



Owner's Manual – Tipper and Tiltbed Trailers

Tipping Trailers – TT2012, TT2515, TT3017, TT3621
Tiltbed Trailers – CT166, CT167, CT177, TB4021, TB4621, TB5021, TB5521

Please enter the following information for your own records:

Trailer Model: (from Manufacturers plate)	
VIN Number: (from Manufacturers Plate)	SCK
Date of purchase:	
Purchased from:	
Maximum Gross Weight (MGW):	
Unladen Weight: (from CoC)	
Payload: (MGW minus Unladen Weight)	
Drawbar Security Code: (from RH drawbar)	

Having recorded this information, please take a further moment to fill in and return the Guarantee Registration Card. This is a big step towards protecting your trailer against theft.

It is suggested this page is removed from the manual (so that the manual can be kept with the trailer without risk of losing both trailer and this important information) and kept in a place of safety with the purchase receipt and the Certificate of Conformity*.

Manufacturer's Plate

The trailer is fitted with a Manufacturer's Plate to the right hand side drawbar which will show the following information:

- The manufacturers name and address details
- The trailer model
- The trailer serial number
- Maximum gross weight for the trailer

Drawbar Security Code:

This is a code – numbers and letters – cut into the right-hand drawbar but only on TT, CT166 and CT167 models. It is not on CT177, TT2012 and TB drawbars.

INTENDED USE

The following are permitted:

- (Tipper) Transport of loose aggregates, wood chips

- (Tilt bed) Transport of wheeled or tracked vehicles



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General – All Types Covered by this Manual

1.1 Introduction

Please take the time to read the contents of this manual before you attach the trailer to the towing vehicle or attempt to load it. It is a good idea when reading this manual, to take a tour of the trailer with all persons who will be using it.

Make sure everyone responsible is fully conversant with the procedures for attaching to the towing vehicle, towing, loading, unloading and maintaining the unit. By following, understanding and practising the information and procedures in this manual, the trailer will give you many miles/kilometres of safe use.

Certain information in this manual is governed by law and is subject to change without prior notice.

Great care has been taken to ensure that the information is correct at the time of publication. However, it is the trailer user's sole responsibility to ensure that they fully comply with all legal requirements.

We reserve the right to implement changes and improve specifications without prior notice.

Whilst every effort has been made to ensure the accuracy of these instructions, they are intended only as a guide to the user.

1.2 – Overview of Trailer Types covered by this Manual

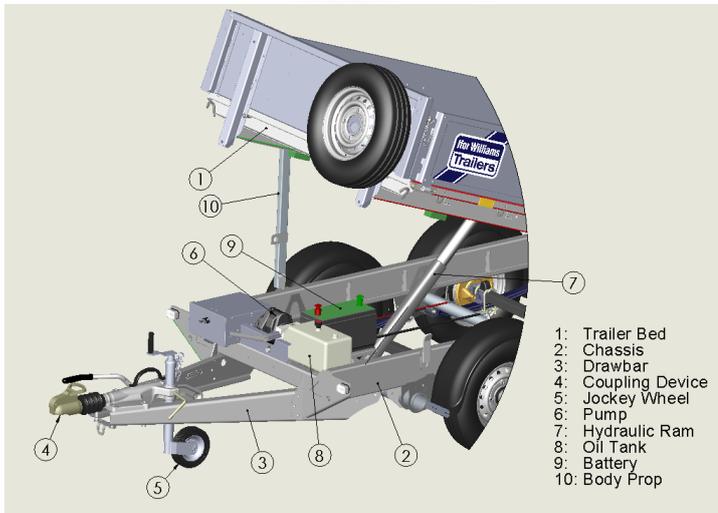
Tiltbed trailers can tilt their load-bed through a small angle, until the rear touches the ground, to allow the loading and unloading of wheeled or tracked vehicles. Ifor Williams Tiltbed trailers always tilt by lifting their front wheels off the ground.

Tipping trailers are intended primarily for the carriage of loose loads such as sand and gravel and can tip their load bodies through a large angle such that the load then slides out the back. Unlike Tiltbeds, Tipping trailers keep all their wheels on the ground during discharge.

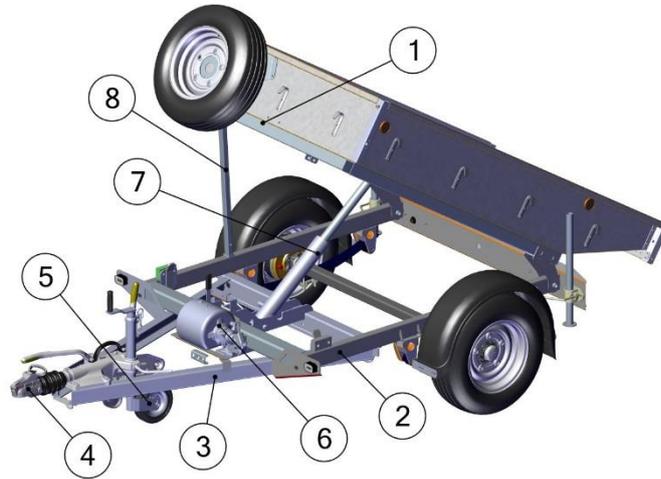
Both Tiltbed and Tipping trailers use hydraulic actuators to tilt or tip their load-beds.



Tipper – TT Series



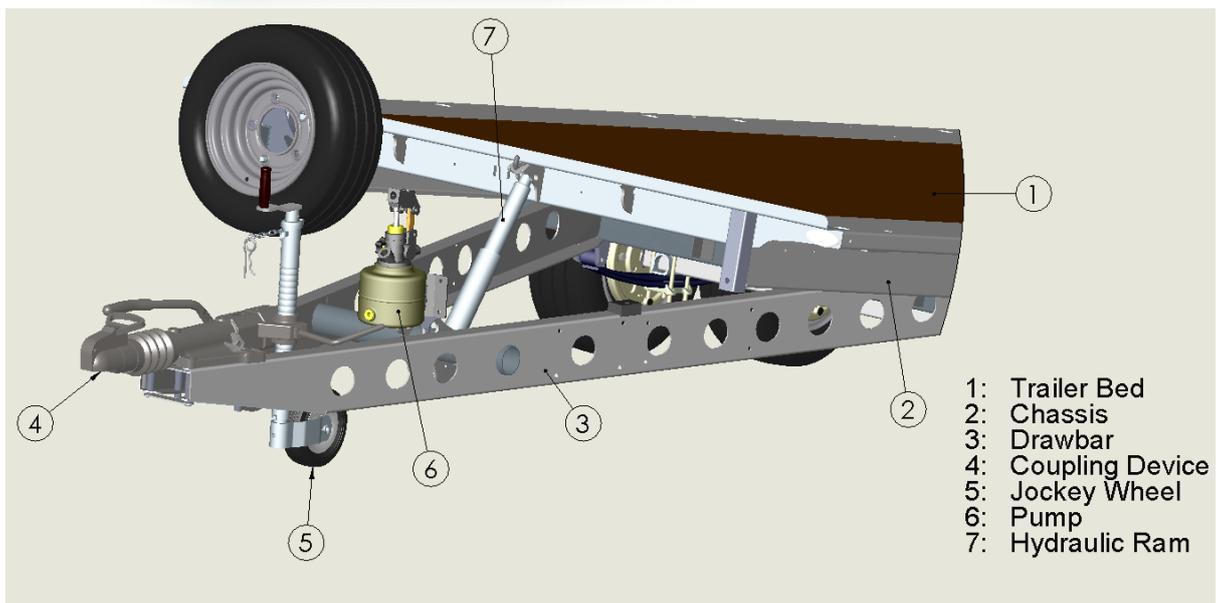
- 1. Trailer bed
- 2. Chassis
- 3. Drawbar
- 4. Coupling Device
- 5. Jockey Wheel
- 6. Pump
- 7. Hydraulic Ram
- 8. Safety Prop



Tiltbed – CT166 and

CT167

TT2012



- 1: Trailer Bed
- 2: Chassis
- 3: Drawbar
- 4: Coupling Device
- 5: Jockey Wheel
- 6: Pump
- 7: Hydraulic Ram



Tiltbed – TB Series



Tiltbed – CT177

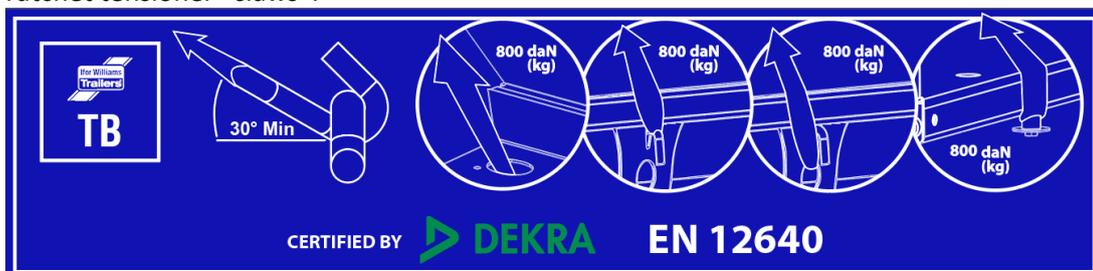


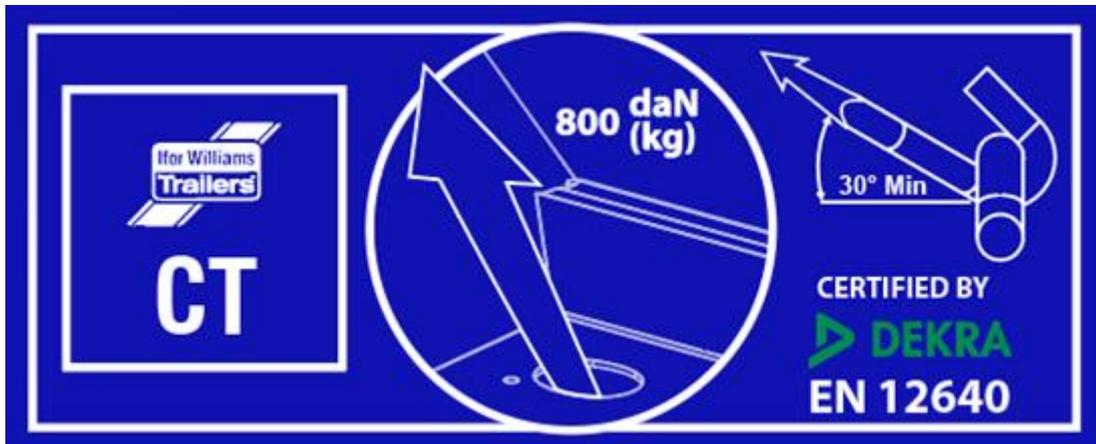
2 – Load Security

- Except in the case of tipping trailers carrying aggregate loads – sand and gravel for instance - always ensure the load is secured against movement.
- Be aware that the highest loads occur during braking and restraint against forward movement is particularly important. For that reason, lashings running diagonally, forwards from a rear lashing point, around the front of the load and rearwards to the opposite lashing point are preferred to those going straight across the load. A similar front, rearwards, front lashing restrains against rearwards movement. A third lashing might be fitted directly over side to side.
- The UK Code of Practice: Security of Loads in Transport gives some guidance but is biased towards Heavy Goods Vehicles. At variance with advice in that document, Ifor Williams rope hooks are 800 kg rated lashing points. All the rated lashing points for a particular trailer type are shown pictorially on a decal fitted to the front of the trailer. Each lashing point is rated at either 500kg or 800kg and the sum total of lashing points used should exceed the weight of the load restrained. For example: 2500 kg load, use 2 pairs of lashing rings: capacity $2 \times 2 \times 800 = 3200$ kg.



- All the oval holes in the floor of TB and CT177 trailers are 800 kg rated attachment points for ratchet tensioner “claws”.





- In the special case of transporting cars and vans (wheeled vehicles with pneumatic tyres), special ratchet tensioning wheel securing straps, Ifor Williams part P1042, should be used at every wheel. Lashing any other part of the vehicle to the trailer is likely to result in the lashing “tugging” as the transported vehicle suspension moves and this may break or loosen the lashings or at least overload the lashing points.


- Winches are designed to pull loads not hold them in place during transit and should never be used as a means of securing the vehicle. If used in this way, winch cables will always loosen in transit as the cables tighten themselves onto the cable drum.
- During extended journeys, carry out regular checks on the condition of the load securing system.

3 – Operation – Tipping Trailers

3.1 – Safe Operation of Tipping Trailers

- DO NOT LEAVE THE TRAILER UNATTENDED WITH THE BODY RAISED UNLESS THE SAFETY PROP IS IN PLACE.** (See use of safety prop – Section 4.2)



- It is recommended that Personal Protection Equipment such as safety boots and gloves be worn when operating the trailer.
- It is recommended that new users practice operating the tipping mechanism with the trailer empty to ensure familiarity with the controls.
- By cordoning off, or by some other means, prevent encroachment of people and, so far as possible property, into the “working area”. This may be defined as 2m behind and 3m either side of a Tipping Trailer.
- Ensure lighting is adequate.
- The trailer lighting could be obscured when tilting/tipping. Ensure that measures are taken to compensate for this when operating on a public road, such as placing a warning tri-angle or lights behind the vehicle.
- Tipping Trailers must be stationary, coupled to the towing vehicle with the handbrake applied.
- Do not open the tailboard while trailer body is raised. Tailboards must be opened before tipping commences.
- Tipping results in the centre of gravity being elevated with consequent risk of rollover. This risk increases dramatically if the trailer has an initial side-slope or is on soft ground. Tipping should not be attempted if the initial side-slope exceeds 5 degrees (90mm in 1m) or the surface beneath the wheels is not sufficiently firm to prevent “sinking in” on one side as the load transfers to one side or the other.
- If the load slides out the rear but sticks in the front – as is often the case with wet sand and earth – be aware that the centre of gravity is now higher than before any load discharged and the trailer is now in its least stable condition. Providing the trailer is still level it is safe to go on tipping until the load at the front discharges.



- If any part of the load is stuck in the front of the trailer and will not discharge when the maximum tip angle is reached, the only safe solution is to fully lower the body and shovel the remaining load until loose. Then tip again. Using the towing vehicle to try and jerk the stuck load free is VERY UNSAFE.
- Similarly, if the partly discharged load forms a pile that prevents the rest coming out the only safe solution is to lower the body at least half way, pull the trailer forwards slightly and then tip the remaining load. Do not drive forwards with the body fully elevated.
- Prop stands, load-spreader pads and chocks may be used to supplement stability where ground conditions are marginal.
- Immediately after the load has discharged the elevated tipping body is vulnerable to strong side winds. Where strong winds exist the orientation of the trailer should be such as to minimize this risk.
- After discharge is complete, do not drive off until the body is fully lowered. Even when the above limitations are respected, Operators should ensure the working area either side of a Tipping Trailer is clear of people and, so far as is possible, property taking account of where the fully elevated body might fall in the event of a rollover.
- Do not operate Tipping Trailers in the vicinity of overhead cables.
- No-one except the Operator should be in the working area while tipping.

3.2 – Use of the Safety Prop

DO NOT ENTER, LEAN INTO OR REACH INTO THE AREA UNDER THE RAISED BODY UNLESS THE PROP IS LOCKED IN THE SAFETY POSITION AS SHOWN: IF UNABLE TO DO SO EMPLOY THE USE OF A SECOND PERSON

Fig. 1 prop in safety position

Fig. 2 prop in safety position (chassis end)

Fig. 3 prop fixed under body in transport position

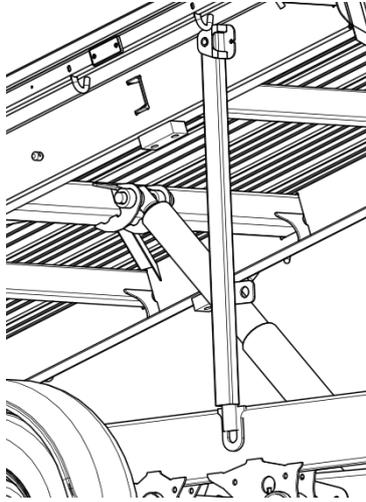


Figure 1

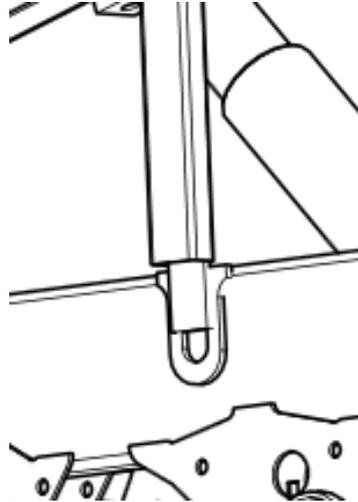


Figure 2

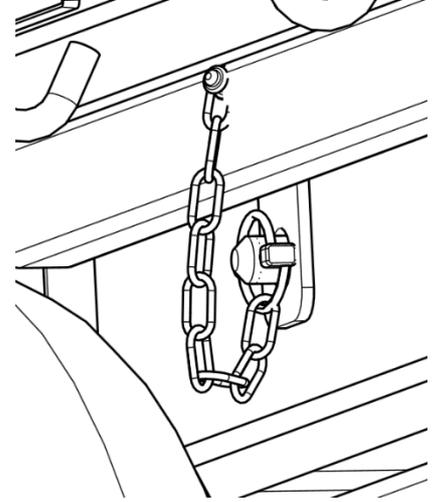


Figure 3

Safety prop specific to TT2012 shown below

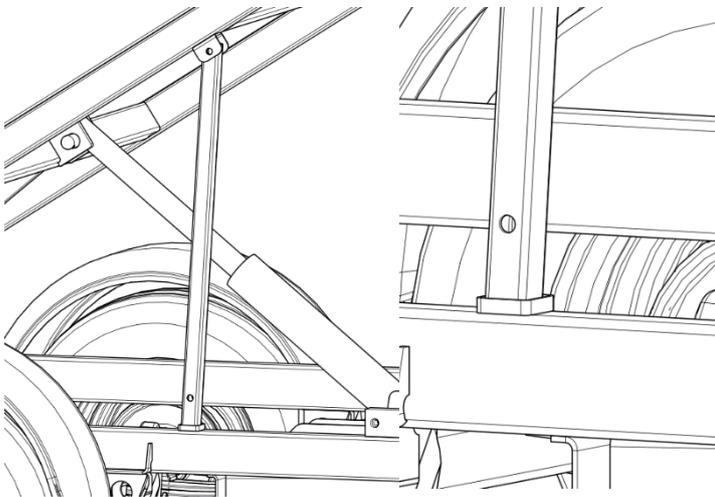


Figure 1

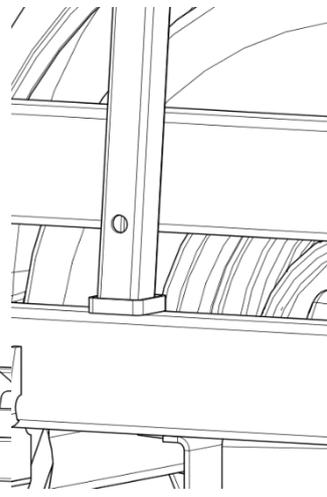


Figure 2

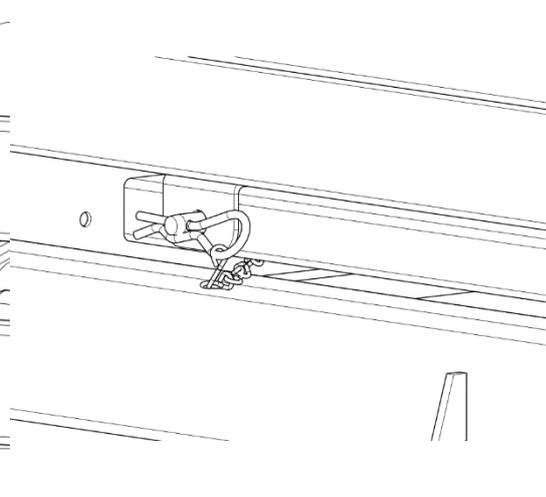
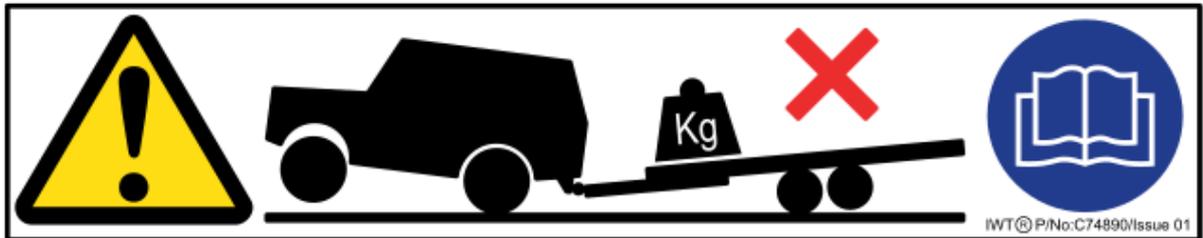


Figure 3

3.3 Loading

- All Ifor Williams Tipping Trailers should achieve correct weight distribution if loaded evenly over the entire length of the body or the centre of the load mass is just forward of the centre of the trailer wheel set.

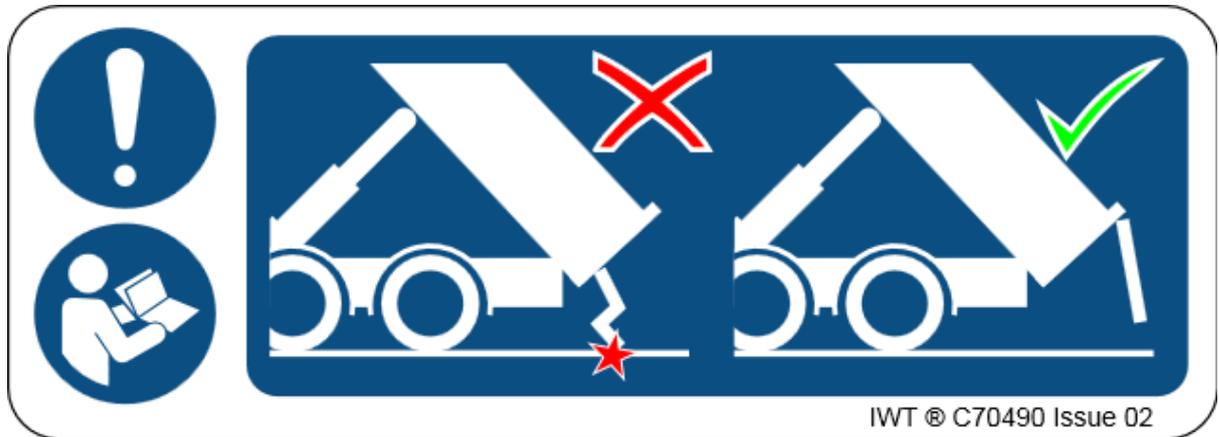


- Tipping Trailers can be used as flatbed trailers when bodywork is removed. However, it is inadvisable to do so with the headboard removed – this being the last line of defence against the load sliding forwards under emergency braking.
- Where weight distribution permits, the load should be placed against the headboard so that, in the event of it sliding forwards during emergency braking or an accident, the headboard does not suffer additional force due to impact.
- Where the load is short and weight distribution demands that it is positioned some way behind the headboard it is recommended that substantial wooden spacers are fitted between headboard and load.
- Loads must always be secured against rolling sliding sideways by a combination of chocks and ratchet tensioner straps. A load that comes loose in an accident may be judged to have caused the accident.
- The load must be secured against sliding or rolling into sideboards which will not survive the resulting impact loads.
- Vehicles which have been loaded using the optional skids must be restrained using special straps similar to Ifor Williams part P1042.

3.4 – Unloading

3.4.1 – Rear Discharge – Tilting Tailboard Function

- The tailboard will hinge at the top or the bottom. The choice depends on the nature of the load.
- Use the top hinged method for aggregate type loads (typically sand or gravel) where the free-flowing nature of the load means that it will easily pass underneath the top edge of the tailboard. Using the top hinged method is always preferred because it means the tailboard cannot hit the ground.
- Use the bottom hinged method where it is likely that the load will jam against the top edge of the tailboard. Logs would be a good example of such a load. However, using the bottom-hinged method means that the tailboard will hit the ground well before maximum tip angle is achieved. If the tailboard does strike the ground damage is almost certain so a bottom-hinged tip requires careful monitoring of the clearance between ground and tailboard.



- If the nature of the load is such that it is likely to both jam against the top edge of the tailboard and yet is not sufficiently free-flowing to come out at the limited tip angle dictated by bottom hinging, then the tailboard may be removed altogether. First release the bottom, then release both top pivots at the same time (therefore requires two people).

3.4.1.1 – Top Hinged Unloading

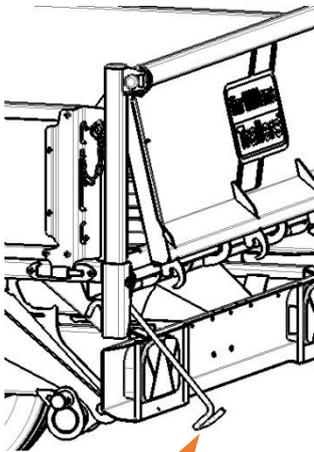


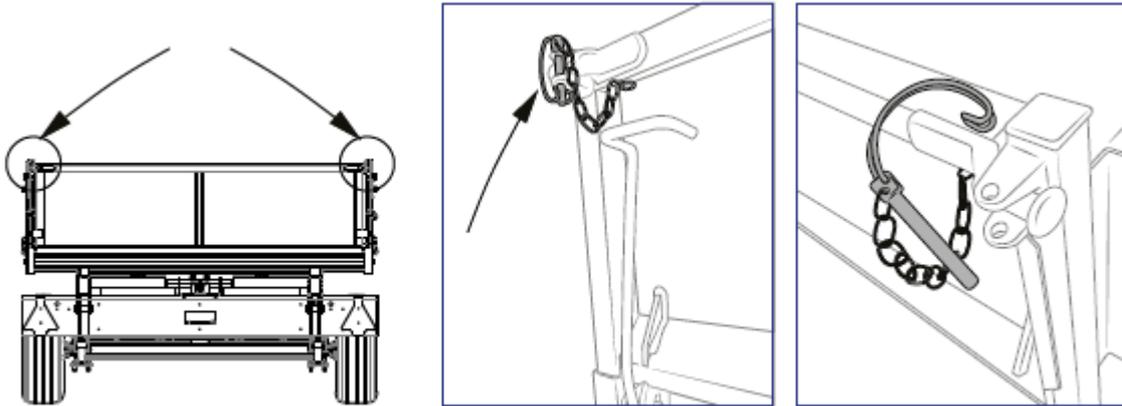
Fig.4

Release lever

- Standing to the left hand side of the rear of the trailer, pull the lever to the left then back to release the lever from its retainer then lower the lever to release the tailboard. (Fig.4)
- Step to the side immediately

3.4.1.2 – Bottom Hinged Unloading (If applicable)

- Un-clip and remove both retaining pins from the gudgeon forks
- Lower the tailboard away from the trailer body
- Step aside immediately



- Note that when the tailboard is down the rear lamps and reflectors are obscured.

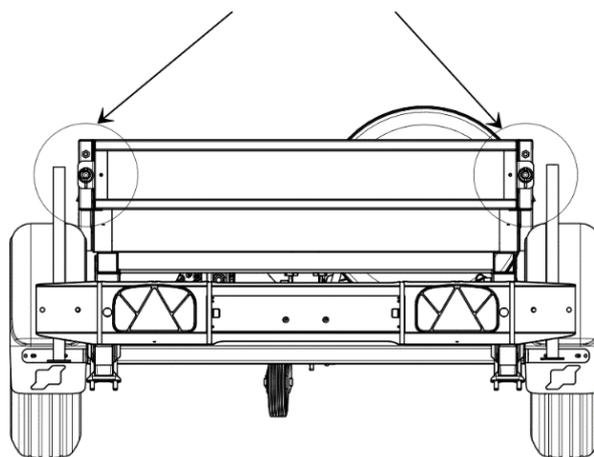


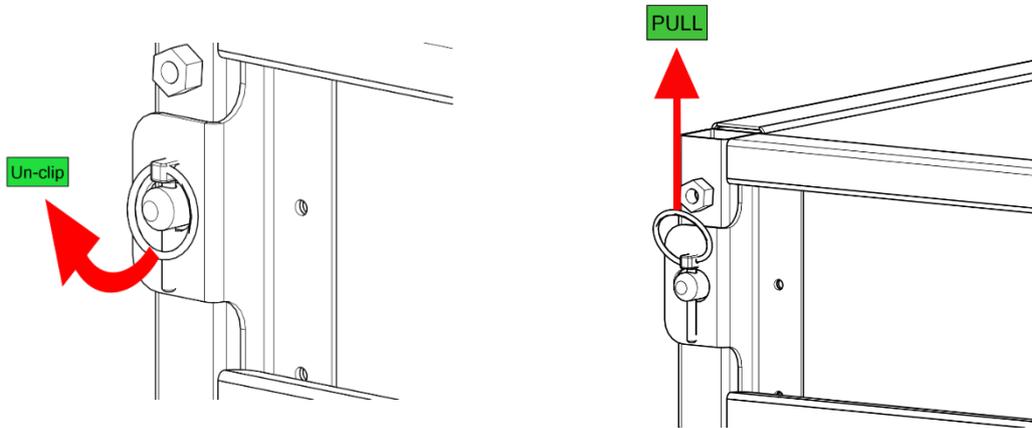
IN SUCH SITUATIONS ON PUBLIC ROADS, A WARNING TRIANGLE OR OTHER SUCH DEVICE MUST BE USED TO WARN OTHERS OF THE PRESENCE OF THE VEHICLE ON THE ROAD.

(Any such device used must be in accordance with national requirements for use on the road.)

3.4.1.3 TT2012 Tailboard removal

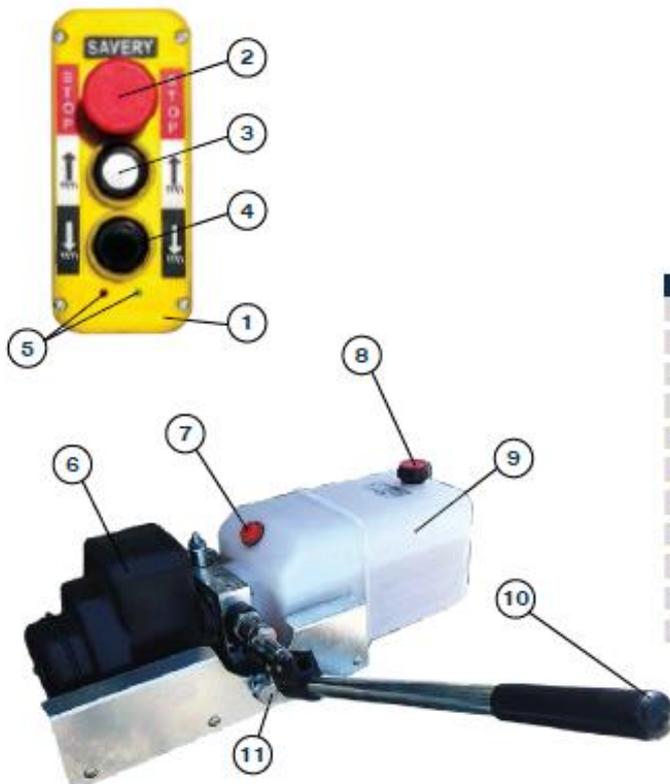
- Un-clip and remove both retaining pins
- Remove tailboard from body and place safely to one side





3.4.2 – Tipping – Electric Tip

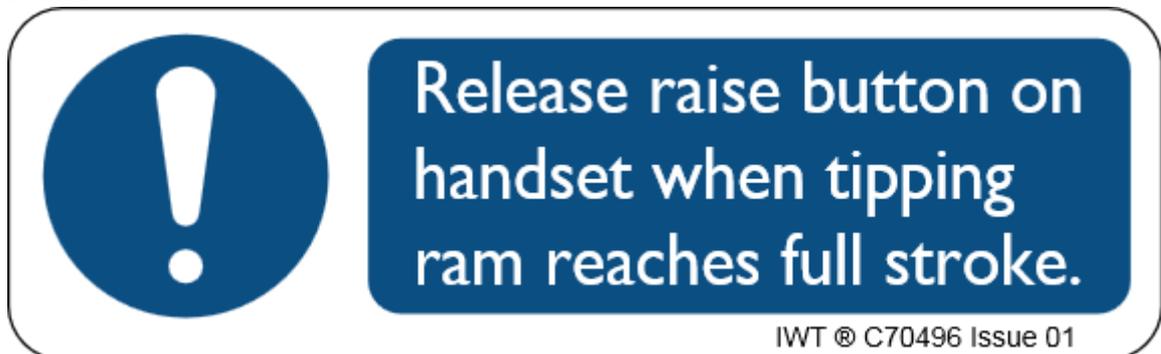
This system uses an electro-hydraulic pump powered by an on-board 12V battery and controlled by a cabled handset. A main isolator switch operated by a removable key deters unauthorised use. An override system allows the pump to be operated manually if required. Follow the Manual Pump instructions to operate.



Remote control	1
Emergency stop	2
Up button	3
Down button	4
Battery indicator lights	5
Electric motor	6
Oil filler cap	7
Alternative oil filler cap	8
Oil tank	9
Handle	10
Pressure release valve	11

3.4.2.1 – Tipping the Trailer Body.

- Connect remote control to socket
- Insert key into isolator switch and turn clockwise 90° to switch on the system.
- Ensure pressure release valve is closed (turned fully clockwise).
- Using the remote control, press the 'up button' to raise the trailer body, release to stop. It is important to release the raise (up) button on the handset as soon as the ram reaches full stroke.



- When using the remote control, note the battery indicator lights. Green indicates battery charge is sufficient. If the red light is showing, this indicates the battery needs charging. Use the manual override until the battery has been charged.

3.4.2.2 – Lowering the trailer bed/body.

- Ensure that the area between the chassis and platform is clear of obstruction.
- Do not rest a hand on the control box lid.

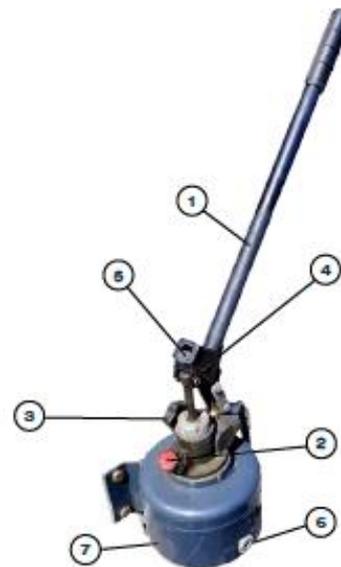
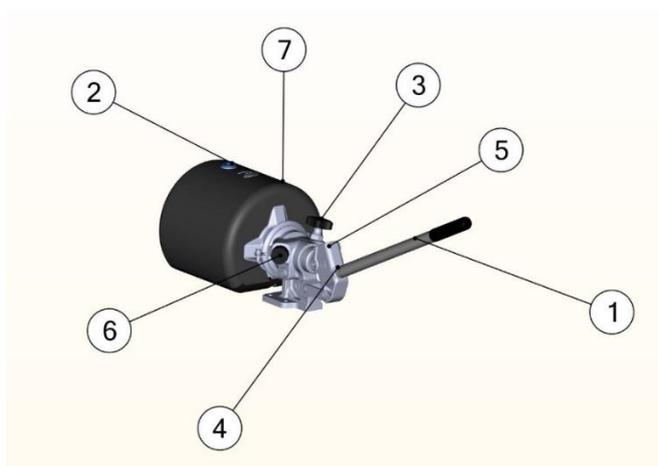


- Lower the trailer bed/body by pressing the ‘down button’ or opening the pressure release valve.
- Once lowered switch off the isolator, remove the key and store safely.
- Disconnect the remote control from the socket.

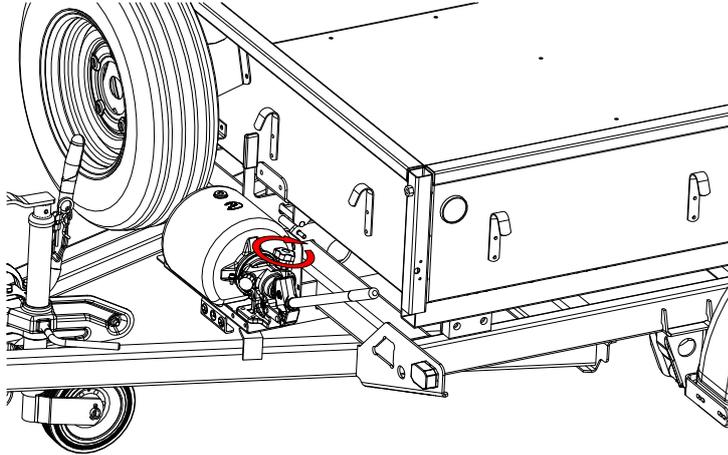
Note. The remote-control unit supplied is generally splash-proof but is not fully waterproof. It should never be immersed in water and should be stored safely when not in use. If it is damaged, it should be removed from service immediately, and replaced if not repairable.

3.4.3 – Tipping – Manual Tip

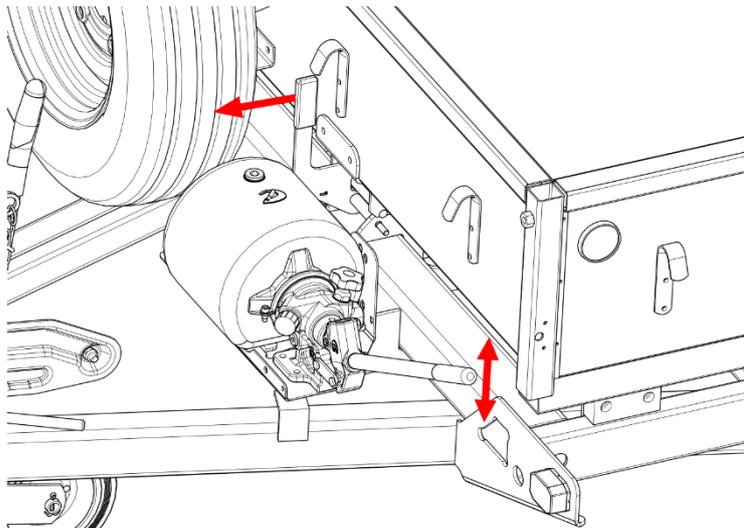
Pump handle	1
Oil tank filler cap	2
Pressure release valve	3
Handle position 1	4
Handle position 2	5
Oil drain	6
Oil tank	7



3.4.3.1 – Raising the Trailer Body TT2012

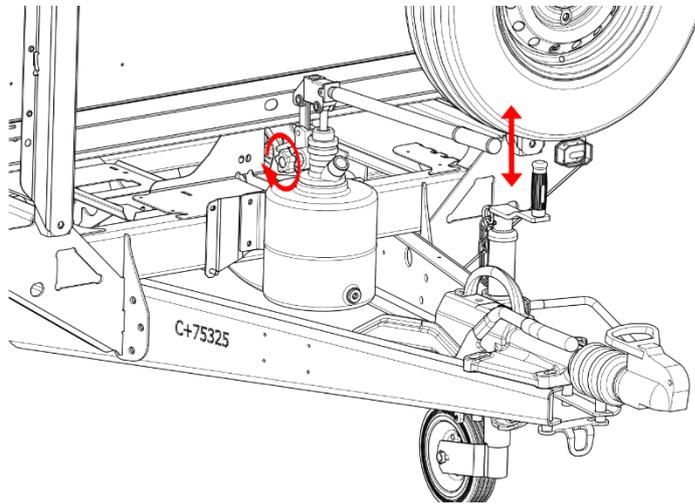


- Close pressure release valve by turning the release valve clockwise



- Pull safety catch lever to release locking mechanism
- Whilst holding the safety catch operate the pump handle until the catch is no longer engaged.
- Release safety catch and continue to pump the lever until body is at the required height.

3.4.3.2 Raising the Trailer Body TT2515 (Manual pump)



- Insert the pump handle into the pump mechanism.
- Close pressure release valve by turning the release valve clockwise.
- Pump the handle until body has reached desired height.

3.4.3.3 – Lowering the Trailer Body.

- Ensure that the area between the chassis and platform is clear of obstruction.
- Slowly open pressure release valve by turning anti-clockwise. Control the rate of decent by adjusting the valve position.
- If the release valve is opened too quickly too soon the flow of high pressure hydraulic fluid out of the ram may be such that it simulates a bust hose and the burst valve screwed into the base of the ram then closes, locking the trailer in a partly tilted condition.
- Once the body is fully lowered, ensure the pressure release valve is left open to avoid a build-up of pressure in the hydraulic system.
- On TT2012 ensure body catch has fully engaged.

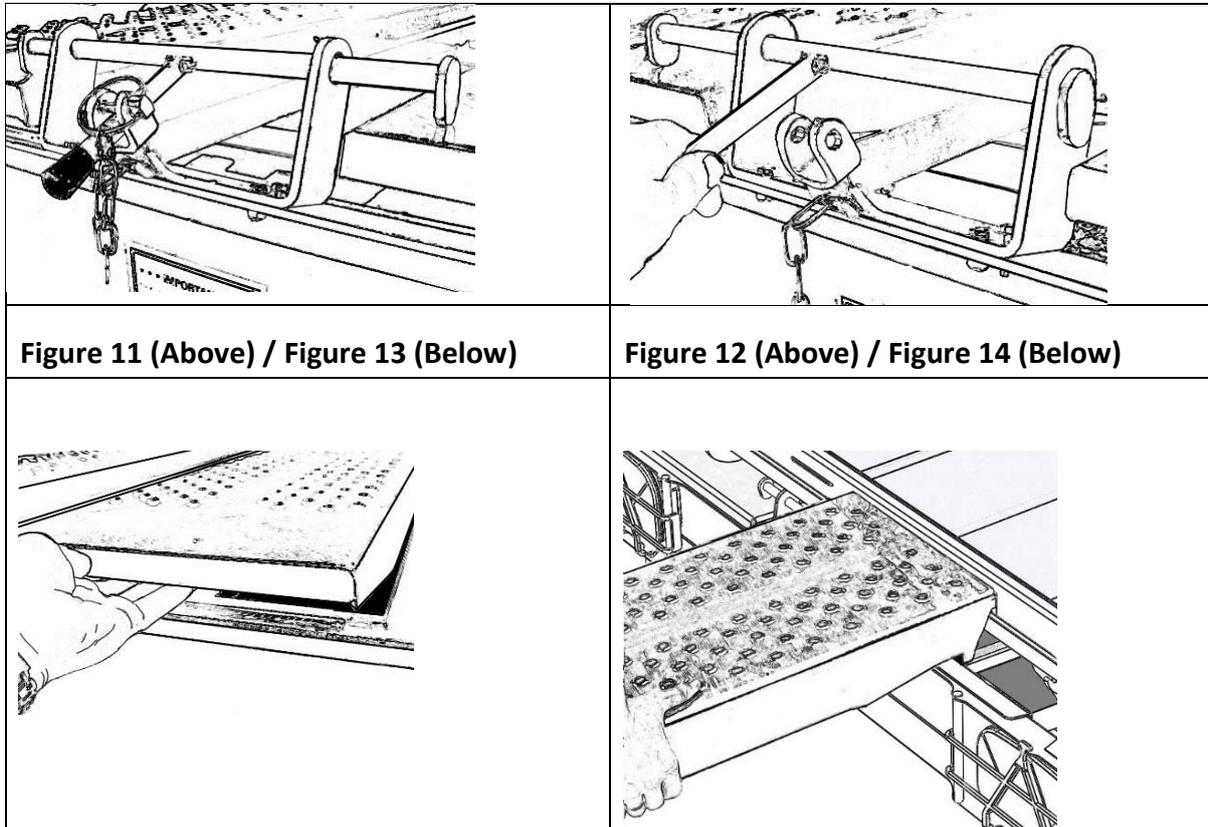
3.4.4 – Side Discharge

- Ifor Williams Tipping Trailers do not side-tip but it may often be convenient to open the sideboards on one side to shovel off aggregate loads or, if the side centre pillar is removed, to roll or drag other cargo off the side. N/A for TT2012

3.5 - Loading Skids

Where loading skids are fitted the procedure for using them is as follows. It is assumed that skids are used to load wheeled vehicles. Where an (optional) electric winch is fitted, please refer to the winch operating section in the Tiltbed section of this manual.

3.5.1- Removing skids



- The skids are stowed under the trailer body and are removed from the rear of the trailer. It is strongly recommended that any lifting or positioning of the skids is carried out by two persons. (Each skid weighs approximately 40kg).
 - Lift the spring ring and withdraw the linchpin. Lift the handle to release the skid retainer clamp (fig 11).
 - Move the handle to the left to remove the right skid or to the right to remove the left skid (fig 12).
 - Lift the rear of the skid and slide out slightly (fig 13).
 - Slide the skid out. It is prevented from sliding all the way out by a stop. Lift the front end of the skid clear of the stop and slide out slowly.
 - Hook the skid onto the skid bar in the required position (fig 14)

Figure 12

Figure 13



3.5.2 – Use of Loading Skids

Extreme care should be exercised when using loading skids on Tipping Trailers

If using a winch to load a vehicle or other rolling load it is essential to establish a safe working area of at least 6m beyond the ends of the skids and at no time must anyone stand in this area while winching is taking place

- Carry out loading and unloading on level, firm ground.
- Always use the prop stands provided.
- Have an assistant on hand to guide you.
- Ensure that the skids are positioned correctly, with the lower ends on firm, level ground, parallel with the trailer and in line with the centre of the tyres of the vehicle to be loaded/unloaded and that the skid top angles are in contact with the trailer rear cross-member over their full width.
- Any assistant should keep well clear during loading/unloading.
- Take your time and constantly check that the vehicle is correctly positioned.

3.5.3 – Replacing Skids

- Ensure that the skid retainer clamp handle is positioned on the opposite side to the skid you are replacing and slide the skid back into place. To prevent injury, keep fingers and hands clear of the underside of the skid before the skid reaches the stowage position.
- When both skids are in place, slide the clamp handle to the central position, locate in the receiver bracket and replace the linchpin as shown in fig 11.

3.6– Electric Winch (Not available on TT2012)

The electric winch option is substantially the same as for the Tiltbed – covered in section 4.2.2 except that the winch is fixed in the central position and does not slide from side to side.

3.7 – Removal and Replacement of Sideboards, Tailboard and Headboard

- Most Ifor Williams Tipping Trailers can be stripped of sideboards, tailboard and headboard to leave a completely flat trailer. However, the headboard should only be removed if absolutely necessary – it is after all the last defence that prevents cargo on the load bed sliding forwards and damaging the towing vehicle in the event of an emergency stop.



3.7.1 – Removing Sideboards

- This is best done with an assistant – one each end of each sideboard.
- Open the sideboard fully
- Slide the sideboard forwards and off its hinges

3.7.2 – Removing Centre Side-Post (where fitted)

The centre sidepost sits in a socket on the side of the trailer and is secured with an anti-rattle bolt.

- Use a 19mm across flats socket to loosen the M12 bolt.
- Lift out the centre sidepost

3.7.3 – Removing Tailboard and Rear Corner Pillars

- Release the bottom of the tailboard as described in section 3.4.1.1.
- Maintain a forwards push on the top corners of the tailboard so that it does not fall on the floor accidentally during the next operation.
- With the aid of an assistant remove the pins from the gudgeon forketts as described in section 4.4.1.2.
- Lift the tailboard rearwards and off.
- The rear corner pillars are secured in sockets with a rearwards-facing anti-rattle bolt. Use a 19 mm across-flats spanner to loosen the bolt and lift out the rear corner pillars.

3.7.4 – Removing Headboard

- If a winch is fitted then consider that the winch is mounted on the headboard so, when the headboard is removed, there can be no winch.
- First remove the spare wheel by releasing the three 19 mm across flats wheel-bolts securing it to its carrier
- Replace the Wheel-bolts in the carrier
- If a winch is fitted it is essential to release the electrical connections at the battery. This means tipping the body AND USING THE BODY PROP AS DESCRIBED IN SECTION 4.2 while releasing the winch power cables from the battery. [The winch power cables are the cables that run back down the trailer towards the rear. The pump power cables run straight from the battery to the pump and must not be disconnected.]



- Tape the winch power cable terminals so that they cannot accidentally reconnect with the battery terminals when the body is lowered. Also place the disconnected winch power cables so that they are not trapped and damaged as the body is lowered or in subsequent road trips.
- Be sure to reconnect the pump power leads to the power pack securely. Electrical power will be needed to lower the body and loose leads may result in arcing and possibly melting of terminals.
- Following the instructions in section 3.2, remove the body prop, lower the body and re-stow the body prop.
- Disconnect the power leads at the winch end, noting which lead goes to which terminal.
- If lifting gear is available to support the winch and headboard assembly, proceed to the next step. Otherwise remove the winch and its cross-tube by releasing the bolts at each end of the cross-tube.
- There are six M12 bolts and nuts securing the Tipper headboard – three on each post. Remove the bottom bolts first then one top bolt each side. Note that two 19 mm across flats spanners are required because the nuts on the rear are not captive.
- Remove the nut from the remaining top bolt on one side but do not withdraw the bolt.
- Use an assistant to maintain contact between the headboard and the trailer body on the released side and to prevent the headboard tipping forwards at the next stage. Make sure the loose bolt stays in its hole.
- Remove the nut from the last remaining bolt but do not withdraw that bolt.
- Together with the assistant, pull the headboard forwards bringing the two loose bolts with it.
- Collect up the nuts and bolts and fit them loosely to the headboard for safe-keeping.

3.7.5 – Re-fitting Headboard, Tailboard and Sideboards

Rebuilding is essentially the reverse of removal – use the exact reverse sequence. However the following additional points should be noted:

- The correct tightening torque for M12 bolts involved is 80 Nm (60 lbf.ft). However the anti-rattle bolts at the bottom of the side-posts and the rear corner pillars should only be tightened to 40 Nm (30 lbf.ft).
- Fit and close both sideboards before tightening the anti-rattle bolt at the bottom of the sidepost when re-fitting the sideboards.

4 – Operation – Tiltbed Trailers

Note that the Tiltbed trailers covered by this manual are suitable for any vehicle or other type of rolling load with pneumatic tyres. They are not suitable for trailers with solid tyres – notably Access Platforms and Rollers.

4.1 – Safe Operation of Tiltbed Trailers



- **DO NOT LEAVE THE TRAILER UNATTENDED WITH THE TRAILER BED RAISED**
 - **NEVER REACH UNDER A TILTED TRAILER WHEN LADEN**
 - **NEVER REACH UNDER AN UNLADEN TILTED TRAILER UNLESS IT IS SAFELY SUPPORTED BY A WORKSHOP CRANE OR SOME OTHER MEANS. DO NOT RELY ON THE HYDRAULICS TO HOLD THE BED UP**
- It is recommended that Personal Protection Equipment such as safety boots and gloves be worn when operating the trailer.
 - It is recommended that new users practice operating the tilting mechanism with the trailer empty to ensure familiarity with the controls.
 - By cordoning off, or by some other means, prevent encroachment of people and, so far as possible property, into the “working area”. This may be as defined as 6 m behind and 1 m either side of a Tiltbed Trailer.
 - Ensure lighting is adequate.
 - The trailer lighting could be obscured when tilted. Ensure that measures are taken to compensate for this when operating on a public road, such as placing a warning tri-angle or lights behind the vehicle.
- 
- Try to avoid loading vehicles backwards. It is extremely difficult to correct directional and positional errors when loading backwards.
 - Tiltbed Trailers must be stationary, coupled to the towing vehicle, with the towing vehicle handbrake on but the trailer handbrake OFF. (The Ifor Williams Tiltbed system results in the trailer being pulled forwards or pushed back slightly as the tilting takes place. The trailer wheels must be free to rotate.)
- 
- No-one except the Operator should be in the working area while tilting, loading or unloading.



- Most modern vehicles have a removable towing eye – typically stored close to the vehicle spare wheel – that screws into the vehicle structure via an access point in the front bumper. In any event consult the vehicle handbook for recommended towing points.
- On no account wrap the winch cable or strap around some part of the vehicle structure and hook it back on itself. Cable or strap damage is almost certain.
- Where there is no point to attach the winch hook, use a webbing loop to wrap round a smooth and strong part of the vehicle and hook onto the webbing loop. Many Ifor Williams winch options are supplied with such a loop. Ensure the webbing is not frayed.
- Always wear thick leather gloves to handle a winch cable.
- The most obvious danger associated with Tiltbeds is an uncontrolled roll-off when a rolling load (vehicle) is being winched up or down. All Ifor Williams supplied winches, notably manual winches, should have an automatic brake such that, if the handle is released when unloading, a brake automatically engages.
- Develop a clear plan for unloading which ensures an unrestrained roll-off cannot happen.

4.2 – Loading Tiltbed Trailers with Vehicles or other Rolling Loads

4.2.1 – General Notes on Loading – Manual Tilt



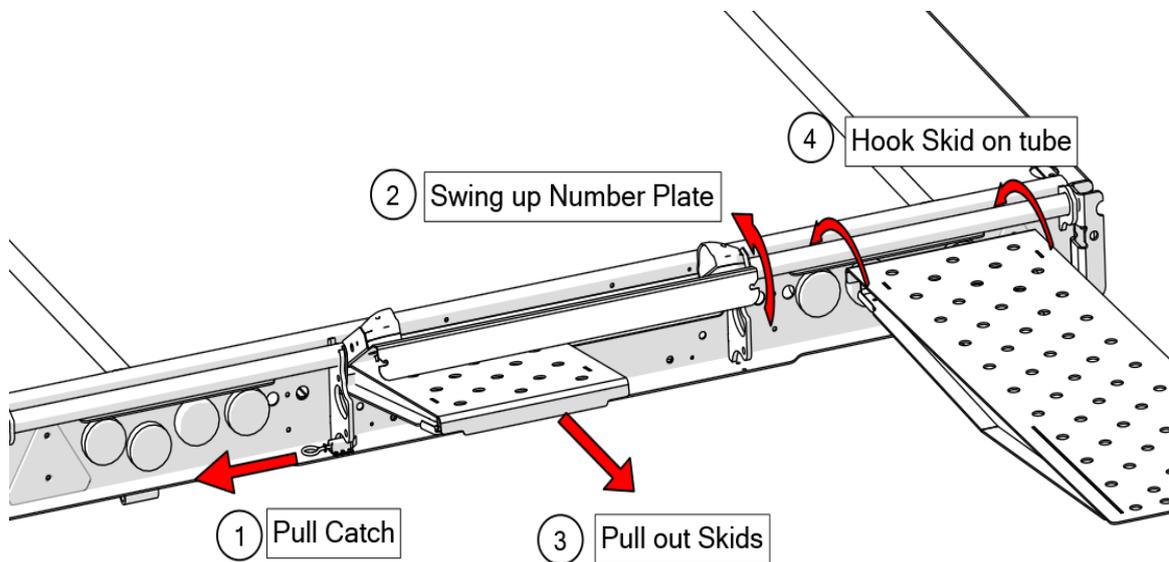
Warning

If the rear lamps are moved, the trailer is tilted, or the moveable components such as tailboard/dropsides/ramp/skids are lowered, the lighting and reflectors may not meet the statutory requirements.

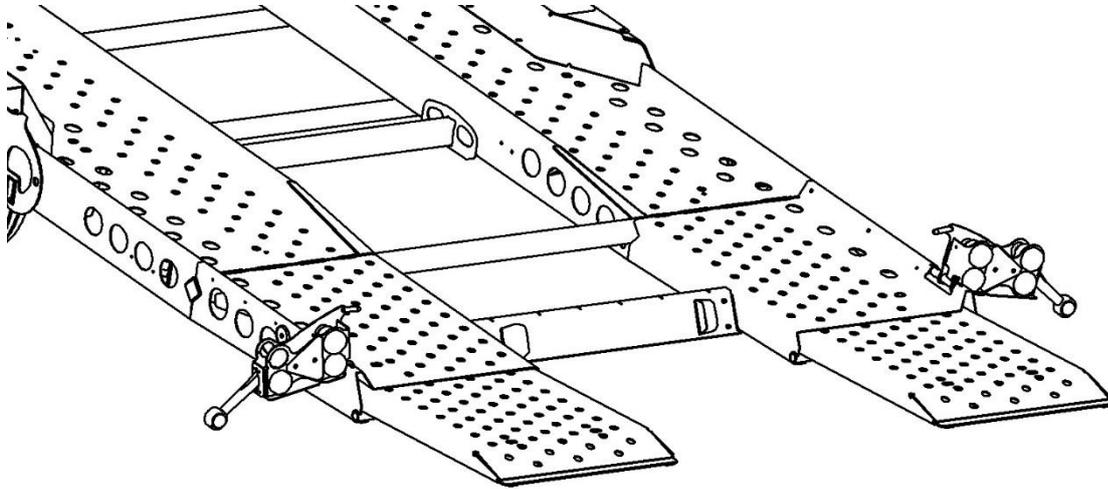


In any of the above situations, a warning triangle or other such device must be used to warn others of the presence of the vehicle on the road. Any such device used must be in accordance with national requirements for use on the road.

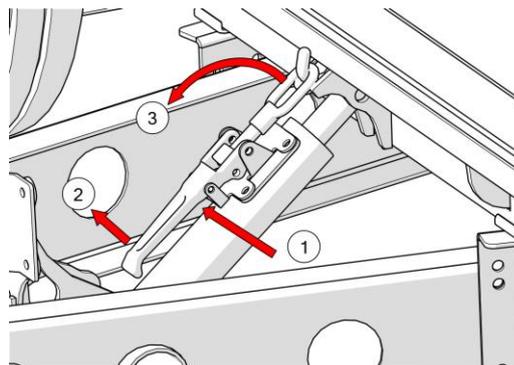
- Only in the case of Pull-Out skids which are an option on the TB range, open the centre cover on which the number plate is fitted and pull out the skids before tilting. Put them a short distance behind the trailer. Do not connect them before tilting.



- All other Tiltbeds will have ramps or attached skids. All should be left closed until tilting is complete.
- CT177 trailers have pull out but retained mini-skids. These should be pulled out before tilting. They are retained by pins on the bottom of the light pods and released by removing the lynch pins just in front of the light pods, thereby allowing the light pods to swing outwards and releasing the mini-skids. Note that, when the CT177 light pods are swung out, although rear lights and reflectors remain visible from the rear they are no longer in their legal orientation or the minimum legal height above the ground. When operating on the public highway it is essential to put a warning device (approved warning triangle) at the rear of the working area (upstream of traffic).



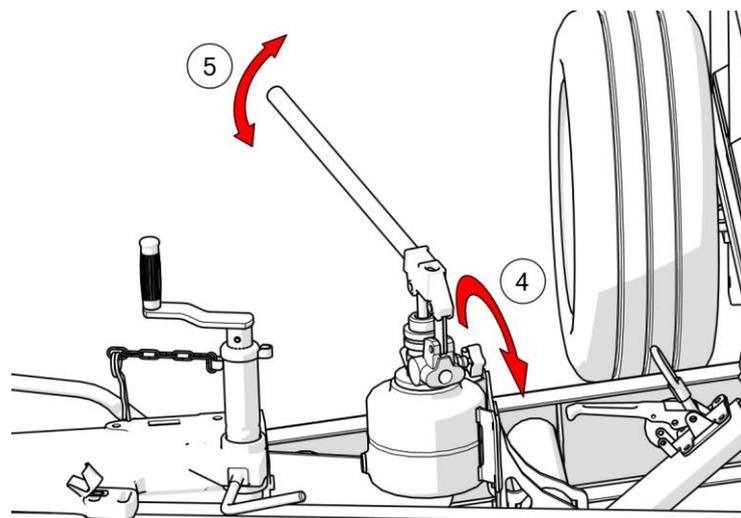
- In the case of the CT166, 167 and TB trailers fitted with sideboards (an option), ensure the rear sideboards are closed – otherwise they will dig in the ground when the load-bed is tilted and suffer significant damage.
- Release the clamps holding the front of the trailer to the drawbar:
 - In the case of the TB a single over-centre latch sitting on top of the ram. It is necessary to pull the “trigger” behind the handle before the handle will open. Swing the latch loop away from the hook so that there is no chance of the latch loop re-engaging the latch loop as the trailer bed lifts.



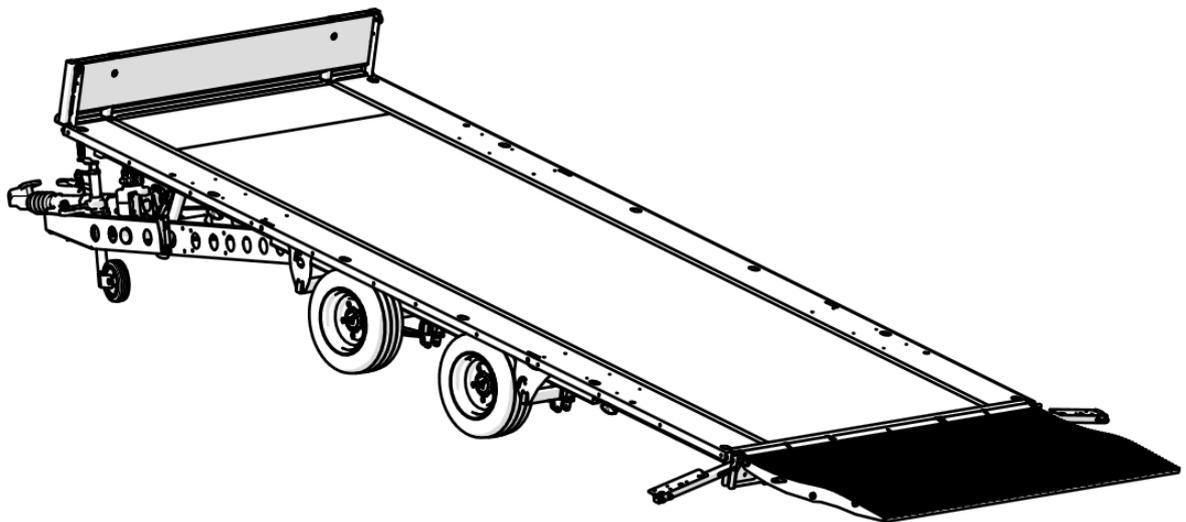
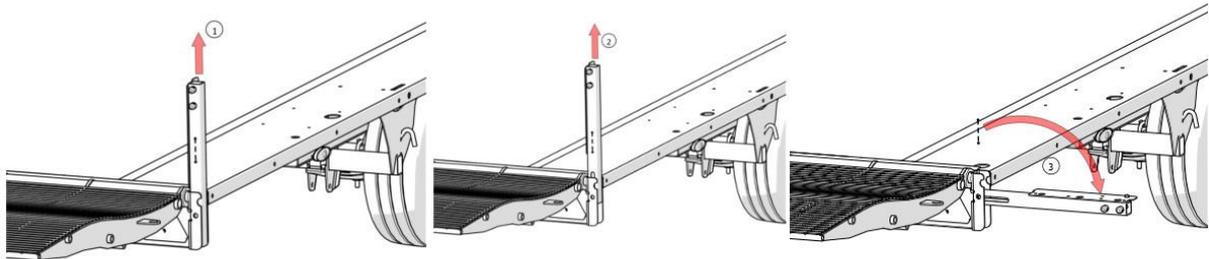
- In the case of the CT177, two over-centre clamps.
- In the case of the CT166 & 167, two screw clamps



- Open the pump valve by turning the black pressure release valve knob anti-clockwise – refer to image in 3.4.3
- Operate the pump handle to raise the body until the rear of the trailer just touches the ground. Note that, to allow for uneven ground, all the hydraulic rams have excess travel. It will be quite possible to continue to tilt the trailer well beyond the point where the rear of the trailer first touches the ground – to the point where all the trailer wheels are off the ground. If the trailer is loaded in this condition potentially damaging loads will be applied to the trailer drawbar and the towing vehicle tow-bar. One or two centimetres clearance between the back of the trailer and the ground is preferable to uncertain and potentially excessively firm contact. Close the pump pressure release valve by turning the black knob clockwise. Excessive force is not required.



- Open the ramp or the sliding skids. If using the TB pull-out skids hook these on to the lip at the rear of the trailer.
- TB trailers with Mesh Ramp, Sliding Skids, Sideboards or a combination of these options will have Rear Corner Posts. These should be opened to increase loading clearance. Lift the post as far as the slot in the post allows and it will then fold outwards.



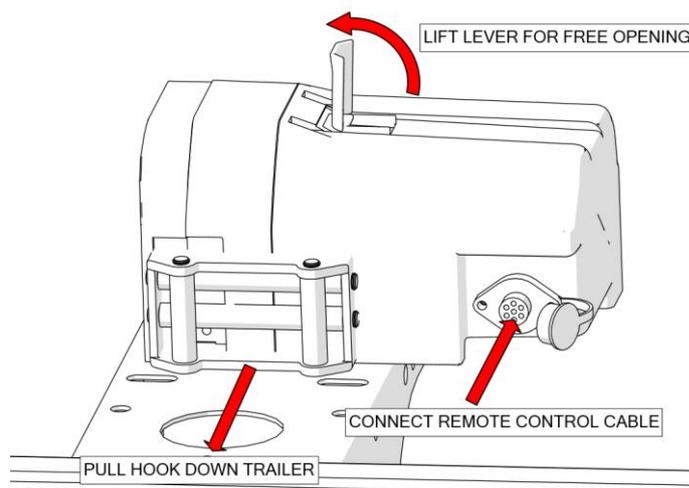
Note: when TB ramp or sliding skids are open, or when the mini-skids are attached prior to loading, the trailer rear lights are obscured. It is essential put a warning device (approved warning triangle) at the rear of the working area (upstream of traffic).

- Position the vehicle or rolling load so that it lines up with the trailer.
- It is advisable to lower the drivers-side window to give access to the steering wheel
- If skids are being used, adjust skid positions so that they line up with the vehicle wheels.
- The CT177 and TB trailers have sliding winch mountings. Slide the winch to a position where the cable or strap aligns with the winching point on the vehicle being loaded.
- Be aware that when loading cars to any Tiltbed trailer, there is a generic issue of “spoiler clearance”. Guidance specific to different Tiltbed types is given in the relevant sections of 5.2.5 below. However, there will be types of motor car – “supercars” and modified cars – where the combination of front overhang and front ground clearance prevent those vehicles from being loaded on ANY Ifor Williams Tiltbed. Ifor Williams Distributors will advise on suitability. Ifor Williams do not make bespoke solutions for such vehicles.

- When lowering Tiltbeds open the pressure release valve (refer to image in 4.4.3) very slowly. If the release valve is opened too quickly too soon the flow of high pressure hydraulic fluid out of the ram may be such that it simulates a burst hose and the burst valve screwed into the base of the ram then closes, locking the trailer in a partly tilted condition.
- IF THE BURST VALVE CLOSSES as described above, simply pump the trailer up a small amount. As soon as hydraulic fluid is forced back into the ram the burst valve will reset. Close the valve and the trailer may be lowered again. Open the release valve less and more slowly than previously.
- Once the bed is fully lowered, ensure the pressure release valve is left open to avoid a build-up of pressure in the hydraulic system.
- Before moving off complete the checks in the User's Handbook

4.2.2 – Loading Vehicles or Rolling Loads with an Electric Winch

- Ifor Williams supply two variants of electric winch installation: with Power Leads or On-Board Battery.
- All Ifor Williams supplied winches have a remote control on the end of a long “susie” cable. The remote control and its cable are normally disconnected from the trailer when not in use and carried on the towing vehicle – the dangers of leaving a long cable on a trailer in transit being obvious. Plug the remote control into the mating socket on the winch assembly.



- The Power Lead option involves heavy duty electrical cables with high current/low voltage plugs, which cannot be connected the wrong way around, at each end. In order to use the Power Lead system, the towing vehicle must have been modified to provide the Power Lead connection to its battery. The Power Leads will also normally be stored on the towing vehicle.



Plug one end of the Power Leads into the mating plug on the winch installation and the other end into the towing vehicle supply point.

- Either lift the small lever on the centre of the winch and pull out the cable by hand – “free spooling”. This is by far the quickest way. Alternatively switch on power to the winch (see next step) and use the remote control to power unwind the cable but be sure to maintain a pull on the cable. Failure to do so may result in loose cable getting jammed around the drum. Note the warning above about wearing thick leather gloves.
- 
- Locate the red-handled isolator switch on the winch assembly and turn it “on”. (The “on” position is where the switch handle pulls itself down as it is turned and then cannot be removed with a straight pull. When the switch is “off” the switch handle can be lifted out.)
 - Hook the cable on to the vehicle to be loaded. Note the comments in section 6.1 about preferred and acceptable methods of attachment.
 - The long susie cable permits the operator to take the remote control anywhere around the trailer. Take it to the rear and just tension the cable.
 - Check that the vehicle being loaded has its handbrake released and is out of gear.
 - Start pulling the vehicle up the trailer. Unless very familiar with the operation, it is advisable to pause every 2 metres or so to check whether any steering corrections are needed.
 - Do not pull the vehicle right to the front of the trailer. It is very unlikely the correct weight distribution will be achieved with the vehicle right to the front. As a starting point, stop winching when the vehicles wheels are evenly disposed about the trailer wheels.
 - Apply the loaded vehicle’s handbrake at this point.
 - Lower the trailer by following the procedure in 4.2.1.
 - With the trailer fully lowered reattach the bed to the drawbar using the screw clamps or the over-centre latches – two screw clamps on the CT136 & 137, two overcentre latches on the CT177 and one overcentre latch on the TB.
 - Close and secure the ramp or sliding skids or stow the pull-out skids as appropriate.
 - At this point it is necessary to asses, by some means, whether the vehicle position on the trailer gives enough imposed load for safe towing (preferably at least 4% of actual GTW but not exceeding the limit on imposed coupling load specified by the manufacturer of the towing vehicle or the maximum imposed load for the couplings actually fitted to the towing vehicle or the trailer). A method of determining the best position for the load is described in Appendix A.
 - In the particular case of the 4m TB trailer a wheel chock kit is available. This would be most useful when it is always the same vehicle being carried.
 - With the vehicle correctly positioned, use wheel securing straps (Ifor Williams part P1042 or similar) at every wheel.



- Ensure the vehicle on the trailer has its handbrake “on”.
- Close any open windows on the vehicle and lock it if appropriate.
- Pull a small amount of slack (about 5 cm (2”) of “sag”) in the winch cable so that the winch is not restraining the vehicle. Do not disconnect the winch.
- Turn the red isolator switch “off”.
- Remove the winch remote control and (if fitted) the power leads and stow them in the towing vehicle. The isolator switch handle may also be re-located to the safety of the towing vehicle if appropriate.
- Before moving off complete the checks in section 3.3.4

4.2.3 – Loading Vehicles or Other Rolling Loads with a Manual Winch

Three different types of manual winch are fitted to Ifor Williams TB and CT177 Tiltbeds. Manual winches are not fitted to CT166 & 167 Tiltbeds because, when tilted, the handle would be too high for safe operation.

- 3 tonne capacity* cable winch marked “Parr” fitted to CT177 trailers and TB
- 3 tonne capacity* strap winch marked “Parr” fitted to CT177 trailers and TB
- 680 kg capacity* cable winch marked “Fulton” fitted to TB trailers
- “Capacity” means the maximum weight of the rolling load which may be pulled up the trailer. Because of the trailer slope this greatly exceeds the maximum “Line Pull” marked on the Fulton winches.
- It is first necessary to spool out the cable. The Parr and Fulton winches function differently in this respect.
 - Hold the handle still on the Parr winch and turn the large black knob anti-clockwise as far as it will go. The line may now be spooled out simply by pulling on the hook. However,
 - ⚠ the handle will spin round at high speed so it is important that no-one is close to the handle or tries to grab it. Before attempting to winch the load, it is important that the large knob is turned fully clockwise so as to engage the automatic brake.
 - The Fulton winch will not spool out by pulling the cable. It must be “unwound” using the handle.
- Hook the cable on to the vehicle to be loaded. Note the comments in section 6.1 about preferred and acceptable methods of attachment.
- It is essential to ensure that the ratchet is engaged when winching commences to prevent accidental roll-off. The tell-tale click, click, click when winding cable on to the winch drum indicates the ratchet is engaged. If there is no “click” do not proceed with winching until the ratchet can be made to engage and clicking is heard.
 - ⚠



- Turn the winch handle so as to remove all slack and apply minimum tension to the cable. Ensure there are at least three turns of cable on the drum.
- Having got the load into position the loading procedure is completed as detailed in section 5.2.2 for electric winch loading.

4.2.4 – Loading Vehicles and other Plant under Own Power

- There are two potential problems:
 - Wheelspin on a wet trailer
 - Wheel going off one side of the trailer, possibly due to squirming sideways under wheelspin.
- If wheelspin is encountered, and no winch is available, then the only advice is to suspend any further loading attempts until adhesion is restored.
- In the particular case of the TB trailer (4m variant only) a bolt on side-rave kit is available which enables the Operator to “feel” where the side of the trailer is.
- The CT177 has very distinct sides to its bed and going off the side should not be possible.
- Use an assistant during own-power loading.
- Having got the load into position the loading procedure is completed as detailed in section 5.2.2 for electric winch loading.

4.2.5 – Notes Specific to Different Tiltbed Types

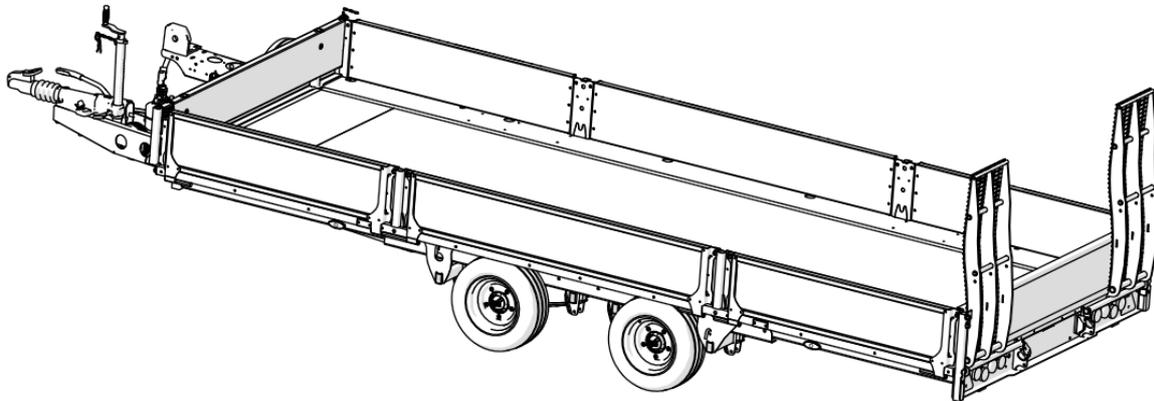
4.2.5.1 – Loading CT166 & 167 Trailers

CT166 and 167 trailers have a relatively high bed (for a CT type) and are available with a short ramp – effectively a tailboard that can be driven over – and also a longer 3’ ramp.

Spoiler clearance is more likely to be an issue with these older trailer models.

4.2.5.2 – Loading TB Trailers

- TB Trailers can be supplied with “S-shaped” Full Width Ramp or Sliding Skids. These offer some relief to the spoiler clearance problem on typical modern cars.



4.2.5.3 – Notes Specific to Loading CT177 Trailers

- CT177 trailers have a very low bed and clearance problems are rare.
- However the low bed is achieved at the expense of having “wheelboxes” which project above the bed.
- When loading it is necessary to establish whether the vehicle wheels will go between the wheelboxes or whether one or both vehicle wheels must go over the wheelboxes.
- The wheelboxes are very strong and there is no risk of crushing them.

5.3 – Unloading Tiltbed Trailers carrying Vehicles or other Rolling Loads



Warning

If the rear lamps are moved, the trailer is tilted, or the moveable components such as tailboard/dropsides/ramp/skids are lowered, the lighting and reflectors may not meet the statutory requirements.



In any of the above situations, a warning triangle or other such device must be used to warn others of the presence of the vehicle on the road. Any such device used must be in accordance with national requirements for use on the road.

- Tiltbed trailers must be coupled to a suitable towing vehicle during the entire unloading operation. There is no safe way of unloading with the trailer supported on its jockey wheel.



- During unloading it is particularly important to establish a safe working area extending at least 6m behind the trailer. This rear MUST remain clear of people and property. Children and animals should be firmly under control so that they cannot wander into the working area.



- Ensure the towing vehicle handbrake is “on” and the trailer handbrake “off” (The trailer must be free to move towards the towing vehicle during tilting.)

- Ensure the vehicle on the trailer has its handbrake “on”.
- If a winch is fitted the winch cable should have been left attached in transit but with some “slack” in it. Operate the winch so as to remove the slack but do not allow the winch to pull with excessive force.
- If the TB stow-away skid option is fitted, remove the skids from behind their cover in the centre of the trailer and attach them to the rear of the trailer in line with the wheels.
- In the case of the CT177 pull out the mini-skids.
- In the case of a ramp or sliding skids release them and rest them on the ground.
- Release the clamps at the front of the trailer and tip the trailer a small amount – sufficient to be certain the tendency is just for the load to roll backwards. See section 6.1 for more detail.



- If sideboards are fitted, the rear sideboards must be closed.

- Remove the wheel securing straps.
- Tip the trailer until the back of the trailer is firmly against the ground (it will lift up as the load comes off the trailer suspension).
- Close the pressure release valve (see image in section 3.4.3)
- Apply the footbrake on the vehicle on the trailer and release its handbrake. Release the footbrake slowly such that all the load is now on the winch cable.
- If no winch is fitted allow the vehicle to roll until it is about half off the trailer. If the vehicle is such that clearance problems are feared, pause the unloading and exit the vehicle to check the spoiler clearance.
- If an electric winch is fitted spool out the winch until the vehicle is about half off the trailer, then pause the operation.
- In the case of a manual winch, take a firm grip on the handle and apply sufficient tension to the cable to allow the ratchet to be released. Manual winches supplied with Ifor Williams trailers should have an automatic brake such that, if the handle is released the winch locks. Do not rely on the automatic brake, **KEEP A FIRM GRIP ON THE HANDLE** as the vehicle is winched down the trailer. As with the electric winch pause at the half off position by re-engaging the ratchet.





- With a manual winch operating correctly, winching the vehicle off the trailer should require a slight positive (unwinding) force on the handle.



- IF THE HANDLE IS RELEASED AND SPINS WILDLY because the automatic brake has not engaged **DO NOT ATTEMPT TO GRAB THE SPINNING HANDLE**. The least worst option is to let the vehicle roll off.
- With the vehicle half off, check that the rear of the trailer is still firmly in contact with the ground. If in doubt pump the ram up a couple of strokes.
- Complete unloading and move the vehicle well clear of the trailer.
- Close the ramp or sliding skids. Unhook stow-away skids and allow them to rest on the ground behind the trailer.
- Lower the trailer and re-secure the front clamps.
- Replace the stow-away skids in the rear of the TB or slide the mini-skids back underneath the main bed of the CT177.

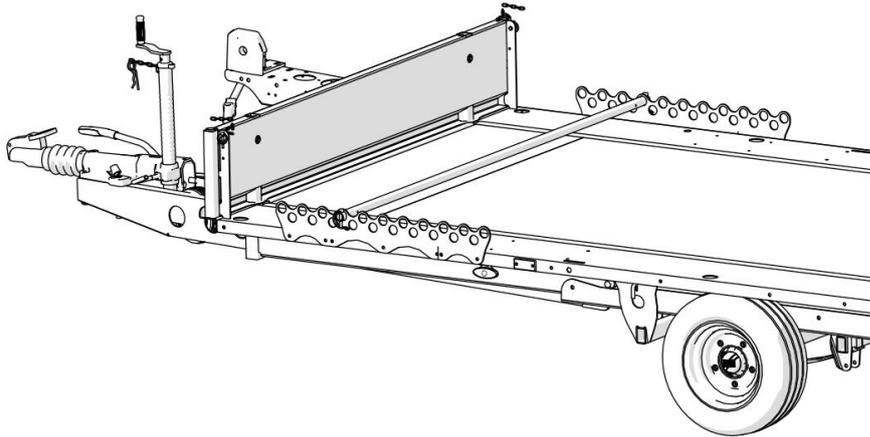
4.4 Using Tiltbed Trailers as Flat Trailers (Tiltbed function not used)

- CT166 & 167 and TB trailers are available with full headboard and sideboard kits. The short CT166 & 167 ramps are effectively standard tailboards made strong enough to drive over.
- In the case of CT166 & 167 trailers with 3' ramps and TB trailers with S-shaped ramps or sliding skids, a "drop-in" tailboard is available that fits in front of the ramp or skids without having to remove them.
- Both CT166 & 167 and TB trailers can be used as flat trailers with or without sideboards. However it is inadvisable to do so without a headboard fitted.
- The CT177 has no Flat Trailer capability although a Centre Deck walkway kit is available.
- For other requirements relevant to using Tiltbed trailers as Flat Trailers please refer to section 3.3.
- Removal and refitting of sideboards and headboard is as for the Tipping Trailer. Refer to section 3.8.

4.5 Fitting and Using the Wheel Chock Kit on TB Trailers

- The Wheel Chock Kit is only available for TB Trailers and cannot be fitted if sideboards are fitted.
- It is not a restraint system, only a system for quickly positioning a frequently carried vehicle.

- The Wheel Chock sideplates have multiple 10.5 mm diameter mounting holes. Only two holes in each plate will align with two holes in a particular chassis. The other holes line up on other TB models. Only 2 x M10 bolts are needed to secure teach plate.



4.6 – Fitting and Using CT177 Ski-Jump Kit

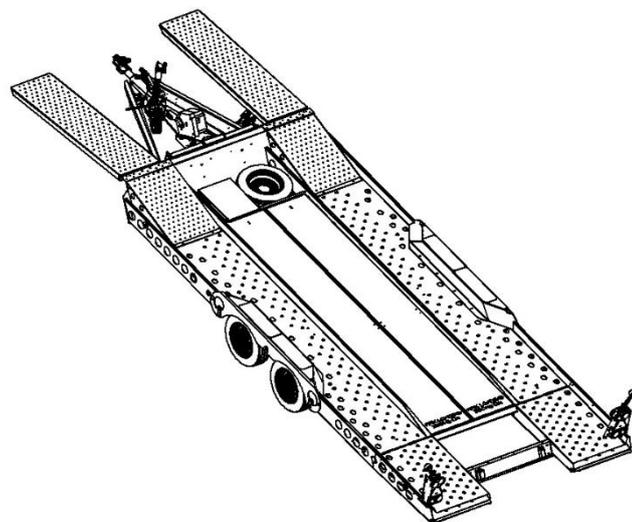
The Ski-Jump kit provides a means of loading the towing vehicle by driving over the trailer.

It comprises a pair of short ramps that bolt to the front of the main bed pressings, two additional skids that “lock on” to the short ramps – thereby preventing accidental disengagement when the transported car is well above the ground – and a special winch bracket that folds down to clear the underside of the transported car.

When using the ski-jump option the jockey wheel must be lowered out of the way or removed altogether.

Not every towing vehicle will work with a ski-jump equipped trailer, towing vehicles with low bed heights being those likely to fail.

The ski-jump skids, when not in use stow between the main bed pressings or, if the centre deck option is fitted, on top of the centre deck pressings. When using the ski-jump option the trailer is partially tilted and then hydraulically locked in position.



The skids which, as noted above, lock in place, can only be slid onto and off of the ramps from the side.



5 Maintenance

5.2 – Hydraulic System

5.2.1 – Hydraulic System Maintenance

- Wipe all external surfaces of the pump and reservoir tank to remove dirt, dust and oil residue.
- Inspect unit for leaks and rectify as necessary.
- Clean reservoir filler cap, remove and renew if cap and / or seal is damaged. Check oil level and replenish with clean hydraulic oil. This should preferably be carried out with actuator (and thus the body ram) at minimum stroke, i.e. with the trailer body down. The oil should be approximately 25mm (1”) from the top of the reservoir tank when full.
- Fully replace the hydraulic oil at intervals depending upon the severity of the duty and environment conditions: Very dirty, dusty and damp: 6 months to 1 year. Otherwise, in more favourable conditions: Approx. 2 yearly.

5.2.2 – Draining the Tank

- With the body fully lowered, remove the main pressure supply hose from the ram and place it into a suitably sized and positioned container.
- Switch on the electrical operating system (or operate the manual pump) to pump the oil into the container. Continue until the oil flow virtually ceases.



- **DO NOT RUN AN ELECTRIC PUMP FOR LONGER THAN IS NECESSARY WHEN THE TANK IS APPROACHING EMPTY**

5.2.3 – Filling the Tank

- Use clean, filtered oil of the correct grade.
- Use a filter unit with a filtration level of 25 microns (25 μm) or better. Use only clean jugs and funnels.



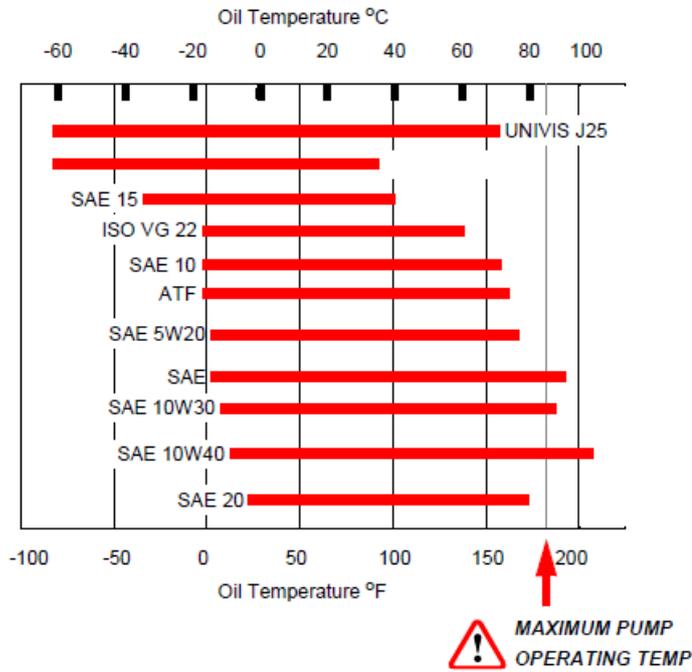
- **Contamination of hydraulic oil accounts for the majority of hydraulic system failures.**



- Connect the hose to the ram but do not tighten.
- Fill the tank to the level mark.
- Bleed the system by operating the motor briefly (or operate the manual pump) whilst observing the release of air from the hose connection on the ram. As soon as there is no sign of air escaping, tighten the connector.
- Check the oil level and top up if necessary.
- For temperatures between -18°C and +70°C the recommended oil specification is SHELL TELLUS 37.
- Alternatives and their working temperature data are shown in the table below.

SupplierGrade		Pour Point °C	Viscosity in Centistokes	
			@0°C	@40°C
B.P.Trading	HLP 32	-33	----	15
	HP 32	-54	----	15
Burmah Castrol	Hyspin VG 15	-39	117	15
	Hyspin AWS 15	-39	117	15
	Hyspin AWH 15	-51	82	15
Esso	Nuto H 15	-35	95	14
	Nuto HP 15	-35	95	14
	Univis J 13	-59	50	15
ELF Stermol	Albatross	-40	77	15
Gulf Oil	Harmony 15 AW	-30	93	14
Lorco	HT15	-40	90	14
	FVT 15	-40	85	14
Mobile Oil	11	-45	87	17
Shell UK Oil	Tellus T 15	-51	75	15
Total Oil GB	Azolla 15 N	-30	100	15
	Equivis VG15	-51	82	15

Where the temperature is constantly below -10°C, please consult your oil supplier.
See page oil temperature data below.



5.3 – Battery

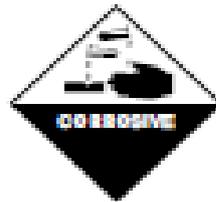
Batteries, where fitted, are 12V 105Ah, maintenance free (apart from charging) type. When working on the battery observe the appropriate safety precautions:



Avoid skin and eye contact



Explosive gas



Contains sulphuric acid



Do not smoke. Avoid contact with sparks or flames.

5.3.1 – Battery Maintenance

- In the case of TB trailers the battery is carried underneath the body inside the vee of the drawbar and access requires that the body be tilted. Do not attempt to inspect or charge the battery unless the tilted body is safely supported – not just held up by the hydraulic ram.



- The battery needs charging when the light on top shows red. A green light indicates that the battery is adequately charged. Always use a “smart” charger.
- So-called “smart” chargers are available which are supposed to prevent overcharging damage*. However the most reliable method is to monitor the open-circuit voltage (charger disconnected, everything off). At 12.2V the battery is half charged. Above this voltage there is plenty of capacity left and the risk of overcharging is best avoided. Below this voltage charging in-the-green up to the fully charged 12.7V requires careful monitoring.
- Match charger to battery type and capacity.
- Ensure charging take place in a well-ventilated area where there is no risk of sparks or flame. Charging produces small quantities of highly flammable hydrogen gas.
- Ensure that the charger leads are connected to the correct battery terminals: positive to positive, and negative to negative BEFORE SWITCHING ON THE CHARGER.
- Once charging is complete SWITCH OFF THE CHARGER BEFORE DISCONNECTING ITS LEADS TO THE BATTERY.
- If the battery becomes hot or acid leaks out, then stop charging immediately. At this point the battery is almost certainly damaged and dangerous and should be replaced.
- Do not charge a frozen battery, or a battery with a temperature above 45°C.
- The battery will self-discharge slowly even when unused. Allowing the battery to fall into deep discharge** will make recovery slow or impossible. A voltage check and appropriate recharge every 6 months is essential.
- In very cold weather internal freezing is a risk. Should this happen the battery may split and leak. Keeping the battery fully charged greatly reduces the risk of freezing damage.
- Rapid charging should be avoided if at all possible because it will result in up to 30% reduction in the number of charge cycles the battery will accept.



- * Overcharging, almost always resulting in the battery becoming hot, causing the plates inside to buckle and contact each other. Should this happen the battery has suffered unrecoverable damage and should be replaced.
- ** Prolonged periods of the battery being left “flat” results in the plates inside becoming heavily “sulphated”. Recovery involves slow charging over a protracted period with the inherent danger that the recovered battery then suffers overcharging damage.

5.4– Parts

5.4.1 Replacement parts

A comprehensive list of all approved replacement parts specific to Tiltbeds and Tippers can be found in the Ifor Williams Trailers Parts catalogue. The latest version can be found at www.iwt.co.uk, or copies are available from your local distributor.

5.4.2 Accessories

A comprehensive list of approved accessories specific to Tiltbeds and Tippers can be found in the Ifor Williams Trailers Parts catalogue.

Examples of available accessories can also be found in the relevant trailer model brochures. The latest versions of these can be found at www.iwt.co.uk, or copies are available from your local distributor.

5.5 – Tyres

5.5.1 Pressure, Load, Speed and Interchangability

- Tyres must be maintained at the pressures shown below. Underinflation at maximum load will result in overheating, uneven wear, reduced stability and, if seriously underinflated, sudden failure.
- When replacing tyres ensure that it is the same size and load speed rating. The number (load) and letter (speed) code of the load speed index are very important and the same size of tyre will probably be available in lower load/speed ratings than those shown below. Lower load/speed ratings are unsafe.
- Tyres typically carry other speed, load and pressure information on their sidewalls. These apply to use outside the Europe – typically North America – and should be ignored. Only the number/letter load speed index matters in Europe.



Tyre Size	Correct Load/Speed Index	Pressure (cold)
195/55R10	98N	6.2 bar / 90 psi
165R13C 8PR	94/92N	4.5 bar / 65 psi
155/70R12	104/102N	6.2 bar / 90 psi
195/60R12	104/102N	6.5 bar / 95 psi
185/70R13C	106/104N	6.0 bar / 87 psi

5.5.2 Tyre Repairs

Punctures should be inspected and repaired by a specialist tyre Distributor. Not all punctures can be repaired and tyres with other damage may not be suitable for repair.

Do not fit tubes to tubeless tyres as trapped air between the tube and the tyre will eventually leak away resulting in low pressure and tyre failure.

5.5.3 Changing a Wheel

- All the trailers covered by this manual are supplied with a spare wheel as standard. The exact location varies but access does not involve tipping or tilting the trailer except in the case of the CT177.
- The CT177 spare wheel is located alongside the toolbox in the front of the load bed. Depending on the length of the vehicle being transported, its weight distribution and therefore its position on the trailer, it may be necessary to unload the transported vehicle to access the spare.
- Wheel changing inevitably means jacking some part of the trailer so that the damaged wheel can be released. Before proceeding develop a clear plan of how to get the damaged wheel off the ground.
- In the particular case of Tiltbeds requiring a front or centre axle wheel change, by far the easiest way to get the front wheels off the ground is to tilt the load bed. (See relevant Tiltbed section for correct procedure – important.)
- In all other cases, Tiltbed rear axles and Tippers, an appropriately rated jack will be needed. Assume that the jack is lifting half the actual weight of trailer plus load. The best position for the jack, even in the case of a front axle wheel change, is under the chassis immediately behind the rear spring.
- In the particular case of the CT177, the only jacking point is the underside of the cross-member which projects through the side-plate just behind the wheels.
- Jacking under the axle beam, close to the spring seat is acceptable if the jack is of a type which “cradles” the axle beam and cannot slip off. If the CT177 is jacked under the axle beam it will be impossible to remove the wheel.



- DO NOT jack under the spring, near the centre of the axle beam or near the centre of any cross-member.
- Unless the trailer is unladen it should always be coupled to an appropriately rated towing vehicle when changing a wheel. Laden trailers should not be jacked up with the jockey wheel supporting the front of the trailer.
- With the damaged wheel off the ground and the trailer handbrake on, release the wheel-bolts. If right hand wheel is being removed, it is likely that the wheel will rotate a short distance as the brakes go into “auto-reverse” and come on again.
- If the trailer brakes are not capable of resisting the release torque applied to the wheel bolts without rotating then the brakes are out of adjustment. In this event the trailer should be lowered until there is sufficient ground contact to resist wheel rotation. Do not attempt to adjust the brakes of a laden trailer while it is jacked up.
- Note: Loosening the wheel bolts while the full laden weight is on the wheel will result in damage to the wheel.
- Place the removed wheel bolts where the threads will not be contaminated with dirt.
- Remove the damaged wheel. This will normally be straight-forwards. However, in the particular case of the CT177, the wheel can only be removed if the bottom of the wheel is pushed under the trailer, allowing the top of the wheel to fall out between the side plate and the brake drum. Refitting a CT177 wheel requires the reverse sequence.
- Clean the face of the hub and the back face of the wheel of any rust, dirt, flaked paint, grease or any other contaminant. This is very important.
- Fit the spare wheel and start all the wheel bolts by hand. Starting the wheel bolts by putting the wheel bolt in a pneumatic gun could cost a replacement hub. Cross-threaded hubs cannot be salvaged.
- The initial tightening procedure is very important if wheel vibration on the unladen trailer is to be avoided. Position the wheel and drum such that, for a 5-stud wheel, there is a wheel bolt at top centre. Take the weight of the wheel off the wheel bolts – a lever placed under the wheel if available – and just “nip” each wheel bolt with a hand wrench starting at the 10 o’clock then 2 o’clock positions. Done correctly the wheel is now centred.
- Progressively tighten each wheel bolt, starting at the ten o’clock position and going around clockwise to every other (alternate) wheel bolt until all are at the specified torque: 110 Nm (81 lbf.ft). Ideally there should be three torque increments up to the final torque.
- In the case of 4-stud wheels the wheel should also be positioned with a stud-hole at top centre, the weight of the wheel should also be supported and the first two wheel bolts to be nipped and subsequently tightened should be those at 9 o’clock and 3 o’clock. For 4-bolt wheels the tightening torque is 88 Nm (65 lbf.ft).



- The only acceptable method of applying the correct wheel bolt torque is a calibrated manual torque wrench.
- Lower the trailer and remove the jack.
- DO NOT DRIVE ON AN UNDER INFLATED TYRE.
- After any wheel refitting wheel bolt torques should be checked after approximately 25 miles. Wheel bolt torques are 110 Nm (81 lbf. ft) for 5-stud wheels or 88 Nm (65 lbf. ft) for 4-stud wheels.

5.7.3 – Wheel Bearings

5.7.3.1 – Wheel Bearing checking

- Unlike car wheel bearings, which run with pre-load and have no measurable play, Ifor Williams' wheel bearings always have free play. At the extreme end this can seem quite alarming but actual measurement, as described below, almost always shows it to be quite small. No other procedure is accepted by the Company.
-  • Many wheel bearings are replaced un-necessarily with the only result that the hub bore is enlarged during removal and refitting and the replacement bearing then comes loose.
- Tests by the Company and our bearing supplier show hardly any reduction in life for bearings with far more clearance than is permitted by this procedure.
 - Conversely, bearings which are too tight can show a dramatic reduction in life.

5.7.4 – Brake Cables

5.7.4.1 – Brake Cable Inspection

- The construction of the brake cable is as follows: outer plastic sheath, spiral steel case, thick nylon sheath, inner steel cable. Local wear of the outer plastic sheath which exposes the steel spiral has no effect on the function of the brakes. Only if the steel spiral case is penetrated is urgent replacement needed.
- Brake cable should move smoothly and equally when the handbrake is applied. If the coupling head is moved from side to side with the handbrake applied (and the trailer wheels on the ground), so that the wheels on both sides are forced into auto-reverse further equal movement should be observed.
- If, at either stage equal movement is not observed then it is possible that water ingress has caused the cable to rust, swell and sieze. However, it is most likely that the brakes are out of adjustment, so the first step is to reset the brakes as described in the Knott leaflet.



- Any signs of rust or fraying on the inner cable or rusting of the threaded end such that the adjuster nuts cannot be turned is cause for immediate replacement.

5.8 Coupling Maintenance

5.8.1 – Bellows

5.8.1.1 – Checking Bellows

- Check the drawtube bellows for splits before every journey. Normal use creates a pumping effect as the brakes are applied and released and dirt and moisture will soon be drawn in through a split bellows.
- Damaged bellows should be replaced at the earliest opportunity and not less than within 24 hours of discovery. Failure to do so will result in the drawtube becoming corroded and, as it becomes resistant to sliding, the trailer brakes become less effective and eventually stop working all together.

5.8.2 – Coupling Head

5.8.2.1 – Checking the Coupling Head

- Check that the un-coupled Coupling Head Wear Indicator is not beyond the “MAX” position (see image in section 3.3.1.) If it is then replace the Coupling Head.
- Replacement of the coupling head (if required) entails releasing the damper within the drawtube. It is therefore essential to carry out the Damper check test described in section 5.8.3.1 below, in case the Damper also needs replacing.
- The internal working surface Coupling Head should be periodically cleaned and regreased with LMP grease.

5.8.3 – Coupling Damper

5.8.3.1 – Checking the Coupling Damper and Drawtube

- With the handbrake ON (handbrake lever right back) push the Coupling Head as far back towards the body of the Coupling as it will go – about 8cm. A steady force is required and travel will be slow because the function of the Damper is to slow all movement.
- If the Drawtube will not allow the Coupling Head to move back, despite considerable force, then it is likely the drawtube is siezed, possibly due to water ingress and consequent corrosion. As a first step and in order that the damper check can be completed, pump grease



into the grease nipple on top of the damper body. Rock the damper head from side to side, but not so much as to damage the bellows, so as to encourage the grease to spread.

- If a seized Drawtube is suspected then proceed to remove the damper as described in the next section and, with the Damper removed, establish whether the Drawtube can be made to slide easily. If it cannot then a bent Drawtube may be suspected. A previous “jackknifing” event is a possible cause. In the event of a bent Drawtube the whole Coupler must be replaced.
- Once the Coupling Head has been compressed release it suddenly – taking care that it does not strike legs as it does so.
- When released the damper should take about 2 seconds to fully extend the Coupling Head.
- If the Coupling Head extends rapidly (in less than one second) then the Damper has lost its damping function and must be replaced.
- If the Coupling Head extends very slowly or only partially then the Damper has lost most of its gas pressure and must be replaced.

5.8.3.2 – Replacing the Coupling Damper

- Contact distributor.

5.9 – Breakaway Cable

- As noted in section 3.3 The Breakaway Cable has the vitally important function of pulling the trailer handbrake on in the event that the trailer separates from the towing vehicle (a Breakaway).
- Only replace with a genuine IWT part.

5.9.1 – Checking the Breakaway Cable

Look for kinks, fraying of the wire or anything else that looks like it might degrade the strength of the cable.

5.9.2 – Replacing the Breakaway Cable

- Contact distributor.



5.10 – Suspension

5.10.1 – Suspension Inspection



- The great majority of springs last the life of the trailer and no maintenance of the spring itself is required. In particular **DO NOT GREASE OR OIL THE SLIPPER SURFACE AT THE REAR OF THE SPRING** – it increases the spring stress and greatly increases the risk of premature failure.

- The spring eye bushes should be inspected using the following procedure:
- Jack the chassis up so that the rear of each spring in turn falls away from the slipper surface but not so far as to cause the corresponding wheel to leave the ground. Make sure the trailer is safely supported and reach underneath to feel for looseness at the front of the spring. If there is noticeable movement or rattle then the spring eye bush (IW part P1208) needs replacing. This requires the spring to be removed from the axle and the trailer.
- Spring eye bolt and U-bolt torques should be checked. Correct torques are:
 - Spring eye bolts: 105 Nm (77 lbf.ft)
 - U-bolts: 140 Nm (103 lbf.ft)
- Note: spring shackle bolts (always at the rear of springs but not the rear of every spring) where only a nylon roller is retained (no spring eye) must not be tightened beyond 40 Nm and do not require checking.
- Every spring has a bump stop above it which is secured by the U-bolts. It is important to check that the bump stop is intact. The bump stop comprises a rubber element bonded to a metal plate. Failure may take the form of the bond failing and the whole rubber bump stop falling off, leaving just the metal plate. Occasionally overloaded bump stops just split. Bump stops which have lost their rubber or are split must be replaced immediately.

5.12 Washing

- Regular washing with a solution of water and mild detergent such as car wash will help to prolong the surface finish of plated and painted components.
- This is particularly important if the trailer is used on salt-treated roads, in coastal areas, is heavily soiled or is used to carry corrosive substances such as fertilizers. In these cases, the trailer should be thoroughly washed down after each use.
- If using a pressure washer, care should be taken to avoid training the high pressure spray onto electrical components or decals for extended periods or at close range.
- Additives intended for brightening aluminium, often containing phosphoric acid, must not be used on galvanised surfaces as they will slowly remove the zinc.



6 – Troubleshooting

All Tippers and Tiltbeds with manual pumps	Body/Bed will not come down	Pressure release valve opened too quickly and burst valve has closed	Pump body back up a few strokes, close pressure relief valve and then open it more slowly
All except CT177	Sideboards won't close	Dirt under sideboard	Open sideboard and brush side of floor clean.
Tippers	Tailboard cannot be re-secured after tipping	Handle has hit ground (or part of discharged load) and is bent	Straighten out handle (minor damage) or replace hinge bar assembly.
Electric tip Tippers and Tiltbeds	Body/Bed lifts very slowly and may stop prematurely	Battery is discharged	Recharge battery as per section 6.3.1
Electric tip Tippers and Tiltbeds	Body won't lift, no sound from pump	Bad electrical connection.	Unload trailer using manual backup. Prop Tipper body using supplied prop as per section 4.2 or suspend (empty Tiltbed body on suitable hoist and remove and clean all electrical connections.
Tipper	Body won't lift full amount	Seriously overloaded	Lower body, shovel load from FRONT of body and re-tip
Tipper	Body won't lift full amount	Some hydraulic fluid has leaked away	Lower body, add hydraulic fluid, complete tip, fit body prop as per section 4.2, inspect for leaks and repair as necessary.
All Tiltbeds	Body won't lift	Latches not released	Open pressure release valve, inspect latches for probable stretch (looseness), unload trailer if loaded but do not use trailer again until latches are replaced.
TB and CT177 Tiltbeds	"Trigger" under latch handle will not release so handle cannot be opened	Latch has been stretched by some previous event.	Replace latch(es)

TB and CT177 Tiltbeds	Trailer tilts while travelling	Latch has become stretched and lost its overcentre geometry. Trigger still works but cannot keep handle closed when subject to dynamic loads.	Replace latch(es)
CT177	Wheel can't be removed after wheel-studs released	Trailer jacked up under axle or wrong technique	Jack trailer under outer ends of cross-members (not axles) then push bottom of wheel inwards and top of wheel will fall outwards.
CT177	Wheel can't be refitted	See above	Refit by pushing bottom of wheel under trailer first then top though gap between sideplate and hub.
CT177	Scuffing of tyre sidewalls against sideplates	Tyre pressures have been allowed to drop too low.	Consult a tyre Distributor about extent of tyre damage and whether replacement is necessary. Improve tyre pressure monitoring.

All	Sudden vibration	Wheel coming loose	STOP IMMEDIATELY. Check all wheel bolt torques (should be 110 Mn (81 lbf.ft) for 5-stud wheel or 88 Mn (65 lbf.ft) for 4-stud wheels). Do not over-tighten.
All	Towing Instability	Refer to section 3.4.3	Refer to section 3.4.3
All	Tyres more worn at sides than centre	Tyres under-pressure	Inflate tyres to pressure shown in 6.5.1 and review tyre maintenance procedures
All	One or more tyres won't hold pressure	Either slow puncture from embedded object, leaking valve or tyre has been used at very low pressure and has been damaged.	Consult a Tyre Distributor.
All	Bang and shock when reversing uphill	This is normal. Brakes come on because of auto-reverse function and require a hard push from the towing vehicle before suddenly releasing.	No action needed
All	Bang and sharp push from	Coupling Damper may be worn out	Carry out Coupling Damper check as described in section 6.8.3.1. Replace if necessary.



	trailer during normal braking.		
All	Trailer locks and releases wheels under normal or hard breaking.	Coupling Damper may be worn out.	Carry out Coupling Damper check as described in section 6.8.3.1. Replace if necessary.
All	Rattle from Coupling when Towing	Either the tow-ball is worn, or the coupling head is worn or the load is too far to the rear of the trailer resulting in insufficient imposed load.	Check tow-bar and coupling for excessive looseness when unladen. Check imposed load and adjust load position if necessary.

7 – End of Life Disposal

All the trailers covered by this manual contain materials requiring disposal at an appropriate recycling facility:

Hydraulic Oil (All trailers)

Batteries (Only trailers with electric pump or winch)

8 – Technical Data

8.1 All Versions

Hydraulic System	
Manual Pump	Hydraulic system
Electric Pump	Combined Hydraulic & Electrical system
Noise Emission	< 70dBA
Battery	12V 105Ah
Maximum allowable working pressure	210 Bar
Pressure relief valve setting	180 Bar
Oil reservoir capacity – Manual Tilt	4 Litre
Oil reservoir capacity – Manual Tipper	6 Litre
Oil reservoir capacity – Electric all	7 Litre
Hydraulic Oil Specification	See section 6.2
Operating Conditions	Snow and ice to sand and dust but not immersed



Ambient Working Temperature	-20°C to + 45°C
Ambient Storage temperature	-40°C to +60°C (below -20°C the battery must be kept charged above 12.2V)
Humidity	0 to 100%

8.2 – Tipper

Type	TT2012	TT2515	TT3017	TT3621
Unladen Weight	400 kg	730 kg	870 kg	1085 kg
Gross Weight	1500 kg	2700 kg	3500 kg	3500 kg
Tipping Capacity	≤1100 kg	≤1970 kg	≤2630 kg	≤2415kg
No. of Axles	1	2	2	2
Maximum Imposed Load	100 kg	100 kg	150 kg	150 kg
Loading platform dimensions	Length	1.97m	2.46m	3.01m
	Width	1.22m	1.49m	1.62m
	Tip Angle	57.0°	50.0°	52.5°
Hydraulic system	Manual	P2241	P11305 (option)	N/A
	Electric	N/A	P11976 (standard)	P11976
Hydraulic Cylinder	P11313	P1131	P11310	
Option	Additional unladen weight			
Loading Skids	70 kg – steel		38 kg – aluminium	
Electric Winch	N/A	25 kg		
Ladder Rack	18 kg	20 kg	22 kg	24 kg
Mesh Sides	60 kg	65 kg	80 kg	95 kg
Solid Side Extensions	N/A	76 kg	93 kg	109 kg

8.3 Tiltbed – CT

Type	CT166	CT167	CT177
Unladen Weight	885kg	985kg	805kg
Gross Weight	3500kg	3500kg	3500kg
Tilting Capacity	≤2615 kg	≤2515kg	≤2695kg
No. of Axles	2	2	2
Maximum Imposed Load	150 kg	150 kg	150 kg
Loading platform dimensions	Length	4.87m	4.87m
	Width	1.90m	2.16m
	Tilt angle	10.5° (high ramp) / 12.5° (low ramp)	
Hydraulic system	Manual	Standard	Standard
	Electric	Option	Option
Hydraulic Cylinder	2 x P1139		P11317
Option	Additional unladen weight		



Electric Tip	40 kg		
Electric Winch	55 kg		
Headboard only	28 kg	31 kg	N/A
Ladder Rack	20 kg	24 kg	N/A
Full Drop side Kit incl. headboard	121 kg	124 kg	N/A
Mesh Side Extensions	125 kg	130 kg	N/A
High Ramp	+33 kg	+40 kg	N/A
Floor lashing rings (per pair)	1 kg		N/A
Centre Decking	N/A		39 kg
Ski-Jump	N/A		106 kg

8.4 Tiltbed – TB

Type	TB4021 - 302	TB4021 - 352	TB4621 - 302	TB4621 - 352	TB5021 - 352	TB5021 - 353	TB5521 - 353
Unladen Weight (A ramp or Skid option must be added)	685 kg	730 kg	735 kg	785 kg	835 kg	860 kg	900 kg
Gross Weight	3000 kg	3500 kg	3000 kg	3500 kg	3500 kg	3500 kg	3500 kg
Tilting Capacity	≤2315 kg	≤2770 kg	≤2265 kg	≤2715 kg	≤2665 kg	≤2640 kg	≤2600 kg
No. of Axles	2	2	2	2	2	3	3
Maximum imposed load	150 kg	150 kg	150 kg	150 kg	150 kg	150 kg	150 kg
Loading platform dimensions	Length	4.07m	4.07m	4.64m	4.64m	5.1m	5.57m
	Width	2.04m	2.04m	2.04m	2.04m	2.04m	2.04m
	Tilt Angle	11°	13.5°	10.5°	12.5°	10°	9.5°
Hydraulic tip system	Manual	P11415 - standard					
	Electric	P11976 - option					
Option	Additional Unladen Weight						
Headboard, Dropsides, Mesh Ramp	160 kg	170 kg	180 kg	190 kg			
Mesh Ramp	80 kg						
Hinged Mesh Skids	45 kg						
Removable Skids	40 kg						
Ladder Rack	14 kg						
Headboard	25 kg						
Wheel Chock Kit	9 kg						
Winch Mounting Bracket Kit	19 kg						
Battery Carrier (only)	9 kg						
Battery and Battery Carrier	35 kg						



Electric Winch with Bracket and Battery Kit	52 kg			
Electric Winch with Bracket and Power Leads	28.5 kg			
3000 kg Cable Winch (Manual)	25 kg			
1500 kg Mechanical Cable Winch	6.5 kg			
Raised Rave Kit	6 kg	N/A	N/A	N/A
Drop-in tailboard kit	16 kg			
Mesh extension kit (Mesh ramp)	95 kg	110 kg	130 kg	135 kg
Headboard, Drop in Tailboard, Sideboard Kit	85 kg	100 kg	110 kg	120 kg
Mesh Extension Kit (Tailboard)	105 kg	115 kg	135 kg	140 kg