



ELITE
S E R I E S

LAVINA ELITE L3213GEB

User Manual



Tech Support Line: 800-987-8403 | www.superabrasive.com | info@superabrasive.us



Warranty Registration Card

Complete and submit this form within 30 days from the date of purchase. The registration is invalid without the machine serial number.

Section 1: Customer Information

Customer name

Address

City

State and Zip Code

Phone #

Email

Section 2: Machine Information

LAVINA model

Serial #

Purchase Date

Purchased From (distributor, dealer)

Email: warranty@superabrasive.us / Fax: 706-658-0357
Superabrasive Inc., 9411 Jackson Trail Rd, Hoschton, GA 30548

WARRANTY AND RETURNS**WARRANTY POLICY FOR LAVINA® E MACHINES**

A warranty card must be submitted to Superabrasive within 30 days of purchase in order for the foregoing warranty to apply.

You can either mail a hard copy of the warranty card or submit it electronically - see page 2.

Superabrasive warrants, from the time of delivery and receipt by the original customer, new and unused products sold by Superabrasive or Superabrasive-appointed distributors or dealers. Goods shall be free from defects in materials and workmanship. Superabrasive or a Superabrasive-appointed repair facility shall either replace or repair any defects in the Goods resulting from faulty design, materials, or workmanship. Products repaired or replaced during the warranty period shall be covered by the foregoing warranty for the remainder of the original warranty period, or ninety (90) days from date of the repair or shipment of the replacement, whichever is longer. Spare parts for repair will be either new or equivalent to new.

Warranty period shall be 2 years from the time of delivery and receipt by the original customer, or 600 operating hours on the machine - whichever occurs first. Superabrasive will cover the shipping charges for the transportation of the machine to Superabrasive (or an approved repair facility) and back to the customer (within the 48 contiguous States) in the event that the damage occurs and is reported within 200 operating hours. Shipping charges, if covered by Superabrasive, must be agreed upon in advance and approved by Superabrasive. Thereafter, the customer will have to cover the shipping charges to Superabrasive and back. Superabrasive will not warranty Goods after a period of 2 years from the time of delivery and receipt by the original customer, or 600 operating hours on the machine - whichever occurs first.

Superabrasive shall not be liable for any defects that are caused by circumstances that occur after the Goods have been delivered and whilst the Goods are in the possession of the purchaser. Furthermore, the warranty does not include normal wear and tear or deterioration. Wear parts are not warranted. Superabrasive is not liable for defects arising out of use of non-OEM parts.

The Warranty is void if the purchaser has not followed the maintenance plan stipulated by the machine's manual and warranty card. The warranty is void if the purchaser repairs said Goods himself, or if repairs are conducted by a repair facility that is not approved by Superabrasive. Superabrasive's liability does not cover defects which are caused by faulty maintenance, incorrect operation, faulty repair by the purchaser, or by alterations conducted without Superabrasive's prior written consent. The same applies to any alterations of the Goods or services performed by another party other than Superabrasive, a Superabrasive-appointed distributor, or a Superabrasive-approved repair facility. The warranty is not applicable on a defect that arises due to tools or parts that are not original to Superabrasive. Replaced defective parts shall be placed at Superabrasive's disposal and shall become property of Superabrasive. If such defective parts are replaced

within the warranty period, the shipping charges will be covered by Superabrasive. In warranty complaint cases, when no defects are found for which Superabrasive is liable, Superabrasive shall be entitled to compensation for the labor, material cost, and shipping charges, incurred by Superabrasive as a result of the complaint.

The warranty herein is non-transferable, and only applies to the original owner or purchaser of the machine.

RETURN POLICY FOR LAVINA® E MACHINES

The Lavina® E machines may be returned, subject to the following terms:

In no case, a machine is to be returned to Superabrasive Inc. for credit or repair without prior authorization. Please contact Superabrasive Inc. or your local distributor for an authorization and issuance of a return authorization number. This number along with the serial number of the machine must be included on all packages and correspondence. Machines returned without prior authorization will remain property of the sender and Superabrasive Inc. will not be responsible for them. No machines will be credited after 90 days from the date of invoice.

All returns must be shipped freight prepaid. Returned machines may be exchanged for other equipment or parts of equal dollar value. If machines are not exchanged, they are subject to a fifteen percent (15%) restocking fee.

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1. GENERAL INFORMATION

This owner's manual is intended for the operator of the Lavina® 32GE machine, the servicing technician as well as anyone else involved with operating or servicing the machine. We recommend that you read the instructions very carefully and follow them strictly. The manual includes information about assembling, using, handling, adjusting and maintaining your Lavina® 32GE floor grinding and polishing machine.

MANUFACTURER

Superabrasive was founded in 1987, as a manufacturer of high quality diamond tools for the stone and concrete industry. Today, Superabrasive is one of the world's leading companies in the production of diamond tools and floor grinding machinery. At Superabrasive, we strive to deliver the very best solutions to our customers, and enable them to work more efficiently.

GENERAL DESCRIPTION

The Lavina® 32GE machine is intended for grinding, polishing and buffing concrete, marble, granite, limestone and terrazzo surfaces with diamond tools.

The Lavina® 32GE is a three-disc machine and can be used dry as well as wet.

For best results, use only tools manufactured or recommended by Superabrasive and its distributors.

WARNING!

The Lavina® 32GE machine is manufactured and fitted for the above-mentioned applications only! Every other use may possess risks to the persons involved.

MACHINE CHARACTERISTICS

The Lavina® 32GE is made of two main component sections:

LAVINA® 32GE MAIN DESIGN

The two main component sections are the carriage and main head.

The handle on the frame is adjustable in height and enables the operator to work in a correct and safe posture.

Two LED lights (Fig.1.2) enable the operator to work in darker areas. The lamps are with magnet holder can be adjusted in different positions.

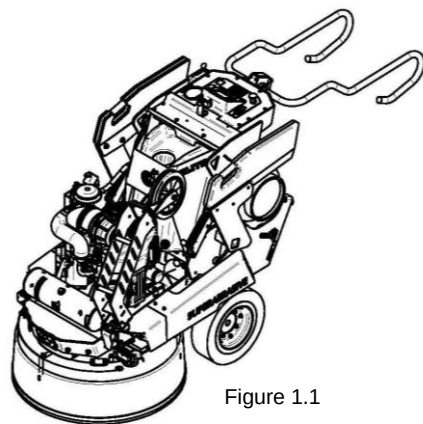


Figure 1.1

A LED light (Fig.1.3) lights the grinded floor behind the machine. The lamp holder can be adjusted to different positions.

- **The propane tank** is placed on a tank holder on the backside of the frame.

- **The control panel** (fig.1.4) is positioned on top of the frame and contains switches that allow the operator to start/stop the engine, apply the electromagnetic clutch, and navigate the machine

- **The water tank** is on the opposite side of the frame, so that the weight of the water does not affect the operation of the machine. The frame weight, on the other hand, is fully absorbed by the driving wheels.

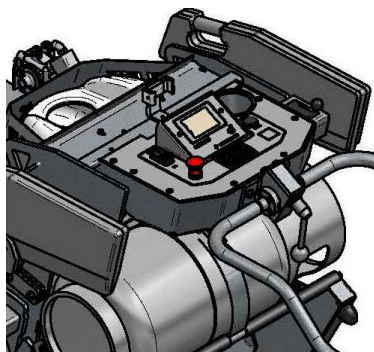


Figure 1.4

- **The Engine Kawasaki FX1000V** with electric clutch is mounted on the base plate and drives the three heads with a belt system.

- **The planetary motion** is derived from the main engine, driven by a duplex roller chain,

- **The self-leveling Guard** is designed to have contact with the surface. Anytime, no matter the height of the tool used.

- **"Quickchange" tool holder** is designed to hold the tools with "Quickchange" connection.

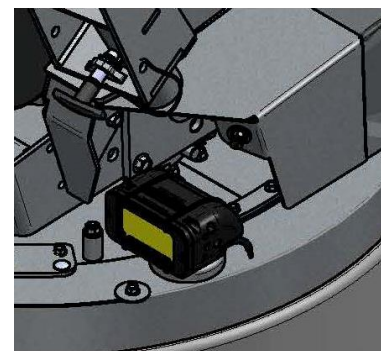


Figure 1.2

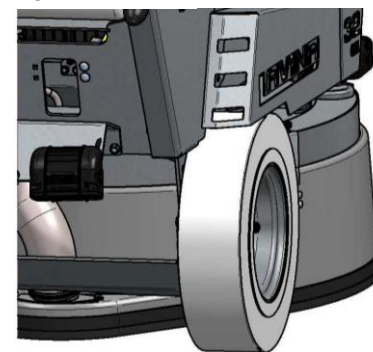


Figure 1.3

ENVIRONMENTAL CONDITIONS

The temperature range for operating the Lavina® 32GE outdoors is between 41°F and 86°F or 5°C and 30°C. Never use the Lavina® 32GE during rain or snow when working outdoors. When working indoors, always operate the machine in well-ventilated areas.

VACUUM CONNECTION

A connection for a vacuum dust extractor is located on the carriage. The Lavina® 32GE does not include a vacuum dust extractor. The customer must purchase the vacuum dust extractor separately. The hose of the vacuum extractor must be Ø 76 mm/ 3 inch. The vacuum dust extractor must be adapted for floor grinders and have a minimum air displacement of 600 m³/h with a negative vacuum of 21 kPa.

TECHNICAL DATA

	LAVINA® 3213GE							
Engine	Kawasaki FX1000V							
Capacity of engine	999cc				61.0cu.in			
Power	26.1kW /3600 min				35hp/3600 min			
Tool holder rpm	425-675 rpm							
Engine rpm	2000-3600 rpm							
Working width	814 mm				32”			
Tool holder diameter	3 x 335 mm				3 x 13,2”			
Direction of rotation	The heads have counter-clockwise / left rotation							
Weight	665kg				1413 lbs			
Weight position	Pos.1	Pos.2	Pos.3	Pos.4	Pos.1	Pos.2	Pos.3	Pos.4
Grinding pressure	292 kg	312 kg	355 kg	404 kg	645 lbs	689 lbs	784 lbs	892 lbs
Grinding pressure with third wheel	305 kg	326 kg	368 kg	418 kg	673 lbs	720 lbs	812 lbs	922 lbs
Application	wet and dry							
Vacuum hose port	Cam lock E300							
Water attachment	Quick change for ¾” hose							
Water tank capacity	46 l				12 gal			
Propane tank capacity	15.2 kg				33.5 lbs			
Water feed	Peripheral							
Machine LxWxH	2540x680x1320 mm				100x34x52”			
Packing crate LxWxH	1600x950x1600 mm				63x37.4x63”			

VIBRATIONS

The vibrations of the machine are within the limits of directives and harmonized standards from the European Union when the Lavina® 32GE is operated with the recommended tools and in normal conditions.

NOISE EMISSIONS

The noise emissions are within the limits of directives and harmonized standards from the European Union when the Lavina® 32GE is operated with the recommended tools and in normal conditions. However, as previously stated, the operator must wear ear protectors.

LABEL DATA

The data on the label provides the correct voltage, kW and RPM (needed for operational purposes); Weight (needed for transportation purposes); production year and serial number (needed for maintenance purposes).

CUSTOMER SERVICE

For customer assistance and technical support call your local distributor or call Superabrasive Inc. at 1-800-987-8403 or visit us at www.superabrasive.com, where you can download a copy of this manual.

2. SAFETY ISTRUCTIONS

RECOMMENDED USE

The Lavina® 32GE machine is designed and manufactured to grind and polish concrete, terrazzo and natural stone floors. It can be used for renovations as well as for polishing. The machine is designed for dry or wet use. When using it dry, use a vacuum of appropriate size. For more information, please refer to the chapter on handling the vacuum connection.

PROHIBITED USE

The machine MUST NOT be used:
 For applications different from the ones stated in the General Description chapter.
 For not-suitable materials.
 In environments which:
 Possess risks of explosion
 Possess high concentration of powders or oil substances in the air
 Possess risks of fire
 Feature inclement conditions.
 Possess electromagnetic radiation.
 In nursing homes, hospitals, day-care centers, etc
 In areas where loose tiles or other objects are preventing proper use of the machine.
 In rooms without proper ventilation

PREPARATION FOR WORK

Make sure that:
 You have closed the work area, so that no person unfamiliar with operating the machine can enter the area
 The tool plate and tools are adjusted to the machine properly
 There are no missing parts of the machine
 The machine is in upright working position
 The protection devices are working properly.

PROTECTION DEVICES

The machine is equipped with several protection devices including the following:
 An emergency stop button
 A protection skirt and a hood for protecting the tool plates.
 These devices protect the operator and/or others persons from potential injuries. Do not remove them. On contrary, before using the machine, please ensure that all protection devices are mounted and function properly.

ARREST FUNCTIONS

Functions of arresting of the machine are following:
 Switch to stop the engine
 Button to stop the grinding movement
 Close the propane tank

SAFE USE

The Lavina® 32GE is designed to eliminate all risks correlated with its use. However, it is not possible to eliminate the risks of an eventual accident with the machine. Unskilled or uninstructed operator may cause correlated residual risks. Such risks are:
 Position Risks due to operator's incorrect working position
 Tangling up Risks due to wearing inappropriate working clothes

WARNING

WARNING

WARNING

WARNING

WARNING

WARNING

Training Risks due to lack of operational training

NOTE: In order to reduce all consequences of the above-mentioned risks, we advise that machine operators will follow the instructions in the manual at all times.

PROPANE SAFETY

WARNING

Propane is a flammable gas whose vapors are heavier than air. As is the case with gasoline, propane can explode if the proper cautions are not heeded. Propane is odorized with an agent having a distinct odor that is recognizable at very low concentrations. This helps in identifying leaks, even when they are small.

Awareness and basic safety precautions are required when working with propane. As long as these precautions are followed, risk is negligible. Ignorance, however, could pose needless risk.

The two greatest hazards with propane powered floor care machines are:

- **Carbon Monoxide Poisoning:** This is the most frequently reported incident associated with propane powered floor care machines and is caused by excessive exhaust emissions. The symptoms are headache, dizziness and nausea. A major cause involves engines with poor preventive maintenance practices, usually those with dirty air filters and machines operated in confined areas without adequate ventilation. Another cause may be substandard, inexpensive machines with no emissions control technology and improperly set carburetion.

- **Overfilled Fuel Cylinders:** Nearly all fire related incidents reported result from bringing a cylinder into a building without first checking for overfill. This action is dangerous, unwise, and unnecessary.

FIRE SAFETY

WARNING

Be aware of the potential dangers of fire or explosion when using propane, and take normal fire-safety precautions.

Fire: There is a possibility of fire from LPG vapor leaking or venting from fuel cylinders or carburetion equipment.

Explosion: LPG vapor concentrated or confined to a small, restricted space may explode or ignite.

Propane may experience a **BLEVE**, a boiling liquid expanding vapor explosion.

EMISSIONS

WARNING

All propane powered floor care machines produce emissions. Most are harmless, but some are dangerous and can be fatal. Carbon monoxide (CO) poses the greatest risk, since CO can be lethal within as little as 30 minutes exposure at 3,000 parts per million (ppm) concentration.

Carbon monoxide is an invisible, odorless, colorless gas created when fossil fuels (such as gasoline, wood, coal, propane, oil and methane) burn incompletely.

HAZARD COMMUNICATION

WARNING

A Material Safety Data Sheet for propane shall be posted in all buildings where propane will be used.

Because propane is odorized, it is easily detected at levels of just a few parts per million, which is much less than the exposure limit of 1000 parts per million.

If you smell propane while operating a propane floor care machine, do the following:

Stop the engine:

1. Pull the throttle to the stop position (if present) or turn the key switch to the off position.
2. Shut off the service valve on the propane cylinder.
3. Move the floor machine to a well-ventilated area.
4. Remove the cylinder from the machine and take it outside the building.
5. If the cylinder is leaking, contact a DOT approved repair shop to determine the cause of the leak and have the shop, not you, repair it.

If a fire occurs while the machine is being operated, do the following:

1. Stop the engine: pull the throttle to the stop position (if present) or turn the key switch to the off position.
2. Shut off the service valve on the propane cylinder if possible. Be careful not to be burned.
3. Move the machine outside if possible. If not possible, move it to a well-ventilated area away from flammable materials.
4. Do not attempt to extinguish the flame from a gas leak. If you do, the gas will build up in the area and could re-ignite. Starve the fire by shutting off the supply of gas.
5. Have the machine and cylinder inspected before using them again.

LOCAL AGENCIES AND REGULATIONS

• NFPA

Operating a propane powered floor care machine requires compliance with certain safety regulations. The National Fire Protection Agency (NFPA) Standard for Storage and Handling of LP Gas is the appropriate authority for safe propane use. A copy of this publication is available through the NFPA in Quincy, MA (1-800-334-3555).

Among its regulations, NFPA #58 requires that all personnel employed in the handling of propane gas be trained in its proper handling and operating procedures. It also requires them to carry a written certification from their employer or training supervisor to attest to such training. Although this is directed mainly to those who fill and transport liquid propane gas, Onyx Environmental Solutions recommends that operators of propane powered floor care machines in public places be trained and certified as well.

With regard to operation of propane powered floor care equipment, even though NFPA 58 8-4.5 says "these machines shall be permitted to be used in buildings frequented by the public, including the times when such buildings are occupied by the public," Onyx Environmental Solutions suggests usage when occupancy of a given work area is minimal.

• CARB / EPA

The California Air Resource Board (CARB) and Environmental Protection Agency (EPA) also set limits for propane-powered engines used outdoors, but CARB/EPA approval does not signify that the engine is safe to use indoors.

• CGA

The Canadian Gas Association (CGA) has set a limit of 1500 ppm CO in exhaust flow.

• OSHA

For propane powered machines used indoors, the Occupational Health and Safety Administration (OSHA) has established a limit of 50 ppm CO for 8-hour time weighted average (TWA) in ambient air and is considering a limit of 800 ppm CO in exhaust flow.

• DOT

The Department of Transportation (DOT) has established regulations regarding the safety of fuel cylinders including the ones used on propane powered floor care machines.

• Local Agencies

Local law enforcement agencies such as the local Fire Marshall also rely on independent testing labs such as UL and CGA before giving their approval of the use of some equipment. These labs thoroughly test equipment and submit their stamp of approval only after rigorous testing. While not being required by all law enforcement agencies, the stamp of approval by these agencies further assures the operator that he or she is working with and around safe equipment.

NOTE: In order to reduce all consequences of the above-mentioned risks, we advise that machine operators will follow the instructions in the manual at all times.

RESIDUAL RISKS



WARNING

During the normal operating and maintenance cycles, the operator is exposed to few residual risks, which cannot be eliminated due to the nature of the operations.

BEFORE YOU BEGIN



WARNING

Working area must be clear from any debris or objects. A first-time operator must always read the manual and pay attention to all safety instructions.

All propane connections and cables must be inspected for potential damages.

Ground wire system of the power supply must be also inspected.

Perform general daily inspections of the machine and inspect the machine before each use.

Always inspect the safety devices:

The emergency break must be clear and working

The tool protector must be working

The machine must be clean

Never operate the machine in the rain!

Confirm that there are no missing parts especially after transportation, repair or maintenance.

Before filling the water tank with water make sure the machine is not working and the main switch is turned off.

Before turning on the machine make sure that the base is placed on the floor, the machine **MUST NOT** be in an upright position when turned on!



WARNING

OPERATING MACHINE

Never work with the machine without visual contact with it. Never run the machine when you are situated between the handles of the wheel

When operating the Lavina® 32GE, make certain that there is no one, but you around the machine.

Never leave the machine unattended while working.

The water hose must move freely and must be damage-free. Check if the floor, you work on, is not too uneven. If this is the case, it may damage the machine.

AFTER WORK IS COMPLETED WARNING

Clean the machine and its surroundings properly
Empty and clean the water tank
Store the machine in a safe place
Place the Propane bottle outside in its storage

THE WORK AREA WARNING

Make certain that people or vehicles do not enter the work area.
Avoid cables and hoses being in the way.
Always check the floor for debris

PERSONAL PROTECTIVE EQUIPMENT (PPE) WARNING

Always wear safety shoes when working with the machine.
All personnel in the immediate work area must wear safety glasses with side shields.
Always wear safety gloves when changing the tools.
Always wear clothes suitable for the work environment.
Always wear Carbon Monoxide Indicator badges as an extra precaution.
The plastic indicator contains a colored indicator button that darkens in the presence of Carbon Monoxide. The relative darkness of the indicator button indicates the level of CO in the ambient atmosphere. Most indicator badges have a useful life of 30 days, depending on the concentration of contaminants, humidity, and temperature.

TESTING WARNING

There are a great number of instruments offered on the market to test for toxic gases. Only those designed to read carbon monoxide resulting from combustion engines is considered acceptable for testing exhaust emissions from propane powered floor machines.

Some instruments are used to read "ambient air" and may be damaged if used to take readings in the muffler or tail pipe. Selecting the proper instrument is an important part of meeting the testing requirements.

Generally speaking, units capable of reading in ppm, (parts per million), at ranges from 0 to 1000 are adequate for checking ambient air (air in the breathing zone of the operator). Instruments capable of testing carbon monoxide in the exhaust should be able to read from 0 to at least 2000 ppm and should be certified by the manufacturer for that purpose.

Some instruments and systems used for these purposes are:

1) AMBIENT AIR MONITORING

DRAGER Model 190: Manufactured by National Drager.

SENSIDYNE gas sampling system with YB-11038 Sensidyne detector tubes

DRAGER gas sampling system with YB-4620 Drager detector tubes

GAS-TECH Model CO-95

ENERAC POCKET 60: Manufactured by Energy Efficiency System

2) ENGINE EXHAUST ANALYZERS

HORIBA GAS ANALYZER

ENERAC 2000 COMBUSTION ANALYZER

ENERAC POCKET 60

3) DATA LOGGERS

INDUSTRIAL SCIENTIFIC CORP. MODEL STX-70

CO MONITOR, Data-Logger

BIOSYSTEMS INC. "TEXILOG" Data-Logger

- All instruments used for testing must be calibrated at intervals recommended by the manufacturer. The monitor, model number and date of calibration will be recorded with all test results.

OPERATOR WARNING

The operator Lavina® 32GE machine must have an adequate technical knowledge and preparation.

The operator must know the machine's work environment.

Only one operator at a time can work with the machine.

The operator must be properly trained and well instructed prior operating the machine.

The operator must understand all the instructions in this manual.

The operator must understand and interpret all the drawings and designs in manual.

The operator must know all sanitation and safety regulations pertaining to the operation of

The operator must have floor grinding experience.

The operator must know what to do in case of emergency

The operator is expected to operate their equipment safely and responsibly. They are responsible for the proper

handling and storage of propane cylinders, identifying potential hazards associated with his job and avoiding

these hazards at all times.

PROPANE CYLINDERS WARNING

The Propane cylinders are constructed of either aluminum or steel. We recommend aluminum because it is lighter and guards against rusting. The cylinder used on propane powered floor machines is classified as a 4E240 cylinder. Its rated capacity is 33.5 lbs. and this designation refers to the model of the cylinder. Actual propane capacity achieved during filling can be less than, equal to, or slightly more than 33.5 lbs. Use only UL, CTC/DOT listed cylinders.

The propane cylinder used on the floor machine is a motor fuel cylinder as listed by the Department of Transportation. Unlike the common 33.5-lb propane outdoor grill cylinders (which are not legal for use on propane floor machines), the motor fuel cylinder has a number of safety systems designed into it to ensure your safety at all times.

There are two types of 33.5 lb. motor fuel cylinders.

Liquid draw

Vapor draw

The liquid draw cylinder is used on larger vehicles like forklifts. These machines have special vaporizing carburetors to allow the propane to change from a liquid to a gas before being burned in the combustion chamber.

The vapor draw cylinder is used on small machines like the propane powered floor care machines. The vacuum generated by the engine draws up the Propane gas vapor through the fuel system. The propane powered floor care machine does not have an evaporating

system and will freeze up if liquid propane is introduced to it. It is necessary that special attention be paid to ensure that neither the liquid nor the vapor draw cylinders be overfilled.

REFUELLING CYLINDERS



WARNING

The proper filling of propane cylinders is a subject so important that it warrants special attention. Propane cylinders should only be filled by qualified propane dealers.

Most important, propane cylinders should be filled no more than 80% of their rated capacity. The other 20% is called the vapor space or headspace. This vapor can be compressed without causing the pressure relief valve to open and vent gas to the area around the cylinder. If there is no headspace to allow for fuel expansion, the pressure relief valve will open, releasing propane gas into the atmosphere. This is a very dangerous and volatile situation as there is always the possibility that enough of the vented gas could find its way down to the floor and come in contact with a pilot light from a furnace, hot water heater, or other source of ignition. Propane changes into a gas, is -44° F (-42° C). Exposing unprotected skin to propane gas or liquid could result in frostbite injury.

All new cylinders should be vented and purged of air per manufacturer's instructions before use. Never bleed propane cylinders indoors.

STORAGE CYLINDERS



WARNING

When not in use, propane cylinders always should be stored outside in an upright position in a secure, tamperproof, steel mesh storage cabinet. This cabinet may be located next to the building but with at least five feet (1.5 m) of space between the cabinet and the nearest building opening (door or window), also away from heat and direct sunlight.

Do not install the cabinet near a stairway or street elevator as vented propane gas will seek a lower level since it is heavier than air and could find its way into the basement of the building. Do not store cylinders full or empty inside a building or inside a vehicle. Although it is unlikely that propane will vent from a stored cylinder, if it should, the

vapor could come in contact with an ignition source such as a spark from a power tool or other appliance and create a flash fire.

Do not smoke or use a device with an open flame when handling or transporting propane cylinders.

TRANSPORTING CYLINDERS

When transporting cylinders to a propane dealer or to a job, make sure the cylinders are securely fastened and standing in an upright position with the service valve closed.

A cylinder rattling around in the back of a vehicle and banging into other objects constitutes a hazard. Avoid dropping or banging cylinders against sharp objects.

The propane cylinders are sturdily constructed but a series of hard jolts could cause damage.

Please note that any cylinder that has been filled is always considered full, no matter how little propane gas remains in it. This is because even when all liquid has evaporated into vapor there is still some propane gas vapor left in the cylinder. Because this remaining fuel is flammable, an empty cylinder should be treated with the same careful procedures as one that is filled to the 80% level with liquid propane. The only time that a cylinder is considered empty is when it is new, before it has been filled with propane.

When transporting a propane powered floor machine, the propane cylinder may be strapped onto the machine as long as the machine itself is firmly secured in the vehicle.

Of course, spare cylinders should always be secured in an upright position



WARNING

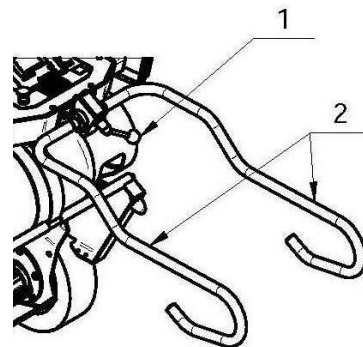


Figure 3.1

3. HANDLING AND TRANSPORTATION

POSITIONING THE HANDLE

By loosening the swivel bolt (Fig. 3.1-2), one can turn the steering bracket (Fig. 3.1-3) to a new position. To turn the steering bracket down (Fig. 3.3) you have to loosen the swivel bolt (Fig. 3.1-2) and push it in, for security reasons.

To change the handle positions pull the knob (Fig. 3.1-1, Fig. 3.4), and move the handle up or down.

USING THE STEERING BRACKET

The handle can be positioned in three different positions:

Transport position to store or to transport or to hoist the machine (fig. 3.2)

Working position (fig. 3.3) and Flipping position (fig. 3.4)

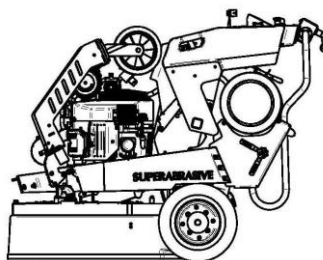


Figure 3.2

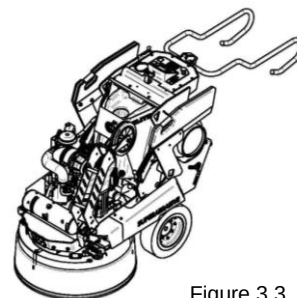


Figure 3.3

FLIPPING THE MACHINE UP

To change the tools, put the handle in the flipping (upright) position (Fig. 3.7), grab the steering bracket and pull the machine down using all bodyweight (one foot on the heel behind the propane bottle). Put the bracket down on the floor (Fig. 3.8) and change the tools. One foot on heel behind the propane bottle can help again while putting the machine down.

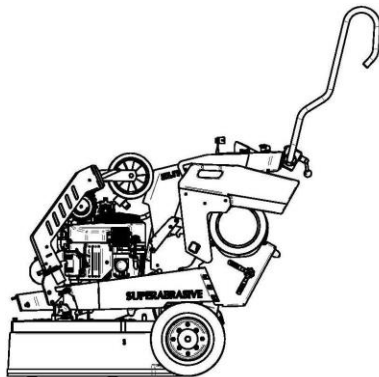


Figure 3.6.1

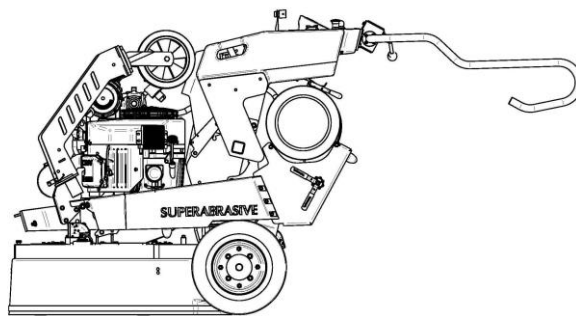


Figure 3.6.2

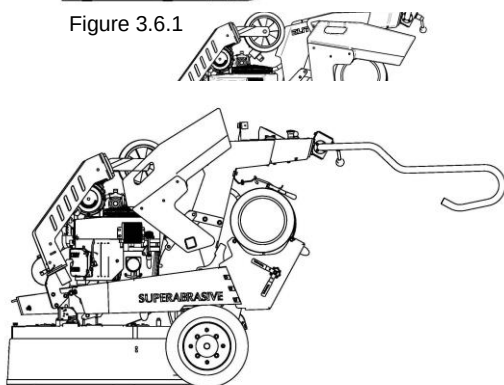


Figure 3.6.3

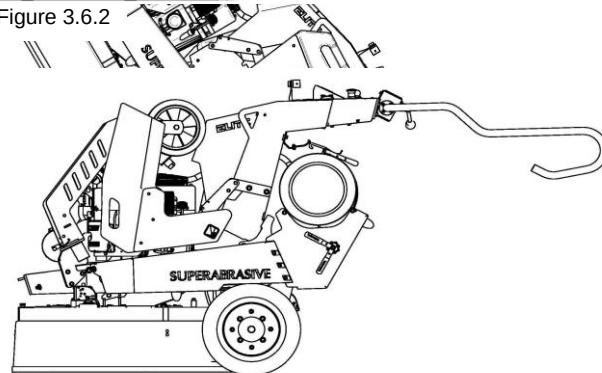


Figure 3.6.4

HANDLING WEIGHTS

The machine has two built in weights. Each one could stay in four different positions (Fig. 3.6)

Put the weights in pos.1 when the machine is in position to change the working tools.

The weights are locked in pos.2, pos.3 and pos.4 (Fig. 3.7).

The pressure on the working tools is different in each of the four weights positions. See the Technical Data



Figure 3.7

HANDLING THE GUARD

The **self-leveling guard** is designed to always have a contact on the surface with brush no matter the height of the tool used.

During transport the guard can be hung up so it does not drag on the floor.



Figure 3.8.1



Figure 3.8.2



Figure 3.8.3



Figure 3.8.4

DISMOUNTING THE GUARD

After dismounting the guard the machine could pass through 32 inch (815 mm) wide doors.

1. Unscrew the two bolts about 1-1.5 turn /Fig. 3.9-2; Fig. 3.9-3;/to disconnect the vacuum connector/Fig. 3.9-4/ from the carriage.

2. Put the machine in position to change the tools / Fig. 3.5/.

3. Unscrew the bolt holding the guard / Fig. 3.10.1/ and the two bolts on the back stoppers/ Fig. 3.10.2/

4. You can dismount the guard as shown on / Fig. 3.10.3/ and / Fig. 3.10.4/

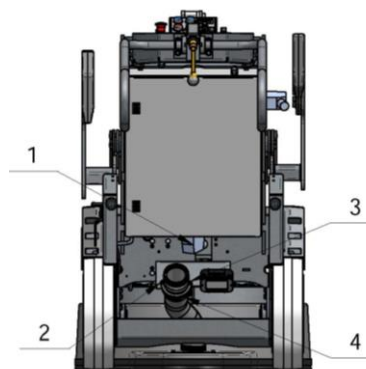


Figure 3.9



Figure 3.10



Figure 3.10.1



Figure 3.10.2



Figure 3.10.3



Figure 3.10.4

THIRD WHEEL

Lavina® 32GE has a third wheel for easier handling. It has two positions (fig.3.11.1 or fig.3.11.2) and is mounted and dismounted with a pin assembly (fig.3.11.3).



Figure 3.11.1



Figure 3.11.2



Figure 3.11.3

LIFTING

Lifting the machine by crane is possible by using the handles of the carriage (fig. 3.11). The design is rated only for the weight of the machine. Do not lift any other loads on the machine. Always use hoisting equipment rated for 800 kg (1300 lbs) or greater.

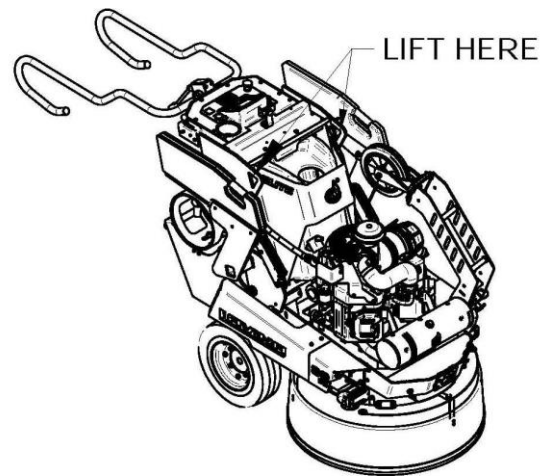


Figure 3.12

STORAGE

Always store and transport the Lavina® 32GE in a dry place. Never transport the Lavina® 32GE unprotected; it may be damaged if transported unprotected during rain or snow.

When the temperature may fall to 32° F (0° C) or less during the storage of the machine, water should be emptied from the system using the following steps:

- Pull out the hose of the tank .
- Using compressed air, blow out excess water from the system at each position of the tap water ball valve (Fig.4.3).

4. OPERATION**4.1 PRELIMINARY CONTROLS**

Inspect the working area as explained in the safety instructions. For wet use, fill in the water tank. Connect the vacuum extractor and ensure that the vacuum hose is clear and it will follow the machine easily.

**4.2 CONTROL OF THE WATERFLOW
WATER FLOW CONTROL SYSTEM**

The water system is designed to supply water directly on the tools. The water supply is coming either from the tank or from external water source:

- water supply from the tank:

Put the internal water valve into position „ON“ (along the axis of the machine) Figure 4.2 and close the external valve Figure 4.3, so the water could flow from the tank through the internal valve over the tools.

You can adjust the water flow by putting the internal valve in an intermediate position.

- external water supply:

Put the internal water valve into position „OFF“ Figure

4.1 and open the external valve Figure 4.4, so the water could flow through the external valve over the tools.

You can adjust the water flow by putting the external valve in an intermediate position.

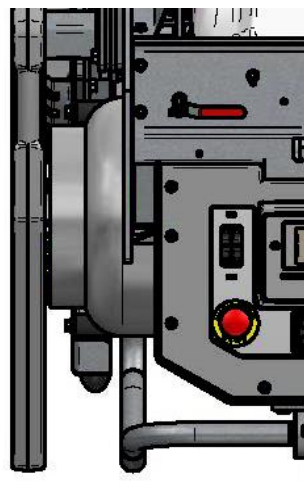


Figure 4.1

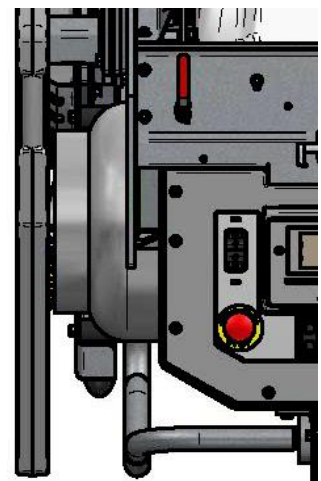


Figure 4.2

ALWAYS USE CLEAN WATER TO PROTECT THE SYSTEM FROM DIRT.

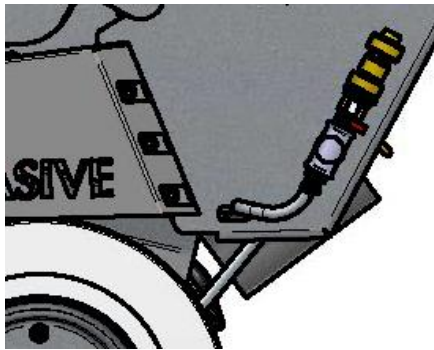


Figure 4.3

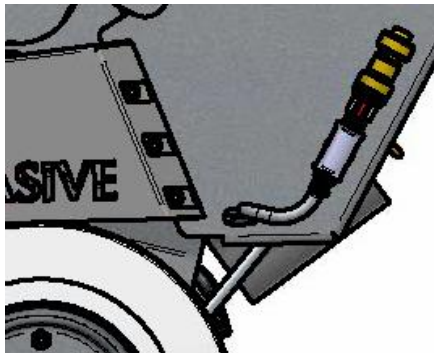


Figure 4.4



Figure 4.5

4.3 ADJUSTING AND MOUNTING TOOLS

The Holder A64 in the LAVINA® E can work with either 3 or 6 rubber buffers, which will alter its elasticity (3 will be more flexible than 6). You can make the change after dismantling the holder as per the instructions in TROUBLESHOOTING.

In the Lavina 3213GE, the holder is initially mounted with 6 buffers.

Mount the tools only after ensuring that there is enough diamond bond material left. Be sure that the plates

are always clean before mounting.

WARNING: Always Secure the Quick Change tools with the security plate (Fig.4.6), lock with the tool holder key (Fig.4.6) and make sure that the butterfly is securely locked at 90 degrees. Always use the tool holder key (Fig.5.3).

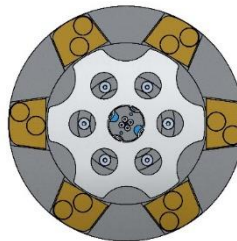


Figure 4.6

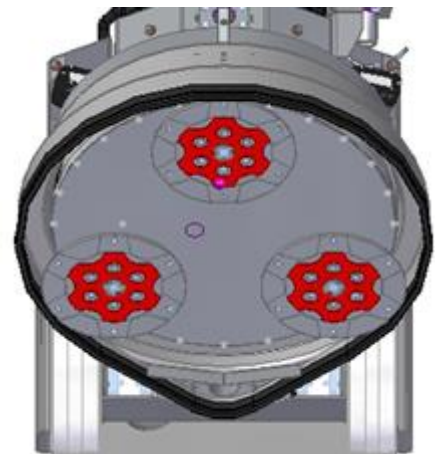


Figure 4.7



Figure 4.8

4.4 VACUUM CONNECTION

To connect a vacuum cleaner, the Lavina 32GE is supplied with vacuum hose Cam Lock inlet E300 / vacuum hose diam. 3 in (76mm).

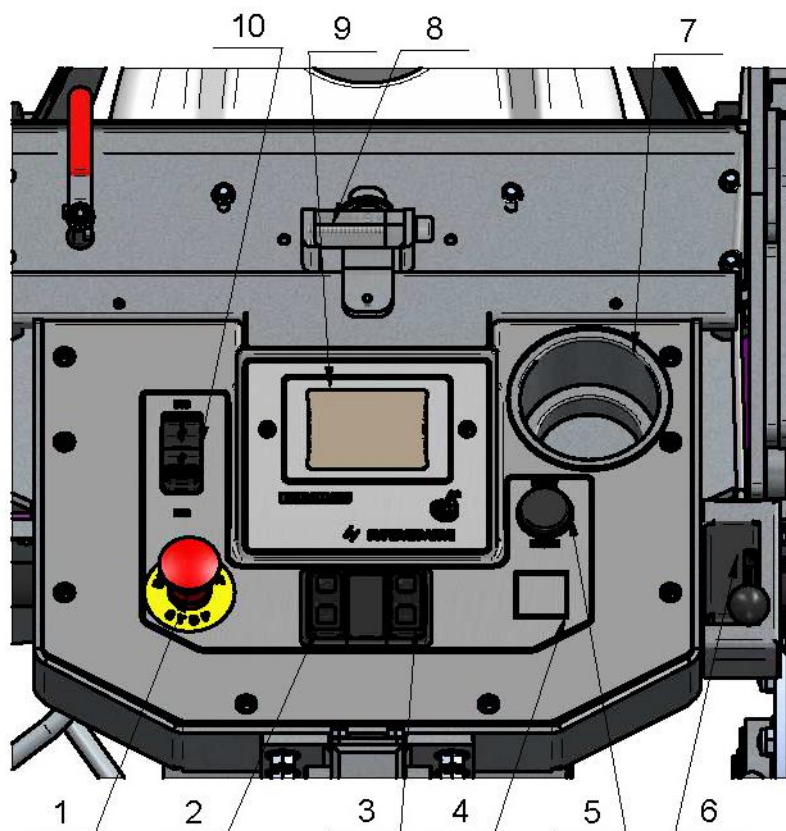


Figure 4.9.1

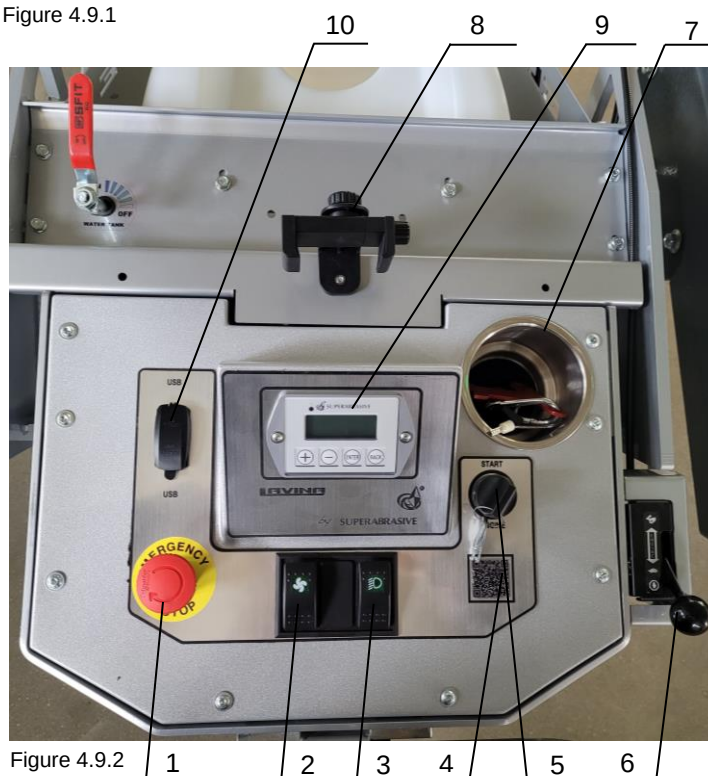


Figure 4.9.2

4.5 CONTROL BOARD

/under the cover is the 30 Amp fuse for the electrical system and the contacts separating the electrical system between carriage and the main head/

1 Emergency button used to stop the motor in case of emergency

2 Start/Stop clutch - **Start** will electronically activate the grinding plates to spin; **Stop** will disconnect engine from grinding heads.

3 Lights switch.

4 QR code. When you scan it with your phone for example, it will redirect your browser to Lavina manuals page.

5 Start/Stop Engine switch - Turn key fully to the right (make contact) to ignite the engine. Fully to the left will arrest the engine.

6 Throttle Push forward to accelerate.

7 Cup holder

8 Phone holder.

9 Electronics Module of digital fuel control system
When running, it indicates the revolutions per minute of the motor (see the conversion table to know the rpm of the tools). When not running, it indicates the worked hours. The hour meter will blink between 48-52 hours as a reminder for oil change.

10 USB charger.

4.5.1 FUEL-MINDER USER MANUAL

The SM40 Fuel-Minder is a high-performance, digital fuel control system featuring closed loop feedback, fuel lock-off capability, emissions safety warnings with shutdown, and an LCD screen for user interface. The system is highly responsive to changes in engine load, providing optimum the air-to-fuel ratio regardless of operating conditions.

SYSTEM COMPONENTS

The following parts are included with the system

- Electronics Module
- Integrated Wire Harness
- Fuel Control Valve
- Fuel Control Housing
- O2 Sensor
- LPG Regulator with lock-off

Individual items are available as replacement parts if necessary

OVERVIEW OF FEATURES

Closed Loop Fuel Management System

The Fuel-Minder uses closed-loop feedback from the O2 sensor to control the amount of fuel introduced to the engine via the Fuel Control Valve. This technology continuously monitors engine emissions and is capable of making fuel corrections to compensate for varying engine loads and conditions.

FAULTY O2 SENSOR DETECTION

If a faulty O2 sensor is detected, the Fuel-Minder will alert the user within 3-5 minutes from a cold-start. A message will be displayed on the LCD screen to let the user know that the O2 sensor needs to be replaced.

BUILT-IN FUEL LOCKOFF CONTROLLER

The Fuel-Minder also controls the fuel lockoff and only allows fuel to pass through if it detects the engine is cranking. Once the Fuel-Minder is powered off from the equipment key switch, the Fuel-Minder closes the fuel lockoff and shuts the engine down immediately.

EMISSIONS WARNINGS AND SHUTDOWN

If the Fuel-Minder detects engine emissions that are too lean or rich for a period of 5 minutes, it will shut the engine down via the fuel lockoff. The Red LED will blink and the LCD will display a message alerting the user of the issue and will prompt some common fix suggestions.

DUAL HOUR METERS

The Fuel-Minder has two hour meters, one for the engine and the other for equipment. The Engine Hours are resettable, which should only be done if the engine is replaced. The Equipment Hours (located in Options Menu) is non-resettable and shows the total hours on the equipment, similar to the odometer of a vehicle.

BATTERY VOLTMETER

This feature allows for real-time display of the battery's voltage, which also helps for troubleshooting any battery or charging system issues that may arise.

ENGINE TACHOMETER

Displays the current engine speed (in RPM). This should be used to assess proper idle, WOT and engine speed for the appropriate tooling.

JOB TIMER

The job timer feature works when it is activated and while the engine is running, and will not continue to run if the engine is stopped. The allows for easy timing of jobs or work areas to help determine speed.

PASSWORD PROTECTION

Located in the options menu, the password feature allows a maintenance manager or owner to enable a password that prevents the user from resetting the Service Due alerts without the appropriate pin.

SERVICE ALERTS

The Fuel-Minder also provides equipment-specific service alerts for the following items:

- Air Filter
- Oil Change + Filter
- Spark Plugs
- Seal Replacements
- Chain Inspections
- Belt Inspections
- Tooling Inspections

Each item has individual alerts at different hour intervals, and the Fuel-Minder will start alerting the user of upcoming maintenance within 3 hours of when it is due. To reset a particular service alert, simply scroll to it, using the + or - buttons, then hold the reset button for 2 seconds. The meter will then prompt you to reset that interval.

SLEEP MODE

To conserve equipment battery life, the Fuel-Minder will enter sleep mode if there are no key inputs or engine activity. The backlight will dim after 30 seconds of inactivity, then turn off after 1 minute. The display will turn off after 2 minutes. To wake from sleep mode, simply press any key or start your engine.

MAIN MENU NAVIGATION AND USE

This section outlines how to navigate the menu and interact with certain features.

MAIN MENU

The Main Menu contains the following screens, which can be viewed by simply using the + and - buttons to scroll. Please note: Upon startup or waking from sleep mode, the first screen shown is always Engine Hours.

- Engine Hours (Default screen)
- Clean Filters
- Oil Change + Filter
- Spark Plugs
- Chain Inspections
- Seal Replacements
- Belt Inspections
- Tooling Inspections
- Battery Voltage
- Tachometer
- Options Menu

LED ALERTS & RESETTING SERVICE INTERVALS

The Fuel-Minder will alert you when service is due by blinking a red LED within 3 hours of the specified interval and displaying "Service Due" on the LCD screen. When you see this light, simply scroll through your menu to see which service item is due. To reset a specific interval, just scroll to that particular screen (for example, Oil Change), then hold the **SELECT** button for 2 seconds until you see the reset prompt, then press the + button to reset that interval.

OPTIONS MENU NAVIGATION AND USE

OPTIONS MENU

To enter the options menu, simply scroll until **Options Menu** is displayed on the screen, then press **SELECT**. The first option displayed by default is **Add Password**. Use the + or - buttons to scroll and view other options. To exit the options menu, scroll until you see **EXIT OPTIONS**, then press **SELECT**.

Add Password- This option allows you to add a password that prevents unauthorized users from resetting service intervals or performing a factory reset. This is a 4-digit pin that you set.

Change Password- Allows you to change your password, if one is saved. Note: This option is hidden unless a password has been created.

Remove Password- Used to disable the password feature, if a password is saved. Note: This option is hidden unless a password has been created.

Factory Reset- CAUTION, this option will erase all memory and restore your device to factory condition. This also allows for resetting the total engine hours. Password required if set.

Factory Unlock- This option is only used by SuperAbrasive and requires a factory assigned pin number to activate.

Tach Settings- This allows you to adjust the tachometer for a carbureted or fuel injected engine. It should come pre-set to the correct option and will not require changes.

Equipment Hours- This displays the total number of hours on your equipment and is non-resettable.

Date of Purchase- This can be used by the user or dealer to record the equipment purchase date. To enter the date, hold **SELECT** for 2 seconds; a cursor should appear under the MM. Use the + and - buttons to change the month field, then press **SELECT** to move to the Day field. Again, use the + and - buttons to select the desired day. Once you have the desired date, hold **SELECT** for 2 seconds and a prompt to save the information will appear.

Engine Info- To view the engine model/serial information, scroll to **Engine Info** in the Options Menu, and press **SELECT**. To edit this information, hold **SELECT** for 2 seconds. Then use the + and - buttons to select the appropriate letters and numbers. Press **SELECT** quickly to move the cursor, or hold **SELECT** for 7 seconds to save/exit.

Equipment Info- To view the equipment model/serial information, scroll to **Equipment Info** in the Options Menu, and press **SELECT**. To edit this information, hold **SELECT** for 2 seconds. Then use the + and - buttons to select the appropriate letters and numbers. Press **SELECT** quickly to move the cursor, or hold **SELECT** for 7 seconds to save/exit.

Job Timer- The job timer acts as a stopwatch, but only starts and stops when the engine is turned on/off. This allows you to accurately time how long your engine runs for a particular job.

Exit Options- Returns to the main menu, and default screen (Engine Hours).

SAFETY INFORMATION

Safety Information- Read all safety information before using this device to ensure safe and proper use.

Do not interact with the device while operating your equipment. Doing so may distract your attention and cause an accident, or may be illegal depending on your region.

Avoid any direct contact with pressure washers, water sprayers or cleaning chemicals of any kind.

Do not drop or cause an impact to the device.

Do not bend or twist the device and/or the wire harness excessively.

Do not disassemble, modify or repair your device. This product contains no user serviceable parts.

FCC Part 15.21

Any changes or modifications to this device that are not expressly approved by the manufacturer may void the user's authority to operate the device.

4.5.2 SA LPG CONTROLLER USER MANUAL

The SA LPG Controller is a high-performance, digital fuel control system featuring closed loop feedback, fuel lock-off capability, emissions safety warnings with shutdown, and an LCD screen for user interface. The system is highly responsive to changes in engine load, providing optimum the air-to-fuel ratio regardless of operating conditions.

SYSTEM COMPONENTS

The following parts are included with the system

- Electronics Module
- Integrated Wire Harness
- Fuel Control Valve
- Fuel Control Housing
- O2 Sensor
- LPG Regulator with lock-off

Individual items are available as replacement parts if necessary

OVERVIEW OF FEATURES

Closed Loop Fuel Management System

The SA LPG Controller uses closed-loop feedback from the O2 sensor to control the amount of fuel introduced to the engine via the Fuel Control Valve. This technology continuously monitors engine emissions and is capable of making fuel corrections to compensate for varying engine loads and conditions.

FAULTY O2 SENSOR DETECTION

If a faulty O2 sensor is detected, the SA LPG Controller will alert the user within 3-5 minutes from a cold-start. A message will be displayed on the LCD screen to let the user know that the O2 sensor needs to be replaced.

EMISSIONS WARNINGS AND SHUTDOWN

If the SA LPG Controller detects Carbon monoxide emissions, it will shut the engine down via the kill-switch. For LED color coding, read the CO shut-off module specification, page 19.

DUAL HOUR METERS

The SA LPG Controller has two hour meters, one for the engine and the other for the equipment. The Engine Hours are resettable, which should only be done if the engine is replaced. The Equipment Hours is non-resettable and shows the total hours on the equipment, similar to the odometer of a vehicle.

BATTERY VOLTMETER

This feature allows for real-time display of the battery's voltage, which also helps for troubleshooting any battery or charging system issues that may arise.

ENGINE TACHOMETER

Displays the current engine speed (in RPM). This should be used to assess proper idle, WOT and engine speed for the appropriate tooling.

JOB TIMER

The job timer feature works when the engine is running with equipment, and will not continue to run if the engine is stopped. The job timer allows for easy timing of jobs or work areas to help determine speed. Resetting the job timer is password protected.

SERVICE ALERTS

The SA LPG Controller provides equipment-specific service alerts for the following items:

- Air Filter
- Oil Change + Filter
- Spark Plugs
- Seal Replacements
- Chain Inspections
- Belt Inspections
- Tooling Inspections

Each item has individual alerts at different hour intervals, and the SA LPG Controller will start alerting the user when the hour interval is over. To reset a particular service alert, simply press the Enter button. The interval starts to blink. Then press and hold the “+” and the Enter buttons for a couple of seconds. The interval should be reset.

MAIN MENU NAVIGATION AND USE

This section outlines how to navigate the menu and interact with certain features.

MAIN MENU

The Main Menu contains the following screens, which can be viewed by simply using the “+” and “-” buttons to scroll. Please note: Upon startup, the first screen shown is always Operational Information (battery’s voltage and tachometer).

- Operational Information (Default screen)
- Alarm Status
- Engine Hours
- Equipment Hours
- Job Timer
- Service menu
- Diagnostic menu
- Machine number
- About

Operational Information - This is the default screen. It displays the battery’s voltage and tachometer - current engine speed in rpm.

Alarm status – Shows if there is an alarm from the MT05 communication of the Kohler engine or from the CO shut-off module.

Engine Hours – Displays the total number of hours – idle mode and clutch engaged.

Equipment Hours – Displays the number of hours on your equipment when the machine is with engaged clutch.

Job Timer - The job timer acts as a stopwatch, but only starts when the machine works with clutch engaged. This allows you to accurately time how long your engine runs for a particular job.

Service menu – When you enter this menu, you have access to the service intervals of the machine. Alarm message indicates when an interval is over. Then you should take particular action and reset the interval.

Diagnostic menu - When you enter this menu, you have access to the CO shut-off module status and the clutch state (engaged or not).

Machine number – The machine serial number is entered here from the manufacturer.

About – This screen displays the manufacturer name. Hardware and software version too.

LED ALERTS & RESETTNG SERVICE INTERVALS

The SA LPG Controller will alert you when service is due. To reset the service interval see text above – Service Alerts.

SAFETY INFORMATION

Safety Information- Read all safety information before using this device to ensure safe and proper use.

Do not interact with the device while operating your equipment. Doing so may distract your attention and cause an accident, or may be illegal depending on your region.

Avoid any direct contact with pressure washers, water sprayers or cleaning chemicals of any kind.

Do not drop or cause an impact to the device.

Do not bend or twist the device and/or the wire harness excessively.

Do not disassemble, modify or repair your device. This product contains no user serviceable parts.

FCC Part 15.21

Any changes or modifications to this device that are not expressly approved by the manufacturer may void the user's authority to operate the device.

4.6 STARTING THE MACHINE

First, follow the directions in the chapter on Safety Devices and Safety Instructions. Check oil level. Open the service valve on the propane tank about one and a half (counterclockwise) turns. Next, make sure the Start/Stop Clutch rocker (2) is in stop position and check that the throttle (3) in the **IDLE** position. This creates the necessary vacuum to open the lock- off valve inside the regulator. Actuation of the throttle lever will keep the lock- off valve from opening and the engine from getting fuel so the engine will not start. Proper maintenance will insure easy starting. Engage starter (1) for a **MAXIMUM** of 5 to 6 seconds or until the engine fires. Serious starter damage will result if this is exceeded and the warranty may not apply. Operate the engine at half throttle for approximately two minutes to properly warm engine. Then advance to full throttle for best results. If working wet, add water to the floor surface. If working dry, instead switch on the vacuum unit. Finally, hold the machine firmly and push the start of the Start/Stop clutch button (2).

4.7 OPERATING THE MACHINE

Guide the machine in straight lines across the floor, slightly overlapping the previously completed surface with each new line. Work at a constant speed, allowing the tools time to work at a speed appropriate for the tools' grit size. Avoid vibrations. Do not stop the machine while tools are still running as they will mark the surface of the floor. When working wet, select the destination of the water feed with the water tap (fig. 4.2-1) and periodically run the pump (fig. 4.10-11) to release water onto the floor surface. Starting the pump is possible only if the machine motor is on. When working dry, check the floor surface periodically for dust accumulation. Check regularly to see if your vacuum works properly.

4.8 STOPPING THE MACHINE

The stopping of the machine must be done gradually until the tools movement stops. Do not stop moving the machine before the tools comes to rest, as the tools could damage the surface. Stopping of the machine must be done gradually. To begin, disengage the clutch by pushing the Stop clutch rocker (2), and return the throttle (1) to the **IDLE** position. Wait 5-10 seconds. Turn the **Start/Stop Engine switch (5)** fully to the left in order to arrest the engine. Close (clockwise) the service valve on the propane tank.

- In case of an emergency **ONLY** press the "**Emergency Stop Button**" (1).

When finished with the machine, store the propane tank outside the building, in a **SECURE** place away from heat or direct sunlight.

5. TOOLS AND ACCESSORIES

TOOL HOLDER KEY

The tool holder key (Fig. 5.1) is used for adjusting, mounting and dismounting of the tools. Always use the key for mounting. Item number is A03.00.00.00

SECURITY PLATE FOR QUICKCHANGE PADS

Plate (Fig. 5.2) used to secure the "Quickchange" pads.

Item number is A64.00.01

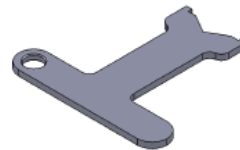


Figure 5.1

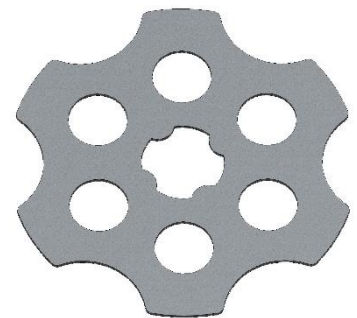


Figure 5.2

WORKING RPM CONVERSION TABLE

rpm engine	rpm tools
2000	425
2100	445
2200	470
2300	490
2400	510
2500	530
2600	550
2700	575
2800	595
2900	615
3000	640
3100	660
3200	680
3300	700
3400	720
3500	745
3600	765

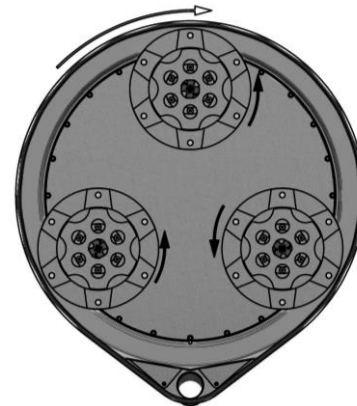
6. POPULAR TOOLS

The heads have counter-clockwise / left rotation.
Use the blue PCDs and Carbide Scrapers.

RECOMMENDED TOOLS



QuickChange System and Tooling feature extremely fast and convenient tool changes, and a long tool life, providing for great long-term cost savings. The QuickChange pads are produced in four different bonds for super hard, hard, medium and soft concrete, in a variety of grit sizes. They are offered with 1 or 2 buttons or rectangular segments, which allows you to customize the aggressiveness of the cut.



Calibra grinding discs: our popular ceramic bond discs are designed for the removal of difficult scratches and they save you valuable time by eliminating the need for multiple passes with metal tools.

They can be used wet or dry, and are best for hard concrete applications. They are 3-inch, with included Velcro back attachment.



NATO® polishing discs feature a special resin formula designed for both wet and dry applications and a unique design with wide channels allowing for work on a cleaner surface and ensuring a quality polish. Available in 3 and 4 in sizes. They are with Velcro attachment.



V-HARR® Premium Polishing Pads are designed for mechanically polishing and restoring concrete; also ideal for terrazzo and hard stone floors. V-HARR® pads are offered in a wide variety of diameters and grit sizes to accommodate many applications. Dry use is strongly recommended.

Shine Pro® are high quality diamond-integrated pads for floor maintenance. Available in a variety of sizes, they are great for daily use. When used wet, they require only water (no wax or chemicals needed), making them a very environmentally-friendly solution for maintaining floors.

Use Only Superabrasive's Recommended Tools. For More Tooling Options, Visit www.superabrasive.com

7. MAINTENANCE AND INSPECTION

REMARK

Tampering w/Emission Control System Prohibited

Federal law and California State law prohibits the following acts or the causing thereof: (1) the removal or rendering inoperative by any person other than for purposes of maintenance, repair, or replacement, of any device or element at design incorporated into any new engine for the purpose of emission control prior to its sale or delivery to the ultimate purchaser or while it is in use, or (2) the use of the engine after such device or element of design has been removed or rendered inoperative by any person.

Among those acts presumed to constitute tampering, involve the parts/systems listed below:

- Carburetor and internal parts
- Spark plugs
- Magneto or electronic ignition system
- Fuel filter element
- Air cleaner elements
- Crankcase
- Cylinder heads
- Breather chamber and internal parts
- Intake pipe and tu

CLEANING

Keep your machine clean. Cleaning the machine on a regular basis will help detect and solve potential problems before they cause damage to the machine. Most importantly, check and clean the tool plate connections, power cord and plugs, vacuum hoses and water tank.

CHECK DAILY

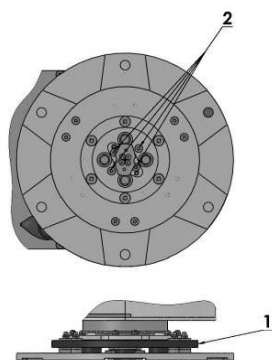


Figure 7.1

After operating the Lavina® 32GE, the operator should conduct a visual inspection of the machine. Any defect should be solved immediately. Pay attention to power cords, plugs and vacuum hoses loose bolts or screws.

Tool holders: Buffers and elastic element are consumables and must be visually checked daily and replaced if needed. The key lock holders (butterflies) on the tool holders should be also checked.

Check the rubber buffers and make sure the holders are secure. The flange holding the buffers (Fig.7.1-1) has to be firmly secured to the unit. A gap seen here indicates loose screws securing the holder. The screws have to be tightened immediately to safely operate the machine. Working with loose screws could cause serious damage to the machine. The tightening force on the screws should be 22-25N.m (16-18lb.ft).

It is very important to regularly check the screws that secure the "QuickChange" holder to the safety part (Fig.7.1- 2), so that the holder will not fly away if the buffers get damaged. The "QuickChange" should also be cleaned.

CHECK AND REPLACE AFTER THE FIRST 8 WORKING HOURS

Replace the oil in the engine after the first 8 hours work, according to the instructions of the engine manufacturer.

Always use 30HD or 10W30 engine oil with all of the following ratings: SF, SG, and CC

CHECK AND REPLACE EVERY 50 WORKING HOURS

Change engine oil, while changing check for leakage of engine oil at the various seals. The hour meter will blink between 48-52 hours as a reminder "Engine Oil Capacity" is 1.7L(1.8US.qt) when oil filter is not removed; 1.9L(2.0US.qt) when oil filter is removed/.

RECOMMENDED OIL CHANGE INTERVALS

Do not exceed the 50-hour oil change interval. Oil changes more frequent than 25 hours will give even longer engine life. In any case, always use 30HD or 10W30 engine oil with all of the following ratings: SF, SG, and CC. make sure the oil level is maintained at the "FULL" level.

CHECK EVERY 200 WORKING HOURS

Every 200 working hours, the operator should inspect all parts of the machine carefully. Most importantly, inspect and clean the tool plate connections, plugs, vacuum hoses and water tank and filter. Also, check the water flow of the pump. Check the guard assembly. Make certain the wheels are clean and rotate properly. Inspect the control buttons. If there are defective control parts, they should be replaced immediately. Replace worn vacuum- and water hoses.

Carefully inspect the seal rings and bearings of the grinding units, and replace any showing signs of excessive wear.

For more information, refer to chapter troubleshooting below. Open the service cover on the motor base Figure 9.7.2 to check of the planetary chain. Lubricate the chain with chain lubricant and correct the sag if needed.

Return machine to **authorized service center** for overall checkup of the Engine. For Propane safety, have the machine serviced by a **Certified Technician**, including emission check.

CHECK EVERY 400 WORKING HOURS

In addition to checks made every 200 working hours, replace sealer and V-rings as described in chapter “**DISMOUNTING TOOL HOLDERS TO CHANGE V-RINGS AND FELT-RINGS**”.

Remove the protective covers under the generator. Check the belt that runs the generator. If necessary, tighten it, making sure not to “over tension.” Replace it if necessary.

Return machine to authorized service center for overall checkup of the Engine. For Propane safety, have the machine serviced by a Certified Technician, including emission check.

VACUUM

As stated previously, frequently check hoses and other parts for clogging.

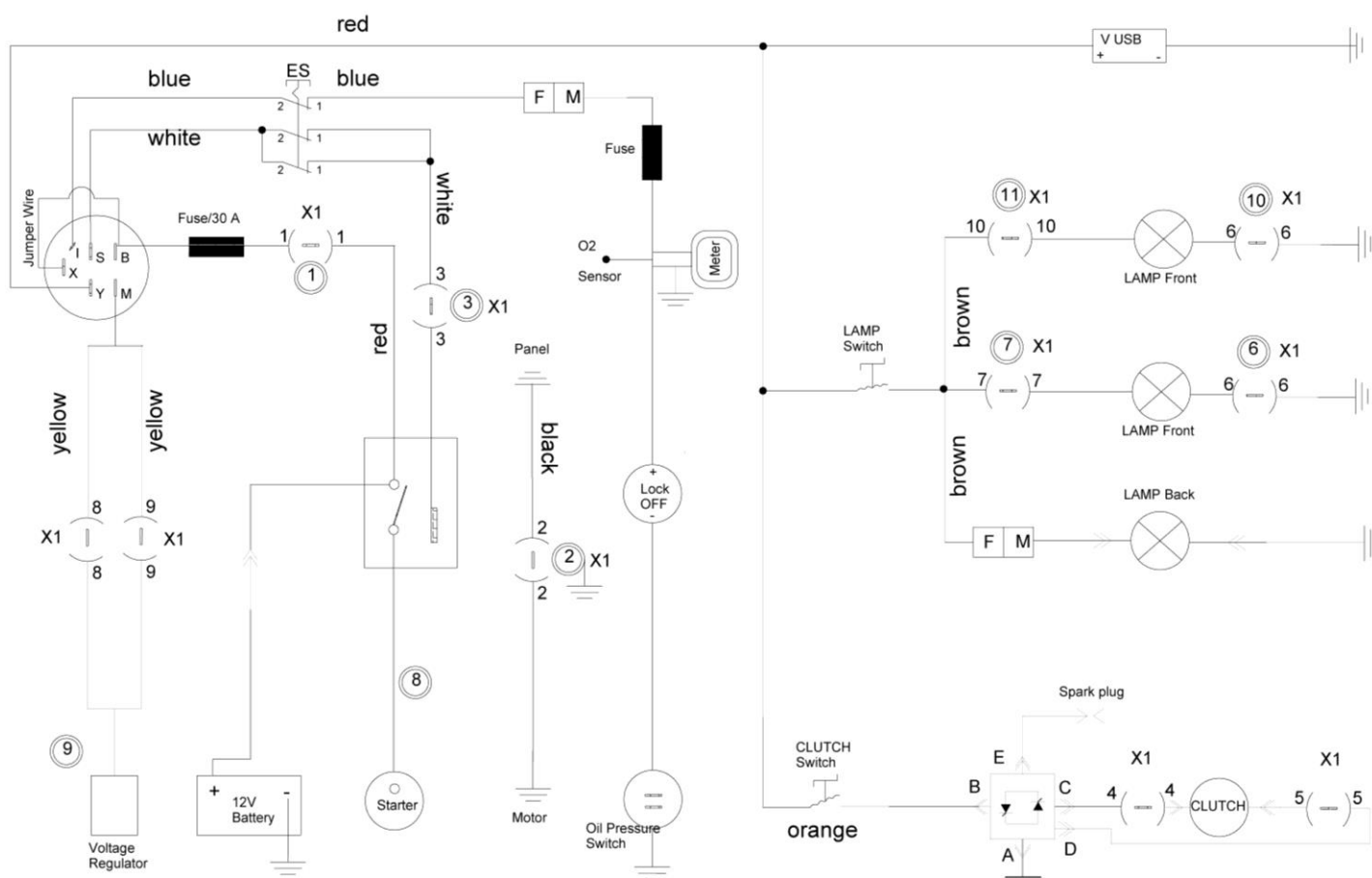
WATER LEAKS

Replace any leaking parts immediately as the water could damage your machine

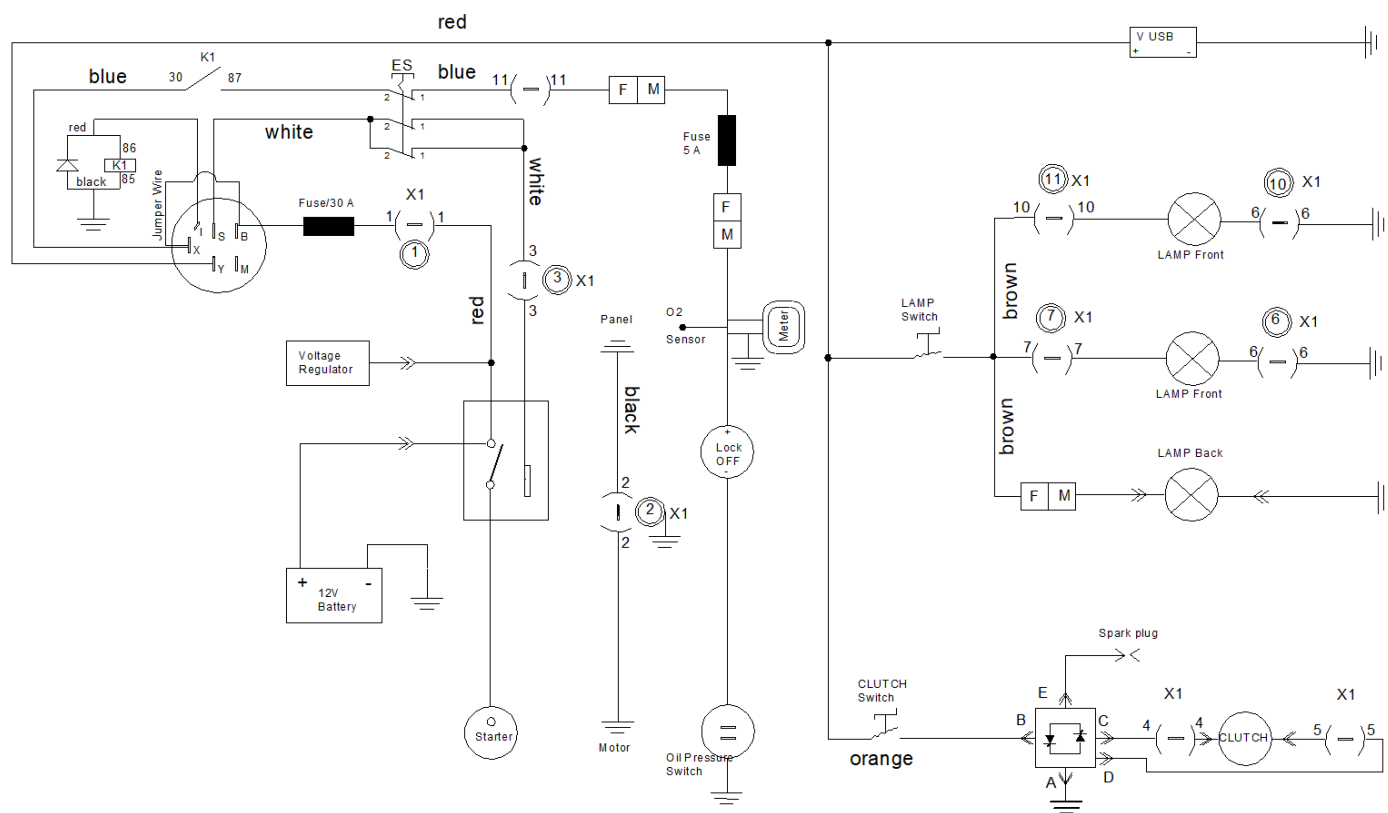
MECHANICAL PARTS

Parts such as the belt, seal rings, cap rings, spiders and buffers and guard assembly are subject to wear and should be replaced as needed.

ELECTRICAL SCHEMES WITH KAWASAKI ENGINE AND DIGITAL FUEL CONTROL SYSTEM



ELECTRICAL SCHEMES WITH KAWASAKI ENGINE AND SA LPG CONTROLLER



OPERATION	INTERVAL							
	Daily	First 8 Hrs.	Every 50 Hrs.	Every 100 Hrs.	Every 200 Hrs.	Every 300 Hrs.	Every 400 Hrs.	Every 500 Hrs.
Check & add engine oil	X							
Check for loose or lost fasteners	X							
Check for oil leakage	X							
Inspect fuel hose and connections	X							
Clean engine dust filter	X							
Inspect throttle & wire	X							
Change engine oil		X	X					
Change engine oil filter		X		X				
Replace engine primary air filter						X		
Replace engine pre filter								X
Inspect battery and battery connections				X				
Inspect, clean & re-gap spark plugs, Replace if necessary								
Check & adjust valve clearance * Re-torque heads *						X		
Clean & lap valve seating surface *						X		
Check engine emissions								X
Inspect power cords, plugs and vacuum hoses, loose bolt or screws.	X							
Check the rubber buffers, elastic element and fixing of the holders	X							
Inspect and clean the tool plate connections					X		X	
Inspect and clean water tank, filters mesh and misting nozzle					X		X	
Inspect the seal rings and bearings of the grinding units					X			
Check the planetary chain and lubricate					X		X	
Replace Felt-Ring and V-rings							X	
Check belts and bearings							X	
* Return machine to authorized service center for overall checkup of the Engine. For Propane safety, have the machine serviced by a Certified Technician, including emission check.								

8. TROUBLESHOOTING

INDEX OF PROBLEMS AND SOLUTIONS

8.1 ENGINE

When troubles occur, be sure to check the simple causes which may at first seem too obvious to be considered. For example, a starting problem could be caused by fuel starvation due to an empty propane cylinder or an unopened service valve. If you do not check for this, starter burnout could result.

Some Troubles and solutions:

Surging idle

To smooth out the engines' idle characteristics, adjustment is provided by an idle screw on the lower left side of the carburetor as viewed from the operator's position. The screw is bright steel and 1/4" in diameter with a Phillips head on it. Rotating the screw clockwise will increase the idle speed and this should cure the "surging idle". If it does not, call our customer service.

Engine starts and idles, but will quit as the throttle is advanced

It is possible that the propane tank's service valve is faulty. To check for this, close the valve completely and then reopen very slowly while you listen for a "click" when the gas begins to travel through the valve. If you hear this very slight noise, the valve is only partially opening. This allows enough gas through to start and idle the engine, but not enough for full throttle operation. As the throttle is increased, allowing more air to enter the intake, the engine will quit from fuel starvation. Call your dealer or the factory for instructions on where to have the service valve replaced. Meanwhile, to get by, you can continue to open the service valve until you do not hear a "click" and then the engine will run normally. If it does not, call your customer service.

Starter barely turns the engine over or the solenoid just clicks

The battery is likely low in charge. This can be remedied by recharging the battery using a 12 Volt battery charger at 4.12 amperes. The battery is under the control box. The positive post is the one with the RED cable attached to it. Follow the instructions that came with the battery charger. REMINDER: this will continue to happen unless your engine is run for sufficient time between starts to recharge the battery.

8.2 CHECKING AND CHANGING OIL

Check the engine oil level; do not screw the dipstick in to get reading. While changing engine oil, check for leakage of engine oil at the various seals. The hour meter will blink between 48-52 hours as a reminder.

Recommended Oil Change Intervals

Do not exceed the 50-hour oil change interval. Oil changes more frequent than 25 hours will give even longer engine life. In any case, always use 30HD or 10W30 engine oil with all of the following ratings: SF, SG, and CC. make sure the oil level is maintained at the "FULL" level.



Figure 8.2.1



Figure 8.2.2

8.3 DISMOUTING TOOL HOLDERS TO CHANGING V-RINGS AND FELT RINGS



Figure 8.3.1



Figure 8.3.2



Figure 8.3.3



Figure 8.3.4



Figure 8.3.5



Figure 8.3.6



Figure 8.3.7

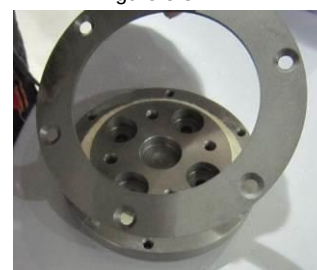


Figure 8.3.8

To check or replace the buffers and the elastic elements, the tool holders have to be dismantled.

You will need a 13mm deep metric socket with an outside diameter of no more than 3/4in to unscrew the four bolts (Fig.8.3.1) and remove the holder (Fig.8.3.2) When the tool holder is dismantled, you can change the sealers (V-Ring and Felt-Ring).

By loosening four Hex cap flange bolts (Fig.8.3.3) the adaptor comes loose. Unscrew the six screws of the cap (Fig.8.3.4) holding the felt-ring. Take out the Felt-Ring, adaptor and V-Ring.

Mount the V-Ring with the smallest lip of the V to the inside (Fig.8.3.5) - simply push the V-Ring so the top is on the same level as the pulley top (Fig.8.3.6). Then take the adaptor and push the V-Ring down with the adaptor (Fig.8.3.7). The lowest lip of the V-Ring should only barely touch its gliding surface. Mount the adaptor and the Felt-Ring on top (Fig.8.3.7). Close the sealers with the cap (Fig.8.3.8) and screw the bolts. Always use the original bolts. Do not push the V-ring down with fingers.



Figure 8.3.9



Figure 8.3.10

When the tool holder and adapter are dismantled, you can change the top key transmitting the movement to the planetary chain.

8.4 DISASSEMBLING AND MOUNTING TOOL HOLDERS TO CHANGING BUFFERS AND ELASTIC ELEMENT

When the TOOL HOLDER is disassembled you can change defective parts – elastic element, buffers, etc.

Lift the locking pin (Fig.8.4.1) to dismantle the retaining washer (Fig.8.4.2). Take out the screws on the buffers and the nuts of the elastic element (Fig.8.4.3; Fig.8.4.4).

Remove the elastic element from the QC plate (Fig.8.4.5). While the holder is dismantled (Fig.8.4.6;



Figure 8.4.1



Figure 8.4.2

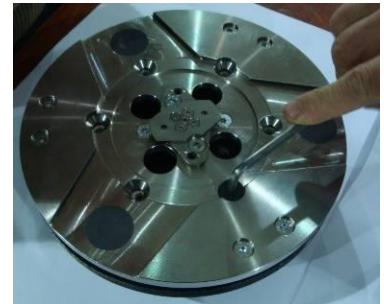


Figure 8.4.3

Fig.8.4.7), clean the parts and replace any defective ones with new ones. Assemble the holder with new buffers, new screws, and new elastic element.

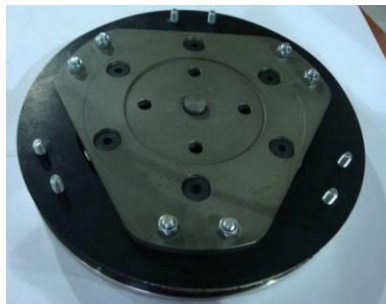


Figure 8.4.4



Figure 8.4.5



Figure 8.4.6

Replace the retaining washer (Fig.8.4.8) and push the locking pin (Fig.8.4.9). This will prevent the washer from falling while mounting the



Figure 8.4.7



Figure 8.4.8

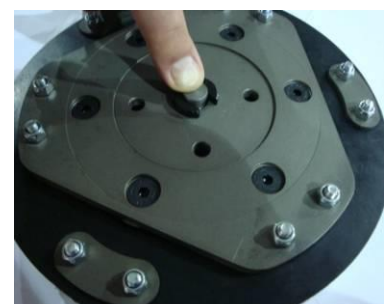


Figure 8.4.9

holder on the machine.



Figure 8.4.10

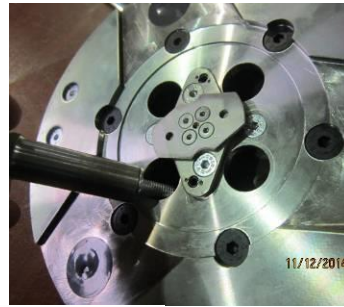


Figure 8.4.11

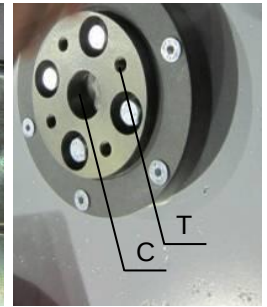


Figure 8.4.12

Make sure the four bolts holding the adaptor (Fig.8.4.12) are reliably tightened. Mount the holder on the machine using the same socket as in 8.3 (Fig.8.4.10; Fig.8.4.11). The retaining washer fits into the central hole C of adaptor and the four bolts into the thread holes T (Fig.8.4.12). The holder is centered on the outside diameter of the adaptor. Ensure the holder is properly connected to the plate of the adaptor and then tight evenly the four bolts. Tightening force on the bolts has to be 22...25N.m(16...18 lbf.ft). Mounting the holder without retaining washer (Fig.8.4.2) is **INADMISSIBLE** because the security system preventing the separation of part of the holder in case of broken buffers and elastic element will not function! You can change the butterfly of the holder without dismantling the holder of the machine.

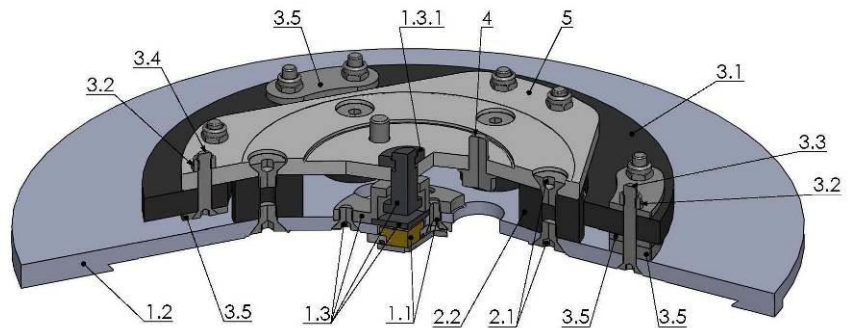


Figure 8.4.13

8.5 SEPARATING THE HEAD FROM THE CARRAGE

1. Please note that the propane cylinder has to be removed (Fig. 8.5.1 Fig. 8.5.3-1) and stored outside before any maintenance or reparation is done.

2. Unscrew the two bolts about 1-1.5 turn /Fig. 8.5.2-2; Fig. 8.5.2-3;/ to disconnect the vacuum connector/Fig. 8.5.2-4/ from the carriage.

3. Disconnect the flexible hose supplying water under the cover of the machine/Fig. 8.5.3-1/.



Figure 8.5.1

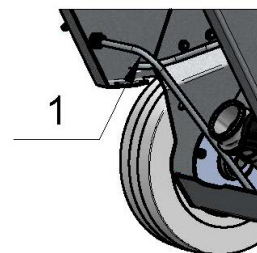
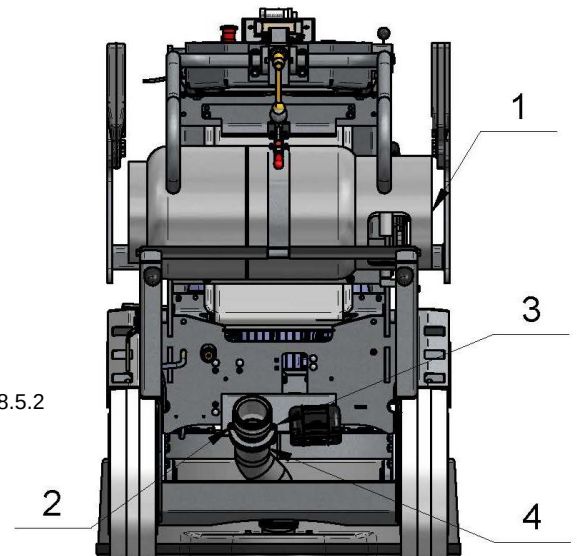


Figure 8.5.3

Figure 8.5.2



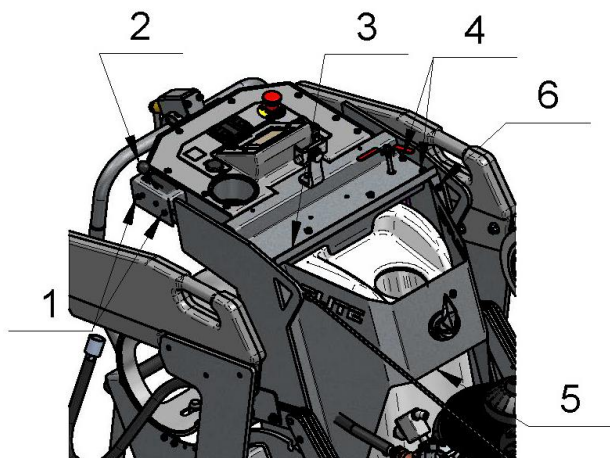


Figure 8.5.4



Figure 8.5.5



Figure 8.5.6



Figure 8.5.7



Figure 8.5.8

4. Unscrew (Fig. 8.5.4-1) the bolts (Fig. 8.5.4-1) dismount the throttle (Fig. 8.5.4-2) .

5 . Unscrew the four bolts /pos.4/ to remove the panel /pos.3 / and unscrew the four bolts /pos.6/ to remove the panel /pos.5 / /Fig.8.5.4/.
6. Disconnect the cable of the battery/Fig. 8.5.5/.

7. Disconnect the coupling, disconnect the cable and move it to the main head. /Fig. 8.5.6; Fig. 8.5.7; Fig. 8.5.8/.

8. Remove the lamps /on magnetic attachment/ and disconnect the cable /pos.1 and pos.2 Fig. 8.5.9/.



Figure 8.5.9

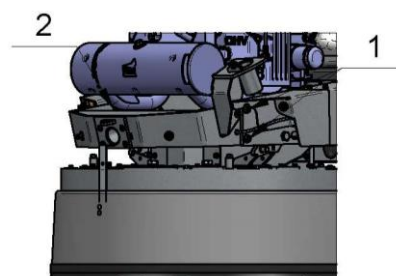


Figure 8.5.10

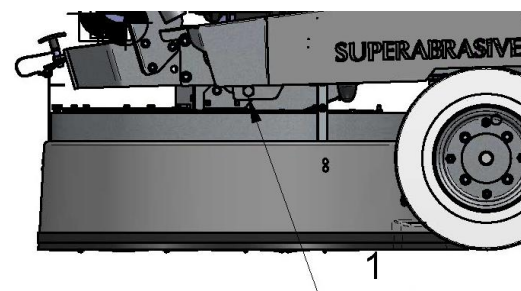


Figure 8.5.11

9. Unscrew the four bolts with nuts /pos.1/ to remove the bridge with holder for third wheel /Fig. 8.5.10/.

10. Unscrew the two nuts on the bolts /pos.1, Fig. 8.5.11 /.

Now it is possible to separate the head by removing the bolts. This will require two people: one person holds the carriage while the other pulls the bolts. After removing the bolts, carefully pull the carriage backwards to ensure that there is no collision with the engine oil drain plug or other part of the main head.

8.6 DISMOUNTING/MOUNTING THE ENGINE AND CHANGE BELT

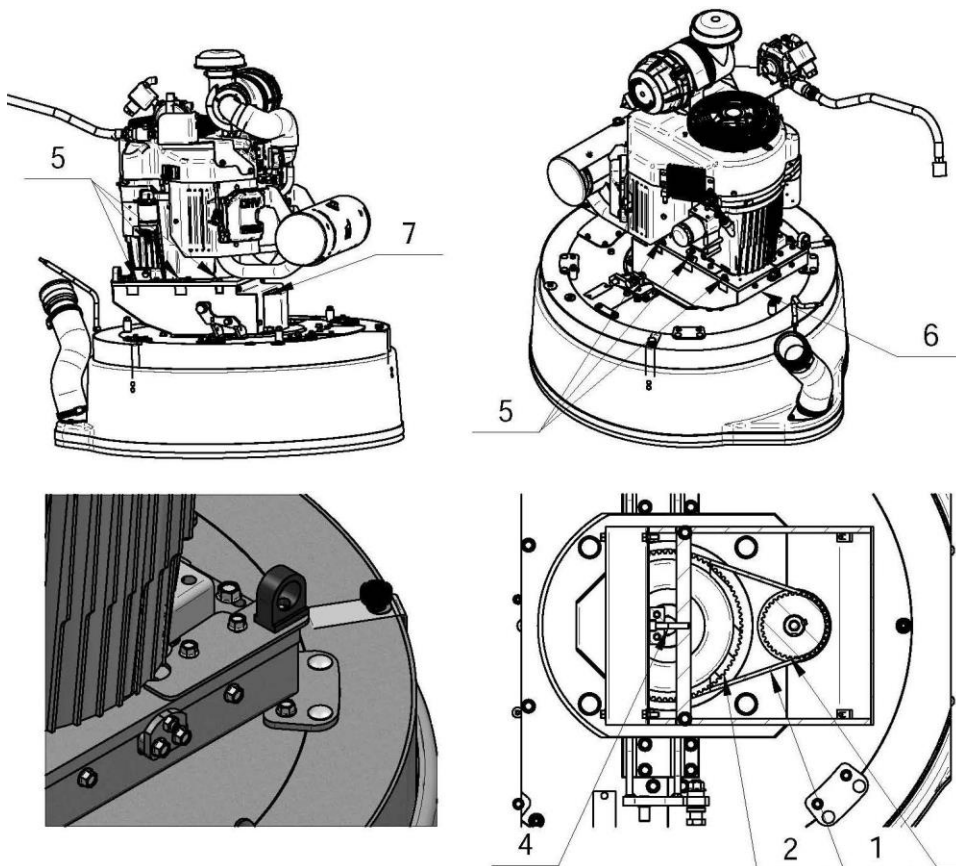


Figure 8.6.1
Figure 8.6.3

Figure 8.6.2
Figure 8.6.4

Separate the head from the carriage (see previous chapter). Remove the front and back belt protectors (Fig. 8.6.1-7) (Fig. 8.6.2-6). Loosen the motor base plate (Fig. 8.6.2_5) and release the tensioner assembly (Fig. 8.6.4-4). Take off the engine with the motor base plate.

Reassemble in the same manner. Tension the belt (Fig. 8.6.4-1) with bolt (4) on (fig. 8.6.4). The belt tension can be tested with a Frequency tension Tester Optibelt 3 TT. The readings should be 195...205 Hz. If you do not have a Frequency tension Tester, use the already set limit of the movement of the motor base plate

ATTENTION:
NEVER "OVER" TENSION THE BELT, THE BELT WILL BE DESTROYED AND IT WILL NEVER RECOVER ITS ORIGINAL TENSION

8.7 REPLACING THE CLUTCH

To replace the electric clutch, remove the engine (see previous

chapter) and lay it on its side with the oil drainage up (Fig. 8.7.1) and loosen the front nut to dismount the clutch (Fig. 8.7.2 and Fig. 8.7.3).

Reassemble in the same manner. Do not forget to mount the washer back on the shaft (Fig. 8.7.4). The torque on the front nut (Fig. 8.7.3) to mount the pulley and clutch should be 70 Nm or 52 lbf.ft (Fig. 8.7.2 and Fig. 8.7.3).

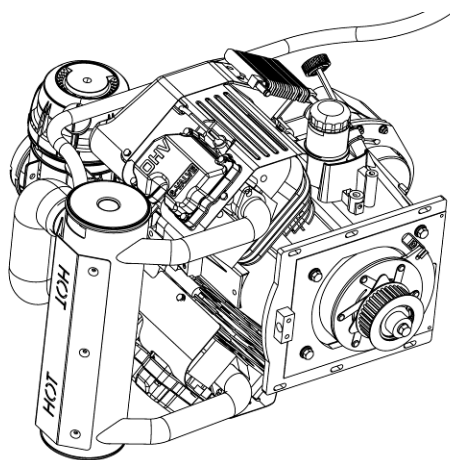


Figure 8.7.1



Figure 8.7.2

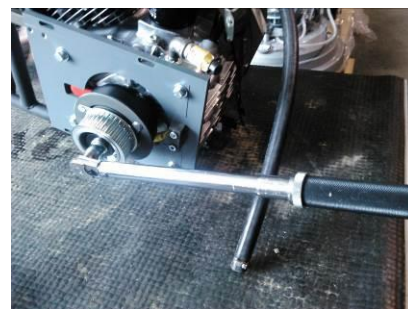


Figure 8.7.3



Figure 8.7.4

8.8 CORRECTING SAG OF USED PLANETARY CHAIN

Unscrew the bolts and nuts of the maintenance window (see Fig.8.8.1,pos.1;pos.2) from the front of the main head and lift the machine into tool-changing position. Manually turn the holders in order to turn the main head, stop when the chain link and the chain tensioner can be seen through the window.

Loosen two bolts of the chain tensioner a quarter to a half revolution (Fig.8.5.2,pos.1 and pos.2). The tensioner should turn with minimum clearance, without inclination, and then unscrew the inner nut (Fig.8.8.3,pos.1). To tension the chain screw, tighten the outer nut (Fig.8.8.3,pos.2). The tensioner of the planetary chain should allow chain sagging of 3...5mm (1/8...3/16 in) measured in span X (Fig.8.8.4). When the tension is set, screw the two nuts (Fig.8.8.2) and the two bolts (Fig.8.8.2) .

ATTENTION: NEVER “OVER” TENSION THE CHAIN, THE CHAIN WILL BE DAMAGED

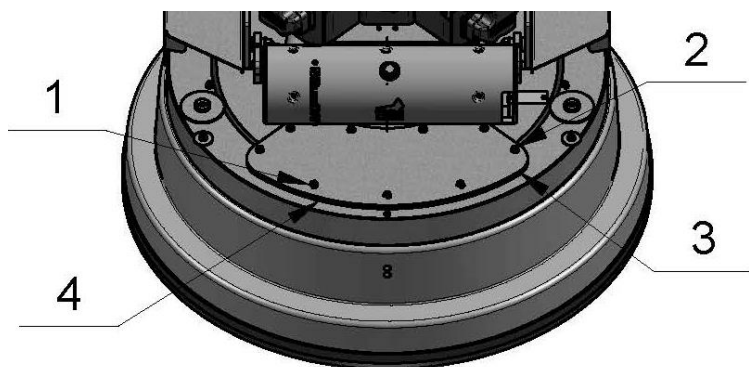


Figure 8.8.1

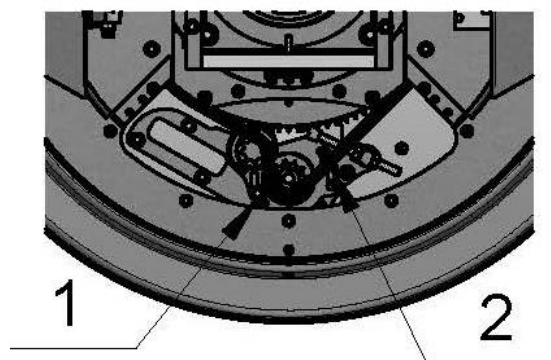


Figure 8.8.2

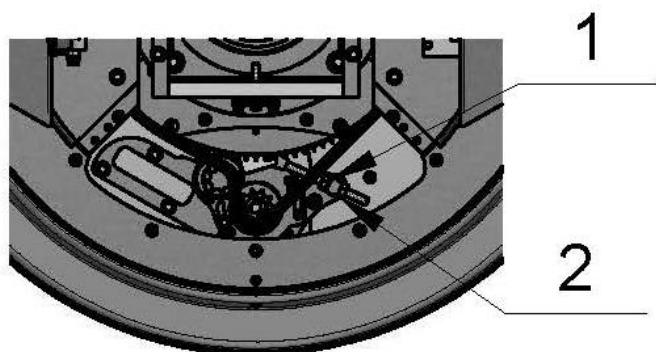


Figure 8.8.3

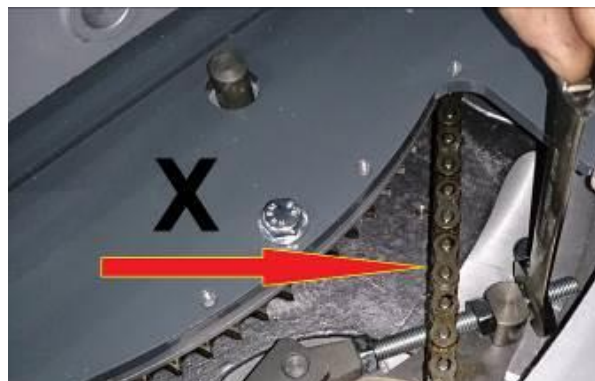


Figure 8.8.4

8.9 MOUNTING NEW PLANETARY CHAIN

The planetary chain is replaced with new one when the step/drive of the chain tensioner is finished or there is a loss of integrity of the chain. Take off the maintenance window (see Fig.8.8.1) from the front of the main head (Fig.8.8.2) (Fig.8.8.3) and lift the machine into tool-changing position. Manually turn the holders in order to turn the main head, stop when the chain link and the chain tensioner can be seen through the window.



Figure 8.9.1

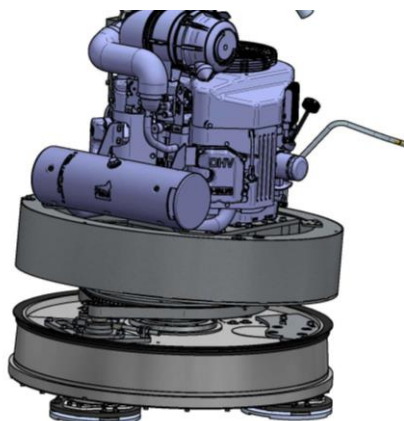


Figure 8.9.2

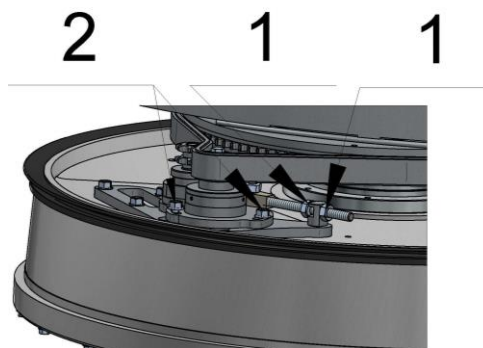


Figure 8.9.3

Separate the main head from the carriage as described in the paragraph “Separating the head from the carriage”, Dismount the top cover. Unscrew the eight bolts (Fig.8.9.1) and take off the top cover (Fig.8.9.2) (Fig.8.9.3).

Pull out the split pin (Fig.8.9.6) and the chain link pin (Fig.8.9.7) Remove the chain, and install the new chain in the same manner, then insert the chain link pin and the split pin (Fig.8.9.8) (Fig.8.9.9)

To tension the chain, screw the outer nut (Fig.8.9.4). The tensioner of the planetary chain should allow chain sag of 3...5mm (1/8...3/16 in) measured in span X (Fig.8.8.7). With tension set, screw the two nuts (Fig.8.9.3-1) (Fig.8.8.8) and the two bolts (Fig.8.9.3) (Fig.8.9.4).

ATTENTION: NEVER “OVER” TENSION THE CHAIN, THE CHAIN WILL BE DAMAGED



Figure 8.9.4



Figure 8.9.5

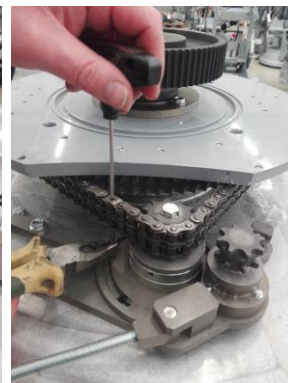


Figure 8.9.6

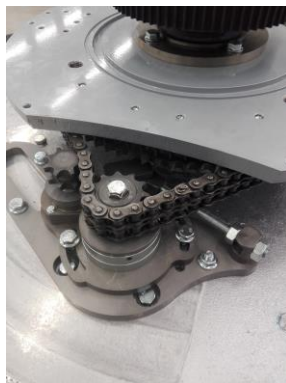


Figure 8.9.7

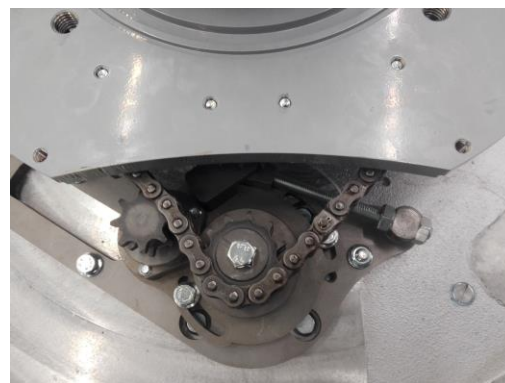


Figure 8.9.8

8.10 REPLACING THE FRONT KEY JOINT OF THE PLANETARY PULLEY

Find the driving pulley unit of the planetary movement. Dismount the holder (Fig.8.10.1) and the adaptor underneath (Fig.8.10.2), this will clear the access to the front key joint. (Fig. 8.10.4)



Figure 8.10.1



Figure 8.10.2



Figure 8.10.3



Figure 8.10.4

8.11 TENSIONING AND REPLACING THE TRANSMISSION BELT

The transmission of the machine has one maintenance-free timing belt. To change the belt, remove all holders and dismount their adaptors. Dismount the sealing. Carefully check the friction surface (flanges of the lower cover and the outside diameter of the adaptors). Decide if they are in good condition (wear, smoothness of surface) and whether they can work until next inspection. Remove the bottom cover by unscrewing the bolts around the

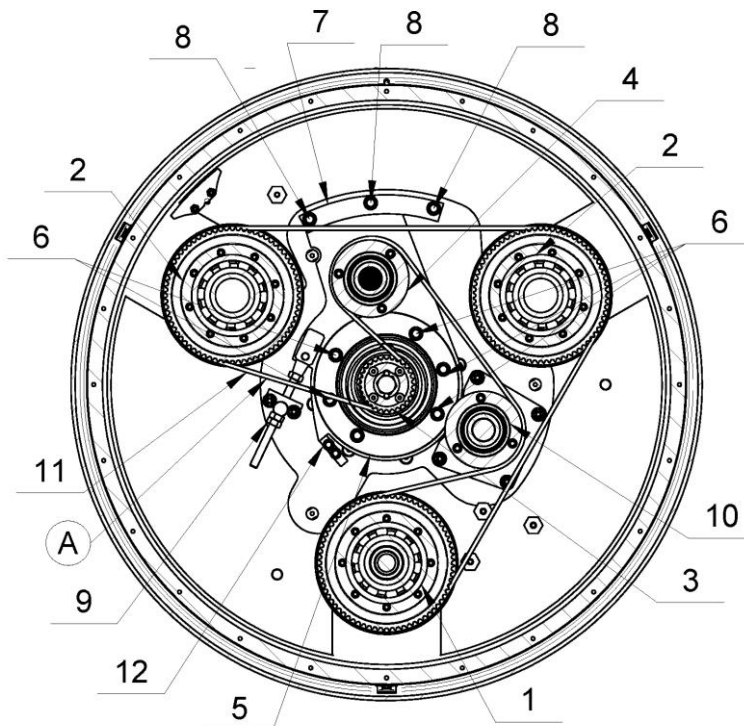


Figure 8.11.1

edge and the three bolts of the spacers. (Fig.8.11.2). Under the cover there is a sealer around the edge, and the spacers have O-Rings. It is recommended to change all seals with the belts.

Fig.8.11.1 shows the scheme of the belt location. To mount the new belt, first unscrew the nuts at pos.8 (Fig.8.11.5), pos.9(Fig.8.11.3) and the six bolts at pos.6(Fig.8.11.4) enough to be able to turn the tensioner around the central axle. Clean the washers and surrounding area, and check if all bearings of pulley units and tensioners are in good condition (check for too much clearance or rolling noise). Rotating the tensioner will allow the centre distance to be reduced so the timing belt may be fitted without force.

Put the belts in pos.11 as per the scheme, and pay attention to their correct orientation at each pulley. Ensure that you have loosened the nuts at pos.8 and the six bolts at pos.6, allowing the tensioner to rotate with minimal force. Using the nuts at pos.9, tighten the belt, and verify again the correct position of the belt and the correct gearing in every pulley. Rotate the gear while tensioning to allow for a regular tension distribution along the belt. Control the tension using Frequency tension Tester Optibelt 3 TT(Fig.8.11.6).

The tension in the span A(Fig.8.11.6) of the belt should be 127-130Hz. It is possible to use the pre-installed supports (Fig. 8.11-12)(Fig. 8.11.7) as references to stop the tensioner at the desired belt tension, provided that the supports have not been moved from their factory position.

NEVER "OVER" TENSION THE BELT, THE BELT WILL BE DESTROYED AND IT WILL NEVER RECOVER ITS ORIGINAL TENSION



Figure 8.11.2



Figure 8.11.3

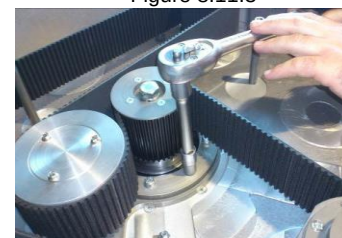


Figure 8.11.4



Figure 8.11.5



Figure 8.11.6



Figure 8.11.7

8.12 REPLACING THE PULLEYS

Fully loosen the belt and remove (see the previous section). After removing the belts, unscrew the four bolts of the pulleys on top of the disc (Fig. 8.12.1) and replace.

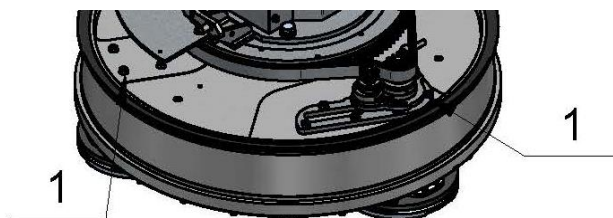


Figure 8.12.1

8.13 REPLACING THE PLANETARY DRIVING CHAIN WHEEL AND CENTRAL CHAIN WHEEL AND PLANETARY TENSIONER

Unscrew the bolt and remove the old gear. Put grease in the safety cap (Fig.8.13.1-3) of the new gear and mount to the shaft. Fold the safety washer as shown on Fig.8.13.1, and screw the bolt, using the “blue” thread locking adhesive. Tightening force on the bolts should be 22...25N.m (16...18 lbf.ft). Screw the safety washer as shown on (Fig.8.13.1).

When mounting the new gear put silicone sealant in pos. 4 of Figure 8.13.1. The central gear consists of two halves, which are replaceable by unscrewing the bolts on fig.8.13.2

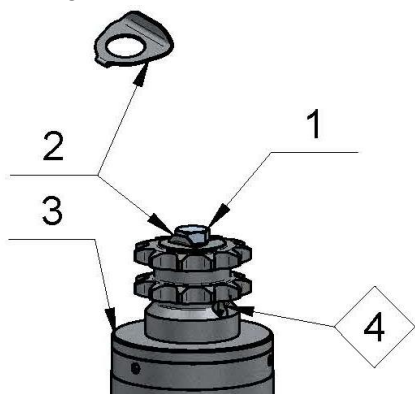


Figure 8.13.1



Figure 8.13.2

When dismantling the chain, unscrew the nuts (1) on the pin. Unscrew the bolts (2) and lift the tensioning assembly.

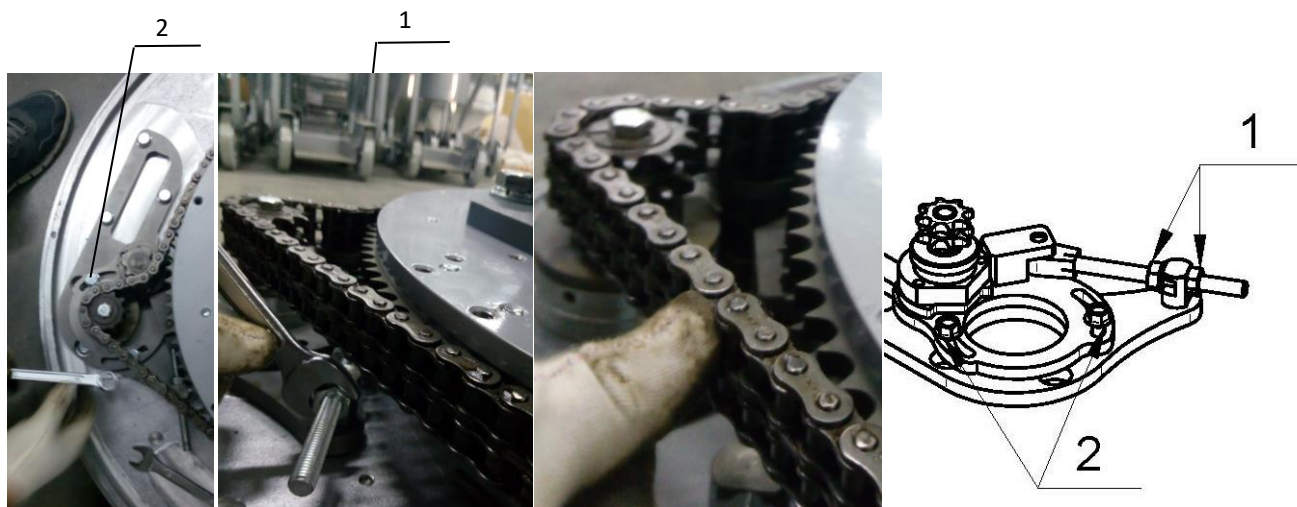


Figure 8.13.3

9. DISPOSAL

If your machine after time is not usable or needs to be replaced, send the machine back to Superabrasive or a local distributor, where a professional disposal complying with the environment laws and directives is guaranteed.

10. MANUFACTURER'S CONTACTS

If you need to contact Superabrasive Inc. with technical support questions, below is the contact information.

Address; 9411 Jackson Trail Road, Hoshton GA 30548, USA

Email: info@superabrasive.us

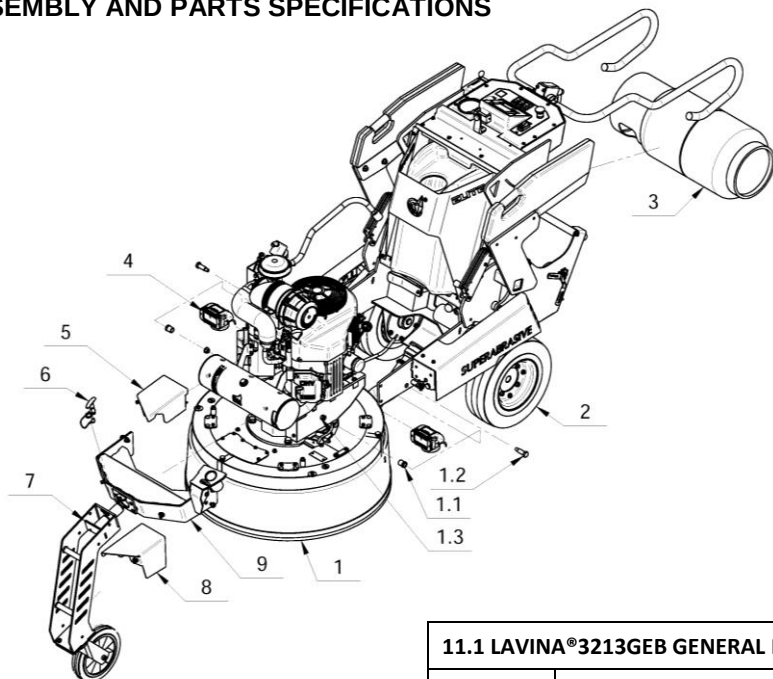
Tel.: 706 658 1122

Fax: 706 658 0357

Website: www.superabrasive.com

11. SPARE PARTS

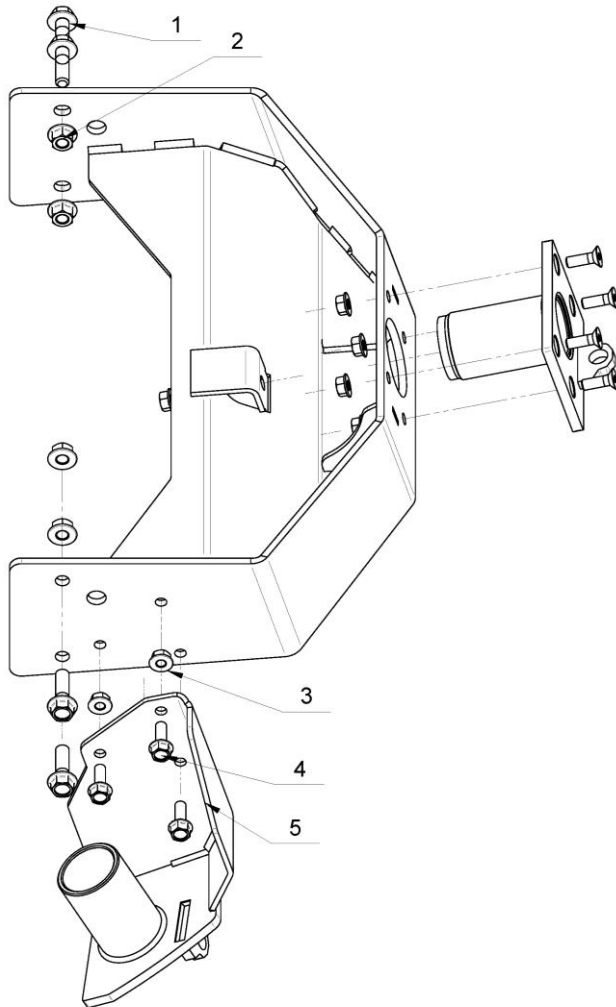
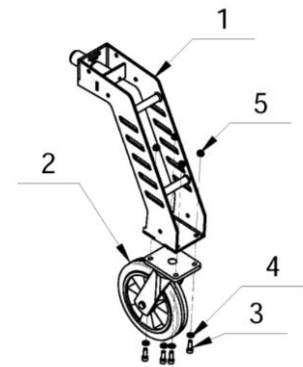
ASSEMBLY AND PARTS SPECIFICATIONS



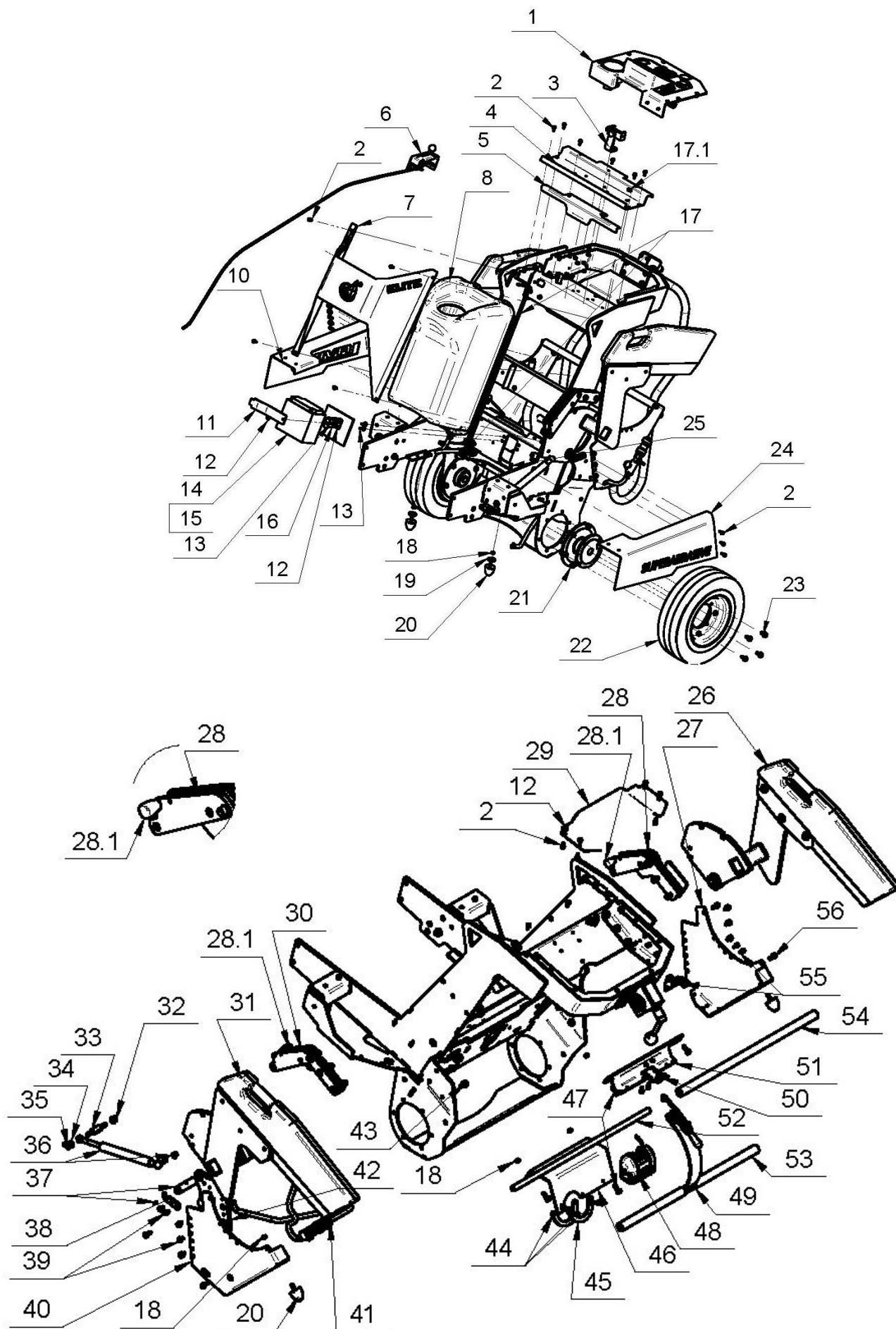
11.1 LAVINA®3213GEB GENERAL PARTS

No.		Item No.	Description	Pcs.
1		L3213GEB10.00.00	Main Head	1
	1.1	L32E10.00.23	Bush	2
	1.2	L32-00.00.00.00.02	Bolt	2
	1.3	M12DIN934	Nut	2
2		L32GEB20.00.00	Carriage	1
3		W2509	Horizontal Aluminium Propane Tank	1
4		A50.00.00.00	LED light with magnetic base	2
5		L32GEB02.00.00	Misting nozzle support L32GEB	1
6		L32RE05.00.00	Pin Assembly	1
7		L32RE04.00.00	Third wheel L32E	1
8		L32EB03.00.00	Misting nozzle left support	1
9		L32EB01.00.00	Front Frame L32EB	1

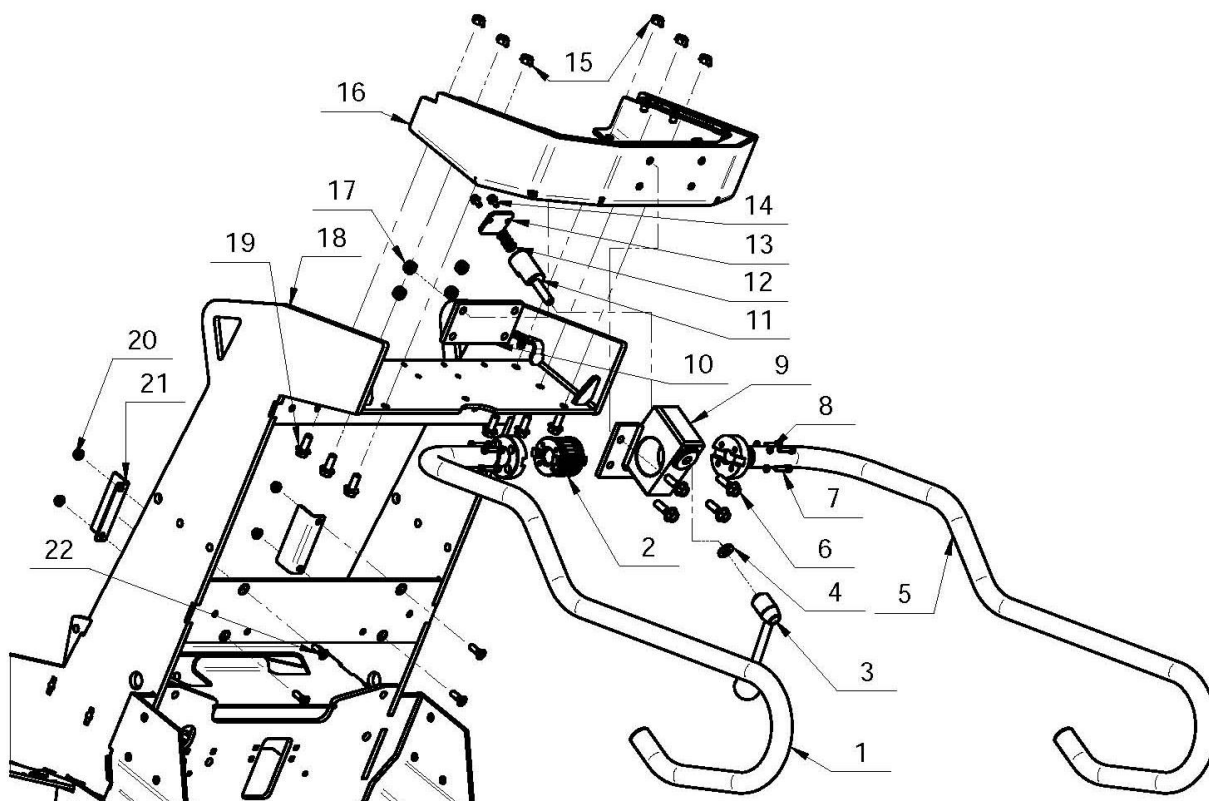
11.2 LAVINA®32RE THIRD WHEEL			
No.	Item No.	Description	Pcs.
1	L32RE04.10.00	Frame	1
2	30312000053	Wheel	1
3	30301230049	Screw M10x30DIN912	4
4	30301221005	Washer M10DIN125A	4
5	30301240092	Nut M10DIN985	4



11.3 LAVINA®32GEB FRONT FRAME PARTS			
No.	Item No.	Description	Pcs.
1	30301210021	BoltM10x35	4
2	30301240084	NutM10DIN6923	4
3	30301240095	NutM8DIN6923	3
4	30301210038	Bolt M8x25DIN6921	3
5	L32E01.30.00	Third wheel carrier	1



11.4 LAVINA®32GEB CARRIAGE							
No.	Item No.	Description	Pcs.	No.	Item No.	Description	Pcs.
1	L32GEB24.00.00	Control board assembly	1	28.1	30329000008	Knob BO751-107-25M08	2
2	30301210051	Bolt M6X16DIN6921	20	29	L32GE20.00.22	Control board bottom	1
3	HGP270	Phone clip mount	1	30	L32E20.40.00	Left Weight Support	1
4	L32E20.00.04	Front panel L32E	1	31	L32GE20.20.00	Left Weight	1
5	L32E20.03.00	Tank plate set L32E	1	32	30301240134	Nut M12DIN6923	2
6	L32GE25.00.00	Control board with throttle cable	1	33	L32E20.00.06	Pivot shaft	2
7	L32E20.00.01	Front panel	1	34	30301221005	Washer M10DIN125A	2
8	A91.00.00	Tank Assembly	1	35	30316000069	Pin3.2x20DIN94	2
9	30311000506	Clamp	1	36	30317000036	Gas spring	2
10	L32E20.00.02	Fender right	1	37	L32E20.00.07-K	Weight axis L32E	2
11	L32GE20.00.17	Battery Clamp 2 L32GE	1	38	L32GE20.00.12	Plate for weight axis L32GE	2
12	30301240098	Nut M6DIN6923	9	39	30301210058	Bolt M8X12DIN6921	10
13	30301210088	Screw M6X25DIN603	3	40	L32GEB20.02.00	Left pad holder L32GEB	1
14	30313000220	12V Battery W4359	1	41	A88.00.00	Water Valve assembly	1
15	L20GE20.30.00	Battery harness (carriage section)	1	42	L32GE20.00.11	Weight support L32GE	2
16	L32GE20.00.16	Battery Clamp 1	1	43	30301210033	Bolt M10X20DIN6921	6
17	A92.00.00	Water Valve assembly L32EB	1	44	L32E20.00.10-K	Clamp cam lock 3 in thread	1
17.1	30301330220	Rubber sleeve	1	45	L32E20.00.09	Clamp cam lock 3 in	1
18	30301240106	Nut M8DIN985	8	46	L32E20.00.05	Light and Cam lock holder	1
19	L32D-10.00.24	Washer	2	47	30301210038	Bolt M8X25DIN6921	4
20	30310000005	Pad	4	48	UT-BS0201	LED Light	1
21	L32E29.00.00	Wheel Bearing assembly	2	49	L38GRX-26.20.00	Strap	1
22	A66.00.00.00	Wheel assembly	2	50	L20GX-25.30.00	Strap	1
23	30301210033	Bolt M10X20DIN6921	8	51	L32GE20.00.14	Strap holder	1
24	L32E20.00.03	Fender left	1	52	L32GE20.00.15	Link	2
25	30301210117	Bolt M6X20DIN6921	4	53	L32GE20.00.19	Rubber support 2	2
26	L32GE20.10.00	Right Weight	1	54	L32GE20.00.18	Rubber support 1	1
27	L32GE20.01.00	Right pad holder	1	55	L32GE20.06.00-K	Propane tank stopper	1
28	L32GE20.30.00	Right Weight Support	1	56	30301210031	Bolt M8X20DIN6921	4

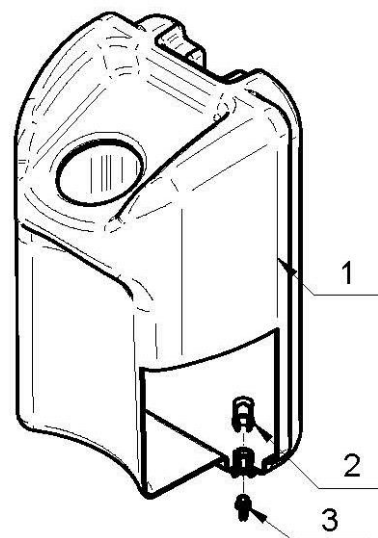


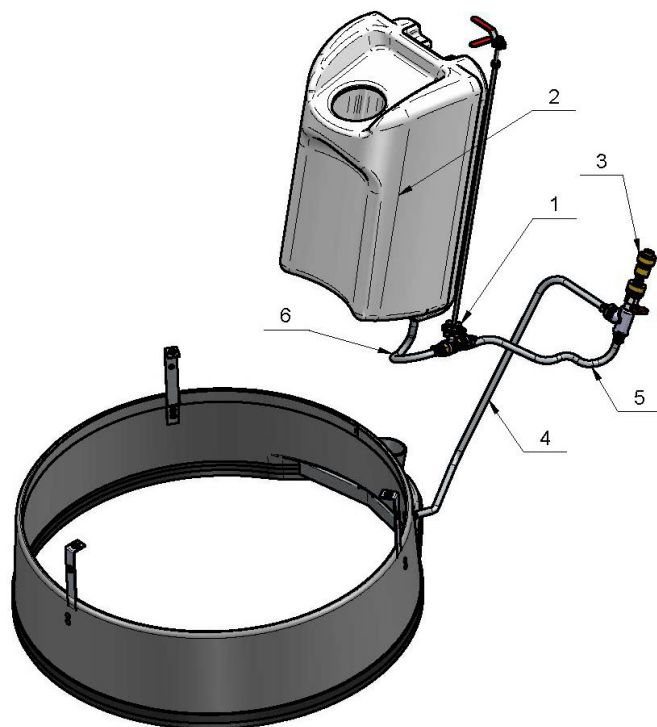
11.5. LAVINA®32GEB FRAME AND STEERING BRACKET PARTS

No.	Item No.	Description	Pcs.	No.	Item No.	Description	Pcs.
1	L32E23.20.00	Left Bracket	1	12	30317000010	Spring L32B-02.03.00.00.02	1
2	L32B-02.03.00.00.01-01	Sprocket	1	13	L32C.23.00.21	Housing	1
3	30329000000	Swivel Bolt GN212.3-28-M12-E	1	14	30301210048	Bolt M6X12DIN6921	2
4	30301221006	Washer M12DIN125A	1	15	30301240084	Nut M10DIN6923	6
5	L32E23.30.00	Right Bracket	1	16	L32GEB22.00.00	Support handle L32GEB	1
6	30301210021	Bolt M10X35DIN 6921	4	17	30301240092	Nut M10DIN985	4
7	30301230035	Screw M6X25DIN912	8	18	L32GEB21.00.00-K	Frame	1
8	30301220013	Spring Washer M6DIN7980	8	19	30301210096	Bolt M10X35DIN 6921	6
9	L32E23.10.00	Handle support	1	20	30301240106	Nut M8DIN985	4
10	L32E20.00.13	Handle support plate	1	21	L32E20.00.08	Tank support	2
11	L32C.23.00.06	Screw	1	22	30301230027	Screw M8X25DIN7991	4

11.6 LAVINA® 32GEB WATER TANK

No.	Item No.	Description	Pcs.
1	A91.00.00.01-K	Water Tank A91	1
2	30316000001	Filter	1
3	30316000015	Nipple	1

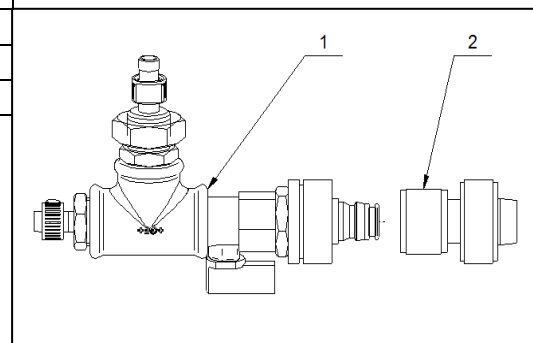


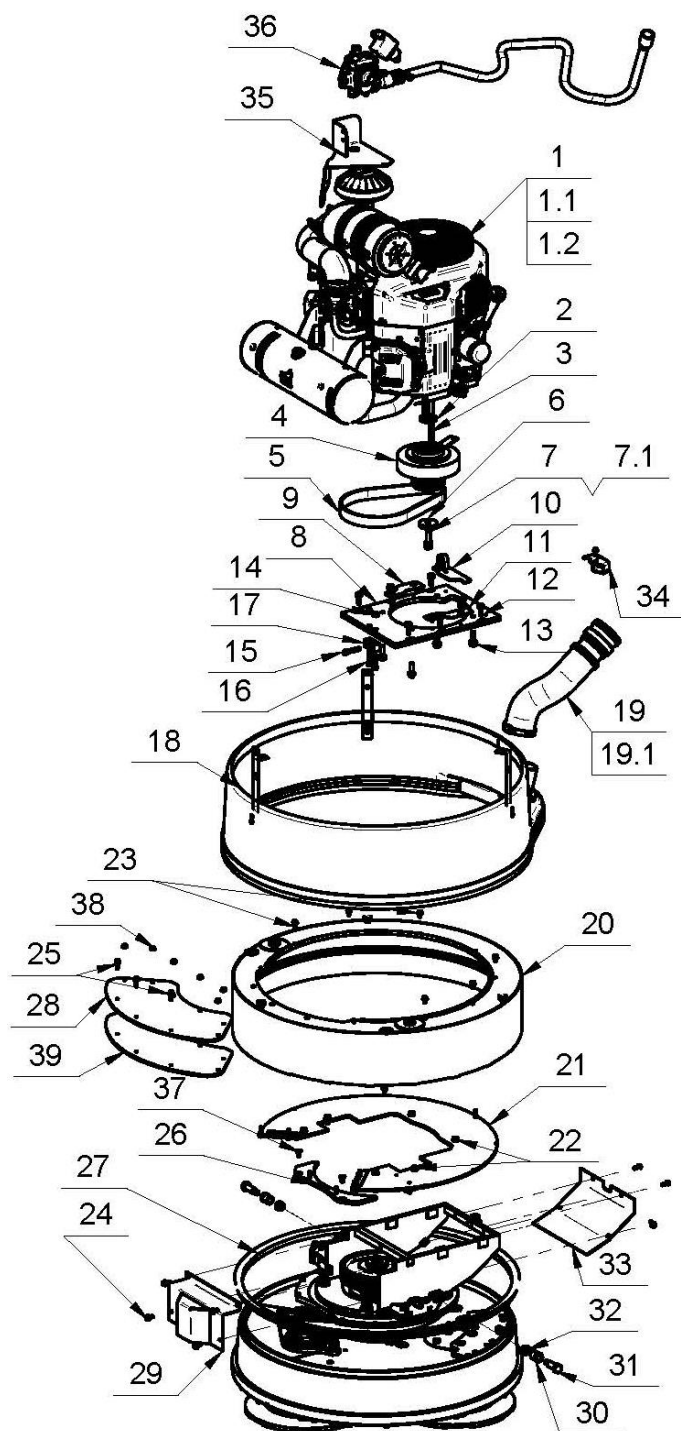
**11.7 LAVINA® 32GEB WATER INSTALLATION**

No.	Item No.	Description	Pcs.
1	A92.00.00	Internal water valve Assembly	1
2	A91.00.00	Water tank	1
3	A88.00.00	External water valve Assembly	1
4	MAR8.85	PE Tube	1
5	MAR8.40	PE Tube	1
6	MAR8.30	PE Tube	1

11.8 LAVINA® 32GEB EXTERNAL WATER VALVE

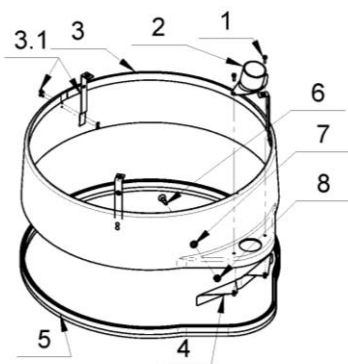
No.	Item No.	Description	Pcs.
1	A88.00.00-K	Water ball valve kit	1
2	30316000013	Quick-change nozzle	1



**11.9. LAVINA®32GEB TOP COVER AND MOTOR SUPPORT PARTS**

No.	Item No.	Description	Pc s.
1	FX1000V-BS00-S	Complete Engine Assembly	1
1.1	L32GE18.00.00	Cable harness engine to control board	1
1.2	L32GE10.40.00	Battery harness (engine section)	1
2	L32GE10.00.45	Clutch Washer	1
3	L32GX-10.00.67	Key	1
4	30313000537	Electric Clutch	1
5	30308000147	Timing Belt HL8248MHL30	1
6	L32GX-10.00.44	Bearing retainer	1
7	BHEX-7/16-20X1-3/4	Bolt BHEX-7/16-20X1-3/4	1
7.1	WHEX-7/16-WASHER01	Spring Washer WHEX-7/16	1
8	L32GX-10.00.42	Engine Base Plate	1
9	L32GX-10.00.48	Right cover L32GX	1
10	L32GE10.00.51-K	Rear right cover L32GE	1
11	L32GX-10.00.49	Left cover L32GX	1
12	30301210038	Bolt M8X25DIN6921	6
13	SAB-3/8-16X1-1/4	Bolt SAB-3/8-16X1-1/4	4
14	30301240095	Nut M8DIN6923	4
15	30301230112	Bolt M8X45DIN912	1
16	30301230043	Bolt M8X35DIN912	2
17	L32GX-10.00.43	Tensioning Device Support	1
18	L32EB10.70.00	Gard Assembly	1
19	L32E10.03.00	Vacuum Hose	1
19.1	D76X350PU	Soft Vacuum Hose	1
20	L32EB19.00.00	Top Cover Assembly	1
21	L32GE10.06.00	Rear Top Cover Base Set	1
22	30301210072	Bolt M8X16DIN6921	6
23	30301210048	Bolt M6X12DIN6921	6
24	30301210051	Bolt M6X16DIN6921	10
25	30301210117	Bolt M6X20DIN6921	3
26	L32E10.00.24-2-K	Front Top Cover Base L32E-2	1
27	30302000046	V-Ring Type A	1
28	L32E10.00.28-2	Inspection Cover L32E-2	1
29	L32GX-10.06.00	Front Guard	1
30	L32E10.00.23	Bush	2
31	L32-00.00.00.00.02	Bolt	2
32	30301240134	Nut M12DIN6923	2
33	L32GX-10.00.50	Rear Guard	1
34	L32GE10.30.00	O clutch support	1
35	L32GE10.00.75	Regulator Carrier	1
36	30313000098	Regulator set L32GE42.00.00	1
*36	L38GRE42.00.00	Regulator set	1
37	30301230056	Screw M8x16DIN7991	2
38	30301240098	Nut M6DIN6923	7
39	L32E10.00.29-2	Sealer Inspection Cover L32E-2	1

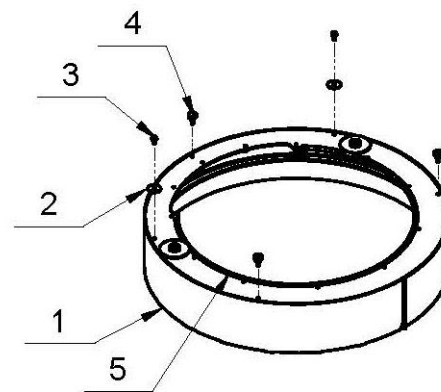
*36 FOR MACHINES FROM SERIAL NUMBER NO2312L3213gebi2001. REPLACES POS. 36 L32GE42.00.00 AS SPARE PART.

**11.10 LAVINA® 32EB GUARD ASSEMBLY**

No.	Item No.	Description	Pcs.
1	30301210117	Bolt M6X20DIN6921	2
2	L32E10.71.00	Vacuum Port L32E	1
3	L32EB10.70.01-K	Guard set	1
3.1	L32E10.73.00-K	Limitary tape set	3
4	L32E10.72.00	Bottom Vacuum Port	1
5	FBL1350-2780	Brush	1
6	L25GEB10.70.02	Nozzle L25GEB	1
7	30301221006	Washer M12DIN125	1
8	30301240111	Nut M12DIN985	1

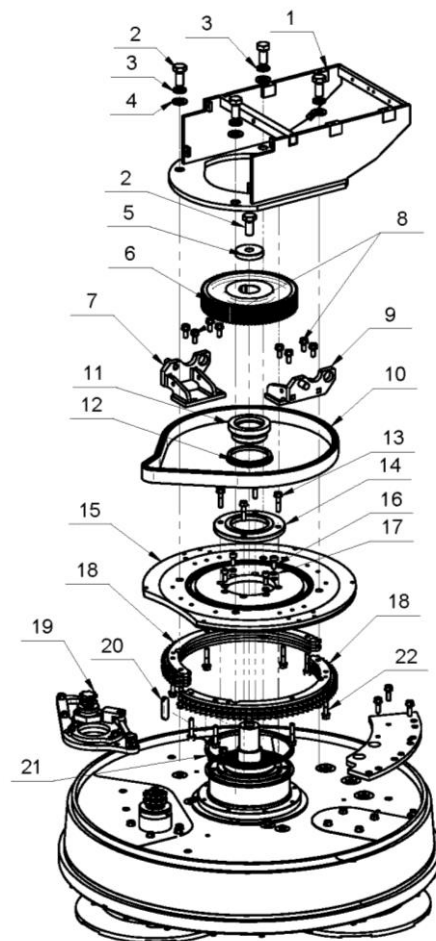
11.11 TOP COVER L32EB

No.	Item No.	Description	Pcs.
1	L32EB19.10.00-K	Top Cover	1
2	30301221022	Washer D35x1.4	2
3	30301210051	Bolt M6X16DIN6921	2
4	30329000041	Knob Bolt M6X16	3
5	L32E19.00.11	Sealer	1

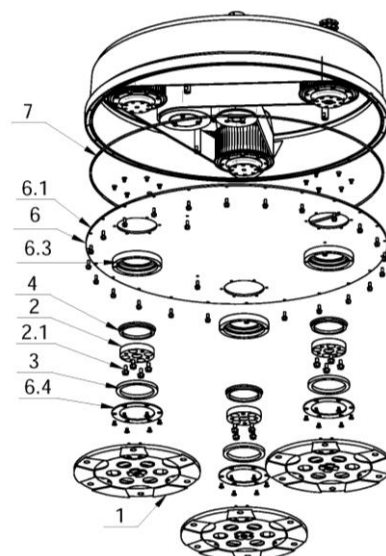


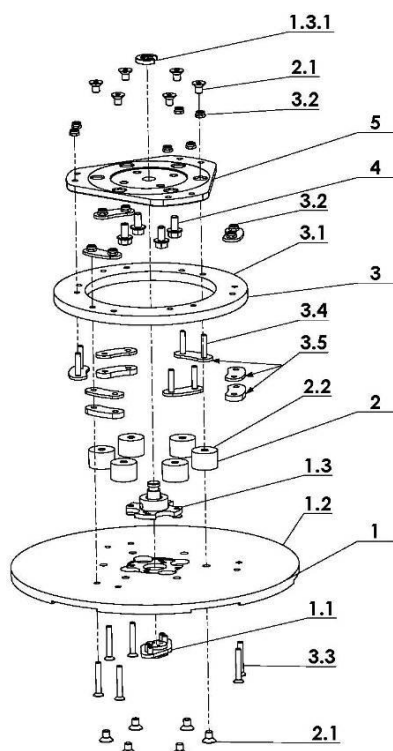
11.12 LAVINA® 3213GEB PLANETARY CHAIN PARTS

No.	Item No.	Description	Pcs.
1	L32GX-11.40.00	Motor support assembly	1
2	30301210019	Bolt M16X35DIN933	5
3	30301220006	Spring Washer M16DIN127B	4
4	M16DIN125A	Washer M16DIN125A	4
5	L32X-11.00.10	Washer End	1
6	L32GX-11.00.35	Pulley unit	1
7	L32GE10.03.00	Right support 2 L32GE	1
8	30301210031	Bolt M8X20DIN6921	8
9	L32GE10.04.00	Left support 2 L32GE	1
10	08B-2-96	Chain	1
11	L32GX-11.00.33	V-Ring Support	1
12	30302000005	V-Ring Type A	1
13	30301210032	Bolt M8X35DIN6921	4
14	L32GE11.00.32	Cap flange VLC L32GE	1
15	L3213E11.20.01	Supporting disc L3213E	1
16	30301230087	Screw M8X20DIN912	4
17	30301220022	Spring Washer M8DIN7980	4
18	L3213E11.30.00	Planetary Chain ring Set	2
19	L3213E17.00.00	Planetary tensioning unit	1
20	30301260073	Key 12x8x50	1
21	30302000007	V-Seal TWVL01700	1
22	30301210092	Bolt M8X40DIN6921	10

**11.13 LAVINA® 3213GEB BOTTOM COVER PARTS**

No.	Item No.	Description	Pcs.
1	A64.00.00	Tool Holder A64	3
2	A42.03.00	Adaptor	3
2.1	30301210072	Bolt M8x16DIN6921	4
3	30309000000	Felt Ring	3
4	30302000005	V-Ring Type A	3
5	30301210051	Bolt M6x16DIN6921	24
6	L3213E10.08.00	Bottom Cover Assembly	1
6.1	L3213E10.08.01	Bottom Cover	1
6.2	30301230017	Screw M6X10DIN7991/10.9/	36
6.3	L25LS-14.00.02	Flange	3
6.4	L25LS-14.00.03	Outer Cover	3
7	D4X2X2500	Seal	1

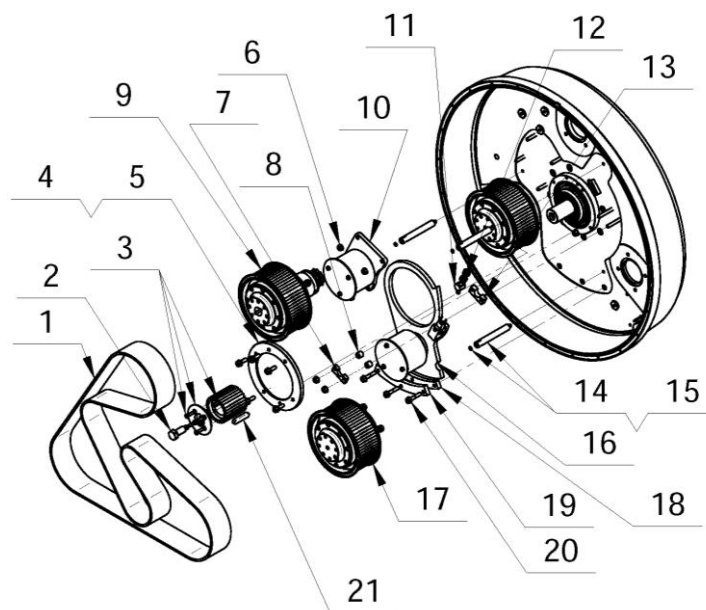


**11.14 LAVINA®3213GEB TOOL HOLDER PARTS /SEE ALSO FIG.8.4.13/**

No.			Item No.	Description	Pcs.
1			A64.10.00	Quick Change Assembly	1
	1.1		A63.12.00	Keylock Set	1
	1.2		A43.11.00	Quick Change plate	1
	1.3		A41.12.00	Security set	1
		1.3.1	A41.00.05	Washer A41	1
2			A25.00.10-K	Buffer with two screw	6
	2.1		30301230161	Screw M8X12DIN7991/10.9/	12
	2.2		A25.00.10	Buffer	6
3			A41.20.03-K	Driving Set A41	1
	3.1		A41.20.03	Elastic Element	1
	3.2		30301240124	Self Locking Nut M6DIN980V	12
	3.3		30301230131	Screw M6X40DIN7991/10.9/	6
	3.4		30301230123	Screw M6X30DIN7991/10.9/	6
	3.5		A41.21.00	Set of plates	1
4			30301210072	Bolt M8x16DIN6921	4
5			A41.20.01	Flange	1

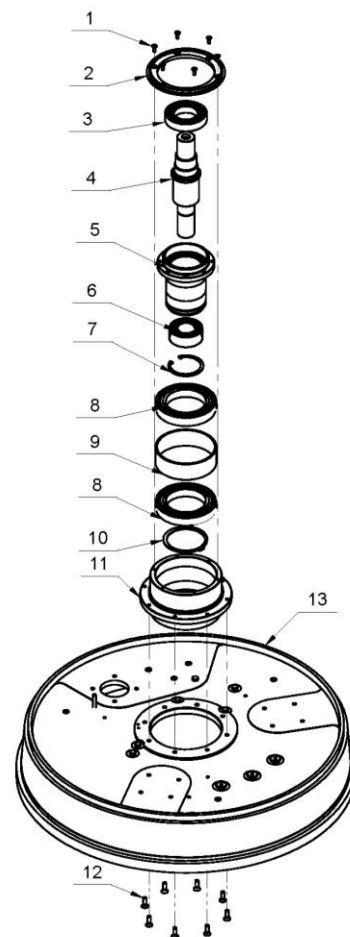
11.15 LAVINA® 3213GEB TRANSMISSION BELT PARTS

No.	Item no.	Description	Pcs.
1	30308000148	Timing Belt 28008MHL70	1
2	30301210019	Bolt M16X35DIN933	1
3	L32RE11.10.00	Central Pulley Assembly	1
4	30301210038	Bolt M8x25DIN6921	6
5	L38GS-10.00.04	Cap	1
6	30301240095	Nut M8DIN6923	2
7	L25L-10.00.07	Support	1
8	L25L-10.00.08	Washer	2
9	L3213E13.00.00	Driving Pulley Unit	1
10	L3213E15.00.00	Deflection Pulley	1
11	L32C-14.20.04	Nut	1
12	30301240099	Nut M10DIN934	2
13	L38G-10.00.07	Support	1
14	30302000105	O-Ring 6x2	3
15	L32D-10.00.02	Distance Bolt	3
16	L3213E14.00.00	Tensioning Support	1
17	L3213E12.00.00	Pulley Unit	2
18	L38G-10.00.05	Sector 1	1
19	L38G-10.00.06	Sector 2	1
20	30301210092	Bolt M8x40DIN6921	1
16	30301260069	Key12x8x56	1

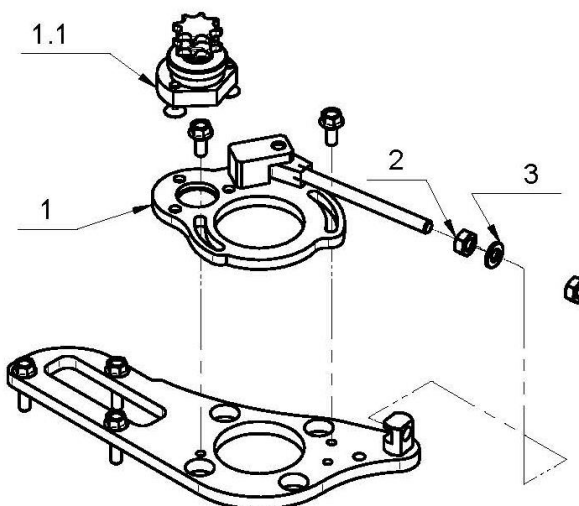
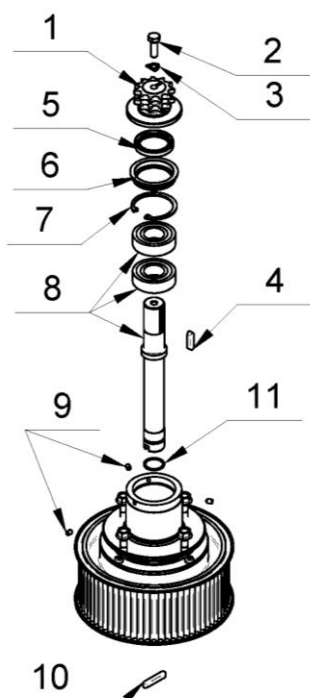


11.16 LAVINA® 3213GEB CENTRAL SHAFT BEARING PARTS

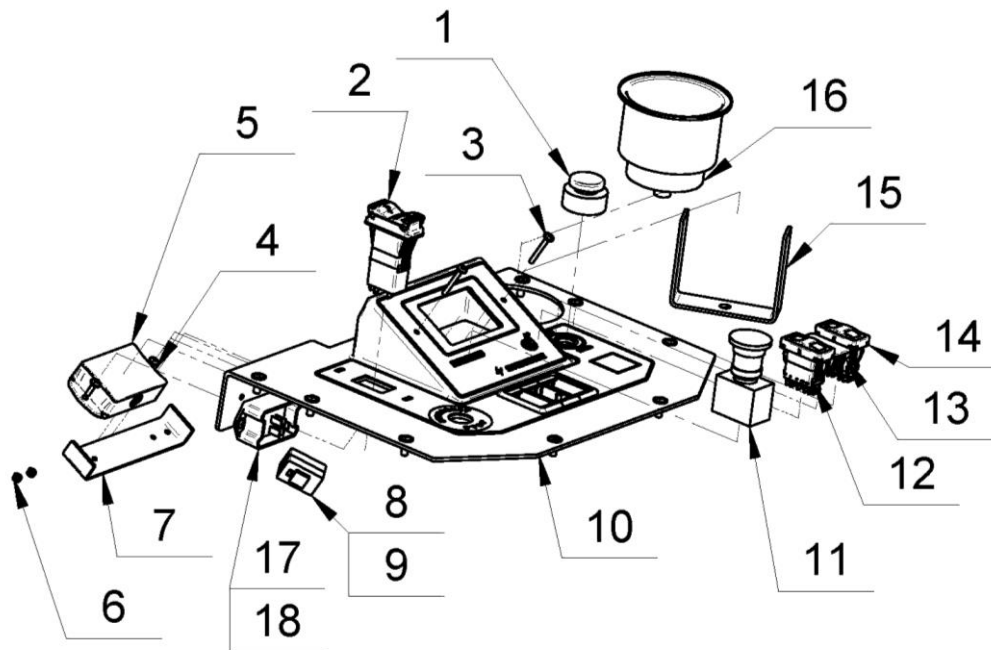
No.	Item No.	Description	Pcs.
1	30301230002	Screw M6X16DIN7991	6
2	L32D-11.00.03	Cap	1
3	30303000053	Roller Assembly 6211	1
4	L32GE11.00.05	Shaft	1
5	L32D-11.00.02	Central bushing L32D	1
6	30303000009	Roller Assembly 3208	1
7	30301250017	Retaining Ring A80DIN472	1
8	30303000008	Roller Assembly 6019	2
9	L32D-11.00.04	Spacer	1
10	30301250018	Retaining Ring B95DIN471	1
11	L32D-11.01.00	Housing	1
12	30301230027	Screw M8X25DIN7991	8
13	L3213E11.00.06-K	Disc	1

**11.17 LAVINA® 3213GEB DRIVING PULLEY UNIT PARTS**

No.	Item No.	Description	Pcs.
1	L3213E13.30.00	Drive chain pulley	1
2	30301210002	Bolt M8X25DIN933	1
3	L32X-13.00.25	Security washer	1
4	30301260082	Key6X6X25	1
5	30302000042	Seal ring TRAA00350	1
6	L32GX-13.00.12	Cap	1
7	30301250007	Retaining Ring A52DIN472	1
8	L38GRX-13.00.06-R1-K	Shaft Assembly	1
9	30301230141	Screw M5X8DIN914	3
10	30301260051	Key6X6X36	1
11	30302000108	O-Ring 21x2	1

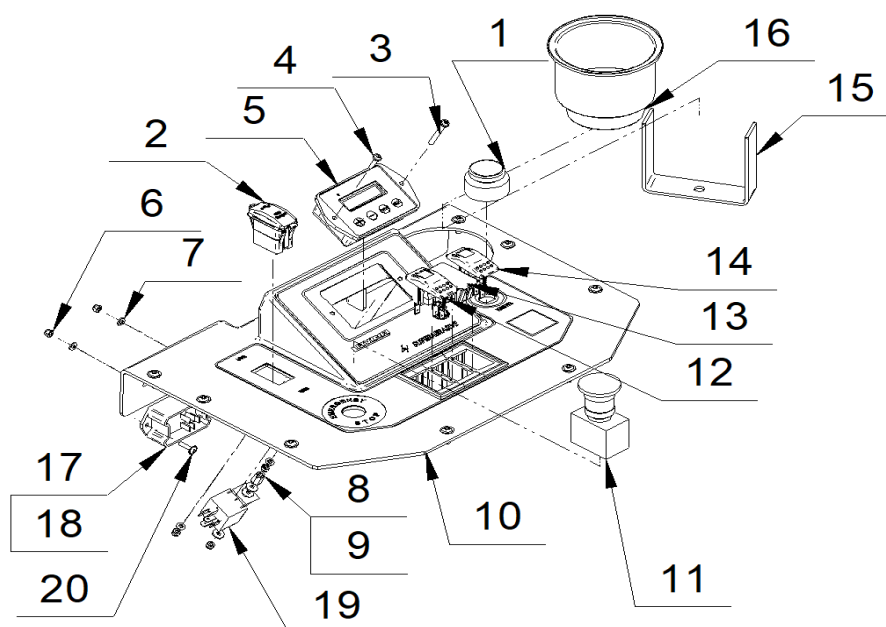
**11.18 LAVINA® 3213EB PLANETARY TENSIONING UNIT**

No.	Item No.	Description	Pcs.
1	L3213E17.20.00	Tensioning Support	1
1.1	L3213E17.21.00-K	Tensioning chain sprocket	1
2	30301240099	Nut M10DIN 934	2
3	30301221005	Washer M10DIN125A	1



11.19.1 LAVINA®32GEB CONTROL BOARD PARTS

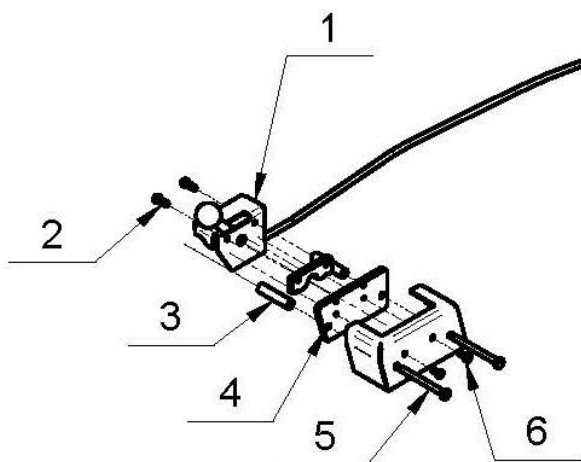
No.	Item No.	Description	Pcs.	No.	Item No.	Description	Pcs.
1	30313000069	Start Switch	1	10	L32GE24.00.01-2-K	Control board assembly kit	1
2	30313000173	USB charger	1	11	30311000719-K	Emergency stop button	1
3	30301230275	Screw M4x35DIN967	2	12	30313000072	Clutch Switch	1
4	30301230066	Screw M4x12DIN967	2	13	30313000090	Panel hole plug	1
5	GT-EM40	Complete Monitor Assembly	1	14	30313000074	Light Switch	1
6	30301240114	Nut M4DIN985	4	15	L20GX-40.20.03	Clamp	1
7	L32GE24.00.02	Clamp mounting	1	16	30350000045	Cup holder	1
8	30311000753	Fuse Holder	1	17	L32GE24.20.00	Control board harness	1
9	30313000253	Fuse	1	18	30313000538	Soft start controller	1



11.19.2 LAVINA®32GEB CONTROL BOARD PARTS SA CONTROLLER

for machines from serial number No2312L3113GEBI2001

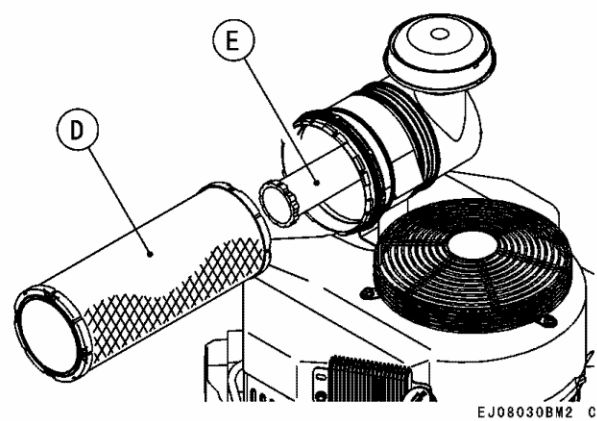
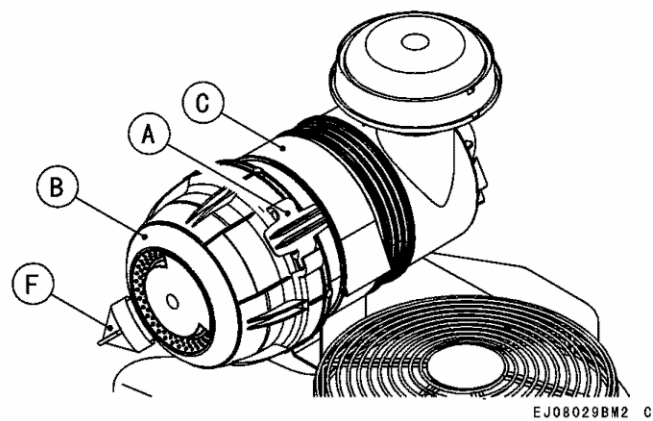
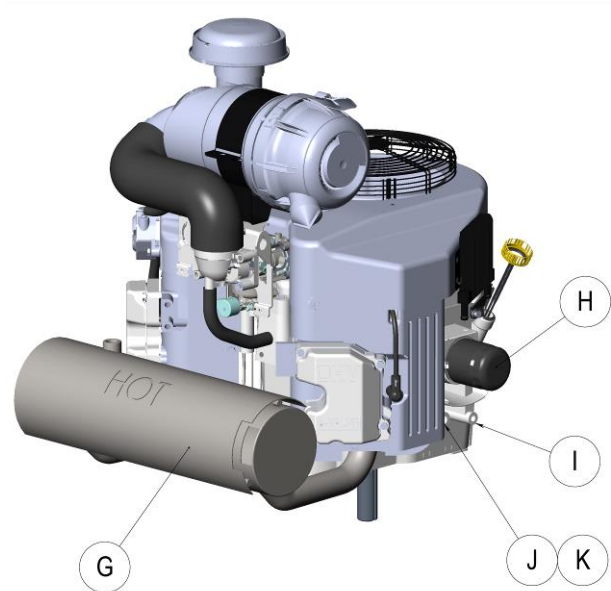
No.	Item No.	Description	Pcs.	No.	Item No.	Description	Pcs.
1	30313000069	Start Switch	1	11	30311000719-K	Emergency stop button	1
2	30313000173	USB charger	1	12	30313000072	Clutch Switch	1
3	30301230036	Screw M4x40 ISO 7380 F	1	13	30313000090	Panel hole plug	1
4	30301230302	Screw M4x20 ISO 7380 F	1	14	30313000074	Light Switch	1
5	A97.00.00-3	EMC-SA LPG controller-3	1	15	L20GX-40.20.03	Clamp	1
6	30301240114	Nut M4DIN985	5	16	30350000045	Cup holder	1
7	30301221001	Washer M4DIN125A	4	17	L32GEB24.10.00-1	Control board harness	1
8	30301221010	Washer M4DIN9021	3	18	30313000538	Soft start controller	1
9	30301240005	Rivet nut M5	1	19	30311000498	Automotive relay	1
10	L32GE24.00.01-2-SA-K	Control board assembly kit SA	1	20	30301230064	Screw M4x16DIN967	2



11.20 LAVINA® 32GEB THROTTLE CABLE ASSEMBLY

No.	Item No.	Description	Pcs.
1	30313000054	Throttle CABLE	1
2	30301210109	Bolt M5x14DIN933	2
3	L32GE25.00.04	Distance Bush	2
4	L32GE25.00.02	Throttle base plate	1
5	30301210085	Bolt M6x65DIN933	2
6	30301210007	Bolt M5x10DIN933	2

11.21 LAVINA® 32GEB ENGINE PARTS			
No.	Item No.	Description	Pcs.
		Kawasaki FX1000V-BS00-S	1
A		Retaining clamps	2
B	11011-7050	Cap - AIR FILTER	1
C	11011-7047	Case-AIR FILTER	6
D	11013-7044	Primary Element -AIR FILTER	1
E	11013-7045	Secondary Element -AIR FILTER	1
F	11065-7008	Cap	1
G	FX 921V-11.00.00	Cat Muffler Asseby	1
H	49065-7010	Oil Filter	1
I	W1325	Oil Pressure Switch	1
J	K59071-7004	Joint	1
K	FE17409029909	Oil Drain Valve	1



12.EMISSION CONTROL WARRANTY STATEMENT**CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT YOUR WARRANTY RIGHTS AND OBLIGATIONS**

The California Air Resources Board and Superabrasive Inc. are pleased to explain the emissions control system warranty on your 2016 small off-road engine (SORE). In California, new SORE must be designed, built and equipped to meet the State's stringent anti-smog standards. Superabrasive Inc. must warrant the emission control system on your SORE for the period of time listed below provided there has been no abuse, neglect or improper maintenance of your SORE.

Your emission control system may include parts such as the carburetor, fuel-injection system, the ignition system, catalytic converter, fuel tanks, fuel lines, fuel caps, valves, canisters, filters, vapor hoses, clamps, connectors, and other associated emission-related components.

Where a warrantable condition exists, Superabrasive Inc. will repair your SORE at no cost to you including diagnosis, parts and labor.

MANUFACTURER'S WARRANTY COVERAGE

The emission control system is warranted for 2 years. If any emission-related part on your equipment is defective, the part will be repaired or replaced by Superabrasive Inc.

OWNER'S WARRANTY RESPONSIBILITIES

As the small off-road engine (SORE) owner, you are responsible for the performance of the required maintenance listed in your owner's manual. Superabrasive Inc. recommends that you retain all receipts covering maintenance of your SORE engine, but Superabrasive Inc. cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the SORE owner you should however be aware that Superabrasive Inc. may deny your warranty if your SORE or its part has failed due to abuse, neglect, improper maintenance or unapproved modification.

You are responsible for presenting your utility equipment engine to a Superabrasive Inc. distribution center as soon as the problem exists. The warranty repairs should be completed within a reasonable amount of time, not to exceed 30 days. If you have any questions regarding your warranty rights and responsibilities, you should contact Superabrasive Inc. at 1-(800)-987-8403 or by e-mail at info@superabrasive.us

Superabrasive Inc
9411 Jackson trail Rd
Hoschton, GA
USA, 30548

GENERAL EMISSIONS WARRANTY COVERAGE

Superabrasive Inc. warrants to the ultimate purchaser and each subsequent purchaser that the equipment is:

Designed, built and equipped so as to conform with all applicable regulations; and

Free from defects in materials and workmanship that cause the failure of a warranted part to be identical in all material respects to that part as described in Superabrasive Inc. application for certification.

The warranty period begins on the date the equipment is delivered to an ultimate purchaser or first placed into service. The warranty period is two years.

Subject to certain conditions and exclusions as stated below, the warranty on emission-related parts is as follows:

(1)Any warranted part that is not scheduled for replacement as required maintenance in the written instructions supplied, is warranted for the warranty period stated above. If the part fails during the period of warranty coverage, the part will be repaired or replaced by Superabrasive Inc. according to subsection (4) below. Any such part repaired or replaced under warranty will be warranted for the remainder of the period.

(2)Any warranted part that is scheduled only for regular inspection in the written instructions supplied is warranted for the warranty period stated above. Any such part repaired or replaced under warranty will be warranted for the remaining warranty period.

(3)Any warranted part that is scheduled for replacement as required maintenance in the written instructions supplied is warranted for the period of time before the first scheduled replacement date for that part. If the part fails before the first scheduled replacement, the part will be repaired or replaced by Superabrasive Inc. according to subsection (4) below. Any such part repaired or replaced under warranty will be warranted for the remainder of the period prior to the first scheduled replacement point for the part.

(4)Repair or replacement of any warranted part under the warranty provisions herein must be performed at a warranty station at no charge to the owner.

(5)Notwithstanding the provisions herein, warranty services or repairs will be provided at all of our distribution centers that are franchised to service the subject engines or equipment.

(6)The SORE owner will not be charged for diagnostic labor that is directly associated with diagnosis of a defective, emission-related warranted part, provided that such diagnostic work is performed at a warranty station.

(7)Superabrasive Inc. is liable for damages to other engine or equipment components proximately caused by a failure under warranty of any warranted part.

(8)Throughout the SORE warranty period stated above, Superabrasive Inc. will maintain a supply of warranted parts sufficient to meet the expected demand for such parts.

(9) Any replacement part may be used in the performance of any warranty maintenance or repairs and must be provided without charge to the owner. Such use will not reduce the warranty obligations of Superabrasive Inc.

(10) Add-on or modified parts that are not exempted by the Air Resources Board may not be used. The use of any non-exempted add-on or modified parts by the ultimate purchaser will be grounds for disallowing a warranty claim. Superabrasive Inc. will not be liable to warrant failures of warranted parts caused by the use of a non-exempted add-on or modified part.

WARRANTED PARTS

The repair or replacement of any warranted part otherwise eligible for warranty coverage may be excluded from such warranty coverage if Superabrasive Inc. demonstrates that the SORE has been abused, neglected, or improperly maintained, and that such abuse, neglect, or improper maintenance was the direct cause of the need for repair or replacement of the part. That notwithstanding, any adjustment of a component that has a factory installed, and properly operating, adjustment limiting device is still eligible for warranty coverage. The following emission warranty parts are covered:

- (1) Catalytic converter
- (2) Fuel system: Carburetor, pressure regulator and fuel lock off
- (3) Ignition system
- (4) Intake system including pre-filter
- (5) Exhaust manifold