STORTI

dobermann SW

EVO AS-HS
EVO GP-GP AS
IVECO FPT

USE MAINTENANCE HANDBOOK USER

EN

Ed. 09/2014
Cod.16724573

CE

INTRODUCTION TO MACHINE OPERATION AND MAINTENANCE

(For correct machine operation, you are advised to read this handbook before using the machine.)

WARNING!!! ONLY USE THE MACHINE AS ENVISIONED BY THE USE AND MAINTENANCE MANUAL. ANY MANOEUVRE, USE OR MOVEMENT OR OTHER NOT CONTEMPLATED IN THE MANUAL RELIEVES STORTI S.P.A. FROM ALL LIABILITY FOR INJURY/DAMAGE CAUSED TO PERSONS OR PROPERTY AND MAKES THE WARRANTY NULL AND VOID.

The handbook for **OPERATION AND MAINTENANCE** describes the principles of operation of the machine and provides instructions on how to correctly perform the main operations for using it and routine and periodic maintenance.
The handbook is divided into sections for easier consultation.

The instructions provided in this handbook are intended for use by a professional operator who must have specific knowledge about how to use the machine and must be authorised, instructed and properly trained.

We recommend installing genuine spare parts and accessories. In addition to voiding the guarantee, non-genuine parts may be dangerous and may reduce the life and performance of the machine.

If the machine changes hands, this handbook must always be handed over with the machine. If the handbook gets damaged or lost, a copy must be requested from the machine manufacturer or from the previous owner. The handbook is considered an integral part of the machine.

HANDBOOK UPDATE

The information, descriptions and illustrations contained in this handbook reflect the state-of-the-art at the time of marketing the machine.
The manufacturer reserves the right to make modifications to the machines at any time for technical or commercial reasons. These modifications shall not oblige the manufacturer to update the vehicles that have already been marketed or to consider this publication inadequate.
Any subsequent additions that the manufacturer may consider advisable to provide the machine owner with must be kept together with the handbook and should be considered an integral part of it.

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(Version translated from original instructions)

USER'S HANDBOOK FOR OPERATION AND MAINTENANCE
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TITLE: USER'S HANDBOOK FOR OPERATION AND MAINTENANCE

USER'S HANDBOOK FOR OPERATION AND MAINTENANCE

Problems and their solutions are described after each topic.
Even if this handbook contains the most up to date information, there may be small differences between your machine and those described in this handbook. If you find printing errors or instructions that you cannot understand, or if there is anything else you are not sure about, please contact your supplier.

(TO BE FILLED IN BY THE DEALER)

To view the multimedia content correctly, we advise you to use
ADOBE READER e ADOBE FLASH PLAYER
updated, which can be downloaded from these links:
http://get.adobe.com/it/reader/
http://get.adobe.com/it/flashplayer/

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Ed. 09/2014

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sect.1 ACTIVITYOFWORKERS / QUALIFICATION

Only trained and instructed workers may carry out work with the self-propelled machine.
The manager of the company where the wagon is used must clearly define the various tasks and respective responsibilities regarding use and routine maintenance.
While they are learning, workers can work and carry out maintenance work only under the supervision of an experienced operator.
The operations to be carried out are only those stated in this handbook.
If operations other than those described are necessary, you should contact the STORTI after-sales service centre.

The following table shows the main activities of workers and the qualification required.

ACTIVITY OF WORKERS	Workers with specific training for an activity (*)	Workers who are instructed(**)	Workers with specific technical training (specialized workshop)(***)
LOADING-UNLOADING-TRANSPORT	●	●	●
ASSEMBLY AND PREPARATION	-	-	●
FIRST START UP	-	-	●
USER	-	●	●
ROUTINE MAINTENANCE	-	●	●
TROUBLESHOOTING	-	●	●
DISPOSAL	●	-	-

Key to table: ● = qualified
- = not qualified

(*) Workers who have been instructed and are competent to carry out a specific task (from start to finish) by working for a specialized and qualified firm.

(**) Workers who are instructed are workers who have been informed about the tasks to be carried out, the dangers they can run into if they do not follow the described safety regulations or if they behave incorrectly, and have been informed about the safety devices and measures adopted for protection.

(***) Workers with specific technical training are experts of the sector, who with their technical training and knowledge of the relevant provisions, are able to assess possible hazards in the work to be carried out.
(A qualification that is equivalent to technical training can also be acquired through several years' experience gained in the relevant sector).

sect. 1.1 GENERAL

Congratulations on purchasing a STORTI product.
We thank you for your trust in us and are pleased to count you among our regular customers.

With the new **DOBERMANN SW EVO** you have a Self-Propelled Cutter-Mixer Silo Unloader manufactured with the most up-to-date technology and equipment, which you will certainly be able to use every day with satisfaction.
We therefore advise you to carefully read this “OPERATION AND MAINTENANCE” handbook, the “ELECTRONIC WEIGHING MACHINE” handbook and the “ENGINE” handbook, before using the machine, in order to become fully familiar with your self-propelled machine.

In addition to information for use, this handbook contains important instructions for care and operation in order to guarantee your SAFETY and keep your machine in perfect working order.

If you have any other questions about your Self-Propelled Cutter-Mixer Silo Unloader or any problems, please consult your dealer or contact your **STORTI** importer.
Your questions and suggestions are welcome at any time.

To constantly improve our relationship, please send us the fully filled in “Test Certificate”.
We would remind you that the warranty will be valid only after the STORTI company has received the certificate.

We are sure we can rely on your co-operation and that the use of this machine will give you full satisfaction. We wish you happy reading and a good work day.

sect. 1.2 TEST CERTIFICATE

Fully fill in the card, detach it and send it by post or fax (+39 045 6149006)

STORTI

TEST CERTIFICATE

Storti S.p.A. via Castelletto n°10 37050 Belfiore (VR) ITALY Tel. +39 0456134311 Fax. +39 0457640057 e-mail. info@storti.com	Customer info	name:..... surname:..... corporate name:..... street:..... postcode:..... city:..... county/prov.:..... country:..... tel.:..... fax:..... e-mail:.....	Farm info	type of animals reared	n°
				.....	.....
				.....	.....
				.....	.....
				.....	.....
				.....	.....
				.....	.....

Dealer info	code:..... dealer:.....Machine model:..... test date:.....	Serial number of machine:

To be returned to Storti S.p.A. within 30 days of the test date

sect. 1.3 WARRANTY CERTIFICATE

Unless otherwise agreed in writing, the warranty is valid for 12 months starting from the delivery date, and within the borders of Italy. For parts that have not been manufactured in STORTI's factories, the warranty is limited to that given by the supplier. During the warranty period, all parts that have material or workmanship defects will be replaced free of charge at the final discretion of our Technical Office.
Verification of the defects and their causes must be carried out at our factory in Belfiore - Verona - via Castelletto 10.

The cost of inspection by STORTI, the transport and packing costs for the parts to be repaired or replaced, and also the cost of labour for fitting them, are to be paid by the purchaser.

The warranty will be voided if repairs or replacements are carried out with non-genuine components and also if work not indicated in the handbook is done without our permission.

The warranty does not cover parts that by their nature or use are subject to wear and tear or are poorly maintained. In any case, under no circumstances may the purchaser claim compensation for damage of any kind, however it arose.

On delivery, the customer must check that the machine meets the requirements of the contract and that it has not been damaged in transit. In the event of damage, you must not use the machine and should inform the STORTI company or the supplier within 6 days.

sect. 1.3.1 PLACE OF JURISDICTION
(extrapolated from "TERMS OF SALE" point 16 delivered to the customer)

For any dispute however arising out of this contract and connected with it, even if with foreign citizens for goods supplied abroad, the parties acknowledge and agree that the Court of Verona shall have exclusive jurisdiction.

sect. 1.4 CHECKLIST

BEFORE DELIVERY

Before the machine is delivered to the end customer, the checks described below MUST be carried out.
A cross on a square means the check has been carried out.

- ❑ Check that there are no damaged or missing parts or parts that are out of place, due to transport.
- ❑ Check that all screws are in position and correctly tightened.
- ❑ Check that the hydraulic parts are not damaged (oil leaks, defective pipes, unsuitable connections, etc.).
- ❑ Check that the oil level is correct in the engine reduction gear, mixing unit gearbox, milling cutter gearbox and in the tank
- ❑ Check that the chains and other parts with special grease nipple have been sufficiently lubricated.
- ❑ Check the tightness of the wheel nuts and also the inflation pressure of the tyres.
- ❑ Check that all the guards and SAFETY stickers are in the right place and fixed properly.
- ❑ Check that the model and serial number correspond to the data plate as described on **page 14** and that the machine conforms to the order.
- ❑ Check that all moving parts (chains, unloading belt, augers, etc.) are adjusted correctly and can turn freely.
- ❑ Check that the cutting parts of the central auger are adjusted.

I confirm that the pre-sale checks on the machine have been carried out as described above.

_____
Signature of dealer / agent

_____
Date filled in

ON DELIVERY

The following checklist MUST be verified with the customer AT THE SAME TIME as the machine is delivered.
A cross on a square means the check has been carried out.

- ❑ It has been checked with the customer that the machine conforms to the order.
- ❑ The "Operation and Maintenance Handbook" was given to the customer, and the operation of the machine was explained to the customer and all his/her operators BEFORE the machine was started.
- ❑ All the SAFETY information described in the handbook has been explained to the customer and gone through with him/her.
- ❑ All the safety guards and the operation of the working controls have been explained to the customer and gone through with him/her.
- ❑ The “GOOD RULES FOR CORRECT USE OF THE MIXER WAGON” have been explained to the customer and gone through with him/her.
- ❑ The routine maintenance to be carried out for longer machine life has been explained to the customer and gone through with him/her.
- ❑ The use of the machine been explained to the customer and gone through with him/her.
- ❑ Any booklets with additional information, such as the booklet for the weighing instrument, have been explained to the customer and gone through with him/her.
- ❑ When this customer registration sheet has been filled in, please send it to Storti S.p.A.

I confirm that all information about the machine was fully explained to me when the machine was delivered.

_____ _____
Machine Model Serial Number

_____
Customer's signature

_____
Delivery date

sect. 1.4 CHECKLIST

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I confirm that all information about the machine was fully explained to me when the machine was delivered.

_____ _____
Machine Model Serial Number

_____
Customer's signature

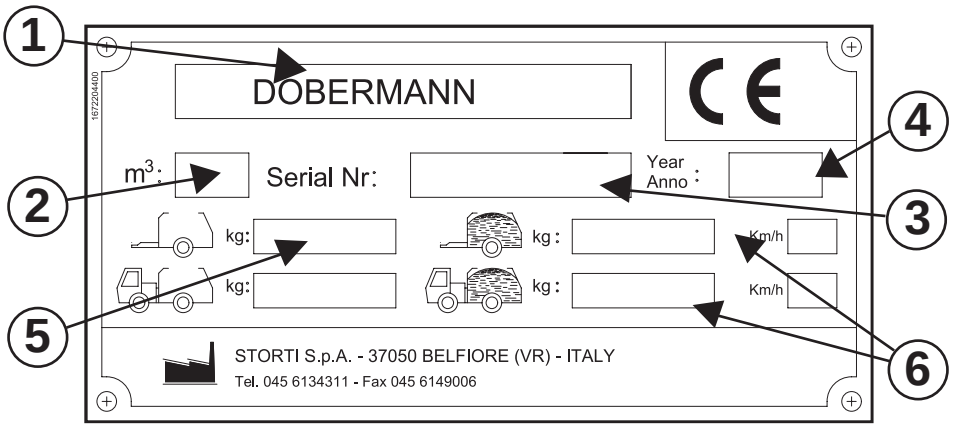
_____
Delivery date

sect. 2 DESCRIPTION AND TECHNICAL FEATURES OF THE MACHINE

sect. 2.1 SELF-PROPELLED MACHINES

These machines have the same cutting and mixing features as the towed machines.
The main quality of self-propelled machines is however to be able to load everything with the front silage unloading milling cutter, and it is therefore necessary to consider a certain reduction in chopping time, due to the fact that the fibre is put in already partially chopped.
By loading all the materials with the silage unloading milling cutter, there is the further advantage of not damaging the surfaces of the ensiled products and leaving an even compact wall that cannot be attacked by fermentation or other processes.
Usually, self-propelled machines allow a reduction in the total time required to carry out the entire process.

sect. 2.2 MACHINE IDENTIFICATION



1) Machine model
2) Internal cubic volume of hopper
3) Progressive serial number
4) Year of manufacture
5) Total unladen weight complete with all optional extras
6) Maximum allowable weight at: 25 Km/h SW EVO AS - 40 Km/h SW EVO HS
12 Km/h SW EVO GP - 25 Km/h SW EVO GP AS

IMPORTANT:
- **The capacity relates to the maximum speed of the machine (varies depending on the model) on solid, level ground. If the machine has to be moved over rough ground, its speed must be reduced considerably.**
  The maximum noise measured (with no load and with cabin closed) is the following:
  Noise: MIN. = 76.7 db(A)
  MAX. = 82.5 db(A)

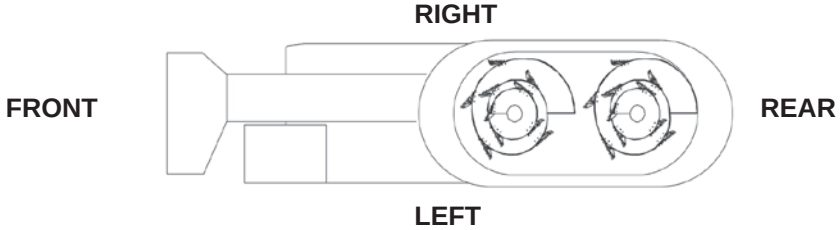
MANDATORY: use ear protection

sect. 2.3 MACHINE DESCRIPTION

The **DOBERMANN SW EVO** is a machine for livestock feeding. Its function is to load and mix various types of products together, in order to prepare a compound suitable for feeding livestock.
The machine basically consists of three distinct units:

- **CUTTING UNIT** with the function of loading the materials into the mixer.
- **MIXER HOPPER** that, by means of augers, cut and mixes the materials put into it and then discharges the finished product into the fodder-troughs.
- **SELF-PROPELLED UNIT**, chassis, cabin, wheels and parts for carrying out the movements and transfer of the unit.

The **RIGHT - LEFT - FRONT- REAR** positions are in relation to the normal direction of travel of the machine



sect. 2.4 INTENDED USES

- Read this handbook carefully and thoroughly before starting the machine.
- Make sure the guards are in order and that the stickers can be read clearly before using the machine to carry out work.
- Practise using the controls by trying each lever and checking their function with the description in the handbook.

- The machine has been designed and built ONLY to cut silage from a silo and chop, mix and distribute livestock feed products.
- Use other than the one described is considered improper use and will release the STORTI company from all liability for any damage or injury caused to operators, third parties and property.
- The machine must be operated by just one operator, who is qualified and of age, sitting in the driver's seat.
- When the material is put in without using the milling cutter, this must be carried out only from above with other suitable equipment that will ensure the operator is at a safe distance from the machine (augers, wheel loaders, loaders, etc.).
- Before using the machine, the operator must make sure no one is behind or near it (work area), and is required to stop the machine if s/he FORESEES hazardous situations.
- The operator must not use the machine if s/he is unwell, tired, drunk or has taken drugs.
- The operator must check that the products s/he plans to use are free of foreign bodies (stones, pieces of iron, etc.) that could injure people or damage the machine and consequently injure the animals to be fed.
- The machine should be used on the farm, on firm level surfaces, with sufficient space to work in conditions of good visibility and safe manoeuvring.
- Clean the machine regularly of residues of dry straw, meal or other products in order to eliminate acid moisture and accumulation of dust and particles that may trigger off a fire (clean the engine area well by blowing it with compressed air).

sect. 2.4.1 PROHIBITED ACTIONS

- **DO NOT** use the machine to carry people, animals or objects.
- **DO NOT** use the machine as lifting equipment or climb onto the cutting arm.
- **DO NOT** enter the mixing hopper to carry out any maintenance operation without first removing the ignition key and releasing the battery switch.
  It is in any case necessary to have another person helping from outside the hopper.
- **DO NOT** stand near the milling cutter, in areas where the chopped material is thrown or on the ensiled mass.
- **DO NOT** damage, tamper with or remove the safety casings or warning notices on the machine.
- **DO NOT** even partially modify any component of the machine.
- **DO NOT** use non-genuine spare parts (see also **"WARRANTY CERTIFICATE"**).
- **If you wear a** PACEMAKER **DO NOT** go near the area where the magnet is situated on the unloading belt, indicated by the following stickers. 
- **DO NOT** use the milling cutter arm improperly, a few examples follow: moving round bales, crushing material, cutting up prunings, and so on, or other material that is not a food product for livestock.
- **DO NOT** remove silage from a silo on trenches higher than the fully raised milling cutter arm, so as to avoid creating **"roofs"** on the ensiled mass that on caving in can cause damage to the machine and injure the operator (fig.1); to remove silage from the silo safely, the trench must be lower than the fully raised milling cutter arm as shown in fig.2.

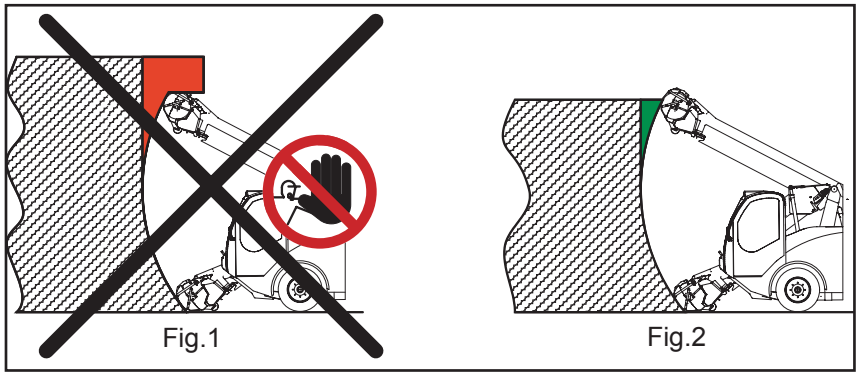


Fig.1

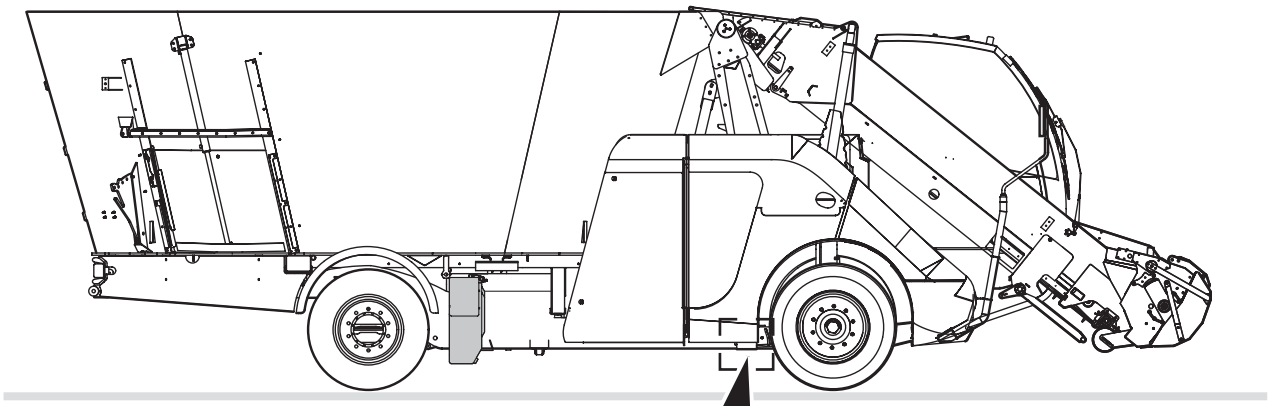
Fig.2

sect. 2.5 SPARE PARTS

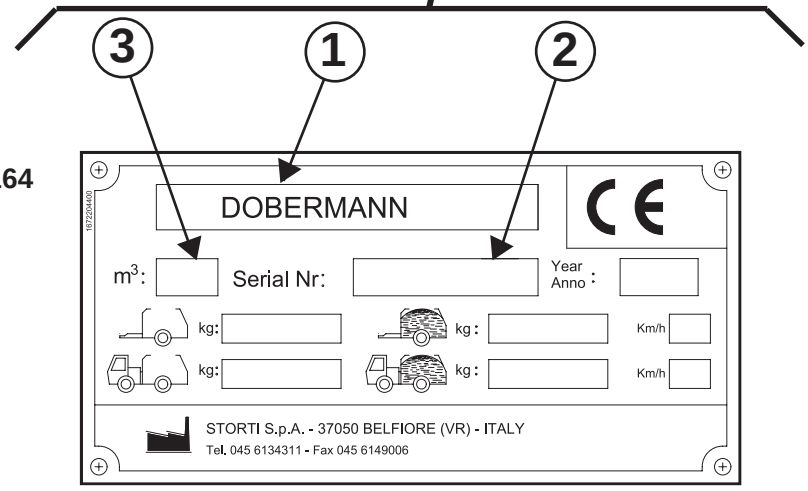
HOW TO ORDER

To facilitate the warehouse search and dispatch of spare parts, we ask our customers to please follow the instructions given below and always quote:

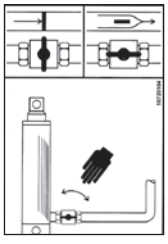
- **Model (1) and serial number (2) of the machine.** This is stamped on the identification plate situated on the right front side of the chassis, under the casing. Orders cannot be processed without the serial number.
- **Capacity of the machine in m^3 (3).**
- **Part number (4, see example) and description of the spare parts.**
- **Quantity of spare parts required.**
- **Exact address and corporate name of the purchaser**, complete with delivery address, if different.
- **Required delivery method** (if this information is not specified, **STORTI** reserves the right to use the method and carrier it considers the most suitable).
- **Unless** otherwise agreed in writing, the goods are dispatched after payment in advance or with cash on delivery.



FOR EXAMPLE: 4



PART NUMBER 16720164

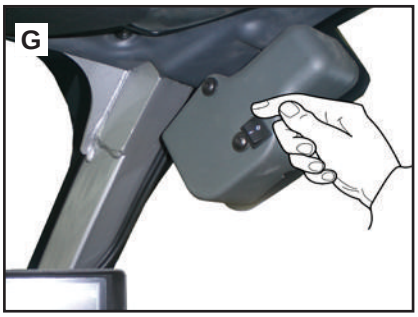


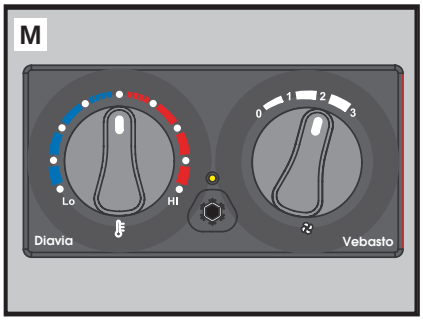
sect. 2.6 CONTROL AND WORK STATION

From the driver's seat you can reach all the controls for operating and adjusting the components of the machine.
The high visibility allows an all-round 360° view to keep the various work stages constantly under control.

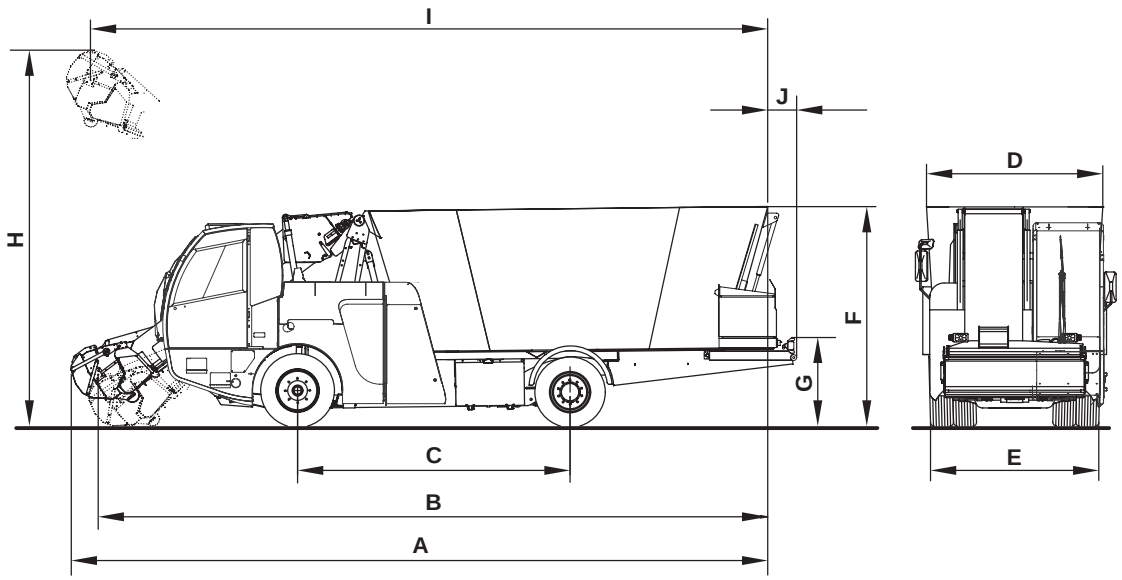
View of controls and adjustments from the driver's seat

A steering wheel
B driver's pedals
C central dashboard controls/switches
D seat adjustments
E emergency push-button
F cabin door opening lever
G side window wiper switch
H weighing instrument
I multifunction lever
L side switches
M heating/air conditioning controls (optional extra)
N roof-mounted controls
O engine accelerator



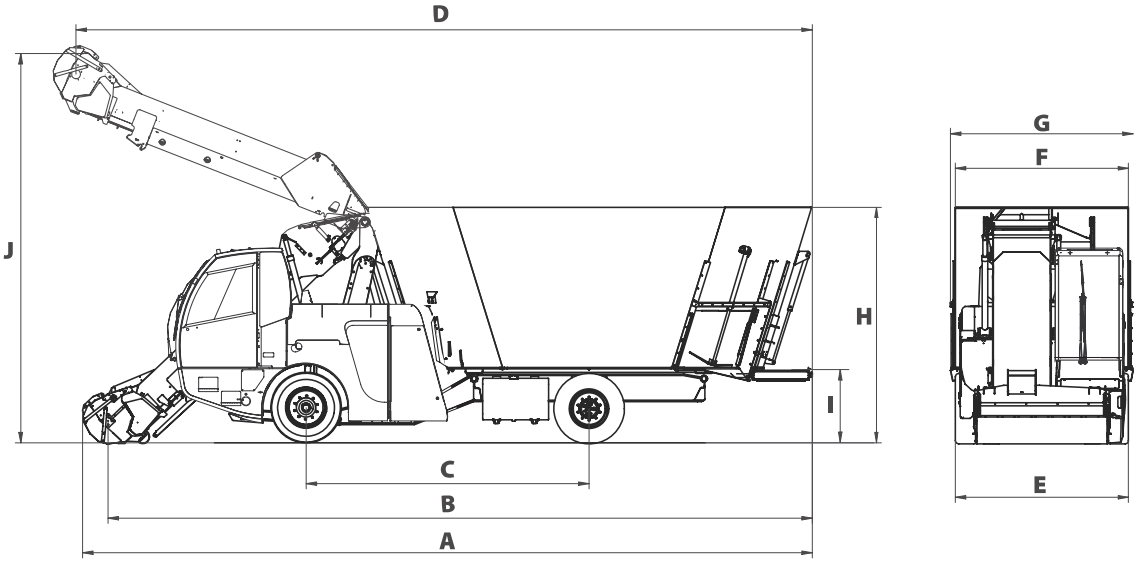


sect. 2.7 TECHNICAL DATA FOR DOBERMANN SW EVO AS/HS



		A	B	C	D	E	F	G	H	I	J	Engine	Un-laden weight	Weight with full load
	m^3	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kW - HP	Kg	Kg
HS 160-40km/h	16	9.390	9.180	3.780	2.390	2.390	2.885	1.060	5.030	8.970	420	151 - 206	13.580	18.000
HS 180-40km/h	18	9.680	9.390	3.780	2.420	2.390	2.900	1.060	5.030	9.270	440	151 - 206	14.220	18.000
HS 200-40km/h	20	9.665	9.380	3.780	2.440	2390	3.060-3.000	1.060	5.190	9.310	390	151 - 206	14.360	18.000
HS 220-40km/h	22	9.710	9.450	3.780	2.500	2390	3.070-3010	1.060	5.190	9.310	520	151 - 206	14.680	18.000
AS 240-25km/h	24	10.150	9.860	3.780	2.480	2390	3.300	1.010	5.620	9.970	295	151 - 206	13.520	20.000
AS 260-25km/h	26	10.125	9.800	3.780	2.500	2390	3.450	1.010	5.700	10.030	250	151 - 206	13.670	20.000

sect. 2.8 TECHNICAL DATA FOR DOBERMANN SW EVO GP



		A	B	C	D	E	F	G	H	I	J	Engine	Unladen weight	Weight with full load
	m^3	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kW - HP	Kg	Kg
SW GP 270	27	10.745	10.375	4.090	10.835	2.500	2.500	2.730	3.230	1.050	5.620	185 - 245	14.700	29.000
SW GP 300	30	10.745	10.375	4.090	10.835	2.500	2.500	2.730	3.400	1.050	5.620	185 - 245	15.000	29.000
SW GP 330	30	10.605	10.235	4.090	11.005	2.500	2.500	2.730	3.630	1.050	5.700	185 - 245	15.300	29.000

These data can be changed in order to make technical improvements.
They are therefore not binding for the purposes of the supply. **STORTI** reserves the right to adopt changes or improvements in the design and the making of the components at any time without being obliged to make these changes to the previously manufactured models.

sect. 2.9 ADOPTED STANDARDS AND TECHNICAL SPECIFICATIONS

To make this partly completed machine, the following standards and technical specifications have been adopted as expressed in the following certificate of conformity **facsimile** that is issued with each machine that leaves the factory of Belfiore - Verona - via Castelletto 10.:

DECLARATION OF CONFORMITY

We, the undersigned

STORTI S.p.A.

with registered office in **via Castelletto 10 - 37038 BELFIORE (VERONA - ITALY)**
Tel. +39 045 6134311 - Fax: +39 045 6149006

The depositary of the documentation: Mr.**Ottorino Storti** residing in via **Castelletto 10 BELFIORE (VERONA ITALY) tel. is** authorized to set up the technical file.

declare under our own responsibility that the machine:

Type.....

Model.....

Serial number.....

complies with the following European Directives

2006/42/EC

2004/108/CE (Electromagnetic compatibility)

The following Harmonised Standards have been used for conforming the machine:

EN 703	(2004 edition)
ISO 13857	
EN ISO 4254-1	
IEC EN 60204-1 fourth edition 2006 (IEC 44-5)	
EN 12999	(November 2003 edition) Only for machines with loader)

Also, the following technical specifications have been used:

ISO 11684	1995
UNI EN ISO 3767-1	
UNI EN ISO 3767-2	

Self-Propelled Cutter-Mixer Silo Unloader

machine for livestock feeding. Its function is to load and mix various types of products together, in order to prepare a compound suitable for feeding livestock. The machine basically consists of three distinct units:

- **CUTTING UNIT** with the function of loading the materials into the mixer.
- **MIXER HOPPER** that, by means of augers, mixes the materials put into it and then discharges the finished product into the fodder-troughs.
- **SELF-PROPELLED UNIT**, chassis, cabin, wheels and parts for carrying out the movements and transfer of the unit.

Belfiore (VR).....

CE

legal representative
OTTORINO STORTI

sect. 3 GENERAL SAFETY AND ACCIDENT-PREVENTION REGULATIONS

General considerations:
Workers who use these machines must be taught how to use them correctly by the employer, informed about the risks arising from incorrect use and informed about the use of the adopted safety devices.

Carefully check the machine before starting it each time.
Storti cannot foresee every possible circumstance that could involve a potential hazard.
The warnings in this handbook and on the machine refer to a machine that is used correctly and in compliance with safety regulations.
The signage on the machine gives important instructions: it is necessary to comply with them for your safety.
Make sure all the safety pictograms are readable.
Clean them and, if necessary, replace them with new labels.
Before using the machine, make sure all the safety devices are correctly placed in position and in good working order; immediately replace any malfunctioning or damaged safety devices or guards.
Before getting out of the cabin and before every maintenance operation, engage the parking brake, switch off the engine and remove the ignition key from the dashboard.
The handbook must always be close to hand so that it can be consulted to check the operating cycle.
If it gets lost or damaged, it will be necessary to ask STORTI for another one.
The machine is designed to be used by only one operator.
Never work with this machine if your are tired, unwell or under the influence of alcohol, drugs or medicines.
We advise the machine operator to avoid wearing garments that could become entangled or caught.
Use PPE (Personal Protective Equipment) (ART. 74-75-76-77-78-79 of the Leg. Dec. 81/08)
During use, the machine can produce dust when working with dry products (hay, straw, etc.).
We advise you to clean the filters by blowing air through them every 8 hours or so of operation or replace them when you notice a considerable reduction of air in the cabin.
When you get out of the cabin, we advise you to wear a dust mask or filtered mask to protect your respiratory tract.
During use, the operator must have sufficient visibility on work areas that are considered hazardous.
The machine must not be left unattended when it is running.
Keep the machine free of foreign materials (rubble, tools, objects) that could damage its operation or injure the operator.
Park the machine on firm, level ground, and make sure it is stationary and stable.
If the machine is parked on a slope, use the chocks supplied with the machine.
Do not work on muddy, sandy or soft ground.
Check the hydraulic pipes for wear. Replace them if they have deteriorated.
Do not use the controls or flexible pipes as supports: these parts move and they do not give stable support.
Machine modifications could cause safety problems and the warranty to **become null and void**.
In this case, the user will be the only person held accountable for any accidents.
Only “type approved” self-propelled machines can travel on the roads; without type-approval, they can be used only on the farm.
Check the tyre pressures regularly and always observe the inflation pressure defined according to the type of tyre and the nature of the ground.

REFUELLING

During refuelling, the machine must be completely switched off, and there must be no lights or electrical accessories switched on.
Do not smoke or use naked flames.

COMPRESSED AIR

When using compressed air to clean the machine, you must protect yourself with goggles and mask.

sect. 3.1 REFERENCES TO THE TEXT OF LAW
(Leg. Dec. 81/2008 subsequently completed by Leg. Dec. no. 106 dated 3 August 2009)

ACCIDENT PREVENTION STARTS HERE

- Consult the instruction handbook before carrying out any operation.

- Correctly interpret the meaning of the pictograms on the machine in order to warn the operator and make him/her aware of the hazards that exist while using it.

E.G.: THE FOLLOWING IS A HAZARD SIGN and indicates an area or part of the machine that can cause serious **INJURY** OR **DEATH**.

- Use PPE (Personal Protective Equipment) (ART. 74-75-76-77-78-79 of Leg. Dec. 81/08);

· OVERALLS
· GLOVES
· GOGGLES
· SAFETY SHOES
· MASK
· EAR MUFFS

- Do not remove or modify safety, warning or control devices without permission (ART. 20 paragraph 2 letter f of Leg. Dec. 81/2008).

IMPORTANT:
Repairing or replacing components with non-genuine parts will invalidate the CE marking and the warranty.

sect. 3.2 SAFETY DEVICES

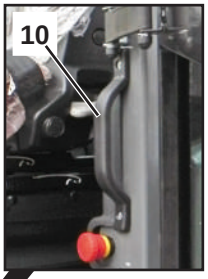
1 hammer, part no. 98400438
2 extinguisher, part no. 98400439
3 Emergency mushroom push-buttons 99401351
4 instruction booklets
5 milling cutter casing
6 chocks, part no. 98400568
7 stickers
8 safety belts
9 handle for getting in/out
10 handle for getting in/out
11 operator present on joystick: when the joystick is released, all the functions of the milling cutter arm are stopped
12 operator present on seat: when the operator gets up from the seat, all the functions of the machine are disabled
13 safety bypass: the machine has safety systems that begin working automatically.

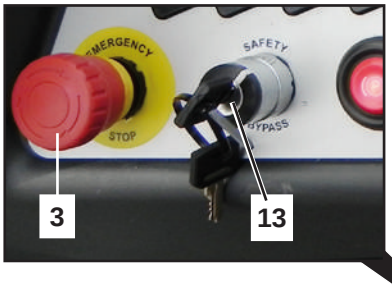
If it is necessary to carry out maintenance work with the machine running, you should contact a Storti after-sales service centre or authorized car-repair garage where skilled persons who are aware of the risks connected with a running vehicle can use the **SAFETY BYPASS** KEY SELECTOR to temporarily bypass the guards.

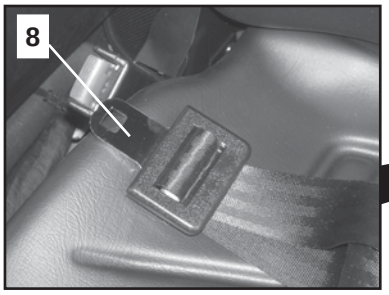
WARNING!!! When the key is turned to the right, the machine no longer has active safety devices.

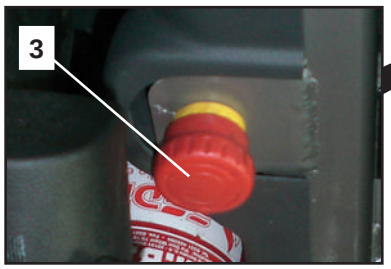
During maintenance work with the key inserted in the bypass selector, the cabin must be closed **(keys in pocket)** and no one should walk near the vehicle.

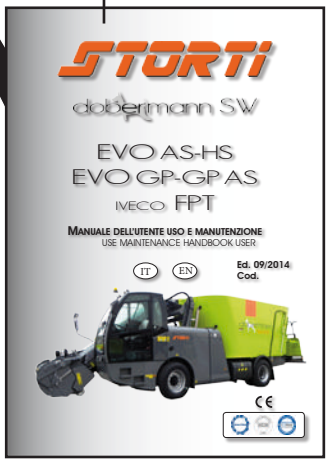
(The use of the bypass selector is recorded in the data memory of the control unit of the machine.)

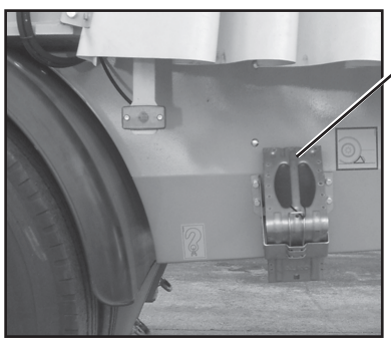


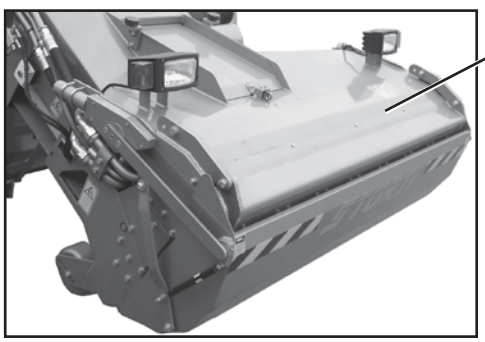








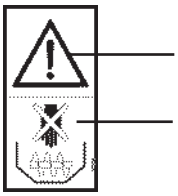




sect. 3.3 SAFETY SIGNS: HAZARD / MANDATORY / WARNING / INFORMATION

sect. 3.3.1 HAZARD / MANDATORY

The following ISO 11684 double-image adhesive "Pictograms" highlight the RESIDUAL risks on the machine if it is not used in "safe conditions": the upper part of the pictogram clearly identifies the type of hazard and risk, the lower parts gives advice on how to avoid the hazard.
(SOME EXAMPLES FOLLOW)



HAZARD!!!!!

do not clean the machine while it is running.

HAZARD!!!!!

mandatory use dust protection

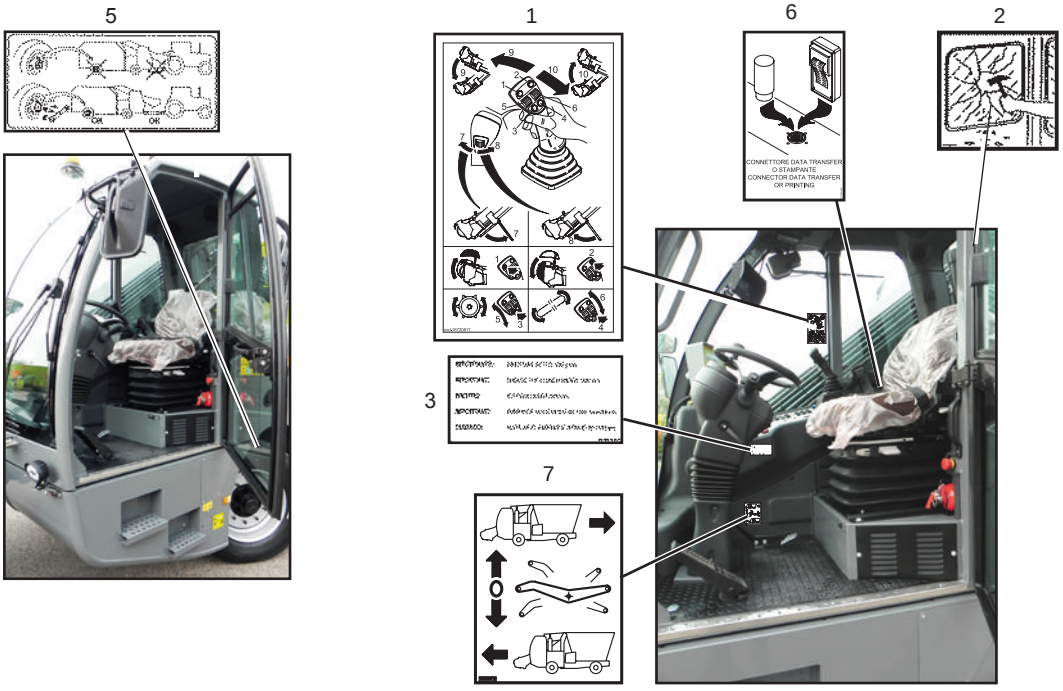
sect. 3.3.2 WARNING / INFORMATION

(SOME EXAMPLES FOLLOW)

WARNING:
fire hazard

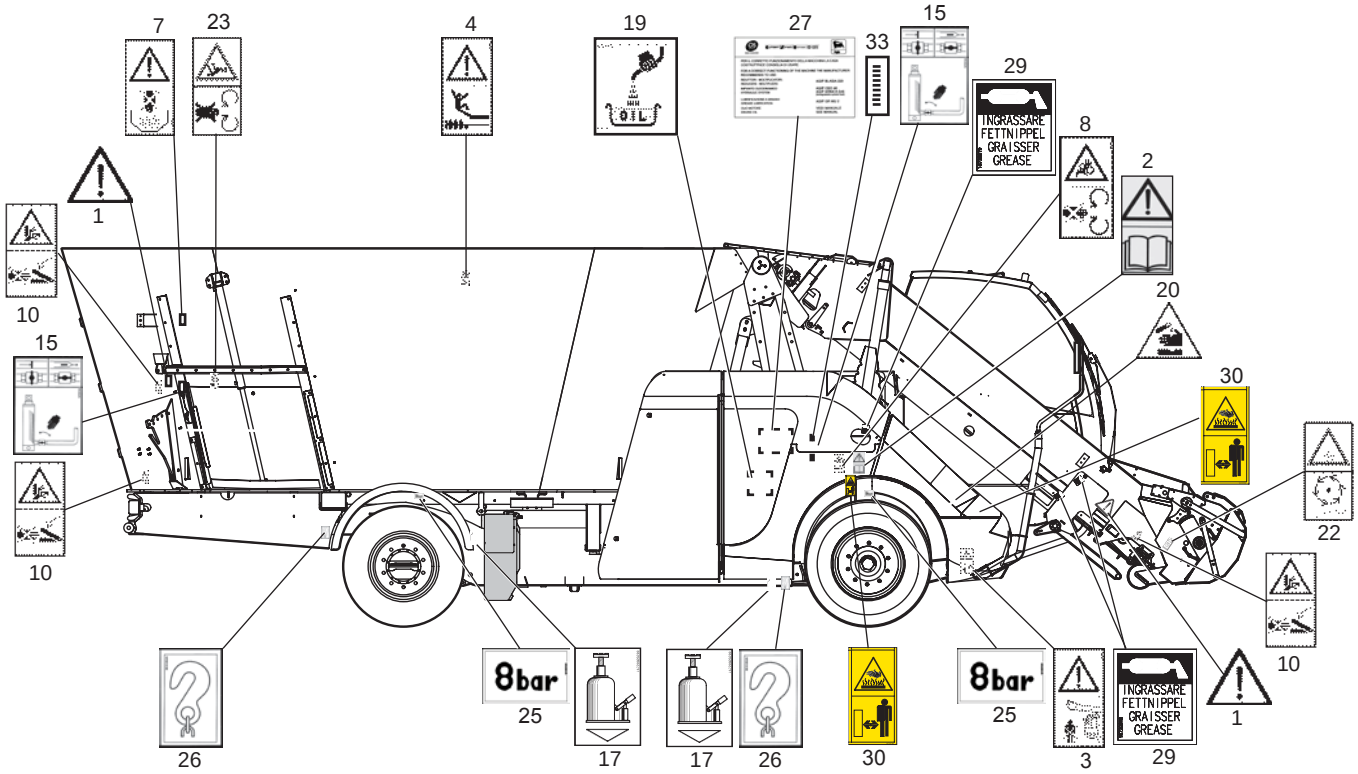
INFORMATION:
grease

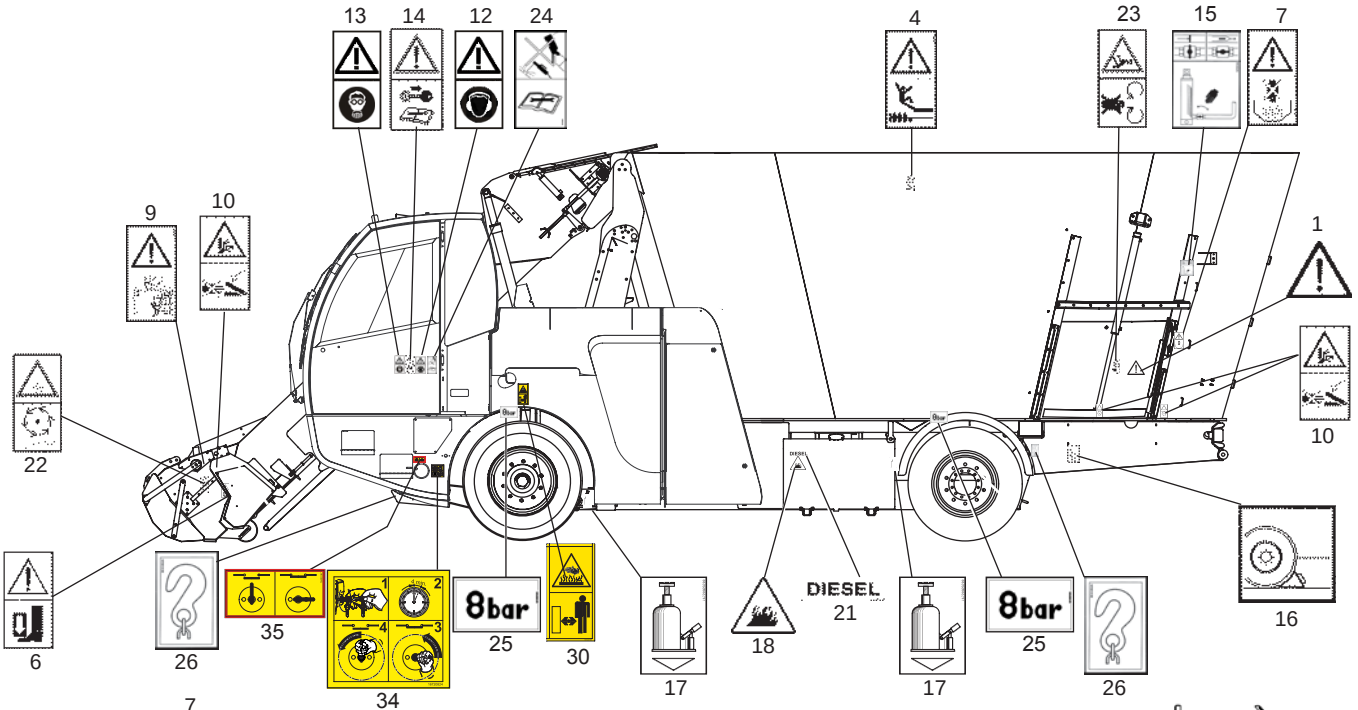
sect. 3.4 POSITION OF INTERNAL STICKERS

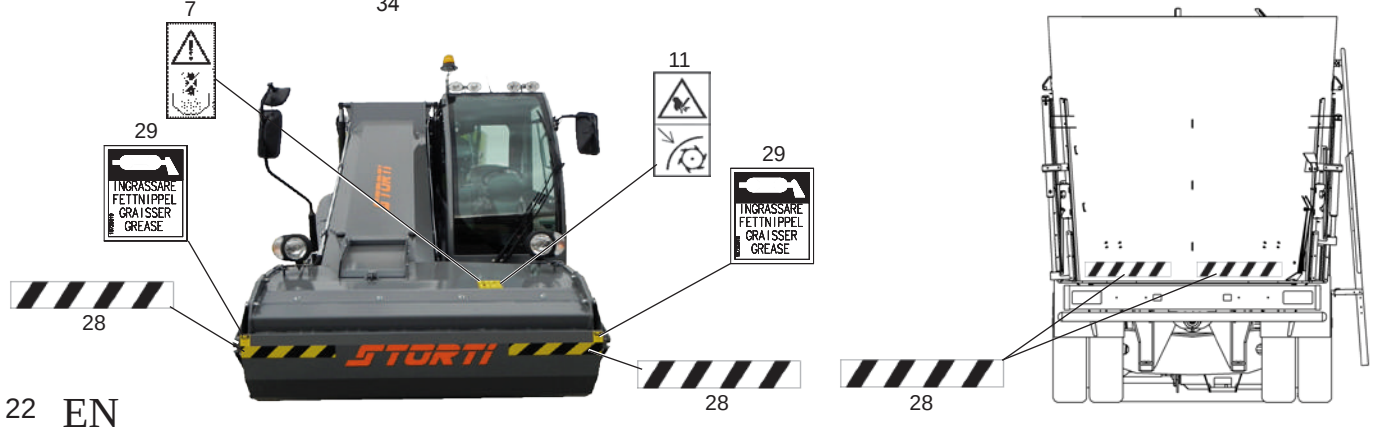


1) **PART NUMBER 16720817 INDICATION:** joystick "controls"
3) **PART NUMBER 16720177 INDICATION:** Use the hammer to break the glass in case of need.
3) **PART NUMBER 16720291 INDICATION:** clutch engagement limit.
5) **PART NUMBER 16720188 MANDATORY:** towing the self-propelled machine "to tow, remove the pinions from the gearboxes and use the bar".
6) **PART NUMBER 16720530 INDICATION:** "connector for data transfer or printer"
7) **PART NUMBER 16720250 INDICATION:** "forward/reverse pedal"

sect. 3.5 POSITION OF EXTERNAL STICKERS







1) **PART NUMBER 16720154 HAZARD:** indicates an area or part of the machine that can cause serious injury or death.
2) **PART NUMBER 16720151 HAZARD:** consult the instruction handbook before carrying out any operation.
3) **PART NUMBER 16720178 HAZARD:** do not go near the milling cutter or stand under it.
4) **PART NUMBER 16720158 HAZARD:** do not work in a position that is higher than the machine.
5) **PART NUMBER 93151110 INDICATION:** graphic thermometer THERMAX.
6) **PART NUMBER 16720156 HAZARD:** danger of crushing.
7) **PART NUMBER 16720153 HAZARD:** do not clean the machine while it is running.
8) **PART NUMBER 16720162 WARNING:** moving parts.**MANDATORY:** close the casings again with the screws after each maintenance operation.
9) **PART NUMBER 16720179 HAZARD:** be careful of power lines.
10) **PART NUMBER 16720169 HAZARD:** milling cutter support.
11) **PART NUMBER 16720170 HAZARD:** close the safety guard.
12) **PART NUMBER 16720312 MANDATORY:** use ear protection.
13) **PART NUMBER 16720313 MANDATORY:** use dust protection.
14) **PART NUMBER 16720314 WARNING:** switch off the power supply before doing maintenance work.
15) **PART NUMBER 16720164 MANDATORY:** close the valve to lock the cylinder before carrying out work on the machine.
16) **PART NUMBER 16720163** Chock the wheels when the machine is parked.
17) **PART NUMBER 16720282** Use a jack to lift the wagons.
18) **PART NUMBER 16720319 WARNING:** fire hazard.
19) **PART NUMBER 16720320** Oil drain.
20) **PART NUMBER 16720321 WARNING:** corrosive liquids.
21) **PART NUMBER 16720194 Diesel.**
22) **PART NUMBER 16720310** Milling cutter rotor stop.
23) **PART NUMBER 16720311 HAZARD:** do not touch moving parts
24) **PART NUMBER 16720409** Do not weld.
25) **PART NUMBER 16720073 INDICATION:** “8 bar.”
26) **PART NUMBER 16720191 INDICATION:** hook.
27) **PART NUMBER 16720014 INDICATION:** "recommended oils"
28) **PART NUMBER 16720030 INDICATION:** "yellow and black stripes"
29) **PART NUMBER 16720019 INDICATION:** "grease"
30) **PART NUMBER 16720786 WARNING:** "Burn hazard"
31) **HAZARD:** do not come near if you wear a **PACEMAKER.**
32) Magnet
33) **PART NUMBER 93151110 INDICATION:** Graphic thermometer THERMAX.
34) **PART NUMBER 16720824 MANDATORY:** “warning battery cut out switch", wait 4 minutes
35) **PART NUMBER 16720167** Switch of the electrical circuit connected to the battery.

31

32

sect. 4 TRANSPORT

sect.4.1 LOADING AND UNLOADING WITH LOADING RAMPS BY THE CUSTOMER

Sloping loading ramp (see fig.1) or horizontal loading ramp.
Loading with loading ramps is a dangerous operation and must be done by qualified and skilled workers.
Follow the instructions below:
Lower the suspension of the lorry, and lower the parking foot (A fig.1) to the ground.
If there is no foot, stabilize the loading platform with support blocks (B fig.1) at the end of the loading platform.
Before driving on, close the rear-view mirrors of the self-propelled machine.
WARNING: while driving on, check that the rear of the self-propelled machine (or the front, if driving on in reverse) does not touch the ground; if it does, it is mandatory to lengthen the loading ramps further to reduce the ramp angle.
When you have finished loading, lower the milling cutter and brake the machine.
Tie the machine with 4 ropes using the mounts provided and indicated by stickers.
WARNING: do not load using wet or iced up loading ramps.
The loading operations must be carried out by at least two people, the driver and a helper who can indicate if any corrections need to be made.
Use the information in the diagram below and carry out the operations with suitable equipment, based on the weight shown on the identification plate.
Calculate the length of the sloping loading ramp to be used based on the height of the loading platform used.
Reference example: loading platform height 1000mm, length of loading ramp used 4300mm (see fig.1).

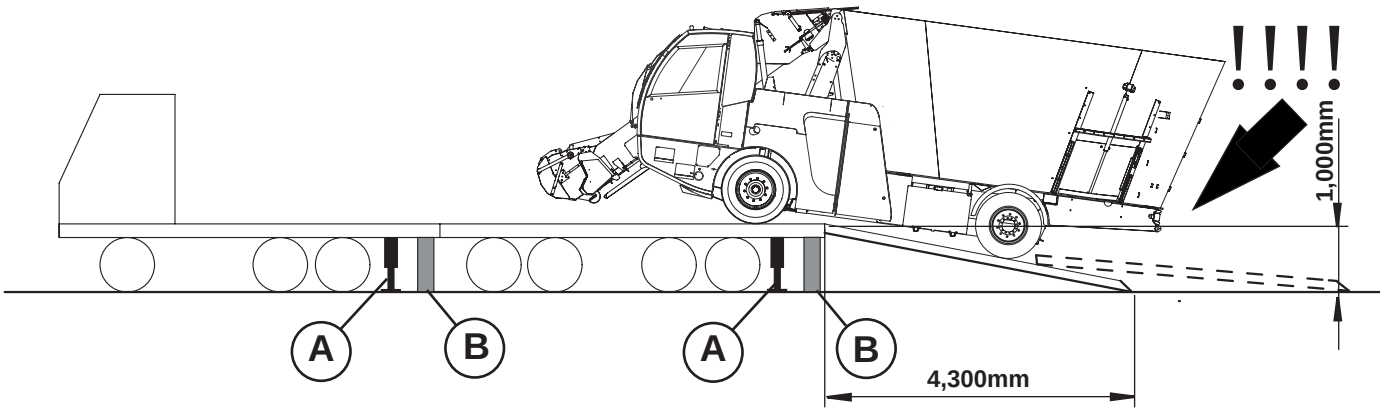


fig.1

sect. 4.2 ANCHORAGE

During transport, the machine must be positioned as follows:
- CUTTING ARM in rest position, resting on the ground
- THE ENGINE must be switched off.
- CONTROL LEVERS in rest position.
- GUARDS of the milling cutter lowered.
- WINDOWS AND DOOR of the cabin closed.
- IGNITION KEYS removed from the panel.
- CHOCKS on the 4 wheels.
- PARKING BRAKE engaged.
- BATTERY SWITCH on OFF (switched off).

The machine must be securely anchored to the loading platform using only the mounts provided (fig.2).

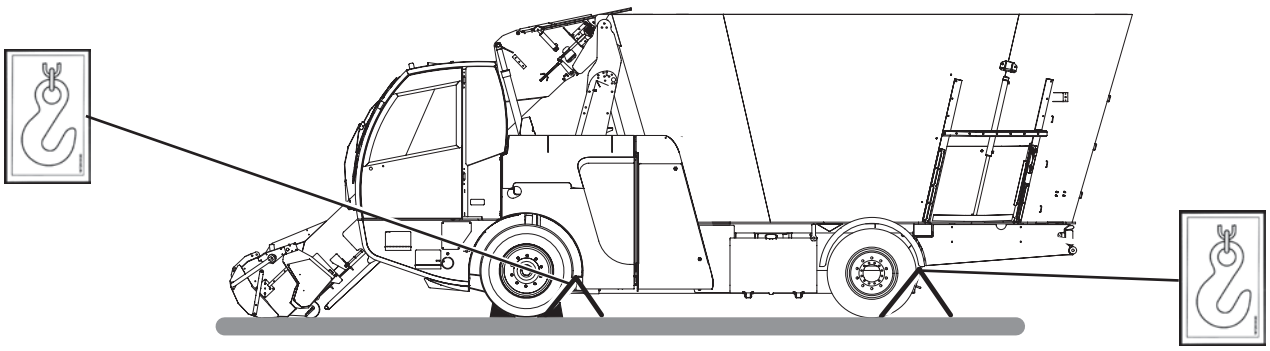
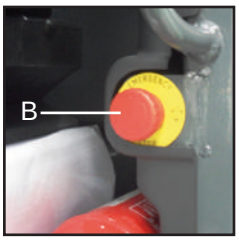
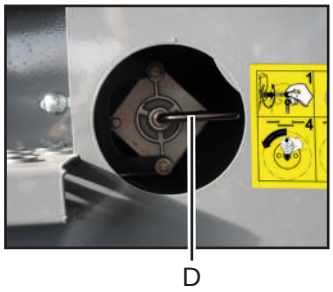


fig.2

Sect. 4.3 CONNECTIONS

When at destination, to unload the machine, check that neither of the emergency mushroom push-buttons (one on the right side dashboard of the driver's seat (“A”) and one on the left side door pillar (“B”) is pressed. If even only one mushroom push-button is engaged, the panel does not come on and only the yellow warning light of the triangle “C” lights up.
In this case, release the engaged push-button by turning it in the direction of the arrow on the knob.





Connect the battery via the manual lever (D) situated on the right side of the machine (1).
(See BATTERY CUT OUT SWITCH section).

Fill-up with fuel and AdBlue (UREA).

Sect. 4.4 FINAL CHECK

Before starting to work, check that the controls, brakes, lights, reversing buzzers, rear view camera (optional extra), milling cutter, control panel, wheels, etc. are all working properly.
If problems are found, check for possible solutions in the handbook, otherwise call the after-sales service centre.

Sect. 4.5 LIQUID AND FLUID SPECIFICATIONS: WATER - OIL - FUEL - AdBlue® (UREA)

Use a mixture of water and PARAFLU 11 at 50% (as per FPT engine use and maintenance manual supplied) also in the summer.
Alternatively to the PARAFLU 11, see Dobermann SW EVO FPT maintenance schedule.
Use lubricants that comply to the international specifications ACEA E7 - E9.
The degree of viscosity to use in relation to the environment temperature is given in the maintenance schedule table.
The consumption of oil is deemed acceptable up to a quantity equal to 0.5% of fuel consumption.

Use STANDARD fuel in compliance with the EN 590 regulation
(A fuel that respects the parameters fixed by EN 590 does not cause damage and leaves practically no deposits. A too high quantity of water, petrol, biodiesel or other pollutants in the diesel, jeopardises the lubricant capacity of the fuel and causes engine failure).

Diesel for low temperatures: The EN 590 regulation distinguishes different classes of diesel, identifying the features of those most suitable for use at low environmental temperatures.
The oil companies are completely responsible for compliance with the regulation which envisions the distribution of fuels for climatic and geographical conditions of the different countries.

WARNING!!!
Filling up from, baskets, cans or drums that are not clean can pollute the diesel with risk of damage to the injection system,
In this case, before filling up, filter the diesel or leave impurities to settle.

AdBlue® (UREA) IMPORTANT READING!!!

AdBlue® is a pure, colourless synthetic urea solution,produced following precise specifications starting from the organic urea compound and pure, demineralised water. The formulation of AdBlue® may appear simple, but it must be produced in strict and rigorous conditions, to ensure its purity. It is also essential that the purity is kept during distribution and storage, up to final destination, i.e. in the vehicle AdBlue® tank and in the exhaust gas injection system.
Without this level of purity, the SCR system will not function correctly and there is a high risk that the vehicle emissions reduction equipment is damaged.
Why is AdBlue required?
AdBlue® is an essential element that means that your vehicle, on which the SCR system is mounted (Selective Catalytic Reduction),is always compliant with the legal requirements within the UE regarding exhaust gas emissions. In other words, AdBlue® is injected in controlled quantities into the exhaust gases of your vehicle. With the aid of the catalytic transformer, the AdBlue® transforms the toxic exhaust gases, the nitrogen oxides (NOx), into two harmless substances: nitrogen and steam. The result of this process is a great reduction of the emissions of noxious substances, the NOx.
What can happen if contaminated AdBlue® is used?
AdBlue® is a very pure chemical product and this must be preserved in all phases; from production to use.
If the AdBlue® is contaminated, due to incorrect storage or improper handling, cit will cause incorrect operation of the SCR system, in so much as this system is sensitive to the impurities that may be contained in the AdBlue®.
Consequently, your vehicle may not circulate legally.
Furthermore, contaminated AdBlue® damages the SCR system and makes the request for assistance relative to any damage to the SCR system under warranty impossible .
How can we be sure of using AdBlue correctly?
First of all, only purchase AdBlue® from suppliers that display the VDA licence for the production and/or supply of the product.
AdBlue® has specifications that comply with the ISO 22241 and this imposes producers and distributors of AdBlue® to guarantee the purity of the product from production to distribution and storage. VDA provides licences to producers and suppliers of AdBlue®, which authorises use of the AdBlue® trademark.
You can find a list of authorised AdBlue® dealers at: www.vda.de >Publications>Orders & Downloads.
Follow the what to do and not to do instructions scrupulously.

What Not To Do
1)Purchase:
Do not purchase AdBlue® or any other solution for SCR from suppliers that are not VDA registered licenced suppliers.
Do not purchase products that are presented as AdBlue® but are called “Soluzione di urea” or “Urea solution” or similar
If the name AdBlue® is not on the packaging, it is not AdBlue® but a lower quality product.

2) Supply:
Do not introduce any other product than AdBlue® into the AdBlue® tank.
There is no substitute.
The use of impure AdBlue or other liquids such as water, can cause the progressive deterioration and consequent block of the catalyser, with costs for repairs and spare parts, reduction of efficiency and dead times.
To store and supply AdBlue® do not use containers and instruments for fuels and lubricants such as tanks, buckets and funnels, as the AdBlue® would be contaminated.
Do not use previously-used AdBlue® containers as they could be contaminated.
Do not expose AdBlue® to direct sunlight.

3)Use:
Do not use AdBlue® as an additive for diesel.
AdBlue® is not an additive for fuels, therefore never add AdBlue® directly to the fuel tank.
If this should occur, do not start the engine.
Do not use the vehicle without AdBlue®.
Your investment would be damaged in the long term.
The diagnostics system on board detects the absence of AdBlue® and that the NOx emissions are above the legal limit.
Incorrect use makes the warranty null and void and circulation illicit.
Do not add water to the AdBlue® tank.

What To Do
1)Purchase:
Only purchase AdBlue from AdBlue licence holders, registered at VDA.

2) Storage and supply:
Only use selected materials for the storage and supply of AdBlue®.
To prevent contamination of the supply unit, only insert the AdBlue® gun into the AdBlue® inlet. both are clearly indicated and recognisable.

The product in containers such as tanks, drums and IBC, which the managers of the fleet receive from the AdBlue® suppliers, must be sealed.
Fill up the AdBlue® tank always with AdBlue®.
It is generally a clearly visible tank, with medium dimensions and blue cap. It is usually near to the vehicle fuel tank or where it can be positioned on the vehicle.
Storage temperatures less than 30° C and above -11°C are recommended to ensure the shelf life of 12 months.
If subjected to temperatures below -11°C, the AdBlue freezes, but can also be thawed without its quality deteriorating.
To thaw the AdBlue®, heat the external container lightly and the product will go back to its original state.
The vehicle system is protected against the presence of frozen AdBlue® in the pipes and injector, because the dosing pipes are emptied on switch-off.

3)Use:
The AdBlue® must remain pure in order for the SCR system to function suitably and not undergo damage.
For this reason the AdBlue® must be protected from any contamination from substances, such as: fuel, oil, grease, dust, dirt, metal, detergents.
Keep the AdBlue® equipment clean and free from dust and dirt.
If the inside must be cleaned or rinsed, use demineralised water or AdBlue® itself: do not use tap water!

WARNING!!! two types of problem can occur from using poor quality AdBlue:
Aging and poisoning of the catalyser.

1) Ageing occurs typically from the presence of substances that make the catalyser less efficient and reduce the life span the capacity to operate (reducing the useful services). The catalyser is designed to last for the entire lifespan of the VEHICLE, while if an AdBlue with parameters (e.g. calcium) outside specifications is used, it will last for a shorter time and must be replaced at great expense.
Ageing therefore takes place slowly and blocks the vehicle over time.

2) Poisoning is typically due to the presence of metals (e.g. zinc or copper) or pollutant substances (which must never be present in the AdBlue), which ruin the catalyser immediately and make it unusable.
The result is the immediate necessity to replace the catalyser in a way to allow the SCR SYSTEM to function again.
These problems can be prevented only by using quality AdBlue® without pollutants.

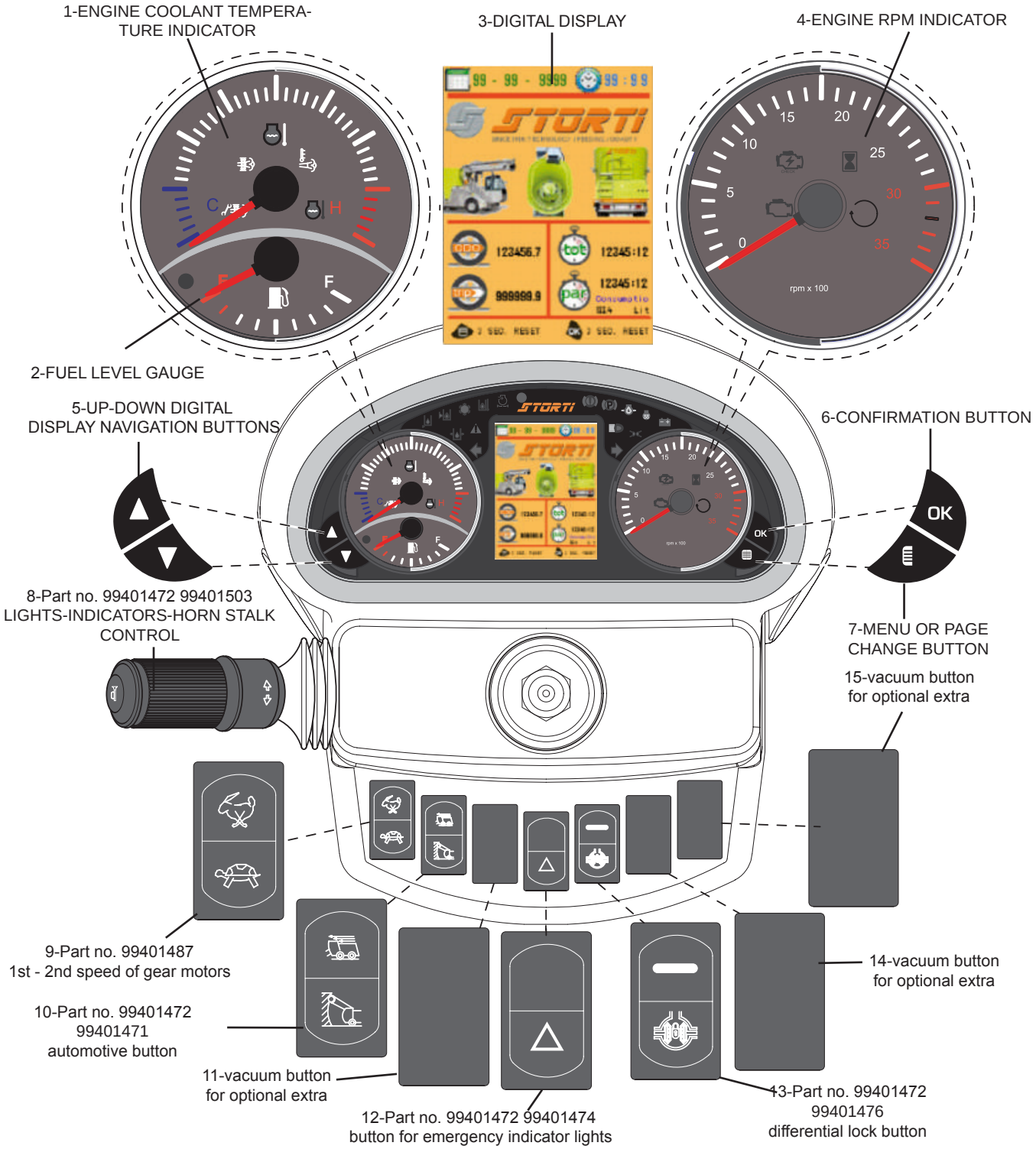
NOTE:
Summary of preservation of AdBlue®
The main aspect to be considered to assess the expiry date of the AdBlue® is the preservation temperature, which must vary between a minimum of -11°C and a maximum of 30°C.
The product must be kept out of sunlight and must only come into contact with suitable materials.
AdBlue® preserved at approx. 30°C on average has a shelf life of 12 months and only in the case of preservation at temperatures stably over 30°C does the lifespan decease (6 months at 35°C - CEFIC guide lines).

If preserved correctly, AdBlue® has duration of 12 months from the date of production.

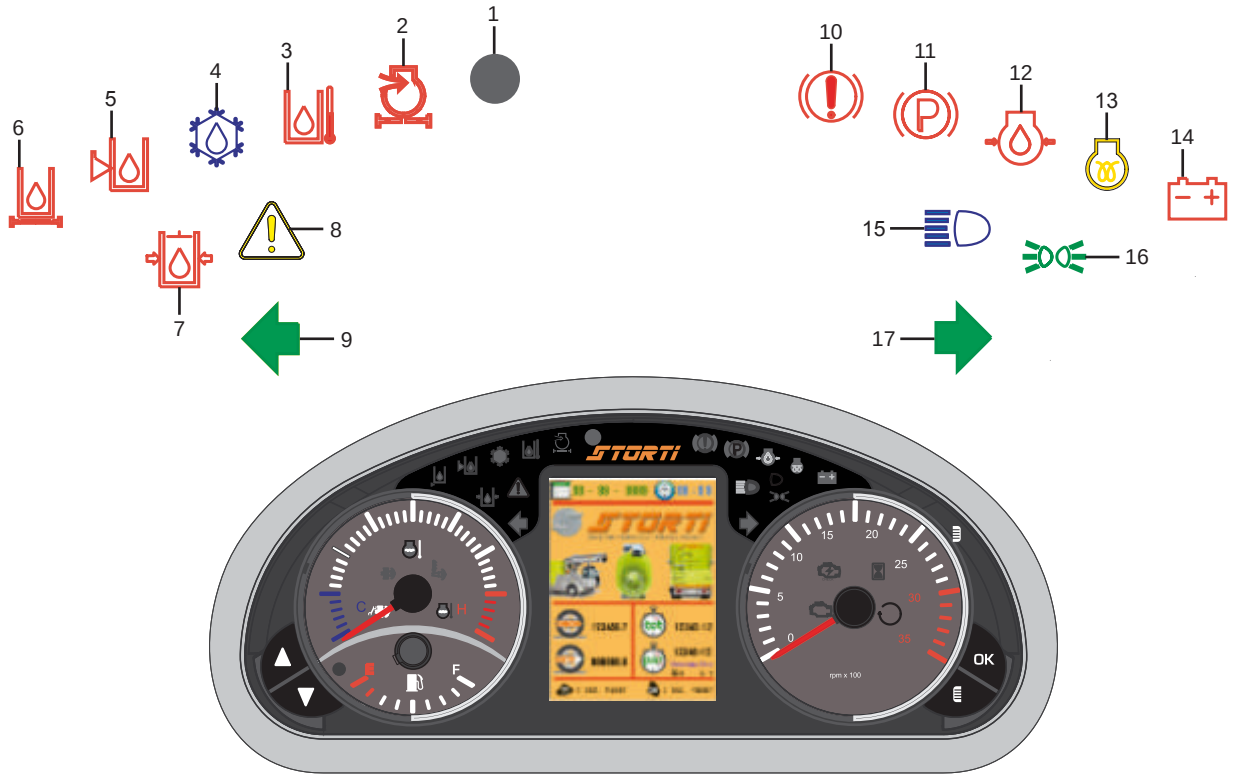
SUMMARISING
AdBlue is a registered trademark (by VDA) for AUS32 (Aqueous Urea Solution 32.5%)
used in the SCR to reduce the emissions of nitrogen oxides from the exhaust gases produced by the vehicles fitted with diesel engine. As suggested by the name, AUS32 is a solution of 32.5% top quality technical urea (low content of calcium, metals, biuret, etc.) in demineralised water. The solution is non-toxic, non-inflammable and not hazardous to handle. However, the solution can be corrosive for some metals and must be stored and transported using appropriate materials.
For this solution to be able to be called AdBlue, it must contain a specific concentration of technical urea and, most of all, respect the strict qualitative parameters that govern the contents of metals, calcium, biuret and other components that, if present in the AdBlue, would leave to irreparable damage for the catalysers.
The risks of an AdBlue outside of specifications:
the SCR systems are very sensitive to the quality of AdBlue used.
It is extremely important that the AdBlue lies within specifications and not contaminated during transport, handling and preservation.
An essential aspect to be considered is that the damage that can occur due to AdBlue containing calcium or metals outside the specification are not visible immediately, but occur after a certain period of time and also after many kilometres.
The excessive presence of calcium for example, with relative deposits of limescale, cannot create immediate problems, but will finish by clogging the injectors and damaging the catalyser after a few thousand kilometres.
In brief, two types of problem can occur from using poor quality AdBlue:
Aging and poisoning of the catalyser.

Sect. 5 MACHINE OPERATION

Sect. 5.1 FULL OPTIONAL CENTRAL DASHBOARD



Sect. 5.1.1 DESCRIPTION OF CENTRAL DASHBOARD WARNING LIGHTS



1) panel brightness sensor: adjusts the brightness of the panel depending on external light (stays off if the battery voltage drops below 10 volts).

2) red clogged air filter warning light: check the filter cartridge (see maintenance section).

3) red hydraulic oil temperature warning light: comes on when the hydraulic oil exceeds 90°C; together with the warning light, a buzzer in the cabin is activated; it goes out at 80°C.

4) blue cold oil warning light: comes on to indicate that a sufficient quantity of oil is unable to circulate in the system; this is due to its low temperature or because the vehicle continues to be used even after the clogged filter warning light comes on; with this warning active, on some models the acceleration of the engine is disabled for safety.

5) red hydraulic oil level warning light: comes on when the oil level is low, the buzzer in the cabin also sounds, top up to the correct level (see maintenance section).

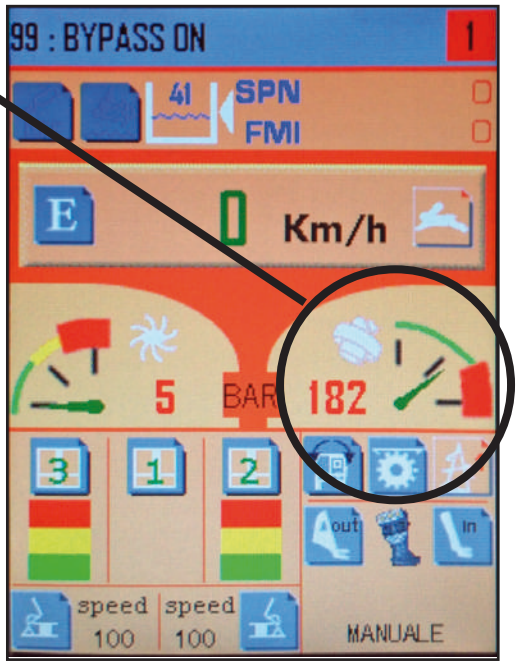
6) red hydraulic oil filter obstruction warning light: Together with the warning light, a buzzer in the cabin is activated. The warning light may stay on for a few seconds when the machine is cold.
Keep the engine at low revs until it goes out.
If it does not go out, switch off the engine immediately and replace the clogged filter (see maintenance section).

7) red hydraulic oil pressure warning light: stop the engine after the warning light comes on; the supercharging pressure is low; contact a STORTI after-sales service centre (when the rotation LED switches on for the augers, it is stopped automatically).

8) yellow warning light for warning/alarm: starts to flash with a frequency of 1Hz if the safety device Bypass is enabled, and comes on steady when the “Engine alarm” or “Bosch hydrostatic transmission alarm” (only HS) is present.
It also comes on when the emergency mushroom push-buttons are pressed.

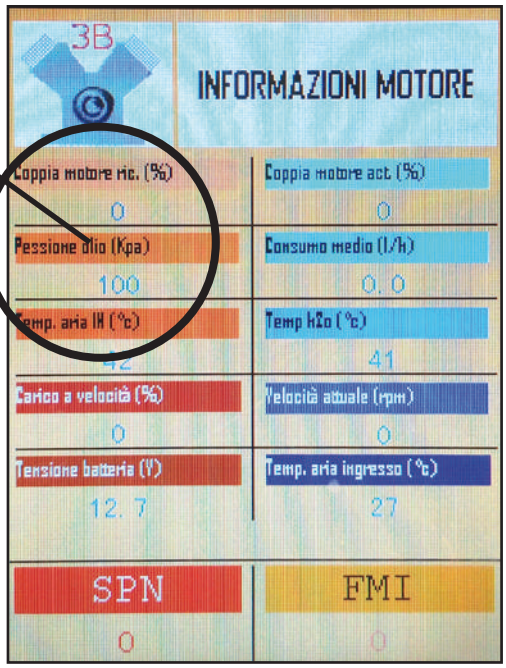
9) green warning light of left indicator: indicates the left turn indicator of the light stalk.

10) red brake oil pressure warning light: activated below the pressure threshold of 140 bar on the braking circuit (can be seen in real time on the initial screen of the display - see drawing alongside). From this moment on, a pressure reserve of 3 to 4 brakings is available.



11) red parking brake warning light activated in conditions of safety: on first starting, the parking warning light is always on and is deactivated by releasing the brake with button ”P” in the AS versions; in HS machines, by pressing the button or accelerating with the pedal if the button is not pressed.
With the machine with engine running, first get down from the cab and press button "P", activation of the brake is signalled by the presence of LED 11 on and not be the light present on the head of button "P"

12) red engine oil pressure warning light: activated when the pressure of the FPT engine is lower than 90Kpa (0.9bar).
It is possible to check the pressure of the lubrication circuit from the engine information page on the display (see drawing alongside).
Call the STORTI after-sales service centre.



13) yellow spark plug warning light: managed automatically by the engine (only on some engine models).

14) red generator/battery warning light: comes on when there is malfunctioning of the generator or when the battery is too low.

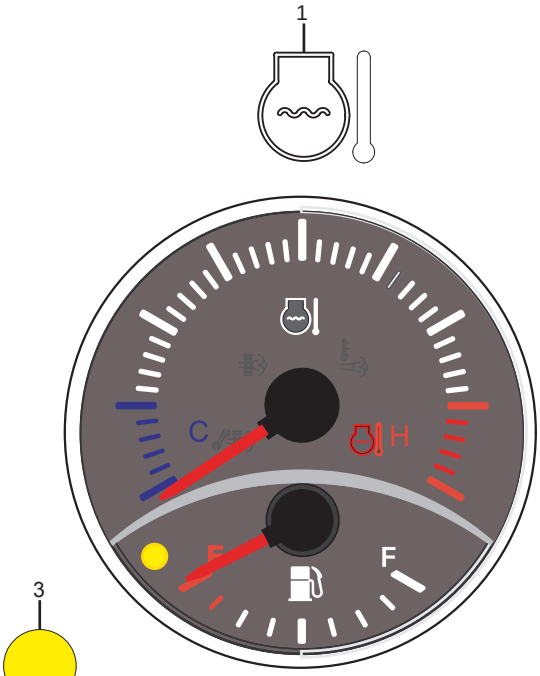
15) blue full headlight warning light

16) green sidelight warning light: comes on when the light stalk is operated to switch on the sidelights.

17) green warning light of right indicator: indicates the right turn indicator of the light stalk.

Sect. 5.1.2 ENGINE COOLANT TEMPERATURE INDICATOR

1) white serigraph identifies the function linked to the indicator.
2) red engine coolant overtemperature warning light.
3) yellow low fuel warning light: comes on when the machine becomes low on fuel.
   in 180 litre tank = 30/35litres
   in 300 litre tank = 55/60litres



103°C WARNING LIGHT ON

Coolant liquid temperature: the coolant high temperature alarm has a threshold of 103°C ± 3°C. The maximum temperature accepted is therefore equal to106°C; beyond this threshold, a derating begins,
which reaches maximum level (50% cut of the
power) to 112°C. Further derating is caused by a fuel temperature of 70°C being reached.

Sect. 5.1.3 TACHOMETER INDICATOR

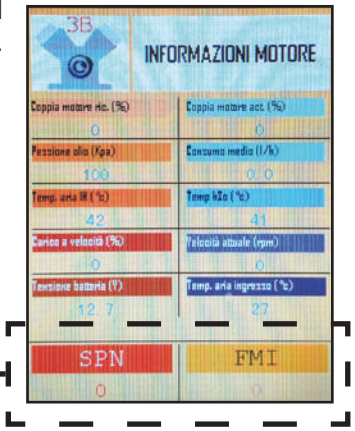
1) orange warning light: diagnostic alarm
2) orange warning light: serious engine failure
3) orange warning light: engine redline

Sect. 5.1.4 FUNCTIONS OF ENGINE WARNING LIGHTS

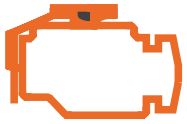
1) orange diagnostic alarm warning light: comes on when there is an engine problem, and the error code is also shown in the relevant area of the display (see figure alongside).

DIAGNOSTIC ALARM WARNING LIGHT

Area where the error code appears
SPN FMI
(see description in list of errors, sect.

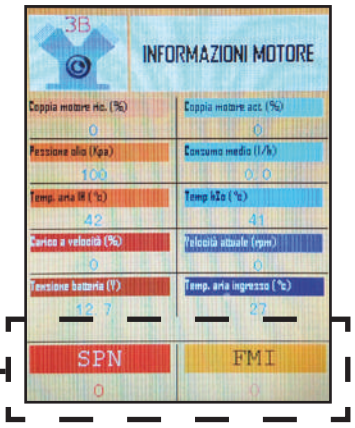


2) orange serious engine problem alarm warning light: comes on when there is a serious fault at the engine
In this case too, the relevant error codes can be consulted on the display.



SERIOUS ENGINE FAILURE WARNING LIGHT

Area where the error code appears
SPN FMI
(see description in list of errors, sect.



3) orange engine redline warning light: activates when the engine reaches 2600 rpm, a buzzer activates along with the LED inside the cab.

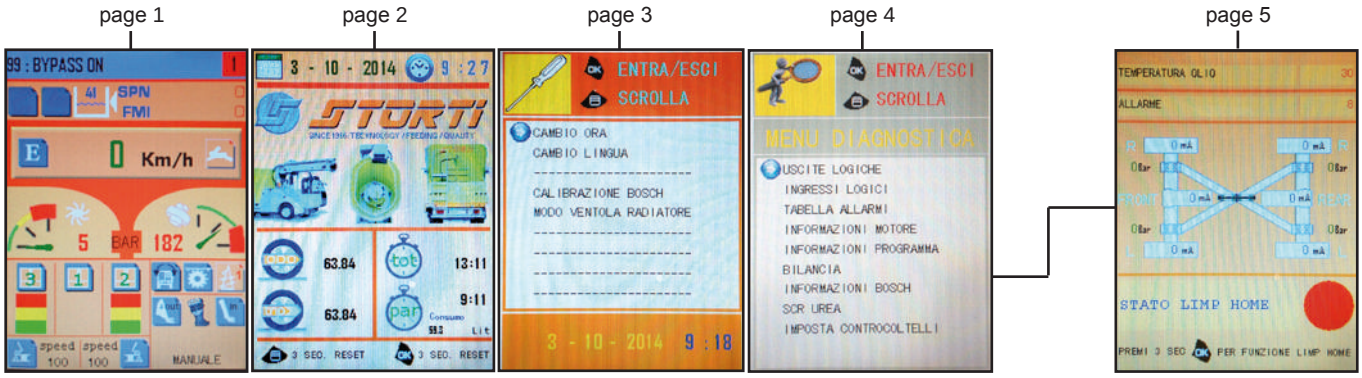
redline alarm
2600rpm

Sect. 5.1.5 DISPLAY NAVIGATION BUTTONS

1) navigation button: forward main page change
2) navigation button: back main page change
3) button to enter/exit the menu of the displayed page
4) scroll button, used to select the various items of the displayed menu

1) navigation button for forward main page change: the main menu pages are entered when this button is pressed.

2) navigation button for back main page change: pressing this button returns the operator to the menus of the previous pages.

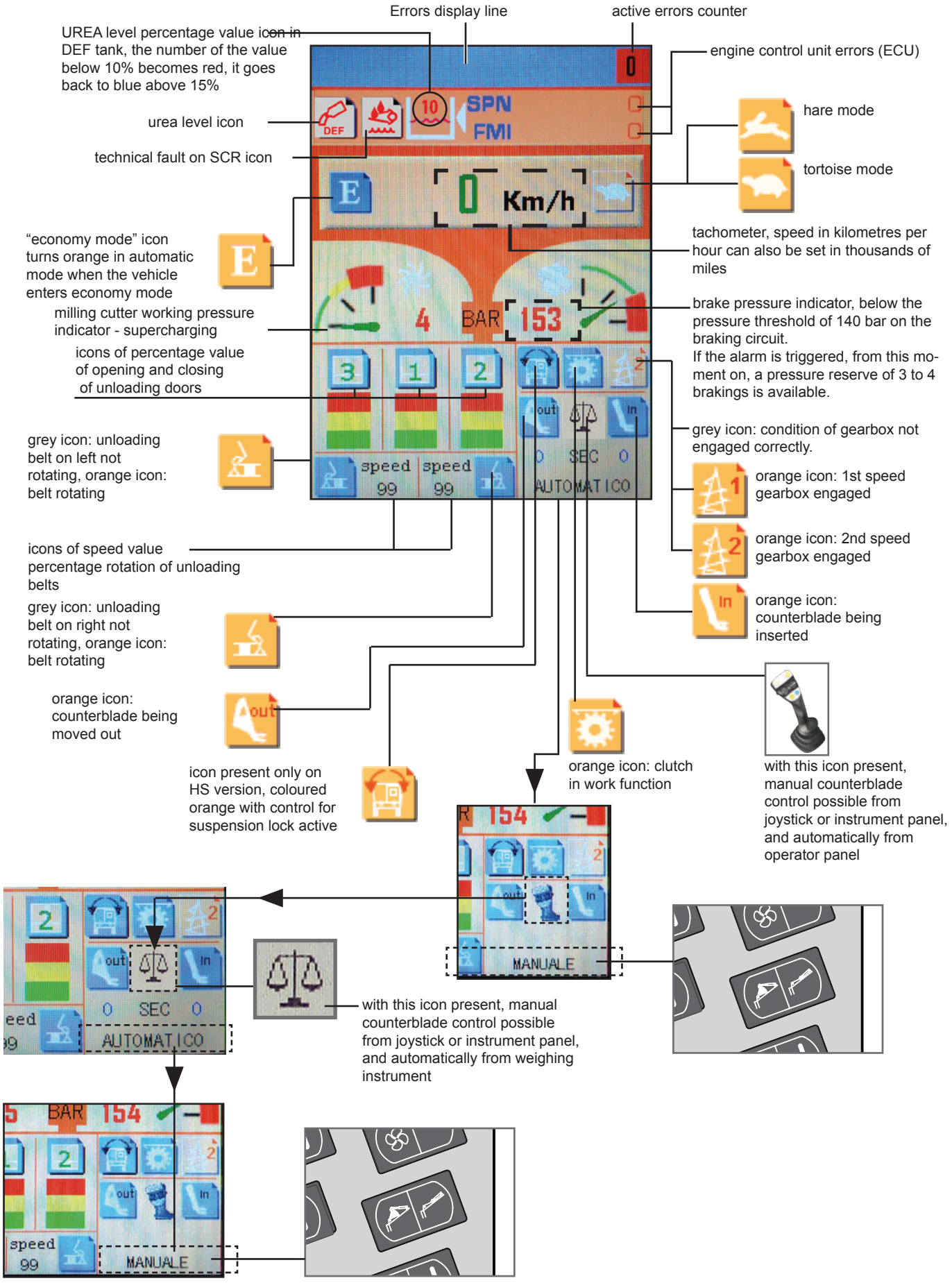


3) button to enter/exit the menu of the displayed page: when the required page is entered, the button of the menu of interest is pressed to enter the settings to be set, changed and selected.

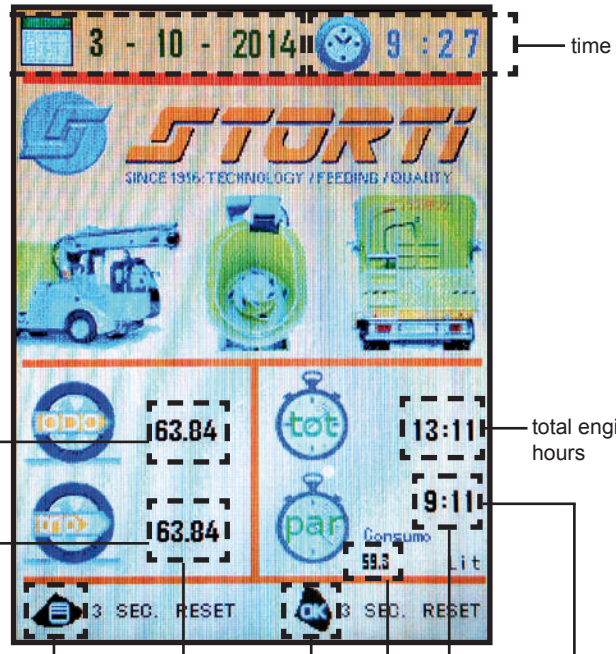
4) scroll button, used to navigate through the various items of the displayed menu.
On the HS version, to enter the BOSCH control unit screen, scroll to the “BOSCH information” item and click on the OK button (3).

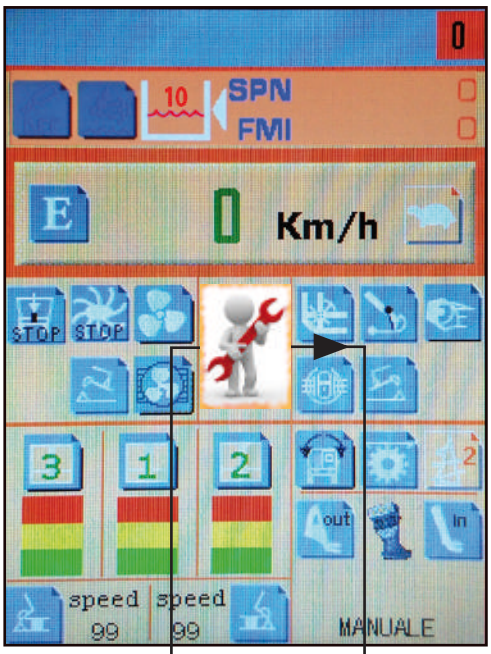
Sect. 5.2 DESCRIPTION OF MAIN MENU PAGES

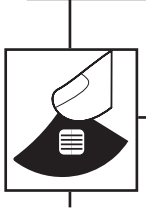
Page 1



Page 2







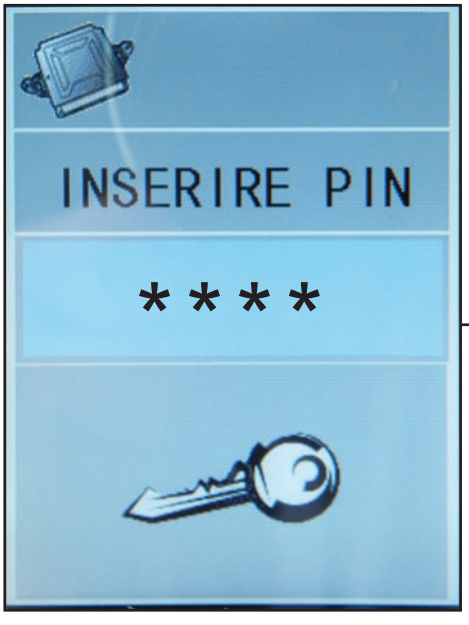
press for 3 seconds to reset to zero the partial kilometres travelled

press OK for 3 seconds or more to reset the engine hours and the consumption to zero

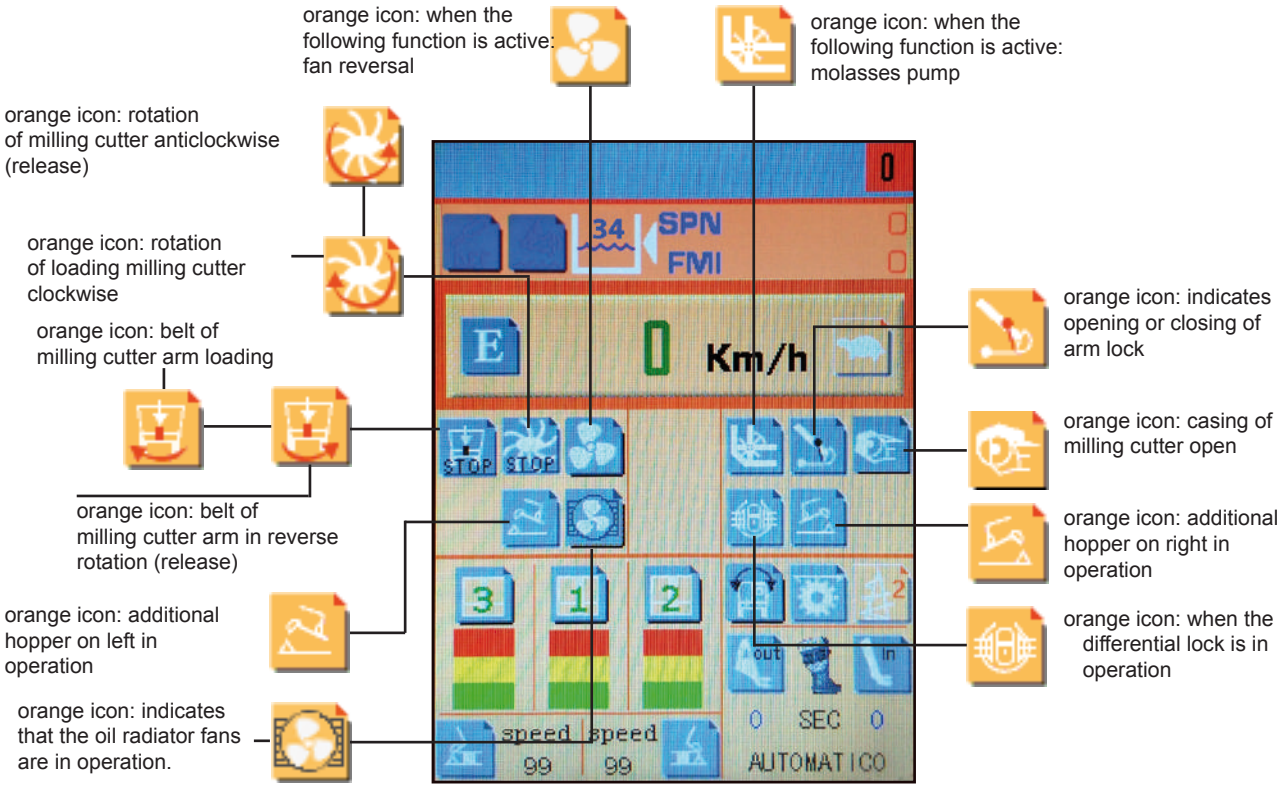
partial engine hours (to "always" be reset when **300** hours are reached. Check the display page where the servicing warning icon appears for service planned as per **service plan** supplied).

servicing warning is displayed at **300** engine hours it goes out only after "reset" to be carried out from the service menu with a password. (this operation can be carried out at Storti after-sales service centres).

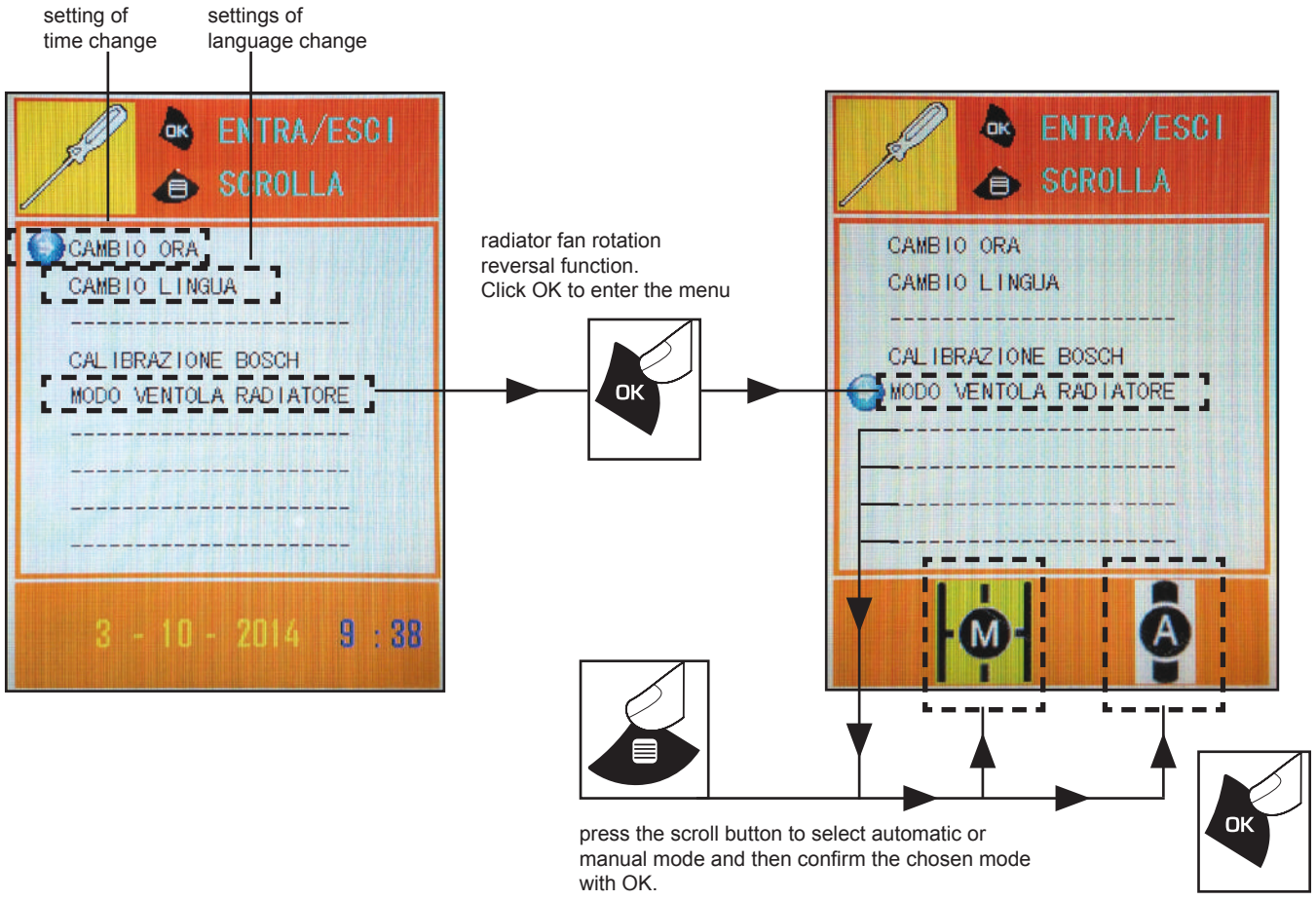
To enter the reset menu, select the first page of the display, and then press the 4 buttons at the same time for about 10 seconds; this opens the page for entering the password to enter.



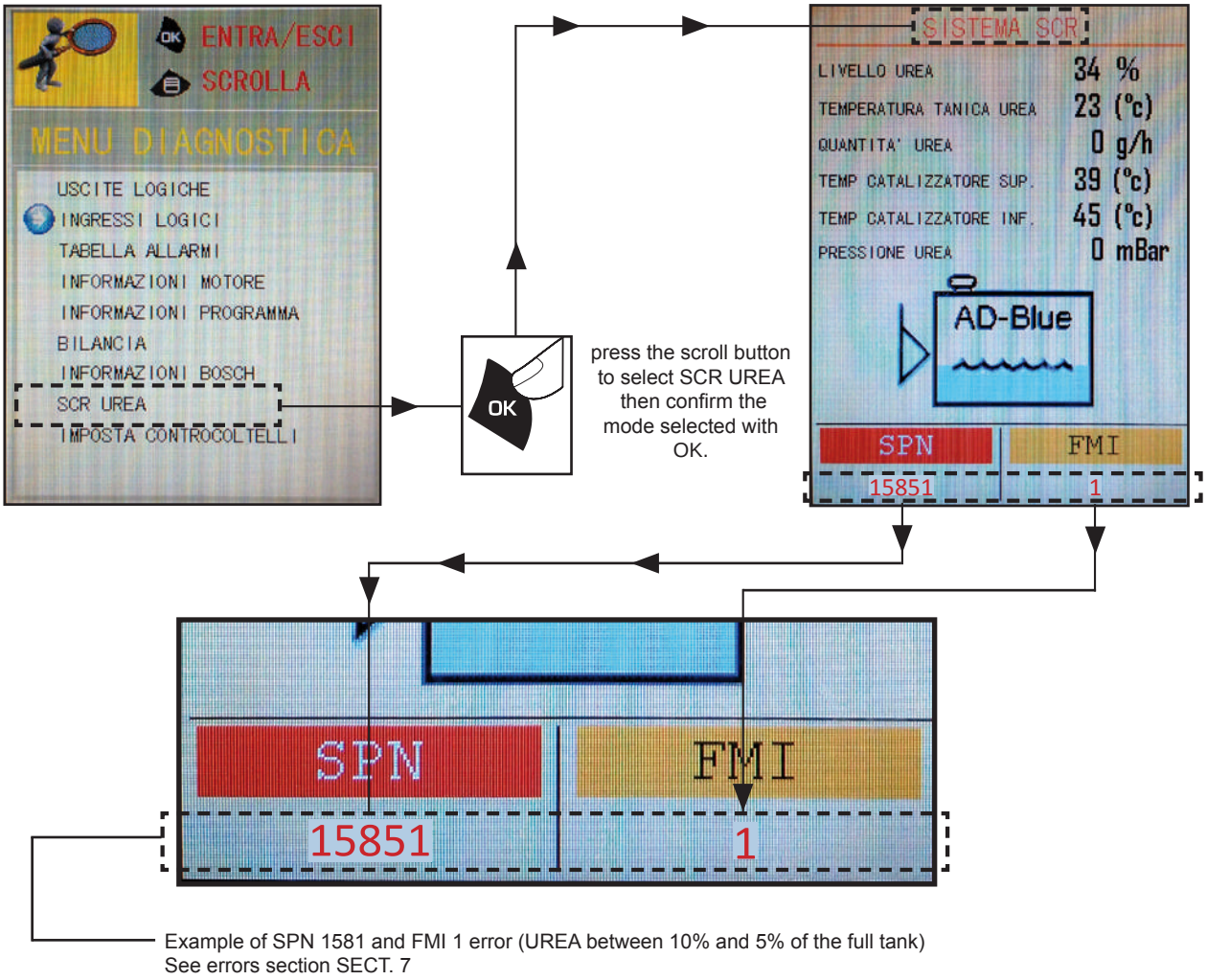
Page 2.1

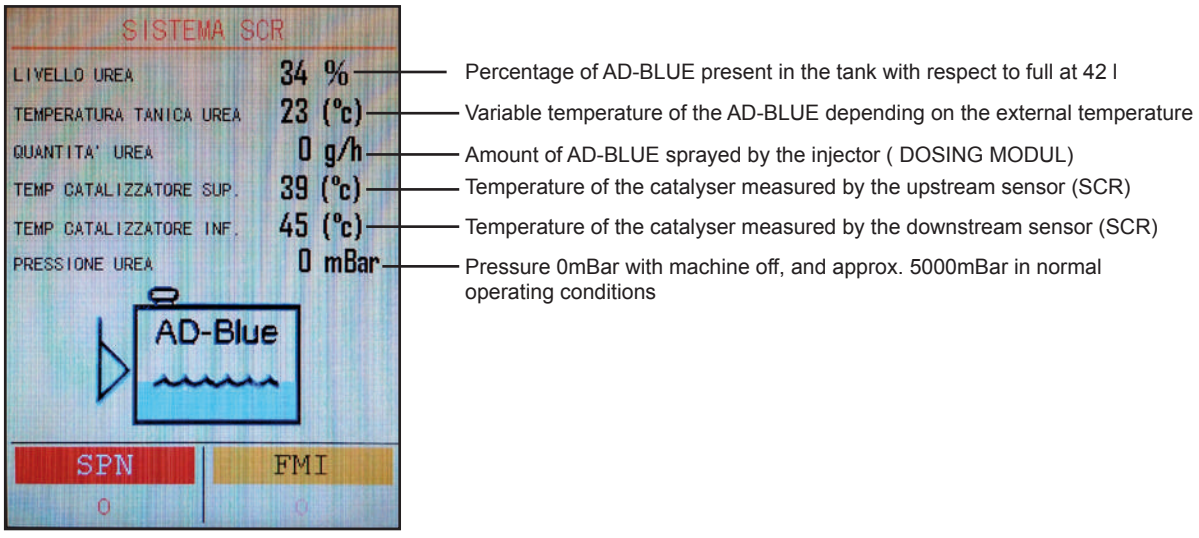


Page 3

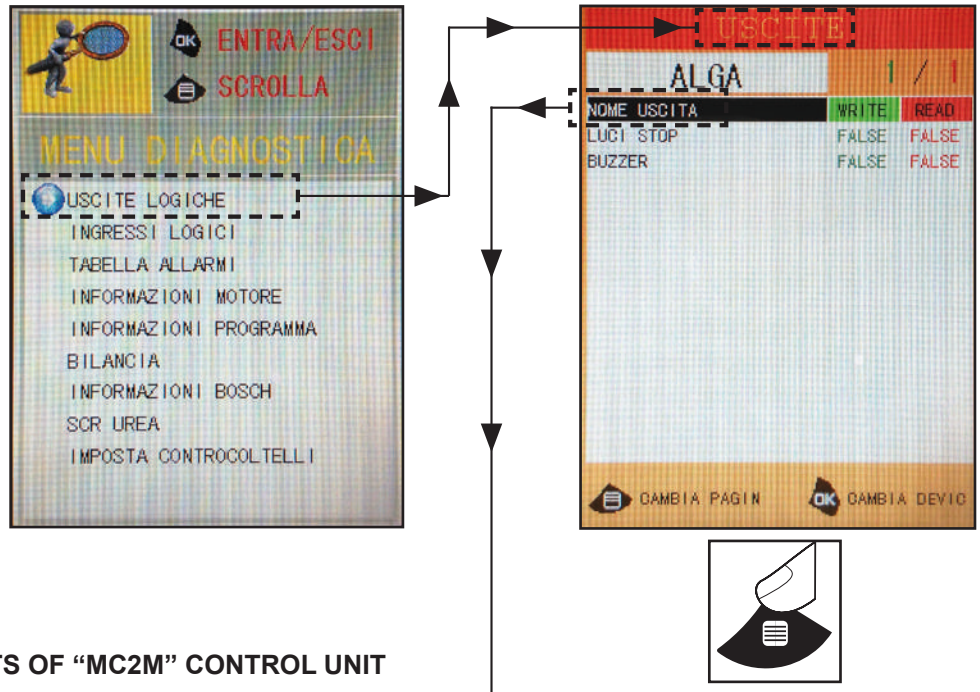


Page 4 DIAGNOSTIC MENU: SCR UREA

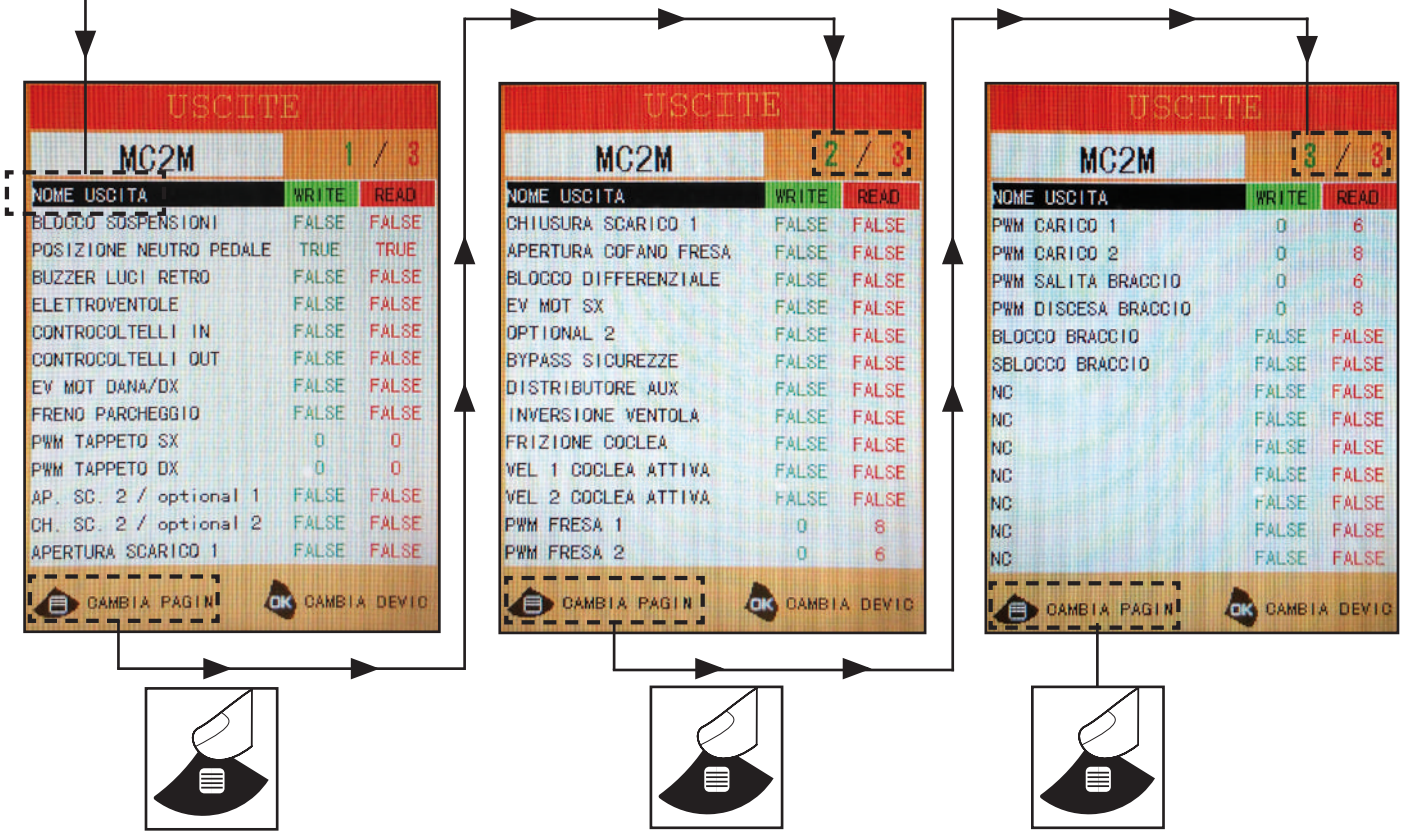




Page 4 DIAGNOSTIC MENU: LOGIC OUTPUTS

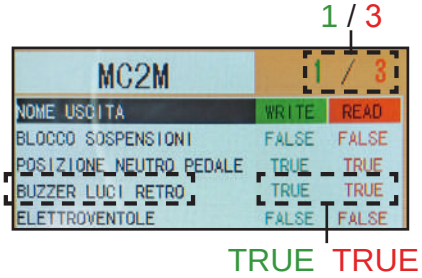


LOGIC OUTPUTS OF “MC2M” CONTROL UNIT

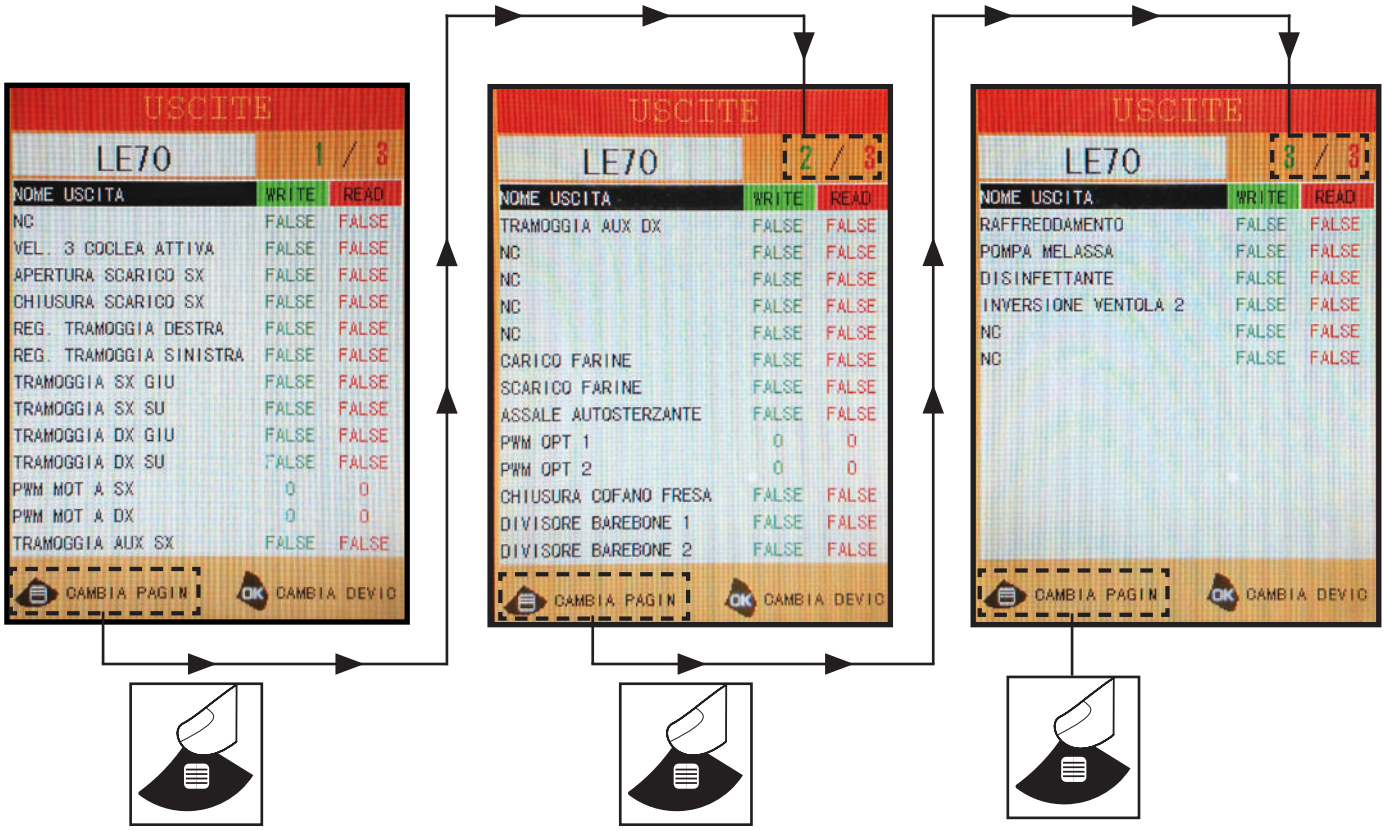


GENERIC EXAMPLE OF FAULT DIAGNOSTICS

If the “BUZZER” does not sound while reversing, on page 1/3 of the MC2M menu in the REAR LIGHTS BUZZER” position, check the WRITE/READ items; if they are both on TRUE during the manoeuvre, it means the control unit is implementing the command correctly but the electric signal is not reaching the buzzer.
In this case, the problem may lie in the buzzer connection or in a break in the wiring or be caused by malfunctioning of the buzzer.

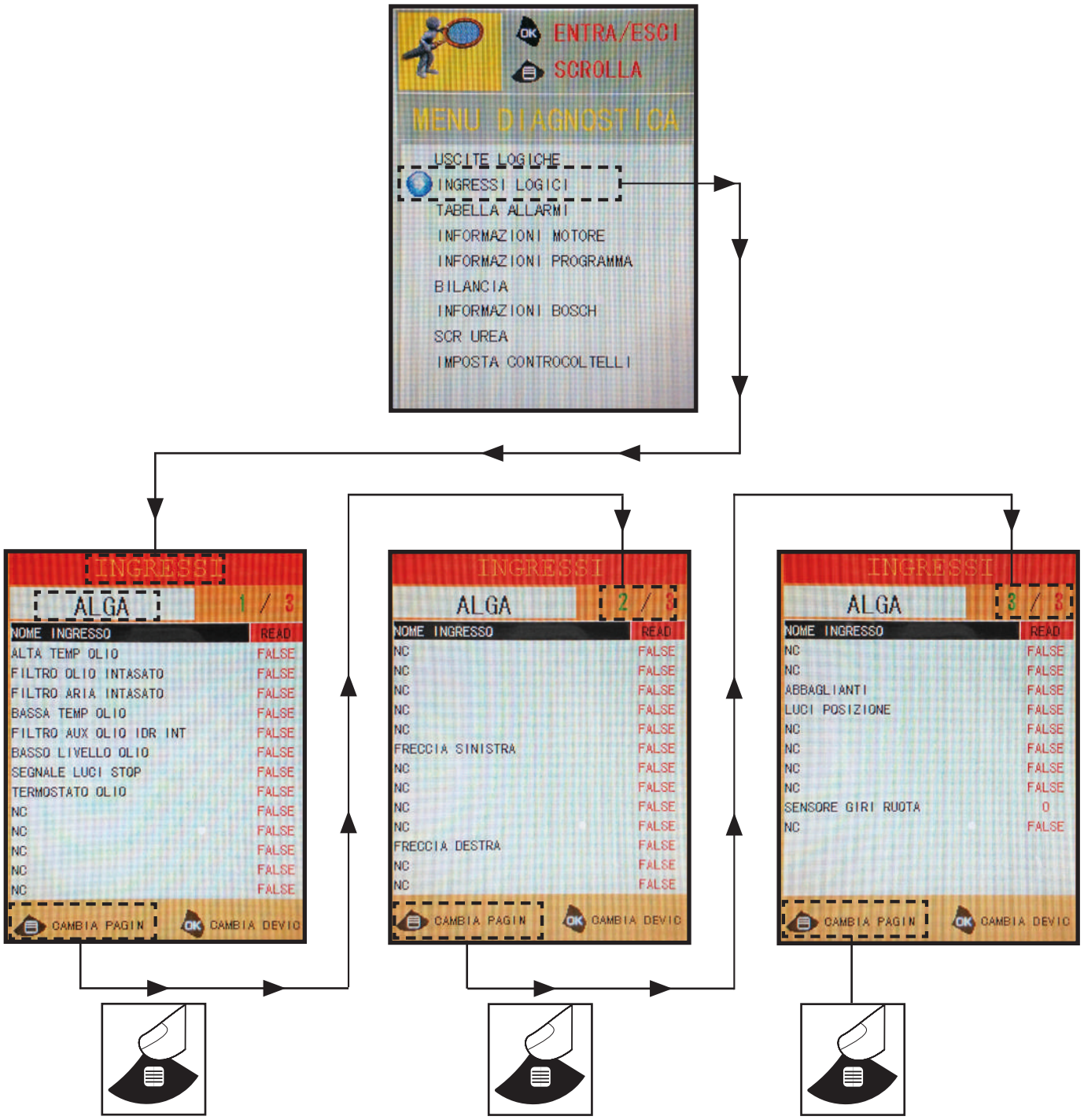


LOGIC OUTPUTS OF “LE70” CONTROL UNIT

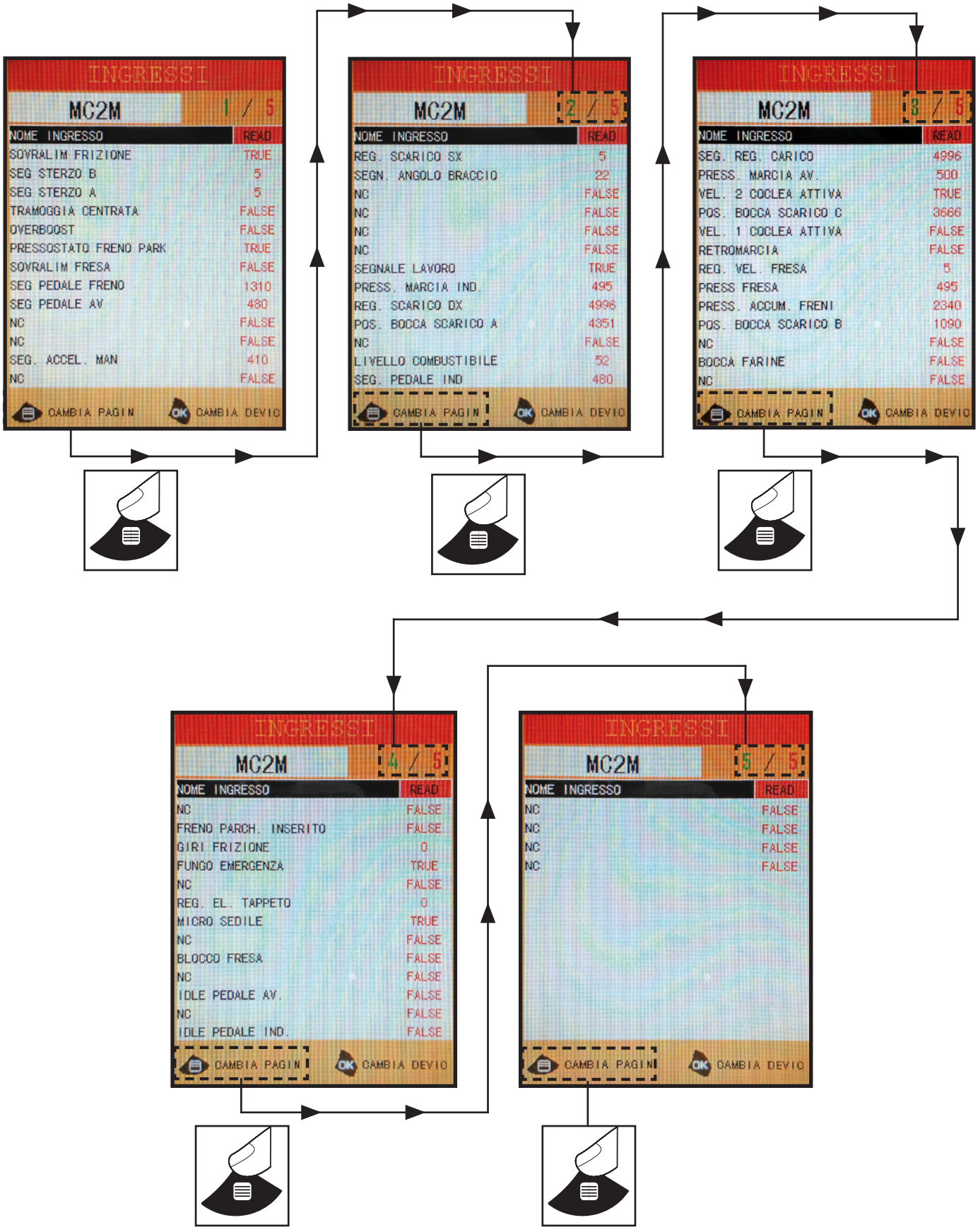


N.B.:Warming, the switch-on of some LEDS on the panel and the relative **inputs/outputs** varies depending to machine configuration.
On the utilities defined as **“optional”** , the indications described below may change contextually to the number of hydraulic distributors used and the functions connected; for further information contact STORTI after-sales assistance.

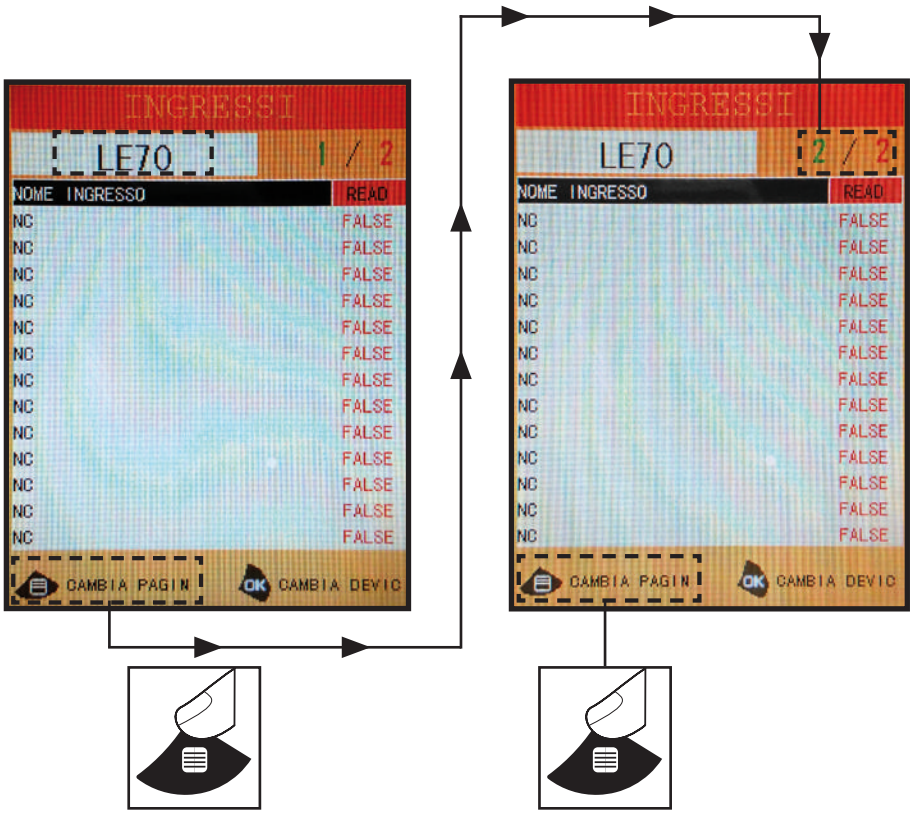
Page 4.1 DIAGNOSTIC MENU: LOGIC INPUTS



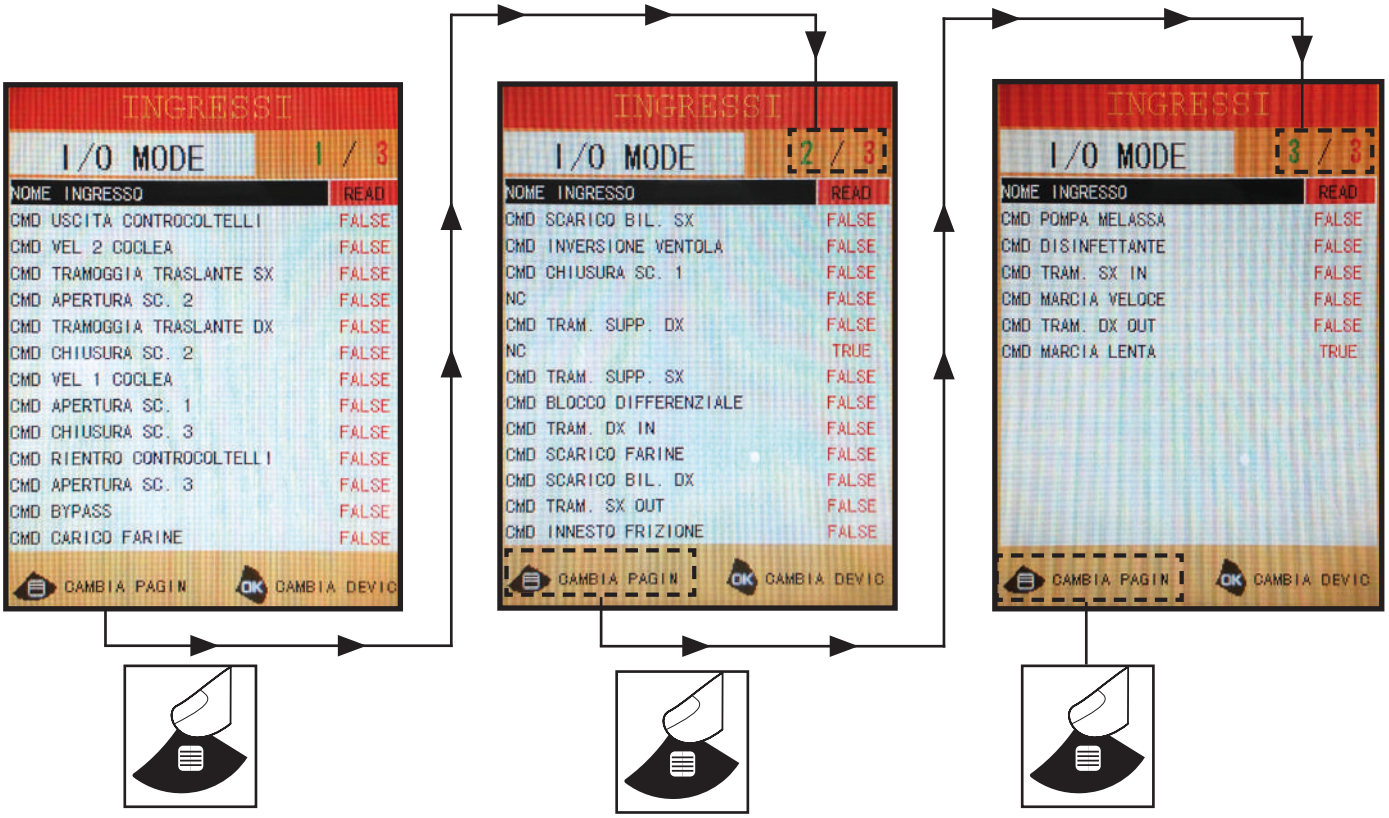
LOGIC INPUTS OF “MC2M” CONTROL UNIT



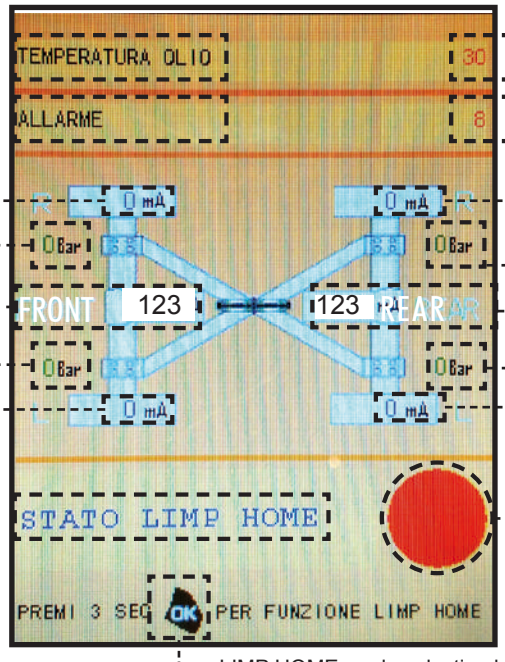
LOGIC INPUTS OF “LE70” CONTROL UNIT



LOGIC INPUTS OF “MODE” CONTROL UNIT



Page 5 HS ELECTRONIC MANAGEMENT SYSTEM INFORMATION MENU

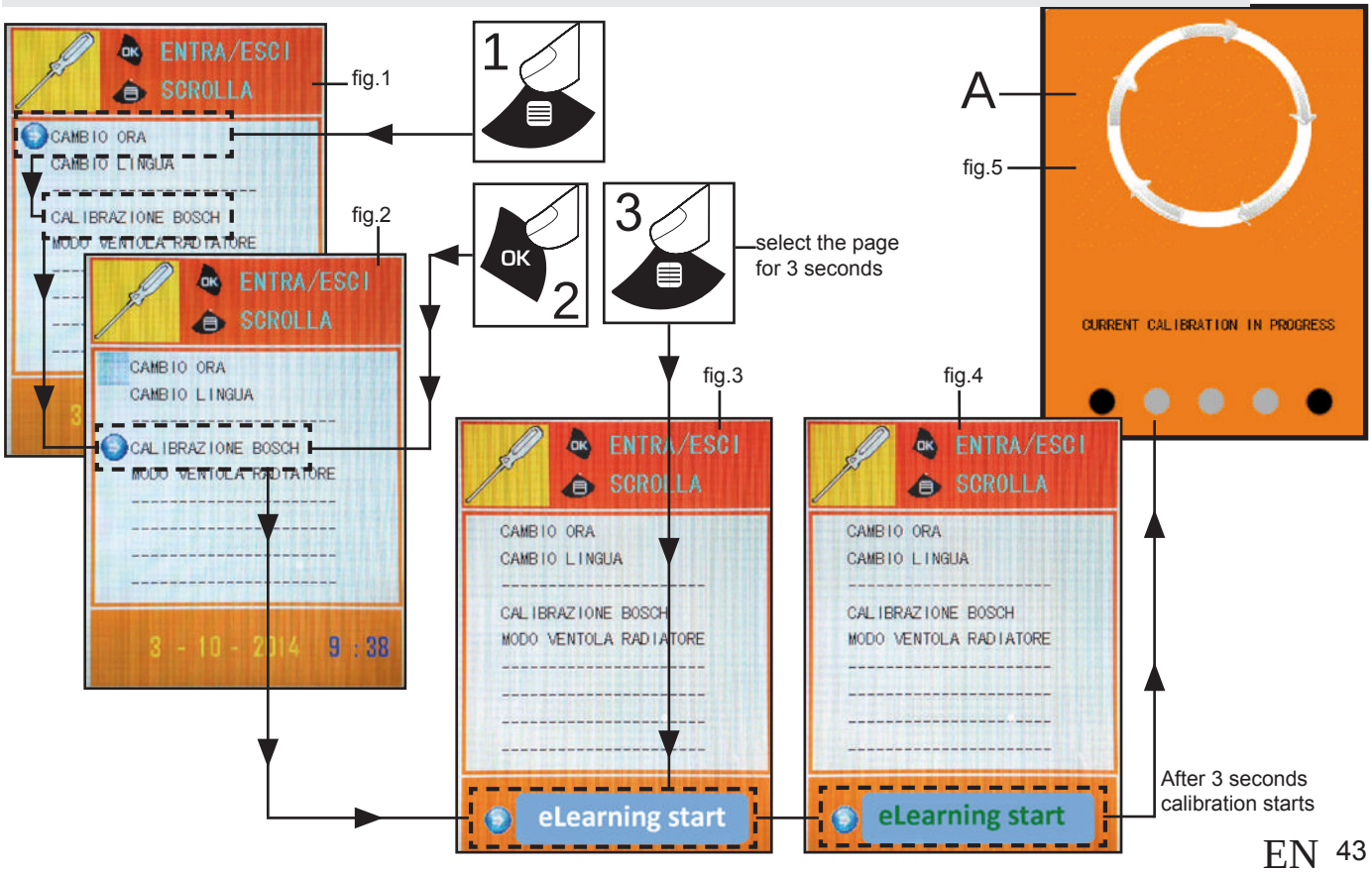


- hydraulic oil temperature
- BOSCH alarm codes (see table of errors)
- proportional SV current of RIGHT front hydraulic motor
- pressure on the hydraulic motor casing
- proportional SV current of RIGHT rear hydraulic motor or DANA axle motor
- proportional SV current pump forward
- pressure on the hydraulic motor casing
- proportional SV current of pump back
- pressure on the hydraulic motor casing
- proportional SV current of LEFT front hydraulic motor
- proportional SV current of LEFT rear hydraulic motor
- LIMP HOME status red, not active - green, active
- LIMP HOME mode selection button

In LIMP HOME mode, it is possible to move the vehicle at minimum operating speed after a serious malfunction has occurred with consequent topping of the machine.
In the case in point, press the "OK" button for about 3 seconds until the warning light turns green; this status will be exited when the malfunction has been resolved.

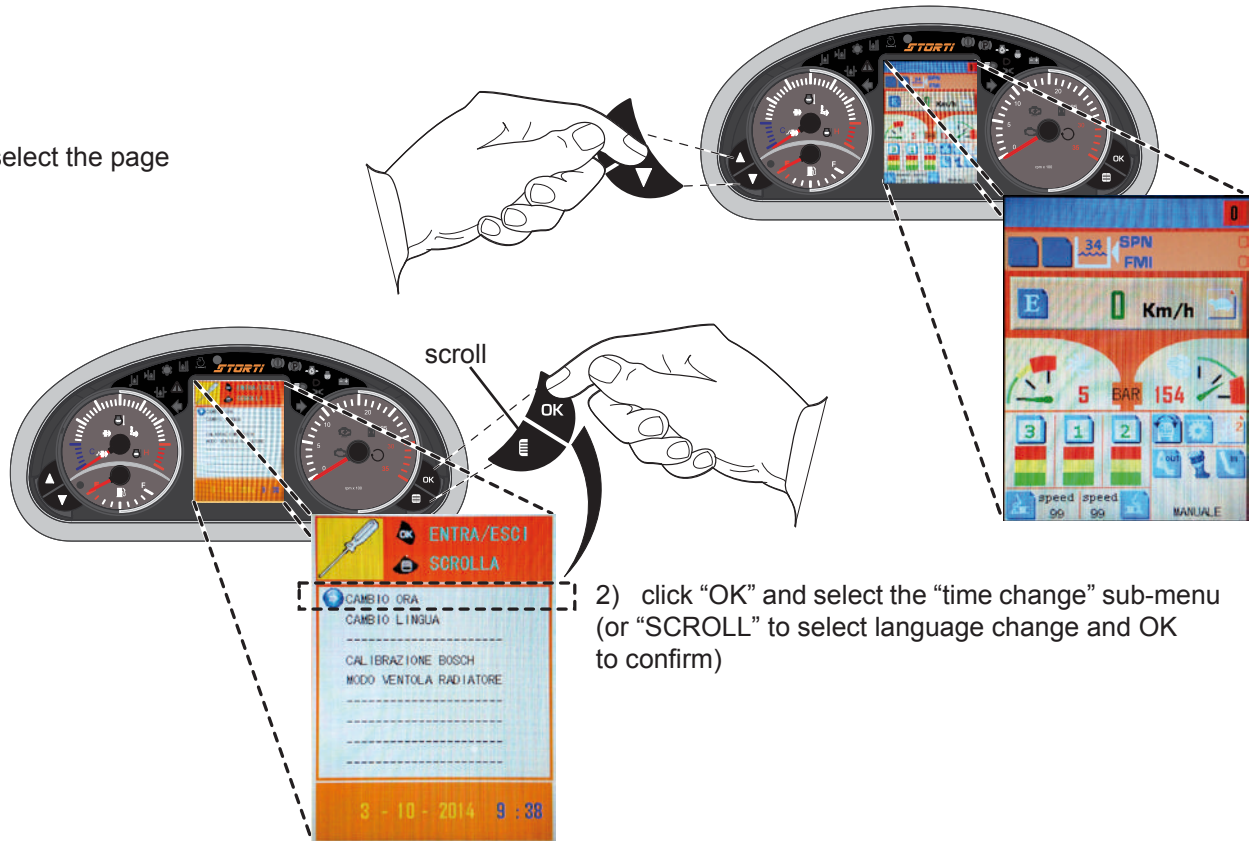
Sect. 5.3 BOSCH CALIBRATION (NOTE FOR AUTHORISED WORKSHOP/AFTER-SALES ASSISTANCE)

To enter the calibration mode, press scroll (Fig. 1), press the "OK" (calibration Bosch) (Fig. 2) press scroll (Fig. 3) for 3 seconds (the display will change to green) (Fig. 4) to end of which appears the page "A" (Fig. 5). During this phase, engine revs. will go to approx.1200rpm.
From this condition, operate on the forward/reverse pedal in a forward direction and hold down until the procedure ends automatically. Calibration ends when the diesel goes to minimum rpm and on releasing the pedal in neutral, the display goes back to the home page.
This operation is required for automatic calibration of the currents on the proportional electrovalves of the pump and the hydraulic motors and must be performed if the hydraulic pump or hydraulic engines are replaced, in order to restore correct functioning parameters.
(N.B.: during calibration, the machine must be lifted from the ground with free traction wheels because the control unit causes continuous rotation automatically.)

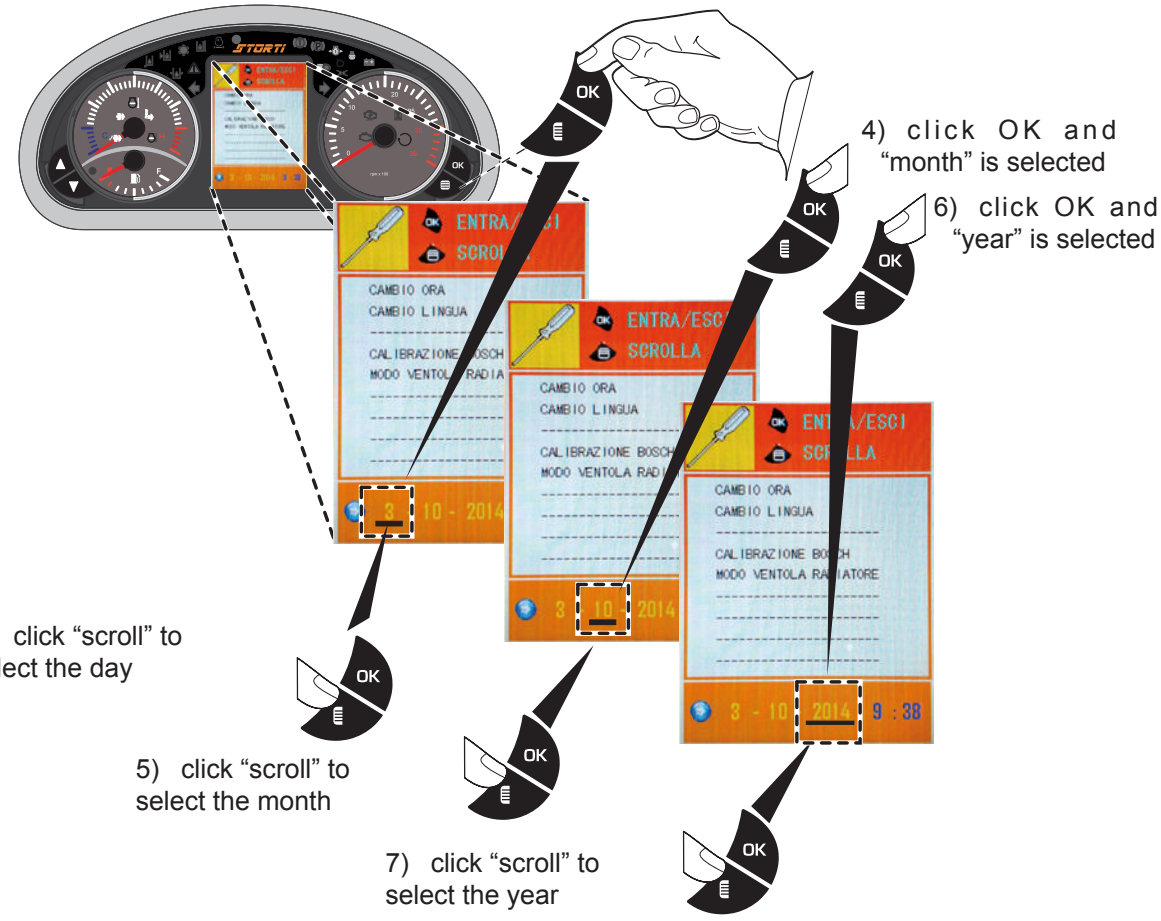


Sect. 5.4 EXAMPLE OF HOW TO CHANGE THE DATE

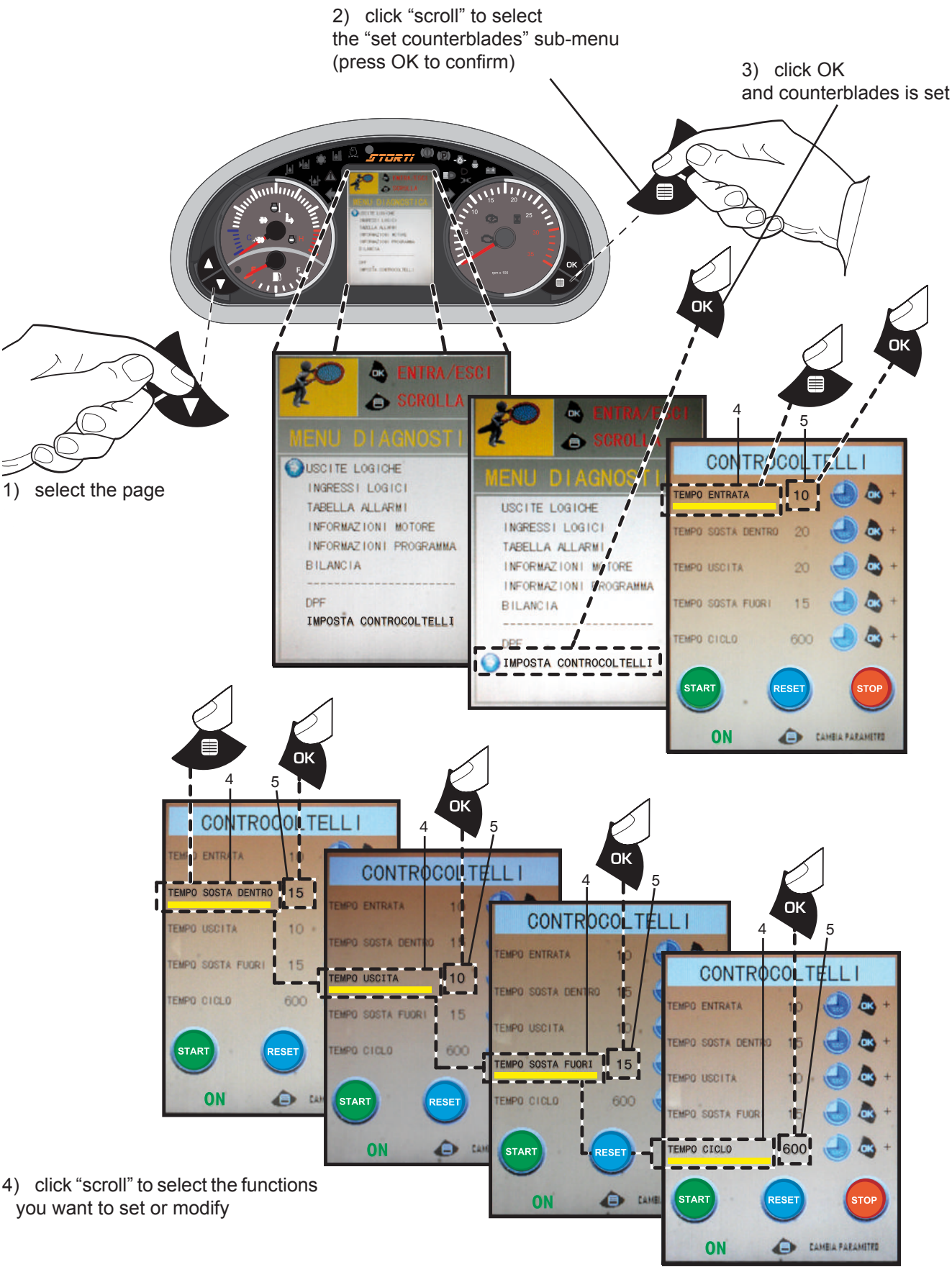
1) select the page

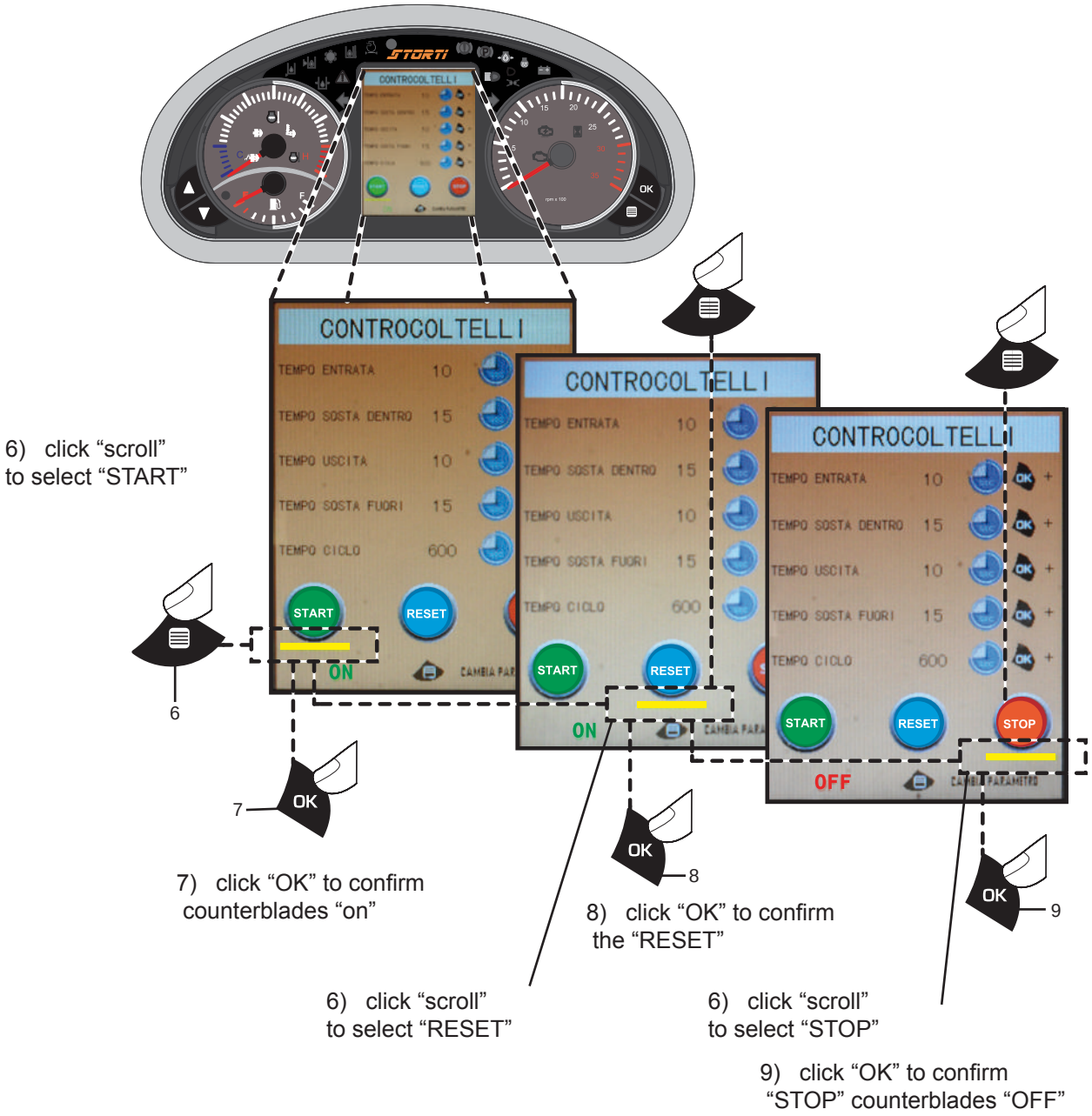


2) click “OK” and select the “time change” sub-menu (or “SCROLL” to select language change and OK to confirm)



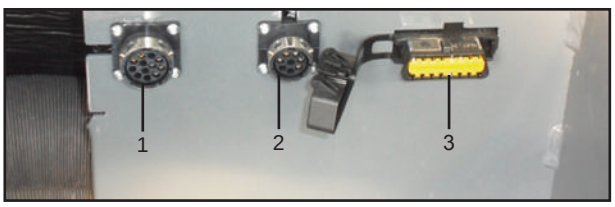
Sect. 5.4.1 EXAMPLE OF HOW TO PROGRAM THE STRIKE PLATES





Note: if the machine is switched off with the counterblades active (ON), when it is next started, the blue "RESET" button must be pressed to restore its operation.

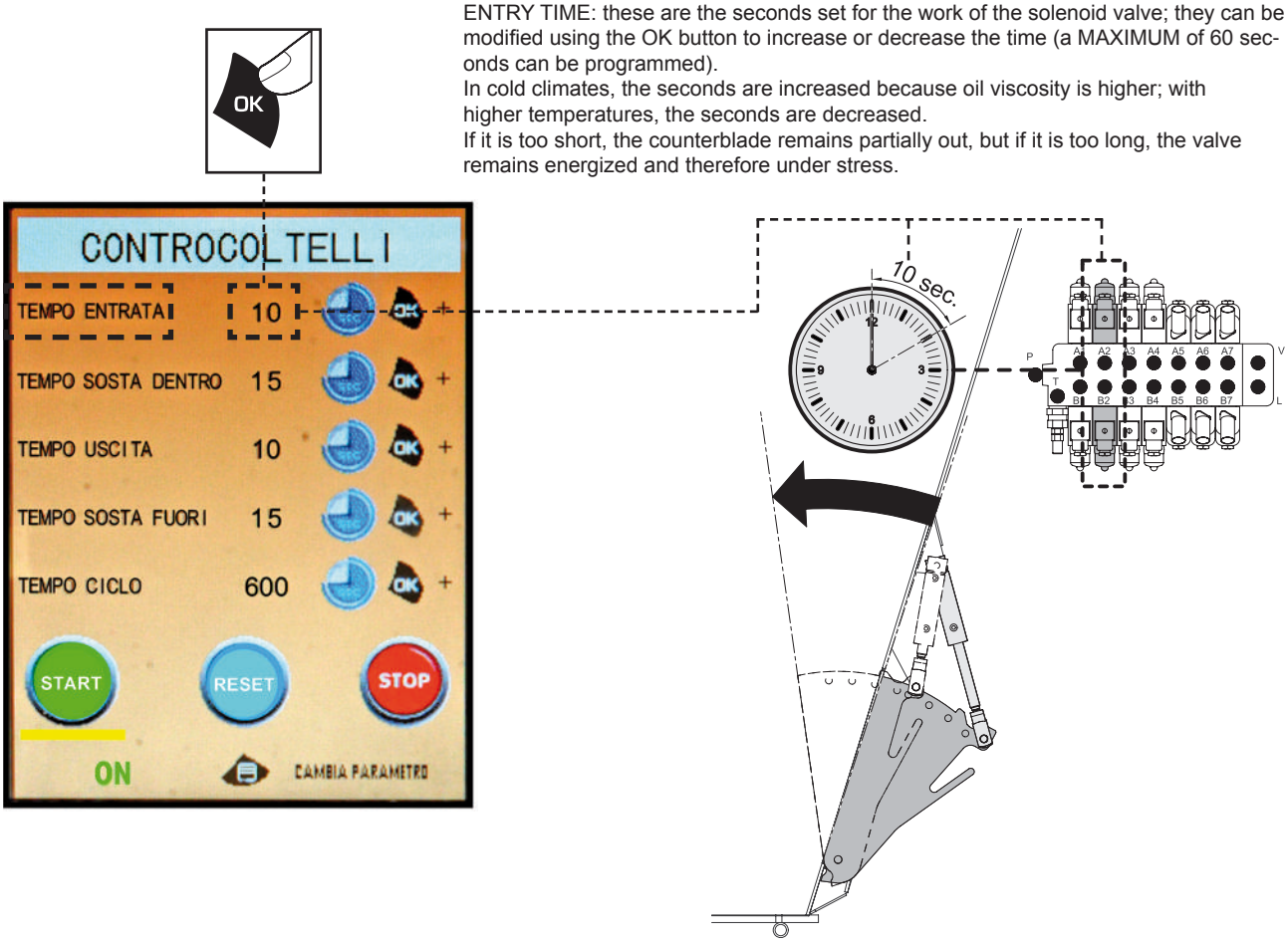
Sect. 5.5 DIAGNOSTIC SOCKETS FOR USE AT STORTI AFTER-SALES SERVICE CENTRES



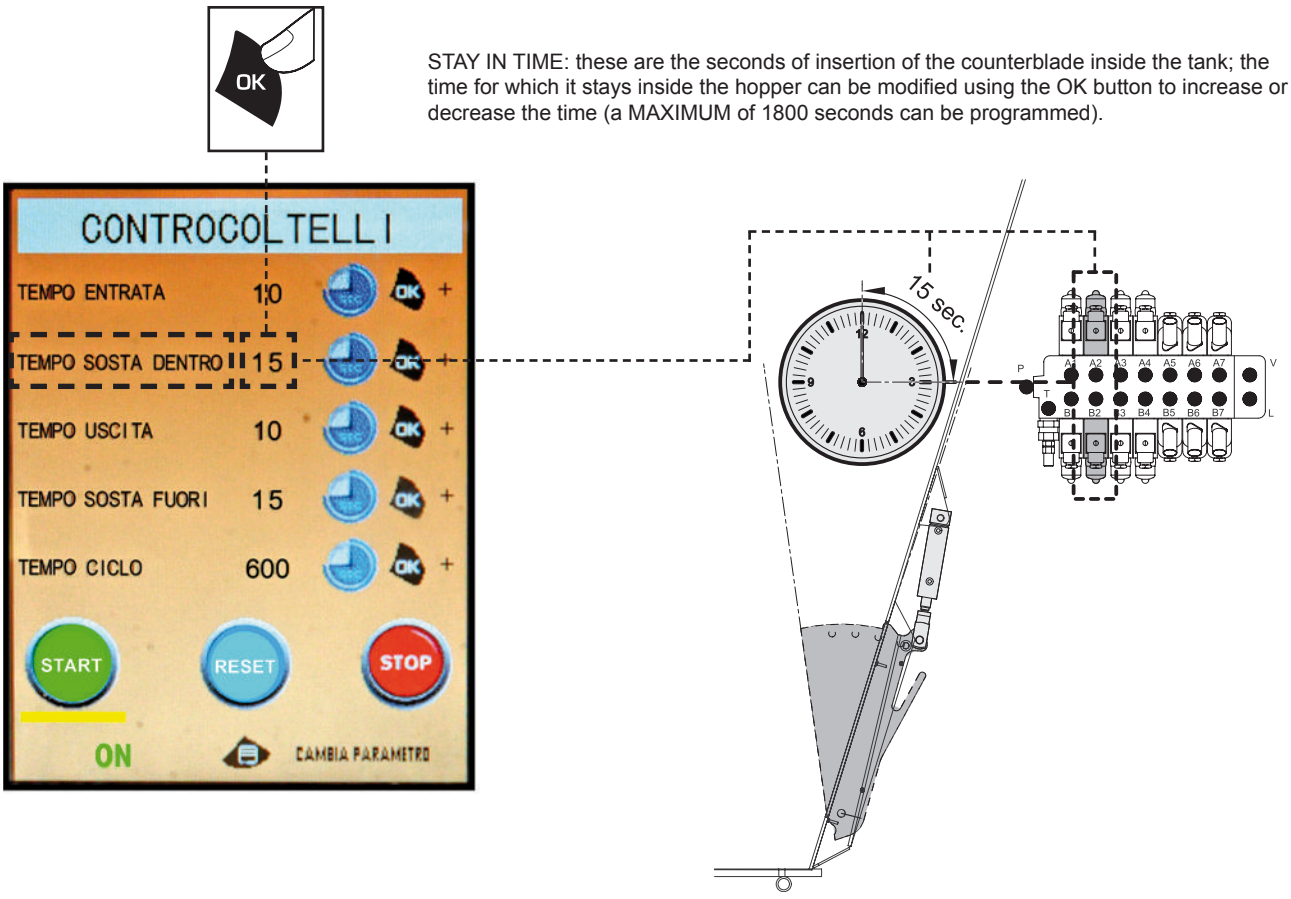
1) diagnostic socket for IVECO engine servicing
2) diagnostic socket for BOSCH REXROTH servicing
3) diagnostic socket for MAIN - SLAVE CONTROLLER 3B6 servicing

Sect. 5.6 AUTOMATIC COUNTERBLADE PROGRAMMING

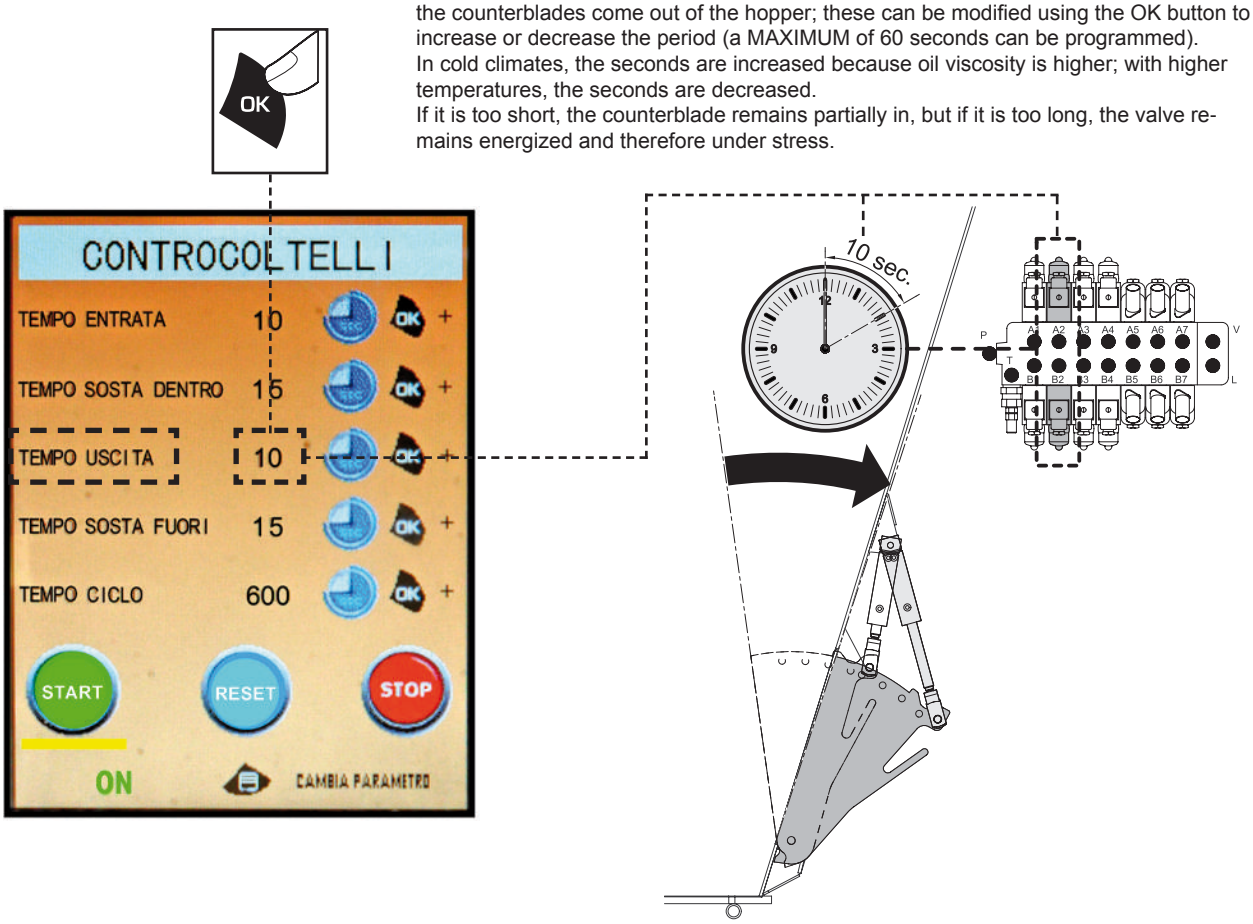
ENTRY TIME: these are the seconds set for the work of the solenoid valve; they can be modified using the OK button to increase or decrease the time (a MAXIMUM of 60 seconds can be programmed).
In cold climates, the seconds are increased because oil viscosity is higher; with higher temperatures, the seconds are decreased.
If it is too short, the counterblade remains partially out, but if it is too long, the valve remains energized and therefore under stress.



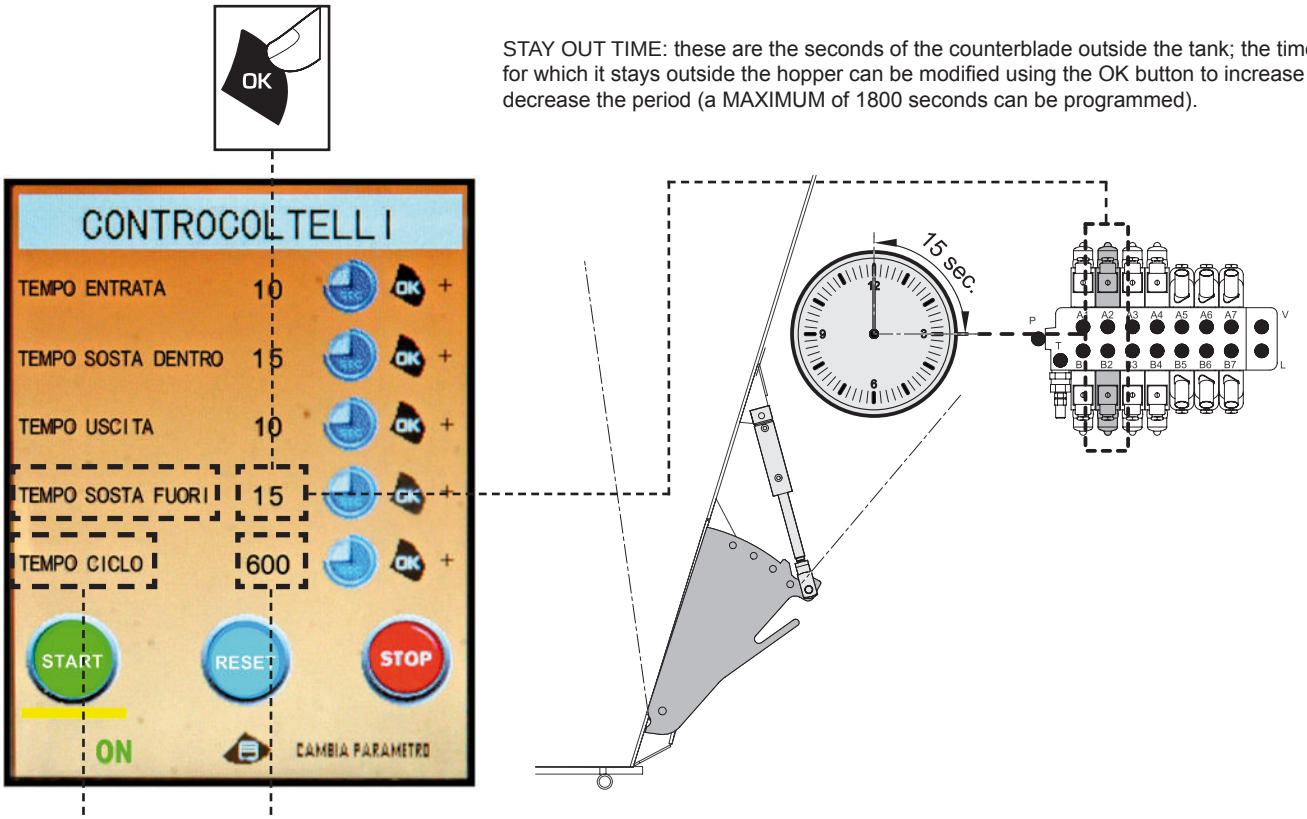
STAY IN TIME: these are the seconds of insertion of the counterblade inside the tank; the time for which it stays inside the hopper can be modified using the OK button to increase or decrease the time (a MAXIMUM of 1800 seconds can be programmed).



EXIT TIME: these are the seconds set for the work of the solenoid valve to make the counterblades come out of the hopper; these can be modified using the OK button to increase or decrease the period (a MAXIMUM of 60 seconds can be programmed).
In cold climates, the seconds are increased because oil viscosity is higher; with higher temperatures, the seconds are decreased.
If it is too short, the counterblade remains partially in, but if it is too long, the valve remains energized and therefore under stress.



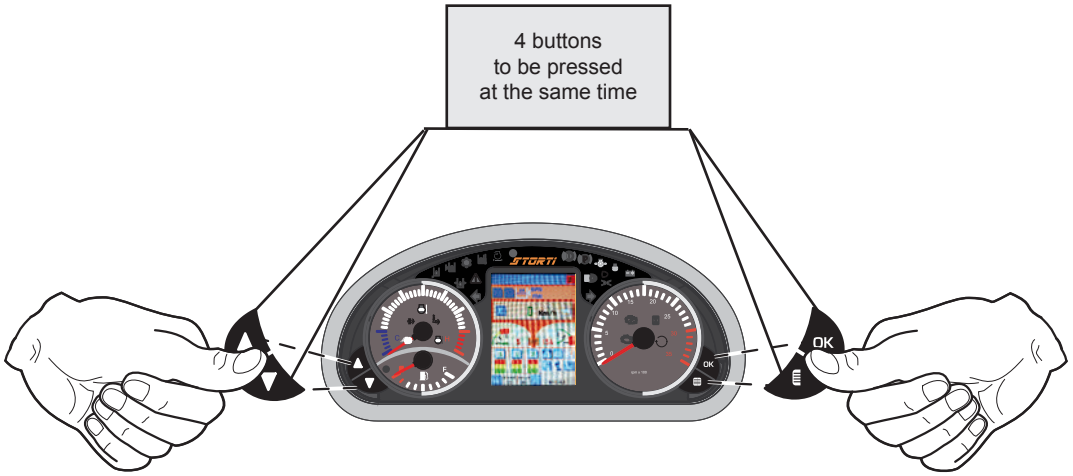
STAY OUT TIME: these are the seconds of the counterblade outside the tank; the time for which it stays outside the hopper can be modified using the OK button to increase or decrease the period (a MAXIMUM of 1800 seconds can be programmed).

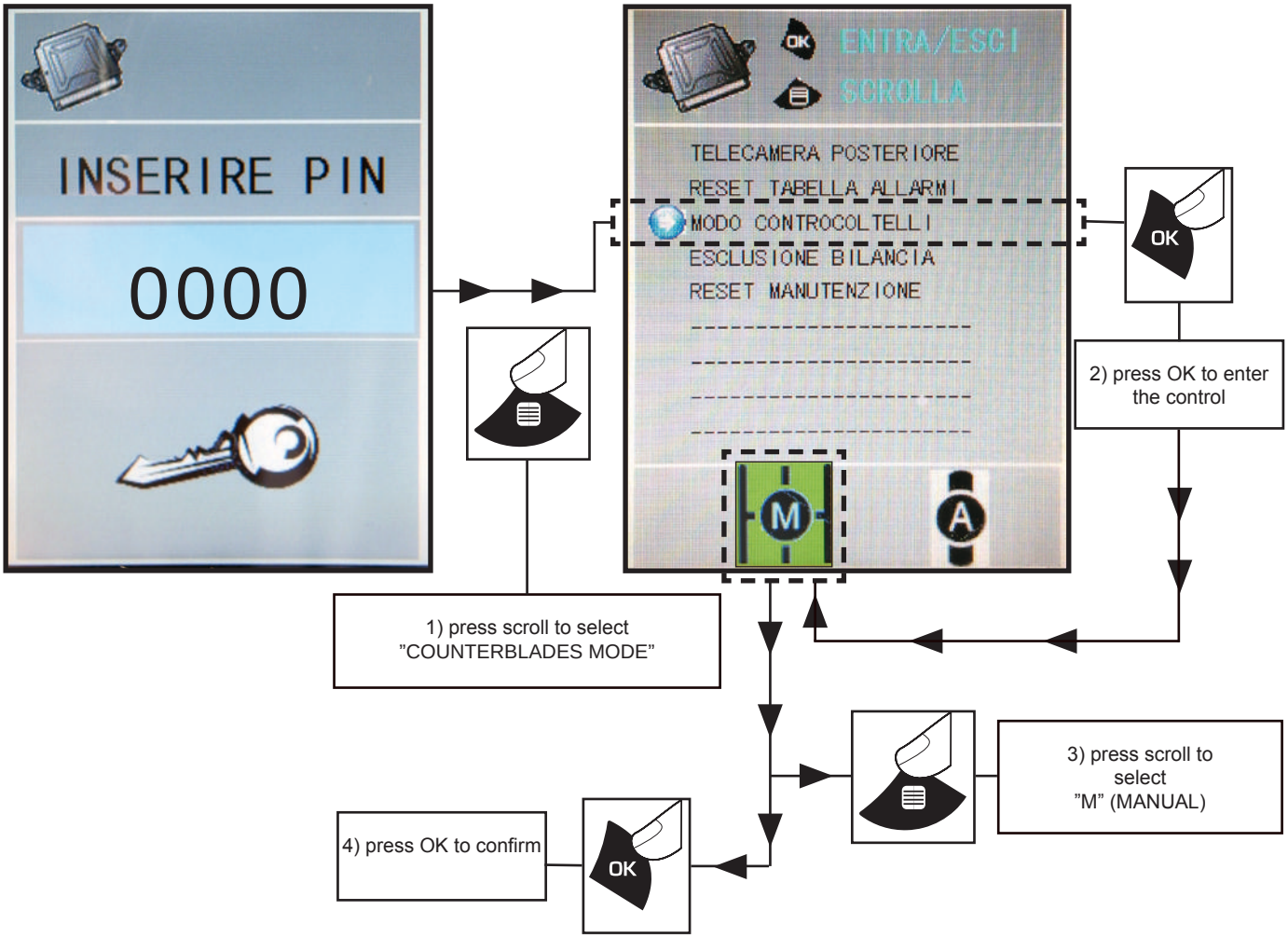


CYCLE TIME: this is the period of time necessary for carrying out all the operations described up to this point.
A MAXIMUM of 3200 seconds, which is 53 minutes, can be programmed.
When the cycle has finished, a new period can be started by pressing the start button or the reset button.
All the operations can be seen through the display panel.

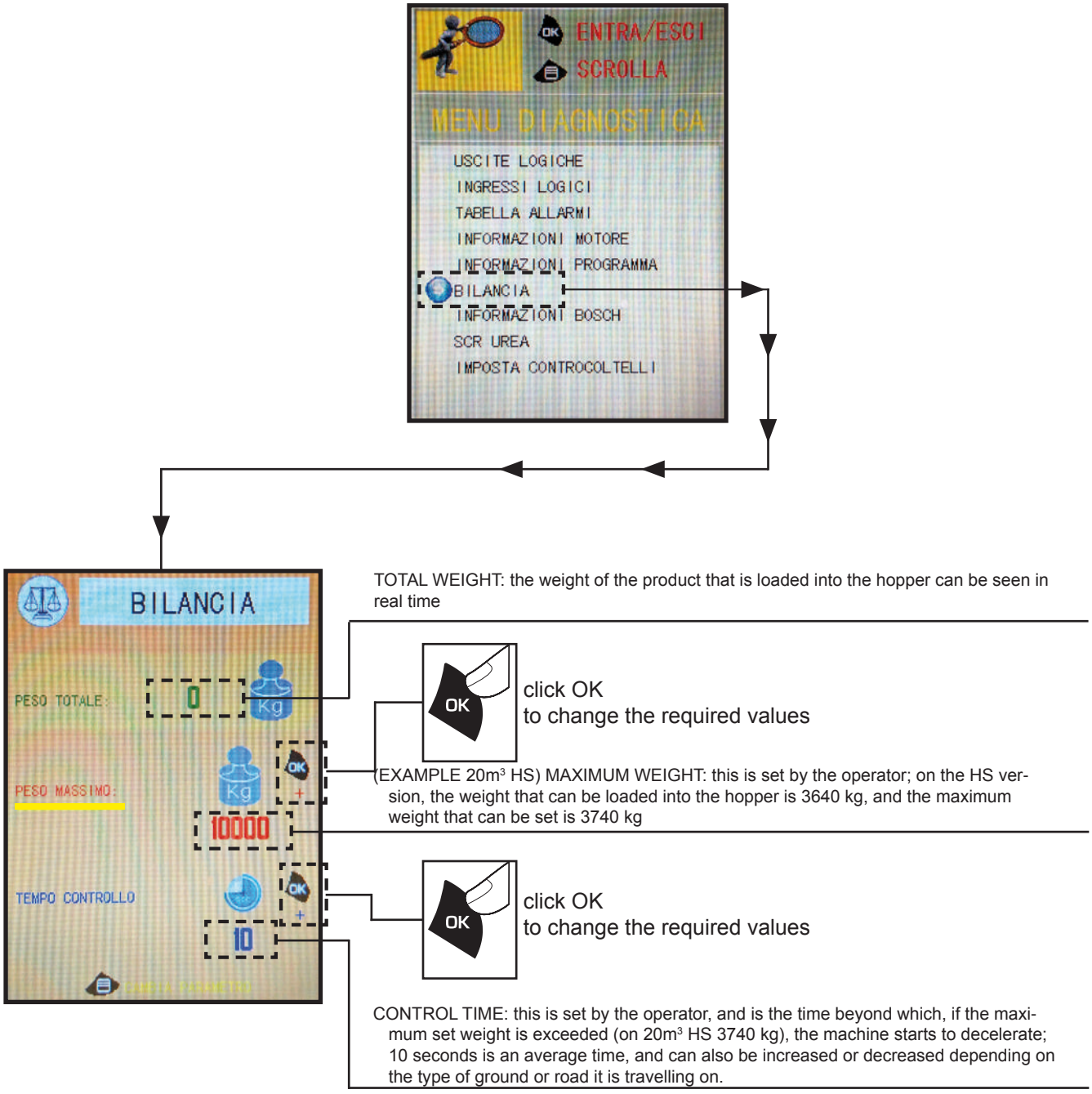
Sect. 5.6.1 MANUAL METHOD OF SETTING THE COUNTERBLADES

To enter the reset menu, select the first page of the display, and then press the 4 buttons at the same time for about 10 seconds; this opens the page for entering the PIN (password 0000) to enter.
(Follow the numbered procedure)





Sect. 5.7 SCALE (ONLY CAN BUS) FOR SPEED CONTROL BASED ON LOADED WEIGHT (ONLY HS)



EXAMPLE ON HS 20m³			
Weight with no load	Weight that can be loaded	Weight with full load	Maximum weight that can be set
Kg	Kg	Kg	Kg
14.360	3640	18.000	3740

Sect. 5.8 ALARMS TABLE

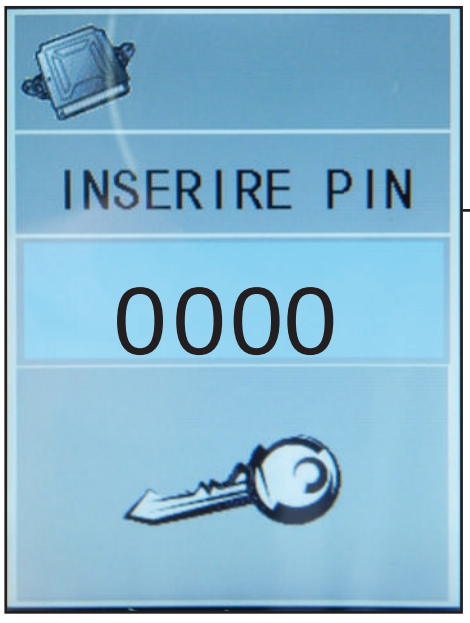
click OK to enter the table of errors

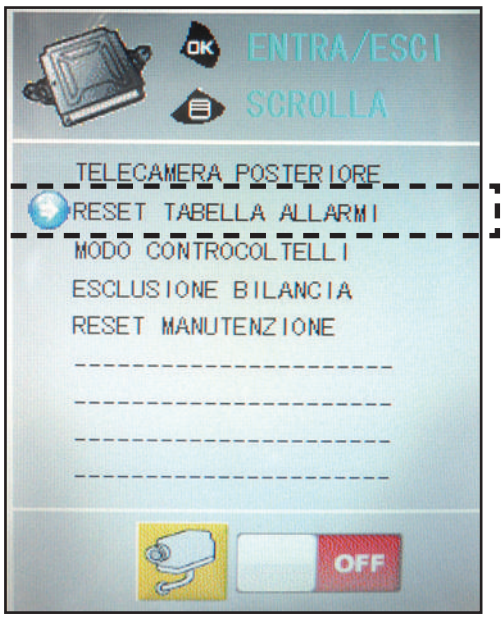
total number of occurrences of errors.
After a certain number of errors, the control unit starts to overwrite them.
If numbering is to be reset, it is possible to do this manually by entering the "RESET" menu and selecting
RESET TABLE OF ALARMS

Press scroll to scroll down the codes

Press scroll to scroll down the codes

To enter the reset menu, select the first page of the display, and then press the 4 buttons at the same time for about 10 seconds; this opens the page for entering the PIN password to enter.





Sect. 5.9 DESCRIPTION OF THE SCR SYSTEM

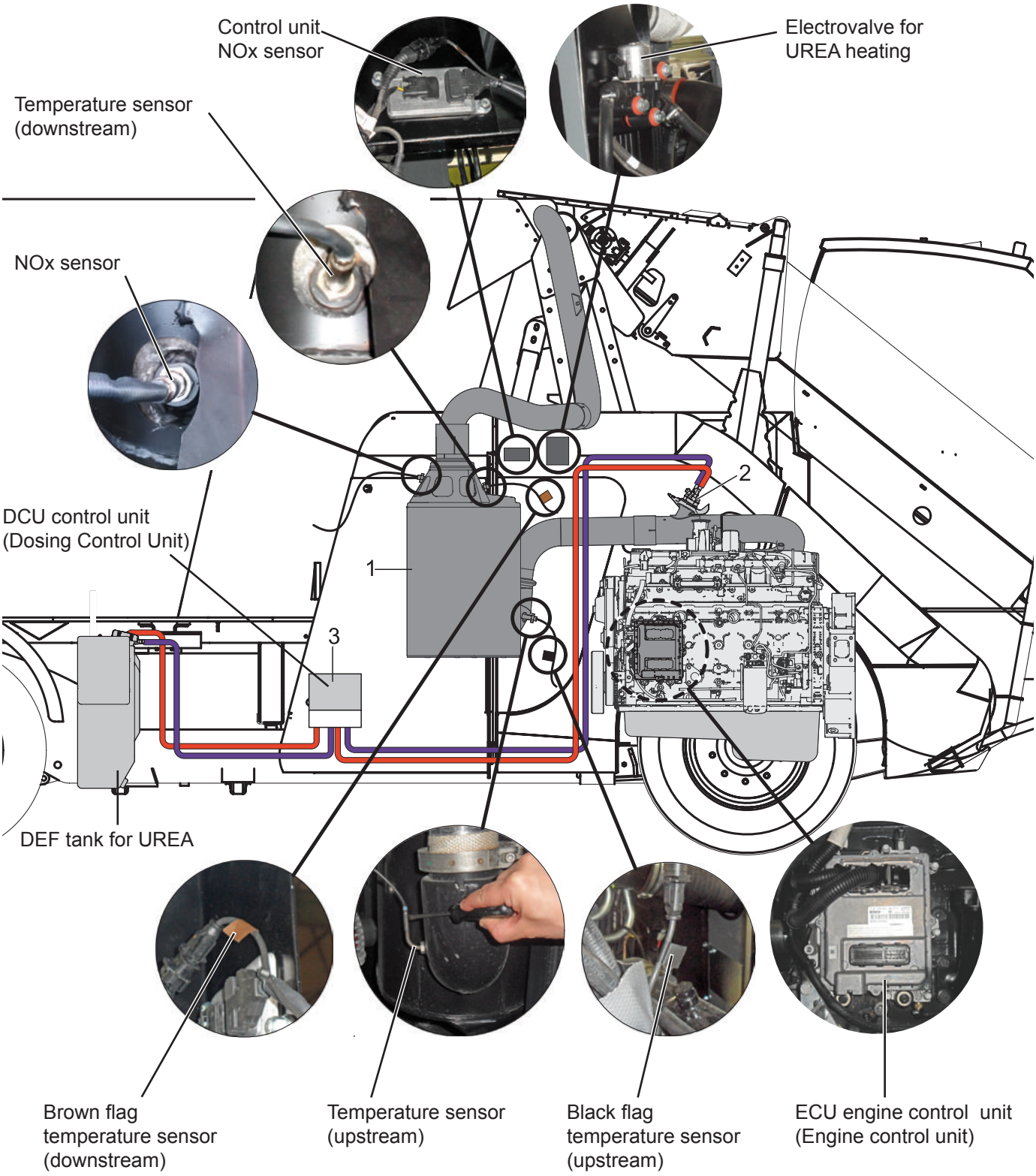
The DeNOx2 system is a post-treatment system of the exhaust gases for diesel engines.
This system improves the quality of the exhaust gases by converting the nitrogen oxides present in the exhaust to N2 and H2O.
the DeNOx2 works with a special catalyst that reaches, via the SCR process (Selective Catalytic Reduction) and with the aid of a reducer, a high conversion efficiency.
32.5% urea and water solution is used as the reducer.
This solution is completely harmless, non-toxic,odourless and ecological.

The main system components are:
1) Catalyser
2) Injection system
3) DCU (Dosing Control Unit).

The catalyst is connected to the engine exhaust and is installed in place of the vehicle silencer, as it is supplied with sound-absorbing material.
The engine exhaust gas current passes through the catalyser while the water/urea solution is injected upstream from the catalyser and managed by the dosing system that controls the urea/water flow rate, depending on the engine operating conditions.

The phenomenon can be divided into two phases:

a) Hydrolysis, during which the urea/water solution is converted into ammonia (conversion takes place in the first part of the catalyser).
b) SCR (Selective Catalytic Reduction), in which the ammonia produced by the hydrolysis reacts with the nitrogen oxides forming steam and free nitrogen.
The water/urea reducer is pumped out from a tank and injected inside the catalyser.
Dosing is performed via a special injector installed directly on the exhaust piping at the entrance to the catalyser.
The system control unit receives data regarding the quantity of urea to inject from the engine ECU via the CAN line and doses the exact amount of reducer into the catalyser.


Control unit
NOx sensor
Electrovalve for
UREA heating
Temperature sensor
(downstream)
NOx sensor
DCU control unit
(Dosing Control Unit)
1
2
3
DEF tank for UREA
Brown flag
temperature sensor
(downstream)
Temperature sensor
(upstream)
Black flag
temperature sensor
(upstream)
ECU engine control unit
(Engine control unit)

Sect. 5.9.1 EXAMPLE OF INDUCEMENT STRATEGY ON UREA LEVEL AND CORRELATED ALARMS

1° EXAMPLE of inducement for low level DEF (AD BLUE UREA)

1) Urea level below 10% and over 5%:

Error DTC 3DEB (15851), the lamp A (fig.1) for the DEF level (AD BLUE UREA) is always on.
There is no derating (drop in power).

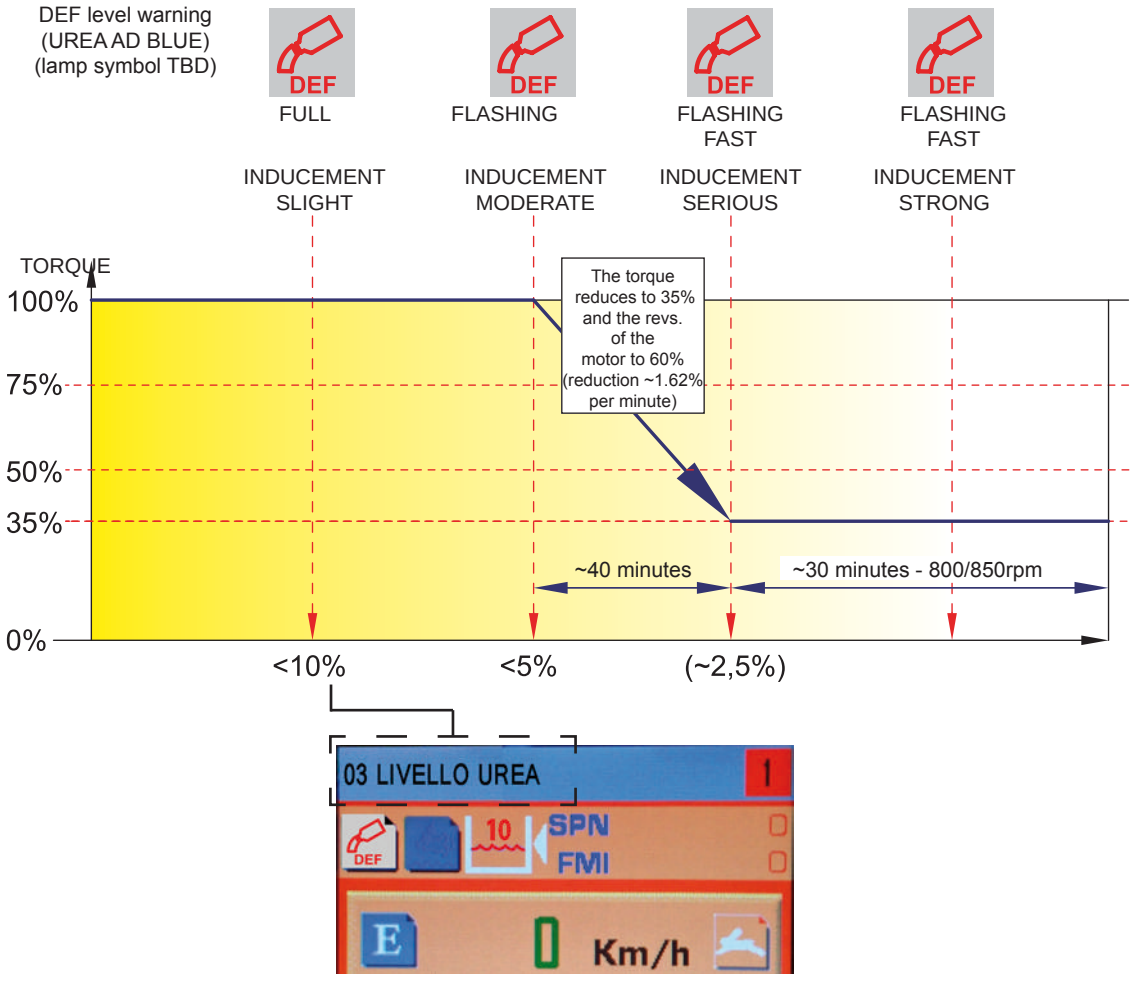
2) Urea Level below 5%:

Error DTC 3DEC (15852), the lamp A (fig.1) for the DEF level (AD BLUE UREA) is flashing.
The performance of the maximum torque is limited to 35% of the total power and to 60% of engine revs. (decrease in torque and engine revs. ~1,62% per minute).
The torque limitation of 35% takes place in ~40 minutes.

3) Urea Tank empty:

Error DTC 3D95 (15765), the lamp A (fig.1) for the DEF level (AD BLUE UREA) is flashing twice as fast.
The is taken to minimum (800/850 rpm) gradually in approx. 30 minutes.

TORQUE REDUCTION CURVE LAYOUT LOW LEVEL WARNING DEF (AD BLUE UREA)



2° EXAMPLE of inducement for low level DEF (AD BLUE UREA)

1) Urea level below 10% and over 5%:

Error DTC 3DEB (15851) FM1, the lamp A (fig.1) for the DEF level (AD BLUE UREA) is always on.
There is no derating (drop in power).

2) Urea Level below 5%:

Error DTC 3DEC (15852), the lamp A (fig.1) for the DEF level (AD BLUE UREA) is flashing.
The performance of the maximum torque is limited to 50% of the total power and to 60% of engine revs. (decrease in torque and engine revs. 2% per minute).
The 50% limitation of the torque takes place in 25 minutes, the 60% engine revs. in approx. 21 minutes.

3) Urea Tank empty:

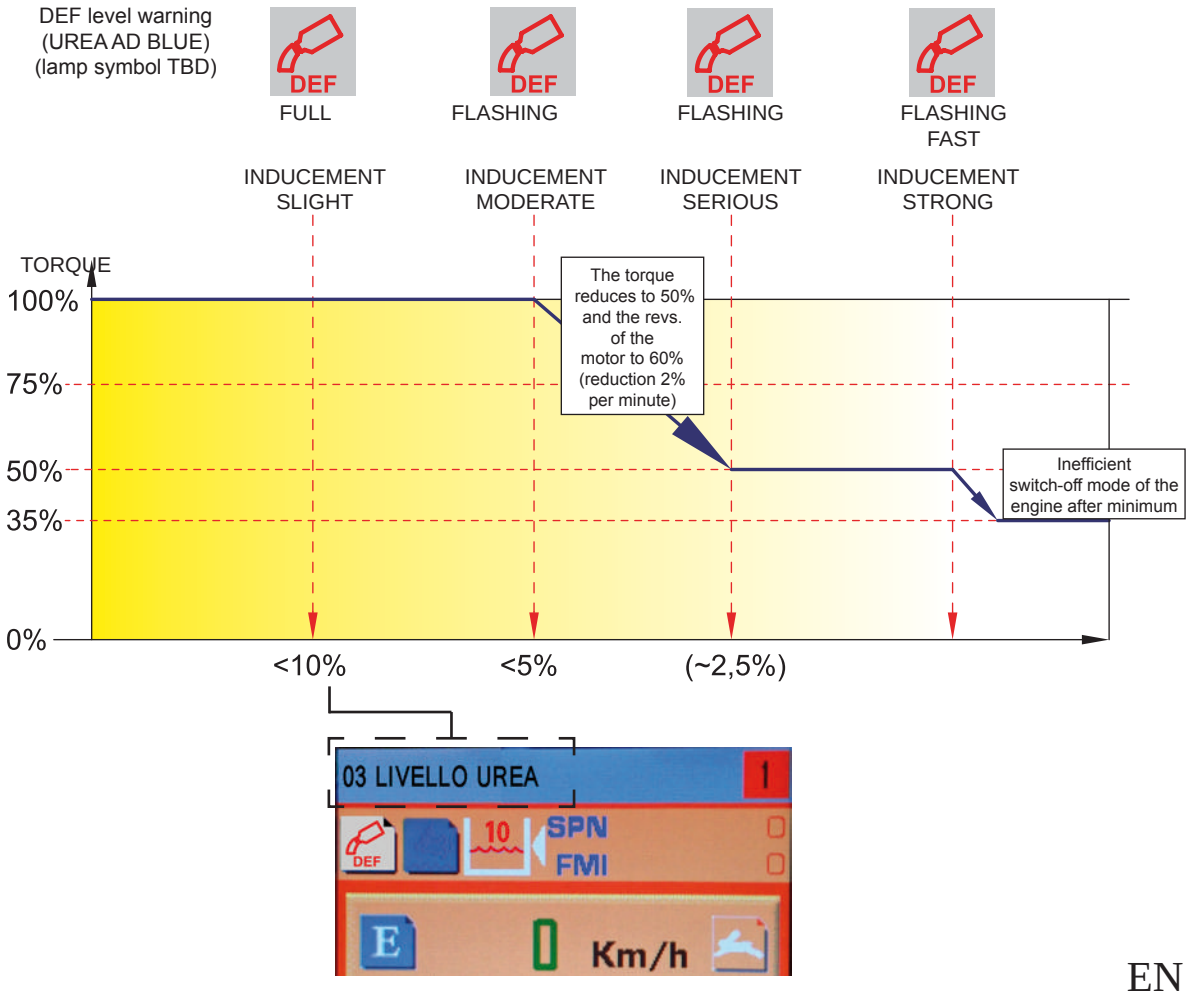
Error DTC 3D95 (15765), the lamp A (fig.1) for the DEF level (AD BLUE UREA) is flashing twice as fast.

4) With Urea Tank empty:

The torque is further reduced to 35%
In this inefficient mode, the engine stops after stabilising itself for a certain period at minimum revs.

fig.1

TORQUE REDUCTION CURVE LAYOUT LOW LEVEL WARNING DEF (AD BLUE UREA)



1st EXAMPLE OF TECHNICAL FAULTS INDUCEMENT STRATEGY
Inducement due to technical fault of the Nox sensor

Example of de-calibration from the 1st to the 2nd stage:

1) a fault is detected on the Nox sensor , if the signal does not arrive within 500 ms.
(see light switch on B fig.1)

2) lamp B (fig.1) DEF technical fault (AD BLUE UREA) is always on.

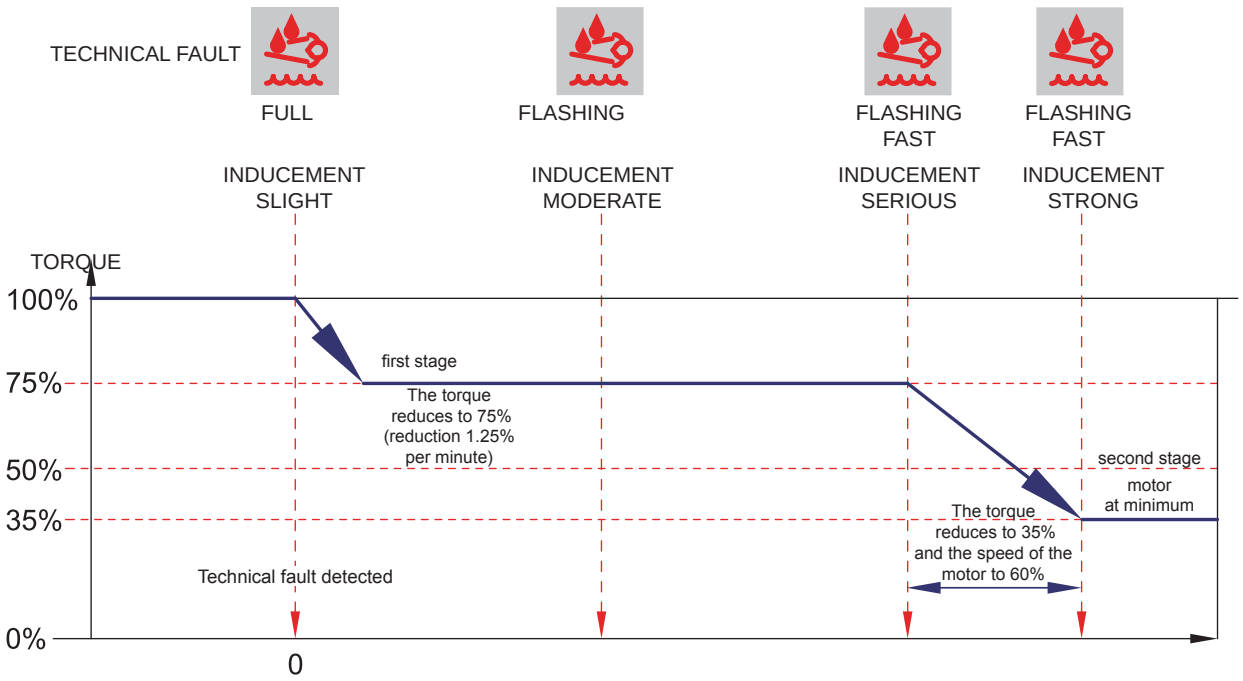
3) There is derating (drop in power), the performance of the maximum torque is limited to 75% of the total power, the reduction of 25% is reached in 20 minutes (decrease in power approx. 1.25% per minute).

4) after a period of time (variable) from when the technical fault is detected, the lamp B (fig.1) starts to flash continuously and there is further derating (drop in power), the performance of the maximum torque is limited to 35% of the total power, and to 60% engine revs.
the limitation of the torque to 35% takes place in a time between 40 to 60 minutes.

5) on reaching this threshold the engine remains stabilised at minimum revs.

fig.1

TORQUE AND NUMBER OF REVS. REDUCTION CURVE LAYOUT INDICATING TECHNICAL FAULT AND INDUCEMENT



2nd EXAMPLE OF TECHNICAL FAULTS INDUCEMENT STRATEGY
1) Inducement due to bad quality AD BLUE (UREA)

Example: bad quality DEF (UREA AD BLUE) water in the tank

1)The DEF (AD BLUE UREA) quality fault is detected after 20 minutes from filling up. (see light switch on B fig.1)

2) lamp B (fig.1) DEF technical fault (AD BLUE UREA) is always on.

3) There is derating (drop in power), the performance of the maximum torque is limited to 75% of the total power, the reduction of 25% is reached in ~25 minutes (decrease in power approx. 1% per minute).

4) after 90 minutes from the technical fault being detected, the lamp B (fig.1) starts to flash continuously

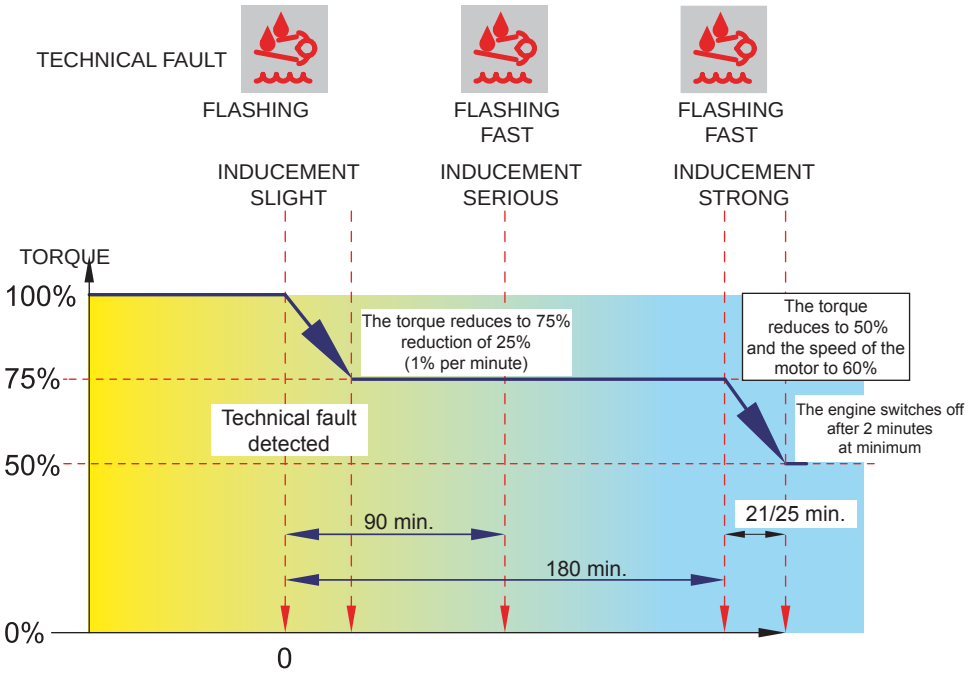
5) There is further derating (drop in power), the performance of the maximum torque is limited to 50% of the total power, the reduction of 25% is reached in ~25 minutes (decrease in power approx. 1% per minute).

6) after ~115 minutes from the technical fault being detected, the lamp B (fig.1) starts to flash twice as fast.

7)on reaching this threshold the engine stops after ~2 minutes that it is at minimum revs.

fig.1

TORQUE AND NUMBER OF REVS. REDUCTION CURVE LAYOUT.
Inducement due to poor quality AD BLUE (UREA)



3rd EXAMPLE OF TECHNICAL FAULTS INDUCEMENT STRATEGY
1) Explanation of inducement due to bad quality AD BLUE (UREA)

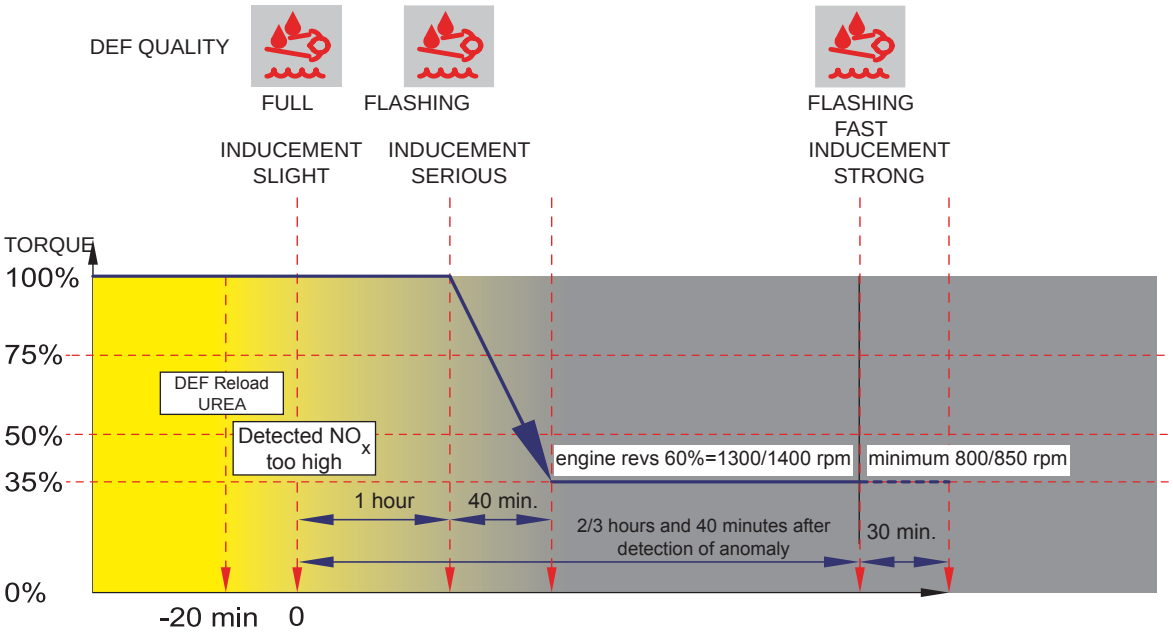
There are two levels of inducement based on the time passed following detection of the poor quality of the reagent.
Summary of the levels of inducement and respective causes of activation:

Anomaly detection = Indication for the operator
- 1 hour passed after detection (start of de-calibration) = Second stage
- 2/3 hours and 40 minutes after detection = Final stage

INDICATION TO THE OPERATOR - REAGENT QUALITY
- It is activated when the poor reagent quality is detected by the engine management control unit
- It is cancelled when the management control unit detects that the post-treatment unit is operating in compliance with normal parameters or when a higher level of inducement is activated.

SECOND STAGE OF INDUCEMENT - REAGENT QUALITY
- It is activated after 1 hour from when the quality anomaly of the control unit reagent was detected
- It is cancelled when the engine control unit detects that the post-treatment unit is operating in compliance with normal parameters or when a higher level of inducement is activated.
- The torque is limited to 35% and rotation speed to 60% of nominal.
  Both parameters are partialised gradually in unison in an interval of 40 minutes.

FINAL STAGE OF INDUCEMENT - REAGENT QUALITY
- I is activated after 2/3 hours and 40 minutes from when the quality anomaly of the reagent is detected by the control unit
- It is cancelled when the engine control unit detects that the post-treatment unit is operating in compliance with normal
- The engine is taken to normal rotation speed gradually in approx. 30 minutes (800/850 rpm).



Sect. 5.9.2 EXTRACT FROM THE TYPE-APPROVAL CERTIFICATE e3*97/68LA*2010/26*1049*06

Operating criteria of the Indicators strategy/Inducement of the SCR system for applications NON-ROAD

Key of LEDS used:

Technical fault indication LED: .....

Reagent level warning LED (e.g.):.....

Inducement global strategy

Figure 1 provides a system layout.

The main components are the Reagent Dosing System, consisting in: DEF tank with level sensor, pump unit, dosing module and SCR catalyser.

Fig.1

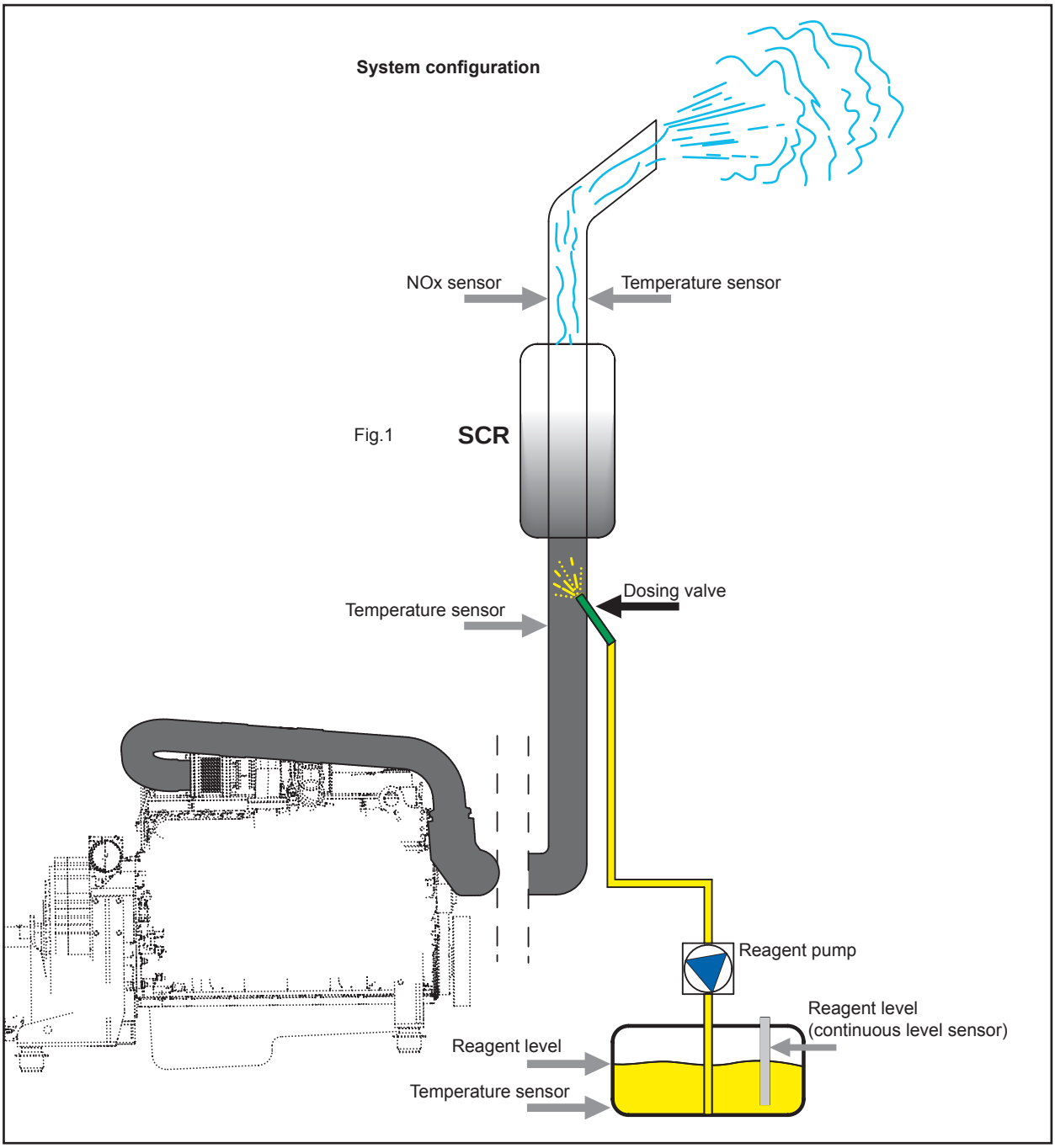
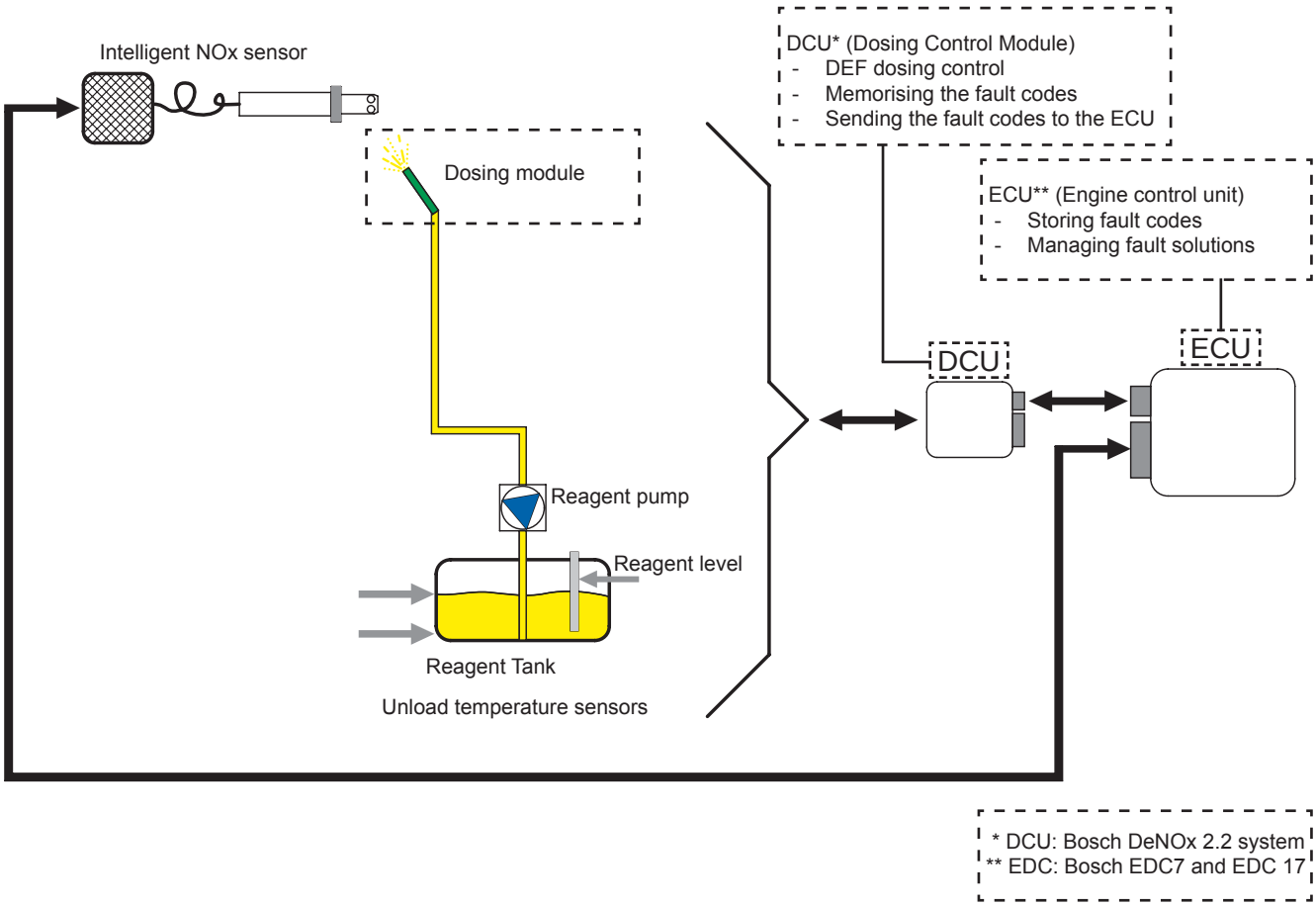


Figure 2: Detailed Configuration of the System, electric components



The system faults are divided into 4 categories:

1. **DEF level**
2. **DEF quality**
3. **System technical faults**
4. **EGR (where applicable)**

Point 3 includes that affect the effectiveness of the SCR, not included in categories 1 and 2. The faults detected immediately trigger the inducement of the SCR system (with OBD terms: “in non-confirmed state”), the system does not wait for confirmation of the fault in a consecutive cycle.
Since most of the electric malfunctioning can be solved by a an engine ticking over cycle,malfunctioning is required relative to the dosing system and the NOx sensor with active dosage.
Dosage of the DEF is only active when the SCR catalyser reaches the working temperature between **220°C and 240°C**, depending on the application.
Errors implying inducement are organised in three classes, depending on the detection conditions and solution.

Class 1: Malfunctioning which requires only switch-on for solution.
Restore is performed simply by starting the engine.

Class 2: Malfunctioning that requires the engine to be running for restore diagnostics, but do not require the SCR system to be running.

Class 3: Malfunctioning which requires reagent injection for solution.
This requires operation of the engine under determined loads in order to raise the operating temperature of the catalyser above **220°C.**

Description of Engine Decalibration (see following graphics)

The intensity of the inducement increases on the basis of the time passed from the malfunction occurring.
There are **4 successive stages** that can be activated:

1. Signals for the operator/indicator LED activation
The toque or revs are not reduced in this stage; the operator is informed regarding malfunctioning of the system by the switch-on of the relevant LED.

2. First stage/reduction of the drive torque by 25%(see green graphics fig.3)
When the first stage is activated, the torque is limited to 75% of its rated value with parity of revs.
When torque limitation starts, the torque limit goes gradually from its normal envelope to that de-calibrated in an interval of 20 mins.

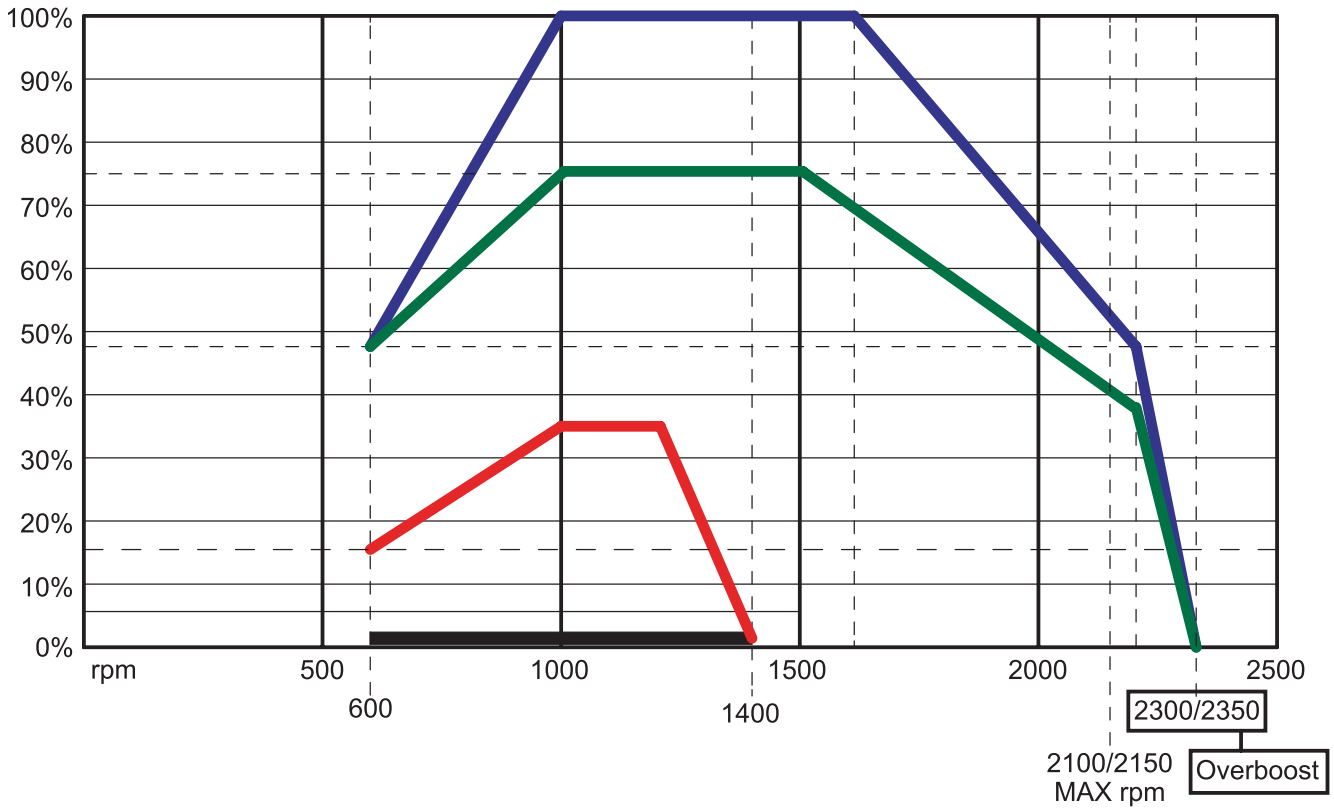
3. Second stage/reduction of the drive torque by 65% and rotation speed by 40% (see red graphics fig.3)
When the second stage is activated, the drive torque and the maximum rotation speed are limited.
The amplitude of the ramp is 200 +/- 50 rpm.
When de-calibration starts, the torque limits and speed go gradually from the initial envelope to that de-calibrated.
The initial envelope can be normal or that de-calibrated corresponding to the first stage and the interval of time corresponding to the de-calibration ramp is 40 minutes.

4. Final stage/engine ticking over (see black graphics fig.3).
The torque is further limited in the last stage until ticking over conditions are reached.
The ramp has duration of 30 minutes.
If the engine is stopped during the ramp and then re-started, the ramp is interrupted.
Ticking over is commanded immediately, after emergency re-start.

Malfunctioning that does not require dosing to be operating (e.g. electric faults and reagent level), imply the following decalibration mode: if the engine is stopped during the ramp and then re-started, the ramp is interrupted.
Torque and speed limitations are applied immediately.

The behaviour corresponding to malfunctioning, which requires active dosing to be solved is described in the "Solution/ terms of the decalibration" chapter.

Fig.3



SOLUTION/ TERMS OF THE DECALIBRATION

When malfunctioning is detected that is related to the SCR system, the inducement is activated and a defined number of stages follows..
When the engine stops, a meter called **"Repeated transgression"** is set, which memorises the level of inducement for **40 hours** of normal operation (see figure 4).
Full power is left after start-up and the vehicle can operate in normal conditions.
When malfunctioning is not repaired and is detected again within 40 hours of working, the system will start the decalibration ramp to the last active level of inducement.
The malfunction detection time varies between a few seconds for the electric fault and 20 minutes for malfunctioning that require reagent dosing to be active.
If malfunctioning of the same unit is detected **3 times in the 40 working hours**, the current decalibration stage will be **blocked**.
The system can only be reset via the professional scanner of the vehicle supplier.

The afore-mentioned strategy is only applied in the case of malfunctioning of a technical nature and reagent low quality and not electric faults and reagent level.
The latter are not reset with re-start of the engine and the inducement remains active.
Malfunctioning caused by reagent level can be restored only by topping-up the reagent.
The malfunctioning linked to the SCR system cannot be detected using a generic scanner, but along with the**"Repeated transgression"** meter can be reset using a professional scanner.

BELOW FIND THREE EXAMPLE GRAPHICS

EXAMPLE N°1 "FIRST STAGE" INDUCEMENT WITH MAXIMUM TORQUE OF 75% (REDUCTION OF 25%)(FIG.4)

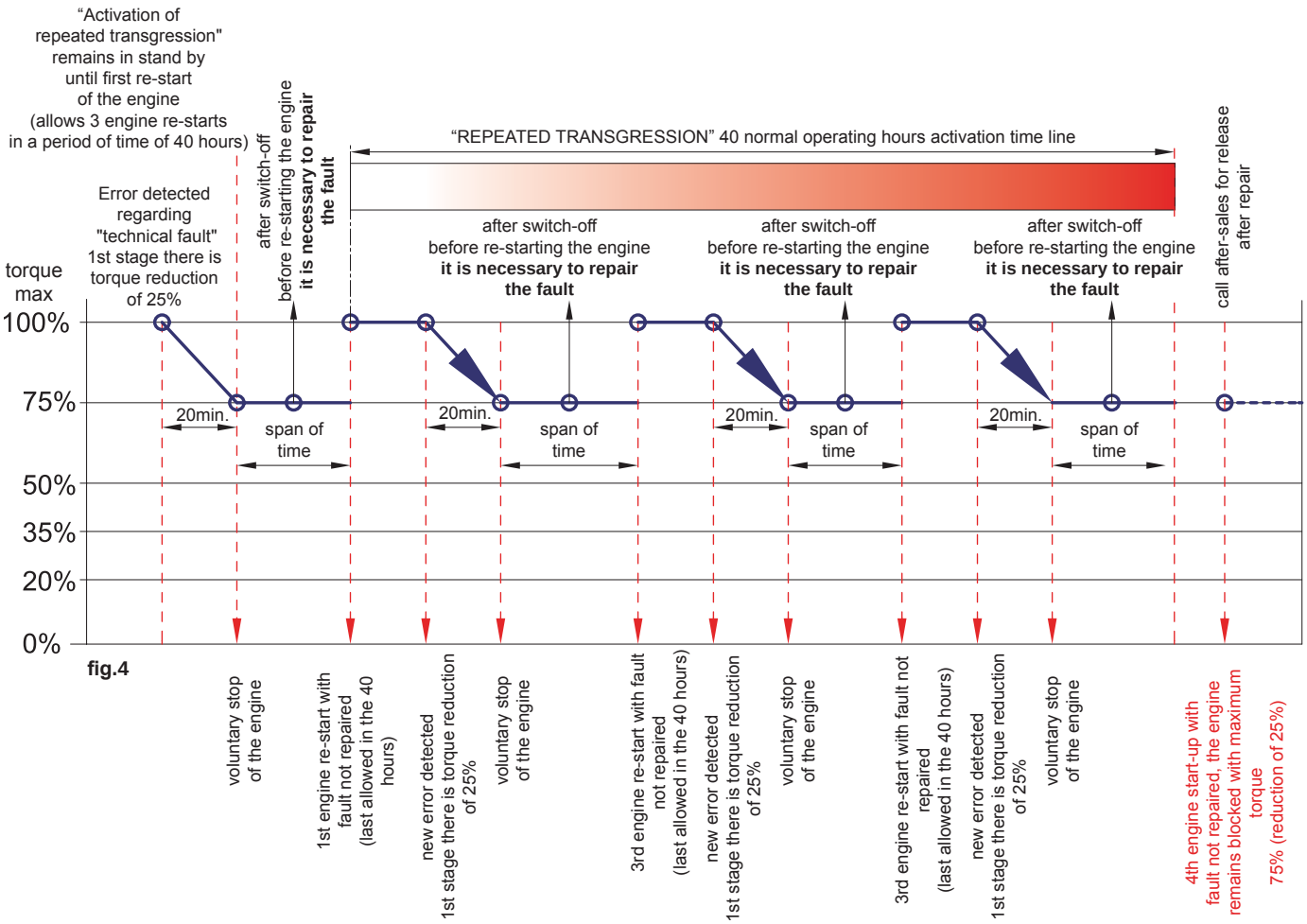


fig.4

EXAMPLE N°2 "SECOND STAGE" INDUCEMENT WITH MAXIMUM TORQUE OF 35% (REDUCTION OF 65%)(FIG.4.1)

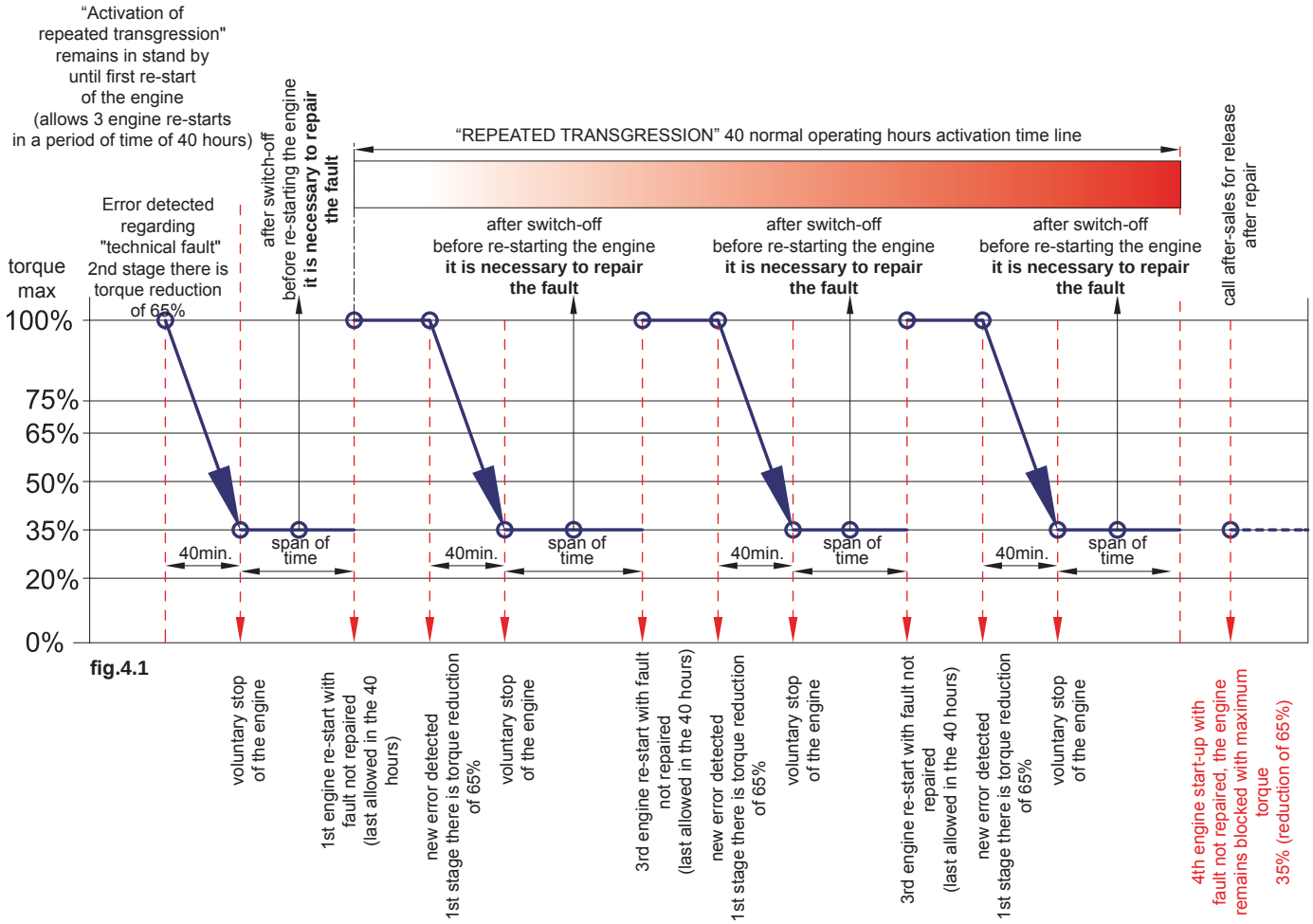


fig.4.1

EXAMPLE N°3 "FINAL STAGE" INDUCEMENT WITH MAXIMUM TORQUE REDUCED TO MINIMUM (FIG.4.2)

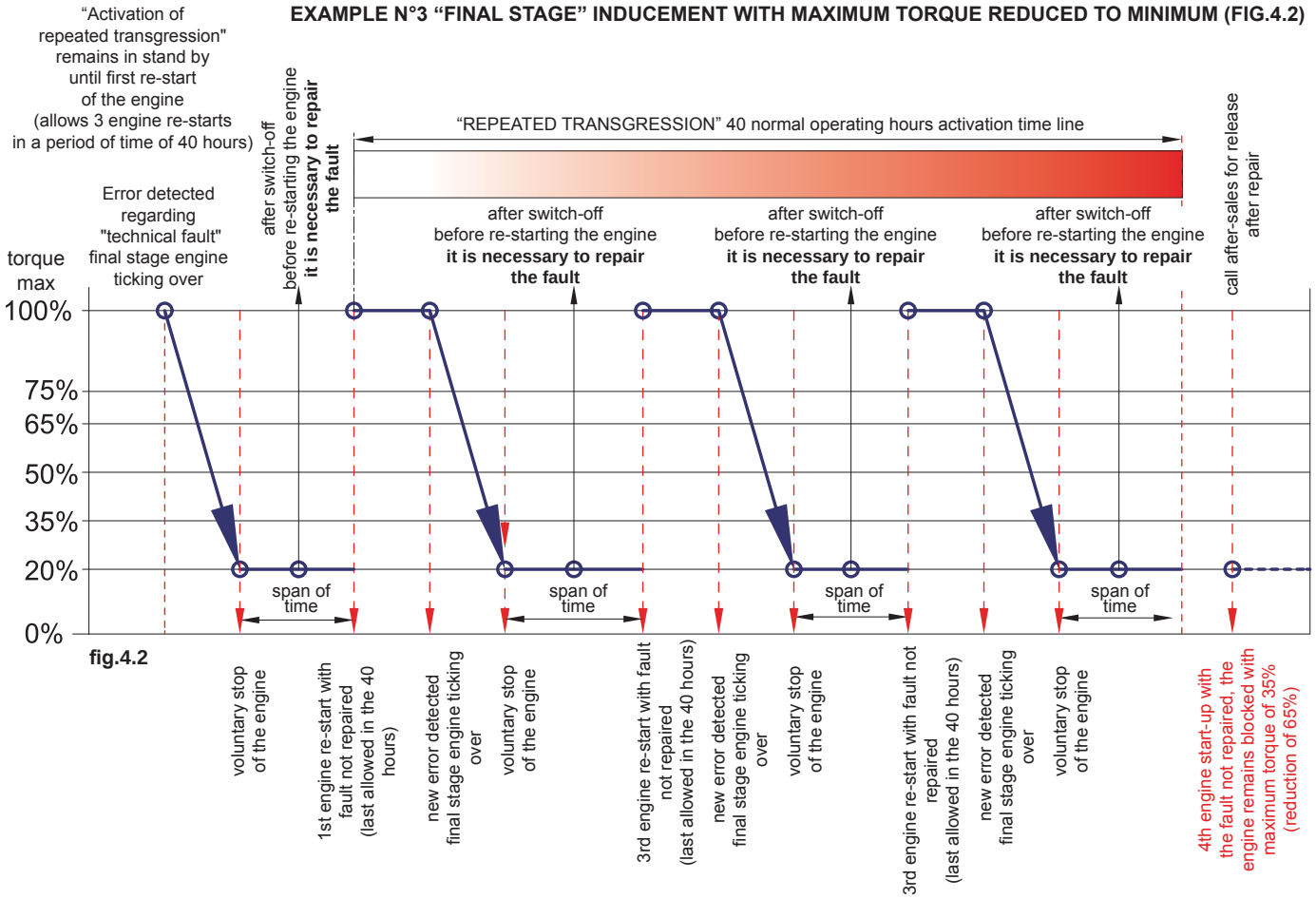


fig.4.2

INDUCEMENT BASED ON THE REAGENT LEVEL (DESCRIPTION OF FUNCTIONING LOGIC AND GENERAL PRINCIPLES)

The levels of inducement based on the level of the reagent present in the tank.
These refer to the levels described in the "Description of Engine Decalibration" chapter.
A specific display/indicator shows the level of the reagent that can be used.
The reagent levels mentioned below refer to the levels of reagent that can be used, not the total level of reagent.
When the reagent level indicator shows **0%**, reserve reagent is still available to ensure injection of the reagent even when the maximum level of inducement is active.
Summary of the levels of inducement and respective causes of activation:

- Reagent level < 10% = Indication for operator
- Reagent level < 5% (start decalibrating) = Second stage
- Reagent level 0% = Final stage

These specifications do not include a detailed description of the visual signs used for the inducement and they may vary in relation to the design of the display.
That above-listed reagent levels that activate the different levels of inducement, can also vary in relation to the shape of the tank.
However, the general description included is part of the inducement strategy.

INDICATION TO THE OPERATOR - REAGENT LEVEL

It is activated with the reagent level lower than **10%** and a higher inducement level is not active
It is cancelled when the reagent level goes beyond **15%** or when a higher level becomes active
The operator is also indicated with visual signals.

SECOND STAGE OF INDUCEMENT - REAGENT LEVEL

- It is activated with the reagent level lower than **5%** and a higher inducement level is not active
- It is cancelled when the reagent level goes beyond **10%** or when a higher level becomes active
- The torque is limited to 35% and rotation speed to **60%** of nominal.

Both parameters are partialised gradually in unison in an interval of 40 minutes.

FINAL STAGE OF INDUCEMENT - REAGENT LEVEL)

- It is activated with the reagent level corresponding to **0%**
- It is cancelled when the reagent rises above **5%**
- The engine goes to minimum rotation speed gradually in 30 minutes.

INDUCEMENT BASED ON POOR REAGENT QUALITY (FIG.5)

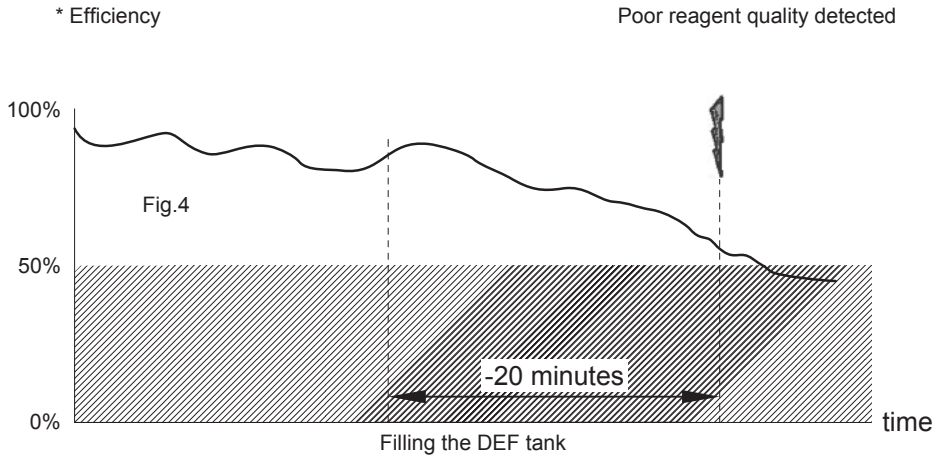


fig.5

* Efficiency = (NOx_emitted by the engine - NOx_measured) / NOx_emitted by the_engine
where
- NOx_emitted by the engine is that upstream from the catalyser
- NOx_measured is that downstream from the catalyst, reduced by the SCR system. It is therefore the residual NOx level not converted by the system

FIGURE 5: PRINCIPLE OF DETECTION OF REAGENT QUALITY
The quality of the reagent can only change when the same is topped up with an unsuitable liquid, such as water.
This addition of liquid will alter the level of the tank, therefore representing a filing episode.
The SCR system requires a lower level of dilution of the reagent in order to reach a given efficiency value.
From a given point onwards, the closed loop dosing control will no longer compensate the poor quality, thus decreasing efficiency.
Once a pre-established efficiency level is reached (calculated starting from the CALCULATED RAW NOX and NOx measured at the exhaust), a malfunctioning signal will be configured.
In connection with a recent filling episode, this will configure a malfunctioning signal due to poor reagent quality.
There are two levels of inducement based on the time passed following detection of the poor quality of the reagent.
Summary of the levels of inducement and respective causes of activation:

Detection of anomaly = Indication to the operator
- 1hour passed after detection (start of de-calibration) = Second stage
- 2/3 hours and 40 minutes after detection = Final stage

INDICATION TO THE OPERATOR - REAGENT QUALITY
- It is activated when the poor reagent quality is detected by the engine management control unit

- It is cancelled when the management control unit detects that the post-treatment unit is operating in compliance with normal parameters or parameters or when a higher level of inducement is activated.

SECOND STAGE OF INDUCEMENT - REAGENT QUALITY
- It is activated after 1 hour from when the quality anomaly of the control unit reagent was detected
- It is cancelled when the engine control unit detects that the post-treatment unit is operating in compliance with normal parameters or when a higher level of inducement is activated.
- The torque is limited to 35% and rotation speed to 60% of nominal.
  Both parameters are partialised gradually in unison in an interval of 40 minutes.

FINAL STAGE OF INDUCEMENT - REAGENT QUALITY
- I is activated after 2/3 hours and 40 minutes from when the quality anomaly of the reagent is detected by the control unit
- It is cancelled when the engine control unit detects that the post-treatment unit is operating in compliance with normal

- The engine goes to minimum rotation speed gradually in 30 minutes.

INDUCEMENT BASED ON MALFUNCTIONING OF A TECHNICAL NATURE
There are three levels of inducement based on the time passed following the detection of malfunctioning of the post-treatment system of the exhaust gases.
Figure 6 shows examples of malfunctioning of a technical nature. This malfunctioning can be further divided into two categories:
1. Malfunctioning of an electrical nature which require just engine start-up to be solved.

2. Malfunctioning for which active reagent dosing is required to be solved.

COMPONENT	CAUSE	DESCRIPTION	INDUCEMENT STRATEGY	DTC on professional scanner
SCR catalyser	**Removal from the catalyser**	**Monitoring NOx level** SCR catalyser efficiency below limits	Malfunctioning of a technical nature	**P0420** Catalytic system efficiency lower than limits
NOx sensor	**Electric connectors disconnected**	**Monitoring the message of the NOx sensor CAN line** Maximum time passed	Malfunctioning of a technical nature	**P2200** NOx sensor circuit
	Removal of the NOx sensor, acceptability of the measurement	**Check acceptability of the NOx signal** Comparative monitoring of the average measurement of the sensor NOx and the estimated concentration of NOx	Malfunctioning of a technical nature	**P2201** NOx sensor circuit Range of validity
SCR Temperature Sensors	**Electric connectors disconnected removal**	**Removal and electric disconnection** Check whether the temperature sensor reaches the temperatures required	Malfunctioning of a technical nature	**P042B** Temperature sensor circuit range of validity
DCU (CAN line)	**DCU disconnected electrically**	**Timer of the CAN OM1DCU message** Monitoring of the CAN messages errors reception timer from the DCU	Malfunctioning of a technical nature	**C10E** Communication with control module interrupted
	DCU disconnected electrically	**Timer of the CAN SCR message** Monitoring of the CAN messages errors reception timer on the SCR from the DCU	Malfunctioning of a technical nature	**C10E** Communication with control module interrupted
	DCU disconnected electrically	**Monitoring the status of the DCU** Monitoring the functioning anomalies of the DCU check function	Malfunctioning of a technical nature	**P2BAE** NOx monitoring system, surplus NOx

Fig.6 table of examples of malfunctioning of a technical nature of the SCR system

Summary of the levels of inducement and respective causes of activation:

Anomaly detection	= First stage
90 minutes after the detection	= Second stage
250 minutes after the detection	= Final stage

These specifications do not include a detailed description of the visual and acoustic signals used for inducement and they can vary in relation to the design of the display.
However, the general description included is part of the inducement strategy.

First Stage of Inducement - Technical Malfunctioning

- It is activated when system malfunctioning is detected by the engine control unit
- It is cancelled when the management control unit detects that the post-treatment unit is operating in compliance with normal parameters or parameters or when a higher level of inducement is activated.
- The torque is taken gradually to a value of 75% in 25 minutes.

Second stage of Inducement - Reagent Level

- It is activated after 90 minutes from when the anomaly is detected by the control unit
- It is cancelled when the engine control unit detects that the post-treatment unit is operating in compliance with normal parameters or when a higher level of inducement is activated.
- the torque is limited to 35% gradually over 40 minutes.

Final stage of Inducement - Reagent Quality

- It is activated after 250 minutes from when an anomaly is detected by the control unit
- It is cancelled when the engine control unit detects that the post-treatment unit is operating in compliance with normal
- The engine goes to minimum rotation speed gradually in 30 minutes.

Emergency Re-start

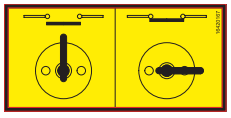
If the final stage of inducement is active, it could be impossible for the machine to move with its own residual power.
If this should occur while the machine is in a hazardous position, e.g. along a railway line, the
emergency re-start system is available to make it possible to move the machine.

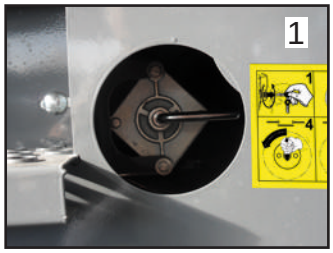
- Allows 30 seconds functioning without torque or rotation speed limitation
- After 30 seconds, the engine will immediately go back to the minimum rotation speed
- There are no limits to the number of emergency re-starts.

N.B.: The emergency start-up is available **only** with the **"final stage"** of inducement active and not be all other stages of intermediate inducement.

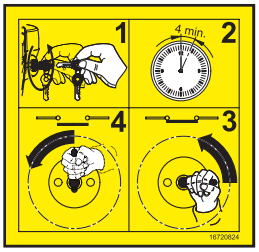
Sect. 5.10 BATTERY CUT OUT SWITCH

The machine has a manual battery cut out switch situated on the left side of the machine (1).
If the vehicle is not to be used for a long time, you are advised to disconnect the battery to prevent it from discharging.
To disconnect it, open the small hatch with your finger (2), through the hole, grip the lever and turn it anticlockwise (into vertical position); turn the lever clockwise to connect it (connected in horizontal position).
There is also a sticker that shows the two conditions of the lever: connected and disconnected.
To carry out these operations, always use the required PPE.





WARNING!!! Before disconnecting the battery cut out switch, wait at least 4 minutes from when the ignition panel switches off, to allow the control unit to run the AFTER RUN program to control the UREA control circuit and allows the control units to register the machine parameters.
(see numbered sequence on sticker on side code16720824)



USE SUITABLE SAFETY EQUIPMENT FOR EVERY MAINTENANCE OPERATION

Sect. 5.11 EMERGENCY PUSH-BUTTONS

The machine has 2 mushroom-head emergency devices, one to the left side of the seat on the door pillar (fig.1), and the other on the right side dashboard near the steering wheel (fig.2).
when the mushroom push-button is pressed, the machine is stopped, the various electrical utilities are prevented, the the yellow warning light on the dashboard comes on (see warning light no. 8).
To restore correct operating conditions and start the machine, rotate the emergency mushroom push-button in the direction of the arrow shown on the head of the mushroom push-button.

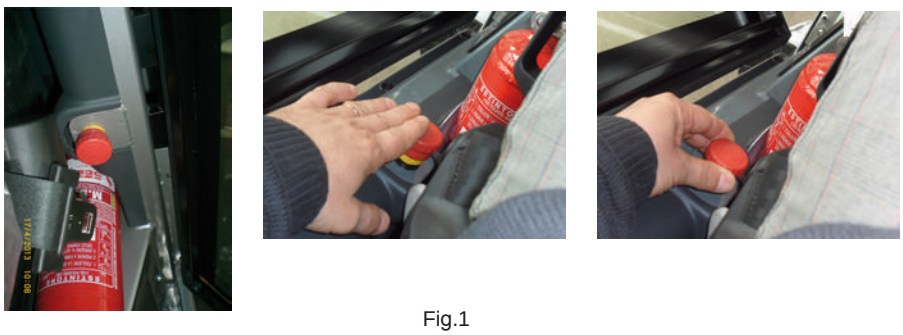
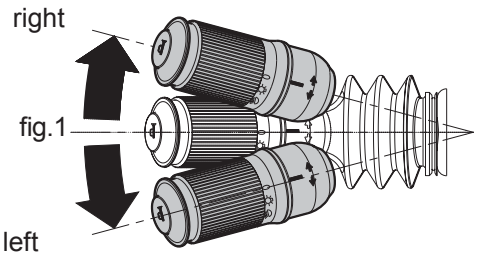


Fig.1

Fig.2

Sect. 5.12 LIGHTS-INDICATORS-HORN STALK CONTROL FUNCTIONS

fig.1) right and left indicators (on the dashboard, warning light 9 comes on to turn left, warning light 17 comes on to turn right)



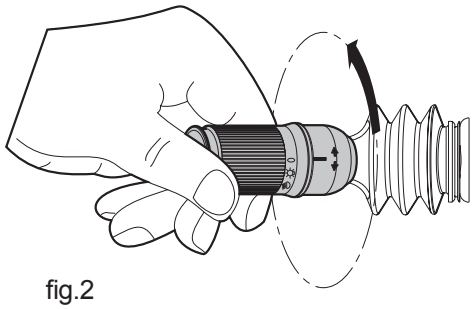
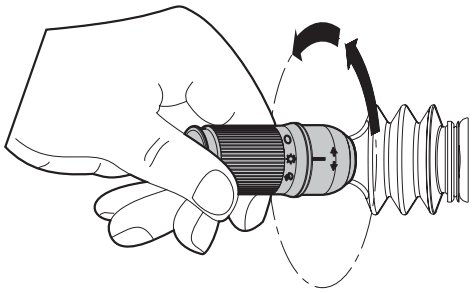


fig.2

fig.2) rotary light knob, turn anticlockwise to select the sidelights and dipped headlights function



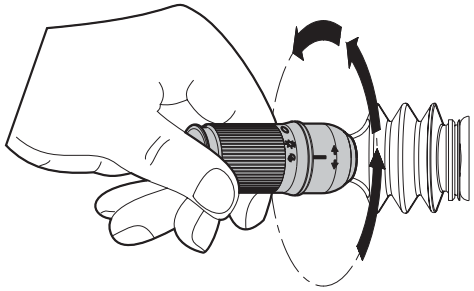


fig.3) central position for sidelights and dipped headlights; when the light stalk is raised (returns when released), the full headlights are activated for brief signalling (flash). When the light stalk is lowered, the full headlights are activated permanently.

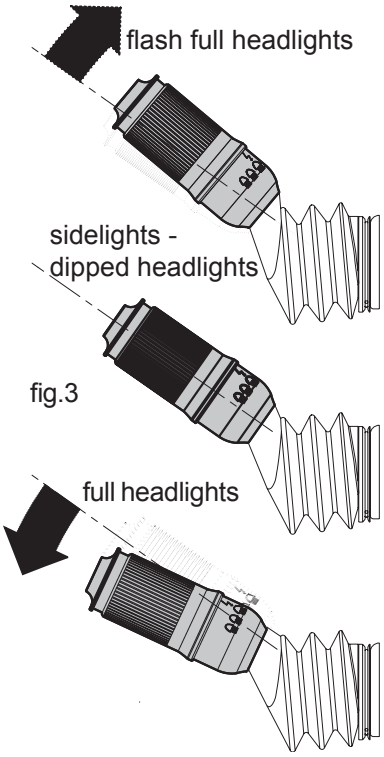
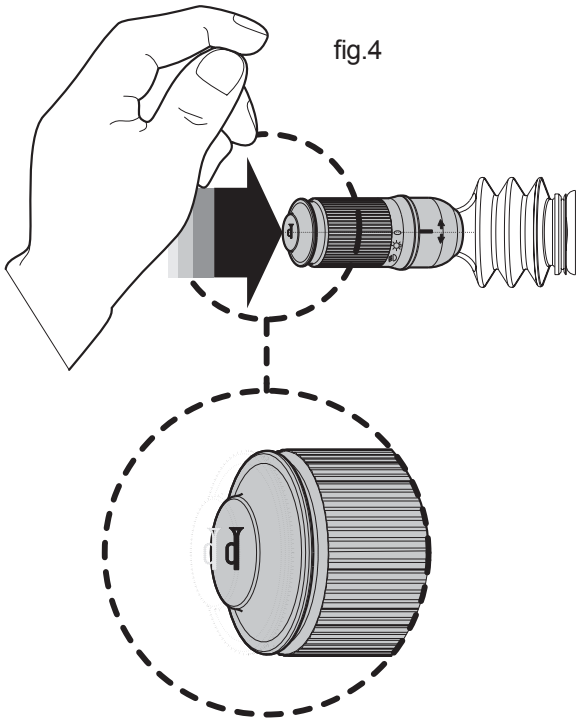


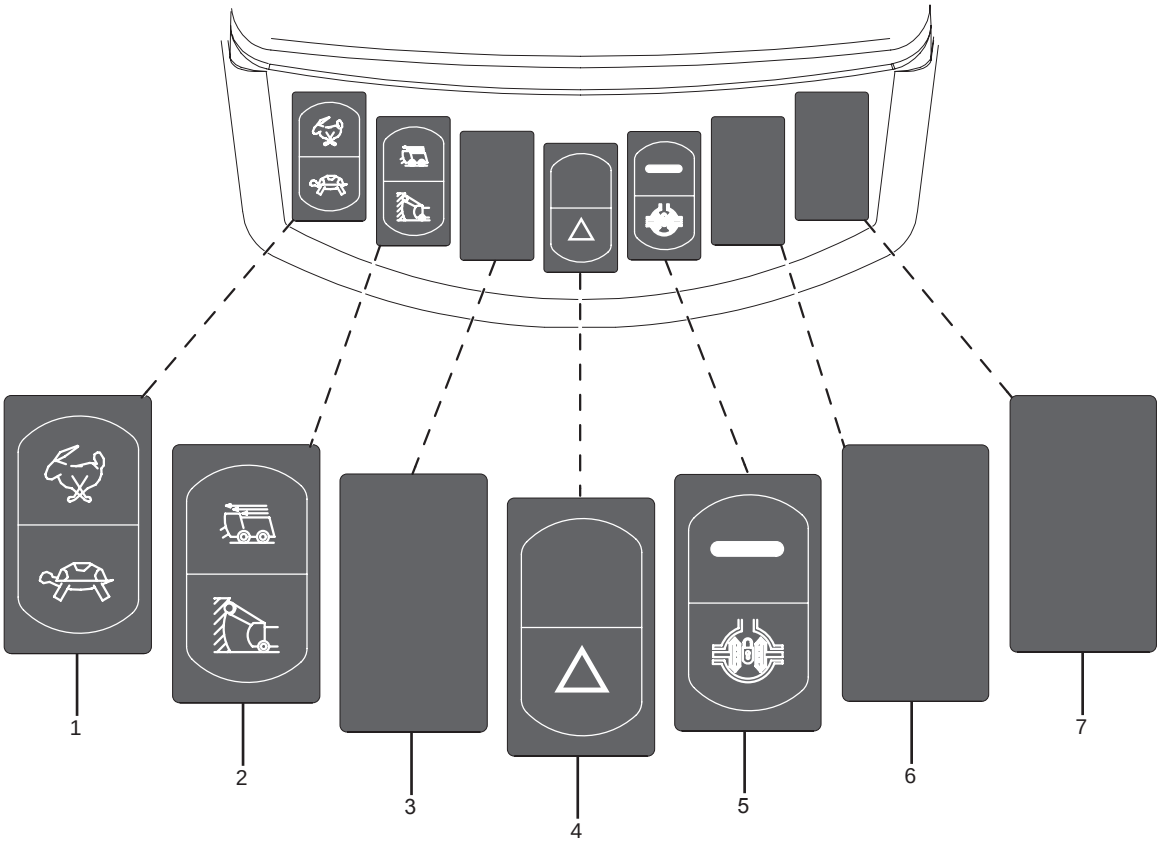
fig.3

fig.4) horn; push with the palm where indicated by the trumpet

fig.4



Sect. 5.13 DESCRIPTION OF FUNCTIONS OF STEERING COLUMN BUTTONS



1) 1st - 2nd gear motors speed: 2-position permanent button; press the tortoise to engage 1st speed, press the hare to engage 2nd speed.
Depending on the version of self-propelled machine (electronically controlled or conventional hydraulic transmission), this button allows the operator to go from one gear to the other in certain operating modes: “machine“ stopped or moving at below a speed of about 3 to 4 km/h; this is a normal operating condition.

2) forward movement mode button: 2-position permanent button, press to select the work mode or the road transfer mode (only HS version machines).

3) provision for optional button.

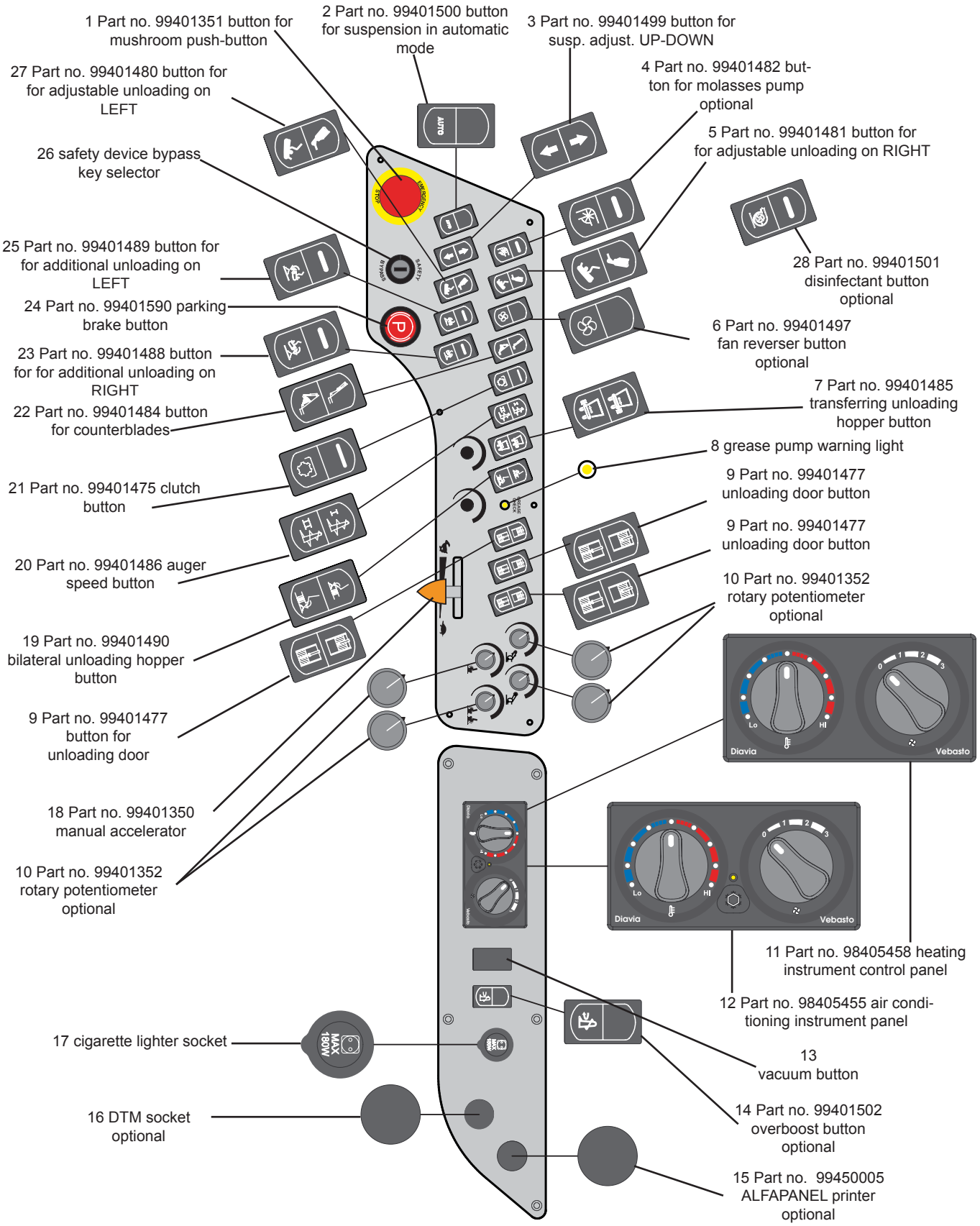
4) button for 4 indicators: 2-position permanent button; activates the emergency indicators.

5) differential lock button: 2-position momentary button; press to engage the differential lock and release to disengage the differential lock.
For example, if a wheel slides or if a wheel is lifted, its resistant torque is practically nothing. In this case, manually activate the “differential lock” button to restore the correct conditions for machine traction.

6) provision for optional button.

7) provision for optional button.

Sect. 5.14 RIGHT SIDE INSTRUMENT PANEL (COMPLETE CONFIGURATION)



Sect. 5.14.1 DESCRIPTION OF FUNCTIONS OF RIGHT SIDE INSTRUMENT PANEL BUTTONS

1) emergency mushroom push-button: when the mushroom push-button is pressed, the machine is stopped, the various electrical utilities are prevented, the display switches off and the yellow warning light on the dashboard comes on (see warning light no. 8).

2) suspension button: 2-position momentary button - 1st position: hold down the button for more than 10 seconds to enter calibration mode calibration (see sect.5.23.3).

2nd position: the starting of the suspension from manual to automatic can be forced by pressing and holding for one second, even below the speed threshold envisaged for automatic operation (below 3 km/h).

3) UP-DOWN suspension adjustment button: 3-position momentary button, press the button to raise or lower the suspension suspensions (for use, see sect. 5.23 - sect. 5.23.1 - sect. 5.23.2- sect. 5.23.3).

4) molasses pump button (optional): 2-position permanent button; press the button to activate the pump.

5) button for right adjustable unloading hopper: 3-position momentary button; press down side to lower, press up side to raise.

6) fan reverser button (optional): instable 2-position button, press for 2 seconds to invert fan rotation in order to clean the radiator grid.
As an option, there is the possibility of activating the same function automatically from the dashboard of the machine (see sect. 5.2 page 3).

7) transferring button: 3-position momentary button; press right side to move the hopper to the right, press left side to move the hopper to the left.

8) grease pump warning light: this yellow warning light comes on for about 1 second during starting of the machine or due to insufficient pressure of the lubrication circuit

9) unloading door button: 3-position momentary button; press open side to open, press close side to close.

10) rotary potentiometer (optional): used to proportionally control the speed of the powered devices concerned (milling cutter speed, and speed of loading and unloading belts).

11) heated instrument control panel: allows the operating parameters of the heated machine to be adjusted.(see sect.5.27)

12) air conditioning instrument panel: allows the operating parameters of the air conditioned machine to be adjusted.(see sect.5.27)

13) vacuum button

14) overboost button (optional): 2-position permanent button; allows the maximum RPM of the diesel engine to be increased from the 2300+/-50 RPM.
This is to increase the rotation turns of the augers in order to clean them.

15) ALFAPANEL printer (optional): for printing recipes and anything else connected with weighing instrument management.

16) DTM socket (optional): allows the DTM memory cartridges to be connected for data interchange between DTM and the weighing instrument.

17) cigarette lighter socket.

18) manual accelerator: used to control the rotation speed of the diesel engine, in HS machines it becomes neutral when the automotive function is active (electronic management of the hydrostatic transmission).

19) bilateral hopper button: 3-position permanent button; selects the direction of rotation of the bilateral unloading belt.

20) auger speed button: 3-position momentary button; allows the rotation speed of the augers to be selected (I slow- II fast)
microswitches situated on the gearbox allow the actual selected auger speed to be checked through the display.
In combination with the clutch button, this allows semi-automatic gear change.

21) clutch button: 2-position permanent button; when pressed, this activates the rotation of the mixing augers.
In combination with the auger speed change button, this also allows semi-automatic gear change.

22) button for counterblades: 3-position momentary button; press connected side to insert the counterblades, press disconnected side to make the counterblades come out.

23) additional unloading hopper button on RIGHT: 2-position permanent button; when pressed, this activates the rotation of the unloading belt on the left.

24) parking brake button.

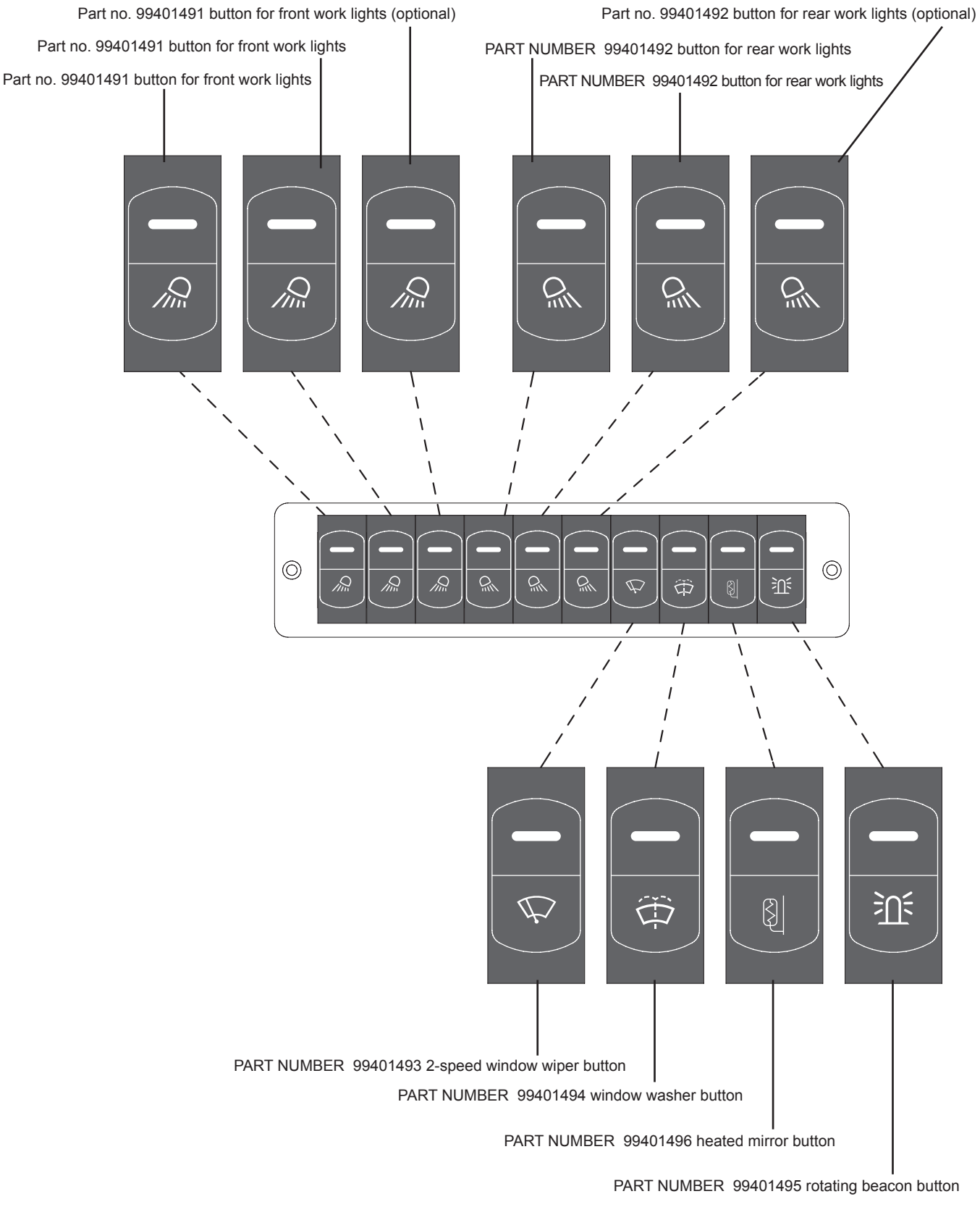
25) additional unloading hopper button on LEFT: 2-position permanent button; when pressed, this activates the rotation of the unloading belt on the right.

26) bypass key selector: turning the key to the right disables the safety devices present.
WARNING!!! To be used only in case of maintenance of the machine by workers who have been trained and taught how to use the vehicle and are aware of the hazards that exist. (The use of the selector is recorded in the data memory of the control unit of the machine.)
The key must be kept away from the vehicle in a safe place (see additional notes on the use of the BY PASS sect. 5.21).

27) hopper button for adjustable unloading on LEFT: 3-position momentary button; press down side to lower, press up side to raise.

28) disinfectant button (optional): 2-position permanent button; when this button is pressed, it acts on the pump that, through nozzles, distributes the disinfectant product on the wheels of the machine.

Sect. 5.15 DESCRIPTION OF BUTTONS ON THE CABIN ROOF (COMPLETE CONFIGURATION)



Sect. 5.16 ADJUSTING THE HEIGHT OF THE CONTROL COLUMN (fig.1)

The control column is height adjustable for a total travel of 60mm.
To adjust, proceed as follows:
1) loosen lever A by pulling it towards you (anticlockwise), grip the steering wheel (C) with both hands and pull it up to the required position (maximum 60mm).
2) to FIX the new position of the steering wheel, lock it by turning lever A clockwise.

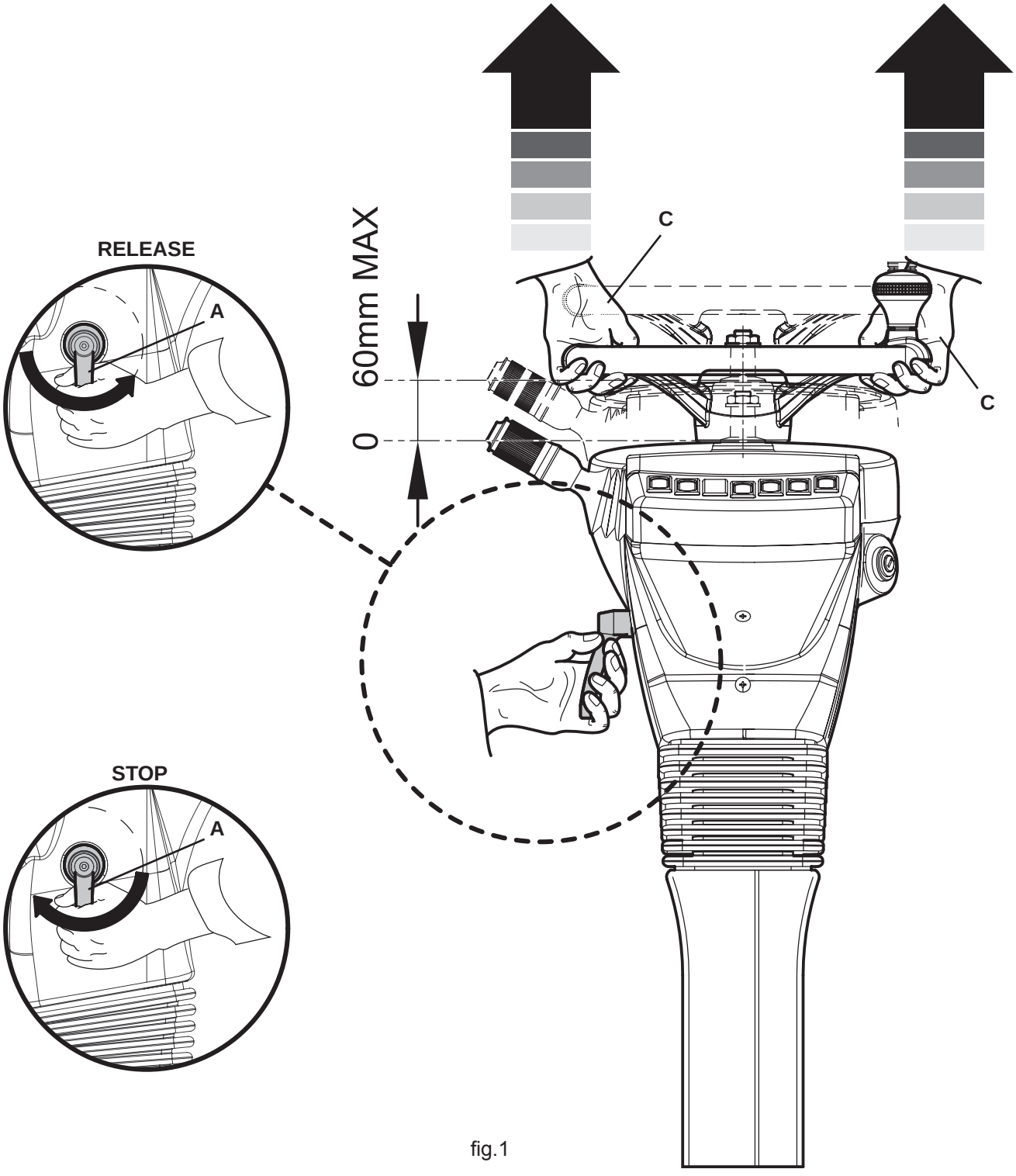


fig.1

Sect. 5.16.1 ADJUSTING THE TILT OF THE COLUMN (fig.2)

The command tower can be adjusted by pushing it towards the glass or pulling it towards yourself with a travel of 5° towards the glass or 30° towards the driver, with maximum movement of 35°(from fully forward to fully backwards).
To adjust, loosen lever A by pulling it toward you (anticlockwise), and then grip the steering wheel (B) and pull the column to bring it nearer or push it to move it away.
When you have found the right position, lock by turning lever A clockwise.

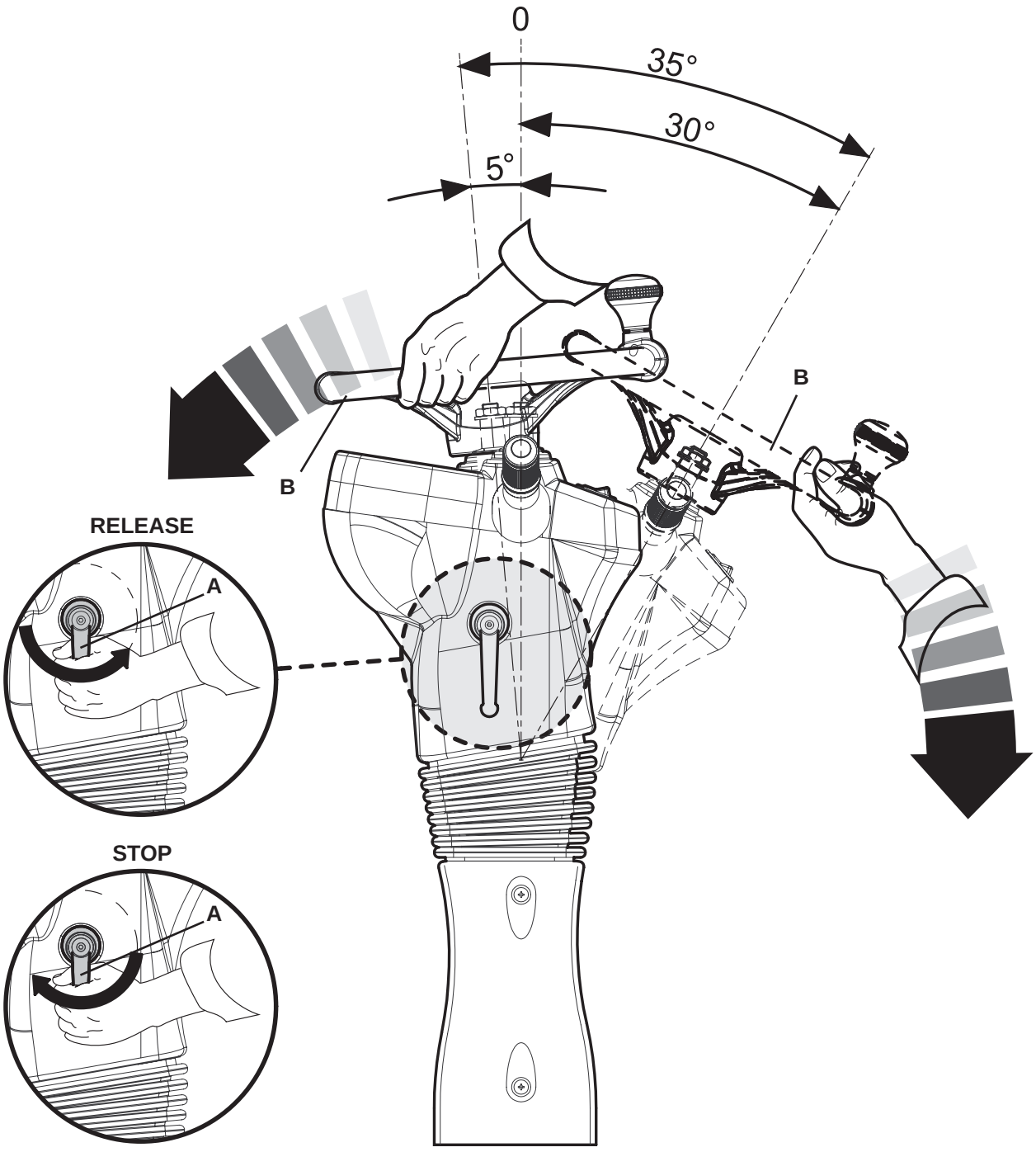


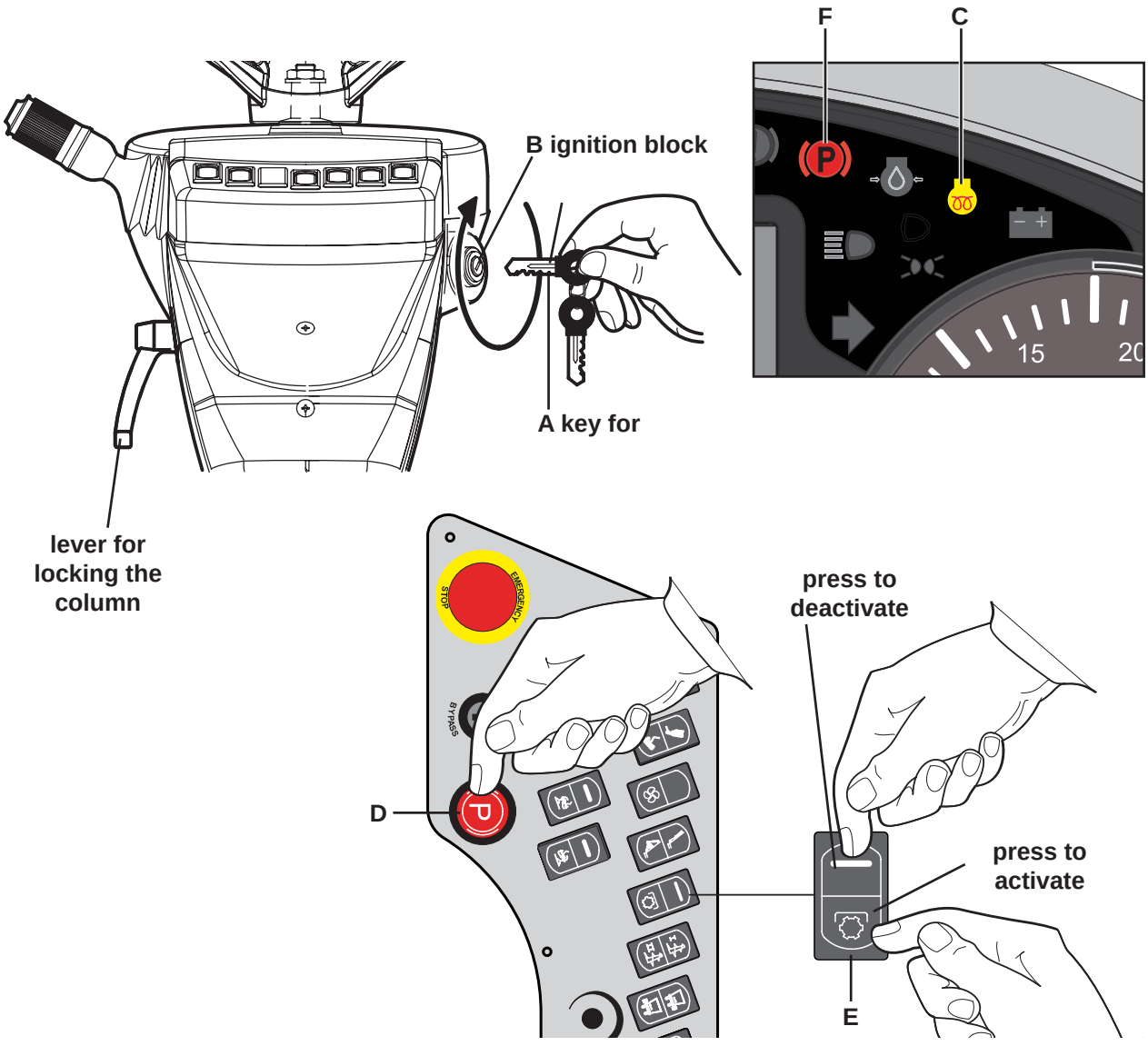
fig.2

Sect. 5.17 STARTING

WARNING!!! Before starting the machine, remember to fasten your safety belt.

Procedure:
1) Insert the key “A” in the ignition panel “B”.
2) turn the key clockwise until it clicks once (the control board LEDS light up).
(With some pre-heat kits, it is possible that the spark plug LED needs more time to switch off; this behaviour is normal).
3) after the warning light has gone out, continue to turn the key until the engine starts (irrespective of the position of the parking brake or the engaged clutch, it is always possible to start the machine).
After starting the engine, wait until the water temperature is at least 60°C before starting to work.
This time is necessary so that the hydraulic oil can reach the right temperature (32/33 degrees) (on the HS version, the hydraulic oil temperature can be seen on the display “Page 5 HS ELECTRONIC MANAGEMENT SYSTEM INFORMATION MENU”).

Safety equipment on starting.
The machine has an automatic safety system on starting; this acts on the parking brake, “D” and on the clutch button “E”.
case 1) the vehicle has been switched off or parked without the parking brake: on first starting, the parking brake engages automatically (see lit warning light on the dashboard F).
To restore the normal condition of use (starting), press the brake button “D” again (AS) (on the dashboard, the red warning light F goes out), or on the HS machine operate on the forward or reverse transfer pedal.
case 2) clutch engaged: allows the machine to be started (safely) by disabling the rotation of the augers
(bypassing the clutch button “E”).
The normal function of use of the clutch is restored by deactivating it by pressing button “E”, and then enabling it pressing this button in the other direction.
case 3) parking brake not on and clutch engaged: proceed in sequence as described in case 1 and in case 2.
case 4) HS machine ignition, the pedal must be in neutral position otherwise start-up is prevented (for safety reasons).



Sect. 5.18 FORWARD MOVEMENT

During transfers and manoeuvres (on the HS machine in work mode), the rotation speed of the engine must be kept within a value of 1300/1400 up to 2100/2150rpm.
To move along with the machine, release the parking brake (A fig.1) and work slowly with your “RIGHT” foot on the forward/reverse pedal (B fig.2) (press the front to move forward - press the back to reverse); release the pedal in its central position to stop.
To brake, press the pedal (C fig.3) (LEFT FOOT)

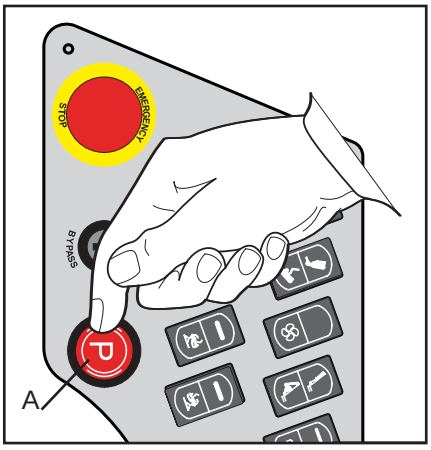


fig.1

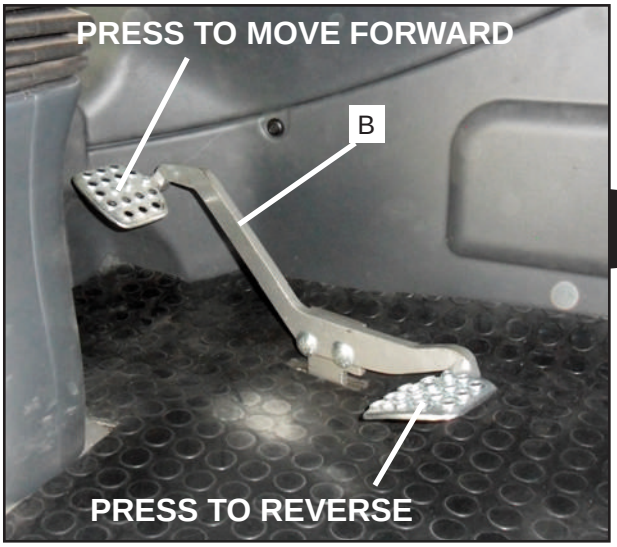


fig.2

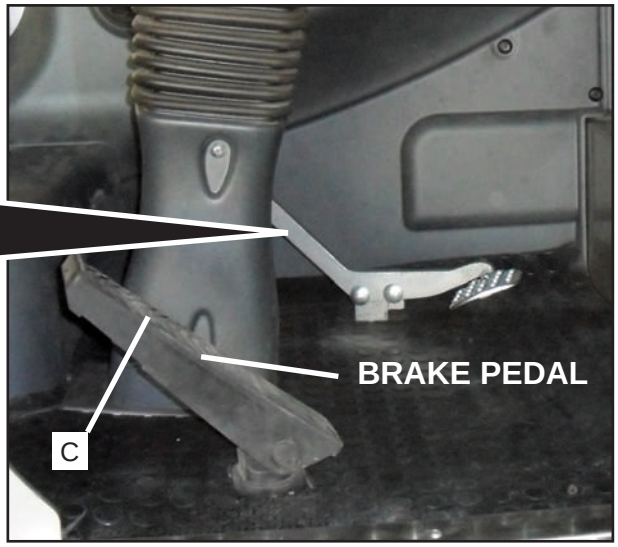


fig.3

NOTE ON TRANSMISSION FOR HS VERSION:
The DANA / OMSI axle has a Limited Slip Differential that can be switched on manually by button **(see Sect. DESCRIPTION OF FUNCTIONS OF STEERING COLUMN BUTTONS).**
If a wheel slides or is lifted off the ground, its resistant torque is practically nothing. In this case, press the button to activate the “differential lock” to restore the correct conditions for traction of the machine.

Sect. 5.19 OPERATING MODE (ONLY HS VERSION MACHINES)

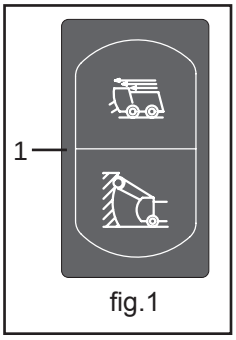


fig.1

IMPORTANT: select road mode or work mode (using the relevant button 1 Fig.1) before starting to move the wagon.

ROAD MODE:

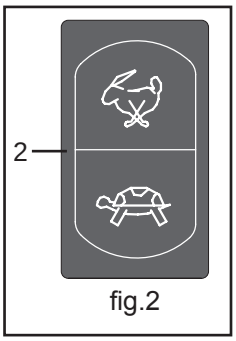


fig.2

To move along with the machine, release the parking brake and work slowly on the pedal (press the front to move forward, press the back to reverse); release the pedal in its central position to stop. An increase in pressure on the pedal will increase the transfer speed and also the engine revs. During this mode, it is possible to select slow or fast speed using the relevant button **(hare/ tortoise** 2 Fig.2**).**

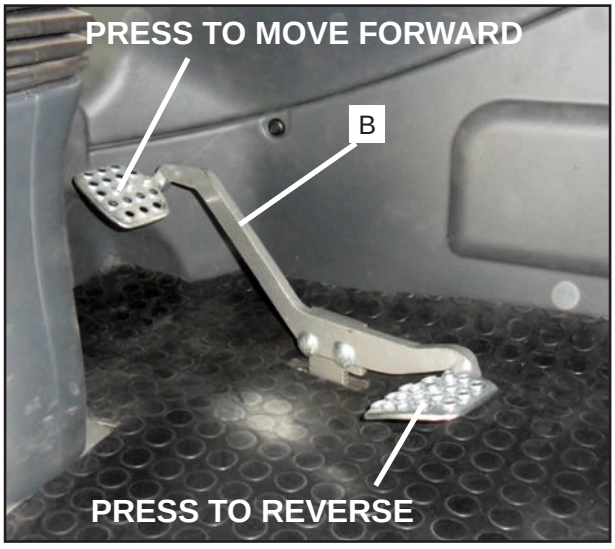


fig.3

WORK MODE:

When the forward/reverse pedal is pressed B Fig.3, only the transfer speed is changed whereas the engine revs can be adjusted separately using the lever accelerator (3 Fig.4**)**.
In work mode, the transfer speed will be lower than in road mode, but in any case, the slow/fast speed can be selected using the **(hare/tortoise** button 2 Fig.2**)**.

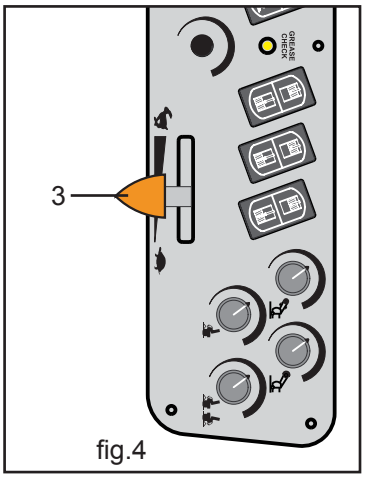
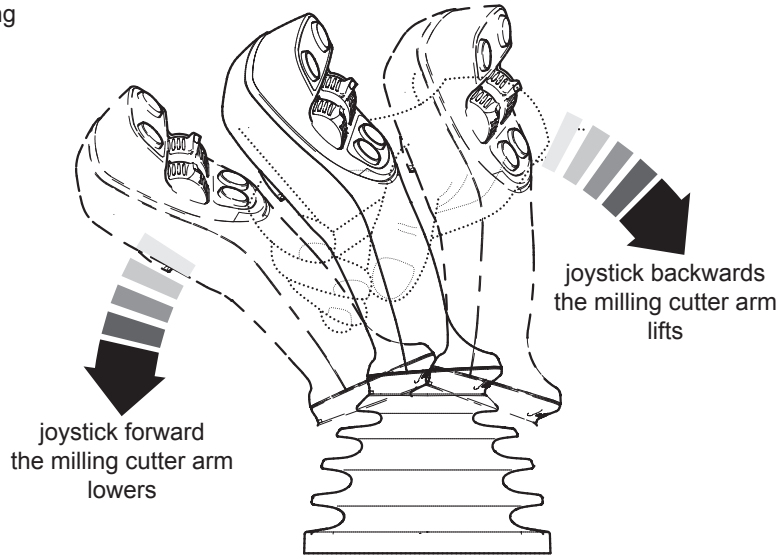
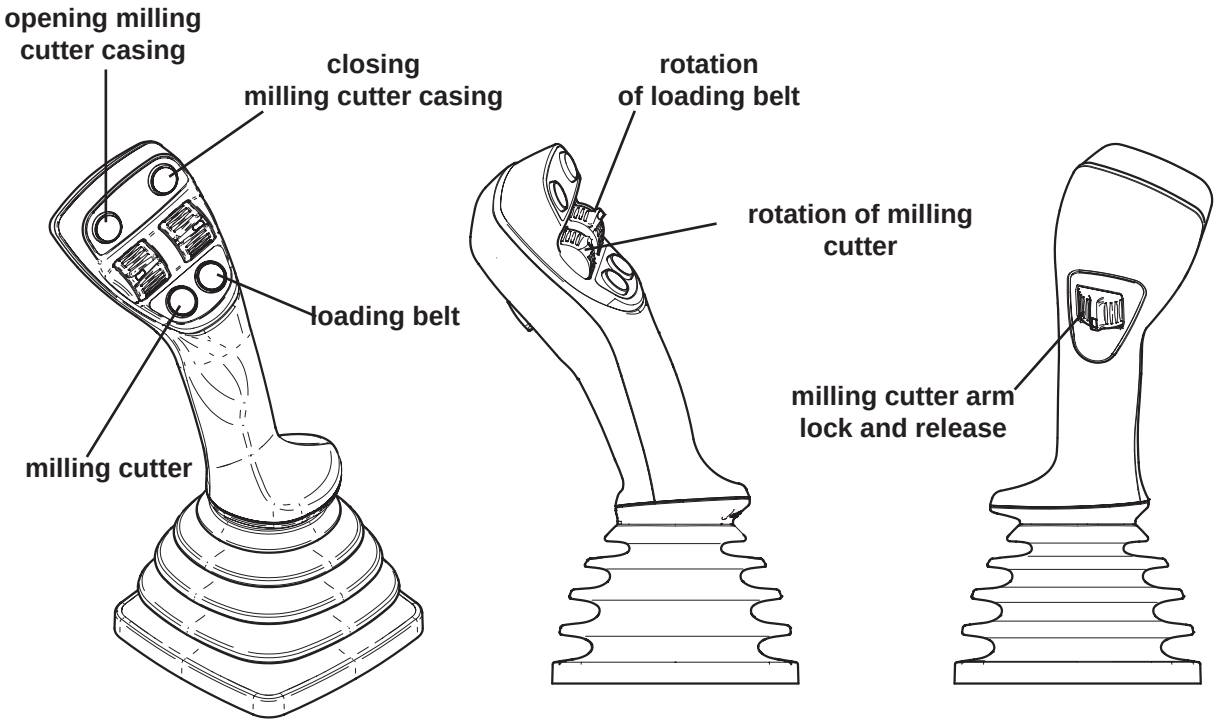


fig.4

Sect. 5.20 STANDARD JOYSTICK CONTROL FUNCTIONS (LOGIC 1)

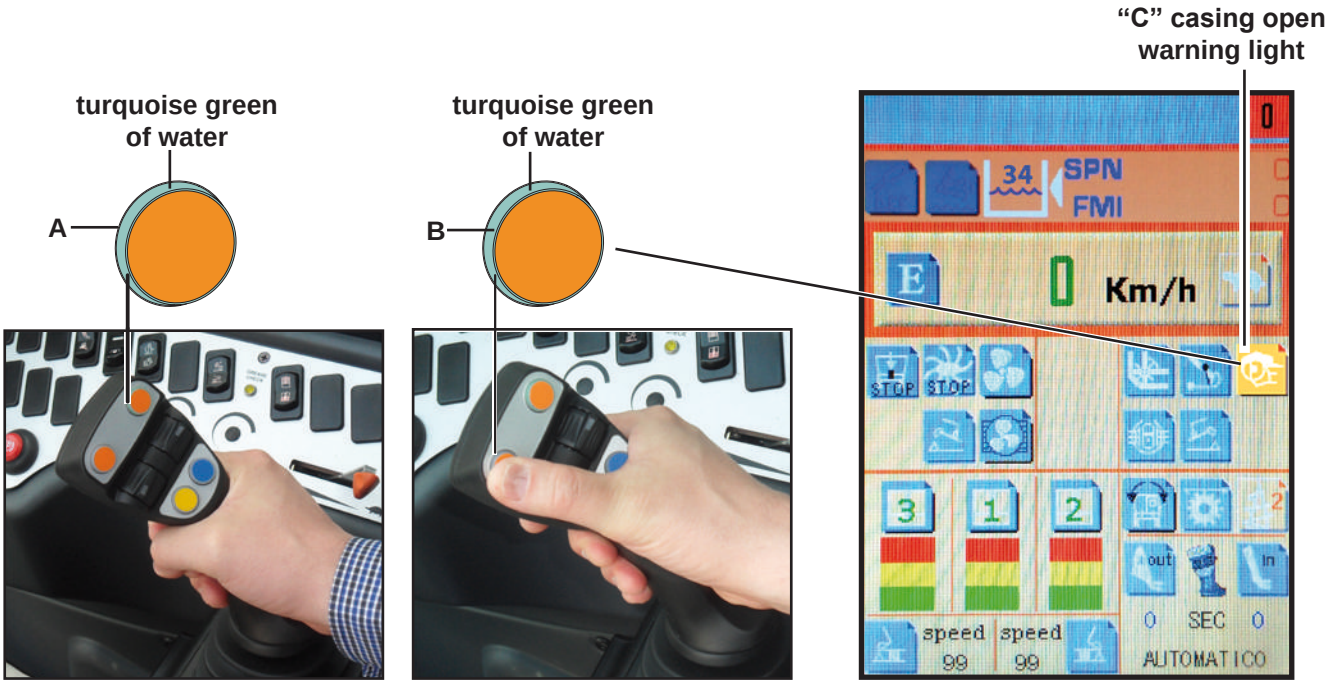
The joystick device controls all the functions of the milling cutter arm as described in the following drawings:
- raising and lowering the milling cutter arm
- opening of milling cutter casing
- closing of milling cutter casing
- loading belt
- rotation of loading belt
- loading milling cutter
- rotation of milling cutter
- milling cutter arm lock
- milling cutter arm release





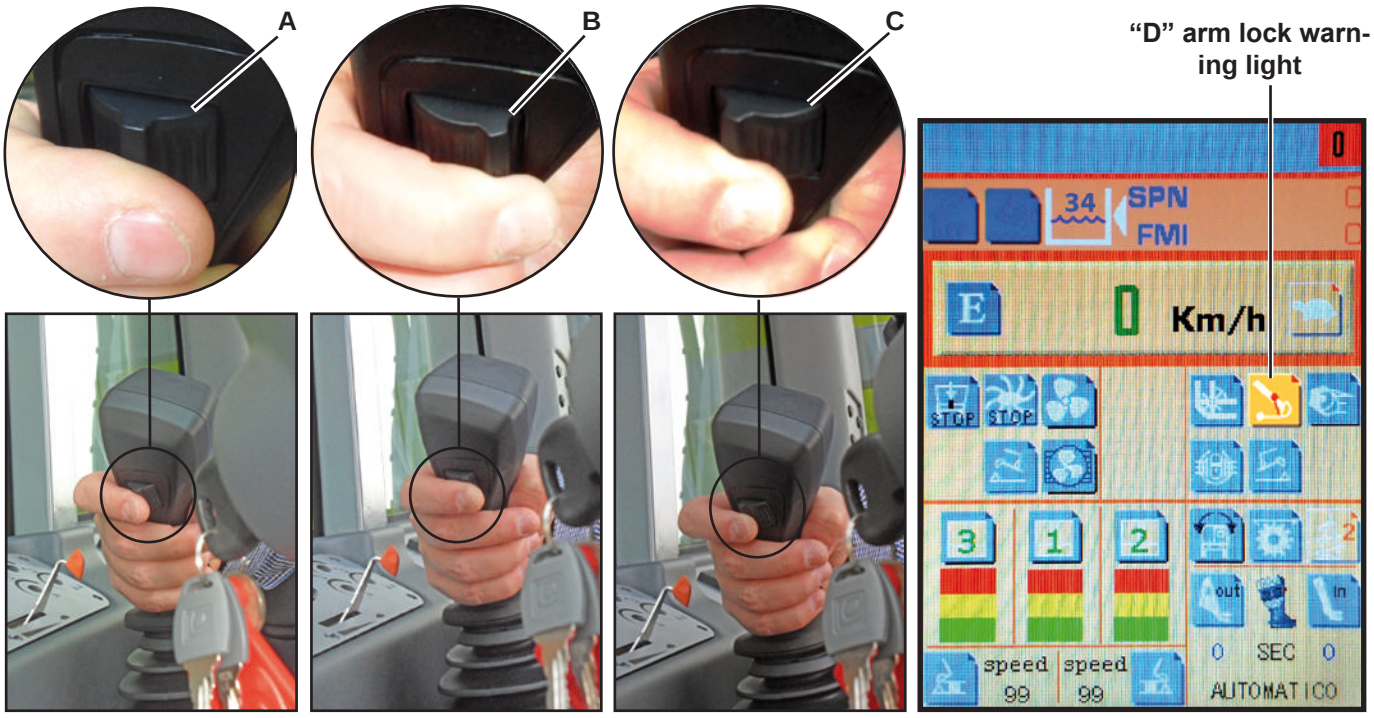
Sect. 5.20.1 OPENING AND CLOSING OF MILLING CUTTER CASING (LOGIC 1)

With the machine running, when gripping the joystick (with the **capacitor** or the **man present**) button, the crown of button “A” lights up (turquoise green)(flashing red with bypass connected), closing of milling cutter casing.
To open the casing, press button “B”; after it has been pressed, its ring lights up (turquoise green) (flashing red with bypass on) and the casing opens; on the display of functions, warning light “C” also comes on: orange means casing open, grey means casing closed.
To close, press button “A” again (the ring lights up).
(WARNING!!! In an emergency, on immediately letting go of the joystick, the casing closes automatically.
If the SAFETY DEVICE BYPASS selector is active, the milling cutter casing can be kept open even after letting go of the joystick and the ring of the buttons lights up with flashing red light.)



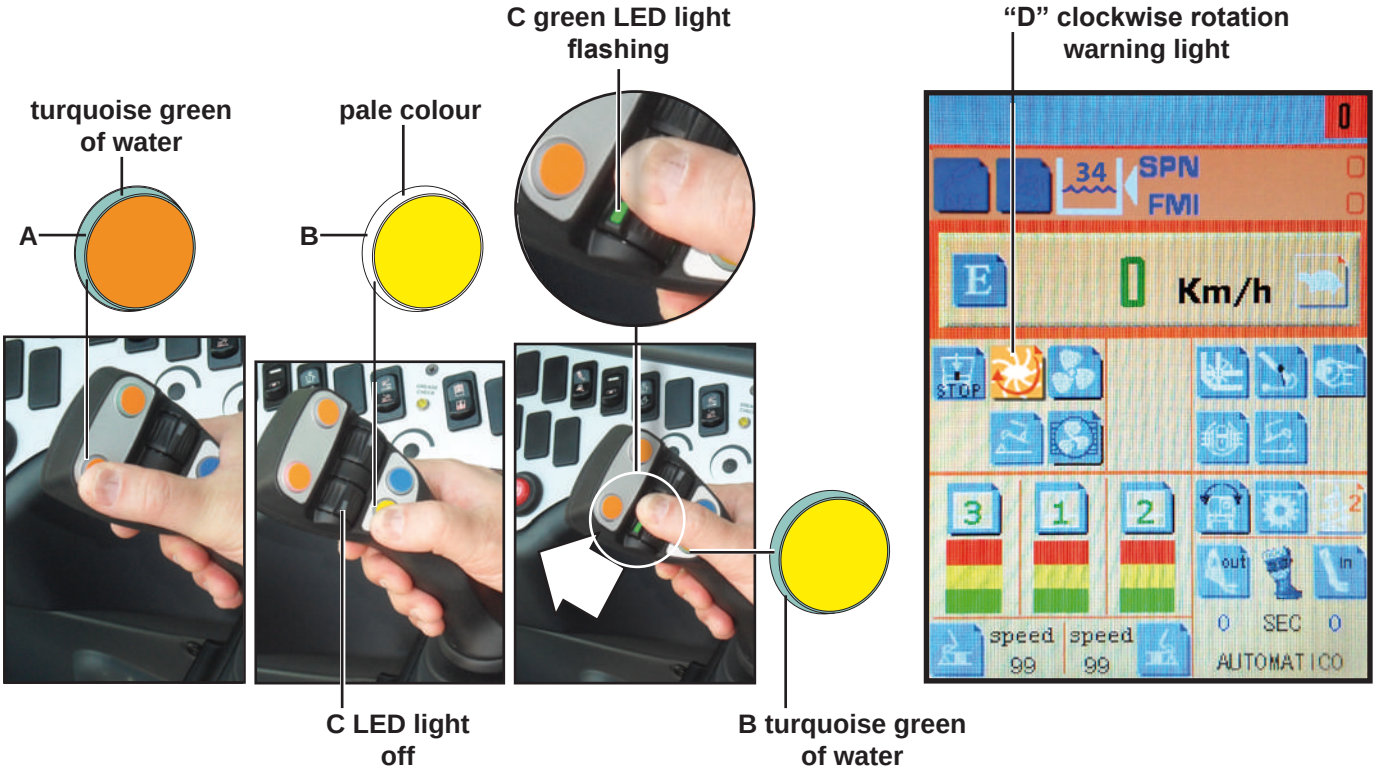
Sect. 5.20.2 OPENING AND CLOSING OF ARM LOCK (LOGIC 1)

When the rear slide of the joystick “A” is moved to the left “B”, the milling cutter arm is released (it is possible to raise and lower the arm for cutting); warning light “D” also comes on.
When the slide is moved to the right “C”, the milling cutter arm is locked (arm fully lowered); warning light “D” also comes on. This operation should always be done when moving from one place to another on the road and on the farm (for safety when the machine is moved).



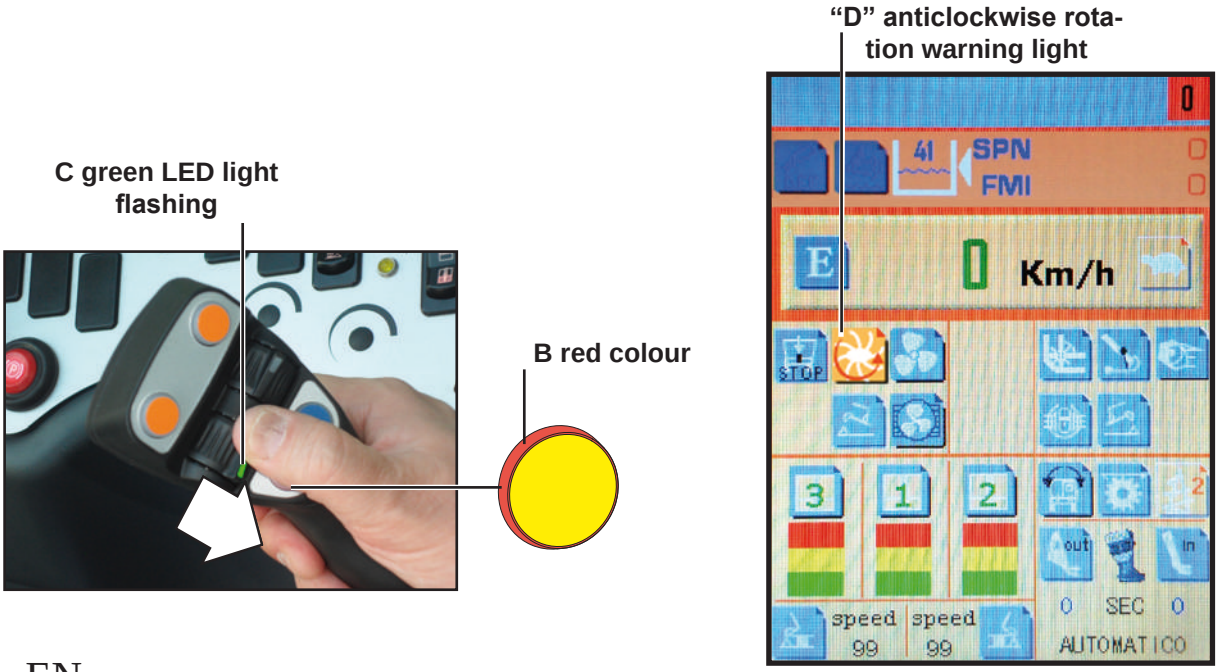
Sect. 5.20.3 USE OF MILLING CUTTER (LOGIC 1)

Open the milling cutter casing as described in the previous section using button “A”.
Press the milling cutter enabling button “B”; the pale coloured ring lights up. When slide “C” (the green LED flashes) is moved forwards (towards the windscreen), clockwise rotation of the milling cutter is activated (cabin door side can also be seen on warning light “D”) and the ring of button “B” lights up green.
During cutting, you can take your thumb off the “slide” control “C” because the slide stays in position.
The joystick has the “DEAD MAN” safety device; if you let go of it, the milling cutter stops.



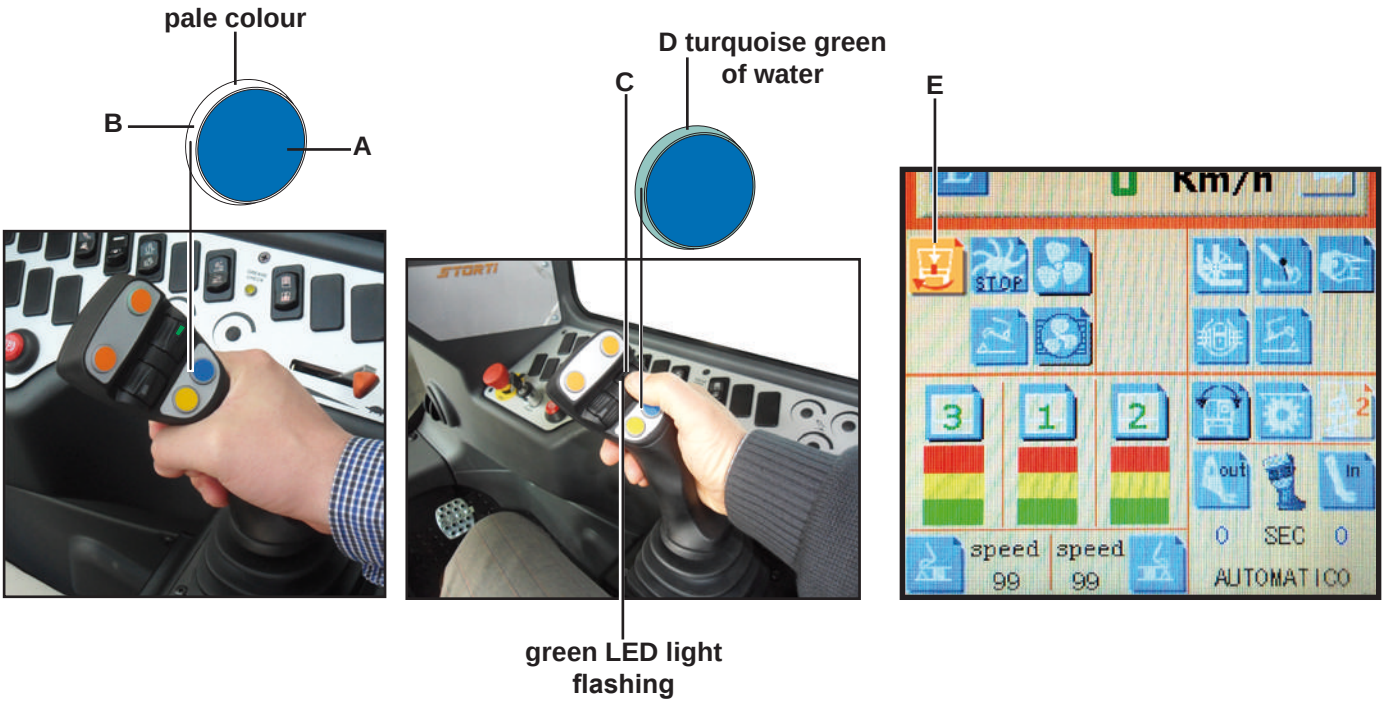
Sect. 5.20.4 REVERSE ROTATION OF MILLING CUTTER (LOGIC 1)

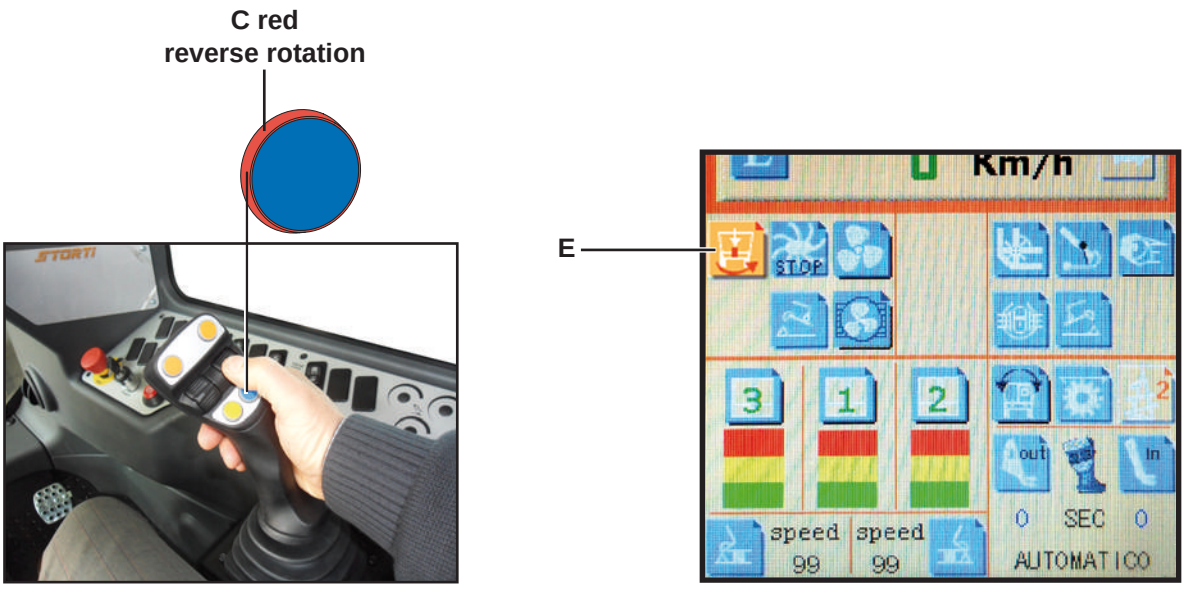
If it is necessary to reverse the rotation of the milling cutter (due to a jam, for maintenance, etc.) to make it rotate anticlockwise, pull the slide “C” towards the seat; the milling cutter stops automatically and then starts again after 2/3 seconds with its rotation reversed (can also be seen on warning light “D”) (the ring of button “B” lights up red) (the green LED of the slide flashes).
Even during reverse rotation, you can take your thumb off the “slide” control “C” because the slide stays in position.



Sect. 5.20.5 USE OF LOADING BELT (LOGIC 1)

Press the loading belt enabling button “A”; the pale coloured ring lights up “B”. When slide “C” is moved forwards (towards the windscreen), rotation of the loading belt is activated and the ring of the green button “D” lights up (can also be seen on warning light E on the display).
If it is necessary to reverse the rotation of the belt (to release it), move the slide in the opposite direction (towards the operator); the ring of button “C” lights up red and icon “E” indicates reverse rotation.
During the loading operation, you can take your thumb off the “slide” control “C” because the slide stays in position.
The joystick has the “DEAD MAN” safety device; if you let go of it, the belt stops.

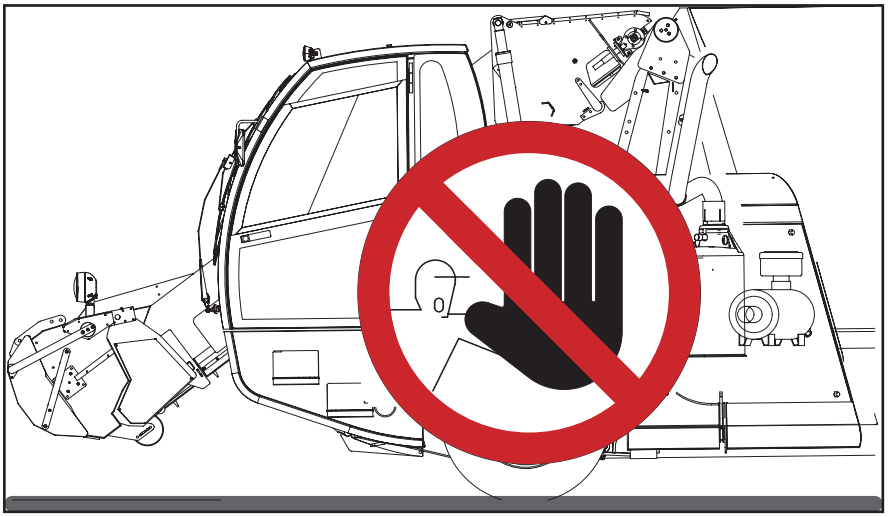




Sect. 5.21 USE OF "SAFETY BYPASS" SELECTOR SWITCH AT AFTER-SALES SERVICE CENTRES

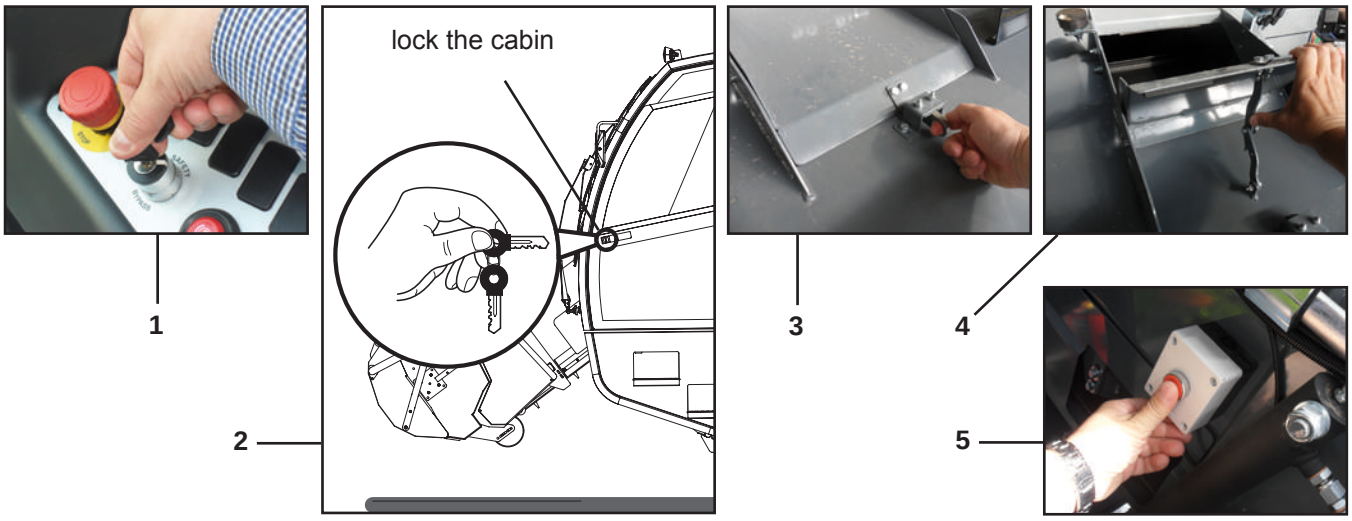
The machine has safety systems that begin working automatically to make the wagon risk and accident proof and protect the operator against accidents due to distraction or behaviour that does not comply with safety regulations.
If it is necessary to carry out maintenance work with the machine running, you should contact a Storti after-sales service centre or authorized car-repair garage where skilled persons who are aware of the risks connected with a running vehicle can temporarily disable the guards using the **SAFETY BYPASS** key selector.

WARNING!!! When the key is turned to the right, the machine no longer has active safety devices.
During maintenance work with the key inserted in the bypass selector, the cabin must be closed **(keys in pocket)** and no one should walk near the vehicle.
(The use of the bypass selector is recorded in the data memory of the control unit of the machine.)
When the work is finished, remove the key that must be kept well away from the vehicle in a safe place.



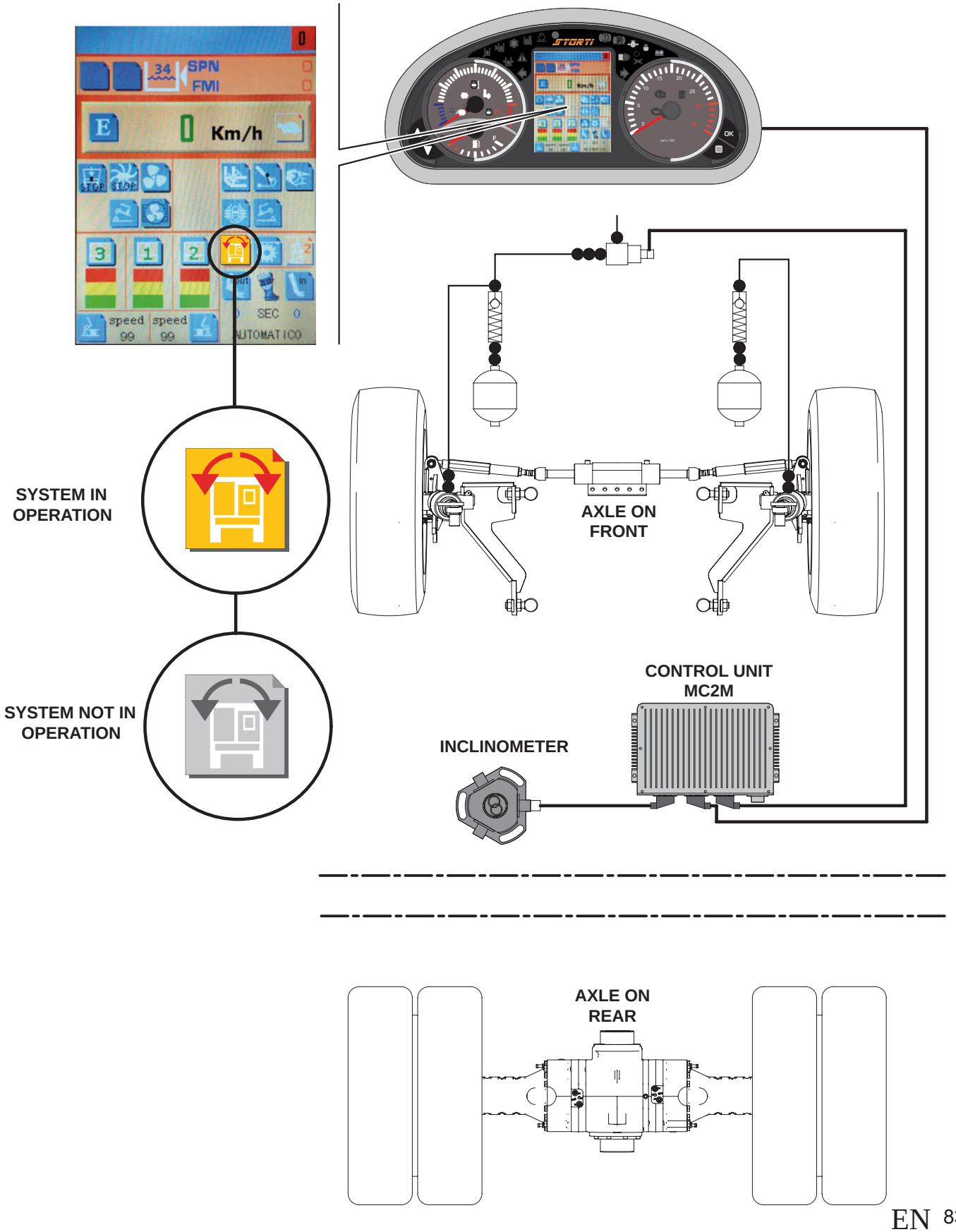
Sect. 5.21.1 EXCEPTION TO USING THE SAFETY BYPASS BUTTON

The first situation of being allowed to use the **"SAFETY BYPASS"** selector switch for the operator is when meal is loaded through the milling cutter arm; in this case, insert and turn the key (1) to bypass the dead man safety device present on the seat. Then the operator **must** lock the cabin (2), (pocket the keys), go to the meal loading door on the milling cutter arm, open the door (3), tip in the meal (4) and press the "temporary" button situated on the milling cutter arm to activate the loading belt (5).
WARNING!!! if the "Safety bypass" is not switched on, the button on the milling cutter arm will not work.
The second exception for using the **"SAFETY BYPASS"** selector switch is to keep the milling cutter casing open even when the joystick is released, for example for maintenance operations on the milling cutter drum, regarding replacement of milling cutter blades with relevant fixing screws and nuts, sharpening, cleaning the drum, unjamming, checking for oil leaks, etc.)
To carry out these operations, always use the required PPE.



sect. 5.22 STANDARD HS SUSPENSION SYSTEM

The system works so as to prevent excessive side tilt that would compromise the stability of the machine.
The inclinometer measures the roll angle of the self-propelled machine. This parameter, together with the speed, determines the control of the stop valve situated on the hydraulic circuit of the front suspension.
The final effect is improved stability on bends and over uneven ground.
Activation of the control is displayed by the relevant warning lights on the dashboard (orange if on, grey if off) and takes place at a speed exceeding ~15km/h and roll angles >3°



sect. 5.23 HYDAC SUSPENSION OPTION

The following section is to inform the user about the operation of the HYDAC electronically controlled suspension.
WARNING!!! It is possible to interact with the suspension control system using the buttons situated on the right instrument panel only in the cases described in the following notes.
All other actions not included in the described cases can cause safety risks and forfeiture of the agreed warranty.
The system works by managing three operating modes:

1 MANUAL OPERATING MODE

2 AUTOMATIC OPERATING MODE

3 SYSTEM CALIBRATION OPERATING MODE

Sect. 5.23.1 MANUAL OPERATING MODE

The manual operating mode is activated when, during starting of the machine, the position of one or more jacks of the suspension is outside the fixed tolerance range, or by pressing the UP/DOWN arrow button when the speed of the machine is lower than the set minimum speed limit.
In this operating mode, the warning light on the dashboard is “on steady”; the height of the suspension can be adjusted manually by pressing the UP/DOWN button.
If, during the manual adjustment operations, the maximum travel positions are reached, both upwards and downwards, the control unit automatically disables the control to prevent mechanical stress on the suspension cylinders.

To summarize: manual operating mode is activated when, during starting, the suspension is outside the adjustment range, or by pressing the UP/DOWN button when the self-propelled machine is travelling at a lower speed than the minimum set speed.

The manual operating mode is deactivated when the set minimum speed threshold is exceeded or the automatic button is pressed.

Sect. 5.23.2 AUTOMATIC OPERATING MODE

When this operating mode is active, the suspension is adjusted automatically by the control unit.
If, during starting of the machine, the start up conditions are correct, the warning light remains off and the system is managed in automatic mode.
If, after starting, the system is not within the correct operating tolerance, the warning light comes on steady and manual control will be selected.
It is also possible to change to automatic mode by pressing the automatic button below the minimum speed threshold set (~3km/h) by the manual operating mode.
If the control unit establishes malfunctioning, it indicates this situation with error codes repeated by the warning light.
Example: if the ideal levelling conditions arenot reached after 40 seconds, the control unit switches the system off for 20 seconds, after which the procedure is repeated.
If, after three attempts, the procedure has not been completed successfully, the system changes to error mode.

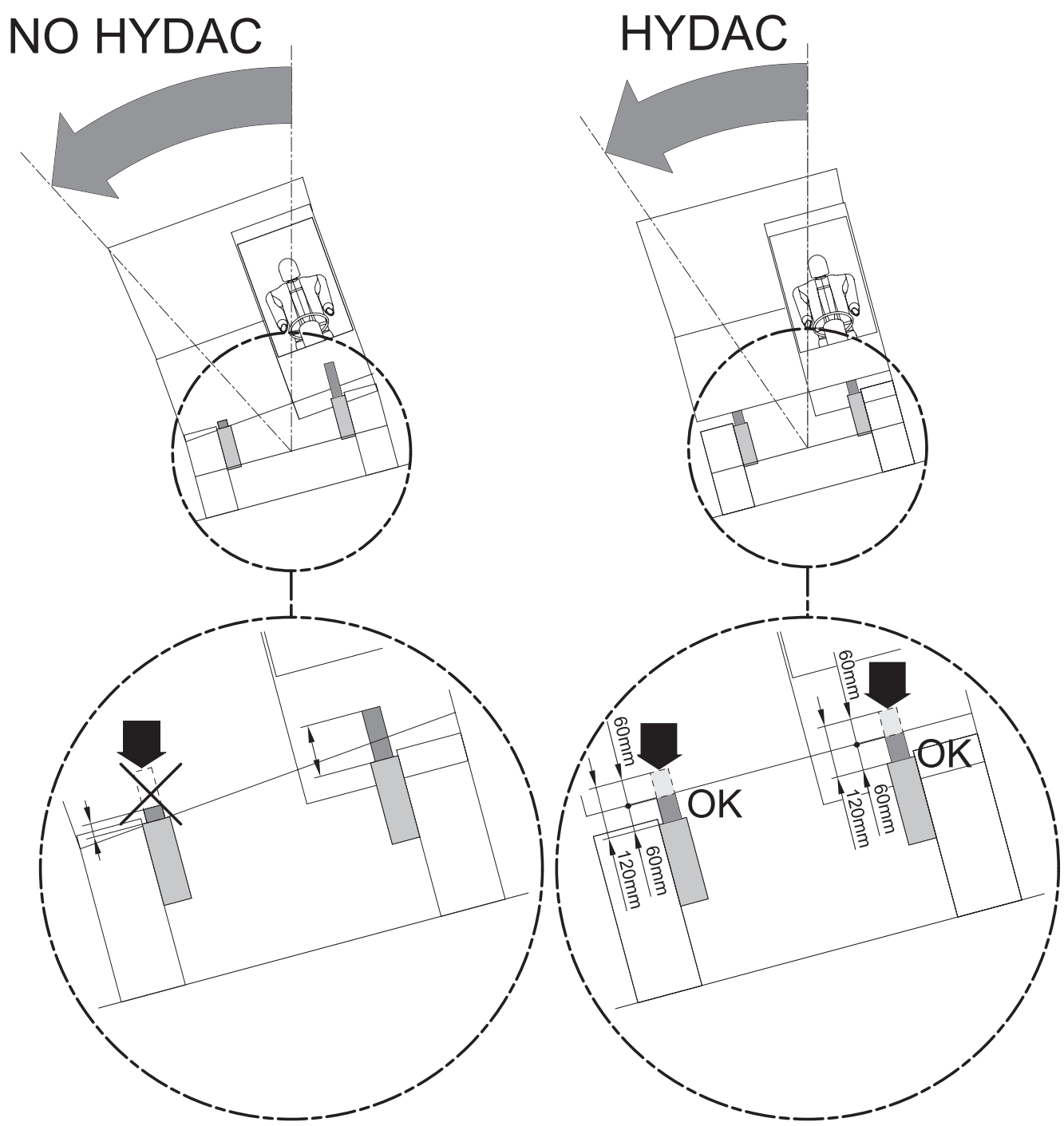
To summarize: the automatic operating mode is activated when the suspension is within the nominal operating range. When the minimum speed value set by the manual operating mode is exceeded (~3km/h), or by pressing the automatic button.
It is deactivated when the UP/DOWN button is pressed below the set minimum speed.

Sect. 5.23.3 SYSTEM CALIBRATION OPERATING MODE

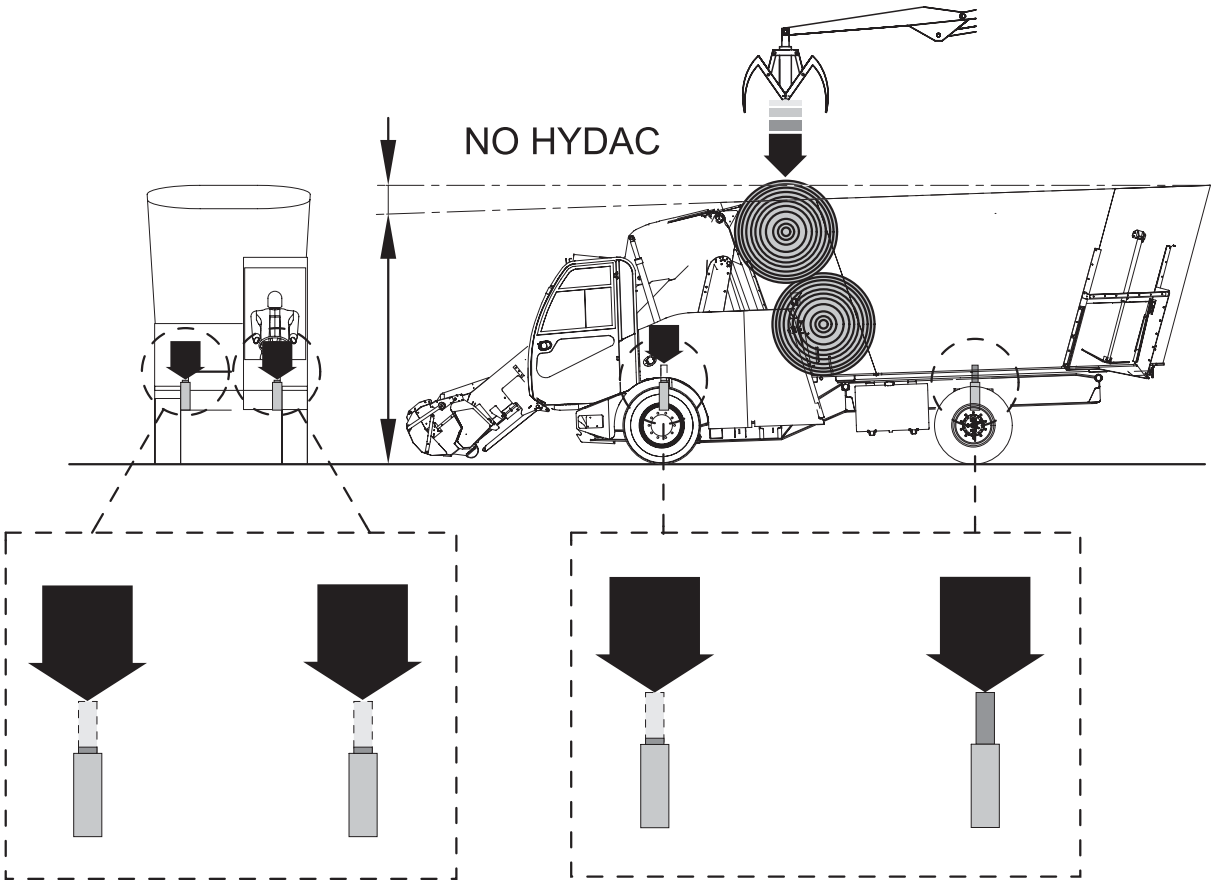
WARNING!!! The calibration should be carried out manually only with the vehicle parked on a level surface and the parking brake active.
The calibration is used to store the maximum and minimum travel points of the suspension cylinder in the control unit. If these values are not stored, the system will always remain in calibration condition, so making the vehicle unusable.
To calibrate, press and hold down the automatic button for more than 10 seconds until the warning light starts flashing with a frequency of 1Hz, then press and hold down the UP arrow button for as long as necessary to reach the maximum upward travel. The position is stored when the button is released.
Repeat this operation with the DOWN arrow button to store the minimum downward travel. Release the button to store the position.
If necessary, the operation can be repeated several times to overwrite the previously stored data.
If the stored data are inconsistent with the expected data, they will not be accepted and will therefore not be stored.
Once calibration has been completed, the warning light stops flashing and the system becomes operational and ready for use.

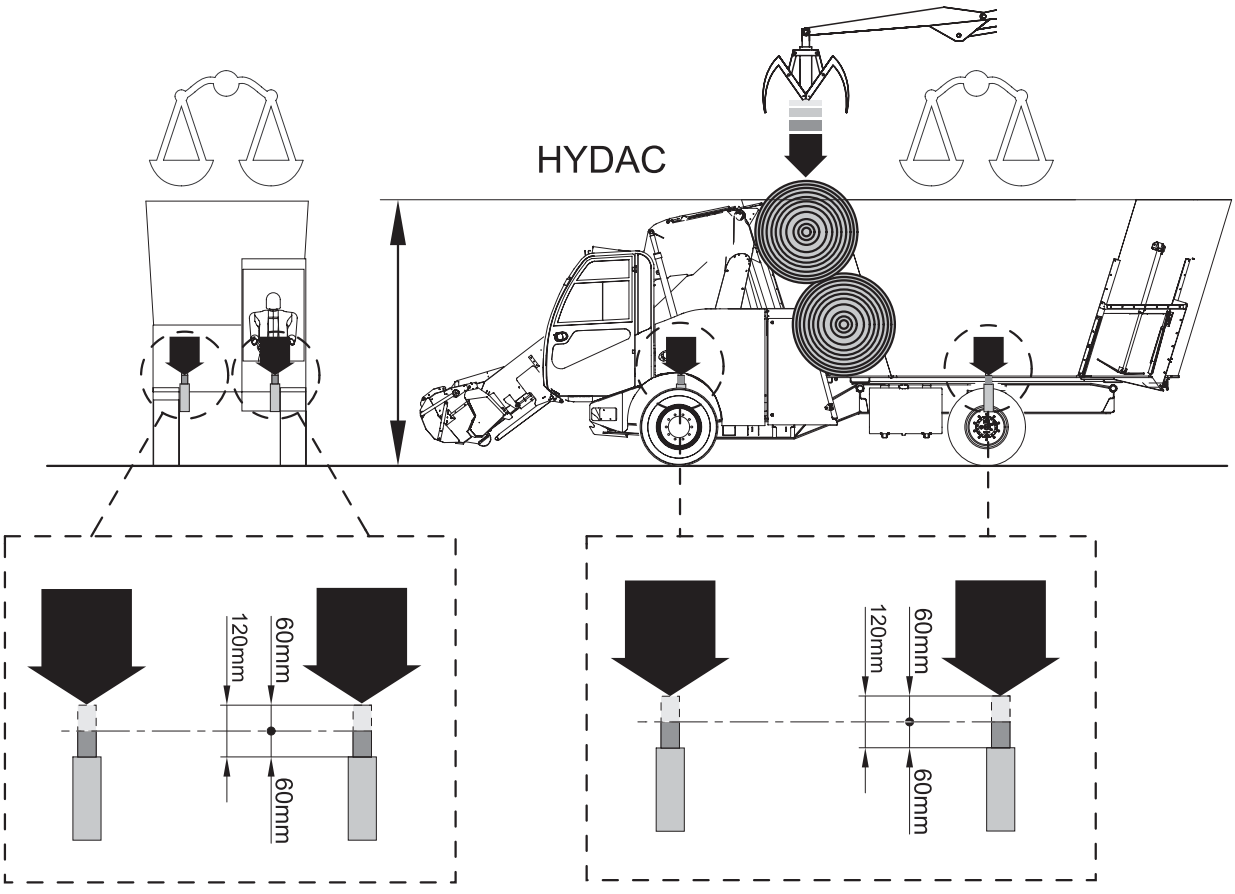
SOME FIGURATIVE EXAMPLES OF OPERATING MODES OF THE SYSTEM ARE GIVEN BELOW:

STABILITY

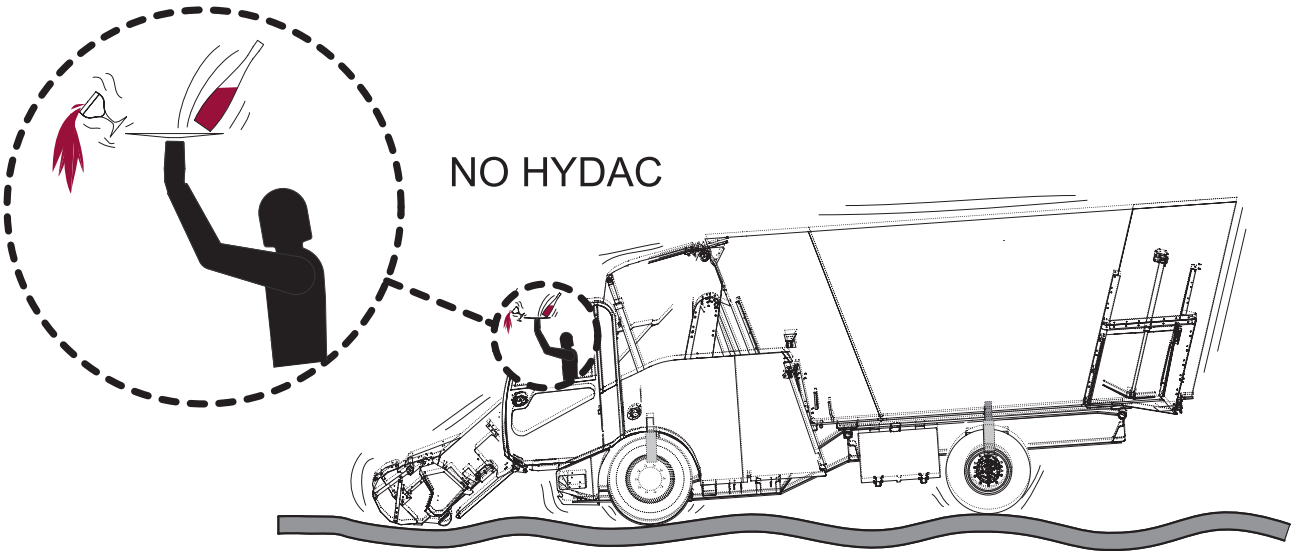


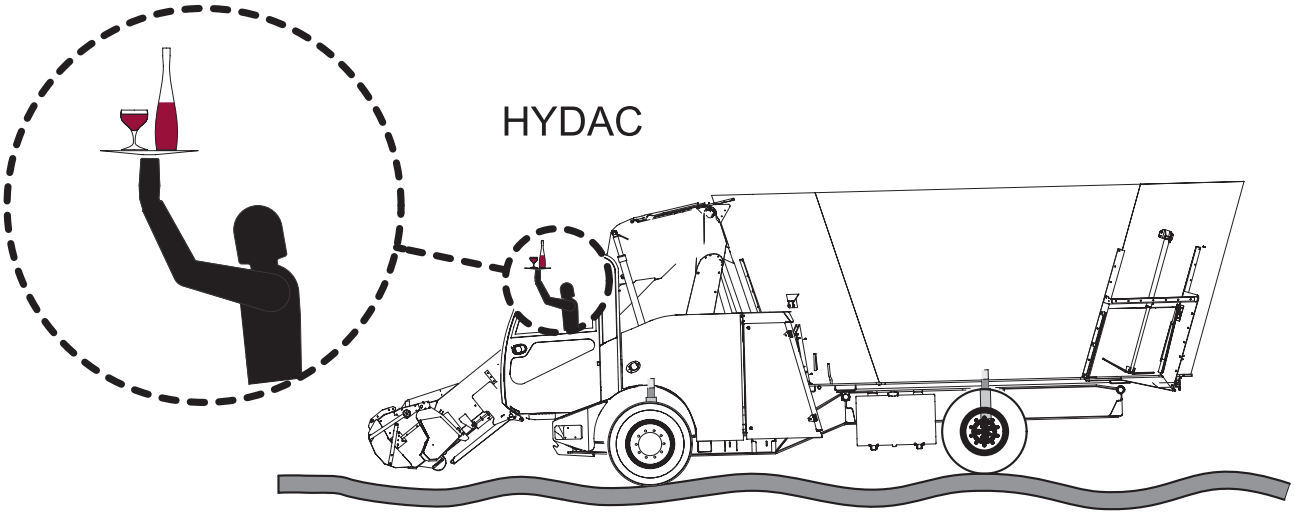
BALANCING AND STABILIZATION OF THE LOAD





DRIVING COMFORT

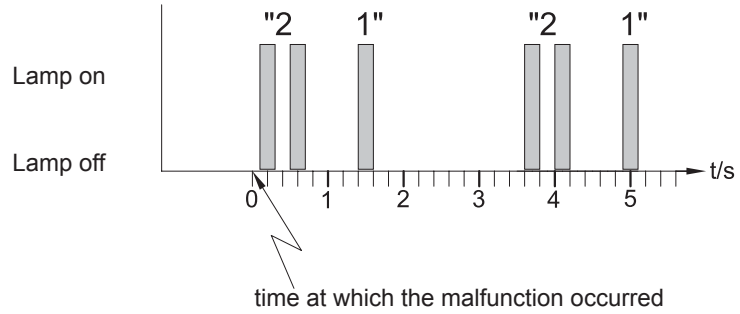




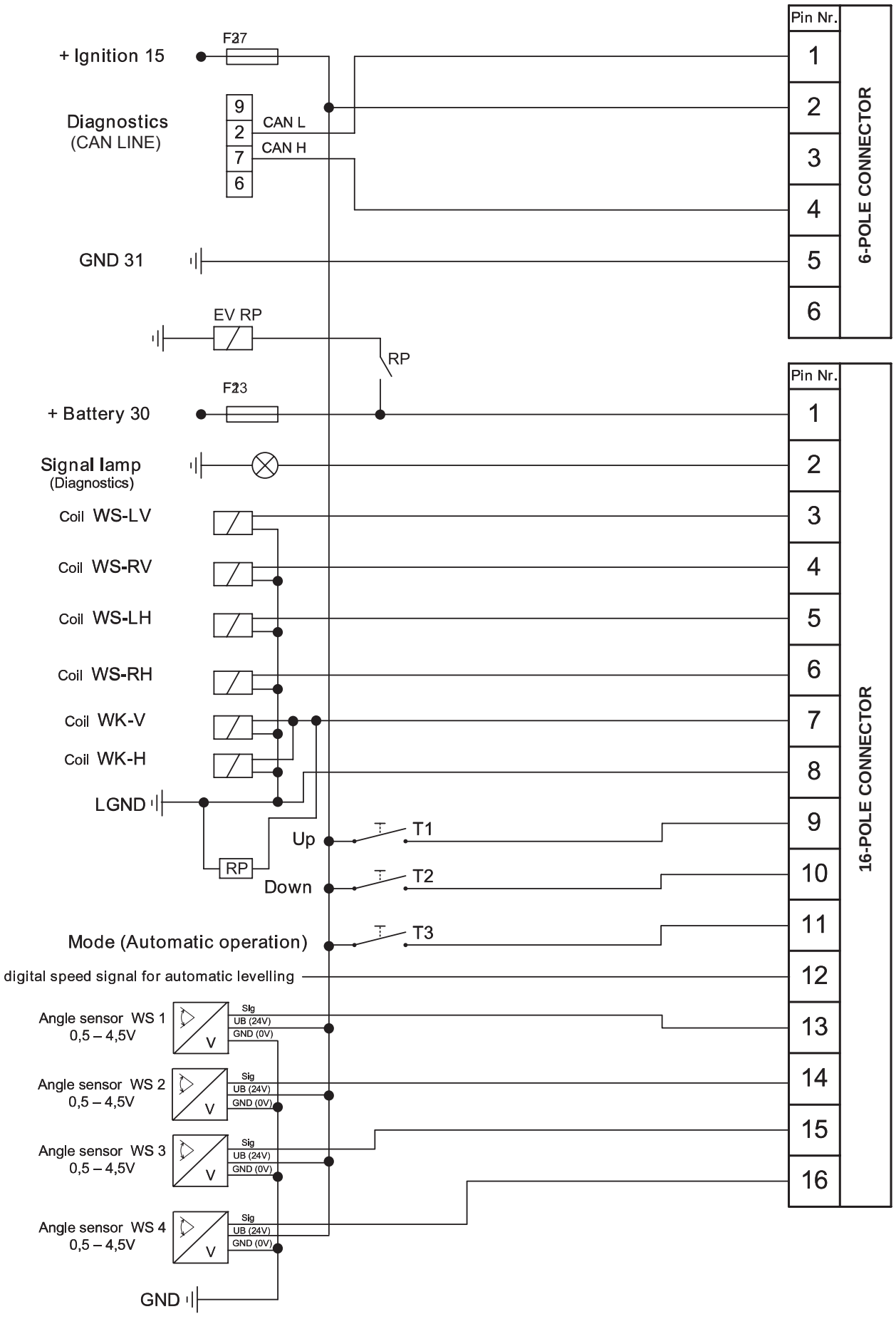
sect. 5.23.4 TABLE OF CONTROL UNIT ERRORS

Monitored components	Possible cause of the alarm / error	Code of lamp for Flash signal
	Control in AUTOMATIC mode, no error; all ok;	"OFF"
	Control in manual mode;	"ON" (The lamp is on steady)
	Control in calibration mode;	11 (slow flashing 1Hz)
Angle sensor **WS 1**	Cable is broken or plug is not connected Output signal of angle sensor not consistent	21
Angle sensor **WS 2**	Cable is broken or plug is not connected Output signal of angle sensor not consistent	22
Angle sensor **WS 3**	Cable is broken or plug is not connected Output signal of angle sensor not consistent	31
Angle sensor **WS 4**	Cable is broken or plug is not connected Output signal of angle sensor not consistent	32
Control of electrovalve **WS-LV**	Cable broken or connector not correctly inserted on the solenoid valve or overloaded. Check the LGND signal.	44
Control of electrovalve **WS-RV**	Cable broken or connector not correctly inserted on the solenoid valve or overloaded. Check the LGND signal.	43
Control of electrovalve **WK-V/ WK-H**	Cable broken or connector not correctly inserted on the solenoid valve or overloaded. Check the LGND signal.	33
Control of electrovalve **WS-LH**	Cable broken or connector not correctly inserted on the solenoid valve or overloaded. Check the LGND signal.	42
Control of electrovalve **WS-RH**	Cable broken or connector not correctly inserted on the solenoid valve or overloaded. Check the LGND signal.	41
Supply voltage	Supply voltage with inconsistent voltage.	63
EEPROM	An error has occurred during storage of the parameters.	64
Out of time	Maximum time elapsed near the adjusted position	65

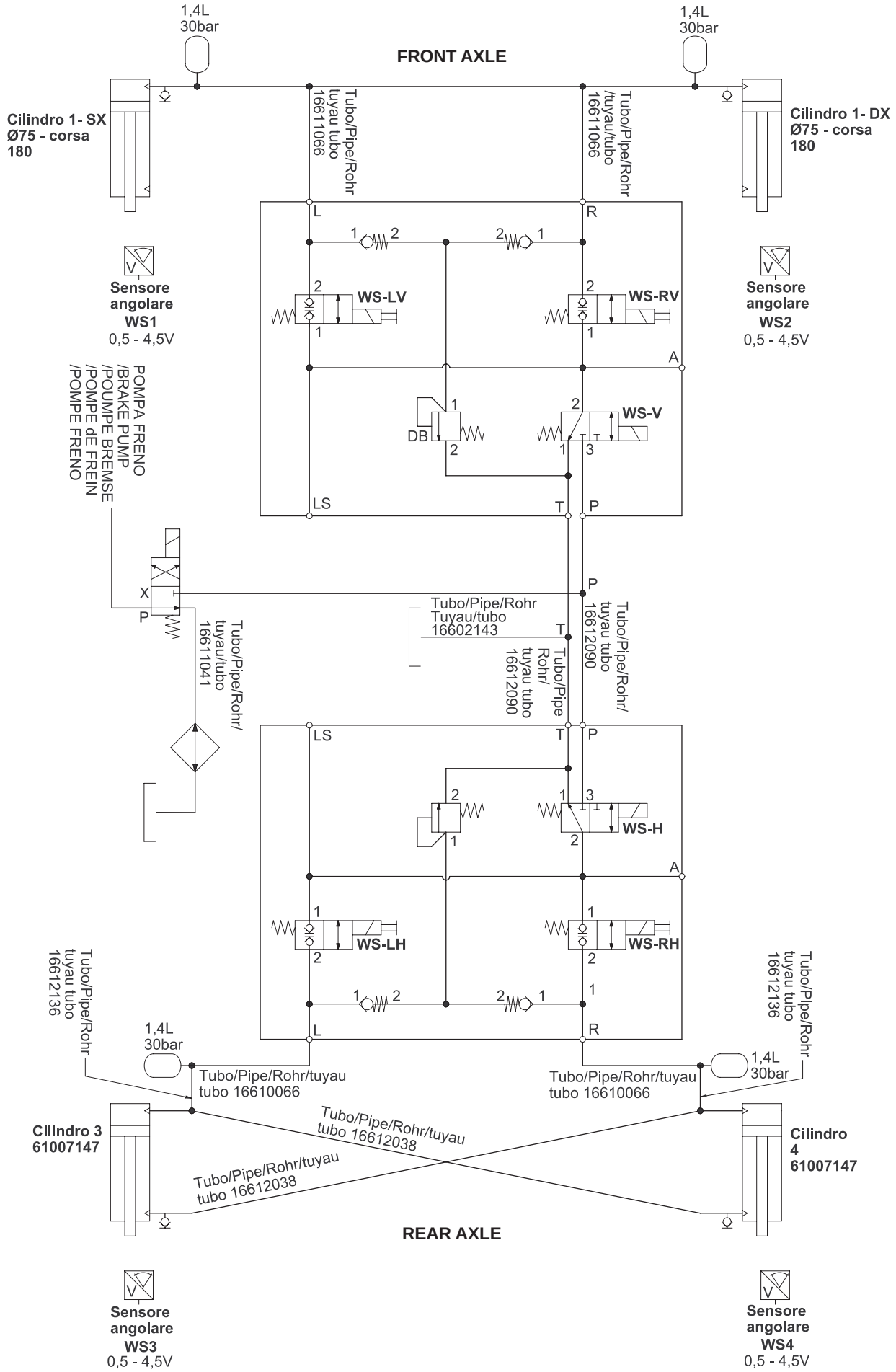
Example of an error code "21" for an angular sensor with inconsistent signal:



sect. 5.23.5 HYDAC WIRING DIAGRAM



sect. 5.23.6 HYDAC HYDRAULIC DIAGRAM



Sect. 5.24 TABLE OF BOSCH ERRORS

CODE ERROR		POSSIBLE CAUSES	EFFECTS	SOLUTIONS
1	Max Age	The RC control unit has been working for more than 10000 hours	Detection of error - the machine proceeds at low speed	Replace with new ECU control unit
2	Max Work Hours	The RC control unit has been working non-stop for more than 24 hours	Detection of error - the machine proceeds at low speed	Reset the ECU control unit
3	HW Temperature	The temperature of the Hardware exceeds the safety limit	Detection of error - the machine proceeds at low speed for 5 minutes and then stops	Reset the ECU control unit to reduce the hardware temperature
4	Battery Voltage	Power supply outside normal parameters	Detection of error - the machine stops	Reset the control unit check the control unit wiring
5	Power PWM	PWM outputs deactivated after detection of error or by safety switch	Detection of error - the machine stops	Reset the control unit to clear the errors / check emergency mushroom push-button status
6	Power Analog In	Damaged control unit - outputs disconnected for safety reasons	Detection of error - abnormal operation of the ECU control unit	Reset the control unit / check the reasons for the error
7	HW Status	Abnormal operation of the control unit	Detection of error - transfer stops, or transfer at low speed with Limp home control	Reset the control unit / check the reasons for the error
8	Start Lock	Starting conditions inconsistent	Detection of error - malfunctioning of controls	Check reasons for error code
9	Drive Poti	Worn cables, damaged wiring or potentiometer not working	Detection of error - the machine stops	Check the wiring, the functions of the potentiometer, the IVS switch or the functions of the pedal
11	Brake Poti	Worn cables, damaged wiring or potentiometer not working	Detection of error - Low speed	Check the wiring, and functions of the potentiometer
12	Gas Signal Req	Worn cables, damaged wiring or potentiometer not working	Detection of error	Check the wiring, and functions of the potentiometer
13	Speed Sensor	Worn cables, damaged wiring or sensor not working	Detection of error - Low speed - No ABS / ASR function	Check the wiring and the functionality of the sensor
14	Steer Sensor	Worn cables, damaged wiring or sensor not working	Detection of error - Low speed - No ABS / ASR function	Check the wiring and the functionality of the sensor
15	TFS Sensor	Worn cables, damaged wiring or sensor not working	Detection of error - Low speed	Check the wiring and the functionality of the sensor
16	PR2 Drive Sens	Worn cables, damaged wiring or sensor not working	Detection of error	Check the wiring and the functionality of the sensor
17	Seat Switch	Seat occupied sensor	Detection of error	Check the Switch
18	Engine CAN	Damaged WIRING / out of time message	Detection of error - Low speed	Check the wiring
19	Engine Error	Check the engine error code	Detection of error	-
21	Oil Temp	Pump limited by the control of the oil temperature	Detection of error	check the cooling functions, reduce the load
22	Water Temp	Pump limited by the control of the water temperature	Detection of error	check the cooling functions, reduce the load
23	Speed > Max	Maximum speed of the machine exceeded	Detection of error	use the mechanical brake
24	PB Logic	Error between request for parking braking and brake status	Detection of error - Vehicle stop or at low speed if LIMP HOME is active	check the wiring, the valve of the parking brake and pressure sensor, or disable the control of the parking brake
25	Drive Direct	There is no relationship between the direction of travel and the required real direction	Detection of error - Vehicle stop or low speed if LIMP HOME is active	check the wiring and the speed sensor or deactivate the direction control
26	False Start	unintentional movement of the machine	Detection of error - Vehicle stop or low speed if LIMP HOME is active	check the pump controller, or deactivate the false start control
27	Boost A4 Drive	Pump supercharging pressure, only minimum limit low	Detection of error - Vehicle stop or low speed if LIMP HOME is active	Check the wiring and the pump pressure sensors or deactivate the control of the supercharging pressure
28	Pump Coil	Pump coil malfunction or worn wiring cables	Detection of error - Vehicle stop	Check the wiring and the coil

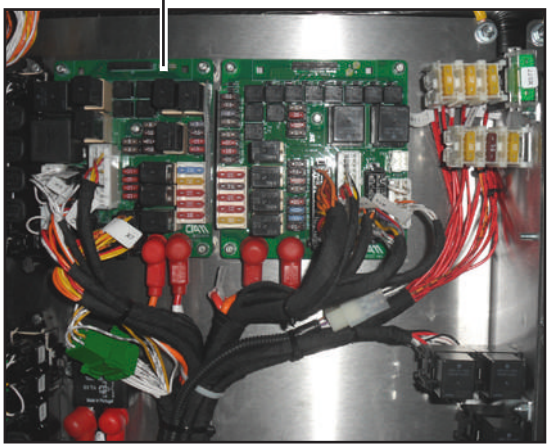
29	Motor Coil	Motor coil malfunction or worn wiring cables	Detection of error - Low speed	Check the wiring, the coils and the emergency switch
31	PB Coil	Pump coil malfunction or worn wiring cables	Detection of error - Vehicle stop	Check the wiring, the coils and the emergency switch
32	PB Sensor	Pressure sensor or wiring malfunction	Detection of error - Low speed	Check the wiring and the sensor
33	Pump Speed	Pump rotation speed is too high	Detection of error	Try to reduce motor speed using the mechanical brake
34	HMotor Shift	Wrong parameter of hydraulic motors, sensor or solenoid malfunction	Detection of error - low speed or stopping of the unit in case of damage to the Hydro-coil sensor / the motor speed is measured before or after shifting	Check the wiring, the coils and the speed sensors of the hydraulic motors
35	bad Para	Wrong parameters from Bodas Service	Detection of error - Low speed	Adjust the parameters or set the default parameters
36	bad Para Menu 2	Wrong parameters from Bodas Service	Detection of error - Low speed	Adjust the parameters or set the default parameters
37	Machine Type	Wiring connections	Detection of error - Vehicle stop if detection takes place during starting	Check the wiring or the ON / OFF Limp home switch if detection takes place during starting
38	Case Sensors	Electrical connections or damaged sensor	Detection of error	Check the wiring and the sensors
39	3B6 Stop	STOP request from 3B6	Detection of error - Forward movement stop	Activation from 3B6
41	3B6 Can	No CAN communication with 3B6 Ecu	Detection of error - Driving stop, low speed only detection of Error 3 CAN	check the wiring or the condition of the 3B6 Ecu control unit
42	3B6 Limp Home	Limp Home activation request from 3B6 Ecu control unit	Detection of error - Low speed activated	Limp Home disabling request

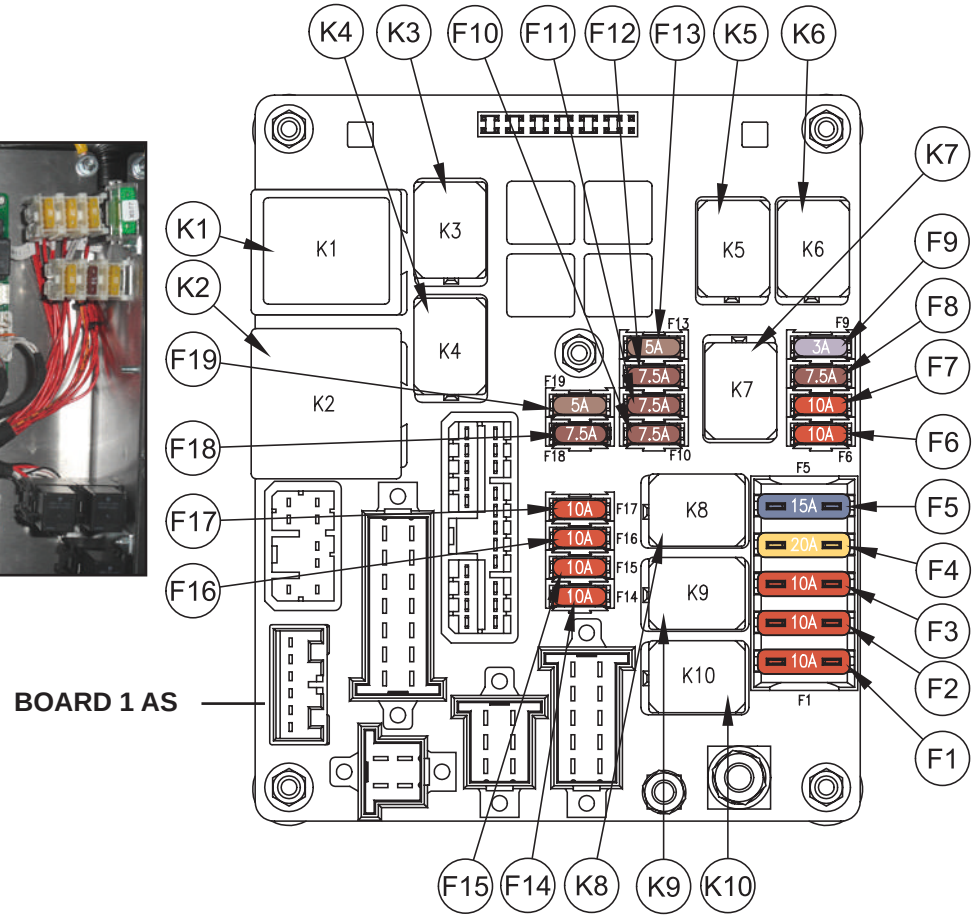
Sect. 5.25 POSITION OF FUSES AND RELAYS INSIDE CABIN ON AS/HS VERSION

To access the 3 fuse boards, pull the seat forward and remove the rear panel “A” (fig.1) by unscrewing the 4 fixing screws. Tables describing the fuse and relay function boards are shown below.

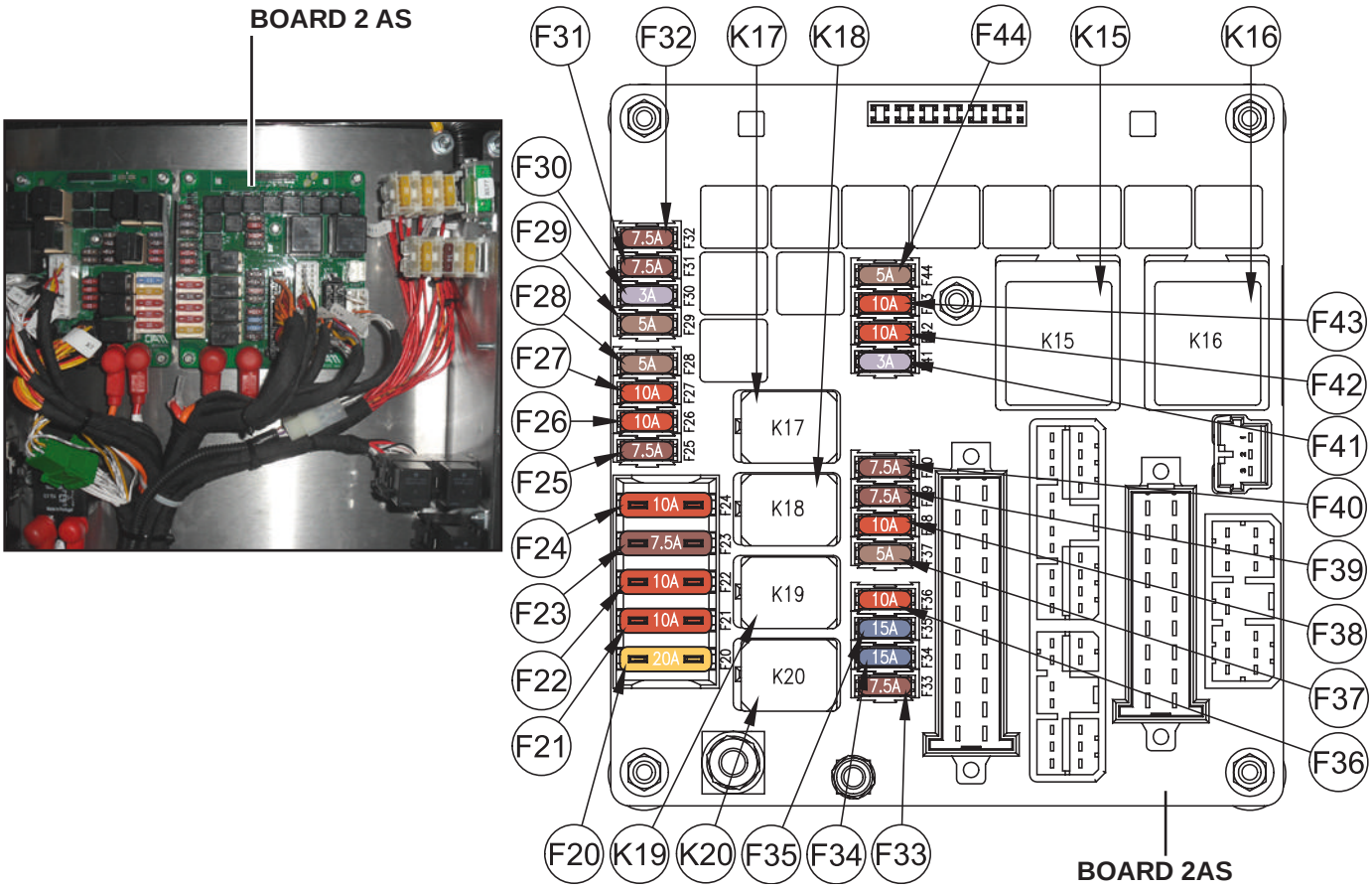
fig.1

BOARD 1 AS



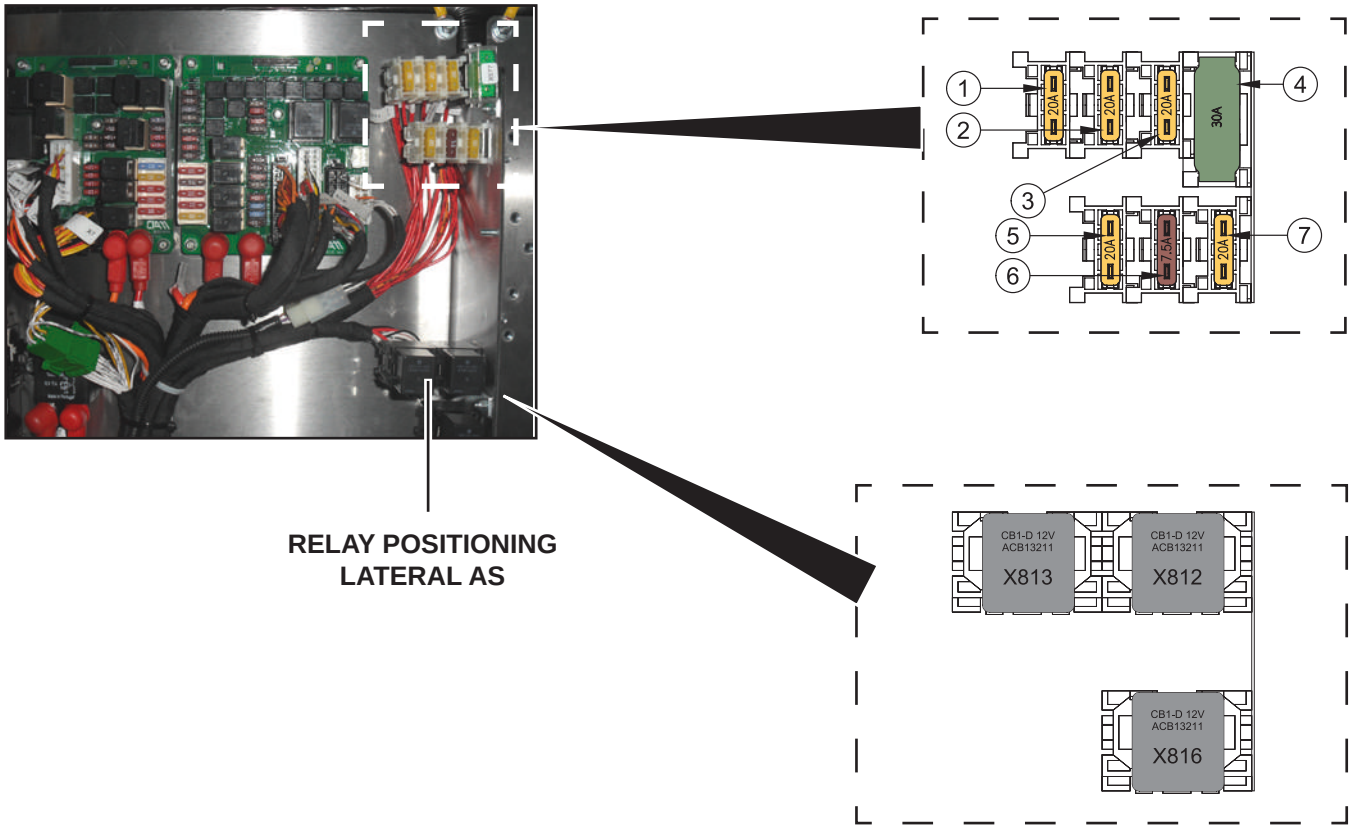


POSITION	DESCRIPTION OF FUNCTION OF FUSES ON BOARD 1 AS	AMPERES
F1	WORK LIGHTS ABOVE CAB RIGHT AND LEFT LATERALS	10A
F2	+VP LE70	10A
F3	WORK LIGHTS ABOVE CAB CENTRALS	10A
F4	-	20A
F5	RIGHT - LEFT FRONT WORK LIGHT	15A
F6	RIGHT - LEFT SIDE WORK LIGHT (PYRAMIDS)	10A
F7	LIGHT BAR RIGHT WORK LIGHT - LIGHT BAR LEFT WORK LIGHT	10A
F8	CLACSON	7.5A
F9	+30 CAN - BRIDGE CONNECTOR POWER SUPPLY	3A
F10	+15 FRONT WINDOW WIPER - SIDE WINDOW WIPER SWITCH	7.5A
F11	+30 LEFT FRONT + REAR LIGHT RELAY	7.5A
F12	+30 RIGHT FRONT + LEFT REAR POSITION LIGHTS RELAY	7.5A
F13	+15 CAN - BRIDGE CONNECTOR POWER SUPPLY	5A
F14	+15 LIGHT STALK	10A
F15	+15 HEATED MIRRORS	10A
F16	+15 ROTATING BEACON	10A
F17	+15 CIGARETTE LIGHTER SOCKET	10A
F18	VE ELECTRONIC POWER SUPPLY - ***LE70 LOGIC BOARD POWER SUPPLY*** -	7.5A
	SENSORS 12V POWER SUPPLY - ***STEERING COLUMN SWITCHES POWER SUPPLY*** -	
	SPEED CHANGE BUTTON - ***DIFFERENTIAL BLOCK BUTTON***-	
	- MC2M LOGIC BOARD POWER SUPPLY - ***FUSE 5A*** - +15 JOYSTICK -	
	SEAT MAN PRESENT MICRO SWITCH POWER SUPPLY - +15 ALGA TFT - ***STOP LIGHTS PRESSURE SWITCH POWER SUPPLY***-	
	- +15 BUTTONS CONTROL UNIT POWER SUPPLY (I/O) -	
	+15 DASHBOARD SWITCHES POWER SUPPLY - +15 DIAGNOSTIC SOCKET 3B6	
F19	OPTIONAL	5A
	DESCRIPTION OF FUNCTION OF OTHER COMPONENTS ONI BOARD 1	
K1	AIR CON UNIT CAB FANS RELAY	
K2	FLASHING INDICATORS - EMERGENCY LIGHTS RELAY	
K3	ENGINE START CONSENT FROM PEDAL IN NEUTRAL RELAY	
K4	OPTIONAL	
K5	CLACSON RELAY (ACOUSTIC WARNING)	
K6	WORK LIGHTS ON REAR LIGHT BAR RELAY	
K7	RIGHT AND LEFT LATERAL REAR WORK LIGHTS RELAY	
K8	PYRAMID WORK LIGHT RELAY	
K9	RIGHT AND LEFT CENTRAL REAR WORK LIGHTS ABOVE CABIN RELAY	
K10	RIGHT AND LEFT LATERAL REAR WORK LIGHTS ABOVE CABIN RELAY	



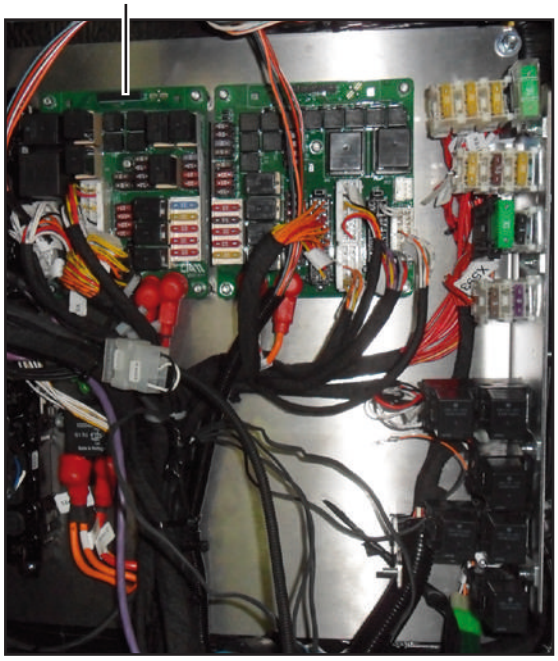
POSITION	DESCRIPTION OF FUNCTION OF FUSES ON BOARD 2 AS	AMPERES
F20	+30 FUSE K15 UNLOADING WORK LIGHT RELAY	20A
F21	DIPPED HEADLIGHT FUSE	10A
F22	RIGHT REVERSE GEAR WORK LIGHT FUSE - REVERSE GEAR LIGHT + REAR BUZZER	10A
F23	-	10A
F24	LEFT REVERSE GEAR WORK LIGHT - REVERSE GEAR LIGHT + VIDEOCAMERA TRIGGER SIGNAL	10A
F25	+30 AUTORADIO - +30 EMERGNCY INDICATORS	7.5A
F26	POWER SUPPLY RELAY TO FULL HEADLIGHTS + FULL HEADLIGHTS LED	10A
F27	PRESSURE SWITCH A/C +15 A/C HEATING UNIT PANEL POWER SUPPLY	10A
F28	+30 ALGA TFT INSTRUMENT	5A
F29	+30 TOPCON +30 WIEGHING MACHINE POWER SUPPLY	5A
F30	+30 CAN BRIDGE POWER SUPPLY	3A
F31	STOP LIGHTS FUSE	7.5A
F32	+15 WEIGHING SYSTEM	7.5A
F33	+15 TOPCON (GPS)	7.5A
F34	+15 CABIN ROOF WORK LIGHTS SWITCHES	15A
F35	+15 GREASE PUMP CONTROL UNIT	15A
F36	+15 POWER SUPPLY TO SEAT COMPRESSOR	10A
F37	-	5A
F38	+15 LIGHT FIXTURE - +15 CAR RADIO	10A
F39	+15 INDICATORS INTERMITTENCE BUTTON	7.5A
F40	OPTIONAL (AVAILABLE) +15	7.5A
F41	+15 IGNITION (EMERGENCY BUTTON N.O. CONTACT POWER SUPPLY)	10A
F42	+15 DIAGNOSTICS SOCKET +15 KEY AFTER DIODE	10A
F43	+15 CAMERA POWER SUUPLY	10A
F44	-	5A
	DESCRIPTION OF FUNCTION OF OTHER COMPONENTS ONI BOARD 2	
K15	UNLOADING WORK LIGHT RELAY	
K16	24V DENOX SENSOR POWER SUPPLY RELAY FROM EMERGENCY BUTTON	
K17	FULL HEADLIGHT RELAY	
K18	CAMERA 1 TRIGGER SIGNAL RELAY REAR LEFT WORK LIGHT	
K19	RIGHT REAR WORK LIGHT RELAY + REAR BUZZER RELAY - 2ND REAR LIGHTS RELAY	
K20	DIPPED HEADLIGHT RELAY	
K29	A/C PRESSURE SWITCH COMMAND RELAY + HEATING UNIT PANEL	
K22	RELAY +30 ALGA TFT INSTRUMENT	
K21	RELAY +30 TOPCON +30 WIEGHING MACHINE POWER SUPPLY	

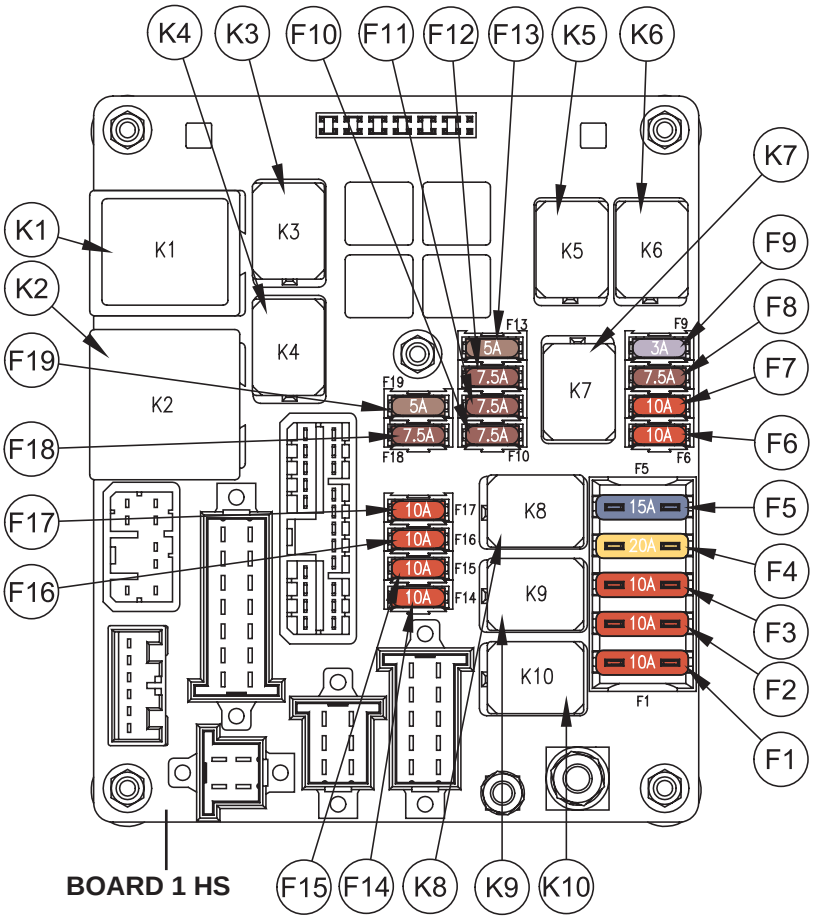
LAYOUT OF SIDE FUSES ON DOBERMANN AS



POSITION	DESCRIPTION OF FUNCTION OF SIDE FUSES ON DOBERMANN AS	AMPERES
1	FUSE +30 RELAY COOLING FAN NUMBER 2 - HYDRAULIC OIL COOLING RELAY	20A
2	FUSE +30 RELAY COOLING FAN NUMBER 1 - HYDRAULIC OIL COOLING RELAY	20A
3	FUSE +30 HEATING UNIT CAB FANS / AC RELAY	20.A
4	FUSE +30VP POWER BOARD MC2M	30A
5	FUSE +30 FRONT WINDOW WIPER POWER SUPPLY	20A
6	ELECTRIC CLUTCH FUSE +30 COMPRESSOR A/C	7.5A
7	+30 A/C EVAPORATOR A/C ELECTRIC CLUTCH RELAY	20A
	DESCRIPTIONAND SERVICE OF THE LATERAL AS RELAY	
X812	HYDRAULIC OIL ELECTRIC FAN 1 RELAY	
X813	HYDRAULIC OIL ELECTRIC FAN 2 RELAY	
X816	A/C EVAPORATOR ELECTRIC FAN RELAY	

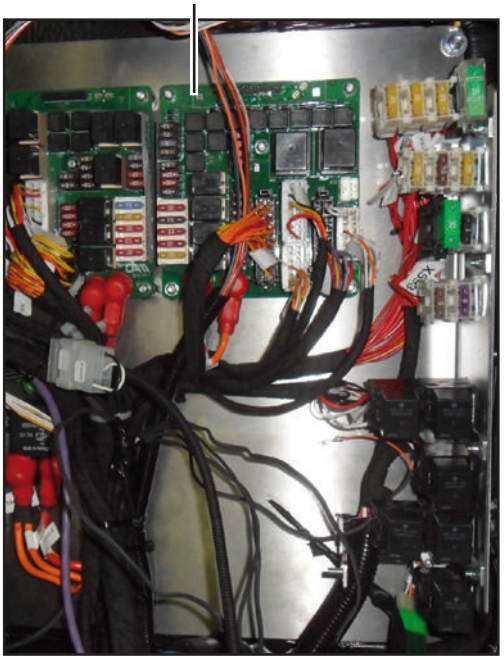
BOARD 1 HS

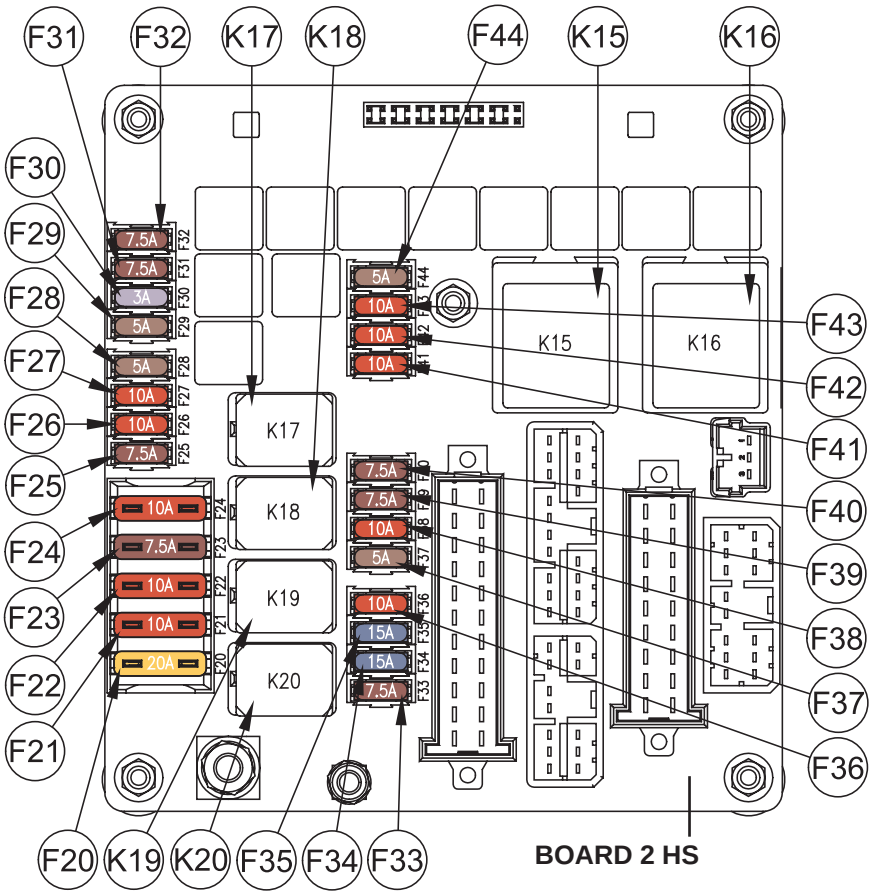




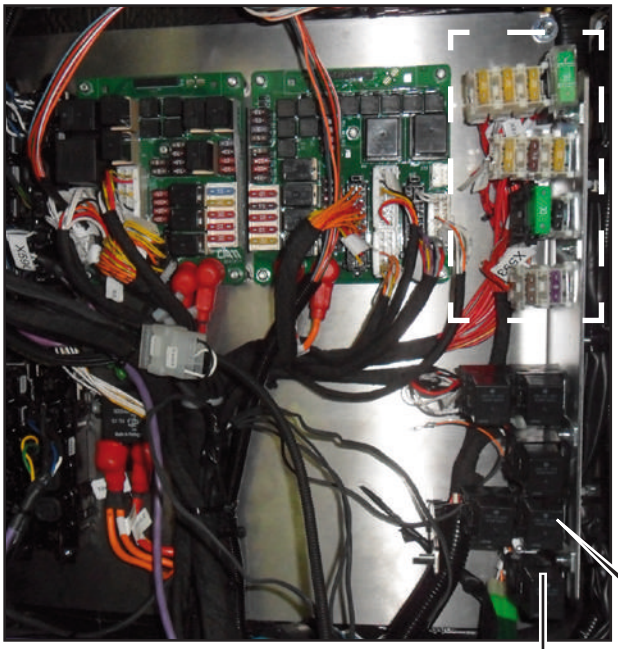
POSITION	DESCRIPTION OF FUNCTION OF FUSES ON BOARD 1 HS	AMPERES
F1	WORK LIGHTS ABOVE CAB RIGHT AND LEFT LATERALS	10A
F2	+VP LE70	10A
F3	WORK LIGHTS ABOVE CAB CENTRALS	10A
F4	-	20A
F5	RIGHT - LEFT FRONT WORK LIGHT	15A
F6	RIGHT - LEFT SIDE WORK LIGHT (PYRAMIDS)	10A
F7	LIGHT BAR RIGHT WORK LIGHT - LIGHT BAR LEFT WORK LIGHT	10A
F8	CLACSON	7.5A
F9	+30 CAN - BRIDGE CONNECTOR POWER SUPPLY	3A
F10	+15 FRONT WINDOW WIPER - SIDE WINDOW WIPER SWITCH	7.5A
F11	+30 LEFT FRONT + REAR LIGHT RELAY	7.5A
F12	+30 RIGHT FRONT + LEFT REAR POSITION LIGHTS RELAY	7.5A
F13	+15 CAN - BRIDGE CONNECTOR POWER SUPPLY	5A
F14	+15 LIGHT STALK	10A
F15	+15 HEATED MIRRORS	10A
F16	+15 ROTATING BEACON	10A
F17	+15 CIGARETTE LIGHTER SOCKET	10A
F18	VE ELECTRONIC POWER SUPPLY - ***LE70 LOGIC BOARD POWER SUPPLY*** - SENSORS 12V POWER SUPPLY - **STEERING COLUMN SWITCHES POWER SUPPLY** - SPEED CHANGE BUTTON - ***AUTOMOTIVE SELECTION BUTTON*** - DIFFERENTIAL BLOCK BUTTON- - MC2M LOGIC BOARD POWER SUPPLY ***FUSE 5A*** - +15 JOYSTICK - SEAT MAN PRESENT MICRO SWITCH POWER SUPPLY - ***+15 ALGA TFT*** - STOP LIGHTS PRESSURE SWITCH POWER SUPPLY- +PLANETARY SENSOR POWER SUPPLY AMU - ***+15 BUTTONS CONTROL UNIT POWER SUPPLY (I/O)*** - +15 DASHBOARD SWITCHES POWER SUPPLY - ***+15 DIAGNOSTIC SOCKET 3B6***	7.5A
F19	OPTIONAL	5A
	DESCRIPTION OF FUNCTION OF OTHER COMPONENTS ONI BOARD 1	
K1	AIR CON UNIT CAB FANS RELAY	
K2	FLASHING INDICATORS - EMERGENCY LIGHTS RELAY	
K3	ENGINE START CONSENT FROM PEDAL IN NEUTRAL RELAY	
K4	OPTIONAL	
K5	CLACSON RELAY (ACOUSTIC WARNING)	
K6	WORK LIGHTS ON REAR LIGHT BAR RELAY	
K7	RIGHT AND LEFT LATERAL REAR WORK LIGHTS RELAY	
K8	PYRAMID WORK LIGHT RELAY	
K9	RIGHT AND LEFT CENTRAL REAR WORK LIGHTS ABOVE CABIN RELAY	
K10	RIGHT AND LEFT LATERAL REAR WORK LIGHTS ABOVE CABIN RELAY	

BOARD 2 HS



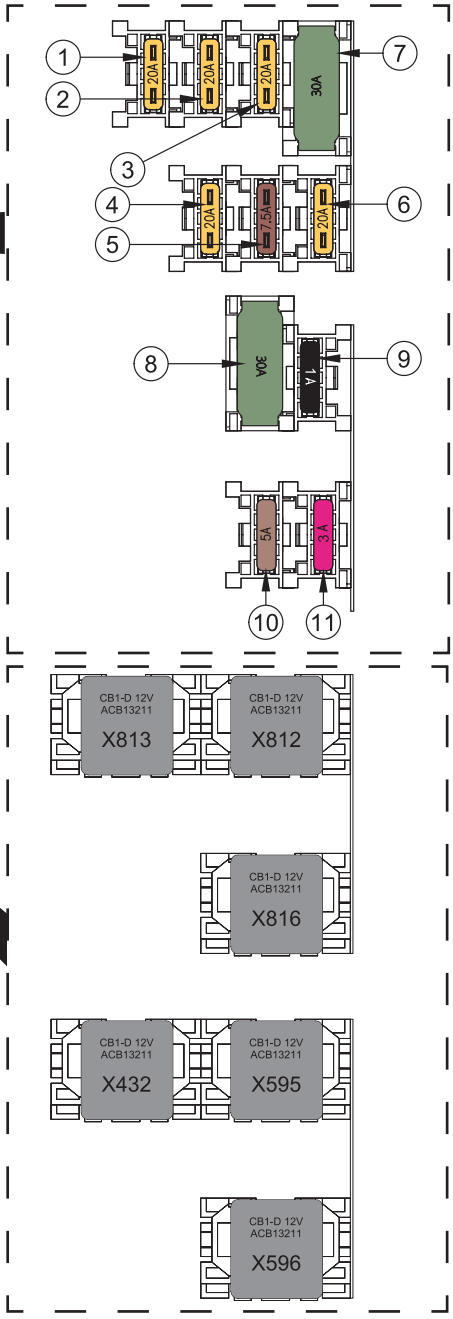


POSITION	DESCRIPTION OF FUNCTION OF FUSES ON BOARD 2 HS	AMPERES
F20	+30 FUSE K15 UNLOADING WORK LIGHT RELAY	20A
F21	DIPPED HEADLIGHT FUSE	10A
F22	RIGHT REVERSE GEAR WORK LIGHT FUSE - REVERSE GEAR LIGHT + REAR BUZZER	10A
F23	+30 FUSE HYDAC (EUPOWER SUPPLY + ARON)	10A
F24	LEFT REVERSE GEAR WORK LIGHT - REVERSE GEAR LIGHT + VIDEOCAMERA TRIGGER SIGNAL	10A
F25	+30 AUTORADIO - +30 EMERGNCY INDICATORS	7.5A
F26	POWER SUPPLY RELAY TO FULL HEADLIGHTS + FULL HEADLIGHTS LED	10A
F27	PRESSURE SWITCH A/C +15 A/C HEATING UNIT PANEL POWER SUPPLY	10A
F28	+30 ALGA TFT INSTRUMENT	5A
F29	+30 TOPCON +30 WIEGHING MACHINE POWER SUPPLY	5A
F30	+30 CAN BRIDGE POWER SUPPLY	3A
F31	STOP LIGHTS FUSE	7.5A
F32	+15 WEIGHING SYSTEM	7.5A
F33	+15 TOPCON (GPS)	7.5A
F34	+15 CABIN ROOF WORK LIGHTS SWITCHES	15A
F35	+15 GREASE PUMP CONTROL UNIT	15A
F36	+15 POWER SUPPLY TO SEAT COMPRESSOR	10A
F37	+15 HYDAC (SENSORS + BUTTONS)	5A
F38	+15 LIGHT FIXTURE - +15 CAR RADIO	10A
F39	+15 INDICATORS INTERMITTENCE BUTTON	7.5A
F40	OPTIONAL (AVAILABLE) +15	7.5A
F41	+15 IGNITION (EMERGENCY BUTTON N.O. CONTACT POWER SUPPLY)	10A
F42	+15 DIAGNOSTIC SOCKET +15 BOSCH SENSORS- +15 AUTOMOTIVE SWITCH +15 KEY AFTER DIODE	10A
F43	+15 CAMERA POWER SUUPLY	10A
F44	-	5A
	DESCRIPTION OF FUNCTIONS OF OTHER COMPONENTS ON BOARD 2 HS	
K15	UNLOADING WORK LIGHT RELAY	
K16	24V DENOX SENSOR POWER SUPPLY RELAY FROM EMERGENCY BUTTON	
K17	FULL HEADLIGHT RELAY	
K18	CAMERA 1 TRIGGER SIGNAL RELAY REAR LEFT WORK LIGHT	
K19	RIGHT REAR WORK LIGHT RELAY + REAR BUZZER RELAY - 2ND REAR LIGHTS RELAY	
K20	DIPPED HEADLIGHT RELAY	
K29	A/C PRESSURE SWITCH COMMAND RELAY + HEATING UNIT PANEL	
K22	RELAY +30 ALGA TFT INSTRUMENT	
K21	RELAY +30 TOPCON +30 WIEGHING MACHINE POWER SUPPLY	



RELAY POSITIONING LATERALS HS

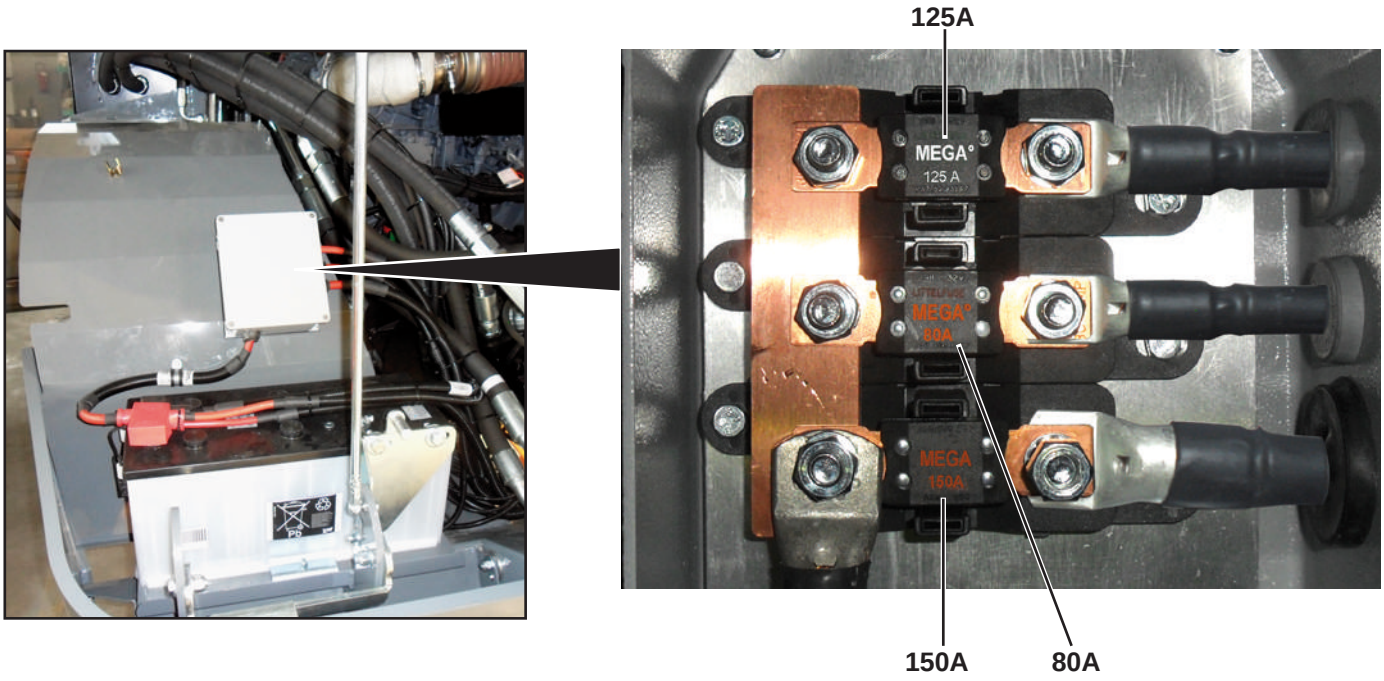
LAYOUT OF SIDE FUSES ON DOBERMANN HS



POSITION	DESCRIPTION OF FUNCTION OF SIDE FUSES ON DOBERMANN HS	AMPERES
1	FUSE +30 RELAY COOLING FAN NUMBER 2 - HYDRAULIC OIL COOLING RELAY	20A
2	FUSE +30 RELAY COOLING FAN NUMBER 1 - HYDRAULIC OIL COOLING RELAY	20A
3	FUSE +30 HEATING UNIT CAB FANS / AC RELAY	20.A
4	FUSE +30VP POWER BOARD MC2M	30A
5	FUSE +30 FRONT WINDOW WIPER POWER SUPPLY	20A
6	ELECTRIC CLUTCH FUSE +30 COMPRESSOR A/C	7.5A
7	+30 A/C EVAPORATOR A/C ELECTRIC CLUTCH RELAY	20A
8	X431 FUSE +30 AUTOMOTIVE SYSTEM POWER SUPPLY	30A
9	X594 FUSE +15 AFTER DIODE TO BOSCH CONTROL UNIT	1A
10	EMERGENCY RELAY FUSE	5A
11	+15 BOSCH LOGIC BOARD VE POWER SUPPLY (AUTOMOTIVE SYSTEM)	3A
	DESCRIPTIONAND SERVICE OF THE LATERAL HS RELAY	
X812	HYDRAULIC OIL ELECTRIC FAN 1 RELAY	
X813	HYDRAULIC OIL ELECTRIC FAN 2 RELAY	
X816	A/C EVAPORATOR ELECTRIC FAN RELAY	
X595	EMERGENCY RELAY (+30 - FUSE 30A)	
X432	EMERGENCY RELAY (+30 - FUSE 5A)	
X596	BOSCH BOARD VE SELF-RETIANING RELAY	

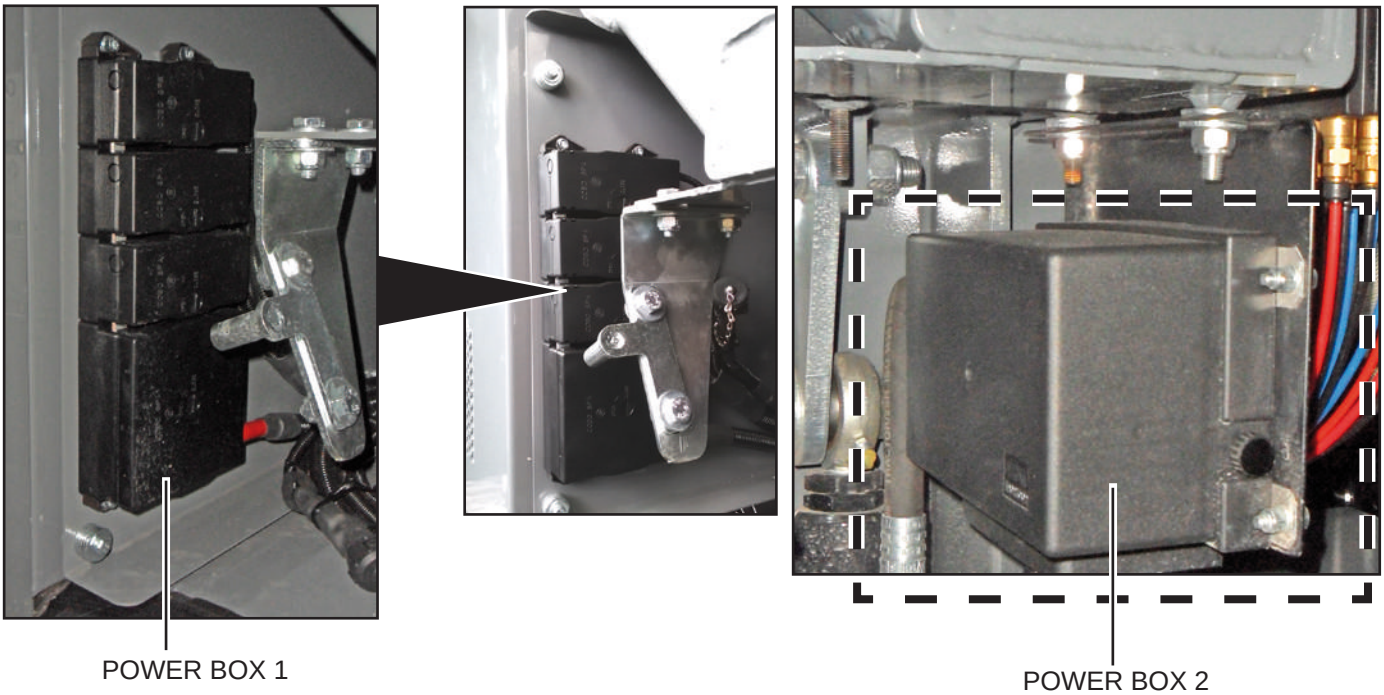
Sect. 5.25.1 POSITION OF FUSES INSIDE ENGINE COMPARTMENT

There is a high amperage fuse box inside the engine compartment. Remove the 4 countersunk screws on the cover to change or check a fuse.
The fuses present are: 80A= POWER BOX 2
125A= ALTERNATOR
150A= POWER BOX 1

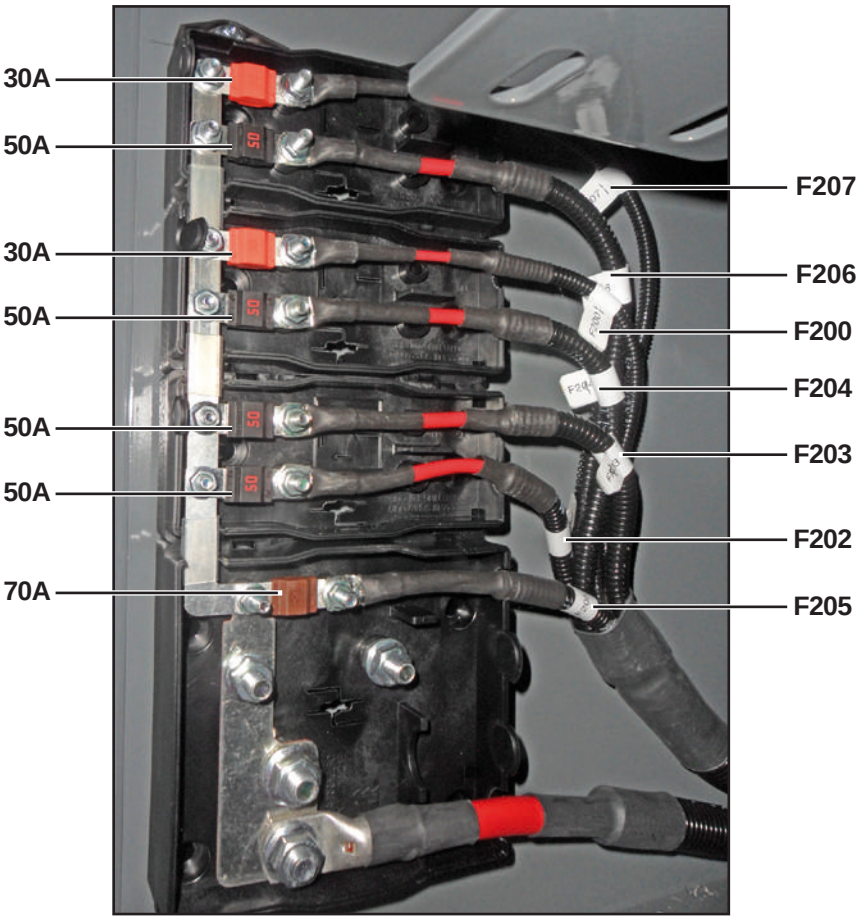


Sect. 5.25.2 POSITION OF FUSES BEHIND CABIN ON LEFT SIDE

These fuses situated behind the cabin can be accessed by opening the left side door (behind cabin door)

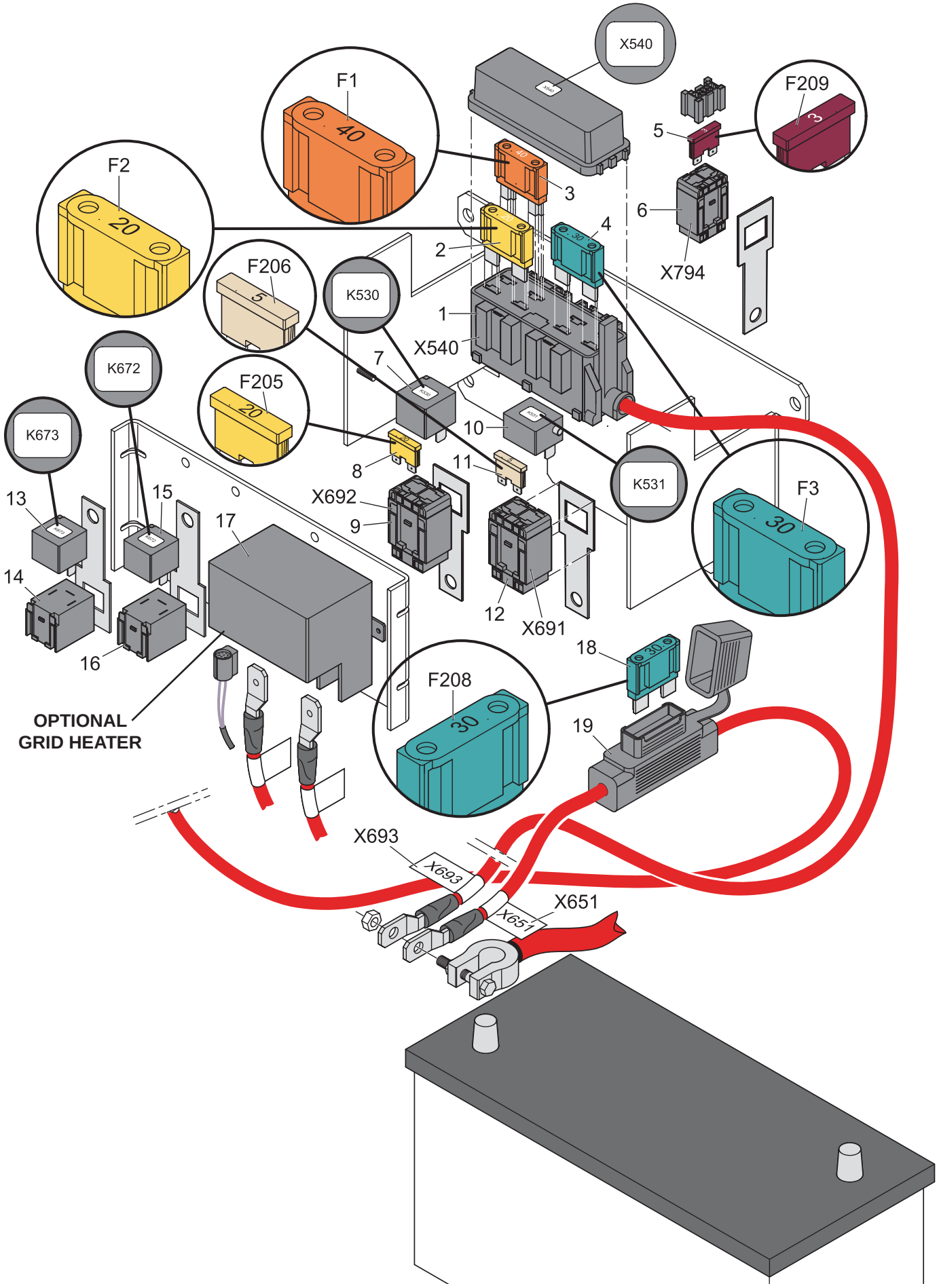


Sect. 5.25.3 POSITION OFPOWER BOX 1 FUSES



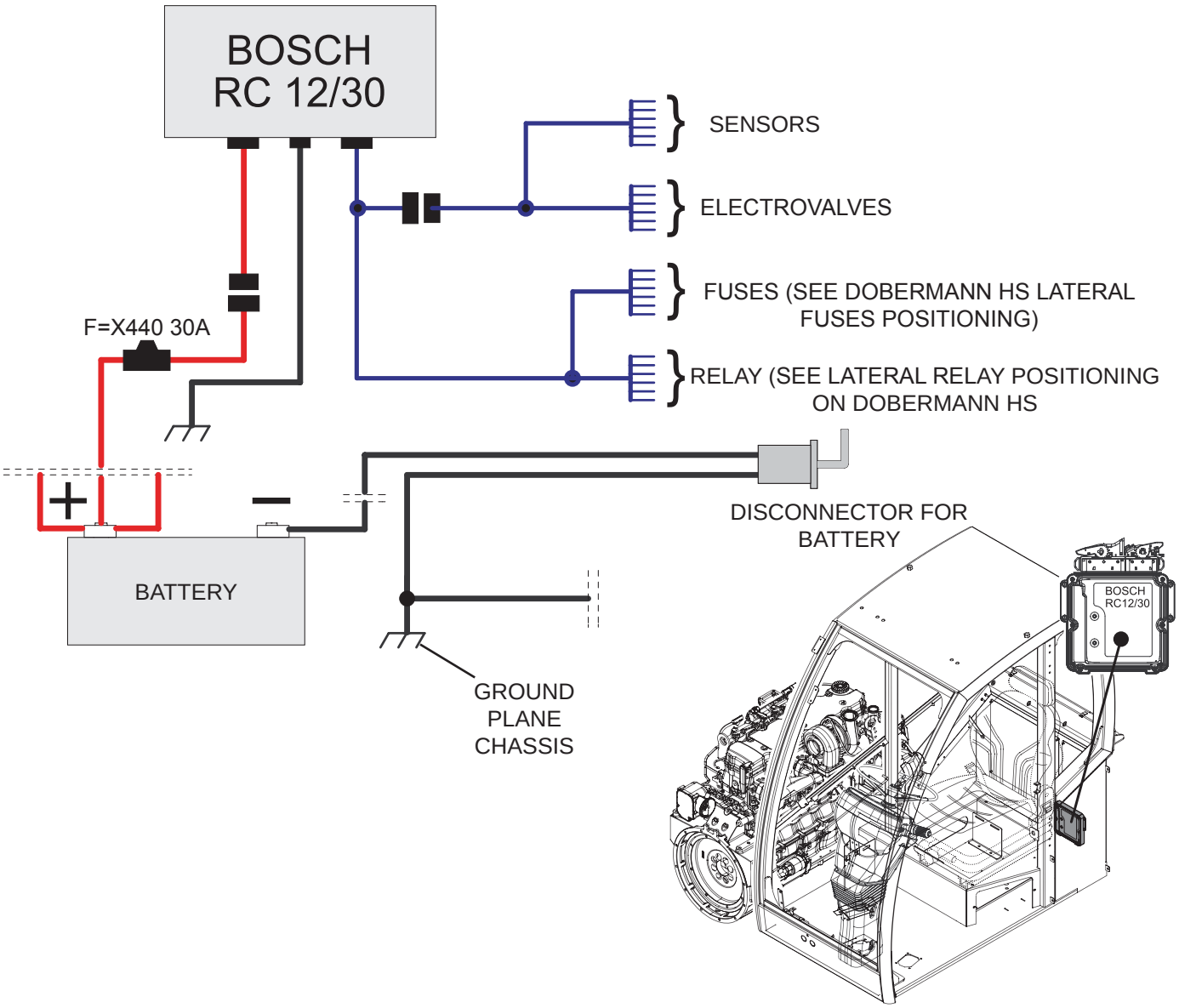
POSITION	DESCRIPTION OF THE POWER BOX 1 POWER LINES SERVICE	AMPERES
F200	IGNITION PANEL +30 CLAMP FUSE	30A
F202	+30 AIRCON - HEATING UNIT MAIN FUSE	50A
F203	CONTROL UNIT RELAY N°1 +30 MAIN FUSE	50A
F204	CONTROL UNIT RELAY N°2 +30 MAIN FUSE	50A
F205	+30 ANCILLARY RELAY MAIN FUSE	70A
F206	+30 HYDRAULIC OIL ELECTRIC FAN MAIN FUSE	50A
F207	+30 ANCILLARY RELAY MAIN FUSE (POWER SUPPLY PRESETTING)	30A

Sect. 5.25.4 COMPONENTS of POWER BOX 2

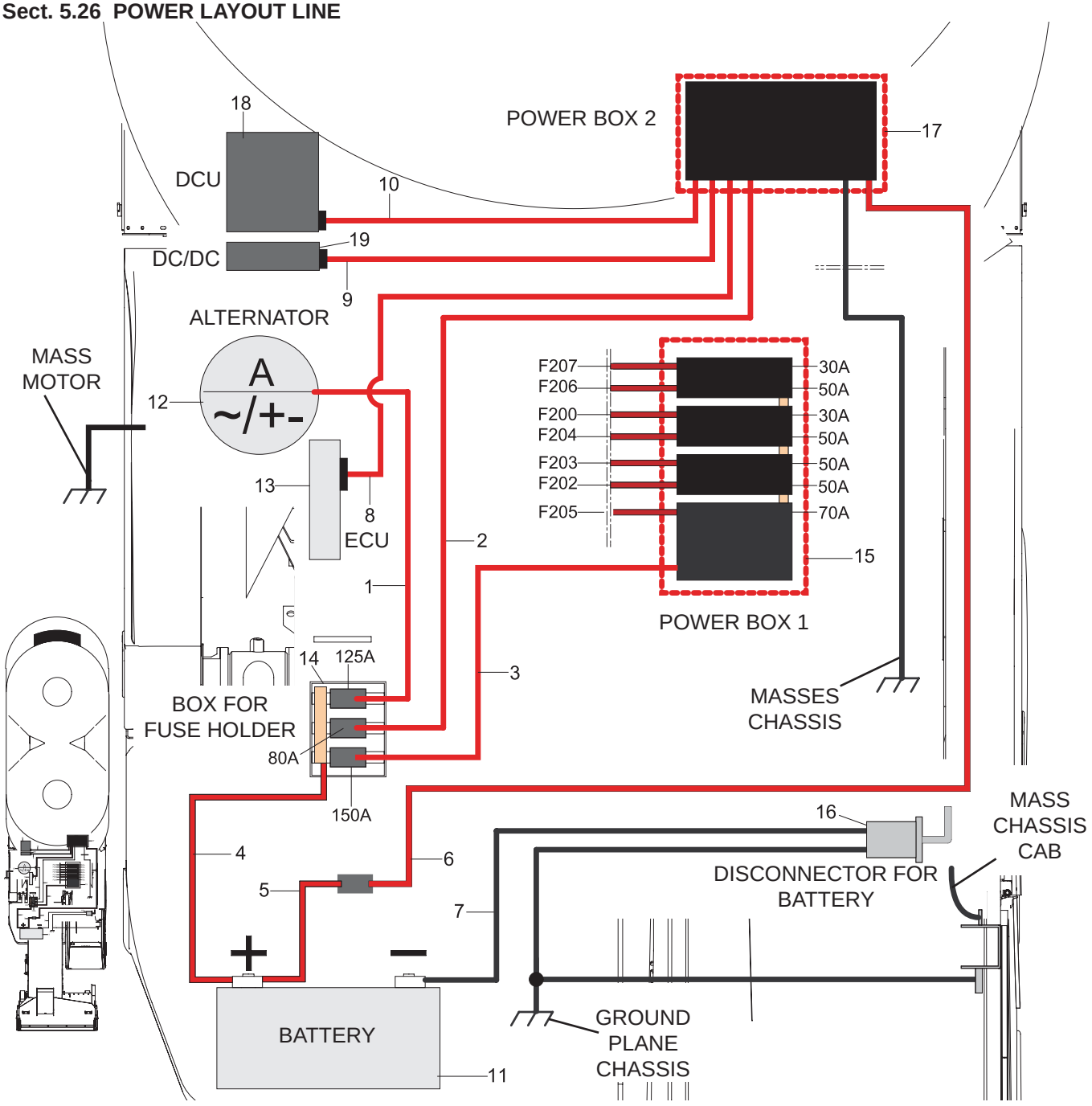


POSITION	DESCRIPTION OF POWER BOX 2 COMPONENTS SERVICE	CODE	RELAY	AMPERES
1	FUSE HOLDER BOX	X540	-	-
2	+30 DIESEL FUEL FILTER HEATIONG ELEMENT RELAY	F2	-	30A
3	ENGINE STARTER RELAY FUSE	F1	-	40A
4	+30 ECU IVECO FUSE	F3	-	30A
5	+30 IVECO DIAGNOSTICS FUSE	F209	-	3A
6	FUSE HOLDER	X794	-	-
7	ENGINE STARTER RELAY	-	K530	-
8	+24V DCU CONTROL UNIT FUSE	F205	-	20A
9	FUSE HOLDER	X692	-	-
10	DIESEL FUEL FILTER HEATIONG ELEMENT RELAY	-	K531	-
11	24V SENSOR FUSE	F206	-	5A
12	FUSE HOLDER	X691	-	-
13	12V DC/DC CONVERTER RELAY	-	K673	-
14	FUSE HOLDER	-	-	-
15	24V DC/DC CONVERTER RELAY	-	K672	-
16	FUSE HOLDER	-	-	-
17	APPLICAZIONE OPTIONAL GRID HEATER POWER RELAY	-	-	-
18	+30 12V DC/DC CONVERTER POWER SUPPLY	F208	-	30A
19	SEALED FUSE HOLDER	-	-	-

Sect. 5.25.5 POWER LINE LAYOUT (ON HS VERSION)



Sect. 5.26 POWER LAYOUT LINE



POSITION	DESCRIPTION OF IVECO FPT EBNGINE POWER LINE COMPONENTS (TWO BOX)	CODE
1	POWER SUP0PLY CABLE FROM FUSE BOX TO ALTERNATOR	
2	POWER SUPPLY CALE FROM FUSE BOX TO POWER BOX 2	
4	POWER SUPPLY CABLE FROM BATTERY POSITIVE POLE TO FUSE BOX	
5	POWER SUPPLY CABLE FROM BATTERY POSITIVE POLE TO P.B.2 DC/DC CONVERTER LINE FUSE	
6	POWER SUPPLY CABLE FROM POWER FUSE TO DC/DC CONVERTER LINE ON P.B.2	
7	POWER SUPPLY CABLE FROM BATTERY NEGATIVE TO BATTERY CUT OUT SWITCH	
8	POWER SUPPLY LINE AND ECU RESTORE SIGNALS	
9	DC/DC CONVERTER POWER SUPPLY LINE (12/24V DC).	
10	POWER SUPPLY LINE AND DCU DENOX SIGNALS	
11	BATTERY 12V 200 Ah	
12	STANDARD ALTERNATOR 12V 120 Ah	
13	ENGINE CONTROL UNIT (ECU)	
14	FUSE BOX (HIGH AMPERAGE FUSE BOX FOR CABLE PROTECTION UP TO P.B.1/P.B.2 AND ALTERNATOR	
15	POWER BOX N°.1 - POWER LINES DIVERSION TO MACHINE UTILITIES	
16	BATTERY CUT OUT SWITCH TO NEGATIVE	
17	POWER BOX 2 IVECO ENGINE MANAGEMENT (FPT)	
18	UREA CONTROL SYSTEM CONTROL UNIT	
19	DC/DC CONVERTER 12/24V DC.	

Sect. 5.27 HEATING / AIR CONDITIONING UNIT

At the customer's request, the cabin is equipped with heating system or air conditioning system.
There are 4 vents for demisting the windows: 2 situated in front (A fig.1) for the front window (de frost), 2 rear vents for demisting the other windows (B fig. 2-2A).

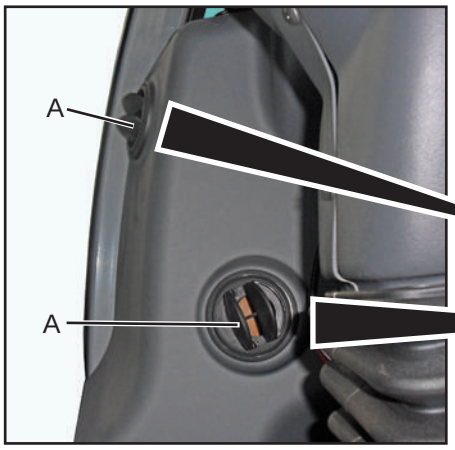


fig.1

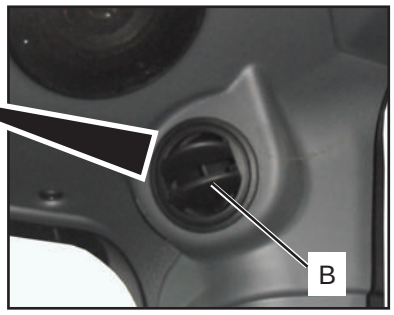
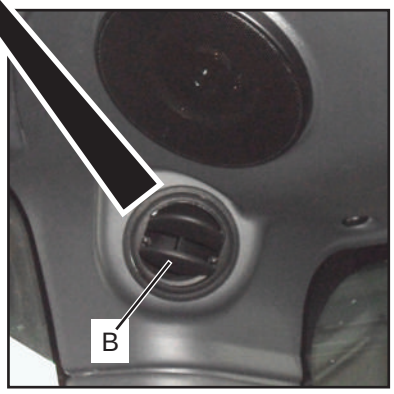
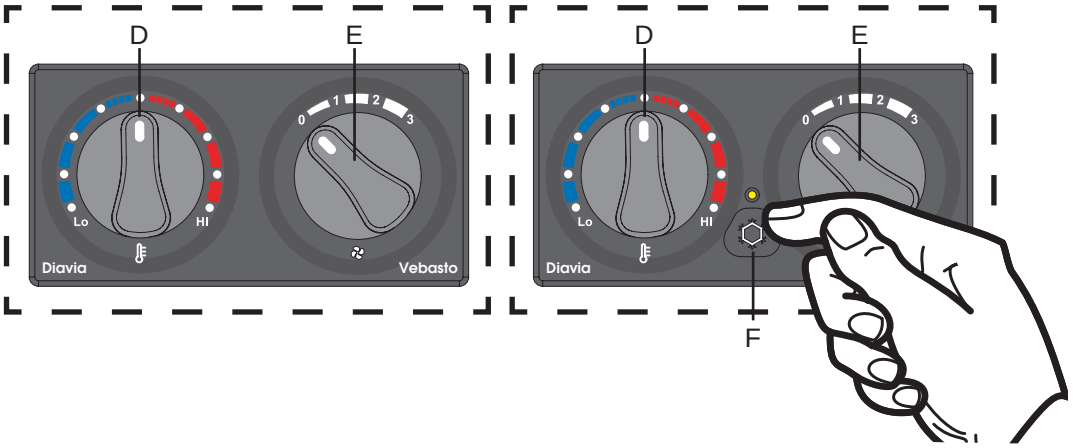


fig.2



The heating or air conditioning controls are located on the right rear side dashboard (C fig.3).
To operate the heating and adjust the temperature, use the knob **(**D) (blue for cold air and red for hot air), to adjust the air flow, use the three-speed knob (E).
If the machine has air conditioning, press the switch (F) to start the compressor, and then adjust the temperature and air flow with knobs D and E



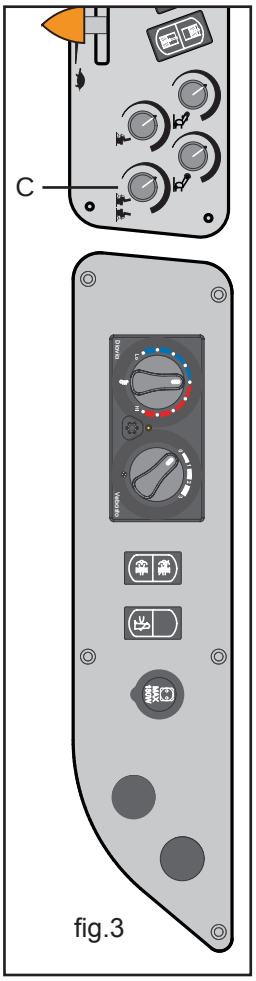


fig.3

It should be remembered that, for good operation, the filter (G) situated under the driver's seat, on door side, must be kept clean (fig.4).
The filter can be reached by removing the 2 handwheel screws (H fig.4), Once you have removed the cover, unscrew and remove the holding handwheel (I fig.5), pull the filter outwards slightly (L fig.6) and then slide it out from where it is inserted (M fig.6) clean it with air and fit it back in place with the grille at the front (N fig.7)

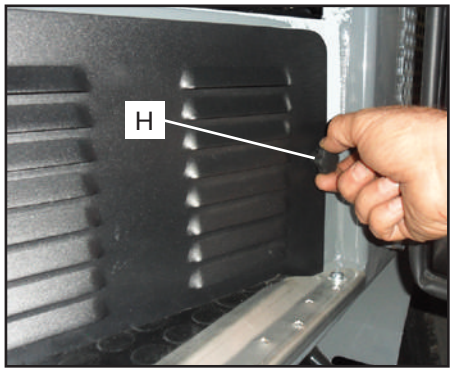


fig.4

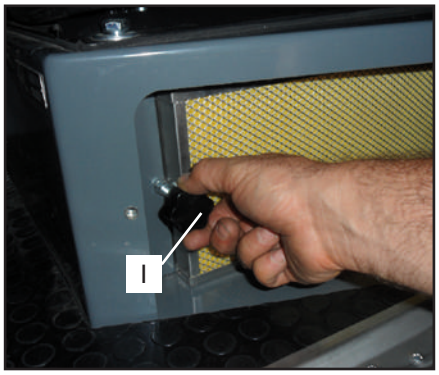


fig.5

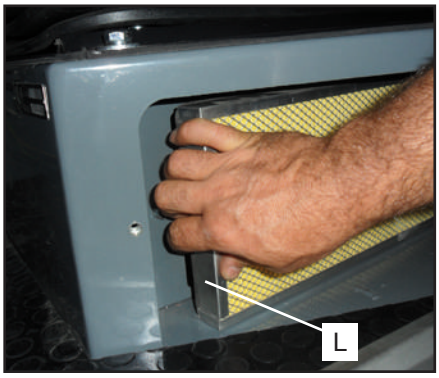


fig.6

WARNING!!! The interior air filter "L" is a sensitive spare part for the operator's safety (health) so it must be checked and cleaned.

We advise you to replace it yearly.

PART NUMBER:

Part. L Internal filter: 98405546

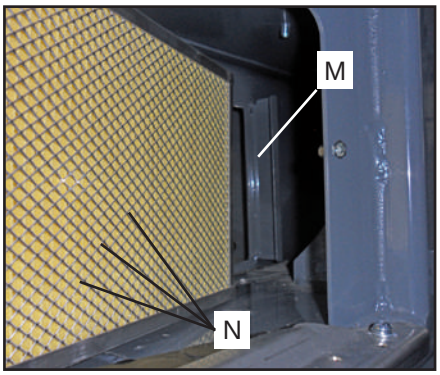
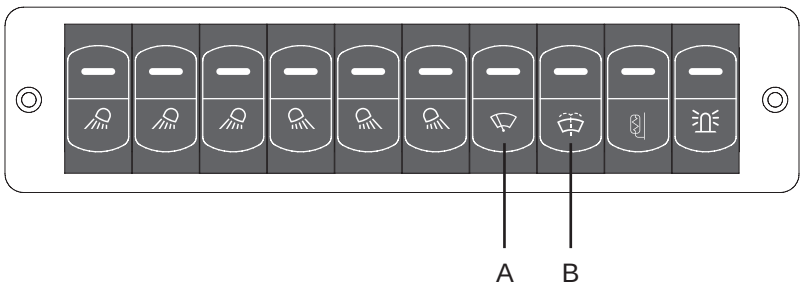
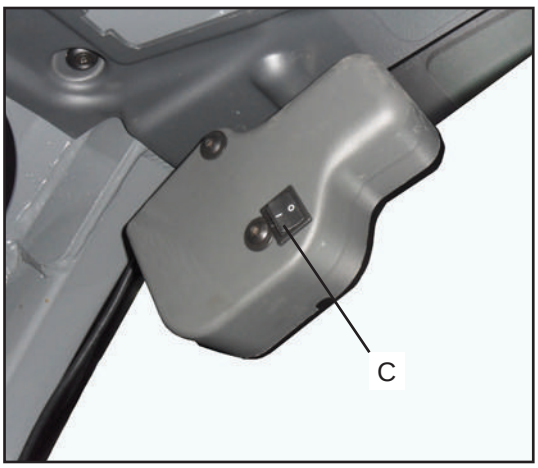


fig.7

Sect. 5.28 OPERATION OF FRONT AND SIDE WINDOW WIPERS

The front window wiper has two continuous operation settings.
The first speed with intermittent operation can be ordered as an optional extra.
Operation of window wipers: when button A on the roof-mounted dashboard is pressed, only the front window wiper is started (during rain).
When button B on the roof-mounted dashboard is pressed, water is sprayed out and automatically operation of the front window wiper is started (for example, to clean the window). At the same time, water is also sprayed onto the side window; to start the relevant window wiper, press switch C on the window wiper motor.





Sect. 5.29 IMPORTANT:

- Sound the horn to warn others every time you start a manoeuvre.
- Materials must always be put in with the mixer rotating.
- The loading sequence depends solely on the final product to be obtained. Normally, meal is loaded first, then the dry materials, such as hay and straw, and then the chopped materials.

If long hay or straw has to be loaded with forks or loaders, the machine must be allowed to work at 2150 rpm until the long fibre has been partially cut, and then loading is completed with the chopped materials.
Mixing should then be finished with the engine kept at 1800/2000 rpm.

Sect. 5.30 GOOD RULES FOR CORRECT USE OF THE MIXER WAGON

Achievement of a good ration depends on countless factors (product quality, correct choice of wagon type, good operator, attention during the various work stages), and it is practically impossible to provide a procedure that can be followed to the letter and that will always give optimal results.
The same type of raw materials kept or produced in different geographical areas, and in a different way, can have characteristics such that they have to be treated differently when they are used. We therefore think it more correct to present considerations regarding the various stages of the work, and the behaviour of some products after they have been put in the mixer, rather than a sequence of operations to carry out.
Starting from the assumption that the instructions presented above have produced a good result in most cases, we believe it is advisable to point up some factors that can compromise the result of the final product:

- Poor quality of raw materials due to bad harvesting and/or storage
- Poor working order of the machine due to bad maintenance
- Insufficient attention or skill of the user

The Cutter-Mixer wagon is only a tool and therefore the operator must know and always keep in mind the result that must be obtained so as to exploit the characteristics of the machine based on the various materials being used.
It follows that the advice given above is primarily a good starting point and provides guidelines to either follow or correct according to case.

Sect. 5.31 GENERAL CONSIDERATIONS

The main quality of self-propelled machines is however to be able to load everything with the front silage unloading milling cutter, and it is therefore necessary to consider a certain reduction in chopping time, due to the fact that the fibre is put in already partially chopped.
By loading all the materials with the silage unloading milling cutter, there is the further advantage of not damaging the surfaces of the ensiled products and leaving an even compact wall that cannot be attacked by fermentation or other processes.
Usually, self-propelled machines allow a reduction in the total time required to carry out the entire process.
Some points to keep in mind are described below:

- if you are absolutely sure of the quality of the round bale or that its weight corresponds to the quantity required in the recipe, **it can be put in whole**.

This machine has in fact the characteristic of breaking it up in a short time.

- if you want a particularly short unifeed, sharpening of the blades becomes very important. This machine cuts more due to the effect of speed than of pressure.
- putting in water reduces the volume of the fibre, and so prevents possible loss of material from the top of the machine.

However, the increase in toughness of the material increases the time it takes to cut the fibres.
But in this machine, the problem of twisting around the auger does not exist.

- when dry mixing, pay attention to the rotation time.

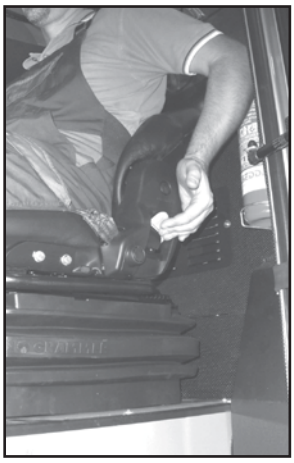
Over a certain value, the mixing quality may worsen.

- a prolonged mixing or cutting time, or a high speed of rotation, causes heating of the product due to the considerable surface area of the auger in contact with the material.
- at the end of unloading, the auger must be rotated quickly to unload the spiral of the auger as much as possible.

sect. 5.32 SEAT ADJUSTMENTS (ACCORDING TO REQUESTED CONFIGURATION)

*For the adjustments of the mechanical version seat, follow the photographic guide (adjustments may change depending on the seat installed).
For the pneumatic version, the Operation&Maintenance handbook for the seat (GRAMMER) is supplied with the machine.

ADJUSTING THE BACK TILT:
Pull the left lever to lower or raise the tilt of the back.

ADJUSTING THE SEAT FORWARDS / BACKWARDS:
Pull the lever to release the stop and then, by applying leverage with your legs, move the seat nearer or further away (4 adjustment positions)


ADJUSTING THE WEIGHT ON THE SEAT
For excellent comfort, the seat must be set to the driver's weight.
To adjust the weight, pull out the crank and rotate it to the right or left to adjust the capacity of the seat; the weight can be seen through the little window near the crank.

ADJUSTING THE SEAT HEIGHT
Pull up the seat by applying leverage with your legs (see photo); when it is released, it lowers fully, and then when it is pulled up again, 2 positions are available.
(when you hear the click, the seat is positioned)


*The adjustments of the seats indicated may change depending on the model installed and the photos are purely indicative.

Sect. 5.33 WORKING STAGES

1) Bring the machine near the mass of product to be cut and, at the same time, make sure there is no one in the vicinity of the machine.

2) Before moving up to the mass of product, switch off the machine, check that the safety valves of the cylinders are in work position (open).
Switch on the machine and lift the safety guard of the milling cutter, start the mixer using the button to engage the clutch and lift the milling cutter above the mass of material.

N.B.: Be careful of overhead power lines.

IMPORTANT: Button 21 on the side instrument panel controls clutch engagement and release; these operations must not be done with the engine at a high rpm speed.
Avoid repeatedly stopping and starting the mixer when there is a high load inside it.

3) Move forward slowly in a straight line up to the required cutting depth and stop the machine with the **pedal brake**.
It is essential that the guide wheels are well aligned with the machine especially during forward movement, in order not to knock against their sides with the milling cutter.

4) Start the loading belt and the milling cutter with the engine at about 1500 rpm and begin cutting silage from the silo; adjust the downward speed by means of the lever **(See illustration of milling cutter arm control)**.
This adjustment should be done in such a way as to allow the milling cutter to work at variable pressure, which can be seen on the indicator of the instrument **(see DESCRIPTION OF MAIN MENU PAGES Page 1),** suitable for the hardness of the product to be cut from the silo.
The direction of rotation of the milling cutter should be chosen according to the material to be cut: as a general guide, upward rotation for hard material and downward rotation for soft materials is to be preferred.

WARNING: wait until the drum has stopped before reversing the direction of rotation of the milling cutter.
After 20/30 cm, accelerate the engine speed until about 2100 rpm are reached and then complete the downward movement. At the end of the downward movement, wait a few moments to allow the belt to empty, and then lower the engine rotation speed and stop the milling cutter and the belt.
If you have to repeat the operation to complete the load, start from **point 3**.

5) When the cutting operations are finished, move away slowly in a straight line so that the side of the machine does not knock against the mass of product.

6) To distribute the product in the fodder-trough, operate the button for opening the unloading door up to the required extent (see bar indicator on the instrument); then start the conveyor belt to unload the mixed product into the fodder-troughs.

7) When unloading is finished, close the door by operating the button in the reverse direction, wait until the belt is completely empty and then stop it with the relevant button.

8) At the end of the work, the machine must be parked on a firm and preferably level floor, with the milling cutter safety guard lowered and the milling cutter on the ground.

IMPORTANT:
If the milling cutter jams during cutting, work as follows:
- Release the joystick in central position.
- Reduce engine rotation to 1500 rpm.
- Lift the milling cutter by 20-30 cm.
- Restart the milling cutter and start.
- Reverse the rotation for a few seconds, and return with the lever to the central position.

IMPORTANT:
Carry out rotation reversal when the milling cutter is stopped.
If this operation must be repeated several times, it is recommended to suspend the job, move the machine switch the engine off and check the cause of malfunctioning (foreign bodies, missing knives or blunt knives, excessive descent speed of the milling cutter, etc.).

OPTIONAL AUGER CLEANING SYSTEM (OVERBOOST)
If, after finishing unloading the product, some is left on the augers, it is possible to use the OVERBOOST function (optional extra) to clean them.
For the AS version: stop the machine with the parking brake, accelerate (with hand accelerator) to take the engine to 1900 rpm and then press the OVERBOOST button that takes the engine over its threshold up to 2300±50. This increase in rpm makes the augers turn more quickly so that the product stuck on them will drop off.
For the HS version: brake the machine with the parking brake and press the “work mode” button, take the engine to about 1900 rpm with the hand accelerator and then press the OVERBOOST button.

N.B. There is also the possibility of loading meal through the opening situated on the milling cutter arm (A fig.1).
WARNING!!! if the **"Safety bypass"** is not switched on, the button on the milling cutter arm will not work.

1) Rest the milling cutter arm on the ground;
2) Keep the engine at 1500 rpm and the clutch engaged;
3) Open the door and load the meal;
4) Operate the button (B fig.1) that moves the loading belt and repeat the operation until the required weight is reached.

IMPORTANT:
Before going away, the operator **must** lock the cabin (pocket the keys) and engage the parking brake.

If the milling cutter casing is open, when the button is pressed it is closed for safety reasons.

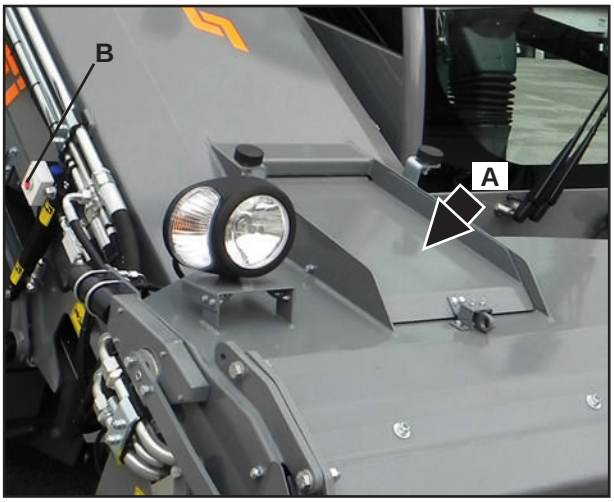
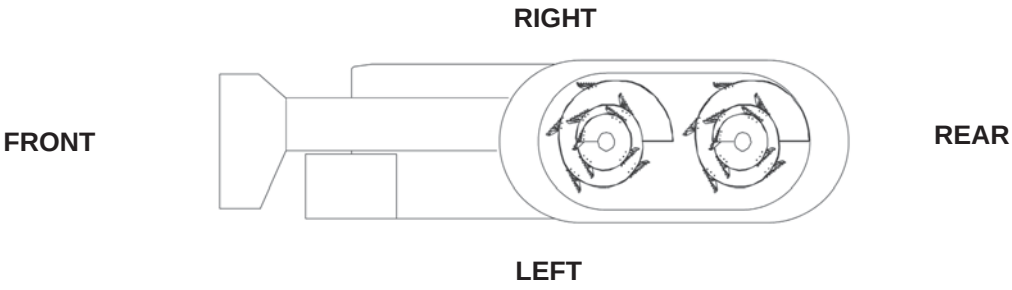
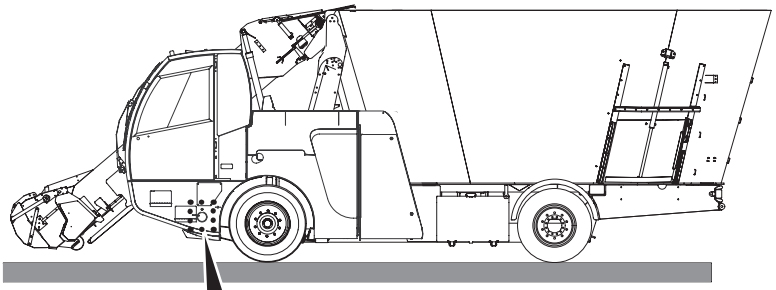
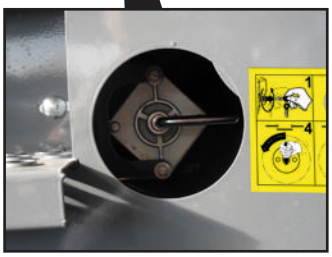


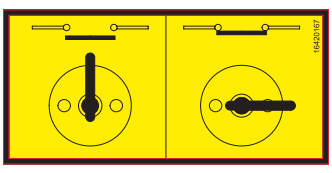
Fig.1

The **RIGHT - LEFT - FRONT- REAR** positions are in relation to the normal direction of travel of the machine



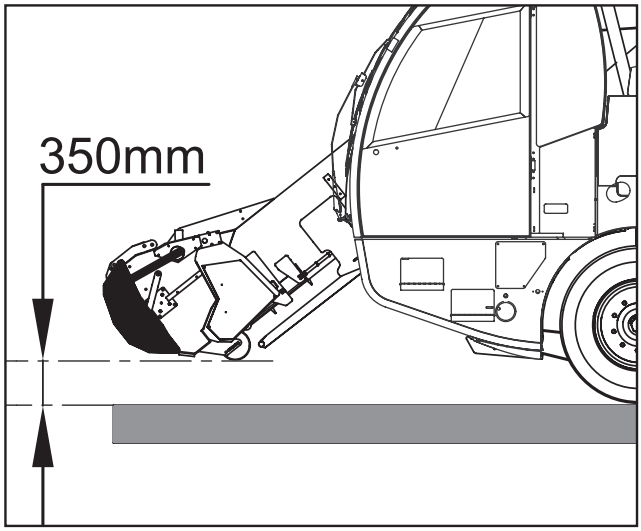






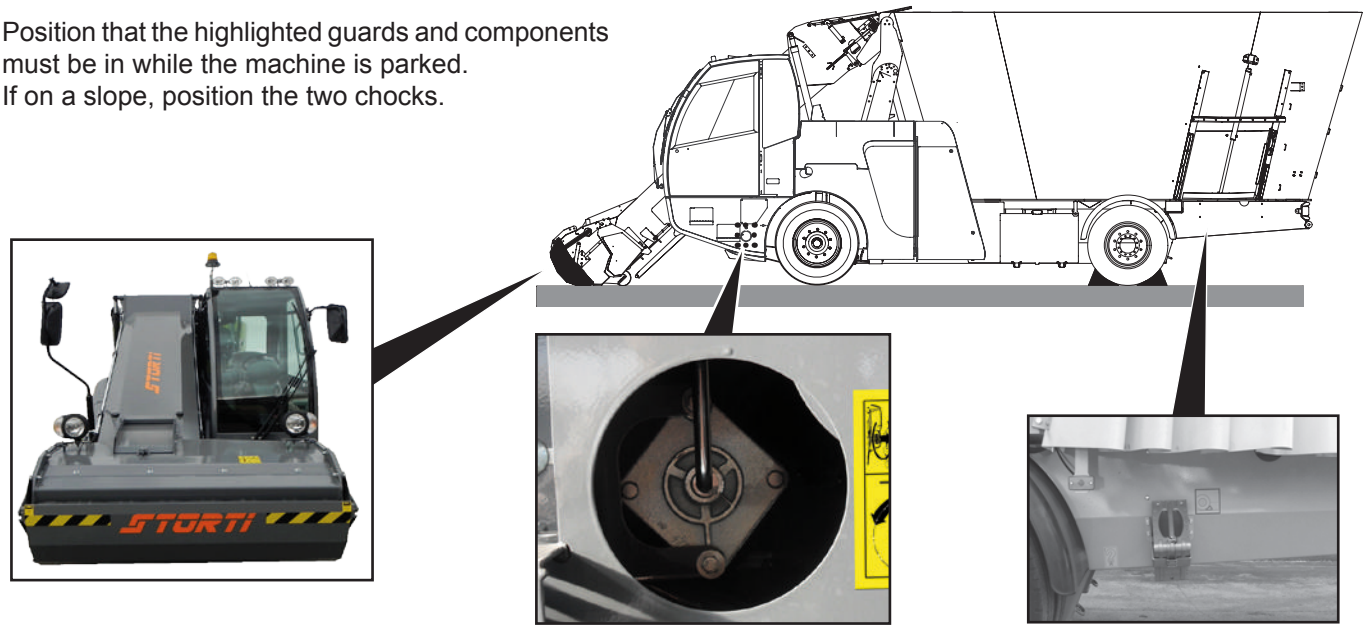
Sect. 5.34 RUNNING

Position that the highlighted guards and components must be in while the machine is running.



Sect. 5.35 PARKING

Position that the highlighted guards and components must be in while the machine is parked.
If on a slope, position the two chocks.



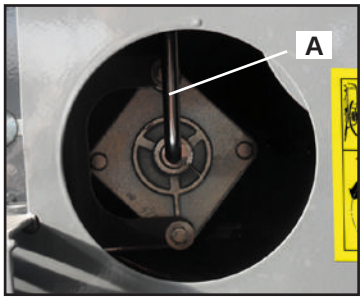
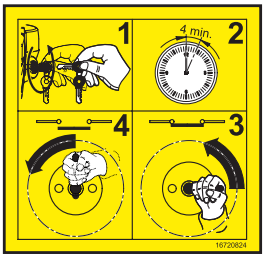


Fig.1

WARNING!!! Before disconnecting the battery cut out switch, wait at least 4 minutes from when the the ignition panel switches off, to allow the control unit t o run the **"AFTER RUN"** program,to control the **UREA** circuit and the control units to record the machine parameters.



Sect. 5.36 IN CASE OF FIRE

If a fire starts, due to causes inside or outside the machine, immediately deactivate the battery current using the manual battery cut out switch situated on the right side of the machine (A fig.1)
and use the extinguisher supplied.

Sect. 5.37 USE OF EXTINGUISHER

The workers who use the machine must be informed and taught about the risks arising from fire and how to put out a fire.
Check that the extinguisher is fully charged (seal present, indicator on the pressure gauge in green area) (A fig.1) and does not have any problems such as blocked nozzles, leaks, traces of corrosion, disconnected parts.
The maintenance card must be present on the appliance and correctly filled in.
1) How to use the extinguisher
Remove the safety pin.
Grip the nozzle.
Press the control lever down fully and point the jet at the base of the flames.

Warning!!!
After use, even partial use, the extinguisher must be sent to Customer Service with collection and return by skilled persons.

The user is responsible for keeping the extinguishers in working order, even if there is a periodic maintenance service by an external specialized company, and must therefore constantly carry out monitoring operations.
The user must also keep a special register, signed by the managers, where all the operations are to be constantly recorded.

Warning!!!
The extinguisher can be used only on the types of fire for which it has been approved; improper use can be dangerous (see instructions for use and fire class printed on the extinguisher B fig.2).

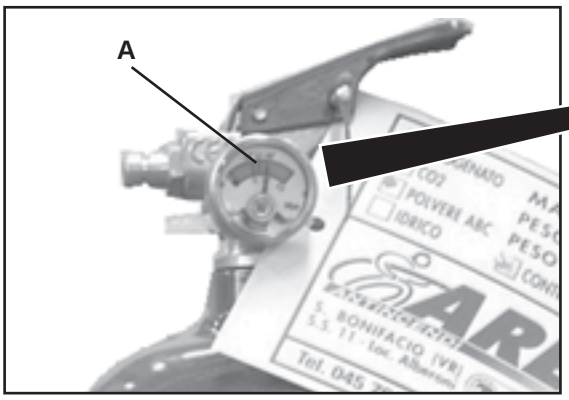


Fig.1

Fig.2

Sect. 6 MAINTENANCE

Sect. 6.1 RESPECT THE ENVIRONMENT

Air and earth are precious and irreplaceable assets; respecting them also means respecting ourselves.
It is therefore important to know the local regulations for correct disposal of waste oils and coolants.
If you do not know what these provisions are exactly, collect these liquids in watertight containers until you have obtained the relevant information from your supplier who will certainly be able to help you.
Avoid skin contact and do not allow the liquid to spill over when topping up.
Immediately repair damaged tanks or pipes; protect them properly when doing work with a welding machine, grinder or other equipment that could damage them.

Sect. 6.2 GENERAL MAINTENANCE RULES

General considerations:
To carry out machine maintenance work safely, some simple but essential rules must be followed.
1) The work area must be clean, clear of materials that may get in the way and with adequate lighting.
2) Air must be circulated to eliminate any stagnation of volatile substances.
3) There must be no sources that can trigger a fire.

Do not climb onto the machine to add or change the hydraulic oil. It is essential to use a ladder or secure support to lubricate the higher parts of the machine.
Before carrying out any checking or maintenance operation, you must do the following:
- **Switch off the engine.**
- **Remove the keys from the panel.**
- **Engage the parking brake.**
- **Lock the cabin and disconnect the battery switch.**
- **Chock the front wheels when working on the rear wheels.**
- **Close the valves of the milling cutter cylinders when you have to work at the front of the machine.**

Check the pressure of the tyres once a month and, if necessary, inflate them to the pressure indicated on the label.
Check the tightness of the bolts of the wheel hubs.
When filling up with diesel fuel, always check that there are no deposits in the prefilter, and clean it if necessary by unscrewing the plug under the bowl.
Each time, before starting the engine, check that the radiator grilles are clean.
Any straw or hay must be removed with the engine switched off to prevent the smallest parts from clogging the radiator.
Promptly replace or repair the control and warning instruments (warning lights, pressure gauges, audible warning devices).
When a fuse blows, always check for the cause.
If you find oil leaks, immediately check for the cause, carry out the necessary repairs and top up the oil level.
Make sure the cutting parts (milling cutter and auger blades) are always in working order.

a) If necessary, the milling cutter blades can be sharpened: broken ones must be promptly replaced in order not to compromise the balance of the milling cutter.
Replace them when their profile is shortened by 4 mm from the original spare one supplied.
Also check the wear and tightness of the fixing screws and nuts of the knives after the first 10 hours and at intervals of 250 hours.
WARNING!! If they appear worn before the first 250 hours, replace them immediately or tighten if they are loosened.

b) The auger blades must be replaced if worn.
This is to avoid creating more stress with greater wear of the mechanical parts and greater fuel consumption.

USE SUITABLE SAFETY EQUIPMENT FOR EVERY MAINTENANCE OPERATION
Work regarding strictly engine related parts are described in the relevant “FPT OPERATOR'S HANDBOOK”.

Sect. 6.3 GREAT CARE REQUIRED !!

Precaution for carrying out welding on any part of the vehicle (chassis, axles, hopper, engine, etc.) with motors having electronic control units, situated inside the cabin behind the seat and under the side panels on the right.

IMPORTANT: DO NOT wash the control units with water under pressure.
Before welding on **any** part of the machine and on the **motors** having motor control units, protect the unit from possible damage caused by overcurrents, as described below.

1) **Disconnect** the supply of current from the battery using the battery cut out switch situated near the steps for climbing into the cabin.
2) **Disconnect** all the connectors of the control units present on the machine (see fig.1).
3) **Connect** the welding machine earth near to the welding point and make sure the motor control unit and other electrical components are not in the area of the earth.

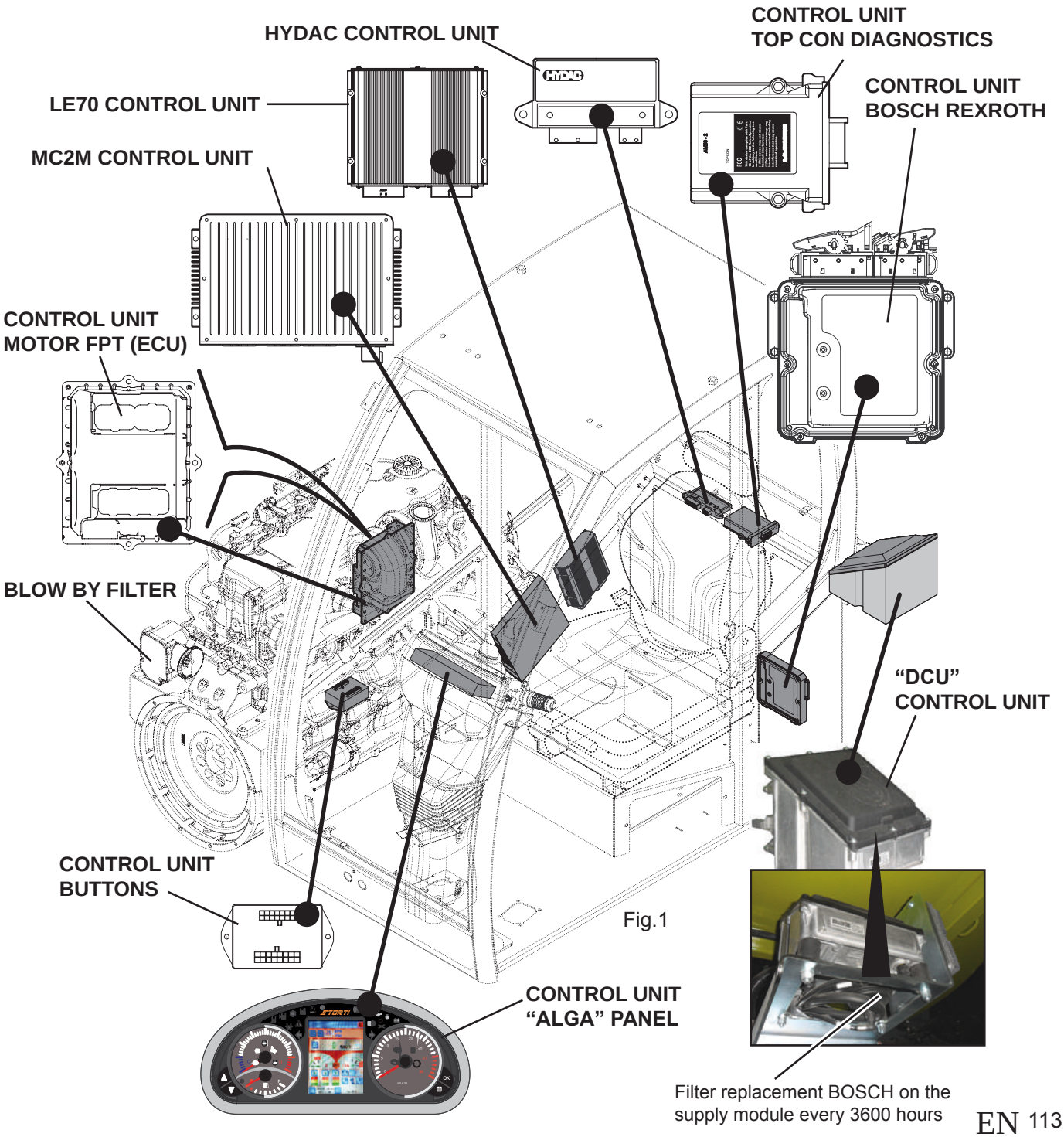


Fig.1

Filter replacement BOSCH on the supply module every 3600 hours

Sect. 6.4 Maintenance Plan - Dobermann SW EVO AS/HS

●Check / Adjustments - ■Replacement - ▲Cleaning - **x** Greasing

				Interval by hours of operation							
				After the first		Every		After			
	Page	CODE	Q.TY	10	100	8	50	250	500	1000	2000
*ENGINE OIL (MS 15W40 DCQ III LA)	123	98000033	15.2 l	●		●			■		
ENGINE OIL FILTER (2992242)	123	96150168	1						■		
*DIESEL FUEL PRE-FILTER (2992662)	115	96150169	1			●			■		
DIESEL FUEL FILTER (2992241)	123	96150167	1						■		
INTERNAL AIR FILTER CARTRIDGE (CH12-16418)	117	99012014	1			▲			■		
*AIR FILTER CARTRIDGE (ST12-16419)	117	99012015	1			▲			■		
CABIN INTERIOR AIR FILTER (006098)	85	98405546	1			▲			■		
*COOLANT (Eni Antifreeze Bike S)	123	98400553	35 l	●		●	■ 2000 hours or 2 years				
HYDRAULIC OIL FILTER CARTRIDGE	116	99011009	1						■		
HYDRAULIC OIL (Agip Oso 46)	114	98000000	85 l	●			●				■
AUGER GEARBOX OIL (Agip Blasia 220)	126	98000001	15+15 l	●	■		●			■	
TRANSMISSION OIL SI372 (Agip Blasia 220)	121	98000001	3.4 l	●	■		●			■	
GEARBOX OIL (Agip Blasia 220)	124	98000001	10 l	●	■		●			■	
MILLING CUTTER GEARBOX OIL (Agip Blasia 220)	129	98000001	1.5 l	●	■					■	
WHEEL GEARBOX OIL AS (Agip Rotra MP 85W140)	118	98000019	0.8+0.8 l	●				■			
DANA HS AXLE GEARBOXES (Agip Rotra MP/S 85W90)	118	98000029	1.05+1.05 l	●				■			
DANA AXLE DIFFERENTIAL (Agip Rotra MP/S 85W90)	99	98000029	13.4 l	●				■			
AUGER BLADE KIT	112		2	●				●/■			
MILLING CUTTER BLADE KIT	111		1	●				●/■			
TIGHTNESS AND WEAR OF AUGER BLADE SCREWS AND NUTS	111			●				●/■			
WHEEL NUT TIGHTENING	96			●	●			●			
OVERALL BOLT AND NUT TIGHTENING				●				●			
1« LEAK CHECKING FROM HYDRAULIC SYSTEM PIPES HYDRAULIC PIPE AND FITTING TIGHTENING				●			●				
AIR CONDITIONER BELT	134								●		
**ENGINE BELT								●		■	
INTAKE PIPING	117			●					●		
BATTERY	120								●		
CLUTCH	120			Automatic registration							
SUSPENSION	100			●					●		
2« RADIATOR CLEANING	117					▲					
LOADING CONVEYOR	129-132			●		▲	●				
UNLOADING CONVEYOR	133			●		▲	●				
2« ENGINE COMPARTMENT CLEANING							▲				
FRONT WHEELS (315/70 R22.5)	96	99100166	2					●8 bar			
REAR WHEELS (275/70 R22.5)	96	99100176	4					●8 bar			
UNLOADING DOOR GUIDES	128							x			
CARDAN SHAFT CROSSES	123-128						x				
BEARINGS / BUSHINGS		Spare cartridge 98400890 1		Automatic greaser NLGI-0							
CYLINDERS AND PIVOT PINS				Automatic greaser NLGI-0							
OTHER NON-AUTOMATED POINTS								x			
REPLACEMENT FILTER BY BLOW see position on page 113				EVERY 1500 hours							
DeNOx 2 SYSTEM MONITORING DIAGNOSTIC MESSAGES REGISTERED BY ENGINE CONTROL EVERY 1800 HOURS (or every 2 years)											
DEF/AD BLUE TANK FILTER CLEANING see position on page 148				WHEN NECESSARY							
SUPPLY LINE FILTER CLEANING (VOSS) see position on page 148				AT EACH OIL CHANGE							
FILTER REPLACEMENT (BOSCH) ON SUPPLY MODULE see position on page 113				3600 HOURS (or every 2 years)							
FPT ENGINE (SEE MANUAL SUPPLIED)											

NOTES:
1« Regularly check the rubber hoses; replace them if obvious signs of deterioration are found by visual inspection.
2« Thoroughly clean with air to eliminate dust and deposits of foreign matter.
N.B. THE QUANTITIES OF OIL INDICATED IN THE TABLE ARE APPROXIMATE. IT IS THE MAINTENANCE TECHNICIAN'S RESPONSIBILITY TO CHECK THE EXACT QUANTITY OF OIL BY REFERRING TO THE MAXIMUM LEVEL CHECKING POINTS INDICATED IN THE MACHINE OPERATION AND MAINTENANCE HANDBOOK.
*REFER TO THE FPT ENGINE MANUAL SUPPLIED
**IN CASE OF NECESSITY REPLACE BEFORE

Sect. 6.5 Maintenance Plan - Dobermann SW EVO GP

●Check / Adjustments - ■Replacement - ▲Cleaning - **x** Greasing

				Interval by hours of operation							
				After the first		Every		After			
	Page	CODE	Q.TY	10	100	8	50	250	500	1000	2000
*ENGINE OIL (MS 15W40 DCQ III LA)	123	98000033	15.2 l	●		●			■		
ENGINE OIL FILTER (01183574)	123	99003049	1						■		
*DIESEL FUEL PRE-FILTER (2992662)	115	96150169	1			●			■		
DIESEL FUEL FILTER (2992241)	123	96150167	1						■		
INTERNAL AIR FILTER CARTRIDGE (CH12-16418)	117	99012014	1			▲			■		
*AIR FILTER CARTRIDGE (ST12-16419)	117	99012015	1			▲			■		
CABIN INTERIOR AIR FILTER (006098)	85	98405546	1			▲			■		
*COOLANT (Eni Antifreeze Bike S)	123	98400553	35 l	●		●	■ 2000 hours or 2 years				
HYDRAULIC OIL FILTER CARTRIDGE	116	99011009	1						■		
HYDRAULIC OIL (Agip Oso 46)	114	98000000	85 l	●			●				■
AUGER GEARBOX OIL (Agip Blasia 220)	126	98000001	39.5+39.5 l	●	■		●			■	
TRANSMISSION OIL SI380 (ROTRA LSX 75W90)	121	98000030	5 l	●	■		●			■	
GEARBOX OIL (Agip Blasia 220)	125	98000001	10 l	●	■		●			■	
MILLING CUTTER GEARBOX OIL (Agip Blasia 220)	129	98000001	1.5 l	●	■					■	
WHEEL GEARBOX OIL GP (Agip Rotra MP 85W140)	119	98000019	1.2+1.2 l	●				■			
AUGER BLADE KIT	112		2	●				●/■			
MILLING CUTTER BLADE KIT	111		1	●				●/■			
TIGHTNESS AND WEAR OF AUGER BLADE SCREWS AND NUTS	111			●				●/■			
WHEEL NUT TIGHTENING	96			●	●			●			
OVERALL BOLT AND NUT TIGHTENING				●				●			
1« LEAK CHECKING FROM HYDRAULIC SYSTEM PIPES HYDRAULIC PIPE AND FITTING TIGHTENING				●			●				
AIR CONDITIONER BELT	134								●		
**ENGINE BELT								●		■	
INTAKE PIPING	117			●					●		
BATTERY	120								●		
CLUTCH	120			Automatic registration							
SUSPENSION	100			●					●		
2« RADIATOR CLEANING	117					▲					
LOADING CONVEYOR	129-132			●		▲	●				
UNLOADING CONVEYOR	133			●		▲	●				
2« ENGINE COMPARTMENT CLEANING							▲				
FRONT WHEELS (315/70 R22.5)	96	99100166	2					●8 bar			
REAR WHEELS (275/70 R22.5)	96	99100176	4					●8 bar			
UNLOADING DOOR GUIDES	128							x			
CARDAN SHAFT CROSSES	123-128						x				
BEARINGS / BUSHINGS		Spare cartridge 98400890 1		Automatic greaser NLGI-0							
CYLINDERS AND PIVOT PINS				Automatic greaser NLGI-0							
OTHER NON-AUTOMATED POINTS								x			
REPLACEMENT FILTER BY BLOW see position on page 113				EVERY 1500 hours							
DeNOx 2 SYSTEM MONITORING DIAGNOSTIC MESSAGES REGISTERED BY ENGINE CONTROL EVERY 1800 HOURS (or every 2 years)											
DEF/AD BLUE TANK FILTER CLEANING see position on page 148				WHEN NECESSARY							
SUPPLY LINE FILTER CLEANING (VOSS) see position on page 148				AT EACH OIL CHANGE							
FILTER REPLACEMENT (BOSCH) ON SUPPLY MODULE see position on page 113				3600 HOURS (or every 2 years)							
FPT ENGINE (SEE MANUAL SUPPLIED)											

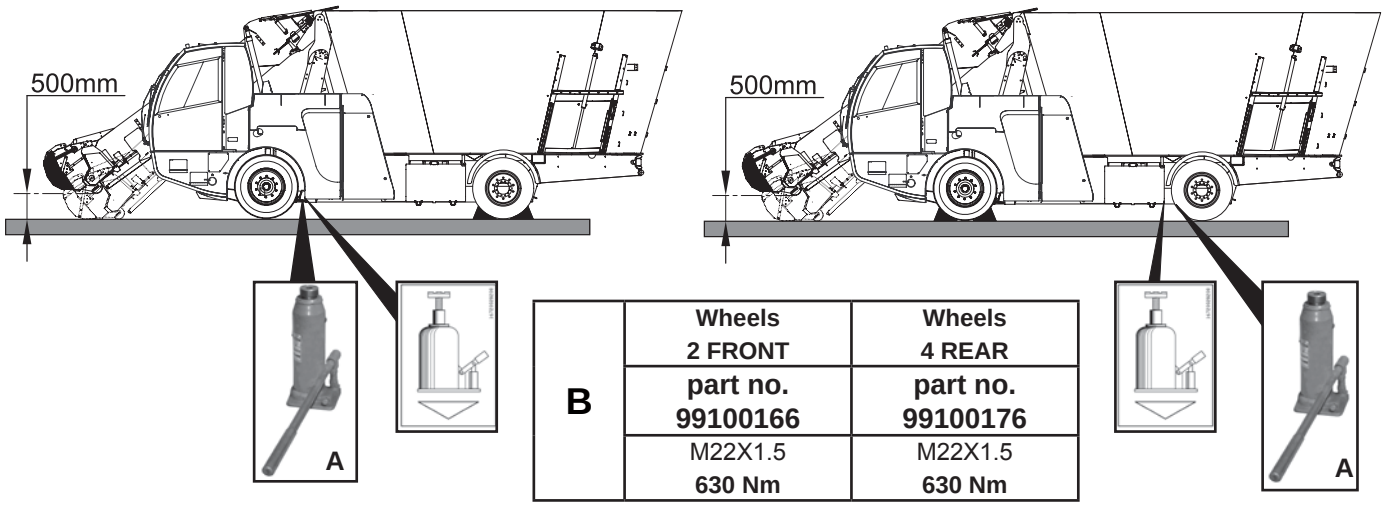
NOTES:
1« Regularly check the rubber hoses; replace them if obvious signs of deterioration are found by visual inspection.
2« Thoroughly clean with air to eliminate dust and deposits of foreign matter.
N.B. THE QUANTITIES OF OIL INDICATED IN THE TABLE ARE APPROXIMATE. IT IS THE MAINTENANCE TECHNICIAN'S RESPONSIBILITY TO CHECK THE EXACT QUANTITY OF OIL BY REFERRING TO THE MAXIMUM LEVEL CHECKING POINTS INDICATED IN THE MACHINE OPERATION AND MAINTENANCE HANDBOOK.
*REFER TO THE FPT ENGINE MANUAL SUPPLIED
**IN CASE OF NECESSITY REPLACE BEFORE

300 l DIESEL FUEL TANK- reserve 55/60 l

UREA 42 l TANK

Sect. 6.6 CHANGING THE WHEELS

Before starting each operation, make sure the milling cutter is at least half a metre off the ground.



B	Wheels 2 FRONT	Wheels 4 REAR
	part no. 99100166	part no. 99100176
	M22X1.5 630 Nm	M22X1.5 630 Nm

The jack **(A)** for lifting must have a minimum capacity of 10 T, and must be positioned under the two chassis side members marked by a pictogram.
Switch off the engine and chock the wheels on the opposite side to the side to be lifted;
Lock the cabin and take the keys with you;
Position the jack under the side member and lift the wheel off the ground;
Unscrew the nuts and change the wheel;
The tightening torque must be: See table **B.**

Sect. 6.7 TOWING

WARNING!!! NOTE APPLYING TO ALL VERSIONS.
If the machine is parked on a slope and it is not possible to move it to a level area, before releasing the rear wheels it is ABSOLUTELY necessary to position the 2 chocks supplied under the wheels on the down side of the vehicle because once the connection pinions have been removed the machine will be without brake.

Sect. 6.7.1 TOWING ON AS VERSION

When towing **ON AS VERSION,** it is essential to release the rear wheels by removing the connecting pinion (A fig.1) from the gearbox using the relevant spanner (B fig.1) and screw (M6 fig.1) supplied.

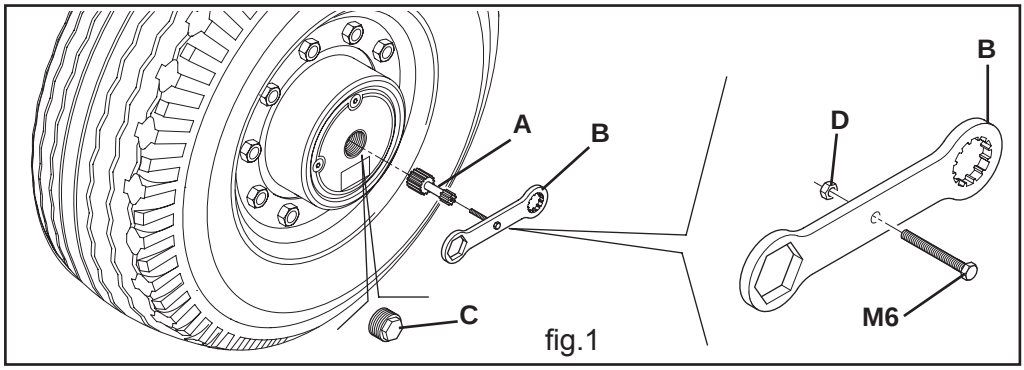


fig.1

After removing the central plug (C fig.1), screw the M6 screw onto the special tool supplied and lock it with the nut (D fig.1), and then screw it onto the shaft (A fig.1), so that you can get hold of it. Take it out completely and put back the plug (C fig.1) to prevent oil from coming out.

N.B.: For towing the towing bar must be used as the connection pinions are removed (A), the machine no longer has brakes.

Sect. 6.7.2 TOWING ON GP VERSION

When towing, it is essential to release the rear wheels by removing the connecting pinion (A fig.1) from the gearbox using a screw B (M6x1 fig.1) that is not supplied.

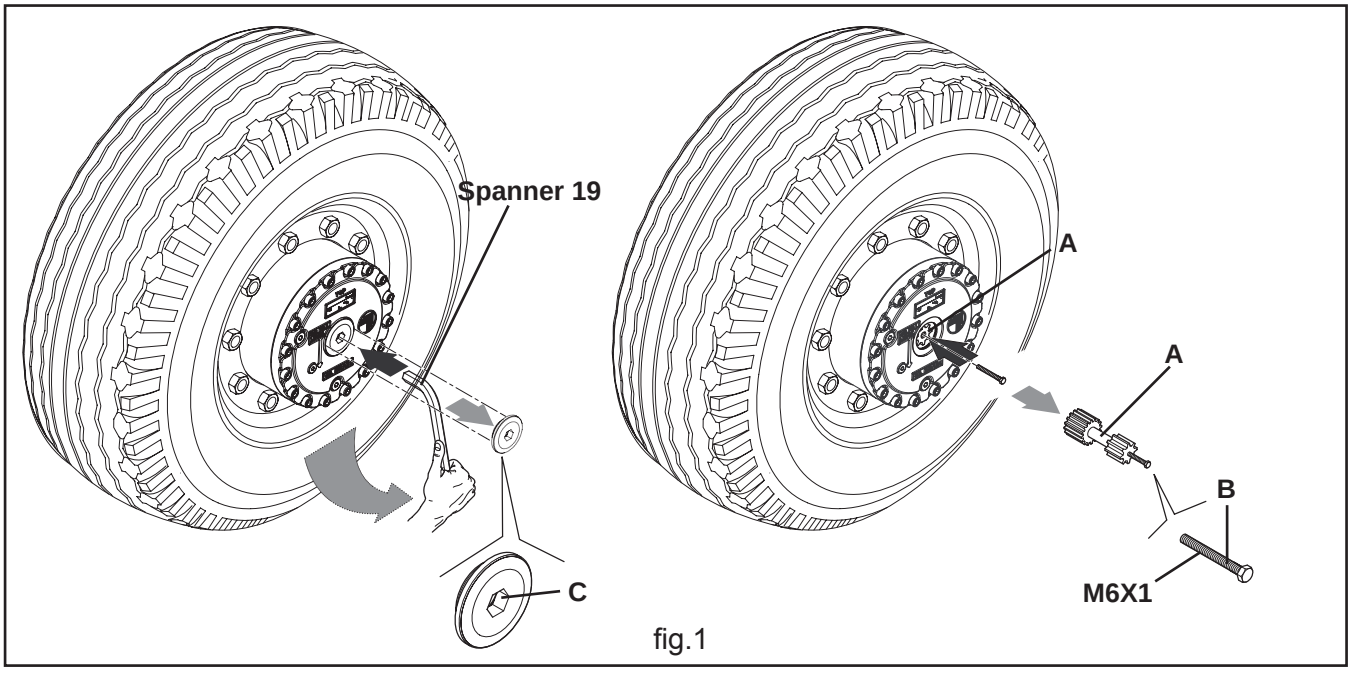
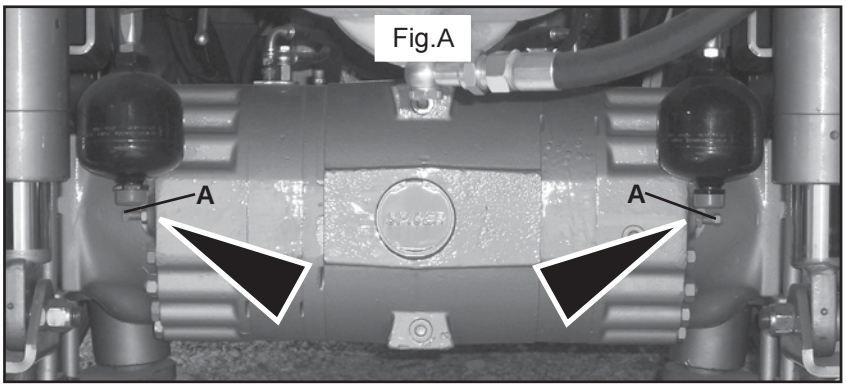


fig.1

After removing the central plug (C fig.1), screw the M6 screw onto the shaft (A fig.1), so that you can get hold of it. Take it out completely and put back the plug (C fig.1) to prevent oil from coming out.

N.B.: For towing the towing bar must be used as the connection pinions are removed (A), the machine no longer has brakes.

Sect. 6.7.3. TOWING ON VERSION WITH DANA AXLE (HS)



When towing ON 35 km/h VERSION (with DANA axle), it is essential to release the rear wheels from the negative brake (4 side screws) (A fig.A) and follow the photographic procedure.

EMERGENCY MANUAL RELEASE
Loosen the nuts (30) of the screws (31) fig.1 for the manual mechanical release of the braking units and move the nuts back by about 8 mm.

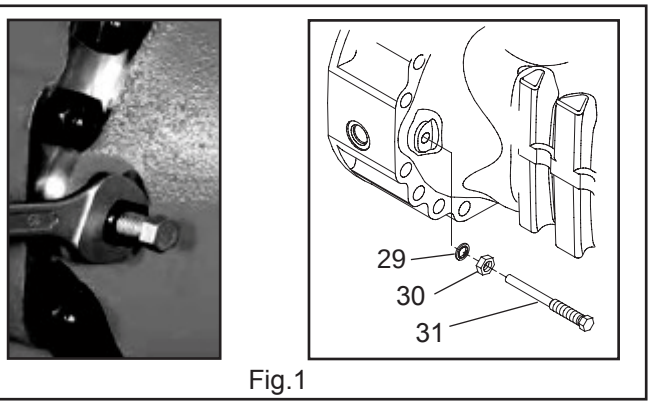


Fig.1

Using a spanner, screw in the screws (31) alternately by a 1/4 turn at a time, to compress the Belleville spring washers and free the brake discs fig.3.
IMPORTANT.
Screw in for a max.of one turn.

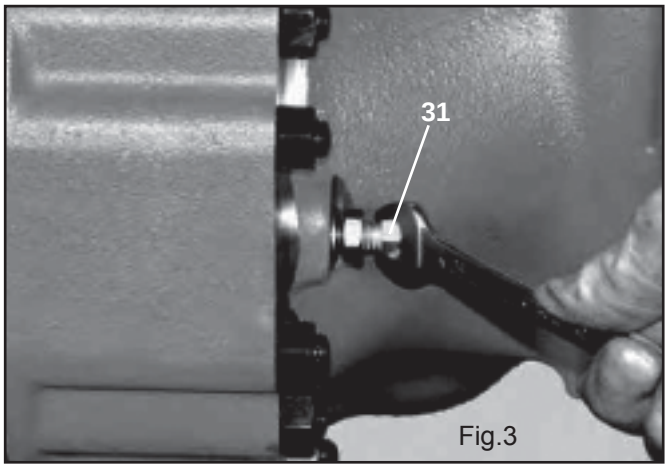


Fig.3

Adjust the screws (31) until they protrude from the arm by 30 ± 0.5 mm. fig.5

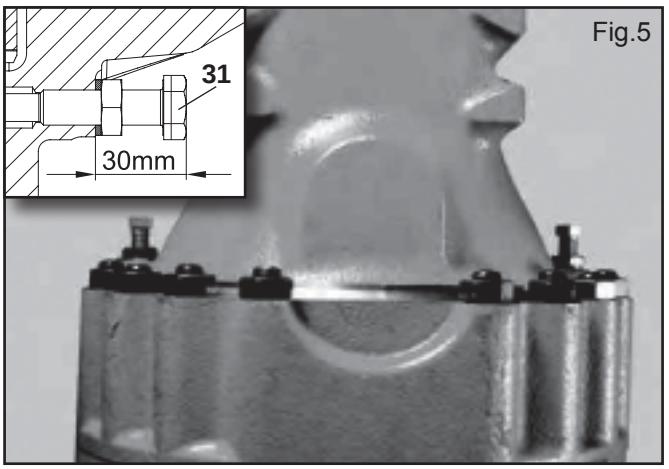


Fig.5

Screw in the screws (31) until they are up against the pressure plate (fig.2)

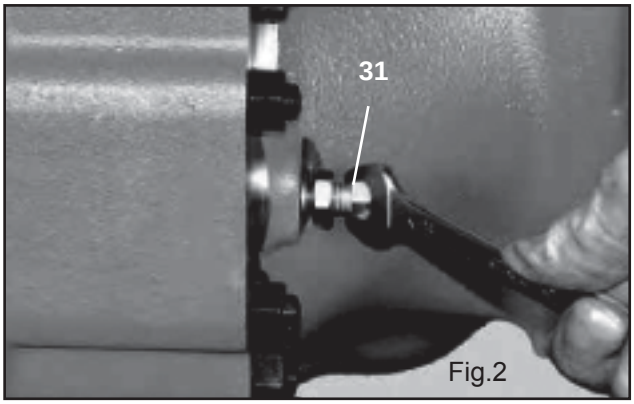


Fig.2

ADJUSTMENT AFTER MANUAL RELEASE
MANUAL Remove the screws complete with nuts and gaskets.
Replace the gaskets, lubricate the screws with silicone grease Tecno Lube /101 and fit everything in the arm fig.4

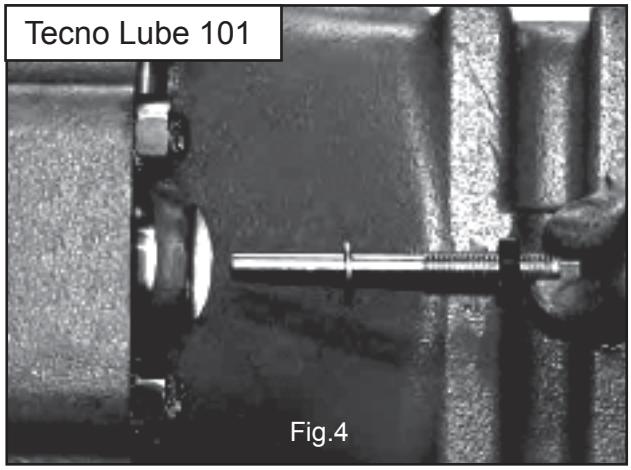


Fig.4

Lock in position with the nuts (30). **WARNING!** Maintain the position of the screws (31) when the nuts are released (30); after locking, check the the protrusion of the screws (31) again.

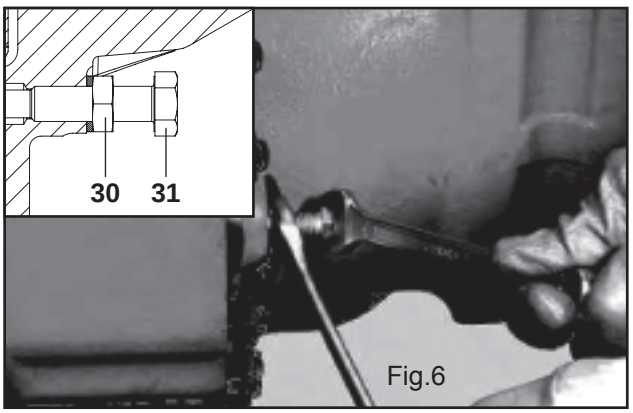


Fig.6

N.B.: For towing the towing bar must be used as the connection pinions are removed (A), the machine no longer has brakes.

Sect. 6.7.3.1 ROUTINE MAINTENANCE OF DANA AXLE OF DOBERMANN HS

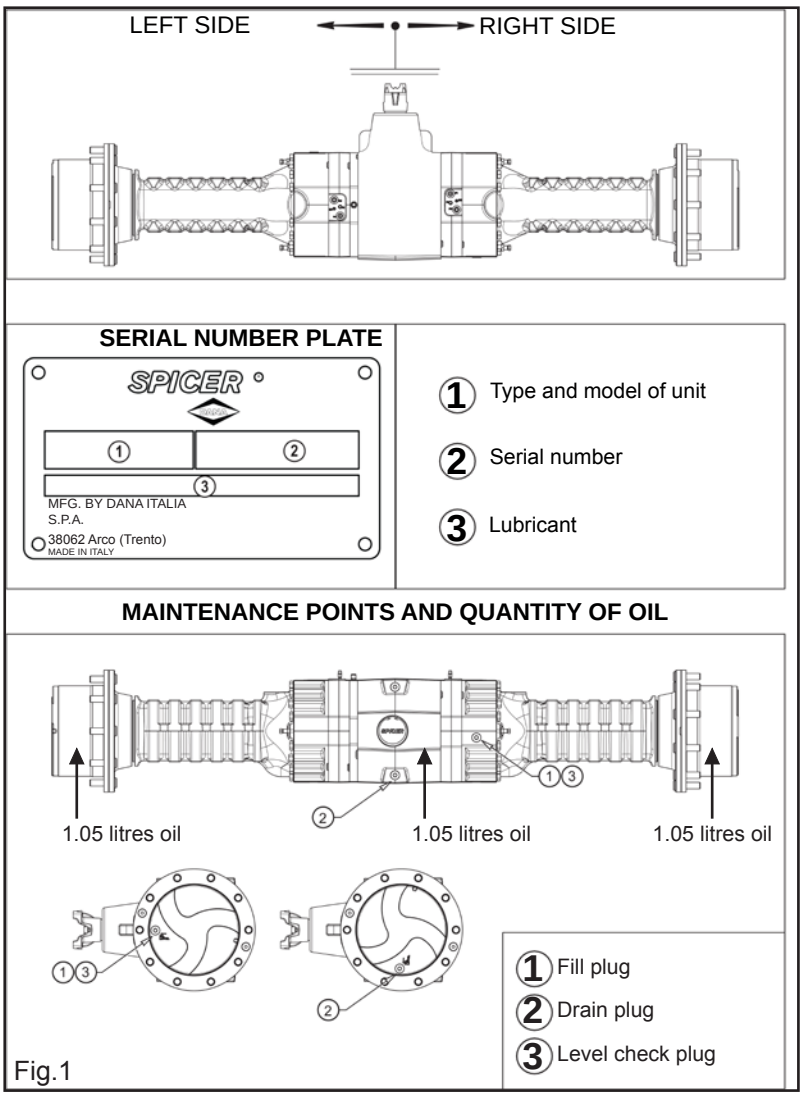
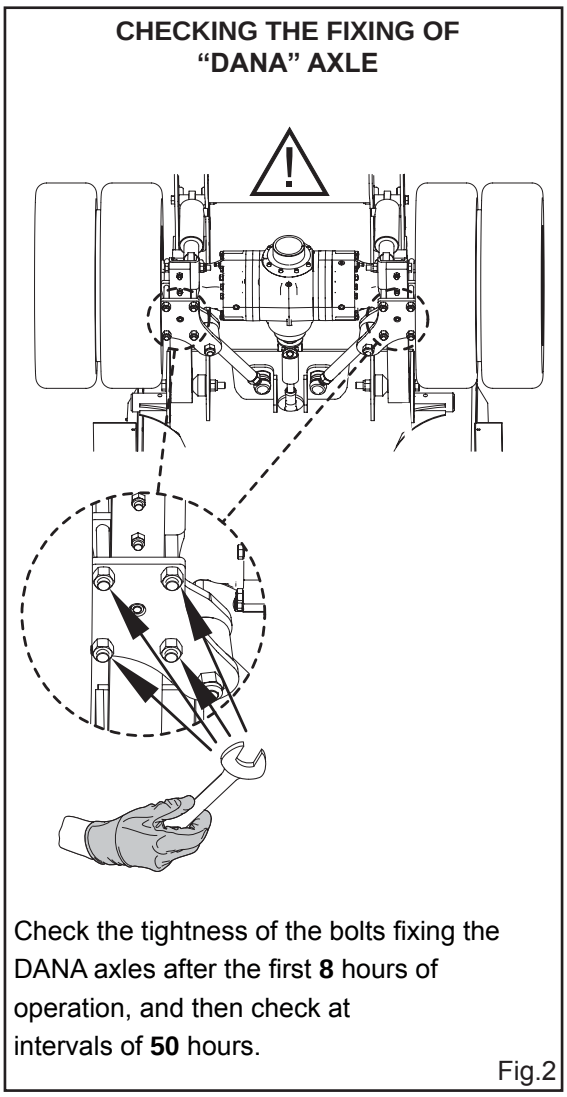


Fig.1



Check the tightness of the bolts fixing the DANA axles after the first **8** hours of operation, and then check at intervals of **50** hours.

Fig.2

MAINTENANCE INTERVALS

OPERATION		FREQUENCY	LUBRICANTS
Check of levels	Differential	Monthly	SAE85W90 (API GL4 - MIL L-2105 With additives for oil bath brakes SAE85W90 (API GL5 - MIL L-2105-B For versions with hypoid bevel gear and/or with self-locking differential, with additives for oil bath brakes
	Planetary reducer	Every 200 hours	
Oil change	Differential	Every 250 hours ✳	
	Planetary reducer	Every 250 hours ✳	
	Self-locking differential	Every 250 hours ✳❒	

❒Initially after 100 hours of operation
✳Also at the first signs of noisy running or braking

OPERATION	PART	CONDITIONS	FREQUENCY	LUBRICANTS
Lubrication	Joints	Normal work	Monthly	MOLIKOTE
		Heavy work	Weekly	

ADJUSTMENT AND CHECKS

UNIT	OPERATION	FREQUENCY	BRAKE CONTROL CIRCUIT
Negative brake	Adjustment	Every 1000 hours ✳	Use only mineral oil **ATF Dexron II**. Make sure the gaskets of the master cylinder are suitable for this oil
Service brake	Adjustment	Every 500 hours	
Wheel nuts	Tightening	Every 200 hours	

✳Initially after 100 hours of operation

Sect. 6.8 ADJUSTING THE FRONT SUSPENSION (NO HYDAC)

Operation to be carried out by 3 operators

When, after the recommended time (see table), it is necessary to adjust or restore the full functionality of the front suspension, follow the procedure below:

1) Park the machine on a level surface with the engine off;
   one operator checks the RIGHT suspension, another checks the LEFT suspension in the cabin.
2) To access the adjustment point, open the left side door; on the right near the radiator fan, there is the valve in closed position (A fig.1)
3) Remove the setscrew (B fig.2), remove the washer with assembly marks (C fig.2) and remove the lever of the valve (D fig.2)
4) Remove the stop ring (E fig.2), remove the safety plate (F fig.2) and turn it anticlockwise through 90° (F fig.3)
5) Insert the valve lever (G fig.3), open by turning anticlockwise until it locks with the plate (F fig.4).
   Open the valve to fully unload the suspension.
6) Switch on the machine and accelerate fully, so the suspension is loaded, and then unload completely; repeat the operation twice to be sure there is no air; while it reloads and rises, measure (fig.5) the piston and when it reaches 90mm close the valve (G fig.6).
7) If you find a height difference between the two suspensions (due to uneven ground), you should measure the 180mm part; this is because the machine adapts to the ground and keeps it level.
   If you find other problems, call the after-sales service centre.
8) When the operation has been completed, repeat the various operations in reverse order from point 5 to point 2
9) Do a test run.
   If the setting is not satisfactory, repeat the procedure.
10) If the reset is unsuccessful, we advise contacting the after-sales service centre.

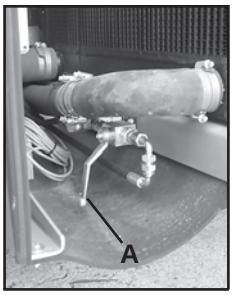


fig.1

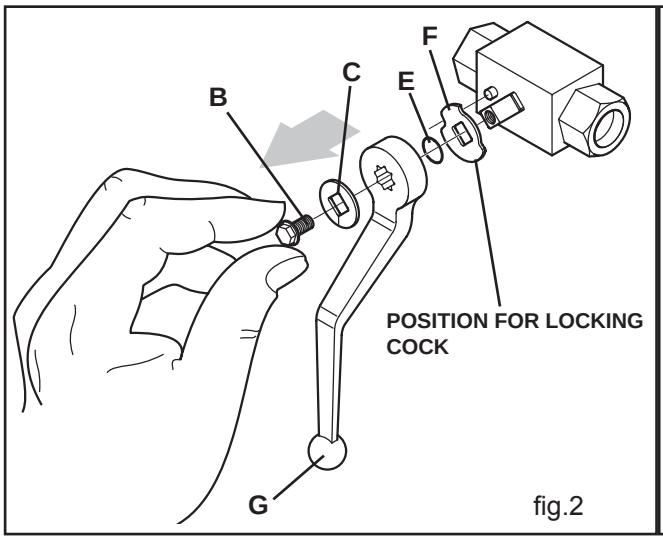


fig.2

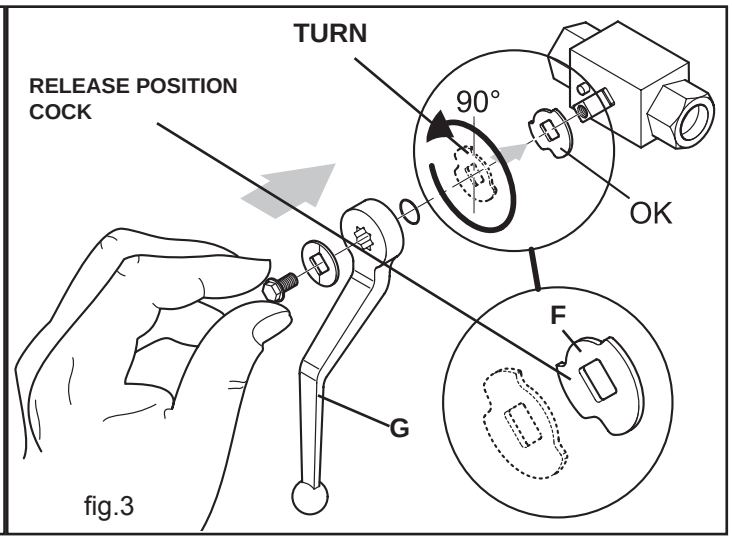


fig.3

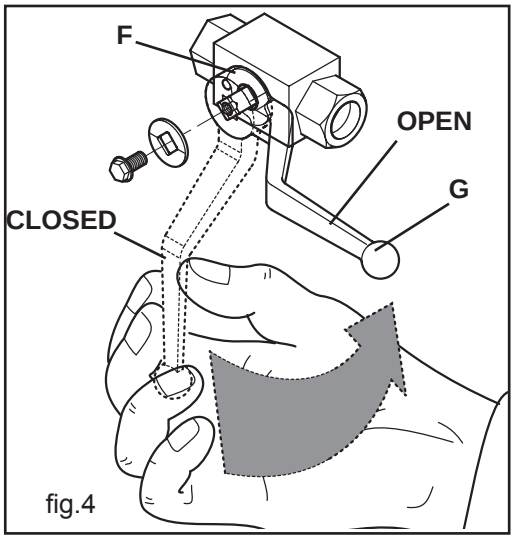


fig.4

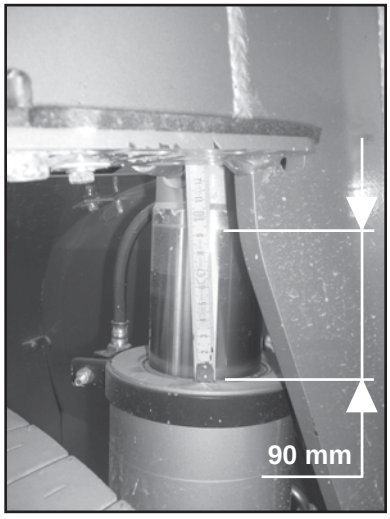


fig.5

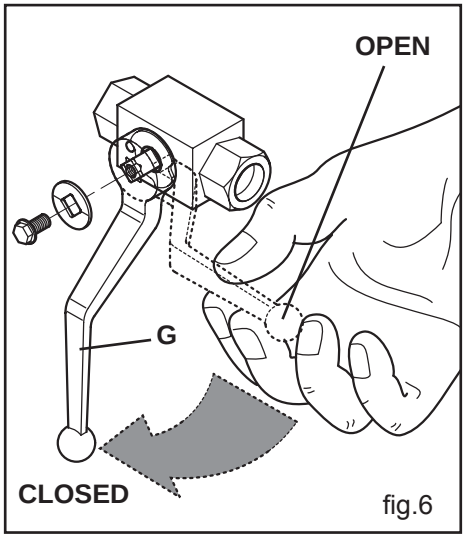


fig.6

Sect. 6.8.1 ADJUSTING THE FRONT AND REAR SUSPENSION ON HS WITH DANA / OMSI AXLE

Operation to be carried out by 3 operators
When, after the recommended time (see table), it is necessary to adjust or restore the full functionality of the front suspension, follow the procedure below:

The Dobermann HS has front and rear suspension, the procedure for adjusting the front suspension is the same as for the AS version (see previous page), and the valve involved is detail A in fig.1.

WARNING!!"To adjust the rear suspension, proceed as follows: this is a dangerous operation with the risk of crushing if safety rules are not adopted; it is "**mandatory"** to put under the machine, near the rear axle under the chassis side members (A fig.2), a safety trestle (B fig.2) or 2 screw jacks (C fig.2) **(OF SUITABLE CAPACITY TO BEAR THE WEIGHT OF THE MACHINE)** that will stop the machine from lowering, when you are under the hopper unloading the suspension, with the opening of the cylinder valves.

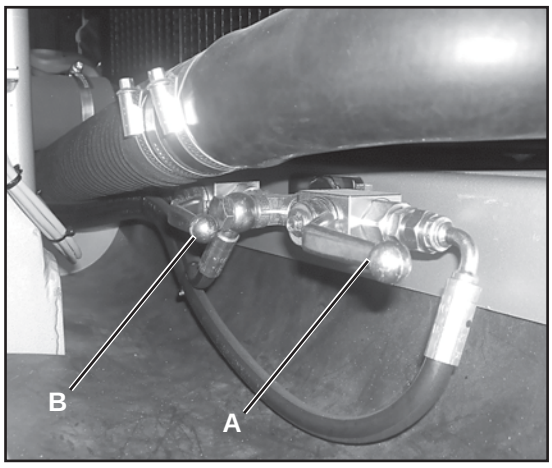


fig.1

USE SUITABLE SAFETY EQUIPMENT FOR EVERY MAINTENANCE OPERATION

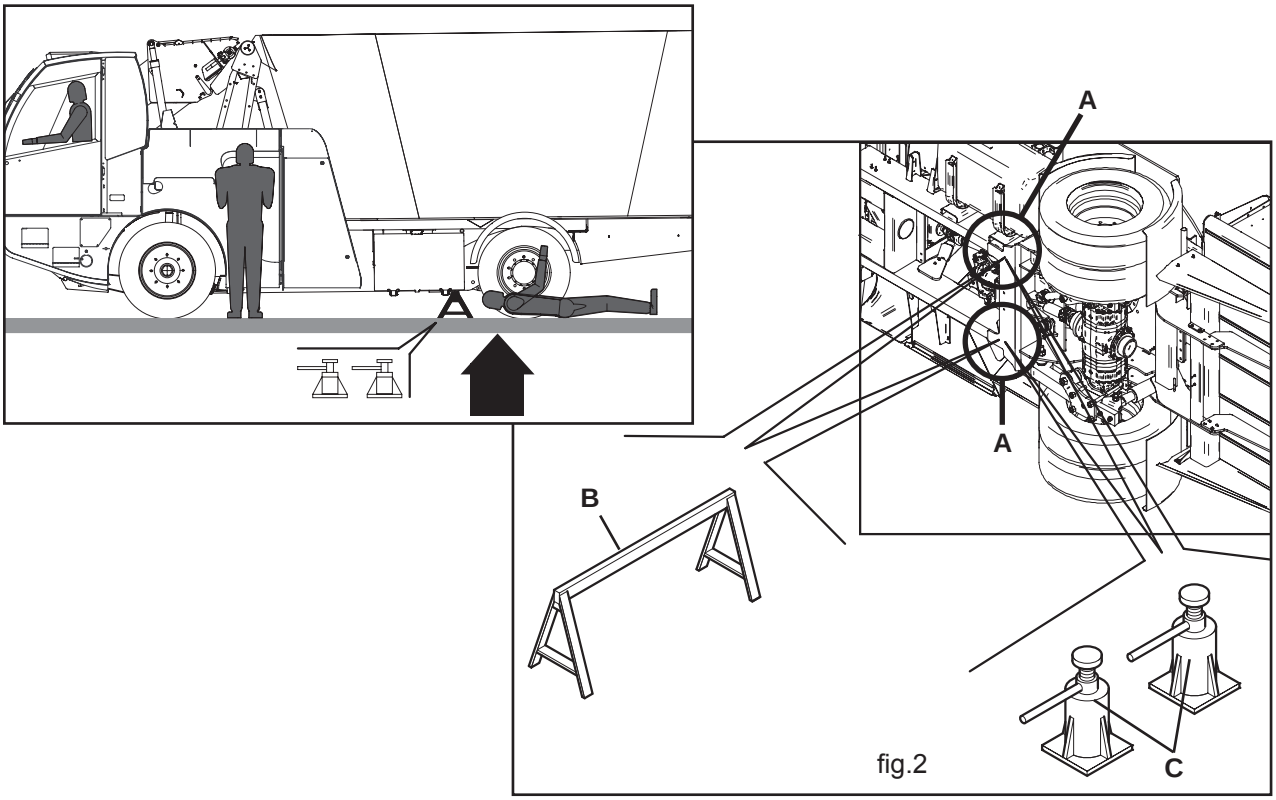


fig.2

1) Prepare the valves (B and C fig.) as for the front suspension adjustment.
2) Open the rear valves of the suspension (C fig.3).
2) Open the valve (B fig.1) and the suspension unloads.
3) Switch on the machine and accelerate fully, so the suspension is loaded, and then unload completely; repeat the operation twice to be sure there is no air, while it reloads and rises measure (fig.4) the the piston and when it reaches 90mm close the front valve (B fig.1), and then close the 2 rear valves (C fig.2).
4) When the operation has been completed, repeat the various operations in reverse order to lock the front valve (B fig.1) and the rear valves (C fig.2).
5) Do a test run.
   If the setting is not satisfactory, repeat the procedure.
6) If the reset is unsuccessful, we advise contacting the after-sales service centre.

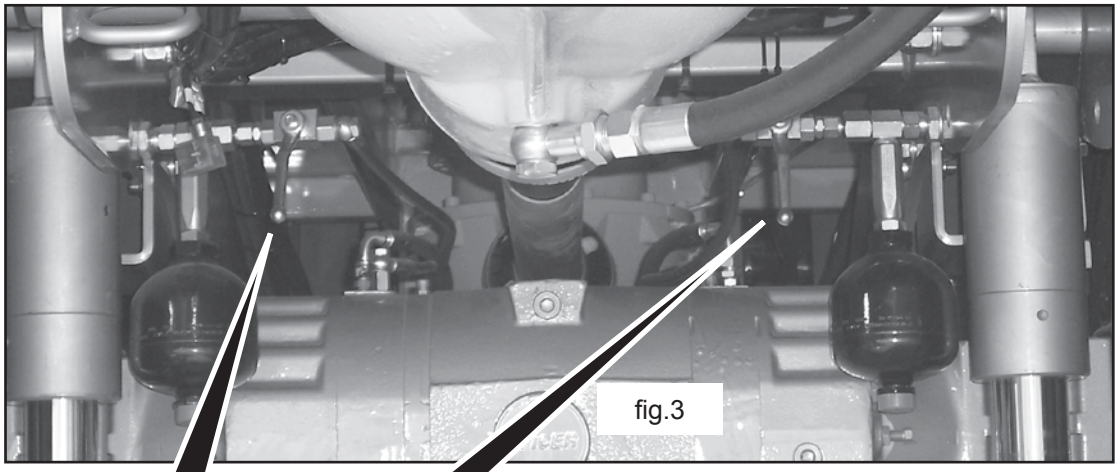


fig.3

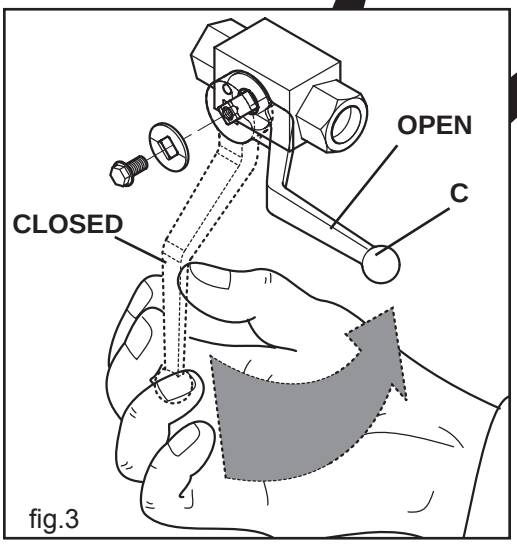


fig.3

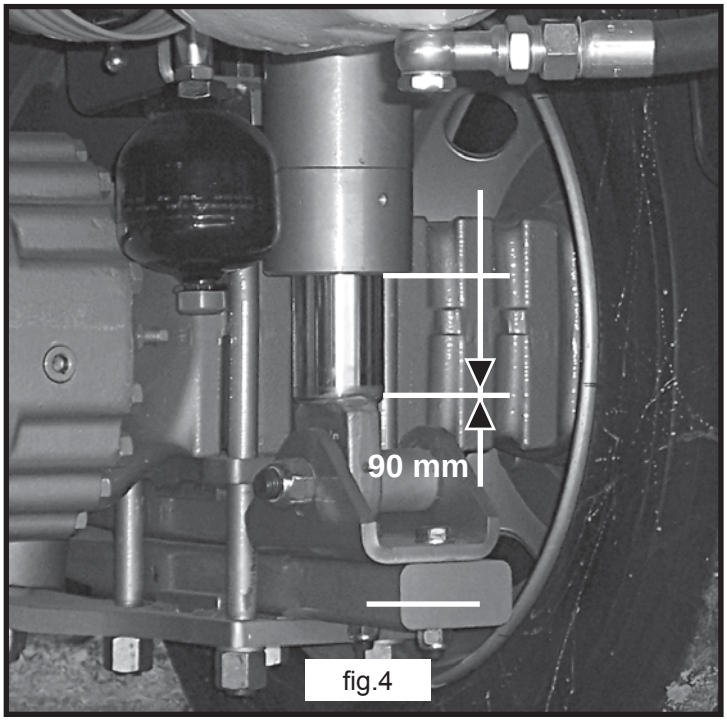


fig.4

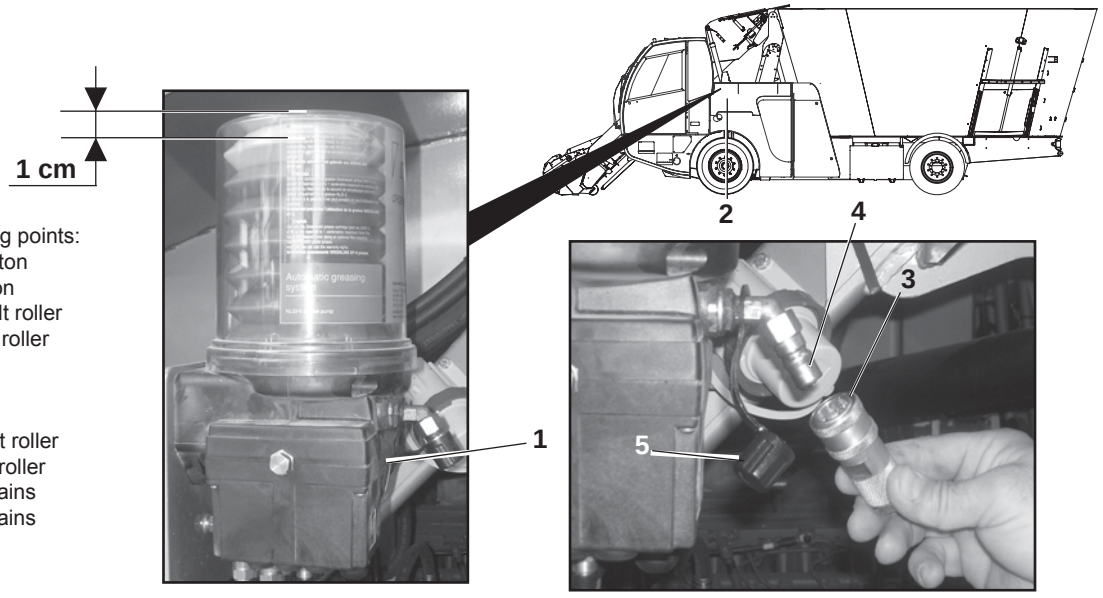
WARNING!!"Whenever you go under the machine for the various adjustment and checking operations, to work safely, position a trestle or suitable jacks as described previously.

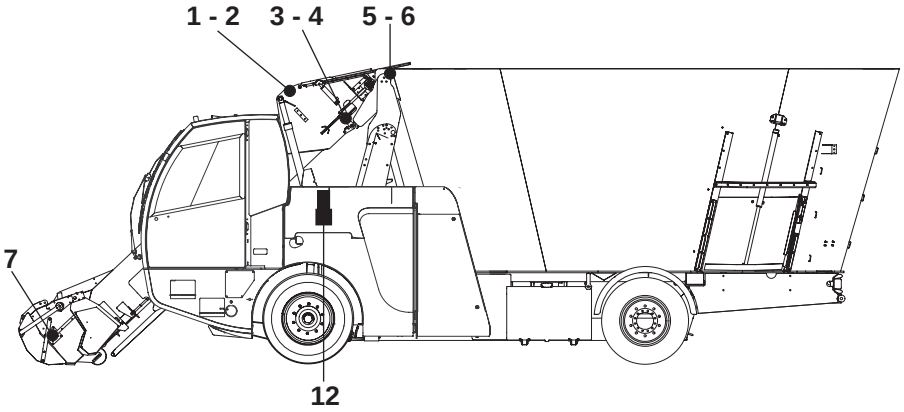
NOTES:
a) The suspension must be checked after the first 10 hours of operation and then every 500 hours.
b) When you have finished adjusting the suspension, make sure the machine is parallel to the reference plane and that it is set up correctly.
c) Check the front and rear wheel nuts.
The tightening torque must be **630 Nm.**

Sect. 6.9 AUTOMATIC CENTRALIZED LUBRICATION

The DOBERMANN SW EVO has automatic centralized lubrication with cyclic time controlled by electronic control unit (detail 1). (Lubricate as per maintenance table with ordinary grease AGIP MU 2).
The centralized lubrication system has 1 warning light situated on the side dashboard; when it is activated, the green warning light comes on.
The user should only check the level of grease in the tank and top it up **"twice at the most" and then replace the cartridge, part no. 98400890. 98400890**. (see sect.6.19)
The tank is accessed by opening the left side casing (detail 2).
To top up the level, proceed as follows: from the glove box in the cabin, take the quick-fit connection supplied (detail 3) for connection to the tank (detail 4), remove the plug (detail 5), connect the quick-fit connection (detail 3), and then connect the filling pump containing the new grease.
Fill the tank up to a maximum of 1 centimetre from the top of the tank.
The lower part of the piston must not go below the minimum level.
Use only **NLGI-0 Lithium calcium soap** grease.
When filling is finished, disconnect the quick-fit connection and close with the plug (detail 5).
Clean the quick-fit connection and put it back in its place.
N.B.: The right to warranty coverage will be lost if used inappropriately.

Diagram of automatic greasing points:
1 right milling cutter arm piston
2 left milling cutter arm piston
3 bearings of right upper belt roller
4 bearings of left upper belt roller
5 right arm joint
6 left arm joint
7 milling cutter bearing
8 bearings of right lower belt roller
9 bearings of left lower belt roller
10 belt roller transmission chains
11 belt roller transmission chains
12 grease tank





Sect. 6.10 ELECTRICAL COMPALUBE SYSTEM WITH ELECTRONIC TIMER

WARNING!!! The TIMER of the lubrication system control unit is **FACTORY** set to lubricate every 180 continuous minutes from when the machine is switched on and have **MEMORY** EFFECT (the minutes of operation after each switch-on of the machine are not added together).

When the machine is switched off, the minutes of operation not is reset; if the times are less than 180 continuous minutes, in order for the machine to be lubricated, the electronic control unit must be **reprogrammed** manually depending on the continuous operating time that you consider suitable for your daily use (see table fig. 3).

THE LUBRICATION INTERVAL CAN BE SET UP TO 240 CONSECUTIVE MINUTES.

The main operation of putting the system into service is the setting of the electronic timer.
The length of the lubrication interval depends on the following factors: the quantity of lubricant required by the greasing points and the operating conditions.
Setting procedure
1.Remove the assembly screws from the cover A fig.1 of the timer using a special Allen key.
2.Remove the cover (being careful with the gasket).
3.On the integrated circuit, there are 4 micro switches (DIP-switch B Fig.2): set the switches on the correct position for the required lubrication interval (see table below).
4.Put the cover back in place. Check that the gasket is seated correctly.
Then lock the cover in place by tightening the Allen screws.

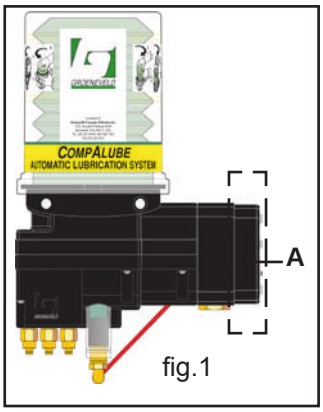


fig.1

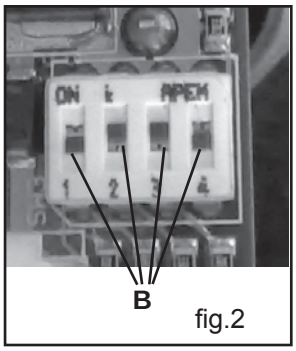


fig.2

Pause interval	Micro switch 1	Micro switch 2	Micro switch 3	Micro switch 4
30 minutes	OFF	OFF	OFF	not relevant
45 minutes	ON	OFF	OFF	not relevant
60 minutes	OFF	ON	OFF	not relevant
90 minutes	ON	ON	OFF	not relevant
120 minutes	OFF	OFF	ON	not relevant
150 minutes	ON	OFF	ON	not relevant
180 minutes	OFF	ON	ON	not relevant
240 minutes	ON	ON	ON	not relevant

fig.3

Sect. 6.10.1 COMPALUBE - AUTOMATIC LUBRICATION SYSTEM

The electrically operated CompAlube lubrication systems consist of the components listed below (Fig 1):
1.the pump unit, which in turn completes:
•an electric pump for lubrication (rotary gear pump);
•a lubricant tank (grease cartridge);
•the control unit (electronic timer);
•the metering units;
•a probe for transmission of lubricant pressure;
•a filling connection (optional);
2.the lubricant pipes present between the metering units and the various greasing points;
3.a power cable to the pump;
4.the pump fixing bracket (not visible in the illustration).

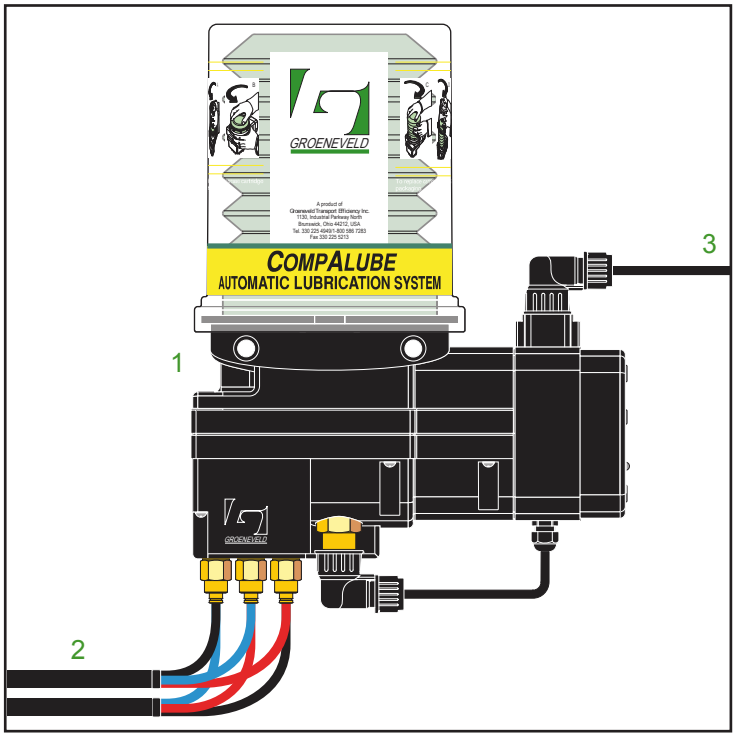


fig.1

COMPALUBE SYSTEM WITH INTEGRATED ELECTRONIC TIMER
The CompAlube pneumatic pump unit with integrated electronic timer consists of the components listed below (Fig.2)
1.transparent cover
2.grease cartridge
3.rotary gear pump
4.pressure regulating valve
5.metering units
6.motor
7.integrated circuit
8.electrical fitting
9.filling connection (optional)
10.test button
11.lubricant pressure switch

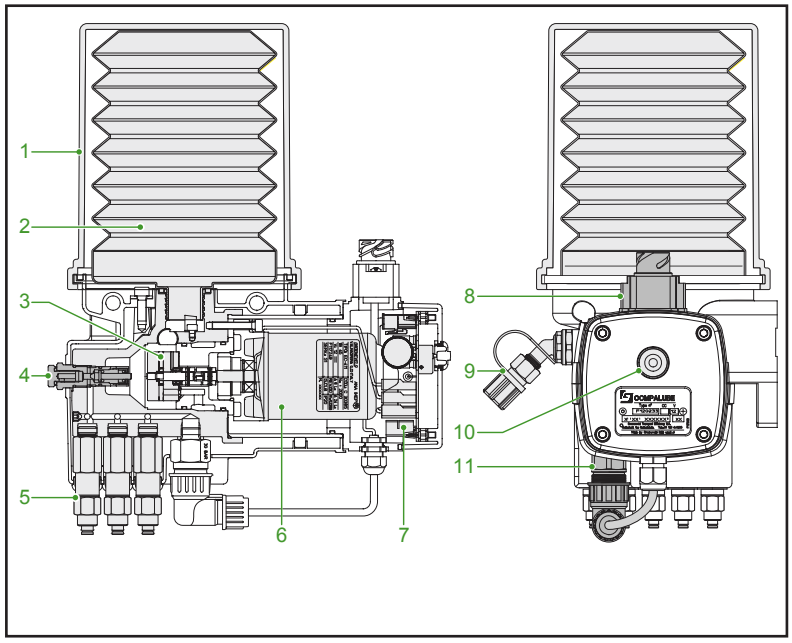


fig.2

CARRYING OUT A TEST CYCLE

Press the test button on the right side of the pump unit (Fig 3) for at least 3 seconds and for no more than 6 seconds until you hear the pump motor starting to work (if the test button is pressed for longer than 6 seconds, a multiple test cycle will be started consisting of 10 consecutive cycles, which are useful, for example, for lubrication after repair work on the vehicle).
This way, the pumping procedure will be started.
This procedure takes 2 minutes. At the end of the 2 minutes, the direction of rotation will be reversed for 90 seconds to gradually reduce the pressure of the lubricant inside the pump.
Wait 15 seconds before starting off the next procedure.

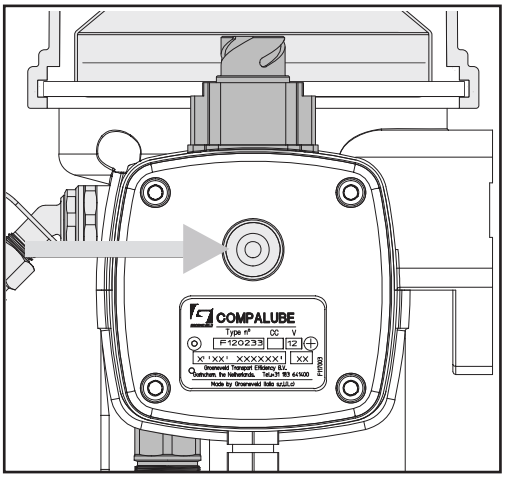


fig.3

REPLACING THE GREASE CARTRIDGE

The CompAlube pump unit has a replaceable grease cartridge (Fig 4).
The cartridge is protected by a transparent cover and can be replaced quickly and easily.

WARNING:
To avoid letting impurities into the pump during cartridge replacement, before removing the transparent cover, clean the pump unit and the space immediately surrounding it.
When removing a cartridge that is not completely empty, remember that grease may spill out. Protect the environment and prevent spilling of grease.
To dispose of empty cartridges and lubricant, follow current disposal regulations.

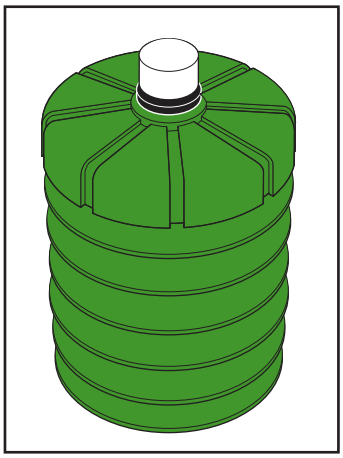


fig.4

1.The transparent cover (Fig 5) has a bayonet connection.
To remove it, rotate it anticlockwise and lift it off the pump unit.

2.Remove the empty cartridge. The cartridge is screwed onto the pump: to remove it, rotate it to the left (anticlockwise) (Fig 6) and lift it.

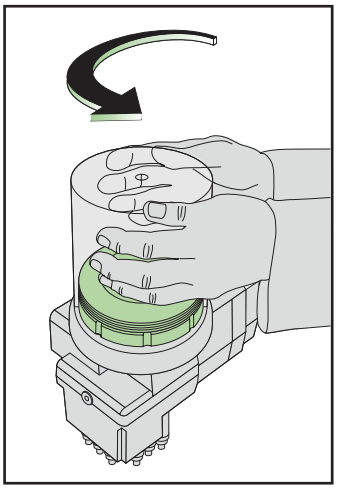


fig.5

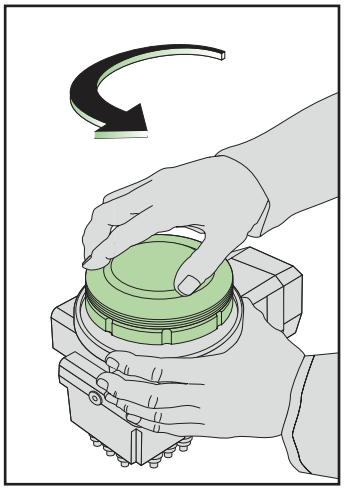


fig.6

3.Remove and replace the rubber gasket (Fig 7 C) and the cardboard disc (Fig 7 B) with the elements supplied with the new cartridge.
Make sure you fit the cartridge with just one rubber gasket.

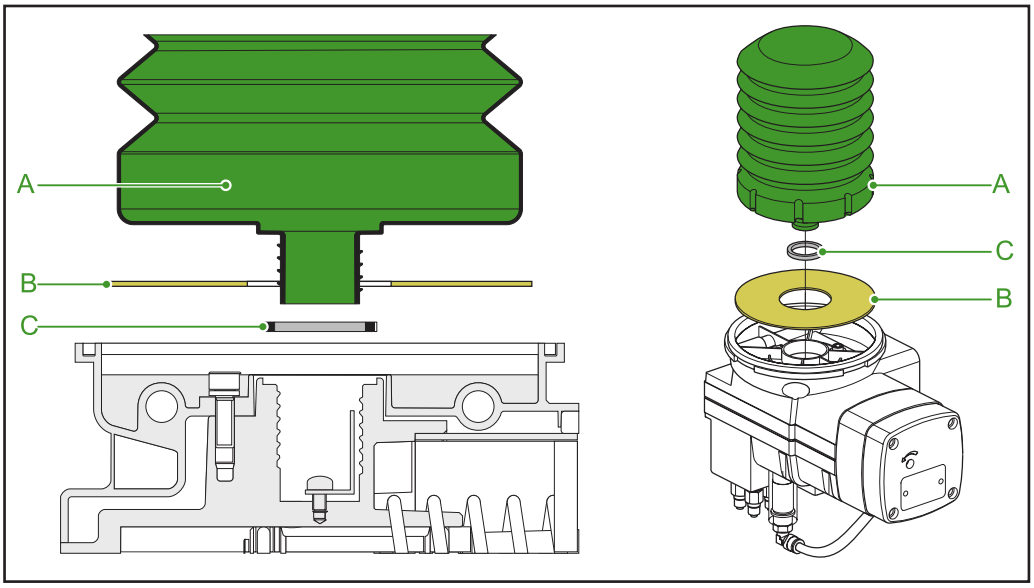


fig.7

4.Take the new grease cartridge, remove its screw cap and leave the metallic paper seal on it.
Insert the cartridge on the pump and rotate it to the right (clockwise) to screw it onto the pump (Fig 8).
The metallic paper seal will be automatically removed when the cartridge is screwed onto the pump.

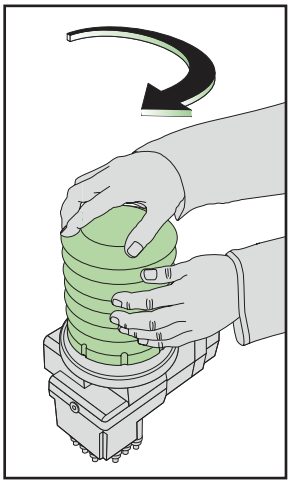


fig.8

5.Clean the cover, position it on the cartridge (Fig 9) and screw it onto the pump by rotating it to the right (clockwise).

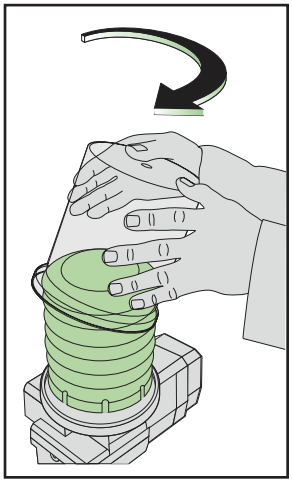


fig.9

TOPPING UP THROUGH THE FILLING CONNECTION

The lubricant in the tank must be topped up when it has reached the minimum level.
To do this, it is necessary to use a top-up pump.
The top-up procedure (Fig 10) involves the following operations:
1.If the top-up pump is new, the top-up pipe must first be filled with lubricant.
This will prevent air from being pumped into the tank. Insert the quick-fit coupling of the top-up pipe on the quick-fit coupling of the cover of the top-up pump and carry out
pumping until the pipe is completely full of lubricant.
2.Remove the cover from the filling connection.
3.Clean the filling connection and the coupling present on the top-up pipe.
4.Connect the top-up pipe to the filling connection.
5.Fill the tank up to the maximum level (1 cm below the upper edge of the tank).
6.Remove the top-up pipe from the filling connection and connect the top-up pipe to the quick-fit coupling of the top-up pump.
7.Insert the cover on the filling connection.
8.A filter is inserted inside the filling connection of the pump.
If filling is difficult to carry out, the filter may be dirty; if so, remove and clean the filter.

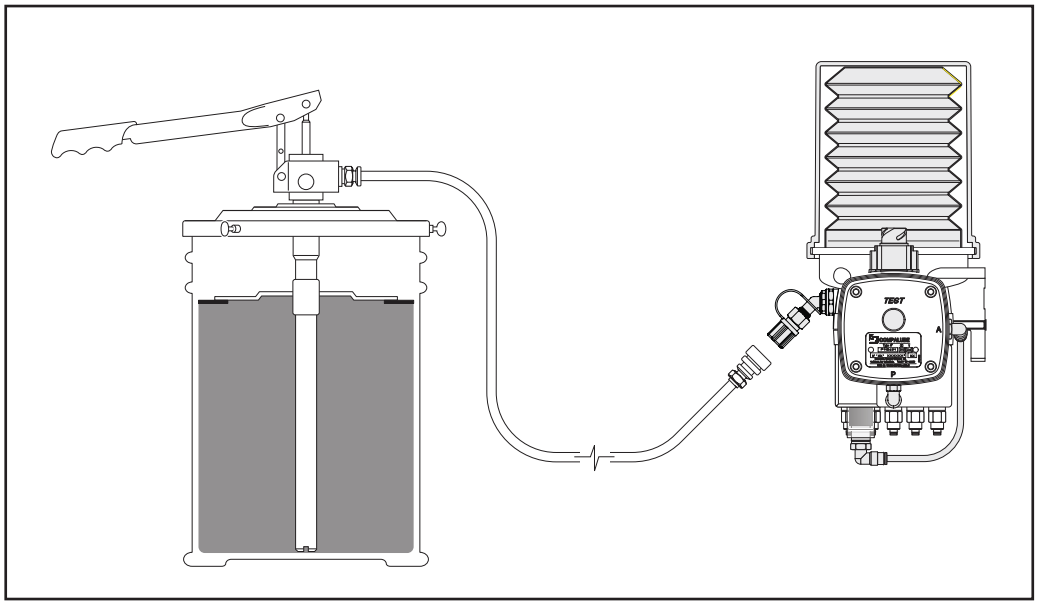


fig.10

Sect. 6.10.2 TROUBLESHOOTING - PNEUMATIC COMPALUBE SYSTEM

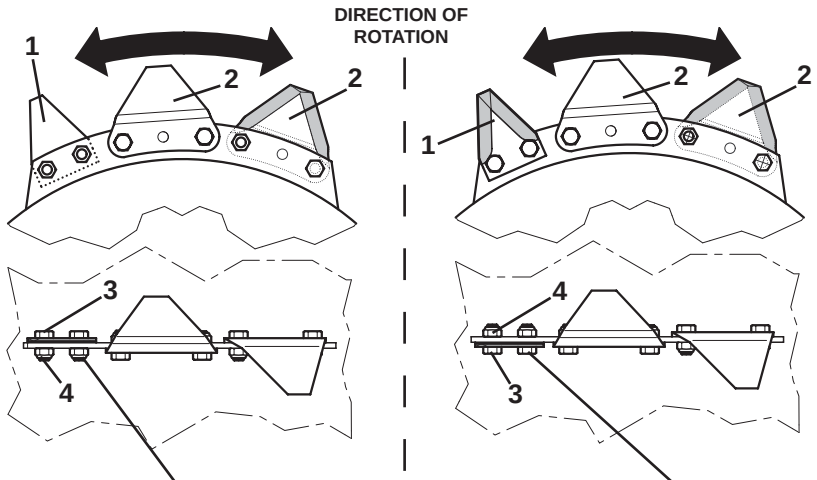
Problem	Cause	Solution
The lubricant pressure warning light indicates malfunctioning (red light present).	1. Empty grease cartridge or empty tank.	Replace the cartridge with a new cartridge or top up the tank through the special filing connection.
	2. Leak inside a metering unit.	Check for the possible presence of an excessive quantity of lubricant on the greasing points. Remove and replace the metering unit connected to the greasing point.
	3. Faulty lubricant pressure warning light.	Repair or replace the lubricant pressure warning light.
	4. Air in the system.	Deaerate the system.
	5. Abnormal operation of the pump.	Repair or replace the pump.
All the greasing points are too dry, whereas the lubricant pressure warning light is not indicating any malfunctioning (green light present).	1. Incorrectly set braking counter (the frequency of activation of the brakes set between lubrication cycles is too high).	Set the braking counter correctly.
	2. The lubricant used in the system is not suitable for the operating environment (temperature too low).	Replace the grease cartridge with another containing a suitable lubricant.
	3. Compressed air from the pneumatic tank is not flowing to the pump.	Check the supply and pressure of the air in the pneumatic tank. Check the condition of the pneumatic pipes present between the pump and the pneumatic tank.
	4. The pump is not receiving any signal from the pneumatic pipes of the brake control.	Check the condition of the pneumatic pipes present between the pump and the valve. Check that the restriction device of the coupling of the quick control valve of the brake has no dirt on it.
All the greasing points are receiving an excessive quantity of lubricant.	Incorrectly set braking counter (the frequency of brake activation set between the lubrication cycles is too low).	Set the braking counter correctly.
Some greasing points are too dry, while others receive a correct amount of lubricant.	1. Damaged lubricant pipe(s).	Repair or replace the lubrication pipes.
	2. Abnormal operation of the metering unit.	Replace the metering unit.
An excessive quantity of lubricant is present on a greasing point.	Leaks inside the metering unit.	Replace the metering unit.

Sect. 6.10.3 TROUBLESHOOTING - ELECTRICAL COMPALUBE SYSTEM

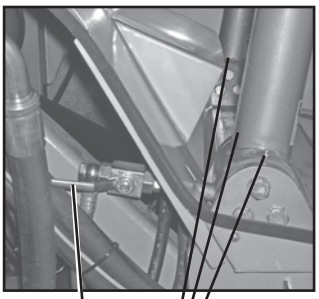
Problem	Cause	Solution
The control warning light is permanently active.	1. Empty grease cartridge or empty tank.	Replace the cartridge with a new cartridge or top up the tank through the special filing connection.
	2. Leak inside a metering unit.	Check for the possible presence of an excessive quantity of lubricant is present on a greasing point. Remove and replace the metering unit connected to the greasing point.
	3. Abnormal operation of the pressure switch of the lubricant.	Repair or replace the pressure switch of the lubricant.
	4. Air in the system.	Deaerate the system.
	5. Abnormal operation of the pump.	Repair or replace the pump.
All the greasing points are too dry, while the control LED does not signal any malfunctioning.	1. Timer is not correctly (the pause interval set between the lubrication cycles is too high).	Set the timer correctly.
	2. The lubricant used in the system is not suitable for the operating environment (temperature too low).	Replace the grease cartridge with another containing a suitable lubricant.
	3. No power supply.	Check that the wiring and fuse are intact.
All the greasing points are receiving an excessive quantity of lubricant.	Timer is not correctly set (the pause interval set between the lubrication cycles is too low).	Correctly set the timer.
Some greasing points are too dry, while others are receiving the correct quantity of lubricant.	1. Damaged lubricant pipe(s).	Repair or replace the lubrication pipes.
	2. Abnormal operation of the metering unit.	Replace the metering unit.
An excessive quantity of lubricant is present on a greasing point.	Leaks inside the metering unit.	Replace the metering unit.

Sect. 6.11 REPLACING THE MILLING CUTTER BLADES

1) Lift the milling cutter to the height of the operator's shoulders (to work more comfortably).
2) Close the downward movement locking valve **(A)**, fitted on the right cylinder of the milling cutter arm (accessed by opening the right casing).
3) Replace the blades (Fig. 1), (+fixing screws and nuts)
4) Always replace one blade at a time together with the fixing screws and nuts, making sure that the position and direction are the same as the original ones (Fig. 2).
Remember to open the safety valve again after completing the operation.



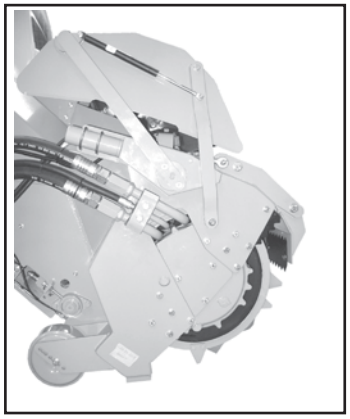
WARNING!!!
Check the condition of the blade fixing screws and nuts after the first **10** hours and at intervals of **250** hours; if they show signs of wear before **250** hours, **replace them immediately**, if **loosened tighten them**.

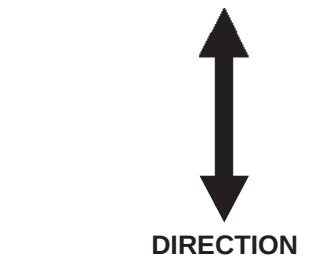


PART NUMBER:

1 Straight blade: 16800129
2 Curved blade: 16800030
3 Screw: 90000053 - M8X20
4 Nut: 90808005 - M8

Fig.1





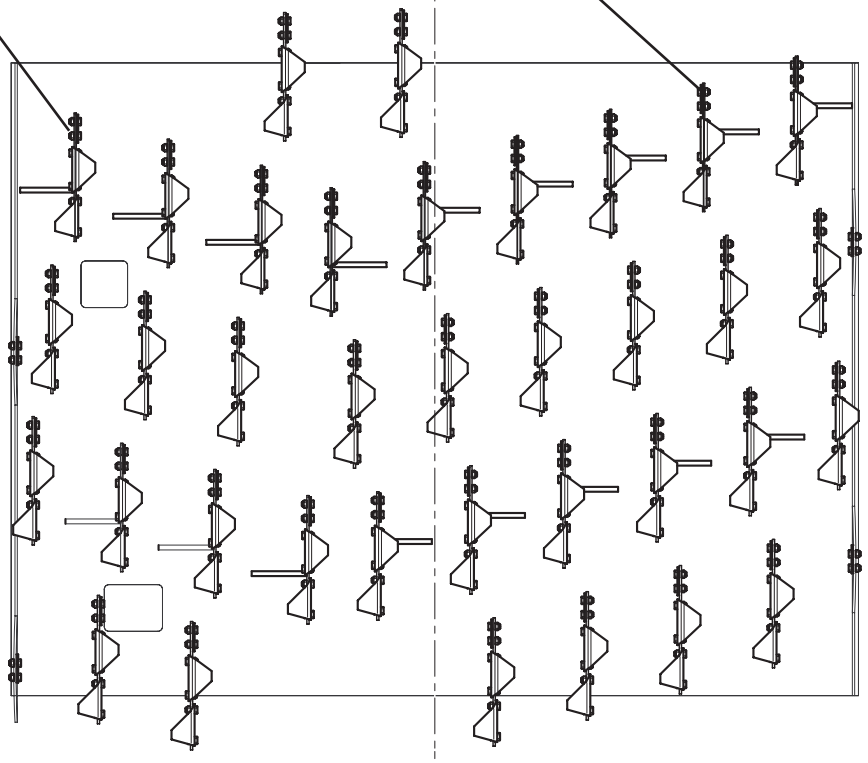


Fig.2

Sect. 6.12 TIMING THE AUGERS

WARNING: if you remove the augers to carry out maintenance work, or the gearboxes are made to turn with no load one at a time disconnected from each other and from the universal joint, when they are connected together again, the augers must be timed as per drawing **(Fig. 1)** by manually turning the gearboxes until the correct position is reached. **When the correct positions have been reached, you can connect the two gearboxes of the augers together. If they are not timed as shown in the drawing, mixing will be compromised and the mechanical parts will be subjected to greater stress.**

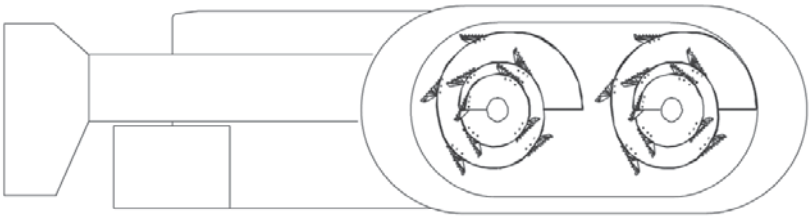


Fig.1

Sect. 6.12.1 REPLACING THE AUGER BLADES

This operation requires particular caution. It is advisable for 2 people to carry it out, with one inside the hopper and the other outside helping by providing the blades and screws.

Before entering the mixer **A (Fig. 1)** open the unloading door, switch off the engine, disengage the clutch, lock the cabin, take the keys with you (put the keys in your pocket), close the valve **B (Fig. 2)** (remember to open it before starting to work).
Disconnect the battery switch **C (Fig. 3)**.

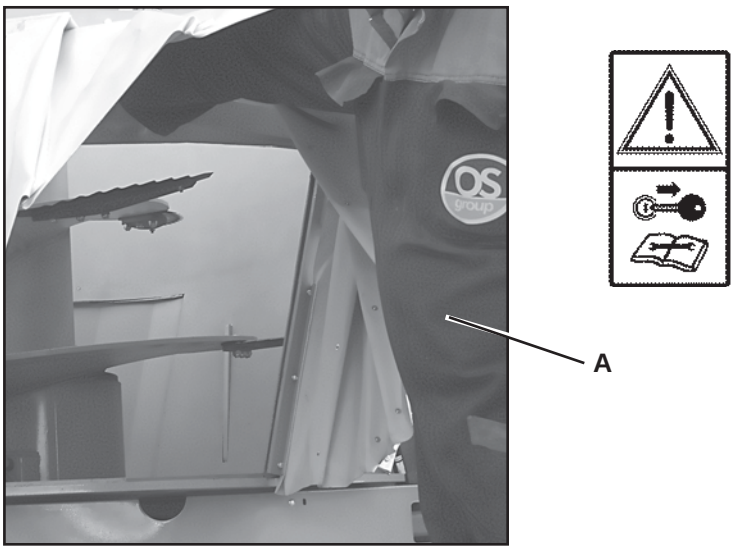


Fig.1

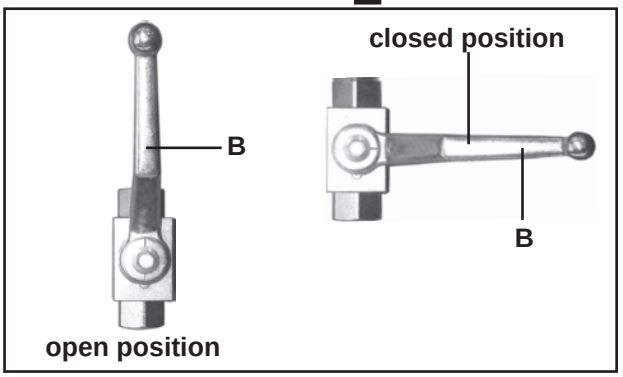


fig.2

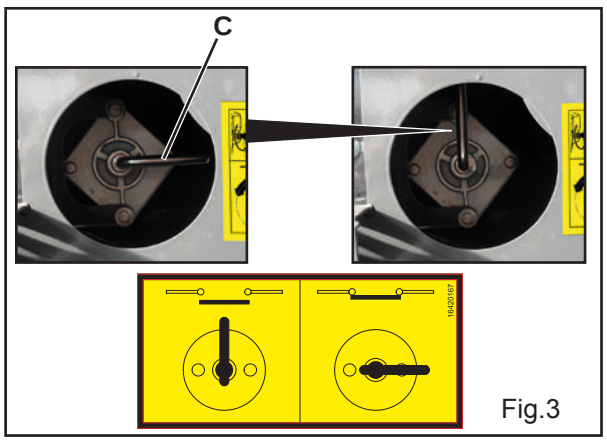
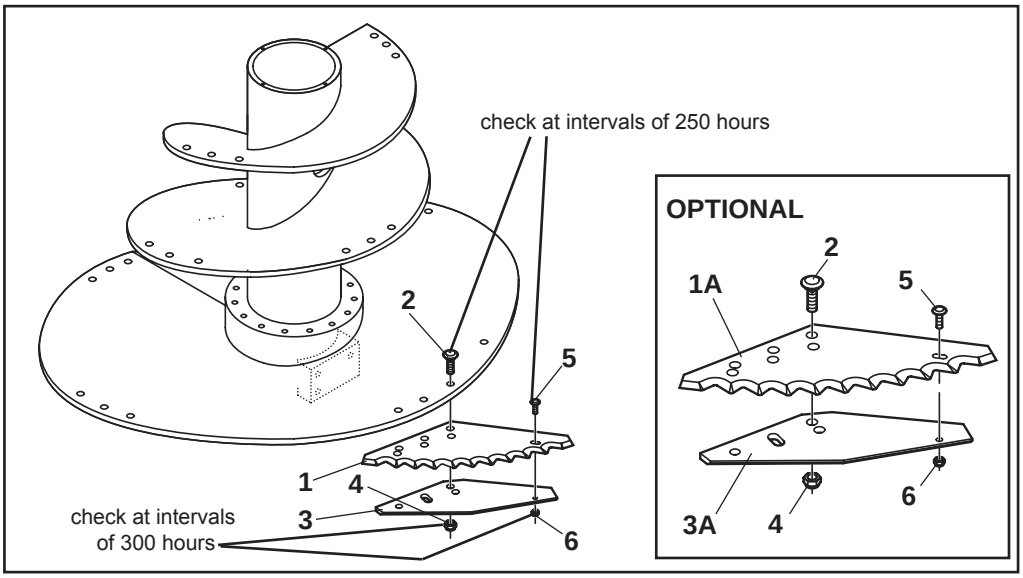


Fig.3

PART NUMBER:
1) LONG SABRE BLADE WITH TUNGSTEN COATING: **16800040**
1A) OPTIONAL EXTRA: OVERSIZE SABRE BLADE WITH TUNGSTEN COATING: **16800156**
2) ROUND HEADED FIXING SCREW W.SQ.NECK M16X55: **16121183**
3) UNDER BLADE: **16140201**
3A) UNDER BLADE: **16141033**
4) LOCK NUT M16: **90808009**
5) ROUND HEADED FIXING SCREW W.SQ.NECK M10X34: **16120252**
6) LOCK NUT M10: **90808006**



WARNING!!!
Check the condition of the blade fixing screws and nuts after the first **10** hours and at intervals of **250** hours; if they show signs of wear before **250** hours, **replace immediately**, if **loosened tighten them**.

Sect. 6.12.2 MAINTENANCE OF AUGER BLADES

The blades subject to the greatest wear are those fitted on the base of the auger **(1 fig.1)**; to make them wear evenly, it is advisable to change their position **(2 fig.1)** before having to replace them.
(Also check the blade fixing screws and nuts for wear and tightness after the first 10 hours and at intervals of 300 hours; replace immediately if worn, tighten if loose).
When changing the blade positions, it is advisable to re-sharpen the sabres on side **A (Fig.2)** following the shape of the original profile without impairing its lower part, side **B (Fig.2)** of the sabre.
Warning when sharpening the **optional** long sabre blade, because it has tungsten coating that makes the metal wear resistant, re-sharpen the sabres on side **A (Fig.2)**.

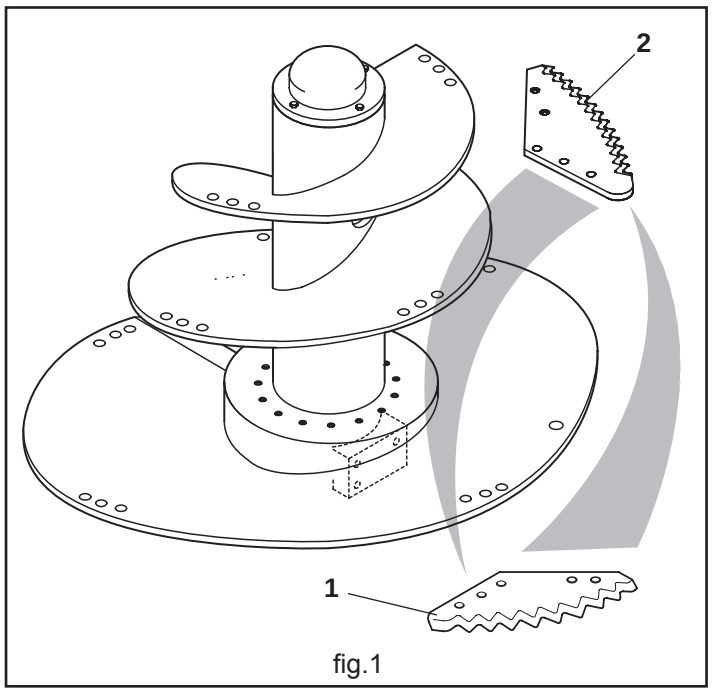


fig.1

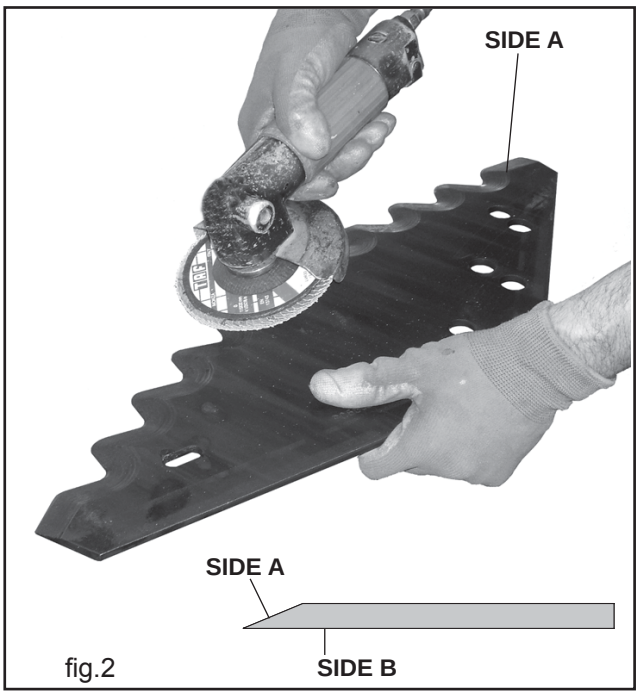


fig.2

Sect. 6.13 COMPONENTS ON RIGHT SIDE

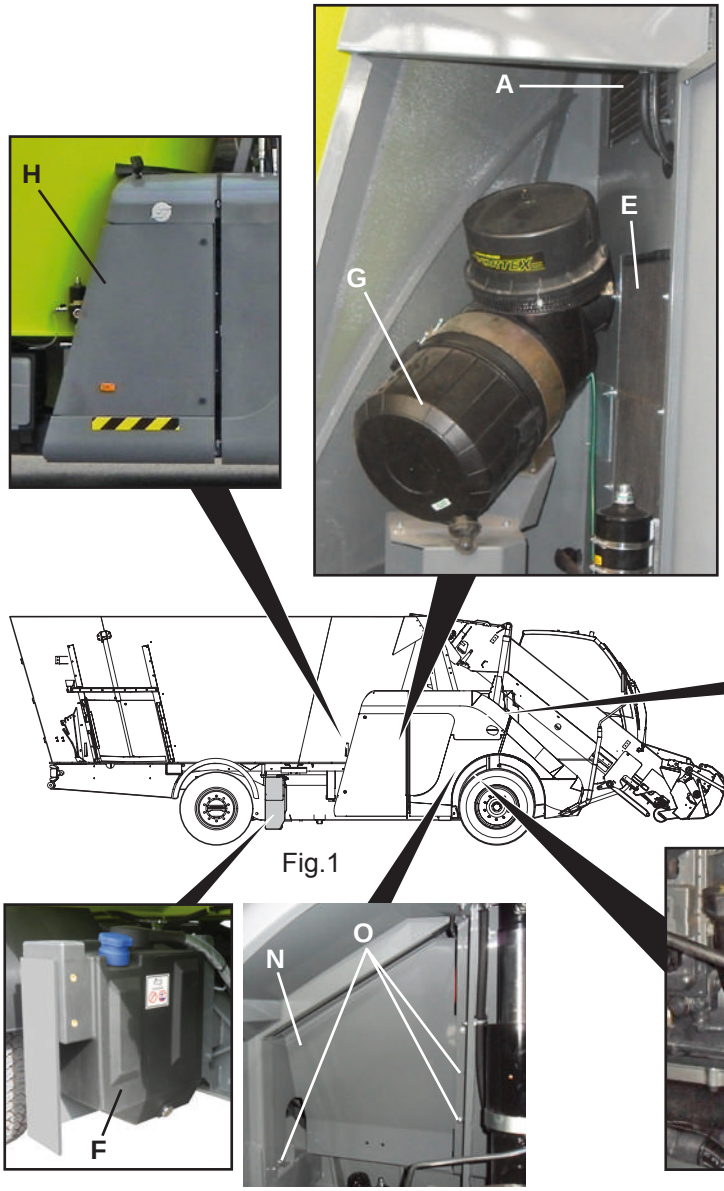


Fig.1

A = Air conditioning radiator
B = Oil tank plug
C = Hydraulic oil filter
D = Oil drain plug
E = Oil radiator grille
F = UREA tank
G = Air filter
H = Right grille
I = Safety valve for locking downward movement of milling cutter arm cylinder
L = Engine oil fill plug
M = Diesel fuel filter
N = RH internal mudguard
O = 3 x M6 SCREWS

Sect. 6.13.1 TOPPING UP THE HYDRAULIC OIL

The hydraulic oil tank has two oil level sight glasses:
1 MAX. - 2 MIN. (Fig.2).
When the oil drops below halfway down sight glass 1, it must be topped up until it is half-way up sight glass 2.
To fill with oil, remove the plug (B Fig.3).
Close with plug B after topping up to the required level.

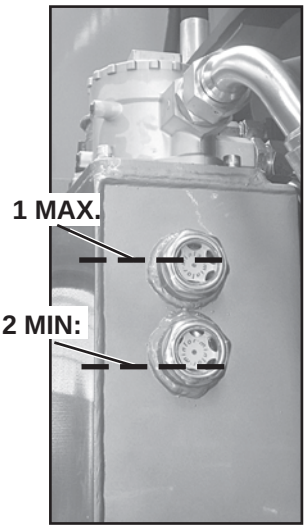


Fig.2

Sect. 6.13.2 CHANGING THE HYDRAULIC OIL

When the hydraulic oil needs to be changed (as per maintenance table) proceed as follows:
Equip yourself with a container for collecting the waste oil.
Remove the fill plug B and the drain plug D Fig.1 and let the oil drain out.
Make sure you dispose of the oil as per current local regulations.
Put back plug D Fig. 1.
and fill the tank with the new oil as per maintenance table.
When the oil reaches sight glass I Fig. 2, filling is finished.
Then put back plug B.

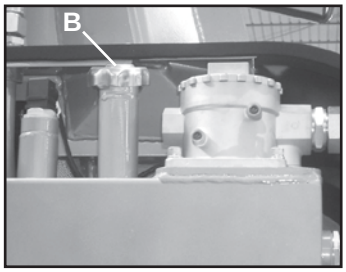


Fig.3

Sect. 6.13.3 ENGINE OIL

Part. F fig.1 engine oil filter (see FPT engine handbook).
To access the load cap, remove the right internal mudguard N by loosening the 3 screws O

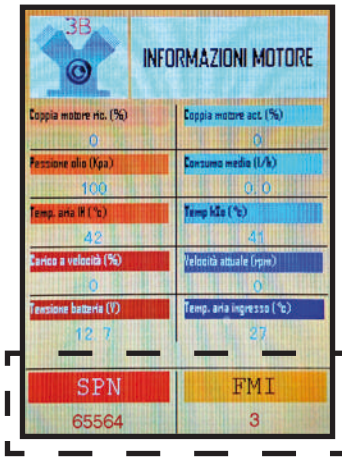
Sect. 6.13.4 DIESEL FUEL FILTER

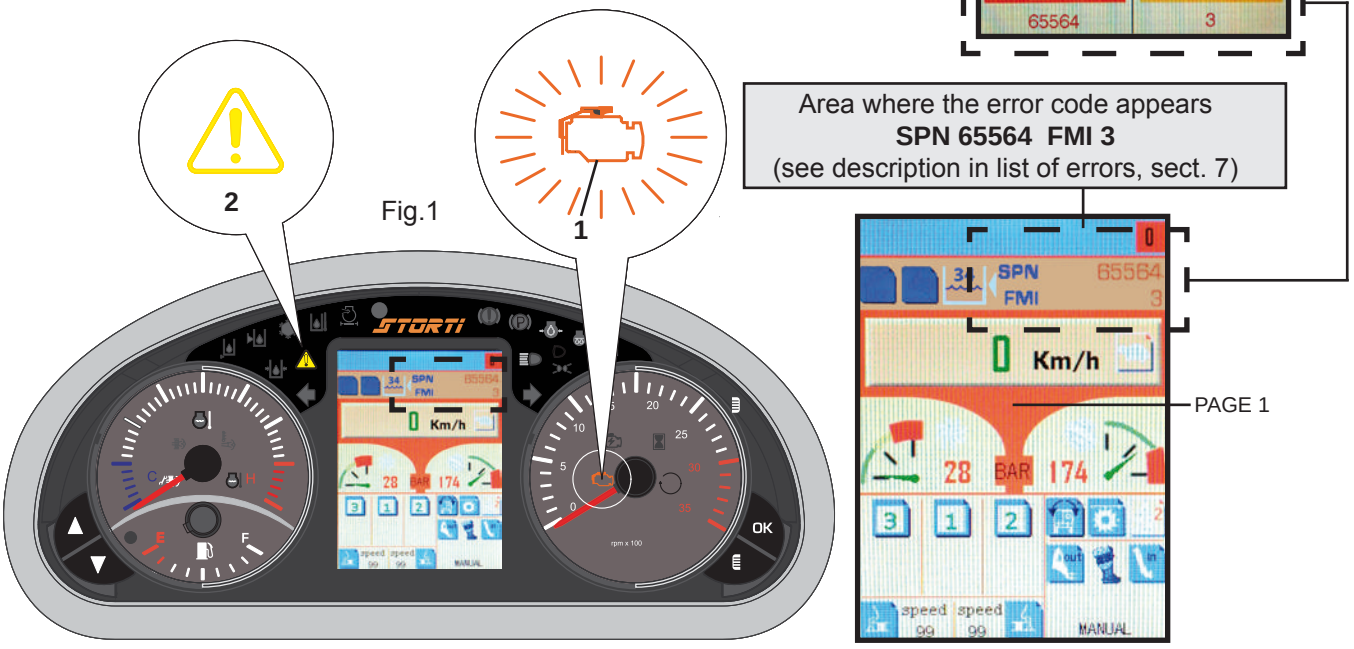
Part. Detail R fig.1 diesel fuel filters, spare part number 96150167 (see FPT engine handbook).
To access the diesel fuel filter, remove the right internal mudguard N by loosening the 3 screws O

Sect. 6.13.5 FUEL PREFILTER

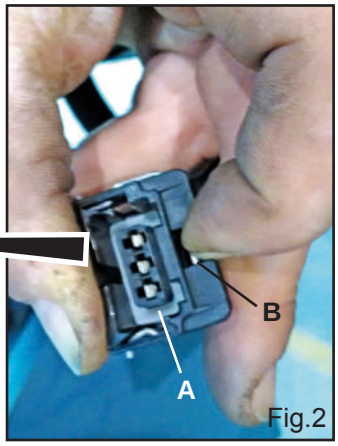
When the orange “SERIOUS ENGINE FAILURE” LED switches on along with the yellow "failure/alarms" LED
1fig.1 and 2 fig.1 on the dashboard, it means there is an engine problem indicated by the electronic control unit.
They type of failure is signalled on the first page display and also on the "ENGINE INFORMATION" page (fig.2), if the error code is “SPN 65564 FMI 3” it means that there is water in the diesel fuel pre-filter, which must be eliminated.
(see procedure).

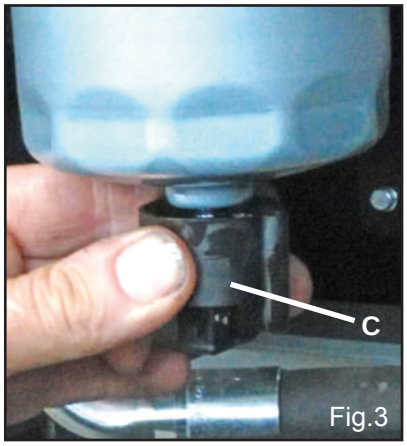
Fig.2





Proceed as follows with engine off: position a container under the filter to collect the liquid, remove the electric connector A (fig.1/2) by pressing the safety catch B (fig2) and push downwards. Slowly open the drain cap C (fig.3) (without removing it from the bottom of the prefilter) and allow the liquid to escape. When just diesel fuel can be recognised, close and tighten the cap. Reconnect the electric connector(see FPT ENGINE USE AND MAINTENANCE MANUAL supplied).





If the prefilter is replaced, the new prefilter must be filled with fuel via the pressure pump situated above the filter (D fig.4),proceed as follows: loosen the purge screw (D fig.4) positioned on the
pre-filter support and operate on the hand pump (E fig.4) until the new supply circuit is full.
Make sure that the fuel that escape is not dispersed in the environment.
Tighten the purge screw fully home.
Start the engine and keep it ticking over for a few minutes until all air residues have been eliminated.

Note: whenever it is necessary to accelerate the residual air purge phase, proceed by operating on the hand pump also during start-up.

Fig.4

SPARE PART NUMBER
Diesel fuel prefilter cartridge: 96150169

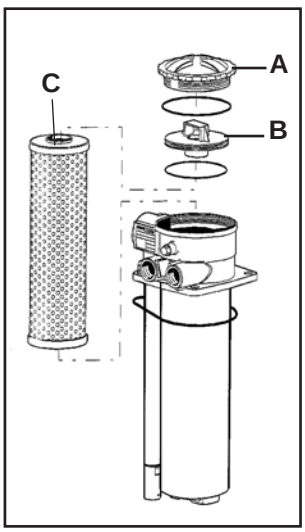


Fig.4

Sect. 6.13.6 REPLACING THE HYDRAULIC OIL CARTRIDGE

After changing the hydraulic oil or when the warning light on the dashboard comes on, the filter cartridge needs to be replaced.
With the engine off, unscrew the upper cover of the filter (A fig.4), take out the cartridge, take off the handle (B fig.4) and insert it in the new cartridge.
Fit the cartridge (C fig.4) in the filter and close with the cover (A fig.4).

SPARE PART NUMBER (FIG.4):
detail 1 Filter cartridge: 99011009

Sect. 6.13.7 CLEANING THE GRILLE AND OIL RADIATOR

The air conditioning radiator grille (A fig.1) and the oil radiator (B fig.1) should be cleaned by blowing them with compressed air from the inside and from the outside.
N.B. = This operation must be done with the engine switched off.
If the compressed air is not sufficient, they can be cleaned with a jet of water.
If a high pressure water cleaner is used, always work from the outside and be very careful not to bend the cooling fins; if necessary, reduce the pressure of the water or increase the distance of the jet from the radiator (E fig.1)

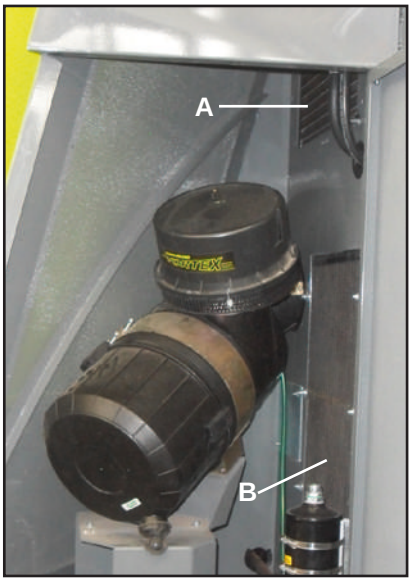


Fig.1

Sect. 6.13.8 AIR FILTER

When the warning light 2 (fig.1) on the central dashboard comes on, remove the main filtering and safety element and clean it with compressed air.

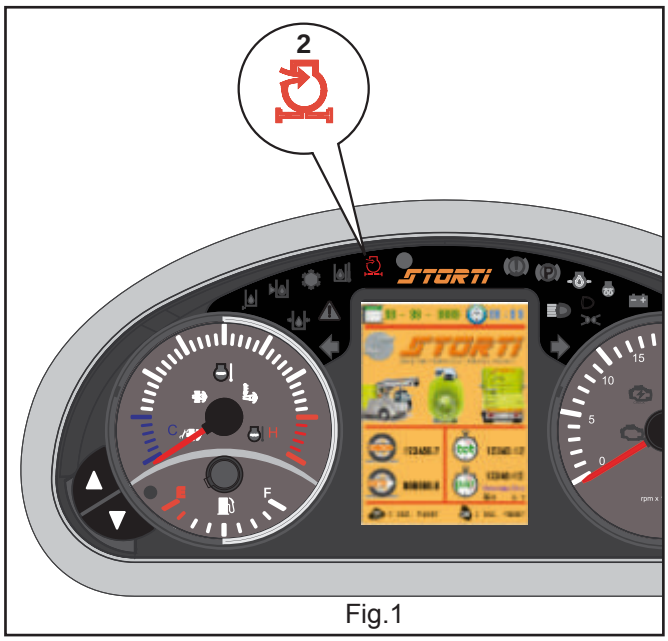


Fig.1

Then put back the cartridge.
To clean and replace the filters proceed as follows:
1) Release the 3 stops, and remove the cover (A fig.2).
2) Take out the filter (B fig.3) by rotating and pulling it, and clean or replace it (see maintenance table).
If the warning remains after this operation has been carried out, you must clean or replace the internal safety cartridge (D fig.5).
To take it out, remove the nut (C fig.4) and rotate and pull it (D fig.5) (see maintenance table).

SPARE PART NUMBER (FIG.2-3-4-5):
part. B cartridge: 99012015
part. D internal safety cartridge: 9901214

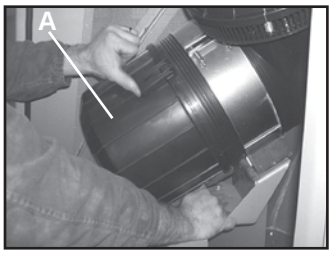


Fig.2

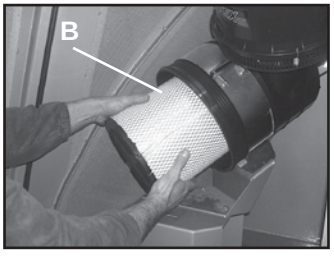


Fig.3

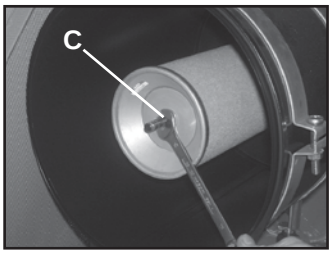


Fig.4

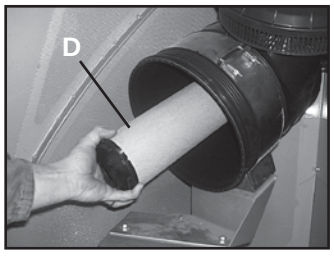


Fig.5

Sect. 6.13.9 SUCTION PIPE

Check that the suction hose (A fig.1) is not broken.
If it is broken, have it replaced immediately to prevent serious damage to the engine.
SPARE PART NUMBER:
part. A FIG.1 suction pipe Ø125 : 98405177

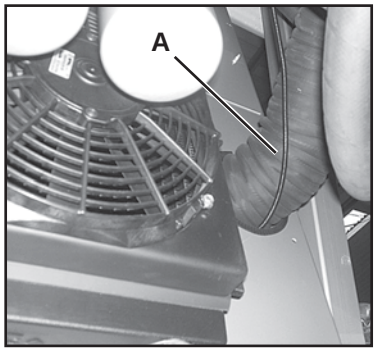


Fig.1

Sect. 6.14 CHANGING THE OIL IN THE REAR WHEEL GEARBOXES, AS VERSION

The oil in the wheel gearboxes must be changed as per maintenance schedule.
To change the oil, proceed as follows: **with machine cold**
1) Position the wheel with one of the two plugs facing downwards (A fig.1), place a tray to catch the waste oil, (to be disposed of in accordance with current regulations in the user's COUNTRY), remove the lower plug (A fig.6) using an Allen key (E) and the upper plug (B fig.1) to help the oil flow out.
2) When all the oil has drained out, rotate the wheel so that one hole is at the top (C fig.2) and then fill until oil comes out through the lower hole (D fig.2).
3) Put the plugs back and repeat this operation for the other wheel.

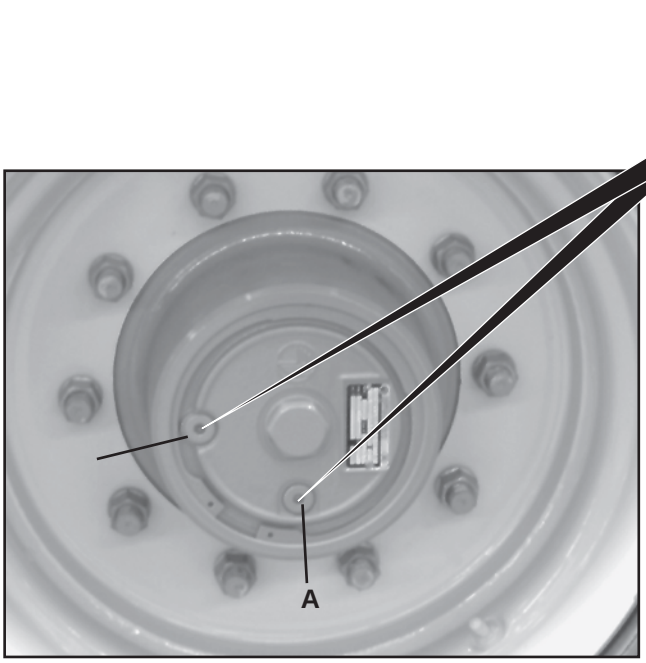


Fig.1 - Emptying

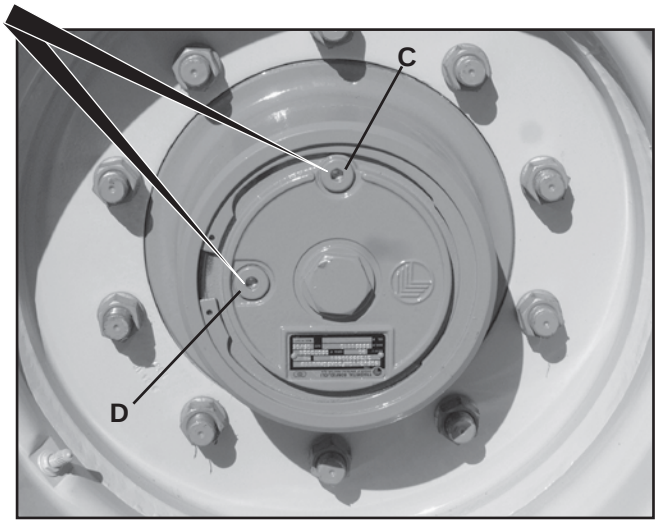


Fig.2 - Filling

Sect. 6.15 CHANGING THE OIL IN THE REAR WHEEL GEARBOXES, DANA AXLE

The oil in the wheel gearboxes must be changed as per maintenance schedule.
To change the oil, proceed as follows: **with machine cold**
1) Position the wheel with the plug facing downwards (A fig.1), place a tray to catch the waste oil, (to be disposed of in accordance with current regulations in the user's COUNTRY), and remove the plug (A fig.1) using an Allen key (E).
2) When all the oil has drained out, rotate the wheel so that one hole is at the side (B fig.2) and then fill until oil comes out of the hole itself (B fig.2).
3) Put the plug back and repeat this operation for the other wheel.

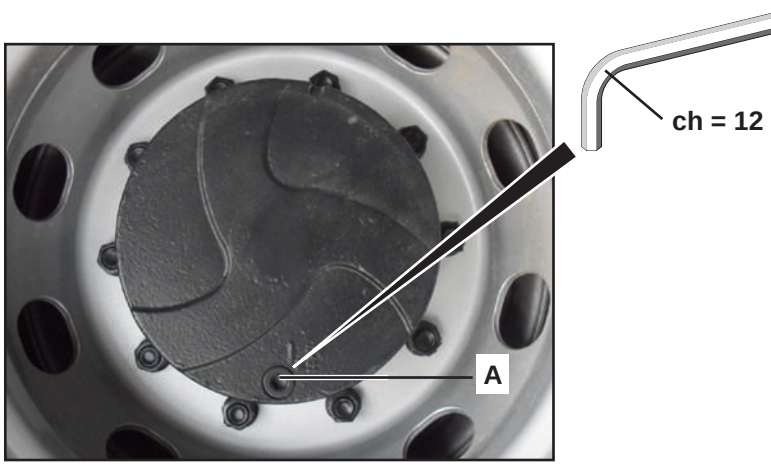


Fig.1 - Emptying

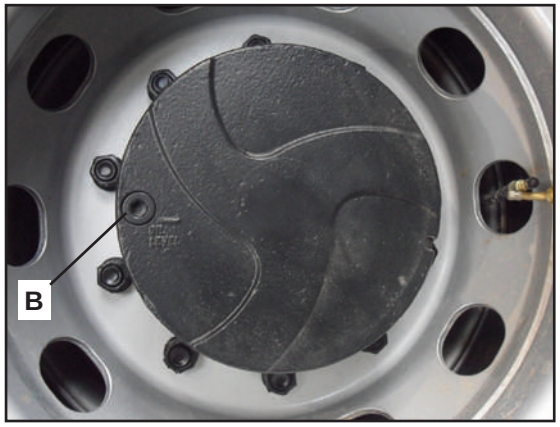


Fig.2 - Filling

Sect. 6.16 CHANGING THE OIL IN THE REAR WHEEL GEARBOXES, GP

The oil in the wheel gearboxes must be changed as per maintenance schedule with machine cold.
For replacement position the wheel as shown in the photo with the drain plug**"OIL DRAIN"** at the bottom, place a tray to catch the waste oil, (to be disposed of in accordance with current regulations in the user's COUNTRY) remove the drain plug **(A fig.1)**, remove the fill plug **(B fig.2)** to make the oil flow out more quickly. Put back the drain plug **(A fig.3)**, remove the level plug **(C fig.3)** fill with a quantity of oil **(D fig.3)** until oil comes out through the hole **(E fig.3)** (see lubricant quantity table).
Put back the level plug (**C fig.4)** and fill plug **(B fig.4)**.

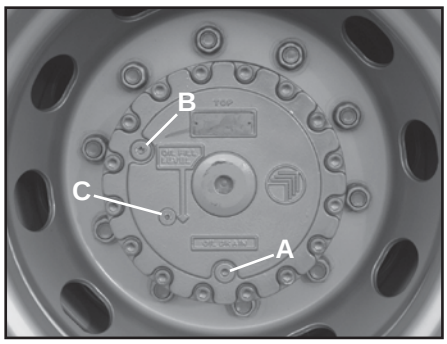


Fig.1

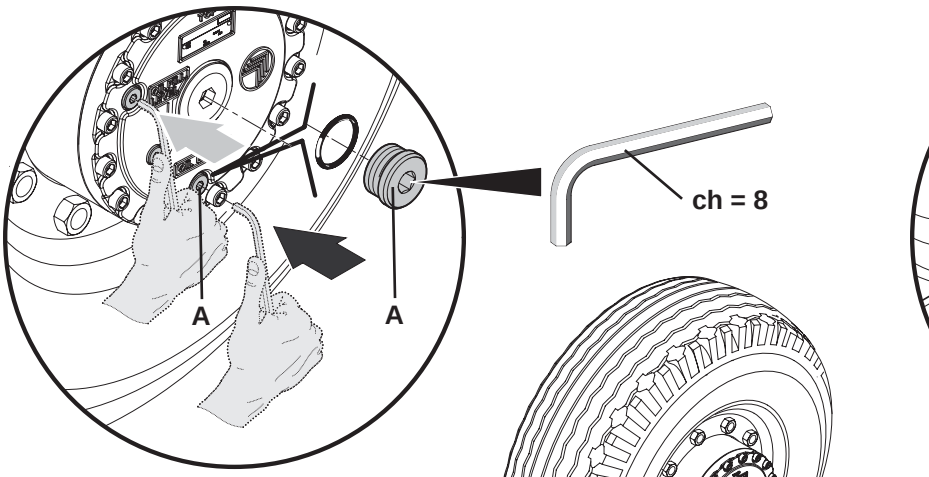
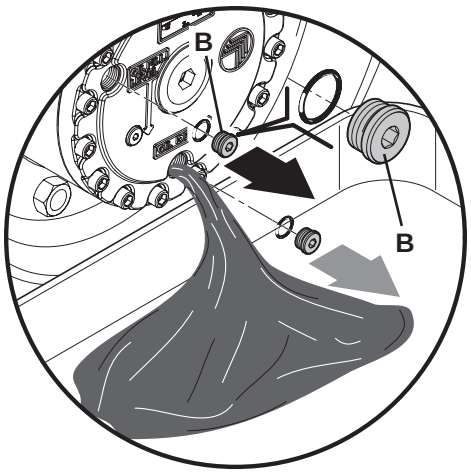


Fig.2



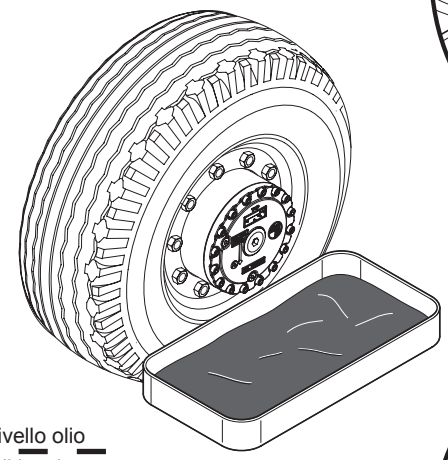


Fig.3

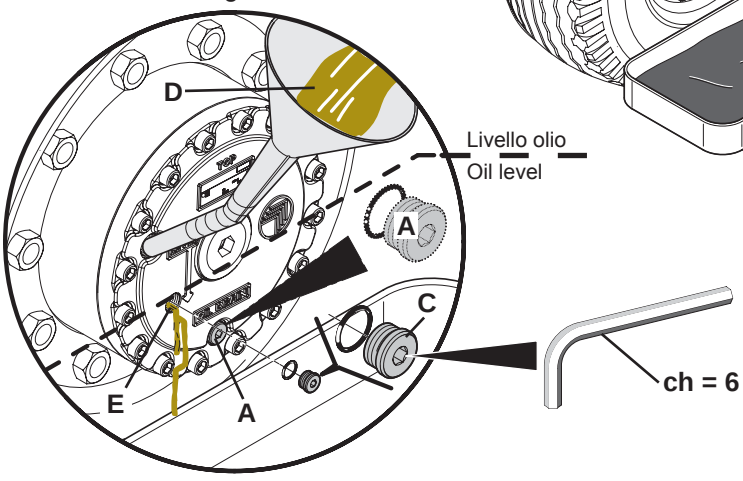
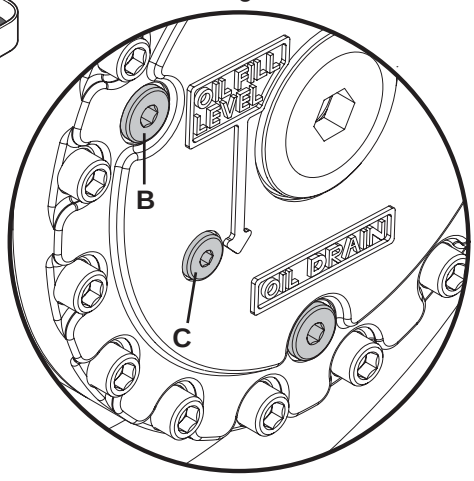


Fig.4



Sect. 6.17 ENGINE COMPARTMENT COMPONENTS

A = Battery
B = Expansion tank of the gearbox
C = Gearbox
D = Oil drain plug
E = Gearbox clutch
F = Electrical circuit switch (on left side)

Sect. 6.17.1 CHECKING THE BATTERY / BATTERY CHARGING FROM REMOTE CABLE

SPARE PART NUMBER (FIG.1):
part. A battery: 99453013
part. F: 99400189 Electrical circuit switch

Every 30 to 40 days, check the level of liquid in the battery (A), and add some if necessary.
Check that the battery cut out switch (F), situated on the left side of the vehicle, is in good working order.

WARNING!!!

If the battery is discharged, and the milling cutter arm is lowered, the casing cannot be opened to charge it. In this case, to start the machine, connect the terminals of a BATTERY STARTER (or a battery charger) to the "remote cable" provided on the left side chassis, see sect. 6.18 component "R".
Connect the terminals as shown on the stickers + / -

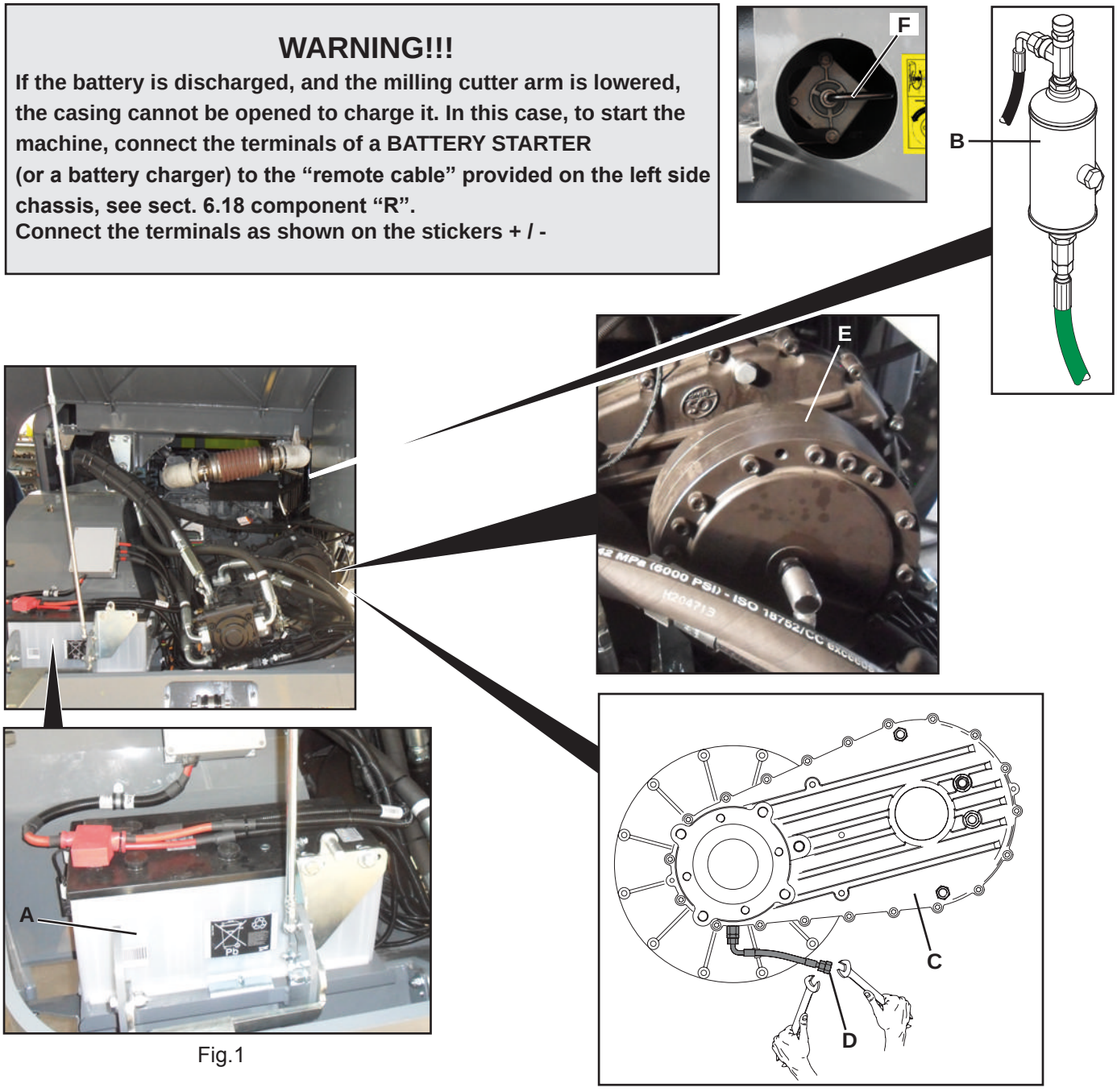


Fig.1

Sect. 6.17.2 CHECKING THE OIL LEVEL IN THE GEARBOX / OIL CHANGE

The gearbox (A fig.1) oil check should always be carried out when the machine is cold.
The level should be checked through the sight glass plug (B fig.1) situated on the gearbox casing facing the hopper (for the maintenance intervals, see the maintenance table after the first 10 hours of operation and then at 50 hour intervals).
The level sight glass plug and the fill plug are reached from the left side of the machine. Open the left door (C fig.2), and then remove the clip-on mudguard that is removable for maintenance inspection (D fig.3).
To top up, remove the fill plug (E fig.1) and replenish to halfway up the level sight glass (B fig.1).
To change the oil, remove the plug (F fig.4) under the gearbox, remove the fill plug to let the oil flow out more quickly (B fig.1) (the waste oil must be disposed of in accordance with current regulations in the user's COUNTRY).
Close the drain tube with the plug (F fig.4), pour in the quantity of oil to fill to halfway up the level sight glass (B fig.1) (see lubricant quantity table).
Close the fill plug (E fig.1).

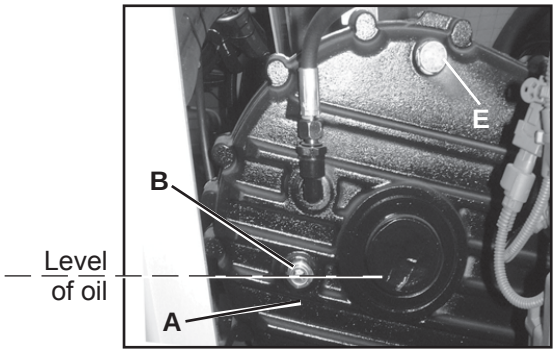


Fig.1

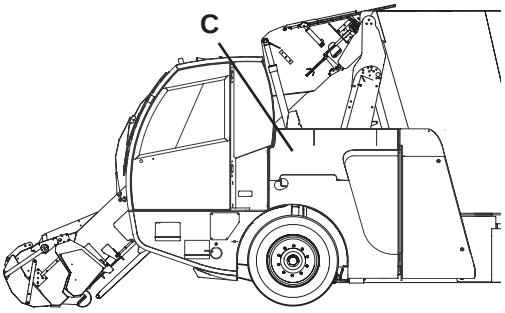


Fig.2

Fig.3

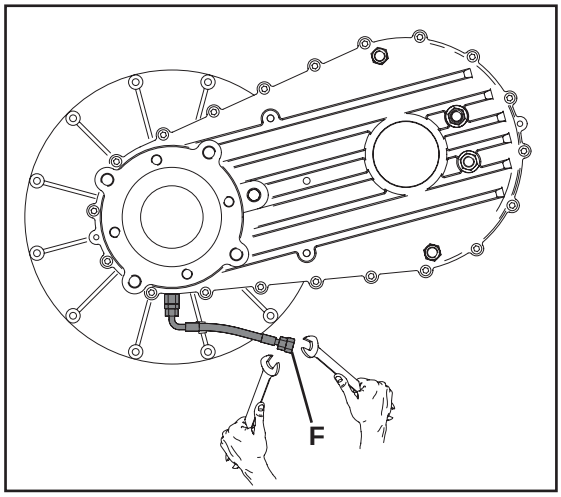


Fig.4

Sect. 6.18 COMPONENTS ON LEFT SIDE

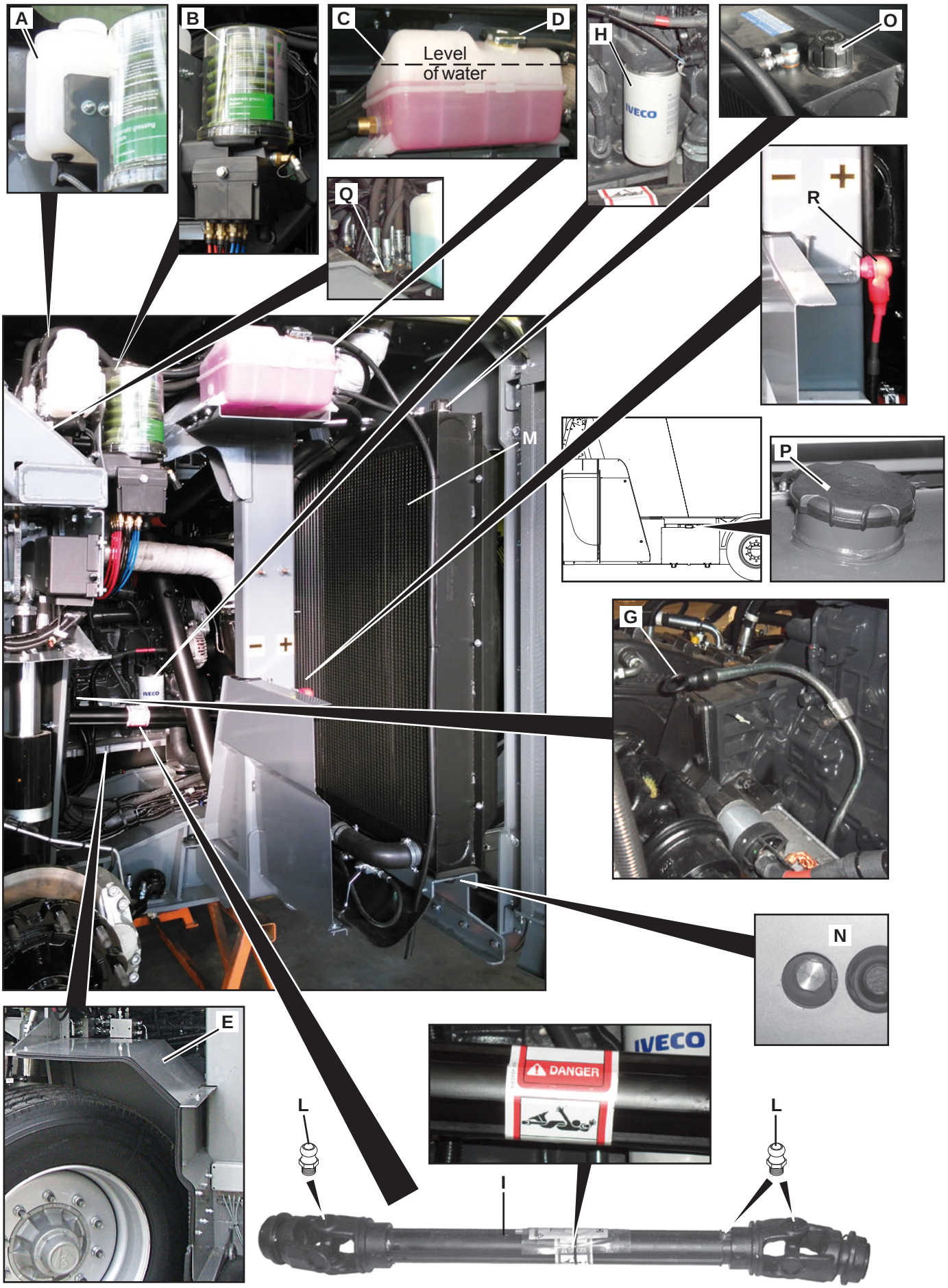


Fig.1

A = Window wiper water tank
B = Grease pump
C = Expansion and radiator top up tank
D = Radiator top up plug
E = Removable mudguard
F =
G = Engine oil dipstick
H = Engine oil filter
I = Universal joint
L = Grease nipple
F = Water radiator filler cap
M = Water radiator
N = Water radiator drain plug
O = Water radiator filler cap
P = Fuel filler cap
Q = DPX distributor
R = Remote cable (battery charger)

Sect. 6.18.1 CHECKING THE WINDOW WIPER WATER

If no water comes out when the button (1 Fig.2) (on the roof) is pressed, check the window wiper water tank (A fig.3): If it is empty, open the plug and fill it.

Fig.2

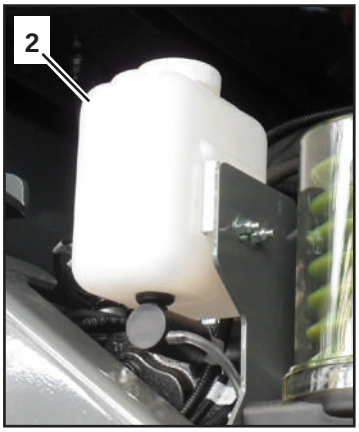


Fig.3

Sect. 6.18.2 COOLANT

The radiator filler cap (O fig.1) should be used only for filling the system when it is completely empty.
After filling the radiator, close the cap (O fig.1) and continue filling through the expansion tank through plug D until the water level is halfway up the tank (C fig.1).
The system should be checked first with the engine cold and then with the engine hot to check that the water level in the tank rises as the engine temperature rises.
When the machine is cold, check the level again and top it up to halfway up the expansion tank.
Water should be added only through the tank (C fig.1) through plug D and when the machine is cold.
There is a drain plug (N fig.1) on the bottom of the radiator.

Sect. 6.18.3 ENGINE OIL FILTER

Part. Detail H fig.1 engine oil filter (see FPT engine handbook).

Sect. 6.18.4 ENGINE OIL DIPSTICK

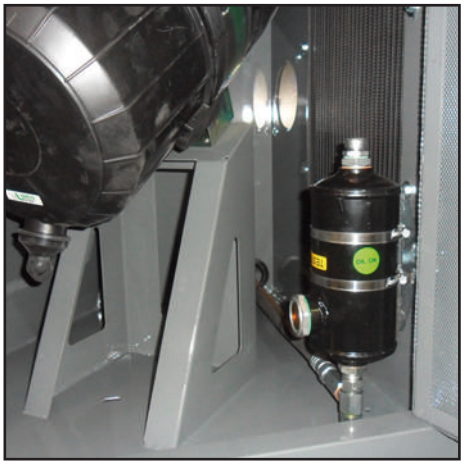
Part. G fig.1 oil dipstick.
Check the oil level regularly (see FPT engine handbook).

Sect. 6.18.5 LUBRICATING THE UNIVERSAL JOINT CROSSES

Lubricate the crosses of the universal joint "I" through the grease nipples "L" as per maintenance table.

Sect. 6.19 CHECKING THE OIL LEVEL IN THE COMER GEARBOX / OIL CHANGE ON AS/HS VERSION

The gearbox oil check should always be carried out when the machine is cold.
The level should be checked through the sight glass plug **(A fig.1)** (for the maintenance intervals, as per maintenance schedule).
To top up, remove the fill plug **(B fig.2)** and replenish to halfway up the level sight glass The gearbox oil check should always be carried out when the machine is cold.
The level should be checked through the sight glass plug **(A fig.1)** (for the maintenance intervals, as per maintenance schedule).
To top up, remove the fill plug **(B fig.2)** and replenish to halfway up the level sight glass **(A fig.1)**.
To change the oil, carry out the following procedure:
close the valve D **(fig.1)**, remove the fill plug B **(fig.2)** from the compensation tank and the drain plug C **(fig.6)** on the reduction gear casing, remove the breather tube E **(fig.3)** to allow the oil to flow out more quickly (for the operation times, see maintenance table).
(the collected waste oil must be disposed of in accordance with current regulations in the user's COUNTRY).
After the oil has been drained out, put back the drain plug C **(fig.6)**, fill through the hole of the compensation tank with the quantity of oil required to bring the level to halfway up the level sight glass **(A fig.1)** (see lubricant quantity table). The oil can be put in manually (quite a long operation) or with a pump, adjusting the filling pressure - MAX 1 Bar (N.B. the fill hole on the compensation tank is 1/2 "gas, the pump fitting must be 1/2" gas, air must not enter).
When you have finished filling, the breather tube E (fig.4) must be full. Re-install on the quick-release union (fig.5) and open the valve D (fig.5).



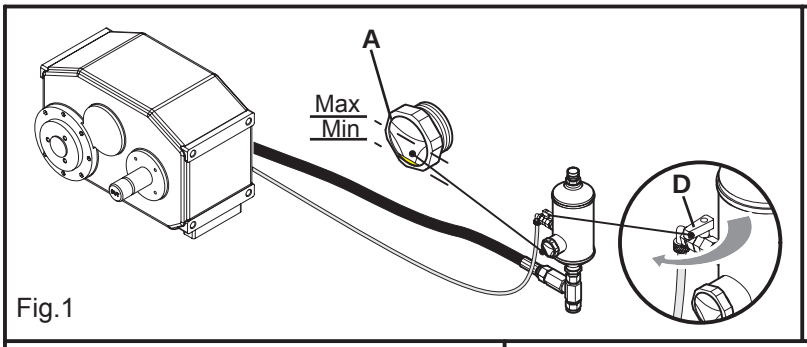


Fig.1

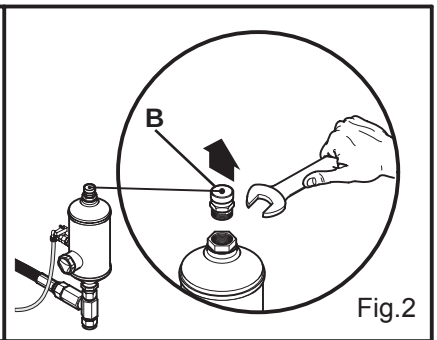


Fig.2

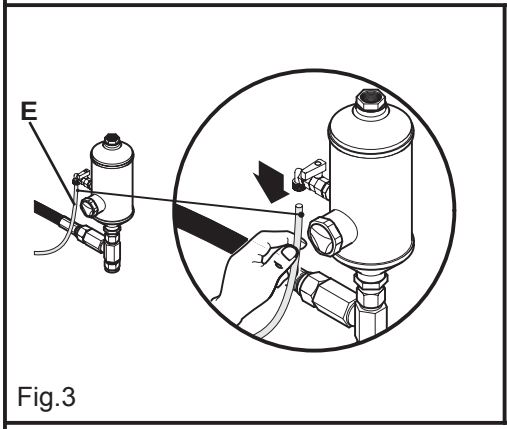


Fig.3

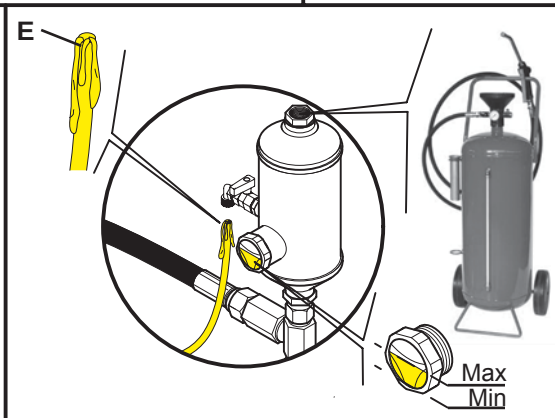


Fig.4

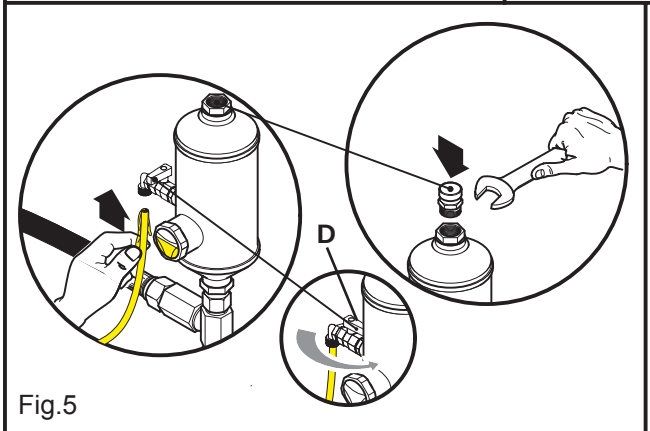


Fig.5

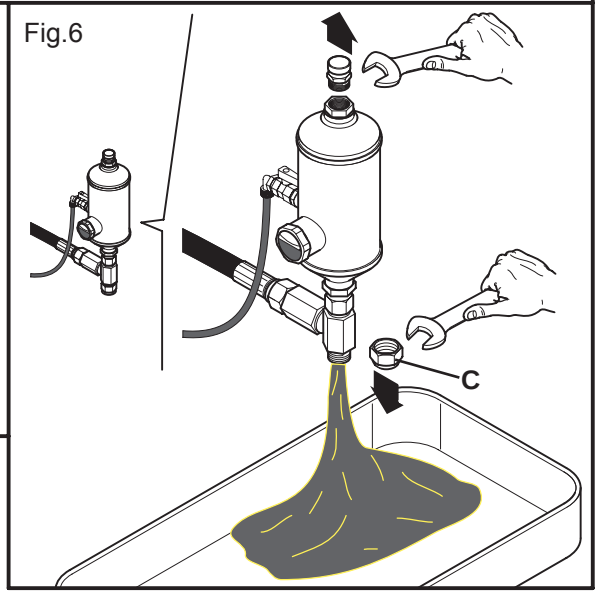
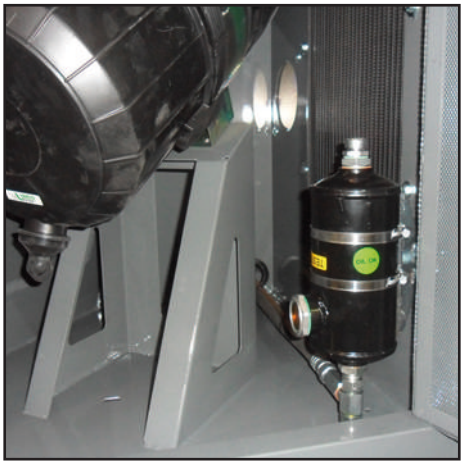


Fig.6

Sect. 6.20 CHECKING THE OIL LEVEL IN THE COMER GEARBOX / OIL CHANGE ON GP VERSION

The gearbox oil check should always be carried out when the machine is cold.
The level should be checked through the sight glass plug (A fig.1) (for the maintenance intervals, as per maintenance schedule).
To top up, remove the fill plug (B fig.2) and replenish to halfway up the level sight glass The gearbox oil check should always be carried out when the machine is cold.
The level should be checked through the sight glass plug (A fig.1) (for the maintenance intervals, as per maintenance schedule).
To top up, remove the fill plug (B fig.2) and replenish to halfway up the level sight glass (A fig.1).
To change the oil, carry out the following procedure:
close the valve D (fig.1), remove the fill plug B (fig.2) from the compensation tank and the drain plug C (fig.6) on the reduction gear casing, remove the breather tube E (fig.3) to allow the oil to flow out more quickly (for the operation times, see maintenance table).
(the collected waste oil must be disposed of in accordance with current regulations in the user's COUNTRY).
After the oil has been drained out, put back the drain plug C (fig.6), fill through the hole of the compensation tank with the quantity of oil required to bring the level to halfway up the level sight glass (A fig.1) (see lubricant quantity table). The oil can be put in manually (quite a long operation) or with a pump, adjusting the filling pressure - MAX 1 Bar (N.B. the fill hole on the compensation tank is 1/2 "gas, the pump fitting must be 1/2" gas, air must not enter).
When you have finished filling, the breather tube E (fig.4) must be full. Re-install on the quick-release union (fig.5) and open the valve D (fig.5).



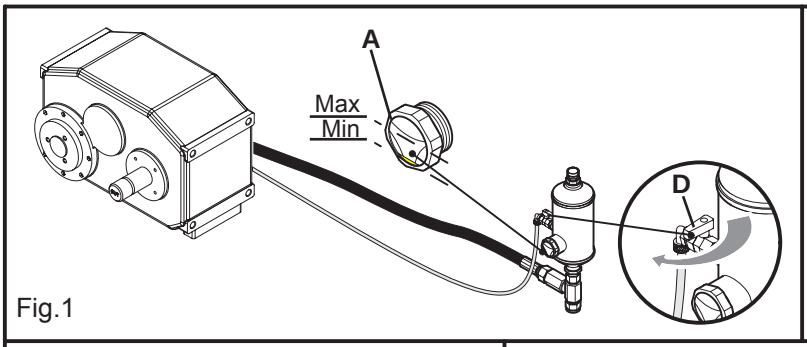


Fig.1

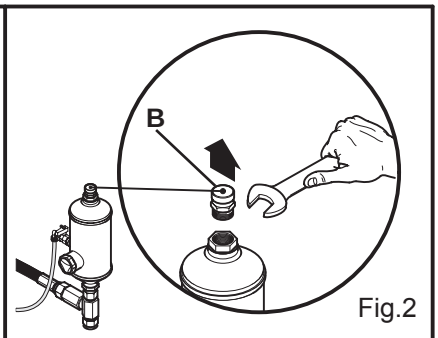


Fig.2

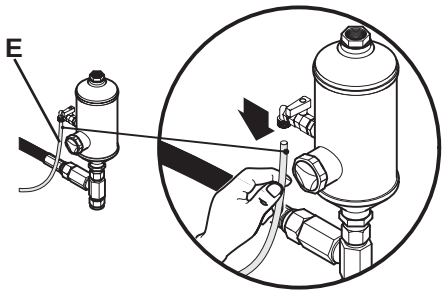


Fig.3

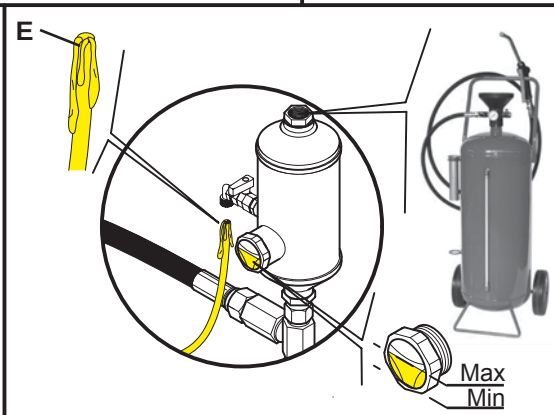


Fig.4

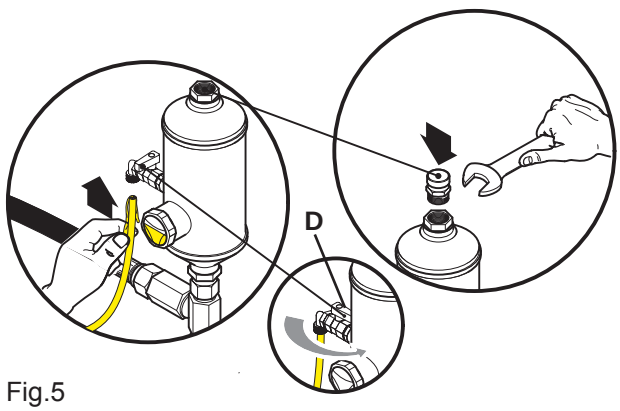


Fig.5

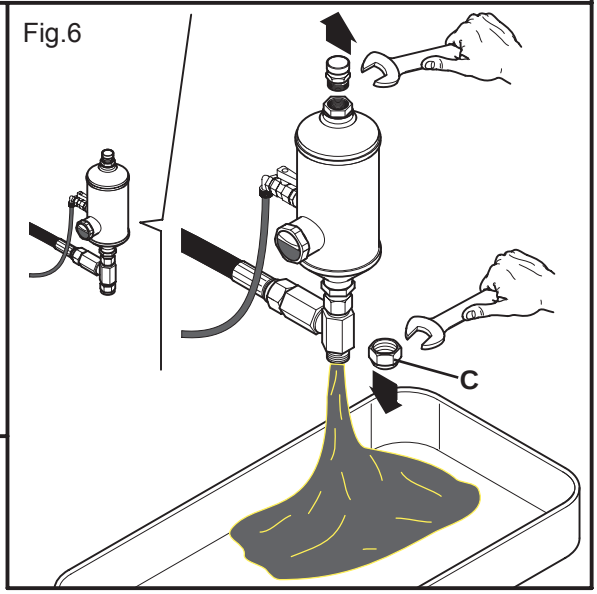
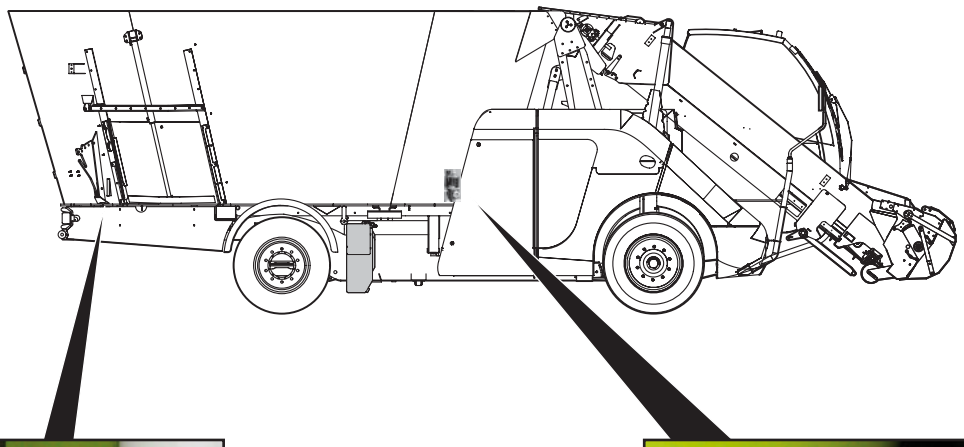


Fig.6

Sect. 6.21 CHECKING THE OIL LEVEL IN THE AUGER GEARBOXES

The gearbox oil check should always be carried out when the machine is cold.
The level should be checked through the sight glass plug **(A fig.1 / fig.2)** (for the maintenance intervals, as per maintenance schedule).
To top up, remove the fill plug **(B fig.1 / fig.2)** and replenish to halfway up the level sight glass **(A fig.1 / fig.2)**.



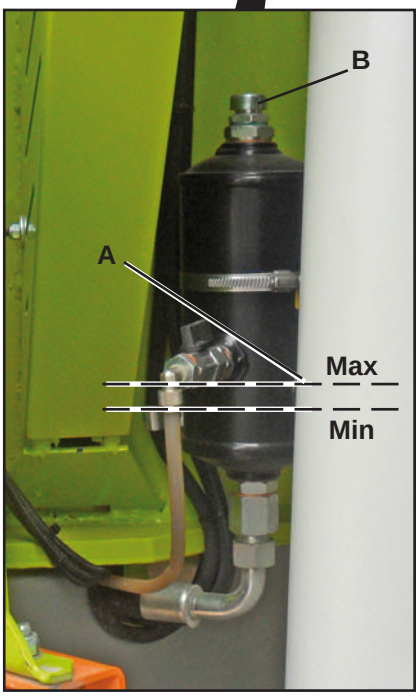


Fig.1

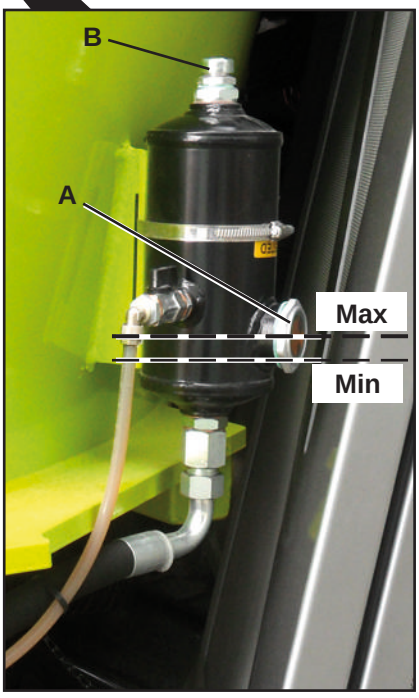


Fig.2

Sect. 6.21.1 CHANGING THE OIL IN THE AUGER GEARBOXES

To change the oil, proceed as follows:
with machine cold close the valve **D (fig.1)** remove the fill plug **B (fig.1)** from the compensation tank and the bored screw **C (fig.1)** on the gearbox casing, remove the vent tube **E (fig.1)** to allow the oil to flow out more quickly (for the maintenance intervals as per maintenance schedule).
(the collected waste oil must be disposed of in accordance with current regulations in the user's COUNTRY).
Once the oil has drained out, put back the bored screw **C (fig.1)**, fill with the required quantity of oil through the hole of the compensation tank to halfway up the level sight glass **(A fig.1)** (see lubricant quantity table); the oil can be loaded manually quite a long operation) or with a pump and filling pressure adjusted to **MAX 1 Bar** (**N.B.** the fill hole on the tank is 1/2" gas, the pump connection must be 1/2" gas, and air must not enter).
When filling has finished, the vent tube **E (fig.1A)** must be full. Put it back on the quick-release fitting and open valve **D (fig.1A)**
(This operation should be carried out for both gearboxes)

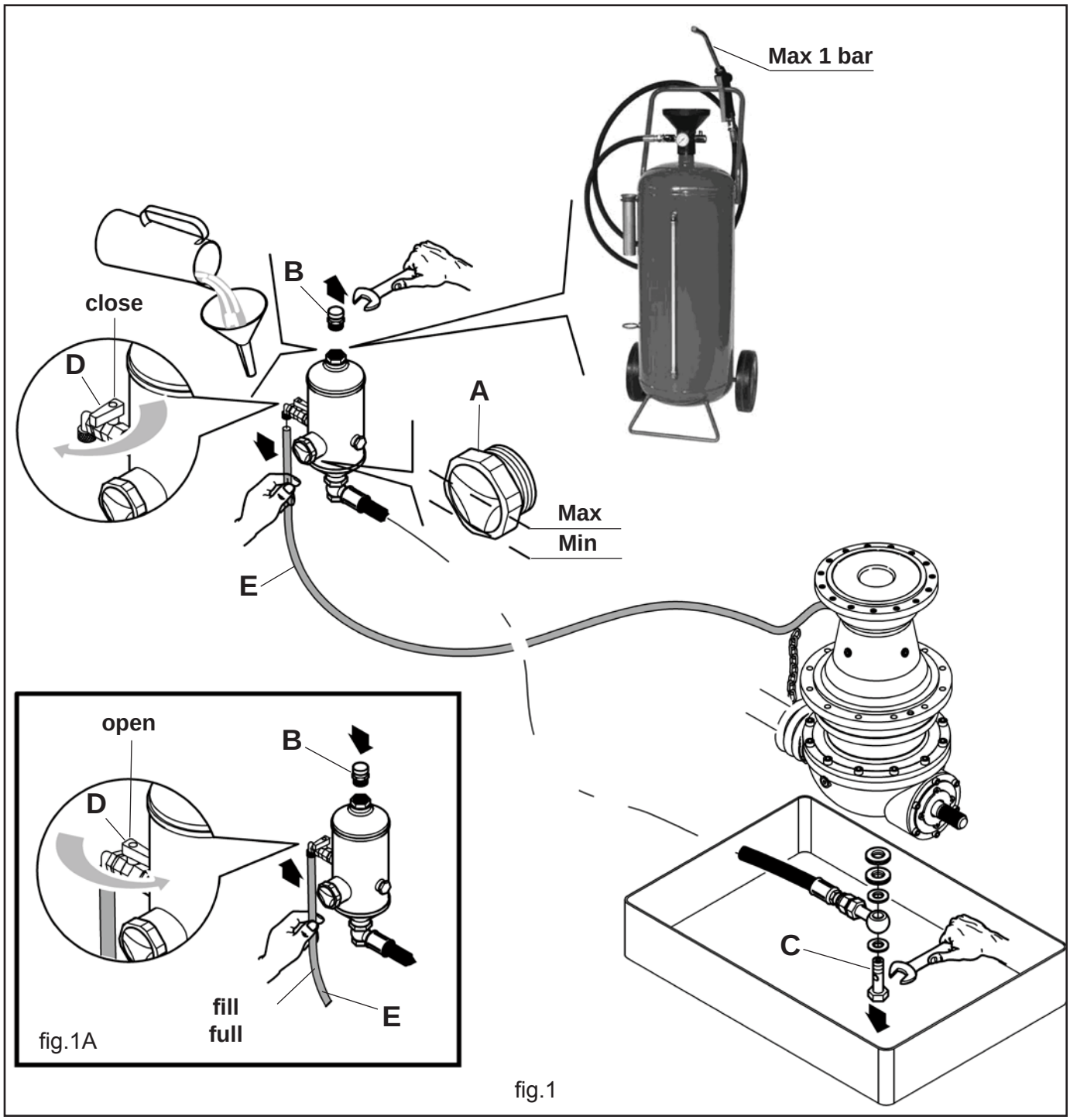


fig.1A

fig.1

Sect. 6.22 LUBRICATING THE CROSSES OF THE UNIVERSAL JOINTS OF THE TRANSMISSION GEARBOXES

Lubricate as per maintenance table through the 2 grease nipples **(A Fig. 1)** the crosses of the universal joint of the gearbox transmission.

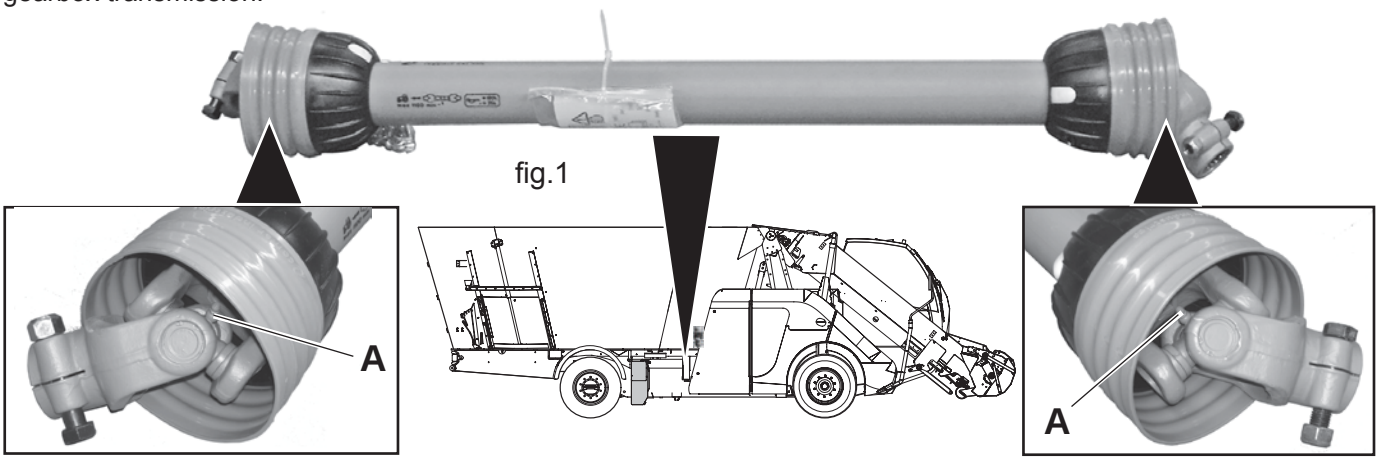


fig.1

Sect. 6.23 UREA REFILLING (42 l)

Warning!!! when going to the distributor to load the UREA tank (capacity 42 l), clean the filling plug area well (fig.1) from foreign bodies (residues of dry straw, meal, earth and any other dirt deposited) to prevent them entering the tank during refuelling, thus causing malfunctioning and damage to the UREA system and engine.
If the UREA is loaded in the company, make sure that the filling basket is clean, new and has never contained liquids (Diesel, petrol, water oil or other).
Once a container has been used, always use it for successive loading.

WARNING!!! if anomalies occur at the UREA plant due to unclean recipients, foreign bodies or poor quality UREA, the sensors record the engine control unit errors, making the warranty null and void.

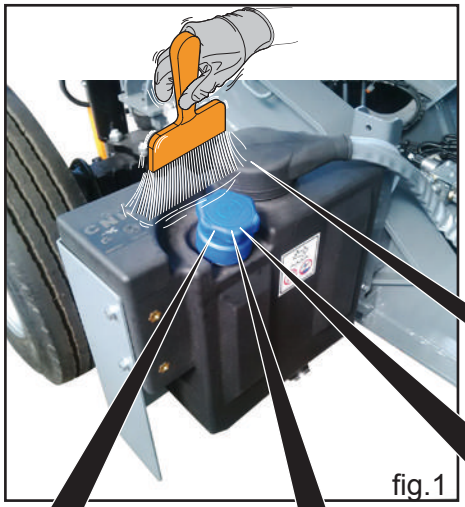


fig.1

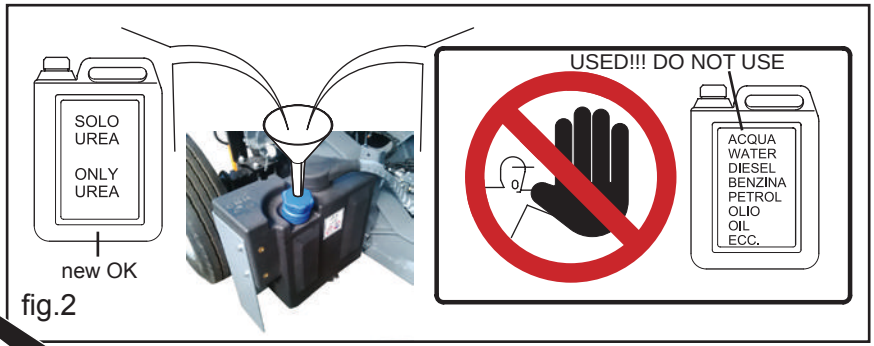


fig.2

DEF/AD BLUE filter

Power supply line type filter with (VOSS)

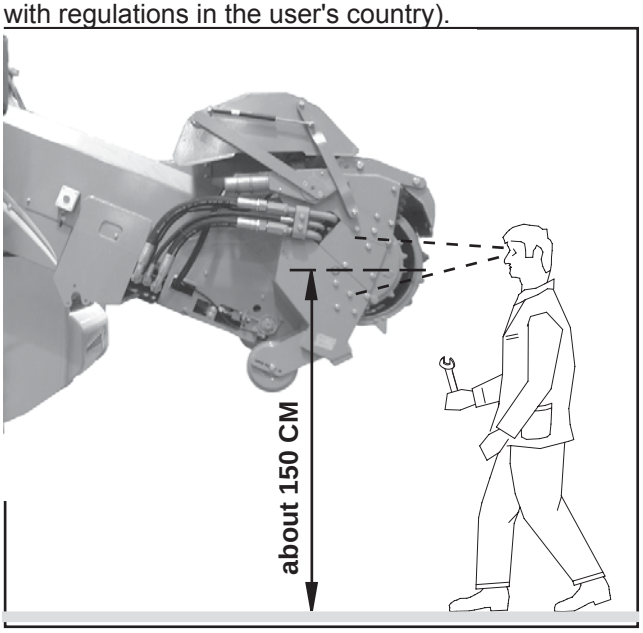
Sect. 6.24 LUBRICATING THE UNLOADING DOOR

Lubricate the guides of the unloading door
(for intervention times as per maintenance schedule)

Sect. 6.25 CHECKING THE OIL LEVEL IN THE MILLING CUTTER GEARBOX

With machine cold

To check the level, lift the milling cutter to about eye level and remove the level plug (A fig. 1).
If the level is OK, the oil should start to come out. If it does not, top up through this hole.
(Consult the maintenance table for the required maintenance intervals).
To change the oil, lower the milling cutter to the ground, remove the drain plug B and let the oil flow out, and then put back the plug and fill through the level plug (A fig.1) (the waste oil must be collected and disposed of in accordance with regulations in the user's country).



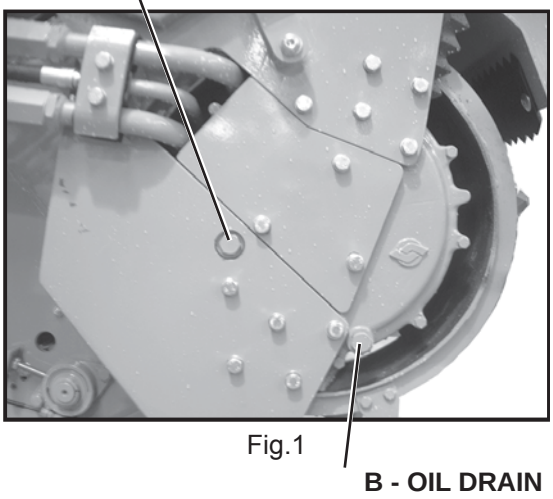


Fig.1

Sect. 6.26 ADJUSTING THE LOADING BELT AND CENTRING

WARNING!!! During the first **15 days** of operation of the machine, keep an eye on the centring of the loading belt of the milling cutter arm. This is because, in the first few days, there may be some shifting of the belt to the right or to the left due to the normal settling of the belt during operation.
If you find there is shifting to the right or to the left, stop the milling cutter to prevent damage to the belt or the channel, **switch off the machine** (put the keys in your pocket) and carry out the following adjustment sequence:

1st case - Belt shifted to the RIGHT

(SEE DIRECTION OF TRAVEL OF THE MACHINE fig.1) loosen lock nut **A** at the top RIGHT on the milling cutter arm - fig.2.
Use two 27mm spanners

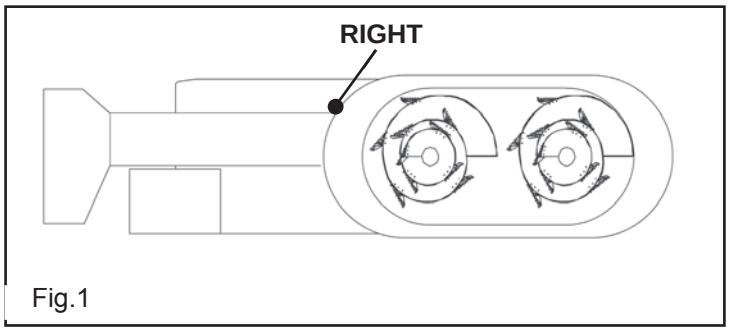


Fig.1

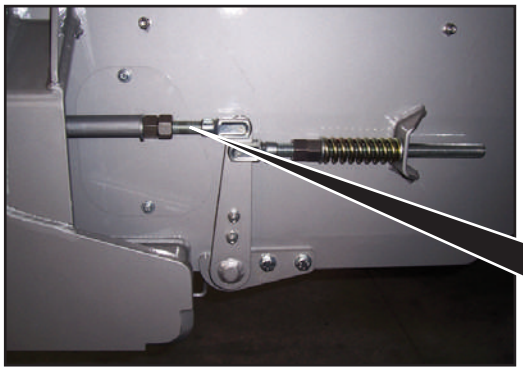


Fig.2

When you have loosened nut **A** (fig.2)**,** tighten nut **B** (fig.3) by turning the nut through 1 to 3 turns **at the most** (we advise doing this by degrees) - to be checked as you go.

After carrying out this operation, test the centring of the belt by making it turn for a few minutes.
If the centring is correct, tighten lock nut **A.**

If this adjustment is not sufficient, you must also **adjust** the tensioner on the **LEFT**: loosen the lock nut **C** at the top LEFT on the milling cutter arm - fig.4.

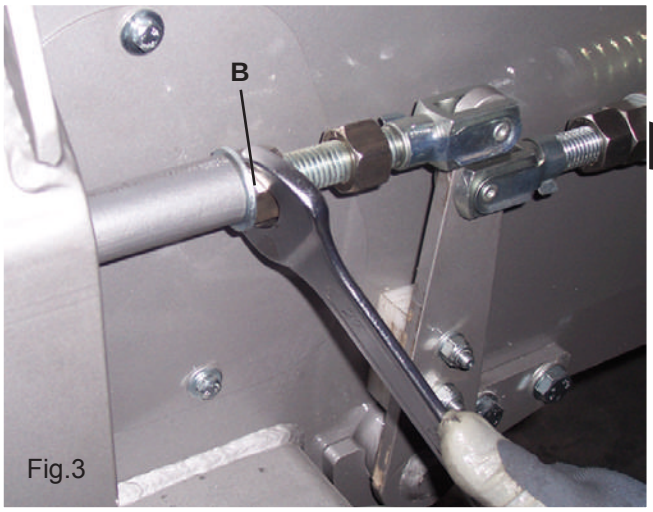
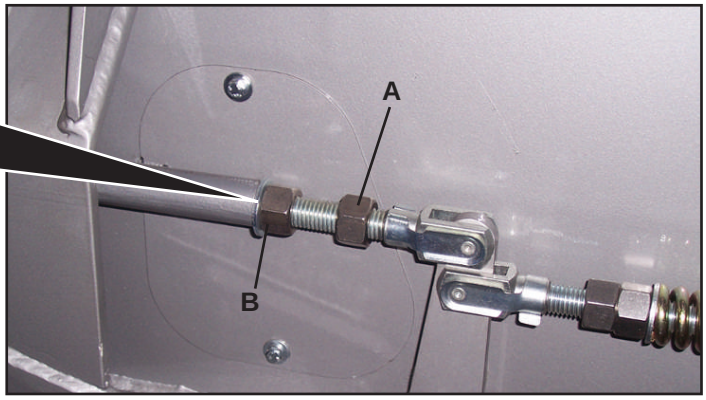
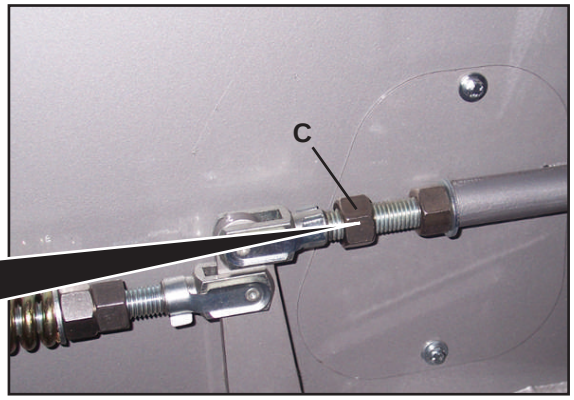


Fig.3





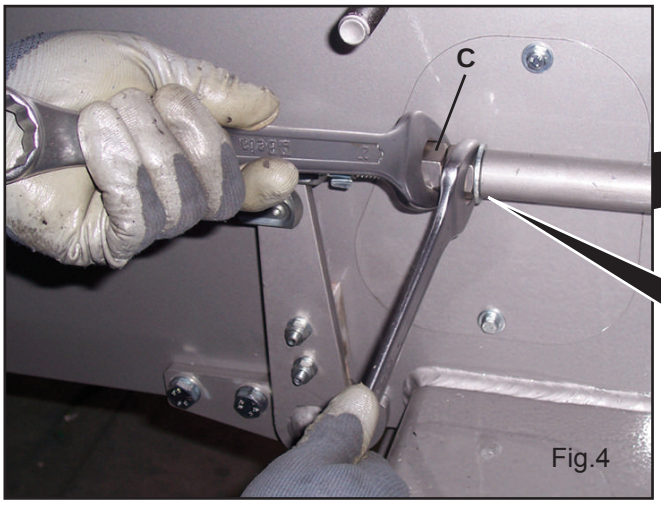


Fig.4

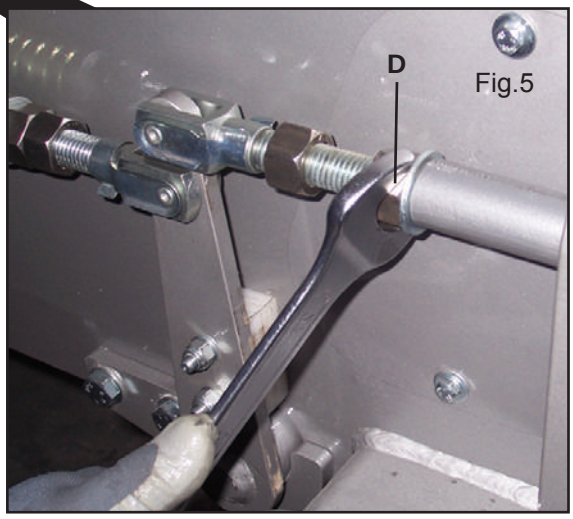


Fig.5

Tighten nut **D** (fig.5) by turning the nut **through half a turn, 1 turn at the most** (we advise doing this a little at a time) - check as you go.
After carrying out this operation, test the centring of the belt by making it turn for a few minutes.
If the centring is correct, tighten lock nut **C.**
If these operations do not give a satisfactory result repeat them and halve the number of adjustment turns - instead of 1 turn to 3 turns, half a turn to 1 turn - to obtain the ideal adjustment.

2nd case - Belt shifted to the LEFT
(SEE DIRECTION OF TRAVEL OF THE MACHINE fig.1) loosen lock nut **A** at the top LEFT on the milling cutter arm - fig.2.
Use two 27mm spanners

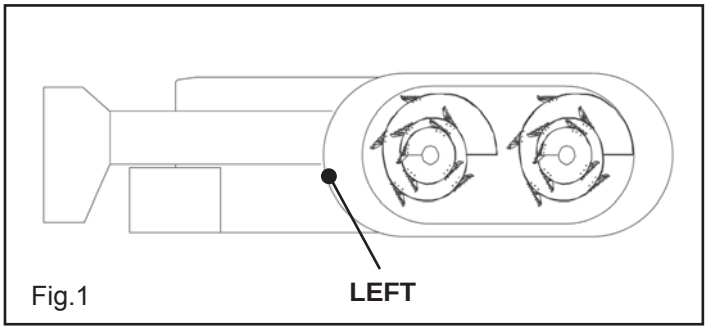
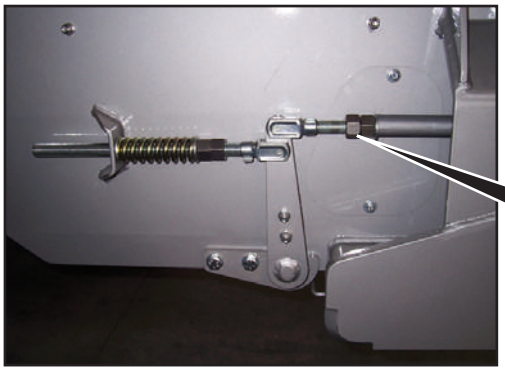


Fig.1



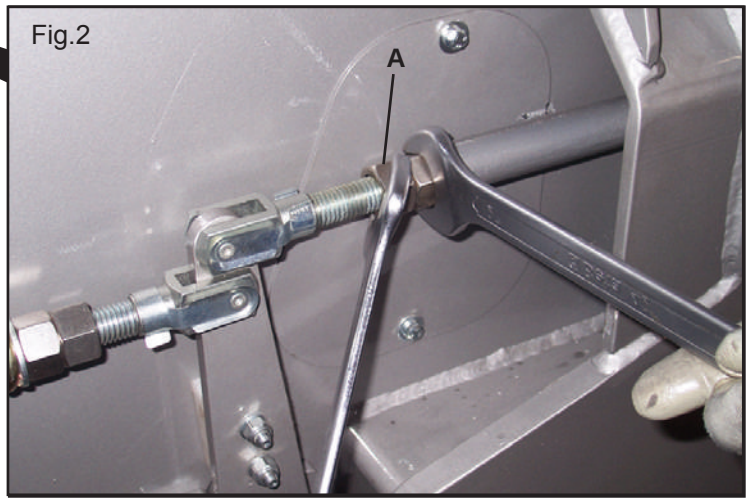


Fig.2

When you have loosened nut **A** (fig.2)**,** tighten nut **B** (fig.3) by turning the nut through 1 to 3 turns **at the most** (we advise doing this by degrees) - to be checked as you go.
After carrying out this operation, test the centring of the belt by making it turn for a few minutes.
If the centring is correct, tighten lock nut **A.**

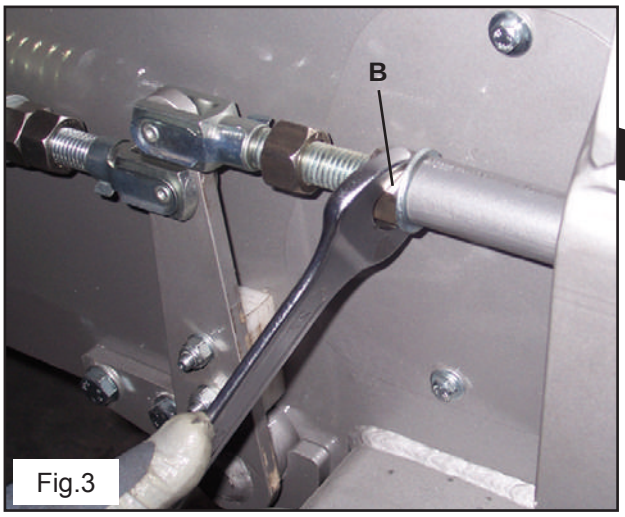
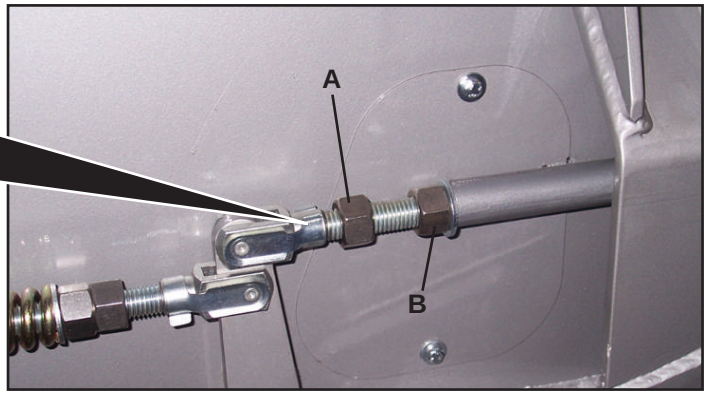


Fig.3



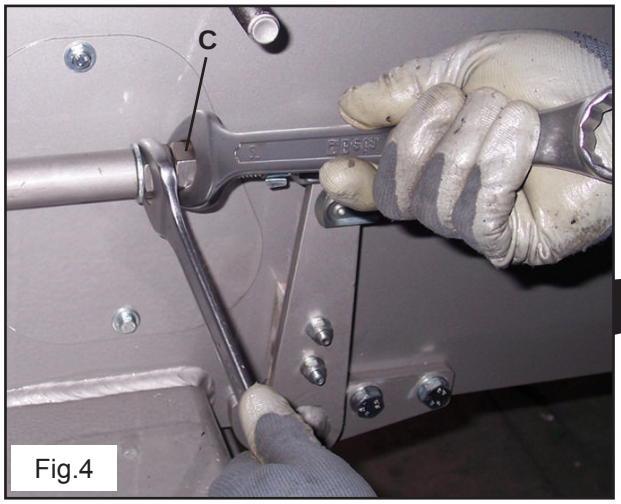
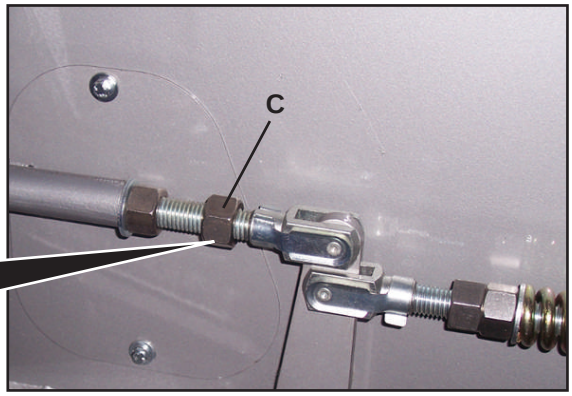


Fig.4



If this adjustment is not sufficient, you must also **adjust** the tensioner on the **RIGHT**: loosen the lock nut **C** at the top RIGHT on the milling cutter arm - fig.4.
Tighten nut **D** (fig.5) by turning the nut **through half a turn maximum 1 rev.**
(we advise doing this a little at a time) - check as you go.
After carrying out this operation, test the centring of the belt by making it turn for a few minutes.
If the centring is correct, tighten lock nut **C** - fig.4**.**
If these operations do not give a satisfactory result repeat them and halve the number of adjustment turns - instead of 1 turn to 3 turns, half a turn to 1 turn - to obtain the ideal adjustment.

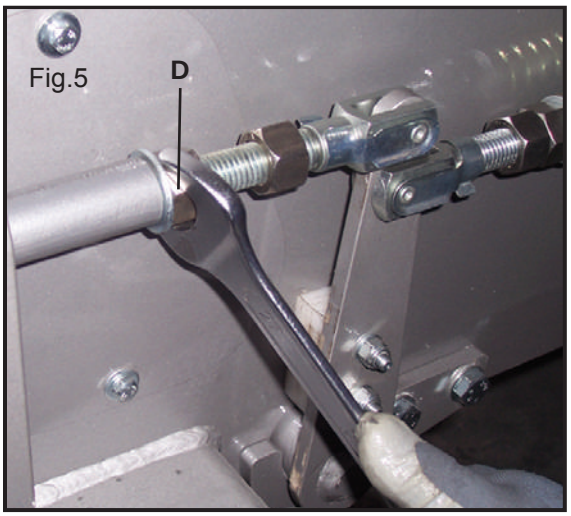


Fig.5

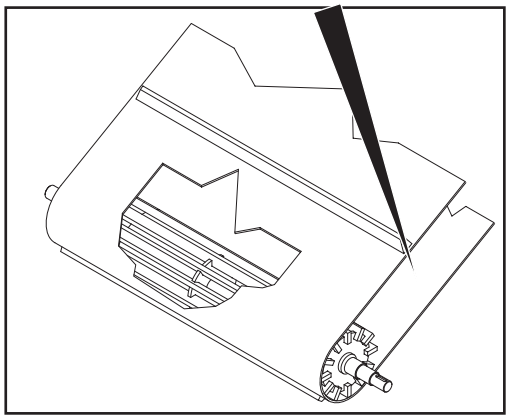
Sect. 6.27 LOADING BELT TENSION

The loading belt is kept under tension by the springs (A Fig.1).
The springs must be adjusted between coils with a gap of between 0.2 and 0.5 mm. To compress them and bring them to the correct measurement, turn the 4 nuts (B Fig.1) (2 each side).

N.B. = After each adjustment, turn the belt in the loading direction (green light) for at least 5 minutes at a high number of revs and then check for correct centring.

IMPORTANT!! check and adjust the belt after the first 10 hours of operation, and then every 50 hours.

N.B. = for good operation of the loading belt, always keep the inside of the belt clean.
Also check that the rollers are clean and that the scrapers are in the right place.



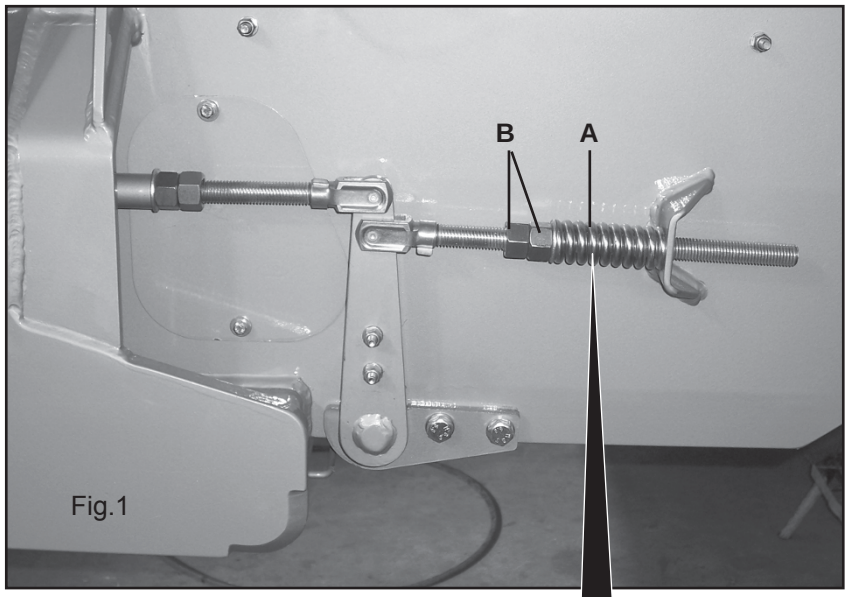
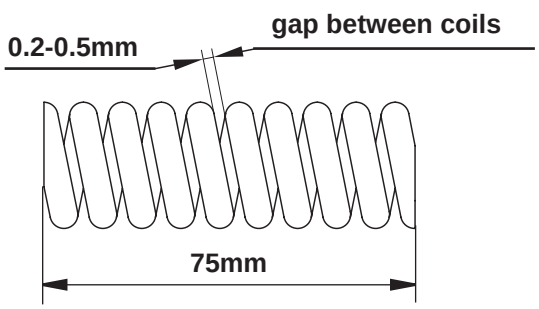


Fig.1



Sect. 6.28 TENSION OF G22 UNLOADING BELT / TRANSFERRING G22

The unloading belt **(A Fig. 1)** is kept under tension by the springs **(B Fig. 1)** situated in the front of the belt. Their tension must be adjusted with belt stopped using the screws **C**, and checking that the spring **B** is compressed to **95mm**.

N.B.: For good operation of the unloading belt, check that the inside of the belt is clean and also check that the rollers are clean and that the scrapers are in the right place.

IMPORTANT!! check and adjust the belt after the first 10 hours of operation, and then every 50 hours.

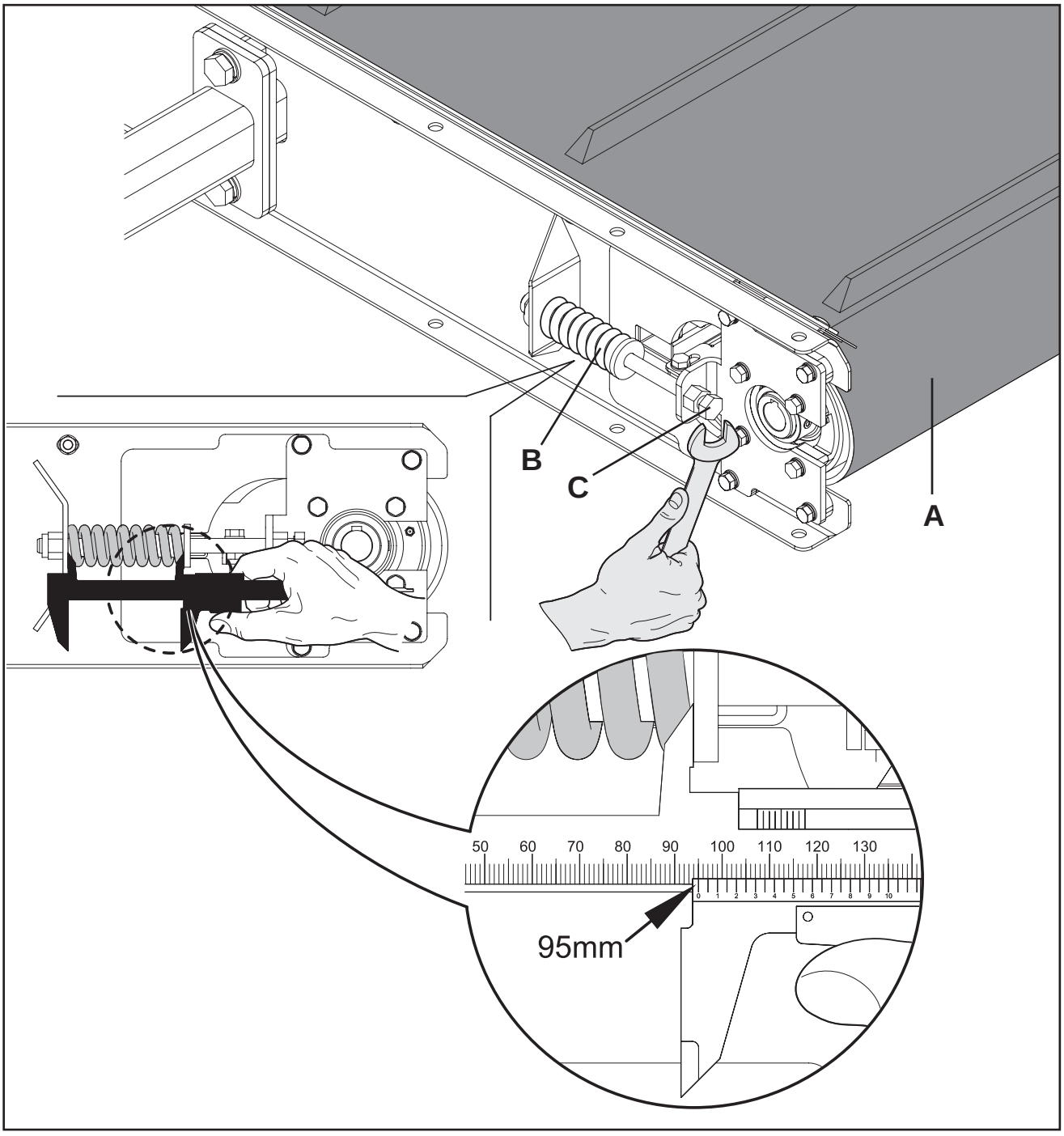


fig.1

Sect. 6.29 CHECKING / REPLACING THE AIR CONDITIONING COMPRESSOR BELT

To adjust or replace the belt A (fig.1) of the compressor, proceed as follows:
replacement: remove the screw B (fig.1) and loosen screw C (fig.1), approach the pulleys, replace the belt, tension, tighten the screw B and then fasten the screw C.
To restore the correct tension of the belt, loosen the screw C, tension and tighten.

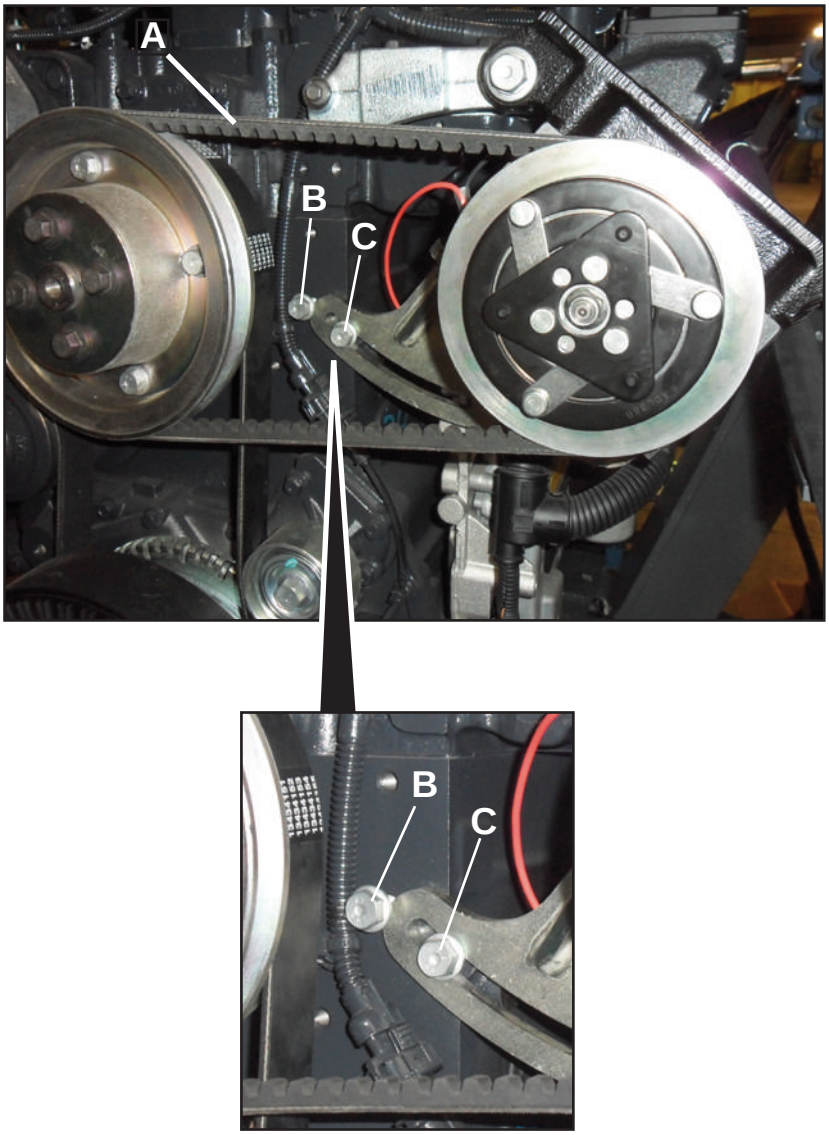


fig.1

Sect. 6.30 PROBLEMS AND SOLUTION

PROBLEMS	SOLUTIONS
• **On starting, no warning light comes on:**	Check the battery switch. Check the general fuses of **125A - 150A - 80A** Check the connections of the battery cables.
• **Failure to work of an electrical component:**	Check the battery switch. Check the fuses.
• **The weighing system is not working:**	Check the fuse. For malfunctioning, check the instruction booklet of the weighing machine.
• **The engine switches off:**	Check the fuel level. Check that the diesel fuel prefilter is clean. Check the diagnostics through the display.
• **Machine low at front:**	Check the height of the front suspension; to reset, see relevant section.
• **When the forward/reverse pedal is pressed, the machine does not move and the engine strains:**	Make sure the parking brake is not engaged. Check that there are no active alarms disabling the transfer.
• **When the forward/reverse pedal is pressed, the machine does not move:**	With the engine off, check that the drive wire with all the mounts and forks are in the right place (AS). Check that, when the pedal is operated, the pump lever moves. If the machine needs to be moved from one place to another, carry out the operation described in sect. 6.7-sect. 6.7.1 -sect. 6.7.2-sect. The lever mechanism is situated under the cabin floor near the forward/reverse pedal (fig.1).
• **The ancillary equipment (door, unloading belt, etc.) does not work:**	Check that the LED situated on the coil of each piece of ancillary equipment is on. If it is off, there is an electrical problem, if it is on and the ancillary equipment does not work, it is a hydraulic problem. Call the after-sales service centre.
• **The unloading belt is jammed:**	Check the tension of the belt. Check for the presence of foreign bodies between the rear roller and the frame of the hopper.

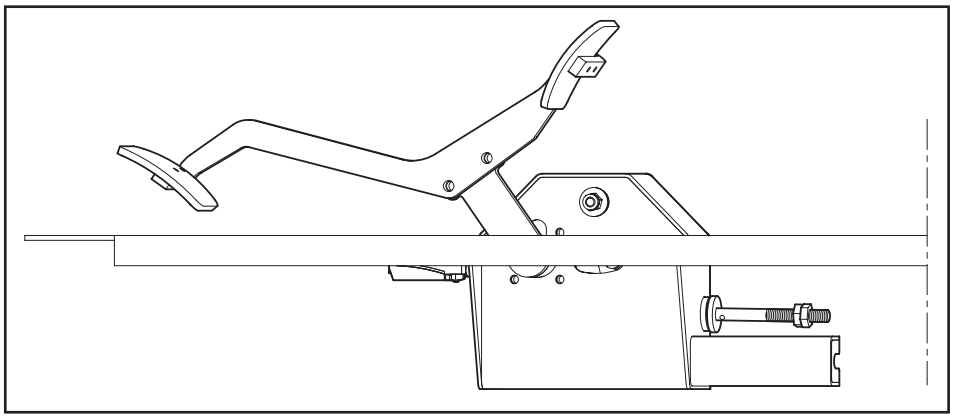


fig.1

Sect. 6.31 SCRAPPING/DISPOSAL OF HAZARDOUS MATERIALS

When the machine is to be scrapped, it is considered special hazardous waste. To scrap it, you must use the services of an authorized specialized centre or, if you purchase another new vehicle, you can take it to the dealer who will then take it to a special scrapping centre, in conformity with the current legislation in your country.
The following are to be considered hazardous materials: oil, grease, fuel, filters, pipes, batteries.

SANCTIONS PROVIDED FOR

Failure to take the machine to be scrapped to an authorized waste disposal centre is subjected to administrative sanctions in accordance with the current regulations in your country.

Sect. 7 ECU DIAGNOSIS ERRORS DIAGNOSTICS TABLE

FMI	Description
0	Above Normal
1	Below Normal
2	Not plausible
3	Source high
4	Source low
12	No signal
31	Not available

SPN	SPN	FMI				FAILURE DESCRIPTION
DEC values	HEX values	MAX =3	MIN =4	NPL =2	SIG =12	
						VEHICLE 1 (Sensors/Plausibility checks)
65553	10011	x	x	x	x	Fault path 1 for vehicle Speed sensing
131089	20011	x	x	x	x	Fault path 2 for vehicle Speed sensing (CAN)
196625	30011	x	x	x		Fault path 3 for vehicle Speed sensing (max.pulse width)
65554	10012	x	x		x	Accelerator Pedal 1
131090	20012	x	x		x	Accelerator Pedal 2
65555	10013				x	Accelerator Pedal and brake not plausible
65556	10014	x	x		x	Multiple State Switch
65557	10015				x	Cruise control actuating device evaluation error
65558	10016			x	x	Main clutch signal
65559	10017			x	x	Brake signal
65560	10018				x	Engine brake preselection switch status
65561	10019			x		No terminal 15 signals detected
65562	1,001A	x				Terminal 50 always pressed
65564	1001C	x				Water in fuel
65565	1001D	x	x	x	x	Loss of efficiency in SCR catalyst
						VEHICLE 2 (Lamps/Relays/Actuators)
65569	10021	x	x	x	x	Adjustable speed limit lamp
65570	10022	x	x	x	x	Power stage fault status for MIL
65571	10023	x	x	x	x	Power stage for system lamp
65572	10024	x	x	x	x	Cold start lamp
65573	10025	x	x			Main relay defect (High press pump)
65574	10026	x	x			Battery voltage fault
65575	10027	x	x			Main relay 5 (Engine brake decompressor valve)
65576	10028	x				Main relay SCBatt (Lambda H./Grid H./Batt.switch)
131112	20028		x			Main relay SCGND (Lambda H./Grid H./Batt.switch)
65577	10029	x	x			Main relay 3 (A/C compr.)
65578	1,002A	x	x			Main relay 4 (Exhaust valve eng.brake)
65579	1002B	x	x	x		Power stage air heater 1 actuator

65580	1002C	x	x	x		Power stage air heater 2 actuator
65581	1002D	x	x			Air heater test switch on (volt.below lower threshold)
131117	2002D	x	x			Air heater test switch off (volt.exceeds higher threshold)
65579	1002B	x	x	x	x	Error path for the glow control relay actuator
65580	1002C	x	x	x	x	Error path for the glow display lamp
65581	1002D	x	x			Errors of Glow control unit
65582	1002E	x	x	x	x	Error path of power stage pre-supply pump
65582	1002E	x				Grid heater always switched on
65583	1002F			x	x	Air condition power stage CAN message
						ENGINE 1 (Temperature and Pressure Sensors)
65585	10031	x	x	x	x	Coolant temperature sensor
65586	10032				x	Coolant temperature sensor dynamic test
65587	10033	x	x	x		Boost Temp. Signal
65588	10034	x	x	x	x	Boost pressure sensor
65589	10035	x	x			Fuel Temp. Signal
65590	10036	x	x			Rail pressure sensor CP3
131126	20036	x	x			Rail pressure sensor offset monitoring
65591	10037	x	x	x		Rail pressure relief valve
65592	10038	x	x	x	x	Oil Pressure Sensor
131128	20038				x	Oil Pressure too low
65593	10039	x	x			Error path for signal range check of duty cycle of air temperature signal
131129	20039	x	x			Error path for signal range check of air temperature; do not enter into fault code memory, always use fault class 0
131129	20039	x	x	x	x	Oil Temp. Sensor
65594	1,003A				x	Oil Temperature above normal
131130	2,003A		x			Missing pressure in coolant circuit
131131	2,003B	x	x	x		Atmospheric Temperature Sensor (Humidity?)
131132	2003C	x	x			BET temperature sensor
196668	3003C	x	x			ClgZn temperature sensor
262204	4003C	x	x			Inside air temperature sensor
65597	1003D	x	x	x		Fuel pressure sensor
131133	2003D	x	x			Fuel pressure sensor dynamic plausibility test
65598	1003E				x	Coolant temperature sensor absolute test
65599	1003F				x	Coolant pressure sensor not plausible
						ENGINE 2 (Speed sensing/actuators)
65601	10041	x	x			Crankshaft sensor failure
65602	10042		x			Running with camshaft sensor only
65603	10043	x	x			Camshaft sensor failure
65604	10044	x			x	Offset between camshaft and crankshaft
65605	10045	x	x	x	x	Power stage Fan actuator
65606	10046	x	x	x		Power stage Fan 2 actuator
65607	10047	x	x			Fan speed sensor signal
65608	10048	x	x	x	x	Air condition power stage

65609	10049	x	x	x	x	Fuel filter heating output
65610	1,004A			x		Engine Compartment Start Button is stuck
65611	1,004B	x	x	x	x	Blowby recircul. Control relay actuator
65612	1004C	x				Blowby engine overspeed detection
						Fuel metering CR Systems
						Fuel metering Unit Injector Systems
65617	10051	x				Rail pressure max.positive deviation exceeded
131153	20051	x				Rail pressure positive deviation 2nd part
65617	10051	x	x	x	x	Cyl.1 specific errors
65618	10052	x				Rail pr.max.pos.deviation exceeded conc.set flow of fuel
65618	10052	x	x	x	x	Cyl.2 specific errors
65619	10053	x				Maximum negative rail pressure deviation with metering unit on lower limit is exceeded
65619	10053	x	x	x	x	Cyl.3 specific errors
65620	10054	x				Minimum rail pressure exceeded
65620	10054	x	x	x	x	Cyl.4 specific errors
65621	10055	x				Maximum rail pressure exceeded
65621	10055	x	x	x	x	Cyl.5 specific errors
65622	10056	x				Rail pressure drop rate is higher than expected
65622	10056	x	x	x	x	Cyl.6 specific errors
65623	10057	x				Setpoint of metering unit in overrun mode not plausible
65623	10057			x		Disabled Cyl. Shutoff function
65624	10058	x				Setpoint of fuel volume flow through metering unit is lower than calculated limit
65625	10059			x	x	Metering unit PWM-powerstage
131161	20059	x				Short circuit to battery of metering unit output
196697	30059		x			Short circuit to ground of metering unit output
65626	1,005A	x	x			Metering unit AD-Channel
65627	1,005B	x				High pressure test(deactivates rail press. monitoring)
						Injectors 1
65633	10061	x	x	x	x	Cylinder 1 - Short circuit Low/High
65634	10062	x	x	x	x	Cylinder 2 - Short circuit Low/High
65635	10063	x	x	x	x	Cylinder 3 - Short circuit Low/High
65636	10064	x	x	x	x	Cylinder 4 - Short circuit Low/High
65637	10065	x	x	x	x	Cylinder 5 - Short circuit Low/High
65638	10066	x	x	x	x	Cylinder 6 - Short circuit Low/High
65639	10067	x	x	x	x	Cylinder 1 - Open load
65640	10068	x	x	x	x	Cylinder 2 - Open load
65641	10069	x	x	x	x	Cylinder 3 - Open load
65642	1,006A	x	x	x	x	Cylinder 4 - Open load
65643	1,006B	x	x	x	x	Cylinder 5 - Open load
65644	1006C	x	x	x	x	Cylinder 6 - Open load
65645	1006D	x				Fault path to disable rail monitor. while compr.test active
						Injectors 2

65649	10071	x	x	x	x	Bank 1 specific errors - Short circuit / not classifiable
65650	10072	x	x	x	x	Bank 1 specific warnings - Open load
65651	10073	x	x	x	x	Bank 2 specific errors - Short circuit / not classifiable
65652	10074	x	x	x	x	Bank 2 specific warnings - Open load
65659	1,007B	x				Misfire in multiple cylinders
65660	1007C	x	x	x	x	Chip-specific errors-->stop engine
131196	2007C	x	x	x	x	Chip-specific errors-->stop engine
65662	1007E	x	x	x		Fault path of injection limitation
						Air inlet system / EGR
65668	10084	x				Messages SRA2EDC
65669	10085	x			x	Error path for exceeding the maximum drift difference between load- and idle range
131205	20085	x	x			Error path for exceeding the maximum drift limit in the low-idle range
196741	30085	x	x			Error path for exceeding the maximum drift limit in the load range
65670	10086	x	x			Signal range check of supply voltage, (not in failure memory)
131206	20086	x	x			Error path for the raw air mass signal
196742	30086	x	x	x		Error path for the raw air mass signal
262278	40086	x	x	x		Error path for signal range check of reference signal
65671	10087	x				AirCtl permanent positive governor deviation
65672	10088		x			AirCtl permanent negative governor deviation
131208	20088	x	x			AirCtl governor plausibility check
65673	10089	x				Short circuit to Batt. for EGR power stage
131209	20089		x			Short circuit to ground for EGR power stage
196745	30089			x	x	No load/excessive temperature for EGR power stage
65674	1,008A	x	x	x		Power stage for EGR Bypass valve actuator
65675	1,008B	x				Short circuit to BATT for throttle valve actuator powerst.
131211	2,008B		x			Short circuit to GND for throttle valve actuator powerst.
196747	3,008B			x	x	No load and excess temp. for TVA powerst.
65676	1008C				x	Monitoring of the controller
65677	1008D	x				AirCtl permanent positive governor deviation
65678	1008E		x			AirCtl permanent negative governor deviation
65679	1008F				x	Too long time spent in transition mode RgnNrm
						Boost system and turbine speed
65681	10091	x	x	x		Boost pressure actuator current AD-channel
65682	10092	x				Short circuit to Battery for BPA powerstage
131218	20092		x			Short circuit to Ground for BPA powerstage
196754	30092			x	x	No load/excessive temperature for BPA power stage
65683	10093	x	x	x	x	Turbine speed
65683	10093	x				Error path for short-term overboost
65684	10094	x				Multi signal defects in EPCtl
65685	10095	x	x	x		P2 pressure errors in EPCtl
65684	10094	x				Permanent governor deviation in PCR low boost
65685	10095		x			Permanent governor deviation in PCR high boost

131221	20095	x	x			PCR governor plausibility check
65686	10096	x		x		P3 pressure errors in EPCtl
65686	10096	x	x			Errorpath for filtered energizing time of Cylinder 1
131222	20096	x	x			Errorpath for filtered energizing time of Cylinder 2
196758	30096	x	x			Errorpath for filtered energizing time of Cylinder 3
262294	40096	x	x			Errorpath for filtered energizing time of Cylinder 4
65687	10097	x		x	x	Turbine speed errors in EPCtl
65687	10097	x	x			Errorpath for energizing time calibration injection of Cylinder 1
131223	20097	x	x			Errorpath for energizing time calibration injection of Cylinder 2
196759	30097	x	x			Errorpath for energizing time calibration injection of Cylinder 3
262295	40097	x	x			Errorpath for energizing time calibration injection of Cylinder 4
65688	10098	x				Multi signal defects in PCR
65688	10098	x	x			Errorpath for filtered energizing time of Cylinder 5
131224	20098	x	x			Errorpath for filtered energizing time of Cylinder 6
196760	30098	x	x			Errorpath for energizing time calibration injection of Cylinder 5
262296	40098	x	x			Errorpath for energizing time calibration injection of Cylinder 6
65689	10099	x	x	x		P2 pressure errors in PCR
65690	1,009A	x		x		Turbine speed errors in PCR
65691	1,009B	x				High turbine speed and high air pressure
65692	1009C	x		x		P3 pressure errors in PCR
65693	1009D	x	x			Temperature of Inner control loop
65694	1009E	x	x			Temperature of Outer control loop
65695	1009F	x				Multi signal defects in EGSys_NOxEstIv
						Exhaust system (After treatment)
65697	100A1	x	x	x		Lambda linear signal of Nox Sensor
131233	200A1	x	x	x		Lambda binary signal of Nox Sensor
65698	100A2	x	x	x	x	Nox signal of Nox Sensor
65699	100A3	x	x	x		Heater of Nox Sensor
65700	100A4	x				Message Nox Sensor timeout
65701	100A5	x				Message DM1DCU timeout
65702	100A6	x				Message SCR1 timeout
131238	200A6	x				Message SCR2 timeout
65704	100A8		x			SCR2 message: low urea level
131240	200A8	x	x	x	x	Low urea level in tank
196776	300A8	x				Timeout for urea sensor
262312	400A8	x	x	x	x	Wrong urea concentration
65705	100A9	x	x			Exhaust gas temp.sensor before oxidation catalyst
65707	100AB	x	x			Exhaust gas temperature sensor before turbine
131243	200AB	x	x		x	Exhaust Gas Pipe pressure sensor
65707	100AB			x		Faults of CAN message VDC1
65708	100AC	x	x	x	x	Heater used in EGR Mass Flow rate
131244	200AC			x		CAN message EngGsFlowRt

65709	100AD	x	x	x	x	Recirculated Engine Exhaust Gas Temp. Sensor
65710	100AE	x	x			Air humidity sensor
65711	100AF	x				DM1DCU SPN1 message
131247	200AF	x				DM1DCU SPN2 message
196783	300AF	x				DM1DCU SPN3 message
262319	400AF	x				DM1DCU SPN4 message
131245	200AD	x				SCR inducement, technical failure class high
196770	300A2	x				Nox Sensor plausibility test
196781	300AD	x				Urea quality and urea warning level 6
262314	400AA	x				SCR inducement, technical failure class low
262317	400AD	x				SCR inducement, poor DEF quality
327847	500A7		x			Minimum urea level 1
327850	500AA	x				SCR inducement, technical failure class low
327853	500AD	x				SCR inducement, poor DEF quality
327855	500AF	x				DM1DCU SPN4 message
393383	600A7		x			Minimum urea level 2
393386	600AA	x				Urea quality and urea warning level 3
393389	600AD	x				SCR inducement, poor DEF quality
458919	700A7		x			Minimum urea level 3
458922	700AA	x				SCR inducement, technical failure class high
458925	700AD	x				Urea quality and urea warning level 10
						Interfaces 1 (CAN-Bus)
65713	100B1	x				Busoff in CAN A
65714	100B2	x				Busoff in CAN B
65715	100B3	x				Busoff in CAN C
65716	100B4	x				Timeout for BC2EDC1
131252	200B4	x				Timeout for BC2EDC2
65717	100B5	x				Timeout for VM2EDC
65718	100B6			x		Timeout of CAN message WSI
65719	100B7			x		Timeout in CAN send messages
65720	100B8	x				Physical implausibility of TSC-demand
65721	100B9	x				MIL visualization for BC2EDC1
65722	100BA	x				Message Dashboard Display timeout
65723	100BB	x				Message ERC1DR timeout
65724	100BC	x				Message RxAMCONIv timeout
65725	100BD			x		Timeout error of RxCCVS message
65726	100BE	x				Physical plausibility DCS
65727	100BF			x		CAN message RxEngTemp2
						Interfaces 2 (CAN messages timeout)
65729	100C1			x		Timeout of CAN message EBC1
65730	100C2			x		Timeout of CAN message ETC1
65731	100C3			x		Timeout of CAN message TCO1

65732	100C4	x		x		Timeout of CAN message TSC1-AE
131268	200C4	x		x		Timeout of CAN message TSC1-AR
65733	100C5	x		x		Timeout of CAN message TSC1-DE
131269	200C5	x		x		Timeout of CAN message TSC1-DR
65734	100C6	x	x			Timeout of CAN message TSC1-PE
65735	100C7	x		x		Timeout of CAN message TSC1-TE
131271	200C7	x		x		Timeout of CAN message TSC1-TR
65736	100C8	x		x		Timeout of CAN message TSC1-VE
131272	200C8	x		x		Timeout of CAN message TSC1-VR
65737	100C9	x				Timeout of CAN message TF
131273	200C9	x				Timeout for message TimeDate
196809	300C9	x				Timeout for message HRVD (high resolution vehicle distance)
65738	100CA				x	Monitor.temperature upstream of Oxid.Catalyst
65739	100CB				x	Monitor.temperature upstream of Particul.filter
65740	100CC				x	Monitor.temperature upstream of Turbo charger
65741	100CD	x				Too high regeneration demand
65742	100CE	x				Temp.difference upstream from Oxidation catalyst of bank1 and 2 exceeded threshold
65743	100CF	x				Temp.difference upstream from Particulate filter of bank1 and 2 exceeded threshold
						ECU 1 (internal checks)
65745	100D1	x				Communication error of CJ940
65746	100D2		x	x	x	Error state of EEPROM
65747	100D3				x	Recovery which is locked
131283	200D3				x	Recovery which is suppressed
196819	300D3				x	Recovery which is visible
65748	100D4				x	Communic.supervision Watchdog/Contr.-Flag
65749	100D5		x	x	x	Redundant shutoff paths during initial.
65750	100D6				x	Deviation between TPU and system time
65751	100D7			x	x	Dataset variant coding
65752	100D8				x	Supervision of SPI-handler Flag
65753	100D9	x	x	x	x	Error status ADC monitoring
65754	100DA				x	Fault FMTC_trq2qBas_MAP contains non strictly monotonous q curves
						ECU 2 (Powerst./Immobil./Overrun/Sensor supply)
65761	100E1	x	x			Short circuit to Batt or Ground, no load, excess.temp. for high side power stage
131297	200E1	x	x	x		Short circuit to Batt or Ground, no load, excess.temp. for low side power stage
65762	100E2		x			Error state of Immobilizer (no fuel release)
65763	100E3	x				Energising time exceeds limit of overrun monitoring
65764	100E4	x				Plausibility error in engine speed check
65765	100E5	x	x			12V sensor supply voltage
65766	100E6	x	x			Sensor supply voltage 1
65767	100E7	x	x			Sensor supply voltage 2
65768	100E8	x	x			Sensor supply voltage 3
65769	100E9	x				Supply voltage CJ940 upper limit

65770	100EA		x			Supply voltage CJ940 lower limit
65771	100EB	x	x		x	Atmospheric Pressure Sensor
						Particulate trap
65777	100F1				x	Part.filter differential pressure sensor not plausible
65778	100F2	x	x			Part.filter differential pressure sensor
65779	100F3	x	x			Part.filter pre temperature sensor
65780	100F4	x	x			Flow resistance monitoring
65781	100F5	x				Differential pressure above limit
65782	100F6				x	Dynamics of differential pressure signal not plausible
65783	100F7	x	x		x	Differential pressure signal
65784	100F8				x	Pressure sensor frozen so signal not plausible
65785	100F9				x	Hose line defect so signal not plausible
65786	100FA				x	Pressure sensor blocked so signal not plausible
65787	100FB	x				Permanent regeneration
65788	100FC	x	x		x	First exhaust gas temperature monitoring
65789	100FD				x	General temperature not plausible
65790	100FE	x	x		x	Second exhaust gas temperature monitoring
65791	100FF	x				Number of locked regenerations
131327	200FF	x				Regeneration demand number 2
196863	300FF	x				Regeneration demand number 3
						Lambda probes
393233	60011	x	x	x	x	Monitoring of Lambda sensor 1 Nernst cell pin
393234	60012	x	x	x	x	Monitoring of Lambda sensor 1 Pump current pin
393235	60013	x	x	x	x	Monitoring of Lambda sensor 1 Heater powerstage
393236	60014			x		Heater coupling defect of Lambda sensor
393237	60015	x	x			Monitoring of Lambda sensor 1 signal range
393238	60016	x	x	x	x	Monitoring of Lambda sensor 1 virtual ground pin
393239	60017	x	x			Monitoring of Lambda sensor 1 O2 volt.calibration value
393240	60018	x	x			Monitoring of Lambda sensor inner resistance calibr.val.
393241	60019				x	SPI chip error defect of Lambda sensor (not plausible)
393242	6,001A		x			SPI chip error defect of Lambda sensor (low batt.volt.)
393243	6,001B			x		Shunting detection of Lambda sensor
393244	6001C	x	x			Ri value monitoring of LSU0
393245	6001D	x	x			CO2 concentration error in full load oper.point
393246	6001E	x	x			CO2 concentration error in part load oper.point
393247	6001F	x	x			CO2 concentration error in overrun oper.point
						Reserve
458769	70011					Error check of critical time for oil dilution
458770	70012					Misfire Cylinder 1
458771	70013					Misfire Cylinder 2
458772	70014					Misfire Cylinder 3
458773	70015					Misfire Cylinder 4

458774	70016					Misfire Cylinder 5
458775	70017					Misfire Cylinder 6
458779	7,001B					Additive valve actuator
458780	7001C					Intercooler Bypass Valve Powerstage
458781	7001D					Runuptest is set to disable misfire detection during runup test
458782	7001E					Fault path for Runup test
458783	7001F					Dynamic error for LSU
Denox2 Diagnosis						
						Electrical failures of sensors 1
15633	3D11					Air pressure sensor aft orifice (electrical)
15634	3D12					Atmospheric pressure sensor (electrical)
15635	3D13					Battery voltage sensing (electrical)
15636	3D14					Air pressure sensor bef orifice (electrical and signal out or range)
15637	3D15					Temperature sensor after catalyst (electrical and plausibility)
15638	3D16					Temperature sensor before catalyst (electrical and plausibility)
15639	3D17					Sensor supply 1 (for UREA level sensor)
15640	3D18					Sensor supply 2 (for UREA and air pressure sensors)
15641	3D19					UREA pressure sensor in box (electrical and plausibility)
15642	3D1A					UREA Temperature sensor in box (electrical and plausibility)
15643	3D1B					Temperature sensor of dosing Module (electrical)
15644	3D1C					NOX Sensor (Self monitoring of sensor / only CAN message)
15645	3D1D					NOx sensor measures too high Nox
						Electrical failures of sensors 2
15665	3D31					UREA level sensor (electrical)
15666	3D32					UREA Temperature sensor in Tank (electrical)
						Indicator
15681	3D41					Diagnostic lamp (electrical)
15682	3D42					UREA Level Gauge (electrical)
						Electrical Failures of actuators
15697	3D51					Compressed air ctrl Valve (electrical)
15698	3D52					Dosing Valve (electrical)
15699	3D53					UREA Pump speed
15700	3D54					Ventilation Valve (electrical)
						Electrical failures of heaters
15713	3D61					Line Heater back Flow tube
15714	3D62					Heater of dosing module
15715	3D63					Line Heater Inlet tube
15716	3D64					Heater of Box
15717	3D65					Line Heater Compensation tube
15718	3D66					Heater of UREA Pump
15719	3D67					Line Heater pressure tube (Box-Dosing module)

15720	3D68					Tank heating Valve
						Functionality 1
15729	3D71					Compressed air pressure bef orifice out of range
15730	3D72					Compressed air pressure (Commissioning)
15731	3D73					Temperature after catalyst too low
15732	3D74					UREA pressure too low (Commissioning)
15733	3D75					UREA pressure too high
15734	3D76					UREA Temperature in Pump Module out of range
15735	3D77					UREA Temperature in Tank out of range
15736	3D78					System frozen and not free in time
15737	3D79					Ventilation valve error / to low pressure drop (Commissioning)
						Functionality 2
15745	3D81					Compressed air tube clogged
15746	3D82					UREA pressure too low at system start
15747	3D83					UREA Temperature too low during commissioning
15748	3D84					UREA pressure drop too high with opened Ventilation valve in Afterrun
						Functionality 3
15761	3D91					Compressed air tube leak
15762	3D92					Plausibility air pressure sensors
15763	3D93					UREA Leakage error
15764	3D94					Catalyst efficiency too low (with NOx sensor)
15765	3D95					UREA Tank empty
15766	3D96					UREA Level Indication not plausible with UREA consumption
						CAN Messages
15777	3DA1					CAN Message "UREA request"
15778	3DA2					CAN Message "UREA request" Timeout
15779	3DA3					CAN Message 0 "EEC1" (0C F0 04 00) (engine speed, load)
15780	3DA4					CAN Message 1 "Eng Temp" (18 FE EE 00) (Coolant/oil temp)
15781	3DA5					CAN Message 2 "Amb Cond" (18 FE F5 00) (ambient temperature/Barometric pressure)
15782	3DA6					CAN Message 3 "Inlet Cond" (18 FE F6 00) (Boost Press&Temp)
15783	3DA7					"CAN Message 4 ""ECM2-SCR"" (0C FF 3D 00) (Nox estimation,Dosing on/off, heating on/off,exh gas flow)"
15784	3DA8					CAN message NOx Sensor
15785	3DA9					DCU or Heater switched "off" too long time via CAN
15786	3DAA					UREA Tank level error (CAN message or electrical with real sensor)
15787	3DAB					UREA Tank Temperature not plausible with Pump module temperature
						System failures
15810	3DC2					Too many Frozen Cycles of dosing module
15825	3DD1					Application error in MAP selection for UREA quantity calculation
15826	3DD2					EEPROM / Checksum failures
15827	3DD3					Ignition "on" signal K15
15828	3DD4					Main Relay opens too early / too late

Sect. 8 MACHINE CONTROL UNIT ERROR MESSAGES

ERRORS	DESCRIPTION OF FUNCTION OF FUSES ON BOARD 2 AS
IDS_CFG1	CHANGE TIME
IDS_CFG2	CHANGE LANGUAGE
IDS_CFG3	BOSCH CALIBRATION
IDS_CFG4	----------
IDS_CFG5	----------
IDS_CFG6	COUNTERBLADES MODE
IDS_CFG7	MACHINE CHANGE
IDS_CFG8	RESET TABLE OF ALARMS
IDS_CFG9	REAR CAMERA
IDS_CFG10	----------
IDS_CFG11	RADIATOR FAN MODE
IDS_CFG21	LOGIC OUTPUTS
IDS_CFG22	LOGIC INPUTS
IDS_CFG23	TABLE OF ALARMS
IDS_CFG24	MOTOR INFORMATION
IDS_CFG25	PROGRAM INFORMATION
IDS_CFG26	SCALES
IDS_CFG27	BOSCH INFORMATION
IDS_CFG28	MAINTENANCE RESET
IDS_CFG29	SCR UREA
IDS_CFG30	SCALES EXCLUSION
IDS_CFG31	SET COUNTERKNIVES
IDS_CFG32	COUNTERKNIVES
IDS_BOSCH1	ALARM
IDS_BOSCH2	PRESS 3 SEC.
IDS_BOSCH3	FOR LIMP HOME FUNCTION
IDS_BOSCH4	**LIMP HOME STATUS**
IDS_BOSCH5	OIL TEMPERATURE
IDS_DPF1	DPF INFORMATION
IDS_DPF2	ASH LOAD PERCENTAGE
IDS_DPF3	DPF INHIBITION
IDS_DPF4	FILTER STATUS
IDS_DPF5	Regeneration not necessary
IDS_DPF6	LOW level regeneration necessary
IDS_DPF7	MODERATE level regeneration necessary
IDS_DPF8	HIGH level regeneration necessary
IDS_DPF9	No inhibition
IDS_DPF_IN1	Inhibition from CAN
IDS_DPF_IN2	Inhibition from SWITCH
IDS_DPF_IN3	Inhibition from accelerator OFF
IDS_DPF_IN4	Inhibition from neutral position
IDS_DPF_IN5	Inhibition from high speed
IDS_DPF_IN6	Inhibition from parking brake
IDS_DPF_IN7	Inhibition from low gas temp.
IDS_DPF_IN8	Inhibition from system fault
IDS_DPF_IN9	Inhibition from temporary block
IDS_DPF_IN10	Inhibition from permanent block
IDS_DPF_IN11	Inhibition from motor not hot
IDS_DPF12	MOTOR STATUS
IDS_DPF13	No limitation
IDS_DPF14	30% power limitation
IDS_DPF15	30% power and 1200 RPM limitation
IDS_DPF16	SOOT LOAD ESTIMATE
IDS_DPF17	REGENERATION STATUS
IDS_SCR1	SCR SYSTEM
IDS_SCR2	UREA TANK TEMPERATURE
IDS_SCR3	UREA LEVEL
IDS_SCR4	UREA QUANTITY
IDS_SCR5	UPP. CATALYSER TEMP
IDS_SCR6	LOW. CATALYSER TEMP
IDS_SCR7	UREA PRESSURE
IDS_SCR8	MORE HEAVY DUTY PROTECTION
IDS_SCR9	LESS HEAVY DUTY PROTECTION
IDS_SCR10	NOT REQUESTED
IDS_SCR11	REQUESTED
IDS_SCR12	ERROR

IDS_SCR13	N.D.
IDS_SCR14	(°c)
IDS_EXIT	GOES TO SAFE AREA
IDS_VUOTO	
IDS_DIAG	DIAGNOSTICS MENU
IDS_PARAMETER	CHANGE PARAMETER
IDS_RES_CYCLE	3 sec. RESET CYCLE
IDS_TIME_CTRL	CONTROL TIME
IDS_TIME_IN	STAY IN TIME
IDS_TIME_MOVE_IN	ENTRY TIME
IDS_TIME_OUT	STAY OUT TIME
IDS_TIME_MOVE_OUT	EXIT TIME
IDS_TIME_TOT	CYCLE TIME
IDS_VER_SW	SOFTWARE VERSION
IDS_VER_MC2M	MASTER BOARD MC2M
IDS_VER_LE70	SLAVE BOARD LE70
IDS_VER_ALGA	ALGA-TFT DISPLAY
IDS_TOT_KG	TOTAL WEIGHT:
IDS_MAX_KG	MAXIMUM WEIGHT:
IDS_SPN	SPN
IDS_FMI	FMI
IDS_OC	OC
IDS_TORQUE_1	Motor torque req. (%)
IDS_TORQUE_2	Motor torque act. (%)
IDS_PRESS_1	Oil pressure (Kpa)
IDS_CONS_1	Average consumption (l/h)
IDS_CONS_2	Consumption
IDS_TEMP_1	IN air temp. (°c)
IDS_TEMP_2	H2O temp (°c)
IDS_LOAD_1	Load at speed (%)
IDS_VEL_1	Current speed (rpm)
IDS_LEV_1	Coolant level (%)
IDS_AIR1	Input air temp. (°c)
IDS_VOLT	Battery voltage (V)
IDS_CUR_ALARM	CURRENT ALARM:
IDS_TEMP_OIL_MOT	OIL TEMPERATURE [Deg C]
IDS_TITLE_MOTOR	MOTOR INFORMATION
IDS_TITLE_3B6	INFORMATION 3B6
IDS_TITLE_OUTPUT	OUTPUTS
IDS_TITLE_INPUT	INPUTS
IDS_ALGA	ALGA
IDS_MC2M	MC2M
IDS_LE70	LE70
IDS_IOMODE	I/O MODE
IDS_OUT	OUTPUT NAME
IDS_IN	INPUT NAME
IDS_WR	WRITE
IDS_RD	READ
IDS_TRUE	TRUE
IDS_FALSE	FALSE
IDS_OUT0_ALGA	STOP LIGHTS
IDS_OUT1_ALGA	BUZZER
IDS_IN0_ALGA	OIL TEMP STOP
IDS_IN1_ALGA	OIL FILTER CLOGGED
IDS_IN2_ALGA	AIR FILTER CLOGGED
IDS_IN3_ALGA	LOW OIL TEMP
IDS_IN4_ALGA	IDR AUX OIL FILTER CLOGGED
IDS_IN5_ALGA	LOW OIL LEVEL
IDS_IN6_ALGA	STOP LIGHTS SIGNAL
IDS_IN7_ALGA	OIL THERMOSTAT
IDS_IN8_ALGA	NC
IDS_IN9_ALGA	NC
IDS_IN10_ALGA	NC
IDS_IN11_ALGA	NC
IDS_IN12_ALGA	NC
IDS_IN13_ALGA	NC
IDS_IN14_ALGA	NC
IDS_IN15_ALGA	NC

IDS_IN16_ALGA	NC
IDS_IN17_ALGA	NC
IDS_IN18_ALGA	LEFT INDICATOR
IDS_IN19_ALGA	NC
IDS_IN20_ALGA	NC
IDS_IN21_ALGA	NC
IDS_IN22_ALGA	NC
IDS_IN23_ALGA	RIGHT INDICATOR
IDS_IN24_ALGA	NC
IDS_IN25_ALGA	NC
IDS_IN26_ALGA	NC
IDS_IN27_ALGA	NC
IDS_IN28_ALGA	FULL HEADLIGHTS
IDS_IN29_ALGA	POSITION LIGHTS
IDS_IN30_ALGA	NC
IDS_IN31_ALGA	NC
IDS_IN32_ALGA	NC
IDS_IN33_ALGA	NC
IDS_IN34_ALGA	WHEEL REVS SENSOR
IDS_IN35_ALGA	NC
IDS_OUT0_MC2M	SUSPENSION BLOCK
IDS_OUT1_MC2M	PEDAL NEUTRAL POSITION
IDS_OUT2_MC2M	REAR LIGHTS BUZZER
IDS_OUT3_MC2M	ELECTRIC FANS
IDS_OUT4_MC2M	COUNTERKNIVES IN
IDS_OUT5_MC2M	COUNTERKNIVES OUT
IDS_OUT6_MC2M	DANA/RH MOT EV
IDS_OUT7_MC2M	PARKING BRAKE
IDS_OUT8_MC2M	LEFT MAT PWM
IDS_OUT9_MC2M	RIGHT MAT PWM
IDS_OUT10_MC2M	AP. SC. 2 / optional 1
IDS_OUT11_MC2M	CH. SC. 2 / optional 2
IDS_OUT12_MC2M	OPENING UNLOADER 1
IDS_OUT13_MC2M	CLOSURE UNLOADER 1
IDS_OUT14_MC2M	OPENING OF MILLING CUTTER CASING
IDS_OUT15_MC2M	DIFFERENTIAL BLOCK
IDS_OUT16_MC2M	LH MOT EV
IDS_OUT17_MC2M	OPTIONAL 2
IDS_OUT18_MC2M	SAFETY DEVICES BYPASS
IDS_OUT19_MC2M	AUX DISTRIBUTOR
IDS_OUT20_MC2M	FAN INVERSION
IDS_OUT21_MC2M	AUGER CLUTCH
IDS_OUT22_MC2M	ACTIVE COCLEA SPEED 1
IDS_OUT23_MC2M	ACTIVE COCLEA SPEED 2
IDS_OUT24_MC2M	MILLING CUTTER 1 PWM
IDS_OUT25_MC2M	MILLING CUTTER 2 PWM
IDS_OUT26_MC2M	PWM LOAD 1
IDS_OUT27_MC2M	PWM LOAD 2
IDS_OUT28_MC2M	ARM ASCENT PWM
IDS_OUT29_MC2M	ARM DESCENT PWM
IDS_OUT30_MC2M	ARM BLOCK
IDS_OUT31_MC2M	ARM RELEASE
IDS_OUT32_MC2M	NC
IDS_OUT33_MC2M	NC
IDS_OUT34_MC2M	NC
IDS_OUT35_MC2M	NC
IDS_OUT36_MC2M	NC
IDS_OUT37_MC2M	NC
IDS_OUT38_MC2M	NC
IDS_OUT39_MC2M	NC
IDS_IN0_MC2M	CLUTCH OVERPOWER
IDS_IN1_MC2M	STEERING SEG B
IDS_IN2_MC2M	STEERING SEG A
IDS_IN3_MC2M	CENTRED HOPPER
IDS_IN4_MC2M	OVERBOOST
IDS_IN5_MC2M	PARK BRAKE PRESSURE SWITCH
IDS_IN6_MC2M	MILLING CUTTER OVERPOW.
IDS_IN7_MC2M	BRAKE PEDAL SEG
IDS_IN8_MC2M	FOR PEDAL SEG

IDS_IN9_MC2M	NC
IDS_IN10_MC2M	NC
IDS_IN11_MC2M	MAN. ACCEL. SEG.
IDS_IN12_MC2M	NC
IDS_IN13_MC2M	REG. EXHAUST LH
IDS_IN14_MC2M	SIGNAL ARM CORNER
IDS_IN15_MC2M	NC
IDS_IN16_MC2M	NC
IDS_IN17_MC2M	NC
IDS_IN18_MC2M	NC
IDS_IN19_MC2M	WORK SIGNAL
IDS_IN20_MC2M	PRESS. MARCIA IND.
IDS_IN21_MC2M	REG. EXHAUST RH
IDS_IN22_MC2M	POS. MOUTH TO DRAIN
IDS_IN23_MC2M	NC
IDS_IN24_MC2M	FUEL LEVEL
IDS_IN25_MC2M	REV. PEDAL SIGN
IDS_IN26_MC2M	UNLOAD ADJ. SEG.
IDS_IN27_MC2M	PRESS. MARCIA AV.
IDS_IN28_MC2M	SPD. 2 SCREW ON
IDS_IN29_MC2M	POS. MOUTH EXHAUST C
IDS_IN30_MC2M	SPD. 1 SCREW ON
IDS_IN31_MC2M	REVERSE GEAR
IDS_IN32_MC2M	MILLING CUTTER SPEED ADJ.
IDS_IN33_MC2M	MILLING CUTTER PRESS
IDS_IN34_MC2M	BRAKES ACVCUM. PRESS.
IDS_IN35_MC2M	POS. MOUTH EXHAUST B
IDS_IN36_MC2M	NC
IDS_IN37_MC2M	MEAL OPENING
IDS_IN38_MC2M	NC
IDS_IN39_MC2M	NC
IDS_IN40_MC2M	PARK BRAKE. ARMED
IDS_IN41_MC2M	CLUTCH REVS.
IDS_IN42_MC2M	EMERGENCY BUTTON
IDS_IN43_MC2M	NC
IDS_IN44_MC2M	MAT EL. ADJ.
IDS_IN45_MC2M	SEAT MICRO SWITCH
IDS_IN46_MC2M	NC
IDS_IN47_MC2M	MILLING CUTTER BLOCK
IDS_IN48_MC2M	NC
IDS_IN49_MC2M	FOR. PEDAL IDLE
IDS_IN50_MC2M	NC
IDS_IN51_MC2M	REV. PEDAL IDLE
IDS_IN52_MC2M	NC
IDS_IN53_MC2M	NC
IDS_IN54_MC2M	NC
IDS_IN55_MC2M	NC
IDS_IN0_LE70	NC
IDS_IN1_LE70	NC
IDS_IN2_LE70	NC
IDS_IN3_LE70	NC
IDS_IN4_LE70	NC
IDS_IN5_LE70	NC
IDS_IN6_LE70	NC
IDS_IN7_LE70	NC
IDS_IN8_LE70	NC
IDS_IN9_LE70	NC
IDS_IN10_LE70	NC
IDS_IN11_LE70	NC
IDS_IN12_LE70	NC
IDS_IN13_LE70	NC
IDS_IN14_LE70	NC
IDS_IN15_LE70	NC
IDS_IN16_LE70	NC
IDS_IN17_LE70	NC
IDS_IN18_LE70	NC
IDS_IN19_LE70	NC
IDS_IN20_LE70	NC
IDS_IN21_LE70	NC

IDS_IN22_LE70	NC
IDS_IN23_LE70	NC
IDS_IN24_LE70	NC
IDS_IN25_LE70	NC
IDS_OUT0_LE70	NC
IDS_OUT1_LE70	SPD. 3 SCREW ON
IDS_OUT2_LE70	LH UNLOAD OPENING
IDS_OUT3_LE70	LH UNLOAD CLOSING
IDS_OUT4_LE70	REG. HOPPER RIGHT
IDS_OUT5_LE70	REG. LEFT HOPPER
IDS_OUT6_LE70	LH HOPPER DOWN
IDS_OUT7_LE70	LH HOPPER UP
IDS_OUT8_LE70	RH HOPPER GOWN
IDS_OUT9_LE70	RH HOPPER DOWN
IDS_OUT10_LE70	MOT PWM ON LH
IDS_OUT11_LE70	MOT PWM ON RH
IDS_OUT12_LE70	LEFT AUX HOPPER
IDS_OUT13_LE70	RIGHT AUX HOPPER
IDS_OUT14_LE70	NC
IDS_OUT15_LE70	NC
IDS_OUT16_LE70	NC
IDS_OUT17_LE70	NC
IDS_OUT18_LE70	MEAL LOAD
IDS_OUT19_LE70	MEAL UNLOAD
IDS_OUT20_LE70	SELF-STEERING AXLE
IDS_OUT21_LE70	PWM OPT 1
IDS_OUT22_LE70	PWM OPT 2
IDS_OUT23_LE70	CLOSING OF MILLING CUTTER CASING
IDS_OUT24_LE70	BAREBONE 1 DIVIDER
IDS_OUT25_LE70	BAREBONE 2 DIVIDER
IDS_OUT26_LE70	COOLING
IDS_OUT27_LE70	MOLASSES PUMP
IDS_OUT28_LE70	DISINFECTANT
IDS_OUT29_LE70	FAN 2 INVERSION
IDS_OUT30_LE70	NC
IDS_OUT31_LE70	NC
IDS_IN0_IOMODE	COUNTERKNIVES OUTPUT COMD
IDS_IN1_IOMODE	AUGER SPEED 2 CMD
IDS_IN2_IOMODE	LEFT TRANSFERRING HOPPER CMD
IDS_IN3_IOMODE	UN. 2 OPENING CMD 2
IDS_IN4_IOMODE	RIGHT TRANSFERRING HOPPER CMD
IDS_IN5_IOMODE	UN. 2 OPENING CMD 2
IDS_IN6_IOMODE	AUGER SPEED 1 CMD
IDS_IN7_IOMODE	UN. 2 OPENING CMD 1
IDS_IN8_IOMODE	UN. 2 OPENING CMD 3
IDS_IN9_IOMODE	COUNTERKNIVES RETURN COMMAND
IDS_IN10_IOMODE	UN. 2 OPENING CMD 3
IDS_IN11_IOMODE	BYPASS CMD
IDS_IN12_IOMODE	MEAL LOAD CMD
IDS_IN13_IOMODE	RH SCALE UNLOAD CMD on LEFT
IDS_IN14_IOMODE	FAN INVERSION CMD
IDS_IN15_IOMODE	UN. 2 OPENING CMD 1
IDS_IN16_IOMODE	NC
IDS_IN17_IOMODE	RH UPP. HOPPER CMD
IDS_IN18_IOMODE	NC
IDS_IN19_IOMODE	LH UPP. HOPPER CMD
IDS_IN20_IOMODE	DIFFERENTIAL BLOCK CMD
IDS_IN21_IOMODE	CMD TRAM. RH IN
IDS_IN22_IOMODE	MEAL UNLOAD CMD
IDS_IN23_IOMODE	RH SCALE UNLOAD CMD on RIGHT
IDS_IN24_IOMODE	CMD TRAM. LH OUT
IDS_IN25_IOMODE	CLUTCH ENGAGEMENT CMD
IDS_IN26_IOMODE	MOLASSES PUMP CMD
IDS_IN27_IOMODE	DISINFECTANT COMD
IDS_IN28_IOMODE	CMD TRAM. LH IN
IDS_IN29_IOMODE	FAST GEAR CMD
IDS_IN30_IOMODE	CMD TRAM. RH OUT
IDS_IN31_IOMODE	SLOW GEAR CMD
IDS_TKM	TOTAL KM
IDS_PKM	PARTIAL KM

IDS_KMH	Km/h
IDS_MPH	mph
IDS_BAR	BAR
IDS_LINGUA	ENGLISH
IDS_HS	HS
IDS_LS	LS
IDS_OK	ENTER/EXIT
IDS_OFF	OFF
IDS_ON	ON
IDS_MENU	SCROL
IDS_TOL	TOTAL HOURS WORKED
IDS_AUTO	AUTOMATIC
IDS_MAN	MANUAL
IDS_POL	PARTIAL HOURS WORKED
IDS_RES_KM	3 sec. RESET KM
IDS_RES_ORA	3 sec. RESET HOURS
IDS_PIN	ENTER PIN
IDS_CH_PAG	CHANGE PAGE
IDS_CH_DEV	CHANGE DEVICE
IDS_PROGRESS	CURRENT CALIBRATION IN PROGRESS
IDS_EL_DOWN	DOEN ALRM
IDS_EL_UP	UP ALARM
IDS_PAG_DOWN	3 SEC. PAGE DOWN
IDS_PAG_UP	3 SEC. PAGE UP
EL_PRIOR_0	
IDS_ALARM1	HEARTBEAT ERROR
IDS_ALARM2	ALGA DISCONNECTED
IDS_ALARM3	LE70 DISCONNECTED
IDS_ALARM4	MC2M CPU1 DISCONNECTED
IDS_ALARM5	ALARM MES.185 ASA-CBO
IDS_ALARM6	ALARM MES.187 IO-MODE
IDS_ALARM7	ALARM MES.191 JOYSTICK
IDS_ALARM8	CANBUS OFF
IDS_ALARM9	ALARM MES.18F DG
IDS_ALARM10	ALARM MES.525 BOSCH
IDS_ALARM11	ALARM MES.526 BOSCH
IDS_ALARM12	ALARM MES.527 BOSCH
IDS_ALARM13	ALARM MES.528 BOSCH
IDS_ALARM14	ALARM MES.529 BOSCH
IDS_ALARM15	ALARM MES.7A9 ALGA
IDS_ALARM16	ALARM MES hb BOSCH
IDS_ALARM17	ALLARME MS hb DG
IDS_ALARM18	MC2M PARAMETERS ERROR
IDS_ALARM19	MC2M WARNING PARAMETERS
IDS_ALARM20	ALGA AREA RETAIN ERROR
IDS_ALARM21	WARNING AREA RETAIN ALGA
IDS_ALARM22	ALGA PARAMETERS ERROR
IDS_ALARM23	ALGA PARAMETERS WARNING
IDS_ALARM24	PARAMETERS ERROR LE70
IDS_ALARM25	PARAMETERS WARNING LE70
IDS_ALARM26	SPN ENGINE WARNING
IDS_ALARM27	SPN UREA WARNING
IDS_ALARM28	
IDS_ALARM29	ADLUBE LEVEL LOW
IDS_ALARM30	SUSPENSIONS BLOCK ERR
IDS_ALARM31	REAR LIGHTS ERR
IDS_ALARM32	FANS ERR
IDS_ALARM33	KNIVES IN ERR
IDS_ALARM34	KNIVES OUT ERR
IDS_ALARM35	PARK BRAKE ERR
IDS_ALARM36	RH UNLOAD AP. ERR
IDS_ALARM37	RH UNLOAD CH. ERR
IDS_ALARM38	ERR AP. EXHAUST POST
IDS_ALARM39	REAR UNLOAD CH. ERR
IDS_ALARM40	MILLING CUTTER CASE AP. ERR
IDS_ALARM41	DIFFERENTIAL B. ERR
IDS_ALARM42	BYPASS ERR
IDS_ALARM43	FAN INV. ERR
IDS_ALARM44	AUGER CLUTCH ERR
IDS_ALARM45	AUGER SPEED1 ERR

IDS_ALARM46	AUGER SPEED2 ERR
IDS_ALARM47	ARM BLOCK ERR
IDS_ALARM48	ARM RELEASE ERR
IDS_ALARM49	DANA RED. PWM ERR DANA
IDS_ALARM50	LH SCALE UN PWM ERR
EL_GROUP_1	
EL_EMPTY	
EL_FMI_DEFAULT	
IDS_ALARM51	RH SCALE UN PWM ERR
IDS_ALARM52	LH RED PWM ERR
IDS_ALARM53	CW MILLING CUTTER PWM ERR
IDS_ALARM54	CCW MILLING CUTTER PWM ERR
IDS_ALARM55	CW LOAD PWM ERR
IDS_ALARM56	CCW LOAD PWM ERR
IDS_ALARM57	ARM UP PWM ERR
IDS_ALARM58	ARM DOWN PWM ERR
IDS_ALARM59	AUXILIARY DISTRIBUTOR ERR
IDS_ALARM60	AUGER SPEED 3 ERR
IDS_ALARM61	ERR AP. EXHAUST LH
IDS_ALARM62	ERR CH. EXHAUST LH
IDS_ALARM63	HOPP.OUT ADJ. ERR
IDS_ALARM64	HOPP. IN ADJ. ERR
IDS_ALARM65	LH HOPP. DOWN ERR
IDS_ALARM66	LH HOPP. UPERR
IDS_ALARM67	RH HOPP. DOWN ERR
IDS_ALARM68	RH HOPP. UPERR
IDS_ALARM69	LH AUX. HOPP. ERR
IDS_ALARM70	RH AUX. HOPP. ERR
IDS_ALARM71	MEAL LOAD ERR
IDS_ALARM72	MEAL UNLOAD ERR
IDS_ALARM73	SELF-STEERING ERR
IDS_ALARM74	MILLING CUTTER CLOSING ERR
IDS_ALARM75	BAREBONE 1 ERR
IDS_ALARM76	BAREBONE 2 ERR
IDS_ALARM77	COOLING ERR
IDS_ALARM78	MOLASSES PUMP ERR
IDS_ALARM79	DISINFECTANT ERR
IDS_ALARM80	FAN 2 INV. ERR
IDS_ALARM81	PWM MOT ALH ERR
IDS_ALARM82	PWM MOT ARH ERR
IDS_ALARM83	OPT 1 EV ERR
IDS_ALARM84	OPT 2 EV ERR
IDS_ALARM85	BRAKE IDLE ERR
IDS_ALARM86	ACCELERATOR IDLE ERR
IDS_ALARM87	STEERING SENSOR ERR
IDS_ALARM88	SEAT MICRO SWITCH ANOMALY
IDS_ALARM89	HYD. OIL TEMPERATURE
IDS_ALARM90	JOYSTICK ERROR
IDS_ALARM91	ALARMS BUZZER ERR
IDS_ALARM92	BRAKE POW. ERR
IDS_ALARM93	FORWARD ACC POW.ERR
IDS_ALARM94	REVERSE ACC POW.ERR
IDS_ALARM95	MANUAL ACC POW.ERR
IDS_ALARM96	BOSCH ALARM CODE
IDS_ALARM97	AUGER SPEED SENSORS ANOMALY SCREW
IDS_ALARM98	MSG ASA RND ERR
IDS_ALARM99	BYPASS ON
IDS_ALARM100	MSG BOSCH RND ERR
IDS_ALARM_LOG_SET_ACK	
IDS_ALARM_LOG_RTN_NACK	
IDS_ALARM_LOG_NORMAL	OK
IDS_ALARM_LOG_SET_NACK	ERR
IDS_ALARM_LOG_CRC_ERROR	
IDS_ALARM_QUICK_ACK	

IDS_ALARM_QUICK_RTN	
IDS_ALARM_QUICK_SET	

Sect. 9 EXTRACT OF THE INSTRUCTION MANUAL RELATIVE TO THE 2010/52/UE DIRECTIVE POINTS DISCUSSED:

4.1

a) seat adjustment....
see page 107 sect. 5.32.: **Seats adjustment**
The seat use and maintenance manual is supplied with the pneumatic seat version

b) use and adjustment of any heating, ventilation and air conditioning system;
see page 104 sect.5.27: **HEATING / AIR CONDITIONING UNIT**

c) switching the engine on and off;
see page 75 sect.5.17

d) position and method of opening the safety exits;
see page 21 sect.3.4 sticker 2: **Use the hammer to break the glass in case of need.**

e) climbing onto and off off the tractor;
to climb onto and off of the machine, use the 2 slip-proof steps and 3 grips, see page 20 sect.3.2

f) hazardous areas around the pivot axle of the articulated tractors;
not applicable

g) use of special tools:
not applicable

h) methods for performing maintenance and repairs in safety:
see page 112 sect. 6.2 **general maintenance regulations**

i) information regarding inspection intervals of the hydraulic piping;
see page 114 sect. 6.4 **DOBERMANN SW EVO AS/HS MAINTENANCE SCHEDULE,**
page115 sect. 6.5 **DOBERMANN SW EVO GPMAINTENANCE SCHEDULE**

j) instructions regarding tractor towing methods;
see page 116 sect. 6.7 **Towing** - 6.7.1 **TOWING ON AS VERSION -**
see page 117 sect. 6.7.2 **TOWING ON GP VERSION -**see page. 117 sect.6.7.3 **TOWING ON VERSION WITH DANA AXLE (HS)**

k) instructions regarding safe use of jacks and recommended lifting points;
see page 116 sect. 6.6 **Wheel replacement**

l) hazards connected to the batteries and fuel tank;
see page 22 sect. 3.5 **Warning/indication** see sticker n°35 electric circuit switch connected to the battery (prevents battery overloading), sticker n°20 corrosive liquids, and on the fuel tank sticker n°18 warning fire hazard.

m) o not use the tractor if there are risks of overturning.....
see page 12/13 sect. 2.4 **Intended use**

n) residual risks connected to hot surfaces, when oil or coolant must be added to engines or drive parts that are hot;

see page 22 sect. 3.5 **Position of external stickers** sticker n°30 burns hazard (on side and central casing near to the locks.

The control and top-up of oil in the gearboxes, the gear, water radiator must be performed when the machine is cold, as specified on page 138 sect. 6.14, page 138 sect.6.15, page 139 sect.6.16, page 141 sect.6.17.2, page 143 sect.6.18.2, page 144 sect.6.19, page 145 sect.6.20, page 146 sect.6.21, page 147 sect.6.21.1, page 149 sect.6.25,

o) level of protection of the structure against falling objects, if pertinent;

correct use of the machine does not entail falling objects to affect the resistance of the structure.

p) level of protection against hazardous substances, if pertinent;

see page 18 sect.3 **General safety and accident-prevention regulations**

q) level of protection of the operator protection structure, if pertinent

see page 18 sect.3 **General safety and accident-prevention regulations**

4.3 Declaration relative to noise:

the noise lies within the limits prescribed for the machine category (see registration certificate)

4.3 Declaration relative to vibrations:

the vibrations at the steering wheel are not such to cause problems for the driver.