



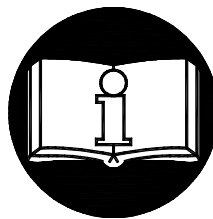
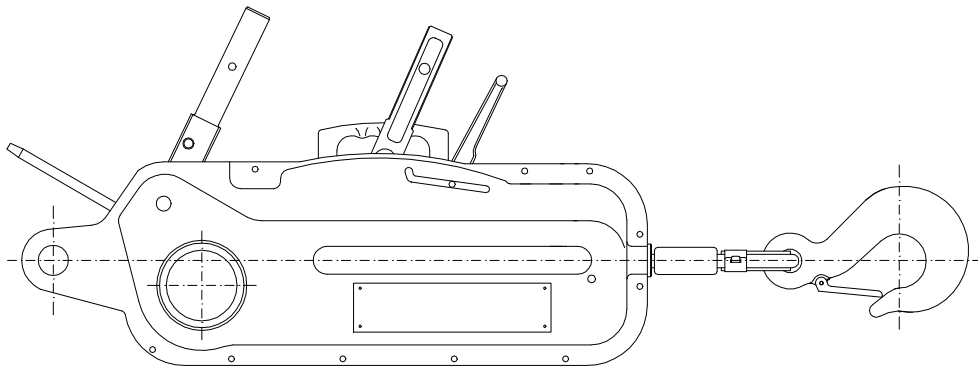
BRANO a.s., 747 41 Hradec nad Moravicí
The Czech Republic
tel.: +420 553 632 316, 553 632 303
fax: +420 553 632 407, 553 632 151
<http://www.brano.eu> info@brano.eu

SAFETY PRINCIPLES, OPERATION AND MAINTENANCE MANUAL

FOR

ROPE HOIST

type 30-00, 30-10 and 30-11
lifting capacity 0,8t; 1,6t and 3,2t



Read this manual carefully before using this product. This manual contains important safety, installation, operation and maintenance information. Make this manual available to all responsible persons.

Keep for further use!

Edition 3rd
MARCH 2011
Evidence number 1-52165-0-1



CONTENT

1	DEFINITION	3
2	INTENDED PURPOSE	3
3	SAFETY PRINCIPLES	4
3.1	SAFETY SUMMARY	4
3.2	SAFETY PRINCIPLES	4
3.2.1	Before use	4
3.2.2	While in operation	5
3.2.3	After use	5
3.2.4	Risk analyses	5
3.2.5	Maintenance	5
4	PACKING, STORAGE AND MANIPULATION	6
4.1	ACCESSORIES	6
4.2	PACKING	6
4.3	STORAGE	6
4.4	MANIPULATION	6
5	MAIN TECHNICAL PARAMETERS	7
5.1	MECHANICAL CLASSIFICATION	7
5.2	MATERIAL AND PROVEDENÍ	8
5.3	DATA ON THE PRODUCT	8
6	INSTALLATION OF HOIST	8
6.1	CHECKING BEFORE THE INSTALLATION	8
6.2	SLIDING ON THE WIRE ROPE	9
6.3	SUSPENDING OF THE HOIST	11
6.4	POSITION OF HOIST DURING LIFTING AND PULLING	11
6.5	INSTRUCTIONS FOR OPERATOR OF ROPE HOIST	12
6.6	CHECKING BEFORE USE	13
7	OPERATION	13
7.1	USE OF THE ROPE HOIST	13
7.2	SAFETY WORKING ENVIRONMENT	14
8	INSPECTION OF HOIST	14
8.1	INSPECTION	14
8.1.1	Inspection classification	14
8.1.2	Daily inspection	14
8.1.3	Regular inspection	15
8.1.4	Occasionally used hoist	15
8.1.5	Inspection report	15
8.2	Inspection procedure	15
9	TROUBLESHOOTING	18
10	LUBRICATION	18
10.1	GENERALLY	18
10.2	TRANSMISSIONS	18
10.3	ROPE	18
11	MAINTENANCE	19
11.1	SAFETY PRINCIPLES	19
11.2	GENERAL INSTRUCTIONS	19
11.3	CHECKING	19
11.4	REPAIR	19
11.5	TEST	20
12	REMOVING FROM OPERATION – DISPOSAL	20
14	FINAL REQUIREMENTS OF THE MANUFACTURER TO THE CUSTOMER	20

1 DEFINITION

! DANGER

Danger: is used to indicate the presence of hazard which will cause death or severe injury if the warning is ignored.

! WARNING

Warning: is used to indicate the presence of hazard which can cause death or severe injury if the warning is ignored.

! CAUTION

Caution: is used to indicate the presence of hazard which can cause minor injury if the warning is ignored. Caution can also indicate dangerous practices.

Lifting capacity (Q): indicates maximum mass (working load limit), the hoist is designed to support under conditions given by this manual.

2 INTENDED PURPOSE

2.1 Rope hoist (further only hoist) is designed solely for manual lifting, lowering and pulling of free loads in arbitrary direction at the workplace. The maximum tension in rope must not exceed nominal lifting capacity.

2.2 Design of the hoist meets requirements given by the Directive of European parliament and Council 2006/42/EC in wording of the Czech technical regulation – government order no. 176/2008 Coll. of Laws. In valid wording and requirements of harmonised Czech technical standards ČSN EN ISO 12100 - 1, ČSN EN ISO 12100 - 2, ČSN EN 14121-1 and ČSN EN 13157+A1.

2.3 Design of the hoist meets requirements given for the group of machinery I (mining) category M2 according to the Directive of European parliament and Council 94/9/EC in wording of the Czech technical regulation – government order no. 23/2003 Coll. Of Laws. In valid wording and requests of harmonised Czech technical standard ČSN EN 13463-1 and meets condition for use in environment „dangerous atmospheric conditions 2“ according to the ČSN EN 1127-2 with limitation according to the national regulation – regulation of ČBÚ (Czech Bureau of Mine) no.22/89 of Coll. Of Laws § 232 clause (1) c) to 1,5% accumulation of mine gas.

2.4 Design of the hoist meets requirements given for the group of machinery II (no mining) category 2 and 3 according to the Directive of European Parliament and Council 94/9/EC in wording of the Czech technical regulation – government order no.23/2003 Coll. Of Laws in valid wording as well as requirements of the harmonised Czech technical standard ČSN EN 13463-1 and meets conditions for use in environment „zone 1 and zone 21“ ,“zone 2 and zone 22“ according to the ČSN EN 1127-1.

Note: Articles 2.3 and 2.4 apply for the version of the hoist for the environment with explosion risk.

3 SAFETY PRINCIPLES

3.1 SAFETY SUMMARY

Danger exists when loads are lifted, particularly when a hoist is not being used properly or is poorly maintained. Because an accident or serious injury could result, special precautions apply to the operation with hoists during assembly, maintenance and inspection.

! WARNING

NEVER use hoist for lifting or transporting people.

NEVER lift or transport loads over or near people.

NEVER lift more than lifting capacity stated on the hoist.

ALWAYS make sure the load carrying structure will provide adequate support to handle fully loaded jack and all lifting operations.

ALWAYS let people around to know when lift is about to begin.

ALWAYS read the operation manual and safety instruction.

Remember, proper rigging and lifting techniques are the responsibility of the operator. Check all applicable national directions, regulations and standards for further information about the safe use of your hoist.

3.2 SAFETY PRINCIPLES

! WARNING

3.2.1 Before use

ALWAYS ensure, physically strong, qualified and instructed persons elder 18 years of age, knowing this manual and trained in safety conditions and way of work operate the hoist.

ALWAYS check the hoist every day prior to starting a work according to the article 8.1.(2) „Daily inspection“.

ALWAYS make sure the length of rope is long enough for the intended job.

ALWAYS use only original rope BRANO.

ALWAYS ensure the rope was not corroded, clean and undamaged.

NEVER manipulate with loads firmly placed or unknown weight.

NEVER tension rope without knowledge of necessary tensioning forces.

NEVER use damaged or worn out hoist.

NEVER use hoist with jumped out or missing safety latch of hook.

NEVER use hoist without visible marking of carrying capacity on its nameplate.

NEVER use modified or deformed hooks.

NEVER lengthen rope with the help of clamps or in any other way.

NEVER use a hoist marked by the label „**OUT OF SERVICE** .“

ALWAYS consult use of the hoist in non-standard or extreme environment with the manufacturer.

ALWAYS see to it that rope was properly lubricated.

3.2.2 While in operation

ALWAYS remove rope curves and slings before starting lifting or pulling.

ALWAYS make sure the load is properly seated in the hook.

ALWAYS make sure the safety latches of hooks works in the correct way.

ALWAYS pay attention to the limit positions.

ALWAYS use manual power only. Do not lengthen lever.

ALWAYS during lifting of loads, where weight approaches to nominal lifting capacity is recommended, due to the high operating forces, two persons operated the hoist.

NEVER allow swinging the load, causing impacts or vibrations.

NEVER use the rope as a sling.

NEVER support a load on the tip of the hook.

NEVER pull rope over any edge. Use pulleys.

NEVER weld, cut or provide other operation on a suspended load.

NEVER use rope as a welding electrode.

NEVER work with hoist when the rope is jammed or slipping.

NEVER handle with wire rope without gloves.

NEVER touch moving parts of hoist during operation. Ensure no objects or their parts get inside the hoist.

NEVER leave suspended load unattended.

3.2.3 After use

NEVER leave a load suspended.

ALWAYS ensure the jack against incompetent use.

3.2.4 Risk analyses

The analysis of possible risks from aspect of design, operation and environment of the hoist application is presented in the separate document „Risk analysis“. This document can be required in service centers.

3.2.5 Maintenance

ALWAYS let the qualified personnel, approved by the user, regular inspection of the hoist.

ALWAYS ensure the rope was clean and undamaged.

ALWAYS ensure the sliding parts were greased enough.

Only such interventions can be done during maintenance, that are in compliance with requirements of the manufacturer specified in the chapters 11 and 14 of this operation manual.

IT IS NOT PERMISSIBLE to carry out repairs and maintenance in other way than prescribed by the manufacturer. It concerns namely the forbiddance of using the non original spare parts or carrying out modifications on the product without any approval of the manufacturer.

4 PACKING, STORAGE AND MANIPULATION

4.1 ACCESSORIES

Every packing of standard rope hoist consist of:

- (1) Telescopic hand lever
- (2) Spare shear pins (they are placed in the tube of lifting lever position 1 on picture in article 6.2)

4.2 PACKING

4.2.1 Rope hoists are supplied assembled, packed in cardboard boxes.

4.2.2 The following accompanying documentation is a part of the delivery:

- a) Operation Manual
- b) EC Declaration of Conformity
- c) Certificates of Quality and Completeness and Guarantee Card.
 - c1) Guarantee period is stated in the Guarantee Card.
 - c2) The guarantee does not apply to defects caused by infringement of the instructions stated in this Operation Manual and defects occurred owing to improper use and unskilled intervention.
 - c3) The guarantee does not apply also to modifications on the product without an approval of the manufacturer.
 - c4) Claim of product defects is carried out according to applicable provisions of commercial code eventually as amended.
- d) List of service centers (for the Czech and Slovak Republics only).

4.3 STORAGE

Store the hoists in dry and clean stocks free of chemical influences and vapours. When storing the rope ensure, each rope could be easily comparable with inspection records.

- (1) ALWAYS store hoists without any suspended load.
- (2) Remove all dust, water and impurities from the hoist.
- (3) Lubricate rope and springs of safety latches of hooks.
- (4) Store the hoist in a dry place.
- (5) During further use follow the instructions of the article 8.1.2 „Occasionally used hoist“.

4.4 MANIPULATION

During manipulation keep valid technical instructions and standards for work with heavy loads.

5 MAIN TECHNICAL PARAMETERS

Type	Lifting capacity (t)	Rope	Length ¹⁾ of rope (m)	Lifting ²⁾ speed (m/min)	Range of working temperature	Operating ³⁾ force on lever (N)	Weight (without packaging) (kg)	
							hoist	rope
30-10	0,8	Ø8	20	2	-20°C to +50°C	250	11,5	5,9
30-00	1,6	Ø11		2		450	21,5	12
30-11	3,2	Ø16		0,45 0,84		380 (B) 750 (A)	33,5	25

Note:

1) Ropes with different length (10m, 30m, 40m) can be ordered separately.

2) Calculated on presumption of 35 swings per minute.

3) A – higher lifting speed B- lower lifting speed

Hoist of lifting capacity 3,2t has hinge pin instead of hook.

5.1 MECHANICAL CLASSIFICATION

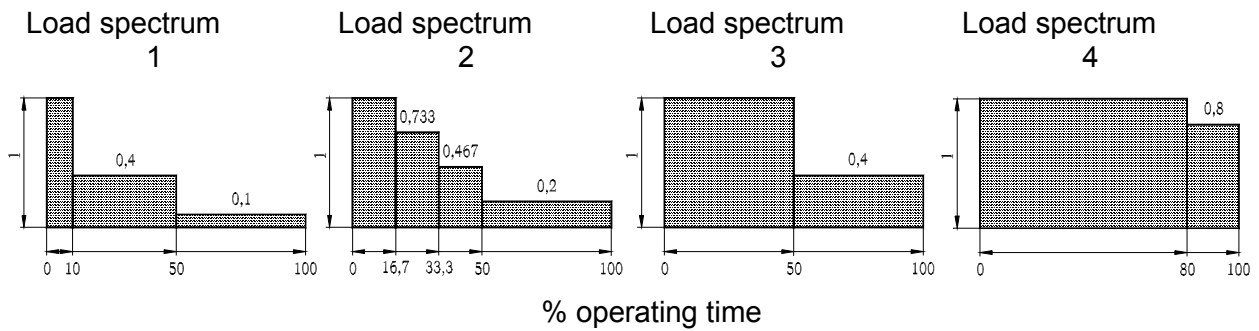
Safety and life of hoist is guaranteed under presumption it works in accordance with the specified classification.

Hoist is designed for class 1Bm according to the regulation FEM 9.511 – see diagram 5.1. (corresponds to classification of the mechanism M3 according to the ISO 4301/1).

Average daily working time is set by the load diagram.

Tab. 5.1 MECHANICAL CLASSIFICATIONS

Load spectrum (Load distribution)	Definitions	Cubic mean value	Average daily operating time (h)
1 (light)	Mechanism or parts thereof, usually subject to very small loads and in exceptional cases only to maximum loads.	$k \leq 0,50$	1 - 2
2 (medium)	Mechanism or parts thereof, usually subject to small loads but rather often to maximum loads.	$0,50 < k \leq 0,63$	0,5 - 1
3 (heavy)	Mechanism or parts thereof, usually subject to medium loads but frequently to maximum loads.	$0,63 < k \leq 0,80$	0,25 – 0,5
4 (very heavy)	Mechanism or parts thereof, usually subject to maximum or almost maximum loads.	$0,80 < k \leq 1,00$	0,12 – 0,25



5.2 MATERIAL AND PROVEDENÍ

- 5.2.1 All parts of hoist are made of steel, handle is made of plastic.
- 5.2.2 Materials inclinable to creation of an incendiary spark in terms of the annex No. 2 article 1.3.1 to the ministerial order No. 23/2003 of the Coll. of Laws and the ČSN EN 1127-2 article 6.4.4 and ČSN EN 13 463-1 article 8.1 harmonized technical standards are not used in design of the hoist.
- 5.2.3 Materials with dangerous effects of static electricity in meaning of the ČSN EN 1127-2 article 6.4.7, ČSN EN 1127-1 article 6.4.7, ČSN EN 13463-1 article 7.4.3 and ČSN 33 2030 are not used in the design of the hoist.
- 5.2.4 Hoist does not exceed the noise values specified in the annex no. 1 article 1.7.4.2 letter u) NV 176/2008 of the Coll of Laws (Directive EP and RE no. 2006/42/ES)

Note.: Article 5.2.1 – 5.2.3 are valid for version of hoist to environment of explosion risk.

5.3 DATA ON THE PRODUCT

Every product is fitted with identification plate with the following data:

Standard version:	Version to environment with explosion risk:
Manufacturer's identification	Manufacturer's identification
Address of the manufacturer	Address of the manufacturer
Type of product	Type of product
Lifting capacity	Lifting capacity
Serial number	Serial number
Year of production	Year of production
CE marking	CE marking
	Symbol of protection type (I M2 for group I , II 2G for group II)

6 INSTALLATION OF HOIST

Prior to installation of the hoist check carefully the hoist and wire rope for possible damages.

6.1 CHECKING BEFORE THE INSTALLATION

6.1.1 Load-carrying structure

! WARNING

ALWAYS make sure the load carrying structure is firm enough to support the weight of load and the hoist. Installation must not be provided onto the structure, where the carrying capacity cannot be checked.

ALWAYS the user is responsible for the load carrying structure!

6.1.2 Checking the rope

Check, whether the wire rope is clean, not twisted and damaged.

6.2 SLIDING ON THE WIRE ROPE

Prior to sliding on the wire rope we recommend to check the smooth and correct operation of the mechanism by the swinging moment of the lifting and lowering lever. Opening of the clamp blocks is possible on unloaded hoist only.

Lifting capacity 0,8t and 1,6t

(see fig. 6.2.1)

Lowering lever (2) move in the direction of arrow and slightly push. By pulling move the release lever (3) in direction of an arrow, until it gets behind the cog and keep both clamp blocks in the open position. Straighten and pull the tip of rope through guide bushing (4) through the whole hoist to the other side. Pull the rope through the hoist to the required lifting length. Pulling the rope through the hoist we can make easier by the swinging movement of the lifting lever (1). Release the releasing lever (3) from the cog.

We recommend during tightening the lifting capacity 1,6t to put the hoist vertically on the hook (the guide bushing (4) for sliding the rope is on the top) and the releasing lever (3) put into the notch by the foot.

Procedure of pulling the rope through is graphically described at fig. 6.2.2:

Fig. 6.2.1

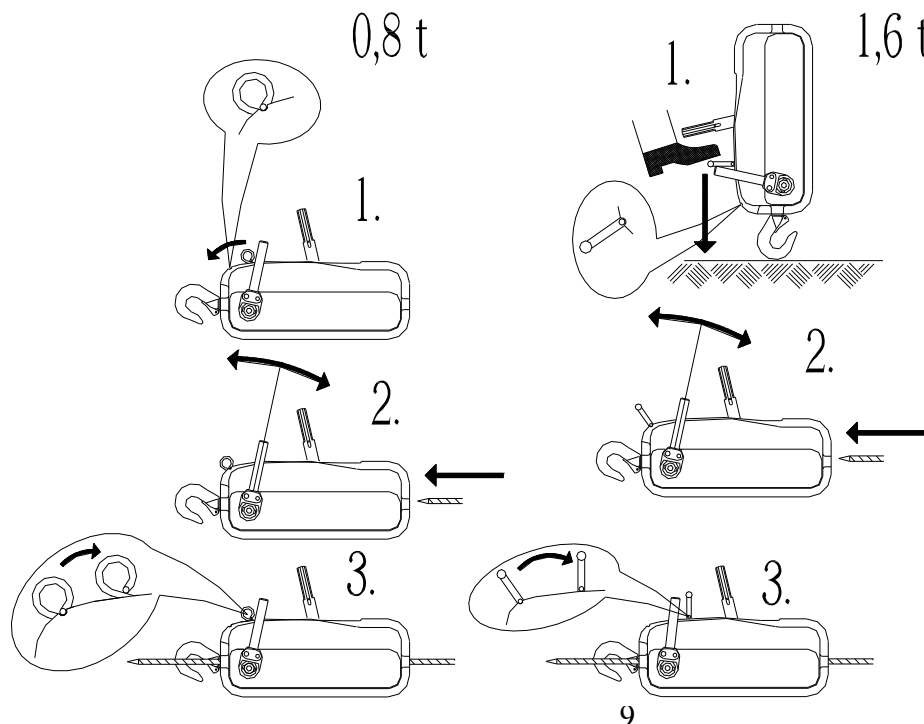
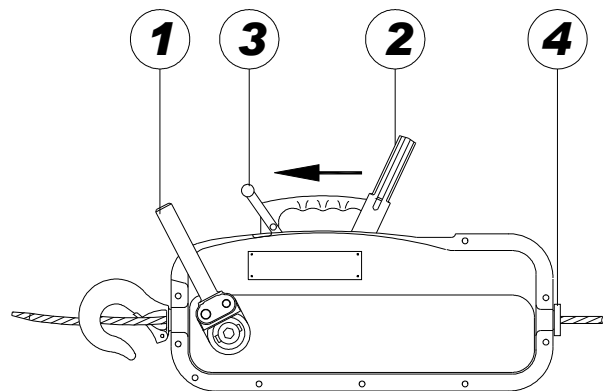


Fig. 6.2.2

Fig. 6.2.3.

Lifting capacity 3.2t (see fig. 6.2.3)

Put the hoist vertically to the hinge pin (guide bushing (4) for pulling through the rope is on the top). Lifting lever (1) move down and hold by the use of your foot at the ground. Lowering lever (2) pull towards the releasing lever (3). Both levers at the same time shift down by the energetic movement so as the releasing lever (3) jumped to the notch.

Pull the rope through the hoist to the required lifting length. Pulling the rope through the hoist we make easier by swinging movement of the lifting lever (1). Release the releasing lever (3) from the notch.

Procedure of pulling the rope (through the rope hoist 3,2t) is graphically described at fig. 6.2.4:

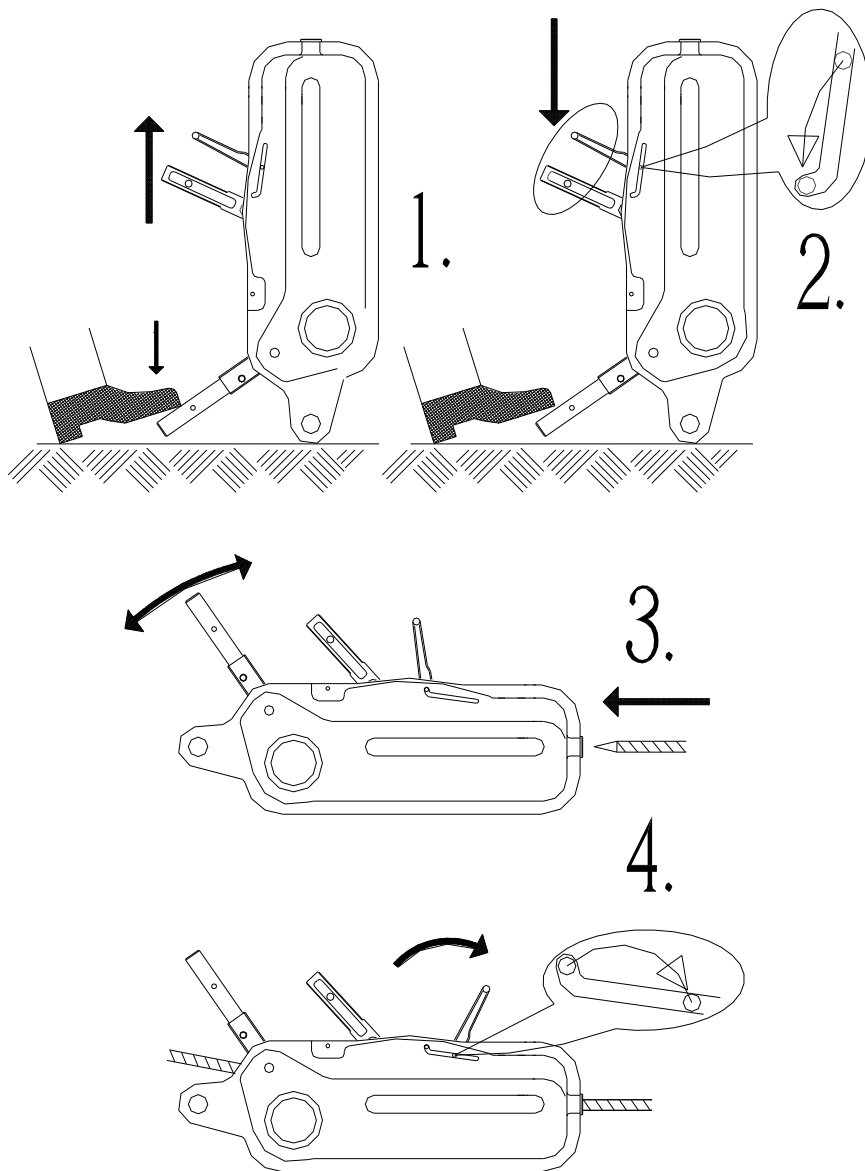
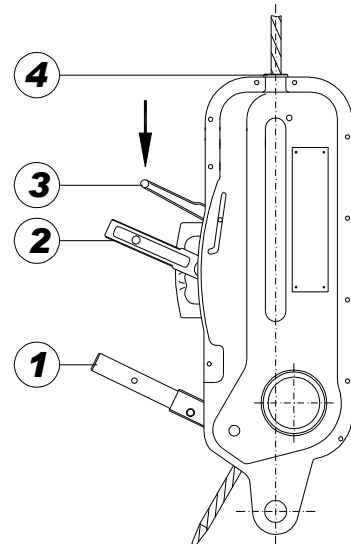


Fig. 6.2.4

6.3 SUSPENDING OF THE HOIST

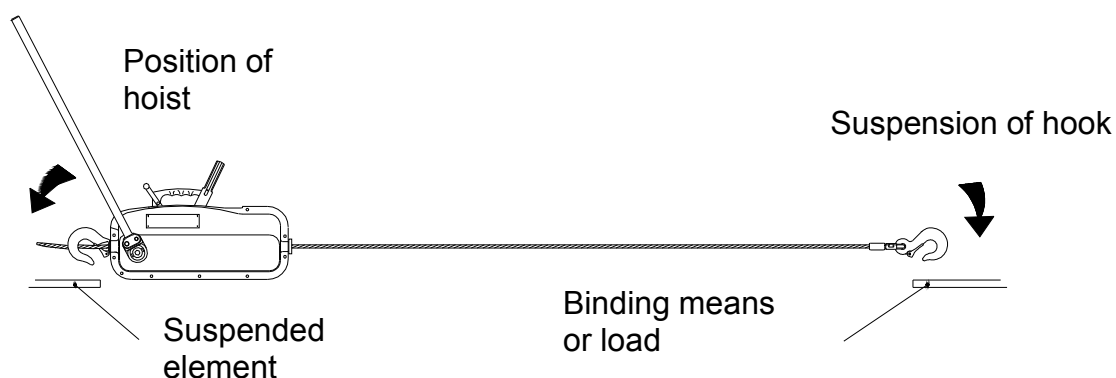
! WARNING

Be careful during suspending the hoist to a suspension element and ensure appropriate conditions for safety installation according to the character of the environment (working platform, auxiliary lifting device, etc.), to avoid endanger or injury of people. Use safety equipment when suspending rope hoist in heights to avoid fall from height.

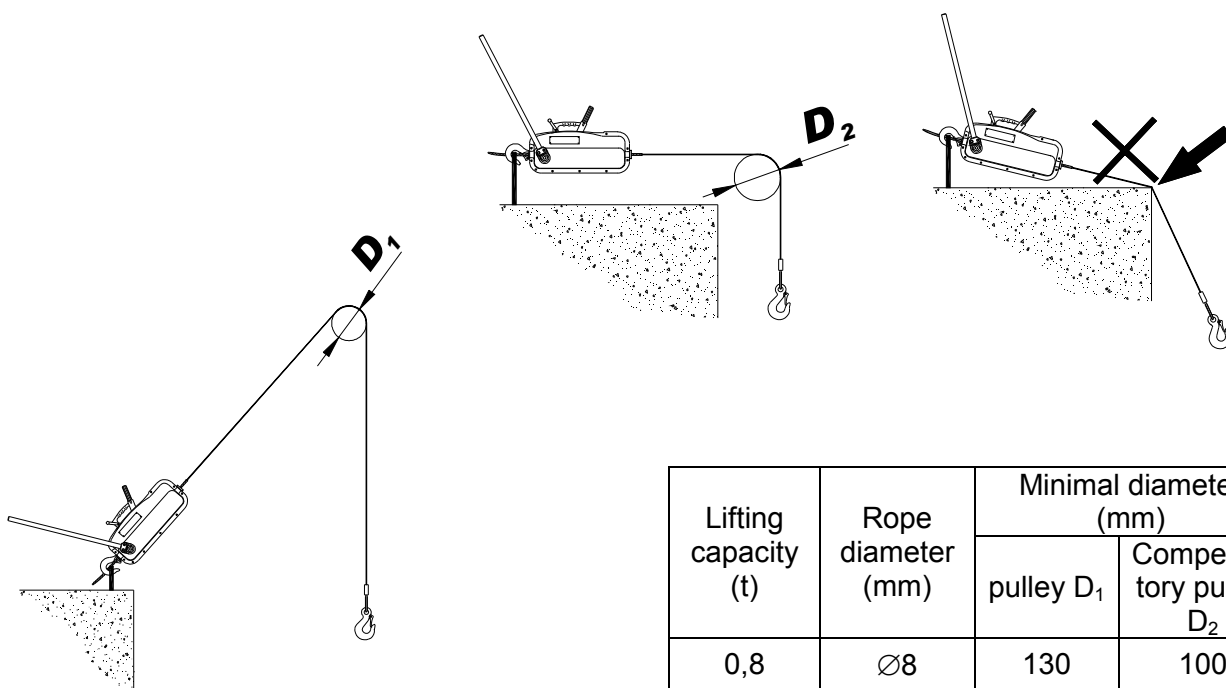
User is responsible for creating conditions for the installations and suspension of the hoist.

6.4 POSITION OF HOIST DURING LIFTING AND PULLING

(1) Rope must get into the hoist in its axe.



(2) If during lifting or pulling the rope is not straight line, a load pulley must be used to straight the rope in line.



Lifting capacity (t)	Rope diameter (mm)	Minimal diameter (mm)	
		pulley D ₁	Compensatory pulley D ₂
0,8	Ø8	130	100
1,6	Ø11	180	140
3,2	Ø16	260	200

6.5 INSTRUCTIONS FOR OPERATOR OF ROPE HOIST

lifting and lowering of load can be interrupted in any height of lift. Stability of load position is ensured by the two coupled clamp blocks.

Against overloading is the rope hoist fitted with shear pins in the lifting lever. During deformation of shear pins the clamp blocks remain gripped and thus the position of load is stabilised. Spare shear pins are placed in the cavity of the lifting lever.

From the safety reasons is forbidden to use other then original shear pins.

6.5.1 Tensioning and slacking the rope

Put hand (telescopic) lever on lifting lever -1 (fig.6.2.1) so as the securing pin jumped to opening in the telescopic lever. By swinging motion of the lever rope is tightened and load is approaching.

By changing the telescopic lever to lowering lever -2 (fig.6.2.1) and its swinging motion the rope is slacked. You must not operate at the same time with lifting and lowering lever. Prior to longer lowering of load we recommend slightly lubricate the rope and inside mechanism through opening of the lowering lever.

! WARNING

NEVER lift or lower hook to limit positions.

ALWAYS leave about 1m of rope as a reserve for lifting as well as especially during lowering.

6.5.2 Choice of the lifting speed

(only at lifting capacity 3,2 t)

Rope hoist of lifting capacity 3,2t has double lever transmission for tensioning of rope (lifting). This enable during lifting of loads with lower weight (about to 50% of lifting capacity) reach longer lift per one swing of lever and thus higher speed.

A – lower lifting speed (turtle)

Catch (5) at lifting lever (1) lift off and lever of eccentric (6) set according to the picture 6.5.1 and 6.5.2

B – higher lifting speed (hare)

Catch (5) at lifting lever (1) lift off and lever of eccentric (6) set according to the picture 6.5.1 and 6.5.2

Fig. 6.5.1

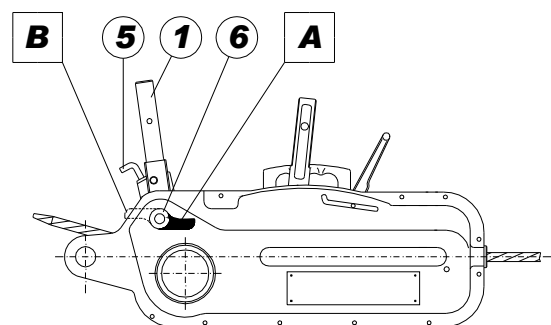
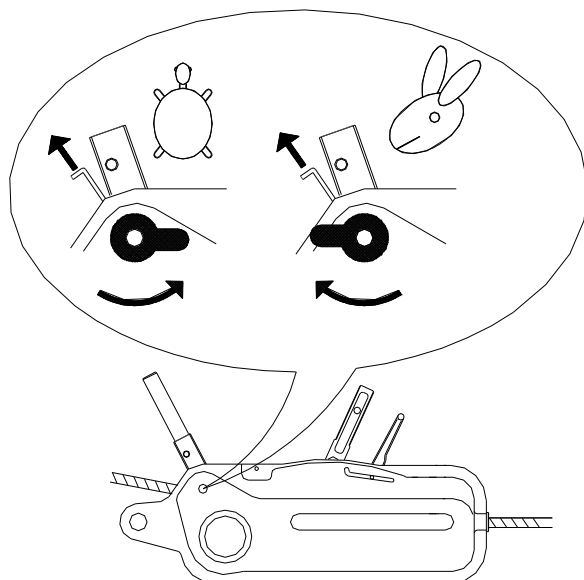


Fig. 6.5.2



6.6 CHECKING BEFORE USE

! CAUTION

- (1) Look at first to the previous articles of this manual again and make sure that all steps were done correctly and all parts are safely assembled.
- (2) Check the rope is not twisted.
- (3) Checked, whether hooks are correctly suspended and safety latches are snapped.
- (4) Inspect visually a load carrying structure or suspended elements, whether they are without defects. Check tightening of the fastening screws.
- (5) By several motions of hand lever check the function of hoist without a load.
- (6) Provide several lifting and lowering with suitable load (10% to 50% lifting capacity).
At the same time check the hoist, whether during lowering and stopping hold the load without slipping.

7 OPERATION

7.1 USE OF THE ROPE HOIST

The rope hoist is multi purpose device, determined for lifting, lowering, pulling and tensioning of loads. It is operated by the help of hand lever. It can be used not only in standard environment but also in environment with explosion risk – see article 2.3 and 2.4 of this manual.

It is determined for organisation as well as for private persons.

Since work with heavy loads may involve unexpected danger, it is necessary to follow all „Safety instruction“ according to the chapter 3 of this manual.

7.2 SAFETY WORKING ENVIRONMENT

! WARNING

- (1) Operator must be provably familiar with this manual, must keep valid safety and hygienic instructions and must be qualified to operate this device.
- (2) Operator must be equipped with safety helmet, gloves and suitable protective shoes.
- (3) Only verified binding means appropriate lifting capacity is to be used for binding loads.
- (4) When more persons take part into the operation, always one person familiar with safety instruction must be responsible for manipulation with the hoist.
- (5) The operator must have a clear and unobstructed view of the working area before starting the work. If this is not possible, a second or more persons must serve in nearby area.
- (6) The operator must check the entire work place is safe and whether there is a possibility of escaping in case of endanger before operating the rope hoist.
- (7) During work with rope hoist the suitable distance of operator from the load must be kept. It is prohibited to lift or lower bulky loads preventing to keep sufficient distance.
- (8) When operating the rope hoist in limited areas you must prevent the hook or load do not hit into any obstacle or to rope hoist body.

8 INSPECTION OF HOIST

8.1 INSPECTION

8.1.1 Inspection classification

- (1) Initial inspection: prior to the first use. All new or repaired hoists shall be inspected by a responsible qualified person to ensure qualified fulfilment with the provisions of this manual.
- (2) Inspections of hoists in regular service are divided into two general classifications based on the intervals at which should be performed. Intervals depends on the nature of the critical components of hoists and the degree of their wear, mechanical damage or malfunction. Two main groups are marked here as daily and regular. The respective intervals are defined in the following way:

(a) Daily inspection: visual examination provided by the operator at the beginning of each usage.

(b) Regular inspection: visual inspection provided by a person designated by the user.

- 1) normal service – annually,
- 2) heavy service – every half a year,
- 4) special or infrequent service – as recommended by the qualified person at the first use and according to the directions of the qualified service personnel.

8.1.2 Daily inspection

Items such as those listed in recommended in section 8.2 (1) „Daily inspection“ check the hoist for damages and defects. Provide this inspection also during operation the interval between regular inspections. Qualified personnel determine, whether any defects or damage constitute a hazard and will require more detail inspection.

8.1.3 Regular inspection

Complete inspections of the hoist perform as recommended regular inspections. These inspections may be performed with the hoist in its normal location and do not require dismantling of the hoist. The recommended regular inspection defined in the section 8.2(2) shall be performed under the supervision of competent persons who determine, whether the complete disassembly is necessary. These inspections shall include the requirements of the daily inspection as well.

8.1.4 Occasionally used hoist

(1) A rope hoist that has been idle for a period of one month or more but less than one year shall be put through a detailed inspection conforming to the requirements of the section 8.1.2 before it is placed again in service.

(2) A rope hoist that has been idle for a period of one year shall be put through a detailed inspection conforming to the requirements of section 8.1.3 before it is placed again in service.

(1) A wire rope is to be inspected according to the requirement in section 8.1.3 always before the rope hoist is put into operation, if the rope hoist was idle for a period of three or more months.

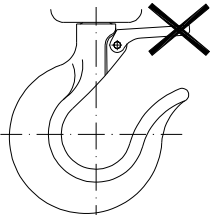
8.1.5 Inspection report


Always keep reports about the performed tests, repairs, inspections and maintenances of rope hoists. Dated inspections reports should be maintained at time intervals specified in section 8.1.1 (2)(b) and keep at place designated the user.

Defects found by the inspection or reported during operation must be announced to a person for safety and designated by the user.

8.2 Inspection procedure

(1) **Daily inspection** (provided by the operator or designated person)

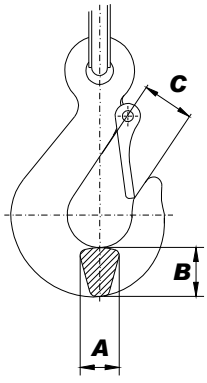
PART	INSPECTION METHOD	LIMIT/CRITERIA FOR DISCARD	REMEDY
1. Function of rope hoist	Visual, hearing	Rope binds, jumps, make a noise etc.	Clean and lubricate the hoist, if the defect is not removed give the hoist repaired
2. Hooks (1) Appearance	Visual 	Safety latch jumped out of the top of hook, bind shank of hook or other visible hook deformation	Deformed hook – replacement of the hook
(2) Safety latch	By hand springing of the safety latch	Pushed safety latch does not return	Clean, lubricate, repair or replace

3.Rope (1) Appearance	Visual Check the whole rope 	Dust, impurity, deformation, excessive wear, corrosion Damaged and deformed rope, excessive damage, corrosion	Clean by the brush, lubricate and surface clean by a swab Replacement of the rope
(2) Lubrication	Visual	Rope is not lubricated	Clean the rope and lubricate, surface clean by a swab
(3) Setting up the rope	Visual check, whether the rope is not twisted	Rope is twisted or kinked	Straight up the rope to the normal position
4. Fastening parts	Visual check of all screws, nuts, rivets, etc.	Defected or missing parts Loose parts	Replace by new parts Fasten loosed parts

(2) Regular inspection (provided by the qualified personnel)

PART	INSPECTION METHOD	LIMIT / CRITERIA FOR DISCARD	REMEDY
1. Fastening parts	Visual check of all screws, nuts, rivets, etc.	Defected or missing parts Loosed parts	Replaced by new parts Fasten loosed parts
2. All parts	Visual check	Worn or damaged parts Dirty and not lubricated parts	Replace by new parts Dismantle, clean, lubricate and assemble again
3. Name plate – marking of the lifting capacity on hoist	Visual check	Illegible lifting capacity	Repair or replace by a new one

4. Hooks (1) Deformation of a hook (opening)	Measure dimension „C“ by the help of the slide calliper	Measured value is bigger then set by the diagram 8.3	Replacement of the hook
	Visual check	Deformation is visible at visual check	Replacement of the hook
(2) Wear of a hook	Measure dimension „A“ and „B“ by a slide calliper	If dimensions „A“ or „B“ decreased by more than 10%	Replace worn or deformed hook by the new one



Lifting capacity (t)	Dimension "A" (mm)		Dimension "B" (mm)		Dimension "C" (mm)
	Standard	Limit	Standard	Limit	Limit
Hooks with eye (rope)					
0,8	20	18	25	22,5	26
1,6	27	24,3	35	31,5	38
3,2	37	33,3	49	44,1	51
Hook with opening (hoist)					
0,8	19	17,1	24	21,6	37
1,6	24	21,6	31	27,9	44

5. Rope – limits/criteria for putting the rope out of operation

(1) Number of visible broken wires – see diagram

Provide the inspection always on both given length of rope. Put the rope out of operation, when several broken wires appear close together so they create the group in the given place or when the fracture of the whole strand takes place.

Rope diameter (mm)	Checked length (mm)	Max. number of broken wires
8	48	5
	240	10
11	68	3
	336	6
16	96	3
	480	6

- (2) Contraction of the rope diameter - max. about 10%.
- (3) External wear – contraction of the rope due to the pushing, surface wear, inner wear etc., can be at maximum 7% of the nominal diameter of the rope.
- (4) Corrosion of the wire rope (external and internal).
- (5) Deformation of rope – visible change of shape against its normal form.
- (6) Defect caused by the heat or electric arc.

During all inspections we have to taken into account the individual factors when monitoring the particular criteria.

9 TROUBLESHOOTING

Situation	Cause	Remedy
1. Hoist lift hard or fails to lift	(1) Hoist is overloaded. (2) Rope slipping – rope is excessively worn or deformed.	(1) Decrease the weight of load to the nominal lifting capacity. (2) Replacement of the rope
2. Lifting lever is free	Overload hoist – destruction of the shear pin.	Replacement of the shear pin.
3. Lowering lever works easily.	Broken spring of the clamp block	Replacement of the spring
4. Safety latch of hook does not work.	(1) Damaged safety latch. (2) Deformed hook.	(1) Repair the latch. (2) Check the hook – see „Daily inspection“.

10 LUBRICATION

10.1 GENERALLY

Remove the old lubricant before the application of a new one. Clean parts by the dissolvent and put the new lubricant. Use the lubricant prescribed by the manufacturer. Clean rope by the brush or by the steam.

10.2 TRANSMISSIONS

Dismantle cover of hoist. For lubrication use vaseline PM-A2 or its equivalent:

- for lifting capacity 0,8t guiding pins and groove for guiding pin,
- for lifting capacity 3,2t guiding cubes, groove in cover reinforcement and ball bearings of lifting lever.

All other friction surfaces (pins) at all lifting capacities lubricate with machine oil according to ISO - VG 46 or VG 48 or their equivalent.

10.3 ROPE

Wrong maintenance and insufficient lubrication of rope reduce remarkably its life and could cause serious accident. Apply thin layer of oil to the rope and rub down with a swab. Regular lubrication prevent reduce wear and prevent corrosion of rope and extend its life.

! CAUTION

ALWAYS lubricate rope 1 x weekly or often according to the intensity of the operation.

ALWAYS lubricate more often in corrosive environment than in normal circumstances (salt water, sea climate, acids etc.).

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

ALWAYS rub down the surface of rope after lubrication with a swab

NEVER use cleaning liquids on acid base.

11 MAINTENANCE

11.1 SAFETY PRINCIPLES

! WARNING

With the exception of the rope replacement, the maintenance, professional inspection and tests can be provided by the qualified personnel (service organisations) trained with safety and maintenance of these hoists only.

ALWAYS use only parts supplied by the manufacturer.

It is not permitted to perform repairs or maintenance in the other way than prescribed by the manufacturers. It concerns especially the forbiddance of using unoriginal spare parts or carrying out modifications on the product without any approval of the manufacturer.

ALWAYS check the function of the hoist after providing the maintenance.

ALWAYS mark the defective or repaired hoist by the suitable label (for example „OUT OF OPERATION“).

NEVER do maintenance when a load is suspended on the hoist.

NEVER use a hoist, that is under repair!

11.2 GENERAL INSTRUCTIONS

The following instruction gives general important information about the dismantle, inspection, repair and assembly. If the hoist was dismantled from any reason, proceed according to the following instructions.

1. Provide the maintenance in the clean environment.
2. **NEVER** dismantle hoist more, than necessary to provide repair.
3. **NEVER** use excessive power during dismantling parts.
4. **NEVER** use heat as a means during dismantling parts, when parts are determined for further use.
5. Keep the workplace clean and free from foreign substances, that could get into bearings or others moving parts.
6. If hold a part in a vice, always use suitable inserts to protect the surface of parts.

11.3 CHECKING

Check all the dismantled parts, whether they are suitable for further use.

1. Check all parts, whether they are not worn out and have no scratches or cracks.
2. Check, whether the treaded parts have undamaged tread.
3. Above all check the rope, that is the most frequent cause of defects.

11.4 REPAIR

Worn out or damaged parts shall be replaced. Small burrs and scratches or other small surface defects remove and smooth by the fine abrasive stone or the abrasive cloth.

11.5 TEST

The loading test with load exceeding lifting capacity about 10% shall be done at all repaired hoists by a qualified person to verify the function and brake of hoist.

12 REMOVING FROM OPERATION – DISPOSAL

The rope hoist does not contain any harmful substances, its parts are made of steel, only handle of hand lever is made of PVC. After removal from operation dismantle the handle and rope hoist give to firm dealing with disposal of a metal scrap. During liquidation of handle follow the appropriate standards for disposal of recycling plastics.

13 ELATED DOKUMENTATION of Laws as amended

13.1 EC declaration of conformity

13.2 This Instruction Manual was elaborated in accordance with following technical regulations, technical standards and national regulations:

- Ministerial order no. 176/2008 of the Coll. of Laws as amended (Directive of EP and Council 2006/42/EC)
- Ministerial order no.23/2003 of the Coll. of Laws as amended (Directive of EP and Council 94/9/ES)
- ČSN EN ISO 12100 - 1
- ČSN EN ISO 12100 - 2
- ČSN EN 14121-1
- ČSN EN 13157+A1
- ČSN EN 1127 - 2
- ČSN EN 1127 - 1
- ČSN EN 13463 - 1
- Regulation of CBM (Czech Bureau of Mine) No.22/89 of the Coll. of Laws.
- ČSN 33 2030.

14 FINAL REQUIREMENTS OF THE MANUFACTURER TO THE CUSTOMER

Any changes of the product, eventually usage of unoriginal spare parts can be realized only based on the approval of the manufacturer. When not observing this condition the producer does not guarantee safety of his product. In this case, any manufacturer's guarantees do not apply to the product.