

ELECTRIC CHAIN HOISTS OPERATING AND MAINTENANCE INSTRUCTION

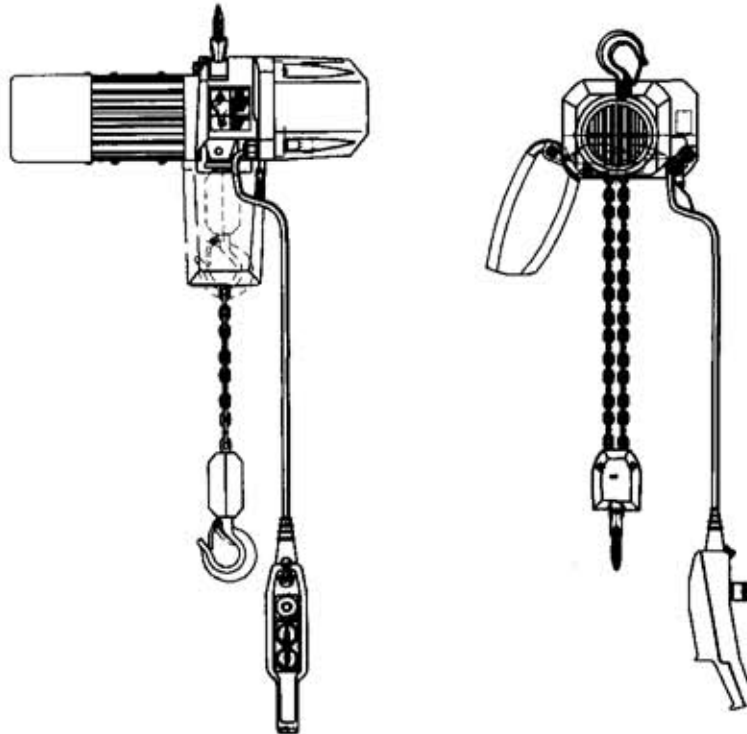
RATED LOADS FROM 125 KG TO 2 TONNES

Follow all instructions and warnings for inspecting, maintaining and operating this hoist.

The use of any hoist presents some risk of personal injury or property damage. The risk is greatly increased if proper instructions and warnings are not followed. Before using this hoist, each operator should be thoroughly familiar with all warnings, instructions and recommendations in this manual.

Retain this manual for future reference and use.

- The hoist operator must receive this operating instructions manual.
- The hoist operator must read this operating instructions!



Customer's notes:

Model	
Serial No.	
Date Purchased	

- The above information will be required when purchasing spare parts and when making inquiries.
- Copy them from the name plate on the hoist and save them for future reference.

1 PREFACE

This manual contains important information to help you properly install, operate and maintain your hoists for maximum performance, economy and safety.

Please study its contents thoroughly before putting your hoists into operation. By practicing correct operating procedures and by carrying out the recommended preventive maintenance suggestions, you will experience long, dependable and safe service. After you have completely familiarized yourself with the contents of this manual, we recommend that you carefully file it for future reference.

The information herein is directed to the proper use, care and maintenance of the hoist.

2. SAFETY

2.1 INTRODUCTION

The mechanical handling equipment detailed within this manual is designed to raise, transport and lower loads as supplied and must not be used for any other purpose. The following safety information must be read and understood by all personnel before commencing operation or maintenance.

In this instructions manual, precautions are listed under two categories, "**DANGER**" and "**WARNING**".

△ **DANGER** Situations in which improper use can lead to death or serious injuries.

△ **WARNING** Situations that can cause property damage or light to intermediate injuries.

Some situations listed as △ "WARNING" may lead to serious conditions.

Precautions must be obeyed no matter which category they come under.

Mark specifying that the electric chain hoist must be grounded.

Mark warning of the possibility of electrical shocks

△ DANGER

The unit (electric chain hoist and trolley) must be operated only by people who fully understand the operating instructions manual and the precautions on the warning name plate.

People without the necessary qualifications must not operate the unit or carry out hook and sling connecting operations.

Inspect the unit before operating it, and carry out periodical inspections.

Under no circumstances must the hoist be used for any unauthorised purpose that is beyond the operating instructions contained in this manual

2.1.1 IMPORTANT!!

The following warning and safety procedures are essential for avoiding possible bodily injury and property damage.

2.1.1.1 Basic Safety Procedures

△ WARNING

- NEVER lift more than the rated load marked on the hoist.
- NEVER use the hoist to lift, support or transport people.
- NEVER lift or transport loads over or near people.
- ALWAYS read the operation and safety instructions.

2.1.1.2 Safety Procedures Prior To Use

WARNING

- ALWAYS the operator of the hoist must be a person who is completely familiar with all safety and operation procedures.
- ALWAYS check the hoist before use and confirm that the load chain is well lubricated.
- ALWAYS check the brake before use.
- ALWAYS check the safety latches to see if they work properly. Broken and missing safety latches must be replaced immediately.
- ALWAYS use genuine our parts and chains.
- ALWAYS set the load properly in the hook.
- ALWAYS confirm that the safety latch has closed completely.
- ALWAYS take up the slack of the load chain and sling carefully, and make the initial load lift off shock as small as possible.
- ALWAYS use a hoist within the "Duty rating", ED% or time rating.
- ALWAYS avoid excessive inching and make sure that the hoist motor completely stops before reversing the operating direction.
- NEVER modify the hoist.
- NEVER use modified or deformed hooks.
- NEVER use a hoist when malfunction, unusual performance, damage or extensive wear are found.
- NEVER abuse the over-hoisting/over-lowering limit switch mechanism by using it regularly.
- NEVER remove or obscure the warnings and nameplate on the hoist.
- NEVER allow your attention to be diverted when operating the hoist and never leave a suspended load unattended.
- NEVER operate the hoist unless the load is centered underneath it.
- NEVER use the hoist with twisted, kinked, damaged or worn chain and never attempt to lengthen the load chain.
- NEVER use the load chain so that it comes in to contact with an edge.
- NEVER allow the chain or hook to be used as a ground for welding and never touch them with live welding electrodes.
- NEVER abuse the friction clutch by using it frequently. Improper use can severely damage the hoist and lead to serious injuries.
- NEVER pull on the pendant control cable.

2.1.1.3 Maintenance Safety Procedures:

WARNING

- ALWAYS have a qualified service person inspect the hoist periodically.
- ALWAYS clean the hoist thoroughly and keep the load chain well lubricated.
- ALWAYS only allow the friction clutch to be adjusted at an authorized service shop.
- NEVER attempt to extend , repair, or weld the load chain.
- NEVER touch live electrical parts.

2.2 MAXIMUM SAFE WORKING LOAD

The maximum safe working (SWL) of the hoist is indicated on the bottom block and a load plate located below the motor. Under no circumstances must a load greater than the stated SWL be handled.

2.3 Access to hoist operating areas

There is risk of collision between personnel and a hoist, or of being crushed by a load during operation. Personnel entering the operating area must be aware of hoist movement and must take all precautions to ensure that contact with a moving hoist, or its load, is avoided.

2.4 Electrical system isolation

Except when carrying out tests requiring power, the electrical supply must be isolated and warning notices displayed.

2.5 MAINTENANCE WITH LIVE ELECTRICAL SYSTEMS

When carrying out maintenance on live electrical systems, personnel must take the necessary precautions to protect themselves and others from accidental contact. Post warning notices to warn that tests are undergoing with the power supply live.

2.6 Protection devices

Under no circumstances shall any safety device or safety feature such as limit switches be removed, modified or disabled.

2.7 Fasteners

Use new, do not re-use old fasteners when fitting components such as torque loaded bolts, lock nuts, split pins etc.

2.8 Maintenance access

Some maintenance tasks may require the erection of a platform for safe access. Under no circumstances must unqualified personnel erect access platform.

2.9 MAINTENANCE ABOVE GROUND LEVEL

When carrying out maintenance above ground level, ensure all tools, parts etc. Are secured to pre-vent injury to others. Identify the danger area and post warning notices.

2.10 Skin burn- Brake units, Gearboxes and Motors

There is a risk of severe skin burning from contact with a recently operating hot brake unit, gear box or motor. Ensure the unit is cool.

2.11 Lockout / Tagout procedure

When performing maintenance on the hoist, it is recommended that the user adopts a lockout/tagout procedure to protect personnel by preventing accidental start up, or exposure to electrical shock. Individual locks/tags are placed on controls, isolation switches etc. To prevent use. The recommended procedures include:

1. An established company policy on steps to follow for lockout / tagout.
2. Employee training relating to the company procedures.
3. Identification and location of isolation switches etc.
4. Power to be restored only after maintenance is completed. The associated individual has removed each lock/tag and affected people are notified.

2.12 HOIST LABELS AND PLATES

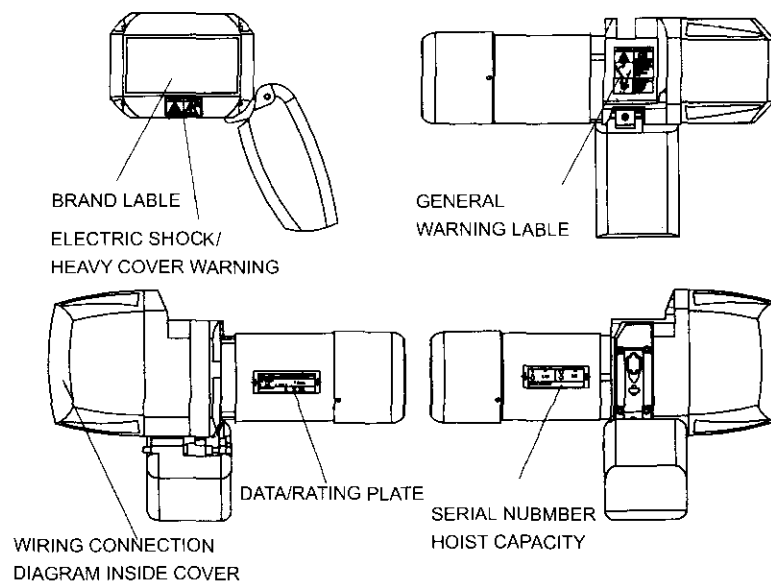


FIGURE2-1 HOIST LABELS AND DATA PLATES

2.13 EMERGENCY STOP

The control pendant is fitted with an emergency stop button which immediately halts hoist/trolley motions.

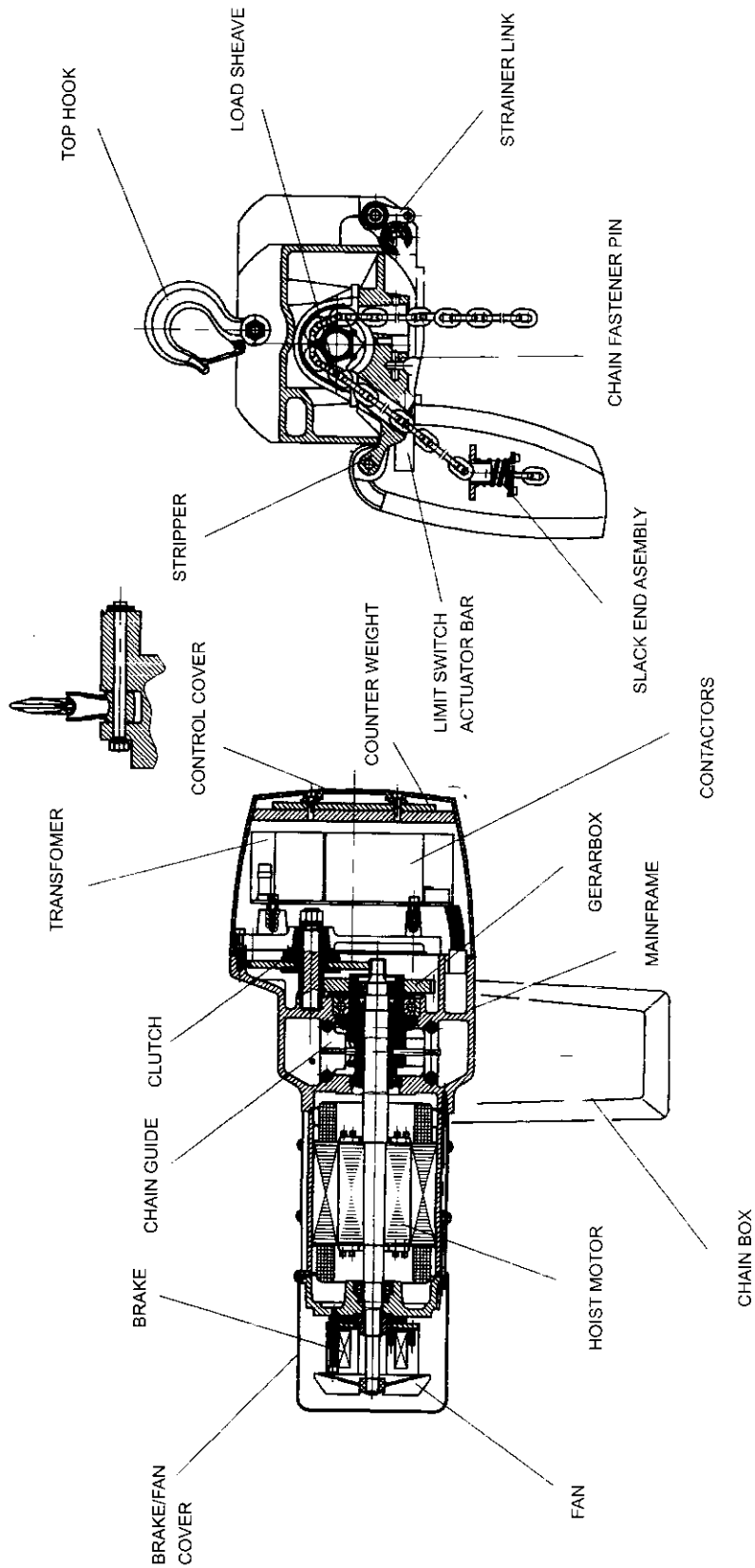


FIGURE2-2 HOIST MAINFRAME ASSEMBLY

3 GENERAL INFORMATION

DESCRIPTION

The electric chain hoist (and electric trolley as applicable) is controlled through a pendant pushbutton control unit operating at 48 volts (or 24 volts 36 volts) for 230 volts, 1-phase and all 3-phase power supply units, derived from a transformer in a control enclosure. Control contactors for 3-phase power supply units are mounted on a printed circuit board. 1-phase power supply units are hard wired. A rectifier circuit to operate the DC brake. The control pendant is fitted with an emergency stop button which immediately halts hoist/trolley motions. Hoist motor is mounted on a shaft driving the first reduction gearing. A cooling fan is fitted to the end of the rotor shaft. The stator is mounted in a mainframe and end-shield arrangement. The motor flange is attached to the body with tie-bolts. The windings are fitted with thermal protection to prevent damage if operate above the rate duty.

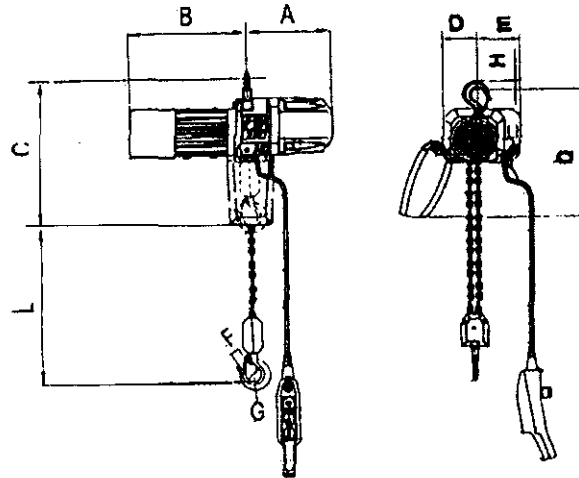


FIGURE3-1 DRAWING OF ELECTRIC CHAIN HOISTS

Model		HL0.125t	HL0.25t	HL0.16t	HL0.32t	HL0.25t	HL0.5t	HL1t	HL2t	
Rated Capacity	tonne	0.125	0.25	0.16	0.32	0.25	0.5	1	2	
Testing Load	tonne	0.16	0.32	0.20	0.40	0.32	0.63	1.25	2.5	
Standard lift	m	3	3	3	3	3	3	3	3	
Lifting Speed	m/min									
	Fast	8	4	12	6	8	4	8	4	
	Slow	2	1	3	1.5	2	1	2	1	
Number of falls		1	2	1	2	1	2	1	2	
Output Power KW	Fast	0.25		0.4		0.4		1.6		
	Slow	0.06		0.1		0.1		0.4		
Rating factor	Fast	20		20		20		20		
	Slow	40		40		40		40		
Load Chain Dia.x P		mm		Ø5x15		Ø5x15		Ø8x24		
Cable Length mm	Power source	4Core(1.5 mm ²)		4Core(1.5 mm ²)		4Core(1.5 mm ²)		4Core(1.5 mm ²)		
	Push Button	5Core(1 mm ²)		5Core(1 mm ²)		5Core(1 mm ²)		5Core(1 mm ²)		
Net Weight		kg	26	27	28	29	30	31	55	58
Min.Distance between Hooks		mm	400		400		400		650	
Dimensions	A	mm	236		236		236		430	
	B	mm	279		309		309		373	
	C	mm	400		400		400		430	
	D	mm	102.5		102.5		102.5		130	
	E	mm	122.5		122.5		122.5		148	
	F	mm	25		25		25		40	
	G	mm	36		36		36		50	
	H	mm	18		18		18		31	
	L	mm	3000		3000		3000		3000	
Q	mm	400		400		400		450		

- 1) Power supply:3-phase 380V, 50HZ
- 2) Hoist Motor Insulation:class f
- 3) Pushbutton operating voltage:48V, special voltage is available on request;
- 4) Other hoisting lifts and pushbutton cord lengths are available on request;
- 5) The design ,materials and specifications are subject to change for improvements without notice.

3.1 OPERATING CONDITIONS

Our electric chain hoists and trolleys are designed for the vertically lifting, lowering and horizontal transportation of loads by operating the pendant push button switch, and must be used within the following conditions.

- 1) Power source: As specified on nameplate of the electric chain hoist , and motorized trolley.
- 2) Trolley beam: Trolley to be used only on the designated beams.
- 3) Ambient Temperature:-10°C ~ 40°C
- 4) Humidity: Under 90%.
- 5) Enclosure status: Do not use in ambient conditions that contain steam or explosive gases.
- 6) Rating: 20/10 minutes.(Slow/Fast)

3.2 HOIST MOTOR

Data contained in Table 1 and 2 applies to 380V,3-ph,50Hz hoist motors rated at M3 duty.

Table 1 Hoist Motor Data

Hoist type	Motor size	Power (kW)	N rev/min	%ED	Starts /hours	Rated curren	Starting current	Cos φ_N	Cos φ_A	Mains supply delay fuse
							IN (A)	IA (A)		
HL0.25t	Dual	71/64	2900/ 700	40/20	120/ 240	1.5/ 0.8	8.5/ 1.8	0.72/ 0.48	0.82/ 0.58	6
HL0.32t	Dual	71/95	2900/ 700			1.5/ 0.8	8.5/ 1.8	0.72/ 0.48	0.82/ 0.58	6
HL0.5t	Dual	71/95	2900/ 700			1.5/ 0.8	7.4/ 1.7	0.72/ 0.48	0.82/ 0.59	6
HL2 t	Dual	90/120	2900/ 700			4.5/ 2.8	24/ 7	0.95/ 0.48	0.91/ 0.74	16

3.3 TRAVEL MOTOR

Data contained in Table 2 applies to 380V ,3-phase ,50Hz trave motors rated at M3 duty.Fuse and cable data combines hoist and trolley requirements.

Table 2 Travel Motor Data

Trolley speed	Motor size	Power (kW)	%ED	Starts /hours	Rated curren	Starting current	Cos φ_N	Cos φ_A	Mains supply delay fuse
Dual	71/64	0.25/0.06	25/12	75/150	0.8/0.6	4/1.2	0.78/ 0.56A	0.87/ 0.66A	16A

3.4 AIRBORNE NOISE EMISSION

The equivalent continuous a-weighted sound pressure measured on test hoists taken in the workshop, from a distance of 1-meter with attendant background noise, do not exceed 80 db.

3.5 HOIST MOTOR

The motor is mounted on a shaft driving the first reduction gearing. A cooling fan is fitted to the end of the rotor shaft. The stator is mounted in a frame and end-shield arrangement.

The motor flange is attached to the body with tie-rods.

The windings are fitted with thermal protection to prevent damage if operating above the rated duty.

3.6 CONDITION MONITORING UNIT

The condition-monitoring unit (if fitted) logs the the total number of hoist motions and hours of operation. This is used as a guide to maintenance and must not be removed or disabled.

3.7 TOP HOOK

The top hook, fitted with a spring-loaded safety latch, is attached to the mainframe by a suspension pin.

3.8 SINGLE FALL BOTTOM BLOCK

The single fall bottom block comprises a forged steel hook with spring-loaded safety latch. The hook shank revolves in swivel halves, housing the load chain, split collars, retaining ring, roller bearing and thrust washer. Swivel halves are secured by two socket screws and retain the chain and link. A chain stop cap at the end of the chain contacts the top of the bottom block and a limit switch actuator to stop motion at the upper limit of travel.

3.9 TWO FALL BOTTOM BLOCK

The two-fall bottom block is similar to the single fall with sideplates that contain a chain wheel. The chain wheel revolves on a fixed axle secured by a retaining pin. The chain wheel has a series of faces around its periphery in which the chain links are bedded, transporting the chain through the block.

A rubber buffer is fitted to the top of the block and contacts a limit switch actuator to stop the motion at the upper limit of travel.

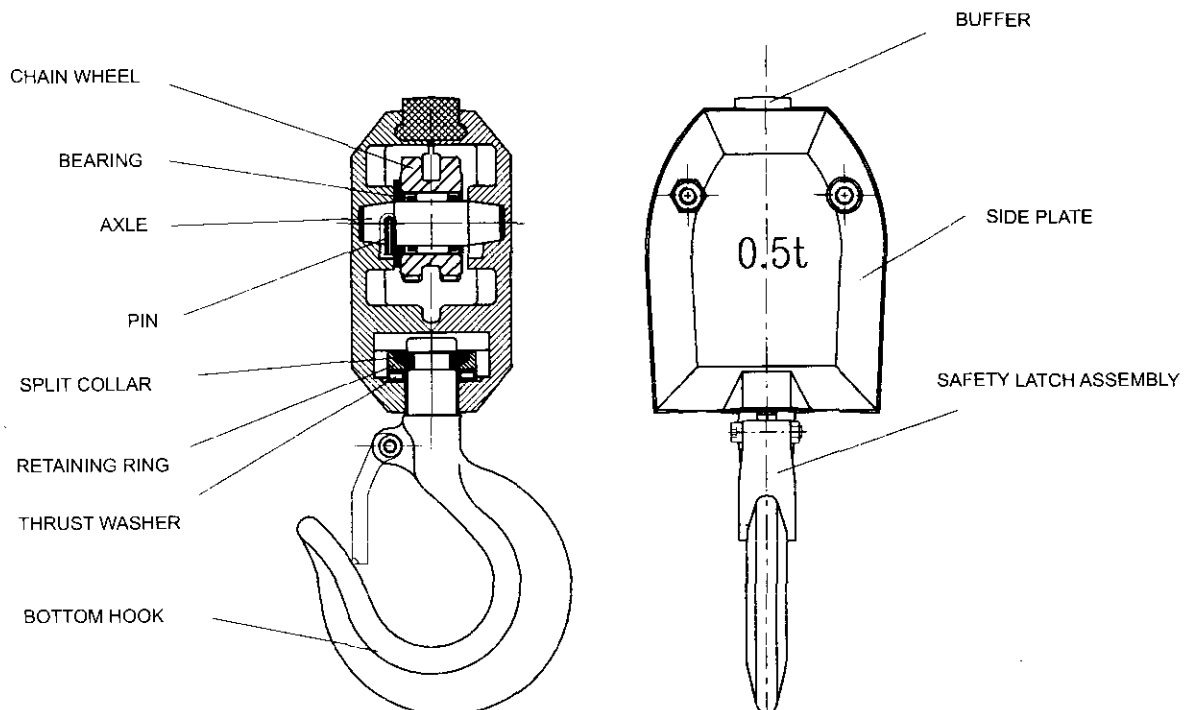


FIGURE3-2 TWO FALL BOTTOM BLOCK

3.10 SLACK END ASSEMBLY

The slack end assembly is fitted with a chain stop cap which locates a compression spring anchored to the end of the load chain by inter-locking chain stop discs clamped by two setscrews/nuts. The assembly prevents the end of the chain running through the hoist mechanically and electrically by contacting with a limit switch actuator to stop motion at the lower limit of travel.

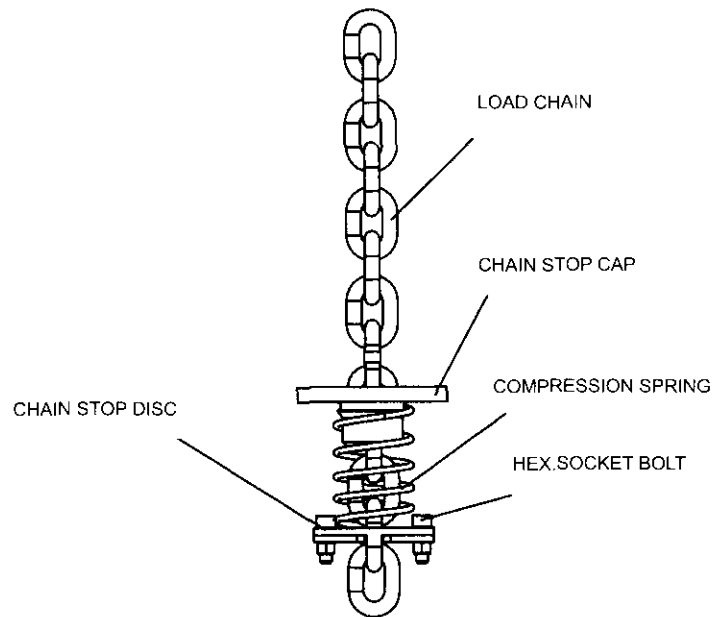


FIGURE3-3 SLACK END ASSEMBLY

3.11 HOIST SUSPENSION

The hoist can be suspended from a fixed point or from a travelling trolley.

3.12 EYE SUSPENSION

The hoist is suspended from an eye mounted on the mainframe.

3.13 HOOK SUSPENSION

The hoist is hung by the top hook onto a travelling trolley or eye bolt etc.

3.14 BUILT-IN SUSPENSION

A built-in hoist utilises a suspension plate permanently fitted to two cross bolts between trolley sideplates.

1) Push travel

All four-trolley wheels are undriven and travel is achieved by pulling on the hoist chain and dragging the unit along the beam

2) Geared travel

Two trolley wheels are geared and meshed with a geared traverse shaft supported from the trolley sideplate. The chain wheel, keyed to the end of the traverse shaft, has a series of pockets to seat the chain links, transmitting drive to the trolley wheels.

3) Electric travel

The hoist is suspended from cross bolts in an electric travelling trolley. A geared motor unit transmits drives through a traverse shaft to geared wheels. Travel is controlled by using a pushbutton on the hoist pendant control unit operating via contactors in the control enclosure.

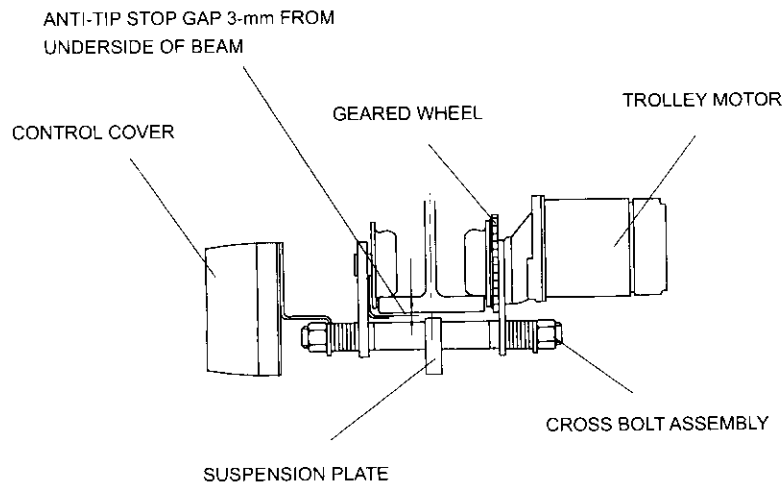


FIGURE3-4 ELECTRIC TRAVEL

4 INSTALLATION

4.1 PRE-INSTALLATION CHECKS

- 1) Check for transit damage.
- 2) Ensure all fasteners and joints are tight and secure.
- 3) Ensure the safe working load (SWL) of the lifting unit and bottom block corresponds with the test certificate for hoist and suspension point.
- 4) Check that all external wiring is secure and undamaged.
- 5) Check that the load chain is secure and undamaged.

4.2 CONNECTING THE CHAIN BOX

⚠ DANGER

- Do not modify the chain box
 - Always attach the chain box before raising the hoist into position.
- 1) Connect the chain box with the chain bucket bolt .
 - 2) Feed the load chain into the chain box gradually and neatly from the end.
 - 3) The load chain may tangle and the hoist may not operate correctly when the load chain is placed into the chain box in one bundle.
 - 4) The inside of the chain box must be cleaned periodically when the hoist is used in an area where dust and foreign matter can enter the chain box.

4.3 LUBRICATION

- 1) Lubricate the load chain before using with machine oil or gear oil.
- 2) When the gear section of the hoist is disassembled, always change the oil or grease within the gear case.
- 3) When the gear box section of the motorized trolley is disassembled, add an extra coat of heavy duty grease (disulfide molybdenum grease) to the gears.

4.4 CIRCUIT BREAKERS

- 1) Must install a circuit breaker.
- The circuit breaker must be exclusively for the hoist and independent from other machinery.
- 2) Select an adequate capacity circuit breaker from Table 1,2..

4.5 HOOK SUSPENSION HOISTS

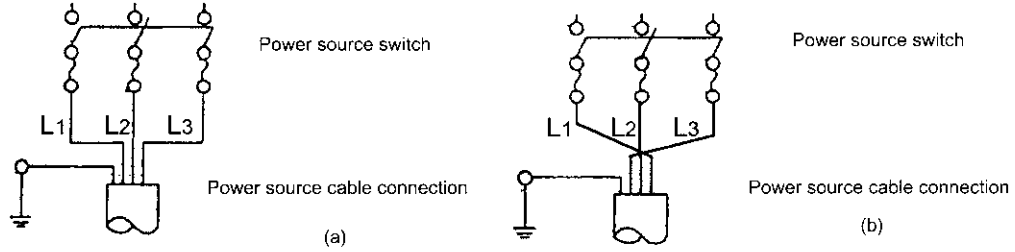
Ensure the hoist suspension point is of sufficient size to admit the top hook or eye and allow correct seating in the hook saddle.

4.6 POWER SUPPLY

1) For a 380V power supply using four 1.5 mm² mains cable. Ratings and cable sizes for other supply voltages can be obtained from our factory.

Supply voltage / frequency is marked on the motor rating plate. Before connecting the hoist, ensure that the values correspond with those of the supply voltage.

- 2) The supply must have a fused isolator at operator level.
- 3) For a travelling hoist, a suitable power supply is required along the whole length of travel.
- 4) When the hoist does not function when the pendant push buttons are depressed, the running direction of the electric chain hoist and the point direction of the pendant push buttons are opposite. If this happens, interchange the position of power source cable.
- 5) As shown in the lower drawing, a reverse connection can be corrected by interchanging two (wire "L1" or "L3") of the three wires of the power source cable.



When "Power source connection (a)" is a reverse connection, the reverse connection can be corrected by interchanging wires "L1" and "L3" as shown in "Power source cable connection (b)"

4.6.1 CONNECTING THE MAINS SUPPLY

- 1) Connect the cable to the hoist before connecting the isolator / mains supply.
- 2) Remove the control cover.
- 3) Connect the three-phase supply to the labeled terminals and the earth to the stud.
- 4) Feed the cable through the gland, strip the outer sheath and tighten the gland.
- 5) Connect the power supply cable as applicable.
- 6) Replace the control cover.
- 7) Connect the supply cable to the isolator / mains

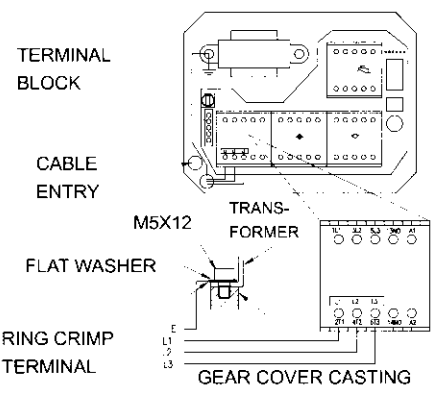


FIGURE4-1 3-PHASE MAINS POWER WIRING

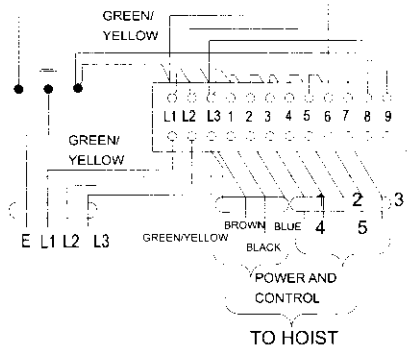


FIGURE4-2 3-PHASE MAINS POWER CONNECTION FOR A TROLLEY MOUNTED HOIST

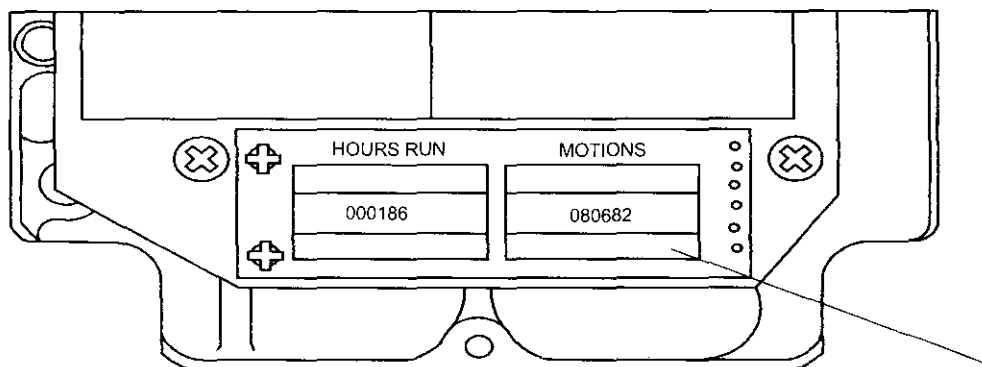
4.7 PRE-COMMISSIONING CHECKS

Before the hoist is put into service, the following checks must be carried out.

- 1) Isolate the power supply.
- 2) Check the suspension point for damage and security.
- 3) Ensure all mechanical and electrical connections are tight and secure.
- 4) Ensure the load chain is clean , lubricated ,not kinked / twisted.

4.8 COMMISSIONING AND TESTING

- 1) Energise the supply.
- 2) Operate the hoist with no load through the full extent of travel and check operation is smooth. Ensure direction of movement corresponds with the direction arrows on the pendant.If not, remove control cover and reverse two phases.
- 3) Check limit switch operation by driving the bottom block to the upper and lower limits.
- 4) Check operation of the slipping clutch with the full SWL. The clutch is factory set and must not be disturbed.If slip occurs within the SWL, the hoist must be returned to us.
- 5)Check the operation of the hoist brake by raising a load a short distance. (Maximum slip with a full SWL is 8 mm for every metre / minute hoist speed.
- 6)For a trolley mounted hoist, travel along the full runway length, ensure adequate clearance.
- 7)For an electric trolley, check the travel brake operates when the control pushbuttons is released.
- 8)Ensure the commissioning date is recorded in the condition monitoring unit panel if fitted.



COMMISSIONING DATE

FIGURE4-3 CONDITION MONITORING UNIT

- 9) Record installation in the Planned Maintenance Log .
- 10)Fit the load chain box.

5 OPERATION

5.1 GENERAL

5.1.1 Load limiter

The slipping clutch prevents overload. Do not use a hoist with a faulty clutch.

5.1.2 Motor protection

Thermal protection prevents motor winding damage if the hoist is used above the rated duty. If the unit cuts out during operation, allow the motor to cool and the device to automatically reset.

5.1.3 Pushbutton controller

The hoist / traverse (as applicable)control unit is fitted with pushbuttons (Fig.4-1)

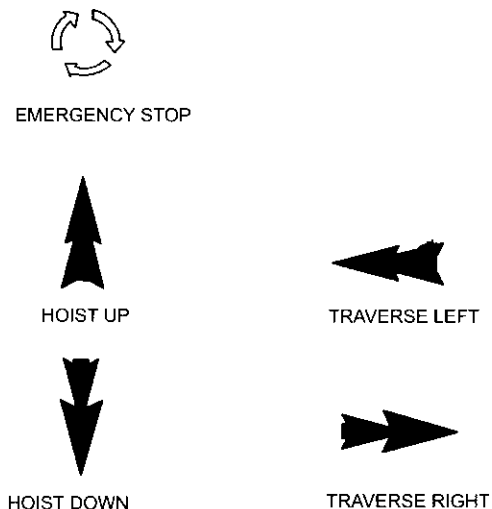


FIGURE5-1 CONTROL PUSH BUTTONS

5.1.4 Emergency stop

During an emergency, depress the mushroom shaped Emergency stop button (the topmost button on the pendant push button switch) to immediately stop the hoist and trolley. When depressed the Emergency stop button will automatically lock and cut off the electricity. After the emergency, the emergency stop button can be reset to its normal position by turning it.

5.1.5 Single speed

Single speed hoist (and electric travel) control is by single depression push buttons. Depress and hold the pushbutton. Release to stop.

Trolley travel direction is shown by labels which correspond with those on the control unit

5.1.6 Dual speed

Dual speed hoist (and electric travel) control is by double depression pushbuttons. Depress and hold the pushbutton to the first pressure for slow speed and to the second pressure for fast speed. Release to stop.

5.1.7 Geared trolley

Pull the fall of hand chain opposite the required direction of travel.

5.1.8 Push trolley

Pull the trolley using the load / loadchain. Do not place any part of the body under the load.

5.2 HOIST SAFETY

When using hoist, observe the following :

- Do read and understand para.1 ,safety and operating instructions provided in this manual.
- Do read statutory regulations.
- Do be familiar with controls and warnings located on the equipment.
- Do ensure that a firm footing is maintained when operating lifting equipment.
- Do ensure that load slings / attachments correct size / rating and seated in the hook saddle.
- Do use hook safety catches, ensure that the hook catch is closed and is not supporting the load.
- Do ensure that the load is free to move and is clear of bostructions.
- Do ensure that the hoist, bottom block and the hook are directly in line with the direction of loading before commencing a lift.
- Do take up all slack carefully, lift a few centimetres, check the balance of the load and check the load holding action before continuing.
- Do ensure that hoist / trolley motions correspond with labels with lables on the control unit.
- Do ensure that all personnel remain clear of a suspended load.
- Do warn personnel of an approaching load.
- Do avoid swinging the load or load hook.
- Do report any malfunction or damage to a supervisor promptly.
- Do ensure that the limit switches function correctly before lifting a load.
- Do NOT use damaged lifting equipment.
- Do NOT use the load chain as a sling wrapping the chain around the load.
- Do NOT attempt to raise a load unless the load is centred under the hoist.
- Do NOT apply the load to tip of the hook.
- Do NOT lift more than the rated load, or use the slipping clutch to assess a potential overload.
- Do NOT lift a load if binding prevents equal loading on all load supporting sling / chains.
- Do NOT allow contact between a hoist and / or load and an obstruction.
- Do NOT use the hoist to lift, support, or transport personnel.
- Do NOT raise / travel or lower loads above other personnel.
- Do NOT drag the load chain or hook along the floor or across other objects.
- Do NOT allow attention to be diverted from operating the lifting equipment.
- Do NOT use limit switches as operational stops. They are safety devices only.
- Do NOT adjust or repair lifting equipment unless qualified.

5.3 PRE-USE CHECKS

Carry out the following:

- 1) Carry out a visual check and ensure no damage to the hoist control unit and control cable.
- 2) Switch on the power supply.
- 3) With no load, check upper and lower limit switches are operaing.
- 4) Check the operation of the hoist brake (ideally with a full safe working load). It should operate smoothly, without any of the following.
- 5) Load slips when hoisting.
- 6) Load falls when pushbutton is released.
- 7) Load falls too quickly when lowering .
- 8) Excessive overrun when lowering.
- 9) Check that the load chain is free from damage, wear and twists. The chain should fall naturally in a straight line with no kinks. If faulty, a replacement must be fitted before using the hoist.

NOTICE:On two fall hoists the bottom block can turn over on itself, twisting the chain and causing damage to the chain andstripper block.

- 10) Ensure that the load chain is adequately lubricated.
 - 1) Check the hlli for cracks or damage and that the safety catch is secure and operates correctly.
 - 2) If the hoist is fitted to a runwat beam, ensure that the runway is undamaged, clear of obstruction,end stops are fitted and secure on both ends of the runway.

5.4 OPERATION

- 1) Carry out pre-use checks.
- 2) Switch on the power supply at the isolator.
- 3) Use the hoist as required using information and controls.
- 4) At the end of use, press EMERGENCY STOP and isolate the power supply.

6 ROUTINE MAINTENANCE

WARNING: The hoist must be operated and maintained in accordance with statutory and local regulations and procedures within the country of use.

The following schedule provides a guide to maximum maintenance intervals. Time periods for some items may be increased or decreased, based upon experience gained during equipment operation.

Task	Pre-use	After 30-200 service hours	Repeat interval	
			200 service hours	12 months
Check hoist, control unit, cable and support wires for security and damage	√			
Check brake operation	√			
Check limit switch operation	√			
Check hook and safety catch	√			
Check jib girder / end stops	√			
Lubricate top hook suspension pin		√		√
Check all assembly bolts for tightness				√
Check electrical enclosure(s) and wiring for damage		√	√	
Check hoist suspension for damage and security		√	√	
Lubricate bottom block thrust bearing / load chain wheel bearing		√		√
Check warning labels / plates		√	√	
Check load chain / anchors		√		√
Lubricate loadchain		√	√	
Lubricate handchain (geared trolley)		√		√
Check chainbox		√	√	
Check brake air gap		√	√	
Generally check trolley for damage and security of attached parts		√		√
Lubricate geared trolley open gears		√		√
Check load limit clutch operation by lifting an overload. The clutch must operate within the range 110% SWL to 125% SWL				√
Paint Finish				√

6.1 HOOK

Measure dimension 'A' of the new hook with a slide calipers, and write it down for future reference.

The hook must be replaced immediately when one of the following limits are exceeded.

- When deformation is visually noticeable (elongation, twists, cracks, etc).
- When the limits of Table are exceeded and when dimension 'H' has worn down more than 90%.
- When dimension 'A' differs from the above recorded value of the new hook.

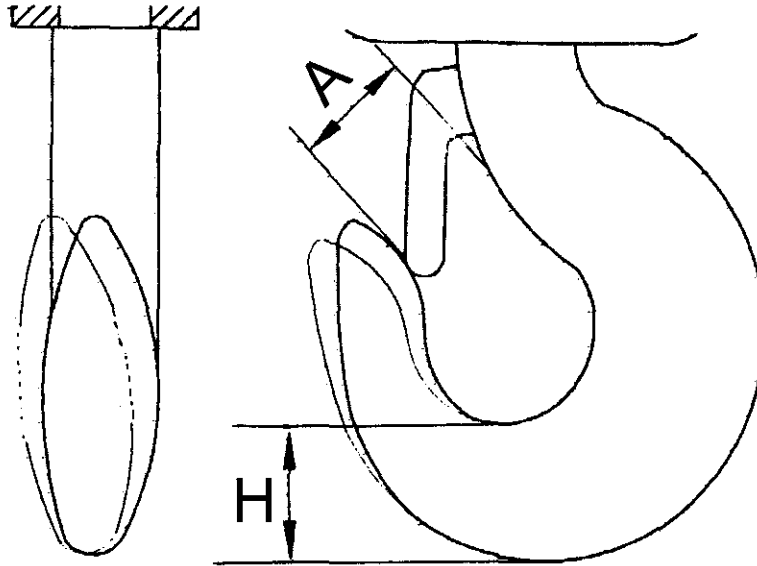


FIGURE6-1 EXAMPCE OF HOOK WEAR

Rated load	Top hook		Bottom hook	
	Normal A	Limit A	Normal A	Limit A
500 kg and below	31.5 mm	33 mm	31.5 mm	33 mm
1000 kg and 2000kg	44 mm	46mm	44 mm	46 mm

Check for the following:

- 1) Cracks
- 2) Wear, reduce the working area of the hook by 10%
- 3) A bend or wrist exceeding 10° degree from the plane of an unbent hook (Fig. 6-1)
- 4) Safety latch assembly operation.

If, due to wear or deformation, the safety latch is inoperative / fails to fully close the throat opening , the fault must be rectified before the hoist is returned to service.

Hooks having any fault shall be removed from service unless a qualified person approves further use. Hooks approved for continued use shall be subjected to frequent inspection.

6.2 LOAD CHAIN

Note: The original fit load chain conforms to chain safety regulations for lifting equipment. Obtain a new load chain from us. Fitting an unapproved chain renders our liability and guarantee void.

Measure the sections of the load chain that come into contact with the load sheave with a slide calipers. Replace the load chain when the limits of Table are exceeded. The whole load chain must be replaced even if one link is extensively worn or deformed.

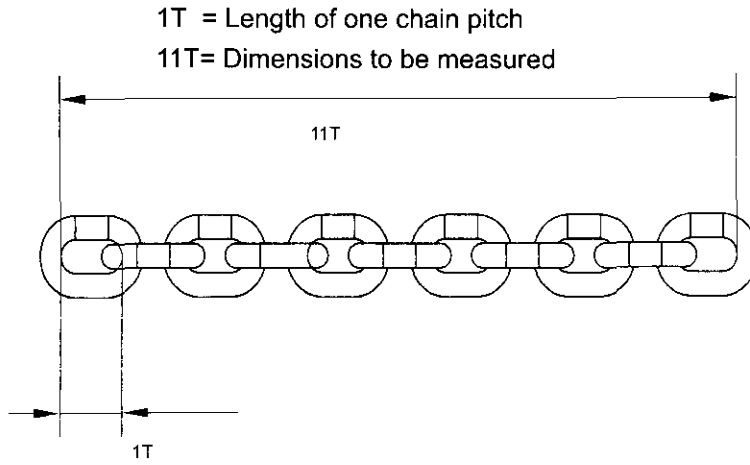


FIGURE6-2 LOAD CHAIN

Rated load	Chain size (mm)	Standard 11 t (mm)	Limit 11 links (mm)
500 kg and below	5x15	165	168
1000 kg and 2000kg	8x24	264	269

6.3 LUBRICATION

Wipe the chain clean, use a suitable brush, lubricate along the entire length of the chain and ensure contact points between links are lubricated.

6.4 DAMAGE AND WEAR

Check for deformation, cracks, pitting, reduction in the thickness of links or increase in pitch due to stretch.

If the chain is replaced, remove the chain stripper block and examine the load chain wheel.

Examine the links at various points along the chain and check there is no wear, damage or distortion.

6.5 FRICTION CLUTCH

The hoist is equipped with a friction clutch mechanism, which will slip and cause the motor to run idle when the hoist is overloaded. The friction clutch is adjusted before the hoist leaves the factory, and will normally not require further adjusting.

6.6 HOIST BRAKE

Type part No.	Brake Torque
49#	5.0 N.m
49#	10.0 N.m

6.6.1 Hoist Brake Explored Figures

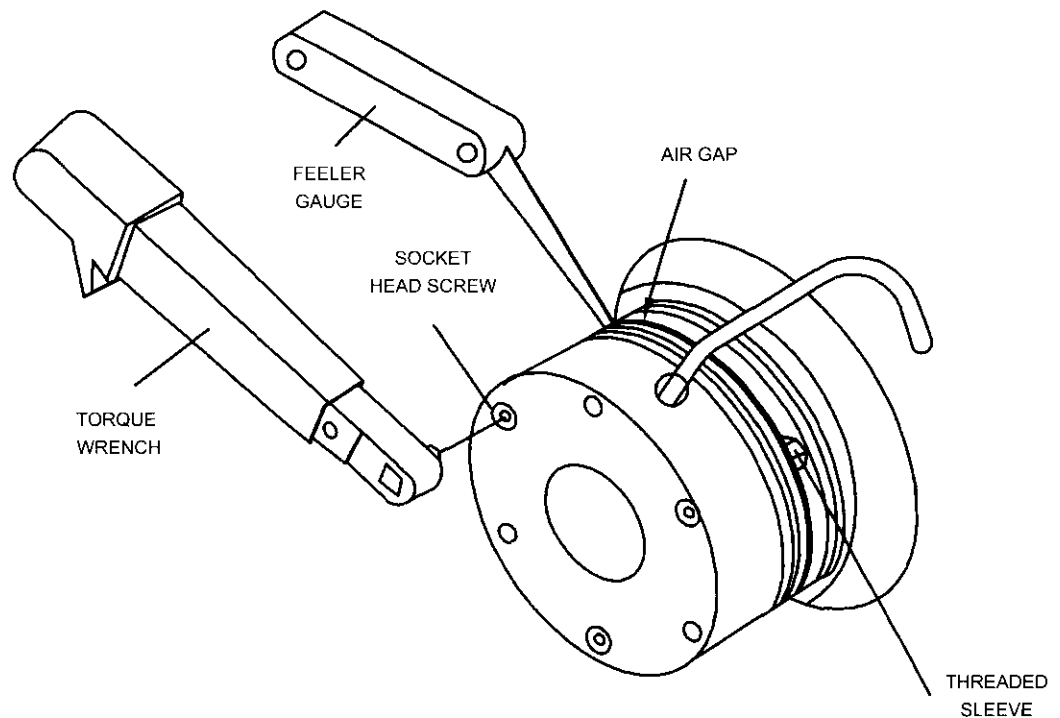


FIGURE6-3 ELECTROMAGNERIC BRAKE UNIT

6.6.2 Checking / setting the air gap

- 1) Remove the load and fully lower the bottom block
- 2) Isolate the power supply.

⚠ WARNING: There is a risk of severe shin burning from contact with a recently operated hot brake unit. To avoid the risk of skin burn ,before servicing a brake unit, ensure that the unit is cool.

- 3) Remove the cover.
- 4) Using feeler gauges at the periphery in three positions, check the air gap, ensuring that the gap is even throughout 360 degree.
- 5) To adjust ,slacken the mounting bolts and re-set the gap by rotating the adjuster tubes. Torque ,tighten the mounting bolts .
- 6) Recheck the air gap,
- 7) Replace the cover.
- 8) Remove all tools and equipment.
- 9) Restore the power supply.
- 10) Check the brake is functioning correctly.

7 GENERAL OVERHAUL

A general overhaul must be carried out on reaching the theoretical duration of service, or at most 10-years, to restore the hoist condition and allow further safe operation for a specified period.

Table 7-1 details components to be checked / replaced during general overhaul.

Component	Check for wear	Check for security / damage	Replace
Brake	√		
Contactors, limit switches	√		
Motor shaft	√		
Gearing	√		
Friction bearings			√
Seals / gaskets			√
Chain, chain sheave	√		
Chain guide	√		
Suspension	√		
Load hook			√
Tight end anchor pin		√	
Trolley, travel wheels	√		

Table 7-1 General overall

The inspector specifies the new theoretical duration of service and the maximum time period to the next general overhaul. The data must be documented for recorder.

7.1 SAFE WORKING PERIODS (S.W.P)

The safety and health provisions make it a legal requirement to eliminate special hazards caused by, for example, fatigue and aging. The requirement obliges the owner of serial hoist units to determine the actual duration of service on the basis of the operating hours, load spectra and / or recording factors.

This rule determines measures for achieving safe working periods over the entire duration of service. The hoist unit is designed for specific periods of operation but premature failure cannot be eliminated.

- 1) The actual duration of service determined on the basis of operating time and load spectrum must be documented at least once per year.
- 2) The operating time T_i (hours) is read on the condition-monitoring unit (if fitted). If a condition-monitoring unit is not fitted, the operating time must be obtained from a record of hoist use, refer to para 6.1.4
- 3) The load (load spectrum) must be estimated. Refer to para. 6.1.2
- 4) The actual duration of service \hat{S} is calculated as: $S = k_m \cdot T_i$ if.
- 5) A general overhaul must be carried out on reaching the theoretical duration of service. This shall be no later than 10 years after commissioning.
- 6) The owner of the hoist is responsible for checks and overhauls in accordance with relevant.

A general overhaul is defined as:

Inspection of the machinery for the purpose of detecting all defective components and / or components and parts close to failure and the replacement of all such components and parts. Following a general overhaul, the machinery is in a condition similar to that of the same machinery in new condition as far as the principle of operation and performance values are concerned.

8 LUBRICATION SCHEDULE

Before commencing, refer to para.1,-safety.

⚠ WARNING: Lubricants represent a health safety hazard. Before handling Lubricants, read and comply with the associated product health and safety data information sheet obtained from the lubricant supplier.

The following schedule provides a guide to maximum lubrications intervals under normal conditions. Time intervals for some items may be increased or decreased, based on experience gained during operation.

The specialised application hoists,contact our dealer.

8.1 HOIST UNIT

Part	Application
Top hook suspension pin	Regrease every 12 months
Hoist motor bearings	Sealed
Gearbox	Sealed
Ball and roller bearings	Sealed
Load chain	Lubricate every 30-100 service hours

8.2 BOTTOM BLOCK

Part	Application
Thrusting bearing	Re-pack every 12 months
Chain wheel bearing (2 fall)	Re-pack every 12 months

8.3 TROLLEY

(Trolley mounted hoists only)

Part	Applicataion
Wheel bearings	Sealed
Handwheel shaft bearings(gearred travel only)	No lubrication required unless dismantled. Lubricate bush ends where contacting another surface
Open gears(gearred and electric travel)	Lubricate every 12 months.Avoid lubricant on wheel treads
Hand chain (gearred travel)	Lightly lubricate every 12 months
Gearbox(electric travel)	Repack is dismantled

9. CORRECTIVE MAINTENANCE

9.1 SPARE PARTS

To ensure compatibility, obtain spare parts from our factory, when ordering, quote the hoist type and serial number. When replacing fuses, use fuses of the same rating.

9.2 LOAD CHAIN

Note: The original fit load chain conforms to chain safety regulations for lifting equipment. Obtain a new load chain from us.

9.2.1 Single Fall Load Chain

Removal and Fitting

- 1) Lower the bottom block until just before lower limit switch operation and isolate the power supply.
- 2) As necessary, use suitable access equipment and lift the chain slack end from the chain box.
- 3) Using a suitable wedge between the chainbox and mainframe, lift and retain the chainbox away from the mainframe.
- 4) Restore the power supply and raise the bottom block to lower the chain slack end for access
- 5) Isolate the power supply.
- 6) Remove the slack end assembly.
- 7) Restore the power supply and drive the hoist to draw the new chain through the hoist.
- 8) Lower the bottom block to disconnect the old / new chain and the bottom block.
- 9) Isolate the power supply.
- 10) Remove the old chain from the bottom block by lifting the chain stop cap, unscrew the cap screws and separate the swivel halves.
- 11) Place the chain through the chain stop cap prior to fitting the end link into the depression in the swivel half. Join the swivel halves and secure with the cap screws. Torque tighten to 13 N-m.
- 12) Refit the slack end assembly.
- 13) Remove the wedge, restore the power supply, raise the bottom block sufficiently and place the chain slack end in the chainbox.
- 14) Wipe the chain clean and lubricate.
- 15) Restore the power supply and check hoist operation.

9.2.2 Two Fall Load Chain

Removal and Fitting

- 1) Lower the bottom block until just before lower limit switch operation and isolate the power supply.
- 2) As necessary, use suitable access equipment and lift the chain slack end from the chain box.
- 3) Using a suitable wedge between the chainbox and mainframe, lift and retain the chainbox away from the mainframe.
- 4) Restore the power supply and raise the bottom block to lower the chain slack end for access
- 5) Isolate the power supply.
- 6) Remove the slack end assembly.
- 7) Restore the power supply and drive the hoist to pull the new chain through the hoist.
- 8) Drive the hoist to lower, hand pulling the chain to feed through the bottom block.

⚠ DANGER: A counter weight (3.2kg maximum) is fitted inside the control cover to balance the hoist on units of 0.5 tonnes SWL and below ,To avoid injury, be careful when removing.

9) Isolate the power supply.

10) Anchor the new chain by placing the end link into the body casting to ensure no twists are introduced into the chain and refit the anchor bolt and washer through the body casting.Fit a new nut and tighten to 30 N-m.

11) Refit the slack end assembly.

12) Refit the slack end assembly .

13) Remove the wedge ,restore the power supply,raise the bottom block sufficiently and place the chain slack end in the chainbox.

14) Wipe the chain clean and lubricate.

15) Restore the power supply and check hoist operation.

9.3 LOAD CHAIN BOX

9.3.1 Removal and fitting

1) Lower the bottom block until the lower limit switch operates to empty chain from the chain box.

2) Isolate the power supply.

3) Using suitable access equipment,unscrew the stiff nut from the retaining bolt,withdraw the bolt from the lug,untension the spring and remove the chainbox.

4) Place the slack end of the chain into the chainbox.

5) Position the chain box locating the stripper block lug,position the tension spring to secure.

6) Fit the bolt to the stripper block lug and fit the securing nut.

9.4 PENDANT CONTROL UNIT AND CABLE

The pendant control unit is supplied with a length of cable to position the unit 1-metre above operating floor level.If cable length is greater than 20-meters,contact us for details.

9.4.1 Removal and Fitting

1) Isolate the power supply.

2) Remove the control enclosure / control units covers.

3) Note and disconnect the wiring,remove the control cable and use it as a pattern for the new cable.

4) Cut the cable insulation to free the support wires either side of the control cable and strip the insulation for 12.5 mm of bare wire on each support wire end to form a splice joint.Pass the end of one support wire through the support loop on the control unit and crimp the splice.

5) Ensure support wires support the cable at the hoist gland entry and the cable entry to the control unit,observing cable form and bend dimensions.Do not tighten the cable clamp as this prevents the support wires supporting the weight of the pendant controller.

6) Repeat step 5 to loop the new support wires through the strainer link on the hoist unit.

7) Connect the wiring.

8) Refit the control / control unit cover.

9) Restore the power supply and check operation of the hoist.

10 CONTROL WIRING DIAGRAMS

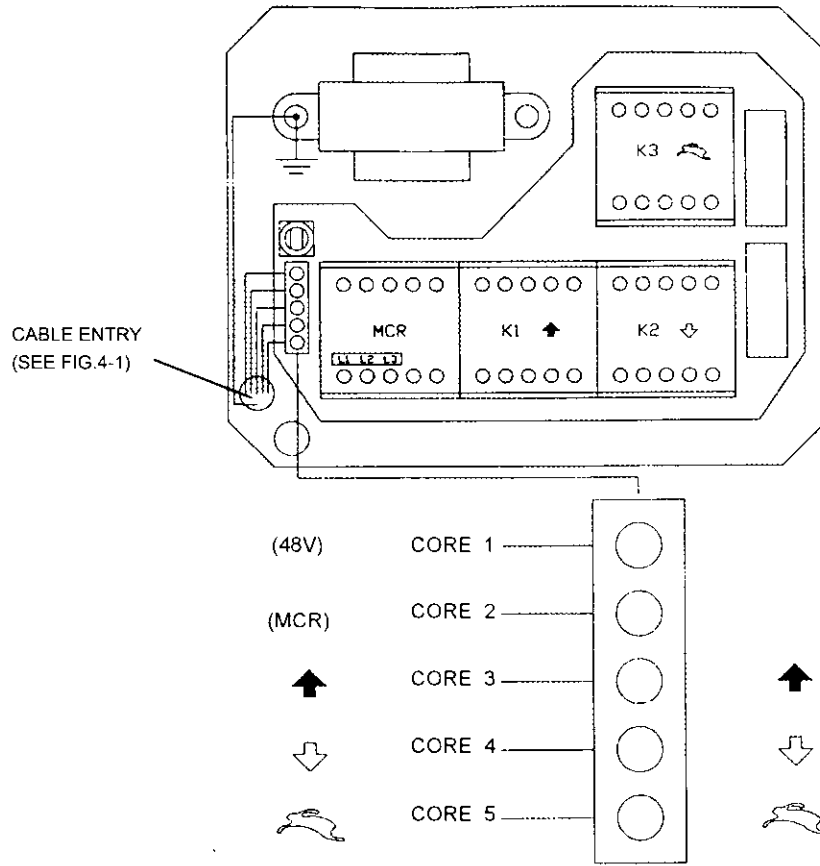


FIGURE 10-1 CONTROL CIRCUIT WIRING-3-PHASE POWER SUPPLY UNITS

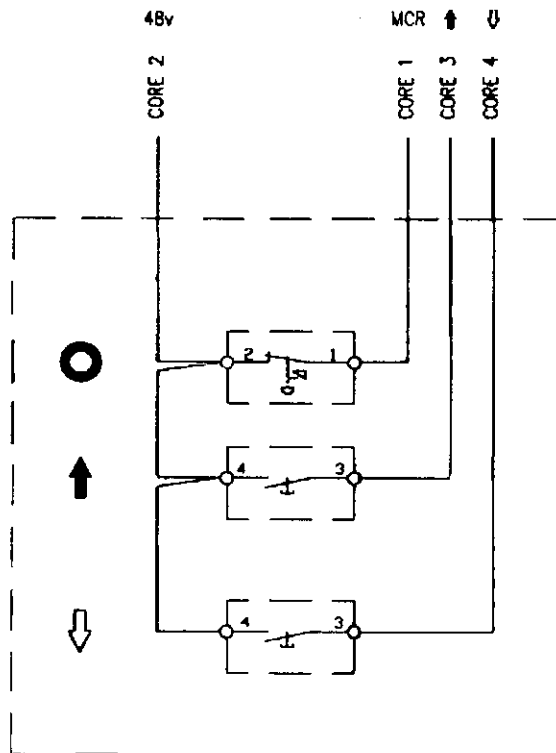


FIGURE 10-2 SINGLE SPEED PENDANT CONTROLLER WIRING -3 PHASE POWER SUPPLY UNITS

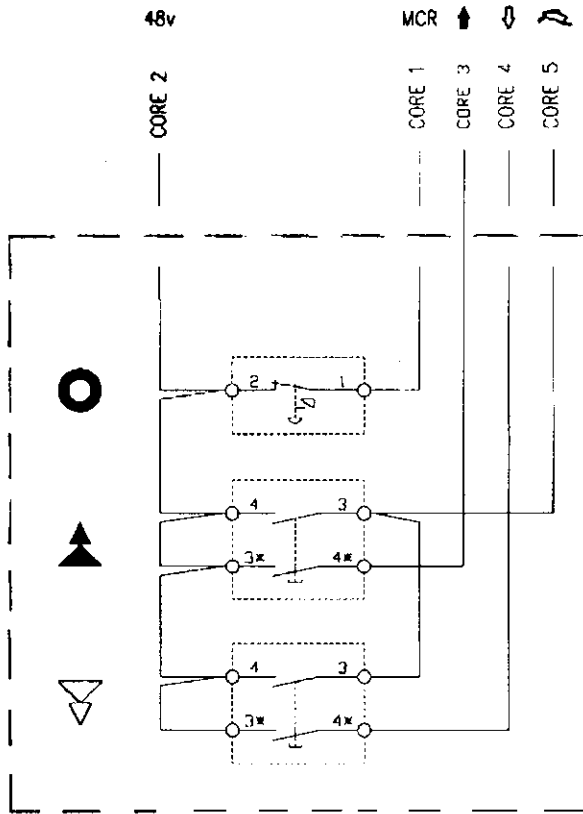


FIGURE10-3 DUAL SPEED PENDANT CONTROLLER WIRING-3-PHASE POWER SUPPLY UNITS

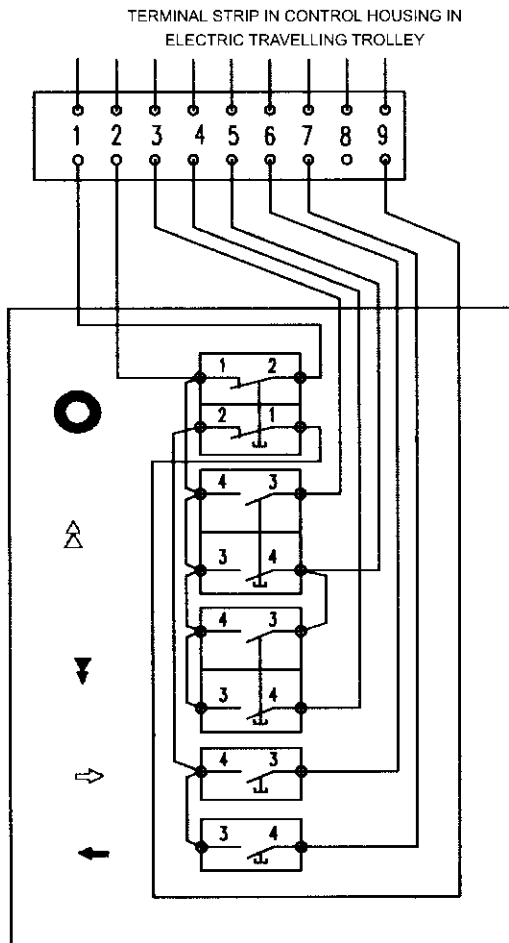
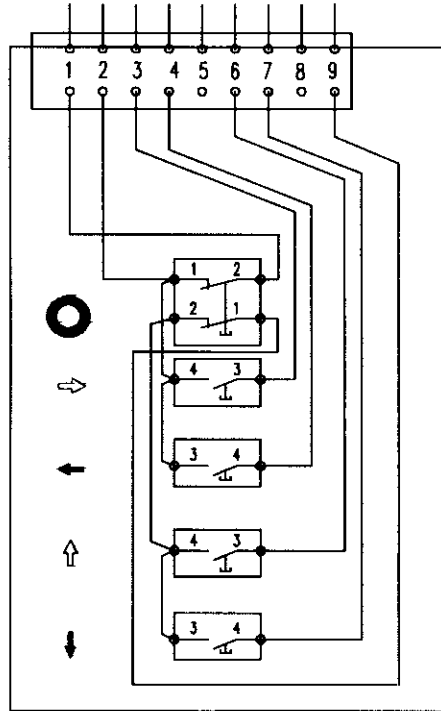


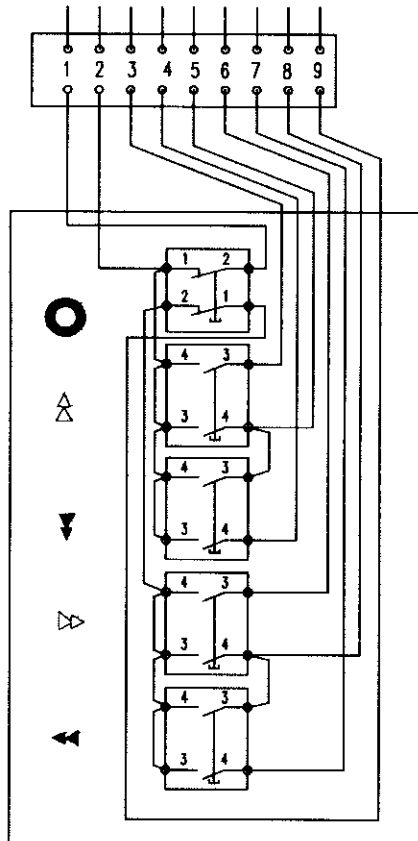
FIGURE10-4 DUAL SPEED HOIST/SINGLE SPEED TROLLEY
WIRING-3-PHASE POWER SUPPLY UNITS

TERMINAL STRIP IN CONTROL HOUSING IN
ELECTRIC TRAVELLING TROLLEY



**FIGURE10-5 SINGLE SPEED HOIST/SINGLE SPEED TROLLEY
WIRING-3-PHASE POWER SUPPLY UNITS**

TERMINAL STRIP IN CONTROL HOUSING IN
ELECTRIC TRAVELLING TROLLEY



**FIGURE10-6 DUAL SPEED HOIST/DUAL SPEED TROLLEY WIRING-3-
PHASE POWER SUPPLY UNITS**

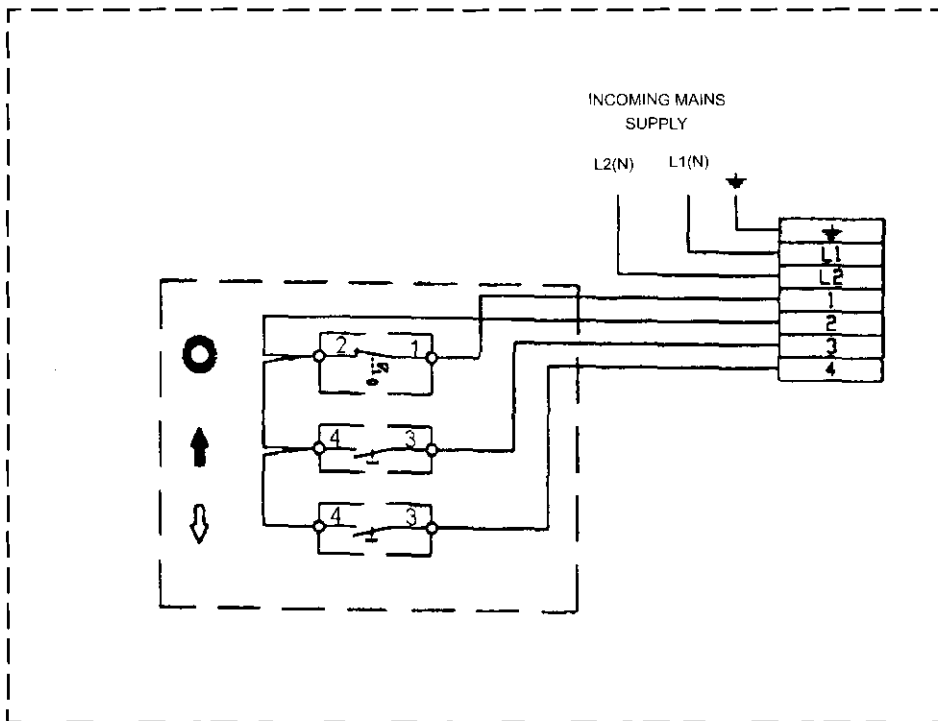


FIGURE10-7 1-PHASE POWER SUPPLY UNITS

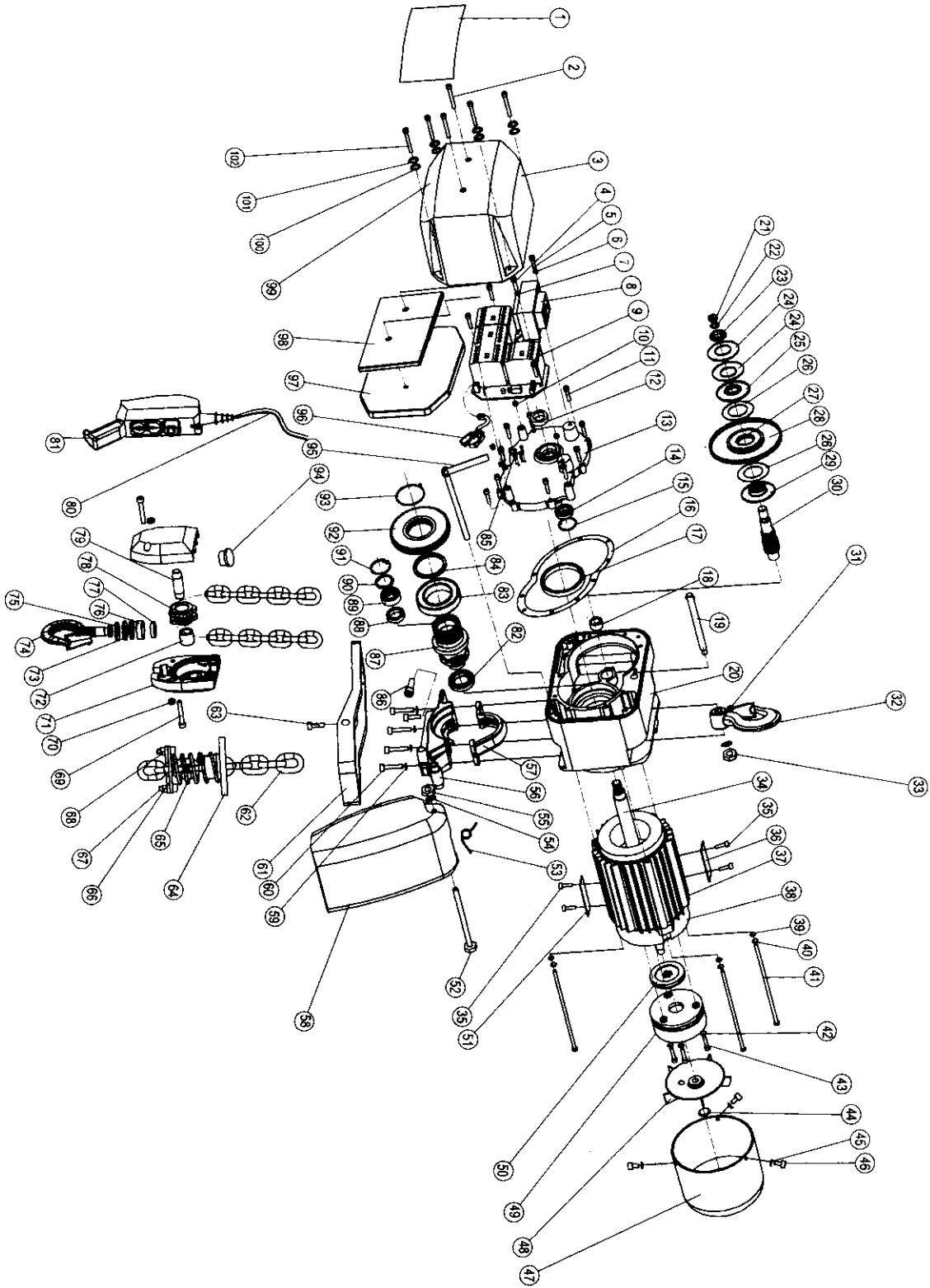
11 HOIST DISPOSAL

Disposal of a hoist unit at the end of its working life, it must be carried out in accordance with all local regulations and procedures and with regard to the safety of others.

12 HOIST MANUFACTURING MATERIALS

The following materials are used in the manufacture of hoist units

Control cover,braker cover	ABS polymer
Chain-box and chain feeder	MDPE material
Chain guide / Stripper	ZG45
Body,gear cover,motor casing,bottom block sideplate and actuator arm	Aluminium alloy
All remaining parts	Ferrous ally



0.5T (TWO FALLS)

FIGURE13-1 ELECTRIC CHAIN HOIST EXPLORED FIGURES

13 PARTS LIST & EXPLORED FIGURES

Part No.	Part Name	Q' tity	Part No.	Part Name	Q' tity
1	Brand Lable	1	52	Bold M8x120	1
2	Hex. Bolt M5 x 35	2	53	"U"Spring	1
3	PCB Unit Cover	1	54	Washer ϕ 8	2
4	Hex. Bolt M5 x 20	4	55	Nut M8	1
5	Hex. Bolt M5 x 16	1	56	Chain Guide(DN)	1
6	Spring Washer	1	57	Chain Guide(UP)	1
7	Washer ϕ 5	3	58	Chain Bucket	1
8	Transformer	1	59	Spring Washer ϕ 5	4
9	PCB unit	1	60	Hex.Bolt M5x35	4
10	Isulating Bushing	5	61	Switch Rocking Lever	1
11	Hex.Bolt M5 x 25	10	62	Load Chain	1
12	Oil Seal 20x30x7	1	63	Hex.Bolt M6x8	1
13	Gear Case Cover	1	64	Chain Stop Cap	1
14	Ball Bearing 6002	1	65	Spring	1
15	Circlip ϕ 32	1	66	Chain Stop Disc	2
16	Seal ring	1	67	Hex.Bolt M4x12	2
17	Oil Seal 65x75x9	1	68	Self-Locking Nut M4	2
18	Roller Bearing 15x21x12	1	69	Hex.Bolt M6x30	2
19	Yoke Pin	1	70	Self-Locking Nut M6	2
20	Gear Case Sear	1	71	Swivel Half	2
21	"O"Oil Seal	1	72	Roller Bearing 15x21x21	1
22	Bushing	1	73	Meedle Bearing	2
23	Fixing Washer	1	74	Bottom Hook	1
24	Spring Washer25x50x1.5	2	75	Thrust Washer	1
25	Left-Pressing Sleeve		76	Retaining Ring	1
26	Friction Disc	2	77	Split Collar	1
27	Inner Copper Sleeve	1	78	Chain Wheel	2
28	Big Disc Gear	1	79	Chain Wheel Axle	1
29	Right-Pressing Sleeve	1	80	Control Cable	1
30	Pinion Shaft	1	81	Push-Button Unit	4
31	Safety latch Assembly	2	82	Ball Bearing 6204-2Z	1
32	Top Hook	1	83	Ball Bearing 6010	1
33	Self-Locking Nut M8	1	84	Bushing	1
34	Rotor assembly	4	85	Scres M4x16	1
35	Screw M4x8	1	86	Chain Fasten Pin	1
36	Electric Data late	1	87	Load Sheave	1
37	Hoist Motor Stator	1	88	Oil Seal22x32x7	1
38	Mortor Bracket	1	89	Roller Bearing 202E	1
39	Washer ϕ 4	3	90	Ripple Washer	1
40	Spring Washer ϕ 4	3	91	Circlip ϕ 35	1
41	Motor Stay Bolt	3	92	Load Gear	1
42	Spring Washer ϕ 4	3	93	Circlip ϕ 50	2
43	Mounting Bolt M4	3	94	Buffer	1
44	Cirlip ϕ 10	1	95	Switch Rocking Bar assy	1
45	Washer ϕ 4	3	96	Overlifting-Overlowering Switch Unit	4
46	Screw Bolt M4x8	3	97	Cover Weight(1)	4
47	Cooling Fan Cover	1	98	Cover Weight(2)	4
48	Cooling Fan	1	99	Live Terminal/Heavy Cover Warning	1
49	Electromagnetic Brake Unit	1	100	Rubber Washer	1
50	Disc Hub Unit	1	101	Washer ϕ 5	4
51	Hoist Motor Nameplate	1	102	Hex.Bolt M5x20	4