RIDING TROWEL

MSP475

SAFETY & OPERATIONS MANUAL

Manual Part #: 069599 | Revision: B
Language: English | Original Instructions

RIDING TROWEL

SAFETY & OPERATIONS MANUAL

This manual covers the products listed below:

Part No.	Description
074400	MSP475, 8ft, Kubota, Gas, 57HP, Hydraulic Steering

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.

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.

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GENERAL INFORMATION

Limited Warranty & Limitation of Liability

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.

Information Contained In This Manual

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

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.:	*CE1938*
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:	*MSP465 Riding Trowel* *MSP475 Riding Trowel*
Description:	*Ride-on concrete smoothing machine*
Serial No.:	*xxxxxxxx*
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: 11/22/2019

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

Sound & Vibration Testing

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
- dB (A)	- m/sec^2	- m/sec^2	- m/sec^2
This information was acquired from sound and vibration analysis tests conducted at Allen Engineering Corporation test facilities.			

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

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

MSP 475

- **Model**
- **Series**

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

475 01 19 001

- **Sequence Number**
- **Year**
- **Month**
- **Series**

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 or under the seat. 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.

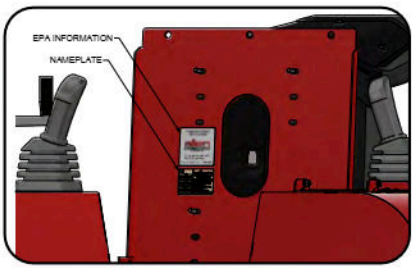
FILL IN FOR FUTURE REFERENCE

Model Number:_____

Serial Number:_____

Date Purchased:_____

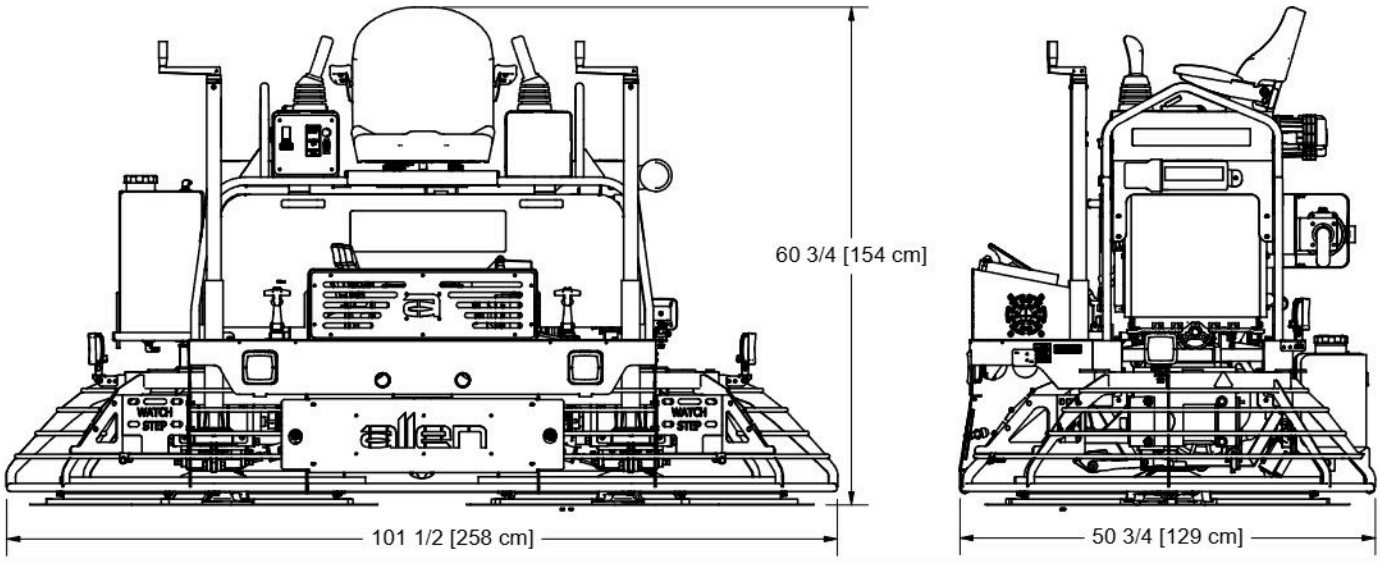
Purchased From:_____



Technical Specifications / Machine Dimension Specifications

Machine Specifications

- Horse Power: ..... 57 hp [42.5 kW]
- Fuel Capacity:..... 10 Gal [37.9 L]
- Retardant Capacity: ..... 6 Gal [22.7 L]
- Fuel Consumption (Approx.):..... 1.6 GPH [6 LPH]
- Steering System: .....Hydraulic
- Hydraulic Capacity:..... 3 Gal [11.4 L]
- Number of Operating Lights:..... 6
- Height: .....60-3/4" [155 cm]
- Length: .....101-1/2" [258 cm]
- Width: .....50-3/4" [129 cm]
- Dry Weight: .....1,750 lbs [794 Kg]
- Panning Width: .....101" [257 cm]
- Rotor Center Distance:.....51" [129.5 cm]
- Rotor Diameter: ..... 46" [116.8]
- Idle RPM:..... 1,000
- Full RPM:..... 3,600
- Lifting:.....2-point, Top-Mounted



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]

Engine Oil. 10W-30

Starter Capacity V-kW: . . . . . 12V - 1.0 kW

Alternator Capacity: . . . . . 12V - 40A

Dry Weight, lbs. [kg]. . . . . 264.6 [120]

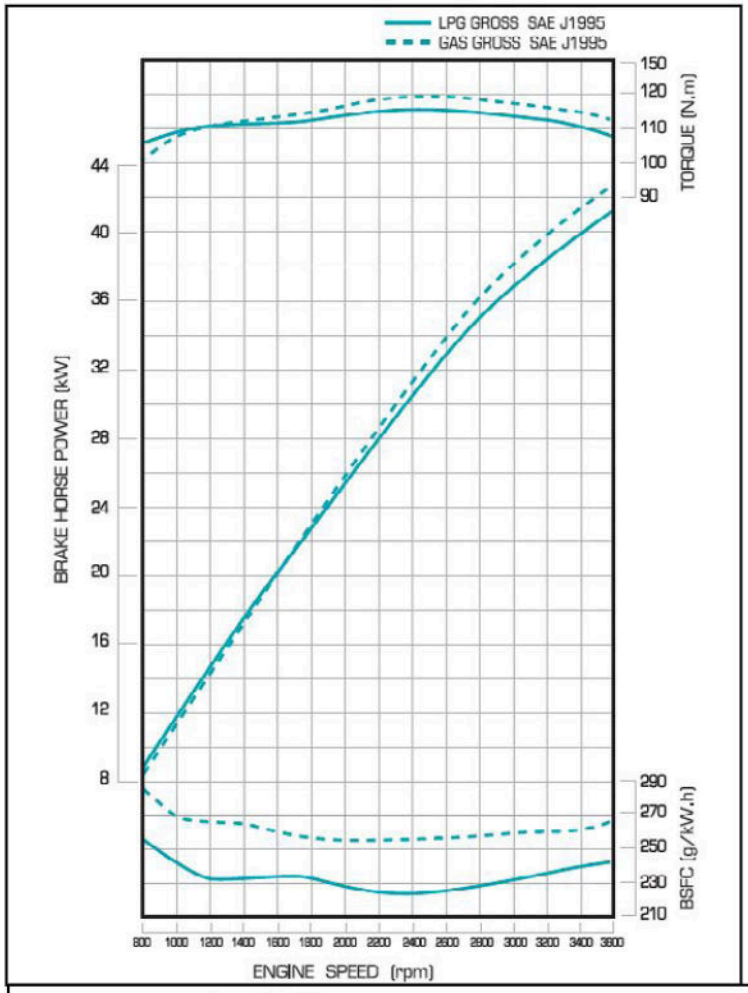
Dimensions:

- Length, in. [mm]: . . . . . 23.3 [591.3]
- Width, in. [mm]: . . . . . 18.8 [478.7]
- Height, in. [mm]: . . . . . 25.7 [652.3]

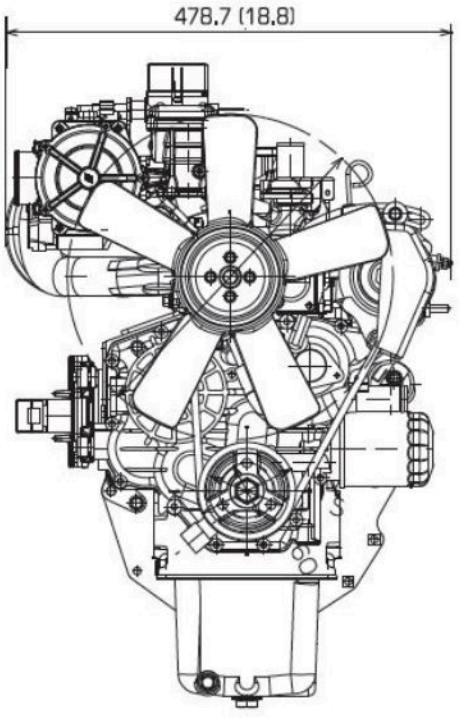
Emission Certifications:

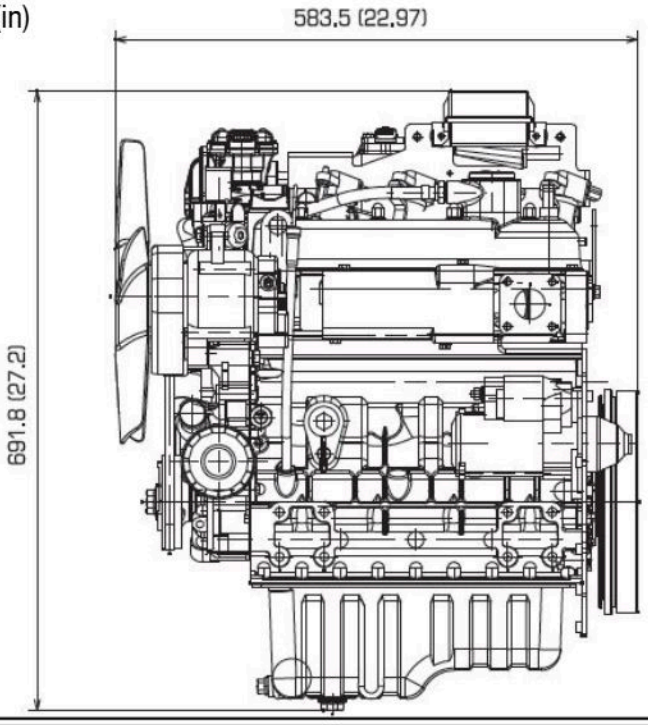
- EPA Non-Road LSI Tier 2 Certified
- CARB Off-Road LSI Tier 3 Certified

Engine Specifications



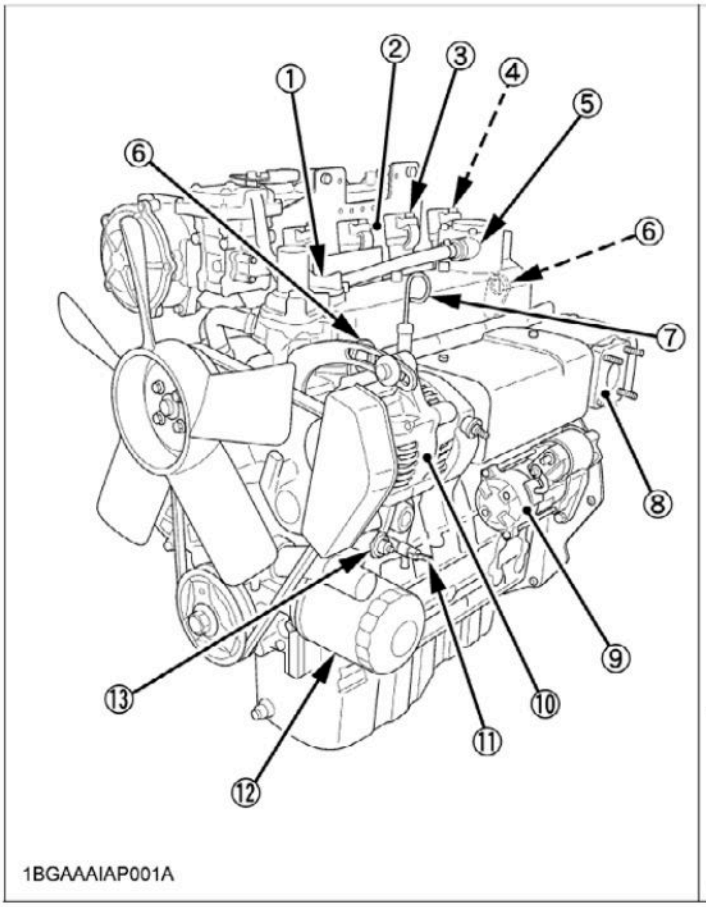
Dimensions: mm (in)

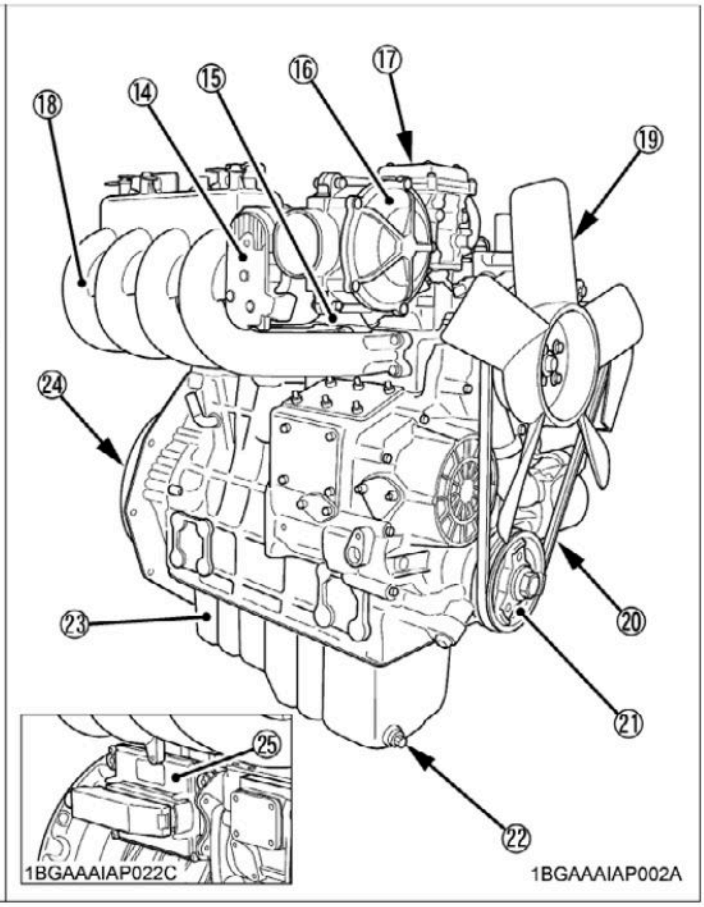




Engine Parts

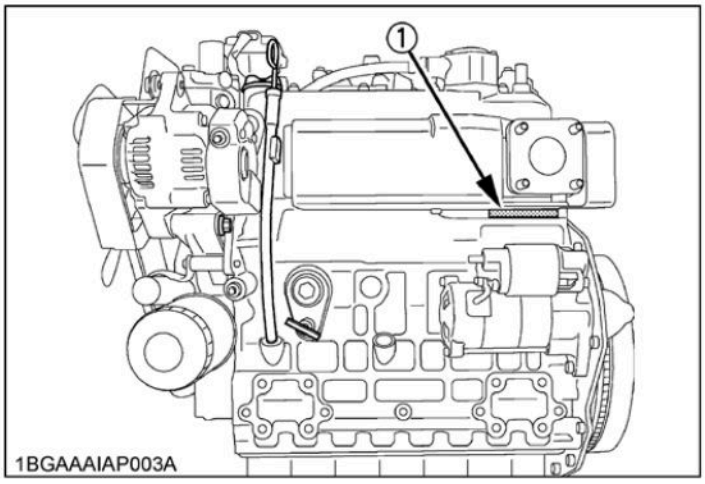
Information taken directly from manufactures product literature. For further information please reference engine manufactures Operator's Manual.





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

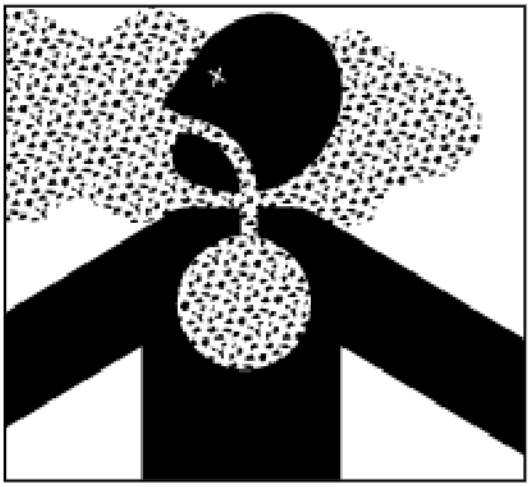
REF. #	PART NAME
15	Injector
16	Gas Mixer
17	Pressure Regulator
18	Intake Manifold
19	Cooling Fan
20	Fan Belt
21	Fan Drive Pulley
22	Oil Drain Plug
23	Oil Pan
24	Flywheel
25	ECU (Engine Control Unit)



(1) Engine serial number

SECTION 1: SAFETY

⚠ WARNING



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.

⚠ WARNING

Cancer and Reproductive Harm
www.P65Warnings.ca.gov

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.

Manual Tag Safety Detail

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

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 arrester 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.

SECTION 1 SAFETY

Operating Safety

⚠ WARNING

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 the machine running unattended.

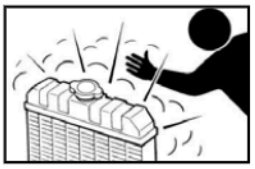
- **DO NOT** run the machine indoors or in an enclosed area such as a deep trench unless adequate ventilation, through such items as exhaust fans or hoses, is provided. Exhaust gas from the engine contains poisonous carbon monoxide gas; exposure to carbon monoxide can cause loss of consciousness and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

DANGER

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** 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.

Service Safety

⚠ WARNING

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 with 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.

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

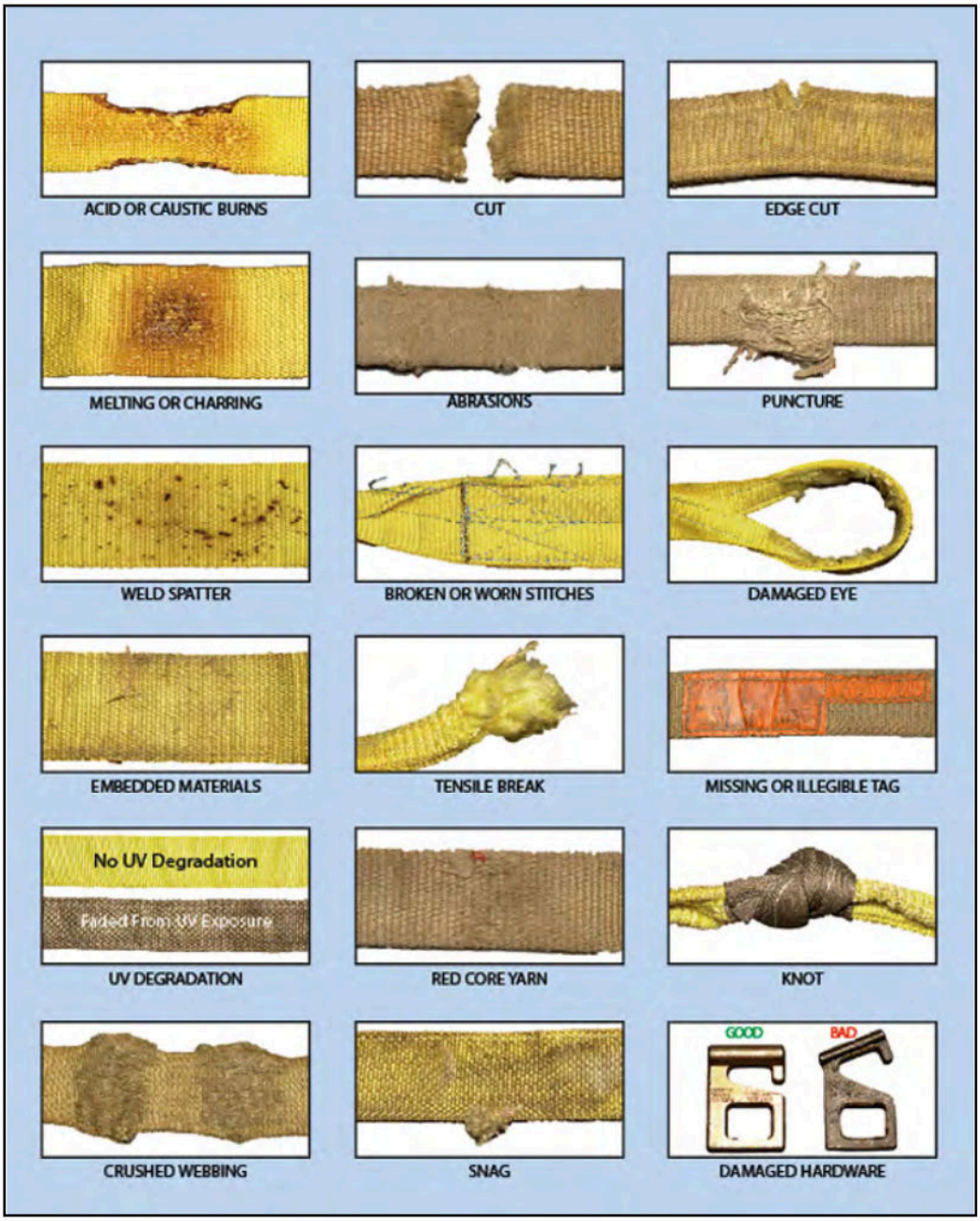
OSHA Standard Number: 1926.251

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)



Lifting Safety

- 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 075064
- 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.
- Ensure that the sling angle is as close to 90° as possible, or preferably no less than 60°.
- **ALWAYS** shutdown engine before transporting.

Lifting Points

- 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

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)

1

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. 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

3. Carefully slide the pans under the machine making sure that you are aware of the corners on the blades as they are sharp. As a precaution wear cut resistant gloves.

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)

5

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.

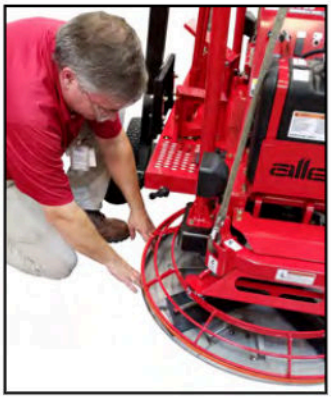
6

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.

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 "ACCESSORIES" for appropriate dolly jack part number]



1. Attach the front and rear dolly jacks into the machine at the receiving tube locations.

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 of the blades as they are sharp. As a precaution wear cut resistant gloves.

4. Align the pans so that the clips will not be crushed when the machine is lowered back down.

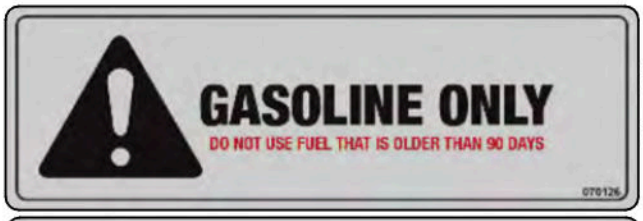
5. Slowly lower the machine down onto the pans. Make sure the blades are going into the proper gaps. (Typically the pans can only be installed one way)

6. Remove the dolly jacks 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.

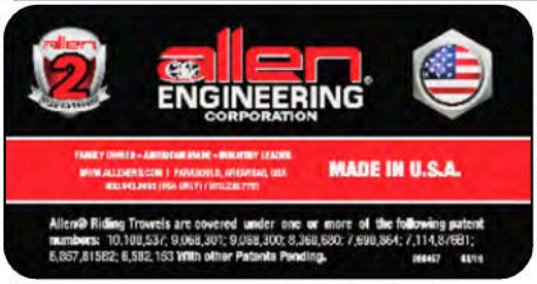
NOTE: Utilizing the lifting sling(bridle) and the dolly jacks are intended only for site transportation and the installation of pans and blades. DO NOT use them for regular maintenance without the additional use of jack stands to insure stability of the machine.

Safety Decals



DECAL - GASOLINE ONLY
PART #: 070126
QTY: 2

DECAL - RETARDANT ONLY
PART #: 065655
QTY: 1



DECAL - AEC INFO / PATIENTS
PART #: 076042
QTY: 1

DECAL - COOLANT WARNING
PART #: 069113
QTY: 1

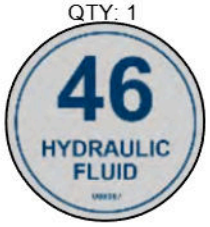
DECAL - SAFETY WARNINGS & STEERING
PART #: 069119
QTY: 1

DECAL - HYDR. PRESS. WARNING
PART #: 070402
QTY: 1

DECAL - PROP 65
PART #: 069225
QTY: 1

DECAL - DROP HAZARD
PART #: 065656
QTY: 2

DECAL - HYDRAULIC FLUID
PART #: 066067
QTY: 1



DECAL - MSP465 FUSE DETAIL
PART #: 070127
QTY: 1

DECAL - GEARBOX OIL
PART #: 048299
QTY: 1

DECAL - PINCH HAZARD
PART #: 065917
QTY: 2

DECAL - LIFTING POINT
PART #: 065653
QTY: 2

DECAL - TIE DOWN
PART #: 068459
QTY: 4

DECAL - EPA INFO
PART #: 071102
QTY: 1

DECAL - GREASE
PART #: 066103
QTY: 2

SECTION 2: OPERATION

SECTION 2 OPERATIONS

Introduction to MSP475

NOTE

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 MSP475 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.

All Allen Engineering MSP475 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. (See Sect. 3 Service)
9. Check operating controls for proper operation and adjustment
10. Check speed control operation before and after starting engine for proper operation
11. Check for any hydraulic leaks
12. 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

1. Sit down in the riding trowel seat. DO NOT attempt to start the riding trowel without an operator in the seat.
2. Flip the engine toggle switch up to the ON position. Then push the “push to start” button down until the engine starts, release the button when engine starts. Allow engine to warm up for 5 minutes before operating riding trowel

⚠ CAUTION

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

NOTE

To turn off the riding trowel bring the trowel to a stop and simply flip the engine toggle switch down to the OFF position and the engine will stop.

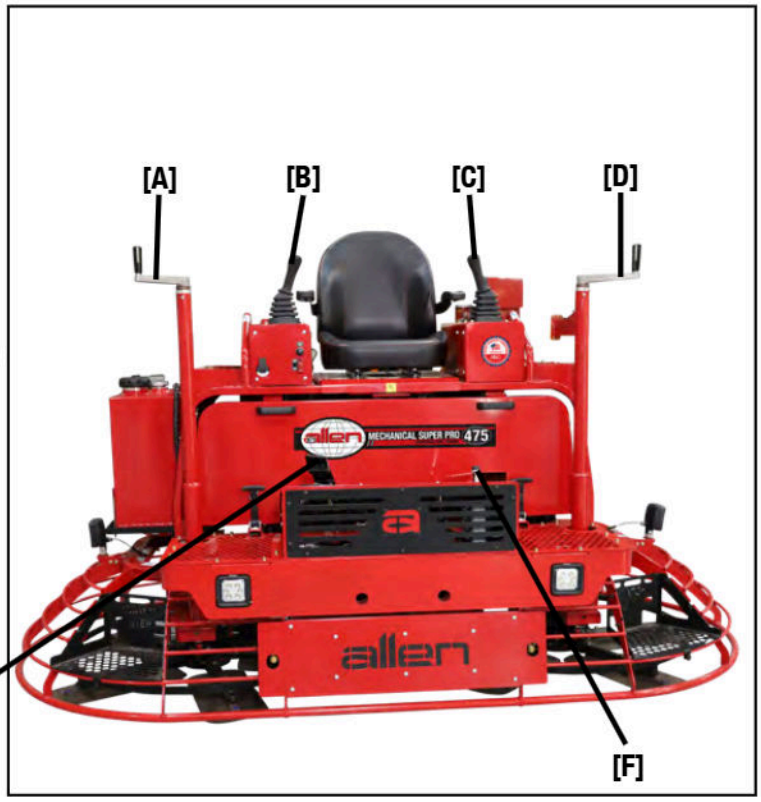
Trowel Operation

Operating The Riding Trowel

To utilize your Allen Engineering **MSP475** 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.



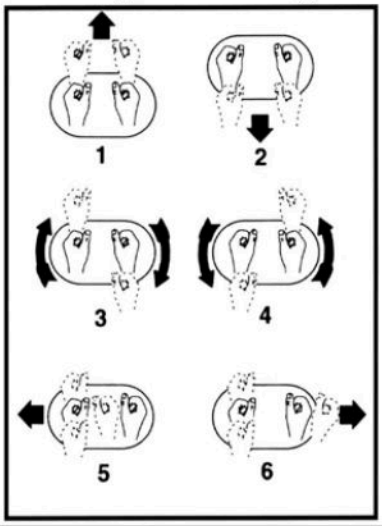
1. Location of all Operating Controls

A. Right Pitch Control
B. Joystick (Left & Right, Forward & Reverse)
C. Joystick (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.

Steering Control Diagram



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

3. Stopping the Trowel

Release pressure on the right foot pedal [E], and let go of the joysticks [B] and [C]. They will return to their neutral position.

⚠ CAUTION

This machine is equipped with a seat kill switch mechanism. If in need of an emergency stop, simply flip the engine toggle switch 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.

⚠ CAUTION

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.

⚠ CAUTION

***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 (1000 RPM) & Full (3600 RPM)

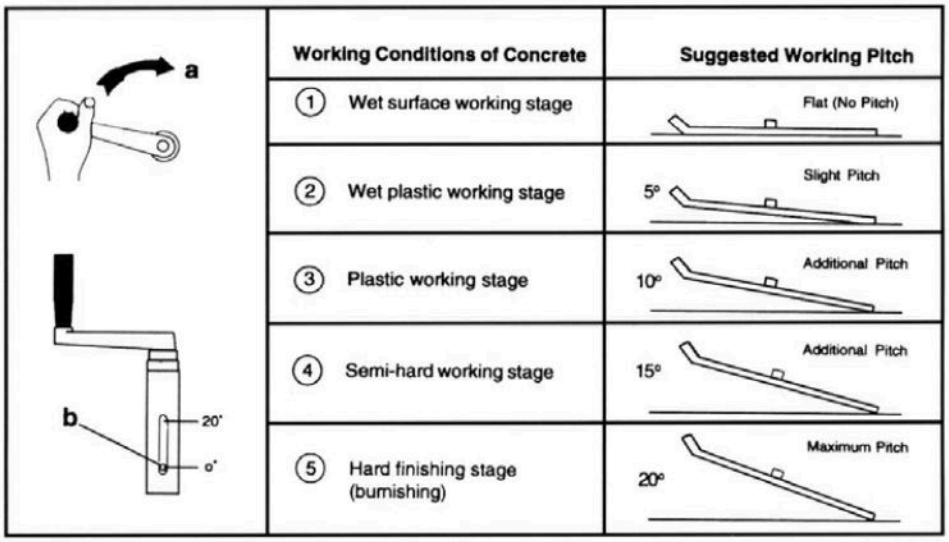
Trowel Operation

1. 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 Left and Right pitch control handles. By turning the handle counter-clockwise, the pitch will decrease, turning the handle clockwise will increase the pitch level. (see the Figure below).

Pitch Adjustment



Working Conditions of Concrete	Suggested Working Pitch
① Wet surface working stage	Flat (No Pitch)
② Wet plastic working stage	Slight Pitch 5°
③ Plastic working stage	Additional Pitch 10°
④ Semi-hard working stage	Additional Pitch 15°
⑤ Hard finishing stage (burnishing)	Maximum Pitch 20°

2. 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.

Engine Display Unit

The Murphy PowerView 25 is a robust and compact engine and diagnostic display.

It's capable of monitoring electronic engine parameter data and on a back lit graphics display. The display is capable of handling sophisticated engine diagnostics as well as basic engine alarm/ shutdown. LEDs indicate alarm or shutdown status.

Soft Keys
The two 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.

Specifications:

- AEC Part #: 074704
- Display: ..... Back Lit Graphics Display
- Orientation:.....Landscape
- Operating Voltage: .....6-36 VDC
- Communications: ..... CAN BUS SAE J1939 Compliant

SECTION 3: SERVICE

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**	**50hrs**	**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						
Inspect Belts*	X						
Inspect all Hardware					X		
Inspect Wiring						X	
Inspect Battery						X	
Inspect Exhaust						X	
Inspect Coolant Hoses						X	
Inspect Catalyst						X	
ACTION							
Grease Trowel Arms	X						
Grease Pressure Plates	X						
Control Linkage Lubrications		X					
Grease Bearings & U-Joints			X				
Change Engine Oil**				X			
Change Oil Filter				X			
Change Hydraulic Oil***				X			
Change Fuel Filters				X			
Change Air Filters					X		
Replace Fan Belt					X		
Clean Entire EGR System							X
Change Coolant							X

* Replace belts as needed

** First engine oil change should be done at 50hrs of use

*** Or as a precaution replace the hydraulic fluid annually. Replace Hydraulic Fluid with Hydraulic Oil 46 (DTE25) or Equivalent.

Filter & Fluid Replacement

Replace Hydraulic Fluid with Hydraulic Oil 46 (DTE25) or Equivalent The tank size is approximately 1.7GAL (6.4 L), allow room for fluid expansion, do not overfill the tank. The fluid level can be checked on the tank filler breather. Fluid level should at least be level with the green mark on the dipstick (AEC PN FI0350). Hydraulic Oil Filter: (Replacement) Filter Element AEC PN 061528.

Engine Oil:

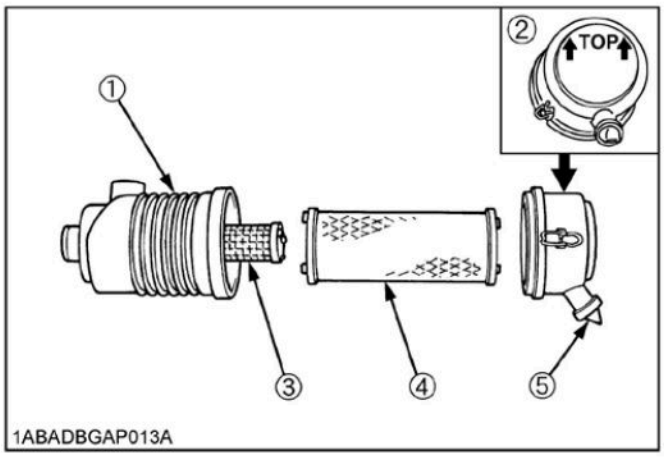
- Change the type of engine oil according to the ambient temperature. For general use 10W/30 oil is recommended (1.59 Gal).
- When using oil of different brands from the previous one, be sure to drain all the previous oil before adding the new engine oil.

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

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 #: 069249
Description: Filter, Air, Safety For Kubota WG1605

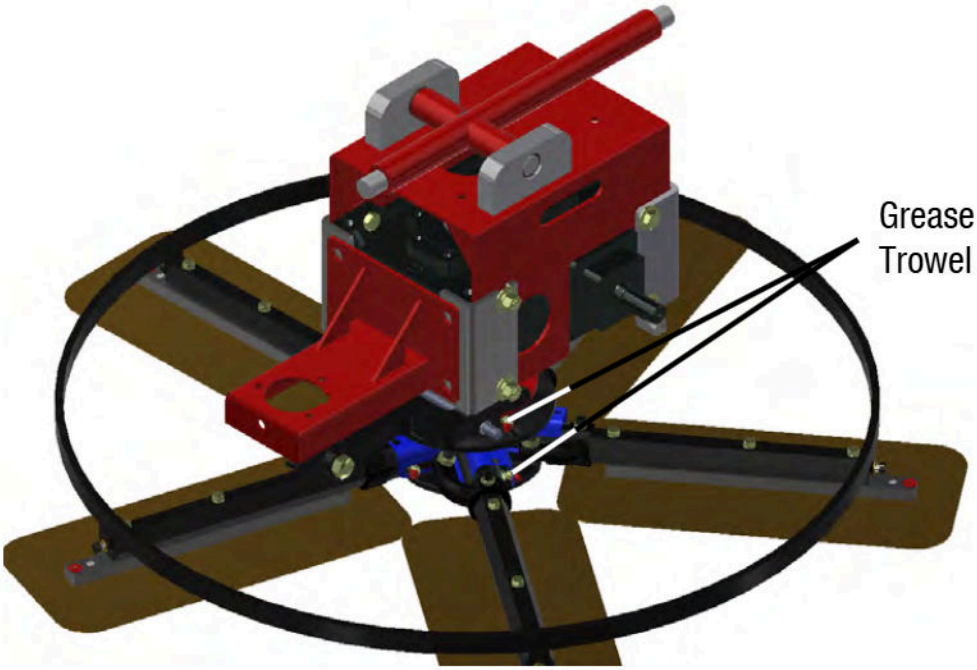
#4

Part #: 069428
Description: Filter, Air, Primary For Kubota WG1605

Area	Malfunction	Possible Cause	Corrective Measure	Ref.
Engine	Engine does not start, or is difficult to start	Battery is discharged	- Add battery fluid - Charge the battery - Replace the battery	
		Battery cable is disconnected	- Connect battery cable	
		Blown fuse	- Replace fuse	
		Bad connection or breakage in the wiring	- Contact your AEC dealer	
		Out of fuel	- Fill fuel	
		Air is in fuel	- Contact your AEC dealer	
		Engine fouled	- Wait a while and try starting again	
		Insufficient or wrong oil	- Fill or change oil	
		Dirty or damaged spark plug	- Clean or replace spark plug	
		Contamination in fuel system	- Contact your AEC dealer	
		Other (other than above)	- Contact your AEC dealer	
	Engine stalls	Out of fuel	- Fill fuel	
		Cold engine	- Warm up the engine	
		Other (other than above)	- Contact your AEC dealer	
	Engine stops abruptly	Out of fuel	- Fill fuel	
		Piston siezure due to insufficient or bad oil	- Contact your AEC dealer	
		Other (other than above)	- Contact your AEC dealer	
	Engine does not stop	Electrical malfunction	- Contact your AEC dealer	
		Other (other than above)	- Contact your AEC dealer	
	Idling is not stable	Insufficient intake air (clogged air cleaner)	- Clean or replace the air cleaner	
		Other (other than above)	- Contact your AEC dealer	
	Poor power or acceleration	Bad fuel	- Change fuel	
		Wrong oil (improper viscosity)	- Change to suitable oil	
		Accelerator (throttle) is not properly adjusted	- Contact your AEC dealer	
		Insufficient intake air (clogged air cleaner)	- Clean or replace the air cleaner	
		Excessive load	- Reduce load	
		Loose drive belt	- Adjust	
		Other (other than above)	- Contact your AEC dealer	
	Irregular noise or vibration from or around the engine		- Contact your AEC dealer	
	Excessive oil consumption		- Contact your AEC dealer	
	Engine overheats	Insufficient amount of engine oil	- Fill oil	
		Cooling fan is clogged or blocked	- Clean	
		Other (other than above)	- Contact your AEC dealer	
	Excessive fuel consumption	Clogged air cleaner	- Clean or replace air cleaner	
		Other (other than above)	- Contact your AEC dealer	

Troubleshooting Continued

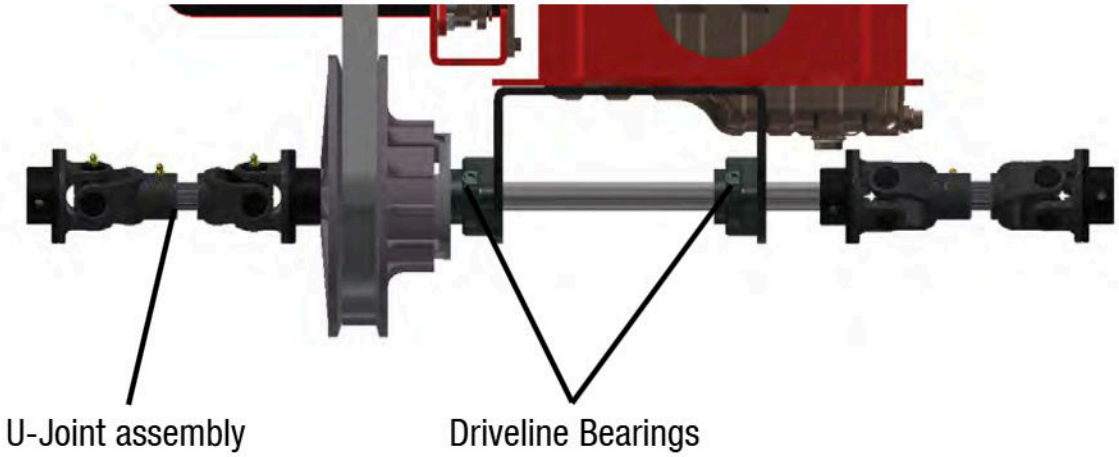
Area	Malfunction	Possible Cause	Corrective Measure	Ref.
Engine	Black smoke comes out of exhaust	Bad fuel	- Change fuel	
		Clogged air cleaner	- Clean or replace the air cleaner	
		Other (other than above)	- Contact your AEC dealer	
	White or blue smoke comes out of exhaust	Engine oil level is too high	- Adjust the oil level	
		Other (other than above)	- Contact your AEC dealer	
Safety Devices	Lamp does not light	Blown bulb	- Replace	
		Blown fuse	- Replace	
		Other (other than above)	- Contact your AEC dealer	
Hydraulic System	Pump does not work	Insufficient or deteriorated hydraulic fluid	- Add or change fluid	
		Other (other than above)	- Contact your AEC dealer	



1. Grease driveline bearings after 50 hours of use.

   NOTE: On the left side of the front deck there are grease ports for easy access.

2. Grease U-Joints after 50 hours of use.



Transporting the Trowel

Transporting Trowel Procedures

Optional dolly jacks are available for short moves or to aid in servicing the trowel. Install dolly jacks as follows:

1. Inspect dolly jack for serviceability and damage.
2. Place the riding trowel on firm level ground.
3. Tie steering levers to the frame to prevent them from tipping forward when trowel is being lifted.
4. Insert the front dolly jack fully into the holes [K] in the mainframe of the riding trowel. The front dolly jacks are equipped with short lifting tubes while the rear dolly jacks have long lifting tubes.
5. Insert the rear dolly jacks with the long lifting tubes into the holes [L] provided in the rear of the mainframe. The holes in the mainframe are located directly opposite the front holes.
6. Turn jack handles clockwise to lift trowels and counter-clockwise to lower trowel.

Figure 3.2: Dolly Jack Ports

⚠ WARNING

The dolly jack lifting system is designed for short moves and to aid in servicing the trowel. It is not a substitute for a towing system or trailer. An optional lifting bridle is available and recommended for lifting the trowel. Attach the bridle to the two lifting points on the trowel, see page 22. Refer to Accessories Section for part numbers.

⚠ CAUTION

The drive belts MUST be free from oil and foreign contaminants to prolong life.

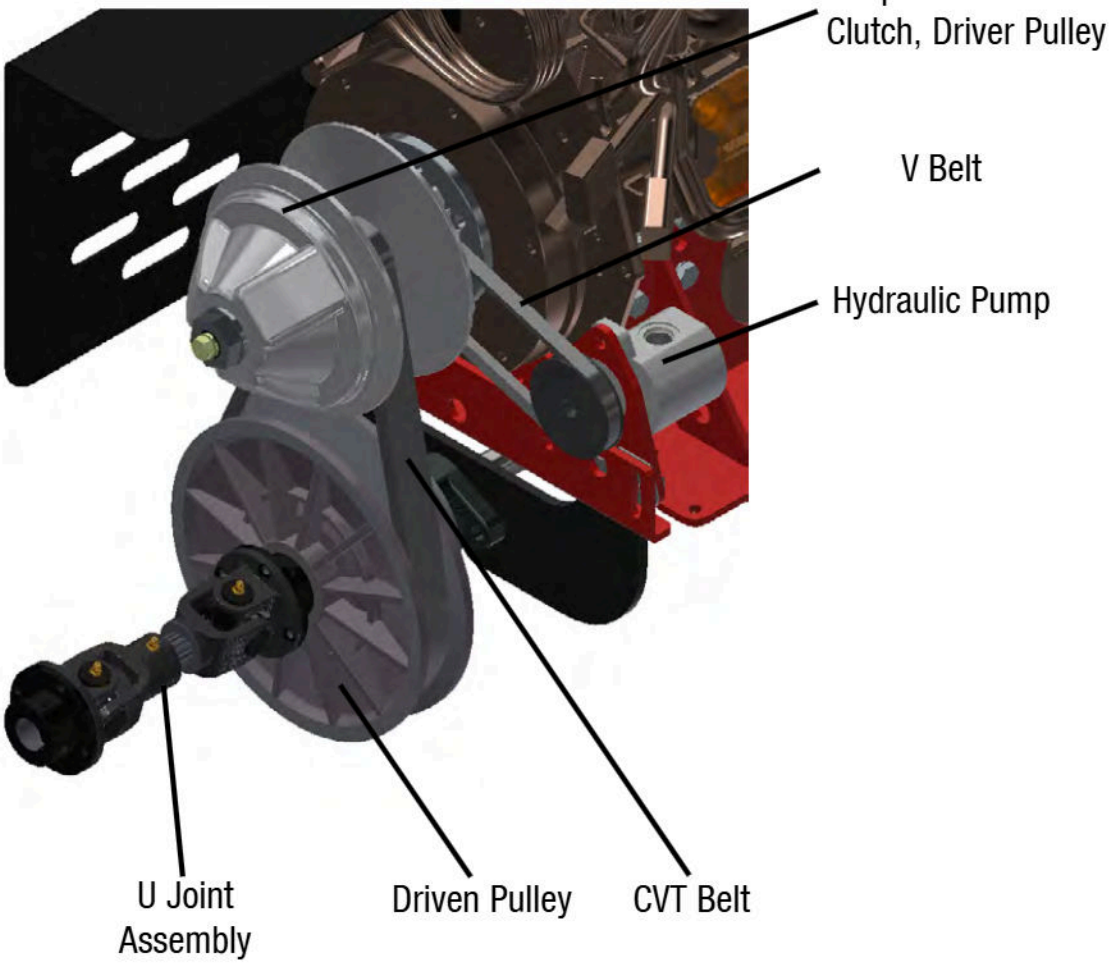
To Replace The Drive Belt:

1. Place the trowel on a flat, level surface with the blades pitched flat.
2. Disconnect the battery.
3. Remove the front screen and locate the pulley and driveline assembly.
4. Disconnect and remove the u-joint assembly closest to the driven pulley by removing (4) 1/4”-20 x 5/8” socket head round screws and 1/4” split lock washers on the driveshaft hub. Refer to Figure 3.3.
5. Use a M6x1.0x40 mm bolt to spread apart the pulleys to allow slack in the belt and remove it from the lower and upper pulleys.
6. Replace the new belt in opposite order of removal.
7. Apply one drop of blue Loctite No. 242 to the (4X) 1/4”-20 x 5/8” socket head round screws and reassemble with 1/4” split lock washers in opposite order of disassembly.
8. Reconnect the battery.

To Replace The Pump V Belt:

1. Follow steps 1 - 5 above
2. If the pump belt has enough slack, remove it from the pump pulley and the pulley assembly, replace the pump belt.
3. If necessary, loosen the 2 set screws on the pump pulley and remove it to allow slack in the belt. Then remove and replace the pump belt
4. Replace the pulley and set screw, apply one drop of blue Loctite No. 242 to the screw.
5. Follow steps 6-8 above

Drive Belt Maintenance



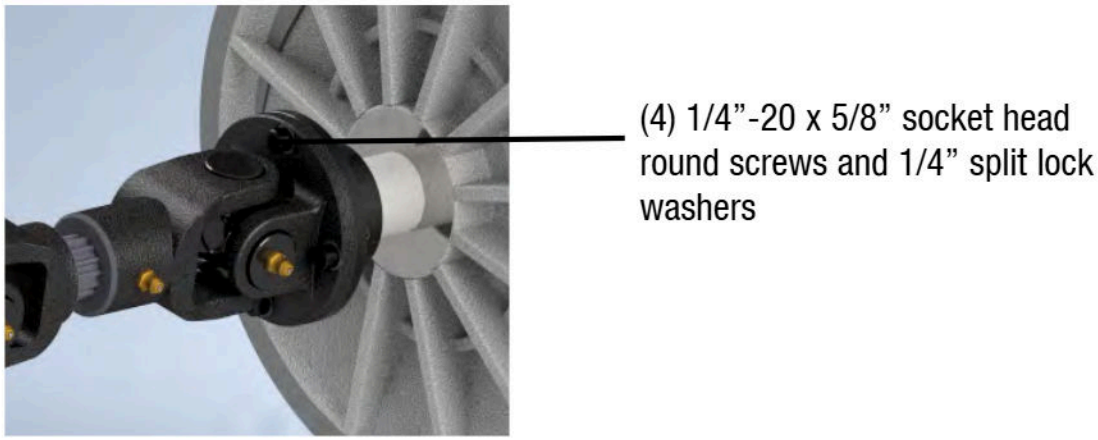


Figure 3.3: Power Assembly

Why Winterize the Retardant System?

If water is allowed to freeze in the retardant system, serious damage to the hose system and the pump may occur. To prevent freezing in the spray system it is best to completely drain the retardant system of all water.

Failures of this type will void the warranty of the pump

Do not use automotive antifreeze to winterize the retardant system.
Antifreeze is highly toxic, and ingestion may cause serious injury or death.

Winterizing the Retardant System Procedure

To properly drain the system perform the following steps:

1. Completely drain the fluid in the retardant tank by disconnecting the hose that is attached to an outlet on the bottom of the tank. Use an appropriate container to catch the fluid.
2. While the tank's hose is disconnected, turn the pump ON and allow the pump to purge the water from the hose system. Then turn the pump OFF.
3. Disconnect all of the hoses that are attached to the pump's inlet and outlet ports. Then turn the pump ON, allowing it to operate until all of the fluid is expelled. Turn OFF the pump once all the water has been expelled. Do not reconnect the hoses at this time.

Be sure to make a note at tank filler as a reminder "Hoses are disconnected for winterizing service."
All pump and tank ports must be left open to guard against any freeze damage.

Retardant System - Winterizing

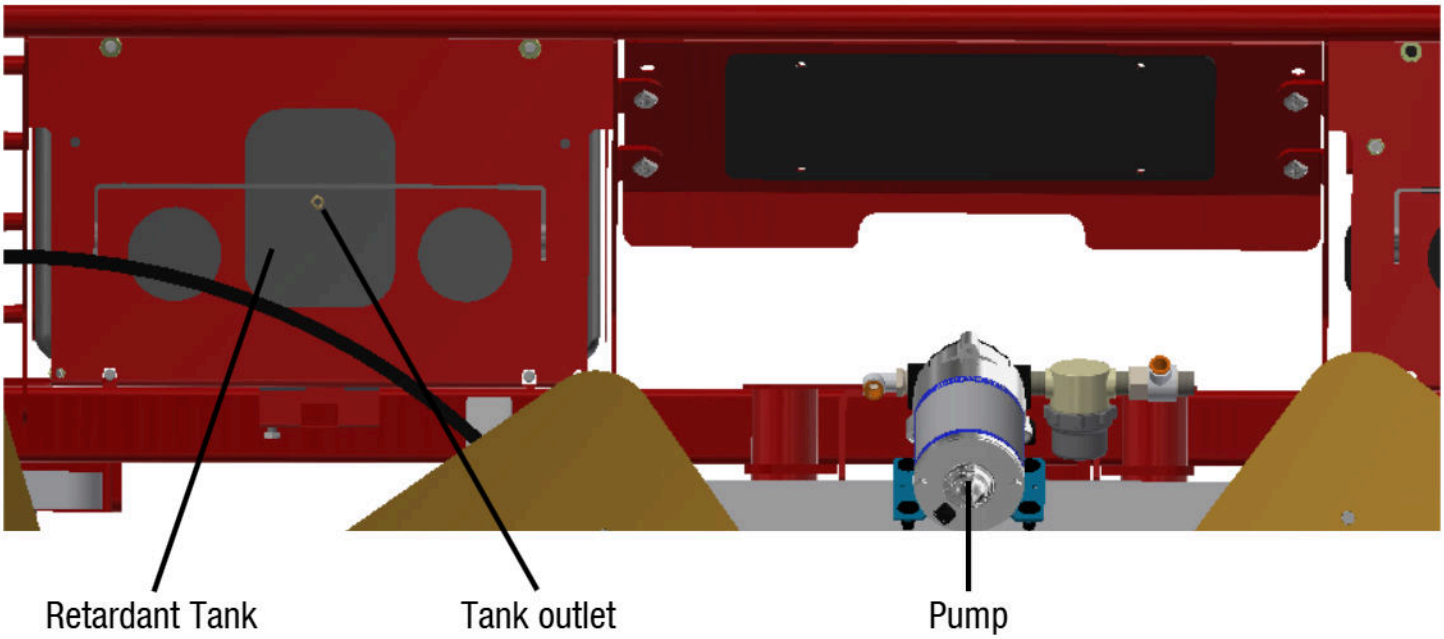


Figure 3.12: Retardant Tank and Pump (Underside)

Battery Jump Start Procedures

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.

⚠ WARNING

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.

⚠ WARNING

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.

⚠ CAUTION

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

⚠ CAUTION

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

Lift Lever Adjustment Procedure

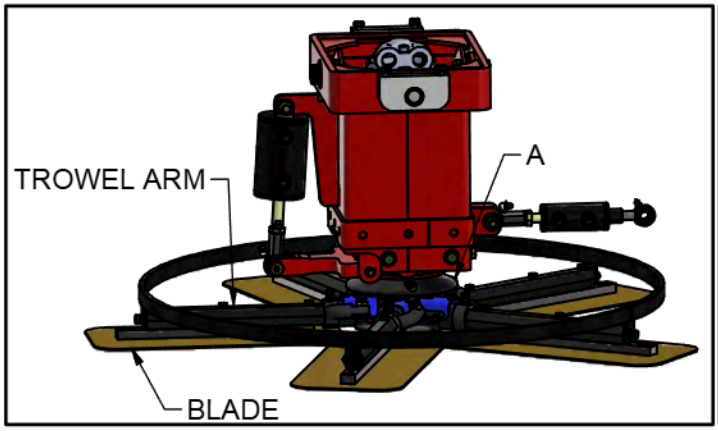
- Damage to and/or replacement of a trowel arm can change the adjustment of the lift lever. This can unbalance the trowel arms and cause the riding trowel to wobble during operation. To operate smoothly the lift lever on all trowel arms must be adjusted the same to ensure that the riding trowel is balanced 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 preform this procedure and to check the flatness and straightness of the trowel arms.

NOTE

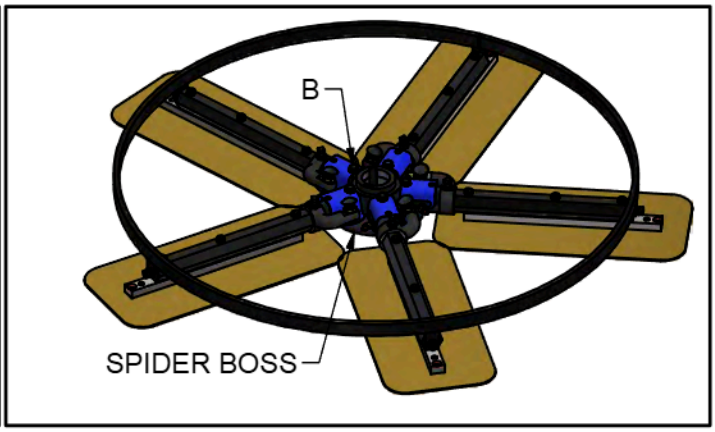
Make sure that there is no pitch in the blades before attempting to remove a trowel arm.

- The steps below descried 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. Preform 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

Diagnostic Trouble Component (DTC)	SPN Code	FMI Code	Issue
Manifold Absolute Pressure	106	16	• Sensor or Wiring Harness Short to Power • Sensor Malfunction
		4	• Sensor or Wiring Harness Open or Short to Ground • Sensor Malfunction
Fuel Pressure	94	3	• Sensor or Wiring Harness Short to Power
		4	• Sensor or Wiring Harness Open or Short to Ground • Sensor Malfunction
		0	• Fuel Pressure Abnormality (High Side)
		1	• Fuel Pressure Abnormality (Low Side)
Fuel Temperature	174	3	• Operating in a Hot Environment • Sensor Out of Calibration
		4	• Operating in a Frigid Atmosphere • Sensor Out of Calibration
	3486	1	• Not Vaporized Completely
Engine Coolant Temperature	110	3	• Sensor or Wiring Harness Open or Short to Power • Sensor Malfunction
		4	• Sensor or Wiring Harness Short to Ground • Sensor Malfunction
		15	• Engine Coolant Temperature Abnormality • (High Side Stage 1)
		0	• Engine Coolant Temperature Abnormality • (High Side Stage 2)
Intake Air Temperature	105	3	• Sensor or Wiring Harness Open or Short to Power • Sensor Malfunction
		4	• Sensor or Wiring Harness Short to Ground • Sensor Malfunction
		15	• Engine Coolant Temperature Abnormality • (High Side Stage 1)
		0	• Engine Coolant Temperature Abnormality • (High Side Stage 2)
Knock	731	4	• Sensor or Wiring Harness Open or Short to Power • Sensor Malfunction
		2	• Knock Signal Abnormality (High Side) • Sensor Malfunction
Battery Voltage	168	15	• System Voltage Abnormality (High Side)
		17	• Wiring Harness Open or Short or Damage • Battery Abnormality
5V External	1079	3	• Wiring Harness Short to 12V Power • ECM Malfunction
		4	• Wiring Harness Short to Ground • ECM Malfunction
	1080	3	• Wring Harness Short to 12V Power • ECM Malfunction
		4	• Wring Harness Short to Ground • ECM Malfunction
	1079	31	• Wiring Harness Short to 12V Power or Ground • ECM Malfunction

Fault Codes

Diagnostic Trouble Component (DTC)	SPN Code	FMI Code	Issue
Throttle Position Sensor	51	3	• TPS Circuit in the Harness Short to Power • TPS Malfunction
		4	• TPS Circuit in the Harness Short to Ground • TPS Malfunction
	3673	3	• TPS Circuit in the Harness Short to Power • TPS Malfunction
		4	• TPS Circuit in the Harness Short to Ground • TPS Malfunction
	51	0	• TPS Malfunction
		1	
		7	
		31	
Barometric Pressure	108	1	• Sensor Out of Calibration • Loss for 5V Reference Feed (5V_ext1) to MAP • Signal Wire Open or Shorted to Ground
Foot Pedal Position (FPP)	91	3	• Wiring Harness Open or Short or Damage • FPP Malfunction
		4	
		16	
		18	
		31	• FPP Malfunction
	29	3	• Wiring Harness Open or Short or Damage • FPP Malfunction
		4	• Wiring Harness Open or Short or Damage • FPP Malfunction
Engine Speed	515	15	• Engine Over Speed Condition, Stuck Throttle, Large Vacuum Leak Into Intake Manifold After Throttle Blade
		16	• Engine Over-Speed Condition, Faulty Crank Sensor or Input
		0	• Engine Over-Speed Condition, Faulty Crank Sensor or input
Oil Pressure	100	1	• Low Oil Pressure
Adaptive Learn	4237	0	• Exhaust Leaks Upstream or Near the HEGO Sensor • Reduced Fuel Supply Pressure to the Gaseous Fuel Control System • An Inoperative Sensor • An Injector that is Stuck Closed or Dirty • Weak Spark or Lack of Spark to a Cylinder • A Fuel Supply or Manifold Leak • A Non-Responsive HEGO Sensor
		1	• An inoperative O2 sensor • High fuel supply pressure or temperature • Internal mechanical engine damage • An injector that is stuck open or leaking • High fuel supply pressure to the gaseous fuel control or faulty pressure regulator • A non-responsive HEGO sensor

Diagnostic Trouble Component (DTC)	SPN Code	FMI Code	Issue
Closed Loop	4236	0	• Exhaust leaks upstream or near the HEGO sensor • Reduced fuel supply pressure • An injector that is stuck closed • Reduced fuel supply pressure to the gaseous fuel control system • A fuel supply or manifold leak • A non-responsive HEGO sensor
		1	• High fuel supply pressure to the fuel injection system • A non-responsive HEGO sensor • An injector that is stuck open • High fuel supply pressure to the gaseous fuel control or faulty pressure regulator • A non-responsive HEGO sensor
Catalyst Monitor	3050	11	• Physically Damaged Catalyst • Contaminated Catalyst Element • Post Signal Circuit Shorted to Pre-signal
EGO Sensors	3217	5	• Open feed circuit to O2 heater • Open or shorted to ground O2 signal wire • Open sensor ground (5Vrtn1) • Inoperative sensor
	3227		
Injectors	651	5	• Loss of 12 V feed to injector • Open injector coil • Open or shorted to ground injector driver circuit in engine harness
		6	• Injector coil shorted internally • Injector driver circuit shorted to voltage between injector and ECM
	652	5	• Loss of 12 V feed to injector • Open injector coil • Open or shorted to ground injector driver circuit in engine harness
		6	• Injector coil shorted internally • Injector driver circuit shorted to voltage between injector and ECM
	653	5	• Loss of 12 V feed to injector • Open injector coil • Open or shorted to ground injector driver circuit in engine harness
		6	• Injector coil shorted internally • Injector driver circuit shorted to voltage between injector and ECM
	654	5	• Loss of 12 V feed to injector • Open injector coil • Open or shorted to ground injector driver circuit in engine harness
		6	• Injector coil shorted internally • Injector driver circuit shorted to voltage between injector and ECM

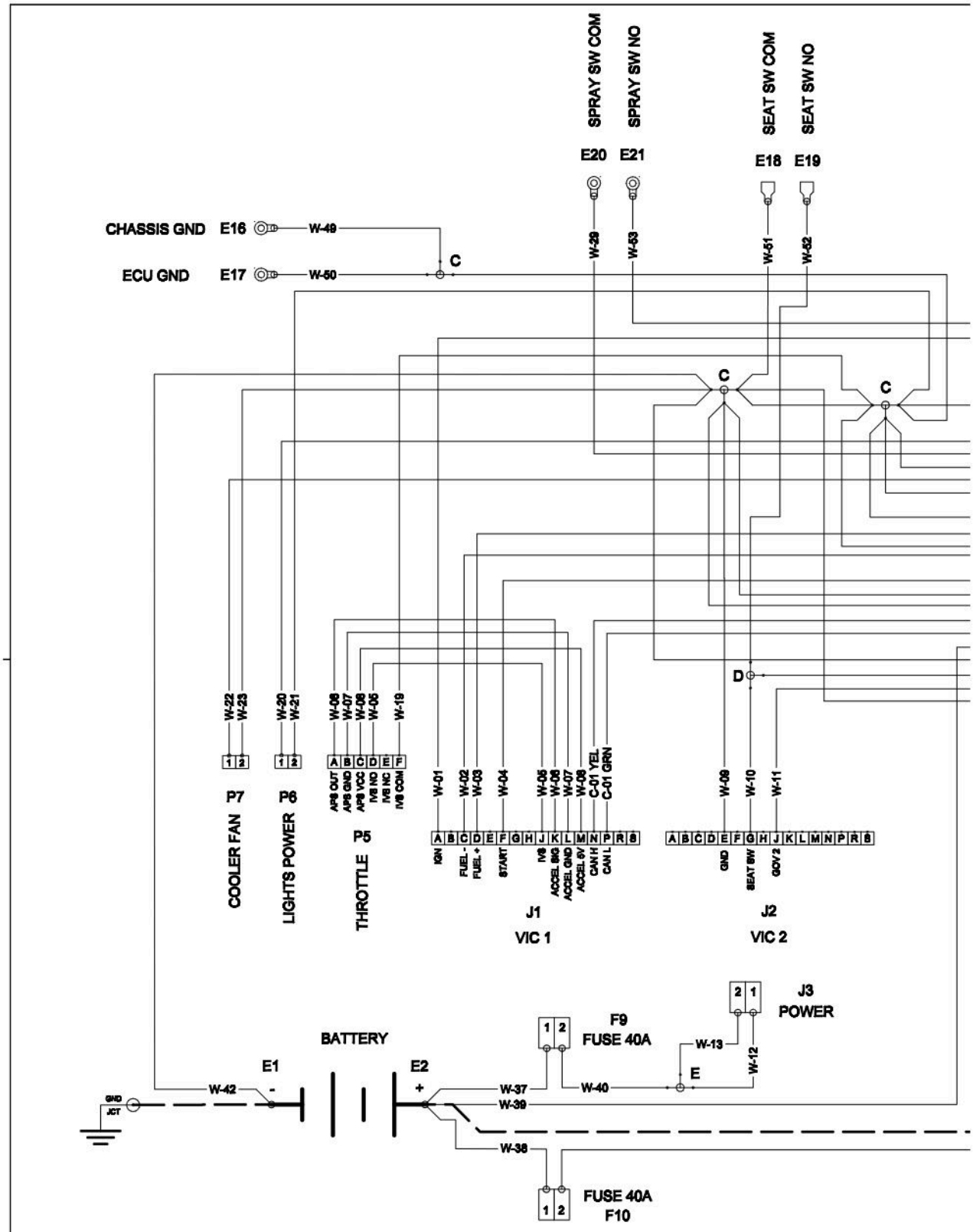
Fault Codes

Diagnostic Trouble Component (DTC)	SPN Code	FMI Code	Issue
Spark Coil Primary	1268	5	• A Short to Ground or Open Circuit in the Harness • An Open Internal to the Primary Coil
		6	• A Short to Power in the Harness • A Short Internal to the Primary Coil
	1269	5	• A Short to Ground or Open Circuit in the Harness • An Open Internal to the Primary Coil
		6	• A Short to Power in the Harness • A Short Internal to the Primary Coil
	1270	5	• A Short to Ground or Open Circuit in the Harness • An Open Internal to the Primary Coil
		6	• A Short to Power in the Harness • A Short Internal to the Primary Coil
	1271	5	• A Short to Ground or Open Circuit in the Harness • An Open Internal to the Primary Coil
		6	• A Short to Power in the Harness • A Short Internal to the Primary Coil
Lock off/Fuel Diagnostics	632	31	• Leak Fuel at Solenoid • Faulty Solenoid • Open or Short to Ground
Fuel Pump Feedback	1347	5	
		6	
Fuel Pump Relay Control/Coil	1348	4	• Relay pull in coil shorted internally • Relay driver circuit shorted to ground in wire harness
		5	• Open coil in relay • Open in relay driver circuit in engine harness
		3	• Shorted relay pull in coil • Relay driver circuit shorted to voltage in wire harness
Power Relay Control / Coil	1485	4	• Short to Ground in Relay Pull in Coil • Short to Ground in Relay Driver Circuit in Wire Harness
		3	• Shorted Relay Pull in Coil • Relay Driver Circuit Shorted to Voltage in Wire Harness
EPR Diagnostics	520260	0	• Inlet Pressure to DEPR is too high
		1	• Inlet Pressure to DEPR is too Low • Malfunctioning Lock Off Valve, Plugged Fuel Filter, Close Manual Valve or Fuel Tank Out of Fuel
		3	• Wiring Harness Open or Short or Damage
		4	• Wiring harness Open or Short or Damage • Faulty EPR Power Circuit
		12	• Short or Open Circuit in Actuator Coil • Associated Wiring • Overheating or Actuator Drive Electronics • DEPR Internal Microprocessor or Memory Failure, Fuel Temperature Sensor Failure
		34	• Faulty CAN connection • CAN termination incorrect

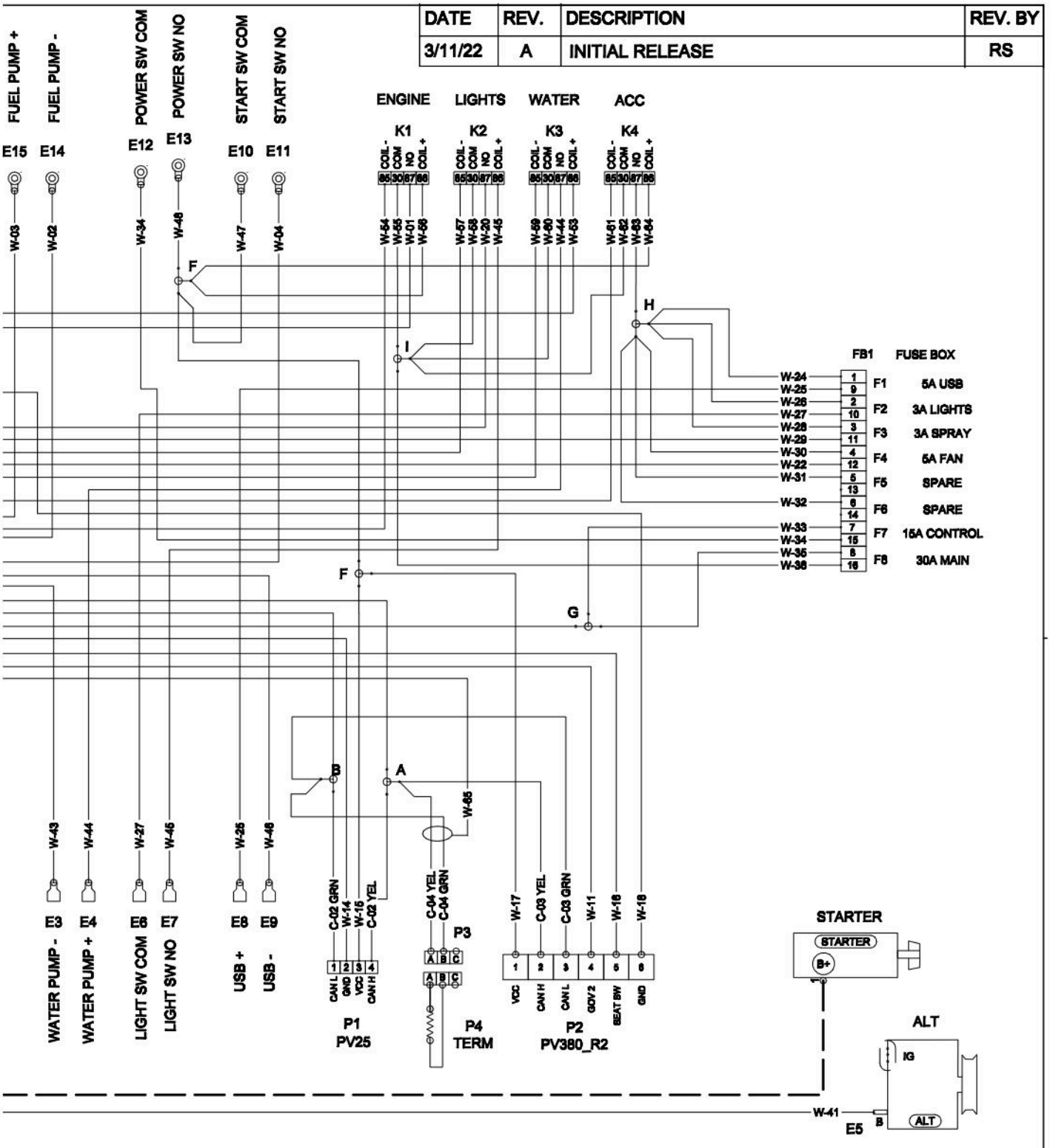
Diagnostic Trouble Component (DTC)	SPN Code	FMI Code	Issue
Cam/Crank Sensors	636	2	• Cam+ or Cam- Circuits in Wrong Connector Terminal Slot
		4	• Loss of Sensor Feed • Open Sensor Ground • Open or Shorted Ground Signal Wire
		8	• Mechanical Misalignment Between Cam and Crank
	723	2	• Cam+ or Cam- Circuits in Wrong Connector Terminal Slot
		4	• Loss of feed voltage to Cam sensor • Loss of signal or ground circuits • Faulty sensor
Internal Processor Diagnostics	628	13	• Faulty ECU
	629	31	• Faulty ECU
	630	12	• Faulty ECU
	1634	2	• Faulty ECU
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.

Electrical Schematic

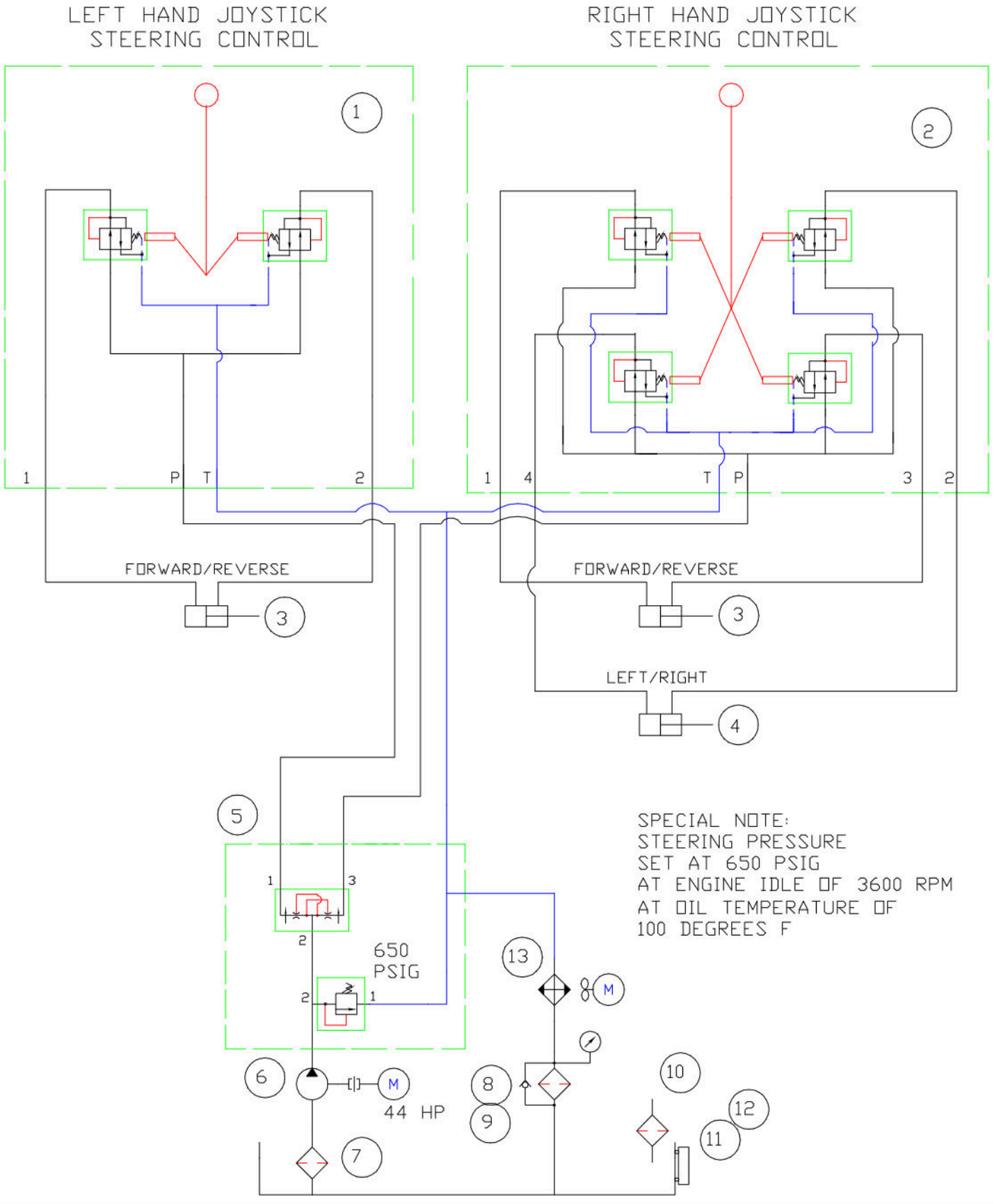


DATE	REV.	DESCRIPTION	REV. BY
3/11/22	A	INITIAL RELEASE	RS



TOLERANCES IN INCHES, UNLESS OTHERWISE SPECIFIED		CKIIIPOWER	TITLE: K8416SC-01		
X.X ±0. X.XX ±0. X.XXX ±0. ANGULAR ±0.5	THIRD VIEW	1100 RESEARCH BLVD. ST. LOUIS, MISSOURI 63132 (314) 868-8620 www.ckpower.com	DESCRIPTION: HARNESS, KUBOTA WG1605-G-E3-AEC-1		
			DRAWN BY: RS	DATE: 11 MAR 2022	SHEET 1 of 1

Hydraulic Steering Schematic



BILL OF MATERIAL - MSP475 HYDRAULIC SYSTEM COMPONENTS			
ITEM #	AEC PART #	DESCRIPTION	QTY
-	069747	KIT, COMPONENT, HYDRAULIC, MSP475	1
1	064817	JOYSTICK, SINGLE AXIS	1
2	064818	JOYSTICK, DUAL AXIS	1
3	048661	CYLINDER, STEERING, FORWARD/REVERSE	2
4	048660	CYLINDER, STEERING, LEFT/RIGHT	1
5	046735	MANIFOLD, STEERING	1
6	046738	PUMP, GEAR	1
7	046732	STRAINER, SUCTION	1
8	049978	FILTER, RETURN LINE	1
9	046241	GAUGE, FILTER	1
10	FI0350	BREATHER / DIP STICK	1
11	052929	INDICATOR, SIGHT LEVEL	1
12	045948	PLUG, MAGNETIC TANK	1
13	052930	COOLER, AIR / OIL	1
14	063341	CONTROLLER, FOOT PEDAL	1
15	069748	KIT, FITTING, HYDRAULIC, MSP475	1
16	069749	KIT, HOSE, HYDRAULIC, MSP475	1

Cleaning Procedure

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:

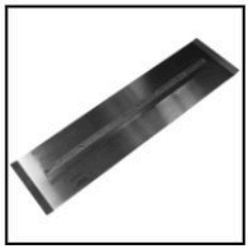
- Remove air filters and blow out with compressed air, **NOT** to exceed 80 PSI.

SECTION 4: ACCESSORIES

Popular Accessories

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

Part Number: 016094V-4

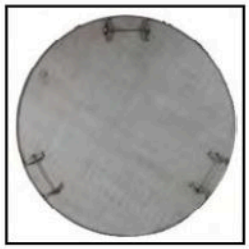


Trowel Blade, Finish, 6” X 18”, VP Silver Series
(only sold as set of 4)

Part Number: 015695V-4

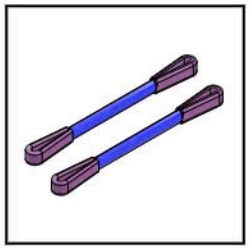
Float Pan, Clip On, 46.5” O.D., Universal Flat, 80° Lip Angle,
5-Blade

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 lbs Vertical, 4,800 Choker, 6,000 lbs Basket, 3’6”
long with 10” eyes

Part Number: 075064

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: 039090

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:

https://www.alleneng.com/msp475

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

MANUAL REVISION DETAIL			
REVISION #	**REVISION DATE**	**REVISION REFERENCE #**	**REVISION BY**
-	10/19	Initial Release	MW
A	08/23	Design Updates	MK
B	02/24	MN 24-062, 24-058	MK

allen® ENGINEERING CORPORATION

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