

# ATS PNEUMATIC USER MANUAL



**ELEPHANT**  
LIFTING PRODUCTS™

**ATS**  
PNEUMATIC

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This operation manual edition 08/2016 covers the following Elephant Lifting Trolleys:

- Manual trolleys
- Reel chain trolleys
- Motorized trolleys
- Low headroom trolleys

And for the running gears of the following hoist systems:

- Synchronized hoists
- Lifting and rotating units
- Monorail hoists
- Ultra-low hoists

It must be read carefully and in its entirety before operating any hoist.

For trolleys with a built-in or suspended hoist, for motorized trolleys and for hoist systems, this manual is only valid together with the operation manual for the respective hoist.

Serial No.

Please enter the Serial No. of your Elephant Lifting Products hoist here.

**THIS MANUAL MUST BE READ BEFORE USING OR REPAIRING THESE PRODUCTS.**

This manual contains important safety, installation, operation, and maintenance and repair information. Make this manual available to all persons responsible for the operation, installation, maintenance and repair of these products.

**Do not use this hoist for lifting, supporting, or transporting people or lifting or supporting loads over people.**

Always operate, inspect and maintain this hoist in accordance with South African Bureau of Standards Specification number SANS1638:2008 pneumatically powered chain hoists and SANS 1639:2010 Reconditioned pneumatically powered chain hoists and any other safety codes or procedures relevant to the industry in which the hoist is being used. Testing of pneumatically powered chain hoists must only be carried out by the competent person contemplated in SANS 1639:2010.

**For Hoists used outside of South Africa:**

It is the responsibility of the owner/user to install, inspect, test, maintain, and operate a hoist in accordance with ANSI/ASME B30.16, "Safety Standard for Overhead Hoists", OSHA regulations. If the hoist is installed as part of a total lifting system, such as an overhead crane or monorail, it is also the responsibility of the owner/user to comply with the applicable ANSI/ASME B30 volume that addresses that type of equipment.

It is the responsibility of the owner/user to have all personnel that will install, inspect, test, maintain, and operate a hoist read the contents of this manual and applicable portions of ANSI/ASME B30.16, "Safety Standard for Overhead Hoists" and OSHA Regulations. If the trolley is installed as part of a total lifting system, such as an overhead crane, the applicable ANSI/ASME B30 volume that addresses that type of equipment must also be read by all personnel.

If the trolley owner/user requires additional information, or if any information in the manual is not clear, contact Elephant Lifting Products or the distributor of the hoist. Do not install, inspect, test, maintain, or operate this hoist unless this information is fully understood.

A regular schedule of inspection of the hoist in accordance with the requirements of ANSI/ASME B30.16 should be established and records maintained.

## **Preface**

Elephant Lifting Products warrants to the user its hoists, and other products to be free from defects in material and workmanship for a period of one year from the date of purchase.

Elephant Lifting Products will repair, without cost to the user, any product found to be defective, including parts and labour charges, or at Elephant Lifting Products option, will replace such products or refund the purchase price less a reasonable allowance for handling in exchange for the product. Repair and replacements are warranted for the remainder of the original warranty period.

If any product proves defective within its original one year warranty period, it shall be returned to Elephant Lifting Products with proof of purchase and the original test certificate.

This warranty does not apply to products which Elephant Lifting Products has determined to have been misused or abused, improperly maintained by the user, or where the malfunction or defect can be attributed to the use of non-genuine Elephant Lifting Products parts.

Elephant Lifting Products makes no other warranty and its maximum liability is limited to the purchase price of the product and in no event will Elephant Lifting Products not be liable for any consequential, indirect, incidental or special damages of any nature arising from the sale or use of the product whether based on contract or otherwise.

It is Elephant Lifting Products policy to promote safety of all persons and equipment in the workplace. All equipment manufactured is thoroughly checked, packed and inspected before dispatch. Any loss or damage which occurs during shipment while en-route must be reported to Elephant Lifting Products immediately. Should any item be delivered to you in apparent good condition, but upon opening the container, loss or damage has taken place while in transit; notify Elephant Lifting Products immediately. Should any items be delivered back to Elephant Lifting Products all transport costs will be for the account of the user.

These instructions are prepared by Elephant Lifting Products for the purpose of maintenance, repair and the use of its air hoists.

No responsibility for failure of equipment due to manufacturing procedure will be assumed if these instructions are not carried out. Only original Elephant Lifting Products supplied spares are to be used in all repairs.

## Safety Information

This manual will refer to existing legal requirements and engineering practices as known when this document was written. Should any such legislation or practices change or be “enlarged” upon then due consideration must be taken. Various standards have been used to assist in compiling this document and will be listed where applicable.

The use of powerful lifting equipment is subject to certain hazards that cannot be overcome by mechanical means but only by the exercise of intelligence, care and common sense. It is therefore essential that personnel involved in the use and operation of equipment must be competent, careful, physically and mentally qualified, and trained in the safe operation of equipment and the handling of the loads. Serious hazards are overloading, dropping or slipping of the load caused by improper hitching or slinging, obstructing the free passage of the load and using equipment for a purpose for which it was not intended or designed. The above can lead to fatal consequences.

Operators of Elephant Lifting Products Hoists are also under obligation to ensure safe and hazard-free operation. This can be achieved through the following measures:

- Keep the operation manuals available at the hoist operating site,
- Performing regular training,
- Performing regular inspections (at least once annually),
- Implement an inspection log and make regular entries,
- And regularly check personnel for safety and hazard awareness during work.

Elephant Lifting Products fully realizes the importance of proper design factors, minimum and maximum sizes and other limiting dimensions of the chain and its fastenings, sprockets and similar equipment all of which are designed with safety in mind.

The various conditions of the equipment or material can vary depending on the environment they are used in which may cause corrosion or wear and any other variables that may arise in each individual application. It is in the light of this that the hoist be maintained and repaired under the supervision of a competent person:

1. Who is qualified by virtue of his knowledge, training, skills and experience to organize the work and its performance?
2. Who is familiar with the legal requirements which apply to the work to be performed?

3. Who has been trained to recognize any potential or actual danger to health and safety in the performance of the work?

The instructions given in this manual must be interpreted accordingly and sound judgment used in determining their application.

This operation manual is intended to help the operator to become familiar with Elephant Lifting Products trolleys and how to use them properly.

This operation manual contains important information for the safe, proper and efficient operation of Elephant Lifting Products Air hoists. Observance of the manual helps to avoid hazardous situations, to reduce repair costs and downtimes and to ensure the specified service life of the Elephant Lifting Products Air Hoists.

Always keep the manual readily available at the location where the Elephant Lifting Products trolley is being used.

All persons charged with operating, maintaining or repairing Elephant Lifting Products trolleys must read and follow the instructions in this manual.

### **Danger, Warning, Caution and Notice**

Throughout this manual there are steps and procedures which, if not followed, may result in an injury. The following signal words are used to identify the level of potential hazard.

#### **DANGER**

Danger is used to indicate the presence of hazard which will cause **severe** injury, death or substantial property damage if the warning is ignored.

#### **WARNING**

Warning is used to indicate the presence of a hazard which **can** cause **severe** injury, death, or substantial property damage if the warning is ignored.

#### **CAUTION**

Caution is used to indicate the presence of a hazard which **will** or **can** cause minor injury or property damage if the warning is ignored.

#### **NOTICE**

Notice is used to notify people of installation, operation, or maintenance information which are important but not hazard-related.

## Safety Summary

### WARNING

- **Do not use this trolley or any equipment attached to it for lifting, supporting, or transporting people or lifting or supporting loads over people.**
- **Elephant Lifting Products series of trolleys are designed to provide a MINIMUM of 5 to 1 safety factor. It is the responsibility of the customer to ensure that the structure to which the hoist is attached and any load attaching devices are capable of handling the static and dynamic loads imposed on the structure by the hoist and its attachments when lifting the rated load. If in doubt, consult a registered professional structural engineer.**

### NOTICE

- **Lifting equipment is subject to different regulations in each country. These regulations may not be specified in this manual.**
- **Whenever a conflict arises between the contents of this manual and any other applicable legislation, standard or procedure, the more stringent of the two must be applied.**

The Occupational Health and Safety Act and Mine Health and Safety Act and other recognized safety sources make a common point: Employees who work near cranes or assist in hooking on or arranging a load should be instructed to keep out from under the load. From a safety standpoint, one factor is paramount: conduct all lifting operations in such a manner that if there were an equipment failure, no personnel would be injured. This means keep out from under a raised load and keep out of the intended path of any load.

**Elephant Lifting Products** industrial and mining air hoists are manufactured in accordance with the latest ISO9001 standards.

The Occupational Safety and Health Act of 1993, section 10 states:

10. (1) Any person who designs, manufactures, imports, sells or supplies any article for use at work shall

Ensure, as far as is reasonably practicable, that the article is safe and without risks to health

when properly used and that it complies with all prescribed requirements.

- (2) Any person who erects or installs any article for use at work on or in any premises shall ensure, as far as is reasonably practicable, that nothing about the manner in which it is erected or installed makes it unsafe or creates a risk to health when properly used.
- (3) Any person who manufactures, imports, sells or supplies any substance for use at work shall –
  - (a) ensure, as far as is reasonably practicable, that the substance is safe and without risks to health when properly used; and
  - (b) take such steps as may be necessary to ensure that information is available with regard to the use of the substance at work, the risks to health and safety associated with such substance, the conditions necessary to ensure that the substance will be safe and without risks to health when properly used and the procedures to be followed in the case of an accident involving such substance.
- (4) Where a person designs, manufactures, imports, sells, or supplies an article or substance for or to another person, and that other person, and that other person undertakes in writing to take specified steps sufficient to ensure, as far as is reasonable practicable, that the article or substance will comply with all prescribed requirements and will be safe and without risks to health when properly used, the undertaking shall have the effect of relieving the first mentioned person from the duty imposed upon him by this section to such an extent as may be reasonable having regard to the terms of the undertaking.

It is the owner's and user's responsibility to determine the suitability of a product for any particular use. It is recommended that all applicable industry, trade association and legislation be checked. Read all operation instructions and warnings before operation.

This manual has been produced by **Elephant Lifting Products** to provide agents, fitters, and company personnel with the information required to install, operate, maintain and repair the products described herein.

It is extremely important that fitters and operators be familiar with the servicing procedures of these products,

or similar products, and is physically capable of conducting the procedures. These personnel shall have a general working knowledge that includes:

1. Proper and safe use and application of fitter's common hand tools as well as special or recommended tools.
2. Safety procedures, precautions and work habits established by accepted industry standards.

**Elephant Lifting Products cannot** know of, nor provide all the procedures by which product operations or repairs may be conducted and the hazards and/or results of each method. If operation or maintenance procedures not specifically recommended by the manufacturer are conducted, it must be ensured that product safety is not endangered by the actions taken. If unsure of an operation or maintenance procedure or step, personnel should place the product in a safe condition and contact supervisors and/or the factory for technical assistance.

## **Identification**

The nameplate mounted on the side plate identifies the type of Elephant Lifting Products trolley and contains important rating data.

If you have any questions concerning the operation of Elephant Lifting Products trolleys which are not addressed in this operation manual, please contact us at the following address:

Elephant Lifting Products  
38381 N. Robert Wilson Rd.  
Gonzales, Louisiana, 70737  
Phone: (888) 844-6113  
Fax: (225) 644-6695  
e-mail: sales@elephantlifting.com

## **Main Components**

Elephant Lifting Products trolleys and running gears consist of the following main components:

- 1 Side plates
- 2 Rolling wheels
- 3 Distance spacers
- 4 Load bolts/clevis load bar
- 5 Air motor drive, reel chain drive (fore running wheels or rack and pinion  
Exception: no drive with manual trolleys.

## **Product Description**

To traverse loads, Elephant Lifting Products air hoists can be suspended or built into Elephant Lifting Products trolleys.

The air hoist is suspended with its upper hook in the load bolt or load eye of the trolley.

Built –in means that the hoist is rigidly mounted into the trolley by means of a twist-proof load eye.

Elephant Lifting Products lifting gear and low headroom trolleys have this rigid connection only. For ultra-low (UL) configurations please see the UL Installation and operation manual.

Elephant Lifting Products trolleys are moved according to their construction:

- Manual trolleys by pushing or pulling by hand (on hooks and/or load)
- Reel chain trolleys by alternatively unwinding the reel chain
- Motorized trolleys by actuating the control of the traversing motor

The operating pressure of the traversing motors is adapted in accordance with the operating pressure of the corresponding hoist (see nameplate). Elephant Lifting Products trolleys are designed in accordance with DIN15018 and correspond to stress group B4, lifting group H2. They are suitable for girders according to DIN 1025 or similar types of girder.

The track width of the trolleys above 2 tons carrying capacity is adjusted to the girder profile given by you in the order sheet.

**Note:** The track width of some Elephant Lifting Products trolleys can be adjusted within a certain range. If you want to use your trolley on a girder profile different to the original one, please contact us.

Elephant Lifting Products trolleys are fitted with anti-climb and anti-drop devices.

These form-fitting devices are additional safety measures and prevent the trolley from falling down irrespective of the function of the running wheels and from climbing up the girder flange.

The possible curve radius can be seen in the attached technical data sheet.

Special Elephant Lifting Products trolley models can be delivered with:

- Extra low height for low headroom trolley
- Rack-and-pinion drive for form-fitting power transmission
- Locking device for fixing in a certain position
- Two travel speeds
- Infinitely variable travel speed

- Pneumatic end switches for limiting the movement increased spark protection (as described below) in case of especially high requirements for explosion protection
- Cleaning of the exhaust air by filter silencers
- Throttle control for reducing the maximum travel speed

## **Intended Use**

Elephant Lifting Products trolleys in combination with Elephant Lifting Products hoists are intended to be used exclusively for lifting and lowering loads and for their horizontal movement above floor.

Any other use or use outside these stipulations is deemed to be impermissible. For applications requiring this type of use please consider the Elephant Lifting Products range of winches and the Elephant Lifting Products Rigga range of hoists. Elephant Lifting Products cannot be held liable for any damage resulting from incorrect usage. The entire risk is borne by the operator.

The following situations, among others, are regarded as improper use:

- Exceeding the permitted load-carrying capacity
- Oblique pulling of loads
- Sliding loads
- Detaching, dragging or pulling of loads
- Catching of falling loads
- Carrying people
- Jog control over longer distances
- Switching to the opposite direction with load in motion
- Operation reaching of the end stop

See also **Rules for the safe operation of trolleys**, page 28.

Intended use also includes observance of the operation manual and compliance with the inspection and maintenance conditions.

## **Operating Conditions**

Elephant Lifting Products Air Hoists are extremely robust and require little maintenance. They are suitable for use in explosion-hazardous areas (see rating on hoist for details), as well as in areas with increased concentrations of soot and dust, high humidity and at ambient temperatures of – 20° C up to approx. + 70° C if they are not heated above this level due to external influences. The thermal endurance of chains and hooks is + 150° C.

## **CAUTION**

When touching metallic hand controls which are colder than 0° C, skin could freeze within a few seconds, and at temperatures above 43° C, burns may occur. As a protective measure, please wear suitable gloves.

For stationary outdoor operation, hoists must be protected against weathering and the maintenance intervals must be shortened.

Depending upon the version, Elephant Lifting Products Air Hoists must be operated at a system pressure of 4 bar or 6 bar (see information on the nameplate). If the system pressure is too low, important functions of the hoist will be impaired:

- The brake will drag and is thus subject to a high degree of wear. An impermissibly high degree of warming could take place.
- The controls become noticeably less sensitive.

## **DANGER**

### **Warning against excessive system pressures**

Operating with excessive system pressures results in danger due to overloading. Therefore, the pressure must be limited to that specified on the nameplate.

Elephant Lifting Products Air Hoists must be operated with a sufficiently clean and dry air supply. The air supply must fulfil the following quality requirements:

- Particle size less than 40 µm
- Particle density less than 10 mg/m<sup>3</sup>  
(corresponds to Class 7 in accordance with ISO 8573-1:2001)

Order to provide adequate compressed air quality, operation with a service unit is recommended. Usually an oiler is not required in the service unit, as the motor is provided with internal permanent lubrication.

Also see **Lubricants**, page 26.

- Pressure dew point at least 10° C below the lowest expected ambient temperature

### **Do not operate Elephant Lifting Products Air Hoists with other gases.**

With moist air and ambient temperatures at or below 0° C, there is danger of icing in the motor. Icing can be prevented by:

- The use of an upstream air dryer or using a service unit with oiler,



- Adding anti-icing agent to the lubrication oil (depending upon moisture content of compressed air),
- Or using air motor oil (Art. No. 11900) with anti-icing agent for relevant temperatures.

- Always store the hoist in a no load condition.
- Wipe of all dirt and water.
- Oil the load chain, hook pins and hook latch.
- Store the hoist in a clean dry environment.
- Before returning the hoist to service, follow instructions for hoists not in regular service in the “INSPECTION” section.

## **Transport and Storage**

### **Safe Transportation**

If you wish to transport your Elephant Lifting Products Air Hoist to another site, please observe the following points:

- Carefully dismount trolley.
- Set the entire hoist down carefully; do not allow it to drop. For weights see **Technical data**, page 45.
- Lay control and supply hoses together in such a way that they are not kinked.
- Please ensure that the controls are not damaged. (Risk of malfunction).
- Reel in the hoist chain in such a way that loops cannot form and the chain cannot become twisted.
- Secure the chain.

### **Storage Conditions**

#### **Breaks in Operation**

- In the case of longer operational breaks, coat the chain and hook with a light oil film.
- Motor conservation: if the motor lubrication is not renewed at the specified intervals, a protective coating must be applied to the motor. For this purpose, use a non-resinous and non-sticky conserving oil with a conserving protection duration which corresponds to the length of the planned operational break.

➤

#### **Storage**

- If the hoist is to be stored for a long time, spray anti corrosion spray or SAE 10W or 27-32 centistoke oil into the air inlet port and run the hoist slowly for a few seconds. This will compensate for the slight delay of the oil coming from the lubricator, and stop moisture rusting the bearings.
- Plug hoist air inlet port.

## **Initial Operation**

The four most important aspects of hoist operation are:

1. Follow all safety instructions when operating hoist.
2. Allow only people trained in safety and operation of this product to operate hoist.
3. Subject each hoist to a regular inspection and maintenance as outlined in this manual under the section ‘Inspection’.
4. Be aware of the hoist capacity and weight of load at all times.

Operators must be physically competent. Operators must have no health condition which might affect their ability to act, and they must have good hearing, vision and depth perception. The hoist operator must be carefully instructed in his duties and must understand the operation of the hoist, including a study of manufacturer’s literature. The operator must thoroughly understand proper methods of hitching loads and should have a good attitude regarding safety. It is the operator’s responsibility to refuse to operate the hoist under unsafe conditions.

### **Mounting the Trolley**

**DANGER**

Elephant Lifting Products trolleys must only be installed by qualified personnel. Faulty installation can lead to serious accidents.

**CAUTION**

The trolley girders for Elephant Lifting Products trolleys must be able to safely withstand the expected forces.

The calculation of the static load and the selection of the girder profile are the responsibility of the operator. The carrying capacity of the suspended/built-in hoist must not be bigger than the capacity of the trolley.

Dynamic tractive forces have to be considered.

Elephant Lifting Products trolleys are designed for running girder profiles in accordance with DIN 102 or similar profiles.

There must be sufficient room for the trolley to move freely along the whole of the track. For example there should be no screw heads, clamping plates, web plates or other similar items in the way. Please bear in mind that the side plates of our trolleys could extend over the upper edge of the girder, especially if the girder is particularly small. If this is the case, the girders must be suspended or mounted so that they are self-supporting in order not to interfere with the movement of the trolley.

Unhindered movement of the attached energy supply system must be ensured along the trolley's path.

Please supply adequate working tools.

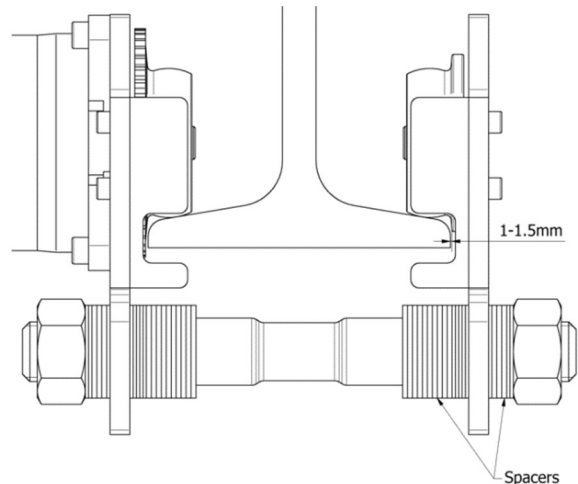
Please look for a safe place for the mounting personnel.

The control hoses on the motor side leading to the control valve should only be connected after having mounted the trolley to avoid damage (see the section **Connecting the control hoses**, page 25).

### **Mounting Motorised Trolleys or Monorail Hoists**

For adjustable trolleys and hoists, the wheel spacing, and bottom block width need to be set prior to mounting the hoist/trolley on the beam. The crossheads with adjustment will have washers and bushes that allow for fine enough adjustment of the spacing. By adding or removing washers from both sides (and fitting "spacers" on the outside of the trolley/bottom block), set the hoist to allow 1 to 1.5mm between the wheel flange and the beam flange. See figure below. Where adjustable bottom blocks are used, apply the same method to allow 1 to 1.5mm clearance on the bottom block inner member to the

beam flange. Ensure that all lock nuts or end caps are properly secured before using the hoist/trolley.



### **Mounting Trolleys with Clevis Load Bar into Girders with Open Ends**

By screwing in the clevis load bar, both side plates are brought to a distance that is approx. 28 mm larger than the bottom flange width of the girder for manual trolleys and approx. 36 mm larger for motorized and reel chain trolleys.

The running gear can now be mounted into the track girder by pushing the running gear onto the girder so that the running wheels roll on the bottom flange. After mounting, the clearance between the outer edge of the bottom flange of the girder and the wheel flange must be between 1 and 1.5 mm on either side.

## **DANGER**

At the largest girder width, the clevis load bar must be at least flush with both side plates on the outside.

### **Mounting Trolleys with Clevis Load Bar into Girders with Closed Ends**

By turning the clevis load bar, a pre-adjustment takes place to mount the trolley onto the bottom flange of the girder. The trolley is first pushed onto one end with two wheels and then adjusted by turning the clevis load bar so that the opposite wheels are also placed on the bottom flange. After mounting the trolley, the clearance between the outside edge of the bottom flange of the girder and the wheel flange should be set to between 1 and 1.5 mm on either side.

## DANGER

Incorrect suspension/loading of the load bar, i.e. over the flat cross-section, causes danger of fracture and is therefore not permissible.

### Correct:

After the running gear width has been adjusted, the clevis of the load bar must be positioned to the girder as shown in figure 6. The load hook of the lifting equipment can now be attached to the clevis.

## DANGER

Do not drop lifting equipment; equipment should always be placed properly onto the floor.

### Mounting Trolleys with Load Bolt (Over 2 tons Carrying Capacity) into Girders with Open Ends

- Mount the trolley at one end of the girder. For rack-and-pinion drive, the drive pinion is to be lowered first in order to be released from the rack and pinion.
- Secure both ends of the girder with end stops to prevent the trolley from falling. They must be designed for the impact load occurring in the event of a collision, with full load and full speed.
- The end stops have to be equipped with a buffer. We recommend our clamping buffers. For rack-and-pinion drive, engage the drive pinion (see section Adjusting the rack-and-pinion drive).
- The hexagonal nuts **1,2** of the distance spacers **3** and the load bolt **4** at the rear side plate **6** have to be loosened so far that the trolley can be pushed over the bottom flange of the girder. If necessary, the rear side plate including the outer distance washers **7** have to be completely dismantled. For rack-and-pinion drive, the drive pinion is to be lowered first in order to be released from the rack and pinion.
- In the case of running gears without distance spacers, the retaining rings must be removed from the hexagonal nuts **2** of the load bolts and the hexagonal nuts **2** at the rear side section must be loosened so far that the trolley can be pushed over the bottom flange of the girder. If necessary, the rear side plate must be completely dismantled.

- Position the trolley (possibly including the hoist) with running wheels of the front side plate on the bottom flange of the girder.
- Thread on and tighten the rear side plate using washer sets (see section **Screw retainers and torques**, page 43).

### ATTENTION!

Please pay attention to the position and number of the locking rings and distance washers that fasten the hoist to the middle of the trolley.

- Connecting the controls (see the section **Connecting the controls**, page 25). For rack-and-pinion drive, engage the drive pinion (see section Adjusting the rack-and-pinion drive).

After mounting please check

- The clearance between the outer edge of the girder flange and the wheel flange. It should be between 2 and 3 mm on either side.
- The position of the anti-tipping device on the rear plate. It should have a clearance of approx. 1 mm to the underside of the girder.
- The fit and position of the end stops.

### Adjusting the Rack-And-Pinion Drive

The rack-and-pinion drive may be moved vertically if the retaining bolts are loosened. This feature allows for the adjustment of the flank clearance. It also offers the option of releasing the engagement into the rack and pinion.

After mounting the trolley with the rack-and-pinion drive disengaged, the flank clearance must be adjusted.

In case of more than one drive on a running gear, one drive must be engaged first as described. To engage additional drives, the pinion must be brought into a suitable position with respect to the rack. Afterwards, the engagement is to be adjusted as described.

### Connecting the Controls

#### Connecting the Control Hoses

In case the control device is delivered separately, for your guidance short hose pieces have been put into the plug-in connections at the factory. Their colour or numbering corresponds to that of the hoses to be connected, enabling you to connect the hoses one after the other.

## Removing the Hose Pieces

- Press down the locking ring **1** with a suitable tool (for example screwdriver), pulling out the hose piece **2** at the same time.

- 1** Air connection on the left
- 2** Main air connection
- 3** Air connection 2<sup>nd</sup> travel speed
- 4** Control port on the right

### ATTENTION!

Please ensure that the hose is not bent when inserted.

- Put the loop of the strain relief (wire rope) into the existing eyebolt.
- Put the end of the corresponding hose into the hole of the corresponding plug-in connection.
- Push the hose in as far as the stop.
- Check the connection by pulling on the hose.

If air escapes from the connection during operation, try to push the hose concerned even further in.

## Connecting to the Main Air Supply

- Check air connection for contamination and clean if necessary.
- Blow through compressed air hose in order to remove foreign bodies.
- Attach the compressed air hose to the connection on the hoist or on the service unity. Tighten the union nut.

## Lubrication

To ensure continued satisfactory operation of the hoist, all points requiring lubrication must be serviced with the correct lubricant at the proper time interval. Correct lubrication is one of the most important factors in maintaining efficient operation.

The lubrication intervals recommended in this manual are based on intermittent operation of the hoist eight hours each day, five days per week. If the hoist is operated almost continuously or more than the eight hours each day, more frequent lubrication will be required. Also, the lubricant types and change intervals are based on operation in an environment relatively free of dust, moisture, and corrosive fumes. Use only

those lubricants recommended. Failure to observe this precaution may result in damage to the hoist and/or its associated components.

1. Coat all motor parts with a light film of SAE 10W or 27 – 32 centistoke or good quality hydraulic oil before assembling.

## CAUTION

- **Do not use automotive type detergent oil. Detergents will de-laminate the motor vanes and cause motor failure.**
2. Apply a coating of grease to all gearing before assembly. Neglect of proper lubrication will lead to bearing failure. The recommended greases are as follows: DIMOL GR-2-EP, CASTROL SHEEROL EP2 and SHELL ALVANIA EP2. If these specific greases are not available use equivalent grease.

## Starting Operation

If the trolley is operating with an Elephant Lifting Products Hoist, the operation manual of the mounted hoist/hoist system has to be observed before putting into operation, the section **Pre-start checks** also applies.

## Inspection

Careful inspection on a regular basis will reveal potentially dangerous conditions while still in the early stages, allowing corrective actions to be taken before the condition becomes dangerous.

Any deficiency revealed through inspection must be reported to an appointed person. A determination must be made as to whether a deficiency constitutes a safety hazard before resuming operation of the hoist.

The results of the inspection must be recorded in the inspection log.

## Inspection before Initial Operation

Hoists mounted into trolleys have to comply with the regulations for the prevention of accidents valid for cranes. Before beginning to use a crane for the first

time and after any major modification before starting to work with it again, it has to be checked by a qualified person. See also ZH1/27 "Principles for the Testing of Cranes".

The test has to include the orderly erection, equipment and the readiness of service, etc. The suitability of operation of the ready-to-operate equipment has to be safeguarded:

- By a dynamic test with 1.1 times the maximum carrying capacity under normal working conditions (lift load just above floor),
- If necessary by a static test with 1.25 times the maximum carrying capacity (with motorized equipment).

Note: The static test is not applicable for hand-operated cranes

During these tests, no permanent deformation (distortion), disturbances of performance or other failures may occur.

As according to BGG (ZH1/27), hoists in trolleys do not represent a ready-to-use installation on delivery; the manufacturer only supplies a declaration of incorporation. EC conformity cannot be issued until the ready-to-operate installation has been checked by an authorized person.

If necessary, further tests on the basis of national regulations have to be executed. In case of testing loads higher than those mentioned in this manual, please contact Elephant Lifting Products.

If the control circuit of the installation allows several movements at the same time, the dynamic test has to be executed with combined movements.

For trolleys with rack-and-pinion drives, sufficient flank clearance (approx. 0.3 mm) must be set between the drive pinion and the rack, along the entire track. If the setting is too close, the drive pinion could be damaged or even break.

## Frequent Inspection

On hoists in continuous service, frequent inspection should be made at the beginning of each shift. In

addition, visual inspections should be conducted during regular service for any damage or evidence of malfunction.

### 1. Operation.

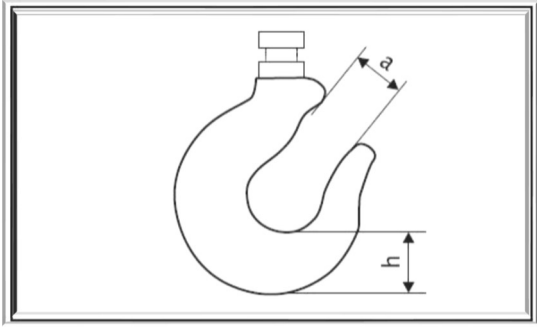
Check for visual signs or abnormal noises (grinding etc.) which could indicate a potential problem. Make sure all controls function properly and return to neutral when released. Check chain feed through the chain guides and undercarriage. If chain jams, wedges, jumps are excessively noisy or "clicks", clean and lubricate the chain. If problem persists replace the chain sprockets or chain guide. Do not operate the hoist until all problems have been corrected.

### 2. Hooks.

Check for wear or damage, increased throat width, bent shank or twisting of the hook. Replace hooks which exceed the throat opening specified in Table 2 or exceed a 10 degrees twist (see Figure 4). If the hook latch snaps past the tip of the hook, the hook is sprung and must be replaced. Check hook support swivels for excessive clearance or damage. Ensure they swivel easily and smoothly.

HOOK RATING	Maximum permissible hook opening dimension "a" (mm) **	Minimum permissible height dimension "h" (mm)
0.5 – 2 Ton	31	25.6
3 Ton	35.7	36.1
5-6 Ton	46	44.7
10 Ton	50.4	58.9
16 Ton	66	67
20 Ton	87	80
25 Ton	97	94
50/60Ton	112	132

\*\* If safety catch fitted, subtract the thickness of the safety catch from the maximum hook opening dim "a"



**Hook dimensions and wear limits**

**3. Hook Travel Buffers.**

The hook travel buffers are securely attached to either end of the load chain. When functioning as hook travel limits they operate in conjunction with the load limiter which stops the air motor when pulled against the hoist. If the buffers are pulled against the hoist and the hoist stops, release the controls and listen for the sound of the load limiter valve resetting as it exhausts a small amount of air.

**4. Air System.**

Visually inspect all connections, fittings, hoses and components for indication of air leaks. Repair any leaks found.

**5. Controls.**

During operation of the hoist, check the response of the hoist to the pendant is smooth and not sticky. Ensure that the control handle switches to its maximum position in both directions. The control handle must return to neutral when released. If hoist responds slowly or movement is unsatisfactory, do not operate hoist until all deficiencies have been corrected. If fitted with an E-Stop button, ensure when activated hoist does not operate.

**6. Hook Safety Latch.**

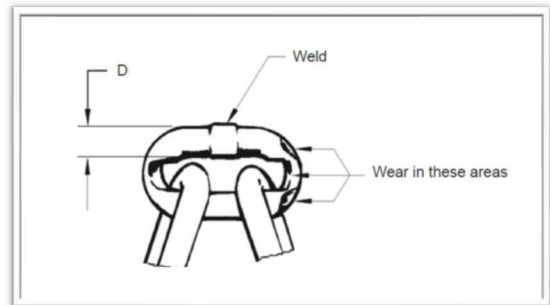
Make sure the hook safety latch is present and operating properly. Replace if necessary.



- **Do not use hoist if hook safety latch is missing or damaged**

**7. Load Chain.**

Examine each of the links for bending, cracks in weld areas or shoulders, traverse nicks and gouges corrosion pits and chain wear, including bearing surfaces between chain links (see figure 5). Replace a chain that fails any of the inspections. Check chain lubrication and lubricate if necessary. Refer to "LOAD CHAIN" in "LUBRICATION" section.



- **The full extent of load chain wear cannot be determined by visual inspection. At any indication of load chain wear inspect chain and chain wheel in accordance with instructions in "Periodic Inspection".**

**8. Load Chain Reeving.**

Ensure welds on upright links are away from driven load sheave. Reinstall chain if necessary. Make sure chain is not twisted or kinked. Adjust as required.

**Daily Inspection for Machines Operated in Corrosive Environments**

If the machine operating environment is at all corrosive, a more in depth daily inspection should be undertaken; All exposed bearings should be checked to see if they rotate freely. Unshielded bearings and exposed, untreated steel should be well greased. If the machine has a roller chain for 2-wheel drive, this should be kept well lubricated.

## **Operation**

### **Rules for the Safe Operation of Trolleys**

In addition to the rules listed in the operation manual for Elephant Lifting Products air hoists and Elephant Lifting Products monorail hoists, the following rules have to be observed:

If several trolleys are working together, the customer has to set up the conditions for safe operation.

If the local conditions or the work to be performed make it necessary, the customer has to define operating instructions.

Maintenance and inspection work may only be performed once the people in charge are convinced that the trolley and the hoist/monorail hoist are cut off from the energy supply and that measures have been taken to prevent the unauthorized supply of energy.

The same applies to maintenance work and any changes in case personnel in the working area of the trolley may be exposed to danger. If there is a danger that parts may fall down, the corresponding area has to be barricaded and protected by guards. Other risks from neighboring installations also have to be safeguarded against. After completion of the work, operation may only recommence following release by the operator. Before release, the operator must be convinced that all work has finally been completed, that the whole trolley including hoist/hoist system is in a safe condition again, and that all personnel involved have cleared the installation.

See also “Rules for the safe operation of hoists” in the operation manual **Air hoists/monorail hoists**.

If components other than Elephant Lifting Products components are used, danger may occur. Such an application can only be allowed after having received Elephant Lifting Products agreement.

### **Controls**

#### **Pilot Pendant Control**

The hoist is operated via a two button pilot pendant control. The two buttons control the lifting and lowering of the hoist. For hoists mounted on motorized trolleys a four button pilot pendant control is supplied which controls the horizontal movement of the trolley

in addition to the lifting and lowering of the hoist. The pilot pendant control allows for precise spotting and variable speed control and has arrows indicating the direction of movement of the lower hook and the trolley. The harder the pendant buttons are pressed the faster the hoist or trolley will operate. When the buttons are released, the control valve shuts off the air supply to the hoist thereby applying the brake and stopping the hoist.

### **Emergency Stop**

The E and F controls that are designed for the EU are fitted with an emergency stop button. The same design is available on demand for customers outside EU.

The emergency stop button, when pressed, locks in the down position and halts the motion of the trolley. All other pushbuttons are then inoperable. The emergency stop can be released once the danger has been eliminated. Operation of the trolley using the pushbuttons can only take place after this has been done.

- In the event of a hazard, press down firmly on the red EMERGENCY STOP button.
- Once the hazard has been removed, turn the emergency stop button slightly to the right to release it. It jumps back into place.

### **Taking out of Operation**

#### **Shutting Down**

If the hoist is to be taken out of operation for a longer period of time it must be protected against corrosion and dirt.

- Coat the chain and hook with a light oil film.
- Move the load hook out of the lifting area, in order to avoid hazardous situations.
- Do not move against the lifting and lowering limiters/buffers (emergency end stop devices).
- Depressurise the air line.

### **Dismantling**

**DANGER**

Elephant Lifting Products Air Hoists must only be dismantled by qualified personnel.

## **WARNING**

**Disconnect the air supply hose before performing any maintenance or repairs on this hoist.**

1. Check fault list for problem solving.
2. Do not disassemble the hoist any further than necessary to replace or repair damaged parts, unless major service is due.
3. Whenever grasping a component in a vice, always use aluminum covered or copper covered vice jaws to protect the surface of the component and help prevent damage. This is particularly true of threaded members and housings.
4. Do not disassemble this hoist unless you have a complete set of new gaskets, O-rings and seals on hand for replacement. These are available in the Overhaul Seal and Gasket Kit and parts list.
5. Do not attempt to recondition by washing out sealed bearings. We recommend that all bearing, vanes & O-rings be replaced when the hoist is reassembled.

### **Dismantle of the Control Valve (Pilot Pendent Control)**

1. If the hoist has a pendent control, remove the three pendent control hoses.
2. Unscrew the four bolts attaching the control valve to the motor housing. Remove the control valve from the hoist. Remove the gasket.
3. Examine all components for wear, replacing damaged or worn components. Replace all gaskets and O-rings before re-assembly.
4. Remove all sharp edges and burrs from components. Wipe all components with SAE 10W oil before re-assembling in the reverse order to stripping.

### **Disposal**

Elephant Lifting Products Hoists contain a range of materials which, on expiry of the service life, must be disposed of or recycled where appropriate, in accordance with statutory regulations.

Please note the following list of materials used:

#### **Hoist**

- Ferrous materials
  - Steel
  - Nodular cast iron
- Non-ferrous metals
  - Bronze
- Plastics
  - Polyethylene
  - Polyurethane
  - Polyamide
  - Natural rubber
  - Epoxy resin
  - Polyacetal
  - Thermoset moulding compound (Asbestos-free brake lining)

#### **Filter Silencer/Service Unit:**

- Zinc die cast
- Brass
- Nitrile rubber
- Aluminium
- Polypropylene
- Polyurethane
- Glass-fibre reinforced plastic
- Steel
- Polyacetal
- Polyethylene



## **Maintenance**

### **Maintenance and Inspection Intervals**

Elephant Lifting Products trolleys are extremely robust and require little maintenance. Compliance with maintenance and inspection intervals is of great importance, in order that the trolleys operate safely and reliably over a period of many years. If the trolley is being operated in a harsh environment that leads to accelerated wear, then the intervals should be reduced.

### **CAUTION**

Maintenance work on Elephant Lifting Products trolleys must only be performed by trained and qualified personnel.

In the case of maintenance work exceeding normal service and maintenance, please contact Elephant Lifting Products.

For information regarding qualification of maintenance personnel, see the section **Personnel safety**, page 5.

### **Cleaning and Care**

If your Elephant Lifting Products trolley has to work in dirty surroundings, remove coarse dirt from the trolley.

### **Spare Parts**

If, during repair work, the replacement of components is necessary, only original Elephant Lifting Products spare parts may be installed.

### **Inspection and Repairs**

Elephant Lifting Products recommends two types of inspection:

- a) The frequent inspection performed by the operator as pre-work inspection.
- b) The periodic inspections performed by personnel trained in the operation and repair of this hoist.

Careful inspection on a regular basis will reveal potentially dangerous conditions while still in the early stages, allowing corrective actions to be taken before the condition becomes dangerous.

Any deficiency revealed through inspection must be reported to an appointed person. A determination must be made as to whether a deficiency constitutes a safety hazard before resuming operation of the hoist.

### **Records and Reports**

An inspection record should be maintained for each hoist, listing all points requiring periodic inspection. A written report should be made monthly on the condition of the critical parts of each hoist. These reports should be dated, signed by each person who performed the inspection, and kept on file where they are readily available to authorized personnel.

### **Periodic Inspection**

Frequency of periodic inspection depends on the severity of usage:

NORMAL	HEAVY	SEVERE
Yearly	Biannually	Quarterly

### **NOTICE**

- **Please note the requirements of the Occupational Health and Safety Act of South Africa (Act 85 of 1993), Driven Machinery (Regulation 18) Lifting Machines and Lifting Tackle regarding the examination and testing of lifting machines and lifting tackle.**

Disassembly may be required for HEAVY or SEVERE usage. Keep accumulative written records of periodic inspections to provide a basis for continuing evaluation. Inspect all the items in "Frequent Inspection". Also inspect the following:

#### 1. **Fasteners.**

Check cap screws and nuts. Replace if missing or tighten if loose.

#### 2. **All Components.**

Inspect for wear, damage, distortion, deformation and cleanliness. If external evidence indicates the need, disassemble. Check gears, shafts, bearing, load sheaves, chain guides, springs and covers. Replace worn or damaged parts. Clean, lubricate and reassemble.

#### 3. **Hooks.**

Inspect hooks carefully for cracks using magnetic particle or other suitable non-destructive testing methods. Inspect hook swivels. Tighten swivel bolts if necessary.

**4. Load Sheaves.**

Check for damage or excessive wear. Replace if necessary. Observe the action of the load chain feeding through the hoist. Do not operate a hoist unless the load chain feeds through the hoist and undercarriage smoothly and without audible clicking or other evidence of jamming, wedging or malfunctioning.

**5. Motor.**

If performance is poor, disassemble the motor and check for wear or damage to bearings, vanes, cylinder end plates and other parts. The parts should be cleaned, lubricated and reassembled. Replace worn or damaged parts.

**6. Brake.**

Raise a load equal to the rated capacity of the hoist about 200mm off the floor. Verify hoist holds the load without slipping. If slipping occurs, disassemble. Remove brake disc as described in the "MAINTENANCE" section. Check and clean the brake parts each time the hoist is dismantled. Replace the brake disc if the thickness is less than 5 mm.

**7. Supporting Structure.**

Check for distortion, wear and continued ability to support the load.

**8. Trolley (If equipped)**

Check that the trolley wheels run properly on the beam and that the distance between wheel flanges exceeds the beam flange size by 4.5 to 6 mm. Check that wheels and rail are not excessively worn and inspect the side plates for opening up due to bending. Do not operate the hoist until any problems have been identified and corrected.

**9. Nameplate.**

Check for presence and legibility. Replace if necessary.

**10. Load Chain and Anchors.**

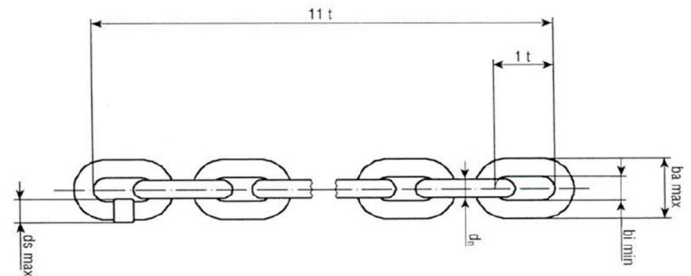
Ensure both ends of the load chain are securely attached to the hook swivel or chain stopper. Secure if loose, repair if damaged, replace if missing.

**11. Load Chain.**

Measure the load chain for wear and stretching as shown below and compare to the allowable limits in Table 3. Take care to take the measurements on that part of the chain which comes into contact with the load sheave most often. If the measurements exceed the maximum values shown below, replace the chain. Always use the load chain recommended by Elephant Lifting Products for the desired application.

Chain d x t	7x21	9x27	11.2x34	13x36	16x45	23.5x66
d <sub>n</sub> min	6.7	8.6	10.8	13.1	16.1	23.8
1t max	21.3	27.4	34.8	36.5	45.5	66.7
11t max	231.7	297.9	378.8	397.4	496.9	730.3
b <sub>i</sub> min	8.4	10.8	14.0	14.9	18.2	27.0
b <sub>a</sub> max	23.6	30.4	38.0	42.9	52.8	76.6
d <sub>s</sub> max	7.5	9.6	12.0	13.9	17.2	24.6

Dimension in mm



**12. Chain Bag / Container.**

Check for damage or excessive wear and that chain container is securely attached to the hoist. Secure or replace if necessary. Ensure correct positioning of the chain bag.

**Hoists Not in Regular Use**

1. A hoist which has been idle for period of one month or more, but less than one year, should be given an inspection conforming with the requirements for "Frequent Inspection" prior to being placed into service.
2. A hoist which has been idle for a period of more than one year should be given an inspection conforming with the requirements of "Periodic Inspection" prior to being placed into service.
3. Standby hoist should be inspected at least biannually in accordance with the requirement of "Frequent Inspection". In abnormal operating conditions hoists should be inspected at shorter intervals.

## Filtration

Should the airline filtration not be integrated into the motor housing a proper high capacity filter is required with a 100 micron screening and should were possible include a water separator. Do not use tap water screens as they pass particles of between 0,25 - 0,50 mm which will cause excessive wear in the motor.

## Testing the Brake (Motorised Trolleys)

Test the brake function daily.

When the pushbuttons of the controls are released, the trolley may not keep running for an unusually long time.

### ATTENTION!

If the trolley keeps running for an unusually long time after braking, the brake has to be repaired.

## Overload Protection

Elephant Lifting Products air hoists have overload protection fitted as a standard feature. Overload protection automatically disables the “UP” lifting operation if the load reaches or is greater than a maximum set load. The maximum load setting is between 110% and 125% of the hoists rated load capacity.

When overload protection is triggered only the “Down” lowering operation can be initiated.

The overload protection can also respond to a load that is less than the max shutoff setting if, for example, a load is abruptly lifted by a slack chain. It is therefore always recommended to take up any slack in the lifting chain prior to attempting to lift the load, and to lift the load slowly and progressively – avoiding “shock” loadings.

In the event that the overload protection triggers under a loading deemed to be below the maximum capacity of the hoist it can be reset by briefly activating the “DOWN” lowering function. It is therefore recommended to always start a lifting cycle by briefly activating the “DOWN” lowering function. After which the “UP” lifting function can be activated.

## Overload Testing

If it is necessary to overload test the hoist, the Overload Protection can be bypassed by removing the locking cap screw.

## DANGER

Once the overload test is complete the locking cap screw must be re-inserted and properly tightened until it seats firmly on the brass washer. The overload protection will not function if air is able to leak past the locking cap screw.

## Adjusting the Overload Protection

If it is necessary to overload test the hoist, the Overload Protection can be bypassed by removing the locking cap screw.

## DANGER

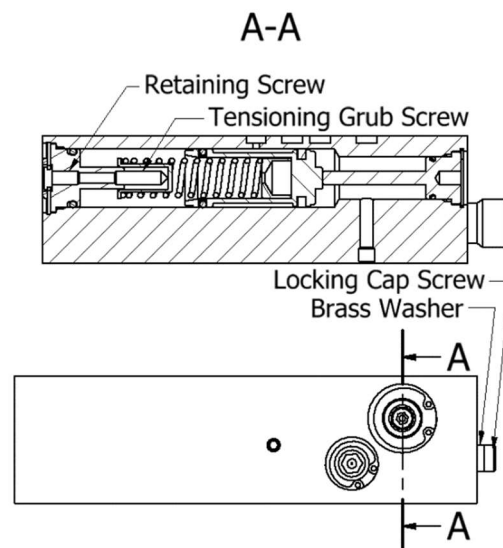
If the overload protection is incorrectly adjusted the hoist may be overloaded – leading to failure of the chain, or other components of the hoist, which may result in dropping of the load.

Follow the below procedure to adjust the Overload Protection:

1. Loosen the retaining screw in order to reach the tensioning grub screw underneath it.
2. Turn the tensioning grub screw to adjust the overload protection setting. Turn the grub screw clockwise to increase the shutoff setting or counter clockwise to decrease the shutoff setting.
3. Replace the retaining screw and tighten it down until flush.

### ATTENTION!

If the retaining screw is not properly tightened down the Overload Protection may function erratically.



## **Troubleshooting**

This section provides the information necessary for troubleshooting the Elephant Lifting Products series of hoists. The troubleshooting guide provides a general outline of problems which could be experienced with normal use of the hoist. It lists the symptom, the possible cause, and the possible remedy for the trouble being experienced.

<b>SYMPTOM</b>	<b>CAUSE</b>	<b>REMEDY</b>
Trolley cannot be moved	EMERGENCY STOP button pressed	If there is no danger, release the EMERGENCY STOP button
	Motor run dry, rotor is stuck	Repair the motor, check the service unit (fill with oil, remove water) or renew grease lubrication
Trolley can only be moved slowly or not at all	Defective control device	Have control device repaired
	Control lines leaking or bent	Have lines repaired
	Motor vanes worn	Replace motor vanes
	Control valve on motor faulty	Have control valve repaired
	Two-way valve in the motor defective	Have shuttle valve repaired
	Air pressure too low	Increase air pressure or hose section
	Plug-in connection of control lines not properly plugged in	Check plug-in connection (try to press hoses in further)
	Track of trolley too narrow	Adjust the clearance between the wheel flange and the outside edge of the bottom flange of the trolley girder
Trolley speed reduces when operated for a long period or the motor stops	Brake piston setting too tight	Correct adjustment of brake piston. At high ambient temperatures, perform adjustment with the motor warmed up accordingly.
Trolley can only be moved slowly or not at all	Brake does not bleed fully	Increase air pressure to 6 bar. Check brake seal for leaks and replace seal if required.
	Brake lining and/or brake piston worn	Replace brake lining and or brake piston.
Trolley is repeatedly blocked at the same place	Tracks are uneven or rail joint displaced	Rectify track faults
	Curve radius too narrow	Increase curve radius

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