



# OPERATIONS - PARTS MANUAL



**HP105**  
MECHANICAL-DRIVE

*Riding Trowel*

**allen**  
**ENGINEERING**  
CORPORATION  
819 South 5th Street  
Paragould, AR 72450

## 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.

# HP105

# Riding Trowel

## OPERATIONS - PARTS

## MANUAL

This manual covers the products listed below:

<u>Part No.</u>	<u>Description</u>
064200	TWIN ENGINE RIDER, HP105

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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.

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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**

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**

## **SECTION 5 ACCESSORIES**

Complete any warranty requirements as specified by the engine manufacturer in their instructions found inside the manual box located on the operator's control panel.

Your engine 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 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.*

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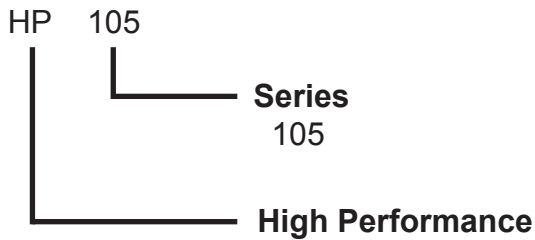
[www.youtube.com/AllenMachinery](http://www.youtube.com/AllenMachinery)

# 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.

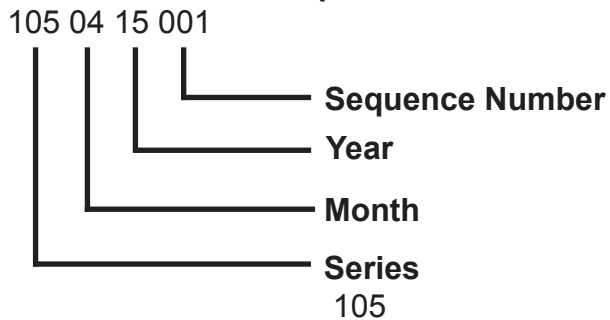
### Model Number



### 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





# 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 bottom left hand corner of the main frame front deck. See image below for serial number plate 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

HP105 is a High Performance Twin Engine Ride-On Power Trowel. It is a work horse delivering a total of 53hp and built for concrete professionals. Utilizing the torque converter clutch, it provides excellent low speed torque for low speed float panning and superior high rotor speed for finishing concrete.

<b>MODEL</b>	<b>HP105</b>
Engine	Kohler 26.5 Hp EFI
Dimensions (L x W x H)	101.5 in. x 50.5 in. x 59.5 in. (254 x 128 x 151 cm)
Panning Width	95 in. (241 cm)
Rotors (Diameter)	46 in. (1,168 mm) - Five Bladed Spider
Maximum Rotor Speed	0 - 175 RPM (Variable Speed)
Weight	1,180 lbs (535 kg)
Steering	Manual
Fuel Capacity	12 gal. (45.4 L) - Two Tanks
Retardant Capacity	6 gal. (22.7 L)
Seat Frame	Bolt-on with Removable Screen
Finish Blades - Standard	8 x 18
Gearboxes (2)	Super Heavy Duty (SHD) 20:1 Ratio
Steering Control System	Manual
Pitch Control	Manual Crank
Safety Shutdown Switch	Yes (Foot Pedal)
Approximate Running Time	3 Hours
Torque Converter Clutch (TC)	Standard
Engine Hour and RPM Gauge	Digital
Low Oil Detection	Low Oil Pressure Kill
Amperage, Alternator	25 Amp (2)
Lights	4

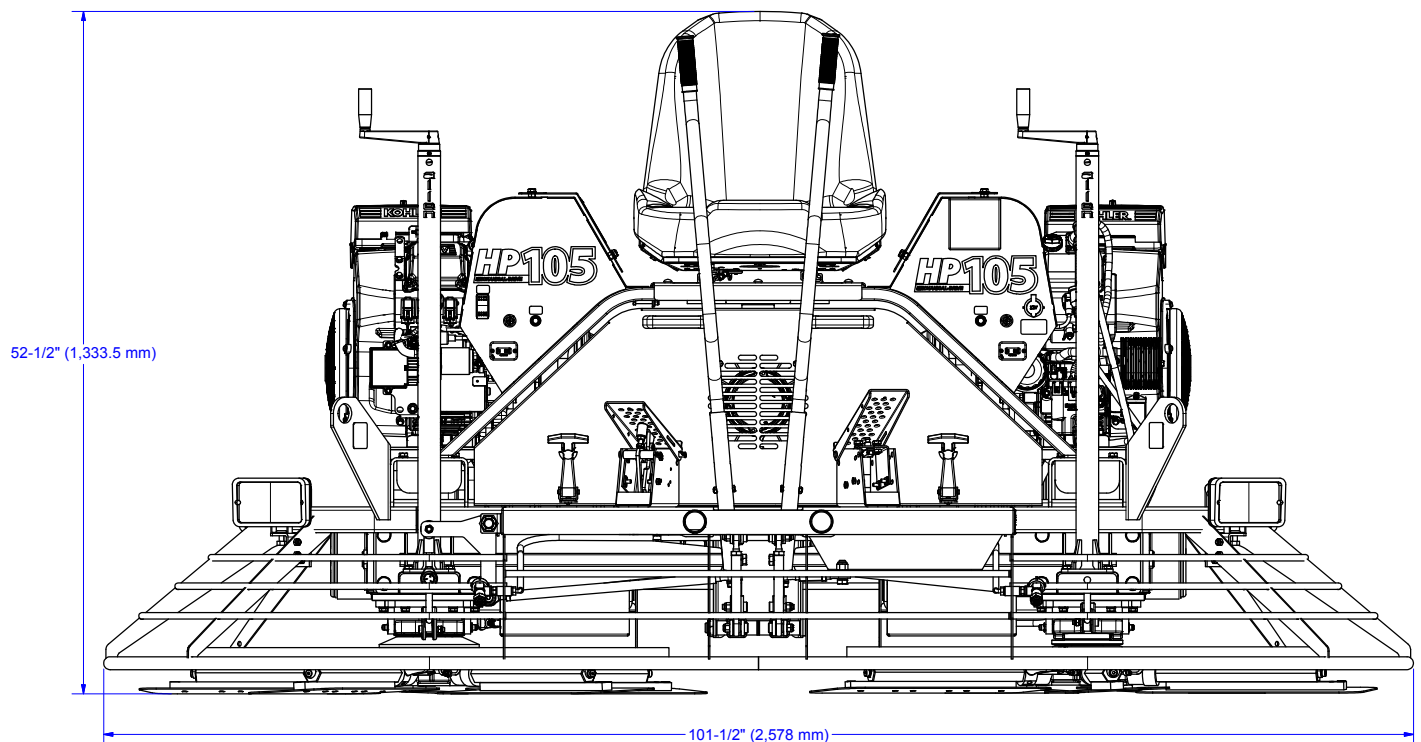
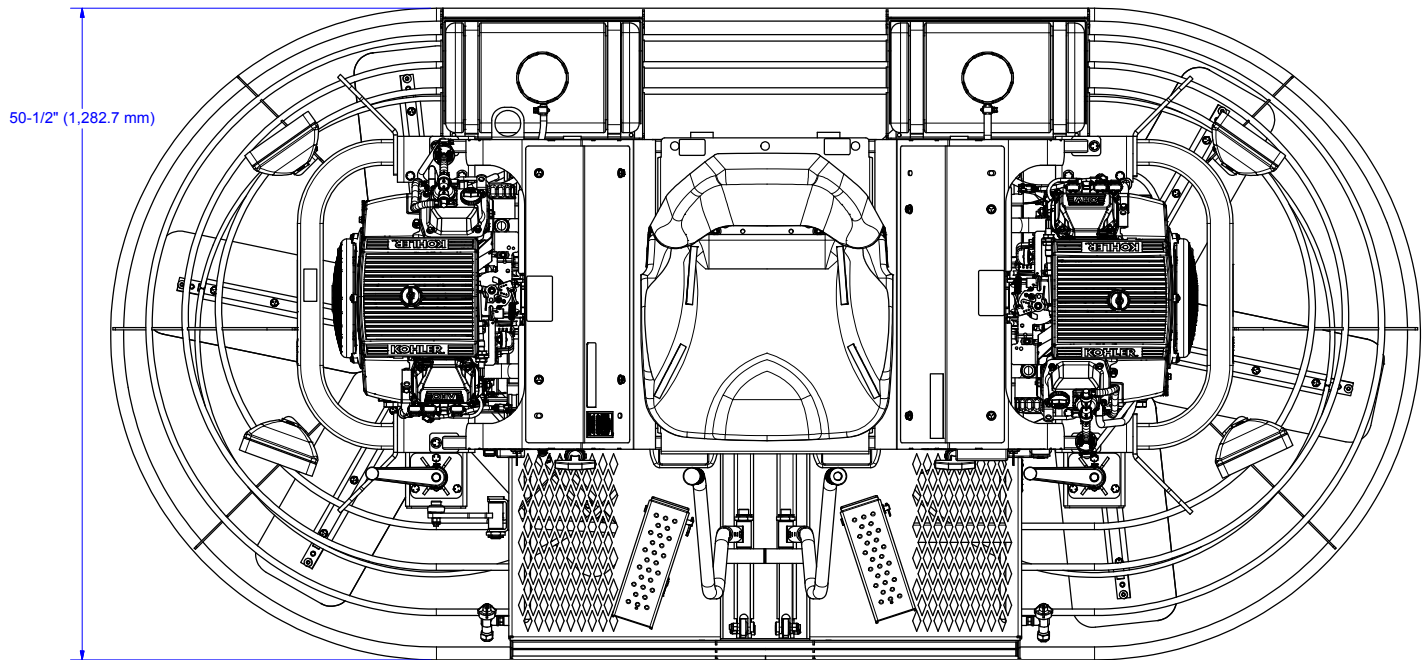
## Engine Specifications

### 26.5 HP Kohler

Model	Command PRO EFI ECH749
Power hp(kW) 1	26.5 (19.8)
Displacement cu in (cc)	45 (747)
Bore in (mm)	3.3 (83)
Stroke in (mm)	2.7 (69)
Peak Torque lbs. ft (Nm)	40 (54.2)
Compression Ratio	9.1:1
Dry Weight lbs (kg)	108 (49)
Oil Capacity U.S. quarts (L)	2 (1.9)
Lubrication	Full pressure w/full-flow filter
Dimensions L x W x H in	14.8 x 18.9 x 24.5
Backpressure Limit 2	50
Power hp (kW) 3	24.9 (18.6)
Rated Speed (RPM)	3600



# Dimensional Specifications





## SECTION 1 SAFETY

### State Regulations Proposition 65 Warning



## WARNING



### **CALIFORNIA — Proposition 65 Warning**

Engine exhaust and some of its constituents, and some dust created by power sanding, sawing, grinding, drilling and other construction activities contains chemicals known to the State of California to cause cancer, birth defects and other reproductive harm. Some examples of these chemicals are:

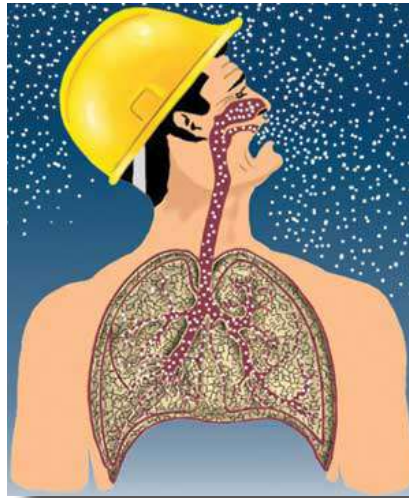
- Lead from lead-based paints.
- Crystalline silica from bricks.
- Cement and other masonry products.
- Arsenic and chromium from chemically treated lumber.

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: **ALWAYS** work in a well ventilated area, and work with approved safety equipment, such as dust masks that are specially designed to filter out microscopic particles.



# Federal Regulations Respiratory Hazards

## 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. 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.

### **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.

## SECTION 1 SAFETY

## Safety Information

Do not operate or service the equipment before reading the entire manual. Safety precautions should be followed at all times when operating this equipment. Failure to read and understand the safety messages and operating instructions could result in injury to yourself and others.

### SAFETY NOTES

The four safety notes shown below will inform you about potential hazards that could injure you or others. The safety notes specifically address the level of exposure to the operator and are preceded by one of four words: DANGER, WARNING, CAUTION or NOTICE.



Indicates a hazardous situation which, if not avoided, **will** result in death or serious injury.



Indicates a hazardous situation which, if not avoided, **could** result in death or serious injury.









Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



Addresses practices not related to personal injury.



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.

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

## SECTION 1 SAFETY

### General Safety

- **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.



- **ALWAYS** avoid wearing jewelry or loose fitting clothes that may snag 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 to 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.

- **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 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.



- If applicable, never use your hand to find hydraulic leaks. Use a piece of wood or cardboard. Hydraulic fluid injected into the skin must be treated by a knowledgeable physician immediately or severe injury or death can occur.



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



- **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.



- **NEVER** allow passengers or riders on the riding trowel during operation.
- **NEVER** lubricate components or attempt service on a running machine.

## SECTION 1 SAFETY

### General Safety (cont'd)

#### NOTICE

- **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.

#### 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 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 screed.



#### CAUTION

- **NEVER** touch the hot exhaust manifold, muffler or cylinder. Allow these parts to cool before servicing equipment.



#### NOTICE

- **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.







- **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.
- **ALWAYS** use extreme caution when working with flammable liquids.
- **DO NOT** fill the fuel tank while the engine is running or hot.
- **DO NOT** overfill tank, since spilled fuel could ignite if it comes into contact with hot engine parts or sparks from the ignition system.
- Store fuel in appropriate containers, in well-ventilated areas and away from sparks and 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.



- **DO NOT** drop the battery. There is a possibility that the battery will explode.
- **DO NOT** expose the battery to open flames, sparks, cigarettes, etc. The battery contains combustible gases and liquids. If these gases and liquids come into contact with a flame or spark, an explosion could occur.



- **ALWAYS** wear safety glasses when handling the battery to avoid eye irritation. The battery contains acids that can cause injury to the eyes and skin.
- Use well-insulated gloves when picking up the battery.
- **ALWAYS** keep the battery charged. If the battery is not charged, combustible gas will build up.
- **DO NOT** charge battery if frozen. Battery can explode. When frozen, warm the battery to at least 61°F (16°C).

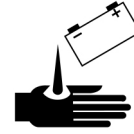


## SECTION 1 SAFETY

### General Safety (cont'd)

- **ALWAYS** recharge the battery in a well-ventilated environment to avoid the risk of a dangerous concentration of combustible gases.

- If the battery liquid (dilute sulfuric acid) comes into contact with clothing or skin, rinse skin or clothing immediately with plenty of water.



- If the battery liquid (dilute sulfuric acid) comes into contact with eyes, rinse eyes immediately with plenty of water and contact the nearest doctor or hospital to seek medical attention.

#### **CAUTION**

- **ALWAYS** disconnect the negative battery terminal before performing service on the equipment.
- **ALWAYS** keep battery cables in good working condition. Repair or replace all worn cables.
- Side slope operation is not permitted.
- Walk around the riding trowel before starting it to see if any items are worn, damaged, leaking, etc. that may make the riding trowel dangerous to operate.
- Stop and inspect the equipment if you strike an object. If necessary, make repairs before restarting.
- **ALWAYS** check that all controls are functioning properly immediately after start-up!
- **DO NOT** operate machine unless all controls operate correctly.

This decal notates special safety equipment that is required to operate this machine.



This decal notates the pinch point locations on this machine.



This decal notates the lifting points on this machine.



This decal indicates that this machine can start fires to it's surroundings due to sparks from the exhaust.



This decal indicates a hot surface and warns personnel not to touch.



## SECTION 1 SAFETY

### Safety Labels and Decals (cont'd)

This decal notates that lifting a trowel with clip on style pans attached is prohibited. Use only safety catch pans.



This decal notates that this equipment was proudly manufactured in the United States of America.



This decal notates the location of the light switch on this machine.



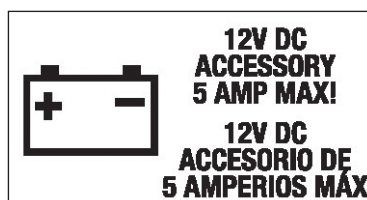
This decal notates that the thrust bearings must be greased daily.



This decal notates that this product was made at the Allen Engineering Corporation manufacturing facilities in Paragould, Arkansas.




This decal notates the location of the 12V accessory port.



This decal notates that this product is covered under one or more patents.

Allen Products are covered under one or more of the following patent numbers: Los Productos de Allen son cubiertos abajo uno o más de los números patentados siguientes: **U.S. Design Patents: U.S. Patentes de diseño:** 402,998; 400,542; 403,332; 410,931; 465,897; 466,909; 474,203; 400,544; 404,042; 404,041; 413,127; 416,564. **U.S. Utility Patents: U.S. Patentes para uso general:** 5,288,166; 5,328,295; 5,352,063; 5,476,342; 5,533,831; 5,562,361; 5,567,075; 5,658,089; 5,988,939; 6,019,433; 6,089,786; 6,857,815; 5,816,740; 5,108,220; 5,238,323; 5,480,257; 5,480,258; 5,613,801; 5,685,667; 5,803,658; 5,816,739; 5,890,833; 5,934,823; 5,967,896; 5,988,938; 6,048,130; 6,053,660; 6,106,193; 5,405,216; 6,019,545; 6,582,153B1; 6,089,787; 7,690,864B2. **Canadian Patents: Patentes Canadienses:** 2,039,893. **With other Patents Pending. Con otras patentes pendientes.**



048448 REV: B 04/10

This decal notates that this product uses unleaded gasoline only.

<p><b>WARNING:</b> EXPLOSIVE FUEL!</p> <p>DO NOT OVERFILL OR START ENGINE NEAR SPILLED GASOLINE. LEAVE 1 1/4 INCH SPACE AT TOP OF TANK FOR FUEL EXPANSION. DO NOT ADD GASOLINE WHILE ENGINE IS HOT OR RUNNING. DO NOT OPERATE WHILE FUEL CAP IS REMOVED.</p>	<p><b>ADVERTENCIA:</b> COMBUSTIBLE EXPLOSIVO!</p> <p>NO SOBRELLENE NI INICIE EL MOTOR CERCA DE GASOLINA DERRAMADA. DEJE 1 1/4 PULGADAS DE ESPACIO EN LA PARTE SUPERIOR DEL TANQUE PARA EXPANSIÓN DEL COMBUSTIBLE. NO AGREGUE GASOLINA MIENTRAS EL MOTOR ESTÁ CALIENTE O EN MARCHA. NO USAR MIENTRAS LA TAPA DE COMBUSTIBLE NO ESTE PUESTA.</p>	<p><b>⚠ DANGER PELIGRO</b></p>  <p>ENGINES PRODUCE CARBON MONOXIDE WHICH IS AN ODORLESS DEADLY POISON DO NOT OPERATE IN AN ENCLOSED AREA.</p> <p>LOS MOTORES PRODUCEN MONÓXIDO DE CARBONO QUE ES UN VENENO MORTAL SIN OLORES. NO HAGA FUNCIONAR EN UN ÁREA CERRADA.</p>
<b>GASOLINE ONLY</b>		<b>GASOLINA SOLAMENTE</b>

This decal notates the model number and series number of this machine.

# HP105

MECHANICAL-DRIVE

This decal notates the location of where to put hand tools on the machine.



## **SECTION 1 SAFETY**

### **Safety Labels and Decals (cont'd)**

This decal notates the location of where the operations and parts manuals are.



This decal illustrates Allen Concrete Equipment.



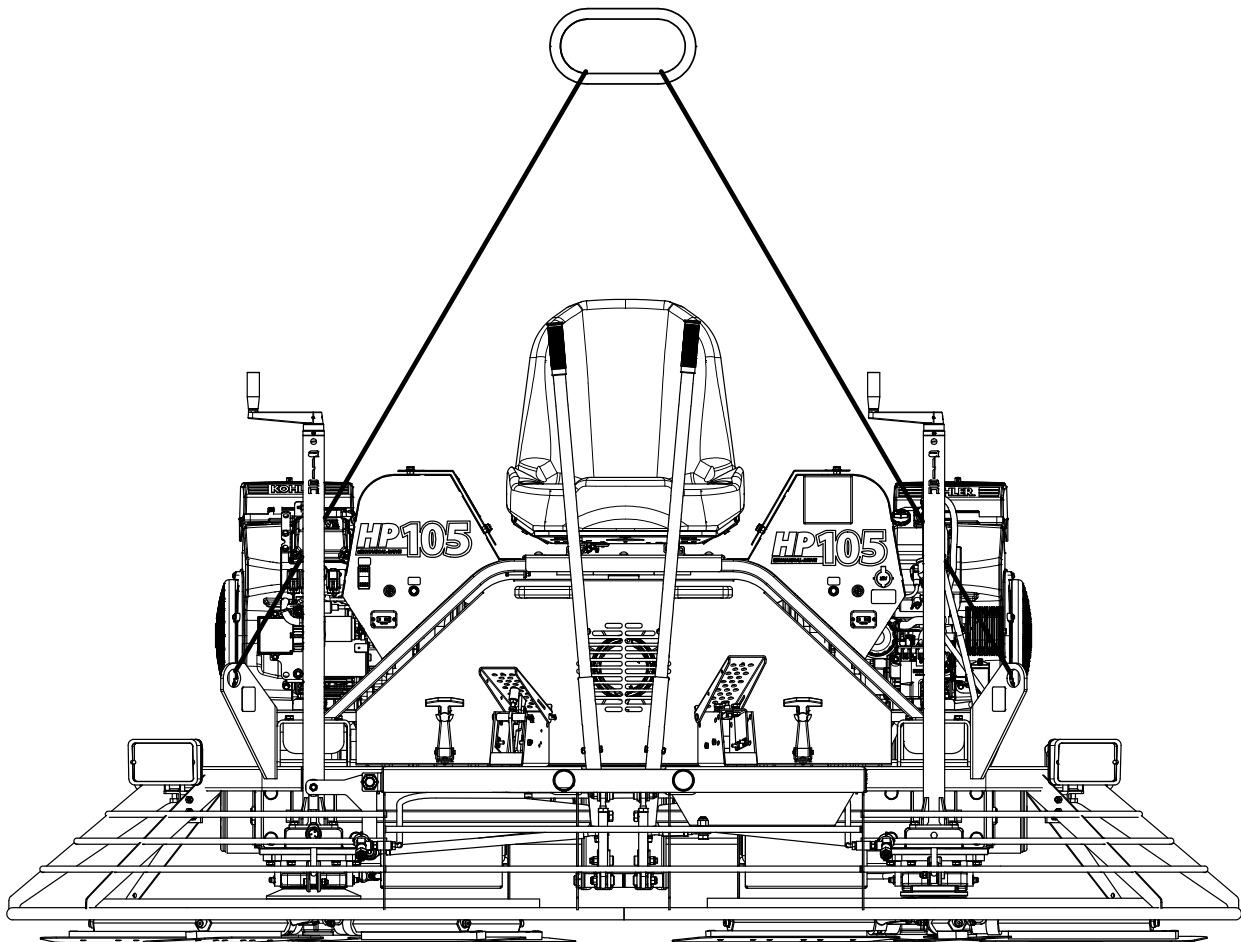


### **CAUTION**

- When lifting the riding trowel, 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:*

- Place slings, chains or hooks through each lifting eye on the machine. Use a sling or chains with a minimum length of 2 meters (5 feet) on each leg, connected to a central lifting device. Ensure that all lifting devices have sufficient weight-bearing capacity.
- **ALWAYS** shutdown engine before transporting.
- **NEVER** lift machine with paving pans with z-clips. Only safety catch pans can be lifted.



## SECTION 1 SAFETY

### Transportation Safety

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



**Before operation each day ensure the following:**

- All guards, side screens and panels are in place.
- All safety and information signs are in place and legible.
- Engine oil levels are correct.
- Check battery level
- Check all operating controls for proper operation and adjustment.
- Check speed control operation before and after starting engine for proper operation.
- Gearbox oil level. Add oil as required.
- The steering, left and right.

**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.

- Remove loose objects that could interfere with operation.

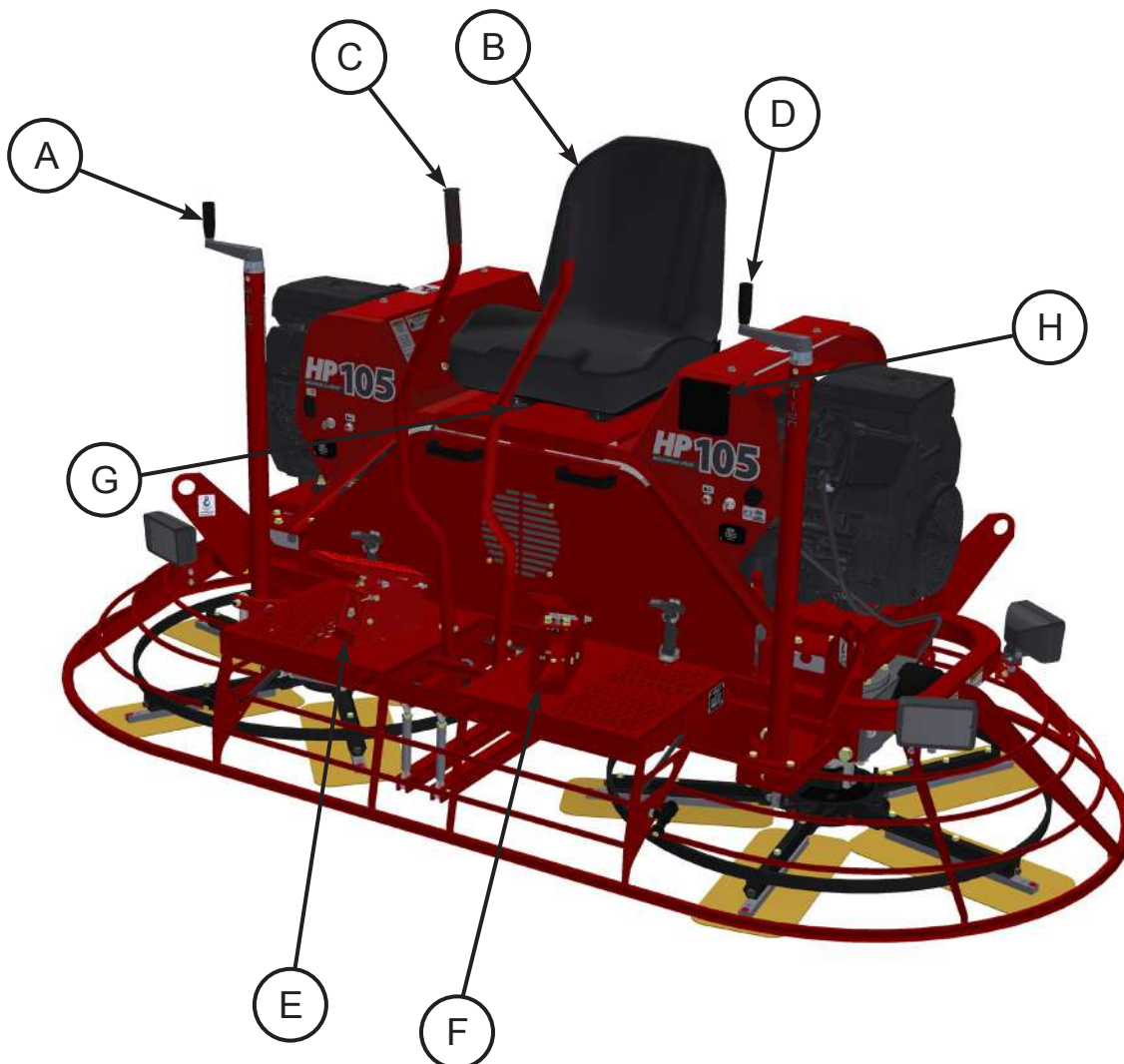
## SECTION 2 OPERATIONS

### Operating Instructions

To utilize your Allen Engineering HP105 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.

#### Location of all Operating Controls

- |     |  |
|-----|--|
| [A] | Right Pitch Control                        |
| [B] | Joystick (Forward & Reverse)               |
| [C] | Joystick (Left & Right, Forward & Reverse) |
| [D] | Left Pitch Control                         |
| [E] | Right Foot Throttle Pedal                  |
| [F] | Left Kill Switch Pedal                     |
| [G] | Seat Adjustment                            |
| [H] | Cup Holder                                 |



With the operator in the seat, show them 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 the engines fully engage the throttle. This allows the engines to warm up quicker and also engages the torque converter. At this time the machine's rotors will begin turning.

### 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.

### Stopping The Riding Trowel

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

### CAUTION

This machine has a kill switch mechanism installed in the left and right foot pedals. If in need of an emergency stop, simply lifting the foot off of the pedals will turn the engines off completely.

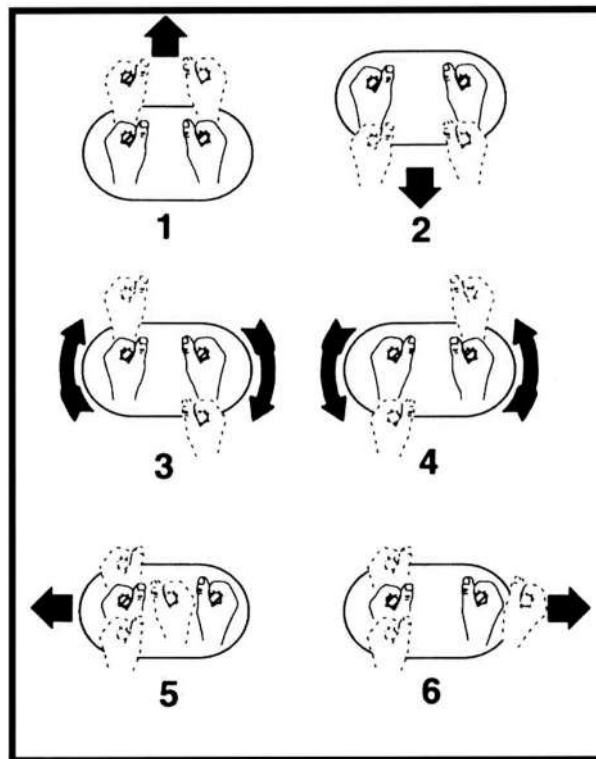
## SECTION 2 OPERATIONS

### Operating Instructions - cont'd

#### 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 or right while operating the right hand joystick.

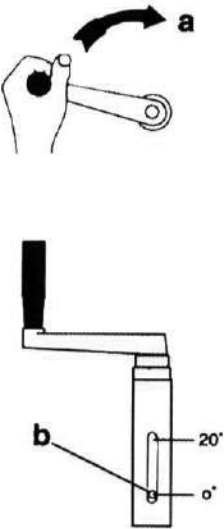
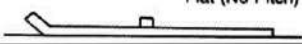

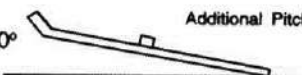
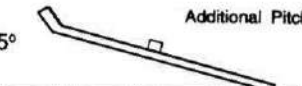
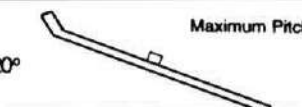
Position	Action
1	Forward
2	Reverse
3	Rotate clockwise
4	Rotate counter clockwise
5	Left sideways
6	Right sideways



### Pitch Adjustment

Different pitch angles are needed as you work the different stages of the concrete. Refer to figure below. 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 "a" use the pitch indicator "b" to adjust pitch equally on both right and left trowel blades.

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

## **SECTION 3 SERVICE**

# **Maintenance Instructions**

Maintenance described in this section represents minimum requirements for continuous satisfactory operation of the machine.

Because improperly maintained machines are hazardous, it is extremely important that only qualified mechanics perform maintenance work.

It is imperative that only genuine AEC parts are used if replacement is needed as substituted parts in critical areas may place the operator at risk.

It is recommended that a regular maintenance schedule be followed for mechanical adjustments as well as for lubrication.

Use a preventative maintenance program to catch and correct many serious problems before they occur. The preventative maintenance schedule contained herein gives a daily, weekly, monthly, semi-annually, annually, and break-in 100 hours minimum requirement to keep your riding trowel running for years. The lubrication chart contained herein is one part of riding trowel preventative maintenance.

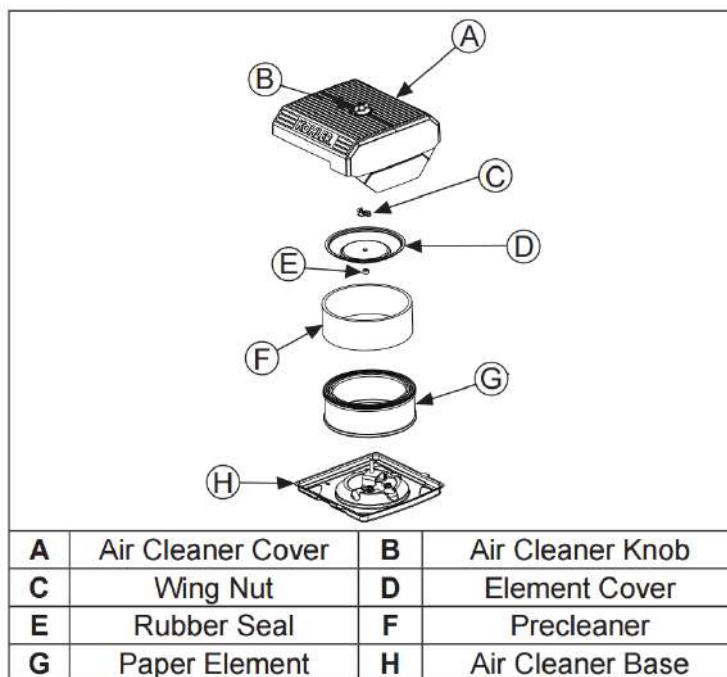
Because regular maintenance cannot be controlled by the manufacturer or by the distributor, it must ultimately be the responsibility of the owner.

Your AEC dealer stands ready to assist in the event of operational difficulties. However, most adjustments and/or repair can be readily performed by the user.

The instructions provided in this section will facilitate the maintenance of the AEC equipment to operate at peak efficiency.

### **Pre-Cleaner Maintenance Procedure**

This engine is equipped with a large capacity, dual element air filter—an oiled, foam pre-cleaner surrounds a high density paper element.



Loosen knob and remove air cleaner cover.

### **Precleaner**

1. Remove precleaner from paper element.
2. Replace or wash precleaner in warm water with detergent. Rinse and allow to air dry.
3. Saturate precleaner with new engine oil; squeeze out excess oil.
4. Reinstall precleaner over paper element.

### **Paper Element**

1. Clean area around element. Remove wing nut, element cover, and paper element with precleaner.
2. Separate precleaner from element; service precleaner and replace paper element.
3. Check condition of rubber seal and replace if necessary.
4. Install new paper element on base; install precleaner over paper element; reinstall element cover and secure with wing nut.

Reinstall air cleaner cover and secure with knob.

## SECTION 3 SERVICE

### Engine Oil Maintenance

#### Engine Oil Level Check

- ALWAYS check the engine oil dipstick before using the riding trowel. At a minimum check engine oil once per day. Follow the Maintenance and Lubrication Chart contained herein.
- ALWAYS use a good quality engine oil.
- The engine oil fill is the same as the oil dipstick hole and is located on the engine block opposite the crankcase drain hose and plug.
- Use oil grades appropriate to the surrounding temperature range as shown below. See **GRADE OF OIL CHART** under **CHANGING ENGINE OIL** section below.
- Remove engine oil dipstick to access oil fill hole. To fill engine with oil use a long funnel to avoid spilling or use an oil can filled with the proper weight small engine oil and squirt oil directly into fill hole. Check oil level with dipstick. Fill the crank case to the full mark on the dipstick. **DO NOT** overfill.
- Replace dipstick.

#### Change Engine Oil



#### NOTE

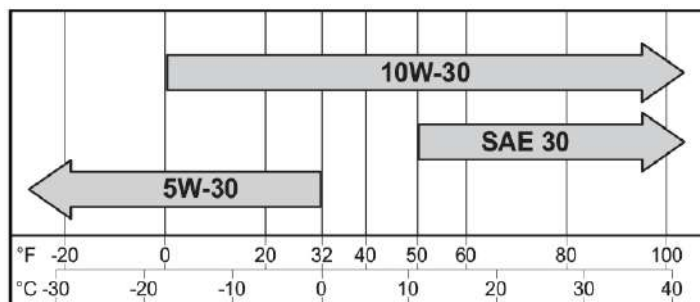
Important: Engine oil is best drained when the engine is warm. Warm oil flows freely and carries away more impurities than cold oil.

**Note:** Change engine oil every **100 hours** of operation. On a new engine, change oil after the first **5 hours** of operation.

**Note:** Trowel must be on a level surface when changing and checking oil.

Note: Viscosities shown in the chart below may be used when the average temperature in your area is within the indicated range.

- 10W30 is recommended for general, all-temperature use (above 32°F (0°C)).





# Maintenance Schedule

## SECTION 3 SERVICE

Maintenance Schedule					
Item	Daily	Weekly	Monthly	Annually	100 Hours
Check external hardware	✓				
Check fuel level	✓				
Check fittings and hoses	✓				
Apply grease to thrust bearings	✓				
Check all operational controls	✓				
Tighten all bolts and nuts.			✓		
Grease steering assembly heim joints			✓		
Inspect visually for loose or missing parts	✓				
Wash wet concrete of machine	✓				
Clean fuel sediment bowl		✓			
Inspect battery (fill with water if needed)		✓			
Change gearbox oil				✓	
Inspect drive belts			✓		
Check all adjustments					✓
Change the engine oil				✓	✓
Check air cleaner element		✓			
Thoroughly clean machine				✓	
Change the hydraulic oil					✓

## **SECTION 3 SERVICE**

### **Filter Replacement**



**AIR CLEANER PAPER ELEMENT  
PART #: 24-083-03-S**



**ENGINE OIL FILTER  
PART #: 52 050 02-S**



**ENGINE FUEL FILTER  
PART #: 25 050 42 S**

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 seizure 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	

## SECTION 4 PARTS

### Factory Service Information

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.

The FRONT and/or REAR orientations are defined from the operator’s view of sitting on machine (SOM).



#### ! 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 drive line couplings, and moving components. 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:

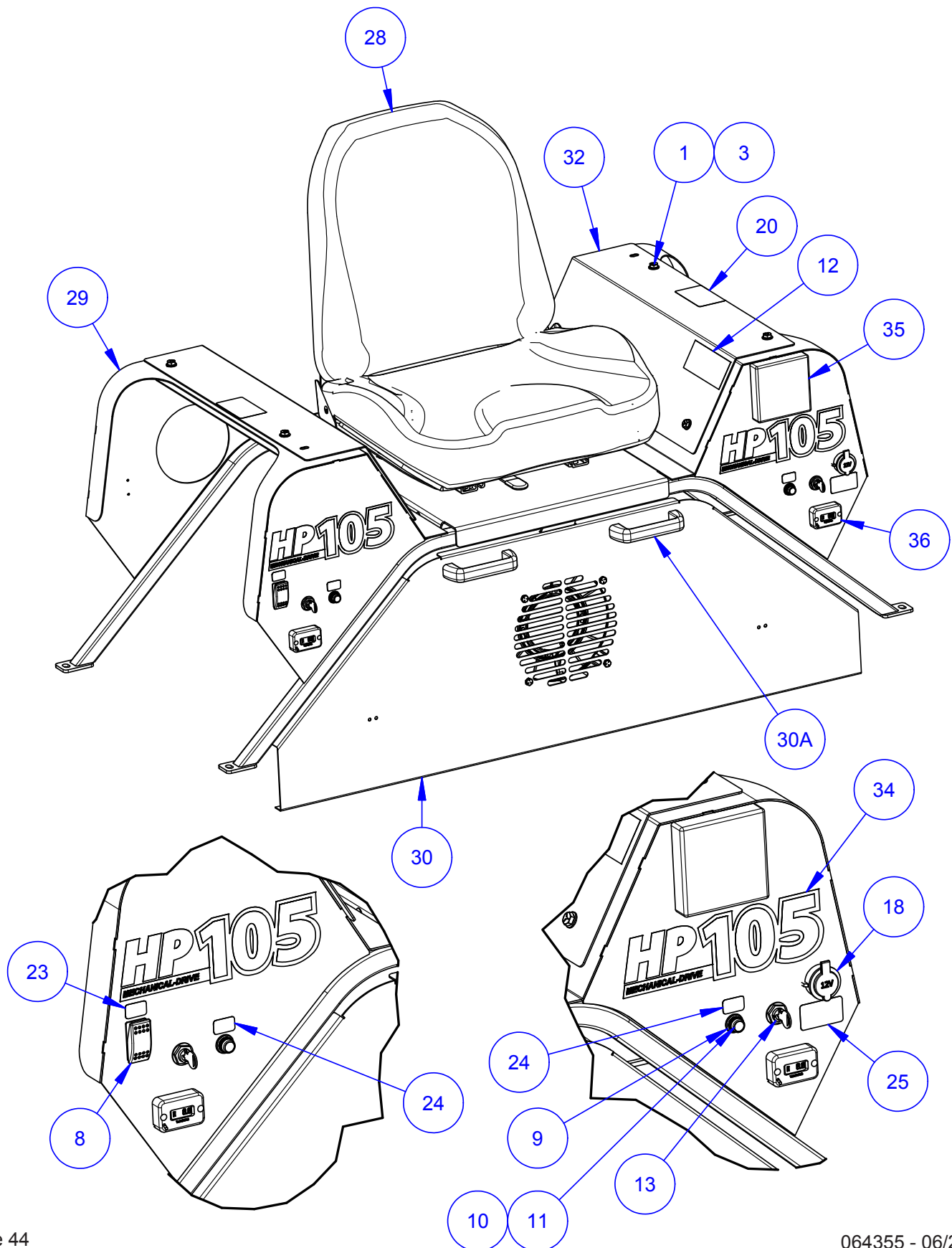
1. All orders for service parts - include the serial number for the machine. Shipment will be delayed if this information is not available.
2. Include correct description and part number from the "PARTS" Section 4.
3. Specify exact shipping instructions, including the preferred routing and complete destination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



*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

### Seat Frame Assembly Illustration



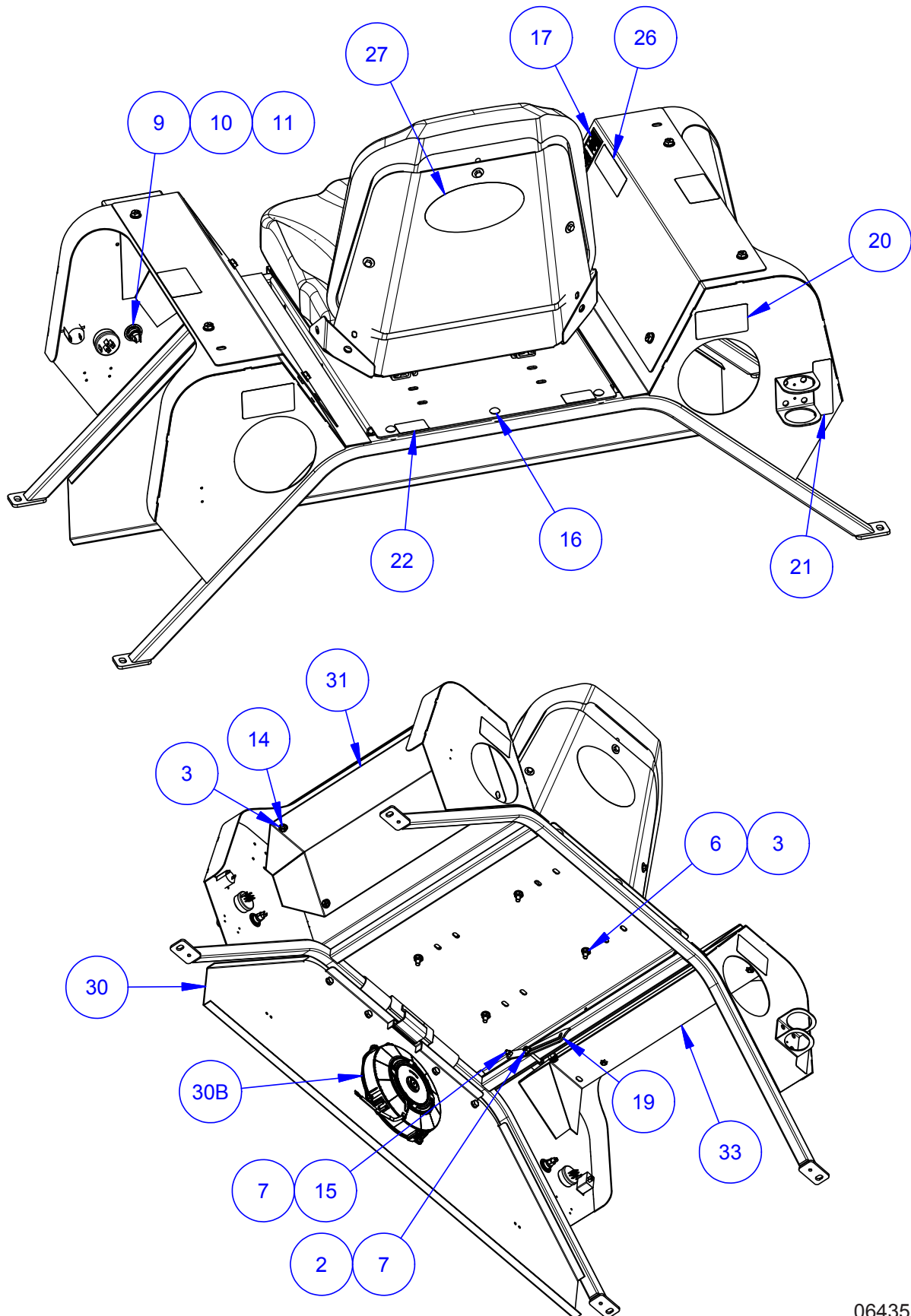
# Seat Frame Assembly Parts List

## SECTION 4 PARTS

ITEM	PART NO.	DESCRIPTION	QTY
1	010021	FSTN, HHCS 5/16-18 X 1-1/4 GR5	8
2	010081	FSTN, FW 1/4	1
3	010082	FSTN, FW 5/16	20
4	010100	FSTN, NUT HEX 5/16-18	8
5	010102	FSTN, NUT HEX 3/8-16	8
6	012612	FSTN, NUT HEX NYLOCK 5/16-18	4
7	029671	FSTN, NUT HEX 1/4-20 NYLOC	2
8	032125	SWITCH, ROCKER #91B2184	1
9	034610	SOCKET, T-2 SLIDE BASE LAMP	2
10	034611	LAMP, T-2 SLIDE BASE #5	2
11	034614	LENS, T-2 LAMP RED JEWEL	2
12	039048	DECAL, GEN PROTECTION WARNING	1
13	039750	KEY SWITCH KOHLER ENGINE	2
14	040004	FSTN, 5/16-18 GR-C STOVER HEX NUT	8
15	042343	FSTN, SFBHCS 1/4"-20 x 3/4	1
16	047665	RUBBER BUMPER	3
17	048181	DECAL, CALIFORNIA PRPSTN 65	1
18	049588	FEMALE RECEPTICAL 12VDC	1
19	053211	PROP F/ SEAT FRAME	1
20	053444	DECAL, HOT W/ HAND	4
21	053447	DECAL, HAND TOOL AREA (SP)	1
22	053449	DECAL, PINCH HAZARD (SP)	2
23	053450	DECAL, LIGHTS (SP)	1
24	053451	DECAL, OIL (SP)	2
25	053452	DECAL, 12V ACCESSORY (SP)	1
26	053453	DECAL, SPARK WARNING (SP)	1
27	056340	DECAL ALLEN OVAL 4" X 6.67" WHITE	1
28	061372	SEAT, RIDER	1
29	063923	SEAT FRAME WMNT	1
30	063932	FRONT SCREEN ASSEMBLY	1
30A	048678	HANDLE, LOAD RATED NYLON	REPL
30B	064725	FAN, SPAL VA14-AP11C/C-34A	REPL
31	063938	HEAT SHIELD, LH	1
32	064201	HEAT SHIELD	2
33	064288	HEAT SHIELD, RH	1
34	064356	Decal, HP105 9-1/2 x 3	2
35	064371	HOLDER, HP105 CUP	1
36	064386	METER, TACH/HOUR INDUCTIVE, F/EFI	2

## SECTION 4 PARTS

### Seat Frame Assembly (cont'd) Illustration





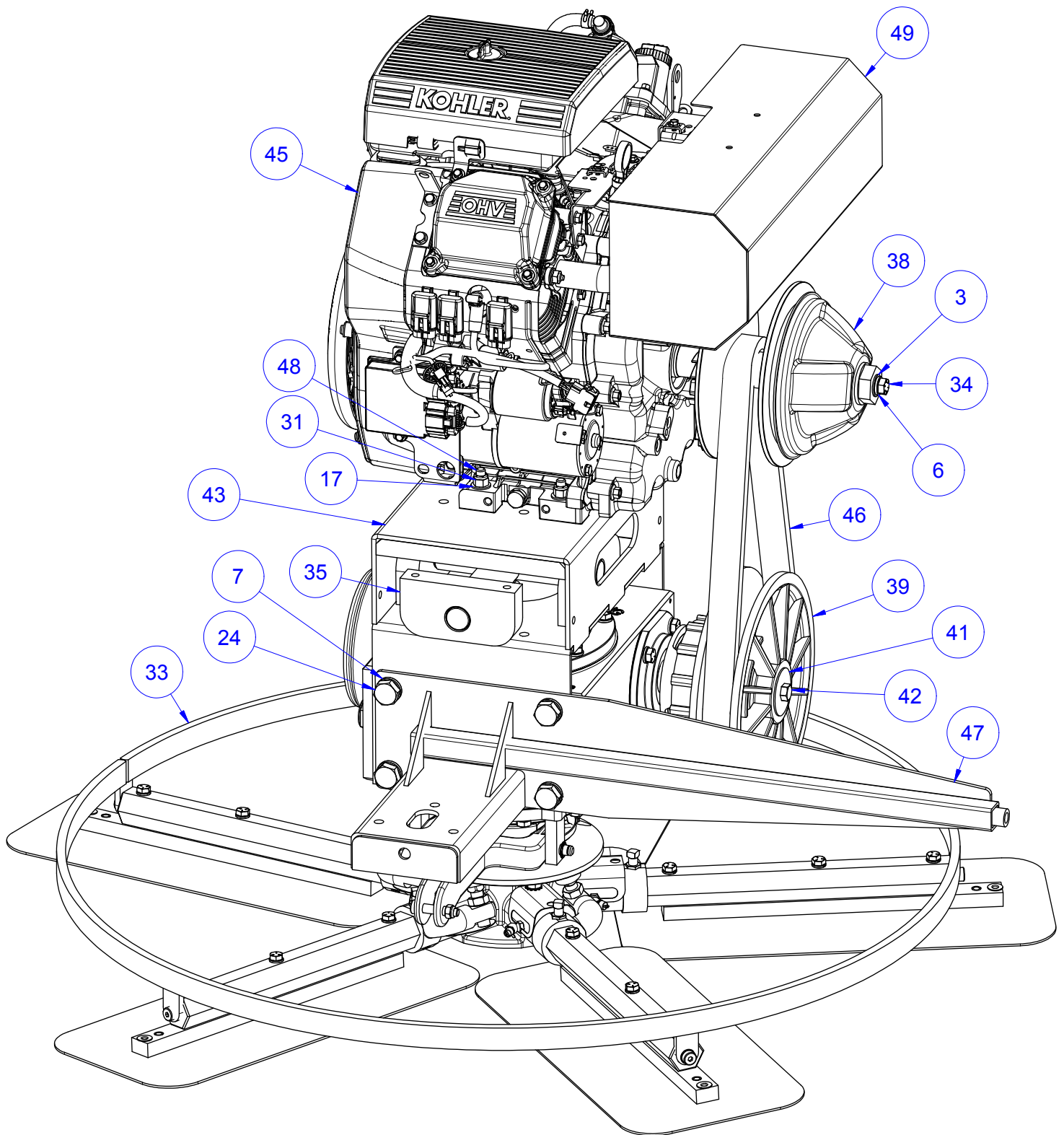
## Seat Frame Assembly (cont'd) Parts List

## SECTION 4 PARTS

ITEM	PART NO.	DESCRIPTION	QTY
1	010021	FSTN, HHCS 5/16-18 X 1-1/4 GR5	8
2	010081	FSTN, FW 1/4	1
3	010082	FSTN, FW 5/16	20
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5	010102	FSTN, NUT HEX 3/8-16	8
6	012612	FSTN, NUT HEX NYLOCK 5/16-18	4
7	029671	FSTN, NUT HEX 1/4-20 NYLOC	2
8	032125	SWITCH, ROCKER #91B2184	1
9	034610	SOCKET, T-2 SLIDE BASE LAMP	2
10	034611	LAMP, T-2 SLIDE BASE #5	2
11	034614	LENS, T-2 LAMP RED JEWEL	2
12	039048	DECAL, GEN PROTECTION WARNING	1
13	039750	KEY SWITCH KOHLER ENGINE	2
14	040004	FSTN, 5/16-18 GR-C STOVER HEX NUT	8
15	042343	FSTN, SFBHCS 1/4"-20 x 3/4	1
16	047665	RUBBER BUMPER	3
17	048181	DECAL, CALIFORNIA PRPSTN 65	1
18	049588	FEMALE RECEPTICAL 12VDC	1
19	053211	PROP F/ SEAT FRAME	1
20	053444	DECAL, HOT W/ HAND	4
21	053447	DECAL, HAND TOOL AREA (SP)	1
22	053449	DECAL, PINCH HAZARD (SP)	2
23	053450	DECAL, LIGHTS (SP)	1
24	053451	DECAL, OIL (SP)	2
25	053452	DECAL, 12V ACCESSORY (SP)	1
26	053453	DECAL, SPARK WARNING (SP)	1
27	056340	DECAL ALLEN OVAL 4" X 6.67" WHITE	1
28	061372	SEAT, RIDER	1
29	063923	SEAT FRAME WMNT	1
30	063932	FRONT SCREEN ASSEMBLY	1
30A	048678	HANDLE, LOAD RATED NYLON	REPL
30B	064725	FAN, SPAL VA14-AP11C/C-34A	REPL
31	063938	HEAT SHIELD, LH	1
32	064201	HEAT SHIELD	2
33	064288	HEAT SHIELD, RH	1
34	064356	Decal, HP105 9-1/2 x 3	2
35	064371	HOLDER, HP105 CUP	1
36	064386	METER, TACH/HOUR INDUCTIVE, F/EFI	2

## SECTION 4 PARTS

### RH Rotor Module Assembly Illustration



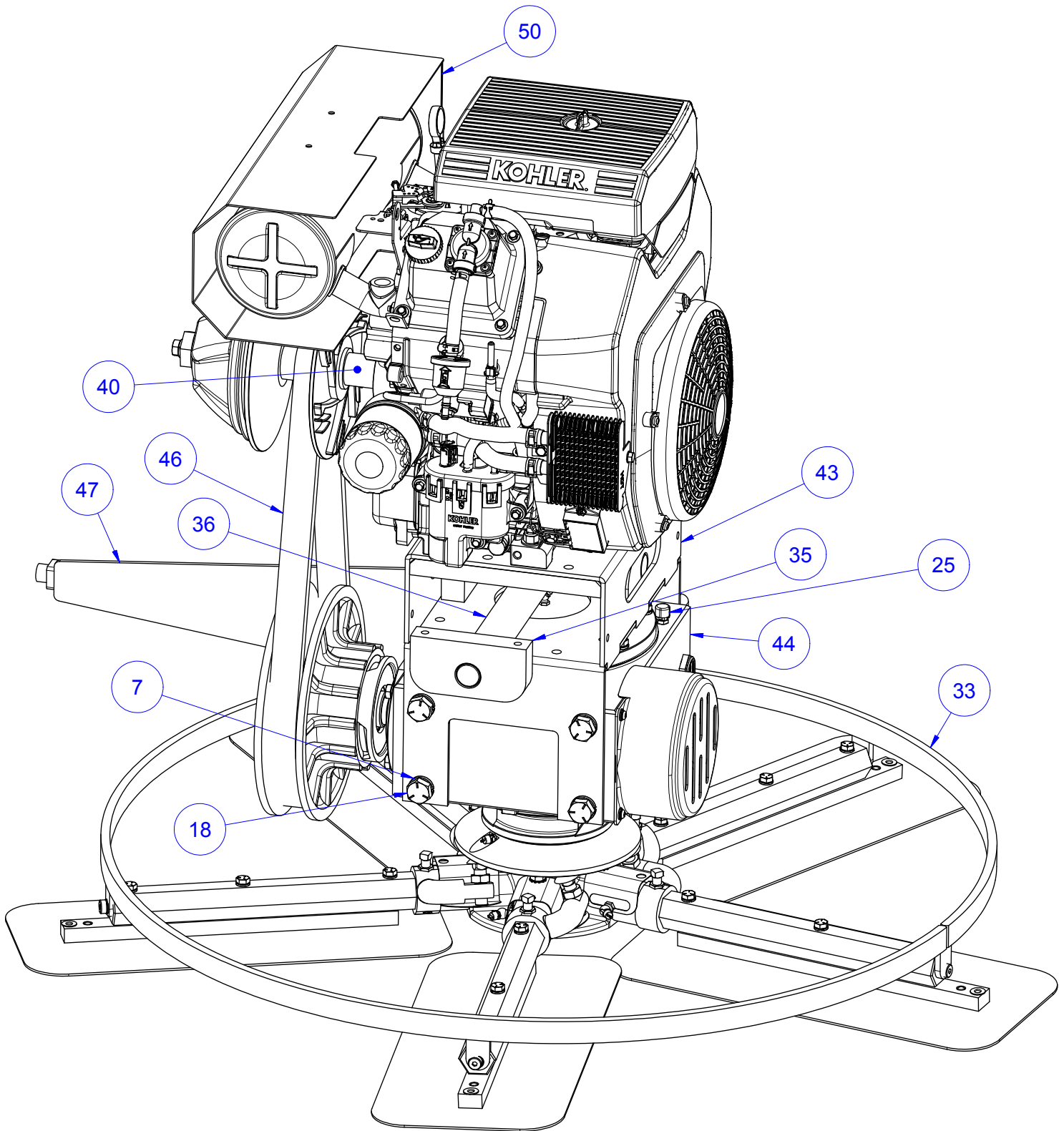
# RH Rotor Module Assembly Parts List

## SECTION 4 PARTS

ITEM	PART NO.	DESCRIPTION	QTY
1	010024	FSTN, HHCS 5/16-18 X 2 GR 5	15
2	010036	FSTN, HHCS 3/8-16 X 1	4
3	010084	FSTN, FW 7/16	1
4	010090	FSTN, LW 5/16	15
5	010091	FSTN, LW 3/8	4
6	010092	FSTN, LW 7/16	1
7	010095	FSTN, LW 5/8	8
8	010513	FITTING, 1/4-28 STR GREASE	1
9	012612	FSTN, NUT HEX NYLOCK 5/16-18	1
10	015677	RING, Ø7/16 E-STYLE RETAINING	2
11	015678	PIN, YOKE ARM	1
12	015691	FSTN, SHCS 1/2-13 X 1-1/2 RH	1
13	015692	CAP, Ø1/4 RED GREASE	7
14	015693	PLUG, PLASTIC CAP EC12	1
15	015694	PLUG W-1 RED PLASTIC TAPERD	5
16	015696	KEY, .25x1.25 LG HARD RAD	1
17	017751	FSTN, FW HARD A325 3/8 (p)	4
18	020915	SCR, 5/16-11x1-1/2 HHC	4
19	024820	STOCK, 1/4 SQx4 LG KEY	1
20	025091	FSTN, 3/8 SHOULDER BOLTx1/2 LONG	5
21	025092	BUSHING, 3/8x1/2x5/16 BRONZE	5
22	026215	YOKE, ARM	1
23	026504	SCR, 5/16-18x1/2xØ3/8x1-1/4 SHLDR	1
24	029311	FSTN, HHCS 5/8-11 X 1 3/4 GR 8 YELLOW ZINC	4
25	029529	VALVE, RELIEF 1/8-27NPT (AIR V)	1
26	037532	BLADE, 8x18 FLAT FINISH GOLD	5
27	037652	WASHER, HD RETAINING	1
28	039685	BEARING, THRUST AXIAL BALL EW	1
29	039686	CAP, SHD PRESSURE PLATE	1
30	039687	PLATE, SHD PRESSURE	1
31	040630	3/8-16 GR8 360 LOCKNUT	4
32	040794	ASSY, 1200-5-SHD LH SOM SPIDER	1
33	040833	RING, 1200VG SD 5 BL STAB	1
34	042280	SCR, 7/16-20x4-1/2 YZ GR 8 HHC	1
35	048561	BEARING ASSEMBLY F/ ROTOR MOUNT X1	4
36	048964	CROSSHEAD, 4-WAY	1

## SECTION 4 PARTS

### RH Rotor Module Assembly (cont'd) Illustration



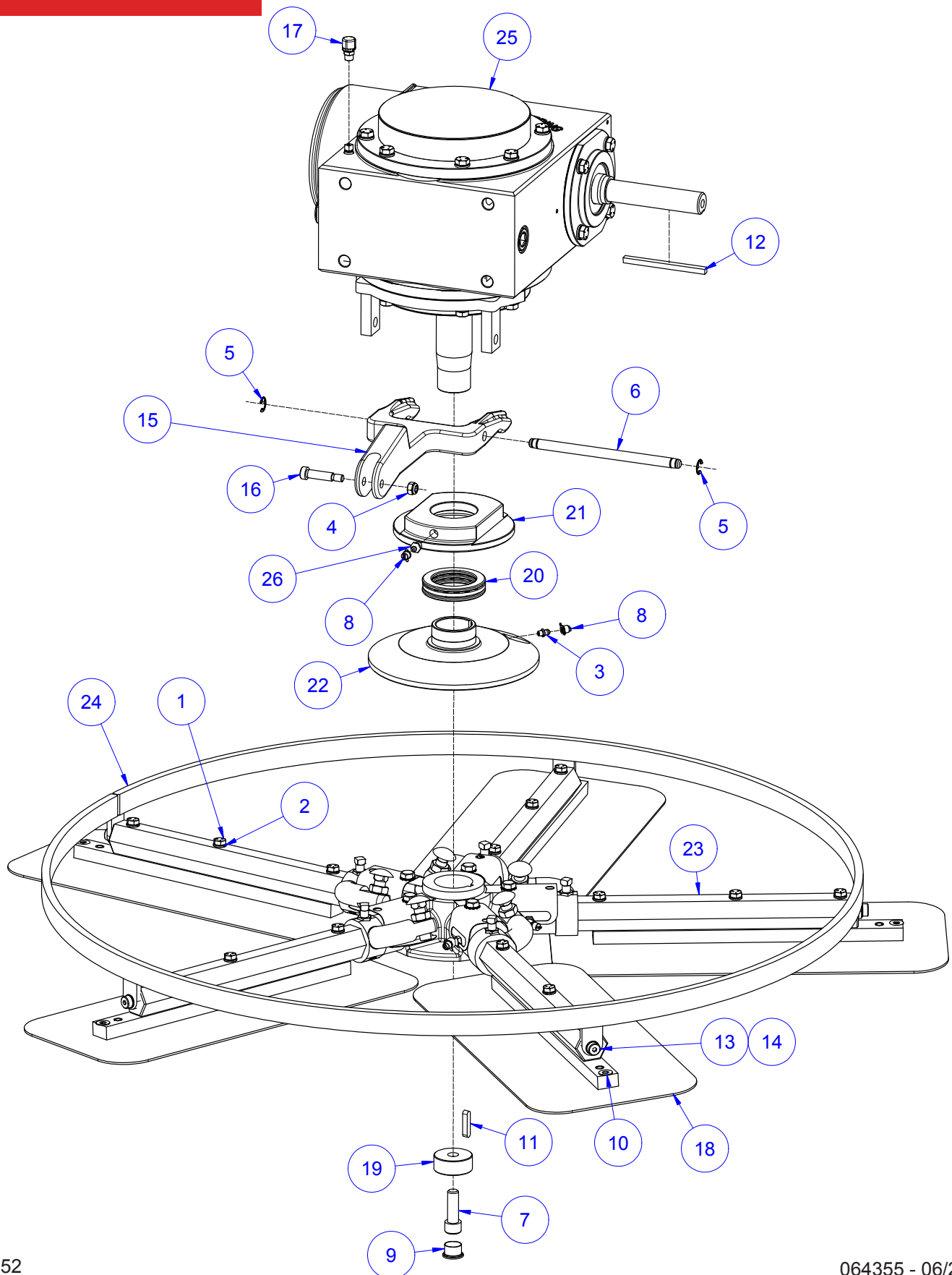
## RH Rotor Module Assembly (cont'd) Parts List

## SECTION 4 PARTS

ITEM	PART NO.	DESCRIPTION	QTY
37	053223	KEY, 3/16 X 1/4 X 2	1
38	053327	PULLEY, MSP445 20:1 DRIVER	1
39	053389	PULLEY, MSP445, MP215	1
40	055616	SPACER F/ CLUTCH, MSP445	1
41	060865	WASHER, LARGE OD	1
42	060870	HHCS, 7/16-20 X 3/4	1
43	063912-A	GEARBOX BRKT WMNT	1
44	063914	GEARBOX, 20:1 RATIO RH	1
45	063927	ENGINE, KOHLER 26.5 EFI	1
46	063930	BELT, CVT	1
47	063949	STEERING ARM WMNT, RH	1
48	064239	ENGINE BOLT WMNT	2
49	064389	HEAT SHIELD WMNT	1
50	064394	HEAT SHIELD INSULATION	1
51	201163	FITTING, 1/8-27 PTF STR GREASE	1

## SECTION 4 PARTS

### RH Rotor Assembly Illustration



## RH Rotor Assembly Parts List

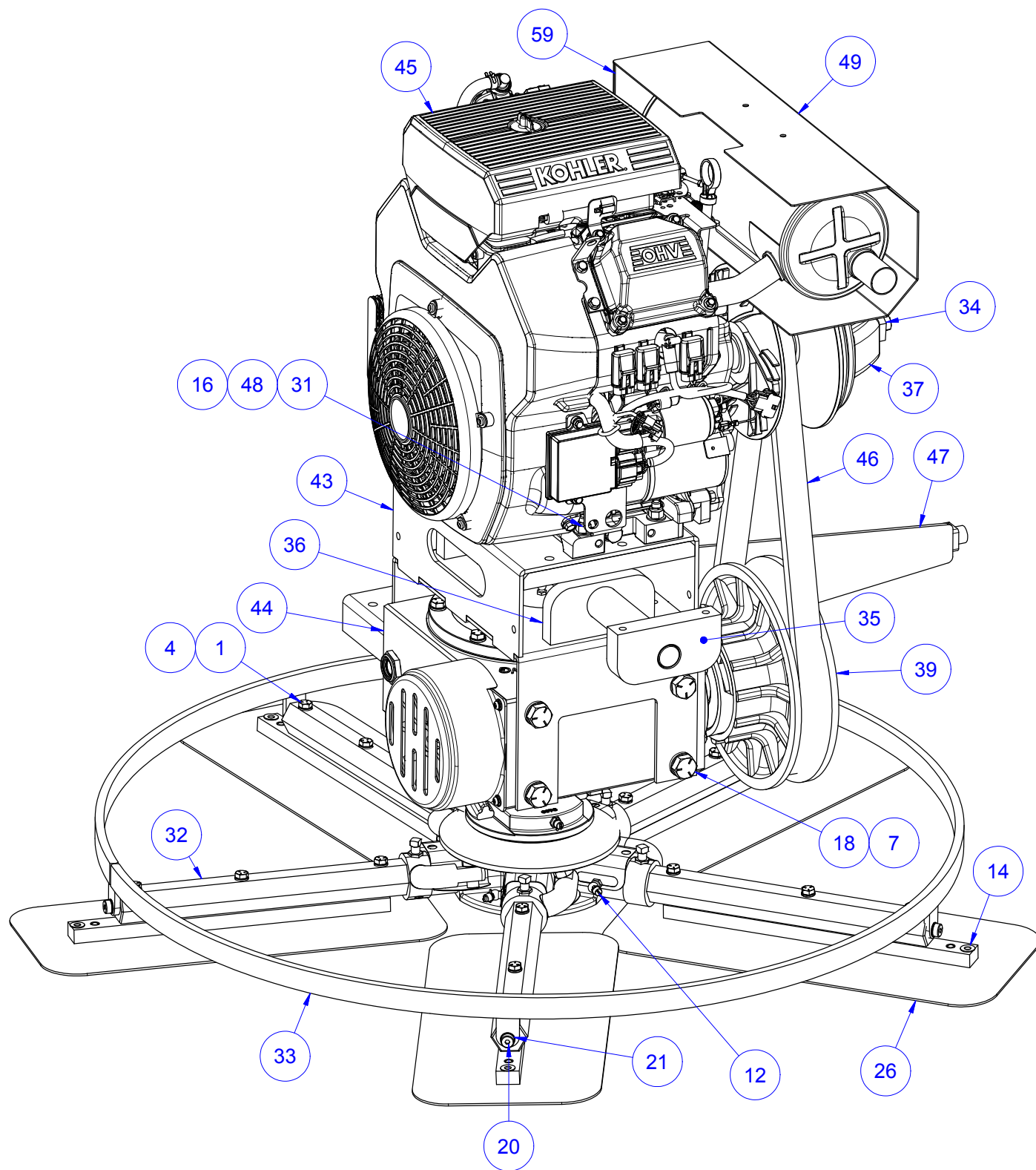
## SECTION 4 PARTS

ITEM	PART NO.	DESCRIPTION	QTY
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2	010090	FSTN, LW 5/16	15
3	010513	FITTING, 1/4-28 STR GREASE	1
4	012612	FSTN, NUT HEX NYLOCK 5/16-18	1
5	015677	RING, Ø7/16 E-STYLE RETAINING	2
6	015678	PIN, YOKE ARM	1
7	015691	FSTN, SHCS 1/2-13 X 1-1/2 RH	1
8	015692	CAP, Ø1/4 RED GREASE	6
9	015693	PLUG, PLASTIC CAP EC12	1
10	015694	PLUG W-1 RED PLASTIC TAPERD	5
11	015696	KEY, .25x1.25 LG HARD RAD	1
12	024820	STOCK, 1/4 SQx4 LG KEY	1
13	025091	FSTN, 3/8 SHOULDER BOLTx1/2 LONG	5
14	025092	BUSHING, 3/8x1/2x5/16 BRONZE	5
15	026215	YOKE, ARM	1
16	026504	SCR, 5/16-18x1/2xØ3/8x1-1/4 SHLDR	1
17	029529	VALVE, RELIEF 1/8-27NPT (AIR V)	1
18	037532	BLADE, 8x18 FLAT FINISH GOLD	5
19	037652	WASHER, HD RETAINING	1
20	039685	BEARING, THRUST AXIAL BALL EW	1
21	039686	CAP, SHD PRESSURE PLATE	1
22	039687	PLATE, SHD PRESSURE	1
23	040795	ASSY, 1200-5-SHD RH SOM SPIDER	1
24	040833	RING, 1200VG SD 5 BL STAB	1
25	063914	GEARBOX, 20:1 RATIO RH	1
26	201163	FITTING, 1/8-27 PTF STR GREASE	1



## SECTION 4 PARTS

## LH Rotor Module Assembly Illustration





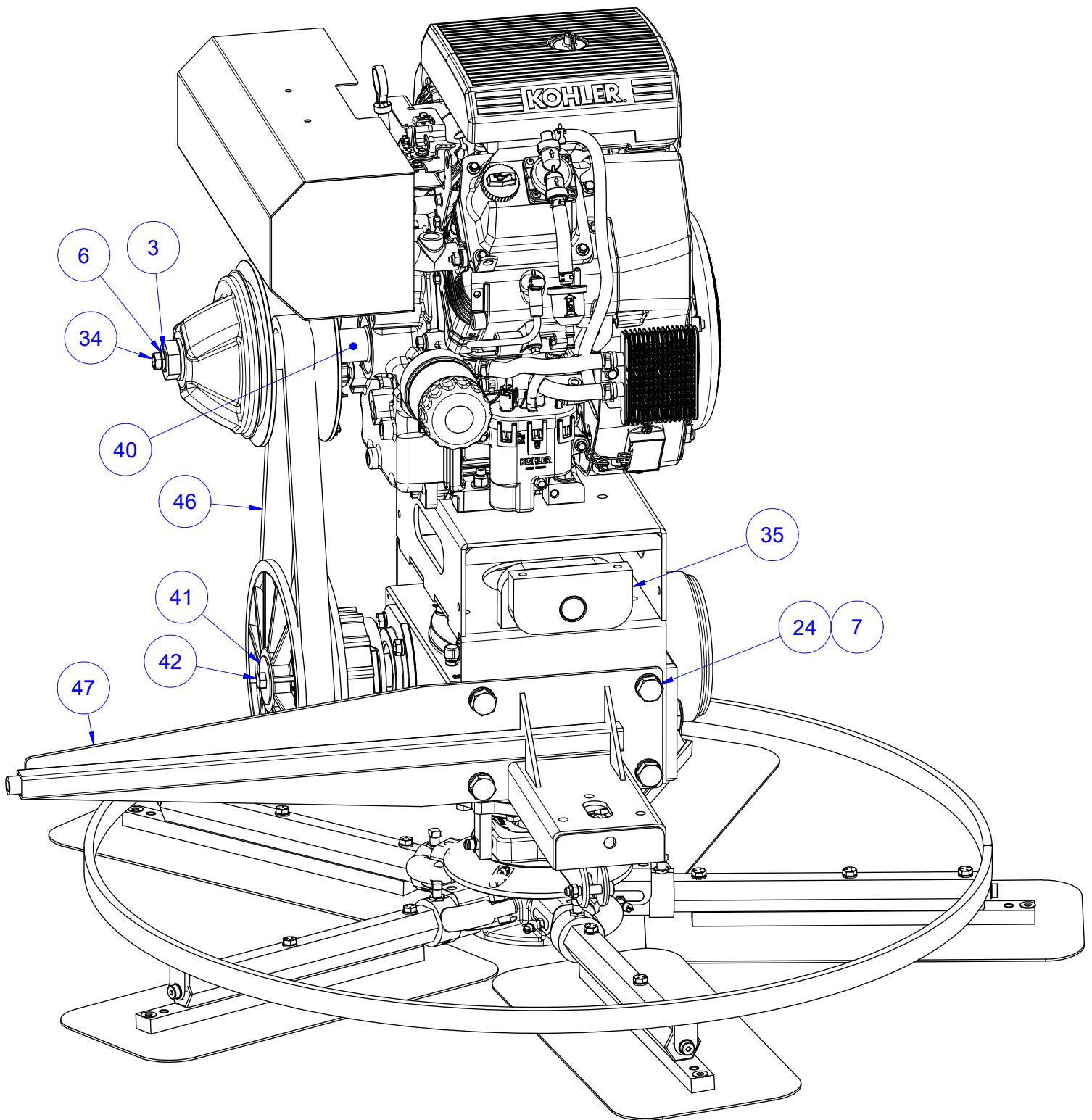
# LH Rotor Module Assembly Parts List

## SECTION 4 PARTS

ITEM	PART NO.	DESCRIPTION	QTY
1	010024	FSTN, HHCS 5/16-18 X 2 GR 5	15
2	010036	FSTN, HHCS 3/8-16 X 1	4
3	010084	FSTN, FW 7/16	1
4	010090	FSTN, LW 5/16	15
5	010091	FSTN, LW 3/8	4
6	010092	FSTN, LW 7/16	1
7	010095	FSTN, LW 5/8	8
8	010513	FITTING, 1/4-28 STR GREASE	1
9	012612	FSTN, NUT HEX NYLOCK 5/16-18	1
10	015677	RING, Ø7/16 E-STYLE RETAINING	2
11	015678	PIN, YOKE ARM	1
12	015692	CAP, Ø1/4 RED GREASE	7
13	015693	PLUG, PLASTIC CAP EC12	1
14	015694	PLUG W-1 RED PLASTIC TAPERD	5
15	015696	KEY, .25x1.25 LG HARD RAD	1
16	017751	FSTN, FW HARD A325 3/8 (p)	4
17	020155	SCR, 1/2-13 X 1-1/2 LH SHCS	1
18	020915	SCR, 5/16-11x1-1/2 HHC	4
19	024820	STOCK, 1/4 SQx4 LG KEY	1
20	025091	FSTN, 3/8 SHOULDER BOLTx1/2 LONG	5
21	025092	BUSHING, 3/8x1/2x5/16 BRONZE	5
22	026215	YOKE, ARM	1
23	026504	SCR, 5/16-18x1/2xØ3/8x1-1/4 SHLDR	1
24	029311	FSTN, HHCS 5/8-11 X 1 3/4 GR 8 YELLOW ZINC	4
25	029529	VALVE, RELIEF 1/8-27NPT (AIR V)	1
26	037532	BLADE, 8x18 FLAT FINISH GOLD	5
27	037652	WASHER, HD RETAINING	1
28	039685	BEARING, THRUST AXIAL BALL EW	1
29	039686	CAP, SHD PRESSURE PLATE	1
30	039687	PLATE, SHD PRESSURE	1
31	040630	3/8-16 GR8 360 LOCKNUT	4
32	040794	ASSY, 1200-5-SHD LH SOM SPIDER	1
33	040833	RING, 1200VG SD 5 BL STAB	1
34	042280	SCR, 7/16-20x4-1/2 YZ GR 8 HHC	1
35	048561	BEARING ASSEMBLY F/ ROTOR MOUNT X1	2
36	048966	CROSSHEAD, 2-WAY	1
37	053327	PULLEY, MSP445 20:1 DRIVER	1

## SECTION 4 PARTS

### LH Rotor Module Assembly (cont'd) Illustration



# LH Rotor Module Assembly (cont'd) Parts List

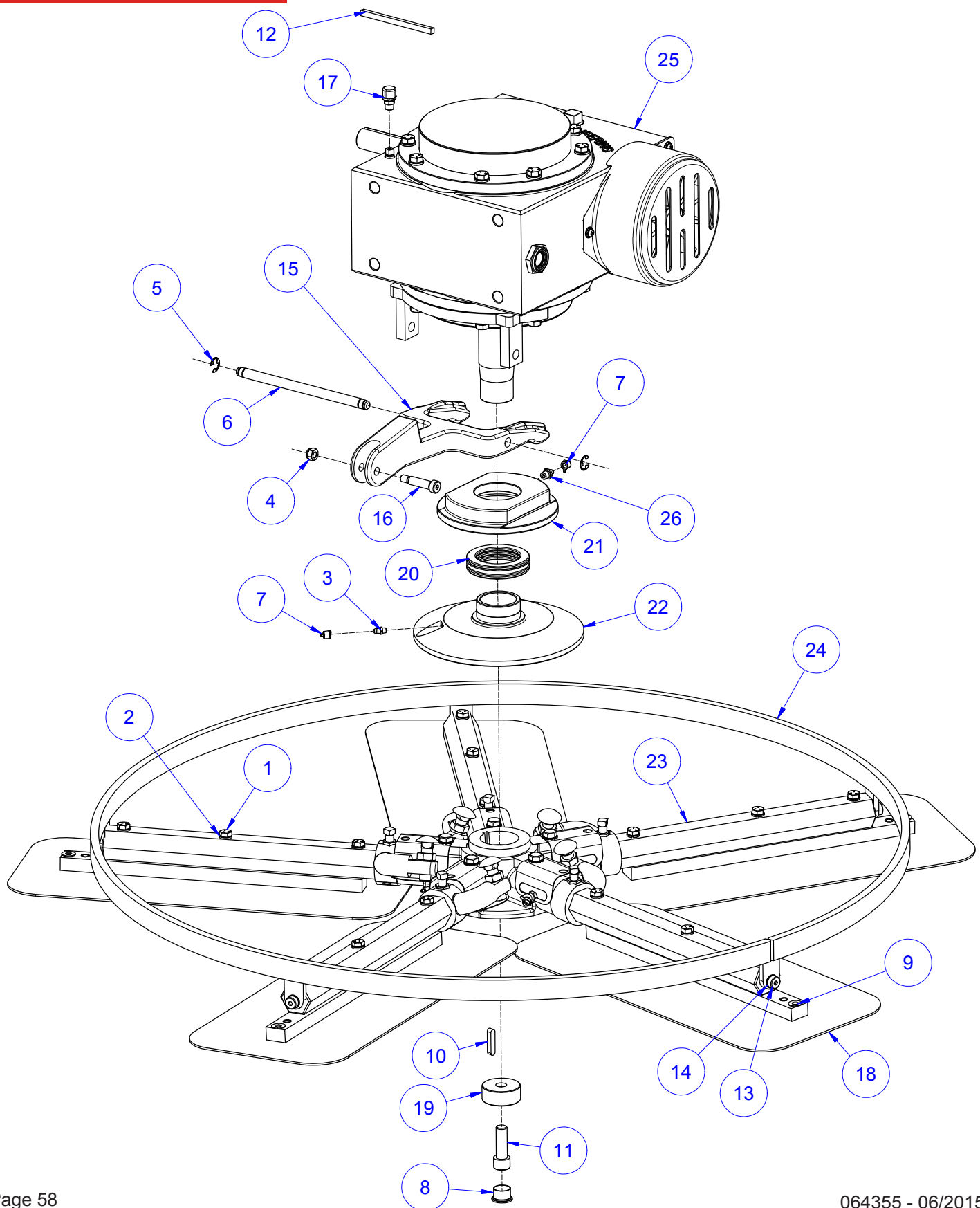
## SECTION 4 PARTS

ITEM	PART NO.	DESCRIPTION	QTY
38	053223	KEY, 3/16 X 1/4 X 2	1
39	053389	PULLEY, MSP445, MP215	1
40	055616	SPACER F/ CLUTCH, MSP445	1
41	060865	WASHER, LARGE OD	1
42	060870	HHCS, 7/16-20 X 3/4	1
43	063912	GEARBOX BRKT WMNT	1
44	063916	GEARBOX, 20:1 RATIO LH	1
45	063927	ENGINE, KOHLER 26.5 EFI	1
46	063930	BELT, CVT	1
47	064210	STEERING ARM WMNT, LH	1
48	064239	ENGINE BOLT WMNT	2
49	064389	HEAT SHIELD WMNT	1
50	201163	FITTING, 1/8-27 PTF STR GREASE	1
59	064394	HEAT SHIELD INSULATION	1



## SECTION 4 PARTS

## LH Rotor Assembly Illustration



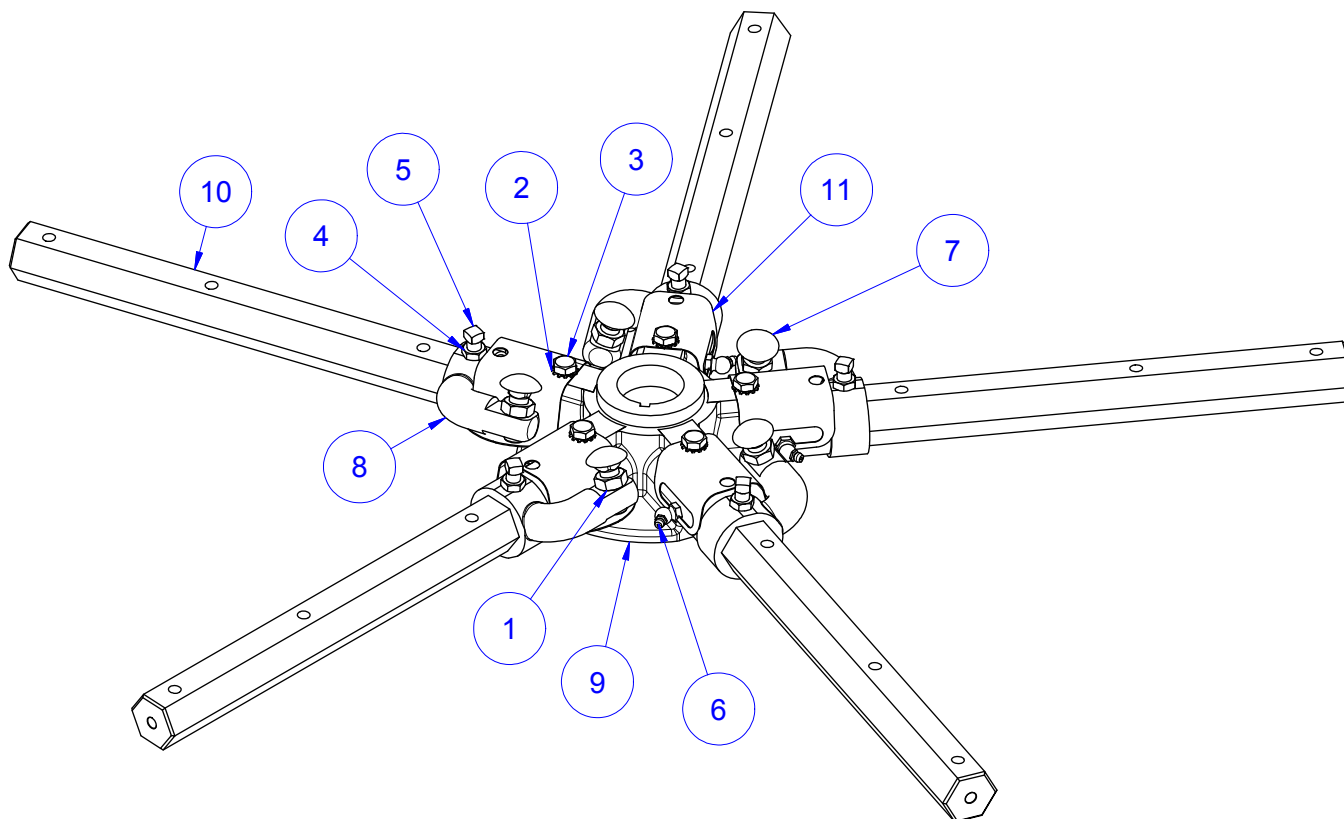
# LH Rotor Assembly Parts List

## SECTION 4 PARTS

ITEM	PART NO.	DESCRIPTION	QTY
1	010024	FSTN, HHCS 5/16-18 X 2 GR 5	15
2	010090	FSTN, LW 5/16	15
3	010513	FITTING, 1/4-28 STR GREASE	1
4	012612	FSTN, NUT HEX NYLOCK 5/16-18	1
5	015677	RING, Ø7/16 E-STYLE RETAINING	2
6	015678	PIN, YOKE ARM	1
7	015692	CAP, Ø1/4 RED GREASE	7
8	015693	PLUG, PLASTIC CAP EC12	1
9	015694	PLUG W-1 RED PLASTIC TAPERD	5
10	015696	KEY, .25x1.25 LG HARD RAD	1
11	020155	SCR, 1/2-13 X 1-1/2 LH SHCS	1
12	024820	STOCK, 1/4 SQx4 LG KEY	1
13	025091	FSTN, 3/8 SHOULDER BOLTx1/2 LONG	5
14	025092	BUSHING, 3/8x1/2x5/16 BRONZE	5
15	026215	YOKE, ARM	1
16	026504	SCR, 5/16-18x1/2xØ3/8x1-1/4 SHLDR	1
17	029529	VALVE, RELIEF 1/8-27NPT (AIR V)	1
18	037532	BLADE, 8x18 FLAT FINISH GOLD	5
19	037652	WASHER, HD RETAINING	1
20	039685	BEARING, THRUST AXIAL BALL EW	1
21	039686	CAP, SHD PRESSURE PLATE	1
22	039687	PLATE, SHD PRESSURE	1
23	040794	ASSY, 1200-5-SHD LH SOM SPIDER	1
24	040833	RING, 1200VG SD 5 BL STAB	1
25	063916	GEARBOX, 20:1 RATIO LH	1
26	201163	FITTING, 1/8-27 PTF STR GREASE	1

## SECTION 4 PARTS

### RH Spider Assembly - 040794 Illustration and Parts List



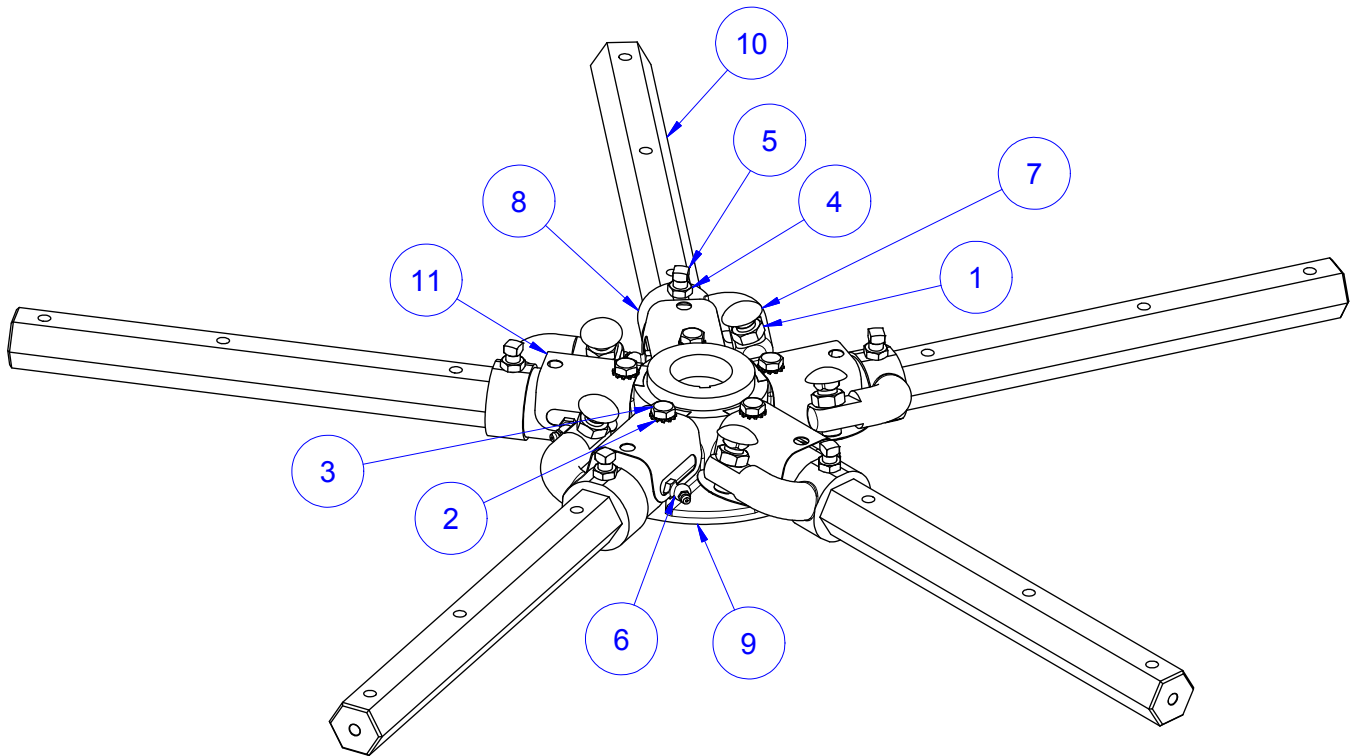
ITEM	PART NO.	DESCRIPTION	QTY
1	010050	FSTN, NUT HEX JAM 1/2-13	5
2	015682	WASHER, 3/8 EXT TOOTH LOCK	5
3	015683	BOLT, 3/8-16 X 7/8 DOG PT HEX HD CAP	5
4	015684	NUT, 3/8-16 JAM HEX	5
5	015686	FSTN, SQHSS 3/8-16 X 1	5
6	024755	FITTING, 1/8-27 NPT 45° GREASE	5
7	028216	BOLT, 1/2-13 X 1 1/2 GR 8 CARRIAGE	5
8	033034	LEVER, LIFT SD UNIVERSAL	5
9	040698	SPIDER RH 5 BOSS CW ROT 46-48	1
10	040700	ARM, 5 BOSS SPIDER ASSY TROWEL	5
11	040792	CLIP, 46-48 UNIV SPIDER SPRING	5

# LH Spider Assembly - 040795

## Illustration and Parts List

## SECTION 4

## PARTS

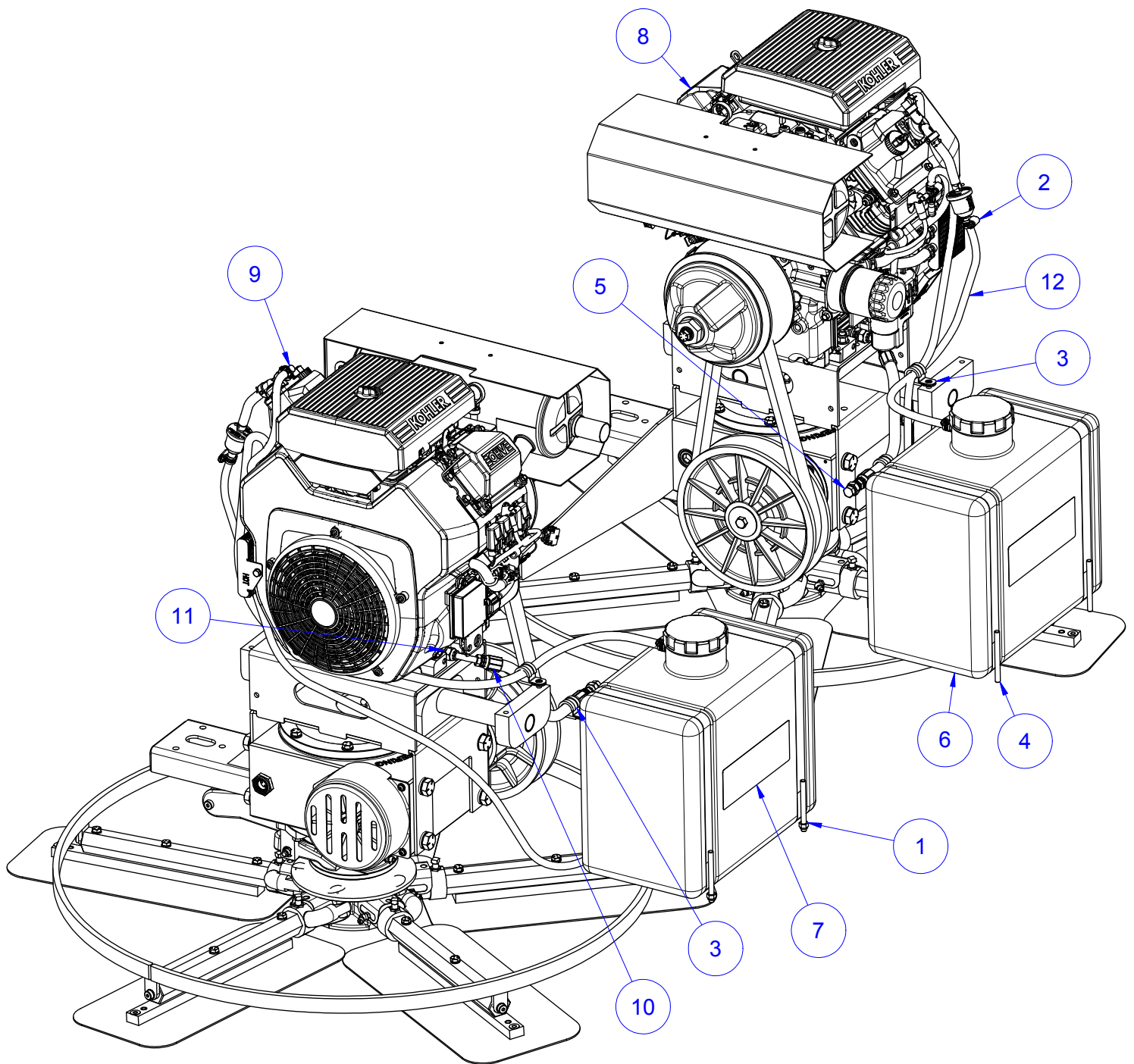


ITEM	PART NO.	DESCRIPTION	QTY
1	010050	FSTN, NUT HEX JAM 1/2-13	5
2	015682	WASHER, 3/8 EXT TOOTH LOCK	5
3	015683	BOLT, 3/8-16 X 7/8 DOG PT HEX HD CAP	5
4	015684	NUT, 3/8-16 JAM HEX	5
5	015686	FSTN, SQHSS 3/8-16 X 1	5
6	024755	FITTING, 1/8-27 NPT 45° GREASE	5
7	028216	BOLT, 1/2-13 X 1 1/2 GR 8 CARRIAGE	5
8	033034	LEVER, LIFT SD UNIVERSAL	5
9	040699	SPIDER, LH 5 BOSS CCW ROT	1
10	040700	ARM, 5 BOSS SPIDER ASSY TROWEL	5
11	040792	CLIP, 46-48 UNIV SPIDER SPRING	5



## SECTION 4 PARTS

## Fuel System Assembly Illustration





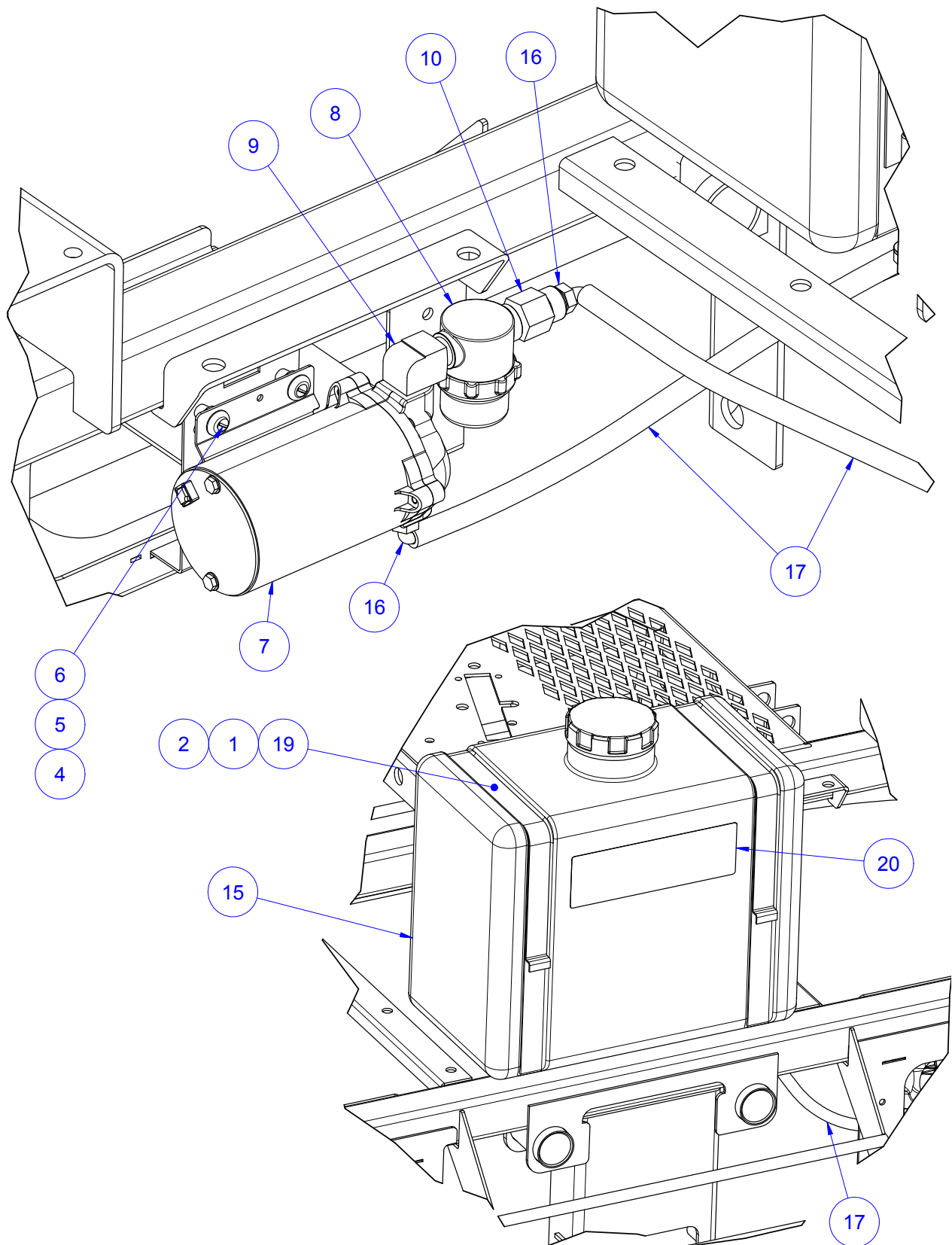
## Fuel System Assembly Parts List

## SECTION 4 PARTS

ITEM	PART NO.	DESCRIPTION	QTY
1	010109	FSTN, NUT HEX NYLON 5/16-18	2
2	019430	FSTN, CLAMP SIZE 4 MINI	8
3	020604	CLIP, SAE 14-.406 INSUL LOOP	4
4	048921	STRAP, TANK MSP425	4
5	049164	PLUG, F2408-6-O JIC	2
6	053200	TANK ASSY, 6 GAL FUEL W/ CAP (EPA)	2
7	053443	DECAL, GASOLINE ONLY (SP)	2
8	063913	MODULE, 20:1 RH ROTOR ASSY	1
9	063926	MODULE, 20:1 LH ROTOR ASSY	1
10	064383	HOSE, OIL DRAIN F/ HP105	2
11	042821	FITTING, #JICMX3/8MPT STGT. FLARE-O	2
12	019429	HOSE, 5/16" FUEL LINE	1.5
13	065172	FUEL PUMP, FACET 40178 (NOT SHOWN)	1

## SECTION 4 PARTS

## Spray System Assembly Illustration



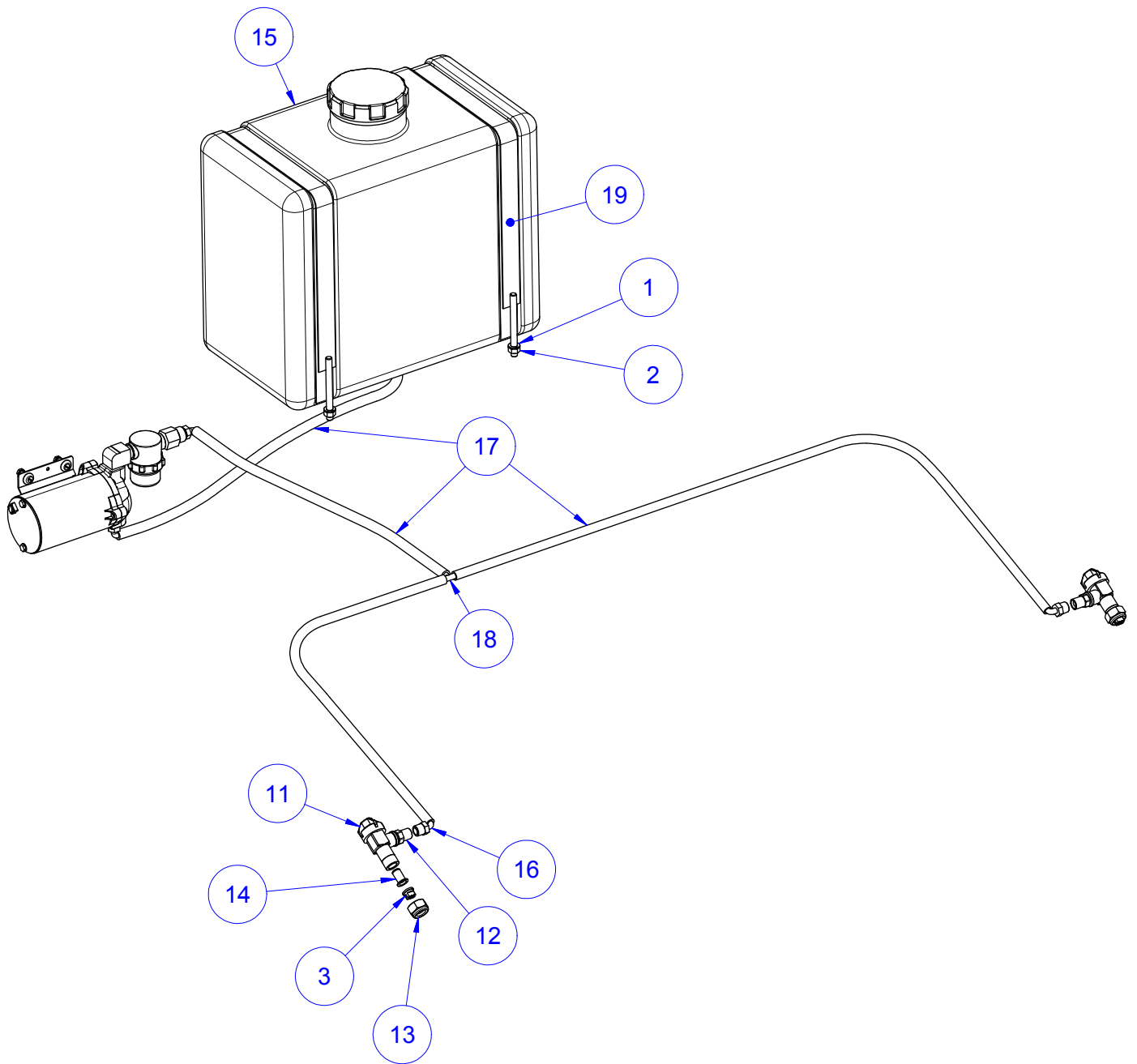
# Spray System Assembly Parts List

## SECTION 4 PARTS

ITEM	PART NO.	DESCRIPTION	QTY
1	010090	WASHER, 5/16 SPLIT LOCK	2
2	010100	FSTN, NUT HEX 5/16-18	2
3	012702	TIP, 80°x0.10 GPM BRASS SPRAY	2
4	013371	NUT, 8-32 STL Z-PLT MCH HEX	4
5	013704	FSTN, LW EXT STAR 8-32	4
6	018624	FSTN, RHMS SLT 8-32 X 1	4
7	033735	PUMP, SPRAY SYSTEM	1
8	040209	FILTER, RETARDANT SPRAY SYSTEM	1
9	040387	ELBOW, 3/8 BRASS 90° STREET	1
10	040388	FTG, 3/8X1/4 BRASS FM TO FM REDUCER	1
11	041604	VALVE, CHECK BODY	2
12	041606	PLASTIC 1/4 NPT CLOSE NIPPLE	2
13	041624	RETAINER, NYLON SPRAY TIP	2
14	047579	STRAINER, POLY 100 µ MESH	2
15	047700	TANK, 6 GALLON WATER PLASTIC	1
16	047933	ELBOW, 1/4 PUSHLOK x 1/4 NPT PLASTIC	4
17	048246	HOSE, 3/8" WATER LINE	7.75 FT
18	048652	TEE, PLASTIC 1/4 x 1/4 x 1/4	1
19	048921	STRAP, TANK MSP425	2
20	053445	DECAL, RETARDANT ONLY (SP)	1
21	063920	MAIN FRAME	1

## SECTION 4 PARTS

### Spray System Assembly (cont'd) Illustration



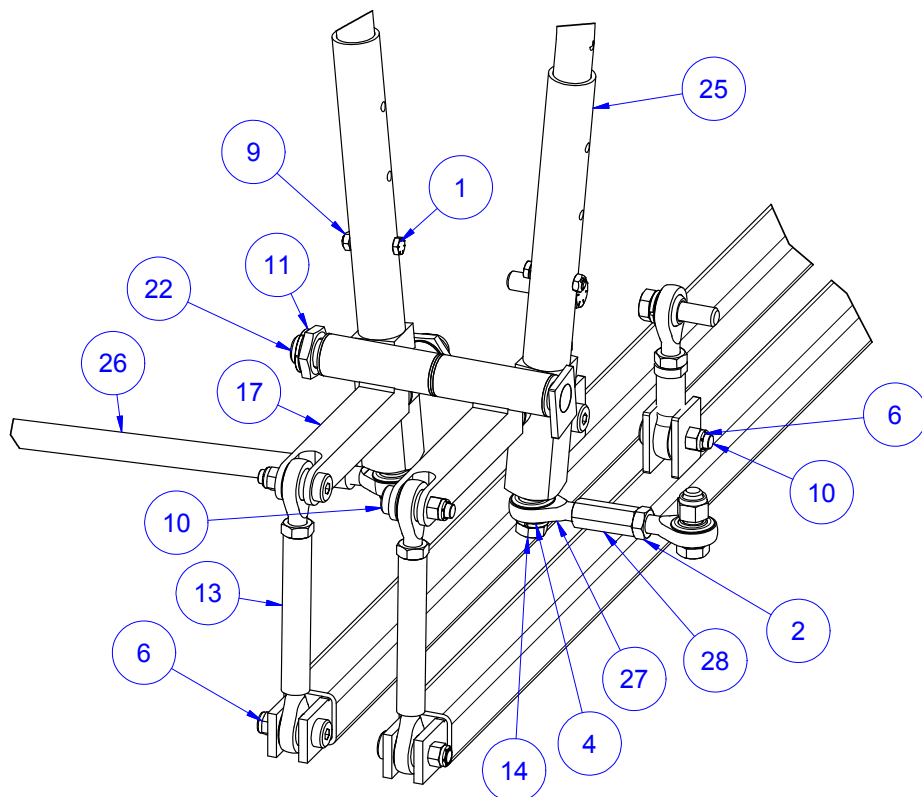
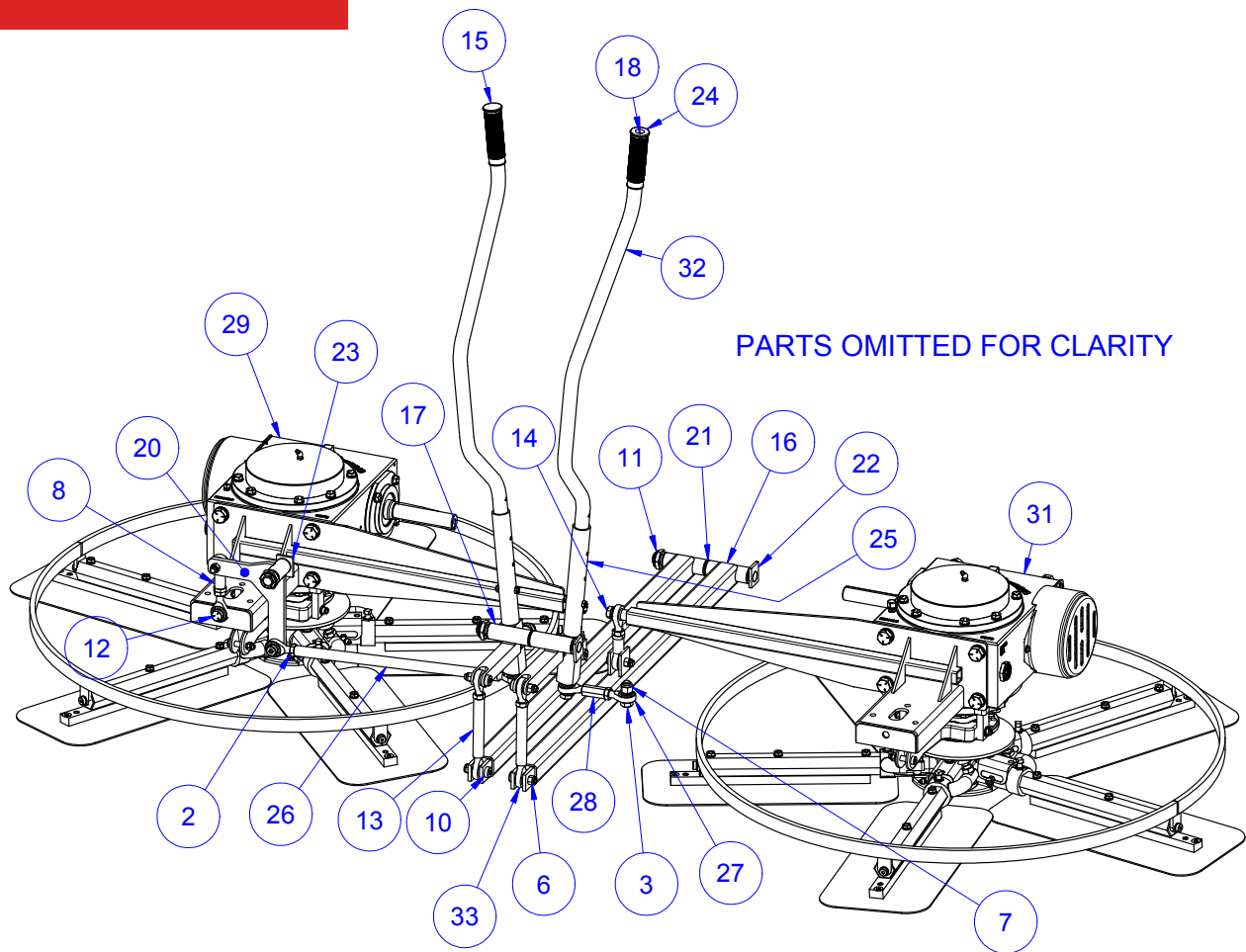
## Spray System Assembly (cont'd) Parts List

## SECTION 4 PARTS

ITEM	PART NO.	DESCRIPTION	QTY
1	010090	WASHER, 5/16 SPLIT LOCK	2
2	010100	FSTN, NUT HEX 5/16-18	2
3	012702	TIP, 80°x0.10 GPM BRASS SPRAY	2
4	013371	NUT, 8-32 STL Z-PLT MCH HEX	4
5	013704	FSTN, LW EXT STAR 8-32	4
6	018624	FSTN, RHMS SLT 8-32 X 1	4
7	033735	PUMP, SPRAY SYSTEM	1
8	040209	FILTER, RETARDANT SPRAY SYSTEM	1
9	040387	ELBOW, 3/8 BRASS 90° STREET	1
10	040388	FTG, 3/8X1/4 BRASS FM TO FM REDUCER	1
11	041604	VALVE, CHECK BODY	2
12	041606	PLASTIC 1/4 NPT CLOSE NIPPLE	2
13	041624	RETAINER, NYLON SPRAY TIP	2
14	047579	STRAINER, POLY 100 µ MESH	2
15	047700	TANK, 6 GALLON WATER PLASTIC	1
16	047933	ELBOW, 1/4 PUSHLOK x 1/4 NPT PLASTIC	4
17	048246	HOSE, 3/8" WATER LINE	7.75 FT
18	048652	TEE, PLASTIC 1/4 x 1/4 x 1/4	1
19	048921	STRAP, TANK MSP425	2
20	053445	DECAL, RETARDANT ONLY (SP)	1
21	063920	MAIN FRAME	1

## SECTION 4 PARTS

## Steering System Assembly Illustration



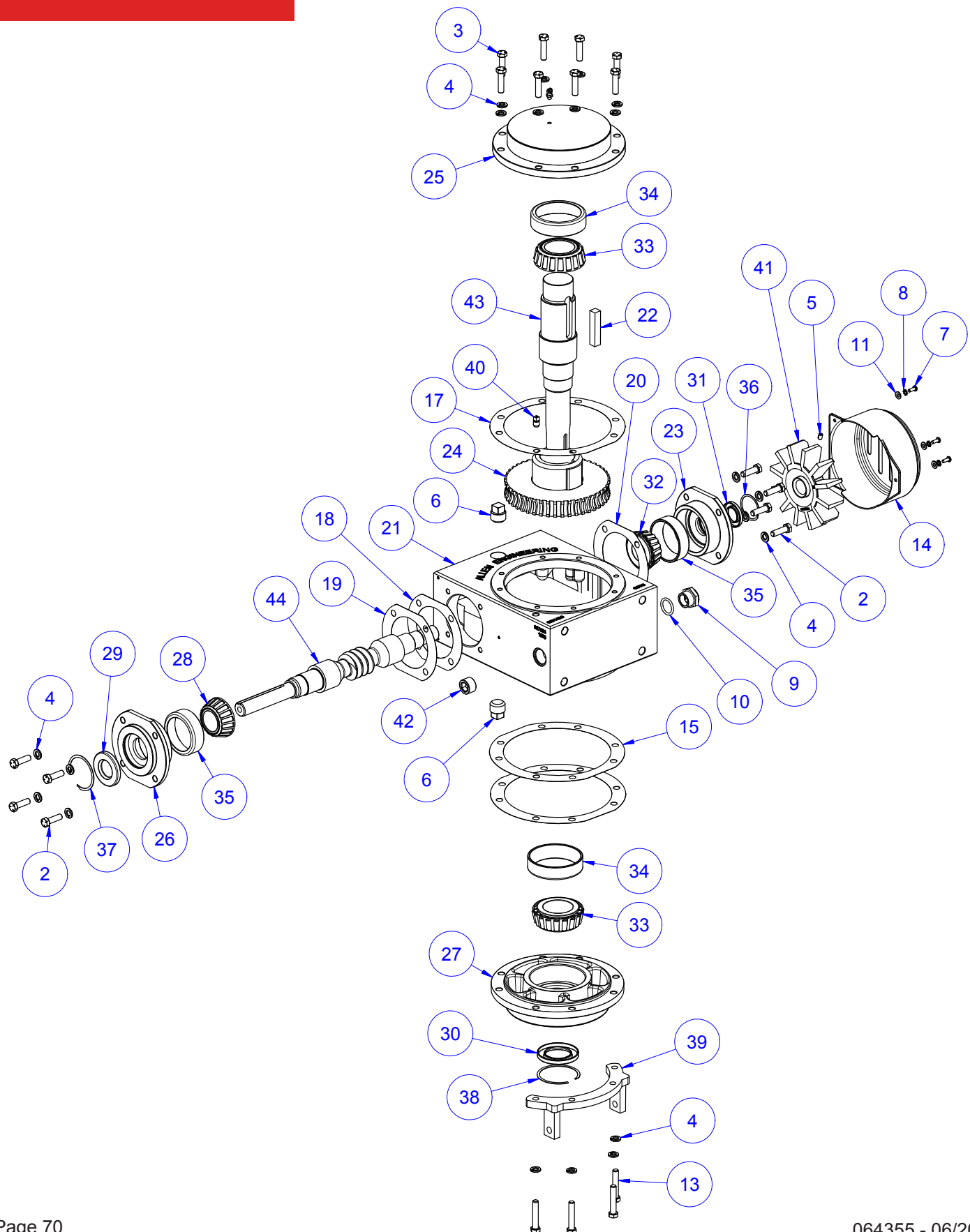
# Steering System Assembly Parts List

## SECTION 4 PARTS

ITEM	PART NO.	DESCRIPTION	QTY
1	010005	BOLT, 1/4-20x1-1/2 GR 8 HHC	2
2	010051	FSTN, NUT HEX JAM 1/2-20 FINE GR8	7
3	010069	FSTN, HHCS 1/2-13 X 1-1/2	1
4	010093	FSTN, LW 1/2 GR8	4
5	010107	NUT, 1/2-20 GR 5 HEX	1
6	010464	FSTN, NUT NYLOK 3/8-16	8
7	011238	FSTN, NUT HEX NYLOK 1/2-13	1
8	019900	ROD, 1/2 FEMALE END	3
9	020542	FSTN, NUT STOVER LOCK 1/4-20	2
10	026267	BOLT, 3/8-16xØ1/2x1 LG SHOULDER	8
11	026447	NUT, 3/4-10 SELFLOCK THIN HEX	5
12	037140	BOLT, 1/2-20x1-1/2 GR 5 HHC	1
13	046701	ARM, STEERING 4-1/2	2
14	046864	SCR, 1/2-20X1-3/4 YZ HEXHD CAP	4
15	048354	GRIP, SAT 3 Ø1 BLACK HANDLE	1
16	048869	ARM, LOWER CONTROL	2
17	048894	CONTROL, RIGHT HORIZONTAL	2
18	048909	SWITCH, PUSH BUTTON	1
19	048910	BRG, Ø5/8 NYL FLNG SLEEVE	1
20	048925	FULCRUM, L/R STEERING	1
21	048929	BEARING, Ø3/4 ID PLASTIC FLANGE	14
22	048969	SHAFT, STEERING	2
23	048970	SHAFT, FULCRUM	1
24	049245	GRIP, MODIFIED HANDLE	1
25	060881	STEERING SOCKET WMNT	2
26	060882	SHAFT, 18" LONG STEERING LINKAGE	1
27	060921	HOUSING, 1/2 MALE ROD END	2
28	060922	COUPLER NUT, 1/2-20 X 1 3/4	1
29	063913	MODULE, 20:1 RH ROTOR ASSY	1
30	063920	MAIN FRAME	1
31	063926	MODULE, 20:1 LH ROTOR ASSY	1
32	064245	HANDLE, STEERING	2
33	221408	ROD, END MALE 1/2"	7

## SECTION 4 PARTS

## LH Gearbox Assembly Illustration





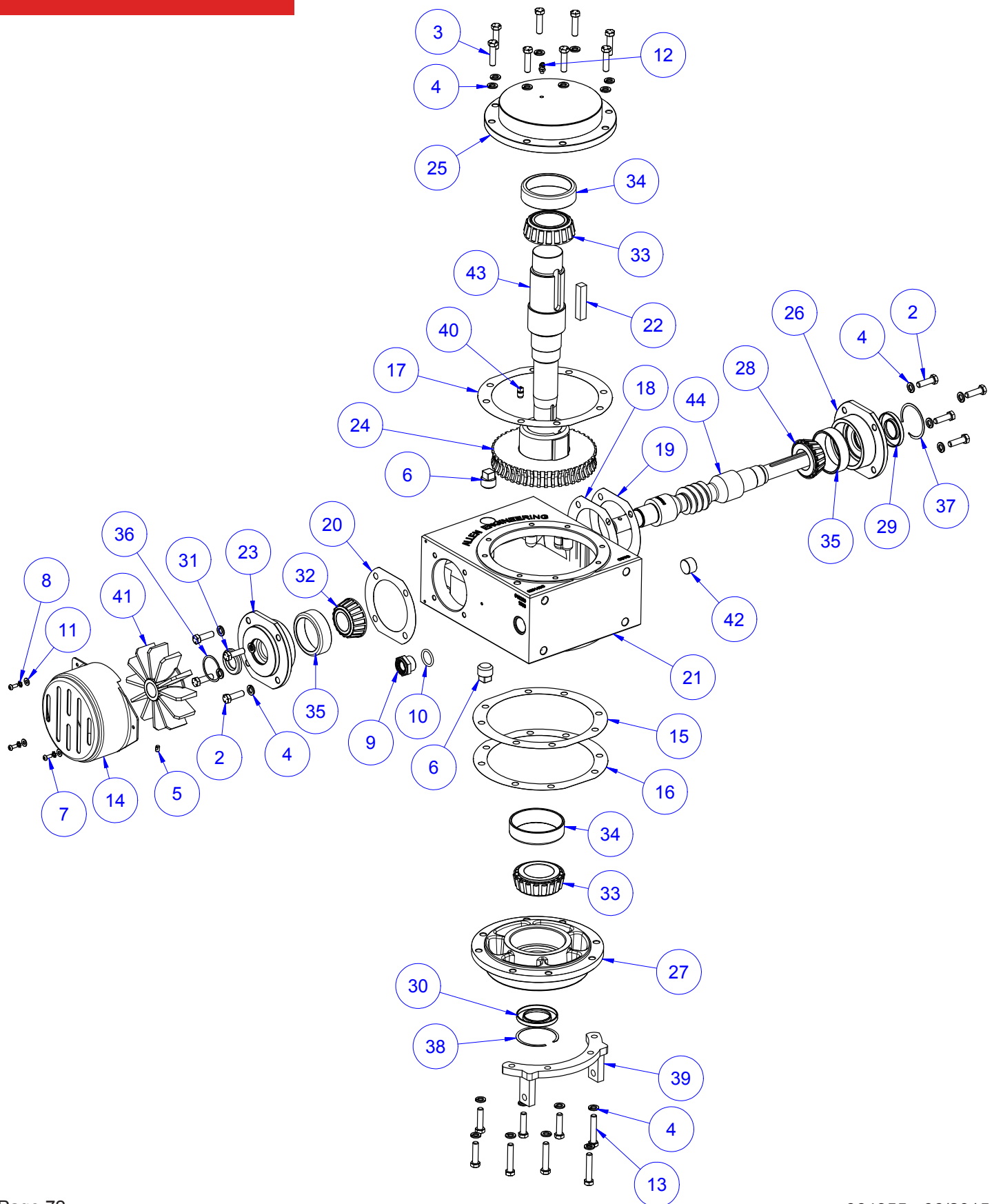
# LH Gearbox Assembly Parts List

## SECTION 4 PARTS

ITEM	PART NO.	DESCRIPTION	QTY
-	063916	GEARBOX, 20:1 RATIO LH	-
1	048299	OIL, GEARBOX	2.84 L
2	010037	FSTN, HHCS 3/8-16 X 1-1/4 GR 5	8
3	010038	BOLT, 3/8-16x1-1/2 GR 5 HHCS	8
4	010091	WSHR, Ø3/8 ID Z-STL SPLIT LOCK	20
5	012869	SCR, 1/4-20x3/8 BO SKT SET	1
6	012953	PLUG, 3/4 NPTF BI SQ HD PIPE	2
7	013484	SCR, 10-24x1/2 RDH PPH	3
8	013740	FSTN, LW STAR #10	3
9	015672	GAUGE, 3/4-14 NPT PORTHOLE VIEW	1
10	015673	O-RING, 15/16x1-3/16x1/8 BUNA	1
11	018072	WSHR, #10 Z STL SAE FLAT	3
12	018510	FITTING, 1/4-28 NPT 45° GREASE	1
13	026775	SCR, 3/8-16x2 GR 8 HHC	4
14	028703	SHROUD, FAN GEARBOX SHD	1
15	028914-10	SHIM, .010 LGE GEARBOX CVR	1
16	028914-2	SHIM, .002 LGE GEARBOX CVR	1
17	028914-XX	SHIM, (GENERIC) LGE GEARBOX CVR	1
18	028915-10	SHIM, .010 LGE GEARBOX FLANGE	1
19	028915-5	SHIM, .005 LGE GEARBOX FLANGE	1
20	028915-XX	SHIM, (GENERIC) LGE GEARBOX FLG	1
21	029143	CASE, SHD GEARBOX	1
22	029146	KEY, GEARBOX SQ 1/2x2.500	1
23	029147	FLANGE, GEARBOX SHD	1
24	029149	GEAR, 20:1 LH BRONZE	1
25	029150	CAP, SHD GEARBOX LARGE	1
26	029154	CAP, SHD GEARBOX END	1
27	029155	CAP, BOTTOM GEARBOX SHD	1
28	029178	BEARING, Ø1.4375 BORE TAPERED	1
29	029179	SEAL, Ø1.375 RADIAL SHAFT OIL	1
30	029180	SEAL, Ø1.875 RADIAL SHAFT OIL	1
31	029181	SEAL, Ø1.125 RADIAL SHAFT OIL	1
32	029182	BEARING, Ø1.3125 BORE TAPERED	1
33	029183	BEARING, Ø2 BORE TAPERED	2
34	029184	CUP, Ø3-43/64 TPR ROLLER BRG	2
35	029272	CUP, Ø3 TPR ROLLER BRG	2
36	032713	RING, Ø1.827 RETAINING	1
37	032714	RING, Ø2.478 RETAINING	1
38	032715	RING, Ø2.857 RETAINING	1
39	032716	BRACKET, SD GEARBOX	1
40	032745	PLUG, 1/8 NPT RED POLTHN THD	1
41	034541	FAN, SHD GEARBOX	1
42	035327	PLUG, 3/4-14 NPTF HOLLOW HEX	1
43	037650	SHAFT, MAIN RH SHD GEARBOX	1
44	063915	SHAFT, COUNTER RH&LH SHD TWIN ENGINE	1

## SECTION 4 PARTS

## RH Gearbox Assembly Illustration



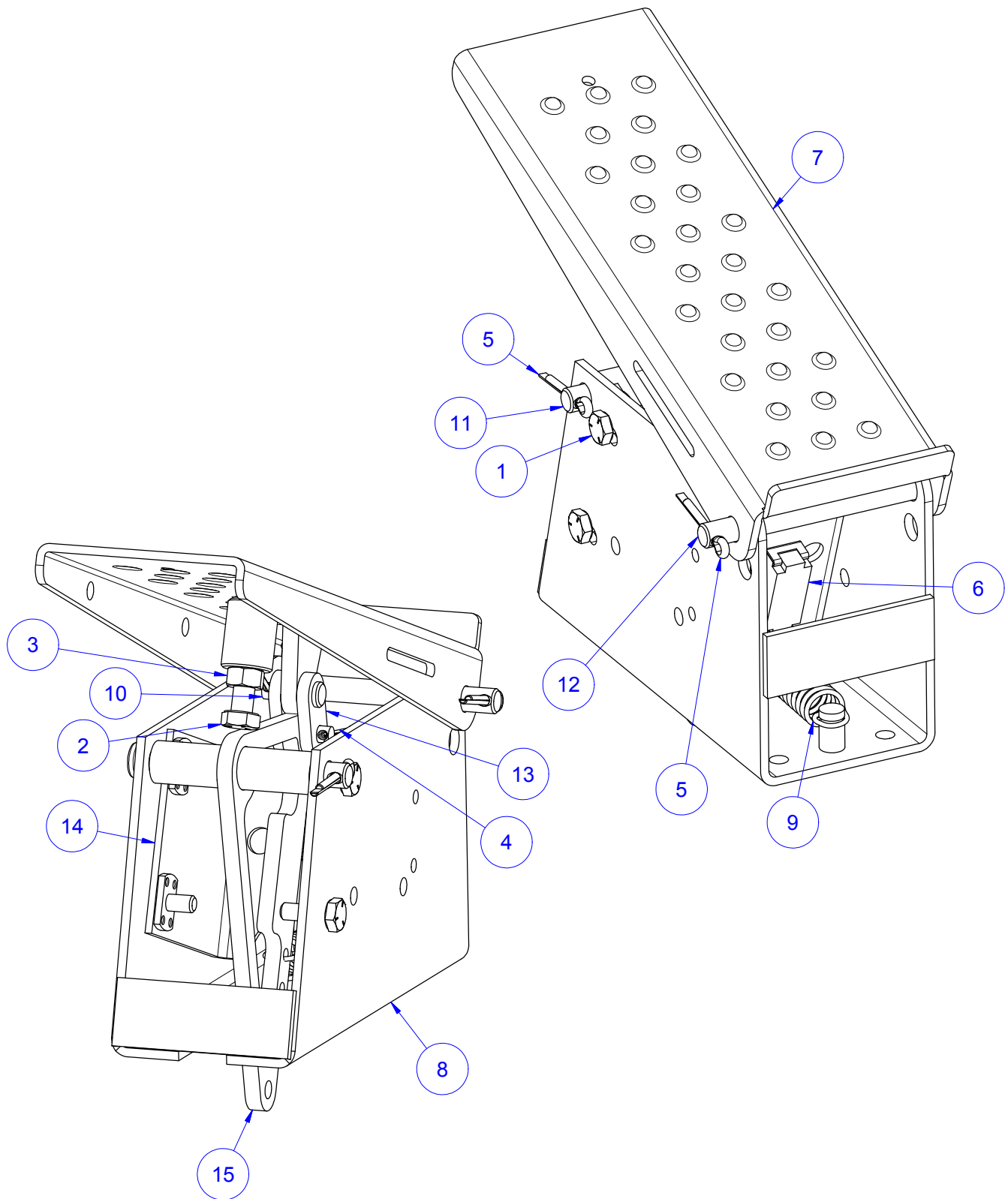
# RH Gearbox Assembly Parts List

## SECTION 4 PARTS

ITEM	PART NO.	DESCRIPTION	QTY
-	063914	GEARBOX ASSEMBLY, RH	-
1	048299	OIL, GEARBOX	2.84 L
2	010037	FSTN, HHCS 3/8-16 X 1-1/4 GR 5	8
3	010038	BOLT, 3/8-16x1-1/2 GR 5 HHCS	12
4	010091	WSHR, Ø3/8 ID Z-STL SPLIT LOCK	24
5	012869	SCR, 1/4-20x3/8 BO SKT SET	1
6	012953	PLUG, 3/4 NPTF BI SQ HD PIPE	2
7	013484	SCR, 10-24x1/2 RDH PPH	3
8	013740	FSTN, LW STAR #10	3
9	015672	GAUGE, 3/4-14 NPT PORTHOLE VIEW	1
10	015673	O-RING, 15/16x1-3/16x1/8 BUNA	1
11	018072	WSHR, #10 Z STL SAE FLAT	3
12	018510	FITTING, 1/4-28 NPT 45° GREASE	1
13	026775	SCR, 3/8-16x2 GR 8 HHC	4
14	028703	SHROUD, FAN GEARBOX SHD	1
15	028914-10	SHIM, .010 LGE GEARBOX CVR	1
16	028914-2	SHIM, .002 LGE GEARBOX CVR	1
17	028914-XX	SHIM, (GENERIC) LGE GEARBOX CVR	1
18	028915-10	SHIM, .010 LGE GEARBOX FLANGE	1
19	028915-5	SHIM, .005 LGE GEARBOX FLANGE	1
20	028915-XX	SHIM, (GENERIC) LGE GEARBOX FLG	1
21	029143	CASE, SHD GEARBOX	1
22	029146	KEY, GEARBOX SQ 1/2x2.500	1
23	029147	FLANGE, GEARBOX SHD	1
24	029148	GEAR, 20:1 LH BRONZE	1
25	029150	CAP, SHD GEARBOX LARGE	1
26	029154	CAP, SHD GEARBOX END	1
27	029155	CAP, BOTTOM GEARBOX SHD	1
28	029178	BEARING, Ø1.4375 BORE TAPERED	1
29	029179	SEAL, Ø1.375 RADIAL SHAFT OIL	1
30	029180	SEAL, Ø1.875 RADIAL SHAFT OIL	1
31	029181	SEAL, Ø1.125 RADIAL SHAFT OIL	1
32	029182	BEARING, Ø1.3125 BORE TAPERED	1
33	029183	BEARING, Ø2 BORE TAPERED	2
34	029184	CUP, Ø3-43/64 TPR ROLLER BRG	2
35	029272	CUP, Ø3 TPR ROLLER BRG	2
36	032713	RING, Ø1.827 RETAINING	1
37	032714	RING, Ø2.478 RETAINING	1
38	032715	RING, Ø2.857 RETAINING	1
39	032716	BRACKET, SD GEARBOX	1
40	032745	PLUG, 1/8 NPT RED POLTHN THD	1
41	034541	FAN, SHD GEARBOX	1
42	035327	PLUG, 3/4-14 NPTF HOLLOW HEX	1
43	037651	SHAFT, MAIN LH SHD GEARBOX	1
44	063915	SHAFT, COUNTER RH&LH SHD TWIN ENGINE	1

## SECTION 4 PARTS

### Throttle Pedal Assembly - 064255 Illustration



# Throttle Pedal Assembly - 064255

## Parts List

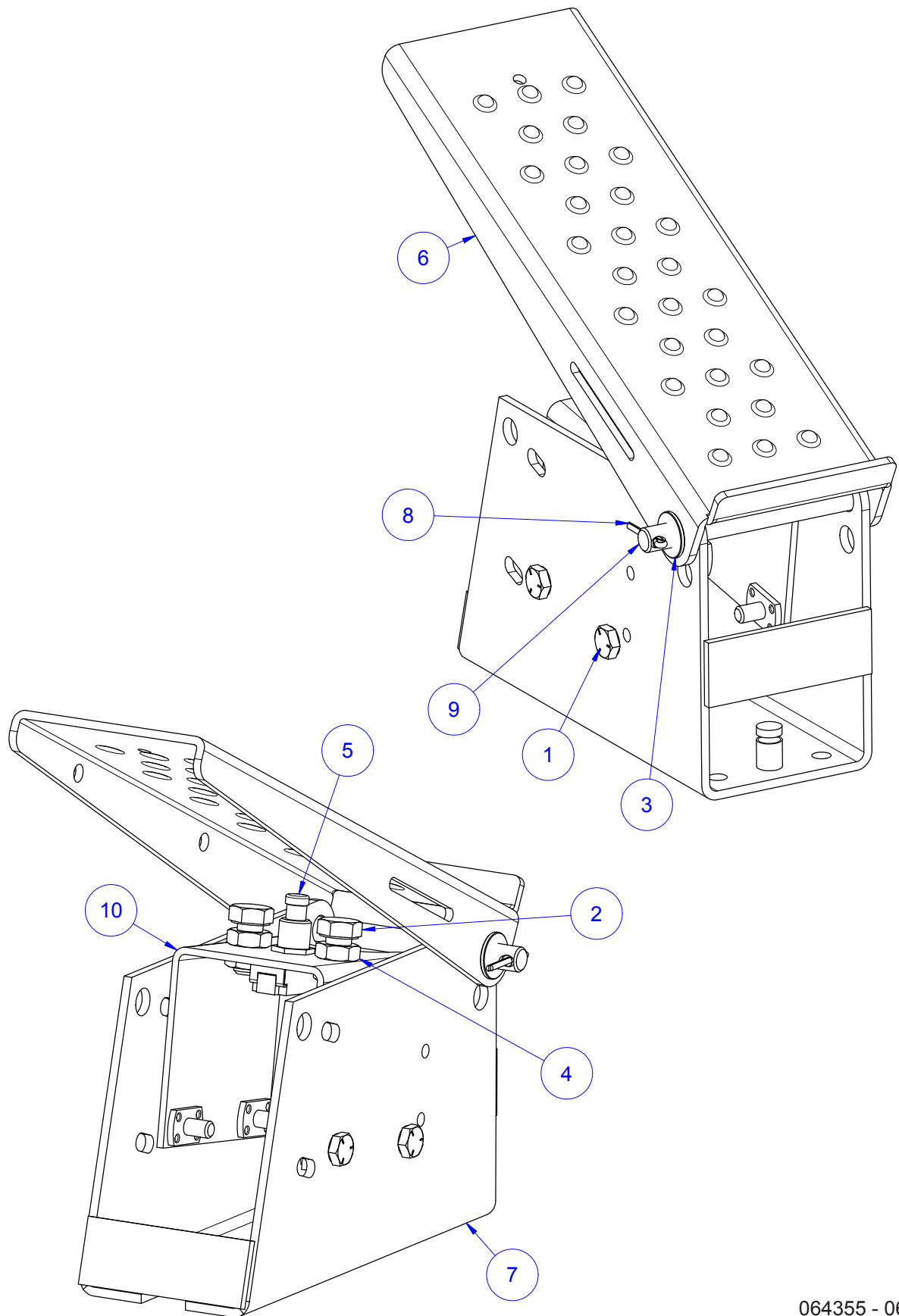
## SECTION 4

### PARTS

ITEM	PART NO.	DESCRIPTION	QTY
1	010002	FSTN, HHCS 1/4-20 X 3/4	4
2	010020	FSTN, HHCS 5/16-18 X 1	1
3	010100	FSTN, NUT HEX 5/16-18	1
4	010131	PIN, Ø1/16 X 1 ZP STL COTTER	2
5	012361	PIN, Ø1/8 X 1 COTTER	2
6	024631	SWITCH, KILL FOR RIDING TROWEL	1
7	024839	ASSY, FOOT SPEED PEDAL	1
8	024851	THROTTLE HOUSING WMNT	1
9	024981	EXTENSION SPRING	1
10	024982	FSTN, PIN CLEVIS 1/4 X 51/64	2
11	024983	FSTN, PIN CLEVIS 3/8 X 3-1/4	1
12	028895	FSTN, PIN CLEVIS 3/8 X 3 3/4	1
13	040246	SHACKLE 1-1/4" FOOT SPEED SHORT	2
14	041596	WELDMENT, KILL SWITCH PLATE	1
15	059534	FULCRUM WMNT	1

## SECTION 4 PARTS

### Kill Switch Pedal Assembly - 059535 Illustration



## Kill Switch Pedal Assembly - 059535 Parts List

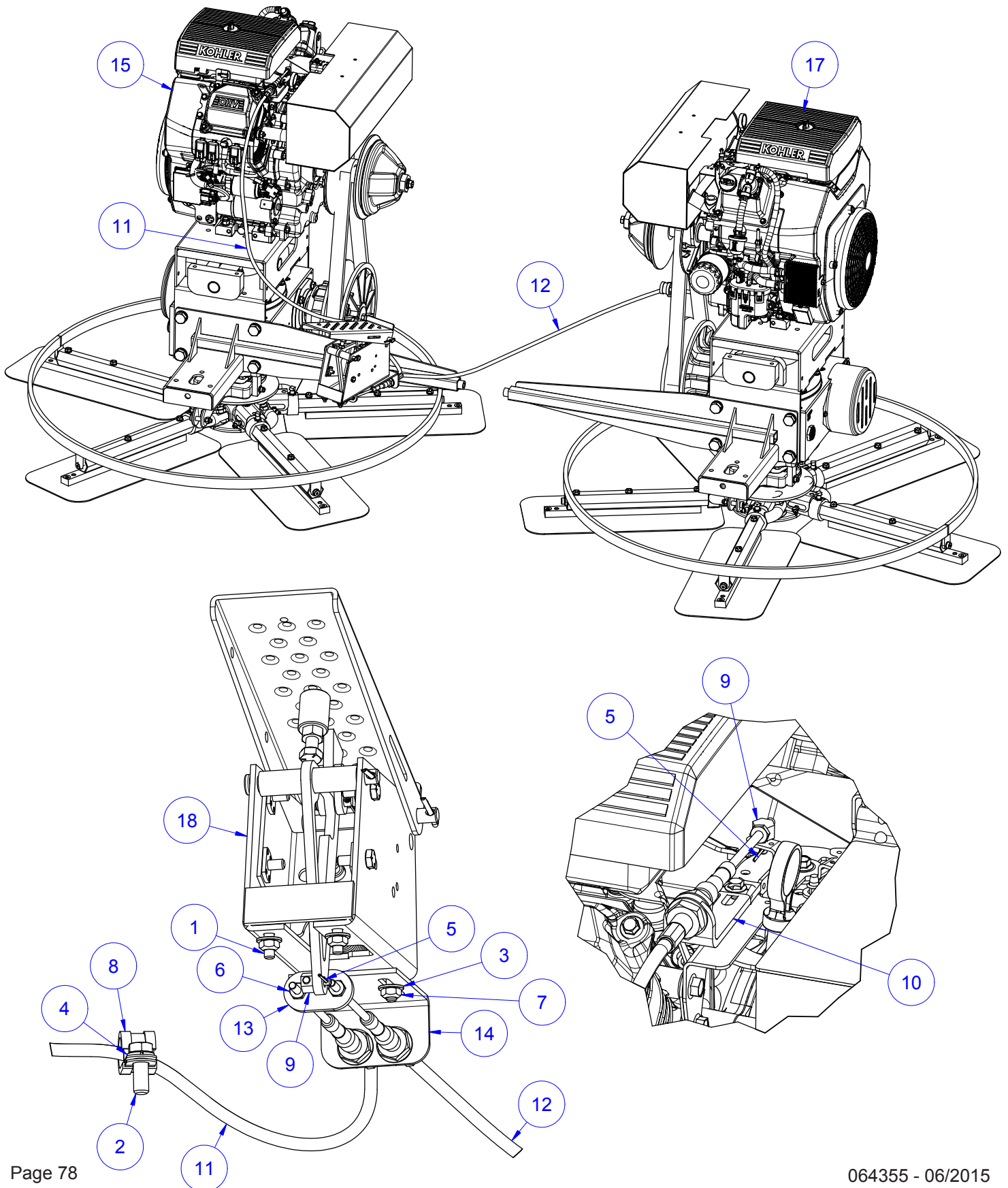
## SECTION 4 PARTS

ITEM	PART NO.	DESCRIPTION	QTY
1	010002	FSTN, HHCS 1/4-20 X 3/4	4
2	010035	FSTN, HHCS 3/8-16 X 3/4	2
3	010082	FSTN, FW 5/16	1
4	015684	FSTN, NUT HEX JAM 3/8-16	4
5	024631	SWITCH, KILL FOR RIDING TROWEL	1
6	024840	PLATE, PEDAL FOOT SPEED	1
7	024851	THROTTLE HOUSING WMNT	1
8	026226	PIN, Ø3/32 X 3/4 ZP STL COTTER	1
9	028895	FSTN, PIN CLEVIS 3/8 X 3 3/4	1
10	041596	WELDMENT, KILL SWITCH PLATE	1



## SECTION 4 PARTS

## Throttle Assembly Illustration





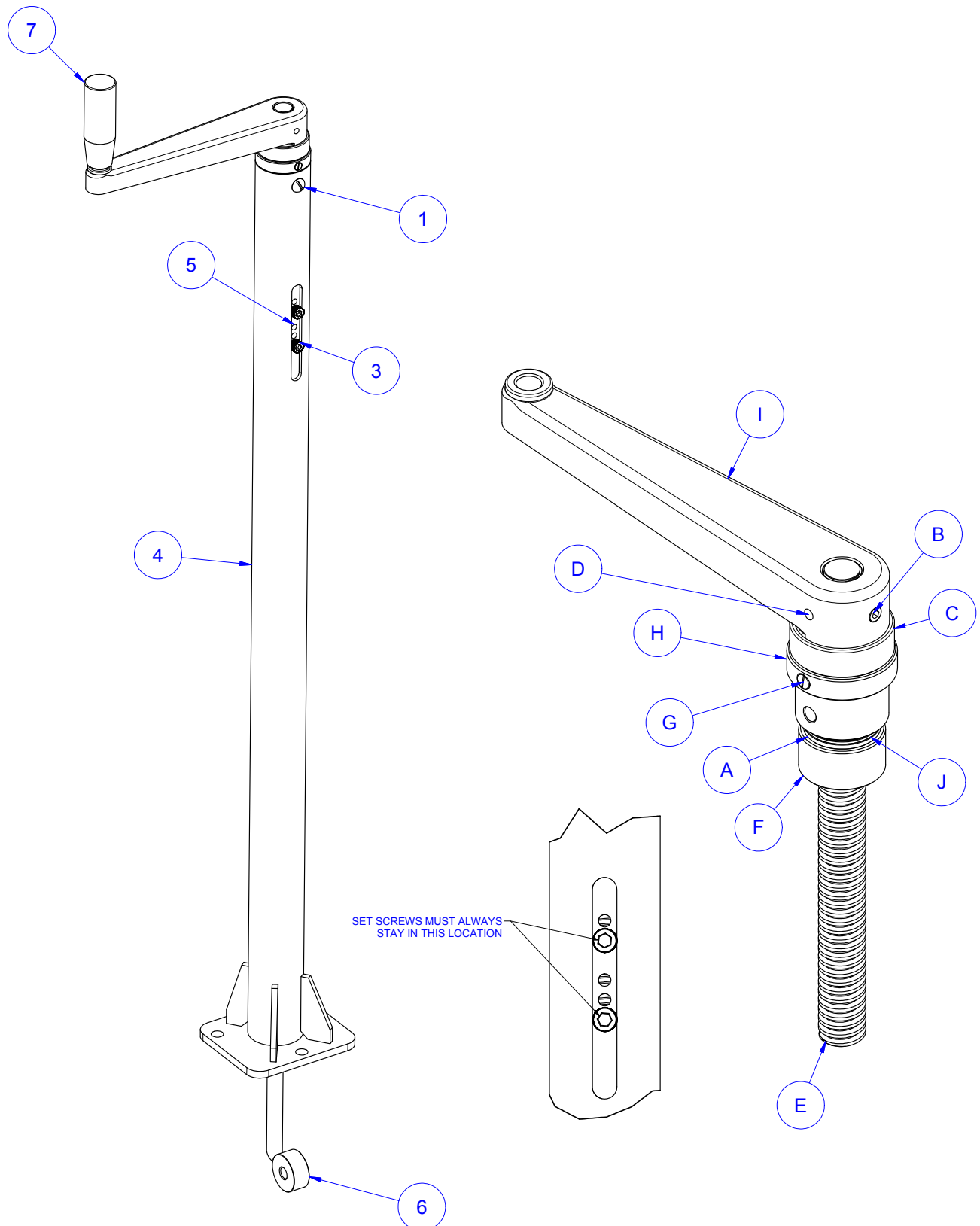
## Throttle Assembly Parts List

## SECTION 4 PARTS

ITEM	PART NO.	DESCRIPTION	QTY
1	010002	FSTN, HHCS 1/4-20 X 3/4	4
2	010036	FSTN, HHCS 3/8-16 X 1	2
3	010081	FSTN, FW 1/4	4
4	010091	FSTN, LW 3/8	2
5	010131	PIN, Ø1/16 X 1 ZP STL COTTER	3
6	010570	FSTN, NUT HEX 10-32	2
7	020542	FSTN, NUT STOVER LOCK 1/4-20	4
8	020604	CLIP, SAE 14-.406 INSUL LOOP	2
9	024984	PIVOT, THROTTLE CABLE	3
10	032182	THROTTLE BRKT	2
11	032300	CABLE, THROTTLE 60" HD (RH ENGINE)	1
12	032301	CABLE, THROTTLE 72" HD (LH ENGINE)	1
13	033900	THROTTLE CABLE CONNECTOR, HP105	1
14	033914	PLATE, THROTTLE MOUNT, HP105	1
15	063913	MODULE, 20:1 RH ROTOR ASSY	1
16	063920	MAIN FRAME	1
17	063926	MODULE, 20:1 LH ROTOR ASSY	1
18	064255	FOOT PEDAL W/ THROTTLE, RH	1

## SECTION 4 PARTS

## Pitch Control Assembly - 032370 Illustration



# Pitch Control Assembly - 032370

## Parts List

# SECTION 4

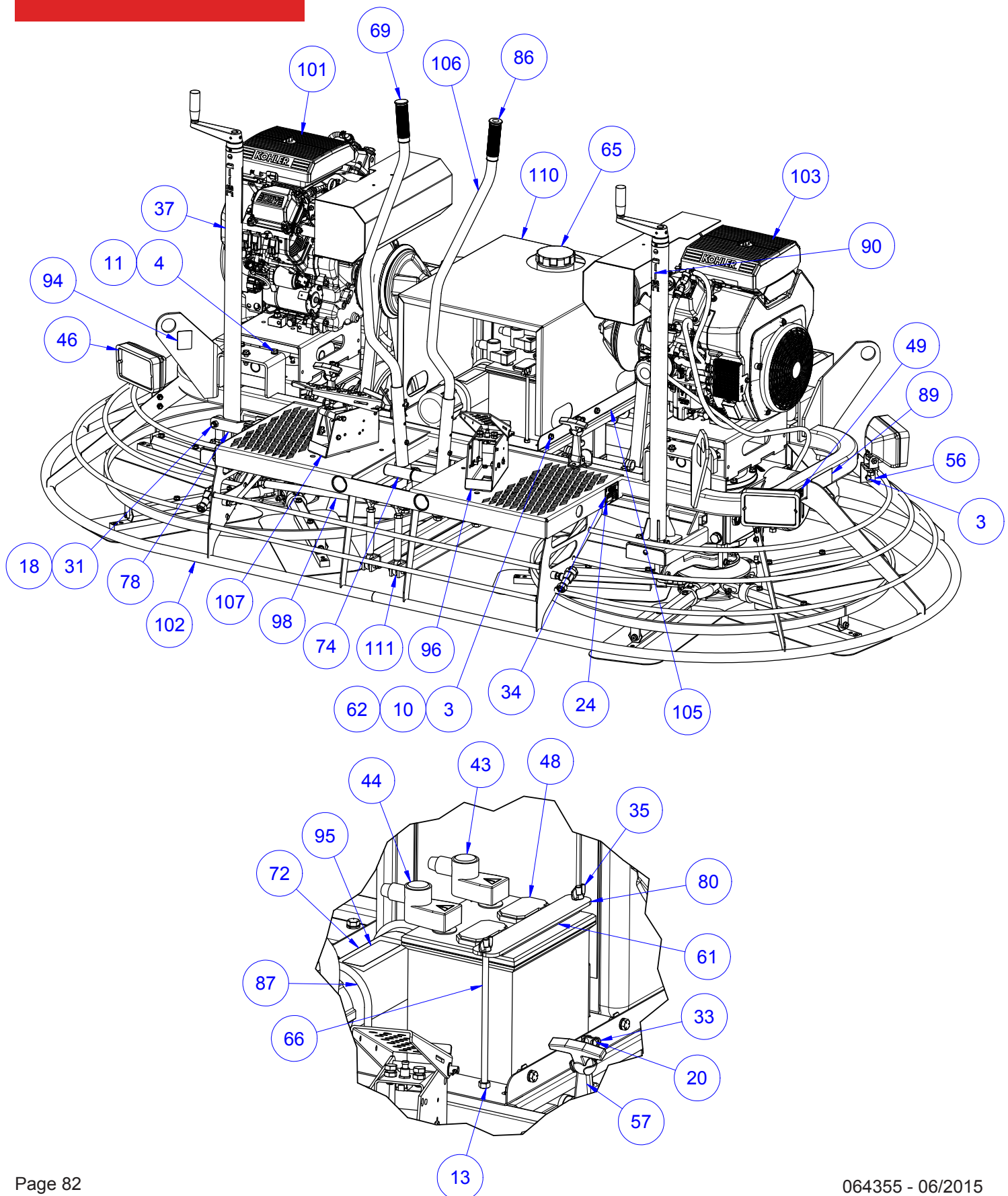
## PARTS

ITEM	PART NO.	DESCRIPTION	QTY
1	015410	FSTN, RHMS 1/4-20 X 3/8	2
2	015747	PIN, ROLL 3/16 X 1-3/8 SPIROL	1
3	015768	FSTN, SHCS 1/4-20 X 1/4 HOLO	2
4	026420	WELD'T, PRO PITCH CONTROL TUBE	1
5	029812	BUSHING, SLIDE PITCH CONTROL PITCH CONTROL TUBE	1
6	029822	PITCH CONTROL SHAFT	1
7	032115	KNOB,PITCH CONTROL HANDLE (RT)	1
8	061529	CRANK HANDLE & SCREW SHAFT ASY, LONG	1

ITEM	PART NO.	DESCRIPTION	QTY
A	012710	THRUST BEARING RACE	2
B	013374	SCREW, 1/4-28 X 1/4 SFLKG SKT SET	1
C	015742	THRUST BEARING	1
D	018289	FSTN, SPRING ROLL 3/16 X 1-1/4	1
E	029997	SHAFT, SCREW AJD. PITCH	1
F	032191	STOP F/ PITCH CONTROL HANDLE	1
G	036797	SCREW, 1/4-28 X 1/4 SFLKG SKT SET	2
H	036914	BUSHING, CABLE ASS'Y - RIDERS	1
I	037693M	HANDLE, CRANK F/ PITCH	1
J	100340	BEARING NTA-1220 THRUST	1

## SECTION 4 PARTS

## Mainframe Assembly Illustration



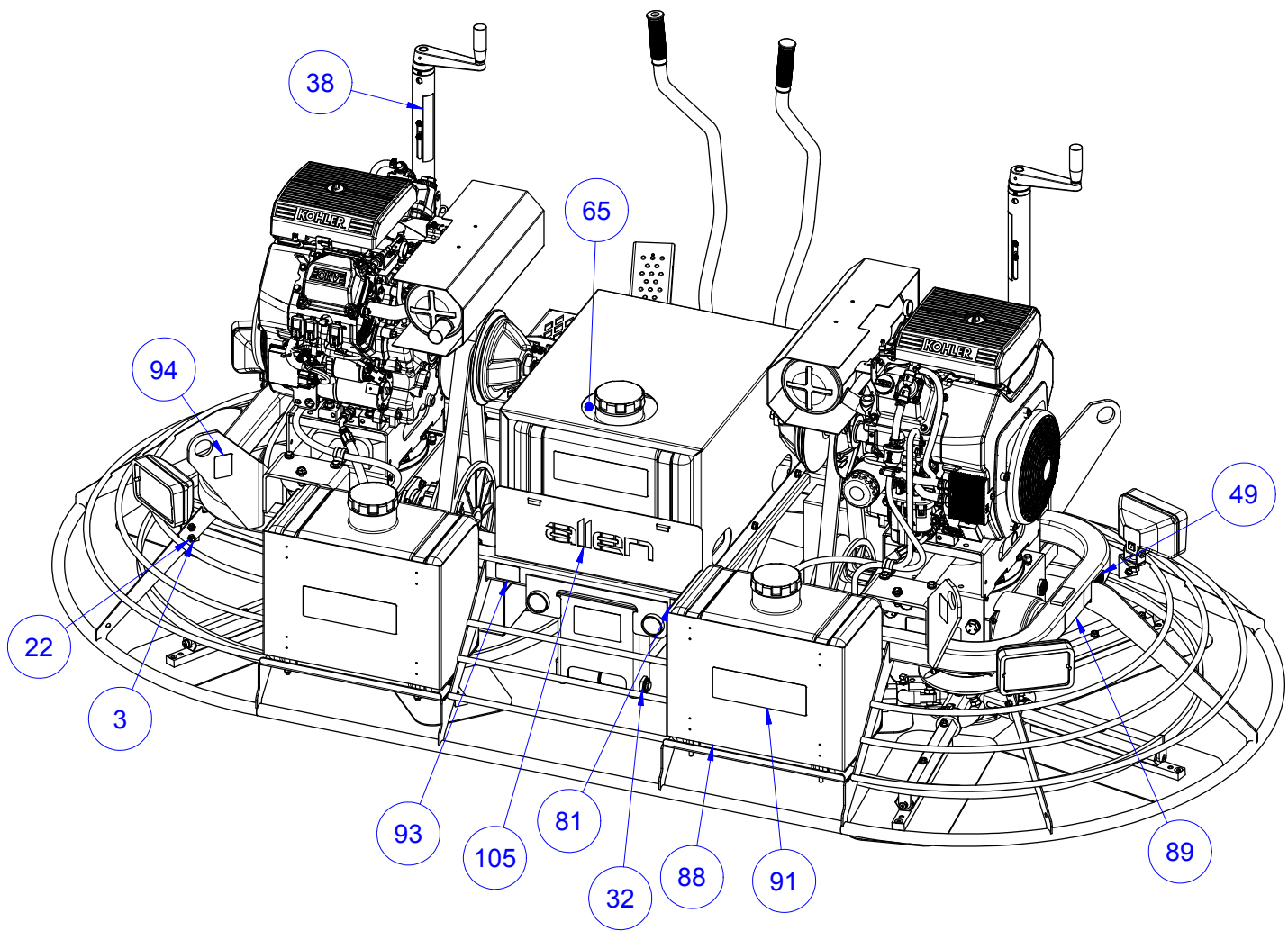
# Mainframe Assembly Parts List

## SECTION 4 PARTS

ITEM	PART NO.	DESCRIPTION	QTY
1	010002	FSTN, HHCS 1/4-20 X 3/4	8
2	010005	BOLT, 1/4-20x1-1/2 GR 8 HHC	2
3	010019	FSTN, HHCS 5/16-18 X 3/4 GR 5	22
4	010036	FSTN, HHCS 3/8-16 X 1	17
5	010051	FSTN, NUT HEX JAM 1/2-20 FINE GR8	7
6	010069	FSTN, HHCS 1/2-13 X 1-1/2	1
7	010081	FSTN, FW 1/4	8
8	010082	FSTN, FW 5/16	8
9	010083	FSTN, FW 3/8	6
10	010090	*Varies*	18
11	010091	FSTN, LW 3/8	17
12	010093	FSTN, LW 1/2 GR8	4
13	010100	FSTN, NUT HEX 5/16-18	6
14	010102	FSTN, NUT HEX 3/8-16	4
15	010107	NUT, 1/2-20 GR 5 HEX	1
16	010109	FSTN, NUT HEX NYLON 5/16-18	2
17	010131	PIN, Ø1/16 X 1 ZP STL COTTER	3
18	010464	FSTN, NUT NYLOK 3/8-16	18
19	010464	FSTN, NYLOCK 3/8-16 GR5	4
20	010568	SCR, 10-32 X 1/2 RND HD MACH	8
21	011238	FSTN, NUT HEX NYLOK 1/2-13	1
22	012612	FSTN, NUT HEX NYLOCK 5/16-18	8
23	012702	TIP, 80°x0.10 GPM BRASS SPRAY	2
24	012994	RIVET, 1/8x3/8 ALUM DOME HD [closed]	4
25	017751	FSTN, FW HARD A325 3/8 (p)	4
26	019430	FSTN, CLAMP SIZE 4 MINI	8
27	019900	ROD, 1/2 FEMALE END	3
28	020542	FSTN, NUT STOVER LOCK 1/4-20	10
29	020604	CLIP, SAE 14-.406 INSUL LOOP	8
30	024984	PIVOT, THROTTLE CABLE	3
31	026267	BOLT, 3/8-16xØ1/2x1 LG SHOULDER	8
32	026447	NUT, 3/4-10 SELFLOCK THIN HEX	5
33	029568	NUT, 10-32 NYLOCK HEX	8
34	032097	DECAL, SERIAL NUMBER PLATE	1
35	032106	NUT, 5/16-18 STEEL LIGHT WING	2
36	032182	THROTTLE BRKT	2
37	032370	ASSY, PITCH CONTROL	2
38	032377	DECAL, F/ PITCH CONTROL TUBE	2
39	032875	FSTN, HHCS 3/8-16 X 1-1/4 GR 8	10
40	033735	PUMP, SPRAY SYSTEM	1
41	033900	THROTTLE CABLE CONNECTOR, HP105	1
42	033914	PLATE, THROTTLE MOUNT, HP105	1
43	035597	INSULATOR, POS BATT TERMINAL	1
44	035598	INSULATOR, NEG BATT TERMINAL	1
45	036791	SCR, 10-32 X 3/8 SLTD RDH MACH	4
46	036881	LIGHT, 12 V WORK	4
47	037140	BOLT, 1/2-20x1-1/2 GR 5 HHC	1
48	037771	BATTERY, 12 V GRAY 655CA	1
49	039778	DECAL, GREASE THRUST BEARING DAILY	2
50	040209	FILTER, RETARDANT SPRAY SYSTEM	1
51	040387	ELBOW, 3/8 BRASS 90° STREET	1
52	040388	FTG, 3/8X1/4 BRASS FM TO FM REDUCER	1
53	041604	VALVE, CHECK BODY	2
54	041606	PLASTIC 1/4 NPT CLOSE NIPPLE	2
55	041624	RETAINER, NYLON SPRAY TIP	2

## SECTION 4 PARTS

## Mainframe Assembly (cont'd) Illustration



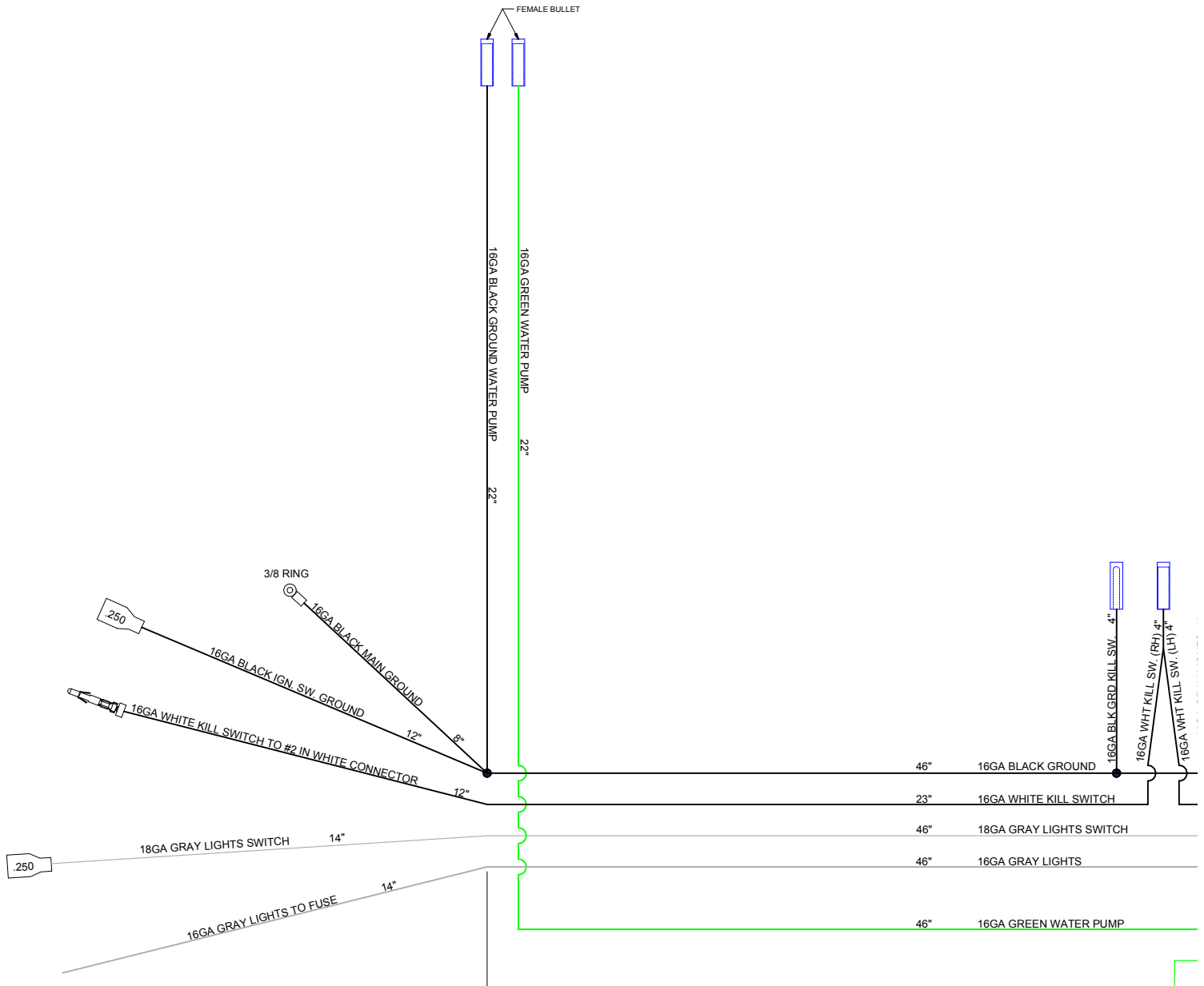
# Mainframe Assembly (cont'd) Parts List

## SECTION 4 PARTS

ITEM	PART NO.	DESCRIPTION	QTY
56	042140	BRACKET, REAR LIGHT SP400B	4
57	042260	LATCH, FLEX DRAW LRG RUBBER	2
58	042821	FITTING, #JICMX3/8MPT STGT. FLARE-O	2
59	046701	ARM, STEERING 4-1/2	2
60	046864	SCR, 1/2-20X1-3/4 YZ HEXHD CAP	4
61	047273	CUSHION F/ BATTERY STRAP	1
62	047547	FSTN, 5/16-18 PAL SNAP NUT	14
63	047548	FSTN, 3/8-16 PAL SNAP NUT	8
64	047579	STRAINER, POLY 100 µ MESH	2
65	047700	TANK, 6 GALLON WATER PLASTIC	1
66	047715	ROD, 5/16-18 BATTERY RETAINER 8-5/8"	2
67	047933	ELBOW, 1/4 PUSHLOK x 1/4 NPT PLASTIC	4
68	048246	HOSE, 3/8" WATER LINE	1
69	048354	GRIP, SAT 3 Ø1 BLACK HANDLE	1
70	048448	DECAL, AEC PATENT NUMBERS	1
71	048652	TEE, PLASTIC 1/4 x 1/4 x 1/4	1
72	048665	TUBE, MANUAL PACK PLASTIC 9000-14	1
73	048869	ARM, LOWER CONTROL	2
74	048894	CONTROL, RIGHT HORIZONTAL	2
75	048909	SWITCH, PUSH BUTTON	1
76	048910	BRG, Ø5/8 NYL FLNG SLEEVE	1
77	048921	STRAP, TANK MSP425	2
78	048925	FULCRUM, L/R STEERING	1
79	048929	BEARING, Ø3/4 ID PLASTIC FLANGE	14
80	048932	BAR, BATTERY HOLD DOWN	1
81	048937	DECAL, MFG. BY ALLEN ENG.	1
82	048959	GROMMET, 1/2" RUBBER HOSE	2
83	048969	SHAFT, STEERING	2
84	048970	SHAFT, FULCRUM	1
85	049164	PLUG, F2408-6-O JIC	2
86	049245	GRIP, MODIFIED HANDLE	1
87	053189	U-BOLT, 3 1/2" X 3/8-16	2
88	053200	TANK ASSY, 6 GAL FUEL W/ CAP (EPA)	2
89	053441	DECAL, LIFTING/CRUSH HAZARD (SP)	2
90	053442	DECAL, ALLEN VERTICAL BRUSHED CHROME	2
91	053443	DECAL, GASOLINE ONLY (SP)	2
92	053445	DECAL, RETARDANT ONLY (SP)	1
93	053446	DECAL, MADE IN USA (SP)	1
94	053448	DECAL, LIFT HERE ONLY (SP)	4
95	053454	DECAL, MANUALS (SP)	1
96	059535	FOOT PEDAL W/ KILL, LH	1
97	060881	STEERING SOCKET WMNT	2
98	060882	SHAFT, 18" LONG STEERING LINKAGE	1
99	060921	HOUSING, 1/2 MALE ROD END	2
100	060922	COUPLER NUT, 1/2-20 X 1 3/4	1
101	063913	MODULE, 20:1 RH ROTOR ASSY	1
102	063920	MAIN FRAME	1
103	063926	MODULE, 20:1 LH ROTOR ASSY	1
104	063942	BELT GUARD	2
105	064244	TANK MNT PLATE	1
106	064245	HANDLE, STEERING	2
107	064255	FOOT PEDAL W/ THROTTLE, RH	1
108	064383	HOSE, OIL DRAIN F/ HP105	2
109	064562	WELDMENT, TANK GUARD	2
110	064572	TANK COVER F/ HP105	1
111	221408	ROD, END MALE 1/2"	11

# SECTION 4 PARTS

## Electrical Schematics



### BATTERY CABLES

064540 - CABLE, 4 AWG POS - HP105  
064542 - CABLE, 4 AWG NEG - HP105



## SECTION 4

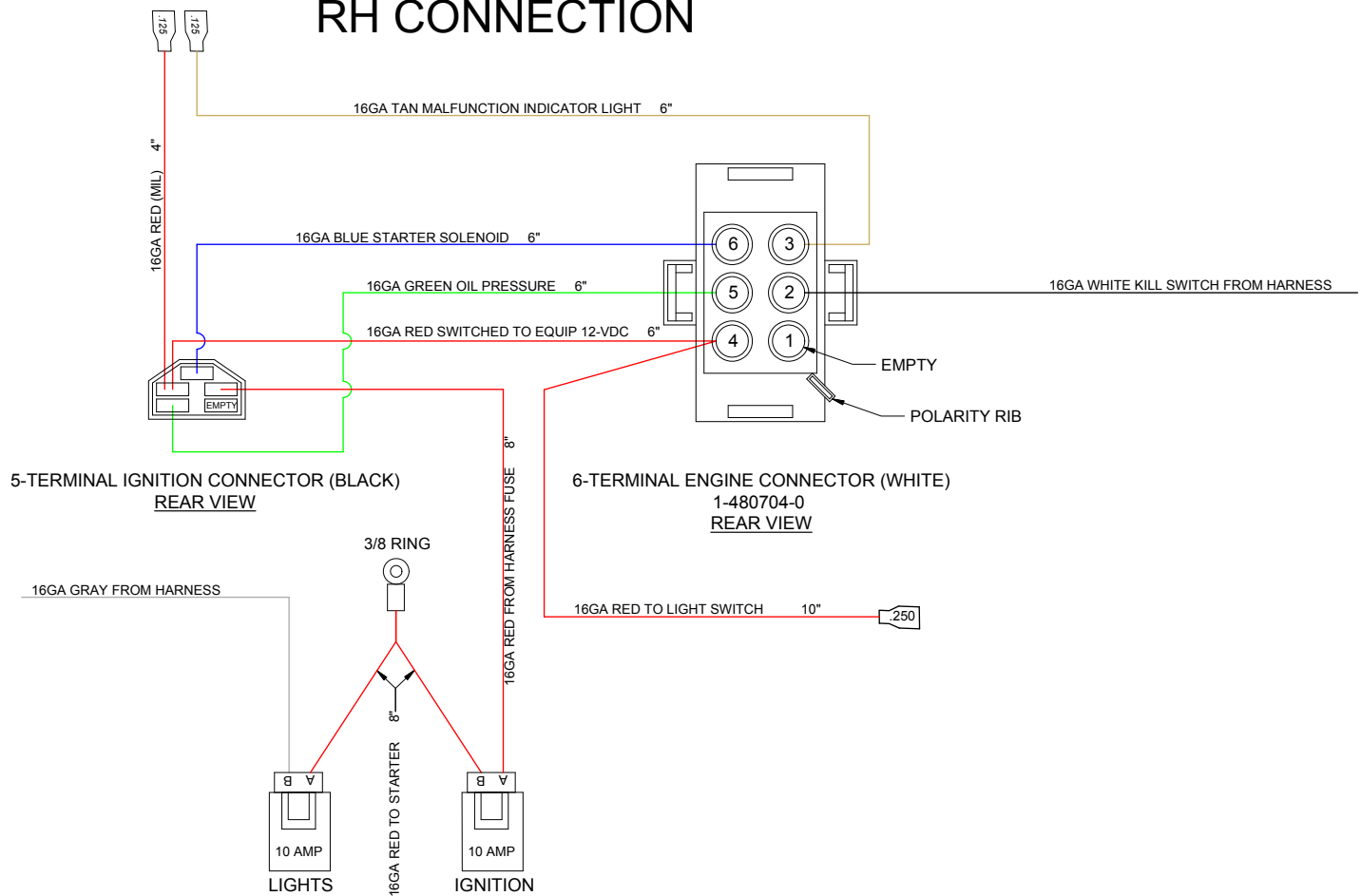
### PARTS



## SECTION 4 PARTS

## Electrical Schematics (cont'd)

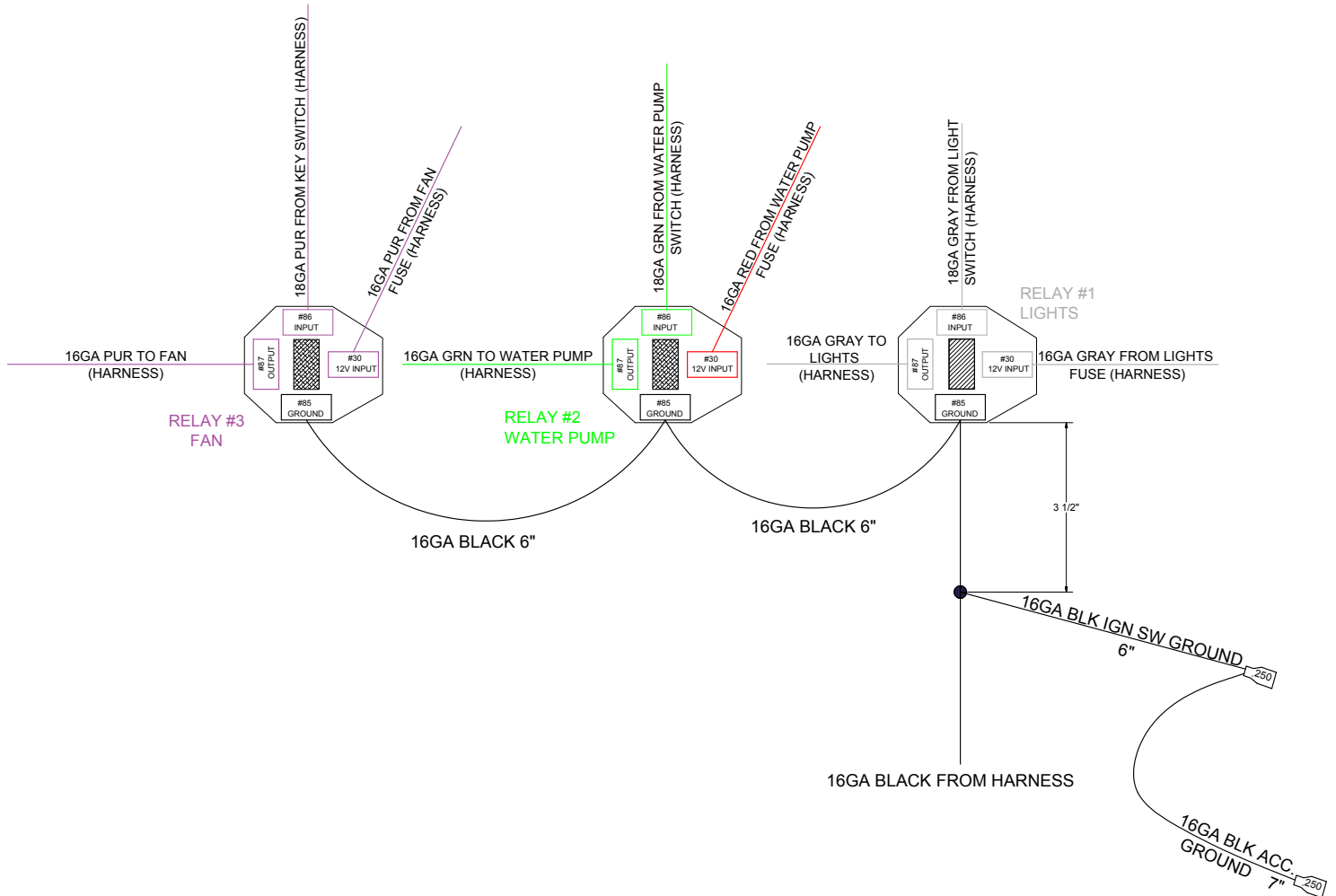
### RH CONNECTION





# SECTION 4 PARTS

## Electrical Schematics (cont'd)

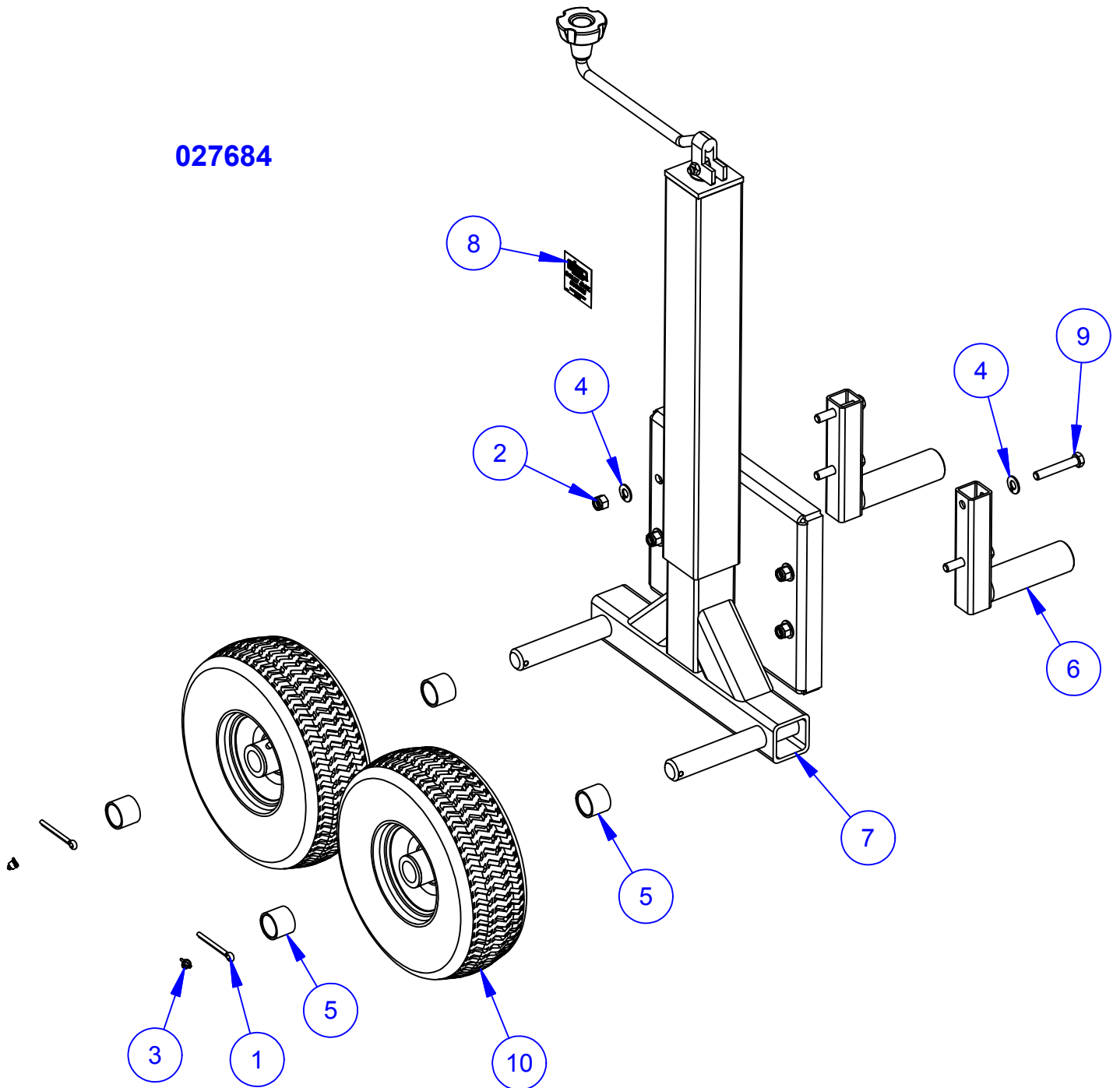


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## SECTION 5 ACCESSORIES

### Front Dolly Jack Assembly Illustration

027684



## Front Dolly Jack Assembly Parts List

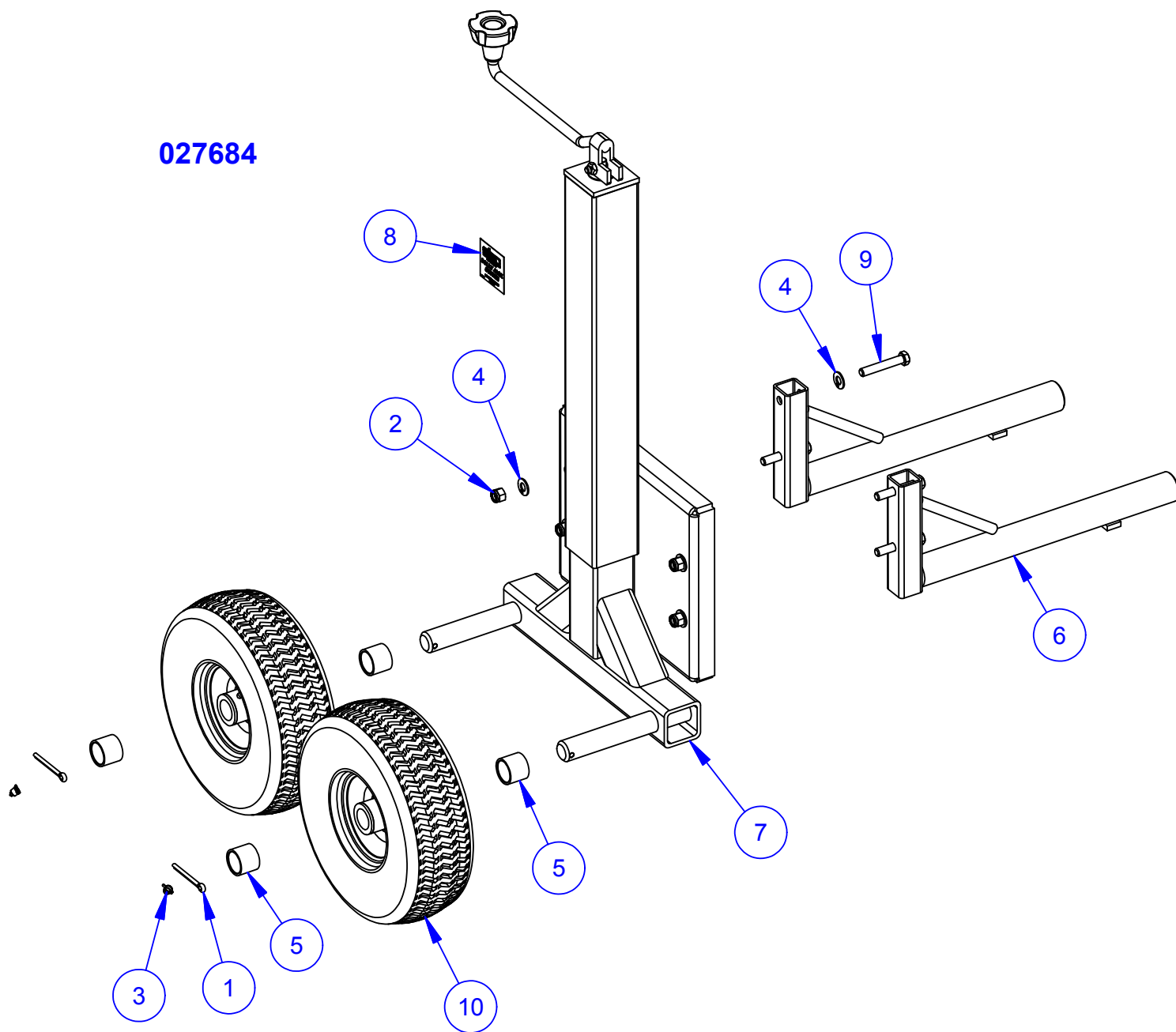
## SECTION 5 ACCESSORIES

ITEM	PART NO.	DESCRIPTION	QTY
1	010133	PIN, 3/16 X 2 COTTER	2
2	010464	FSTN, NUT NYLOK 3/8-16	4
3	015692	CAP, Ø1/4 RED GREASE	2
4	017751	FSTN, FW HARD A325 3/8 (p)	8
5	024628	SPACER, DOLLY JACK	4
6	026729	LIFT, FRONT DOLLY JACK	2
7	026938	JACK, SP DOLLY	1
8	039633	DECAL, DOLLY JACK SYSTEM	1
9	040637	BOLT, 3/8-16 X 2-1/4 GR 8 HHC	4
10	099014	ASSY, 410/350 X 4 PNEU WHEEL	2

## SECTION 5 ACCESSORIES

### Rear Dolly Jack Assembly Illustration

027684





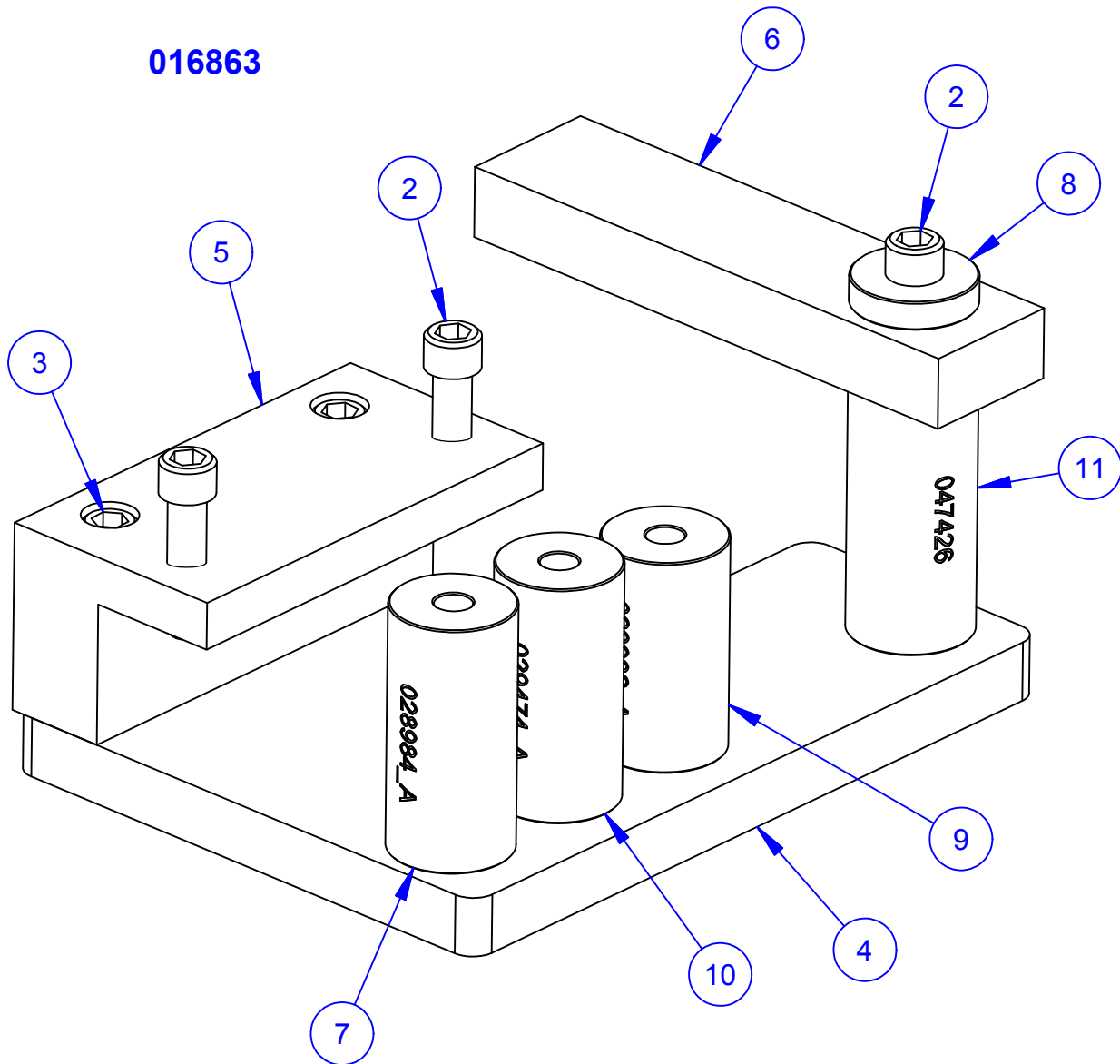
## Rear Dolly Jack Assembly Parts List

## SECTION 5 ACCESSORIES

ITEM	PART NO.	DESCRIPTION	QTY
1	010133	PIN, 3/16 X 2 COTTER	2
2	010464	FSTN, NUT NYLOK 3/8-16	4
3	015692	CAP, Ø1/4 RED GREASE	2
4	017751	FSTN, FW HARD A325 3/8 (p)	8
5	024628	SPACER, DOLLY JACK	4
6	026728	LIFT, REAR DOLLY JACK	2
7	026938	JACK, SP DOLLY	1
8	039633	DECAL, DOLLY JACK SYSTEM	1
9	040637	BOLT, 3/8-16 X 2-1/4 GR 8 HHC	4
10	099014	ASSY, 410/350 X 4 PNEU WHEEL	2

## SECTION 5 ACCESSORIES

### Trowel Arm Alignment Jig Assembly Illustration



## Trowel Arm Alignment Jig Assembly Parts List

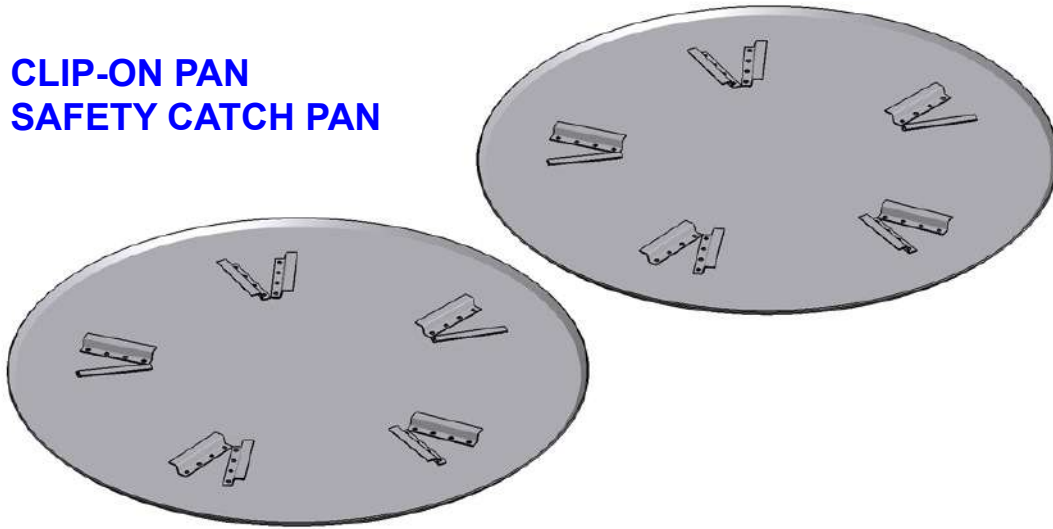
## SECTION 5 ACCESSORIES

ITEM	PART NO.	DESCRIPTION	QTY
1	015884	SCREW, 3/8-16x1 SCKT CAP	4
2	016877	FSTN, SHCS 3/8-16 X 1-1/2	3
3	028076	SCREW, 3/8-16x2 SCKT CAP	2
4	028981	BASE	1
5	028982	CLAMP, BLOCK	1
6	028983	ARM	1
7	028984	SPACER, 2.600 HGT ADJUSTING	1
8	028985	WASHER	1
9	028986	SPACER, 2.243 HGT ADJUSTING	1
10	029474	SPACER, 2.500 HGT ADJUSTING	1
11	047426	SPACER, 2.725 HGT ADJUSTING	1

## SECTION 5 ACCESSORIES

**051552 - CLIP-ON PAN**

**051553 - SAFETY CATCH PAN**



**042779 - LIFT BRIDLE, 2500# 6' SLING**



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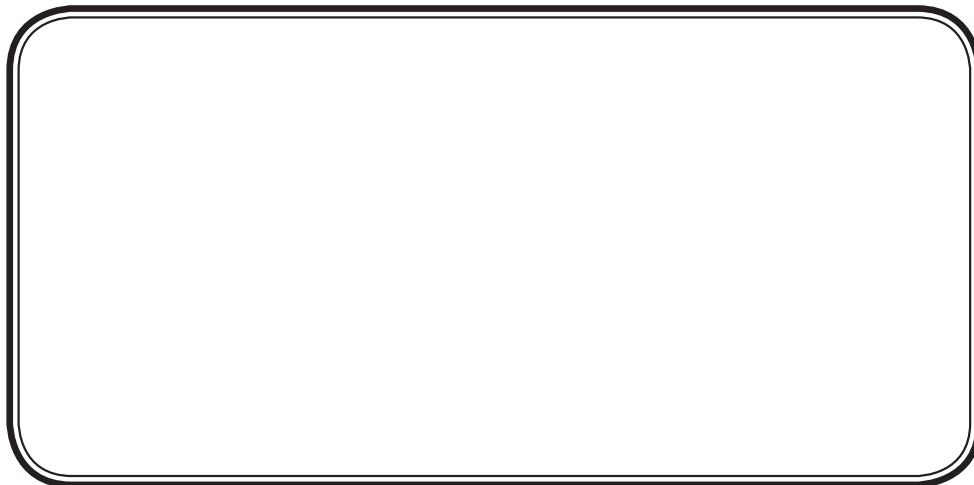
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