

English
11.9.2008



COMPLETE ASSEMBLY INSTRUCTION FOR CRANES

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SUPDOC006-0.ORD

066800





R&M Materials Handling, Inc.
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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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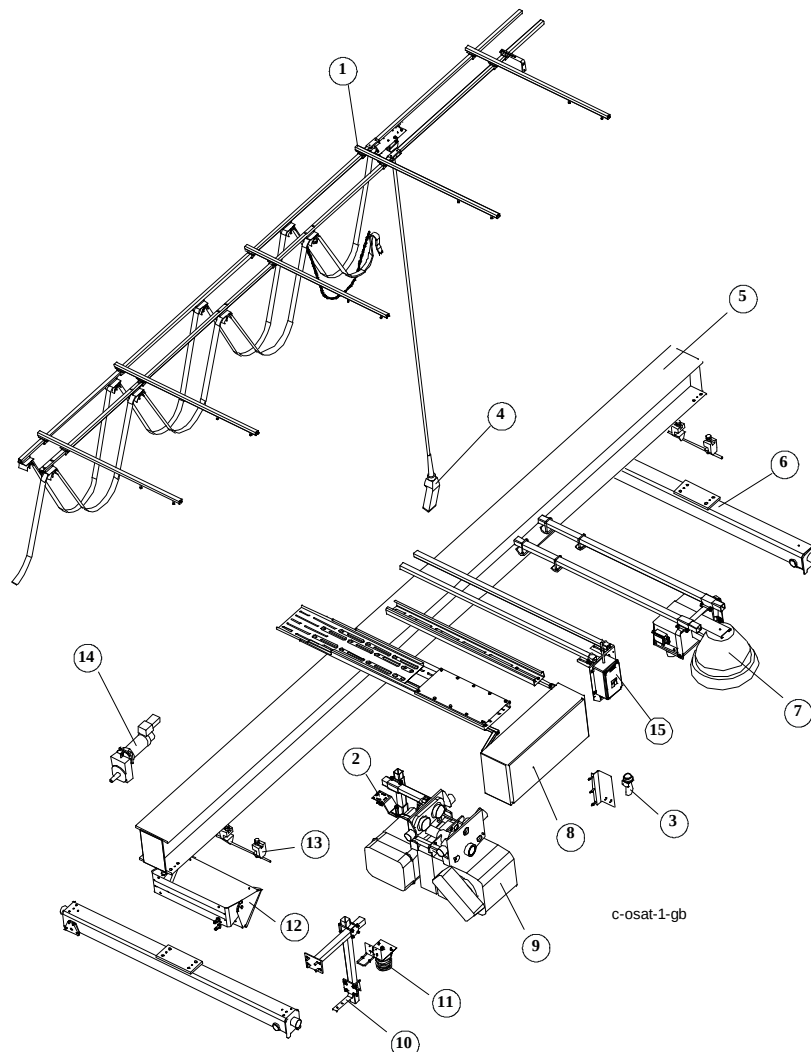
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1 Crane components

1.1 Single girder crane (Wire rope hoist)

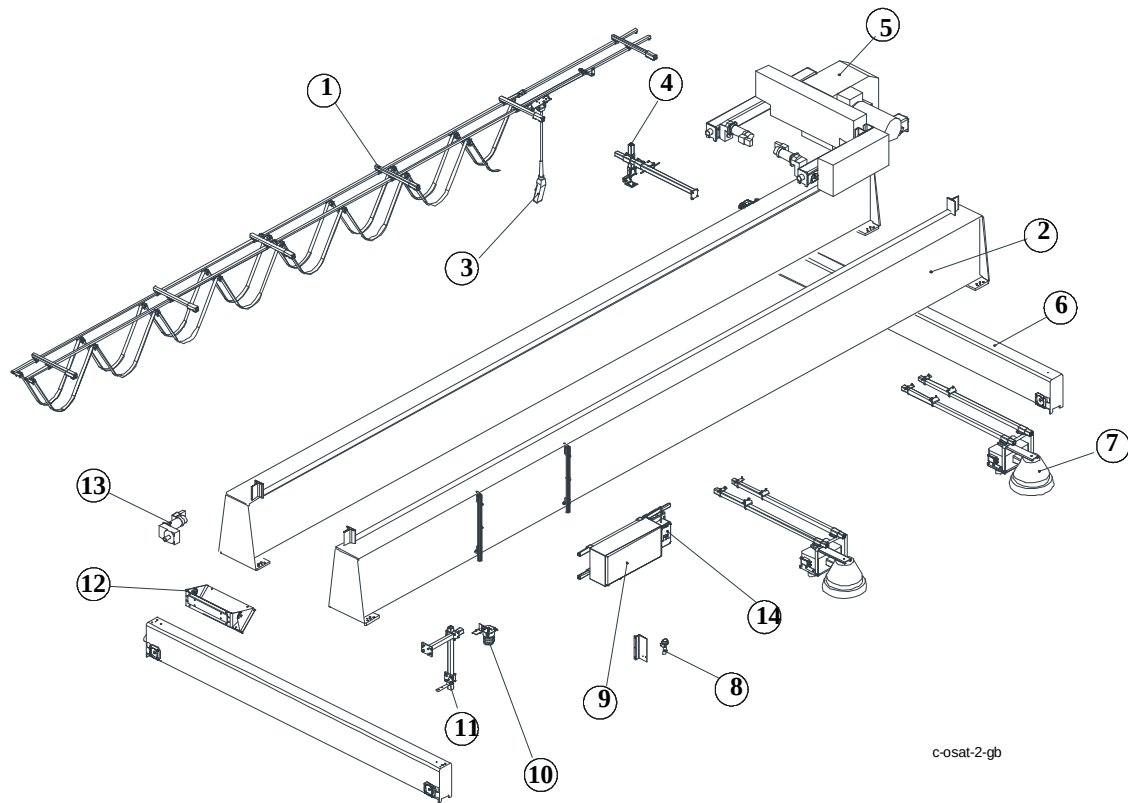


Pos.	Name	Pos.	Name
1	Festoon assembly	9	Hoist
2	Hoist power towing arm	10	Crane power towing arm
3	Horn (option)	11	Flashing light (option)
4	Pendant (option)	12	Load display (option)
5	Main girder	13	Buffer stop
6	End carriage	14	Bridge traveling machinery
7	Light (option)	15	Radio (option)
8	Bridge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



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1.2 Double girder crane (Wire rope hoist)



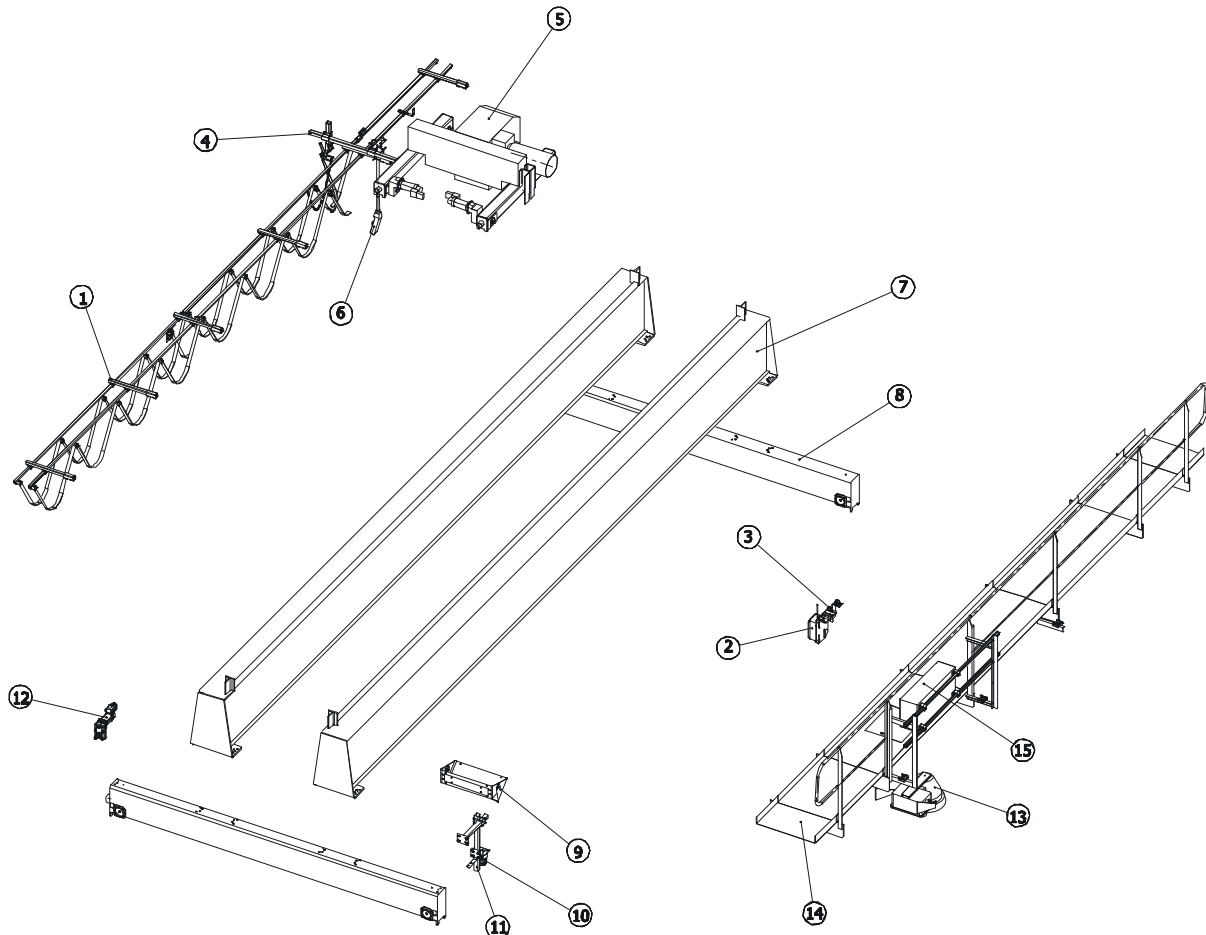
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Pos.	Name	Pos.	Name
1	Festoon assembly	8	Horn (option)
2	Main girders	9	Bridge panel
3	Pendant (option)	10	Flashing light (option)
4	Hoist power towing arm	11	Crane power towing arm
5	Hoist	12	Load display (option)
6	End carriage	13	Bridge traveling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



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

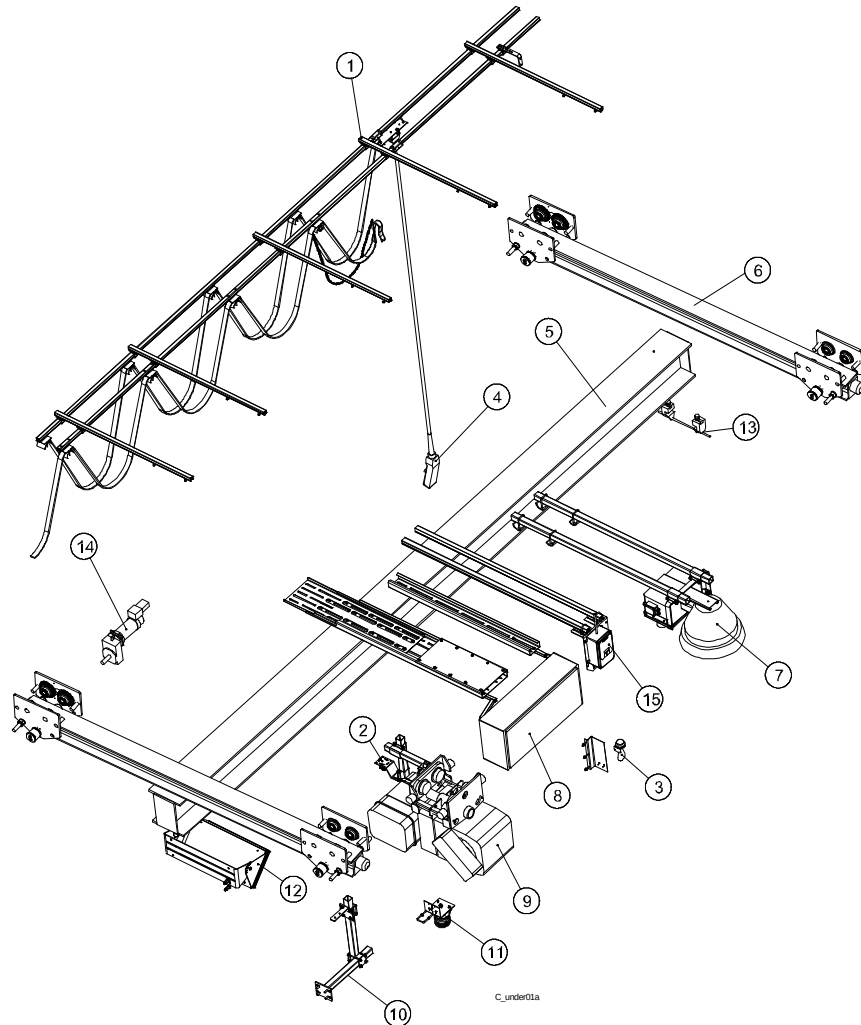


Pos.	Name	Pos.	Name
1	Festoon assembly	9	Load display (option)
2	Radio (option)	10	Flashing light (option)
3	Horn (option)	11	Crane power towing arm
4	Hoist power towing arm	12	Bridge traveling machinery
5	Hoist	13	Light
6	Pendant (option)	14	Service platform (option)
7	Main girders	15	Bridge panel
8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



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1.4 Single girder crane, underrunning end carriages

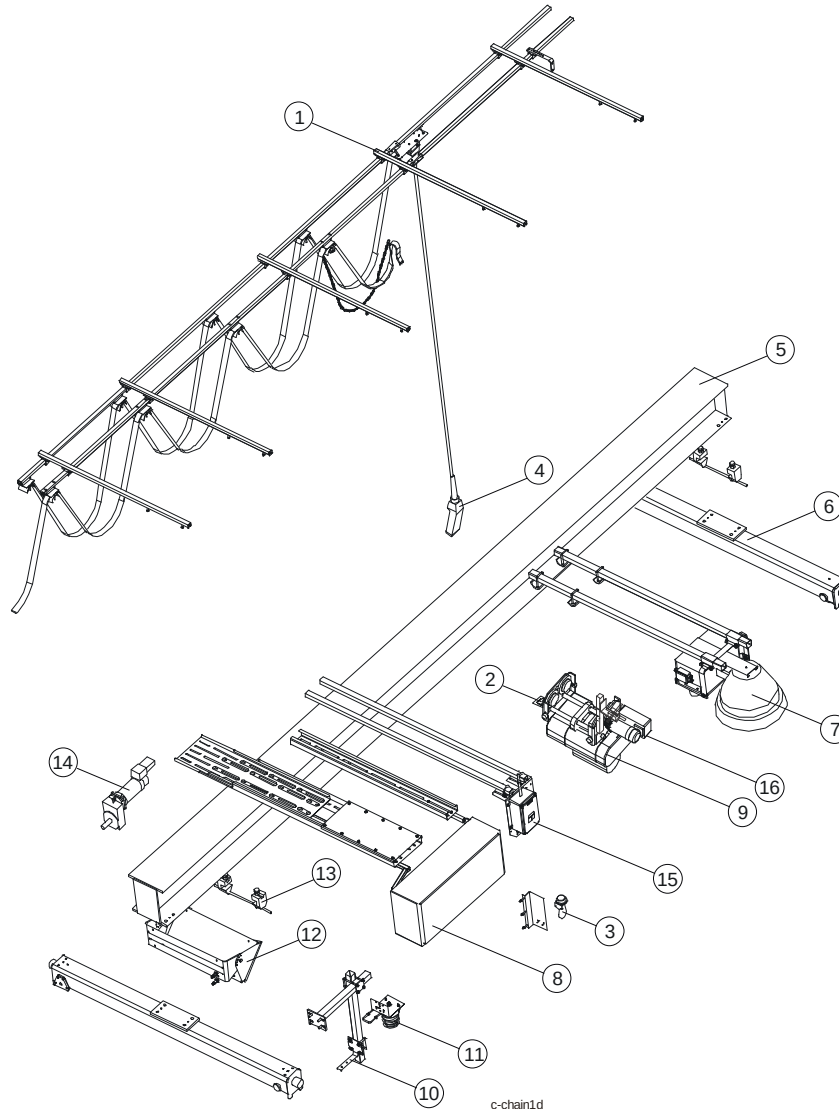


Pos.	Name	Pos.	Name
1	Festoon assembly	9	Hoist
2	Hoist power towing arm	10	Crane power towing arm
3	Horn (option)	11	Flashing light (option)
4	Pendant (option)	12	Load display (option)
5	Main girder	13	Buffer stop
6	End truck	14	Bridge traveling machinery
7	Light (option)	15	Radio (option)
8	Bridge panel		



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1.5 Single girder crane (Chain hoist)



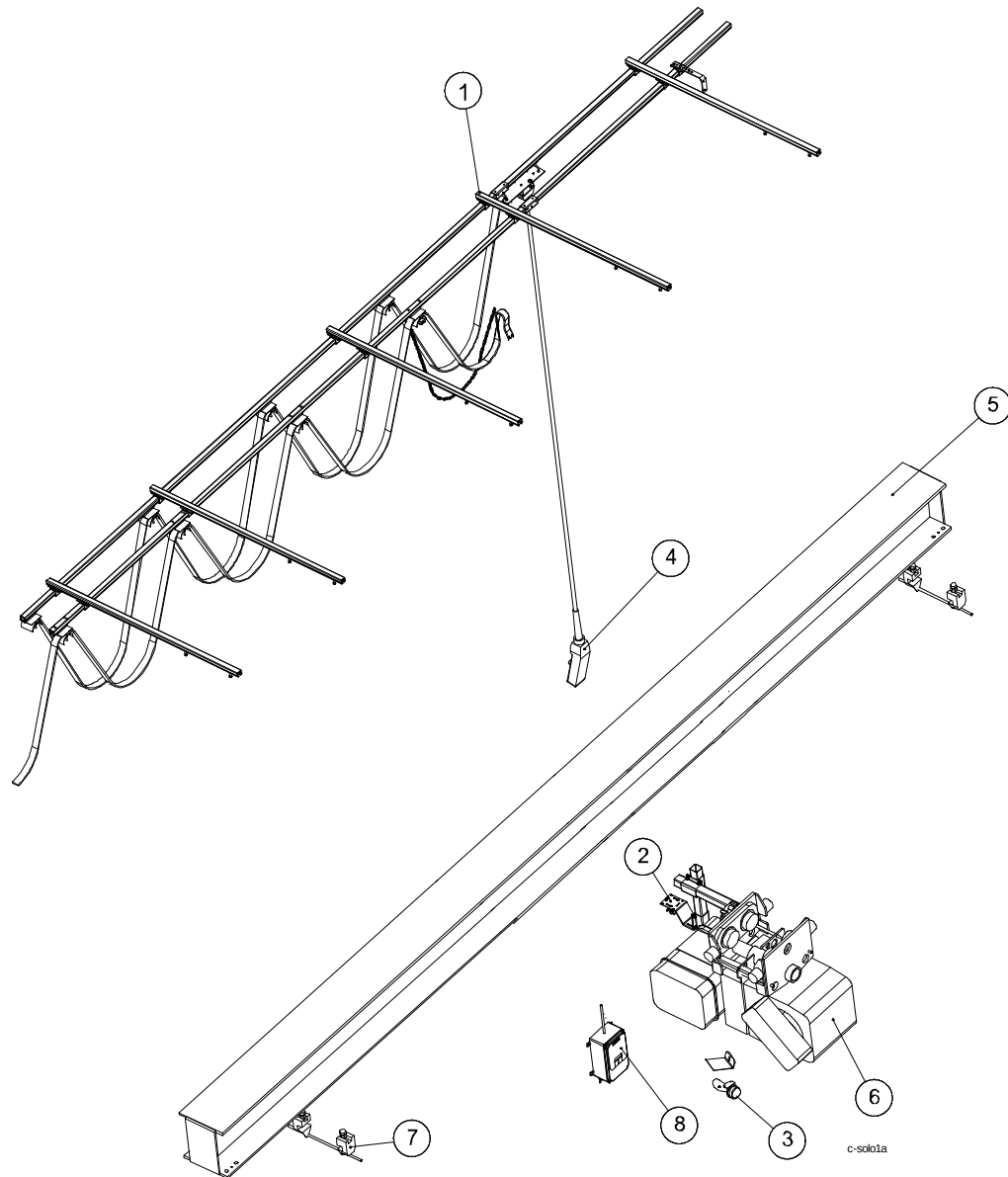
c-chain1d

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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1.6 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)		

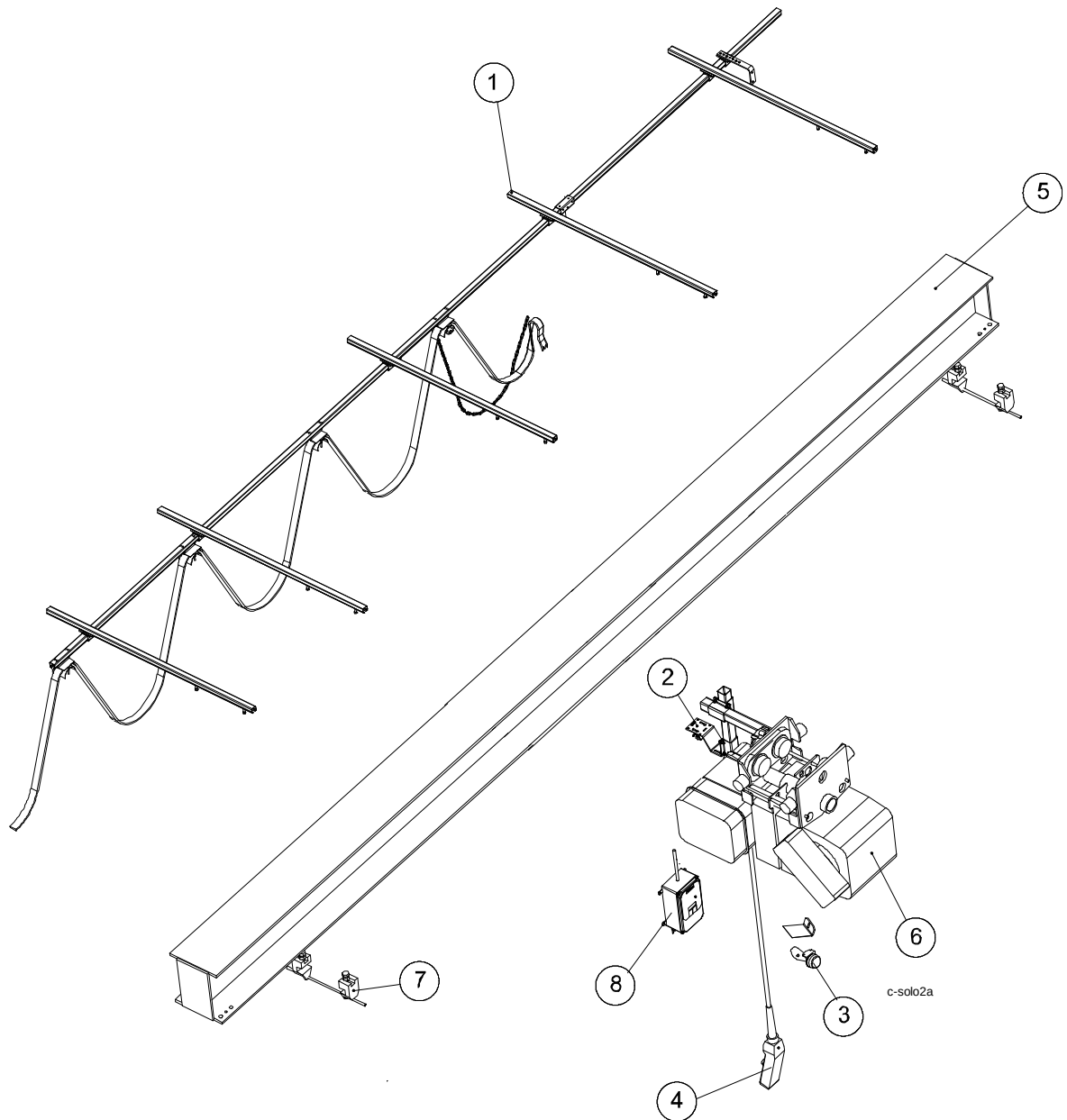


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1.7 Solo hoist, pendant fixed in hoist (Wire rope hoist)





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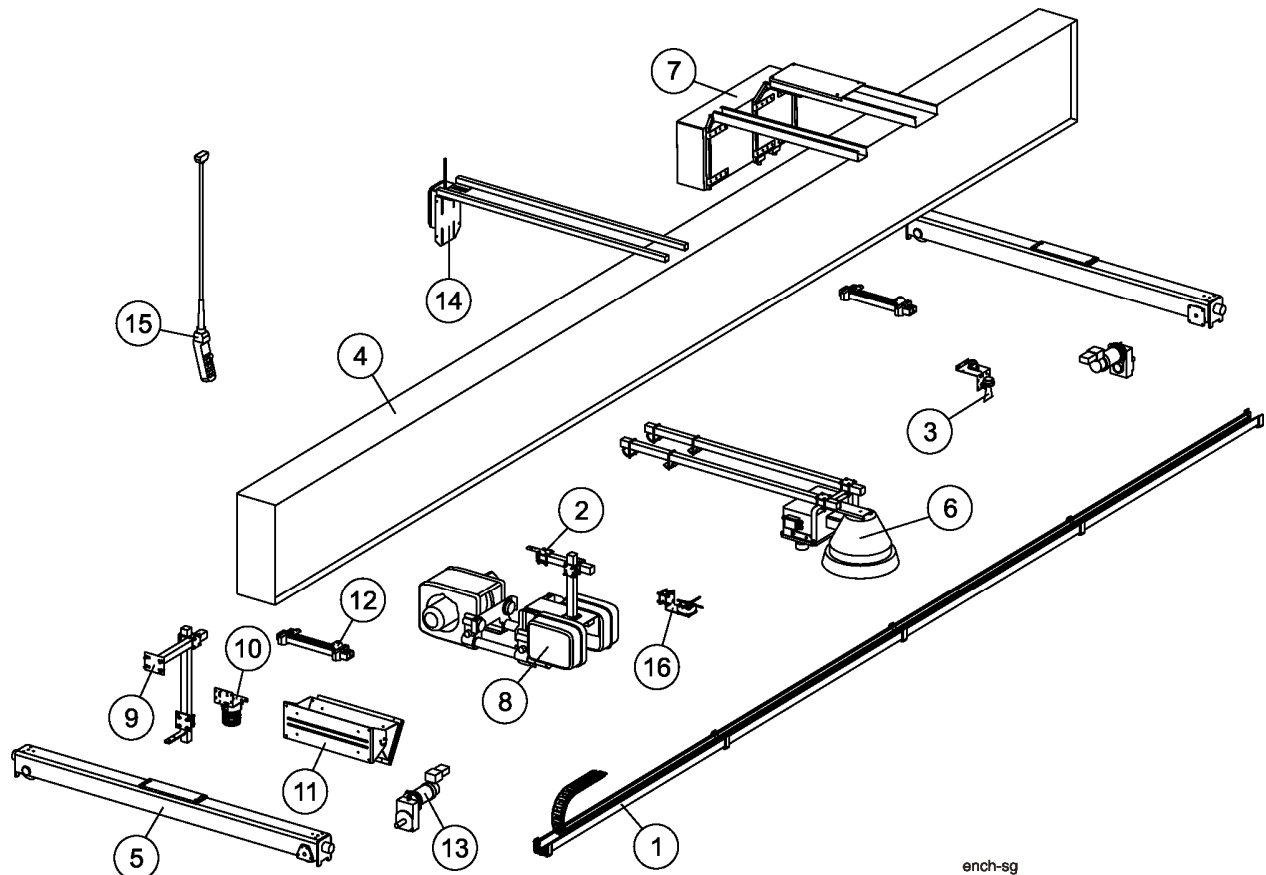
Pos.	Name		
1	Festoon assembly		
2	Hoist power towing arm		
3	Horn (option)		
4	Pendant (option)		
5	Main girder		
6	Hoist		
7	Buffer stop		
8	Radio (option)		



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2 Crane components (Energy chain)

2.1 Single girder crane (Wire rope hoist, Energy chain)



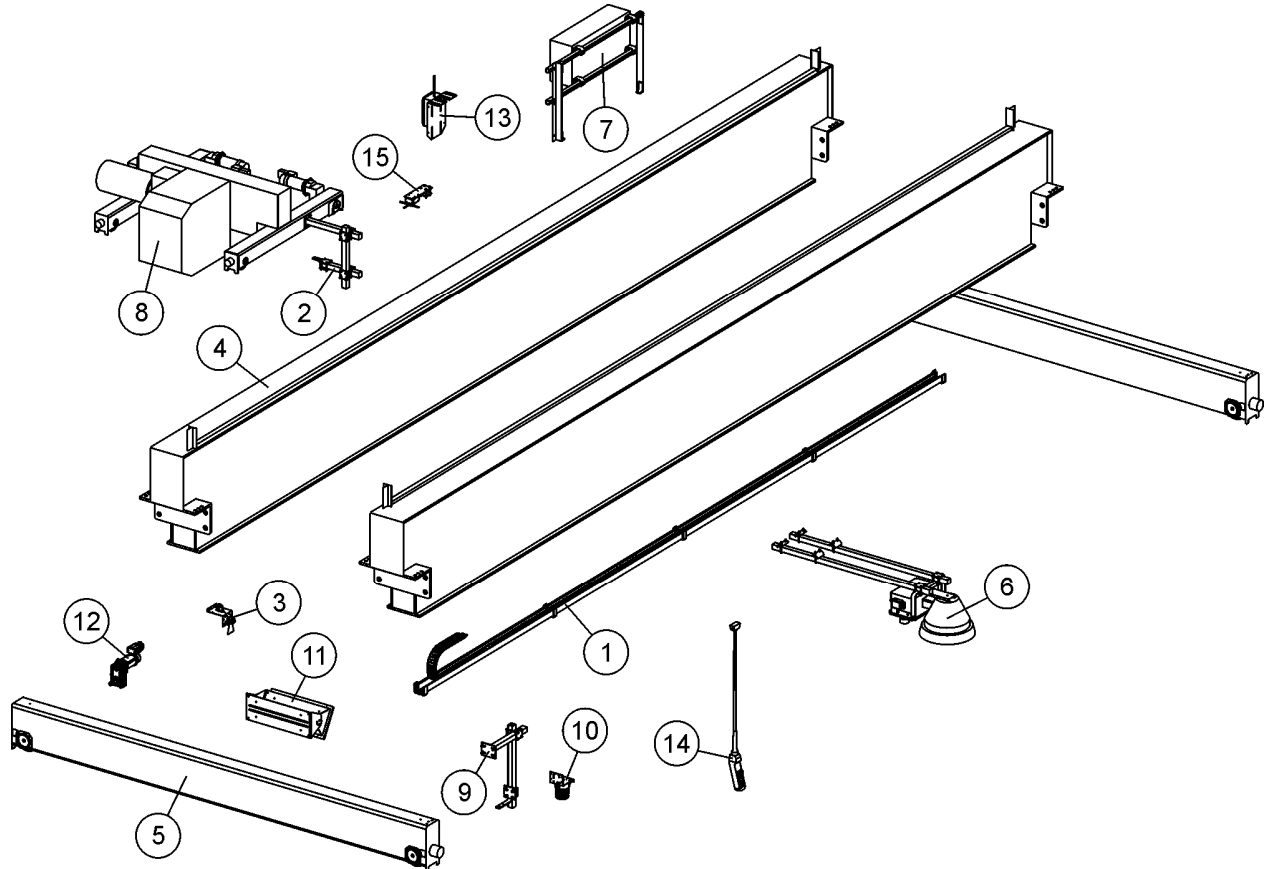
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Pos.	Name	Pos.	Name
1	Energy chain assembly	9	Crane power towing arm
2	Hoist power towing arm	10	Flashing light (option)
3	Horn (option)	11	Load display (option)
4	Main girder	12	Buffer stop
5	End carriage	13	Bridge travelling machinery
6	Light (option)	14	Radio (option)
7	Bridge panel	15	Pendant (option)
8	Hoist	16	Limit switch



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2.2 Double girder crane (Wire rope hoist, Energy chain)

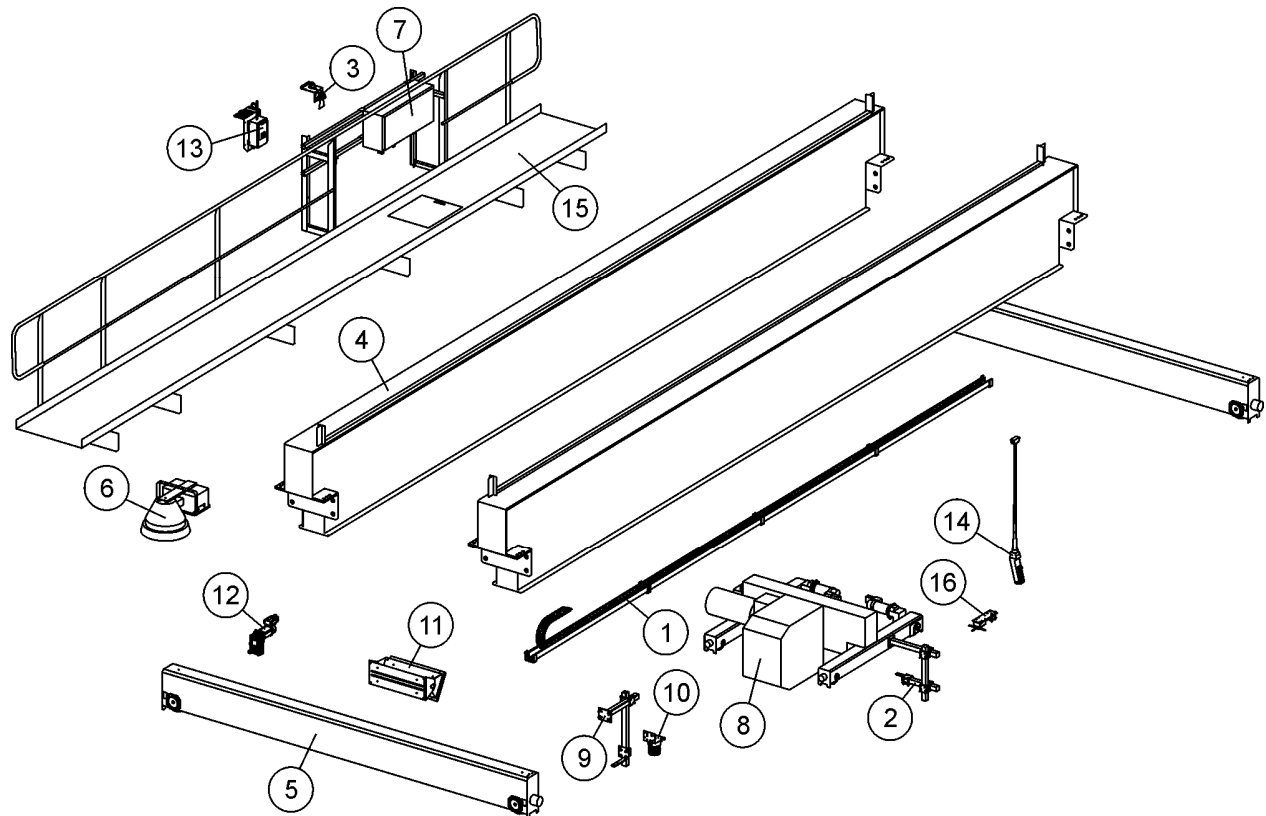


Pos.	Name	Pos.	Name
1	Energy chain assembly	9	Crane power towing arm
2	Hoist power towing arm	10	Flashing light (option)
3	Horn (option)	11	Load display (option)
4	Main girders	12	Bridge travelling machinery
5	End carriage	13	Radio (option)
6	Light (option)	14	Pendant (option)
7	Bridge panel	15	Limit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



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2.3 Double girder crane with a service platform (Wire rope hoist, Energy chain)



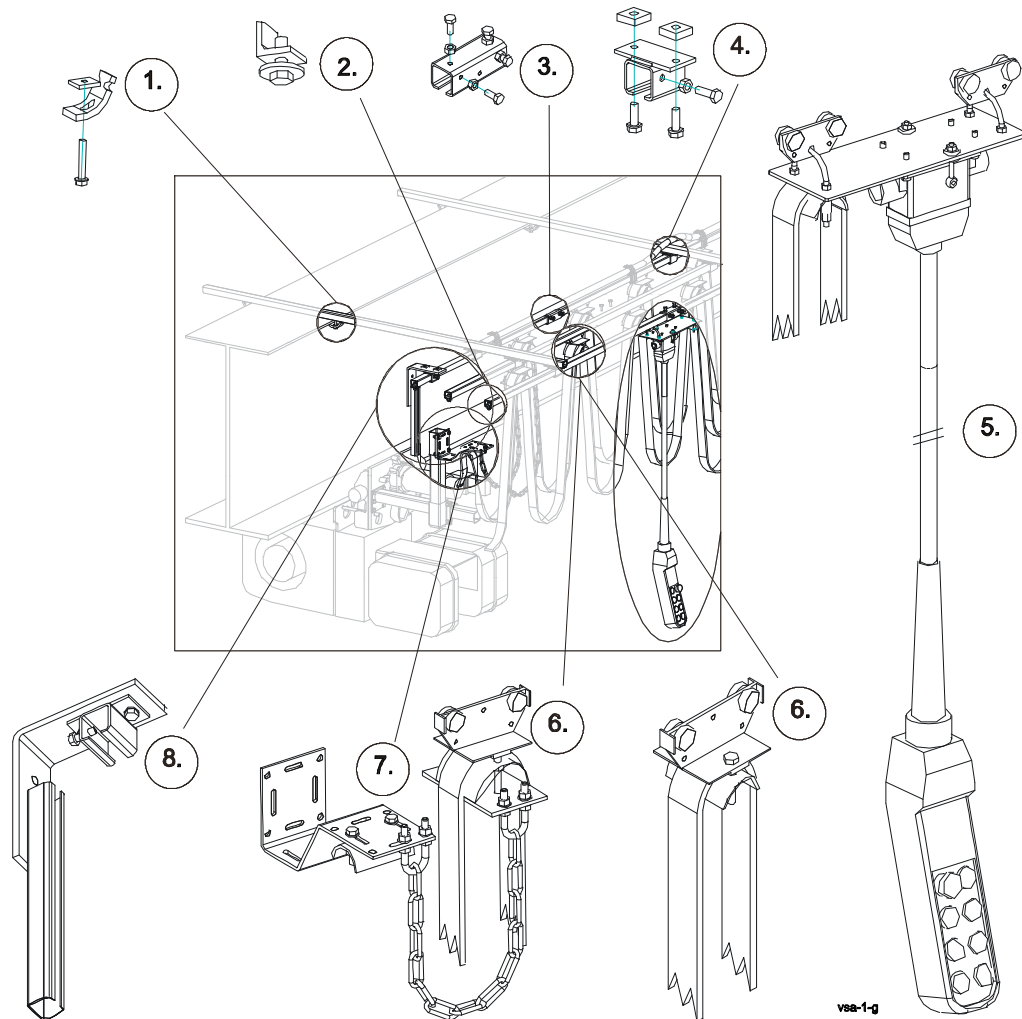
Pos.	Name	Pos.	Name
1	Energy chain assembly	9	Crane power towing arm
2	Hoist power towing arm	10	Flashing light (option)
3	Horn (option)	11	Load display (option)
4	Main girders	12	Bridge travelling machinery
5	End carriage	13	Radio (option)
6	Light (option)	14	Pendant (option)
7	Bridge panel	15	Service platform (option)
8	Hoist	16	Limit switch



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3 Festoon assembly

3.1 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	

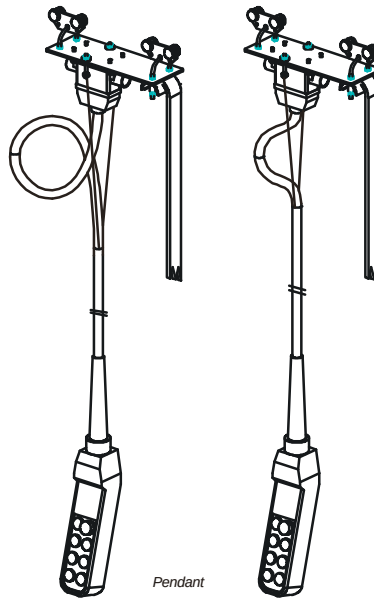


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Part number seven (7) is an assembly, which includes a current collector, a cable saddle, two pieces of arced fasteners, a chain and a plate for a cable trolley.

To notice when assembling a festoon

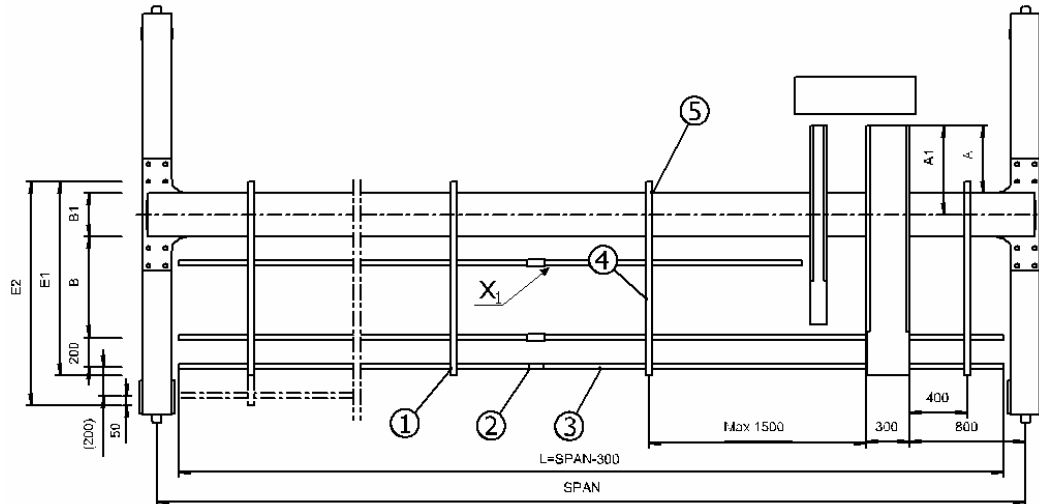
- Make sure that the joint (part no. 3) is smooth for trolley (part no. 6) to travel.
- Pendant trolley will be assembled in the outer c-rail from the crane.
- Tighten strain relief wires on both sides of the plug so that the pendant cable is either on loop or on pleat. When looped, there will be better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





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3.2 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

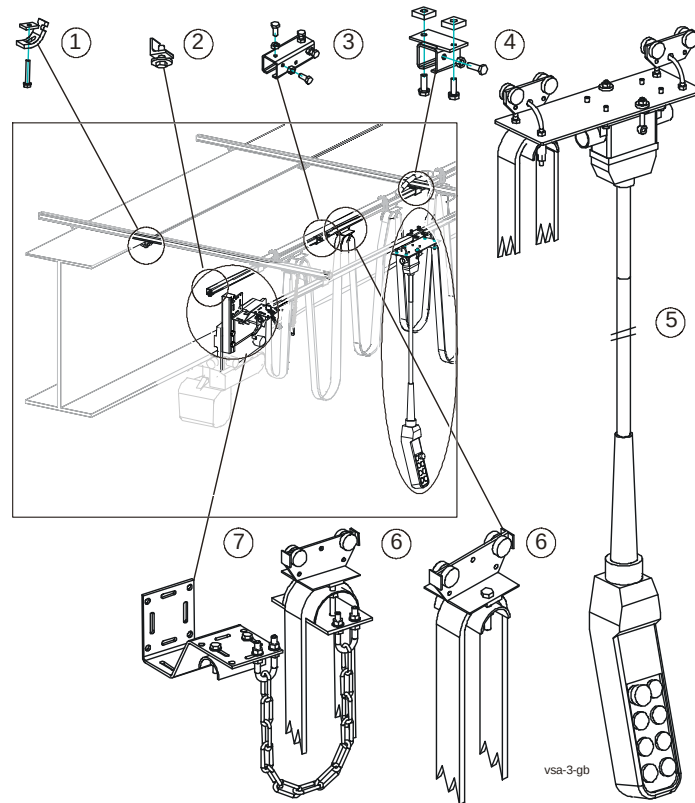
Normal headroom hoist					
Hoist - Ropes	Flange B1	A1	B	E1	E2
Drum diam. 303 mm -R2/R4	≤270	530	660	1340	1520
Drum diam. 303 mm -R2/R4	>270	530	660	1520	1800
Drum diam. 355 mm -R2/R4	≤270	600	720	1340	1520
Drum diam. 355 mm -R2/R4	>270	600	720	1520	1800
Drum diam. 406 mm -R2x	≤270	750	840	1520	1800
Drum 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



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3.3 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		

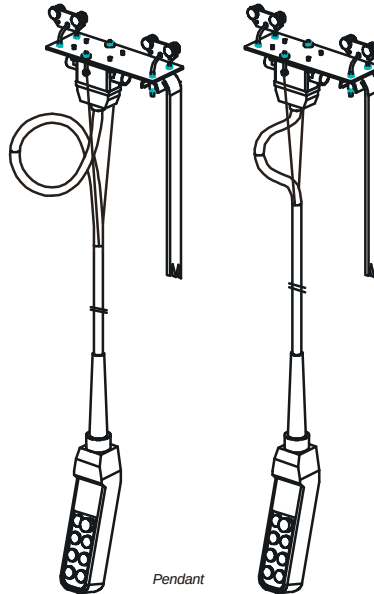
Part number seven (7) is an assembly, which includes a current collector, a cable saddle, two pieces of arced fasteners, a chain and a plate for a cable trolley.



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To notice when assembling a festoon

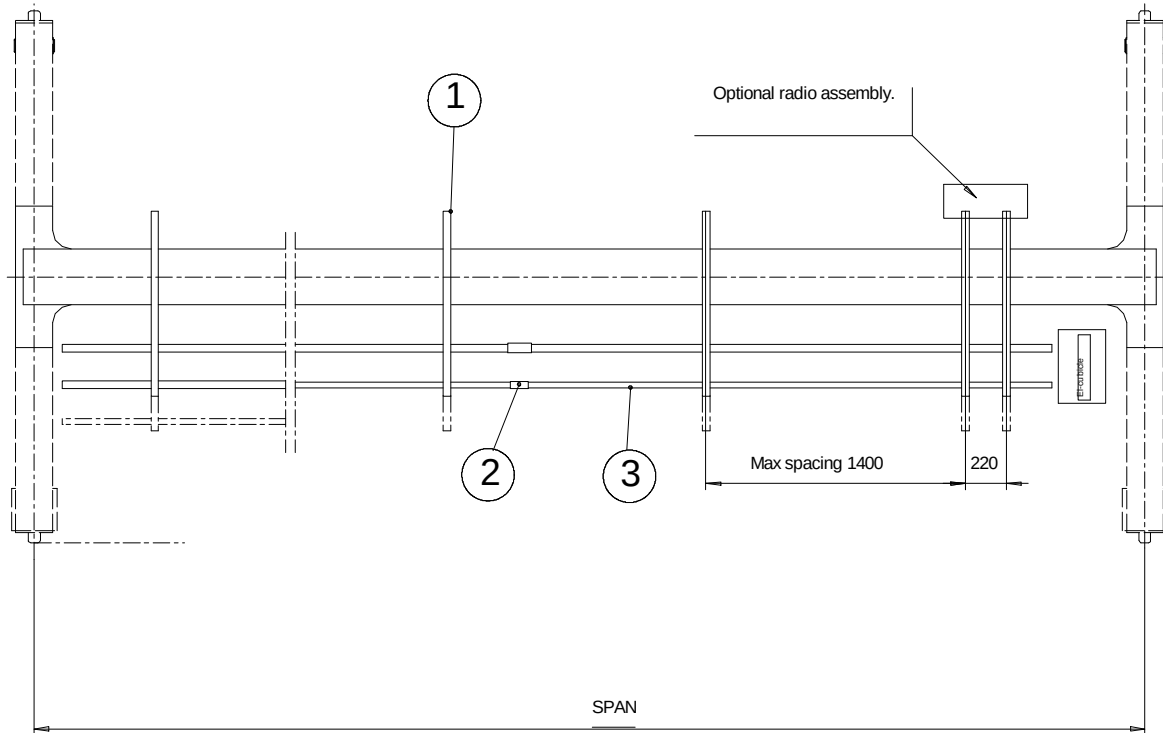
- Make sure that the joint (part no. 3) is smooth for trolley (part no. 6) to travel.
- Pendant trolley will be assembled in the outer c-rail from the crane.
- Tighten strain relief wires on both sides of the plug so that the pendant cable is either on loop or on pleat. When looped, there will be better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





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

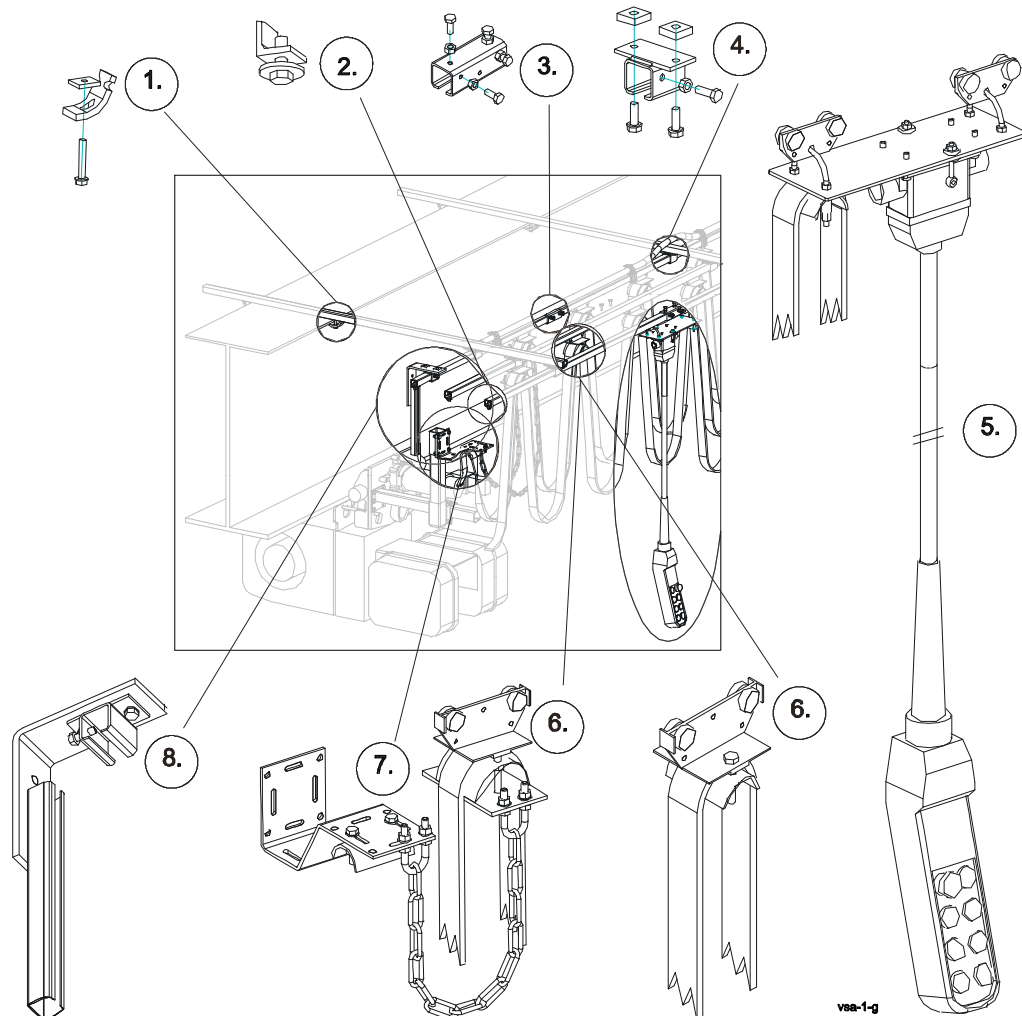


Pos.	Name
1	Track support
2	Track joint
3	C-rail



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3.5 Solo hoist with moveable pendant (Wire rope hoist)



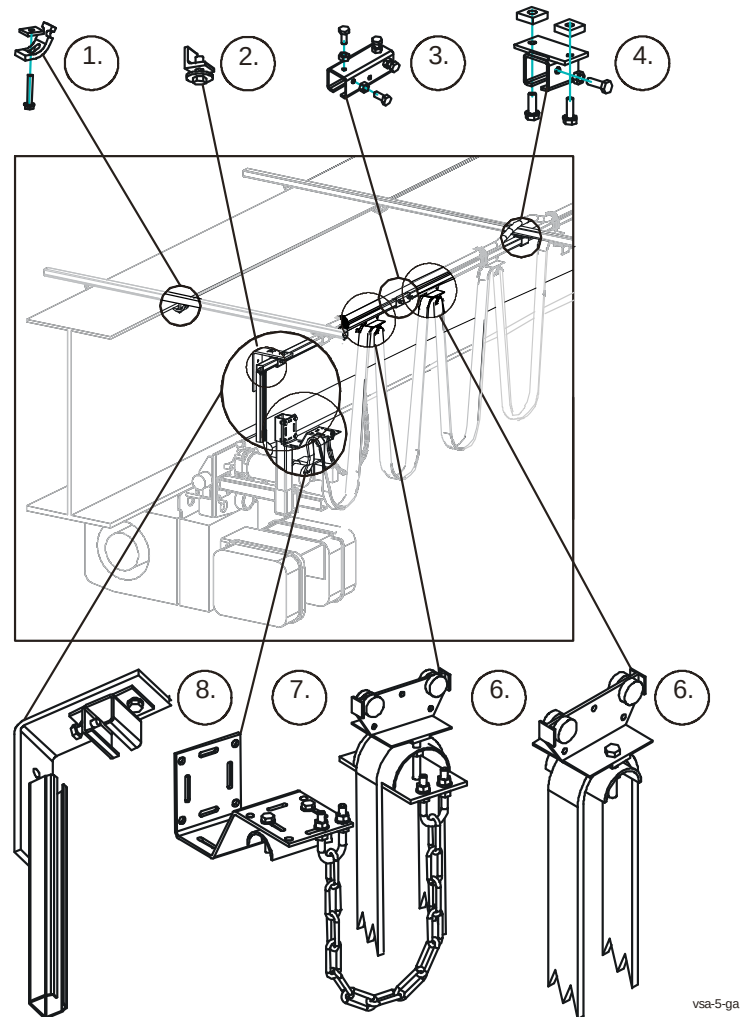
Pos.	Name	Specification	Amount
1	Beam clip	KC-020181 or KC-020180	
2	End stop	KC-023215	
3	Track joint	KC-024105 or KC-023210	
4	Track support bracket	KC-023226 or KC-024122	
5	Pendant trolley (option)		
6	Cable trolley		
7	Towing arm assembly		
8	Limit switch trigger and adapter	QA-L210W30 and KC-023201	

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



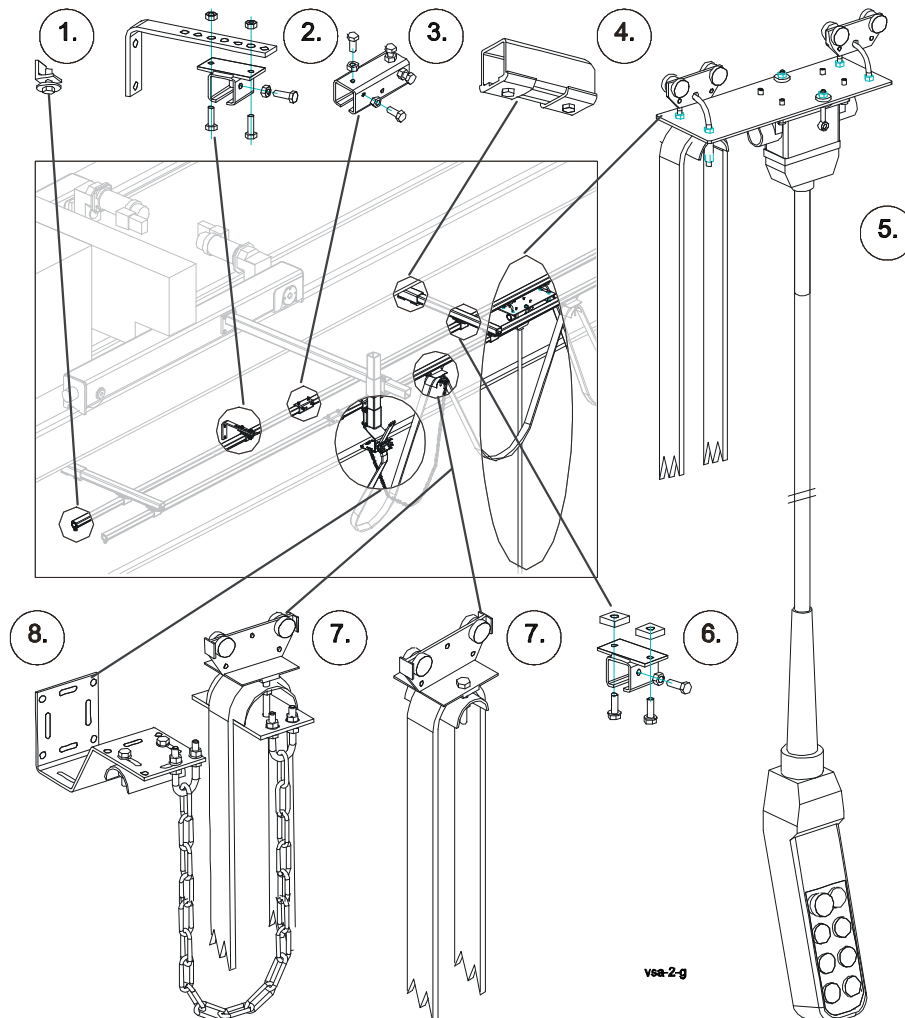
Pos.	Name	Specification	Amount
1	Beam clip	KC-020181 or KC-020180	
2	End stop	KC-023215	
3	Track joint	KC-024105 or KC-023210	
4	Track support bracket	KC-023226 or KC-024122	
6	Cable trolley		
7	Towing arm assembly		
8	Limit switch trigger and adapter	QA-L210W30 and KC-023201	

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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3.7 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		

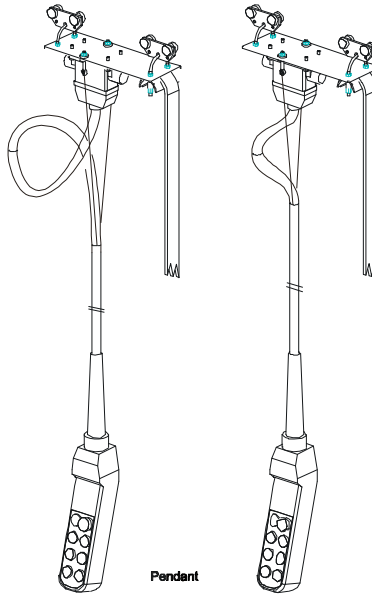
- Part number eight (8) is an assembly, which includes a current collector, a cable saddle, two pieces of fixing plates, a chain and a plate for a cable trolley.
- Part number 4 is not included in standard delivery



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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.

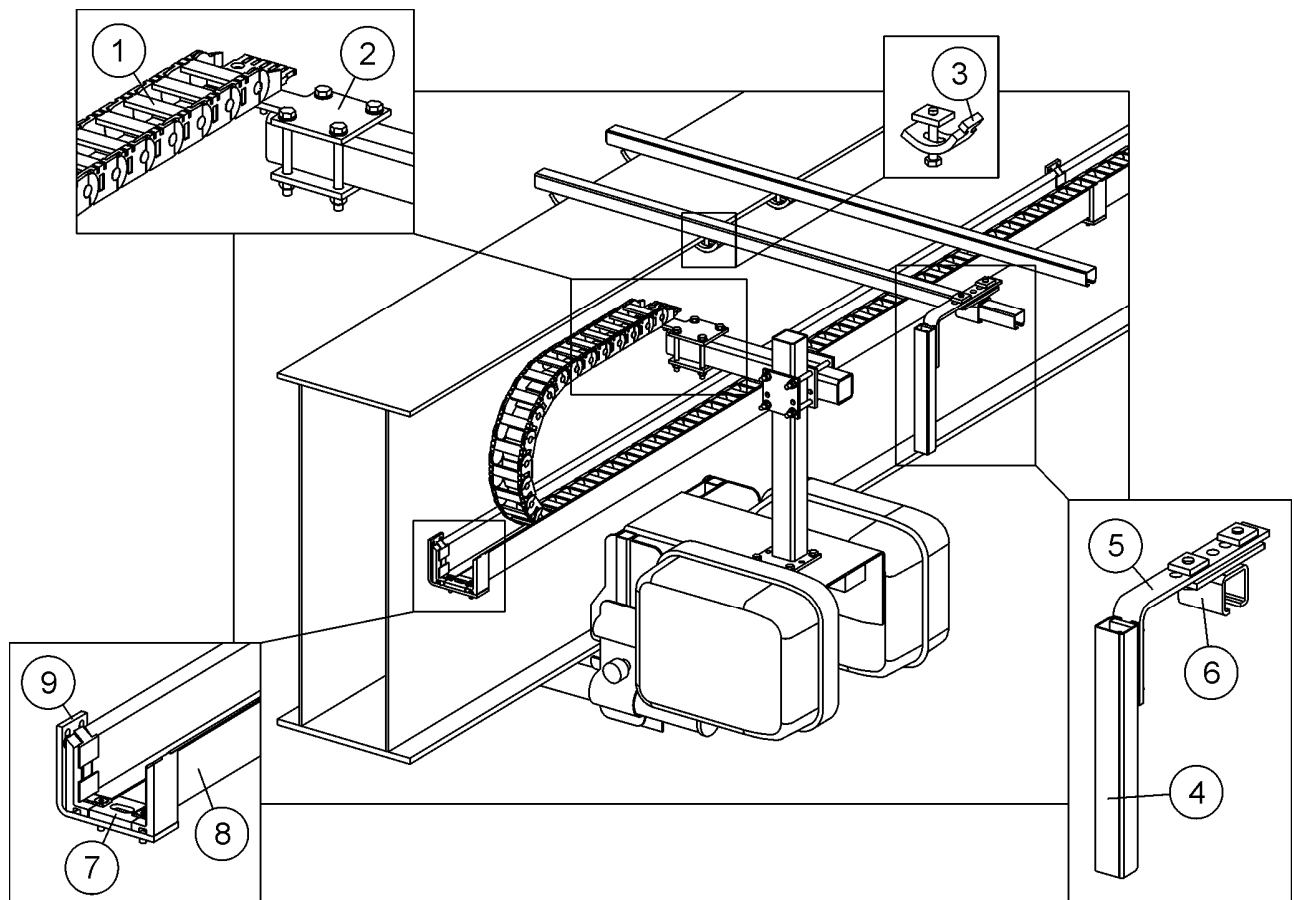




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4 Energy chain assembly

4.1 Energy chain, Single girder crane (Wire rope hoist)

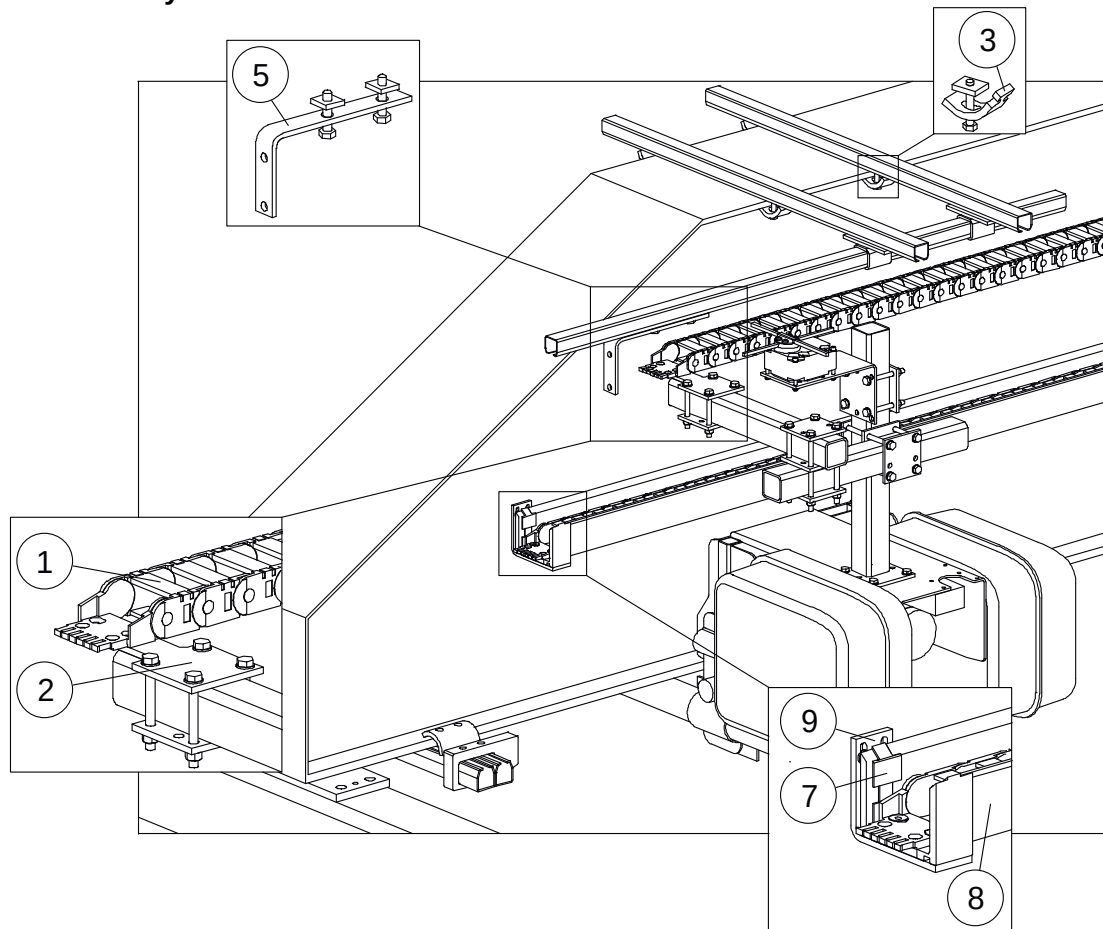


Pos.	Name	Specification	Amount
1	Energy power chain	2500, E200 or 10	
2	Towing arm	CQT-L175W80H6	
3	Beam clip	KC-020181-08	
4	C-rail	KC-020275-0250	
5	Trigger plate	QA-L210W30	
6	Track support	KC-023222-1 or KC-024155	
7	Installation set for guide channel	92.950.03 or 92.950.05	
8	Guide channel	CQ-L1984W 24H68T2	
9	Fixing plate	CQ-L110W40H90T5	



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Alternative assembly



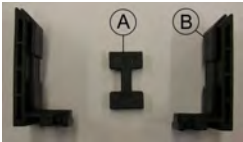
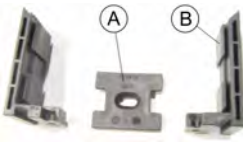
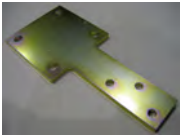
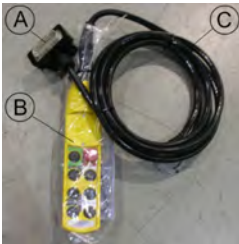
Pos.	Name	Specification	Amount
1	Energy power chain	2500, E200 or 10	
2	Towing arm	CQT-L175W80H6	
3	Beam clip	KC-020181-08	
5	Trigger plate	QA-L210W30	
7	Installation set for guide channel	92.950.03 or 92.950.05	
8	Guide channel	CQ-L1984W 24H68T2	
9	Fixing plate	CQ-L110W40H90T5	



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4.2 Delivered Components

Please check that you have all the components listed below in the energy chain package.

1	Energy chain 	2	Guide channel 
3	Installation set Chain type 10  A. Spacer plate B. Side part Chain type E200 and 2500  A. Spacer plate B. Side part	4	Guide channel support parts 
5	Towing arm parts  Standard towing arm  Low headroom towing arm  Low headroom towing arm accessory part (SX2 or SX3 profile main girder)	6	Crane travelling motor cable 
7	Cable ties of motor cable 	8	Radio control system  A. Receiver B. Plug C. Transmitter
9	Accessories Fixing screws for guide channel installation sets  DIN 7991-M6x30 Fixing screws for chain type 10 fixed end  DIN 912-M6x30	10	Spare pendant (option)  A. Plug B. Pendant C. Cable



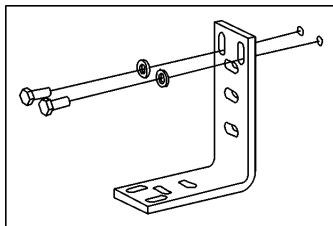
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4.3 Mounting

The mounting of the energy chain should be done in the same order as described in this manual to make the mounting as easy as possible.

4.3.1 Mounting the Guide Channel Support Parts on the Main Girder

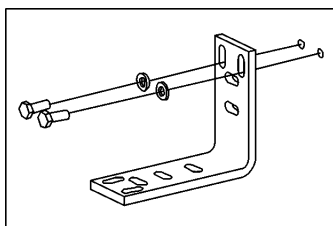
4.3.1.1 Energy Chain Type 10



Make two M6 threads on the main girder for each support part as shown in the drawing. The support part is fixed onto the main girder with M6x16 screws (DIN933). The type of the washer is DIN126. Make sure that the long side of the support part is fixed on to the main girder.

The easiest and fastest way to mount the support parts is to make two small holes into the main girder and use self-tapping screws.

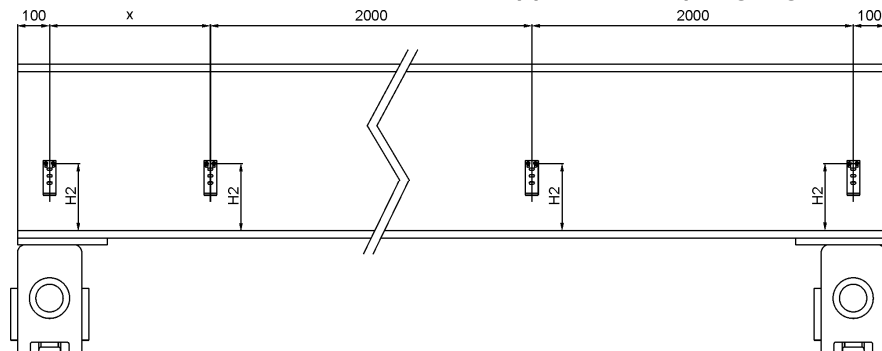
4.3.1.2 Energy Chain Types E200 and 2500



Make two M6 threads on the main girder for each support part as shown in the drawing. The support part is fixed on the main girder with M6x16 screws (DIN933). The type of the washer is DIN126. Make sure that the short side of the support part is fixed on to the main girder.

The easiest and fastest way to mount the support parts is to make two small holes into the main girder and use self-tapping screws.

4.3.1.3 Main Girder Mounted with Guide Channel Support Parts (Single girder crane)



Start the guide channel mounting from the bridge cubicle side (fixed end of the energy chain, right side on the drawing) support part of the energy chain. It is mounted 100 mm from the end plate of the main girder. This way the chain cables are supported in the whole span distance. Mount the other support



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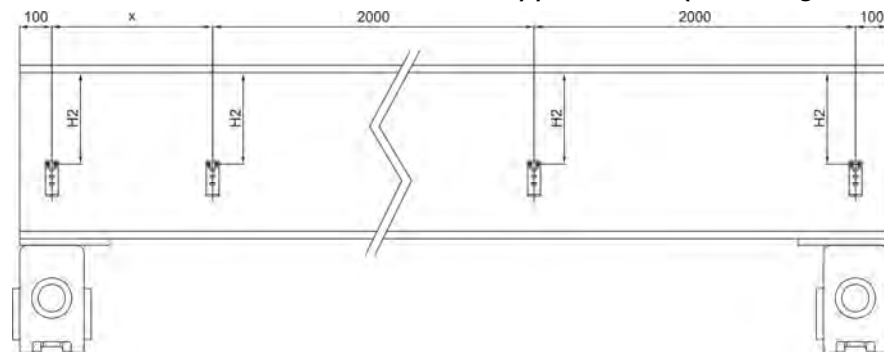
parts at exactly 2000 mm intervals measuring from the centre line of the support parts as illustrated in the drawing above.

The last support on the energy chain loop end (moving end, left side on the drawing) is also mounted at a distance of 100 mm from the end plate of the main girder. This is the place where the shorter guide channel part should be located. It is marked as distance X in the drawing above. On this end the guide channel can be shorter if needed, but do not make it shorter than the energy chains loop: the loop should always be completely supported by the guide channel.

H2 DIMENSIONS

PROFILE MAIN GIRDER			
Chain type	Hoist type	Hoist frame size	H2 (mm)
10	Low headroom hoist	SX2, SX3, SX4, SX5	125
10	Normal headroom hoist	SX2, SX3, SX4, SX5	140
E200, 2500	Low headroom hoist	SX2, SX3	180
E200, 2500	Low headroom hoist	SX4, SX5	220
E200, 2500	Low headroom hoist (12,5 t hoist)	SX5	240
E200, 2500	Normal headroom hoist	SX2, SX3, SX4, SX5	220
BOX MAIN GIRDER			
Chain type	Hoist type	Hoist frame size	H2 (mm)
10, E200, 2500	Low headroom hoist	SX2, SX3	350
10, E200, 2500	Low headroom hoist	SX4	370
10, E200, 2500	Low headroom hoist	SX5	390
10, E200, 2500	Normal headroom hoist	SX2, SX3, SX4, SX5	280

4.3.1.4 Main Girder Mounted with Guide Channel Support Parts (Double girder crane)



Start the guide channel mounting from the bridge cubicle side (fixed end of the energy chain, right side on the drawing) support part of the energy chain. It is mounted 100 mm from the end plate of the main girder. This way the chain cables are supported in the whole span distance. Mount the other support parts at exactly 2000 mm intervals measuring from the centre line of the support parts as illustrated in the drawing above.



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The last support on the energy chain loop end (moving end, left side on the drawing) is also mounted at a distance of 100 mm from the end plate of the main girder. This is the place where the shorter guide channel part should be located. It is marked as distance X in the drawing above. On this end the guide channel can be shorter if needed, but do not make it shorter than the energy chains loop: the loop should always be completely supported by the guide channel.

H2 DIMENSIONS

DOUBLE MAIN GIRDER (BOX AND PROFILE)			
Chain type	Hoist type	Hoist frame size	H2 (mm)
10	Double girder hoist	SX2, SX3, SX4, SX5	130
E200	Double girder hoist	SX2, SX3, SX4, SX5	190
2500	Double girder hoist	SX2, SX3, SX4, SX5	330

4.3.2 Mounting the Guide Channel

4.3.2.1 Assembling the Guide Channel Installation Sets



Assemble the side parts together with the spacer plate as shown in the picture.

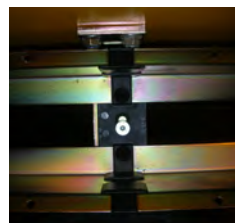
4.3.2.2 Connecting the Guide Channel with Installation Sets



Insert the guide channel bars carefully inside the installation set. If the bars do not easily glide inside the installation set, bend the bars slightly inwards. Do not bend too much to prevent the fixing tongues of the installation set from breaking up!



A. Right placing of the guide channel



Be sure that the guide channel bars are mounted all the way in the installation set. The right mounting is presented in the picture above. Please note that 1-2 mm space can be left between the installation set and guide channel bars. This space may be needed if the placing of the guide channel support part has not been accurate enough.



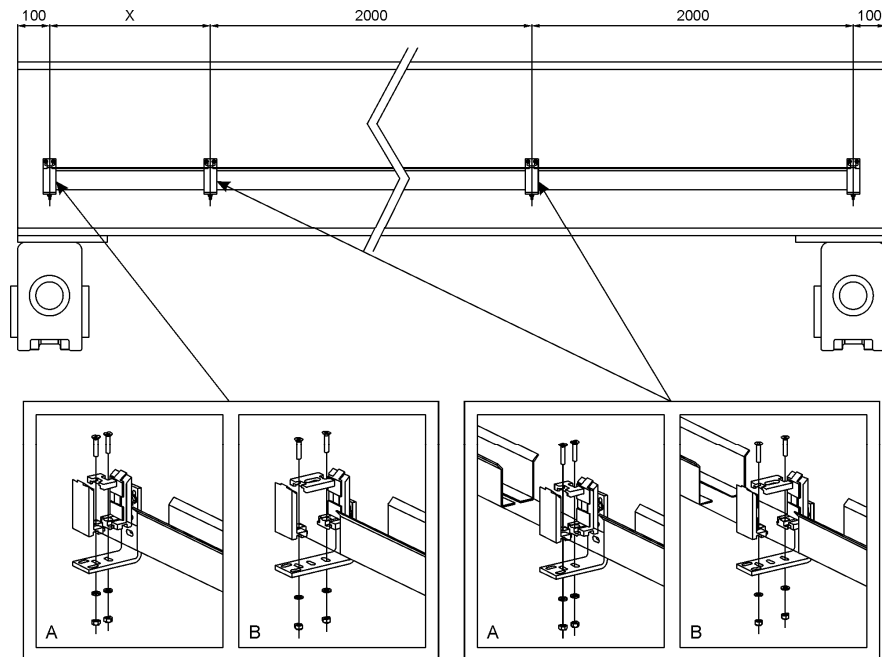
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4.3.2.3 Mounting the Guide Channel on the Main Girder

Begin the guide channel mounting from the bridge cubicle side (fixed end of the energy chain). Complete the mounting in the loop end (moving end) of the channel. If the guide channels needs to be cut, do it in the loop end as illustrated with X in the drawing below.

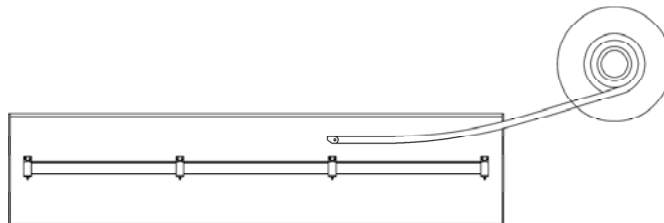


- A. Chain type 10
- B. Chain types E200 and 2500

4.3.3 Mounting the Energy Chain

4.3.3.1 Placing the Energy Chain in the Guide Channel

Place the energy chain reel on the bridge cubicle side (fixed end of the energy chain power supply, right side in the drawings).

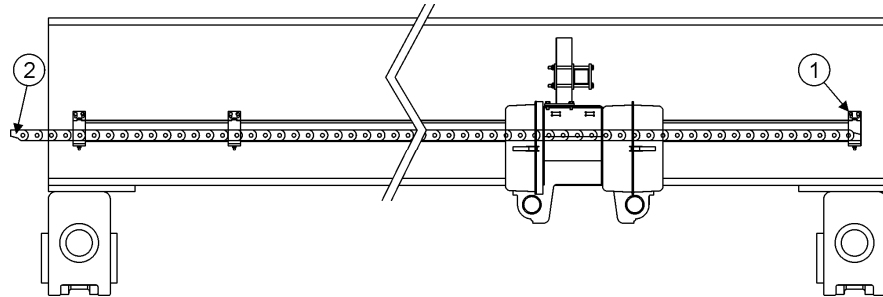


Make sure that the reel is placed higher than the guide channel. Otherwise there is a risk of bending the chain over backwards! If the chain is bent over during the assembly, remove the bent link from the chain to prevent problems in chain movement.

Pull the chain from the reel completely. Do not break bridge cubicle side(fixed end) plugs coming from the centre of the reel while pulling the chain from the reel.



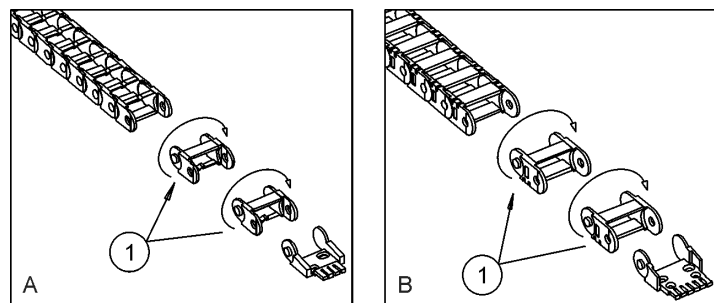
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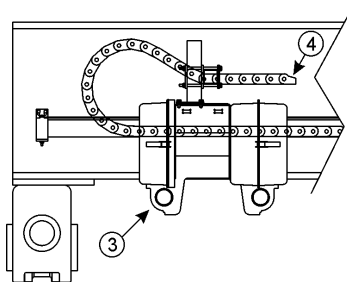
- 1. Bridge cubicle side (Fixed end) of the energy chain power supply
- 2. Moving (loop) end of the energy chain power supply

4.3.3.2 Mounting the Energy Chain (Chain types 10 and 2500)

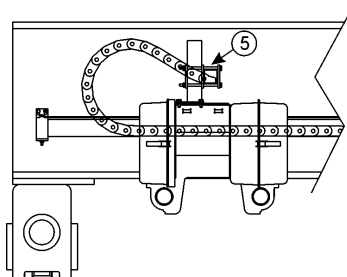
Check that the last two links of the chain are turned 180 degrees as shown in the drawing below. This strengthens the chain and ensures it's fluent functioning.



- A. Chain type 10
- B. Chain type 2500



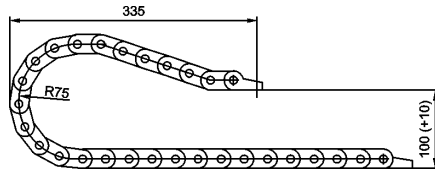
Move the trolley against the end buffer of the loop end of the guide channel (3) and bend the loop end of the energy chain over the towing arm (4).



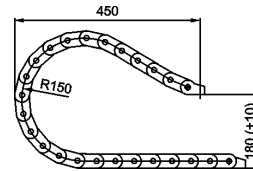
Shorten the energy chain to the right length from bridge cubicle side (fixed end) and fix it to the trolley towing arm (5). Be sure that the two last links are turned as instructed earlier.



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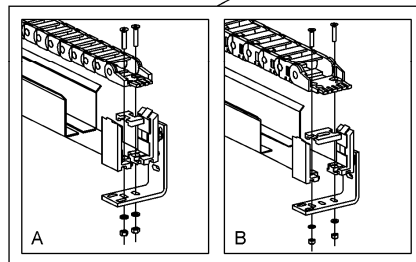
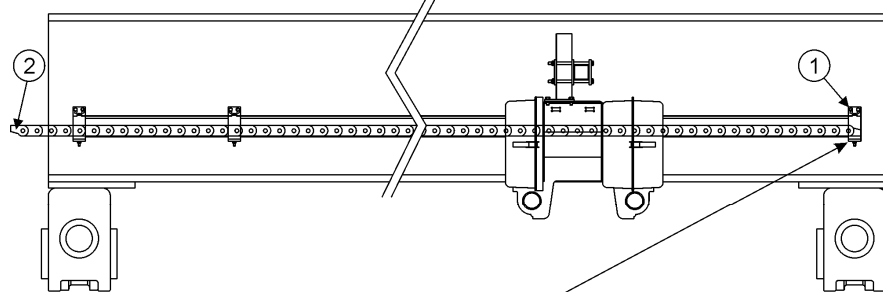
Chain type 10



Chain type 2500

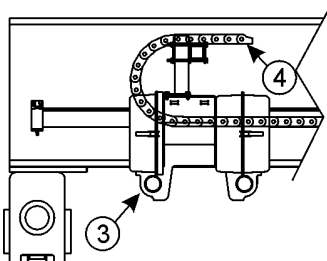
The attached energy chain layout drawings show the right mounting height of the towing arm. The detailed assembly of the energy chain moving end into the towing arm is instructed in the towing arm chapter.

When the moving end has been correctly mounted and the energy chain cut to the right length, fasten the bridge cubicle side (fixed end) on the first guide channel support part as shown in the drawings.



1. Bridge cubicle side (Fixed end) of the energy chain power supply
2. Moving (loop) end of the energy chain power supply
- A. Chain type 10: fastening of the bridge cubicle side (fixed end)
- B. Chain type 2500: fastening of the bridge cubicle side (fixed end)

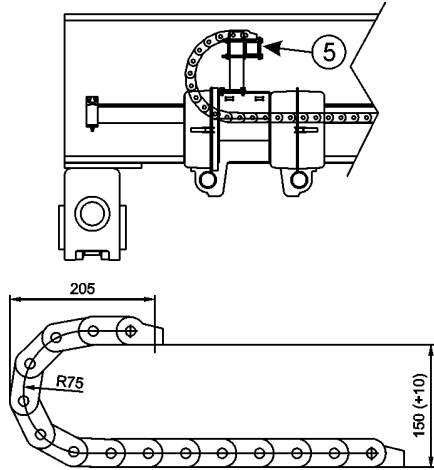
4.3.3.3 Mounting the Energy Chain (Chain type E200)



Move the trolley against the end buffer of the loop end of the guide channel (3) and bend the loop end of the energy chain over the towing arm (4).



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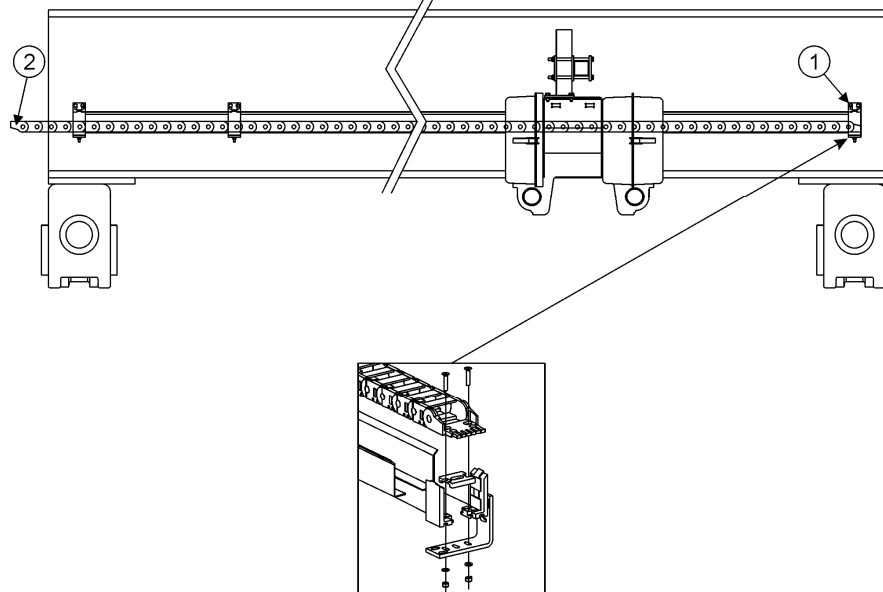


Chain type E200

Shorten the energy chain to the right length from bridge cubicle side (fixed end) and fix it to the trolley towing arm (5).

The attached energy chain layout drawing shows the right mounting height of the towing arm. The detailed assembly of the energy chain moving end into the towing arm is instructed in the towing arm chapter.

When the moving end has been correctly mounted and the energy chain cut to the right length, fasten the bridge cubicle side (fixed end) on the first guide channel support part as shown in the drawings. The third screw between the two screws fastening the energy chain fixed end is not necessary needed.



1. Bridge cubicle side (fixed end) of the energy chain power supply
2. Moving (loop) end of the energy chain power supply



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4.3.3.4 Fastening the Energy Chain Cables

Before fastening the energy chain cables, pull the possible extra free length of the cables in the loop end (trolley panel side) to bridge cubicle side (fixed end) of the chain. In this end it is easier to mount the extra cables in e.g. the cable tray of the bridge cubicle fastening.

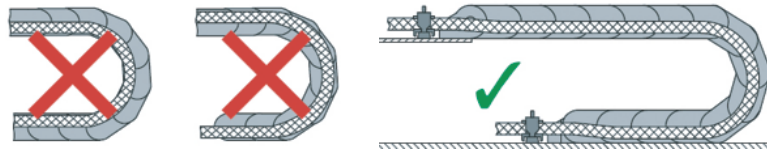


Check that the cables are not crossing over each other in any part of the energy chain.

The energy chain cables are fastened on both ends of the chain with cable ties as shown in the picture.



Before fastening the cable ties, make sure that the cables are mounted as shown in the right drawing below. The correct way is to first fasten the other end of the cables. Then pull the cables tight at the other end. Then push the cables inwards about 10 mm before tightening the cable ties to provide the necessary slack.



Make few test runs with the trolley and check that the slack remains correct.

4.3.4 Mounting Other Components

4.3.4.1 Bridge Motor Cabling

Cable ties of the bridge motor cable are mounted on outside of the guide channel. The distance between the ties is approximately 400 mm. With bigger cables shorter distance between the cable ties may be needed. Otherwise the bigger cable may sag into the guide channel. The maximum diameter of the cables or cable bundle in the cable tie is 45 mm. If more cabling is needed, the other side of the guide channel can be used.

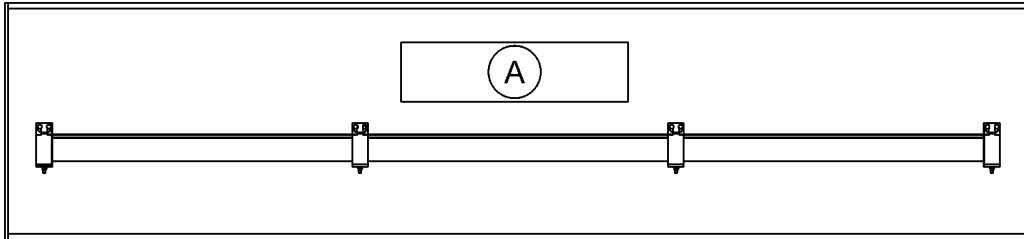




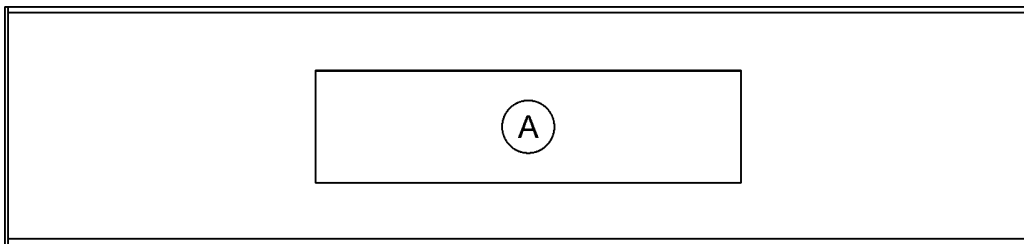
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4.3.4.2 Stickers

With the component package delivery there is a set of smaller stickers. These stickers are intended to be used in the guide channel side of the main girder because of the smaller space available on this side as shown in the drawings enclosed.



Main girder seen from the energy chain side.
A. Brand sticker



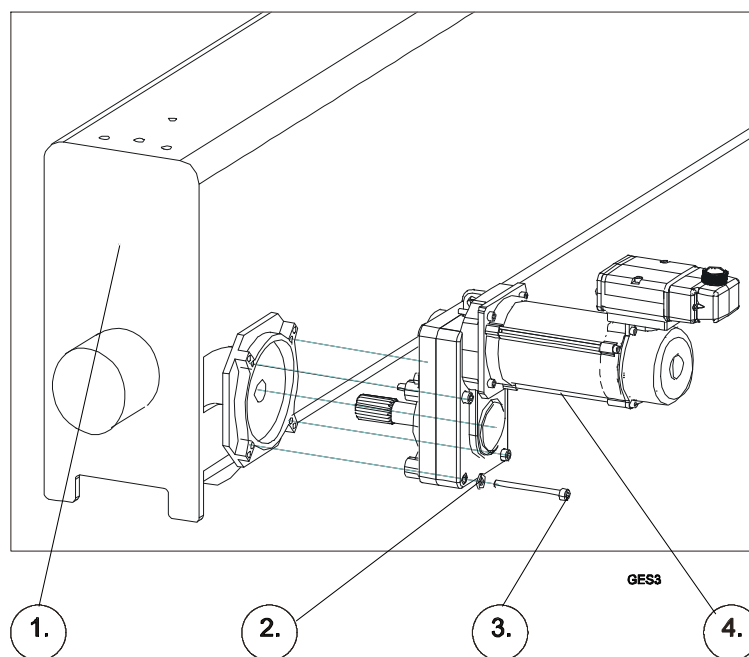
Main girder seen from the opposite side of the energy chain.
A. Brand sticker



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5 Traveling machinery assembly

5.1 Machinery sizes 3-5



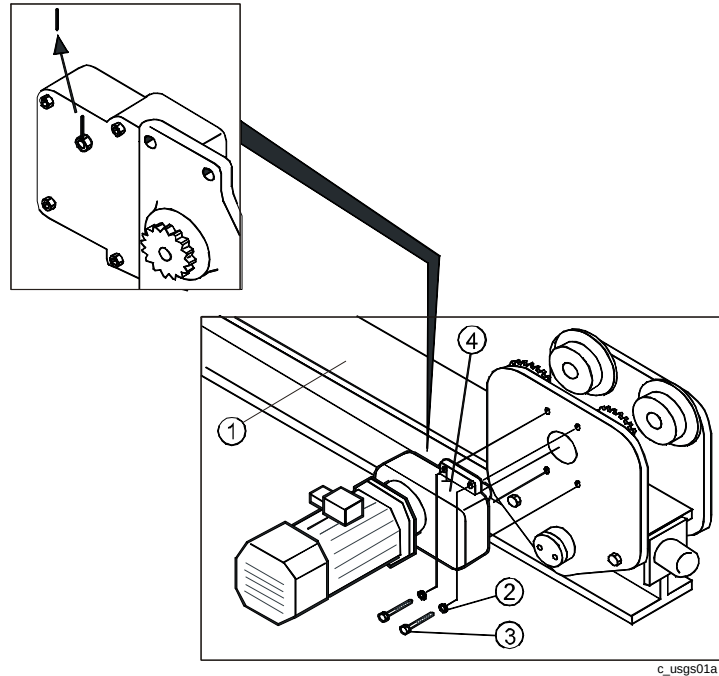
Pos.	Name	Specification	Amount
1	End carriage		2
2	Washer	DIN125-A8-A3G (Machinery sizes 3 and 4) DIN6796-A12-A3G (Machinery size 5)	8+8
3	Screw	DIN912-M8x85-8.8-A3G (Machinery size 3) DIN912-M8x100-8.8-A3G (Machinery size 4) DIN912-M12x140-8.8-A3G (Machinery size 5)	8+8
4	Traveling machinery		2

- 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.



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5.2 Machinery size 3, 8 wheels



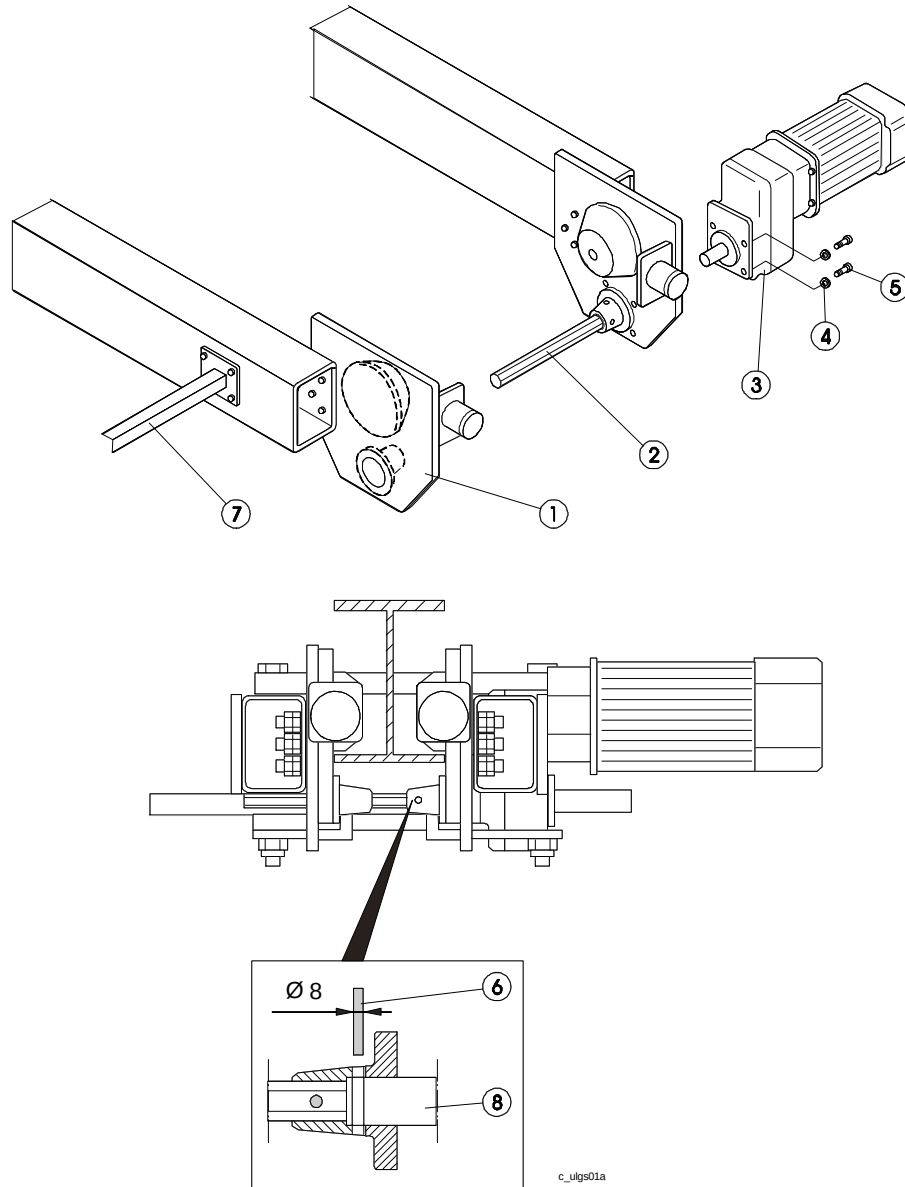
Pos.	Name	Specification	Amount
1	End truck		2
2	Washer	11DIN126-A3G	4+4
3	Socket head cap screw	M10X35DIN933-8.8A3G	4+4
4	Traveling machinery		2

- 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 M10-8.8 40 Nm
- Remove the protection pin from the breather plug.



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5.3 Machinery size 3, 4 wheels



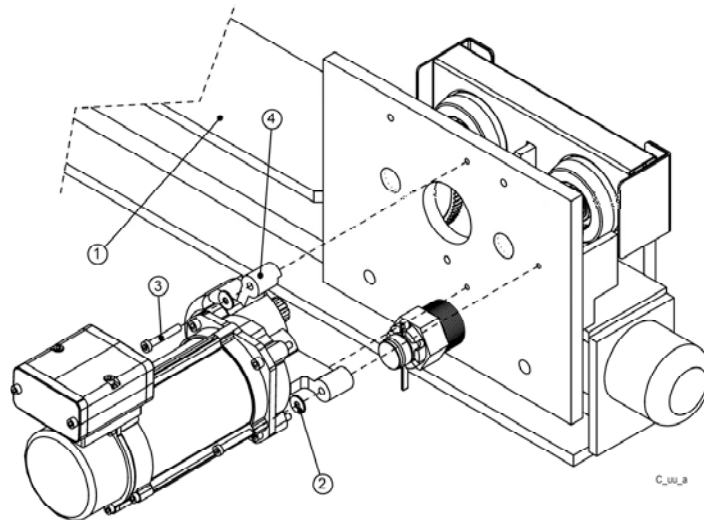
Pos.	Name	Specification	Amount
1	End truck		2
2	Axle	ILBD00-6 A	2
3	Traveling machinery		2
4	Washer	11DIN126-A3G	4+4
5	Socket head cap screw	M10X35DIN933-8.8A3G	4+4
6	Split pin	DIN1481-8X32	1+1
7	Crane power towing arm		1
8	Gear shaft		



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- Drill 8 mm hole for pin through gear wheel and traveling machinery shaft, use predrilled hole! Install split pin!
- Do not fix axle to the idle wheel! Make sure that axle moves horizontally freely through gear wheel!
- Remove the protection pin from the breather plug!

5.4 Machinery size 2, 8 wheels



Pos.	Name	Specification	Amount
1	End truck		2
2	Washer	6DIN9021-A3G	3+3
3	Socket head cap screw	M6x40 DIN912-8.8-A36	3+3
4	Traveling machinery		2

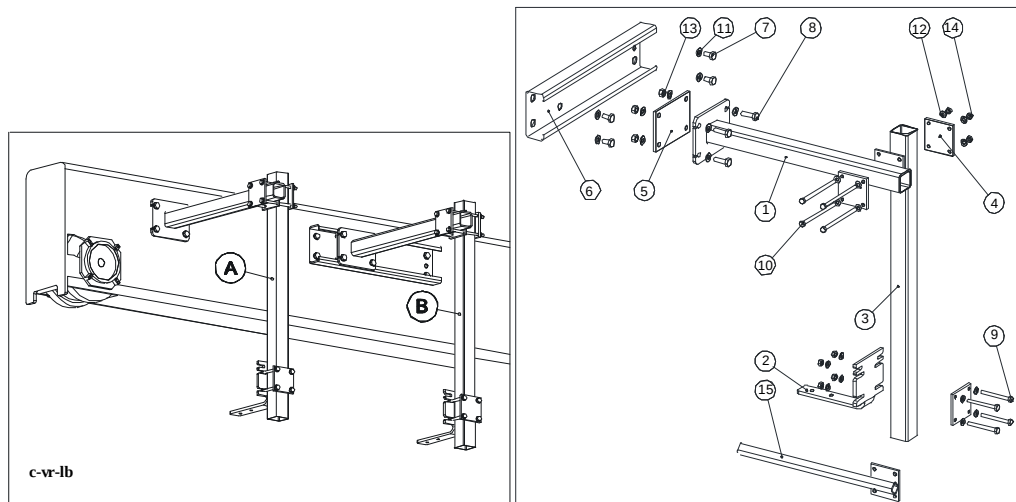
- Clean splines and mounting flanges from dirt and rust protection wax and grease the shaft lightly before assembly.
- You can use a plastic hammer to slide drive in. Do not use any metal or lead hammer.
- Tightening torques M6-8.8: 9 Nm



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6 Crane towing arm assembly

6.1 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).

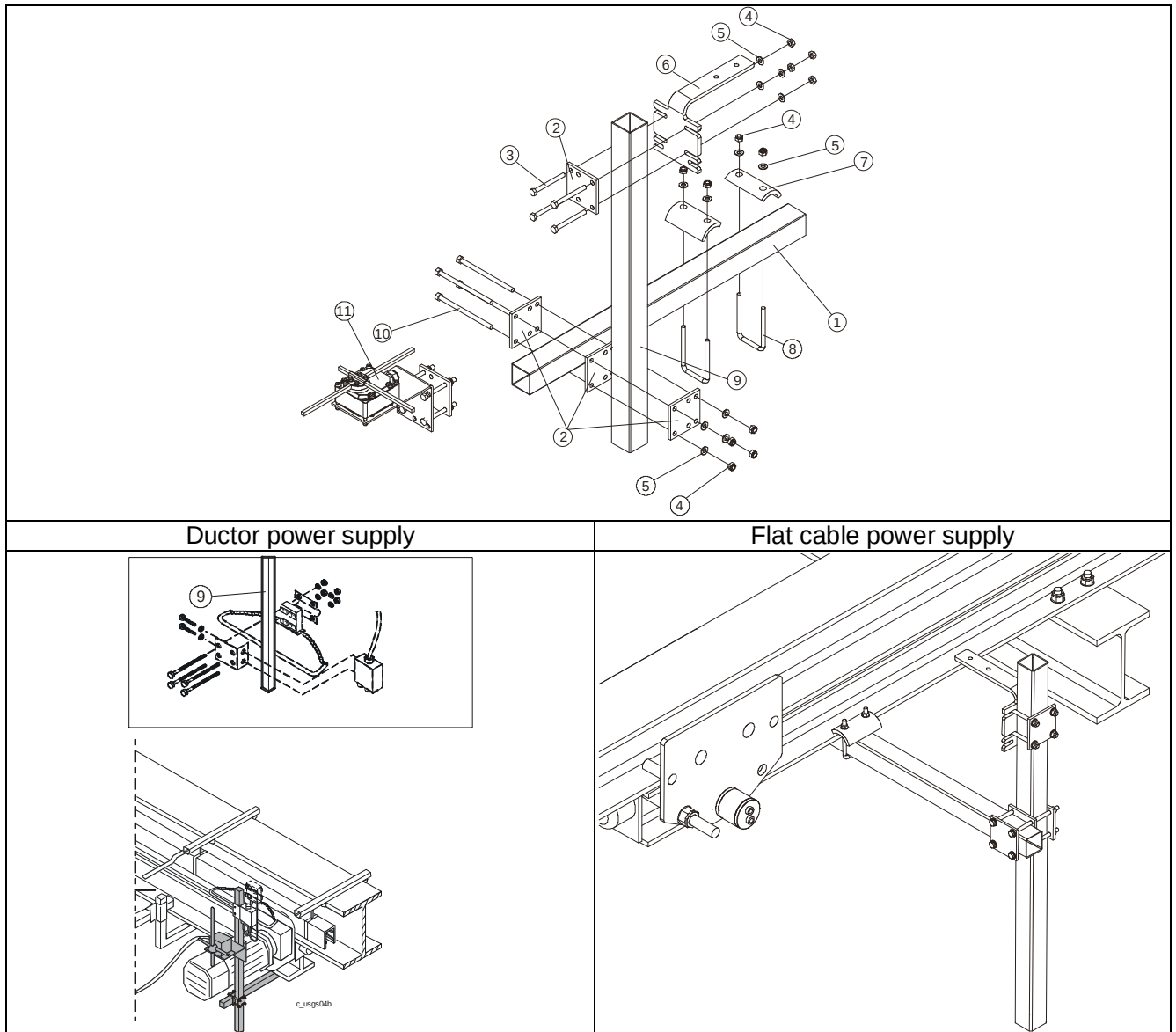
- If necessary cut off excess length of square tubes.
- There will be several attaching possibilities in the end carriage for the towing arm. Choose the best suited for the case.
- Notice the differences between variations in the part list.

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



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6.2 Crane Towing Arm, 8 wheels end carriage and I-beam frame





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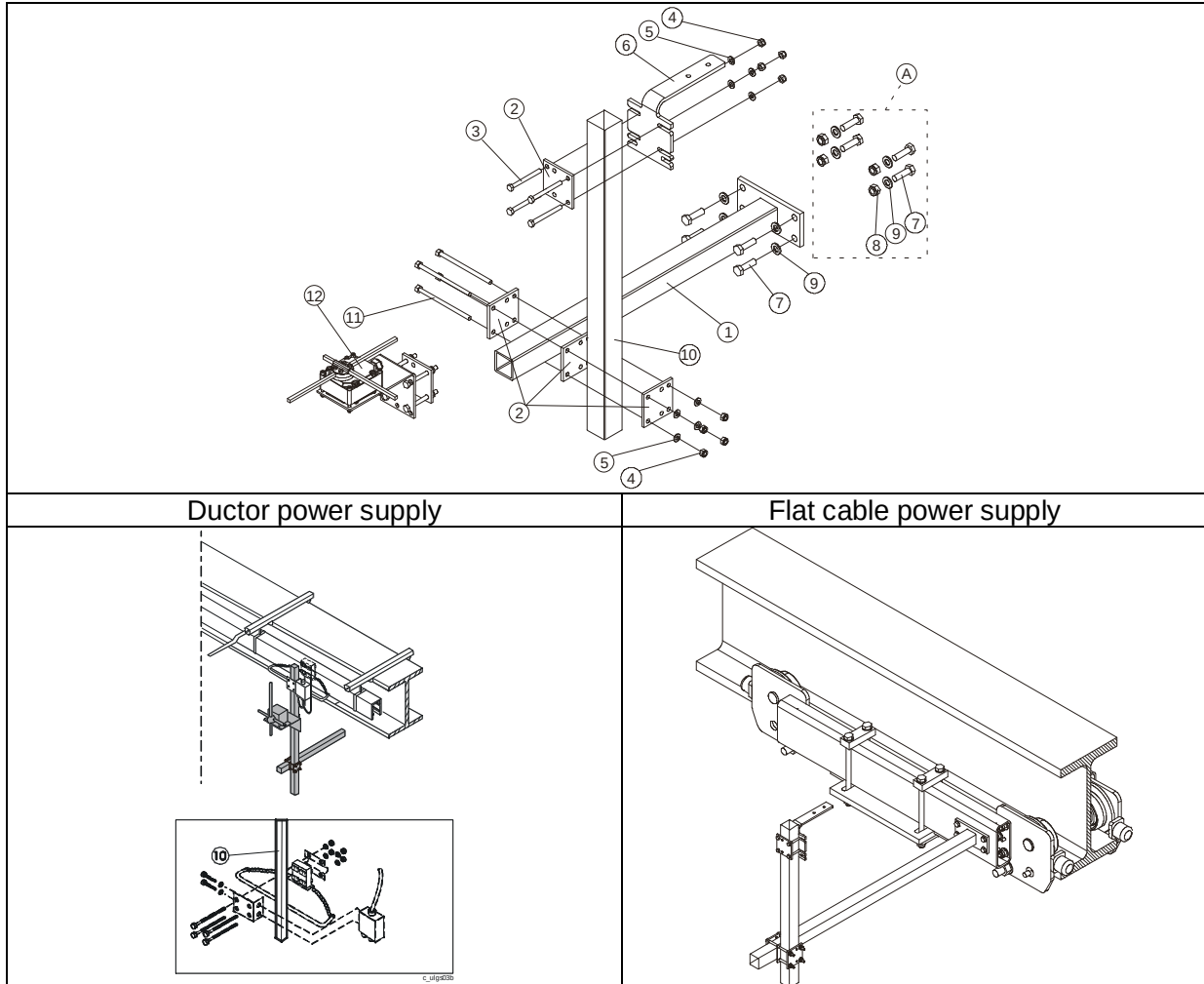
Pos.	Name	Specification	Fixing variation	Amount
1	Bar	CQ-L1200		1
2	Fixing plate	CQP-L80W80H6		4
3	Screw	DIN931-M8X80-8.8-A3G		4
4	Nut	DIN985-M8-8-A3G		12
5	Washer	DIN125-A8-A3G		20
6	Towing arm	CQP-L195W120H135		1
7	Girder clamp	CQ-W58H100T8		2
8	U-bolt	CQ-L280D8		2
9	Tube	CQ-L1500W50H50T2		1
10	Screw	DIN931-M8X140-8.8-A3G		4
11	Limit switch (option)			1

- If necessary cut off excess length of square tubes.



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6.3 Crane Towing Arm, 4 wheels end carriage and 8 wheels end carriage with Hat-profile



A. Alternative assembly

Pos.	Name	Specification	Fixing variation	Amount
1	Bar	CQ-L1200		1
2	Fixing plate	CQP-L80W80H6		4
3	Screw	DIN931-M8X80-8.8-A3G		4
4	Nut	DIN985-M8-8-A3G		8
5	Washer	DIN125-A8-A3G		16
6	Towing arm	CQP-L195W120H135		1
7	Screw	DIN931-M12X40-8.8-A3G		4
8	Nut	DIN985-M12-8-A3G		4
9	Washer	DIN126-A12-A3G		4
10	Tube	CQ-L1500W50H50T2		1
11	Screw	DIN931-M8X140-8.8-A3G		4
12	Limit switch (option)			1

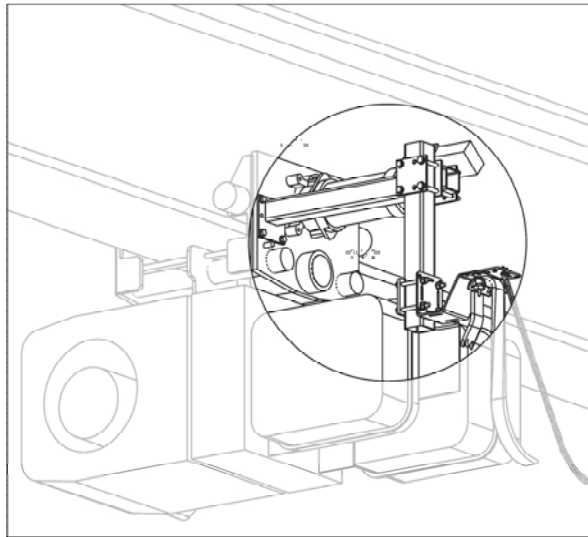
- If necessary cut off excess length of square tubes.



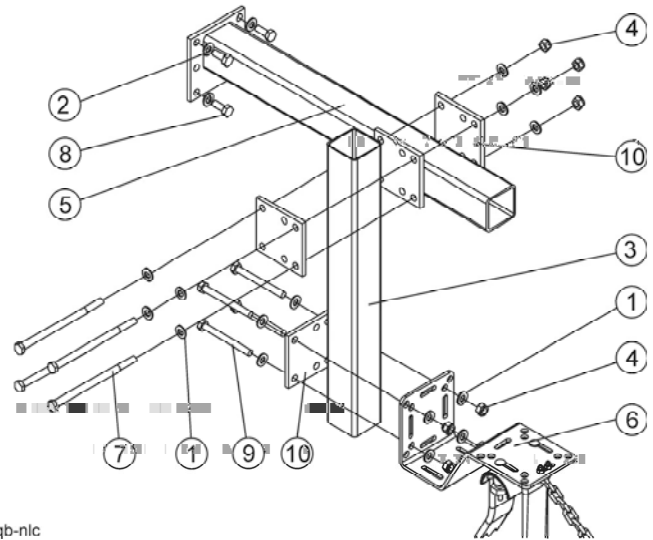
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7 Hoist power towing arm assembly

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



vr-qaqb-nlc

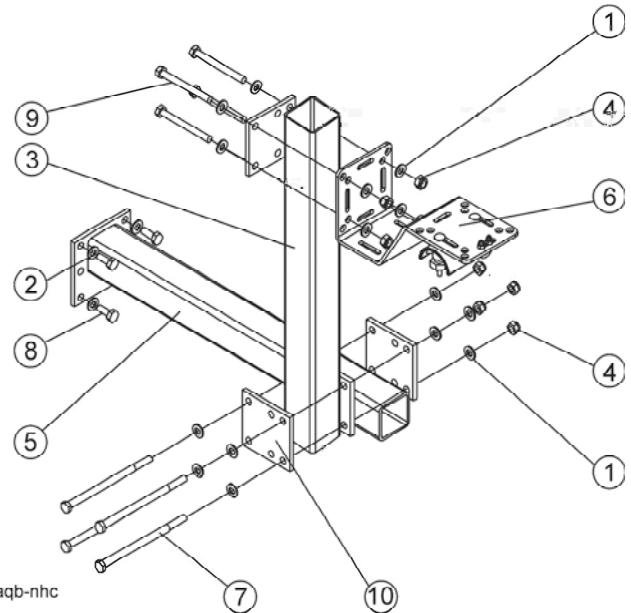
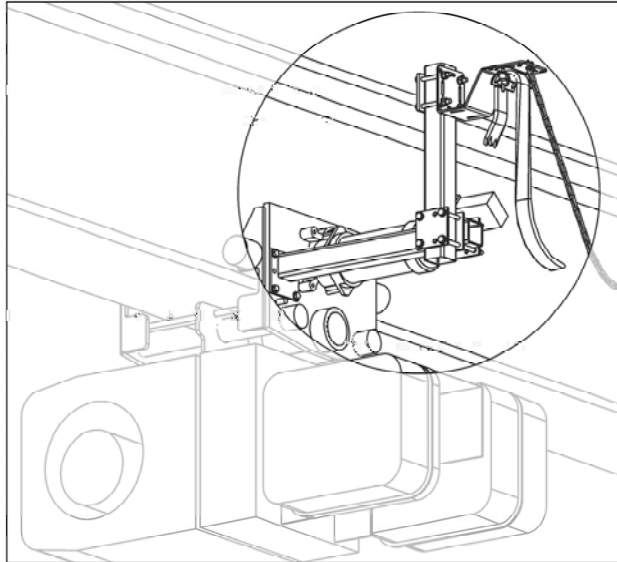


Pos.	Name	Specification	Amount
1	Washer	DIN125-A8-A3G	16
2	Washer	DIN127-A8-A3G	4
3	Tube	CQ-L420W50H50T2	1
4	Nut	DIN985-M8-8-A3G	8
5	Towing arm	CQ-L450	1
6	Towing arm assembly		1
7	Screw	DIN931-M8x140-8.8-A3G	4
8	Screw	DIN933-M8X25-8.8-A3G	4
9	Screw	DIN931-M8x80-8.8-A3G	4
10	Fixing plate	CQP-L80W80H6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



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

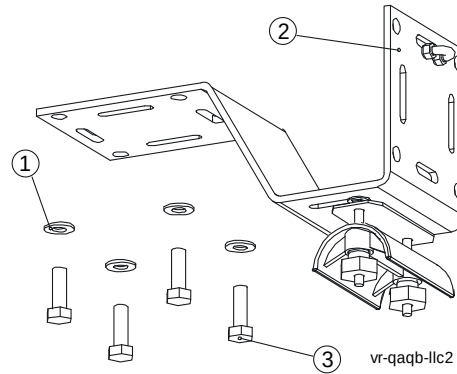
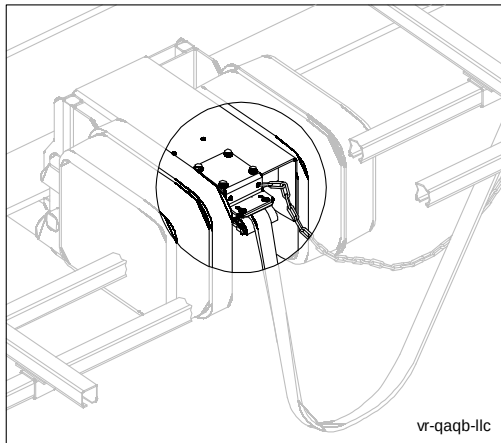


Pos.	Name	Specification	Amount
1	Washer	DIN125-A8-A3G	16
2	Washer	DIN127-A8-A3G	4
3	Tube	CQ-L420W50H50T2	1
4	Nut	DIN985-M8-8-A3G	8
5	Towing arm	CQ-L450	1
6	Towing arm assembly		1
7	Screw	DIN931-M8x140-8.8-A3G	4
8	Screw	DIN933-M8X25-8.8-A3G	4
9	Screw	DIN931-M8x80-8.8-A3G	4
10	Fixing plate	CQP-L80W80H6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



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

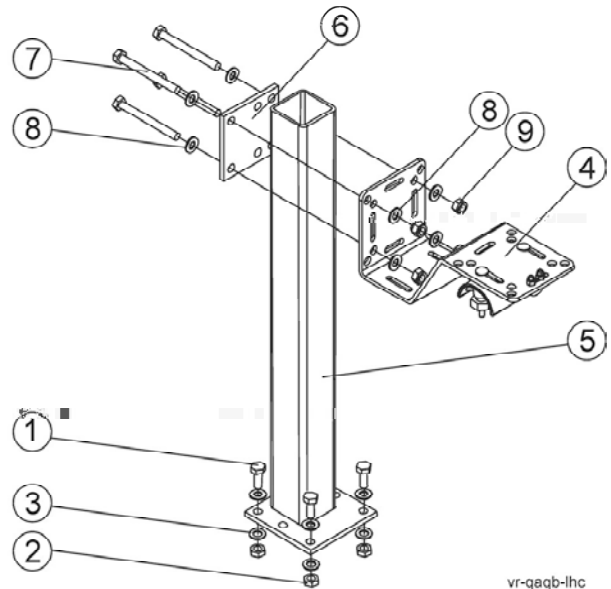
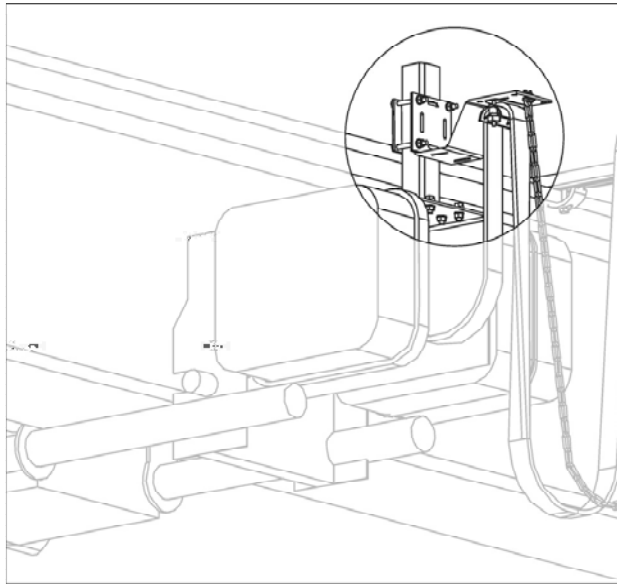


Pos.	Name	Specification	Amount
1	Washer	DIN127-A8-A3G	4
2	Assembly		1
3	Screw	DIN933-M8X12-8.8-A3G	4



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



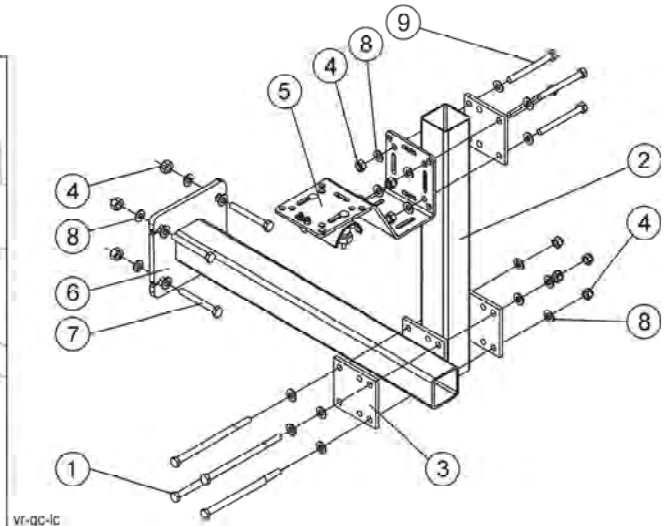
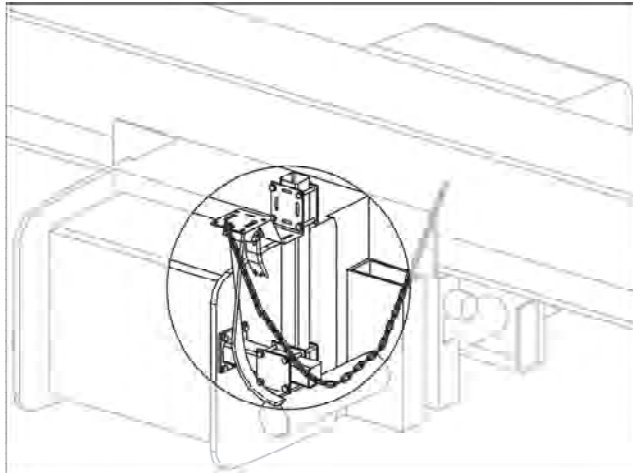
vr-qaqb-lhc

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

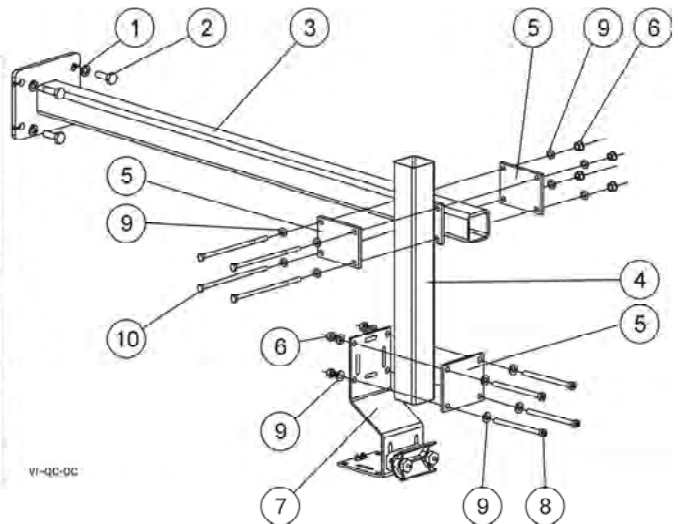
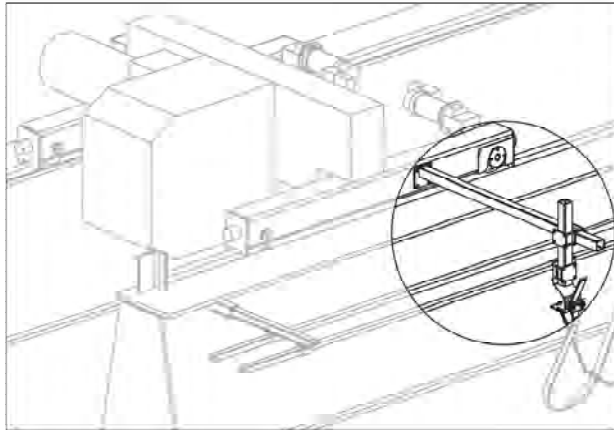


Pos.	Name	Specification	Amount
1	Screw	DIN931-M8x140-8.8-A3G	4
2	Tube	CQ-L...	1
3	Fixing plate	CQP-L80W80H6	4
4	Nut	DIN985-M8-8-A3G	12
5	Towing arm assembly	CQT-D/L/N/J	1
6	Towing arm	CQ-L250	1
7	Screw	DIN933-M8x40-8.8 or DIN933-M8x90-8.8	4
8	Washer	DIN125-A8-A3G	24
9	Screw	DIN931-M8x80-8.8-A3G	4



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7.6 Double girder trolley (Wire rope hoist)

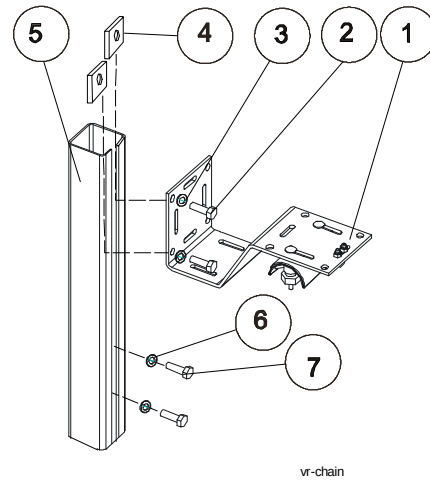
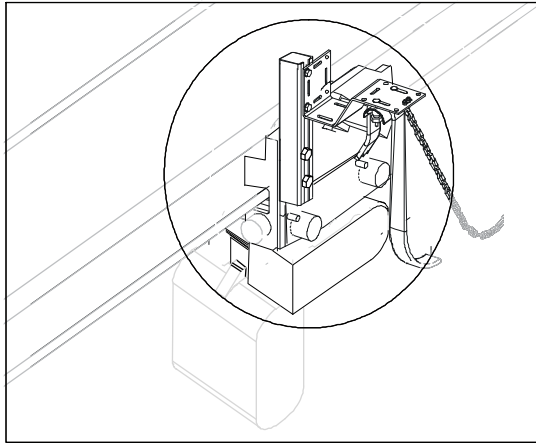


Pos.	Name	Specification	Amount
1	Washer	DIN127-A10-A3G	4
2	Screw	DIN933-M10x30-8.8-A3G	4
3	Towing arm	CQT-L	1
4	Tube	CQ-L550W50H50T2	1
5	Fixing plate	CQP-L80W80H6	4
6	Nut	DIN985-M8-8-A3G	8
7	Towing arm assembly	CQT-D/L/N	1
8	Screw	DIN931-M8x80-8.8-A3G	4
9	Washer	DIN125-A8-A3G	16
10	Screw	DIN931-M8X140-8.8-A3G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



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7.7 Normal headroom hoist (Chain hoist)



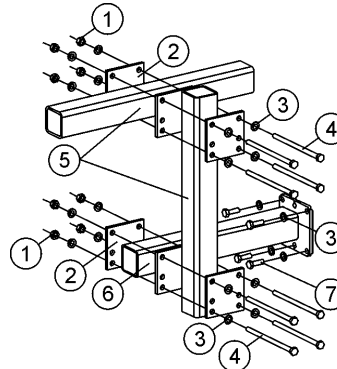
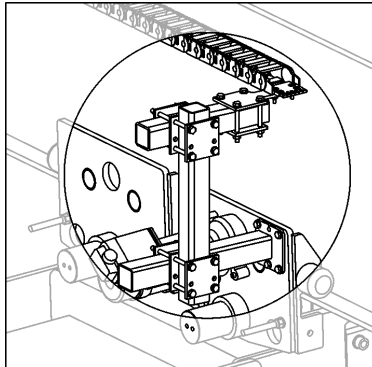
Pos.	Name	Specification	Amount
1	Assembly		1
2	Screw	DIN912-M8X25-8.8-A3G	2
3	Washer	DIN125-A8-A3G	2
4	Nut	CQ-L25W25TB	8
5	Support	CQ-L450W40H40	1
6	Washer	DIN440-D28/9X3-A3G	2
7	Screw	DIN912-M8X50-8.8-A3G	2



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8 Hoist power towing arm assembly (Energy chain)

8.1 Normal headroom hoist (SX2, SX3, SX4 or SX5) (Wire rope hoist, Energy chain)

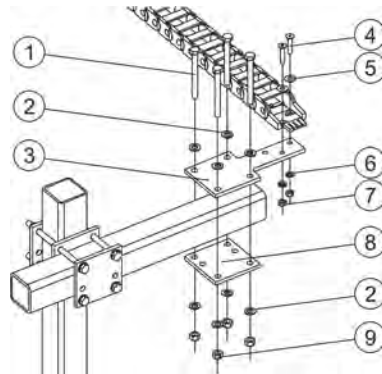


Pos.	Name	Specification	Amount
1	Nut	DIN985-M8-8-A3G	
2	Fixing plate	CQP-L80W80H6	
3	Washer	DIN125-A8-A3G	
4	Screw	DIN931-M8x140-8.8-A3G	
5	Tube	CQ-L420W50H50T2	
6	Tube	CQ-L250	
7	Screw	DIN933-M8x25-8.8-A3G	



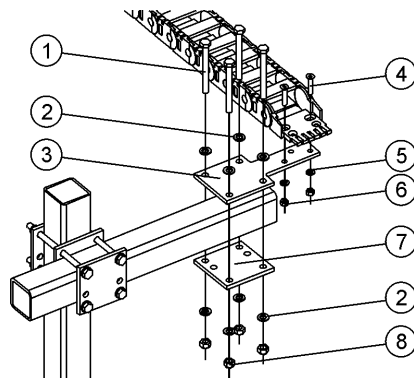
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Chain type 10



Pos.	Name	Specification	Amount
1	Screw	DIN931-M8x80-8.8-A3G	
2	Washer	DIN126-A8-A3G	
3	Towing arm	CQT-L175W80H6	
4	Screw	DIN912-M6x30-8.8-A3G	
5	Washer	DIN9021-6-A3F	
6	Washer	DIN126-A6-ZN45	
7	Nut	DIN985-M6-8-ZN45	
8	Fixing plate	CQP-L80W80H6	
9	Nut	DIN985-M8-8-A3G	

Chain type E200 or 2500



Pos.	Name	Specification	Amount
1	Screw	DIN931-M8x80-8.8-A3G	
2	Washer	DIN126-A8-A3G	
3	Towing arm	CQT-L175W80H6	
4	Screw	DIN7991-M6x30-10.9-A3G	
5	Washer	DIN126-A6-ZN45	
6	Nut	DIN985-M6-8-ZN45	
7	Fixing plate	CQP-L80W80H6	
8	Nut	DIN985-M8-8-A3G	

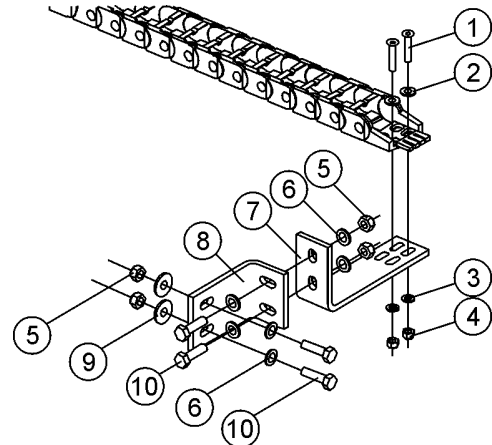
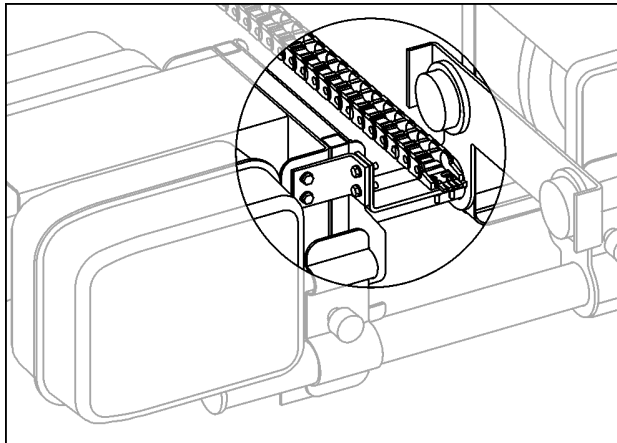


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8.2 Low headroom hoist (SX2 or SX3)(Wire rope hoist, Energy chain)



Valid if energy chain type 10 and profile main girder



Pos.	Name	Specification	Amount
1	Screw	DIN912-M6x30-8.8-A3G	
2	Washer	DIN9021-6-AEF	
3	Washer	DIN126-A6-ZN45	
4	Nut	DIN985-M6-8-ZN45	
5	Nut	DIN985-M8-8-A3G	
6	Washer	DIN126-A8-A3G	
7	Towing arm	CQT-L150W34H75	
8	Towing arm	CQT-L95W60H45	
9	Washer	DIN9021-8-A3G	
10	Screw	DIN933-M8x30-8.8-A3G	

8.3 Low headroom hoist (SX2, SX3 or SX4)(Wire rope hoist, Energy chain)



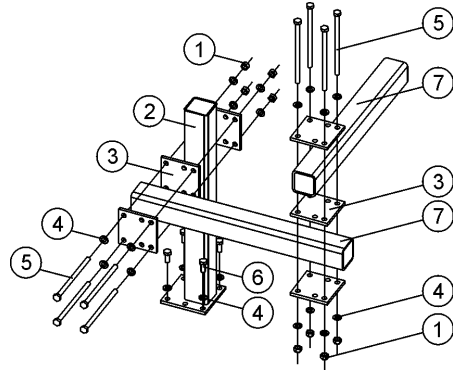
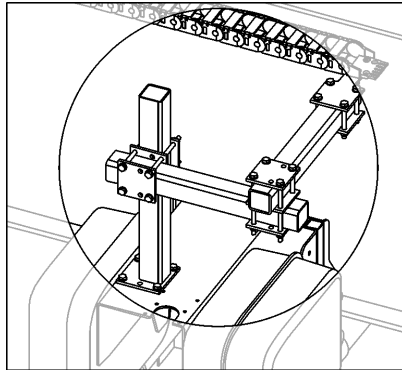
Valid if energy chain type E200 or 2500



Valid if energy chain type 10 and box main girder

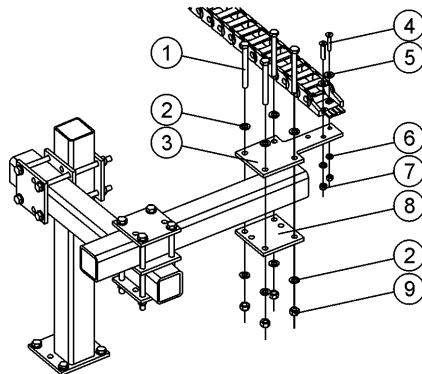


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Pos.	Name	Specification	Amount
1	Nut	DIN985-M8-8-A3G	
2	Towing arm	CQ-L250	
3	Fixing plate	CQP-L80W80H6	
4	Washer	DIN126-A8-A3G	
5	Screw	DIN931-M8x140-8.8-A3G	
6	Screw	DIN933-M8x20-8.8-A3G	
7	Towing arm	CQ-L420W50H50T2	

Chain type 10

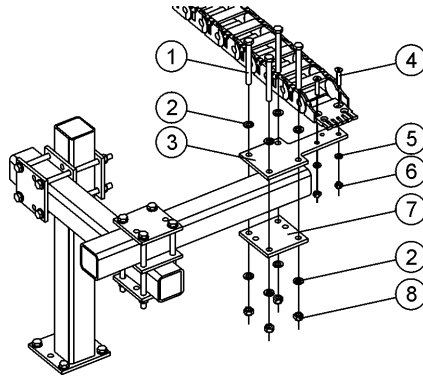


Pos.	Name	Specification	Amount
1	Screw	DIN931-M8x80-8.8-A3G	
2	Washer	DIN126-A8-A3G	
3	Towing arm	CQT-L175W80H6	
4	Screw	DIN912-M6x30-8.8-A3G	
5	Washer	DIN9021-6-A3F	
6	Washer	DIN126-A6-ZN45	
7	Nut	DIN985-M6-8-ZN45	
8	Fixing plate	CQP-L80W80H6	
9	Nut	DIN985-M8-8-A3G	



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Chain type E200 or 2500

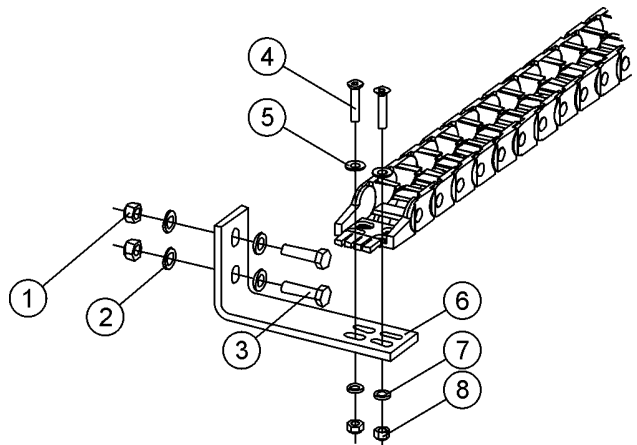
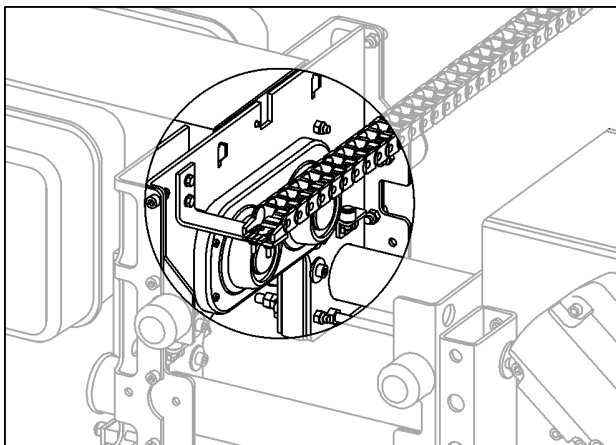


Pos.	Name	Specification	Amount
1	Screw	DIN931-M8x80-8.8-A3G	
2	Washer	DIN126-A8-A3G	
3	Towing arm	CQT-L175W80H6	
4	Screw	DIN7991-M6x30-10.9-A3G	
5	Washer	DIN126-A6-ZN45	
6	Nut	DIN985-M6-8-ZN45	
7	Fixing plate	CQP-L80W80H6	
8	Nut	DIN985-M8-8-A3G	

8.4 Low headroom hoist (SX4)(Wire rope hoist, Energy chain)



Valid if energy chain type 10 and profile main girder



Pos.	Name	Specification	Amount
1	Nut	DIN985-M8-8-A3G	
2	Washer	DIN126-A8-A3G	
3	Screw	DIN933-M8x30-8.8-A3G	
4	Screw	DIN912-M6x30-8.8-A3G	



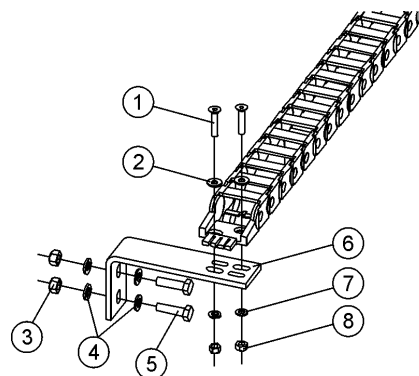
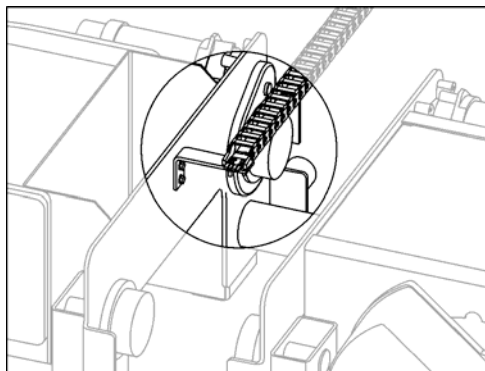
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5	Washer	DIN9021-6-A3F	
6	Towing arm	CQT-L150W34H75	
7	Washer	DIN126-A6-ZN45	
8	Nut	DIN985-M6-8-ZN45	

8.5 Low headroom hoist (SX5)(Wire rope hoist, Energy chain)



Valid if energy chain type 10 and profile main girder



Pos.	Name	Specification	Amount
1	Screw	DIN912-M6x30-8.8-A3G	
2	Washer	DIN9021-6-A3F	
3	Nut	DIN985-M8-8-A3G	
4	Washer	DIN126-A8-A3G	
5	Screw	DIN933-M8x30-8.8-A3G	
6	Towing arm	CQT-L150W34H75	
7	Washer	DIN126-A6-ZN45	
8	Nut	DIN985-M6-8-ZN45	

8.6 Low headroom hoist (SX5)(Wire rope hoist, Energy chain)



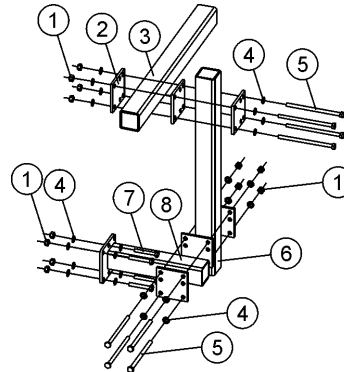
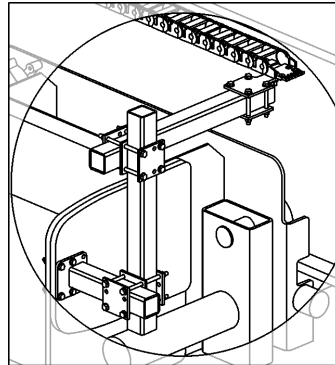
Valid if energy chain type E200 or 2500



Valid if energy chain type 10 and box main girder

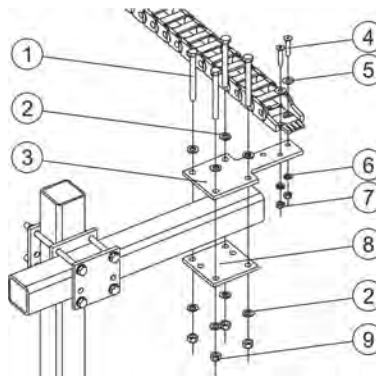


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Pos.	Name	Specification	Amount
1	Nut	DIN985-M8-8-A3G	
2	Fixing plate	CQP-L80W80H6	
3	Tube	CQ-LXXW50H50T2	
4	Washer	DIN126-A8-A3G	
5	Screw	DIN931-M8x140-8.8-A3G	
6	Tube	CQ-LXXW50H50T2	
7	Screw	DIN933-M8x180-8.8-A3G	
8	Towing arm	CQ-L250	

Chain type 10

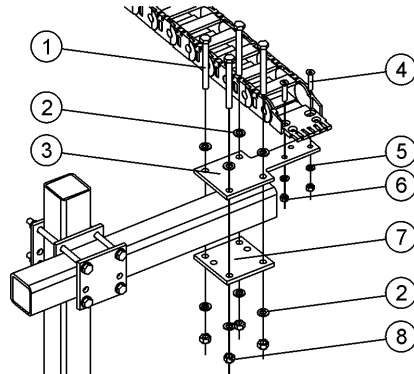


Pos.	Name	Specification	Amount
1	Screw	DIN931-M8x80-8.8-A3G	
2	Washer	DIN126-A8-A3G	
3	Towing arm	CQT-L175W80H6	
4	Screw	DIN912-M6x30-8.8-A3G	
5	Washer	DIN9021-6-A3F	
6	Washer	DIN126-A6-ZN45	
7	Nut	DIN985-M6-8-ZN45	
8	Fixing plate	CQP-L80W80H6	
9	Nut	DIN985-M8-8-A3G	



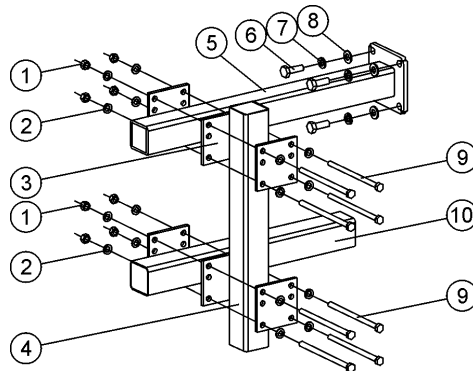
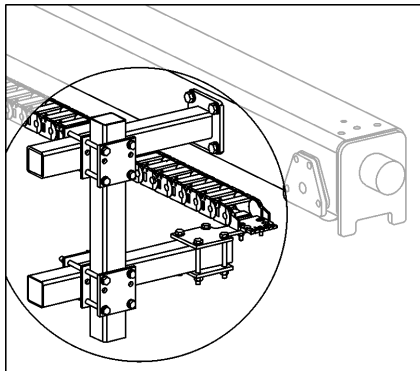
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Chain type E200 or 2500



Pos.	Name	Specification	Amount
1	Screw	DIN931-M8x80-8.8-A3G	
2	Washer	DIN126-A8-A3G	
3	Towing arm	CQT-L175W80H6	
4	Screw	DIN7991-M6x30-10.9-A3G	
5	Washer	DIN126-A6-ZN45	
6	Nut	DIN985-M6-8-ZN45	
7	Fixing plate	CQP-L80W80H6	
8	Nut	DIN985-M8-8-A3G	

8.7 Double girder trolley (SX2, SX3, SX4 or SX5) (Wire rope hoist, Energy chain)

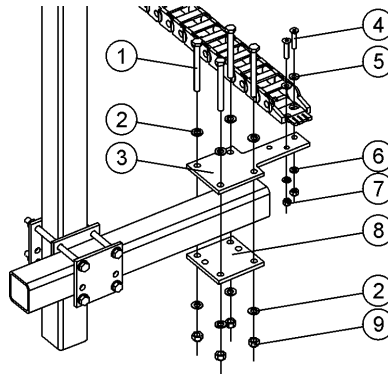


Pos.	Name	Specification	Amount
1	Nut	DIN985-M8-8-A3G	
2	Washer	DIN126-A8-A3G	
3	Fixing plate	CQP-L80W80H6	
4	Tube	CQ-L550W50H50T2	
5	Towing arm	CQT-L1200	
6	Screw	DIN933-M10x30-8.8-A3G	
7	Washer	DIN127-A10-A3G	
8	Washer	DIN125-A10-A3G	
9	Screw	DIN931-M8x140-8.8-A3G	
10	Tube	CQ-L420W50H50T2	



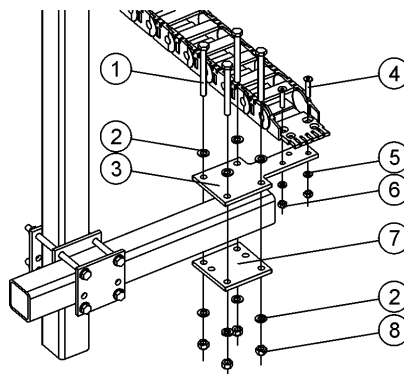
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Chain type 10



Pos.	Name	Specification	Amount
1	Screw	DIN931-M8x80-8.8-A3G	
2	Washer	DIN126-A8-A3G	
3	Towing arm	CQT-L175W80H6	
4	Screw	DIN912-M6x30-8.8-A3G	
5	Washer	DIN9021-6-A3F	
6	Washer	DIN126-A6-ZN45	
7	Nut	DIN985-M6-8-ZN45	
8	Fixing plate	CQP-L80W80H6	
9	Nut	DIN985-M8-8-A3G	

Chain type E200 or 2500



Pos.	Name	Specification	Amount
1	Screw	DIN931-M8x80-8.8-A3G	
2	Washer	DIN126-A8-A3G	
3	Towing arm	CQT-L175W80H6	
4	Screw	DIN7991-M6x30-10.9-A3G	
5	Washer	DIN126-A6-ZN45	
6	Nut	DIN985-M6-8-ZN45	
7	Fixing plate	CQP-L80W80H6	
8	Nut	DIN985-M8-8-A3G	



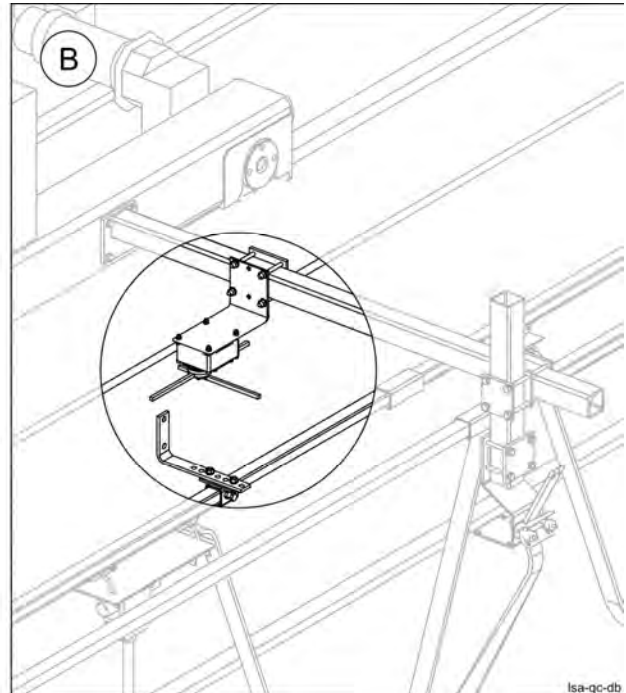
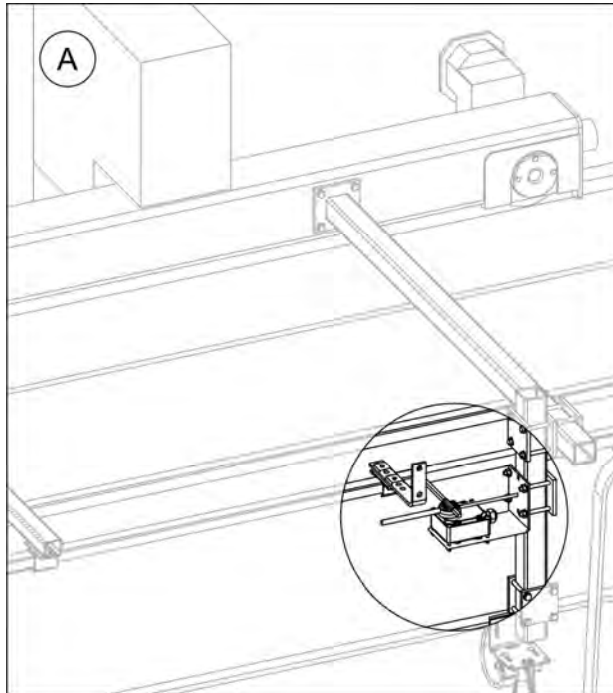
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9 Traveling limit switch assembly

9.1 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

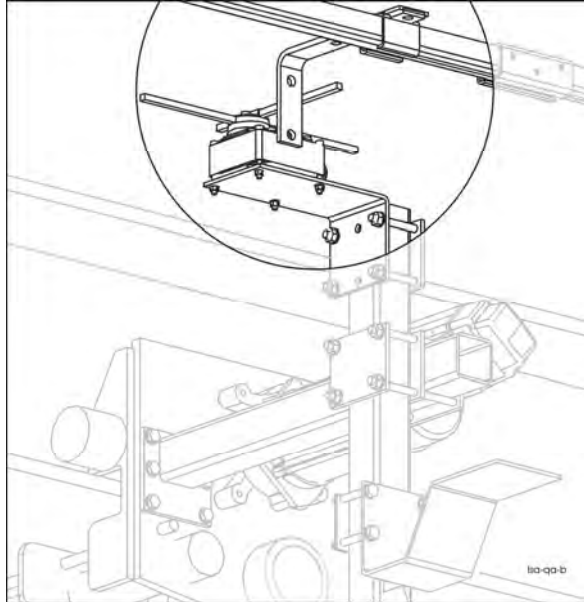
Hoist limit switch can be assembled to the horizontal or to the vertical square tube of hoist towing arm. Choose the best fitting place.

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



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9.2 Normal headroom trolley (Wire rope hoist)



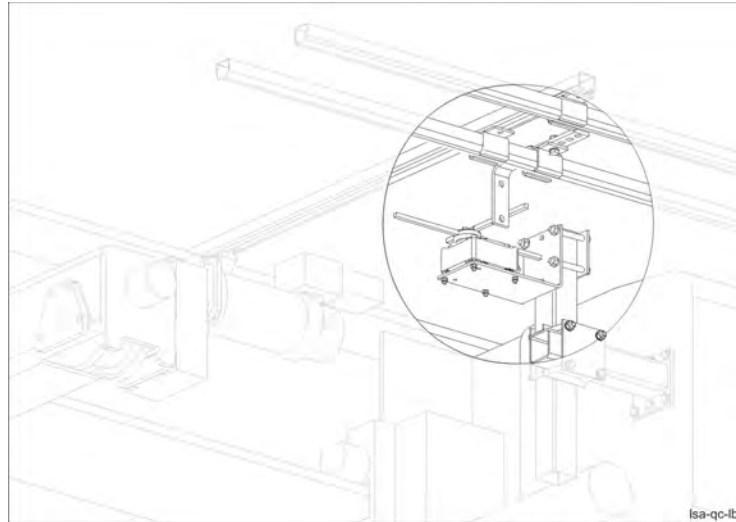
Limit switch part list			
Pos.	Name	Specification	Amount
	Limit switch	XC...	1
	Fixing plate	QA-L162W110H93	1
	Fixing plate	CQP-L80W80H6	1
	Fixing part set	CQA	1
Limit switch trigger part list			
Pos.	Name	Specification	Amount
	Plate	QA-L210W30	2 or 4
	C-rail	KC-020275-0250	2 or 4
Trigger fixing part			
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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9.3 Low headroom hoist (drum diam. 406 mm) (Wire rope hoist)



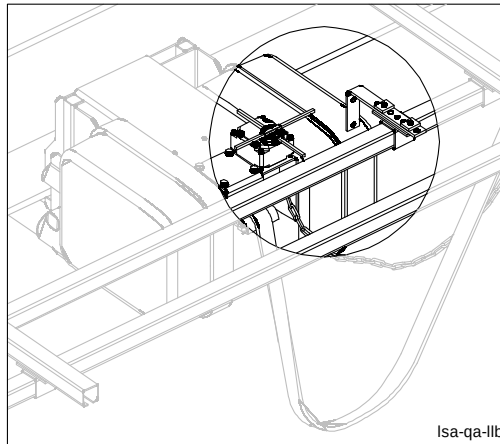
Limit switch part list			
Pos.	Name	Specification	Amount
	Limit switch	XC...	1
	Fixing plate	QA-L162W110H93	1
	Fixing plate	CQP-L80W80H6	1
	Fixing part set	CQA	1
Limit switch trigger part list			
Pos.	Name	Specification	Amount
	Plate	QA-L210W30	2 or 4
	C-rail	KC-020275-0250	2 or 4
Trigger fixing part			
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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9.4 Low headroom hoist (drum diam. 303 mm or 355 mm), girder height $\leq$ 500 mm (Wire rope hoist)



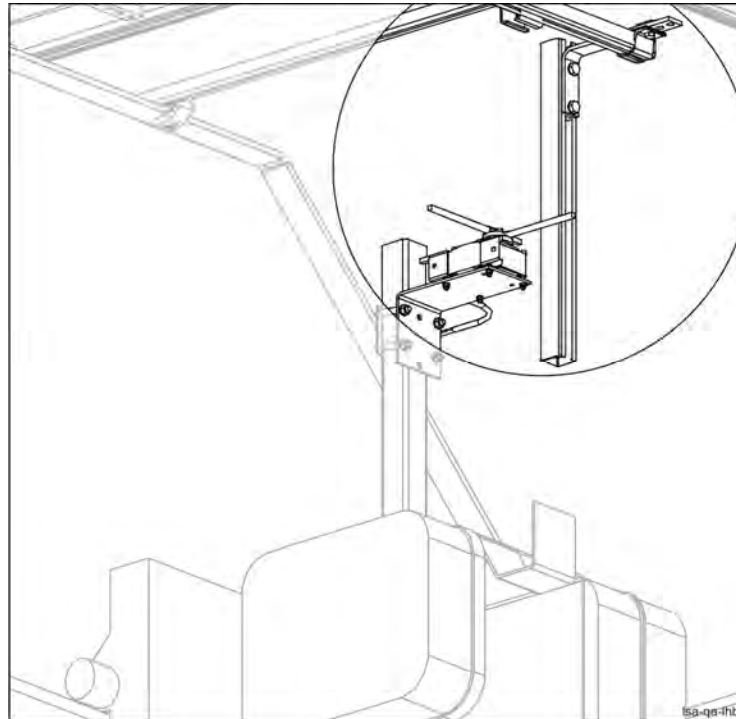
Limit switch part list			
Pos.	Name	Specification	Amount
	Limit switch	XC...	1
	Fixing part set	CQA	1
Limit switch trigger part list			
Pos.	Name	Specification	Amount
	Trigger	QA-L210W30	2 or 4
	Adapter	KC-023201-250	2 or 4
Trigger fixing part			
Pos.	Name	Specification	Amount
	Track support bracket	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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9.5 Low headroom hoist (drum diam. 303 mm or 355 mm), girder height > 500 mm (Wire rope hoist)



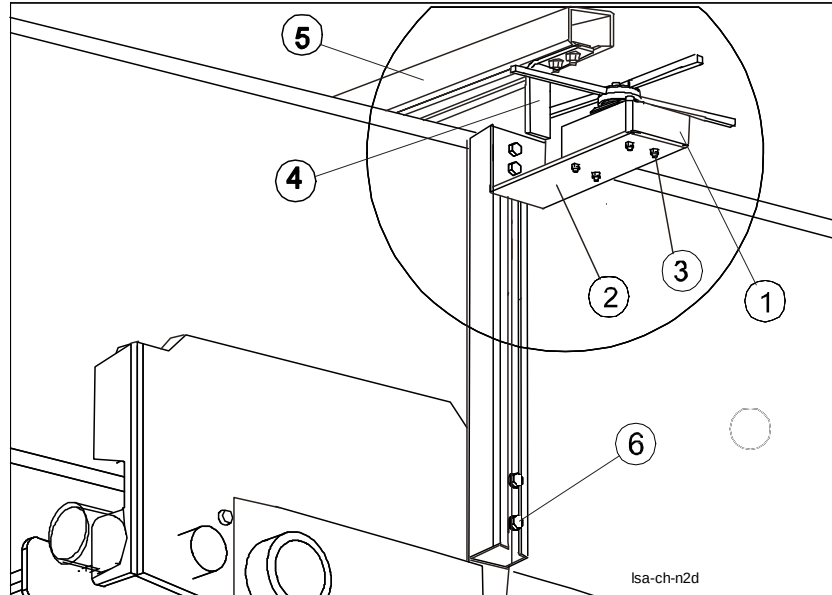
Limit switch part list			
Pos.	Name	Specification	Amount
	Limit switch	XC...	1
	Fixing plate	QA-L162W110H93	1
	Fixing plate	CQP-L80W80H6	1
	Fixing part set	CQA	1
Limit switch trigger part list			
Pos.	Name	Specification	Amount
	Plate	QA-L210W30	2 or 4
	C-rail	KC-020275-0250	2 or 4
Trigger fixing part			
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.



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9.6 Normal headroom trolley (Chain hoist)

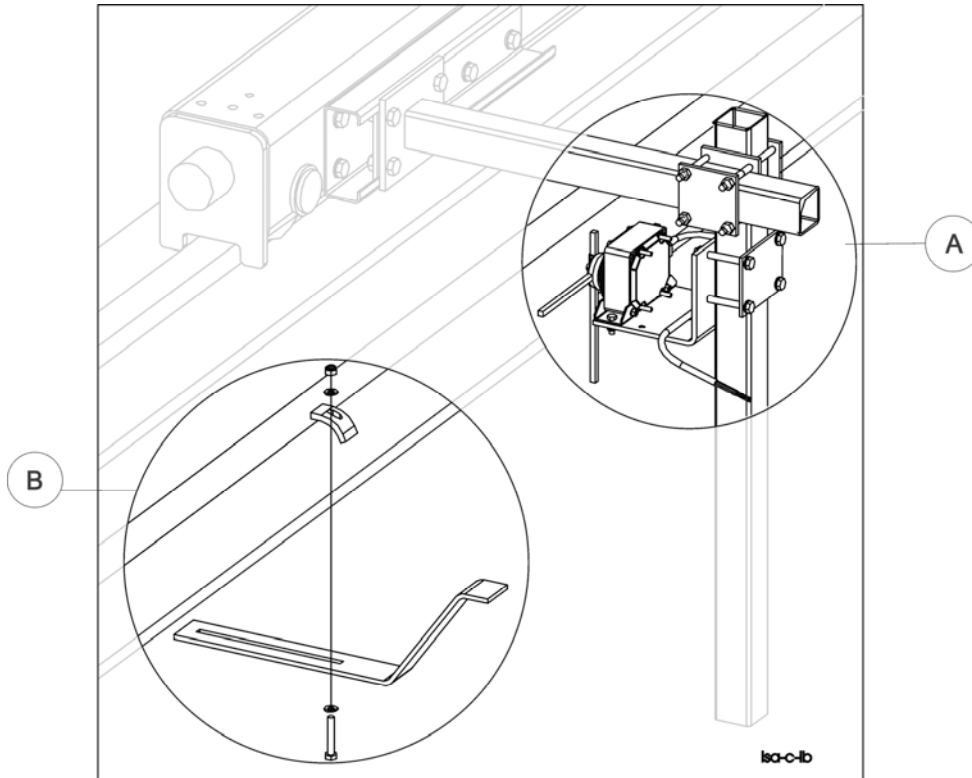


Limit switch part list			
Pos.	Name	Specification	Amount
1	Limit switch	XC...	1
2	Fixing plate	QA-L162W110H93	1
Limit switch trigger part list			
Pos.	Name	Specification	Amount
4	Trigger	QA-L210W30	2
	Screw	DIN933-M10X20-8.8-A3G	4
	Nut	CQ-L25W25T8	4
Trigger support			
Pos.	Name	Specification	Amount
5	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



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9.7 Crane limit switch assembly



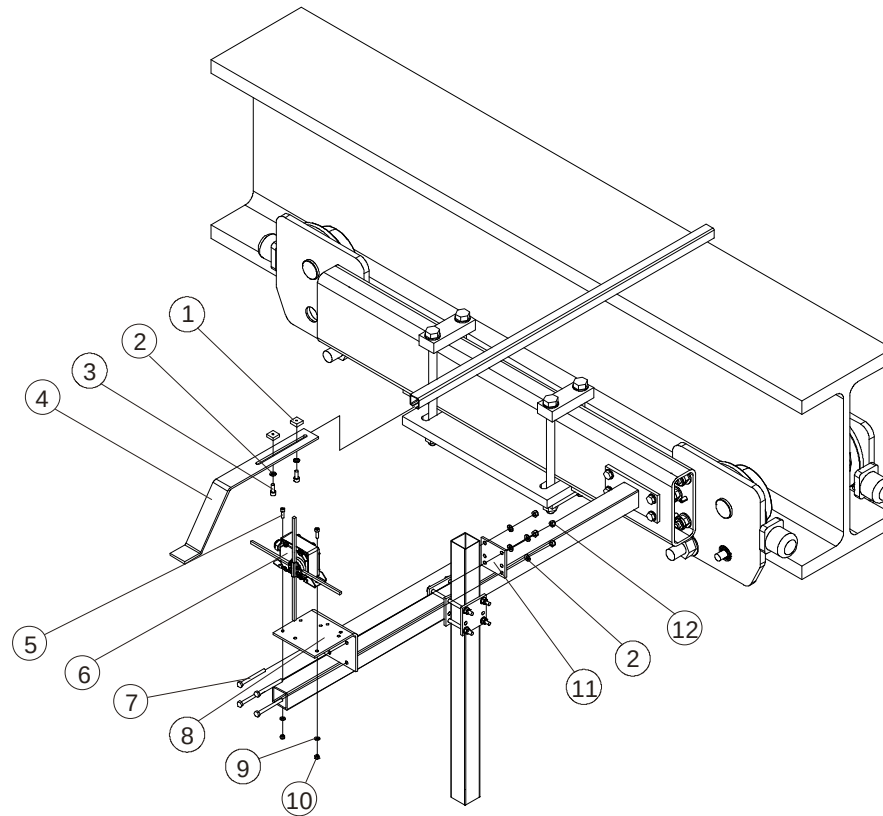
Limit switch part list			
Pos.	Name	Specification	Amount
A	Limit switch	XC...	1
	Fixing plate	CQK-W146H116T6	1
	Fixing plate	CQP-L80W80H6	4
Trigger fixing part			
Pos.	Name	Specification	Amount
B	Trigger	CQK-L463W80H145T5 or CQK-W463H140T5	2 or 4
	Beam clip	KC-020180-08	2 or 4
Fixing set			
Pos.	Name	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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9.8 Crane limit switch assembly



Pos.	Name	Specification	Fixing variation	Amount
1	Fixing part	CQ-W25T6L30		2
2	Washer	DIN125-A9-A3G		10
3	Screw	DIN933-M8X25-8.8-A3G		2
4	Trigger	CQK-W463H140T5		1
5	Screw	DIN933-M6X20-8.8-ZN25		2
6	Limit switch	XCR-F17		1
7	Screw	DIN931-M8X80-8.8-A3G		4
8	Support plate	CQK-W146H116T6		1
9	Washer	DIN125-A6-A3G		4
10	Nut	DIN985-M6-8-A3G		2
11	Fixing plate	CQP-L80W80H6		1
12	Nut	DIN985-M8-8-A3G		4

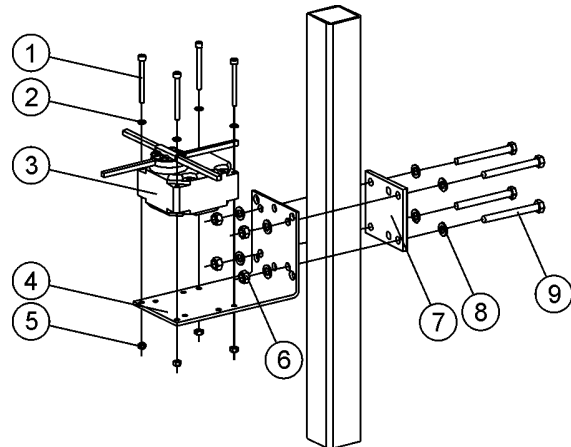
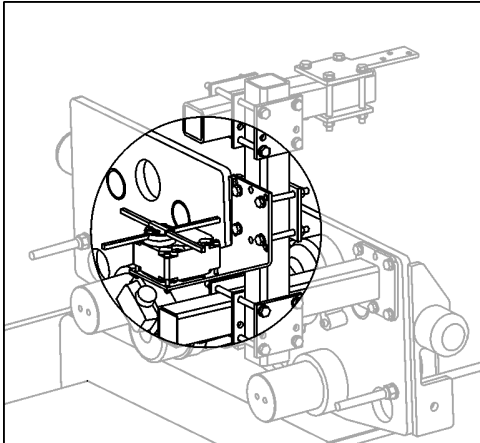
Assemble the crane limit switch to cranes towing arm. The trigger is to be assembled to the runway beam.



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10 Travelling limit switch assembly (Energy chain)

10.1 Normal headroom hoist (Wire rope hoist, Energy chain)



Pos.	Name	Specification	Amount
1	Screw	DIN912-M5x55-8.8-A3G	
2	Washer	DIN125-A5.5-A3G	
3	Limit switch	XC...	
4	Fixing plate	QA-L162W110H93	
5	Nut	DIN985-M5-8-A3G	
6	Nut	DIN985-M8-8-A3G	
7	Fixing plate	CQP-L80W80H6	
8	Washer	DIN125-A8-A3G	
9	Screw	DIN931-M8x80-8.8-A3G	

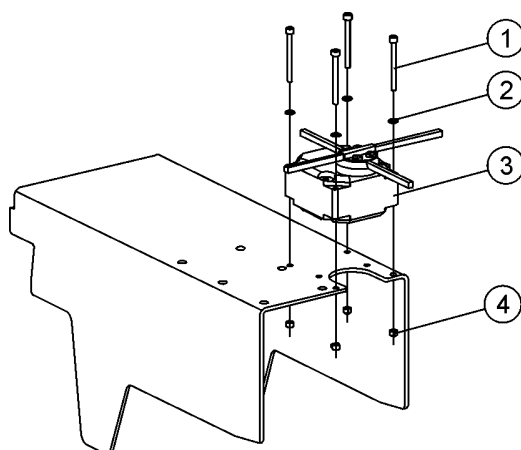
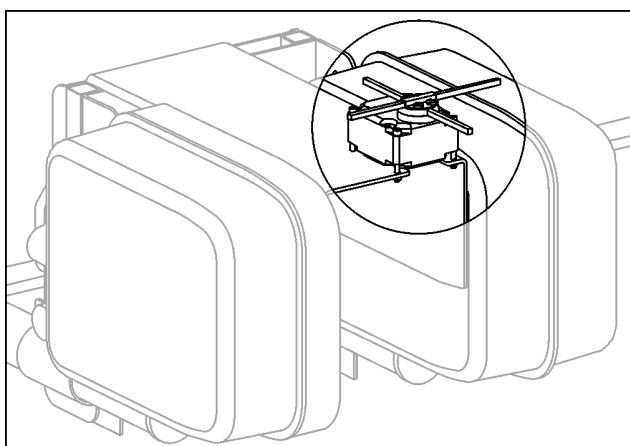


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10.2 Low headroom hoist (SX2, SX3 or SX4)(Wire rope hoist, Energy chain)



Valid if energy chain type 10 and profile main girder



Pos.	Name	Specification	Amount
1	Screw	DIN912-M5x55-8.8-A3G	
2	Washer	DIN125-A5-A3G	
3	Limit switch	XC...	
4	Nut	DIN985-M5-8-A3G	



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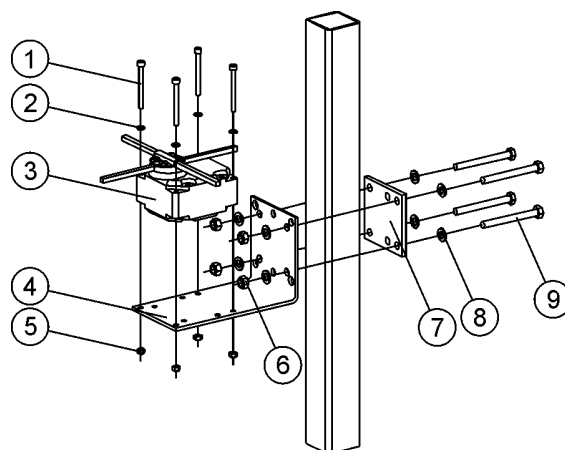
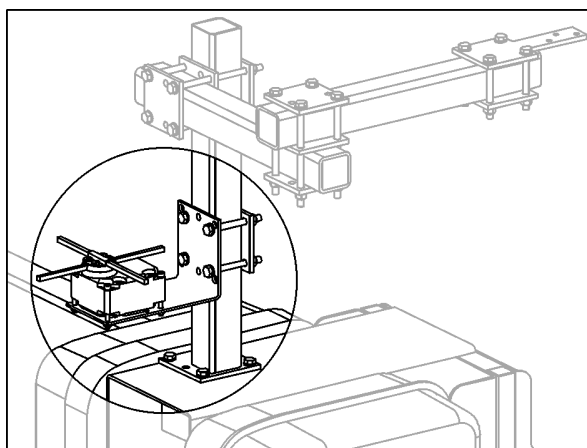
10.3 Low headroom hoist (SX2, SX3 or SX4) (Wire rope hoist, Energy chain)



Valid if energy chain type E200 or 2500



Valid if energy chain type 10 and box main girder



Pos.	Name	Specification	Amount
1	Screw	DIN912-M5x55-8.8-A3G	
2	Washer	DIN125-A5.5-A3G	
3	Limit switch	XC...	
4	Fixing plate	QA-L162W110H93	
5	Nut	DIN985-M5-8-A3G	
6	Nut	DIN985-M8-8-A3G	
7	Fixing plate	CQP-L80W80H6	
8	Washer	DIN125-A8-A3G	
9	Screw	DIN931-M8x80-8.8-A3G	

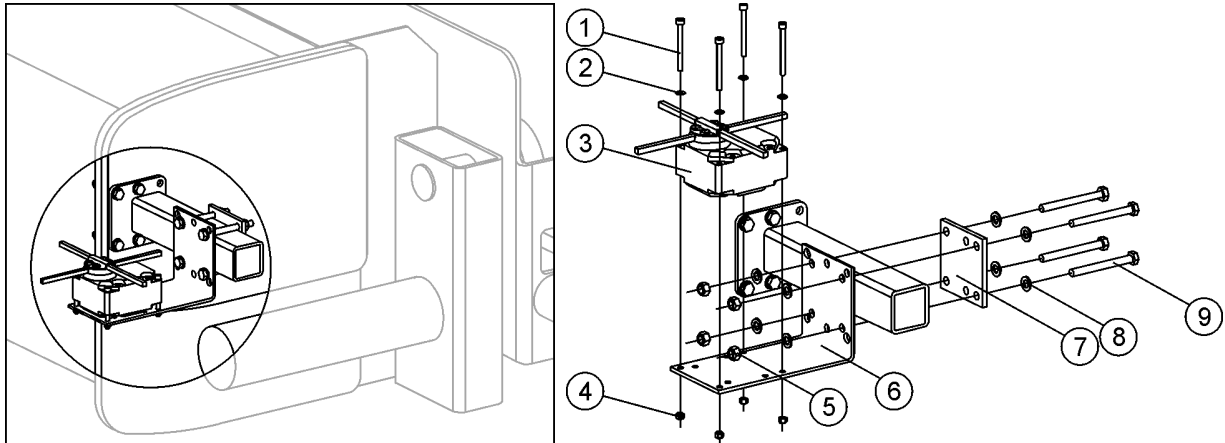


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10.4 Low headroom hoist (SX5)(Wire rope hoist, Energy chain)



Valid if chain type 10 and profile main girder



Pos.	Name	Specification	Amount
1	Screw	DIN912-M5x55-8.8-A3G	
2	Washer	DIN125-A5.5-A3G	
3	Limit switch	XC...	
4	Nut	DIN985-M5-8-A3G	
5	Nut	DIN985-M8-8-A3G	
6	Fixing plate	QA-L162W110H93	
7	Fixing plate	CQP-L80W80H6	
8	Washer	DIN125-A8-A3G	
9	Screw	DIN931-M8x80-8.8-A3G	



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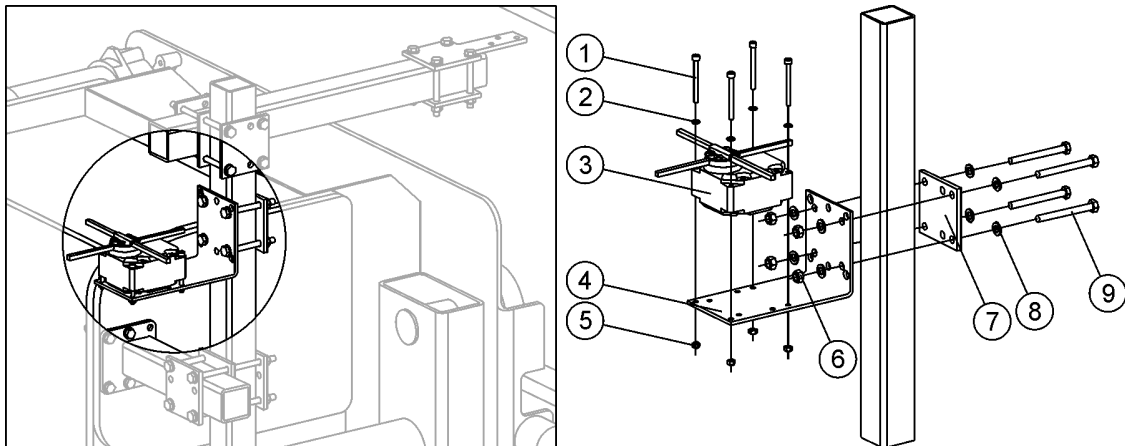
10.5 Low headroom hoist (SX5) (Wire rope hoist, Energy chain)



Valid if energy chain type E200 or 2500



Valid if energy chain type 10 and box main girder

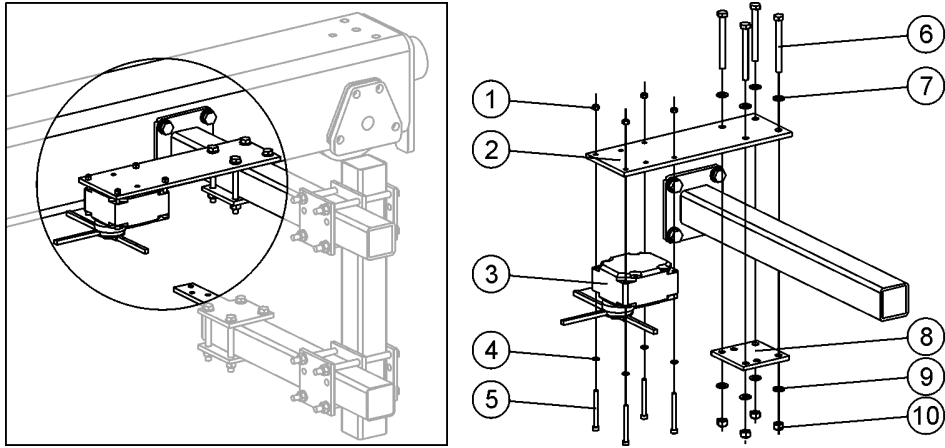


Pos.	Name	Specification	Amount
1	Screw	DIN912-M5xX5-8.8-A3G	
2	Washer	DIN125-A5.5-A3G	
3	Limit switch	XC...	
4	Fixing plate	QA-L162W110H93	
5	Nut	DIN985-M5-8-A3G	
6	Nut	DIN985-M8-8-A3G	
7	Fixing plate	CQP-L80W80H6	
8	Washer	DIN125-A8-A3G	
9	Screw	DIN931-M8x80-8.8-A3G	



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10.6 Double girder trolley (Wire rope hoist, Energy chain)



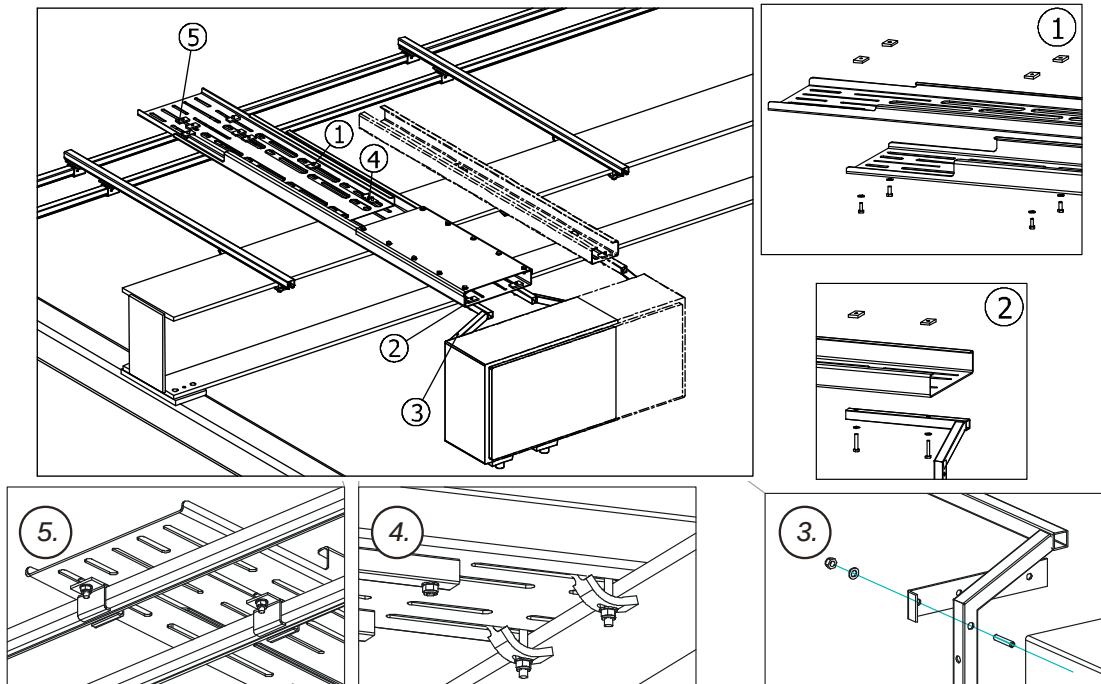
Pos.	Name	Specification	Amount
1	Nut	DIN985-M5-8-A3G	
2	Fixing plate	CQL295W95T6	
3	Limit switch	XC...	
4	Washer	DIN125-A5.5-A3G	
5	Screw	DIN912-M5x55-8.8-A3G	
6	Bolt	DIN933-M8x80-8.8-A3G	
7	Washer	DIN125-A8-A3G	
8	Fixing plate	CQP-L80W80H6	
9	Nut	DIN985-M8-8-A3G	



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11 Bridge panel assembly

11.1 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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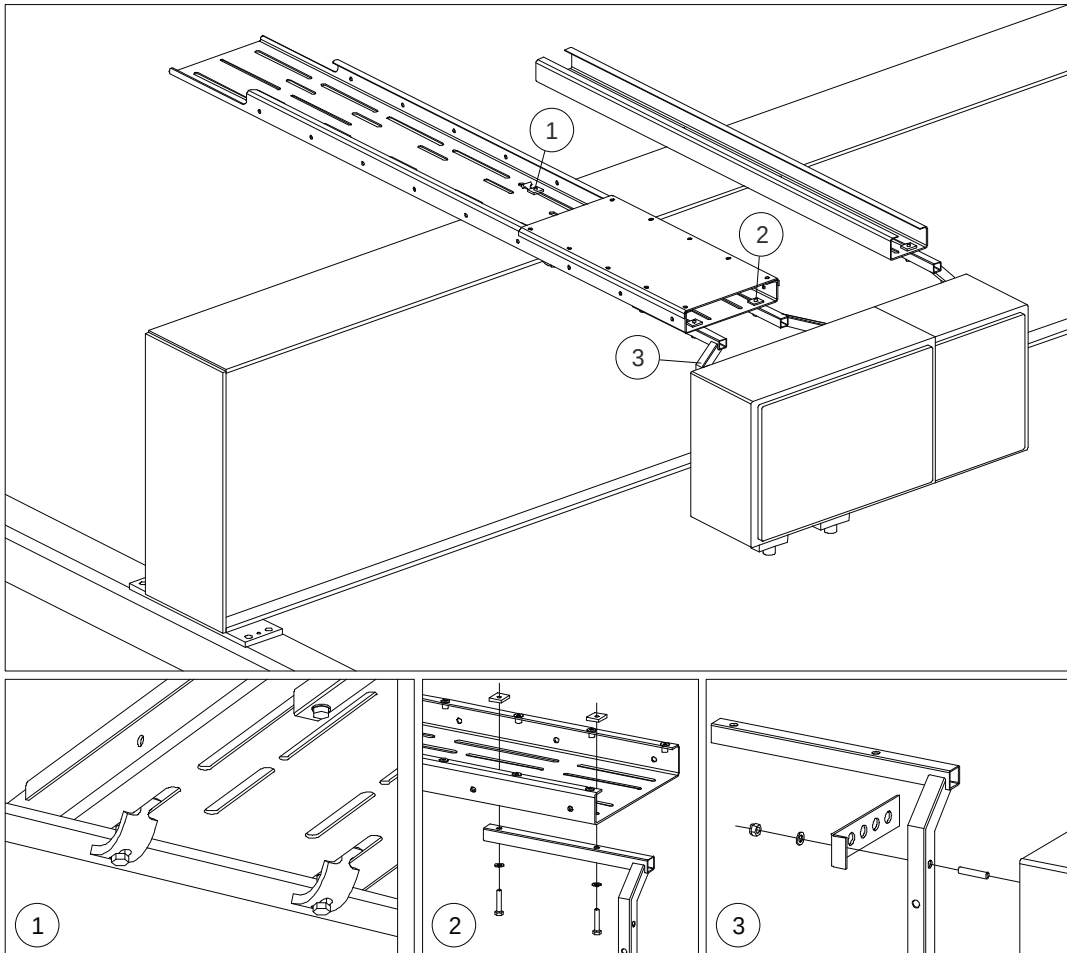
Fixing cable way to the girder			
Pos. 4	Name	Specification	Amount
	Beam clip	KC-020180-08	4
Fixing cable way to the c-rail			
Pos. 5	Name	Specification	Amount
	Track support bracket	KC-023226	2

- 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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11.2 Single girder crane (Wire rope hoist, Energy chain)



Fixing cable way to the girder			
Pos. 1	Name	Specification	Amount
	Beam clip	KC-020180-08	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

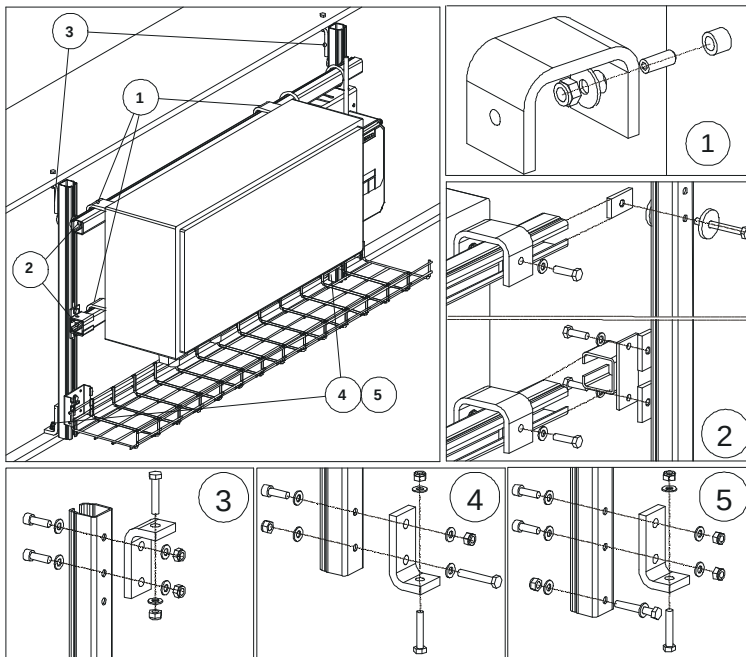
Fixing bridge panel			
Pos. 3	Name	Specification	Amount
	Fixing part	CQP-S...	2 or 3
	Support	CQP-S-L240W23H40T3	4 or 6
	Screw (Threadlocking)	DIN913-M8x40-A3G	4 or 6
	Washer	DIN125-A8-A3G	4 or 6
	Nut	DIN985-M8-8-A3G	4 or 6



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

11.3 Double girder crane (Wire rope hoist)



Note!
Positions 4 and
5 are alternative
fixing types.

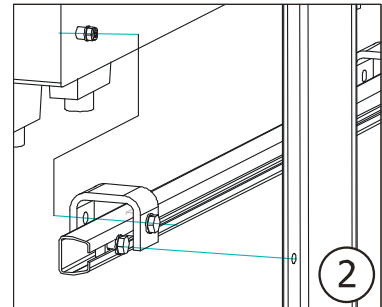
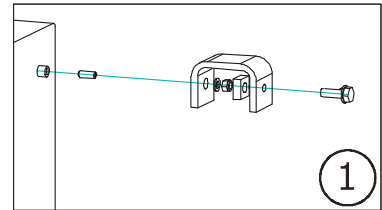
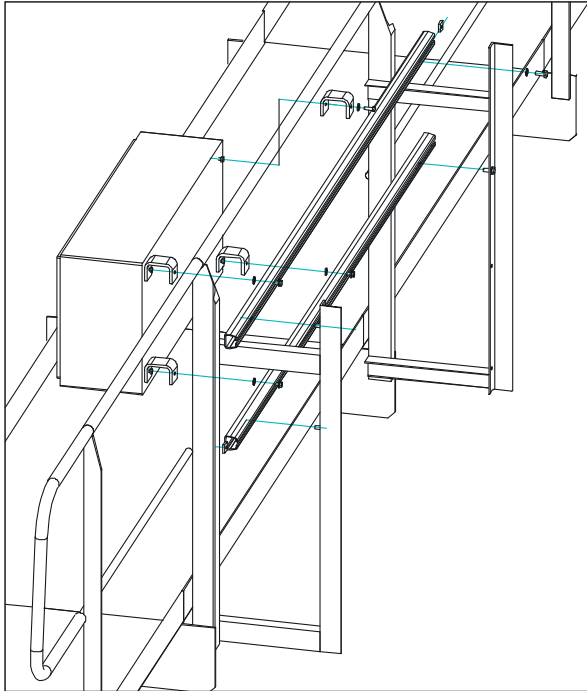
Name	Specification	Amount		
Fixing bridge panel; Position 1				
Fixing plate	CQP-L81W50H58T8	4/6/8		
Screw (Thread locking)	DIN913-M8x20-8.8-A3G	4/6/8		
Washer	DIN9021-8-A3G	4/6/8		
Nut	DIN985-M8-8-A3G	4/6/8		
Fixing c-rail; Position 2				
C-rail	KC-020276	2		
Nut; Square	CQ-W25T6L45	10/12/14		
Screw	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! 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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11.4 Double girder crane with a service platform (Wire rope hoist)

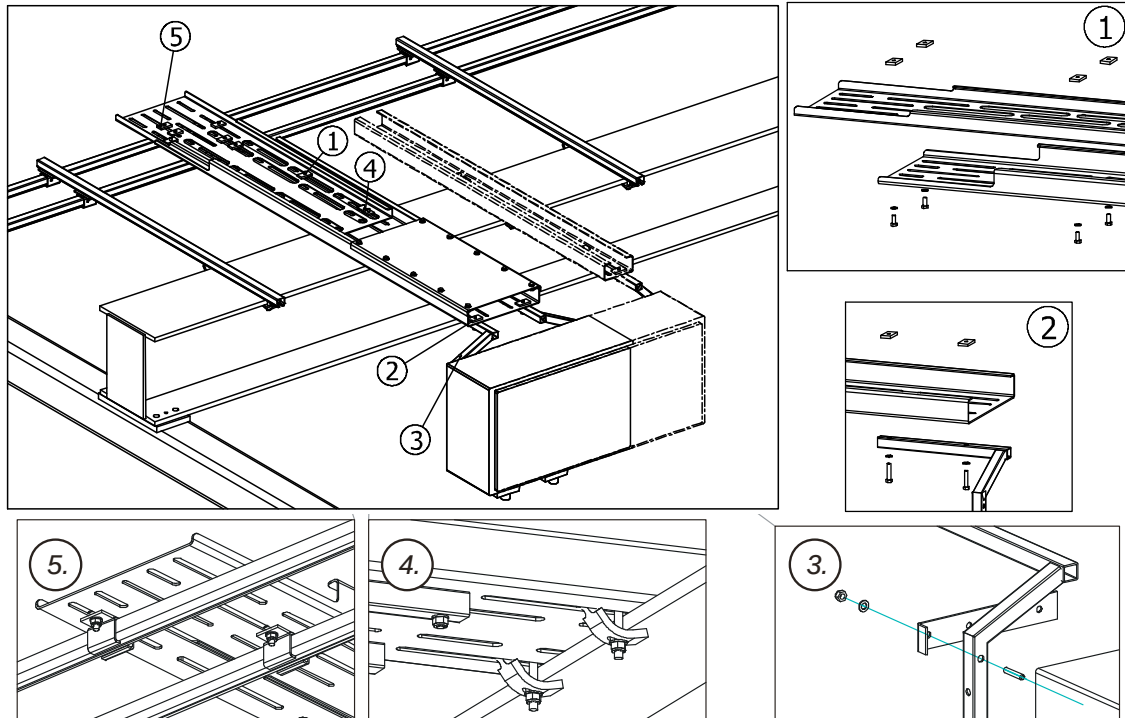


Fixing bridge panel			
Pos. 1	Name	Specification	Amount
	Fixing plate	CQP-L81W50H58T8	4/6/8
	Screw (Threadlocking)	DIN913-M8x20-8.8-A3G	4/6/8
	Washer	DIN9021-8-A3G	4/6/8
	Nut	DIN985-M8-8-A3G	4/6/8
Fixing c-rail			
Pos.2	Name	Specification	Amount
	C-rail	KC-020276-(650/850/1340/1520/1800/2000/2200)	2
	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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11.5 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

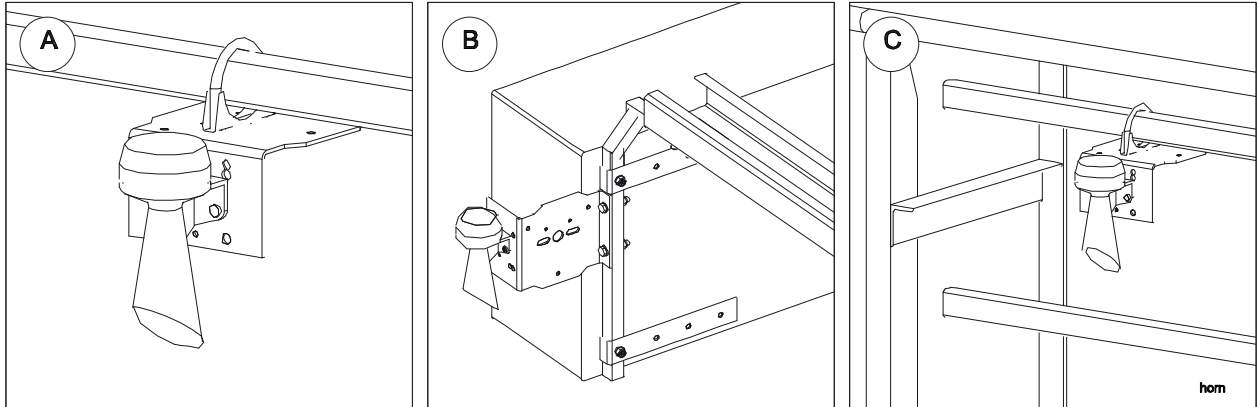
- In small sized bridge panels will be used one piece of a cableway, then only two fixing parts will be needed.



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12Horn assembly

12.1 Crane



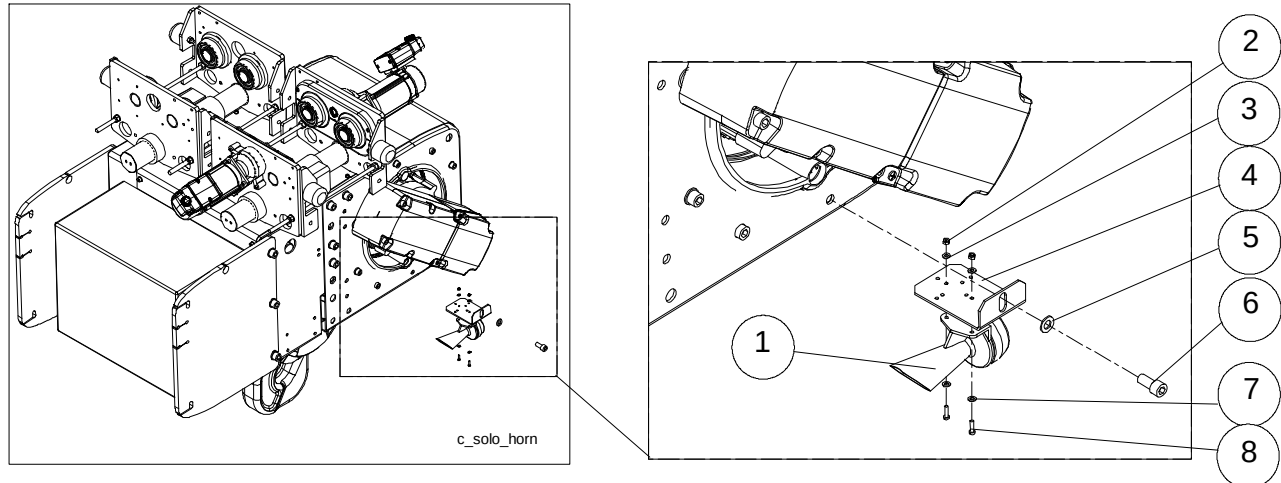
A.	The horn can be fixed to the console of the festoon assembly as near as possible to the bridge panel.
B.	In single girder cranes the horn can be assembled to the bridge panel bracket.
C.	If there is a service platform on the crane the horn can be assembled to the C-rail or handrail nearby the bridge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

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



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12.2 Solo hoist



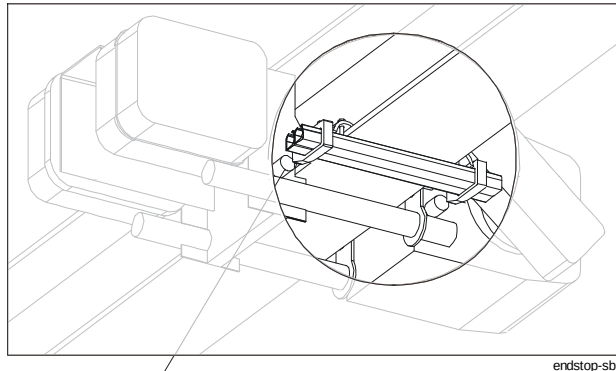
Pos.	Name	Specification	Amount
1	Horn		
2	Nut	DIN985-M4-8-A3G	2
3	Washer	DIN125-A5-A3G	4
4	Fixing plate	QA-L125W80H42	1
5	Washer	Washer of frame end plate fixing screw	
6	Screw	Fixing screw of hoist frame end plate	
7	Screw	DIN84-M4X16-4.8-A2F	2



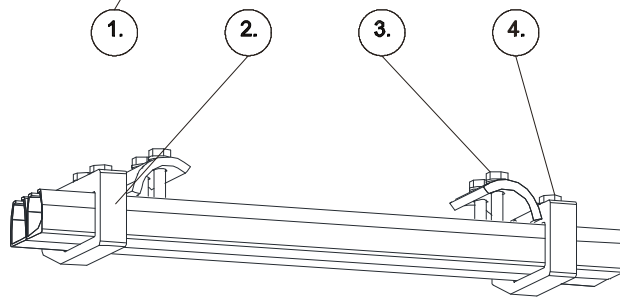
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13 Buffer stop assembly for single girder crane

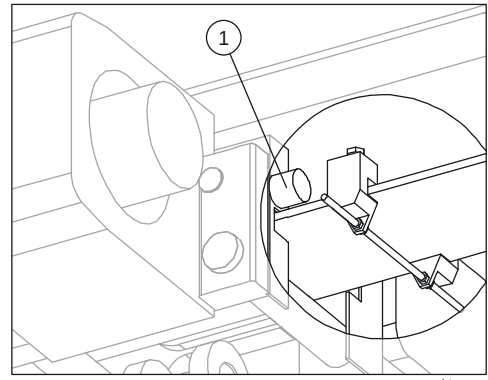
13.1 Wire rope hoist



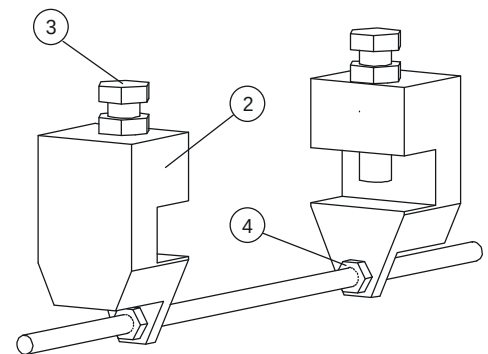
endstop-sb



Low headroom hoist (drum diam. 303 mm)



endstop-mc



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:

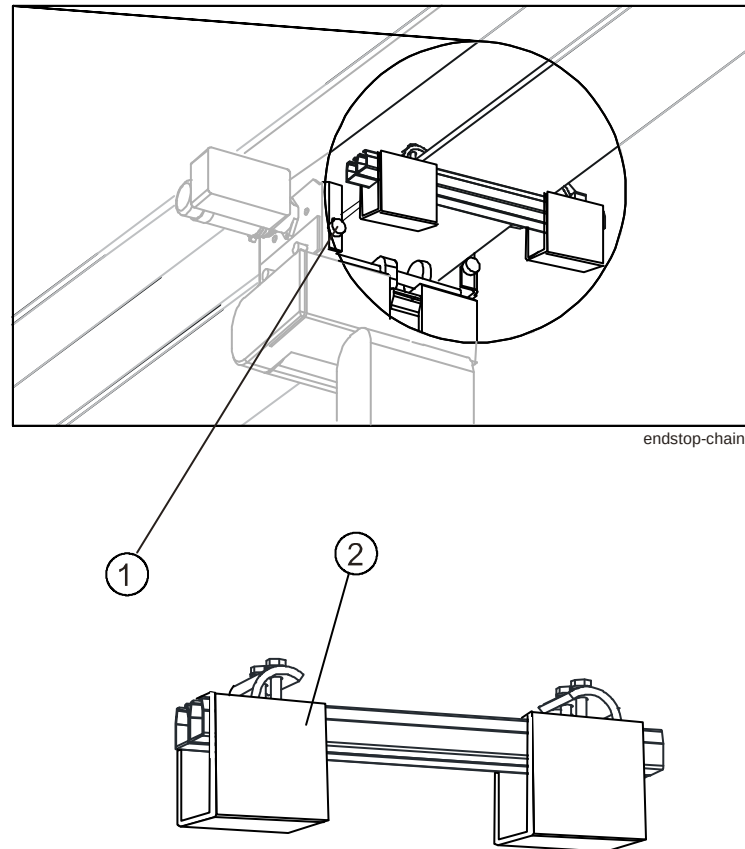
- Make sure that the buffer hits center (1) of the buffer stop.
- Check, that the buffer stops (2) will stop the hoist on both ends of the crane, not the cable trollies!
- At first, tighten screws (3) to correct torque and ensure them with locking nuts if so equipped.
- Then tighten nuts (4) to correct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

- M10	45 Nm
- M12	77 Nm
- M20	170 Nm



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13.2 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



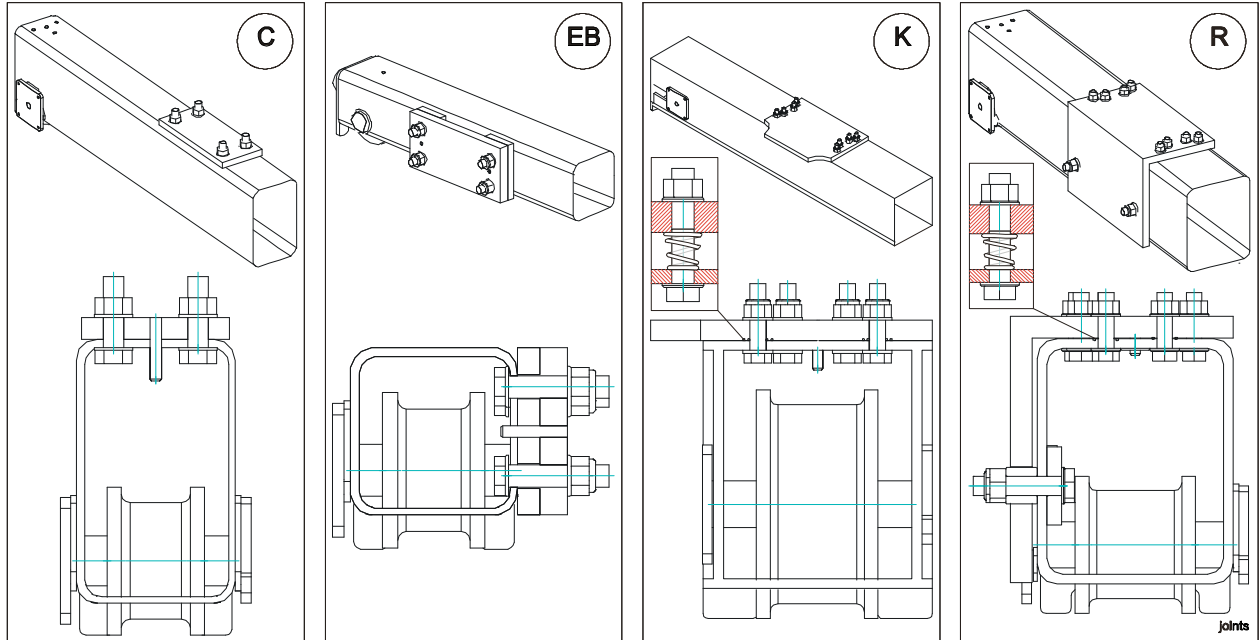
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14Joint plate assembly



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14.1 Joint plate assembly, top running end carriages



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

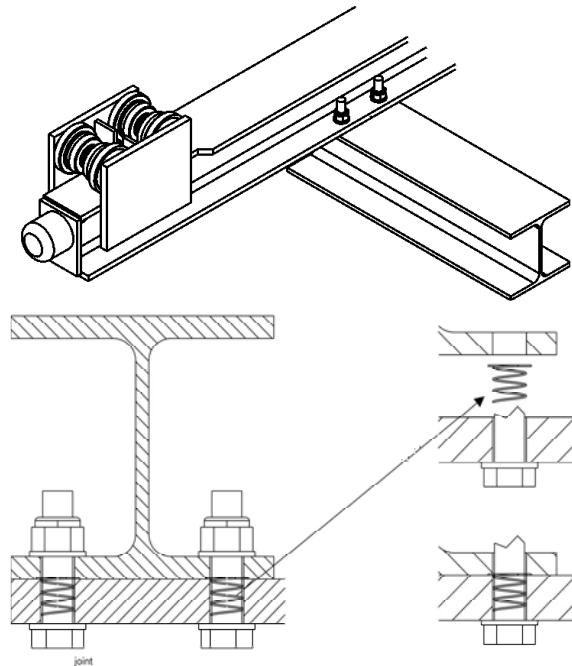
Tightening torque	
Screw size	Tightening torque
M16-10.9	280 Nm
M20-8.8	385 Nm
M20-10.9	550 Nm

- 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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14.2 Joint plate assembly, underrunning end carriages



Pos.	Connection	Friction rings
BA, BB, SA, SB	Bottom connection	Yes

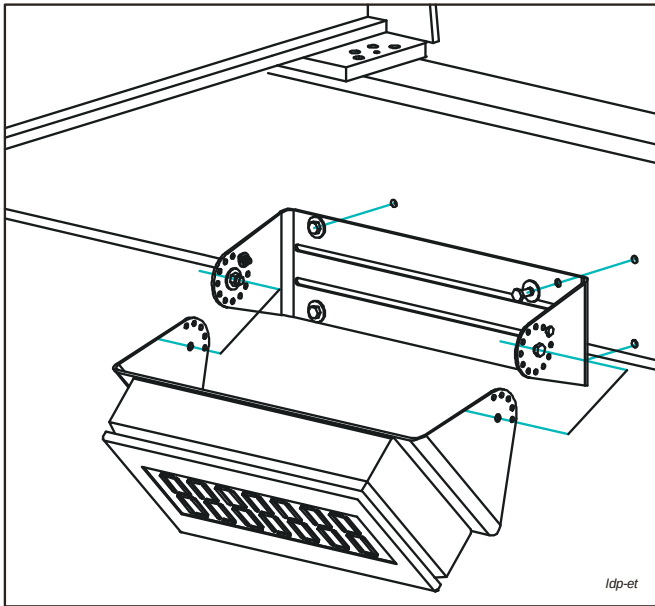
Tightening torque	
Screw size	Tightening torque
M16-10.9	280 Nm
M20-10.9	550 Nm

- Check that joint surfaces are free from dirt, dust and loose particles.
- Place friction rings around screw holes at bottom of end carriage.
- Place joint plate bottom of the end carriage. 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.

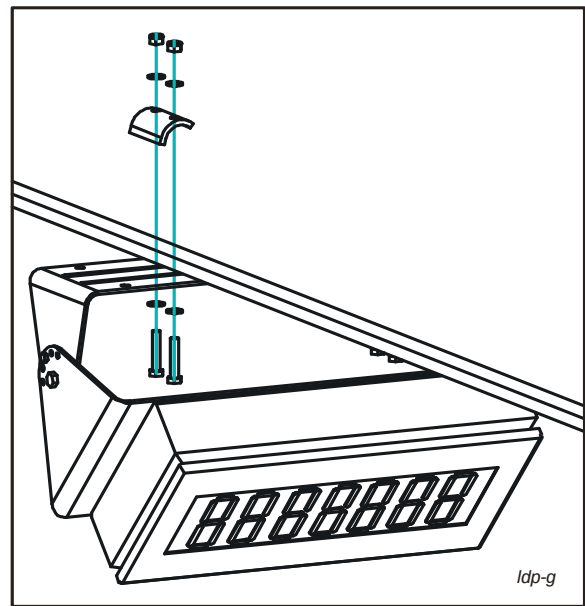


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15Load display assembly



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

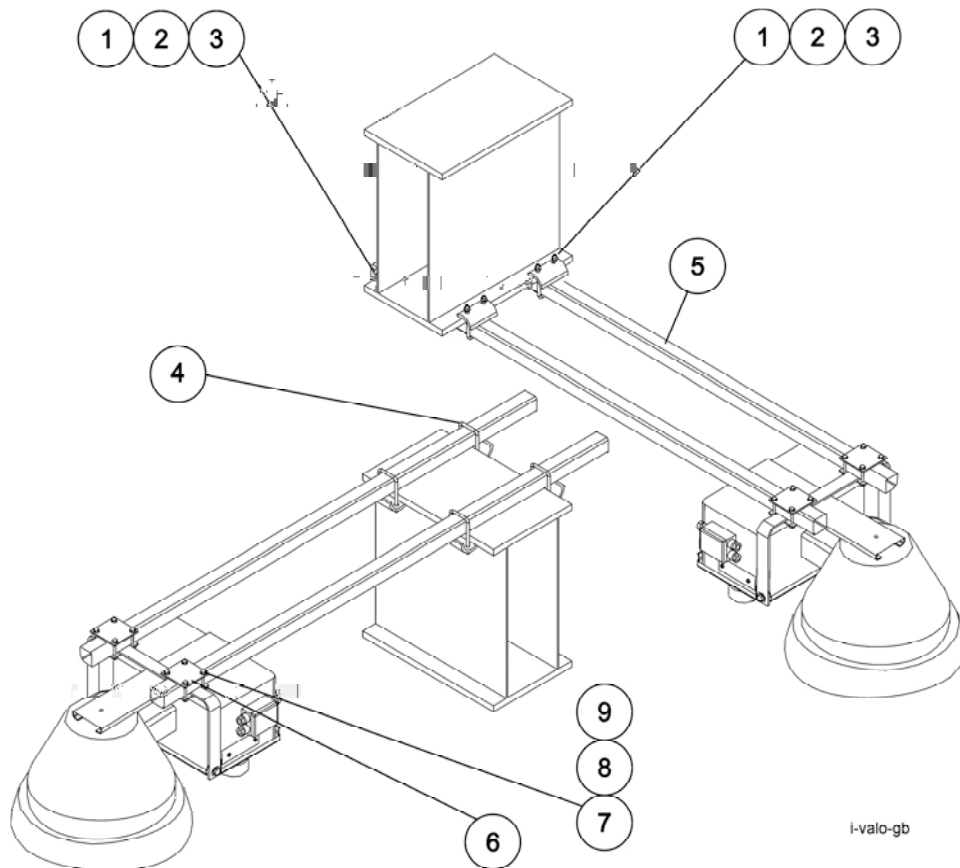
Assemble the load display as close as possible to the bridge panel.



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16Crane light assembly

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



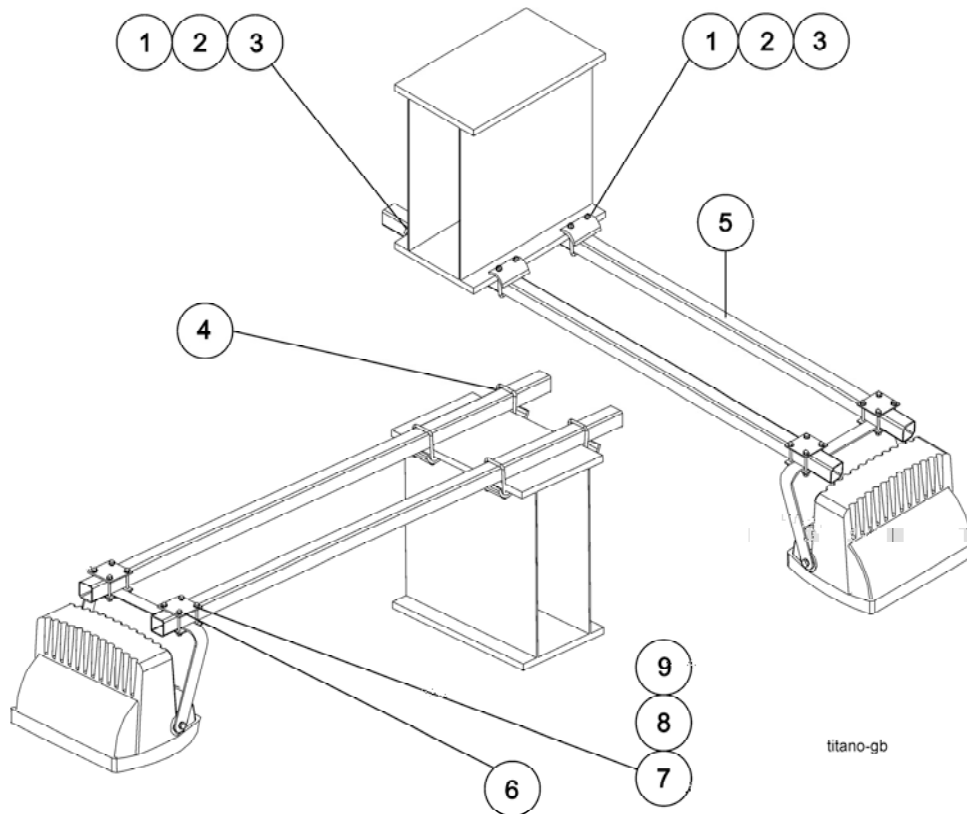
Pos.	Name	Specification	Amount
1	Nut	DIN985-M8-8-A3G	8
2	Washer	DIN126-A8-A3G	8
3	Plate	CQ-W58H100T8	4
4	Fixing part	CQX-M8D8L104	4
5	Tube	CQ-W50H50T4 1700 (1) / CQ-L1000W50H50T2 (2)	2
6	Fixing Plate	CQP-L80W80H6	4
7	Screw	DIN931-M8x90-8.8-A3G	8
8	Nut	DIN985-M8-8-A3F	8
9	Washer	DIN126-A8-A3G	16

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



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16.2 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

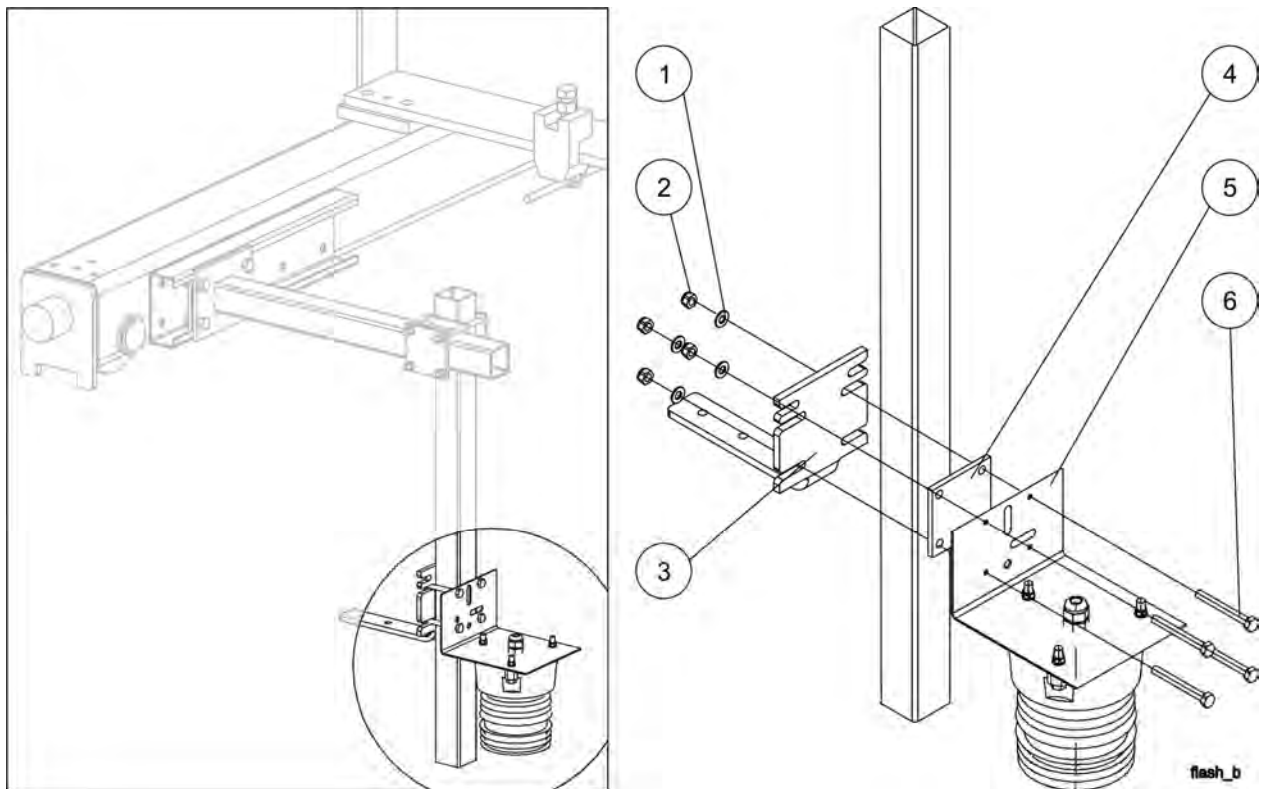
Tubes (part no 5) variation 1 is for assembly fixed to the upper flange, variation 2 is for assembly fixed to the lower flange.



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17 Flashing light assembly

17.1 Flashing light assembly, top running end carriages



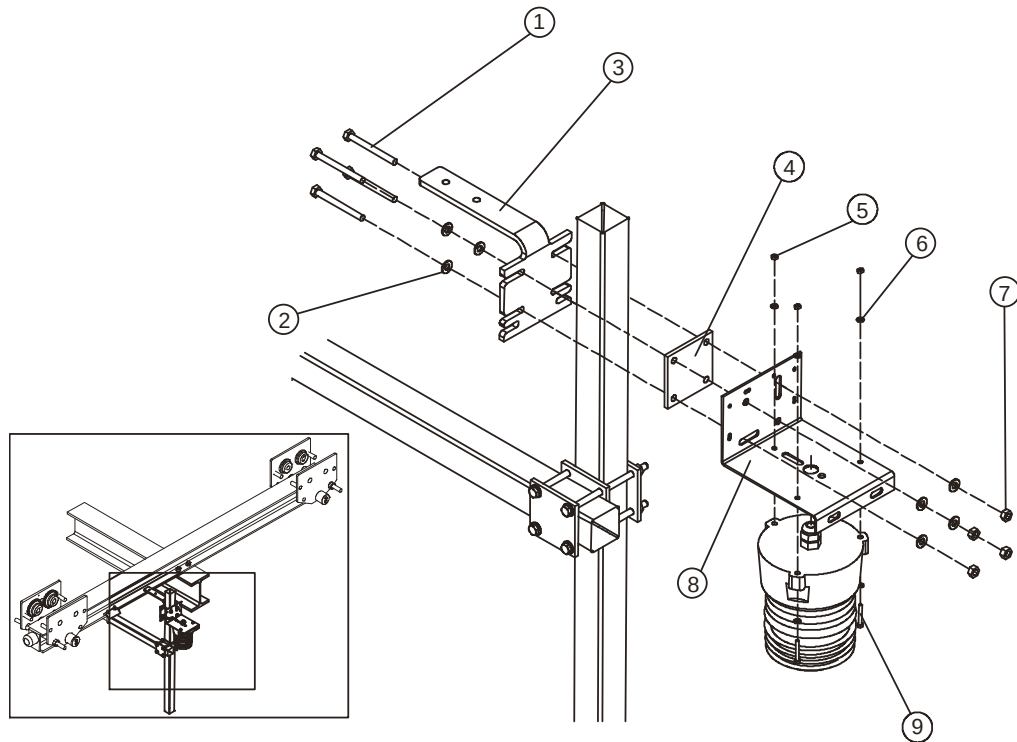
Pos.	Name	Specification	Amount
1	Washer	DIN125-A8-A3G	8
2	Nut	DIN985-M8-8-A3G	4
3	Crane towing arm	CQP-L195W150H135	1
4	Plate	CQP-L80W80H6	1
5	Fixing plate	EN10025-S235JR-2MM 170X102	1
6	Screw	DIN931-M8x80-8.8-A3G	4

- 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).



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17.2 Flashing light assembly, underrunning end carriages



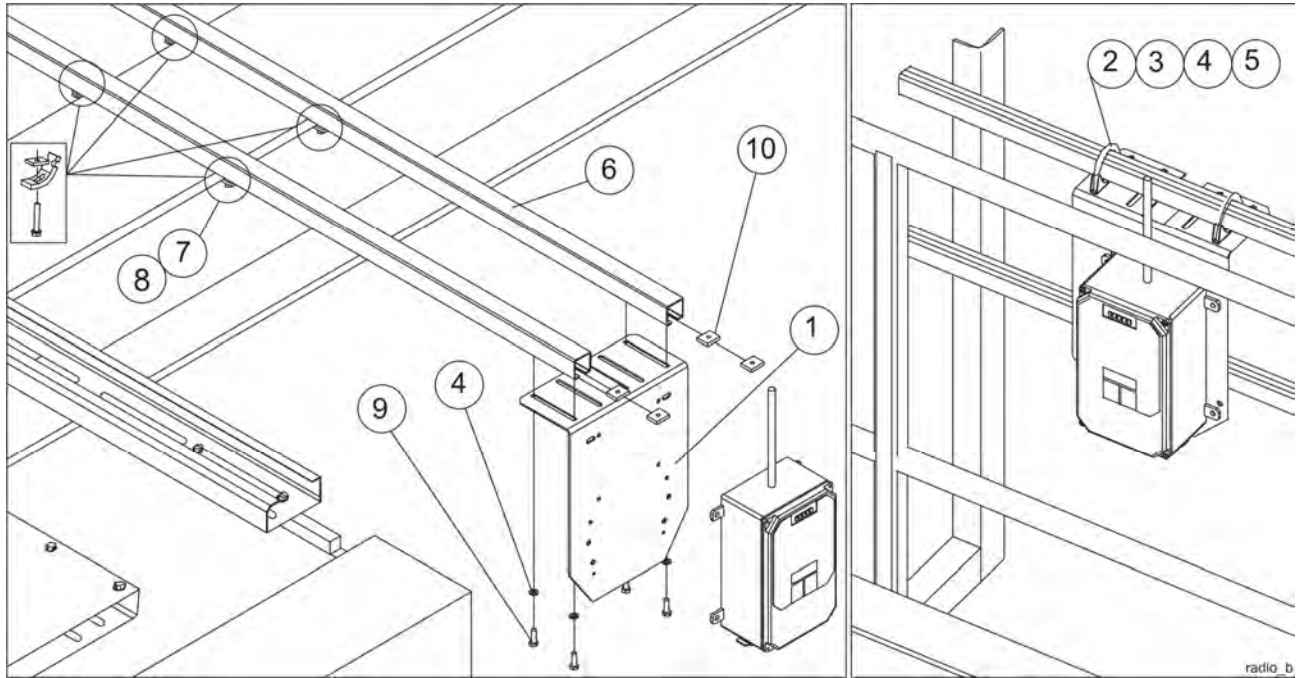
Pos.	Name	Specification	Amount
1	Screw	DIN931-M8X80-8.8-A3G	4
2	Washer	DIN125-A8-A3G	8
3	Towing arm		1
4	Fixing plate	CQP-L80W80H6	1
5	Nut	DIN934-M4-8-A3G	3
6	Washer	DIN125-A4-A3G	6
7	Nut	DIN985-M8-8-A3G	4
8	Fixing plate	CQ-L170W128H140T2.5	1
9	Screw	DIN933-M4X30-8.8-A3G	3

- 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).



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18Radio assembly



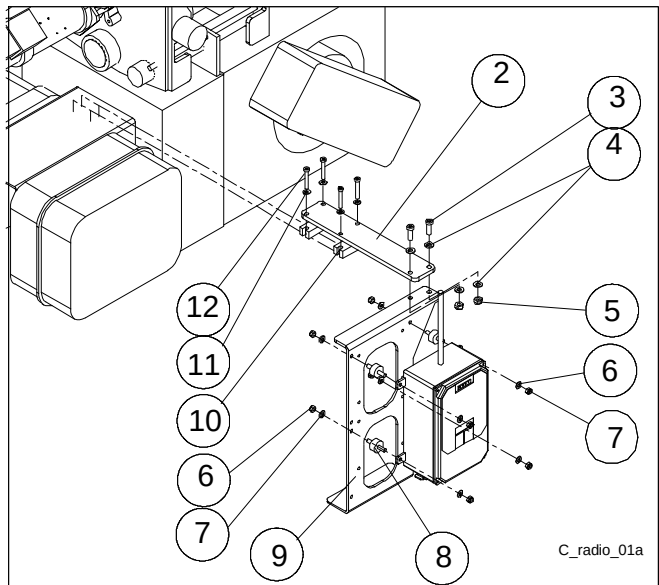
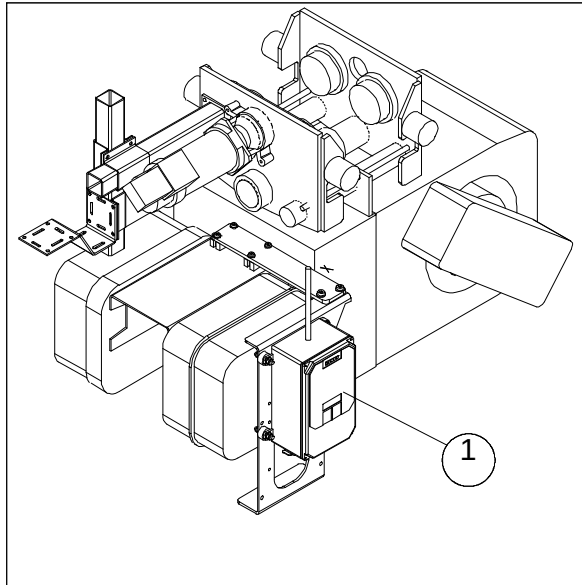
Pos.	Name	Specification	Amount
1	Bracket	CQ-L128W280H378T3	1
2	Fastener	CQ-D42/85182306	2
3	Fastener	CQ-D51/85182309	2
4	Washer	DIN127-AB-A3G	4
5	Washer	DIN125-AB-A3G	4
6	Rail; C-Rail	KC-020276-1800	2
7	Beam Clip	KC-020181-08	4
8	Beam Clip	KC-020180-08X36	4
9	Screw	DIN933-MBX25-8.8-A3G	4
10	Fixing Part	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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19Radio assembly (solo)



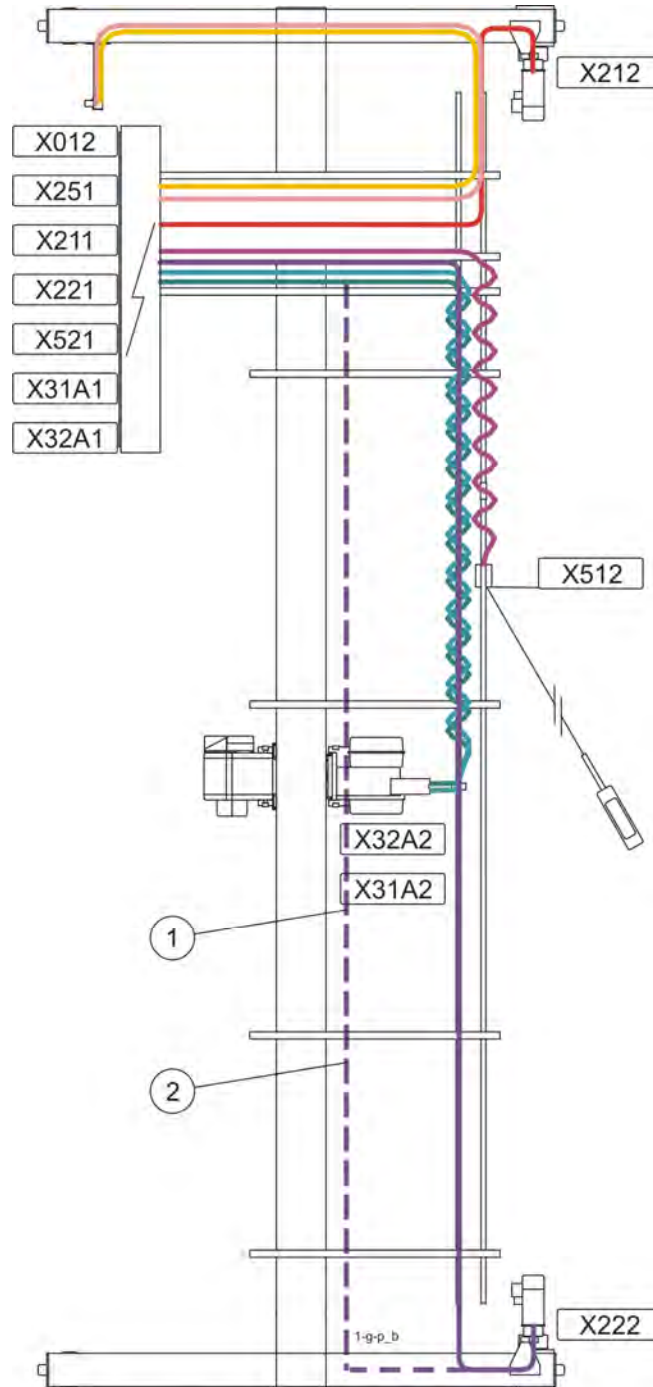
Pos.	Name	Specification	Amount
1	Radio		1
2	Support plate	QA-L374W70H10-7021	1
3	Screw	DIN912-M10X30-8.8-A3G	2
4	Washer	Din125-A10-A3G	4
5	Nut	DIN985-M10-8-A3G	2
6	Washer	Included in radio delivery	8
7	Nut	Included in radio delivery	8
8	Rubber bushing	Included in radio delivery	4
9	Support plate	QA-L374W70H10-7021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



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20 Cable plugs and paths

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

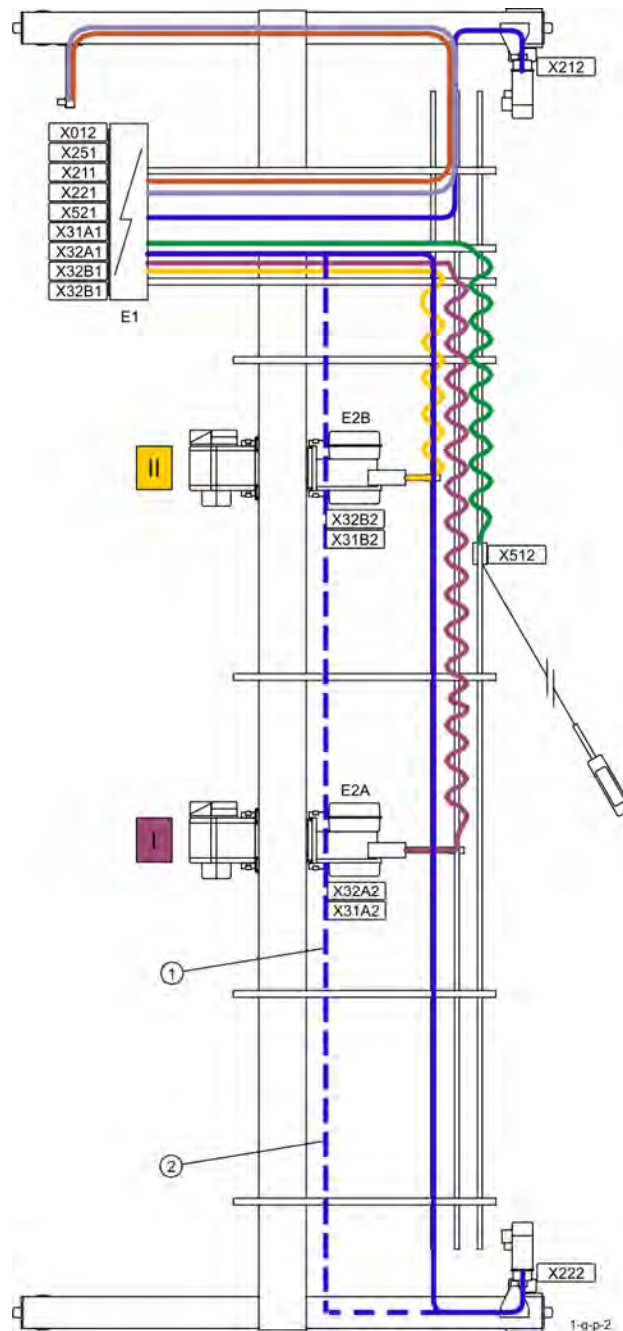




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1. Upside-down fixed C-rail.
2. An alternative cable path to travelling machinery for those areas where this cable must be protected.

20.2 Single girder crane plug layout and cable paths, two hoists (Wire rope hoist)

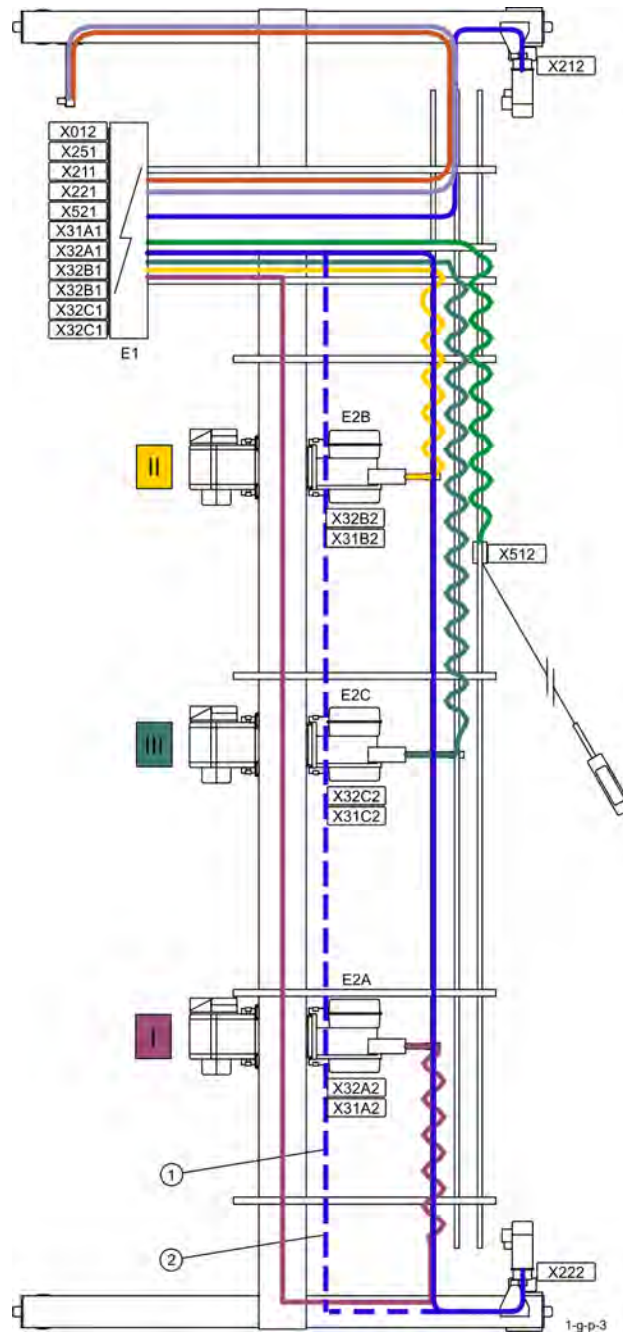




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1. Upside-down fixed C-rail.
2. An alternative cable path to travelling machinery for those areas where this cable must be protected.

20.3 Single girder crane plug layout and cable paths, three hoists (Wire rope hoist)

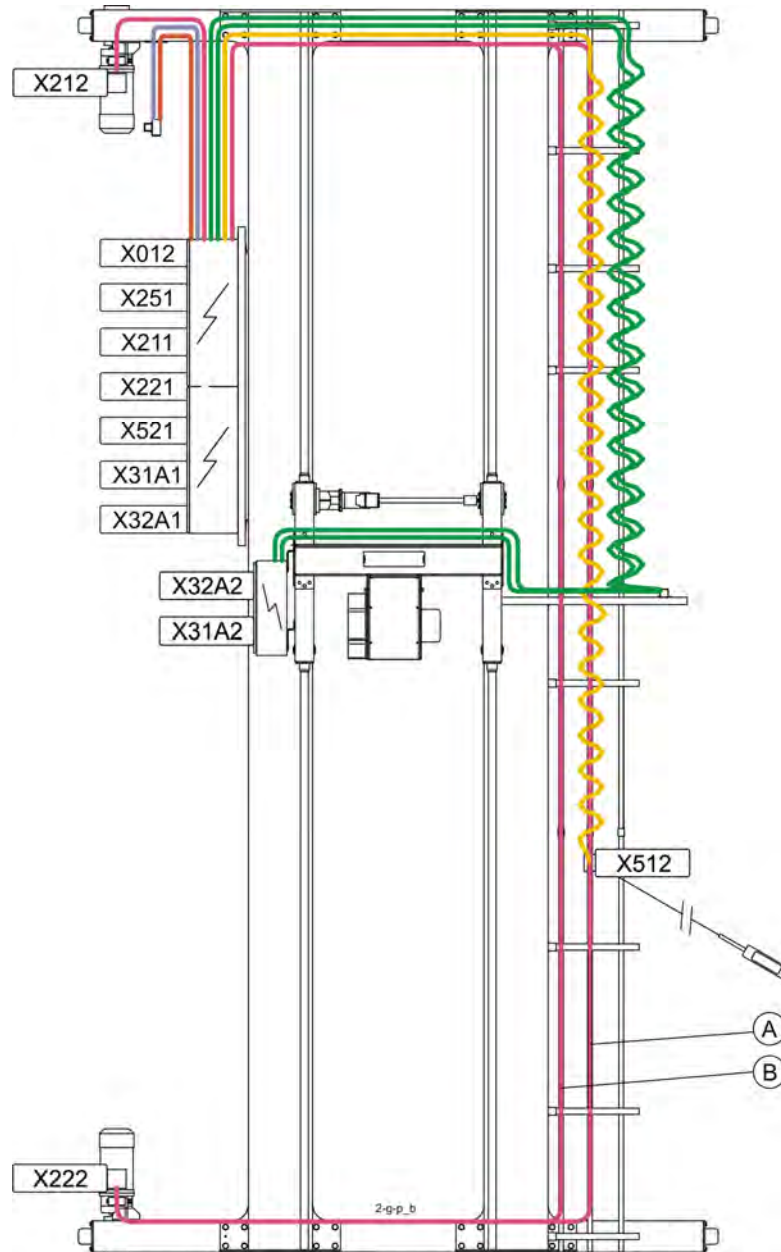


1. Upside-down fixed C-rail.
2. An alternative cable path to travelling machinery for those areas where this cable must be protected.



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

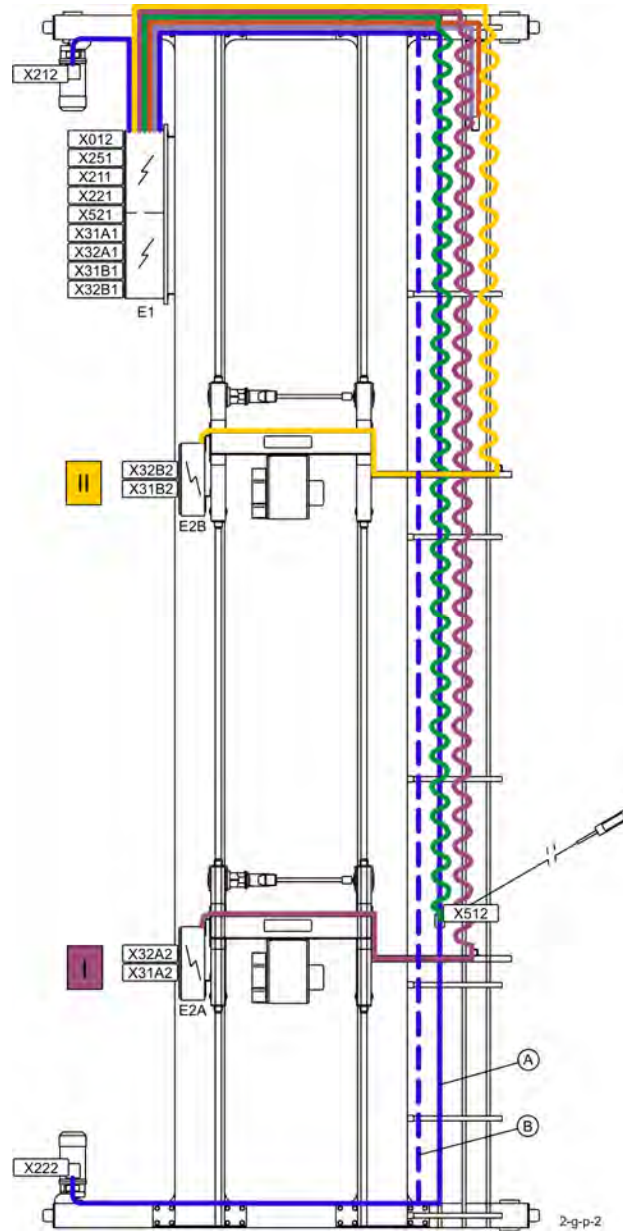


A/B Alternative cable paths



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20.5 Double girder crane plug layout and cable paths, two hoists (Wire rope hoist)

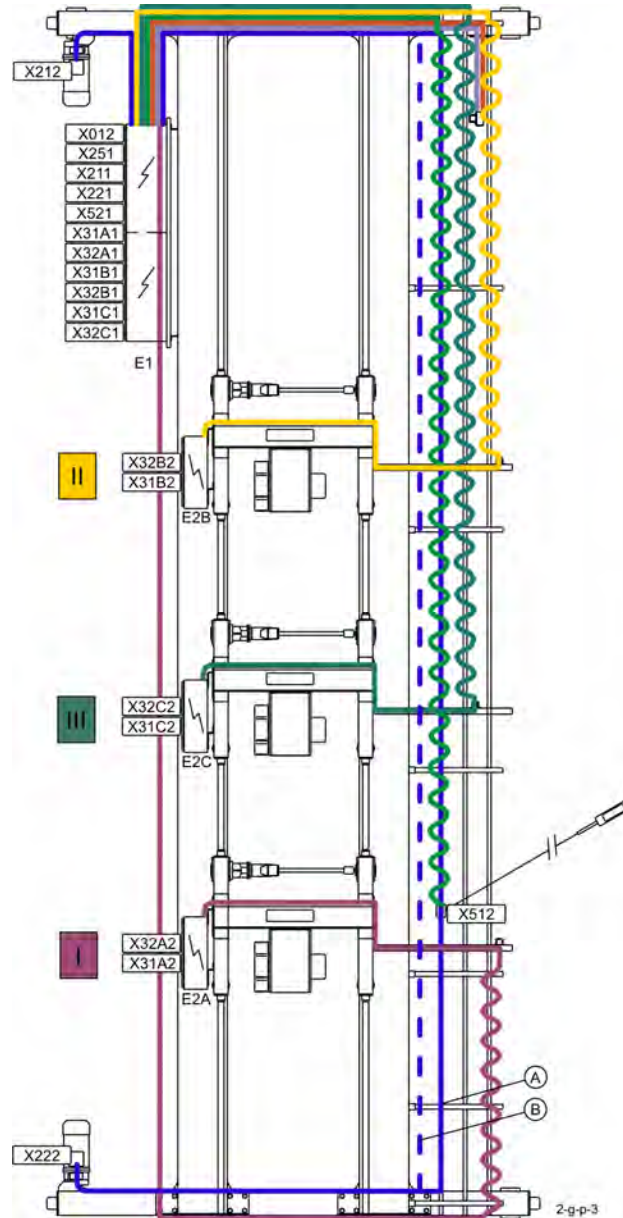


A/B Alternative cable paths



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20.6 Double girder crane plug layout and cable paths, three hoists (Wire rope hoist)

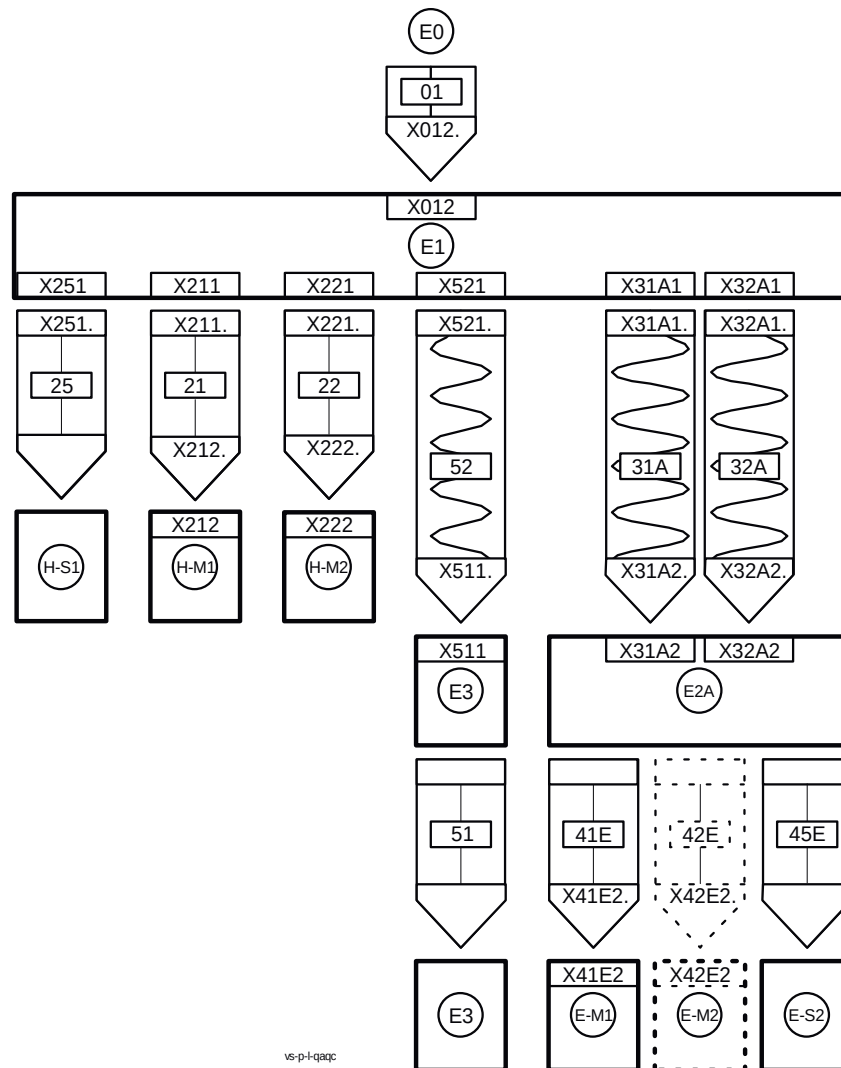


A/B Alternative cable paths



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20.7 Plug diagram, (Wire rope hoist)



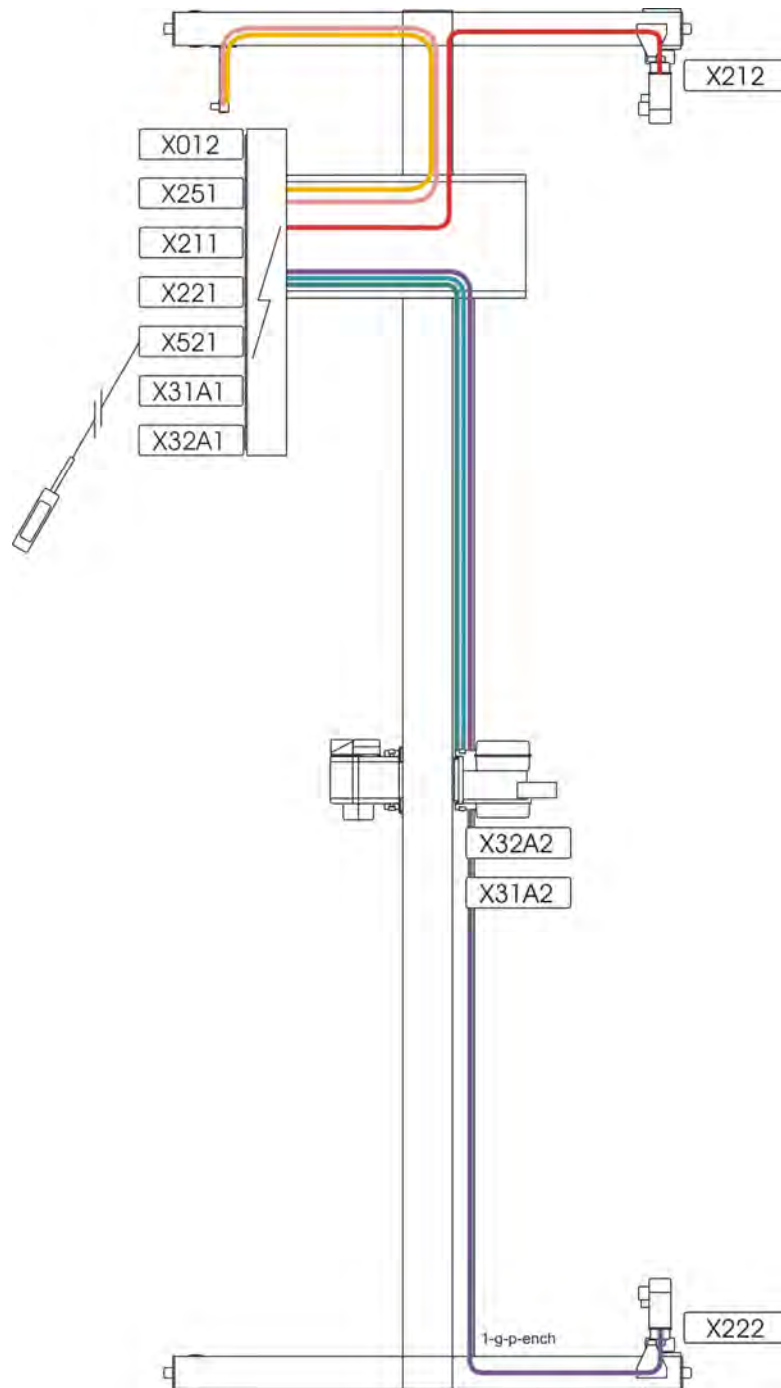
vs-p-l-qaqc

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	E-M1	Hoist traveling motor 1
H-M1	Crane traveling motor 1	E-M2	Hoist traveling motor 2
H-M2	Crane traveling motor 2	E-S2	Hoist limit switch



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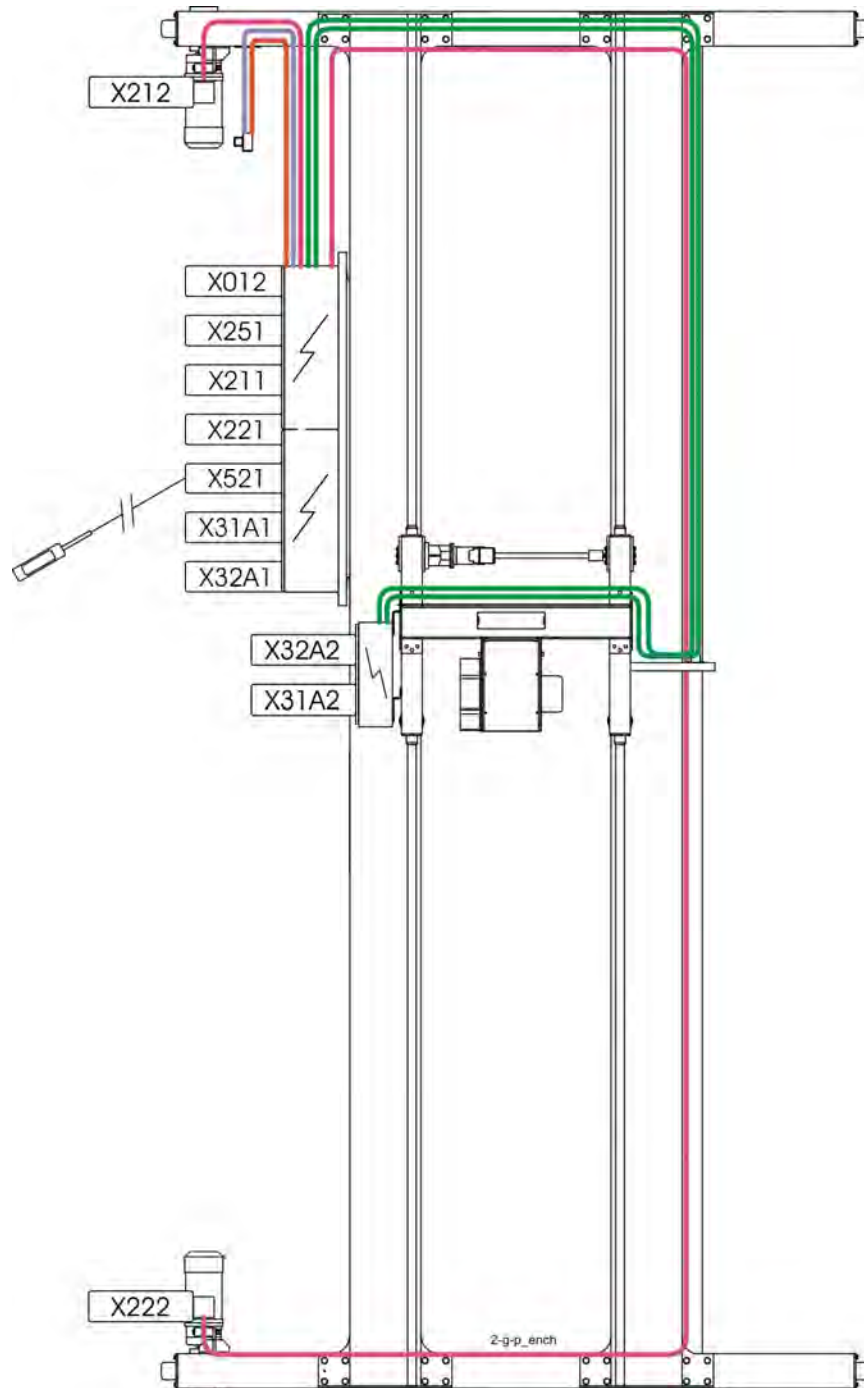
20.8 Single girder crane plug layout and cable paths (Wire rope hoist, Energy chain)





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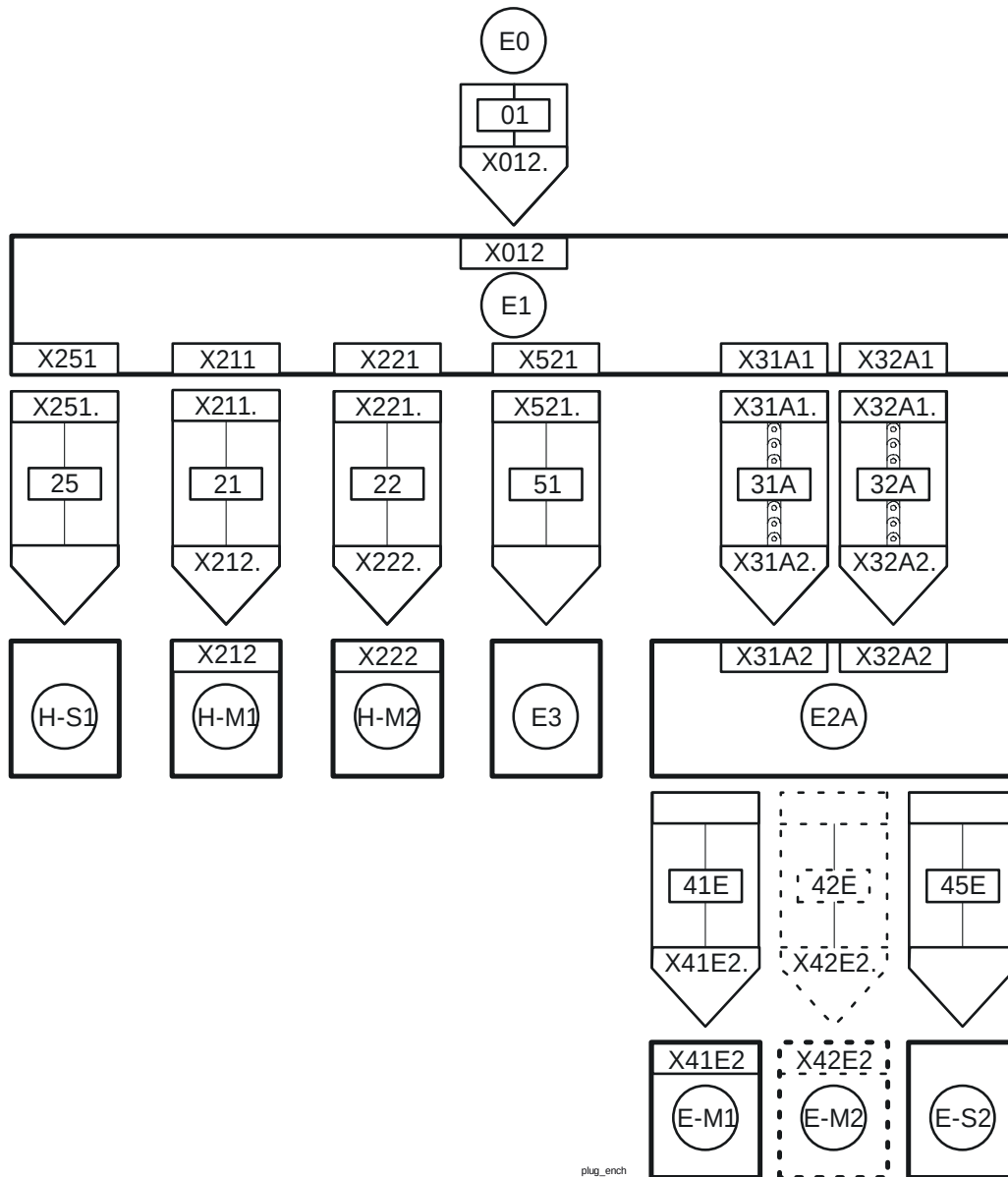
20.9 Double girder crane plug layout and cable paths (Wire rope hoist, Energy chain)





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20.10 Plug diagram, (Wire rope hoist, Energy chain)

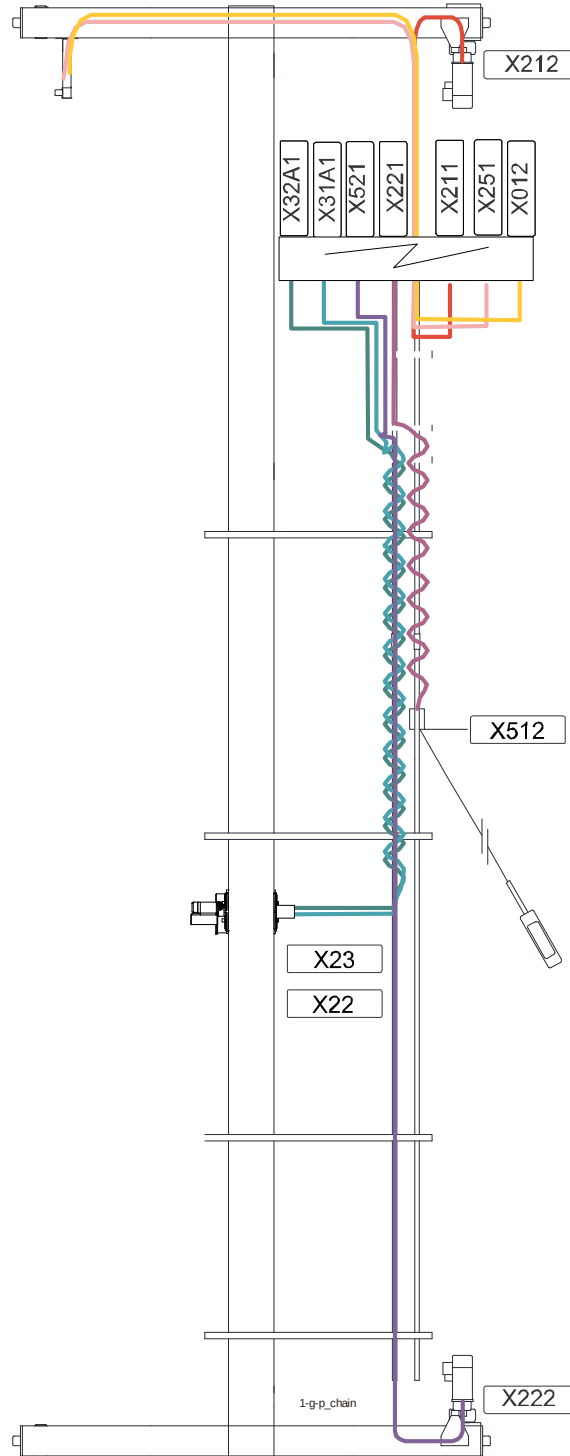


Symbol	Definition	Symbol	Definition
E0	Crane power supply	E3	Push button
E1	Bridge panel	E2A	Hoist panel
H-S1	Crane limit switch	E-M1	Hoist traveling motor 1
H-M1	Crane traveling motor 1	E-M2	Hoist traveling motor 2
H-M2	Crane traveling motor 2	E-S2	Hoist limit switch



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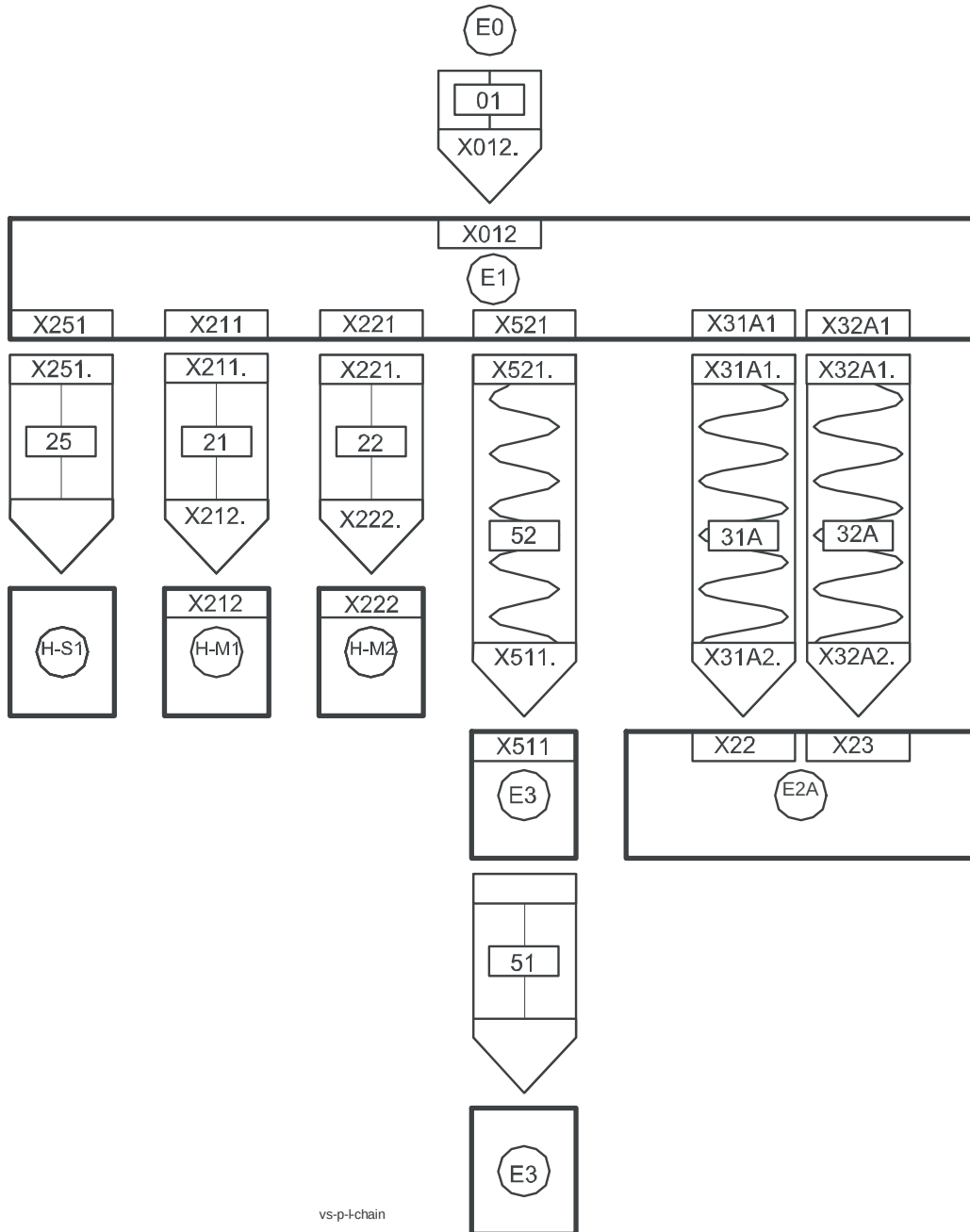
20.11 Single girder crane plug layout and cable paths (Chain hoist)





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20.12 Plug diagram (Chain 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

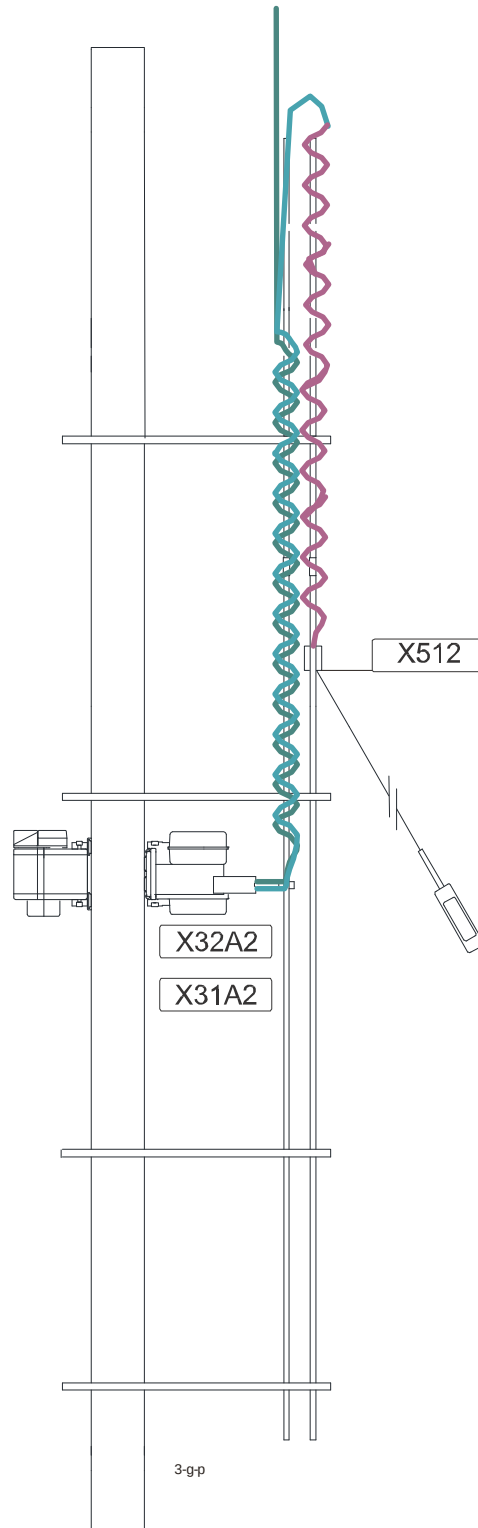


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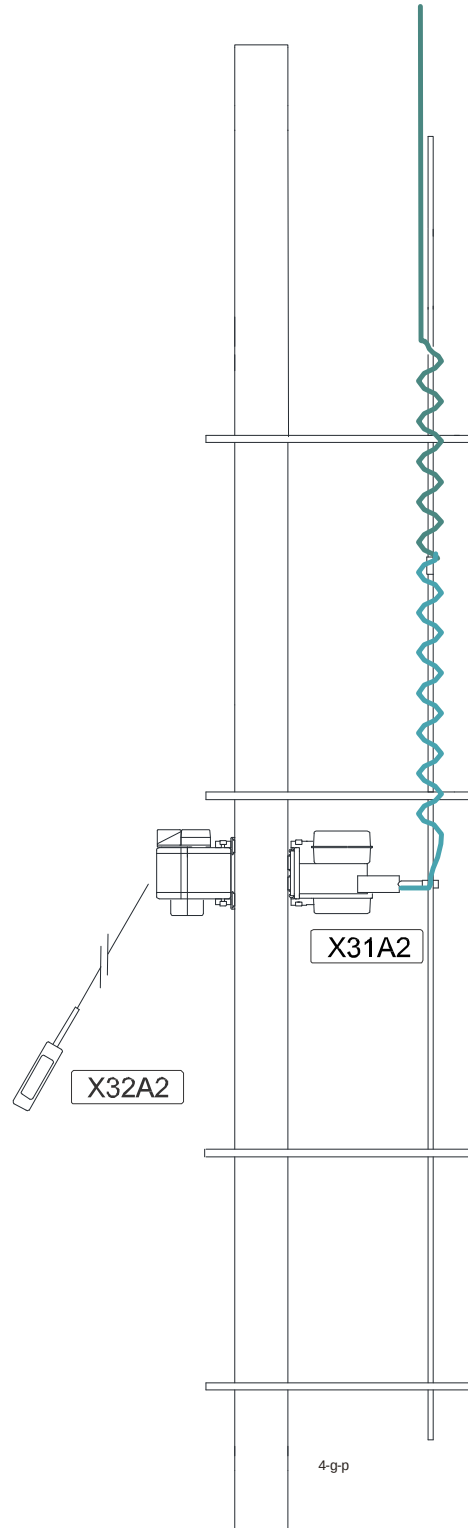
20.13 Solo hoist with moveable pendant plug layout and cable paths (Wire rope hoist)





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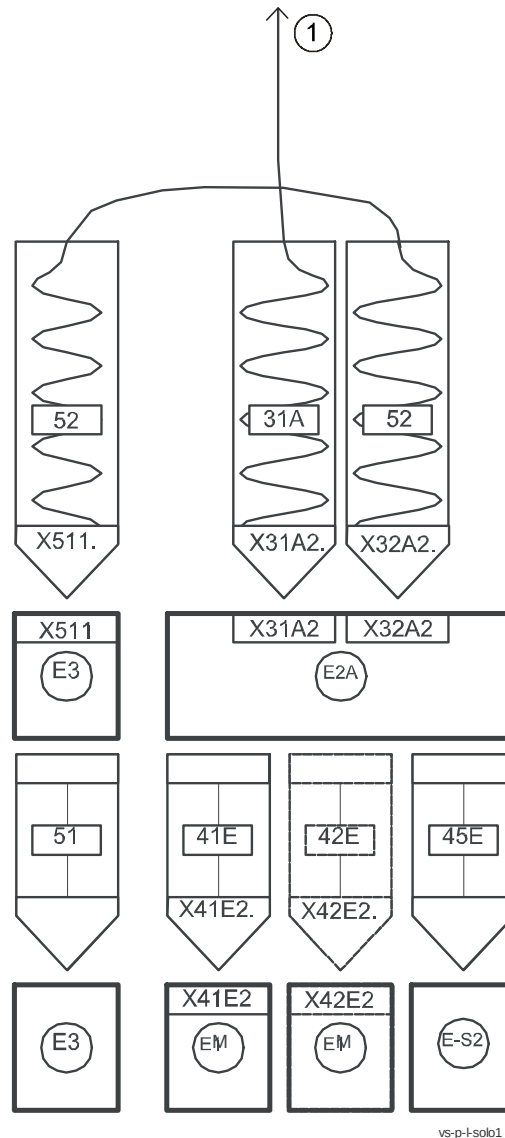
20.14 Solo hoist with fixed pendant plug layout and cable paths (Wire rope hoist)





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20.15 Plug diagram, movable pendant (Wire rope hoist)

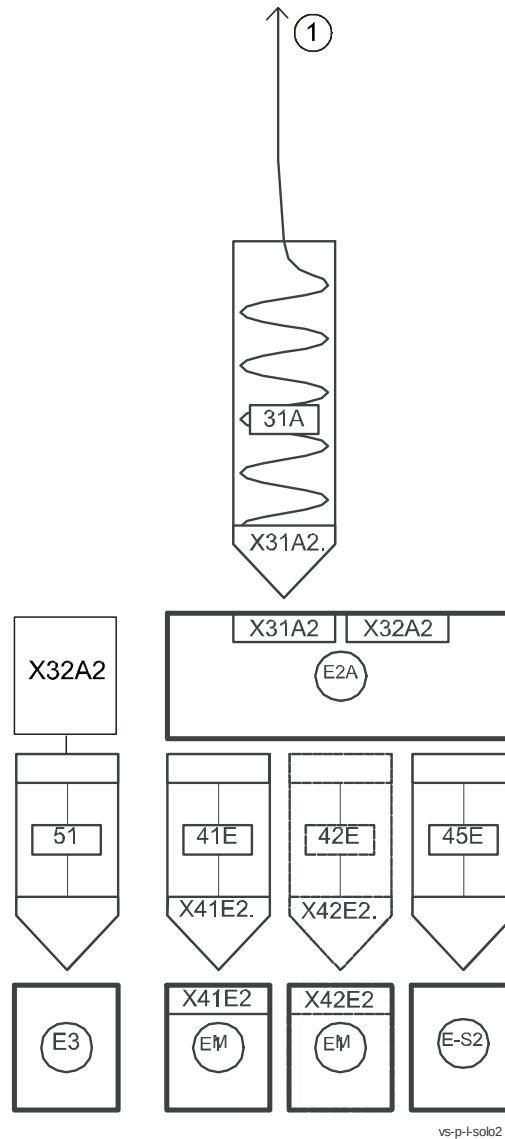


Symbol	Definition	Symbol	Definition
1	To the power supply	EM1	Hoist traveling motor 1
E3	Push Button trolley and push button	EM2	Hoist traveling motor 2
E2A	Hoist panel	E-S2	Hoist limit switch



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20.16 Plug diagram, fixed pendant (Wire rope hoist)



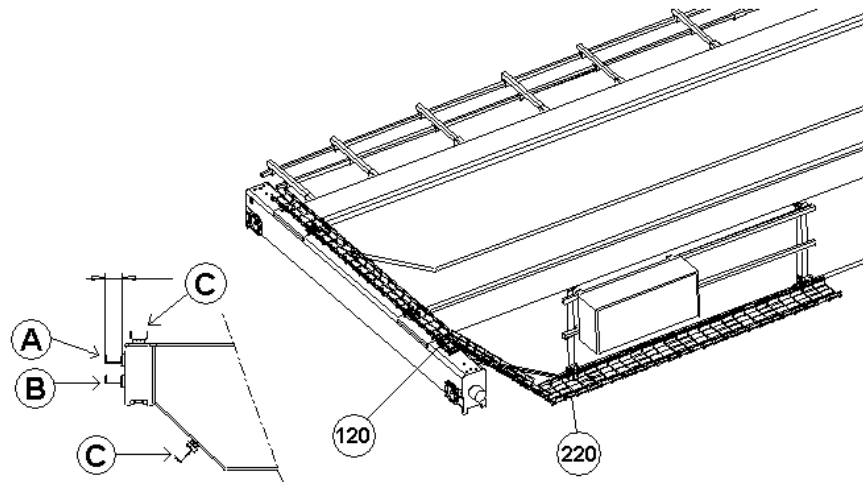
Symbol	Definition	Symbol	Definition
1	To the power supply	EM2	Hoist traveling motor 2
E2A	Hoist panel	E-S2	Hoist limit switch
EM1	Hoist traveling motor 1		



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21Crane cable ways

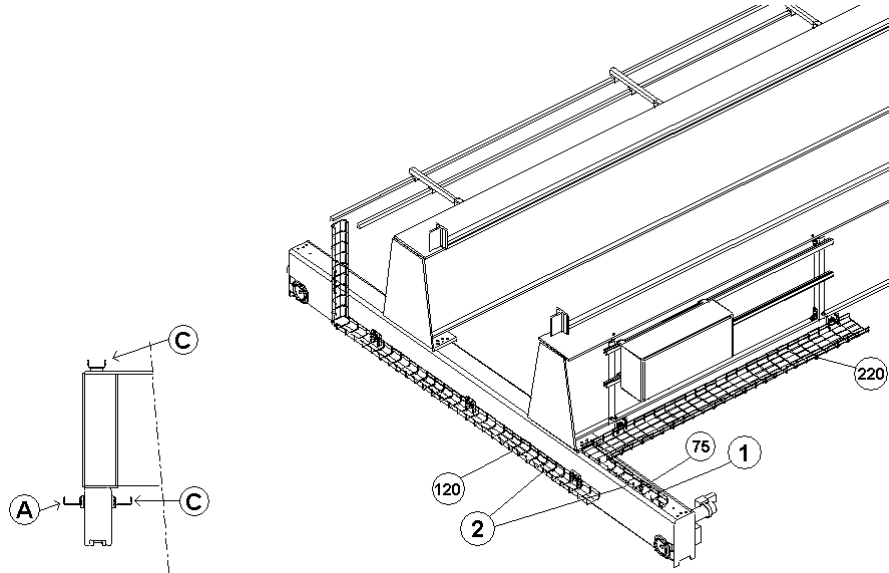
21.1 Assembly examples



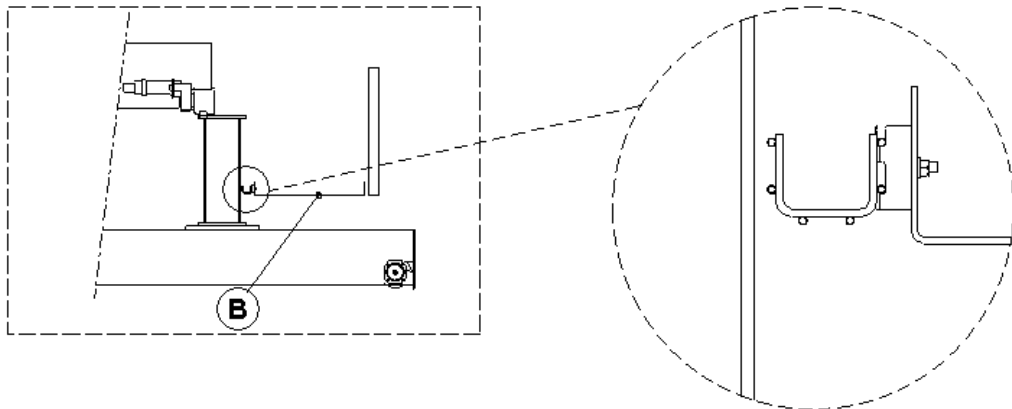
- A. Primary cable channel mounting location
- B. Additional cable way if needed
- C. Alternative cable channel mounting location
- 120. Cable way width 120 mm
- 220. Cable way width 220 mm



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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



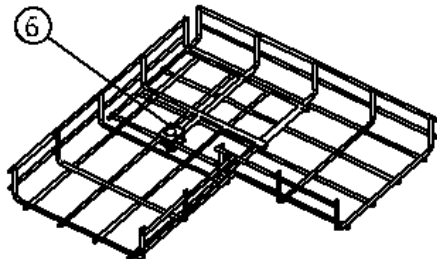
B. Service platform

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.

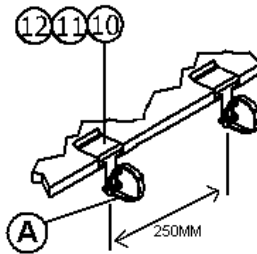


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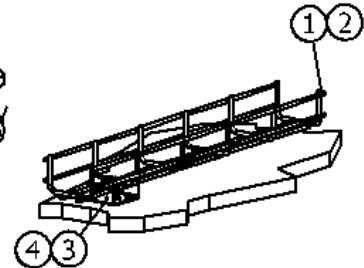
21.2 Common assembly methods



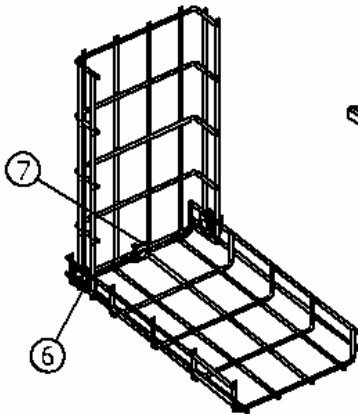
Cable ways as an angle



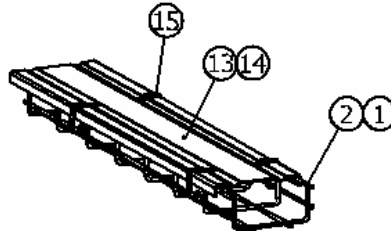
Cable fasteners for single or few cables
 A. Plastic cable tie



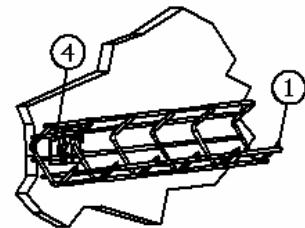
Assembly on top



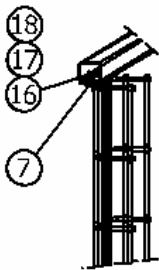
Cable ways as an angle



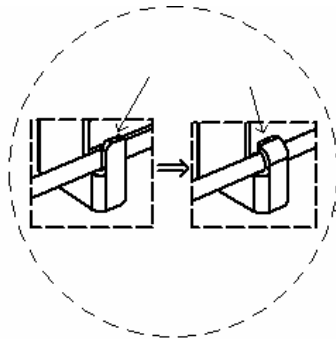
Cover assembly
 4pcs. (15) per cover plate



Wall assembly in an angle



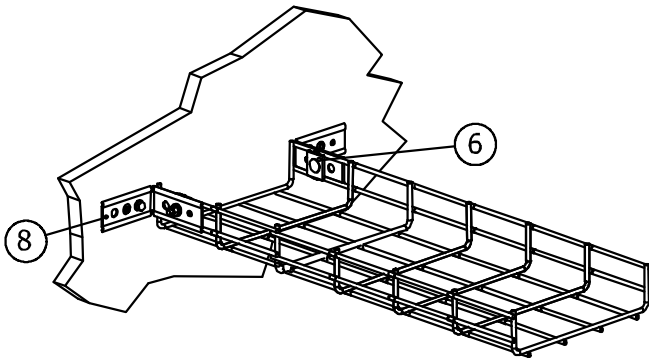
Fastening to a C-rail



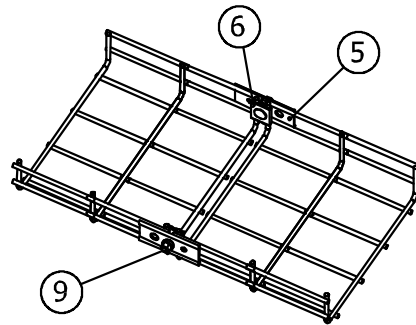
Wall mounting



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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