



User Guide



Link Trolley (Standard and LUL)

Permaquip Ltd
Level 3 Universal House, 41 Catley Road,
Darnall, Sheffield, UK
Tel: +44 (0) 114 291 1020
Fax: +44 (0) 114 261 8186
E-mail: sales@permaquip.co.uk
www.permaquip.co.uk

CONTENTS

1	Introduction	4
2	Safe and Correct Use	5
3	Technical Specification	7
3.1	Physical Data for the Link Trolley	7
3.2	Load Specification	7
3.3	Physical Data for the Link Trolley Accessories.....	8
3.4	Scaffold Attachment Scaffolding Limits	8
3.5	Product Compliance	8
4	Storage and Transportation	9
4.1	Storage	9
4.2	Transportation	9
5	General Layout	10
6	Operating Instructions.....	11
6.1	Mounting on the Track	11
6.2	Loading the Link Trolley	12
6.3	Fitting the Mesh Sides (optional)	13
6.4	Using the Link Trolley	14
6.5	Removing from the Track	14
6.6	Using the Scaffold Attachment (optional)	14
6.7	Fitting the Red Light	16
6.8	Fitting the Light Bracket.....	17
6.9	Using the Loading Ramps (optional)	17
7	Maintenance	19
7.1	Wheels and Axles	19
7.2	Brakes	20
7.3	Link Trolley Assembly.....	21
7.4	Scaffold Attachment	21
7.5	Red Light	21
7.6	Light Bracket.....	21
7.7	Loading Ramps	22
8	Test Specification	23
9	Training.....	24
10	Ordering.....	25
10.1	Main Components and Assemblies	25

Please note

Whilst Permaquip Limited has taken every care in preparing this User Guide it is intended as a technical guideline only. Save to the extent that there are statutory rights to the contrary, Permaquip accepts no liability in relation to any use or reliance made of any information in this User Guide.

All information, illustrations and specifications in this User Guide are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

Equipment operators and installers shall be responsible for ensuring that a safe working environment and safe systems of work are in place and in certain circumstances advice and permission from the controlling authority must be sought before any operation, installation or surveying work is carried out.

Permaquip™ is a trademark of Permaquip Ltd.
©2006 Permaquip Ltd.

2 INTRODUCTION

The Permaquip™ Link Trolley is designed to be used as a manual propelled, stand-alone load-bearing rolling platform for use on-track.

Each Link Trolley is equipped with a fail-safe braking system and is supplied with detachable Brake and Push Handles.

Up to three Link Trolleys can be connected together.

3 SAFE AND CORRECT USE

Please keep this User Guide for future reference.

To ensure safe and correct use of the Link Trolley the following should be noted:



Wear feet and hand protection when using the Link Trolley. Additional Personal Protective Equipment (PPE) should be worn according to local regulations.



The Link Trolley, or parts of, must be replaced if damage occurs. Do not use the Link Trolley if any components are damaged.



Store the Link Trolley in a secure position.



Before using, undertake a Manual Handling Risk Assessment and follow the assessment guidelines at all times. Use the Brake and Push Handles provided. Do not exceed walking pace, noting underfoot and rail head conditions. Do not walk on sleepers or the rail head.



Stopping distances will greatly increase by icy or wet conditions; gradients; an increase in load; an increase in speed.



LUL Link Trolleys and other Link Trolleys fitted with insulated wheels must not be used in locations where live AC overhead power lines are present. Do not use the Link Trolley near live DC third-rail or fourth-rail systems. Do not use the Scaffold Attachment on or near live AC overhead power lines.



Only use the Scaffold Attachment with scaffolding certified to BS1139 Part 3 or equivalent.



Do not use the Link Trolley for any other purpose than as described in the introduction.



Do not connect more than three Link Trolleys together at any one time.



Do not hold off the Brake Handle using mechanical means.



Do not allow any load protrusions to face downwards such that they could foul the gap between the linked trolleys, or any load to interfere with the braking mechanism.



Do not ride on or tow the Link Trolley.



Do not put fingers in the gap between the Link Trolleys when moving.

4 TECHNICAL SPECIFICATION

4.1 Physical Data for the Link Trolley

	Trolley Assembly (standard)	Trolley Assembly (LUL)
Width	1675 mm	
Length	750 mm	
Height	218 mm (without handles)	
Total Mass	47 kg	57 kg
Centre of mass	Central	

4.2 Load Specification

- Maximum load capacity for one Link Trolley:

1,250 kg UDL¹

- Maximum total load capacity when 2 Link Trolleys are connected:

2,000 kg UDL¹

- Maximum total load capacity when 3 Link Trolleys are connected:

2,000 kg UDL¹

¹ Note that all loads up to and including the maximum shown should be uniformly distributed. The load must be positioned equally about the Trolley centre. When used on Network Rail infrastructure, the maximum SWL is 1,000 kg UDL for one trolley.

- Maximum total load capacity of a Scaffold Attachment (when fitted):

225 kg SWL

- Maximum total load capacity of the Loading Ramps (when fitted):

1500 kg SWL (per pair)

4.3 Physical Data for the Link Trolley Accessories

	Mesh Sides	Scaffold Attachment	Red Light	Light Bracket
Height	500 mm	520 mm	93 x 66 x 32 mm	165 x 76 x 175 mm
Total Mass	25 kg	38 kg	0.11 kg	1.1 kg
Mass of heaviest component	8 kg	19 kg	-	-
Centre of mass	Central			

- Red Light Replacement Batteries



3v DC
 2 off
 Size AA (LR6, 15A, KAA, X/E91, MX/MN1500, 815, AM3, 4206/4006)
 Ø14.5 mm x 50.5 mm nominal dimensions
 1.5v DC, Alkaline
 Mercury and cadmium free

4.4 Scaffold Attachment Scaffolding Limits

- Minimum length between scaffold legs 1630 mm
- Maximum length between scaffold legs 2496 mm
- Minimum width between scaffold legs 1273 mm
- Maximum width between scaffold legs 1554 mm
- Minimum scaffold tube internal diameter 38 mm
- Maximum scaffold tube outside diameter 70 mm

4.5 Product Compliance

The standard Link Trolley complies with RIS-1701-PLT.

5 STORAGE AND TRANSPORTATION

5.1 Storage



The Link Trolley and any associated spare parts should be stored in a dry and secure environment. Safety critical spare parts must be stored in a dry, secure and controlled environment.



The maximum number of Link Trolleys that can be stacked during storage is 8.

5.2 Transportation



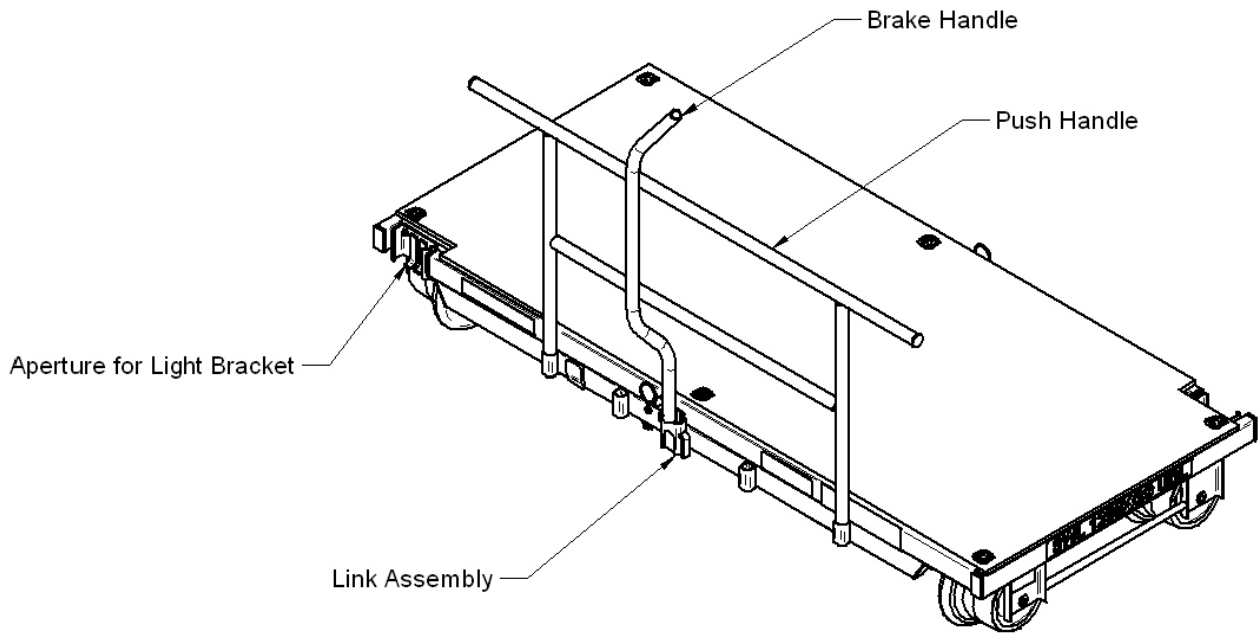
During transit the Link Trolley should be secured, and kept away from all electrified lines. Ensure that any method used to secure the Link Trolley in/on a vehicle applies the load uniformly and does not exceed the SWL. Do not use excessive force when using a ratchet type loading strap.



The maximum number of Link Trolleys that can be stacked during transit is 5, provided that this is within the vehicles operating capabilities. Note that the load must be secure and stable.

6 GENERAL LAYOUT

The following shows the main components of the Link Trolley.



7 OPERATING INSTRUCTIONS

The following procedure outlines the correct method for operation.



Always push, never pull, the Link Trolley.



All work should only be performed by competent personnel.



Always follow local regulations.



Observe Manual Handling Regulations.

7.1 Mounting on the Track

1. It is recommended that the Link Trolley is lifted by two persons.
2. Check that the Link Trolley has a unique serial number, is identified with the SWL and the 'Next Brake Test Due' has not expired.
3. Check that the brakes are in good working order. To do this, access the braked wheels and rotate with one hand. The wheels should resist movement. If in doubt do not use until it has been checked by a competent person.
4. Place the Link Trolley onto the track, ensuring that all four wheels are in contact with the rail head.
5. Fit the Brake Handle and Push Handle onto the Link Trolley at the opposite end to the intended direction of travel, with the Link Assembly fitted onto the Brake Lever as shown below.



6. Check the brakes are working correctly – they are fail-safe so should be on when the Link Trolley is stationary.
7. If more than one trolley is required, place the other trolley on the track as before. Remove the Link Assembly from each Link Trolley. On one of the mating Link Trolleys stow the Link Assembly as shown below.



Move the Link Trolleys together so they are touching and connect the two together using the other Link Assembly, as shown below.



7.2 Loading the Link Trolley

1. Ensure that the SWL is not exceeded.
2. Ensure that the load is stable and is uniformly distributed over the Link Trolley loading area.
3. Ensure that the load does not overhang the Link Trolley sides and infringe on the track gauge.

7.3 Fitting the Mesh Sides (optional)



1. Mesh Sides (optional) are available to facilitate the loading of loose, lightweight and bulky items.
2. Locate the pins of the long Mesh Side into the Push Handle sockets of the Link Trolley, as shown below.



3. Slide the short Mesh Sides into the locating lugs, as shown below. Ensure that the top locking lug is engaged into the end frame of the long Mesh Sides.

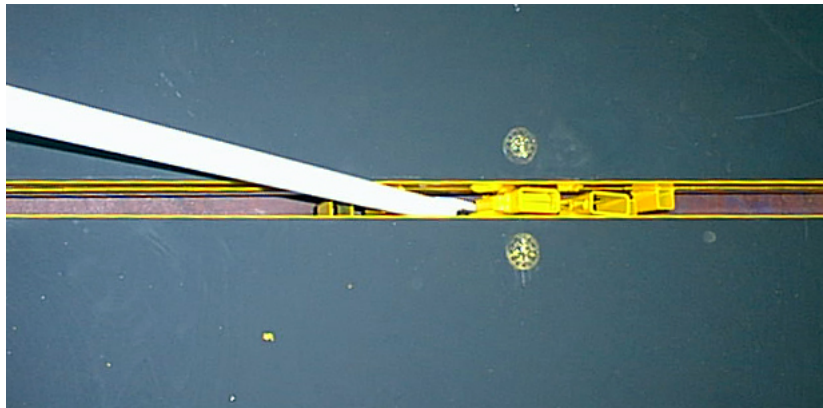


7.4 Using the Link Trolley

1. Move the Brake Handle sideways to release the brakes, and use the Push Handle to move the trolley.
2. Releasing the Brake handle will then re-apply the brakes.

7.5 Removing from the Track

1. Remove the load, Mesh Sides or Scaffold Attachment as appropriate.
2. If the Link Trolley is connected to another, use the Brake Handle to remove the Link Assembly as shown below.



3. Refit the Link Assembly onto the Brake Lever.
4. It is recommended that the Link Trolley is lifted by two persons.

7.6 Using the Scaffold Attachment (optional)



Do not exceed 4400 mm above rail height.

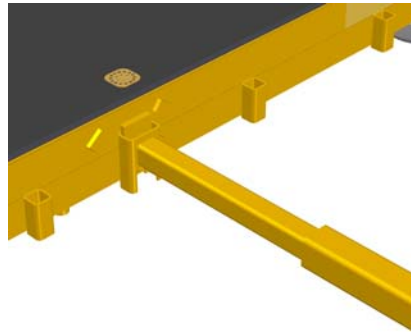


Follow the scaffold manufacturer's instructions for assembly and disassembly.

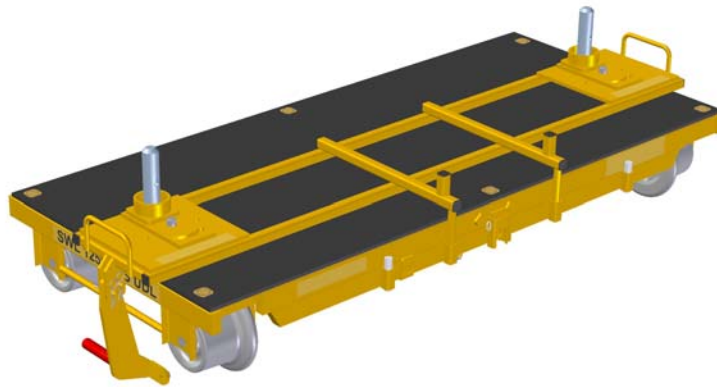
Attachment of the Scaffold Attachment to the Link Trolley

1. Visually check the frame assembly is free from distortion or damage. Do not use if the distortion is greater than 5 mm or fractured welds are present.
2. Ensure all Rail Hooks, Locking Pins and R-Clips are present and are not damaged. If they are missing or damaged do not use until they are replaced.

3. With two Link Trolleys mounted onto the track, slide the Inner Brake Linkage into the Outer Brake Linkage. Mount this Brake Linkage assembly onto both of the Link Trolley Brake Lever mechanisms, as shown below.



4. Mount the Scaffold Attachment frames onto the Link Trolleys, ensuring the two Location Dowels are fitted fully into the Push Handle sockets on the side of the Link Trolley, as shown below.



5. Locate a vertical section of scaffolding into the supports. The lateral members should then be clipped into position and the longitudinal bars assembled.
6. The scaffolding can then be progressively built upwards, ensuring each level is safe and secure before elevating to the next level.

Moving the Assembled Scaffold Link Trolley

1. Ensure that all four rail hooks are in the upright position. Note that in order to raise the hooks on track with third-rail, both pins should be removed from either side and the hook lifted vertically.
2. Ensure that all Locking Pins and R-Clips are inserted prior to moving.
3. Fit the Push Handle at the rear of the Link Trolley and locate the Brake Handle.
4. Move the Brake Handle sideways to release the brakes, and use the Push Handle to move the trolley.
5. Releasing the Brake handle will then re-apply the brakes.

Platform work on the Scaffold Link Trolley when stationary



Ensure that the SWL is not exceeded.



Do not move the Scaffold Link Trolley while persons are on the platform.

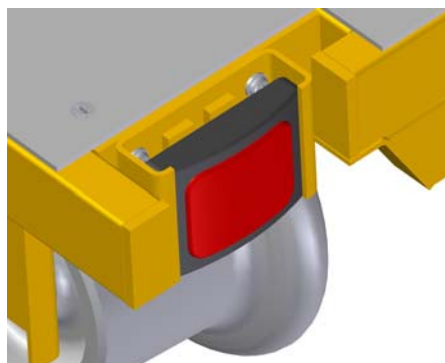
1. Ensure that all four Rail Hooks are lowered and locked into position using both of the Locking Pins for each Rail Hook, and that the R-Clips have been inserted.
2. Adjust the Hook Adjustment Bolt until in contact with the rail.
3. Ensure that the fail-safe brake is correctly applied.
4. Ensure that the scaffolding is located correctly into the Scaffold Attachments and that the Scaffold Attachments are correctly installed onto the Link Trolleys.
5. Platform operation can then proceed.

Scaffold and Scaffold Attachment Removal

1. Remove the scaffolding from the Scaffold Attachments.
2. Lift the Rail Hooks to the raised position by removing the R-Clip and lower Locking Pin, rotating the Rail Hook and locking in the raised position by re-inserting the Locking Pin and R-Clip.
3. Remove the Push and Brake Handles.
4. Lift off the Scaffold Attachment off each Link Trolley.

7.7 Fitting the Red Light

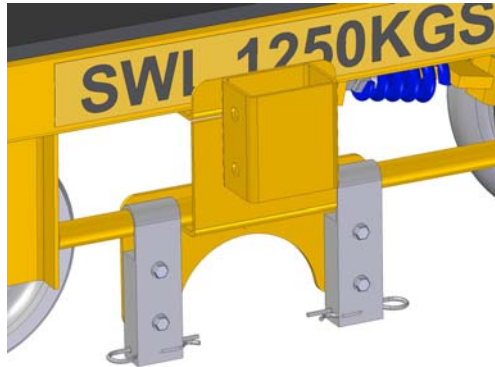
1. The Red Light is located in 2 positions on the Link Trolley. There are no additional fixings required as they slot into the Light Brackets fitted within the apertures, as shown below.



2. The Red Lights have to be removed to switch them on and off.

7.8 Fitting the Light Bracket

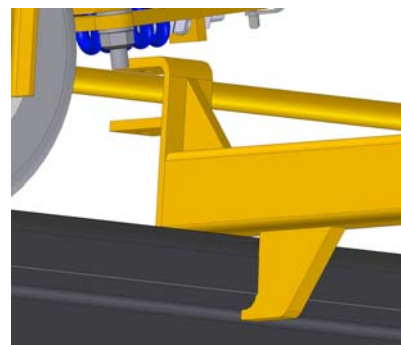
1. The Light Bracket is designed to hold a flood light (with a vertical stand measuring 50mm x 30mm) in position whilst the Link Trolley is stationary, to aid the illumination of the local working environment. The Light Bracket can be mounted on each side of the Link Trolley.
2. With the Link Trolley stationary, mount the Light Bracket as shown below, ensuring that it is clear of the brake components.
3. Fit the Clamp Locking Clips into each Clamp to secure in position.



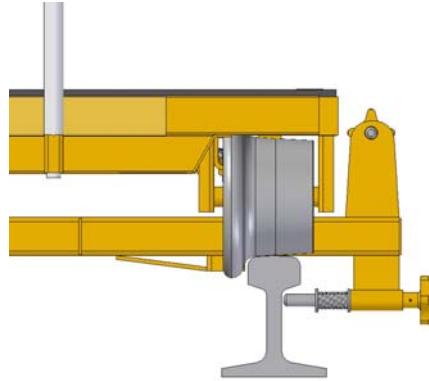
4. The flood light stand can be secured to the Light Bracket using the 2 holes in the aperture and suitable fasteners if required.
5. Ensure that the Light Bracket is removed before the Link Trolley is moved.

7.9 Using the Loading Ramps (optional)

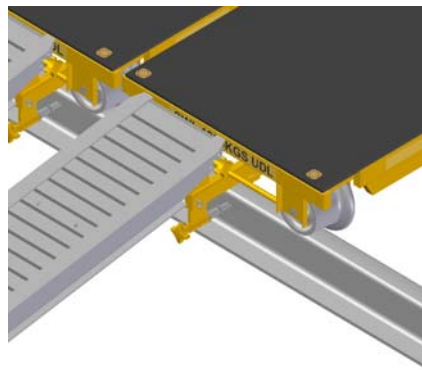
1. Check that the Link Trolleys have the round Side Handles fitted. Earlier Link Trolleys without Side Handles or other manufacturer's Link Trolleys can not be used with the Loading Ramps.
2. With two Link Trolleys connected together on the track, slide the Ramp Frame in between the Rail and underside of each trolley.
3. Ensure the front of the frame is located:
 - To the underside of the rail head with the Rail Hook
 - On the top of the rail
 - To the Link Trolleys with the Link Trolley Hook, as shown below. Secure in position with the retaining pin.



4. Ensure the rear of the Ramp Frame is located:
- To the flange of the rail with the locking pins fully extended
 - On the top of the rail, as shown below.



5. Attach the Ramps to each Ramp Frame by locating the Hinge Pin through the holes shown in the diagram below, ensuring that the Hinge Pin is fully in. Secure in position with the retaining pin.



8 MAINTENANCE



All work should only be performed by competent personnel.



Always follow local regulations.



Observe Manual Handling Regulations.



Brake tests must be performed following any repair or replacement of the brake system or components, including brake pad replacement.

For components that require replacing please refer to the Link Trolley Spare Parts List. Please contact Permaquip Ltd for additional copies.

Note that:

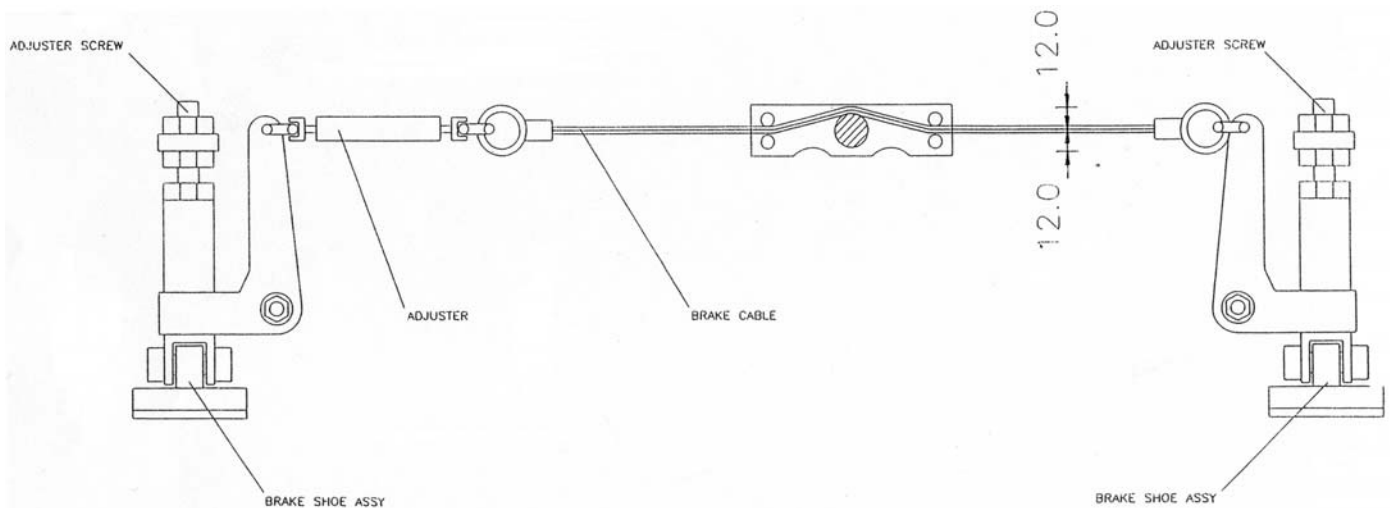
- **The Maintenance and Testing of the Brakes, Wheels and Axles are defined as Railway Safety Critical under CoP0010, Railway Safety Critical Maintenance Elements of Small Plant and Equipment.**
- **The Maintenance and Testing of the Brakes are covered under CoP0018, Rail Mounted Manually Propelled Equipment. The brakes must be maintained and tested at a periodicity of no greater than 3 months.**

8.1 Wheels and Axles

1. With the brakes released using the Brake Handle, check the wheels rotate freely.
2. Resistance to rotation or rocking of the wheel on the axle indicates either a worn axle or a cracked bearing. The wheel bearings are sealed for life and do not require lubrication. There should be no more than 2.0mm end float of the wheels.
3. Check the wheel profile for wear, cracks or damage. Replace damaged or worn wheels.
4. Check the Axle Retaining Pin is securely in place.

8.2 Brakes

1. Remove the brakes and check the brake linings. Remove any dirt or oil from the working surfaces. The recommended minimum thickness of the brake pad lining is 2.5mm.
2. Check the operation of the brake to ensure that the brake rod cable, clevis and adjusters are in good condition.
3. Lubricate all brake pivot pins, brakes cables, clevis pins and adjusters with a general purpose lubricant.
4. Check that both brake shoes apply and release simultaneously. To adjust the brakes;
 - Slacken the brake cable.
 - Adjust each brake spring using the adjuster screw whilst the brake is applied.
 - Re-adjust the brake cable using the adjusting shackle to give 12mm of slack on the brake cable as shown in the following diagram.



5. Test the brake efficiency using the Brake Test Tool. Ensure that the wheels and brake pads are dry. The brakes should be tested at all four quadrants of each braked wheel and in both directions. The average torque at which the wheel resists movement should be equal or greater than 45 Nm. Note that a higher torque figure may restrict the number of Link Trolleys that can be connected together, although this is not detrimental to the safe operation of individual Link Trolleys.
6. If the brake torque is not achieved, check and adjust the brakes as described previously and repeat the tests.
7. Fix a 'Next Brake Test Due' label onto the Trolley. The date specified must be within 3 months. Complete the Maintenance Brake Test Record Sheet.

8.3 Link Trolley Assembly

1. Check that the Link Assemblies are free from damage.
2. Check that the frame structure is free from deformation and that all welds are in good condition.
3. Ensure that the axle mounts are straight and are in-line.
4. Check that all four wheels make contact with the rail head when in an unladen condition.
5. For standard Link Trolleys fitted with wooden decks, check the condition of the wood. Decks that are loose, de-laminated, cracked or have holes need to be replaced.
6. For LUL Link Trolleys fitted with aluminium decks, check the condition of the aluminium. Decks that are loose, damaged or deformed need to be replaced.

8.4 Scaffold Attachment

1. Check that the frame assembly is free from distortion or damage. Renew the frame assembly if distortion is greater than 5 mm or fractured welds are present.
2. Check that the Rail Hooks, Locking Pins, Securing Wires, R-Clips and Hook Adjustment Bolts are fitted and free from damage. Replace as appropriate.
3. Replace any damaged, worn or missing Base Plates, Locking Screws and Spigots.
4. Lubricate the Base Plates with general purpose grease.

8.5 Red Light

1. To replace the batteries within the Red Light, remove the 4 off cross-headed screws from the rear of the light assembly and lift off the rear cover.
2. Replace the 2 off batteries to the correct specification, noting the polarity.
3. With the gasket in position replace the rear cover and secure using the 4 off screws.
4. Discard the old batteries according to local and national regulations.
5. Check the light operation using the rotary switch on the rear cover.
6. Replace into the Link Trolley.

8.6 Light Bracket

1. Check that the Clamp Locking Clips can be easily fitted to each Clamp.
2. Check that the Bracket is free from damage or deformation.

8.7 Loading Ramps

1. Check the Serial Numbers for the Ramp Frames and Ramps match.
2. Check that the Ramp Frames and Ramps are free from distortion or damage. Renew if distortion is greater than 5 mm or fractured welds are present.
3. Check that the Rail Hooks, Link Trolley Hooks, Locking Pins, are free from damage and that they all locate on the track and Link Trolley correctly. Replace as appropriate.
4. Check the Locking Pins are free from damage and spring return. Replace any damaged, worn or missing Locking Pins.
5. Lubricate the Locking Pins with general purpose grease.

9 TEST SPECIFICATION

The Link Trolley should be tested to the following specification after the Maintenance procedures have been completed where necessary.

Note the testing of the Brakes is defined under the Maintenance section of this User Guide. This is important as the brakes must be checked and maintained before testing.

The standard Link Trolley should be tested to the following specification:

1. The conductivity between the wheels and frame of the Link Trolley needs to be checked using a calibrated resistance meter.
2. Zero the meter so the display reads 0.00 Ω .
3. Connect one lead to an unpainted section of the Link Trolley frame. Connect the other lead to one of the wheels. The measured resistance should be less than 0.15 Ω .

The LUL Link Trolley and other Link Trolleys fitted with insulated wheels should be tested to the following specification:

4. The resistance of the insulation of the Link Trolley needs to be checked using a calibrated resistance meter.
5. Ensure the brakes are on.
6. Check that the meter display reads 1 Ω or less when the two leads are connected together.
7. The resistance between the trolley frame and wheels needs to be checked. Connect one lead to an unpainted section of the Link Trolley frame. Connect the other lead to one of the wheels. The measured resistance should be at least 5 M Ω .
8. Repeat for the remaining three wheels and record the four measurements taken.
9. The resistance between the wheels needs to be checked. Connect one lead to one of the wheels. Connect the other lead to the opposite wheel that sits on the opposite rail head. The measured resistance should be at least 5 M Ω .
10. Repeat for the remaining pair of wheels and record the two measurements taken.

The Link Trolley should be tested to the following specification after any structural repairs have been carried out, or when the Link Trolley has been damaged.

1. Note the Serial Number of the Link Trolley.
2. Place a straight edge between the rear face of two wheel flanges (as aligned along the rail). Check that the variation in alignment does not exceed 3mm.
3. Repeat for the other pair of wheels.
4. Mount the Link Trolley onto a test track and ensure the brakes are on.
5. Check that there is no deformation by ensuring the chassis is flat to within 2.0mm. Also check that there is no weld damage. Replace the chassis if the deformation exceeds this limit.
6. Measure the height between the track and the centre position of the Link Trolley frame on all four sides.
7. Lower a 1,562.5kg calibrated test mass onto the trolley (1.25 x 1,250kg SWL).
8. Leave for 10 minutes.
9. Remove the test mass.
10. Measure the heights again. There should be no more than 1.5mm difference in the two measurements.

Permaquip Ltd offer a testing and maintenance service – please contact us for further details.

10 TRAINING


Persons that will operate, maintain and test the Link Trolley should undertake a programme of training. This programme of training should include the following aspects:




- Product familiarisation.
- Component location and function.
- Product preparation.
- Safe and Correct Use.
- Maintenance.
- Testing.
- Practical experience.

Permaquip Ltd offer a training service – please contact us for further details.

11 ORDERING

11.1 Main Components and Assemblies

DESCRIPTION		PADS Cat. No.	PART NO
Link Trolley (Standard)		PA05/03389	28455
Link Trolley (LUL)		LUL Cert. Number PE007/1125	28800
Link Trolley (Standard with insulated wheels)			32820
Brake Test Tool			34711
Red Light			040820218
Scaffold Attachment (w/o scaffold)		68/19194	29619

Light Bracket			34087
Mesh Sides			30643
Loading Ramps			34088

For spare parts please refer to the Link Trolley Spare Parts List.

Please contact Permaquip Ltd for further information and support.
Our contact details are shown on the front of this User Guide.

In order to avoid delay and to have your orders fulfilled promptly,

Please telephone, e-mail, fax or write giving the following information:

- 1. Company name.**
- 2. Contact details.**
- 3. Invoicing and delivery details.**
- 4. Purchase order number.**
- 5. Method of delivery.**
- 6. Part number, description and quantity for each item.**

Your Notes

Your Notes