



# Diesel Walk-Behinds

## OPERATIONS & PARTS MANUAL

REVISION: 07.2017 | PART #: 055639

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## 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.

# Walk-behind Trowel

## OPERATIONS-PARTS

## MANUAL

This manual covers the Trowels listed below:

<u>Part No.</u>	<u>Description</u>
055639	PT, 436 7 YAN W/ HANDLE (DIESEL)

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Allen Products are covered under one or more of the following patent numbers:

**U.S. Design Patents:** 344,736; 400,542; 400,544; 402,998; 402,999; 403,332; 404,041; 404,042; 410,931; 413,127; 416,564; 465,897; 466,909; 474,203.

**U.S. Utility Patents:** 5,108,220; 5,238,323; 5,328,295; 5,352,063; 5,405,216; 5,476,342; 5,480,257; 5,480,258; 5,533,831; 5,562,361; 5,567,075; 5,613,801; 5,658,089; 5,685,667; 5,803,658; 5,816,739; 5,816,740; 5,890,833; 5,934,823; 5,967,696; 5,988,938; 5,988,939; 6,019,433; 6,019,545; 6,048,130; 6,053,660; 6,089,786; 6,106,193; 6,857,815; 5,288,166; 6,582,153 B1, 7,108,449; 7,114,876; 7,316,523; 7,690,864 B2

**Canadian Patents:** 2,039,893.

**With other Patents Pending.**

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# Limited Warranty

## LIMITED WARRANTY and LIMITATION OF LIABILITY

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

- A. New Machines and Parts ..... One Year**
- B. New Gear Boxes ..... Two Years**

*The above listed warranty periods are effective for Allen Machines with a first day of use by End User on April 1, 2007 or later.*

Warranty period begins on first day of use by End User. This first day of use is established by the date of a completed Allen Warranty Card or a Bill of Sale to the End User. 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. Engine warranty claims should be made directly to an authorized factory service center for the particular engine manufacturer.
5. Allen's warranty does not cover the normal maintenance of products or its components (such as engine tune-ups 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 is not covered under the Allen Gear Box warranty.
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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# 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 PARTS**

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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.

## Dealer Information

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:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



## Ordering Parts

Section 4.0 contains 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” section of this 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.



*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.*

# Model Number - Serial Number Codes

## 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

**PRO 436**

**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.

**36D 01 12 001**

**Production Sequence**

**Year Mfd**

**Month Mfd**

**Series/Model**

# Unit Identification

## 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 to Figure 1 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.

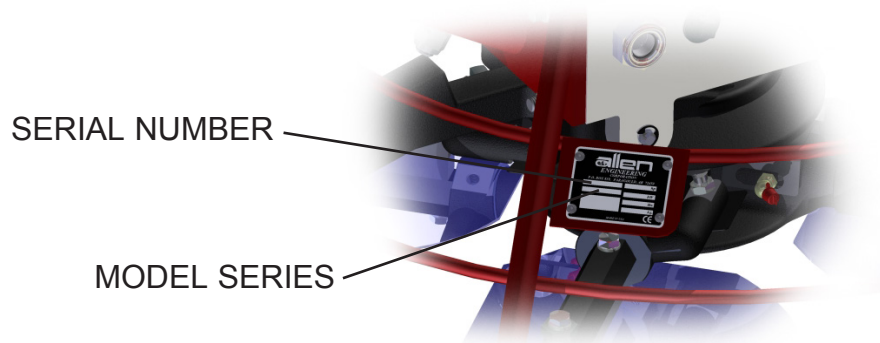
### FILL IN FOR FUTURE REFERENCE

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

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

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

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



**Figure 1**  
Serial Number Location

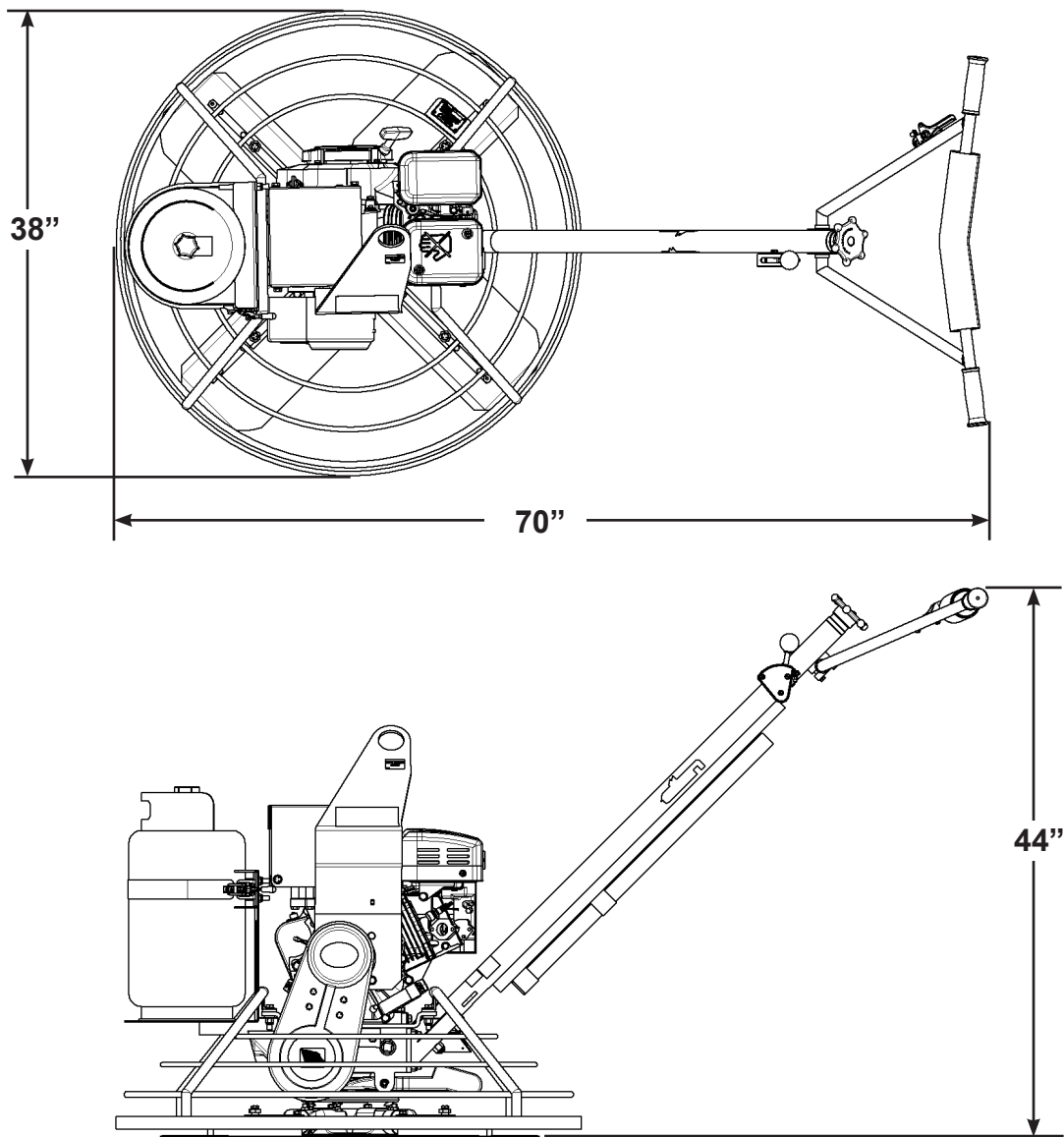
# Technical Specifications

Measurements in this manual are in U.S. units and their customary metric units (i.e., metric units contained within brackets [8 mm]).

## Machine Features:

- Dimensions (L x W x H) inch [mm] .....72x38x36  
(guard ring/long handle) .....[1829x965x914]
- Rotor Speed (RPM) .....110 - 135
- Combo Blade .....Standard
- Gearbox .....Standard Duty (STD)
- Fixed Guard Rings .....Standard
- Steering System .....Manual
- Gearbox Rotation .....Standard
- Safety Shutdown Switch .....Centrifugal
- Fuel Capacity gal [L] .....1.6 [6.05]
- Run Time (Approximate) hr .....2.5
- Transmission Type .....Clutch
- Drive Belt Type .....Kevlar Vee

### Machine Dimensional Specifications



# Engine Specifications

## Yanmar L70V Engine Information (6.4 HP)

Engine Type . . . . .	Air Cooled, 4 cycle, Vertical Cylinder
Fuel . . . . .	Diesel
Number of Cylinders . . . . .	1
Bore x Stroke . . . . .	78mm x 67 mm
Total Displacement . . . . .	320 cc
Combustion type . . . . .	Direct Injection
Aspiration . . . . .	Natural Aspiration
Valves per Cylinder . . . . .	2
Rated Speed . . . . .	3600rpm
Net Intermittent . . . . .	6.4hp[4.8kW]/3600rpm
Net Continuous . . . . .	5.8hp [4.3kW]/3600rpm
Direction of Rotation . . . . .	Counter Clockwise, Viewed from PTO Side
Crankshaft Type . . . . .	Straight Keyed, Tapered or Threaded
Starting System . . . . .	Recoil
Decompression System . . . . .	Manual Type with Auto-return Lever
Fuel Tank Capacity . . . . .	2.7 liters
Brake Specific Fuel Consumption at Rated Output . . . . .	270 g/kW-hr
Lubrication System . . . . .	Pressure Lubrication with Trochoid Pump
Oil Capacity . . . . .	1.10 liters [0.40 effective]
Exhaust System . . . . .	Expansion Silencer with Cover
Air Cleaner . . . . .	Dry Type with Paper Element
Balancing System . . . . .	Single, Counter-Rotating, Balancer Shaft
Length . . . . .	14.9in[378.2mm]
Width . . . . .	16.6in[422mm]
Height . . . . .	17.8in[453mm]
Dry Weight (Recoil Start) . . . . .	78.3 lbs [35.5kg]
Noise Output at Continuous Output Rating, Mean of Four Direction at 1 Meter	95.5 dB(A)

## Engine Specifications (cont'd)





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# ***Section 1*** ***SAFETY***

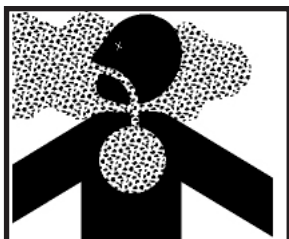
## SECTION 1 SAFETY

### 1.0 State Regulations



#### **CALIFORNIA PROPOSITION 65 WARNING**

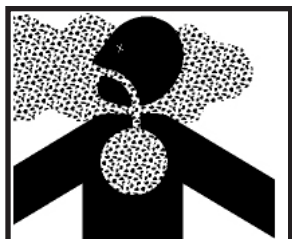
**Gasoline engine exhaust** from this product contains chemicals known to the State of California to cause cancer, birth defects and other reproductive harm.



**WARNING**

### **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. Silica is a basic component of sand, quartz, brick clay, granite and numerous other minerals and rocks. Repeated and/or substantial inhalation of airborne crystalline silica can cause serious or fatal respiratory diseases, including silicosis. In addition, California and some other authorities have listed respirable crystalline silica as a substance known to cause cancer. When cutting such materials, always follow the respiratory precautions mentioned above.



**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. If you are unfamiliar with the risks associated with the particular process and/or material being cut or the composition of the tool being used, review the material safety data sheet and/or consult your employer, the material manufacturer/supplier, governmental agencies such as OSHA and NIOSH and other sources on hazardous materials. California and some other authorities, for instance, have published lists of substances known to cause cancer, reproductive toxicity, or other harmful effects.

Control dust, mist and fumes at the source where possible. In this regard use good work practices and follow the recommendations of the manufacturers or suppliers, OSHA/NIOSH, and occupational and trade associations. Water should be used for dust suppression when wet cutting is feasible. When the hazards from inhalation of dust, mists and fumes cannot be eliminated, the operator and any bystanders should always wear a respirator approved by NIOSH/MSHA for the materials being used.

## SECTION 1 SAFETY

### 1.1 General Safety Precautions

#### 1.1.1 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.*



*Potentially hazardous situations that could result in death or serious injury are indicated by the word WARNING.*



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

## 1.2 Spark Arrestor Notice

## SECTION 1 SAFETY

### 1.2.1 Laws Pertaining to Spark Arrestors

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.



## SECTION 1 SAFETY

### 1.3 General Safety

#### CAUTION

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



• Avoid wearing jewelry or loose fitting clothes that may get caught on the controls or moving parts as this can cause serious injury.

• **NEVER** operate this equipment when not feeling well due to fatigue, illness or when under medication.



• **NEVER** operate this equipment under the influence of drugs or alcohol.



• **ALWAYS** clear the work area of any debris, tools, etc. that would constitute a hazard while the equipment is in operation.

• No one other than the operator is to be in the working area when the equipment is in operation.

• **DO NOT** use the equipment for any purpose other than its intended purposes or applications.

• This equipment should only be operated by trained and qualified personnel 18 years of age and older.

• Whenever necessary, replace nameplate, operation and safety decals when they become difficult read.

• AEC does not assume responsibility for any accident due to equipment modifications. Unauthorized equipment modification will void all warranties.

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

## 1.3, continued General Safety

## SECTION 1 SAFETY

- **ALWAYS** know the location of the nearest fire extinguisher.



- **ALWAYS** know the location of the nearest first aid kit.



- **ALWAYS** know the location of the nearest phone or keep a phone on the job site. Also, know the phone numbers of the nearest ambulance, doctor and fire department. This information will be invaluable in the case of an emergency.



- Engine fuel exhaust gases contain very poisonous carbon monoxide. This gas is colorless and odorless, and can cause death if inhaled.

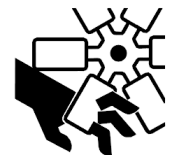
- The engine of this equipment requires an adequate free flow of cooling air. **NEVER** operate this equipment in any enclosed or narrow area where free flow of the air is restricted. If the air flow is restricted it will cause injury to people and property and serious damage to the equipment or engine.



- **NEVER** operate the equipment in an explosive atmosphere or near combustible materials. An explosion or fire could result causing severe bodily harm or even death.



- **ALWAYS** keep clear of rotating or moving parts while operating the trowel.



- **DO NOT** start or operate the trowel if the drive train will not disengage. Centrifugal force between the trowel and surface when starting can cause uncontrolled handle movement that can cause serious injury. The handle must not move while pulling the engine recoil starter.

## SECTION 1 SAFETY

### 1.3, continued General Safety

- **NEVER** disconnect any emergency or safety devices. These devices are intended for operator safety. Disconnection of these devices can cause severe injury, bodily harm or even death. Disconnection of any of these devices will void all warranties.

#### **CAUTION**

- **NEVER** stand on trowel during operation.
- **NEVER** lubricate components or attempt service on a running machine.
- **NEVER** place your feet or hands inside the guard rings while starting or operating this equipment.

#### **NOTE**

- **ALWAYS** keep the machine in proper running condition.
- Fix damage to machine and replace any broken parts immediately.
- **ALWAYS** store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children and unauthorized personnel.
- A safety manual for operating and maintenance personnel of concrete power trowels produced by the Association of Equipment Manufacturers (AEM) can be obtained for a fee by ordering through their website at [www.aem.org](http://www.aem.org).



## 1.4 Engine Safety

## SECTION 1 SAFETY

### **WARNING**

- **DO NOT** place hands or fingers inside engine compartment when engine is running.
- **NEVER** operate the engine with heat shields or guards removed.
- Keep fingers, hands hair and clothing away from all moving parts to prevent injury.
- **DO NOT** remove the radiator cap while the engine is hot. High pressure boiling water will gush out of the radiator and severely scald any persons in the general area of the trowel.
- **DO NOT** remove the engine oil drain plug while the engine is hot. Hot oil will gush out of the oil tank and severely scald any persons in the general area of the trowel.



### **CAUTION**

- **NEVER** touch the hot exhaust manifold, muffler or cylinder. Allow these parts to cool before servicing equipment.
- **NEVER** run engine without an air filter or with a dirty air filter. Severe engine damage may occur. Service air filter frequently to prevent engine malfunction.
- **NEVER** tamper with the factory settings of the engine or engine governor. Damage to the engine or equipment can result if operating in speed ranges above the maximum allowable.
- **ALWAYS** use extreme caution when working with flammable liquids.
- **DO NOT** start the engine near spilled fuel or combustible fluids. Fuel is extremely flammable and its vapors can cause an explosion if ignited.
- **ALWAYS** refuel in a well-ventilated area, away from sparks and open flames.
- **NEVER** use fuel as a cleaning agent.
- **DO NOT** smoke around or near the equipment. Fire or explosion could result from fuel vapors or if fuel is spilled on a hot engine.

## SECTION 1 SAFETY

### 1.6 Transportation Safety

- **NEVER** allow any person or animal to stand underneath the equipment while lifting.



#### NOTICE

- Some walk-behind trowels can be lifted or moved by two people utilizing lifting tubes or other special attachments. Generally, however, they must be lifted using lifting bales and cranes, hoists, or forklifts.

- **NEVER** transport trowel with float pans attached unless safety catches are used and are specifically cleared for such transport by the manufacturer.

- Before lifting, make sure that the lifting bales are not damaged.

- **NEVER** hoist the trowel more than three feet off the ground with float pans attached.

- Always make sure crane or lifting device has been properly secured to the lifting bales of the equipment.

- **DO NOT** lift machine to unnecessary heights.

- **ALWAYS** shutdown engine before transporting.

- **NEVER** lift the equipment while the engine is running.

- Use adequate lifting cable (wire or rope) of sufficient strength.

- **ALWAYS** tie down equipment during transport by securing the equipment with rope.

## 1.7 Safety and Operation Labels

## SECTION 1 SAFETY

The safety and operation labels shown in this section are placed in important areas on the machine to draw attention to potential safety hazards and service information. Should any of these labels become unreadable or damaged, replacement labels can be ordered from your distributor.

### **CAUTION**

This is a multi-purpose label that requires the operator to have maximum eye, hearing, hand, and feet protection. Also, it highly recommends that the operator reads the manual.



### **WARNING**

This label identifies the lift locations on the machine. No other locations or features on the machine are to be used as lifting points. This will cause damage to the machine.



### **NOTE**

This label identifies the tank used for retardant spray agents (i.e., water-based retardants) only on the machine. **NO OTHER** non-retardant chemicals nor fuel is to be in this tank.

**RETARDANT  
ONLY**

### **CAUTION**

For gasoline-fueled machines, this label identifies the tank used for **GASOLINE** fuel only in the machine. **NO OTHER** type of fuel is to be used in this tank.



## SECTION 1 SAFETY

### 1.7, continued Safety and Operation Labels

#### **NOTE**


This label is a maintenance reminder to grease the thrust bearing daily. This will ensure that the life span of the bearings will be maintained at their optimal performance level.

**GREASE THRUST  
BEARING DAILY**

039778

This label cautions against allowing cleaning agents, surface treatments, or other foreign substances to contaminate drive components.

The drive components could be damaged from the contaminants and cause the drive system to fail.

 **CAUTION**


DO NOT ALLOW CLEANING AGENTS,  
SURFACE TREATMENTS, OR FOREIGN  
SUBSTANCES TO CONTAMINATE  
DRIVE COMPONENTS

DRIVE COMPONENTS COULD BE DAMAGED  
AND CAUSE THE DRIVE SYSTEM TO FAIL

047878

#### **WARNING**

This label warns of the risk hazards associated with engine exhaust fumes causing health issues as identified by the State of California.

 **WARNING**

**CALIFORNIA  
PROPOSITION 65  
WARNING**

Engine exhaust and  
some of its constituents  
contains chemicals  
known to the State of  
California to cause  
cancer, birth defects and  
other reproductive harm.

=====

**ALWAYS** work in a well  
ventilated area and use  
approved safety  
equipment.

048181

# ***Section 2*** ***OPERATIONS***

## SECTION 2 OPERATIONS



*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.*



### 2.1.1 Description

The Walk-behind trowel is a modern high production machine. Finishing rates will vary depending on the operators skill and job conditions. This trowel has four finishing blades. Walk-behind trowels are designed for the floating and finishing of concrete slabs.

The standard duty gearbox is designed to provide exceptional performance with low maintenance and trouble free use under some of the worst conditions. Power is transferred from the engine to the gearbox input shaft via a V-belt pulley drive system. The pulley engages using a clutch. See the Parts section of this manual.

All Allen Engineering **Walk-behinds** are equipped with a safety shutdown switch.

Operating time between fuel refills is approximately 2-1/2 to 3 hours with a rotor speeds of 110 to 135 RPM.

The **Walk-behinds** are the most technically advanced riding trowels on the market today. With proper maintenance and use, your trowel will provide you with exceptional service and dependability.

### **2.2.1 Before Starting Procedures**

#### **Fuel Check**

1. Remove the gasoline cap located on top of fuel tank.
2. Visually inspect to see if fuel level is low. If fuel is low, replenish with diesel fuel.
3. When refueling, be sure to use a strainer for filtration. DO NOT top-off fuel. Wipe up any spilled fuel.

#### **Gearbox Oil**

1. Determine if the gearbox oil is low by removing the oil plug located on the side of the gearbox. The correct level of the lubrication oil should be to the bottom of the fill plug.
2. If lubrication oil begins to seep out as the drain plug is being removed, then it can be assumed that the gearbox has a sufficient amount of oil.
3. If lubrication oil does not seep out as the drain plug is being removed, fill with type Allen Oil Kit P/N 048386 gearbox lubricant oil until the oil filler hole overflows.

#### **V-Belt Check**

A worn or damaged V-belt can adversely affect the performance of the trowel. If a V-belt is defective or worn simply replace the Vbelt as outlined in the maintenance section of this manual.

#### **Belt Guard Check**

Check for damage, loose or missing hardware.

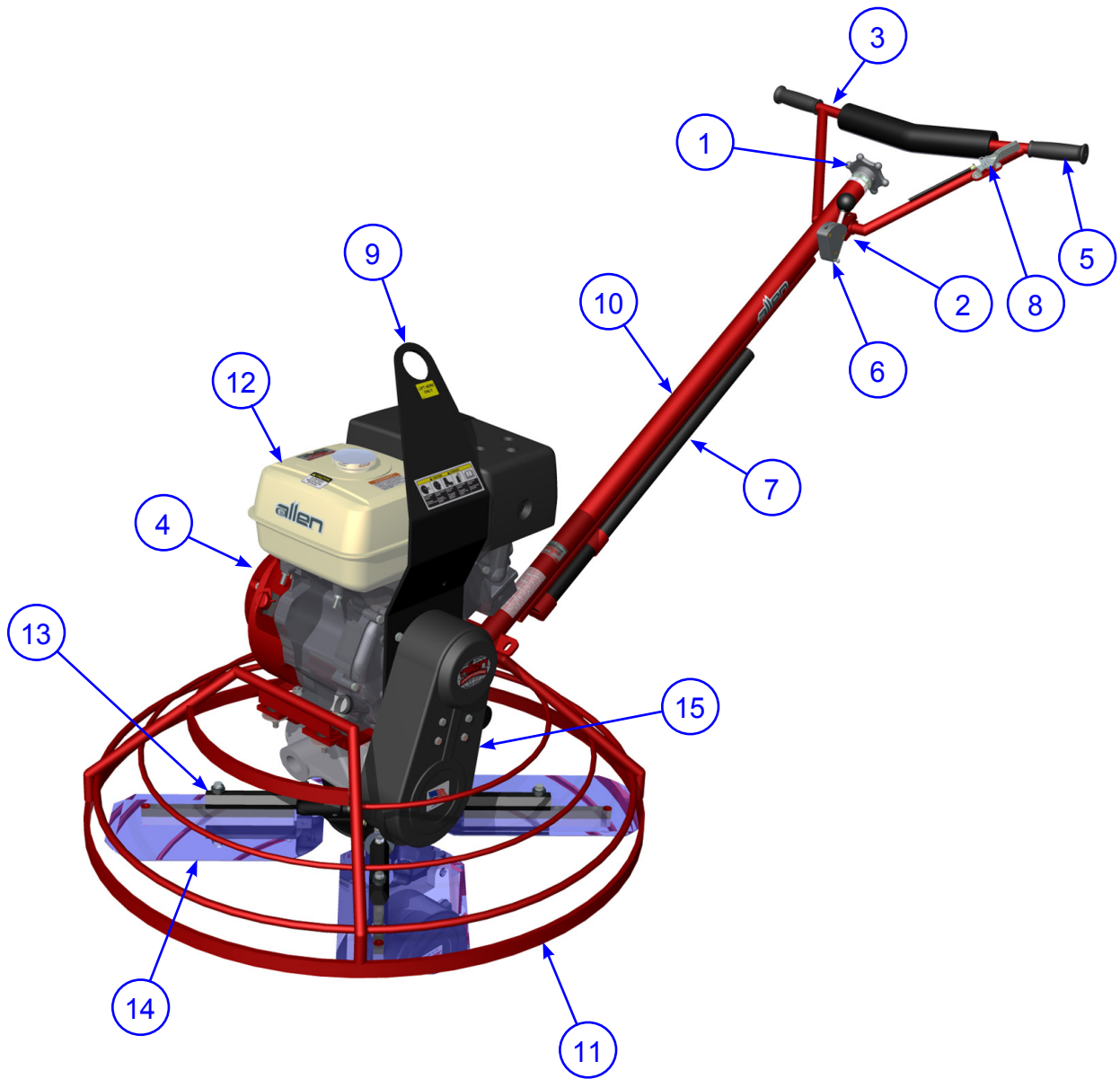
#### **Blade Check**

Check for worn or damaged blades. Check to see if a blade is worn out while the others look new. If this is the case there could be a blade pitch issue. Replace any worn blades.

#### **Engine Oil Check**

1. To check the engine oil level, place the trowel on secure level ground with the engine stopped.
2. Remove the filler dipstick from the engine oil filler hole and wipe clean.

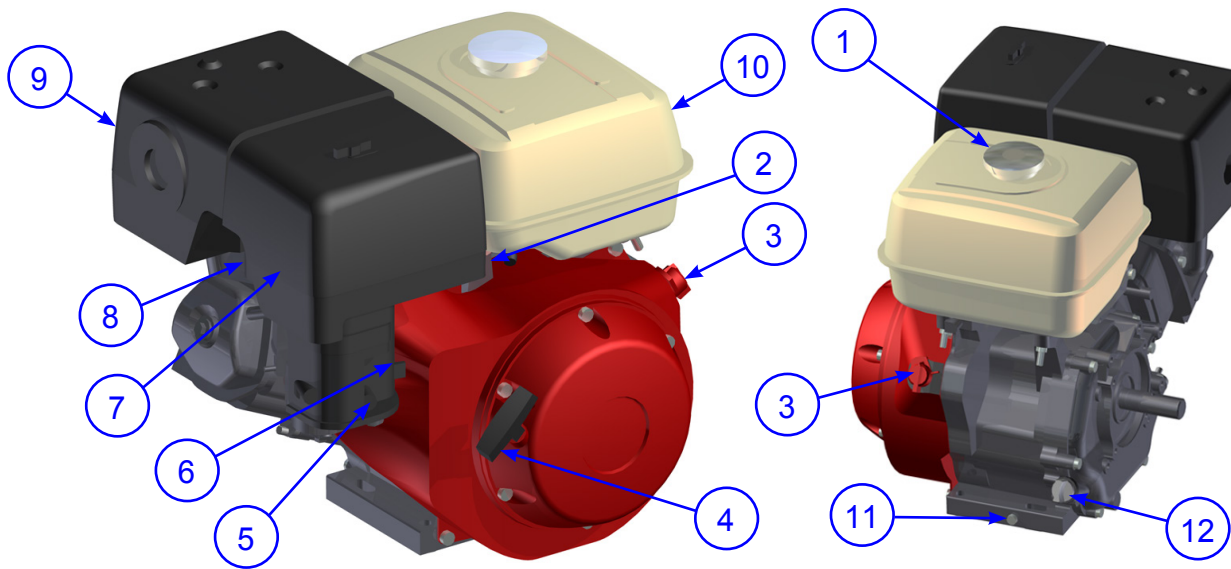




- 1. Fine Pitch Control Handle** – To adjust the pitch of the blades, turn the handle either clockwise or counter-clockwise to achieve the desired blade pitch.
- 2. Handlebar Adjuster** – Change the angle/height of the handle bars by loosening bolts, adjust handlebars to desired location, tighten bolts firmly to hold handlebars in that position.
- 3. Handle Bar** – When operating the trowel, place both hands on each grip to maneuver the trowel.
- 4. Recoil Starter Housing** – Automatically spools the recoil starter rope when using to start the engine.
- 5. Hand Grip** – Replace hand grips when they become worn or damaged.
- 6. Centrifugal “Kill” Switch** – In the event the operator loses control of the trowel, this switch will shut-down the engine.
- 7. Lifting Tube** - Use this tube to lift the trowel onto a slab. Tube is to be inserted into socket located in front of the gearbox.
- 8. Throttle Lever** – Controls engine speed. Returns engine to idle when released.
- 9. Trowel Lifting Point** – The trowel is equipped with a lifting bail that can be used to safely lift and move the trowel.
- 10. Main Tube** - When disassembling components inside the tube exercise caution.
- 11. Guard Ring** - NEVER! put hands or feet inside guard ring while the machine is running.
- 12. Engine** – This trowel uses a Honda engine.
- 13. Trowel Arm** – NEVER operate the trowel with a bent, broken or out of adjustment trowel arm. If the blades show uneven wear patterns or some blades wear out faster than others, the trowel arm may need to be adjusted. Use the trowel arm alignment tool P/N 016863 to adjust the trowel arms.
- 14. Blades** – This trowel is equipped with combination blades. These blades are versatile and should take care of most troweling needs. In addition pans can be attached to the trowel arms that will allow the trowel to float on “wet” concrete.
- 18. Belt Cover** – Remove this cover to gain access to the drive belt. NEVER operate the trowel with this cover removed.

## 2.4 Engine Controls

## SECTION 2 OPERATIONS



**1. Fuel Filler Cap** – Remove this cap to add unleaded gasoline to the fuel tank. Make sure cap is tightened securely. DO NOT over fill.

**2. Throttle Lever** – Used to adjust engine RPM speed (lever advanced forward SLOW, lever back toward operator FAST).

**3. Engine ON/OFF Switch** – ON position permits engine starting, OFF position stops engine operation.

**4. Recoil Starter (pull rope)** – Manual-starting method. Pull the starter grip until resistance is felt, then pull briskly and smoothly.

**5. Fuel Valve Lever** – OPEN to let fuel flow, CLOSE to stop the flow of fuel.

**6. Choke Lever** – Used in the starting of a cold engine, or in cold weather conditions. The choke enriches the fuel mixture.

**7. Air Cleaner** – Prevents dirt and other debris from entering the fuel system. Remove wing-nut on top of air filter canister to gain access to filter element.

**8. Spark Plug** – Provides spark to the ignition system. Set spark plug gap according to engine manufacturer's instructions. Clean spark plug once a week.

**9. Muffler** – Used to reduce noise and emissions.

**10. Fuel Tank** – Holds unleaded gasoline.

**11. Oil Drain Plug** – Remove this plug to remove oil from the engine's crankcase.

**12. Dipstick/Oil Filler Cap** – Remove this cap to determine if the engine oil is low.

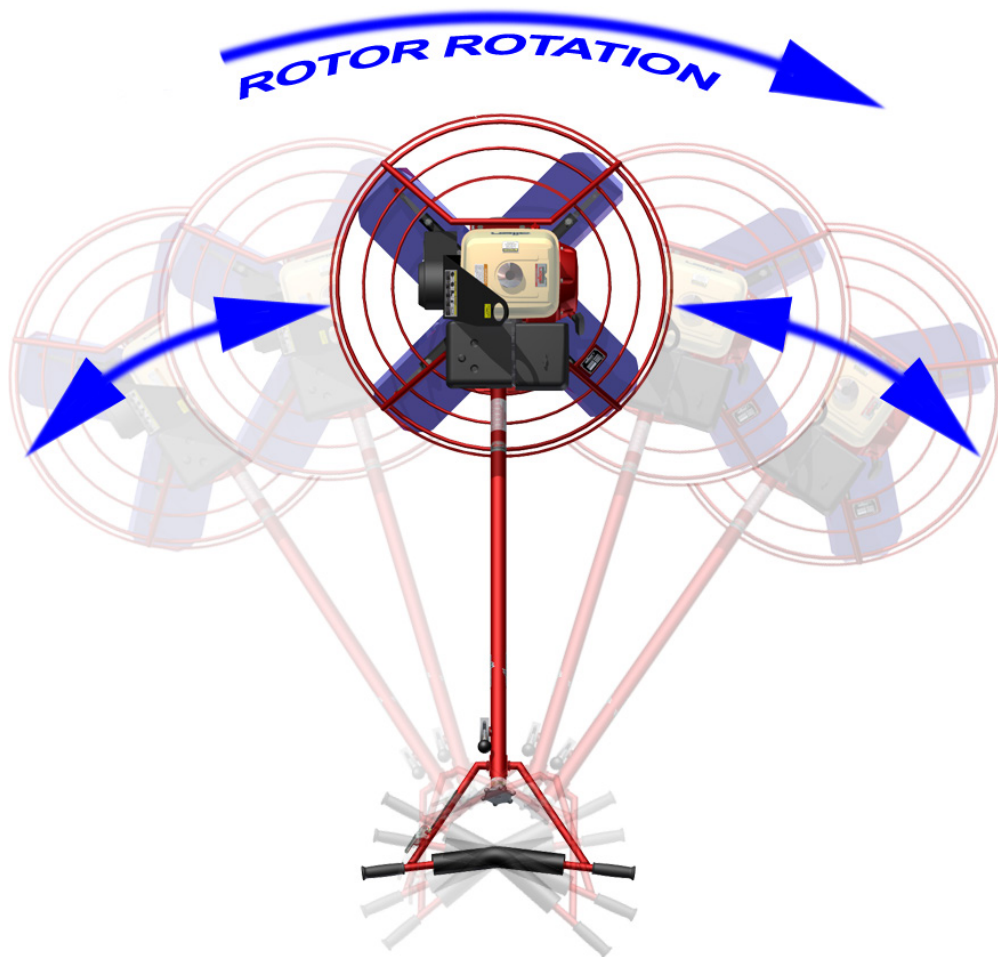
### 2.3.1 Operating The Trowel

to The following steps are intended as a basic guide to machine operation, and are not be considered a complete guide to concrete finishing. We suggest that all operators (experienced and novice) read "Slabs on Grade" published by the American Concrete Institute, Detroit, Michigan. Read the "Training" section of this manual for more information.

1. Get into the operator's position behind the handle. With a secure foothold and a firm grasp on the handles slowly increase the engine speed until the desired blade speed is obtained.
2. To maneuver the trowel, gently lift up on or press down on the main trowel handle. To move the machine to the operator's left, lift up on the handle, to move machine to the right, push down on the handle.
3. The best method for finishing concrete is to slowly walk backwards with the trowel, guiding the trowel from side to side. This will cover all footprints on wet concrete.
4. Remember that if you let go of the trowel, just step away and let the trowel come to a complete stop before trying to recover the trowel.

### Stopping The Engine

1. Move the throttle lever to the IDLE or SLOW position and run the engine for three minutes at low speed.
2. After the engine cools, turn the engine start/stop switch to the "OFF" position.



**Push down** on the handle to move the rotor assembly to the right.

**Pull up** on the handle assembly to move the rotor assembly to the left.

### 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 increase the pitch, turn the pitch control clockwise use the pitch indicator to adjust pitch equally on both right and left trowel blades.

## **SECTION 2 OPERATIONS**

### **Notes**

# ***Section 3 SERVICE***

**3.1  
Periodic Maintenance****3.1 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. To service the engine pull the seat locking pin out and tilt seat back.

**TABLE 3.1.1  
CHECK LIST**

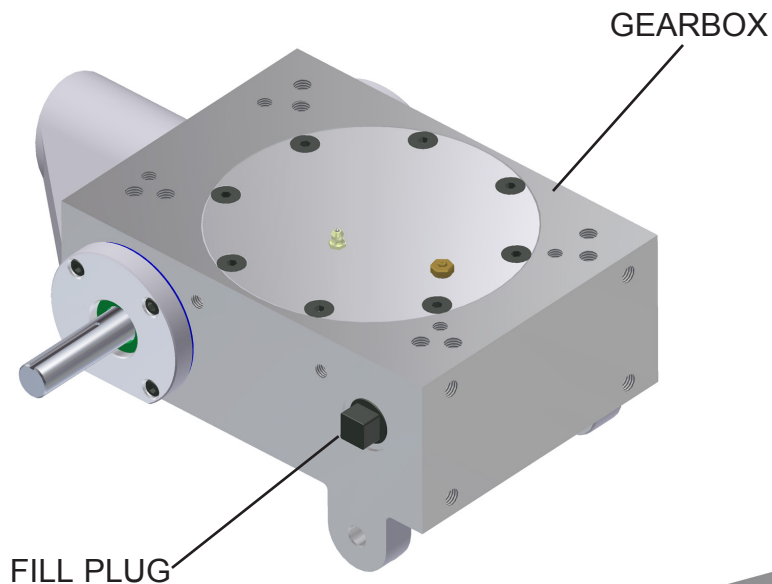
ITEM	DAILY	EVERY 20 HRS	EVERY 50 HRS	EVERY 100 HRS	EVERY 300 HRS
Grease trowel arms	✓				
Check oil level in gearbox	✓				
Check engine oil level	✓				
Check & tighten external hardware	✓				
Check drive belt for wear		✓			
Check valve clearance					✓
Change engine oil				✓	
Replace engine oil filter				✓	
Grease trowel gearbox					✓
Replace spark plug					✓



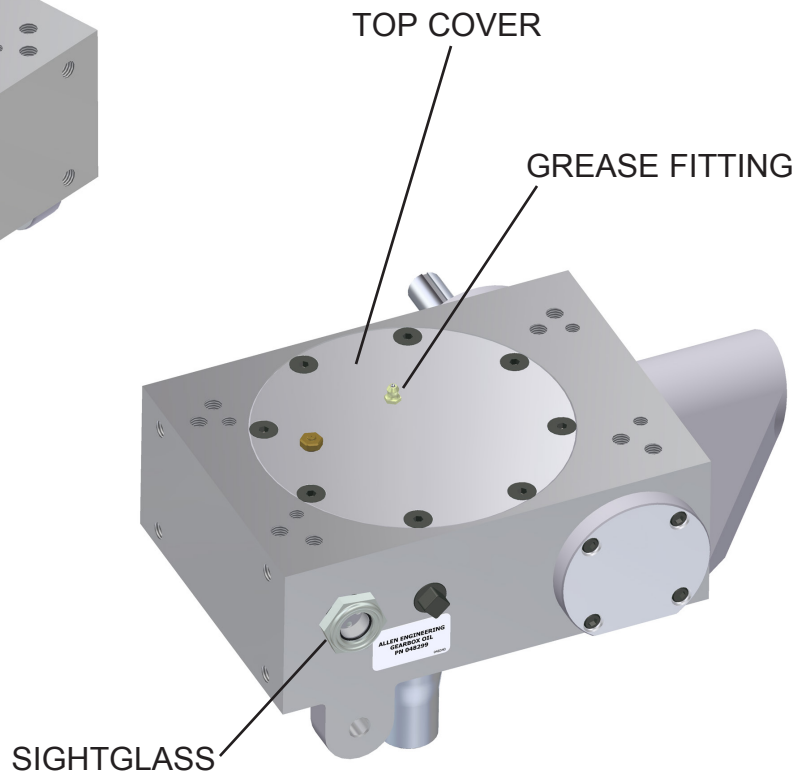
### 3.2 Trowel Gearbox Maintenance

Check Oil levels in the gearbox daily (every 8 hours) Add oil if oil level is below the check sight glass.

- 1) To add oil tilt gearbox to the side and remove the fill plug. Add oil through hole opening. Replace fill plug after proper level has been achieved. Fill so that there is oil 1/2 way in the sight glass. Use Allen Oil only.
- 2) Each Gearbox has a grease fitting on top cover that must be greased (2 SHOTS ONLY) every 300 operating hours. Use only Mobilith SHC 220 Extended pressure grease.



**FIGURE 3.2.1**  
FILL PLUG LOCATION



**FIGURE 3.2.2**  
GREASE FITTING LOCATION

### 3.3 Lift Lever Adjustment

#### 3.3 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.

The steps below describe the general procedure to remove the trowel arms to be aligned.

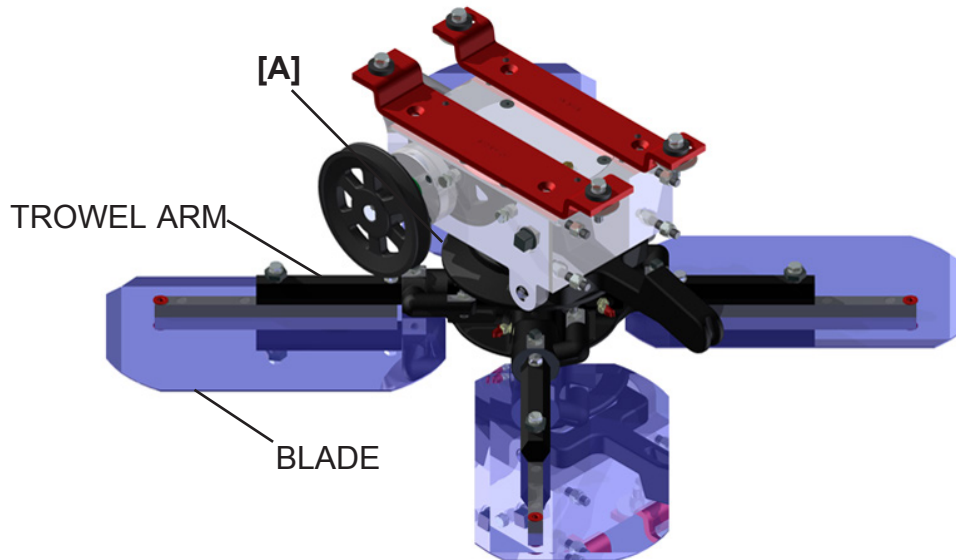


*Make sure that there is no pitch in the blades  
before attempting to remove a trowel arm.*

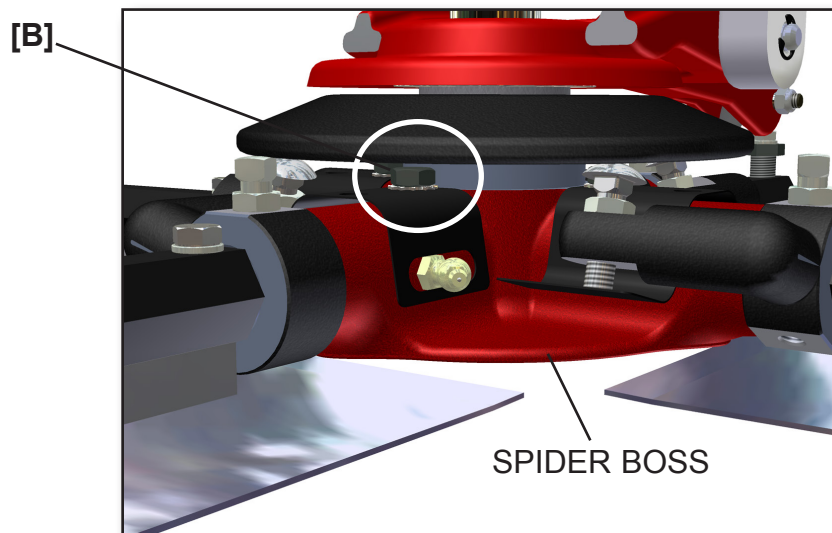
- 1) Block up pressure plate **[A]** using a wooden block.
- 2) Remove stabilizer ring from spider assembly (only on available models).
- 3) Remove blades from trowel arms.
- 4) Loosen hex head cap screw **[B]** and remove it and the external star washer from the spider boss.
- 5) Remove trowel arms 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).

### 3.3, continued Lift Lever Adjustment

## SECTION 3 SERVICE



**FIGURE 3.6.1**  
PRESSURE PLATE LOCATION



**FIGURE 3.6.2**  
FASTENER HARDWARE REMOVAL

#### 3.4 Transporting Trowel Procedures

Extra care should be taken when lifting the trowel off the ground. Serious damage to the machine or personal injury could be caused by dropping a trowel.

#### CAUTION

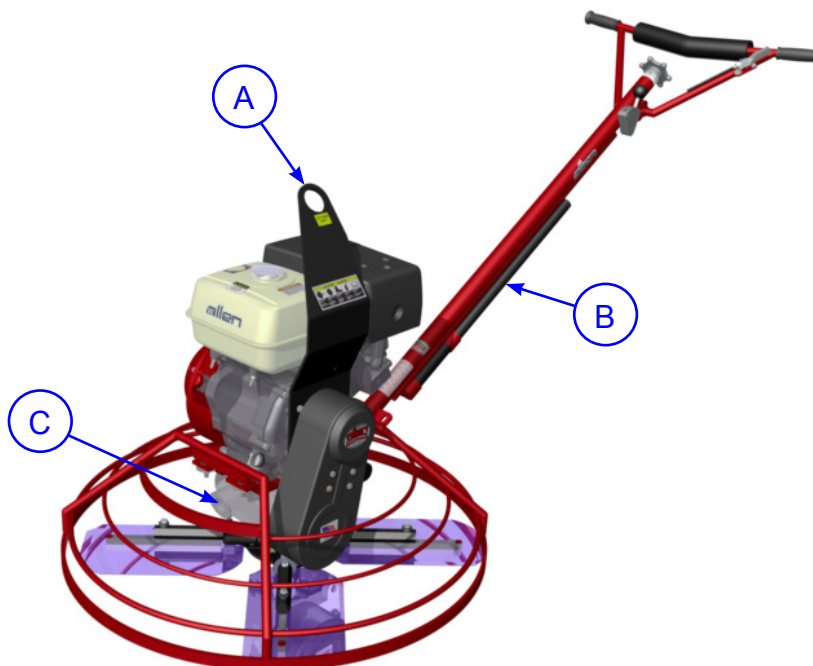
The trowel is heavy and awkward to move around. Use proper heavy lifting procedures and DO NOT lift the trowel by the guard rings.

The lift bale(A) provides an optimal lift point for moving the trowel. A forklift can be used to lift a trowel up onto a building. Using a crane to move a machine with a lift bale is highly recommended, and is perfectly safe for the machine. Extra care should be taken when lifting the machine off the ground, however. Serious damage to the machine or personal injury could be caused by dropping a trowel.

Remove the auxiliary lifting tube(B) located on the bottom of the main handle. Insert the tube into the socket(C) located on the opposite side of the gearbox from the handle. Make sure that the hole in the tube engages with the socket. With one person lifting from the main handle, and another lifting from the auxiliary lifting tube pick up the machine to move it onto a slab.

#### CAUTION

The trowel must be stabilized by the person carrying the operator's handle. If it is not stabilized properly, the handle could swing around and flip the trowel, causing damage to the trowel and also bodily injury.



# ***Section 4 PARTS***

This section contains the illustrated drawings and parts list for help in identifying and/or ordering replacement parts for your machine. Follow the instructions in the front section of this manual “Ordering Parts” when ordering replacement parts to insure prompt and accurate delivery.

### **NOTE**

All set screws have blue (LOC-TITE™) applied at the factory. If set screw is removed or loosened for any reason re-apply blue (LOC-TITE™).

### **NOTE**

All grease fittings are capped with CAP PLUG GC-5 (AEC PN 015692) to protect the fitting. If cap becomes missing or damaged replace it as soon as possible.

### **NOTE**

Anti-Seize is applied at the factory to all drive line coupling, gear box main and counter shafts and pitch control threaded rod assemblies. If these parts are disassembled re-apply a light coat of a graphite based anti-seize.

We recommend AEC quality replacement parts, available from the AEC Customer Service Department or your nearest AEC Dealer.

Part numbers are subject to change without notice. Part numbers might be different outside of the United States of America. Use part numbers listed in the applicable parts list table when you place your order. If a part number changes, the AEC Customer Service Department or your nearest AEC dealer will have the latest part number for the replacement part.

Remember when you order replacement parts, you will need your model number and serial number. These are the numbers that you have recorded in the UNIT ID section of this manual. Please order replacement parts by the appropriate part number, not the key number.

This manual contains an illustrated parts list for help in ordering replacement parts for your machine. Follow the instructions below when ordering parts to insure prompt and accurate delivery:

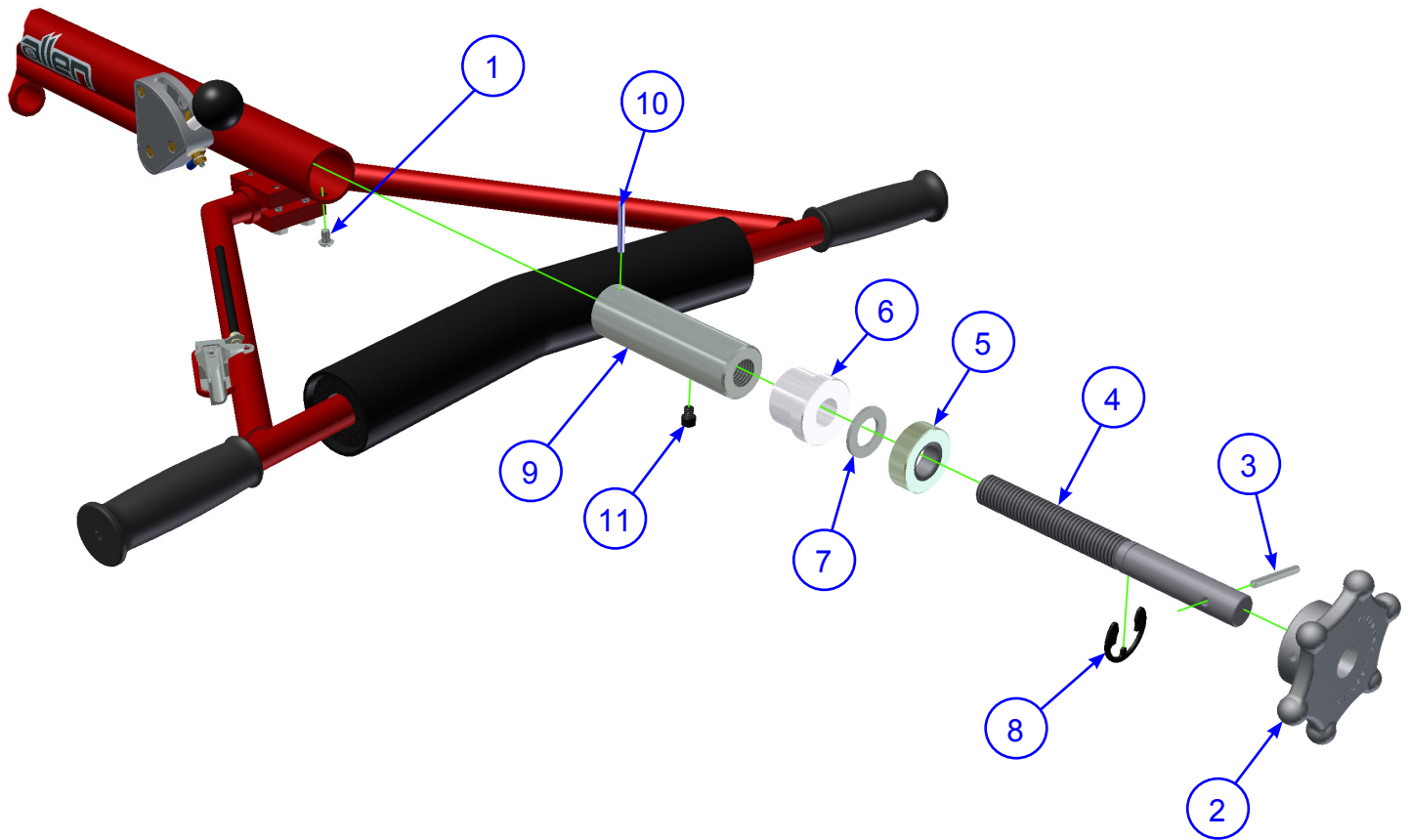
1. All orders for service parts - include the serial number for the machine. Shipment will be delayed if this information is not available.
2. Include correct description and part number from the "PARTS" Section 4.
3. Specify exact shipping instructions, including the preferred routing and complete destination 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.

### **NOTE**

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.

## SECTION 4 PARTS

### 4.1 Illustration Fine Pitch Adjustment





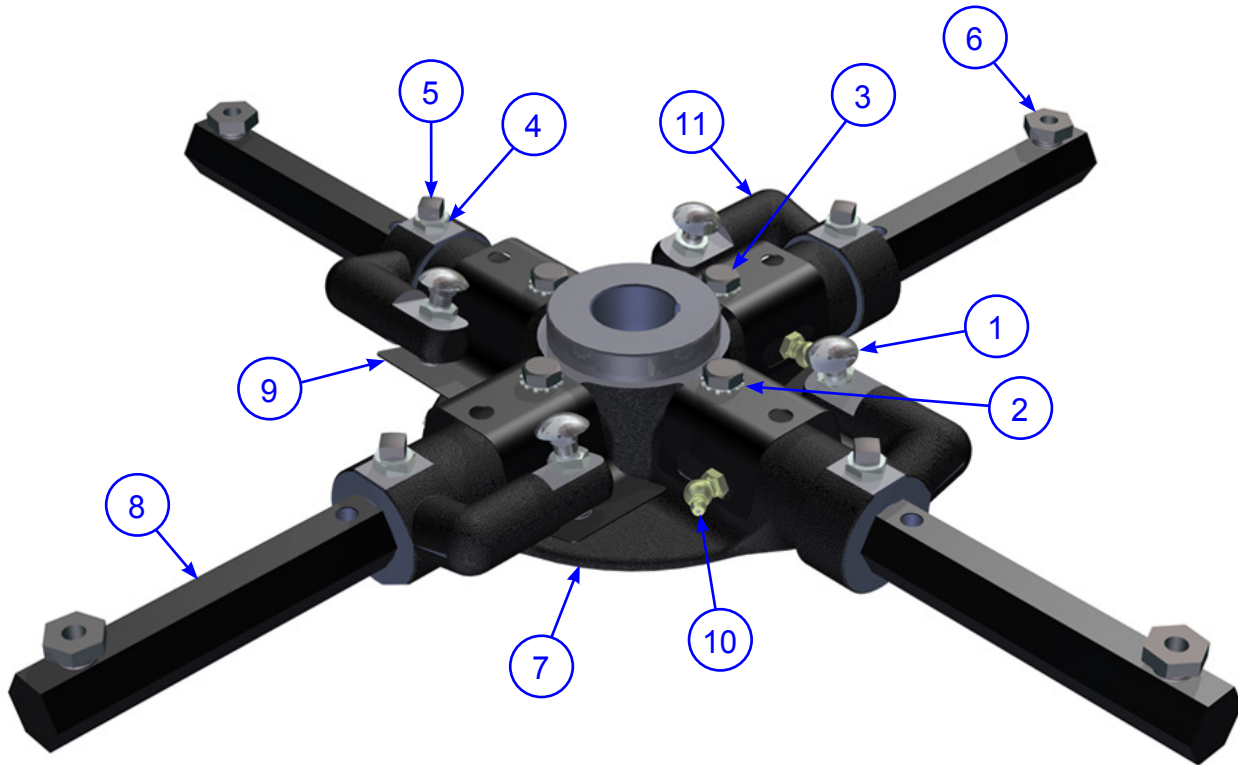
## 4.1 Parts List Fine Pitch Adjustment

## SECTION 4 PARTS

ITEM	PART #	DESCRIPTION	QTY
1	015410	FSTN, RHMS 1/4-20 X 3/8	1
2	015739	KNOB, ADJUSTABLE HANDLE	1
3	015740	FSTN, PIN SPIRAL 3/16 X 1-3/4	1
4	015741	SCREW SHAFT, PITCH CONTROL	1
5	015742	THRUST BEARING	1
6	015743	BUSHING, F/ PITCH CONTROL	1
7	015744	WASHER FINE PITCH CNTRL SPACER	1
8	015745	RING, RETAINING	1
9	015746	BUSHING, SLIDE	1
10	015747	PIN, ROLL 3/16 X 1-3/8 SPIROL	1
11	015768	FSTN, SHCS 1/4-20 X 1/4 HOLO	1

## SECTION 4 PARTS

### 4.2 Illustration 436 Spider - 015893



## 4.2 Parts List 436 Spider

## SECTION 4 PARTS

ITEM	PART #	DESCRIPTION	QTY
1	012990	FSTN, CABLT 3/8-16 X 1-1/4"	4
2	015682	FSTN, LW EXT STAR 3/8	4
3	015683	FSTN, 3/8-16 X 7/8 DOG CAP SCREW	4
4	015684	FSTN, NUT HEX JAM 3/8-16	8
5	015686	FSTN, SQHSS 3/8-16 X 1	4
6	015688	FSTN, 9/16-18 NF ADJ/MACH SCRW	4
7	015816	SPIDER, 4-BOSS MACH CW STD	1
8	015818	TROWEL ARM, STD 36" SPIDER	4
9	016920	SPRING CLIP, UNIVERSAL SPIDERS	4
10	024755	FITTING, 1/8-27 NPT 45° GREASE	4
11	033032	LIFT LEVER, STD UNIVERSAL	4

### **- OUR MISSION STATEMENT**

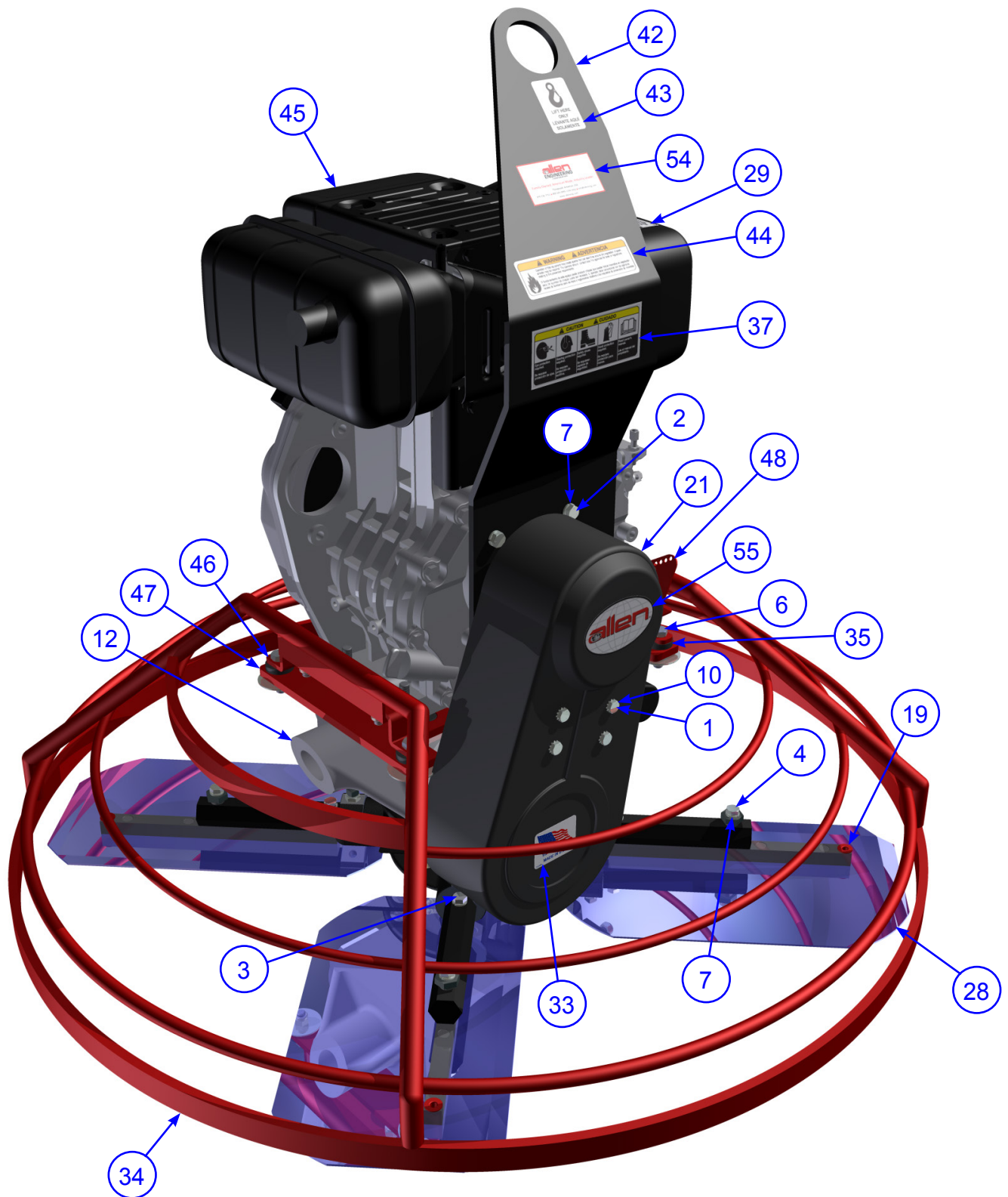
Our Mission is to provide superior quality products (manufactured in a safe and efficient environment by highly trained and dedicated personnel), on-time deliveries, and reactive & knowledgeable customer service.

### **- OUR QUALITY POLICY**

The Allen Engineering Team is fully committed to exceeding customer expectations for the quality of the products and services provided through the continuous improvement process of reducing waste, defects, and variability in everything we do.

### **- OUR VISION**

Our Vision is to be a world-class manufacturer of concrete placing and finishing equipment.



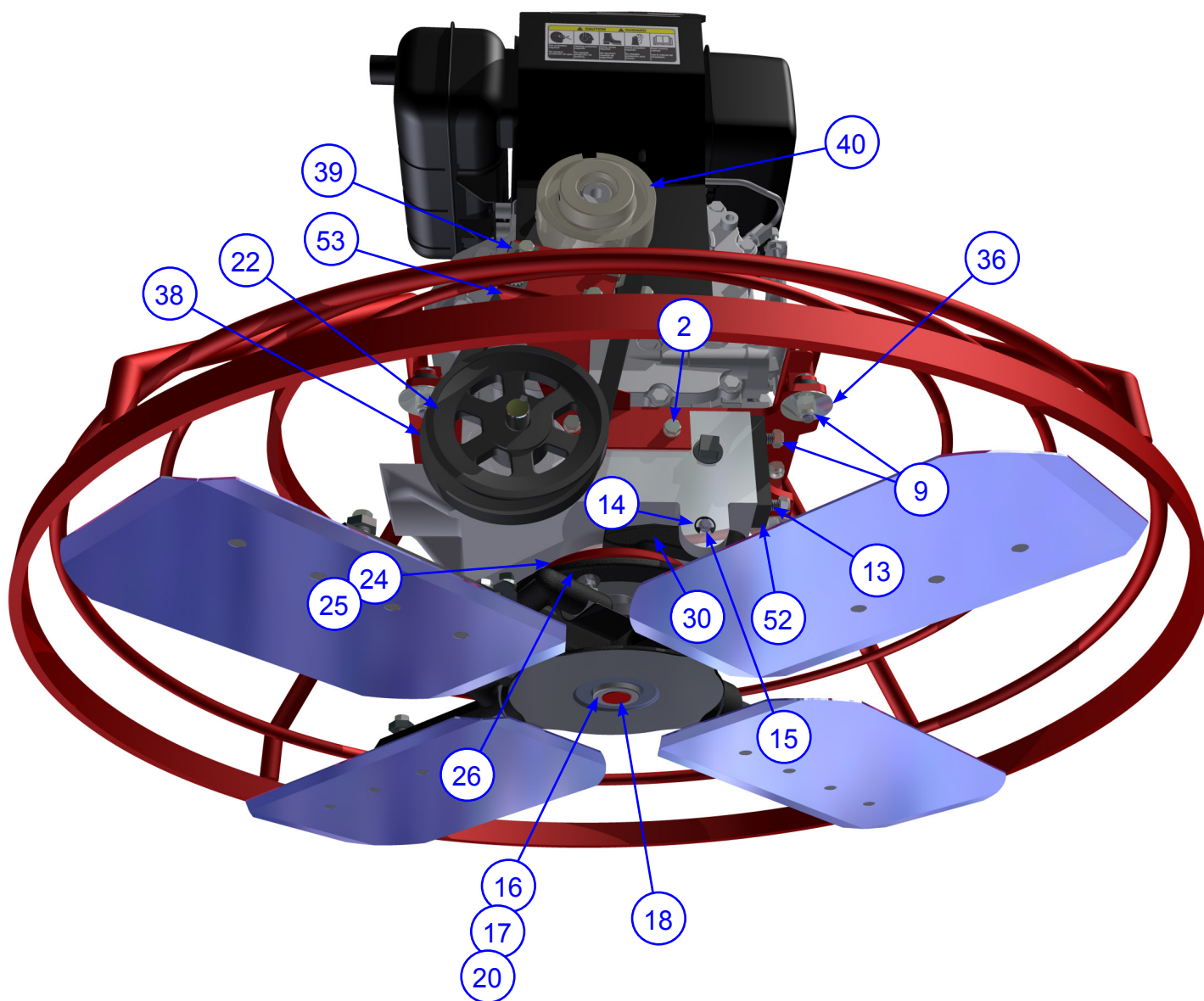
## 4.3 Parts List 436 Diesel Power Unit

## SECTION 4 PARTS

ITEM	PART NO.	DESCRIPTION	QTY
1	010002	FSTN, HHCS 1/4-20 X 3/4	4
2	010019	FSTN, HHCS 5/16-18 X 3/4 GR 5	6
3	010022	FSTN, HHCS 5/16-18 X 1 1/2" LONG	4
4	010024	FSTN, HHCS 5/16-18 X 2 GR 5	4
5	010036	FSTN, HHCS 3/8-16 X 1	2
6	010038	BOLT, 3/8-16x1-1/2 GR 5 HHCS	4
7	010090	FSTN, LW 5/16	14
8	010273	KEY, 3/16 SQ X 2	1
9	010464	FSTN, NUT NYLOK 3/8-16	8
10	012753	FSTN, LW 1/4 INT/EXT	4
11	012994*	RIVET, 1/8x3/8 ALUM DOME HD	4
12	015202	GEARBOX, STD WALK BEHIND	1
13	015674	FSTN, STDBLT 3/8-16 X 1-3/4	8
14	015677	RING, Ø7/16 E-STYLE RETAINING	2
15	015678	PIN, YOKE ARM	1
16	015690	WASHER, RETAINING FOR TROWELS	1
17	015691	FSTN, SHCS 1/2-13 X 1-1/2 RH	1
18	015693	PLUG, PLASTIC CAP EC12	1
19	015694	PLUG W-1 RED PLASTIC TAPERD	4
20	015696	KEY, .25x1.25 LG HARD RAD	1
21	015703	BELT GUARD, LARGE PLASTIC	1
22	015707	PULLEY, 3/4 BOREx5.73 OD V-GRV	1
23	015711	FSTN, FHSCS 3/8-16 x 3/4	4
24	015821	CAP, PRESSURE PLATE	1
25	015822	THRUST BEARING	1
26	015824	PLATE, PRO RIDER/WALKER PRESSURE	1
27	015893	SPIDER ASSY, 900-SFC LH-SOM	1
28	016095	TROWEL BLADE, COMBO 8 X 14	4
29	016191	DECAL, ALLOW ENG TO COOL	1
30	017264	YOKE, TROWEL	1
31	020514	FSTN, NUT STOVER LOCK 3/8-16	4
32	032097*	DECAL, SERIAL NUMBER PLATE	1
33	032896	DECAL, MADE IN USA-FLAG	1
34	037619	RING WMNT, 36" WB	1
35	037648	BUSHING, NITRILE T MOUNT 436 & 446	4
36	037675	FSTN, FENDER WASHER 3/8 X 1 1/4	4
37	039048	DECAL, GEN PROTECTION WARNING	1
38	041324	V-BELT	1
39	047546	PAL NUT- 1/4-20	4
40	047843	CLUTCH, Ø1 ID BORE NR WE25	1

## SECTION 4 PARTS

### 4.3 Illustration 436 Diesel Power Unit - cont'd



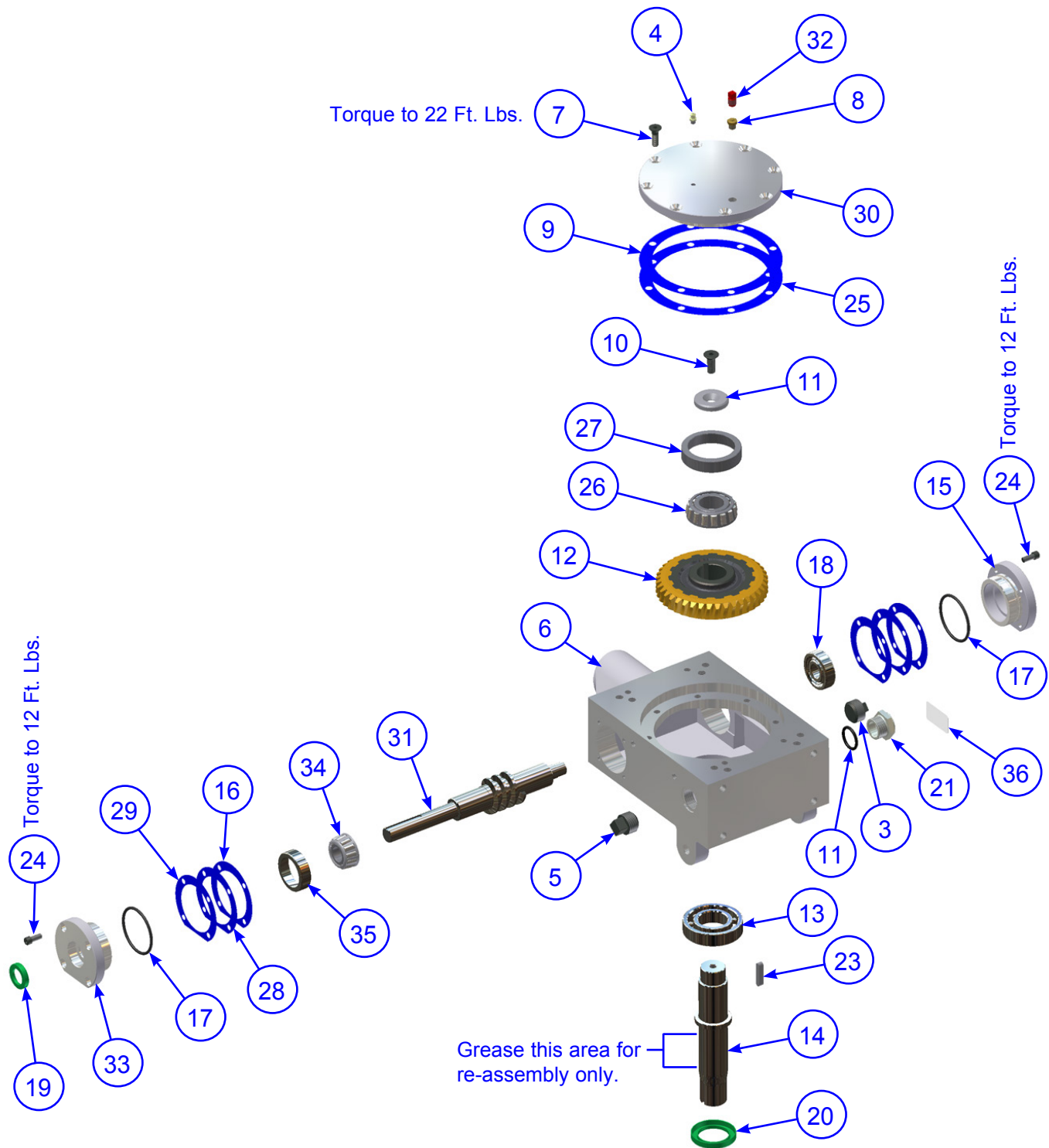
## 4.3 Parts List 436 Diesel Power Unit - cont'd

## SECTION 4 PARTS

ITEM	PART NO.	DESCRIPTION	QTY
41	048937*	DECAL, MFG. BY ALLEN ENG.	1
42	049771	PLATE, WALKBEHIND LIFTING	1
43	053448	DECAL, LIFT HERE ONLY (SP)	1
44	053453	DECAL, SPARK WARNING (SP)	1
45	055619	ENGINE, YANMAR LV70	1
46	055621	MNTB BRKT, RING	2
47	055622	MOTOR PLATE	1
48	055632	THROTTLE BRKT WMNT	1
49	055633	THROTTLE LEVER, MODIFIED	1
50	055634	SPRING, KILL LEVER	1
51	055635	CLIP, E-KILL CABLE	1
52	055637	RUBBER SPACER	2
53	055640	GUARD BRKT WMNT	1
54	056336	DECAL AEC 1.5" X 3.25" WHITE/RED	1
55	056341	DECAL ALLEN OVAL 2" X 3.34" WHITE	1
56	056479	WIRE STOP SWIVEL	1
57	056480	WIRE STOP	1

\* = NOT SHOWN  
(Continued from Page 4-9)







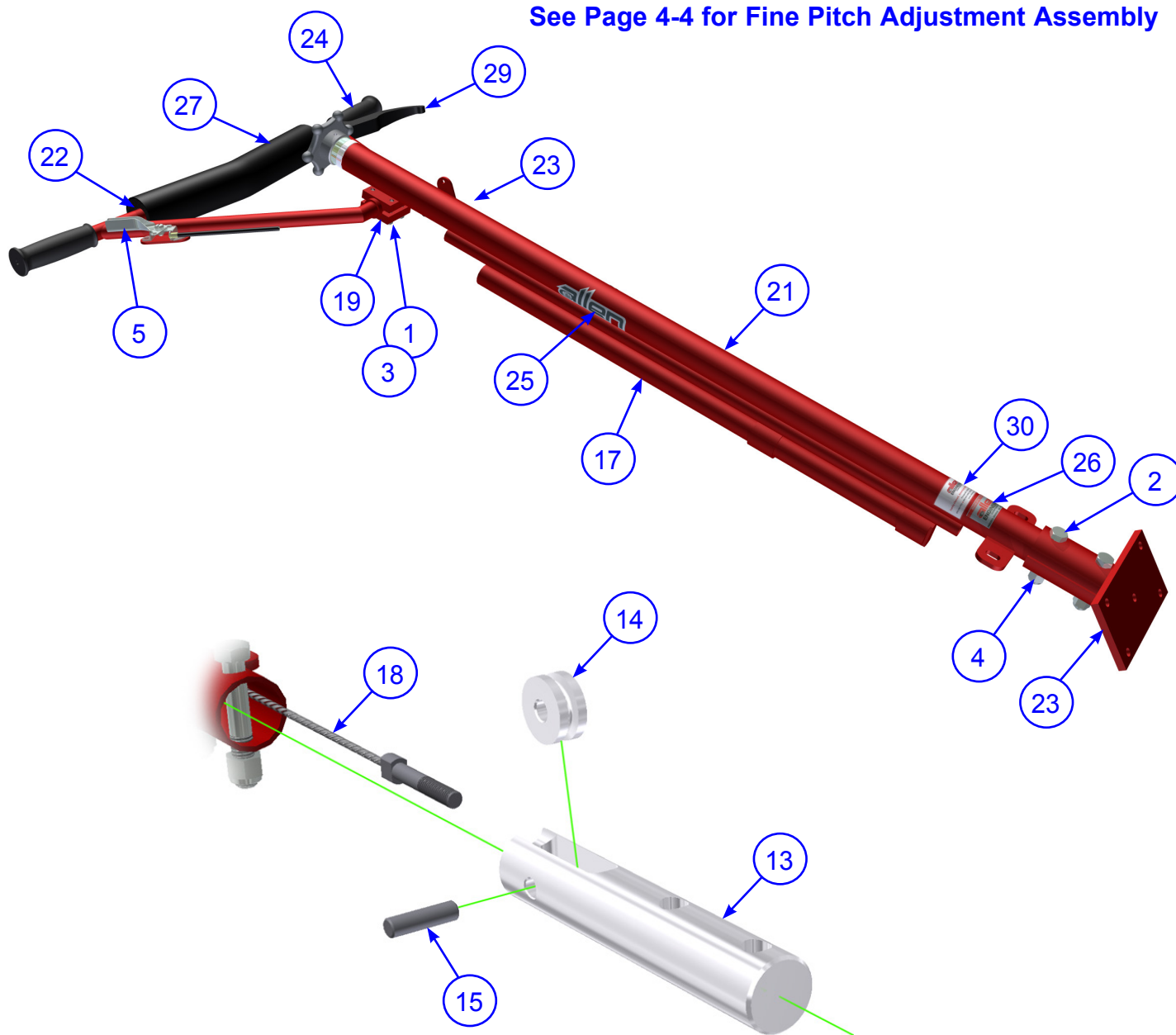
## SECTION 4 PARTS

ITEM	PART #	DESCRIPTION	QTY
1	001003	GREASE, MOBILITH SCH220	.094
2	048299	OIL, ALLEN ENGINEERING GEARBOX	.757/LT
3	010498	PLUG, 3/8 NPT BI SQ HD PIPE	2
4	010513	FITTING, 1/4-28 NPT STR GREASE	1
5	012953	PLUG, 3/4 NPTF BI SQ HD PIPE	1
6	015204	GEAR BOX,MACHINE FINISHED	1
7	015205	FSTN, SCREW FHSSS 5/16-18 X 1	8
8	015209	VALVE 1/8 NPT-27 RELIEF	1
9	015210	GASKET .005 THICK, TOP COVER	AS REQ.
10	015212	FSTN, SCREW FHSS 3/8-16 X 1 LH	1
11	015213	WASHER PRESSURE	1
12	015216	GEAR,BRONZE RH	1
13	015217	BEARING, RADIAL BALL	1
14	015219	SHAFT, MAIN MACH FINISHED	1
15	015221	CAP, GEAR BOX END	1
16	015222	GASKET, END CAP & FLANGE .005	AS REQ.
17	015660	O-RING, GEAR BOX END CAPS	2
18	015663	BEARING ANGULAR CONTACT	1
19	015670	SEAL, OIL CR# 7455V	1
20	015671	SEAL, OIL CR# 13661	1
21	015672	GAUGE, 3/4-14 NPT PORTHOLE VIEW	1
22	015673	O-RING, 15/16x1-3/16x1/8 BUNA	1
23	015696	KEY, .25x1.25 LG HARD RAD	1
24	017314	FSTN, SHCS 1/4-20 X 5/8	8
25	020018	GASKET .003 THICK, TOP COVER	AS REQ.
26	022073	BEARING TAPERED ROLLER	1
27	022074	BEARING RACE	1
28	022185	GASKET, END CAP & FLANGE .002	AS REQ.
29	022186	GASKET, END CAP & FLANGE .003	AS REQ.
30	015208	COVER-GEAR BOX MACH. FINISHED	1
31	026740	SHAFT, INPUT RH GEAR BOX	1
32	032745	PLUG, PLASTIC 1/8" P18-27 (TRANSPORT ONLY)	1
33	015223	FLANGE, GEAR BOX (4 HOLE)	1
34	015668	BEARING, TAPERED ROLLER	1
35	015669	BEARING RACE	1
36	048340	DECAL, ALLEN ENGR GEARBOX	1

## SECTION 4 PARTS

### 4.5 Illustration Handle (Fine) - 055638

See Page 4-4 for Fine Pitch Adjustment Assembly



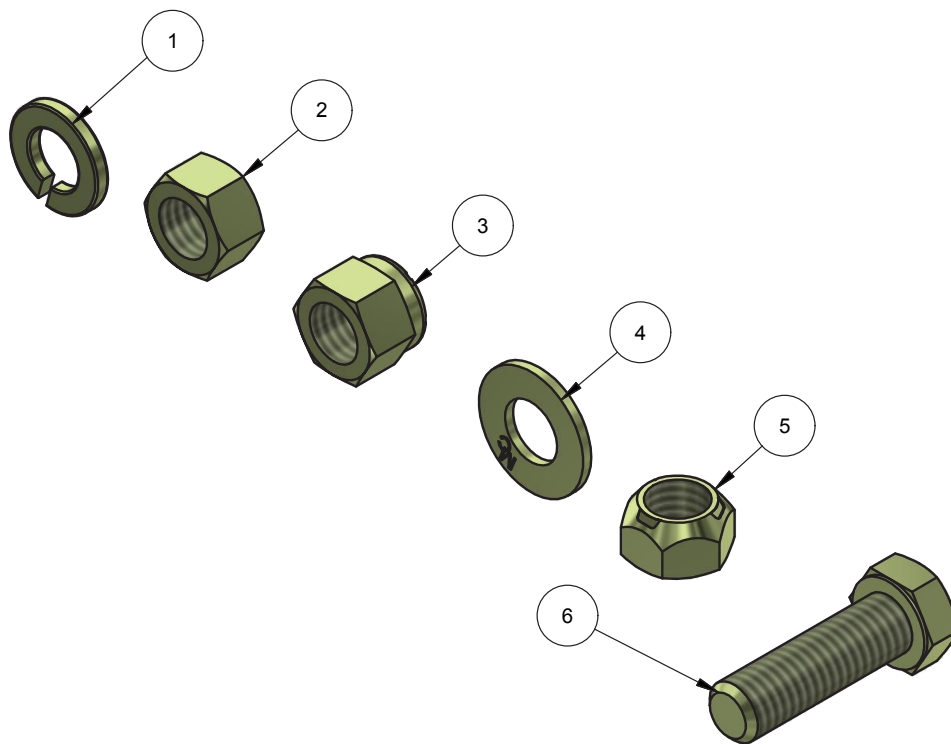
## 4.5 Parts List Handle - 055638

## SECTION 4 PARTS

ITEM	PART NO.	DESCRIPTION	QTY
1	010004	FSTN, HHCS 1/4-20 X 1-1/4	4
2	010075	FSTN, HHCS 1/2-13 X 3 GR 5	2
3	010089	FSTN, LW 1/4	4
4	011238	FSTN, NUT HEX NYLOK 1/2-13	2
5	015735	THROTTLE AND CABLE ASSEMBLY	1
6	015739	KNOB, ADJUSTABLE HANDLE	1
7	015741	SCREW SHAFT, PITCH CONTROL	1
8	015742	THRUST BEARING	1
9	015743	BUSHING, F/ PITCH CONTROL	1
10	015744	WASHER FINE PITCH CNTRL SPACER	1
11	015746	BUSHING, SLIDE	1
12	015747	PIN, ROLL 3/16 X 1-3/8 SPIROL	1
13	015752	BLOCK, CABLE SUPPORT	1
14	015753	PULLEY, CABLE	1
15	015754	PIN 3/8 X 1 3/8 CABLE PULLEY	1
16	015768	FSTN, SHCS 1/4-20 X 1/4 HOLO	1
17	015769	BAR, CARRY F/ WALKBEHINDS	1
18	016691	CABLE PITCH CONTROL SHORT ASSY	1
19	034279	BLOCK, CLAMP ADJ/HAND R/W 034277	1
20	034282	HANDLEBAR WDMT F/ADJ HNDL - PT	1
21	034286	EXTENSION WDMT F/SHT HNDL F/PT	1
22	034441	INSULATION, F/ HANDLEBAR	1
23	034714	BRKT, WB SHORT HANDLE FOOT PAD MTG	1
24	048308	GRIP, HANDLE (7/8"ID)	2
25	048379	DECAL, ALLEN 4 1/2 x 1 1/2	2
26	048937	DECAL, MFG BY ALLEN ENGR	1
27	049770	COVER, WB HANDLE PAD (STRAIGHT)	1
28	055636	CONTROL LEVER, E-KILL	1
29	055636	LEVER, CONTROL F/ DIESEL W/B	1
30	056336	DECAL AEC 1.5" X 3.25" WHITE/RED	1

## SECTION 4 PARTS

### 4.6 Handle Kit Illustration



## 4.6 Handle Kit Parts List

## SECTION 4 PARTS

ITEM	PART NO.	DESCRIPTION	QTY
-	065824	HANDLE KIT	1
1	010091	FSTN, LW 3/8	2
2	010102	FSTN, NUT HEX 3/8-16	2
3	010464	FSTN, NUT NYLOK 3/8-16	5
4	017751	FSTN, FW HARD A325 3/8 (p)	4
5	020514	FSTN, NUT STOVER LOCK 3/8-16	1
6	032875	FSTN, HHCS 3/8-16 X 1-1/4 GR 8	2

## **SECTION 4 PARTS**

### **Notes**

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INTENTIONALLY BLANK



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