This manual edition 10/2002 covers the operation of the following JDN air hoists:

**PROFi 025 TS**  **PROFi 05 TS**

{\[^{\text{Fabr.-No.}}\]}

{\[^{\text{Fabr.-No.}}\]}

**PROFi 1 TS**  **PROFi 2 TS**

{\[^{\text{Fabr.-No.}}\]}

{\[^{\text{Fabr.-No.}}\]}

Before operating any hoist, carefully read the entire manual. For hoists in trolleys, refer to the manual on JDN Trolleys.

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

Within the Federal Republic of Germany
operators of air hoists must observe the currently applicable
▶ UVV Winches, Lifting and Pulling Devices
   (BGV D8), and
▶ UVV Loadcarrying Devices Used with Lifting
   Equipment (BGV D6),

and when air hoists are used together with trolleys
operators must additionally observe the currently applicable
▶ UVV Cranes (BGV D6).

Operators must also initiate the prescribed tests.

In all other countries, the corresponding local regulations have to be observed.

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 are designed in accordance with the 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 third parties, or with the risk of equipment damage.

All personnel entitled to operate 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 customer is under obligation 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 (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 air hoists is responsible for ensuring that the inspection log that is 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.
The present manual is intended to help the operator to get familiar with 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 place 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.

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 equipment damage.
**IDENTIFICATION**

The nameplate mounted on 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 addressed in this manual, please contact us at the following address:

J.D. NEUHAUS GMBH & CO. KG  
Windenstraße  
D-58449 Witten-Heven  

Phone +49-2302-2080  
Fax +49-2302-208286  
http://www.jdn.de  
e-mail: info@jdn.de

Example of a nameplate, mounted on the hoist cover
** MAIN COMPONENTS **

The JDN air hoists of the **Profi TS** series consist of the following main components:

1. Gearbox
2. Mid section with chain sprocket
3. Motor and disc brake
4. Control unit with air connections
5. Chain and hook
6. Overload protection

** PRODUCT DESCRIPTION **

The JDN air hoists of the **Profi TS** series are rated for maximum loads from 0.25 tons (for the **Profi 025 TS**) to 2 tons (for the **Profi 2 TS**). Different control systems are provided for the various types of applications.

Using an appropriate control system, the vane type motor of the air hoists can be controlled to give precise load positioning.

The JDN air hoists of the **Profi TS** series are in accordance with the driving mechanism group 1Am, FEM 9.511 standard.

The motors of the JDN air hoists of the **Profi TS** series are treated during assembly with a special JDN high quality grease (article No. 11901, 11902) enabling to run the hoists with oil-free air for a service time of approx. 100 hours and should be replaced latest after 5 years (see maintenance, page 31). An additional lubrication with oiled air by means of a service unit with oiler is possible.

*JDN air hoist of the **Profi TS** series*
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 60079-204\(^4\)). 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:

\[\text{II 2 GD IIA T4(X)/ II 3 GD IIB T4(X)}\].

ADDITIONAL MARK "X"

This special mark refers to notes about explosion protection in the Operation Manual.

\[\text{II 2 GD IIA T4(X)/ II 3 GD IIB T4(X)}\]: 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.

\[\ldots\text{ IIC T6(X)}\]: 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) determining 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 \[\text{II 2 GD IIC T4}\] depending on the construction of the trolley (see below) - but also with \[\text{II 2 GD IIB T4}\]. For further conditions of use please refer to the information for a safe operation (references \(\text{[1]}\) and \(\text{[2]}\)).

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 \[\text{II 2 GD IIC T6(X)}\], containing the special mark "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:

\[\text{II 2 GD IIB T4/II 3 GD IIC T4}\].

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 \[\text{II 2 GD IIC T4}\] (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 and bronze coated running wheels or running wheels made of bronze 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 these 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 $10^9 \, \Omega$ to avoid electrostatic dangers of ignition. Otherwise (at $>10^9 \, \Omega$) the hoses of explosion group IIA and IIB must have a diameter of $\leq 30 \, \text{mm}$ and in explosion group IIC a diameter of $\leq 20 \, \text{mm}$ 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 deteriorate 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 $10^6 \, \Omega$). 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 01655, Redecker6, Nabert, Schön7, IEC 60079-12 und IEC 60079-20)

<table>
<thead>
<tr>
<th>Explosion Group</th>
<th>Temperature Class</th>
<th>Ignition Temperature</th>
<th>Maximum Admissible Surface Temperature of the Operating Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>&gt; 450°C</td>
<td>450-300°C</td>
<td>450°C</td>
</tr>
<tr>
<td>T2</td>
<td>300-200°C</td>
<td>200-135°C</td>
<td>135°C</td>
</tr>
<tr>
<td>T3</td>
<td>135-100°C</td>
<td>100-85°C</td>
<td></td>
</tr>
</tbody>
</table>

### Group 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)
- 0-Kresol
- Methane
- Methyl Acetate
- Methyl Alcohol
- Methyl Chloride
- Methylene Chloride
- Naphthalene
- (Nitro Benzole)
- Phenole
- Propane
- Tolulene
- 0-Xyrol

### Group 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
- Sulphide
- Ethyl Ether

### Group II C
- **Hydrogen
- **Acetylene
- **Carbon Disulphide

( ): 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 ignition

*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**

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

\(^*1\): 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 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).

**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 12/979 „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 $190°C \times \frac{2}{3} = 126°C$ maximum admissible surface temperature.

---


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.


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


9. Hauptverband der Deutschen Berufsgenossenschaften/Berufsgenossenschaftliches Institut für Arbeitssicherheit
**PRODUCT INFORMATION**

---

**INTENDED USE**

The JDN air hoists are designed for lifting loads with vertically arranged chain. But under special conditions they can also be used for lifting people. When operating with a trolley, they are also applicable to move 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.

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**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 in 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.

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

The JDN air hoists require a pneumatic supply at a pressure of 6 bar. If the supply pressure lies below this, then the hoist may not operate correctly. The following may occur:

- The brake drags, leading to high wear.
- The sensibility of the control noticeably diminishes.

**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.

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

- size of entrained particles less than 40µm
- amount of entrained particles less than 5 mg/m³
- pressure dewpoint at least 10°C below the lowest expected ambient temperature

Do not attempt to operate the JDN air hoists 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.

If you intend to operate your JDN air hoist in combination with a trolley, carefully read the instructions supplied with it, as well as the relevant accident prevention regulations dealing with the operation of such trolleys.

---

**OPERATION WITHOUT CHAIN BOX**

**CAUTION!**

When using JDN hoists without chain box it has to be observed that the idle chain (unloaded chain end) going in or running out of the chain sprocket does not cause any dangers as for example by hooking on or banging against something or by dropping down. Dangers by dropping down may also arise when during lifting the idle chain at first settles down on loads with larger surfaces and then slides off and drops down.

---

**OPERATION WITH SERVICE UNIT**

When operating hoists with service unit, avoid using any synthetic lubricants and do not use alcohol to prevent icing.

**CE-CERTIFICATION**

Within the European Union, only hoists with CE-certification may be operated.
TRANSPORTATION AND STORAGE

SAFE TRANSPORTATION

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

▶ Put the hoist down carefully, do not drop it. Note that the hoist has a weight of 21.5 to 34.5 kg (for the PROFI 025 TS and 2 TS respectively).
▶ Carefully bundle the control and supply hoses and avoid twisting.
▶ Install the chain and avoid looping.

STORAGE CONDITIONS

INTERRUPTIONS IN USE
▶ If the hoist is to be taken out of service for a prolonged period of time, cover the chain and hook with a thin film of oil.
▶ The inside of the motor has a longlasting conservation against corrosion (more details see page 31).

PREPARING FOR STORAGE
▶ Cover the air supply fitting with an adhesive tape or with a cap of the correct size to prevent contamination.
▶ Store the JDN air hoist in a clean and dry location.
SETTING UP

UNPACKING

WARNING!
When unpacking the hoist, bear in mind that it is quite heavy, between 21.5 and 34.5 kg (for the PROFi 025 TS and 2 TS respectively).

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.
➤ 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

➤ Connecting the rope control (page 18)
➤ Mounting the chain (page 44)
➤ Chain box (page 50)

Chains in abnormal lengths are shipped in loose form, separate from the hoist. In such cases, a short length of chain is already in the hoist itself. To draw the chain inside the hoist, the latter must be connected to the air system and ready for operation.

THE CHAIN MUST BE LUBRICATED BEFORE STARTING OPERATION (SEE PAGE 33).

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.

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).

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

Suspend the hoist, using the hook or eye provided
FASTENING OF PENDANT CONTROLS

FASTENING OF 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 guidance 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.

HOW TO ESTABLISH THE PLUG-IN CONNECTION

Motor side of hoist

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.
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.

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.
### LUBRICANTS

Under normal ambient conditions, the following lubricants and cleaners are applicable. If the hoist 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!**
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.

<table>
<thead>
<tr>
<th>Application</th>
<th>Recommended lubricant/cleaner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor lubrication applied in the factory</td>
<td>JDN high quality grease article No. 11901 (1 kg) article No. 11902 (40 g)</td>
</tr>
<tr>
<td>Operation with service unit</td>
<td>Air motor oil type D kinematic viscosity approx. 30 mm²/s (cSt) at 40°C, anti-icing additive if required</td>
</tr>
<tr>
<td>Chain lubrication</td>
<td>Automotive motor oil, kinematic viscosity approx. 150 mm²/s (cSt) at 40°C, or special lubricant provided by J.D. NEUHAUS</td>
</tr>
<tr>
<td>Motor Preservation (not necessary when using the JDN high quality grease)</td>
<td>Non resinous conserving oil with according preservation protection duration</td>
</tr>
<tr>
<td>Motor cleaning (not necessary when using the JDN high quality grease)</td>
<td>Pure petroleum</td>
</tr>
<tr>
<td>Lubrication for bearing and gear (also for open toothing)</td>
<td>Lithium saponified grease, walk penetration 265-295 (0,1 mm), ground oil viscosity: 190 cSt (mm²/s) at 40°C, dripping point: 180°C, operating temperatures: -30° to +120°C, denomination acc. to DIN 51825: KP2K-30, additives: EP (for wear reduction) and ageing protection; water resistant and anticorrosive.</td>
</tr>
</tbody>
</table>
Before beginning to use a hoist for the first time, the hoist and the 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 without 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.
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).

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 31).

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 32).

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)
- 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.

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 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.
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 43).
▶ 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.
▶ Take care for correct 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 responsibility.

- If the air supply is cut protect the load and the 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 14.

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 responsible expert” (see the section entitled **Inspection list**, page 32).
The JDN air hoists can be delivered with a number of different controls, all of which are suitable for use in areas exposed to explosion hazards.

All control buttons automatically return to the “zero” position when released.

**F CONTROL**
The F control has two pushbuttons, one for lifting and one for lowering the hook. Arrows next to the pushbuttons indicate the direction of motion.

- To lift, press the upper pushbutton.
- To lower, press the lower pushbutton.

**HT CONTROL**
The HT control has a single pushbutton for lifting and lowering the hook. The direction of motion is indicated by arrows that are moulded into the pushbutton.

- To lift, tilt the pushbutton up.
- To lower, tilt the pushbutton down.
FI CONTROL
The FI control has two levers located side by side, for lifting or lowering the load. By varying the degree of pressure applied to a lever, you can slow down or accelerate the motion of the load in that direction, allowing for very precise load positioning. Arrows marked on the levers show the direction of motion.

- To lift, slowly depress the right-hand lever. The load will begin to move slowly upwards.
- Depress the lever further to increase the lifting speed.
- Reduce the pressure on the lever slightly to decrease the lifting speed.
- To lower, slowly depress the left-hand lever. The load will begin to move slowly downwards.
- Depress the lever further to increase the lowering speed.
- Reduce the pressure on the lever slightly to decrease the lowering speed.

EMERGENCY STOP SWITCH
In the EU each control is equipped with an emergency stop switch as standard. Outside the EU the control will be equipped with an emergency stop switch on special request only.

In order to quickly avert a hazard caused by the hoisting movement the push buttons have to be released interrupting the hoisting movement immediately.

Only in case this stop function fails the red emergency stop switch has to be firmly pressed down thus closing the motor valve and halting the motion of the load hook. The emergency stop switch engages. The push buttons for lifting and lowering are out of function. The emergency stop switch can be unlatched by turning it clockwise. It goes back into zero position.

DANGER!
Never unlatch the emergency stop switch before the hazard has been removed and the stop function of the push buttons has been re-established.
ROPE CONTROL

The rope control is used to control the lifting and lowering motion directly. The two ropes are fastened to a grip, which can be operated with one hand for precise, fine positioning. Arrows are marked on the grip indicating the direction of motion.

- To lift, carefully pull down on the rope with the green cone grip. The load will begin to move slowly upwards.
- Pull on the rope more strongly to increase the lifting speed.
- Reduce the force on the rope to move the load more slowly.
- To lower, carefully pull down on the rope with the yellow cone grip. The load will begin to move slowly downwards.
- Pull on the rope more strongly to increase the lowering speed.
- Reduce the force on the rope to move the load more slowly.

DANGERS!

Only use suitable harness in correspondence to the load. Never use the hoist chain as a sling around the load.

In Germany, operators must observe the safety regulations for the use of harness with lifting equipment (VBG 9a). In other countries, operators must comply with local regulations as applicable.

- Put the harness into the deepest point of the load hook, never on the tip of the hook.
- Ensure that the hook safety catch snaps back into position.

CONNECTING A LOAD

DANGERS!

Only use suitable harness in correspondence to the load. Never use the hoist chain as a sling around the load.

In Germany, operators must observe the safety regulations for the use of harness with lifting equipment (VBG 9a). In other countries, operators must comply with local regulations as applicable.

- Put the harness into the deepest point of the load hook, never on the tip of the hook.
- Ensure that the hook safety catch snaps back into position.
CAUTION!
The JDN air hoists must be allowed to align themselves freely under load, otherwise excessive forces may arise leading to damages of the hoist parts.

► First lift the hook to tighten the slack chain. When tightening the chain interrupt the lifting movement for a moment. The hoist will now align itself as required. This procedure reduces wear on the hoist parts.
► Now continue to lift the load normally.

If the hoist is equipped with an overload protection, it will stop upwards motion when the load reaches or exceeds the maximum permissible load.

DANGER!
Make sure that no one is underneath the load!

► Lower the load and put it down gently.

DANGER!
Make sure that during all operations of the air hoists the load hook can be lowered up to the bottom to avoid that a load can be lowered into lowest position without reaching the floor! Danger of overloading!

INTERRUPTING WORK
If you intend to interrupt your work with the JDN air hoist, proceed as follows:
► Set the load down and disconnect it from the hoist.
► Raise the hook high enough so that it does not pose a danger for anyone moving about in the area.

► Lower the load hook until you can easily disconnect the load.
► Raise the hook high enough so that it does not pose a danger for anyone moving about in the area.
The vane motor consists of a cylinder sleeve 1 with two lateral side plates and a rotor 2.

The rotor is eccentrically positioned in the cylinder sleeve and has slots 3 for receiving the vanes 4.

The vanes run freely and are pressed against the inner surface 5 of the cylinder sleeve. Each two neighbouring vanes form a chamber 6.

When the chamber is filled with compressed air the pressure at the first vane is stronger due to the greater surface area 4.1 compared to the smaller surface area of the following vane 4.2. The resulting torque causes the rotor to turn. The compressed air escapes the chamber when passing the exhaust port 7.

The arrows in the illustration show the turning direction of the rotor and the corresponding direction of the air flow.
AIR PRESSURE FLUCTUATIONS DURING OPERATION

When the motor is started, the pressure in the air supply system drops from the nominal system pressure $p_1$ to the operating pressure $p_2$.

The magnitude of the operating pressure $p_2$ depends on

- the weight of the load and
- the direction of load movement.

When lifting the maximum rated load, the operating pressure, $p_2$, may not drop more than 10% below the hoist’s rated nominal pressure.

Example:
A hoist with a rated nominal pressure of 6 bar will lift the rated maximum load with the rated lifting speed at an actual operating pressure of 5.4 bar.
TAKING THE HOIST OUT OF OPERATION

PROLONGED SHUTDOWN

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

- Coat the chain and hook with a thin film of oil.
- Raise the load hook high enough so that it does not pose a danger for anyone moving about in the area. Avoid ramming the end stop switch.
- Relieve all pressure from the air lines.

See also section entitled Storage conditions, page 15.

STORAGE

See section entitled Storage conditions, page 15.

DISMANTLING THE HOIST

DANGER! RISK OF INJURY!
The JDN air hoists should only be dismantled by qualified personnel.

- Release all pressure from the air lines.
- Set up a suitable working platform.
- Undo the union nut and remove the air hose.
- Cover the air connection fitting to prevent contamination with dirt.
- Press back the snap rings on the control hoses using a screwdriver, and at the same time pull the hoses out. Avoid pinching the hoses!
- Mark the control connection fittings. (You can use the coloured hose stubs for this purpose, taking green for the „down“ connection and yellow for „up“.)
- Unscrew the relieving device (hose carrier) and remove the controls.
- Carefully unhook the hoist from its point of suspension and transport it as required.

DISPOSAL

The JDN air hoists contain a number of materials which must be properly disposed of or recycled by the operator at the end of the hoist’s working life, under applicable law.

The special materials contained in the hoists are listed below.

HOIST:
- Ferrous materials
  Steel
  Cast steel
  SG iron
- Non-ferrous metals
  Bronze
  Aluminium
- Synthetic materials/plastics
  Polyurethane
  Polyethylene
  Polyvinyl chloride
  Polyamide
  Rubber
  Polypropylene
  Epoxy resin
  Polyacetal
  Thermosetting casting (brake liner, asbestos-free)

FILTER SILENCER:
- Zinc die-casting
- Brass
- NBR
- Aluminium
- Polypropylene
- Polyurethane
- Glass-reinforced plastic
- Steel
- Polyacetal
- Polyethylene
MAINTENANCE

MAINTENANCE AND INSPECTION INTERVALS

JDN air hoists are sturdy and require little maintenance. To ensure that the hoist 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 hoist 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 air hoists.

CLEANING AND CARE

If you must frequently move the JDN air hoist from one place to another, especially in heavily soiled or moist areas, take the following steps:

- remove dirt contamination from the hoist and chain,
- shut the air connection fittings, and
- store the hoist in a clean and dry location.

SPARE PARTS

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

LUBRICATION

See section entitled Lubricants, page 19.

INSPECTIONS AND MAINTENANCE WORK

Hoists are classified into groups and designed according to their planned operating method according FEM/ISO. The daily working time and the load collective determine the classification (1 Am/M4).

The theoretical service time is 3200 hours in the load collective 2, corresponding to 800 hours of full load.

When using hoists mostly for lowering loads (as from 75% of the duty cycle) the working life would be reduced due to higher lowering speeds in the range of 50% to 100% nominal load. The diminution factor $f_v$ has the value of 1 at 50% nominal value linearly rising to 1,5% at 100% nominal load (percentage of nominal load P)

$$f_v = 1 + 0.5 \frac{P - 50}{50} \quad (\text{for } P > 50\%)$$

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 documented 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 to remove 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 required work.

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

<table>
<thead>
<tr>
<th>Maintenance procedure</th>
<th>Interval</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check the oil level in the service unit (^1)</td>
<td>as required</td>
<td>(See section entitled <strong>Filling and adjusting the lubricator</strong>, page 36)</td>
</tr>
<tr>
<td>Lubricate the chain</td>
<td>as required</td>
<td>(See section entitled <strong>Lubricating the chain</strong>, page 33)</td>
</tr>
</tbody>
</table>

### Inspection procedure

<table>
<thead>
<tr>
<th>Inspection procedure</th>
<th>Interval</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check the controls</td>
<td>daily</td>
<td>(See section entitled <strong>Testing the controls</strong>, page 33)</td>
</tr>
<tr>
<td>Check the brake</td>
<td>daily</td>
<td>(See section entitled <strong>Inspecting the chain</strong>, page 42)</td>
</tr>
<tr>
<td>Test the overrun protection trip</td>
<td>daily</td>
<td>(See section entitled <strong>Testing the brake</strong>, page 33)</td>
</tr>
<tr>
<td>Test the emergency stop switch</td>
<td>daily</td>
<td>(See section entitled <strong>Testing the controls</strong>, page 33)</td>
</tr>
<tr>
<td>Inspect the chain</td>
<td>every 3 months</td>
<td>(See section entitled <strong>Inspecting the chain</strong>, page 42)</td>
</tr>
<tr>
<td>In Offshore and similar corrosive applications the chain has to be exchanged on a regular basis (^2)</td>
<td>at least every 5 years</td>
<td></td>
</tr>
<tr>
<td>Inspect the chain sprocket wheel and chain guides</td>
<td>every time the chain is changed</td>
<td></td>
</tr>
<tr>
<td>Check brake wear</td>
<td>every 250 operating hours (^2), at least once per year</td>
<td>(See section entitled <strong>Replacing brake disc</strong>, page 37)</td>
</tr>
<tr>
<td>Inspect all screw and bolt connections</td>
<td>every 250 operating hours (^2), at least once per year</td>
<td></td>
</tr>
<tr>
<td>Inspect the hook (both load carrying-part and suspension point)</td>
<td>every 250 operating hours (^2), at least once per year</td>
<td>(See section entitled <strong>Inspecting the load hook; exchanging the hook</strong>, page 40)</td>
</tr>
<tr>
<td>Inspect the motor</td>
<td>every 250 operating hours (^2), at least once per year</td>
<td></td>
</tr>
<tr>
<td>Inspect and lubricate hook axial bearings and chain sprocket wheel bearings</td>
<td>every 250 operating hours (^2), at least once per year</td>
<td>Maximum axial tolerance of hook bearing: 2,5 mm</td>
</tr>
<tr>
<td>Inspect service unit (^1)</td>
<td>every 250 operating hours (^2), at least once per year</td>
<td>(See section entitled <strong>Inspecting the service unit</strong>, page 34)</td>
</tr>
<tr>
<td>Inspect silencer, check flow resistance</td>
<td>every 250 operating hours (^2), at least once per year</td>
<td>(See section entitled <strong>Inspecting the silencer for flow resistance</strong>, page 34)</td>
</tr>
<tr>
<td>Exchange lubricant of the motor</td>
<td>every 100 operating hours (^2), at least every 5 years</td>
<td>(See section entitled <strong>maintenance</strong>, page 31)</td>
</tr>
<tr>
<td>Test overload protection</td>
<td>annually</td>
<td>(See section entitled <strong>Testing and adjusting the overload protection</strong>, page 46)</td>
</tr>
<tr>
<td>Inspect gearing, exchange lubricant</td>
<td>every 800 operating hours (^2), at least every 5 years</td>
<td></td>
</tr>
<tr>
<td>Inspect shaft coupling and load clutch</td>
<td>every 800 operating hours (^2), at least every 5 years</td>
<td></td>
</tr>
<tr>
<td>Exchange motor lubrication</td>
<td>every 100 hours (^2), at least every 5 years</td>
<td>(See section entitled <strong>Exchange motor lubrication</strong>, page 39)</td>
</tr>
<tr>
<td>Check air connections for damages</td>
<td>annually</td>
<td></td>
</tr>
<tr>
<td>Change buffer (^1)</td>
<td>at least every 5 years</td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) if existing  \(^2\) when using according to the classification
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 button it must not be visibly noticed that the chain slows down.

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.

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.

CHECKING THE OVERRUN PROTECTION

- Lift the load hook without load until it almost reaches the upper end, then stop.
- 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.

LUBRICATING THE CHAIN

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.

The chain of the JDN air hoist must be lubricated in the joints without load.

- Put the chain in a suitable container.
- Spray the chain with an automotive motor oil.

If it is necessary to lubricate the chain without dismounting it, move the chain back and forth to ensure that the chain links are lubricated at the joints.

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).

TESTING THE CONTROLS

The switching elements of the controls must move freely without sticking.

- Take the load off the JDN air hoist.
- Depress and release all switching elements one after another. The elements should always spring back to their initial position as soon as they are released.
- Press the emergency stop switch. The hoisting motion should immediately halt, even when activating the switching elements.
- Unlatch the emergency stop switch by turning the button.

DANGER!
If any switching element is hard to operate or sticks in the down position, stop using the hoist immediately. The control must first be repaired.
In addition to the scheduled inspection intervals, the silencer should be inspected and its flow resistance assessed whenever the hoist fails to reach the specified lifting speed (see section entitled Technical data, page 53).

To check the flow resistance, compare the lifting speed with the silencer fitted and without at nominal load. The speed with standard silencer or filter silencer must be at least 65% of the lifting speed without silencer. In case of obtaining lower values the silencer elements have to be exchanged.

INSPECTING THE SERVICE UNIT

INSPECTING AND ADJUSTING THE FILTER REGULATOR

The filter regulator is set in the factory at an operating pressure of 5.4 bar (operating pressure with running motor) whereby the manometer can show more than 6 bar with switched off motor. A faultless adjustment is only reached at a pressure upstream of 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. This will require at least a pressure of 7 bar upstream of the service unit.

- Relieve all pressure from the airline behind the service unit.
- Turn the adjusting knob counter-clockwise to detension the adjusting spring.
- Turn the setting knob until the pressure gauge shows 6 bar pressure. 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 of the service unit, then the cross-section of the air feeding hose is too small. The accuracy of the manometer has to be regularly checked.
DRAINING THE WATER

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.

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 once per year 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 housing and turn it to the right. The receptacle locks by itself.
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 filled 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, counterclockwise to increase it.

Oil dripping rates: 2 drops 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.
PLEASE NOTE:
When replacing the brake disc and/or the motor vanes we recommend to put a very thin layer of the JDN high quality grease (article No. 11901, 11902) on the following components:
- brake cylinder and brake piston (not the brake surfaces)
- all parts inside the motor
- reversing sleeve and reversing valve of the control valve

In order to achieve a durable protection, repeat this procedure once a year.

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 screws 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 section entitled Torque settings, page 55).

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

Remove the motor housing cover.

Remove the brake assembly from the housing and exchange the brake disc if required.
When the vanes of the air motor become worn, the motor performs less well, reducing the load capacity of the JDN air hoist. 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 cap 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 section entitled *Replacing brake disc*, page 37).

---

First remove the brake assembly (see section entitled *Replacing brake disc*, page 37).
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.

Clean all parts.

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

**Exchange motor lubrication**

Before assembling the cylinder sleeve, rotor with slots, vanes and both bearing discs put a very thin layer of JDN high quality grease on this parts.

Set the motor housing on end and replace the rotor in the housing.

Insert the 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 available from JDN.)

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.

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.

Place the seal into position.

Place the rotor end onto the shaft coupling.

Flange-connect the motor to the mid section, using two hexagon socket screw (see section **Torque settings**, page 55).
INSPECTING THE LOAD HOOK
EXchanging the hook

If the hook opening „a“ and the height „h“ of the hook go outside the tolerable wear range, the hook must be exchanged.

<table>
<thead>
<tr>
<th>Load capacity</th>
<th>Maximum hook opening „a“</th>
<th>Minimum height „h“</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hook with safety latch</td>
<td>Hook without safety latch</td>
</tr>
<tr>
<td>up to 1 ton</td>
<td>29.5 mm</td>
<td>31.5 mm</td>
</tr>
<tr>
<td>2 tons</td>
<td>34.0 mm</td>
<td>36.5 mm</td>
</tr>
</tbody>
</table>

EXCHANGING THE LOAD-BEARING SLEEVE AND HOOK

- Drive out the dowel pin of the chain link lug.
- Remove the lug.
- Prepare the new chain link lug and the new dowel pin.
- Link the new load-bearing sleeve and hook to the chain using the link lug.
- Adjust the link lug so that the dowel pin fits through the load-bearing sleeve and through the lug.
- Drive the new dowel pin into the chain link lug.

DANGER!
Do not apply any load to the tip of the hook!
Do not attempt to bend the hook back into shape! Do not anneal the hook!
These actions can cause the hook to fail in service, allowing a lifted load to fall.

CHECK THE AXIAL CLEARANCE

Maintenance and lubrication
Please observe that the bearings of the load hook and/or load eye are checked and greased regularly at least once a year. Very important: in areas with wear increasing working conditions as for example high ambient temperatures or aggressive substances in the atmosphere or where the lubricant will eventually be washed out the intervals for maintenance and inspection have to be shortened in any case.

RISKS IN CASE OF INSUFFICIENT MAINTENANCE/LUBRICATION

DANGER!
Insufficient maintenance/lubrication may in cases cause high wear with a danger of a load crash

TO AVOID DANGERS
Dangers can be avoided by regular maintenance/lubrication in corresponding intervals.
If the axial tolerance of the built-in hook or load eye is more than 2.5 mm (see drawing) the worn out parts have to be exchanged.
The chain of your JDN air hoist must be exchanged if it begins to show one of the following defects:

- corrosion pitting
- bent or damaged links
- chain drawn stiff
- wear over 11 pitches ($A_{\text{max}}$)
- single pitch wear ($B_{\text{max}}$)
- elongation of an individual link ($D_{\text{max}}$)

JDN will forward a chain inspection guide upon request.

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.

Comply with DIN 685 Part 5 when inspecting chains.

For exchanging the chain sprocket the gear has to be dismantled (see graph in spare parts list).

### Inspecting the Chain

<table>
<thead>
<tr>
<th>Chain d x t (mm)</th>
<th>5 x 15</th>
<th>7 x 21</th>
</tr>
</thead>
<tbody>
<tr>
<td>$A_{\text{max}}$</td>
<td>178.0</td>
<td>249.2</td>
</tr>
<tr>
<td>$B_{\text{max}}$</td>
<td>15.8</td>
<td>22.1</td>
</tr>
<tr>
<td>$C_{\text{min}}$</td>
<td>4.5</td>
<td>6.3</td>
</tr>
<tr>
<td>$D_{\text{max}}$</td>
<td>25.8</td>
<td>36.1</td>
</tr>
</tbody>
</table>

**Test dimensions of the chain**

The chain sprocket should be exchanged together with the chain as otherwise the new chain will be subject to increased wear. The dowel pin has to be exchanged, too.

- Remove the chain box (if applicable) and unscrew the chain stop.
- Drive out the chain link lug dowel pin.
- Remove the chain link lug and allow the end of the chain to hang down freely.

**Single Fall Chain Hoist:**

- Disconnect the sleeve and the hook from the chain.
- Disconnect the rubber pad and washers from the chain, if fitted.
- Operate the hoist (UP direction), allowing the chain to be withdrawn until the free end is just clear of the control lever.

**Double Fall Chain Hoist (PROFI 275):**

On the PROFI 275, after the chain link lug has been pulled both ends of the chain are free.

- Unscrew the chain stop from the chain and remove the lower half of the block.
- Operate the hoist (UP direction), allowing the chain to be withdrawn until the free end is just clear of the control lever.

Each chain change has to be documented in the check book.

\[ c = \frac{d_1 + d_2}{2} \]
Changing the Chain Sprocket

- Loosen cap screw and take off motor (see also section Exchanging motor vanes, page 38).
- Take off gear from the center part.
- Press chain sprocket together with the chain scraper out of the center part towards the gear side.
- Take off bearing from the chain sprocket.
- Check chain guide of the center part for wear (exchange in case of high wear).
- Press bearing of chain sprocket at the motor side into the center part.
- Push second bearing onto the new chain sprocket (side of the coupling slot).
- Press chain sprocket into the center part together with the chain scraper (pay attention to the correct position of the chain scraper).
- Put an approx. 20 centimeter long piece of chain into the center part so that it hangs out on both sides (separate chain from the old chain). The first link on the load side of the center part has to be in vertical position (see figures Mounting the chain).

If there is a mounting aid for the chain this step can be ignored.

- Put sealing onto the center part, pin up gear and press in chain bolt for fixing (align in advance).
- Put sealing onto the center part and pin up motor with shaft coupling.
- Connect gear, center part and motor with casp screws.
**CAUTION!**
The chain delivered with this JDN air hoist has very narrow tolerances and is well tuned to the chain sprocket.
To ensure proper functioning and avoid risks, whenever exchanging the chain you should always use an original JDN chain.

- Straighten the new chain and verify the correct number of links. For a single fall chain hoist, there should be an even number of links.
- Connect an open chain link with the last link of a 20 cm long piece of chain.
- Connect the new chain with the open link in such a way that the welds of the vertical links are facing outside when the chain runs over the chain sprocket (first link vertical).
- Operate the hoist in the UP direction, allowing the new chain to be drawn over the chain sprocket.
- Disconnect the piece of chain and the open link from the new chain.
- When using a chain box, mount the chain stop on the tenth link.

**CAUTION!**
Do not allow the chain to twist!
A twisted chain is subject to excessive stress loading.

- Use a new chain link lug to fasten the end link of the new chain to the housing.
- Secure the chain link lug, using a new dowel pin.
- Install end discs with buffer, if applicable.
- Mount the hook, if applicable (see section entitled **Inspecting the load hook; exchanging the hook**, page 40). When mounting the hook, take care that the fork-shaped sleeve is capable of running through the control lever.

**MOUNTING A SINGLE FALL CHAIN**

Mount the new chain in such a way that the welds of the vertical links are on the outside, first link vertical (see arrow).

Fasten the end link with the new chain link lug.

Chain with the correctly mounted chain stop when using a chain box.
**MAINTENANCE**

**MOUNTING A DOUBLE FALL CHAIN**

---

**CAUTION!**

The chain delivered with this JDN air hoist has very narrow tolerances and is well tuned to the chain sprocket. To ensure proper functioning and avoid risks, you should always use an original JDN chain whenever exchanging the chain.

- Straighten the new chain and verify the correct number of links. For a double fall chain hoist, there should be an odd number of links.
- Connect an open chain link with the last link of a 20 cm long piece of chain.
- Connect the new chain with the open link in such a manner that the welds on the vertical links are facing outside when the chain runs over the chain sprocket (first link vertical).
- Operate the hoist in the UP direction, allowing the new chain to be drawn over the chain sprocket.
- Disconnect the piece of chain and the open link from the new chain.
- When using a chain box, mount the chain stop on the tenth link.

---

**CAUTION!**

Do not allow the chain to twist. A twisted chain is subject to excessive stress loading.

- Use a new chain link lug to fasten the end link of the new chain to the housing. Insert the lug just far enough to hold up the end of the chain.
- Operate the hoist in the UP direction, and allow the chain to run over the chain sprocket until only 1 m of its length is remaining on the load side.
- Insert end discs with buffer.
- Lead the chain through the bottom block. Use a wire hook to help pull it through.
- Attach the chain stop to the fourth link.
- Lead the other end of the chain into the back opening on the housing, taking care to avoid twisting the chain. Now drive the chain link lug all the way in so that both ends of the chain are securely fixed in position.
- Secure the chain link lug with the dowel pin.

---

**Diagram:**

- Mount the new chain in such a way that the welds of the vertical links are on the outside, first link vertical (see arrow).
- Insert the lug just far enough to hold up the end of the chain.
- Schematic depiction of the run of a double fall chain.
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 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.

**TESTING AND ADJUSTING THE OVERLOAD PROTECTION**

**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.

Loosen the locking screw to override the overload protection.

Loosen the retaining screw to reach the threaded lug underneath it.
**TABLE OF PROBLEMS, CAUSES, AND SUGGESTED REMEDIES**

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause</th>
<th>Suggested remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hoist does not lift</td>
<td>The overload protection has been set off</td>
<td>Lower the hook briefly, reduce the load to the acceptable limit, and lift again</td>
</tr>
<tr>
<td></td>
<td>Air pressure too low</td>
<td>Increase air pressure to 6 bar</td>
</tr>
<tr>
<td></td>
<td>Emergency stop pressed down</td>
<td>Ensure that the hazard has passed, unlatch the emergency stop</td>
</tr>
<tr>
<td></td>
<td>Control defective</td>
<td>The control must be repaired</td>
</tr>
<tr>
<td>Hoist lifts too slowly</td>
<td>Brake does not vent properly</td>
<td>Increase air pressure to 6 bar, check the brake vent seal, and replace seals as necessary</td>
</tr>
<tr>
<td></td>
<td>Air supply hoses leaking or loosely connected</td>
<td>Check connections of compressed air supply and control hoses, tighten as necessary</td>
</tr>
<tr>
<td></td>
<td>Airline section too small</td>
<td>Use an airline with the specified section</td>
</tr>
<tr>
<td></td>
<td>Service unit contaminated with dirt, filter clogged</td>
<td>Clean service unit, take steps to improve air quality</td>
</tr>
<tr>
<td></td>
<td>Silencer clogged</td>
<td>Exchange silencer elements</td>
</tr>
<tr>
<td></td>
<td>Motor vanes worn out</td>
<td>Replace motor vanes</td>
</tr>
<tr>
<td></td>
<td>Motor run dry</td>
<td>Lubricate motor, inspect service unit ¹⁾</td>
</tr>
<tr>
<td></td>
<td>Motor control valve defective</td>
<td>Repair control valve</td>
</tr>
<tr>
<td></td>
<td>Two-way valve of brake defective</td>
<td>Repair brake</td>
</tr>
<tr>
<td>Load hook fails to stop immediately when brake is applied</td>
<td>Brake lining worn out</td>
<td>Exchange brake disc</td>
</tr>
<tr>
<td>Excessive chain noise coming from the chain sprocket</td>
<td>Chain worn out</td>
<td>Exchange old chain against a new JDN chain</td>
</tr>
<tr>
<td></td>
<td>Chain sprocket worn out</td>
<td>Exchange chain sprocket</td>
</tr>
<tr>
<td></td>
<td>Wrong chain installed</td>
<td>Check chain dimensions and replace if necessary</td>
</tr>
<tr>
<td>Speed goes down when lowering with load</td>
<td>lack of lubricant in the motor</td>
<td>Increase lubricant (inspect service unit) ¹⁾</td>
</tr>
</tbody>
</table>

¹⁾ if existing
OPTIONAL FEATURES

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 element.
- The silencer reduces the noise by 3 to 4 dB (A) below the figure for the standard (sinter plate) 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.

Filter silencer
**EXCHANGING THE CONTROLS**

You can choose between various types of controls for JDN air hoists: in addition to the rope control, there are the F, HT, and FI-type controls, all of which can be easily exchanged against each other. The installation procedure is always the same, with the exception of installing the relieving device.

**EXCHANGING AIR CONTROLS**

If you wish to exchange one of the F, HT, or FI-type controls against another of the same group, see section entitled *Connecting the control hoses*, page 17.

**CHANGING FROM MECHANICAL CONTROL TO AIR CONTROL**

It is possible to change from rope control to air control or vice versa, but this should only be carried out by a properly trained technician.

⚠️ **DANGER!**

Do not allow anyone else but a properly trained technician to carry out any work on the control shaft or piston. Improper installation can lead to chain breaking.

If you want to change from mechanical to air control, consult the customer service department of J.D. NEUHAUS GMBH & CO. KG.

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**OVERLOAD PROTECTION**

The JDN air hoists **PROFI 175** and **275** 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 shut-off setting is between 110% and 125% of the hoist’s rated maximum load capacity.

If the overload protection has been actuated, only the “Down” motion can be initiated. As soon as the load drops below the shut-off setting, the overload protection is released, and the lifting operation can be started once again.

The overload protection may also be actuated by a load that weighs less than the shut-off setting. This may happen if the hoist is traversed upwards at full speed with a slack chain and runs against the resistance of the load to be lifted. For this reason we recommend to tighten the slack chain slowly before commencing normal lifting operation.

If you wish to add the overload protection feature to your **PROFI 025 TS** or **05 TS** hoist, consult the customer service department of J.D. NEUHAUS GMBH & CO. KG. How to adjust the overload protection see page 46.
**BOOSTER VALVE**

If the length of the control hose exceeds 10 m, the reaction time of the push button controls may be delayed.

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

**CHAIN BOX**

In many applications a chain box increases safety at work as otherwise the down-hanging chain could in cases interfere with the load.

The JDN chain boxes are available in various sizes, depending on the chain length.

**CAUTION!**
Do not exceed admissible filling quantity!
Danger of a chain drop!

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

The chain stop is fitted above the load hook, where it functions in the same way as the end stop, but earlier. In case of the **Profi 275** with double chain the chain stop at the already mounted chain fall has to be fitted downwards as far as necessary in order to support the bottom sleeve (idle chain fall).

Additionally the soft buffer at the opposite (running) chain fall has to be exchanged against a package of several hard buffers for changing the position of the emergency stop of the load hook.

Please contact us if you have any queries.

For your better understanding please see bottom figure on page 45.

A chain stop is always fitted to the tenth link of the chain, counting from the hoist end of the chain. This chain stop ensures that a minimum length of chain remains in the chain box when the load hook is at its lowest point thus preventing the chain from running clear of the chain box when the hook is subsequently lifted again (see sections entitled **Mounting the chains**, page 44).

**DANGER!**
When working with chain box the lubrication of the chain is of special importance to avoid the chain to fall out.

CAUTION!
Do not allow the chain to bunch up in the chain box.

- After the chain box has been installed, lower the hook to its lowest point.
- Now lift the hook and allow the entire chain to run into the chain box.

/L50776

After the chain box has been installed, lower the hook to its lowest point.

/L50776

Now lift the hook and allow the entire chain to run into the chain box.

DANGER!
When working with chain box the lubrication of the chain is of special importance to avoid the chain to fall out.
This technical innovation, featuring two independent brakes, makes the air hoists of the Profi 75 series (up to 2 tons load capacity) even safer.

The motor brake regulates the braking and holds the load safely in position. The second brake opens and closes together with the motor brake without actually exercising a braking force. In this way it is not exposed to wear. The only time it actually exercises a braking force is in the event that the motor brake should unexpectedly fail.

**DUAL BRAKE SYSTEM**

**TESTING THE FIRST BRAKE (MOTOR BRAKE)**

For the purpose of testing the functioning of the first brake with the test load it is possible to override the overload protection (see section entitled Testing and adjusting the overload protection, page 46).

In order to test the motor brake the second brake must first be disabled. Proceed as follows:

- Remove the safety ring (retainer ring) from the front of the gearing.
- Remove the silencer.

The brake cover is now exposed. It has a 7 mm diameter hole bored through the centre.

- Pass a M 6x16 screw through this hole and thread it into the brake piston assembly which lies just beyond. (In a pinch, you can use one of the four motor cover screws for this purpose.)
- When the screw head just touches the brake cover thread it one full rotation further. This will release the second brake.

Now the first brake (motor brake) can be tested with the full testing load, which is 125% of the rated capacity.

Upon completion of the test all parts have to be replaced to function.

- Completely remove the M 6x16 screw.
- Re-install the silencer and replace the safety ring (retainer ring).
- If a motor cover screw has been used for this operation, replace it in its position.
**TESTING THE SECOND BRAKE**

For testing the function of the second brake with the test load it is possible to override the overload protection (see section entitled **Testing and adjusting the overload protection**, page 46).

**WARNING!**
Keep away from the test weight at all times.

<table>
<thead>
<tr>
<th>Static test</th>
<th>Dynamic test</th>
</tr>
</thead>
<tbody>
<tr>
<td>▶ Lift the test weight (125% of the rated capacity) approximately 10 cm.</td>
<td>▶ Dismount the brake disc of the first brake (motor brake) (see section entitled <strong>Replacing brake disc</strong>, page 31).</td>
</tr>
<tr>
<td>▶ In this condition, loosen the motor cover screws. This is done by threading the screws out by one half turn at a time, one after the other, until the screw heads are clear of the motor cover.</td>
<td>▶ Now reassemble the brake, but without the brake disc. This is necessary to close the brake’s venting system.</td>
</tr>
<tr>
<td>In this position, there is no load at all on the first brake (motor brake) and is out of function. The test requirements are fulfilled if the second brake holds the load in this position.</td>
<td>▶ Now lift the test weight (125% of the rated capacity).</td>
</tr>
<tr>
<td></td>
<td>▶ Lower the test weight, then stop the lowering motion.</td>
</tr>
<tr>
<td></td>
<td>If the second brake, which now operates alone, securely brakes and holds the load, the test requirements have been fulfilled.</td>
</tr>
</tbody>
</table>

**WARNING WITH SENSITIVE CONTROL!**
When lifting the test weight, depress the UP button in one go!

When the load is already suspended and the sensitive control is switched to lift slowly, the load will be observed to drop, because the second brake opens earlier than the motor break which is out of function in this condition (brake disc dismounted).

▶ After completion of the test, re-install the brake disc (see section entitled **Replacing brake disc**, page 37).
## TECHNICAL DATA

<table>
<thead>
<tr>
<th>Type</th>
<th>025 TS</th>
<th>05 TS</th>
<th>1 TS</th>
<th>2 TS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lifting capacity</td>
<td>t</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of chain falls</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Motor output</td>
<td>kW</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Weight with standard lift, rope control, without $\Delta p$</td>
<td>kg</td>
<td>21.5</td>
<td>24</td>
<td>27.5</td>
</tr>
<tr>
<td>Weight of 1 m chain</td>
<td>kg</td>
<td>0.54</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Chain dimensions</td>
<td>mm</td>
<td>5x15</td>
<td>7x21</td>
<td>7x21</td>
</tr>
<tr>
<td>Air pressure (nominal pressure)</td>
<td>bar</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Air consumption at rated load - lifting</td>
<td>m³/ min</td>
<td>1.4</td>
<td>1.4</td>
<td>1.4</td>
</tr>
<tr>
<td>Air consumption at rated load - lowering</td>
<td>m³/ min</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>Air connection</td>
<td>G ½</td>
<td>G ½</td>
<td>G ½</td>
<td>G ½</td>
</tr>
<tr>
<td>Hose inside diameter</td>
<td>mm</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Hose outside diameter</td>
<td>mm</td>
<td>27</td>
<td>27</td>
<td>27</td>
</tr>
<tr>
<td>Lifting speed at rated load</td>
<td>m/ min</td>
<td>20</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Lifting speed without load</td>
<td>m/ min</td>
<td>44</td>
<td>22</td>
<td>11</td>
</tr>
<tr>
<td>Lowering speed at rated load</td>
<td>m/ min</td>
<td>40</td>
<td>24</td>
<td>12</td>
</tr>
<tr>
<td>Lowering speed without load</td>
<td>m/ min</td>
<td>30</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>Standard lift</td>
<td>m</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Control length with standard lift</td>
<td>m</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Sound level at rated load, with standard silencer - lifting</td>
<td>dB (A)</td>
<td>75</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td>Sound level at rated load, with standard silencer - lowering</td>
<td>dB (A)</td>
<td>80</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Sound level at rated load, with filter silencer - lifting</td>
<td>dB (A)</td>
<td>71</td>
<td>71</td>
<td>71</td>
</tr>
<tr>
<td>Sound level at rated load, with filter silencer - lowering</td>
<td>dB (A)</td>
<td>77</td>
<td>77</td>
<td>77</td>
</tr>
</tbody>
</table>

1) The sound level of the measuring area in 1 m distance of the machine surface was calculated acc. to DIN 45635, part 20 considering our prescribed overpressure of the operating pressure.

The reduction of the sound level indoors is approx. 3 dB (A) for each doubling of the distance.
**DIMENSIONS**

<table>
<thead>
<tr>
<th></th>
<th>025 TS</th>
<th>05 TS</th>
<th>1 TS</th>
<th>2 TS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A minimum headroom</td>
<td>452</td>
<td>395</td>
<td>410</td>
<td>544</td>
</tr>
<tr>
<td>B</td>
<td>298</td>
<td>238</td>
<td>238</td>
<td>370</td>
</tr>
<tr>
<td>C</td>
<td>141</td>
<td>144</td>
<td>183</td>
<td>183</td>
</tr>
<tr>
<td>D</td>
<td>302</td>
<td>308</td>
<td>348</td>
<td>348</td>
</tr>
<tr>
<td>E</td>
<td>26</td>
<td>26</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>F</td>
<td>26</td>
<td>26</td>
<td>26</td>
<td>30</td>
</tr>
<tr>
<td>G maximum width</td>
<td>217</td>
<td>217</td>
<td>217</td>
<td>217</td>
</tr>
<tr>
<td>H</td>
<td>24</td>
<td>27</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>I</td>
<td>132</td>
<td>136</td>
<td>142</td>
<td>116</td>
</tr>
</tbody>
</table>

**TORQUE SETTINGS**

<table>
<thead>
<tr>
<th>Screw</th>
<th>Torque, in Nm</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 cap screws, hoist housing</td>
<td>60</td>
</tr>
<tr>
<td>3 cap screws, motor cover</td>
<td>4.9</td>
</tr>
<tr>
<td>4 cap screws, brake cover</td>
<td>8</td>
</tr>
<tr>
<td>1 cap screw, hose carrier</td>
<td>8</td>
</tr>
</tbody>
</table>