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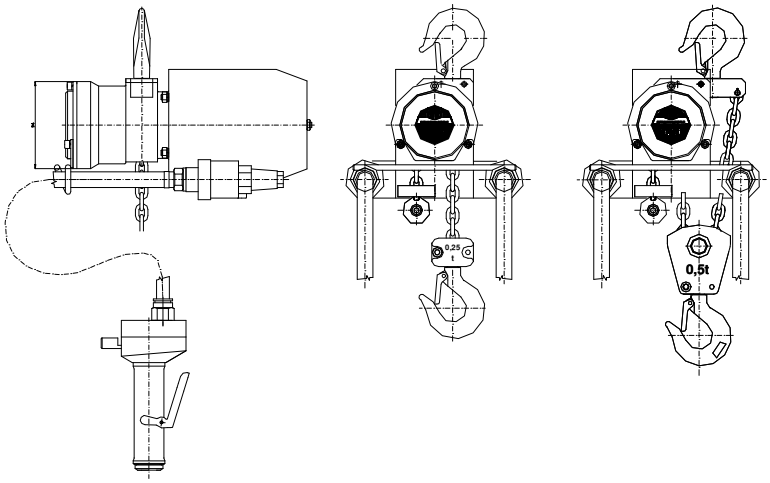
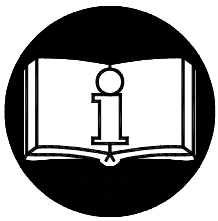
INSTRUCTIONS FOR USE
SAFETY PRINCIPLES, OPERATION AND MAINTENANCE
FOR

PNEUMATIC CHAIN HOIST
PL type
load capacity 250 kg and 500 kg





Before using the chain hoist read these instructions for use carefully. They contain important safety instructions and instructions for use, installation, operation and maintenance of the product. Ensure that all responsible persons have access to this handbook.

Keep for further use !

Issue 2.
FEBRUARY 2008
File number 1-54661-0-0

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CONTENTS

1 SAFETY DEFINITIONS

! DANGER **Danger**: warns of immediate dangerous situations, which can cause death or serious injury, if the operator does not avoid them.

! WARNING **Warning**: points out possible dangerous situations, which could cause death or serious injury, if the operator does not avoid them.

! NOTICE **Notice:** warns of possibly dangerous situations that could cause minor or light injuries, if the operator does not avoid them. Notice may also warn against dangerous practice.

Load capacity (Q): is the maximum permitted weight of the load (the limit working load) which the chain hoist can be loaded with when performing manipulation under the conditions set out in these instructions.

2 PURPOSE OF THE DEVICE

2.1 The PL type pneumatic chain hoist with a load capacity of 250 kg or 500 kg in the standard version (hereinafter referred to as the chain hoist) is constructed expressly for vertical lifting and lowering of loads at workplaces, where compressed air is available. The weight of the load must not exceed the given permissible load capacity.

This chain hoist may only be used in environments where there is no risk of explosion.

2.2 The construction of the PL type pneumatic chain hoist, load capacity 250 kg and 500 kg satisfies the requirements set out in European Parliament and Council Guideline no. 98/37/EC amended by Czech Technical Regulation – government regulation no. 24/2003 Coll., as amended and the requirements of harmonised Czech Technical Standards ČSN EN ISO 12100 - 1 , ČSN EN ISO 12100 - 2,ČSN EN 1050 and ČSN ISO 12480 - 1.

The NP non-explosive version chain hoist (hereinafter the NP chain hoist):

2.3 The construction of this chain hoist satisfies the requirements set out for group I (for mines) category M2 devices, according to European Parliament and Council Guideline 94/9/EC as amended by Czech Technical Regulation – Government Regulation no. 23/2003 Coll., as amended and the requirements of harmonised Czech Technical Standard ČSN EN 13463-1 and fulfils the conditions for use in environments that are “hazardous atmospheric conditions 2“ according to ČSN EN 1127-2 with restrictions according to national regulation – Czech Mining Authority By-law no.22/89 Coll., Section 232 paragraph (1) c) up to 1.5% methane concentration.

2.4 The construction of this chain hoist satisfies the requirements set out for group II devices (non-mining) category 2 and 3 according to European parliament and Council Guideline 94/9/EC as amended by Czech Technical Regulation –

Government Regulation no. 23/2003 Coll., as amended and the requirements of harmonised Czech Technical Standard ČSN EN 13463-1 and fulfils the conditions for use in “zone 1 and zone 21“ and “zone 2 and zone 22“environments according to ČSN EN 1127-1.

3 SAFETY PRINCIPLES

3.1 SUMMARY OF SAFETY PRINCIPLES

There is a risk when lifting loads, particularly in cases when the chain hoist is not used correctly or is poorly maintained. Because this could result in an accident or serious injury special safety precautions must be taken during work with the chain hoist, during its assembly, maintenance and inspection.

! WARNING

NEVER use the chain hoist to lift or transport people.

NEVER lift or transport loads above people or near them.

NEVER load chain hoists more than the load capacity given on the chain hoist.

ALWAYS check that the supporting structure will safely hold the fully loaded chain hoist and all hoisting operations.

ALWAYS notify persons in the surrounding area before commencing work.

ALWAYS read the instructions for use and safety instructions.

Remember that the operator is responsible for the correct technique of tying and lifting loads. Therefore check all national guidelines, regulations and standards to make sure they do not contain additional information on safe work with your chain hoist.

3.2. SAFETY PRINCIPLES

! WARNING

3.2.1 Before use

ALWAYS ensure that the chain hoist is operated by competent and instructed individuals older than 18 years, acquainted with these instructions and trained in work safety and methods.

Every day before commencing work **ALWAYS** check the chain hoist according to paragraph 8.2. (1) “Daily inspection“.

ALWAYS check that the chain length is sufficient for the intended work.

ALWAYS only use a brand chain.

ALWAYS ensure that the chain is not corroded, is clean and lubricated.

ALWAYS check that the end stop with the rubber shock absorber is firmly attached to the last chain link

NEVER use the chain hoist without the advance air-treatment filtering and lubrication unit

NEVER use the chain hoist if it is damaged or worn

NEVER use the chain hoist if the hook safety catch is not inserted, damaged or missing
NEVER use the chain hoist without visible load capacity marked on the hoist
NEVER use modified or deformed hooks
NEVER join or extend the chain
NEVER use the chain hoist if it has an ”**OUT OF ORDER**“ sign attached.
ALWAYS consult use of the chain hoist in non-standard or extreme environments with the manufacturer, or its authorised representative
ALWAYS check the air pressure in the mains (min. 0.5 MPa max.0.6 MPa)
NEVER use the chain hoist if the compressed air has a gauge pressure higher than 0.6 MPa

3.2.2 During use

ALWAYS check that the load is correctly suspended from the hook
ALWAYS check that the hook safety catch has been correctly closed
ALWAYS take care during extreme lifting or lowering (marginal positions)
ALWAYS use protective work aids and hearing protectors
NEVER lift loads heavier than the chain hoist’s load capacity
NEVER use the chain hoist to stretch, pull or anchor loads
NEVER try to lift attached or buried loads.
NEVER lift a load with the chain under tension at an angle.
ALWAYS avoid excessive tipping (i.e. short impulses to the motor)
ALWAYS the chain must be under tension and must not have any knots before starting to lift a load from the ground.
NEVER use a twisted, corroded or damaged chain.
NEVER join or extend the chain using screws, welding, etc.
NEVER permit the load to swing, create shocks or vibrations.
NEVER use the chain hoist chain to tie anything.
NEVER suspend the load from the tip of the hook.
NEVER pull the chain over an edge.
NEVER weld, cut or perform other operations on the suspended load.
NEVER use the chain to ground anything during welding.
NEVER work with the chain hoist if the chain starts jumping or if it starts making unusual excessive noise.
NEVER remove the protective silencing cover from the chain hoist.

3.2.3 After use

NEVER leave a suspended load without supervision
ALWAYS secure the chain hoist against unauthorised use.

3.3 Risk analysis

The break down of possible risks from the aspect of structure, operation and environment for installation of the chain hoist is given in an independent document titled “Risk analysis“. This document can be requested from service centres.

3.4 Maintenance

ALWAYS permit competent parties to perform regular inspections on the chain hoist.

ALWAYS use the chain hoist only when completely assembled with the filtering and oiling unit, including the water separator (not part of the delivery) – for more detail see article.6.3
ALWAYS check the state of the filter and the oil level in the filtering and oiling unit.
ALWAYS ensure that the chain is clean and lubricated.
ALWAYS ensure that sliding parts are sufficiently greased.
During maintenance perform operations that comply with the manufacturer's requirements given in chapter 11.1 and 11.4 of this Instructions for Use.

IT IS NOT PERMITTED to perform repairs and maintenance otherwise than by those methods prescribed by the manufacturer. This particularly concerns prohibition of use of non-brand parts or modifications to the product without the manufacturer's consent.

4 ACCESSORIES, PACKAGING, STORAGE AND MANIPULATION

4.1 ACCESSORIES

4.1.1 The following are supplied together with each chain hoist:
control lever
2 pieces of rubber hose, 3m long
a) 4 clips for connecting the hoses

4.1.2 The following accompanying documentation is also part of the delivery:
a) Instructions for use
b) EC declaration of conformity
c) Certification of product quality and completeness and guarantee certificate
c1) The guarantee period is given on the guarantee certificate.
c2) The guarantee does not apply to defects caused by non-adherence to the instructions given in the instructions for use and to defects arising through incorrect use or unauthorised operation.
c3) The guarantee also does not apply to modifications of the product or use of non-brand spare parts without the manufacturer's consent.
c4) Product defects are claimed according to the relevant provisions of the Commercial Code as amended.
d) List of service centres (only for the Czech and Slovak Republics)

4.1.3 Hoses for connecting the control handle to the compressed air source are not supplied with the chain hoist. The user must obtain hoses with a minimum gauge of 10 mm according to the distance between the chain hoist and the compressed air source and according to the operating environment in which it is to be operated.
10 mm gauge hoses lose pressure and output if the supply hose is longer than 5 m. In such cases the hose gauge must be larger.
Hoses for use in environments with a risk of explosion must satisfy the requirements given in article 5.2.5 of these Instructions for Use.

4.2 PACKAGING

The chain hoist is delivered assembled and packaged in a cardboard box with accessories according to paragraph 4.1.1.

4.3 STORAGE

Store the chain hoist in a dry and clean storage area, free of the effects of chemical substances and vapours.
(1) Always store the chain hoist without any suspended load.
(2) Wipe all dust, water and dirt from the chain hoist.
(3) Grease the chain, the block peg, the hook pegs and the hook safety catch springs.
(4) Place the chain hoist in a dry place.
(5) During subsequent use follow the instructions in article 8.1.2. “Daily inspection“ and article 8.1.4 “Occasionally used chain hoists“ of these Instructions for Use.

4.4 MANIPULATION

Adhere to the valid technical regulations and standards for work with heavy loads during transport and manipulation.

5 KEY TECHNICAL PARAMETERS

Technical data	Unit	Load capacity (t)	
		0.25	0.5
Number of load bearing strands	item	1	2
Maximum motor output	kW	0.8	0, 0.8
Basic lift height [1)]	m	3	
Drive medium		Filtered compressed air containing oil vapour[5)]	
Air pressure [2)]	MPa	0.5-0.6	
Air consumption	m^3/min	3	
Min. lifting speed when loaded	m/min^{-1}	6	3
Operating temperature range	°C	0 °C to + 50 °C	
Load chain	mm	4x12 ČSN EN 818-7	
Hose gauge (from the motor to the controls) [3)]	mm	10	
Weight	kg	10.1	10.9
Weight increase per 1 m of lift	kg	0.35	0.7
A level acoustic pressure at the site of operation max. [4)]	dB	93 – 98	93 – 98

Comments:
The maximum standard lift height is 15 m. The required lift height must be specified in the order. Lift heights exceeding 15 m must be consulted with the manufacturer.

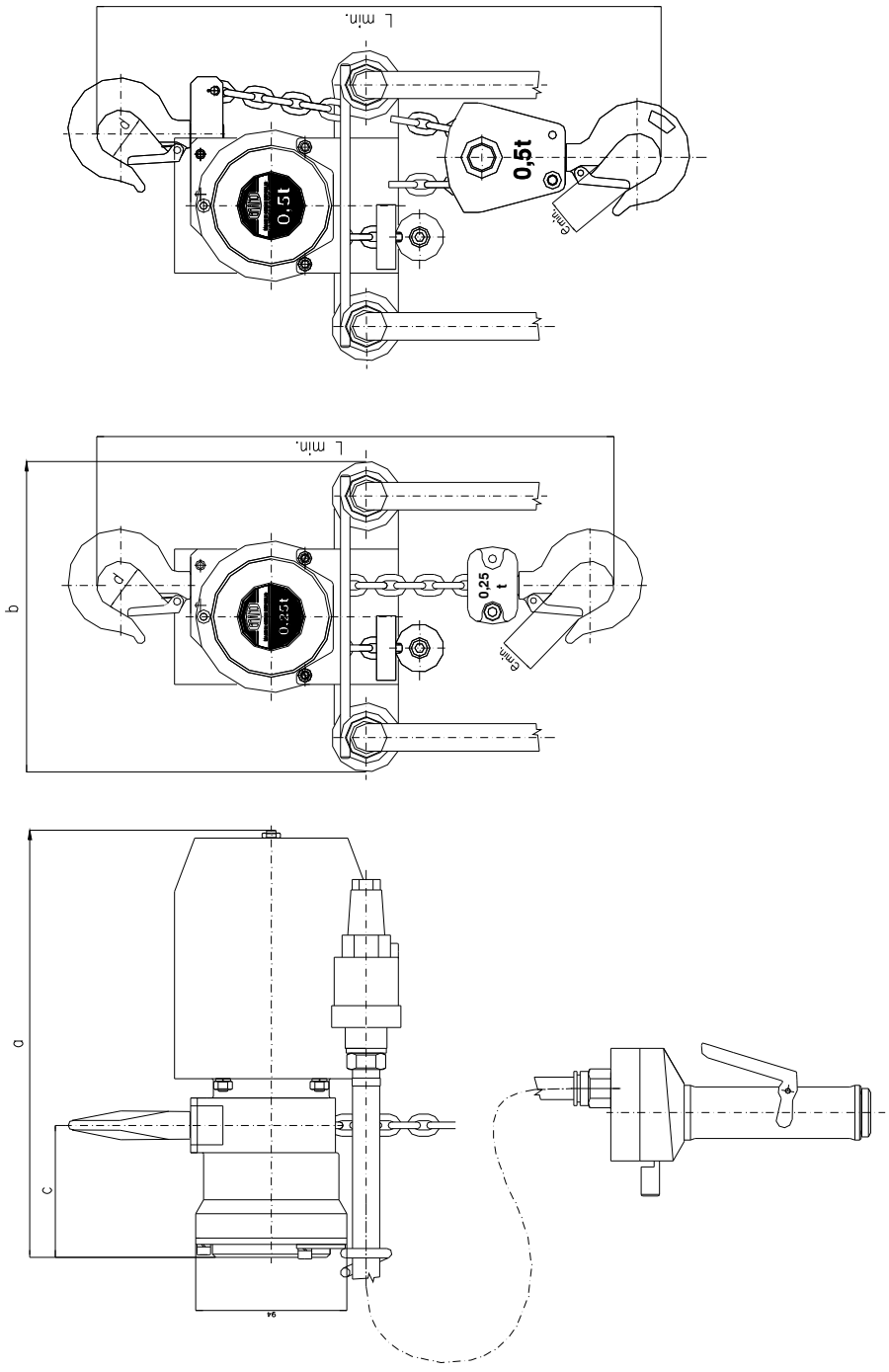
1) 0.5 MPa air pressure is the minimum air pressure at the input to the control distributor during full take-off, i.e. 3 m^3/min
2) The hose length supplied as standard is intended for the basic lift height and is 3 m. Other hose lengths must be ordered specially (also for non-standard lift heights).
   Hoses suitable for use in environments with a risk of explosion are supplied as standard (according to article 5.2.5 of these Instructions for Use)
3) Measured at a distance of 1m from the chain hoist.

4) See article 6.3 for precise specifications.

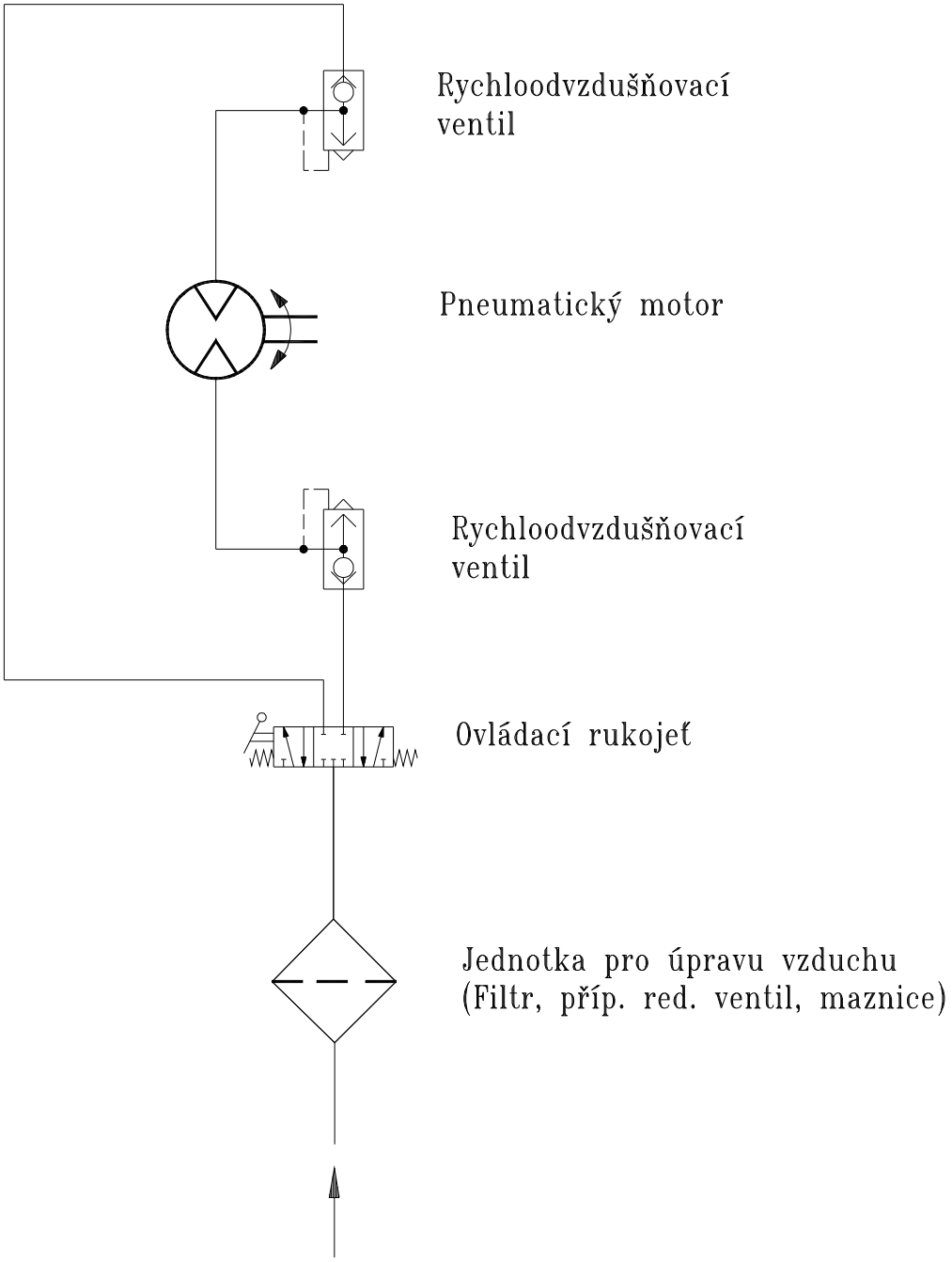
Chief dimensions

	a	b	c	d	D	L_{min}	e_{min}
PL 250	255	194	82	30	94	322	21
PL 500	255	194	82	30	94	350	21

Pic. 5.1



PNEUMATIC DIAGRAM



5.1 MECHANICAL CLASSIFICATION

The safety and service life of the chain hoist is guaranteed under the condition that it is used in accordance with the prescribed classification.
The chain hoist is constructed for class 1Am according to regulation FEM 9.511 – see tab. 5.1. (corresponds to M4 mechanism classification according to ISO 4301/1).
The average daily operation period is set by the load diagram.
The max. standard lift height of the chain hoist is 15m. The required lift height must be specified in the order. Lift heights exceeding 15 m must be consulted with the manufacturer.

Tab. 5.1 MECHANICAL CLASSIFICATION

Load diagram (load distribution)	Definition	Load coefficient	Average daily operation time (h)
1 (light)	Chain hoists usually subject to small loads and only in exceptional cases to maximum loads.	k≤0.50	2-4
2 (medium)	Chain hoists usually subject to small loads but also fairly frequently to maximum loads.	0.50< k ≤ 0.63	1-2
3 (heavy)	Chain hoists usually subject to medium loads but repeatedly subject to maximum loads	0.63< k ≤ 0.80	0.5-1
4 (very heavy)	Chain hoists usually subject to maximum loads or nearly maximum loads.	0.80< k ≤ 1.00	0.25-0.5

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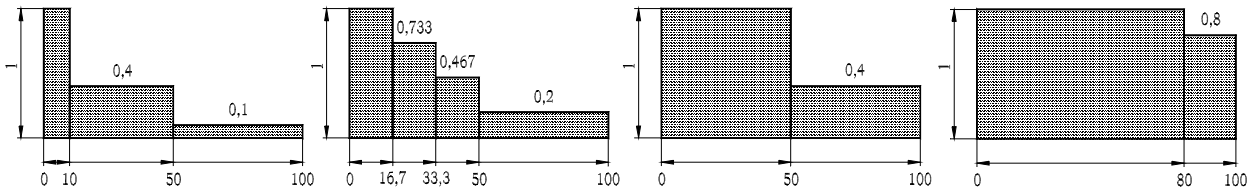
Load diagram 1 | Load diagram 2 | Load diagram 3 | Load diagram 4



% operation time

5.2. MATERIAL AND DESIGN FOR ENVIRONMENTS WITH A RISK OF EXPLOSION

5.2.1 The main part of the chain hoist is made of steel, cast iron, Al alloy, from brass and rubber.

5.2.2. Materials that are liable to create incandescent sparks are not used for construction of the exterior parts of the NP chain hoist in accordance with supplement no. 2 article 1.3.1 to Government Regulation no. 23/2003 Coll., and harmonised technical standards ČSN EN 1127-2 article 6.4.4 and ČSN EN 13 463-1 article 8.1).

5.2.3. The drive unit of the NP chain hoist (made of Al alloy) is sufficiently protected by a cover and secured in accordance with the requirements of ČSN EN 13 463-1 chapter 9 (removal of the cover requires a tool or key).

5.2.4 Materials with dangerous static electricity effects are not used in the chain hoist in accordance with ČSN EN 1127-2 article 6.4.7, ČSN EN 13463-1 article 7.4.3 and ČSN 33 2030.

5.2.5 The connecting hoses for supplying compressed air used during operation of the chain hoist in environments with a risk of explosion according to article 2.4 an 2.5 of these Instructions for Use, must satisfy ČSN EN 1127-1 and ČSN EN 1127-2 article 6.4.7, ČSN EN 13463-1 article 7.4.3, ČSN 33 20 30 and, during use in group I environments (mines), also article 185 paragraph (1) of Czech Mining Authority By-law no. 22/89 Coll., as amended.

5.3 INFORMATION ON THE PRODUCT

Each product has a plate with the following data affixed to it:

Standard version:	**Version for use in environments with a risk of explosion:**
manufacturer	manufacturer
manufacturer's address	manufacturer's address
product type	product type
load capacity	load capacity
series number	series number
year of manufacture	year of manufacture
CE identification	CE identification
	protection type symbol (I M2 for group I , II 2G for group II)

6 INSTALLATION OF THE CHAIN HOIST

6.1 INSPECTION BEFORE INSTALLATION

a) Carefully check the chain hoist is not damaged before installing it.
b) Perform the steps given in chapter 3.2.1 of these Instructions for Use

6.1.1 Supporting structure

! WARNING

ALWAYS make sure that the supporting structure is strong enough to hold the weight of the load and the chain hoist. The chain hoist must not be installed on structures that do not have a verified carrying capacity.

The user is **ALWAYS** responsible for the supporting structure!

6.2 INSTALLING AND SUSPENDING THE CHAIN HOIST

Assemble the chain hoist and install it according to the following points:

1) Remove the tie wire from the chain and straighten it so that it is not twisted.
2) Connect the couplings on the upper side of the control lever to the couplings on the chain hoist motor using the pressure hoses. Slide the hoses onto the coupling peg and secure them with the clips. The hose connectors on the control lever and on the motor flange of the chain hoist are marked with arrows determining the direction of the airflow when the load is being lifted. **Make sure that each hose connects the apertures with the corresponding arrows (↑ or ↓).**
3) Suspend the chain hoist from the upper hook at the intended site and check the chain.
4) Connect the compressed air supply hose to the coupling on the bottom side of the control lever.
5) **Then check that the hoses are connected correctly by lowering the chain hoist without a load.**

Comment: Before assembly remove any dirt from the hoses by blowing compressed air through them.

! DANGER

In environments with a risk of explosion the hoses must satisfy requirements according to article 5.2.5 of these Instructions for Use.

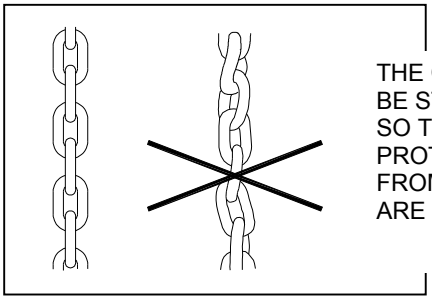
6.2.1 Lubricating the chain

Apply a thin layer of oil to the chain, if possible spraying it on. Regular lubrication prevents wear and corrosion of the chain and extends its service life.

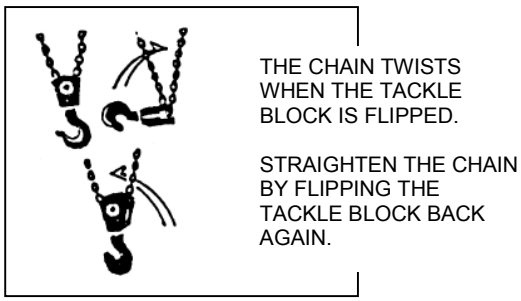
6.2.2 Checking the position of the chain

Check that the hook is not flipped (two-strand chain hoist) or twisted as in pic. 6.2.2. If the chain is twisted, position it correctly. Never suspend loads on a twisted chain.
The chain is not twisted if the welded sections on all links form a row.

Pic. 6.2.2.a Twisted chain



Pic. 6.2.2b Filpped chain



When suspending the chain hoist from the suspension element take the greatest care to secure correct conditions for safe installation according to the character of the environment (work deck, auxiliary lifting device, etc.), so that no people are injured or

endangered. When suspending the chain hoist at heights use protective aids to secure against falling.

6.3 COMPRESSED AIR REQUIREMENTS

For problem-free operation of the chain hoist the air supplied to the control lever must be:
- filtered, so that it does not contain large particles of dust, rust, etc.
- contain an oil vapour.

Lubrication is usually ensured by the filtering and oiling unit, including the water separator (not part of the delivery)
We recommend that the filtering and oiling unit be installed higher than the chain hoist site of operation. The connection pipe gauge must be at least 10 mm, with a length of max. 5 m.
We recommend DEPRAGOL oil.

6.3.1 Lubrication intensity – adjusting the oiling unit

Adjust the oiling unit so that it releases 3 – 4 drops of oils / 1m^3 air.
The lubrication intensity can be approximately checked by:
Placing a sheet of paper in the path of the airflow coming from the supply hose from the compressed air mains for a period of approx. 1 minute. There should only be traces of oil on the paper, the oil should not be running off it.

6.3.2 Recommended quality values of the treated air

With regard to achieving the maximum possible utility properties of the chain hoist and the optimum service life of the air motor, we recommended the following maximum values for the oiled (lubricated) air according to the ČSN ISO 8573-1 standard:

Air quality class	Dirt contents (class-)		Water content (class 4) dew-point		Oil content (class 4)
	µm	mg/m^3	DTP	g/m^3	mg/m^3
4	25	8	+3	6	5

The user is responsible for creating correct conditions for installation of the chain hoist and performing the installation.

6.4 TEST BEFORE USE

! NOTICE

(1) First of all read the previous articles of these instructions and make sure that all the steps have been taken correctly and that all the parts have been safely assembled.
(2) When testing a chain hoist of 250 kg load capacity, check that the last link of the load chain ends in an end stop.
(3) When testing chain hoists with a load capacity of 500 kg check that the first link of the load chain is anchored to the chain hoist body and that the last element ends in an end stop.
(4) Check that the hooks are correctly suspended and the hook safety catch is closed.

(5) Visually inspect the supporting structure or suspension elements to check that they have no defects.
(6) Test the function of the chain hoist by lifting and lowering several times without a load.
(7) Lift and lower a suitable load (10% to 50% of the load capacity) several times. At the same time check that the chain hoist holds the load without slipping when lowering or stopped.

7 USE AND OPERATION

7.1 DESCRIPTION AND USE OF THE CHAIN HOIST

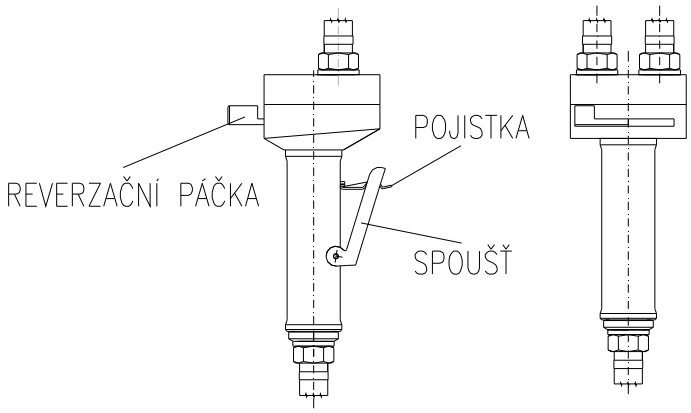
7.1.1 The chain hoist is a portable, suspended, hoisting device, driven by an air vane motor. It can be used wherever there is the option of connecting it to a compressed air supply. It can be used in standard environments and also in environments with a risk of explosion – see article 2.3, 2.4 and 7.2 paragraph 4) of these Instructions for Use.

7.1.2 The stability of the load position at any lift height is ensured by the automatic disc brake in the motor, which brakes the motor whenever the air supply is interrupted. The immediate response by the brake when the air supply is switched off is ensured by two rapid air-release valves, installed at the air inlets into the motor. The rapid air-release valves are fitted with noise silencers at the exhaust.

7.1.3 The air motor is fitted with a cover made of steel sheet, which serves to:
- cover the motor element made from aluminium alloy during operation in environments with a risk of explosion
- situates silencing material to damp the noise of the air motor.

7.1.3 The air motor is controlled by manual use of the control lever, which must have a filtering and oil unit placed before it (or other suitable device for treating the air). Lifting and lowering can be interrupted at any lift height. The chain hoist chain is fitted with an end stop that prevents the chain from coming loose from the chain hoist. The chain hoist is intended for commercial and private use.

7.1.4 Controlling the chain hoist
Lifting and lowering loads is controlled using the control lever. The direction of movement of the load is selected by setting the reversible lever to the position of the intended direction of movement (up ↑ **UP** down ↓ **DOWN**).
After lifting the safety catch press the button to open the compressed air supply into the chain hoist motor.



! NOTICE

When lifting a load weighing close to the nominal weight, the load may sometimes remain still when lifting is repeatedly stopped and started again.

This situation occurs when the air motor vanes are in a specific position compared to the inlet and outlet canal.
If this case occurs, move the reversible lever to the down position ↓ and lower the load several centimetres. Then move the reversible lever back to the up position ↑ and continue lifting by pressing the button quickly (hard).
The mentioned situation may also occur if there is insufficient air pressure.

The chain hoist is not suited to use during assembly work requiring accuracy, because it does not enable movement (lifting and lowering) of a load with more accuracy than 10mm (micro-lifting).

The rapid air-release valve can make an unusual noise (particularly during lifting), which is caused by vibrations of the valve membrane. This fact does not affect the function of the hoist.

! NOTICE

We do not recommend that the chain hoist be used at temperatures below 0^0 C. Condensation of water vapour from the compressed air results in water, which may cause the vanes in the air motor to freeze to the rotor.

! WARNING

The chain hoist end stop is fitted to the last link of the chain. The anchor is only intended to prevent the load chain from being ejected and is not intended to hold the load.
Do not continue working if the chain end stop comes into contact with the displacer located in the block and tackle body. Damage to the anchor could result in the load falling.

7.2 SAFETY PRECAUTIONS DURING USE OF THE CHAIN HOIST

! WARNING

1) Because work with heavy loads can present unexpected risks, it is necessary to adhere to all the “Safety principles“ according to chapter 3 of these Instructions for Use.
2) If the compressed air supply is interrupted the suspended load can be lowered by releasing the air brake by using an M6 nut, which is screwed onto the threaded shaft protruding from the front of the motor. Take great care when performing this operation.
3) Never use the chain hoist when the brake has been released (with the M6 nut screwed onto the motor shaft).
4) In environments with a risk of explosion only use the non-explosive version of the chain hoist. This version of the chain hoist has a brass plaque bearing the Ex symbol and gives the type of protection (IM2, II2G).
5) The hose for supplying the compressed air used for operation of the chain hoist in environments with a risk of explosion according to article 2.3 and 2.4 of these Instructions for Use must satisfy ČSN EN 1127-1 and ČSN EN 1127-2 article 6.4.7, ČSN EN 13463-1 article 7.4.3, ČSN 33 20 30 and, during use in group I environments (mines), also article 185 paragraph (1) of Czech Mining Authority Guideline no. 22/89 Coll., as amended.

7.3 SAFE WORKING ENVIRONMENT

! WARNING

(1) The chain hoist operator must be provably acquainted with these Instructions for Use, must adhere to the valid safety and hygienic regulations and must be licensed to operate this device.
(2) During work with the chain hoist, the operator must be equipped with a protective helmet, gloves, suitable footwear and hearing protectors.
(3) Only tested tying material of a suitable carrying capacity may be used to tie the loads.
(4) During operation by multiple individuals, one employee trained in safety during work must always be chosen, who will be responsible for manipulation of the chain hoist.
(5) This employee must have an unrestricted view of the whole work area, even before the work commences. If this is not possible one or more people near the chain hoist must help him with supervision.
(6) Before commencing work the operator must verify that the whole work area is safe and that there is a possible escape route from the area in the event of danger.
(7) During work with the chain hoist the operator must keep a sufficient distance from the load. It is forbidden to lift or lower bulky loads that do not enable the operator to keep his/her distance.
(8) If you are working with the chain hoist in a restricted area, you must ensure that the hook or the load does not come into contact with an obstacle or the chain hoist body.

7.4 PREVENTION OF THE DAMAGING EFFECTS OF NOISE

! DANGER

Because the air motor of the chain hoist is a significant source of noise the following rules must be followed:

(1) The chain hoist operator must wear approved hearing protectors during work.
(2) The chain hoist operation site must be positioned so that it is located at least 2 m from the hoist (where this is possible according to the local conditions).
(3) During use of the chain hoist in a noisy environment and in cases when the operator is permanently located in the immediate vicinity of the chain hoist, the operator's maximum working period must be limited to **3 hours** per eight-hour work shift.
(4) Restriction of the operator's working period according to item (3) can be dealt with by alternating operators at workplaces. The interval must be at least 30 minutes long and the employee must not be subject to the effects of excessive noise during this interval.

8 INSPECTION OF THE CHAIN HOIST

8.1 INSPECTION

8.1.1 Types of inspection

(1) Initial inspection: precedes first use. All new or repaired chain hoists must be examined by an authorised competent party, so that qualified performance of the requirements of this handbook is satisfied.
(2) Inspections of chain hoists that are operated regularly can be divided into two groups in general, according to the inspection intervals. The intervals are dependant on the condition of critical components in the chain hoist and on the level of wear, damage or incorrect function. The two main groups are daily and regular inspections. The corresponding intervals are defined as follows:

(a) Daily inspection: a visual examination that is performed by the operator, determined by the user, at the beginning of each period of use.

(b) Regular inspection: a visual examination that is performed by the competent person, determined by the user.
1) normal operation – once a year,
2) heavy operation – once every six months,
5) special or occasional operation – according to the recommendations of the competent persons during first use and according to the instructions of qualified employees (maintenance workers).

8.1.2 Daily inspection

On components where this is recommended in paragraph 8.2(1) "Daily inspection", check that the chain hoists are not damaged and are defect free. Also perform this inspection during operation in the interval between regular inspections. Qualified employees will determine whether any defect or damage can present a danger and whether a more detailed examination is necessary.

8.1.3 Regular inspection

Perform overall examinations of the chain hoists in the form of recommended regular inspections. During these inspections the chain hoist may remain at its normal site and does not have to be disassembled. The recommended regular inspection given in paragraph 8.2(2) must be performed under the supervision of competent individuals, who will determine whether it is necessary to disassemble the chain hoist. These inspections also include the requirements of daily inspections.

8.1.4 Occasionally used chain hoist

(1) A chain hoist that has not been operated for a period of one month or longer, but of less than one year, must undergo a detailed examination corresponding to the requirements in paragraph 8.1.2, before being put back into operation.
(2) A chain hoist that has not been used for a period of one year or longer must undergo a detailed examination corresponding to the requirements given in paragraph 8.1.3 before being put back into operation.

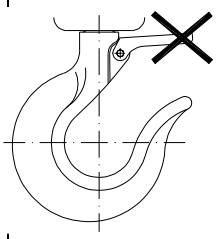
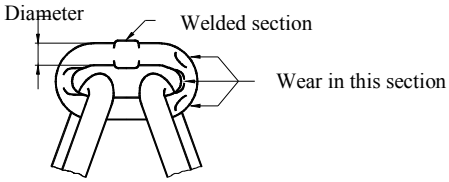
8.1.5 Inspection report

Always keep records of the tests, repairs, inspections and maintenance performed on chain hoists. Make dated records on chain hoists at intervals specified in paragraph 8.1.1 (2)(b) and keep them in an accessible place, determined by the user.
Defects revealed by an inspection or established during operation must be reported to the individual responsible for safety and determined by the user.

8.2 Inspection procedure

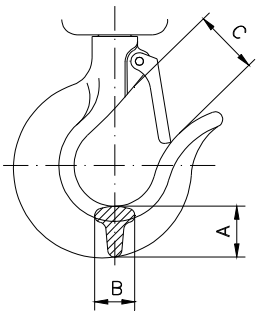
(1) Daily inspection (performed by the operator or authorised person)

PART	INSPECTION METHOD	LIMIT/CRITERION FOR ELIMINATION	RECTIFICATION
1.Chain hoist functions.	visual audio	the chain seizes, jumps, makes excessive noise, etc.	clean the chain and lubricate it, if the defect is not rectified replace the chain
2.Mounting components	visual inspection of all screws, nuts, studs, etc.	defective or missing components loose components	replace with new ones tighten loose components
Hose connection to the chain hoist and control lever	visually clips and hose ends pulling on the hose to check the tightness of the connection	missing, damaged and corroded clips damaged, frayed, cracked hose ends	add replace clips tighten cut off the damaged hose ends, or replace the hose

2. Hooks (1) Appearance	Visually 	safety catch open on the hook tip, bent hook shaft, other visible deformation of the hook	the chain hoist was overloaded. Professional examination of the hoist – replacement of the hook and other damaged parts
(2) Twisting the hook	twist the hook along its axis	the hook does not turn smoothly or seizes	clean and lubricate
(3) Hook safety catch	manually spring the safety catch	the safety catch does not return to its original position after being pushed in	clean, lubricate, repair or replace
3. Load chain (1) Appearance	check the whole chain visually	Cracks at the welding sites, longitudinal scores, deformation, excessive wear, corrosion	replace the chain
Comment Complete wear of the chain cannot be determined by a visual inspection. If there is indication of complete wear check the chain according to the "Regular inspection"			
(2) Lubrication - chain - motor	visually visually	chain is not lubricated check lub. according to 6.2.3	clean the chain and lubricate it. Adjust the lubricating unit
(3) Chain position	visually according to 6.6.2a	the chain is twisted or flipped over, the welds are not in one row	straighten the chain and place it into its normal position
(4) Flipped tackle block (only with two supporting strands)	visually according to 6.2.2b	the chain is twisted as a result of the flipped tackle block, the welds are not in one row	straighten the chain by flipping the tackle block back again
4. Filtering and oiling unit	visually	cleaner blocked with dirt and water insufficient oil	clean the filter thoroughly drain water from the separator add oil
6. End stop and rubber absorber	visually	deformation damage	replace

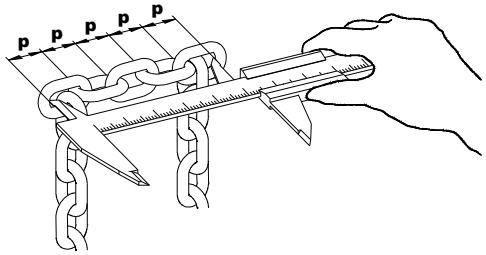
(2) **Regular inspection** (performed by a competent person)

PART	INSPECTION METHOD	LIMIT/CRITERION FOR ELIMINATION	RECTIFICATION
1. Chain hoist function.	visually audio	the chain seizes, jumps, makes excessive noise, etc.	clean the chain and lubricate it, if the defect is not rectified replace the chain
2.Mounting components.	visual inspection of all screws, nuts, studs, etc.	defective or missing components loose components	replace with new ones tighten loose components
Hose connection to the chain hoist and the control lever	visually clips and hose ends pull on the hoses to check the tightness of the connection	missing, damaged and corroded clips damaged, frayed, cracked hose ends	add, tighten and replace clips cut off the damaged hose end, or replace the hose
3. All parts	visual inspection	worn or damaged parts dirty or un-lubricated parts	replace with new ones disassemble, clean, lubricate and reassemble
4. Plate – giving the load capacity of the chain hoist	visual inspection	load capacity unreadable	repair or replace with a new one repair the load capacity on the chain hoist
5. Hooks (1) Hook deformation (open)	measure dimension "C" using a slide gauge visual inspection	the measured value is greater than that set out in the tab. deformation is visible during a visual inspection, do not use the hook,	Professional audit of the hoist – replacement of hooks and other damaged parts
(2) Worn hook	measure dimension "A" and "B" using a slide rule	if dimensions "A" or "B" have decreased by more than 10%	Replace worn or stretched hooks with a new one



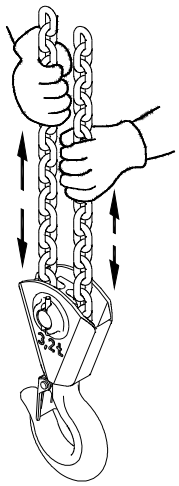
Nosnost (t)	Rozměr "A" (mm)		Rozměr "B" (mm)		Rozměr "C" (mm)
	Standard	Limit	Standard	Limit	Limit
0,25	17,5	15,8	16	14,5	24
0,5	17,5	15,8	16	14,5	24

PART	INSPECTION METHOD	LIMIT/CRITERION FOR ELIMINATION	RECTIFICATION
6. Chain - tension	measure the span using a slide gauge, measure at the site that is most frequently in contact with the block and the nut	the "p" dimensions must not exceed the limit values given in the following table	if the limit values are exceeded, request replacement of the chain



Velikost řetězu (d)	Počet měřených článků	Rozteč měřených článků p x 5		Vyřazovací limit pro (d)
		Standard	Limit	
∅4	5	60	61,8	3,6

7. Brake - function	suspend a load weighing the same as the load capacity of the chain hoist, lift it at least 250 mm and lower it	after lifting has stopped the brake must hold the load in each position during lifting or lowering	if this does not happen check that: 1) the brake release nut is not screwed onto the brake shaft 2) request repairs and adjustment of the brake
8. Chain anchor	visual inspection	the end stop at the end of the chain is not sufficiently tight	tighten the securing screw, or replace the damaged end stop

9. Block rotation (load capacity 500 kg)	Rotate the block by pulling on the chain 	The block does not rotate smoothly	clean, lubricate or repair
10. End stop and rubber shock absorber		Deformation damage	replace

9 ESTABLISHING DEFECTS

Situation	Cause	Rectification
1. The chain hoist will not hold a load	Brake slipping. The brake release nut has been forgotten on the motor shaft	Adjust or repair the brake Remove the nut
2. On interruption of the air supply the load falls several cm before it stops	Damaged rapid air-release valve Blocked noise damper on the valve	Replace valve Clean the dampers - wash them in solvent and blow them through with compressed air Replace the dampers
2. The chain hoist has difficulty lifting a load or does not lift it at all	(1) the chain hoist is overloaded. (2) insufficient air pressure	(1) reduce the load weight to the value of the nominal load capacity. (2) check the air pressure in

	(3) damaged gear transmission (4) insufficient motor lubrication or damage to the motor (vanes, discharging spring) or brake	the supply (3) check components according to the "Maintenance" chapter (4) adjust the lubrication unit, in the event of a malfunction the motor or brake must be repaired
3. The chain runs poorly, seizes	(1) damaged or worn chain or nut (2) load chain is twisted or flipped	(1) check the chain or components according to the "Regular inspection" or perform repairs according to the "Maintenance" chapter (2) see "Daily inspection"
4. The chain hoist makes an unusual noise	1) insufficiently lubricated chain 2) insufficiently lubricated transmission 3) worn block in the tackle block (500 kg)	1) oil the chain 2) oil the gear transmission using lubricating grease 3) replace the block
5. The hook latch will not jump closed	(1) damaged safety catch (2) deformed hook	(1) repair the safety catch (2) check the hook – see "Daily inspection"
6. Worn rubber shock absorber on the end stop	(2) worn material	(2) replace the rubber shock absorber

10 LUBRICATION

IN GENERAL

Before application of new lubricant remove the old lubricant, clean the components in solvent and apply new lubricant. Use the lubricant prescribed by the manufacturer.

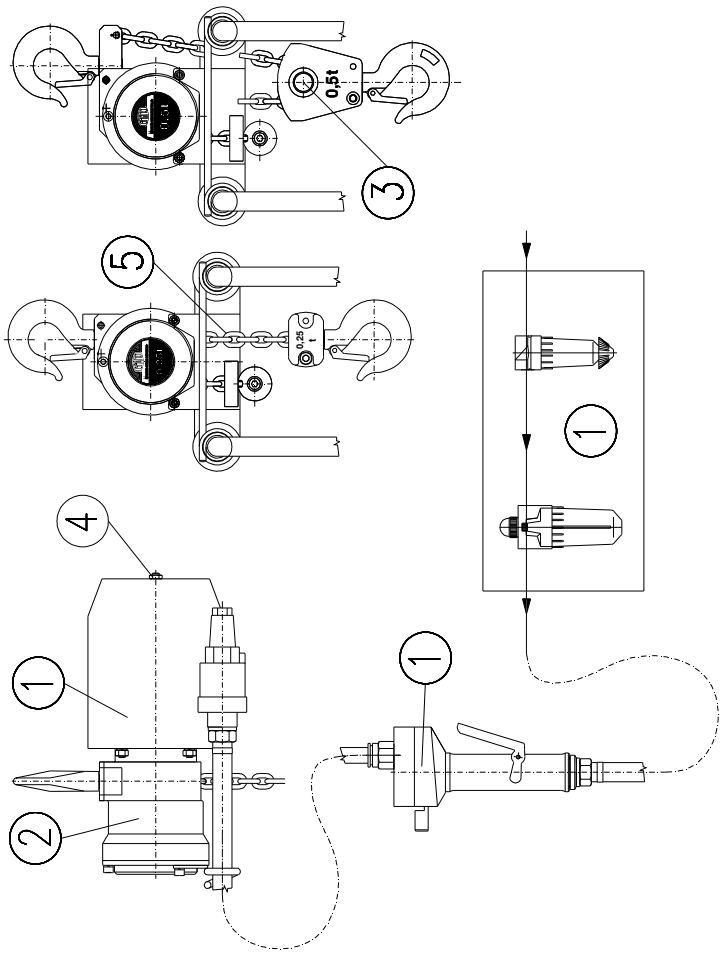
Pic.10.1

Position	Lubricant	Lubricated site	Lubrication interval	Comment
1	DEPRAGOL	Air motor Control lever	Continually by means of the compressed air during operation	Maintain sufficient oil supplies. Lubrication intensity 3-4 drops/m^3 adjust
2	PM – A2	Gear transmission and bearings	50 hours operation	After disassembling the cover and the air motor see pic. 10.2 position 2 and 5
3	MOLYKA	Chain hoist stud	50 hours operation	For 500 kg load capacity
4	MOLYKA	Brake	50 hours operation	After disassembly of the motor lubricate along the perimeter see pic. 11.4

5	VG46 VG48	Load chain	8 hours operation	Keep clean and lubricated

Comment: The air treatment filtering and oiling unit may be a single unit and does not have to correspond to the picture.

10.1 LUBRICATION PLAN



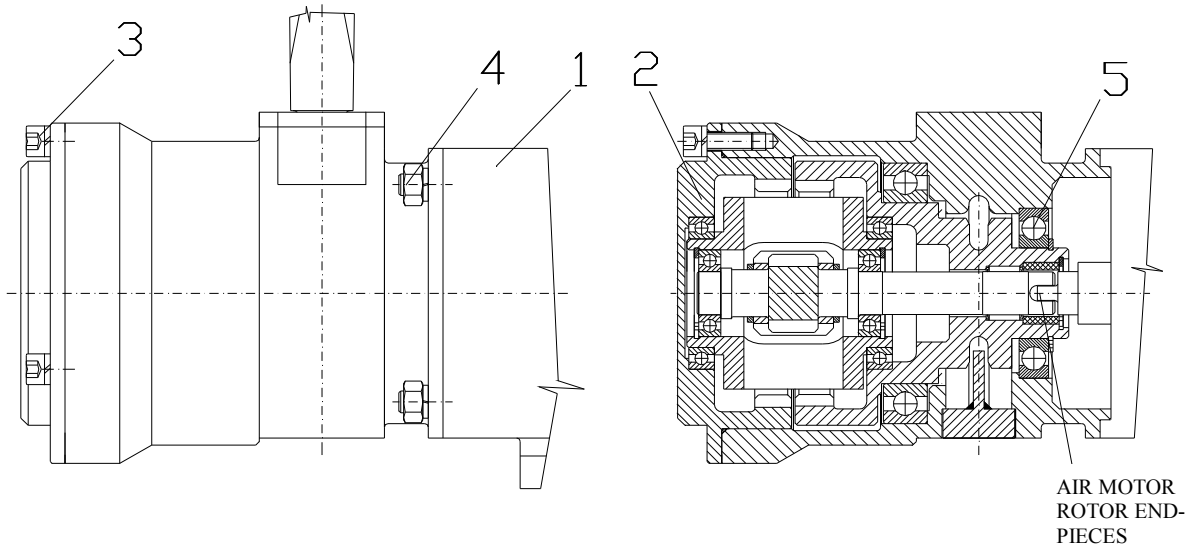
PIC 10.1

10.2 TRANSMISSION AND BEARINGS (pic. 10.2)

Unscrew the screws (pos. 3) and remove the lid (pos. 2), remove the original lubricating substance and fill the area beneath the lid with grease. Use PM – A2 lubricating grease or its equivalent. Then fit the lid so that the satellite gears fit into the lid gears. After fitting the lid, tighten the screws.
Unscrew 4 screws on the motor cover and remove the cover.
Loosen the nuts (pos. 4) on the air motor (pos. 1), remove the motor and, after removing the original lubricating substance on the bearing (pos. 5), lubricate the bearing using PM – A2 lubricating grease or its equivalent. Assemble using the reverse procedure.

! NOTICE

Every time you assemble the motor cover take care to place the silencing material in the original position in the area between the motor and the cover.



Pic. 10.2

10.3 LOAD CHAIN

! NOTICE

Incorrect maintenance and insufficient lubrication of the chain can cause serious accidents.

ALWAYS lubricate the chain once a week or more frequently according to operation demands.

ALWAYS lubricate more often in corrosive environments (salt water, coastal areas, acids, etc.) than under normal circumstances.

ALWAYS use machine oil according to ISO – VG 46 or VG 48 or their equivalent.

11 MAINTENANCE

11.1 SAFETY PRINCIPLES

! WARNING

With the exception of replacement of the chain, maintenance, professional inspections and tests may only be performed by qualified parties (service organisations), trained in safety and maintenance of these chain hoists.

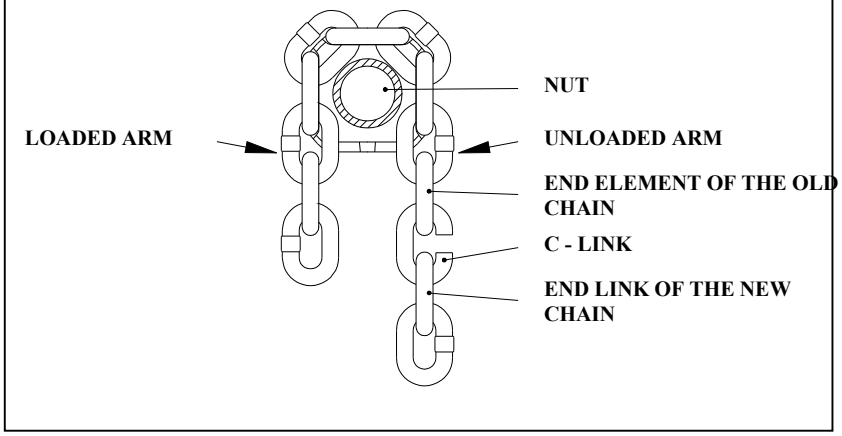
ALWAYS only use components supplied by the manufacturer.
It is not permitted to perform repairs and maintenance by other methods than those prescribed by the manufacturer. This particularly concerns prohibition of use of non-original spare parts or performance of modifications to the product without the manufacturer's consent.
ALWAYS check chain hoist function after performing maintenance.
ALWAYS identify malfunctioning chain hoists or chain hoists being repaired with a suitable sign (for example "OUT OF SERVICE")
NEVER perform maintenance if there is a load on the chain hoist.
NEVER operate a chain hoist that is being repaired!

11.2 REPLACEMENT OF THE LOAD CHAIN

11.2.1 SINGLE-STRAND CHAIN

Remove the end stop from the loose end of the chain.
Hook the C-link to the last link on the loose end – see pic. 11.2.
Lower the chain until a sufficient length of the new chain is hanging out of the chain hoist.
Fit the end stop to the loose end of the new chain.
Attach the coupling with the hook to the other end of the chain. Check that the chain is not twisted.

Pic. 11.2 – Replacement of the load chain



11.2.2 DOUBLE-STRANDED CHAIN

Remove the end stop from the loose end of the chain.
Hook the C-link to the last link on the loose end – see pic. 11.2
Lower the chain until a sufficient length of the new chain is hanging out of the chain hoist.
Fit the end stop to the last link on the loose end of the new chain.
Thread the protruding end of the chain through the block in the tackle block, thread it onto the stirrup stud and secure it with a cotter pin.

11.3 CLEANING THE NOISE SILENCERS

The noise silencers, fitted to the rapid-bleed valves on the sides of the chain hoist, must be kept free of blockage so that the exhausted air can pass through them. According to the local conditions (dustiness of the environment, filtration quality and lubrication of the compressed air, intensity of hoist operation) the disassembled noise

silencers must be washed in solvent and blown through with compressed air once every 1 to 6 months.

! WARNING

Blocked noise silencers extend the brake response time and may cause the load to drop when the motor is stopped.

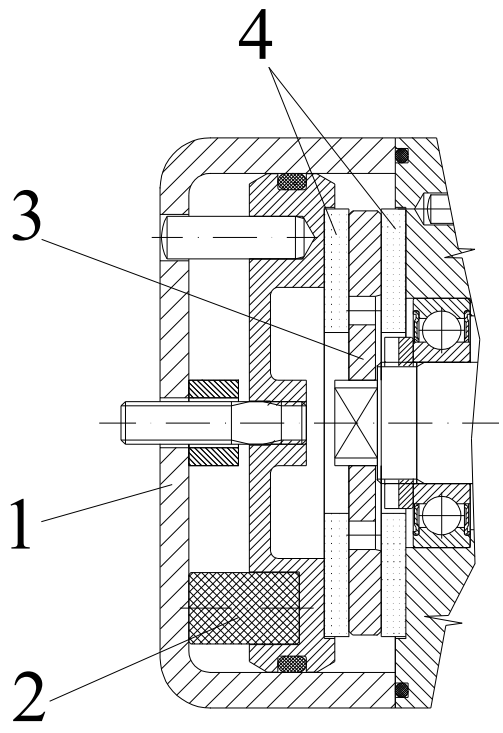
11. 4 INSPECTING AND ADJUSTING THE BRAKE

We recommend that the brake be inspected and adjusted after approx. 400 hours of operation, always at a professional servicing facility.

Replace the motor brake regulation cylinder (2) every three years, regardless of the frequency of use of the chain hoist and each time the brake is repaired.

For permissible wear of the working surfaces on the brake components – see table 11.3

1. **Brake cover**
2. **Motor brake regulation cylinder**
3. **Carrier**
4. **Brake insert**



Pic.11.4

Table 11.3

Component	Standard dimension (mm)	Maximum wear	Limit dimension
Carrier (3)	4.5	0.8	3.7
Brake insert (4)	3.5	0.4	3.1

11. 5 INSPECTION OF THE AIR MOTOR

We recommend that the air motor be inspected after approx. 400 hours of operation, always at professional servicing facilities.
After disassembling the brake cover remove the motor rotor with flanges.
-check the vane wear
-check the condition of the discharging springs
Replace worn and damaged parts.

11.6 GENERAL INSTRUCTIONS

The following instructions give generally important information on disassembly, inspection, repairs and assembly. If the chain hoist was disassembled for any reason, proceed according to the following instructions.

1. Perform maintenance in a clean environment.
2. **NEVER** disassemble the chain hoist more than is necessary for performing the required repairs.
3. **NEVER** use excessive force when dissembling parts.
4. **NEVER** use heat (fire) as a means for disassembling parts, if these parts are intended for further use.
5. Keep the workplace clean and tidy, free of foreign substance that could penetrate the bearings or other moving parts.
6. If the component is held in a vice, always use suitable pads to protect the surface of the component.

11.7 INSPECTION

Inspect all disassembled components to check that they are suitable for further use.

1. Check that all transmissions, including the shaft, are not worn and are free of grooves or cracks.
2. Check that the thread is undamaged on threaded components.
3. Clean brake inserts and the carrier using a wire brush and check their condition.
4. Measure the thickness of the brake inserts (see table 11.3)

11.8 REPAIRS

Worn or damaged parts must be replaced.
Remove small burrs or grooves or other minor surface defects and smooth with fine grinding stone or sand paper.

11.9 TEST

All repaired chain hoists must be tested by a professional party. This load test, with a load exceeding the load capacity by 10%, will verify the chain hoist functions and brakes.

12 PUTTING OUT OF OPERATION - DISCARDING

Before putting the chain hoist out of operation, thoroughly rinse very greasy parts in de-greaser (petrol, etc.), drain the oil from the pressure lubricator and remove the hoses.
Chain hoists treated in this manner must be handed over to a company concerned with disposal of metal waste.

13. RELATED DOCUMENTATION

EC declaration of conformity

The instructions for use were written up in accordance with the following technical regulations, technical standards and national regulations:

- Government regulation no.24/2003 Coll., as amended (European Parliament and Council Guideline 98/37/EC)
- Government regulation no.23/2003 Coll., as amended (European Parliament and Council Guideline 94/9/EC)
- ČSN EN ISO 12100 - 1
- ČSN EN ISO 12100 – 2
- ČSN ISO 12480 - 1
- ČSN EN 1050
- ČSN EN 1127 – 2
- ČSN EN 1127 - 1
- ČSN EN 13463 – 1
- Czech Mining Authority Regulation no.22/89 Coll.
- ČSN 33 2030
- ČSN EN 14492-2

14. THE MANUFACTURER'S FINAL REQUIREMENTS OF THE CUSTOMER

Any modifications to the product, i.e. use of non-brand spare parts may only take place on the basis of the manufacturer's consent.
If these conditions are not adhered to the manufacturer is not liable for the safety of its product. In such cases the manufacturer's guarantee does not apply to the product.