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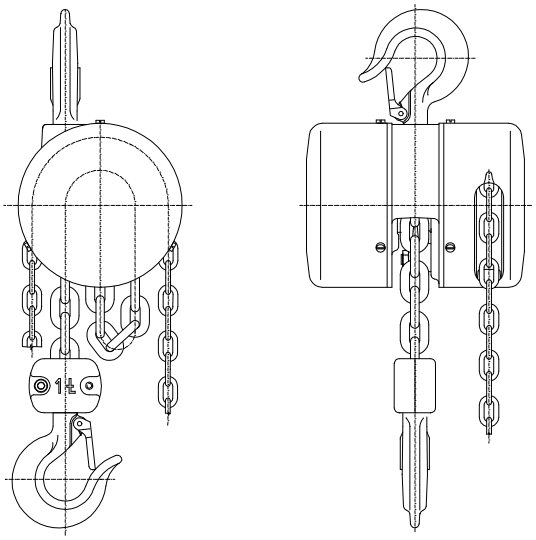
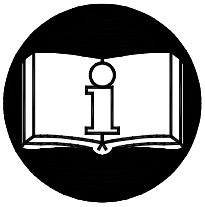
INSTRUCTION MANUAL
SAFETY PRINCIPLES, OPERATION, MAINTENANCE
FOR

CHAIN BLOCKS

type Z 110 - lifting capacity 125kg and 250kg
type Z 100 - lifting capacity 0,5t, 1,6t, 7,5t , 10t ,15t and 20t
type Z 100-1 - lifting capacity 1t a 3,2t
type Z 100-2 - lifting capacity 5t





Read carefully this manual before using the chain block. It contains important safety, operation, installation and maintenance instructions. Make this manual available to all responsible persons.

Keep for futher use !

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CE

CONTENT

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 a possible hazard, which could cause death or severe injury, if the warning is ignored.

! CAUTION **Caution**: is used to indicate a possible hazard, which could cause light injury, if the warning is ignored. Caution can warn against dangerous practices as well.

Lifting capacity (Q): indicates the maximum permitted mass of a load (working load limit), which a chain block is designed to support in general service under conditions defined in this manual.

2 DEVICE PURPOSE

2.1 The chain block
type Z 100, lifting capacity 0,5t, 1,6t, 7, 5t,10t, 15t and 20t
type Z 100-1, lifting capacity 1t and 3,2t
type Z 100-2, lifting capacity 5t
and its modification type Z 110, lifting capacity 125kg and 250kg:
(reffered to as "chain block")

has been designed solely for **hand** vertical lifting and lowering of free loads in the workplace. The load mass must not exceed the specified nominal lifting capacity.
2.2 The chain block has been designed to meet requirements provided by Directive 98/37/EC of the European Parliament and of the Council as amended by the Czech technical regulation – ministerial order No. 24/2003 of the Coll. of Laws as amended as well as requirements of the ČSN EN ISO 12100-1, ČSN EN ISO 12100-2, ČSN EN 1050 and ČSN EN 13157 harmonized technical standards.

2.3 The chain block has been designed to meet requirements for the group I of devices (mine) category M2 according to the Directive 94/9/EC of the European Parliament and of the Council as amended by the Czech technical regulation – ministerial order No. 23/2003 of the Coll. of Laws as amended as well as requirements of the ČSN EN 13463-1 harmonized Czech technical standard and fulfils the conditions for use in the „dangerous atmospheric conditions 2" environment according to the ČSN EN 1127-2 standard with the limitation according to the national regulation – CBM (Czech Bureau of Mine) regulation No.22/89 of Coll. of Laws § 232 section (1) c) up to 1,5% of mine gas accumulation.

2.4. The chain block has been designed to meet requirements specified for the group II of devices (non-mine) category 2 and 3 according to the Directive 94/9/EC of the European Parliament and of the Council as amended by the Czech technical regulation – ministerial order No. 23/2003 of the Coll. of Laws as amended as well as requirements of the ČSN EN 13463-1 harmonized Czech technical standard and fulfils the conditions for use in the „zone 1 and zone 21", „zone 2 and zone 22" environments according to the ČSN EN 1127-1 standard.

Note: 2.3 and 2.4 articles apply for the chain block designed for use in environment with explosion hazard.

3 SAFETY PRINCIPLES

3.1 SAFETY SUMMARY

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

! WARNING

NEVER use chain block for lifting and transporting people.

NEVER lift or transport loads over or near people.

NEVER lift more than lifting capacity shown on the chain block nameplate.

ALWAYS make sure the load carrying structure will provide adequate support to handle fully loaded chain block and all the lifting operation.

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

ALWAYS read the operation and safety instructions.

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 safety use of your chain block.

3.2. SAFETY PRINCIPLES

! WARNING

3.2.1 Prior to use

ALWAYS ensure physically fit, qualified and instructed persons over 18 years of age, familiarized with this manual and trained in safety conditions and way of work, operate the chain block.

ALWAYS check the chain block daily before use according to the section 8.2.(1) „Daily inspection“.

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

ALWAYS check the brake function before use.

ALWAYS use original chain only.

ALWAYS ensure the load chain is not corroded, is cleaned and oiled.

ALWAYS make sure the last link of load chain is strongly fastened to the body.

NEVER use damaged or worn out chain block.

NEVER use chain block with jumped out, damaged or missing hook’s safety latch.

NEVER use a chain block without a visible marking of the lifting capacity.

NEVER use modified or deformed hooks.

NEVER connect or lengthen the load chain.

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

ALWAYS consult the manufacturer or his authorized representative, if you plan to use a chain block in non-standard or extreme environments.

3.2.2 When in use

ALWAYS make sure the load is properly seated in the hook.
ALWAYS make sure the safety latches of hooks work in the correct way.
ALWAYS pay attention to the limit positions.
ALWAYS use manual power only.
ALWAYS when lifting loads approaching the nominal lifting capacity we recommend, regarding the operating forces, the operation was ensured by two persons.
NEVER use a chain block for tensioning, pulling or anchoring loads.
NEVER allow swinging the load, causing impacts or vibrations.
NEVER use a chain as a sling.
NEVER hitch a load on the tip of the hook.
NEVER pull the chain over any edge.
NEVER weld, cut or make any operation on a suspended load.
NEVER use a chain as a welding electrode.
NEVER operate a chain block, if chain is jumping or atypical or excessive noise occurs.

3.2.3 After use

NEVER leave a load suspended.
ALWAYS ensure the chain block against incompetent use.

3.2.4 Risk analysis

The analysis of possible risks in light of design, operation and environment of the chain block application is presented in freestanding document „Risk analysis“. This document can be required in service centers.

3.2.5 Maintenance

ALWAYS enable qualified personnel inspect the chain block regularly.
ALWAYS ensure the chain was clean and oiled.
ALWAYS ensure the sliding parts were greased enough.
NEVER add other parts for lengthening the load chain.

Only such interventions can be done when maintaining that are in compliance with requirements of the manufacturer specified in the chapters 11 and 14 of this 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 of unoriginal spare parts or carrying out modifications on the product without an approval of the manufacturer.

4 PACKING, STORAGE AND MANIPULATION

4.1 PACKING

Chain blocks by the lifting capacity 5t are supplied assembled and packed in carton boxes. Chain blocks of lifting capacity 7,5t,10t, 15t and 20t are supplied free loaded on pallets packed in foil.

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

a) Instruction 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 Instruction Manual and defects occurred owing to improper use and unskilled intervention.
   c3) The guarantee does not apply also to modifications on the product or using of unoriginal spare parts 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).

4.2 STORAGE

Store chain blocks in dry and clean stocks free from chemical influences and vapours.

(1) Always store chain blocks without any suspended load.
(2) Remove all dust, water and impurity from the chain block.
(3) Lubricate chain, pivot of roller, pivots of hook and springs of hooks safety latches.
(4) Suspend the chain block in a dry place.
(5) During the further use follow instructions of the section 8.1.2 „Daily inspection" or 8.1.4 „Chain block occasionally used".

4.3 MANIPULATION

During transportation and manipulation follow the applicable technical regulations and standards for work with heavy loads.

5 MAIN TECHNICAL PARAMETERS

Lifting capacity 0,125 – 10 t

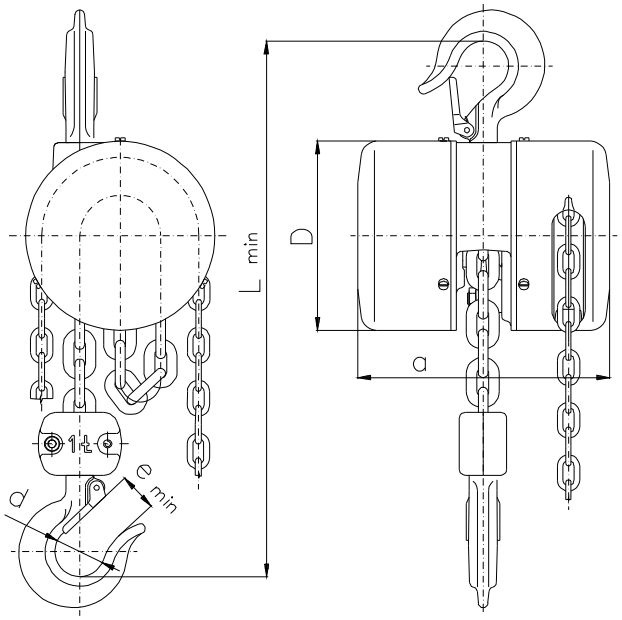
TABLE 5.A

Type	Lifting capacity (t)	Number of chain falls	Chain ČSN EN 818-7 (strength class 8)	Operating force (N)	Lifting[1)] speed (m/min)	Working temperature range	Basic [2)] lift (m)	Weight (kg)
Z110	0,125	1	∅3,6x15,5	230	3,12	-20°C to +50°C	2	3,6
Z110	0,250	2	∅3,6x15,5	230	1,56			4,7
Z100	0,5	1	∅5x15	300	1,1		3	8
Z100-1	1	1	∅7x21	350	0,7			14,5
Z100	1,6	1	∅9x27	320	0,36			25,5
Z100-1	3,2	1	∅11x31	400	0,29			37
Z100-2	5	2	∅11x31	400	0,15			57
Z100	7,5	2	∅11x31	480	0,15			70
Z100	10	3	∅11x31	400	0,1			85

Notes:
1) Calculated on presumption of winding off 30m of the hand chain per minute.
2) Maximum standard lift is 15m. Required lift is necessary to be specified in the order. Lifts exceeding 15 m must be consulted with the manufacturer.

TABLE 5.B - DIMENSIONS

Lifting capacity (t)	Main dimensions – informative (mm)				
	a	D	L_{min}	e_{min}	d
125 (kg)	120	80	200	16	20
250 (kg)	120	80	260	21	25
0,5	165	115	250	18,5	30
1	180	136	330	23,5	36
1,6	220	198	410	29,5	43
3,2	254	220	510	35,5	50
5	254	220	655	39,5	56
7,5	254	220	875	43	56
10	254	220	1000	47	63



Lifting capacity 15 and 20 t

TABLE 5.c - Technical parameters

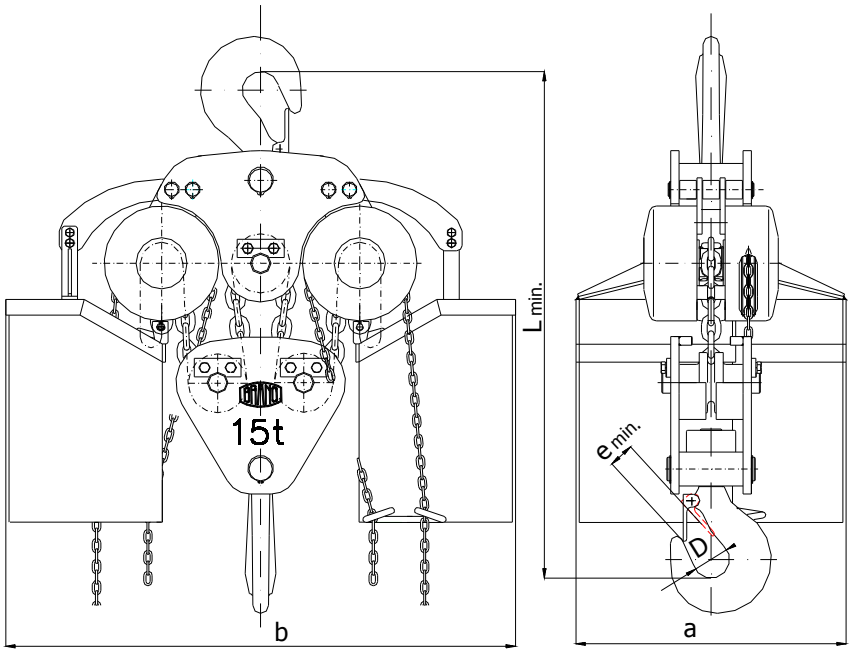
Type	Lifting capacity (t)	Number of chain falls	Chain ČSN EN 818-7 (strength class 8)	Operating force on one chain block (N)	Lifting[1] speed (m/min)	Working temperature range	Lift[2] max. (m)	Weight without chain (kg)	Increase of weight for 1m of lift (kg)
Z100	15	4	∅11x31	480	0,15	-20°C to +50°C	12	280	13
	20	6		400	0,1		8	350	19,2

Notes:

1) Calculated on presumption of winding off 30m of the hand chain per minute on each chain block.
2) Lift based on the order. Lifts exceeding table values must be consulted with the manufacturer.

TABLE 5.D - DIMENSIONS

Lifting capacity (t)	Main dimensions – informative (mm)				
	a	b	L_{min}	e_{min}	D
15	510	980	910	53	71
20	510	1100	950	60	80



Chain blocks of lifting capacity 15 and 20t are standardly equipped with chain stackers.

5.1 MECHANICAL CLASSIFICATION

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

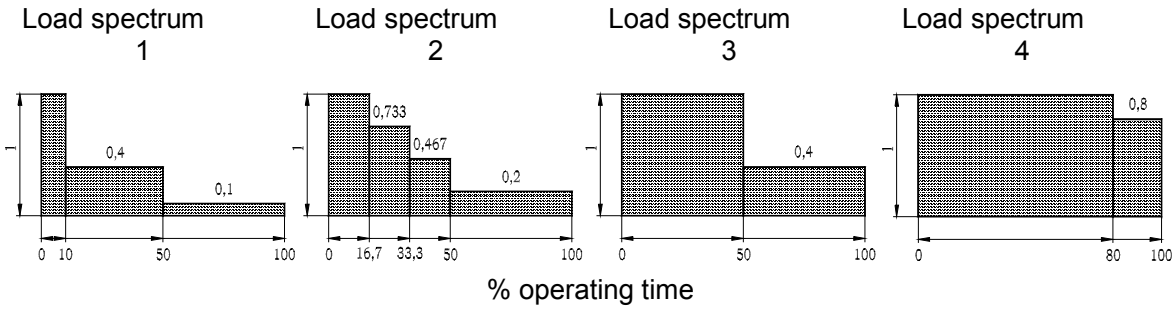
Chain block is design for class 1Bm according to the regulation FEM 9.511 – see table 5.1. (corresponds to classification of the mechanism M3 according to the ISO 4301/1).

Average daily working time is set by the load spectrum.

Table 5.1 MECHANICAL CLASSIFICATION

Load spectrum (Load distribution)	Definition	Cubic mean value	Average daily operating time (h)
1 (light)	Chain blocks usually subject to small load and in exceptional cases only to maximum load.	k≤0,50	1 - 2
2 (medium)	Chain blocks usually subject to small load but rather often to maximum load.	0,50< k ≤ 0,63	0,5 - 1
3 (heavy)	Chain blocks usually subject to medium load but repeatedly to maximum load.	0,63< k ≤ 0,80	0,25 – 0,5

4 (very heavy)	Chain blocks usually subject to maximum or almost maximum load.	$0{,}80 < k \leq 1{,}00$	0,12 – 0,25



5.2. MATERIAL AND DESIGN

5.2.1 Main parts of the chain block are manufactured from structural steel and cast iron, braking inserts of brake from brass or ceramic-metallic material.

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 ČSN EN 1127-1 article 6.4.4 and ČSN EN 13 463-1 article 8.1 harmonized technical standards are not used.

5.2.3 Materials with dangerous effects of static electricity within the 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 chain block.

5.2.4 The chain block does not exceed the noise values specified in the annex 2 article 1.7.4 letter f of the MO No. 24/2003 of the Coll. of Laws (EP and RE directive No. 98/37/EC)

Note: Articles 5.2.2 and 5.2.3 apply for chain block design to environment with explosion risk.

5.3 DATA ON PRODUCT

Every product is fitted with label with specified data as follows:

Standard design:	**Design 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 THE CHAIN BLOCK

Prior to installation check the chain block 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 chain block. The 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!

6.2 SUSPENDING OF THE CHAIN BLOCK

! CAUTION

Be careful during suspending the chain block on the pendant element and ensure appropriate conditions for safety installation according to the environment character (working platform, auxiliary lifting device, etc), to avoid endanger or injury of people. Use safety equipment when suspending the chain block in heights.

User is responsible for creating the working conditions for installation and providing the installation of the chain block.

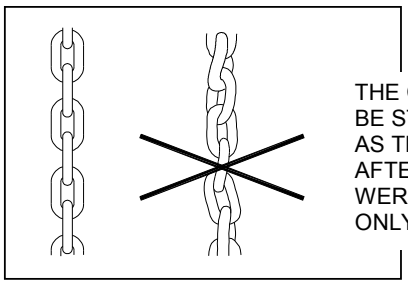
6.2.1 Lubrication of chain

Put the thin layer of oil on the chain, preferably by means of spray. Regular lubrication will avoid wear and corrosion of chain and lengthen its life.

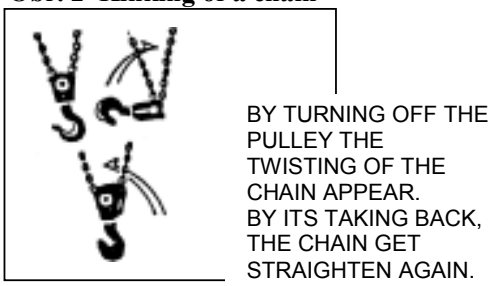
6.2.2 Checking the chain position

Check, whether the hook is not kinked or twisted as on the picture 1 and 2. If the chain is twisted, put it to its correct position. Never suspend a load on the twisted chain. Chain is not twisted, when the welded parts of all the links are in one row. It is applicable for lifting capacity 5t and higher. Pay increased attention to checking of the chain position at lifting capacity 15 and 20t.

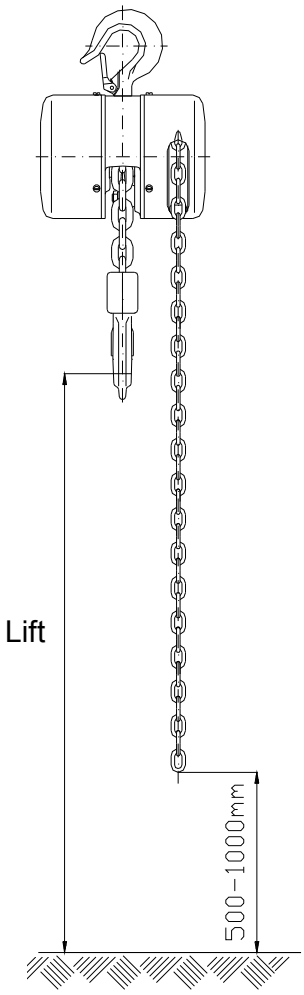
Obr. 1 Twisting of a chain



Obr. 2 Kinking of a chain



6.2.3 SETTING OF THE HAND CHAIN



After the installation of the chain block in the workplace we check the position of the hand chain. The distance of the end of bottom loop of the hand chain over the level of the surface, on which operation staff of the chain block stands during the operation, must be in the range 500 –1000mm. Chain blocks are supplied with a hand chain, the length of which is proportional to the lift of the chain block and during the installation meets condition of correct setting of the chain end.

In other cases, where regarding a way of use of the chain block, the length of the hand chain does not meet prescribed conditions, the chain must be shortened or lengthened.

Shortening of the chain: we disconnect the chain in place of the coupling link by buckling free ends of the links. We shorten the chain by required length and connect again by coupling link. Free ends of the coupling link we bend to one another.

Lenghtening: we disconnect the chain in place of the coupling link by buckling free ends of the links. We attach other part of chain of required ength by means of two coupling links. Free ends of coupling links we bend to one another.

Coupling links and hand chain of required length can be bought as spare parts.

Note: the request for operating chain of other length than standard one can be made just in the order.

6.3 CHECKING PRIOR TO USE

! CAUTION

(1) First look again through the previous articles of this manual and make sure all steps were correctly done and all parts are safely assembled.
(2) check, whether hooks are correctly suspended and safety latches snapped in.
(3) Check visually load carrying structure or pendant elements, whether they are without defects.
(4) By several motions of the hand chain check the function of the chain block without a load.
(5) Provide several lifting and lowering with a suitable load (10% to 50% lifting capacity). At the same time check the brake, whether it helds the load without slipping during its lowering and stopping.

7 OPERATION

7.1 USE OF THE CHAIN BLOCK

The chain block is multipurpose device intended for lifting and lowering of loads under normal condition in workplace and in environments with the explosion hazard

as well, if a protection type symbol is marked on the label – see articles 2.3, 2.4 and 5.3 of this manual. It is operated by means of the hand chain. It is designated for organizations and private persons.
Since dealing with heavy loads may involve unexpected danger, all “Safety instructions” according to the chapter 3 must be kept.

! WARNING

The last link of the load chain is anchored to the body of the chain block. The anchoring just prevent sliding off the load chain and is not determined for holding the load.
Do not continue in operation with if the tensioning of the anchored end of the load chain occurs. Damage of the chain anchoring can cause fall of the load..

7.2 LIFTING, LOWERING

Lifting and lowering is provided by pulling on the hand chain of the chain block. Lifting or lowering can be interrupted at any height of the lift.

! WARNING

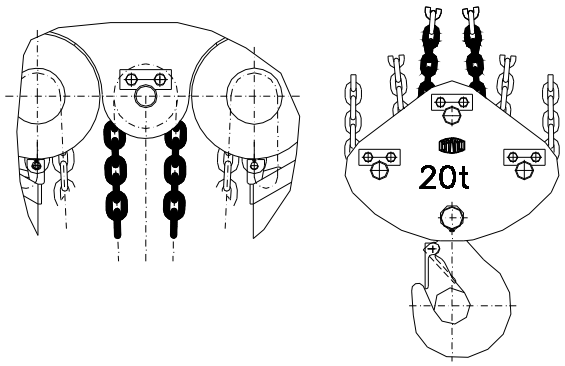
At chain block with a great lift (15 and more meters) a dangerous heating up of the brake can take place when lowering loads in exceptional cases (uninterrupted and quick lowering). In such cases it is necessary to lower loads slowly and intermittently.

! CAUTION

When lifting loads being in a lifted state hanged over to other lifting device (crane, forklift truck etc.) it is necessary to relieve the load chain (chains) of the chain block only by means of the hand chain of the chain block not by lifting loads by means of the other lifting device. Only the mentioned procedure guaranties a trouble-free releasing brake of the chain block after removal of the load.

! WARNING

Cain blocks of lifting capacity 15t and 20t are intended in principle for operational staff consisting of several members (at least of two ones). The speed of winding off the chain when lifting or lowering must be balanced on both chain blocks – synchronized so that in both stackers was the same length of the chain. The operating staff must check a balancing of the coulor coded central parts of the chain on the upper sheave (Z100/15t) or block pulley (Z100/20t).



7.2 SAFETY WORKING ENVIRONMENT

! WARNING

(1) Operator must be demonstrably familiarized with this instruction manual, follow applicable safety and hygienic regulations and be qualified to this equipment service.

(2) In the course of work with the chain block the operating staff must be equipped with helmet, gloves and suitable footwear.
(3) Only verified binding means of appropriate lifting capacity is to be used for binding loads.
(4) When more persons take part in the operation always one person responsible for manipulation with the chain block and trained in work safety must be determined.
(5) The operator must have a clear and unobstructed view of the working area before staring the work. If it is not possible, a second or more persons must help to supervise in the nearby area.
(6) The operator must check, the entire workplace is safe and whether there is a possibility of escaping in case of endanger, before operating the chain block.
(7) During work with the chain block, the sufficient distance of the 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 chain block in limited areas you must prevent the hook or loads does not hit into obstacle or to chain block body.

8 INSPECTION OF THE CHAIN BLOCK

8.1 INSPECTION

8.1.1 Inspection classification

(1) Initial inspection: prior to initial use. All new or repaired chain blocks shall be inspected by a designated qualified person to ensure compliance with the applicable provisions of this manual.
(2) Inspection procedures for chain blocks in regular service are divided into two general classifications based on the intervals at which should be performed. The intervals are dependent upon the nature of the critical components of the chain block and the degree of their exposure to wear deterioration or malfunction. The two general classifications are herein designated as daily and regular. The respective intervals are defined in the following way:

(a) Daily inspection: visual examination provided by the operating personnel or person designated by the user at the beginning of each usage.
(b) Regular inspection: visual inspection provided by the qualified person designated by the user.
1) normal operation – annually,
2) heavy operation – twice per year,
3) special or infrequent operation – as recommended by a qualified person designated by the user prior to first use and according to the directions of the qualified operating personnel.

8.1.2 Daily inspection

Inspect for damages and defects items such as those listed in section 8.2(1) “Daily inspection. Provide this inspection also during operation in the interval between

regular inspections. A qualified personnel shall determine, whether any defects or damages constitute a hazard or will require more detailed inspection.

8.1.3 Regular inspection

Complete inspections of the chain block shall be performed as recommended regular inspection. These inspections may be performed with the chain block in its normal location and do not require dismantling the chain block. The recommended regular inspection defined in the section 8.2(2) must be performed by qualified persons determining whether the complete disassembly is necessary. These inspections include also the requirements of daily inspections.

8.1.4 Chain block occasionally used

(1) A chain block that has been idle for a period of one month or more but less than one year shall be given an inspection conforming to the requirements of the section 8.1.2 before it is placed again in operation.

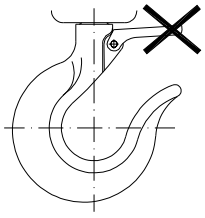
(2) A chain block that has been idle for a period of one year shall be given an inspection conforming to the requirements of section 8.1.3 before it is placed in operation.

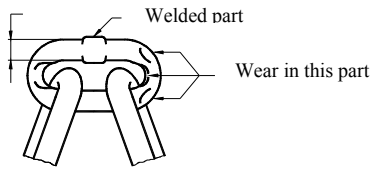
8.1.5 Inspection record

Keep always the record of the performed tests, repairs, inspections and maintenance of chain blocks. Carry out dated inspection records at time intervals specified in the section 8.1.1 (2) (b) and keep them available in the palce designated by the user. Defects found by the inspection or recorded during the operation must be announced to the person designated by the user who is responsible for work safety.

8.2 INSPECTION PROCEDURE

(1) Daily inspection (provided by the operator or competent person)

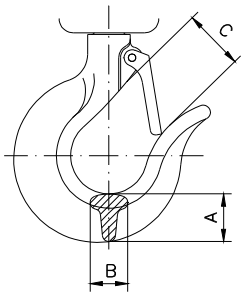
PART	INSPECTION METHOD	LIMIT/CRITERIA FOR DISCARD	REMEDY
1. Function of chain block	Visual, listening	Chain binds, jumps, make an excessive noise, etc.	Clean and lubricate the chain, if the trouble is not removed, replace the chain.
2. Fastening parts	Visual check of all bolts, nuts, rivets etc.	Defective or missing parts Loose parts	Replace by the new one. Fasten loosed parts
2. Hooks (1) Appearance	Visual 	Safety latch jumped out from the top of the hook, bind shank, other visible hook deformation.	Professional overhaul of lifting device – exchange of hook and other damaged parts.
(2) Hook rotating	Rotate hook around its axis by manual	Hook does not rotate fluently or scrub.	Clean and lubricate.
(3) Safety latch of hook	springing of safety latch.	Safety latch does not return after pushing	Clean, lubricate, repair or exchange.

4. Load chain (1) Appearance	Visually check the whole chain.	Cracks in the place of welding, cross nocks, deformation, excessive wear, corrosion	Exchange of the chain.
Note: The complete wear of the chain cannot be determined by the visual inspection. When wear sign is found check the chain according to " Regular inspection".			
(2) Lubrication	Visual	Chain is not lubricated.	Clean and lubricate the chain.
(3) Setting in the chain	Visual check according to pic.1, whether the chain is not kinked.	The chain is kinked or twisted; welds are not in a row.	Straighten the chain and set to normal position.
(4) Kinked chain tackle block (only at two loading chain strands)	Visual according to pic.2	Chain is kinked due to kinked tackle block, welds are not in a row.	Straighten the chain by turning back the tackle block
4. Hand chain	Visual	Chain is kinked or twisted. Chain is deformed or damaged and does not come correctly to chain wheel.	Straighten the chain and set to normal position. Exchange of the chain.

(2) **Regular inspection** (provided by a qualified person)

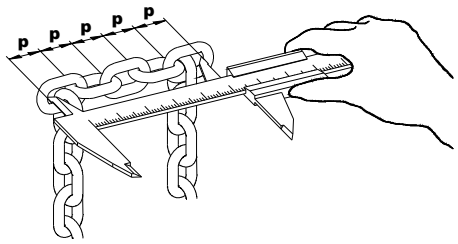
PART	INSPECTION METHOD	LIMIT/CRITERIA FOR DISCARD	REMEDY
1. Fastening parts.	Visual check of all bolts, nuts, rivets, etc.	Defected or missing parts Loose parts	Replace by the new one. Fasten loosed parts
2. All parts	Visual check.	Worn or damaged parts. Dirty and not lubricated parts.	Replace by the new one. Dismantle, clean, lubricate and assemble again.

3. Name plate – marking of lifting capacity on the chain block	Visual check	Illegible lifting capacity.	Repair or replace by the new one. Repair marking on the chain block.
4. Hooks (1) Deformation of hook (opening)	Measure dimension „C“ with slide calliper. Visual check.	Measured value is higher then specified by the table. Deformation is visible during visual check.	Technical inspection of lifting device – exchange of hooks and other damaged parts.
(2) Hook wear	Measure dimension „A“ and „B“ with a slide calliper.	Do not use the hook, if dimensions „A“ or „B“ were decreased more then 10%.	Worn or deformed hook replace by the new one.

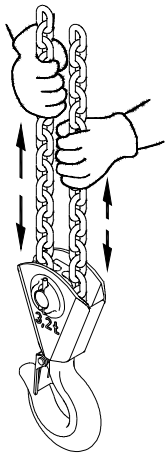


Capacity (t)	Dimension "A" (mm)		Dimension "B" (mm)		Dimension "C" (mm)
	Standard	Limit	Standard	Limit	Limit
0,125	12	10,8	_	_	19
0,25	14,6	13,2	_	_	23
0,5	17,5	15,8	16	14,5	24
1	22	19,8	19	17	29
1,6	26	23,4	23	20	35
3,2	36,5	32,8	34	30,5	41
5	42	37,8	35	31,5	45
7,5	48	43,2	38	34,2	47
10	58	52,2	45	40,5	52
15	67	63,3	53	47.7	59
20	75	67,5	60	54	66

5. Chain - prolongation	Measuring of the pitch with the slide calliper, measure at the point that is most frequently engaged with the sheave and the nut.	Dimension „p“ must not exceed limit values shown in the following table.	If limit values are exceeded ask for replacement of the chain.
- colour marking (applied for 15 and 20t)	Visual check	Colour is not visible.	Paint the central part of the chain with red colour in length about 600 mm



Size of the chain (d)	Number of measured links	Pitch of measured links p x 5		Discard limit for (d)
		Standard	Limit	
∅3,6	5	77,5	79,8	3,2
∅5	5	75	77,3	4,5
∅7	5	105	108,2	6,3
∅9	5	135	139,1	8,1
∅11	5	155	159,7	9,9

6. Brake - function	Suspend the load of weight equal to lifting capacity of the chain block, lift it at min. 250 mm and lower.	After interrupting the operation, the brake must keep the load in any position of lifting or lowering.	If this does not happen, ask for repair and the brake adjustment.
7. Anchoring the chain.	Visual check.	The end of the chain is not fasten enough to the body.	Fasten the fixing bolt. Repair damaged joint or replace.
8. Pawl - function	Visual check during lifting.	Pawl does not snap to teeth of ratchet wheel.	Clean, lubricate or replace the spring.
9. Rotating of block sheave.	Rotate the block sheave by pulling the chain. 	The block sheave rotate smoothly.	Clean, lubricate or repair.

9 FAULTS FINDING

Situation	Cause	Remedy
1. The chain block does not keep the load.	Brake slipping.	Brake adjusting or repair according to chapter „Maintenance“.
2. The chain block lifts hard or fails to lift the load.	(1) Chain block is overloaded. (2) Damaged gearing.	(1) Decrease the weight of load to the nominal lifting capacity. (2) Check the parts according to the chapter „Maintenance“.
3. Chain has bad approach, jams.	Damaged or worn chain or nut.	Check the chain or parts according to “Regular inspection“ or provide repair according to the chapter „Maintenance“
4. Abnormal sounds comes from the chain block.	1) Not enough lubricated chain. 2) Not enough lubricated gearing. 3) Worn sheave.	1) Lubricate the chain. 2) Lubricate the gearing. 3) Replace the sheave.
5. In audible characteristic sound during falling of the pawl to claw of ratchet wheel.	Loose of pawl function. Rust, impurities, broken spring.	Clean, replace the spring.
6. Safety latch of hook does not work.	(1) Damaged safety latch. (2) Deformed hook.	(1) Repair the safety latch. (2) Check the hook – see „Daily inspection“.

10 LUBRICATION

10.1 GENERALLY

Before the application of the new lubricant, remove the old one, clean parts by the solvent and put the new lubricant. Use the lubricant specified by the manufacturer.

10.2 GEARINGS

Dismantle the cover on the opposite side of the chain wheel.
Remove the old lubricant and replace by the new one. Use grease PM – A2 or its equivalent.

10.3 LOAD CHAIN

! CAUTION

The wrong maintenance and inappropriate lubrication of the chain can be a cause of a serious accident.

ALWAYS lubricate the chain 1 x per week or more often according to the intensity of the service.

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

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

11 MAINTENANCE

11.1 SAFETY PRINCIPLES

! WARNING

With exception of replacing the chain only qualified personnel (service organizations) trained in safety and maintenance of these chain blocks can carry out maintenance, inspections and tests.

ALWAYS use parts supplied solely by the manufacturer.

It is not permitted to make repairs and maintenance in other way than prescribed by the manufacturer. It concerns especially the forbiddance of using of unoriginal spare parts or performing of modifications on the product without an approval of the manufacturer.

ALWAYS check the function of the chain block after providing maintenance.

ALWAYS mark the defective or repaired chain block with the appropriate label (for example: „OUT OF SERVICE“).

NEVER do maintenance when a load is suspended on the chain block.

NEVER use a chain block that is under repair!

11.2 REPLACEMENT OF THE LOAD CHAIN

11.2.1 SINGLE FALL CHAIN

Unscrew the bolt and remove the free end of the chain. Hook C – link – behind the last link of the free end see pic. 11.2.

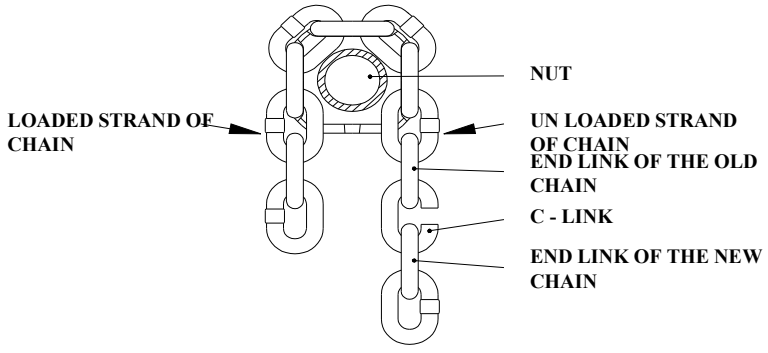
Provide the lowering until the end of the new chain is slipped out enough.

Fasten the free end of the chain again by the bolt to the body of the chain block.

The coupling with the hook fix to the other end of chain.

Check, the chain is not twisted.

Picture. 11.2 – Replacement of the load chain



11.2.2 MULTI FALL CHAIN

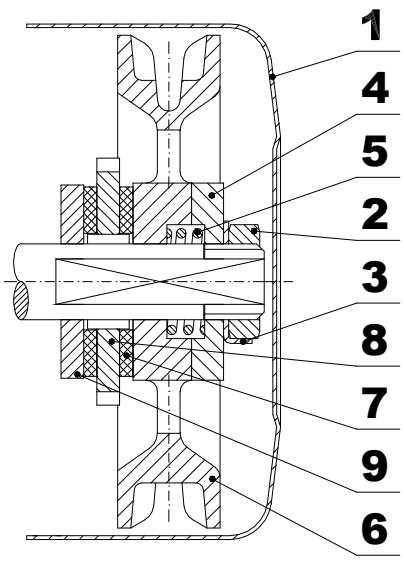
Unscrew the bolt and remove the free end of the chain. Hook C – link – behind the last link of the free end see pic. 11.2. Provide the lowering until the end of the new chain is slipped out enough. The free end of new chain fasten again by the bolt to the body of the chain block.
Slipped end pass through the sheave in pulley, slide on the pin of yoke and ensure by the split pin (two fall model).
Slipped end pass through the sheave in pulley and in yoke, set on pin of chain and ensure by cotter pin or ring (three fall model).

11. 3 BRAKE ADJUSTMENT

Remove the cover (1) on side of the chain wheel together with the hand chain.
Release (unlock) the tabof the tab washer (3) and nut (2) tighten slightly. Teeth of the segment (4) must be seated in the mesh with teeth of the chain wheel (6).
Thus fasten nut release about 1/6 of turn i.e. 60° and ensure by the tab washer (3).
Put the hand chain on the chain wheel and screw the cover. Check the brake with a suitable load.

Pic. 11.3 – Brake adjustment

Legend:
1- cover
2- nut
3- tab washer
4- screw segment
5- spring
6- chain wheel
7- brake insert
8- ratchet wheel
9- thrust washer



11.4 GENERAL INSTRUCTIONS

The following instructions give general important information on dismantling, inspection, repair and assembly. If the chain block was for any reason dismantled, proceed according to the following instructions.

1. The maintenance has to be provided in a clean environment.
2. **NEVER** dismantle the chain block more then it is necessary to provide repair.
3. **NEVER** use excessive power during dismantling.
4. **NEVER** use heat as a means during dismantling parts, if parts are determined for further use.
5. Keep the workplace clean free from foreign substances that might get into bearings or other moving parts.
6. When using a vice, always use appropriate inserts to protect the surface of parts.

11.5 CHECK

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

1. Check all gears including the shaft, whether they are not worn out and have no scratches or cracks.
2. Check whethert the tread parts have no damaged thread.
3. Clean braking inserts, ratchet wheel and thrust washer (position 7, 8 and 9 on the pic. 11.3) by the wire brush and check their condition.
4. Measure the thickness of the braking inserts (see table 11.6)

TABLE 11.5

Thickness of the braking insert (mm)	Limit (mm)	Wear (mm)
2,5	2	0,5

11.6 REPAIR

Worn out or damaged parts must be replaced. Remove small burrs and scratches or other small surface defects and smooth by the fine abrasive stone or an abrasive cloth.

11.7 TEST

The load test with load exceeding lifting capacity about 10% must be carried out on all repaired chain blocks by the qualified personnel to check the function and brake of the chain block.

12 REMOVING FROM OPERATION – LIQUIDATION

The chain block does not contain any harmful substances; its parts are made of steel, cast iron and brass. Hand over the chain block after putting it out of operation to the firm dealing with disposal of waste metal.

13 RELATED DOCUMENTATION

13.1 EC declaration of conformity

13.2 The Operation Manual was elaborated in accordance with following technical regulations, technical standards and national regulations:

- Ministerial order No.24/2003 of the Coll. of Law as amended (EP and Council directive 98/37/EC)
- Ministerial order No.23/2003 of the Coll. of Laws as amended (EP and Council directive 94/9/EC)
- ČSN EN ISO 12100 - 1
- ČSN EN ISO 12100 - 2
- ČSN EN 13157
- ČSN EN 1050

- 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 producer.
When not observing this condition the producer does not guarantee safety of his product. In this case, any producer's guarantees do not apply to the product.

EC Declaration of conformity

CE

Manufacturer **BRANO a.s.**

747 41 Hradec nad Moravicí, Opavská 1000
The Czech Republic
ID No.: 45193363 TIN: CZ45193363

We declare under our sole responsibility that the product

Name:	Chain block – hand
Type:	Z 100
Parameters:	Lifting capacity 0,5t, 1t, 1,6t, 3,2t, 5t, 7,5t, 10t

Description and purpose of use:
Hand chain blocks designated solely for manual vertical lifting and lowering of free loads under normal atmospheric conditions in workplace upon observance of the maximum lifting capacity.

Is in conformity with the following directives and standards:
MO No. 24/2003 of Coll.of Laws, RE directive No. 98/37/EC,
ČSN EN ISO 12100-1:2004(EN ISO12100-1:2003), ČSN EN ISO 12100-2:2004 (EN ISO12100-2:2003) ČSN EN1050:2001 (EN1050:1996), ČSN EN 953:1998(EN953:1997)

The product is safe under conditions of the usual use determined by us.
The compliance assessment was provided according to § 12,sect. 4a) the act No..22/1997 of Coll. Of Laws as amended.

Compliance assessment was performed by a company called **TÜV CZ, s.r.o.; Novodvorská 994, CZ-14700 Prague 4; company number: 63987121; authorized person nr. 211 and notified place under EC with identification nr. 1017**, which issued for this product Assessment Report 0590/70/01/BT/ZH/S dated 13 September 2001 and Assessment Report 1039/70/04/BT/IZ/S dated 23 August 2004.
Compliance is confirmed through Certificate nr. **332/04/07/02/0 dated 26 August 2004.**

Hradec nad Moravicí	26.8.2004	Ing. Alena Šimečková	Ing.Zdeněk Pavlíček
Place	Date	Director of SBU ZZ	Manager of Q SBU ZZ

EC Declaration of conformity

CE

Manufacturer **BRANO a.s.**

747 41 Hradec nad Moravicí, Opavská 1000
The Czech Republic
ID No.: 45193363 TIN: CZ45193363

We declare under our sole responsibility that the product

Name:	Chain block – hand
Type:	Z 100-1
Parameters:	Lifting capacity 1t, 3,2t

Description and purpose of use:
Hand chain blocks designated solely for manual vertical lifting and lowering of free loads under normal atmospheric conditions in workplace upon observance of the maximum lifting capacity.

Is in conformity with the following directives and standards:
MO No. 24/2003 of Coll.of Laws, RE directive No. 98/37/EC,
ČSN EN ISO 12100-1:2004(EN ISO12100-1:2003), ČSN EN ISO 12100-2:2004 (EN ISO12100-2:2003) ČSN EN1050:2001 (EN1050:1996), ČSN EN 953:1998(EN953:1997)

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Hradec nad Moravicí 26.8.2004 Ing. Alena Šimečková Ing.Zdeněk Pavlíček

Place	Date	Director of SBU ZZ	Manager of Q SBU ZZ

EC Declaration of conformity

CE

Manufacturer **BRANO a.s.**

747 41 Hradec nad Moravicí, Opavská 1000
The Czech Republic
ID No.: 45193363 TIN: CZ45193363

We declare under our sole responsibility that the product

Name:	Chain block – hand
Type:	Z 110
Parameters:	Lifting capacity 125kg, 250kg

Description and purpose of use:
Hand chain blocks designated solely for manual vertical lifting and lowering of free loads under normal atmospheric conditions in workplace upon observance of the maximum lifting capacity.

Is in conformity with the following directives and standards:
MO No. 24/2003 of Coll.of Laws, RE directive No. 98/37/EC,
ČSN EN ISO 12100-1:2004(EN ISO12100-1:2003), ČSN EN ISO 12100-2:2004 (EN ISO12100-2:2003) ČSN EN1050:2001 (EN1050:1996), ČSN EN 953:1998(EN953:1997)

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Place	Date	Director of SBU ZZ	Manager of Q SBU ZZ