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# COMBINED RAM & TANK INSTALLATION MANUAL

Please consult Harsh if any issues arise as operating instructions are subject to change without prior notice.



FM 13737

**HARSH**<sup>®</sup>  
[www.harshuk.com](http://www.harshuk.com)

Registered office as above. Registered in England No. 2168135. VAT Reg. No. 475 4892 00

## Combined Ram & Tank ASSEMBLY AND INSTALLATION GUIDELINES

Correct installation of the tipping gear in accordance with the instructions of both Harsh UK and the Truck Manufacturer is essential for the efficient and safe operation of the tipper truck.

Failure to meet these installation guidelines may affect the Warranty of the Tipping Gear and the Truck and could have product liability implications.

Personnel who are qualified as a skilled fitter and have undergone a suitable training programme should only undertake installation.

Your HARSH tipping gear will be supplied in kit form to suit the type of chassis you have ordered. The kit will be one bundle comprising of the ram & tank and kit box. The kit-packing list will be attached to the top of the box. Check that the Truck Model, Wheelbase and Gearbox details stated on the supplied Tipping Gear Kit list are correct. If not, contact Harsh UK sales administration on 01759 372100.



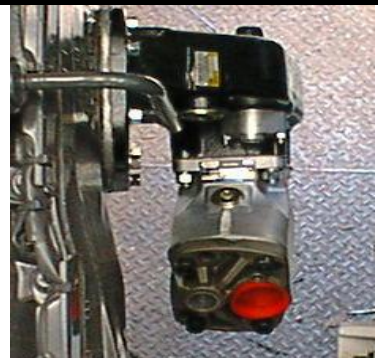
Now, check that all the main components are complete and in accordance with the equivalent items stated on the supplied kitting list. Report any shortages to Harsh UK sales administration on 01759 372100.

Once the full kit is checked you should take out the PTO and pump – checking them against the front of the packing list and also checking the actual gearbox in the vehicle is the same as that listed on the paperwork. The PTO will have separate instructions and you should always try to have the pump with the inlet upwards.



Having checked the kit detail (above) now make sure that the Gear box type in the truck matches the type stated on the paperwork.

The PTO/Pump should be installed in line with the manufacturers instructions, which are supplied with the PTO/Pump kit.



Always try to assemble the pump with the inlet upwards although in some cases this may not be possible due to a foul condition between the pump and prop shaft or other chassis componentry.



A suitable air supply should be located to enable the PTO engagement switch and cab control to be installed (the bodybuilder guideline booklet for your particular chassis will give a air location point).



The cab control should be positioned to customer specifications, (however the pto warning light must be in the drivers view, if this is not possible an audible warning needs fitting) if non are given it must be easily accessible, but **must not** obstruct the drivers entrance and exit to the vehicle and also must not be located where possible knee or other injuries could occur. Ensure clearance on all areas of seating inc. height adjustment seats.

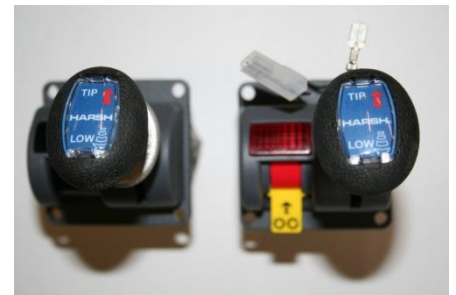


The control switch should be piped up as follows to ensure correct operation.

Single; Port 1 = air in  
Port 3 = exhaust  
Port 21 = lower  
Port 22 = raise

Dual; Port 1 = air in  
Port 3 = exhaust  
Port 21 = lower  
Port 22 = raise  
Port 23 = P T O

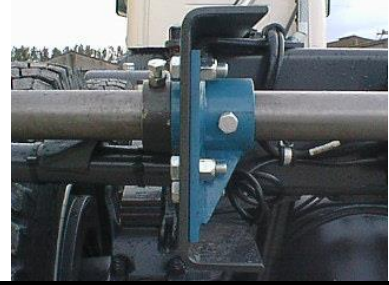
The Cab Controls Ports are cast into the sides of the cab control to ensure the cab control is correctly piped up.



The tipper hinge point must now be located as to chassis manufacturers recommendations.

Install the relevant bracketry supplied ensuring the hinge bar is exactly perpendicular to the centre line of the chassis and parallel to the chassis cross members.

The hinge bar should be drilled and locked at the chassis bracket / boss points once the hinge bar is centralised.



#### Subframe Mounted Applications;

If mounting in conjunction with a Subframe the hinge boss should pass through the subframe. Leave the required amount through the subframe to give adequate body bracket clearance. Once welded in place fit a crossmember and gussets as required. If the installation of a full-length chassis subframe is required it should be mounted in line with chassis manufacturers recommendations. Locate the Tipper Hinge point to the manufacturers recommendations. Install the relevant bracketry supplied ensuring the Hinge Bar is level and centralised.



Ensure a suitable cross member is fitted in front of the Hinge Bar. The Hinge Boss must also be fabricated with suitable gussets.



The ram and tank assembly is mounted to the chassis frame or chassis-reinforcing subframe by means of the Pedestal Bracket kit, fitted to the tank trunnion arms and mounted on the chassis/subframe members. The Pedestal Bracket kit consists of a bottom Pedestal bracket and a top Cradle bracket.



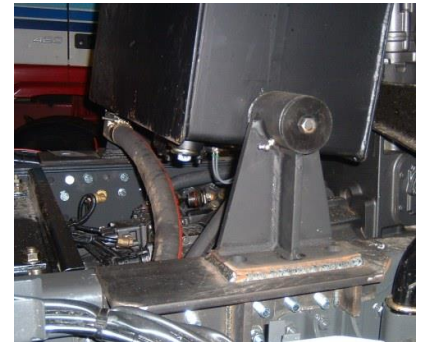


The pedestal brackets, supplied with the kit, should be fitted to the chassis frame in accordance with the truck manufacturer's recommendations. Use existing bolts where possible or replace with equivalent or higher grade, otherwise, use pre-drilled holes where possible and minimum M16 8.8 grade bolts. Profile the brackets around chassis componentry where necessary and remove all burrs and sharp edges



The position of the brackets will be shown on the layout assembly drawing. Care should be taken to ensure that no foul condition could take place with gearbox/chassis components.

When the pedestal brackets have been secured to the chassis, the ram and tank, with the top cradle brackets fitted to the tank trunnion arms, should be carefully lowered onto the pedestal brackets.



Align the ram and tank assembly so that it is exactly central on the chassis and the centre line of the trunnion arms is perpendicular to the centre line of the chassis (measure from a datum such as a crossmember for example), ensure that on each side there is a 2mm clearance between the ram trunnion shoulder and the face of the cradle bracket boss. Ensure that there is adequate clearance for the fitment of the hydraulic pipes. The cradle brackets should then be welded to the top of the pedestal.

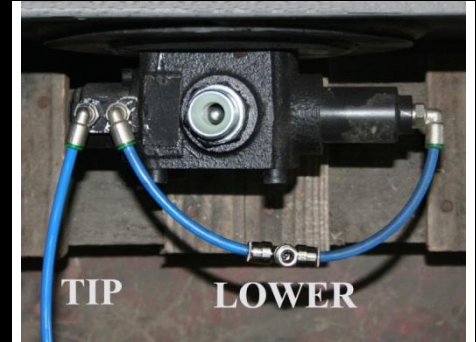
Connect the Low Pressure Pipe between the Oil Tank outlet and the suction port of the Pump.



Connect the high-pressure pipe from the pump outlet port to the tipper valve. The DP22 valve is fitted with a 1/8" BSP port to take a pressure valve for either load weighing or a bridge bashing kit.



The DP22 Valve should be piped up as follows to ensure correct operation.



The pipes should run as direct as is possible with regular clamping and any bends that are needed should be as large as is possible to allow for hose compression. Always ensure that no hose is straight to allow for movement of the tipping gear when the body is tipped.



### Load Cells Application

When mounting the Tipper ram and tank on load cells, the pedestal brackets should first be mounted to the chassis or the chassis-reinforcing subframe as described above.

It is now necessary to position the Load cell mounting blocks.

The procedure is as follows:

#### Load Cells

- a) Bolt the mounting blocks to the bottom of the Load cells.
- b) Bolt the cradle brackets to the load cells.
- c) Fix the cradle brackets c/w the attached load cells and blocks to the trunnion arms on the tank.
- d) Position the ram and tank on the pedestal brackets as recommended on the assembly drawing, Align the ram and tank assembly so that it is exactly central on the chassis and the centre line of the trunnion arms is exactly perpendicular to the centre line of the chassis (measure from a datum such as a crossmember for example). Ensure that on each side there is a 2mm clearance between the ram trunnion shoulder and the face of the cradle bracket boss.
- e) The load cell mounting blocks are then tacked in position on the pedestal brackets.
- f) Remove the ram and tank c/w load cells from the mounting blocks and fully weld the mounting blocks to the pedestal brackets.
- g) Replace the ram and tank and tighten all bolts in line with the torque settings recommended by the load cell manufacturer

**ONCE THE INSTALATION IS COMPLETE:**

- A) GREASE ALL AVAILABLE POINTS
- B) FILL THE TANK WITH THE RECOMMENDED GRADE OF HYDRAULIC OIL TO THE SPECIFIED LEVEL.
- C) CHECK ALL HOSE JOINTS FOR LEAKS.
- D) CHECK PTO/PUMP FOR ANY LEAKS
- E) CHECK THAT ALL BOLTS HAVE BEEN TIGHTENED CORRECTLY.

**FINAL CHECKS:**

IT IS ESSENTIAL TO RE-CHECK THE FOLLOWING POINTS.

- 1) ENSURE ANY BODY WARNING DEVICE WORKS CORRECTLY AND DEACTIVATION ARM / SENSOR IS CORRECTLY POSITIONED.
- 2) AGAIN BLEED THE SYSTEM AND RE-FILL WITH OIL AS REQUIRED. ENSURE TO ADEQUATLY TIGHTEN BLEED SCREW AND CLEAN OFF EXCESS OIL.
- 3) ENSURE ALL OPERATION STICKERS ARE FITTED IN THE CAB AND ALL WARNING SIGNS ARE CLEARLY VISSABLE.
- 4) ENSURE FITTING AND MAINTAINANCE MANUAL IS PLACED IN THE CAB FOR THE OPERATOR.

HARSH LTD has a policy of continuous improvement and therefore reserves the right at any time without notice to change the supply origin, price and specification of any products supplied by it. Any prices, descriptions or other data relating to any products supplied by HARSH LTD are given in good faith but HARSH LTD shall have no liability of any nature should there be any discrepancy between any products supplied and prices, descriptions or data.

If further general technical information is required consult the tipping gear and mounting guidelines booklet available at [www.harshuk.com](http://www.harshuk.com). Or alternatively call our sales/technical department on 01759 372100.





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## MAINTENANCE INSTRUCTIONS

Periodic maintenance and inspection will increase the working life of the Tipping Gear. Follow the routine of the checklist set out below at least once per week or every 50 cycles whichever is sooner to ensure efficiency and safety of the tipping gear.

Liberally grease all grease points on the tipping gear and rear hinge.

Check all high-pressure pipes and connections for oil leaks.

Check oil level in tank when Tipping hoist is at rest. Top up if necessary using the following: -

Recommend hydraulic oil: - Elf - Hydrelf 68. Morris - Triad HV37a. Texaco - Rando HD268. Shell - Tellus 68.

Check fixing bolts for damage and tightness.

Check vehicle for any form of damage or wear and take measures to fully repair or replace damage on the vehicle.

Replace any damaged tipping gear parts immediately with genuine HARSH replacements.

## SAFETY INSTRUCTIONS

### While Tipping

Always check for overhead wires, obstructions and make sure that no other people are in the vicinity of the vehicle or tipping area before tipping.

Tip with the vehicle at rest, on level ground and with a balanced even load.

(Never overload, or heap the load).

Always check the conditions of the area where tipping i.e. do not tip when there is:

Wet or unstable ground which may collapse or in high winds.

Stay in cab when Tipping. If the load sticks or any problems develop immediately lower the body. (Never shunt load free or leave cab and go under a raised loaded body.)

After tipping, always lower the body fully before driving off and disengage PTO.

### While Working on Vehicle

Never work under a raised loaded body even if propped.

Never work under a raised empty body unless propped.

Look for any signs of wear not only on the tipping gear but also the wood packers, hinge assembly, hoses, valve and tank assembly.

**NEVER ALLOW ANYONE UNDER AN UNPROPPED BODY**



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