



MANUAL
CONTROLLED
“H” AND “D”
TRUCK MIXERS



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1. GENERAL ISSUES

1.1. THIS “INSTRUCTIONS MANUAL FOR USE AND MAINTENANCE”:

- Shows the use of the machine foreseen by the project;
- Indicates the technical features of the machine;
- Provides instructions for displacement, installation, assembly, adjustment and use of the machine;
- Establishes maintenance interventions and the frequency with which they must be carried out;
- Provides indications on possible residual risks.

The Manufacturer declines any responsibility for the non-observance of the provisions relayed in this instructions manual for use and maintenance

NOTE: this “Instructions manual for use and maintenance” reflects the technical knowledge at the time of the machine’s commercialization and cannot be considered inadequate if updated on the basis of future experience developments.

The Manufacturer reserves the right to update its manuals without the obligation to redraft the previous versions. The user has the right to require all updated information directly from the Technical Assistance Service (see data on the cover).

1.2. PRESERVATION OF THE MANUAL

The “Instructions manual for use and maintenance” must be kept inside the vehicle’s cabin or in an accessible place always at hand for consultation.

1.3. DEFINITIONS

1.3.1. Dangerous zones

Any area inside or in the proximity of a machine which may constitute a risk to the safety of the person or persons entering the area.

1.3.2. Operator

The person or persons assigned to start up machine functions, regulate, or carry out maintenance and cleaning the plant’s equipment.

1.3.3. Trained personnel

Qualified personnel and/or those under the surveillance of qualified personal trained to avoid danger arising from the improper use of the machine.

1.4. SAFETY AT THE WORKPLACE

1.4.1. Personal Safety Equipment

ALWAYS WEAR suitable personal protection apparel which must always be kept in good conditions and correctly worn.

IT IS FORBIDDEN to wear personal clothing at the workplace or clothing that may give rise to danger.

1.4.2. Special provisions

DURING USE AND MAINTENANCE, THE FOLLOWING PROVISIONS MUST BE STRICTLY OBSERVED



ATTENTION! The manufacturer declines any responsibility for damage to things or persons arising from the failure to observe the provisions here listed.

1. The safety devices provided on the truck mixer **MUST** always be kept in perfect working order.
2. All the interventions that require access to the maintenance zone and/or to the temporary deenergizing of one or more safety devices **MUST** be performed only when the truck mixer is at a complete standstill, the motor must be turned off and the keys to the command panel and/or vehicle kept by the operator.
3. When required for maintenance operations, voltage supply is cut off by disconnecting the vehicle's battery and/or auxiliary motor (read the instructions in the relevant manual carefully).
4. Always check the efficiency of safety devices installed before turning on energy supply.
5. The personnel assigned to maintenance **MUST** be trained and **MUST** have read and assimilated this “Manual of Instructions for Use and Maintenance”.
6. All the sign plates **MUST** always be kept whole and readable.



WARNING! IT IS FORBIDDEN to raise the truck mixer (mixer + vehicle) by utilizing the hooks preset on the mixer (these coupling points can be utilized only during the mounting phase. For raising the complete **TRUCK MIXER**, look up in the use and maintenance manual of the vehicle on which the mixer is installed).

1.5. FORESEEN USE AND MARKING

The CONCRETE MIXERS have been designed, built and tested in full compliance with the directives: 2006/42/CE, 2006/95/CE, 2000/14/CE, 2004/108/CE and subsequent modifications and are intended solely for the **transportation and distribution of concrete**.

Key:

- A:** Identifies the designation of machinery
- B:** Indicates the type of machinery
- C:** Indicates the serial no.
- D:** Indicates the year of construction
- E:** Indicates the weight
- F:** Indicates the required power

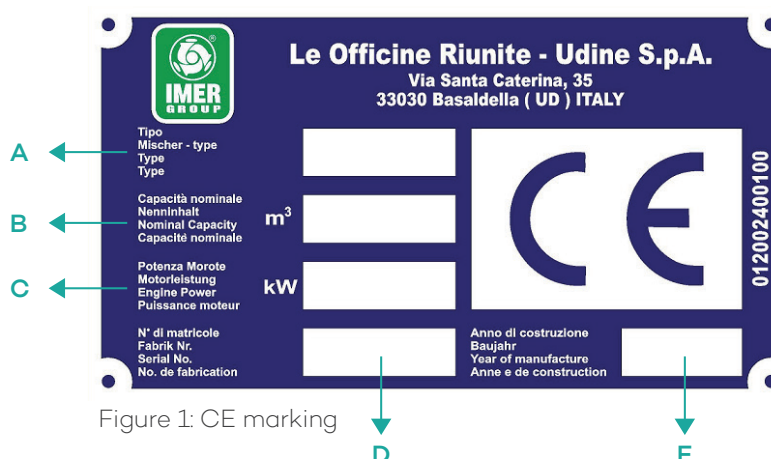


Figure 1: CE marking

2. CHARACTERISTICS

2.1. TECHNICAL SPECIFICATIONS

2.1.1. Technical Data

MODEL	Nominal capacity m ³	Geometric volume m ³	Max power kW	Rotating speed 1/min.	Water meter m ³ /h	Water tank l
LT3.7	3	7,244	35	0-14	20	315
LT5.7	5	8,721	40	0-14	20	650
LT6.7	6	10,125	46	0-14	20	650
LT7.7	7	12,022	52	0-14	20	650
LT8.7	8	13,116	58	0-14	20	650
LT8XL.7	8,5	13,902	58	0-14	20	650
LT9.7	9	16,048	70	0-14	20	650
LT10.7	10	17,542	77	0-14	20	650
LT11.7	11	19,628	77	0-14	20	650
LT12XL.7	12	20,300	77	0-14	20	650
LT14.7	14	22,800	77	0-14	20	650
LT15.7	15	25,560	90	0-14	20	650
LT35I	3	7,244	35	0-14	20	280
LT90I	9	13,116	70	0-14	20	1000
LT95I	9	14,862	70	0-14	20	1000
LT105I	10	16,081	77	0-14	20	1000
LT130I	12	17,492	77	0-14	20	1000
X-DRIVE 115	11,5	17,677	11,646	77	0-14	20
X-T 115	11,5	17,677	11,646	77	0-14	20

2.1.2. Environmental conditions

Working temperature limits	$0 \div +50\text{ }^{\circ}\text{C}$
Temperature limits at standstill	$-15 \div +60\text{ }^{\circ}\text{C}$

2.1.3. Sound emissions

The value of sound emission guaranteed by the truck mixer (Lwa) measured in compliance with the Directive (2000/14/CE) and with the technical norms of reference EN ISO 3744, vary according to the type of installation and vehicle and reach a maximum value of Lwa 115 dB (A) for installation with POWER TAKE-OFF (PTO), whereas it is at Lwa 121 dB (A) for installations with donkey motors. Given the variability of values, each truck mixer is equipped with an identification plate conforming with Directive (2000/14/CE) located on the higher deck of the machine and contains the exact value of sound emissions guaranteed for the type of installation.

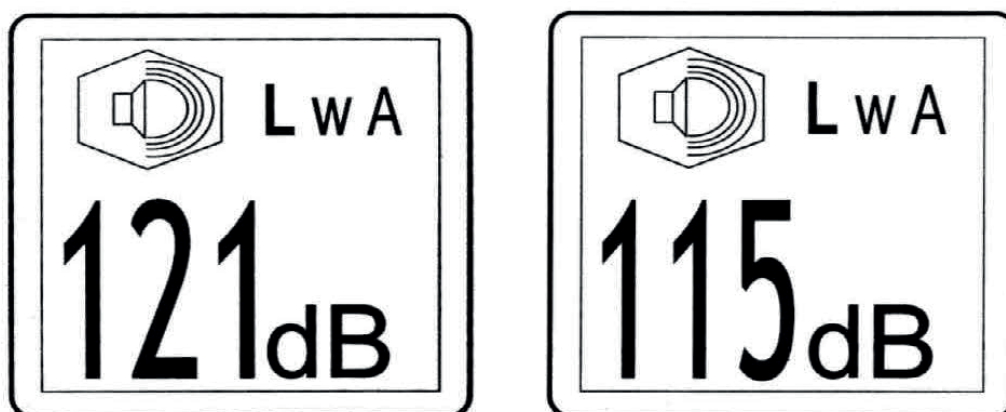


Figure 2: Plate indicating guaranteed maximum sound emissions

The level of sound emissions to the operator's ears were tested in pursuance of Presidential Decree (DPR) 459 and of Directive 98/37/EC is established at 80 dB(A).

2.1.4. Dimensions and weights

MODEL	Min. Length mm (H)	Min. Length mm (D)	Height mm	Weight Kg (H)	Weight Kg (D)
LT3.7	4500	4510	2302	2650	3050
LT5.7	4990	5258	2436	2900	3350
LT6.7	5349	5586	2533	3100	3600
LT7.7	5872	6075	2683	3350	3850
LT8.7	6280	6517	2735	3550	4050
LT8XL.7	6143	6720	2716	3650	4150
LT9.7	6805	6910	2732	4200	4700
LT10.7	7145	7580	2792	4400	4900
LT11.7	7528	8118	2805	4800	5400
LT12XL.7	7595	8366	2841	4950	5550
LT14.7	8548	9145	2856	5200	6000
LT15.7	8903	9503	2893	5600	6300
LT 35I	4500	4510	2302	2650	3050
LT90I	6146	6146	2735	4100	4750
LT95I	6423	6423	2803	4326	4976
LT105I	6694	6757	2800	4394	5094
LT130I	7050	7110	2810	5150	5850

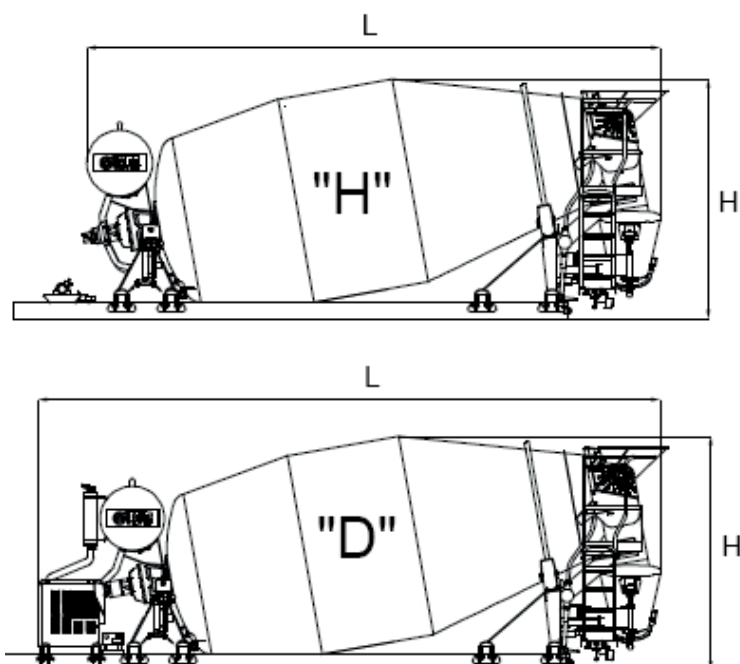


Figure 3: Measurement specifications

2.2. DESCRIPTION OF THE MACHINE

2.2.1. Identification of TRUCK MIXER VERSION “H” parts (power take off)

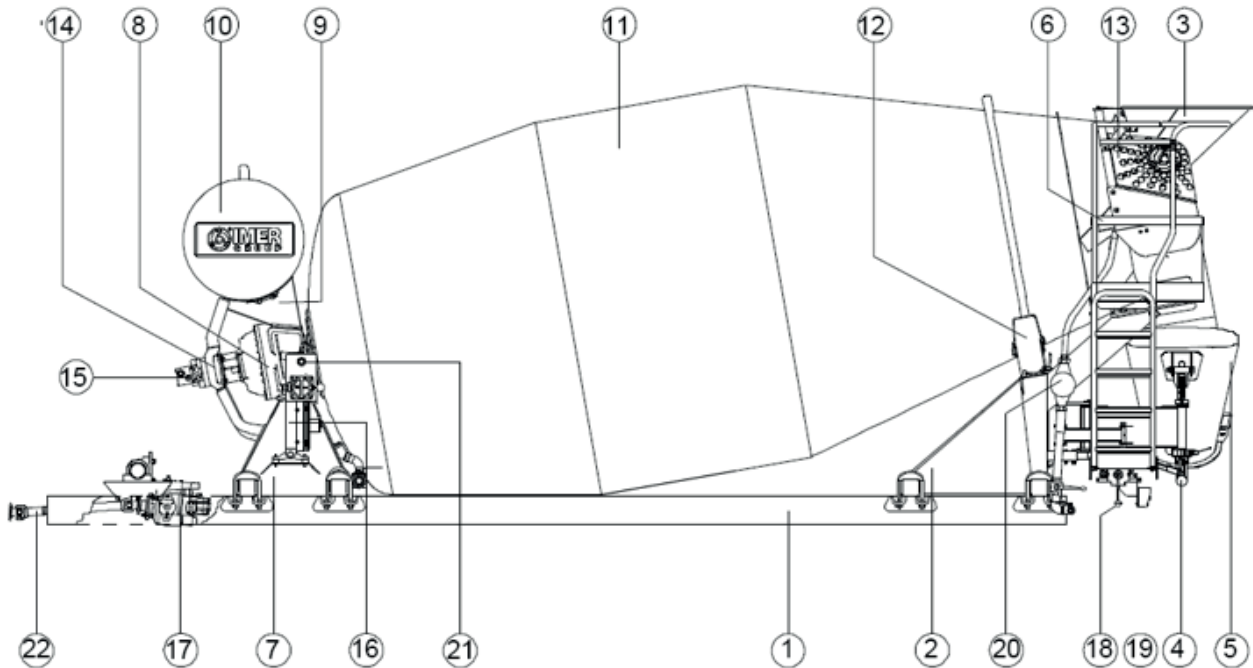


Figure 4: Identification of the version “H” parts

1	CHASSIS	12	DRUM ROLLING ROLLERS
2	ROLLER CARRIER FRAME	13	PROTECTION
3	LOADING HOPPER	14	WATER PUMP
4	CHUTE RAISING JACK	15	HYDRAULIC MOTOR
5	DISCHARGE CHUTE	16	HEAT EXCHANGER
6	INSPECTION LADDER	17	HYDRAULIC PUMP
7	REDUCER CARRYING FRAME	18	DRUM ROLLING COMMANDS
8	REDUCER	19	EDC GAS + GAS COMMANDS
9	TANK SUPPORT HOUSING	20	LITRE COUNTER
10	WATER TANK	21	OIL TANK
11	DRUM	22	CARDAN DRIVE

2.2.2. General Description of the version (H) Truck Mixer

The truck mixer is composed of a false chassis (1) designed in harmony with the technical prescriptions of the truck manufacturers. This chassis is the base on which the frame of roller carrier (2) is fixed, together with the discharge hopper, the reducer carrying frame (7) and the hydraulic pump (17). The movement of the drum (11) is managed and controlled through manual lever commands (18) located at the rear end of the mixer truck in proximity with the discharge point. A control device called EDC GAS+ GAS- (19) located near the discharge chute, allows to control the number of motor revolutions, from the working minimum up to the maximum value set during parameterization phases. The loading hopper (3) which can be disassembled, is connected to the roller carrier frame (2) by means of a tubular suspension.

The revolving discharge chute (5) is completely foldable on the side of the mixer truck and a jack (4) allows height regulation. The reducer carrier frame (7) supports an elliptical reducer (8) and is connected to the frame (1) by means of special bolted anchorage. The support housing (9) of the water tank and relevant reserve tank (10) are mounted on the reducer. The control of the water flow is effected through a litre counter (20). The drum (11) is sustained by two to four rollers (12), in special steel, secured to the roller carrier frame (2). The water pump (14) is flanged directly to the reducer or activated by a hydraulic motor. The protection (13) located in correspondence to the mouth of the drum which is accessed through the inspection ladder (6) is secured to the suspension that supports the discharge drum (3) and limits possible abrupt movements of the empty drum by means of apposite screws. The hydraulic group is composed of a hydraulic pump (17) and a hydraulic motor (15) and by the heat exchanger (16) equipped with an oil tank (21). The movement transmission between the power take off of the vehicle and the hydraulic pump (17) is carried out through the cardan drive (22).

2.2.3 Identification of the parts TRUCK MIXER VERSION “D” (auxiliary motor)

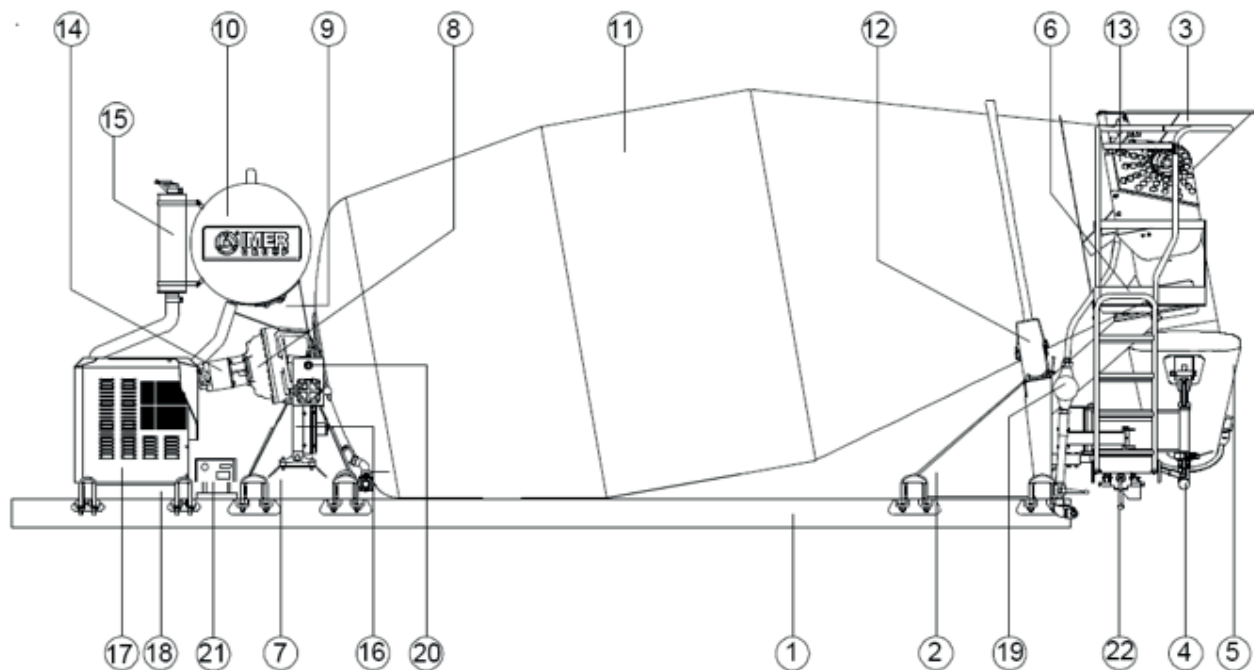


Figure 4: Identification of the version “D” parts”

1	CHASSIS	12	DRUM ROLLING ROLLERS
2	ROLLER CARRIER FRAME	13	PROTECTION
3	LOADING HOPPER	14	HYDRAULIC MOTOR
4	CHUTE RAISING JACK	15	“DONKEY” ENGINE FUMES EXHAUST PIPE
5	DISCHARGE CHUTE	16	HEAT EXCHANGER
6	INSPECTION LADDER LANDING	17	“DONKEY” ENGINE
7	REDUCER CARRYING FRAME	18	SUPPORT FRAME FOR “DONKEY” ENGINE
8	REDUCER	19	LITRE COUNTER
9	TANK SUPPORT HOUSING	20	OIL TANK
10	WATER TANK	21	PANEL OF “DONKEY” ENGINE
11	DRUM	22	AUX. M. GAS+ GAS- & DRUM COMMANDS

2.2.4. General description of the Truck mixer version (D)

The truck mixer is composed of a false chassis (1) designed in harmony with the technical prescriptions of the truck manufacturers. This chassis is the base on which the roll carrier frame (2) is secured with a discharge hopper, the reducer-carrier frame (7) and the support frame (18) for the diesel donkey engine (17). The movement of the drum (11) and the acceleration of the GAS+ GAS- donkey engine are managed and controlled through two-lever manual commands (22) located at the rear end of the truck in proximity with the discharge point. The loading hopper (3) which can be disassembled, is connected to the roller carrier frame (2) by means of a tubular suspension. The revolving discharge chute (5) is completely foldable on the side of the mixer truck and a jack (4) allows height regulation. The reducer carrier frame (7) on which an elliptical reducer (8) is secured is connected to the frame (1) by means of special bolted anchorage. The support housing (9) of the water tank and relevant reserve tank (10) are mounted on the reducer. The control of the water flow is effected through a litre counter (19). The drum (11) is sustained by two to four rollers (12), in special steel, secured to the roller carrier frame (2). The water pump is activated by a belted transmission connected to the diesel donkey engine (17), or by a hydraulic motor. The protection (13) located in correspondence to the mouth of the drum which is accessed through the inspection ladder (6) is secured to the suspension that supports the discharge drum (3) and limits possible abrupt movements of the empty drum by means of apposite screws. The hydraulic group is composed of a hydraulic pump directly connected to the donkey engine (17) from the hydraulic motor (14) and by the heat exchanger (16) equipped with an oil tank (20). The donkey engine is equipped with an independent fumes exhaust pipe (15) and by a specific control panel (21).

2.2.5. Power supply

The movement of the truck mixer is carried out through a hydraulic circuit powered by a hydraulic pump which receives its movement directly from the power take off of the vehicle on which the mixer is installed (version “H”) or by a diesel donkey engine (version “D”) installed on the chassis of the truck mixer itself.

2.2.6. Management (version “H”)

The command and control equipment of this version is located at the rear end in proximity with the discharge point so as to facilitate the control functions. The possible options effected upon request concern variations in the basic configurations present and may consist in a repetition of the manual commands levers in the vehicle’s cabin for the management of the drum’s rotations and combined with the EDC device at the back, to which an accessory START STOP command to the vehicle motor may be provided.

2.2.7. Management (version “D”)

The command and control equipment of this version endowed with a donkey engine is located at the rear end in proximity with the discharge point so as to facilitate the control functions. In the cabin of the vehicle there may be also a repetition of the manual commands for the management of the drums rotations (optional feature, provided upon request). The donkey engine is equipped with a panel for activation and control and is located at the front part (towards the vehicle’s cabin) on the vehicle driver’s side.

2.3. DESCRIPTION OF THE WATER SYSTEMS

2.3.1. Water systems run by pumps

This water system consists of a tank (1), equipped with a graduated water dipstick (2), a pump (3) which can be directly flanged to the reducer or activated by a belt-transmission system from the auxiliary diesel motor if provided, or by a hydraulic motor, with a quick coupling connector (6), a ball valve (5), a filter (4), a valve (7) for loading water into the drum, a dosing unit (8), circuit drain valves (10), quick coupling connector (9), washing hose nozzle, load and delivery pipes.

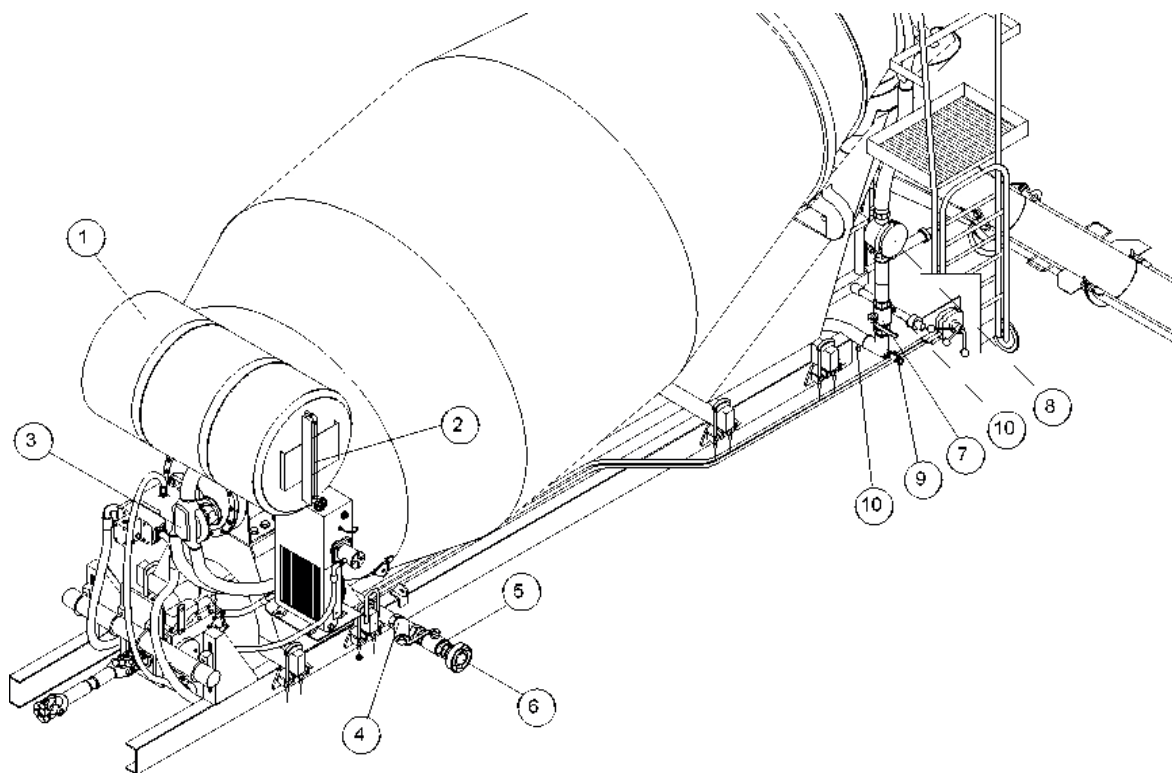


Figure 5: Description of the water system

2.3.2. Filling of water tank in the systems run by pumps

To fill the water tank, follow this procedure:

- 1) Check that the drum is at a standstill;
- 2) Check that the valve (5) is closed;
- 3) Check that the valve (7) is closed;
- 4) Check that the drain valves (10) are closed;
- 5) Connect the water loading hose to the quick coupling connector (6);
- 6) Open the valve (5);
- 7) The water level in the tank can be checked through the level display (2) fitted on the tank;
- 8) The tank is totally filled when the water overflows from the overflow pipe fitted on the tank itself;
- 9) Close the valve (5);
- 10) Disconnect the loading hose from the quick coupling connector.

2.3.3. Water systems functioning with compressed air

This system operates with compressed air. The compressed air is taken from the service tanks of the truck through an independent circuit.

ATTENTION! Operate the pressurized system only with truck mixer stopped. Before restarting the vehicle, make sure that the pressurized system is close, that is, that the “M” valve is set to the “1” position.

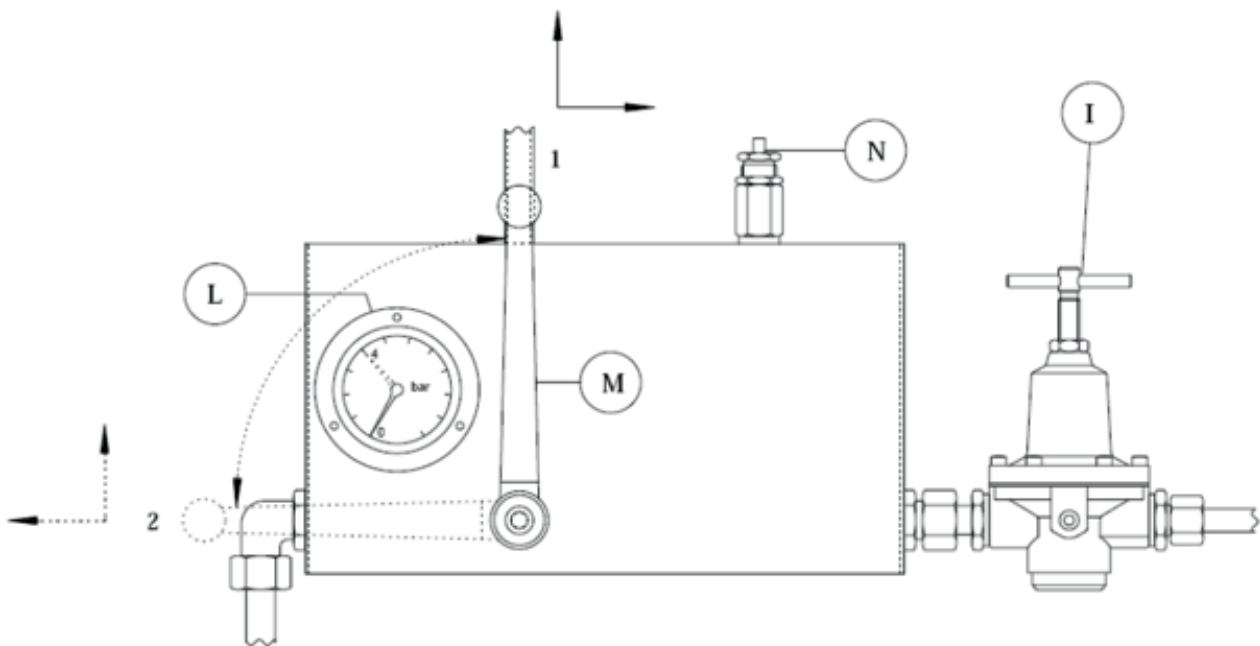


Figure 6: Compressed air control device

The system consists of a tank (1) equipped with water dipstick (2), a pressure reducer (I), a three-way valve (M), a safety valve (N), a manometer (L), a quick coupling connector (6), a valve (5), a filter (4), a valve (7) for water loading into the tank, a dosing unit (8), drain valves (10), a quick coupling connector (9), a washing hose nozzle, inlet and delivery pipes and air pipeline.

2.3.4. Filling the tank in water systems operating with compressed air

The air flow is controlled through the three -way valve “M”. Air pressure can be adjusted through the delivery regulator “I”. The value of such pressure can be read through the pressure gauge “L”. The whole system is protected with the safety valve “N” calibrated to 4.5 bars.



ATTENTION! Pressure can never exceed the value of 4.5 bars.

To fill the tank with water, follow this procedure:

- 1) make sure that the drum is not in motion;
- 2) check that the valve (5) is closed;
- 3) check that the valve (7) is closed;
- 4) check that the drain valves (10) are closed;
- 5) turn the lever of the three-way valve until it reaches the “2” position (Figure 6) so as to interrupt the compressed air flow to the tank and allowing water filling;

- 6) open the valve (5);
- 7) the level of water in the tank can be checked through the level display (2) fitted on the tank;
- 8) close the valve (5);
- 9) disconnect the loading hose from the quick coupling connector (6);
- 10) turn the lever of the “M” valve (Figure 6) until it reaches position “1”: the compressed air flow to the tank is activated and the tank gets pressurized (4,5 bars at maximum) so as to release the required quantity of water.

2.4. HYDRAULIC SYSTEM

2.4.1. System components

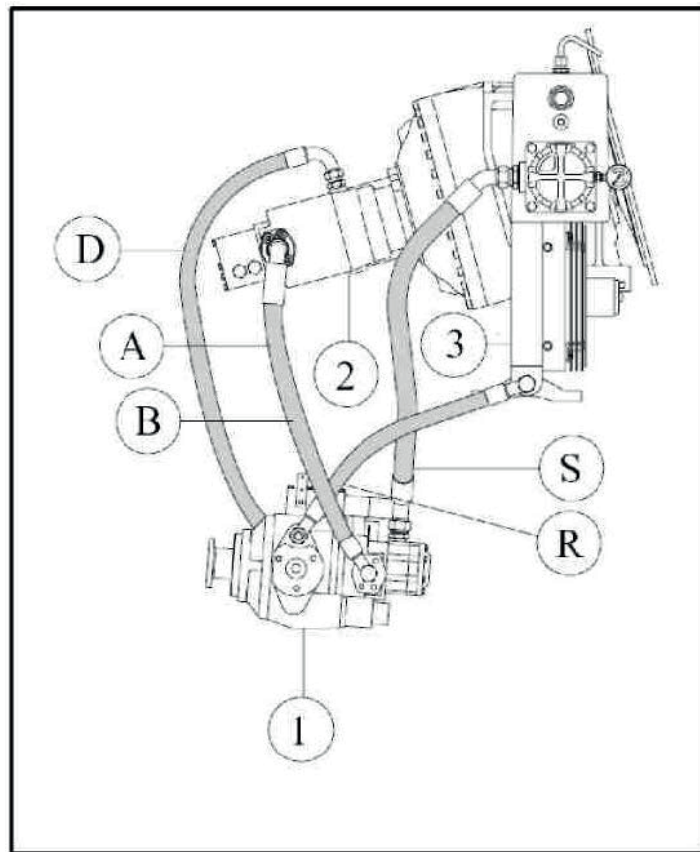


Figure 7: Identification of the water system components

- | | |
|-------------------|-----------------------|
| 1 Hydraulic pump | A High pressure pipes |
| 2 Hydraulic motor | B High pressure pipes |
| 3 Heat exchanger | D Leakage tube |
| | R Return pipe |
| | S Suction pipe |

3. GENERAL INFORMATIONS ON USE

3.1. LIABILITY AND MANAGEMENT

3.1.1. Responsible personnel

The purchaser or the user company is responsible in ensuring that only qualified personnel, authorized and trained beforehand, be assigned to the use and maintenance of the truck mixer.

Should accidents arise due to the violation of safety norms or due to carelessness or negligence by the personnel, the user company or the driver are held responsible by law.

IT IS FORBIDDEN to allow a person who has not been properly trained beforehand, to drive the truck mixer.

3.1.2. Work typology

This truck mixer was designed and manufactured for the transport of concrete, mortar, sand, gravel or similar material at a specific weight not greater than $2,4 \text{ kg/dm}^3$.

The nominal capacity of the truck mixer, expressed in m^3 , thus refers to the specific weight of $2,4 \text{ kg/dm}^3$.

Should there be need of transporting material at the specific weights greater than $2,4 \text{ kg/dm}^3$, the m^3 being transported must be proportionately reduced.



ATTENTION! If the load of the truck mixer is greater than the nominal capacity established, the guarantee will automatically expire.



ATTENTION! For safety reasons the truck mixer must be used in the way and for the finalities for which it was designed and constructed.

3.1.3. Specific safety norms

In addition to the safety norms stated in the manual for use and maintenance, all other norms for the prevention of accidents must be observed. Special attention must be focused on the following points.

- Do not load the truck mixer excessively; in all circumstances respect the maximum mass allowed by local laws and also that established by the truck mixer manufacturing company.
- For safety reasons the truck mixer must be used in the way and for the finalities for which it was designed and manufactured
- Always respect the safety distance from the drum when working or during manoeuvring phases.
- Nobody must transit in the zone under the unloading channel during manoeuvring phases.
- The plates bearing information and/or instructions must always be kept clean and readable.
- If the work is to be carried out in the proximity of public places, make sure that the traffic or pedestrians do not transit in dangerous zones, which must be signalled out with appropriate signs and safety devices according to the circumstances.



ATTENTION! Repairs, maintenance etc. must be carried out when the truck is at a standstill, with the power take off disconnected, the vehicle motor deactivated and the auxiliary motor (if any) must also must be turned off.

The maintenance operator MUST keep the keys to the truck and the keys to the command panel (if any).

The mechanical safety block of the drum MUST always be activated.

3.1.4.Risks arising from manoeuvres

Always stand at a safe distance from the rotating drum.

The truck mixer may represent a risk if manoeuvred negligently, in an incorrect manner or when manoeuvred by persons who are not familiar with the types of control and the truck's functions.

3.1.5.Risks arising from extraordinary maintenance operations

Extraordinary maintenance operations such as the replacement of the mixing spiral blades inside the drum or other parts subject to wear and tear, must be effected by qualified personnel and with the truck at a standstill and with the electric panel deactivated.

Whoever carries out maintenance operations must possess the key to activate and accede to the truck's cabin and also that to the command panel of the mixer.

Welding operations carried out inside the drum must be done with the help of an extractor fan and must use low voltage lighting equipment (24 V); the mechanical block of the drum must be inserted.



ATTENTION! For detailed information, refer to the specific chapter on maintenance.

3.2. USE OF THE MECHANICAL SAFETY BLOCK DEVICE

3.2.1. Description of the device

The mechanical block of the drum is an auxiliary device to be used to carry out maintenance in complete safety.



ATTENTION! The mechanical block must be used only when the electric panel is deactivated and must never be considered as a sufficient guarantee for safety if used alone.

The use of a hinged fork with two block positions, when inserted in correspondence with a welded metallic stop block between the drum and the rolling ring, would impede the rotation of the drum itself.

3.2.2. Mechanical block applications

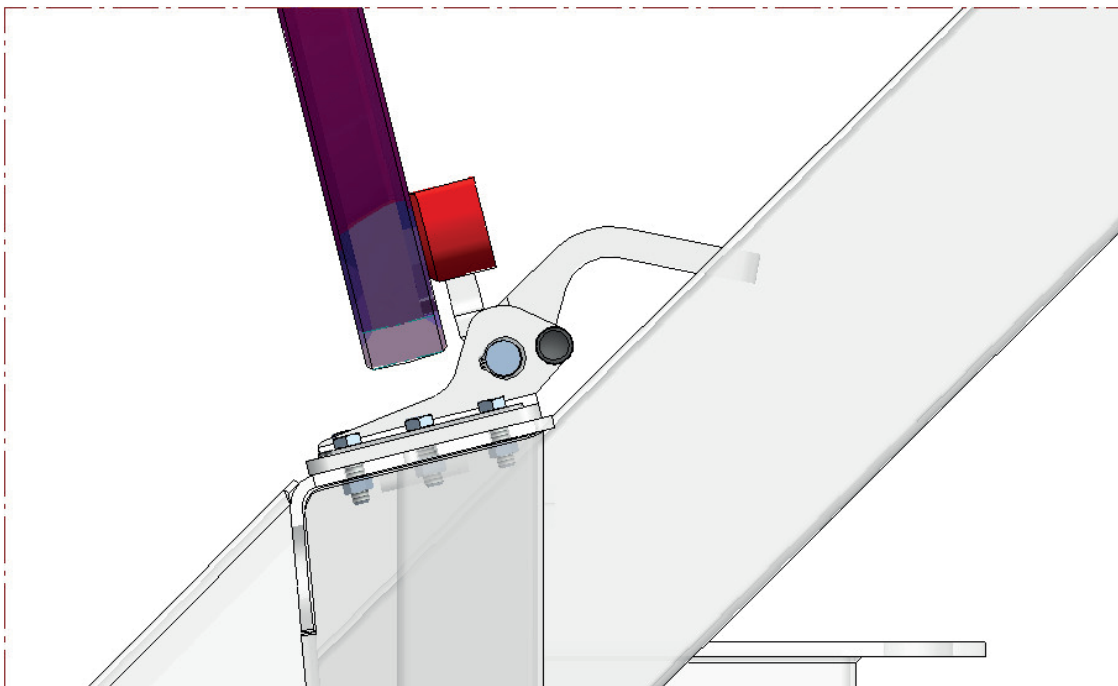
The mechanical anti-rotation drum block is applied to avoid accidental rotations during maintenance works inside the drum. The presence of personnel inside the drum or the asymmetric mass of possible encrustations may produce the rotation of the drum, even partially, generating a source of danger.



ATTENTION! Do not supply electricity to the command panel before having deactivated the mechanical block. **IT IS ABSOLUTELY FORBIDDEN TO SET THE DRUM IN MOTION WITH THE MECHANICAL BLOCK INSERTED.** The manufacturer declines every responsibility for damages arising from incorrect operations.

3.2.3. Mechanical block not inserted

The figure illustrates the position the mechanical block must assume when the drum is in function. The safety pin with must be insert in the appropriate hole.



Picture 8: Block position during work phases

3.2.4. Mechanical block insertion

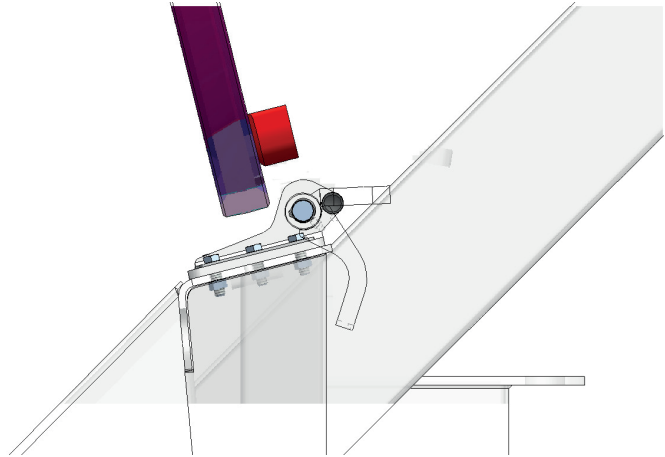
To insert the mechanical block proceed as described below:

stop the drum at its blocked position, that is with the centre of the two red element welded on the drum is aligned with the blocking element.

Cut off the truck engine or the donkey engine.
The maintenance operator keeping the key.

Release the stop pin which, having a spring, will return in position.

Lift the plate by pushing the handle until the locking element fits between the two elements welded to the drum.



Picture 9: Inserting the mechanical block

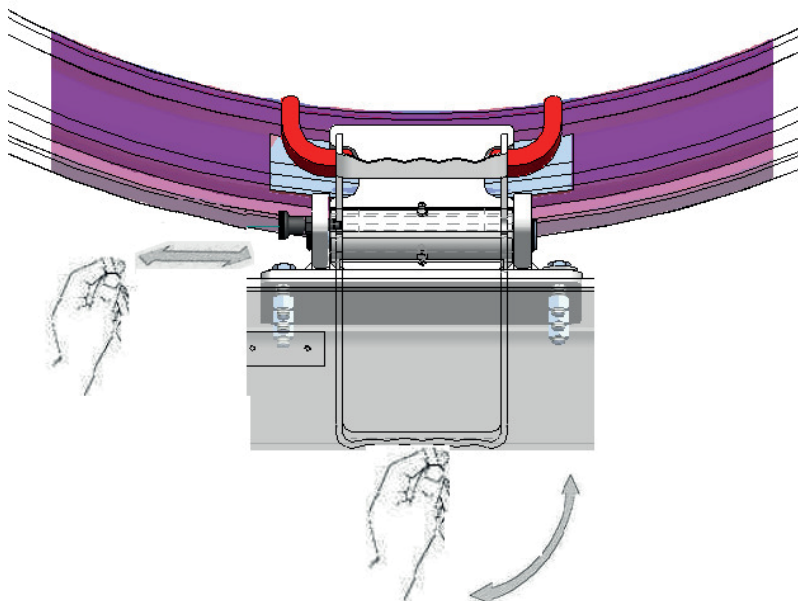
3.2.5. Mechanical block inserted

The picture shows the mechanical block inserted, the fork blocks the drum and the pin with knob is secured by the spring block.



ATTENTION! IT IS FORBIDDEN TO START DRUM ROTATION WITH THE MECHANICAL BLOCK INSERTED.

The manufacturer declines every responsibility for damages arising from incorrect operations



Picture 10: Mechanical block inserted

4. SAFETY DEVICES ON THE MACHINE

4.1. SYSTEMS

4.1.1. Water system

Special non-return valves have been installed on the high pressure hydraulic line to intervene whenever there is a drop in the hydraulic pressure generated by the pump.

There are also maximum-pressure valves that intervene should the oil pressure exceed the established values so as to avoid breakdowns in the reducer and in the mechanical parts.

4.1.2. Water system run by compressed air (if any)

If the truck mixer is equipped with a water system run by compressed air, a maximum-pressure valve calibrated at 4.5 bars is installed.



ATTENTION! Never modify the setting conditions of the safety valves that were calibrated during the control phase and tested by manufacturer’s personnel of competence.

4.2. MODIFYING THE SAFETY DEVICES

The safety devices must never be modified because their functions would diminish or be neutralized.

The correct functioning of the safety devices must always be regularly checked.

Safety devices must be repaired the moment the first signs of malfunctioning are noted, and if the fault cannot be eliminated or corrected the truck mixer must be placed out of service.

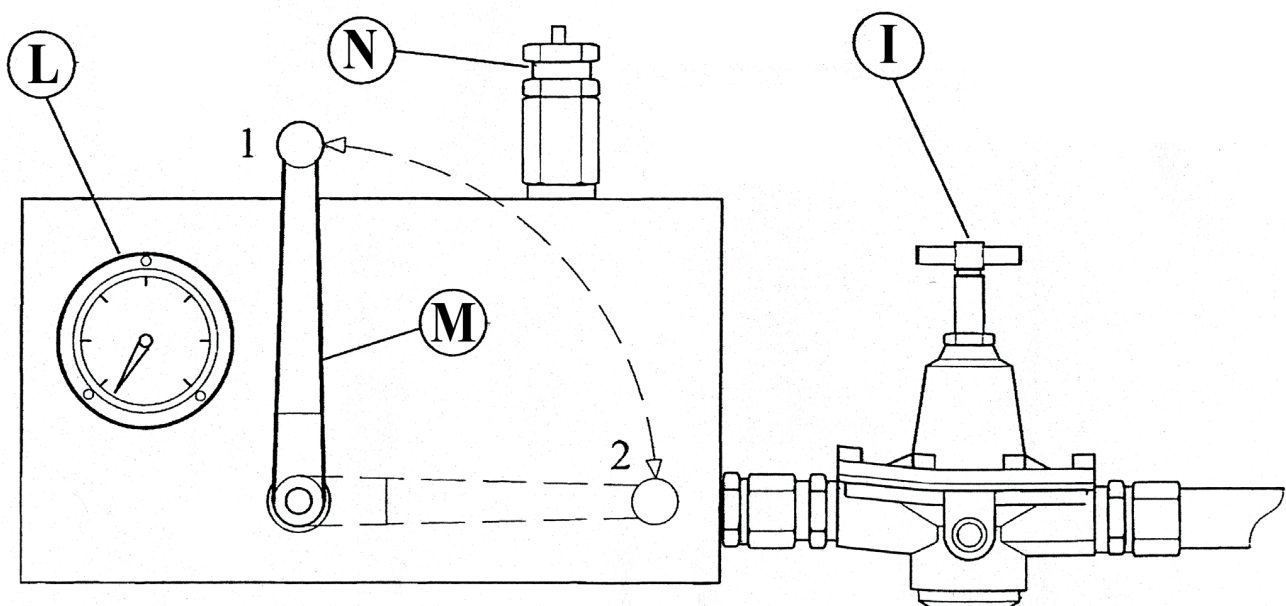


Figure 6.2

4.2.1. Specific safety device of the truck mixer version “H”

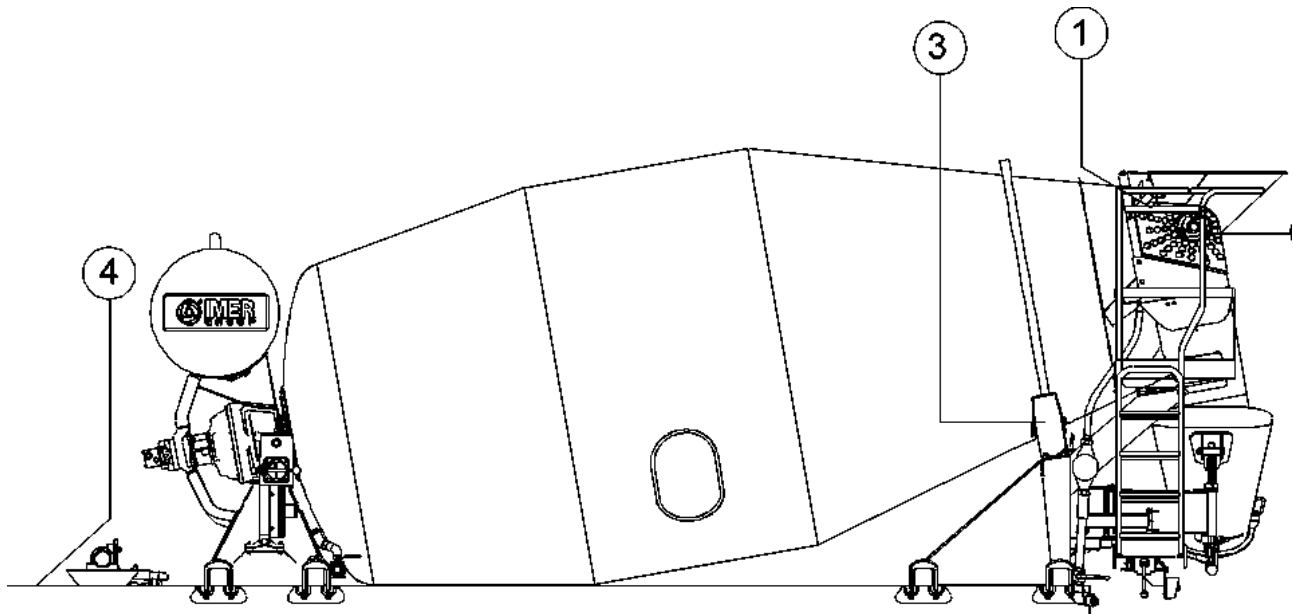


Figure 12: Safety devices on version “H” truck mixer

- | | |
|--------------------------------|-----------------------------------|
| 1) LADDER LANDING FALLSTOP BAR | 2) DRUM MOUTH PROTECTION |
| 3) ROLLING ROLLER SAFETY GUARD | 4) CARDAN DRIVE SAFETY PROTECTION |

4.2.2. Specific safety devices of truck mixer version “D”

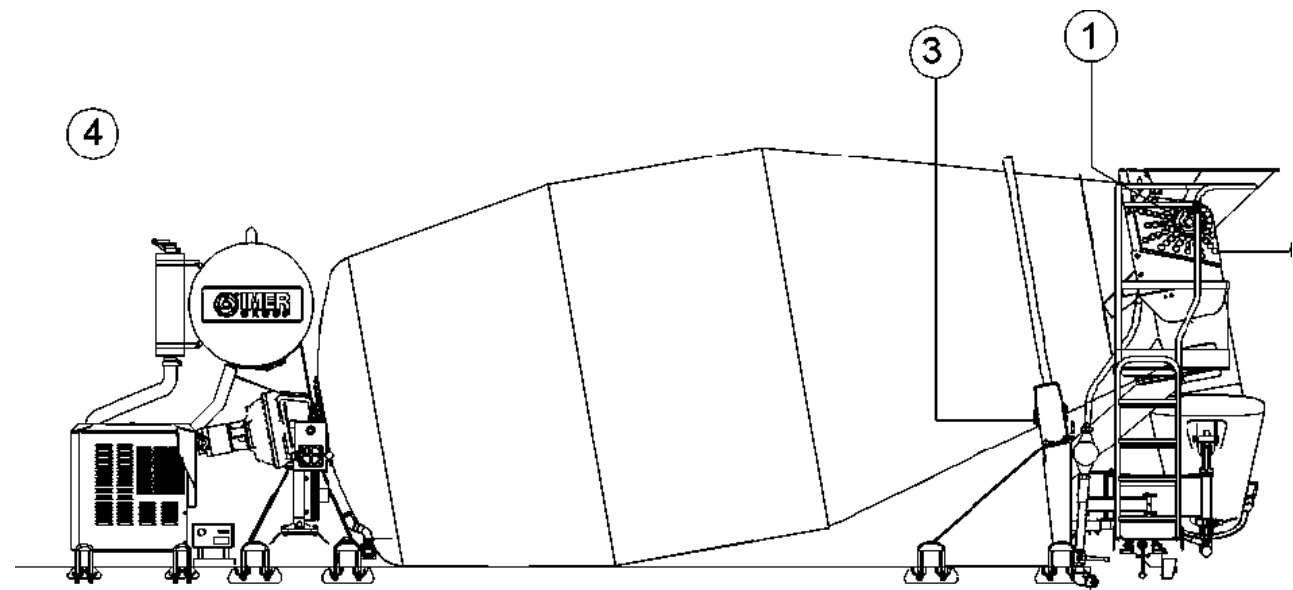


Figure 13: Safety devices on version “D” truck mixer

- | | |
|--------------------------------|-------------------------------------|
| 1) LADDER LANDING FALLSTOP BAR | 2) ROLLING ROLLER SAFETY GUARD |
| 3) DRUM MOUTH PROTECTION | 4) SAFETY GUARD FOR “DONKEY” ENGINE |

5. SETTING THE MACHINE AT WORK

5.1. START UP

5.1.1. Preliminary checks

Besides maintenance works we will later specify, the truck mixer must be daily inspected so as to check on possible signs of wear or other defects. The following must be particularly verified:

the mobile parts;	the protective devices;
connection screws and blocks;	oil and water pipes
the safety devices;	cleanliness of machine;
	electric wires, connectors and relays.

All the verified defects that cause doubts on the machine's safety conditions MUST be immediately signalled out to the person in charge. Pay attention to anomalous sounds that indicate malfunctioning; should such sounds be heard, try to trace the cause and intervene immediately for repairs, as the circumstances require.

All the persons involved in the use, maintenance or repairs of the truck mixer must have the Manual for Use at hand and must have studied and assimilated its contents. These persons must always assist the members of personnel who need to familiarize themselves with the machine.

Should the truck mixer be set to work under irregular conditions, without the scrupulous observance of our recommendations, we shall not be liable for damages to persons and things arising from the incorrect use of the truck mixer itself. We strongly recommend to perform the familiarization operations when the drum is empty.

5.1.2. Identifying the manual lever commands (version H with power take off)

The set of single-lever manual commands plus the block device, is located at the rear end of the truck mixer. The levers of the manual controls have the functions illustrated in the plate positioned near the same controls:

Lever	Direction of movement	FUNCTION
1	Clockwise blocks lever “2”	To block lever “2”
	Anticlockwise unlocks lever “2”	
2	In “O” position the drum is at a standstill	Progressively regulates the number of drum revolutions from “O” to max. in two rotation directions.
	Towards “A” the drum rotates in the loading direction	
	Towards “B” the drum rotates in the unloading direction	

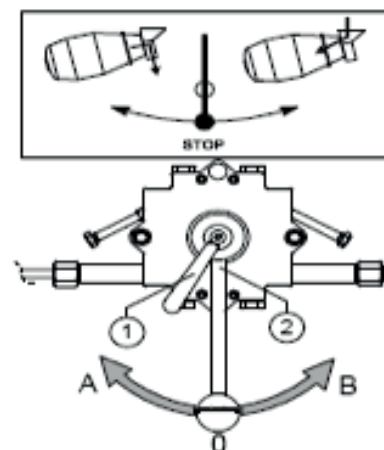


Figure 14: Manual command functions (version H)

5.1.3. Identifying the 2 buttons of EDC commands GAS+ GAS- (version H)

The EDC commands with 2 buttons for digital acceleration of the vehicle's motor, are located at the rear end of the truck mixer.

The function of the two buttons is that of controlling the vehicle motor's revolutions from the minimum working conditions to the maximum values set during the parameterization phase.

The “A” button's function is that of increasing the number of revolutions, whereas the “B” button decreases the number of revolutions.

The increase of the vehicle motor's revolutions is therefore an increase of power supply required in the phases of mixing or unloading when the drum is full.

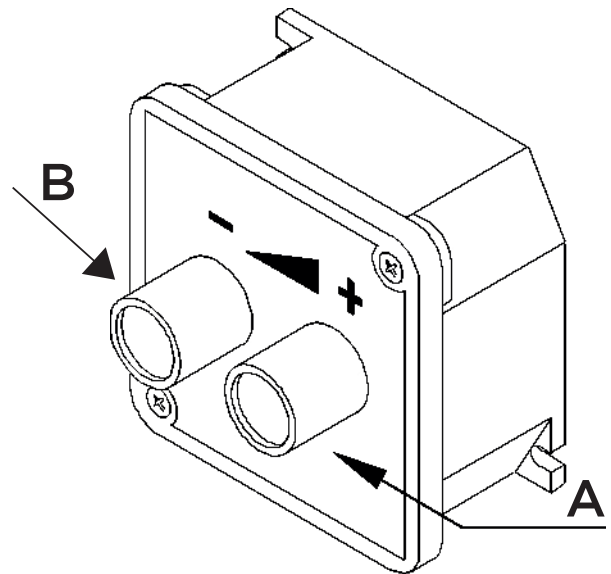


Figure 15: Functions of EDC with 2 buttons

5.1.4. Identifying the 4 buttons of EDC commands GAS+ GAS- START / STOP of the vehicle's motor (an optional supplied for version H)

The EDC 4 button commands for the digital acceleration and the startup/stop of the vehicle's motor are located at the rear end of the truck mixer.

The functions of the buttons is that of controlling the number of revolutions of the vehicle's motor from the minimum working conditions to the maximum values set during the parameterization phase and to startup or stop the vehicle's motor. The “A” button's function is that of increasing the number of revolutions, whereas the “B” button decreases the number of revolutions.

The “C” button's function is that turning off the vehicle's motor, whereas the “D” button turns it on.

The increase of motor revolutions and therefore that of power supplied is necessary during full load work phases.

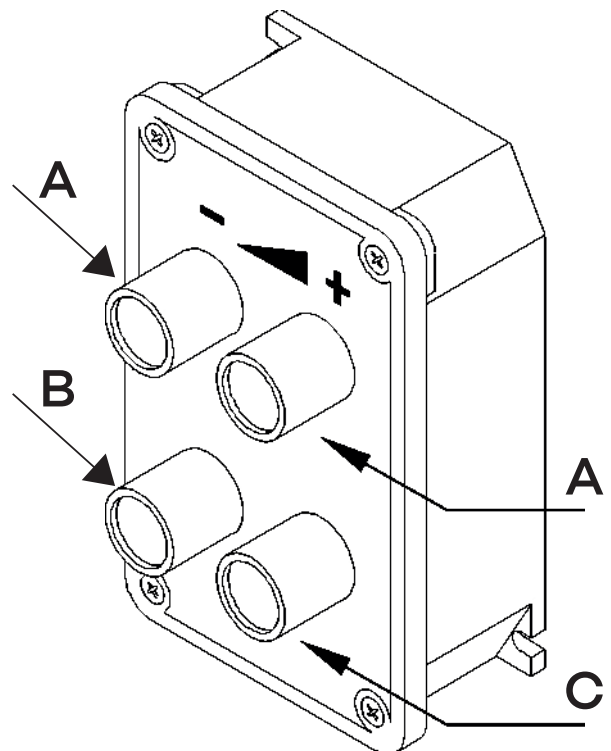


Figure 16: Functions of EDC with 4 buttons

5.1.5. Identifying the levers of the manual commands (version D with auxiliary diesel motor)

The set of two-lever manual commands plus the block device, are located at the rear end of the truck mixer. The levers of the manual commands correspond to the following functions:

Lever	Direction of movement	FUNCTION
1	clockwise blocks levers “2” and “3”	To block levers “2” and “3”
	Anticlockwise unlocks lever “2”	
2	In “0” position the drum is at a standstill	Progressively regulates the number of drum revolutions from “0” to max. in two rotation directions.
	Towards “A” the drum rotates in the loading direction	
	Towards “B” the drum rotates in the unloading direction	
3	Towards “C” accelerates the donkey engine	From “0” to “C” increases the No. of motor revolutions, and from “C” to “0” decreases

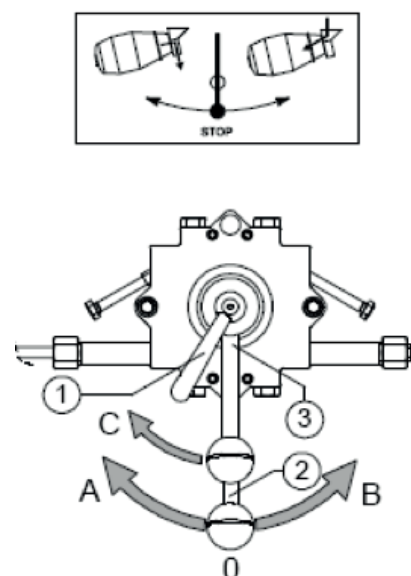


Figure 16: Manual command functions (version H)

5.2. STARTING

5.2.1.General instructions

Follow the procedure here below:

- Check that the levers commands are all positioned at “0” (see Fig. 7.2)
- place the truck mixer in horizontal position

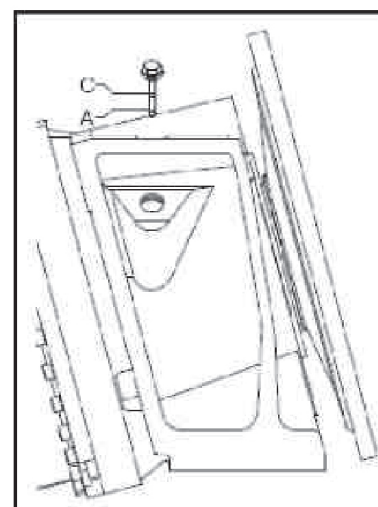
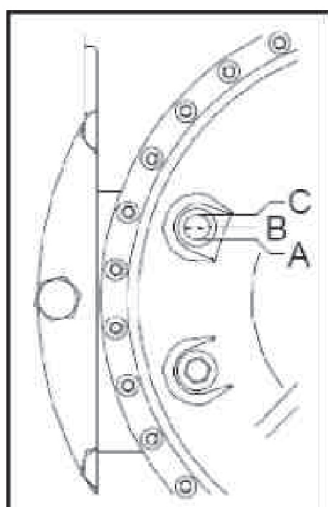
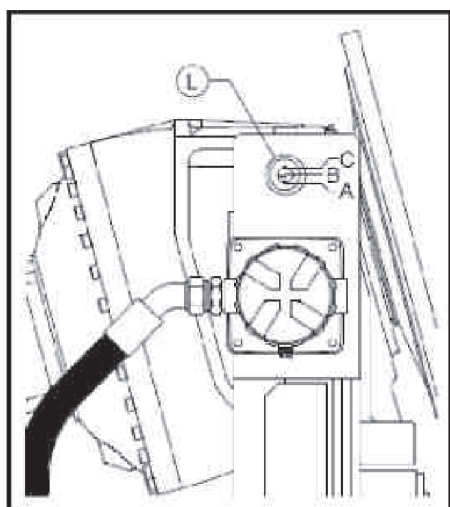


Figure 16: Oil level indicators

- Check that the oil level in the tank is above the minimum “A” - Figure 16/1
- Check that the oil level in the reducer is above the minimum “A” - Figure 16/2
- Check that there is water in the tank



ATTENTION! At every startup or restart, make sure that the command lever “2” is set to position “O”.

5.2.2. Operational sequence for the startup of version “H”

If the truck mixer is connected to the power take off of the truck, startup the motor and insert the power take off by following the instructions provided by the manufacturer.

At this point the truck mixer (version H) is energized and ready to enter into function.

To control drum rotation follow the instructions below:

- Check that the block lever “1” (Figure 8) is loose enough, if necessary turn it in anti-clockwise direction to unblock the command lever “2”;
- Slowly turn lever “2” from position “O” towards the direction desired whether “A” or “B”;
- Regulate the speed and the direction of drum rotation with lever “2”



ATTENTION! Every time the motor is activated the EDC device with 2 or 4 buttons will automatically reset the acceleration level of the motor, making it restart at the minimum working conditions. In order to obtain greater power during loading phases, increase the level of motor acceleration through the GAS+ button of the EDC device and control the number of motor revolutions with lever 2 (figure 14).

5.2.3. Operational sequence for the startup of version “D”



ATTENTION! Before starting up the donkey engine, carefully read the instructions contained in the relevant Manual for use and Maintenance.

The control devices of the donkey engine are found on the command panel (Figure 17). Startup the truck mixer (version D) in the following sequence:

- Turn the key of “1” clockwise until the first position is reached and check that the green pilot light “2” indicating voltage has come on. Also the red pilot light “3” indicating oil must come on.
- Complete the key’s rotation to startup the donkey engine.
- At this point the red pilot light “3” should turn off.

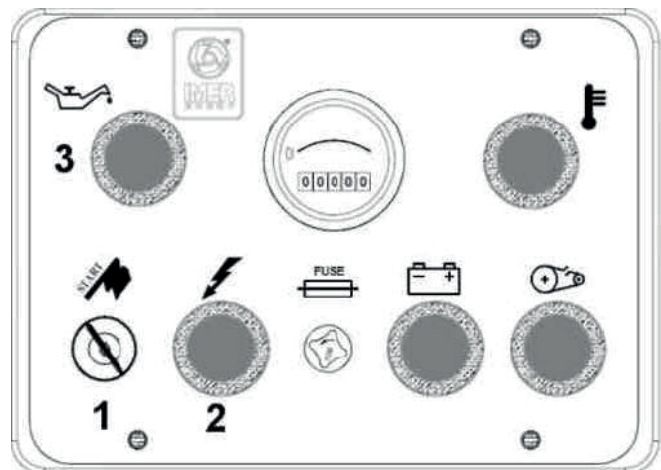


Figure 17: Control panel of donkey engine



ATTENTION! Should the red pilot light “3”, remain activated after the startup of the donkey engine, or should it turn on while the donkey engine is working, immediately turn off the motor and consult the use and maintenance instructions provided by the manufacturer.

At this point the truck mixer (version D) is energized and ready to enter in function.
To control drum rotations follow the indications below:

Check that the lever of block “1” (Figure 15) is loose enough, if necessary turn it in anti-clockwise direction to unblock the levers of commands “2” and “3”;

Turn lever “3” in the direction shown in Figure 15 towards point “C” up to an intermediate position (to obtain donkey engine acceleration);

Slowly turn lever “2” from position “O” towards the desired direction “A” or “B” (Figure 15);

Regulate the speed and the direction of drum rotation always through lever “2”



ATTENTION! Before moving lever “2”, increase the number of revolutions of the diesel motor with lever “3” (Figure 15).



ATTENTION! Should there be the need to reduce the speed of drum rotation, first act on lever “2” and successively reduce the diesel motor’s number of revolutions by working on lever “3” (Figure 15).

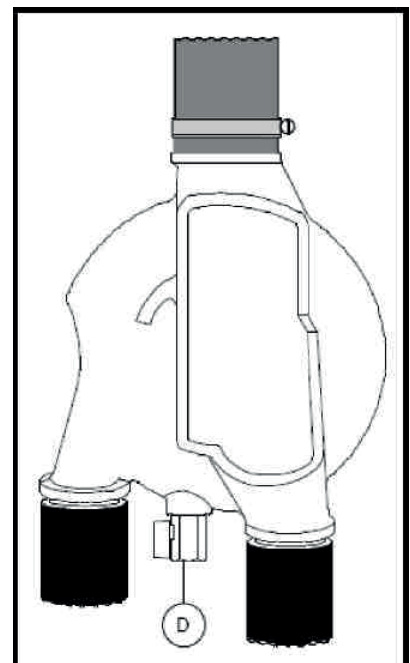
5.3. STARTING IN WINTER



ATTENTION! When operating at low temperatures, startup the truck mixer as described, maintaining minimum working conditions for a few minutes, so as to allow the hydraulic oil and all the parts to reach an optimal working temperature.

- Check that the pump and the water counter are free from ice; and if the water system was emptied through the appropriate drain valve, the condensation may have caused the formation of ice;
- Startup the truck mixer as described in paragraph 4.2 and keep it at minimum working conditions for a few minutes;
- Load the water tank by following the correct procedures after having checked that all the discharge and drain valves have been closed. Then proceed with the work phases.

Figure 18: Water pump



At the end of each work day, or before a break, perform the following operations to empty out the water circuit completely:

- Open all the valves of the water system;
- Open the drain valve (D) (Figure 18);
- Let the drum rotate at minimum speed for about 5-10 seconds with the valve open to allow it drain off the whole water circuit completely;

5.4. LOADING OPERATIONS

5.4.1. Loading positioning

After having filled the water tank and checked the good working conditions of the machine, position the mixer by aligning the loading hopper under the opening of the mixer's main discharge chute. Set the speed and the direction needed for the loading phase.

The rotation speed must be proportional to the discharging capacity of the mains (generally equivalent to 15 revolutions/minute).



ATTENTION! Never load the truck mixer beyond the limits established by the maximum nominal capacity admitted, as referred to the specific weight of the material being transported.

5.4.2. Post-loading inspection before transfer

At the end of loading operations, before starting transfer, pay great attention to the following points:

- Check that the discharge chute is blocked through the apposite blocking device
- Check that the folding chute (if present) is closed and secured to the discharging chute through the apposite tie rods
- Check that the lower part of the ladder is folded and blocked through the apposite hook
- Check that the extension chute is correctly positioned and secured to the apposite supports.

5.4.3. Transfer and discharge preparations

During transfers, set the speed of the drums to 1,5 - 2 revolutions/minute.

Avoid abrupt accelerations and braking

5.4.4. Mixing

If allowed by the norms in force in the country of the user, when loading has been completed increase the rotation speed and maintain the speed until the mixing of components has been completed (the time necessary for the completion of this phase depends on the type of material being mixed).

A series of trials would be recommended in order to create a specific chart of various recipes to be tried out.

5.4.5. Discharging

At the end of the mixing phase, position the discharge chute in an optimal position to allow the drum to be emptied.

The discharge chute can be adjusted vertically at about 45° and may rotate for about 200° around the mixer's axis.

Two extensions can be applied to the discharge chute (if there is an optional folding chute limit yourself to adding one extension to the folding chute). These methods can meet all discharging demands without excessively subjecting the metallic truck mixer structure to excessive stress.

Proceed with the discharging operations as described below:

- Unblock the discharging chute's blocking device (2) turning it clockwise
- Grasp the handles of the chute (1) and position it in the best way for discharging.
- Work on the lever (4) that activates the manual hydraulic pump of the chute raising jack to orient it vertically. To lower the chute unscrew the discharge handle located on the pump itself.
- If present, grasp the handles of the folding chute to free it from the elastic block and turn it over.
- If necessary, add the extension chutes.
- Block the chute in place with the chute blocking device (2).

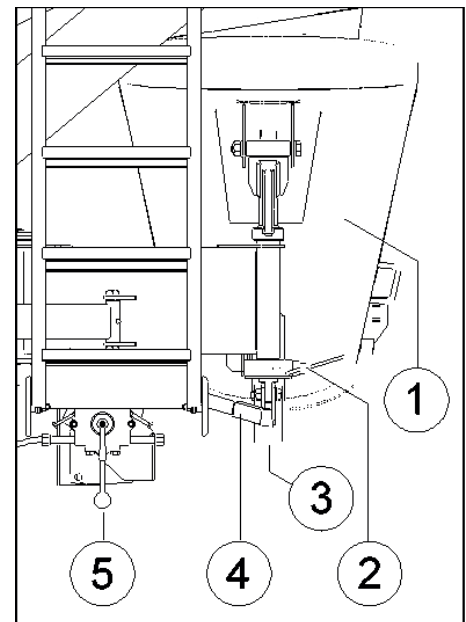


Figure 19: Discharge chute



ATTENTION! IT IS FORBIDDEN to add extensions to the discharge chute beyond the limit allowed in this manual.

- Regulate the speed and direction of drum rotation by working on the manual commands (5) to obtain a perfect and constant discharge flow, working gently on the command lever to slowly start the discharging phase, increasing the speed until a perfect flow is obtained (see paragraph 5.1 STARTUP).



ATTENTION! According to the type of device receiving the product mixed by the truck mixer, pay attention to the quantity of material discharged and the discharge interruption time from the moment the lever is turned.

- Complete the discharging operations by accurately cleaning all the parts of the mixer that came into contact with the discharged material.

6. CLEANING

6.1. WARNINGS AND CLEANING OPERATIONS

Before a long working pause and always at the end of a work day, all the truck mixer parts which have come into contact with the material transported must be cleaned. To do so, use a water jet.

Although the bearings are shielded against water, it is recommendable not to turn water jets on them.

All the parts which get in contact with concrete, such as the loading and unloading hoppers for instance, the drum, the unloading chute, the extension and folding chutes must be accurately washed and every trace of material must be removed.

6.1.1. Drum washing

Load the drum with 150/200 litres of water using the water specifically kept in the mixer reserve tank. Keep the drum rolling until the plant is reached or a suitable place/station organized for waste water collection. Discharge the waste water into a special drain arranged for sewage disposal, repeat the operation if necessary.

6.1.2. Moving parts

Although all the moving parts are usually protected from possible concrete splashes, it is necessary to check that the drum rolling rollers and all the hydraulic cylinder rods are free from concrete and perfectly cleaned and lubricated.

6.1.3. Operations to be avoided

- Do not clean rubber parts with oil
- Do not use solutions containing acids, alkali, corrosive chemical agents in general which may damage chromed and painted parts further to those in rubber.



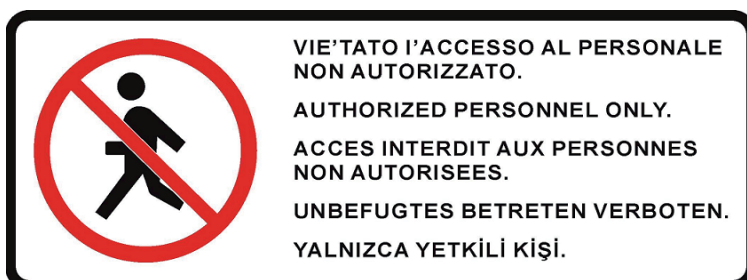
ATTENTION! do not clean with steam jets or pressurized water during the first 6 (six) weeks. After this period, keep a safety distance of at least 40 centimetres from painted surfaces. The manufacturer declines any responsibility for damages caused by cleaning with pressurized jets.



ATTENTION! Do not turn water or steam jets on electrical and electronic apparatus directly.



WARNING! NON-AUTHORIZED PEOPLE ARE NOT ALLOWED TO UTILIZE THE INSPECTION LADDER



7. MAINTENANCE

Repairs and maintenance operations must be performed by authorized personnel trained to work on this type of machine.

During these operations the safety norms and precautionary measures provided must be mandatorily observed.

7.1. WELDING OPERATIONS

All repairs performed by welding must be carried out by qualified personnel who will pay attention to the following welding norms:

7.1.1. Reference norms for welding works

- **UNI EN 287-1: 2004** Qualification test of welders – Fusion welding – Part 1: Steels
- **UNI EN ISO 15607: 2005** Specification and qualification of welding procedures for metallic materials – General rules
- **UNI EN ISO 15609-1: 2006** Specification and qualification of welding procedures for metallic materials – Welding procedure specification – Part 1: Arc welding
- **UNI EN ISO 15614-1: 2008** Specification and qualification of welding procedures for metallic materials – Welding procedure test – Part 1: Arc and gas welding of steels and arc welding of nickel and nickel alloys

7.1.2. Important warnings for repairs performed inside the drum



ATTENTION! Repairs, maintenance etc., must be performed when the truck mixer is at a standstill, with power take off deactivated (version “H”), the vehicle’s motor and donkey engine turned off (version “D”). The manufacturer must have the keys of the truck mixer and if present, also the keys of the donkey engine’s command panel (version “D”). The mechanical safety block of the drum must absolutely be inserted.

The electric and electronic systems must be deactivated, the batteries of the vehicle must be disconnected before starting any welding operations.



ATTENTION! Before proceeding with the disconnection of the vehicle’s batteries, consult the Manual of instructions for use and maintenance. Incorrect disconnection of the batteries may cause damages to the truck’s electronic system.

Only equipment with safety voltage can be used inside the drum. (24 V).

Air out the drum and extract possible fumes caused by welding and/or flame cutting.

The maintenance and/or repairs operations must be performed in the full observance of specific EC safety norms or alternatively, those specified for the country in which the truck mixer is being used and according to the provisions of the truck’s chassis and the local traffic regulations.

The manufacturer will not be liable for modifications performed on the truck mixer without express authorization.



ATTENTION! Without the mechanical block the drum could rotate, it is therefore FORBIDDEN to carry out operations on the truck mixer without having first inserted the mechanical block. It is expressly FORBIDDEN to enter inside the drum or perform operations without having first inserted the mechanical block.

7.2. REGULAR INSPECTIONS AND MAINTENANCE

7.2.1. Checklist for ordinary maintenance

The hydraulic oil and filter must be replaced by all means once a year even if the truck mixer has not exceeded the established number of working hours.

Works necessary to maintenance must be performed regularly; as a rule it would be good to coordinate them with maintenance works on the other parts of the machine.

The maintenance schedule given in the table must be considered as guidelines since a correct scheduling of maintenance works must be set according to the requirements of the machine's specific working conditions and through practical experience.

7.2.2. Maintenance of the hydraulic system

Daily verify the heat exchanger's oil level through the transparent level indicator located on the tank.

If the level goes below minimum immediately trace and repair the dripping points in the circuit, after which replenish with the same type of oil as that already present (see table of lubricants).

Respect the planned schedules and see to the replacement of hydraulic oil, attentively following the manual's chart of lubricants to identify the technical specifications of the correct oil to be used.

At every replacement of hydraulic oil, also the filter cartridge must be replaced; **attempts to clean the cartridge would signify breaking the filtering device!**

If the cartridge appears to be excessively dirty we advise you to reduce the time interval between replacements.

To obtain good drainage the oil must be replaced when the system is heated up.



WARNING! Danger of burn

In some conditions the tank walls and the oil can reach high temperatures; pay attention and always wear individual adequate protecting devices.

TYPE OF CONTROL	DAILY	WEEKLY	1st INSP.	6 MTHS	12 MTHS
	8 h	40 h	200 h	1000 h	2000 h
Replace reducer oil			☉		☉
Check reducer oil level	☉		☉		
Replace hydraulic and filter oil			☉		☉
Clean the cooling wings of the heat exchanger			☉	☉	
Lubricate the rolling ring of the drum	☉		☉		
Lubricate the cardan drive and check flange closures		☉	☉		
Check and lubricate the wires and lever command box			☉	☉	
Lubricate the central pin of the semitrailer		☉	☉		
Lubricate all the points equipped with lubricator		☉	☉		
Check the perfect sealing of the all the hydraulic fittings		☉	☉		
Check the efficiency of the heat exchanger fan		☉	☉		
Check the tensioning conditions of the trapezoidal transmission belts (in the model with donkey engine)		☉	☉		
Check the water filter		☉	☉		
Check the safety valve functions of the compressed air system (if any)		☉	☉		
Check the electric system		☉	☉		
Check the tightened conditions of all the fastening bolts		☉	☉		
Check alignment of the rollers with rolling drum ring		☉		☉	
Check the wear and tear conditions of the drum			☉		
Elektrik sistemini kontrol ediniz.			☉		
Check the wear and tear conditions of all the chutes and hoppers, replace the anti-wear sheets if necessary			☉		
Make a visual check to see if there are deformations on the structure framework			☉		
Check the donkey engine	Refer to the manual instructions for use and maintenance of the manufacturer				
Check the semitrailer	Refer to the manual instructions for use and maintenance provided by the manufacturer				

7.2.3. Replacing the oil of the hydraulic system



WARNING! Danger of burn

In some conditions the tank walls and the oil can reach high temperatures; pay attention and always wear individual adequate protecting devices.

To replace the oil proceed as follows:

- Place the mixer in horizontal position;
- Stop the mixer and turn off the vehicle's motor and also the donkey engine (for model “D”);
- Place a tank with capacity for about 30 litres under the heat exchanger;
- Remove the discharger's plug;
- Wait until the emptying phase is completed;
- Place a container with capacity for 10 litres under the hydraulic pump;
- Unscrew the fittings of the leakage tube located under the hydraulic pump (figure 7);
- Wait until oil no longer drips out;
- Rescrew the leakage tube fittings located on the hydraulic pump;
- Rescrew the plug of the exhaust pipe of the heat exchanger (figure 20).

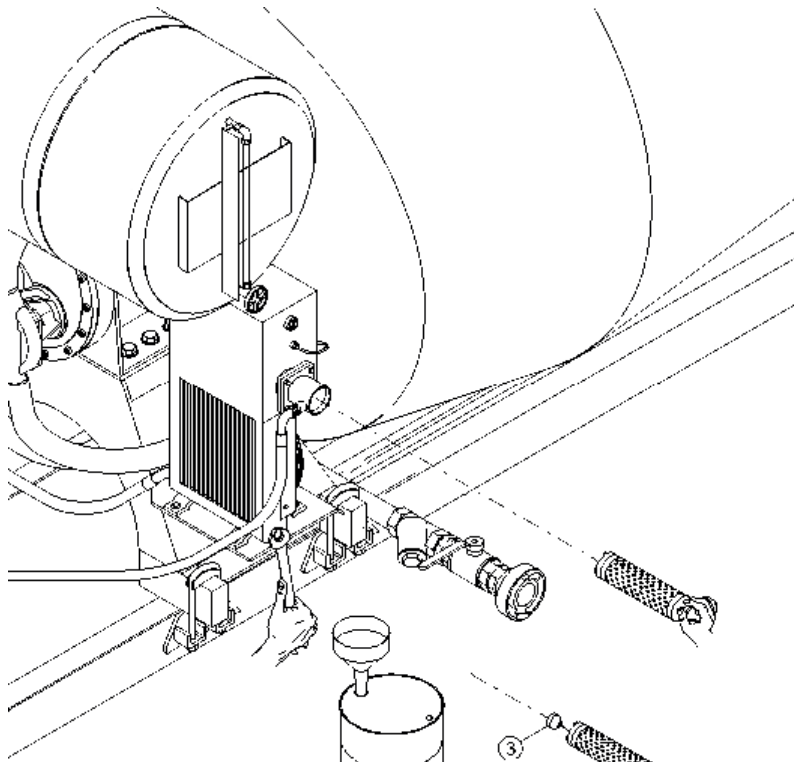


Figure 20: Replacing oil and filter

7.2.4. Replacing the oil filter cartridge

When the vacuumeter positioned near the cartridge indicates the RED colour, it means that the filter is dirty and that therefore it is indispensable to replace it.



WARNING! When the filter is dirty or clogged (vacuometer indicator on RED), the boosting pump may go into cavitation with the risk of anomalous operation for the machine and of damage for the hydraulic devices. **IT IS FORBIDDEN TO UTILIZE THE MACHINE WHEN THE VACUOMETER INDICATOR IS POSITIONED ON RED.**

Carry out the replacement of the filter cartridge as indicated hereinafter:

- unscrew the red cap from the seat of the filter and extract the filter cartridge (obtaining at the same time the closure of the internal valve to avoid the outflow of all the oil contained in the exchanger);
- Take out the nut (3 figure 20) screwed on one side of the terminal of the filter sustaining rod and replace the cartridge (2 figure 20) with a new one;
- Reassemble it checking that the filter is set in its proper seat; if necessary replace the sealing O-ring (4 figure 20);
- Fill the tank of the heat exchanger up to level “B” (figure 21) with oil of the same type and with the characteristics indicated in the chart of lubricants) (paragraph 7.3.1);
- Startup the mixer at minimum, let the drum rotate at very slow speed and again fill the exchanger until the oil no longer drops below the midline “B” of the level gauge;
- Check the tightness of the caps, if necessary replace the seals;
- Check that there are no leakages at the joints.



Figure 21: Oil cooler indicators



WARNING! Danger of burn

In some conditions the tank walls and the oil can reach high temperatures; pay attention and always wear individual adequate protecting devices.

7.2.5. Reducer maintenance

Before starting up the mixer check that the oil level in the reducer is above the minimum “A” (Figure 22).

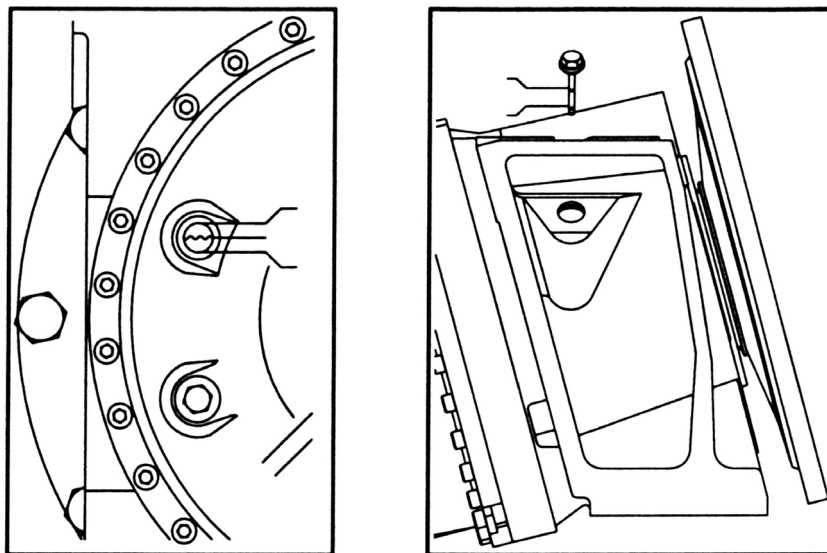


Figure 22: Oil level indicators of reducer

7.2.6. Replacing oil of the reducer

To replace the oil, proceed as follows:

- Place the mixer in horizontal position;
- Stop the mixer and turn off the diesel motor;
- Place a container with the capacity for 30 litres under the discharge cap of the reducer;
- Take off the discharge cap “T” (Figure 23);

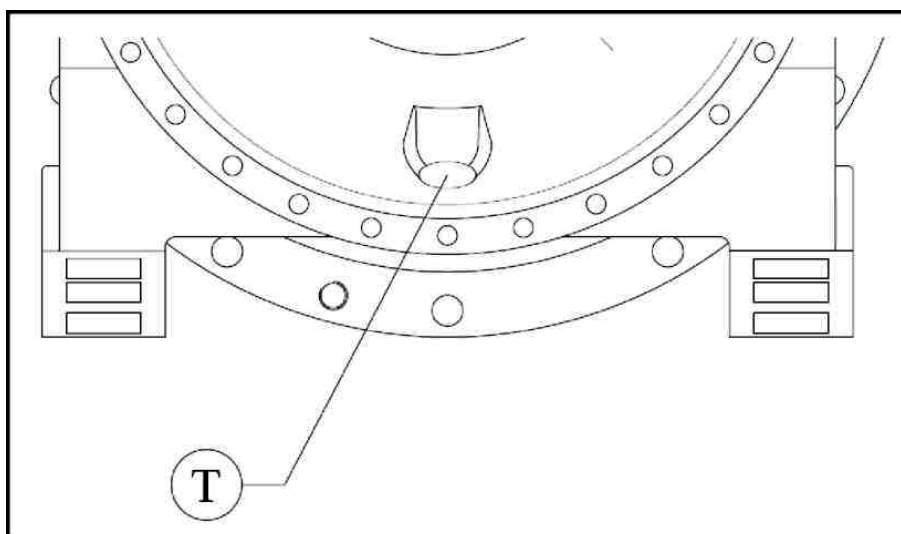


Figure 23: Discharge cap of reducer

- Wait until the emptying process is completed;
- Rescrew the cap on to the reducer discharger;
- Fill the reducer up to level “B” (Figure 22) with oil of the same type and with the characteristics indicated in the Chart of Lubricants;
- Startup the mixer at minimum, letting the drum rotate at very slow speed and check that the oil level does not drop below the midline “B” of the visual oil gauge or level “C” of the rod (Figure 22) ;
- Check that the closure of the caps are tight, if necessary replace the seals;

7.3. LUBRICATION

7.3.1. Chart with specifications of lubricants and their applications

LUBRICATION POINTS	SPECIFICATIONS	CLASS SAE OR NLGI	TEMPERATURE °C
Pump and motor hydraulic drive	DIN 51524/2ISO-VG 22	HPL 22	+20°C/-15°C
	MIL-L-2104C MIL-I-46152	SAE 5W	
	DIN 51524/2ISO - VG 32	HLP 32	
	MIL - L - 2104 C MIL - L - 46152	SAE 10W	+30°C/-5°C
	DIN 51524/2ISO - VG 46	HPL 46	
	MIL - L - 2104 C MIL - L - 46152	SAE 15W SAE 20W 20	+40°C/0°C
	DIN 51524/2ISO - VG 68	HPL 68	
	MIL - L - 2104 C MIL - L - 46152	SAE 30	+50°C/+5°C
Reducer		75W90 / 80W90	-30°C/+20°C
	API GL 5 MIL L 2105 D	85W/90	
		85W/140	
Manual pump of the chute raising device	DIN 51524/2 ISO - VG 32	HPL 32	+30-5
Lubricants	DIN 51502 K2KNLGI 2		
Cardan drive	DIN 51825 -KPF-2K	NLGI 2	+60 -25

7.3.2. Lubrication

Lubricate all the points with a hand pump as indicate in the chart below:

7.3.3. Specifications chart of the lubricating points

POSITION	DESCRIPTION	No. OF GREASERS	TYPE OF LUBRICANT
1	Rolling ring	/	GREASE
2	Rolling roller pins	2	GREASE
3	Flag rotation pin	3	GREASE
4	Chute raising jack	1	GREASE
5	Flag rotation pin	2	GREASE
6	Cardan drive	3	GREASE

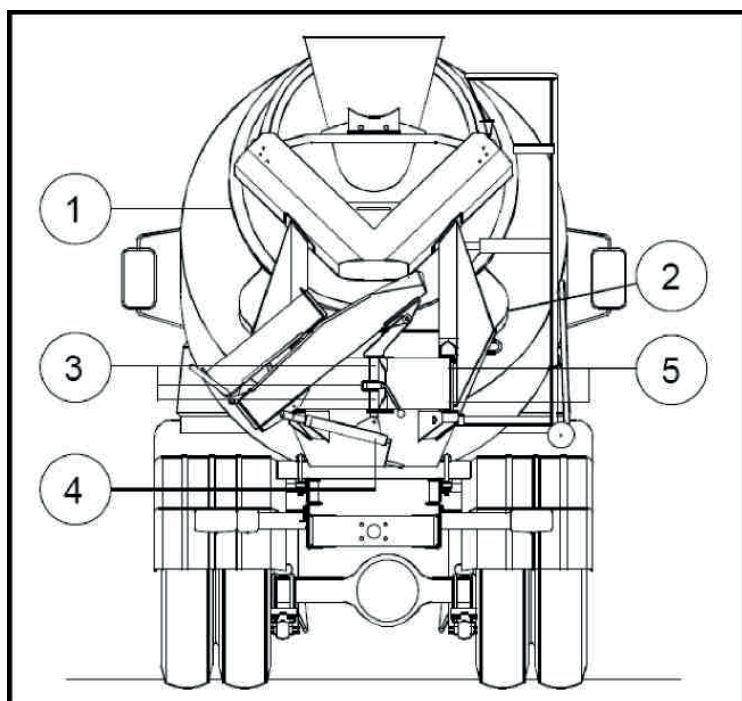


Figure 24: Greasing points

The connection points are of the **UNI 7663 A** type or **UNI 7663 B**;

All the joints have a protection cap which must always be closed.

Lubricate moreover, all the drum safety rings regularly, “1” (figure 24) with graphite grease.

7.4. MAINTENANCE ON THE WATER PUMP

7.4.1. Pumps directly coupled to the reducer

When the pump is directly coupled to the reducer, for safety against overloading, the coupling is composed of a joint of a special plastic material.

If the pump gets blocked the plastic joint breaks even before more serious breakdowns occur.

7.4.2. Replacing the water pump joint

To replace the water pump joint, follow this procedure:

- Remove the coupling screws between the water pump (1 figure 25) and the reducer;
- Manually rotate the shaft of the water pump and check that this rotation is free and without friction;
- Pull out the damaged or broken joint (2 Figure 25);
- Insert the new plastic joint;
- Put the pump back in place, paying attention to the alignment of the parts;
- Tighten the coupling pump-reducer screws.

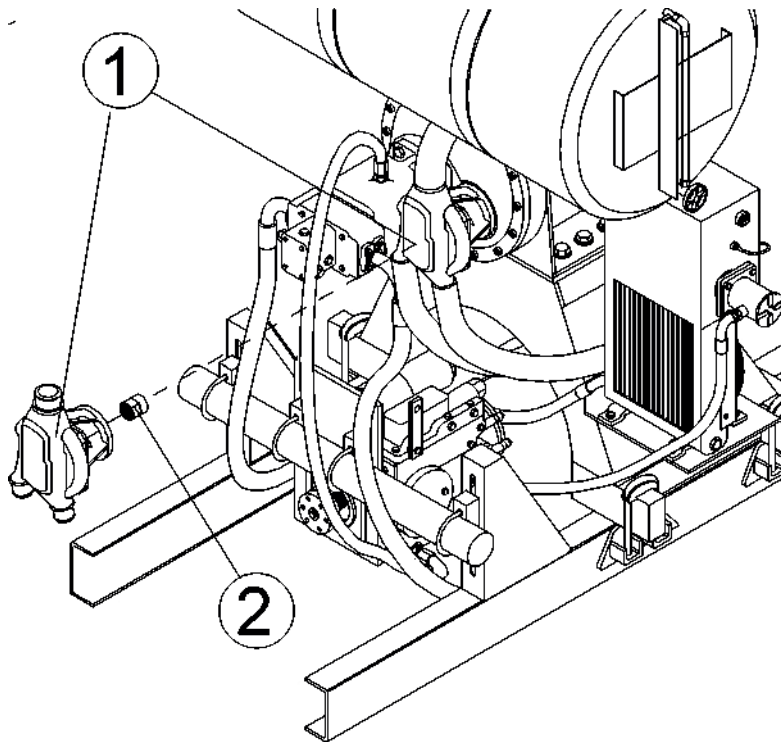


Figure 25: Replacing the water pump joint



ATTENTION! The water pump must never be made to rotate without water.

7.5. WEAR AND TEAR AND REPLACEMENT OF METALLIC PARTS

7.5.1. Checking the wearing parts

Besides the established periodical inspections, it is good practice to perform visual inspections at the start of each work day to verify the conditions and the proper tightening of the wear and tear protections, the wear and tear conditions of the drum, of the protective plates of the mixing blades, and of the loading and discharge chutes and hoppers.



ATTENTION! Immediately replace the protective plate of the propellers if they are worn out. The life span of the propellers strictly depend on the integrity of the protective plate.

To replace the drum consult a specialized work shop.

7.6. MAINTENANCE OF THE DRUM ROLLING ROLLERS

7.6.1. Inspections

According to the established schedules, check the free rotation of the rollers and their positions with respect to the rolling ring.

If a roller gets blocked, replace it immediately with a new one so that the mixer drum does not get damaged beyond repair.

According to the set schedule, lubricate the pins and rolling rollers through a hand pump.

7.7. TIGHTENING OF SCREWS

7.7.1. Inspections

All the joints of the mixer are effected with screws and bolts which must be regularly checked, and the inspection consists in a calibrated tightening by means of a dynamometric key respecting the values contained in the following table.

POSITION	Tightening torque (Nm)
A	350
B	400
C	250
D	260

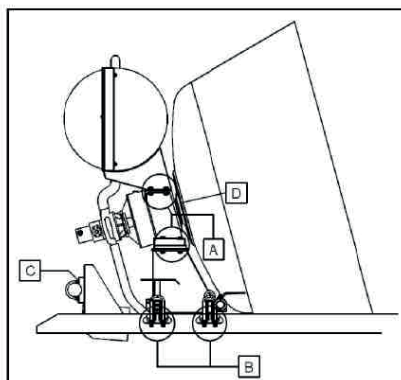


Figure 26: Identifying the points subject to calibrated tightening

According to the established schedules, check the proper tightening of the truck assembly screws, at the points where the mixer is secured to the chassis

There may two types of screws used:

1. UNI5738 M14x1.5 class 10.9 ZN with nut UNI6927 class 10.9 ATB ZN
2. UNI5738 TEF M16x1.5 class 10.9 ZN with nut DIN980 class 10.9 ATB ZN and 2 washers 17x30x4 uni5714-75 FEZN8C1A



ATTENTION! The sealing couple must be at 180 ± 10 Nm per M14 and at 280 ± 10 Nm per M16 if cases of loosened screws are verified. IT IS FORBIDDEN to tighten them anew, and must be ABSOLUTELY REPLACED

7.8. MAINTENANCE INTERVENTIONS TO THE ELECTRICAL EQUIPMENT

7.8.1. Inspections

It is forbidden to intervene inside the electric panel without first having cut off the power supply

The person who carries out maintenance operations must possess the key to activate and accede to the truck's cabin and also the key to the donkey engine's command panel (truck mixer model “D”).

The electric system was set up in observance of the current EC norms in force.
Both the electric panel and the entire system possess a protection degree of IP 54 / IP 55.

Only qualified personnel are allowed to accede to the electric panel.

The voltage power supply of the panel may be at 24 or 12 Volt DC. According the model of the vehicle on which the mixer is installed. The value of this voltage may be directly seen on the electric panel.



ATTENTION! Never operate when the panel is energized
ATTENTION! Do not extinguish fires with water jets

We decline any responsibility for faults arising from tampered electric panels with the consequential damages. Any type of variations or modifications to the electric panel must be authorized beforehand by the manufacturer.

Each variation must be immediately marked out on the wiring diagram.



ATTENTION! Never intervene with welders without having first disconnected the electric panel from the power supply line: disconnect the batteries of the truck and the donkey engine only when dealing with the “D” model of the truck, and only after doing so proceed with welding operations (consult the truck and donkey engine manufacturers' Manuals).

7.9. REPLACING THE CARDAN DRIVE

In the truck mixers activated by truck power take (PTO of model “H”), the hydraulic pump is connected to the power take off motor by means of a cardan shaft (Figure 26).

7.9.1. Sequence to be followed in cardan drive replacement

The installation of cardan drives must be performed as follows:

- Remove all traces of paint, dirt, grease, protective device or other devices from the surface of the flanges;
- Eliminate possible roughness or slight imperfection (e.g. the dents or bumps);
- Do not lubricate or grease the flange surfaces;
- Check that the counter-flange present on the vehicle or on the framework do not reveal deformations, ovalizations and irregularities during rotation;
- Put the cardan drive's shaft in place (1 figure 26);
- Do not absolutely use violent methods such as hammering the flange or putting pressure on the crosspieces;
- Check that the position of the crosspieces and their correspondence with possible reference arrows must coincide;
- Do not lubricate the fixing bolts of the flanges;
- The holes and the thickness of the flanges must never be modified;
- After installation, grease the points (2 figure 26) of the cardan shaft
- Make the power take off of the truck rotate and check that there are no irregularities during the rotation of the cardan shaft;
- check the tightened conditions of the bolts once again.



ATTENTION! The cardan shaft must be greased using the apposite greasers at the grease points corresponding with the crosspieces on a regular basis according to the maintenance plan indicated.



ATTENTION! Only Lithium soap must be exclusively used to grease the cardan drive.

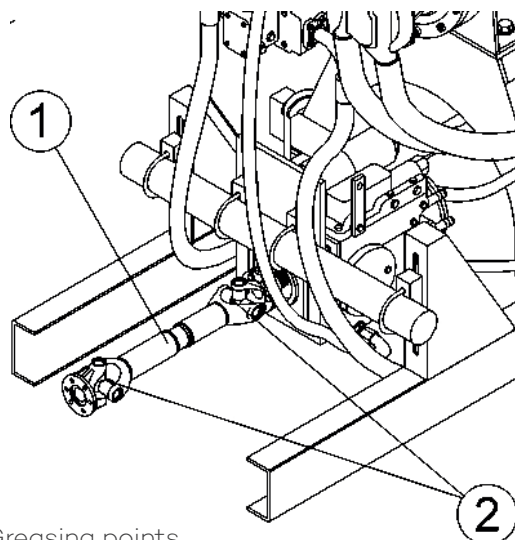
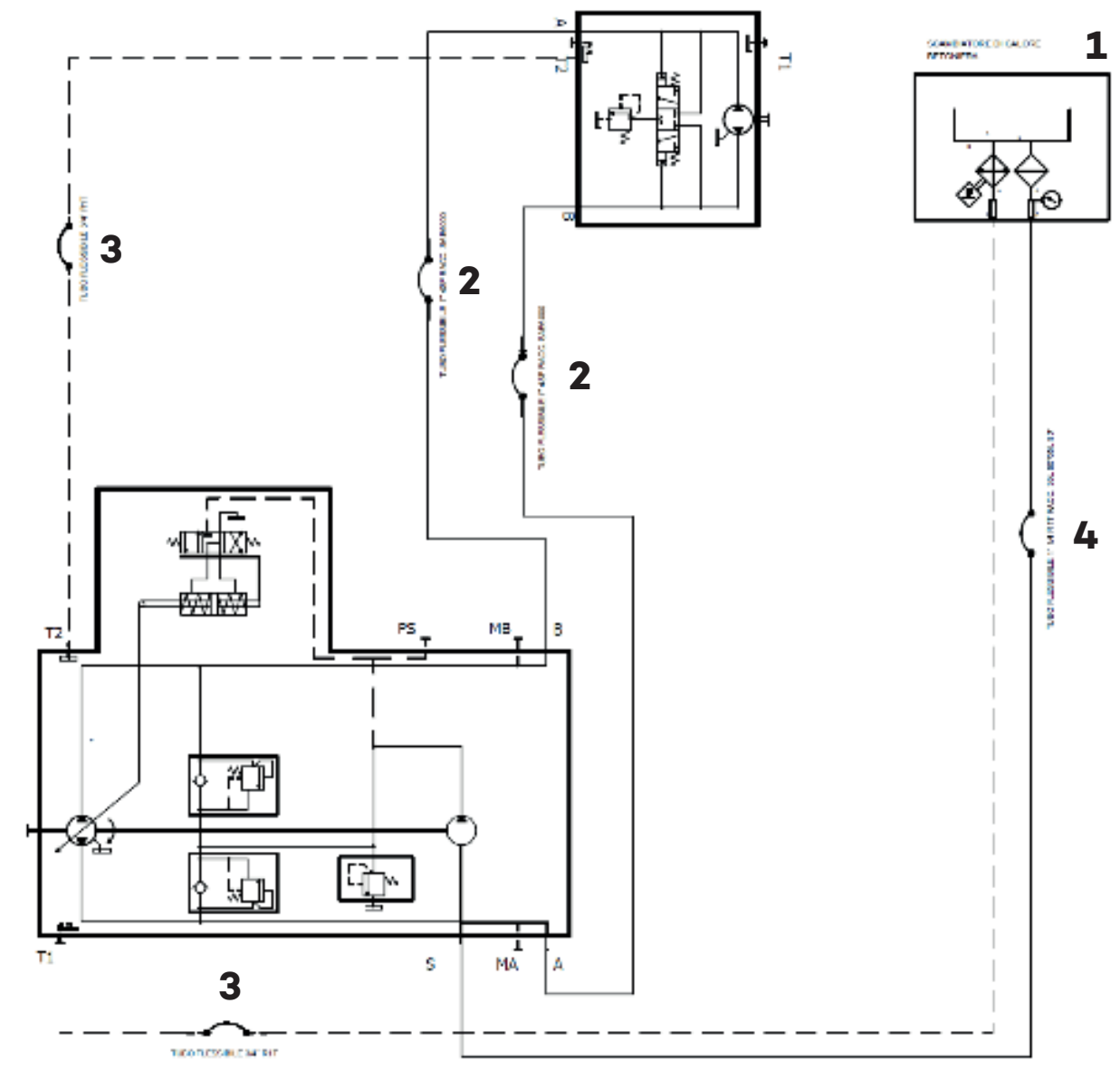


Figure 26: Greasing points

8. DIAGRAMS

8.1. HYDRAULIC DIAGRAM



1	OIL COOLER
2	FLEXIBLE HOSE 1" 4SP FITTING SAE E6000
3	FLEXIBLE HOSE ¾" R1T
4	FLEXIBLE HOSE 1" ¼ 4SP R1T FITTING 35L 90°/35L 90°

8.2. ELECTRIC DIAGRAM

9. INCONVENIENCES CAUSES AND REMEDIES

INCONVENIENCE	PROBABLE CAUSE	REMEDY
The drum does not rotate clockwise or anticlockwise	The servocontrol control cable of the hydraulic pump is broken	Replace the cable. Should material be present inside the drum, it must be discharged by operating the servocontrol lever of the hydraulic pump by hand.
The drum does not rotate and the reducer emits anomalous sounds:	The reducer is broken	Replace the reducer. Should material be present in the drum, immediately load some water and oil so as to delay the solidification of the contents. Go to an apposite centre for material/waste disposal; insert the mechanical block device in the drum, open the inspection port hole and unload as much material as possible; wash and clean all inner and external parts well. First dismantle the hydraulic motor coupled to the reducer, then dismantle the reducer.
The drum does not rotate, or it does so very slowly especially with hot oil	The hydraulic pump is broken	Replace the hydraulic pump. Should material be present in the drum, immediately load some water and oil so as to delay the solidification of the contents. Go to an apposite centre for material/waste disposal; insert the mechanical block device in the drum, open the inspection port hole and unload as much material as possible; wash and clean all inner and external parts well. Disconnect the tubes connected to the hydraulic pump

INCONVENIENCE	PROBABLE CAUSE	REMEDY
The drum does not rotate, or it does so very slowly especially with hot oil	The power supply pump of the hydraulic pump is broken	Check the pressure inside the supply circuit; if it is lower than 12 bars, replace the supply pump.
The drum does not rotate, or it does so very slowly especially with hot oil (the high pressure gauge reads out optimum values for the specific type of load present)	The hydraulic motor is broken	Replace the hydraulic motor. Should material be present in the drum, immediately load some water and oil so as to delay the solidification of the contents. Go to an apposite centre for material/waste disposal; insert the mechanical block device in the drum, open the inspection port hole and unload as much material as possible; wash and clean all inner and external parts well. First disconnect the tubes connected to the hydraulic motor, then dismantle the motor from its reducer
The drum does not rotate, or it does so very slowly especially with hot oil (the high pressure gauge reads out optimum values for the specific type of load present)	The maximum-pressure valves of the hydraulic motor are blocked	If this is the case, a noise similar to a whistle can be heard and indicates that the oil in the high pressure circuit is being discharged. Dismantle the valves involved and clean and/or replace them;
The “zero” or “neutral” position of the drum does not coincide with that of the command levers.	The setting screws of the control cable of the hydraulic pump are loosen.	Loosen the two setting nuts of the hydraulic pump’s cable located on the stirrup fitted on the pumpitself: the servocontrol lever of the hydraulic pump gets automatically positioned in neutral position. Set the stroke again through the apposite screws on the control box and retighten the setting nuts previously loosened.

INCONVENIENCE	PROBABLE CAUSE	REMEDY
When one of the control levers is operated, it does not provoke an immediate reaction of the associated selected function.	The filter in the heat exchanger is very dirty and clogged	Replace the filter with another one with the same characteristics;
The temperature of the hydraulic oil is very high (appr. 80 °C - 85 °C)	The level of oil in the heat exchanger is below the minimum	Refill with oil with the same characteristics
	The fan of the heat exchanger is not working.	Check that the connecting plug between the cooling fan and the electric cables is correctly inserted into the apposite connectors.
		Replace the bulb thermometer
		Replace the control relay of the cooling fan
		Replace the cooling fan
The drum rotation is very noisy	The rolling ring is lacking in grease	Grease the rolling ring.

10. EMERGENCY CONTROL

In case of breakdown of the donkey engine and/or of the hydraulic pump an emergency system must be prepared and connected to another truck mixer in working conditions.

The following figure shows how the emergency system must be.

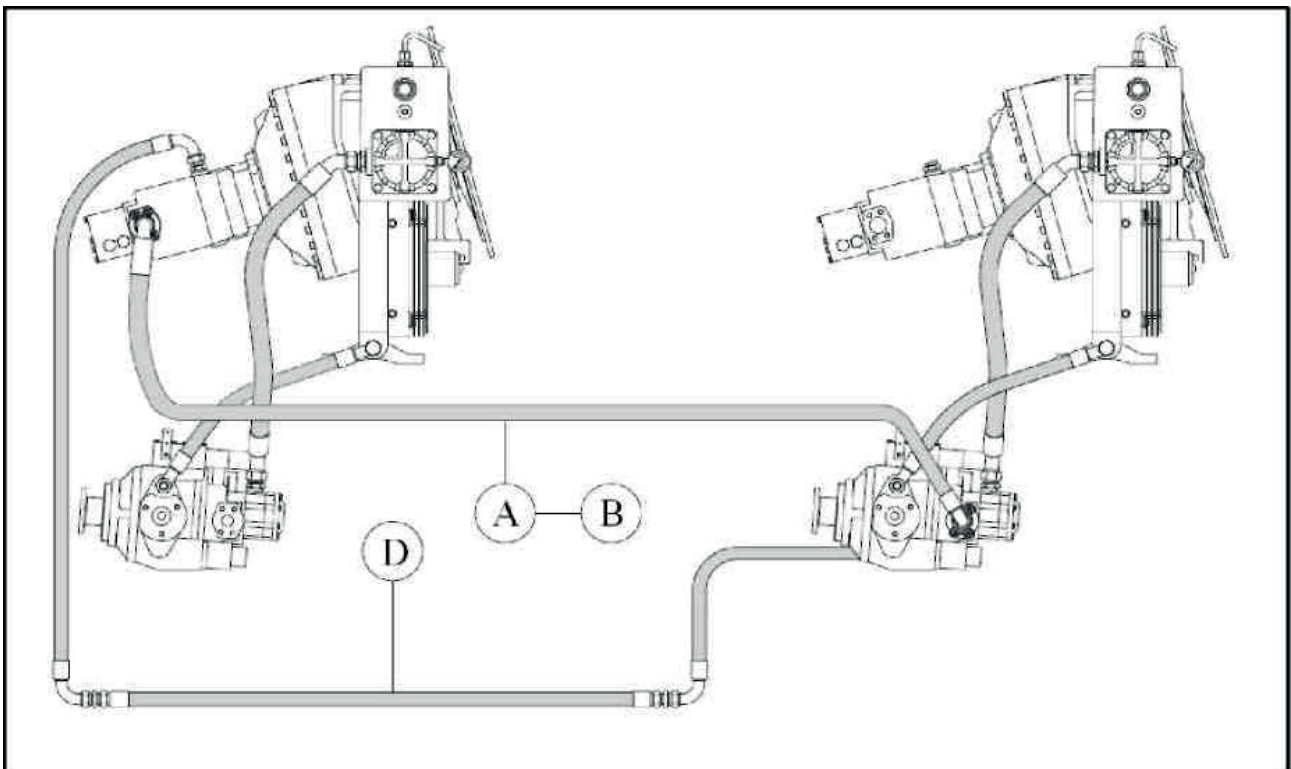


Figure 27: Hydraulic connection for operations in emergency conditions



ATTENTION! The system must be only used to unload the drum and prevent solidification of the material inside.

The system consists of a series of hydraulic pipes of sufficient length and equipped with apposite connection joints to allow connection to another truck mixer.

Before starting to use the emergency system, check if there are any other causes behind the breakdown.

10.1.1. Connection procedure

Connect the pipes following this procedure:

- fill all the hydraulic pipes with oil that have the characteristics specified in the table of lubricants;
- Top up with oil, if necessary;
- Pay the maximum attention to the toroidal gaskets present in the flanged couplings, replace them if necessary;

- Join the high pressure hydraulic tubes “A and B” with the hydraulic leakage tube “D” by screwing the respective couplings and paying particular attention to respect the preestablished positions (Figure 19);
- Pay particular attention not to accidentally introduce dirt and/or external bodies in the hydraulic circuit;
- Check the proper tightening of the hydraulic tubes couplings again;
- Start up the emergency system and check that there is no oil leakage;
- Unload the material present in the drum;
- Wash the mixer with accuracy;
- Contact the Assistance Service for breakage repairs.

11. MACHINE DISPOSAL

11.1. DISMANTLING

11.1.1. Truck separation

Contact a well equipped and authorized workshop

11.2. DEMOLITION OF THE MACHINE

11.2.1. Preparation for machine scrapping

Should the machine be scrapped, it is recommended to make it inert before by eliminating any exhausted oils and residues from the circuits, the tanks, the filters and the tanks (if any) and by dismantling all the plastic material or rubber material for their differentiated disposal.

11.2.2. Waste disposal

The disposal of the machine's components of different materials must be carried out in respect of the environment and in compliance with the specific laws in force in the territory where disposal takes place. It is absolutely necessary to avoid any environmental contamination during the various phases of dismantling and demolition.

11.2.3. Customer's responsibility

It will be customer's responsibility to carry out this operation in compliance with the regulations in force in the country where the machine is demolished.

11.3. INDICATIONS ON ADEQUATE WASTE DISPOSAL

11.3.1. Ferrous materials, aluminium, copper

This is recyclable material and must be consigned to an appropriate centre for material/waste disposal.

11.3.2. Plastic materials and rubber

This type of material must be consigned to a refuse dump or an appropriate recycling centre.

11.3.3. Exhausted oils

They must be considered as special waste and therefore to be treated according to law prescriptions. Consign this material to an authorized refuse dump.

11.3.4. Waste water and concrete waste

These are to be collected into an appropriate settling pond to be used for the production of new fresh concrete.



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