LAVINA® 13G-X
User Manual

SUPERABRASIVE

Tech Suppo ine: 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® X 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 contiguous 48 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 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® X MACHINES

The Lavina® X 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.

1. GENERAL INFORMATION

This owner's manual is intended for the operator of the Lavina® 13G-X machine, the servicing technician as well as for anyone 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® 13G-X 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® 13G-X machine is intended for grinding, polishing and buffing concrete, marble, granite, limestone and terrazzo surfaces with diamond tools.
The Lavina® 13G-X is a one-disc machine.
The Lavina® 13G-X is intended to grind/polish edges, corners or difficult to reach surfaces. Additionally, the machine could be used for grinding wood floor surfaces.
For best results, use only tools manufactured or recommended by Superabrasive and its distributors.

⚠ WARNING The Lavina®13G-X 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®13G-X is made so it can grind/polish surfaces, where bigger machines have difficulties to reach.

Figu Figure 1.2

MAIN DESIGN

Main Head has 3 fixed working positions – forward, left 45° and right 45° for working close to walls.

The inclination of the main head is adjusted crosswise and lengthwise to 4° (Fig. 1.1)

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

Control Board (fig.1.2) Throttle control lever and digital /RPM/workings hours indicator

The motor is mounted on the base plate. The motor is driving the grinding head with a belt system.

ENVIRONMENTAL CONDITIONS

The temperature range for operating the Lavina®13G-X outdoors is between 41°F and 86°F or 5°C and 30°C. Never use the Lavina®13G-X 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 handle. The Lavina®13G-X 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 50.8 mm and can be glided over the pipe. The vacuum dust extractor must be adapted for floor grinders and have a minimum air displacement of 300m3/h with a negative vacuum of 21 kPa.

TECHNICAL DATA

	Lavina® 13GX	
Engine	Kawasaki FJ180V KAI with manual start	
Capacity Of Engine	**179cm³**	**10.9 cu. In.**
Power	**4,1 kW**	**5.5 hp**
Tool holder rpm	**525-900 rpm**	
Engine rpm	**2100-3600 rpm**	
Working width	**335 mm**	**13,2”**
Tool holder diameter	**335 mm**	**13,2”**
Tool diameter	**335 mm**	**13,2”**
Weight	**119 kg**	**262,4 lbs**
Grinding pressure	**33 kg**	**73 lbs**
Additional weight	**-**	**-**
Application	**dry**	
Vacuum hose port	**50,8 mm**	**2”**
Capacity propane tank	**9 kg**	**20 lbs**
Machine LxWxH	**1208x599.5x917 mm**	**47.6”x23.6” x36.1”**
Packing LxWxH	**1410x730x1100 mm**	**55.5”x28,7”x43.3”**

VIBRATIONS

The vibrations of the machine are within the limits of directives and harmonized standards from the European Union when the Lavina®13G- X is operated with the recommended tools and in normal conditions.

SONOROUS EMISSIONS

The sonorous emissions are within the limits of directives and harmonized standards from the European Union when the Lavina® S 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 and kW (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 INSTRUCTION

RECOMMENDED USE

⚠ WARNING

The LAVINA® 13G-S 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 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

⚠ WARNING

The machine MUST NOT be used:

- For applications different from the ones stated in the General Description chapter.
- 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:

⚠ WARNING

- 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 mounted on 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

⚠ WARNING

- The machine is equipped with several protection devices including the following:
- 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

⚠ WARNING

- Functions of arresting of the machine are following:
  - **Throttle** Pull the lever of the throttle back to reduce strongle the revolutions of the engine. At the anpositions of throttle lever engine stops.
  - Close the propane tank valve

SAFE USE

⚠ WARNING

- The LAVINA® 13G-S 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
  - Training Risks due to lack of operational training

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)
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)
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 ⚠ WARNING

- **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 NPFA 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, 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 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.
- Perform general daily inspections of the machine and inspect the machine before each use.
- Always inspect the safety devices:
- The tool protector must be working
- Mount the security disc when working with Quickchange Pads.
- 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!

OPERATING MACHINE

⚠ WARNING

- When operating the Lavina® 13G-S , 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.
- Always wear ear protectors 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 dectector tubes
   DRAGER gas sampling system with YB-4620 Drager detective tubes
   GAS-TECH Model CO-95
   ENERAC POCKET 60: Manufactured by Energy Efficiency System
2) ENGINE EXHUAST 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 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 machine.
- The operator must have floor grinding experience.
- The operator must know what to do in case of emergency.
- The operator must have an adequate technical knowledge and preparation.
- 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 20 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 20 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 20-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 20 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%, which is about 4” (10 cm) from the top of the cylinder, 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 -44º F (-42º 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 ⚠ WARNING

- 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

3. OPERATION

PRELIMINARY CONTROLS

Inspect the working area as explained in the safety instructions. For dry use connect the vacuum extractor and ensure that the vacuum hose is clear and it will follow the machine easily.

Figure 3.1

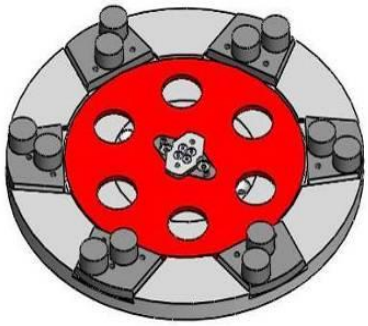


Figure 3.2

Figure 3.3

MOUNTING TOOLS

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: Secure always the"Quickchange" pads with the security plate (Fig.3.1), lock the butterfly completely (90 degrees) with the tool holder key (Fig.3.2). Diamond tools with Velcro are attached on foam plate of 13,2 inch(Fig.3.3). The foam plates are mounted on the key lock (butterfly).Always use the tool holder key (Fig.3.3).

LEVELING AFTER MOUNTING THE TOOL

On top of the base plate is mounted a water level (Fig. 3.4). Designed to establish the good working position of the tools and adjusted by the operator in the different ranges:

Turn left and right on 45° by releasing the screw handle (Fig. 3.4)

Figure 3.4

Figure 3.5

Figure 3.6

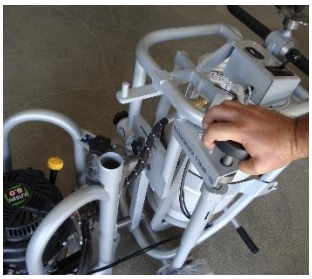


Figure 3.7

Tilt crosswise to the left and to the right to 4° - release the screw handle (Fig. 3.5)

Using the handle (Fig 3.6) and guided by the index line and the levelling put the operating part in the desired crosswise position and screw the handle (Fig 3.5)

Using the vertical screw (Fig 3.7) and guided by the leveling adjust the operating part to flat position or find the required lengthwise tilt (forward or backward).

ADJUSTING HANDLE


Figure 3.8


Figure 3.9

Unscrew the handle (Fig. 3.8) till it reaches the ager (Fig. 3.9). Pull up the ager (Fig. 3.9) and turn the handle to the desired position.

TOOL PROTECTING GUARD

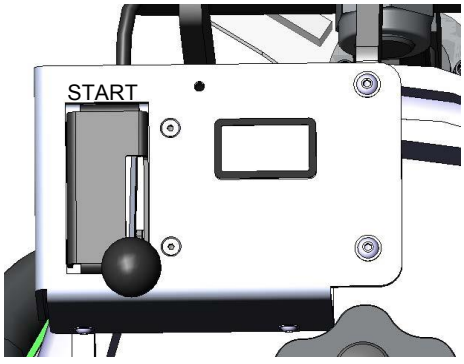
The protecting guard has free movement and is self-adjusting according to the height of the tool abrasion and is turning in the range of 45˚clockwise or anti clockwise following the wall (Fig 3.11). The height of the brush is adjusted only when using the Foam plate (Fig.4.3). The adjustment is made by unscrewing the bolts on the side of the guard (Fig 3.12) and pulling out the brush to the desired position.


Figure 3.11


Figure 3.12


Figure 3.13

The plastic rolls on the protecting guard serve to protect the wall from damages (Figure 3.11). By moving the roll in the hole (Figure 3.13) can be adjusted the distance of the working tool to the wall.



THE CONTROL BOARD

1 Throttle control lever Controls engine

2 Digital RPM/workings hours indicator When the motor runs it indicates the revolutions per minute of the motor, see the conversion table to know the rpm of the tools. When the motor does not run, it indicates the worked hours.

STARTING THE MACHINE

1. Check engine oil level.
2. Check engine air filter.
3. Open the propane tank valve one and a half turns counter clockwise.
4. Turn Emergency Stop clockwise to make sure it is in the up position.
5. Move throttle to "Start" position (farthest forward).
6. Press primer on the propane regulator no more than one second. (Located on the engine side of regulator)
7. Slowly pull the recoil starter handle until resistance is felt.
8. Pull recoil starter handle quickly to start engine. Repeat until engine starts.
9. Slowly return the recoil starter handle.
10. Let engine idle in "Start" position for ten to fifteen seconds to warm the engine before moving throttle to desired speed.

Notes. When moving throttle from ''Start" to ''Idle" the clutch may engage. It is recommended to tilt machine back when doing so. Move throttle slowly to prevent engine from stalling. Steps 6 and 10 may not be necessary after engine is warm. Using primer on the regulator longer than one second will flood engine and will fail to start.

OPERATING THE MACHINE

Guide the machine in straight lines across the floor, and with each new line overlap a little bit of the previously completed surface. 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 LAVINA® 13G-X machine in one spot while the tools are still working because they will leave marks on the floor surface. Check the floor surface periodically to ensure that dust is not accumulating on the surface, also check regularly if your vacuum works properly.

STOPPING THE MACHINE

The stopping of the machine must be done gradually until the motor stops. Do not stop moving the machine before arresting the clutch as the tools could damage the surface. Pull the Throttle control lever in STOP position, then close (clockwise) the service valve on the propane tank. ALWAYS allow the engine to run until it stops from lack of fuel. Disconnect the fuel line from the tank.

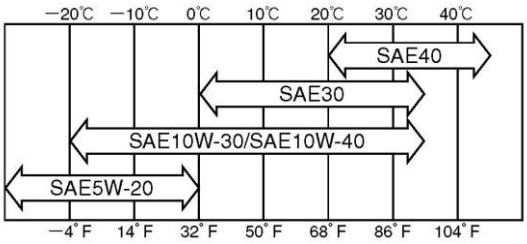
REMEMBER, when you are finished with the machine, store the propane tank outside the building, in a **SECURE** place away from heat or direct sunlight. Remember not to hold the machine in one spot before turning off until the grinding plates stop moving.

ENGINE OIL

The following engine oils are recommended. API Service Classification : SF, SG, SH, or SJ.

OIL VISCOSITY

Choose the viscosity according to the temperature as follows: (fig. 3.__)



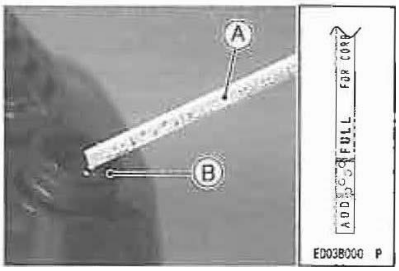
NOTE: Using multi grade oils (5W-20, 10W-30, and 10W-40) will increase oil consumption. Check oil level more frequently when using them.

ENGINE OIL CAPACITY

Without oil filter	0.65 L (0.69 U.S.qt)
With oil filter	When changing oil filter 0.85 L (0.90 U.S.qt)
	New engine and without changing oil filter

Check the engine oil level daily before the engine starting otherwise shortage of the engine oil may cause serious damage to the engine such as seizure.

• Place the engine (equipment) on level surface. Clean area around the oil gauge before removing it.
• Remove the oil gauge (A) and wipe it with clean cloth.
• Pour the oil slowly to 'FULL' mark on the oil gauge.
• Insert the oil gauge into the oil filler (8) WITHOUT SCREWING IT IN.
• Remove the oil gauge to check the oil level. Level should be between' ADD' and "FULL" marks. Do not overfill.
• Install and tighten the oil gauge.



4. TOOLS AND ACCESSORIES

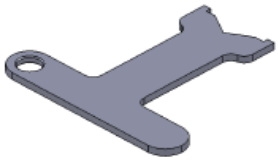


Figure 4.2

TOOL HOLDER KEY

The tool holder key (Fig.4.2) is used for adjusting, mounting and dismounting of the foam plates. Always use the key for mounting.

Item number is A03.00.00.00

FOAM PLATE

Diamond tools with Velcro are mounted on the foam plate 13.5“(Fig.4.3).

The foam plate is mounted on the “QuickChange”System.

Item number is LV-FP-13.5-S

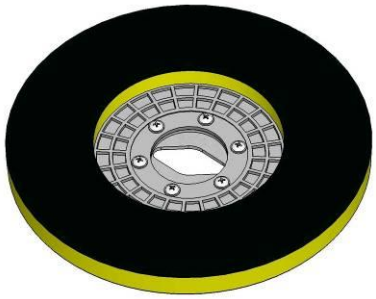


Figure 4.3

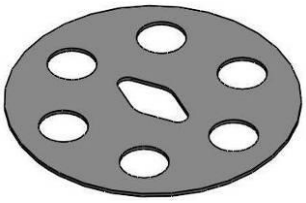


Figure 4.4

SECURITY PLATE FOR QUICKCHANGE PADS

Plate (Fig.4.4) used to ensure the “Quickchange” pads.

Item number is A38.00.02

5. POPULAR TOOLS

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

6. MAINTENANCE AND INSPECTION

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, vacuum hoses, water tank and the Propane installation.

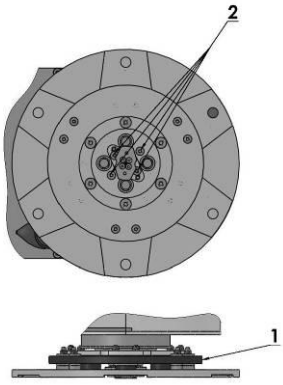


Figure 7.1

CHECK DAILY

After operating the Lavina® X machine, 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 bolt or screws.

Tool holders: Buffers and elastic element are consumables and must be visually checked daily and replaced as needed. See that flanges or discs are mounted and locked well in place. The key lock holders (butterflies) should be also checked.

Check the rubber buffers and fixing of the holders. The flange holding the buffers (Fig.7.1-1) has to be firmly fixed to the unit. A gap seen here means that there are loose screws fixing the holder. The screws have to be tightened immediately for safe operation. Working with loose screws on the holder could badly damage the machine. Tightening force on the screws should be 22...25N.m(16...18 lbf.ft).

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

CHECK AND CLEAN EVERY 10 WORKING HOURS

Check air filter and clean with compressed air.

CHECK AND REPLACE AFTER THE FIRST 15 WORKING HOURS

Check the belt tension after 15 hours working with the machine.

For the correct tension, see TROUBLESHOOTING.

CHECK AND REPLACE EVERY 50 WORKING HOURS

Change engine oil, while changing check for leakage of engine oil at the various seals. Engine Oil Capacity" is 0.8 L(0.9US.qt) with oil filter. Change air filter with oil filter.

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, vacuum. Check the guard assembly. Make certain the wheels are clean and rotate properly. If there are defective control parts, they should be replaced immediately. Carefully inspect the seal rings and bearings of the grinding units, and replace any showing signs of excessive wear. For Propane safety, have the machine serviced by a **Certified Technician**, including emission check.

For more information, refer to chapter troubleshooting below.

CHECK EVERY 400 WORKING HOURS

Besides the checks of 200 working hours, open up the bottom cover like described in chapter "TROUBLE SHOOTING REPLACING BELT Check if sealers, belt and bearings are in good condition, change if needed. Beware by tensioning the belt not to "over tension"; the belt will never regain his original tension. 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.

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.

7. TROUBLESHOOTING

INDEX OF PROBLEMS AND SOLUTIONS

7.1 ENGINE

When troubles occur, be sure to check the simple causes which at first, may 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.

Some Troubles and solutions:

Surging idle

To smooth out the engines' idle characteristics, adjustment is provided by an idle screw on the lower right 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.

Figure 8.1.1

⚠ WARNING

CHANGING OIL

Hot engine oil can cause severe burns. Allow engine temperature to drop Irom hot to warm level belore draining and handling oil.

Change oil after first 8 hours of operation. Thereafter change oil every 50 hours.

- Run the engine to warm the engine oil. Note: Warm oil flows better and carries more contaminates.
- Stop engine, wait for all moving parts to stop.
- Remove the oil drain plug on side of the engine to drain oil into suitable container while the engine is warm.(Figure 8.1.1)
- Reinstall the oil drain plug.
- Remove oil gauge and refill with new oil (See point 3 operation engine oil).

OIL FILTER CHANGE

- Change the oil filter every 200 hours of operation.

⚠ WARNING Stop the engine and be carelul with hot oil drained.

- Drain engine oil to suitable containers. CAUTION: Belore removing the oil filter, place suitable pan under Iliter connection.
- Rotate the oil filter (A) counter clockwise to remove il.(Figure 8.1.2)
- Coat a film of clean engine 011 on seal of new filter.
- Install new filter rotating it clockwise until seal contacts mounting surface (B). Then rotate filter *3/4* turn more by hand.
- Supply engine oil as specified.
- Run the engine for about 3 minutes, stop engine, and check oil leakage around the filter.
- Add oil to compensate oil level down due to oil filter capacity

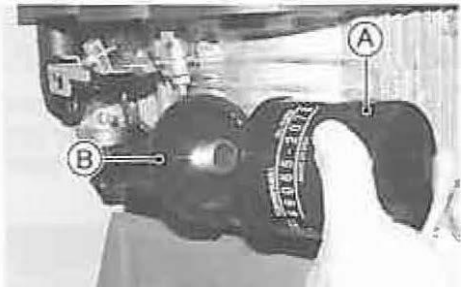


Figure 8.1.2

AIR FILTER CHANGE

Service Interval: Every 25 hours—Clean the foam pre-cleaner.
Every 300 hours— Replace the paper air filter. (May need more often in dusty conditions.)

Note: Do Not operate the engine without the air filter assembly; extreme engine damage will occur.

- Stop engine, wait for all moving parts to stop.
- Disconnect the wire from the spark plug
- Remove the cover(Fig.8.1.3_1) and clean it thoroughly.
- Remove the paper air filter (Fig.8.1.3_3) and discard it as required.
  Note: **Do Not** try to clean a paper air filter
- Remove the foam element(Fig.8.1.3_2) and wash it with a mild detergent and water, then blot it dry.
- Saturate the element with clean engine oil, then squeeze it (Do Not twist) to remove the excess oil.
- Install the foam element.
- Install the new paper air filter.
- Reinstall the cover.

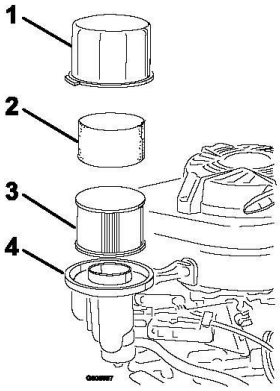


Figure 8.1.3

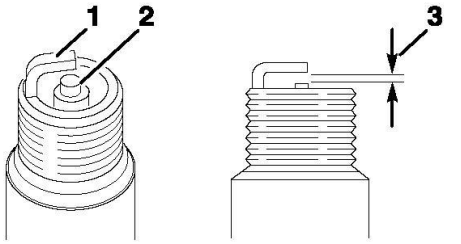
CHECK SPARK PLUGS

Service Interval: Every 100 hours

- Stop the engine and wait for all moving parts to stop
- Disconnect the wire from the spark plug
- Clean around the spark plug.
- Remove the spark plug from the cylinder head.

Note: Replace a cracked, fouled, or dirty spark plug. Do Not clean the electrodes because grit entering the cylinder can damage the engine.

- Set the gap on the plug to 0.030 inch (0.76 mm)
- Install the spark plug and the gasket seal.
- Torque the plug to 17 ft-lb (23 N-m).
- Connect the wire to the spark plug.



1. Side electrode
2. Center electrode insulator
3. Air gap—0.030 inch (0.76 mm)

Figure 8.1.4

7.2 DISMOUNTING TOOL HOLDER TO CHANGE V-RINGS

To check or replace the buffers and the elastic elements, the tool holders have to be dismounted. You will need a 13mm deep metric socket with an outside diameter of no more than 3/4in to unscrew the four bolts (Fig.7.2.1) and remove the holder (Fig.7.2.2) and adaptor (Fig.7.2.3). When the tool holder is dismounted, you can change the sealers (V-Ring). Mount the V-Ring with the smallest lip of the V to the inside (Fig.7.2.4) - simply push the V-Ring so the top is on the same level as the pulley top (Fig.7.2.5). Then take the adaptor and push the V-Ring down with the adaptor. The lowest lip of the V-Ring should only barely touch its gliding surface. Mount the adaptor and the Holder on top (Fig.7.2.6). Always use the original bolts. Do not push the V-ring down with fingers.


Figure 7.2.1


Figure 7.2.2

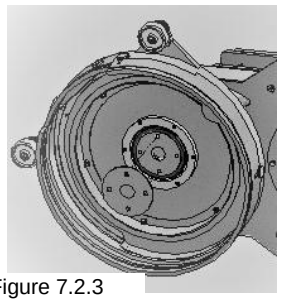


Figure 7.2.3


Figure 7.2.4

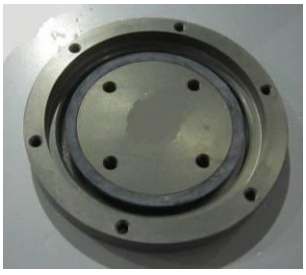


Figure 7.2.5


Figure 7.2.6

7.3 DISASSEMBLING AND MOUNTING TOOL HOLDER TO CHANGE BUFFERS AND ELASTIC ELEMENT

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

Lift the locking pin (Fig.7.3.1) to dismount the retaining washer (Fig. 7.3.2). Take out the screws on the buffers and the nuts of the elastic element (Fig. 7.3.3; Fig. 7.3.4). Remove the elastic element from the QC plate (Fig. 7.3.5). While the holder is dismounted (Fig. 7.3.6; Fig. 7.3.7), clean the parts and replace any defective ones with new ones. Assemble the holder with new buffers, new screws, and new elastic element.

Replace the retaining washer (Fig. 7.3.8) and push the locking pin (Fig. 7.3.9). This will prevent the washer from falling while mounting the holder on the machine.

Make sure the four bolts holding the adaptor (Fig. 7.3.12) are reliably tightened.

Mount the holder on the machine using the same socket as in 8.6 (Fig. 7.3.10; Fig. 7.3.11). The retaining washer fits into the central hole C of adaptor and the four bolts into the thread holes T (Fig. 7.3.12). 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. 7.3.2) 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 dismounting the holder of the machine.


Figure 7.3.1


Figure 7.3.2


Figure 7.3.3

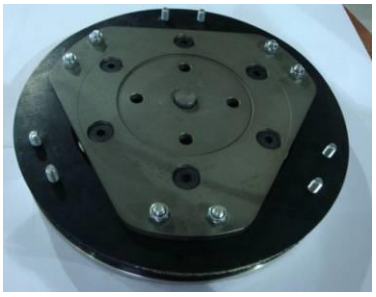


Figure 7.3.4

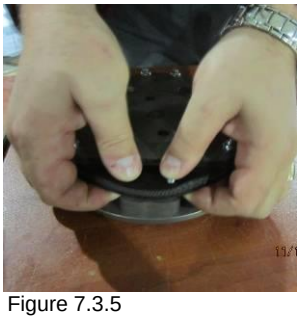


Figure 7.3.5


Figure 7.3.6


Figure 7.3.7

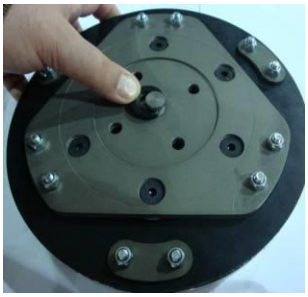


Figure 7.3.8

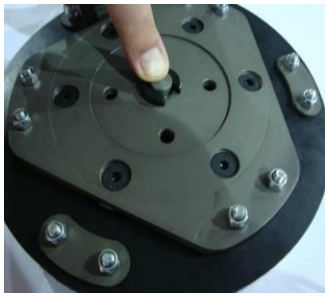


Figure 7.3.9


Figure 7.3.10


Figure 7.3.11

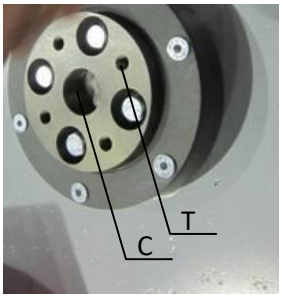


Figure 7.3.12

Fig. 7.3.13 is a 3-d section view of the holder, showing its parts. The numbering is the same as in Spare parts.

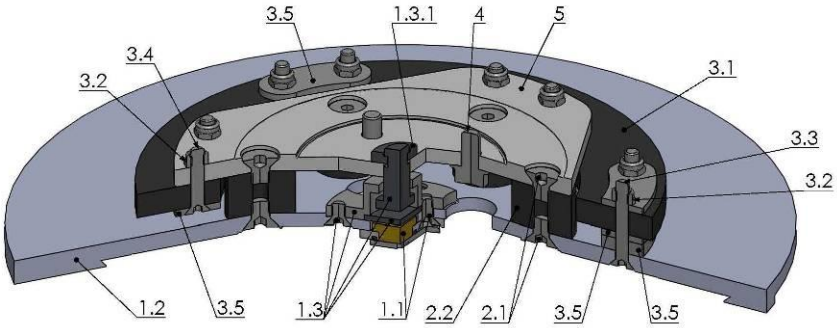


Figure 7.3.13

7.4 TENSIONING THE BELTS

PLEASE MAKE SURE YOU CHECK THE TENSION OF THE BELT AFTER THE FIRST 15 HOURS OF OPERATION

If the operator notices, the grinding spindle is turning irregular or noisy or in the worse case, the grinding spindle does not turn although the motor turns. It is recommended to check the belts.

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

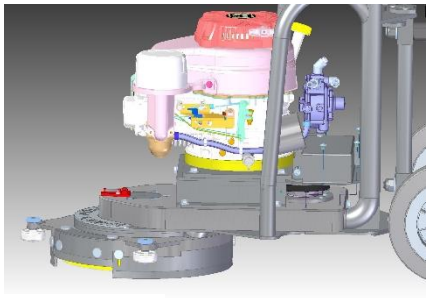


Figure 7.4.1

Figure 7.4.2

Remove the revision cover (Figure 7.4.1) and turn the screw (Figure 7.4.2) clockwise to tight the belt. The tightening force of one belt is 207 N measured by OPTIKRIK 1 **.**

7.5 CHANGING THE BELTS

Figure 7.5.1

Figure 7.5.2

Figure 7.5.3

Figure 7.5.4

Figure 7.5.5

Figure 7.5.6

Figure 7.5.7

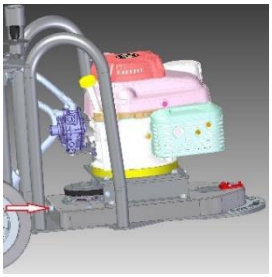


Figure 7.5.8

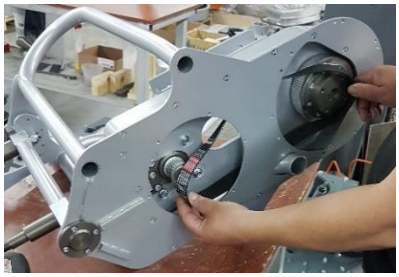


Figure 7.5.9

Figure 7.5.10

The driving transmission from the engine to the tools is made by the two types of belts: V-belt – from the engine to the pulley and timing belt – from the pulley to the tool.To change the timing belt follow the instruction of Figure 7.5.1 to Figure 7.5.6. Loosen the screws of the pulley Figure 7.5.7 and through the rear bolt shown on Figure 7.5.8 move forward the pulley till the dismounting of the timing belt. As per 7.4 loosen the V-belt moving the engine backward. Put the timing belt Figure 7.5.9 and tighten with the rear bolt shown on Figure 7.5.8. The tensioning force is 367N (Optibelt-TT3/TTmini – with frequency 99,15 1/s). Figure 7.5.10 Fix the pulley Figure 7.5.7. Tighten the V-belt according to 7.4

ATTENTION: NEVER "OVER" TENSION THE BELT, THE BELT WILL BE DISTROYED AND IT WILL NEVER RECOVER ITS ORIGINAL TENSION. This belt cannot be retightened.

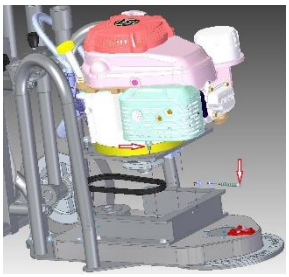


Figure 7.5.11

To change the v-belt unscrew the bolts shown on Figure 7.5.11 and change the belt.

Tighten the v-belt:
- initial tension is 269N
- secondary tension is 207N

7.6 REPLACING THE CLUTCH

loose the front nut with an impact wrench to dismount the pulley and clutch (Fig. 7.6.1), (Fig. 7.6.2). Reassemble in the same manner. Do not forget to mount back the keyway (Fig. 7.6.3). Apply Red Loctite to the clutch bolt. The torque on the front nut (Fig. 7.6.1) to mount the pulley and clutch should be 40 Nm or 30 ft lbs/for 3/8-24 UNF/.

Figure 7.6.1

Figure 7.6.2

Figure 7.6.3

8. WARRANTY AND RETURNS

WARRANTY POLICY FOR LAVINA®13G-X

If your warranty card is missing, call your local distributor and request a warranty card or visit us at www.superabrasive.com to download one.

The customer is responsible for filling out the card and mailing it to the manufacturer's address indicated on the card. To ensure registration and activation of the warranty coverage, the warranty card must be mailed to the manufacturer within 30 days from date of purchase. Failure to mail the warranty card within 30 days from date of purchase may void the warranty. Make sure you provide the manufacturer with all the information requested, and most importantly with the distributor's name, machine serial number and purchase date

Superabrasive Inc. guarantees that the original purchaser of the Lavina ®13G-X machine will be covered against defects in material and workmanship for a period of 2 years from the date of delivery or 500 hours of use whichever comes first.

The following conditions pertain to this warranty:

Applies only to the original owner and it is not transferable.

Machine must not be dismantled and tampered with in any way.

Covered components proven defective will be repaired or replaced at no charge. Covered components include motors, bearings and switches.

This warranty does not apply to any repair arising from misuse, neglect or abuse, or to repair of proprietary parts.

This warranty does not apply to products with aftermarket alterations, changes, or modifications.

This warranty is in lieu of and excludes every condition of warranty not herein expressly set out and all liability for any form of consequential loss or damage is hereby expressly excluded.

This warranty is limited to repair or replacement of covered components and reasonable labor expenses.

All warranty returns must be shipped freight prepaid.

The above warranty conditions may be changed only by Superabrasive. Superabrasive reserves the right to inspect and make a final decision on any machine returned under this warranty. This warranty applies to new, used and demo machines.

Superabrasive does not authorize any person or representative to make any other warranty or to assume for us any liability in connection with the sale and operation of our products.

RETURN POLICY FOR LAVINA®13G-X

Lavina®13G-X 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 these.

No machines will be credited after 90 days from the date of invoice.

All returns must be shipped freight prepaid. All returns 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.

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

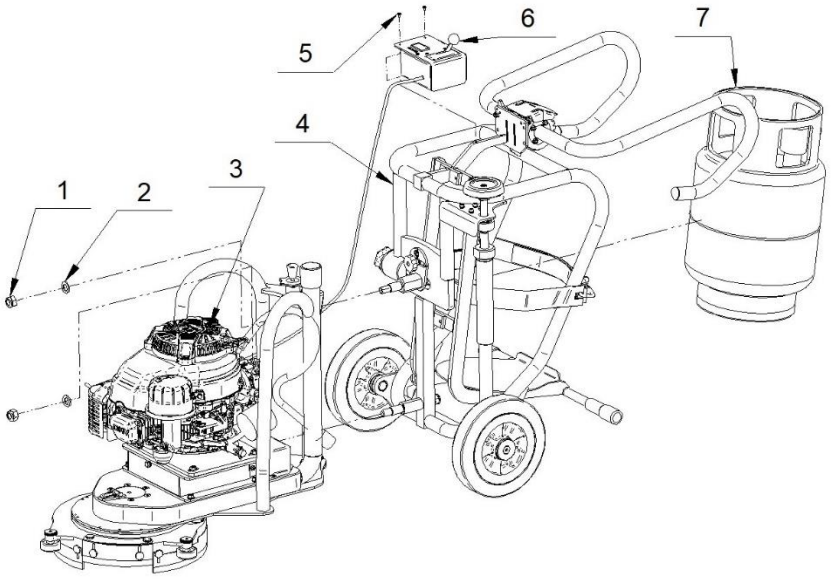
Fax: 706 658 0357

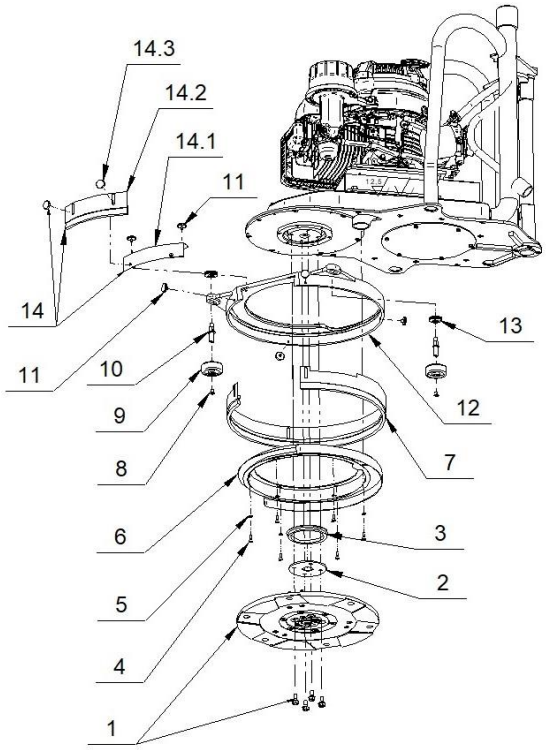
Website: www.superabrasive.com

11. SPARE PARTS

ASSEMBLY AND PARTS SPECIFICATIONS

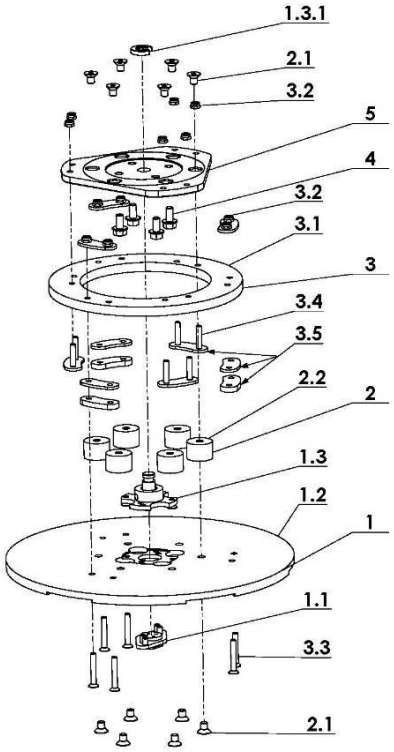
1. LAVINA®13G-X GENERAL PARTS			
No.	**Item No.**	**Description**	**Pcs.**
1	M16DIN982	Self Locking Nut	2
2	M16DIN125A	Washer	2
3	L13GX10.00.00	Main Head	1
4	L13GX20.00.00	Carriage	1
5	M5X10ISO7380F	Screw	2
6	L13GX20.10.00	Pult	1
7	W2504	Propane tank	1

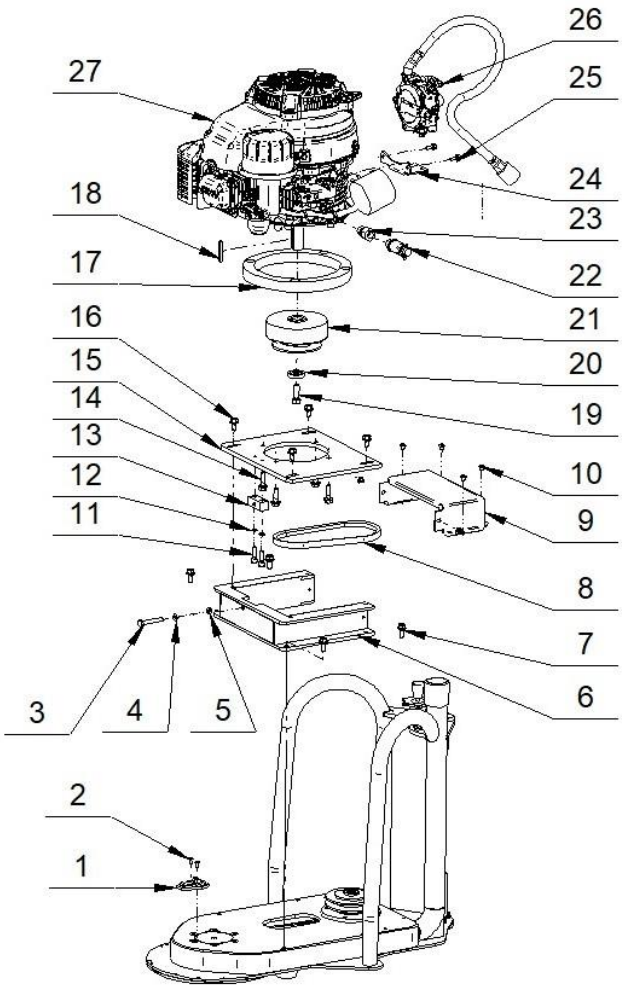




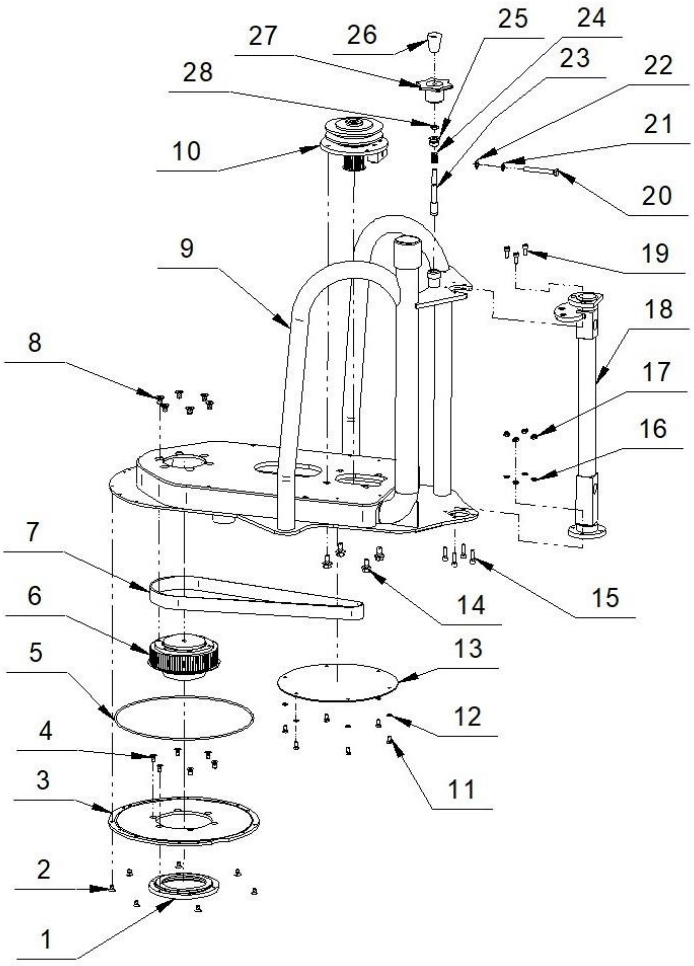
2. LAVINA®13G-X MAIN HEAD 1				
No.		**Item No.**	**Description**	**Pcs.**
1		A43.00.00	Tool Holder A43	1
2		L13GX10.00.01	Adaptor	1
3		TWVA00800	V-Ring Type A	1
4		M5X12DIN912	Screw	6
5		M5DIN7980	Washer	6
6		L13GX10.40.00	Succer Cover	1
7		L13GX10.00.02	Strip Brush	1
8		M6X8ISO7380F	Screw	2
9		PO 050 19 22 OG	Roll PO	2
10		L13GX10.00.06	Axis Roll	2
11		L13GX10.00.07	Screw	6
12		L13GX10.00.11	Protecting Disc	1
13		M8DIN467	Nut	2
14		L13GX10.30.00	Cover	1
	14.1	L13GX10.31.00	Cover	1
	14.2	L13GX10.30.01	Strip Brush	1
	14.3	L13GX10.00.07	Screw	2

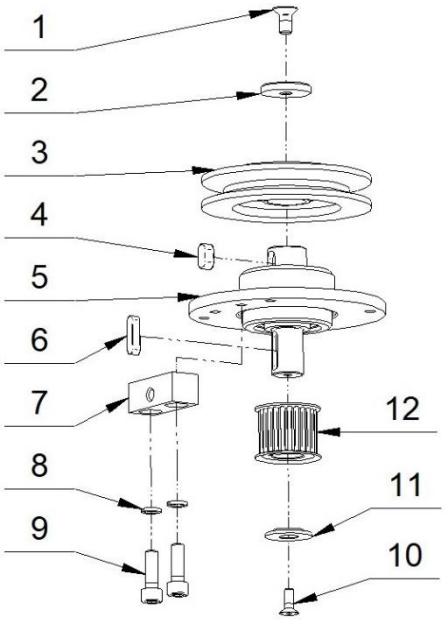
3. LAVINA®13G-X TOOL HOLDER PARTS/SEE ALSO FIG.8.7.13/ (POS.1 INCLUDE POS.1.1;1.2;1.3/POS.1.3 INCLUDE POS.1.3.1 and etc.)					
No.			**Item No.**	**Description**	**Pcs.**
1			A43.10.00	Quick Change Assembly	1
	1.1		A31.12.00	Keylock Set	1
	1.2		A43.11.00	Quick Change plate	1
	1.3	.	A41.12.00	Security set	1
		1.3.1	A41.00.05	Washer A41	1
2			A25.00.10-K	Buffer with two screw	6
	2.1		M8X12DIN7991	Screw	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		M6DIN985	Self Locking Nut	12
	3.3		M6X40DIN7991	Screw	6
	3.4		M6X30DIN7991	Screw	6
	3.5		A41.21.00	Set of plates	1
4			M8x16DIN6921	Bolt	4
5			A41.20.01	Flange	1





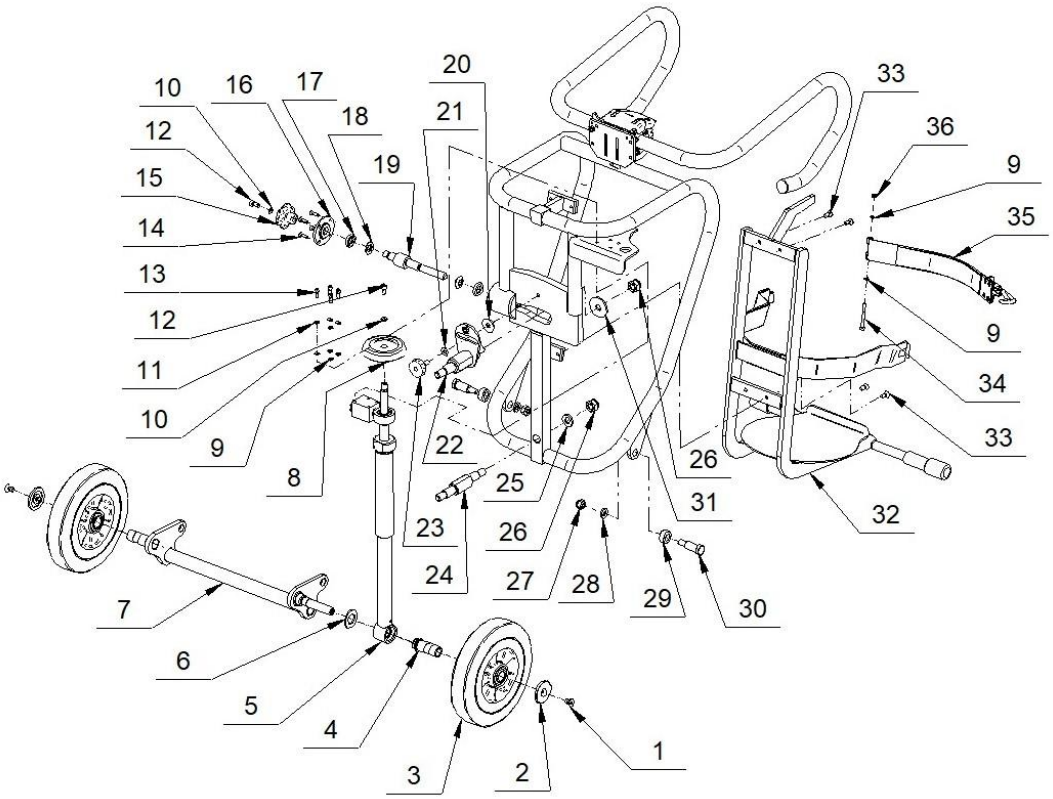
4. LAVINA®13G-X MAIN HEAD 2			
No.	**Item No.**	**Description**	**Pcs.**
1	DWL-K5	Double Water Level	1
2	M4X10DIN85A	Screw	2
3	M8X50DIN933	Bolt	1
4	M8DIN127B	Spring Washer	1
5	M8DIN125A	Washer	1
6	L13GX10.80.00	Frame	1
7	M8X20DIN6921	Bolt	4
8	A21	Belt	1
9	L13GX10.00.09	Cover	1
10	M6X8ISO7380F	Screw	6
11	M8X25DIN912	Screw	2
12	M8DIN7980	Spring Washer	2
13	L25G-10.00.66	Tensioning Device Support	1
14	M8X30DIN6921	Bolt	4
15	L13GX10.70.01	Plate	1
16	M8X16DIN6921	Bolt	4
17	L13GX10.00.52	Foam Sealing	1
18	V20GX-40.00.09	Key	1
19	7/16-20 UNFX1 1/4"	Bolt	1
20	L13GX10.00.08	Washer	1
21	1600P127	Centrifugal Clutch	1
22			
23			
24	L13GX10.00.12	Plate	1
25	M6X16DIN6921	Bolt	2
26	L13GX10.01.00	Regulator set	1
27	Kawasaki FJ180V KAI	Engine	1



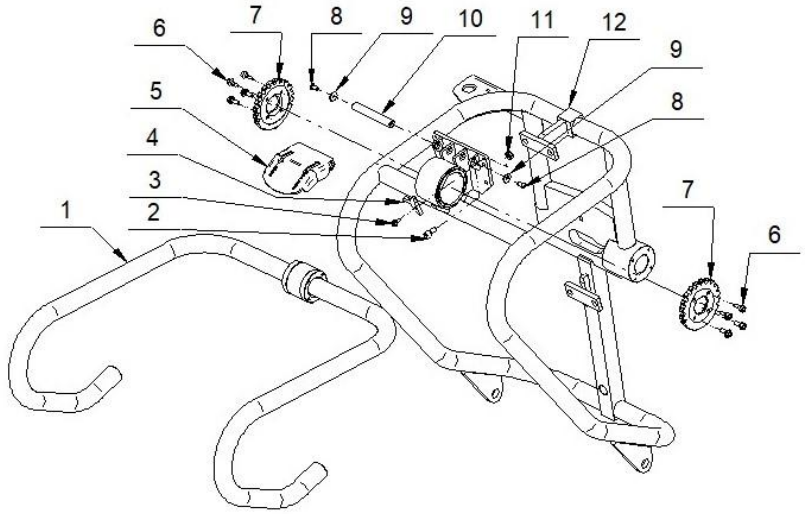


5. LAVINA®13G-X MAIN HEAD 3			
No.	**Item No.**	**Description**	**Pcs.**
1	L13GX10.00.03	Flange	1
2	M6X10DIN7991	Screw	7
3	L13S-10.00.40	Disc Cover	1
4	M6X12DIN7991	Screw	6
5	D3.2X1.8X803	Seal	1
6	L13GX10.10.00	Driven Bearing	1
7	OMEGA9255MHP25	Timing Belts	1
8	M8X12DIN7991	Screw	6
9	L13GX10.20.00K	Frame SET	1
10	L13GX10.90.00	Pulley Unit Assembly	1
11	M5X10DIN933	Bolt	6
12	M5DIN7980	Washer	6
13	L13S-10.00.20	Cover	1
14	M8X16DIN6921	Bolt	4
15	M6X20DIN912	Screw	4
16	M6DIN125A	Washer	4
17	M6DIN985	Self Locking Nut	4
18	L13GX10.50.00	Tubular Axle	1
19	M6X14DIN912	Screw	3
20	M8X60DIN933	Bolt	1
21	M8DIN127B	Spring Washer	1
22	M8DIN125A	Washer	1
23	L13GX10.60.01	Pin	1
24	L13S-20.30.05	Spring	1
25	L13S-20.30.03	Nut	1
26	BO751107	Conical Handle	1
27	L13GX10.61.00	Wheel	1
28	M8DIN439B	Nut	1

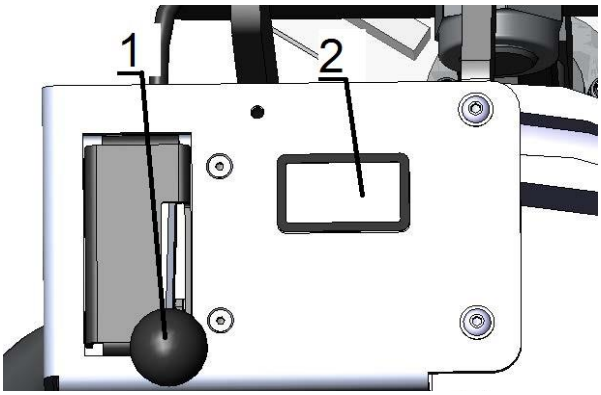
4. LAVINA®13G-X MAIN HEAD 2			
No.	**Item No.**	**Description**	**Pcs.**
1	M8X16DIN7991	Screw	1
2	L13GX10.90.05	Washer	1
3	L13GX10.90.02	Belt Sheave	1
4	8X7X16DIN6885A	Key	1
5	L13GX10.91.00K	Bearing Body	1
6	6X6X25DIN6885A	Key	1
7	L25G-10.00.66	Tensioning Device Support	1
8	M8DIN7980	Spring Washer	2
9	M8X25DIN912	Screw	2
10	M6X16DIN7991	Screw	1
11	L13GX10.90.04	Washer	1
12	L13GX10.90.01	Pulley	1



5. LAVINA®13G-X CARRIAGE PARTS 1							
No.	**Item No.**	**Description**	**Pcs.**	**No.**	**Item No.**	**Description**	**Pcs.**
1	M10X16DIN7991	Screw	2	19	L13S-20.40.01	Screw	1
2	L25X-20.00.03	Wheel Cap	2	20	M10DIN440R	Washer	1
3	IFP250x50-25x60	Wheel	2	21	M10DIN125A	Washer	1
4	L13S-21.00.06-1	Bush	1	22	L13X-20.20.00	Axle	1
5	L13S-21.20.00	Connecting Rod	1	23	F17840	Knob Bolt	1
6	L13S-21.00.07	Washer	1	24	L13S-20.00.05	Bottom Axle	1
7	L13S-21.10.00-1	Carnage Frame	1	25	M16DIN125A	Washer	1
8	L13S-20.00.32	Handle	1	26	M16DIN982	Self Locking Nut	2
9	M6DIN125A	Washer	6	27	M12DIN982	Self Locking Nut	2
10	M8DIN433	Washer	2	28	M12DIN125A	Washer	2
11	M6DIN127B	Spring Washer	4	29	L13S-20.00.23	Washer	2
12	M8X16DIN912	Screw	2	30	L13S-20.00.21	Axle	2
13	M6X16DIN912	Screw	4	31	L13X-20.00.23	Washer	1
14	M6X20DIN7991	Screw	4	32	L13GX20.20.00	Propane Tank Holder	1
15	F17760	Handle	1	33	M8X20DIN7991	Screw	4
16	L13S-20.40.03	Flange	1	34	M6X60DIN912	Screw	1
17	M16DIN6319D	Washer	2	35	L13GX20.30.00	Strap	1
18	M16DIN6319C	Washer	2	36	M6DIN985	Self Locking Nut	1



5. LAVINA®13G-X CARRIAGE PARTS 2			
No.	**Item No.**	**Description**	**Pcs.**
1	L13GX21.00.00	Handle	1
2	M8X16DIN912	Screw	1
3	M5X12DIN6921	Bolt	1
4	L20GX-23.00.11	Fixator	1
5	L20GX-23.20.00	Fixator	1
6	M6X16DIN6921	Bolt	8
7	L20GX-23.00.01	Flange	2
8	M6X12ISO7380-1	Screw	2
9	M6DIN9021	Screw	2
10	L20GX-23.00.02-1	Axle	1
11	M8DIN985	Self Locking Nut	1
12	L13GX20.40.00	Frame	1



6 LAVINA® 13G-X Control Board Parts			
No.	**Item No.**	**Description**	**Pcs.**
1	W4110	Throttle	1
2	W4313	Hour Meter	1