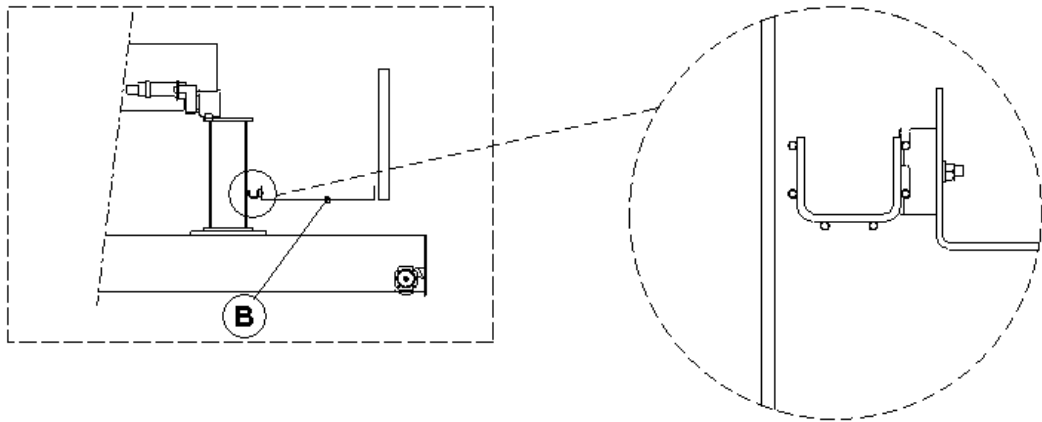
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- A. Primary cable channel mounting location
- C. Alternative cable channel mounting location
- 1. Similar cable way (width 75) for the other travelling unit also on the other end.
- 2. Use cover plates (not shown here) with cable ways along end carriages.
- 75. Cable way width 75 mm
- 120. Cable way width 120 mm
- 220. Cable way width 220 mm



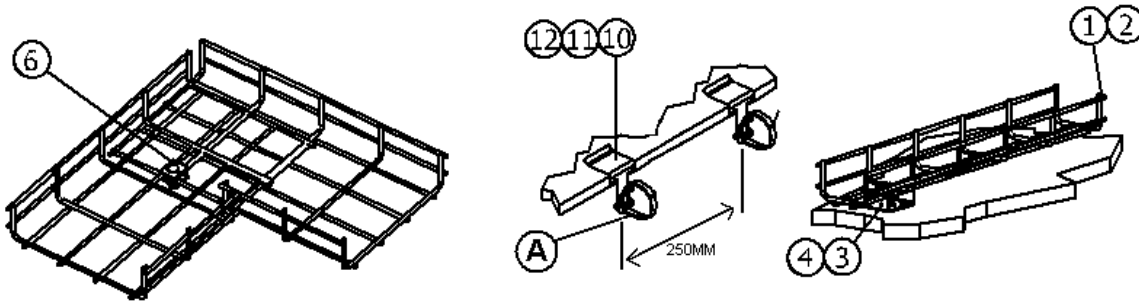
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B. Service platform

In the case of service platform there is a possibility to assemble cables of lights, limit switches, travelling machineries etc in a cable way that situates between main girder and service platform. This cable way do not include in standard delivery. This has to be ordered separately.

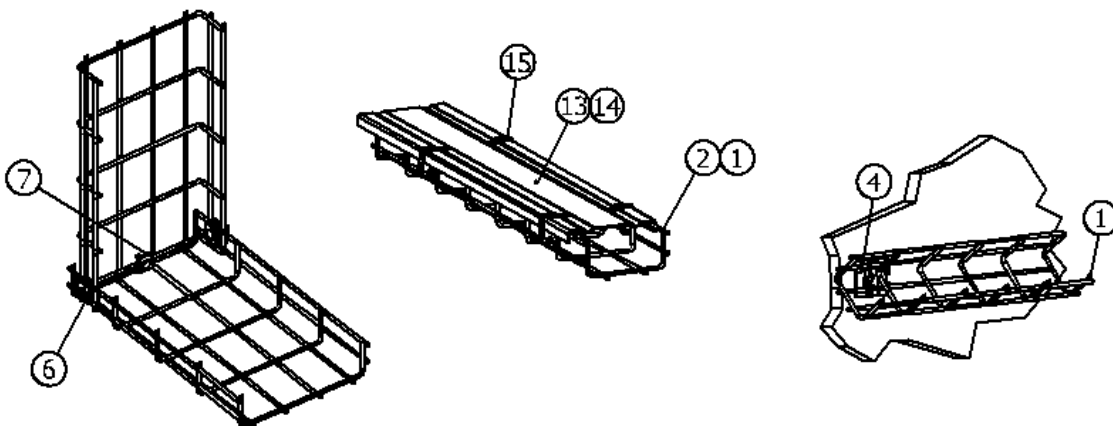
17.2 Common assembly methods



Cable ways as an angle

Cable fasteners for single or few cables
 A. Plastic cable tie

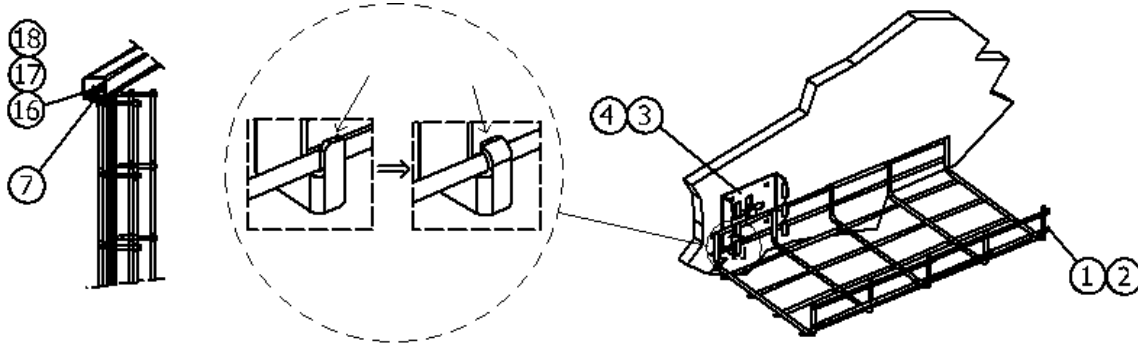
Assembly on top



Cable ways as an angle

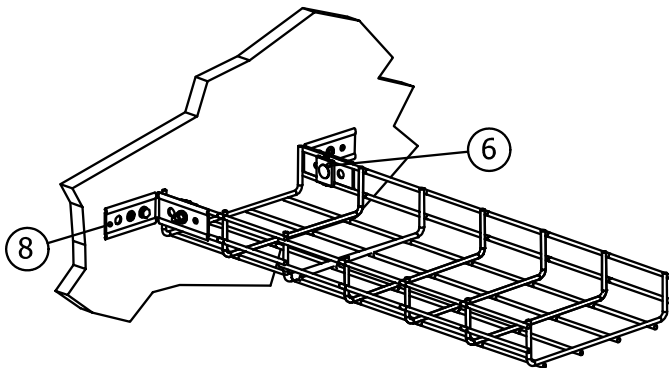
Cover assembly
 4pcs. (15) per cover plate

Wall assembly in an angle

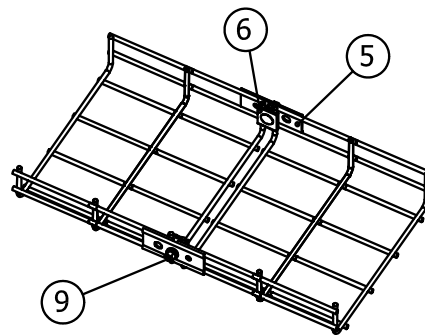


Fastening to a C-rail

Wall mounting



End fastening onto a wall



Joint

- Spacing for brackets 3 and 4 is appr. 500 mm.
- Fastening with M8x16 screw & washer
- Assembly drillings M8

Pos.	Name	Specification
1	Cable way	DEFEM 11 49_ 10
2	Cable way	DEFEM 11 49_ 01
3	Bracket	DEFEM 11 49_ 57
4	Bracket	DEFEM 11 49_ 98
5	Fitting	DEFEM 11 49_ 54
6	Fitting	DEFEM 11 49_ 55
7	Fitting	DEFEM 11 49_ 56
8	Fitting	DEFEM 11 49_ 69
9	Screw set	DEFEM 11 49_ 84
10	Cable fastener	CADDY 4H24CT
11	Cable fastener	CADDY 4H58CT
12	Cable fastener	CADDY 4H91CT
13	Cover plate	DEFEM 11 49_ 70
14	Cover plate	DEFEM 11 49_ 71
15	Clip	DEFEM 11 49_ 79
16	Fixing part	CQ-W25T6L45
17	Washer	DIN125-A8-A3G
18	Screw	DIN912-M8x20-8.8-A3G



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Factory Testing and Inspection of Industrial Crane

Work number (crane factory):	
Customer:	Customer reference:
Crane layout drawing number / Crane Id:	Manufacturer's work number / reference:

Technical Data

ENCLOSURES, OR NOTES AT BACKSIDE (marked items)

Crane Span (m)	Crane type (S, D, U)		<input type="checkbox"/>
Load / hoist I (T) (SWL)	Serial number/hoist I		<input type="checkbox"/>
Load / hoist II (T) (SWL)	Serial number/hoist II		<input type="checkbox"/>
Main-/control voltage[V]; Freq. (Hz)	Controls (pendant etc.)		<input type="checkbox"/>
Colour (RAL) / thickness (um)			<input type="checkbox"/>

Testing and Inspection results:

Item	Explanation	Result	Explanation	Result	
1. Span	Left side (mm)		Right side (mm)		<input type="checkbox"/>
2. Trolley rail gauge (2-girder-type) Trolley B-measure (1-girder-type)	Left/right (mm)		Mid-girder (mm)		<input type="checkbox"/>
	Hoist				<input type="checkbox"/>
3. Crane structure measure	Rail -- top point (mm)		Rail -- low point (mm)		<input type="checkbox"/>
4. Operation of control devices	Pendant		Radio		<input type="checkbox"/>
5. Movement directions / symbols	Pendant		Radio		<input type="checkbox"/>
6. Trolley limit switch	Left		Right		<input type="checkbox"/>
7. Bridge limit switch	Forward		Backward		<input type="checkbox"/>
8. Hook approach measures	Left (mm)		Right (mm)		<input type="checkbox"/>
9. Operation of hoisting machinery and running sound	Hoist I		Hoist II		<input type="checkbox"/>
10. Operation of traversing machinery and running sound	Hoist I		Hoist II		<input type="checkbox"/>
11. Operation of travelling machinery and running sound	Forward		Backward		<input type="checkbox"/>
12. Crane lights	Operation				<input type="checkbox"/>
13. Horn / flashlight	Operation				<input type="checkbox"/>
14. Anti-collision limit switch	Forward		Backward		<input type="checkbox"/>
15. Girder -- end truck connections			Torque (Nm)		<input type="checkbox"/>
16. Welds	Appearance				<input type="checkbox"/>
17. Surface treatment	Dry film thickness (um)		Appearance		<input type="checkbox"/>
18. Signs and stickers	Placing				<input type="checkbox"/>
19. Documents					<input type="checkbox"/>
20. Other					<input type="checkbox"/>
21. Other					<input type="checkbox"/>

Crane has been inspected and tested as listed above. Testing was done without load.

Date and place:

Name / Signature:

Crane Factory:



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At Site Inspection of Industrial Crane

Customer:	Delivery address:																																													
Customer Order/Ref Nr:	Manufacturer's work number / reference:																																													
Remarks:																																														
Strike out items, which are not applicable to delivery. In case of any deficiencies in the delivery, return copy of this form with comments to crane factory.																																														
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