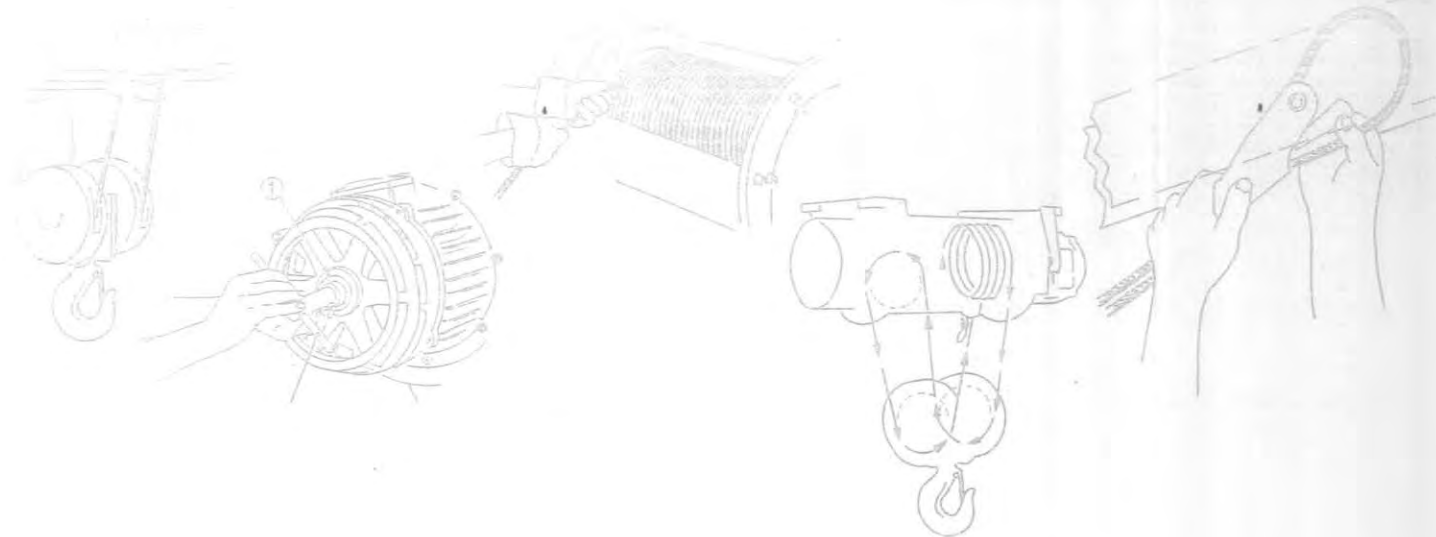




MANUAL OF:

- ERECTION
- OPERATION
- MAINTENANCE

FOR ELECTRIC WIRE ROPE HOIST

SERIES
BM



ALWAYS SAVE THIS BOOK FOR FUTURE REFERENCE

M/E/ 001/95

Table of contents



1. Preliminary information	Page 3
2. Description of hoist/trolley	Page 5
3. Installation instruction	Page 21
3.1. Preparation for installation	Page 21
3.2. Packing	Page 21
3.3. Transport and movement	Page 22
3.4. Storage	Page 22
3.5. Removing the hoist from the packaging	Page 22
3.6. Assembly of the parts	Page 23
3.7. Mounting on the beam	Page 23
3.8. Mounting the block	Page 24
3.9. Electrical connections	Page 25
3.10. Start-up	Page 26
3.11. Checking the operation and settings	Page 27
3.12. Load tests	Page 28
4. Use and maintenance instructions	Page 30
4.1. Hoist functions - "intended use"	Page 30
4.2. Preparation	Page 30
4.3. What must always be done!	Page 32
4.4. What must never be done!	Page 36
4.5. Operations	Page 41
4.6. Switching off after work	Page 41
4.7. Maintenance	Page 41
4.8. Lubrication	Page 46
4.9. Replacements	Page 47
4.10. Adjustments	Page 49
4.11. Faults and remedies	Page 50
4.12. List of wear parts	Page 52
4.13. Special maintenance tools	Page 53
4.14. Removal - new destination	Page 54
4.15. Reinstatement after storage	Page 54
4.16. Disposal/scrapping	Page 54
4.17. Periodic maintenance register	Page 55

Machine Identification Data

Type of hoist/trolley _____

Weight Kg _____ Registration number _____ Date of construction _____

Date _____

1. Preliminary information



Contents of the manual

This manual contains a description of the hoist trolley and its "intended use", its technical characteristics with regard to operation and performance, the installation user and maintenance instruction, for the STD models in the supported or suspended version, and with single or double beam trolley. The following documentation is also supplied with the manual:

- EEC declaration of conformity or declaration of the manufacturer.
- appraisal report of the machine.
- electrical diagrams.

Users of the manual

This publication is aimed at the following:

- the manager of the company, workshop or site
- installation staff
- the operator
- maintenance staff.

The manual must be left in the safekeeping of a duly authorised person, in an appropriate place where it is always available for consultation.

In the event of loss or damage new documentation is available from **Misia Paranchi Srl**. Please quote the code in this manual.

Reading key

The instruction have symbols specifying the different type of information available e.g.:

Information which must be observed.



Maximum attention must be paid to any instructions accompanying this symbol.

Important information.



Indicates information and advice useful for handling, assembly and installation.



Indicates that the operator should move on to the next procedure.

References and numbers are used throughout the text, where necessary, which correspond to the illustrations in the manual.

In the illustrations, any parts of the trolley/hoist described in the text are indicated with a number.

For example: 1 (fig. 1) means: part or component 1 in figure 1.

Before working with this hoist/trolley, the operator must read the relevant section(s) of this instruction manual. The guarantee given of problem-free operation and complete suitability for the work in question is totally dependent on the correct application of all the instructions contained in this manual.

This technical documentation refers to the electric rope hoist series BM of standard production **Misia Paranchi, Via Stradivari 11/12 - 20026 Novate Milanese (MI)**, and is identified with the edition number M/E/001 dated 1 January 1995.

The technical documents are drawn up in compliance with the harmonized standards UNI-EN292 part 1, point 3.20 and part 2, point 5.

The BM series electric rope hoists are produced in compliance with the Community Directive 89/392 EEC and subsequent amendments, the so called Machine Directives. The components which form part of the hoist comply with the requirements of the Directive, and the EC marking on the entire machine is proof of this conformity.

	
DECLARATION OF CONFORMITY according to the Machinery Directive 89/392 and further amendments Annex IIA	
We: MISIA PARANCHI SRL Via Stradivari 11/12 - 20026 Novate Milanese	
Declare under our sole responsibility that the products named electric rope hoists Model BM:	
SIZES: A - B - C - D - E TYPES: S1 - S4 WITH or WITHOUT TROLLEYS TYPE: S - SC1 - J - S3 - S5 W.L.L.: FROM 800 KGS TO 16 T	
Which this declaration relates to in conformity with the Machinery Directive 89/392 CEE and further amendments	
EUROPEAN STANDARD WHICH WE REFER TO: EN - 292 Part 1 and Part 2 (Safety of machinery) EN - 29002 (Quality Assessment) EN - 60204-1 (Electrical equipment of machines)	
NATIONAL STANDARD AND TECHNICAL RULES WHICH WE REFER TO: VBGB VBGP - VBG9a (Rules accidents at work) DIN 15018 (Steel construction) FEM 1001-1987 (Mechanism for lifting appliances) FEM 9.311 (Classification of mechanisms) FEM 9.681 (Selection of travel means) FEM 9.682 (Selection of lifting means) FEM 9.661 (Selection of wires and sheaves) FEM 9.641 (Control symbols) FEM 9.755 (Safety working period S.W.P.) FEM 9.811 (Technical specifications) DIN 15401 (Selection of hooks) DIN 40050 (L.P. Protection)	
We declare moreover as required by the annex V of Machinery Directive 89/392 CEE: - The Marking CE is placed on the machine - The technical documentation is disposable in the Manufacturer's offices	
Hoist type/Trolley: _____	
Capacity Kgs: _____	Serial N°: _____ Production year: _____
Date: _____	
MISIA PARANCHI SRL Giuseppe Stradivari Director of product	

Example of the declaration of conformity.

1. Preliminary information



MISIA has obtained quality assurance approval for the production and distribution of electric rope hoists in compliance with standards EN29002-1987; ISO9002-1987; BS57050: PART:1987, issued by BVQI under no. 9306.037.



Example of the quality system certification awarded to the company

 MISIA PARANCHI S.r.l. VIA STRADIVARI, 11/12 20026 NOVATE MIL. MILANO ITALY		PARANCO ELETTRICO A FUNE ELECTRIC ROPE HOIST	
		ANNO YEARS	
TIPO TYPE		BM	GRUPPO GROUP FEM
PORTATA CAPACITY		Kg.	
CORSA GANCIO HEIGHT OF LIFT		m.	
VELOCITA' SPEED		m/min.	
POTENZA MOTORE MOTOR POWER		Kw	
ALIMENTAZIONE SUPPLY		V-	Hz

Legibility of rating plates

Rating plates must always be kept in a legible condition and cleaned on a regular basis.

If a plate deteriorates and/or is no longer legible, even if only one line of text is affected, another should be ordered from the manufacturer, quoting the data in this manual or on the original plate.

Types of plate:

- Plate showing hoist data
- Plate showing trolley data
- Plate showing lifting and handling data.

The instruction stated in this manual are not a substitution for but a summary of the obligations required by current legislation on safety and accident prevention standards.

With reference to the contents of this manual, MISIA declines all responsibility in the following cases:

- use contrary to legislation regarding national security and accident prevention
- defective layout of the structures on which the hoist is intended for use
- failure to read or comply with the instructions supplied in the manual
- defects in mains voltage
- unauthorized modifications to the machine.

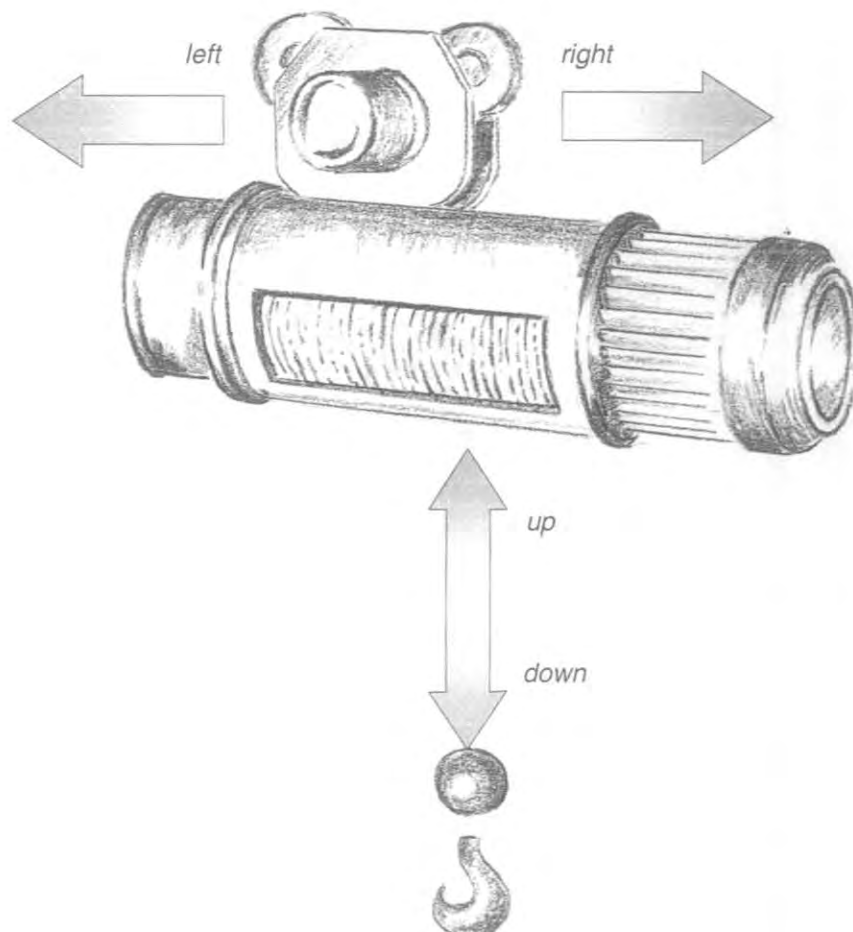


The hoist: and old function

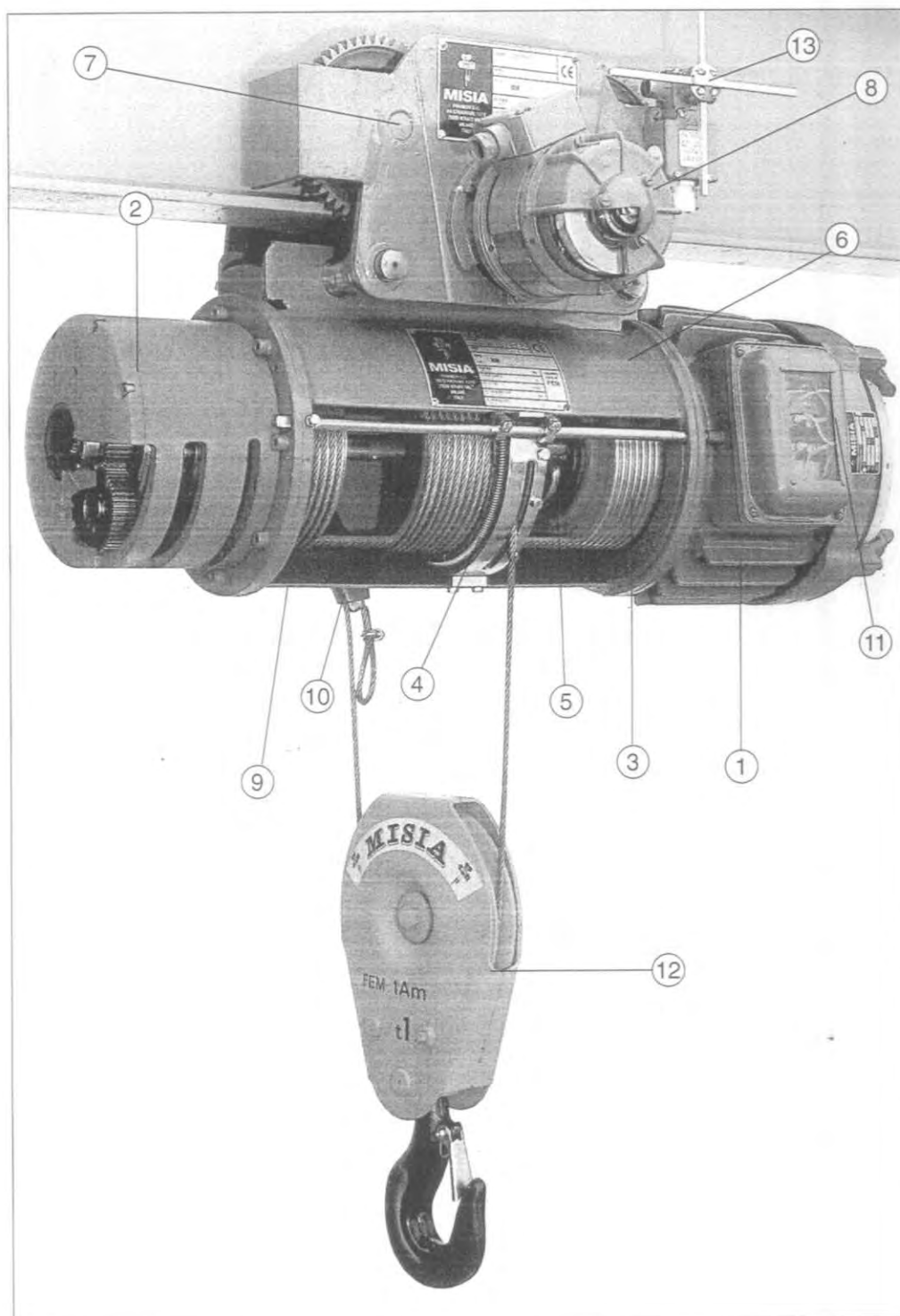
Electric rope hoists are normally mounted overhead and provide vertical lifting functions in space for an unguided free load by the appropriate lifting hook or accessories suitable for the purpose.

If installed on a trolley running on overhead rails, the hoist allows horizontal translation movements of the load.

The horizontal and vertical movement functions can also be simultaneously combined.



2. Description of hoist/trolley



Key

- | | |
|-----------------------------------|------------------------|
| ① HOIST MOTOR | ⑦ MONO-RAIL TROLLEY |
| ② GEARBOX | ⑧ TRAVEL MOTOR |
| ③ ROPE DRUM | ⑨ LOAD LIMITER |
| ④ ROPE GUIDE RING | ⑩ ANCHORAGE |
| ⑤ MOTOR-GEARBOX FLEXIBLE COUPLING | ⑪ LIFTING LIMIT SWITCH |
| ⑥ HOIST BODY | ⑫ BLOCK |
| | ⑬ TRAVEL LIMIT SWITCH |

The range

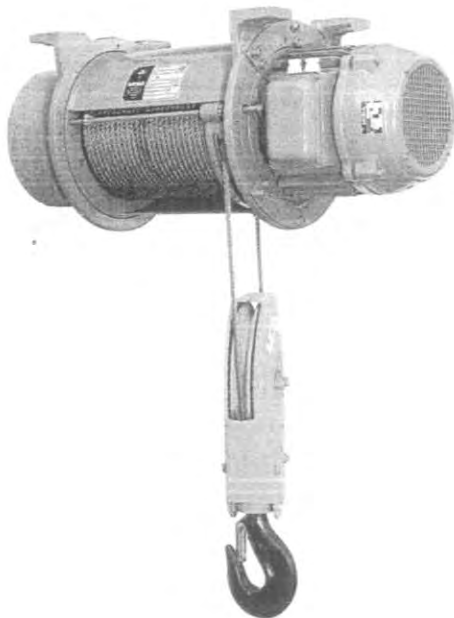


Standard configuration

MISIA series BM electric rope hoists are available in the following five standard configurations:

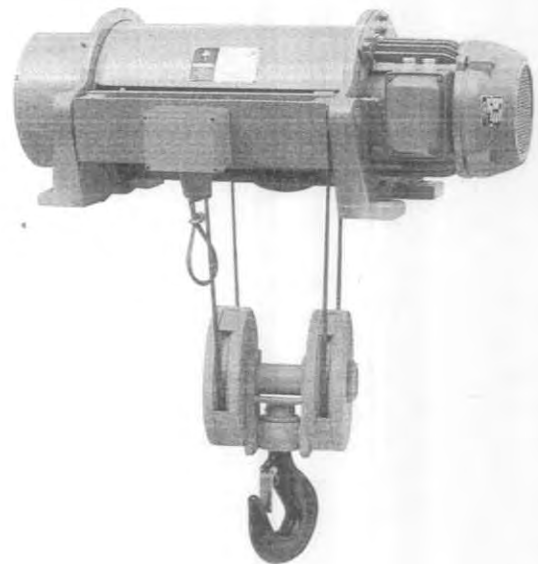
Version **S2** with two rope falls for capacities from **800 kg** to **8,000 kg** in **supported or suspended** version.

VERSION S2



Version **S4** with four rope falls for capacities from **1600 kg** to **16,000 kg** in **supported or suspended** version.

VERSION S4



Applications

FIGURE 3

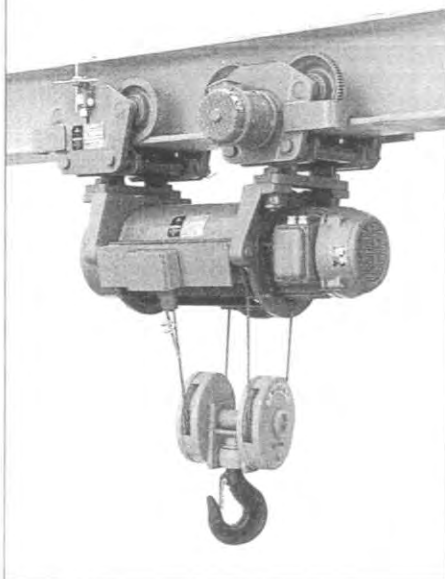


Figure 3 with electric mono-rail trolley in **normal version**.

Figure 53 with electric double rail trolley with hoist in **supported version**.

FIGURE 53

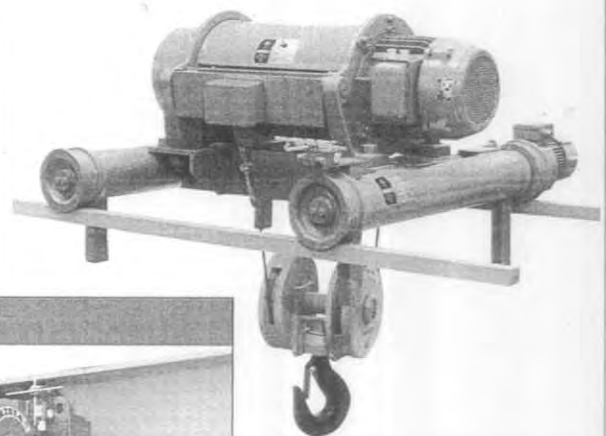


FIGURE 83

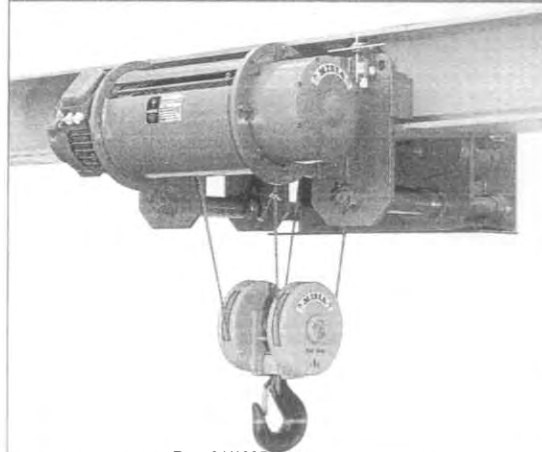
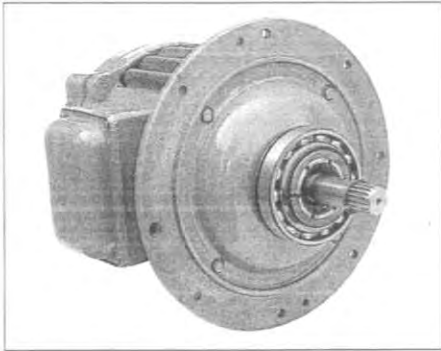
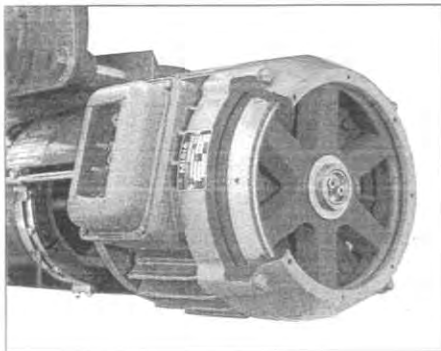


Figure 83 with electric mono-rail trolley in **compact version**.



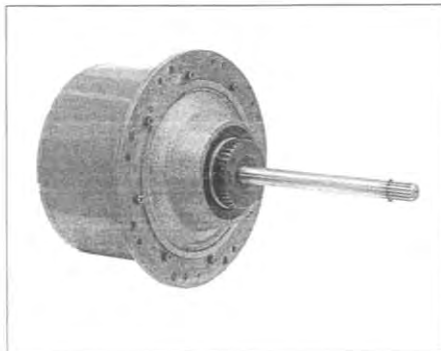
ELECTRIC MOTOR WITH INTEGRAL BRAKE

The lifting motor is of the integral brake three-phase asynchronous type with tapered armature and rotor in short circuit with high starting torque value. It is available in single or double polarity versions for single or two speed hoists with a ratio of 1:4 between the main and auxiliary speeds. The motor is connected to the gearbox shaft through a flexible coupling and is mounted on the outside of the hoist body to allow optimum cooling and easy accessibility for maintenance.



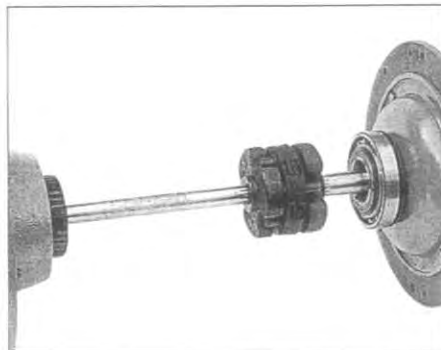
BRAKE

The brake consists of a fan arrangement equipped with a tapered ring with asbestos-free brake lining integral with the motor shaft; it moves axially with it, thus providing the braking action against the bell device fixed to the motor's frame; it is of the mechanical type and is applied automatically if the power fails.



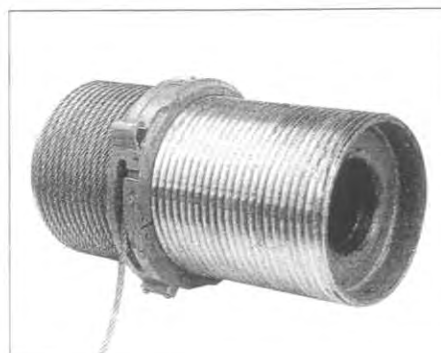
GEARBOX

This is of the two-stage planetary gear type and consists of a robust steel frame inside which the gear teeth are cut. The pinions and the planetary gears are heat treated and mounted on shafts with ball-bearings rotating in an oil bath. With the recommended lubricants, the hoist can work in temperatures between -20°C and $+60^{\circ}\text{C}$.



FLEXIBLE COUPLING

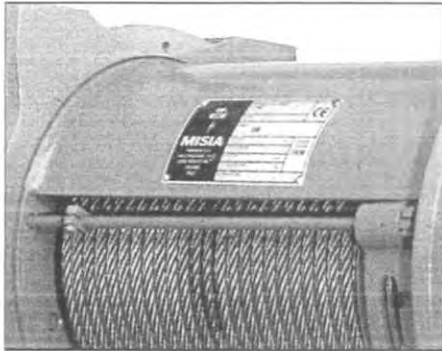
This is of the type with pegs inserted into two moving parts fitted onto the splined shafts of the engine and gearbox, which are connected to each other by a flexible ring capable of withstanding a large number of starting and braking operations, damping the shocks caused by the starting and stopping of the motor.



DRUM

Made of steel, machine-scrolled and rotating on roller bearings. It is rotated by the slow shaft of the gearbox through a convex grooved coupling to allow slight oscillations without transmitting stresses to the structure.

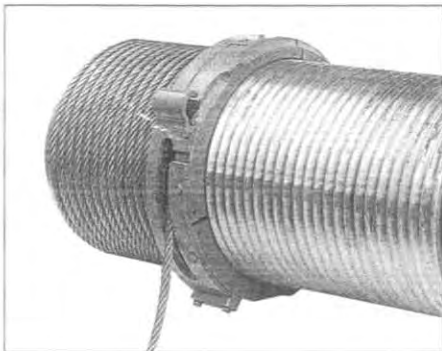
Description of the components



FRAME

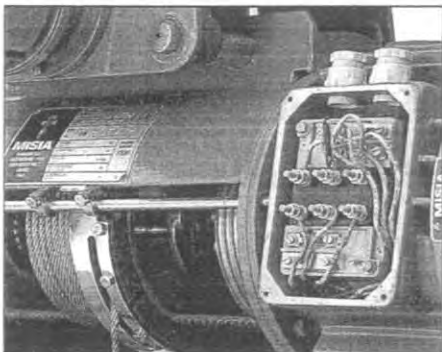
Consists of a thick metal shell to which flanges are welded with seats to support both the gearbox and the motor, while the rope drum rotates inside it.

The frame has flanges with feet for the supported version; for the suspended version, the feet face upwards.



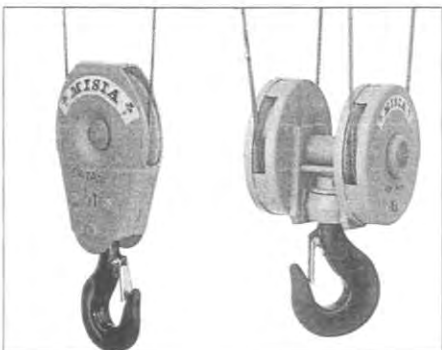
ROPE GUIDE

The rope guide ring consists of threaded segment allowing the rope to be coiled onto the drum; they are connected to each other by a metal strip to facilitate their assembly. The rope spring, inside the rope guide, allows the rope to be held in position in the drum grooves and prevents kinks in it if the hoist should continue to operate with the load already in position.



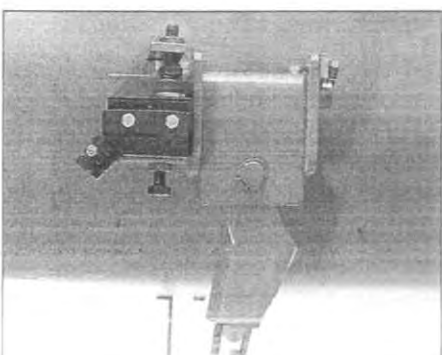
LIMIT-SWITCH

The hoists are provided with a limit-switch lifting safety device which, in an emergency, limits the upward and downward travels of the hook. It consists of a microswitch of the slow positive opening type, acts on the auxiliary circuit of the motor's control contactors and is mechanically operated by the rope guide through a rod and adjustable pawl system.



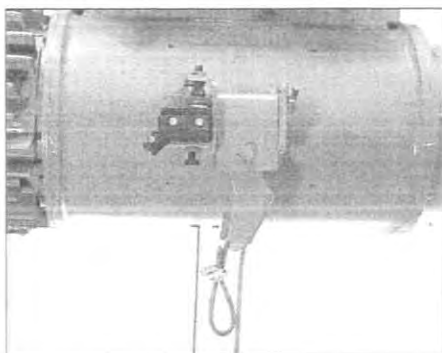
BLOCK WITH 2 OR 4 FALLS

The blocks are equipped with grooved pulleys for the rope, rotating on permanently lubricated ball bearings. The protective casings are of forged steel and guarantee operating safety by preventing accidental contacts between the operator and the moving parts (pulleys and rope). The lifting hook is made of high strength forged steel; it oscillates on its own support and rotates on thrust bearings. It is provided with an anti-release safety device (spring catch).



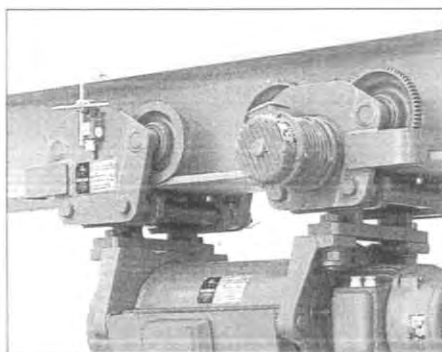
LOAD LIMITER

All the BM series of 2 and 4 fall hoist are systematically equipped with a load limiting device with 1 or 2 intervention thresholds. Consisting of a sensitive and reliable electromechanical system with pins and pre-calibrated springs, acting on a microswitch which operates on the auxiliary circuit of the lifting control contactor, it works as a safety device if the hoist should find itself under operating conditions which exceed the overload limits laid down by the EC Directives. The use of the load limiter mounted on the anchorage beam nevertheless enables the maximum purchase to be obtained on the hook.



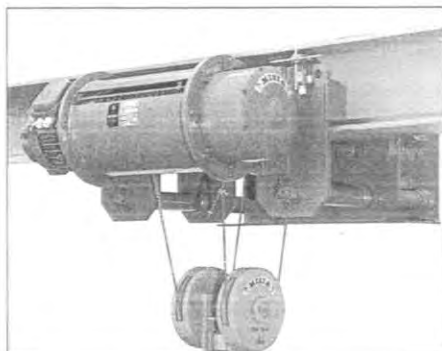
ROPE AND ANCHORAGE

The rope is of the flexible steel stranded type and has been chosen and dimensioned in accordance with ISO standards and FEM rules. The end of the rope is fixed to a wedge and bracket anchorage oscillating in both directions. The rope and anchorage assembly guarantees a minimum safety factor of 5.



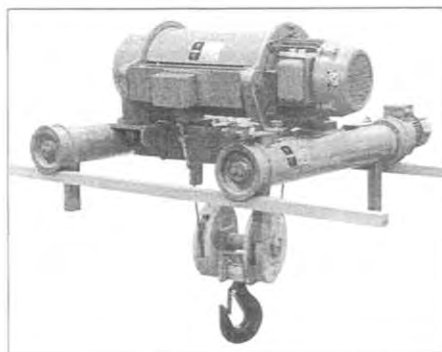
MONO-RAIL TROLLEY IN "NORMAL" VERSION

The main structure of the trolley consists of steel plates with an anti-fall bracket device and anti-derailing system. Single-flange steel wheels mounted on ball bearings are attached by pivots to the plates; 2 or 4 wheels (according to the trolley version) are driven by an integral-brake gearbox motor equipped with a toothed pinion which engages with the rim of each wheel. For this version of the trolley, the hoist is suspended from pins.



MONO-RAIL TROLLEY IN "COMPACT" VERSION

The mono-rail trolley is built in the "compact" version when it is necessary to make the maximum use of the available height between floor and rail. In this version also, the main structure consists of steel plates with anti-fall bracket device and anti-derailing system. The hoist is mounted laterally on the trolley to bring the hook closer to the rail. On the other side of the rail is a container for the ballast counterweights which must be provided as required, according to the type of hoist and the instruction given in the installation manual.



DOUBLE RAIL TROLLEY

Equipped with 4 twin-flange wheels mounted on ball bearings and provided with anti-derailment bracket. The two driven wheels are directly connected to an integral-brake gearbox motor of the pendular type. This type of connection makes it possible to avoid any external step-down torque, thus allowing the best power transmission with low maintenance.



TRAVEL LIMIT-SWITCH

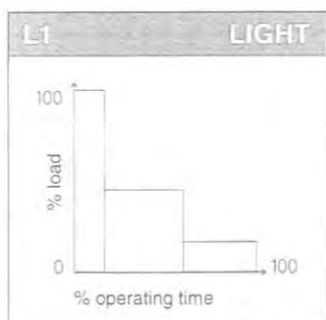
The electric travel trolleys must be equipped with an electric limit-switch for limitation of the transverse travel.

Example diagram for choice of the BM series electric hoist according to the FEM group, in accordance with rule 9.511 (Series production hoists)

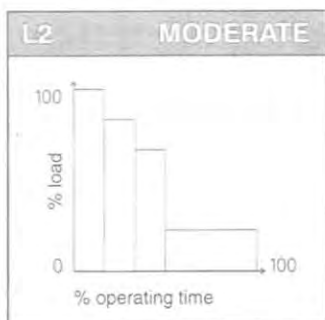


The hoist's service intensity is determined on the basis of two parameters:

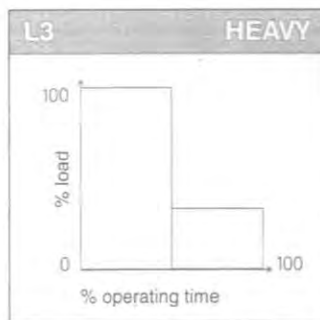
- class of operation = **total time of use in hours "T"**
- type of duty:



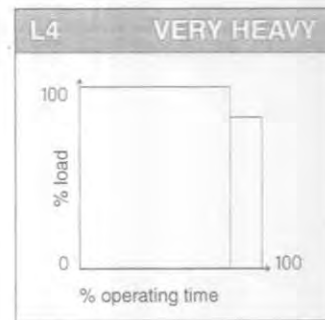
For hoists which rarely lift the maximum load and mainly lift light loads.



For hoists which lift maximum, moderate and light loads in about the same ratio.



For hoists which frequently lift the maximum load and normally moderate loads.



For hoists which normally lift loads close to the maximum.

TYPE OF DUTY		TIME OF USE "T"	
L1 - Light		6300	12500
L2 - Moderate		3200	6300
L3 - Heavy		1600	3200
L4 - Very heavy		800	1600
FEM GROUP		BM	
		1 A m	2 m
NUMBER OF ROPE FALLS		HOIST SIZE	
2/1 (S2)	4/1 (S4)		
800	1600	-	A
1000	2000	A	-
1250	2500	-	-
1600	3200	-	B
2000	4000	B	-
2500	5000	-	C
3200	6300	C	-
4000	8000	-	D
5000	10000	D	-
6300	12500	-	E
8000	16000	E	-

COMPARISON BETWEEN FEM SECTION IX GROUPS OF USE (SERIES HOISTS) AND FEM SECTION I AND ISO GROUPS (NON-SERIES HOISTS)

FEM 9.511	FEM Sez. I - ISO
1C m	M2
1B m	M3
1A m	M4
2 m	M5
3 m	M6
4 m	M7

Example of choice of hoist:

Based on the type of duty (light) and the total time of use in hours (12500), the FEM group (2 m) is determined, and therefore as a function of the max. capacity (5000 kg in 4/1 fall version S4) the type of hoist will be BMC.

☐ Max. hook load	$P = 5000 \text{ kg}$
☐ hook travel	$hm = 7 \text{ m}$
☐ lifting speed	$v = 4 \text{ m/min}$
☐ rope falls	$t = 4/1 \text{ (S4)}$
☐ type of duty	$L1 = \text{light}$
☐ total time of use	$T = 12500 \text{ hours}$

Temporary service

As laid down by **FEM** rules 9.681 and 9.682, the integral-brake electric travel and lifting motors are designed and built for use in intermittent service according to the operating group chosen. It may however happen, for example in the case of long travels or high hook lifts, that these intermittent conditions are not respected. In such cases, use in **temporary service** is permitted where the operating time is able to be determined in relation to the limit temperatures allowed by the motors. In these cases, however, it is best to check that the motors are not subjected to more than 10 starts for a maximum time of use corresponding, according to the said FEM rules, to the chosen operating group (see table).

TEMPORARY SERVICE (high hook lifts and long travels)

GROUP		Min. continuous time of use	Max. No. of consecutive starts during the time of use
FEM	ISO		
1Bm	M3	15	10
1Am	M4		
2m	M5	30	10
3m	M6		

Performance and technical characteristics of the BM series electric hoists - sizes A-B-C-D-E

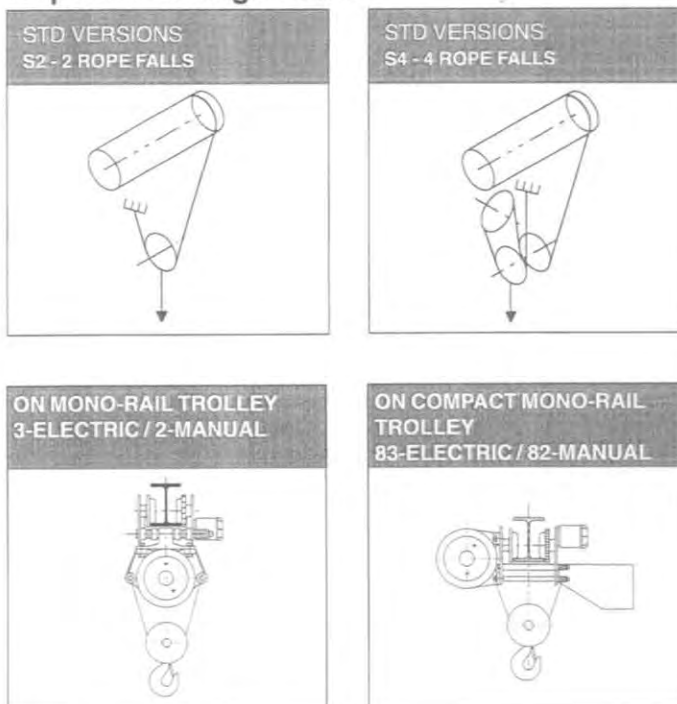


PERFORMANCE AND CHARACTERISTICS VERSION "S" - The lifting speeds refer to a frequency of 50 c/s

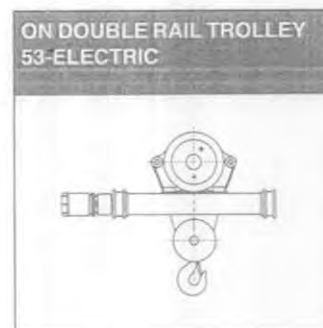
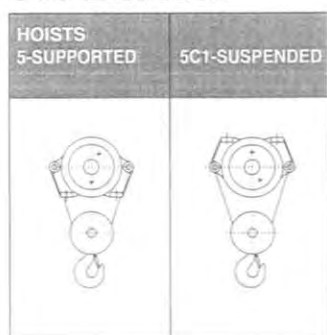
Capacity Kg	BM hoist	FEM group	HOOK TRAVEL - m -							MAIN LIFTING SPEED		AUXILIARY LIFTING SPEED NA-VA m/min	BM hoist	Ø Rope
			Measurement (Drum lg)							N NORMAL m/min	V FAST m/min			
			P (1°)	S (2°)	T (3°)	Q (4°)	R (5°)	Z (6°)	X (7°)					
800	A 8 S2	2 m	6	9	12	18	24	33,5	37	8	12	2	A	7
1000	A 10 S2	1A m	6	9	12	18	24	33,5	37	8	12	2		
1600	A 16 S4	2 m	-	-	6	9	12	-	-	4	6	1		
	B 16 S2		6	9	12	18	24	32	36	8	12	2		
2000	A 20 S4	1A m	-	-	6	9	12	-	-	4	6	1	B	10
	B 20 S2		6	9	12	18	24	32	36	8	12	2		
2500	C 25 S2	2 m	7	10,5	14	21	28	36	43	8	12	2	C	10
3200	B 32 S4		-	-	6	9	12	-	-	4	6	1		
4000	C 32 S2	1A m	7	10,5	14	21	28	36	43	8	12	2		
	B 40 S4		-	-	6	9	12	-	-	4	6	1		
	D 40 S2		7	10,5	14	21	28	35	41,5	8	12*	2		
5000	C 50 S4	2 m	-	-	7	10,5	14	-	-	4	6	1	D	13
	D 50 S2		7	10,5	14	21	28	35	41,5	8	12*	2		
6300	C 63 S4	1A m	-	-	7	10,5	14	-	-	4	6	1		
	E 63 S2		10,5	15,5	21	28	35	42	-	8	-	2		
8000	D 80 S4	2 m	-	-	7	10,5	14	-	-	4	6	1	E	15
	E 80 S2		10,5	15,5	21	27,5	35	42	-	8	-	2		
10000	D S4	1A m	-	-	7	10,5	14	-	-	4	6	1		
12500	E S4	2 m	-	7,5	10,5	13,5	17,5	21	-	4	-	1		
16000	E S4	1A m	-	7,5	10,5	13,5	17,5	21	-	4	-	1		

* Lifting speeds not available with measurement X of hoist D.

Rope fall arrangements



STD Execution



Example of BM electric hoist identification references



Rev. 01/1995

Characteristics of the motors of BM Series hoists and trolleys



Normal voltages:

- 220 V - 380 V at 50 c/s
- For single polarity motors, delta/star or star/delta voltage changeover is always possible
- For double polarity motors, specify the exact mains voltage.
- The absorption shown in the tables are for 380 V - 50 c/s

Special voltages:

Motors for voltages different from those indicated can be supplied on request.

N.B.: The auxiliary speeds are used only for short times in their intermittent regime (e.g.: for positionings) and not as service.

STD speed: (all the speeds in the table can be supplied on request)

LIFTING MOTOR CHARACTERISTICS - No. of starts/hour = 240 - S.I. 40% - aux. speed S.I. 15%

BM hoist	Measurement (Drum lg.)	MAIN LIFTING SPEED				MAIN/AUX. LIFTING SPEEDS			
		N - NORMAL		V - FAST		NA - NORMAL/AUX		VA - FAST/AUX	
		Kw	A	Kw	A	Kw	A	Kw	A
A	P-S-T-Q-R	1,5	4,7	2,3	6	1,5/0,33	5/3,7	2,2/0,33	7/5,5
	Z-X	3	10,1	4,5	12	3/0,75	7,5/6,5	4,5/0,75	10,5/10
B	P-S-T-Q-R	3	10,1	4,5	12	3/0,75	7,5/6,5	4,5/0,75	10,5/10
	Z-X	8	21	12	28	8/1,7	18/14	12,5/1,7	25/24
C	P-S-T-Q-R	4,5	12,3	7,5	16,2	4,8/1	12/10	7,5/1	15/14
	Z-X	8	21	12	28	8/1,7	18/14	12,5/1,7	25/24
D	P-S-T-Q-R-Z	8	21	12	28	8/1,7	18/14	12,5/1,7	25/24
	X	12,5	32	-	-	13/3	27/39	-	-
E	P-S-T-Q-R-Z	12,5	32	-	-	13/3	27/39	-	-

MONO-RAIL TROLLEY MOTOR CHARACTERISTICS (figure 3) - No. of starts/hour = 120 - S.I. 40% - aux. speed S.I. 15%

Type of hoist	Max capacity (kg)	TRAVEL SPEED m/min															
		20		16		12		10		8		20/6,5		15/5		12/4	
		Kw	A	Kw	A	Kw	A	Kw	A	Kw	A	Kw	A	Kw	A	Kw	A
A - S2-S4 B S2 to m. "R"	2000	0,12	0,82	0,10	0,80	0,12	0,82	0,12	0,82	0,12	0,82	0,18	1,1	0,18	1,1	0,18	1,1
												0,06	0,65	0,06	0,65	0,06	0,65
da A S2 mis. X to E S4	16000	0,37	1,8	0,32	1,5	0,37	1,8	0,37	1,8	0,37	1,8	0,37	1,5	0,37	1,5	0,37	1,5
												0,10	0,9	0,10	0,9	0,10	0,9

For capacities from 800 ÷ 6300 Kg n° 1 motor
6301 ÷ 12500 Kg n° 2 motor
12501 ÷ 16000 Kg n° 4 motor

For the Z-X measurements: 2 motors

COMPACT MONO-RAIL TROLLEY MOTOR CHARACTERISTICS (figure 83)

N° of starts/hour = 120 - S.I. 40% - aux. speed S.I. 15%

Max capacity (kg)	TRAVEL SPEED m/min															
	20		16		12		10		8		20/6,5		15/5		12/4	
	Kw	A	Kw	A	Kw	A	Kw	A	Kw	A	Kw	A	Kw	A	Kw	A
1000	0,12	0,82	0,10	0,80	0,12	0,82	0,12	0,82	0,12	0,82	0,18	1,1	0,18	1,1	0,18	1,1
											0,06	0,65	0,06	0,65	0,06	0,65
4000	0,25	1,3	0,22	1,0	0,25	1,3	0,25	1,3	0,25	1,3	0,37	1,5	0,37	1,5	0,37	1,5
											0,10	0,9	0,10	0,9	0,10	0,9
10000	0,37	1,8	0,32	1,5	0,37	1,8	0,37	1,8	0,37	1,8	0,37	1,5	0,37	1,5	0,37	1,5
											0,10	0,9	0,10	0,9	0,10	0,9

For capacities from 800 ÷ 6300 Kg n° 1 motor
6301 ÷ 10000 Kg n° 2 motors

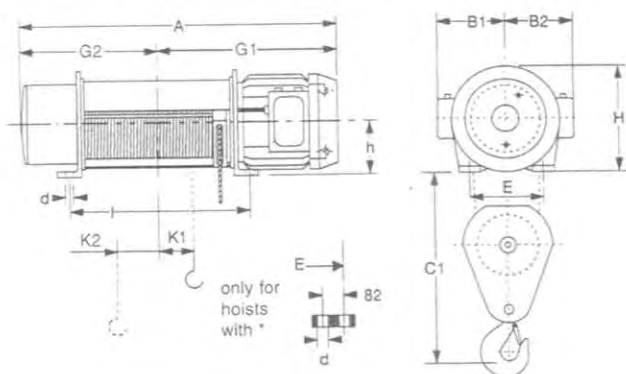
DOUBLE RAIL TROLLEY MOTOR CHARACTERISTICS (figure 53) - N° of starts/hour = 120 - S.I. 40% - aux. speed S.I. 15%

Max capacity (kg)	TRAVEL SPEED m/min									
	20		16		12		20/5		20/6,5	
	Kw	A	Kw	A	Kw	A	Kw	A	Kw	A
6300	0,37	1,2	0,37	1,2	0,37	1,2	0,37/0,09	1,5/0,60	-	-
10000	0,55	1,7	0,55	1,7	0,55	1,7	0,55/0,12	2,0/0,80	-	-
16000	1,10	3,1	0,75	2,1	0,75	2,1	-	-	1/0,37	3,4/1,2

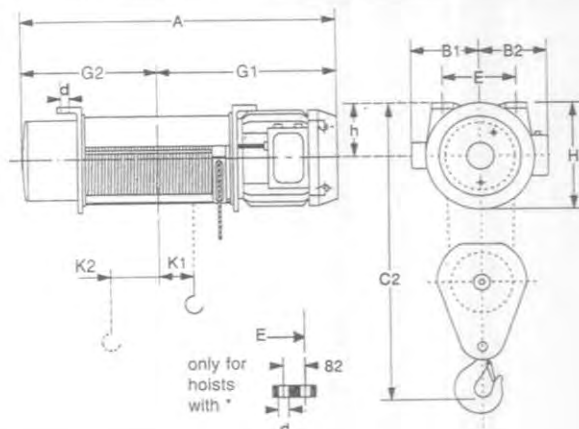
BM Series electric hoists with 2 rope falls - S2 -



TYPE 5 SUPPORTED



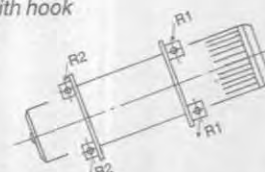
TYPE 5C1 SUSPENDED



BM SIZE		A	B	C	D	E*
GENERAL DIMENSIONS	C ₁	520	625	700	780	910
	C ₂	830	1025	1100	1270	1510
	H	310	400	400	490	600
	h	155	200	200	250	300
	E	200	270	270	330	460
	d	21	26	26	30	28
	B ₁	210	270	270	310	360
	B ₂	200	220	220	255	290
	A	760	885	945	1000	1160
	G ₁	445	520	565	600	645
P (1 st measurement)	G ₂	315	365	380	400	515
	l	365	394	424	440	638
	K ₁	55	52	59	56	82
	K ₂	48	45	52	49	77
	(Kg) weight	140	260	310	475	735
S (2 nd measurement)	A	865	995	1065	1105	1320
	G ₁	495	575	625	655	725
	G ₂	370	420	440	450	595
	l	470	504	544	545	798
	K ₁	82	79	89	82	123
T (3 rd measurement)	K ₂	75	73	82	75	118
	(Kg) weight	145	270	325	495	770
	A	965	1095	1175	1210	1480
	G ₁	545	625	680	705	805
	G ₂	420	470	495	505	675
Q (4 th measurement)	l	570	604	654	650	958
	K ₁	107	104	117	109	242
	K ₂	100	96	110	101	78
	(Kg) weight	150	285	340	515	840
	A	1165	1295	1395	1420	1695
R (5 th measurement)	G ₁	645	725	790	810	913
	G ₂	520	570	605	610	782
	l	770	804	874	860	1173
	K ₁	232	212	227	191	350
	K ₂	74	90	110	124	78
R (5 th measurement)	(Kg) weight	165	315	375	575	900
	A	1365	1495	1615	1630	1910
	G ₁	745	825	900	915	1020
	G ₂	620	670	715	715	890
	l	970	1004	1094	1070	1388
R (5 th measurement)	K ₁	332	312	337	296	457
	K ₂	74	90	110	124	78
	(Kg) weight	180	335	405	620	965

BM SIZE		A	B	C	D	D*	E*
GENERAL DIMENSIONS	C ₁	520	625	700	780	780	910
	C ₂	920	1120	1190	1285	1380	1510
	H	402	497	497	497	600	600
	h	202	252	252	252	300	300
	E	270	330	330	330	460	460
	d	26	30	30	30	28	28
	B ₁	270	310	310	310	360	360
	B ₂	220	255	255	255	290	290
	A	1445	1645	1750	1840	-	2120
	G ₁	825	930	983	1020	-	1125
Z (6 th measurement)	G ₂	620	715	767	820	-	995
	l	1004	1070	1175	1280	-	1598
	K ₁	311	374	427	479	-	562
	K ₂	89	40	41	41	-	78
	(Kg) weight	335	620	645	665	-	1030
X (7 th measurement)	A	1535	1750	1925	-	1955	-
	G ₁	870	983	1070	-	1043	-
	G ₂	665	767	855	-	912	-
	l	1094	1175	1350	-	1433	-
	K ₁	336	427	514	-	525	-
X (7 th measurement)	K ₂	109	41	41	-	39	-
	(Kg) weight	345	665	680	-	980	-

"MAX" and "MIN" reactions on feet with hook in fully raised position (static values)

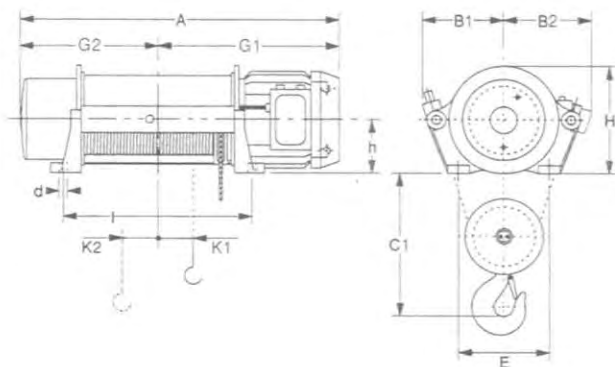


BM SIZE		A		B		C		D		E		
FEM Group		2 m	1Am	2 m	1Am	2 m	1Am	2 m	1Am	2 m	1Am	
Capacity Kg		800	1000	1600	2000	2500	3200	4000	5000	6300	8000	
Reactions on individual foot "daN"												
Measurement (drum length)	P	R ₁	305	370	580	710	890	1115	1395	1710	2200	2735
		R ₂	175	210	365	435	535	660	875	1060	1375	1690
	S	R ₁	315	380	605	735	925	1160	1445	1770	2290	2845
		R ₂	165	205	350	415	510	625	835	1010	1300	1595
	T	R ₁	320	390	620	755	950	1185	1485	1820	2625	3265
		R ₂	165	195	340	405	490	605	805	970	1000	1210
	Q	R ₁	370	450	705	855	1060	1325	1610	1975	2785	3465
		R ₂	125	145	270	320	400	485	710	845	870	1040
	R	R ₁	390	475	745	910	1130	1410	1735	2120	2900	3605
		R ₂	110	125	395	275	345	415	605	720	790	935
Z	R ₁	420	500	850	1020	1260	1560	1945	2380	2990	3715	
	R ₂	160	180	275	305	335	385	420	485	730	860	
X	R ₁	420	500	870	1045	1290	1600	2005	2440	-	-	
	R ₂	165	185	280	310	320	360	515	580	-	-	

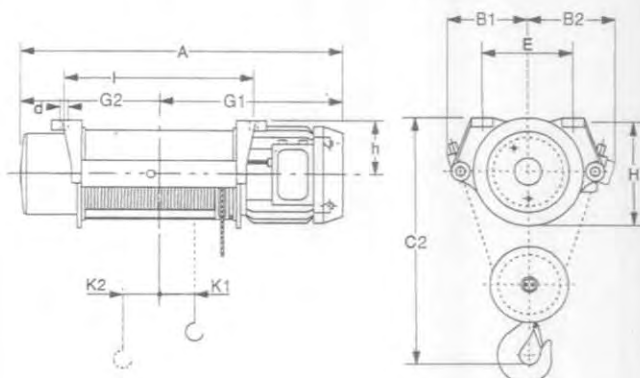
BM Series electric hoists with 4 rope falls - S4 -



TYPE 5 SUPPORTED

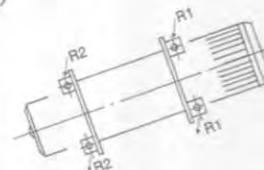


TYPE 5C1 SUSPENDED



BM SIZE		A	B	C	D	E
GENERAL DIMENSIONS	C ₁	440	570	600	720	760
	C ₂	770	970	1000	1220	1390
	H	320	400	400	490	610
	h	165	200	200	250	315
	E	270	330	330	330	400
	d	26	33	33	39	37
	B ₁	240	290	290	350	410
	B ₂	310	370	370	450	520
	A	-	-	-	-	1320
	G ₁	-	-	-	-	725
S (2 nd measurement)	G ₂	-	-	-	-	595
	I	-	-	-	-	764
	K ₁	-	-	-	-	67
	K ₂	-	-	-	-	53
	(Kg) weight	-	-	-	-	885
T (3 rd measurement)	A	965	1095	1175	1210	1480
	G ₁	545	625	680	705	805
	G ₂	420	470	495	505	675
	I	580	643	693	696	924
	K ₁	102	51	66	55	98
	K ₂	1	50	46	49	62
	(Kg) weight	200	365	420	640	935
Q (4 th measurement)	A	1165	1295	1395	1420	1695
	G ₁	645	725	790	810	913
	G ₂	520	570	605	610	782
	I	780	843	913	906	1139
	K ₁	196	146	176	133	160
	K ₂	-43	4	-9	24	52
	(Kg) weight	220	410	465	720	1085
R (5 th measurement)	A	1365	1495	1615	1630	1910
	G ₁	745	825	900	915	1020
	G ₂	620	670	715	715	890
	I	980	1043	1094	1116	1354
	K ₁	296	224	256	238	248
	K ₂	-93	-24	-33	-28	19
	(Kg) weight	245	430	510	780	1170
Z (6 th measurement)	A	-	-	-	-	2120
	G ₁	-	-	-	-	1125
	G ₂	-	-	-	-	995
	I	-	-	-	-	1564
	K ₁	-	-	-	-	274
	K ₂	-	-	-	-	45
	(Kg) weight	-	-	-	-	1250

"MAX" and "MIN" reaction on feet with hook in fully raised position (static values)

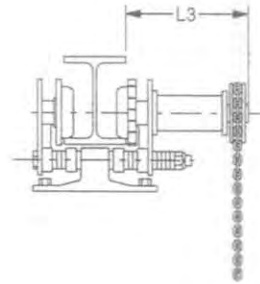
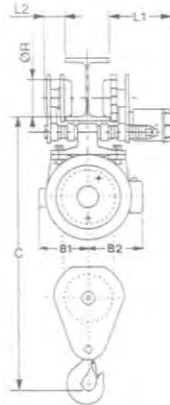
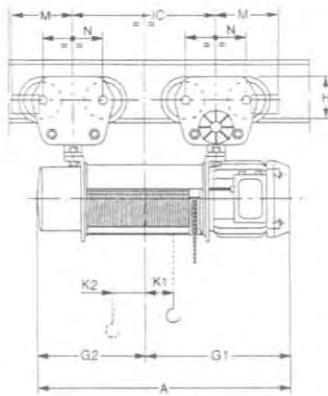


BM size		A		B		C		D		E	
FEM group		2 m	1Am	2 m	1Am	2 m	1Am	2 m	1Am	2 m	1Am
Capacity kg		1600	2000	3200	4000	5000	6300	8000	10000	12500	16000
Reactions on individual foot "daN"											
Measurement (drum length)	S	R ₁	-	-	-	-	-	-	-	3930	4960
		R ₂	-	-	-	-	-	-	-	2820	3540
	T	R ₁	600	735	1035	1265	1615	2000	2505	3085	4055
		R ₂	310	375	775	945	1130	1390	1860	2280	2720
	Q	R ₁	665	815	1200	1470	1870	2320	2800	3445	4310
		R ₂	255	305	630	765	895	1095	1610	1960	2540
	R	R ₁	715	875	1270	1560	1965	2440	3080	3795	4600
		R ₂	220	260	570	685	825	1000	1355	1640	2290
	Z	R ₁	-	-	-	-	-	-	-	4570	5755
		R ₂	-	-	-	-	-	-	-	2360	2925

BM Series electric hoists with 2 rope falls with normal mono-rail trolley (figure 3) - S2 -



WITH TROLLEY TYPE 3 (ELECTRIC) - WITH TROLLEY TYPE 2 (MANUAL)



GENERAL DIMENSIONS	C	960	1160	1250	1425	1690
	M	210	210	270	270	300
	N	225	225	280	280	310
	H	140	140	200	200	235
	L ₁	245	245	310	310	310
	L ₂	80	80	100	100	110
	L ₃	300	300	405	405	415
	B ₁	210	270	270	310	360
	B ₂	200	220	220	255	290
	Ø wheels	120	120	175	175	210

Beam:
minimum geometrical
travel for passage
of wheels

P (1 st measurement)	UNI 5769/73	INP	180	180	220	220	260
	A	-	885	-	-	-	1160
	G ₁	-	520	-	-	-	645
	G ₂	-	365	-	-	-	515
	IC	-	394	-	-	-	638
	K ₁	-	52	-	-	-	82
	K ₂	-	45	-	-	-	77
	(Kg) weight	-	390	-	-	-	1045
	S (2 nd measurement)	A	865	995	1065	1105	1320
	G ₁	495	575	625	655	725	

T (3 rd measurement)	G ₂	370	420	440	450	595
	IC	470	504	544	545	798
	K ₁	82	79	89	82	123
	K ₂	75	73	82	75	118
	(Kg) weight	275	400	545	715	1080
	A	965	1095	1175	1210	1480
	G ₁	545	625	680	705	805
	G ₂	420	470	495	505	675
	IC	570	604	654	650	958
	K ₁	107	104	117	109	242

T (3 rd measurement)	A	965	1095	1175	1210	1480
	G ₁	545	625	680	705	805
	G ₂	420	470	495	505	675
	IC	570	604	654	650	958
	K ₁	107	104	117	109	242
	K ₂	100	96	110	101	78
	(Kg) weight	280	315	560	735	1150

R (5 th measurement)	G ₁	745	825	900	915	1020
	G ₂	620	670	715	715	890
	IC	970	1004	1094	1070	1388
	K ₁	332	312	337	296	457
	K ₂	74	90	110	124	78
	(Kg) weight	310	465	625	840	1275

S (2 nd measurement)	A	865	995	1065	1105	1320
	G ₁	495	575	625	655	725
	G ₂	370	420	440	450	595
	IC	470	504	544	545	798
	K ₁	82	79	89	82	123
	K ₂	75	73	82	75	118
	(Kg) weight	275	400	545	715	1080
	A	965	1095	1175	1210	1480
	G ₁	545	625	680	705	805
	G ₂	420	470	495	505	675

T (3 rd measurement)	IC	570	604	654	650	958
	K ₁	107	104	117	109	242
	K ₂	100	96	110	101	78
	(Kg) weight	280	315	560	735	1150
	A	1165	1295	1395	1420	1695
	G ₁	645	725	790	810	913
	G ₂	520	570	605	610	782
	IC	770	804	874	860	1173
	K ₁	232	212	227	191	350
	K ₂	74	90	110	124	78

BM SIZE

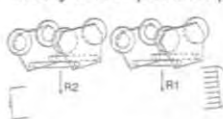
GENERAL DIMENSIONS	C	A	B	C	D	D*	E
C	1050	1270	1340	1435	1530	1690	
M	210	270	270	300	300	300	
N	280	280	280	310	310	310	
H	200	200	200	235	235	235	
L ₁	310	310	310	310	310	310	
L ₂	100	100	100	110	110	110	
L ₃	405	405	405	415	415	415	
B ₁	270	310	310	310	360	360	
B ₂	220	255	255	255	290	290	
Ø wheel	175	175	175	210	210	210	

UNI 5769/73	INP	220	220	220	260	260	260
Z (6 th measurement)	A	1445	1645	1750	1840	-	2120
G ₁	825	930	983	1020	-	1125	
G ₂	620	715	767	820	-	995	
IC	1004	1070	1175	1280	-	1598	
K ₁	311	374	427	479	-	562	
K ₂	89	40	41	41	-	78	
(Kg) weight	555	840	865	975	-	1340	

X (7 th measurement)	A	1535	1750	1925	-	1955	-
G ₁	870	983	1070	-	1043	-	
G ₂	665	767	855	-	912	-	
IC	1094	1175	1350	-	1433	-	
K ₁	336	427	514	-	525	-	
K ₂	109	41	41	-	39	-	
(Kg) weight	565	885	900	-	1290	-	

Y (8 th measurement)	A	1535	1750	1925	-	1955	-
	G ₁	870	983	1070	-	1043	-
	G ₂	665	767	855	-	912	-
	IC	1094	1175	1350	-	1433	-
	K ₁	336	427	514	-	525	-
	K ₂	109	41	41	-	39	-
	(Kg) weight	565	885	900	-	1290	-

"MAX" and "MIN" reaction on trolleys with hook
in fully raised position (static values)



Wheel diam.	X	l
120	20	32
175	25	40
210	25	40



$R = \frac{R_1}{R_2}$: Number of wheels

BM SIZE

FEM group	2 m	1Am	2 m	1Am	2 m	1Am	2 m	1Am	2 m	1Am
Capacity Kg	800	1000	1600	2000	2500	3200	4000	5000	6300	8000

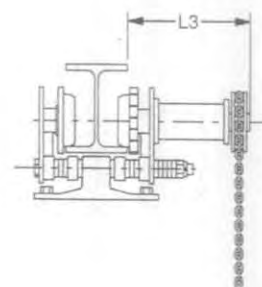
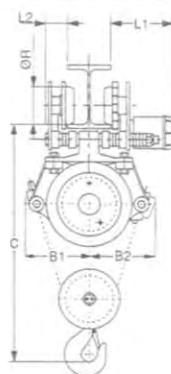
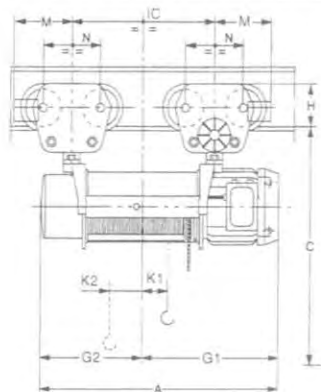
Reactions on trolley "daN"

Measurement (drum length)	P	R ₁	-	-	1225	1485	-	-	-	4555	5625
	P	R ₂	-	-	795	935	-	-	-	2095	3535
	S	R ₁	695	825	1275	1535	1960	2430	3000	3650	4735
	S	R ₂	395	475	765	895	1130	1360	1780	2130	2755
	T	R ₁	705	845	1305	1575	2010	2480	3080	3750	5405
	T	R ₂	395	455	745	875	1090	1320	1720	2050	2555
	Q	R ₁	805	965	1475	1775	2230	2760	3330	4060	5725
	Q	R ₂	315	355	605	705	910	1080	1530	1800	2235
	R	R ₁	845	1015	1555	1885	2370	2930	3580	4350	5955
	R	R ₂	285	315	555	615	800	940	1320	1550	1735

BM Series electric hoists with 4 rope falls with normal mono-rail trolley (figure 3) - S4 -



WITH TROLLEY TYPE 3 (ELECTRIC) - WITH TROLLEY TYPE 2 (MANUAL)



BM SIZE

GENERAL DIMENSIONS		A	B	C	D	E*
C	(mm)	910	1140	1190	1360	1640
M	(mm)	210	270	270	270	300
N	(mm)	225	280	280	280	310
H	(mm)	140	200	200	200	235
L ₁	(mm)	245	310	310	310	310
L ₂	(mm)	80	100	100	100	110
L ₃	(mm)	300	405	405	405	415
B ₁	(mm)	240	290	290	350	410
B ₂	(mm)	310	370	370	450	520
Ø wheels	(mm)	120	175	175	175	210

Beam: minimum geometrical travel for passage of wheels

UNI 5769/73 INP 180 220 220 220 260

S (2^a measurement) A - - - - 1320

G₁ - - - - 725

G₂ - - - - 595

IC - - - - 764

K₁ - - - - 67

K₂ - - - - 53

(Kg) weight - - - - 1225

T (3^a measurement) A 965 1095 1175 1210 1480

G₁ 545 625 680 705 805

G₂ 420 470 495 505 675

IC 580 643 693 696 924

K₁ 102 51 66 55 98

K₂ 1 50 46 49 62

(Kg) weight 330 585 640 890 1275

Q (4^a measurement) A 1165 1295 1395 1420 1695

G₁ 645 725 790 810 913

G₂ 520 570 605 610 782

IC 780 843 913 906 1139

K₁ 196 146 176 133 160

K₂ -43 4 -9 24 52

(Kg) weight 350 630 685 970 1425

R (5^a measurement) A 1365 1495 1615 1630 1910

G₁ 745 825 900 915 1020

G₂ 620 670 715 715 890

IC 980 1043 1133 1116 1354

K₁ 296 224 256 238 248

K₂ -93 -24 -33 -28 19

(Kg) weight 375 650 730 1030 1510

Z (6^a measurement) A - - - - 2120

G₁ - - - - 1125

G₂ - - - - 995

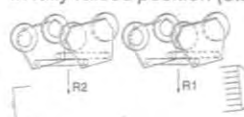
IC - - - - 1564

K₁ - - - - 274

K₂ - - - - 45

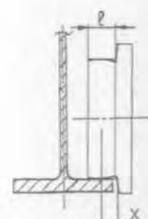
(Kg) weight - - - - 1590

"MAX" and "MIN" reaction on trolleys with hook in fully raised position (static values)



Wheel diam.	X	ℓ
120	20	32
175	25	40
210	25	40

$R = \frac{R_1}{R_2}$: Number of wheels



BM SIZE	A	B	C	D	E
---------	---	---	---	---	---

FEM group 2 m 1Am 2 m 1Am 2 m 1Am 2 m 1Am 2 m -

Capacity Kg 1600 2000 3200 4000 5000 6300 8000 10000 12500 -

Reactions on trolley "daN"

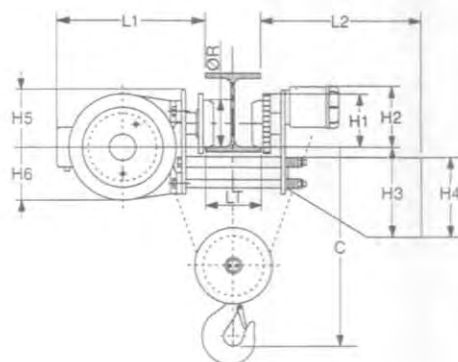
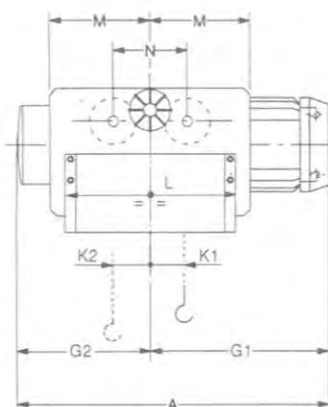
Measurement (drum length)		S	T	Q	R	Z	Reactions on trolley "daN"								
							R ₁	R ₂	R ₁	R ₂	R ₁	R ₂	R ₁	R ₂	R ₁
			R ₁	-	-	-	-	-	-	-	-	-	-	8030	-
			R ₂	-	-	-	-	-	-	-	-	-	-	5810	-
			R ₁	1265	1535	2180	2640	3340	4110	5135	6295	8280	-	-	-
			R ₂	685	815	1660	2000	2370	2890	3845	4685	5610	-	-	-
			R ₁	1395	1695	2510	3050	3850	4750	5725	7015	8790	-	-	-
			R ₂	575	675	1370	1640	1900	2300	3345	4045	5250	-	-	-
			R ₁	1495	1815	2650	3230	4040	4990	6285	7715	9370	-	-	-
			R ₂	505	585	1250	1480	1760	2110	2835	3405	4750	-	-	-
			R ₁	-	-	-	-	-	-	-	-	9310	-	-	-
			R ₂	-	-	-	-	-	-	-	-	4890	-	-	-

* For BME size, max. capacity 12500 kg.

BM Series electric hoists with 2 rope falls with compact mono-rail trolley (figure 83) - S2 -



WITH TROLLEY TYPE 83 (ELECTRIC)

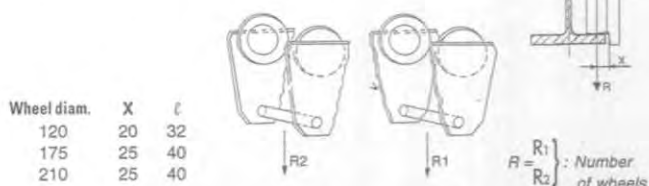


BM SIZE		A	B	C	D
GENERAL DIMENSIONS					
max. beam flange width	*LT	110	150	210	220
	N	225	280	280	310
	L ₁	410	500	500	590
	L ₂	480	670	670	830
	H ₁	140	200	200	235
	H ₂	210	255	255	285
	H ₃	380	440	440	460
	H ₄	270	330	330	360
	H ₅	210	255	255	285
	H ₆	120	190	190	220
	Ø wheels	120	175	175	210
Beam: minimum geometrical travel for passage of wheels - INP - UNI 5769/73					
P (1 st measurement)	INP	180	220	220	260
	A	760	885	945	1000
	G ₁	445	520	565	600
	G ₂	315	365	380	400
	M	450	490	510	560
	L	250	290	250	240
	K ₁	55	52	59	56
	K ₂	48	45	52	49
S (2 nd measurement)	(Kg) total weight	260	450	490	890
	A	865	995	1065	1105
	G ₁	495	575	625	655
	G ₂	370	420	440	450
	M	550	600	640	660
	L	350	390	380	340
	K ₁	82	79	89	82
	K ₂	75	73	82	75
T (3 rd measurement)	(Kg) total weight	290	490	530	940
	A	965	1095	1175	1210
	G ₁	545	625	680	705
	G ₂	420	470	495	505
	M	650	700	750	770
	L	450	490	490	450
	K ₁	107	104	117	109
	K ₂	100	96	110	101
	(Kg) total weight	320	530	570	990

BM SIZE		A	B	C	D
Dimension "C"					
WIDTH OF BEAM FLANGE in mm	120	545	-	-	-
	140	565	-	-	-
	160	590	650	-	-
	180	615	670	-	-
	200	640	695	-	-
	220	665	720	735	-
	240	685	745	760	815
	260	710	770	780	840
	280	735	790	805	865
	300	760	815	830	890
	350	820	875	890	950
	400	880	935	950	1010

* Dimension C for beam width larger than those shown

"MAX" and "MIN" reactions on pair of wheels with block in fully raised position (static values)



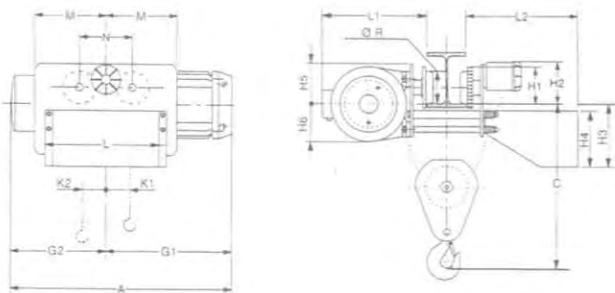
BM SIZE	A	B	C	D
FEM group	2 m 1Am	2 m 1Am	2 m 1Am	2 m 1Am
Capacity Kg	800 1000	1600 2000	2500 3200	4000 5000
Reactions on pair of wheels "daN"				
Measurement (drum length)	P	R ₁	740 890	1345 1620
		R ₂	340 390	735 860
	S	R ₁	855 1030	1520 1835
		R ₂	255 280	600 685
T	R ₁	960 1155	1685 2035	2620 3260
	R ₂	180 185	475 525	490 550

N.B. The hoists are supplied without ballast (which is included in the total weight). The ballast weights to be used are shown in the installation manual.

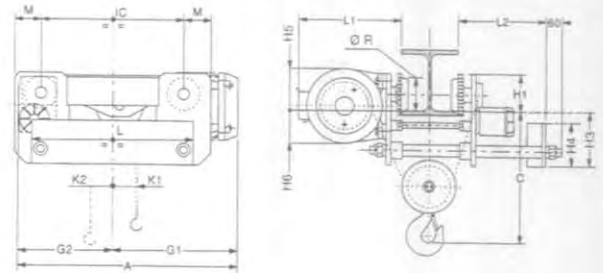
BM Series electric hoists with 4 rope falls with compact mono-rail trolley (figure 83) - S4 -



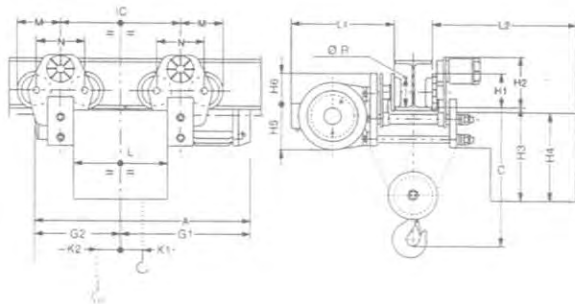
HOIST SIZE "A"



HOIST SIZE "B-C"



HOIST SIZE "D"

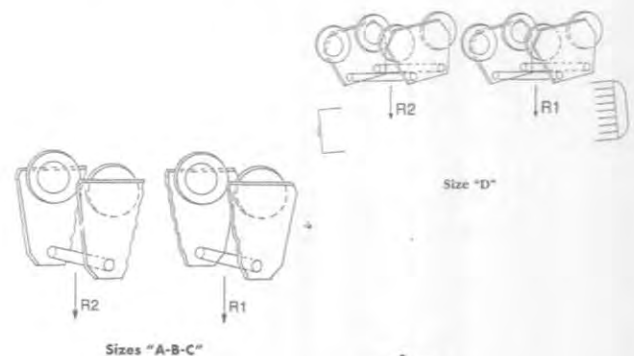


BM SIZE	A	B	C	D
Dimension "C"				
WIDTH OF BEAM FLANGE in mm	200	-	-	-
	220	-	-	-
	240	-	-	-
	260	555	605	665
	280	580	625	685
	300	605	650	710
	350	660	710	770
	400	720	770	830

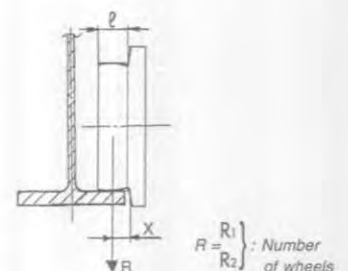
* Dimension C for beam widths larger than those shown

"MAX" and "MIN" reactions on pair of wheels with block
in fully raised position (static values)

BM SIZE		A	B	C	D	
GENERAL DIMENSIONS		C	530	590	650	920
Max. beam flange width	(mm)	LT	240	250	250	260
		N	280	-	-	310
		L ₁	420	570	570	630
		L ₂	480	470	470	650
		H ₁	200	200	200	235
		H ₂	255	200	200	285
		H ₃	400	300	300	450
		H ₄	280	320	320	400
		H ₅	255	220	220	260
		H ₆	230	300	300	400
		Ø wheels	175	175	175	210
Beam: minimum geometrical travel for passage of wheels						
- INP - UNI 5769/73						
T (3° measurement)	(mm)	INP	220	220	220	260
		A	965	1095	1175	1210
		G ₁	545	625	680	705
		G ₂	420	470	495	505
		IC	-	704	754	650
		M	340	150	150	320
		L	460	810	860	550
		K ₁	102	51	66	55
(Kg)	total weight	K ₂	1	50	46	49
		520	760	780	1100	
Q (4° measurement)	(mm)	A	1165	1295	1395	1420
		G ₁	645	725	790	810
		G ₂	520	570	605	610
		IC	-	904	974	860
		M	440	150	150	320
		L	660	1010	1080	660
		K ₁	126	146	176	133
		K ₂	-13	4	-9	24
(Kg)	total weight	560	830	910	1300	



Wheel diam.	X	ℓ
175	25	40
210	25	40



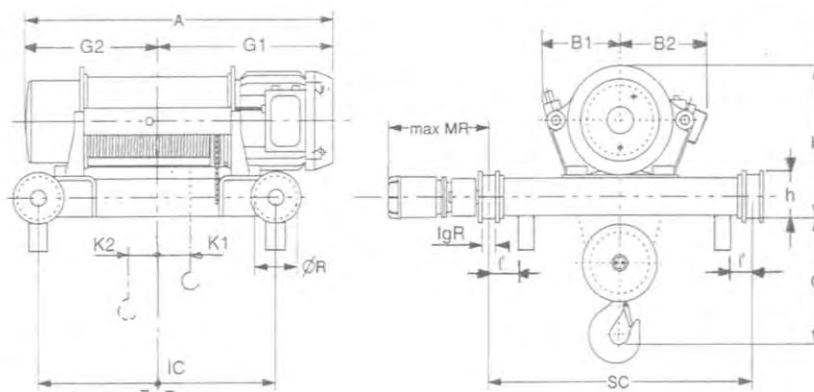
BM SIZE		A		B		C		D		
FEM group		2 m	1Am	2 m	1Am	2 m	1Am	2 m	1Am	
Capacity Kg		1600	2000	3200	4000	5000	6300	8000	10000	
Reactions on wheels "daN"										
Measurement (drum length)	T	R ₁	1660	2005	2240	2700	3365	4130	5280	6450
		R ₂	480	535	1770	2110	2475	3010	3910	4740
	Q	R ₁	1820	2200	2565	3095	3900	4785	5945	7255
		R ₂	360	380	1515	1785	2070	2485	3445	4135

N.B. The hoists are supplied without ballast (which is included in the total weight). The ballast weights to be used are shown in the installation manual.

BM Series electric hoists with 2 and 4 rope falls with double beam trolley (figure 53) -S2/S4 -

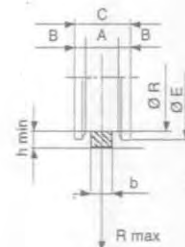
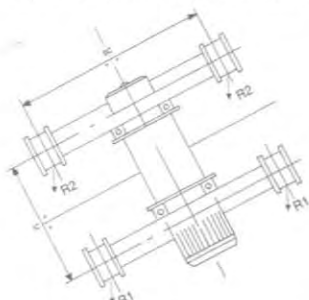


WITH TYPE 53 TROLLEY (ELECTRIC)



BM SIZE		B	C	D	D	E
VERSION		S4	S4	S2	S4	S4
GENERAL DIMENSIONS	C	570	600	780	720	760
	H	555	555	645	645	820
	SC	1000	1000	1000	1000	1200
	l	60	60	60	60	60
	Ø R	160	160	160	160	200
	Ig.R	50	50	50	50	60
	max MR	480	480	480	480	760
	H	155	155	155	155	210
	B ₁	290	290	310	350	410
	B ₂	370	370	255	450	520
S (2° measurement)	A	-	-	-	-	1480
	G ₁	-	-	-	-	805
	G ₂	-	-	-	-	675
	IC	-	-	-	-	1125
	K ₁	-	-	-	-	67
	K ₂	-	-	-	-	53
	(Kg) weight	-	-	-	-	1225
T (3° measurement)	A	1095	1175	1210	1210	1480
	G ₁	625	680	705	705	805
	G ₂	470	495	505	505	675
	IC	900	900	900	900	1285
	K ₁	79	69	134	57	98
	K ₂	21	42	76	47	62
	(Kg) weight	615	670	785	890	1365
Q (4° measurement)	A	1295	1395	1420	1420	-
	G ₁	725	790	810	810	-
	G ₂	570	605	610	610	-
	IC	1110	1110	1110	1110	-
	K ₁	179	174	216	135	-
	K ₂	-29	-7	85	22	-
	(Kg) weight	675	730	840	995	-

"MAX" and "MIN" reactions on wheels with hook in fully raised position (static values)



Ø R	Ø E	A	B	C	h	b	R max.
			(mm)		min	min max	Kg.
160	185	50	15	80	30	30 40	3100
200	230	60	15	90	30	40 50	5000

BM SIZE	B		C		D				E	
Version	S4		S4		S2		S4		S4	
FEM Group	2 m	1Am	2 m	1Am	2 m	1Am	2 m	1Am	2 m	1Am
Capacity Kg	3200	4000	5000	6300	4000	5000	8000	10000	12500	16000

Reactions on wheels "daN"										
Measurement (drum length)	S	T	Q	R ₁	R ₂	R ₁	R ₂	R ₁	R ₂	R ₁
				-	-	-	-	-	-	3825 4815
				-	-	-	-	-	-	3085 3855
				1110	1345	1630	1845	1515	1840	2505 3065 3975 4985
				825	990	1235	1050	910	1085	1985 2425 3015 3755
				1245	1510	2005	2275	1620	1970	2765 3385 - -
				R ₂	720	855	1510	1270	830	980 1780 2160 - -

3. Installation instructions



3.1. PREPARATION FOR INSTALLATION

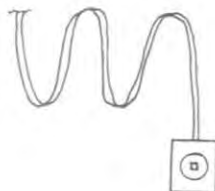
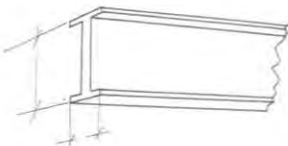


Check firstly that the characteristics of the hoist, and of the supplies for which the user is responsible, are as shown in the order confirmation in order to ensure its correct installation; in particular:

 MISIA PARANCHI S.r.l. VIA STRADIVARI, 11/12 20026 NOVATE MIL. MILANO ITALY	PARANCO ELETTRICO A FUNE ELECTRIC ROPE HOIST	
	ANNO YEAR	
	TIPO TYPE	
	BM	
	PORTATA CAPACITY	GRUPPO GROUP FEM
	CORSA GANCIO HEIGHT OF LIFT	
	VELOCITA' SPEED	
	POTENZA MOTORE MOTOR POWER	
	ALIMENTAZIONE SUPPLY	V- Hz



Check the suitability of the beam or of the fixed support intended to hold the hoist and of the electricity supply.

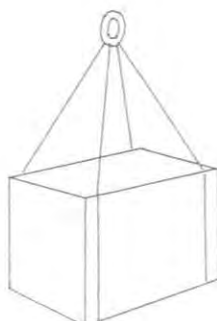


Check the working area in which the hoist will be operating:

- check that there are no obstacles in the way of the hook while it is lifting.
- ensure that in the case of hoists with trolley, the horizontal translation and lifting movements are free of impediments and present no danger to people, things and the workplace.
- ensure that permanent working activities are not carried out in areas beneath the horizontal movements of the trolley.



Provide suitable weights for the dynamic and static load tests, with suitable securing and lifting equipment, equal to:



$$\begin{aligned} \text{DYNAMIC TEST} \\ \text{weight} &= \text{nominal capacity} \times 1,1 \\ \text{STATIC TEST} \\ \text{weight} &= \end{aligned}$$

- **nominal capacity x 1.25** for nominal capacities of over 1000 kg.
- **capacity x 1.5** for nominal capacities of up to 1000 kg.

Rev. 01/1995



Check the suitability of the electricity supply and the voltage and current values according to what is specified in the order confirmation.

Ensure that the documentation with which you have been supplied corresponds to the hoist to be installed.

3.2. PACKING



The hoist can be delivered on pallets or in crates, open cases or closed cases according to the customer's requirements at the time of ordering. Respect the handling instructions in the case of "closed cases" and the indications and symbols given on them.



Handle
with care



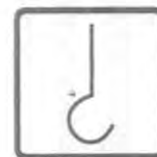
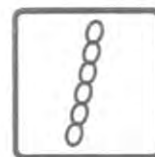
Do not
overturn



Protect
from rain



Do not
stack



Indication of lifting means and points



Before handling the packaging, pay attention to the weight of the item shown on the package.



If the hoist is not to be installed immediately, pay attention to the following instructions:



- the standard version of the packaging is not "rainproof" and is not intended for maritime or tropical destinations or for hostile environments



- the packed and suitably preserved equipment can be kept for up to about 5 years in a covered warehouse at a temperature of between -20° and +70°C with 80% humidity.

For different environmental conditions, ask for special packaging.

3. Installation instructions



DO NOT USE TIE-BEAMS FOR LIFTING AND MOVING THE PACKAGING.



LIFT THE PACKED HOIST WITH THE FORKS OF THE LIFT TRUCK OR BY MEANS OF TRANSPALLETS.



Dispose of the packaging as required by law.

3.3. TRANSPORT AND MOVEMENT



This must be done by properly qualified carriers so that the equipment is moved with the necessary care. No other goods must be placed on top of the machines being transported or on the relevant packagings. While in transit, the goods must be carefully covered to provide waterproof protection against rain.

During sea transport, they must be kept in the hold and protected against spray or moist winds.



Movements must be carried out with suitable equipment, lifting the machine without dragging it along.

3.4. STORAGE



The goods, whether designed for indoor or outdoor installation, can be stored up to a maximum of 5 years in an environment with the following characteristics:

- protected against atmospheric agents
- humidity no higher than 80%
- minimum temperature -20°C
- maximum temperature +70°C.



For storage periods of more than 5 years, ask the manufacturer about special preservation procedures.



If these values should change during storage, preliminary checks will have to be carried out before the hoist is put into service (see "Reinstatement after storage" paragraph).



If the temperature at the place of storage rises above or falls below the values given and the humidity exceeds 80%, provide protection for the cases with barrier bags and hygroscopic salts.



For storage in the open, provide:

- supports to keep all packages without pallets off the floor,
- protect all the packages with barrier bags and hygroscopic salts.

3.5. REMOVING THE HOIST FROM THE PACKAGING



The hoist's removal requires no special slings.



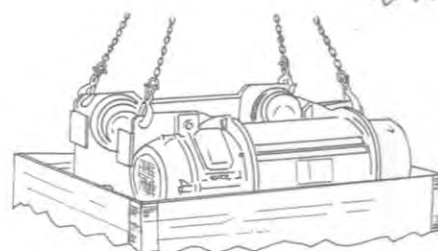
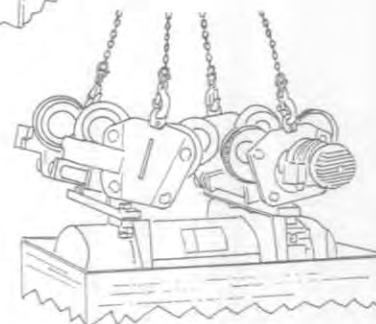
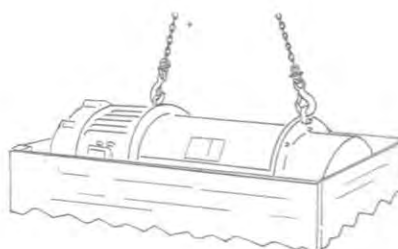
Use suitable slings for the weight of the hoist to be lifted.



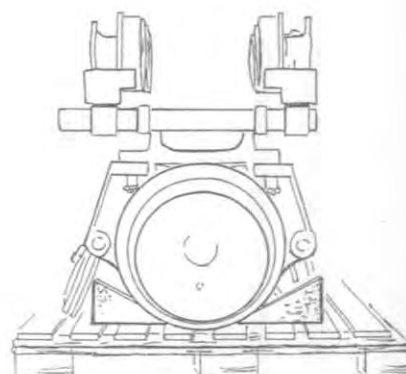
Once the hoist has been removed, check its integrity visually before beginning installation.



When removing the hoist, hook the slings onto the points provided, as shown in the illustrations.



After removing it from the packaging, rest the hoist on a pallet, keeping it stable by means of two wedges placed on each side of the hoist.



3. Installation instructions



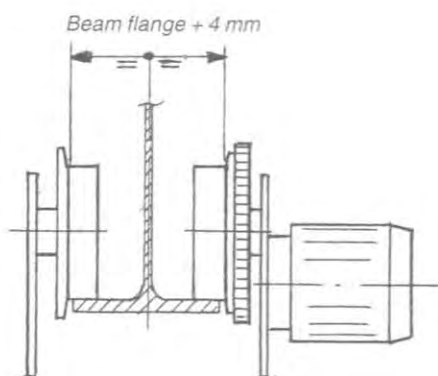
3.6. ASSEMBLY OF THE PARTS



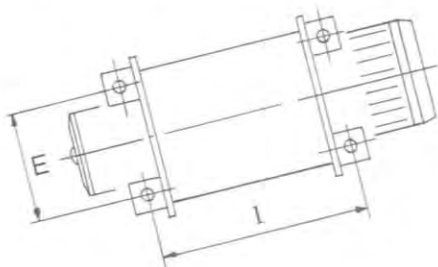
Ensure that the hoist's characteristics allow it to be used as planned, and in particular check that the hook travel is no shorter than required and that the lifting capacity is sufficient for the loads to be lifted.



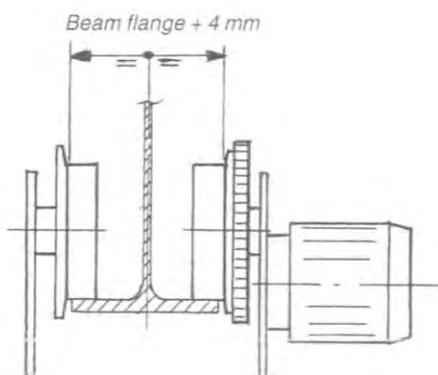
In the case of hoists with mono-rail trolley "figure 3" and "figure 83", the trolleys are provided with a predetermined beam width. This is shown in the order confirmation and is indicated by a suitable label on the trolley.



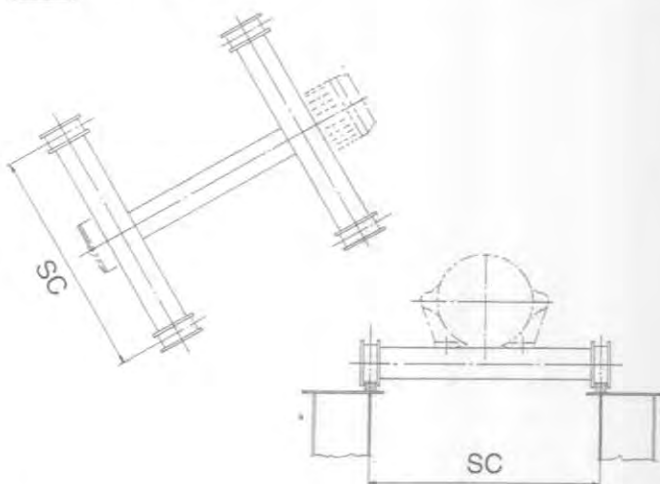
The previous paragraph is also valid for hoists in the supported "figure 5" and suspended "figure 5C1" versions.



In all cases, check the correspondence between the width indications of the trolley and the beam flange for "figure 3" and "figure 83" trolleys.



Check the gauge of the double beam trolleys "figure 53".



Contact the MISIA Technical Office if any modifications are required.

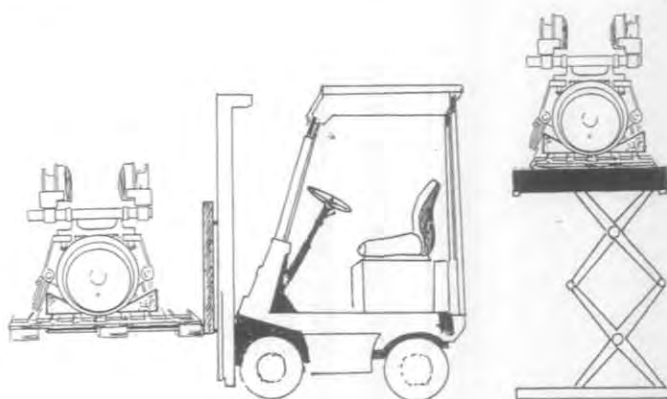
3.7. MOUNTING ON THE BEAM



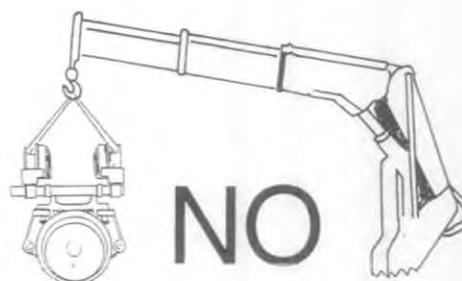
With the hoist positioned on the pallet, lift it vertically with a fork-lift truck or elevator platform.



The job to be carried out involves raising rather than lifting from above.



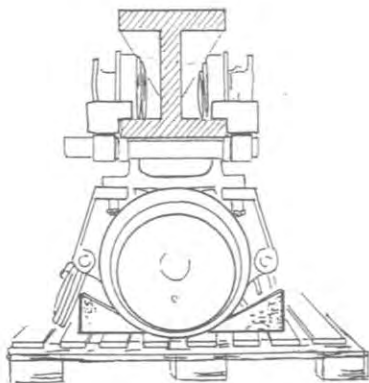
Avoid the use of jib cranes, since the slings used for the lifting of the load would prevent it from being mounted on the beam.



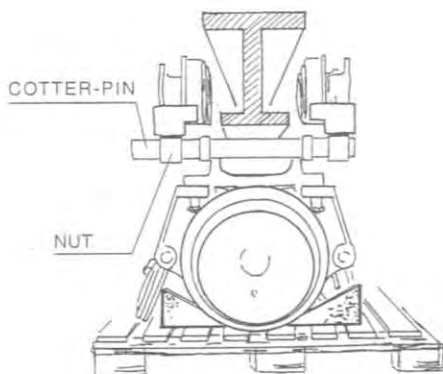
3. Installation instructions



-> If the beam is "above head height", the trolley is mounted on the mono-rail by putting it on at the end and blocking off the mono-rail with the fixed stop.

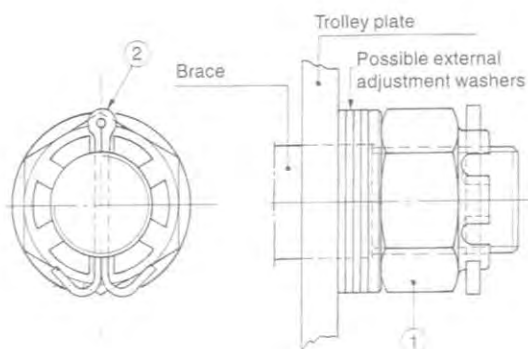


-> In the case of a gantry or mono-rail beam, extend the plates on the nut side with reference to the beam width, so that the trolley can be mounted on the lower flange of the mono-rail.



-> Bring the hoist up to the beam keeping it in the underneath position.

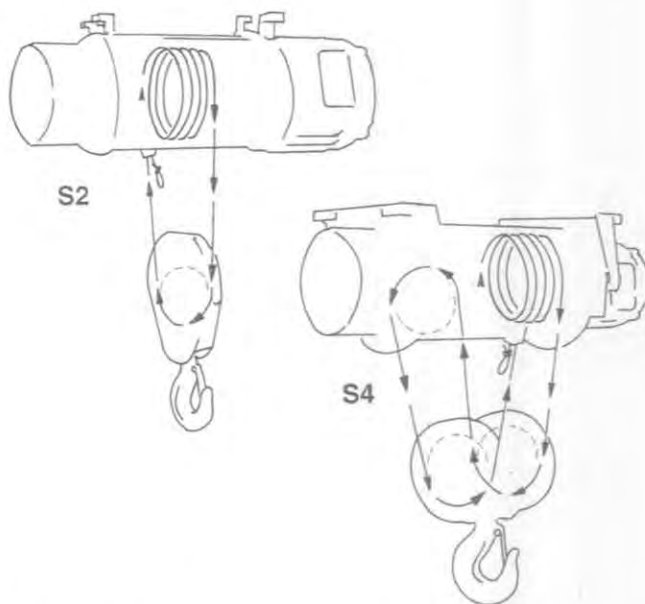
! Close up the plate against the internal spacers, screw up the nuts ensuring that the face of the ring nut (item 1) is in the exact position in relation to the hole in the brace, insert the cotter-pin (item 2) and bend back the outer edges underneath to prevent it from coming out.



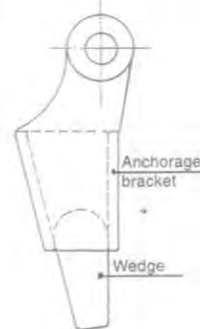
3.8. MOUNTING THE BLOCK



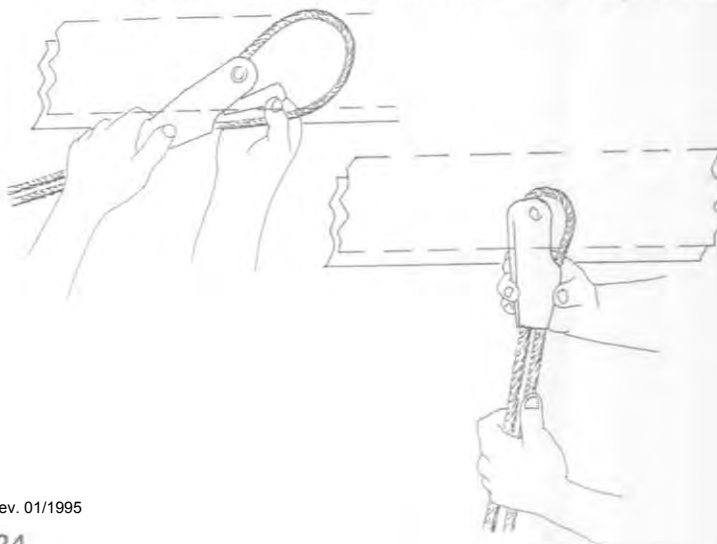
When mounting the block for 2 or 4 rope fall hoists, follow the indications given in the illustrations.



Before threading the rope through the anchorage bracket, check that the wedge provided does not project from the lower base without the rope mounted, as shown in the figure.



The rope, after being passed through the pulleys, must then be fixed to the relevant transverse joist by inserting the wedge into the seat of the bracket.



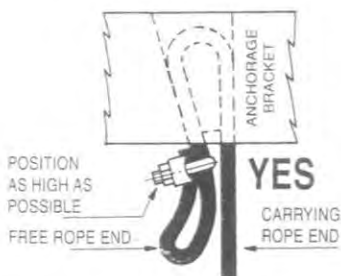
3. Installation instructions



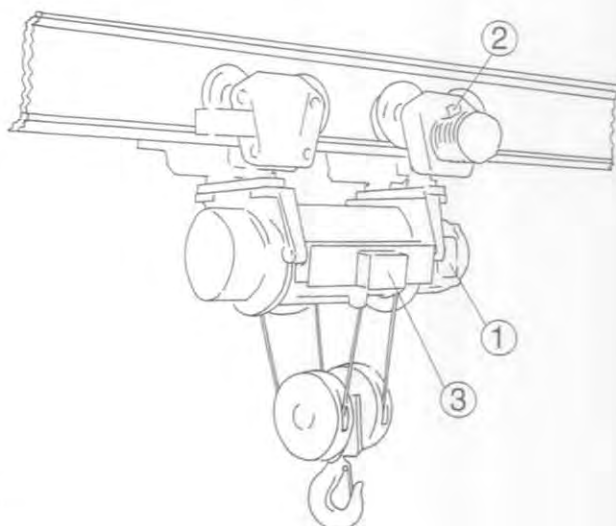
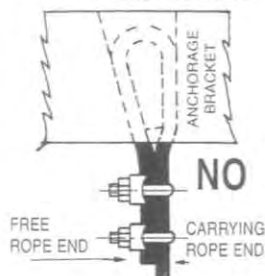
After the mounting operation, fix the holdfasts supplied to the free end of the rope.

BMA-B SERIES HOIST

Correct holdfast attachment

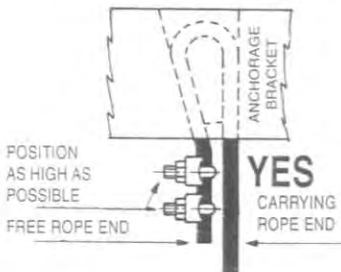


Incorrect holdfast attachment

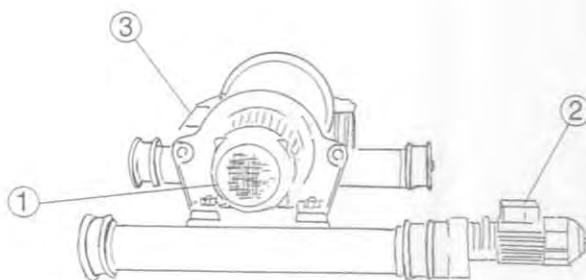
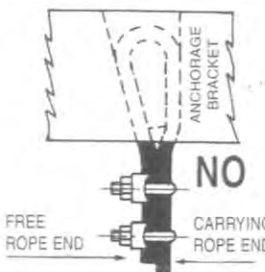


BMC-D-E SERIES HOISTS

Correct holdfast attachment



Incorrect holdfast attachment



3.9. ELECTRICAL CONNECTIONS



Before switching on the hoist's motor, check that the power supply characteristics (voltage and frequency) correspond to those shown on the rating plate. Because double polarity motors generally have a single supply voltage, it is not possible to alter the voltage by changing the terminal connections.



Check that, under the worst operating conditions (i.e. with the greatest number of devices consuming power) and with the hoist on full load, the voltage at the motor's terminals remains within a tolerance of $\pm 10\%$ of the nominal voltage.



Tighten the terminals hard to prevent loose contacts.

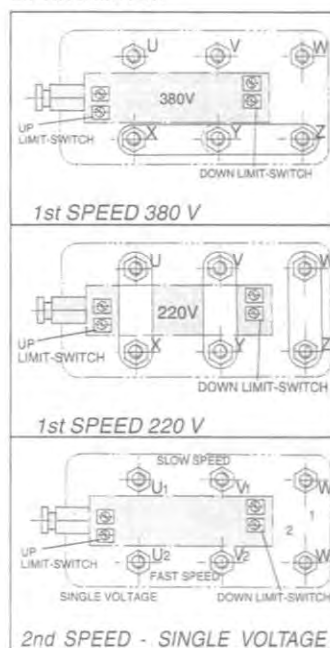


Ensure that the diagrams of the electrical equipment and of the terminal strip relate to the machine with which you will be working.

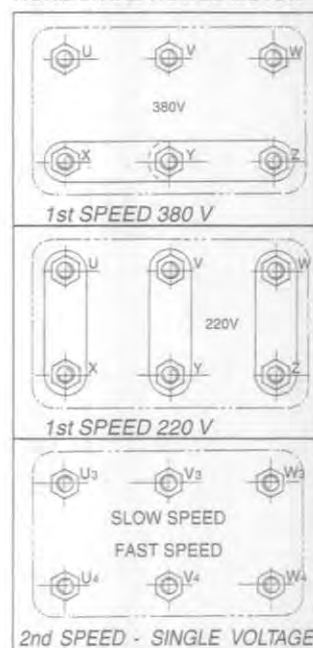


The wiring diagram for machines supplied with electrical switchgear is placed inside the cubicle of the said switchgear.

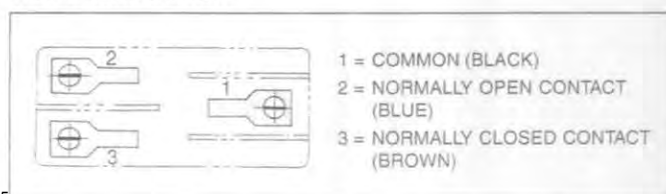
ITEM 1
LIFTING MOTOR



ITEM 2
HORIZONTAL TRAVEL MOTOR



ITEM 3 LOAD LIMITER



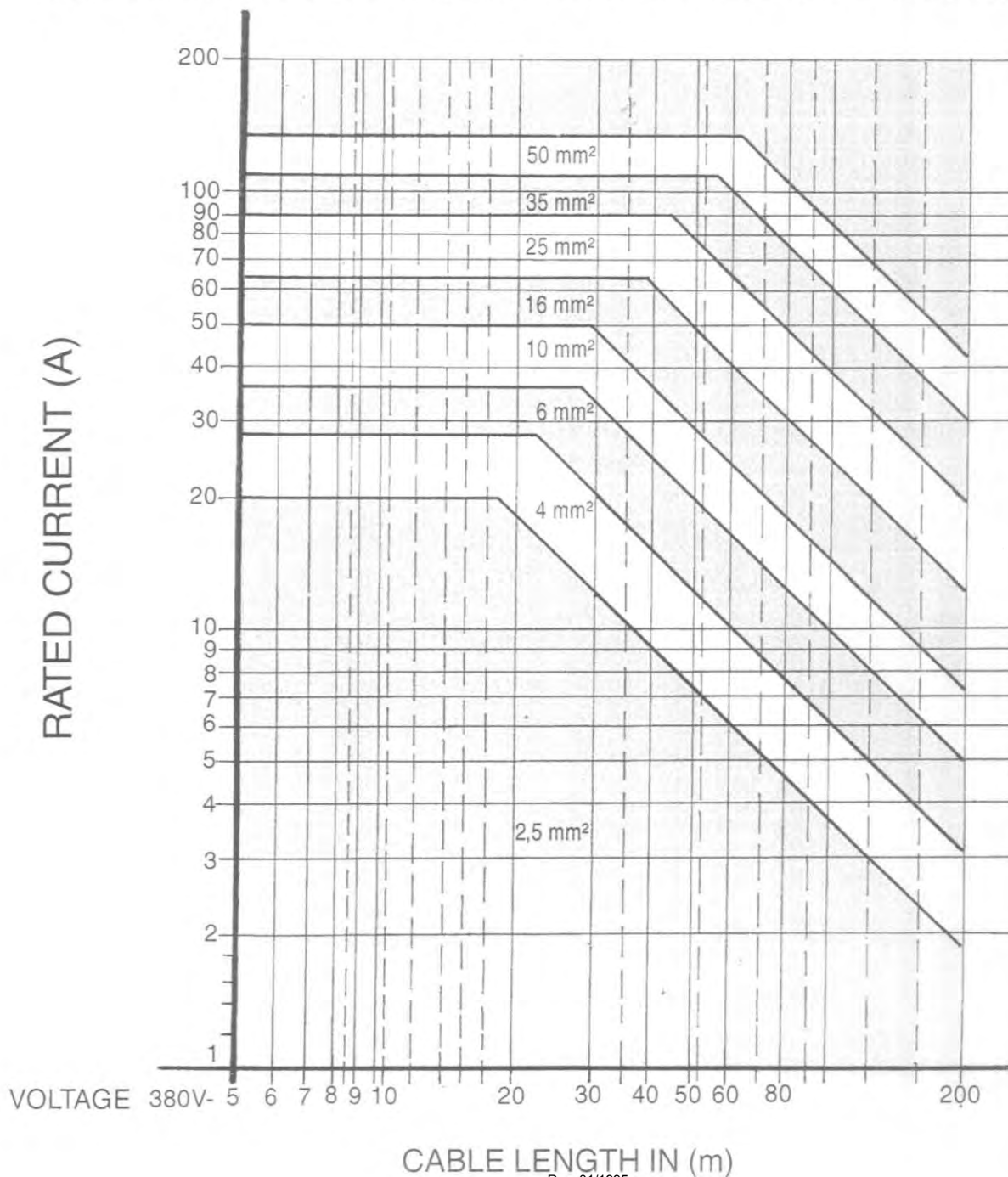
3. Installation instructions



3.10 START-UP

- i** Check the efficiency of the power supply and the adequacy of the magnetothermal circuit-breaker on the power supply line in relation to the power levels of the motors and their consumption.
- i** Check that the gearboxes are lubricated and that there are no oil leaks.
- i** Check that the rope, drum, pulleys and rope guides are properly lubricated with grease of SAE 30 viscosity.
- i** Check the lubrication of the trolley wheels, and if necessary lubricate with grease, taking care to avoid fouling the wheel tread.
- i** Check that the stop limit-switches are correctly positioned and secured.
- !** Check that the cross-section of the power cable is as indicated in the table, according to the power consumptions of the motors (shown in table 5 on page 44).

CABLE CROSS-SECTION FOR FESTOON POWER LINES



3. Installation instructions



3.11 CHECKING THE OPERATION AND SETTINGS

3.11.1. Up-down limit-switches



After connecting up the main power supply line, check that when the 'up' button is pressed, the hook movement corresponds to it.

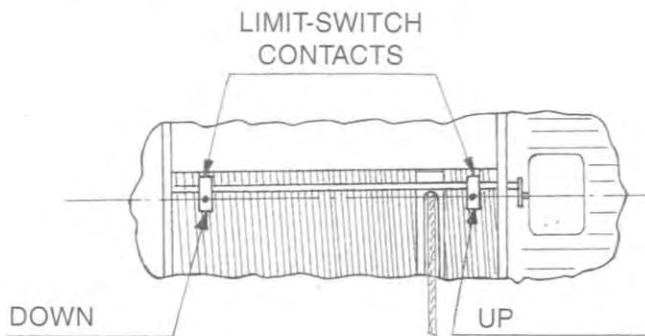
If this is not the case, reverse two phases of the power supply.



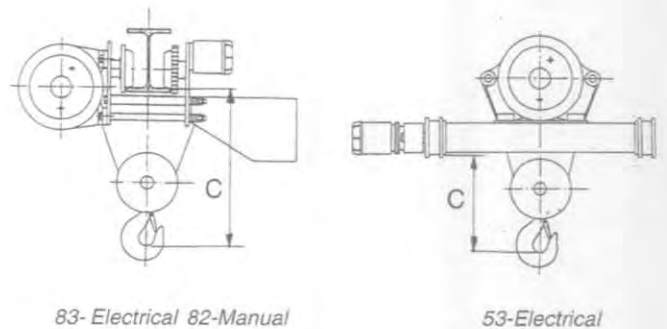
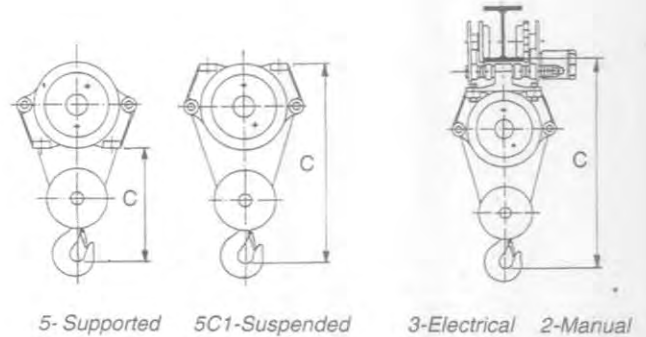
The above operation is extremely important because the correct operation of the up and down limit-switches depends on it.



Take care to position the up and down limit-switch contacts in the correct locations on the limit-switch control rod, so that the switch operates when the hook is at the desired height.



In the limit-switch position, the top of the block must stop at the distances shown in table 1. For lifting speeds higher than 8 m/min, this distance must be increased by at least 50 mm.



VERSION -S2- (2 rope falls)

TAB. 1

BM SIZE	MEASUREMENT	FIG. 5	FIG. 5C1	FIG. 3	FIG. 53	FIGURE 83 - Up to beam flange width (mm)													
						110	120	140	160	180	200	220	240	260	280	300	350	400	
A	P ÷ R	520	830	960	-	530	545	565	590	615	640	665	685	710	735	760	820	880	
	Z - X		920	1050															
B	P ÷ R	625	1025	1160	-		635		650	670	695	720	745	770	790	815	875	935	
	Z - X		1120	1270															
C	P ÷ R	700	1100	1250	-			720				735	760	780	805	830	890	950	
	Z - X		1190	1340															
D	P - Z	780	1270	1425	780			790					815	840	865	890	950	1010	
	X		1380	1530															
E	P ÷ Z	910	1510	1690	-			-				-							

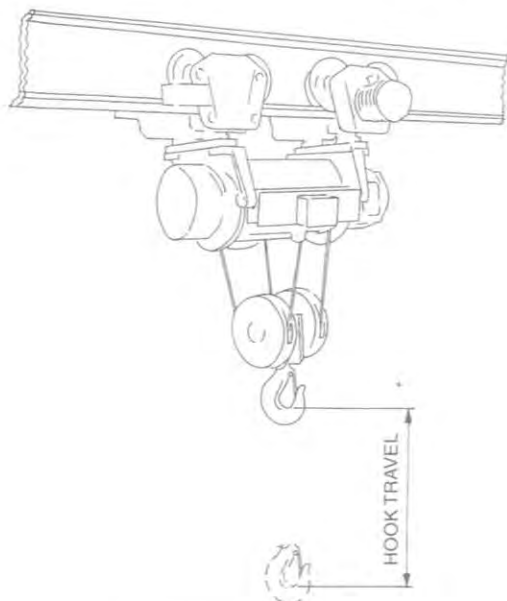
VERSION -S4- (4 rope falls)

BM SIZE	FIG. 5	FIG. 5C1	FIG. 3	FIG. 53	FIGURE 83 - Up to beam flange width (mm)													
					110	120	140	160	180	200	220	240	260	280	300	350	400	
A	440	770	910	-				530					555	580	605	660	720	
B	570	970	1140	570				590					605	625	650	710	770	
C	600	1000	1190	600				650					665	685	710	770	830	
D	720	1220	1360	720				920						960	980	1040	1100	
E	760	1390	1640	760			—				—				—			

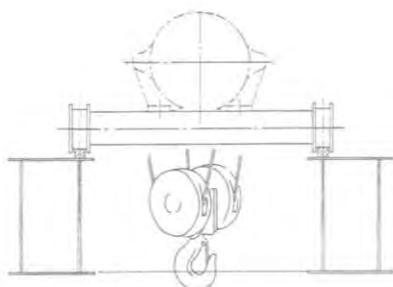
3. Installation instructions



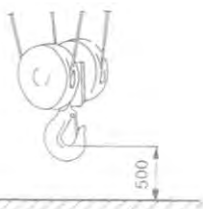
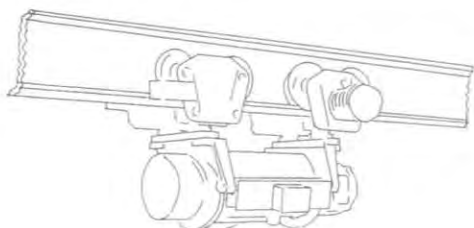
Run the block through for the whole predetermined hook travel and check that it stops correctly when the contact point is reached, on the way up and down.



In the case of hoists with double beam trolley "figure 53", the bottom of the gap inside the hook must not be lower than the bottom of the beam.



The setting of the down limit-switch must not allow the lower surface inside the hook to be less than 500 mm above the floor.



3.11.2. Horizontal travel limit-switch



Connect up the power supply line.



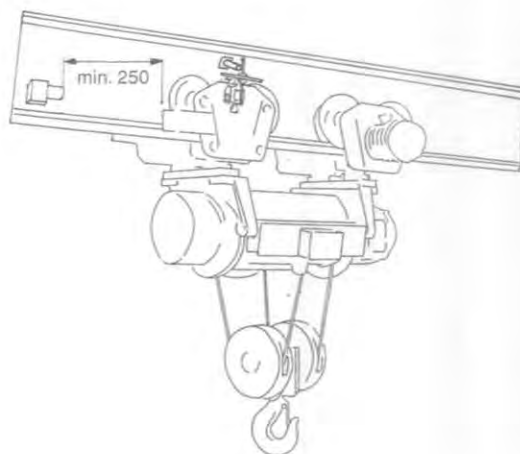
Do not interfere with the internal connections of the trolley/hoist or of the push-buttons.



Acting on the "right-left" push-buttons, run the trolley along the whole length of the beam and check that it stops correctly.



Check the correct positioning of the contact for the trolley limit-switch, in order to ensure an adequate "overrun" space and prevent risks of collision between trolley and fixed stop.



3.11.3. Brake release



Inching forward, check that the brake disc releases properly from the brake lining, allowing it to rotate freely without rubbing.

3.11.4. Noise level



Check that during lifting and horizontal travel, no abnormal noises occur such as: squeaks, cyclic noises, abnormal vibration, etc. The noise level of the machine, even on full load, must always be less than 85 dbA and constant.

3.12. LOAD TESTS

3.12.1. Dynamic test



Provide suitable weights equal to: nominal capacity x 1.1 for the load tests, and suitable slinging and lifting equipment.



Sling the load taking care to position the hook vertically above the load itself, to avoid oblique pulls.



Tension the slings slowly, avoiding jerks.

3. Installation instructions



Tension the slings using the "slow" speed, if available.



Check that when the up button is pressed, the load lifting is not activated, in order to confirm that the load limiter is working properly.



Raise the load slowly and check that this occurs without difficulty and that no unusual noises, distortions or structural deflections occur.



Repeat the test at maximum speed, carrying out the previous checks.



Check that the "up and down" limit-switches are working properly.



Check that the brake is working properly, ensuring that the weight stops quickly enough and that there are no abnormal slippages of the load when the button is released.



Carry out the same checks for the horizontal travel movement, without bringing the load to the maximum height (lift it about 1 metre above the floor).



First operate at slow speed, if available, and then at the maximum speed.



Check that the trolley is running correctly along the beam and that there are no unusual noises or structural deflections.

Load limiter



During the test, check that the excess load warning signal is given.

3.12.2. Static test



The static tests must be carried out without operating the lifting and horizontal movement motors.



Lift the nominal load, stop it in the suspended position and gradually apply weights to it until an overload value of 25% of the nominal capacity is reached, for hoists of over 1000 kg capacity, and of 50% for hoists of up to 1000 kg capacity.



The load must not be moved during this operation.



Check that with the weight suspended (nominal load plus overload) there are no slippages, unusual noises, permanent deformations or structural deflections.

4. Use and maintenance instructions



4.1. HOIST FUNCTIONS - "Intended use"

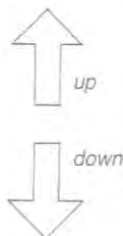
i The electric rope hoist does the job of moving, by lifting vertically in space with the lifting hook and the appropriate accessories, goods or materials within industrial, craft and commercial installations, and is therefore unsuitable for civil engineering applications unless suitably adjusted for the purpose. The hoist can be used in fixed positions, or in sliding ones with a horizontal movement trolley and can be used on gantry or travelling cranes, etc., or mono-rails.

The functions of the hoist/trolley assembly are therefore carried out through two principal actions:

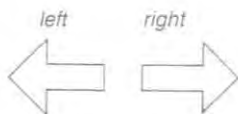
- vertical lifting of the load by the hoist,
- horizontal translation of the load by movement of the hoist's trolley.

These movements are controlled by the push-buttons, namely:

- UP and DOWN push-buttons for the LIFTING control



- LEFT and RIGHT push-buttons for control of the horizontal movement



These activate the function when they are kept pressed and can be of the "graduated" type with two positions, the first for the "slow" speed control and the second for the "fast" control.

The EMERGENCY STOP button present on the control unit is mushroom-shaped, coloured red, and activates the STOP function when it is pressed down. To allow the operation of the hoist it is necessary to turn the EMERGENCY STOP button clockwise and pull it to the "raised" position which allows the equipment to work.

The hoist can also be operated by a radio control system; the push-buttons have the same functions as specified above, and the control unit is free and not attached to the machine.



Switch on the power by turning the main switch to the "ON" or "I" position;



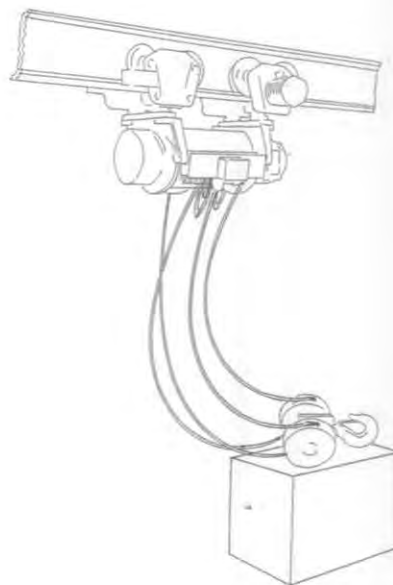
Check the hoist's operation by checking the movements described in the previous paragraph - HOIST FUNCTIONS "Intended use" - Carry out the preliminary checks as described in the "WHAT MUST ALWAYS BE DONE" chapter.

4.2.1. Lifting

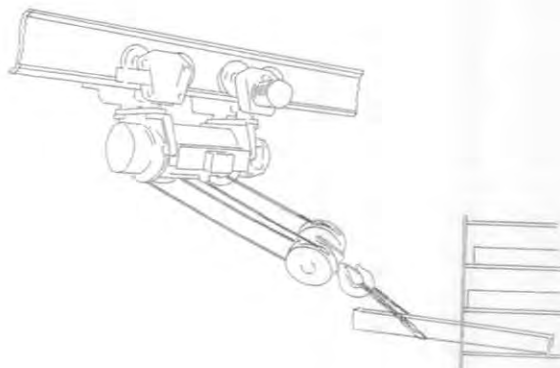


The operator must always take care to keep the lifting ropes tense, never resting the hook on the ground or on the loads to be lifted.

Loose ropes can become twisted, come off the drum or the block pulleys, form knots, suffer even serious damage and create unforeseen dangerous situations.



The operator must obligatorily avoid making oblique lifts which are always dangerous and hard to control, and particularly oblique lifts parallel to the axis of the drums which could cause serious damage to the rope guides and grooves with consequent uneven winding.



4.2. PREPARATION

Before starting work with the hoist, carry out the following operations:



Visually check the condition of the machine;

4. Use and maintenance instructions



4.2.2. Horizontal trolley movement



It is essential to avoid violent impacts between the trolley and the end buffers to avoid causing serious damage to the mechanical components and structure. It must be borne in mind that the limit-switches are placed in a position allowing the full travel of the trolley, when the latter approaches them at low speed, and that the braking distance required increases with the speed.

Consequently, the operator must always slow down the trolley when it approaches the ends.

4.2.3. Emergency and interlock devices



The power supply is disconnected from the machine by opening the line circuit-breaker (excluded from the supply) and pushing the "Emergency stop" button on the control unit. An electrical and mechanical interlock on the movement motors prevents rotation in both directions being ordered simultaneously; the electrical interlock on the slow and fast speed lifting motors prevents power from being supplied to them simultaneously. Switching off the power causes all movements of the hoist to stop immediately, since the electric motors are provided with fail-safe automatic brake devices.

4.2.4. Safety devices



The lifting and horizontal movement limit-switches restrict the maximum hook travel, are emergency devices and therefore cannot be used systematically as service stops or enabling devices for subsequent operations.

The load limiter with two operating thresholds (the first for warning and the second for stopping) prevents use of the hoist under overload conditions. A safety spring catch is fitted to the lifting hook to prevent accidental release of the slings.

4.2.5. Load limiter

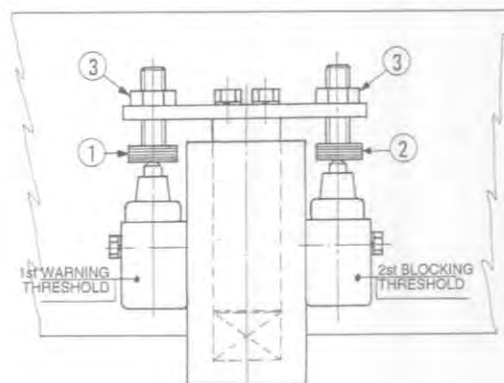


The load limiter fitted to the rope hoists has 2 intervention thresholds calibrated as follows:

- The 1st threshold warns that the nominal load has been reached.
- The 2nd threshold prevents the lifting and horizontal movement functions, apart from lowering.

Checking the release limit calibration values of the 2 intervention thresholds must be done as laid down in rule FEM 9.761 at least once a year, using suitable weights of known value and/or with the aid of a load cell with display of the strain values.

The results of the annual checks must be recorded in the appropriate register.



4. Use and maintenance instructions



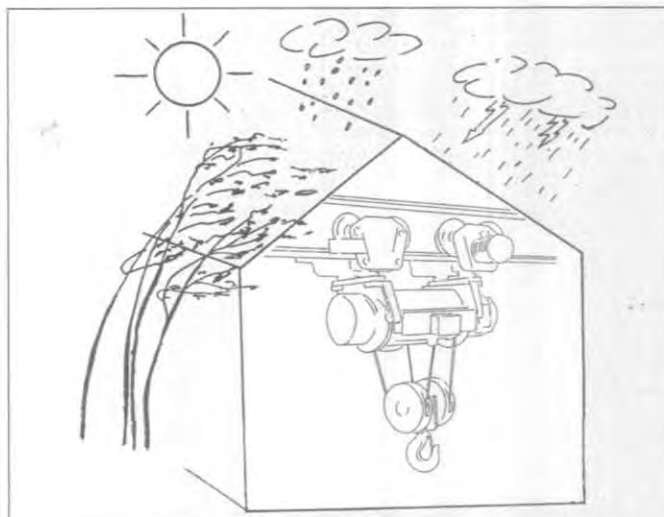
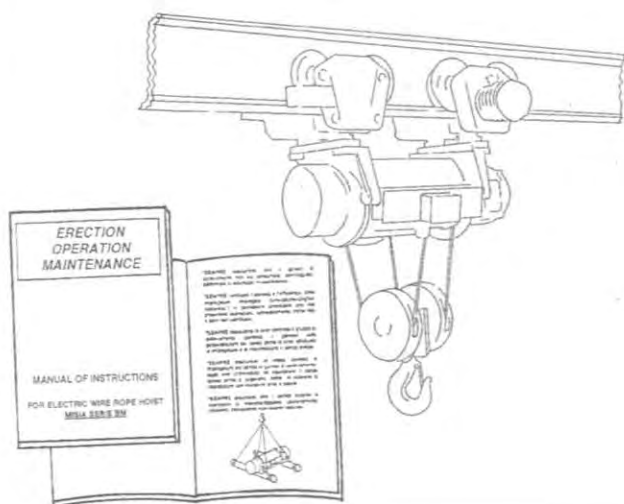
4.3. WHAT MUST ALWAYS BE DONE!

4.3.1. Precautions and criteria of use



The correct use of the hoist allows full use to be made of the machine's capabilities in complete safety.

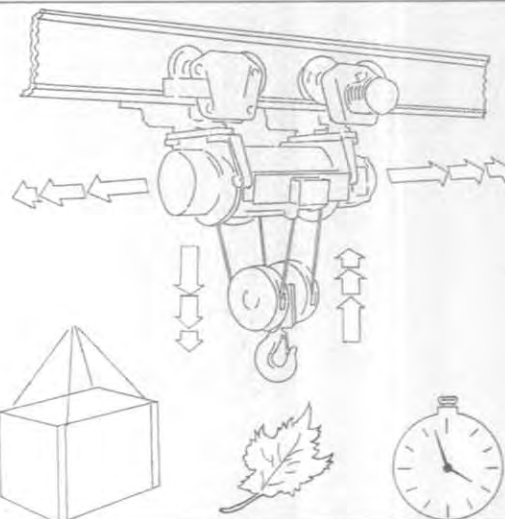
This possibility is guaranteed **only** if the instructions are scrupulously followed, and therefore:



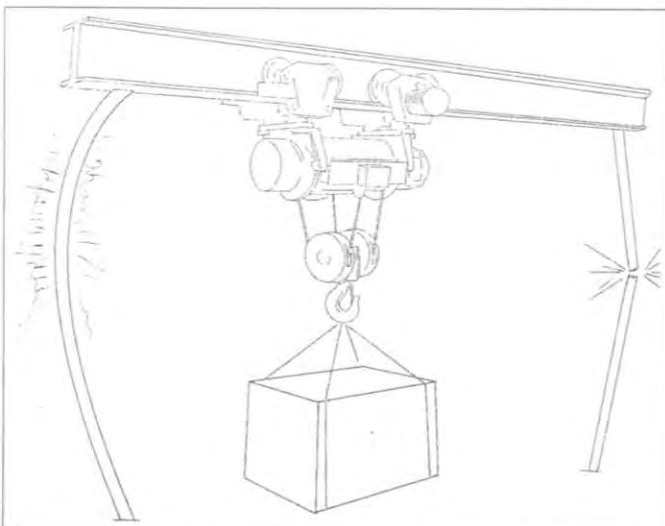
ALWAYS ensure that the hoist is working in an environment protected against the weather (rain, wind, snow, etc.).



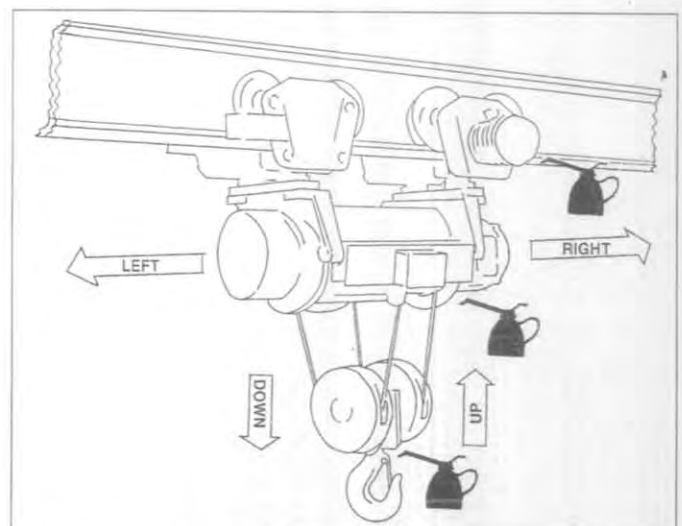
ALWAYS follow the instructions and warnings given on the hoist and in the working areas. These are accident-prevention warnings and must always be legible.



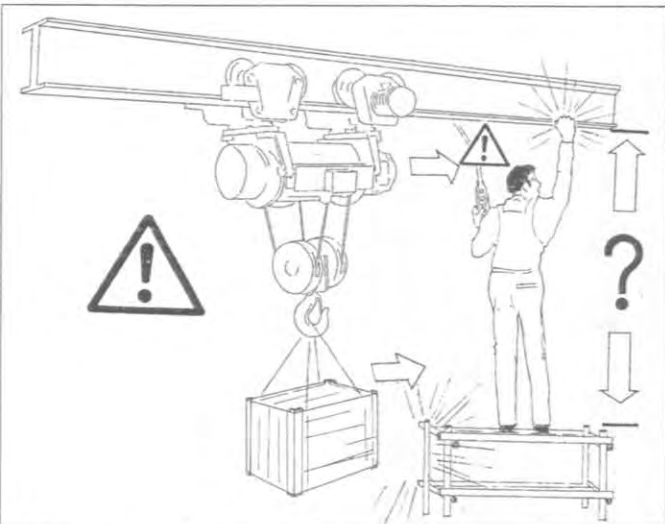
ALWAYS check that the machine is suitable for the work to be done (work cycles - intermittent operation - time of use - loads to be moved).



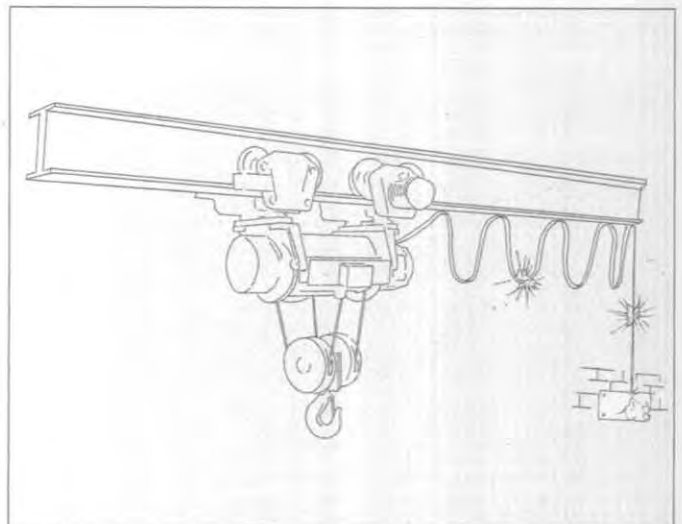
ALWAYS check the solidity of the structures supporting the hoist and the trolley.



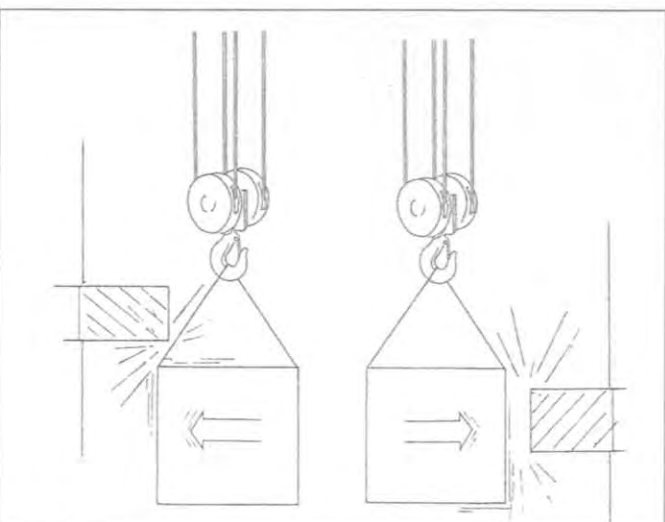
ALWAYS check the condition of the various parts of the hoist (ropes, drum, pulleys, block and hook, push-buttons, limit-switches, gearbox motors, trolley wheels, etc.).



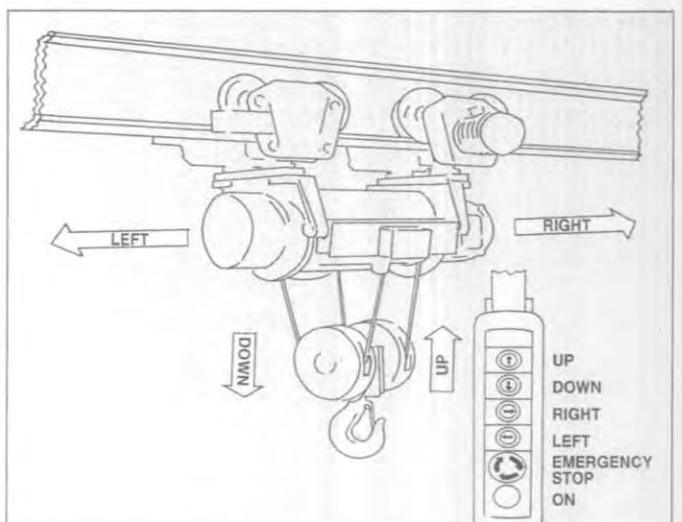
ALWAYS check that the running track of the trolley-hoist assembly is at a level that does not allow the operator to interfere with it.



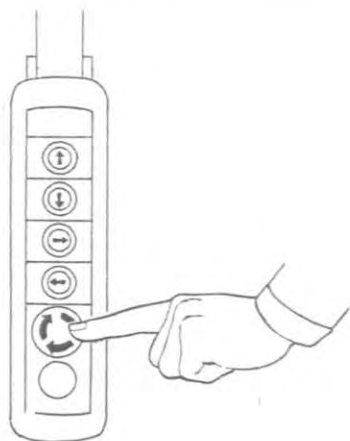
ALWAYS check the electrical equipment; in particular, check that the connections are made properly and that there are no precarious or dangerous ones. Check that the motors are working properly (hoist and trolley).



ALWAYS ensure, before starting any manoeuvre, that the travelling area of the trolley and hoist is obstacle-free.



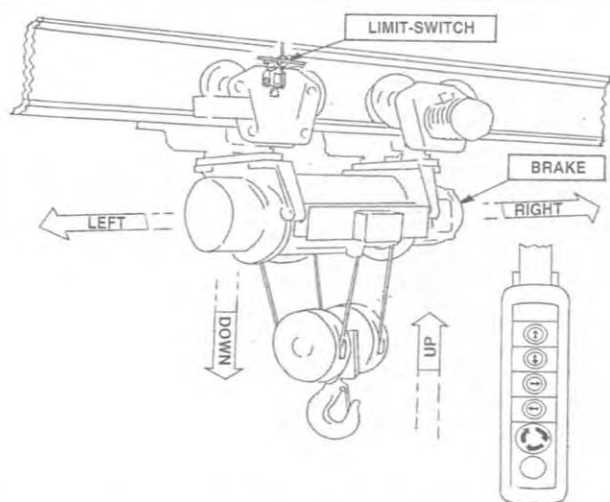
ALWAYS check the correspondence between the movements of the trolley and of the hoist.



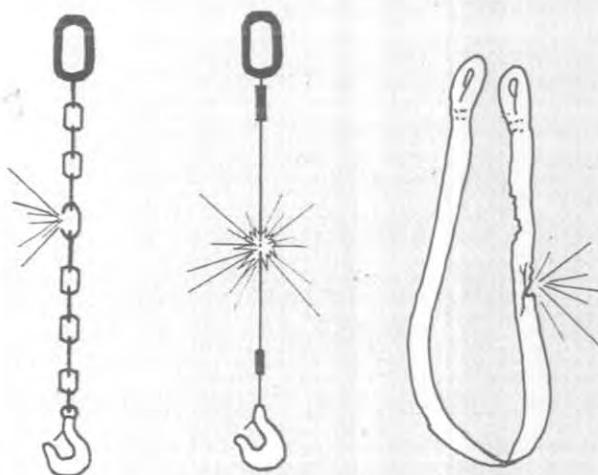
ALWAYS test that the emergency stop button is working properly.



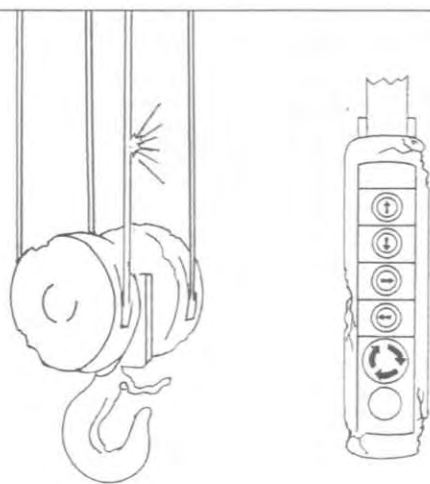
ALWAYS ensure that the lifting hook is not worn, damaged or without its safety device (spring catch).



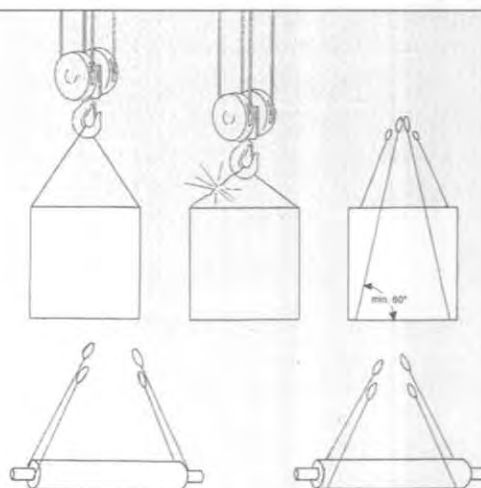
ALWAYS check the constant efficiency of the brakes and limit-switches, checking the functionality of their movements.



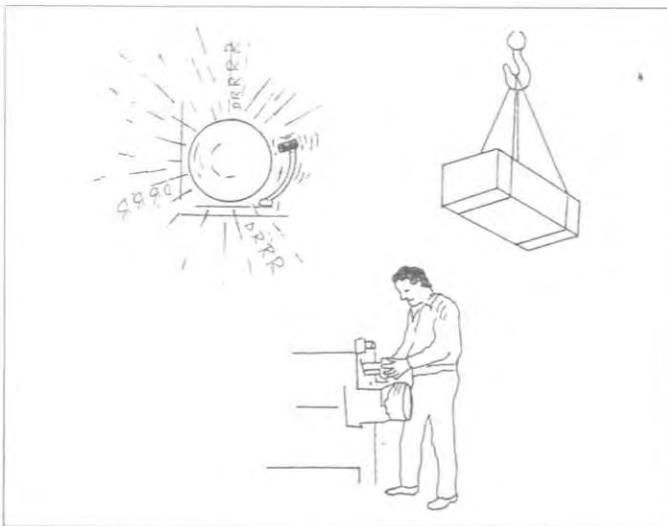
ALWAYS check the suitability and efficiency of the slings used (ropes-chains-belts-straps-etc.); in particular, check that there are no lacerations, tears, broken strands or parts without lubrication.



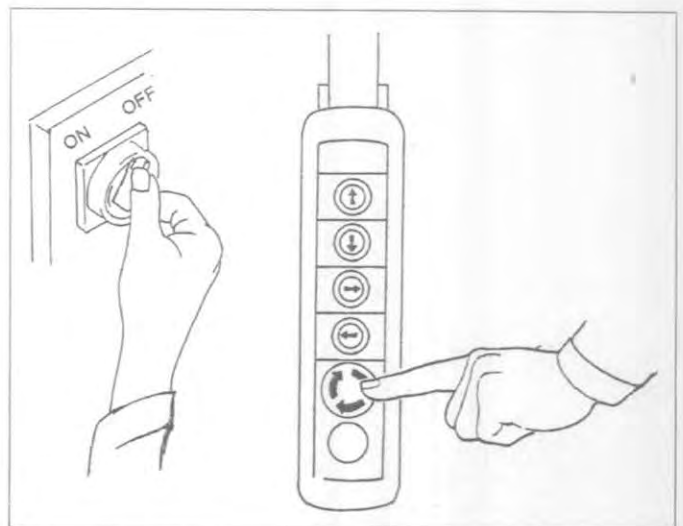
ALWAYS carry out checks on the ropes, block, hook, load limiter and push-buttons, looking at their integrity and efficiency.



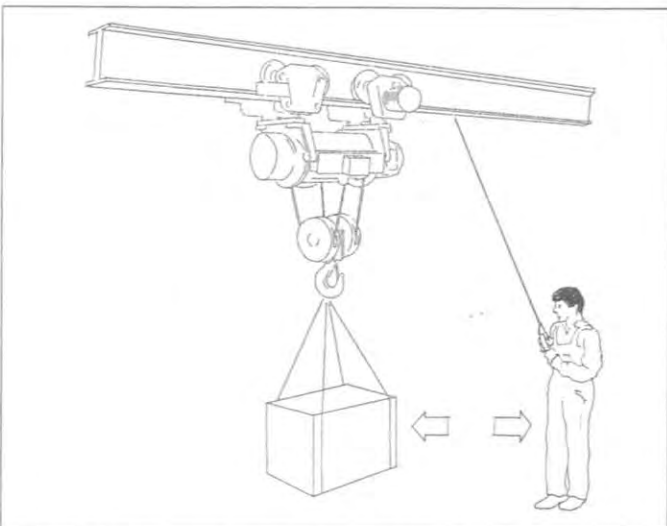
ALWAYS sling the load from the lifting hook correctly, balancing the load itself before lifting it, and tension the slings slowly and safely.



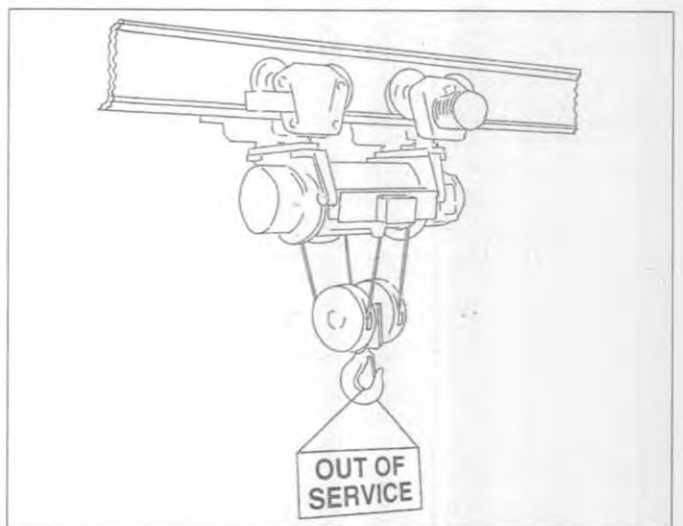
ALWAYS warn personnel working in the hoist-trolley manoeuvring area that the load movement operations are about to begin.



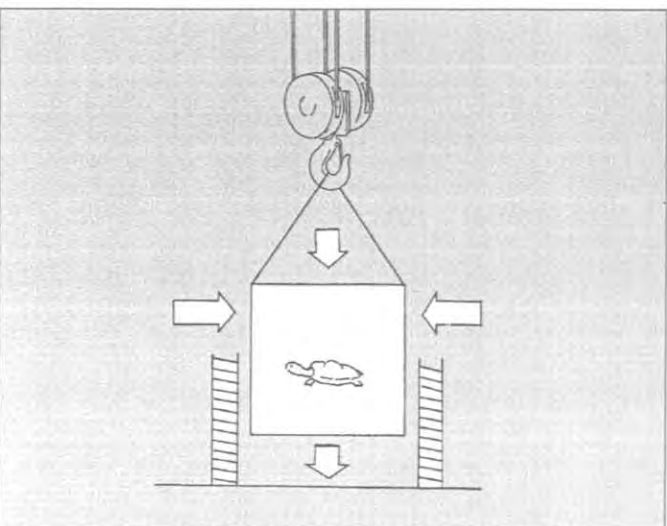
ALWAYS, before leaving the working area, press the stop button on the control unit and turn off the main switch of the hoist.



ALWAYS work outside the manoeuvring radius of the load being lifted.



ALWAYS inform the department manager of any operating anomalies (faulty operation, suspected breaks or unusual noises) and indicate that the machine is out of service.



ALWAYS use the "slow" speeds for the load approaching and positioning operations, for short distances.



ALWAYS follow the maintenance programme and record, after every inspection, any comments concerning, in particular, the hook, rope, brakes and limit-switches; comply with articles 375 and 376 of DPR 547/55.

4. Use and maintenance instructions



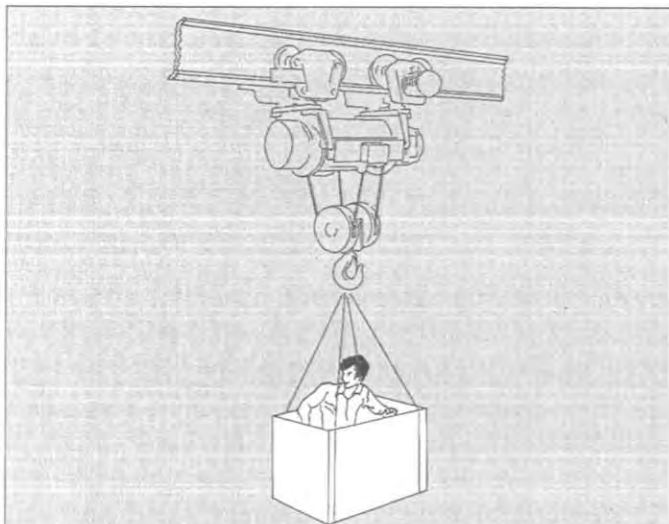
4.4. WHAT MUST NEVER BE DONE!

4.4.1. Counter-indications and improper use

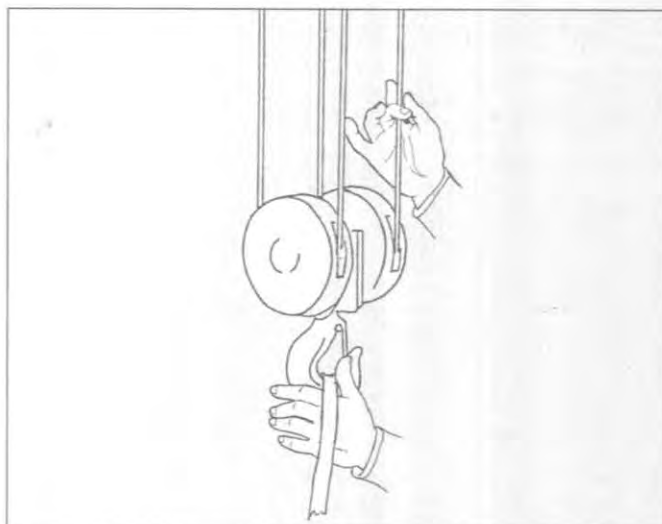


The use of the rope hoist for prohibited manoeuvres, its improper use and lack of maintenance can cause situations of serious danger to the workers and working environment, in addition to damaging the functionality and intrinsic safety of the machine.

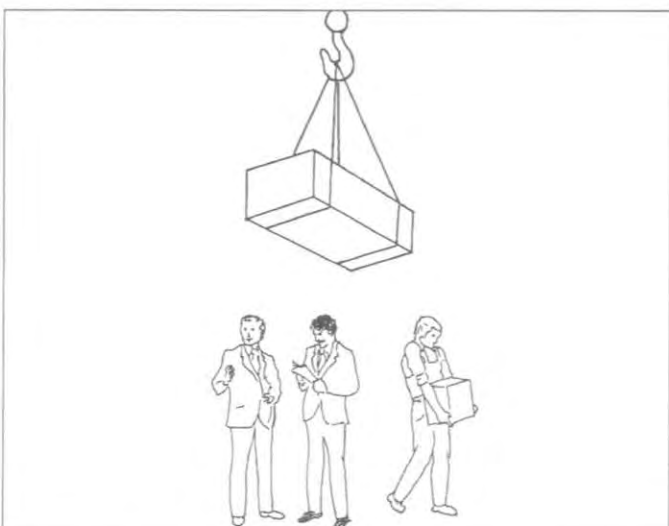
The actions described below, which obviously cannot cover all possible cases of "misuse" of the hoist but are nevertheless the most "reasonably" foreseeable ones, must be considered absolutely forbidden and therefore:



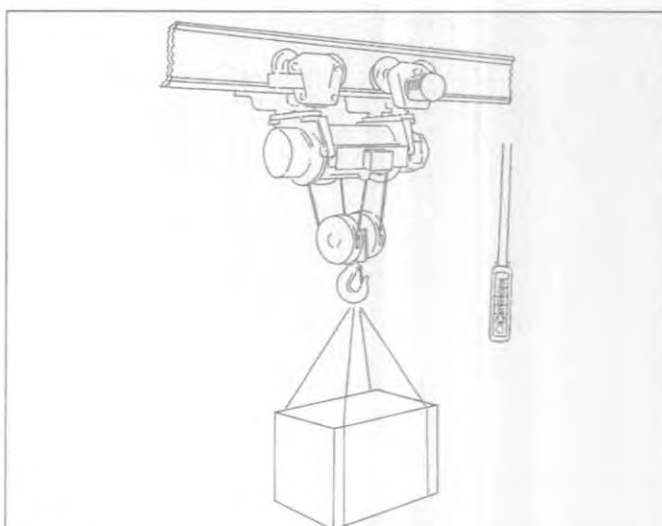
NEVER use the hoist for lifting and carrying people.



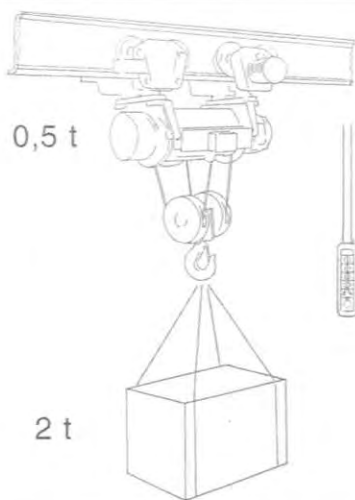
NEVER put your hands into rotating pulleys, onto moving ropes, onto slings being tensioned, into the area of contact with the load, or between hook and sling.



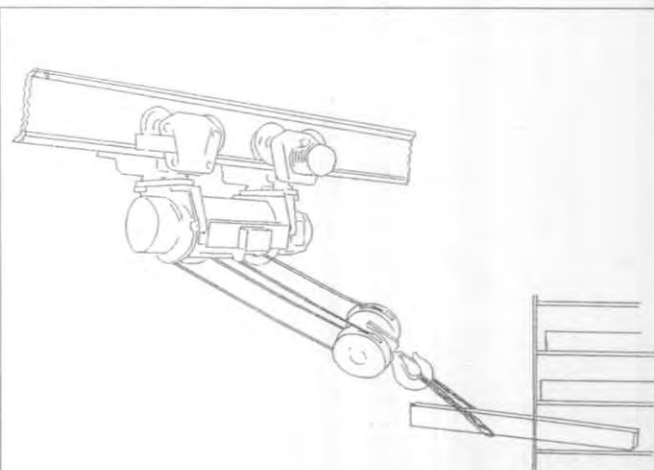
NEVER lift loads while people are passing underneath.
NEVER walk, stand, work or manoeuvre beneath the suspended load.



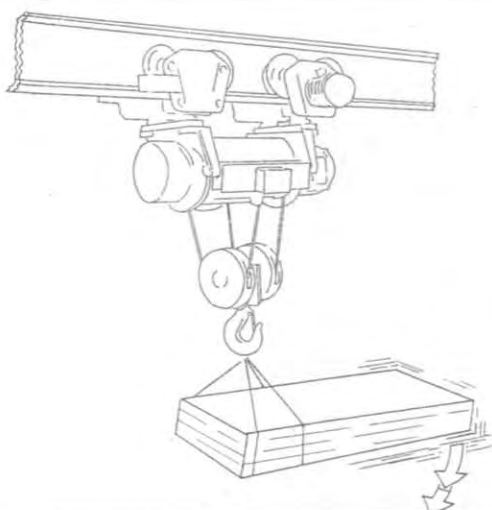
NEVER leave the suspended load unguarded.



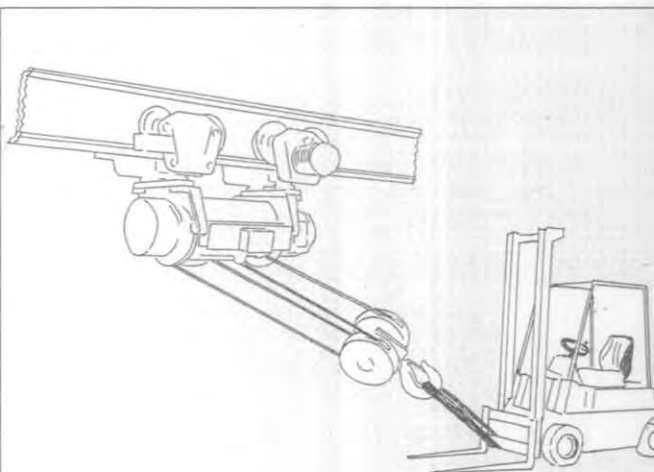
NEVER lift loads which are heavier than the nominal capacity or apply heavier loads to the hook.



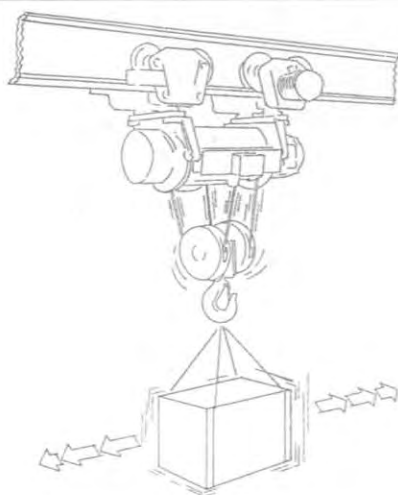
NEVER place the rope in a diagonal pulling position.



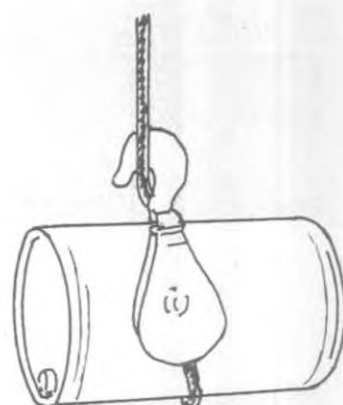
NEVER lift unbalanced loads.



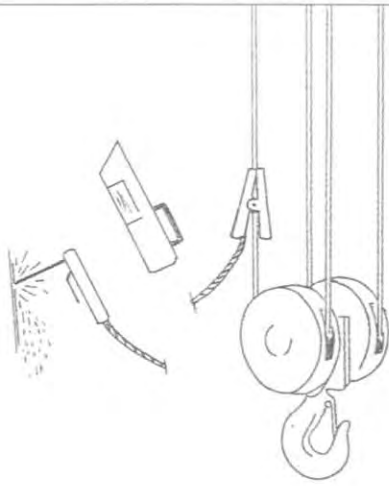
NEVER use the hoist for pulling or dragging.



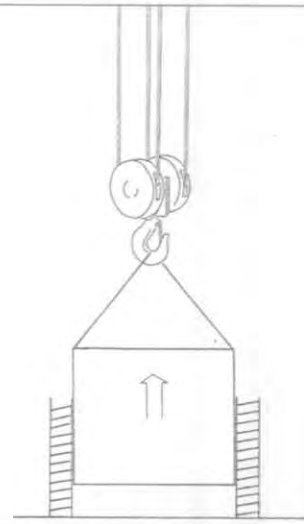
NEVER let the load or hook swing about during horizontal movements.



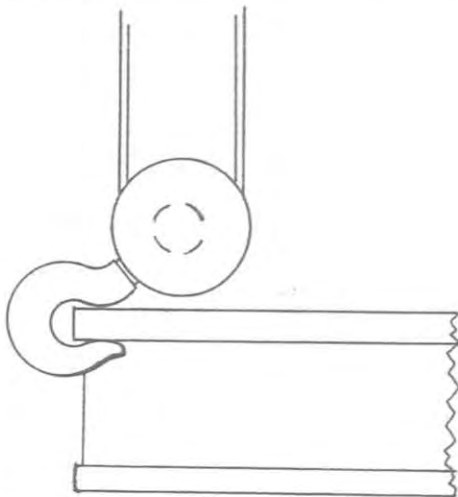
NEVER use the hoist's rope as a sling for the load.



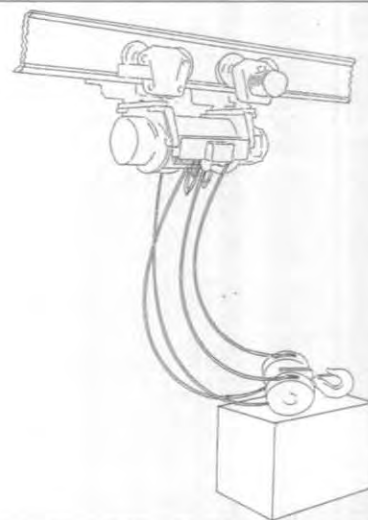
NEVER use the rope as an earth or a welding connection.



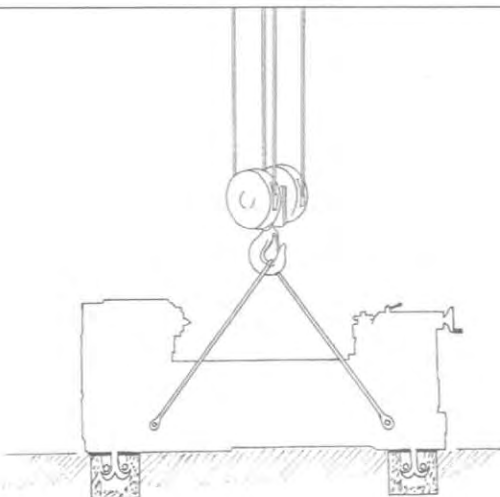
NEVER lift "guided" loads.



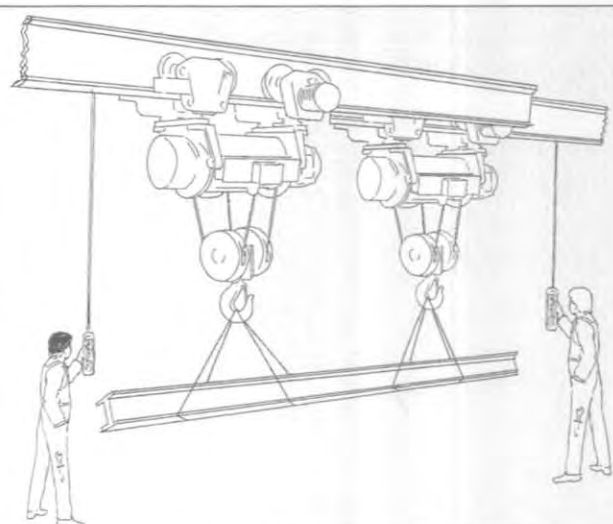
NEVER use the tip of the hook as a supporting base for the load.



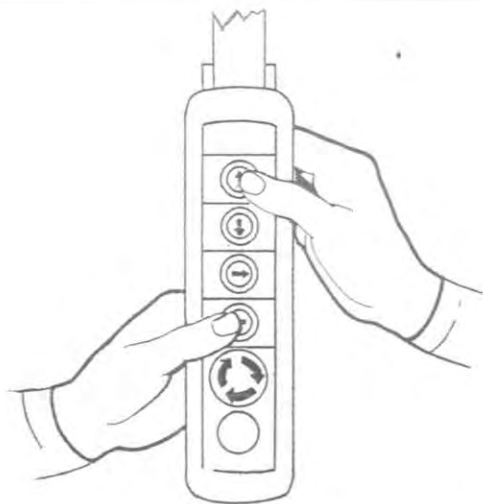
NEVER continue to lower the hook after positioning the load, causing the rope to become slack.



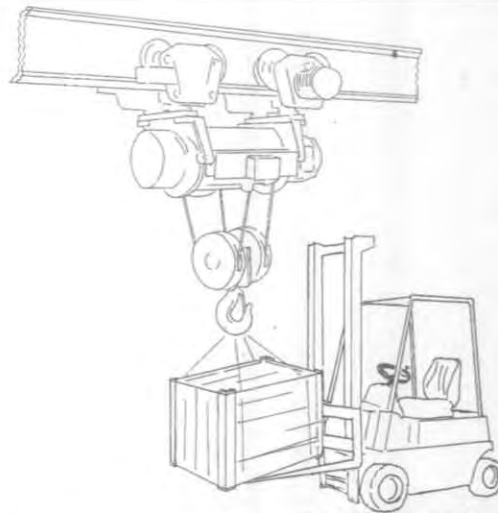
NEVER use the hoist to pull on items which are fixed to the floor.



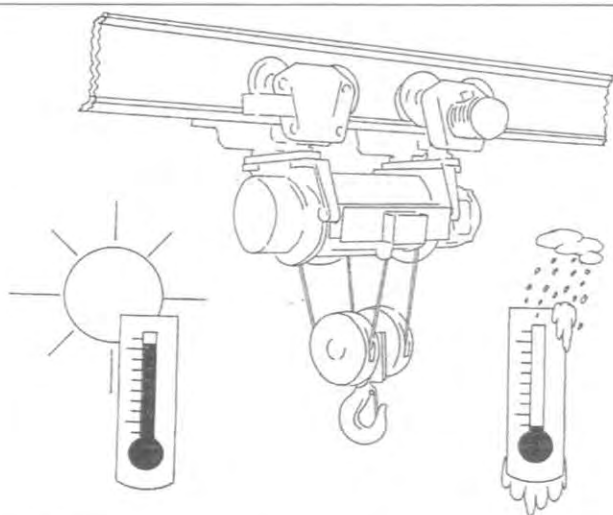
NEVER use two hoists simultaneously to lift the same load, without adopting adequate safety procedures.



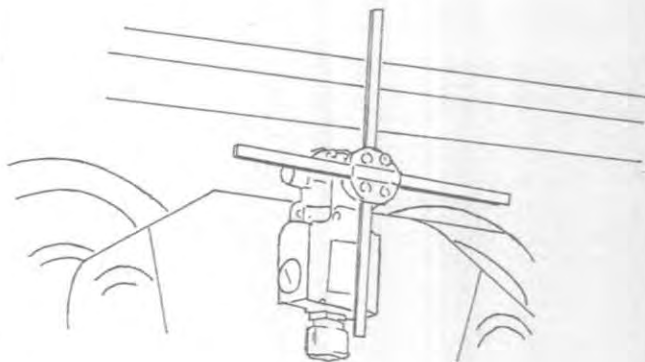
NEVER use the hoist with two simultaneous movements; wait for the first movement to stop completely before starting the next.



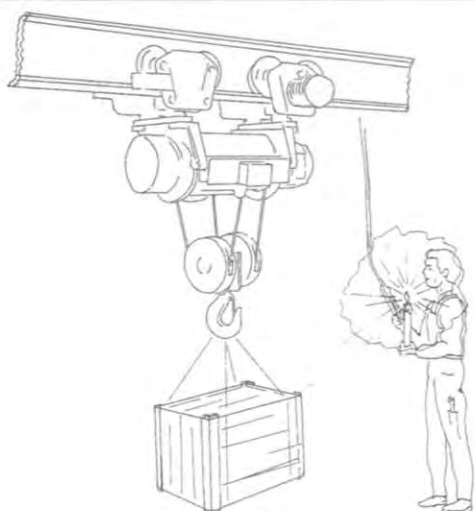
NEVER use the brake in case of a fault to stop the hoist for lowering the suspended load; use suitable equipment to release the load.



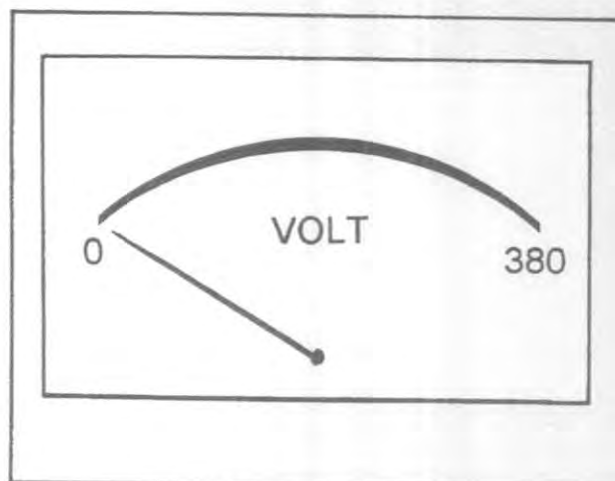
NEVER use the machine under unsuitable environmental conditions (-10°C $+40^{\circ}\text{C}$; 80%).



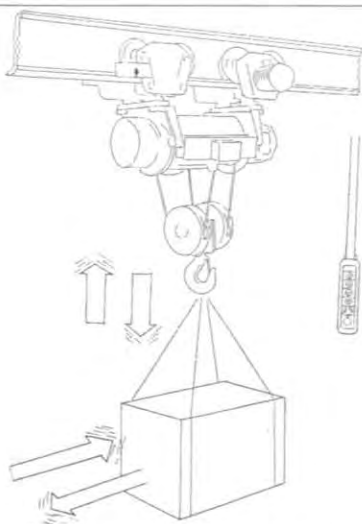
NEVER make the automatic trolley-hoist limit-switches work continuously.



NEVER use the hoist with insufficient lighting conditions in the working area.



NEVER use the hoist in the presence of a large mains voltage drop or of an accidental failure of one of the three phases.



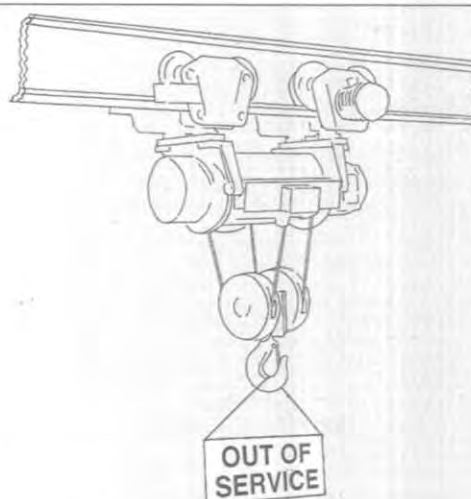
NEVER make sharp reversals of direction during the lifting and horizontal movement operations.



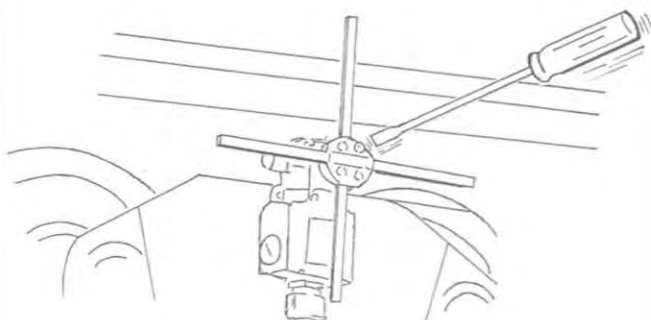
NEVER abandon the hoist at the end of the work without carrying out the relevant safety procedures.



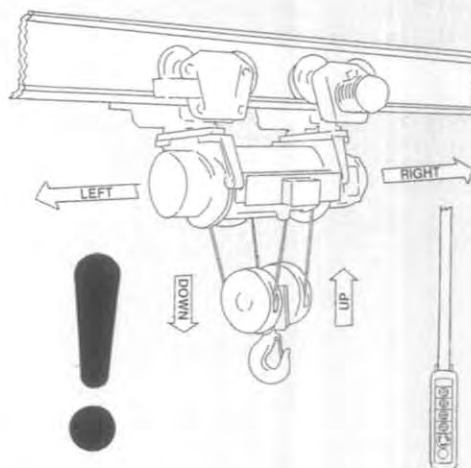
NEVER repeatedly operate the control push-buttons of the hoist.



NEVER carry out ordinary maintenance operations, inspections or repairs without putting the hoist out of service or with a load suspended and without adopting the relevant procedure.



NEVER alter or interfere with the settings of the safety devices and/or tamper with the equipment.



NEVER use the trolley/hoist unless all its functions are working properly.

4. Use and maintenance instructions

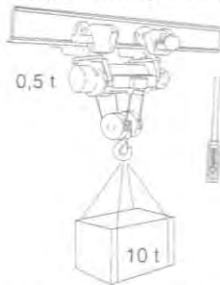


4.5. OPERATIONS

When using the Misia electric rope hoist, the operator must follow the instructions provided in order to get the best efficiency and the maximum safety for himself and others, and emphasis must in particular be placed on the importance of scrupulously observing the instructions relating to:



capacity - The limit load capacity must never be exceeded (by lifting loads greater than the nominal capacity or overloads, or by altering the settings of the load limiter) although it has been determined with ample safety margins.



manoeuvres - It is good practice to carry out one movement at a time, since only in this way can a manoeuvre be started, stopped and constantly followed by the operator, who must therefore avoid repeated switchings on and off in the case of small movements.

It is not in fact true that manoeuvres with "small bursts of current" can be advantageous. Only the precise definition of the manoeuvre's starting and ending times allows real savings of time and energy.



lighting - The hoist and trolley do not have their own lighting system. The lighting provided must be sufficient to allow the hoist to be operated in complete safety for the intended use.

When carrying out maintenance operations in badly lit areas and/or parts of the machine, it is compulsory to have a portable lighting system, taking care to avoid patches of shadow which may obstruct or reduce visibility at the point where the work is being done or in the surrounding areas.

4.6. SWITCHING OFF AFTER WORK

To switch off the hoist after work, the following requirements must be met:



Release the lifting hook from the slings used for moving the load.



In the case of hoists with a trolley, return the latter to the position where it is to be kept during periods out of use.



Raise the hook to avoid interference with and danger to the movement of people and things beneath the machine.



Stop all the hoist's movements by pressing the "stop" button.



Set the control unit to the "non-disturbance" position.



Switch off the power supply to the hoist, turning the general switch to the "off" or "0" (zero) position.

4.7. MAINTENANCE



The maintenance programme includes ordinary interventions involving inspections, tests and checks, carried out directly by the operator and/or by specialist staff used for normal company maintenance, and periodic interventions which include replacement, recording and lubrication operations carried out by staff trained by the manufacturer, or by specific courses or publications.

4.7.1. Ordinary maintenance



Includes maintenance operations that can be carried out directly by the operator or by specialist staff, as laid down in this document, and not requiring the special use of instruments and tools. These operations are divided into:



daily operations carried out by the operator, including:

- general visual checks
- functional checks (motor test, limit-switch test, no-load brake tests, "start/stop" button test)
- checking of ropes and hooks.



weekly interventions carried out by specialist staff, involving:

- visual checking of each mechanism and of any lubricant leaks
- functional checking of the brakes under load
- limit-switch check and, if necessary, lubrication of the limit-switch operating mechanisms, levers or cams, to ensure proper operation and to reduce wear
- functional and integrity checking of the control unit and relevant cable.



monthly interventions carried out by specialist staff, including:

- checking the efficiency of ropes and rope guides
- checking pulley wear
- checking wheel wear
- checking and cleaning of plug and socket connectors
- checking of oxidised contacts: after cleaning, cover with a thin layer of vaseline
- checking the lubrication of the mobile runners of the cable festoon and checking of the cables
- checking the efficiency and integrity of the power supply line and of its components.

4. Use and maintenance instructions



4.7.2 Periodic maintenance

Includes the maintenance operations carried out by trained staff, involving replacements, recordings and lubrications (for the latter operation, see the LUBRICATION paragraph), as indicated in the table.

During the maintenance of either mechanical or electrical parts, it is necessary to open the general isolating switch and to place an "out of service" notice on the machine.

Observe the following instructions for the individual parts of the machine:

i Ropes and attachment devices - check the condition of the rope for any deterioration; the rope and rope-guides are wear components. Regular lubrication prolongs their life. It is often possible to improve the performance of the ropes by looking at the reasons for their deterioration. This is done by analysing the worn rope.

During inspections it is a good idea to look carefully at the parts of the rope that are wound over the pulleys and at their attachment points at the ends. Record the date and results of the examinations as described in the appropriate table, so as to be able to plan when the rope will have to be replaced.

The decision to replace the rope must be determined first and foremost by the number and positions of the broken wires making up the strand, by the degree of wear and corrosion and by other damage or relevant lacerations.

The ropes must be replaced when the visible broken wires reach the maximum deterioration values indicated for one of the two reference lengths (table 2) equal to 6 or 30 times the rope's diameter.

It should be borne in mind that breakages are often hard to identify, since the ends of the broken wire remain in the original position and do not project from the surface of the rope.

To observe these breakages, it is necessary to remove the grease covering the rope, to slide a piece of soft wood along it and, if possible, to bend the rope manually so as to lift the broken wire ends and make them visible. The rope checking must be done "without load"; to reveal any breaks more easily, provide a radius of curvature roughly corresponding to the pulley radius.

During the inspection check:

! The number of broken wires - on the basis of the rope characteristics, it is possible to identify in table 2 "Limit number of visible broken wires"

the maximum permissible number of visible wire breaks on any section of rope.

For values higher than those shown, the rope must be replaced.



The reduction of the rope diameter - if a metal core rope shows a reduction of 15% or more in its nominal diameter (due to stretching in the area of curvature), it must be replaced.



Rope corrosion and wear - if the nominal diameter of a rope is reduced by 10% or more as a result of corrosion or wear, it must be replaced even if there are no broken wires.



Rope deformation - deformations can be of the rope helix type; with reduction of diameter concentrated in short stretches of rope; or with local flattenings or angular deformations due to severe external stresses.

In the first case, the deformation causes irregular movements of the rope while it is running, movements which are the primary cause of greater wear and wire breakages, and in the second case the defect often occurs at the ropes' end anchorages.



The effect of heat - ropes which have been exposed to exceptionally high temperatures (recognisable externally by the annealed iron colour assumed by the rope) must be replaced.



The above causes are described in detail in standard ISO 4309.



The hook - check the efficiency of the anti-release and rotation blocking device. Check that the rope return pulleys are able to rotate freely.

The hook pulleys can be easily checked visually by observing their angle without load during lifting and lowering.

If the hook is at a considerable angle from the vertical during these operations, first on one side and then on the other, this means that the pulley friction is excessive and the pulleys must therefore be removed for examination of their running surfaces.

Check that, with the free rotation blocking device, the hook rotates freely without excessive friction and that the movement is smooth and jerk-free. Otherwise, remove it and examine the bearing. Check the wear in the sling contact area.

LIMIT NUMBER OF VISIBLE BROKEN WIRES

TAB. 2

Diameter (Ø)	Formation	Cross winding		Parallel windings	
		6 diameters	30 diameters	6 diameters	30 diameters
7-10	114 fili (6 x 19 + NF)	2	4	1	2
10	227 special wires	4	8	3	6
13	275 special wires	5	10	4	8
15	389 special wires	6	12	5	10

4. Use and maintenance instructions



Pulleys - observe the rotation of each individual pulley and check that it is working properly; if faults are found, remove it and check the relevant bearing. Also check the groove wear.



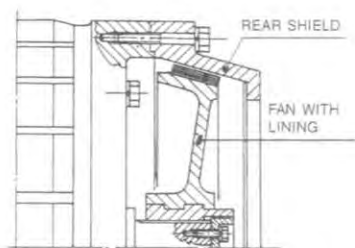
Drum - check the tightness of the rope securing screws and examine for wear. Check the integrity of the threads.



Gearbox - check for any irregular vibration, which may be caused by damage to a bearing; in this case, strip down the gearbox to replace the bearings.



Brakes on integral-brake motors - check the wear on the friction surfaces on the mobile fan and on the tapered ring of the motor brake; if scratches are found, the components must be ground and/or replaced.



Wheels - check the wear on the edges and running surfaces; edges whose thickness is reduced by 40% and/or running surfaces with wear of more than 4 mm on the diameter mean that the wheels need to be replaced. Check the bearings for noise; unusual noise means that the bearing must be replaced.

Check the play in the fit between wheel and shaft and between shaft and gearbox; the presence of play means that the shaft and/or wheels need replacing.



Buffers - Check that the end stops are not distorted and that there are no signs of giving way in their attachment to the structures, and that the buffer is complete without signs of breakage or permanent distortion and is properly fixed to its support.



Electrical system - if part of the supply, check that the moving parts of the contactors move with the minimum friction; otherwise, the electromagnet might not be strong enough to ensure good pressure between the contacts.

It is also necessary to check the cleanness of the contact surfaces between fixed core and mobile keeper in order to prevent any film used to prevent rust, collecting dust and causing the contactor to stick.

The contacts must never be lubricated with oil, which can become carbonised and offer resistance to the passage of current, causing local overheating which will shorten the life of the equipment.

Any removal of films of oxide should be done with a very fine file, and never with sandpaper or similar.

The wear of the contacts must also be checked, replacing them once it (particularly if irregular) interferes with the alignment of the assembly, or makes the length of the spring insufficient to guarantee good pressure between the contact surfaces.

The same care must be taken with the auxiliary contacts.

In case of dismantling, handle the coil with extreme care to prevent damage to the winding, particularly at its ends.

Periodically check that the coil supply voltage is of the correct value, to prevent poor contacts, overheating or noise.



Limit-switches - check their condition and proper operation (operate the limit-switches manually several times).

In particular, for the movement limit-switches, check their operation during an ordinary manoeuvre, testing first at low speed.

Make a statistical check on their resistance to atmospheric agents. Check the mechanical integrity of the moving parts (lever and springs) and check the tightness of the fixing screws.



Fuses - keep a regular stock of each type of fuse fitted, so that they can be quickly replaced with the same type of fuse if necessary. See table 3 - table 4 (page 44).

LIFTING MOTORS

TAB. 3

MOTOR REFERENCE	1 SPEED - N -					1 SPEED - V -					2 SPEEDS - NA -					2 SPEEDS - VA -				
	1608-6	2008-6	2011-6	2412-6	2714-6	1608-4	2008-4	2012-4	2714-4		2110-6/24	2612-6/24	2714-6/24	3317-6/24	3517-6/24	2110-4/24	2612-4/24	2714-4/24	3317-4/24	
OUTPUT Kw	1,5	3	4,5	8	12,5	2,3	4,5	7,5	12		1,5	3	4,8	8	13	2,2	4,5	7,5	12,5	
											0,33	0,75	1	1,7	3	0,33	0,75	1	1,7	
DELAYED FUSE CAPACITY A _{Am}	220 V	16	25	32	63	80	20	32	50	63	16	25	32	63	80	20	25	32	63	
	380 V	10	20	25	32	63	16	25	32	63	10	20	20	32	63	16	20	32	63	

4. Use and maintenance instructions



HORIZONTAL MOVEMENT MOTORS

TAB. 4

MOTOR REFERENCE	1 SPEED			1 SPEED		
	0,12	0,55	1,1	0,18	0,55	1,0
MAX MOTOR OUTPUT in Kw				0,06	0,12	0,37
DELAYED FUSE CAPACITY A _{lim}	220 V	4	6	10	4	6
	380 V	2	4	6	2	4



Terminals - periodically check that the terminals are properly tightened; check that the identification number is clearly visible and integral with the terminal; check the integrity of the heat insulating material, and replace promptly if cracked or broken.



Motors - clean the motor, removing any dust that may have settled on the frame and might interfere with the cooling; check that the ventilation apertures are unobstructed; with the motor running normally, check the noise level, the temperature and the presence of any play in the rotor supports. If you find even minimal play, temperatures close to the support higher than those of the frame and/or high noise levels, replace the bearings; with the motor running normally, check the temperature of the frame using a temperature probe.

Temperatures above 110°C reveal, in fact, that the motor is being overloaded; in this case, look for the causes inside the equipment and check the duty for which the machine is intended; check the current consumption and the voltage, comparing them with the nominal values shown on the rating plate of each motor (see table 5).

LIFTING MOTORS

TAB. 5

MOTOR REFERENCE	1 SPEED - N -					1 SPEED - V -					2 SPEEDS - NA -					2 SPEEDS - VA -			
	1608-6	2008-6	2011-6	2412-6	2714-6	1608-4	2008-4	2012-4	2714-4		2110-6/24	2612-6/24	2714-6/24	3317-6/24	3517-6/24	2110-4/24	2612-4/24	2714-4/24	3317-4/24
OUTPUT Kw	1,5	3	4,5	8	12,5	2,3	4,5	7,5	12		1,5	3	4,8	8	13	2,2	4,5	7,5	12,5
CONSUMPTION LEVELS - A -											0,33	0,75	1	1,7	3	0,33	0,75	1	1,7
	220 V	8,1	17,5	21,3	36,3	55,4	10,4	20,8	28,0	48,5	8,7	13	20,8	31,2	46,7	12,1	18,2	26	43,3
											6,4	11,3	17,3	24,2	67,5	9,5	17,3	24,2	41,5
	380 V	4,7	10,1	12,3	21	32	6	12	16,2	28	5	7,5	12	18	27	7	10,5	15	25
											3,7	6,5	10	14	39	5,5	10	14	24

4. Use and maintenance instructions



4.7.3. Maintenance periods and intervals



The intervals between the maintenance operations shown in table 6 below refer to a machine working under the normal conditions laid down by the FEM 9.511 rules for group 1Am; if working under heavy conditions, the frequency of the

maintenance operations must be increased. This consideration is also valid if the machine is being used in a group higher than the one specified.

If the use of the hoist is normal and correct, it can be overhauled after a period of use of about 10 years, according to rule FEM 9.755 (S.W.P.)

TABLE OF PERIODIC MAINTENANCE AND INSPECTION INTERVALS

TAB. 6

MACHINE COMPONENTS	PERIODS						
	1 MAINTENANCE		PERIODIC INSPECTIONS			MAINTENANCE	
	3 MONTHS	12 MONTHS	DAILY	WEEKLY	MONTHLY	ANNUAL EVERY...	
ROPE AND ATTACHMENTS INSPECTION	X				X		
LIMIT-SWITCH OPERATION	X		X				
LOAD LIMITER	X			X		1 year	
HOOK CONDITIONS		X		X		1 year	
GEARBOX OPERATION		X			X	1 year	
BRAKE OPERATION	X		X			6 months	
BRAKE TRAVEL RECORDING	X					6 months	
WHEELS/BEARINGS CHECK		X				1 year	
CONDITION OF BUFFERS		X				1 year	
ELECTRICAL SYSTEM CHECK	X				X		
FIXING BOLTS	X					6 months	

4. Use and maintenance instructions



4.8. LUBRICATION

Careful control of the lubrication operations on the machine and mechanisms is a necessary condition to ensure effective performance in the service for which the hoist is intended, and long life.

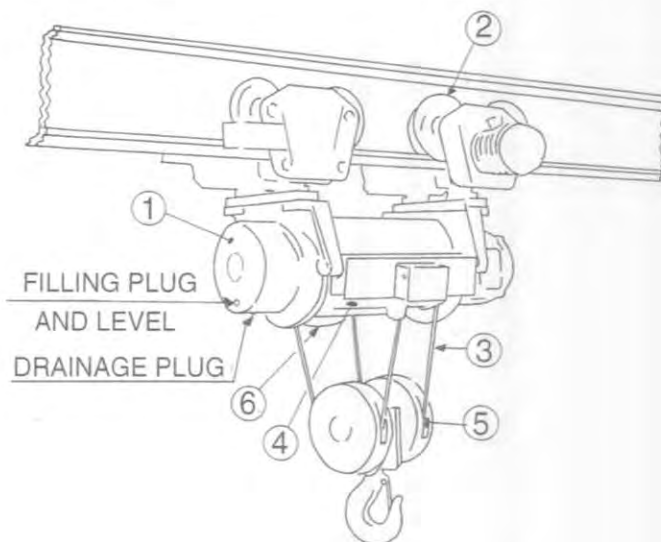
The lubricating capacity diminishes with time, so that the lubricants have to be renewed or replaced.

Lubrication of the hoist is very simple and can be done by unskilled personnel provided that they follow the instructions in this manual scrupulously and carry out the necessary checks and toppings up, at the intervals shown in the "lubrication" table - table 7.

Method of draining and replacing the hoist's gearbox oil:

- the oil must be drained at a temperature of not less than +20°C (in case of ambient temperatures <20°C, it is necessary to run the gearbox without load for a few minutes in order to warm up the oil before draining it);
- remove the drainage plug and let the oil flow out, flush the gearbox with petrol, carry out a few no-load manoeuvres and then drain completely;
- pour in the oil very slowly to allow time for it to reach the level; take care not to fill to above the level of the indicator;

- the lubricant must never be of a type which is more fluid than the one specified, to prevent leaks.



LUBRICATION PROGRAMME

TAB. 7

POINT	ITEM	OIL	GREASE	FREQUENCY		
				MONTHLY EVERY...	MONTHLY EVERY...	YEARLY EVERY...
1	HOIST GEARBOX	FINA CERAN AD	/	1	3	3
2	EXTERNAL GEARS, TROLLEY WHEELS				X	
3	ROPE		FINA MARSON		X	
4	ROPE DRUM	/				X
5	BLOCK PULLEYS		L M GRAPHITED			1
6	ROPE RETURN PULLEY					1

QUANTITY OF LUBRICANT

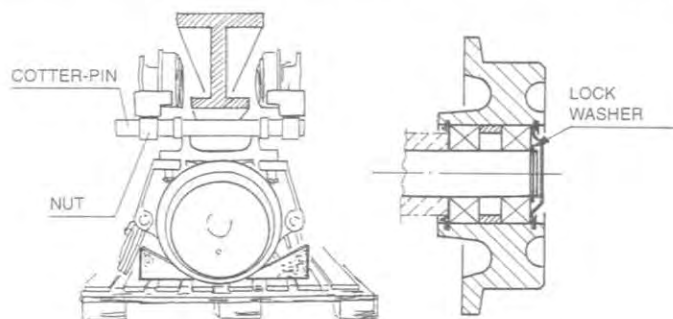
POINT	BM SIZE									
	A		B		C		D		E	
	MIXTURE	QUANT. Kg.	MIXTURE	QUANT. Kg.	MIXTURE	QUANT. Kg.	MIXTURE	QUANT. Kg.	MIXTURE	QUANT. Kg.
1	P ÷ R	0,7	P ÷ R	1,0	P ÷ R	1,0	P ÷ Z	1,4	P - Z	2,0
	Z - X	1,0	Z - X	1,4	Z - X	1,4	X	2,0	-	-
2 ÷ 6	BRUSH LUBRICATION WHEN SUFFICIENT									

4. Use and maintenance instructions

4.9. REPLACEMENTS

4.9.1 Removal and mounting procedure

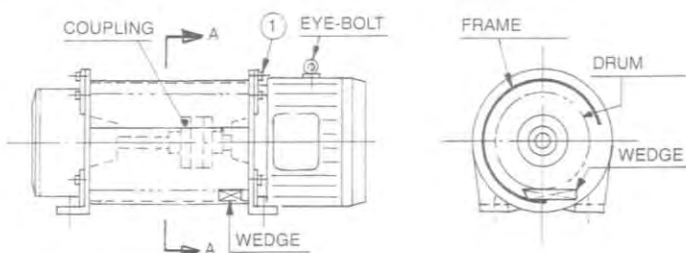
Wheels and trolley - Rest the hoist on a platform, slacken off the nuts on the sides of the trolley so as to release it from the beam lintel, lower the trolley to the floor and proceed with the wheel replacement, releasing it from the lock washer that keeps it up against the bolt.



Motor

For removal: undo the screws (1), insert a wooden wedge between the drum and the frame to prevent the drum from falling and slide out the motor suspended from a previously fitted eye-bolt.

For mounting: ensure that the coupling is correctly mounted on the gearbox shaft and place the removed item horizontally on the supporting base already used to remove it. Slide in the item, moving it about until the correct position is reached and then tighten the screws (1).



Rope - before fitting a new rope, it is necessary to check that the pulley grooves and the drum thread have not been worn or distorted by the passage of the old rope. If they have, replace the damaged parts. Unwind the coil of new rope without twisting it, so as not to cause creases.



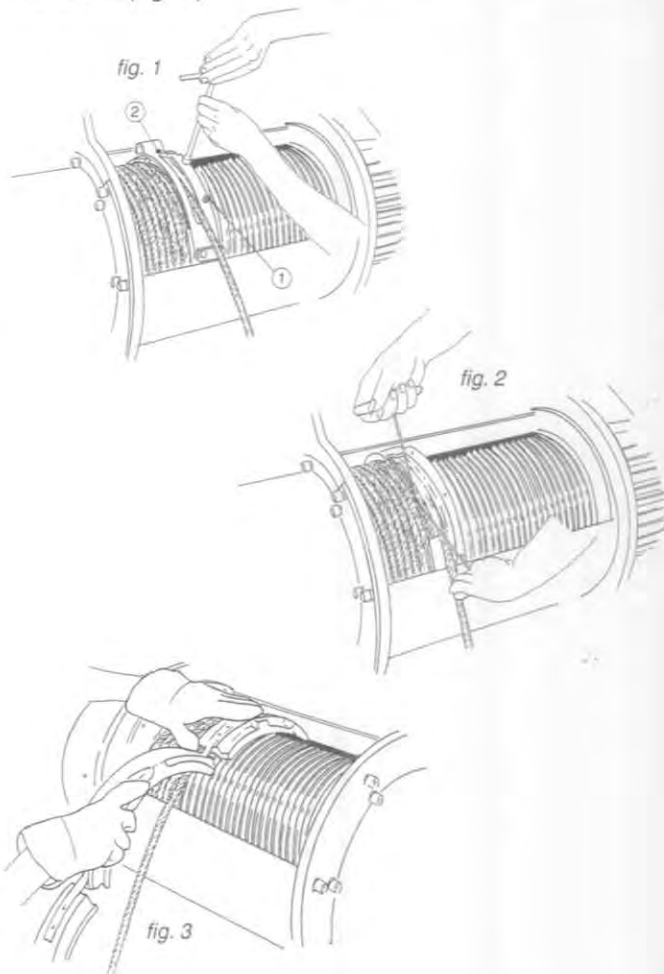
WRONG



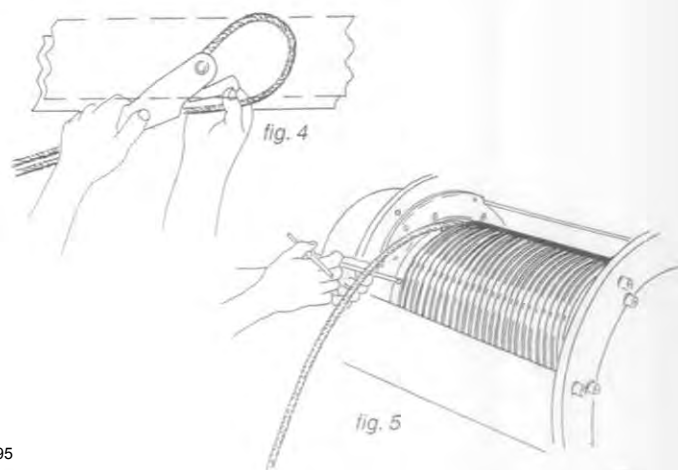
RIGHT



To remove the rope guide, proceed as follows: undo the screws (1) (fig. 1), remove the slide block (2) (fig. 1), remove the rope tightening spring (fig. 2) and take the rope guide ring off the drum (fig. 3).



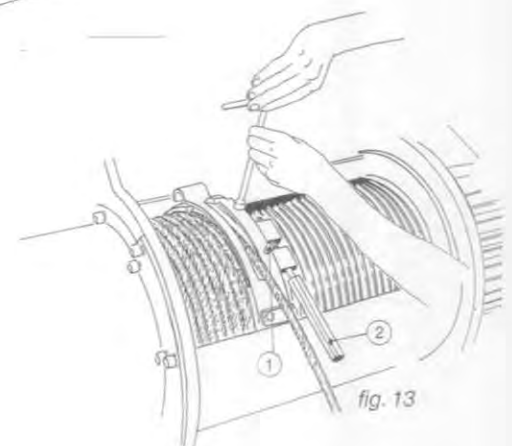
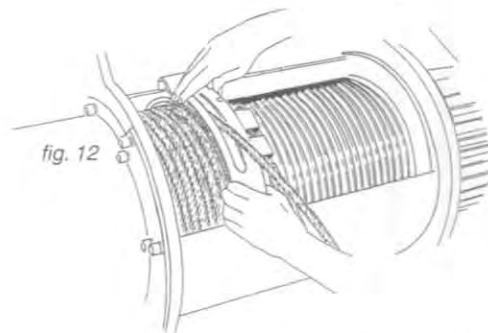
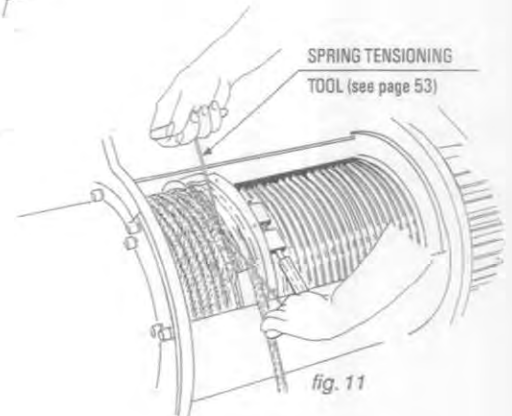
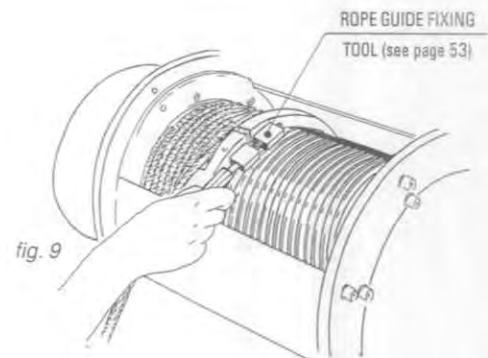
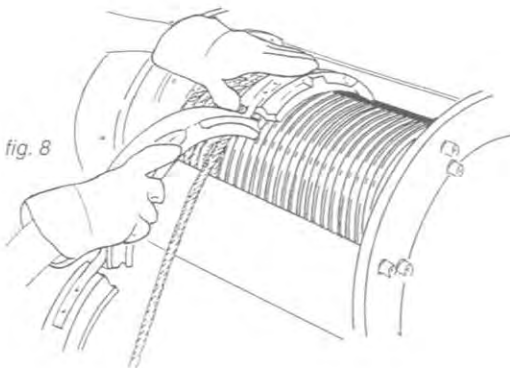
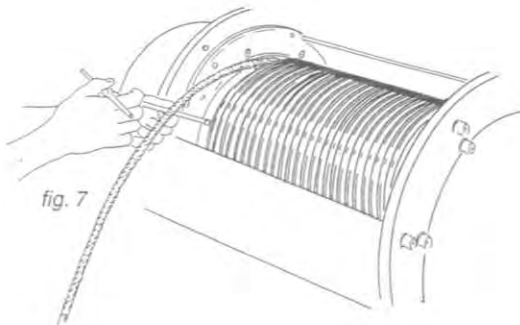
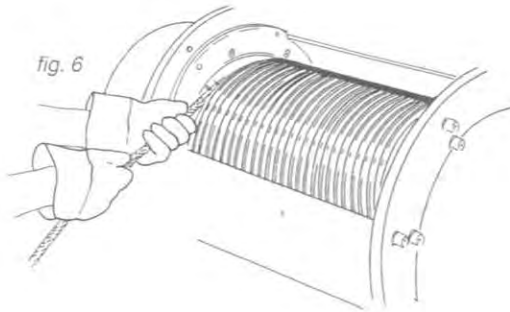
To remove the rope: remove the anchorage wedge (fig. 4), then take the end of the rope off the bracket and take the rope off the block pulleys and any return one. Fully unwind the rope from the drum by pressing the "down" button on the control unit, until the end of the drum. Slacken off the rope fixing screws and remove the rope end from the seat inside the drum (fig. 5).



4. Use and maintenance instructions



Fitting a new rope: thread one end of the rope into the internal seat on the drum as shown (fig. 6) until the end of the rope reaches the screws, then tighten the screws onto the rope (fig. 7). Press the "up" button of the control unit, keeping the rope tensioned to ensure correct winding until at least half of it is on the drum, as indicated (fig. 8).



Fitting the rope guide ring: insert the rope guide ring (fig. 8) putting it into position on the drum grooves. Push on the ring with the appropriate pliers with 2 blocks, using the 2 holes on the right-hand side of the ring (fig. 9).

Mount the rope spring in the gap inside the ring (fig. 10) and close it up by hooking it on (fig. 11). Fit the rope guide slide block (fig. 12) and tighten the screws (1) (fig. 13).

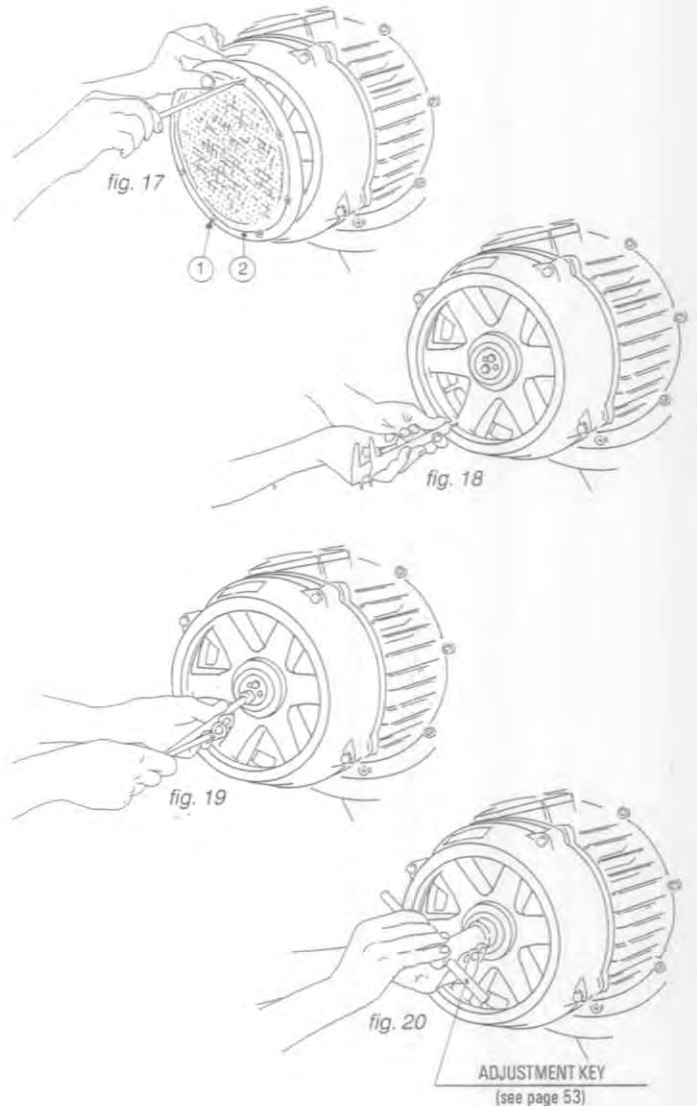
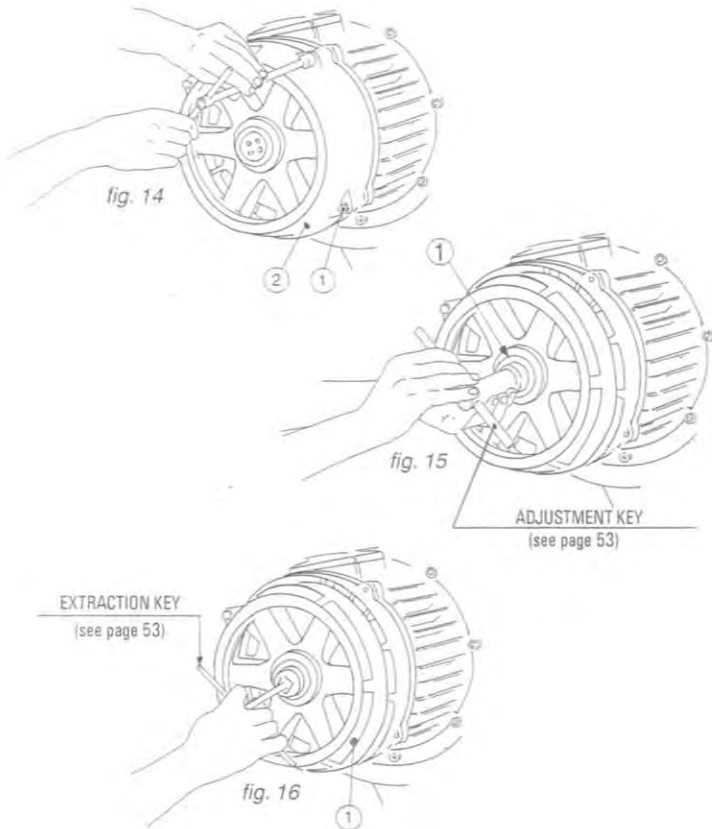
After mounting the rope guide ring, pass the free end of the rope through the block's pulley and then fix the free end to the bracket on the fixed end, as described in the "block mounting" operations in paragraph 3.8 on page 24 of the installation manual.

4. Use and maintenance instructions



Removal and fitting of the lifting brake "fan": undo the screws (1) (fig. 14), remove the brake bell device (2) (fig. 14) and remove the brake adjustment ring nut (1) (fig. 15) with the appropriate key.

Using an extractor, remove the brake fan (1) (fig. 16). Fit the new fan, pushing it forward with the aid of a lead mallet, refit the brake bell (2) (fig. 14) and the screws (1) (fig. 14), then adjust as indicated in the "brake bell adjustment" paragraph.



Warning:

The maximum axial movement allowed by the rotor when the brake is released is 2.5 mm.

4.10 ADJUSTMENTS

4.10.1. Brake adjustment

This operation must be carried out with the hoist stationary and without any load.

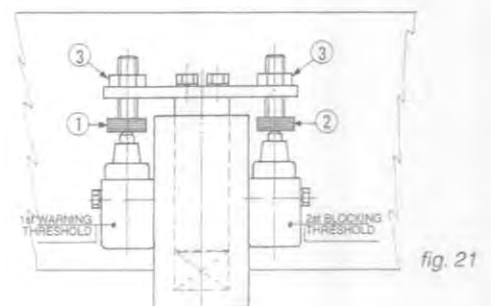
Undo the screws (1) and take off the grille (2) (fig. 17); make the measurement at any point between the brake fan (fig. 18) and a surface of the bell with the brake applied. After making the measurement, push the fan axially into the motor with the aid of a lever and make another measurement, recording the difference (fig. 18). If the difference is greater than the nominal values (0.8/1.2 mm) proceed as follows:

- undo the screws (fig. 19) then rotate the adjustment ring nut clockwise to take up any axial movement greater than the nominal value, bearing in mind that one complete turn of the ring nut represents 2 mm (fig. 20). After this take-up operation, repeat the measurement with the brake released (fig. 18), checking that the axial movement is within the nominal value, then put back the nuts and the grille (fig. 17).

4.10.2. Load limiter adjustment

1st intervention threshold: apply the nominal load, act on the screw (1) (fig. 21) and rotate it until the danger signal is given.

2nd intervention threshold: apply the nominal load plus 25%, act on the screw (2) (fig. 21) and rotate it until the signal blocking the up movement and the sideways movements is given. After the adjustment, check that the lock nut (3) is tight.



4. Use and maintenance instructions



4.11 FAULTS AND REMEDIES

The foreseeable failure conditions relating to individual operating functions of the trolley and hoist are given below. The columns in tables 8/9 show the type of problem,

the operating function and the component likely to have caused the fault.

TABLE OF FAILURE CONDITIONS

TAB. 8

FUNCTION/FAULT	LIFTING	TROLLEY MOVEMENT	CAUSE
DOES NOT START	*	—	- UP/DOWN LIMIT-SWITCH - UP/DOWN CONTACTOR - UP/DOWN PUSH-BUTTON - HOIST MOTOR - LOAD LIMITER
	*	*	- CHECK HOIST AND TROLLEY POWER CABLE FESTOON
	*	*	- MAIN POWER LINE - LV TRANSFORMER NOT WORKING - LINE CONTACTOR
	—	*	- LEFT/RIGHT LIMIT-SWITCH - LEFT/RIGHT CONTACTOR - LEFT/RIGHT PUSH-BUTTON - TROLLEY MOTOR
STARTS PARTIALLY (IN ONLY ONE DIRECTION)	*	*	- LIMIT-SWITCH, CONTACTOR OR PUSH-BUTTON OF THE FUNCTION INHIBITED (INDEPENDENTLY OF EACH OTHER)
MOVEMENT DOES NOT STOP IN THE RIGHT SPACE	*	*	- BRAKE OF THE FUNCTION (IN THE CASE CHECK THE "SLIPPING" ACTION))
	ALSO, LOAD SLIPS AND IS NOT HELD		
MOVEMENT DOES NOT STOP AT THE TRAVEL LIMITS	*	*	- BRAKE (IDEM ABOVE) - LIMIT-SWITCH OF THE FUNCTION
CONTINUES WITH FUNCTION EVEN WHEN RELEVANT PUSH-BUTTON HAS BEEN RELEASED	*	*	- DIRECTIONAL PUSH-BUTTON - RELATIVE CONTACTOR - "FALSE CONTACT"
EXCESSIVE GEARBOX NOISE		*	- LACK OF LUBRICATION - OUT OF DUTY CYCLE
SQUEAKY NOISE DURING BRAKING	*	—	- PRESENCE OF DUST - EXCESSIVE PLAY - WORN BRAKE LINING
SQUEAKY NOISE IN THE DRUM OR ROPE OR ROPE GUIDE DRUM	*	*	- LACK OF LUBRICATION - INCORRECT WORK SERVICE
SQUEAKY NOISE IN PULLEYS OR BLOCK	*	—	- LACK OF LUBRICATION - INCORRECT WORK SERVICE
SQUEAKY NOISE IN WHEELS (JERKY OPERATION)	—	*	- RAILS NOT PROPERLY ALIGNED - LACK OF LUBRICATION - OUT OF DUTY CYCLE
THE HOOK IS "LIVE"	*	—	- CHECK ELECTRICAL SYSTEM
TROLLEY WHEELS SLIPPING ON TRACK	—	*	- WHEELS OR TRACK WITH EXCESS LUBRICATION OR PRESENCE OF PAINT,

4. Use and maintenance instructions



COMPONENT FAULTS TABLE

TAB. 9

COMPONENT/TYPE OF FAULT	CAUSE	REMEDY
BRAKE SLIPPING	- WORN BRAKE LINING - PRESENCE OF OIL AND GREASE	- ADJUST PLAY OR REPLACE LINING - CLEAN LINING
DISC BRAKE VIBRATION	- INCORRECT SUPPLY VOLTAGE (TOO LOW) - SUPPLY ON ONLY ONE PHASE - AIR GAP TOO LARGE BETWEEN MAGNETIC PARTS	- RESTORE ORIGINAL CORRECT CONDITIONS - ADJUST THE AIR GAP
BRAKE OVER-HEATING	- INCORRECT WORK SERVICE - INCORRECT ADJUSTMENT - UNSUITABLE ENVIRONMENTAL CONDITIONS	- RESTORE PLANNED WORKING CONDITIONS - ADJUST THE BRAKE
BRAKE WILL NOT RELEASE OR TENDS TO STICK	- POWER FAILURE - INCORRECT ADJUSTMENT - UNSUITABLE ENVIRONMENTAL OR WORKING CONDITIONS	- RESTORE OPERATING VOLTAGE VALUES AND ADJUST THE BRAKE - RESTORE SUITABLE CONDITIONS
LIMIT-SWITCH STUCK OPEN	- OBSTRUCTION - CONNECTIONS INTERRUPTED	- CLEAN AND RESTORE ORIGINAL CONDITIONS
BUTTONS ON CONTROL UNIT STUCK "CLOSED"	- OBSTRUCTION	- CLEAN - CHECK CONDUCTORS ON CONTROL UNIT
REMOTE SWITCH CONTACTS "STUCK"	- LACK OF MAINTENANCE - USE UNDER UNSUITABLE ENVIRONMENTAL OR WORKING CONDITIONS	- RESTORE CORRECT CONDITIONS OF USE
MOTOR TOO HOT	- MAINS VOLTAGE VARIATIONS HIGHER OR LOWER THAN PERMITTED 10% - LOW COOLING AIR VOLUME, POSSIBLE OBSTRUCTION OF AIR PASSAGES - AMBIENT TEMPERATURE HIGHER THAN PERMITTED - MACHINE NOT USED UNDER PLANNED SERVICE CONDITIONS	- GUARANTEE CORRECT MAINS VOLTAGE - RESTORE CORRECT AIR CIRCULATION - RESTORE SUITABLE AMBIENT CONDITIONS OR ADJUST FUNCTIONAL CHARACTERISTICS OF MOTOR TO THE NEW CONDITIONS - ADAPT SERVICE CONDITIONS TO THOSE PLANNED
MOTOR WILL NOT START	- FUSE BLOWN - CONTACTOR HAS INTERRUPTED THE SUPPLY - OVERLOAD, HIGH STARTING FREQUENCIES BLOCKAGE, INSUFFICIENT PROTECTION	- REPLACE FUSE - CHECK THE FUNCTION'S CONTACTOR - REWIND MOTOR AND PROVIDE BETTER PROTECTION - CHECK THE CONTROL DEVICE
MOTOR START WITH DIFFICULTY	- FREQUENCY OR VOLTAGE FALL WELL BELOW NOMINAL VALUE WHEN STARTING	- IMPROVE MAINS OR POWER SUPPLY LINE CONDITIONS
MOTOR HUMS AND ABSORBS A LOT OF POWER	- FAULTY WINDING - ROTOR IN CONTACT WITH THE STATOR - ONE PHASE OF SUPPLY MISSING - GEARBOX SEIZED - BRAKE SEIZED - POWER CABLE SHORT-CIRCUIT - MOTOR-SHORT-CIRCUIT	- HAVE REPAIRED BY A SPECIALIST - CHECK THE MAINS SUPPLY AND/OR THE CONTACTOR - GET SPECIALIST TECHNICIAN TO INTERVENE - HAVE CHECKED AND ADJUST NECESSARIO ALLA REGISTRAZIONE - REMOVE THE SHORT-CIRCUIT - GET A SPECIALIST TO INTERVENE
SHORT-CIRCUIT ON MOTOR WINDING FALSE CONTACT	- FAULTY WINDING - ACCIDENTAL ACTIVATION OF THE FUNCTION	- REWIND THE MOTOR - CHECK CONDUCTORS ON CONTROL UNIT

4.12.1. Hoist

ITEM	BM HOIST	MEASUREMENT (drum length)																																																															
		A								B								C								D								E																															
		P	S	T	Q	R	Z	X	P	S	T	Q	R	Z	X	P	S	T	Q	R	Z	X	P	S	T	Q	R	Z	X	P	S	T	Q	R	Z																														
1	COMPLETE LIFTING MOTOR	N	156217							143465							157226							157219							157226							157222																											
		V	168922							169011							169015							169012							169015							/																											
		NA	345280							345281							345283							345282							345283							148492																											
		VA	169013							168925							345284							169014							345284							/																											
2	BRAKE FAN	N															280055														280055							345301																											
		V	345045							280119														290119							345046							/																											
		NA																						345100														345312																											
		VA	345093							345094							345097														345097							/																											
3	LIMIT-SWITCH		160694																					160695														345332																											
4	DRUM SUPPORT BEARING		6015							6016							6021							6016							6021							6024																											
5	ROPE GUIDE RING		158106							107							158107							1310							158108							1310							158109							1513							158110						
6	ROPE	VERS. S2	0716	0722	0728	0740	0752	0772	0779	1016	1023	1029	1041	1056	1071	1079	1019	1027	1033	1047	1061	1078	1092	1320	1327	1334	1349	1363	1372	1390	1528	1539	1549	1563	1578	1591																													
		VERS. S4	-	-	0730	0742	0754	-	-	-	1031	1043	1054	-	-	-	-	-	1035	1048	1062	-	-	-	-	1336	1351	1365	-	-	1541	1552	1566	1580	1594																														
7	LOAD LIMITER MICROSWITCH		Z 15 GK 55																																																														

4. Use and maintenance instructions

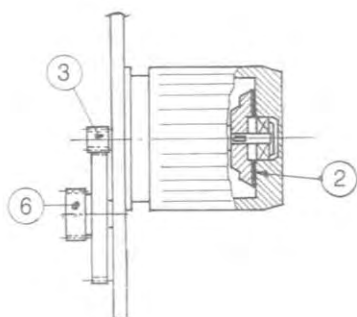
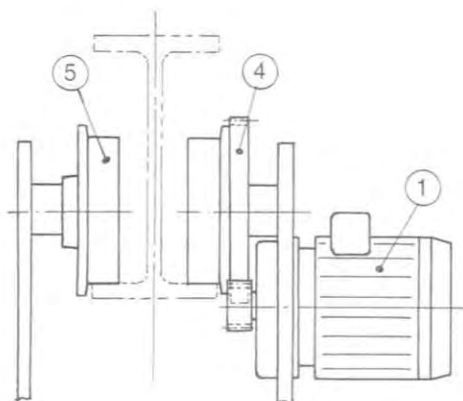


4.12.2. Mono-rail trolleys fig. 3 - fig. 83

SPARE PARTS

ITEM	DESCRIPTION	CODE		
1a	1 SPEED HORIZONTAL MOVEMENT MOTOR	168926/012	160500/025	168929/037
		168926/010	160500/022	168929/032
1b	2 SPEED HORIZONTAL MOVEMENT MOTOR	1405124		1407124
2a	1 SPEED FERODO DISC	345156		345157
2b	2 SPEED FERODO DISC		345167	
3a	1 SPEED MOTOR PINION 10 e 16 m/min	192553		148899
3b	1 SPEED MOTOR PINION 12-10-8 m/min	Z:12		/
		Z:14	400100	148899
		Z:16	400101	400201
		Z:19	/	400202
		Z:12	192553	/
3c	2 SPEED MOTOR PINION	Z:14	400100	148899
		Z:16	400101	400201
		Z:19	/	400202
4	DRIVEN WHEEL WITH BEARINGS	RM120	RM175	RM210
5	IDLE WHEEL WITH BEARINGS	RF120	RF175	RF210
6	SLOW PINION WITH GEAR	192561	148856	242158

N.B.: When ordering spares, always quote: trolley serial No. - year of construction, item No. and ref. No.



4.13 SPECIAL MAINTENANCE TOOLS

TYPE OF TOOL	FUNCTION	LIFTING MOTOR SIZE	REFERENCE
LIFTING MOTOR BRAKE FAN ADJUSTMENT KEY	LIFTING BRAKE AIR GAP ADJUSTMENT	1608-6	
		1608-4	
		2110-6/24	8002
		2110-4/24	
		2008-6	
		2008-4	
		2011-6	
		2012-4	8003
		2612-6/24	
		2612-4/24	
		2412-6	
		2714-6/24	8004
		2714-4/24	
		2714-6	
		2714-4	8005
LIFTING MOTOR BRAKE FAN EXTRACTION KEY	LIFTING MOTOR BRAKE FAN REPLACEMENT	3317-6/24	
		3317-4/24	
		3517-6/24	8006
		1608-6	
		1608-4	
		2110-6/24	8020
		2110-4/24	
		2008-6	
		2008-4	
		2011-6	
		2012-4	8021
		2612-6/24	
		2612-4/24	
		2412-6	
PLIERS FOR ROPE GUIDE RING	MOUNTING ROPE GUIDE RING ON DRUM	2714-6/24	8022
		2714-4/24	
		2714-6	
		2714-4	8023
		3317-6/24	
		3317-4/24	
		3517-6/24	8024
		/	9001
ROPE GUIDE RING SPRING PULL	MOUNTING/ REMOVING ROPE GUIDE RING	/	9002

* Key normally supplied together with the hoist

** Key and tools available on request

4. Use and maintenance instructions



4.14. REMOVAL - NEW DESTINATION

i If it should become necessary to remove the trolley/ hoist from its working position for extraordinary maintenance operations (repairs/ replacements), or to install it in a new location, carry out the operations in the reverse order to the one described for the "Mounting on the beam" operations, paragraph 3.7 on page 23.



This operation must be carried out by specialist and specially trained staff, with adequate tools and personal accident-prevention systems as required by the standards.



If the trolley/hoist has to be transferred to a different use from the originally intended one (used machine sold to a third party), it is recommended that the new place of destination and the name of the new user be communicated to the manufacturer, to allow **MISIA S.r.l.** to give news of any updates relating to the machine and/or to this manual.

- Perform a dielectric strength test at 2000V, taking care to isolate any rectifier bridges or electronic circuits
- check that the cable festoons slide correctly
- carefully check the operation of the control push-buttons unit.

4.16. DISPOSAL SCRAPPING

If the hoist and trolley have to be scrapped, their parts must be disposed of in different ways according to the different characteristics thereof (e.g.: metal, oils and lubricants, plastic and rubber, etc.), possibly engaging specialist companies for the purpose and in any case observing the legal requirements relating to the disposal of solid industrial waste.

4.15. REINSTATEMENT AFTER STORAGE

Before starting work with a trolley/hoist that has been stored for a long time on site, the following operations must be carried out:

for the mechanisms

- check any lubricant leaks and replace any faulty seals
- top up the lubricant levels
- check that the mechanisms are tightly attached to the structure
- remove any traces of rust from the sliding parts of the control devices
- check the rope's integrity and clean and lubricate the rope itself, the pulley grooves and the drums
- lubricate the thrust bearing of the hooks and the unpainted mechanical components (shafts, joints, operating rods)
- remove any water that may have accumulated in concave parts of the structure and mechanisms.

electrical part

- remove any condensation inside the motors, extracting it from the open terminal cavities; dry with a jet of air
- check the integrity and operation of the brakes. Reset the exact air gap value
- check the integrity and operation of the limit-switches
- check the integrity of the electrical and electronic parts and components. Remove any condensation, dry the contacts of the remote-switches and treat all components with spray for electrical equipment. Carefully clean and spread a film of vaseline on the mating surfaces and threaded covers of all containers.

4. Use and maintenance instructions



4.17. PERIODIC MAINTENANCE REGISTER

This register must be used to record all the monthly, weekly and annual maintenance operations indicated in table 6 on page 45. It must be completed by the user, giving the results and any observations.

The name of maintenance worker and the date of the relative operation must also be clearly identifiable.

4.17.1. Register composition

The register must consist of a number of pages equal to the number of components listed alongside.

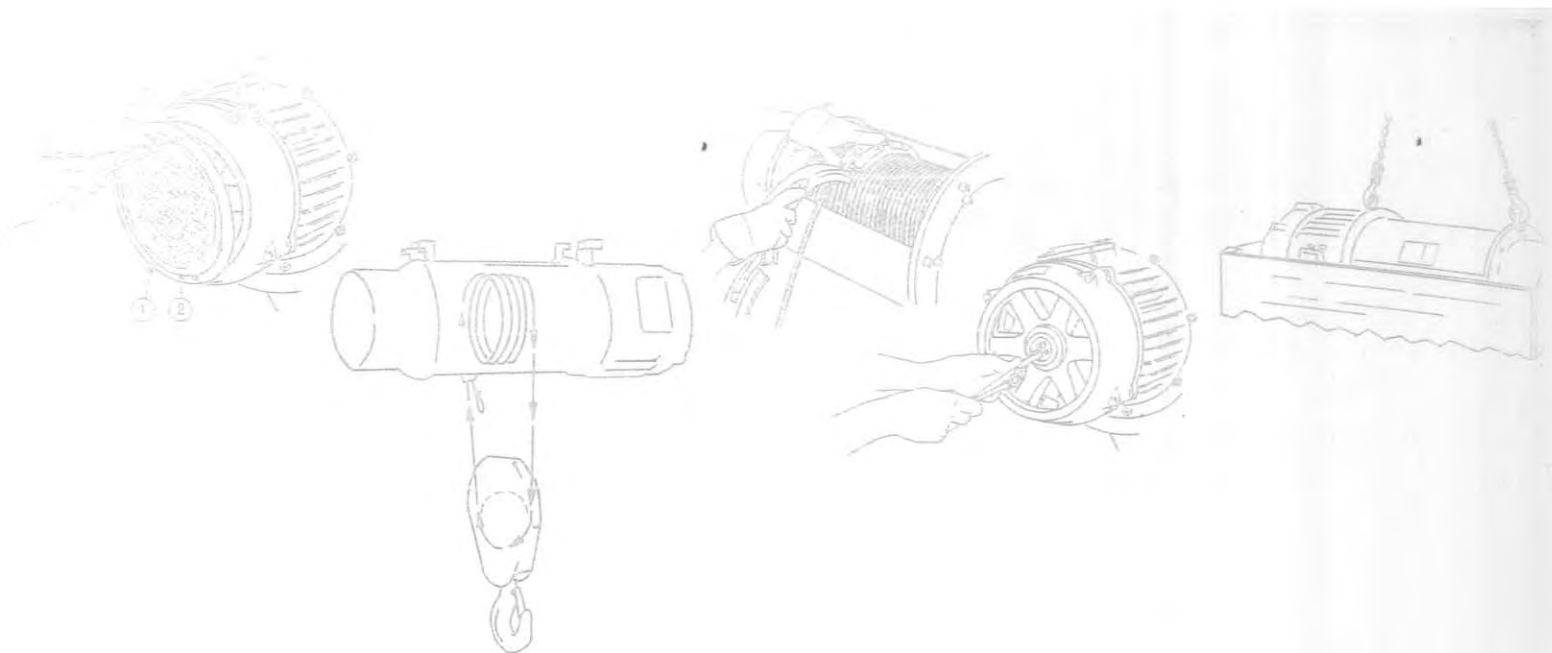
List A (monthly, weekly maintenance)

- Ropes
- Hook
- Brakes
- Fixing bolts
- Electrical system
- Limit-switches

List B (annual maintenance)

- Rope guides
- Gearbox
- Wheels
- Buffers
- Block
- Return pulleys
- Load limiter.

MONTHLY/WEEKLY/ANNUAL MAINTENANCE OPERATIONS				
COMPONENT:				
DATE	OPERATION	RESULT	SIGNATURE	NOTES



MISIA PARANCHI

S.R.L.

