

**RIDING TROWEL**

# **HDX605**

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## **SAFETY & OPERATIONS MANUAL**

Manual Part #: 068356 | Revision: B  
Language: English | Original Instructions



# RIDING TROWEL

## SAFETY & OPERATOR MANUAL

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**This manual covers the products listed below:**

<b><u>Part No.</u></b>	<b><u>Description</u></b>
060500	HDX605 Riding Trowel

### NOTICE

This manual, or a copy of it, must be kept with the machine at all times.  
There is a manual storage container located on the machine for your convenience.

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Allen Products are covered under one or more of the following patent numbers:  
10,100,537; 9,068,301; 9,068,300; 8,360,680; 7,690,864; 7,114,876B1; 6,857,815B2; 6,582,153  
With other Patents Pending.

Printed in U.S.A.

# Limited Warranty & Limitation of Liability

## GENERAL INFORMATION

Allen Engineering Corporation ("Allen") warrants its products to be free of defects in material or workmanship for:

### **TWO YEARS FROM END USER'S DATE OF PURCHASE**

Warranty period begins on the date of purchase by the End User of the product. All warranty is based on the following limited warranty terms and conditions, including the disclaimer of implied warranties and consequential damages.



1. Allen's obligation and liability under this warranty is limited to repairing or replacing parts if, after Allen's inspection, there is determined to be a defect in material or workmanship. Allen reserves the choice to repair or replace.
2. If Allen chooses to replace the part, it will be at no cost to the customer and will be made available to the Allen Distributor, Dealer, or Rental Center from whom the End User purchased the product.
3. Replacement or repair parts, installed in the product, are warranted only for the remainder of warranty period of the product as though they were the original parts.
4. Allen does not warranty engines or batteries. Engine warranty claims should be made directly to an authorized factory service center for the particular engine manufacturer. Batteries are not warranted due to unknown treatment during transport, etc, and any battery claims should be directed to the battery manufacturer.
5. Allen's warranty does not cover the normal maintenance of products or its components (such as engine tuneups and oil & filter changes). The warranty also does not cover normal wear and tear items (such as belts and consumables).
6. Allen's warranty will be void if it is determined that the defect resulted from operator abuse, failure to perform normal maintenance on the product, modification to product, alterations or repairs made to the product without the written approval of Allen. Allen specifically excludes from warranty any damage to any trowels resulting from an impact to the rotors.
7. Impact damage to gear boxes is not covered under the Allen warranty and is deemed customer abuse.
8. Allen will pay shop labor on warranty items at the Allen Shop Labor Rate in existence on the date of the warranty claim. An Allen labor chart will determine the time allowed to complete a repair and will govern the shop labor hours that will be allowed.
9. Allen will pay freight on warranty replacement parts at worldwide standard ground rates. No warranty replacement parts will be shipped air freight at the expense of Allen. Allen only pays outbound freight charges when sending warranty replacement parts to the customer via ground service. Allen does not pay any inbound freight. However, if Allen determines this to be a warranted item, only then will Allen reimburse the customer for inbound freight at standard ground rates.
10. ALLEN ENGINEERING CORPORATION'S WARRANTY POLICY WILL NOT COVER THE FOLLOWING: TAXES; SHOP SUPPLIES; ENVIRONMENTAL SURCHARGES; AIR FREIGHT; TRAVEL TIME; LOSS OF TIME; INCONVENIENCE; LOSS OF RENTAL REVENUE; RENTAL COSTS OF EQUIPMENT USED TO REPLACE THE PRODUCT BEING REPAIRED; LOSS OF USE OF THE PRODUCT; COMMERCIAL LOSS; OR ANY OTHER CHARGES WHATSOEVER OR ANY LIABILITIES FOR DIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGE OR DELAY.
11. ALLEN ENGINEERING CORPORATION MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED. THIS LIMITED WARRANTY IS IN LIEU OF THE WARRANTY OF MERCHANTABILITY AND FITNESS. THERE ARE NO OTHER WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION ON THIS DOCUMENT.
12. No Allen employee or representative is authorized to change this warranty in any way or grant any other warranty unless such change is made in writing and signed by an officer of Allen Engineering Corporation.

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This manual provides information and procedures to safely operate and maintain the Allen Machine.

For your own safety and protection from personal injury, carefully read, understand, and observe the safety instructions described in this manual. Keep this manual or a copy of it with the machine at all times.

Always operate this machine in accordance with the instructions described in this manual. A well maintained piece of equipment will provide many years of trouble free operation.

This manual is divided into the following sections:

### **SECTION 1 SAFETY**

### **SECTION 2 OPERATIONS**

### **SECTION 3 SERVICE**

### **SECTION 4 ACCESSORIES**

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Complete any warranty requirements as specified by the engine manufacturer in their instructions found inside the manual box located on the back of the riding trowel operator's seat.

Your engine and clutch is not manufactured by Allen Engineering Corporation, Inc, and therefore is not covered under Allen Engineering Corporation, Inc warranty.

Your engine manufacturer should be contacted if you wish to purchase a parts manual or a repair manual for your engine.

Refer to enclosed owners engine manual for complete O&M instructions. See your battery manufacturer for battery warranty.



## EC Declaration of Conformity

with the

### European Machinery Directive 2006/42/EC

*We hereby declare that the machinery stipulated below complies with all the relevant provisions of the EC Machinery Directive and the UK National Laws and Regulations adopting this Directive.*

Declaration Ref. No.: **CE1920**

Manufacturer:  
[name and address] **Allen Engineering Corporation  
819 South Fifth St., Paragould, AR 72450, USA**

Authorised Representative in EU:  
[name and address] **Andrew Clark, Designplus (Eng.) Ltd.  
10 Chapel Lane, West Bergholt, Colchester, Essex, CO6 3EG, UK**

Equipment: **HDX50S Aiding Trowel**

Description: **Ride-on concrete smoothing machine**

Serial No.: **xxxxxxx**

Notified Body:  
[name and address] **Not required.**

Other EC Directives: **EMC Directive 2014/30/EU**

Harmonized Standards Applied:  
[In full] **EN 12649: Concrete compactors and smoothing machines -  
Safety**

Harmonized Standards referenced:  
[partially applied]

Person empowered to draw  
up the declaration: **Jay Allen**

Signature:

Position: **President**

Place of issue: **Paragould, AR 72450, USA**

Date:

**9/5/2019**

*Modifications to the machine without prior approval from the undersigned  
will render this declaration null and void.*



### Sound Pressure Level Information:

Sound pressure is “A” weighted . Measured at the operators ear position while the ride-on trowel is operating at full throttle on concrete in a manner most often experienced in “normal ” circumstances. Sound pressure may vary depending upon the condition of the concrete. Hearing protection is always recommended.



### Vibration Level Information:

The vibration level indicated is the maximum RMS (Root Mean Square) velocity value obtained at the handle grip while operating the ride-on trowel on curing concrete in a manner most often experienced in “normal ” circumstances. Values were obtained from all three axes of motion. The values shown represent the maximum RMS value from these measurements.

Summary Data Of Sound And Vibration Testing for CE Marking			
Operator Ear SPL	Seat Vibration Average	Left Hand Vibration Average	Right Hand Vibration Average
100 dB (A)	0.14 m/sec <sup>2</sup>	1.95 m/sec <sup>2</sup>	0.65 m/sec <sup>2</sup>
This information was acquired from sound and vibration analysis tests conducted at Allen Engineering Corporation test facilities.			

**OPERATOR IS NOT LIMITED**

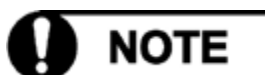
## GENERAL INFORMATION

## Dealer Information & Ordering Parts

Your Dealer has Allen Engineering Corporation trained mechanics and original Allen replacement parts. Always contact the Allen Dealer who sold you this machine for Allen Certified repairs and replacement parts.

Place Allen Dealer information below for future reference.

Dealer Name: _____		
Phone #: (____) - ____ - _____		
Address: _____		
City: _____	State: _____	Zip: _____
Salesman: _____	Mobile Phone: _____	
Additional Comments: _____		
_____		
_____		
_____		



ALL INFORMATION, SPECIFICATIONS, AND ILLUSTRATIONS IN THIS MANUAL ARE  
SUBJECT TO CHANGE WITHOUT NOTICE AND ARE BASED ON THE LATEST  
INFORMATION AT THE TIME OF PUBLICATION.

The "PARTS & DECALS MANUAL" contain illustrated parts lists for help in ordering replacement parts for your machine. Follow the instructions below when ordering parts to insure prompt and accurate delivery:

1. All orders for service parts - include the serial number for the machine. Shipment will be delayed if this information is not available.
2. Include correct description and part number from the "PARTS & DECALS MANUAL"
3. Specify exact shipping instructions, including the preferred routing and complete destination address.
4. **DO NOT** return parts to AEC without receiving written authorization from AEC. All authorized returns must be shipped pre-paid.
5. When placing an order, please contact the AEC dealer nearest you.



# Model & Serial Number / Unit Identification

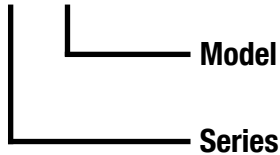
## GENERAL INFORMATION

### Manufacturer's Codes:

When ordering parts or requesting service information, you will always be asked to specify the model and serial numbers of the machine. The legends below specifically defines each significant character or group of characters of the Model Number and Serial Number codes.

### Model Number

HDX 605

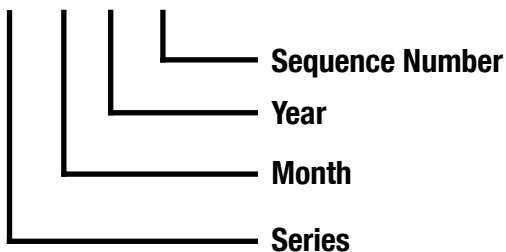


### Serial Number

The serial number found on the identification plate is a ten digit format. The model number identifies your machine and will ensure that you receive the correct replacement parts.

### Serial Number Example

605 01 19 001



### Unit Identification Plate Location:

An identification plate listing the model number and the serial number is attached to each unit and is located on the rear lower left side of mainframe. Refer below for serial number and model number location. This plate should not be removed at any time.

Please record the information found on this plate below so it will be available should the identification plate become lost or damaged. When ordering parts or requesting service information, you will always be asked to specify the model and serial numbers of the machine.

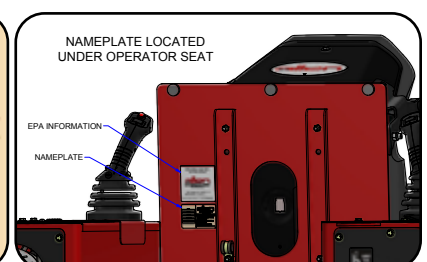
### FILL IN FOR FUTURE REFERENCE

Model Number: \_\_\_\_\_

Serial Number: \_\_\_\_\_

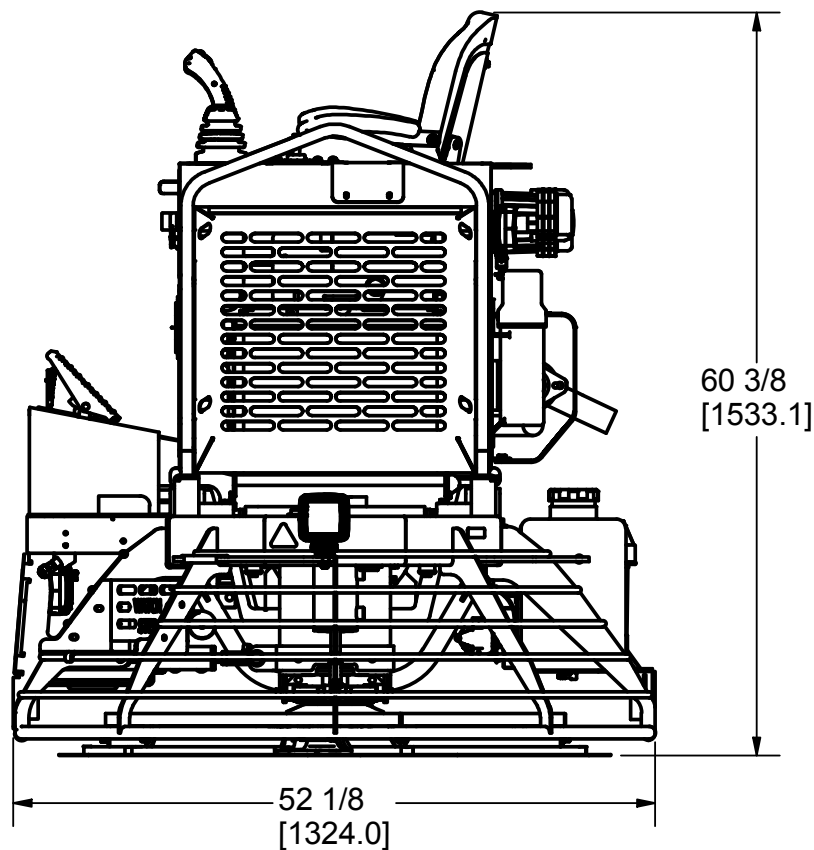
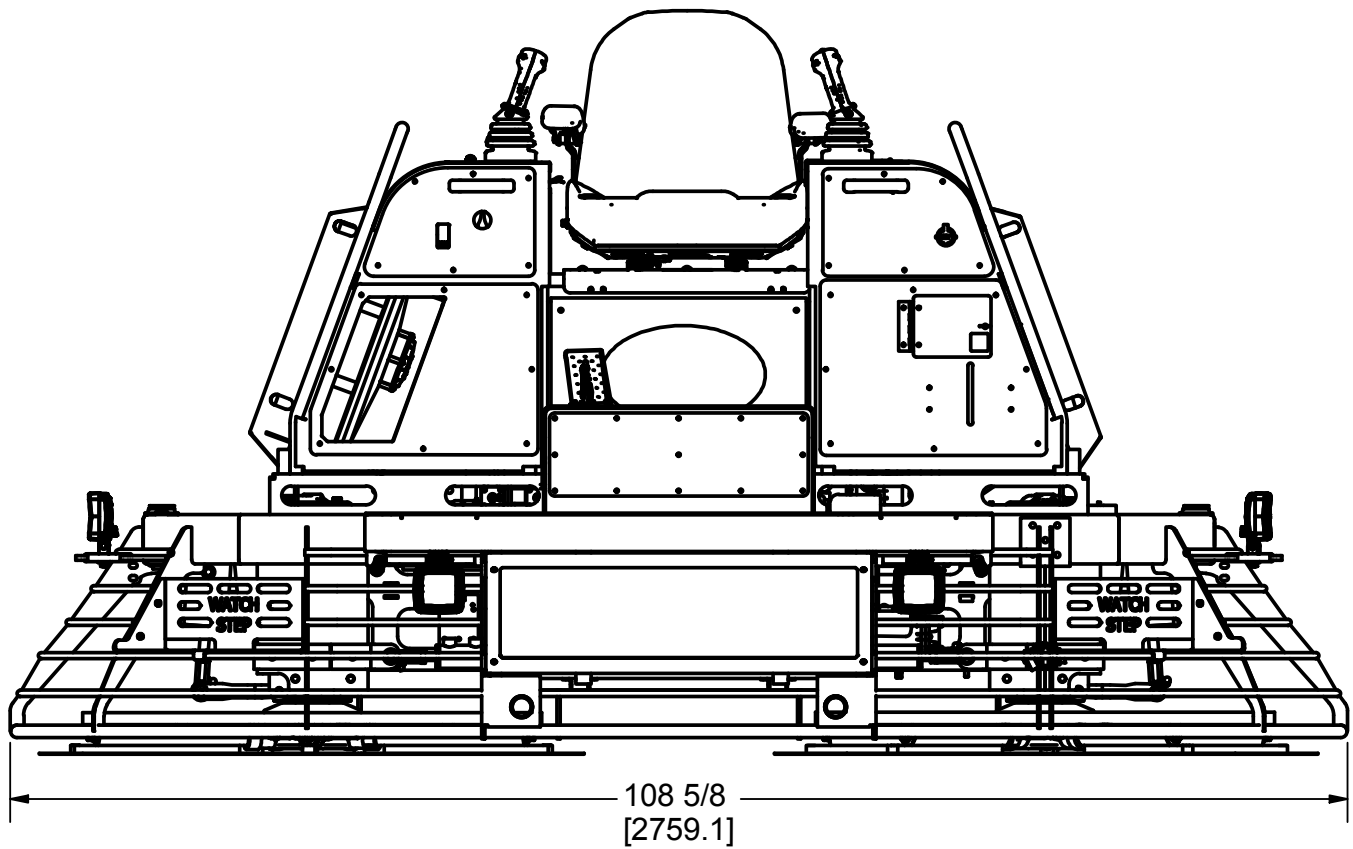
Date Purchased: \_\_\_\_\_

Purchased From: \_\_\_\_\_



## Machine Specifications

- Horse Power: .....57 hp [42.5 kW]
- Fuel Capacity:..... 13 gal [49.2 L]
- Retardant Capacity: ..... 6 gal [22.7L]
- Fuel Consumption (Approx.):.....4.3 gal/h [16.3 L/h]
- Steering System: .....Hydraulic Power
- Hydraulic Fluid Capacity: ..... 15 gal [56.8L]
- Number of Operating Lights:.....6
- Height: ..... 60-3/8" [1533.1 mm]
- Length: ..... 108-5/8" [2759.1 mm]
- Width: ..... 52-1/8" [1324.0 mm]
- Dry Weight: .....2049 lb [929.4 kg]
- Panning Width: ..... 101.5" [2578.1mm]
- Rotor Center Distance:.....55.5" [1409.7mm]
- Rotor Diameter: .....46" [1168.4mm]
- Idle RPM:.....1200
- Full RPM:.....3400
- Lifting:..... 2-point, Top-Mounted

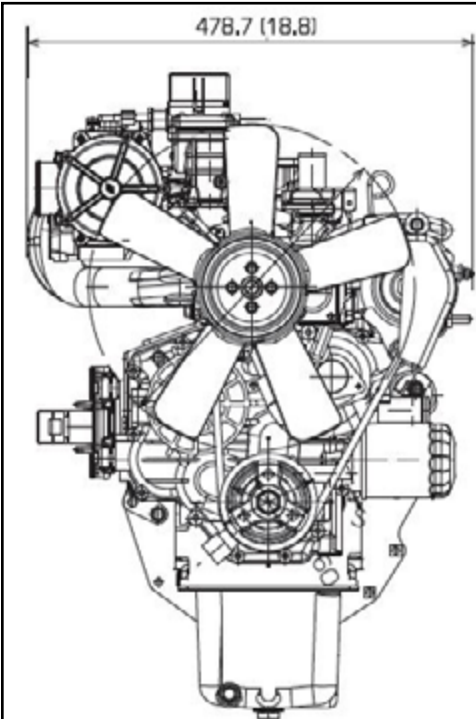
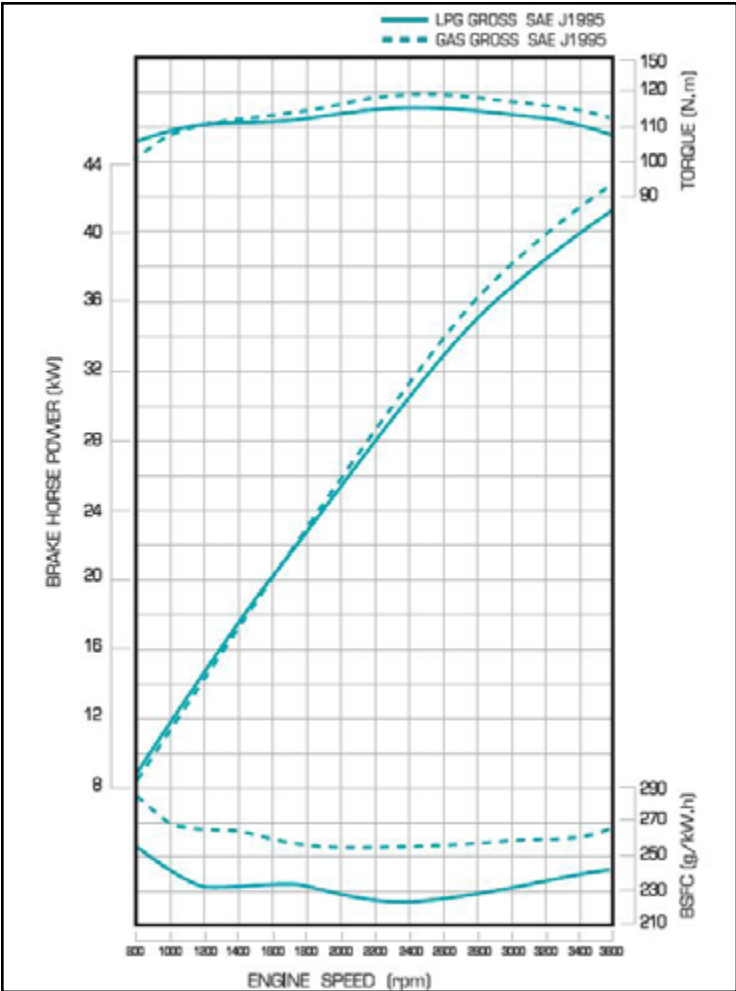


## GENERAL INFORMATION

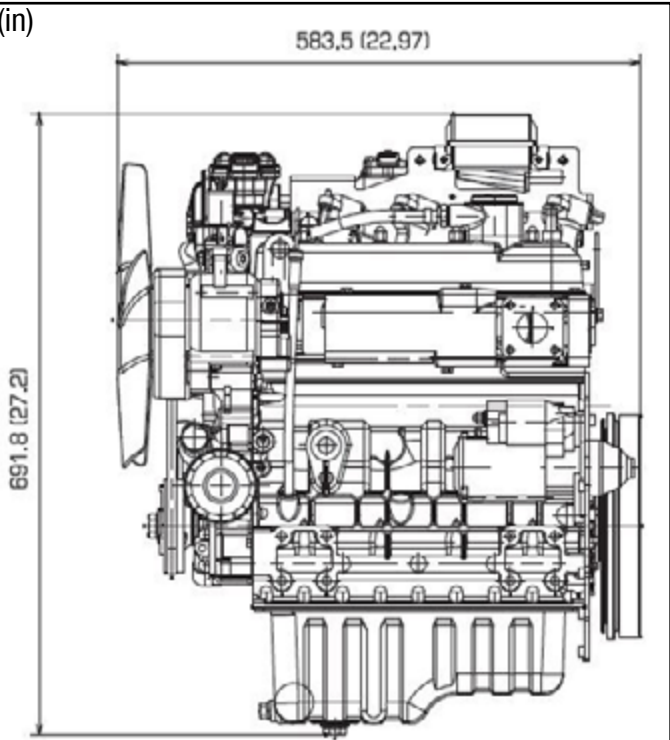
## Engine Specifications

### Kubota Engine Information

Model:	WG1605-G-E3
Fuel Type:	Gasoline
Horsepower [KW]:	57 [42.5]
Engine Type:	Vertical Liquid Cooled, 4 Cycle
Number of Cylinders:	4 In-Line
Bore x Stroke, in. [mm]:	3.11 x 3.09 [79 x 78.4]
Displacement (L):	1.537
Ignition System:	Coil on Plug
Intake System:	Naturally Aspirated
Compression Ratio:	9.1:1
Governor Type:	Electronic
Cooling System:	High Capacity Liquid
Direction of Rotation Rev.:	Counter-Clockwise (view from Flywheel)
Oil Pan Capacity in gal [L]:	1.59 [6.0]
Starter Capacity V-kW:	12V - 1.0 kW
Alternator Capacity:	12V - 40A
Dry Weight, lbs. [kg]:	264.6 [120]
Dimensions:	
• Length, in. [mm]:	23.3 [591.3]
• Width, in. [mm]:	18.8 [478.7]
• Height, in. [mm]:	25.7 [652.3]
Emission Certifications:	
• EPA Non-Road LSI Tier 2 Certified	
• CARB Off-Road LSI Tier 3 Certified	



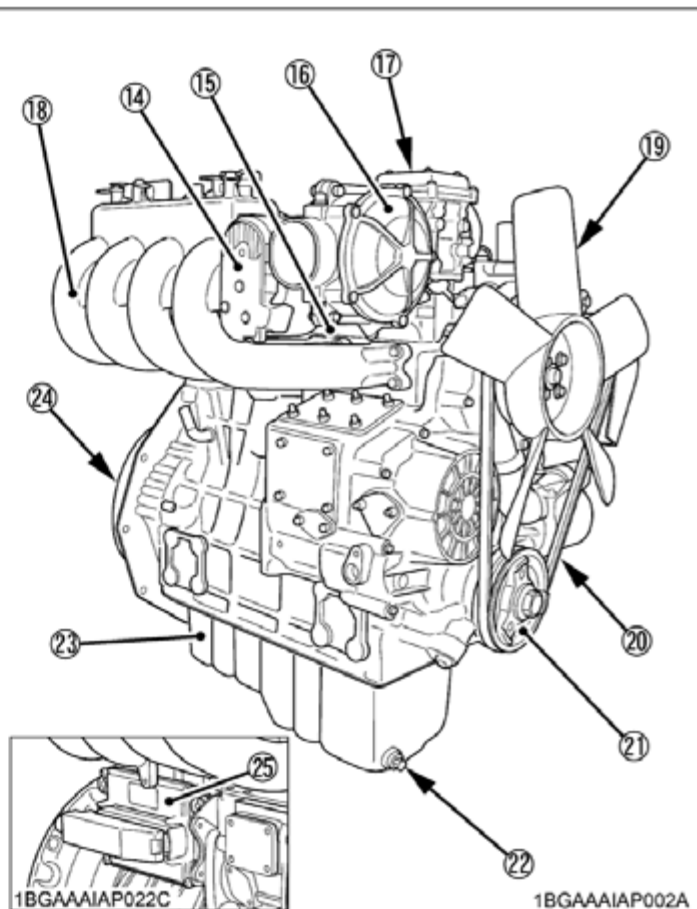
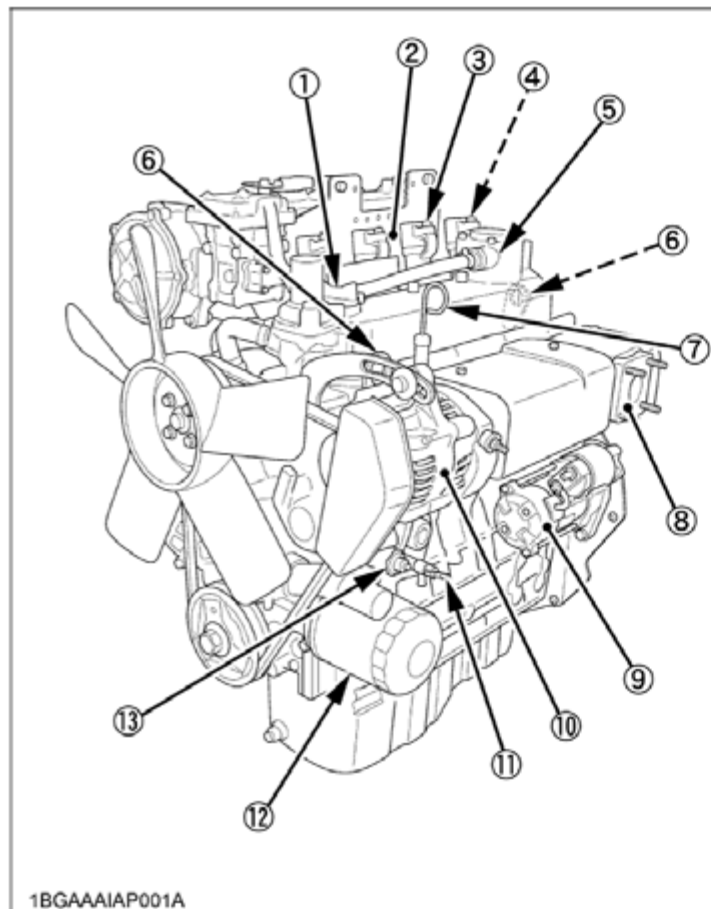
Dimensions: mm (in)



## GENERAL INFORMATION

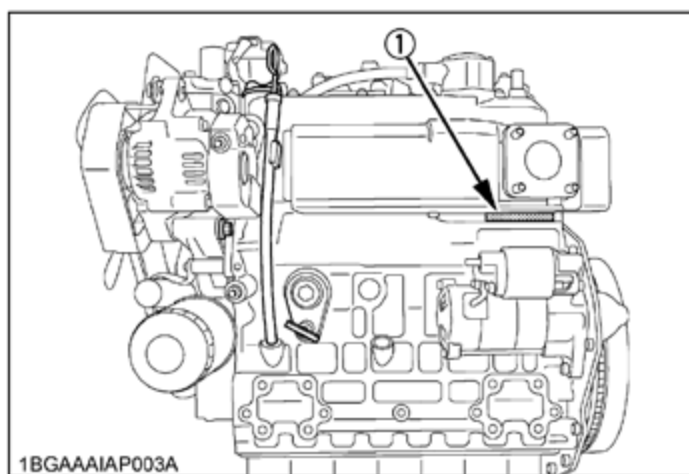
## Engine Parts

Information taken directly from manufactures product literature. For further information regarding mechanical or electrical operation please reference the included engine manufactures Operator's Manual.



REF. #	PART NAME
1	Oil Filler Plug
2	Delivery Pipe (Gas)
3	Plug Ignition Coil
4	Spark Plug
5	PCV Valve
6	Engine Hook
7	Oil Level Gauge
8	Exhaust Manifold
9	Starter
10	Alternator
11	Coolant Drain Shutoff-Valve
12	Oil Filter Cartridge
13	Oil Pressure Switch
14	Electronic Control Throttle

REF. #	PART NAME
15	Injector
16	Gas Mixer
17	Pressure Regulator
18	Intake Manifold
19	Cooling Fan
20	Fan Belt
21	Fan Drive Pulley
22	Oil Drain Plug
23	Oil Pan
24	Flywheel
25	ECU (Engine Control Unit)



(1) Engine serial number

# **SECTION 1 SAFETY**

## SECTION 1 SAFETY

# Federal / State Warning Regulations



### RESPIRATORY HAZARDS

Grinding/cutting/drilling of masonry, concrete, metal and other materials can generate dust, mists and fumes containing chemicals known to cause serious or fatal injury or illness, such as respiratory disease, cancer, birth defects or other reproductive harm.

### SILICOSIS WARNING

Grinding/cutting/drilling of masonry, concrete, metal and other materials with silica in their composition may give off dust or mists containing crystalline silica.



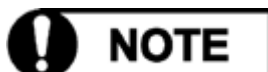
### CALIFORNIA PROPOSITION 65 WARNING

Gasoline engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects and other reproductive harm.



### Safety-Alert Signs

This manual contains Safety-Alert Signs, as defined below, which must be followed to reduce the possibility of improper service damage to the equipment or personal injury. Read and follow all Safety-Alert Signs included in this manual.



**NOTE** defines an operating procedure, condition, etc. which is essential to highlight that contains useful or important information.



**EMERGENCY** is used for the identification of safety equipment, first aid, or emergency egress locations.



**NOTICE** used to convey safety information on labels and signs.



**CAUTION** is indicative of a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



**WARNING** Indicative of a potentially hazardous situations that could result in death or serious injury



**DANGER** indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury

## SECTION 1 SAFETY







# Spark Arrestor Notice / Safety Symbols

**⚠ WARNING ⚠ ADVERTENCIA**

Operation of this equipment may create sparks that can start fires around dry vegetation. A spark arrestor may be required. The operator should contact local fire agencies for laws or regulations relating to fire prevention requirements.

El funcionamiento de este equipo puede producir chispas que pueden iniciar incendios en vegetación seca. Un supresor de chispas puede ser necesario. El operador debe comunicarse con las agencias locales de bomberos para las leyes o reglamentos relativos a los requisitos de prevención de incendios.

Some states require that in certain locations arrestors be used on internal combustion engines. A spark arrestor is a device designed to prevent the discharge of spark or flames from the engine exhaust. It is often required when operating equipment on forested land to prevent the risk of fires. Consult the engine distributor or local authorities and make sure that you comply with regulations regarding spark arrestors.

Symbol	Safety Hazard
	Lethal exhaust gas hazards
	Explosive fuel hazards
	Burn hazards
	Rotating parts/crush hazards
	Pressurized fluid hazards
	Hydraulic fluid hazards

Potential hazards associated with the operation of this equipment will be referenced with hazard symbols which may appear throughout this manual in conjunction with safety notes.



Familiarity and proper training are required for the safe operation of this equipment! Equipment operated improperly or by untrained personnel can be dangerous! Read the operating instructions contained in both this manual and the engine manual and familiarize yourself with the location and proper use of all controls.

- **ALWAYS** read, understand, and follow procedures in the Operator's Manual before attempting to operate the equipment.



- **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, respiratory protection, hearing protection, steel-toed boots and other protective devices required by the job or city and state regulations.



- **NEVER** operate this machine while under the influence of drugs or alcohol.



- **NEVER** allow anyone to operate this equipment without proper training. People operating this equipment must be familiar with the risks and hazards associated with it.

- **NEVER** touch the engine or muffler while the engine is on or immediately after it has been turned off. These areas get hot and may cause burns.



- **NEVER** use accessories or attachments that are not recommended by AEC. Damage to equipment and injury to the user may result.

- **NEVER** operate the machine with the belt guard missing. Exposed drive belt and pulleys create potentially dangerous hazards that can cause serious injuries.



- **NEVER** leave machine running unattended.

- **DO NOT** run the machine indoors or in an enclosed area such as a deep trench unless adequate ventilation, through such items as exhaust fans or hoses, is provided. Exhaust gas from the engine contains poisonous carbon monoxide gas; exposure to carbon monoxide can cause loss of consciousness and may lead to death.



- **ALWAYS** remain aware of moving parts and keep hands, feet, and loose clothing away from the moving parts of the equipment.



- **ALWAYS** close fuel valve on equipped engines when machine is not being operated.

- **ALWAYS** store the equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children.

## SECTION 1 SAFETY

# Engine Safety










Internal combustion engines present special hazards during operation and fueling. Read and follow the warning instructions in the engine owner's manual and the safety guidelines below. Failure to follow the warnings and safety guidelines could result in severe injury or death.

- **DO NOT** run the machine indoors or in an enclosed area such as a deep trench unless adequate ventilation, through such items as exhaust fans or hoses, is provided. Exhaust gas from the engine contains poisonous carbon monoxide gas; exposure to carbon monoxide can cause loss of consciousness and may lead to death.
- **DO NOT** smoke while operating the machine.
- **DO NOT** smoke when refueling the engine.
- **DO NOT** refuel a hot or running engine.
- **DO NOT** refuel the engine near an open flame.
- **DO NOT** spill fuel when refueling the engine.
- **DO NOT** run the engine near open flames.
- **ALWAYS** refill the fuel tank in a well-ventilated area.
- **ALWAYS** replace the fuel tank cap after refueling.
- **ALWAYS** keep the area around the muffler free of debris such as leaves, paper, cartons, etc. A hot muffler could ignite the debris and start a fire.





Poorly maintained equipment can become a safety hazard! In order for the equipment to operate safely and properly over a long period of time, periodic maintenance and occasional repairs are necessary.

- **ALWAYS** disconnect the battery before servicing the equipment. 
- **DO NOT** attempt to clean or service the machine while it is running. Rotating parts can cause severe injury. 
- **DO NOT** crank a flooded engine with the spark plug removed on gasoline-powered engines. Fuel trapped in the cylinder will squirt out the spark plug opening.
- **DO NOT** test for spark on gasoline-powered engines if the engine is flooded or the smell of gasoline is present. A stray spark could ignite the fumes. 
- **DO NOT** use gasoline or other types of fuels or flammable solvents to clean parts, especially in enclosed areas. Fumes from fuels and solvents can become explosive. 
- **ALWAYS** turn engine off and remove key from machine before performing maintenance or making repairs.
- **ALWAYS** handle blades carefully. The blades can develop sharp edges which can cause serious cuts. 
- **ALWAYS** keep the area around the muffler free of debris such as leaves, paper, cartons, etc. A hot muffler could ignite the debris and start a fire.
- **ALWAYS** replace worn or damaged components with spare parts designed and recommended by AEC Corporation.
- **ALWAYS** disconnect the spark plug on machines equipped with gasoline engines, before servicing, to avoid accidental start-up.
- **ALWAYS** relieve all pressure in the air, oil and cooling systems before disconnecting any lines, fittings or related items. Escaping fluid under pressure has sufficient force to penetrate skin causing serious personal injury, DO NOT check for leaks your hands. 
- **ALWAYS** switch off the power supply at the battery disconnect before adjusting or maintaining the electrical equipment.
- **ALWAYS** keep the machine clean and labels legible. Replace all missing and hard-to read labels. Labels provide important operating instructions and warn of dangers and hazards.
- **ALWAYS** wear rubber gloves to avoid personal injury, when you treat fluids used in machine. In case of contact with skin, immediately wash off. 

## SECTION 1 SAFETY

# Lifting Safety

**ALWAYS DO A THOROUGH INSPECTION OF THE SLINGS, CHAINS, AND HOOKS  
BEFORE ATTEMPTING TO LIFT THE MACHINE!**

OSHA has set forth guidelines which detail the use of Rigging Equipment for Material handling. This guideline is found under

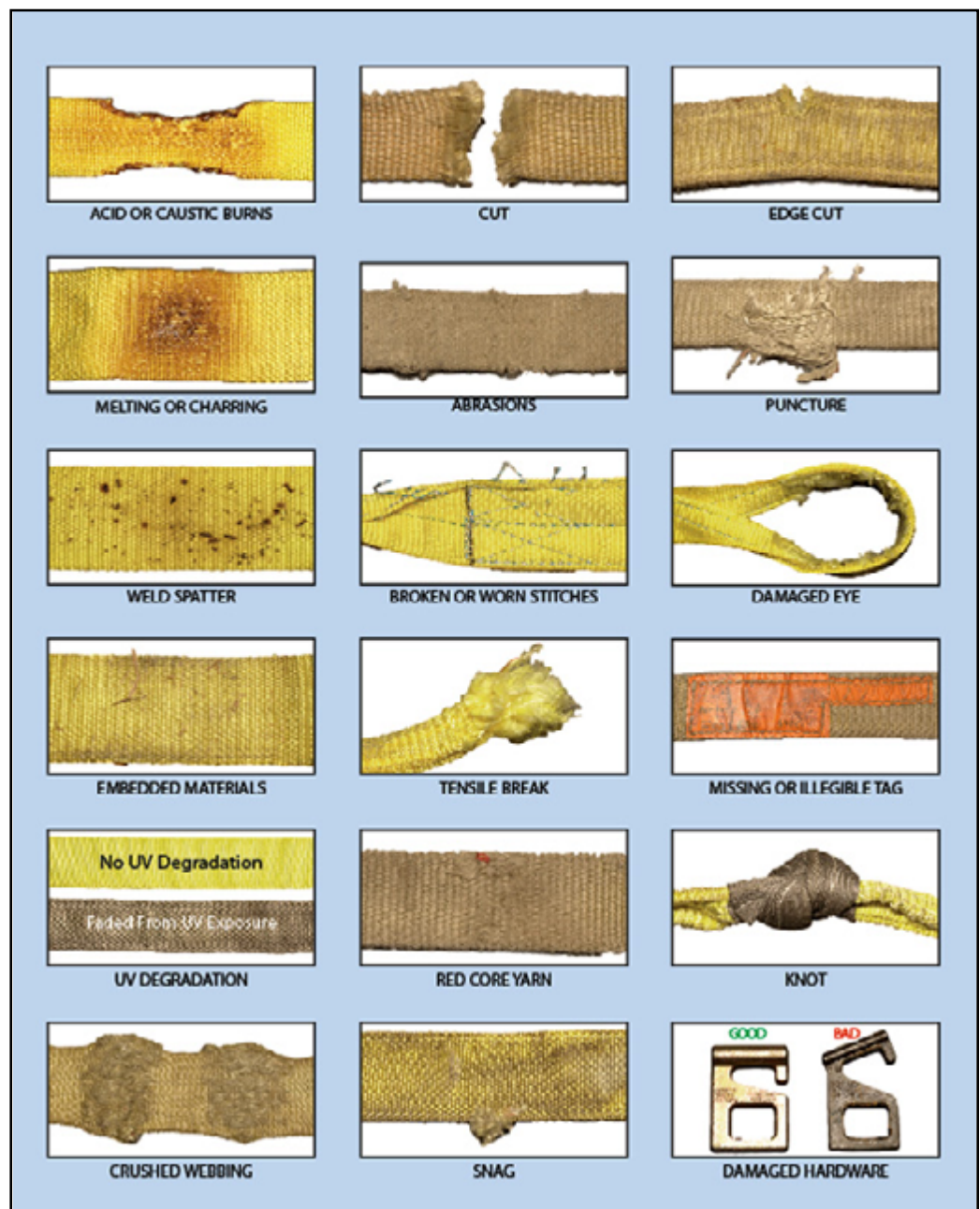
**OSHA Standard Number: 1926.251**

Please read and follow all guidelines found in this standard.

Removal from service.

*Synthetic web slings shall be immediately removed from service if any of the following conditions are present:*

OSHA 1926.251(e)(8)

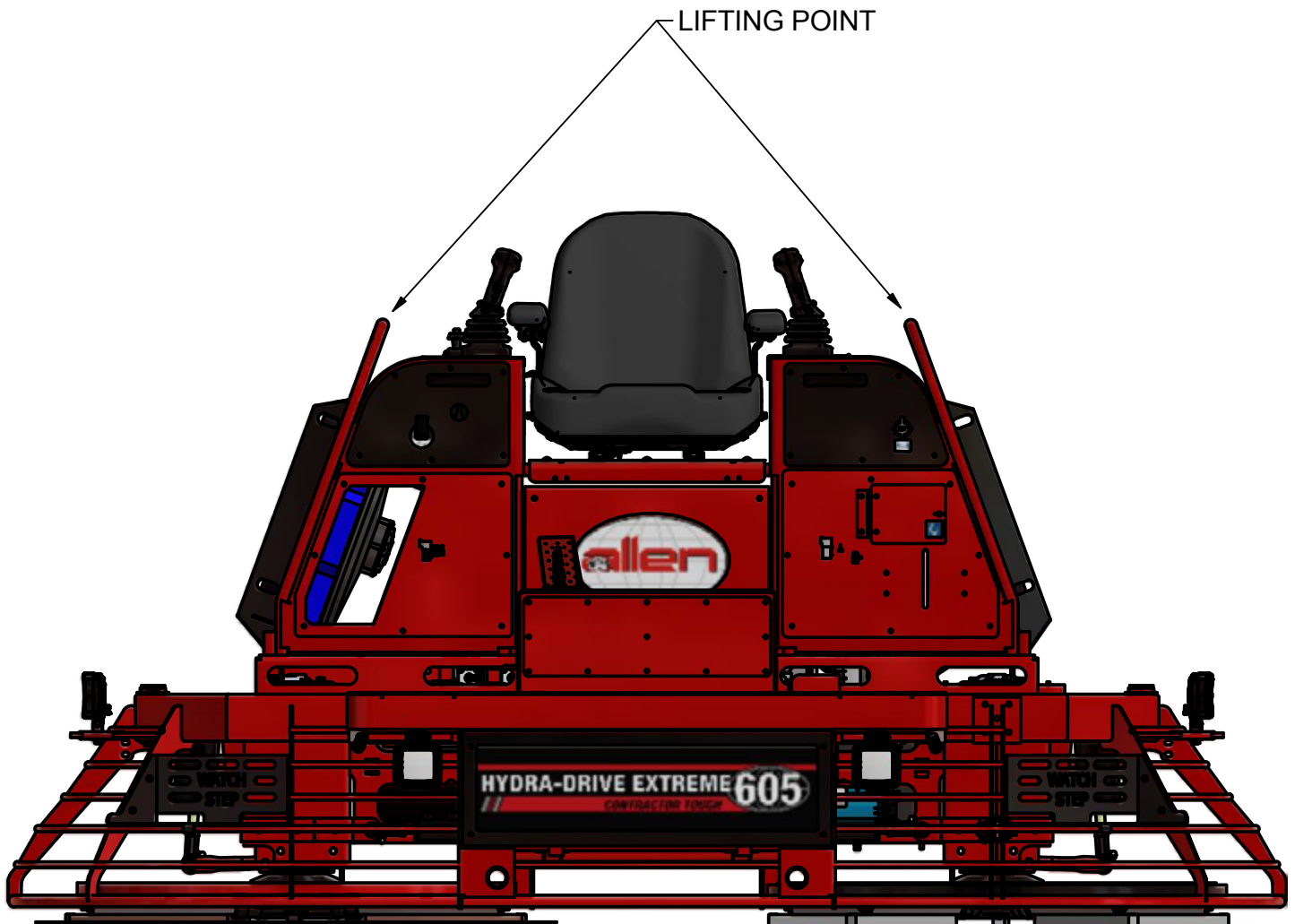




- When lifting the machine, all personnel must be clear of the machine.
- **DO NOT** stand near or under the machine while it is being lifted.

### Lifting instructions using a hoist:

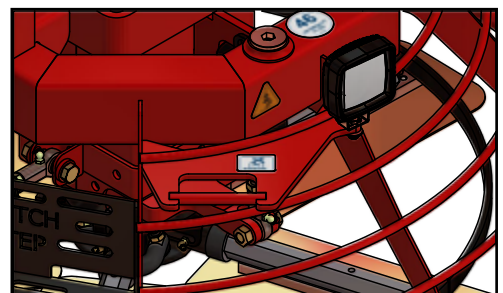
- An optional lifting harness is available for purchase. Part number **064798**
- Place slings, chains or hooks through each lifting point on the machine. Use a sling or chains connected to a central lifting device. Ensure that all lifting devices have sufficient weight-bearing capacity.
- **ALWAYS** shutdown engine before transporting.



## SECTION 1 SAFETY

# Transportation Safety

- Make sure the hitch and coupling of the towing vehicle are rated equal to, or greater than the trailer “gross vehicle weight rating.”
- **ALWAYS** inspect the hitch and coupling for wear. Never tow a trailer with defective hitches, couplings, chains, etc.
- Check the tire air pressure on both towing vehicle and trailer. Trailer tires should be inflated to 50 psi cold. Also check the tire tread wear on both vehicles.
- **ALWAYS** make sure the trailer is equipped with a safety chain.
- **ALWAYS** properly attach trailer’s safety chains to towing vehicle.
- **ALWAYS** make sure the vehicle and trailer directional, backup, brake and trailer lights are connected and working properly.
- DOT Requirements include the following:
  - Connect and test electric brake operation.
  - Secure portable power cables in cable tray with tie wraps.
- The maximum speed for highway towing is 55 MPH unless posted otherwise. Recommended off-road towing is not to exceed 15 MPH or less depending on type of terrain.
- Avoid sudden stops and starts. This can cause skidding, or jack-knifing. Smooth, gradual starts and stops will improve towing.
- Avoid sharp turns to prevent rolling.
- Trailer should be adjusted to a level position at all times when towing.
- Raise and lock trailer wheel stand in up position when towing.
- Place chock blocks underneath wheel to prevent rolling while parked.
- Place support blocks underneath the trailer’s bumper to prevent tipping while parked.
- Use the trailer’s swivel jack to adjust the trailer height to a level position while parked.
- Use tie downs to ensure machine does not move during transportation.





# Pan Installation Safety - Lifting Bridle

## SECTION 1 SAFETY

This section details the proper technique to utilize the lifting bridle system in a safe manner to install concrete finishing pans.

(NOTE: Images are for illustration purposes only)



**Use a lifting sling (bridle) with a capacity of at least 2:1 weight ratio for the equipment being hoisted.**

**[See section "ACCESSORIES" for appropriate lifting harness part number]**

1. Verify the machine blades are at a 0° pitch.
1. Attach the lifting bridle to the machine shown in section "Lifting Safety"
2. Slowly lift the machine in a safe manner to a height that is required to safely install the pans. This is typically 6"-8" above floor level.
3. Carefully slide the pans under the machine making sure that you are aware of the corners on the blades as they are sharp.
4. Align the pans so that the clips will not be crushed when the machine is lowered back down.
5. Slowly lower the machine down onto the pans. Make sure the blades are going into the proper gaps. (Typically the pans can only be installed one way)
6. Once the machine is on securely on the ground with the pans underneath, remove the lifting bridle from the machine.
7. Start the machine and slowly increase the throttle until the blades begin turning and engaging the pans. The machine is now ready to finish the concrete utilizing the pans.



**NOTE:** Utilizing the lifting sling(bridle) and the dolly jacks are intended only for site transportation and the installation of pans and blades. DO NOT use them for regular maintenance without the additional use of jack stands to insure stability of the machine.

## SECTION 1 SAFETY

# Pan Installation Safety - Lifting Jacks

This section details the proper technique to utilize the Dolly Jack system in a safe manner to install concrete finishing pans.

(NOTE: Images are for illustration purposes only)

**Use the appropriate set of lifting jacks that are designed for the machine you are lifting.**  
**[See section "ACCESORIES" for appropriate dolly jack part number]**



1. Verify that the machine blades are at a 0° pitch.
2. Attach the front and rear dolly jacks into the machine at the receiving tube locations.
3. Slowly lift the machine in a safe manner to a height that is required to safely install the pans. This is typically 6"-8" above floor level.
4. Carefully slide the pans under the machine, making sure that you are aware of the corners of the blades as they are sharp.
5. Align the pans so that the clips will not be crushed when the machine is lowered back down.
6. Slowly lower the machine down onto the pans. Make sure the blades are going into the proper gaps. (Typically the pans can only be installed one way)
7. Remove the dolly jacks from the machine
8. Start the machine and slowly increase the throttle until the blades begin turning and engaging the pans. The machine is now ready to finish the concrete utilizing the pans.



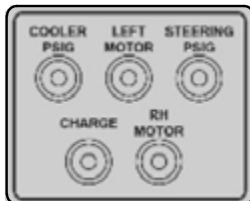
**NOTE:** Utilizing the lifting sling (bridle) and the dolly jacks are intended only for site transportation and the installation of pans and blades. DO NOT use them for regular maintenance without the additional use of jack stands to insure stability of the machine.

# Safety Decals

## SECTION 1 SAFETY



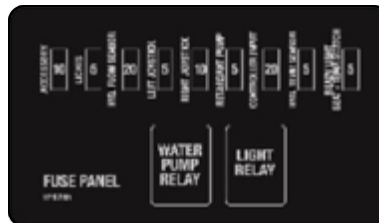
Right Control Area  
Part #: 068474



Left Cup Holder Area  
Part #: 068456



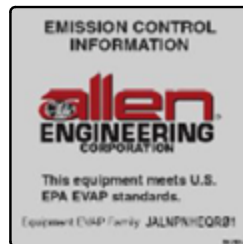
Left Steering  
Part #: 066093



HDX605 - Fuse Panel  
Part #: 070235



HDX605 - Fuse Box  
Part #: 066094



EPA Decal  
Part #: 067934



Gasoline Only  
Part #: 068454



Grease Rider  
Part #: 066103



Pinch Hazard  
Part #: 065917

## SECTION 1 SAFETY

## Safety Decals



AEC Info / Warranty / Patent  
Part #: 068457

Retardant Only  
Part #: 065655

Lifting Point  
Part #: 065653



Prop 65 Warning  
Part #: 069225



Coolant  
Part #: 068436



Light Switch  
Part #: 065897



Hand Tool Area  
Part #: 066068



Hydraulic Fluid  
Part #: 065668



HYD. PRESSURE  
Part #: 070402

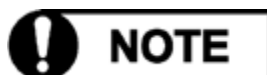


Drop Hazard  
Part #: 065656



Tie Down  
Part #: 068459

# **SECTION 2 OPERATION**



This machine is built with user safety in mind. However, it can present hazards if improperly operated and serviced. Follow operating instructions carefully.

If you have any questions about operating or servicing this equipment, please contact your Allen Engineering Dealer or AEC Customer Service at 800-643-0095 or 870-236-7751.

The HDX605 riding trowel is a modern high production machine. Finishing rate will vary depending on the operators skill and job conditions. This riding trowel has ten finishing blades.

The Super Heavy Duty (SHD) Gearboxes are designed to provide exceptional performance with low maintenance and trouble free use under some of the worst conditions.

All Allen Engineering HDX605 Riders are equipped with a safety shutdown switch and a low oil warning for added job safety and engine protection. Operating time between fuel refills is approximately 2-1/2 to 3 hours depending on rotor speeds.

### Before Starting Procedures

Before operation each day check for the following:

1. All guards, side screens and panels are in place
2. All safety and information signs are in place and legible
3. Engine, Gearbox, and Hydraulic Oil levels are correct.
4. Fuel level in fuel tank.
5. Check the battery level
6. Condition of air filter on engine.
7. Condition of riding trowel arms and blades.
8. Verify that daily maintenance of grease points have been performed.
9. Check operating controls for proper operation and adjustment
10. Check speed control operation before and after starting engine for proper operation
11. Check the steering left and right, for proper operation
12. Check for any hydraulic leaks
13. Remove any loose objects that could interfere with the operation of the trowel

**Note:** If there is any indication that faulty equipment exists, shutdown safely, inform the proper authority and **DO NOT** operate the riding trowel until the problem has been fixed.

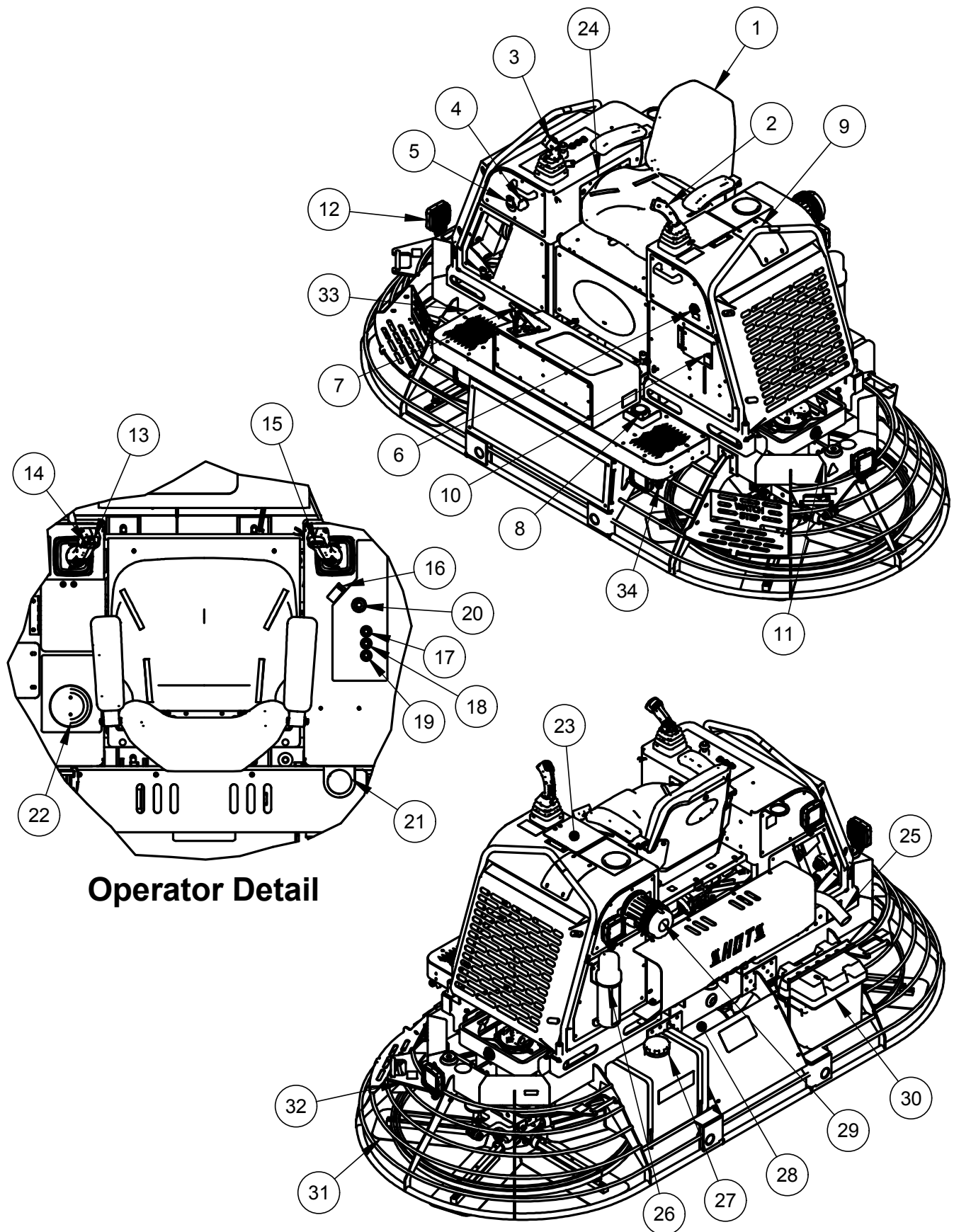
### Starting Procedures

Turn ignition switch key to the start-position, immediately release key when engine starts. Allow engine to warm up for 5 minutes before operating riding trowel.



Operating the starter for more than 5 seconds can damage the starter or engine. If engine fails to start release the switch and wait 15 seconds before operating starter again.





**Operator Detail**



1. Operator Seat - Rotors will not spin unless operator is seated. Seat is adjustable.
2. Left Joystick - Used to move the rider forward and backward
3. Right Joystick - Used to move the rider forward, backward, left & right.
4. Key Switch - Used to start that machine.
5. Light Switch - Turns the machine LED lights on or off.
6. USB - Dual USB plugs. 2.1A @ 5VDC MAX
7. Foot Control - Used to control rotor speed.
8. Fuel Tank - Holds 13 gal [49.2 L] of gasoline.
9. Lifting Point - Used to raise and lower the machine
10. Engine Coolant Access - Used to access the engine coolant
11. Hydraulic Fluid Reservoir - Where the hydraulic fluid is stored
12. Machine Lights - Used to illuminate the surrounding work area
13. Water Spray Button - (located on the left joystick) used to spray water on the work surface
14. Left Blade Pitch - switch used to change the pitch of the left blades
15. Right Blade Pitch - switch used to change the pitch of the right blades
16. Idle/Full Throttle Switch - Controls engine RPM.
17. Warning Light - Red, LED, Hydraulics Over Heated
18. Warning Light - Green, LED, Control weather start ready
19. Warning Light - Yellow, LED, Change hydraulic filter
20. Cruise Control Switch - Turns the machine cruise control on/off
21. Tool Holder - Store hand tools here
22. Cup Holder - Holds your favorite beverage
23. Engine Module - Controls engine RPM, shows fuel level, controls/monitors multiple other features
24. Fuse Box - Holds electrical fuses and relays
25. Muffler - Used to control exhaust sound and direction
26. Manual Tube - Holds the machine safety and operations manual. (for Parts Manual see page 59)
27. Retardant Reservoir - Holds the retardant fluid
28. Oil Filter - Filters the engine oil
29. Air Filter - Filters the engine air
30. Battery - 12VDC, 700 Cold Crank Amperes (CCA)
31. Screed Blade - Used to smooth and finish concrete
32. Tie Down - Use these to secure the machine during transport.
33. Unit Identification Plate - Model #, Serial #, Engine Power, Weight, Production Date
34. Spray Nozzle - Used to spray retardant on concrete

## SECTION 2 OPERATIONS

# Trowel Operation

## Operating The Riding Trowel

To utilize your Allen Engineering **HDX605** rider to its fullest capacity the machine should be driven in the direction the operator is facing. This will finish the widest possible area while giving the operator an excellent view of the slab surface about to be troweled. When the machine reaches the end of the slab make a 180 degree turn and repeat the straight line of direction to the other end of the slab. To familiarize a new operator with the riding trowel the following steps should be taken.

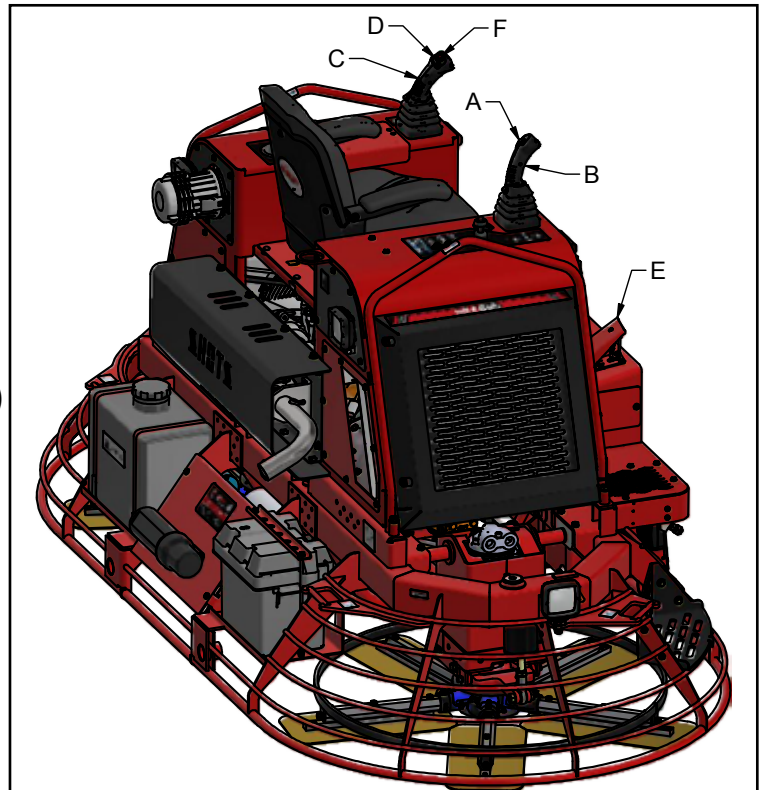


### NOTE

All items in this manual are describe from the operator "Sitting On Machine" or **SOM** for short.

### 1. Location of all Operating Controls

- A. Right Pitch Control
- B. Joystick (Forward & Reverse)
- C. Joystick (Left & Right, Forward & Reverse)
- D. Left Pitch Control
- E. Right Foot Pedal
- F. Retardant Spray Pushbutton

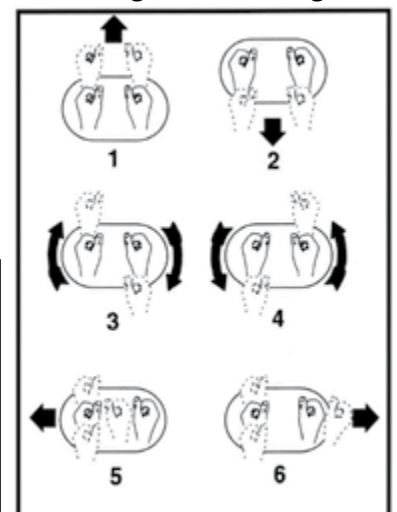


### 2. Steering the Riding Trowel

A slight "feathering motion" forward and backward with the left hand joystick is required to move the machine in a straight path to the left. The same motion is required of the right joystick to move to the right.

Position .....	Action
1 .....	Forward
2 .....	Reverse
3 .....	Rotate Clockwise
4 .....	Rotate Counter-clockwise
5 .....	Sideways - Left
6 .....	Sideways - Right

### Steering Control Diagram



### 3. Stopping the Trowel

To stop the trowel's movement, let go of the joysticks [B] and [C]. They will return to their neutral position. Also release pressure on the right foot pedal [E].



*This machine is equipped with a seat kill switch mechanism. If in need of an emergency stop, simply turning the key off or raising off the seat even while holding the right foot pedal down, will stop the engine from running.*

### 4. With the operator in the seat, show him the functions of the joysticks [B] and [C] and how to start the machine.

A hard level concrete slab with water on the surface is an ideal place for an operator to practice with the machine. For practice pitch the blades up approximately 1/4 inch on the trailing edge. Start by making the machine hover in one spot and then practice driving the machine in a straight line and making 180 degree turns. Best control is achieved at full engine RPM.



*After starting engine, fully engage the throttle. This allows the engine to warm up quicker and also engages the torque converter. At this time the machine's rotors will begin turning so long as foot pedal [E] is engaged.*



***DO NOT** use excessive pressure on the joysticks. Excessive pressure does not increase the reaction time of the machine and can damage steering controls.*

### 5. Engine Speed

The engine has two primary speed settings: Idle (1200 RPM) & Full (3400 RPM)

The engine will start at idle speed. This machine is equipped with a **Cold Weather Start** circuit, meaning that the engine RPM will not increase above idle speed until the hydraulic oil has reached an optimum temperature. The operator can activate the RPM toggle to **FULL** during this period, however the RPM will not increase until that optimum temperature is achieved.

There is a seat sensor on the machine that will not allow the engine RPM to go above idle speed if the operator is not seated. Therefore, the operator must be seated AND the Cold Weather Start circuit must be disengaged in order for to achieve full RPM speed.

## SECTION 2 OPERATIONS

# Trowel Operation

### 6. Cruise Control

This machine comes standard with a cruise control function. The cruise will allow the operator to remove their foot off the foot pedal and still maintain rotor function.

To use the cruise control, enable the foot switch so that the rotors engage, then pull up on the cruise control button. To release the cruise control, press down on the center button on the cruise control then pull up slightly to disengage.


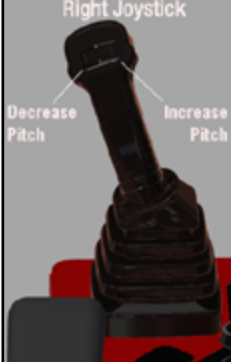


### 7. Pitch Adjustment

Different pitch angles are needed as you work the different stages of the concrete. When changing or setting pitch (angle of trowel blades), slow the machine down, set the desired degree of pitch on the left side of the machine and then adjust the right side to match.

To change the pitch, the operator will use the rocker switch located at the top of either joystick. By pressing the rocker switch towards the inside, the pitch will decrease, pressing the switch toward the outside of the joystick will increase the pitch level. (see Figure 2.5).

**FIGURE 2.5**  
**Pitch Adjustment**

 Left Joystick Increase Pitch Decrease Pitch	Working Conditions of Concrete	Suggested Working Pitch
	Stage 1: Wet surface working stage	0°
 Right Joystick Decrease Pitch Increase Pitch	Stage 2: Wet plastic working stage	5°
	Stage 3: Plastic working stage	10°
	Stage 4: Semi-hard working stage	15°
	Stage 5: Hard finishing stage (Burnishing)	20°

### 8. Enable Machine Blades

The machine trowel blades are enabled by the foot pedal (E). Hold down the pedal to enable the rotors to begin turning, release pressure off the pedal to stop the rotors.



The Murphy PowerView 380 features robust, multifunction displays for advanced monitoring of multiple electronic engines.

It's capable of monitoring multiple engines and machine parameters on an easy-to-read 3.8-inch (97mm) QVGA monochrome LCD. The display is capable of handling sophisticated engine diagnostics as well as basic engine alarm/shutdown. Customize the PV380 display using the PowerVision Configuration Studio®, an intuitive tool designed to make customization simple. Using the software tool, users can tailor basic graphics, designate screen layout

and define custom parameters. The PV380 is equipped with five tactile push buttons to quickly access a convenient menu. In addition, a back-lit and heated graphic display with LEDs indicate alarm or shutdown status.

### Flat Screen Display

A 3.8" QVGA monochrome LCD screen displays gauges, soft key commands and fault messages as well as menu options for setup and configuration.

### Soft Keys and Commands

The five tactile push buttons on the bottom of the display correspond to the options available for the screen being displayed.

### Alarms

Red and amber warning LEDs; set point triggered output for external piezo buzzer or shut-down relay.

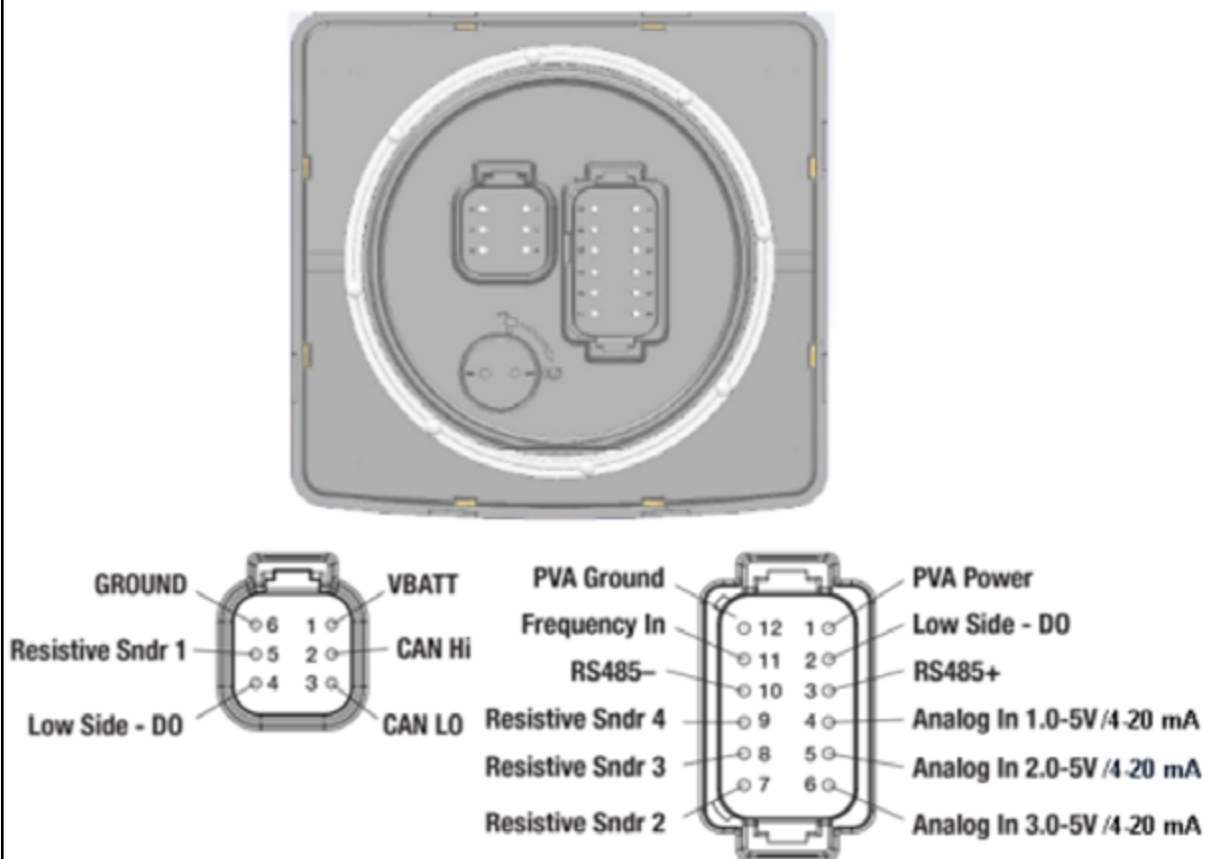
## SECTION 2 OPERATIONS

# Engine Control Unit (ECU)

### Specifications:

- AEC Part #: .....066227
- Display: ..... 3.8" Monochrome LCD
- Resolution:..... QVGA, 320 x 240 Pixels
- Orientation:..... Landscape
- Back-lighting: ..... LED, White
- Flash Memory:.....2Mb
- RAM: .....256kb
- Operating Voltage: .....6-36 VDC
- Power Consumption:.....10 Watt
- Communications: ..... CAN 2.0B & RS485 (Modbus)

### PV380 Connector Pin Outs (Back View)







**OPERATOR INTERFACE HOME SCREEN:** This screen (shown above) is the instrument cluster screen and is where you will start to navigate to all other menus.

**BUTTON ONE:** This button will swap the language between English and Spanish.

**BUTTON TWO:** This button will display the Engine Fault Codes and the I/O Status Screen. By selecting I/O status, you will then be able to see real time status of the Machine ID points, Seat Switch status, Cold Start status, Desired Engine Speed, and Run/Idle Status.

**BUTTON THREE:** This button will allow a person to change the screen brightness, screen contrast, units of measure, and language. Use button 1 to move the selection “UP”, use button 2 to move the selection “DOWN”, button 3 will verify the selection, use button 5 to return to the home screen.

**BUTTON FOUR:** Directs you to the Service Reminder screen. The first screen will give an overview of the current state of all the service reminders that are set. To cycle through/reset the reminders, press OK (button 3), then press the down arrow (button 1) and select “+” (button 3). This will reset the selected option back to the appropriate service interval. To cycle through the different service options, press “+” (button 3) when the selection arrow is at the top.

**BUTTON FIVE:** This will alternate the top row of readouts to provide more real time engine process data. The top row will either display an “Engine Torque / Load RPM” option or a “Cool Temp / Fuel Temp” option.

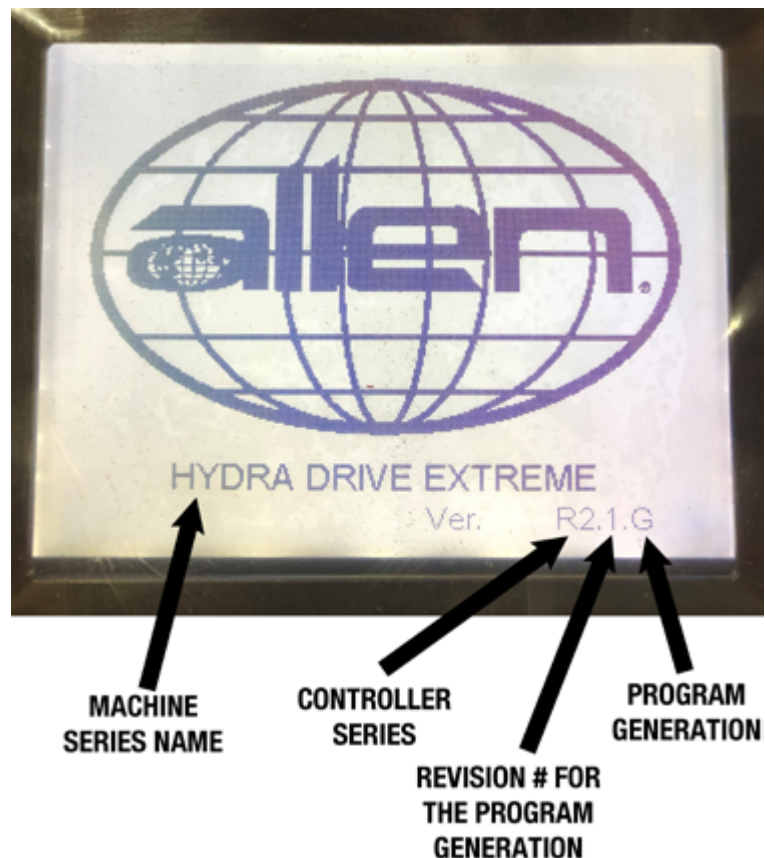
## SECTION 2 OPERATIONS

# Engine Control Unit (ECU)

### FUNCTIONS:

- Cold Start - When the hydraulic oil is too cold, the engine will automatically ramp up to “cold start” RPM to allow the machine to warm to an acceptable operating temperature. The status of this function can be viewed on the I/O Status screen under “OIL TEMP”.
- Run/Idle - The rocker button to the right of the operator will toggle the machine between RUN RPM and IDLE RPM after the Hydraulic oil has reached temperature. The status of this function can be viewed in the IO STATUS Screen under “CC,RN”
- Seat Switch - The machine cannot be in RUN RPM unless the seat switch is made. If the operator stands up while in run RPM, the machine will return to IDLE RPM. The status of this function can be viewed in the IO STATUS screen under “SEAT SW”.
- Run Light - When the oil temp has reached an acceptable temp, the green light to the right of the operator will illuminate.
- Lift-Off - When lifting the machine off the slab, with no operator in the seat, someone can hold the Run/Idle Rocker to achieve a higher Engine RPM for 5 seconds and press the foot pedal while the machine is being pulled from the concrete.

The start up screen will display for 5 seconds once power is supplied to the control unit (the machine key is turned on). This screen will display the Allen logo, the Machine Series Name, and the relevant software information that is needed for troubleshooting





# **SECTION 3 SERVICE**

## SECTION 3 SERVICE

# Maintenance Schedule

### Periodic Maintenance Schedule

The table below list basic trowel and engine maintenance. Refer to OEM engine manufacturer's Operation Manual for additional information on engine maintenance. A copy of the engine operator's manual was supplied with the machine when it was shipped.

Maintenance Schedule						
Description	Daily	20 Hrs	200 Hrs	500 Hrs	1K Hrs	4K Hrs
INSPECT						
Inspect Engine Oil Level	X					
Inspect Hydraulic Oil	X					
Inspect Air Filters	X					
Inspect Radiator Fins	X					
Inspect Radiator Coolant	X					
Inspect for Leaks	X					
Check poly V-belt				X		
Inspect all Hardware				X		
Inspect Belts					X	
Inspect Wiring					X	
Inspect Battery					X	
Inspect Exhaust					X	
Inspect Coolant Hoses					X	
Inspect Catalyst					X	
ACTION						
Control Linkage Lubrications		X				
Change Engine Oil			X			
Change Hydraulic Oil			X			
Change Fuel Filters			X			
Change Oil Separator Element					X	
Change Air Filters				X		
Drain Water Separator				X		
Replace Fan Belt				X		
Clean Entire EGR System						X
Change Coolant						X

\*Replace Hydraulic Fluid with Hydraulic Oil 46 (DTE25) or Equivalent\*

Above 25°C (77°F)	SAE30 or SAE10W-30 SAE15W-40
0°C to 25°C (32°F to 77°F)	SAE20 or SAE10W-30
0°C to -20°C (32°F to -4°F)	SAE10W or SAE10W-30
Below -20°C (-4°F)	SAE5W-30

- Change the type of engine oil according to the ambient temperature.
- When using oil of different brands from the previous one, be sure to drain all the previous oil before adding the new engine oil.



Part #: 043920

Description: Filter, Fuel, For Kubota WG1605



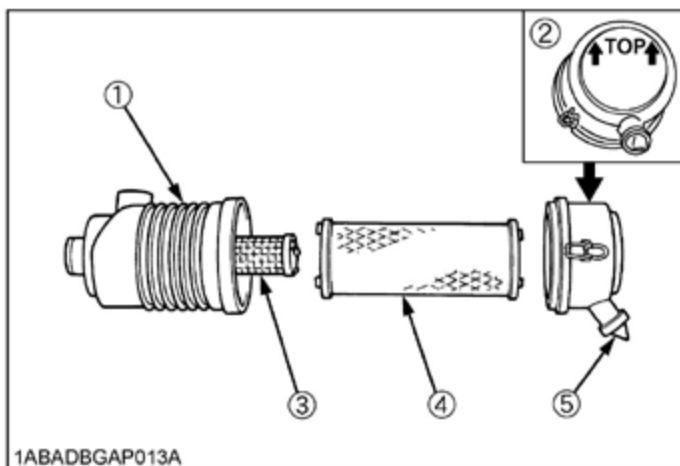
Part #: 064828

Description: Filter, Oil For Kubota WG1605



Part #: 049801

Description: Filter, Hydraulic, Spin-On, 10 micron



- (1) Air cleaner body
- (2) Cover
- (3) Secondary element

- (4) Primary element
- (5) Evacuator valve

#3



Part #: 069429

Description: Filter, Air, Safety For Kubota WG1605

#4



Part #: 069428

Description: Filter, Air, Primary For Kubota WG1605

## SECTION 3 SERVICE

# Hydraulic Filter Service

### DANGER

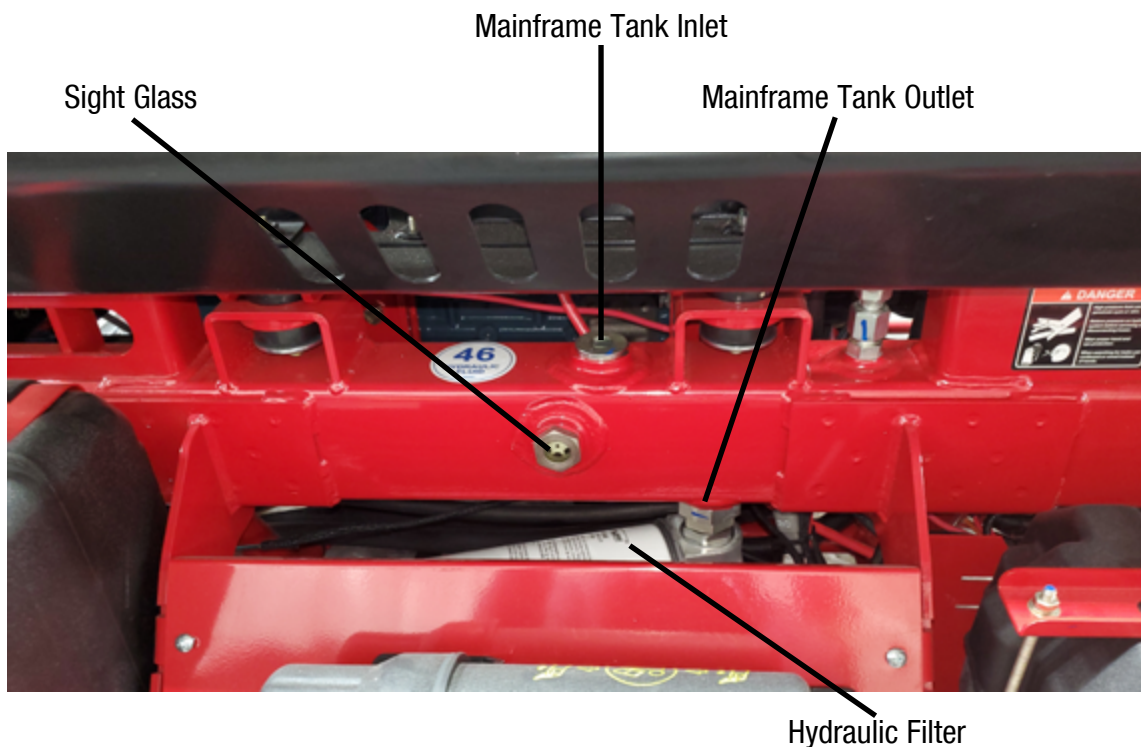
Hydraulic system service safety:

- **DO NOT** check for leaks with your hands.
- **Ensure that the machine is powered off and the hydraulic system is depressurized.** (There should be no pressure in the system as long as the machine is turned off.)
- If applicable, **DO NOT** service a hot machine. Allow the machine to cool before servicing hydraulic components.

The filters status should be checked weekly or monthly. Check to see if there is a notification on the display, from the light on the seat frame or check the gauge on the filter.

Be sure to use a pan/container to catch any oil that drains when changing the filter, **fluid will drain from the filter.** Either tilt the machine to divert the oil or cap the ports or hoses while servicing the filter. **After changing the filter make sure that the hydraulic oil is topped off,** the oil should be filled just above the sight glass. Do not overfill the mainframe tank.

\*Replace Hydraulic Fluid with Hydraulic Oil 46 (DTE25) or Equivalent\*. The riding trowel is filled with Philips66 Megaflow AW Hydraulic Oil 46 at the factory.



*Rear View*

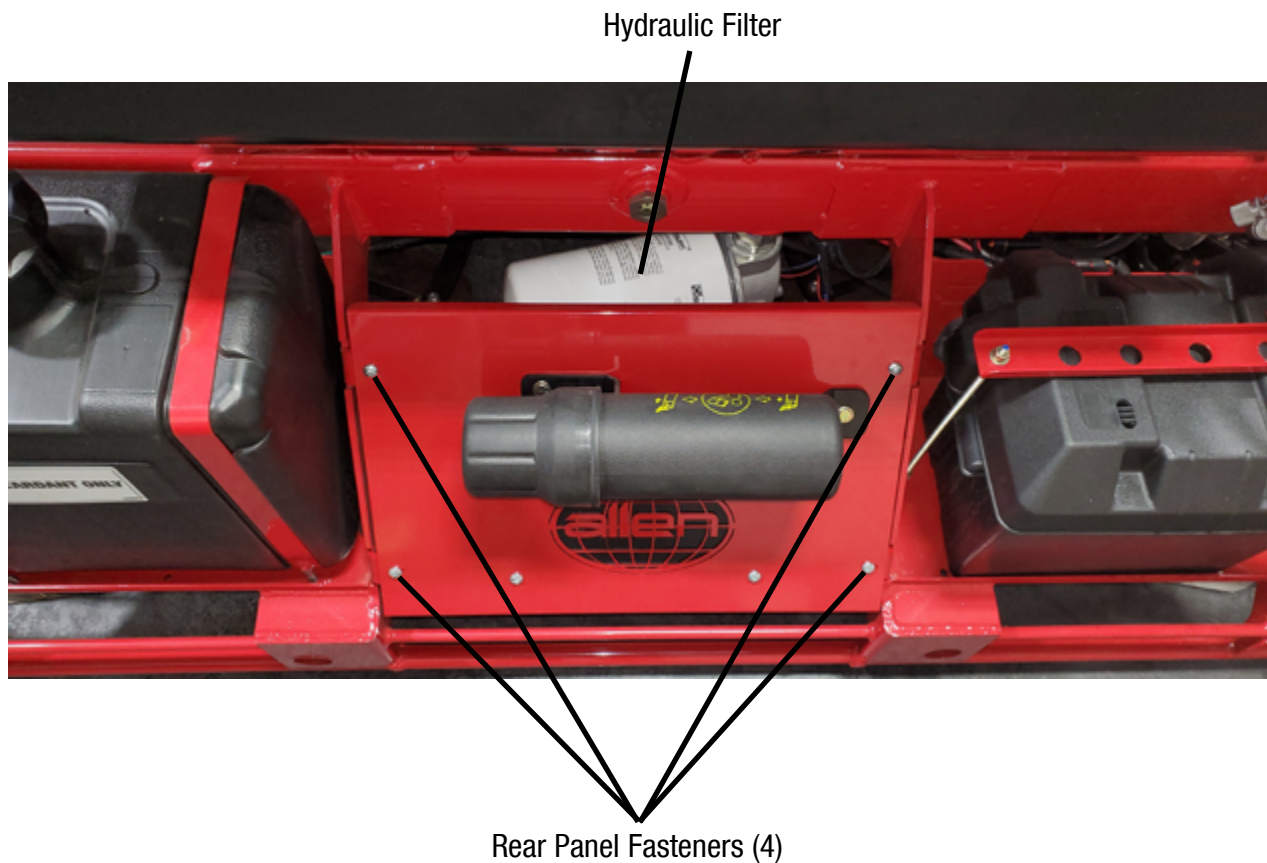
### Changing the Hydraulic Filter:

The hydraulic filter is a spin on filter, its part number is 049801

**NOTE:** The filter is directly connected to the mainframe tank outlet, fluid may flow freely once the filter is removed. Be prepared to use a pan/container to catch any loose fluid.

1. Remove the rear panel to get access to the filter, this panel is fastened by four Philips screws.
2. Then unscrew the filter, and replace the filter.
3. If fluid is lost or to replace the hydraulic fluid the oil should be filled just above the sight glass. Do not overfill the mainframe tank.

\*Replace Hydraulic Fluid with Hydraulic Oil 46 (DTE25) or Equivalent\*. The riding trowel is filled with Philips66 Megaflow AW Hydraulic Oil 46 at the factory.



## **Battery Jump Start Procedure**

Occasionally it may be necessary to jump start a weak battery. If jump starting is necessary the following procedure is recommended to prevent starter damage, battery damage, and personal injury.



Jump starting a battery incorrectly can cause the battery to explode resulting in severe personal injury or death. Do not smoke or allow any ignition sources near the battery and do not start a frozen battery.



Electrical arcing can cause severe personal injury.  
Do not allow positive and negative cable ends to touch.

1. Use a battery of the same voltage (12V) as is used with your engine.
2. Attach one end of the positive booster cable (red) to the positive (+) terminal of the booster battery. Attach the other end to the terminal of your engine battery.
3. Attach one end of the negative booster cable (black) to the negative (-) terminal on the booster. Attach the other end of the negative cable to your engine battery.
4. Jump starting in any other manner may result in damage to the battery or the electrical system.



Over cranking the engine can cause starter damage.  
Allow 5 minutes for starter to cool if engaged for more than 15 seconds.



When using lights or high amperage draw accessories,  
idle the engine for a period of 20 minutes to bring the battery to charge state.

### Lift Lever Adjustment Procedure

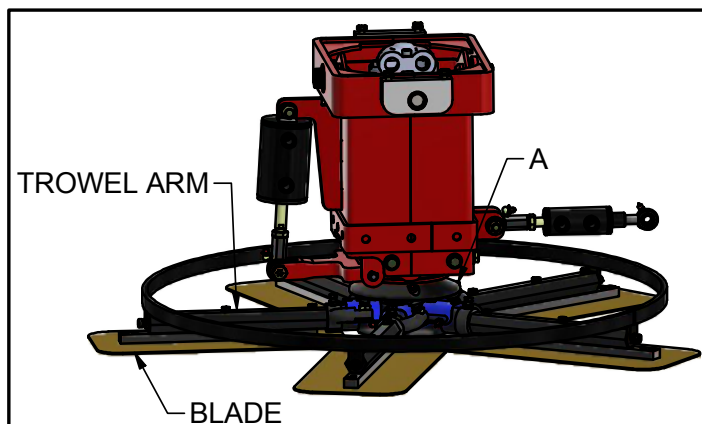
- Damage to and/or replacement of a trowel arm can change the adjustment of the lift lever. This can unbalance the trowel arms and cause the riding trowel to wobble during operation. To operate smoothly the lift lever on all trowel arms must be adjusted the same to ensure that the riding trowel is balanced correctly.
- Adjusting the trowel arms is accomplished by using the optional trowel arm alignment jig AEC PN 016863. The service manual that is included with the alignment jig describes in detail the steps to perform this procedure and to check the flatness and straightness of the trowel arms.



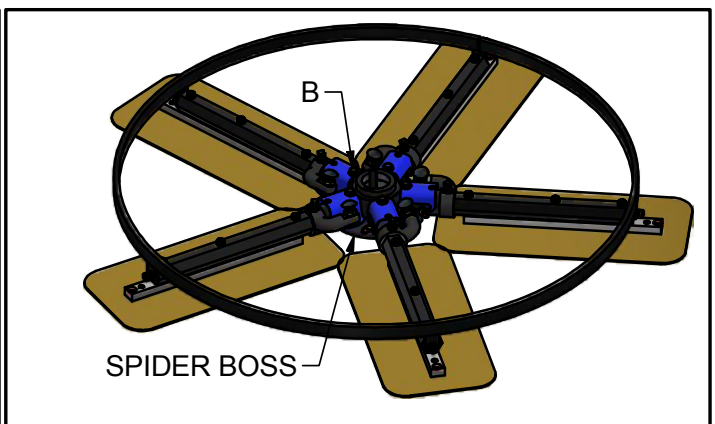
*Make sure that there is no pitch in the blades before attempting to remove a trowel arm.*

- The steps below described the general procedure to remove the trowel arms to be aligned.
  1. Block up pressure plate **[A]** using a wooden block.
  2. Remove stabilizer ring from spider assembly (only on available models).
  3. Remove blades from trowel arms.
  4. Loosen hex head cap screw **[B]** and remove it and the external star washer from the spider boss.
  5. Remove trowel arms from spider boss with lift levers in place.
  6. Clean flats on trowel arm before placing it in the trowel arm jig (PN 016863).
  7. Perform the alignment procedures as outlined in the alignment jig service manual (PN 047427).
  8. Re-attach trowel arm to spider boss and blades to trowel arms.
  9. Tighten down hex head cap screw to secure trowel arm in place.
  10. Reattach stabilizer ring (only on available models).

### PICTURES FOR REFERENCE ONLY



PRESSURE PLATE LOCATION



FASTENER HARDWARE REMOVAL



## SECTION 3 SERVICE

## Fault Codes

Diagnostic Trouble Component (DTC)	SPN Code	FMI Code	Issue
Manifold Absolute Pressure	106	16	<ul style="list-style-type: none"> <li>Sensor or Wiring Harness Short to Power</li> <li>Sensor Malfunction</li> </ul>
		4	<ul style="list-style-type: none"> <li>Sensor or Wiring Harness Open or Short to Ground</li> <li>Sensor Malfunction</li> </ul>
Fuel Pressure	94	3	<ul style="list-style-type: none"> <li>Sensor or Wiring Harness Short to Power</li> </ul>
		4	<ul style="list-style-type: none"> <li>Sensor or Wiring Harness Open or Short to Ground</li> <li>Sensor Malfunction</li> </ul>
		0	<ul style="list-style-type: none"> <li>Fuel Pressure Abnormality (High Side)</li> </ul>
		1	<ul style="list-style-type: none"> <li>Fuel Pressure Abnormality (Low Side)</li> </ul>
Fuel Temperature	174	3	<ul style="list-style-type: none"> <li>Operating in a Hot Environment</li> <li>Sensor Out of Calibration</li> </ul>
		4	<ul style="list-style-type: none"> <li>Operating in a Frigid Atmosphere</li> <li>Sensor Out of Calibration</li> </ul>
	3486	1	<ul style="list-style-type: none"> <li>Not Vaporized Completely</li> </ul>
Engine Coolant Temperature	110	3	<ul style="list-style-type: none"> <li>Sensor or Wiring Harness Open or Short to Power</li> <li>Sensor Malfunction</li> </ul>
		4	<ul style="list-style-type: none"> <li>Sensor or Wiring Harness Short to Ground</li> <li>Sensor Malfunction</li> </ul>
		15	<ul style="list-style-type: none"> <li>Engine Coolant Temperature Abnormality (High Side Stage 1)</li> </ul>
		0	<ul style="list-style-type: none"> <li>Engine Coolant Temperature Abnormality (High Side Stage 2)</li> </ul>
Intake Air Temperature	105	3	<ul style="list-style-type: none"> <li>Sensor or Wiring Harness Open or Short to Power</li> <li>Sensor Malfunction</li> </ul>
		4	<ul style="list-style-type: none"> <li>Sensor or Wiring Harness Short to Ground</li> <li>Sensor Malfunction</li> </ul>
		15	<ul style="list-style-type: none"> <li>Engine Coolant Temperature Abnormality (High Side Stage 1)</li> </ul>
		0	<ul style="list-style-type: none"> <li>Engine Coolant Temperature Abnormality (High Side Stage 2)</li> </ul>
Knock	731	4	<ul style="list-style-type: none"> <li>Sensor or Wiring Harness Open or Short to Power</li> <li>Sensor Malfunction</li> </ul>
		2	<ul style="list-style-type: none"> <li>Knock Signal Abnormality (High Side)</li> <li>Sensor Malfunction</li> </ul>
Battery Voltage	168	15	<ul style="list-style-type: none"> <li>System Voltage Abnormality (High Side)</li> </ul>
		17	<ul style="list-style-type: none"> <li>Wiring Harness Open or Short or Damage</li> <li>Battery Abnormality</li> </ul>
5V External	1079	3	<ul style="list-style-type: none"> <li>Wiring Harness Short to 12V Power</li> <li>ECM Malfunction</li> </ul>
		4	<ul style="list-style-type: none"> <li>Wiring Harness Short to Ground</li> <li>ECM Malfunction</li> </ul>
	1080	3	<ul style="list-style-type: none"> <li>Wiring Harness Short to 12V Power</li> <li>ECM Malfunction</li> </ul>
		4	<ul style="list-style-type: none"> <li>Wiring Harness Short to Ground</li> <li>ECM Malfunction</li> </ul>
	1079	31	<ul style="list-style-type: none"> <li>Wiring Harness Short to 12V Power or Ground</li> <li>ECM Malfunction</li> </ul>

Diagnostic Trouble Component (DTC)	SPN Code	FMI Code	Issue
Throttle Position Sensor	51	3	<ul style="list-style-type: none"> <li>TPS Circuit in the Harness Short to Power</li> <li>TPS Malfunction</li> </ul>
		4	<ul style="list-style-type: none"> <li>TPS Circuit in the Harness Short to Ground</li> <li>TPS Malfunction</li> </ul>
	3673	3	<ul style="list-style-type: none"> <li>TPS Circuit in the Harness Short to Power</li> <li>TPS Malfunction</li> </ul>
		4	<ul style="list-style-type: none"> <li>TPS Circuit in the Harness Short to Ground</li> <li>TPS Malfunction</li> </ul>
	51	0	<ul style="list-style-type: none"> <li>TPS Malfunction</li> </ul>
		1	
		7	
		31	
Barometric Pressure	108	1	<ul style="list-style-type: none"> <li>Sensor Out of Calibration</li> <li>Loss for 5V Reference Feed (5V_ext1) to MAP</li> <li>Signal Wire Open or Shorted to Ground</li> </ul>
Foot Pedal Position (FPP)	91	3	<ul style="list-style-type: none"> <li>Wiring Harness Open or Short or Damage</li> <li>FPP Malfunction</li> </ul>
		4	
		16	
		18	
	29	31	<ul style="list-style-type: none"> <li>FPP Malfunction</li> </ul>
Engine Speed	515	3	<ul style="list-style-type: none"> <li>Wiring Harness Open or Short or Damage</li> <li>FPP Malfunction</li> </ul>
		4	<ul style="list-style-type: none"> <li>Wiring Harness Open or Short or Damage</li> <li>FPP Malfunction</li> </ul>
Engine Speed	515	15	<ul style="list-style-type: none"> <li>Engine Over Speed Condition, Stuck Throttle, Large Vacuum Leak Into Intake Manifold After Throttle Blade</li> </ul>
		16	<ul style="list-style-type: none"> <li>Engine Over-Speed Condition, Faulty Crank Sensor or Input</li> </ul>
		0	<ul style="list-style-type: none"> <li>Engine Over-Speed Condition, Faulty Crank Sensor or input</li> </ul>
Oil Pressure	100	1	<ul style="list-style-type: none"> <li>Low Oil Pressure</li> </ul>
Adaptive Learn	4237	0	<ul style="list-style-type: none"> <li>Exhaust Leaks Upstream or Near the HEGO Sensor</li> <li>Reduced Fuel Supply Pressure to the Gaseous Fuel Control System</li> <li>An Inoperative Sensor</li> <li>An Injector that is Stuck Closed or Dirty</li> <li>Weak Spark or Lack of Spark to a Cylinder</li> <li>A Fuel Supply or Manifold Leak</li> <li>A Non-Responsive HEGO Sensor</li> </ul>
		1	<ul style="list-style-type: none"> <li>An inoperative O2 sensor</li> <li>High fuel supply pressure or temperature</li> <li>Internal mechanical engine damage</li> <li>An injector that is stuck open or leaking</li> <li>High fuel supply pressure to the gaseous fuel control or faulty pressure regulator</li> <li>A non-responsive HEGO sensor</li> </ul>

## SECTION 3 SERVICE

## Fault Codes

Diagnostic Trouble Component (DTC)	SPN Code	FMI Code	Issue
Closed Loop	4236	0	<ul style="list-style-type: none"> <li>Exhaust leaks upstream or near the HEGO sensor</li> <li>Reduced fuel supply pressure</li> <li>An injector that is stuck closed</li> <li>Reduced fuel supply pressure to the gaseous fuel control system</li> <li>A fuel supply or manifold leak</li> <li>A non-responsive HEGO sensor</li> </ul>
		1	<ul style="list-style-type: none"> <li>High fuel supply pressure to the fuel injection system</li> <li>A non-responsive HEGO sensor</li> <li>An injector that is stuck open</li> <li>High fuel supply pressure to the gaseous fuel control or faulty pressure regulator</li> <li>A non-responsive HEGO sensor</li> </ul>
Catalyst Monitor	3050	11	<ul style="list-style-type: none"> <li>Physically Damaged Catalyst</li> <li>Contaminated Catalyst Element</li> <li>Post Signal Circuit Shorted to Pre-signal</li> </ul>
EGO Sensors	3217	5	<ul style="list-style-type: none"> <li>Open feed circuit to O2 heater</li> <li>Open or shorted to ground O2 signal wire</li> <li>Open sensor ground (5Vrtn1)</li> <li>Inoperative sensor</li> </ul>
	3227		
Injectors	651	5	<ul style="list-style-type: none"> <li>Loss of 12 V feed to injector</li> <li>Open injector coil</li> <li>Open or shorted to ground injector driver circuit in engine harness</li> </ul>
		6	<ul style="list-style-type: none"> <li>Injector coil shorted internally</li> <li>Injector driver circuit shorted to voltage between injector and ECM</li> </ul>
	652	5	<ul style="list-style-type: none"> <li>Loss of 12 V feed to injector</li> <li>Open injector coil</li> <li>Open or shorted to ground injector driver circuit in engine harness</li> </ul>
		6	<ul style="list-style-type: none"> <li>Injector coil shorted internally</li> <li>Injector driver circuit shorted to voltage between injector and ECM</li> </ul>
	653	5	<ul style="list-style-type: none"> <li>Loss of 12 V feed to injector</li> <li>Open injector coil</li> <li>Open or shorted to ground injector driver circuit in engine harness</li> </ul>
		6	<ul style="list-style-type: none"> <li>Injector coil shorted internally</li> <li>Injector driver circuit shorted to voltage between injector and ECM</li> </ul>
	654	5	<ul style="list-style-type: none"> <li>Loss of 12 V feed to injector</li> <li>Open injector coil</li> <li>Open or shorted to ground injector driver circuit in engine harness</li> </ul>
		6	<ul style="list-style-type: none"> <li>Injector coil shorted internally</li> <li>Injector driver circuit shorted to voltage between injector and ECM</li> </ul>

Diagnostic Trouble Component (DTC)	SPN Code	FMI Code	Issue
Spark Coil Primary	1268	5	<ul style="list-style-type: none"> <li>A Short to Ground or Open Circuit in the Harness</li> <li>An Open Internal to the Primary Coil</li> </ul>
		6	<ul style="list-style-type: none"> <li>A Short to Power in the Harness</li> <li>A Short Internal to the Primary Coil</li> </ul>
	1269	5	<ul style="list-style-type: none"> <li>A Short to Ground or Open Circuit in the Harness</li> <li>An Open Internal to the Primary Coil</li> </ul>
		6	<ul style="list-style-type: none"> <li>A Short to Power in the Harness</li> <li>A Short Internal to the Primary Coil</li> </ul>
	1270	5	<ul style="list-style-type: none"> <li>A Short to Ground or Open Circuit in the Harness</li> <li>An Open Internal to the Primary Coil</li> </ul>
		6	<ul style="list-style-type: none"> <li>A Short to Power in the Harness</li> <li>A Short Internal to the Primary Coil</li> </ul>
	1271	5	<ul style="list-style-type: none"> <li>A Short to Ground or Open Circuit in the Harness</li> <li>An Open Internal to the Primary Coil</li> </ul>
		6	<ul style="list-style-type: none"> <li>A Short to Power in the Harness</li> <li>A Short Internal to the Primary Coil</li> </ul>
Lock off/Fuel Diagnostics	632	31	<ul style="list-style-type: none"> <li>Leak Fuel at Solenoid</li> <li>Faulty Solenoid</li> <li>Open or Short to Ground</li> </ul>
Fuel Pump Feedback	1347	5	
		6	
Fuel Pump Relay Control/Coil	1348	4	<ul style="list-style-type: none"> <li>Relay pull in coil shorted internally</li> <li>Relay driver circuit shorted to ground in wire harness</li> </ul>
		5	<ul style="list-style-type: none"> <li>Open coil in relay</li> <li>Open in relay driver circuit in engine harness</li> </ul>
		3	<ul style="list-style-type: none"> <li>Shorted relay pull in coil</li> <li>Relay driver circuit shorted to voltage in wire harness</li> </ul>
Power Relay Control / Coil	1485	4	<ul style="list-style-type: none"> <li>Short to Ground in Relay Pull in Coil</li> <li>Short to Ground in Relay Driver Circuit in Wire Harness</li> </ul>
		3	<ul style="list-style-type: none"> <li>Shorted Relay Pull in Coil</li> <li>Relay Driver Circuit Shorted to Voltage in Wire Harness</li> </ul>
EPR Diagnostics	520260	0	<ul style="list-style-type: none"> <li>Inlet Pressure to DEPR is too high</li> </ul>
		1	<ul style="list-style-type: none"> <li>Inlet Pressure to DEPR is too Low</li> <li>Malfunctioning Lock Off Valve, Plugged Fuel Filter, Close Manual Valve or Fuel Tank Out of Fuel</li> </ul>
		3	<ul style="list-style-type: none"> <li>Wiring Harness Open or Short or Damage</li> </ul>
		4	<ul style="list-style-type: none"> <li>Wiring harness Open or Short or Damage</li> <li>Faulty EPR Power Circuit</li> </ul>
		12	<ul style="list-style-type: none"> <li>Short or Open Circuit in Actuator Coil</li> <li>Associated Wiring</li> <li>Overheating or Actuator Drive Electronics</li> <li>DEPR Internal Microprocessor or Memory Failure, Fuel Temperature Sensor Failure</li> </ul>
		34	<ul style="list-style-type: none"> <li>Faulty CAN connection</li> <li>CAN termination incorrect</li> </ul>

## SECTION 3 SERVICE

## Fault Codes

Diagnostic Trouble Component (DTC)	SPN Code	FMI Code	Issue
Cam/Crank Sensors	636	2	<ul style="list-style-type: none"> <li>Cam+ or Cam- Circuits in Wrong Connector Terminal Slot</li> </ul>
		4	<ul style="list-style-type: none"> <li>Loss of Sensor Feed</li> <li>Open Sensor Ground</li> <li>Open or Shorted Ground Signal Wire</li> </ul>
		8	<ul style="list-style-type: none"> <li>Mechanical Misalignment Between Cam and Crank</li> </ul>
	723	2	<ul style="list-style-type: none"> <li>Cam+ or Cam- Circuits in Wrong Connector Terminal Slot</li> </ul>
		4	<ul style="list-style-type: none"> <li>Loss of feed voltage to Cam sensor</li> <li>Loss of signal or ground circuits</li> <li>Faulty sensor</li> </ul>
Internal Processor Diagnostics	628	13	<ul style="list-style-type: none"> <li>Faulty ECU</li> </ul>
	629	31	<ul style="list-style-type: none"> <li>Faulty ECU</li> </ul>
	630	12	<ul style="list-style-type: none"> <li>Faulty ECU</li> </ul>
	1634	2	<ul style="list-style-type: none"> <li>Faulty ECU</li> </ul>
J1939 Network	695	9	

This is only a partial list of the most common error codes that are available. If an alternate code is shown that is not on this list, please contact Allen Engineering Service Department for details.

### Machine Cleaning Procedure

When cleaning the machine, please adhere to the following information to ensure proper cleaning and to keep the machine in the best condition possible.

#### Power Washing Procedure:

#### NOTICE

- Ensure that the water pressure is below 2000 PSI (14 MPa)
- Always keep the water temperature below 180°F (80°C)
- Use a spray nozzle with at minimum 40° wide spray angle
- Keep the nozzle at least 1 foot (300mm) away from the machine
- Avoid spraying water on the engine and electronic components. Examples include electronic displays, lights, switches, wiring, etc. The electronic components may be damaged if water is sprayed on them.
- Keep a perpendicular angle (90°) when cleaning over a decal.
  - Holding nozzle of a pressure washer at an angle different from 90° may lift the decal from the machine.
- Recommended using a safe cement dissolver, **BACK-SET** or similar, to remove hardened concrete.
- It is **NOT** recommended to use chemicals such as:
  - Muriatic Acid
  - Hydrochloric Acid
  - Hydrofluoric Acid
  - Sulfuric Acid
  - Phosphoric Acid
- To prevent build-up of concrete on the machine, use **BODY GUARD** or similar protection wax.

#### Filter Cleaning Procedure:

- Remove air filters and blow out with compressed air, **NOT** to exceed 80 PSI.

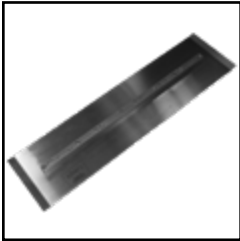
# **SECTION 4 ACCESSORIES**





Trowel Blade, Combo, 8" X 18", VP Silver Series  
(only sold as set of 4)

Part Number: 016094V-4



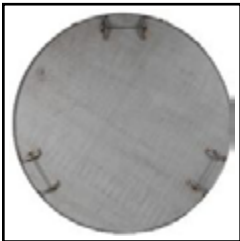
Trowel Blade, Finish, 6" X 18", VP Silver Series  
(only sold as set of 4)

Part Number: 015695V-4



Float Pan, Clip On, 46.5" O.D., Universal Flat, 80° Lip Angle,  
5-Blade

Part Number: 051552



Float Pan, Safety Catch, 46.5" O.D., Universal Flat, 80° Lip Angle,  
5-Blade

Part Number: 051553



Lifting Bridle, 6,000 Pound Max, 2-Point x 3 Foot

Part Number: 064798



Dolly Jacks are available for HDX riders to make mobilization easier. These tires are foam-filled to help support the added weight of the machine and to help prevent flats. (Comes in set of 2)

Part Number: 048770-F

## NOTICE

### Parts Manual

In order to provide a premier experience to our customers, we have moved the “Parts” section out of this manual and placed it in a separate “Parts & Decals Manual”. This will allow us to provide any changes or other important information quicker to you, the customer. See below for ways to access the “Parts & Decals Manual”.

### Mobile Device:

Scan this QR code with a compatible device (cellular phone, tablet, etc.)



### Computer:

Click the link, or go to the following website to find the product manuals

[HDX605](#)

### Mail:

A physical copy of the parts manual can also be mailed to you upon request. Please contact Allen Engineering service department and one can be sent to you.

Allen Engineering  
P.O. Box 819  
Paragould, Ar.  
72451, USA

Phone: 1.800.643.0095 (USA Only) / 1.870.236.7751  
Fax: 1.800.643.0097 (USA Only) / 1.870.236.3934

## Revision Detail

## GENERAL INFORMATION

### MANUAL REVISION DETAIL

REVISION #	REVISION DATE	REVISION REFERENCE #	REVISION BY
-	06/19	Initial Release	MW
A	01/22	Updated Covers	MK
B	10/22	Hydraulic Filter Service Info	MK



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