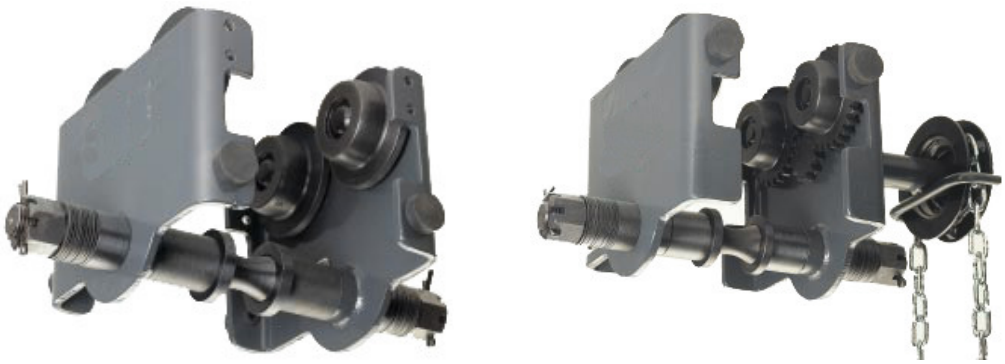
MANUAL TROLLEY EX INSTRUCTION MANUAL

RPTC 10000

English
STD-R-KHA-F-CQD-ENG



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CAUTION: Keep the instructions in a safe place for future reference.

TABLE OF CONTENTS

1 INTRODUCTION

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CAUTION: Keep the instructions in a safe place for future reference.

Before proceeding with the operation or maintenance of the equipment it is important that the operating and maintenance personnel read this bulletin carefully in order to ensure the safe and efficient use of the equipment.

Also, it is strongly recommended that the personnel responsible for the operation, inspection, and servicing of this hoist, read and follow the Safety Standard ASME B30.16-1998 (or current revised edition). This standard covers Overhead Hoists (under-hung) as promulgated by the American National Standards Institute and is published by the American Society of Mechanical Engineers. Copies of this publication are available from the Society at United Engineering Center, 345 East 47th St., New York, NY 10017.

If any instructions are unclear, contact the manufacturer or distributor of the equipment before attempting to install or use the hoist.

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1.1 Foreword

This manual has been prepared to acquaint you of the procedures necessary for the installation, operation and maintenance of the equipment you have purchased.

Proper use is important to the ultimate performance of this equipment. Careful study of and adherence to the instructions will help ensure safe, dependable operation. It is also recommended that you keep this manual readily accessible to operators as well as maintenance and safety personnel.

Information in this manual is subject to change without notice.

1.2 Warranty

All sales are subject to the R&M Standard Terms and Conditions of Sale and Product Warranty. Copies are available upon request from R&M and are expressly incorporated by reference hereto.

1.3 Minimum charges

All orders for repair parts are subject to a minimum charge.

1.4 Claims for damage in shipment

All shipments are carefully inspected and are delivered to the carrier in good order. Upon receipt of shipment caution should be exercised so that there is no loss or damage. If damage has occurred, refuse to accept the shipment until the carrier makes the proper notation to that effect.

In the event of concealed loss or damage, notify the carrier immediately. By following these suggestions you will encounter less difficulty collecting your claim.

2 MANUAL TROLLEYS

2.1 What not to do

- Do not set down the machine without having an adapted support to avoid damaging the sensitive sides.
- Do not let the machine drop.
- Never modify the machine unless the constructor has studied and authorized the modification.
- Never modify the values and adjustments of the safety components, outside the limits provided for in the manual, or without the approval of the constructor.
- Never try to repair or alter the machine (e.g., welding) without the authorization of the constructor or a trained maintenance agent.
- Do not let an unqualified person use the machine.
- Never lift more than the maximum working load indicated on the machine. Shocks or accidental collision of the load with objects can cause excess loads.
- Never remove the hook safety catches.
- Never use the machine to extract, loosen, or pull sideways.
- Never use the machine to transport people.
- Do not touch the moving components.
- Do not operate the machine if your physical condition does not allow it.
- Never use the machine when in bad repair (wear, deformation, etc.).
- Never use suspect spare parts or parts whose origin is not known.
- Never swing the load intentionally.
- Do not subject the machine to brutal shocks.
- Do not use the mechanical stops as a repetitive means of stopping.
- Never distract the operator while the machine is being operated.
- Never leave a suspended load hanging, unless necessary.
- Do not use the machine for a purpose or in an area for which it is not intended.
- Do not expose the machine to an aggressive atmosphere (temperature, acidity, etc.).
- Do not use the safety components as operation components.
- Do not use the controls needlessly (avoid inching, operating the buttons in a stop-start manner). This can cause overheating and even damage to the machine.
- Never pull the load slantwise. Make sure that the machine is vertical to the load before lifting.
- Never transport a load with people nearby. Do not pass the machine, with or without a load, above a person.

2.2 What to do

- Handle the machine by its structure, or by the devices provided for this purpose, or in its original packing.
- Store the machine in its normal operating position (without load) away from aggressive atmospheres (dust, humidity, etc.).
- Make sure that the machine is always clean and protected from corrosion (lubrication, etc.).
- The machine should be installed by a technician with the competence required.
- Ensure the machine attaching structure is rigid.
- Ensure that safety rules are followed (harness, clearance of work areas, posting of instructions to be followed in the area, etc.).
- Use the trolley between –10°C and + 50°C.
- Comply with the distance between the trolley and the raceway.
- Connect the feed cable directly to the supply terminal board in the electric box.
- Set up an inspection program and record all maintenance operations for the machines, particularly the brake, limit switches, fastening beam, etc.
- Replace any element that is worn or may be defective.
- The machine should be maintained regularly in accordance with the instructions in this manual.
- Check the operation and adjustment of safety components (brake, travel limit, etc.) in conformity with the user manual.
- Regularly check the machine.
- If a deformation or unusual wear is noted, the parts must be changed.

- Check that the assembly elements are correctly tightened.
- Check that the steel cable strands supporting the control box fulfill their functions properly.
- The components should only be replaced by original parts that are compatible with the type of machine.
- Before operation, ensure that the load is correctly fastened and installed. Make sure the load is correctly balanced before moving it. Pay attention to the center of gravity of the load to be moved.
- When moving the load, make sure it is sufficiently raised and distant from the surrounding machines and other objects so as to avoid all obstacles during operation, ask for help if the volume of the load prevents you from seeing above it.
- Use the standards of ergonomics to use the trolley.
- If manually moving the machine, push the load.
- The prevention instructions to be carried out during different operations should be well known.
- Use the material under normal working conditions (ambient temperature, atmosphere, etc.).
- Material used outdoors should be protected as well as possible against bad weather conditions.
- Notify the necessary people after a dangerous operation or if the machine seems problematic (abnormal noise, abnormal behavior, etc.).

2.3 General information

2.3.1 Acceptance of the material

Carry out a visual inspection of the packing to ensure it is intact. If the package is not intact, issue the appropriate notifications. Check that the trolley corresponds to your order.

2.3.2 Installation

The service life of a trolley depends upon how it is installed. It is essential that the instructions in this manual are followed carefully for the installation, use, and maintenance of the machine. Any use contrary to the instructions may be dangerous. In this case, the manufacturer will not accept any liability.

Do not use the machine without having read and understood the whole of the instruction manual. Always keep the manual close to the machine, available to the operator and to the person responsible for maintenance. Make sure safety rules are followed (harness, clearance of work area, posting of instructions to be followed in the work area, etc.).

The trolley can be adapted to all runaway profiles. Couple or hook on the hoist after installation of the trolley.

⚠ CAUTION: Check the width of the runaway rail and adapt the spacing of the flanges of the trolley as indicated in the tables

Ensure:

- That the profile is secured.
- That the profile is suitable to the loads to be supported.
- That the dimensions are compatible with the trolley which is to be installed.
- That the maximal deflection of the profile does not exceed 1/500 of the span under the dead loads and the SWL.
- That the longitudinal slope of the track does not exceed 0.3 %.

Carry out:

1. Disassembly of the trolley
   - Remove the side plate on the counterweight side.
   - Position the trolley on the beam.
   - Refit the side plate.
   - Ensure that all nuts are correctly tightened.

2. Without disassembly of the trolley
   - Install the trolley on the profile, by the end.
   - Fit the travel limit stops (not provided) at the end of the runway.
   - Ensure that all nuts are correctly tightened.

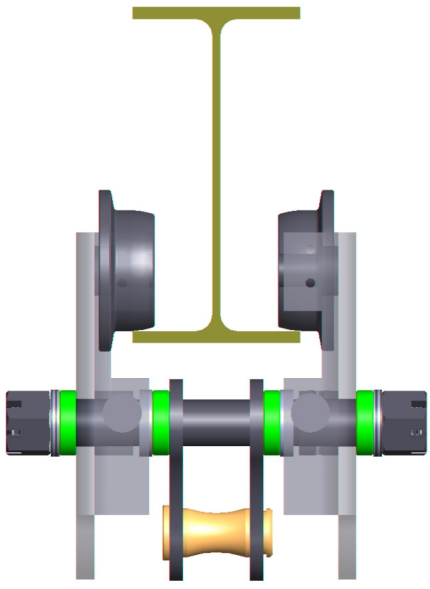
On the curved profiles, the driving wheels should be positioned on the outside of the curve, preferably. These points have to be checked after a repair, a maintenance operation or a long stop.

Curve radius:

250 kg / 500 kg	=	1 m
1000 kg	=	1.5 m
2000 kg / 3000 kg	=	2 m
5000 kg	=	3 m

☞ NOTE: Coupling part center must be located in the center of the beam.

Figure 1. Chain travel trolley



☞ NOTE: VERY IMPORTANT! See side plate setting table.

2.4 Presentation

The manual gantry crabs make it possible to suspend any type of lifting equipment provided with a hook, lifting loads of 250 to 10,000 kg.

2.4.1 Brief description of manual gantry crab

The crab is comprised of:

- 2 flanges, in sheet steel
- 4 rollers mounted on ball bearings with detachable axles and rolling rims profiled to roll on any type of iron monorail
- 1 cross-bar for hook or coupling, in steel, to ensure the bracing of the assembly.

2.4.2 Characteristics and dimensions

Push travel trolley

Figure 2. Push travel trolley characteristics and dimensions

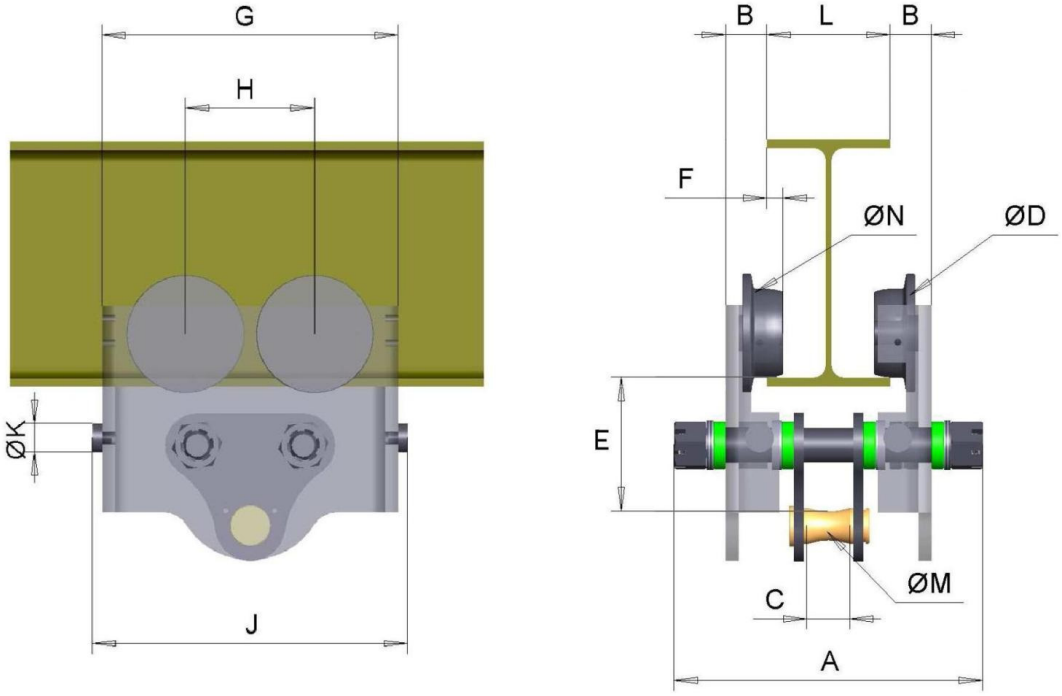


Table 1. Push travel trolley characteristics and dimensions

Capacity	Beam width	A	B	C	ØD	E	F	G	H	J	ØK	ØM	ØN
[kg]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
250	50 - 202	284	16	32	74	60	13	170	80	194	18	15	50
500	50 - 200	303	19	32	79	62	19	185	85	210	24	20	55
–	188 - 310	411	19	32	79	62	19	185	85	210	24	20	55
1000	65 - 202	326	22	39	92	82	22	225	101	249	28	22	62
–	188 - 310	425	22	39	92	82	22	225	101	249	28	22	62
2000	88 - 202	340	26	42	104	98	24	272	124	296	36	28	76
–	188 - 310	448	26	42	104	98	24	272	124	296	36	28	76
3000	100 - 202	356	28	49	131	146	27	322	145	346	44	28	96
–	188 - 310	464	28	49	131	146	27	322	145	346	44	28	96
5000	114 - 202	375	34	60	144	161	36	362	158	386	48	35	108
–	188 - 310	484	34	60	144	161	36	362	158	386	48	35	108
6300	124 - 202	394	43	68	170	175	39	411	185	436	50	43	130
–	188 - 310	502	43	68	170	175	39	411	185	436	50	43	130
7500	124 - 202	394	43	68	170	175	39	411	185	436	50	43	130
–	188 - 310	502	43	68	170	175	39	411	185	436	50	43	130
10000	124 - 202	400	46	70	176	187	40	442	200	466	50	45	134
–	188 - 310	506	46	70	176	187	40	442	200	466	50	45	134
12500	124 - 202	408	48	70	176	185	41	442	200	466	50	50	134
–	188 - 310	514	48	70	176	185	41	442	200	466	50	50	134
16000	136 - 202	472	75	92	226	283	54	555	272	579	50	64	168
–	188 - 310	578	75	92	226	283	54	555	272	579	50	64	168
20000	136 - 202	472	75	88	226	277	54	555	272	579	50	68	175
–	188 - 310	578	75	88	226	277	54	555	272	579	50	68	175

Chain travel trolley

Figure 3. Chain travel trolley characteristics and dimensions

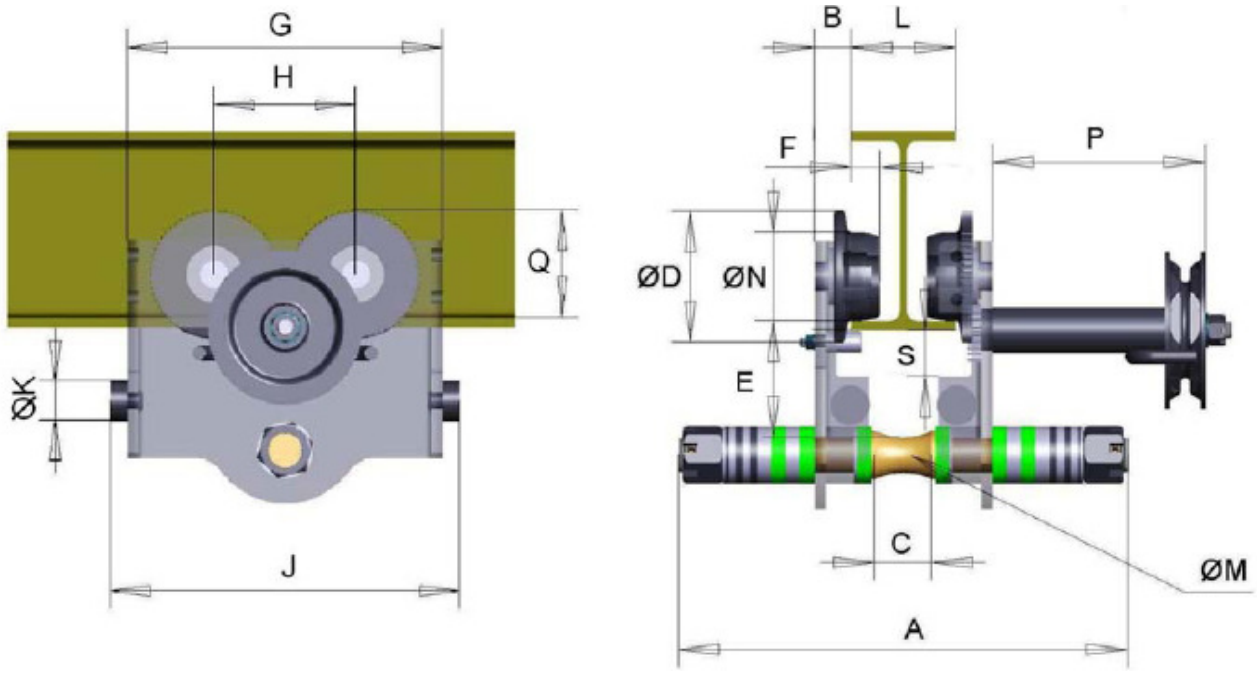


Table 2. Chain travel trolley characteristics and dimensions

Capacity	Beam width	A	B	C	ØD	E	F	G	H	J	ØK	ØM	ØN	P	Q	S	U
[kg]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
1000	65 - 202	326	22	39	92	82	22	225	101	249	28	22	62	146	76	40	160
	188 - 310	425	22	39	92	82	22	225	101	249	28	22	62	146	76	40	160
2000	88 - 202	340	26	42	104	98	24	272	124	296	36	28	76	146	92	38	157
	188 - 310	448	26	42	104	98	24	272	124	296	36	28	76	146	92	38	157
3000	100 - 202	310	28	49	131	146	27	322	145	346	44	28	96	37.5	114	38	58
	188 - 310	418	28	49	131	146	27	322	145	346	44	28	96	37.5	114	38	58
5000	114 - 202	326	34	60	144	161	36	362	158	386	48	35	108	37.5	126	47	60
	188 - 310	434	34	60	144	161	36	362	158	386	48	35	108	37.5	126	47	60
6300	124 - 202	344	43	68	170	175	39	411	185	436	50	43	130	80	154	46	68
	188 - 310	452	43	68	170	175	39	411	185	436	50	43	130	80	154	46	68
7500	124 - 202	344	43	68	170	175	39	411	185	436	50	43	130	80	154	46	68
	188 - 310	452	43	68	170	175	39	411	185	436	50	43	130	80	154	46	68
10000	124 - 202	350	46	70	176	187	40	442	200	466	50	45	134	80	154	46	68
	188 - 310	458	46	70	176	187	40	442	200	466	50	45	134	80	154	46	68
12500	124 - 202	358	48	70	176	185	41	442	200	466	50	50	134	59	154	45	65
	188 - 310	466	48	70	176	185	41	442	200	466	50	50	134	59	154	45	65
16000	136 - 202	416	75	92	226	283	54	555	272	579	50	64	168	73	197	78	78
	188 - 310	522	75	92	226	283	54	555	272	579	50	64	168	73	197	78	78
20000	136 - 202	416	75	88	226	277	54	555	272	579	50	68	175	73	120	60	78
	188 - 310	522	75	88	226	277	54	555	272	579	50	68	175	73	120	60	78

Figure 4. Hand chain length to unwind in order to move the load or the trolley over a distance of 1 m.

Load [kg]	1000	1500	2000	3000	5000	6300	7500	10000	12500	16000	20000
Chain length [m]	3.4	3.4	3.4	4.5	4.5	5	5	5	5	9.5	9.1

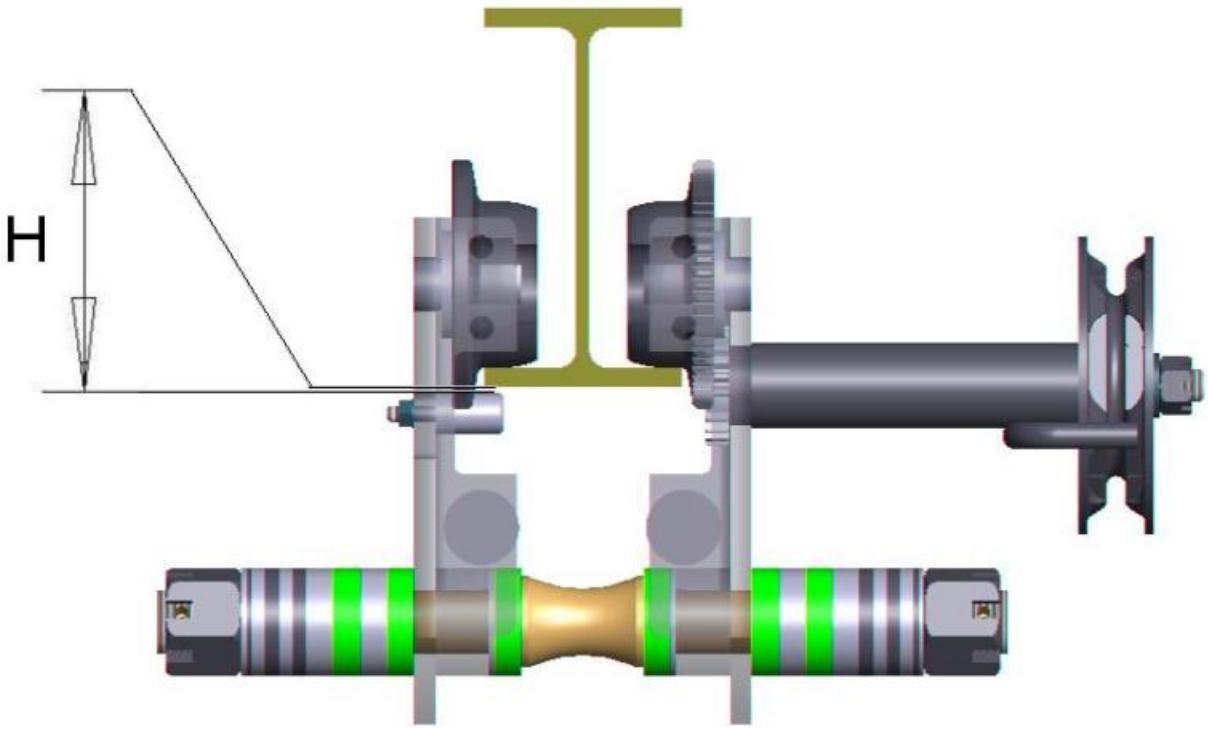
Table 3. Wheel and handling chain capacities

Capacity	**wheel diameter**	**handling chain**
[kg]	**[mm]**	**[mm x mm x mm]**
1000	115	5 x 23.7 x 18
	115	5 x 23.7 x 18
2000	115	5 x 23.7 x 18
	115	5 x 23.7 x 18
3000	160	5 x 23.7 x 18
	160	5 x 23.7 x 18
5000	160	5 x 23.7 x 18
	160	5 x 23.7 x 18
6300	160	5 x 23.7 x 18
	160	5 x 23.7 x 18
7500	160	5 x 23.7 x 18
	160	5 x 23.7 x 18
10000	160	5 x 23.7 x 18
	160	5 x 23.7 x 18
12500	160	5 x 23.7 x 18
	160	5 x 23.7 x 18
16000	160	5 x 23.7 x 18
	160	5 x 23.7 x 18
20000	160	5 x 23.7 x 18
	160	5 x 23.7 x 18

2.5 Setting of the axle "no rock"

Chain travel trolley 1000 kg (beam : 65 à 310), 2000 kg (beam : 88 à 310)

Figure 5. Axle setting dimension



This adjustment must be done when the trolley is put in place.

The dimension "H" between the lower face of the beam and the upper line of the axle is 1 mm. This value may be adjusted to achieve best operation.

2.6 Adjustment of the flanges

Trolley adjustment

Figure 6. Chain travel trolley

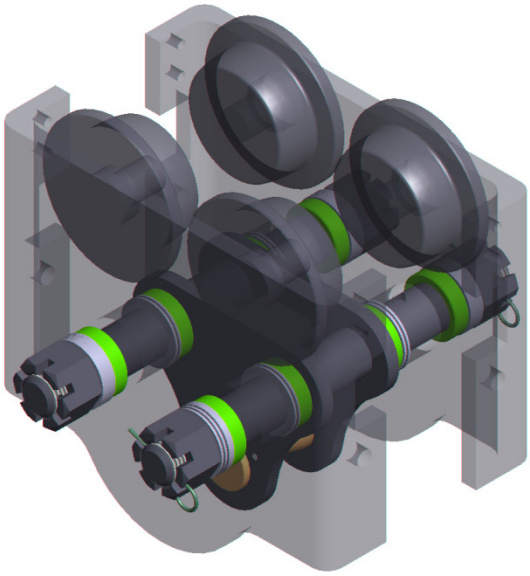
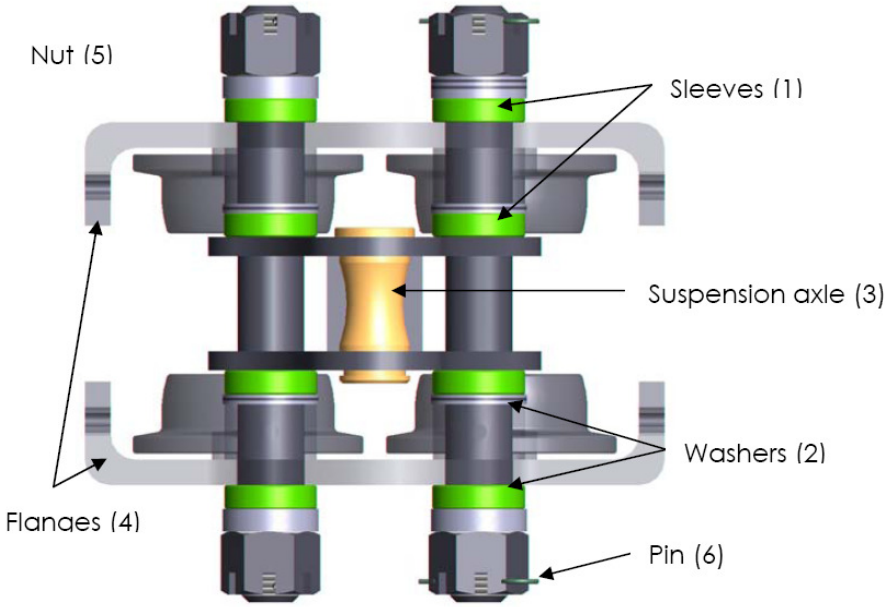


Figure 7. Chain travel trolley components



The trolley can be adjusted to accommodate different track widths using the following procedure:

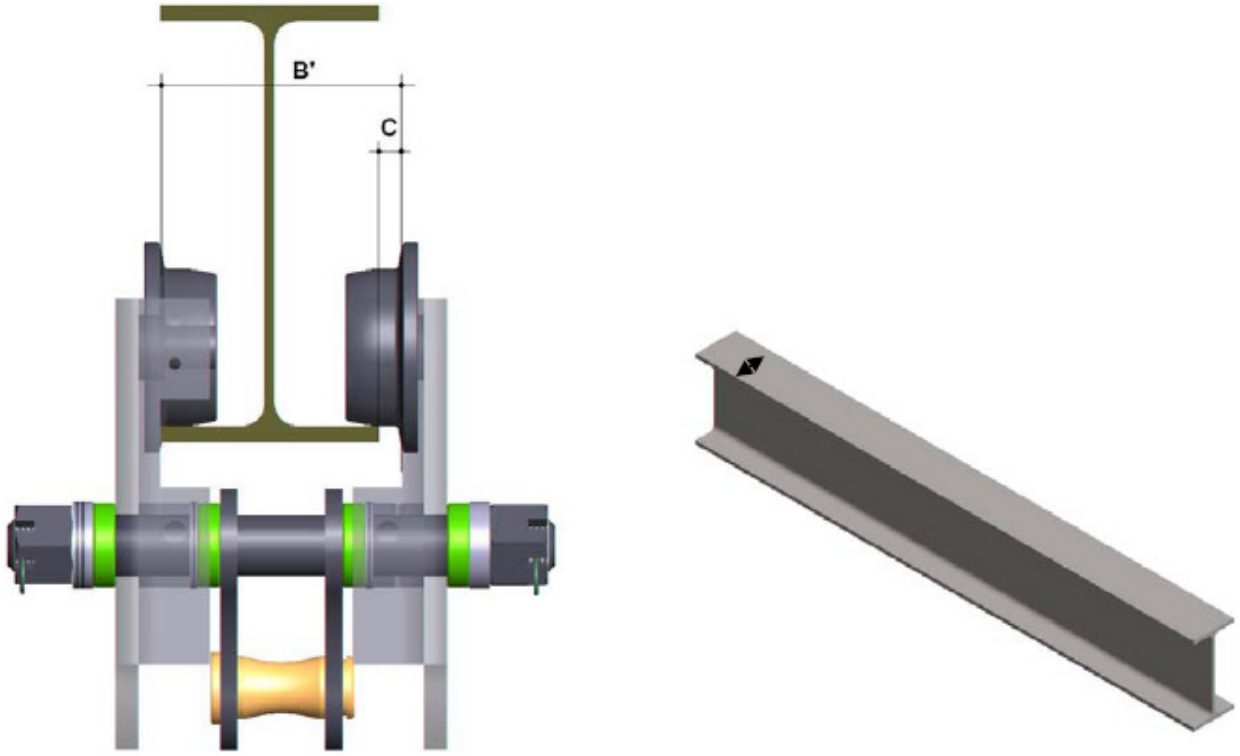
1. Check width B of the track (Figure 7).
2. The distance B' between the wheel flanges can be adjusted using the spacers (1) and washers (2). Make sure that the suspension pin (3) is centered on the track. Depending on the tolerances of the washers and spacers, the stacking can be different on the left side and on the right side (Figures 6 and 7).
3. In any case, provide at least one washer outside the flange (4), under the nut (5) (Figure 6)!
4. After adjustment, tighten the nuts (5) and reinsert the pins (6) (Figure 6).

Caution: When adjusting dimension B' between the rollers, add the track width:

- **For trolleys up to 2000 kg, add up to 3 mm C**
- **For trolleys in excess of 3000 kg, add from 3 to 5 mm C**

The values above are for guidance only. Clearance depends upon the tolerance and quality of the track.

Figure 8. Chain travel trolley track adjustment dimensions



2.7 Assembly on the track

At this stage, the distance between the wheel flanges is set. The trolley can be introduced through either end of the hoist track. If this is not possible—for instance, if the mechanical stops or limit switches are already in place—the trolley can also be installed through the lower flanges. In this case, remove the nuts on one side of the trolley and move the flanges apart. Reassemble all components and ensure that dimension C is correct (Figure 7).

Figure 9. Flanges being moved apart

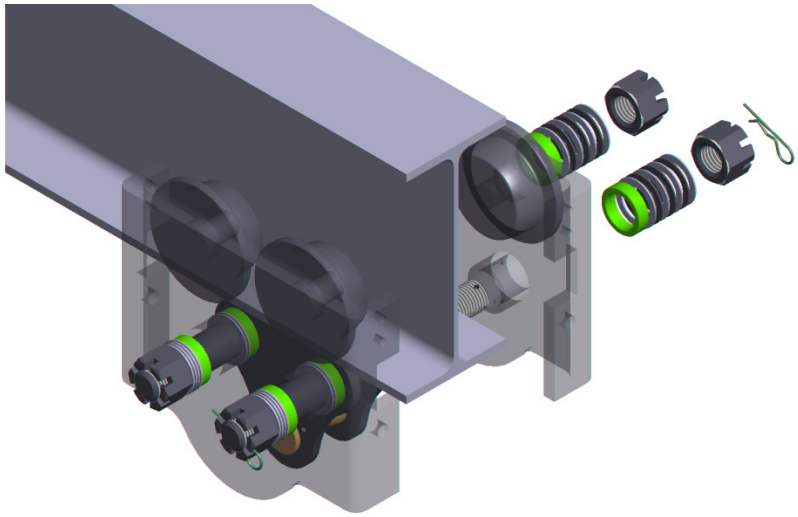
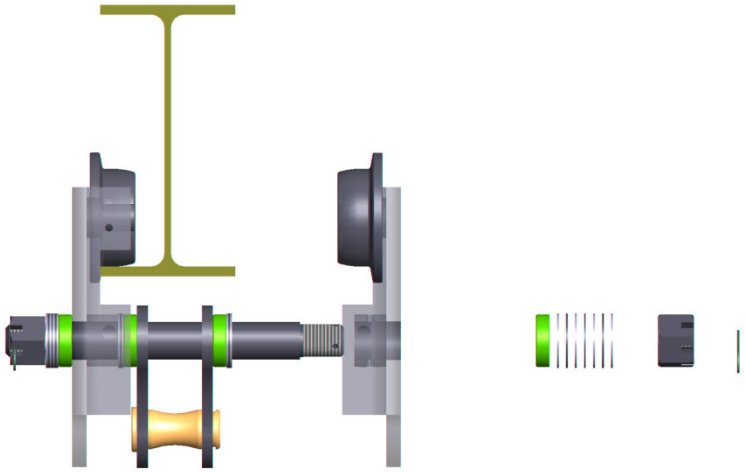


Figure 10. Flanges being moved apart



Ensure that the suspension pin (3) is centered on the track (Figure 6).

3 APPLICABLE DIRECTIVES FROM JULY 1, 2003

- Manufacturer :
  ATEX 94/09/EC or ATEX 100a

- User (installation) :
  ATEX 99/92/EC or ATEX 137a (England) or 118a (France)

3.1 Hazardous area classifications

Table 4. Hazardous area classification

	Equipment category	Flammable substances	Comparison
Classification Group 1 (mines)	M1	Methane, dust	Group 1
	M2	Methane, dust	Group 1
Classification Group 2 (surface)	1	Gases, vapors, fog, dust	Group 2 Z 0 (gases) / Z 20 (dust)
	2	Gases, vapors, fog, dust	Group 2 Z 1 (gases) / Z 21 (dust)
	3	Gases, vapors, fog, dust	Group 2 Z 2 (gases) / Z 22 (dust)

Table 5. Explosive atmosphere presence by hazard area classification

Category	1	2	3	Safe area
Presence of explosive atmosphere (per year)	Constant or for long periods > 1000 hrs	Probable during normal operation (occasional) 10 <…< 1000 hrs	Rarely or for short periods < 10 hrs	Practically never

3.2 Gas group and temperature classes

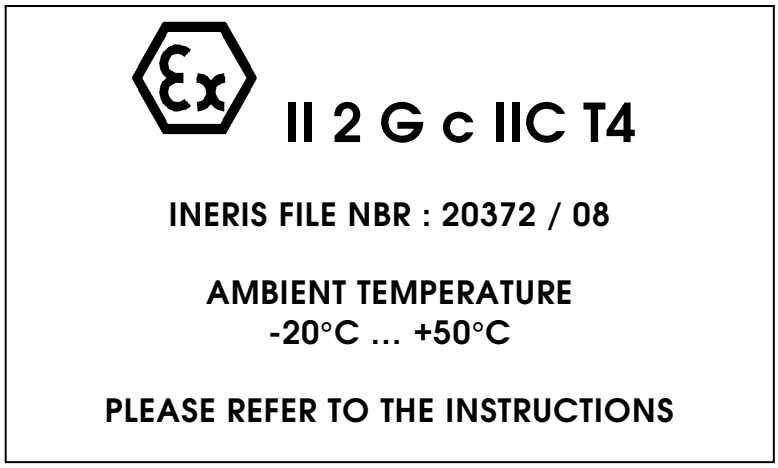
Table 6. Gas group and temperature classes

Max. surface temperature	II A	Gas group II B	IIC
T1 - 450° C	Methane Monoxyde carbone Ammoniac Acetone Toluene	Cyclopropane Acide cyanhydrique	Hydrogene
T2 - 300° C	Propane Butane	Ethylene Butadiene	Acetylene
T3 - 200° C	Gas	–	–
T4 - 135° C	Acetaldehyde	Diethyl ether	–
T5 - 100° C	–	–	–
T6 - 85° C	–	–	–

3.3 ATEX label:

The following label identifies ATEX equipment suitable for the hazardous area defined by the specific marking:

Figure 11. ATEX label



According to ATEX Directive 99/92/EC, it is the user's responsibility to verify the suitability of the ATEX equipment to the hazardous area.

3.4 Conformity to the ATEX Directive:

INERIS, notified body and identified under number 0080, in accordance with article 9 of Council Directive 94/9/EC of the 23rd of March 1994, has acknowledged receipt of our technical file according to the procedure described in article 8 b) ii) of the directive.

The technical documentation has been consigned by the INERIS notified body under the reference: 20372/08

3.5 Gas hazard area marking:

Ex II 2 G c IIC T4

EX:	Utilization in hazardous area
II:	Surface equipment
2:	Category 2
G:	Gas hazard area
c:	Protection type*
IIC:	Gas group
T4:	Temperature class

3.6 Dust hazard area marking:

Ex II 2 D c T+135°C

EX:	Utilization in hazardous area
II:	Surface equipment
2:	Category 2
D:	Dust hazard area
c:	Protection type*
T+135°C:	Maximum surface temperature

*'c' in the marking means "Constructional safety"

Constructional safety is a protection mode stating that the mechanical design of the hoist has been made according to standards to avoid any spark generation in normal operation and in regular maintenance of the equipment.

3.7 Technical installation and maintenance

3.7.1 Qualifications of installation & maintenance personnel

Only persons whose training includes instruction on the various types of protection involved, including appropriate, periodic refresher training, should carry out installation and maintenance.

3.7.2 General maintenance

Repairs on Ex equipment are classified into two types:

- Work on equipment in the hazardous area.
- Work on equipment that can be removed from the hazardous area

Work in the hazardous area

The following must be clarified with the operator before starting work in the hazardous area:

- Is there an explosion hazard in the working area?
- Is there a poison hazard?
- What visual and acoustic signals apply in case of danger?
- Are there escape routes and how are they marked?
- How is the equipment isolated from the mains supply and secured (warning sign and padlock)?
- What hazard zone is present:
  - in the vicinity of the Ex equipment?
  - in the vicinity of the control equipment (on the ground for cranes)?

The customer is responsible for the use and safety of the installation during operation. Consequently, they alone are qualified to answer the questions above in sufficient detail and, thus, determine whether work can be carried out without risk.

Typically, the customer will issue a “hot work” permit in which the operator informs the technician that he may work on the Ex installation and specifies the times when he may do so. This written permit is primarily required for welding and other works that may cause a hazard (e.g., grinding), but also applies when auxiliary equipment, such as a power drill, is used.

After the work—not including maintenance work—has been completed, the customer may demand an installation certificate. The technician assumes significant responsibility for this work because the customer is not obligated to have the electrical installation inspected further by an Ex expert before commissioning.

Modifications to Ex equipment affecting Ex protection may not be performed by the technician. If such modifications are necessary, the equipment or the installation must be inspected by an Ex expert. The acceptance test is confirmed by an expert's report.

If you are uncertain about any issues that may arise during a repair, always seek guidance from your senior manager or local specialist.

If you are forced by a customer for reasons of urgency to perform a modification or installation that does not comply with regulations, please ensure that the customer signs a certificate with the following wording:

"The modification on equipment _____was ordered by me_____for operational reasons, despite the technician’s indication that the condition of the equipment no longer complies with regulations. It was pointed out that the equipment must be returned to a serviceable condition as soon as possible."

Work outside the hazardous area

If practical, equipment should be moved to a safe area before commencing work. If such relocation is possible, observe all safety precautions when dismantling and transporting the equipment. This includes vehicles moving equipment from the hazardous area to a non-hazardous area and vice versa.