JDN OPERATION MANUAL
AIR HOISTS PROFI Ti®
MONORAIL HOISTS

J.D. NEUHAUS

powered by air

Please fill in here the Fabr.-No. of your JDN air hoist.

This manual edition 4/2002 covers the
operation of the following JDN Air Hoists:

PROFI 3 Ti
Fabr.-No.

PROFI 6 Ti
Fabr.-No.

PROFI 10 Ti
Fabr.-No.

PROFI 15 Ti
Fabr.-No.

PROFI 20 Ti
Fabr.-No.

PROFI 25 Ti
Fabr.-No.

PROFI 37 Ti
Fabr.-No.

PROFI 50 Ti/TS
Fabr.-No.

PROFI 100 Ti
Fabr.-No.

the following JDN Monorail Hoists (EH)
only in connection with the Operation Manual "trolleys"

EH 20
Fabr.-No.

EH 25
Fabr.-No.

EH 37
Fabr.-No.

EH 50
Fabr.-No.

EH 75
Fabr.-No.

EH 100
Fabr.-No.

and the following JDN Ultra-Low Monorail Hoists (UH)
only in connection with the Operation Manual "trolleys"

UH 05
Fabr.-No.

UH 1
Fabr.-No.

UH 2
Fabr.-No.

UH 4
Fabr.-No.

UH 6
Fabr.-No.

UH 8
Fabr.-No.

UH 12
Fabr.-No.

UH 75
Fabr.-No.

UH 100
Fabr.-No.

Before operating any hoist, carefully read the entire manual. For trolley mounted hoists refer to the manual **JDN Trolleys.**

CONTENTS

Please note!

Within the Federal Republic of Germany
operators of air hoists must observe the currently applicable

- UVV Winches, Lifting and Pulling Devices (VBG 8), and
- UVV Load carrying Devices Used with Lifting Equipment (VBG 9a),

and users of trolley mounted hoists must additionally comply with the currently applicable

- UVV Cranes (VBG 9).

Users must also initiate the prescribed tests.

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

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

SAFETY INSTRUCTIONS

ORGANISATIONAL MEASURES

JDN Air Hoists / Monorail Hoists (in the following called JDN Air Hoists) are manufactured in accordance with the latest state of the art and accepted safety practice. Nonetheless, the use of an air hoist may be associated with the risk of injury or death of the user or of some third party, or with the risk of property damage.

All personnel involved with the safe operation of the air hoist 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 air hoists are charged with maintenance, repair or other additional works.

The user is obliged to ensure that the air hoist is operated in a safe manner. The following measures are requested as a minimum:

- keep this manual readily available at the air hoist operating site,
- carry out training on air hoist 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 air hoist to ensure that it 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 air hoist.

„Properly trained“ in the present case means that the operator has appropriate training and experience in working with air hoists 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 air hoist.

- Follow the applicable regulations for the workplace in question.
- Observe all relevant accident prevention regulations, in particular VBG 8 (Winches, Lifting and Pulling Devices) and VBG 9a (Load-carrying 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 EQUIPMENT DAMAGE

The user of JDN Air Hoists is responsible for ensuring that the inspection log delivered with the hoist is correctly used and kept up to date.

- Ensure that the scheduled maintenance is performed as prescribed.
- Do not use the air hoist for any other purpose 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 inform himself about JDN Air Hoists and how to use them properly.

This manual contains important information on the safe, proper, and economic operation of the JDN Air Hoists. By following this information the risk of safety hazards, repair costs and machinery downtime can be reduced and the useful lifetime of the air hoist can be extended.

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

All persons charged with operating, maintaining, or repairing JDN Air Hoists 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 the instructions could cause property damage.

IDENTIFICATION

The nameplate fixed to the hoist cover identifies the type of JDN Air Hoist and gives important rating information.

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

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D - 58449 Witten-Heven

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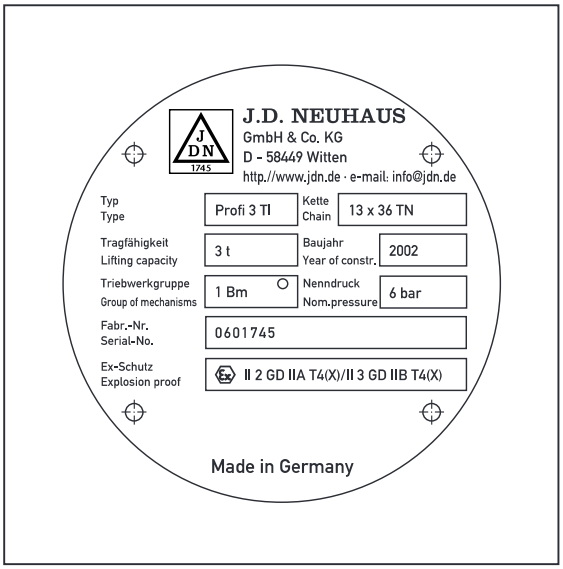

Example of a nameplate fixed to the hoist cover

OPERATING MODE

JDN Air Hoists are manufactured in accordance with the driving mechanism group 1 Bm/M3 (according FEM/ISO)[1)].

Hoists manufactured in series have a limited life time. After reaching the theoretical service time special tests have to be carried out (see the section entitled **Inspections and maintenance work,** page 34).

1) FEM: Fédération Européenne de la Manutention – European Materials Handling Federation

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 bedescribed 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 8.

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 ≤ 30 mm and in explosion group IIC a diameter of ≤ 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[7], 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 holst; 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 destined 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 destined 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 EN50014[8]).

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[9] „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 forflammable 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 Redeker, Schön: 6. Nachtrag zu Sicherheitstechnische Kennzahlen brennbarer Gase und Dämpfe, 1990

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

9 Hauptverband der Deutschen Berufsgenossenschaften/Berufsgenossenschaftliches Institut für Arbeitssicherheit

EMISSION

The sound emission figures are shown in table **Technical data,** page 42.
The sound pressure level at the measuring surface at 1 m distance from the machine surface was determined acc. to DIN 45635, Part 20 with an air pressure acc. to our instructions. The reduction of the sound level under indoor conditions is approx. 3 dB (A) per each doubled distance.
When in operation – due to motor lubrication – small amounts of lubricating oil are discharged with the exhaust air into the ambient atmosphere.
When using a filter silencer (see the section entitled **Overload protection,** page 39) the oil emission can be avoided. Additionally the sound emission will be reduced.

INTENDED USE

The JDN Air Hoists are designed for lifting loads with vertically arranged chain. Under special conditions they can also be used for lifting people. When incorporated in trolleys they are also suited for moving elevated loads in a horizontal direction.

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.

Please also see **Safety Instructions,** page 20.

CONDITIONS OF USE

The JDN Air Hoists 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 -20°C and approximately +70°C. Permitted chain and hook temperatures: -40°C up to +150°C.

WARNING!
When touching metallic hand controls being colder than 0°C frostbites of the skin may occur within a few seconds, at temperatures above 55°C burnings may occur. Protective measures: use suitable safety gloves.

CERTIFICATION

Every JDN Air Hoist is issued with a works certificate.

APPLICATION

APPLICATION AREAS

Hoists intended for permanent outdoors operation must be protected against the influences of weather and the intervals between maintenance must be reduced.

SUSPENSION POINTS

DANGER!
Suspension points for JDN Air Hoists are to be constructed in such a way that the expected forces can be safely held. Ensure that your JDN Air Hoist can come free into alignment under load, otherwise unallowed additional forces can occur.

DANGER!
The supporting structure of air hoists must have a rigid bedding. Vibrations damage the chain and may lead to chain cracks. Furthermore no vibrations must be transmitted from the outside to the hoist (as for example by the suspended load).

ENERGY REQUIREMENTS

Air pressure, amounts and connections, see the table entitled **Technical data,** page 42.

DETAILS OF THE AIR PRESSURE

JDN Air Hoists are also identified by the nominal pressure (overpressure) stated on the hoist itself. With this value we want to coordinate the hoist to a corresponding air pressure system.

When connected but not working the hoist receives the pressure of the air circuit. After starting operation the pressure decreases to the actual value i.e. working pressure which varies according to the load figure and the direction of the load movement (up or down). Furthermore it depends upon the hose section, the hose length as well as upon the diameter of the air circuit and its length.

When calculating the lifting capacity of the hoists we have therefore considered a loss of 10 % of the nominal air pressure for lifting the maximum load. In other words: A hoist with a nominal pressure of 6 bar reaches the stated parameters at a working pressure of 5.4 bar.

DANGER!
Working with system pressures of more than 6 bar may cause risks of overloading. Therefore the pressure has to be limited to 6 bar.

JDN Air Hoists must have sufficient supply of clean and dry working air (to fulfill this requirement an air dryer must, if necessary, be connected to the air supply).

Do not drive JDN Air Hoists with other gases (contact supplier).

Working air must have sufficient of the following qualities:

Solid particle content:
- Size of particles, smaller than 40 µm
- Density of particles, less than 5 mg/m^3

Pressure dew point:
At least 10 °C under the lowest expected temperature in surrounding area of application.

For lubrication of the motor, the working air must contain lubricating oil in the following quantities:

Oil content:
- 10 mg per m^3 air consumption
  The adjustable oiler, which is built into the connected air service unit, ensures that the operating air contains the required amount of oil (see the section entitled **Service unit,** page 29).

In working areas where the surrounding temperature is 0 °C or under and in case of longer periods of operation (e. g. several minutes) particular attention must be paid that the working air is not too damp. Danger of icing up of air hoses, control valves, motor and brake! With the connection of an air dryer icing up can be avoided. Under certain conditions it is sufficient to feed lubricating oil with anti-freeze protection (see the section **Operating materials,** page 23) to the working air (see the section entitled **Service unit,** page 29).

TRANSPORTATION AND STORAGE

TRANSPORTATION

DANGER!
Do not throw or drop your JDN Air Hoist.

Make sure that load hook, chain loops and control hoses do not hang down.

Control hoses and switches must not be damaged when handling JDN Air Hoists.
– Danger of incorrect functioning!

STORAGE

Store your JDN Air Hoist in a clean and dry place.

Take care that the control elements and control hoses cannot be damaged.

Protect the connection for the air intake hose against damage or intake of dirt or foreign bodies.

In case of longer periods of non operation protect your JDN Air Hoist including chain and load hook against corrosion. To protect the motor against corrosion inject conservating oil into the air supply hose after the last use (see the section entitled **Operating materials,** page 23), then run your JDN Air Hoist for a short period.

After longer periods of non operation clean the motor by pouring about 30 cm^3 of petroleum into the air hose and then run your JDN Air Hoist for approximately half a minute. Then, straight away, pour a little lubricating oil into the air hose – further lubrication is carried out by the service unit.

SETTING UP

UNPACKING

WARNING!
Be careful when unpacking the hoist. Observe the weight (see **Technical Data,** page 42)

CAUTION!
Take care to prevent twisting the control hoses which could lead to incorrect functioning of the hoist.

- Keep the hoist documentation in the appropriate place provided at site.
- Carefully lift the hoist out of the carton (if existing).
- Recycle packaging materials in accordance with local regulations.

MOUNTING

The JDN Air Hoists are generally delivered in fully-assembled condition.

If not, then proceed to the sections entitled

- **Fastening the pendant control** (page 17)
- **Connecting the rope control** (page 18)
- **Chain container** (page 37)

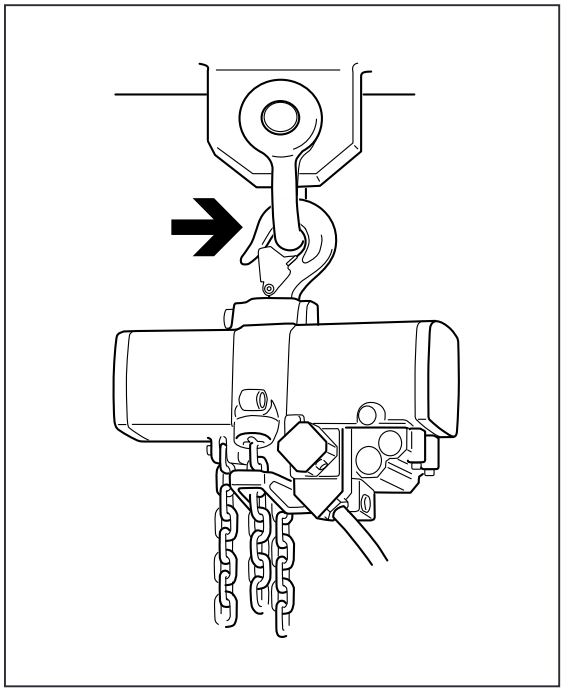
THE CHAIN MUST BE LUBRICATED BEFORE STARTING OPERATION (SEE PAGE 34).

INSTALLING THE HOIST

DANGER! RISK OF INJURY!
The JDN Air Hoists must be installed by suitably trained personnel. An incorrectly installed hoist can lead to serious injuries.

DANGER!
The points from which the JDN Air Hoist is suspended must be capable of withstanding the forces that may be expected to arise.

- Set up a suitable working platform.
- Suspend the hoist to the stationary point or to the trolley, using the provided hook or eye.
- Ensure that the hook safety latch snaps back into position.



Suspend the hoist using the provided hook or eye

FASTENING THE PENDANT CONTROL

FASTENING THE COMPLETE PENDANT CONTROL TO THE HOIST

FI control:

- ▶ First, fasten the hose carrier by unscrewing the cap screw and screwing on the hose carrier.

E, F and HT controls:

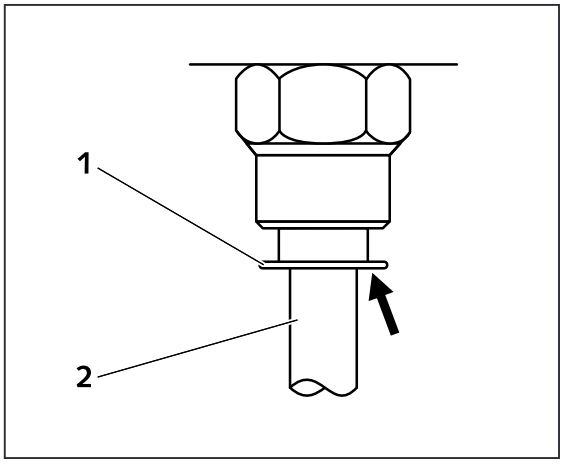
- ▶ Hang up the loop of the wire rope into the existing ring bolt.

CONNECTING THE CONTROL HOSES

For your help short hose pieces have been put into the plug-in connexion 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.



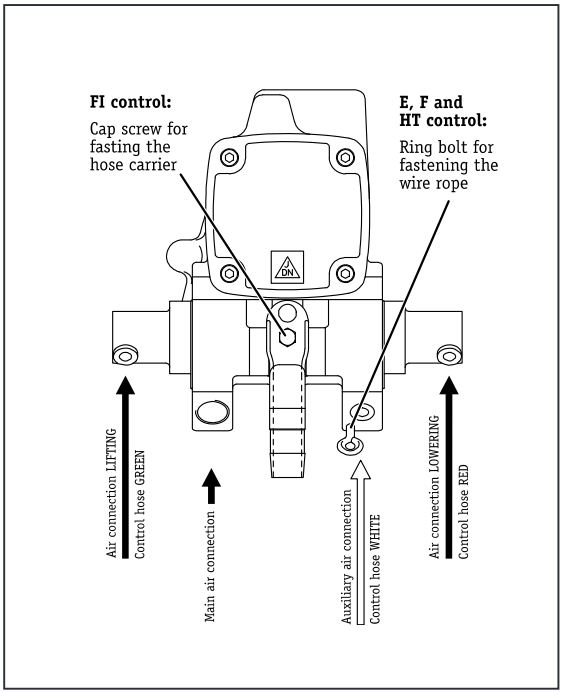
Plug-in connection

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

- ▶ 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.

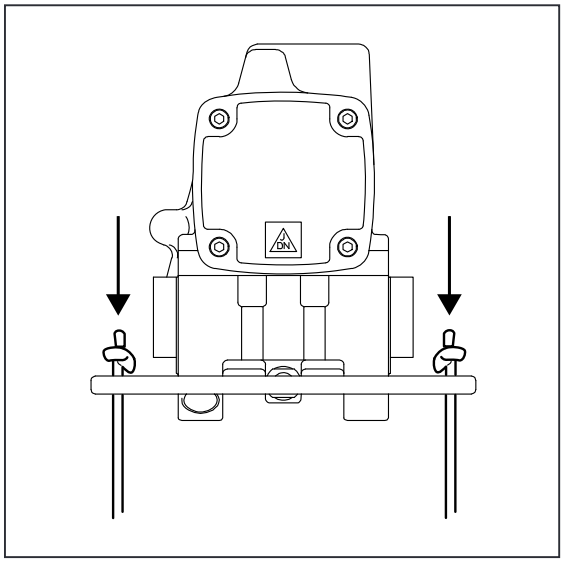
HOW TO ESTABLISH THE PLUG-IN CONNECTION



Motor side of hoist

CONNECTING THE ROPE CONTROL

- ▶ Tie the ends of the control rope to the two ends of the control lever.
- ▶ Thread the UP rope into green wood pin so that the pin's tapered end points up.
- ▶ Thread the DOWN rope into yellow wood pin so that the pin's tapered end points down.
- ▶ Thread the rope through the wooden grip in such a way that the arrows on the grip correspond to the direction of hook travel.

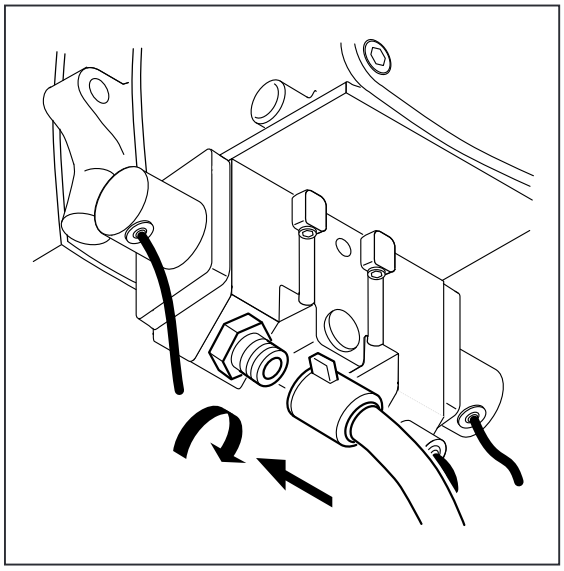


Rope control, motor side

CONNECTING THE MAIN AIR SUPPLY

CAUTION!
When operating a hoist with service unit, the unit should be not more than 5 m away from the hoist.

- ▶ 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 air supply hose into the hoist-side fitting and secure it by tightening down the union nut.



Plug the main air supply hose in and secure it with the union nut.

INITIAL OPERATING CHECKS

Prior to initial use the hoist and supporting structure must be checked by a qualified person. Checking must also be carried out after any major modification. The object of such testing is to determine that the lifting equipment is correctly installed and ready for operation.

TESTING THE BRAKE

The correct functioning of the brake must be tested before starting to use the hoist. Proceed as follows:

- ▶ Operate the hoist with no load, alternating between lifting and lowering.

The chain must stop running immediately after releasing a control button.

DANGER!
If you notice that the chain running does not stop immediately stop using the hoist at once! The hoist must be repaired before any further use.

CHECKING THE DIRECTION OF OPERATION

- ▶ Check that the load hook moves up and down in accordance with the markings on the hoist controls.

CHECKING THE OVERRUN PROTECTION

- ▶ Lift the load hook with no load until it almost reaches the upper end.
- ▶ Carefully lift it still further until the hook or the chain stop strikes the overrun switch.

The lifting operation must stop when the control lever has reached its central position.

DANGER!
In case the hoisting movement is not stopped with the control lever in its central position and the control lever blocks in the down position, stop using the hoist at once!
The hoist must be repaired before any further use.

CHECKING THE EMERGENCY STOP SWITCH

- ▶ Actuate lifting process and press down red emergency stop switch whilst lever is still pressed down. Lifting process must come to a halt immediately. Release emergency stop switch.
- ▶ Actuate lowering process and press down red emergency stop switch whilst lever is still pressed down. Lowering process must come to a halt immediately. Release emergency stop switch.

OPERATION

SAFETY INSTRUCTIONS

FOLLOW THESE RULES FOR SAFE HOIST OPERATION

Whenever you operate a hoist, you are responsible for your own safety and the safety of your fellow workers.

- Only persons duly authorised by the management shall operate the hoist.
- Before beginning to use the JDN Air Hoist you should inform yourself thoroughly about the correct method of operation. Read this manual carefully and carry out the indicated procedures on the hoist step by step.
- Report any malfunctioning to your safety representative at once, so that it can be corrected.
- Follow the instructions issued by the responsible accident prevention authorities (in Germany, these instructions are known as UVV's and are issued by the trade associations).

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.

Hoists have to be checked by trained staff at least once a year or after a service time of 160 hours (see the section entitled **Inspections and maintenance work,** page 34).

In addition to the annual inspection by an expert JDN Air Hoists should be checked according to the service and inspection lists (see the sections entitled **Maintenance list and Inspection list,** page 35).

For example JDN Air Hoists may not be used in the following areas:

- critical surroundings in atomic plants.
- above acid baths or similar plants with aggressive substances.
- in areas where organic acids can be found.
- operating the hoist whilst lying on the floor or moving loads horizontally.

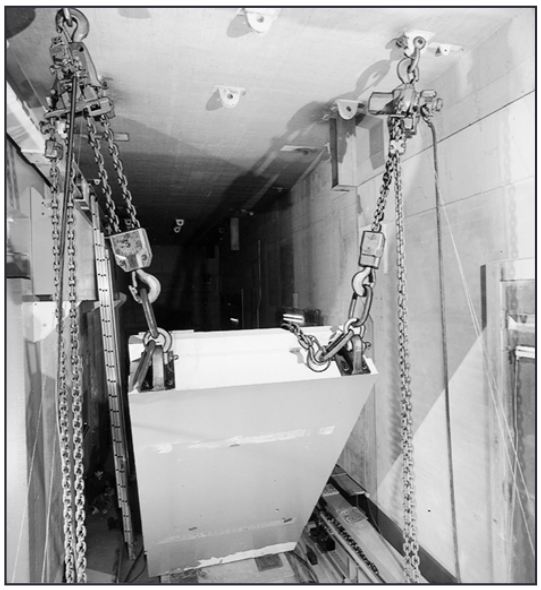
On the following pages some important points for the safe operation of your JDN Air Hoist are listed. They should help you to avoid hazards.

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 (Oblique Lifting)

Definition of Oblique Lifting

Oblique lifting means the deviation from the vertical position of the load chain and the hoist at rectilinear course of the power line between the point of application of the load at the hook and the suspension at the supporting structure.



Oblique Lifting

Under special safety precautions and considering the corresponding situation at site JDN Air Hoists can be used for oblique lifting whereby the hoists Profi 3 TI, 6 TI, 10 TI and 15 TI have to be additionally equipped with special emergency end switches whereby the use of a chain container is not allowed as the chain may fall out or form knots. Hoist mounted trolleys are not allowed for oblique lifting. Please contact us in case of application.

- dragging or pulling loads or trying to dislodge stuck loads.
- load the hook at its tip.
- catching a falling load.

- using the hoist for transporting people.
- hoisting by tipping the control buttons or levers.
- reversing the hoist while it is in motion.
- deliberately ramming the end stop switch.

For the safety of all personnel it is vital to follow the instructions given below whenever operating a JDN Air Hoist.

- Never touch a running chain.
- Never allow any person to stay under a raised/suspended load.
- When hooking loads observe appropriate regulations.
- Make sure that the operating place is without any danger for the operator due to suspension or load.
- Start carefully when lifting loads.
- Never try to correct a fault or damage while the hoist is under load.
- Never operate the hoist whilst lying on the floor or move loads horizontally.
- Never run to end positions under normal working conditions.
- Never use bent, open or twisted hooks. Hoist to repair, never straighten, change hook.
- Never use stiff moving hook at the chain. Inspection.
- Never use stiff moving hook in the housing without load. Inspection.
- Never load hook on the tip, only on deepest part of hook saddle.
- Never lock hook at connecting point.
- Never anneal the hook.
- Never block operating elements.
- Never use stiff operating elements. Repair shop.
- Operate JDN Air Hoists only with original JDN controls.
- Uncontrollable external power influences (e.g. through hydrocylinder, falling loads) are not permitted.
- Use only suitable and approved harness, do not jam hook at the fixing point of the harness.
- Never use the hoist chain for wrapping around a load to be lifted.
- Position the load vertically under the hoist before lifting. The chain should be hanging straight down.
- Never allow a load to drop into the harness.
- Before lifting a load, ensure that it does not exceed the rated capacity of the hoist including the weight of the load and the harness.
- Do not take up the load at full speed if the chain is initially slack.
- Ensure that the load is in a stable position when lifting or lowering it down to avoid accidents caused by a toppling or falling load.
- Never use the hoist in an attempt to dislodge a load that has become stuck.
- Never lift more than one load at a time.
- Never allow the chain to be bent.
- Save the load in case of loss of energy.
- Do not join or mend hoist chain.
- Exchange deformed load hook.
- Repair damaged hook safety latch.
- Repair tight hook bearing.
- Do not bend or squeeze control hoses.
- Loose screws must be fastened by repair shop.
- Shut off air supply before taking off air hoses.
- Do not exceed allowed quantity of chain in the chain container.
- When working without chain container avoid dangers caused by the idle chain: falling down, interlocking, striking (see section **Chain Container,** page 37).
- Repair hoist in case of a too long braking distance.
- Check blocked chain for damages.
- Check chain for damage if hoist blocks in switched on position.
- In case of lifting a load with several hoists avoid overloading by wrong load distribution. Avoid unacceptable load distribution.
- Choose safe place of control.
- Do not exceed operating pressure.
- Put in order twisted chain (capsized bottom block).
- Do not work with damaged or worn or rusty chain.
- Do not work with chain pulled rigid, bent or extended chain.
- Do not use the load chain as a sling for suspension.
- It is not permitted to connect or repair hoist chains (e.g. with bolts, emergency links or otherwise).
- Remove chain accumulated in front of chain intake.
- Do not bend the chain.
- Admissible temperature range for chain and hook: -40°C up to +150°C, permitted heat bearing capacity of the body of the air hoist max. 90 °C, permitted ambient temperature: -20°C up to +70°C.
- Never touch metallic hand controls being colder than 0°C or warmer than 55°C without using suitable safety gloves.

- Do not carry out any modifications on the air hoist.
- It is not allowed to use other than JDN components with JDN Air Hoists because of the dangers connected therewith.
- Only use original JDN spare parts. When using foreign components and/or carrying out changes by non authorised persons J.D. Neuhaus GmbH & Co. KG does not undertake any responsilbility.
- If the air supply is cut protect area around the load until power is restored.
- Turn off the compressed air before detaching the air hoist from the compressed air system.
- Do not start a double or multiple fall chain hoist when the bottom block is still supported.

DANGER!
Make sure that the load hook can be lowered up to the floor at all operating conditions of the air hoist in order to avoid that a load is lowered to its lowest position without reaching the floor. Danger of overloading.

In case of using hoists in extremely difficult conditions the user has to work out a directive on the basis of this Operation Manual understandable for and in the language of the operator. In this directive regulations for the safe operation are stipulated considering the special conditions at site.

In addition, it is essential to follow all instructions given in the sections entitled **Intended use and Conditions of use,** page 13.

JDN Air Hoists are equipped with round steel chains as load chains. When in use section 5 of DIN 685 should be observed.

Extract: “At the instigation of the operator chains in use should be checked and tested at regular intervals by a responsable expert” (see the section entitled **Inspection list,** page 35).

OPERATING MATERIALS

FOR MOTOR LUBRICATION:

- lubricating oil "D" (pneumatic oil), DIN 51502, kinematic viscosity approx. 32 mm2/s (cST) at 40 °C (ISO VG 32, DIN 51519).

Additives: Anticorrosive, wear protection and cleaning

If surrounding temperatures are 0 °C or below and according to the humidity of the pressurised air an anti-freeze additive to the lubricating oil or pneumatic oil with anti-freeze additive for the appropriate temperatures is recommended.

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

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

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

FOR MOTOR PRESERVATION:

- Use a non resinous and non sticking conserving oil. The preservation protection duration should be in accordance with the intended period of non operation.

FOR LUBRICATION OF BEARINGS AND GEAR:

- Roller bearing grease, lithium saponified, walk penetration 265 – 295 (0.1 mm). Dropping point: 190 °C.

Operable temperature range: -30 °C to +130 °C, ground oil viscosity at 40 °C 190 mm2/s, DIN 51502, additives: anticorrosive and ageing protection.

FOR MOTOR CLEANING:

- Pure petroleum.

FOR CHAIN LUBRICATION:

- Motor oil, kinematic viscosity approx. 150 mm2/s (cST) at 40 °C.

If the environmental conditions at the working site are such that they induce wear please consult the manufacturer about the appropriate motor and chain lubricant.

CONTROLS

JDN Air Hoists are operated by:

Control	sensitive		emergency stop switch alternatively	
	yes	no	yes	no
E control		x	x	
F control	x[1)] Option	x	x	
HT control		x	x	
FI control	x[1)]		x	
Cord control	x			X

[1)] Up to 20 t lifting capacity

The operating elements (push buttons, lever) return automatically to zero position when released.

The emergency stop function is operated by pressing the red stop button, immediately stopping all operations of the hoist and trolley. Movement of the load hook is also stopped. By simply releasing the emergency stop button the emergency stop function is reset.

E control

F control

HT control

FI control

Cord control

CHAIN

RULES FOR RUNNING IN HOIST CHAINS BEFORE CARRYING OUT THE OVERLOAD TEST

CAUTION!
In case this information should not be observed you damage the high tensile chain in your hoist/lifting gear already during testing prior to initial use for which the manufacturer does not undertake any liability.

Hoisting chains with a load capacity of over 25 metric tons have to be run in before carrying out the overload test so that they can withstand the high surface pressure at the contact points of the chain links (in the joints).

For preparing the test with overload the following prerequisites have to be fulfilled:

1. The chain has to be carefully lubricated in the joints. Please observe the relevant information in the Operation Manual.
2. The chain has to be loaded five times by lifting and lowering with approximately 50% the nominal load thus sufficiently increasing the load bearing capacity of the joints.
3. Especially the part of the chain which will be tested with overload has to be carefully lubricated once again.

Only now the overload test can be carried out.

DANGER!
Extreme corrosions (pitting corrosion) heavily reduces the resistance against vibrations of chains. **Danger of cracks!** Hydrogen induced brittleness with following stress corrosion cracking due to corroding media (as for example sea water) can occur at high tensile steels (as for example at the chain). **Danger of cracks!**

So-called recombination poisons as for example hydrogen sulphide, cyanides, arsenic compounds and rhodanides favour this procedure.

Furthermore dangers arise due to rusty chains when using chain containers as the chain may fall out of the box when piling up.

Apart from that rusty chains increase wear.

Before operation ensure that the chain of your JDN Air Hoist is in perfect condition.

- Order any twisted chain.
- Ensure that the chain can run straight so that blocking of the chain intake at the mid section is avoided.

The chain has to be checked in regular intervals (see the section entitled **Inspection list,** page 35)

In case of any of the following defects:
- Extended chain links
- Bent chain links
- Externally damaged links
- Chain pulled rigid
- Severe wear in the link joints
- Corrosion scars

the JDN Air Hoist must be sent for overhaul immediately (see the section entitled **Test dimensions,** page 36).

The chain must be lubricated when not under load (see the section entitled **Lubrication of the chain,** page 34).

Appropriate lubricants see the section entitled **Operating materials,** page 23.

The lubrication intervals depend on the daily running time.

Increased wear can occur due to aggressive environmental influences.

- Shorten maintenance intervals.

For safety reasons please note that the chain may not be

- used as a sling round the load for suspension.
- handled while running.
- run at an angle so that the links can be bent on entry.
- repaired or attached to other hoist chains (e. g. with bolts, emergency links or otherwise).

The allowed chain temperature range is from –40 °C to +150 °C.

If you use a chain container the permitted filling capacity may not be exceeded (see the section entitled **Chain container,** page 37).

LOAD HOOK

Check the throat width “a” and the height “h” of the load hook of the JDN Air Hoist in use at least once a year (see the section entitled **Test dimensions,** page 36). The throat width “a” can be checked with the JDN load hook gauge.

Load hooks may not be
- Loaded on the tip
- Straightened
- Annealed

If the hook is bent the JDN Air Hoist should be sent for inspection.

The allowed load hook temperature range is from –40°C to +150°C.

STARTING OPERATION

JDN Air Hoists including their supporting structure are to be checked by trained staff prior to being placed in service.

In case JDN Hoists are mounted by the user into trolleys or cranes, these powered cranes have to be checked by trained staff prior to being placed in service or prior to being placed in service again after a substantial modification.

For preparation of the compressed air JDN Air Hoists must be operated with an air service unit.
The air service unit must not be more than 10 m away from the hoist.

The air service unit is supplied without the oil.
Oiler and regulator are already preset.

For filling the oiler, see the sections entitled **Operating materials,** page 23, and **Service unit,** page 29.

Lubrication of the chain by the client before initial use is especially important (see the sections entitled **Lubrication of the chain,** page 34, and **Operating materials,** page 23).

A well ordered running-in of the chain is a must for a proper functioning of the JDN Air Hoist. Before every operation, please check that the chain is not twisted or the bottom block – if applicable – has not been flipped through the chain falls. Order the chain if necessary.

Observe all appropriate regulations when attaching the load!

Before every operation and after longer idle periods action should be taken in the following order:

1. Check power requirements (air pressure and air consumption see the section entitled **Technical data,** page 42) and the setting of the regulator in the service unit.
2. Check the oil level in the oiler of the service unit and if necessary replenish (see the section entitled **Service unit,** page 29).
3. Lubricate the chain if necessary.
4. Blow through the air hose before connecting.
5. Connect air supply hose (for size of hose and air connection screw see the section entitled **Technical data,** page 42).
6. Test the brake function and – at the same time – the control unit and the limit switch (see the section entitled **Testing the limit switch,** page 33).

Switch the JDN Air Hoist (without load) for short periods alternatively to raise and lower. When the control element is released the chain should not continue to run.
If the chain continues to run and/or the operating element does not automatically return to the zero position, your JDN Air Hoist must be sent for repair!

TROUBLESHOOTING

Symptom	Remedy
motor has too little power or stops	– check air pressure, increase if necessary – check diameter of air hose (see the section entitled **Technical data,** page 42) – check hose for free passage of air – check tightness of control hose connections – check oil level – silencer plate clogged, wash out or change.

All other problems must be corrected by maintenance repairs.

MAINTENANCE

If maintenance measures exceed care and servicing please contact the manufacturer.

With regard to the qualification of maintenance personnel see the section entitled **Safety instructions,** page 5.

CARE

If your JDN Air Hoist is not suspended, connected or installed stationary but frequently changing working place – especially in contaminated or humid surroundings – ensure that for periods of non operation it is stored in a clean and dry place (see the section entitled **Storage,** page 15).

SERVICE UNIT

CAUTION!
When operating a hoist with service unit, the unit should be installed within 5 m of the hoist.

The service unit for air hoists PROFI 3 TI up to PROFI 50 TS consists of the two components filter-regulator and lubricator. The service unit for air hoists PROFI 50 TI and PROFI 100 TI as well as for the monorail hoists consists of the three components filter, regulator and lubricator.

VERSION OF TWO COMPONENTS

Inspecting and adjusting the filter-regulator

The filter regulator is preset in the factory at an operating pressure of 5,4 bar (operating pressure with running motor). If the pressure gauge shows a different reading you should first check the accuracy of the gauge. If the gauge is in order, then re-adjust the filter-regulator with running motor with rated load. A faultless adjustment is only reached at a pressure upstream the service unit of at least 7 bar.

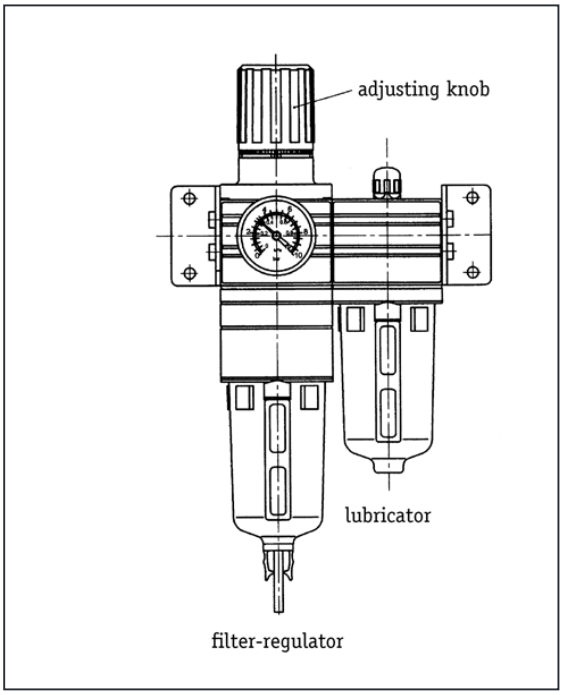
- Lift the adjusting knob.
- Turn the regulator knob until the pressure gauge shows 5,4 bar operating pressure.
  Turn clockwise to increase the pressure or counter-clockwise to decrease it.
- Latch the adjusting knob by pressing it down.

Alternatively you can set the filter regulator to 6 bar with halted motor which will require a pressure of at least 7 bar upstream the service unit.

- Relieve all pressure from the air line behind the service unit and close it again.
- Turn the adjusting knob counter-clockwise to detension the adjusting spring.
- Turn the adjusting knob until the pressure gauge shows a pressure of 6 bar. Turn clockwise to increase the pressure or counter-clockwise to decrease it.
- Latch the adjusting knob by pressing it down.

If the operating pressure does not reach 5,4 bar despite a sufficiently high pressure upstream the service unit then the cross section of the air feeding hose is too small!

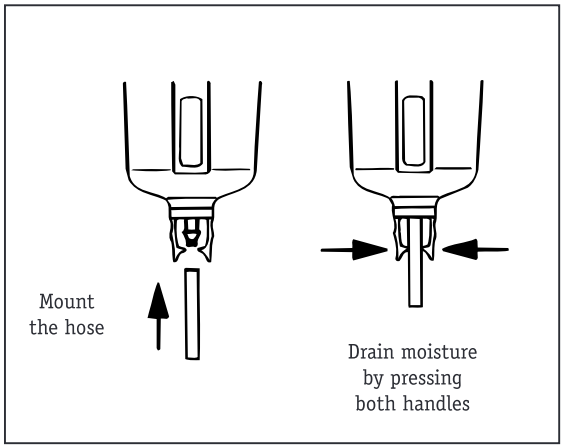
Version of two components filter-regulator and lubricator



Draining the moisture

In the course of time moisture is gathered in the receptacle of the filter-regulator which has to be drained in regular intervals. Please proceed as follows:

- Check the water level visible through the sight glass in the receptacle. The water level may not reach the separating disc.
- Mount the enclosed drain hose (instead of this a soft PVC-hose of a diameter of 8 x 1 of corresponding length may be used).
- Collect the drained water and dispose it in a suitable manner as it may contain oil.



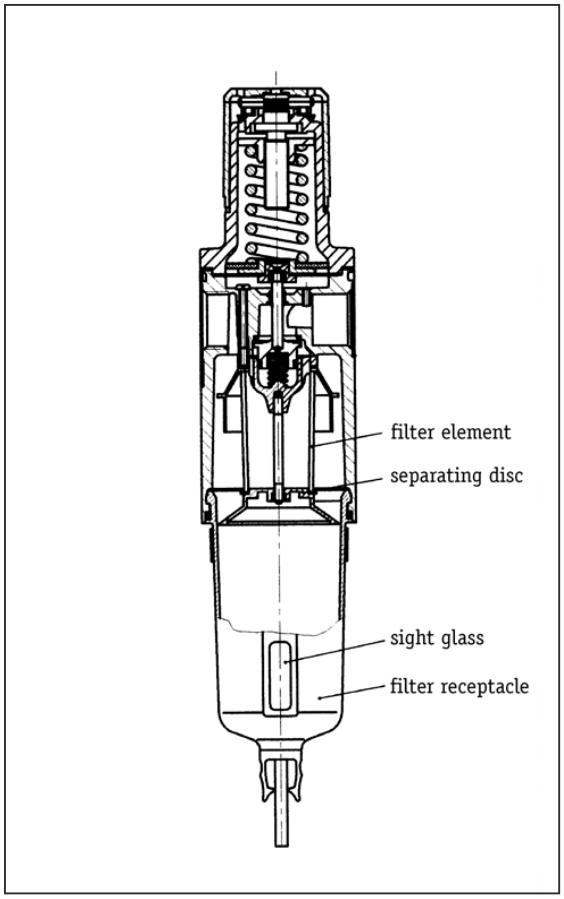
Draining the moisture

Cleaning the filter element

CAUTION!
Do not use any alcohols for cleaning the service unit! Alcohol may damage parts of the service unit. Transparent parts may only be cleaned with soap.

The filter element must be cleaned yearly as follows:

- Drain the water.
- Shut off the compressed air supply, carefully relieve any remaining pressure.
- Unlock the receptacle of the filter-regulator, turn it to the left until it stops and remove it.
- Unscrew the separating disc. The filter element is loosely positioned on the centre of the separating disc.
- Clean the filter element with soap water and blow through it firmly.
- Remount the clean filter element and tighten the separating screw.
- Put receptacle of the filter regulator back into the hosuing and turn it to the right. The receptacle locks by itself.



Version of two components filter-regulator and lubricator

Filling and adjusting the lubricator

The function of the lubricator is to ensure that the air supplied to the hoist receives a constant and precisely metered quantity of oil. It is very important to check the lubricator regularly as the vane motor could be damaged in case of insufficient lubrication. The lubricator can be replenished even when it is under pressure.

- ▶ Check the oil level through the sight glass of the receptacle. The oil level may not fall short of the minimum marking!
- ▶ Unscrew the oil filling plug.
- ▶ Fill the lubricator with oil up to the maximum marking and replace the oil filling plug.
- ▶ Check the oil dripping rate through the sight glass with running motor.
- ▶ Turn the oil throttle screw with a screw driver until reaching the required number of oil drops per minute. Turn clockwise to reduce the dripping rate, counter-clockwise to increase it.

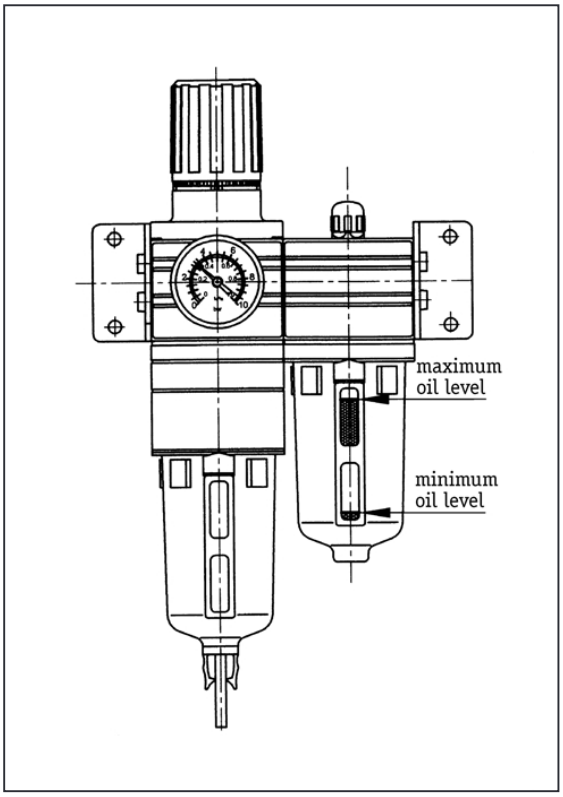
Oil dripping rates (lifting with no load):

For UH 05, UH 1 and UH 2:
2 drops each per minute

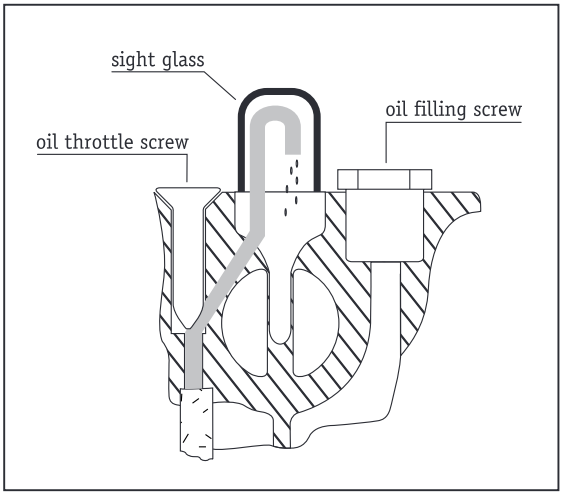
For PROFI 3 TI, 6 TI, 10 TI, 15 TI, 20 TI, EH 20, UH 4, UH 6, UH 8 and UH 12:
10 drops each per minute

For PROFI 25 TI, 37 TI and 50 TS:
15 drops each per minute

CAUTION!
It is not allowed to fill the lubricator with synthetic oils. It may neither be connected to an air system fed by a compressor which is lubricated with synthetic oils.



Check the oil level and replenish if necessary



Checking and adjusting the oil dripping rate through sight glass

VERSION OF THREE COMPONENTS

Inspecting and adjusting the regulator

see description of the version of two components.

Draining the moisture

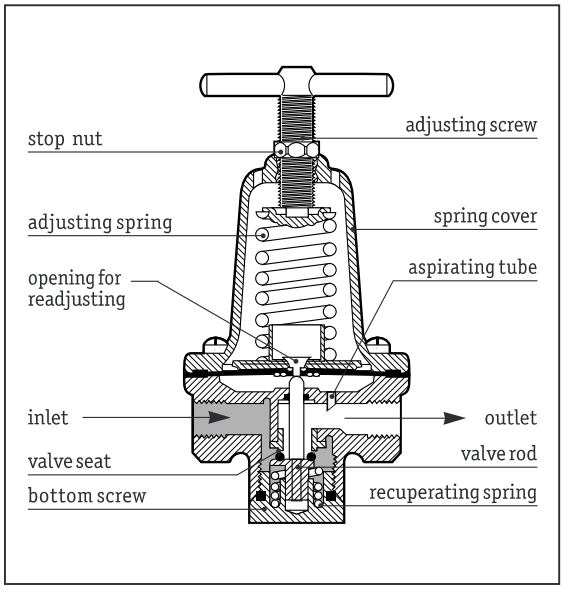
The receptacle is drained automatically.

Cleaning the filter element

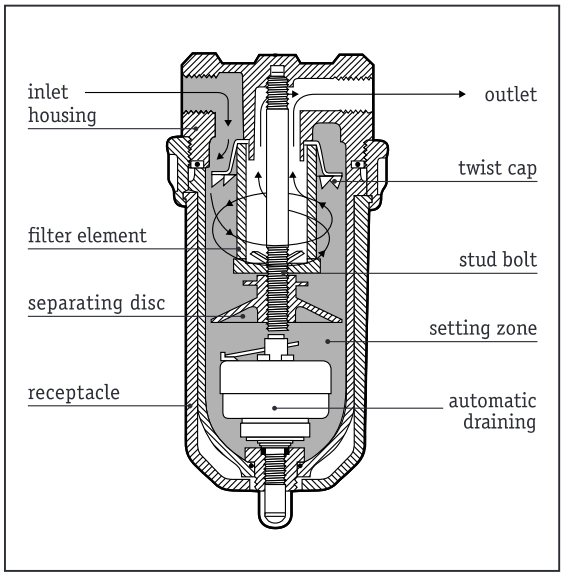
CAUTION!
Do not use any alcohols for cleaning the service unit! Alcohol may damage parts of the service unit. Transparent parts may only be cleaned with soap.

The filter element must be cleaned yearly as follows:

- ▶ Shut off the compressed air supply, carefully relieve any remaining pressure.
- ▶ Unscrew the receptacle by turning the cap nut to the left.
- ▶ Unscrew the separating cap.
- ▶ Remove the filter element from the stud bolt.
- ▶ Clean the filter element with soap water and blow through it firmly.
- ▶ Place the clean filter element back on the stud bolt and screw the separating disc tight.
- ▶ Screw the receptacle tight by turning the cap nut to the right.



Regulator



Filter

Filling and adjusting the lubricator

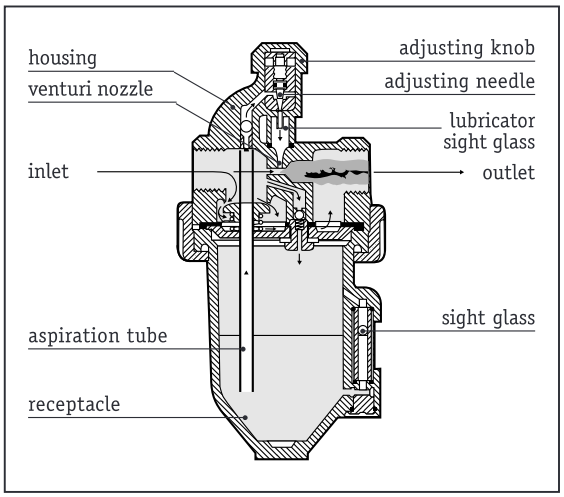
See description **Version of two components.**
The lubricator can be replenished under pressure.

- ▶ Check the oil level through the sight glass of the receptacle. The oil level may not fall short of the minimum marking!
- ▶ Unscrew the oil filling plug.
- ▶ Replenish the lubricator with oil up to the maximum marking and replace the oil filling plug.
- ▶ Check the oil dripping rate through the sight glass with running motor.
- ▶ Adjust the oil dripping rate by turning the adjusting knob until reaching the required number of drops per minute. Turn clockwise to reduce the dripping rate, counter-clockwise to increase it.

Oil dripping rates (lifting with no load):

For EH 25 up to EH 50:
15 drops each per minute

For PROFI 50 TI, 100 TI, EH 75, EH 100,
UH 75 and UH 100:
25 drops each per minute



Lubricator

CHECKING THE CONTROL ELEMENTS

The control elements of your JDN Air Hoist must return automatically to the off position when they are released.

Check once a day whether the control elements work smoothly.

TESTING THE BRAKE

The correct functioning of the brake must be tested as follows:

- ▶ Operate the hoist with no load, alternating between lifting and lowering.

When you release a control element it must not be visibly noticed that the chain slows down.

DANGER!
If you notice that the chain does not stop running immediately, stop using the hoist at once! The hoist must be repaired before any further use.

Due to physical reasons the stopping distance cannot reach the value zero but during this function test it must not be visibly noticed the chain slows down.

TESTING THE LIMIT SWITCH

Move the hooks in succession into the upper and lower end position. Stop just before the end positions are reached and carefully (e. g. by pressing the control elements several times) move the hook into the end position.

LUBRICATION OF THE CHAIN

The links of the chain of your JDN Air Hoist must be lubricated in unloaded position.

- Place the chain in an appropriate container.
- Spray the chain with so much car oil that it is completely covered with an oil film (see the section entitled **Operating materials,** page 23).
- If there is no container available for carrying out lubrication the chain can be lubricated while it is hanging. Ensure that the links are completely coated with oil (e. g. by moving).

You can get from JDN a high duty lubricator in a sprayer which sticks well to the chain and does not drop after the solvent has evaporated, article No. 12066 (sprayer 400 ml).

INSPECTIONS AND MAINTENANCE WORK

Hoists are classified into groups and designed according to their planned operating method according FEM/ISO. The daily running time and the load collective determine the classification (1 Bm/M3). The theoretical service time is 1600 hours in the load collective 2, corresponding to 400 hours of full load.

Whereby it is supposed that the distance for lifting and lowering is more or less the same.

The life time of hoists used mainly for lowering purposes (approx. 75% of the duty cycle) would be reduced because of the higher lowering speed in the range of 50% to 100% of the nominal load. The reduction factor fv has the value 1 at 50% nominal load linearly ascending to 1,5 at 100% nominal load (P = percentage of nominal load).

$$f_v = 1+0{,}5 \ \frac{P-50}{50} \ \text{(for } P > 50\%\text{)}$$

In order to obtain safe working periods the client has to check at each inspection whether the theoretical service time has been reached. This has to be documentated at least once a year in the check book which contains an example of how to calculate the actual service time.

When the theoretical service time is reached a general overhaul has to be carried out. Local (national) safety regulations detail the precise method to be used for calculating and recording the actual service time. It is the customer's responsibility to initiate the overhaul which must be recorded in the check book. For information on the general overhaul consult the manufacturer.

It is only when the assumption for the group classification is in accordance with the practical operation of the hoist that a safe working period corresponds to the theoretical service time. Any deviation between the actual working time and the theoretical service time increases or decreases the safe working period.

Apart from the daily inspection all inspection procedures require removing the hoist from its operating position.

- Release all pressure from the air lines.
- Set up a suitable working platform.
- Disconnect the air supply and control hoses from the hoist.
- Take the hoist out and remove it to a location suitable for conducting the work required.

WARNING!
Every time repairs have been carried out the setting up checks must be done on the hoist.

MAINTENANCE LIST

No.	Measures to be taken	Frequency	see the section entitled
1	Check oil level for motor lubrication	daily	**Service unit,** page 29
2	Check control elements	daily	**Checking the control elements,** page 33
3	Test brake function	daily	**Testing the brake function,** page 33
4	Test limit switch	daily	**Testing the limit switch,** page 33
5	Lubricate the chain	in case of need	**Operating materials,** page 23, and **Lubrication of the chain,** page 34
6	Check emergency stop	daily	**Controls,** page 24
7	Check buffers of the emergency stop device (if there is no end switch)	daily	

All these measures are described in the section entitled **Service Unit,** page 29.

INSPECTION LIST

The mentioned frequencies refer to normal operation (see the section entitled **Operating mode,** page 8).

The frequencies have to be increased in dependence on higher stress.

No.	Measures to be taken	Frequency
1	Check chain	every three months at least
2	Check chain sprocket and chain guide	at every chain change
3	Check wear on brakes	every 250 hours*
4	Check all screw and bolt connections	every 250 hours*
5	Check seating and condition of load hook and eye (load and suspension sections)	every 250 hours*
6	Check motor	every 250 hours*
7	Check gears and change lubrication	every 800 hours**
8	Check shaft coupling	every 800 hours**
9	Check load coupling	every 800 hours**
10	Check control	daily
11	Check service unit	yearly
12	Check silencer	yearly
13	Check overload protection	yearly
14	Check and lubricate the axial bearing of the hooks and the bearing of the sprocket wheels	yearly
15	Change buffers of the emergency stop device	at least every 5 years
16	Check air connections for damages	yearly
17	In Offshore and similar corrosive applications the chain has to be exchanged on a regular basis	at least after 5 years

* at least yearly ** at least after 5 years

TEST DIMENSIONS

Note: When checking the extent of wear, the wear which will occur in the period until the next examination must be taken into consideration.

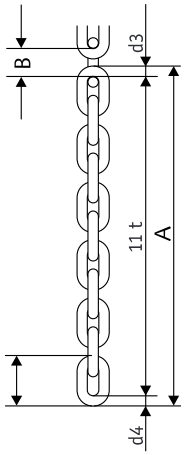
The chain sprocket should be exchanged at the same time when exchanging the chain, as otherwise the new chain will be subject to increased wear. Each chain change has to be documented in the check book.

Chain d x t	7 x 21	13 x 36	16 x 45	22 x 66	31.5 x 90
Dimension A max.	249.2	429.2	536	783.4	518.3*
11 x t inside	235.8	404.3	505.3	741.2	457.8*
Dimension B max.	22.1	37.9	47.4	69.5	93.8
Dimension C min.	6.3	11.7	14.4	19.8	28.35
Dimension D max.	36.1	63.9	79.3	113.3	157.6

Dimensions in mm

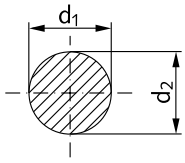
* Measuring length referred to 5 x t

Type	Max. permissible dimension of throat width a[1)]	Min. permissible dimension of height h
UH 05, UH 1	31.5 mm	21.4 mm
UH 2	36.5 mm	28.5 mm
3 TI	35.7 mm	36.1 mm
6 TI, UH 4, UH 6	46.0 mm	41.3 mm
10 TI, UH 8, UH 12	50.4 mm	58.9 mm
15 TI	60.6 mm	71.3 mm
20 TI, 25 TI EH 20, EH 25,	83.4 mm	80.8 mm
37 TI, 50 TI, 50 TS EH 37, EH 50,	110.2 mm	116.9 mm
100 TI, EH 75, EH 100, UH 75, UH 100	131.0 mm	152.0 mm

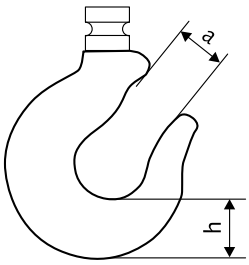


11 t = A - (d3+d4)

1) With safety latch the plate thickness of the safety latch has to be subtracted from the max. permissable dimension a.



$$C = \frac{d_1 + d_2}{2}$$



ACCESSORIES

CHAIN CONTAINER

Use only JDN chain containers with JDN Air Hoists. Other constructions could be a high safety risk.

Never exceed the permitted filling capacity for a chain container.

For chains in containers lubrication is of utmost importance for making full use of the bucket capacity. Rust on chains assist high piling up of the chain in the bucket and is therefore not allowed.

When the chain runs into the container it has to be observed that between lower edge of mid section and chain pile at least 5 chain links can hang without obstruction.

The chain may only pass into the container over the chain drive. Should it have fallen out of the container for example during transportation it must be completely extended at the load hook side and then returned into the container over the chain drive with running hoist.

In case a load is fastened directly under the load hook it has to be safeguarded that it cannot be driven against the chain container. If necessary a clamping sleeve has to be mounted on the chain above the load hook acting as an emergency stop at the control lever.

DANGER!
When operating JDN Air Hoists without a chain container it has to be made certain that the idle chain running up and down the chain sprocket (unloaded chain end) does not cause any risks for example by interlocking, striking or falling down.

Crash dangers may also arise when during the lifting process the idle chain at first settles on large surface loads or other surfaces above the transport level and then slides or falls down.

DANGER!
Do not exceed the admissible filling capacity! Danger of a chain drop!

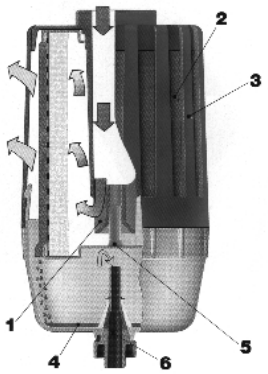
DANGER!
When using a chain container the lubrication of the chain is of special importance to avoid the chain to fall out.

CAUTION!
The chain container must be protected against impacts from the load when lifting. Fit a chain stop to the chain if required.

CAUTION!
Do not allow the chain to pile up in the chain container.

FILTER SILENCER

1 Distribution system
2 Filter silencer element
3 Upper housing
4 Drip pan
5 Fastening bolt
6 Divertor



Filter silencer

OPERATION

The function of the fine filter silencer takes place in three steps:

1. The oil containing exhaust air flows over the inlet into a conical distribution system (1) to flow uniformly against the filter element and reduce the flow rate.

2. When flowing through the filter element made of micro glass fibre the oil particles form larger drops – because of the "coalescing effect" – which are collected in the outer foam coating and can drop from there into the transparent drip pan (4).
   The degree of efficiency achieved is > 99.99 % of all oil particles according to the DOP Test.

3. The compressed air, which is now clean, can expand to ambient pressure. The reduced flow speed leads to a sound absorption of > 4 dB (A). The noise level of expanding from 7 bar to atmosphere can reach approx. 125 dB (A).

4. – Result: Clean and quiet ambient air.

As the structure of the filtering material (2) has a high hollow volume (approx. 90 %) there is considerable retention of solid particles. Therefore the service life is correspondingly high and the pressure drop very low.

MAINTENANCE

Care must be taken that the filtered out oil or the emulsion which has accumulated in the drip pan, are drained. This should be carried out by turning the knob of the divertor (6) by 90 ° before the fluid level reaches the filter silencer element (2).

Depending on the amount of solid particles, the element needs to be replaced by a new one after approx. 2500 hours of operation with the filter silencer still mounted in the air line. The bottom tray fastened to the upper housing with 4 snap connections can be easily removed, the same as the element which is held in place by the fastening bolt (5).

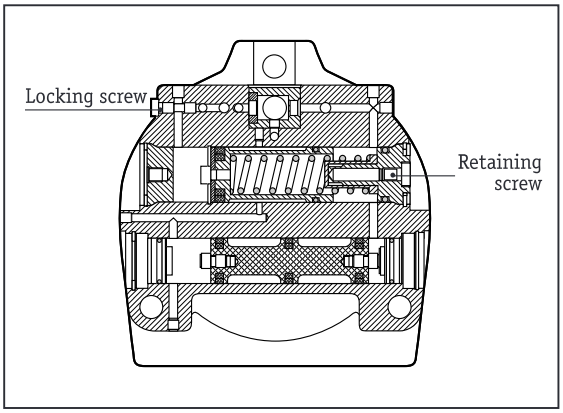
OVERLOAD PROTECTION

JDN Air Hoists have the overload protection as a standard feature for the EU market. The overload protection automatically stops the lifting operation if the load reaches or is greater than the maximum setting.
The shutoff setting is between 110% and 125% of the hoist's rated maximum load capacity.

When the overload protection has actuated only the "Down" motion can be initiated.

The overload protection can also respond to a load that weighs less than the shutoff setting. This may happen when with full speed and a slack chain a load is abruptly lifted. We therefore recommend to tighten the slack chain slowly before lifting the load.

If you wish to retrofit the overload protection to your air hoist consult the customer service of J.D. NEUHAUS GMBH & CO. KG.



Overload protection (at the motor)

OVERLOAD TESTING WITH PROFI 3 TI THROUGH PROFI 20 TI AND MONORAIL HOIST EH 20

When testing the hoist with overload without causing the hoist to shut-off the locking screw has to be removed.

DANGER!
After completing the overload test, always tighten the locking screw until it seats firmly.

ADJUSTING THE OVERLOAD PROTECTION

DANGER!
If the overload protection is incorrectly adjusted the chain may break.

- Loosen the retaining screw in order to reach the threaded lug underneath it.
- Turn the threaded lug to adjust the overload protection setting. Turn the lug clockwise to increase the shutoff setting or counterclockwise to decrease the setting.
- Replace the retaining screw and tighten it down before testing the overload protection for correct functioning.

OVERLOAD TESTING WITH PROFI 25 TI THROUGH PROFI 100 TI AND MONORAIL HOISTS EH 25 THROUGH EH 100

When testing the hoist with overload without causing the hoist to shut-off the locking screw has to be removed.

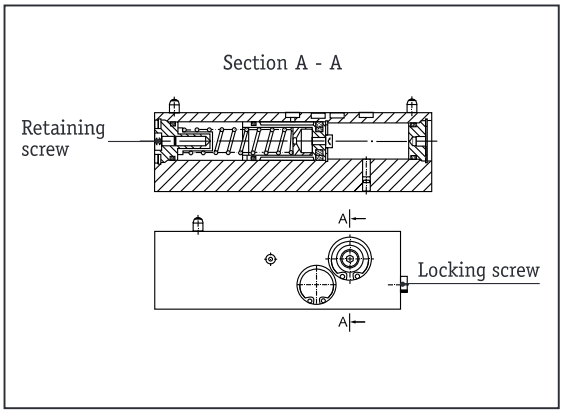
DANGER!
After completing the overload test, always tighten the locking screw until it seats firmly.

- Loosen the locking screw.
- Now the pressure balance piston is not activated at the "UP" side, and the overload protection is out of function.
- After completing the overload protection test tighten the locking screw until it seats firmly.

ADJUSTING THE OVERLOAD PROTECTION

DANGER!
If the overload protection is incorrectly adjusted the chain may break.

- Loosen the retaining screw in order to reach the threaded lug underneath it.
- Turn the threaded lug to adjust the overload protection setting. Turn the lug clockwise to increase the shutoff setting or counterclockwise to decrease the setting.
- Replace the retaining screw and tighten it down before testing the overload protection for correct functioning.



Overload protection (at the motor)

OVERLOAD TESTING WITH UH 05 THROUGH UH 2

When testing the hoist with overload without causing the hoist to shut-off the locking screw has to be removed.

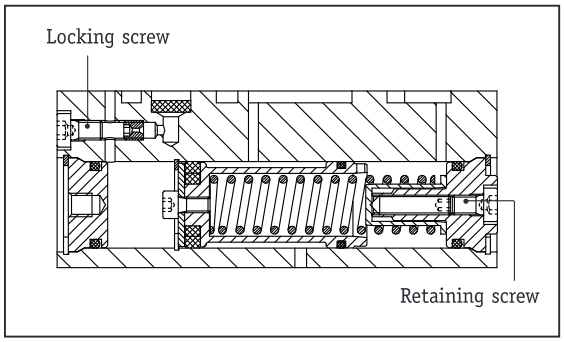
DANGER!
After completing the overload test, always tighten the plug screw until it seats firmly.

- Loosen the plug screw.
- Now the pressure balance piston is not activated at the "UP" side, and the overload protection is out of function.
- After completing the overload protection test, tighten the plug screw until it seats firmly.

ADJUSTING THE OVERLOAD PROTECTION

DANGER!
If the overload protection is incorrectly adjusted the chain may break.

- Loosen the retaining screw in order to reach the threaded lug underneath it.
- Turn the threaded lug to adjust the overload protection. Turn the lug clockwise to increase the shutoff setting, or counterclockwise to decrease the setting.
- Replace the retaining screw and tighten it down before testing the overload protection for correct functioning.



Overload Protection (at the motor)
Loosen the retaining screw to reach the threaded lug underneath it.

OVERLOAD TESTING WITH UH 4 TROUGH UH 12

When testing the hoist with overload without causing the hoist to shut-off the locking screw has to be removed.

DANGER!
After completing the overload test, always tighten the plug screw until it seats firmly.

- Loosen the cover screw (1) at the housing
- Loosen the plug screw.
- Now the pressure balance piston is not activated at the „UP" side, and the overload protection is out of function.
- After completing the overload protection test, tighten the plug screw until it seats firmly.
- Replace the cover screw (1) at the housing.

ADJUSTING THE OVERLOAD PROTECTION

DANGER!
If the overload protection is incorrectly adjusted the chain may break.

- Loosen the cover screw (2) at the housing.
- Loosen the retaining screw in order to reach the threaded lug underneath.
- Turn the threaded lug to adjust the overload protection. Turn the lug clockwise to increase the shutoff setting, or counterclockwise to decrease the setting.
- Replace the retaining screw and tighten it down before testing the overload protection for correct functioning.
- Replace the cover screw (2) at the housing.

BOOSTER VALVE

To shorten the reaction times of indirect controls (E, F, HT) where the control hose length is over 10 m, an additional valve is fitted on the motor.

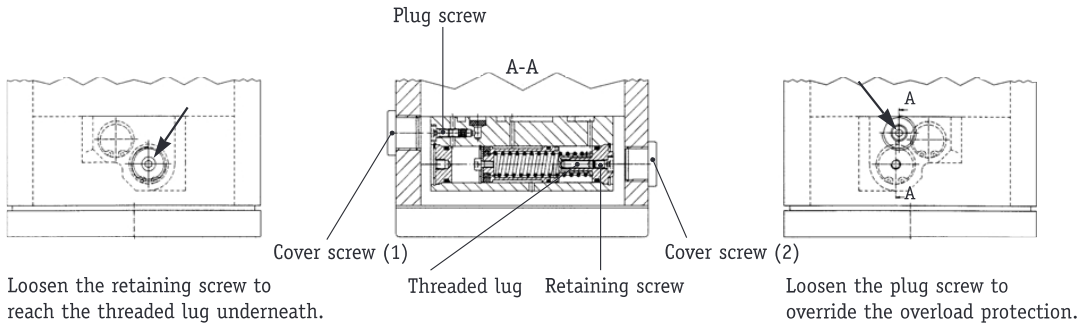
This also prevents a pressure drop in the control cylinder of the motor valve.

AXIAL BEARING

As standard the top hooks of JDN Air Hoists can only be turned around its longitudinal axle without load as there is no roller bearing in the housing.

In case the top hook has to be turned around smoothly under load an axial bearing with own housing can be mounted between hoist housing and top hook.

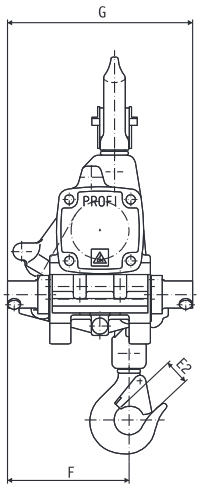
This additional device increases the headroom of JDN Air Hoists.

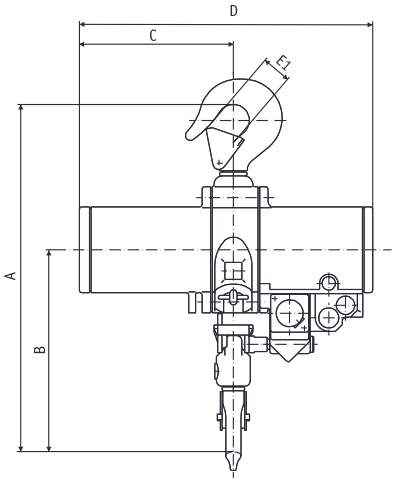


Overload protection (in the motor housing)

DIMENSIONS / TECHNICAL DATA

SPECIFICATIONS OF JDN AIR HOISTS PROFI





Type	025 TS	05 TS	1 TS	2 TS	3 TI	6 TI	10 TI	15 TI	20 TI	25 TI	37 TI	50 TS	50 TI	100 TI
A min. headroom*	452	395	410	544	540	650	800	910	1090	1282	1466	1700	1700	2200
B	298	238	238	370	320	430	535	585	708	948	935	1144	1144	1475
C	141	144	183	183	200	200	240	240	390	393	377	475	538	705
D	302	308	348	348	480	480	528	528	768	839	807	1005	1124	1417
E_1	26	26	30	30	40	40	42	55	75	75	100	100	100	120
E_2	26	26	26	30	30	40	42	55	75	75	100	100	100	120
F	132	136	142	116	198.5	198.5	220	322	250	466	518	310	310	440
G max. width	217	217	217	217	275	275	340	465	360	610	745	539	539	767

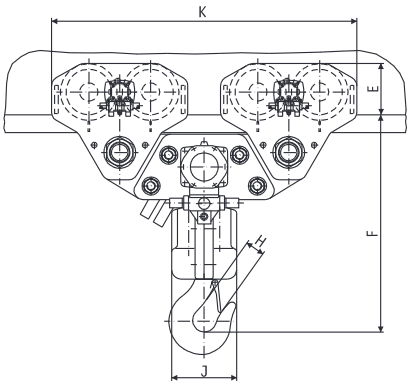
* Chain container increases the headroom

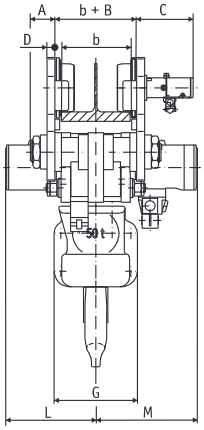
Dimensions in mm

Type		025 TS	05 TS	1 TS	2 TS	3 TI	6 TI	10 TI	15 TI	20 TI	25 TI	37 TI	50 TS	50 TI	100 TI
Rated capacity	metric tons	0.25	0.5	1	2	3	6	10	15	20	25	37.5	50	50	100
Number of chain falls		1	1	1	2	1	2	2	3	4	2	3	4	4	4
Motor output	kw	1.0	1.0	1.0	1.0	2.2	2.2	2.2	2.2	2.5	6.0	6.0	6.0	10.0	10.0
Air pressure	bar	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Lifting speed with rated load	m/min	20	10	5	2.5	3.5	1.7	1.0	0.7	0.5	1.1	0.65	0.45	0.7	0.35
Lifting speed with no load	m/min	44	22	11	5.5	7	3.5	2.6	1.7	1.0	2.3	1.6	1.3	1.3	0.7
Lowering speed with rated load	m/min	40	24	12	6	8.5	4.2	3	2	1.3	1.9	1.5	1.4	1.5	0.8
Air consumption with rated load Lifting	m^3/min	1.4	1.4	1.4	1.4	2.4	2.4	2.4	2.4	2.9	5.5	5.5	5.5	11	11
Air consumption with rated load Lowering	m^3/min	1.2	1.2	1.2	1.2	3.1	3.1	3.1	3.1	3.7	6.5	6.5	6.5	12	12
Air connection		G 1/2	G 1/2	G 1/2	G 1/2	G 3/4	G 3/4	G 3/4	G 3/4	G 3/4	G1	G1	G1	G1 1/2	G1 1/2
Hose dimension (Ø inside/Ø outside)	mm	15/27	15/27	15/27	15/27	19/31	19/31	19/31	19/31	19/31	25/39	25/39	25/39	35/51	35/51
Weight with standard lift. rope control. without Δp	kg	21.5	24	27.5	34.5	67	88	125	190	285	498	880	855	940	2460
Chain size	mm	5x15	7x21	7x21	7x21	13x36	13x36	16x45	16x45	16x45	22x66	22x66	22x66	22x66	31.5x90
Weight of chain per metre	kg	0.54	1.0	1.0	1.0	3.8	3.8	5.8	5.8	5.8	10.8	10.8	10.8	10.8	21.3
Standard lift	m	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Length of control with standard lift	m	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Sound level with rated load[1] with standard silencer - Lifting	dB (A)	75	75	75	75	86	86	86	86	76	83	83	83	88	88
Sound level with rated load[1] with standard silencer - Lowering	dB (A)	80	80	80	80	88	88	88	88	82	83	83	83	89	89

[1] measured in 1 m distance acc. to DIN 45635 part 20

SPECIFICATIONS OF JDN MONORAIL HOISTS





Type	EH 20	EH 25	EH 37	EH 50	EH 75	EH 100
A	162	146	100	125	100	125
B	68	70	68	68	68	68
C	287	277	287	292	287	292
D	35	25	35	40	35	40
E	220	198	220	283	220	283
F*	850	998	1070	1150	1480	1535
G	275	170	190	420	286	575
H	75	75	100	100	120	120
J	210	350	455	340	740	470
K	720	1185	1730	1680	3210	3130
L	390	377	379	462	640	762
M	407	434	430	560	655	750

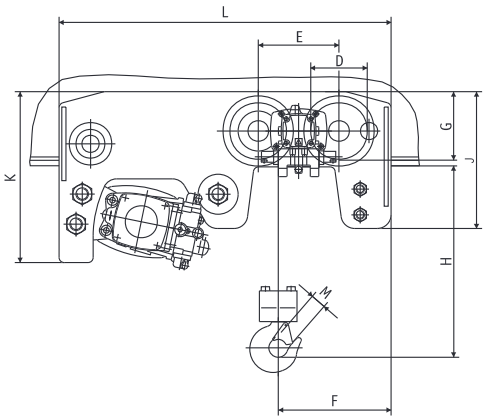
* Chain container increases the headroom

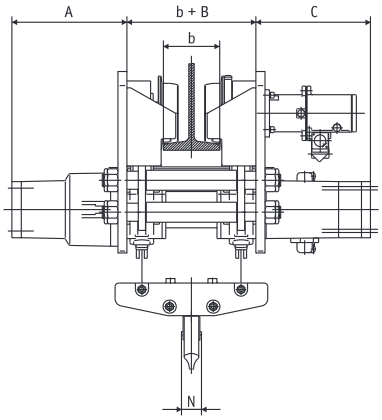
Dimensions in mm

Type		EH 20	EH 25	EH 37	EH 50	EH 75	EH 100
Rated capacity	t	20	25	37.5	50	75	100
Number of chain falls		4	2	3	4	3	4
Motor output Trolley	kw	0.7	1.4	1.4	1.4	2.8	2.8
Motor output Hoist	kw	2.5	6	6	6	10	10
Air pressure	bar	6	6	6	6	6	6
Lifting speed with rated load	m/min	0.5	1.1	0.65	0.5	0.45	0.35
Lifting speed with no load	m/min	1.0	2.3	1.6	1.1	0.85	0.65
Lowering speed with rated load	m/min	1.3	1.9	1.5	0.9	1.0	0.75
Travelling speed with rated load	m/min	12	12	12	12	12	12
Travelling speed with no load	m/min	13.5	13.5	13.5	13.5	13.5	13.5
Air consumption Trolley	m^3/min	1.3	2.6	2.6	2.6	5.2	5.2
Air consumption Hoist		2.9	5.5	5.5	5.5	11	11
Air connection		G 3/4	G 1 1/2	G 1 1/2	G 1 1/2	G 1 1/2	G 1 1/2
Hose dimension (Ø inside/Ø outside)	mm	19/31	25/39	25/39	25/39	35/51	35/51
Weight with standard lift	kg	620	950	1450	1780	4000	5700
Chain size	mm	16x45	22x66	22x66	22x66	31.5x90	31.5x90
Weight of chain per metre	kg	5.8	10.8	10.8	10.8	21.3	21.3
Standard lift	m	3	3	3	3	3	3
Length of control with standard lift	m	2	2	2	2	2	2
Sound level with rated load[1] with standard silencer - Lifting	dB (A)	76	83	83	83	88	88
Sound level with rated load[1] with standard silencer - Lowering	dB (A)	82	83	83	83	89	89

[1] measured in 1 m distance acc. to DIN 45635 part 20

SPECIFICATIONS OF JDN ULTRA-LOW MONORAIL HOISTS





Type	UH 05	UH 1	UH 2	UH 4	UH 6	UH 8	UH 12
A	155	155	155	246	317	246	317
B	140	140	140	200	200	200	200
C	252	252	252	315	315	315	315
D	84	84	84	165	165	165	165
E	136	136	136	236	236	236	236
F	182	182	148	330	330	270	270
G	114	114	114	197.5	197.5	197.5	197.5
H* min. 58 <=b <=125	120	120	120				
H* min. 125 <=b <=210	125	125	135				
H* min. 150 <=b <=230				210	210	260	260
H* min. 210 <=b <=310	130	130	140				
H* min. 230 <=b <=310				220	220	235	235
J	257	257	257	400	400	400	400
K	339	339	339	500	500	500	500
L	625	625	625	970	970	970	970
M	26	26	30	30	40	40	42
N	38	38	53	53	55	55	76

* Chain container increases the headroom

Dimensions in mm

Type		UH 05	UH 1	UH 2	UH 4	UH 6	UH 8	UH 12
Rated capacity	t	0.5	1.0	2.0	4.0	6.0	8.0	12.0
Number of chain falls		2	2	4	2	2	4	4
Motor output	kw	1.0	1.0	1.0	2.5	2.5	2.5	2.5
Air pressure	bar	6	6	6	6	6	6	6
Lifting speed with rated load	m/min	10	5	2.5	2.2	1.5	1.0	0.7
Lifting speed with no load	m/min	24	12	6	4.4	3	2	1.4
Lowering speed with rated load	m/min	24	12	6	7.5	5.2	3.6	2.5
Air consumption Lifting -rated load-	m^3/min	1.4	1.4	1.4	2.9	2.9	2.9	2.9
Air consumption Lowering -rated load-	m^3/min	1.2	1.2	1.2	3.7	3.7	3.7	3.7
Air connection		G 1/2	G 1/2	G 1/2	G 3/4	G 3/4	G 3/4	G 3/4
Hose dimension (Ø inside/Ø outside)	mm	15/27	15/27	15/27	19/31	19/31	19/31	19/31
Weight with standard lift without control	kg	105	106	120	450	470	495	520
Chain size	mm	7x21	7x21	7x21	13x36	13x36	13x36	13x36
Weight of chain per metre	kg	1.1	1.1	1.1	3.8	3.8	3.8	3.8
Standard lift	m	3	3	3	3	3	3	3
Lenght of control with standard lift	m	2	2	2	2	2	2	2
Sound level with rated load[1] with standard silencer - Lifting	dB (A)	75	75	75	76	76	76	76
Sound level with rated load[1] with standard silencer - Lowering	dB (A)	80	80	80	82	82	82	82

[1] measured in 1 m distance acc. to DIN 45635 part 20

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