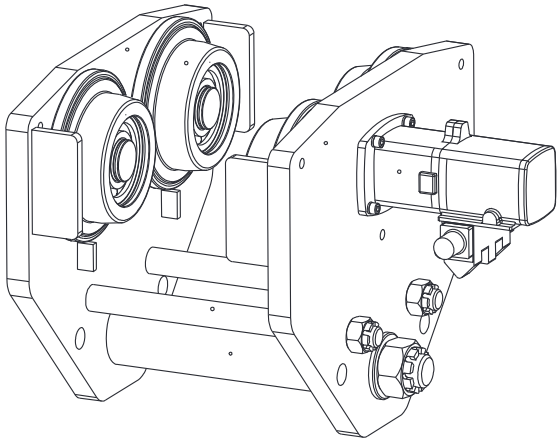
JDN OPERATION MANUAL TROLLEYS



J.D.NEUHAUS

powered by air

This manual, edition 11/2002, covers the operation of the following JDN trolleys:

- ▶ manual trolleys
- ▶ reel chain trolleys
- ▶ motorized trolleys
- ▶ low headroom trolleys

and for the traversing gears of the following hoist systems:

- ▶ synchronized hoists
- ▶ lifting and rotating units
- ▶ monorail hoists
- ▶ ultra low hoists

Before operating any trolley carefully read the entire manual!
For trolleys with built-in or suspended hoist, with motorized trolleys and with hoist systems, this manual is only valid together with the operation manual **"JDN air hoists/JDN monorail hoists".**
The operator has to work in accordance with these manuals.

Fabrication-No.

Please fill in here the fabrication no. of your JDN trolley.

CONTENTS

Please note!

Within the Federal Republic of Germany
operators of trolleys must comply with the currently applicable

- UVV Winches, Lifting and Pulling Devices (BGV D8), and
- UVV Loadcarrying Devices used with Lifting Equipment (BGV D6), and
- UVV Cranes (BGV D6).

Operators must also initiate the prescribed tests.

In all other countries, the operator shall comply with local regulations as applicable.

Additional regulations may apply when incorporating trolleys into other installations or using trolleys in unusual conditions.

SAFETY INSTRUCTIONS

ORGANISATIONAL MEASURES

JDN trolleys are designed in accordance with the state of the art and accepted safety practice.
Nonetheless, the use of a trolley may be associated with the risk of injury or death of the user or of some third party, or with the risk of equipment damage.

All personnel charged with operating the trolley must carefully read and understand the operation manual, especially the present section dealing with safety. This is particularly important when personnel not normally working with trolleys are charged with maintenance, repair or other additional works.

The customer is under obligation to ensure that the trolley is operated in a safe manner. The following measures are requested as a minium:

- keep this manual readily available at the trolley operating site,
- carry out training on trolley operation on a regular basis,
- set up an inspection log and keep it up to date, and
- on a regular basis, check up on the personnel working with the trolley to ensure that this is being used in a safe and proper manner.

PERSONNEL SAFETY

Ensure that only properly trained personnel are entrusted with the operation, maintenance and repair of the trolley.

“Properly trained“ in the present case means that the operator has appropriate training and experience in working with trolleys and is sufficiently versed in occupational safety and accident prevention regulations to be able to determine whether or not it is safe to operate the trolley.

- Follow the applicable regulations for the workplace in question.
- Observe all relevant accident prevention regulations, in particular BGV D8 (Winches, Lifting and Pulling Devices) and BGV D6 (Loadcarrying Devices used with Lifting Equipment).
- Ensure that you are properly informed about any hazardous materials you may be working with.
- Follow the safety instructions given in this manual.

PREVENTING PROPERTY DAMAGE

The customer of JDN trolleys is responsible for ensuring that the inspection log that is delivered with the trolley is correctly used and kept up to date.

- Ensure that the scheduled maintenance is performed as prescribed.
- Do not use the trolley for any purpose other than its intended design use.
- Ensure that the conditions of use as detailed below are met.

PRODUCT INFORMATION

THE OPERATION MANUAL

The present manual is intended to help the operator to learn about JDN trolleys and how to use them properly.

This manual contains information on the safe, proper and economic operation of the JDN trolley. By following this information the risk of a safety hazard, repair costs and machinery downtime can be reduced and the useful lifetime of the trolley can be extended.

Always keep the manual readily available at the location where the JDN trolley is being used.

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

WARNINGS AND SYMBOLS

In this manual warnings about safety are classified in three categories:

DANGER!
Indicates that failure to follow these instructions can cause a hazard to life and limb. The symbol indicates the immediate danger of severe and possibly fatal injuries.

WARNING!
Indicates a situation that could become hazardous. Failure to follow the instructions could result in injuries.

CAUTION!
Indicates that failure to follow instructions could cause equipment damage.

IDENTIFICATION

For exact identification of your JDN trolley you will find the name plate with all important information on the side plate.

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

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58449 Witten-Heven
Germany

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Fax +49 - 2302 - 208286
http://www.jdn.de
e-mail: info@jdn.de

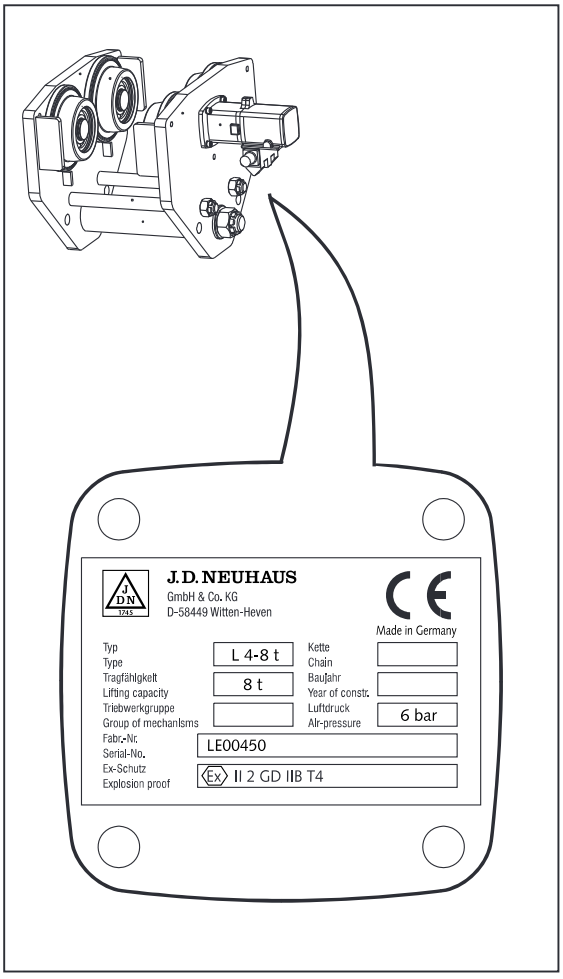

Figure 1: Example of a nameplate, mounted on the side plate

MAIN COMPONENTS

JDN trolleys and traversing gears consist of the following main components:

1 side plates
2 rolling wheels
3 distance spacers
4 load bolts
5 air motor drive, reel chain drive
exemption: no drive with manual trolleys

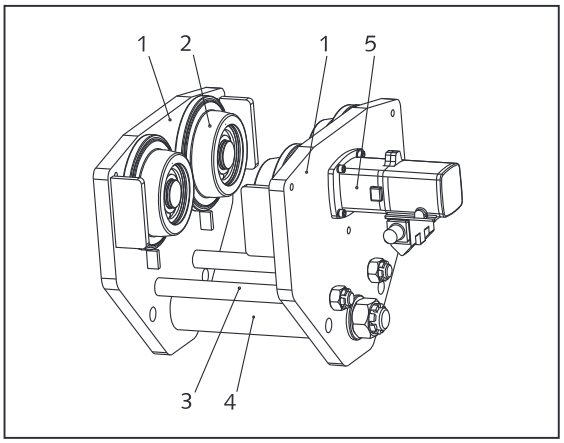

Figure 2: Main components of JDN trolleys (figure shows motorized trolley)

PRODUCT DESCRIPTION

To traverse loads JDN air hoists can be suspended or built into JDN 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.

JDN monorail hoists and low headroom hoists have this rigid connection only.

JDN trolleys are moved according to their construction:

- Manual trolleys by pushing or pulling by hand.
- Reel chain trolleys by alternatively unwinding the reel chain.
- Motorized trolleys by actuating the control of the traversing motor.

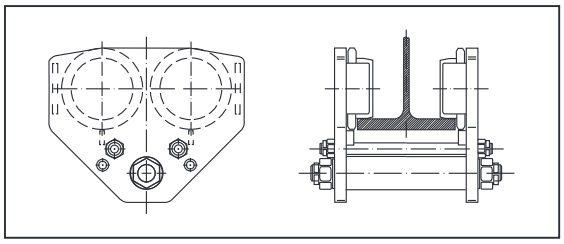

Figure 3: Manual trolley

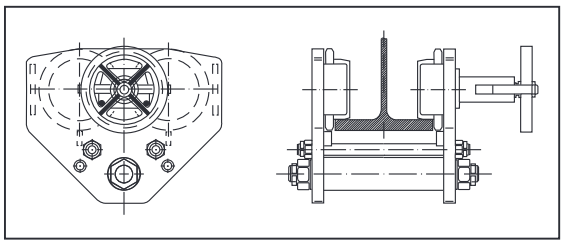

Figure 4: Reel chain trolley

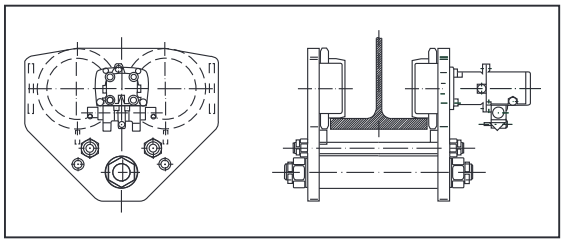

Figure 5: Motorized trolley

The operating pressure of the traversing motors is in accordance with the operating pressure of the corresponding hoists *(see name plate)*.

JDN trolleys are designed in accordance with DIN 15018 and correspond to stress group B 4, lifting group H 2.

They are suitable for I-beams according to DIN 1025 or similar type of beams.
The track width of the trolleys is adjusted to the beam profile given by you in the order sheet.

Remark: The track width of some JDN trolleys can be adjusted within a certain range. In case you want to use your trolley on a beam profile different to the original one, please contact us.

JDN trolleys are fitted with anti-climb and anti-drop devices.

These form fitting devices are additional safety measures and impede that the trolley falls down irrespective of the function of the running wheels and to climb up the beam flange.

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

In special execution JDN trolleys can be delivered with:

- rack and pinion drive for form fitting power transmission
- locking device for positioning in a certain position
- 2-traversing speeds
- infinitely variable traversing speed
- pneumatic end switches for limiting the transversal movement
- increased spark-protection (as described above) in case of especially high requirements for explosion protection
- cleaning of the exhaust air by filter silencers
- suppression of exhaust air for reducing the maximum traversing speed

EXPLOSION PROTECTION

The following information base on the attestation of the DMT Company Gas & Fire Division with regard to the application of JDN hoists, trolleys and cranes in areas with danger of explosion following the European Guideline 94/9/EG[1] ("ATEX 100a"). DMT is certified to test devices and protective systems for its designed use in hazardous areas.

GENERAL EXPLOSION PROTECTION OF JDN PRODUCTS AS STANDARD

JDN air hoists in standard version are devices of category 2 (guideline 94/9/EG, EN 1127-1[2]) to be used in zones 1 and 2 at the presence of gases of explosion group IIA (please also refer to IEC 60079-12[3] and IEC 60079-20[4]). These devices can also be used in zone 2 at the presence of gases of explosion group IIB as long as hydrogen sulphide and ethylene oxide are excluded, furthermore in zones 21 and 22 at the presence of dusts as far as no light metal dusts and dusts sensitive to impacts are present. In zone 1 and 21 frictions and impacts in the working area of the chain have to be excluded.

These devices get the explosion proof marking:
Ex II 2 GD IIA T4(X)/ II 3 GD IIB T4(X).

ADDITIONAL MARK "X"

This spezial mark refers to notes about explosion protection in the Operation Manual.
Ex II 2 GD IIA T4(X)/ II 3 GD IIB T4(X): This marking does not allow the application in the extremely high ignitable media hydrogen sulphide and ethylene oxide nor in light metal dusts and dusts sensitive to impacts.
Ex ... IIC T6(X): This marking allows the application in the media hydrogen sulphide and other materials of temperature class T6 only under special conditions which have to be agreed with the manufacturer and which have to be described in the crane documentation (in Europe: in the crane check book) determinating the maximum surface temperatures of the devices.

JDN HOISTS WITH "INCREASED SPARK PROTECTION"

JDN hoists in the version "with increased spark protection" (FS) fulfil further requirements of the explosion protection. They can be used in all gases of zones 1 and 2 with the exception of hydrogen sulphide as well as in dusts with glowing temperatures above 210°C and ignition temperatures above 202°C, and they can be marked as a maximum with Ex II 2 GD IIC T4 – depending on the construction of the trolley (see below) – but also with Ex II 2 GD IIB T4. For further conditions of use please refer to the information for a safe operation (references D and E).

JDN HOISTS FOR THE APPLICATION IN GASES OF TEMPERATURE CLASS T6 OR IN EXTREMELY DANGEROUS DUSTS

After separate checks especially with regard to ambient temperatures and operating mode the hoists can also be used in media at the presence of hydrogen sulphide or of dusts with especially low glowing and ignition temperatures, getting the marking Ex II 2 GD IIC T6(X), containing the special smark "X" for special conditions (refer to **Additional Mark "X"**). In case of demand please contact us.

JDN TROLLEYS AND CRANES IN STANDARD VERSION

JDN trolleys and cranes can be operated with standard running wheels (made of steel or cast iron) in all types

of dusts as well as at the presence of gases up to explosion group IIC in zone 2. The possible friction speeds at the running wheels are less than 1 m/s due to the low travelling speed so that standard running wheels can be used even up to explosion group IIB of zone 1.

The maximum marking for these devices is:
⟨Ex⟩ II 2 GD IIB T4/II 3 GD IIC T4.

JDN TROLLEYS AND CRANES "WITH INCREASED SPARK PROTECTION"

When working in zone 1 at the presence of gases of explosion group IIC bronze coated running wheels or running wheels made of bronze are additionally used. This Version (FSR) has the maximum marking ⟨Ex⟩ II 2 GD IIC T4 (same as the JDN hoists in version "with increased spark protection").

JDN TROLLEYS AND CRANES FOR THE APPLICATION IN GASES AND DUSTS OF TEMPERATURE CLASS T6

The same as with JDN hoists in the version "with increased spark protection" JDN trolleys and cranes can also be operated in temperature class T6 after having carried out separate checks resulting in the maximum markings with standard running wheels ⟨Ex⟩ II 2 GD IIB T6(X)/II 3 GD IIC T6(X) and with bronze coated running wheels or running wheels made of bronze ⟨Ex⟩ II 2 GD IIC T6(X) that means with the additional character "X" standing for special conditions.

Please also refer to **Additional Mark "X"**, page 9.

MATERIALS WITH DANGER OF FRICTION AND IMPACTS

An increased danger of ignition arises when special material combinations run across one another as for example non corrosion-proof steel or cast iron against aluminium, magnesium or corresponding alloys especially in connection with rust or rust films. Especially at the friction points of chains and load hooks rust or rust films may occur. Therefore for the destined use of the hoists it has to be safeguarded that no rust may arise at theses friction points and that in the operating area of the hoists at possible friction impact or grinding points no material combinations of above mentioned light metals or steel (exception: stainless steel) are present so that sparking with these material combinations due to mechanical influences can be excluded.

COMPRESSED AIR HOSES

Air hoses used in zone 1 must have a sufficiently low surface resistance of less than 10^9 Ω to avoid electrostatic dangers of ignition. Otherwise (at >10^9 Ω) the hoses of explosion group IIA and IIB must have a diameter of Ø ≤ 30 mm and in explosion group IIC a diameter of Ø ≤ 20 mm or it has to be proven that they cannot be dangerously charged.

ACETYLENE AND COPPER

When operating JDN products in hazardous areas with the presence of acetylene in the atmosphere it has to be safeguarded that copper plated parts are kept dry in order to exclude an oxidation of the metallic copper and the formation of an aqueous phase which could react with acetylene and which could lead to dangers of explosion.

LOAD CHAIN

Chain and load are always to be guided in such a way that a sliding and/or grinding friction with neighbouring structural members is avoided. Depending on the degree of corrosion the leaking ability of the chain can deterioate in such a way that it is not sufficient any more. This means for the proper use of hoists that rusty chains may not be used any more.

EARTHING

By a safe earthing electrostatic dangers of ignition can be avoided. The hoists have to be connected to earth which can be obtained via the load hook or load eye if they are connected to a corresponding earthed part (resistance to earth less than 10^6 Ω). The same applies for the use of trolleys or cranes. Their travel way has to be earthed by the customer. As a matter of principle running wheels and surfaces of running rails may not be covered with coats of lacquer as otherwise the earth leaks could obtain inadmissibly high values.

The earth connection of the load hook is obtained via the chain (please also refer to **"Load Chain"**).

Loads have to be earthed too during transport. A separate connection to earth for example is necessary when no-conducting harnesses are used.

CLASSIFICATION OF THE MOST IMPORTANT GASES AND VAPOURS IN EXPLOSION GROUPS AND TEMPERATURE CLASSES

(extract acc. DIN VDE 0165[5], Redeker[6], Nabert, Schön, IEC 60079-12 und IEC 60079-20)

explosion group	temperature class					
	T1	T2	T3	T4	T5	T6
	ignition temperature					
	> 450°C	450-300°C	300-200°C	200-135°C	135-100°C	100-85°C
	maximum admissible surface temperature of the operating devices					
	450°C	300°C	200°C	135°C	100°C	85°C
II A	Acetone Ammonia Aniline Benzole Benzol Chloride 1,2-Dichlor Benzole Acetic Acid Natural Gas Ethane Ethyl Acetate (Ethyl Bromide) Ethyl Chloride (Carbon Monoxide) O-Kresol Methane Methyl Acetate Methyl Alcohol*1 Methyl Bromide Methyl Chloride Methylene Chloride Naphthalene (Nitro Benzole) Phenole Propane Toluene O-Xylol	(Ethyl Alcohol) (Ethylene Glycol) i-Amyl Acetate n-Butane n-Butyl Alcohol 1-Butylene 1,2-Dichlorethane Di-i-Propyl Ether Natural Gas Acetic Anhydride n-Propyl Acetate (n-Propyl Alcohol) i-Propyl Alcohol Vinyl Chloride	n-Amyl Alcohol Benzine/Gasoline Diesel Fuel Heating Oil n-Hexane Jet Propulsion Fuel	Acetaldehyd		
II B	Cyan Hydrogen (Ethyl Bromide) (Carbon Monoxide) (Nitro Benzole) City Gas	Butadiene-1,3 Dioxane-1,4 Divinyl Ether (Ethyl Alcohol) Ethylene (Ethylene Glycol) **Ethylene Oxide Isoprene (n-Propyl Alcohol)	Dimethyl Ether **Hydrogen Sulphide	Ethyl Ether		
II C	**Hydrogen	**Acetylene				**Carbon Disuphilde

( ): The measured values for classifying the media in brackets into explosion group or temperature class are near the next group or class and are therefore mentioned in both.

**: media getting very easily into ingition

*1 (Methanol = Methylalcohol)

DECISIVE CRITERIA TO CHOOSE THE RIGHT VERSION OF JDN-HOISTS OR -CRANES FOR THE USE IN EXPLOSIVE ATMOSPHERES AND USE OF THE JDN-HOIST MINI

Explosion Groups of Gases and Vapours (see Classification of the most important gases and vapours in explosion groups and temperature classes)	**Zone**	**version*1**			**way of use*2**		
II A	2	**A**	**mini*3**				
	1	**A**			D		
II B(X) without hydrogen sulphide and ethylene oxide, which can get very easily into ignition	2	**A**					
	1	**A**	**FS**		D		
II B	2	**A**	**FS**		D	E	
	1	**A**	**FS**		D	E	
II C/ T4	2	**A**	**FS**		D	E	
	1	**A**	**FS**	**FSR**	D	E	
II C/ T6(X)	2	**A**	**FS**		D	E	T
	1	**A**	**FS**	**FSR**	D	E	T
explosive dusts	**Zone**	**version*1**			**way of use*2**		
normal industrial dusts	22	**A**	**mini*3**				
	21	**A**			D		
light metal dusts or dusts sensitive to impacts	22	**A**	**FS**		D		
	21	**A**	**FS**		D		

*1: **versions:**

A : Chain made of galvanised steel, metal control panels get earthing to the hoist; these are standard features. The load chain type 31,5 x 90 made of galvanised steel is not available because of technological reasons. This chain is only to be used for our heavy hoists with very slow chain movements, so that possible friction velocities are very much less than 1 m/s.

FS : Hoists with increased spark protection: Load hook and housing of bottom hook block made of copper plated steel with safety latch made of brass.

FSR: Driving Units with increased spark protection: wheels of trolleys and travelling gears are made of bronze.

*2: **Notes for safe working:**

D : At regular use of the hoist or the crane, there will no ignition dangers to be expected. Hitting and friction movements in the working area of the load chain, which are not a result of the destinated use of the hoist or the crane, and make ignitions occur, are to be prevented. This is most important working with light metals resp. their alloys (stainless steel excluded).

E : It has to be safeguarded that the working area is free of gas or sparks. That means, that e.g. swaying of the load chain, of the bottom hook block or the load hook against part of the environment is to be prevented.

T : Temperature of the environment and the way of use have particularly to be checked.

*3: **Use of the JDN-hoist mini:**

JDN-hoist mini cannot be delivered in a version with increased spark protection (FS).

The surface temperatures depend upon the operating mode and the ambient temperature. Therefore when working in media of temperature class T5 and T6 special checks are necessary.

The temperature classes given on the air hoists base on a maximum ambient temperature of 40°C (refer to DIN EN 50014[7]).

TEMPERATURE LIMITS OF COMBUSTIBLE DUSTS

In areas with danger of explosion due to combustible dusts the surface temperature must not exceed two thirds of the ignition temperature in °C of the dust/air mixture. Temperatures of surfaces on which hazardous substances of dusts may settle down capable to glow may not exceed the glowing temperature of the respective dust reduced by 75 K. Longer safety distances are necessary in case the thickness of the dust layer exceeds 5 mm.

PLEASE ALSO OBSERVE THE CORRESPONDING REGULATIONS IN YOUR COUNTRY!

According to the "HVBG/BIA-Report 12/97[8] "Brenn- und Explosionskenngrößen von Stäuben (Characteristic values of dusts)" the given minimum values for glow and ignition temperatures of dusts allow to give the corresponding surface temperatures:

synthetic caoutchouc, containing soot:
Glow temperature 220°C -75°C = 145°C maximum admissible surface temperature

stearin acid:
Ignition temperature 190°C x $^{2}/_{3}$ = 126°C maximum admissible surface temperature.

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1 Richtlinie 94/9/EG des Europäischen Parlamentes und des Rates vom 23. März 1994 zur Angleichung der Rechtsvorschriften der Mitgliedsstaaten für Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen

2 DIN EN 1127-1: Explosionsfähige Atmosphären - Explosionsschutz, Teil 1: Grundlagen und Methodik, 1997-10.

3 IEC 60079-12: Electrical apparatus for explosive gas atmospheres, Part 12: Classification of mixtures of gases and vapours with air according to their maximum experimental safe gaps and minimum igniting currents, 1978.

4 IEC 60079-20: Electrical apparatus for explosive gas atmospheres, Part 20: Data for flammable gases and vapours, relating to the use of electric apparatus, 1996-10.

5 DIN VDE 0165: Errichten elektrischer Anlagen in explosionsgefährdeten Bereichen, 1991

6 Nabert, Schön: Sicherheitstechnische Kennzahlen brennbarer Gase und Dämpfe 2. Auflage, 1978

7 DIN EN 50014 (VDE 0170/0171 Teil 1): 2000-02
Elektrische Betriebsmittel für explosionsgefährdete Bereiche: Allgemeine Bestimmungen

8 Hauptverband der Deutschen Berufsgenossenschaften/Berufsgenossenschaftliches Institut für Arbeitssicherheit

INTENDED USE

JDN trolleys in combination with JDN air hoists are intended to be used exlusively for lifting and lowering loads and for their horizontal movement above floor.

Any other use shall be deemed improper. Such improper use is at the customer's own risk, and the company J.D. NEUHAUS GMBH & CO.KG shall not be liable for any resulting damages.

Improper use includes, but is not limited to, any and all of the following:

- exceeding the rated load capacity,
- hoisting loads at a non-vertical angle,
- sliding loads,
- dragging or pulling loads or trying to dislodge stuck loads,
- catching a falling load
- using the trolley for moving people
- hoisting by tipping the control buttons or levers
- reversing the trolley while it is in motion
- deliberately ramming the end stop switch

As a prerequisite for proper use, the instructions in the operation manual must be observed and the recommended inspection and maintenance procedures must be carried out.

CONDITIONS OF USE

JDN trolleys are sturdy and require very little maintenance. They are suitable for use in locations subject to explosion hazards, as well as locations exposed to soot, dust, humidity, and extreme temperatures between -25°C and approximately +70°C. Trolleys intended for permanent outdoor operation must be protected against the influence of weather and the intervals between maintenance must be reduced.

Increased corrosion protection to be inquired.

The JDN trolleys require a pneumatic supply at a pressure of 4 to 6 bar. If the supply pressure lies below this, then the trolley may fail to operate correctly.

The JDN trolleys must only be operated with clean and dry air. The air supply should conform to the following:

- size of entrained particles less than 40 µm
- amount of entrainted particles less than 5 mg/m^3
- pressure dewpoint at least 10°C below the lowest expected ambient temperature
- 10 mg contents of oil per m^3 of air consumption

Do not attempt to operate the JDN trolley with any other type of working gas!

At conditions of high atmospheric humidity or low ambient temperatures (at or below 0°C), there is a risk of motor icing!

To prevent motor icing, the following measures may be suitable, depending on the moisture content of the air supply: fitting an upstream air-dryer, adding an anti-icing additive to the lubricating oil, or using an anti-icing air-line lubricant rated for the desired temperature. We recommend our air lubricant article-no. 11900.

OPERATION WITH THE SERVICE UNIT

JDN motor trolleys must be deployed with a service unit. No synthetic lubricants must be used. As protection against icing no alcohols may be used. Further details see operation manual for air hoists.

CE-CERTIFICATION

Trolleys without hoists will be delivered with a manufacturer's declaration. A CE-certification can only be given after finishing the complete installation (see the section entitled **Pre-start checks**, page 20).

TRANSPORTATION AND STORAGE

SAFE TRANSPORTATION

When transporting a JDN trolley to a new location, observe the following points:

- Derail the hoist carefully, do not drop it (weights see annex entitled **Technical data**).
- Carefully bundle the control and supply hoses and avoid twisting.
- Be aware that the controls are not damaged. Danger of wrong function!
- Install the chain of the hoist so that there is no looping and twisting.

STORAGE CONDITIONS

INTERRUPTIONS IN USE

Motorized trolleys:

- If the trolley is to be taken out of service for a prolonged period of time, fill in oil in the air hose. We recommend our air lubricant article-no. 11900.
- Now operate the trolley briefly so as to distribute the oil around the motor.

Following prolonged periods of idleness, clean the air motor as follows:

- Pour approx. 30 cm^3 of crude petroleum (US: kersosine, UK: paraffin oil) into the air hose.
- Operate the trolley for approximately half a minute.
- Catch any petroleum ejected from the filter silencer.
- Add some lubricating oil to the air hose. Now the service unit will provide adequate lubrication.

PREPARING FOR STORAGE

The air supply fitting of the motorized trolley has to be covered with an adhesive tape or with a cap of correct size to prevent contamination and damage.

Store the JDN trolley in a clean and dry location.

SETTING UP

UNPACKING

WARNING!
When unpacking the trolley, bear in mind that it is quite heavy.
(see annex entitled **Technical data**).

CAUTION!
Take care to prevent twisting the control hoses (motorized trolleys) which could lead to incorrect functioning of the trolley.

Keep the trolley documentation in the appropriate space provided at the site.

Carefully lift the trolley out of the carton.

Recycle packaging materials in accordance with local regulations.

MOUNTING

As far as possible JDN motorized trolleys are delivered in fully assembled condition. If necessary filter silencer, chain box and/or control valves are shipped in loose form and have to be mounted at site (see the section entitled **Connecting the control**, page 18).

MOUNTING THE TROLLEY

DANGER!
JDN trolleys must be mounted by suitably trained personnel only.
An incorrect installation can lead to serious injuries.

WARNING!
The trolley girders for JDN trolleys have to safely withstand the forces that may be expected to arise. Reel chain and motorized trolleys up to 3 tons carrying capacity have two anti-tipping devices at their rear side plates which have to be loosened and pushed downwards in the elongated hole before mounting. After mounting they have to be put back in the original position.

The calculation of the statics and the election of the girder profile are of responsibility of the customer. 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.

JDN trolleys are designed for girder profiles according to DIN 1025 or similar.

Above the whole traversing distance there must be sufficient space for the trolley to pass. For example no screw heads, clamping plates, stud plates or similar may hamper the free passing. Please observe that our trolleys when running on especially small girders project with their side plates above the upper edge of the girder. In this case the girders must be suspended or mounted without any support in order not to hamper the movement of the trolley.

In the same way the free movement of the installed energy feeding system must be guaranteed.

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 in order to avoid damages (see the section **Connecting the control hoses**, page 18).

MOUNTING INTO GIRDERS WITH OPEN ENDS

- Mount the trolley at one open end of the girder.
- Secure both ends of the girder with end stops so that the trolley may not fall down. The end stops have to be calculated according to the possible thrust with which the trolley may bang against them with full load and full speed.
- The end stops have to be equipped with a buffer. We recommend our clamping buffers.

MOUNTING INTO GIRDERS WITH CLOSED ENDS

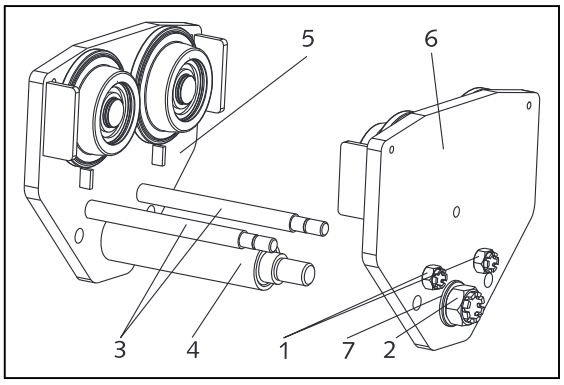


Figure 6: Mounting into girders with closed ends

- The hexagonal nuts (1,2) the distance spacer (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 lower flange of the girder. If necessary, the rear side plate including the outer distance washers (7) have to be completeley dismantled.
- Put the trolley including hoist with the running wheels of the front side plate on the lower flange of the girder.
- Mount the rear side plate with disc packages and screw it tight (torque settings see the section entitled **Screw securing and torques**, page 31).

CAUTION!
Please pay attention to the position and number of the locking rings and distance washers.

Connecting the control (see the section **Connecting the control**, page 18).

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 at the rear plate. The clearance to the lower side of the girder should be approximately 1 mm.
- condition and position of end stops.

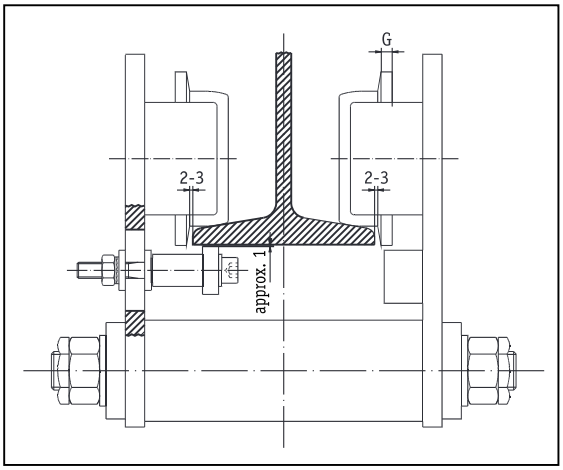


Figure 7: Clearance of wheel flanges and anti-tipping device

CONNECTING THE CONTROL

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 the colours of which correspond to those 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 screw driver), pulling out the hose piece (2) at the same time.

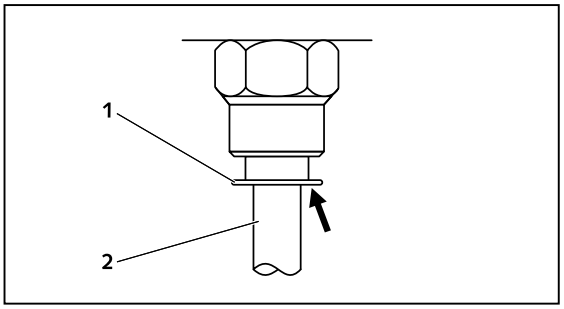


Figure 8: Plug-in connection

HOW TO ESTABLISH THE PLUG-IN CONNECTION

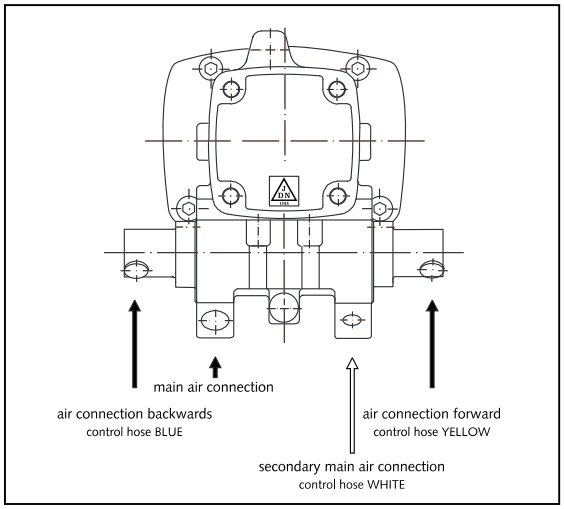


Figure 9: Motor side of the motorized trolley

CAUTION!
Please take care that the hose is not bent when plugging in.

- Put the loop of the tension relief (wire rope) into the existing eyebolt.
- Put the end of the corresponding hose into the hole of the corresponding plug-in connection.
- Press the hose down to the limit making sure that the hose is not bent.
- Please check the proper connection by pulling at the hose.

In case air is coming out of the connections during operation please try to press down the corresponding hose even deeper.

CONNECTING THE MOTORIZED TROLLEYS TO THE MAIN AIR SUPPLY

CAUTION!
JDN motorized trolleys must be operated with a service unit which should be mounted directly onto the trolley.
In case this should not be possible, the service unit should be not more than 5 m away from the trolley.

- ▶ Inspect the air connector and clean it if required.
- ▶ Blow through the air hose with compressed air to remove any debris that may have lodged there.
- ▶ Plug the main supply hose into the trolley-side fitting and secure it by tightening down the union nut. In case of rigidly mounted monorail hoists the service unit has a plug-in air connection. In this case the air hose is fastened to the trolley motor by means of a hose clamp.

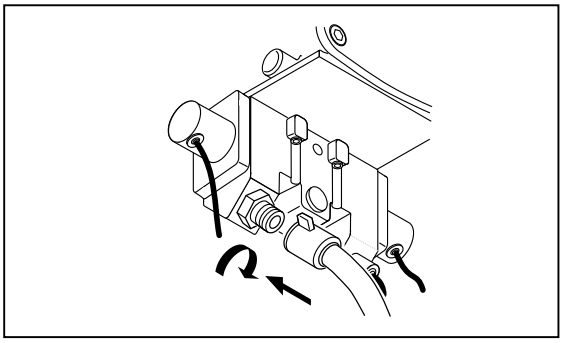


Figure 10: Air connection of trolley motor

LUBRICANTS

Under normal ambient conditions the following lubricants and cleaners are applicable.

If the trolley is operated under adverse conditions that induce increased wear, consult J.D. NEUHAUS for further information.

WARNING!
Oil and grease may cause skin irritation.
Wear protective gloves at all times.

CAUTION!
Never mix synthetic oil with mineral oil,as the physical and thermal properties may be adversely affected. Risk of motor damage.

If a service unit is in use, no synthetic lubricants should be employed at all. Do not use alcohol-based products for anti-icing protection.

Application	Recommend lubricant/cleaner
Motor lubrication applied in the factory	JDN high quality grease article No. 11901 (1 kg) article No. 11902 (40 g)
Operation with service unit	Air motor oil type D kinematic viscosity approx. 30mm²/s (cSt) at 40°C, anti icing additive if required
Motor preservation (Not necessary when using the JDN high quality grease.)	Non-gumming protective oil rated for the duration of storage period
Motor cleaning	Pure petroleum (US: kerosine, UK: paraffin oil)
Lubrication of bearings and gears (also for open toothing)	saponified lithium grease, felting penetration 265-295 (0,1 mm), ground oil viscosity: 190 cSt (mm²/s) at 40°C, dripping point: 180°C, operating temperatures: -30°...+120°C, designation according to DIN 51825: KP2K-30 additive: EP-additives (for reducing wear and tear) and aging protection; water resistant and corrosion protection

STARTING OPERATION

If the trolley is operating with a hoist, the operation manual of the mounted hoist/monorail hoist has to be observed before putting into operation (see also the section entitled **Pre-start checks**, page 20).

CHECKS

The checks have to be effected by the customer. The person elected to carry out the checks has to consider the local safety regulations. The customer must provide all necessary documents and auxiliary equipment for executing the checks.

The results of the check are to be documentated in a check book.

PRE-START CHECKS

Hoists mounted into trolleys have to comply with the regulations for the prevention of accidents valid for cranes. Before beginning to use a crane the first time and after any major modification before starting to work with them again they have to be checked by a qualified person. See also ZH1/27 “Principals for Checking Cranes”.

The test has to include the orderly erection equipment and the readiness of service. 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 condition (lift load just above floor),
- if necessary by a static test with 1,25 times the maximum carrying capacity (with motorized equipment).

During these tests no permanent deformations (distorsions) disturbances of performance or other failures may occur.

As according to ZH 1/27 hoists delivered in trolleys do not represent a ready-to-use installation, the manufacturer only supplies a manufacturer’s declaration. Only after the ready-to-operate installation has been checked by an authorized person, the EC-conformity can be issued. See the section entitled **CE-certification**, page 14.

Instead of this the manufacturer’s declaration will be issued.

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 J.D. Neuhaus.

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

If trolleys are operated with rag and pinion drive a sufficient tooth clearance (approx. 0,3 mm) between driving pinion and the rack along the whole transversing distance has to be set. In case the tolerance is too narrow, the driving pinion can be damaged or may even break.

REPEATED TESTS

See the section entitled **Repeated tests**, page 24.

OPERATION

RULES FOR THE SAFE OPERATION OF TROLLEYS

Apart from rules listed up in the operation manual for JDN air hoists and JDN monorail hoists the following rules have to be observed:

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

In case the local conditions or the works to be realised make it necessary the customer has to work out operating instructions.

Maintenance and inspection works may only be executed after the people in charge have convinced themselves that the trolley and the hoist/monorail hoist are cut off from the energy and that measures have been taken against unauthorized feeding of energy.

The same applies for maintenance works and any changes in case any people 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. Also other risks from neighbouring installations have to be safeguarded. After termination of the works operation may only start again after release by the customer. Before releasing the customer has to convince himself that all works have finally terminated, the whole trolley including hoist/monorail hoist are in a safe condition again and all people involved have cleared the installation.

If other than JDN components are used dangers may occur. Such an application can only be allowed after having received J.D. Neuhaus agreement.

CONTROLS

Together with the hoist/monorail hoist JDN-motorized trolleys can be operated with the following controls:

Control	sensitive	
	yes	no
rope control	x	
E Control		x
F Control	x [1)]	x

[1)] Up to 20 t carrying capacitiy in special execution

E AND F CONTROL

With the push button controls type E and F you can control the lifting, lowering and travelling speeds by pressing down the push buttons. The directions of movement of the load hook and the trolley are marked by arrows above the push buttons.

F CONTROL WITH TWO TRAVELLING SPEEDS

- Low trolley speed: press down half corresponding push button until noticing slight resistance.
- Quick trolley speed: press corresponding push button further down.

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 the EU.

The emergency stop button, when pressed, locks in the down position and halts the motion of the trolley. All other control elements are now inefficient. Once the hazard has been removed, you can unlatch the emergency stop and resume normal operation of the trolley.

- In the event of a hazard, press down firmly the red emergency stop button.
- Once the hazard has been removed, turn the stop button slightly to the right to unlatch it.
  All control buttons automatically return to “zero” position when released.

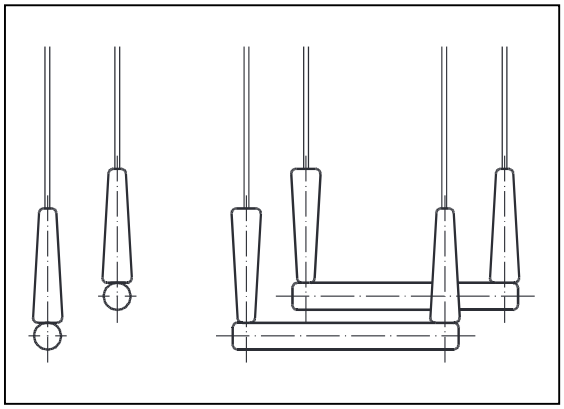


Figure 11: Rope Control

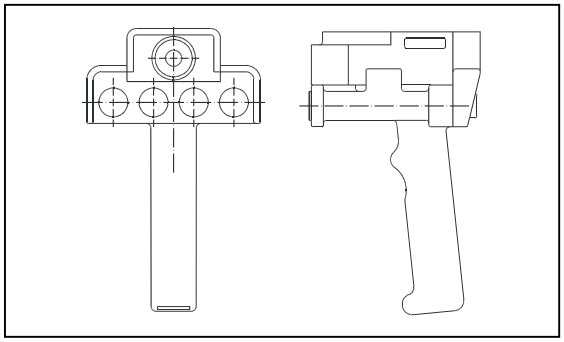


Figure 12: E Control

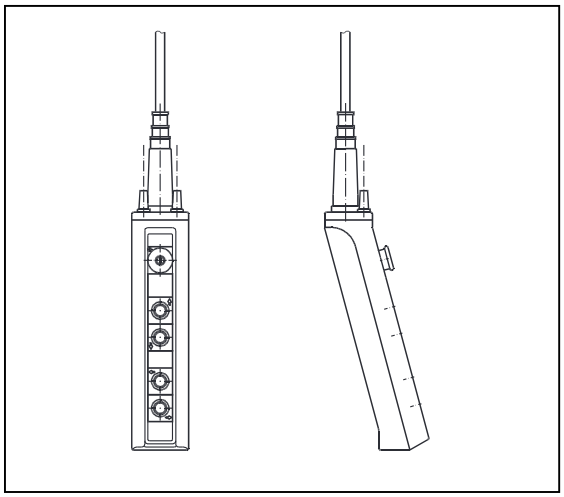


Figure 13: F Control

TAKING THE TROLLEY OUT OF OPERATION

PROLONGED SHUTDOWN (MOTORIZED TROLLEYS)

If you intend to take the trolley out of operation for a prolonged time, then you must take measures to protect it against corrosion.

- ▶ Pour anti-corrosion oil into the air hose.
- ▶ Operate the trolley briefly to distribute the oil inside the motor.
- ▶ Drive the trolley out of the hazard to avoid any damage.
- ▶ Relieve all pressure from the air lines (see also the section entitled **Storage conditions**, page 15).

STORAGE

See also the section entitled **Storage conditions**, page 15.

DISMANTLING

DANGER!
The JDN trolley should be dismantled by qualified personnel only. Risk of injury.

- ▶ Set up a suitable working platform if necessary.

Motorized trolleys:

- ▶ Release all pressure from the air lines.
- ▶ Undo the union nut and remove the air hose.
- ▶ Cover the air connection fitting to prevent contamination with dirt.
- ▶ Derail trolley carefully.
  Please proceed in opposite order according to the section entitled **Mounting the trolley**, page 16.
- ▶ Transport trolley to its destination.

DISPOSAL

JDN trolleys contain a number of materials which must be properly disposed of or recycled by the customer at the end of the trolley's working life, under applicable law.

The special materials contained in the trolleys are listed below.

TROLLEY:

- ▶ Ferrous materials:
  Steel
  SG iron
- ▶ Non-ferrous metals:
  Bronze
- ▶ Synthetic materials/plastics:
  Polyurethane
  Polyethylene
  Polyamide
  Rubber
  Epoxy resin
  Polyacetal
  Thermosetting casting
  (brake liner, asbestos-free)

FILTER SILENCER:

Zinc die-casting
Brass
NBR
Aluminium
Polypropylene
Polyurethane
Glass-reinforced plastic
Steel
Celcon
Azetybu-resin

MAINTENANCE

MAINTENANCE AND INSPECTION INTERVALS

JDN trolleys are sturdy and require little maintenance. To ensure that the trolley continues to provide reliable service for a long time, it is very important that the recommended intervals for the inspections and maintenance required be observed. If the trolley is being operated in a harsh environment that leads to accelerated wear, then the intervals should be reduced.

WARNING!
Only properly trained technicians should be allowed to perform maintenance work on JDN trolleys.

In case of overhaul works exceeding normal service and maintenance, please contact J.D. Neuhaus.

Remarks regarding qualification of maintenance personnel see the section entitled **Personnel safety**, page 5.

CLEANING AND CARE

In case your JDN trolley has to work in dirty surroundings, remove coarse dirt form the trolley.

SPARE PARTS

Use only original JDN spares if you need to replace any parts in the course of repairs.

INSPECTION AND MAINTENANCE WORK

REPEATED TESTS

At least once a year or after 160 service hours cranes must be checked in the defined load collective by an authorized person. Furthermore JDN trolleys have to be checked according to the maintenance and inspection list (see the section entitled **Inspection list,** page 25).

MAINTENANCE LIST

Maintenance procedure	Interval	Remarks
Test the controls	daily	s. page 26
Test the brake	daily	s. page 25
Test the end switches (if existing)	daily	s. page 28

INSPECTION LIST

Inspection procedure	Interval	Remarks
Check the suspension of travelling girder and end stops for damages	annually	
Check the locking devices for damages and function	annually	
Check side plates of trolleys for damages and deformation	annually	exch.* if necessary
Check running wheels incl. bearing for damages and tight fastening	annually	
Check wheel flange wear of running wheels	annually	s. page 27
Check toothed wheels (as long as they are open) for damages, wear and lubrication	annually	exch.* if necessary
Check screw connections for tightness	annually	screw up if nec.
Check load bolt for deformation	annually	exch.* if necessary
Check suspension links for deformation	annually	exch.* if necessary
Check bolts of running wheels for deformation	annually	exch.* if necessary
Test brake for function	annually	s. page 25
Check pneumatic parts for damages, function and density	annually	exch.* if necessary
Check controls for damages and function	annually	
Check hoses for damages and density	annually	exch.* if necessary
Check and clean service unit	annually	s. page 27
Check filter silencer for permeability	annually	s. page 28

* exch. = exchange

TESTING THE BRAKE (MOTORIZED TROLLEYS)

Test the function of brake daily.
When the push buttons of the control are released the trolley may not keep running for an unusual long time.

CAUTION!
If the trolley keeps running for an unusual long time after braking the brake has to be repaired.

REPLACING BRAKE DISC

When the brake begins to noticeably lose its effect, it is time to replace the brake disc.

Loosen the four hexagon socket srews 1 in the cover 2 of the motor housing and remove the cover.

CAUTION!
Take care to avoid damaging the brake assembly seals.

- Pry the brake assembly 4 out of the housing.
- Draw the brake disc 5 off the end of the rotor.
- The brake disc should have a thickness of at least 5.5 mm. Measure it, and replace if necessary.
- Ensure that all seal rings of the brake assembly are correctly positioned in their grooves.
- Replace the brake assembly in the housing, pressing it firmly into position.
- Place the O-Ring 3 into position, and fasten the cover using the four hexagon socket screws (see the section entitled **Screw securing and torques**, in the Operation Manual of the hoist).

WARNING!
Before resuming operation, test the trolley brake under load.

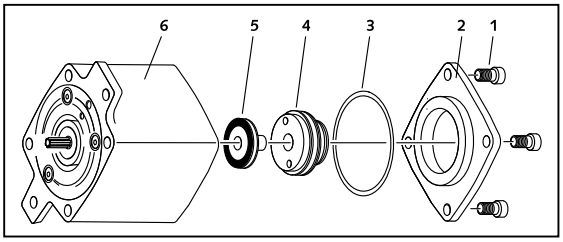


Figure 14: Remove the brake assembly from the housing and exchange the brake disc if required.

EXCHANGING MOTOR VANES

When the vanes of the air motor become worn, the motor performs less well reducing the load capacity of the JDN trolley. In such a case the vanes must be exchanged.

CAUTION!
Only trained technicians should be allowed to work on the air motor. Improper work procedures may damage the motor.

- ▶ Loosen the two hexagon socket screws that hold down the housing, and carefully remove the motor. In doing so, keep track of the shaft coupling and seal.
- ▶ Unscrew the brake cover, remove the brake assembly and the brake disc from the housing (see the section entitled **Replacing brake disc**, page 25).
- ▶ Loosen the three hexagon socket screws (8) of the cover (7).
- ▶ Using a soft plastic hammer, carefully tap on the rotor (3) from the brake assembly side, to drive it out. The vanes (2) and springs (1) will fall out.

Inspect the rotor running surface to ensure that it is free from mechanical defects.

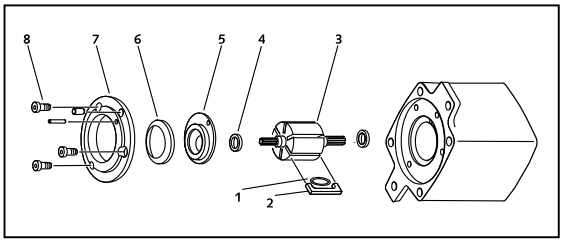


Figure 15: Drive the rotor out form the brake assembly side

Before inserting the rotor and vanes we recommend to grease all inner surfaces with our grease (article no. 11901).

- ▶ Set the motor housing on end and replace the rotor in the housing.
- ▶ Insert new vanes with their compressed springs into the rotor slots one at a time, always inserting the vanes at that point where the rotor/cylinder gap is largest (a special vane mounting tool is availabe from JDN).

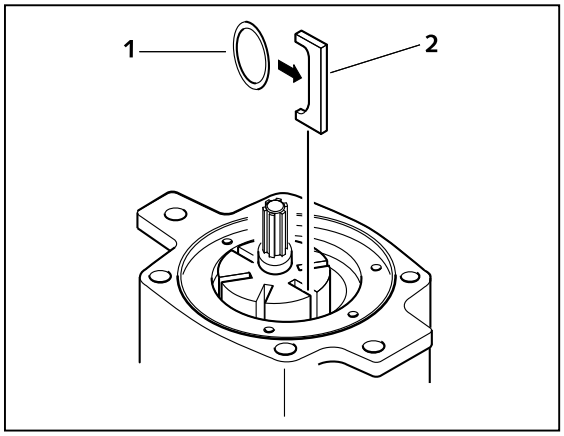


Figure 16: Insert the vanes into the slots where the gap is largest

- ▶ One at a time, place the spacer 4, the bearing disc 5, the plate spring 6 and the cover 7 over the end of the rotor (see figure 14).
- ▶ Screw down the cover.
- ▶ Mount the brake disc and brake assembly into the opposite end of the housing and close the housing with the brake cover, ring seal and the four cap screws (see figure 13).
- ▶ Place the seal into position.
- ▶ Flange-connect the motor to the mid section, using two hexagon socket screws (see the section entitled **Screw securing and torques**, page 31).

TESTING THE CONTROLS

(Motorized trolleys)

Check the free functioning of the push buttons once a day.

The push buttons should always go back to their initial position as soon as they are released.

CAUTION!
If any switching element is hard to operate or sticks in the down position, stop using the trolley immediately. The control must first be repaired.

INSPECTING THE SILENCER FOR FLOW RESISTANCE

In addition to the scheduled inspection intervals, the silencer should be inspected and its flow resistance assessed whenever the trolley fails to reach the specified travelling speed.

In case of notably reduced values the elements of the silencer have to be cleaned or exchanged.

INSPECTING THE SERVICE UNIT

See operation manual of the air hoist.

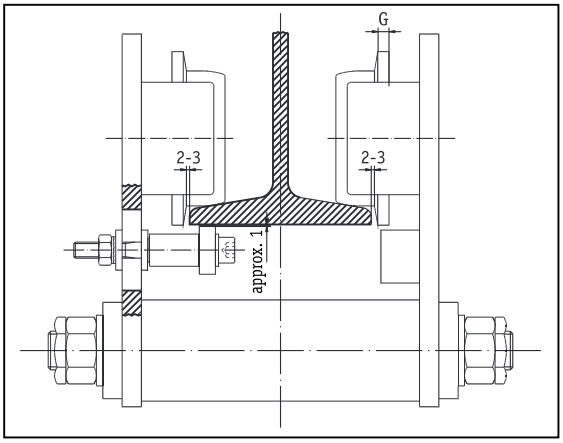
WHEEL FLANGE WEAR OF RUNNING WHEELS

When the limit dimensions at the wheel flanges are reached (see table) the running wheels have to be exchanged.

If necessary the clearance between wheel flange and outer edge of the girder flange has to be readjusted (page 13) before the limit dimension G at the wheel flanges is reached.

Running wheel diameter	50	84	160	185	250
Limit dimension G at the wheel flanges	3	5	6	12	12

Dimensions in mm



Limit dimension G at the wheel flanges

TROUBLESHOOTING GUIDE

Problem	Possible cause	Suggested remedy
Trolley cannot be moved	Emergency cutt-off pressed down	If there is no danger, release emergency cut-off
	Motor runs dry, rotor stuck	Repair motor, check service unit (fill in oil, dewater)
Trolley does not move or moves too slow	Control system defective	Repair control system
	Control hoses leak or are bent	Repair hoses
	Motor vanes worn out	Exchange motor vanes
	Control valve of motor defective	Repair control valve
	Two-way valve in the motor defective	Repair two-way valve
	Air pressure too low	Increase air pressure or hose section
	Plug-in coupling not properly plugged	Check plug-in connection (try to further press in hoses)
	Track of trolley too narrow	Check distances (on both sides 2 to 3 mm tolerance each between wheel flange and outside edge of lower flange of the trolley girder)
Trolley repeatedly blocks at same position	Girder uneven or girder connection offset	Remove faults
	Curve radius too narrow	Increase curve radius

OPTIONAL FEATURES

F CONTROL WITH TWO TRAVELLING SPEEDS

Apart form the standard speed the F control in special execution additionally offers a lower travelling speed which is about $^1/_3$ of the standard speed enabling for example easier positioning of the trolley.

FILTER SILENCER

Using a filter silencer improves both filtering and noise suppression:

- 99,9 % of all oil aerosols from the motor lubrication is filtered out of the air by the filter elements.
- The silencer reduces the noise by 3 to 4 dB (A) below the figure for the standard (sinter plate) silencer.

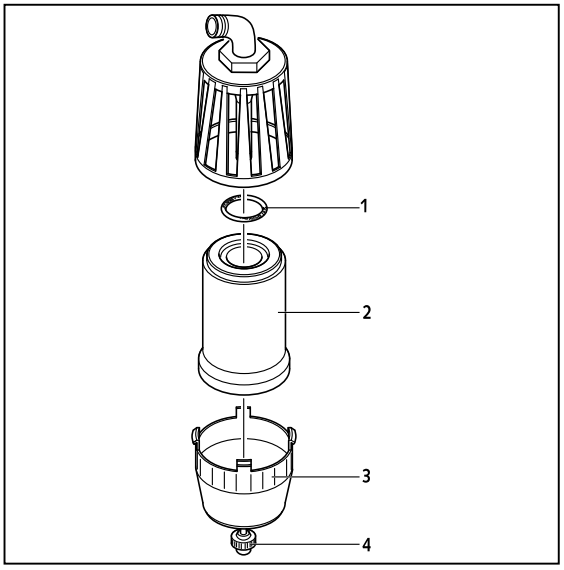


Figure 17: Filter silencer

SERVICING THE FILTER SILENCER

The emulsion that is filtered out of the air collects in the transparent cup (3). The cup must be emptied from time to time before the liquid reaches the filter element.

- Turn the drain screw (4) by 90° and allow the liquid to drain out.
- Shut the drain screw.

The filter element must be exchanged after approx. 2500 operating hours.

- Turn the cup (3) slightly, then pull down.
- Loosen the filter element (2).
- Insert a new filter element with the ring seal (1) and push the cup until it clicks into place.

SPRING-LOADED PRESSURE ROLLERS

For special working conditions as for example driving curves or other extraordinary tractive resistances JDN trolleys can be equipped with spring-loaded pressure rollers as an alternative to the rod and pinion drive assuring sufficient traction also in unloaded condition. The necessary pressure is to be set afer mounting the trolley on the beam (references in the spare parts list.)

LIMIT SWITCHES

End switches are mounted additionally to existing end stops (for example buffers) for limiting the movement of the motor trolley, s. figure **Adjusting the limit switch**.

TESTING THE END SWITCHES

- To check the function of the end switches drive the trolley in both final positions. The end switch must switch off the trolley movement.
- After the end switch there must be sufficient distance (for example buffer) to enable the trolley to run out.

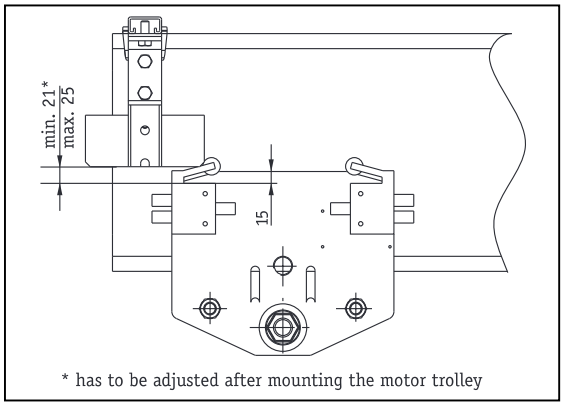


Figure 18: Adjusting the limit switch

BOOSTER VALVE

If the length of the control hose exceeds 10 m, there will be a delay before the control responds to a button being pressed.

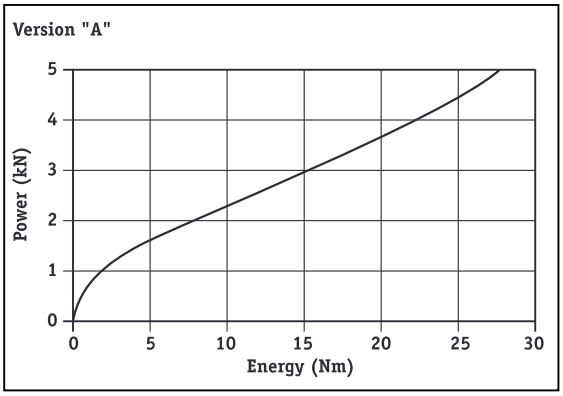
For such cases, a booster valve is installed on the motor for E and F controls, ensuring that the controls react normally.

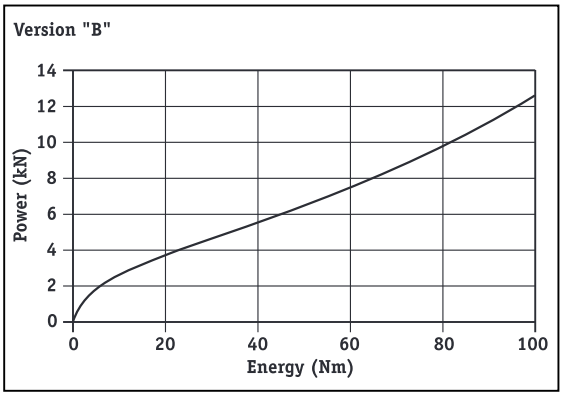
CLAMPING-TROLLEY BUFFER

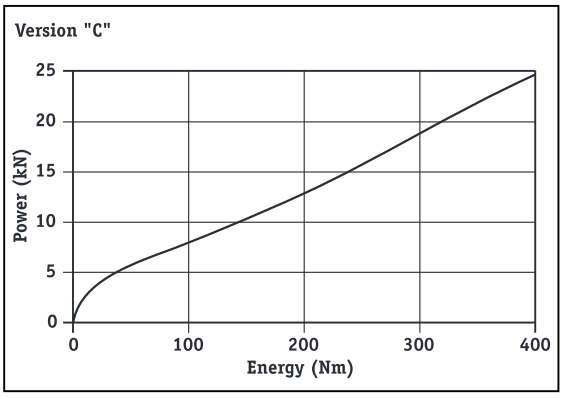
WORKING CONDITIONS

- The clamping-trolley buffers are only suitable for the impact of the trolley wheel against the rubber element.
- The maximum running wheel diameter is 112 mm in version “A” and 160 mm in versions “B” and “C”.
- The clamping-trolley buffer is not suitable for limiting the travel way of trolleys transporting people (driver’s cabin) or overhead cranes.
- The version “C” is limited to a maximum power of 15 kN in case of a crash hazard of the trolley.
- A regular (normal working conditions) running foul is not allowed.
- The clamping-trolley buffers are suitable for the application on parallel-flanged girders made of S235/oil and grease-free.
- The rigid seating of the clamping-trolley buffers must be regularly checked.
- The selection of the suitable clamping-trolley buffers from the selecting table can only be made for J.D. Neuhaus hoists. In special cases or in case of foreign hoists the selection is being done with the help of the following buffer characteristics.
- Top temperature of the buffer element in permanent use is 80°C.
- When driving the clamping buffer with a sheet metal running vertically to the trolley travel way instead with the trolley running wheel the maximum admissible buffer end power is reduced by 50 %. This is also valid for using the clamping buffers as a crash safety device (In this case the maximum buffer end power of version “C” is limited to 7,5 kN). Furthermore it has to be safeguarded that a damage of the buffer element is avoided.
- It is also possible to use the clamping buffers on parallel-flanged girders made of S355 when the maximum admissible buffer end power is reduced by 50 %.

CLAMPING BUFFER CARACTERISTICS



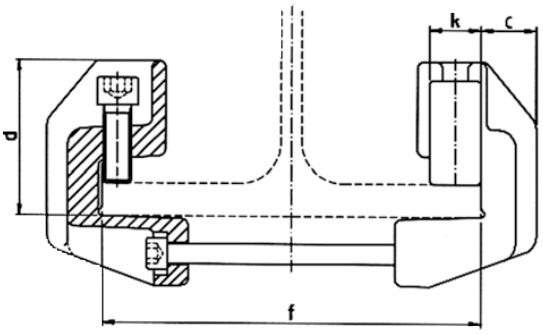


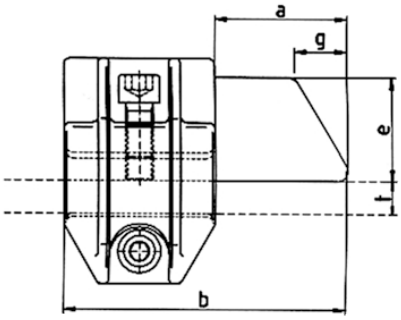


SELECTING TABLE

Trolley Type	Max. load [t]	Version	Flange thickness t [mm]	Flange width f [mm]	Article No.
All Types	1,0	"A"	<=20,5	64 - 120 121 - 190 191 - 243 244 - 300	74570 74571 74572 74573
All Types	3,5	"B"	13,0-30,0	110 - 160 161 - 230 231 - 283 284 - 340	74574 74575 74576 74577
All Types apart from UH 12	10,0 9,0 for UH 12	"C"	20,0-30,0	161 - 230 231 - 283 284 - 340	74578 74579 74580

DIMENSIONS





Version	Dimensions [mm]							Weight [kg]
	a	b	c	d	e	g	k	
"A"	45	110	20	63	40	15	26	2,6
"B"	80	170	32	90	60	35	30	5,9
"C"	97	185	32	90	79	55	46	6,1

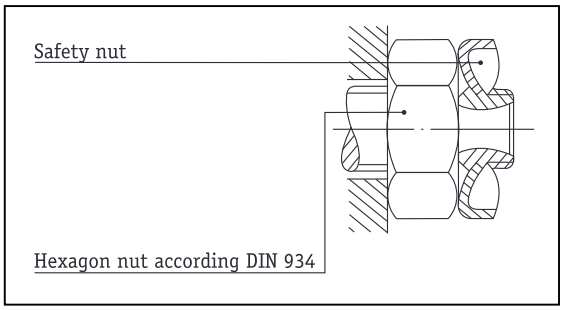
ANNEX

SCREW SECURING AND TORQUES

Type	LN 1t	L 3 t	L 4-8 t	L 10-15 t
Spacering	**Threaded bolt**	**Threaded bolt**	**Threaded bolt**	**Threaded bolt**
Adjustment	infinitely variable	infinitely variable	infinitely variable	infinitely variable
Locked by	Nut M16	Nut M16	Nut M24	Nut M24
Torque	60 Nm	60 Nm	200 Nm	200 Nm
Secured by	Nord-Lock-disc	Nord-Lock-disc	Nord-Lock-disc	Nord-Lock-disc
Load receiver	**Bolt**		**Bolt**	
Adjustment	Spacer discs version [1]		Spacer discs version [1]	
Locked by	Castle nut M24	Nut M24	Castle nut M48	Nut M48
Torque	100 ... 150 Nm	200 Nm	1000 ... 1500 Nm	1700 Nm
Secured by	Tension pin	Safety nut	Tension pin	Safety nut

[1] Please observe delivered version

Type	L 18 t		L 20 t	L 25 t
Spacering	**Bolt**		**Bolt**	**by Load receiver**
Adjustment	Spacer discs version [1]		fixed	–
Locked by	Castle nut M24	Nut M24	Nut M30	–
Torque	100 .. 150 Nm	200 Nm	400 Nm	–
Secured by	Tension pin	Safety nut	Safety nut	–
Load receiver	**Bolt**		**Bolt**	**Bolt**
Adjustment	Spacer discs version [1]		fixed	fixed
Locked by	Castle nut M48	Castle nut M48	Nut M48	Nut M100
Torque	1000 ... 1500 Nm	1700 Nm	1700 Nm	Hand tight
Secured by	Tension pin	Safety nut	Safety nut	Safety ring



TIGHTENING THE SAFETY NUTS

Screw on nuts firmly by hand, then tighten them with a spanner by 1/4 to 1/2 turn.

UNSCREWING THE SAFETY NUTS

Tighten hexagon nut until the spring effect of the locking teeth has been released. Then the safety nut can be easily removed.

TECHNICAL DATA

The denomination of the trolley is composed of the short denomination (LN, LH, LM) and the carrying capacity acc. to table, as for example LN 1t.

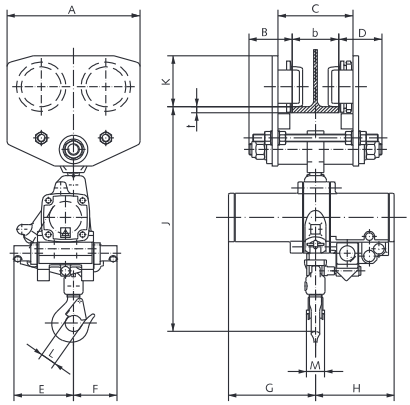
JDN Air Hoist Profi	Type	025 TS	05 TS	025 TS	05 TS	1 TS	2 TS	3 TI	6 TI	10 TI	15 TI
Carrying capacity of trolley	t	1		3					4 – 8	10 – 15	
Carrying capacity of hoist with trolley	t	0.25	0.5	0.25	0.5	1	2	3	6	10	15
Weight of Manual Trolley	Kg	11		26					117	120	
Weight of Reel Chain Trolley and Motor Trolley				37					127	130	
Weight of hoist, standard lift, rope control, without Δp		21.5	24	21.5	24	27.5	34.5	67	88	125	190
Total weight with standard lift of Manual Trolley		32.5	35	47.5	50	53.5	60.5	93	205	245	310
Total weight with standard lift of Reel Chain and Motor Trolley				58.5	61	64.5	71.5	104	215	255	320
Weight of 1 m chain		0.54	1	0.54	1			3.8		5.8	
Chain acc. to DIN 5684-8	mm	5 x 15	7 x 21	5 x 15	7 x 21			13 x 36		16 x 45	
Number of falls		1		1		2	1	2		3	
Air pressure Motor Trolley	bar	6									
Air consumption Motor Trolley at nominal load	m^3/min	1.3									
Air consumption of hoist at nominal load	m^3/min	1.4		1.4				2.4			
Motor rating Motor Trolley	kW	0.7									
Motor rating hoist	kW	1		1				2.2			
Distance travelled with 10 m of hand chain reeled off	m	1.5									
Travelling speed of Motor Trolley at nominal load	m/min	5 [1] / 12									
Hose connection Motor Trolley		G 1/2						G 3/4			
Minimum radius [2]	m	0.5							1		
Max. bottom flange thickness t	mm	25		40					65		
Max. bottom flange width b	mm	310									
Min. bottom flange width b	mm	54							125		
Sound level Motor Trolley [3]	dB (A)	80									

[1] 1st speed of F-control with two speeds
[2] Measured at the inner edge of the beam
[3] Measured at 1 m distance

DIMENSIONS

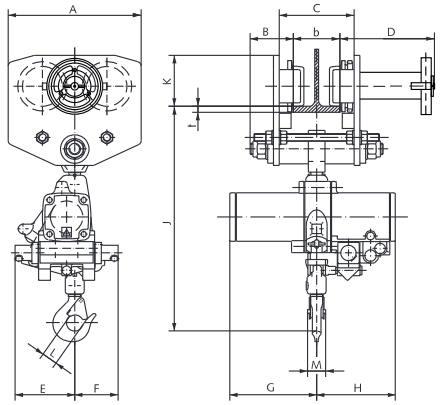
MANUAL TROLLEYS (LN)

JDN-Air Hoist Profi	Typ	025 TS	05 TS	025 TS	05 TS	1 TS	2 TS	3 TI	6 TI	10 TI	15 TI
in Trolley		LN 1t		LN 3t					LN 4-8t	LN 10-15t	
A	mm	150		280					490	490	
B max.		86		113					141	146	
C		b + 30		b + 60					b+70	b + 70	
D		86		113					141	146	
E		133	137	133	137	126	126	200	200	215	322
F		85	81	85	81	92	92	97	97	120	143
G		141	144	141	144	183	183	200	200	240	240
H		162	165	162	165	166	166	278	278	282	282
J min. headroom* mounted		495	445	515	465	475	605	575	745	940	995
J min. headroom* suspended		607	557	627	577	595	725	705	885	1120	1215
K		60		107					198	198	
L		26		26			30		40	42	55
M		38	38	38	38	38	53	50	55	76	98



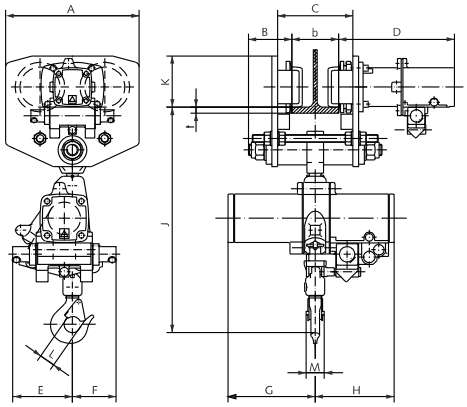
REEL CHAIN TROLLEYS (LH)

JDN Air Hoist-Profi	Typ	025 TS	05 TS	1 TS	2 TS	3 TI	6 TI	10 TI	15 TI
in Trolley		LH 3t					LH 4-8t	LH 10-15t	
A	mm	280					490	490	
B max.		113					141	146	
C		b + 60					b+70	b + 70	
D		294					307	312	
E		133	137	126	126	200	200	215	322
F		85	81	92	92	97	97	120	143
G		141	144	183	183	200	200	240	240
H		162	165	166	166	278	278	282	282
J min. headroom* mounted		515	465	475	605	575	745	940	995
J min. headroom* suspended		627	577	595	725	705	885	1120	1215
K		138					215	215	
L		26			30		40	42	55
M		38	38	38	53	50	55	76	98



MOTOR TROLLEYS (LM)

JDN Air Hoist-Profi	Typ	025 TS	05 TS	1 TS	2 TS	3 TI	6 TI	10 TI	15 TI
in Trolley		LM 3t					LM 4-8t	LM 10-15t	
A	mm	280					490	490	
B max.		113					141	146	
C		b + 60					b+70	b + 70	
D		294					307	312	
E		133	137	126	126	200	200	215	322
F		85	81	92	92	97	97	120	143
G		141	144	183	183	200	200	240	240
H		162	165	166	166	278	278	282	282
J min. headroom* mounted		515	465	475	605	575	745	940	995
J min. headroom* suspended		627	577	595	725	705	885	1120	1215
K		117					198	198	
L		26			30		40	42	55
M		38	38	38	53	50	55	76	98



* without chain box

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