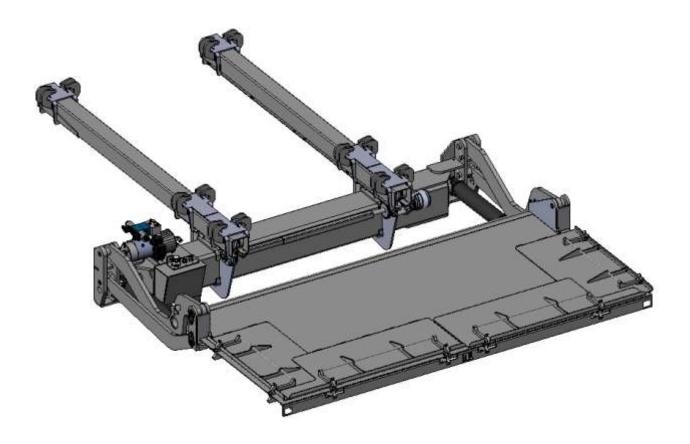
INSTALLATION MANUAL

SLIDER LIFT



CA CK





Hiab UK Ltd

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EC Declaration of conformity for machinery

We hereby declare that:

DEL Slider Tailift Models: DST

- are in conformity with the provisions of the Machinery Directive (2006/42/EC)
- and furthermore declare that parts of the following European harmonised standards have been used:

BS EN 1756-1:2001 BS EN 50498 :2010

Signed:

Name: Martin Saint

Position: SVP, TLFT, Hiab Tail Lifts

Place, Date: Hiab Tail Lifts, 1777 Miller Pkwy, Streetsboro, OH 44241, USA

01/04/25

Important:

This declaration is null and void without a completed Lift Installation Test Certificate attached and all signatures completed, or if modifications are made to the machine without prior written approval from Del Equipment (UK) Ltd.

INTRODUCTION

This manual covers the installation of the slider tailift range DST. The correct installation and setting up of the lift is vital to the working life of the lift.

Safety must be regarded as of paramount importance during installation.

A risk assessment for the installation and commissioning of the tailift is required before starting work.

Read both installation and operators manuals before commencing work.

The lift beam, arms and platform are heavy and can crush. Never work under the lift unless it is securely supported and always disconnect the vehicle battery before starting work.

Do not make any design modification to the tailift unless written permission is first obtained from Hiab UK Ltd.

Please note that any unauthorised modification may: -

- 1. Invalidate the warranty
- 2. Lead to equipment failure
- 3. Create a hazard that is not immediately obvious at the time of installation.

If you are unsure about any aspect of the installation procedure please contact DEL service.

IMPORTANT

This manual forms part of the Inspection record for the tailift, and should be passed on to the end user, together with the operators manual.

The tail lift installer shall in consultation with his manufacturer and user confirm the compatibility between the tail lift and the vehicle taking into account the intended use.

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1. TECHNICAL DESCRIPTION

The DST lift is electro-hydraulically driven.

An electric motor which gets its power from the vehicle battery, drives a hydraulic pump which supplies oil via hoses to the hydraulic lift arm rams and the hydraulic motor for the slide mechanism.

The system is steered by electrical valves.

The platform is supported by the lift arms and has a non-slip surface.

The lift arm rams have built in mechanical safety valves for protection against hose burst.

Lifting speed is fixed by the pump capacity whilst the lowering speed is controlled by special constant flow valves which allow the same speed independent of the load. The hydraulic system is protected by a pressure regulator when lifting (but does not prevent overload at rest position or when lowering).

When the isolator (cabin) switch is off, the lift is "locked"; (where fitted).

The electric motor is equipped with a thermostat which breaks the current in the event of the motor becoming over-heated.

2. INSTALLATION DIMENSIONS

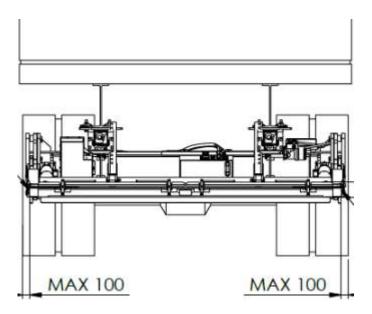
Calculating the installed dimensions:

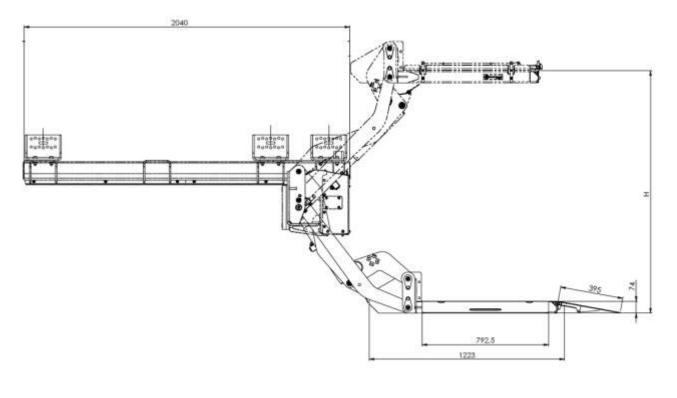
For easier installation it is useful to calculate and specify the necessary dimensions in advance. You should try to install the lift as high as possible.

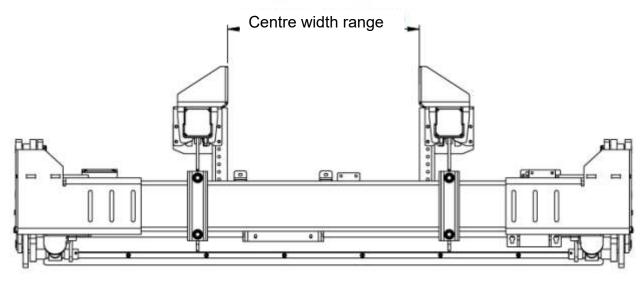
The platform and lift arm combinations are optimised for minimal total length.

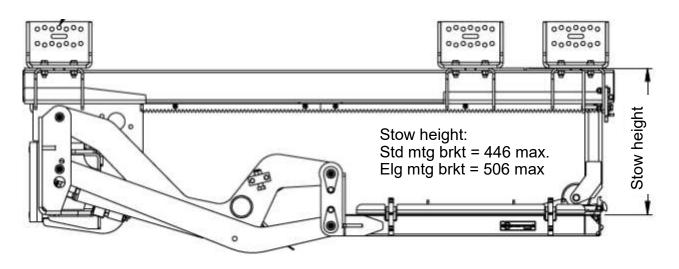
BED HEIGHT RANGE	1050mm - 1420 to 1520mm*
RIGID C-SECTION RANGE	370mm - 700mm
RIGID CHASSIS WIDTH RANGE	760mm - 1120mm
I-BEAM RANGE	352mm - 552mm
I-BEAM CENTRE WIDTH RANGE	1100mm - 1360mm
	RIGID C-SECTION RANGE RIGID CHASSIS WIDTH RANGE I-BEAM RANGE I-BEAM CENTRE WIDTH

For the max distance between the platform and the ground for travelling when the vehicle is unloaded; see Dimensions for Underrun protection.







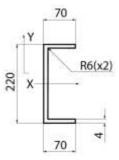


3. DIMENSIONS FOR UNDERRUN PROTECTION

Vehicle chassis requirements:

In order to comply with the applicable underrun protection standards, there are requirements for the vehicle chassis on which the rear tail lift is mounted.

The moment of inertia in a cross-section on a 'C' Section chassis (excluding any support frame) shall not be less than 937 cm4 ('I" Section = 1017 cm4). Thus the min chassis cross-section must measure at least 220x70x4 mm (this corresponds to a min moment of inertia of 937 cm4 around the x-axis).



WARNING - The above dimensions are the minimum permitted for the installation of underrun protection. The strength requirements for mounting the tail lift usually require larger dimensions. If in doubt, contact DEL for support.

Statutory dimensions:

Make sure the installation location allows the tail lift to meet the statutory dimensions for underrun protection when in transport mode

Distance between the platform and the ground when the vehicle is unladen:

Max 450 mm for vehicles with air suspension.

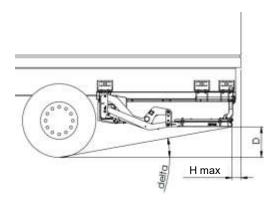
Max 500 mm for vehicles with conventional suspension.

If the departure angle with the above setting is less than 8°, the distance between the platform and the ground on an unladen vehicle must be increased until the angle reaches 8°, but by not more than 550 mm.

Horizontal distance (H) from the outermost part of the vehicle to the platform:

'C' Section = 300mm - 92mm deflection = 208mm.

'I' Section = 300mm - 26mm deflection = 274mm.



4. INSTALLATION PROCEDURE

Safety:

Make sure you fully understand the safe operation of the tailift by reading the operator/maintenance handbook before attempting to install the lift.

Ensure all work is supervised by a competent engineer in a clear area with adequate lighting.

Check that any specific requirements as stated in the relevant chassis manufacturer's bodybuilder's handbook are adhered to.

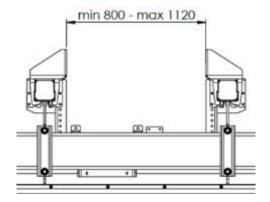
The platform and lift arm combinations are optimized for minimum total overhang, therefore always install the platform front edge level with the rear edge of the vehicle frame or tow hook device so that the platform can open out correctly.

NOTE. Consult the trailer / body manufacturer's instructions before installation commences.

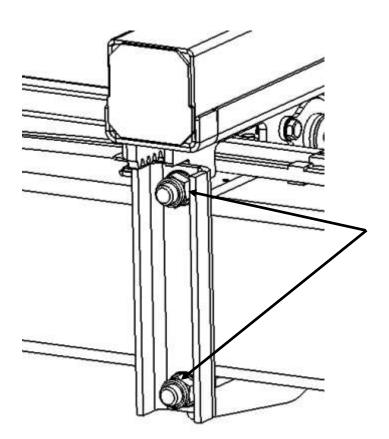
_

Adjusting the Beam Clamps to suit the chassis:

The position of the chassis brackets on the support frame can be adjusted to the frame width of the vehicle.



Slacken off the M22 nuts that hold the clamp to the rear of the chassis brackets.



Adjust the distance between the chassis brackets according to the chassis width and centre of the frame so that the distance from the end of the frame to the brackets is the same on the left and the right.

Tighten the nuts using a torque wrench. Tightening torque: 300 Nm.

Installing the lift on a truck:

Fit the clamp brackets (6 off) to the sliding runners using the M12 fixings supplied (4 per bracket).

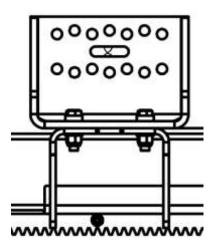
Position the lift under the vehicle chassis.

Temporarily connect the lift and control device to operate the lift's functions.

Adjust the sliding runners to the desired height under the frame. A workshop jack is useful to raise the frame and a forklift to raise the platform. The sliding runners should be positioned as high as possible without components and vehicle chassis colliding each other. The sliding runners must be installed parallel to the vehicle chassis, if necessary, adjust the arms' angle by carefully operating the lift.

With the runners in the forward position, raise the platform so that it is level with the vehicle body floor and adjust the lift's position so that the platform meets the vehicle body.

The lift can be installed first with a bolt in the bracket slots. On the vehicle chassis, mark the middle of the brackets' slot for the drilling of holes.



Drill holes in the chassis, Ø14 mm.

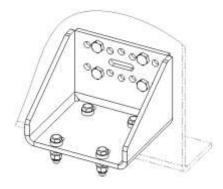
Bolt the sliding rail profile clamp brackets securely on the outside of the vehicle chassis. Use M14x45 bolts and install the associated washer and nut on the inside of the vehicle chassis. Install the bolts but do not tighten.

Check and perform fine adjustment regarding the position of the lift (see sliding rail stop and platform adjustment).

Tighten the bolts with a torque wrench. Tightening torque: 180 Nm.

Drill holes in the vehicle chassis for mounting bolts, Ø14 mm. Drill four more holes through each bracket to suit chassis.

Use fitting kit screws M14x45 (10.9) and install the associated washer and nut on the inside of the vehicle chassis. Install with four bolts in each bracket, if necessary the bolts first installed in the slot-shaped hole can now be moved to two of the outer holes, see Image 14. Tighten the bolts with a torque wrench. Tightening torque: 180 Nm.



NOTE. Welding is not permitted on the chassis brackets.

Do not move the lift all the way to the arm stops before all the bolts are fully tightened against the chassis.

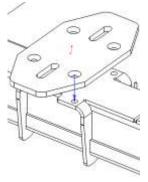
Do not place the lift under load until all bolts are tightened.

Do not place the vehicle body under load until all bolts are tightened.

Installing the lift on a trailer:

Fit the clamp adaptor plates (6 off) to the sliding runners using the fixings supplied (4 x

M12 per bracket). Tightening torque: 140 Nm.



Position the lift under the vehicle chassis.

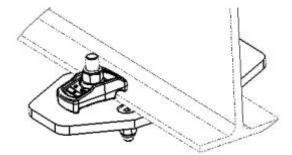
Temporarily connect the lift and control device to operate the lift's functions.

Make sure there is no dirt between sliding rail bracket and the I-beam etc. and that the sliding rail adapter plate and the I-beam are centred on each other when fitted.

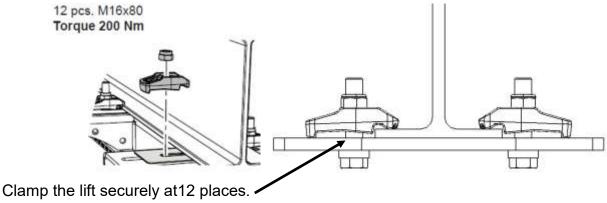
Adjust the sliding runners to the desired height under the frame. A workshop jack is useful to raise the frame and a forklift to raise the platform. The sliding runners should be positioned as high as possible without components and vehicle chassis colliding each other. The sliding runners must be installed parallel to the vehicle chassis, if necessary, adjust the arms' angle by carefully operating the lift.

With the runners in the forward position, raise the platform so that it is level with the vehicle body floor and adjust the lift's position so that the platform meets the vehicle body.

Place clamping brackets (6 pieces for each profile) and loosely clamp in position:

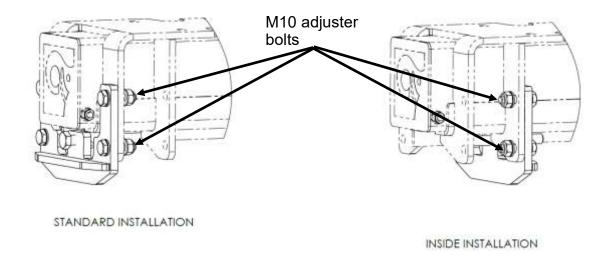


Check and perform fine adjustment regarding the position of the lift (see slider stop and platform adjustment).



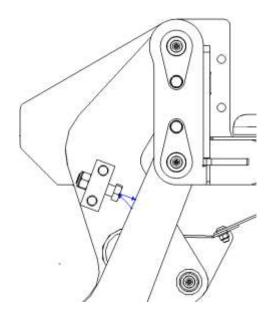
Sliding rail stop adjustment:

The stop positions for the sliders (both 'standard or inside' installation) can be adjusted by locking the M10 adjuster bolts / nuts on both sides of each sliding rail to suit.



Platform arm stop adjustment:

The close position of the platform arms can be locked by slackening, adjusting and retightening the M16 locking bolt / nuts on both arms to suit.

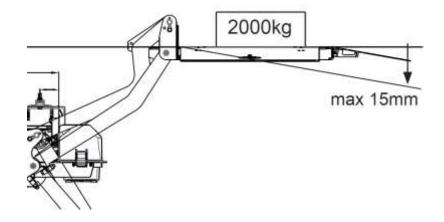


Platform adjustment:

NOTE. This setting must be made after completed installation. The lift must not be loaded when adjusting.

Place a test load on the platform e.g. maximum load (2000 kg) at Load Centre distance of 600mm.

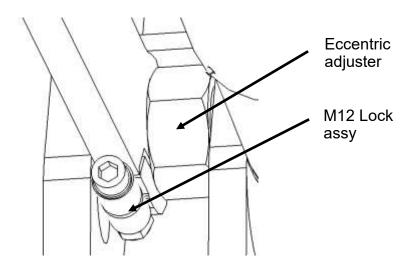
Check that the platform does not bend more than 15 mm.



If adjustment is necessary, lift off the load and support the platform from underneath if necessary with a forklift for example.

Adjust the platform's angle by slackening off the lock assy and then rotate the eccentric adjuster .This same process should be followed on both sides.

After adjustment, tighten the lock nuts with a torque wrench. Tightening torque 140 Nm.



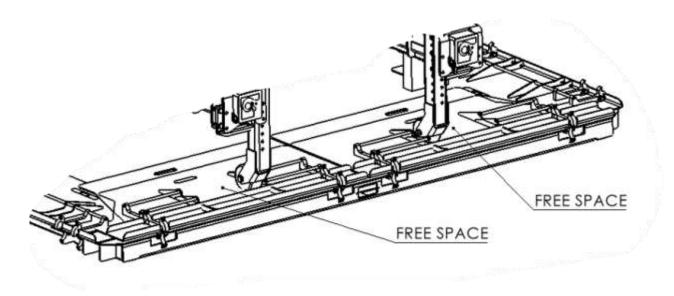
Place the test load back on the platform to check its angle. Repeat until an acceptable angle is achieved with a level continuation of the vehicle body's floor.

Fitting the Platform stops:

Platform stop with roller is supplied and mounted with integrated clamping bracket on to the sliding runners. The platform stop is adjustable in height and can be cut to length to suit RUPD requirements (see Dimensions for underrun protection).



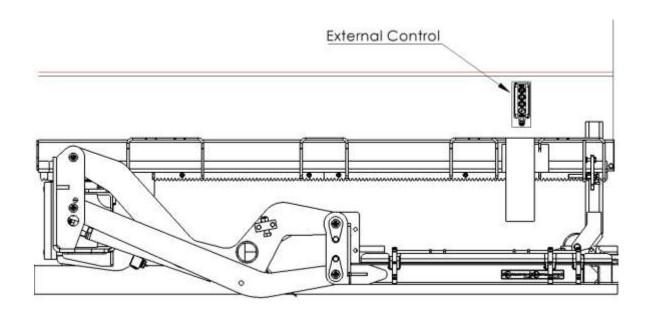
When mounting, the platform stops with roller must be placed in a free space so that they do not rest against the area around the handles on the platform end ramps:

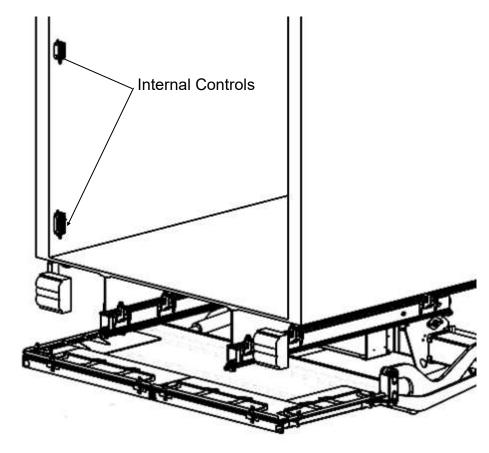


5. LOCATION OF CONTROL POSITIONS

Please refer to the instructions for electrical installation regarding ancillary equipment from your vehicle supplier.

Install control units at suitable places, but the position of the control unit should ensure that the operator has a good view of the load, the working area and the loading area, whilst maintaining a safe distance from the risk zone between the platform and the body and passing traffic.





6. INSTALLATION OF IN-LINE FUSE & EARTH

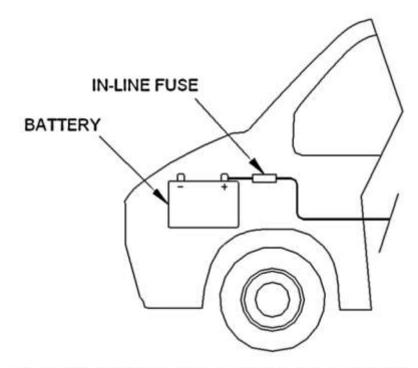
Route main battery cable from tailift to the battery along the chassis avoiding the exhaust, fuel pipes and sharp edges.

Locate the fuse holder on the positive cable, as close to the battery as possible, inside the engine compartment using the short cable to the battery +ve terminal. Connect the negative cable to the battery

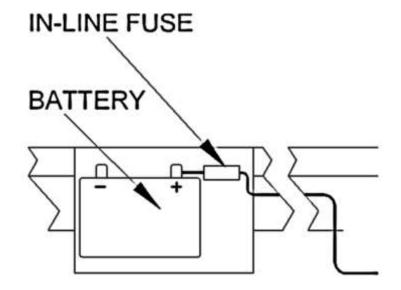
Route the main battery cables from tailift to the battery along the chassis avoiding the exhaust, brake pipes, fuel pipes and sharp edges.

Locate the fuse holder inside the battery case, using bolts, not self-tappers. If insufficient space inside the case, locate as close to the battery as possible, in an area least susceptible to the elements.

Connect the negative cable to the battery.

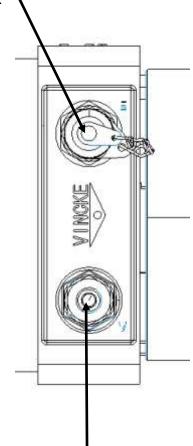


VEHICLE WITH CHASSIS BATTARY



7. POWER PACK RELIEF VALVE

Identify gauge port on power pack and connect pressure test gauge suitable for pressure range. \



To adjust the Rv pressure:

Release the locknut

Adjust the relief valve with an Allen key.

Turn the relief valve **CLOCKWISE** to **INCREASE** the load.

Turn the relief valve **ANTICLOCKWISE** to **DECREASE** the load.

After adjustment, tighten the locknut.

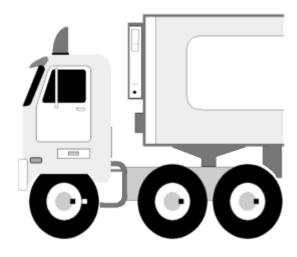
Check the adjustment with the post-installation tests.

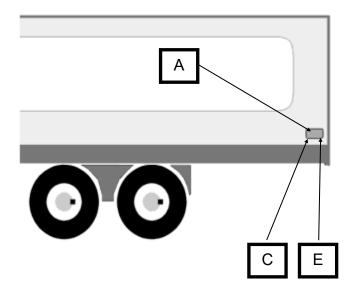
7 - BATTERY GUARD

Some lifts have a Battery Guard / Alarm fitted inside the Ram Housing.

- 1) When the BATT+ voltage is above 13.0V (26.0V) for 10 seconds, the loads will automatically be connected to the battery.
- 2) When the BATT+ voltage drops below 12.1v (24.2v) for 60 seconds, the alarm will pulse for a further 60 seconds warning the user that the loads are about to be disconnected. The disconnect process will stop if the battery voltage returns to 12.v (24.2v) or above.
- 3) After 60 seconds of the alarm pulsing, the loads will disconnect and the alarm will turn off.

9. LOCATION OF WARNING DECALS





A) CAUTION



B) ISOLATE POWER SUPPLY LOCATE ON THE POWER-PACK BOX



D) TAILIFT ISOLATION LOCATED AROUND THE POSITIVE CABLE FROM THE LIFT TO THE BATTERY



C) WARNING



E) MAX LOAD



F) KEEP FEET CLEAR LOCATED AT THE OPERATORS SIDE OF THE PLATFORM



10. TESTS AFTER INSTALLATION

After the lift has been initially installed the following tests <u>MUST</u> be completed to ensure the lift has been installed and set up correctly in accordance with CE regulations. The results of the tests should be entered on the test certificate provided and a copy returned to Hiab (UK) Ltd, the original should remain in this handbook as part of the inspection record for the tailift. This handbook should be kept, together with the operators handbook, with the tailift as part of the inspection record for the lift.



Do not leave a loaded platform unattended

IMPORTANT – CE REGULATIONS REQUIRE THE TEST CERTIFICATE TO BE COMPLETED AND RETURNED TO DEL Equipment (UK) Ltd

1) STATIC TESTS

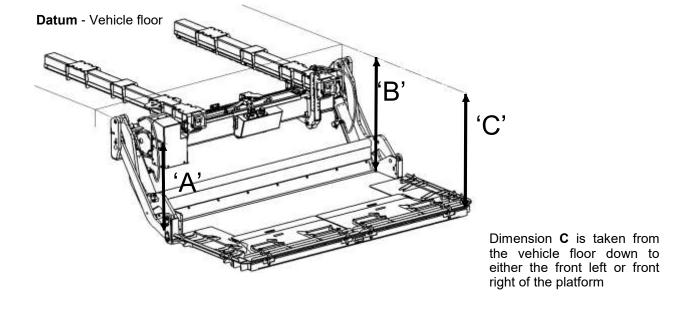
a) Deformation

This test is to ensure that the lift attachment is secure.

- Lower the platform mid-way between vehicle floor level and ground level.
- Measure the height of the platform from the vehicle floor at each side of the plat form and at the front of the platform (measurements A, B and C below). Note that a straight edge resting flat on the lift housing will be needed to measure dimension C. Record the initial measurements in the table below.

Dimensions **A** are taken from the vehicle floor down to the back left hand top side of the platform

Dimensions **B** are taken from the vehicle floor down to the back right hand top side of the platform



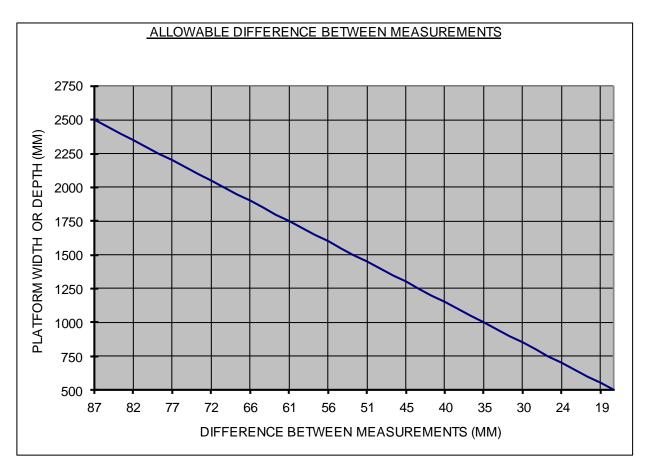
- Apply a load equal to the safe working load +25% (e.g. 2500kgs for 2000kg rated lift), at a distance of 600mm from the load centre to the back of the platform, leave it for 10 seconds before removing it.
- Re-measure the distances A, B and C and record under 'measurement 1' in the table below.
- If the new values of A, B and C recorded under measurement 1 are not the same as the previous values, repeat the test until they are, recording all subsequent tests in the spaces given.
- Check that no permanent deformation has occurred in the lift or its attachment to the vehicle, which would affect its function.

	INITIAL	MEASUREMENT 1	MEASUREMENT 2	MEASUREMENT 3
Α				
В				
С				

b) Platform drift

This test is to ensure that the platform remains stationary within 15mm of its original position over a 15-minute test period.

- Raise the platform to vehicle bed height.
- Apply a load equal to the safe working load + 25% at a distance of 600mm from the load centre to the back of the platform. (note that the power pack relief setting prevents this load from being raised)
- Measure the distances A, B, and C and record them in the table below.
- Leave the platform loaded for 15 minutes.
- After the 15 minutes test period, re-measure the values A to C and record them in the table.
- Check that:
 - 1. The difference between measurements A and A' and B and B' does not exceed 15mm
 - 2. The angular drift of the platform does not exceed 2 degrees. This is checked using the graph below. The graph shows the allowable difference allowed between measurements A' and B' and A' and C' (angular drift, side to side and front to back). If the difference between the measurements is more than that shown in the graph, contact DEL Service for advice.



	Initial Measure- ment		After 15 minutes	Difference between Measurements
А		A'		A' & B'
В		B'		A' & C'
С		C,		

2) TEST TO VERIFY THAT THE LIFT CANNOT RAISE EXCESSIVE LOAD

- Lower the platform to Ground level.
- Apply the safe working load + 25% to the platform in the position shown in the deformation test.
- Verify that the load cannot be lifted.

<u>Note</u> If the load is lifted reset the power-pack relief valve by following the procedure given under the installation procedure section.

3) DYNAMIC TEST

- Apply the safe working load to the platform.
- Ensure that the lift operates through its full range of movements.
- With the load still on the platform go straight to the safety tests.

4) TEST OF SAFETY FUNCTIONS

a) Vertical speed

- With the safe working load on the platform measure the time taken for the platform to lower from bed height to the ground.
- With NO load on the platform, measure the time taken for the platform to raise from the ground to vehicle bed height.
- Record the values in the table below.
- Using the height 'A' measured in the platform drift section above calculate the speed for both the lowering and raising operations (speed = A/time), and record them in the table.
- Check that the speeds do not exceed 150 mm/second

	Laden (lowering)	Unladen (raising)	Measurement 'A'
Time			
Speed (A/Time)			

NOTE

• If the speeds exceed 150 mm/second check that there is no damage to mechanical parts and that the correct oils/greases have been used.

Check that if the hydraulic circuit leaks that the maximum speed for any movement does not exceed the usual operating speed by more than 50% and no part of the platform moves more than 100 mm.

TEST CHECK LIST

•	Static test complete	
•	Excessive load test complete	
•	Dynamic test complete	
•	Safety function test complete	

WARNING - When the final inspection takes place, the space occupied by the moving cylinders and arms must be cleared and made safe as there maybe a risk of collision with the vehicle sub-frame, truck chassis, beam for rear lights, number plate etc.

11. TECHNICAL INFORMATION

TORQUE SETTINGS –

	TIGHTENING TORQUES (N/M)		
	GRADE 8.8	GRADE 10.9	
M6	8	12	
M8	20	29	
M10	40	57	
M12	70	99	
M14	112	158	
M16	175 246		
G 1/4	20		
G 3/8	34		

HYDRAULIC FLUID

Automatic Transmission Fluid – Viscosity - 39 Centi-strokes at 40°C 7.5 Centi-strokes at 100°C

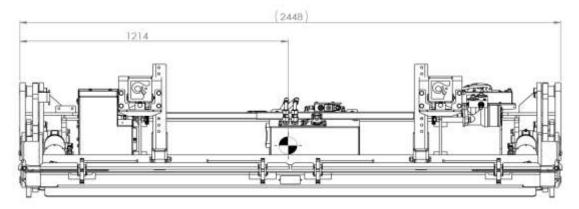
Type 'A' automatic transmission fluid or Shell T22 or equivalent is recommended.

WEIGHTS - 800kg

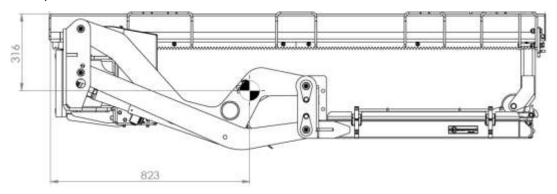
Installation Manual - Slider Lifts

CENTRE OF GRAVITY -

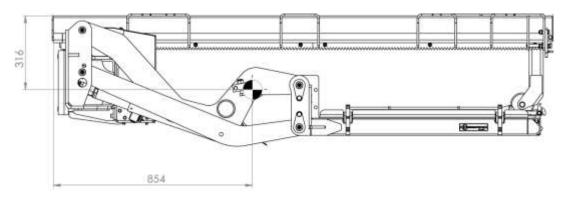
See dimensions below for standard lift centre of gravity CoG dimensions:



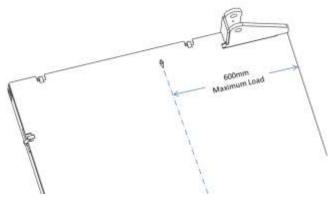
1200mm platform:



1300mm platform:



The two arrows 600mm from the back of the platform demonstrate where the maximum SWL is:



12. FINAL INSPECTION CHECKLIST



CAUTION: Do not use the tailift if any of the items below are not checked and verified. If you have any questions contact Hiab sales. Failure to verify the following could result in severe damage to the tailift or personal injury.

	allation is not fully complete until all the following items are checked and verified the Installation Manual is passed on to the end user of the lift.
	Oil level meets fill mark in pump reservoir.
	On/off switch inside lockable driver's cab or other device to prevent any unauthorised operation in the absence of the operator fitted.
\Box	Platform meets the bed height and ground.
_	Hydraulic components checked for leakage.
	Battery cables attached and clamped tight.
	Fuse fitted as close to the battery as possible.
	Reflective warning device visible.
	All decals in place and legible after painting.
	Manuals in vehicle.
ᆜ	Earth strap properly installed.
Ц	Lights wired properly, are operational, and comply with current lighting reg's.
	Control switch operates properly and the direction of the control operation is logically consistent with direction of travel.
_	Only one raise/lower control is operational at any one time.
	The controls are installed to give the operator a secure working position and also good visibility of the load, the platform and surrounding areas.
Ч	Tailift tested and test certificate completed.
	Vehicle licence plate properly fitted.
	Unshielded hydraulic pipes & electric wires have been placed so as to avoid damage due to movements resulting from the operation of the tail lift or vehicle.
Ш	Visual check to ensure any crushing / shearing risks are avoided and decals are in place warning of risks.

13. PREVENTATIVE MAINTENANCE

- Annually remove the lift Powerpack / Motor / Valve Box/es and spray all the electrical components and connections with WD40 or damp start. Check the pack oil level with the platform down. USE DEXTRON II AUTOMATIC TRANSMISSION FLUID.
- Every 6 months check that the platform is horizontal across the lift. See platform adjustment
- Grease all grease nipples every 4 weeks for the first 3 months then at every vehicle service. Failure to grease will result possible pin and bearing failure.



DATE:

CUSTOMER NAME:.... INSTALLER/TESTER NAME:....

Lift Test Certificate

Hiab UK Ltd

Cargotec Industrial Park,

Ellesmere SY12 9JW

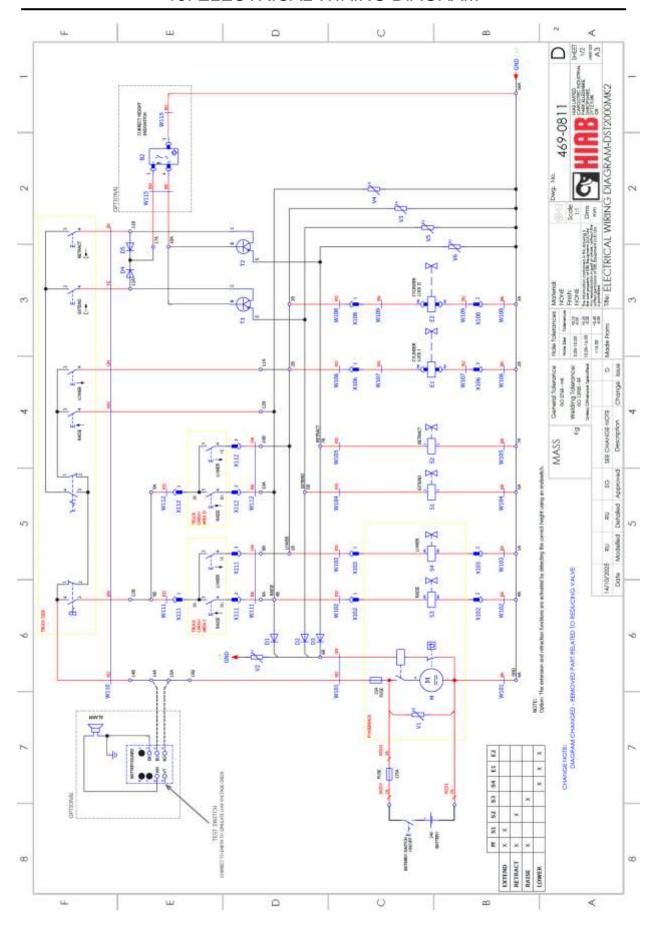
Tel. 01691 623100

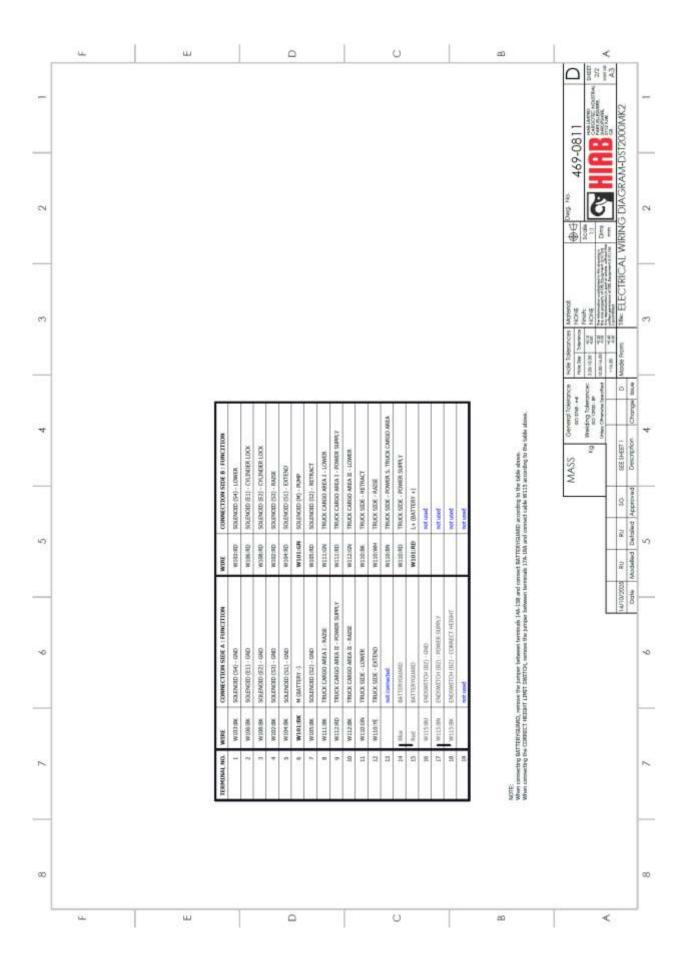
EMAIL:	sales	@del-	-uk.com
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ADDRESS: ADDRESS:
MODEL SERIAL NO:FITTED TO:
RATED CAPACITY:KG VEHICLE REG:(TEST LOAD)
OVERLOAD SETTING: KG (TEST LOAD + 25%)
INSTALLATION TESTS
STATIC TESTSPASS/FAIL?
2. EXCESSIVE LOAD TESTPASS/FAIL?
DYNAMIC TESTPASS/FAIL?
SAFETY FUNCTION TESTSPASS/FAIL?
HAS THE LSD TRANSIT SCREW BEEN REMOVEDYES/NO?
HAS THE FINAL INSPECTION CHECKLIST BEEN COMPLETEDYES/NO?
HAS THE OPERATORS MANUAL BEEN PASSED ON TO THE ENDUSERYES/NO?
GENERAL.OBSERVATIONS
We certify that the product detailed above has been installed in accordance with the manufacturers instructions and that all post installation tests have been completed and passed. We confirm that the manufacturer and end user have been consulted with regard to the products compatibility with the vehicle taking into account the intended use. The product has not been modified in any way. Any modifications have been approved in writing by the manufacturer.
TESTED BY: SIGNED.
COMPANY
THIS CERTIFICATE SHOULD REMAIN IN THE INSTALL ATION HANDROOK

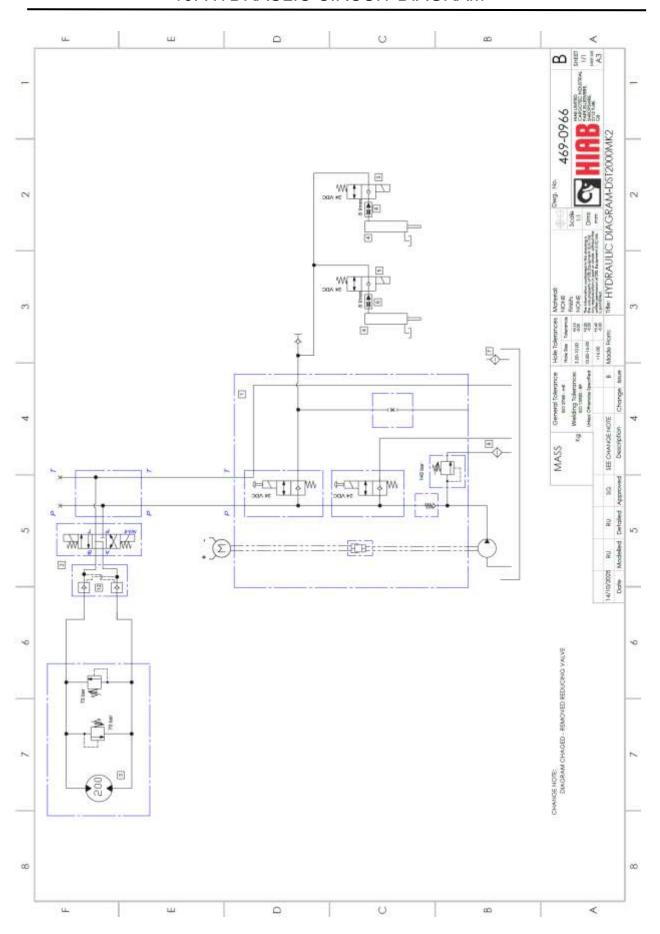
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15. ELECTRICAL WIRING DIAGRAM





16. HYDRAULIC CIRCUIT DIAGRAM



17. DISMANTLING

In the event of dismantling the tail lift from the vehicle, or in the case of transferring it to another vehicle, for storage or for modification, please follow these instructions:

- 1. Support the platform by a crane or similar equipment that can safely support the platform's weight.
- 2. Dismantle the ram's upper hinge pin in the platform and rest the ram's on the ground.
- 3. Run the rams to their minimum stroke limit to remove pressure from the circuit.
- 4. Dismantle the ram's lower hinge pin at the sup-port frame. Remove the ram and take away the hoses. NB. Oil can leak from the hoses and cylinder.
- 6. Remove the platform's hinge pins and lift away the platform, lower the lift arms to the ground.
- 8. Unscrew the lift arm's hinge pins at the support frame and take away the lift arm's.
- 9. Remove all wiring and controls etc.
- 10. Support the support frame from its underside with a forklift or similar equipment with sufficient loading capacity. Unscrew all bolts from the mounting brackets and remove.

Hiab UK Ltd, Cargotec Industrial Park, Ellesmere, SY12 9JW.

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