

SPECIFICATION OF TRUCK MOUNTED GARBAGE COMPACTOR 7 M³ CAPACITY

GENERAL

Vehicle mounted rear loading garbage compactors shall be robust in construction and shall be able to collect of garbage and refuse from different spots and then transport it to dumping ground. The volume of the compactor shall be around 7 m³. The unit shall be operated by hydraulic systems. The positive compaction against the ejector plate shall be used to enable desired compaction to be achieved at all times for even loading. Proper distribution of load on front & rear axles should be achieved without overloading the axles in any circumstances. The refuse shall be pressed into the compactor by a pressing plate & the mechanism shall enable the full body volume to be filled with compacted refuse. The refuse shall be unloaded by an ejector plate.

The operations of this unit shall be such that one driver assisted by two helpers shall be adequate.

COLLECTION & DISPOSAL OF GARBAGE

Collection of garbage shall be done by emptying/unloading the garbage into the hopper of the compactor from the bins. These bins shall be emptied hydraulically by the bin lifter or even emptied manually as the hopper is easily accessible. The compacting process shall be carried out in stages as described below.

- The packer plate, which initially is at a closed position parallel to the floor of the body, shall open hydraulically.
- Due to the actuation of the carrier plate hydraulic cylinders, the carrier shall come down and the hopper shall shut by the packer plate.
- The garbage from the hopper shall be swept by the packer plate and pulled into the container body by the reverse actuation of the carrier plate cylinder.
- The garbage shall be compacted against the ejector plate as the carrier ascends.
- The tailgate shall be mechanical unlocked and the entire assembly shall be hydraulically lifted using the two cylinders.
- The compressed garbage within the container body shall be unloaded by the ejector plate by pushing the garbage out of the body with its double acting multi stage hydraulic cylinder.
- This system shall facilitated easy and quick unloading with assured machine stability during discharge.

The skid-mounted unit shall consist of;

- a) Suitable power takes off arrangement from the truck chassis which shall be used for driving various components of the unit.
- b) Body
- c) Tail gate
- d) Packer plate
- e) carrier plate
- f) Ejector Plate
- g) Bin lifter
- h) Controls
- i) Hydraulic system
- j) Safety Features
- k) Standard Accessories
- l) Painting
- m) Training
- n) Testing and Inspection

The above equipment shall be mounted on client supplied chassis with cabin & PTO like TATA / ASHOK Leyland or equivalent of 11T GVW and 3800 mm wheelbase. Bidder shall furnish full details of vehicle chassis. The standard tools accessories and spares supplied with the chassis shall be handed over to the client at the time of delivery of the unit.

The Bidder shall make arrangements for mounting equipment on the chassis according to the rules laid down by the Regional transport Office, and loads recommended by the chassis manufacturer on the front and rear axles. The Client shall make arrangements for registration of the complete unit with the Regional Transport Office,. The Government fees required for registration & insurance of the units shall be paid by the client directly to the concerned authorities.

REAR LOADER :-

The skid mounted rear loader unit and its hydraulically assisted packer body shall be designed to perform the assigned work. Unit shall conform to the best practice known to the body fabrication trade in design, quality of material and workmanship. Assemblies, subassemblies, components and accessories shall be standard and interchangeable. Accessories not specifically mentioned herein but necessary to furnish complete unit ready for use shall be included.

Unit shall be rear-loading type with loading height not more than 1 meter from ground level. The operation of compacting, ejecting the refuse shall be hydraulic system. The system shall include the hydraulic pump driven by the chassis engine overheating, necessary filter, adjustable relief valves, DOCV's directional control valves, restriction valves and associated pipelines.

The hydraulic cylinders, hydraulic pump and control valves shall be of reputed make, manufactured by the firm having an experience of at least 10 years in the field.

Hydraulic seamless pipes, hoses, couplings should be of high quality and standard to withstand high pressures. The pipe ends should be flared to ensure perfect seal and prevent leakage even at high pressure.

a) PRIME MOVER :-

The unit shall be run on the power transmitted from vehicle engine through P.T.O. (Power Take Off Unit). The P.T.O. shall be of sturdy design of reputed make and should be able to provide sufficient power to run the system.

b) BODY

1. Body shall be fabricated from IS 2072 Steel sheets (4 mm thick floor & side wall and 2.7 mm top plate) and reinforced ribbed so as to withstand continuous operation at maximum imposed loads & without harmful deformation or excessive wear.
2. All reinforcement shall be in the form of vertical rows of box shaped braces interconnected and full welded to the body side sheets.
3. Body cross members shall be fitted on appropriate centers and shall be interlaced through longitudinal members so that the floor is fully supported by both.
4. The body interior shall have a smooth floor, sides and roof in order to prevent damages. No cylinders, valves and other hydraulic components shall come in contact with refuse into the body.
5. The body floor shall be equipped with extra heavy structural steel wide flanges that will guide and support the ejector panel.

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c) TAIL GATE

1. Tailgate side shall be fabricated from high strength mild steel IS 2062 (3mm thick).
2. Hopper floor shall be fabricated from high strength mild steel IS 2062 (6mm thick).
3. Loading height shall not be higher than the top of the chassis frame rails or 1m .
4. The tailgate shall unlock automatically and raise to permit ejection of the refuse when hydraulic valve is manually actuated. There shall be manually operated tailgate turnbuckle locks.
5. Tailgate shall be provided with sturdy arrangement for raising and controlling of descent.
7. The valve that operates the tailgate lift action shall be located at the front end of the body (far away from the tailgate) to prevent any harm to the operator when the refuse is being ejected from the body.
7. The valve operating the tailgate shall be of the spring centered (dead man) type so that the operator must stand at side of tailgate (away from moving packing blades) and physically hold the handle that activates the valve all of this for safety purposes.
8. The hydraulic system shall include relief valves to prevent excess pressure that may damage hoses, tubes and other hydraulic components.
9. A hydraulic fluid velocity fuse restrictor shall be installed at the base of the tailgate cylinder to prevent rapid and dangerous fall of tailgate in case of a hydraulic hose or tube rupture.

d) PACKER PLATE:

1. Packer plate shall be heavily reinforced & fabricated from high strength mild steel 3mm thickness.
2. Packing cycle complete shall be around 20 seconds.
3. The truck's engine shall be accelerated to sufficient speed (rpm) when the packing plate valves are actuated to packing sequence at the rated speed and pressures to compact the refuse.
4. Press Compaction:- Each hopper full of material shall be compressed between the packing blade and ejector panel.
5. The heavy duty packer shall be fitted with sturdy mountings for rams.

e) CARRIER PLATE :

The carrier plate shall be fabricated from high strength mild steel sheets (3mm) and shall be made strong enough to withstand all the abuse imposed upon it by the refuse.

The carrier plate shall slide on shoes for low friction and high efficiency.

f) DISCHARGE OF LOAD: (EJECTOR PLATE)

1. Discharge shall be by means of positive ejection.
2. The ejector panel shall be fabricated from high strength mild steel sheet. The ejector panel should be angled and smooth to ensure clean discharge and eliminate risk of waste adhering to the plate. The ejector plate should be suitably reinforced.
3. The hydraulic telescopic cylinder shall extend and retract ejector over full length of the body and shall be double acting.
4. Ejector plate shall be supported as well as glide.
5. A large access opening at the front of the body shall be provided to attend to the front of the ejection mechanism.

g) BIN LIFTING: (OPETIONAL)

A hydraulically operated bin lifter should be provided at the rear end along with the equipment, and should be capable of lifting the EN standard containers of size 1100 liters steel bins. Two double acting hydraulic cylinders one on each side to be provided. Control lever for operation to be installed at a convenient position such that the working of hydraulic cylinders can be controlled safely. A safety valve to be provided in the system to avoid sudden descent of bin lifter in a case of failure in hydraulic pressure.

h) CONTROLS:

1. Power take-off controls mounted in the cabin shall be conveniently located by chassis manufacturer.
2. The position of Ejector and tailgate controls by two-spool directional control valve shall be outside the body on the left side at the front part of the body.
3. The position of carrier plate, packer plate and bin lifter controls by three spools. Directional control valve shall be outside the body on the left side near the rear part of the body.
4. A device to raise engine speed to required R.P.M. during packing cycle shall be provided.

h) HYDRAULIC SYSTEM:

1. A heavy duty, single speed power take-off shall be provided by chassis manufacturer and shall be compatible with that of chassis transmission.
2. The power take-off must run quietly. Gearing shall be selected for minimum engine R.P.M. compatible with recommended R.P.M. for correct operating pressure and flow per minute.
3. The hydraulic pump shall be designed to operate continuously with peak loading at frequent and short interval. The pump displacement at 1500 rpm should be 75 L/min. It shall be driven by the PTO via propeller shaft.
4. All hydraulic hoses shall be as per relevant standards for designed pressure. Hoses shall have adequate safety factor over maximum relief valve pressure setting. The hoses shall be rigidly mounted on the body, wherever possible.
5. The hydraulic system shall incorporate relief valves to protect all components from excessive pressure and overloads.
7. A replaceable, 10 micron filter should be provided in return line of hydraulic system.
7. All hydraulic components should be easily accessible for inspection.

i) HYDRAULIC VALVES:

All the valves provided shall be of reputed make and of international standard. The valves shall be rated 140 kg/cm² pressure.

HYDRAULIC CYLINDERS:

1. All cylinders must be tested at 1.5 time the rated working pressures.
2. There must be a minimum of 7+2 (OPTIONAL) cylinders as follows :
 - a) 1 No.: Three stage double acting hydraulic cylinder for Ejection plate.
 - b) 2 Nos.: Hydraulic cylinder for tailgate.
 - c) 2 Nos.: Double acting hydraulic cylinder for carrier plate.
 - d) 2 Nos.: Double acting hydraulic cylinder for packer plate.
 - e) 2 Nos.: Double acting hydraulic cylinder for Bin lifter (OPTIONAL).
3. Cylinder rods of all cylinders shall be constructed of high strength, hardened steel rods, centreless ground to an RMS smoothness rating of 8 and shall be hard chrome plate to a minimum thickness of 0.13 mm.

4. All cylinder rod seals shall be able to be field tightened to compensate for normal wear of seals.
5. Pin mounting connections of packer and compaction cylinders shall incorporate hardened spherical bushings on hardened pins where necessary.
7. The cylinders should be reputed make.

HYDRAULIC RESERVOIR TANK AND FILTERS:

The reservoir tank shall be minimum 70 liters capacity and includes a sight fluid level indicator, spin on return filter of 10 micron rating, suction line shut-off cock, and filter cap with chain to prevent loss.

j) SAFETY FEATURES:

1. Hose burst valve shall be fitted to the system to prevent the tailgate descending in the event of the hydraulic failure. Emergency stop switch shall be provided to stop all the operations instantaneously in case of emergency. The switch shall be provided on either side of the vehicle and in the driver's cabin.
2. There shall be a 'body prop' provided on the tailgate to hold the tailgate in the open position for safety of workshop personnel when entering the body for maintenance or repair.

k) STANDARD ACCESSORIES

Following accessories as a part of the machine shall be provided alongwith each model to enhance the performance and safety features of the machines.

- (i) Mud flaps - 2 nos.
- (ii) Mud guard – 2 Nos.
- (iii) Aluminium chequered plate lockable tool box – 1 No.
- (iv) Rotating beacon with cabling – 1No
- (v) Flash Lamp with cabling – 1 No.

l) PAINTING

The entire unit shall be painted with two coats of superior quality anti-corrosive primer with two coats of approved quality paint. The bidder shall get the paints and shades approved from the client.

m) TESTING AND INSPECTION:-

- (i) All inspection, examination and testing shall be carried out in accordance with the technical specification.
- (ii) If the Engineer's Representative/s witness a test they shall be given a copy of the test result and certificate, upon request.