

Warranty

(ART. 6 GENERAL TERMS OF SALE)

The dump body is covered by a 12 (twelve) month warranty starting from the date of delivery of the vehicle. Any repairs or maintenance interventions that become necessary during the warranty period must be carried out exclusively at our plant or at the premises of one of our authorised service centres. The warranty is limited to the replacement of parts that develop faults due to defective workmanship or materials, and the relative labour costs. Inspection of defective parts or identification of possible causes of faults must be carried out exclusively at the headquarters of Cantoni & C. or on the premises of its authorised service centres.

The Warranty does not cover parts subject to normal wear and tear and will lapse if the dump body is modified, tampered with, or disassembled, even partially, by non-authorised repair shops. The Warranty will also be automatically invalidated if the dump body is loaded in excess of the rated loading capacity specified in the vehicle's logbook.

The Warranty does not cover faults caused by incorrect use, negligence, or due to failure to perform routine servicing. The Warranty does not cover the cost of transporting the vehicle to our plant or to our authorised service centres, nor does it cover any losses arising through unavailability of the vehicle or any whatsoever other costs and expenses. Any replaced parts that are not covered by the terms of the Warranty will be charged on the basis of the Price List in force at the time the work is carried out.

This Certificate must be rigorously retained together with the other vehicle documents and produced at the time of any warranty claims

USE AND MAINTENANCE HANDBOOK

Revision: 06 Edition: January 2016

STRADALE, SEMIROCCIA and ROCCIA type dump bodies
(Light, Medium, and Heavy ranges)



**READ THE CONTENTS OF THIS HANDBOOK
CAREFULLY BEFORE USING THE DUMP TRUCK !**



INTRODUCTION

This use and maintenance handbook defines **terms of use provided by the manufacturer:**

CANTONI & C

Via Roma, 9
20010 Boffalora Sopra Ticino (MI)
ITALIA

It contains all the information needed to get the best use out of CANTONI dump truck in conditions of maximum safety.

The handbook is addressed to vehicle operators and to whom is responsible for maintenance and repair works.

Before using the dump truck you must read the information in this manual carefully in order to gain familiarity with the exact operation of the equipment and the relative manoeuvring procedures, to work in safety conditions.

Incorrect manoeuvres or insufficient maintenance can cause serious damage to the dump truck and impair the overall level of safety.

This handbook must be kept in a safe place and be available to the operator at all times.

This handbook reflects the current state of the art in the construction of the dump body. The manufacturer reserves the right to make improvements whenever it deems appropriate with no obligation of prior notification. The dump truck you have purchased may incorporate improvements with respect to the features described in the latest revision of this manual.

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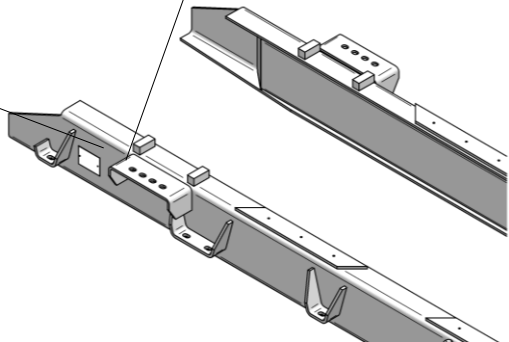
5. PROBLEMS OF USE

- 5.1 Problem**
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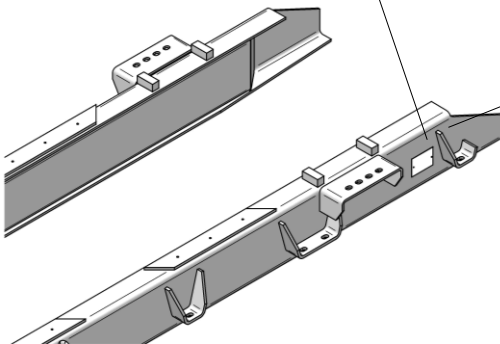
1. DUMP BODY

1.1 Identification

- 1.1.1 The dump body is identified in terms of Type and Serial Number as punched on the dataplate shown below, complete with the Year of Manufacture, Technical Payload, and chassis number of the vehicle on which the dump body is installed.
- 1.1.2 The dataplate, which complies with the requirements of the EC "Machinery Directive" 2006/42/CE , bears the **CE** marking. The dataplate is located on **the outside of the left-hand subframe side member, in the forward section.**



1.1.3 Dump bodies installed on vehicles registered in Italy are identified also by a dataplate complete with: Type and Serial number of the dump body, Type and Chassis number of the vehicle and, when specified, Approval number of the converted vehicle.
 The dataplate is located on the **outside of the right-hand subframe side member, in the forward section.**

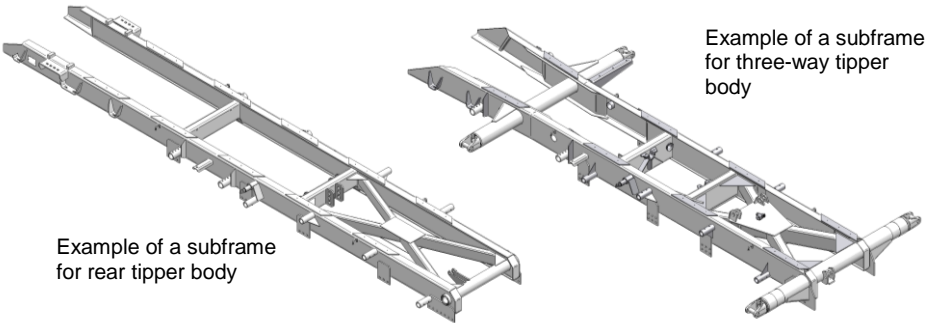


1.2 Description

The tipper body is made by the following components:

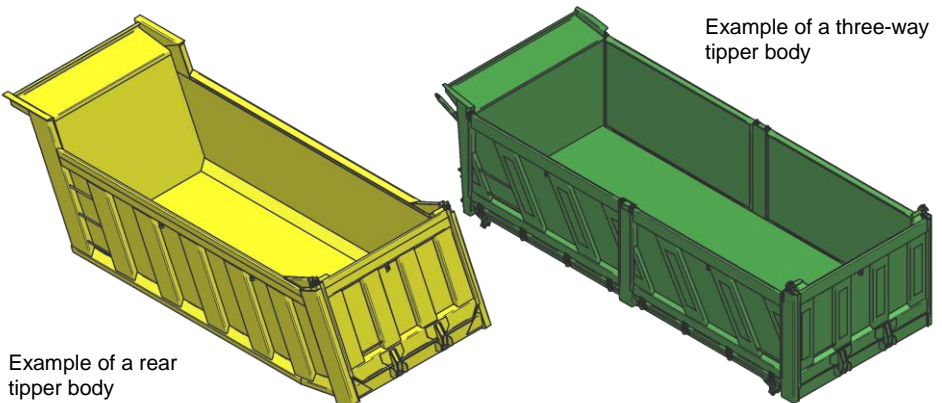
1.2.1 Subframe:

The subframe is composed of welded steel profiles; its function is to reinforce the chassis of the vehicle to which it is bolted. The subframe accommodates the lifting gear and relative hydraulic system.



1.2.2 Load body:

The body is composed of a load floor complete with side boards and a tailgate of various different types in accordance with the specific type of dump truck. The load-bearing frame is fabricated from pressed steel profiles. The panels making up the load floor and the sides are in different gauges and materials in relation to the specific type of use for which the dump truck is designed.



1.2.3 Lifting system:

The lifting system is composed of a telescopic cylinder that tips the dump body, which is articulated on specially designed spherical or cylindrical pivots.

Example of a telescopic cylinder for rear tipper body



Example of a cylinder for three-way tipper body



1.2.4 The hydraulic system, made up of the following parts:

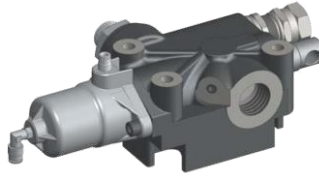
- *Power take-off.* the power take-off is fitted to the vehicle gearbox, which provides the necessary drive. The power takeoff is engaged by a pneumatically-operated clutch controlled from the vehicle cab.



- *Pump:* the pump is driven by the power take-off to which it is mounted by means of a flange coupling. The pump draws in the oil from the hydraulic tank and delivers it under pressure to the directional control valve.



- *Directional control valve*: the directional control valve distributes the pressurised oil to the services in accordance with the required operations of lifting or lowering of the tipper body. The directional control valve is composed of an open-centre spool valve, a non-return valve that allows to keep the body in its lifted position, and a *pressure relief valve* that protects the various parts of the system from possible overpressure conditions.

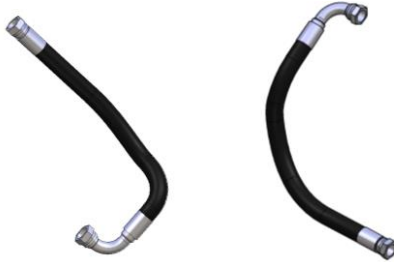


IT IS STRICTLY FORBIDDEN TO MODIFY THE SETTING OF THE PRESSURE RELIEF VALVE.

- *Oil tank*: the oil tank supplies the oil required for operation of the dump body. The tank is equipped with a vented filler plug and, if located at the side of the frame (i.e. in a visible position), with a level gauge. If the oil level is too low the pump may draw in air, while if it is too high oil may leak from the vent hole in the filler plug



- *Piping:*
 - *suction* (from tank to pump)
 - *delivery* (from pump to directional control valve)
 - *delivery/return* (from directional control valve to lift cylinder)
 - *return* (from directional control valve to tank)



1.2.5 Controls and indications

The operating controls for the dump truck, connection of the power take-off, and lifting and lowering of the load body, are installed inside the cab in order to prevent any possible inadvertent activation. Engagement of the power take-off is signalled by a warning light in the cab, while the tipper body lifted condition is signalled by an acoustic sounder that is audible in the immediate area of operation of the dump truck. If necessary, the emergency stop function can be activated by stopping the vehicle engine.



1.3 Essential safety requirements (ESR)

- 1.3.1 The dump body is constructed in compliance with the "Machinery Directive" 2006/42/CE and subsequent amendments
- 1.3.2 The equipment complies with the following Italian standards: UNI 10691, UNI 10692, UNI 10693, UNI 10694, UNI 10695, which regulate the dump truck risk analysis and determine the relative ESR.
- 1.3.3 *Construction criteria:*
- The members of the load-bearing structure are designed in accordance with the rules of calculation issued by the Motorizzazione Civile Italiana (Italian vehicles authority), to ensure adequate resistance and safety in relation to the intended Conditions of Use.
 - The dump body and relative systems are installed on the vehicle in accordance with best workmanship practices and in strict compliance with the instructions of the vehicle manufacturer.
 - Construction site dump bodies are equipped with elastic bumpers between subframe and load body in order to reduce vibration and noise emissions. In any case, the dump truck conversion never influences the sound emission level measured in compliance with EC directives at the time of type approval testing of the vehicle with cab.
 - The dump body controls, featuring "maintained action" type operation, are safe, reliable, and designed in accordance with basic logic criteria. Controls are clearly visible and marked in such a way as to assure coherent, practical, and safe manoeuvres.
 - The high pressure fluid pipelines are designed to withstand the calculated stresses with an ample safety margin in conditions of the maximum permissible load as specified in the project.
 - The hydraulic, pneumatic, and electrical systems are fully tested and checked.
- 1.3.4 *Safety devices:*
- A pressure relief valve incorporated in the directional control valve safeguards the various elements of the hydraulic system from excess stress caused by overpressure.
 - A stroke limiting device determines the maximum tipping angle of the body.
 - In the standard version the reargate is released automatically when the body starts tipping; the hook closes only with the body in its rest position.
 - Dump bodies with multi-side tipping are equipped with removable pin that link the pivots of the tipping movement and determine rear or side lifting of the body in an unequivocal manner, preventing lifting in the direction of the cab and providing the facility to inhibit body lifting.

- Dump bodies installed on vehicles which Gross Weight exceeds 15 tonnes are equipped with steel tie rods fitted between body and subframe, or with rubber bumpers at the rear of the chassis in order to protect the equipment from recoil impact.
- All points of the dump body requiring periodic servicing are easily accessible. The equipment is supplied with a safety bar to support the raised body during maintenance work.
(See Maintenance Prescriptions, point 4.1.3).
- Residual risks are highlighted by warning plates as specified below.
- Warning plates for residual risks

	<p>Do not occupy work area during tipping operations; do not lean your body in the area under the dump body</p>
	<p>Always fit the safety bar during maintenance work with the load body in its raised position.</p>
	<p>Do not stand in the unloading area. Adopt the maximum caution during the opening of the side board.</p>

1.3.5 Guarantee of risk-free operation

- Observation of the instructions given in this handbook, in particular, observance of the Prescriptions for Use and Prescriptions for Servicing given in the following chapters.

2 OPERATING PRESCRIPTIONS – Conditions of use

2.1 Configuration of the vehicle

2.1.1 Before loading/unloading the body, ensure:

- your personal safety;

- that you have an adequate view of the working area (construction site) in order to ensure the absence of persons, animals, or property that may be hit by unloaded material;
 - that the lifting movement of the tipper body can be performed without any obstructions such as scaffolding, bridges, balconies, and – in particular – overhead electrical power lines;
 - that the stationary vehicle is level respect to its longitudinal and trasversal axis;
 - that the vehicle is at a stationary position with the gear lever set to neutral;
 - that the vehicle's parking brake is applied;
- 2.1.2 While tipping the body, in order to safeguard the lifting system (especially the pump), make sure that the engine of the vehicle does not exceed an engine speed of 1000 rpm;
- 2.1.3 After dumping the material and before moving with the vehicle, make sure that:
- the dumped material is not in a position where it may obstruct the return of the tipper body to its rest position;
 - the power take-off has been switched off (a warning light in the cab is on when the power take-off is engaged);
 - the tipper body has been fully lowered (the body in raised condition is signalled by an audible warning signal);
- 2.1.4 To avoid the risk of damaging the lifting cylinder, the body must not be left in the raised position – even when the vehicle is at a standstill.



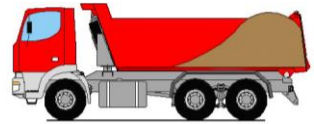
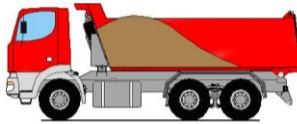
IMPROPER USE OF THE DUMP BODY IS STRICTLY PROHIBITED!

2.2 Configuration of the load

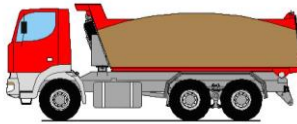
- 2.2.1 The weight of the load must never exceed the Payload value specified in the vehicle logbook.
- (Overloads will compromise the correct operation of the dump body and increase the risk of accidents and the dangers associated with road circulation of the vehicle).
- 2.2.2 Ensure the side boards and rear gate are closed.
- 2.2.3 When loading the body, bulk material must be dropped into the body from the minimum possible height.

- 2.2.4 Heavy materials such as boulders or demolition blocks must be placed carefully on the body floor; never allow heavy blocks or boulders falling into the body. To load this type of material, it is recommended to apply a layer of sand (or other inert material) in order to damp the impact with the body.
- 2.2.5 Distribute the payload uniformly in the body both lengthwise and crosswise.

NO



YES



DO NOT OVERLOAD THE VEHICLE!



ENSURE THE SIDE BOARDS AND REAR GATE ARE CLOSED!

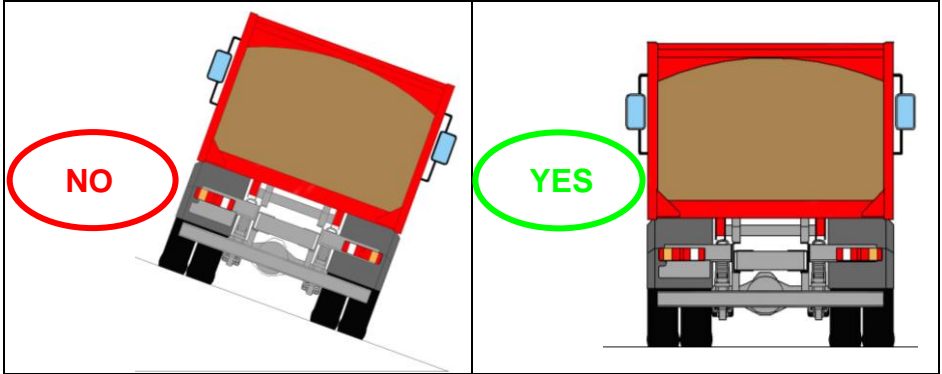


LOAD THE VEHICLE CORRECTLY!

2.3 Unloading conditions

2.3.1 Before dumping the load, check the condition of the ground:

- the vehicle must be standing on stable soil that does not allow the tyres to sink to the ground.
- the tyres must be in contact with a flat area of ground when dumping loads on uneven ground make sure the body is horizontal before proceeding.



2.3.2 Before tipping and at the start of the tipping movement make sure that the material does not adhere to the inside walls of the body, particularly with:

- soil with high clay contents (agricultural soil);
- sand with high contents of binder material;
- frozen material due to low ambient temperatures.

2.3.3 It is extremely hazardous to agitate the tipper body in the attempt to facilitate the unloading of the material.

2.3.4 Do not tip the body in case of to strong wind.



DUMP LOADS EXCLUSIVELY ON FLAT, STABLE GROUND!



SUPERVISE THE STEADY DESCENT OF THE BODY DURING UNLOADING OPERATION!



DO NOT AGITATE THE BODY DURING TIPPING!

3 OPERATING PRESCRIPTIONS – Manoeuvring instructions

3.1 Opening of reargate or sideboards – Position of the pivot pins

3.1.1 The reargate in the standard configuration is equipped with an automatic release device that is activated as the body starts to tip.

The reargate can be optionally equipped with a manually operated horizontal opening system:

insert the pin provided into the lateral hinge; release the upper pivot pins; use the relevant handle to disengage the lower latches.

Perform this manoeuvre only when the body is empty!

3.1.2 The sideboards in the standard version (three-way tipper) are opened manually by a the specific handle located at the end of the body.

3.1.3 In case of three-way tipper, before starting the tipping movement, check that:

- pins are correctly inserted in the pivot points for tilting, to ensure that the body lifts on the required side.
- the reargate or side board on the side towards which the body is to be tipped has been released.

3.1.4 The reargate and side boards can be optionally equipped with specific hydraulic/pneumatic opening devices with controls located in the operator cab. In this case the relative operating instructions will be shown on a specific instruction sheet.



ALWAYS CHECK THAT THE SIDE BOARDS / REARGATE OPEN CORRECTLY!



OPEN THE SIDE BOARDS AND STAND WELL CLEAR OF THE AREA IN WHICH THE LOAD WILL BE DUMPED!

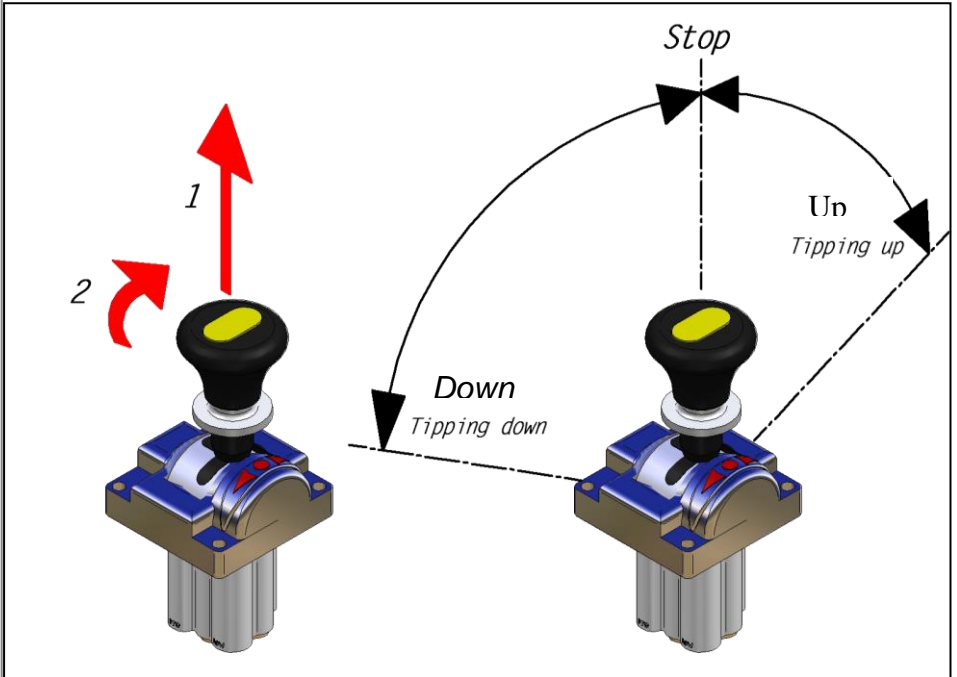


MAKE SURE THE PIVOT PINS ARE CORRECTLY POSITIONED!

3.2 Body tipping controls

(System with power take-off and pneumatic modulator)

3.2.1. Controls: located alongside the driver seat



N. B. In the case of controls provided by the vehicle manufacturer, consult the "Vehicle Owner's Handbook".



IF IT BECOMES NECESSARY TO PERFORM AN EMERGENCY STOP, SWITCH OFF THE VEHICLE ENGINE!

3.2.2 *Lifting*

- The joystick is in the Stop position.
- With the vehicle engine running (neutral gear selected) press the clutch pedal fully down and wait a few seconds to allow the transmission gears to stop.
- To engage the power take-off, lift the collar and move the lever of the modulator into the slot.

Engagement of the power take-off is confirmed by illumination of a red indicator light.

- Release the clutch pedal
- Unlock the Joystick by lifting the collar and hold it « tipping up » in position.
- The body starts the tipping movement and continues to lift until reaching the maximum height as determined by the stroke limiting device.
In the standard version the rear gate is released automatically when the body starts tipping.
- Release the Joystick which automatically returns to the Stop position.
The body keeps its raised position.
- During the tipping operation, when releasing the Joystick that features maintained action type operation, the body will stop lifting and remain in its current position (see image on the previous page).

3.2.3 *Lowering*

- The joystick is in the Stop position.
- Disengage the P.T.O. by lifting the joystick and hold it in « tipping down » position.
The body lowering movement starts.
- Adjust the lowering speed of the tipper body. The speed increases by shifting the Joystick downward.
- Release the Joystick which automatically returns to the Stop position.
In the standard version the rear gate locks automatically when the body reaches its rest position.

- During the lowering phase, when the Joystick is released, as it features maintained action type operation, the body will stop the downward movement and remain in its current position.

During the entire tipping phase an audible sound will warn that the body is raised.



MAKE SURE THE SIDE BOARDS/REARGATE ARE CORRECTLY CLOSED!



MOVE THE VEHICLE ONLY WHEN THE BODY IS IN ITS REST POSITION!

N.B.

- The lever of the modulator may not include the control of the PTO: in this case, it can be engaged with a pneumatic switch on the side of the lever.
- The look of the pneumatic modulator in the cabin may be different from the one shown in the previous image, but the operating system is always the same.

4. MAINTENANCE PRESCRIPTIONS

The use of the equipment in accordance with the designated « Prescriptions for Use » together with a properly executed maintenance are the best possible guarantee of lasting efficiency of the dump truck and minimize the need for repairs.

To facilitate maintenance operations, all parts subject to adjustment, lubrication or cleaning can be easily reached in order to allow to work with the minimum effort and in safe conditions.

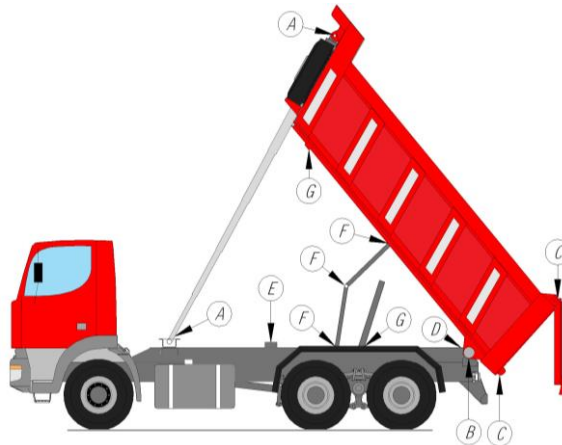
4.1 Preventive maintenance

- 4.1.1 Observe the general accident prevention regulations.
- 4.1.2 Work only when the vehicle is parked with the parking brake applied and disconnected from sources of power (switch off the ignition key and, if necessary, disconnect the battery).
- 4.1.3 When work must be performed with the body in its raised position, **it is absolutely mandatory to use the SAFETY BAR** which is normally stowed in its housing under the body. The bar is pivoted to the subframe and identified by a specific warning plate.
- 4.1.4 Even though the safety bar must be used, it is still strictly prohibited to work under the body when it is fully or partially loaded.
- 4.1.5 Fill in the register of inspections and repairs (see the attached table II).

4.2 Washing and Greasing

- 4.2.1 Wash the dump body every month, carefully removing all dust and remains of materials that could otherwise damage the paint and compromise the proper operation of the various devices.
- 4.2.2 Wash using cold or lukewarm water. Do not wash any parts of the system with high pressure washers.
- 4.2.3 Grease parts in contact with each other and the pivots by way of the dedicated grease nipples (if present). Specifically:
 - A) Supports of the lift cylinder and cradle
 - B) Tipping pivots
 - C) Side board and rear gate, hinges and latches
 - D) Cam levers and swivel joints for opening of the rear gate
 - E) Body guide plates
 - F) Stabilizing-bar
 - G) Attachment points of stroke limiting and safety cables
 - H) Return springs

- I) Accessories: winches, safety bar and other accessories supplied with the dump body.
- 4.2.4 Grease the parts once a month and, in any case, after washing the dump body and after any work performed in demanding conditions with particularly aggressive and/or abrasive materials such as, for example, very high concentrations of dust, humidity, substances with high salt contents.
- 4.2.5 Use Grease with a high pour point ($\geq 180^{\circ}\text{C}$) featuring elevated resistance to mechanical stress. Do not use grease containing acid, naphtha, or solid particulate.



4.3 Checking the Hydraulic Oil

- 4.3.1 Once a week check the hydraulic system for possible external or internal leakage of oil in the power take-off / pump.
- 4.3.2 Each month (or after 200 working hours) check for possible leakage of oil from the junction points of the hydraulic system, working due to vibration generated when the vehicle is travelling/working. If necessary, tighten ringnuts, hose clamps, and screws.
- 4.3.3 With the same frequency check for leakage from between the extensions of the lift cylinder due to wear of the seals. If you notice signs of leakage bring the vehicle to an authorised service centre.

- 4.3.4 Check also that the vent pipe of the oil tank filler plug is not obstructed and that the oil level in the tank is correct (see point 1.2.4. under the heading Oil tank).
- 4.3.5 If necessary, top up the oil or replace it if the characteristics of the original oil contents have altered due to ageing. Use Hydraulic Oil viscosity class 32/46 (ISO 3448) and viscosity index 106/110 (ASTM D2270).

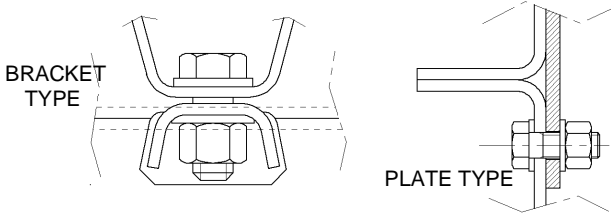


DO NOT WASTE SPENT OIL IN THE ENVIRONMENT!

4.4 Torquing of Threaded Fasteners

4.4.1 Once a month check the torque of the Subframe to Vehicle chassis fixing bolts.

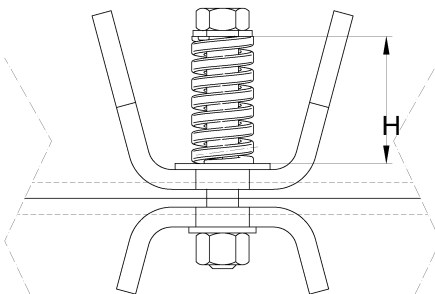
4.4.2 RIGID fixing



BOLT DIAMETER (mm)	TIGHTENING TORQUE (Nm)
∅ 10	55
∅ 12	100
∅ 14	150
∅ 16	235
∅ 18	330

4.4.3 FLEXIBLE fixing

Cylindrical coil spring with rectangular wire ISO12043



H spring <u>discharge</u> (mm)	H spring <u>compressed</u> (mm)
64	58
51	46

4.4.4 In the event of replacement, use fasteners with resistance class 10.9

4.5 Functions of controls and safety devices

Check the following aspects during normal use of the dump body at least once a month:

- 4.5.1 That the indicator symbols and warning plates are present and legible.
- 4.5.2 That the dump truck controls are working correctly, checking also that there are no leaks from the pneumatic circuit.
- 4.5.3 That the indicator light illuminates to signal engagement of the power takeoff.
- 4.5.4 Efficiency of the sounder signalling the "Body raised" condition
- 4.5.5 That the safety cables are not frayed and that the relative connection points are in good condition.
- 4.5.6 The efficiency of the stroke limiting device. On structures incorporating this solution, check the cable as per the previous point.
- 4.5.7 Functionality of the devices for insertion of the pivot pins to ensure the correct direction of tipping.
- 4.5.8 Perfect condition and functionality of the check valve and the pressure relief valve. Do not tamper with the valves!
- 4.5.9 If necessary, have the system checked by an authorised repair shop.



**BEFORE WORKING UNDER THE RAISED LOAD BODY:
MAKE SURE THE BODY IS COMPLETELY EMPTY!**



INSTALL THE SAFETY BAR!

4.6 Condition of wear of the dump body parts

Each month check wear of the dump body parts. Specifically:

- 4.6.1 The lift cylinder must be free of signs of scoring on the extensions. Clean the extensions to remove all traces of dust etc.
- 4.6.2 The tipping pivots must be free of clearance and the relative coupling pins must be in perfect condition.
- 4.6.3 The hinges and opening devices of the side boards and reargate must not have any excessively worn parts or show any signs of abrasion. Opening of the side boards / reargate must not result in mechanical interference with the bodyfloor or with the supporting uprights.
- 4.6.4 The reargate opening device and especially the engagement latch must show no signs of impact damage.
- 4.6.5 The load bearing parts of the structure must be free of fatigue cracks, particularly in the welds on the side members, cross-members, tipping cradle, pivots, brackets, posts and borders of the side boards.
- 4.6.6 Likewise, check the condition of the paintwork, paying special attention to any spots of corrosion due to the formation of rust.



USE EXCLUSIVELY GENUINE ORIGINAL CANTONI SPARE PARTS!

5 PROBLEMS OF USE

Table I - Anomalies of operation and use

5.1 Problem	5.2 Cause	5.3 Corrective action
The body fails to lift – even when empty	Power takeoff not engaged	Engage power takeoff
	Power takeoff faulty	Renew power takeoff
	Air leaks from pneumatic circuit	Tighten pipe connections
	Insufficient oil in hydraulic tank	Fill up the tank (see point 1.2.4 under the heading Oil tank)
	Hydraulic oil tank gate valve closed	Open gate valve
	Jamming of the directional control valve	Adjust the fixing screws (tightening torque: 20 Nm)
During lowering of the body oil spatter is projected from the hydraulic oil tank filler plug	Hydraulic oil tank too full	Adjust the oil level as specified in point 1.2.4 under the heading Oil tank
	Body lowers too fast when loaded	Lower the loaded body more slowly



REPAIRS MUST BE CARRIED OUT ONLY BY AUTHORISED REPAIR SHOPS!

5.1 Problem	5.2 Cause	5.3 Corrective action
"PTO engaged" indicator light fails to illuminate	Lamp burnt out or faulty switch/electrical system	Replace lamp or switch or check wiring
"Body raised" acoustic warning is not audible	Faulty sounder or switch	Replace sounder or switch
	No switch contact	Adjust position of switch
Safety cables are taut with body at maximum height	Stroke limit stop operates too late	Adjust the stroke limiting device so that it operates before the safety cables are taut
The body only lifts partially when loaded	Body overloaded or loaded excessively at the front	Load the body correctly (see point 2.2)
	Vehicle parked on excess downward gradient	Move the vehicle to level ground
	Insufficient oil in hydraulic tank	Fill up the tank as specified in point 1.2.4 under the heading Oil tank
	Pump capacity reduced due to wear	Replace pump
Body fails to remain in its lifted position when the joystick is released	Internal oil leakage in check valve or lowering valve of directional control valve	Clean the valves or replace them if necessary



THE PRESSURE RELIEF VALVE MUST BE CHECKED EXCLUSIVELY BY AUTHORISED PERSONNEL!

