duma rent
www.duma-rent.com

AUSA

D 601 AHG

OPERATOR'S MANUAL

ENGLISH
Original Manual

TECHNICAL DOCUMENT

66.14440.00

INTENTIONALLY BLANK PAGE

duma rent

www.duma-rent.com

D601AHG

OPERATOR'S MANUAL

1 ..... INTRODUCTION
2 ..... SAFETY MEASURES
3 ..... GETTING TO KNOW THE DUMPER
4 ..... OPERATING THE DUMPER
5 ..... EMERGENCY OR BREAKDOWN SITUATIONS
6 ..... TRANSPORTATION, WAREHOUSE STORING AND END OF USEFUL LIFE
7 ..... TECHNICAL INFORMATION
8 ..... MAINTAINING THE DUMPER
9 ..... ADVANCED MAINTENANCE

1

INTRODUCTION

CONTENTS INDEX

FOREWORD 3
HOW TO USE THIS MANUAL 3
WARNINGS 4
ABBREVIATIONS 4
LIABILITY AND WARRANTY 4
- Screen 4
- Dumpers with built-in control units (if they are installed) 5
- Spare Parts 5
- Fuel 5
- Transportation 5
- Protection 5
- Lighting 5

EC DECLARATION 5

FOREWORD

This operator's manual has been designed and compiled with the help of engineers and technical service specialists, in order to inform the operator of the different aspects of the dumper.

The dumper's operator shall take the necessary time to thoroughly read and understand this manual, so that they can operate and maintain the dumper safely and correctly.

HOW TO USE THIS MANUAL

The general index lists this manual's contents. In addition, each chapter has a detailed index, indicating the page where different contents can be located.

This manual contains information regarding safety, driving, use, transportation, storage and maintenance of the dumper.

The pages of each chapter present the following information:

1. Chapter name.
2. Chapter number.
3. Page number.

Page format

This manual should be stored in the document case, in the engine compartment.

The dumper may optionally have a document holder fitted for manuals, protected by an anti-vandal system.

Location of the operator's manual

WARNINGS

Danger warnings are a means of attracting attention towards essential or critical information. The warnings include information about conditions, practices or procedures that should be adhered to, in order to prevent:

- Personal injury.
- Loss of life.

Caution warnings are used to describe conditions, practices or procedures that should be adhered to, in order to prevent:

- Damage to the equipment.
- Destruction of the equipment.
- Endangering health over a period of time.

The notes are used to highlight information of special importance or interest that:

- Should be remembered.
- Facilitates a correct decision.
- Otherwise would be difficult to find out.

The environmental notes are descriptions about procedures and characteristics where it is advisable to consider the possible environmental repercussions of certain actions or choices, mainly about products to be used.

ABBREVIATIONS

Term	Meaning
ECU	Electronic Control Unit
EN	European Standard.
PPE	Personal Protection Equipment.
FNR	Forward - NEUTRAL - Reverse
FVS	Full Visibility System: System of cameras and proximity sensors.

Term	Meaning
HMI	Human-Machine Interface.
N/A	Not Applicable.
W/N	Without Number.
SAE	Society of Automotive Engineers.

LIABILITY AND WARRANTY

AUSA is continually improving its products and reserves the right to make such improvements without incurring any obligation to make changes to dumpers previously sold. Therefore, claims cannot be made based on the data, illustrations and descriptions set forth in this operator's manual.

This section provides indications regarding liability and warranties, related to the dumper and its use.

Screen

The FVS of the dumper should be used with caution, complying with applicable driving regulations.

On the inside of the screen box there are voltages that potentially could cause personal injury.

LIABILITY AND WARRANTY

The specifications are subject to change without prior warning.

Never use high-pressure water on the screen. Although it is waterproof, dampness may cause general interior damage.

Disassembling the chamber components or the monitor will render the warranty void.

Disassembling the chamber will damage the integrity of the chamber's watertight seal.

The dumper's CCTV system complements the rear-view mirrors, thus making it easier to carry out dumper operations.

Dumpers with built-in control units (if they are installed)

All the connectors for the control units should be disconnected during welding operations.

The defective control units and sensors should be replaced for new ones, never repaired.

Do not disconnect the battery immediately after stopping the engine. Wait at least two minutes before disconnecting.

Spare Parts

To guarantee that the dumper maintains the same technical level as the date it was supplied, always use original AUSA spare parts.

Fuel

The use of fuel that does not comply with standard EN 590/ASTM D975 does not guarantee the safe operation nor the durability of the different components of the diesel engine.

The use of fuel that does not comply with standard EN 590/ASTM D975 will void the warranty.

The specifications of the fuel used, as well their sulphur content, are necessary to meet the compliance requirements in relation to exhaust gas emission where the dumper is used.

Transportation

AUSA is not responsible for the transportation of the dumper; this is the distributor's responsibility.

Protection

STOP

Whenever the dumper is in use, the Roll Over Protection Structure (ROPS) should be in its operational position. Otherwise, in the event of an accident, the operator may suffer severe injury or death.

Current legislation does not require the mounting, as standard, of a structure for protection from falling objects. However, if the dumper is to be used in areas that pose this type of risk, the same legislation indicates that the dumper must be equipped with said structure.

Lighting

The use of the dumper without lights is allowed only during daylight hours or in well-lit areas.

EC DECLARATION

The dumper D 601 AHG made by AUSA has been manufactured in accordance with the following certificate of conformity:

EC CERTIFICATE OF CONFORMITY

The manufacturer **AUSA Center, S.L.U.** with registered address c/ Castelladral, 1, 08243 - Manresa - Barcelona, declares that the machine detailed below:

Generic name: DUMPER

Commercial name: _____

Serial number: _____

complies with all the provisions of the EU Machinery Directive 2006/42/EC, and the appropriate national regulations:

- Spanish Royal Decree 1644/2008.

also complies with all the applicable provisions of the following European Community Directives:

- Electromagnetic Compatibility Directive, 2014/30/EC.
- Sound Level Directives of Machinery Used Outdoors, 2000/14/EC and 2005/88/EC.
- Exhaust Emissions Directives, 97/68/EC and 2012/46/EC.

and the appropriate national regulations;

- Spanish Royal Decree 186/2016, applying the EC Electromagnetic Compatibility Directive.
- Spanish Royal Decrees 212/2002 and 524/2006, sound level directives for machinery used outdoors.

on the basis of the provisions of the following European Standards:

- EN 474-1 - Earth-moving Machinery. Safety. General requirements.
- EN 474-6 - Earth-moving Machinery. Safety. Dumpers.

The certification procedure has been carried out in accordance with the provisions for non-dangerous machines in the aforementioned directives.

The details of the person authorised to prepare/preserve the technical file are:

AUSA Center, S. L. U.

c/ Castelladral, 1, 08243 - Manresa - Barcelona

Manresa: ___ / ___ / _____

AUSA Center S.L.U.

c/ Castelladral, 1 - P.O.B. 194

08243 Manresa, Barcelona, Spain

Tel.: 34 93 87 47 311

Fax: 34 93 87 41 211

Web: http://www.ausa.com

AENOR ER Empresa Registrada ER-0529/1999

CERTIFIED IQNet MANAGEMENT SYSTEM

AUSA Center, S.L.U. AUSA 08243 MANRESA

2

SAFETY MEASURES

CONTENTS INDEX

USE OF THE DUMPER 3
Intended Use 3
Improper Use 3
GENERAL INSTRUCTIONS 4
DURING REFUELLING 5
FOR THE OPERATOR 5
DURING OPERATION 6
DURING MAINTENANCE 9
IDENTIFICATION PLATES AND LABELS 11

STOP Safety standards must be adhered to without exception.

AUSA manufactures their dumpers in accordance with demands for intrinsic protection, as established in current law for countries of the European Economic Community, against dangers of any kind, which may present a risk to health or life, whenever the dumper is used and maintained in accordance with these directives.

Any hazard caused by improper use, not in compliance with these instructions or others specifically provided with the dumper will be the responsibility of the user and not AUSA.

This chapter gives instructions on how the dumper must be used as per the provisions in the 2006/42/EC Machine Safety Directive.

USE OF THE DUMPER

Intended Use

STOP Any use other than that intended will be considered improper.

STOP Health and safety at work and accident prevention standards should be adhered to during all transport, maintenance or repair operations.

Follow all operation, maintenance and repair conditions specified in this manual.

The dumper has been designed and manufactured for the transport, dumping and/or dispersion of bulk materials (mortar, concrete, sand, gravel, rubble, etc.). It may also be used in jobs related to gardening, forestry, etc.

Driving, maintenance and repair of the dumper must only be entrusted to duly trained personnel, who have the required tools and know the intervention and safety procedures relating to the dumper.

Improper Use

STOP Improper use of the dumper may cause serious injury to persons and may harm the dumper or the environment.

Improper use is defined as any use that does not conform to the criteria and instructions detailed in this manual.

Below, some of the most frequent and dangerous instances of improper use are listed:

- Transporting persons in the hopper or on the bodywork.
- Failing to comply with the instructions for use and maintenance set out in this manual.
- Overloading.
- Working on unstable, unconsolidated ground or on the edge of ditches and trenches.
- Using accessories and equipment for purposes other than those they are designed for.
- Using accessories and equipment not manufactured or authorised by AUSA.

GENERAL INSTRUCTIONS

General instructions	
Context	**Recommendation**
MODIFICATIONS TO THE DUMPER	Any modification which affects the capacity and safety of the dumper must be authorised by the vehicle machine manufacturer or by a responsible manufacturer, modifying, where necessary, the operator's manual and corresponding plates.
	AUSA will not be held responsible for any incidences or accidents caused by the use of non-original spare parts or by repairs carried out by unauthorised workshops.
	In the case of accessories and equipment being assembled on the base frame of the dumper by companies not connected to AUSA, all prescriptions and limitations of the dumper in relation to mass and dimensions, efficiency of the lighting system and adjustments thereto, along with the need for protection or additional systems must be taken into account in order to guarantee the safety of the dumper.

General instructions	
Context	**Recommendation**
USE	The dumper may only be used for the purposes for which it has been designed.
MAINTENANCE	The operator shall carry out periodic services when using the dumper to ensure it meets the functional safety requirements.
DAMAGE	If the Roll Over Protection Structure (ROPS) has suffered permanent damage or deformation, it should be replaced with a new one.
OPTIONAL ACCESSORIES	If the dumper is equipped with accessories, read carefully the instructions manual specific to that accessory prior to using it. The manuals of all accessories, supplied by their manufacturers, should be kept together with this operator's manual.
	The use of accessories may reduce the load capacity of the dumper.

DURING REFUELLING

During refuelling	
Context	**Recommendation**
TOXICITY	Given the fuel's toxicity, avoid direct contact with hands and inhaling the vapours. Never transfer the fuel by sucking it through a tube using your mouth.
	In high concentrations, the fuel vapours may cause dizziness, lack of concentration and even death in the case of prolonged exposure. If symptoms of dizziness are experienced, seek medical assistance immediately.
PPE	Use adequate watertight clothing, safety glasses and gloves for handling fuel.
TRANSFERRING	When performing refuelling by transferring fuel from a tank, barrel or drum, slowly open the tank's fuel outlet valve. If the tank or drum does not have an outlet valve, use an adequate vacuum pump.

During refuelling	
Context	**Recommendation**
SPILLS	In the case of a fuel spill, clearly mark the area, spread absorbent material, and inform your supervisor. Take the necessary measures to avoid risks until the spilled fuel has been complete removed and the surface is sufficiently dry.
FIRES OR EXPLOSIONS	Do not smoke or cause flames or sparks in refuelling areas. Fuel vapours are explosive.
	Do not store fuel in enclosed areas. Concentrated fuel vapours may cause fires or explosions.

FOR THE OPERATOR

For the operator	
Context	**Recommendation**
TRAINING	Before using the dumper, read this operator's manual thoroughly and pay attention to all the safety plates and labels installed on the vehicle. When in doubt, check with your supervisor.
	The dumper should only be used by authorised, duly-trained personnel.
MOBILE TELEPHONE	The use of mobile phones is prohibited whilst operating the dumper. If necessary, a hands-free system should be employed.

For the operator	
Context	**Recommendation**
PPE	Request the necessary personal protection equipment to carry out the work in a safe and comfortable fashion, for example: ▪ Helmet. ▪ Ear protectors. ▪ Warm clothing. ▪ Reflective equipment. ▪ Safety glasses.
ENTRAPMENT	Do not operate the dumper whilst wearing bracelets, chains, loose clothing, long hair which is not tied back, etc. as they might get caught on controls, rotating parts, edges, etc.

DURING OPERATION

During operation	
Context	**Recommendation**
WORKING IN ENCLOSED ENVIRONMENTS	If there is a risk of fire or explosion in the working area, either because of goods stored or because of possible fluid or gas leaks, check that the dumper is fitted with a sufficient degree of fire protection.
	For dumpers fitted with diesel particle filters in the exhaust (DPF), disable the feedback when operating in the aforementioned area.
	If the work is to be carried out in closed spaces, make sure that the area is well ventilated in order to prevent the excessive build-up of exhaust fumes. Always stop the engine when it is not required.
FIRE	The exhaust gas from the muffler is very hot. To prevent a fire, do not expose dry grass, mowed grass, oil or any other combustible materials to the exhaust gas. Keep the engine and muffler clean at all times.
BEFORE OPERATION	Correctly adjust and fasten the safety belt before driving the dumper.
	The seat position should be adjusted to the operator's physical build.
	If the operator is not on their seat, they should not start the dumper, nor operate the controls.
	The Roll Over Protection Structure (ROPS) should be raised (in the operating position).
DURING OPERATION	Keep the operator's cab clear of all objects or tools that could move about and might obstruct the controls or prevent the implementation of a manoeuvre when required.
	Any anomaly observed whilst using the dumper should be communicated immediately to a superior or to the maintenance service.

During operation	
Context	**Recommendation**
DURING OPERATION (continued)	Keep hands, feet and, in general, the entire body inside the protection area of the Roll Over Protection Structure (ROPS) or the cab (if equipped).
	Ensure clear forward visibility. If the load impedes forward vision, drive in reverse exercising caution.
	The speed of the dumper should be adjusted at all times to the work conditions and the area where it is being carried out. Regularly driving the dumper at maximum speed may represent a danger to the operator and to their surroundings.
	Before reversing the dumper, the operator should check that doing so will not put at risk either the machine itself or nearby people or objects.
	Do not drive with the hopper raised.
	Do not activate two hopper movements simultaneously.
	Check that the resistance of the ground on which you are driving is sufficient for the loaded dumper, in particular on access to bridges, embankments, slabbed areas, loading areas, etc.
	Pay full attention to the work. The safety of both the driver and others depends on the care taken when driving.
	Depending on the ground, try to raise as little dust as possible while driving.
	The operator should ensure that there are no persons in the work area of the dumper when it is in operation.
	If the dumper is used in areas where there are devices that are very sensitive to electromagnetic emissions, make sure that they will not be affected by this.

DURING OPERATION

During operation	
Context	**Recommendation**
DURING OPERATION (continued)	The dumper is not designed to tow other vehicles. In the inevitable event that this may be necessary, a load should be placed in the hopper to ensure traction.
	The operator must leave the cab when the hopper is loaded by shovel, crane or other similar external methods.
DRIVING AND OPERATION ON INCLINES	Pay special attention when working on inclines; move slowly and avoid transversal orientation.
	A slope within the recommended gradient does not mean that this slope can be manoeuvred on with absolute safety under any load, terrain or handling conditions.
	When accessing a slope, always place the dumper on a straight line. Avoid driving diagonally.
	Do not operate on slopes which exceed the recommended gradient. Respect the dumper's stability limits: ▪ Maximum gradient: 25% ▪ Maximum angle of lateral inclination: 25%
	For transversal driving, carry out a change in position on flat ground, and then enter the slope in a straight line.
	Never go down a slope with the gear selector in the NEUTRAL position.
	Only access a slope where the ground is stable, as the dumper may slide (even at low gradients) on grass, brush, damp metal surfaces, frozen ground, snow, etc.

During operation	
Context	**Recommendation**
DRIVING AND OPERATION ON INCLINES (continued)	The dumper may skid sideways on stony ground, and may lose stability on ground that is uneven.
	The presence of surface stones and humidity may impair the traction and stability of the dumper.
	On soft ground, the dumper may sink and the wheels become buried. This may increase the angle of the dumper (maximum gradient and maximum angle of lateral inclination), which may cause it to tip over.
	When operating on a slope, do not turn or raise the hopper. Only raise the hopper to unload.
	When driving on slopes with the hopper loaded, the hopper should be facing uphill, regardless of the direction of travel.
	When driving on slopes with the hopper unloaded, the hopper should be facing downhill, regardless of the direction of travel.
	If the engine stops during operation on a slope, put the gear selector (FNR) in NEUTRAL and restart the engine.
DUMPER LOADS	The dumper must not be used to transport people, other than the driver, unless additional approved seats have been provided for that purpose.
	Do not overload the dumper. Carry out manoeuvres gently, especially when changing direction on slippery ground.
	Avoid transporting materials that stick to the hopper (clayey mud, etc.) or that may get stuck inside (stone blocks, etc.), as they may make the dumper unstable during unloading.

DURING OPERATION

During operation	
Context	**Recommendation**
DUMPER LOADS (continued)	Always ensure that the maximum authorised weight of the dumper or the maximum axle load when collecting materials in the hopper is not exceeded.
	Transporting persons in the hopper is prohibited.
	Do not overload the dumper, nor use it to transport inflammable or explosive materials or substances that are detrimental to health.
	Overloading the dumper makes it unstable, hard to handle and may cause the tipping over of the vehicle or breakage of some components.
	The handling, stability and breaking distance are affected when loading the dumper; for this reason, it is important that the weight is correctly loaded and distributed.
	Always place the load as low as possible to reduce the effects of a high centre of gravity.
	Drive at slow speed and in accordance with the ground conditions when transporting a load.
UNLOADING THE HOPPER	Do not empty the contents of the hopper near a bank which is not reinforced, and unless there is a safety stop bar for the wheels at a safe distance from the edge.
	Perform the unloading manoeuvre progressively, maintaining the stability of the dumper.
	Be especially careful when unloading the hopper, given that the centre of gravity of the dumper may change.

During operation	
Context	**Recommendation**
UNLOADING THE HOPPER (continued)	There should be no one near the dumper when it is going to tip out the contents of the hopper.
	Before raising or lowering the hopper, the operator should ensure that all persons are out of reach of the dumper.
ON PUBLIC ROADS	When the dumper is operating on a public road, the rotating light should be activated.
	If the dumper is equipped with a light system, the front lights protective grills (1) should be disassembled while driving on public roads.
	When driving on public roads, the current applicable legislation should be adhered to.
	When driving on public roads, the longitudinal axis of the hopper should be positioned in the direction of travel.
	When approaching a crossroads with poor visibility, slow down, sound your horn and move forward slowly, in accordance with the amount of visibility available.
	Give way to any pedestrians you might come across while driving.
	To drive the dumper on public roads, all necessary approvals and licenses must be obtained in accordance with the current country legislation where the dumper is used, also incorporating the signalling and safety elements included in the legislation.

DURING MAINTENANCE

During maintenance	
Context	**Recommendation**
TRAINING	Maintenance, repair, adjustment, assembly or removal tasks of the dumper elements can only be carried out by people who have familiarised themselves with the operator's manual. It is recommended that a list of these persons is made, in which they confirm they have familiarised themselves with the operator's manual.
	Respect the environment. When changing oil, fluids, tyres, batteries, etc., take the used materials to the corresponding recycling centres.
	Those persons that carry out repairs, assembly, disassembly or adjustment tasks should follow the instructions contained herein or, where applicable, the instructions supplied separately by AUSA.
	Always keep the dumper well maintained. Specialised personnel should be assigned to this task, equipped with the necessary tools and appropriate instructions. Only authorised personnel should carry out maintenance and repair work.
DUMPER STOPPED	Unless unavoidable, all work on the dumper should be done with the engine switched off, the hopper empty, and all the immobilizing and locking devices engaged.
	Maintenance, servicing, repair and adjustment tasks on the hydraulic engines should only be carried out with the engine turned off.
	Servicing and repairs may only be carried out when the dumper is stationary and the engine is turned off.
DUMPER STOPPED (continued)	If the engine of the dumper is on, in an area with inadequate ventilation or in an enclosed area, there is a risk of fume poisoning.

During maintenance	
Context	**Recommendation**
ERGONOMICS	Some operations are easier done with the hopper raised, and in the unloading position. Before doing so, precautions must be taken to prevent any involuntary movement, using the devices on the dumper specifically designed for this purpose.
IDENTIFICATION PLATES AND LABELS	The identification plates and labels, instructions and warnings attached to the dumper must be kept in a perfectly legible condition.
TOWING	If the dumper needs to be towed, use a tow bar whenever possible, or if none is available, a cable that is strong enough for the job. In all cases, attach it to the points indicated by the manufacturer, and perform the manoeuvre at a speed no greater than 2 km/h for a distance no further than 1 km. If driving a towed dumper, be sure to keep your hands on the steering wheel so that they are safe from wheel whiplash movements.
	Ensure that the towing vehicle has sufficient towing and braking capability to be able to perform this operation.
	Given that the dumper has hydrostatic transmission, prior to any towing operation, follow the instructions indicated in *'Transmission bypass function' in Chapter 4* to disconnect the drive, enabling towing and eliminating any risk to the hydrostatic unit.
TOWING (continued)	Drive carefully and at a reduced speed; and if the tow load is not equipped with an overrun brake, make sure that the brakes are strong enough for both the dumper mass and that of the tow load.

DURING MAINTENANCE

During maintenance	
Context	**Recommendation**
LIFTING THE DUMPER	Lifting the dumper for handling or inspection should be carried out using the points on the machine designed for that purpose.
	Before proceeding to lift the dumper, the tie-beam should be placed between the two frames, so that the articulation is immobilised.
ELECTRICITY	When carrying out any repair work, pay special attention to the battery terminals. These should be protected so that they cannot accidentally be shorted out by a tool, part, etc.
	Before carrying out any electrical welding work on the dumper, remove the electric and electronic equipment and disconnect the positive terminal of the battery, in order to avoid possible damage to the installations.
WHEELS	When changing a tyre, make sure that it is fitted with the tread pattern facing the right way.
	When replacing tyres, in addition to ensuring that they are the correct replacements, follow the tyre manufacturer's safety instructions. For safety reasons, split wheels must not be used (those made of two rims bolted together).
BEFORE MAINTENANCE WORK	Before carrying out any work on the engine cooling system, wait for the temperature of the coolant to drop enough for the coolant reservoir cap to be removed safely.
	Before carrying out work on the dumper, the tie-beam should be placed between the two frames so that the articulation is immobilised.

During maintenance	
Context	**Recommendation**
PPE	In order to avoid allergic reactions and other hazards affecting the skin, replenishing of fuel or other fluids should be carried out wearing protective gloves.
AFTER MAINTENANCE WORK	Once the adjustment or maintenance tasks are completed, place all protection devices in their original position.
HYDRAULICS	Before disconnecting the hydraulic hoses, identify or mark them so that they may be reconnected correctly later.
	Before disconnecting fluid systems, make sure there is no pressure in them and take steps to avoid unexpected spills. Never use a naked flame to check fluid levels and leaks.

IDENTIFICATION PLATES AND LABELS

Plate	Description
	EC marking.
	Fuel type.
	Driving on gradients and dumper overloading warning.
	Tie down point.

Plate	Description
	Joystick functionality.
	Use of ear protectors.
	Risk of entrapment.
	Rear wheel tyre pressure.

IDENTIFICATION PLATES AND LABELS

Plate	Description
	Front wheel tyre pressure.
	Noise level in the environ-ment.
	Manoeuvre zone warning.
	Out of order warning.

Plate	Description
	Dumper use warning.
	Hydraulic oil type.
	Biodegradable hydraulic oil type (if equipped).
	Risk of burns.

IDENTIFICATION PLATES AND LABELS

Plate	Description
	Danger, fan.
	Roll Over Protection Structure (ROPS) characteristics plate.
	Brake fluid type.
	Dumper characteristics plate.

Plate	Description
	Deutz engine indicators.
	Engine oil type.
	Coolant type and level.
	Hoisting point.

IDENTIFICATION PLATES AND LABELS

Plate	Description
	Check the operator's manual.
	Battery disconnection indication.
	Grease points indicator.
	Dangerous to use with the Roll Over Protection Structure (ROPS) folded.

Plate	Description
	Location of the battery cut-off switch.
	Engine stopped indication.
	Maximum load indicator.

3

GETTING TO KNOW THE DUMPER

CONTENTS INDEX

GETTING TO KNOW THE DUMPER....3
OPERATOR'S POSITION....4
Getting in and out of the dumper....4
Seatbelts....4
Seat adjustment....4
CONTROLS....5
Adjust the rear-view mirrors....5
Control panel....8
HMI screen....11
FVS screen....15
FVS menu....17

GETTING TO KNOW THE DUMPER

The D 601 AHG dumper is equipped with a 180° turning hopper. In addition, it has an articulated chassis providing greater versatility.

The dumper moves thanks to a hydrostatic transmission system driven by a diesel engine.

Parts of the dumper

Item	Part
1	Seat
2	Roll over protection structure (ROPS)
3	Diesel engine
4	Hopper
5	Chassis

Parts of the dumper

OPERATOR'S POSITION

Getting in and out of the dumper

Never grab or jerk the steering wheel to get in and out of the dumper. Enter and leave the cab without activating any part in the process.

Always check your hands and soles of your shoes are clean and dry before getting in/out of the dumper.

The dumper has steps (1) and handles (2) on both sides to facilitate operator access.

Seatbelts

STOP

The seatbelt is an important part of this safety system and the operator must always fasten it before operating the dumper.

If the seatbelt is not fastened and the dumper rolls over, the driver may suffer serious injury or death as a result of being crushed.

If the dumper is parked on a steep slope, the seatbelt roller may lock.

The dumper's seatbelt is the roll-up type.

Seatbelt

Seat adjustment

Adjust the position and suspension of the seat

OPERATOR'S POSITION

Adjust the rear-view mirrors

Objects in rear-view mirrors are closer than they appear.

Adjust the position of the rear-view mirrors

CONTROLS

Control panel

CONTROLS

Item	Part	Figure	Description
1	Accelerator pedal		Used to increase the revolutions of the diesel engine. Releasing it reduces the revolutions to idle speed.
2	Brake pedal		Used to activate the front and rear brakes proportionally.
3	Steering wheel		Used to drive the direction of the dumper, turning the articulation of the chassis towards the left or right.
4	Multifunction switch (if equipped)		Allows the following elements of the dumper to be controlled: ▪ Horn: Activated by pressing the top of the switch. ▪ Indicators: Push the lever forward or back to activate one indicator or the other. ▪ Lights: Turning the switch on its axis allows selecting between the types of illumination: ▪ Lights off. ▪ Sidelights. ▪ Low beam. Pushing the lever activates the high beam. ▪ Lights flash: Activated by turning the lever.
5	Control panel		See *'Control panel'*.

CONTROLS

Item	Part	Figure	Description
6	Joystick		Allows the following dumper functions to be controlled: ▪ Gear selector (FNR). The direction of travel is chosen by a switch located on the lower part of the joystick handle. The selected direction of travel is displayed on the upper part of the joystick and the HMI screen: ▪ FORWARD: Green arrow forward. ▪ NEUTRAL: Arrows off. ▪ REVERSE: Red arrow reverse. ▪ Hopper movements. Before turning the hopper, raise it to unlock the turning safety lock (1). Also, when lowering the hopper, try to centre it as much as possible so that it fits correctly into the turning safety lock. ▪ Forward/back: Used to raise or lower the hopper. ▪ Left/right: Used to turn the hopper. ▪ Diagnostics on the HMI screen. Yellow button located on the lower part of the joystick handle. Only for technical assistance service.

CONTROLS

Control panel

Control panel

Item	Part	Figure	Description
1	HMI screen		See *'HMI screen'*.
2	FVS screen		Activated when the following conditions are met: ▪ Ignition switch in contact position. ▪ Forward or reverse gear activated. ▪ Parking brake is released. For more information, see *'FVS screen'*.
3	Parking brake		Used to apply the parking brake, it has two positions: ▪ Released. ▪ Applied. While it is applied, the light remains on.

CONTROLS

Item	Part	Figure	Description
4	Check engine mal-function		When pressed for three seconds, it flashes to indicate the engine malfunction code. This flashing code is explained in the *'Engine Fault Code List', in Chapter 5*.
5	Start-Stop (if equipped)		See *'Start-Stop' in Chapter 10*.
6	Work lamps (if equipped)		Used to switch the work lamps on.
7	Acoustic warning for reverse gear (if equipped)		Used to switch off the acoustic warning for reverse gear, provided the lights are on.
8	Horn		When pressed, the horn activates.
9	Acoustic warning for FVS proximity sensors (if equipped)		Used to switch off the proximity sensors acoustic warning.
10	Hazard lights		Used to switch the hazard lights on (the indicators come on simultaneously). While it is activated, the switch flashes.
11	Rotating light		Used to switch the rotating light on. While it is applied, the light remains on.
12	Emergency push button		Used to stop the diesel engine in case of emergency. Regardless of the driving speed of the dumper, the parking brake is applied automatically.

CONTROLS

Item	Part	Figure	Description
13	Ignition switch		It has four positions: ▪ Parking (P). ▪ Stop (0). ▪ Contact (I). ▪ Start (II). The Parking (P) position has been designed so that the dumper can be parked, with the sidelights on and the key removed from the ignition. This is not possible in the Stop (0) position. When the Parking (P) position is selected, the sidelights come on automatically, regardless of the position of the multifunction switch (if equipped). An intermittent acoustic warning is also activated to remind the operator that the lights are on and the battery might run out.

CONTROLS

HMI screen

HMI screen

Item	Part	Figure	Description
1	Fuel level		Shows the fuel level in the tank. If it is too low, the 'Low fuel level' indicator comes on (3).
2	Coolant tempera-ture		Shows the coolant temperature. If it is too high, the 'High coolant temperature' indicator comes on (4).
3	Low fuel level		Comes on when the fuel level in the tank is too low, and it flashes when it reaches a critical level. Refuel following the indications in section *'Refuelling' in Chapter 4*.
4	High coolant tem-perature		Comes on when the temperature of the coolant is too high. There also appears a flashing warning icon in the centre of the screen, and a continuous acoustic warn-ing sounds. If this happens, proceed as instructed in *'Engine overheating' in Chapter 5*.

CONTROLS

Item	Part	Figure	Description
5	High beam		Comes on when the high beam is on.
6	Indicators		Flashes when the indicators are on.
7	High hydraulic oil temperature		Comes on when the temperature of the hydraulic oil is too high. There also appears a flashing warning icon in the centre of the screen, and a continuous acoustic warning sounds. Clean the radiators following the indications in *'Weekly maintenance´ in Chapter 8.*
8	Parking brake		Comes on when pressing the *'Parking brake' switch.*
9	Battery charge		Comes on when the battery is not being charged. Contact AUSA authorised dealer.
10	Cold start system		Comes on when the cold start system is in operation. Start the engine when this indicator has switched off.
11	Diesel engine oil pressure		Comes on with low diesel-engine oil pressure. There also appears a flashing warning icon in the centre of the screen, and a continuous acoustic warning sounds. This light does not come on when the ignition switch is in the Contact position and the engine is off. Stop the engine immediately and refill following the indications in *'Refilling engine oil' in Chapter 8.*
12	Check engine malfunction	CHECK	Comes on when it detects some engine failure. When the *'Check engine malfunction'* button is pressed for three seconds, it flashes and shows the fault code. This flashing code is explained in the *'Engine Fault Code List', in Chapter 5.*
13	Tachometer		Shows the engine revs in rpm, and it indicates the safe operational interval. See 'ECO mode' to know the limitation of the engine revs.
14	Speedometer		Shows the speed of the dumper in km/h. See 'ECO mode' to know the speed limit.

CONTROLS

Item	Part	Figure	Description
15	Forward NEUTRAL Reverse		Shows the selected direction of travel: ▪ FORWARD: Green arrow forward. ▪ NEUTRAL: 'N'. ▪ REVERSE: Red arrow reverse. In order to see the FORWARD/REVERSE arrows, the following conditions must be met: ▪ Parking brake is released. ▪ Engine ON. ▪ Operator seated on the seat. Otherwise, the icon displayed is the NEUTRAL one, regardless of the selection.
16	Parking brake		Indicates that the parking brake is applied; it has two operating modes: ▪ Red: The parking brake has been applied by the operator. ▪ Green: The parking brake has been automatically applied by the dumper (hill-holder function).
17	ECO Mode		Comes on when the dumper automatically activates the ECO Mode (below 17 km/h). The engine does not go over 1,750 rpm.
18	Hydraulic oil temperature		Indicates the temperature of the hydraulic oil. If it is too high, the '*High hydraulic oil temperature*' indicator comes on (7).
19	Transmission failure		Indicates the need for a diagnosis of the transmission's ECU. Contact AUSA authorised dealer.
20	Low hydraulic oil level		Comes on when the oil level of the hydraulic oil tank is too low. There also appears a flashing warning icon in the centre of the screen, and a continuous acoustic warning sounds. Refill following the indications in *'Refilling hydraulic oil' in Chapter 8.*
21	Lights activated (if equipped)		Comes on when the lights are activated.
22	Seatbelt		Comes on when the presence of the operator is detected on the seat and the seatbelt is not put on. When driving at more than 3 km/h without the seatbelt on, there appears a flashing warning icon in the centre of the screen, and a continuous acoustic warning sounds. Below this speed, there is no icon or acoustic warning.
23	Hours of service		Indicates the period of time the operator has been using the dumper.

CONTROLS

Item	Part	Figure	Description
24	Start-Stop (if equipped)		For additional information about operation, see *'Start-Stop'*.
25	Blocked air filter		Comes on when there is a blockage in the air filter. Proceed following the indications in *MTR.C.01 - 'Cleaning the air filter' in Chapter 9*.
26	Coolant level		Comes on when the coolant level is too low. There also appears a flashing warning icon in the centre of the screen, and a continuous acoustic warning sounds. Refill following the indications in *'Refilling coolant' in Chapter 8*.
27	Water in the fuel		Comes on when there is water in the fuel. There also appears a flashing warning icon in the centre of the screen. Drain the water following the indications in *SAC.R.01 - 'Changing the prefilter, the fuel filter and drain the water' in Chapter 9*.
28	Low fuel pressure		Comes on when the fuel pressure in the engine is too low. There also appears a flashing warning icon in the centre of the screen. Contact AUSA authorised dealer.
29	Inlet air tempera-ture		Comes on when the temperature of the inlet air is too high. Contact AUSA authorised dealer.

CONTROLS

FVS screen

The FVS comprises two systems:

- Visualisation (chambers and screen).
- Proximity sensors (optional).

STOP

It is possible that the proximity sensors system does not detect thin or low objects, materials that absorb sound (snow, cotton, foam rubber) or objects located below the counterweight.

The guidance grid may not reflect the reality due to the position of the camera and its lens.

The objects within the camera's field of vision might be closer or further away than they look.

The proximity sensors system informs that an obstacle has been detected by flashing the appropriate asterisk, and emitting an acoustic signal with a voice message. The flashing frequency increases as the obstacle is closer to the sensor.

The standard dumper is equipped only with the front camera. The proximity sensors and the rear camera are installed as an option.

The voice warnings are always in English.

FVS range

CONTROLS

FVS screen

Item	Part	Figure	Description
1	Distance to the obstacle	1.05m	Indicates the distance to the obstacle detected by the sensors and corresponding to the image displayed on the screen.
2	Active sensor		Flashes when the corresponding sensor detects an obstacle.
3	On/Off		Is used to switch the screen on and off. ▪ When selecting a direction of travel, the appropriate camera is displayed on the screen, regardless of whether the screen is on or off: ▪ FORWARD: Front camera. ▪ REVERSE: Rear camera (if equipped). ▪ With the gear selector (FNR) in NEUTRAL, the screen displays the latest selection made by the operator: ▪ Screen on: Front camera. ▪ Screen off.
4	Increase brightness Modify value		▪ On the FVS screen: Used for increasing the screen brightness. ▪ In the FVS menu: It allows the operator to modify the value of the selected parameter.
5	Reduce brightness Modify value		▪ On the FVS screen: Used for decreasing the screen brightness. ▪ In the FVS menu: It allows the operator to modify the value of the selected parameter.

CONTROLS

Item	Part	Figure	Description
6	Guidance grid Menu downwards		▪ On the FVS screen: Used to toggle the display of the guidance grid. ▪ In the FVS menu: Used for going down, sequentially, through each of the parameters.
7	Menu		Allows the operator to access the FVS main menu. For additional information about the screens in this menu, see 'FVS Menu'.
8	Camera		With the gear selector (FNR) in NEUTRAL, it allows the operator to toggle the display between the front camera and rear camera (if equipped).

FVS menu

The following images show the different parameters that can be modified on each of the FVS menu screens.

FVS main menu

'Image' menu

'Options' menu

'System' menu

'Auto Scan' menu

INTENTIONALLY BLANK PAGE

4

OPERATING THE DUMPER

CONTENTS INDEX

DAY-TO-DAY OPERATIONS 3
- Starting the engine 3
- Parking and stopping the engine 3
- End of the working day 4
- Refuelling 4

SPECIAL OPERATIONS 6
- Running-in the engine 6
- Roll Over Protection Structure (ROPS) 6
- Immobilising the chassis 7
- Immobilising the hopper 8
- Transmission bypass function 9
- Disconnecting the battery 9

The engine performance depends on the following factors:

- Fuel temperature.
- Air temperature.
- Relative humidity in the air.
- Altitude.

The higher these values, the lower the engine performance, as the power it can supply is reduced.

DAY-TO-DAY OPERATIONS

Starting the engine

Before starting the engine, it is important that:

- The operator is seated and with the seatbelt fastened.
- The parking brake is applied.
- The gear selector is in NEUTRAL.

At low temperatures, increase the revs gradually so that the engine achieves a good level of lubrication.

1. Insert the key in the ignition and turn it to the CONTACT position.

Wait until the cold start system indicator switches off.

2. Turn the key to the START position. The engine will start. Once started, let go of the key, which will return to the CONTACT position.

Do not keep the key in the START position for longer than 15 seconds. If the engine does not start, repeat the previous steps, waiting 30 seconds between each attempt.

Parking and stopping the engine

When leaving the dumper, ALWAYS apply the parking brake, regardless of whether or not the contact is activated or whether the engine is on or off.

When leaving the dumper, never leave the key in the ignition.

When parking the dumper and stopping the engine, do not activate the emergency push button.

Park the dumper on level ground, both at the end of the day and when performing maintenance tasks.

Chocking the wheels with suitable blocks is recommended.

1. Perform a smooth stop, releasing the accelerator and gradually stepping on the brake pedal.

If the dumper has been operating at full load, keep the engine idling for at least one minute, to cool down.

DAY-TO-DAY OPERATIONS

2. Put the gear selector (FNR) in the NEUTRAL position.
3. Apply the parking brake.
4. Stop the engine by turning the key to the STOP position.

End of the working day

At the end of a working session with the dumper, follow these steps:

1. Park the dumper in areas specifically designated for this purpose, and not where it prevents people from passing or blocks exits or access to stairways or emergency equipment.
2. Put the hopper in a straight, horizontal position (at rest).
3. Put all elements in their at rest position.

Leave the chassis in the straight position.

4. Apply the parking brake.

If the dumper is left on a slope, apply the parking brake and chock the wheels with suitable blocks.

5. Stop the engine, remove the key from the ignition and disconnect the battery following the indications in *'Disconnecting the battery'*.
6. Disassemble the rotating light (1) from the Roll Over Protection Structure (ROPS) and cover the gap with the rubber protective plug (2).

7. Open the right maintenance cover and store the rotating light in the holder (1) inside the engine compartment. Then, close the right maintenance cover.

8. Lock all mechanisms which impede use of the dumper by unauthorised personnel.

Refuelling

STOP Refuel the dumper in a well-ventilated area and with the engine off.

STOP Never smoke during refuelling,

The fuel must meet the specifications set forth in *'Fuel' in Chapter 1* and *'Fuel Specifications' in Chapter 8*.

Never mix gasoline or alcohol with the fuel.

Do not use fuel mixtures with oils, other fuels or unsuitable additives.

DAY-TO-DAY OPERATIONS

1. Bring the dumper near the fuel pump so that the hose reaches the tank intake comfortably.

2. Apply the parking brake.

3. Deactivate the lighting system (if equipped) and stop the engine.

If the pump has an earth-connection point for vehicles, connect it to a non-insulated metallic point of the dumper.

4. To access the fuel tank intake, open the cap located on the side of the dumper.

This cap might have a vandal-proof safety device.

5. Clean the area around the fuel tank cap to prevent accumulated dirt, water or other substances from entering the tank during refuelling.

6. Turn the fuel tank cap anticlockwise to remove it, and insert the pump hose.

If any internal pressure is perceived (whistling sound heard when removing the fuel tank cap), make sure that the vent is not obstructed before operating the dumper.

7. Fill up the tank, ensuring that its 69-litre maximum capacity is not exceeded.

STOP

Avoid spilling fuel outside the tank. Immediately clean any spillage, and dry the surface thoroughly.

Never refuel before exposing the dumper to high temperatures, since there might be fuel spillages through the vent.

8. Once the tank has been filled, remove the pump hose.

9. Place the cap and turn it clockwise until it stops.

10. Close the cover located on the side of the dumper.

Secure the cap using the vandal-proof safety device.

SPECIAL OPERATIONS

Running-in the engine

Long accelerations at full throttle, maintaining a high cruising speed and overheating are detrimental to the engine during the running-in period.

The dumper's engine requires a running-in period of 50 hours/30 days before it is able to operate at full load. During the running-in period, take into account the following instructions:

- The accelerator pedal must not be pressed by more than ¾ during normal operation of the dumper.
- Brief full accelerations and sudden speed variations contribute to good running in.

Once the 50 hours/30 days running-in period is over, it will be necessary to have the dumper serviced at an official AUSA dealer.

Roll Over Protection Structure (ROPS)

STOP

When changing between the operational and travelling position of the Roll Over Protection Structure (ROPS), adopt a position that maintains good balance.

Also, make sure you keep your hands out of the articulation area, as this may cause serious injury.

The procedure to put the Roll Over Protection Structure (ROPS) into travelling position is explained below:

To place the Roll Over Protection Structure (ROPS) in the operating position, follow the instructions in reverse order.

1. Remove the safety catches (1) of the pins located on both sides of the Roll Over Protection Structure (ROPS).

2. Take the pins out (1).

SPECIAL OPERATIONS

3. Carefully, fold the upper part of the Roll Over Protection Structure (ROPS) into its travelling position.

The Roll Over Protection Structure (ROPS) has a handle (1) on the right side to enable handling and reduce the risk of entrapment.

In addition, it has two gas dampers to compensate for the weight of the upper part during handling.

4. Once the Roll Over Protection Structure (ROPS) is in its travelling position, replace the pins (1) and their corresponding safety catches (2).

Immobilising the chassis

STOP Lock the dumper chassis before towing it or hoisting it with a crane.

Before beginning this procedure, ensure that the chassis is in the straight position.

1. Remove the safety catches (1) of the chassis locking bar (2).

SPECIAL OPERATIONS

2. Remove the locking bar from the chassis.

3. Place the locking bar (1) so that it joins both chassis bodies (2) and place the safety catches (3).

If necessary, turn the steering wheel to adjust the position of the chassis so that the locking bar may be correctly fitted.

Immobilising the hopper

STOP Lock the hopper when carrying out maintenance tasks that require the hopper to be in the raised position.

1. Raise the hopper with the joystick following the instructions set forth in *'Controls' in Chapter 3*.

2. Remove the safety catch (1) and the pin (2) of the safety prop (3) and manually place it into position.

3. Install the pin (2) and the safety catch (1) to attach the safety prop (3) to the chassis.

SPECIAL OPERATIONS

Transmission bypass function

The transmission bypass function is used to enable the dumper to be towed, as described in *'Towing' in Chapter 6*.

ACTIVATION

1. Stop the engine.
2. Access the hydrostatic system pump and remove the protective covers (1) on the two pressure relief valves.

The protective covers are destroyed when removed, and must be replaced with new ones.

3. With a 5 mm Allen key, loosen the screws inside (2) each of the two valves, turning them anticlockwise.

DEACTIVATION

Immediately after towing, deactivate the bypass function.

1. Rearm the high-pressure relief valves, tightening the screws inside (2) to a torque of **10±1 Nm**.
2. Place new protective covers to avoid unauthorised manipulation.

Disconnecting the battery

STOP Before performing any maintenance operation on the electrical system, the battery should be disconnected.

Do not disconnect the battery immediately after stopping the dumper engine. Wait 2 minutes before doing so.

Open the left maintenance cover and turn the battery cut-off switch.

INTENTIONALLY BLANK PAGE

5

EMERGENCY OR BREAKDOWN SITUATIONS

CONTENTS INDEX

EMERGENCY START 3
ENGINE OVERHEATING 4
UNLOCKING THE BRAKES 4
ROLL OVER 5
IMMERSION 5
FUSES 6
ENGINE FAULT CODE LIST 10

EMERGENCY START

If the engine cannot start due to a flat battery, another 12V booster battery can be used together with the corresponding jump leads to connect the two batteries. Proceed as described below:

STOP

Use only 12 V batteries. Other charging devices (such as battery chargers, etc.) might cause explosions in the battery or damage to the electrical system.

When using a battery from another vehicle, try to prevent the vehicle from touching the dumper.

1. Open the left maintenance cover to access the battery.

2. Disassemble the cover (1) of the positive terminal.
3. Connect the terminals from the auxiliary battery to the terminals of the dumper's battery.

Connect the positive terminal from the auxiliary battery to the positive terminal of the dumper's battery (1).

Connect the negative terminal from the auxiliary battery to the negative terminal of the dumper's battery (2).

4. Start the dumper's engine normally, following the indications given in *'Starting the Engine' in Chapter 4*.
5. Disconnect the cables from the terminals.

First, disconnect the negative terminals and then the positive.

ENGINE OVERHEATING

STOP The radiator might be very hot; therefore, it is recommended to use gloves before handling it.

If the coolant temperature indicator comes on when the dumper is in operation, proceed as follows:

1. Reduce the speed, keeping the dumper moving so that air circulates through the radiator.
2. If the indicator is still on after one minute, stop the dumper. Put the gear selector (FNR) in NEUTRAL, apply the parking brake and stop the engine.
3. Wait for the engine to cool down, and perform the following checks:

Inspect the radiator coolant fins and clean them following the procedure in *'Basic Maintenance' in Chapter 8*.

Check the coolant level and refill the tank following the procedure in *'Refilling coolant' in Chapter 8*.

UNLOCKING THE BRAKES

STOP Lock the brakes before starting the dumper again.

To unlock the parking brake, proceed as follows:

1. Stop the dumper's engine and remove the key from the ignition.
2. Access the parking brake under the dumper and remove the lock (1).

Make a small mark to identify the hole where the lock was, so that later it is placed in the same location.

UNLOCKING THE BRAKES

3. Use a 70 mm wrench to rotate the brake (1) two turns clockwise to unlock it.

To lock the brakes again, follow the instructions in reverse order.

ROLL OVER

Once the normal position has been restored, do not attempt to start the dumper without first contacting the official AUSA dealer.

If the dumper rolls over, the operator must take into account the following recommendations to avoid being trapped between the dumper and the ground:

- When the dumper is in operation, stay inside the protective area of the Roll Over Protection System (ROPS) or the cab (if equipped) at all times.
- Grasp the steering wheel firmly.
- Place your feet firmly on the floor of the operator cab.
- Try to keep as far away from the point of impact as possible.

After securing the area and ensuring the well-being of the affected operator, proceed to place the dumper again on its four wheels.

IMMERSION

Do not attempt to start the dumper's engine. Immersion can cause serious damage in the machine.

Contact AUSA authorised dealer.

FUSES

Location of the fuse boxes

FUSES

Fuse box 1

Item	Intensity (A)	Description
1	5	Diesel engine ECU
2	5	Travel direction control signals (FNR) and parking brake
3	7.5	HMI screen, diagnosis connector, alternator and FVS supply
4	10	Rotating light and horn
5	5	Joystick yellow push button
6	1	GPS
7	30	Cab (if equipped)
8	15	Work lamps and start/stop push button
9	15	Indicators and brake light
10	1	Speed sensor and transmission ECU
11	5	Seat sensor and seatbelt sensor
12	20	Machine functions ECU
13	15	Optional connector
14	-	Not used
15	-	Not used
16	5	Start signal (+50)

FUSES

Fuse box 2

Item	Intensity (A)	Description
17	15	Transmission ECU
18	15	Hazard lights
19	1	GPS and digicode
20	20	Cab (if equipped)
21	-	Not used
22	10	Optional connector
23	-	Not used
24	5	Transmission ECU
25	-	Not used
26	-	Not used
27	-	Not used
28	-	Not used
29	20	Lighting equipment (if equipped)
30	-	Not used
31	5	Sidelights and HMI screen lighting indicator
32	5	Sidelights and number plate light

FUSES

Fuse box 3

Item	Intensity (A)	Description
1	30	Diesel engine ECU power supply
2	70	General +15 and +30
3	30	Fuel pump
4	100	Cold start system

ENGINE FAULT CODE LIST

When the engine's electronic management system detects a malfunction, it turns on the *'Check engine malfunction'* indicator (see *'HMI screen' in Chapter 3*).

When the 'Check engine malfunction' button is pressed for three seconds (see *'Control panel' in Chapter 3*), it flashes and shows the fault code.

Depending on the seriousness of the malfunction detected, the engine may continue to operate with certain limitations. In these cases, the *'Check engine malfunction'* indicator remains on or flashes, to indicate a serious system error.

This flashing code is explained in the following table:

Flashing code example: 1-2-8

- 1 x short flash.
- 2 x long flash.
- 8 x short flash.

Code	Flashing code	Description
8	2-2-6	The air mass flow AFS_dm is greater than or equal to AFS_PhysRng.Min_C. Physical range check is low for air mass flow sensor.
9	2-2-6	Air inlet filter temperature, plausibility error.
26	2-6-3	When AirHt_ctDefSRCLoOn_mp is lower than AirHt_ctMaxDef_C. DFC to SRC Low error when heater is on.
28	7-2-8	Healing takes place if the condition for error detection is not present. Air temprature monitoring plausibility check array.
30	7-2-8	Healing takes place if the condition for error detection is not present. Air temperature monitoring plausibility check array.
36	7-2-9	-

Code	Flashing code	Description
37	1-6-7	Short circuit to battery error of actuator relay 2.
38	7-3-1	Short circuit to battery of actuator relay 3.
40	7-3-3	Short circuit to battery of actuator relay 6.
41	7-2-9	Short circuit to ground error. Detailinformation not available.
42	1-6-7	Short circuit to ground of actuator relay 2.
43	7-3-1	Short circuit to ground of actuator relay 3.
44	7-3-2	Short circuit to ground of actuator relay 4.
45	3-1-8	Sensor battery voltage error; signal range check is high.
46	3-1-8	Sensor battery voltage error; signal range check is low.
47	3-1-8	High battery voltage; warning threshold is exceeded.
48	3-1-8	High battery voltage; Shot off threshold exceeded.
73	7-2-2	Throttle valve error, Open load or short cut to battery, blocke valve or wrong control signal for valve.
74	7-2-1	Sensor error glow plug control diagnostic line voltage; Signal range check high.
75	7-2-1	Sensor error glow plug control diagnostic line voltage; Signal range check low.
76	7-2-1	Glow plug control; Open load. Water pump control (PWM) only TTCD 6.1/7.8.
77	7-2-1	Glow plug control; Powerstage over temperature.
78	7-2-1	Glow plug control; Short circuit to battery. Water pump control (PWM).
79	7-2-1	Glow plug control; Short circuit to ground. Water pump control (PWM).

ENGINE FAULT CODE LIST

Code	Flashing code	Description
82	2-7-1	CAN-Bus 2 = CAN_C reports Bus-error (for engines <8L and CV52 it is the engine-CAN@250kbaud). CAN Bus error passive; warning CAN C - engine CAN.
83	2-7-1	No detail information.
84	2-7-1	CAN-Bus 0: BusOff-Status
85	2-7-1	CAN-Bus 1: BusOff-Status
86	2-7-1	CAN-Bus 2 = engine bus BusOff-Status
87	2-7-1	BusOff error CAN.
88	2-2-3	Charged air pressure above warning threshold.
89	2-2-3	Charged air pressure above shut off threshold.
90	2-2-5	Defect fault check for absolute plausibility test.
92	2-2-5	Physical range check high for coolant temperature.
93	2-2-5	Physical range check low for coolant temperature.
96	2-2-5	Sensor error coolant temperature; Signal range check high.
97	2-2-5	Sensor error coolant temperature; Signal range check low.
98	2-3-2	High coolant temperature; Warning threshold exceeded.
99	2-3-2	Coolant temperature; System reaction initiated.
101	2-3-5	Coolant level too low.
106	3-2-5	Plausibility check for clutch.
121	3-4-1	Engine shut off demand ignored.
122	5-9-1	Shut off request from supervisory monitoring function.
124	7-7-4	Fault entry for override control mode.
125	5-9-5	Timeout error of CAN-transmit-frame AmbCon; Weather environments.

Code	Flashing code	Description
126	3-3-8	Timeout Error of CAN-receive-frame AMB; Ambient temperature sensor.
128	5-9-7	Timeout error of CAN-receive-frame AT1IG1; NOX sensor upstream.
129	5-9-6	DLC error of CAN-receive-frame AT1IG1Vol NOX sensor.
130	5-9-7	Timeout error of CAN-receive-frame AT1IG1Vol; NOX sensor.
133	7-6-6	Timeout error (BAM to packet) for CAN-receive-frame AT1IGCVol1.
134	7-6-6	Broadcast announce message of the calibration message of the upstream catalytic NOx sensor has failed.
135	7-6-6	Timeout error (PCK2PCK) for CAN-Receive-Frame AT1IGCVol1.
136	1-1-4	DLC error of CAN-Receive-Frame AT1O1.
137	1-1-7	Timeout error of CAN-Receive-Frame AT1OG1. NOX sensor (SCR-system downstream cat; DPF-system downstream cat).
138	1-1-4	DLC error of CAN-Receive-Frame AT1O-1Vol.
139	1-1-7	Timeout error of CAN-Receive-Frame AT1OG1Vol.
140	7-6-7	Timeout error (BAM to packet) for CAN-Receive-Frame AT1OGCVol2.
141	7-6-7	Calibration message 1 of the after catalyst Nox sensor has failed.
142	7-6-7	Timeout error (PCK2PCK) for CAN-Receive-Frame AT1OGCVol2.
153	7-9-3	Not used.
155	-	Not used.
164	3-3-1	Timeout error of CAN-Receive-Frame EBC1.
167	6-1-5	Timeout error of CAN-Transmit-Frame EEC3.
168	7-6-3	Timeout error of CAN-Transmit-Frame EEC3VOL1. Engine send messages.

ENGINE FAULT CODE LIST

Code	Flashing code	Description
169	7-6-4	Timeout error of CAN-Transmit-Frame EEC3VOL2. Engine send messages.
171	3-3-3	Timeout error of CAN-Receive-Frame ComEngPrt. Engine Protection.
172	6-1-8	Engine shut off request through CAN.
174	3-3-4	Timeout error of CAN-Transmit-Frame ERC1.
178	6-2-3	Timeout error of CAN-Transmit-Frame FIEco.
179	5-2-7	Timeout CAN-message FunModCtl. Function Mode Control.
193	7-6-5	Timeout DFC for NOxSensGlbReqTx.
196	6-3-8	DFC SAE J1939 error.
198	3-3-7	Timeout error of CAN-Receive-Frame PrHtEnCmd. Pre-heat command, engine command.
202	6-7-8	Timeout error of CAN-Receive-Frame UAA10. AGS sensor service message.
203	6-7-8	Timeout error of CAN-Receive-Frame UAA11. AGS sensor data.
212	6-7-8	Timeout error of CAN-Receive-Message RxEngPres. Status Burner Air Pump.
273	6-4-9	DFC SAE J1939 error.
281	1-1-8	Timeout error of CAN-Receive-Frame Active TSC1AE.
282	1-1-8	Timeout error of CAN-Receive-Frame Passive TSC1AE.
283	1-1-9	Timeout error of CAN-Receive-Frame Active TSC1AR.
284	1-1-9	Timeout error of CAN-Receive-Frame Passive TSC1AR.
291	1-1-9	Timeout error of CAN-Receive-Frame TSC1TE - active.
292	1-1-9	Passive timeout error of CAN-Receive-Frame TSC1TE. Setpoint.
293	1-1-8	Timeout error of CAN-Receive-Frame TSC1TR.

Code	Flashing code	Description
294	1-1-8	Passive timeout error of CAN-Receive-Frame TSC1TR.
299	6-5-5	Timeout error of CAN-Transmit-Frame TrbCH. Status Wastegate.
300	1-1-8	Timeout error of CAN-Receive-Frame TSC1AE. Traction Control.
301	1-1-9	Timeout error of CAN-Receive-Frame TSC1AR. Retarder.
305	1-1-8	Timeout error of CAN-Receive-Frame TSC1TE. Setpoint.
306	1-1-9	Timeout Error of CAN-Receive-Frame TSC1TR. control signal
313	6-7-9	Timeout error of CAN-Transmit-Frame UAA11.
360	7-3-7	Powerstage diagnosis disabled. High battery voltage.
361	7-3-7	Powerstage diagnosis disabled. Low battery voltage.
362	3-2-9	Engine brake Pre-Selection switch. Plausibility error.
376	2-8-1	Access error EEPROM memory (delete).
377	2-8-1	Access error EEPROM memory (read).
378	2-8-1	Access error EEPROM memory (write).
381	6-9-3	Physical range check low for EGR differential pressure.
384	4-1-5	Actuator EGR valve. Powerstage over temperature.
387	5-5-5	Internal software error ECU. Injection cut off.
388	2-1-4	Engine speed above warning threshold. Overspeed detection in component engine protection.
389	2-1-4	Engine speed above warning threshold (FOC-Level 1).
390	2-1-4	Engine speed above warning threshold (FOC-Level 2).
391	2-1-4	Engine speed above warning threshold (Overrun Mode).

ENGINE FAULT CODE LIST

Code	Flashing code	Description
411	2-9-2	Ambient air pressure received from a CAN-bus is reported as defective.
412	2-9-2	Sensor error ambient air pressure. Signal range check high.
413	2-9-2	Sensor error ambient air pressure. Signal range check low.
415	3-1-2	Environment temperature sensor, temperature above upper physical threshold.
416	3-1-2	Environment temperature physical range check low.
419	2-1-2	Sensor camshaft speed, disturbed signal.
420	2-1-2	Sensor camshaft detection. Out of range, signal disrupted, no signal.
421	2-1-3	Offset angle between crank- and camshaft-sensor is too large.
422	2-1-2	Sensor crankshaft detection. Out of range, signal disrupted or no signal.
423	2-1-2	Speed detection, out of range, signal disrupted or no signal.
455	2-3-8	PWM-Signal fan, open load or short-circuit ground.
457	2-3-8	PWM-Signal fan, short-circuit to battery.
458	2-3-8	PWM-Signal fan, open load or short circuit to ground
459	2-3-8	Fan speed sensor, electrical error, signal disturbed or very low fan speed.
460	2-3-8	Sensor error fan speed. Signal range check high or engine speed resp. fan speed too big.
461	2-3-8	Sensor error fan speed, signal range check low or fan speed too low.
462	2-3-8	High fan speed, warning threshold exceeded.
463	2-3-8	High fan speed, shut off threshold exceeded.

Code	Flashing code	Description
464	2-2-8	Sensor error water in fuel, signal range check high.
465	2-2-8	Sensor error water in fuel, signal range check low.
472	2-1-6	Sensor error low fuel pressure, signal range check high.
473	2-1-6	Sensor error low fuel pressure, signal range check low.
474	2-1-6	Low fuel pressure, warning threshold exceeded.
475	2-1-6	Low fuel pressure, shut off threshold exceeded.
483	2-2-7	Fuel temperature not plausible.
488	1-3-3	Physical range check high for exhaust gas temperature upstrem (SCR-CAT).
489	1-3-3	Shutoff condition No detail informationen!
542	3-1-4	Hydraulic oil temperature check for Shut off condition.
543	263	Cold start aid relay error.
544	263	Cold start aid relay: Open load.
545	263	Cold start aid relay open load.
547	263	Cold start aid relay: Over temperature error.
549	263	Intake Air Heater Device: Short circuit to battery.
551	263	-
559	1-5-8	Check of missing injector adjustment value programming (IMA) injector 1.
560	1-5-8	Check of missing injector adjustment value programming (IMA) injector 2.
561	1-5-8	Check of missing injector adjustment value programming (IMA) injector 3.
562	1-5-8	Check of missing injector adjustment value programming (IMA) injector 4.
563	1-5-8	Check of missing injector adjustment value programming (IMA) injector 5.

ENGINE FAULT CODE LIST

Code	Flashing code	Description
564	1-5-8	Check of missing injector adjustment value programming (IMA) injector 6.
565	151	Injector cylinder-bank 1: Short circuit.
566	152	Injector cylinder-bank 2: Short circuit.
567	153	Injector powerstage output defect.
568	154	Injector 1 (in firing order): Interruption of electric connection.
569	155	Injector 2 (in firing order): Interruption of electric connection.
570	156	Injector 3 (in firing order): Interruption of electric connection.
571	161	Injector 4 (in firing order): Interruption of electric connection.
572	162	Injector 5 (in firing order): Interruption of electric connection.
573	163	Injector 6 (in firing order): Interruption of electric connection.
575	1-5-5	special pattern for special cases No detail informationen!
576	1-5-6	special pattern for special cases No detail informationen!
577	1-6-1	special pattern for special cases No detail informationen!
578	1-6-2	special pattern for special cases No detail informationen!
579	1-6-3	special pattern for special cases No detail informationen!
580	154	Injector 1 (in firing order): Short circuit.
581	155	Injector 2 (in firing order): Short circuit.
582	156	Injector 3 (in firing order): Short circuit.
583	161	Injector 4 (in firing order): Short circuit.
584	162	Injector 5 (in firing order): Short circuit.
585	163	Injector 6 (in firing order): Short circuit.

Code	Flashing code	Description
590	1-6-2	High side to low side short circuit in the injector 5 (in firing order)
591	1-6-3	High side to low side short circuit in the injector 6 (in firing order)
592	135	Metering unit (Fuel-System): Open load.
593	135	Metering unit (Fuel-System): Powerstage over temperature.
594	135	Metering unit (Fuel-System): Short circuit to battery, highside.
595	135	Metering unit (Fuel-System): Short circuit to ground, high side.
596	135	Metering unit (Fuel-System): Short circuit to battery, low side.
597	135	Metering Unit (Fuel-System): Short circuit to ground, low side
598	1-3-5	Metering unit, short circuit to battery
599	1-3-5	Metering unit, short circuit to ground
605	2-4-1	Too many recognized misfires in cylinder 2 (in firing order)
607	2-4-1	Too many recognized misfires in cylinder 4 (in firing order)
608	2-4-1	Too many recognized misfires in cylinder 5 (in firing order)
609	2-4-1	Too many recognized misfires in cylinder 6 (in firing order)
610	2-4-1	-
611	2-4-1	Misfire detection monitoring No detail informationen!
612	555	Internal ECU monitoring detection reported error
613	555	ECU reported internal software error Internal ECU monitoring detection reported error
614	555	ECU reported internal software error
615	555	ECU reported internal software error.
616	555	ECU reported internal software error

ENGINE FAULT CODE LIST

Code	Flashing code	Description
617	555	ECU reported internal software error
618	555	ECU reported internal software error
619	555	Injection system,electrical error injectors
620	555	ECU reported internal software error
621	555	ECU reported internal software error
623	555	ECU reported internal software error
624	555	ECU reported internal software error
625	555	ECU reported internal software error
627	555	ECU reported internal software error
628	555	ECU reported internal software error
629	555	Diagnostic fault check to report the accelerator pedal position error
630	555	Diagnostic fault check to report the engine speed error
631	555	Error in the plausibility of the injection energizing time
632	555	Error in the plausibility of the start of energising angles
633	555	Diagnostic fault check to report the error due to non plausibility in ZFC
634	555	Diagnosis fault check to report the demand for normal mode due to an error in the PoI2 quantity
635	555	Diagnosis fault check to report the error to demand for an ICO due to an error in the PoI2 shut-off
636	555	Diagnosis fault check to report the error to demand for an ICO due to an error in the PoI3 efficiency factor
637	555	Internal ECU monitoring detection reported error
638	555	Monitoring of Fuel Quantity Correction
639	555	Diagnostic fault check to report the plausibility error in rail pressure monitoring
640	555	Diagnostic fault check to report the error due to torque comparison
641	555	Diagnosis of curr path limitation forced by ECU monitoring level 2

Code	Flashing code	Description
642	555	Diagnosis of lead path limitation forced by ECU monitoring level 2
643	5-5-5	Diagnosis of set path limitation forced by ECU monitoring level 2.
644	5-5-5	Reported Over Voltage of Supply
646	5-5-5	Reported UnderVoltage of Supply
648	4-2-4	Manipulation control was triggered
649	4-2-4	Timeout error in Manipulation control
654	7-5-7	Early opening defect of main relay No detail information!
656	7-5-7	DFC for stuck main relay error No detail informationen!
659	8-1-3	Nox feed back fault detection No detail informationen!
692	7-5-8	Plausibiliti error during Rich to Lean switch over No detail informationen!
693	7-5-8	Monitoring of Nox signal readyness No detail informationen!
714	5-5-5	Diagnostic fault check to report WDA active due to errors in query-/response communication
715	5-5-5	Diagnostic fault check to report ABE active due to undervoltage detection
716	5-5-5	Diagnostic fault check to report ABE active due to overvoltage detection
717	5-5-5	Diagnostic fault check to report WDA/ ABE active due to unknown reason
720	2-1-1	Plausibility Check No detail informationen!
732	2-2-4	Sensor error oil pressure; signal range check high
733	2-2-4	Sensor error oil pressure sensor; signal range check low
734	2-3-1	High oil pressure; warning threshold exceeded.

ENGINE FAULT CODE LIST

Code	Flashing code	Description
735	2-3-1	High oil pressure; shut off threshold exceeded
736	2-3-1	Low oil pressure; warning threshold exceeded
737	2-3-1	Low oil pressure; shut off threshold exceeded
743	1-4-4	Sensor error oil temperature; signal range check high
744	1-4-4	Sensor error oil temperature; signal range check low
745	1-4-4	High oil temperature; warning threshold exceeded
746	1-4-4	High oil temperature; shut off threshold exceeded
747	1-4-5	Override switch; plausibility error.
750	1-3-6	Sensor error airfilter differential pressure; short circuit to battery
751	1-3-6	Sensor error airfilter differential pressure; short circuit to ground
752	1-3-6	Air filter differential pressure; air filter cologged.
772	2-2-3	Pressure downstream charge air cooler, plausibility error
774	2-2-3	Pressure downstream charge air cooler, pressure below lower physical threshold
776	2-2-3	Pressure downstream charge air cooler, short circuit to battery or open load
777	2-2-3	Pressure downstream charge air cooler, short circuit to ground
780	1-1-3	Boost pressure control; negative governor deviation below limit
781	1-1-3	Learning valu too high No detail informationen!
785	1-1-3	Over teperature of device driver of pressure control valve No detail informationen!
791	6-9-3	Delta pressure across venturi in EGR line above physical high limit

Code	Flashing code	Description
793	6-9-3	Plausibility Check fault for deviation of desired and actual EGR-mass flow, where the latter is calculated out of EGR Delta Pressure Sensor
825	2-5-3	The pressure relief valve (PRV) has reached the number of allowed activations.
826	1-4-6	Pressure relief valve is forced to open, perform pressure increase.
827	1-4-6	Pressure Relief Valve (PRV) forced to open. Performed by pressure increase.
828	1-4-6	Pressure Relief Valve (PRV) forced to open. Shutoff conditions.
829	1-4-6	Pressure Relief Valve (PRV) forced to open. Warning conditions.
830	1-4-6	Open Pressure Relief Valve (PRV)
831	1-4-6	Pressure Relief Valve (PRV) error; Rail pressure out of tolerance range.
832	1-4-6	Rail pressure out of tolerance range. The PRV can not be opened at this operating point with a pressure shock.
833	2-5-3	Open time of Pressure Relief Valve (PRV) for wear out monitoring had exceeded
834	7-6-1	Electrical fuel pre - supply pump; open load
835	7-6-1	Electrical fuel pre - supply pump. ECU powerstage over temperature.
836	7-6-1	Electrical fuel pre - supply pump; short circuit to battery
837	7-6-1	Electrical fuel pre - supply pump. Short circuit to ground.
847	1-3-9	Pressure sensor upstream turbine, Physical Range Check high.
848	1-3-9	Pressure sensor upstream turbine, Physical Range Check low.
856	1-3-4	Rail pressure metering unit, Positive governor deviation.
857	1-3-4	Rail pressure metering unit, Rail pressure disrupted. Maximum positive deviation of rail pressure exceeded.

ENGINE FAULT CODE LIST

Code	Flashing code	Description
858	1-3-4	Rail pressure metering unit, Rail pressure disrupted. Maximum positive deviation of rail pressure in metering unit exceeded (RailMeUn1).
859	1-3-4	Rail pressure metering unit, Rail pressure below the target range .(RailMeUn2) Railsystem leakage detected.(RailMeUn10)
861	1-3-4	Rail pressure metering unit, Minimum rail pressure exceeded (RailMeUn3) Negative deviation of rail pressure second stage (RailMeUn22)
862	1-3-4	Rail pressure metering unit, Maximum rail pressure exceeded.
864	1-3-4	Rail pressure metering unit, Setpoint of metering unit in overrun mode not plausible.
865	1-3-4	Setpoint of metering unit in overrun mode not plausible
874	1-4-7	Rail pressure raw value is intermittent No detail informationen!
875	1-4-7	rail pressure raw value is above maximum offset No detail informationen!
876	1-4-6	Maximum rail pressure exceeded (PRV).
877	1-4-7	Sensor error rail pressure. Sensor voltage above upper limit.
878	1-4-7	Sensor error rail pressure. Sensor voltage below lower limit.
881	1-4-9	Longterm adaption factor below threshold
887	1-8-4	DFC for plausibility error Min for NOx sensor downstream of SCR Cat.
889	1-8-5	DFC for plausibility error Max for NOx sensor upstream of SCR Cat
892	2-3-6	Sensor backflow line pressure (SCR); plausibility error
919	1-3-1	Immobilizer status; fuel blocked

Code	Flashing code	Description
920	1-3-1	DFC to block the fuel by Sia No detail informationen!
921	1-3-1	DFC to indicate that TEN-code or UC-code received if ECU is learned. No detail informationen!
922	1-3-1	DFC to indicate that no code is received via CAN. No detail informationen!
923	1-3-1	DFC to indicate that wrong code is received. No detail informationen!
931	6-8-9	Urea supply module temperature; duty cycle in invalid range.
932	1-2-6	Handthrottle idle validation switch; short circuit to battery
935	2-2-6	Sensor error accelerator pedal. signal range check high.
937	1-2-6	Handthrottle; short circuit to ground
940	2-2-6	Sensor error accelerator pedal. Signal is below the range.
946	2-8-2	Failure of sensor supply voltage 1.
947	2-8-2	Failure of sensor supply voltage 2.
948	2-8-2	Failure of sensor supply voltage 3.
956	5-1-2	Starter relay high side. Short circuit to battery.
957	5-1-2	Starter relay high side short circuit to ground.
958	5-1-2	Starter relay low side no load error.
959	5-1-2	Starter relay powerstage over temperature.
960	5-1-2	Starter relay low side short circuit to battery.
961	5-1-2	Starter relay low side short circuit to ground.
969	5-1-3	SVS lamp; open load
970	5-1-3	SVS lamp: powerstage over temperature
971	5-1-3	SVS lamp; short circuit to battery

ENGINE FAULT CODE LIST

Code	Flashing code	Description
972	5-1-3	SVS lamp; short circuit to ground
973	5-5-5	Softwarereset CPU SWReset_0
974	5-5-5	Softwarereset CPU SWReset_1
975	5-5-5	Softwarereset CPU SWReset_2
976	2-2-6	Plausibility error between APP1 and APP2 or APP1 and idle switch.
978	1-2-6	Plausibility error between sensor and idle switch, Acceleratio Pedal Detection. In case of Hand Throttle with Low Idle Switch, it is the plausibility check between hand throttle and idle switch.
980	5-1-5	Terminal 50 was operated too long
981	2-2-6	Air flow temperature sensor; short circuit to battery or open load.
982	2-2-6	Air flow temperature sensor; short circuit to ground
992	1-2-8	Charged Air cooler down stream temperature. Temperature below lower physical threshold.
995	1-2-8	Electrical error charged air temperature. Signal range check low.
996	2-3-3	Charged air cooler temperature. System reaction initiated. High charged air cooler temperature. Warning threshold exceeded.
997	2-3-3	High charged air cooler temperature. Shut off threshold exceeded.
998	1-2-8	Diagnostic fault check for charged air cooler downstream temperature sensor No detail informationen!
1007	6-8-2	Electrical error EGR cooler downstream temperature. Signal range check high.
1008	6-8-2	electrical error EGR cooler downstream temperature. Signal range check low.
1011	7-7-1	Physical range check high for EGR cooler downstream temperature.
1012	7-7-1	Physical range check low for EGR cooler downstream temperature.

Code	Flashing code	Description
1014	5-9-4	Actuator error EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8). Signal range check high.
1015	5-9-4	Actuator error EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8). Signal range check low.
1016	5-9-4	Actuator position for EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8) not plausible.
1022	5-9-4	Actuator error EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8). Signal range check high
1023	5-9-4	Actuator error EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8). Signal range check low
1024	5-9-4	Position sensor error of actuator EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8). Signal range check high.
1025	5-9-4	Position sensor error actuator EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8). Signal range check low.
1026	6-8-4	Temperature downstream DOC, plausibility error
1029	6-8-4	Temperature downstream DOC, temperature above upper shutoff threshold
1030	6-8-4	Temperature downstream DOC, temperature above upper warning threshold
1034	6-8-4	Sensor error exhaust gas temperature downstream (DOC); signal range check high
1035	6-8-4	Sensor error exhaust gas temperature downstream (DOC); signal range check low
1036	6-8-3	Temperature upstream DOC, plausibility error
1039	6-8-3	Temperature upstream DOC, temperature above upper shutoff threshold
1040	6-8-3	Temperature upstream DOC, temperature above upper warning threshold

ENGINE FAULT CODE LIST

Code	Flashing code	Description
1044	6-8-3	Electrical error exhaust gas temperature upstream (DOC); signal range check high
1045	6-8-3	Electrical error exhaust gas temperature upstream (DOC); signal range check low
1047	6-8-5	Sensor error particle filter downstream temperature; signal range check low
1067	5-5-6	Sensor error exhaust gas temperature upstream turbine; signal range check high
1071	6-6-8	Signal error for CAN message No detail informationen!
1157	2-2-8	Water in fuel level prefilter; maximum value exceeded
1158	7-7-2	Zerofuel calibration injector 1 (in firing order); maximum value exceeded
1159	7-7-2	Zerofuel calibration injector 2 (in firing order); maximum value exceeded
1160	7-7-2	Zerofuel calibration injector 3 (in firing order); maximum value exceeded
1163	7-7-2	Zerofuel calibration injector 6 (in firing order); maximum value exceeded
1164	7-7-2	Zerofuel calibration injector 1 (in firing order); minimum value exceeded
1165	7-7-2	Zerofuel calibration injector 2 (in firing order); minimum value exceeded
1166	7-7-2	Zerofuel calibration injector 3 (in firing order); minimum value exceeded
1167	7-7-2	Zerofuel calibration injector 4 (in firing order); minimum value exceeded
1168	7-7-2	Zerofuel calibration injector 5 (in firing order); minimum value exceeded
1170	5-5-5	Internal software error ECU
1180	3-1-8	Physical range check high for battery voltage
1181	3-1-8	Physical range check low for battery voltage
1183	2-2-6	Air inlet filter sensor out of physical range check

Code	Flashing code	Description
1187	7-8-4	Bad quality of reduction agent detected
1193	5-5-6	Physical range check high for exhaust gas temperature upstream turbine
1194	5-5-6	Physical range check low for exhaust gas temperature upstream turbine
1222	2-1-2	Camshaft- and Crankshaft speed sensor signal not available on CAN
1223	5-9-4	Actuator EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8); open load
1224	5-9-4	Actuator EGR-Valve (2.9;3.6) or Throttle-Valve (6.1,7.8); over current
1226	5-9-4	EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8); short circuit to battery
1227	5-9-4	EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8); short circuit to battery
1228	5-9-4	EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8); short circuit to ground
1229	5-9-4	EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8); short circuit to ground
1230	5-9-4	Actuator error EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8); Overload by short-circuit
1231	5-9-4	Power stage overtemperature due to high current.
1232	5-9-4	actuator AGR valve (2.9;3.6) throttle valve (4.1;6.1;7.8); Voltage below threshold.
1239	7-8-8	UB7; Short circuit to battery error of actuator relay 7
1241	1-7-6	UB6; Short circuit to ground actuator relais 6
1242	7-9-1	UB7; Short circuit to ground actuator relay 7
1249	6-9-5	Air pump; CAN communication interrupted no purge function available
1250	6-9-5	Air Pump; internal error
1252	6-9-5	Air Pump; operating voltage error

ENGINE FAULT CODE LIST

Code	Flashing code	Description
1254	8-5-8	Air inlet EPV - pressure too low Air pressure glow plug flush line; below limit
1285	8-2-4	Timeout error of CAN-Receive-Frame ComMS_Sys1TO (error memory Slave); Master-Slave internal CAN message
1286	8-2-5	Timeout error of CAN-Receive-Frame ComMS_Sys2TO (error memory Slave); Master-Slave internal CAN message
1287	8-2-6	Timeout error of CAN-Receive-Frame ComMS_Sys3TO (error memory Slave); Master-Slave internal CAN message
1288	8-2-7	Timeout error of CAN-Receive-Frame ComMS_Sys4TO (error memory Slave); Master-Slave internal CAN message
1289	8-2-8	Timeout error of CAN-Receive-Frame ComMS_Sys5TO (error memory Slave); Master-Slave internal CAN message
1290	8-2-9	Timeout error of CAN-Receive-Frame ComMS_Sys6TO (error memory Slave); Master-Slave internal CAN message
1291	8-3-1	Master Slave, Error of message counter CAN receive message ComMSMoFOvR; ComMSMoFOvR1CNT
1292	8-3-2	Master-Slave CAN; Error Checksum of CAN-Receive Message
1293	8-3-3	Master-Slave CAN; Error of message length of CAN receive message ComMS-MoFOvR;_ComMSMoFOvR1DLC
1294	8-3-4	Timeout error CAN message ComMS-MoFOvR1TO error memory Slave
1299	6-5-5	Wastegate plauisibility error off CAN transmit message.
1300	6-5-5	Timeout Error of CAN-Receive-Frame ComTrbChActr; Wastegate
1302	8-6-6	Deviation of the exhaust gas temperature setpoint to actual value downstream (DOC) too high

Code	Flashing code	Description
1324	7-9-5	Check of missing injector adjustment value programming (IMA) injector 7 (in firing order)
1325	7-9-6	check of missing injector adjustment value programming (IMA) injector 8 (in firing order)
1326	7-9-7	Injector cylinder bank 1 slave; short circuit
1327	7-9-8	Injector cylinder bank 2 slave; short circuit
1328	7-9-9	Injector powerstage output Slave defect
1329	1-7-7	Injector 7 (in firing order); interruption of electric connection
1330	1-7-8	Injector 8 (in firing order); interruption of electric connection
1333	1-7-7	Injector 7 (in firing order); short circuit
1334	1-7-8	Injector 8 (in firing order); short circuit
1337	5-6-5	Timeout of Short-Circuit Ground Diagnosis Cyl. Bank 0;_IVDiaShCirGnd-ToutBnk_0
1338	5-6-6	Timeout of Short-Circuit Ground Diagnosis Cyl. Bank 1;_IVDiaShCirGnd-ToutBnk_1
1339	5-6-5	Injector diagnostic; Short circuit to ground cylinder bank 0
1340	5-6-6	Injector diagnostic; Short circuit to ground cylinder bank 1
1341	5-5-5	Injector diagnostics; time out error in the SPI communication
1342	5-5-5	Injector diagnostics Slave; time out error in the SPI communication
1345	8-9-6	Timeout Error of CAN-Receive-Frame MSMon_FidFCCTO; Master-Slave CAN communication faulty
1357	8-3-6	Error memory Slave reports FID MS-MonFC2 (collective error)
1368	8-3-6	Error memory Slave reports FID MS-MonFC3 (collective error)

ENGINE FAULT CODE LIST

Code	Flashing code	Description
1378	6-9-4	Sensor air pump airpressure; plausibility error
1379	7-1-6	Sensor exhaust gas back pressure burner; plausibility error
1381	8-3-9	Rail pressure safety function is not executed correctly ()
1398	6-8-1	Physical range check high for ECU temperature
1402	6-8-4	Sensor exhaust gas temperature OxiCat downstream (normal operation); plausibility error
1403	6-8-4	Sensor exhaust gas temperature OxiCat downstream (regeneration); plausibility error
1411	8-1-4	Wastegate actuator; internal error
1412	8-1-4	Wastegate actuator; EOL calibration not performed correctly
1413	8-1-4	Wastegate actuator calibration deviation too large, recalibration required
1414	8-1-4	Wastegate; status message from ECU missing
1415	8-1-4	Wastegate actuator; blocked
1417	8-1-4	Wastegate actuator; over temperature (> 135°C)
1418	8-1-4	Wastegate actuator; operating voltage error
1423	5-9-4	Warning threshold for an internal actuator error exceeded, < 4L EGR.actuator und >4L Air Intake Flap
1424	5-9-4	Shut off threshold for an internal actuator error exceeded, < 4L EGR.actuator und >4L Air Intake Flap
1425	2-2-6	air temperature within air filter box above maximum physical value
1431	8-1-5	CAN message PROEGRActr; plausibility error
1432	8-1-5	Timeout Error of CAN-Receive-Frame ComEGRActr - exhaust gas recirculation positioner

Code	Flashing code	Description
1436	8-1-6	Disc Separator; open load
1437	8-1-6	Disc Separator; powerstage over temperature
1438	8-1-6	Disc separator; short circuit to battery
1439	8-1-6	Disc separator; short circuit to ground
1440	8-1-5	EGR actuator; internal error
1441	8-1-5	EGR actuator, calibration error
1442	8-1-5	EGR actuator; status message EGRCust is missing
1443	8-1-5	EGR actuator; due to overload in Save Mode
1455	7-1-1	Temperature during stand-still main phase too low or too high
1458	7-7-1	High exhaust gas temperature EGR cooler downstream; warning threshold exceeded.
1482	1-8-8	CAN message ComMS_Sys7 not received from slave
1484	8-9-5	Master ECU and Slave ECU have been identified as the same types
1485	8-3-6	Master ECU and Slave ECU data sets or software are not identical
1505	8-4-3	Fuel low pressure pump; error pressure build up
1523	8-2-2	Exhaust Gas Recirculation AGS Sensor; signal not plausible
1524	8-2-2	Exhaust Gas Recirculation AGS Sensor; Sensed exhaust mass value above maximum physical value
1525	8-2-2	Exhaust Gas Recirculation AGS Sensor; Sensed exhaust mass value below miniimum physical value
1526	8-2-2	Exhaust Gas Recirculation AGS Sensor; plausibility error, AGS sensor has not passed the burn off process
1527	8-2-2	Exhaust Gas Recirculation AGS Sensor; Temperature of EGR mass not plausible

ENGINE FAULT CODE LIST

Code	Flashing code	Description
1529	8-9-7	(Upstream NOx-Sensor) Diagnostic Fault Check for invalid upstream NOx value (Sensor self diagnostic DFC set by Deutz-SW) NOx-Sensor before SCR-Cat: Invalid upstream NOx value
1530	8-9-8	(Downstream NOx-Sensor) Diagnostic Fault Check for invalid downstream lambda value (Sensor self diagnostic DFC set by Deutz-SW)
1531	8-9-9	(Upstream NOx-Sensor) Diagnostic Fault Check for invalid upstream lambda value (Sensor self diagnostic DFC set by Deutz-SW)
1532	2-4-5	(Downstream NOx-Sensor) Diagnostic Fault Check for invalid downstream NOx value (Sensor self diagnostic DFC set by Deutz-SW)
1533	2-4-6	NOx sensor downstream SCR-CAT, sensor internally open load
1534	2-4-7	NOx sensor downstream SCR-CAT, sensor internally short circuit
1535	2-4-8	NOx sensor upstream SCR-CAT, sensor internally open line
1536	2-4-9	NOx sensor upstream SCR-CAT, sensor internally short circuit
1537	2-5-5	NOx sensor downstream SCR-CAT, lambda value above upper physical threshold
1538	2-5-6	NOx sensor downstream SCR-CAT, lambda value below lower physical threshold
1539	2-5-7	NOx sensor upstream SCR-CAT, lambda value above upper physical threshold
1540	2-5-8	NOx sensor upstream SCR-CAT, lambda value below lower physical threshold
1541	2-5-9	(Downstream NOx-Sensor) Diagnostic Fault Check for downstream NOx value over maximum limit (DFC set by Deutz-SW)
1542	2-6-1	NOx-Sensor downstream SCR-CAT, NOx value below minimum value.

Code	Flashing code	Description
1543	9-1-1	NOx-Sensor upstream SCR-CAT, NOx value above maximum value.
1544	9-1-2	NOx sensor upstream SCR-CAT, NOx value below lower physical threshold
1545	9-6-8	Plausibility error between pressure downstream turbine (PTrbnDs) and ambient air pressure (EnvP)
1560	8-6-9	Relay Urea suction line: broken wiring detected (open load) Row engine: SCR suction line (K28) V-engine: Master: common SCR-suction line (K28) Slave: commoon SCR backflow line (K29)
1561	8-6-9	SCR heater supply module; open load
1562	8-6-9	SCR heater tank; open load
1565	8-9-2	Pressure sensor upstream SCR-CAT, pressure above upper physical threshold
1566	8-9-2	Pressure sensor upstream SCR-CAT, pressure below lower physical threshold
1569	8-9-2	Pressure sensor upstream SCR-CAT; short circuit battery or open load
1570	8-9-2	Pressure sensor upstream SCR-CAT; short circuit ground
1597	9-6-8	Pressure downstream turbine, plausibility error
1630	9-5-5	Fuel low pressure upstream fuel low pressure pump not plausible
1631	9-5-5	Fuel low pressure upstream fuel low pressure pump, pressure above maximum warning threshold
1632	9-5-5	Fuel low pressure upstream fuel low pressure pump, pressure above maximum shut off threshold
1633	9-5-5	Fuel low pressure upstream fuel low pressure pump, pressure below minimum shut off threshold
1634	9-5-5	Fuel low pressure upstream fuel low pressure pump, pressure below minimum warning threshold

ENGINE FAULT CODE LIST

Code	Flashing code	Description
1635	8-1-8	Maximum standstill time reached; oil exchange request ignored
1658	1-9-6	If the counter reaches the threshold, the DFC will be set to inhibit the engine start Engine will not be started, because of EPA-Counter
1659	9-3-8	Timeout error of CAN-Transmit-Frame A1DOC
1660	9-3-9	Timeout error of CAN-Transmit-Frame AT1S
1661	1-9-4	Timeout error of CAN-Transmit-Frame SCR2
1662	9-4-1	Timeout error of CAN-Transmit-Frame SCR3
1663	9-2-1	Timeout error of CAN-Transmit-Frame DPFBrnAirPmpCtl
1664	9-2-2	Timeout error of CAN-Transmit-Frame ComDPFBrnPT
1665	9-2-3	Timeout error of CAN-Transmit-Frame ComDPFC1
1666	9-2-4	Timeout error of CAN-Transmit-Frame ComDPFHisDat.
1667	9-2-5	Timeout error of CAN-Transmit-Frame ComDPFTstMon
1668	9-2-9	Timeout error of CAN-Transmit-Frame ComEGRMsFlw (EGR Steller)
1669	9-3-2	Timeout error of CAN-Transmit-Frame ComEGRTVActr (EGR actuator)
1670	9-3-4	Timeout error of CAN-Transmit-Frame ComETVActrTO.
1671	9-3-6	Timeout ComIntake Throttle Valve Actr.
1672	9-4-2	Timeout error of CAN-Receive-Frame ComRxCM1
1675	9-2-7	Timeout error of CAN-Receive-Frame ComRxDPFBrnAirPmp
1676	9-2-8	Timeout error of CAN-Receive-Frame ComRxDPFCtl.
1677	1-9-5	Timeout error of CAN-Receive-Frame ComRxEGRMsFlw1 (EGR actuator)

Code	Flashing code	Description
1678	9-3-1	Timeout error of CAN-Receive-Frame ComRxEGRMsFlw2 (EGR actuator)
1679	9-3-3	Timeout error of CAN-Receive-Frame ComRxEGRTVActr (EGR actuator)
1680	9-3-5	Timeout error of CAN-Receive-Frame ComRxETVActr
1681	9-3-7	Timeout error of CAN-Receive-Frame ComRxITVActr
1682	9-4-4	Timeout error of CAN-Receive-Frame ComRxSCRHtDiag
1683	9-4-5	Timeout error of CAN-Receive-Frame ComRxTrbChActr (wastegate actuator)
1684	9-4-6	Timeout error of CAN-Receive-Frame ComRxUQSens (Urea quality)
1685	9-4-7	Timeout error of CAN-Receive-Frame ComSCRHtCtl
1686	9-4-8	Timeout error of CAN-Receive-Frame ComTxAT1IMG
1687	9-4-9	Timeout error of CAN-Receive-Frame ComTxTrbChActr (Wastegate actuator)
1698	9-5-6	HMI system; set if restore button blocked
1705	9-7-2	Timeout error of CAN-Receive-Frame ComRxEBC2.
1706	9-7-3	Fancontrol; time out for fan governing
1708	9-7-5	Fan; short circuit battery or open load
1709	9-7-5	Fan; short circuit ground
1710	9-7-6	Fan; in/outlet valve 1; open load
1712	9-7-6	Fan; in/outlet valve 1; short circuit battery
1713	9-7-6	Fan; in/outlet valve 1; open load ground
1714	9-7-7	Fan; in/outlet valve 2; open load
1716	9-7-7	Fan; in/outlet valve 2; short circuit battery
1717	9-7-7	Fan; in/outlet valve 2; open load ground

ENGINE FAULT CODE LIST

Code	Flashing code	Description
1718	9-7-8	Fan; fancontrol; angle sensor defect
1719	9-7-9	Fan; fancontrol; fan or valve defect
1752	4-1-5	EGR actuator, actuator blocked
1753	4-1-5	EGR actuator, CAN error
1754	4-1-5	EGR actuator, EOL calibration error
1755	4-1-5	EGR Actuator, internal electrical fault
1756	4-1-5	EGR actuator, learning process aborted
1757	4-1-5	EGR actuator current is above maximum threshold
1758	4-1-5	EGR actuator supply voltage is above the maximum threshold
1759	4-1-5	EGR actuator supply voltage is below minimum threshold.
1760	4-1-5	EGR actuator, learning process out of range
1761	4-1-5	EGR actuator, broken spring detected.
1762	4-1-5	EGR actuator, temperature high.
1763	4-1-5	EGR actuator, temperature critical high
1788	8-1-4	Turbocharger wastegate, mechanical blocking detected.
1789	8-1-4	Turbocharger wastegate, CAN Error
1790	8-1-4	Turbocharger wastegate, EOL calibration error.
1791	8-1-4	Turbocharger wastegate, internal electrical error
1792	8-1-4	Turbocharger wastegate, learning process aborted.
1793	8-1-4	Turbocharger wastegate, current above maximum threshold.
1794	8-1-4	Turbocharger wastegate, supply voltage above maximum threshold.
1795	8-1-4	Turbocharger wastegate, supply voltage below minimum threshold.
1796	8-1-4	Turbocharger wastegate, learning process out of range.

Code	Flashing code	Description
1797	8-1-4	Turbocharger wastegate, broken spring detected.
1799	8-1-4	Turbocharger wastegate, temperature critical high.
1857	5-5-5	Engine starter, plausibility error of starter release condition
1859	9-9-3	SCR-CAT, Nox emissions above maximum threshold
1860	2-4-6	NOx-Sensor after SCR-Cat: Nox-Sensor dew point problem or plausibility problem
1921	5-9-4	Intake Throttle Flap, H-Bridge, wiring harness broken at connected actuator
1922	5-9-4	Intake Throttle Flap, H-Bridge, current above maximum threshold
1924	5-9-4	Intake Throttle Flap, H-Bridge, short circuit to battery (A02)
1925	5-9-4	Intake Throttle Flap, H-Bridge, short circuit to battery (A67)
1926	5-9-4	Intake Throttle Flap, H-Bridge, short circuit to ground (A02)
1927	5-9-4	Intake Throttle Flap, H-Bridge, short circuit to ground (A67)
1931	5-9-4	Intake Throttle Flap, H-Bridge, position of actuator not plausible (deviation from setpoint more than 7%)
1935	5-9-4	Intake Throttle Flap, H-Bridge, short circuit to battery oder broken wiring harness
1936	5-9-4	Intake Throttle Flap, H-Bridge, short circuit to ground
1972	3-1-5	Inducement SCR Tamp. Slave
2011	6-6-8	Dynamic temperatur check of temp before SCR

6

TRANSPORTATION, WAREHOUSE STORING AND END OF USEFUL LIFE

CONTENTS INDEX

TRANSPORTING THE DUMPER....3
On the bed of a vehicle....3
Loading using a crane....3
Towing....4
STORAGE....5
END OF USEFUL LIFE....5
Dumper....5
Batteries....5
Muffler....5

TRANSPORTING THE DUMPER

On the bed of a vehicle

Take into account the ADR Regulation requirements that may be applicable, according to UN No. 3528.

Adhere to the following instructions when the dumper has to be transported on the bed of another vehicle:

- When driving the dumper, correctly fasten the seatbelt.
- Have the minimum level of fuel in the tank. Empty the fuel tank following the procedure described in *SAC.R.02 - 'Emptying the fuel tank' in Chapter 9*.
- Raise and lower the dumper carefully using the loading ramps.
- Stop the engine and remove the key from the ignition.
- Apply the parking brake.
- Apply chocks to the wheels and fix them to the vehicle bed.
- Anchor the dumper firmly to the bed using slings or another fastening system at the points (1) set for that purpose, to prevent any kind of movement.

The fastening system should be suitable and sturdy enough.

Loading using a crane

STOP

When hoisting the dumper, there must be no one on top nor within a five-meter radius around it.

When the dumper is loaded using a crane, follow the indications below:

- Immobilise the chassis articulation following the procedure described in '*Immobilising the chassis' in Chapter 4*.

TRANSPORTING THE DUMPER

- Attach the cable or the sling at the points (1) on the dumper set for that purpose.

Both the crane and the cables or slings have sufficient capacity to lift the dumper.

- Before hoisting the dumper, check that the cable or sling is firmly hooked.
- Undertake this operation with no load on the dumper, and on flat and horizontal ground.

Lift the dumper in the most horizontal position possible, using guide ropes or other systems to keep the dumper from turning or pivoting.

Towing

STOP

During and after the towing process, the hydrostatic group components might be hot; use suitable protective equipment.

The dumper must be towed using a solid towbar to avoid collisions.

It is only advisable to tow the dumper if there is a fault, and when there is no other alternative, as this process might seriously damage the hydrostatic transmission.

Whenever possible, it is recommended to repair the fault on site.

It is advisable to tow slowly and over short distances.

High-speed and long-distance towing might trigger heat generation and poor lubrication, which may damage the hydrostatic group components.

Make sure that the parking brake is deactivated.

Lock the chassis articulation following the procedure described in '*Immobilising the chassis' in Chapter 4*.

Proceed with the transmission bypass function following the steps set forth in *'Transmission bypass function' in Chapter 4*.

Recommended towing speed: below 2 km/h.

Recommended towing distance: less than 1 km.

STORAGE

During the storage period, maintenance tasks on the dumper must still be performed.

Pay special attention to the level of the fluids and the elements that might age (tyres, weather strips, rubber gaskets, etc.).

Before using the dumper after the storage period, contact your official AUSA dealer to proceed with the necessary specific preparations.

If the dumper is not going to be used for a long time, it should be stored following the recommendations below:

- Clean the dumper thoroughly. Carefully, dry all its parts with pressure air.
- Proceed with a complete lubrication and polish of the dumper.
- Perform a general inspection and replace all worn or damaged parts.
- Paint all worn or damaged parts.
- Dismantle the battery, grease the terminals with Vaseline and store it in a dry place. If is going to be used temporarily, for other purposes, check its load level periodically.
- Store the dumper in a covered, well-ventilated place.
- Start the engine once a month and let it run until it reaches the operating temperature (70-80 °C).
- In cold climates, empty the coolant circuit.

END OF USEFUL LIFE

Dumper

When the dumper reaches the end of its useful life, it must be decommissioned and scrapped by specialised companies, in compliance with local applicable laws.

Batteries

As there is lead and sulphuric acid in the batteries, they must be disposed of in accordance with applicable environmental regulations in the country where the dumper is being used. They must be disposed of as soon as possible.

The batteries to be disposed of must be stored in a dry, isolated place. Do not leave them on the floor, nor on wooden pallets or covered.

Make sure that the battery is dry and that all its caps are closed. If it is necessary to leave a battery to dry in an open area, grease its surface first.

Label the battery to be disposed of, indicating that its use is prohibited.

Muffler

STOP

When manipulating or decommissioning and scrapping the muffler, wear suitable protection, as it contains absorbent materials made of mineral fibres.

Take the waste parts to a landfill site authorised to dispose of mineral fibre materials.

INTENTIONALLY BLANK PAGE

7

TECHNICAL INFORMATION

CONTENTS INDEX

TECHNICAL SPECIFICATIONS TABLE 3

TECHNICAL SPECIFICATIONS TABLE

Specifications and weights		
Discharge type	Swivel	
Payload	6,000	kg
Hopper unloading angle	46.3	°
Maximum towing mass without brake	750	kg
Maximum towing mass with brake	3,500	kg
Chassis	Articulated and pivoting	
Chassis turning angle	30	°
Max. lateral inclination angle of the chassis	10.7	°
Water skip capacity	1,665	l
Struck skip capacity	2,455	l
Heaped skip capacity	3,154	l
Weight when empty (tare)	4,490	kg
Front axle maximum weight	7,100	kg
Rear axle maximum weight	4,300	kg
Service temperature	-15~+40	°C
Fuel tank capacity	69	l
Roll Over Protection Structure	Back-folding roll bar (ROPS). Compliant with ISO 3471.	
Transmission		
Type	Hydrostatic with electronic control	
Travel pump	Variable flow, automatically-regulated, axial pistons pump	
Travel engine	Variable flow, axial pistons engine	
Maximum service pressure	420	bar

Gear selector (FNR)	Electrohydraulic, with a switch below the joystick	
Front axle	Rigid with limited-slip differential and wheel epicyclic gearing	
Rear axle	Rigid with limited-slip differential and wheel epicyclic gearing	
Engine		
Manufacturer	Deutz	
Model	TD3.6 L4	
Power	55.4	kW
Maximum operating speed	2,200	min-1
Par @ 1,600 rpm	330	Nm
Number of cylinders	4	
Emissions	Stage IIIB – EPA Tier4F	
Consumption	13	l/h
CO_2 emissions	34	kg/h
Cooling system	Water/oil mixed radiator	
Driving		
Maximum driving speed	25	kg/h
Climbing incline	45%	%
Safe authorised inclination	-	
Outside turning radius	5,900	mm
Front tyres (standard)	405/70-20 (16.0/10-20)	
Inflation pressure	5	bar
Rear tyres (standard)	405/70-20 (16.0/10-20)	
Inflation pressure	2.5	bar
Minimum load and speed index [5]	A5-152	

TECHNICAL SPECIFICATIONS TABLE

Steering		
Type	Hydraulic steering, double-action cylinder	
Maximum service pressure	180	bar
Hydraulic system		
Hydraulic tank capacity	60	l
Hydraulic pump	Double, geared, attached to the hydrostatic pump	
Displacement	25 – 22,5	cc/rev
Flow (max. rpm)	50	l/min
Maximum service pressure	180	bar
Control valve	Monoblock with two spools	
Electrical equipment		
Starter motor	3.2	kW
Alternator and regulator	1,330	W
Battery	12	V
	100	Ah
	900	A
Brakes		
Service	On all four wheels. Totally-enclosed, multiplate, oil-immersed discs.	
Parking	Negative, spring drive and electrohydraulic disengage	

Hill holder system	Automatic brake activation and deactivation	
Hill assist system	-	
Sound levels		
Sound power level A-weighted measured in the environment LwA[1]	-	dB(A)
Sound power level A-weighted warranted in the environment LwA[1]	101	dB(A)
Uncertainty factor KpA[2]	-	
Sound pressure level A-weighted at operator's position LpA (without cab)[3]	81	dB(A)
Sound pressure level A-weighted at operator's position LpA (with cab)[3]	-	dB(A)
Vibration levels		
Average acceleration value to whole body[4]	<0.25	m/s^2
Average acceleration value to arm-harm[4]	<0.5	m/s^2

[1] According to ISO 6395 (Directive 2000/14/EC)

[2] According to ISO 6396

[3] According to ISO 6394 (EC Directives 84/532/EC, 89/514EC and 95/27/EC)

[4] According to ISO 2631 / ISO 5349-2 (Directive 2000/44/EC)

[5] Combinations with lower load indexes and higher speed rates might be valid and equivalent, according to the specifications established by the E.T.R.T.O. technical manual.

8

MAINTAINING THE DUMPER

CONTENTS INDEX

INITIAL INSPECTION 3
PRELIMINARY CONSIDERATIONS 3
Manipulating fluids 4
ACCESS FOR MAINTENANCE 5
Side covers 5
Floor plate 5
CORRECTIONS, ADJUSTMENTS OR REPLACEMENTS 6
Refilling coolant 6
Refilling engine oil 6
Refilling hydraulic oil 7
Refilling brake fluid 8
FLUIDS AND LUBRICANTS 9
Fuel specifications 10
Engine oil 10
Brake fluid 10
Engine coolant 10
BASIC MAINTENANCE 11

In accordance with Work Equipment Directives (89/655/EEC and RD1215/97) inspections of the main dumper systems must be carried out, and their results must be recorded on the forms provided by the Work Authorities of each country.

The aim of maintenance operations is to achieve an optimum performance and extend the useful life of the dumper.

In order to achieve these objectives, the dumper must be kept in good condition, and safe, harmless working routines must be performed.

There are two types of maintenance tasks:

- **BASIC MAINTENANCE**

  These are the procedures that AUSA considers that may be carried out by the operator of the dumper.

  See *'Basic maintenance'*.

- **ADVANCED MAINTENANCE**

  It is recommended that these procedures are carried out by the official AUSA dealer.

  See *'Advanced Maintenance Plan' in Chapter 9*.

INITIAL INSPECTION

After the initial 50 hours/30 days of dumper operation, it needs to be inspected by the official AUSA dealer.

PRELIMINARY CONSIDERATIONS

STOP All repair and maintenance operations shall be carried out with the dumper unloaded, the gear selector (FNR) in NEUTRAL and the wheels blocked with suitable chocks.

STOP Unless otherwise specified, do not start the engine during maintenance operations.

STOP Lock the hopper when carrying out maintenance tasks that require the hopper to be in the raised position, following the procedure described in *'Immobilising the hopper' in Chapter 4*.

STOP Before performing any tasks on the electrical system, disconnect the battery following the indications specified in *'Disconnecting the battery' in Chapter 4*.

Keep the work area clean during maintenance operations.

Clean using only lint-free fabrics.

Any open line or hose must be plugged immediately to avoid oil spillage and prevent foreign bodies from entering the circuit.

PRELIMINARY CONSIDERATIONS

Manipulating fluids

Prolonged skin exposure to the fluids may cause irritation; the use of rubber gloves and protective goggles is recommended.

After handling fluids, wash your hands thoroughly with water and soap.

In the event of a fire, use fire extinguishers with dry carbon dioxide or foam. Do no use water.

Fluids must be stored in a locked place, with suitable label identification.

In the event of accidental spillage, use sand or an approved absorbing powder. Then, scrape the compound and dispose of it as a chemical substance.

In the event of leaks, take all the necessary precaution to contain them and reduce their impact.

Keep used fluids in special containers for their subsequent disposal through specialised collection points.

- **CONTACT WITH THE EYES**

  Rinse thoroughly with running water. If eye irritation persists, visit the nearest heath centre.

- **INGESTION**

  Do not induce vomiting, and visit the nearest heath centre.

- **EXCESSIVE AND/OR PROLONGED SKIN CONTACT**

  Wash with water and soap.

ACCESS FOR MAINTENANCE

Side covers

The dumper has two side covers (1) for accessing engine components and performing maintenance tasks.

Move the handle to unlock the cover.

Maintenance covers have a vandal-proof safety device (lock).

UNLOCKING MAINTENANCE COVERS

Push the handle upwards (1) to unlock the cover and close it (2).

Floor plate

The dumper has a removable plate (1) on the floor for performing maintenance tasks on several components.

CORRECTIONS, ADJUSTMENTS OR REPLACEMENTS

Refilling coolant

1. Open the right maintenance cover to access the coolant tank (1).
2. Remove the coolant tank cap (2).

3. Fill the tank with coolant until it is between the minimum and maximum level mark (1).

4. Replace the cap and close the right maintenance cover.

Refilling engine oil

1. Open the left maintenance cover to access the engine compartment.

2. Remove the engine oil filling cap (1).

CORRECTIONS, ADJUSTMENTS OR REPLACEMENTS

3. Remove the plastic cap (1) to pour engine oil.

4. Fill with oil until it is between the minimum and maximum level on the dipstick (1).

Use a funnel to avoid oil spills.

5. Replace the engine oil filling cap.
6. Replace the plastic cap and close the left maintenance cover.

Refilling hydraulic oil

1. Place the dumper on a horizontal surface.
2. Apply the parking brake.
3. Deactivate the lighting system (if equipped) and stop the engine.
4. To access the hydraulic oil intake, open the cap located on the right side of the dumper.

This cap might have a vandal-proof safety device.

5. Clean the area around the hydraulic oil cap to prevent accumulated dirt, water or other substances from entering the tank during refilling.

CORRECTIONS, ADJUSTMENTS OR REPLACEMENTS

6. Unscrew and remove the hydraulic oil tank cap with a 17 mm Allen key.

7. Fill up the tank, ensuring that its maximum capacity is not exceeded. To do so, check that the level is at the centre of the mark (1).

STOP Avoid spilling oil outside the tank. Immediately clean any spillage, and dry the surface thoroughly.

When checking the oil level, the hopper must be in a straight, horizontal position.

Use a funnel to avoid oil spills.

8. Place the tank cap and turn it clockwise until it is tight.

9. Close the cover located on the right-hand side of the dumper.

Secure the cap using the vandal-proof safety device.

Refilling brake fluid

1. Open the right maintenance cover to access the brake fluid tank (1).

2. Remove the tank cap (2).

3. Fill the tank to the top with brake fluid, avoiding spills.

4. Replace the cap and close the right maintenance cover.

FLUIDS AND LUBRICANTS

Always check the labels on fluids and lubricants containers to ensure that they meet the required specifications.

Fluid or lubricant	Specifications	Remarks	Capacity
Fuel	Diesel EN 590 Diesel ASTM D975	See 'Fuel Specifications'.	69 litres
Engine oil	Deutz DQC IV-10LA	See 'Engine oil'.	8 litres
Engine coolant	Deutz DQC CA-14	See 'Engine coolant'.	15 litres
Hydraulic circuit oil (standard) 1	ISO VG-32 (ambient temperature below 10 °C) ISO VG-46 (ambient temperature between 10 °C and 40 °C) ISO VG-64 (ambient temperature above 40 °C)	ISO 6743/4-HV DIN-51524 Part 3 HVLP.	60 litres
Hydraulic circuit oil (optional)	ISO HLP-32 (ambient temperature below 10 °C) ISO HLP-46 (ambient temperature between 10 °C and 40 °C) ISO HLP-64 (ambient temperature above 40 °C)	Synthetic and biodegradable.	60 litres
Transfer box oil	API GL-4 SAE J300: 10W-30 SAE J306: 75W-80 API GL-4 / GL-5 SAE J306: 80W-90 MIL-L-2105D	-	1.3 litres
Front and rear axle differential oil	API GL-4 (UTTO)	In all cases, oil with LS additive must be used.	8.6 litres
Front and rear axle hub reduction oil	J20/C MF M1143 API GL-4 / GL-5 (SAE 80W-90)		0.8 litres
Brake fluid	LHM (green) type with mineral base (ISO VG32)	See 'Brake fluid'.	1 litre
Calcium grease for grease points	NLGI-3	-	-

[1] The dumper leaves the factory with ISO VG-46 oil for the hydraulic circuit.

FLUIDS AND LUBRICANTS

Fuel specifications

- The use of diesel EN 590 or ASTM D975 fuels is recommended.
- Do not use fuels with a sulphur content above 0.0015% (15 ppm).
- Apart from being necessary in order to meet approval requirements, a low sulphur level is also compulsory in areas regulated by US EPA. In those areas, use No.2-D S15 diesel fuel as per the following criterion:
  - As an alternative to No.2-D.
  - As an alternative to No.1-D for ambient temperatures below -10 °C.

No.2-D is a distillate fuel of lower volatility for engines in industrial and heavy mobile service (SAE J313).

- Fuel cetane rating:
  - Minimum recommended: 45.
  - A rating over 50 is recommended, especially in ambient temperatures below -20 °C or heights above 1,500 m.

Engine oil

If different brands of oil are used, empty the sump completely before adding the new oil.

Check the web page of the manufacturer for a reference list of oils, in accordance with DEUTZ DQC IV-10LA.

Brake fluid

To avoid serious damage in the brake system, do not use fluids other than the recommended one. When refilling, do not mix different fluids.

Do not use, under any circumstances, vegetable-based brake fluids (SAE J1703).

Engine coolant

The preparation of the cooling system mixture is made with a system protective agent as per DEUTZ DQC CA-14, adding water.

To ensure the correct operation of the engine's cooling system, the water used for preparing the coolant must meet the following requirements:

Parameter	Minimum	Maximum	ASTM
pH	6.5	8.5	D1293
Chlorine (Cl)	-	100 mg/L	D512 D4327
Sulphate (SO4)	-	100 mg/L	D516
Total hardness (CaCO3)	-	3.56 mmol/L	D1126
	-	356 mg/L	D1126
	-	20.0 °dGH	-
	-	25.0 °e	-
	-	35.6 °fH	-

Depending on the ambient temperature of the place where the dumper is going to operate, prepare the coolant mixture following the recommendations below:

Protective agent percentage	Water percentage	Minimum protection temperature
35% (minimum)	65%	-22 °C
40%	60%	-28 °C
45%	55%	-35 °C
50% (maximum)	50%	-41 °C

The dumper leaves the factory with cold protection down to -22 °C.

BASIC MAINTENANCE

As part of the basic maintenance plan, the following tasks must be performed:

- Daily maintenance.
- Weekly maintenance.
- Monthly maintenance.

All these tasks are essential for the correct and safe operation of the dumper.

INTENTIONALLY BLANK PAGE

DAILY MAINTENANCE

AT THE BEGINNING OF THE SHIFT

If any anomaly is detected during the daily inspection, refer to the *'Advanced maintenance plan' in Chapter 9.*

Before using the dumper, check the following:

Task	Description
If the dumper includes optional elements, carry out their appropriate maintenance operations.	Maintenance tasks for optional elements are described in *Chapter 10.*
Carry out a general visual inspection to check for damage, cracks or other defects.	▪ Roll Over Protection Structure (ROPS). ▪ Hopper. ▪ Exhaust system. ▪ Tyres. ▪ Radiator fins. ▪ Chassis.
Check the service hours counter to know whether it is necessary to perform advanced maintenance tasks.	The frequency for these types of tasks is as follows: ▪ 500 hours. ▪ 1,000 hours.
Check the following components for leaks: ▪ Engine. ▪ Transmission. ▪ Hydraulic system. ▪ Cooling system. ▪ Brake system.	Replace any damaged hose or tube immediately. The replacement components must always have the same characteristics as the original ones. If the path of a hose or tube is modified, pay special attention to their acceptable radii in order to avoid bottleneck effects. ▪ Sleeves and clamps. ▪ Hoses. ▪ Couplings. ▪ Fluid stains on the floor or on any part of the dumper.
Check the lighting system (if equipped) and the signalling system of the dumper work properly.	N/A
Check the fuel level.	Refill if necessary. STOP Do not smoke while handling fuel. Always refuel with the engine stopped.

AT THE BEGINNING OF THE SHIFT

Task	Description
Check the level of fluids.	Check the level of the following fluids and, if necessary, refill the corresponding tank: ▪ Engine oil (1). ▪ Hydraulic system oil (2). ▪ Coolant (3). ▪ Brake fluid (4).
Check the control panel.	Verify the correct operation of the following elements: ▪ Buttons. ▪ Switches. ▪ Selectors. ▪ Indicators. Check the engine fault indicator.

Check the dumper elements.	▪ Turn the steering wheel until it stops in both directions, and check that it moves freely, with no stiff points.
	▪ Check that the steering wheel does not have free play.
	▪ Press the accelerator pedal several times to ensure that it moves freely and that, when released, it returns to its original position.
	▪ Start the dumper's engine, advance slowly and press the brake pedal to verify its correct operation.
	▪ Move the hopper with the joystick to verify that it works properly.
	▪ Verify that the gear selector (FNR) operates correctly in its three positions:
	  ▪ Forward.
	  ▪ NEUTRAL.
	  ▪ Reverse.

Verify that the following parts are in good condition: ▪ Protectors. ▪ Covers. ▪ Caps and plugs. ▪ Safety stops. ▪ Locks.	N/A

DAILY MAINTENANCE

AT THE BEGINNING OF THE SHIFT

Task	Description
Verify the correct operation of all safety elements	
Seatbelts.	▪ Verify that the buckle enters and exits the slot easily. ▪ Check that, once engaged, the buckle does not come out of the slot without pressing the unlocking button. ▪ Verify that the anchor points of the different seatbelt elements are firmly attached. ▪ Check that the belt has no cuts or frayed parts. ▪ Verify the good condition of the seams. ▪ Check the correct operation of the sensor.
Acoustic warning.	Check that, when travelling in reverse, the acoustic warning sounds normally.
Emergency push button.	With the engine on, press the emergency push button to check that it triggers the complete stop of the dumper.
NEUTRAL position.	With the gear selector (FNR) in NEUTRAL and the engine on, verify that, when pressing the accelerator, the dumper does not move forwards nor backwards.
Check the condition of plates and stickers.	N/A
Check the operation of the parking brake.	N/A
Verify the condition of the hopper's safety prop and the chassis' locking bar, and of their anchor and support points.	N/A

AT THE END OF THE SHIFT

If the dumper is used in areas with salt water (beaches, etc.) or mud, rinse with clean water to protect it against corrosion, and keep the lights clean. Lubrication and protection of metallic parts is highly recommended.

At the end of the working day, clean the dumper so that dirt does not cause premature wear of the components, and it does not affect their correct operation.

Damaged painted parts must be repainted to prevent corrosion.

Clean with neutral soap.

Do not use degreasing agents, solvents, acetone, etc. to clean plastic parts.

When washing, do not direct pressurised water spray towards the following components:

- Suction intake (air filter).
- Battery.
- Alternator.
- Control panel.
- Other electrical equipment which might get damaged.

Task	Description
Clean the radiator.	STOP Allow the radiator to cool down before cleaning. STOP Use gloves to remove external residues from the radiator. Do not use high-pressure water to clean the radiator fins, as they might get damaged. Clean the radiator fins with a low-pressure water hose. Take into account the following recommendations: ▪ Direct the water spray parallel to the radiator fins. ▪ Aim the spray from the inside outwards, to prevent dirt from entering the engine compartment.
Clean the signalling and lighting system (if equipped).	N/A

DAILY MAINTENANCE

AT THE END OF THE SHIFT

Task	Description
Clean the operator's position.	▪ Seat. ▪ Cab floor. ▪ Access steps. ▪ Handles.
Clean all plates and stickers.	N/A
Clean the hopper.	N/A

INTENTIONALLY BLANK PAGE

WEEKLY MAINTENANCE

AT THE BEGINNING OF THE SHIFT

If any anomaly is detected during the daily inspection, refer to the *'Advanced maintenance plan' in Chapter 9*.

At the beginning of each week and before using the dumper, perform the following checks together with the daily maintenance tasks:

Task	Description
If the dumper includes optional elements, carry out their appropriate maintenance operations.	Maintenance tasks for optional elements are described in *Chapter 10*.
Check the tyre pressure and wear.	N/A
Retighten the fastening nuts on the wheels.	Torque **330 ± 30 Nm**.
Check the battery connections.	▪ Inspect the battery to confirm that there is no external damage. ▪ Verify that there has not been electrolyte loss. ▪ If there is rust on the terminals, clean them and apply dielectric grease or Vaseline.
Lubricate all grease points.	If the dumper has an automatic greasing system, this task is not necessary. The following figure marks the grease points with the icon .

WEEKLY MAINTENANCE

AT THE END OF THE SHIFT

Task	Description
Clean the radiator.	STOP Allow the radiator to cool down before cleaning. STOP Use gloves to remove external residues from the radiator. Do not use high-pressure water to clean the radiator fins, as they might get damaged. Direct the water spray parallel to the radiator fins. Remove the external grille (1) and clean the radiator fins (2) with a low-pressure water hose. Take into account the following recommendations.

INTENTIONALLY BLANK PAGE

MONTHLY MAINTENANCE

AT THE BEGINNING OF THE SHIFT

If any anomaly is detected during the daily inspection, refer to the *'Advanced maintenance plan' in Chapter 9*.

At the beginning of each month, and before using the dumper, perform the following checks together with the daily and weekly inspection tasks.

Task	Description
If the dumper includes optional elements, carry out their appropriate maintenance operations.	Maintenance tasks for optional elements are described in *Chapter 10*.
Check the level of fluids.	Check the level of the following fluids and, if necessary, refill the corresponding tank: ▪ Transfer box oil (1). ▪ Differential oil (2). ▪ Hub reduction (3). The measurement of the hub reduction oil level must be taken with the cap positioned so that 'OIL LEVEL' can be read horizontally.
Check all mechanic anchor points.	Make sure there are no loose parts in the following elements: ▪ Engine. ▪ Transmission. ▪ Exhaust system. ▪ Hydraulic system. ▪ Counterweight. ▪ Mobile parts. ▪ Chassis.

2
3
1

9

ADVANCED MAINTENANCE

CONTENTS INDEX

ADVANCED MAINTENANCE PLAN 3
INITIAL INSPECTION 4

ADVANCED MAINTENANCE PLAN

The *Advanced Maintenance Plan* includes all the tasks that must be carried out periodically to guarantee that the dumper is kept in a good condition and operates correctly.

The tasks in the *Advanced Maintenance Tasks* must only be carried out by specifically-trained personnel, not by the dumper's operator.

Code	Reference
Type of task	
I	Visual inspection/Check
C	Cleaning
L	Lubrication
R	Replacement/Repair
Component where the operation is performed	
CHS	Chassis
REF	Engine cooling circuit
FRN	Brakes
MTR	Engine
SAC	Power/combustion system
LMP	Cleaning System
ELE	Electrical system
HDR	Hydraulic system
TRD	Running gear

ADVANCED MAINTENANCE PLAN

Frequency	Code	Task
50 h	-	Initial inspection
Weekly	MTR.C.01	Cleaning the air filter
500 h	MTR.R.01	Changing oil and oil filter
1,000 h	HDR.R.01	Changing hydraulic oil
1,000 h	HDR.R.02	Changing cartridge oil filter
1,000 h	MTR.R.02	Changing the alternator belt
1,000 h	SAC.R.01	Changing the prefilter, the fuel filter and drain the water
1,000 h	TRD.R.01	Changing the oil from the transfer box
1,000 h	TRD.R.02	Changing the oil from the differentials
1,000 h	TRD.R.03	Changing the oil from the hub reductions
2 years	FRN.R.01	Changing the brake fluid
2 years	REF.R.01	Changing the coolant
Corrective	SAC.R.02	Emptying the fuel tank

INITIAL INSPECTION

After 50 hours of service, it is necessary to conduct a general inspection of the main components of the dumper.

In order to perform this initial inspection, the following maintenance tasks need to be carried out:

- MTR.C.01 - Cleaning the air filter
- MTR.R.01 - Changing oil and oil filter
- HDR.R.01 - Changing hydraulic oil
- HDR.R.02 - Changing cartridge oil filter
- MTR.R.02 - Changing the alternator belt
- SAC.R.01 - Changing the prefilter, the fuel filter and drain the water
- TRD.R.01 - Changing the oil from the transfer box
- TRD.R.02 - Changing the oil from the differentials
- TRD.R.03 - Changing the oil from the hub reductions
- FRN.R.01 - Changing the brake fluid
- REF.R.01 - Changing the coolant

MTR.C.01

Part	Engine
Task	Cleaning the air filter
Type of operation	Cleaning

Tools			
Item	**Description**	**Reference**	**Quantity**
T1	Pressure air machine	-	1

Consumables			
Item	**Description**	**Reference**	**Quantity**
-	-	-	-

Replacement parts			
Item	**Description**	**Reference**	**Quantity**
P1	External air filter	-	1
P2	Internal air filter	-	1

STOP Before carrying out any task on the dumper, ensure that the engine is off and the keys are removed from the ignition.

The cleaning air pressure must not exceed 5 bar.

STOP Allow sufficient time for the engine to cool down to avoid the risk of burns.

DISASSEMBLY AND CLEANING

1. Open the right maintenance cover to access the air filter.

DISASSEMBLY AND CLEANING

2. Pull the two clamps (1) to remove the filter cover.

3. Clean the filter cover with pressurised air (T1) or water.

4. Extract the external filter (1) and clean it with pressurised air (T1).

If there are signs of damage on the external filter, replace it with a new one.

5. Extract the internal air filter (2).

Do not clean the internal air filter with pressurised air. If necessary, replace it with a new one.

6. Clean inside the filter housing.

Exercise special caution when cleaning the housing with pressure air, so that no foreign objects enter the suction line.

ASSEMBLY

1. Install the internal air filter (P2) back in place inside the housing.

2. Install the external air filter (P1) back in place inside the housing.

3. Install the filter cover and affix it using the clamps.

4. Close the right maintenance cover.

MTR.R.01

Part	Engine
Task	Changing oil and oil filter
Type of operation	Replacement or repair

Tools			
Item	**Description**	**Reference**	**Quantity**
T1	**Filter wrench**	**-**	**1**

Consumables			
Item	**Description**	**Reference**	**Quantity**
S1	**Engine oil**	**-**	**8 l**

Replacement parts			
Item	**Description**	**Reference**	**Quantity**
P1	**Oil filter**	**-**	**1**

STOP Before carrying out any task on the dumper, ensure that the engine is off and the keys are removed from the ignition.

STOP Allow sufficient time for the engine to cool down to avoid the risk of burns.

EMPTYING THE SUMP

The sump must be emptied when the oil is warm, to facilitate draining.

1. Open the left maintenance cover and remove the dipstick (1).

EMPTYING THE SUMP

2. Remove the engine oil filling cap (1).

3. Remove the plastic cap (1) to pour engine oil.

4. Access the sump drain plug (1) and place a container underneath.

To avoid spills, the container should have a capacity equal to or greater than 8 litres.

5. Unscrew and remove the sump drain plug, and let all the oil flow into the container.

Disposing of the used oil should be done at specialised collection centres.

6. When there is no more oil left, clean the sump drain plug area.

7. Put the plug in place again and tighten firmly.

MTR.R.01

REPLACING THE OIL FILTER

1. Access the oil filter (1) and place a container underneath.

The container must have sufficient capacity to avoid spills.

2. Unscrew the oil filter using the filter wrench (T1), and remove it.
3. Lubricate the seal of the new oil filter (P1) with new oil (S1).
4. Install the new oil filter (P1) and tighten by hand to a torque of **15-17 Nm**.

FILLING THE SUMP

1. Pour new oil (S1) through the filling hole (1) at the top of the engine.

To reach the optimum level, 8 litres are needed.

Use a funnel to facilitate the process.

2. Put the plug on the filing hole.
3. Put the dipstick in its position.
4. Start the engine and keep it idling for a minute. Then, stop the engine and remove the key from the ignition.
5. Inspect the sump drain plug area and the oil filter area for leaks.
6. Wait for a few minutes, until the oil has gone down to the sump.
7. Extract the oil dipstick and check that the level is correct. Refill if necessary.
8. Replace the engine filling cap and the plastic cap.
9. Clean any oil spill that may occur.
10. Close the left maintenance cover.

INTENTIONALLY BLANK PAGE

HDR.R.01

Part	Hydraulic system
Task	Changing hydraulic oil
Type of operation	Replacement or repair

Tools			
Item	**Description**	**Reference**	**Quantity**
-	-	-	-

Consumables			
Item	**Description**	**Reference**	**Quantity**
S1	Diesel fuel	-	W/N
S2	Hydraulic oil	-	60 l

Replacement parts			
Item	**Description**	**Reference**	**Quantity**
P1	Hydraulic oil tank drain plug seal	-	1

STOP Before carrying out any task on the dumper, ensure that the engine is off and the keys are removed from the ignition.

STOP Allow sufficient time for the engine to cool down to avoid the risk of burns.

EMPTYING THE TANK

1. Access the hydraulic oil tank drain plug (1), located at the bottom.

2. Place a container underneath the drain plug to collect the oil.

To avoid spills, the container should have a capacity equal to or greater than 60 litres.

EMPTYING THE TANK

3. Unscrew and remove the filling cap (1) located at the top of the hydraulic oil tank, using a 17 mm Allen key.

4. Unscrew and remove the hydraulic oil tank drain plug.
5. Wait sufficient time for the tank to completely drain.

Disposing of the used oil should be done at specialised collection centres.

6. Once the tank is empty, clean the area of the plug.
7. Place a new seal (P1) on the drain plug.
8. Place the plug in the tank drainage hole and ensure that it is pressed in firmly.

CLEANING THE OIL FILTER

The hydraulic oil filter must be cleaned each time the oil is replaced.

1. Access the oil filter located on the internal side of the tank.

2. Loosen the six screws from the filter's bracket and separate it from the tank.
3. Clean the filter with diesel fuel (S1).
4. Place the filter back in the oil tank and attach it using the six fixing screws.

HDR.R.01

FILLING THE TANK

1. Fill the tank with oil (S2) up until the centre of the mark (1).

Use a funnel to avoid spills.

2. Place the plug in the tank filling hole and turn it clockwise until it is firmly closed.
3. Clean any oil spill that may occur.
4. Inspect the drain plug area for leaks.

INTENTIONALLY BLANK PAGE

HDR.R.02

Part	Hydraulic system
Task	Changing cartridge oil filter
Type of operation	Replacement or repair

Tools			
Item	**Description**	**Reference**	**Quantity**
T1	Filter wrench	-	1

Consumables			
Item	**Description**	**Reference**	**Quantity**
S1	Hydraulic oil	-	W/N

Replacement parts			
Item	**Description**	**Reference**	**Quantity**
P1	Cartridge oil filter	-	1

STOP Before carrying out any task on the dumper, ensure that the engine is off and the keys are removed from the ignition.

STOP Allow sufficient time for the engine to cool down to avoid the risk of burns.

CHECKING THE VACUUM GAUGE

1. Open the cover, located on the left-hand side of the dumper, and check the saturation level of the cartridge filter (1) using the vacuum gauge (2).

With the engine on, the vacuum gauge needle should be in the green area.

If it approaches or reaches the red area, replace the filter as described in *'Replacing the cartridge filter'*.

Use a light and look diagonally to verify.

REPLACING THE CARTRIDGE FILTER

1. Remove the floor plate (1) to access the cartridge filter (2).

2. Place a container under the cartridge filter area to collect spills.
3. Unscrew the cartridge filter (2) using the filter wrench (T1), and remove it.
4. Lubricate the seal of the new cartridge filter (P1) with hydraulic oil (S1).
5. Install a new cartridge filter (P1) in place and tighten by hand.
6. Start the engine and keep it idling for a minute. Then, stop the engine and remove the key from the ignition.
7. Inspect the cartridge filter area for leaks.
8. Check that the oil level in the hydraulic system is correct. Refill if necessary, following the indications given in *'Refilling hydraulic oil' in Chapter 8*.

MTR.R.02

Part	Engine
Task	Changing the alternator belt
Type of operation	Replacement or repair

Tools			
Item	**Description**	**Reference**	**Quantity**
T1	Ratchet wrench	-	1
T2	10 mm socket spanner	-	1
T3	13 mm socket spanner	-	1
T4	Belt tension meter	-	1

Consumables			
Item	**Description**	**Reference**	**Quantity**
-	-	-	-

Replacement parts			
Item	**Description**	**Reference**	**Quantity**
P1	Alternator belt	-	1

STOP Before carrying out any task on the dumper, ensure that the engine is off and the keys are removed from the ignition.

STOP Allow sufficient time for the engine to cool down to avoid the risk of burns.

DISASSEMBLING THE BELT

1. Open the left and right maintenance covers to access the alternator belt (1) and the screws from the fan protector.

DISASSEMBLING THE BELT

2. Loosen the four screws (1) that hold the fan protector (2) using a ratchet wrench (T1) and a 10 mm socket spanner (T2)

3. Remove the protector (2) towards the opposite side of the fan.

4. Loosen the screw (1) from the alternator spool using a ratchet wrench (T1) and a 10 mm socket spanner (T2).

5. Loosen the tensor (2) from the alternator spool using a ratchet wrench (T1) and a 13 mm socket spanner (T3).

6. Push the alternator to loosen the belt.

7. Remove the alternator belt.

To remove the belt, it needs to pass first behind the fan blades.

MTR.R.02

ASSEMBLING THE NEW BELT

1. Install the new alternator belt (P1).
2. Install the fan protector, and firmly tighten the four screws.

> To assemble the fan protector, follow in reverse order the procedure described in *'Disassembling the belt'*.

3. Use the tensor (2) to move the generator, so that the belt is taut, and tighten the spool screw (1) with a torque of **30 Nm**.

4. With the belt tension meter (T1), check that the belt has a tension of **20 kg**.

> If necessary, readjust the position of the alternator until the correct tension is obtained.

5. Close the left and right maintenance covers.

INTENTIONALLY BLANK PAGE

SAC.R.01

Part	Power/combustion system
Task	Changing the prefilter, the fuel filter and drain the water
Type of operation	Replacement or repair

Tools			
Item	**Description**	**Reference**	**Quantity**
T1	Filter wrench	-	1

Consumables			
Item	**Description**	**Reference**	**Quantity**
S1	Oil	-	W/N

Replacement parts			
Item	**Description**	**Reference**	**Quantity**
P1	Main fuel filter	-	1
P2	Fuel prefilter	-	1

STOP Before carrying out any task on the dumper, ensure that the engine is off and the keys are removed from the ignition.

To prevent circuit contamination, do not refill filters during the replacement process.

STOP Allow sufficient time for the engine to cool down to avoid the risk of burns.

After changing the filters, it is recommended to keep the engine on for 20-30 minutes.

MAIN FUEL FILTER REPLACEMENT

1. Open the left maintenance cover to access the main fuel filter (1) and place a container underneath.

The container must have sufficient capacity to avoid spills.

MAIN FUEL FILTER REPLACEMENT

2. Unscrew the main fuel filter using the filter wrench (T1), and remove it.
3. Clean the base and spread clean oil (S1) on the seal of the new main fuel filter (P1).
4. Install the new main fuel filter (P1) in place and tighten by hand to a torque of **10~12 Nm**.

FUEL PREFILTER AND WATER SEPARATOR REPLACEMENT

1. Access the fuel prefilter (1) and place a container underneath.

The container must have sufficient capacity to avoid spills.

2. Remove the electrical connections from the water sensor in the fuel and unscrew the drain screw (2).
3. Unscrew the fuel prefilter using the filter wrench (T1), and remove it.
4. Clean the base and spread clean oil (S1) on the seal of the new fuel prefilter (P2).
5. Install the new fuel prefilter (P2) in place and tighten by hand to a torque of **17~18 Nm**.
6. Tighten the drain screw (2) to a torque of **1.6 ± 0.3 Nm**.
7. Reconnect the electrical connections of the water sensor in the fuel.

SUPPLY SYSTEM BLEED

After replacing the fuel filters, it is necessary to bleed the supply system and generate the necessary pressure. To this end, do the following four times:

1. Put the ignition key in the CONTACT position.
2. Wait for 20 seconds.
3. Put the ignition key in the STOP position.

SAC.R.01

WATER DRAINING

1. Loosen the drain screw (1) in the prefilter.
2. Wait for all the water to come out.
3. Tighten the prefilter drain screw to a torque of **1.6 ± 0.3 Nm**.
4. Close the left maintenance cover

INTENTIONALLY BLANK PAGE

TRD.R.01

Part	Running gear
Task	Changing the oil from the transfer box
Type of operation	Replacement or repair

Tools			
Item	**Description**	**Reference**	**Quantity**
-	-	-	-

Consumables			
Item	**Description**	**Reference**	**Quantity**
S1	Oil	-	1.3 l

Replacement parts			
Item	**Description**	**Reference**	**Quantity**
-	-	-	-

STOP Before carrying out any task on the dumper, ensure that the engine is off and the keys are removed from the ignition.

STOP Allow sufficient time for the engine to cool down to avoid the risk of burns.

EMPTYING THE TRANSFER BOX

1. Access the transfer box and place a container underneath.

To avoid spills, the container should have a capacity equal to or greater than 1.3 litres.

EMPTYING THE TRANSFER BOX

2. Remove the level and filling cap (1).
3. Unscrew and remove the transfer box drain plug (2) and let all the oil flow into the container.

Disposing of the used oil should be done at specialised collection centres.

4. When there is no more oil left, clean the seal and the transfer box drain plug.
5. Put the drain plug in place.

FILLING THE TRANSFER BOX

1. Pour new oil (S1) through the level and filling cap (1) of the transfer box.

To reach the optimum level, 1.3 litres are needed.

2. Put the level and filling cap of the transfer box back in place.

TRD.R.02

Part	Running gear
Task	Changing the oil from the differentials
Type of operation	Replacement or repair

Tools			
Item	**Description**	**Reference**	**Quantity**
-	-	-	-

Consumables			
Item	**Description**	**Reference**	**Quantity**
S1	Oil	-	17.2 l

Replacement parts			
Item	**Description**	**Reference**	**Quantity**
-	-	-	-

STOP Before carrying out any task on the dumper, ensure that the engine is off and the keys are removed from the ignition.

STOP Allow sufficient time for the engine to cool down to avoid the risk of burns.

This procedure must be performed on both differentials.

EMPTYING THE DIFFERENTIAL

1. Access the differential (1) and place a container underneath.

To avoid spills, the container should have a capacity equal to or greater than 8.6 litres.

2. Remove the level and filling cap (1).
3. Unscrew and remove the differential drain plug (2), and let all the oil flow into the container.

Disposing of the used oil should be done at specialised collection centres.

EMPTYING THE DIFFERENTIAL

4. When there is no more oil left, clean the seal and the differential drain plug.
5. Put the drain plug in place.

FILLING THE DIFFERENTIAL

1. Pour new oil (S1) through the level and filling cap (1) of the differential.

> ⚠ To reach the optimum level, 8.6 litres are needed.

2. Put the level and filling cap of the differential back in place.

TRD.R.03

Part	Running gear
Task	Changing the oil from the hub reductions
Type of operation	Replacement or repair

Tools			
Item	**Description**	**Reference**	**Quantity**
-	-	-	-

Consumables			
Item	**Description**	**Reference**	**Quantity**
S1	Oil	-	3.2 l

Replacement parts			
Item	**Description**	**Reference**	**Quantity**
-	-	-	-

STOP Before carrying out any task on the dumper, ensure that the engine is off and the keys are removed from the ignition.

This procedure must be performed on all four wheels.

STOP Allow sufficient time for the engine to cool down to avoid the risk of burns.

EMPTYING THE HUB REDUCTIONS

1. Move the dumper until the hub reduction plug (1) is facing downwards.

2. Put a container underneath the cap.

To avoid spills, the container should have a capacity equal to or greater than 0.8 litres.

3. Remove the hub reduction plug, and let all the oil flow into the container.

Disposing of the used oil should be done at specialised collection centres.

4. When there is no more oil left, clean the seal and the hub reduction plug.

FILLING THE HUB REDUCTIONS

1. Move the dumper until 'OIL LEVEL' can be read horizontally on the hub reduction.

To avoid damage by friction, reduce the turning of the wheels to a minimum.

2. Pour new oil (S1) to the brim.

To reach the optimum level, 0.8 litres are needed.

3. Put the hub reduction plug back in place.

REF.R.01

Part	Engine cooling circuit
Task	Changing the coolant
Type of operation	Replacement or repair

Tools			
Item	**Description**	**Reference**	**Quantity**
-	-	-	-

Consumables			
Item	**Description**	**Reference**	**Quantity**
S1	Coolant	-	15 l
S2	Sealant	-	W/N

Replacement parts			
Item	**Description**	**Reference**	**Quantity**
-	-	-	-

STOP Before carrying out any task on the dumper, ensure that the engine is off and the keys are removed from the ignition.

STOP Allow sufficient time for the engine to cool down to avoid the risk of burns.

EMPTYING THE COOLING CIRCUIT

The cooling circuit is emptied via three different points:

- Coolant tank.
- Radiator.
- Cylinder block.

In all cases, a container must be placed under the outlet to collect the excess fluid.

The cooling circuit has a capacity of 15 litres.

Disposing of the used coolant should be done at specialised collection centres.

1. Dismantle the plate (1) from the lower part of the dumper.

2. Open the right maintenance cover to access the coolant tank (1).

EMPTYING THE COOLING CIRCUIT

3. Remove the coolant tank sleeve (2).

4. Remove the radiator drain plug (1).

5. Open the left maintenance cover to access the engine.

6. Remove the cylinder block drain plug (1).

REF.R.01

EMPTYING THE COOLING CIRCUIT

7. When there is no more coolant left, clean the drain areas.
8. Using sealant, put the cylinder block drain plug back in place (S2), and replace the radiator drain plug and the coolant tank sleeve.

FILLING AND BLEEDING THE COOLING CIRCUIT

1. Remove the coolant tank cap (1).
2. Fill the tank with coolant (S1) until it is between the minimum and maximum level mark (2).

3. Replace the cap and close the right and left maintenance covers.
4. Put back in place the lower dumper plate.
5. Start the engine and let it run until it reaches the operating temperature (70 ~ 80 °C). Then, stop it and check again the coolant level.

INTENTIONALLY BLANK PAGE

SAC.R.02

Part	Power/combustion system
Task	Emptying the fuel tank
Type of operation	Replacement or repair

Tools			
Item	**Description**	**Reference**	**Quantity**
-	-	-	-

Consumables			
Item	**Description**	**Reference**	**Quantity**
-	-	-	-

Replacement parts			
Item	**Description**	**Reference**	**Quantity**
P1	Fuel tank drain plug seal	-	1

STOP Before carrying out any task on the dumper, ensure that the engine is off and the keys are removed from the ignition.

STOP Allow sufficient time for the engine to cool down to avoid the risk of burns.

STOP Fuel is flammable and explosive under certain conditions.

Never smoke, light a flame or cause sparks in the vicinity of the fuel tank. Always work in well-ventilated areas.

STOP Never refuel before placing the vehicle in a hot area. Fuel expands as temperature increases. If the fuel tank is completely full, fuel may overflow from the tank.

STOP Clean any fuel spill that may occur.

EMPTYING THE TANK

Never leave the dumper without fuel, as this may damage the engine.

1. Unscrew and remove the filling cap (1), located on the upper part of the tank.

2. Access the fuel tank drain plug (1), located at the bottom.

3. Place a container underneath the drain plug to collect the fuel.

To avoid spills, the container should have a capacity equal to or greater than 69 litres.

4. Unscrew and remove the fuel tank drain plug (1).
5. Wait sufficient time for the tank to completely drain.

Disposing of the used fuel should be done at specialised collection centres.

6. Once the tank is empty, clean the area of the plug.
7. Place a new seal (P1) on the drain plug.
8. Place the plug in the tank drainage hole and ensure that it is pressed in firmly.

When the tank is filled up again, it will be necessary to check that there are no leaks from the drain plug area.

INTENTIONALLY BLANK PAGE

AUSA

AUSA Center
C/ Castelladral 1
08243 Manresa - BARCELONA
+34 93 874 73 11
ausa@ausa.com

AUSA Spain
Pol. Ind. Coslada-Marconi 15-17
28823 Coslada - MADRID
+34 91 669 00 06
ausa.madrid@ausa.com

AUSA France
11 Rue Gustave Eiffel
66350 TOULOUGES
+33 (0) 468 54 38 97
ausa.france@ausa.com

AUSA Central Europe
+49 (0) 2384 9889905
info@ausa.de

AUSA U.K.
+44 (0) 7703 609009
ausa.uk@ausa.com

AUSA U.S.
400 Continental Blvd 6th Floor
90245 El Segundo, CA.
+1 (310) 426 2305
ausa.us@ausa.com

AUSA Brasil
Avenida Belizario Ramos 2276
Lages - SC, 88506-000
+55 11 9 87866014
ausa.brasil@ausa.com

AUSA Xina
Room 403, Moma Building, N.199
Chaoyang bei road, Chaoyang District
100026 BEIJING
+86 10 8598 7386
ausa.china@ausa.com

Distribuído por *Distribué par* ***Distributed by*** *Verteilt durch :*

www.ausa.com