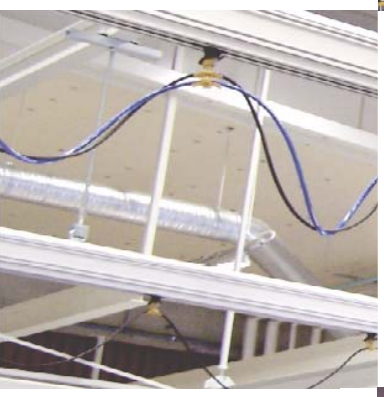
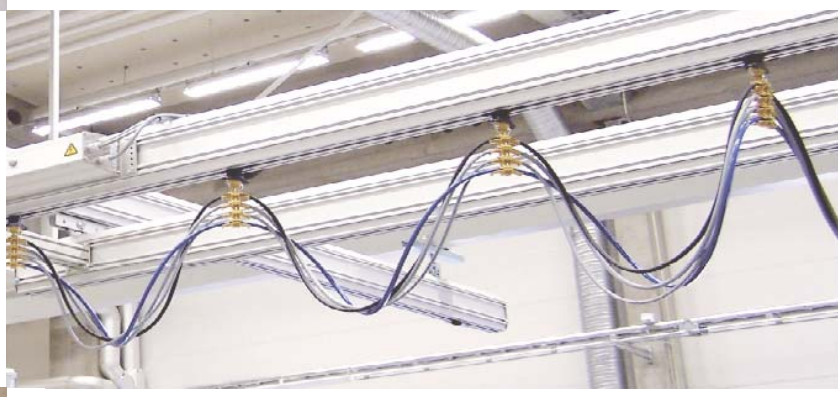
mechrail

Rail system
730731 924

Documentation





movomech

Although the greatest care was taken regarding the information in this catalogue, we assume no responsibility for any errors. We reserve the right to make changes.
ILLUSTRATIONS – The illustrations in the catalogue represent the described products, but the delivered goods may differ in some respects from the illustrations.
SPECIFICATIONS – The right is reserved to make changes in design and dimensions compared with the information in the catalogue in order not to prevent development of designs, material and manufacturing methods.

The customer is reminded that in the purchase of Movomech's products for application on the job or elsewhere, there is supplementary, current information that could not be included in the catalogue in terms of recommendations on each product's suitability regarding different combinations of Movomech's comprehensive product line.

All relevant information must be provided to the persons who are responsible for the application of the product.

Contents

Safety

Movomech AB's equipment is manufactured in accordance with the latest technological advances.
All products are manufactured according to the latest european standards, e.g. EG Machinery Directive (MD) 98/37/EG
The aim of this documentation is to provide the user with practical instructions for safe operation and simple maintenance of the equipment.

Anyone who deals with the installation of the equipment (including related equipment), operational procedure, use, maintenance, and/or repair functions must have read and understood:

- The instruction manual
- The safety regulations
- The safety instructions for each individual section.

In order to avoid misuse and to ensure the reliable operation of the products, we recommend that the instruction manual is always available to the user/operator.

Intended usage

The equipment is intended exclusively for transportation, lifting and lowering of load. Any other use, including the towing of a load and the transportation of passengers, is prohibited (see below for more examples).
Movomech AB does not accept responsibility for damage caused by such use. All risks are the sole responsibility of the user.

The equipment may only be used in perfect technical condition by trained staff, and in accordance with current safety and work protection regulations. Furthermore, the user must observe operational and maintenance conditions contained in the instruction manual.
Severe personal injury and damage to equipment can be caused by:

- Removal of covers and casings
- Non-professional installation of equipment
- Incorrect usage
- Insufficient maintenance

Prohibited usage

Certain types of activities and operations are prohibited, as in specific circumstances they can cause personal injury as well as permanent damage to the construction.
For example:

- It is prohibited to convey passengers using the equipment.
- Never transport suspended loads above anyone's head.
- Never drop a suspended load, and make sure it is lifted in a straight line.
- Never loosen secured or fastened loads by using the equipment.
- Do not overload.
- Do not leave a suspended load unattended.

General safety aspects

The instruction manual should always be kept within easy reach of the equipment. It contains important safety information and sections that relate to guidelines, norms, and regulations.
Failure to follow the safety regulations in this instruction manual may result in personal injury or death.
In addition to the instruction manual, generally applicable regulations and rules must be followed and adhered to in order to avoid accidents and protect the environment.
This also applies to regulations relating to the handling of products dangerous to the environment and the use of personal safety equipment.

As regards all work associated directly or indirectly with the equipment, the user must follow and adhere to all the above regulations as well as current work protection and safety regulations.
In spite of this, a life-threatening risk still prevails in cases where the equipment is used and operated by non-trained or non-instructed staff in a non-professional or non-intended way.
The user should supplement the instruction manual with instructions that consider the nature of the operation, e.g. company organisation, work procedures, and number of staff.

The members of staff who are assigned to work with the equipment must have read the instruction manual prior to undertaking any work, and he/she should pay particular attention to the chapters containing safety instructions.
It is too late once work has commenced.
This applies in particular to members of staff who are working with the equipment on a temporary basis, e.g. for maintenance purposes.

When convenient, the staff should be tested on their knowledge of the manual's contents that relate to safety and accident awareness.
The user is responsible for ensuring that the equipment is used only when it is in perfect condition and that all applicable and relevant safety regulations and requirements are followed.

The equipment should be taken out of operation immediately if functional damage or defects are discovered.
Personal safety equipment should be used as and when necessary, or when required by regulations.
Safety and warning devices, such as signs, stickers and labels must not be removed or made illegible.

All safety and warning devices on or adjacent to the equipment should be complete and maintained in a legible/functional condition.

All changes, extensions or reconstruction that may affect safety are forbidden without written permission from Movomech AB. This also applies to assembly and adjustment of safety equipment and welding of structural parts.
Spare parts must comply with Movomech AB's stated technical requirements. This compliance is guaranteed when original spare parts are used. The intervals prescribed or stated in the instruction manual for regular testing/inspection must be adhered to!

Staff selection and qualifications

Reliable staff must carry out work with/on the equipment.
Regulations that apply to under-age persons must be followed.
The user is responsible for supplying necessary training and instructions to those that he/she employs, including professionals and/or apprentices.
It is recommended that the user draws up instructions and guidelines relating to the causes of errors, communicates these to the relevant staff, and posts directions on appropriate and clearly visible places.
It is recommended that the user makes sure that the knowledge of the staff is adequate as regards the following points, prior to the operation of the construction:

- Knowledge of the contents of the instruction manual
- Knowledge of the safety and user regulations contained therein
- Knowledge of applicable work protection regulations

Only trained and instructed staff should be permitted to work with the equipment. Parameters relating to use, maintenance, and installation should be clarified.

Safety instructions for usage

The only persons allowed to work on the electrical equipment are

competent staff members who work in accordance with regulations and standards for high-voltage equipment.
No persons under the influence of drugs, alcohol or medication which affects their ability to react, are allowed to use, maintain, or repair the construction.

All stated actions and instructions relating to work protection and issues relating to general safety and protection of workers that should be carried out or studied prior to, during or following operation must be followed to the letter.
Failure to do so may result in fatal accidents.

The equipment should be stopped or taken out of operation at the time of detection of faults relating to work protection and operational accessibility.
Safety equipment must not be deactivated, altered or used in a way that conflicts with applicable regulations.
Appropriate actions must be taken to ensure safe operation and functional conditions for the user.
The equipment should only be used when all protective and safety equipment, such as detachable guards and emergency stop devices, are in place and in working order.

Any type of modification and alteration of the equipment is prohibited.

However, this does not apply to lesser changes that do not affect the strength, operational safety or work protection, or to actions which promote an increased level of safety.
The fundamental responsibility for these changes lies with the user.
If in doubt, contact Movomech AB for written approval of the actions prior to implementation.

The equipment should be stopped and locked immediately when functional faults occur.
Faults should be corrected immediately.
A person who detects an immediate danger must without delay press the emergency stop button. This also applies to damage to parts of the equipment that demand immediate stoppage of operation.

Following an ”emergency stop” the user has to wait for the cause of the disruption to be repaired and for an assurance that there is no further danger before he/she reconnects the equipment and resumes operation.

The equipment should be disconnected immediately in the following cases:

- When electrical equipment, cables, and/or insulation material is damaged
- When brake functions and/or safety equipment are defect

Specific local circumstances or applications may lead to situations that were unknown at the time of writing this document.
In such cases, the user must ensure safe operation and disconnect the equipment until measures to maintain safe operation have been carried out in conjunction with Movomech AB or other authorised party.

Ensure that no one can become injured when they use the equipment prior to connecting/activating the equipment.

If the user notices the presence of persons who may become injured during operation, the operation should be discontinued immediately and must not be resumed until these persons have left the dangerous area.

The user must make sure that the equipment is in a perfect and operationally safe condition prior to all operations using the equipment.
The user should carry out all prescribed safety measures and make sure that automated procedures are completed when the equipment is disconnected (e.g. when there are deficiencies as regards operational and personal safety, an emergency situation exists, repair or maintenance is being carried out, damage is noticed or at the completion of work).

Work with the equipment is only allowed when the operator has been instructed to do so by his superior, and if the operator has knowledge of the equipment and its function.

Installation

Material verification

General review and inspection of delivered material should be undertaken during unpacking.

Start up of the equipment

An installation protocol must be complete if the installer has not been trained by Movomech before the equipment is commissioned.
In cases when more than one system is installed, each system must be provided with an installation protocol, name the systems by using ID-numbers, denominations etc.
The installation protocol shall be kept by the client/user.

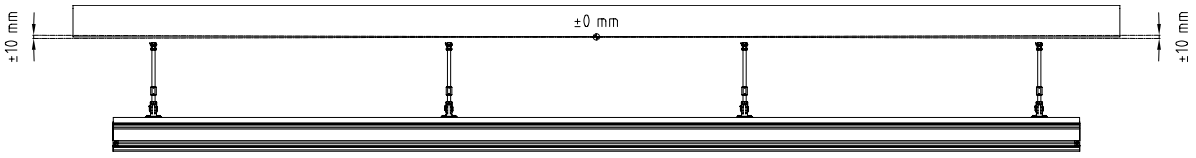
Tip & advice

With all possible combination within the MechRail assortment only general tip and advice are found here.
Carefully plan what to install as well as the installation sequence before work is beginning.
Install if appropriate planned components on the ground before they are put up in the system.
For instance the drilled holes necessary for end stoppers are virtually impossible to drill out in a suspended rail, make these holes while on the floor.
Think of the importance of cleaning the running track before trolleys are inserted.

Tolerance requirements

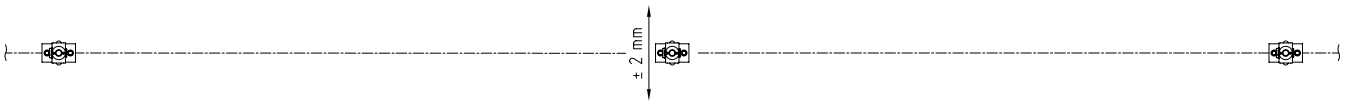
Horizontal plan - Overhead structure

Overhead structure may not exceed the tolerance of ± 10 mm horizontally.



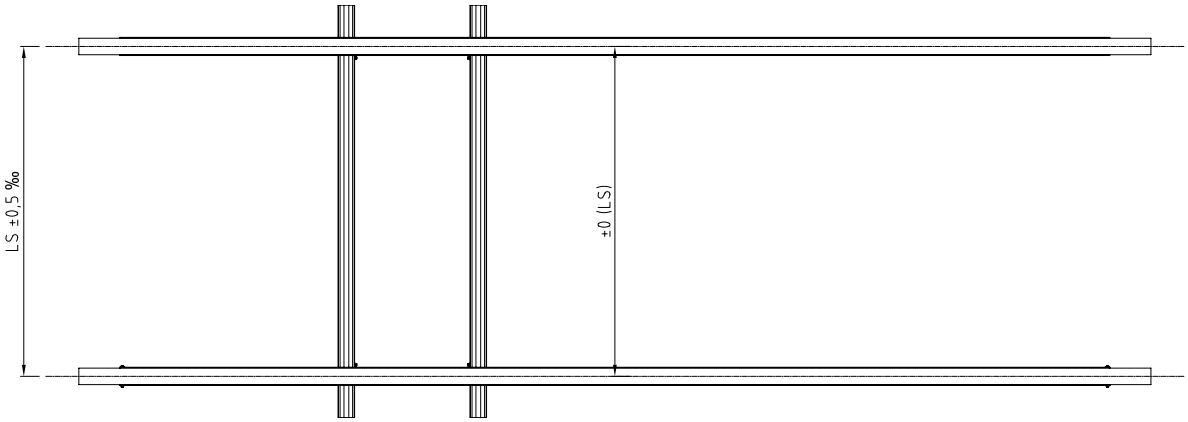
Straightness - Tracks

The suspensions for a track may not be placed with a greater deviation than ± 2 mm from the track direction.



Parallelism - Double track

The suspensions for a track may not be placed with a greater deviation than ± 0,5 ‰ in parallelism.



Installation protocol

The protocol is an acknowledgement that the equipment has been installed according to Movomech's instructions and must be filed by the customer.
The protocol is intended to be completed by the installer during installation if he has not been trained by Movomech.

Place:

Date:

Equipment number:

Installer:

		Installed	*Not installed*
Suspensions / Rail profiles	10		
Trolleys	12		
End stoppers	13		
End covers	13		
Crane girder suspensions	13		
Joint sets	14		
Spacers for double crane	14		
Spacer plates for telescopic cranes	14		
Space savers for cranes	15		
Triangulary stay	15		
Distance bar	15		
Travel limits	16		
Friction roller	16		
Earthing cable	17		
Safety wires	17		
Air preparation units	18		
End fix	18		
Cable towing arms	18		
Cable trolleys	18		
Cable & hose clamps	19		
Wire brackets	19		
C rail	19		
Suspensions / Media profile	20		
Joint sets	20		
Cable & hose inlet	20		
End fix	21		
Cable chains	21		
Cable towing arms	21		
Supporting blocks	21		
Cable tray	21		
Cover	22		
Limit switches	22		
Coupling units	22		
Parking brakes	22		

Comment:

The equipment has been installed according to the instructions:

.....

Place, date and signature of the installer

Single track

Install suspensions in overhead structure (does not apply tight mounted track).
Adjust and level the suspensions horizontally (adjusting washers might be necessary when tight mounted track).
Install if appropriate the components used in the track before suspending it.
NOTE! End stoppers must allways be installed before taking the track into use!
The track is considered to be in use whenever it is suspended!
Suspend the track.

Double track

Install suspensions in overhead structure (does not apply tight mounted track).
Adjust and level the suspensions horizontally and its parallelism (adjusting washers might be necessary when tight mounted track).
Install if appropriate the components used in the track before suspending it.
NOTE! End stoppers must allways be installed before taking the track into use!
The track is considered to be in use whenever it is suspended!
Suspend the track.

Tripple track

Install suspensions in overhead structure (does not apply tight mounted track).
Adjust and level the suspensions horizontally and its parallelism (adjusting washers might be necessary when tight mounted track).
Install if appropriate the components used in the track before suspending it.
NOTE! End stoppers must allways be installed before taking the track into use!
The track is considered to be in use whenever it is suspended!
Suspend the track.

Single crane

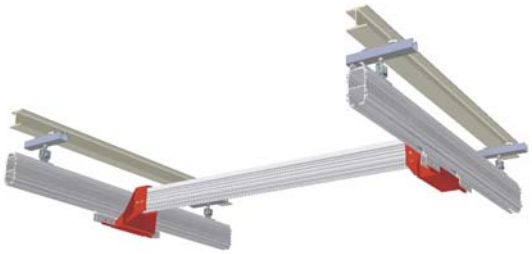
Install the track in overhead structure.
Adjust and level the track horizontally and its parallelism.
Install if appropriate the components used in the crane before suspending it.
NOTE! End stoppers must allways be installed before taking the crane into use!
The crane is considered to be in use whenever it is suspended!
Suspend the crane.

Double crane

Install the track in overhead structure.
Adjust and level the track horizontally and its parallelism.
Install if appropriate the components used in the crane before suspending it.
NOTE! End stoppers must allways be installed before taking the crane into use!
The crane is considered to be in use whenever it is suspended!
Suspend the crane.

Space saving crane

Install the track in overhead structure.
Adjust and level the track horizontally and its parallelism.
Install if appropriate the components used in the crane before suspending it.
NOTE! End stoppers must allways be installed before taking the crane into use!
The crane is considered to be in use whenever it is suspended!
Suspend the crane.

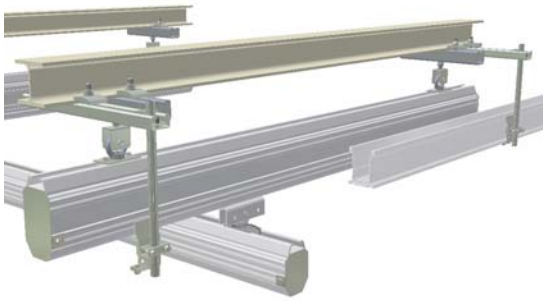


Telescopic crane

Install the track in overhead structure.
Adjust and level the track horizontally and its parallelism.
Install if appropriate the components used in the overhead crane before suspending it.
NOTE! End stoppers must allways be installed before taking the overhead crane into use! The overhead crane is considered to be in use whenever it is suspended!
Suspend the overhead crane.
Install if appropriate the components used in the telescopic crane before suspending it.
NOTE! End stoppers must allways be installed before taking the telescopic crane into use! The telescopic crane is considered to be in use whenever it is suspended!
Suspend the telescopic crane.

Media system

Install the rail system in overhead structure.
Adjust and level the rail system.
Install the components to be used in the media system.

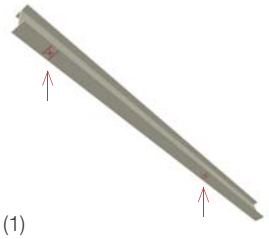


Base assortment

Suspensions / Rail profiles

A & B

(1) Measure and mark each point of suspension.
(2) Place the suspension at the point of suspension.
(3) Verify that the lower plate is in correct position in the anchor profile.
(4) Guide the clamps onto the girder flange (5) making sure that the short end of the clamp is inserted over the flange.
Tighten the clamps just enough so that the suspension can be fine adjusted on the point of suspension.
Tighten the clamps with the correct tightening tourque (110 Nm).
(6) Insert the crane girder suspension into the rail top flange, making sure that it receives the same suspension distance as the upper half of the suspension.
Tighten the crane girder suspension with the correct tightening tourque (25 Nm).
(7) Raise the rail with the crane girder suspensions torwards the upper half of the suspension.
(8) Fit the loop in the fork, insert the cotter and lock it with the locking ring.



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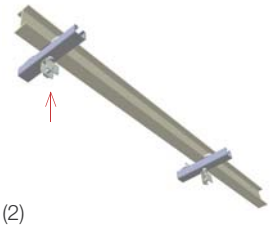

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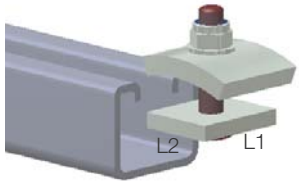

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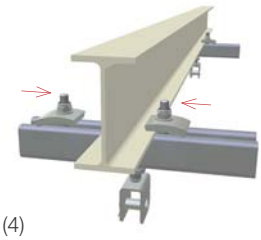

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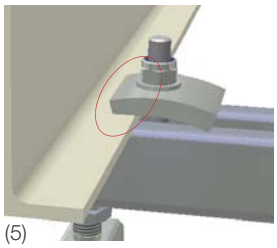

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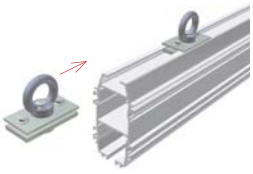

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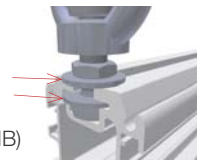

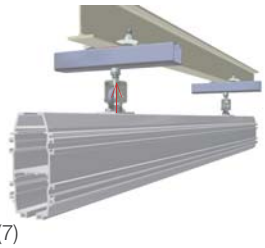

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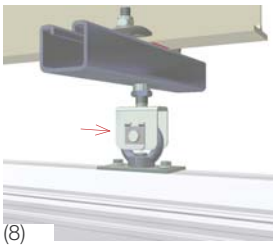
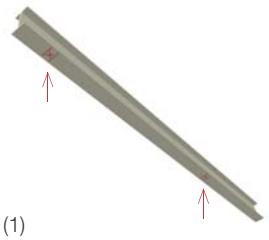


(8)

C

(1) Measure and mark each point of suspension.
(2) Attach the clamp on one side (bolt heads upward).
(3) Place the suspension at the point of suspension.
(4) Attach the second clamp.
Tighten the clamps just enough so that the suspension can be fine adjusted on the point of suspension.
Tighten the clamps with the correct tightening tourque (110 Nm).
(5) Insert the crane girder suspension into the rail top flange, making sure that it receives the same suspension distance as the upper half of the suspension.
Tighten the crane girder suspension with the correct tightening tourque (25 Nm).
(6) Raise the rail with the crane girder suspensions torwards the upper half of the suspension.
(7) Fit the loop in the fork, insert the cotter pin and lock it with the locking ring.
Level the rail.



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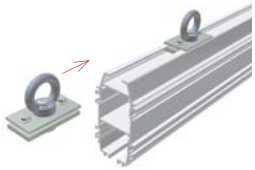

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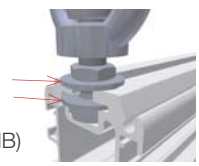

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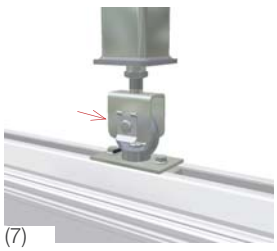

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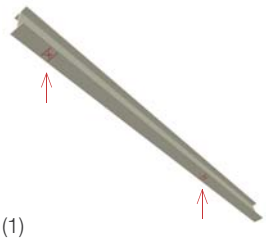
D

Longitudinally mounted:

(1) Measure and mark each point of suspension.
(2) Insert the suspensions in the rail top flange.
Tighten the suspension against the rails flange. Use the correct tightening tourque (110 Nm).
Make sure that the desired suspension distance is obtained between the suspensions.
(3) Attach the clamps one one side.
(4) Raise the rail towards the point of suspension.
(5) Attach the clamps on the other side.
(6) Make sure that the short end of the clamps are inserted over the flange.
Tighten the clamps just enough so that the suspension can be fine adjusted on the point of suspension.
Level the rail, use adjusting washers if necessary.
Tighten the clamps with the correct tightening tourque (110 Nm).



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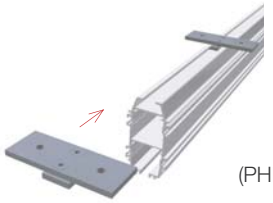

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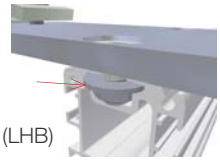

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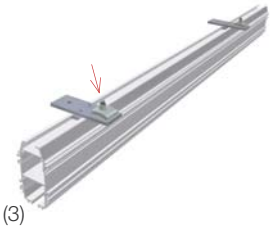

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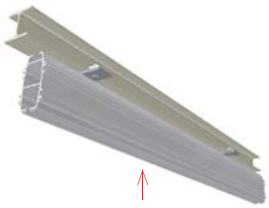

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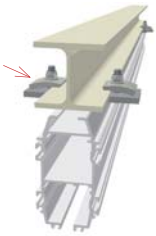

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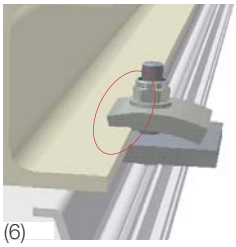
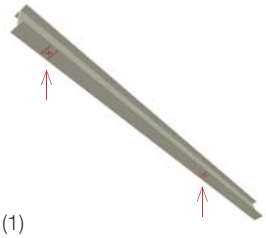


(6)

Cross mounted:

(1) Measure and mark each point of suspension.
(2) Insert the suspensions in the rail top flange.
(3) Raise the rail towards the point of suspension.
(4) Attach the clamps.
(5) Make sure that the short end of the clamps are inserted over the flange.
Tighten the clamps just enough so that the suspension can be fine adjusted on the point of suspension.
Level the rail, use adjusting washers if necessary.
Tighten the clamps with the correct tightening tourque (110 Nm).



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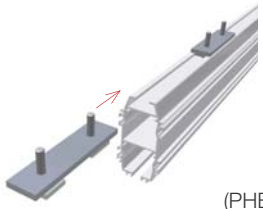

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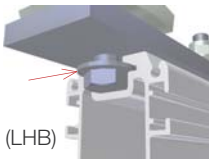
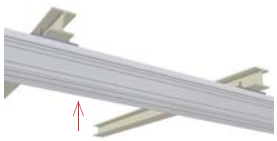


(LHB)

(2)



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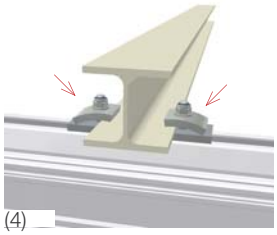

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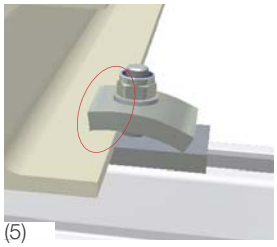


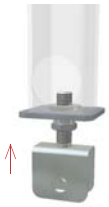
(5)

E

Produce necessary suspension.

(1) Place the ball nut in the hole in the plate.
(2) Attach the suspending bolt.
(3) Insert the cotter pin.
(4) Insert the crane girder suspension into the rail top flange, making sure that it receives the same suspension distance as the upper half of the suspension.
(5) Raise the rail with the crane girder suspensions torwards the upper half of the suspension.
(6) Fit the loop in the fork, insert the cotter and lock it with the locking ring.
Level the rail.

(1)



(2)

(3)

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(PHB)

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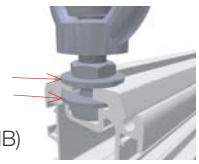

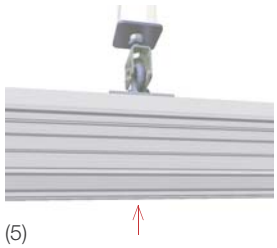

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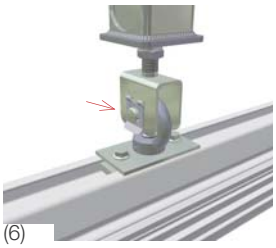
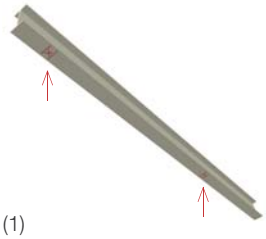


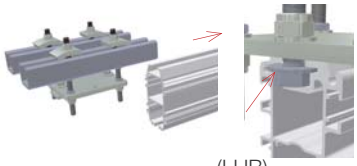
(6)

F

(1) Measure and mark each point of suspension.
(2) Insert the suspensions in the rail top flange.
Tighten the suspension against the rails flange. Use the correct tightening tourque (110 Nm).
Make sure that the desired suspension distance is obtained between the suspensions.
(3) Raise the rail towards the point of suspension.
(4) Make sure that the short end of the clamps are inserted over the flange.
Tighten the clamps just enough so that the suspension can be fine adjusted on the point of suspension.
Level the rail.
Tighten the clamps with the correct tightening tourque (110 Nm).



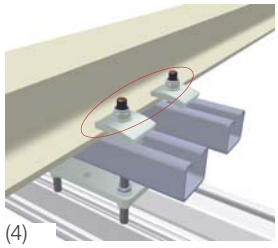
(1)



(LHB)

(2)

(3)



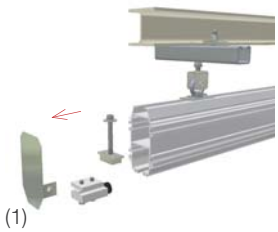
(4)

Trolleys

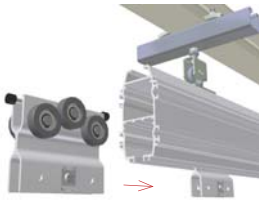
NOTE: Before using trolleys in the system end stopper must be installed!

A & C

(1) Dismantle any mounted end cover, end stopper and travel limits.
(2) Insert required number of trolleys in the rail bottom flange.
Fit end stoppers, end covers and any limit stoppers.



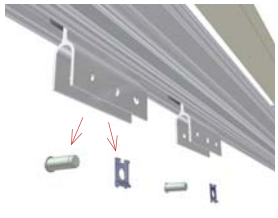
(1)



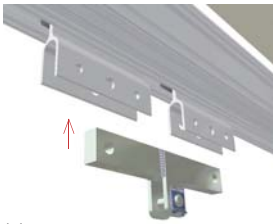
(2)

B

Mount two type A trolleys as above.
(3) Remove the cotters with locking plates.
(4) Fit the spacer between the trolleys, insert the cotters and secure them with the locking plates.



(3)



(4)

(5)

End stoppers

(1) Measure and mark where the end stoppers are to be mounted.
(2) It is of importance that the hole is placed in the centre of the profile and that it is vertical!
(3) Drill necessary holes (PHB/LHB ø10 - AHB ø13).
Deburr the edges of the hole.
Clean the profile internally, it is of importance that chips that may stick on the trolley wheels are removed.

NOTE! It is much easier to install the end stoppers before the rail is suspended!

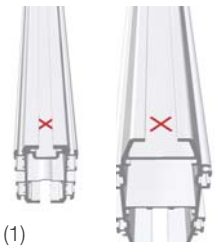
A

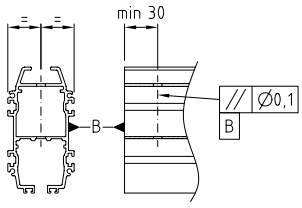
LHB
(4) Insert the nut and washer in the rail top flange, place them directly above the hole.
Insert the bolt with the washer through inserted washer and nut.
Tighten the bolt with the correct tightening torque (25 Nm).

PHB/AHB
(5) Insert the stopper in the upper slot in the rail bottom flange, place it directly below the hole.
Insert the screw with washer into the upper hole down through the lower.
Tighten the stopper with the correct tightening torque (PHB 10 Nm, PHB1/AHB1.1 15 Nm, AHB2/3 25 Nm).

B

AHB
(6) Insert the stopper in the upper slot in the rail bottom flange, place it directly below the hole.
Insert the screw into the stopper and through the holes.
Apply washer and nut.
Tighten the stopper with the correct tightening torque (PHB1/AHB1.1 15 Nm, AHB2/3 25 Nm).


(1)



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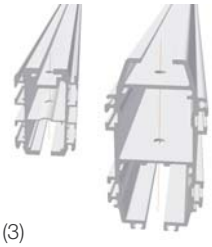
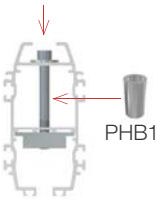

(3)


(4)



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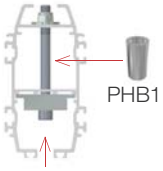
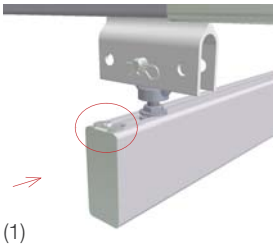


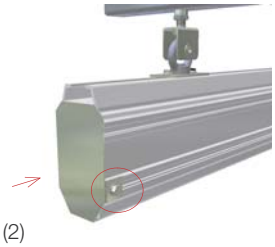
(6)

End covers

PHB
(1) Insert the end covers nuts into the lower and upper slots.
Tighten the end cover with the correct tightening torque (15 Nm).

LHB/AHB
(2) Insert the end covers t-slot nuts into the lower exterior slot of the rail.
Tighten the end cover with the correct tightening torque (25 Nm).

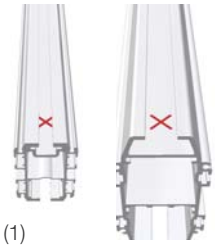

(1)

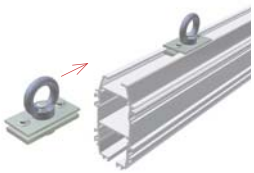

(2)

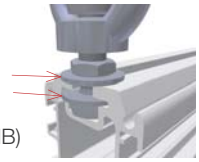
Crane girder suspensions

Tip: first fix one suspension with correct tightening torque (25 Nm), fix the others when the rail is suspended.
Check whether safety wires are to be mounted at the same time.

(1) Measure and mark where the crane girder suspensions are to be mounted.
(2) Insert the crane girder suspensions in the rail top flange.
Bring the suspension to the required position.
Tighten the crane girder suspensions with the correct tightening torque (25 Nm).


(1)

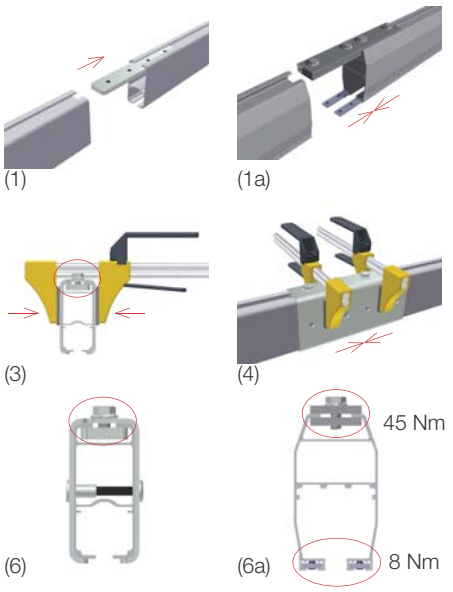

(2) (PHB)


(LHB)

Joint sets

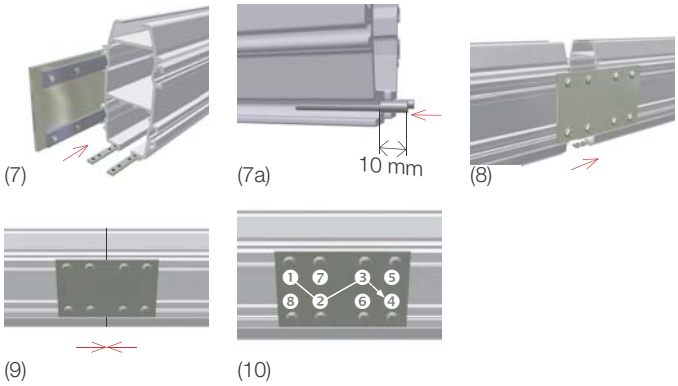
PHB
Tip: it may be beneficial to fit the joints sets before the rail profiles are installed, if the installation conditions permit this.

(1) Insert the long nut in the upper slot on the profile and then the connecting profile.
(1a) For the AHB1.1 rail, also introduce the loose pins in the rails bottom section exterior slot. Bring all the sections together.
2-5: PHB
(2) Place the joint sides in the middle over the splice. NOTE! It is important that the lower flange on the plate rests against the lower edge of the profile before the upper flange is clamped in position!
(3) Carefully clamp the joint set against the profile. Tighten the upper screws slightly, no more than they just fasten.
(4) Make sure that the profiles are spliced correctly and drill the holes for the side screws, ø6 on one and ø9 on the other side of the profile.
(5) Fit the side screws and tighten these moderately.
(6) PHB: Finally tighten the upper screws with the correct tightening torque (25 Nm).
(6a) PHB1: Finally tighten screws with the correct tightening torque (45/8 Nm).



LHB/AHB
Tip: The joint bars can advantageously be mounted after the rail profile is suspended, if the mounting conditions allow this.

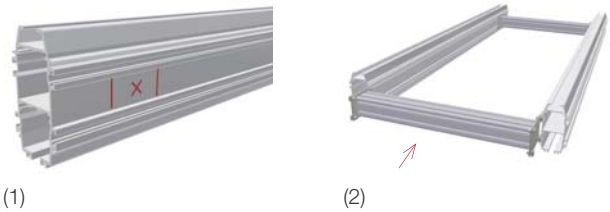
(7) Insert the joint bars T-slot nuts in the rails exterior T-slot.
For the AHB1.1 rail, also introduce the loose pins in the rails bottom section exterior slot (7a).
For the AHB2/3 rails, also introduce the loose joint nuts in the rails bottom section exterior T-slot.
Tighten the splices slightly, just enough to give a slight grip.
(8,9) Bring the rail to be connected against the splice.
Fit the joint bars, and for the AHB rails also the bottom joint nuts/pins in the slots.
Bring all the sections together.
(10) Begin cross-tightening the joint bars and joint nuts.
Finally, tighten the splicing element with the correct tightening torque (25 Nm).



Spacers for double crane

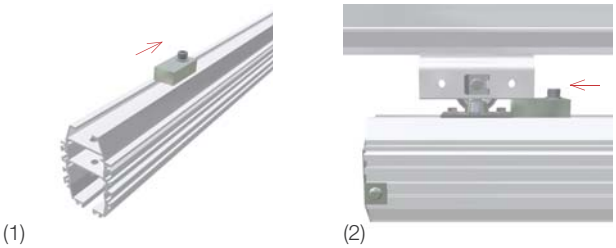
Tip: If other equipment is to be mounted inside the crane, T-slot nuts should be inserted in the rails exterior slots on the inside of the crane before the spacers are mounted.

(1) Measure and mark where the spacers are to be mounted.
At least 20 mm within the rail edge.
(2) Place the profiles side by side with the required distance.
Insert the spacers T-slot nuts in the rails exterior T-slot.
Tighten the bolts with the correct tightening torque (25 Nm).



Spacer plates for telescopic cranes

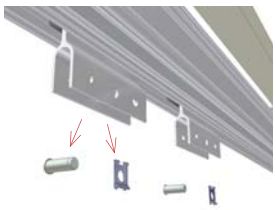
(1) Place the mounting plate (on LHB - the screw, on PHB the lock washer too) in the rail top flange.
Put bolt together with spacer and fasten it in the mounting plate.
(2) Bring the spacer plate against the crane girder suspension.
Tighten the spacer plate with the correct tightening torque (25 Nm).



Space savers for cranes

Tip: If other equipment is to be mounted onto the crane, T-slot nuts should be inserted in the rails exterior slots on the sides before the design modules are mounted.

(1) Remove the cotters with locking plates.
(2,3) Insert the modules T-slot nuts in the rails exterior T-slots and the bracket (for LHB the nut) into the rail top flange.
Bring on the module entirely.
Tighten the bolts with the correct tightening torque (25 Nm).
(4) Raise the crane towards the track.
(5) Fit the modules between the trolleys, insert the cotters and secure them with the locking plates.



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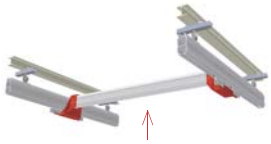
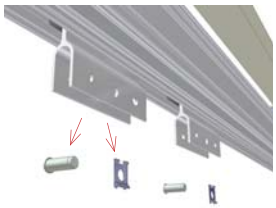


(4)

(5)

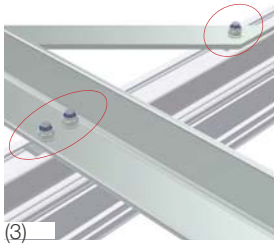
Triangulary stay

(1) Take the pins with the lock washer.
(2) Fit the stays in the required position.
(3) Tighten the stays with the correct tightening torque (25 Nm).
(4) Lift the crane up on the track.
(5) Align the stays between the trolleys, insert the pins and secure these with the lock washers.



(1)

(2)



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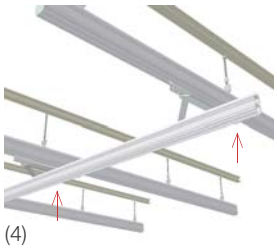


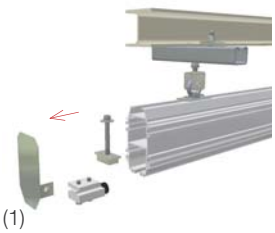
(4)

(5)

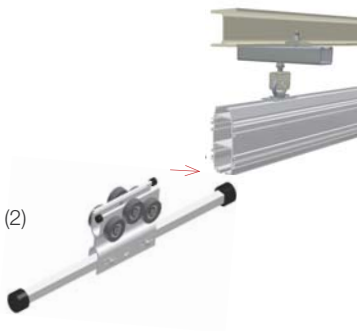
Distance bars

NOTE: Before using distance bars in the system, end stoppers must be installed!

(1) Dismantle any mounted end cover, end stoppers and travel limits.
(2) Insert the distance bars in the bottom flange of the track rails.
Fit the next crane, end stoppers, end covers and eventual limit stoppers.



(1)



(2)

Travel limits

A

PHB/AHB
(1) Insert the travel limit in the upper slot in the rails bottom hole clearance.
(2) Place the travel limit in the desired position.
Tighten the bolt with the correct tightening torque (15 Nm).

B

Tip: This type is dismountable, which makes it possible to insert the mounting plate through the rails bottom hole clearance without having to remove any mounted end stops and end cover.

(3) Insert the travel limits mounting plate in the rails bottom hole clearance.
(4) Place the travel limit in the desired position.
Tighten the bolts with the correct tightening torque (25 Nm).

C

PHB
(3) Insert the travel limits mounting plate in the rails bottom hole clearance.
(4) Place the travel limit in the desired position.
Tighten the bolts with the correct tightening torque (25 Nm).

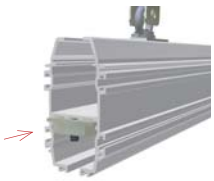
LHB/AHB
(5) Insert the travel limits t-slot nuts in the rails exterior slots.
(6) Place the travel limit in the desired position.
Tighten the bolts with the correct tightening torque (25 Nm).

NOTE: The hydraulic damper should be adjusted so that it cannot go to the bottom!

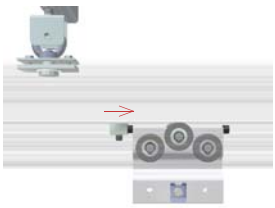
D

LHB/AHB
(7) Secure the travel limit on the trolley.
Tighten the screw with the correct tightening torque (25 Nm).
Insert the travel limit's T-slot nuts in the exterior T-slot on the profile.
8) Position the travel limit where required.
Tighten the screws with the correct tightening torque (25 Nm).

NOTE: Travel limits may under no circumstance replace drilled end stoppers!



(1)



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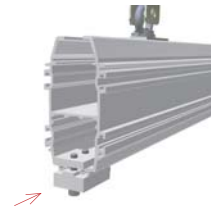

(3)

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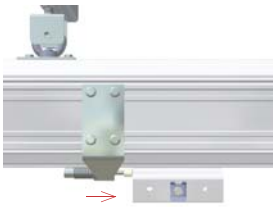

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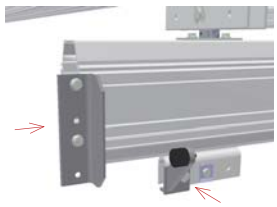

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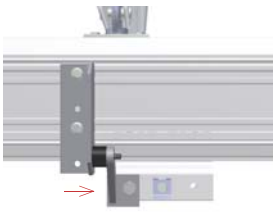


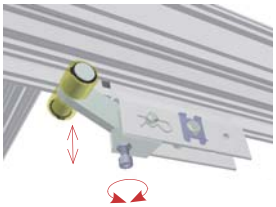
(8)

Friction roller

(1) Secure the friction roller in the trolley with the lock bolt
(2) Adjust friction with the screw, lock with the lock nut.

NOTE! The friction shall only counteract self-rolling on the system!

(1)



(2)

Earthing cable

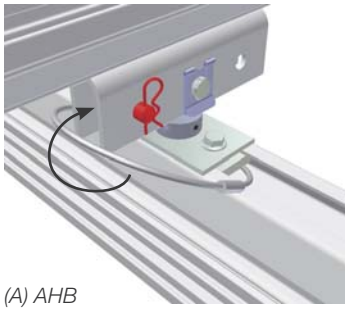
Used for earthing and potential equalisation between sections/rails or between section/rail and earthed building component.

NOTE: Electrical installation may be performed only under the supervision of a qualified electrician!

Safety wires

A

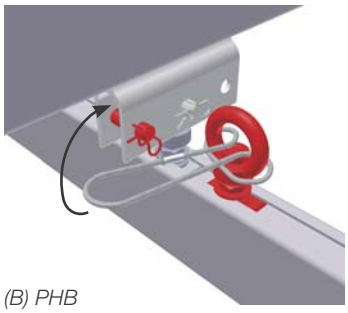
AHB
Before the crane girder suspensions are inserted in the rail top flange, place the safety wires around the suspension.
Bring the suspension to the desired position.
Tighten the crane girder suspensions with the correct tightening torque (25 Nm).
Raise the rail with crane girder suspensions towards the trolleys.
Fit the loop in the fork, insert the cotter, and lock it with the safety plate.
Rotate the safety wires a half turn.
Bring the top loop against a free hole in the trolley.
Put the cotter into the hole in the trolley together with the top loop, and lock them with the safety plate.



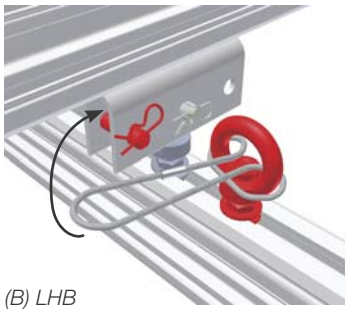
(A) AHB

B

PHB/LHB
Insert the crane girder suspension in the upper flange on the rail profile (on PHB the lock washer too).
Bring the suspension to the desired position.
Tighten the crane girder suspensions with the correct tightening torque (25 Nm).
Rotate the safety wires a half turn.
Bring the top loop against a free hole in the trolley.
Put the cotter into the hole in the trolley together with the top loop, and lock them with the safety plate.

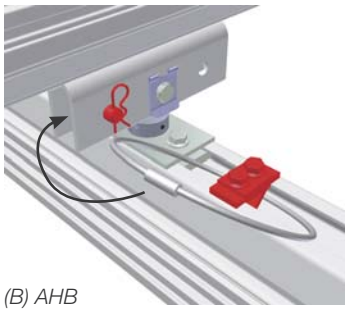


(B) PHB



(B) LHB

AHB
Place the mounting plate in the rail top flange.
Place the safety wires around the mounting plate.
Set the upper part directly above the mounting plate and fix the bolts.
Bring the locking plates against the crane girder suspension.
Tighten the bolts with the correct tightening torque (25 Nm).
Rotate the safety wires a half turn.
Bring the top loop against a free hole in the trolley.
Put the cotter into the hole in the trolley together with the top loop, and lock them with the safety plate.



(B) AHB

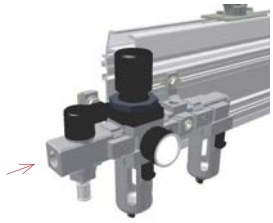
Optional products

Air preparation units

Before mounting the air preparation unit, the lines should be carefully cleaned of contaminants.
The units shall be mounted with the reservoir down, so that the air will flow in the direction of the arrow marking.

(1) Insert the air preparation units T-slot nuts in the rails upper exterior T-slot.
Bring the unit to the desired position.
Tighten the bolts with the correct tightening torque. (25 Nm).

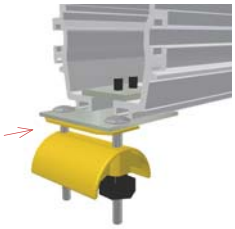
Pressure regulation
Pull the adjusting knob all the way out. Rotate to desired pressure. Lock regulating value by pressing on the knob. To facilitate pressure regulation, at least 60 mm clearance is needed around the adjusting knob.



(1)

End fix

(1) Insert the mounting plate in the rails bottom hole clearance.
Bring the end fix until the mounting plate comes inside the rails edge.
Tighten the bolts with the correct tightening torque (<10 Nm).



(1)

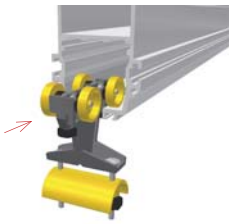
Cable towing arms

(1) Place the cable towing arm next to one of the trolley's two free holes.
Insert the nut in the trolley.
Insert the bolt.
Tighten the bolts with the correct tightening torque (25 Nm).

(1)

Cable trolleys

(1) Insert the cable trolleys in the rails bottom hole clearance.



(1)

Cable & hose clamps

Tip: If several sizes are combined, the largest clamp should be placed nearest to the ball joint.

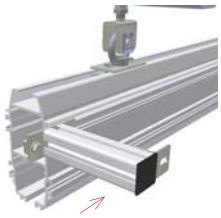
The first clamp:
(1) Unscrew the bolt on the ball and socket joint.
Unscrew the clamp.
Unscrew the bolt and locknut in the middle.
Insert the bolt from the ball and socket joint through the top part of the clamp.
Attach the top part in the ball and socket joint on tight.
Attach on the lower part.
Place the locknut with locking side upwards in the lower part.
Place hose/cable.
Tighten the clamp with the correct tightening torque (<10 Nm).

The following clamps:
Unscrew the locknut in the middle on the following clamp:
Bring the following clamp against the mounted clamp.
The clamps have guiding tracks that hook together.
Attach the new clamp on tightly against the upper clamp.
Open the clamp.
Place the locknut with locking side upwards in the lower part.
Place hose/cable.
Tighten the clamp with the correct tightening torque (<10 Nm).

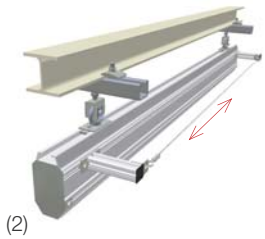
(1)

Wire brackets

(1) Insert the wire bracket's T-slot nuts in the rails exterior T-slot.
Bring the unit to the desired position.
(2) Install the wire.
(3) Tighten the wire bracket with the correct tightening torque (25 Nm).



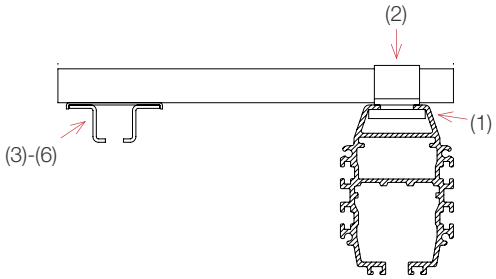
(1)



(2)

C rail

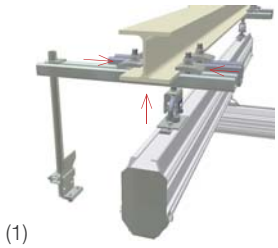
(1) Insert the console plate in the upper T-slot of the profile. Position all consoles with suitable suspension distance (c/c max 2000 mm).
(2) Tighten the fastening elements of the console with the correct tightening torque (25 Nm).
(3) Insert the C rail in the outer bracket of the consoles. Tighten if necessary the fastening elements of the bracket with the correct tightening torque (25 Nm).
(4) Install ev. joints and additional C rails.
(5) Insert the cable trolleys in the C rail.
(6) Install end stops and end covers in both ends of the C rail.



Suspensions / Media profile

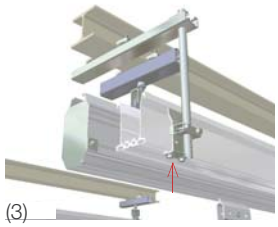
Beam suspension

(1) Place the suspension at the point of suspension.
Guide the clamps onto the girder flange, making sure that the short end of the clamp is inserted over the flange.
Tighten the clamps just enough so that the suspension can be fine adjusted on the point of suspension.
Tighten the clamps with the correct tightening tourque (110 Nm).
(2) Place the media profile in the suspensions.
(3) Tighten the bolts on the underside with correct tightening tourque (25 Nm).



(1)

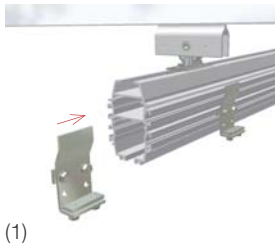
(2)



(3)

Rail suspension

(1) Insert the suspension T-slot nut into the rails lower exterior T-slot.
Tighten the suspensionwith the correct tightening tourque (25 Nm).
(2) Place the media profile in the suspensions.
(3) Tighten the bolts on the underside with correct tightening tourque (25 Nm).



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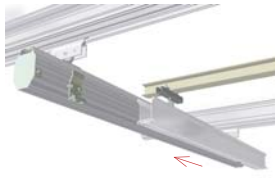

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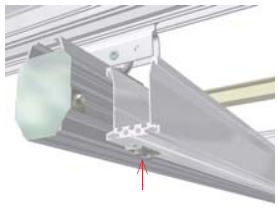


(3)

Joint sets

(1) Insert the T-slot nuts into the slots on the underside of the media profile, place the nuts below the splice.
(2) Bring the rail to be connected against the splice, make sure the edges are flush.
Tighten the bolts with correct tightening tourque (<10 Nm).

(1)

(2)

Cable & hose inlet

Install end fix and chain first.
(1) Insert the T-slot nuts into the T-slots of the suspened media profile.
Tighten the stop screws with the correct tightening torque (<10 Nm).
(2) Bring the rail to be connected against the inlet, make sure the edges are flush.
Tighten the stop screws with the correct tightening torque (<10 Nm).

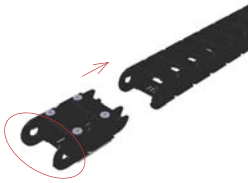
(1)

(2)

End fix

Cable chains

(1) Bring together the end fix and cable chain.
Make sure that the end fix holed part out from the chain.
(2, 3) Place the cable chain into the media profile. Bring on the end fix nuts into the media profile interior T-slot.
Tighten the end fix with correct tightening tourque (<10 Nm).
(4) Raise the other end towards the towing arm and snap chains together.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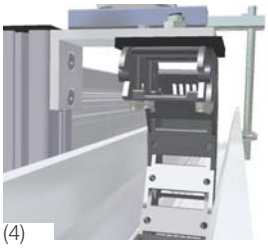
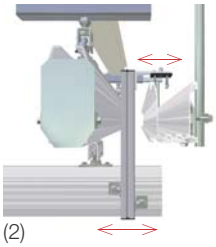

(4)

Cable towing arms

(1) Insert two T-slot nuts in the rails exterior T-slot, one in the upper, one in the lower.
(2) Adjust the towing arm so that the cable chain is centered over the media profile.
Tighten the towing arm with correct tightening tourque (25 Nm).

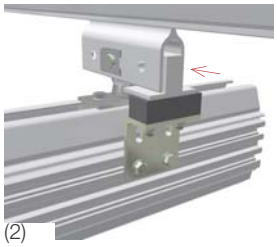

(1)


(2)

Supporting blocks

(1) Place the lower part of the block onto the rails upper T-slot, place it directly under the trolley.
(2) Place the upper part of the block inside the trolley, mate the holes.
Tighten the bolts with the correct tightening torque (25 Nm).
(3) Insert the cotter and secure it with the locking plate.


(1)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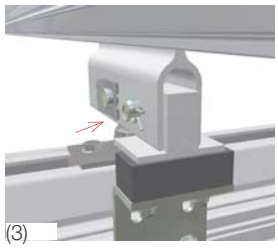
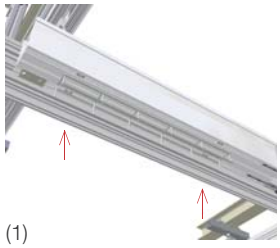

(3)

Cable tray

(1) Insert the T-slot nuts into the media profiles T-slot on the underside, place the cable tray towards the profile.
(2) Attach the brackets and tighten them with the correct tightening torque (<10 Nm).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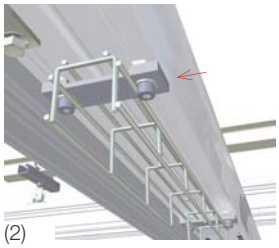
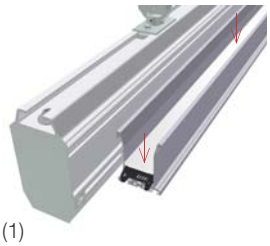

(2)

Cover

(1) Place the cover in the profile.

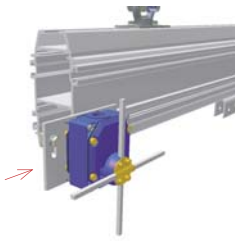


(1)

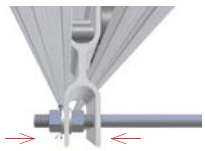
Limit switches

(1) Insert the limit switch's T-slot nuts into the rails exterior T-slot.
Bring the limit switch to the desired position.
Tighten the limit switch with the correct tightening torque (25 Nm).
(2) Install the trigger on the trolley.
(3) Connect the limit switch electrically.

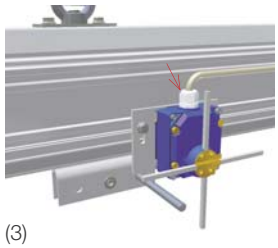
NOTE: Electrical installation may be performed only under the supervision of a qualified electrician!



(1)



(2)

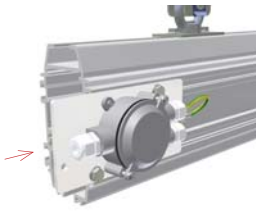


(3)

Coupling units

(1) Insert the coupling unit's two T-slot nuts in the rails exterior T-slot, one in the upper, one in the lower.
Bring the coupling unit to the desired position.
Tighten the coupling unit with the correct tightening torque (25 Nm).
Connect the coupling unit electrically.

NOTE: Electrical installation may be performed only under the supervision of a qualified electrician!



(1)

Parking brakes

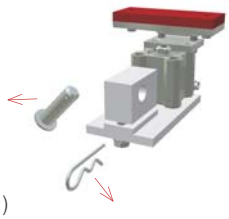
A

(1) Extract cotter and pin.
(2) Fit the block into the trolley, loosen the bolts if necessary.
(3) Insert the cotter and lock it with the cotter
(4) Tighten the bolts that hold the block in place with the correct tightening torque (10 Nm).
(5) Connect the brake pneumatically.
(6) Check that the brake lining is flush the rails underside when compressed air is supplied to the cylinder.

B

Install as above.
(7) Connect the brake electrically.

NOTE: Electrical installation may be performed only under the supervision of a qualified electrician!



(1)

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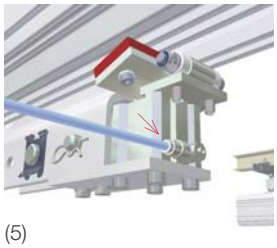

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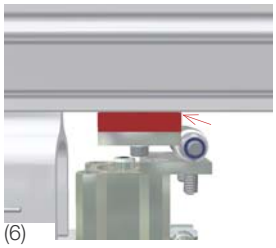

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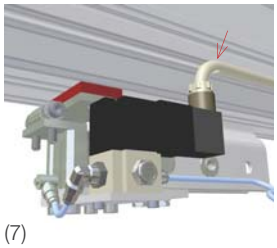


(7)

Service

A general review and functional control tests are performed on a regular basis during commissioning.
All service and maintenance shall be recorded. The user should make sure that material for the purpose is easily available.
NOTE: Make sure that damaged components are replaced immediately in order to avoid possible personal and material damage.
Do not connect the equipment until the workplace is cleaned. This is important for the comfort and well-being of personnel and facilitates service and maintenance. Dirt gives a clear indication of the equipment not being properly maintained, which may possibly affect the remaining guarantees on the equipment.

Maintenance safety instructions

The prescribed procedures and service intervals, including those concerning the replacement of parts/accessories, are described in the instruction manual and must be followed. Professionals are the only persons who are allowed to carry out such procedures.

Staff members with appropriate competence and authority are the only persons who are allowed to carry out mechanical and electrical repair and maintenance work. Unauthorised persons should be prohibited to work with machines and devices inside the equipment.

The equipment should be disconnected and secured against unintentional or unauthorised use, including reconnection, during all repair and maintenance work.
It should be cofirmed that the equipment is free from voltage before any work on electric equipment is commenced.
Make sure that:

- The main power supply is disconnected
- Moving parts are stationary and locked
- Moving parts cannot move accidentally during maintenance work
- It is not possible to accidentally reconnect the power supply during maintenance and repair work

Use safe and environmentally friendly maintenance products and spare parts!

Directions for work during operation

The user or the ”authorised person” must, in each individual case, ensure that the work in question can be carried out without any risk of personal injury because of specific local conditions.

To prevent accidents, only approved and suitable tools and aids may be used during maintenance, adjustment and repair work.
Do not touch rotating parts. Maintain an adequate safe distance between yourself and the machinery to prevent clothes, limbs and hair from becoming caught.
Avoid the occurrence of naked flame, extreme heat (e.g. welding) and sparks in the presence of volatile cleaning materials and nearby inflammable or heat-sensitive materials (e.g. wood, plastics, oils, fats and electric equipment). This can result in fire hazard, harmful gases and damaged insulation.

Directions for work with electric equipment

Use only original fuses with the appropriate rating. The equipment should be stopped immediately on discovery of faults related to the electric power supply.
Defect fuses must not be repaired or bypassed and should only be replaced with fuses of the same kind.

Work on electric equipment and electric components or parts must be carried out by an electrician or authorised staff in accordance with current electric safety regulations.
The parts of the equipment on which inspection, maintenance, and repair work is to be carried out should be disconnected from the power supply.
The electrical equipment should be inspected regularly. Deficiencies, such as loose connections, should rectified without delay.

When it is necessary to work with live parts, a second member of staff, whose responsibility it is to activate the emergency stop and deactivate the main switch in case of an emergency, should be called in. Isolate the work area with a red/white chain or tape and warning signs. Use only voltage-insulated tools.

Electric connectors must be free of voltage (exemptions include socket-outlets, unless safety precautions state that these are dangerous to be in contact with) before they are disconnected or connected.

Directions for work with pneumatic equimpent

The equipment should be stopped immediately on discovery of faults related to the air supply.
Work on pneumatic equipment or parts must only be carried out by authorised staff.
The parts on which inspection, maintenance, and repair work is to be carried out should be disconnected from the air supply.

Maintenance of the equipment

Each product has specific directions for service, maintenance and care. In the service protocol, there is information and the references needed for managing the product.

All preventive maintenance, service and repair should be recorded.
The service procedures should always be used. If more than one rail system exists, each one shall be provided with an Identity number or other designation. Separate maintenance records should be kept for each sysem.

The service protocol shall be kept by the client/user and must be shown to Movomech AB on request.

Service protocol

The protocol is an acknowledgement that the equipment has been serviced according to Movomech's instructions and must be filed by the customer.

Place:

Date:

Equipment number:

Service technician:

	Interval in months at 1 shift	Interval in months at >1 shift	
Suspensions / Rail profiles	3	2	👁 👂 ✋ 🛠 ⓘ
Trolleys	3	2	👁 👂 ✋ ⓘ
End stoppers	3	2	👁 ✋ 🛠
End covers	3	2	👁 🛠
Crane girder suspensions	3	2	👁 ✋ 🛠
Joint sets	3	2	👁 👂 ✋ 🛠 ⓘ
Spacers for double crane	3	2	👁 ✋ 🛠
Spacer plates for telescopic cranes	3	2	👁 ✋ 🛠
Space savers for cranes	3	2	👁 ✋ 🛠
Triangulary stay	3	2	👁 ✋ 🛠
Distance bar	3	2	👁 ✋ 🛠
Travel limits	3	2	👁 👂 ✋ 🛠 ⓘ
Friction roller	3	2	👁 ✋
Earthing cable	3	2	👁 ✋ 🛠
Safety wires	3	2	👁 ✋ 🛠 ⓘ
Air preparation units	1	1	👁 👂 ✋ 🛠 ⓘ
End fix	3	2	👁 ✋ 🛠 ⓘ
Cable towing arms	3	2	👁 👂 ✋ 🛠 ⓘ
Cable trolleys	3	2	👁 ✋ 🛠 ⓘ
Cable & hose clamps	3	2	👁 ✋ 🛠 ⓘ
Wire brackets	3	2	👁 ✋ 🛠
C rail	3	2	👁 ✋ 🛠
Suspensions / Media profile	3	2	👁 ✋ 🛠
Joint sets	3	2	👁 ✋ 🛠
Cable & hose inlet	3	2	👁 ✋ 🛠
End fix	3	2	👁 ✋ 🛠
Cable chains	3	2	👁 👂 ✋ ⓘ
Cable tray	3	2	👁 ✋ 🛠
Cable towing arms	3	2	👁 ✋ 🛠
Supporting blocks	3	2	👁 ✋ 🛠
Cover	3	2	👁
Limit switches	1	1	👁 ✋ 🛠 ⓘ

👁 Visual inspection, examine whether the product exhibits damages

👂 Auditory inspection, examine whether the product exhibits discordant sound

✋ Physical inspection, examine whether the product exhibits damages

🛠 Mechanical inspection, examine whether the product exhibits decomposition, instrument is needed

ⓘ Additional information available

Comment:

The equipment has been serviced according to the instructions:

.....

Place, date and signature of the service technician

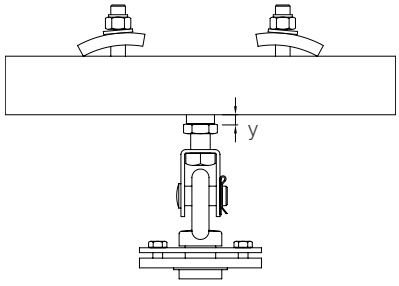
Additional information

Rail profiles	Clean running surface in the profile where the trolley moves. The surface shall be clean and dry. Dirty and greasy running surfaces will inevitably affect performance. Use a clean and dry wiping cloth.
Suspension	Check for wear on the suspension type A & B according to the description below.
Trolleys	Check that the trolley runs quietly and without difficulty along the entire section.
Crane girder suspensions	For PHB1 & AHB, check for wear on the crane girder suspension according to the description below.
Joint sets	Make sure that the runway is flat over the splice, test with trolley.
Travel limits	Limit switches with hydraulic dampers are also checked with regard to leakage.
Safety wires	Check that the safety wires are unloaded.
Air preparation units	Filter: Open the blowdown valve from time to time to blow out collected condensate. Do not allow the liquid level to reach the vortex disk. In case of malfunction, check that the direction of flow is correct. If the flow decreases substantially or the pressure drop increases sharply, the filter element should be cleaned or replaced. Filter element is replaced when the pressure drop across the filter reaches 0.1 MPa, and at least once a year. Pressure regulator: In case of malfunction, check that: a) the primary pressure is higher than the regulated secondary pressure. NOTE: Also in throughflow. b) the seat of the main valve is not clogged. c) membrane or spring has not been damaged. If unregulated air flows through the regulator, this is most likely due to membrane break.
Cable trolleys	Check that the trolleys runs quietly and without difficulty along the entire section.
Cable towing arms	Check whether cables or hoses are damaged.
End fix	Check whether cables or hoses are damaged.
Cable & hose clamps	Check whether cables or hoses are damaged.
Cable & hose inlet	Check whether cables or hoses are damaged.

Specific wear check

Suspension type A & B

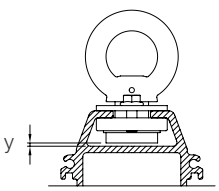
	Delivered	Cassation
	y[mm]	*y*[mm]
PHB, LHB, PHB1, AHB1.1-2	*7,5*	*⩾9,0*
AHB3	*11,0*	*⩾12,5*



Besides this wear check, a general check of the suspension an its fastening elements according to the service protocol is required.

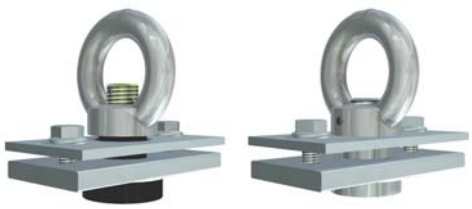
Crane girder suspension type A

	Delivered	Cassation
	y[mm]	*y*[mm]
PHB1, AHB1.1-2	*1,0*	*⩾2,0*
AHB3	*2,5*	*⩾3,5*



New
730379

Old
730379
y[mm] *⩾4,5*



Besides this wear check, a general check of the crane girder suspension an its fastening elements according to the service protocol is required.

Troubleshooting

Getting started

The rail system's performance can be affected by a number of factors. If the system fails to function as desired, the following flow diagram shall be followed in order to diagnose the problem.
Begin by pulling the load with a tension load gauge in order to determine how large a starting torque or driving torque is needed for transfer of the load.
It is generally valid for Movomech´s rail system that the starting force required is 1-1.5% of the transferred load's total weight (including incoming rail components, the hoist and tools weights). The power required to keep rolling is less than 1%.
If the rail system is supplied with a energy system, the load increases by about 1-2 kg.
Customer-specific case of load can affect the starting and driving force that are needed.

#	Problem	See condition
1	Fixture, hoist, arm or crane do not roll evenly over the entire runway length.	A-B-C-D-E-F-G-H-I-J-K
2	Fixture, hoist, arm or crane roll evenly in certain sections but unevenly in other sections of the same runway length.	A-B-C-D-F
3	Fixture, hoist, arm or crane do not want to continue to roll evenly after having started up.	A-B-D-F-G-H-I-K
4	Fixture, hoist, arm or crane get stuck in spliced sections or suspensions.	E
5	Fixture, hoist, arm or crane are tilted or rotate around their horizontal axle (the double crane becomes a parallellogram) and get stuck or run sluggishly.	B-C-D-E-F-G-H-I-K
6	Fixture, hoist, arm or crane behave erratically and jerkily in motions.	A-D-F-G-H-K
7	Fixture or hoist on a displaced crane, a telescoping crane swings on the loaded track rails and causes the opposite side of the crane to rise up, resulting in the tool or fixture being unable to perform correctly. The suspensions on the opposite side and trolleys rotate and lock the crane.	J
8	Fixture, hoist or arm stick in the middle of the span on the crane or the crane between longitudinal suspensions, and cannot be parked anywhere along the runway.	B-D
9	Fixture, hoist, arm or crane are unstable, are warped and act loose along the runway and bind periodically.	C-E-I
10	Fixture, hoist, arm or crane get stuck on a section of the rail where no hangers, stops or splices are found.	B-C-D
11	Fixture, hoist, arm or crane trolleys are worn out and/or go to pieces constantly.	E-F-H-I

#	Condition
A	**Is the runway free from oil, grease and dirt?** Yes - check next item No - Clean the inside of the rail where the truck moves. Dirty or greasy runways will inevitably affect the performance. Grease or oil can temporarily loosen a binding section, but only hides the problem and will at times cause greater resistance by attracting dirt and debris to the runway and truck wheels. Moreover, grease and oil applied to the rail will fall on personnel and products.
B	**Is the track mounted parallel within ± 0,5‰ and in alignment within ± 10mm?** Yes - check next item No - Make sure that the system is in alignment and vertical. When a system is properly installed and the right accessories are used, one can rely on the text above.
C	**Are both track rails free to oscillate around their longitudinal axis on the suspension points?** Yes - check next item No - Install the correct crane girder suspensions between the suspensions and the track rail. The crane girder suspension shouldl be able to roll and swivel. The track rail should be able to swing back and forth in its suspension.
D	**Does the crane go free from supplementary equipment such as air hoses, spiral hoses, electric cables, drive units and locking mechanisms?** Yes - check next item No - Release resistance from external components. Equipment such as air hoses, spiral hoses, electric cables, mechanical stops, control panels, electronic cabinets and drive units can all affect the performance.
E	**Are splice sections straight and in alignment? Are the runway and the splice sections in the same plane and the rails brought together? Are the splice sections properly mounted?** Yes - check next item No - Check that the splices have been installed properly. Check the installation against the manual.
F	**Do the trucks move easily and quietly? Do the trucks roll without wobbling? Does the wheel rotate about the centre of the wheel axle?** Yes - check next item No - Clean the wheel.
G	**Is the tread on the truck wheels smooth and even?** Yes - check next item No - Dismantle the trucks from the rail and inspect. Look for damage, debris and bearing wear. When damage, debris or bearing wear are determined, replace the entire wheel. The wheel must not wobble more than 0.1 mm. It must rotate freely and evenly without any problem.
H	**Are the trucks on the same rail in line with each other and the rail?** Yes - check next item No - Check whether any spacers (on the carrier axle in the truck, between the truck's interior and the crane girder suspension) are properly mounted. Adjust as needed.

I	**Is the C/C-dimension for the track the same as the C/C-dimension for the suspensions on the crane?** Yes - check next item No - The C/C-dimension between the track rails should be identical to the C/C-dimension between the crane girder suspensions on the crane rails with a tolerance of 0,5‰. The crane should be perpendicular and the trucks shall be in line with each other.
J	**Have the proper suspension types been used for the rail system (compact-mounted to avoid tilting with shifted load point)?** Yes - check next item No - Check that compact-mounted rails have been installed satisfactorily.
K	**Is the rail system in good condition and free from damages?** Yes - Contact Movomech for consultation No - Replace damaged components.

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