

Pneumatic chain hoist

Model CPA

Capacities 125 kg up to 990 kg

Operating and
maintenance manual



**Yale Industrial
Products GmbH**

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SAFETY INSTRUCTIONS

Organisational Measures

Yale 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 some third party, or with the risk of equipment damage.

All personnel charged with operating 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 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 (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 Property Damage

The user of Yale 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 purpose other than its intended design use.
- Ensure that the conditions of use as detailed below are met.

Please note!

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

- UVV Winches, Lifting and Pulling Devices (VBG 8), and
- UVV Loadcarrying Devices Used with Lifting Equipment (VBG 9a), and operators of air hoists that are used in conjunction with trolleys must additionally comply with the currently applicable
- UVV Cranes (VBG 9).

Operators must also initiate the prescribed tests.

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

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

PRODUCT INFORMATION

The operation manual

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

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

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!

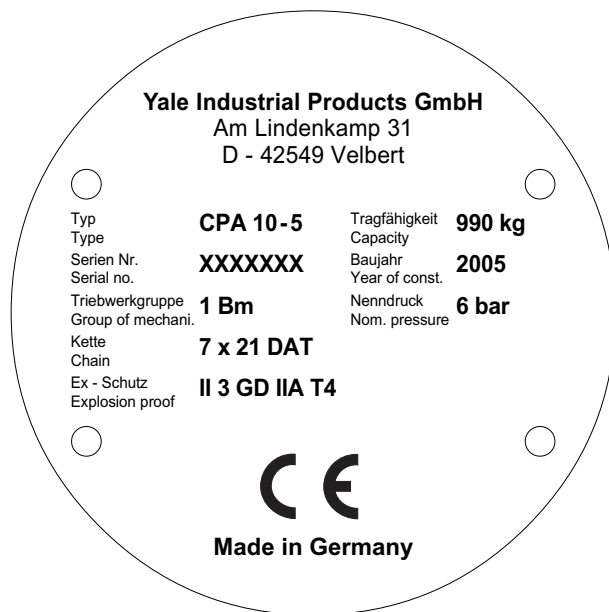
Indicates that failure to follow the instructions could cause equipment damage.

Identification

The nameplate mounted on the hoist cover identifies the type of 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:

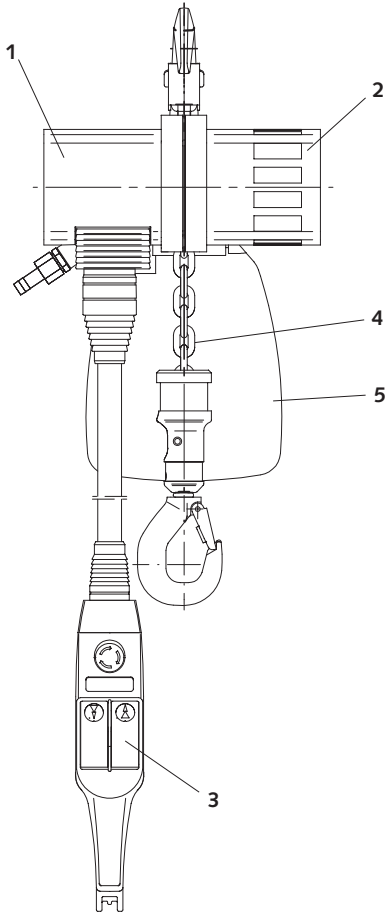
Yale Industrial Products GmbH
 Am Lindenkamp 31 · D-42549 Velbert
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 www.yale.de · e-mail: central@yale.de



Main components

Yale pneumatic chain hoists of the series CPA consist of the following main components:

- 1 Motor
- 2 Gear with chain drive
- 3 Control
- 4 Chain with hook
- 5 Chain box



Air hoist of the series CPA

Product description

The air hoists of the series CPA are air driven chain hoists for carrying capacities of 125 kg, 250 kg, 500 kg and 990 kg.

All types lift with a single chain fall and are equipped with a direct control and an emergency shut-off valve.

Loads can be sensitively moved and precisely positioned. The highest and lowest hook position is limited by buffers (forced stop).

The air hoists CPA correspond to the driving mechanism group 1 Bm according to FEM and M3 according to ISO.

The motors of the air hoists CPA are treated during assembly with a special high quality grease 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 motor lubrication, page 19). An additional lubrication with oiled air by means of a service unit with oiler is possible.

Explosion Protection

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

Explosion Protection for air hoists model CPA are devices of category 3 to be used in zone 2 at the presence of gases of explosion group IIA. These devices can also be used in zone 22 at the presence of dusts as far as no light metal dusts and dusts sensitive to impacts are present. These devices contain aluminium for the housing. Their marking is: **II 3 GD IIA T4**

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 hoists of this type it has to be safeguarded that no rust may arise at these friction points and frictions and impacts are 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 must have a diameter of ≤ 30 mm or it has to be proven that they cannot be dangerously charged.

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, Redeker⁶, Nabert, Schön⁷, IEC 60079-12 und IEC 60079-20)

explosion group	T1	T2	temperature class T3	T4	T5	T6
	> 450°C	450-300°C	ignition temp. 300-200°C	200-135°C	135-100°C	100-85°C
	450°C	max. admissible surface temperature of the operating devices			100°C	85°C
II A	Acetone Ammonia Aniline Benzole Benzol Chloride 1,2-Dichlor Benzole Acetic Acid 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 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 ignition

*1 (Methanol = Methylalcohol)

Decisive Criteria to choose the right version of hoists for the use in explosive atmospheres

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	1	2	A A	CPA* ³		D	
II B (X) without hydrogen sulphide and ethylene oxide, which can get very easily into ignition	1	2	A A	FS		D		
II B	1	2	A A	FS FS		D D	E E	
II C / T4	1	2	A A	FS FS	FSR	D D	E E	
II C / T6(X)	1	2	A A	FS FS	FSR	D D	E E	T T
explosive dusts	Zone		version* ¹			way of use* ²		
normal industrial dusts	21	22	A A	CPA* ³		D		
light metal dusts or dusts sensitive to impacts	21	22	A A	FS FS		D D		

***¹ : versions:**

- A :** Chain made of galvanised steel, metal control panels get earthing to the hoist; these are standard features. The load chain type 31,5 x 90 made of galvanised steel is not available because of technological reasons. This chain is only to be used for our heavy hoists with very slow chain movements, so that possible friction velocities are very much less than 1 m/s.
- FS :** Hoists with increased spark protection: Load hook and housing of bottom hook block made of copper plated steel with safety latch made of brass.
- FSR:** Driving Units with increased spark protection: wheels of trolleys and travelling gears are made of bronze.

***² : Notes for safe working:**

- D :** At 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 hoist:**

The model CPA 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 EN500147).

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.

According to the „HVBG/BIA-Report 12/978 „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.

PLEASE ALSO OBSERVE THE CORRESPONDING REGULATIONS IN YOUR COUNTRY!

- ¹ Richtlinie 94/9/EG des Europäischen Parlamentes und des Rates vom 23. März 1994 zur Angleichung der Rechtsvorschriften der Mitgliedsstaaten für Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen
- ² DIN EN 1127-1: Explosionsfähige Atmosphären - Explosionsschutz, Teil 1: Grundlagen und Methodik, 1997-10.
- ³ IEC 60079-12: Electrical apparatus for explosive gas atmospheres, Part 12: Classification of mixtures of gases and vapours with air according to their maximum experimental safe gaps and minimum igniting currents, 1978.
- ⁴ IEC 60079-20: Electrical apparatus for explosive gas atmospheres, Part 20: Data for flammable gases and vapours, relating to the use of electric apparatus, 1996-10.
- ⁵ DIN VDE 0165: Errichten elektrischer Anlagen in explosionsgefährdeten Bereichen, 1991
- ⁶ Nabert, Schön: Sicherheitstechnische Kennzahlen brennbarer Gase und Dämpfe 2. Auflage, 1978
- ⁷ Redeker, Schön: 6. Nachtrag zu Sicherheitstechnische Kennzahlen brennbarer Gase und Dämpfe, 1990
- ⁸ Hauptverband der Deutschen Berufsgenossenschaften/ Berufsgenossenschaftliches Institut für Arbeitssicherheit

Intended Use

The air hoists are intended to be used exclusively for lifting loads. 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 user's own risk, and the company Yale Industrial Products GmbH shall not be liable for any resulting damages.

Conditions of Use

The air hoists are sturdy and require very little maintenance. They are suitable for use in locations exposed to increased soot, dust, humidity and temperatures between -20°C and approximately +50°C. The heat resistance of chain and hook is +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.

Application Areas

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

Suspension Points



DANGER!

Suspension points for air hoists are to be constructed in such a way that the expected forces can be safely held. Ensure that your 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.

Details of the air pressure

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.

If the pressure is more than 10% below 6 bar an important function of the hoist will be affected: The brake drags, leading to high wear.

Do not attempt to operate the air hoists with any other type of working gas!

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

Entrained particles content:

- size of entrained particles less than 40 µm
- amount of entrained particles less than 5 mg/m³

Pressure dewpoint:

- pressure dewpoint at least 10°C below the lowest expected ambient temperature

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 air hoist in combination with a trolley, carefully read the instructions supplied with it, as well as the relevant accident prevention regulations governing the operation of such trolleys.

Operation with service unit

When operating a hoist with service unit avoid using any synthetic lubricants and do not use alcohol for preventing icing. See also operation manual of the service unit.

CE - Certification

Air hoists model CPA up to 990 kg conform to the EC-Machine Directive.

TRANSPORTATION AND STORAGE

Safe Transportation

When transporting an air hoist to a new location observe the following points:

- Put the hoist down carefully, do not drop it. Note that the hoist has a weight between 9.5 kg and 23 kg.
- 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 motor lubrication and inspection measures, page 19).

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 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 9.5 and 23 kg!



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 air hoists are generally delivered in fully-assembled condition.

If not, then proceed to the sections entitled

- Connecting the control (page 10)
- Mounting the chain (page 21)
- Chain container (page 21)

In case the chain is not mounted but packed separately a short piece of chain is already in the hoist or an auxiliary tool is provided. For mounting the chain the hoist must be connected to the air supply system and ready for operation.

The chain has to be lubricated before operating the hoist (page 18).

Installing the hoist



DANGER! RISK OF INJURY!

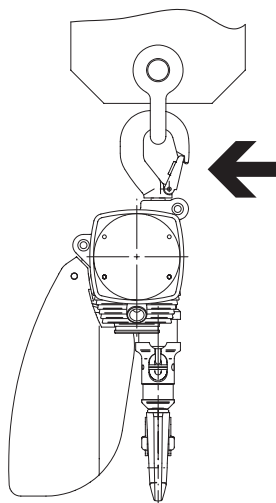
The air hoists must be installed by suitably trained personnel. An incorrectly installed hoist can lead to serious injuries.



DANGER!

The points from which the 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 hook provided.
- Ensure that the hook safety catch snaps back into position.

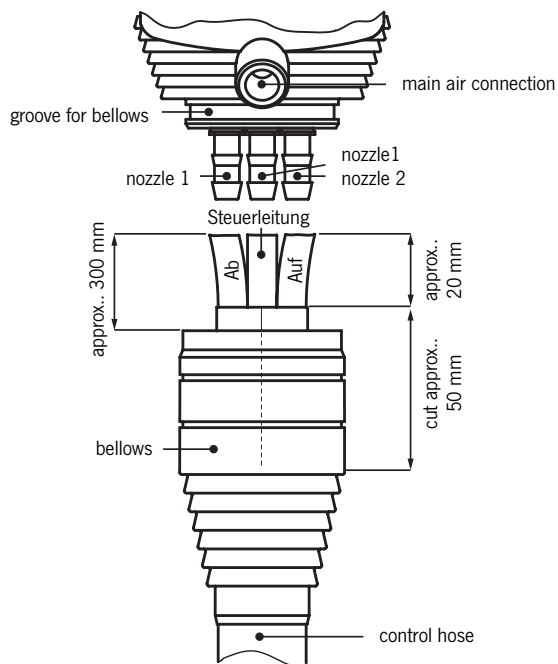


Suspend the hoist, using the hook provided

Connecting the control

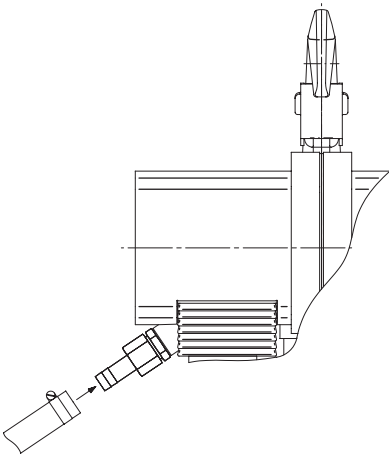
If the control is delivered separately, connect it as follows (see also figure Connecting the control):

- Grease approximately 300 mm of the upper control hose and push the bellows over this section with a suitable tool.
- Cut approximately 20 mm off the end of the protection hose and cut the casing a further 50 mm in a longitudinal direction.
- Lubricate the hose nozzles and push on the appropriate hose.
 - „Steuerleitung“ (air supply) on nozzle 1
 - „Auf“ (lifting) on nozzle 2
 - „Ab“ (lowering) on nozzle 3.
- Raise the bellows and allow to catch into the appropriate groove on the valve housing.



Connecting the main air supply

- 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 hoistside fitting and secure it by tightening down the union nut.



Plug in and secure the main air supply hose

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 Yale Industrial Products GmbH 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 employed at all. Do not use alcohol-based products for anti-icing protection.

Application	Lubricant
Motor lubrication	High quality grease
Operation with service unit	Air motor oil type „D“, kinematic viscosity approx. 30 mm ² /s (cSt) at 40°C, anti-icing additive if required
Chain lubrication	Automotive motor oil, kinematic viscosity approx. 150 mm ² /s (cSt) at 40°C
Gear lubrication	Lithium saponified grease, walk penetration 265-295 (0,1 mm), dripping point 190°C, range of operating temperatures -30°C to 130°C, ground oil viscosity at 40°C, 190 mm ² /s (cSt), additives: corrosion and ageing

Pre-start checks

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.



DANGER!

The supporting structure of the hoist must form a rigid bedding. Oscillations damage the chain and may cause the chain to break.

Testing the brake

The correct functioning of the brake must be tested before starting the hoist proceeding as follows:

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

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



DANGER!

If you notice that the chain keeps running, stop using the hoist at once! Hoist must be repaired.

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 buffer drives against the housing.

The lifting process must be stopped by deformation of the buffer.



DANGER!

When the buffer is damaged, stop using the hoist immediately! Hoist must be repaired (exchange buffers).

Checking the emergency shut-off valve

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

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 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 16).

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 17).

For example 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 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:

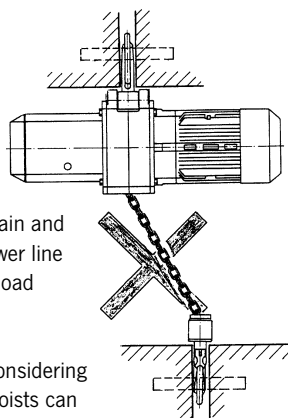
- exceeding the rated load capacity
- hoisting loads at a non-vertical angle (Oblique Lifting)

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.

Under special safety precautions and considering the corresponding situation at site 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.

- 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 an 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.
- 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 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.
- Never use stiff moving hook in the housing without load. Inspection!
- Operate air hoists only with original 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 21).
- 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: -20°C up to +150°C, permitted ambient temperature: -20°C up to +50°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 spare parts. When using foreign components and/or carrying out changes by non authorised persons Yale Industrial Products GmbH does not undertake any responsibility.
- 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.



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 8.

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 17).



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.

Control

All air hoists model CPA are equipped with a direct control. The working air is directly guided from the hand valve to the motor.

The control levers automatically return to "zero" position when released.

The direction of motion of the hook is indicated on the levers by corresponding arrows.

Lifting and lowering speeds can be sensitively regulated.

- Lift slowly: press down slowly right lever until motor starts running.
- Lift more quickly: press down further right lever.
- Infinitely variable change from quick to slow lifting: slowly release pressed down lever.
- Lower slowly: press down slowly left lever until motor starts running.
- Lower more quickly: press down further left lever.
- Infinitely variable change from quick to slow lowering: slowly release pressed down lever.

Emergency shut-off valve

Each control has an emergency stop button. In order to quickly avert a hazard caused by the hoisting movement the control levers have to be released interrupting the hoisting movement immediately.

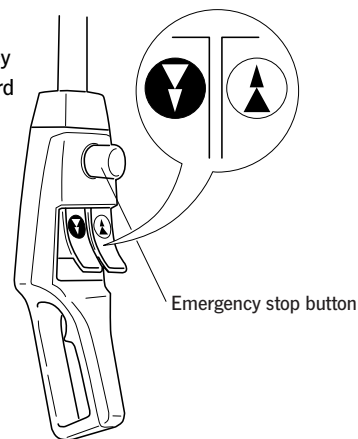
Only in case this stop function fails the red emergency stop button has to be firmly pressed down shutting off the energy and halting the motion of the load hook immediately. The emergency stop button engages. The control levers for lifting and lowering are out of function.

The emergency stop button can be unlatched by turning it clockwise. It goes back into zero position.



DANGER!

Never unlatch the emergency stop button before the hazard and a possible malfunction have been removed.



Connecting a load

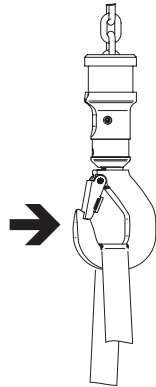


DANGER!

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

In Germany, operators must comply with the safety regulation for the use of harness with lifting equipment (EN 13155). 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.



Lifting a load



CAUTION!

The air hoists must be allowed to align themselves freely under load, otherwise excessive forces may arise leading to damages of the hoist components.

- 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.

Lowering a load



DANGER!

Make sure that nobody 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 due to overloading !

Disconnecting a load

- Lower the load hook until you can easily disconnect the load.
- Remove the hook from the working area to avoid any hazard.

Interrupting work

When interrupting the work with your air hoist proceed as follows:

- Put the load down and disconnect it from the hoist.
- Remove the hook from the working area to avoid any hazard. a danger for anyone moving about in the area.

Operating Principles of the vane motor

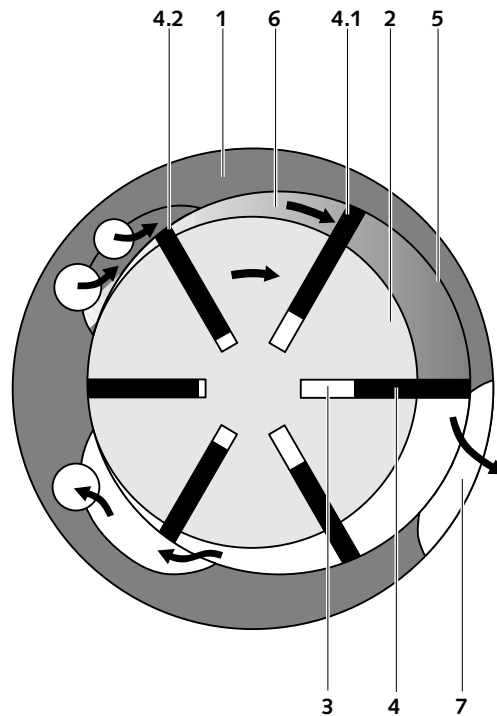
The vane motor consists of a cylinder sleeve 1 with two lateral side plates and a rotor 2.

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 .

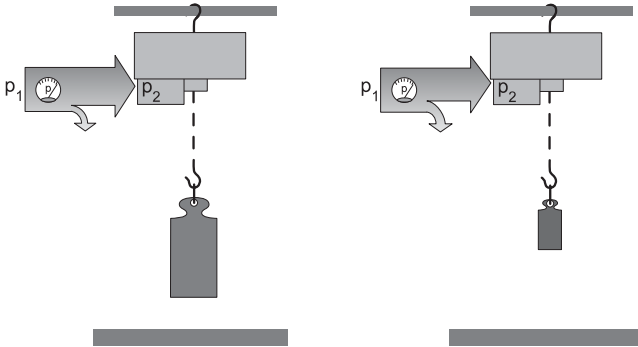
The magnitude of the operating pressure p_2 depends on

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

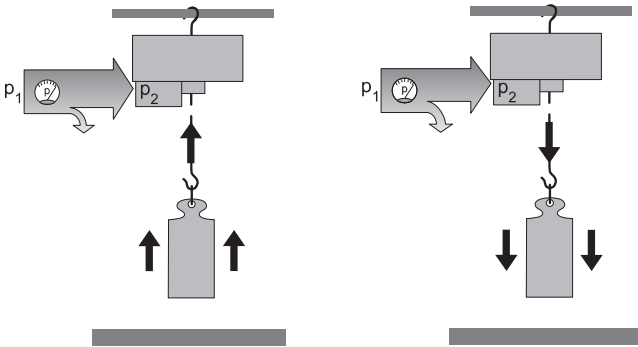
When lifting the maximum rated load, the operating pressure, p_2 , may not drop more than 10% below the hoist's rated nominal pressure.

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.



The operating pressure depends on ... the weight of the load ...



... and the direction of load movement.

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 layer of oil.
- Remove the hook from the working area to avoid any hazard. Do not drive against the buffers!
- Relieve all pressure from the air line. (see also section entitled Storage conditions, page 9)

Storage

(see section entitled Storage conditions, page 9)

Dismantling the hoist



DANGER! RISK OF INJURY!

The air hoists may only be dismantled by qualified personnel.

- Release all pressure from the air line.
- 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.
- Carefully unhook the hoist from the suspension point and remove it.

Disposal

The air hoists contain a number of materials which must be properly disposed of or recycled by the user at the end of the hoist's service time respecting local regulations if any.

The special material contained in the hoists are listed below:

Hoist:

- Ferrous materials
 - Steel
 - Cast steel
- Non-ferrous metals
 - Aluminium
- Synthetic materials/plastics
 - Polyurethane
 - Polyethylene
 - Polyamide
 - Rubber
 - Polyacetal
 - Thermosetting castings (brake linings are asbestos-free)
 - Polyester
- Wool felt

MAINTENANCE

Maintenance and Inspection Intervals

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 air hoists.

Cleaning and care

If you must frequently move the air hoist from one site 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 spares if you need to replace any parts in the course of repairs.

Lubrication

See section the entitled Lubricants, page 11

Inspections and maintenance work

Hoists are classified into groups and designed according to their planned operating method according to FEM/ISO. The daily running time and the load collective determine the classification (1 Bm). The theoretical service time is 1600 hours in the load collective 2, corresponding to 400 hours of full load. The theoretical service time is 3200 hours in the load collective 2, corresponding to 800 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 f_v has the value 1 at 50% nominal load linearly ascending to 1,5 at 100% nominal load (P =percentage of nominal load).

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

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 user'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 from the hoist.
- Take off the hoist 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 procedure	Interval	Remarks
Check the oil level in the service unit ¹	as required	See the operation manual of the service unit
Lubricate the chain	monthly	More frequently if the working conditions cause increased wear (see section entitled Lubricating the chain, page 18)

Inspection procedure	Interval	Remarks
Test the control and the emergency stop button	daily	(see section entitled Testing the control, page 18)
Test the brake	daily	(see section entitled Testing the brake function, page 18)
Test the overrun protection (buffer)	daily	When buffers are damaged they have to be changed at once, at least once per year. (see section entitled Testing the overrun protection, page 18)
Inspect the chain	every three months	(see section entitled Inspecting the chain, page 20) shorten inspecting intervals in case of wear increasing working conditions
Inspect the chain sprocket wheel and chain guides	every time the chain is changed	
Inspect all screw and bolt connections	every 250 operating hours, ² at least once per year	
Inspect the hook (both load carrying part and suspension part)	every 250 operating hours, ² at least once per year	(see section entitled Inspecting and replacing the load hook, page 20)
Inspect the brake with load	every 250 operating hours, ² at least once per year	Load has to be broken safely
Inspect and lubricate hook axial bearings and chain sprocket wheel bearings	every 250 operating hours, ² at least once per year	maximum axial tolerance of hook bearing: 2.5 mm
Inspect service unit ¹	every 250 operating hours, ² at least once per year	See operation manual of the service unit
Inspect the flow resistance of the silencer	every 250 operating hours, ² at least once per year	(see section entitled Inspecting the silencer for flow resistance, page 18)
Exchange lubricant of the motor	every 100 operating hours, ² at least every 5 years	(see section entitled Assembly/motor lubrication, page 19)
Inspect the brake and motor vane wear	every 800 operating hours, ² at least every 5 years	(see section entitled Exchanging brake disc, brake piston and vanes, page 18)
Inspect gearing, exchange lubricant	every 800 operating hours, ² at least every 5 years	
Check permeability and function of the control valve	every 250 operating hours, ² at least once per year	(see section entitled Testing the control, page 18)
Check shaft coupling	every 800 operating hours, ² at least every 5 years	
Check air connections for damages	yearly	

¹ if existing

² when using according to the classification

Testing the brake funktion

Daily test the function of the brake as follows:

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

The chain must stop running evidently after releasing a control lever.



DANGER!

If you notice that the chain running does not halt immediately, stop using the hoist. Send it for repair.

Due to physical reasons the stopping distance cannot get to the value zero, but during this function test it must not be visible that the chain slows down.

Testing the overrun protection

- Check by sight daily whether buffer is damaged. If considerable damages at the buffer are found or when it is completely damaged, a 20 cm long piece of the chain has to be cut off just above the load hook to prevent cracks.
- Exchange buffer during annual inspection, check buffer disk for damages, exchange if necessary.



DANGER!

If the buffer is damaged stop using the hoist immediately! Send it for repair (exchange buffer).

Lubricating the chain

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

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

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

Testing the control

The control levers must always move freely without sticking.

- Shortly depress and release the control levers one after the other. The levers should always go back to their initial position as soon as they are released.
- Press down the EMERGENCY STOP button. The hoisting motion should immediately halt, even when activating the control levers.
- Unlatch the EMERGENCY STOP button by turning it.

The control pistons of the control valve at the motor must move smoothly. If the seat of the packing ring does not fit tight working air escapes directly into the exhaust chamber. If the ball in the inside of the control piston does not close airtight exhaust air escapes at the hand control valve.



DANGER!

In case any lever is hard to operate or sticks in the down position stop using the hoist immediately. The control unit must be repaired.

Inspecting the silencer for flow resistance

In case the hoist fails to reach the specified lifting speed the silencer must be inspected and its flow resistance assessed. (see section entitled Technical Data, page 23).

To check the flow resistance compare the lifting speeds with and without silencer at nominal load.

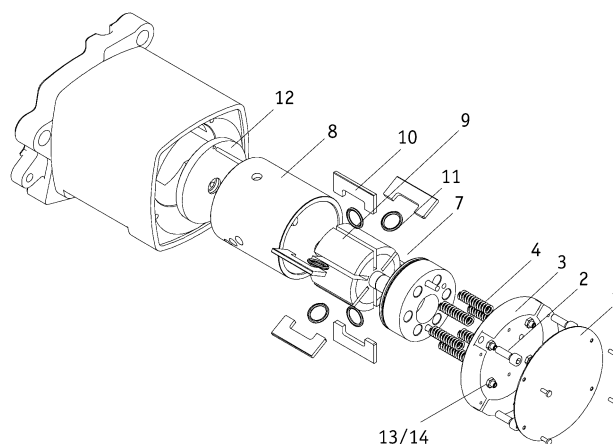
The speed with silencer must be at least 65% the lifting speed without silencer. In case of lower values the silencer elements have to be exchanged.



DANGER!

Never operate the hoist without silencer on daily use.

Exchanging brake disk, brake piston and vanes/motor assembly



The braking effect is generated at the side faces of the rotor. From the cover side of the motor the spring loaded rotor is pressed against an opposite brake disk by a brake piston.

Adjusting the brake

- Unscrew nameplate **1**
- Loosen lock-nuts **14** of adjusting screws **13** (4 screws)
- Screw adjusting screw **13** into the cover up to the limit stop, do not tighten completely!
- Afterwards screw back adjusting screw **13** by 45° from the limit stop, hold tight and lock with nuts **14**
- Fasten nameplate

Dismantling

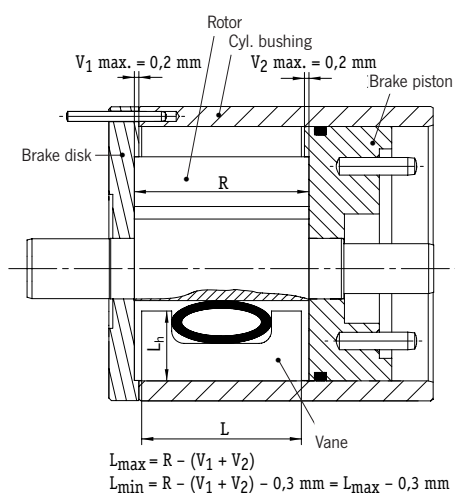
Dismantling the brake disk and brake piston please proceed in the following manner:

- Disconnect hoist from air line.
- Screw off nameplate **1**.
- Unscrew cover screwing **2** behind nameplate and remove cover **3** (when unscrewing the cover the brake springs **4** are completely released).
- Take out springs **4**.
- Draw brake piston **7** out of the cylinder bushing **8**.
- Pull out rotor **9**, catching vanes **10** and starting aids **11**.

Remark

If you only want to exchange the vanes with starting aids proceed at the topic "Check wear of vanes"

- Pull out cylinder bushing **8**.
- Take out brake disk **12**.
- Check brake disk **12** and brake piston **7** for wear and damages and replace if necessary. The circular contour may not be deeper than 0.2 mm. The extremely wear resistant brake material will not reach the wear limit of 0.2 mm within its calculated service life in case of always being used for its purpose. In case of prematurely reaching the wear limit the operating pressure of the running hoist has to be checked (brake slides in case of a too low air pressure).
- Check wear of vanes (see figure below). When the vanes of the air motor are worn out, the motor output and consequently the lifting capacity of the air hoist are reduced. Exchange vanes and starting aids together.



	L_h
CPA 1-15 / CPA 2-8	$\geq 14 \text{ mm}$
CPA 5-10 / CPA 10-5	$\geq 19 \text{ mm}$

Assembly/motor lubrication

- Insert brake disk threading in anti-torsion device (pin). Spread a thin layer of high quality grease on the brake side.
- Put in cylinder bushing, but before doing so align hole of the anti-torsion device to the pin. Spread a thin layer of high quality grease on the inner side of the cylinder bushing.
- Spread a thin layer of high quality grease on vane slots, cylinder and front surfaces of the rotor and insert rotor with coupling side ahead into the housing bearing.
- Spread a thin layer of high quality grease on vanes and push them into the rotor slots together with the starting aids.
- Spread a thin layer of high quality grease on whole surface of brake piston including seal and push it into the cylinder bushing with the brake surface ahead paying attention to the correct position of the excentric drill hole.
- Spread a thin layer of high quality grease on external rotor bearing (needle bush).
- Insert brake springs into the drill holes of the brake piston.
- Assemble cover with bearing paying attention to the well matching position of the brake springs and locating pins to the motor housing and the brake piston, before doing so screw back adjusting screw **13**.
- After screwing on the cover do not tighten the four adjusting screws **13** but only screw them loosely into the cover up to the limit stop, before doing so screw back lock nut **14** wide enough.
- Afterwards screw back adjusting screw **13** by 45° from the limit stop and lock it with nut **14**.
- Fasten nameplate.



CAUTION!

Please observe torque settings, page 25!



WARNING!

Before resuming operation test the braking effect of the hoist under load (break the brake in by some hoisting cycles, then judge).

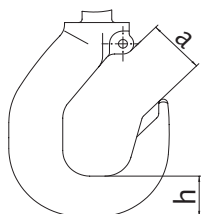
Check motor output! In case of reduced motor output readjust adjusting screw.

Inspecting and replacing load hook and buffer

When the hook opening **a** and the height **h** of the load hook are beyond the wear tolerances the hook must be exchanged.

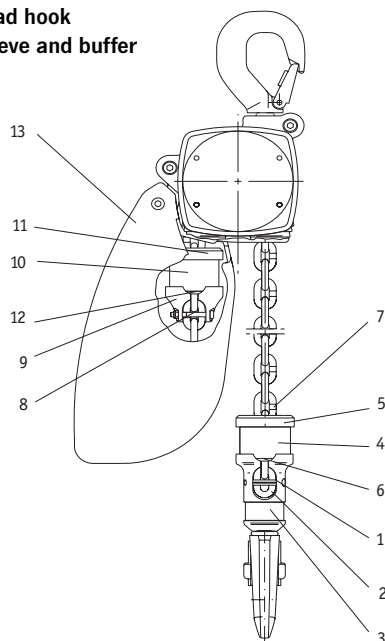
Capacity	Max. permissible dim. of hook opening a ¹⁾	Min. height h
up to 250 kg	23,5 mm	14,3 mm
500 kg to 1000 kg	33,6 mm	22,8 mm

¹⁾ With built-in safety latch the plate thickness of the safety latch has to be deducted from the max. permissible dimension of hook opening **a**.



Test dimensions of the load hook

Exchange load hook with load sleeve and buffer



Dismantling

- Drive the dowel pin **1** for securing the end chain link **2** out of the load sleeve **3**.
- Remove end chain link **2** from the chain pocket.
- Draw buffer **4** and buffer disks **5+6** from the chain

Assembly

- Push buffer disk **5** with edge (edge encloses buffer), buffer **4** and buffer disk **6** without edge onto the chain.
- Put the end chain link **2** in the chain pocket of the load sleeve **3** (pay attention to the correct position of the weld **7**).
- Drive a new dowel pin into the load sleeve for securing the end chain link.

Replacing buffer at end of chain

Dismantling

- When working with a chain box **13** remove the chain box first.
- When using hoists with chain box the end chain link is not fastened to the hoist body.
- When using hoists without chain box take out the end link chain out of the chain fastener at hoist body loosening the screw connection.
- Loosen screw connection **8** at the clamping piece **9**.
- Remove clamping piece **9** from the chain.
- Pull buffer **10** and buffer disks **11+12** from the chain.

Assembly

- Push buffer disk **11** with edge (edge encloses buffer), new buffer **10** and buffer disk **12** without edge onto the chain.
- When using hoists with chain box put the first chain link in the chain pocket of the clamping sleeve **9**, when using hoists without chain box put 11th chain link in the chain pocket of the clamping sleeve **9**.
- Fasten screw connection **8** at the clamping piece **9** for securing the chain link.
- When using hoists without chain box fasten the end chain link to the hoist body.



CAUTION!

Do not twist the chain!

A twisted chain may cause excessive strain to the chain.

- Mount chain box if any.



CAUTION!

When having a chain box the end chain link will not be fastened to the hoist body.

Inspecting the chain

The chain of your air hoist must be exchanged when showing one of the following characteristics:

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

Please observe details of DIN 685 part 5 when inspecting the chain!

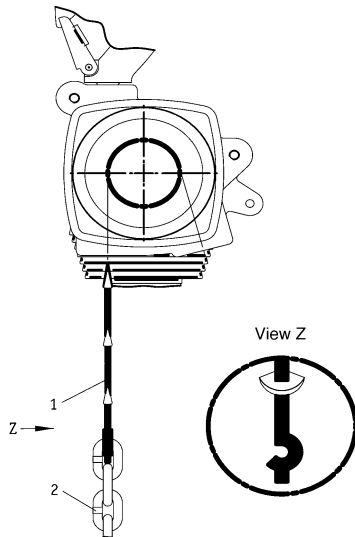
Exchange chain and chain sprocket

Desmantling the chain

The chain sprocket should be exchanged together with the chain as otherwise the new chain will be subject to increased wear.

- Remove chain box from hoist body.
- Then remove load sleeve, clamping piece, buffer and buffer disk from the chain (as described in section Exchange load hook with load sleeve and buffer) and let the chain run out of the hoist.
- For exchanging the chain sprocket the gear has to be dismantled (see graph in attached spare parts list).
- After having exchanged the chain sprocket and assembled the hoist the chain can be mounted.

Mounting the chain

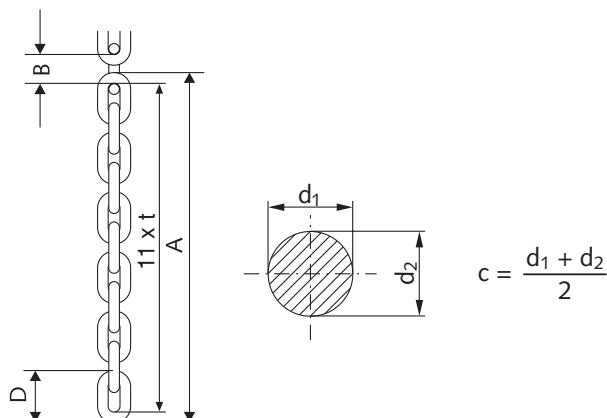


CAUTION!

The chain delivered with this air hoist is precisely dimensioned for use with the chain sprocket. To ensure optimum function of the chain and in order to avoid any risks use original chains only.

- Straighten the new chain and verify the correct number of links. The chain must have an odd number of links (note: same position of end links). Insert the chain into the hoist with the aid of the auxiliary tool 1 (article No. see Spare Part List) whereby the welds 2 must face to the outside (see figure).
- Assembly of load sleeve, clamping piece, buffer and buffer disk acc. to section Exchange load hook with load sleeve and buffer, page 20.
- When a chain is exchanged against a new one this has to be documented in the check book.

Chain d x t (mm)	4 x 12	7 x 21
A _{max}	142,9	249,2
11 x t _{inside max}	135,2	235,8
B _{max}	12,7	22,1
C _{min}	3,6	6,3
D _{max}	20,6	36,1



Test dimensions of the chain

Chain container

In many cases a chain container contributes considerably to safe working conditions.



DANGER!

When operating 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!

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



CAUTION!

The chain container must be protected against impacts from the load during the lifting process. If necessary insert a clamping piece with buffer und buffer disk to the chain.

The clamping piece with buffer and buffer disk is fitted above the load hook in such a way that it acts like an advanced end stop (see section Exchange chain and chain sprocket).



CAUTION!

Never put the chain in the chain container in a disorderly manner!

- After the chain container has been installed lower the load hook one time to its lowest position.
- Now lift the hook and let the entire chain run into the chain container.

PROBLEMS, REASONS AND REMEDIES

Troubleshooting Guide

Problem	Possible cause	Remedy
Hoist does not lift	Air pressure too low	Increase air pressure to 6 bar
	EMERGENCY STOP button is pressed	Unlatch emergency stop after hazard has been removed
	Control defective	Control must be repaired
Hoist lifts too slowly	Brake does not vent properly	Increase air pressure to 6 bar, check the brake vent and seal and replace if necessary Check adjustment of brake piston
	Loose screws of the motor cover	Fasten screws (see section entitled Torque settings, page 25)
	Air supply hoses leaking or loose	Check connections of air supply, check hoses and tighten
	Sections of air line too small	Use air line with sufficient section (check air pressure)
	Dirt in service unit*, filter clogged	Clean service unit, improve air quality
	Silencer clogged	Exchange silencer elements or clean them
	Motor vanes worn out	Replace motor vanes
	Motor run dry	Lubricate motor, inspect service unit*
	Control valve	Repair control valve
Load hook fails to stop immediately after braking	Brake lining and/or brake piston worn out	Exchange brake disk and/or brake piston
Excessive chain noise at chain sprocket	Chain dry Chain worn out	Lubricate chain Replace a new chain
	Chain sprocket worn out	Exchange sprocket, check chain guide, replace if necessary
	Wrong chain installed	Identify chain and replace a new chain if necessary
Lifting or lowering speed slows down at bigger heights or motor stops	Adjustment of braking piston too narrow	Readjust setting of braking piston

*if existing

ANNEX

Technical data

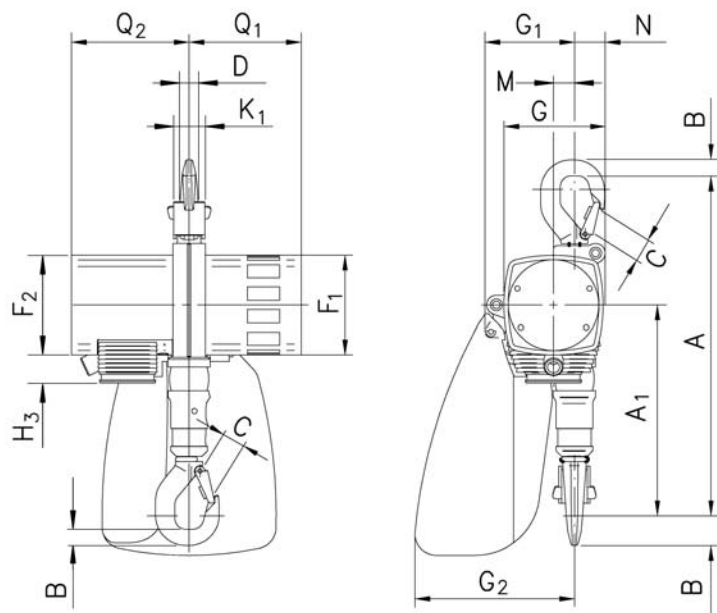
Type		CPA 1-15	CPA 2-8	CPA 5-10	CPA 10-5
Capacity	kg	125	250	500	990
Number of chain falls		1	1	1	1
Motor output	kW	0,4	0,4	1,0	1,0
Weight at standard lift (3 m) and 2 m length of control	kg	9,5	10,5	21	23
Weight of 1 m chain	kg	0,35	0,35	1,0	1,0
Chain dimensions	mm	4 x 12	4 x 12	7 x 21	7 x 21
Air pressure (nominal pressure)	bar	6	6	6	6
Air consumption at rated load - lifting	m ³ / min	0,5	0,5	1,2	1,2
Air consumption at rated load - lowering	m ³ / min	0,7	0,7	1,6	1,6
Air connection		G 3/8	G 3/8	G 1/2	G 1/2
Hose inside diameter	mm	9	9	13	13
Lifting speed at rated load	m/min	15	8	10	5
Lifting speed without load	m/min	40	20	20	10
Lowering speed at rated load	m/min	30	16	18	10
Lowering speed without load	m/min	24	12	12	6
Standard lift	m	3	3	3	3
Control length with standard lift	m	2	2	2	2
Sound level at rated load - lifting	dB (A) ¹⁾	79	79	77	77
Sound level at rated load - lowering	dB (A) ¹⁾	80	80	83	83

Power ratings at 2 m length of control. Longer control hoses decrease the lifting speeds.

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.

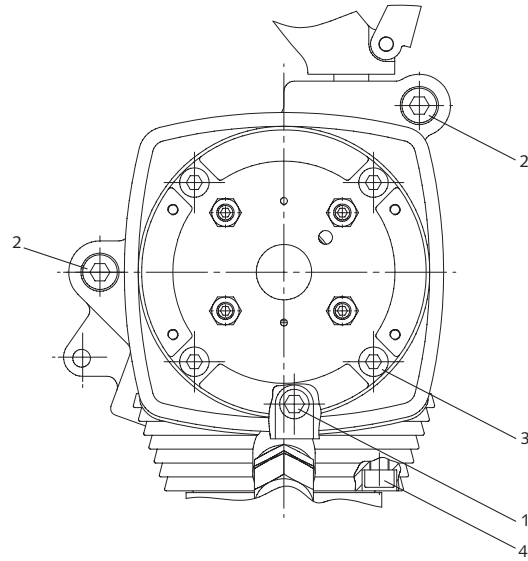
The reduction of the sound level indoors is approx. 3 dB (A) for each doubling of the distance.

Dimensions



all dimensions in mm	CPA 1-15	CPA 2-8	CPA 5-10	CPA 10-5
A	328	328	458	458
A ₁	210	210	290	290
B	17	17	26	26
C	19	19	28	28
D	13	13	22	22
F ₁	92	92	122	122
F ₂	92	92	122	122
G	115	115	155	155
G ₁	83	83	119	119
G ₂	148	148	194	194
H ₃	30	30	45	45
K ₁	30	30	50	50
M	20	20	25	25
N	29	29	40	40
Q ₁	104	104	144	144
Q ₂	109	109	148	148

orque settings



Pos.	Screw	Torque in Nm	
		CPA 1-15/2-8	CPA 5-10/10-5
1	1 cap screw, hoist housing	8	21
2	2 cap screws, hoist housing	8	21
3	4 cap screws, cover	4,9	8
4	4 cap screws, control valve housing	3,5	6

EC-DECLARATION OF CONFORMITY
In accordance with EC-Machinery Directive 98/37/EG. Appendix II A.

We,

Yale Industrial Products GmbH
D- 42549 Velbert, Am Lindenkamp 31

hereby declare that the design, construction and commercialised execution of the below mentioned machine complies with the essential health and safety requirements of the EC Machinery Directive. The validity of this declaration will cease in case of any modification or supplement not being agreed with us previously.

Furthermore, validity of this declaration will cease in case that the machine will not be operated correctly and in accordance to the operating instructions and/or not be inspected regularly.

Machine description:	Pneumatic chain hoist CPA CPA 1-15 CPA 2-8 CPA 5-10 CPA 10-5 Capacity 125 - 990 kg
Machine type:	Pneumatic chain hoist
Serial number:	from manufacturing year 05/05 (serial numbers for the individual capacities/ models are registered in the production book with the remark CE-sign)
Relevant EC Directives:	EC-Machinery Directive 98/37/EG
Transposed harmonised Standards in particular:	ISO 12100 EN 349 EN 818
Transposed (either complete or in extracts) national standards and technical specifications in particular:	DIN 685 DIN 5684 DIN 15018 DIN 15400 DIN 15404 FEM 9.671 FEM 9.682 FEM 9.755 FEM 9.511 BGV D8 BGV D6 BGR 258
Quality assurance:	DIN EN ISO 9001 (Certificate Registration No.: 151)

Date/Manufacturer's authorised sig.: 2005-05-17



Identification of the signee: Dipl.-Ing. Andreas Oelmann
Manager Quality assurance



Certified since November 1991