

GT AIRINJECT INC

“AIR2G2-336[®]”

OWNER/OPERATOR'S MANUAL



AIR2G2-336® OWNER/OPERATOR'S MANUAL

Congratulations on the purchase of the AIR2G2-336®, A REVOLUTIONARY MACHINE! By owning this machine, you will now be able to achieve the absolute best type of aerification possible, AIR injection throughout the soil profile. Remember: AIR IS EVERYTHING TO ANYTHING THAT LIVES®™!

INTRODUCTION

This owner/operator's manual will teach you about the operating features of the AIR2G2-336® as well as the maintenance schedules and procedures. You are responsible for safe and proper operation and maintenance of this machine in order to avoid personal injury and/or damage to the machine.

READ ALL MANUALS CAREFULLY There are also manuals for the engine and compressor attached to the machine.



This is a pedestrian-controlled machine and is intended to be used by a properly trained operator in commercial applications. It is primarily designed for compaction relief and aeration of fine turf areas on professionally maintained park lawns, athletic fields, and golf courses.

You may contact GT AIRINJECT INC. directly at www.air2g2.com for parts information, to find a dealer, or register your machine. To order parts, please email parts@air2g2.com. Please include your machine's serial number as well as the needed part numbers.

Model No. **AIR2G2®-336**

Machine Serial No. _____

Potential hazards are identified in this manual. Safety messages are identified by the safety alert symbol. SEE PIC OF SAFETY ALERT BELOW. **This safety alert signals a hazard that may cause serious injury or death if you do not follow the safety precautions.**



SAFETY ALERT!

This manual uses words to highlight safety information:

NOTE:	Used for notification of important installation, operation, or maintenance information.
CAUTION!	A hazard that could result in minor personal injury or property damage.
WARNING!	A hazard that can result in death, serious injury or substantial property damage.

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CE DECLARATION OF CONFORMITY

Manufacturer's Name: GT AIRINJECT INC.
Manufacturer's Address: 136 Ellis Road N
Jacksonville FL 32254 USA

Declares the machine described below complies with applicable essential health and safety requirements of Part 1 and 4 related clauses of Part 3 of Annex 1 of the Machinery Directive 2006/42/EC.

Description: **AIR2G2®**

Model Number: **AIR2G2®-336**

Serial Number: _____

The following standards have either been referred to or been complied with, in part or in full, as relevant:

EN ISO 12100-1	Safety of Machinery - Basic concepts, general principles for design.
EN ISO 12100-2	Safety of Machinery - Technical principals and specifications
EN ISO 13857	Safety of Machinery - Safety distances to prevent danger zones being reached by upper and lower limbs.
EN 4254-1; 2008	Agricultural Machinery - Agricultural self-propelled mounted, semi-mounted and trailed machines. Common safety requirements
ANSI / ASAE S338.5	Field Equipment for Agricultural - Safety Chain for Towed Equipment
ANSI / OPEI B71.4-2012	Commercial Turf Care - Safety Specifications

Full Name of Responsible Person

GLEN BLACK

TITLE: PRESIDENT, GT AIRINJECT INC.

Signature

Date

Full Name of Authorized Representative

Signature

Date

Original must remain with machine owner. Representative (Distributor) must fax or send fully completed copy to GT AIRINJECT INC. The fax number is 904.516.4609

WARRANTY ON THIS MACHINE WILL BE VOID IF THE WARRANTY REGISTRATION IS NOT RETURNED TO GT AIRINJECT INC WITHIN 30 DAYS OF ACCEPTING DELIVERY

YOUR DISTRIBUTOR IS RESPONSIBLE FOR COMPLETION OF THE WARRANTY REGISTRATION CERTIFICATE AND RETURNING IT TO GT AIRINJECT INC AS SOON AS YOU TAKE DELIVERY OF YOUR MACHINE. PLEASE REFER TO THE "WARRANTY" SECTION FOR ADDITIONAL INFORMATION. THIS FORM IS FOUND IN THE MANUAL TO COMPLETE AND RETURN.

IF YOUR DISTRIBUTOR DID NOT COMPLETE A WARRANTY REGISTRATION CERTIFICATE, PLEASE DO SO AND EMAIL OR FAX TO GT AIRINJECT INC., at parts@air2g2.com or (904)516-4609.

MACHINE RECORD INFORMATION

This operation and maintenance manual has been prepared for use as a guide. The AIR2G2®-336 has been designed for easy maintenance and simple operation on golf courses and athletic fields. If you have any questions, please feel free to contact your distributor or email us at parts@air2g2.com

Distributor Information

Name: _____

Address: _____

Telephone: _____

Fax: _____

Email: _____

Machine Information

Model **AIR2G2®-336**

Purchase Date: _____

**WARRANTY WILL BE DENIED IF THE WARRANTY REGISTRATION CERTIFICATE IS NOT RETURNED
WITHIN 30 DAYS AFTER DELIVERY. THIS FORM CAN BE FOUND IN THIS MANUAL (Page 7).**

**GT AIRINJECT INC.
136 ELLIS ROAD N
JACKSONVILLE, FL 32254 USA**

**(T) 904.379.2243
(F) 904.516.4609**

WARRANTY

GT AIRINJECT INC will repair or replace any item or part of the AIR2G2®-336 that is defective in workmanship or material for a period of **two years or twenty-four (24) months** from the date of delivery of a new AIR2G2-336 to the original end user. **Warranty is VOID if machine has not been run and/or operated OR delivered to final user in over 6 months.**

Normal Wear / Tear / Improper Storage & Maintenance

GT AIRINJECT INC will not be responsible to repair or replace parts subject to normal maintenance, operation, and proper storage routines as specified in the products operator's manual nor to parts subject to wear and tear during the normal and correct operation of the machine. These parts include, but are not limited to: oils, filters, tires, rims, belts, pulleys, rubber hoses, air tubing, spark plugs, chains, all fasteners including pins, steering grips, batteries, probes, probe tips, probe cylinder external scraper, and probe cylinder seals.

Other Items Not Covered By This Warranty

GT AIRINJECT INC will not repair or replace, free of charge, any item that has been damaged by accident or lack of reasonable care and protection or lack of suitable storage. We will not cover parts that have been altered or modified by anyone other than GT AIRINJECT INC or its authorized distributor. We will not cover used parts that are installed in place of failed parts. We will not cover rubber hoses or air tubing. We will not cover parts that have been installed incorrectly by the end user or its agents nor will we cover parts that have been improperly maintained as per the operator's manual. Overtime labor rates will not be covered. **Faulty item(s) or part(s) must be returned to GT AIRINJECT INC or its agent in order to be covered under this warranty. We will not cover freight costs related to the return of the faulty product.** GT AIRINJECT INC will not be liable for any consequential loss, damage, or cost caused by the incidental failure of any new part supplied with the original purchase or any new part supplied as a replacement for any failed part.

Warranty Claims

The final purchaser must provide the delivery date and serial number of the machine as well as written explanation detailing the failure of the product or part and why it is defective in the categories of faulty material or workmanship. **The purchaser is to deliver the faulty product or part to GT AIRINJECT INC or its agent at the purchaser's expense.** Please include the part name and number with the detailed explanation. WARRANTIES ARE NOT TRANSFERABLE. Warranty claims must be submitted to GT AIR INJECT INC within 45 days of the date of failure.

NOTE: GT AIRINJECT INC reserves the right to make changes to design or construction without obligation to incorporate such changes in equipment previously sold. GT AIRINJECT INC also reserves the right to make changes to the owner's manual and subsequent warranties. Acceptance or rejection of the warranty claim is entirely at the sole discretion of GT AIRINJECT INC or agent.

Limitation of Liability

It is expressly understood that GT AIRINJECT INC's liability for its products due to breach of warranty, negligence, strict liability, or otherwise, is limited to furnishing such replacement parts. GT AIRINJECT INC will not be liable for any injury, loss, damage, or expense, whether direct or consequential, including but not limited to, loss of use, income, profit, production, increased costs of operation, spoilage or damage to material arising in connection to the sale, installation, use, inability to use, or the repair or replacement of GT AIRINJECT INC's products. Any operation, adjustment, or assembly procedure that is prohibited or not authorized in the operating instructions or manuals furnished with this machine shall VOID such warranty.



WARRANTY REGISTRATION CERTIFICATE

Signed (By or on behalf of owner): _____ Date of purchase: _____

Name (Please Print): _____

MAINTENANCE SCHEDULE

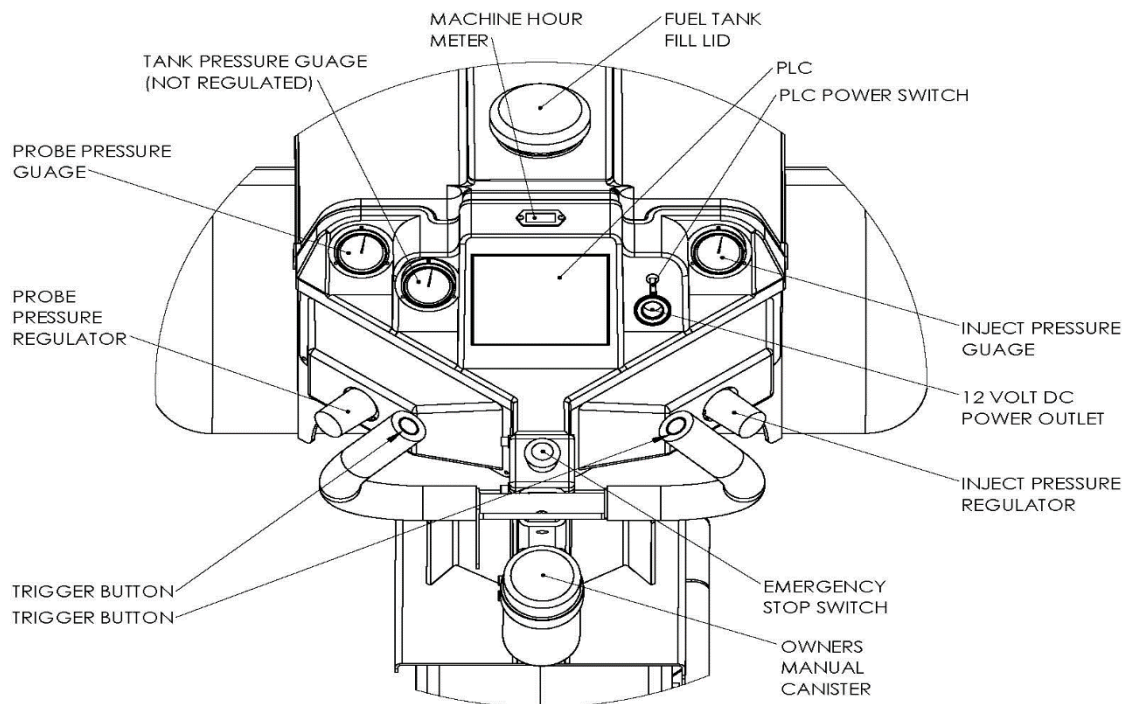
- Service Kohler engine after **first 50 hours** and **every 100 hours** of use thereafter. **(10W-30 Oil)**
- Service Ingersoll Rand Air Compressor every **100 hours**. **(Ingersoll-Rand All Season Select Oil)**
- Service Hydro-Gear Transaxle after **first 50 hours** and then **every 200 hours** thereafter. **(20W-50 Oil)**
- Belts should be re-tensioned after **½ hour to 24 hours of first full use**. Should be checked before every use.
- Check tire pressure before and after each use. The axle tires 10 psi and the steering tire 15 psi.
- Check probes before and after each use for excessive wear.
- Check for air leaks before and after each use. (Use soapy water to aid in finding any leaks)
- Check all nuts and bolts on moving parts of machine to ensure they are properly tight.
- After all air has been released, remove each cylinder and move the rod up and down, 2-3 times, to expel any moisture build-up in the cylinder. **Use the brush (provided in the toolbox on the machine) to clean out the cylinder mount tubes.** Re-mount the cylinders to the base.
- After each use, it is important to store the AIR2G2®-336 without having air pressure in the system. Pressure can be released in 3 different ways: 1) Press and release #8; 2) Open ball valve on right side of air tank, or 3) Open the water separator and drain water and air.

IMPORTANT INFORMATION

- Please read and understand all enclosed operating manuals before using the AIR2G2®-336.



- Pre-check all hoses, nuts, bolts, screws, and probes for tightness prior to operating the machine.
- Understand the operating procedures and controls before use.
- ONLY qualified trained personnel should operate this machine.
- For safe operation, do not operate the machine when you are in poor physical condition, tired, sleepy, or under the influence of drugs or alcohol.
- **IMPORTANT** – Turning the PLC Toggle Switch to the OFF position will send all moving parts to a “**HOME**” position.
- Cable jumping the battery should never be done.
- ONLY USE THE **EMERGENCY STOP SWITCH** IN CASE OF EMERGENCY!



SAFETY

IMPROPER USE, MAINTENANCE, OR FAILURE TO READ AND UNDERSTAND THIS OPERATOR'S MANUAL BY THE OPERATOR CAN RESULT IN INJURY. Safe operating instructions are found in the ANSI / OTEI B71.4-2012,

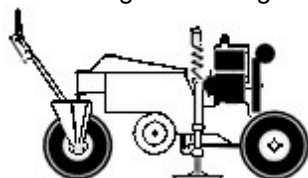
Be aware of the safety alert symbols *Caution, Warning or Note* for your personal safety. Your failure to follow and comply with these instructions, and with these safety warnings may result in personal injury or death.

Training

- Read the complete Operator's/Owner's and Product Manuals that have been received with this machine. It is the owner's responsibility to explain this material to the operator(s) or mechanic(s) if he or she cannot read English.
- Be very aware of the proper operation of the machine and all safety ***Caution, Warning or Note*** alert symbols.



- The owner is responsible to train the operators and mechanics for safe operation of the machine.
- Never allow children around or near the machine. Never allow untrained people to operate or service the equipment. Check local regulations regarding the minimum required age of persons operating this machine.

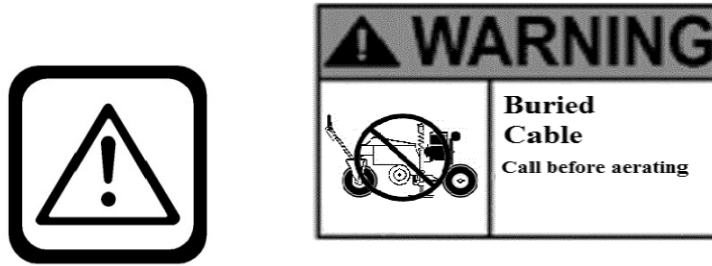


- The owner/user of this machine is responsible for accidents or injuries to themselves, property, or other people. Injuries and risk of accidents may be avoided or prevented by operating the machine carefully and being aware of the safe operations.

Preparation

- Wear appropriate clothing including shoes, safety glasses, and ear protection. Loose clothing, long hair, or jewelry may get tangled in moving parts.
- Remove any objects, such as rocks, branches from trees or bushes, wire, or other debris that may come into contact while moving or operating this machine.

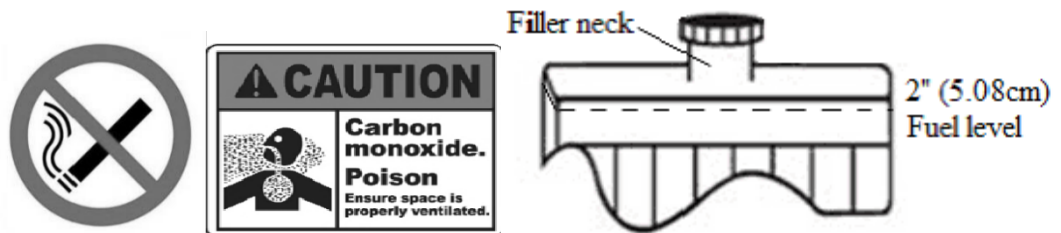
CAUTION! ALL BURIED LINES, INCLUDING IRRIGATION, CABLE, AND ELECTRICAL MUST BE PROPERLY MARKED BEFORE AERATING.



- Gasoline and other fuels are flammable and explosive. Handle carefully.



- Use only an approved refill container for gasoline.
- The machine must not be running when removing the gas cap or adding fuel to the engine.
- NEVER SMOKE when operating or fueling the machine.
- NEVER add or drain gasoline indoors. ALWAYS do so in a well-ventilated area.
- Fill the gas tank to within 2 inches (5.08 cm) from the bottom of the filler neck.

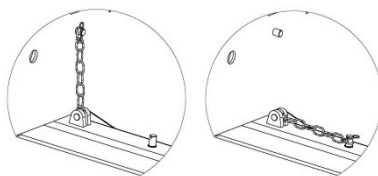


Operation

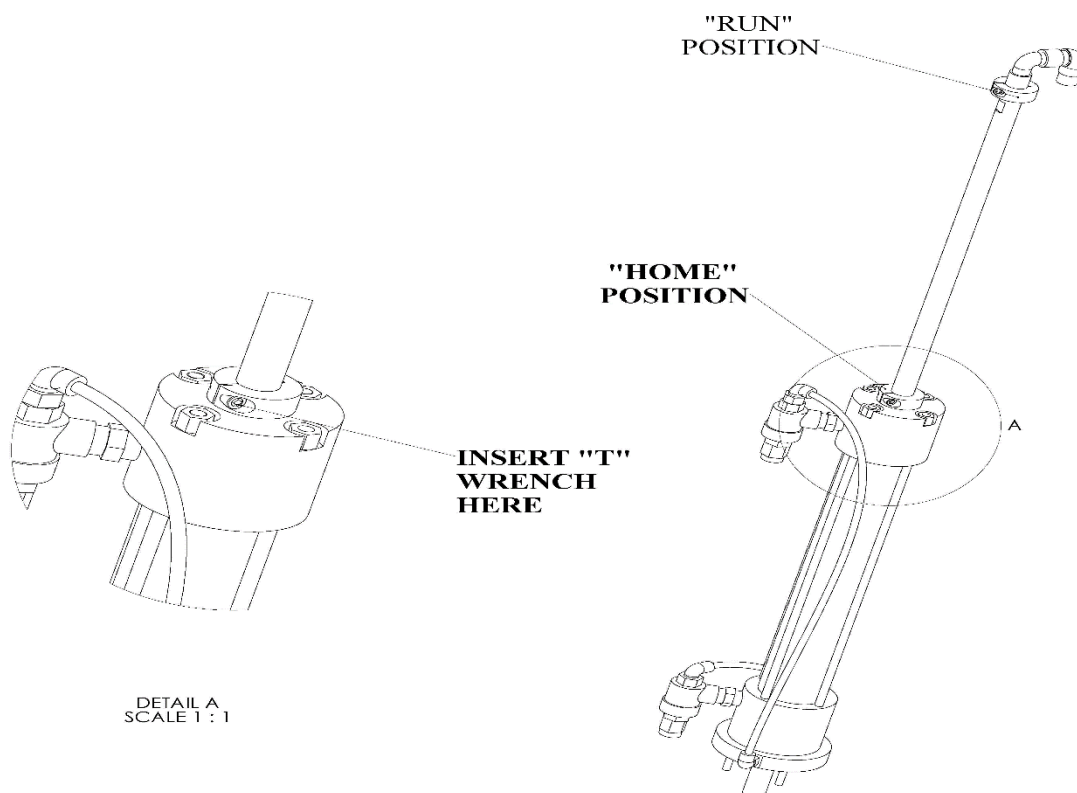
NOTE: THIS MACHINE IS NEVER TO BE TOWED!

- Never run the engine in an enclosed area.
- Operate the machine in good lighting; keep away from holes and hidden hazards.
- Ensure the shields, covers, and other guards are securely in place before and during operation.
- When transporting machine, be certain to use the provided tie-down spots for securement with ratchet straps.

BEFORE LEAVING THE MACHINE: Always stop the machine on level ground. Shut OFF the engine and turn OFF the PLC before leaving the machine for any reason. The beam must be in the UP (HOME) position and the safety chains are secured on each side.



The cylinder rods should be in the UP (home) position with the aluminum clamps hand tightened with supplied T wrench.



When the machine is in a neutral position THE BRAKE WILL BE ENGAGED unless the handle bars are in a forward position away from operator position (to move away from operator) or the handle bars are pulled back towards the operator position (to move towards operator). **NEVER APPLY PRESSURE TO THE HANDLE BARS IN AN ATTEMPT TO MOVE THE MACHINE WHEN IN A NEUTRAL POSITION. DAMAGE MAY OCCUR TO THE CABLE OR TO THE CABLE CONNECTIONS.**

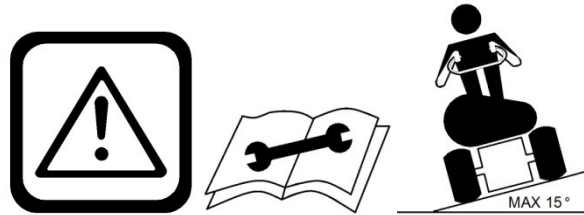
- If an object below the surface is struck, **stop the machine, turn the engine OFF, and the PLC to the OFF position** and inspect the probes (see SAFE OPERATION OF MACHINE & PRE-OPERATION OF THE MACHINE).
- Keep hands and feet away from the probes and Pad Assemblies.



WARNING! NEVER RIDE ON THE MACHINE. KEEP CHILDREN, PETS, AND ANYONE THAT IS NOT OPERATING THE MACHINE AT A SAFE DISTANCE.



CAUTION! USE GREAT CARE WHEN MAKING TURNS AND OPERATING ON INCLINES - 15 DEGREE MAXIMUM SLOPE. REDUCE THE SPEED AND OPERATE IN A SAFE MANNER TO AVOID ANY ROLLOVER ACCIDENTS OR INJURY TO YOURSELF OR ANYONE AROUND YOU.



- Slow down and be cautious when crossing roads or going over sidewalks.
- Never operate the machine when using drugs or alcohol or if you have lack of rest.
- Seek shelter if lightening is near. Lightening may cause death or injury. Seek shelter immediately!
- Use extreme caution when loading or unloading the machine for transport.
- Secure machine with straps at four points of tie-downs, pulling in straps in opposite directions.
- Use extreme caution when approaching an area with blind corners, shrubs, trees or other objects that may obstruct your vision.

CAUTION! BE AWARE OF THE PATH YOU ARE MOVING DURING OPERATION OF THE MACHINE. PAY SPECIAL ATTENTION TO BE CERTAIN THERE ARE NO OBSTACLES IN YOUR PATH OF MOVING THE MACHINE

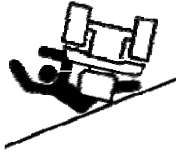


Slope Operation

- The machine may rollover on steep slopes or grades which may cause serious injury or death. Do not operate on a slope greater than a 15 degree angle. Do not operate near ditches, steep banks or drop-off areas.



- A slope may be slippery and the machine may lose traction when the grass is wet. Do not operate under these conditions, you may lose control of the machine and cause serious accident or injury.



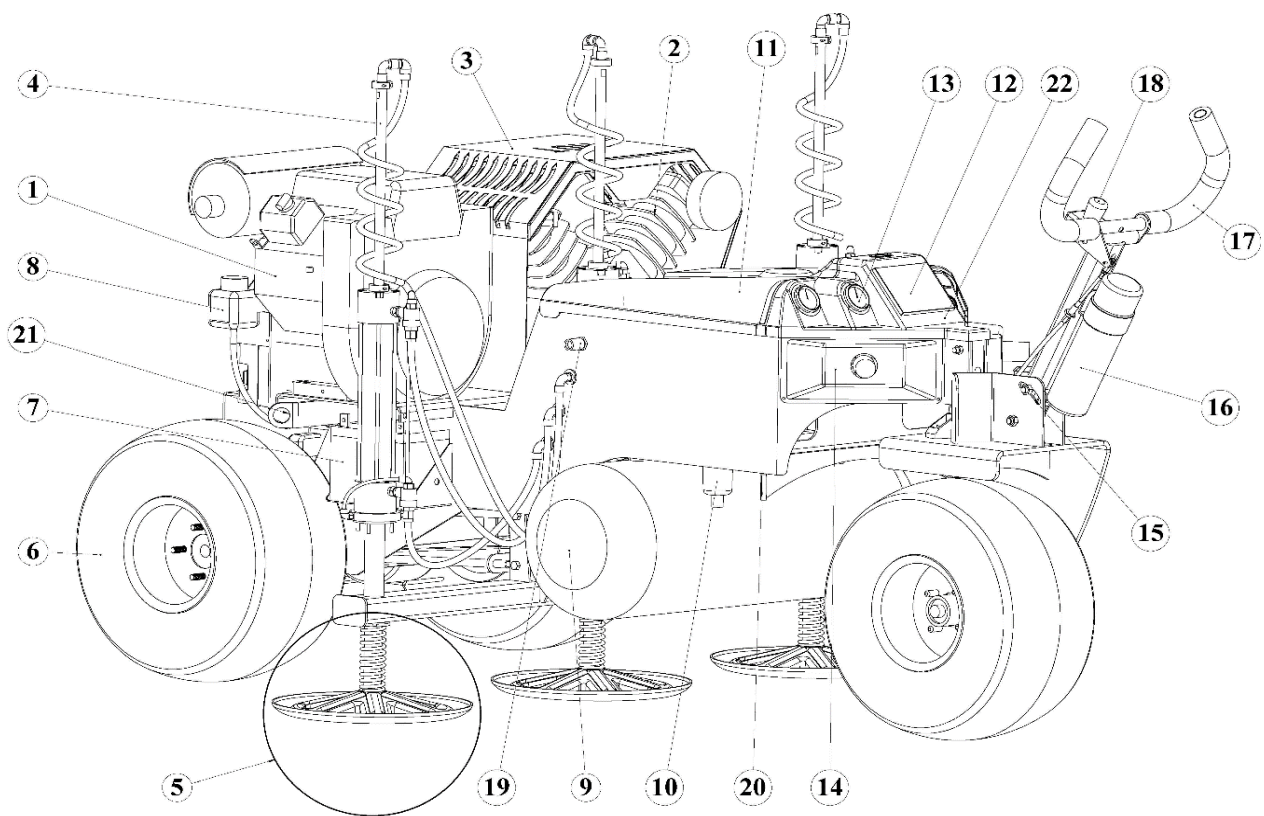
- Do not make sudden turns. Be aware of the path you are moving. Do not operate the machine at a rapid speed.
- On slopes, operate the machine at a slower speed and use extreme caution.
- Be cautious of ditches, dips, or rises that may cause a change in the angle you are operating the machine. Rough ground may cause the machine to overturn.
- On a slope, NEVER SUDDENLY STOP OR START. If the tires lose traction, slowly proceed off the slope.

DO NOT ATTEMPT TO MOVE THE MACHINE WHEN PROBES ARE IN THE GROUND!!! DAMAGE WILL OCCUR TO THE PROBES AND CYLINDERS!!

- When storing the Air2G2®-336, release all air pressure from the system. NEVER store the machine for any length of time with air pressure in the system (i.e. air pressure in tank).
- After one hour of use, drain moisture from the “water separator” (see page 15 item #10). ALWAYS Drain when machine is off of the playing surface.
- On the upper left side of the frame above the air tubing bulkheads is a “quick disconnect”. This is for an industrial air hose that can be used for a tire inflator or to clean off the machine using a blowgun. This connection can be used for an AIR2HP plug-in as well.
- Always start, run, and operate the AIR2G2®-336 monthly. We suggest running and operating the Machine for 10-15 minutes weekly to maintain proper lubrication of engine, compressor, and all other moving parts. If a machine has not been started and/or operated for over 6 months, **DAMAGE MAY OCCUR. ALL WARRANTIES MAY BE VOIDED.**

BRIEF OVERVIEW OF PARTS OF THE AIR2G2-336®

- 1) KOHLER EFI 19 HP motor with a KOHLER exhaust and KOHLER muffler guard attached. See KOHLER owner's manual for reference.
- 2) Ingersoll Rand Two-Stage Air Compressor. Produces air for the Air2G2-336. See Ingersoll Rand's owner's manual for further information.
- 3) Air Compressor Heat Shield
- 4) Attached to pressure beam are three (3) FABCO Pneumatic Cylinders. These push three 0.5 in. (13mm) diameter probes into the soil. The standard probe lengths are 7-inch, 9-inch, and 12-inch.
- 5) Pressure Pad Assembly (3 total)
- 6) The machine travels on 3 smooth turf tires. The psi of these tires will be discussed in the PRE-OPERATION section.
- 7) 12V battery (450 CA, 370 CCA)
- 8) Axle Oil Reservoir Tank
- 9) 20 Gallon (75.70 liters) 200 psi (13.79 bar) air tank located beneath the machine.
- 10) Water Separator. This collects excess moisture in the air system and must be drained during and after each use OR if machine has not been used for an extended period of time.
- 11) Main Cover
- 12) Programmable Logic Computer (PLC)
- 13) Located on the dash you will see three (3) psi gauges. The gauge on the left measures the air pressure used to push the probes into the ground. The center gauge measures the total air pressure in the tank and should be no higher than 175 psi. The gauge on the right measures the air pressure being injected into the subsurface. The left and right gauges can be adjusted by the regulators located beneath each gauge. The center gauge cannot be regulated and is factory set at 175 psi.
- 14) Regulator Covers
- 15) Steering Arm Height Adjustment Slot
- 16) Owner's Manual Canister
- 17) The Handle Bars move the machine towards the drive end (engine and compressor) or the steering end (operator's position). Located at both ends of the handle bar are the Thumb Trigger Switch buttons that, when pressed in unison, start the air injection process. When the handle bar is in the neutral position the **BRAKE IS AUTOMATICALLY SET.**
- 18) Emergency Stop Button (E-STOP). **DO NOT USE THIS AS A REGULAR SHUT-OFF MECHANISM. USE ONLY IN EMEGENCY SITUATIONS TO SHUT MACHINE OFF**
- 19) Auxiliary ¼" inch industrial hose coupler. To be used with Air2HP.
- 20) Steering end Tie-Down Point
- 21) Drive End Tie-Down Point
- 22) Dash Panel

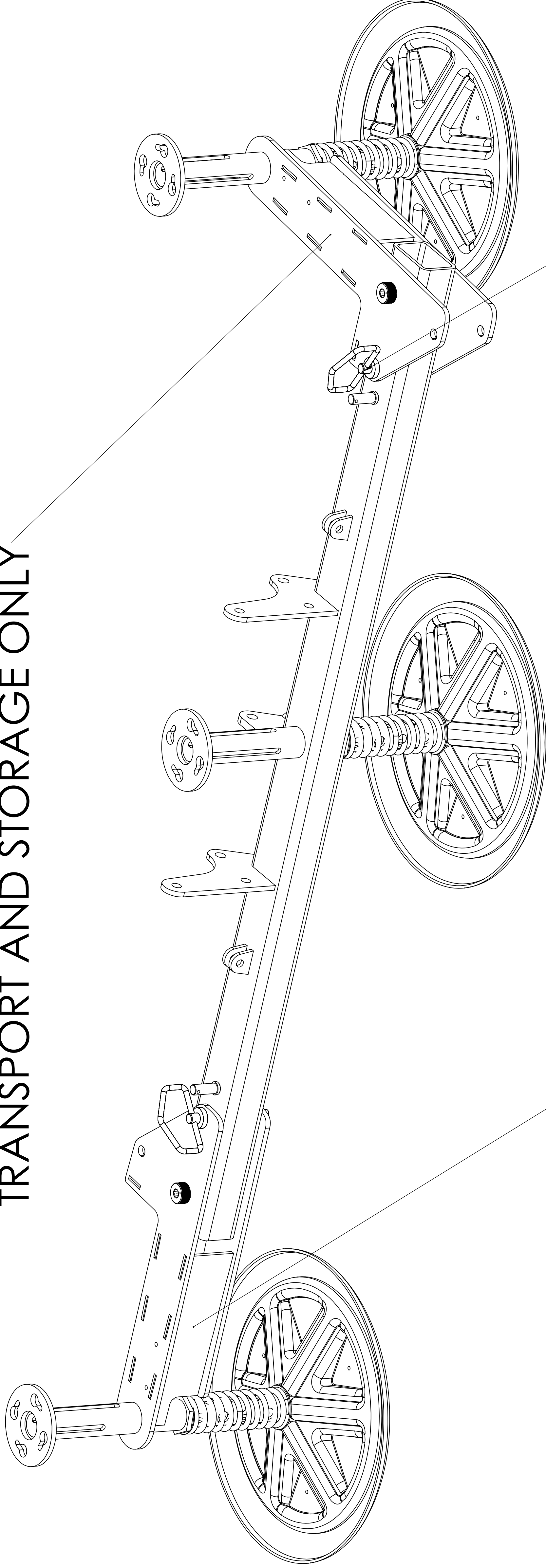


AIR2G2 336 PRESSURE BEAM

RETRACTED POSITION

NOT FOR OPERATION

TRANSPORT AND STORAGE ONLY



ASSURE BOTH PINS ARE
FULLY INSERTED
BEFORE OPERATION
OR TRANSPORT

EXTENDED POSITION

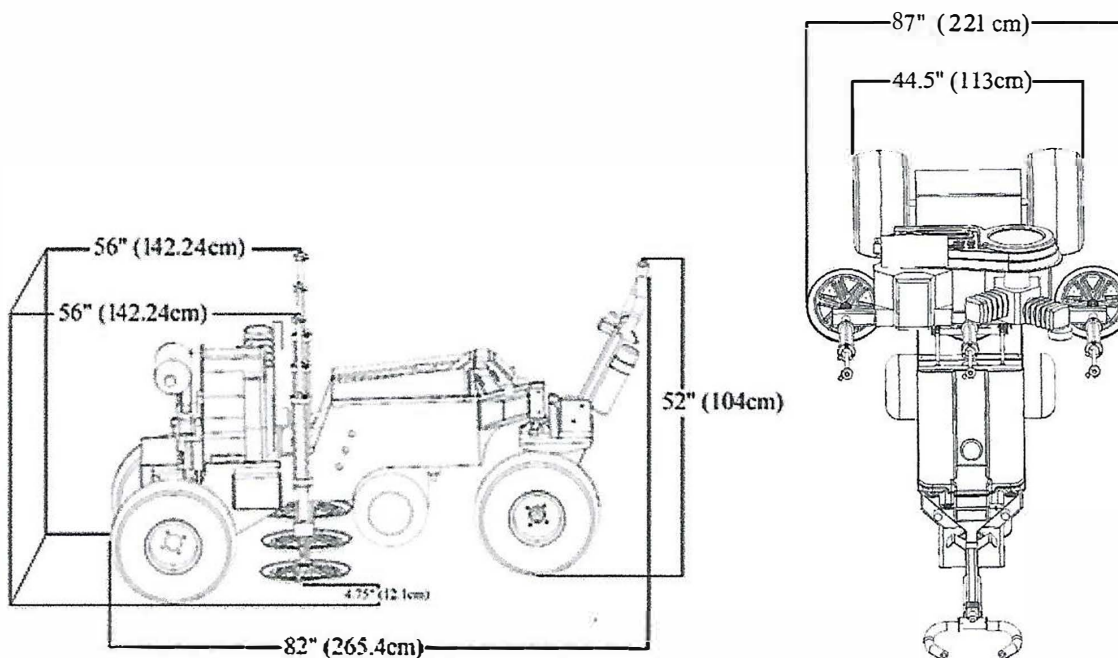
OPERATE MACHINE ONLY WITH
BOTH ARMS EXTENDED

Air2G2 336

SPECIFICATIONS

NOTE: Specification and design are subject to change without notice.

Width, pad to pad	87 inches (221 cm)
Wheel base	44.5 inches (113 cm)
Probe width	72 inches (183 cm)
Length	94 inches (238.76 cm)
Cylinder height	56 inches (142.24 cm)
Handle height	52 inches (104 cm)
Ground clearance	4.75 inches (12.1 cm)
Forward speed	0-5 mph (0-8 kph)
Reverse speed	0-8 mph (0-13 kph)
Net weight	940 lb. (426.37 kg)

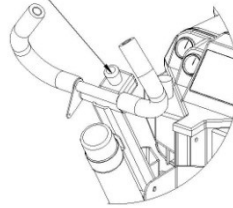


FOR SAFE OPERATION

- 1) When operating the AIR2G2®-336 safety is of the utmost importance **DO NOT MOVE THE MACHINE WHEN THE PROBES ARE IN THE GROUND. DAMAGE WILL OCCUR.**
- 2) Before starting the engine always make a pre-operation inspection to prevent damage to property or personnel. Determine the right and left sides of the machine from the operator's position.
- 3) The AIR2G2®-336 should only be operated by trained and skilled personnel. Keep children, pets, and inexperienced personnel away from the machine. If you are unsure, check with your supervisor.
- 4) Stopping the engine when the machine is in motion in case of an emergency should be clearly understood. Read and understand the KOHLER engine manufacturer's manual.

NOTE: An emergency shut off button is located on the steering bar.

RED EMERGENCY STOP
SWITCH



- 5) The AIR2G2®-336 requires certain knowledge and expertise to operate. You must be trained to use this machine. Never permit inexperienced personnel to operate the machine. Untrained persons can harm themselves and others if they operate the machine.

CAUTION! THIS MACHINE IS NOT RIDEABLE. INJURY OR DEATH MAY OCCUR



- 6) This machine cannot be towed **even in the neutral position**. Damage to the axle may occur. **NEVER** attempt to ride on this machine at any time.



- 7) When engine is running, always keep your hands and all loose clothing away from rotating belts, shafts or pulleys. If hair, clothing or loose objects become entangled on any mechanical part or belt, it can cause serious bodily injury or death. Before opening any safety cover stop the engine.

AS AN OPERATOR, IT IS YOUR RESPONSIBILITY TO PREVENT ACCIDENTS AND BE AWARE OF YOUR SURROUNDINGS.

- 8) Fuel is flammable. DO NOT use cigarettes, matches, or operate the machine near any open flame or extreme heat.



- 9) Do not operate the machine in any unventilated room. Noxious, exhaust gas is discharged from the engine. Carbon monoxide can cause death when inhaled. Use the machine only outdoors.
- 10) When operating the machine **DO NOT TOUCH HOT PARTS**, i.e. the muffler, compressor parts around the spark plugs, rotating parts and air tank.



- 11) When blowing air be careful of soil scattering. Proper eye protection is advised.
DO NOT BLOW AIR WHEN PEOPLE ARE NEAR.

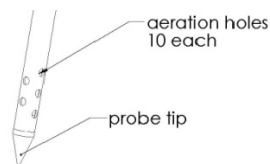
- 12) This machine is not to be used on highway, concrete or stone.

- 13) Proper clothing, shoes, eye protection are advised.

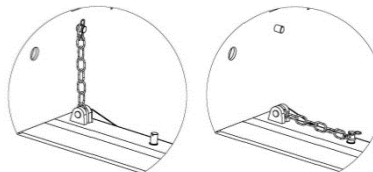


CAUTION! EAR PROTECTION IS REQUIRED.

- 14) Parking the machine after use:



- Check the probes (3) and probe tips for any damage.
- With the beam locked in the UP position, drain all air pressure. When pressure is “0” manually push the cylinder rods downward.



- You can now check the tips underneath the pressure pads for damage.
- Loosen the 4 (four) 7/16” nuts underneath the cylinders – ONLY LOOSEN. Turn the cylinder clockwise and lift the cylinder up. You can now visually see, inspect or change any or all probes and/or tips. When changing the probes, be sure to manually move the cylinder rod up and down, 2-3 times, to push any excess moisture from the cylinder before installing. Set the cylinder back on the cylinder mount base.
- Turn the cylinder counter clockwise and tighten the 4 (four) 7/16” nuts. Tighten in a star pattern: #1, #2 (straight across), #3 (to the left from #2), #4 (straight across from #3).

- 15) DO NOT adjust or repair the engine until it has cooled down. Lock the cylinders (3) and the beam into a stored or home (UP) position.
- 16) Make sure the key switch on the KOHLER motor is turned off or this will deplete the battery. Also, make sure that the PLC switch is in the OFF position. If left in the ON position, this may also cause the battery to deplete.
- 17) For temporary or extended storage, release all air pressure from the air tank, drain all condensation build-up from the air water separator and the air tank. Check the machine for safe and efficient storage.

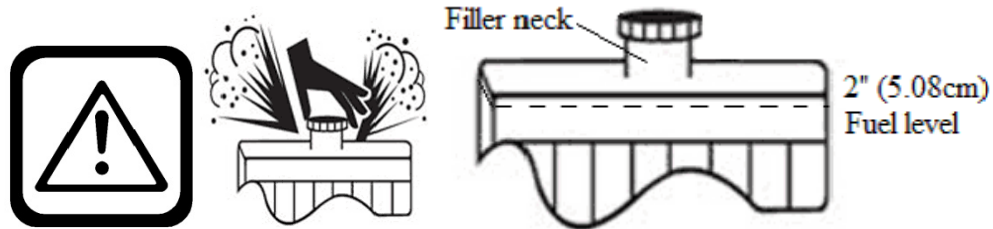
NOTE: For extended storage, treat the fuel with a fuel additive and then let the machine run 3-5 minutes before turning off the engine.

- 18) If replacement parts are needed, use only designated genuine approved parts. Call your dealer or contact GT AIRINJECT INC. at parts@air2g2.com. See warranty registration.

PRE-OPERATION OF THE MACHINE

- 1) **Before starting the machine**, check the levels of gasoline and oils in these areas:
 - a) Make sure the gasoline tank, which is located under the main cover, is filled to within 2 inches (5.08 cm) from the bottom of the filler neck. Full tank is approximately 5 gallons (18.92 liters). Use unleaded (87 minimum octane), leaded may be used if unleaded not available.

WARNING! FILL GAS TANK OUTDOORS IN AN OPEN AREA. LEAVE 2 INCHES (5.08 cm) FROM THE BOTTOM OF THE FILLER NECK TO ALLOW GAS TO EXPAND. DO NOT FILL TO THE TOP.



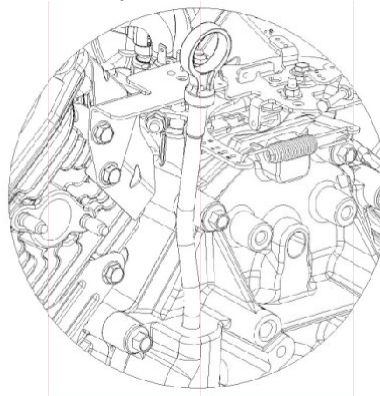
NOTE: Do not use methanol, gasoline containing methanol or gasohol containing more than 10% ethanol because the fuel system could be damaged. Do not mix oil with gasoline.

WARNING! GASOLINE IS HARMFUL AND FATAL IF SWALLOWED AND LONG TERM EXPOSURE TO VAPORS CAN CAUSE SERIOUS INJURY AND ILLNESS. KEEP GAS AWAY FROM EYES AND SKIN. AVOID PROLONGED BREATHING OF VAPORS. KEEP FACE AWAY FROM NOZZLE AND GAS TANK.

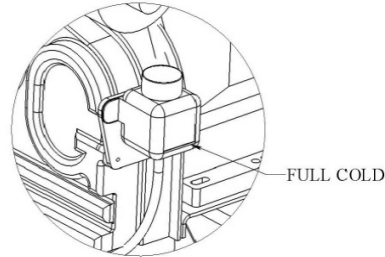


NOTE: Using stabilizers will help keep gasoline fresh during storage of 90 days or more. Do not use fuel additives containing methanol or ethanol.

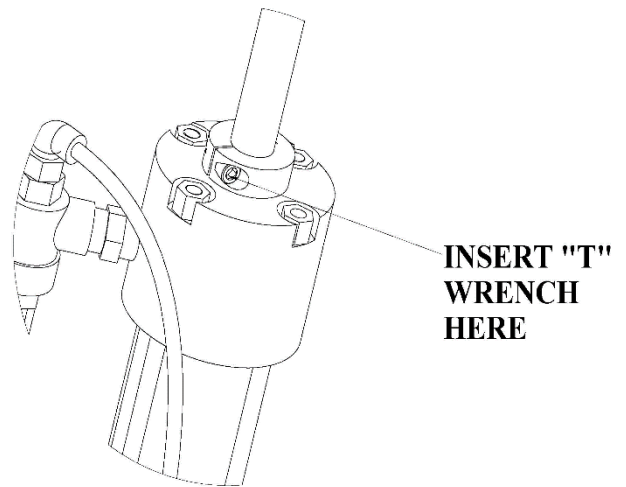
- b) Check oil in the motor before each use and when the engine is cold. Use high quality engine oil (10W30) as described in the KOHLER MANUAL. Do not over fill. Make sure the machine is on a level surface and the engine is OFF. Clean around the oil dip stick so dirt cannot fall back into the filler hole. If oil level is below the FULL mark remove the filler tube cap, add oil until it reaches the FULL mark on the dip stick.



- c) Check the compressor oil by loosening the fill cap and you can visually see the oil.
- d) Make sure the belts are snug while the motor is OFF. Check the axle oil by checking the marked line in the plastic clear reservoir FULL WHEN COLD (see illustration below) Use only **20W-50 oil**.
- e) Belt tension should be checked between ½ hour and 24 hours running at full load. Belt tension should also be checked periodically and adjusted when necessary.



- f) Check for any oil or fuel leaks and rectify before using machine
- 2) **Check tire pressure every other use.** Axle tires 10 psi (0.689 bar) steering tire 15 psi (1.0342 bar).
- 3) **Before starting the machine,** loosen the three 3 screws (found on each cylinder rod) with a 1/8" "T" Wrench, which hold the **aluminum clamp rings located in the HOME position**. Raise the aluminum clamp rings to the top of each rod and tighten. With the beam in a LOCKED position, push down the rods until they meet the ground. You will now be able to look at all 3 probe tips to make sure they are not bent or dull, and you will be able to check the aeration holes to make sure they are clear of any debris.

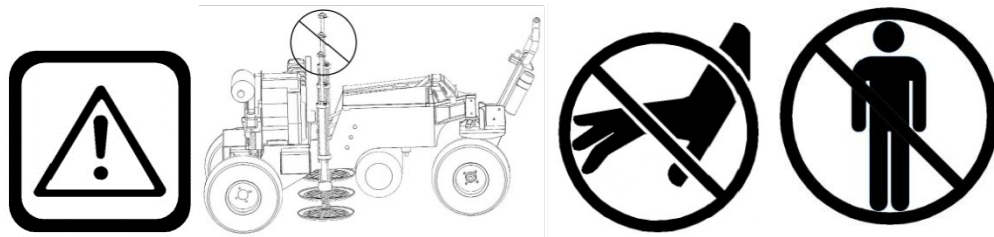


If probe tips are worn or dull, replace immediately as damage can occur to the probe or cylinder. In order to replace the probes and/or probe tips, follow these instructions:

- Loosen the four (4) 7/16" nuts underneath the cylinders – ONLY LOOSEN. Turn the cylinder clockwise and lift the cylinder up. You can now visually see, inspect or change any or all probes. Set the cylinder back on the cylinder mount base. Turn the cylinder counter clockwise and tighten the four (4) 7/16" nuts. Tighten in a star pattern.

The rods will rise automatically after the motor is started, and the air pressure builds.

WARNING! DO NOT TOUCH OR STAND NEAR THE CYLINDER RODS DURING OPERATION.



- 4) **If the engine has not been started for more than 8 hours:** Before turning the key to start, turn key to the on position, allow the electronic fuel pump to fill the fuel filter, now turn to start engine. To set engine Speed/RPM for safely moving machine from location to location, slide throttle control ¼ ways to the UP position. See PICTURE below.

NOTE: Do not tow. The machine must be walked or trailered to the desired location to begin the aeration process.

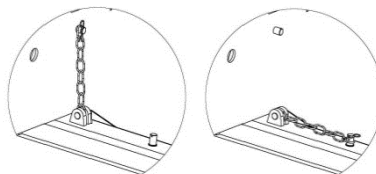
WARNING! DO NOT RIDE THIS MACHINE. TO AVOID ACCIDENTS, A QUALIFIED OPERATOR MUST BE AWARE OF THEIR SURROUNDINGS AND REMEMBER THAT IT IS YOUR RESPONSIBILITY TO THINK AND OPERATE SAFELY.



NOTE: Wear proper clothing, footwear, and eye protection. Ear protection is required.



- 5) **After the motor is running:** Above the beam (see picture) release the chain from the side – one on the left and one on the right side. These chains are stored by inserting the chain onto a pin located on the beam. This will now allow the beam to move in a downward motion, setting the pads on the surface with pressure.

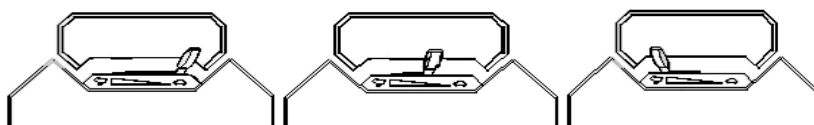


Now, move the throttle to FULL operating position (see pic BELOW).

IDLE RPM

WALKING RPM

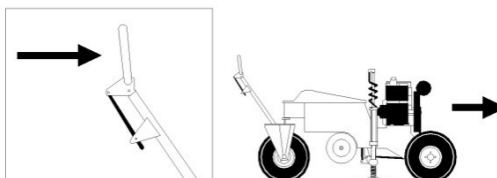
OPERATING RPM



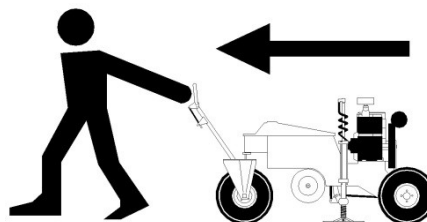
WARNING! KEEP HANDS AND FEET AWAY FROM THE PADS. WHEN FINISHED USING THE MACHINE, ALWAYS ATTACH THE CHAINS BACK TO THE PIN ON EITHER SIDE OF THE FRAME (I.E. IN A HOME OR STORED POSITION [UP]).



- 6) The handle bars always rest in the neutral position. In this position, the brake is automatically set.



- 7) Standing in the operator's position, PUSH the handle bars to release the brake and engage a REVERSE motion. Standing in the operator's position, PULL the handle bars to release the brake and engage in a FORWARD motion. **NEVER FOR ANY REASON, OVER-EXTEND OR APPLY PRESSURE TO THE HANDLE BARS WHILE MOVING THE MACHINE WITH OR WITHOUT THE ENGINE RUNNING. DAMAGE CAN OCCUR TO THE CABLE OR THE CABLE CONNECTIONS. WALK THE MACHINE ONLY IN THE WALKING RPM AS SHOWN ON PAGE 23**



- 8) The trigger buttons, located at the ends of both the right and left handle bars, are depressed simultaneously to start the aeration process.
- 9) Standing in the operator's position behind the handle bars, flip the toggle switch on the right side of the dash to the UP/ON position. The screen will read "SELECT MODE" 1=AUTO / 2=MANUAL (SEE FUNCTION KEYS FOR THE PLC ON THE FOLLOWING PAGE). Press 6 and hold. The screen will read "RESET TO FACTORY", 1=YES / 3=NO. Press 1=YES. **FACTORY DEFAULT SETTING HAVE BEEN RESET.**
- 10) Press 1=AUTO. PLC will read TRIGGER TO START. Once in position to begin the aeration process, slide the throttle lever completely to the left. Trigger buttons at each end of the handle bars must be depressed simultaneously for the aeration process to begin.
- 11) The beam will lower the three (3) pressure pads to the surface.
- 12) The cross member will have heim joints that lock into place, putting a partial amount of the machine weight on these pads. The three (3) cylinders will then insert the three (3) probes into the ground with the pressure from gauge 1. **NOTE: checking the actual depth of the hole is recommended before starting the job to make sure the correct length probes are in use.**
- 13) Fracturing and movement maybe seen on the surface after this has been done. When each injection is timed out, the cylinder rod will bring the probes out of the ground "QUICKLY".
- 14) Once the probes are out of the ground and the cylinder rods are all the way up, the beam will then lift the three (3) pads from the surface. The operator may now move the machine 3-4 feet (.9144-1.2192 m) and repeat this

process. This process should only take 4-5 seconds to complete.

CAUTION! DO NOT STAND NEAR THESE CYLINDERS DURING OPERATION.

NOTE (1): If the pitch or golf course is extremely compacted, the operator may want to move the machine every 2 feet (.6096 m) on the first aeration. Afterwards, the distance will increase in the movement as you loosen the compaction.

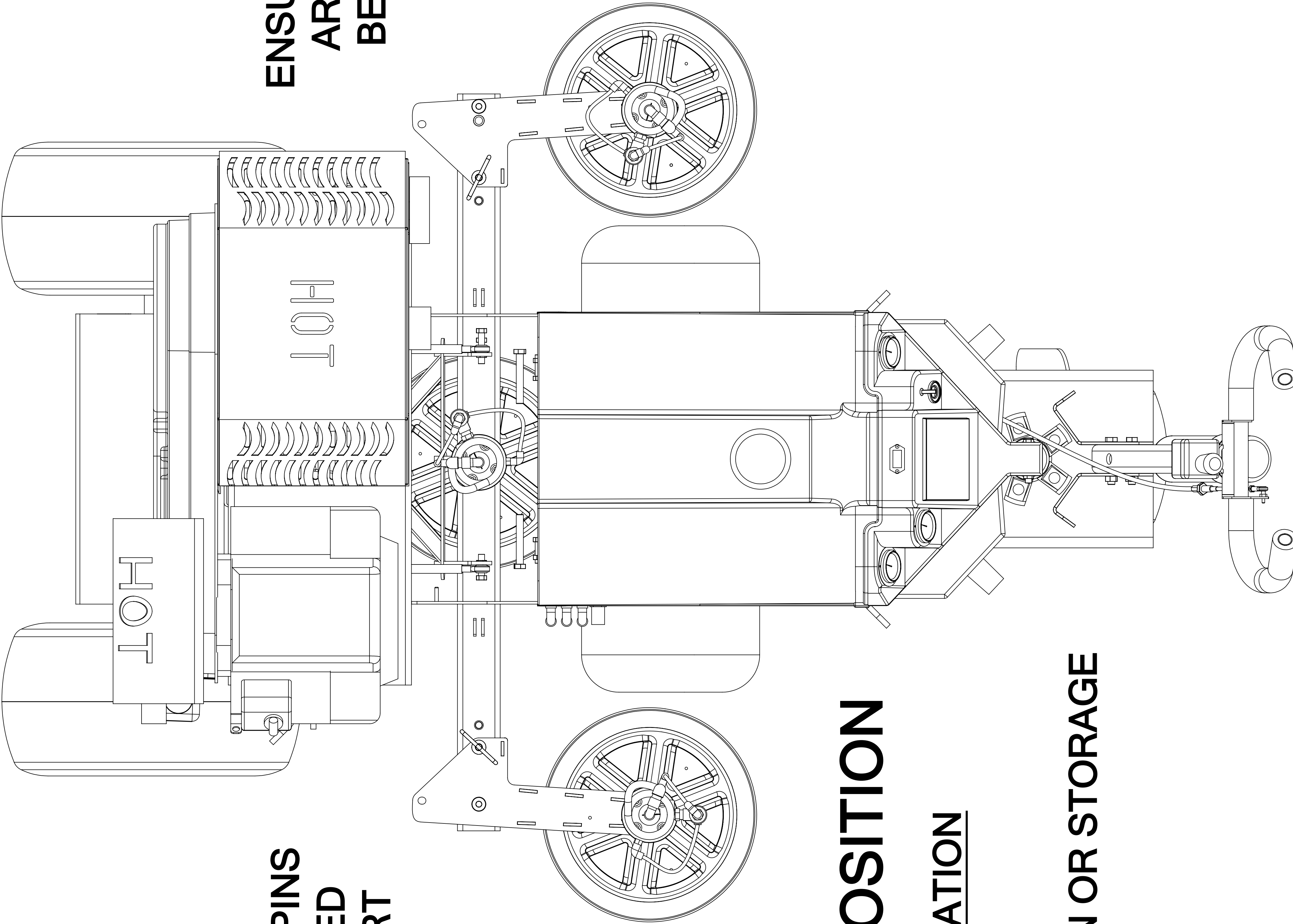
NOTE (2): Standard probes are 7-inch (17.780 cm), 9-inch (22.86 cm) and 12-inch (30.48 cm) in .5 (13mm) outside diameter. If a depth of less than 10 to 12 inches (25.4 to 30.48 cm) is desired, then we suggest using 7-inch (17.780 cm) probes.

NOTE (3): Depth of ALL probes may vary by up to (1) inch (2.54cm) depending on tire pressure, pad assemblies properly adjusted and/or height of the turf to be aerated. The manufacturer suggests that before each use, operate the machine one time normally, move the machine, and check the depth of the hole and make sure the depth of the hole is correct to the length of probe being used.

NOTE (4): Using probes other than the size and diameter as stated will void the warranty on all cylinders

**ENSURE BOTH LOCK PINS
ARE FULLY INSERTED
BEFORE TRANSPORT**

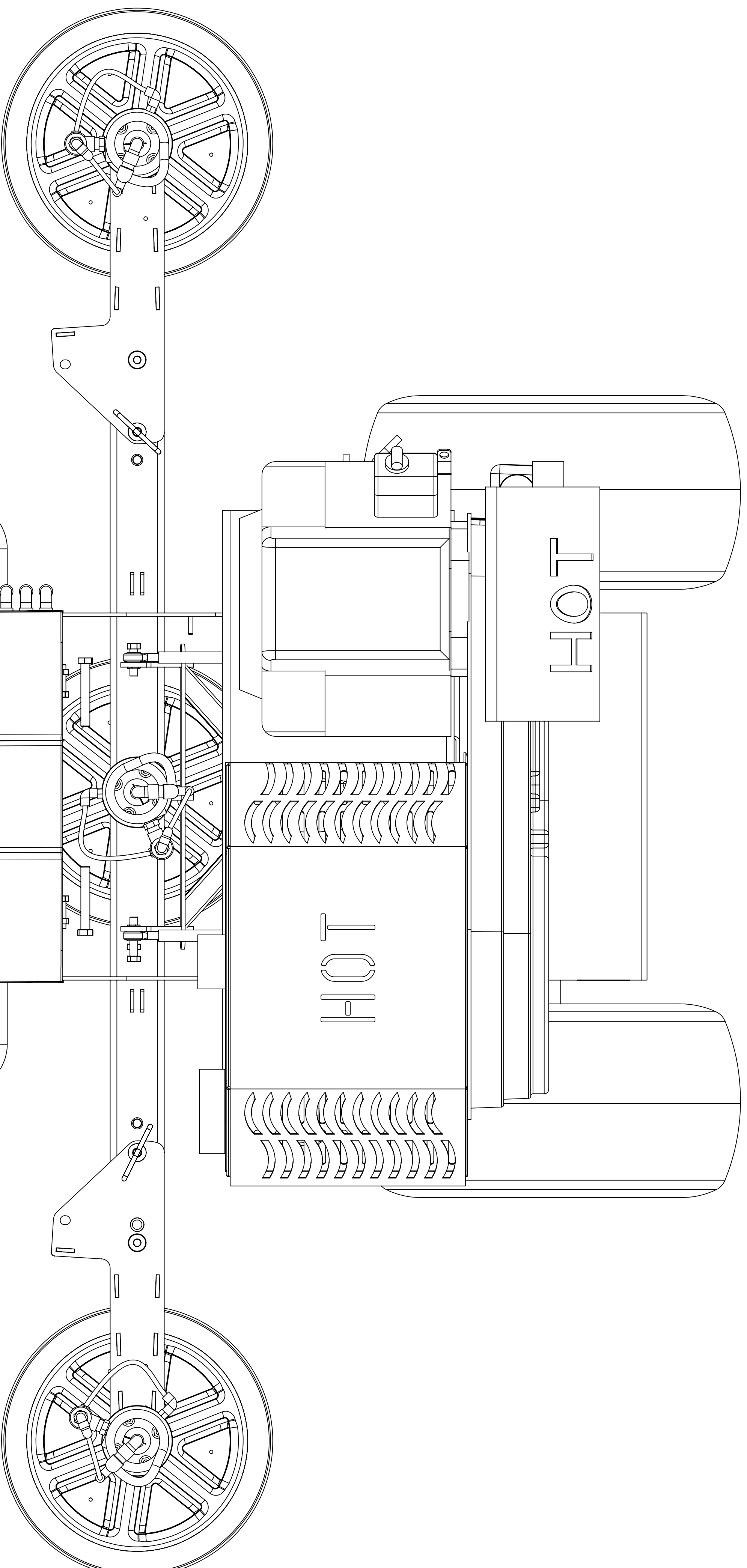
**ENSURE BOTH LOCK PINS
ARE FULLY INSERTED
BEFORE TRANSPORT**



RETRACTED POSITION

NOT FOR OPERATION

**FOR TRANSPORTATION OR STORAGE
ONLY**

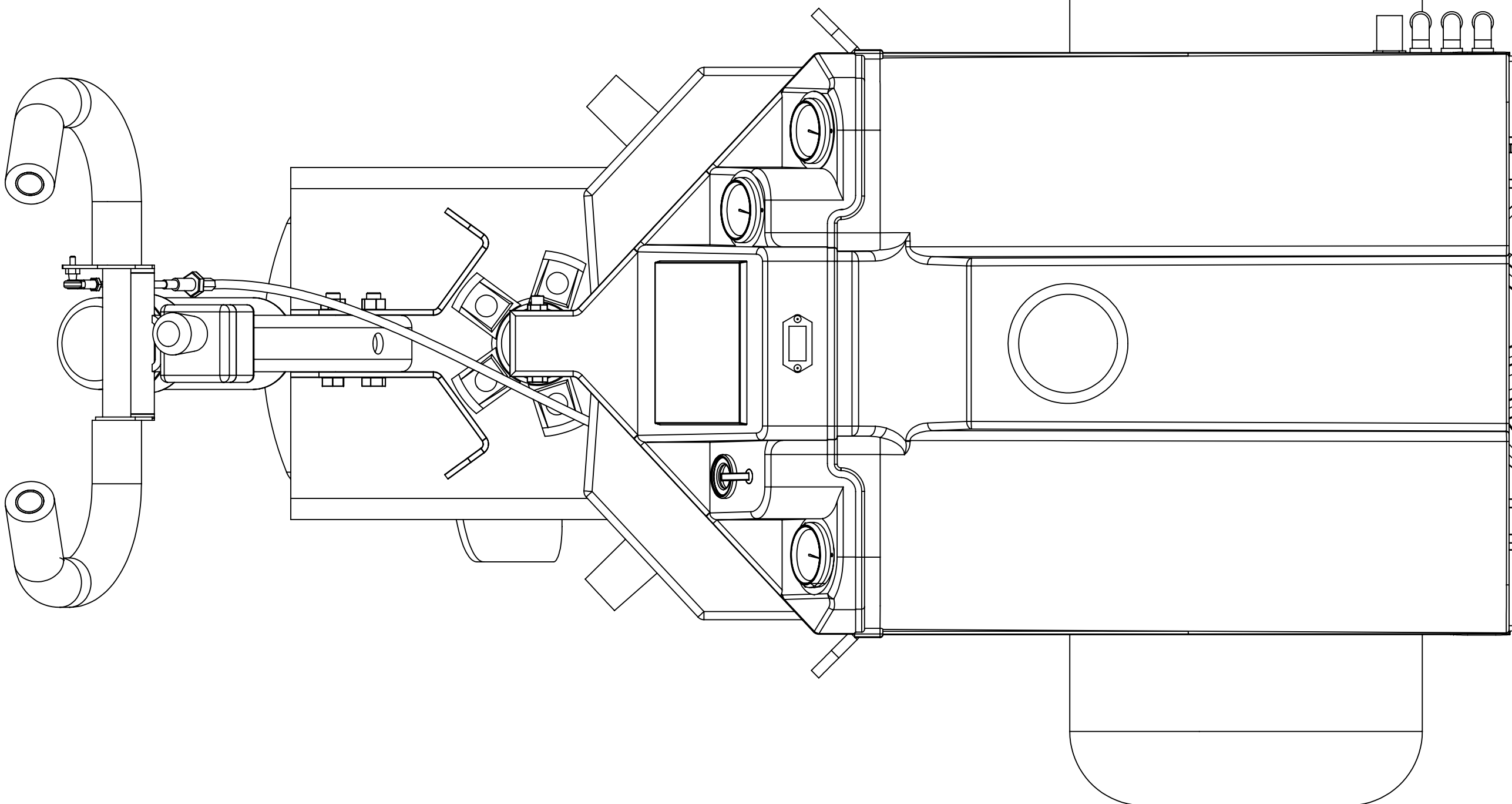


**ENSURE BOTH LOCK PINS ARE
FULLY INSERTED BEFORE
OPERATION**

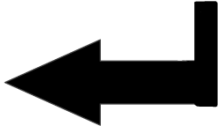
**ENSURE BOTH LOCK PINS ARE
FULLY INSERTED BEFORE
OPERATION**

EXTENDED POSITION

**OPERATE MACHINE ONLY WITH BOTH
ARMS EXTENDED**



**THE FOLLOWING PAGE YOU WILL FIND THE PLC FUNCTION KEYS
FUNCTION KEYS FOR THE PLC**



SET KEY



BACK KEY

TO OPERATE THE PLC

Turn toggle switch up to the ON position. Screen will read 1=AUTO / 2=MANUAL. Press 1=AUTO. Screen will read "TRIGGER TO START".

Push the two thumb switches located at the end of the handle bars simultaneously. Process will begin after each cycle, move the machine FORWARD or REVERSE 2-1/2 to 3 feet and repeat process.

NOTE: IN CASE OF EMERGENCY, PUSH THE EMERGENCY STOP BUTTON OR TURN THE TOGGLE SWITCH DOWN TO OFF. THE MACHINE WILL RETURN ALL FUNCTIONS TO THE HOME POSITION.

ALL SETTINGS ARE FACTORY SET.

OTHER PLC FUNCTION KEYS

There are two (2) function keys for the operator to use.

- With the PLC in 1=AUTO / 2=MANUAL.
- Press 5 and HOLD for 3 seconds. Screen will read "AIR2G2 REVISION 6.2".
- Press 7 & 9 and HOLD SIMULTANEOUSLY. Screen will read HOURS - # OF HOURS MACHINE HAS OPERATED. PRCT (Probe Count) - # OF TIMES PROBES HAVE INJECTED.
- Press  **BACK KEY.** 1=AUTO / 2=MANUAL.
- Press 6 and hold for 3 seconds; screen will read FACTORY SETTINGS press 1=yes 2=no, Press 1
- Press  **BACK KEY** to 1=AUTO / 2=MANUAL

OPERATING PLC TO CHECK MACHINE FUNCTIONS INDEPENDANTLY

All settings are pre-set by the manufacturer.

NOTE: When toggle switch is first turned on, a blow-out or purge of probes will take place

Standing in the operators' position behind the handle bars, flip the toggle switch on the right side of the PLC to the UP/ON position.

- The screen will read **"SELECT MODE"** 1=Auto/ 2=Manual
- Press 2=Manual. Screen will read **"MANUAL MODE"** 1=Motion / 2=Timer.(timer pre-set)
- Press 1=Motion. This is used to ensure the probes are moving UP and DOWN, and to ensure the pressure from the beam is being applied to the pressure pads. Screen will read **"MANUAL MOVE"** 1=Probe / 2= Beam.

DO NOT OPERATE ON A HARD SURFACE, I.E. CONCRETE OR PAVEMENT.

- Press 1=Probe. Screen will read **"MANUAL PROBE"**  1= Toggle. Press BACK Screen will read **"MANUAL MOVE"** 1=Probe / 2=Beam. **ONLY TOGGLE ON A SOFT SURFACE.**
- Press 2=Beam. Screen will read **"MANUAL BEAM"**  Press BACK 2 (two) times. Screen will read **"MANUAL MODE"** 1=Motion / 2=Timer. (Timer is pre-set from mfg.)

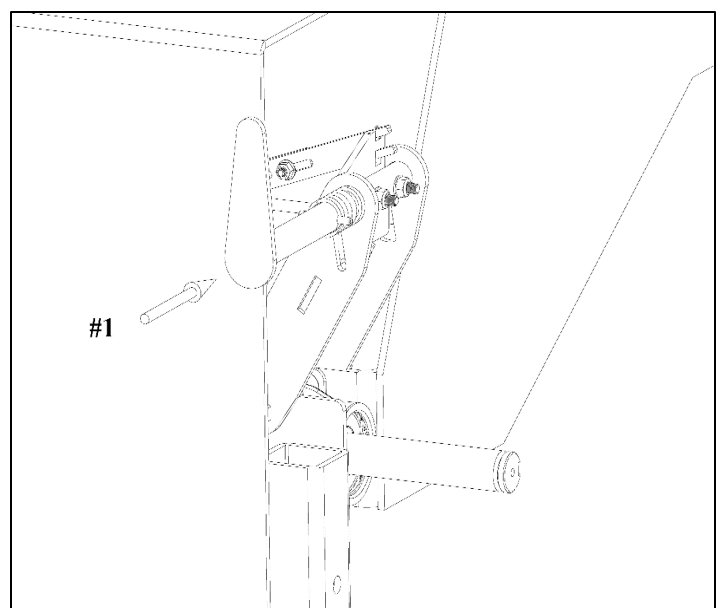
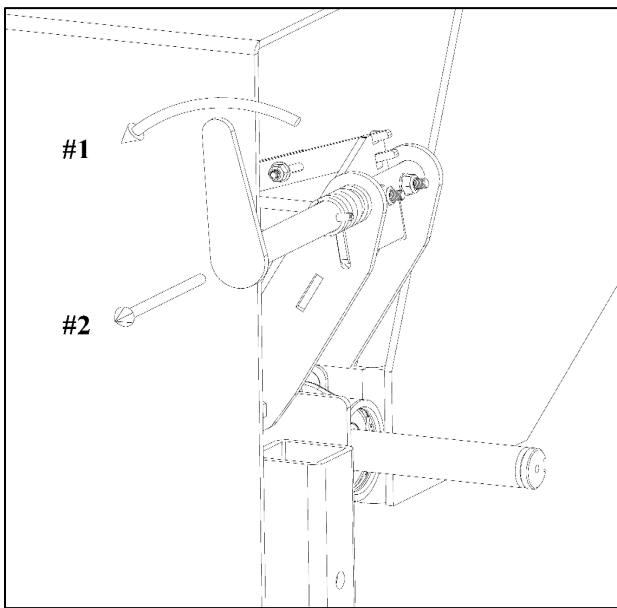
STANDARD OPERATIONS PROCEDURE FOR THE AERATION PROCESS

NOTE: Check hole depth before starting. Refer to page 27, Note (3).

- ❖ Standing in the operator's position behind the handle bars, with both hands on the handle bars, (left hand on the left side and right hand on the right side) with thumb(s) or finger(s) press both trigger buttons simultaneously and the aeration process will begin. **DO NOT MOVE THE MACHINE.** The process will take 3-4 seconds to complete. The PLC will:
 - 1) Lower the beam and the pads to the surface
 - 2) insert the probes (3) into the ground
 - 3) Once depth is achieved, the pre-set regulated amount of air is released into the subsurface, fracturing the soil twice. Each burst is 0.5 seconds.
 - 4) All probes will then retract, and an automatic air purge will then occur
 - 5) Beam and pads will rise
 - 6) AIR2G2®-336 can now be moved 3-4 feet (0.9144-1.219 m) to repeat the process.

NOTE: DO NOT TOW THE MACHINE. **THIS MAY DAMAGE THE TRANSAXLE**

- ❖ The Hydro-Gear transaxle has a neutral position that is to be used only in an emergency or for repairs or maintenance. **THE MACHINE CANNOT BE TOWED.** From the operator's position standing behind the handle bars, in front of the left tire you will see the neutral arm. (See LEFT PIC) Looking at the Neutral Arm, turn it Counter-Clockwise (Anti-Clockwise) from the top point. Pull the arm towards you. At this point, the Neutral should be engaged.

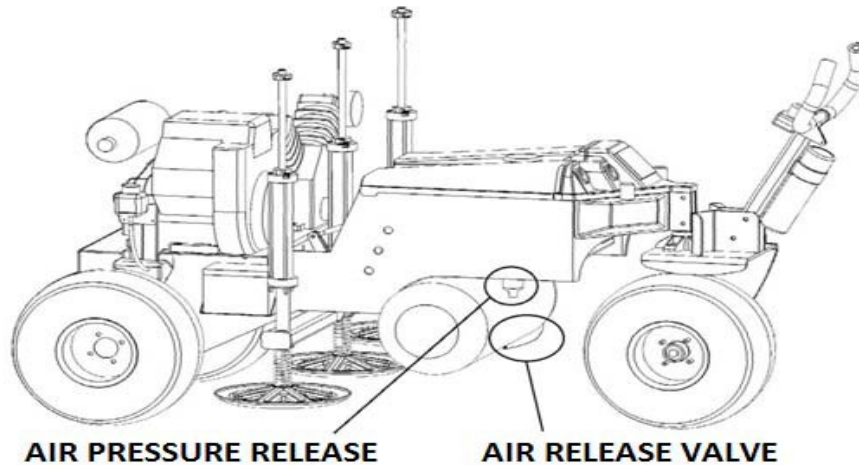


- ❖ In order to move the machine while in the neutral position, you must make sure the machine and PLC are off and the motor is no longer running. Also, the handle bars must be engaged. To move the machine **TOWARDS THE OPERATOR**, pull the handle bars back. To move the machine **AWAY FROM OPERATOR**, push the handle bars forward, thus releasing the brake. If out of gas, remove the tank and fill and re-install in proper location.
- 1) Before operating the machine, you must first engage the axle by releasing the neutral position (SEE RIGHT PIC). To do this, locate neutral arm in front of the left tire, looking at the Neutral Arm, push it towards the machine. The Neutral should now be released (PIC). The axle is now engaged and ready for operation. You may now start the motor and begin operation of the machine.
 - 2) **REMEMBER**, when the handle bars are in the neutral position (center) the parking brake will automatically be set.
 - 3) To transport the Air2G2-336 machine, use a heavy-duty trailer or truck with proper tie downs. Ensure that the trailer or truck has all necessary markings and lighting as required by law

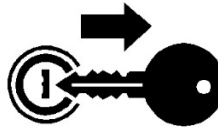
MAINTENANCE AND STORAGE

NOTE: Be sure the beam and all 3 cylinders are secured in the “Home” / stored (UP) position.

- With the PLC in the AUTO/MANUAL mode Press and release 8 (PURGE) and air will be released through the probes. This can be done with or without the motor running. Doing this for 5-7 seconds will help to clean any dirt from the probes. Press 8 again to stop(PURGE).
- ADVISED AIR PRESSURE RELEASE** – Open manual drain on the right under-side of air tank allows for condensation to be drained from the air tank. **Do this off of the turf surface.**
- ADVISED AIR PRESSURE RELEASE** - Slightly loosen the outlet on the air water separator (SEE PIC) and let air pressure escape while cleaning out any condensation. Do this until all air is completely released from the system, and then tighten release knob



- Wait for all movement to stop on the machine before adjusting, cleaning or repairing. The beam must be in the upward and secured position; the brake will be engaged with the handle bars in the neutral position, stop the engine, and put the PLC in the OFF position.



- Clean the machine from all grass. Clean all debris from the probes, mufflers and engine to help prevent fires. **DO NOT PRESSURE WASH.** Use low pressure water. If there is any oil or gas spillage, remove and clean the area. You may use industrial quick-disconnect to attach an air hose/nozzle to blow off dirt and debris.
- Let the engine cool down before storing. Do not store near flames or anything that may be flammable.



- Do not store fuel near flames or drain fuel when indoors.
- The machine must be parked on a level ground. Do not allow untrained personnel to service the machine.
- Use built in jack stands or safety latches to support components of the machine if needed.
- Carefully release pressure from machine components with stored air pressure (see maintenance schedule).

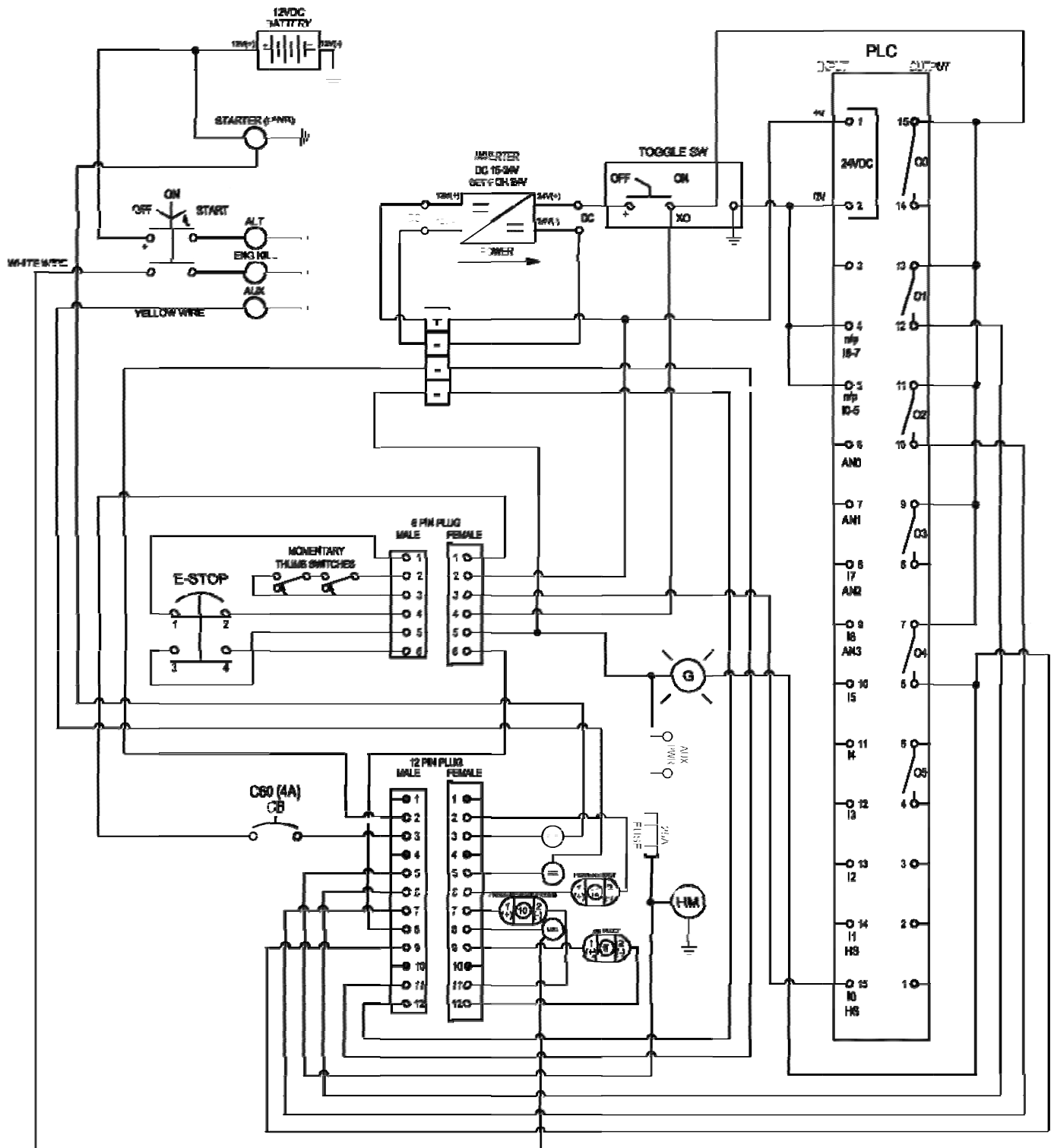
- Disconnect the battery or remove the spark plug wires before making any repairs. Disconnect the negative terminal first and the positive last. Reconnect the positive first and the negative last.
- Keep hands and feet away from moving parts. If possible, do not make adjustments with the engine running.



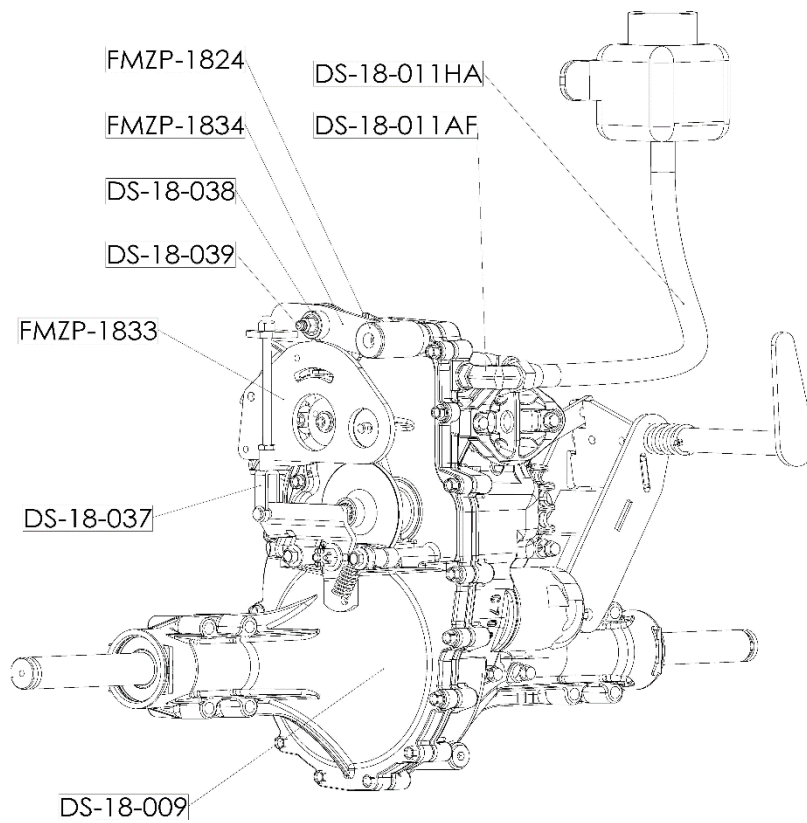
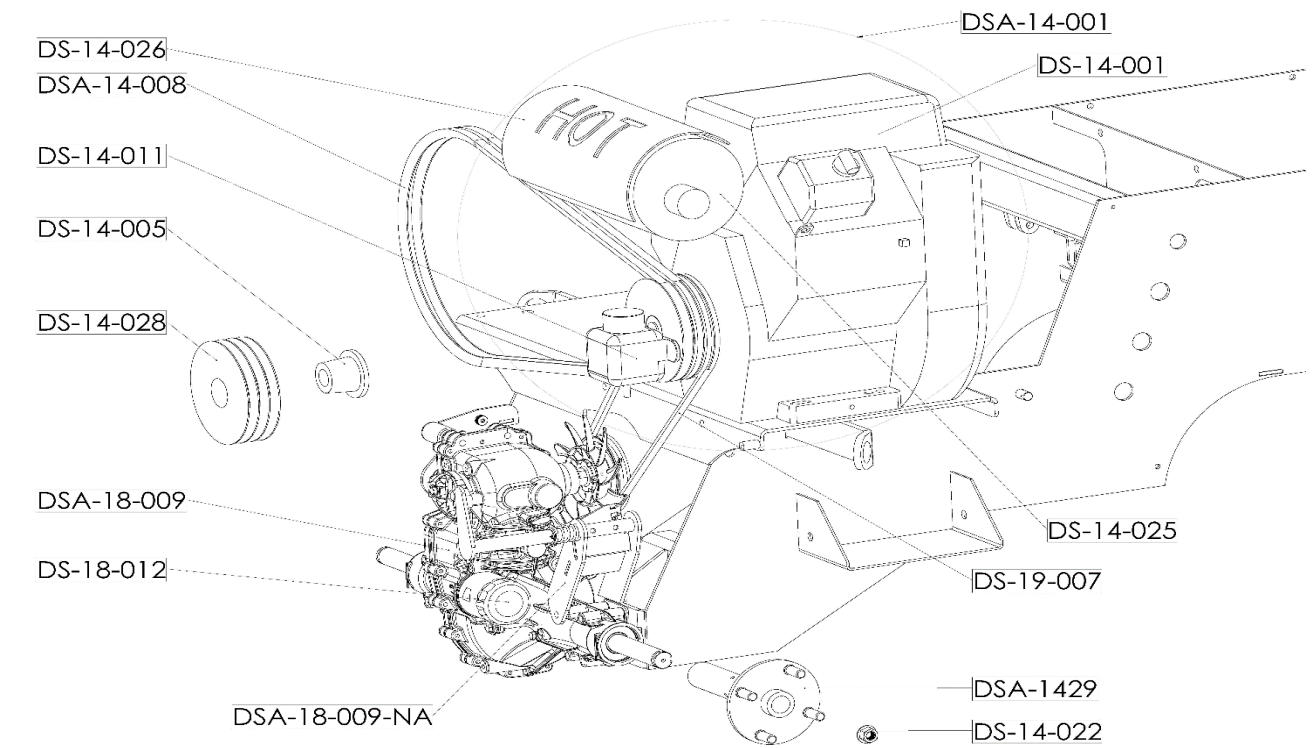
- Charge the battery of the machine in an open, well-ventilated area, away from sparks and flames. UNPLUG the charger before disconnecting or connecting the charger from the battery. Always wear protective clothing and use insulated tools. **It is not recommended to “jump start” the battery.**
- Keep all parts in good working condition and all hardware on the machine tightened. The decals must be replaced when worn or damaged.
- Probe replacement – loosen the four (4) nuts under the cylinder flange, twist the loosened cylinder clockwise and lift up and out of the cylinder tubes. You will now be able to either change or inspect the probe. When changing probes, be sure to manually move the cylinder rod up and down, 2-3 times, to push any excess moisture from the cylinder before installing. After inspection, replace the cylinder by setting the cylinder flat on the cylinder flange. Rotate counter-clockwise and tighten the nuts securely. When tightening the nuts use a star pattern: first nut, go across to 3rd nut, then left for number 2 nut and finish by tightening number 4 nut.
- **Use only GT AIRINJECT INC approved parts. The warranty on the machine may be VOIDED if genuine approved parts are not used.**
- **Warranty may be voided if machine has not been operated for over a six (6) month period.**
- **Warranty on some parts may be voided if machine is operated in any other manner other than that recommended by the manufacturer herein; i.e. riding the machine may cause damage to the PLC, DASH AND/OR TOP COVER.**
- **Using the wrong size probes on the cylinders will void the warranty**

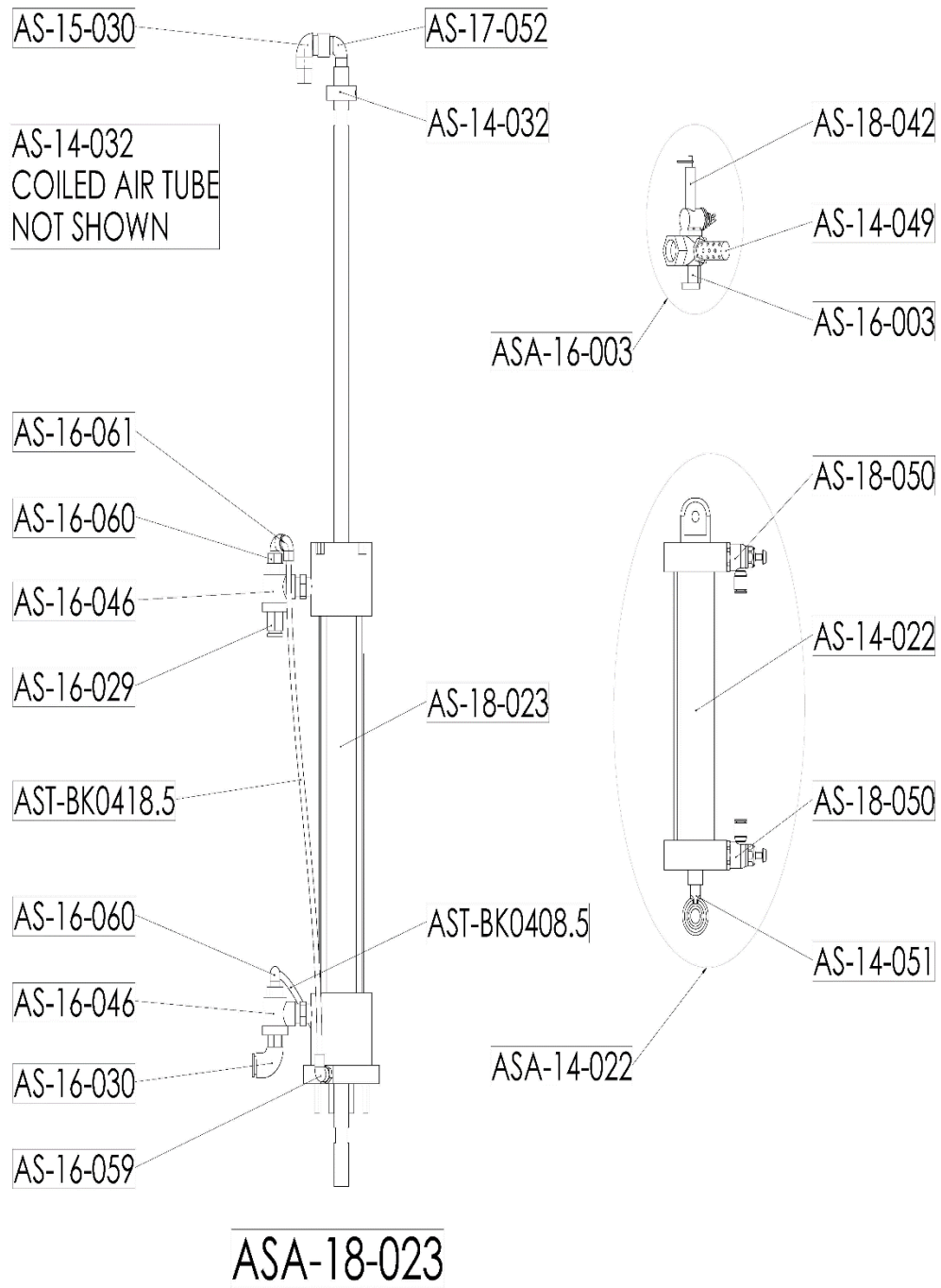
TROUBLE SHOOTING

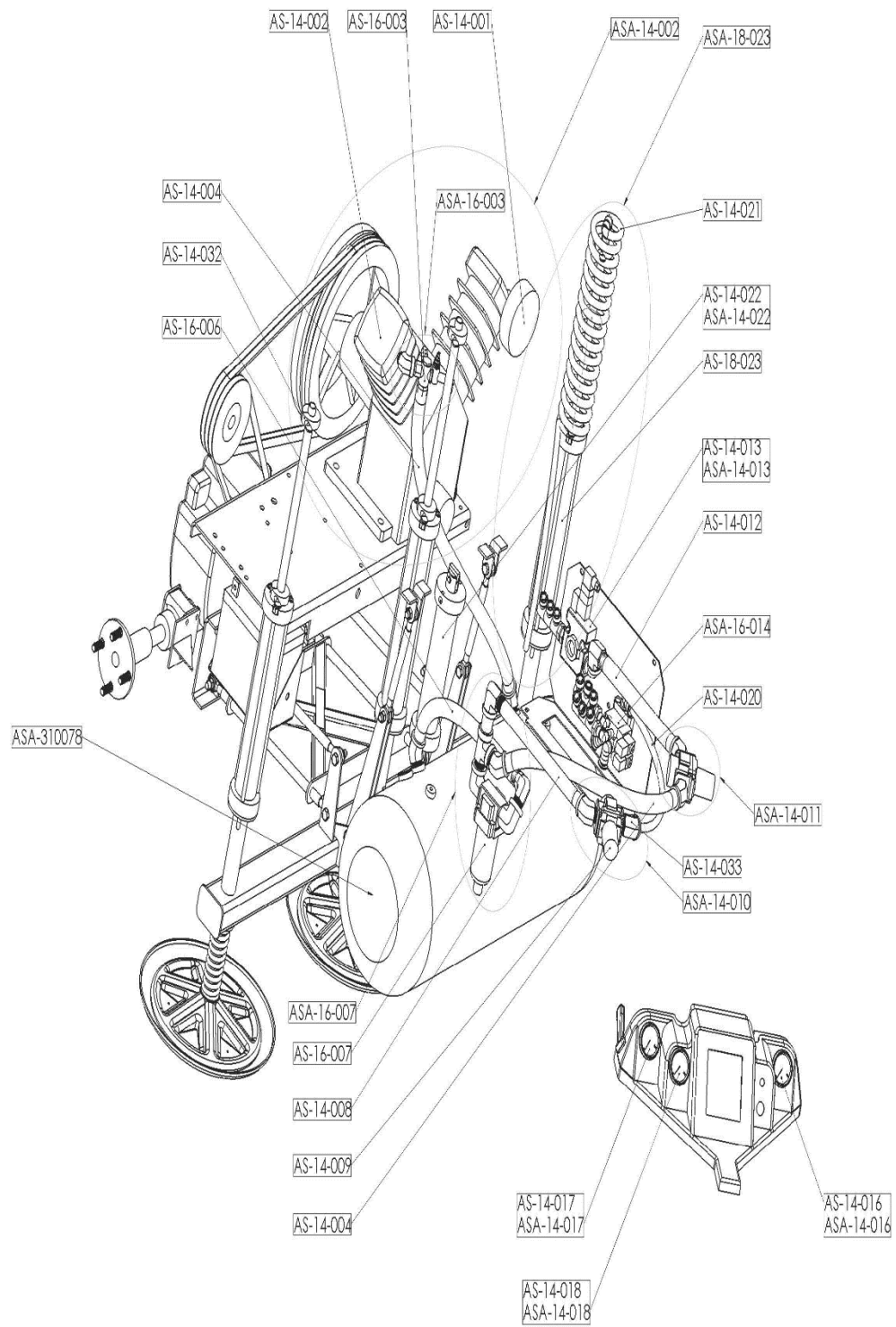
- Condition:** Motor will not start.
Solution: Check the oil and fuel levels. Make sure the battery is charged. **Make sure emergency stop-button has not been pressed.**
- Condition:** No air pressure.
Solution: Release valve on the compressor should be closed. Check all drainage ports. Ensure #8 on PLC is not on.
- Condition:** The machine will not move forward or reverse.
Solution: The axle is in neutral.
- Condition:** The brake does not completely set.
Solution: Check brake pads on the axle.
- Condition:** No power to the PLC.
Solution: Check the breaker underneath the top cover. This should be in the ON position. If still no power, check all wiring. **Check emergency stop button.** Check voltage going to PLC. Must be 24 Volts.
- Condition:** Beam won't go down.
Solution: Make sure safety chains on the left and right sides are released. (Refer to page 23). **Make sure the center cylinder is installed properly after changing probes. Ensure all air tubes are in the proper locations, (i.e. from the frame of the machine, bottom tube to bottom of cylinder; center tube to center connection of cylinder; and top tube to top connector of cylinder).**
- Condition:** Probes will not go down.
Solution: Make sure all tubing is in correct connections, i.e. from the machine, top tube to top connector; center tube to center connector; and bottom tube to bottom connector.
- Condition:** Probes go down but no air injects.
Solution: Check probes, i.e., tips and aeration holes make sure these are not plugged. Check tubing for injection of the air going into the cylinders. Press #8 make sure air is released. Check #6 valve and solenoid for proper operation
- Condition:** Air pressure drops excessively.
Solution: Check number 2 gauge. Tank pressure should read 175 psi (12.07bar). Check numbers 1 and 3 gauges are set at proper levels. Check all release valves, tank, and water air separator make sure these are all closed. Check #8 is not pressed on PLC.
- Condition:** Probes stuck in the ground.
Solution: Turn off PLC and the motor. See if probes return home. If not, release all air pressure from the machine. Manually lift up on the cylinder rods until they become unstuck. Check #12 valve and solenoid for proper operation.
- Condition:** Pressing trigger buttons or switches and nothing happens.
Solution: Turn the PLC off for 10 seconds to re-set. Turn PLC on and press "1" for AUTO.
- Condition:** Hear air escaping under the top cover.
Solution: Turn off the PLC. Turn off the engine. Take top cover off. Listen to determine location of air leak. In order to remove the top cover and remove the fuel tank lid, unlatch two (2) draw latches, one on each side, and remove the cover.

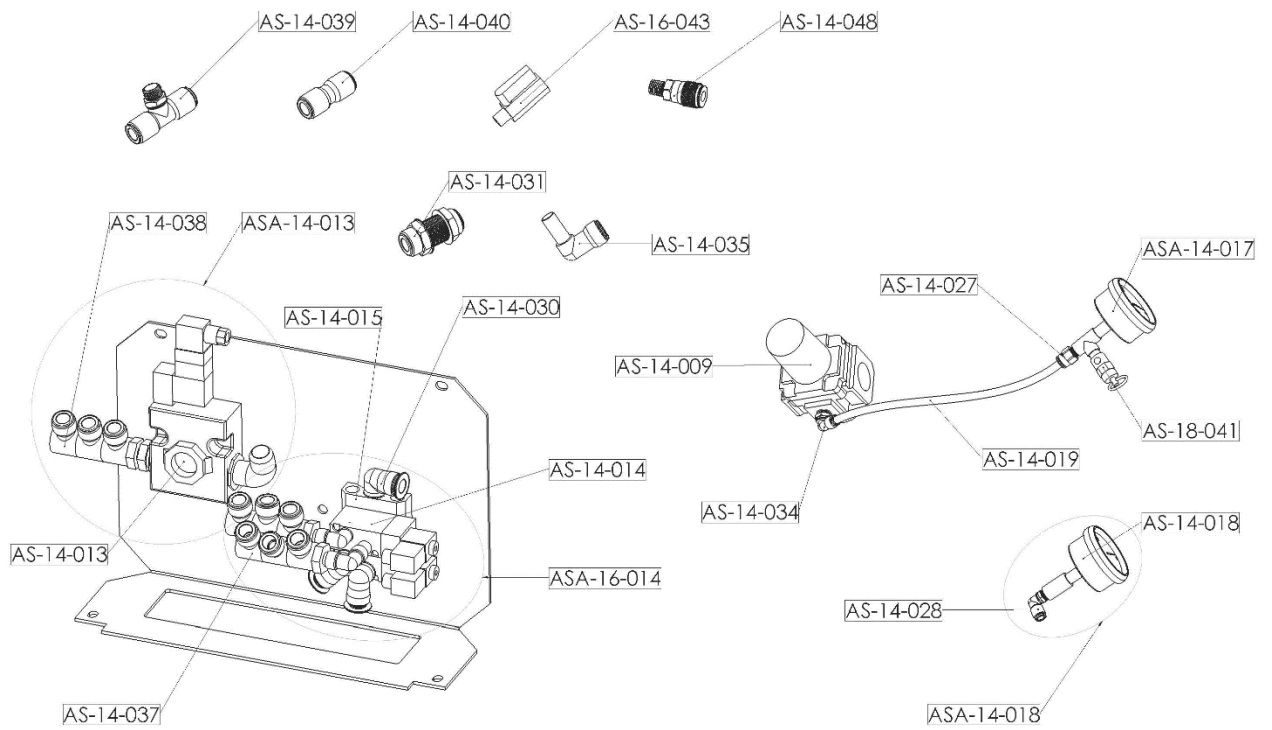


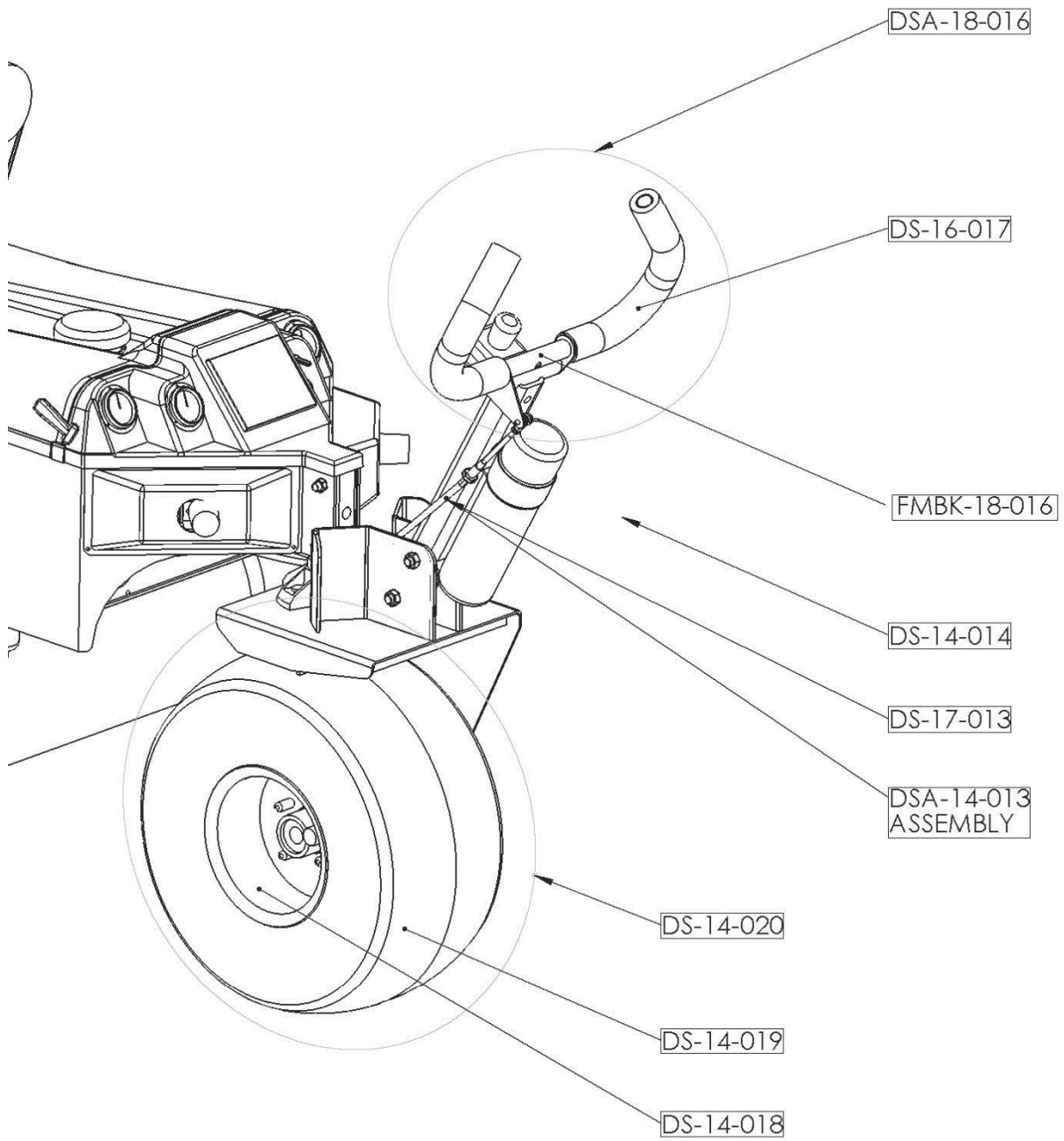
	DWG. NUMBER: FR-SCHEMATIC	DRAWING TYPE: AS-BUILT	DATE CREATED: 08-19-15	DRAWN BY: B.K.	CHECKED BY: T.S.	SHEET: 1 OF 1	REVISION: REV. 2
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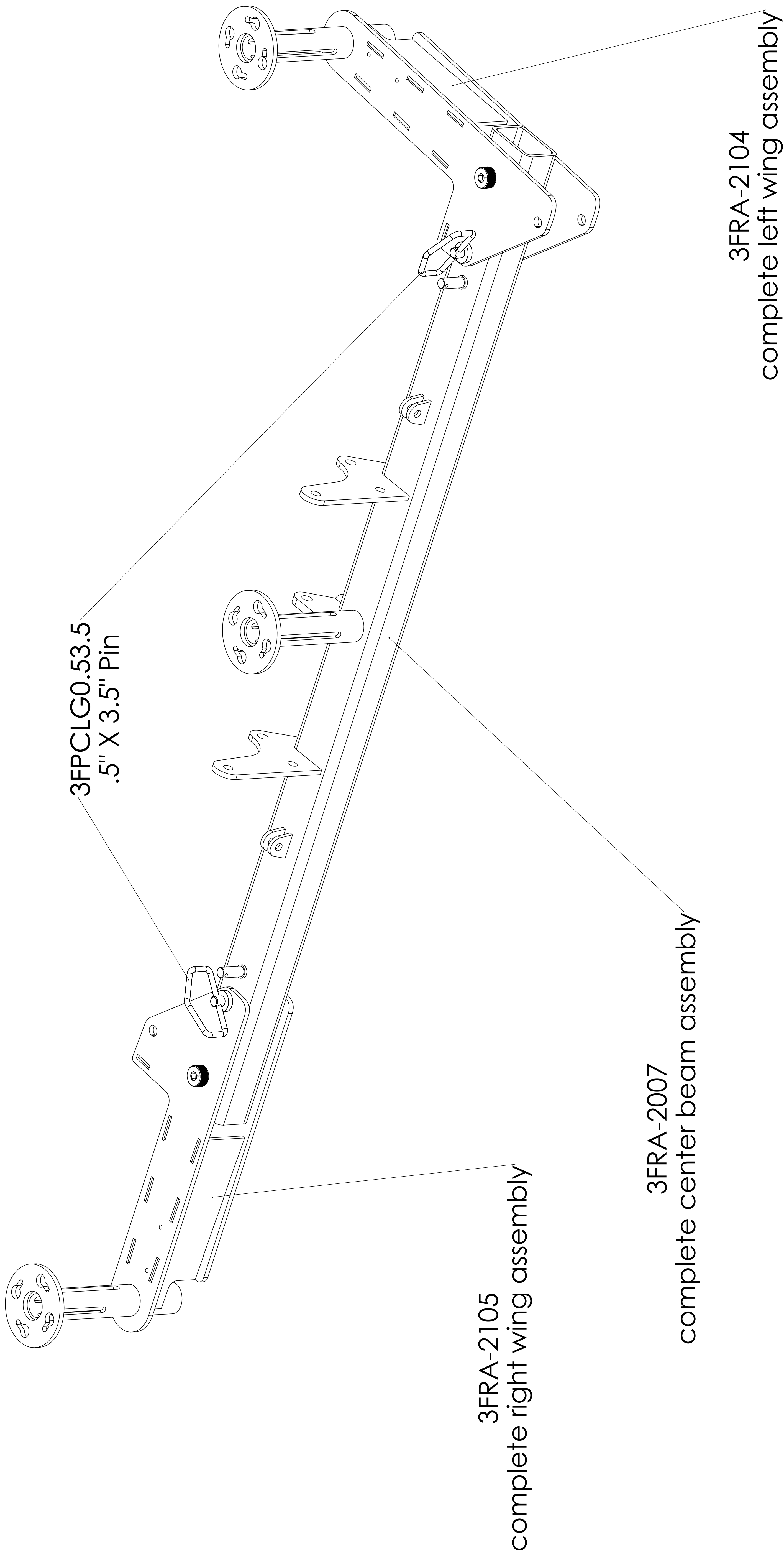








Air2G2 336 Pressure Beam Assembly parts numbers



Item	Purpose	Per Mach ine
AIR SYSTEM		
AS-14-002 (SN) -- INGERSOL-RAND AIR COMPRESSOR 2475	AIR COMPRESSOR	1
AS-14-004 -- STEEL BRAID HOSE (23")	TANK AND AIR INJ. REG. SUPPLY HOSE	2
AS-14-008 -- STELL BRAID HOSE (13")	PROBE INJ. REG. SUPPLY HOSE	1
AS-14-009 -- 3/4" REGULATOR	INJECTION REGULATORS	2
AS-14-009-N -- NORGREN REGULATOR PANEL MOUNT NUT	NORGREN REGULATOR PANEL MOUNT NUT	2
AS-14-009-S -- 2" ID x 2.75" OD x 0.045 " THICK STAINLESS STEEL ROUND SHIM	REGULATOR COVER SHIM	2
AS-14-012 -- 3/4" BLACK RUBBER HOSE, 12" LONG	AIR INJECTION REGULATOR TO AIR INJECTION VALVE HOSE	1
AS-14-013 -- #6 MAC VALVE (AIR INJECTION)	#6 VALVE (AIR INJECTION)	1
AS-14-014 -- 4-WAY, 2 POSITION SINGLE SOLENOID, SPRING RETURN VALVE (air assist)	#10/12 VALVES (cylinder actuation)	2
AS-14-015 -- 2-STATION ALUMINUM VALVE MANIFOLD	#10 & #12 VALVE BANK MANIFOLD	1
AS-14-016 -- 100 PSI PRESSURE GAUGE (2")	AIR INJECTION PRESSURE GAUGE	1
AS-14-017 -- 200 PSI PRESSURE GAUGE (2")	PROBE INJECTION PRESSURE GAUGE	1
AS-14-018 -- 300 PSI PRESSURE GAUGE (2")	SYSTEM PRESSURE GAUGE	1
AS-14-019 -- 1/4" BLACK TUBING (per foot)	AIR GAUGE TUBING	8'
AS-14-020-BK -- 1/2" BLACK TUBING (per foot)	AIR TUBING	10.58 3'
AS-14-020-BL -- 1/2" BLUE TUBING (per foot)	BLUE AIR TUBING	6.67'
AS-14-020-G -- 1/2" GREEN TUBING (per foot)	GREEN AIR TUBING	4.34'
AS-14-020-Y -- 1/2" YELLOW TUBING (per foot)	YELLOW AIR TUBING	5.84'
AS-14-021 -- PROBE CYLINDER COILED TUBING	PROBE CYLINDER COILED TUBING	3
AS-14-022 -- PRESSURE BEAM CYLINDER	PRESSURE BEAM CYLINDER	1
AS-14-027 -- 1/8" FNPT x 1/4" TUBE STRAIGHT	PROBE/AIR INJECTION PRESSURE GAUGES	2
AS-14-028 -- 1/8" FNPT x 1/4" TUBE ELBOW	SYSTEM PRESSURE GAUGE FITTING	1

AS-14-029 -- 3/8" MNPT x 1/2" TUBE STRAIGHT	CYLINDER TOP QE VALVE FITTINGS	4
AS-14-030 -- 3/8" MNPT x 1/2" TUBE ELBOW	PROBE CYLINDERS AND #10 VALVE	6
AS-14-031 -- 1/2" PTC BULKHEAD UNION FITTING	FRAME BULKHEAD FITTINGS	6
AS-14-032 -- PROBE CYLINDER ROD COLLAR CLAMP	PROBE CYLINDER ROD SUPPORT	3
AS-14-033 -- 1/2" MNPT x 1/2" TUBE ELBOW	CYLINDER REGULATOR FITTING	1
AS-14-034 -- 1/4" MNPT x 1/4" TUBE ELBOW	REGULATOR GAUGE TUBE FITTINGS	2
AS-14-035 -- 1/2" TUBE PLUG-IN ELBOW	FITTING EXTENDER ELBOW	20
AS-14-036 -- 3/8" MNPT x 1/4" TUBE STRAIGHT	AIR TANK PRESSURE GAUGE FITTING	1
AS-14-037 -- TRIPLE STEM 3/8" MNPT x 1/2" TUBE	#12 VALVE BANJO FITTING	2
AS-14-038 -- TRIPLE STEM 1/2" MNPT x 1/2" TUBE	#6 & #14 VALVE BANJO FITTINGS	1
AS-14-040 -- 1/2" TUBE UNION	CENTER PROBE CYLINDER COILED TUBING UNION	1
AS-14-044 -- SPEED-CONTROL AIR EXHAUST MUFFLER	PROBE CYLINDER TOP QE MUFFLER	3
AS-14-045 -- AIR EXHAUST MUFFLER	PROBE CYLINDER BOTTOM QE VALVE MUFFLER	3
AS-14-048 -- 3/8" MNPT x 1/4" INDUSTRIAL QD AIR COUPLING	AUXILIARY HOSE PORT	1
AS-14-049 -- UNLOADER VALVE HIGH-FLOW EXHAUST MUFFLER	UNLOADER VALVE EXHAUST MUFFLER	1
AS-14-051 -- BEAM CYLINDER ROD END 1/2"-20 RH THREAD	BEAM CYLINDER ROD END	1
AS-14-052 3/8" MNPT x 3/8" FNPT NPB ELBOW	#12 VALVE FITTING	1
AS-14-065 -- 3/8" FNPT x 3/8" FNPT ELBOW	OIL DRAIN/#12 VALVE FITTING	2
AS-15-030 -- 1/2" PTC x 3/8" MNPT ELBOW (non-swivel)	PROBE CYLINDER COIL TUBING CONNECTOR	3
AS-16-003 -- COMPRESSOR UNLOADER VALVE	COMPRESSOR UNLOADER VALVE	1
AS-16-006 -- STEEL BRAID SEPARATOR SUPPLY HOSE (20")	AIR TANK TO FILTER SUPPLY HOSE	1
AS-16-007 -- NORGREN 3/4" AIR FILTER/SEPARATOR	AIR SYSTEMS FILTER/SEPARATOR	1

AS-16-007-B -- NORGREN FILTER/SEPARATOR WALL MOUNT BRACKET	FILTER MOUNT	1
AS-16-007-E -- NORGREN 3/4" AIR FILTER/SEPARATOR ELEMENT (5 micron)	AIR SYSTEMS FILTER/SEPARATOR ELEMENT	1
AS-16-043 -- 1/4" NPT MINI BALL VALVE (AIR TANK MANUAL DRAIN)	AIR TANK MANUAL DRAIN VALVE	1
AS-16-046 -- CYLINDER QUICK-DUMP VALVE	PROBE CYLINDER QE VALVES	6
AS-16-046RK -- CYLINDER QUICK-DUMP VALVE REPAIR KIT		
AS-16-053 -- 3/8" MINI BALL VALVE	PROBE CYLINDER LIFT SHUTOFF VALVE	1
AS-16-054 -- 325 PSI SAFETY POP-OFF VALVE, 1/4" NPT	UNLOADER SAFETY RELIEF VALVE	1
AS-16-055 -- 3/8" NPT BRASS HOLLOW-HEX PLUG	3/8" VALVE MANIFOLD PLUG	1
AS-16-056 -- 3/8" NPT STEEL NIPPLE FITTINGS (w/ vibra-seal)	QE VALVE CYLINDER MOUNT	7
AS-16-057 CYLINDER LUBE KIT	CYLINDER INTERNAL LUBRICATION OIL	1
AS-16-059 -- 1/8" MNPT x 1/4" TUBE ELBOW FITTING	CYLINDER AIR PLATE SUPPLY FITTING	6
AS-16-060 -- 3/8" MNPT x 1/4" TUBE ELBOW FITTING	QE VALVE TOP FITTING	6
AS-16-061 -- 1/4" TUBE PLUG-IN ELBOW	QE VALVE FITTING EXTENDER ELBOWS	3
AS-17-052 -- 3/8" MNPT x 3/8" FNPT STEEL ELBOW	PROBE CYLINDER FITTING	3
AS-18-023 -- BASE PROBE CYLINDER w/ INTEGRATED WIPER PLATE WITH SMALLER ID SHAFT HOLE	PROBE CYLINDER	3
AS-18-041 -- 120 PSI SAFETY POP-OFF VALVE, 1/8" NPT	PROBE PRESSURE GAUGE SAFETY VALVE	1
AS-18-042 -- 200 PSI SAFETY POP-OFF VALVE, 1/8" MNPT	SYSTEM PRESSURE GAUGE SAFETY VALVE	1
AS-18-050 -- 3/8" MNPT x 1/2" TUBE FLOW CONTROL VALVE	BEAM CYLINDER FLOW CONTROL VALVES	2
AS-18-066 -- BULKHEAD STRAIGHT 3/8" FNPT x 1/2" PTC	FRAME AUXILLARY BULKHEAD FITTING	1
AS-18-067 -- 1/2" PTC x 1/2" MNPT STRAIGHT FITTING	FRAME AUXILLARY CONNECTOR FITTING	1
ASA-14-002 (SN) -- COMPRESSOR ASSEMBLY	COMPRESSOR ASSEMBLY COMPLETE	1
ASA-14-010 -- PROBE INJECTION REGULATOR ASSEMBLY	PROBE INJECTION REGULATOR ASSEMBLY	1

ASA-14-011 -- AIR INJECTION REGULATOR ASSEMBLY	AIR INJECTION REGULATOR ASSEMBLY	1
ASA-14-013 -- AIR INJECTION VALVE MODULE ASSEMBLY	AIR INJECTION MODULE ASSEMBLY	1
ASA-14-016 -- 100 PSI AIR INJECTION GAUGE ASSEMBLY	100 PSI AIR INJECTION GAUGE ASSEMBLY	1
ASA-14-017 -- 200 PSI PROBE INJECTION GAUGE ASSEMBLY	200 PSI PROBE INJ. GAUGE ASSEMBLY	1
ASA-14-018 -- 300 PSI PRESSURE GAUGE ASSEMBLY	300 PSI SYSTEM PRESSURE GAUGE ASSEMBLY	1
ASA-14-022 -- BEAM CYLINDER ASSEMBLY	COMPLETE BEAM CYLINDER ASSEMBLY	1
ASA-16-003 -- COMPRESSOR UNLOADER VALVE ASSEMBLY	COMPRESSOR UNLOADER VALVE ASSEMBLY	1
ASA-16-007 -- NORGREN SEPARATOR ASSEMBLY	COMPLETE SEPARATOR ASSEMBLY	1
ASA-16-014 -- CYLINDER ACTUATION MODULE ASSEMBLY	CYLINDER ACTUATION MODULE ASSEMBLY	1
ASA-18-023 -- PROBE CYLINDER ASSEMBLY	PROBE CYLINDER ASSEMBLY	3
ASA-1881 -- VALVE PLATE COMPLETE ASSEMBLY - INSTALL READY	VALVE PLATE ASSEMBLY	1
ASA-19-007-B -- NORGREN FILTER/SEPARATOR MOUNT BRACKET ASSEMBLY	FILTER MOUNT	1
ASA-19-007-CA -- FILTER/SEPARATOR COMPLETE ASSEMBLY (INSTALL READY)		1
ASA-310078 -- BLUE AIR TANK ASSEMBLY	BLUE AIR TANK ASSEMBLY	1
LSS-212-5B -- PROBE CYLINDER REPLACEMENT PISTON AND ROD ASSEMBLY	PROBE CYLINDER REPLACEMENT ROD	3
LSS-212-A-SK -- FABCO PROBE CYLINDER SEAL KIT	PROBE CYLINDER SEAL KIT	3
LSS-212-A-WDG -- FABCO PROBE CYLINDER WIPERS	PROBE CYLINDER NEW WIPERS	3
LSS-217-SK -- FABCO BEAM CYLINDER SEAL KIT	BEAM CYLINDER SEAL KIT	1
<i>DRIVE SYSTEM</i>		
DS-14-001 (SN) -- KOHLER ENGINE	ENGINE	1
DS-14-005 -- KOHLER ENGINE PULLEY BUSHING	KOHLER DRIVE PULLEY QD BUSHING	1
DS-14-011 -- HYDROGEAR AXLE RESERVOIR TANK KIT	DRIVE AXLE OVER-FLOW RESERVOIR	1
DS-14-014 -- 10-32 RH THREAD FEMALE SHANK ROD END	DRIVE CABLE END MOUNT	2

DS-14-015 -- DRIVE AXLE BRAKE PUCKS	DRIVE AXLE BRAKE PADS	2
DS-14-018 -- WHITE STEEL WHEEL	MACHINE WHEEL	3
DS-14-019 -- 21x12-8 A/Z TLN 800 SLICK NANCO TIRE	MACHINE TIRES	3
DS-14-020 -- TIRE AND RIM ASSEMBLY	TIRE AND WHEEL ASSEMBLY	3
DS-14-021 -- WHEEL STUD w/ LUG NUT	WHEEL STUD w/ LUG NUT	
DS-14-022 -- 1/2"-20 WHEEL LUG NUT	LUG NUT	16
DS-14-024 -- DRIVE BELT SPARE LOOP SET	DRIVE BELT SPARE LOOP SET	1
DS-14-025 -- KOHLER EXHAUST MUFFLER	KOHLER ENGINE EXHAUST MUFFLER	1
DS-14-026 -- KOHLER MUFFLER GUARD	KOHLER ENGINE MUFFLER GUARD KIT	1
DS-14-028 -- 3-GROOVE V-BELT PULLEY	ENGINE PULLEY	1
DS-14-029 -- KOHLER ENGINE OIL FILTER	ENGINE OIL FILTER	1
DS-16-017 -- RUBBER HANDLE BAR GRIPS w/ HOLE	HANDLE BAR GRIPS	2
DS-17-013 -- DRIVE CABLE	DRIVE CABLE	1
DS-17-032 -- 3/8" NPT MALE, 5" PIPE NIPPLE	ENGINE OIL DRAIN EXTENSION	1
DS-17-034 -- VALVE STEMS	TIRE VALVE STEMS	3
DS-18-011AF -- #8 FEMALE SWIVEL JIC TO #6 MALE O-RING BOSS 90 DEGREE ELBOW	AXLE RESERVOIR HOSE ADAPTER FITTING	1
DS-18-011HA -- 30" HOSE ASSEMBLY w/ #8 FEMALE SWIVEL JIC x OPEN END	G7 AXLE RESERVOIR HOSE ASSEMBLY	1
DS-18-037 -- CLEVIS ROD END, 1/4" PIN, 2" LONG, 1/4"-28 FEMALE SHANK, ZINC-PLATED	G7 BRAKE CONNECTOR	1
DS-18-038 -- SEALED BALL BEARING, 3/8" SHAFT DIAMETER	G7 LINKAGE CONNECTOR BEARING	1
DS-18-039 -- 5/16"-18 SHOULDER BOLT, 3/8" DIAMETER x 1/2" LONG SHOULDER	G7 LINKAGE CONNECTOR BOLT	1
DS-19-010 -- ADJUSTABLE LINK V-BELT, A/4L	DRIVE BELT	16'
DSA-14-001 -- (SN) KOHLER ENGINE ASSEMBLY	KOHLER ENGINE ASSEMBLY	1
DSA-14-008 -- COMPRESSOR BELT	COMPRESSOR DRIVE BELT	2
DSA-14-013 -- DRIVE CABLE ASSEMBLY	DRIVE CABLE COMPLETE ASSEMBLY	1
DSA-1492 -- AXLE EXTENSION ASSEMBLY	AXLE EXTENSION COMPLETE ASSEMBLY	2
DSA-18-009 (SN) -- G7 DRIVE AXLE ASSEMBLY	DRIVE AXLE ASSEMBLY (SERIALIZED)	1
DSA-18-016 -- COMPLETE HANDLE BAR ASSEMBLY	COMPLETE HANDLE BAR ASSEMBLY	1
DSA-19-007 2019 G7 AXLE DRIVE BELT	G7 AXLE DRIVE BELT	1
ELECTRICAL SYSTEM		
ES-14-001 -- 12 VOLT BATTERY, 450 CA, 370 CCA	SYSTEM BATTERY	1

ES-14-002 -- BATTERY HOLD-DOWN BRACKET	FIBERGLASS BATTERY HOLD-DOWN BRACKET	1
ES-14-003 -- MAIN WIRING HARNESS	MAIN WIRING HARNESS	1
ES-14-004 -- DIN RAIL WIRING HARNESS	DIN RAIL WIRING HARNESS	1
ES-14-005 -- STEERING ARM WIRING HARNESS	STEERING ARM WIRING HARNESS	1
ES-14-006 -- 240v, 4 AMP MINIATURE CIRCUIT BREAKER	DIN RAIL CIRCUIT BREAKER	1
ES-14-008 -- TOGGLE SWITCH BUTTON (RED LED) 12v/20A	DASH TOGGLE SWITCH	1
ES-14-008C -- TRANSPARENT RED TOGGLE SWITCH COVER	TOGGLE SWITCH COVER	1
ES-14-009 -- 12 VOLT POWER OUTLET	DASH 12V POWER OUTLET	1
ES-14-010 -- POWER CONVERTER 12V TO 24V 10A (SEALED)	DIN RAIL POWER CONVERTER	1
ES-14-012 (SN) -- PLC	SYSTEM PLC	1
ES-14-016 -- THUMB TRIGGER SWITCH	TRIGGER SWITCHES	4
ES-14-017 -- BLACK ENGINE BLOCK GROUNDING CABLE (9")	ENGINE BLOCK GROUNDING CABLE ASSY.	1
ES-14-019 -- HANDLEBAR WIRING HARNESS	HANDLE BAR WIRING HARNESS	1
ES-14-020 -- BLACK FRAME GROUNDING CABLE (9")	BATTERY GROUND CABLE COMPLETE	1
ES-14-021 -- RED BATTERY CABLE	BATTERY POSITIVE CABLE COMPLETE	1
ES-16-007 -- E-STOP ENCLOSURE	SYSTEM EMERGENCY STOP ENCLOSURE	1
ES-16-025 -- DC HOUR METER, 2 HOLE RECTANGULAR	DASH-MOUNT HOUR METER	1
ES-16-027 -- 1 AMP 600V RECTIFIER DIODES	RECTIFIER DIODES	3
ES-18-030 -- 8MM GREEN PANEL CUTOUT LED LIGHT w/ 4" WIRE LEADS	AIR INJECTION DASH INDICATOR LIGHT	1
ES-19-026-B -- BLACK BATTERY TERMINAL PROTECTOR	BATTERY TERMINAL COVER	1
ES-19-026-R -- RED BATTERY TERMINAL PROTECTOR	BATTERY TERMINAL COVER	1
FRAME ITEMS		
FMBK-1430 -- BLACK UPRIGHT ONLY	PAINTED UPRIGHT	1
FMBK-1478 -- BLACK COMPRESSOR HEAT SHIELD	PAINTED COMPRESSOR HEAT SHIELD	1
FMBK-1874-L -- 2018 G7 AXLE COVER MOUNT LEFT - PAINTED (BLACK)	PAINTED LEFT AXLE COVER BRACKET	1
FMBK-1874-R -- 2018 G7 AXLE COVER MOUNT RIGHT - PAINTED (BLACK)	PAINTED RIGHT AXLE COVER BRACKET	1

FMBK-1879 -- BLACK DRIVE-END DROP STAND ONLY	PAINTED AXLE DROP STAND	2
FMBL-1836 -- BLUE AXLE COVER	BLUE AXLE COVER ASSEMBLY	1
FR-14-001 -- 4 LUG HUB BEARING KITS	WHEEL HUB BEARINGS (4 LUG HUBS)	1
FR-14-010 -- 7/16"-20 RH THREAD ROD ENDS	HEIM JOINTS	6
FR-14-011 -- 7/16"-20 LH THREAD ROD ENDS	HEIM JOINTS	6
FR-14-012 -- BEAM SUPPORT CHAIN ASSEMBLY	BEAM SUPPORT CHAIN ASSEMBLY	2
FR-14-013 -- 3/8" OD x 1" LONG CLEVIS PIN	BEAM SUPPORT/AXLE COVER BRACKET PIN	4
FR-14-022 -- 3/8" OD x 3" L SQUARE LOCKING PIN	DROP STAND PINS	3
FR-14-023 -- 5 LUG HUB BEARING KITS	WHEEL HUB BEARINGS FOR 5 LUG HUBS	1
FR-14-026 -- PAD COMPRESSION SPRINGS	PAD SPRINGS	3
FR-14-027 -- SPRING TUBE NUT	SPRING TUBE NUTS	3
FR1455 -- UNPAINTED 1.5" WHEEL SPINDLE	UPRIGHT WHEEL SPINDLE	1
FRA-14-001 -- STEERING WHEEL HUB 4 LUG ASSEMBLY	STEERING WHEEL HUB COMPLETE ASSY.	1
FRA-14-015 -- PRESSURE BEAM ASSEMBLY	PRESSURE BEAM ASSEMBLY	1
FRA-14-018 -- PAD ASSEMBLY COMPLETE	PAD ASSEMBLY	3
FRA-14-023 -- UPRIGHT SPINDLE/HUB 5 LUG ASSEMBLY	UPRIGHT MOUNT HUB COMPLETE ASSEMBLY	1
FRA-1418-L -- LEFT POWER STRUT ASSEMBLY w/ BUSHINGS	POWER STRUT COMPLETE ASSY. LEFT	1
FRA-1418-R -- RIGHT POWER STRUT ASSEMBLY w/ BUSHINGS	POWER STRUT COMPLETE ASSY. RIGHT	1
FRA-1420 -- SHORT LINK TUBE ASSEMBLY	PS TOP LINK ASSEMBLY	2
FRA-1430 -- UPRIGHT ASSEMBLY	UPRIGHT ASSEMBLY	1
FRA-1436 -- 2016 STEERING ARM ASSEMBLY	STEERING ARM ASSEMBLY	1
FRA-1457 -- ANTI-TORQUE FRAME ASSEMBLY	ANTI-TORQUE FRAME FAB ASSEMBLY	1
FRA-1462 -- LONG LINK TUBE ASSEMBLY	PRESSURE BEAM LINK ASSEMBLY	2
FRA-18-005 -- UPRIGHT DROP STAND ASSEMBLY	UPRIGHT DROP STAND COMPLETE ASSEMBLY	1
FRA-1879 -- DRIVE-END DROP STAND ASSEMBLY	AXLE DROP STAND COMPLETE ASSEMBLY	2
3FRA-2007 -- CENTER PRESSURE BEAM	AIR2G2 336 COMPLETE CENTER BEAM ASSEMBLY	1
3FRA-2105 -- RIGHT PRESSURE BEAM WING	AIR2G2 336 COMPLETE RIGHT PRESSURE BEAM WING ASSEMBLY	1

3FRA-2104 – LEFT PRESSURE BEAM WING	AIR2G2 336 COMPLETE LEFT PRESSURE BEAM WING ASSEMBLY	1
3FPCLGO.53.5 – LOCK PIN	AIR2G2 336 (.5" x 3.5" PIN) ZINC COATED PRESSURE BEAM LOCK PIN	2

FUEL/OIL SYSTEM

468317 -- FUEL TANK PICK-UP TUBE BUSHING FUEL GROMMET	FUEL TANK PICK-UP TUBE GROMMET	1
468907A -- FUEL TANK PICK-UP TUBE	FUEL TANK PICK-UP TUBE	1
961112A -- 3.5" SPACE VENT TUBE FOR FUEL TANK	FUEL TANK SPACE VENT TUBE	1
FS-14-001 -- KOHLER ENGINE FUEL FILTER	ENGINE FUEL FILTER	1
FS-14-002 -- 3.5" NON-VENTED FUEL TANK CAP	FUEL TANK CAP	1
FS-14-004 -- TANK-TO-FRAME FUEL HOSE (44")	TANK-TO-FRAME FUEL HOSE	1
FS-14-005 -- TANK-TO-CANISTER VENT HOSE (12")	TANK-TO-CANISTER VENT HOSE	1
FS-14-006 -- CANISTER-TO-FRAME VENT HOSE (39")	CANISTER-TO-FRAME VENT HOSE	1
FS-14-009 -- 1/4" HOSE, 20" LONG w/ ONE FJIC FITTING	ENGINE FUEL FILTER-TO-FRAME FUEL HOSE	1
FS-14-010 -- ENGINE VENT-TO-FRAME HOSE (23")	ENGINE VENT-TO-FRAME HOSE	1
FS-14-013 -- FUEL LINE QD MALE CONNECTOR VALVE	FUEL LINE QD VALVE	1
FS-14-014 -- FUEL LINE QD FEMALE COUPLER VALVE	FUEL LINE QD VALVE	1
FS-14-016 -- 1/4" JIC MALE x 1/4" JIC MALE BULKHEAD 90 DEGREE ELBOW w/ LOCKNUT	FRAME FUEL-LINE BULKHEAD FITTINGS	2
FS-14-017 -- 3/16" x 1/4" SINGLE BARB NYLON NIPPLE	ENGINE VENT-LINE ADAPTER FITTING	1
FS-18-007 -- 400CC CARBON CANISTER 1/4" x 1/4" PORTS	FUEL VAPOR CARBON CANISTER	1
FSA-14-003 -- ENGINE JUMPER VENT HOSE ASSEMBLY	ENGINE JUMPER VENT HOSE ASSEMBLY	1
FSA-14-011 -- 5" JUMPER FUEL HOSE w/ ONE MNPT FITTING	GAS TANK JUMPER FUEL HOSE	1
FSA-14-012 -- 5" JUMPER VENT HOSE w/ ONE MJIC FITTING	GAS TANK JUMPER VENT HOSE	1
FSA-1469 -- CHARCOAL FILTER PLATE COMPLETE ASSEMBLY - INSTALL READY	CHARCOAL FILTER/PLATE ASSEMBLY	1
FSA-16-008 -- GAS TANK ASSEMBLY	GAS TANK COMPLETE ASSEMBLY	1

PLASTIC ITEMS

PL-14-002 -- CUP HOLDER	CUP HOLDER	2
PL-14-004 -- REGULATOR COVER - LEFT	REGULATOR COVER - LEFT	1
PL-14-005 -- REGULATOR COVER - RIGHT	REGULATOR COVER - RIGHT	1
PL-14-006H -- PLC DASH w/ HOUR METER CUT-OUT	PLC DASH w/ HOUR METER CUT-OUT	1
PL-14-008 -- RUBBER T-HANDLE DRAW LATCH	MAIN COVER LATCHES	2
PL-14-009 -- MAIN COVER	MAIN COVER	1
PL-14-010 -- BELT GUARD	BELT GUARD	1
PL-14-012 -- PRESSURE PAD - UPPER	PAD ASSEMBLY - UPPER	3
PL-14-013 -- PRESSURE PAD - LOWER	PAD ASSEMBLY - LOWER	3
PL-16-014 -- CABLE SEALING GROMMET	SPLASH GUARD CABLE GROMMET	1
PL-16-015 -- CLEAR DUST/RAIN COVER	CLEAR DUST/RAIN COVER	1
PL-16-017 -- PLASTIC HB/PS MOUNT TUBE BUSHING	PLASTIC HB/PS MOUNT TUBE BUSHING	6
PL-16-019 -- 3/4" ID PLASTIC LOCKING PANEL CAP	SPLASH GUARD MOUNT HOLE CAPS	2
PL-19-020 -- 1/4" INSIDE HEIGHT RUBBER EDGE TRIM	COMPRESSOR SHIELD CUT-OUT HOLE	22.5"
PLA-14-001 -- OWNER'S MANUAL CANISTER	OWNER'S MANUAL CANISTER - TRIMMED	1
PLA-14-007H -- DASH ASSEMBLY w/ HOUR METER	COMPLETE DASH ASSEMBLY	1
PLA-14-011 -- TOOL BOX ASSEMBLY	TOOL BOX ASSEMBLY	1
PROBE ITEMS		
PR-14-002 -- OVERSIZE PROBE TIPS (HARDENED)	OVERSIZE PROBE TIPS	
PR-14-004 -- PROBE SPRING	PROBE SPRINGS	9
PR-14-007 -- 7" PROBE ASSEMBLY w/ PR-14-002 (OS TIP)	7" PROBE ASSEMBLY	3
PR-14-009 -- 9" PROBE ASSEMBLY w/ PR-14-002 (OS TIP)	9" PROBE ASSEMBLY	3
PR-14-012 -- 12" PROBE ASSEMBLY w/ PR-14-002 (OS TIP)	12" PROBE ASSEMBLY	3
TOOL ITEMS		
T-14-001 -- 3/4" COMBINATION WRENCH	PROBE WRENCH FOR MACHINE TOOL BOX	1
T-14-002 -- 7/16" RATCHET COMBINATION WRENCH	PROBE CYLINDER WRENCH FOR MACHINE TOOL BOX	1
T-14-003 -- 3/16" T-HANDLE HEX KEY	CYLINDER CLAMP-COLLAR WRENCH	1
T-14-004 -- 1-1/4" DIAMETER x 13" LONG TUBE BRUSH	CYLINDER MOUNT & SPRING TUBE BRUSH	1
T-19-005 -- 1/8" HEX T-HANDLE KEY		
T-19-006 -- 5/8" DIAMETER x 9" LONG TUBE BRASS BRISTLE BRUSH	CYLINDER TUBE THREAD CLEANING BRUSH	1

GT AIRINJECT AIR2G2

Risk Assessment

By John Ross MG CMlosh
March 2020

Page	Significant Risks
1	Noise
2	Vibration
5	Maneuvering
7	Moving Parts
7	Hot Parts
8	Exhaust Fumes
9	Compressed Air
9	Petrol / Fire
10	Site Specific Risks

Significant Risks

1. Noise

Relevant Legislation; Control of Noise at Work Regulations 2005; Environmental Protection Act 1990.

The regulations place a duty on the employer not to expose employees to noise levels above 85 dB(a) for a period of greater than 8 hours or a peak sound pressure of 137 dB(c)

Where noise exposure is greater than 80dB(a) if an employee requests hearing protection, it must be supplied.

Where noise exposure is 85 dB(a) hearing protection must be supplied.

When hearing protection is supplied, it must take noise inside the hearing protection to a level of < 80dB(a)

(a) Noise: Exposure to noise levels > than 85 dB(a) for long periods.

Measured noise exposure of AIR2G2

Operators exposure at the ear

LAeq 90 dB(a)* The average sound level when noise levels are rapidly changing. Known as the equivalent continuous level.

LEPd 89.6 dB(a)* The equivalent noise dose when consistently exposed over an 8-hour working day.

LPeak 113.3 dB(c)* the loudest recorded sound that may only be for a very brief period of 1 millisecond.

* a - c refers to sound filters built into the noise meter. The A filter measures exposure at the human ear. The C filter measures single loud brief sounds.

*Noise exposure measured in March 2020 with Svantek SV971 Class 1 sound meter, instrument standard IEC 61672-1:2002, BS4142 for environmental noise.

Operative Controls

Noise exposure from the AirG2 contributes to employees' noise dose over the day or week. In this context, when workers are exposed to any noise over 85dB(a) the area is declared a hearing protection zone where the use of hearing protection is mandatory. Operatives must wear hearing protection with a minimum SNR of 30.

Noise dissipation over distance

The pressure wave from the noise will reduce over distance. Resulting in hearing protection becomes unnecessary for other persons if they are a minimum of 4 metres from the AIR2G2. Anyone inside this radius should wear hearing protection with a minimum SNR of 20.

(b) Nuisance noise: neighbor's exposed to noise affecting their ability to enjoy their home where the AIR2G2 is within hearing distance.

There is no defined level for nuisance noise; nuisance noise being noise that is “unwelcome and can cause distress, annoyance or disturbance to unwilling listeners”. **Exposure to nuisance noise is different from exposure to workplace noise that can cause hearing damage.**

Operative Controls

When working close to a residential property where potentially, residents, patients or customers are sleeping or relaxing, Use of the GT Air Inject in that area is prohibited until after 8.00 am.

Noise Risk Using AIR2G2* / At Risk; All in immediate vicinity, neighbours.				
Without operative controls	Extremely High	High	Moderate	Low
With operative controls	Extremely High	High	Moderate	Low
				Negligible

* Assumes workplace exposure to other equipment with a noise rating >85dB(a)

2. Vibration

Relevant Legislation: Control of Vibration at Work Regulations 2005.

The regulations place a duty on the employer to manage employee’s exposure to handheld vibrating equipment. Where that exposure is >2.5M/S² to do all that is reasonably practicable to reduce it. In situations where this is not possible, not to expose employees to a vibration magnitude >5M/S² In any single day.

In situations where a piece of equipment vibrates at a magnitude of >5M/S², or various pieces of handheld vibrating equipment are used in a single working day with differing vibration magnitudes, the HSE points system should be used to ensure that daily exposure does not exceed a total of 400 points. the HSE points system is calibrated so that 400 exposure points = a daily vibration exposure of 5M/S²

- (a) **Contact:** Physical contact with vibrating equipment of a vibration magnitude greater than 2.5M/S²
- Measured vibration exposure of AIR2G2***

Whilst Injection at 2 metre spacings 3.05M/S²

Whilst traversing between greens 2.39M/S²

Whilst the vibration magnitude of the AIR2G2 does not exceed 5M/S² the vibration exposure will contribute to the daily vibration dose, the exposure level becomes important where other handheld vibrating equipment is used on the same day by the operative.

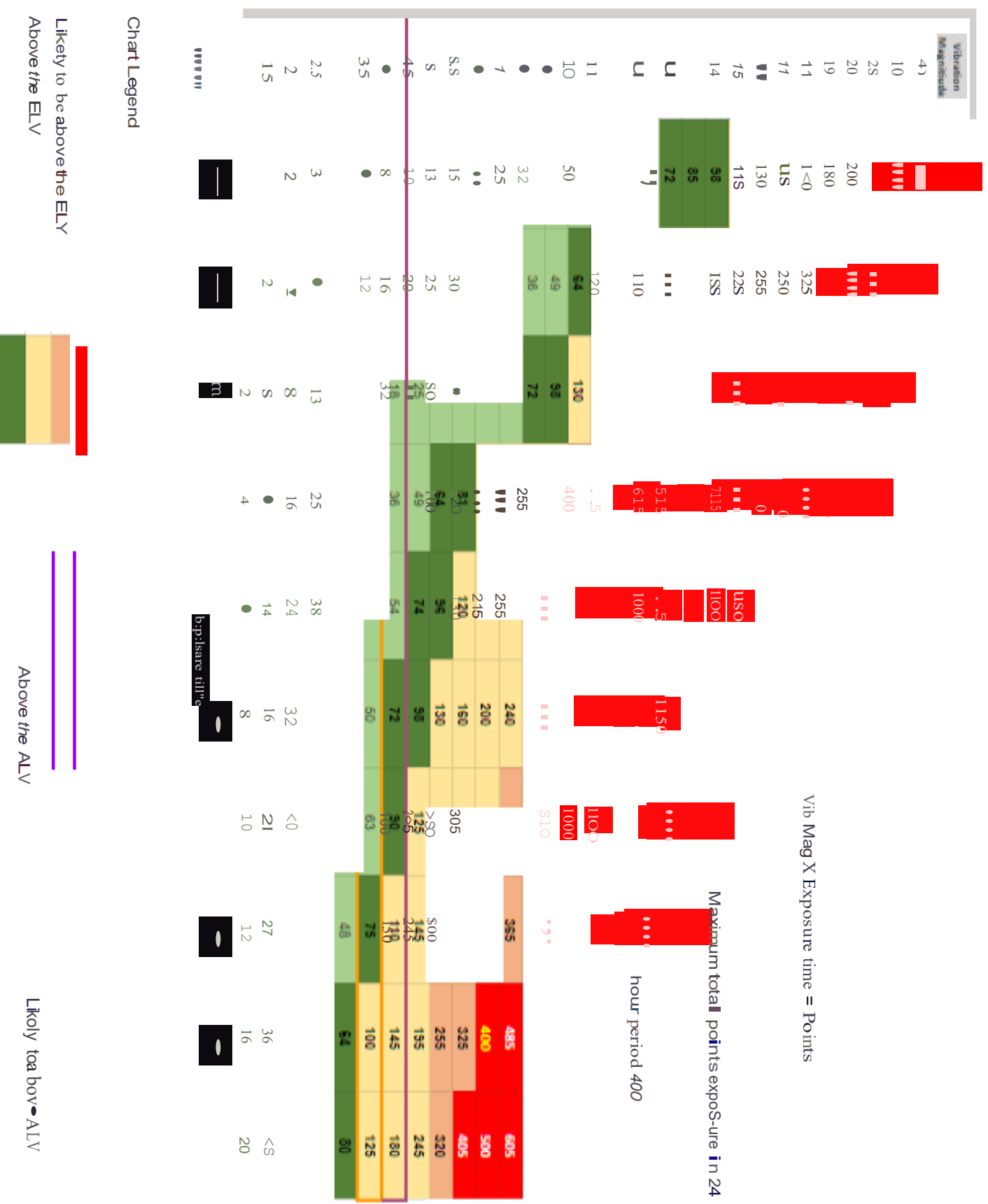
The points accrued using the HSE points system on the AIR2G2 for various exposures is as follows.

- 45 minutes for 1 Green of 500 sq Metres with approx 200 injections = 14 points
- 90 minutes for 2 X Greens at 1000 sq metres with approx 400 injections = 28 points
- 4 hours of continuous exposure while injecting = 75 points
- 6 hours of continuous exposure while injecting = 112 points
- 30 minutes traversing between areas without injecting = 6 points
- 45 minutes traversing between areas without injecting = 9 points

*Vibration measured in March 2020 with GA 20006H Vibration Meter, Instrument Standard: ISO 8041 : 2005 Human Response to Vibration For compliance with: ISO 5349.

For HSE Vibration Points System on AIR2G2 see chart below

HSE Points System for calculating daily vibration exposure



Below ALV (no action needed)

(AL:2G injecting

Daily Point total = SM/SSq

(M'2G Traversing

ALV :- Action limit value of 2.5M/SSq

ELV = Exposure Limit value of S M/S Sq

Operative Controls

Ensure total vibration(all equipment) exposure for the day does not exceed 400 Points.

Vibration Risk Using AIR2G2* / At Risk; operatives controlling AIR2G2				
Without controls	Extremely High	High	Moderate	Low
With controls	Extremely High	High	Moderate	Low
				Negligible

* Assumes workplace exposure to other vibrating equipment with a magnitude > 5M/S².

For further information on Vibration and HSE points system [Vibration.mp4](#)

3. Maneuvering

- (a) **Turning:** Turning in an area where there are other hazards such as downward slopes, ditches, steep banks, golf course bunkers, trees, shrubs, steps, posts, curbs.

Designed Controls

The AIR2G2 Steering, frontwards and rearwards momentum is hydrostatically controlled, momentum is controlled by moving handlebars in the chosen direction. Releasing the handlebars sets the momentum back to neutral. When fully depressed in either direction, forward and rearward speeds are preset. At no time can the AIR2G2 move faster than a pedestrian walk. Steering is on a single rear type pivot giving a quick change of direction.

Operative Controls

Injection patterns are planned to avoid turning in the direction of hazards. When maneuvering in close proximity to hazards revs are lowered and sudden changes in direction avoided. The operator is aware that sudden changes in the direction on the steering bar can result in increased forces in the momentum of the AIR2G2. Sudden movements in any direction are avoided.

- (b) **Rearwards tracking: tracking in areas where the terrain changes behind the operative, suddenly and unseen.**

Designed Controls

Hydrostatic control of the rearward momentum can be stopped by letting go of the handlebars. There is an emergency stop switch that cuts power to the AIR2G2 bringing it to a standstill.

Operative Controls

Areas to be injected are inspected beforehand to determine the best direction of travel with the intention of eliminating or reducing the risk of tracking backwards towards hazards. Operatives familiarize themselves with the terrain before starting. The operational momentum of the AIR2G2 is slow and broken up with frequent periods of air injection, giving operators sufficient time to identify hazard locations and adjust to terrain changes.

When it is necessary to track towards a hazard, injections stop at least two machine lengths before the hazard, the direction of travel is then moved sideways in the safest direction away from the hazard or forwards and away from the danger.

(c) Tracking on slopes causing tire slips: Operative misjudging a gradient or ground conditions resulting in loss of traction, AIR2G2 picking up speed on slopes resulting in loss of directional control with lateral forces causing a rollover.

Designer Controls

The AIR2G2 has a low center of gravity. Preset hydrostat speeds regulate momentum. Either forward or rearward tracking is available to operatives.

Operative Controls

Work routes and injection cycles are planned to avoid steep slopes. A steep slope is one where gravitational forces exert directional momentum on to the GT Air Inject in addition to that from the power unit. The maximum slope for traversing or injection cycles on the AIR2G2 is:

Degrees	Gradient	Percent
15°	1:3.75	26.8

When planning work, the chosen direction of travel on a slope is always directly up or down in preference to horizontal travelling across a slope.

Operative Competence

The AIR2G2 is designed to be used and tracked on slopes. The competence of the operative is the critical factor in ensuring a safe process. A competent operator has the; training; skills; experience; and knowledge needed to operate the AIR2G2 in all circumstances safely.

Maneuvering Risk Using AIR2G2* / At Risk; All in vicinity				
Without operative controls	Extremely High	High	Moderate	Low
With operative controls	Extremely High	High	Moderate	Low
				Negligible
				Negligible

4. Moving Parts

(a) **Belts:** Contact with fast-moving drive belts

Designed Controls

All Belts are guarded, the guards are held in place by fixed nuts.

Operative Controls

Guards should only be removed by a competent service mechanic. The engine will be turned off when guards are removed. Any servicing of the Air2G2 will be completed by a competent service engineer with records kept.

(a) **Probes, Beam and Pads;** Contact with raising or lowering parts or frame

Designed Controls

The operative is separated by distance from the probes and pads whilst using the equipment. Probes, Beam and Pads are lowered using synchronised switches on the handle bars.

Operative Controls

Whilst working the machine in injection mode, all other persons other than the operative are kept clear of the process by a distance of at least 1 metre.

Moving Parts Risk Using Air2G2 / At Risk; Operatives, others in close proximity, service mechanic,				
Without controls	Extremely High	High	Moderate	Low
With controls	Extremely High	High	Moderate	Low
				Negligible

5. Hot Parts

(a) **Exhaust system:** Contact with exhaust system

Designed Controls

The operative is segregated by distance from the exhausts; the exhausts are fixed to the front end of the Air2G2 away from the operator and controls. The exhaust system is; minimized by design; covered with a cooling guard; visible and prominent.

Operative Controls

Whilst working the machine in injection mode, all other persons other than the operative are kept clear of the process by a distance of at least 1 metre.

(b) **Engine:** Contact with engine and compressor power unit

Designed Controls

The operative is segregated by distance from the engine and compressor power unit, The engine and compressor power unit are mounted on the front of the chassis.

Operative Controls

During standard working procedures, there is no need for the operative to come into contact with any hot parts.

Hot Parts Risk Using AIR2G2 / At Risk; Operatives, service mechanic, others in close proximity				
Without controls	Extremely High	High	Moderate	Low
With controls	Extremely High	High	Moderate	Low
				Negligible
				Negligible

6. Exhaust Fumes

(a) Engine exhaust emissions: Inhalation of fumes

Designed Controls

The engine exhaust is located at the front of the AIR2G2 separating the operator by distance from the fumes. The equipment is designed to be used outdoors in a well ventilated environment.

(b) Operative Controls

When the engine has to be run indoors, the time is limited to no more than a few minutes. When the engine is run in a workshop for a period of time the area is well ventilated or, local exhaust ventilation is used carrying the fumes outside and away from the building.

Exhaust Fumes Risk Using AIR2G2* / At Risk; All in close proximity				
Without operative controls	Extremely High	High	Moderate	Low
With operative controls	Extremely High	High	Moderate	Low
				Negligible
				Negligible

7. Compressed Air, 1043 Bar/Litre Compressor Supplying Air to the Probes

(a) Compressor Noise

Operative Controls

Noise exposure is managed by time and wearing hearing protection with appropriate attenuation. Noise from the compressor is absorbed as general equipment noise. See Noise 1.

(b) Tank failure, the sudden release of energy with explosive force

Design controls

The compressed-air plant is designed and manufactured by a reputable specialist company. The tank pressure is factory set and cannot be adjusted. The pressure is released from the tank with every injection cycle. The compressor has two drain points that prevent moisture from building up inside the chamber, which would create internal rusting and weakening of the chamber. Air pressure within the tank can be monitored using a highly visible gauge on the control panel.

Operative Controls

There is a maintenance programme for the pressure system which includes a recorded examination by a competent person on an annual basis. The compressor is drained after each use.

Compressor Risk Using AIR2G2 / At Risk; All in close proximity				
Without controls	Extremely High	High	Moderate	Low
With controls	Extremely High	High	Moderate	Low
				Negligible

8. Fire, Petrol

(a) Refueling

Designed Controls

The fuel tank is located as far away from the engine and compressor as possible.

Operative Controls

The fuel tank is filled when the engine is cold and filled fully to maximize the times between refills. If the AIR2G2 has to be refilled whilst being used, the AIR2G2 is moved to flat ground where the engine is turned off before removing the tank cover and lid. To avoid the risk of spills a petrol can with an anti-spill nozzle is used for filling. At no time is petrol stored on the AIR2G2 other than that which is held within the fuel tank.

Fire/ Petrol Risk Using AIR2G2 / At Risk; All in close proximity				
Without controls	Extremely High	High	Moderate	Low
With controls	Extremely High	High	Moderate	Low
				Negligible
				Negligible

9. Site Specific Risks

Where is the hazard	What is the hazard	What is the risk without controls	What are the controls you have in place	What is the risk with controls
Location	Hazard	Exposed Risk	Controls	Managed Risk

