



MAINTENANCE MANUAL

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1. Safety Precautions

Do not carry the _____ as individual.

Only trained people should carry the Service.

Do not wear loose clothing. At all times, look out for moving objects. When on car top, watch for moving counter weights, elevator well projections such as beams adjacent moving car, other equipments attached thereto or the elevator well

The overhead clearance should be carefully noted while on top of the car. Similarly, when working in the pit watch the car carefully and keep clear of the descending counter weights in the well of the elevator being inspected and in adjoining lift shafts.

Before starting the inspection, first make sure that the safety operating devices, emergency stop switch and other safety devices such as top-of-car operating devices are in proper positions for inspection, and are in working order

Do not enter pits containing water while carrying electric lamps on extension cords or any other electrically operated devices

1.1 INSPECTION FROM THE CAR TOP

Use an electric lamp attached to a three wire earth extension cord with a suitable lamp guard and reflector. The extension lamp should not be hung from the suspension and accessory ropes

If there is an elevator in the adjacent shaft, keep all parts of your body within the limits of the elevator shaft of the car being inspected. Keep within the area of the car to avoid injury from counter weights or projections

Use special care where car tops are curved or domes, and watch out for fixtures on the car top while moving about the car top.

Test the strength of the car top before subjecting it to your entire weight. Avoid standing on top of emergency exit cover.

Be sure to have a firm hold on the cross head or other structural part of the car. When the car is moving, do not hole the ropes

Make sure that a firm and secure standing place is available, free of oil or grease, if the car top is not clean, ensure that it is made clean before inspection is made.



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If the car is equipped with a top-of-car operating device, check it for proper operation before starting inspection and use it to operate the car

Emergency stop switch is located on the car top, check its operation and be prepared to use it in case of an emergency.

Where the overhead clearance is limited, watch overhead obstructions carefully

1.2 INSPECTION FROM THE MACHINE ROOM

Examine the support and fastening before stepping on any on any overhead platform or trap door, to make sure that they are sufficiently strong and rigid to support your weight.

Watch for low headroom in a machine room particularly in secondary levels.

Move about carefully in the machine room to avoid slipping or tripping.

Make sure that the equipment under inspection is isolated from the power supply.

It is advisable to have a responsible person wait near the main switch to ensure that power supply is not inadvertently turned on.

1.3 INSPECTION FROM THE PIT

Since generally there will only be very limited space in the pit, when the car reaches the bottom landing, it is advisable to avoid as much as possible inspection from pit, with the lift is put in normal operating condition.

Before starting the inspection, have a person familiar with the operation of the elevator stationed in the car.

Steps must be taken to ensure that the elevator can be operated only from inside or from top of car whenever inspection is made from the pit.

Study the pit carefully before entering into it and observe the positions that will be occupied by the moving object, when they reach the pit.



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2.Maintenance attention items

2.1 WINDING MACHINE

The winding machine comprises of motor, gear, brake unit, couplings, flywheel and outer pedestal bearing. This assembly is factory aligned and fixed on bedplate

The worm reduction gear lubrication system is self-contained, positive and automatic at all speeds of operation and in either direction of rotation. Effective oil prevents leakages and the only attention required in service is a periodic oil level check. A dipstick is incorporated for this purpose.

It is important to ensure that the correct oil level is not exceeded, as over filling causes churning of oil, resulting over heating and leakage.

Please check the level of oil periodically and top up with 320 oil. This oil should be replenished once in a year

Wherever grease cup is provided, they should be replenished with the recommended grease. Oil seals should be inspected periodically for leakage or wear and replaced as necessary

DO'S

The oil level should be checked and made up with the special grade of oil recommended

DO NOT'S

Do not reuse the oil that has leaked through the seals

Do not use cotton waste for cleaning the gearbos

2.2 OUTER BEARING

Check the tightness of the holding down bolts. Check the outer bearing housing for any misalignment.

2.3 BRAKE

oil all joint pins occasionally. Take care that no oil gets into the drum. Do not adjust compression springs unless absolutely necessary. Brake shoes should be checked periodically for wear and lining replaced with necessary.



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DO'S

Oil all the joint pins. Take care that no oil falls on the drum. Since these joints have limited motion, a very small quantity of oil is sufficient. In most cases, the brake wear be compensated for, without adjustment

DO NOT'S

Do not adjust the compression spring unless this is absolutely necessary.

Do not adjust brake shoe setting screws unless this is absolutely necessary.

2.4 MOTOR

Regular inspection of machines should be made, the frequency depending upon the type of machine and operating condition.

Machines should be kept free from oil, grease, water and dirt. With fan cooled totally enclosed motors, ensure that the external air passages do not become clogged with dirt or other material thereby restricting the passage of air.

Check the soundness of all connections to motor and control apparatus periodically. The frame of every motor should be earthed to comply with relevant codes, from the earthing terminal provided on the motor body for this purpose.

2.5 TEMPERATURE RISE:

Do not become alarmed because the machine is too hot to touch. The insulation of standard motors will withstand a maximum observable temperature of 155 degree centigrade (40 degree centigrade ambient + 155 centigrade temperature rise) for classes "F" insulation and more in the case of class "H" and "C" insulations. So, do not depend on the hand to determine the temperature of the machine, but use thermometer.

2.6 WIRE ROPES

The lubrication of wire ropes applied during manufacture may not last the full life of the ropes, and the ropes may have to be lubricated periodically. Proper lubrication of the suspension ropes will prolong rope life by reducing abrasive action of wire to wire, strand to strand, retard deterioration of the hemp cores, eliminate distortion of ropes, and retard corrosion by providing a moisture repellent coating. As a periodical guide to the need for lubrication – a finger wiped in a sheave groove should show a faint smudge and have a lightly oily feel. If the test leaves the finger dry, and clean, lubrication advisable.



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As improper lubricants may seriously reduce the available traction and cause rope slippage, thus we should recommend the lubricant used in the lubricant chart. Slippage of the rings during acceleration or retardation will be an indicator that the lubrication is excessive.

To determine this, it is necessary to observe the ropes where they pay round the driving machine sheave during acceleration and retardation, particularly during emergency stops.

Governor wire ropes should not be lubricated after installation as the lubricant may interfere with the ability of the governor jaws to stop the governor rope and apply the safety gear, or it may reduce the traction between the governor rope and governor sheave and prevent proper functioning of the governor.

Regular inspection of ropes is also essential for the safe operation of the elevator. It is not possible to elaborate on the various procedures for inspection of ropes as the maintenance and inspection of ropes can be done only by skilled and experienced persons. A rope, which to a layman appears sound, may to an expert show indication of severe loss of strength; and vice versa

The clearance under the balance weight should be checked occasionally and the rope shortened, if necessary. Slack on auxiliary ropes should be taken up when required by means of turn buckles where provided.

DO'S

The rope must be lubricated periodically in order to reduce the wire to wire and strand to strand friction as the ropes bends over the sheave. The lubricant will also retard deterioration of the hemp core. Red rust between the strands is a sign of lack of lubrication

Only the special oil recommended for this purpose should be used. As a practical guide to the need for lubrication, a finger wiped in a sheave groove should show faint smudges and have an oily feel. If this test leaves the finger dry and clean, lubrication is necessary. The best way to lubricate the ropes is to paint them over using

DO NOT'S

Do not lubricate over speed governor rope

Do not under any circumstances use grease. Do not over lubricate. Excessive lubrication will cause rope slippage on the traction sheave and oil dripping on the car after lubrication, that car must runup and down and stops made to ensure that there is no slip.



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a brush

2.7 GUIDES

Check all the guides brackets bolts, palm – block or fish – plate fixing bolts, cleat fixing bolts, and nuts for tightness. Lubrications of guide rails is one of the most difficult problems connected with proper maintenance of elevators. The lubricated surface of the rails are exposed and collect dust and dirt blown about the car as it passes up and down the elevator well.

If the oil film becomes too thin or broken, the guide shoes bite the rails and cause noise and unpleasant riding in the car. Wear of the guide shoes, power consumption of the elevator operation and maintenance cost will be increase. When there is an excess of lubricant on the rails, it is thrown off by the guide shoes into the car and cause stains. In addition, it creates a dirt condition in the elevator which adds to the difficulties of keeping the space clean and creates a fire – hazard.

2.8 OVER SPEED GOVERNOR

The maintenance required for over speed governor is periodical lubrication of moving parts and keeping the equipment clean. If the over speed governor should trip due to accidental over speed, a thorough investigation should be made to ascertain the cause of the over speed. Until the cause is found and eliminated, do not sue the elevator. The resetting procedure of the over speed governor is as follows:

- a). Release safety gear cams from the guides by hand winding the car in up direction
- b). Reset the mechanical trip lever
- c). Reset the electrical trip switch

DO'S

Oil the moving parts including pivot point of the gripping jaws

Check the free movement of the tension weight in the pit

Check the function of the over speed governor trip switch

Inspect periodically the safety gear jaw to ascertain that no significant wear has occurred

DO NOT'S

Do not smear grease or oil in any part that may come in contact with over speed governor rope

Do not alter the setting of the trip level

Do not allow operation of the governor manually

Do not smear grease or allow oil to come in contact with the rubber roller, and components with which ropes will



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come in contact

2.9 SAFETY GEAR UNIT AT BOTTOM OF CAR

All moving parts of car safety mechanisms should be clear and free of rust and dust and should be lubricated at frequent interval \. This is especially important when the equipment is exposed to corrosive vapours or excessive damp conditions as corrosion or rusting of parts may prevent operation of the safety gear

DO'S

Lubricate all the moving parts and test operating by hand with power switched off.

DO NOT'S

Do not disable any of the safety devices under any circumstances

2.10 CONTROLLER



The controller unit housed in sheet metal enclosure – contain all power (440V, 3 phase) and other logic circuits.

1. Do not attempt any adjustment or settings, both mechanical and electrical
2. Do not bypass (or) short the fuses. Use specified rating of fuses in case of replacement
3. Do not jump any terminals, even on temporary basis
4. Switch "OFF" the mains before opening the controller
5. Any abnormal heat / carbonizing of components to be reported and lift to be switched "OFF" immediately.
6. Do not operate the power contactor either manually or electrically, as this will move the lifts bypassing all safeties.

Rating and type of the contactors are available in the unit itself.

All other auxiliary relays, transformers, fuses, electronic components are of standard design normally available.

The **VARIABLE VOLTAGE VARIABLE FREQUENCY (VVVF) DRIVE** controller is already programmed to the needs of the particular installation and needs no further adjustment / changes in parameters.



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2.11 LIFT SHAFT – SHAFT EQUIPMENTS & ACCESSORIES

Lift shaft to be maintained clean, rid of cobwebs or other wastes

Lighting to be done as recommended by norms

Pit in particular, to be maintained clean and water seepage if any, to be attended to preventing repetition

Various limit switches and switch operating cams are located in the shaft, which decides the selection of direction, slow down and stop of the lift in the floor. These switches are connected to the controller in the machine room. Mechanical operating switches are used & these switches are mounted on brackets, which again fixed with clips to the guides.

Entrance projections – whether sliding doors or swing doors or automatic doors – electro-mechanical locks which ensures that the doors are locked mechanically in the closed position. These units are called **LANDING GATE LOCKS** and the contacts are wired to the controller.

Landing call push boxes and other indicator boxes are located on the sides of the entrances and the wiring for the same are inside the lift shaft connected through trunking sections or conduits. Other junction boxes are located along the length on the walls inside the lift shafts.

Care must be taken that there is no seepage or leakage of water inside the shaft, particularly so in the walls where the junction boxes are located. Care must be taken to prevent entry of water from the lobby through the entrances into the lift shaft.

2.12 DOOR OPERATOR & ENTRANCE DOOR ASSEMBLIES

Clean all landing door headers, tracks and hangers off dirt and dust

Lubricate door hanger tracks with light oil (do not lubricate tracks where hangers are of rubber or nylon tyre)

Check & align door springs (center opening doors)

Tighten all loose door air cord or replace worn out air cords. Clean the cords and lubricate them with light oil (side open telescopic doors only)

If any door is damaged or rusted or rusted badly, check report in details

Check and report in detail if any door to be painted



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2.13 MONTHLY PERIODICAL INSPECTION

2.13.1 MACHINE ROOM:

- a. Machine parts should be cleaned properly. If there is any oil leakage is observed from the motors bearing or gear box that should be arrested and oil level is to be maintained
- b. Controller relay and other parts should be cleaned. At the time of cleaning we should check all relay contacts having proper contact or not.
- c. All the controller terminals should be checked for loose connection
- d. While replacing the controller or main fuse wire use always the rated gauge of fuse wires.
- e. Winding unit pedestal, over speed governor and gripping portion should be lubricated periodically with **GREASE or OIL**

2.13.2 HOISTWAY

- a. Hoistway, guide rail, electro-mechanical gate locks, car tops and lift pits should be cleaned once in a month
- b. Guide rails lubricating tanks should be refilled with new oil every month to maintain tank full level.
- c. Electro-mechanical gate lock shaft moving portion should be lubricated.
- d. Car top rope equaliser should be lubricated with oil.
- e. Retiring ramp assembly, plunger, air dash-pot, ramp should be lubricated
- f. Pit, over speed governor and tension weight to be lubricated
- g. All landing gates, top track and bottom track should be cleaned and top track, roller bearing, gate joints should also be lubricated



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2.14 ADJUSTMENTS

2.14.1 WINDING UNIT

- a. If there is any slip in brake slightly tighten the brake and the brake plunger should be closed upto the required level. So that we can have proper levelling.

Caution: should not tighten the brake more than the required level

- b. Car shoes and counter weights shoes should be checked if there is any play or shoe fixing – tighten the same properly.
- c. Retiring ramp should be checked and to be adjusted for smooth operation.
- d. Check the entire gate lock spindle level and tight and correct the position. If something found loose lock it with proper angle.
- e. If any one of the gate is being struck by the lock plate – slightly adjust the gate lock spindle level so that the gate can open freely without any obstruction.

Caution: Retiring ramp level should not be lowered beyond limit

- f. If there is any shake or play in the landing gate beaks or beak carriers tight, adjust it properly to enter into the lock smoothly.
- g. Once in three months all gate locks, well halfway boxes, landing push boxes, car top junction box car push box should be cleaned and terminals at the above mentioned places should be kept tight. If there is any loose connection correct it properly.
- h. Regarding our electric connection we have attached herewith an electric circuit diagram. Kindly read carefully and carry out the replacement as per our diagram.



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2.15 Maintenance Points

2.15.1 Complete inspection

No	Items	Interval (month)
1	Comport	1
2	Leveling state	1
3	Brake slippage	4
4	Gear	12
5	Motor	1
6	Traction sheave	12
7	Over speed governor	12
8	Car door and automatic door machine	1
9	Safety gears	2
10	Guide rail lubrications	1
11	Buffers	2
12	Landing doors	1
13	Traction ropes	12
14	Compensating device	6
15	Lubrication and cleanliness	1

2.15.2 Every Service following Check to be made

1 EB POWER PANEL AND STARTER	
A	Check the correct ratings of ELCB, MCB's, MPCB, and switches.[ICTP switches] 3 poles operated
B	Check the correct ratings of MCB's in car light, shaft light and machine room light
C	Check the ventilation conditions, rain water entry in to machine room and proper lighting in the machine room.
D	Checking loose connections in the all MCB's and starters. Check and set the motor over load tripping amps rating at the starter and MPCB.
2 CONTROLLER	
A	V3F :- Check the suitable resistance, connection & chopper kit
B	PC contactor, Connection & delay time 'ON' PFRR, Cooling fan Interact to Clients for setting the time delay to 'ON' the EB power to generator power, generator power to EB power at AMF panel
C	Power contactor and auxiliary contactors: - Check the main contactors stuck up, arching at terminals, varistor and diode across the contactor coil, mov, add-on block, inter lock, Continuity of terminals and loose connections.



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D	<u>Relay and base</u> : - check the 12v and 24v relay conditions of out look, tightness of wiring in relay base, diode across the relay coil (old jobs), and Relay locking clip condition
E	<u>Transformer and PFRR</u> : - check the line voltage and proper voltage tapping at transformer, varistor across the (0-270v) path, check the forward and reverse conditions of PFRR. In case of APR circuits check its functioning and loose connection
F	<u>HRC fuses / MCB's</u> :- Always provide proper amps rating of fuse wires, and check the amps rating of MCB [M1, M2, M3=AC 1amps, M4,M5=AC 2or3 amps, M6=DC 3amps,M7=AC 6amps,SAFE fuse=AC 2 amps
G	<u>Connector strips</u> : - Check the loose connections at power wires, motor wires, safety wiring, and varistor across the RT, RT1 and BK, BK1 terminals. Incase of screw less connector strips check the connections
H	<u>Processor, SMPS, Timer card</u> , - check the connection mother board, cards,12v timer card SMPS for processor, overload device, gong bells, Call card self booking condition, up/down indications ,controller wise just like simplex duplex, triplex, quarterplex and check this wirings.
I	Rack type card-check the front edge and back edge conditions and decoder wiring.
J	<u>Serial Processor</u> : check the D connector loose connections in landing interface card. Check the cards of serial processor and latest versions of IC's in CPU, display inter face. Check the jumper connections in cards. Finally check the car processor
K	Neatness' of control wiring :--Checks the fixing of power supply card and timer card with proper spacer, sleeves, Finally dress the controller wirings.
3	MOTOR AND GEAR UNIT:-
A	Check the motor oil leakages, sounds, vibrations and motor bush conditions. Check the coupling bush, brake tightness, condition of shoe linear, plunger and brake lever operation
B	In case of sassi / Penta machines, check the brake tightness and brake alignment,
C	Check the gear oil level, oil condition, sound and vibrations in the gear box.
D	Check the main rope, V wheel, Pedestal, Osg rope. Osg switch tripping roller mechanism. Condition of MLS and limit switch operation and over traveling operations.
E	Check the Marking of UP/DN direction on motor, marking of floor level. Finally check the earthing of motor, controller, and starter.
4	CAR TOP
A	Check the equalizer noise and position,
B	Tightness of rope clips,
C	Oil tank, lubrication conditions
D	Car shoes liner,

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E	OSG switch, cam clearance,
F	Car door unit fixing conditions
G	3 in 1 read switches fixing conditions, vanes cutting clearance, all vane fixing conditions and tightness,
5	COLLAPSIBLE GATE
A	Check the gate lock and pre lock element conditions, arching conditions,
B	Beak engagement, delocking lever and adaptor tightness of gate lock unit, earthing of gate lock unit.
C	Gate opening freeness, rivets, lubrication condition,
6	MS SWING DOOR, WOODEN SWING DOOR & SLIDING DOOR OF CAR
A	Check the M.S door closing condition, hydraulic door closer working condition, latch engagement of gate lock and pre lock element, gate lock trucking condition, earthing condition, door handle fixing tightness,
7	WOODEN SWING DOOR
A	Check the wooden door inches tightness, door closer condition, latch condition, rubbing of doors,
8	SLIDING DOORS
A	Check the door units, bearings, door ropes, magnetic latch engagement, slippers, and door plate screw tightness.
9	TRAVELLING CABLES
A	Check the high voltage, low voltage, traveling cable conditions, saddle condition, and wiring loose connection,
10	CAR GUIDES & CWT GUIDES
A	Check the lubricating condition of car & CWT rails, guid fixing nuts & bolts, joint sounds, cwt shoe linear and car shoe linear condition, tightness of main rope clips, gathering clips, I bolt fixing nut & bolt, split pin,
11	CAR PROCESSOR
A	Check the voltage supply of car processor, SMPS fixing & wiring condition, CPU IC version according to circular. Provide separate cable for serial processor [A1, A2, B1, and B2]
12	SAFETY SWITCHES
a	Check the top & bottom MLS switches, UP/DN limit switches. UP/DN MSR switches & HFSR switches, SET & LAST switches. Provide copper element switch for LAST & SET. In case of magnetic switches check manually NOTE: Don't make shorts above switches
13	PIT
A	Check the buffer spring condition of car & CWT, OSG wheel, pit safety switch, distance between traveling cable and pit, buffer clearness of CAR & CWT
14	LANDING & CAR DISPLAY
A	Check the all push buttons blinking, call registration, struck up condition,
B	UP/DN arrows, display, push box cover condition, scrolling display,
C	point sensor, emergency hooter & light working condition,
D	lift fan & light, blower fan sound, overload indication, press & speak working condition, gang bells.



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14	ARD
A	Check the ARD operation, battery condition & loose connection, announcatar, earthing
15	Cleaning
A	Cleaning the machine room, lift controller, machine, and car & landing sill, Car top, car cabin, fall ceiling, fan guard and finally pit.
16	Safety warning stickers
A	Provide rescue operation stickers at machine room near by hand cranking. Provide don't panic & safety stickers in car cabin.





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3.Cleaning & Lubrication Details

3.1 General House -Keeping

As with any complicated electro-mechanical equipment, trouble free service and longer operating lift can be obtained by performing periodic and careful maintenance of the equipment. A prerequisite for proper house-keeping and in other words, it is very essential to keep all the equipment and associated area clean without accumulation of dust, dirt and other miscellaneous objects such as rugs, grease, cans etc. following are some of the general guidelines, which should be adhering to.

3.2 LIFT WELL AND PIT

Elevator lift well and pit must be clean and free from dirt and rubbish and should not be used for storage purpose. water should not be allowed to accumulate in pits.

While cleaning the elevator well or pit, care should be exercised to prevent dirt and dust from falling the equipment. The mechanical equipment should be protected with tarpaulin or other suitable covering before major cleaning is commenced. This also applies when performing repainting or white washing of the elevator shaft and pit.

Care should be exercised to ensure that the wiring conduits, trailing cables, etc., are kept in a clean condition without accumulation of dust, dirt, grease etc.

3.3 MACHINE ROOM AND MACHINERY SPACE

Machine room and machinery space floors should be kept clean and free from oil and grease. Articles or materials not necessary for the maintenance or operation of the elevators should not be stored therein. Inflammable liquids having a flashpoint of less than 100 degree centigrade should not be taken into the machine room.

Any tools, spares, etc. required for maintenance of the elevators should be kept clean and stored neatly so as to readily available when required. It is important that the machine room is kept clean as possible since dirt has a major part in reducing equipment life. This is especially true of the controller where the relay and contactors are very sensitive to accumulation of dust. Due care should be exercised to ensure free and adequate flow of air through the machine room and steps taken to prevent ingress of water or other objects. In machine rooms where forced ventilation with blowers or exhaust fan is provided, the fan or blower also needs periodic maintenance to ensure proper operation.



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3.4 TOP OF CAR

The top of the car and all the equipment installed there, should be kept clean and free from oil or grease. The space should not be utilised for storing any materials.

3.5 CAR AND LANDING DOORS

Car and landing doors, sills and car inside should be cleaned daily, to present a neat appearance and to ensure that dust and dirt do not collect to adversely affect proper functioning of the elevator.

3.6 LUBRICATION DETAILS

3.6.1 Gear Box

RADICON U600 gear box oil level should be maintained as per depth stick mark "L" level.

Oil Grade: Indian Oil : Servo mesh 320 (or) servo system 320 or equivalent grade of oil

Above oil level to be checked every month.

If there is any leakage observed, it must be arrested

Again oil should be filled correctly.

According to your usage it is necessary to change entire gear oil within 10 months to 12 months with new oil.

3.6.2 Ropes : Rope Oil

3.6.3 Wheels :

Drive wheels at machine room, deflector wheel at the bottom of the RSJ supports, car top wheels, counter weight wheels are to be lubricated every month with grease. Nipple provision given at all wheels in machine room. Over Speed Governor shaft to be lubricated once in a month. No.2, grease cup provision already given at the lift pits. OSG tension weight shaft to be lubricated once in a month



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5. PAINTING OF LIFT EQUIPMENT

Care should be taken in the painting of the equipments to see that it does not interface with the proper functioning there of. This is especially important in the case of the governors, care safety parts and buffer parts. These should be tested for proper operation after completion of painting.

REFINISHING OF CAR

Particular care should be used when refinishing the elevator cars

1. Only one car should refinish at a time
2. The car should be placed at the floor for refinishing.
3. Blow torches should not be used for burning off old finishes or for other refinishing work inside elevator car.
4. Before finishing work is to be started, the following measures must be taken:
 - a. All electric supply and control line to the car for lighting, fan, alarm bell, push button etc., should be disconnected from the supply circuit. Only lighting that should be permitted in the elevator car during refinishing work should be a portable light with a guard and vapour proof of globe & without switch connected to a convenient supply point outside the well
 - b. A type of fire extinguisher, suitable for the material being used, should be placed near and outside the elevator car
 - c. Any ventilator at the top of the elevator well should be opened fully
 - d. Top emergency exit of the car if provided should be fully opened
 - e. The landing door should be kept fully open during the entire time of refinishing.
 - f. The car door should be kept fully open except with it is being refinished.



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TROUBLE SHOOTING



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CONTROL SYSTEM & VVVF NOT GETTING SWITCHED 'ON'

POSSIBLE CAUSE	CORRECTION ACTION
PHASE FAILURE	CHECK THE POWER SUPPLY
OVER TRAVEL IN UP (OR) DN DIRECTION	MOVE THE LIFT MANUALLY AND BRING IT TO FLOOR LEVEL
FINAL LIMIT SWITCHES FAILURE	CHECK THE SWITCH CONTACTS ARCING AND OPEN CIRCUIT

VVVF TRIP WHEN LIFT STARTS

POSSIBLE CAUSE	CORRECTION ACTION
LIFT OVER LOADED	CHECK THE BRAKE

VVVF TRIPS IN RUNNING

POSSIBLE CAUSE	CORRECTION ACTION
RESISTANCE FAILURE	CHECK THE RESISTANCE CONNECTION AND CONTINUITY

LANDING, CAR CALLS NOT GETTING REGISTERED

POSSIBLE CAUSE	CORRECTION ACTION
PUSH BUTTON PCB FAILURE	CHECK THE PUSH BUTTON PCB CONNECTION AND STATUS

LANDING, CAR CALL NOT GETTING REGISTERED IN UP DIRECTION

POSSIBLE CAUSE	CORRECTION ACTION



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NOTMAL UP SLOWING SWITCH FAILURE

CHECK THE NORMAL UP SLOWING
SWITCH CONNECTION AND STATUS

LANDING, CAR CALL NOT GETTING REGISTERED IN DN DIRECTION

POSSIBLE CAUSE

NOTMAL DN SLOWING SWITCH FAILURE

CORRECTION ACTION

CHECK THE NORMAL DN SLOWING
SWITCH CONNECTION AND STATUS

CALLS REGISTERED, DOOR CLOSED, LIFT NOT MOVING

POSSIBLE CAUSE

CORRECTION ACTION

CHECK THE POSITION OF THE MAINTENANCE
SWITCH POSITION IN CONTROLLER

LIFT STOPS IN ACCELERATION

POSSIBLE CAUSE

CORRECTION ACTION

CHECK THE FINAL SLOWING SWITCH IN BOTH
DIRECTION

CALL REGISTERED WITH NO INDICATION

POSSIBLE CAUSE

CORRECTION ACTION

LANDING PUSH BUTTON PCB
FAILURE

CHECK THE PUSH BUTTON PCB AND
CONNECTION

EMERGENCY ALARM NOT FUNCTIONING

POSSIBLE CAUSE

CORRECTION ACTION

CHECK THE BATTERY VOLTAGE AND
CONNECTION



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EMERGENCY LAMP NOT FUNCTIONING

POSSIBLE CAUSE

CORRECTION ACTION

CHECK THE BATTERY CONNECTION
AND BULB CONNECTION

1	Lift Doesn't get on	Check the power supply for proper sequence
2	Controller gets on, lift does not run	Check all the gates/ doors properly closed
3	Over travel in both direction	Check the operation of limit switches,
4	MPCB Trips	Lift may be over loaded. Lift may be over traveled.
5	VVVF Trip While lift starts	Check the voltage, Check whether the lift is over loaded.
6	VVVF trips while running & dec	Check the brake resistance connections.
7	Calls not getting registered	Check the operation of bottom PCB. Check the last & set signals.
8	Lift not stopping in level	Check the operating landing switch
9	Landing calls not accepting	Check the position of 12V / Voltage at lowest landing.
10	Contactors chattering	Check the voltage levels at all stages, and change the transformer tapping.
11	Processor hangs	Check the voltage at lowest landing and if low, change the landing commence cables.



MAINTENANCE MANUAL

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EMERGENCY RESCUE OPERATION



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MAINTENANCE MANUAL

• GENERAL INSTRUCTIONS HAND WINDING LIFT CAR

Hand winding (or) moving the elevator manually becomes necessary if the elevator stops between landings due to power failute, breakdown etc., the hand winding operation must be done very carefully, and will require the attention of three people, two in the machine room and one at the nearest landing.

Since the counter weight and the car are balanced for approximately 1/2 of the contract load, the car will have a tendency to move up or down for other loadings. In other words, the car will tend to move up if the elevator is lightly loaded and move down when it is loaded fully.

The procedure for bringing the elevator car to the nearest landing manually is as follows:

- With two people in the machine room, first of all the power supply must be shut off.
- One of them should fit the lever to the hand wheel and hold on to it firmly.
- The other should gently pull the brake release level by hand (**refer sketch enclosed**) thus releasing the brake. When this is done, the car will tend to move up or down depending on the loading and will float if it is approximately loaded to 1/2 of its rated capacity
- The lever should now be rotated carefully, until the car moves to the nearest desired landing.
- The third person standing at the landing should advise the people at the machine room to stop when the car reaches the landing.
- Care should be exercised that the car does not travel beyond a very low speed and whenever there is a tendency for speeding up, the brake lever should be released which engages the drum and stops the elevator.
- The lever should be removed from the hand wheel before the power supply is switched on again.
- It is most important to ensure that the car does not move after any of the landing doors have been opened, unless a responsible person is at landing to prevent any one stepping into the elevator well or the elevator car



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• EMERGENCY RESCUE OPERATION

- * Minimum two persons required.
- * A large portion of the lift would be visible from one of the landings. In case of power operated door open the door by emergency key to ascertain the car position.
- * Ensure that all lobby doors are closed and also advise persons inside the car not to open the door and close the doors if open.

SEQUENCE OF RESCUE

1. Switch "OFF" power supply to the lift.
2. One person to release the brake
3. Second persons position himself suitably, to rotate the flywheel
4. Lift the brake lever upwards to release the brake shoes.
5. Person at flywheel to rotate the wheel slowly and control the movement
6. Rotation in one direction will be easier (up or down depends on carload) as desired rotation
7. Ensure that the lift is cranked and stopped one foot (approx) above / below the floor level
8. Rotate slowly until it reaches a floor zone. The level can be observed in the machine room by the marking on the ropes and the bedplate. The marking on the rope will coincide with the bedplate marking at levels.
9. If the rotation of the flywheel is not in control, lower the brake lever
10. Open lobby door by the emergency key. Open car door manually and help trapped people to come out. Ensure that people do not slip towards lift shaft side.

MAINTENANCE MANUAL**• EMERGENCY RESCUE OPERATION**

- * Minimum two persons required.
- * A large portion of the lift would be visible from one of the landings. In case of power operated door open the door by emergency key to ascertain the car position.
- * Ensure that all lobby doors are closed and also advise persons inside the car not to open the door and close the doors if open.

SEQUENCE OF RESCUE

1. Switch OFF power supply to the lift
2. One person to position himself suitably to rotate the fly-wheel "B"
3. **Firmly hold the fly-wheel "B" for the manual operation**
4. Second person to open the brake shoes "41" by acting on lever "A" and constantly exerting a sufficient force to open them
5. Person at fly-wheel to rotate the wheel slowly and control the movement
6. Rotate either in UP or DOWN direction depending on the car load
7. If the rotation of the fly-wheel is not in control, release the brake lever "A" partially applying braking action
8. Rotate slowly until it reaches a floor zone. The zone can be observed in the machine room by referring marking on the ropes. The marking on the rope coincides with the bed plate marking.
9. Ensure that the lift is cranked and stopped (Approx) to the floor level. Automatic doors crank car upto floor level (± 12 Inches)
10. Open lobby door with the emergency key, open car door manually and help the trapped people to come out. Hold landing door in open position, otherwise it will tend to close back because of spring

CAUTION

- Hold the fly-wheel "B" before releasing the brake lever "A"
- Ensure that people do not slip towards lift shaft side.
- Never reduce brake spring tension to facilitate the manual operation