

OPERATING & MAINTENANCE INSTRUCTION MANUAL WITH SPARE PART LIST

(Guarantee Will be Void if not used as Instructed in this Manual)



WRH III

3t - 2 Fall, 6t - 4 Fall,
10t - 6 Fall

WIRE ROPE HOIST

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Important Information and Warnings

Terms and Summary

This manual provides important information for personnel involved with the installation, operation and maintenance of this product. Although you may be familiar with this or similar equipment, it is strongly recommended that you read this manual before installing, operating or maintaining the product.

Danger, Warning, Caution and Notice - Throughout this manual there are steps and procedures that can present hazardous situations. The following signal words are used to identify the degree or level of hazard seriousness.

DANGER :- Danger indicates an imminently hazardous situation which, if not avoided, **will** result in **death or serious injury**, and property damage

WARNING :- Warning indicates an imminently hazardous situation which, if not avoided, **could** result in **death or serious injury**, and property damage.

CAUTION :- Caution indicates a potentially hazardous situation which, if not avoided, **may** result in **minor or moderate injury** or property damage.

NOTICE :- Notice is used to notify people of installation, operation, or maintenance information which is important but not directly hazard-related.

CAUTION

These general instructions deal with the normal installation, operation, and maintenance situations encountered with the equipment described herein. The instructions should not be interpreted to anticipate every possible contingency or to anticipate the final system, crane, or configuration that uses this equipment. For systems using the equipment covered by this manual, the supplier and owner of the system are responsible for the system's compliance with all applicable industry standards, and with all applicable federal, state and local regulations/codes.

This manual includes instructions and parts information for a variety of trolley and hoist types. Therefore, all instructions and parts information may not apply to any one type or size of specific trolley or hoist. Disregard those portions of the instructions that do not apply.

Record your hoist and trolley's Product Code and Serial Number on the front cover of this manual for identification and future reference to avoid referring to the wrong manual for information or instructions on installation, operation, inspection, maintenance, or parts.

Use only Indef authorized replacement parts in the service and maintenance of this trolley.

WARNING

Equipment described herein is not designed for and **MUST NOT** be used for lifting, supporting, or transporting people, or for lifting or supporting loads over people.

Equipment described herein should not be used in conjunction with other equipment unless necessary and/or required safety devices applicable to the system, crane, or application are installed by the system designer, system manufacturer, crane manufacturer, installer, or user.

Modifications to upgrade, rerate, or otherwise alter this equipment shall be authorized only by the original equipment manufacturer.

Failure to read and comply with any one of the limitations noted herein can result in serious bodily injury or death, and/or property damage.

The angle between rope and plane perpendicular to the axis of the drum shall not exceed 5° (As per IS 3938 6.1.1.2).

Hoists shall not be operated unless the hoist unit is centered *over the load*, except when authorized by a qualified person who has determined that the components of the hoist and its mounting will not be overstressed. Should it be necessary to pick a load that is not centered under the hoist unit, precautions should be taken to control the swing of the load when it is picked clear of its support.

DANGER

HAZARDOUS VOLTAGES ARE PRESENT IN THE CONTROL BOX, OTHER ELECTRICAL COMPONENTS, AND CONNECTIONS BETWEEN THESE COMPONENTS.

Before performing ANY mechanical or electrical maintenance on the equipment, de-energize (disconnect) the main switch supplying power to the equipment; and lock and tag the main switch in the de-energized position.

Only trained and competent personnel should inspect and repair this equipment.



Information

This symbol indicates tips and useful information.

Warning Tag and Labels

The warning tag illustrated below in Figure is supplied with each hoist and trolley shipped from the factory. If the tag is not attached to the pendant cord for your hoist/trolley, order a tag from your dealer and fix it. Read and obey all warnings attached to this Hoist/Trolley. Tag is not shown in actual size.

WARNING

IMPROPER use of powered Hoist could result in death Or serious injury.

To avoid these hazards:

- ▶ ALWAYS read owner's manual and safety instructions.
- ▶ Do NOT lift more than rated load.
- ▶ Do NOT lift or transport loads over or near people.
- ▶ Do NOT use a hoist for lifting supporting or transporting people.
- ▶ Do NOT operate unless load is centered under hoist.
- ▶ Do NOT support a load on the tip of the hook
- ▶ Do NOT use a hoist if the hook latch is missing or broken.
- ▶ Do NOT remove or obscure the warning labels.
- ▶ Do NOT run the load chain or wire rope over a sharp edge.
- ▶ Do NOT use the load chain or wire rope as a sling.
- ▶ Do NOT operate beyond the travel limits of the hook or load block.
- ▶ Do NOT use a twisted, kinked, damaged, or stretched load chain or wire rope.
- ▶ Do NOT operate a wire rope hoist with a wire rope that is not properly seated in its groove.

CONDITIONS WHERE WARRANTY WILL BE VOID / NOT APPLICABLE

HHL does not provide reimbursement for maintenance and visit charges for items such as: brake adjustments, lubrication oil changes, or any other item or activity deemed solely by HHL to be maintenance related.

HHL will not be liable for damage or malfunction and consequently warranty resulting from:

- a. Lack of maintenance.
- b. Use of improper or insufficient lubricants
- c. Supply voltage high/low or insufficient.
- d. Environmental conditions (including but not limited to extreme temperatures, humidity and corrosive environments).
- e. Outdoor applications where HHL is not intimated and recommendations for protection from the elements are not followed.
- f. Misuse or abuse (including but not limited to overloading, shock loading, or side / angular lifting/pulling).
- g. Use of parts other than genuine HHL replacement parts.
- h. Improper repairs or maintenance.
- i. Modifications not approved by HHL.
- j. Improper handling of product after it leaves HHL factory.
- k. Fire, accidents, or acts of God or nature, including but not limited to floods, hurricanes and lightning.
- l. Any piece of equipment not supplied by Hercules Hoists Limited, is installed on products.
- m. Malfunction or damage caused by items added to Hercules Hoists Limited products, including but not limited to controls and control components.
- n. Relocation of hoist / equipment without proper installation and commissioning by HHL / ABP.
- o. Misalignment in existing / installed Crane rail and hoist monorail, improper existing power feed track.

Operational cause Note

Overhead crane & hoists are typically designed to lift objects vertically. The specific guide lines are mentioned in respective IS standard.

Sometimes, however, operators attempt to make a side pull or cross pull or use the hoist horizontally to lift an object that is not directly underneath it.

This can cause damage to hoist.

Probable failures/Risks:

- ▶ Side pulling can cause damage to various hoist parts – Load Chain Wheel, Chain Guide Roller, Chain Stripper, Hook and hook latch assembly, in electric Chain Hoists the load chain guide and chain stripper and in Wire Rope Hoists the rope drum, rope guide and the rope itself.
 - ▶ Additionally, it may place the operator and personnel working near the crane at risk for injury.
 - ▶ One of the main risks for an operator is load swing, which can damage the load or cause injury to the operator. In extreme cases, there might be a load drop.
 - ▶ A rope that has been worn by side pulls may also snap and lead to a loss in control of the load.
 - ▶ Cross pull or side pull may affect on monorail beam flanges, the beam web may deflect / distort, and beam flanges may wear causing uneven sides of beam.
- Preventing side pulls could lead to increases in both the safety and the lifetime of the components, customer should be educated at every interaction opportunity.
 - The unfortunate prevalence of cross pulling-related accidents and maintenance needs repeated replacement of parts like chain guider roller, chain stripper, hook latch assembly, rope guide related parts i.e set of rope guide ring, spring and rope guide joining bracket.

Operational Note:

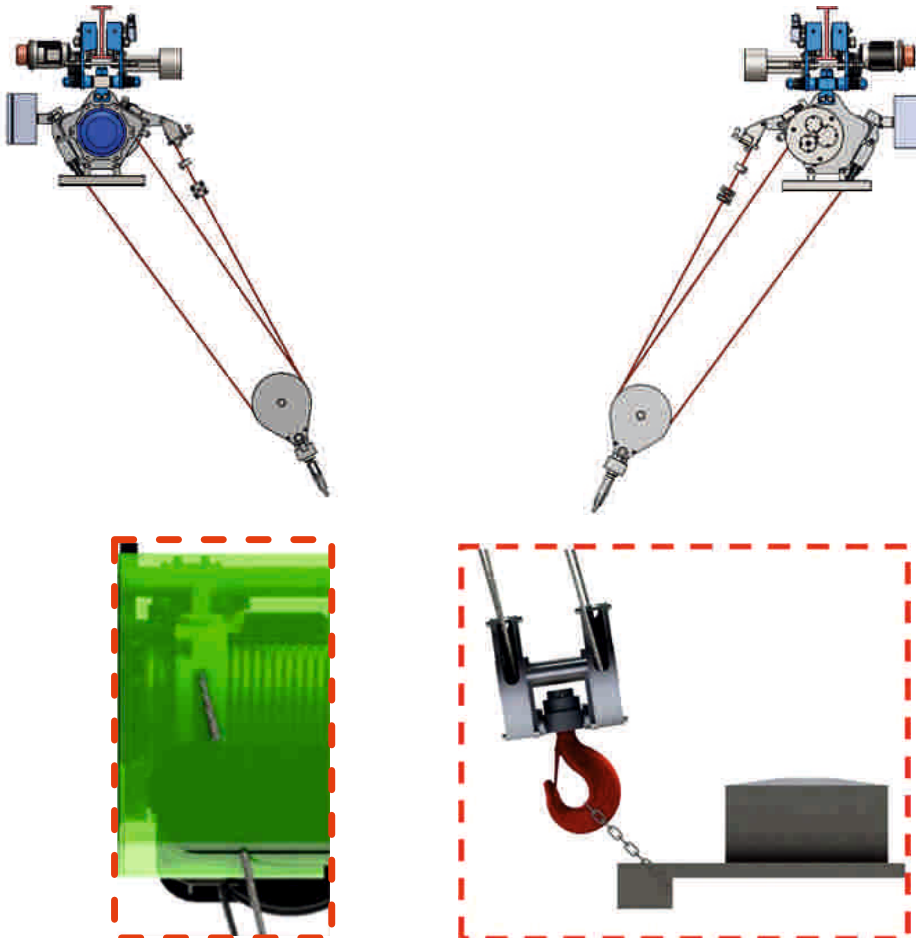
- Please be aware that as a safety feature, this rope guide ring is designed to snap in the event of the wrong usage of the rope hoist. As per IS 3938-2005 the angular lifting / pulling of dead weight is not allowed in wire rope hoist. If any user puts the rope hoist to such an application, the rope guide ring will not allow to perform the lifting. The rope guide ring will break if the fleet angle is more than 5 Deg. including angle between point of lift and dead weight kept on floor.
- The specific instruction in Do's and Don'ts is given hoist operating and maintenance manual. Those guidelines are based on past experience and safety standards of operation.
- The hoist in tandem application cannot be used because the load lifting speed and effort are not balanced in manual hoisting operation. Most important is load required to be centered under hoist and load line of trolley centre and hook seating diameter centre should match. The hoists are designed for lifting load vertically. This phenomenon is applicable for all hoisting equipment's.

If hoist not used in proper way as mentioned above the warranty claims will not be accepted.
Indicative list of parts not covered under warranty.

Indicative list of parts not covered under warranty:

1	Hoist Motor Winding
2	Wire Rope
3	Safety Latch assembly
4	Brake Disc - Hoist and Trolley
5	Brake Coil - Hoist and Trolley
6	Hoist and Cross Travel Limit Switch
7	Trolley Motor Winding
8	Pendent control
9	Relay and Fuse
10	Control Transformer
11	Rope Guide
12	Special Control Switchgears

This can cause damage to hoist



COMMISSIONING CHECK LIST (WRH)

1. **Limit Switch:** Check all limit switches like over hoisting, over lowering, right & left & emergency Check the direction of motions w.r.t. Pendant buttons change phase sequence if required. This is very important safety requirement.
2. **Sufficiency of lift:** Set the bottom Limit switch so that hook touches the floor & no further loosening of wire rope takes place. Set the top limit switch so that safe headroom is maintained between hoist body and lower block. Ensure that rope is not rubbing between L.B.
3. **Angular Loading:** Check that equipment is not subjected to angular loading. Ensure that equipment is installed at proper place proper hook approaches are used to prevent this.
4. **Counter weight assembly:** Ensure that counter weights are correctly assembled for balancing of trolley bolts are properly locked & tightened.
5. **Noise level:** Observed that there is no abnormal noise in Hoist and travel motion.
6. **Greasing:** Apply grease to the rope for full length & rope guide & ensure free movement
7. **Name plate data:** Note hoist, motor nos & record them on Instruction manual for future use.
8. **Abnormal factors:** Excessive dust, temp, humidity, chemical fumes, leakages etc. Report them.
9. **Brake setting:** Ensure that brake operation is not sluggish & load is not slipping. This is to certify that equipment is commissioned on and found satisfactory for use.

ERECTION & COMMISSIONING

Hoist has been designed for ease of erection. After removing side and top frames of wooden box you will find Hoist is bolted on the wooden bottom frames like pallet which can be lifted by fork lift truck.

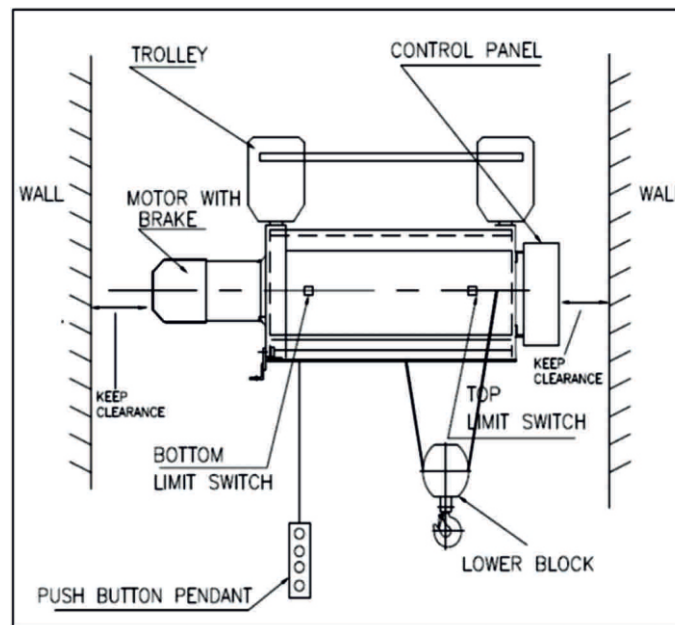
Before erection of hoist adjust flange width of trolley to suit beam size providing equal numbers of washers on both sides between trolley side plate and suspension of hoist.

Check the distance between the wheel flanges. It should be 3 to 8mm more than the width of runway beam flange.

After adjusting the flange width check gear box, oil level, greasing of wire rope, trolley gears and pinions and then install the hoist on beam and remove wooden frame and packing girders.

Contact the hoist to 415 v, 3 phase power supply with 2.5mm sq. copper cable.

(CAUTION – DO NOT FORGET TO CONNECT EARTHING)



Now, cautiously operate Hoisting push button (see fig. 1) and observe Lower Block movement. In case. It is coming down then interchange phase sequence.

Recheck the directions cautiously and operation of Top And Bottom Limit Switches. Adjust limit switches If required.

When everything is set observe movement from top to bottom of lower block without load. Then lift the load by few Cms. And observe that Brake is holding the load.

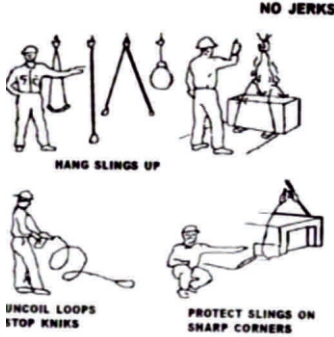
Now operate cross travel motion and fix proper end stoppers / LS actuation / Buffer on beam so that proper clearance is maintained with motor, Gear box and wall.

TROUBLE SHOOTING

TROUBLE	CAUSE	HOW TO SET RIGHT
Hoist does not start No contractor operates.	Phase sequence wrong or one phase failed or limit switch operated.	Change to phases of main supply. Check with lamp. Check movement of limit switch levers.
Hoist does not start Contractors are working.	Brake not opening or motor defect or overloaded.	Remove brake cover and see movement of brake plate. Check without load
Operation interrupted. Chattering of contractors.	Loose connection or wire broken, current collector contact poor.	Tighten all connections. Check wires. Check sitting of shoe & free movement of arm
Push button gets stuck.	Push button sections shifted	Tighten the housing screw.
Braking time too long.	Brake liner is worn.	Adjust brake as per Instructions.
Brake & motor overheats.	Brake not properly opening incorrect air-gap.	Check brake air gap (see the instructions).

Oil for Gear Box		ENKLO 68 (M1-18-J-754)
Oil quantity without creep speed		For hoists with class 'F' insulation; which are exposed to higher temp. or for hoist with 3000 RPM motors use oil ENKLO 68 or equivalent.
WRH III	4.1 litre	

SAFE OPERATING PROCEDURES FOR OVERHEAD CRANES / HOISTS & SLINGS

DO Not	CAUTIONS	DO
<ul style="list-style-type: none"> Lift more than rated capacity of Hoist. Operate Hoist with twisted, kinked or damaged hoist-rope Operate if rope is not seated in drum or sheave grooves. Lift unless load slings are centered on hook. Lift people or travel with people on load. Make side pulls which misalign rope with hoist. Operate unless all travel limit devices are functioning. Lower below point where less than two full wraps of rope remain on hoist drum. Use upper limit switch to stop hoist limit which is emergency stop only. Leave operating position with suspended load on hook. Permit load to contact obstacles. Exceed recommended duty cycle. Use Hoist Rope or chain as a sling or as an earthing for welding. Divert his attention while operating. Remove or obliterate warning label Exceed fuse rating. 	<p>WHENEVER LEAVING OR PARKING ANY HOIST OR CRANE</p> <ul style="list-style-type: none"> Raise all hook to-but not through-limit switches. Place all controls in off position Place main power switch in off position. Make visual check for any dangerous condition & report any defect immediately. Report to supervisor when Hoist is not in operation. Take up slacks, than start load slowly. Keep chains free from twists, knots & knits. Lift from Center of hooks. Avoid lifting from points. Distribute load evenly on all legs. Inspect chain regularly. Remember elongation of links is a sign of overloading. A sharp edge can cut the lift of your sling. Use blocking padding or a corners saddle. Remove knots large enough for the load. Don't jerk loads- jerking may double the stress in your sling. Lift load gradually <div data-bbox="635 1691 970 2027" style="text-align: center;">  <p>NO JERKS</p> <p>HANG SLINGS UP</p> <p>UNCOIL LOOPS STOP KNIKS</p> <p>PROTECT SLINGS ON SHARP CORNERS</p> </div>	<ul style="list-style-type: none"> Test hoist & travel limit devices at a start of each shift. Position the Hoist so that lifting appliance is directly over the load. Take load gently & avoid shock loads. Ensure the travel path is clear before traveling. Sound warning single when approaching personnel. Balancer the loading sling before lifting more than few inches. Test hoist brakes whenever lifting load approaching rated load capacity. Lift load a few inches & test hoist brakes before making complete lift. Make visual checks on equipment at reasonable intervals & report the defects immediately. Use controller to "stop" hoist not limit switch. Watch for proper rigging on load before lifting. Know standard hand signals. Check Lubricants. Check for proper phasing. Always anchor outdoor hoists when not attended. Keep load block safely overhead when not in use.

WIRE ROPE AND ROPE GUIDE RING ASSEMBLY

If wire rope shows broken wires on its length more than 10% or considerable plastic wear, severe corrosion, Kinks, loose strands, then it should be replaced with original rope as suggested by supplier.

For removing and assembling rope guide ring nut (halves), distance beam (A) need to be positioned as shown in Fig. 8 before starting the rope unwinding/winding on the drum by removing one bolt (c) from each side and

Loosening other bolts.

ASSEMBLY PROCEDURE:

- Step1: Clamp wire rope end with 2 Nos. clamping washer (B) firmly on drum. Then wind at least 10 turns with grease on the rope and drum, pulling the rope by hand, so that rope is not loose on the drum.
- Step2: Keep the rope in tension by pulling or clamping and at the same time assemble rope guide Ring (part Z) on drum from bottom of the drum so that thread of part Z will come in adjacent groove (i.e. 11th groove).
- Step3: While putting the spring over rope, to ensure rope is not getting loose, lock the part Z by Wedge (E) as shown in Fig. 8.
- Step4: After ensuring above, assemble spring (D) on top of wound rope through groove in rope guide Ring and entangle its end (use 2 Nos. of cord or wires for pulling springs in opposite direction For assembly pf spring ends). Close spring ends properly by using plier so that ends do not Entangle with rope.
- Step5: Remove wedge and push the part (Z) of rope guide at top so that part (Y) of rope guide can also Be assembled from bottom side of the drum.
- Step6: Then assemble rope guide ring joining brackets (F) & (G) as shown in Fig. 9. (Ensure that bolt Length is not more, causing pressing of rope).
- Step7: Assemble distance beam (A) in position as shown in Fig. 9.
- Step8: Now wind the entire rope length such that 2 grooves are empty at the end of drum and Proper Head room is maintained after Top Limit Switch (L) is actuated. (Adjusted counter weight (P) by Maintaining (Q) dimension as per guidelines given in Fig. 8).
- Step9: Now adjust brass screw (K) such that actuator/joining bracket (F) operates Top Limit Switch (L) While hoisting and Bottom Limit Switch (L) is actuated. (Adjust counter weight (P) by Maintaining (Q) dimension as per guideline given in Fig. 8).
- Step10: Now set the limit Switch (L) & (M) by moving them axially to restrict upper and lower limits If required by application.
- Step11: Ensure that 'U' Clamps (N) are assembled properly as shown in Fig. 9.

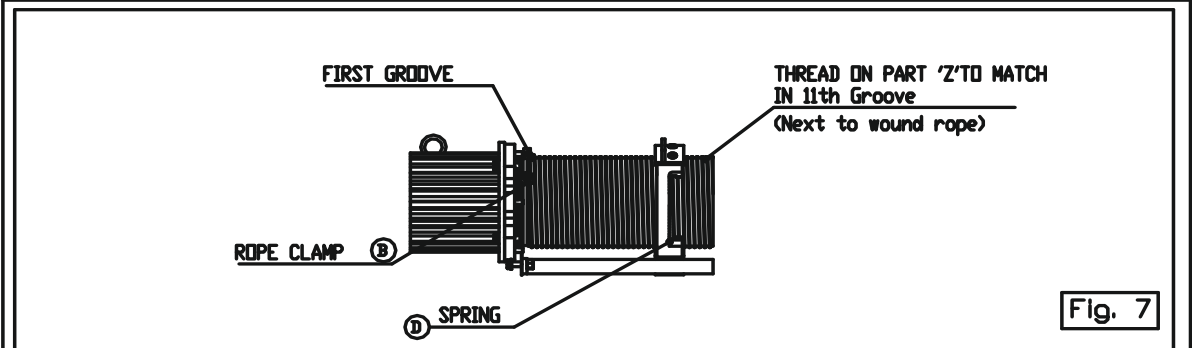


Fig. 7

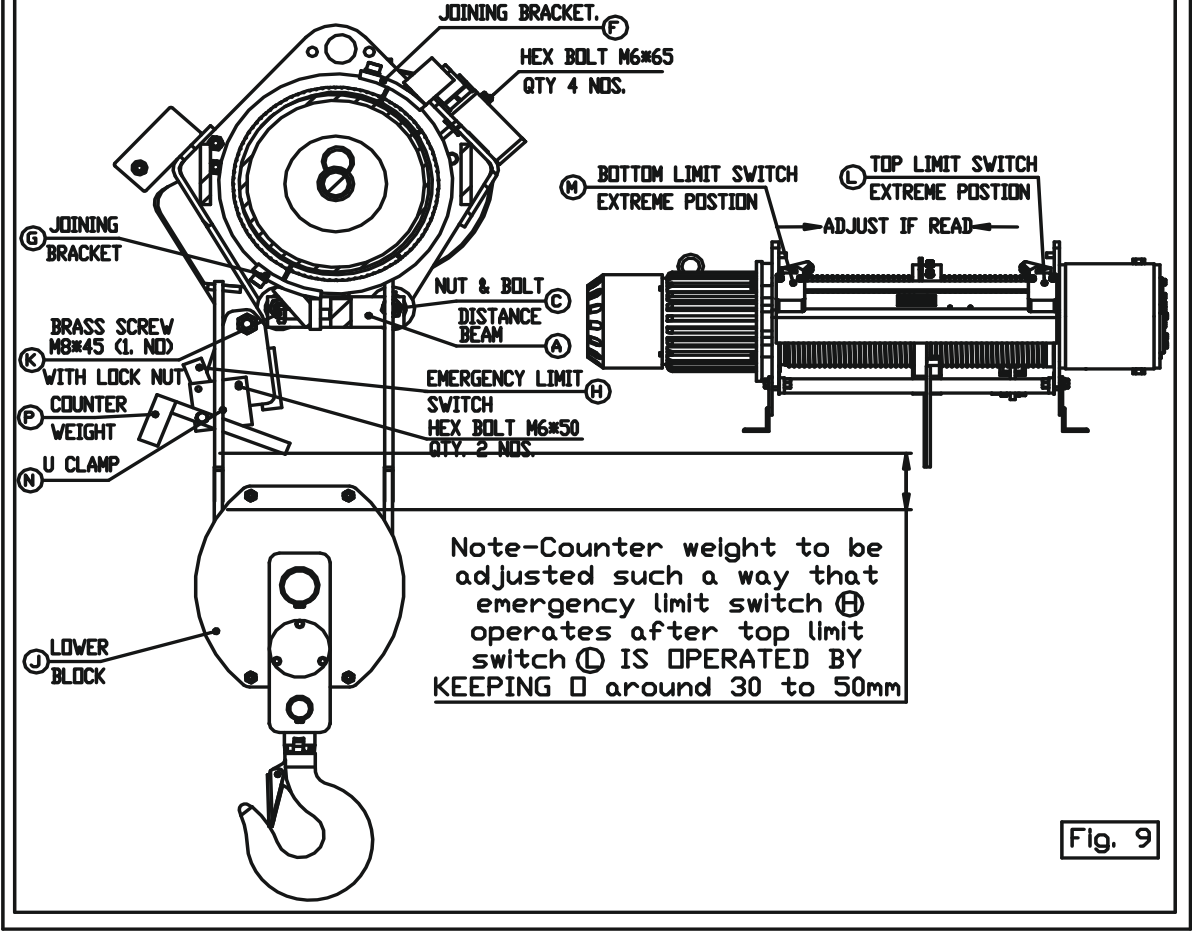
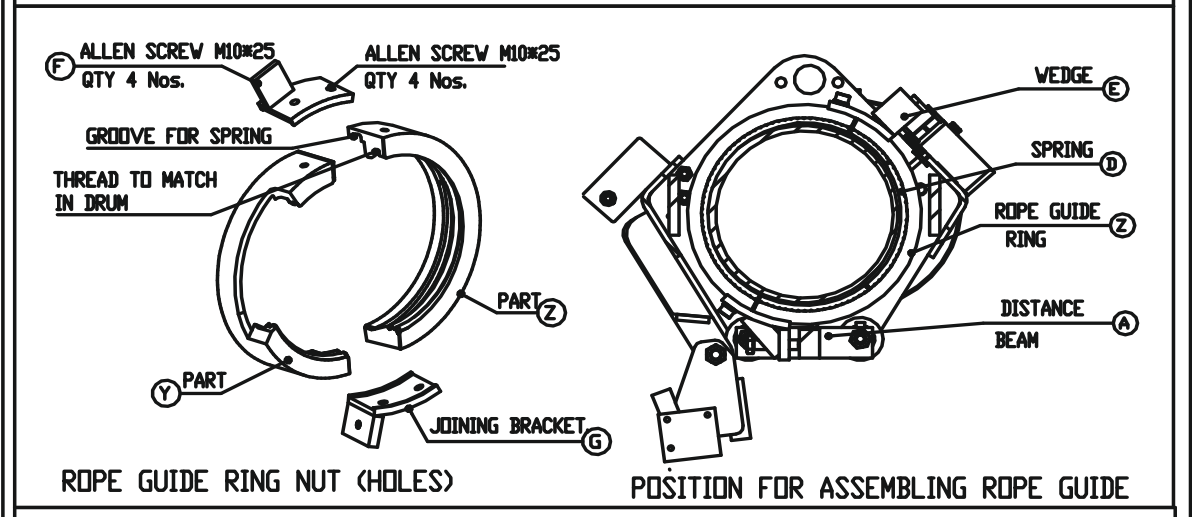


Fig. 9

RECOMMENDED INSPECTION AND MAINTENANCE SCHEDULE

TIME INTERVAL	INSPECTION OR MAINTENANCE
Daily or start of each shift (visual)	<ul style="list-style-type: none"> ■ Check operation of all functional mechanisms including limit switch operation, brakes and control. Report any defect found to properly authorized supervisor & notify the next operator of the defects at the change of the shift. ■ Visually inspect each component of the crane normally used in lifting the load, travelling or lowering the load. This inspection should include, but not be limited to, the items as follow: <ol style="list-style-type: none"> a. Wire Rope: Inspect for kinks or broken wire or evidence of improper spooling on drum & replace seriously damaged ropes immediately. b. A functional operating mechanisms such as sheaves, drums & brakes. c. Visually inspect entire crane for the sings of damage which might cause unsafe immediately. d. All limit switches of hoisting, Lowering, Cross Travel or swivelling. e. Inspect hooks, lower blocks, and all load bearing components for damage.
1-3 Months	<ul style="list-style-type: none"> ■ The result of monthly inspection should be carefully recorded in the suitable log book, in full details, & should be dated signed by the inspector. ■ The purpose of the monthly inspection is to find & correct any wear, damage, or defect, which should affect the safe operation of the machine. This should include the items listed under the daily inspection as well as the following: <p>Inspect the Electrical Controls.</p> <ol style="list-style-type: none"> a. Check hoist gearbox oil level. b. Inspect the entire crane or hoist for structural damages. c. Inspect for cracked or worn sheave, drums, wheels, rails. d. Inspect for worn, cracked or distorted components such as pins, bearing, shaft & gears. e. The current collector system should be thoroughly checked & maintained. The contact tips & case of DSL systems should be checked & cleaned regularly.

RECOMMENDED INSPECTION AND MAINTENANCE SCHEDULE

TIME INTERVAL	INSPECTION OR MAINTENANCE
	<p>f. Inspect for excessive wear on brake system parts, linings, pawls, & ratchets. Be sure pawls & ratchets operate correctly, are in good condition & are properly lubricated. Check the conditions of the fire extinguisher, if furnished.</p> <p>g. Inspect all motors, controls, & conductor systems which might in any way affect the safety of the machine.</p> <p>h. Entire crane or hoist structure, especially surrounding the drive should be thoroughly cleaned.</p>
6 Months	<ul style="list-style-type: none"> ■ Lower Block ■ Rope Guide ■ Lubricate hoist wire rope, Lower block, outboard bearing cartridge at grease fitting.
ANNUALLY	<p>At least annually, the crane hook should be inspected for check by magnetic particle or other suitable crack testing inspection method, to determine that no cracks are discernible. A 15% increase in the throat measurement of hook or a 10% bend in the hook shall be considered cause for replacement.</p>

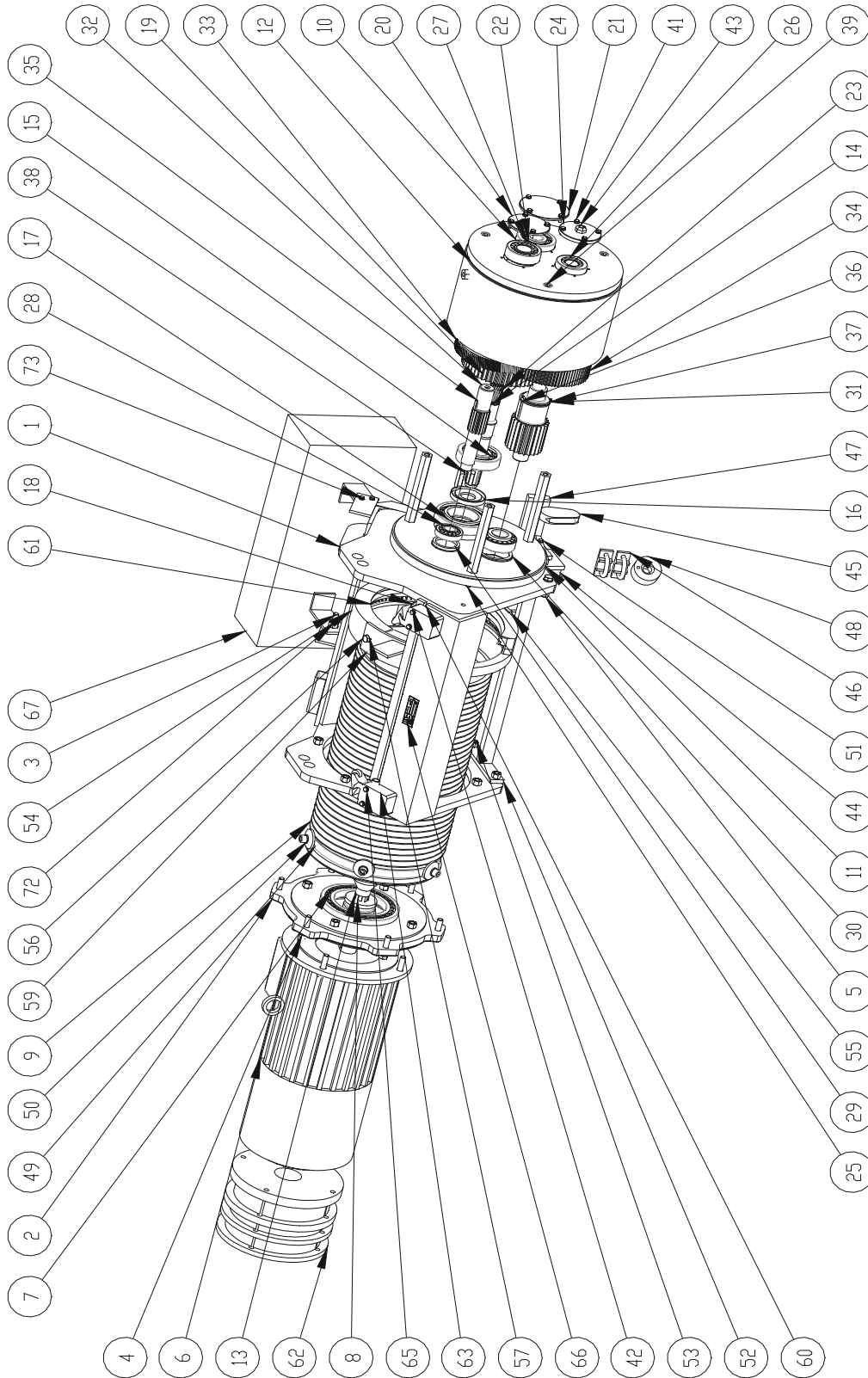
The above visual & operational checks will take only a few minutes at the beginning of each shift, & are absolutely necessary to ensure safe operation.

*** Complete inspection, disassembly and maintenance required. It is recommended that your HERCULES HOISTS LIMITED repair Station be contacted for this service.**

INSPECTION WHEN REQUIRED:

The third type of inspection concerns individual incidents which apply sudden & unusual stress, or possible damage due to any cause. All such incidents which might affect the safe operation of crane should be followed by an immediate & thorough inspection of the crane, using all necessary non-destructive test methods. All repairs found necessary should be made before the machine is returned to service.

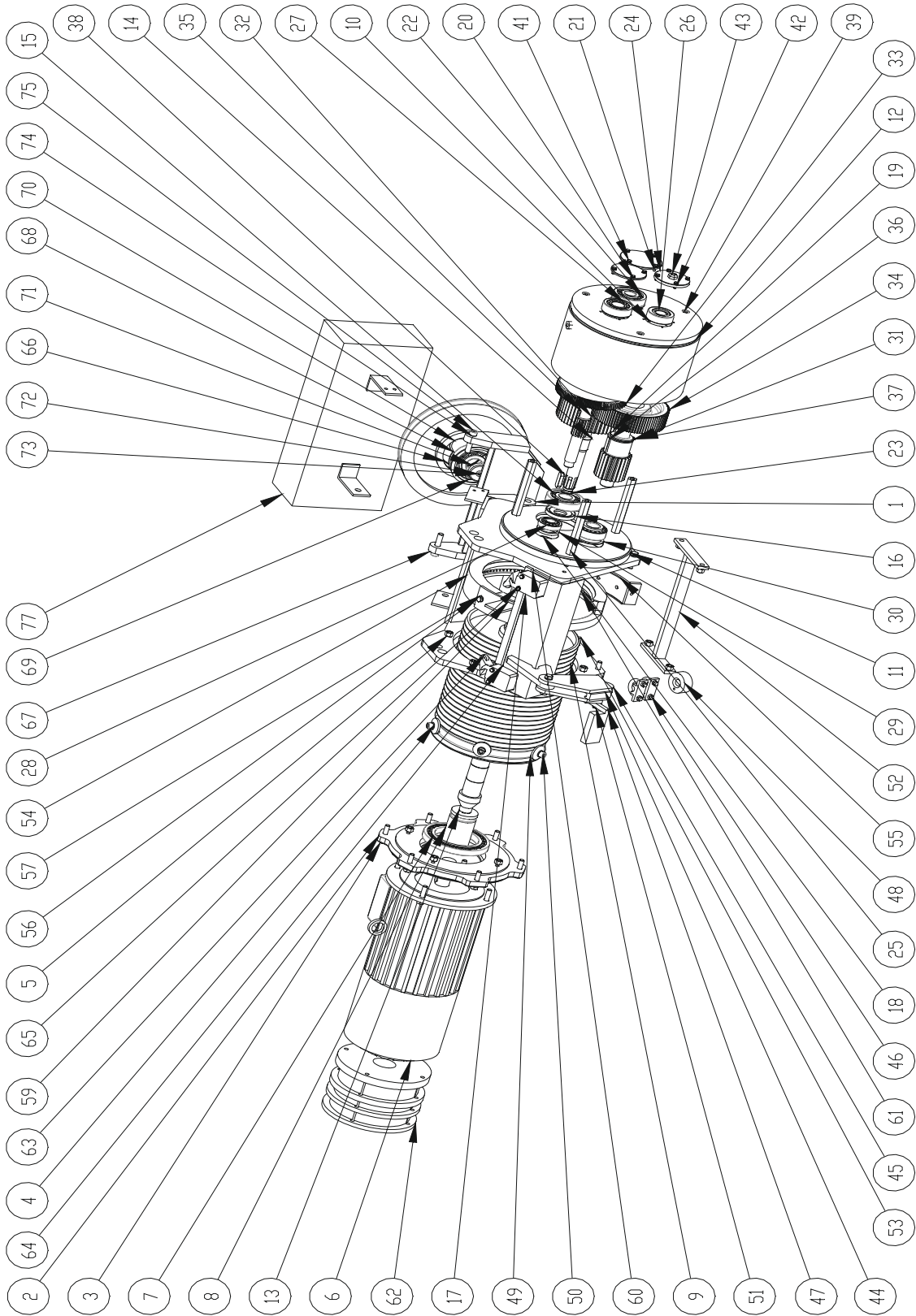
MAINS SPARE PART LIST – 2 FALL



PART NO.	PART CODE	DESCRIPTION	QTY.
1	PHAA133400A	HOUSING COMPLETE (LIFT 7 MTRS)	1
	PHBA133400A	HOUSING COMPLETE (LIFT 12 MTRS)	
	PHDA133400A	HOUSING COMPLETE (LIFT 20 MTRS)	
2	PCCA023030B	END SHIELD MOTOR SIDE	1
3	HBHM 12050088	HT HEX BOLT M12*50	12
4	FLSPWB120000	FLAT SPRING WASHER B12	18
5	HNMM012000YZ	HEX NUT M12	15
6	XMRP003000BBL	HOIST MOTOR	1
7	BBR160240000	BALL BEARING 16024	1
8	PCCA833052C	COUPLING MOTOR SIDE	1
9	PHAA133001A	DRUM COMPLETE (LIFT 7 MTRS)	1
	PHBA133001A	DRUM COMPLETE (LIFT 12 MTRS)	
	PHDA133001A	DRUM COMPLETE (LIFT 20 MTRS)	
10	PCCA053027B	GEAR BOX PLATE OUTSIDE	1
11	PCCA053028B	GEAR BOX PLATE INSIDE	1
12	PCCA123029A	GEAR BOX CASING TUBE	1
13	PCAA133050C	INTERMEDIATE AXLE (LIFT 7 MTRS)	1
	PCBA133050C	INTERMEDIATE AXLE (LIFT 12 MTRS)	
	PCDA133050C	INTERMEDIATE AXLE (LIFT 20 MTRS)	
14	PCCA813021C	MAIN SHAFT	1
15	BBR064070000	BALL BEARING 6407	1
16	OS0350801000	OIL SEAL 35*80*10	1
17	BBR062140000	BALL BEARING 6214	1
18	OS0901251200	OIL SEAL 90*125*12	1
19	PHCA373024C	DRUM GEAR (P300 BIG INT. AXLE)	1
20	PCCA833273A	GEAR BOX CAP FOR 1ST BACK GEAR	1
21	PCCA833272A	GEAR BOX CAP FOR MAIN SHAFT	1
22	BBR064060000	BALL BEARING 6406	1
23	EXCRA0280000	EXTERNAL CIRCLIP A28	1
24	PCCA833271 A	GEAR BOX CAP FOR 2ND BACK GEAR	1
25	PCCA943025A	GEAR BOX BOLT	3
26	BTR323060000	TAPER ROLLER BEARING 32306	1
27	BTR323070000	TAPER ROLLER BEARING 32307	2
28	BTR303050000	TAPER ROLLER BEARING 30305	1
29	PCCA833283A	BALL BEARING DISTANCE RING (1ST BACK GEAR)	1
30	PCCA833282A	BALL BEARING DISTANCE RING	1
31	PCCA812231A	2ND BACK GEAR PINION	1
32	PCCA812221B	1ST BACK GEAR PINION	1
33	PCCA373222B	1ST BACK GEAR WHEEL	1
34	PCCA373232B	2ND BACK GEAR WHEEL	1

PART NO.	PART CODE	DESCRIPTION	QTY.
35	KB0800700270	KEY - BER 8*7*27	1
36	KO140090050	KEY -OER 14 X 9 X 50	1
37	EXCRA0650000	EXTERNAL CIRCLIP A 65	1
38	KB1600100500	KEY - BER 16 X 10 X 50	1
39	ASHM12030000	ALLEN SCREW M12*30, GRADE -12.9	3
40	SQSPW0120000	SSQAURE SRING WASHER M8	3
41	HBHM06016088	HEX BOLT M6 * 16	12
42	FLSPWB060000	FLAT SPRING WASHER B6	21
43	PACE173301A	OIL LEVEL INDICATOR 3/8 BSP	1
44	PHCA133070A	ROPE SUSPENSION WELDING ASSEMBLY	1
45	PHCA863074A	ROPE SUSPENSION KEY	1
46	BDG140000000	BULL DOG GRIP 14 DIA	2
47	PECA133702A	ACTUATOR LEVER FOR GR.ACT.L.SWITCH	1
48	PECA023705A	COUNTER WEIGHT	1
49	PHCA133014A	ROPE CLAMP *NP300 -14	3
50	ASFM12030000	ALLEN SCREW (SHCS) M 12*30	3
51	HBHM06020088	HT HEX BOLT M6*20. GR 8.8	1
52	PHAA133047A	DISTANCE BEAM (LIFT 7 MTRS)	1
	PHBA133047A	DISTANCE BEAM (LIFT 12 MTRS)	
	PHDA133047A	DISTANCE BEAM (LIFT 20 MTRS)	
53	HBHM12045088	HEX BOLT M12*45	4
54	PHCA683083A	ROPE GUIDE RING (R.H.S)	1
55	PHCA133085A	R.H ROPE GUIDE RING JOINING BRACKET	1
56	HBHM10025088	HEX BOLT M10*25	4
57	FLSPWB100000	FLAT SPRING WASHER B10	4
58	HBHM06035088	HT HEX BOLT 6*35	1
59	PHCA133084A	R H ROPE GUIDE RING JOINING BRACKET	1
60	HNMM006000YZ	HEX NUT M6	7
61	PHCA243830A	TENSION SPRING	1
62	XBAP0030PTA	HOIST BRAKE	1
63	XLSP0070SLZ	LIMIT SWITCH	2
64	PNCA833091A	LIMIT SWITCH CLAMP	1
65	HBHM06065088	HEX BOLT M6*65	4
67	0323608B	CONTROL PANEL	1
71	FLSPWB120000	FLAT SPRING WASHER B12	1
72	HNMM012000YZ	HEX NUT M12	1
73	HBHM06020088	HEX BOLT M6*30	2
74	WRF014060370	WIRE ROPE	18.8 M
		WIRE R OPE	29.3 M
		WIRE ROPE	46.0 M

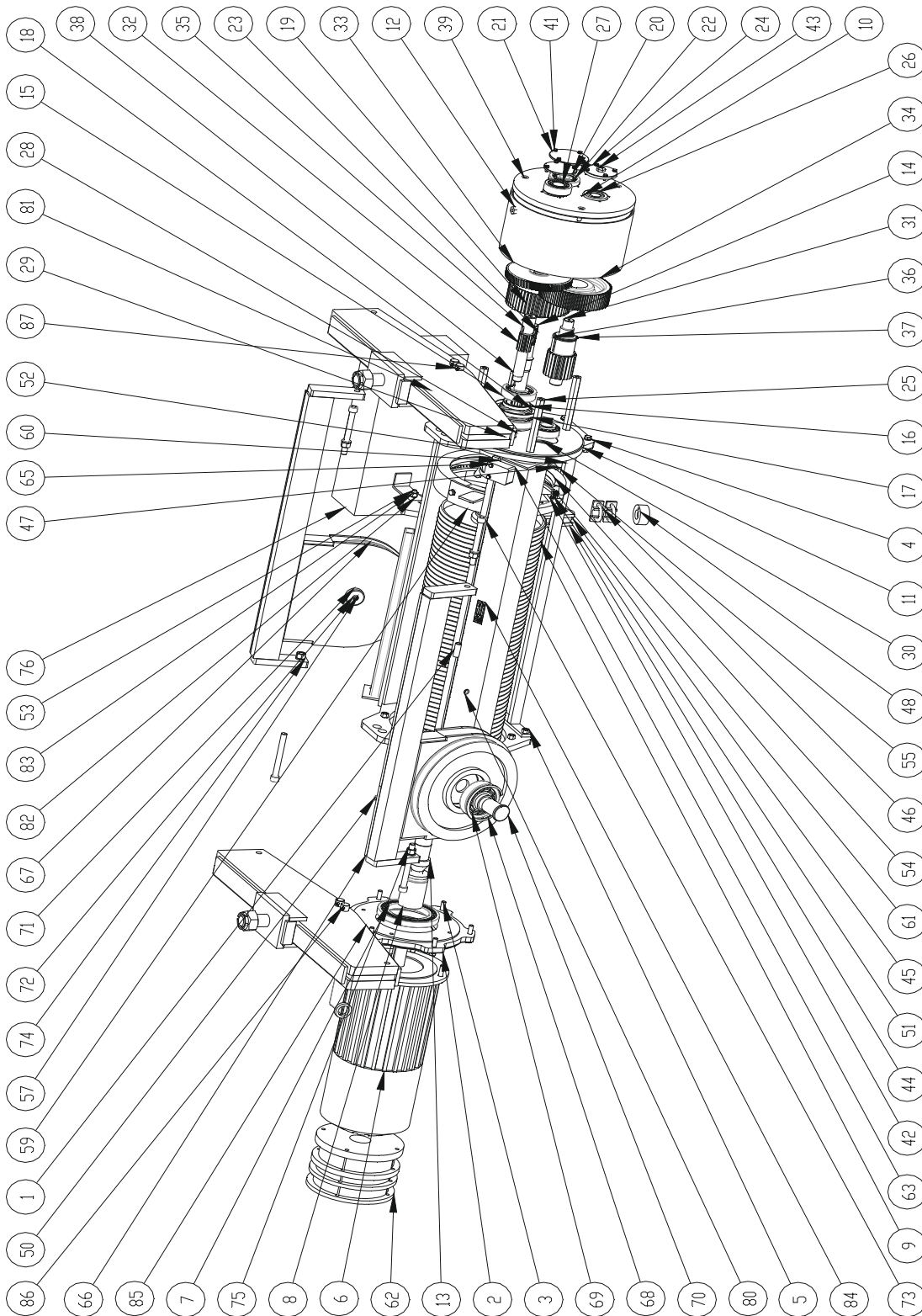
MAINS SPARE PART LIST – 4 FALL



PART NO.	PART CODE	DESCRIPTION	QTY.
1	PHAA133401A	HOUSING COMPLETE (LIFT 3.5 MTRS)	1
	PHBA133401A	HOUSING COMPLETE (LIFT 6 MTRS)	
	PHDA133401A	HOUSING COMPLETE (LIFT 10 MTRS)	
2	PCCA023030B	END SHIELD MOTOR SIDE	1
3	HBHM12050088	HT HEX BOLT M12*50	11
4	FLSPWB120000	FLAT SPRING WASHER B12	18
5	HNMM012000YZ	HEX NUT M12	15
6	XMRP003000BBL	HOIST MOTOR	1
7	BBR160240000	BALL BEARING 16024	1
8	PCCA833052 C	COUPLING MOTOR SIDE	1
9	PHAA133001B	DRUM COMPLETE (LIFT 3.5 MTRS)	1
	PHBA133001B	DRUM COMPLETE (LIFT 6 MTRS)	
	PHDA133001B	DRUM COMPLETE(LIFT 10 MTRS)	
10	PCCA053027B	GEAR BOX PLATE OUTSIDE	1
11	PCCA053028B	GEAR BOX PLATE INSIDE	1
12	PCCA123029A	GEAR BOX CASING TUBE	1
13	PCAA133050C	INTERMEDIATE AXLE (LIFT 3.5 MTRS)	1
	PCBA133050C	INTERMEDIATE AXLE (LIFT 6 MTRS)	
	PCDA133050C	INTERMEDIATE AXLE (LIFT 10 MTRS)	
14	PCCA813021C	MAIN SHAFT	1
15	BBR064070000	BALL BEARING 6407	1
16	OS0350801000	OIL SEAL 35*80*10	1
17	BBR062140000	BALL BEARING 6214	1
18	OS0901251200	OIL SEAL 90*125*12	1
19	PHCA373024C	DRUM GEAR	1
20	PCCA833273A	GEAR BOX CAP FOR 1ST BACK GEAR	1
21	PCCA833272A	GEAR BOX CAP FOR MAIN SHAFT	1
22	BBR064060000	BALL BEARING 6406	1
23	EXCRA0280000	EXTERNAL CIRCLIP A28	1
24	PCCA833271A	GEAR BOX CAP FOR 2ND BACK GEAR	1
25	PCCA943025A	GEAR BOX BOLT	3
26	BTR323060000	TAPER ROLLER BEARING 32306	1
27	BTR323070000	TAPER ROLLER BEARING 32307	2
28	BTR303050000	TAPER ROLLER BEARING 30305	1
29	PCCA833283A	BALL BEARING DISTANCE RING	1
30	PCCA833282A	BALL BEARING DISTANCE RING	1
31	PCCA812231B	2ND BACK GEAR PINION	1
32	PCCA812221B	1ST BACK GEAR PINION	1
33	PCCA373222A	1ST BACK GEAR WHEEL	1
34	PCCA373232B	2ND BACK GEAR WHEEL	1
35	KB080070 0270	KEY - BER 8*7*27	1
36	KO140090050	KEY -OER 14 X 9 X 50	1
37	EXCRA0650000	EXTERNAL CIRCLIP A 65	1
38	KB1600100500	KEY - BER 16 X 10 X 50	1

PART NO.	PART CODE	DESCRIPTION	QTY.
39	ASHM12030000	ALLEN SCREW M12*30	3
40	SQSPW0120000	SSQAURE SRING WA SHER 12 MM	3
41	HBHM06016088	HEX BOLT M6 * 16	12
42	FLSPWB060000	FLAT SPRING WASHER B6	18
43	PACE173301A	OIL LEVEL INDICATOR 3/8 BSP	1
44	PHCA133070A	ROPE SUSPENSION WELDING ASSEMBLY	1
45	PHCA863074A	ROPE SUSPENSION KEY	1
46	BDG140000000	BULL DOG G RIP 14 DIA	2
47	PECA133702A	ACTUATOR LEVER FOR GR.ACT.L.SWITCH	1
48	PECA023705A	COUNTER WEIGHT	1
49	PHCA133014A	ROPE CLAMP	3
50	ASFM12030000	ALLEN SCREW (SHCS) M 12*30	3
51	HBHM06020088	HT HEX BOLT M6*20. GR 8.8	1
52	PHAA133047A	DISTANCE BEAM (LIFT 3.5 MTRS)	1
	PHBA133047A	DISTANCE BEAM (LIFT 6 MTRS)	
	PHDA133047A	DISTANCE BEAM (LIFT 10 MTRS)	
53	HBHM12045088	HT HEX BOLT 12*45	4
54	PHCA683083A	ROPE GUIDE RING (R.H.S) 14 DIA. ROPE	1
55	PHCA133085A	R.H ROPE GUIDE RING JOINING BRACKET	1
56	HBHM10025088	HEX BOLT M10*25	4
57	FLSPWB100000	FLAT SPRING WASHER B10	4
58	HBHM06035088	HT HEX BOLT 6*35	1
59	PHCA133084A	R.H ROPE GUIDE RING JOINING BRACKET	1
60	HNMM006000YZ	HEX NUT M6	5
61	PHCA243830A	TENSION SPRING	1
62	XBAP0030PTA	HOIST BRAKE	1
63	XLSP0070SLZ	LIMIT SWITCH	2
64	PNCA833091A	LIMIT SWITCH CLAMP	1
65	HBHM06065088	HT HEX BOLT M6*65	4
66	PCCK133021A	GUIDE PULLEY WHEEL	1
67	PHCK133024A	GUIDE PULLEY HOUSING	1
68	INCRB1200000	INTERNAL CIRCLIP B120	2
69	BBR064090000	BALL BEARIN G 6409	1
70	PCCK823022B	AXLE FOR PULLEY*P320 -22	1
71	PCCK833023A	BUSH*P320 -23	1
72	FLSPWB100000	FLAT SPRING WASHER B10	1
73	ASFM10020000	ALLEN SCREW M10*20	1
74	FLSPWB140000	FLAT SPRING WASHER B14	2
75	ASHM14060000	ALLEN SCREW (SCHS) M14 * 60,	2
76	HNMM014000YZ	HEX NUT M14	2
77	0323609B	CONTROL PANEL	1
78	WRF014060370	WIRE ROPE (LIFT 3.4 MTRS)	20.2 M
		WIRE ROPE (LIFT 6 MTRS)	30.8 M
		WIRE ROPE (LIFT 10 MTRS)	47.5 M

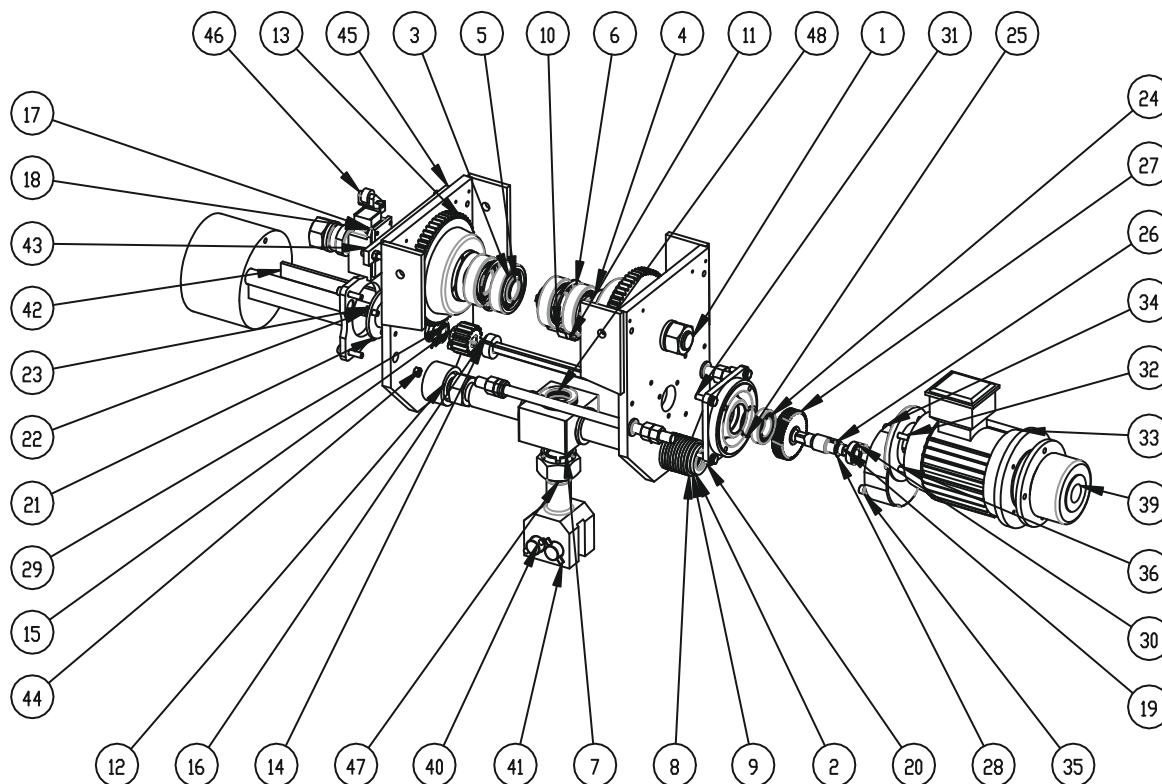
MAINS SPARE PART LIST - 6 FALL



PART NO.	PART CODE	DESCRIPTION	QTY.
1	PHBA133400A	HOUSING COMPLETE (LIFT 4 MTRS)	1
	PHDA133400A	HOUSING COMPLETE (LIFT 6 MTRS)	
2	PCCA023030B	END SHIELD MOTOR SIDE	1
3	HBHM12050088	HT HEX BOLT M12*50	11
4	FLSPWB120000	FLAT SPRING WASHER B12	18
5	HNMM012000YZ	HEX NUT M12	15
6	XMRP003000BBL	HOIST MOTOR	1
7	BBR160240000	BALL BEARING 16024	1
8	PCCA833052C	COUPLING MOTOR SIDE	1
9	PHBA133001B	DRUM COMPLETE (LIFT 4 MTRS)	1
	PHDA133001B	DRUM COMPLETE(LIFT 6 MTRS)	
10	PCCA053027B	GEAR BOX PLATE OUTSIDE	1
11	PCCA053028B	GEAR BOX PLATE INSIDE	1
12	PCCA123029A	GEAR BOX CASING TUBE	1
13	PCBA133050C	INTERMEDIATE AXLE (LIFT 4 MTRS)	1
	PCDA133050C	INTERMEDIATE AXLE (LIFT 6 MTRS)	
14	PCCA813021C	MAIN SHAFT	1
15	BBR064070000	BALL BEARING 6407	1
16	OS0350801000	OIL SEAL 35*80*10	1
17	BBR062140000	BALL BEARING 6214	1
18	OS0901251200	OIL SEAL 90*125*12	1
19	PHCA373024C	DRUM GEAR	1
20	PCCA833273A	GEAR BOX CAP FOR 1ST BACK GEAR	1
21	PCCA833272A	GEAR BOX CAP FOR MAIN SHAFT	1
22	BBR064060000	BALL BEARING 6406	1
23	EXCRA0280000	EXTERNAL CIRCLIP A28	1
24	PCCA833271A	GEAR BOX CAP FOR 2ND BACK GEAR	1
25	PCCA943025A	GEAR BOX BOLT	3
26	BTR323060000	TAPER ROLLER BEARING 32306	1
27	BTR323070000	TAPER ROLLER BEARING 32307	2
28	BTR303050000	TAPER ROLLER BEARING 30305	1
29	PCCA833283A	BALL BEARING DISTANCE RING	1
30	PCCA833282A	BALL BEARING DISTANCE RING	1
31	PCCA812231B	2ND BACK GEAR PINION	1
32	PCCA812221B	1ST BACK GEAR PINION	1
33	PCCA373222A	1ST BACK GEAR WHEEL	1
34	PCCA373232B	2ND BACK GEAR WHEEL	1
35	KB08007 00270	KEY - BER 8*7*27	1
36	KO140090050	KEY -OER 14 X 9 X 50	1
37	EXCRA0650000	EXTERNAL CIRCLIP A 65	1
38	KB1600100500	KEY - BER 16 X 10 X 50	1
39	ASHM12030000	ALLEN SCREW M12*30, GRADE -12.9	3
40	SQSPW0120000	SSQAURE SRING WASHER 12 MM	3
41	HBHM06016 088	HEX BOLT M6 * 16	12
42	FLSPWB060000	FLAT SPRING WASHER B6	20

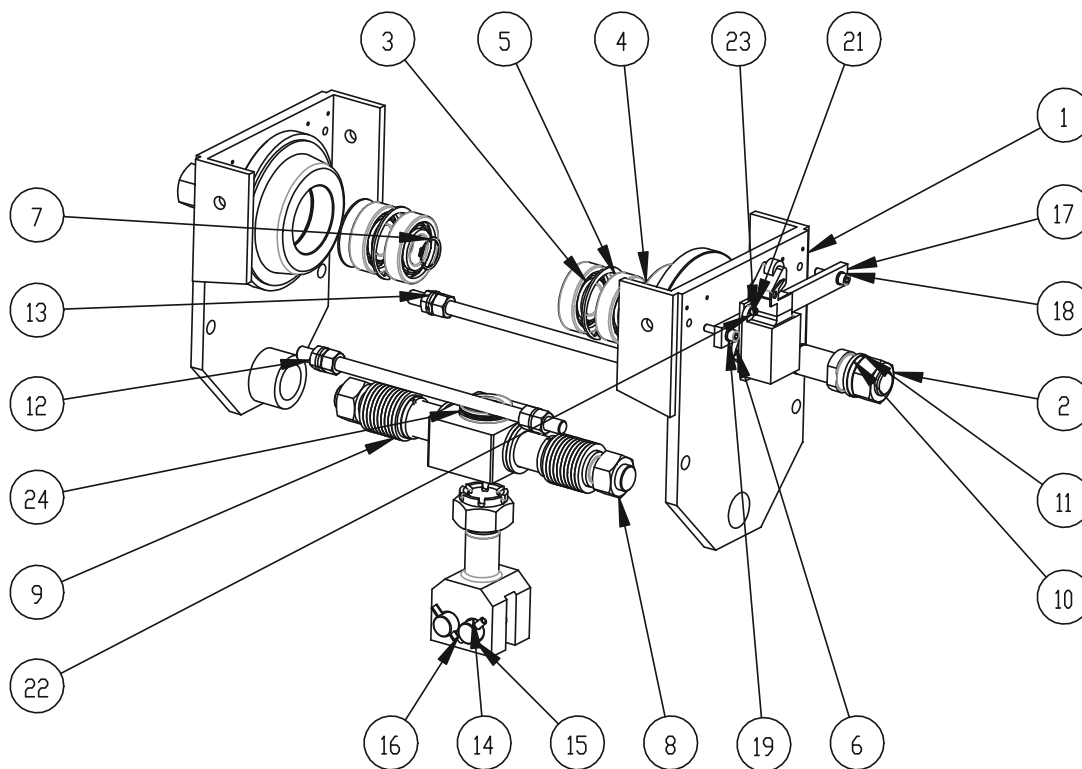
PART NO.	PART CODE	DESCRIPTION	QTY.
43	PACE173301A	OIL LEVEL INDICATOR 3/8 BSP	1
44	PHCA133070A	ROPE SUSPENSION WELDING ASSEMBLY	1
45	PHCA863074A	ROPE SUSPENSION KEY	1
46	BDG10000000 0	BULL DOG GRIB	2
47	PECA133702A	ACTUATOR LEVER FOR GR.ACT.L.SWITCH	1
48	PECA023705A	COUNTER WEIGHT	1
49	PHCA133014A	ROPE CLAMP	3
50	ASFM12030000	ALLEN SCREW (SHCS) M 12*30	3
51	HBHM06020088	HT HEX BOLT M6*20.	1
52	PHBA133047A	DISTANCE BEAM (LIFT 4 MTRS)	1
	PHDA133047A	DISTANCE BEAM (LIFT 6 MTRS)	
53	HBHM12045088	HT HEX BOLT 12*45	5
54	PHCA683083A	ROPE GUIDE RING (R.H.S) 14 DIA. ROPE	1
55	PHCA133085A	R.H ROPE GUIDE RING JOINING BRACKET	1
56	HBHM10025088	HEX BOLT M10*25	4
57	FLSPWB100000	FLAT SPRING WASHER B10	5
58	HBHM06035088	HT HEX BOLT 6*35	1
59	PHCA133084A	R.H ROPE GUIDE RING JOINING BRACKET	1
60	HNMM006000YZ	HEX NUT M6	7
61	PHCA243830A	TENSION SPRING	1
62	XBAP0030PTA	HOIST BRAKE	1
63	XLSP0070SLZ	LIMIT SWITCH	2
64	PNCA833091A	LIMIT SWITCH CLAMP	1
65	HBHM06065088	HT HEX BOLT M6*65	4
66	PHBX133024A	GUIDE PULLEY HOUSING (LIFT 4 MTRS)	2
	PHDX133024A	GUIDE PULLEY HOUSING (LIFT 6 MTRS)	
67	PCCK133021A	GUIDE PULLEY WHEEL *P320 -21	2
68	INCRB1200000	INTERNAL CIRCLIP B120	4
69	BBR06 4090000	BALL BEARING 6409	2
70	PCCK823022B	AXLE FOR PULLEY*P320 -22	2
71	PCCK833023A	BUSH*P320 -23	2
72	ASFM10025000	ALLEN SCREW M10*25	2
73	ASHM16150000	ALLEN SCREW M16X150	4
74	FLSPWB160000	FLAT SPRING WASHER B16	4
75	HNMM016000YZ	HEX NUT M16	4
76	0323610B	CONTROL PANEL	1
80	FLSPWB100000	FLAT SPRING WASHER B10	1
81	HBHM06020088	HT HEX BOLT M6*20. GR 8.8	2
82	FLSPWB120000	FLAT SPRING WASHER B12	1
83	HNMM012000YZ	HEX NUT M12	1
85	PHCX133061A	TROLLEY SUSPENSION (BOGGIE) WITH CASTLE NUT	2
86	PHCX823612B	10T HOIST SUSPENSION BOLT	4
87	DSP080045000	DOWEL SPRING PIN 8*45	8
88	WRF014060370	WIRE ROPE (LIFT 4 MTRS)	37.3 M
		WIRE ROPE (LIFT 6 MTRS)	49.3 M

ELECTRIC TROLLEY



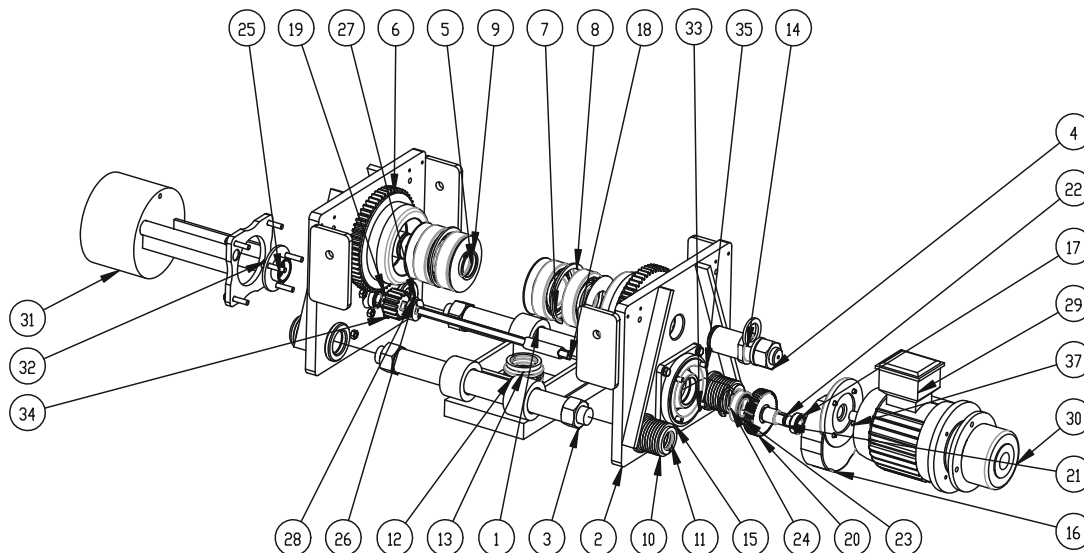
PART NO.	PART CODE 2 FALL	PART CODE 4 FALL	DESCRIPTION	QTY. 2 FALL	QTY. 4 FALL
1	PBCF823015B	PCCF823015B	WHEEL AXLE	2	2
2	FLSPWB300000	FLSPWB300000	FLAT SPRING WASHER B30	4	4
3	BBR063070000	BBR063090000	BALL BEARING 6207 -ZZ/2RS	4	4
4	PBCF113016A	PCCF 113016A	BEARING COVER	2	4
5	EXCRA0450000	EXCRA0450000	EXTERNAL CIRCLIP	2	2
6	INCRB0800000	INCRB1000000	INTERNAL CIRCLIP	2	2
7	PBCN053064A	PBCN053064A	LOAD AXLE FOR BOGGIE TROLLEY	1	1
8	PCCF113252A	PCCF113252A	WASHER FOR LOAD AXLE	11	14
9	PACF113023A	PCCF113253A	SPACER 33 I.D. *50*5	2	2
10	PCCF833027A	PCCF833027A	DISTANCE BOLT	2	2
11	FLSPWB160000	FLSPWB160000	FLAT SPRING WASHER B16	4	4
12	PBCF133001B	PCCF133001B	SIDE PLATE ASSEMBLY GT SIDE	2	2
13	PBCG013013A	PCCF013013A	GEARED WHEEL	2	2
14	PBCF823018C	PBCF823018C	PINION SHAFT (SQ. SECTION)	1	1
15	PACF823017C	PACF823017C	WHEEL PINION (SQ. HOLE)	2	2
16	PACF833020B	PACF833020B	CLAMPING WASHER	1	1
17	ASFM05016000	ASFM05016000	ALLEN SCREW (SHCS) M 5*16	3	3
18	FLSPWB050000	FLSPWB050000	FLAT SPRING WASHER B5	3	3
19	PACF813022C	PACF813022C	DRIVE SHAFT	1	1
20	PACF013028A	PACF013028B	GEAR BOX COVER	1	1

PART NO.	PART CODE 2 FALL	PART CODE 4 FALL	DESCRIPTION	QTY. 2 FALL	QTY. 4 FALL
21	PACF833021B	PACF83302 1B	BEARING HOUSING	1	1
22	HBHM08016088	HBHM08040088	HEX BOLT	3	2
23	FLSPWB080000	FLSPWB080000	FLAT SPRING WASHER	13	14
24	BBR060050000	BBR060050000	BALL BEARING 6005	1	1
25	INCRB0470000	INCRB0470000	INTERNAL CIRCLIP B47	1	1
26	KB0600600180	KB060060018 0	KEY 6*6*18	1	1
27	PACF813031B	PACF813031B	GEAR WHEEL, NO. OF TEETH 50	1	1
28	EXCRA0200000	EXCRA0200000	(A) EXTERNAL CIRCLIP A20	1	1
29	BBR06003ZZ00	BBR06003ZZ00	BALL BEARING 6003ZZ	1	1
30	BBR060030000	BBR060030000	BALL BEARING 6003	1	1
31	PACF1931 12	PACF193112	MODIFIED HEX BOLT 8*30	4	4
32	PACF023029B	PACF023029B	GEAR BOX HOUSING*P150 -29	1	1
33	XMRP028000REM	XMRP026000REM	TROLLEY MOTOR	1	1
34	ASFM08030000	ASFM08030000	ALLEN SCREW M8*30	4	4
35	SQSPW0080000	SQSPW0080000	SQAURE SRING WASHER M8	4	4
36	ASFM08025000	ASFM08025000	ALLEN SCREW M8*25	4	4
37	FLSPWB080000	FLSPWB080000	FLAT SPRING WASHER B8	3	3
38	FLSPWB080000	FLSPWB080000	FLAT SPRING WASHER B -8	1	1
39	XBAP0050SYT	XBAP0050SYT	TROLLEY BRAKE	1	1
40	PGCF823612B	PGCF823612B	SUSPENSION BOLT 4T*NP250 -612	2	2
41	DSP080045000	DSP080045000	DOWEL SPRING PIN 8*45	4	4
42	PNC4133069A	PNC4133069A	COUNTER WEIGHT	1	1
43	ASHM08035000	HBHM08035088	ALLEN SCREW M8*35	6	11
44	HNMM008000YZ	HNMM008000YZ	HEX NUT M8	6	13
45	PACF133651A	PACF133650A	LIMIT SWITCH MOUNTING BRACKET LH SIDE	1	1
46	XLSP0090SLZ	XLSP0090SLZ	LIMIT SWITCH	1	1
47	PHCN863601A	PHCN863601A	SUSPENSION FOR HOIST (BOGIEE)	1	1
48	BTB511080000	BTB511080000	THRUST BEARING 51108	1	1



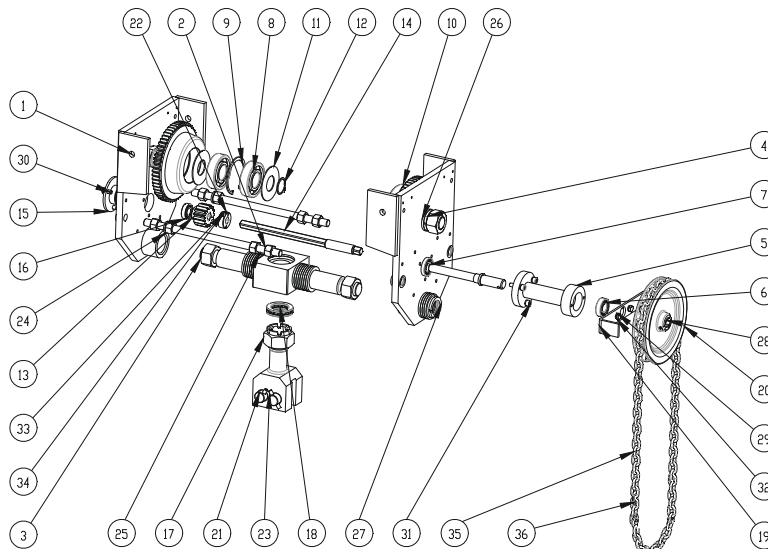
PART NO.	PART CODE 2 FALL	PART CODE 4 FALL	DESCRIPTION	QTY. 2 FALL	QTY. 4 FALL
1	PBCF133010A	PCCF133010B	SIDE PLATE ASSEMBLY PT SIDE	2	2
2	PBCF823015B	PCCF823015B	WHEEL AXLE	2	2
3	BBR063070000	BBR06309 0000	BALL BEARING 6307	4	4
4	PBCF113016A	PCCF113016A	BALL BEARING COVER	2	2
5	INCRB0800000	INCRB1000000	INTERNAL CIRCLIP B80	2	2
6	PBCG013014A	PCCF013014A	PLANE WHEEL	2	2
7	EXCRA0350000	EXCRA0450000	EXTERNAL CIRCLIP	2	2
8	PBCN053064A	PBCN053064A	LOAD AXLE FOR BOGIE TROLLEY	1	1
9	PCCF113252A	PCCF113252A	WASHER FOR LOAD AXLE	24	14
10	PACF113023A	PCCF113253A	SPACER 33 I.D. *50*5	4	2
11	FLSPWB300000	FLSPWB300000	FLAT SPRING WASHER B30	4	2
12	PCCF833027A	PCCF833027A	DISTANCE BOLT	2	2
13	FLSPWB160000	FLSPWB160000	FLAT SPRING WASHER B16	4	4
14	PHCN863601A	PHCN863601A	SUSPENSION FOR HOIST (BOGIEE)	1	1
15	PGCF823612B	PGCF823612B	SUSPENSION BOLT	2	2
16	DSP080045000	DSP080045000	DOWEL SPRING PIN 8*45	4	4
17	PACF133650A	PACF133651A	LIMIT SWITCH MOUNTIN G BRACKETR.H.	1	1
18	ASHM08035000	ASHM08035000	ALLEN SCREW M8*35	2	2
19	FLSPWB080000	FLSPWB080000	FLAT SPRING WASHER B -8	2	2
20	HNNM008000YZ	HBHM08040088	HEX NUT M8	2	2
21	ASFM05016000	ASFM05016000	ALLEN SCREW (SHCS) M 5*16	2	2
22	FLSPWB050000	FLSPWB050000	FLAT SPRING WASHER B5	2	2
23	XLSP0090SLZ	XLSP0090SLZ	LIMIT SWITCH	1	1
24	BTB511080000	BTB511080000	THRUST BEARING 51108	1	1

ELECTRIC TROLLEY (6 FALL)



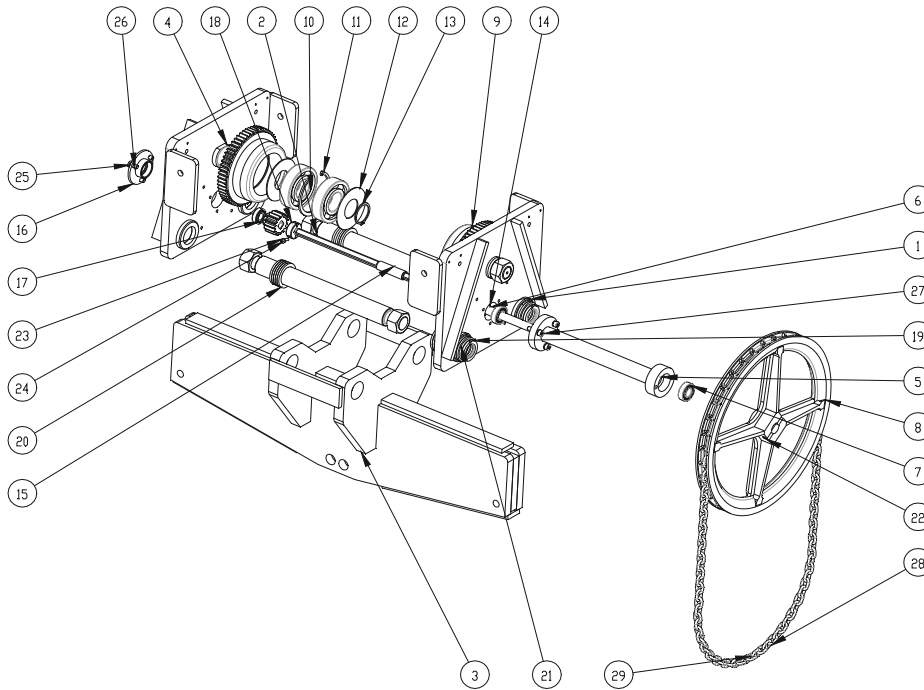
PART NO.	PART CODE	DESCRIPTION	QTY.
1	UDC5133064A	BOGIE CROSS PIECE	1
2	UDC5133011A	BOGIE TROLLEY GEAR SIDE PLATE	2
3	PBCF823025B	LOAD AXLE	2
4	PCCF823015B	WHEEL AXLE	2
5	PCCF113016A	BALL BEARING COVER	4
6	PCCF013013A	GEARED WHEEL STRAIGHT & TAPER WHEEL	2
7	BBR063090000	BALL BEARING 6309	4
8	INCR B1000000	INTERNAL CIRCLIP B 100	2
9	EXCRA0450000	EXTERNAL CIRCLIP A45	2
10	PCCF113252A	WASHER FOR LOAD AXLE	32
11	FLSPWB300000	FLAT SPRING WASHER B30	6
12	BTB512080000	THRUST BEARING 51208	1
13	FLSPWB420000	FLAT SPRING WASHER B42	1
14	PACF113023A	SPA CER 33 I.D. *50*5	2
15	PACF013028B	GEAR BOX COVER	1
16	PACF023029B	GEAR BOX HOUSING	1
17	BBR06003ZZ00	BALL BEARING 6003 -ZZ/2RS	2
18	PBCF823018C	PINION SHAFT (SQ. SECTION)	1
19	PACF823017C	WHEEL PINION (SQ. HOLE)	2
20	PACF813031B	GEAR WHEEL	1
21	PACF 813022C	DRIVE SHAFT	1
22	KB0600600180	KEY -BER 6*6*18	1
23	BBR060050000	BALL BEARING 6005	1
24	INCRB0470000	INTERNAL CIRCLIP B47	1
25	PACF833021B	BEARING HOUSING	1
26	PACF833020B	CLAMPING WASHER *P150 -20	1
27	ASFM05016000	ALLEN SCREW (SHCS) M 5*16	1
28	FLSPWB050000	FLAT SPRING WASHER B5	1
29	XMRP026000REM	TROLLEY MOTOR	1
30	XBAP0050SYT	TROLLEY BRAKE	1
31	PNC4133069A	COUNTER WEIGHT	1
32	FLSPWB080000	FLAT SPRING WASHER B -8	15
33	HBHM08035088	HEX BOLT 8*35	11
34	HNMM008000YZ	HEX NUT M8	11
35	ASFM08030000	ALLEN SCREW M8*30	4
36	FLSPWB060000	FLAT SPRING WASHER B6	4
37	HBHM06016088	HEX BOLT M6 * 16	4

GEREAD TROLLEY – 3T/5T



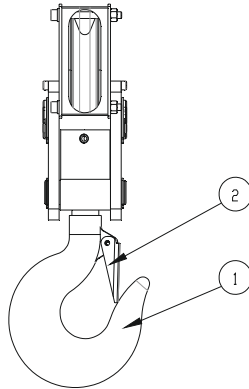
PART NO.	PART CODE	DESCRIPTION	QTY.
1	PBCF133001B	SIDE PLATE ASSEMBLY GT SID E	2
2	PCCF833027A	DISTANCE BOLT	2
3	PBCN053064A	LOAD AXLE FOR BOGGIE TROLLEY	1
4	PBCF823015B	WHEEL AXLE	2
5	PACG133028A	DRIVE SHAFT HOUSING	1
6	BBR06004ZZ00	BALL BEARING 6004ZZ	2
7	PACG823022D	DRIVE SHAFT	1
8	BBR063070000	BALL BEARING 6307	4
9	INCRB0800000	INTERNAL CIRCLIP B 80	2
10	PBCG013013A	GEARED WHEEL	2
11	PBCF113016A	BALL BEARING COVER	4
12	EXCRA0350000	EXTERNAL CIRCLIP A 35	2
13	PACF823017C	WHEEL PINION	2
14	PBCF823018C	PINION SHAFT	1
15	PACF833021B	BEARING HOUSING	1
16	BBR06003ZZ0 0	BALL BEARING 6003 -ZZ/2RS	1
17	PHCN863601A	SUSPENSION FOR HOIST (BOGIEE)	1
18	BTB511080000	THRUST BEARING 51108	1
19	PACG852024A	HAND CHAIR GUIDE	1
20	MECM023022A	HAND CHAIN WHEEL	1
21	PGCF823612A	HOIST SUSPENSION BOLT	2
22	PACF833020B	CLAMPING WAS HER	1
23	DSP080045000	DOWEL SPRING PIN 8*45	4
24	FLSPWB160000	FLAT SPRING WASHER B16	8
25	PCCF113252A	WASHER FOR LOAD AXLE	24
26	PACF113023A	SPACER 33 I.D * 50 * 5	4
27	FLSPWB300000	FLAT SPRING WASHER B30	4
28	DSP060040000	DOWEL SPRING PIN 6*40	1
29	FLSPWB080000	FLAT SPRING WASHER B8	8
30	HBHM08016088	HEX BOLT M8*16	3
31	ASFM08030000	ALLEN SCREW M 8*30	3
32	HBHM08020088	HT HEX BOLT 8*20	2
33	FLSPWB050000	FLAT SPRING WASHER B5	1
34	ASFM05016000	ALLEN SCREW (SHCS) M 5*16	1
35	CHHYN0601804	HAND CHAIN 6 * 19* 20.5	As per requ.
36	CHJL060180YZ	JOINING LINK	1

GEREAD TROLLEY – 10T



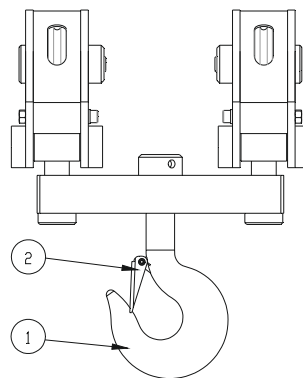
PART NO.	PART CODE	DESCRIPTION	QTY.
1	UDC5133011A	TROLLEY SIDE PLATE	2
2	PBCF823025A	LOAD AXLE	2
3	PHCX133061A	10T TROLLEY SUS PENSION	1
4	PCCF823015B	WHEEL AXLE WITH M30 NUT	2
5	PCCZ133028C	DRIVE SHAFT HOUSING	1
6	PCCZ823022C	DRIVE SHAFT (SQ. TYPE)	1
7	BBR06004ZZ00	BALL BEARING 6004ZZ	2
8	TKCM021011A	HAND CHAIN WHEEL	1
9	PCCF013013A	GEARED WHEEL	2
10	BBR063090000	BALL BEARING 6309	4
11	INCRB1000000	INTERNAL CIRCLIP B 100	2
12	PCCF113016A	BALL BEARING COVER	4
13	EXCRA0450000	EXTERNAL CIRCLIP A45	2
14	PACF823017C	WHEEL PINION	2
15	PBCF823018C	PINION SHAFT	1
16	PACF833021B	BEARING HOUSING	1
17	BBR06003ZZ00	BALL BEARING 6003 -ZZ/2RS	1
18	PACF833020B	CLAMPING WASHER	1
19	FLSPWB300000	FLAT SPRING WASHER B30	6
20	PCCF113252A	WASHER FOR LOAD AXLE	28
21	PACF113023A	SPACER 33 I.D * 50 * 5	6
22	DSP080060000	DOWEL SPRING PIN 8*60	1
23	FLSPWB050000	FLAT SPRING WASHER B5	1
24	ASFM05016000	ALLEN SCREW (SHCS) M 5*16	1
25	FLSPWB080000	FLAT SPRING WASHER B8	6
26	HBHM08016088	HEX BOLT M8*16	3
27	ASFM08030000	ALLEN SCREW M 8*30	3
28	CHHYN0601804	HAND CHAIN 6 * 19	As per requ.
29	CHJL060180YZ	HAND CHAIN LINK	1

LOWER BLOCK – 2 FALL



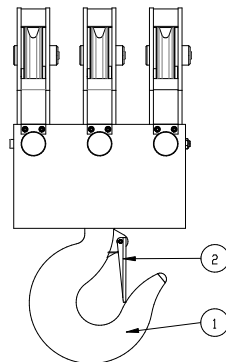
PART NO	PART CODE	DESCRIPTION	QTY
	0320607P	3T LOWER BLOCK ASSLY	
1	PCCJ000101B	HOOK WITH SAFETY LACTH ASSLY	1
2	CCBS003126A	HOOK LATCH ASSLY	1

LOWER BLOCK – 4 FALL



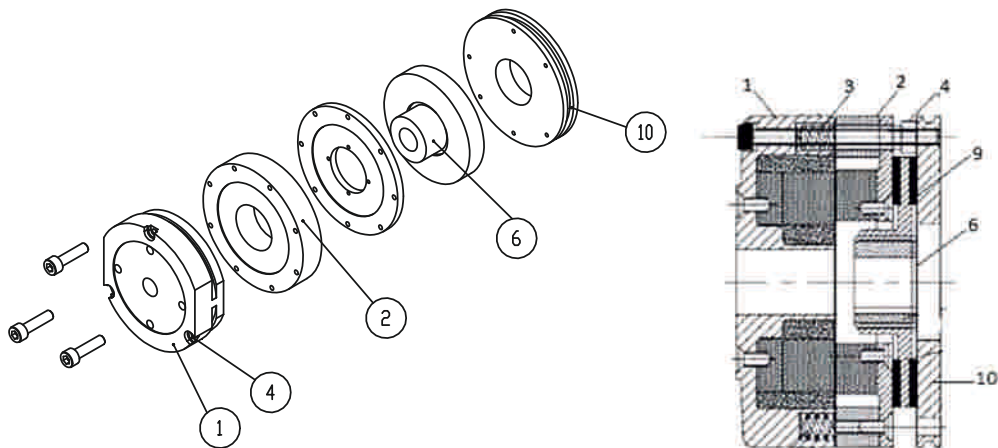
PART NO	PART CODE	DESCRIPTION	QTY
	0310602P	6T LOWER BLOCK ASSLY	
1	PCCK000101B	HOOK WITH SAFETY LACTH ASSLY	1
2	CCDS003204A	HOOK LATCH ASSLY	1

LOWER BLOCK – 6 FALL



PART NO	PART CODE	DESCRIPTION	QTY
	0310603P	10T LOWER BLOCK ASSLY	
1	PCCX000101B	HOOK WITH SAFETY LACTH ASSLY	1
2	PCCX003031A	HOOK LATCH ASSLY	1

TROLLEY BRAKE SPARE PART LIST



PART NO.	PART CODE	DESCRIPTION
	XBAP0050SYT	MAIN BRAKE
1	XBAP01610SSYT	STATOR
2		ARMATURE ASSEMBLY
3		TUBULAR SPRING EACH SET
4	XBAP87210SSYT	MOUNTING FLANGE ASSLY
6		BRAKE DISC & BRAKE LINER (ROTOR / GEAR HUB)
10	XBAP00510SYT	MOUNTING FLANGE

TROLLEY & HOIST BRAKE MAINTENANCE / REPAIR

Trouble	Possible cause	Required action
Break does not apply No braking action	No mains voltage. Stator (coil) open.	Check supply voltage.
	Armature plate Jammed (without moment)	Brake coil resistance to be checked as per the technical data.
Brake action too slow, insufficient braking effect	Oil or grease on the friction lining	Springs, guide bushes must be checked and overhauled (cleaned properly).
	Spring are present/broken	Replace rotor, prevent oil/grease from coming in contact with friction liner.
	Brake lining worn-out	Dismantle brake, loosen sleeves insert new springs.
		Replace rotors (armature plate and flange if very badly worn-out).

To ensure safe & trouble free operation, Spring Loaded Brakes must be checked and maintained at regular intervals. SYTCO Spring Loaded Brakes are wear – resistant and designed for trouble free longer life. The Friction Liners are subject to function -related wear. The Brakes must be checked and readjusted at regular intervals & if necessary, it should be replaced.

PRINCIPLE OF OPERATION : This type of brake consists of stator, Armature, Rotor & Mounting flange. Current is given to stator (coil), the armature plate is attracted to the stator against the spring force thus releasing the rotor. When current is off, strong compression springs push the armature plate back to its position thus clamping the rotor in between armature & mounting flange and providing necessary braking torque.

INSTALLATION : Mounting flange (10) has to be mounted on motor/machine body which should be at right angle to the motor/machine shaft as well as centered internally and externally may be with the help of spigot. The hub (6) has to be fitted on shaft with the help of key and axial retainer (circlip) and Rotor (9) on that. Stator (1) with Armature Assembly (2) has to be fitted on the Mounting flange (10) with the help of provided Allen bolt (8) through adjustment Hollow Bushes (4). The air gap should be adjusted by adjustable Hollow Bushes. To reduce air gap, rotate all bushes equally clockwise. Air gap should be within limits as per following table, initially it should be nominal.

Brake size	05	10	20	40	70	90	160	250
Nominal air gap mm	0.2	0.3	0.3	0.3	0.3	0.4	0.5	0.5
Maximum air gap mm	0.5	0.7	0.7	0.7	0.8	1.0	1.0	1.0

MAINTANENCE : SYTCO Fail Safe Brakes are almost maintenance free. For this periodicity depends on application to application, operating frequency, system inertia to be stopped etc. air gap can be adjusted by rotating adjustable Hollow Bushes to reduce air gap. Rotate all bushes anti-clockwise and check from all sides by filler gauge and vice-versa.

Typical cases of wrong fitment

Typical case of uneven air gap in brake disc: This should be noticed and avoided during preventive maintenance.



Typical case of stator resting bolt head, which will restrict the stator lateral movement of brake disc: This should be noticed and avoided during preventive maintenance.

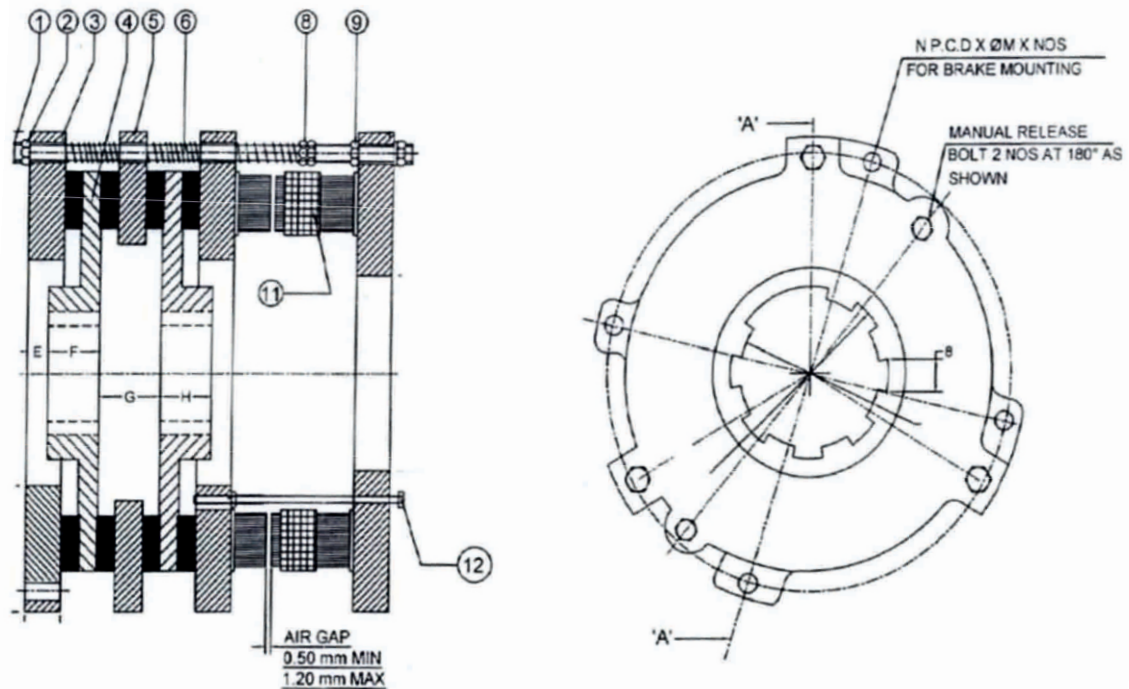


Typical case of stator fitting, the half-moon slot is to clear the bolt head, brake housing fitment wrong, which will obstruct the stator lateral movement of brake disc: This should be noticed and avoided during preventive maintenance.



Typical case of wrong wiring : The RYB colour code of connecting cables to be maintained and wiring connections to be followed accordingly. The supply voltage is 415+/-10% for all AC brakes. The power supply fluctuations will have effect on brake coil first than motor as coil are more sensitive than motor windings.

HOIST BRAKE SPARE PART LIST



PART NO.	PART CODE	DESCRIPTION
1	XBAP0033PTA	STUD
2	XBAP0032PTA	LOCK NUT
3	XBAP0038PTA	MOUNTING PLATE
4	XBAP0036PTA	FRICTION DISC
5	XBAP0037PTA	DUMMY PLATE
6	XBAP0034PTA	RELEASE SPRING
8	XBAP003APTA	SPRING COMP, NUT, & LOCK NUT
9	XBAP0830PTA	GAP ADJU. NUT & LOCK NUT
11	XBAP0026PTA	COIL
12	XBAP0730PTA	RELEASE BOLT

HOIST BRAKE

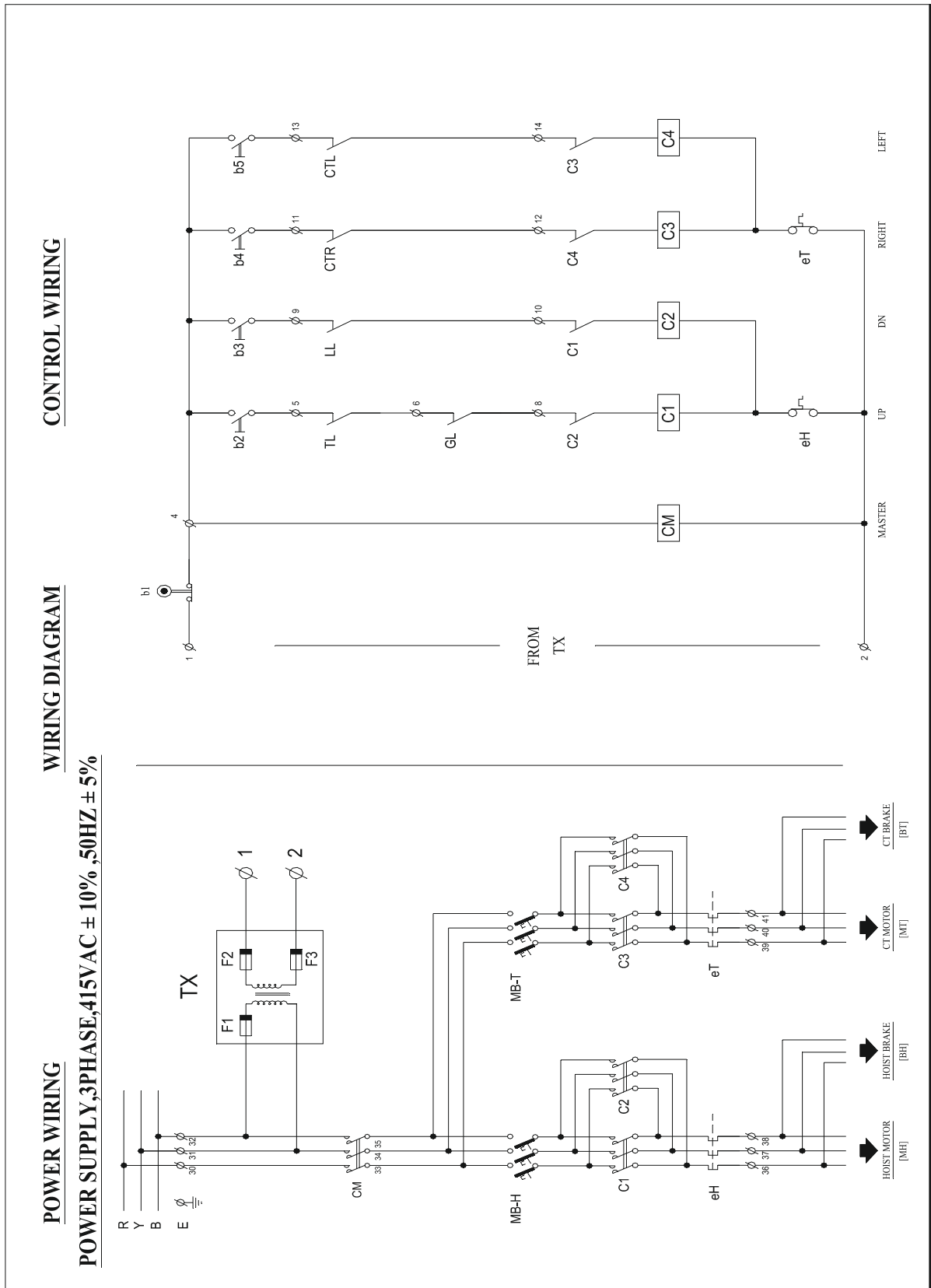
SAFETY PRECAUTIONS

1. To prevent electrical mishaps be sure to disconnect the power to the brake from its source before attempting to service or repair.
2. Look down or secure any load hold by this brake prior to service or repair
3. If this brake has been supplied with a manual hand release, do not override the brake by securing the hand release in an open position
4. Do not operate brake in atmospheres with explosive gases and dusts or corrosive substances. This brake can operate in non explosive dust or with optional seal in water splash and Almaden Atmospheres.
5. When storing or installing the friction rotor, ensure that oil or grease is kept from the friction material surface.

Air gap Hand Release Value

Brake Size	DAT 50X	DAT 75X	DAT 100X	DAT 125X	DAT 150X
Normal Air Gap mm	0.50	0.50	0.50	0.6	0.3
Max Air Gap mm	1.20	1.20	1.20	1.2	1.00

WIRING DIAGRAM



ELECTRICAL SPARE PARTS - 3T

PART CODE	DESCRIPTION	QTY.
XCPP124000A	Enclosure for Baseplate XCPP124001A Size 560X260X150 mm	1
XCPP124001A	Baseplate for Enclosure XCPP124000A Size 490X220X2 mm	1
XCTP0002AVA	Avtronics/Prince Make Control Transformer Primary 415VAC \pm 5%, \pm 10% & Secondary 110VAC, 100VA	1
XMCP0080MDA	Schneider Make MCB 3P 32A Cat No A9N3P32D - Hoist Motor	1
XMCP0120MDA	Schneider Make MCB 3P 4A Cat No A9N3P04D - ET Motor	1
XACP0140SMA	Schneider Make Contactor 32A/110VAC Cat No LC1D32 F7 - Master, Hoist Motor	3
XACP0850TMA	Schneider Make Contactor 9A/110VAC Cat No LC1D09 F7 - ET Motor	2
XORE0150SMA	Schneider Make Overload Relay 9 -13A Cat No LRD16 - Hoist Motor	1
XORP0350TMA	Schneider Make Overload Relay 1 -1.6A Cat No LRD06 - ET Motor	1
XLSP0060SLZ	Indef Make Limit Switch in Standard Housing, Without Roller 1NO+1NC, Normal Action, Rating 10A/500V Cat No. SL609N	1
XLSP0070SLZ	Indef Make Limit Switch in Standard Housing, Angular Roller Lever 1NO+1NC, Normal Action, Rating 10A/500V Cat No. SL609N	2
XLSP0090SLZ	Indef Make Limit Switch in Oil Tight Housing, Normal Roller Lever 1NO+1NC, Normal Action, Rating 10A/500V Cat No. SL603N	2
XPBP0003HHL	Indef Make 5 Way Pendant (Emergency Stop, Hoist/Low Single Speed, Right/Left Single Speed)	1

ELECTRICAL SPARE PARTS - 6T

PART CODE	DESCRIPTION	QTY.
XCPP124000A	Enclosure for Baseplate XCPP124001A Size 560X260X150 mm	1
XCPP124001A	Baseplate for Enclosure XCPP124000A Size 490X220X2 mm	1
XCTP0002AVA	Avtronics/Prince Make Control Transformer Primary 415VAC \pm 5%, \pm 10% & Secondary 110VAC, 100VA	1
XMCP0080MDA	Schneider Make MCB 3P 32A Cat No A9N3P32D - Hoist Motor	1
XMCP0120MDA	Schneider Make MCB 3P 4A Cat No A9N3P04D - ET Motor	1
XACP0140SMA	Schneider Make Contactor 32A/110VAC Cat No LC1D32 F7 - Master, Hoist Motor	3
XACP0850TMA	Schneider Make Contactor 9A/110VAC Cat No LC1D09 F7 - ET Motor	2
XORE0150SMA	Schneider Make Overload Relay 9 -13A Cat No LRD16 - Hoist Motor	1
XORE0290TMA	Schneider Make Overload Relay 1.6 -2.5A Cat No LRD07 - ET Motor	1
XLSP0060SLZ	Indef Make Limit Switch in Standard Housing, Without Roller 1NO+1NC, Normal Action, Rating 10A/500V Cat No. SL609N	1
XLSP0070SLZ	Indef Make Limit Switch in Standard Housing, Angular Roller Lever 1NO+1NC, Normal Action, Rating 10A/500V Cat No. SL609N	2
XLSP0090SLZ	Indef Make Limit Switch in Oil Tight Housing, Normal Roller Lever 1NO+1NC, Normal Action, Rating 10A/500V Cat No. SL603N	2
XPBP0003HHL	Indef Make 5 Way Pendant (Emergency Stop, Hoist/Low Single Speed, Right/Left Single Speed)	1

ELECTRICAL SPARE PARTS - 10T

PART CODE	DESCRIPTION	QTY.
XCPP124000A	Enclosure for Baseplate XCPP124001A Size 560X260X150 mm	1
XCPP124001A	Baseplate for Enclosure XCPP124000A Size 490X220X2 mm	1
XCTP0002AVA	Avetronics/Prince Make Control Transformer Primary 415VAC $\pm 5\%$, $\pm 10\%$ & Secondary 110VAC, 100VA	1
XMCP0080MDA	Schneider Make MCB 3P 32A Cat No A9N3P32D - Hoist Motor	1
XMCP0040MDA	Schneider Make MCB 3P 10A Cat No A9N3P10D - ET Motor	1
XACP0140SMA	Schneider Make Contactor 32A/110VAC Cat No LC1D32 F7 - Master, Hoist Motor	3
XACP0850TMA	Schneider Make Contactor 9A/110VAC Cat No LC1D09 F7 - ET Motor	2
XORE0150SMA	Schneider Make Overload Relay 9 -13A Cat No LRD16 - Hoist Motor	1
XORE0040SMA	Schneider Make Overload Relay 2.5 -4A Cat No LRD08 - ET Motor	1
XLSP0060SLZ	Indef Make Limit Switch in Standard Housing, Without Roller 1NO+1NC, Normal Action, Rating 10A/500V Cat No. SL609N	1
XLSP0070SLZ	Indef Make Limit Switch in Standard Housing, Angular Roller Lever 1NO+1NC, Normal Action, Rating 10A/500V Cat No. SL609N	2
XLSP0090SLZ	Indef Make Limit Switch in Oil Tight Housing, Normal Roller Lever 1NO+1NC, Normal Action, Rating 10A/500V Cat No. SL603N	2
XPBP0003HHL	Indef Make 5 Way Pendant (Emergency Stop, Hoist/Low Single Speed, Right/Left Single Speed)	1

ELECTRICAL SPARE PARTS - GT/PT

PART CODE	DESCRIPTION	QTY.
XCPP123000A	Enclosure for Baseplate XCPP123001A Size 440X260X150 mm	1
XCPP123001A	Baseplate for Enclosure XCPP123000A Size 370X220X2 mm	1
XCTP0002AVA	Avetronics/Prince Make Control Transformer Primary 415VAC $\pm 5\%$, $\pm 10\%$ & Secondary 110VAC, 100VA	1
XMCP0080MDA	Schneider Make MCB 3P 32A Cat No A9N3P32D - Hoist Motor	1
XACP0140SMA	Schneider Make Contactor 32A/110VAC Cat No LC1D32 F7 - Master, Hoist Motor	3
XORE0150SMA	Schneider Make Overload Relay 9 -13A Cat No LRD16 - Hoist Motor	1
XLSP0060SLZ	Indef Make Limit Switch in Standard Housing, Without Roller 1NO+1NC, Normal Action, Rating 10A/500V Cat No. SL609N	1
XLSP0070SLZ	Indef Make Limit Switch in Standard Housing, Angular Roller Lever 1NO+1NC, Normal Action, Rating 10A/500V Cat No. SL609N	2
XPBP0001HHL	Indef Make 3 Way Pendant (Emergency Stop, Hoist/Low Single Speed)	1

MAINTENANCE AND HANDLING

Lubrication

Wire Rope:

- For proper performance the Wire Rope must be maintained in a clean and well lubricated condition.
- The rope should be lubricated every 3 months (more frequently for heavier usage or severe conditions).
- To lubricate the rope, first remove any dirt, grime, moisture or other accumulations of contaminants. Then coat the Wire Rope with ENKLO 68 (M1-18-J-754) oil or equivalent. Ensure that the lubricant is applied to the entire surface of the rope over its entire length.
- For dusty environments, dry lubricants are suggested.
- For conditions not permitting lubricant to fall off the wire rope, consider using non-dripping motorcycle drive chain lubricant.

Wire Rope Drum, Hook Block and Sheaves:

- The drum, hook block and sheaves should be lubricated every 3 months (more frequently for heavier usage or severe conditions).
- Lubricate the Drum, Hook Block and Sheaves with ENKLO 68 (M1-18-J-754) or MP GREASE 3 (SI-18-M-211) grease.
- For dusty environments, dry lubricants are suggested.
- For conditions not permitting lubricant to fall off the drum, hook block and sheaves, consider using non-dripping motorcycle drive chain lubricant.

Trolley Wheels and Gears:

- The Trolley Wheels and Gears should be lubricated every 3 months (more frequently for heavier usage or severe conditions).
- Lubricate the Trolley Wheels and Gears with MP GREASE 3 (SI-18-M-211) grease.
- For dusty environments, dry lubricants are suggested.
- For conditions not permitting lubricant to fall off the trolley wheels and gears, consider using non-dripping motorcycle drive chain lubricant.

Hoist and Trolley Gearboxes – The hoist and trolley gearboxes are lubricated for life and should not need any lubricant replacement.

From harbouring a simple dream of becoming a provider of high-quality, truly Indian material handling solutions to becoming the national market leaders, **Bajaj Indef** has journeyed far and long. Right from our incorporation in 1962 till the present day, innovation, excellence, service and customer focus have been some of the key pillars that have carried us thus far and we only aim to take this legacy forward.

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