Ecolift X

Operating and Maintenance Manual





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INTRODUCTION

The Ecolift X (referred to as "the machine" in this manual) is a simple, safe and efficient alternative to step-ladders, platform/podium steps and small scaffold towers that works by utilising a unique, patented stored power mechanism which enables the platform to be elevated with very little effort by the operator.

It is designed for working in harsh environments, internally or externally, on hard level surfaces with up to 3° slope, and is ATEX approved for working in zone 1/21 hazardous areas.

It does not require batteries (or charging) or connection to an electricity supply, and as it does not have an electric motor, electrics or hydraulics it is very ecologically friendly.

It is suitable for any application provided it is used within its specified operating parameters. If used for applications such as sand blasting, welding, paint spraying or with any other hazardous materials, measures must be taken to ensure it does not become damaged in any way which may impair safety, or reliability. Additional protection for the operator may be required in some cases, which is the responsibility of the operator and/or the operator's employer.

The purpose of this manual is to provide essential basic information required to operate and maintain the machine.

This is not a workshop manual. Please contact the manufacturer or their agent for specific operation or maintenance information if in doubt.

The health and safety of the operator or maintenance technician is the responsibility of the individual and/or their employer and not Power Towers Ltd.

OPERATING SPECIFICATIONS

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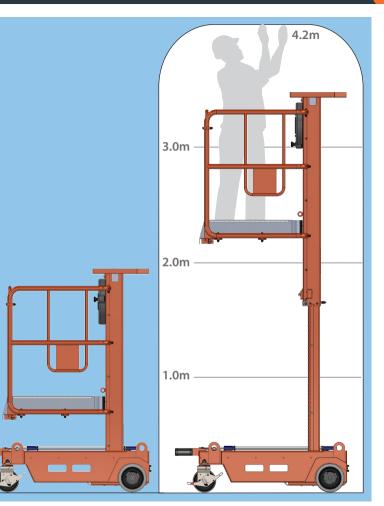
Working Dimensions

Maximum working height:	4.20 m
Maximum platform height:	2.20 m
Platform dimensions:	850 mm (L) x 644 mm (W)
Working footprint:	1280 mm x 950 mm
Safe working load:	150 kg (1 person + tools)
Maximum manual force:	200 N
Maximum gradient for operation:	3°
Maximum wind force:	Internal/External, 12.5 m/s
Maximum wheel force:	165 kg (1.62 kN)
Maximum castor point load:	165 kg (1.62 kN)
Sound pressure level:	Less than 70dBA

Closed Dimensions

Length:	1280 mm
Width:	950 mm
Height:	1950 mm
Weight:	354 kg

Lift Cycles: Unlimited, subject to maintenance program being adhered to.



DO'S and DON'TS

DO'S

- 1. Read, understand and adhere to the instructions on the machine and in the Instruction Guide or Operating Manual.
- 2. Ensure pre-operation checks & operations are carried out in the manner described.
- 3. Use only on hard, level surfaces with up to 3° slope able to support the weight of the machine.
- 4. Use the machine internally or externally, in winds up to 12.5m/s and in ATEX zone 1/21 hazardous areas.
- 5. Ensure the operator is fit and does not suffer from a fear of heights.
- 6. Ensure guardrail gates are closed before elevation.
- 7. Ensure work area around the machine is cordoned off from pedestrians and other traffic.
- 8. Ensure operator is wearing the correct safety equipment.
- 9. Ensure the platform is correctly positioned so as not to come into contact with fixed or moving objects.
- 10. Ensure that the safe working load is evenly distributed on the platform.
- 11. Ensure the machine is being operated within the PUWER (Provision and Use of Workplace Equipment Regulations).
- 12. Ensure the castor brakes are applied when leaving the machine unattended.

DON'TS

- 1. Never exceed the safe working load 150kg (1 person plus tools).
- 2. Never use the machine as a goods lift or crane.
- 3. Never exceed horizontal forces, (maximum horizontal force 200N).
- 4. Never use in wind exceeding 12.5m/s.
- 5. Never use in the vicinity of live conductors.
- 6. Never try to move the machine on its wheels when elevated.
- 7. Never extend the height of the platform by using boxes, steps, ladders etc.
- 8. Never modify the machine in any way without the full written approval of the manufacturer.
- 9. Never attempt to enter or exit the platform unless it is fully lowered.
- 10. Never lift heavy components on the machine without the use of the correct lifting equipment.
- 11. Never use the machine if you are fatigued.
- 12. Never use the machine inappropriately or for 'horseplay.'
- 13. Never use the machine if under the influence of drugs or alcohol.
- 14. Never use the machine if suffering from poor health or using medication which might impair the safe operation of the machine.
- 15. Never use the machine if vision is impaired by bright lighting.
- 16. Never push the machine on sloping surfaces without the use of a safe method.
- 17. Never push or pull objects with the platform.
- 18. Never use on uneven surfaces.

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PRIMARY COMPONENT LOCATIONS



OPERATING PROCEDURES

OPERATING PROCEDURES

It is the owners and/or the users responsibility to ensure that the machine is maintained and operated in accordance with the operation and maintenance procedures contained within this manual.

It is essential to be familiar with the correct operating procedures.

The operator must have adequate training for this type of platform.

The machine is fitted with a safety harness point. If after conducting a risk assessment the operator chooses to wear a safety harness, an approved 'fall restraint' type harness should be worn with a very short lanyard.

Operating procedures are divided into three key areas:

- 1. **Pre-operation checks.** What to do before operating the machine.
- 2. Normal operation. How to use the machine safely.
- 3. Emergency operation. How to lower the machine in the event of operator incapacity.



OPERATING PROCEDURES

PRE-OPERATION CHECKS

- 1. Visually inspect the machine for any signs of damage to handrails, platform tray, chassis and mast lifting structure including mast fixing bolts.
- 2. Check castors and wheels rotate freely and are undamaged.
- 3. Check castor axle bolts (Pic 1) and wheel split pins (Pic 2) are secure.
- 4. Check spirit level (Pic 3) is intact and bubble is centred to ensure machine is level.
- 5. Check gates, gate hinges, hinge springs and hinge fixings are undamaged, and that gates fully open and fully self close when released (Pic 4).
- 6. Ensure step is lowered and secure.
- 7. Check castors are not loose or distorted in any way. If okay, lock by stepping on the red pedal, then step into the basket.
- 8. When standing in the basket: check 'fly-wheel' operating handle works correctly. Hold handle firmly and pull operating knob towards you, release, knob should spring back to lock wheel. Repeat but turn handle once clockwise with knob held pulled towards you. Wheel should turn freely. Turn once anti-clockwise to come down (Pic 5).
- 9. Check emergency lowering tool is attached on the chassis and is not damaged. DO NOT USE THE MACHINE if any of the above items are faulty or not working. NORMAL OPERATION

Use the machine internally or externally, on hard level surfaces sloping up to 3° , and able to support the machine and safe working load.

Ensure a person is available at ground level to assist in case of emergency.

- 1. Position machine under application.
- 2. Check spirit level to ensure machine is level up to 3°. Do not use machine unless bubble remains within 3° circle.
- 3. Ensure castors are in the locked position as described in pre-operation checks.
- 4. Step into platform through gates, ensure gates close behind you. DO NOT ELEVATE IF THEY ARE NOT CLOSED.
- 5. Check there are no overhead obstructions.
- To elevate: pull operating knob towards you and turn clockwise. To stop, stop turning the handle and release handle knob to lock.
- 7. To descend repeat but turn handle anti-clockwise.

Note: Only turn the flywheel handle when standing within the platform guardrails. Never operate when standing outside the guardrails, except when following the "Emergency Lowering Procedure."











The user shall obtain the guidance and approval of the manufacturer in the event of any special working methods or conditions outside those specified by the manufacturer.

OPERATING PROCEDURES

EMERGENCY LOWERING OPERATION

Never attempt to recover the machine/operator if there is any possibility the machine is contacting any live wiring/cabling and is therefore potentially 'live'.

Never operate the emergency lowering without a person in the platform otherwise serious injury may result.

The Emergency Lowering Procedure is for lowering the platform from height with an incapacitated operator in the platform and for no other purpose.

- 1. Locate emergency lowering tool on chassis (Pic 2), remove from fixing. If tool is held captive with tie-wrap safety tag then break tag to release tool.
- 2. Depending on the height of the elevated platform, it may be necessary to extend the shaft of the tool. Turn the shaft lock anti-clockwise to extend and retract the shaft, and clockwise to lock to the desired position.
- Stand to side of machine, attach 'hook' end of emergency lowering tool to flywheel handle knob in basket, releasing handle knob, turn wheel anti-clockwise to bring platform down (Pic 1).
- 4. Keep clear of structure as it descends.

Always remove the lowering tool first before removing the person in order to lock the platform in a stationary position.

Never attempt to engage the emergency lowering tool onto the handle knob without an operator in the platform.



Turn wheel anti-clockwise to bring platform down



Emergency lowering tool located on chassis

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Please note that whilst the machine is extremely simple to maintain, all work must be carried out by a competent person.

NOTE: PUWER (The Provision and Use of Workplace Equipment Regulations 1998) stipulates that suppliers such as hire companies must ensure their equipment is maintained correctly and fully serviced. Once on site, it is the hirer/ employer's responsibility to ensure the machine remains in serviceable condition. The hirer/employer must also ensure the operator is properly trained and familiarised with the machine and the manufacturer's operating procedures.

The health and safety of any operator or maintenance staff is the responsibility of the individual and/or their employer.

DAILY MAINTENANCE

Note: The telescopic mast is a sealed unit which contains a pressurised cylinder and can only be dismantled by a trained person authorised by the manufacturer.

The most important regular maintenance to be carried out by the operator is visual inspection, as per the pre-operation checks.

Daily Checks

The safety critical items to inspect each work session, daily as a minimum are:

1. Check there is no damage to the following: wheels and castors and check that their fixings are secure. These are the components that connect the machine to the ground; if they are damaged then operating the machine could be dangerous and may result in serious injury.

- 2. Check that the guardrails are not damaged and all fixings are secure.
- 3. Check gates and gate hinges are secure and gates fully self close when released. Ensure gates cannot open outwards.
- 4. Check chassis is not damaged and spirit level is intact and working.
- 5. Check mast fixings are all present and secure.
- 6. Check flywheel handle operates correctly: step into the platform to do this (do not attempt to operate the handle from outside the basket). Pull flywheel handle knob towards you, release. Ensure handle springs back to lock wheel. Turn wheel one revolution clockwise then anti-clockwise; ensure handle moves freely in either direction.
- 7. Check automatic wheel-brake works by: Ensure the castor brakes are unlocked, repeat no. 6 when platform is elevated approximately 100mm, and with the assistance of a colleague, attempt to push the machine, machine should not move, wheels should be braked.
- 8. Check emergency lowering tool is attached to chassis and not damaged.
- 9. Check earthing strap is intact, and it is in contact with the ground.

Monthly Checks

As daily checks (items 1-9).

SIX MONTHLY CHECKS - LOLER

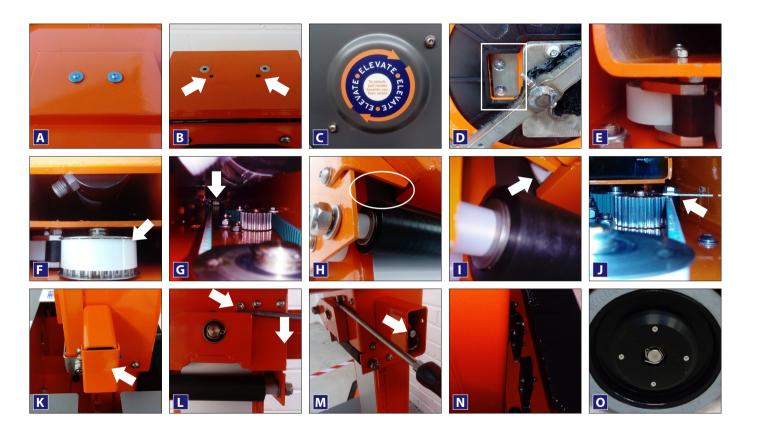
- In order to inspect the internal mechanisms of the machine the following covers must be removed; tool tray (Pic A), mast cap plate (Pic B, shows mast cap after tool tray is removed) and handle cover (Pic C). Remove the tool tray using a 5mm allen key, then remove the mast cap plate using a 6mm allen key. The mast cap screws (Pic B, arrowed) are additionally secured with a threadlock adhesive. If difficulty is experienced removing these screws then they will need to be heated with a heat gun for a few minutes. Remove the handle cover using a special 5mm allen key, which can be obtained from the manufacturer or his agent.
- 2. Inspect and lubricate gearwheels. Use Omega 73 no. 2 harsh environment grease or equivalent. Do not use standard gear grease because it will dry out prematurely and will lead to premature gear wear.
- 3. Elevate the platform approximately 20mm so the back of the belt clamp bracket and the two countersunk fixing screws are visible. Looking through the inspection hole (Pic D, boxed), check the two screws are secure. Look inside the mast section from the top to the rear of the clamp (Pic E), and ensure the two nuts are secure.

Raise and lower the platform fully and inspect the drive belt whilst doing so with the aid of a suitable light. Ensure the belt remains on the top pulley (Pic F, arrowed), bottom pulley (Pic G, arrowed) and drive cog. If it is found difficult to view the lower pulley it may be necessary to look through the gap above the mast roller (Pic H, circled). To do so remove the mast roller cover, located underneath the platform, by slackening the two M12 nuts and pulling the cover off (Pic I, shows cover removed and lower pulley, arrowed). Minor scuffing and wear of the belt surfaces, and visible steel braided wires, is acceptable. However, there must be no signs of wear or fraying of the steel braided wires. If the steel braided wires are worn or frayed, please contact the manufacturer.

Inspect the belt retaining plate (Pic J, arrowed). Ensure that the belt retaining plate does not move when the mast is raised and lowered.

When the internal inspection is complete, refit the mast cap plate and refit screws with medium strength threadlock. Paint seal the screws. Refit the handle cover and refit screws with medium strength threadlock. Paint seal the screws. Refit the tool tray. It is extremely important that all of these screws are replaced correctly.

- 4. Check the mast interlock is undamaged and is working correctly. Check the casing for signs of damage and remove the end plate (Pic K, arrowed). Insert a large flat screwdriver (300mm long approx.) between the stop screw and the lower pulley block (Pic L, arrowed) and lever downwards by applying a force of no more than 10kg. Care must be taken as applying too much force will damage the stop screw. When moving the block, watch the end of the interlock bolt (Pic M, arrowed) and ensure it moves inward and outward as the block is moved down and up. Refit cover and screw. Paint seal screw when refitted.
- 5. Inspect condition of automatic wheel lock. Look under brush strip at rear of chassis when platform is elevated so that mast outer is clear of chassis. Check brake cam plates (Pic N and Fig A, page12) are undamaged and that the two attaching screws are tight. With an assistant to lower the platform, observe the action of the cams and the movement of the brake pins. Ensure the movement is free and the pins clear the wheel discs. When the platform is elevated ensure the pins fully engage the brake discs. Ensure the pockets in the wheels are in good condition.

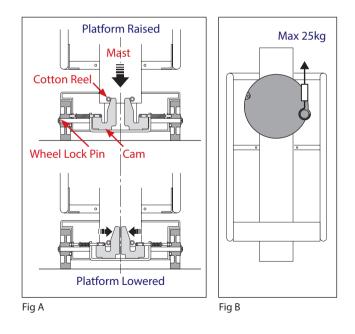


MAINTENANCE PROCEDURES

- 6. Ensure platform entrance gates open and close freely and that they self-close when released. Check pivots and springs for signs of fatigue and damage.
- 7. Check crank handle knob is securely fixed with M12 nyloc nut and roll pin through plastic tip. Ensure handle springs back to the locked position freely.
- 8. The machine should be subjected to the test procedure below:
 a) Fully lower platform to the transport position.
 b) With a calibrated digital spring balance apply a further 25kg force to the drive handle in the anti-clockwise direction (lowering), first releasing the handle knob from the back plate to allow the handle to turn (Fig B).
- Check rear wheels for signs of damage and that they rotate freely. Ensure there is no cut or wear to tyre that penetrates more than 4mm in depth. The original wheel diameter is 250mm. Check the split pin retaining the rear wheels is undamaged and secure (Pic O).
- 10. Check castor condition in accordance with the procedure shown on page 13.
- 11. Visually inspect the condition of the emergency lowering tool ensuring that it is not damaged or bent in any way and that it is securely clipped to the chassis.
- 12. Check all instruction labels are present and clear. Refer to the key spare parts. Check aluminium specification plate is clear and legible.

When replacing components for any reason, only use OEM specification parts, either supplied from the manufacturer or authorised in writing by the manufacturer. Warranties and design approvals will be void if alternative components are fitted. It is essential to obtain manufacturer's approval of any alteration which might affect stability, strength or performance in writing before proceeding.

When refitting a rear wheel always use a new cotter pin (4mm diameter x 32mm A2 stainless steel). NEVER REFIT A USED COTTER PIN.



CASTOR SAFETY AND MAINTENANCE

CASTOR SAFETY & MAINTENANCE

In order to ensure the castors are maintained in serviceable and safe condition, regular inspection is required, especially where arduous conditions are known to be involved or there is a suspicion of misuse or abuse. The other key element to ensure is in safe serviceable condition, is the castor fixing bolt, the condition of which can usually be determined from the condition of the castor bracket.

The castor is highly rated for the application so if visible distortion is evident a significant impact will have occurred and under these conditions the castor and fixing bolt must be replaced.

Typical signs of impact which would require castor and fixing replacement:



Foot pedal distortion as a result of a significant impact; it is likely the top plate and bearing will be distorted as well.



Mounting plate distortion as a result of a single significant impact or multiple lower level impacts. **Even if the rest of the castor is in good condition, it must be replaced.**

It may be thought feasible to repair the castor in a number of these instances, but serious structural damage will have occurred to the head bearing and castor assembly as well as possibly damage to the main fixing bolt. THE CASTOR AND FIXING BOLT MUST BE REPLACED.

When inspecting a castor in order to determine its serviceability, pay particular attention to the head swivel bearing (compare to a new one if possible) and the boss/rivet which goes through the centre of the swivel bearing and which clamps the assembly together.



Castor fixing bolt

Swivel bearing head should feel free to rotate and not loose

Castor Fixing Bolt (3/4 UNC): Castor Axle Bolt: Torque - 120 Nm Torque - 40 Nm

MAINTENANCE FREQUENCY SUMMARY

The table below summarises the frequency of checks that must be carried out on the machine, as detailed on pages 9 to 13.

MAINTENANCE FREQUENCY TABLE			
ltem	Daily	Monthly	6 Monthly (LOLER)
Wheels & Castors	•	•	
Guardrails	•	•	
Gates		•	
Spirit Level	•	•	
Mast Fixings	•	•	
Flywheel Handle	•	•	
Auto-Lok Braked Wheels	•	•	
Emergency Lowering Tool	•	•	
Earthing Strap	•	•	
Visual Inspection		•	
Gearwheel Lubrication			
Crank Handle Force			
Crank Handle Knob Operation			
Drive Belt			
Mast InterLock			
Castor Bolt Torque			
Instruction Labels			

TRANSPORTATION, LOADING, TOWING, MANOEUVRING AND STORAGE

TRANSPORT INSTRUCTIONS

It is the responsibility of the transport driver to ensure the machine is safely secured to the transport vehicle.

Ensure that the transport vehicle has the load capacity and dimensions in order to safely carry the weight and size of the machine.

Ensure that loading straps/chains are of adequate capacity to safely secure the machine for transport.

Always ensure that the machine is transported in the upright position. Never lay flat.

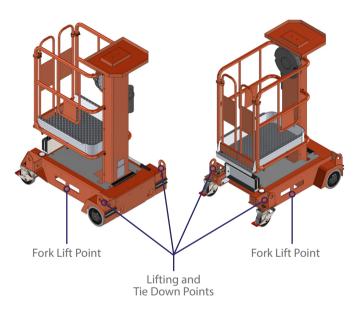
Ensure the transport vehicle is parked on a level surface and the parking brake is applied.

The machine can be loaded via a forklift, tail-lift, or winch. Never push the machine up a slope without the aid of a winch.

If using a forklift, raise the machine by approximately 50 - 100mm so that the wheel brakes engage.

Ensure the castor wheel locks are operated and that the forklift tines are fully engaged through the chassis sockets.

Load the machine onto the transport vehicle, taking care to position the machine so that straps can be located around the base of the machine without the need for the driver to have to climb onto the bed of the vehicle. Note; only trained qualified forklift drivers are to load the machine. Use at least two straps, feed one strap through the tie down points at the front of the machine and feed the other strap through the tie down points at the rear of the machine, so that the machine is tied down in four diagonal directions. Never place the straps over the platform or handrails.



TRANSPORTATION, LOADING, TOWING, MANOEUVRING AND STORAGE

LOADING

If loading with the aid of a winch up a ramp to the trailer, connect the winch cable to the castor/gate end of the chassis around the tops of the swivel castors, and then connect the winch cable to the strap.



Ensure the castor brakes are unlocked, and that the platform is fully lowered in the transport position.

Before disconnecting the machine from the winch cable, engage the castor brakes (arrowed).

If loading with the aid of a tail lift, ensure the tail lift has adequate load capacity and dimensions in order to safely lift the machine. Ensure the tail lift and vehicle is on flat ground. Ensure the platform is fully lowered to the transport position and wheel onto the tail lift bed. Once correctly positioned on the bed, lock the swivel castor brakes.

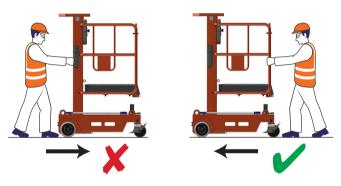
If using a tilting tail lift extra care must be taken to keep the tail level during lowering and raising operations. Ensure all wheels are braked at all times and, in addition, secure the machine to the tail lift if in doubt.

Raise the tail lift to the vehicle bed height. Unlock the castors and manoeuvre to the desired location on the vehicle and tie down as described above.

TOWING

It is the responsibility of the driver to ensure safe practice is employed in order to access the vehicle bed in order to manoeuvre the machine and then tie it down. One option is for the vehicle to be fitted with suitable guarding to prevent the possibility of the driver from falling to the ground.

HOW TO MANOEUVRE



STORAGE

If the machine is due to be stored for periods in excess of one month, the following precautions should be taken: ensure the machine is fully lowered and ideally place a cover over the machine.

Only store or transport the machine in an upright position.

Upon removal from storage and prior to returning to use, ensure machine pre-operation checks are carried out thoroughly, check LOLER certificate is current.

WARRANTY

Your Ecolift X (The Machine) is covered by a parts and components warranty as stated in the purchase terms and conditions.

The Manufacturer, Power Towers Ltd (The Company), undertakes to replace or repair, free of charge, any defective part or component which the company considers to be due to faulty workmanship or material, within the warranty period, except for:

The telescopic mast is a sealed unit. If the mast is opened in any way warranty may be invalid.

Defects arising from neglect, misuse or unauthorised modifications.

Damage caused by abuse, misuse, dropping or other similar damage caused by or as a result of failure to follow transportation, storage, installation, loading or operation instructions.

Alterations, additions or repairs carried out by persons other than the Manufacturer or their recognised distributors.

Transportation or shipment costs to and from the Manufacturer or their recognised agents, for repair or assessment against a warranty claim, on the machine or component.

Materials and/or labour costs to renew, repair or replace components due to fair wear and tear.

Faults arising from the use of non-standard or additional parts, or any consequential damage or wear caused by the fitting or use of such parts.

IMPORTANT

Warranty may, at the sole discretion of the Manufacturer, be voided if the scheduled service/inspections are not carried out in accordance with this manual.

The Manufacturer and/or their recognised agents, directors, employees or insurers will not be held liable for consequential or other damages, losses or expenses in connection with or by reason of or the inability to use the machine for any purpose.

MODIFICATIONS

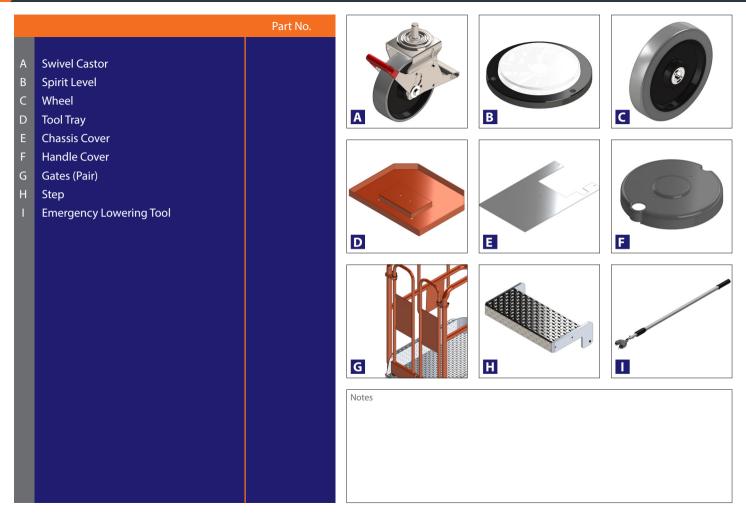
If additional equipment or any third party work, modifications or alterations are to be carried out on the machine which will involve any welding, drilling or any form of cutting or distortion of materials, full written approval must be obtained from the Manufacturer prior to the work being carried out.

ATEX CERTIFICATION

The Ecolift X is ATEX approved for zones 1 and 21. Third party approval by SGS Baseefa. Certificate no. Baseefa 13ATEX0150.

There are no elements of the machine which were identified as a potential hazard.

KEY SPARE PARTS



KEY SPARE PARTS

		Part No.		
J	Platform Tray			
К	Decal Set 1		e.	Colift ATEX rated. non-bowered access
L	Decal Set 2			
Μ	Decal Set 3		J	L
I			M	
			Notes	

DECAL PLACEMENT

Picture	Description	Decal Location
1.	A. 15kg Maximum load	Inside tool tray, front face
2.	A. Do not tie down over guardrails, x 4	Each side of cage near gates, upper and middle guardrails
3.	A. Fork lift point, x 2	Left and right side of chassis, below forklift openings
	B. Maximum wheel load, x 2	Left and right side of chassis, on rear wheel hub guard
	C. Hazard tape, x 2	Left and right side of chassis, on rear wheel hub guard
4.	A. Lock castor, x 2	Front of chassis, adjacent to castors
	B. Lifting & tie-down point, x 2	Front of chassis, next to lifting & tie-down points
	C. Spirit level guidance	Right side of spirit level, on chassis
	D. Maximum wheel load, x 2	Left and right side of chassis, below lifting & tie down points
	E. Hazard tape, x 2	Left and right side of chassis, below Maximum wheel load decal
5.	A. Emergency lowering procedure	Rear of chassis, right side
	B. Hand trap point	Rear of chassis, adjacent to brush strip
6.	A. Lifting & tie-down point, x 2	Rear of chassis, next to lifting & tie-down points
7.	A. Operating Instructions	Left gate, upper panel.
	B. Use advisory decal	Right gate, upper panel
	C. Maximum safe working load 150kg	Left gate, lower panel
	D. Safety requirements	Middle of mast, internal face
	E. Harness point	Above harness point on mast
	F. Elevate	Centre of handle cover

DECAL PLACEMENT















DECAL PLACEMENT











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Picture	Description	Decal Location
8.		Middle of mast below platform, internal face
9.	A. Product logo, x 2	Left and right side of platform
10.	A. Specification plate	Bottom of mast, external face
	B. ATEX plate	Bottom of mast above specification plate, external face
11.	A. Keep mast surfaces clean	Middle of mast, external face
12.	A. Hazard tape	Rear facing edges of tool tray
13.	A. Never release these bolts, x 2	Both sides of mast, below tool tray
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TEST RESULTS & NOTES

Description	Work Carried out	Date

ALTERATIONS & REPAIRS

Description	Work Carried out	Date

ECOX-OP | UK | 07:20



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