

OPERATIONS MANUAL AND PARTS BOOK



SP500

SUPER PROFESSIONAL SERIES RIDING TROWEL

Riding Trowel

**OPERATIONS
PARTS**

**MANUAL
BOOK**

Printed 11/02

THIS MANUAL COVERS RIDING TROWEL(S) BELOW

MODEL

PART #

SP 500A-1500-XHD 56KB PSII 039377A

Allen Engineering's Razorback Riding Trowels are covered under one or more of the following patent numbers: **U.S. Design Patents:** 323,510; 340,340; 344,736; 400,542; 402,998; 402,999; 403,332; 410,931. **U.S. Utility Patents:** 4,298,555; 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; 5,967,696; 5,988,938; 6,048,130; 6,053,660; 6,089,786. **Canadian Patents:** 2,039,893. **French Patents:** 0293496. **German Patents:** M9007736.9 With other Patents Pending.

LIMITED WARRANTY

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

A. All New Machines and Part	6 Months
B. All New Gear Boxes	2 Years
C. All Factory Reconditioned Gear Boxes	1 Year

Warranty period begins on first day of use by End User. This first day of use is established by a completed warranty card or a Bill of Sale to the end user. All warranty is based on the following limited warranty terms and conditions.

1. Allen Engineering Corporation's obligation and liability under this warranty is limited to repairing or replacing parts if, after Allen's inspection, it is determined to be a defect in material or workmanship. Allen Engineering Corporation reserves the choice to repair or replace.
2. If Allen Engineering Corporation chooses to replace the part, it will be at no cost to the customer and will be made available to the Distributor/Dealer from whom the customer 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 Engineering Corporation's warranty applies only to the products that are manufactured by Allen Engineering and does not cover component parts such as engines and clutches. Engine warranty claims should be made directly to an authorized factory service center for the particular product and clutch.
5. Allen Engineering Corporation's warranty does not cover the normal maintenance of products or its components (such as engine tune-ups and oil changes). The warranty also does not cover normal wear and tear items (such as belts and consumables).
6. Allen Engineering Corporation'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 Engineering Corporation. Allen Engineering Corporation specifically excludes from warranty any damage to any trowels resulting from an impact to the rotors. Allen Engineering Corporation also excludes from warranty any failure of clutches on any engine driven piece of equipment.
7. If a new gear box has a factory defect within the first year of use, Allen Engineering Corporation will either repair the gear box or replace it with a new gear box. If a new gearbox has a factory defect in the second year of use, Allen Engineering Corporation will either repair it or replace it with a factory reconditioned gear box. Impact damage is NOT covered under the gear box warranty.
8. Allen Engineering Corporation will pay shop labor repair on warranty at the Allen Engineering Shop Labor Rate in existence on the date of the warranty claim. An Allen Engineering Labor Chart will determine the time allowed to complete a repair and will govern the shop labor hours that will be allowed.
9. Allen Engineering Corporation 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 Engineering Corporation. Allen Engineering only pays outbound freight charges when sending warranty replacement parts to the customer VIA ground service. Allen Engineering does not pay any inbound freight, however, if Allen Engineering determines this to be warranty defect only then will Allen Engineering 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 rental revenue, 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 Engineering Corporation 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.

OPERATIONS IDENTIFICATION PLATE

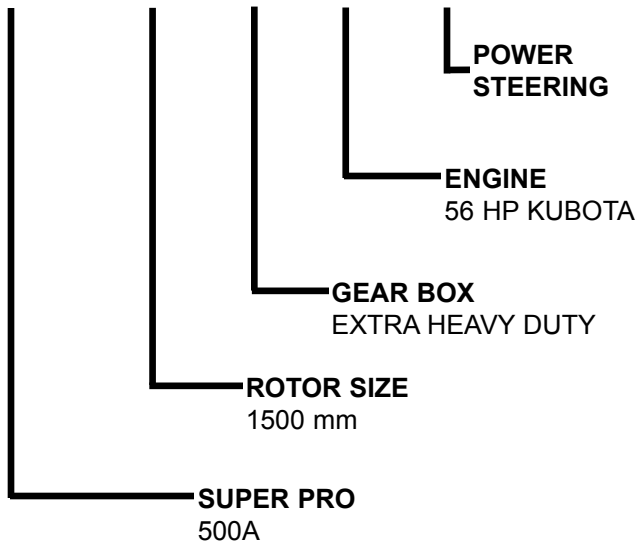
1A OPERATIONS

An identification plate listing the Model Number and Serial Number is attached to each unit and is located on the front band of the mainframe. The plate should not be removed.

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 number and serial number of the unit.

Model Number

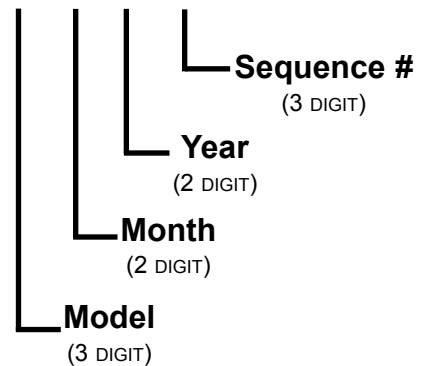
SP500A-1500-XHD 56KB PSII



Serial Number

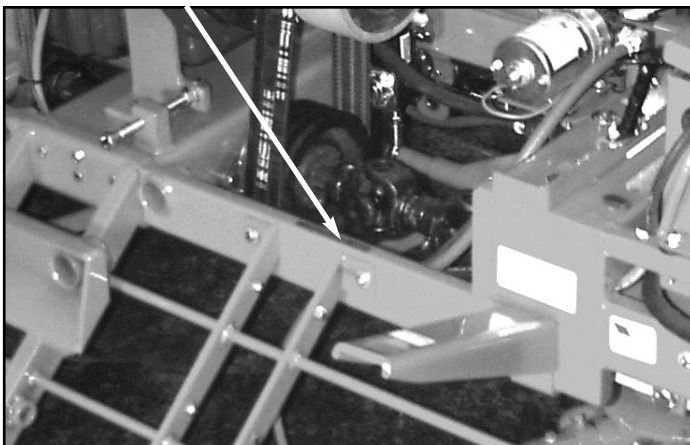
The serial number found on the identification plate is a ten digit number. The model number identifies your machine and will ensure that you receive the correct replacement parts.

SAMPLE: **50A0800001**



**Serial #
Location**

**Identification Plate
Located on Front Left
Side of Mainframe**



FILL IN FOR FUTURE REFERENCES

Model Number: _____

Serial Number: _____

Date Purchased: _____

Purchased From: _____

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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 Distributor or Allen Engineering Corp. Customer Service at 800-643-0095 or 870-236-7751.

Important Reminder

1A OPERATIONS

Complete any warranty requirements as specified by the engine manufacturer in their instructions found inside the manual packet.

Your engine and clutch is not manufactured by Allen Engineering Corp., and therefore is not covered under Allen Engineering 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.

Your Distributor

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

Place distributor information here for future reference.

DISTRIBUTOR NAME: _____		PHONE #: _____ - _____
ADDRESS: _____		
CITY: _____	STATE: _____	ZIP: _____
SALESMAN: _____		
ADDITIONAL INFORMATION: _____		

1A OPERATIONS

THE INFORMATION CONTAINED IN THIS MANUAL WAS BASED UPON THE MACHINES IN PRODUCTION AT THE TIME (BEGINNING WITH SERIAL NUMBERS 5000401006) OF PUBLICATION. ALLEN ENGINEERING RESERVES THE RIGHT TO CHANGE ANY PORTION OF THIS DOCUMENT WITHOUT NOTIFICATION.

Information Contained in This Manual

This manual provides information and procedures to safely operate and maintain the Allen Super Pro 500A-1500-XHD Model Razorback® Riding Trowels.

For your own safety and protection from personal injury carefully read, understand and observe the safety instructions described in this manual.

Always operate and maintain 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 sections listed below.



Ordering Parts

This manual contains an illustrated parts list for help in ordering replacement parts for your machine. Follow the instructions listed below when ordering parts to ensure prompt and accurate delivery. All orders for parts must be made through your local authorized Allen Engineering dealer. All authorized Allen Engineering dealers must fax a copy of the parts order to customer service. The fax number is (870-236-3934). Facsimile orders must contain the following information:

1. On all orders for service parts include SERIAL NUMBER and MODEL number.
2. Shipment may be delayed if this information is not included.
3. Include correct description and part number from part section 2A.
4. **State exact shipping instructions including preferred routing and complete destination address. Also please indicate your preferred freight carrier. If no freight carrier is indicated Allen Engineering reserves the right to ship the shipment the best way possible. Once a shipment leaves Allen Engineering's docks it becomes the responsibility of the freight carrier to insure that it arrives at it's intended destination.**
5. **DO NOT** return parts to Allen Engineering without receiving written authorized Customer Service Report(CSR) from Allen Engineering. All authorized returns must be shipped prepaid. **All unauthorized returns will be shipped back to the addressee at their expense.**

Keep this manual or a copy of it with the machine. If you loose this manual or need an additional copy please contact your Allen distributor or Allen Engineering Corporation at (800) 643-0095 and order literature part number 043462.

1.1 Safety Notes

This manual contains NOTES, CAUTIONS and WARNINGS which must be followed to reduce the possibility of improper service damage to the equipment or personal injury. Read and follow all NOTES, CAUTIONS and WARNINGS included in this manual.

NOTE Contains additional information important to a procedure.

CAUTION Provides information important to prevent errors which could damage machine or components.

WARNING Warns of conditions or practices which could lead to personal injury or death.

1A OPERATIONS

1.3 Operating Safety

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

Safety Precautions

1. Read operating and safety instructions before using the Riding Trowel. Operate the machine in accordance with the manufacturer's instructions.
2. Inspect your Riding Trowel for damage or tampering that can sometimes occur during shipping.
3. **If damage is found file a claim with your carrier immediately! Mark freight bill of lading as damaged shipment.**
4. Do not operate Riding Trowel if any guards have been removed or if the "safety switch" is not operational.
5. Only trained personnel should be allowed to operate your Riding Trowel.
6. Never allow more than one person on the Riding Trowel while it is in operation.
7. No foreign objects such as buckets, tools or materials should ever be attached or allowed to ride on the Trowel during operation.
8. Do not attempt to fill fuel tank or oil sump while the engine is running. Allow engine to cool before refueling.
9. Never attempt to operate the Riding Trowel on steep inclined surfaces.
10. Do not use over the counter hardware to replace manufacturer's hardware.
11. **WARNING: When operating machines with gas engines in confined areas. The fumes MUST be ventilated!**
12. Always wear safety goggles, ear protection, and gloves when operating the Riding Trowel.

1.4 Service Safety

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

DO NOT attempt to clean or service machine while it is running. Rotating parts can cause severe injury.

DO NOT use gasoline or other types of fuels or flammable solvents to clean parts especially in enclosed areas. Fumes from fuels and solvents can become explosive and can be hazardous to your health.

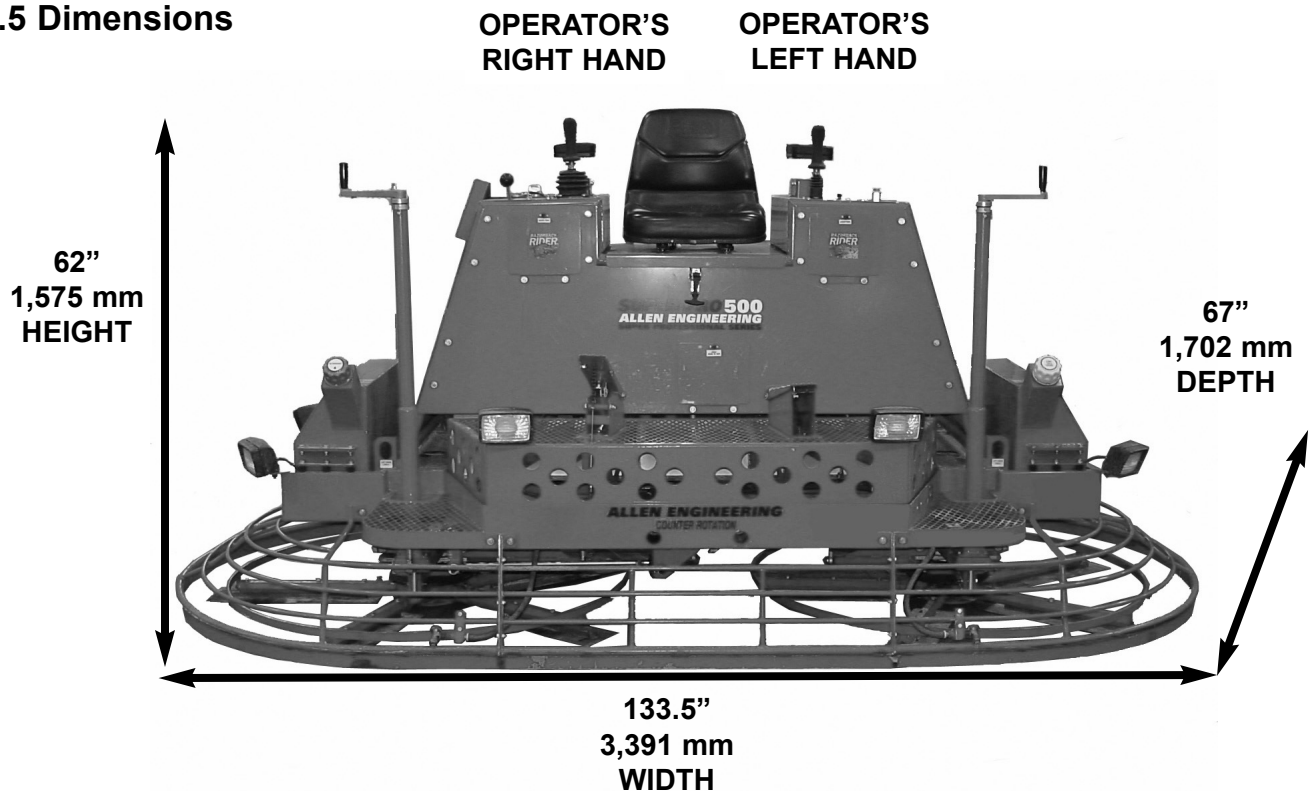
ALWAYS operate machine with all safety devices and guards in place and in working order.

ALWAYS keep area around muffler free of debris such as leaves, paper, cartons, etc. A hot muffler could ignite such items starting a fire.

ALWAYS replace worn or damaged components with spare parts designed and recommended by ALLEN ENGINEERING.

ALWAYS remove key before disconnecting battery and servicing machine to avoid accidental start-up.

1.5 Dimensions



1A OPERATIONS

SUPER PRO MODEL	500A-1500-SXD-56KB	500A-1500-SXD-56KB-
PSII		
Dimensions (LxWxH) (w/o seat, levers, pitch control)	133.5"(3,391mm) x 67"(1702mm) x 62"(1575mm)	133.5"(3,391mm) x 67"(1702mm) x 62"(1575mm)
Panning Path Width	131.5" (3340mm)	131.5" (3340mm)
Two Rotors (diameter)	60" (1,524mm) Non-Overlapping (NOI)	60" (1,524mm) Non-Overlapping (NOI)
Rotor Speed (RPM)	110	110
Weight	2,046 lbs. (928kg)	2,046 lbs (928kg)
Ten Finish Blades	6" x 23" (Standard)	6" x 23" (Standard)
Gearboxes (2)	Extra Heavy Duty (XHD)	Extra Heavy Duty (XHD)
Detachable Guard Rings	Yes	Yes
Flip-Up Hooded Seat Frame	Yes	Yes
Operator Control Panel	Yes	Yes
Powered Retardant Spray System / Capacity	Yes / 10 gal (37.85L) (1 Tank)	Yes / 10 gal (37.85L) (1 Tank)
Steering Control System	Mechanical Dual Levers	Powered Joysticks
Cruise Control	Standard	Standard
Pitch Control	Hand Crank	Hand Crank
Battery	12 Volt	12 Volt
Safety Shutdown Switch	Foot Pedal	Foot Pedal
Diesel Fuel Capacity	10 gal (37.85L) (1 Tank)	10 gal (37.85L) (1 Tank)
Approximate Running Time Between Fueling	4 hrs.	4 hrs.
Centrifugal Clutch	Mechanical Ramp	Mechanical Ramp
Drive Line System	Super Heavy Duty with U-joints	Super Heavy Duty with U-joints
Engine Hour and RPM Meter	Analog	Analog
Glow Plug Ready Light	Yes	Yes
Low Oil	Murphy Gauge	Murphy Gauge
Engine Temperature	Murphy Gauge	Murphy Gauge
Alternator	Murphy Gauge	Murphy Gauge
Lights	6	6
Alternator Output	55 Amp	55 Amp
Lifting Bridle (Nylon Straps)	Standard	Standard
ENGINE: Kubota (KB)	56 HP (41.75kw) @ 3000 RPM	56 HP (41.75kw) @ 3000 RPM
Engine Weight	410.1 lbs (186kg)	410 lbs (186kg)
OPTIONAL FEATURES:		
Ten Finish Blades	8" x 23"	8" x 23"
OPTIONAL ACCESSORIES:		
Trowel Cover	Super Pro 500 Recommended	Super Pro 500 Recommended
Dolly Jacks	Super Pro 500 Recommended	Super Pro 500 Recommended
Riding Trowel Trailer	6' x 12' Recommended	6' x 12' Recommended
Two Pans	1500 Series / 62" (1575mm)	1500 Series / 62" (1,575mm)
Trowel Arm Jig	Available	Available

Engine Make & Model

Kubota 56HP V2003 TE

Intermittent output	HP/rpm	56/2,800
Continuous output	HP/rpm	54/2,800
Fuel and type	Diesel, 4-cycle	
Cylinder arrangement	4 in-line	
Combustion chamber	Spherical Type	
Bore x Stroke	mm x mm	83.0 x 92.4
Total piston displacement	cc	1,999
Compression ratio		22:1
Length x width x height (standard model)	mm	667.1 x 520 x 678
Dry weight (standard model)	kg/lb	186/410.1

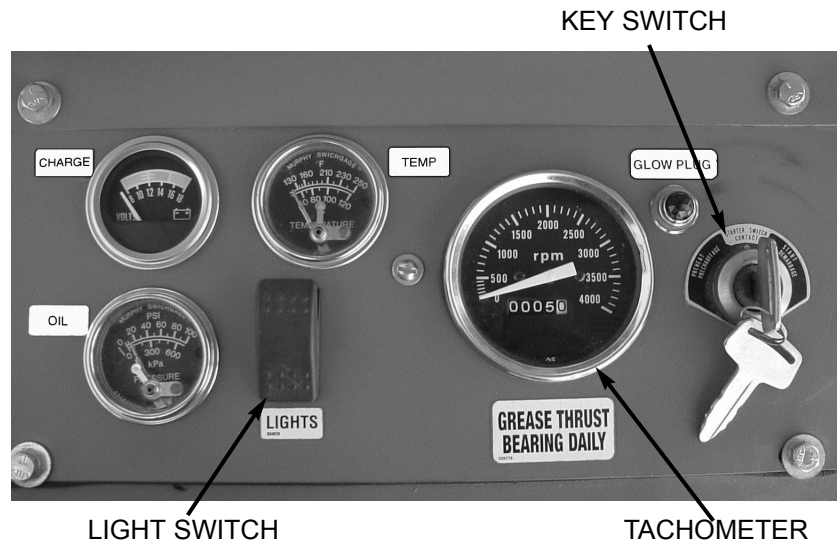
1.7 Description

The Riding Trowel is a modern high production machine. Finishing rate will vary depending on the operators skill and job conditions. The Riding Trowel has ten finishing blades. The *Extra Heavy Duty Fan Cooled Gearboxes* are designed to provide exceptional performance with low maintenance and trouble free use under some of the worst conditions. All Allen Razorback® Riders are equipped with a safety shutdown switch and a low oil shut down for added job safety and engine protection. Operating time between fuel refills is approximately 4 hours with a rotor speed of 110 RPM for the SP500A-1500-XHD. With proper maintenance and use, your Riding Trowel will provide you with exceptional service.

1.8 Before Starting

Before starting trowel check the following:

- * Oil level in engine
- * Oil level in trowel gearboxes
- * Fuel level
- * Condition of air filter
- * Condition of trowel arms and blades
- * Grease trowel daily



1.9 Starting

Before starting trowel refer to drawing above for location and identification of controls.

1. Sit down correctly on the Riding Trowel Seat. DO NOT attempt to start the Riding Trowel with out an operator in the seat.
2. Place left foot on the safety switch pedal located on the operators left hand side. Press down gently engaging the safety switch and maintain slight pressure.
3. Turn key counter-clockwise until the glow plug (red light) goes off.
4. Turn key clockwise until the engine engages and starts
5. Turn key to the run position. Allow engine to warm up before operating trowel.

Caution: Operating the starter for more than 5 seconds can damage the starter or engine. If engine fails to start release the switch and wait 10 seconds before operating starter again.

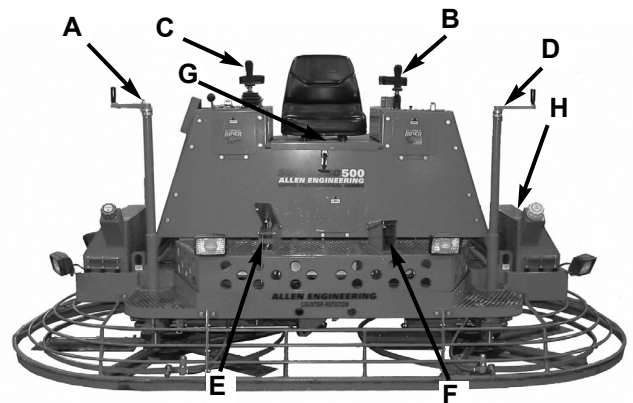
1A OPERATIONS

1.10 Operating

To utilize your Allen, Razorback® 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.

1. Point out the location of all controls:

- A. right pitch control
- B. control lever (forward reverse)
- C. control lever (left & right, forward & reverse
- D. left pitch control
- E. right foot pedal (throttle control)
- F. left foot pedal (safety switch)
- G. seat adjustment
- H. fuel gauge



2. With the operator in the seat, show him the functions of the control levers (B) and (C) and how to start the machine. (refer to page 1A-10)

A hard level concrete slab with water on the surface is an idea place for an operator to practice with the machine. For practice pitch the blades up approximately 1/4" on the leading 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 RPM.

CAUTION: After starting engine fully engage the throttle. This allows the engine to warm up quicker and also engages the centrifugal clutch to maximum RPM's. NOTE: If you start out at a low RPM this will partially engage the clutch, causing it to slip. This will severely damage the clutch, causing clutch failure.

CAUTION: DO NOT use excessive pressure on the control levers (Manual Steering) or Joysticks (Power Steering). Excessive pressure does not increase the reaction time of the machine and can damage steering controls.

1.11 Stopping

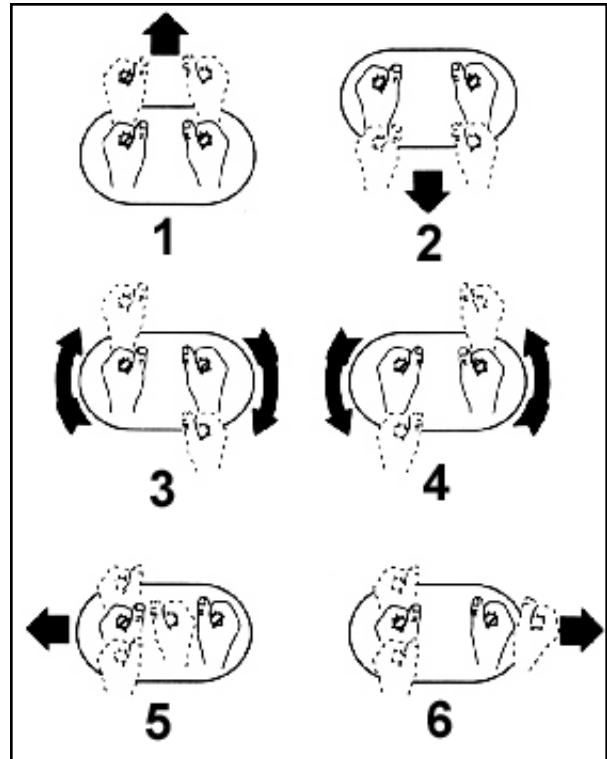
To stop the trowel's movement, return the control levers (C) and (B) to their neutral position and release pressure on the right foot pedal (E).

NOTE: On units equipped with an optional cruise control, push lever all the way down. This will release the right foot pedal and reduce engine speed to disengage the clutch. To stop engine turn the key to the off position.

1.12 Steering

A slight "feathering motion" forward and backward with the left hand control lever is required to move the machine in a straight path to the left or right while operating the right hand control lever. See illustration.

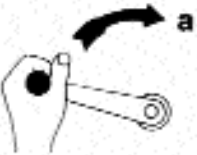
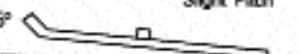
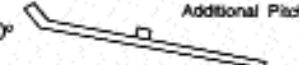
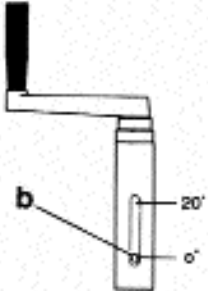
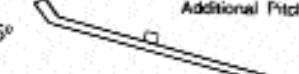
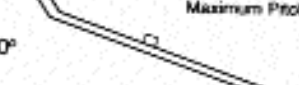
- 1 forward
- 2 reverse
- 3 rotate clockwise
- 4 rotate counter clockwise
- 5 left sideways
- 6 right sideways



1.13 Pitch Adjustment

Different pitch angles are needed as you work the different stages of the concrete. See the drawing 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

1A OPERATIONS

1.14 Periodic Maintenance Schedule

The chart below list basic trowel and engine maintenance. Refer to 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.

	Daily	Every 20 Hours	Every 50 Hours	Every 100 Hours	Every 300 Hours	Annually
Grease Trowel Arms	X					
Check Oil Level In Gearbox	X					
Check Fuel Level	X					
Inspect Air Filters/Replace as	X					
Check and Tighten External Hardware	X					
Grease Thrust Bearing	X					
Check Hydraulic Oil/Filter Refer to Page 1A-19	X					
Grease Control Linkage		X				
Check Drive Belts			X			
Check Valve Clearance			X			
Change Engine Oil				X		
Replace Oil Filters				X		
Oil Crosshead				X		
Grease Trowel Gearbox					X	
Change Hydraulic Oil						X

1.15 Trowel Gearbox

1. Check Oil levels in the gearbox daily (every 8 hours). Add oil if oil level is below the check sight glass. To add oil tilt trowel back and remove the side plug. Add oil through hole opening. Replace plug after proper level has been achieved. DO NOT fill past the plug. Use only Mobil Oil SHC 634, synthetic ISO Grade 460.

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.

To Tighten Belts on SP500A

1. Six bolts have to be loosened before you can proceed to step two.
2. Loosen six nuts(A) and tighten six bolts(B) until the belt tension needed is acquired as in Fig. 3.
3. Tighten nuts(A) back down snug with the motor mounting plate.

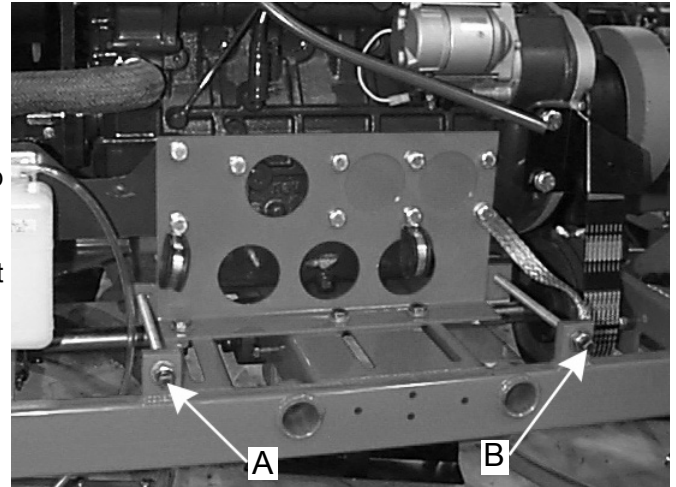


FIG. 1

To Replace on SP500A

1. Loosen the nuts(A) in Fig. 1.
2. Loosen set screws C(refer to Fig. 2) where the u-joint couples to the drive shaft.
4. Slide u-joint (D) off the drive shaft to create a gap in the drive line to allow removal of belts.
5. Install new belts through gap and reverse process to tighten new belts.
6. Tighten all nuts and jam nuts.

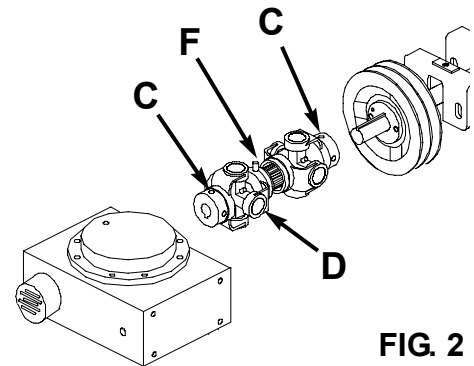


FIG. 2

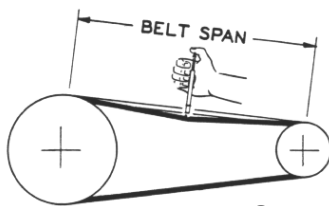


FIG. 3

Belt Tension on SP500A

The tension for the B44 belts on the SP500A should be as follows:

Maximum belt play should be from approximately 3/16" at 7.5 ft/lbs for new belts and 4.5-5 ft/lbs for used belts at the center of the span. New belts should be retensioned after the first 10-12 hours of operation.

- *Check tension frequently during the first 24-48 hours of operation.
- *Over tensioning shortens belt life and bearing life.
- *Keep belts free from foreign material which may cause slip.
- *Make V-drive inspection on a periodic basis, adjust tension when slipping.

1.17 Control Linkage Lubrication

The control linkage is equipped with seven grease fitting to lubricate pivot points. Grease control linkage once a week or every 20 hours to prevent wear and ensure free movement and smooth response of control levers.

Use a general purpose grease and add one to two shots of grease to each fitting.

1.18 Control Lever Adjustment

Be sure that the trowel is on a level surface. The control levers should line up evenly. If levers appear out of adjustment they can be re-adjusted forward or backwards as follows:

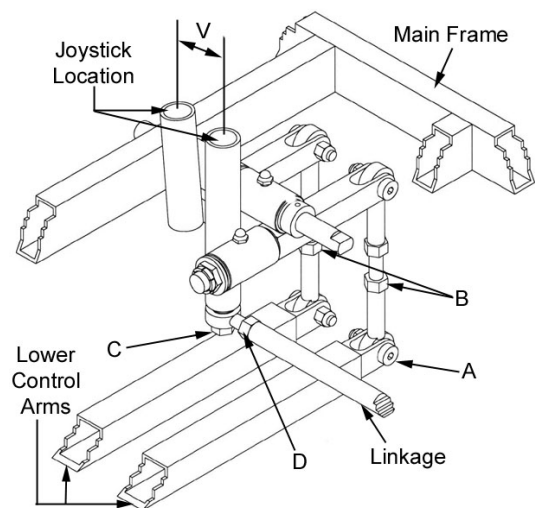
NOTE: Trowel must be placed on flat level surface that fully supports the blades on both rotors.

1. Remove bolts (A).
2. Loosen jam nuts (B).
3. Extend linkage to adjust control levers backward.
4. Shorten linkage to adjust linkage control levers forward.
5. After levers have been adjusted to the desired position, reassemble bolts (A) and tighten jam nuts (B).

1.19 Right Hand Control Lever Adjustment Right or Left

The right hand lever should be set to the same angle as that of the left to form a "V". If levers become out of adjustment adjust the right hand lever as follows:

1. Remove bolt (C).
2. Loosen jam nuts (D).
3. Extend linkage to move control levers to the right .
4. Shorten linkage to move control levers to the left.
5. After control lever has been adjusted to the desired position reassemble bolt (C). And tighten jam nuts (D).



1.20 Lift Lever Adjustment

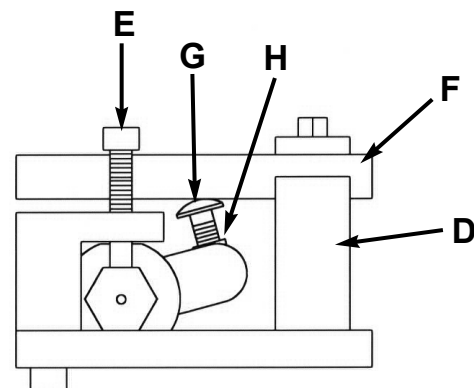
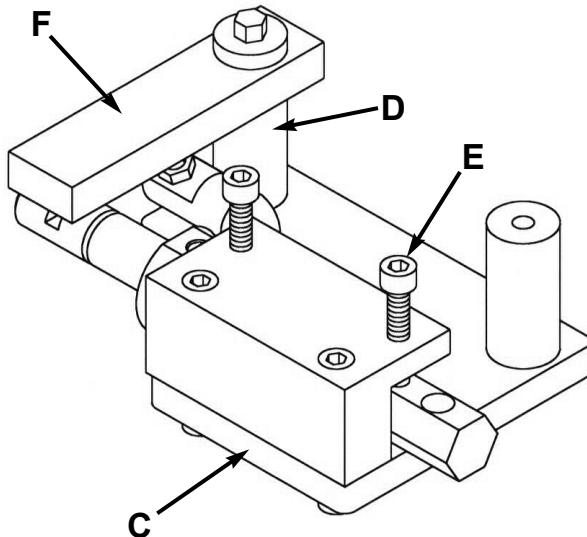
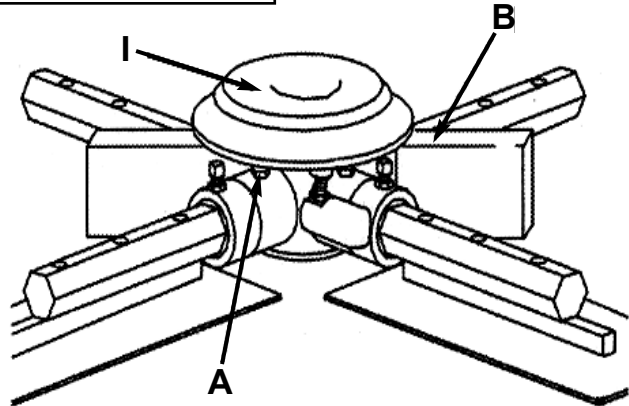
1A OPERATIONS

Damage to or replacement of a trowel arm can change the adjustment of the lift lever. This can unbalance the trowel arms and cause the trowel to wobble during operation. To operate smoothly the lift lever on all arms must be adjusted the same to ensure that the trowel is balanced correctly. Adjust trowel arms using optional trowel arm jig as described below.

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

1. Block up pressure plate (I) using wooden blocks (B).
2. Remove stabilizer ring from spider assembly (only on available models).
3. Remove blades from trowel arms.
4. Loosen hex head cap screw (A) and remove it and the external star washer from the spider boss.
5. Remove trowel arms from spider 5-boss with lift levers in place.
6. Clean flats on trowel arm before placing it in the trowel arm jig (PART# 016863).
7. For SP500A series trowels use the medium spacer (1-1/4 X 2-1/2) (D).
8. Insert trowel arm into trowel arm jig as shown.
9. Tighten socket head bolts (E) down on the trowel arm to hold in place.
10. Place carriage bolts (G) on lift lever under the trowel arm jig (F) as shown.
11. Loosen jam nut (H) and adjust the carriage bolt so that the top of the bolt is just touching the bottom of the trowel arm jig and tighten jam nut (H).
12. Attach trowel arm to spider boss and blades to arms.
13. Tighten down hex head cap screw to secure arm in place.
14. Reattach stabilizer ring (only on available models).

Picture for reference only



1A OPERATIONS

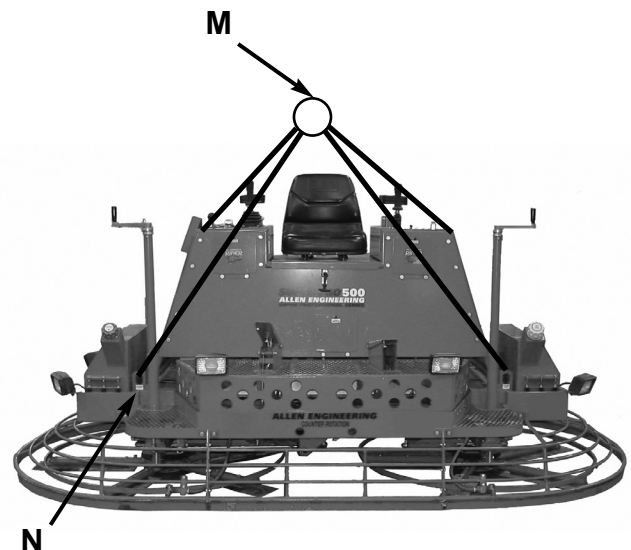
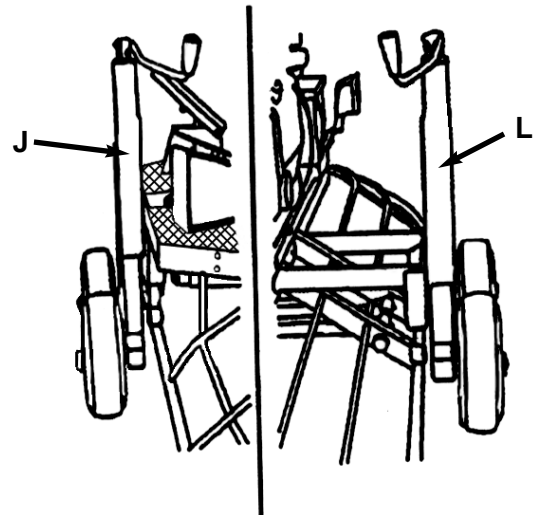
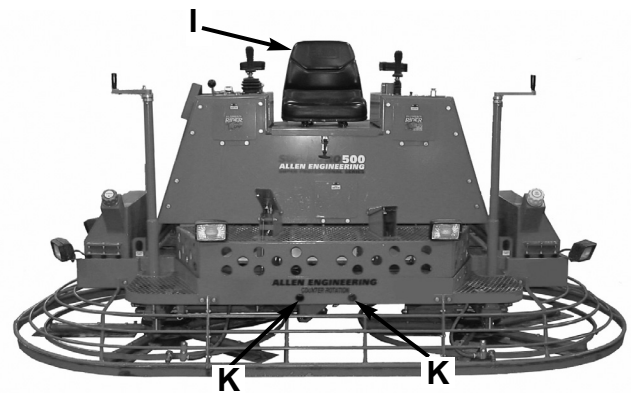
1.21 Transporting Trowel

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

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

CAUTION:

The dolly jack lifting system is designed for short moves and to aid in servicing the trowel. It is not a substitute for a towing system or trailer. An optional lifting bridle (M) is available and recommended for lifting the trowel. Attach the bridle to each of the four lifting eyes (N) on the trowel.



1.22 Battery Jump Start Procedure

1A OPERATIONS

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

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

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

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

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

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

1.23 Greasing Thrust Bearing

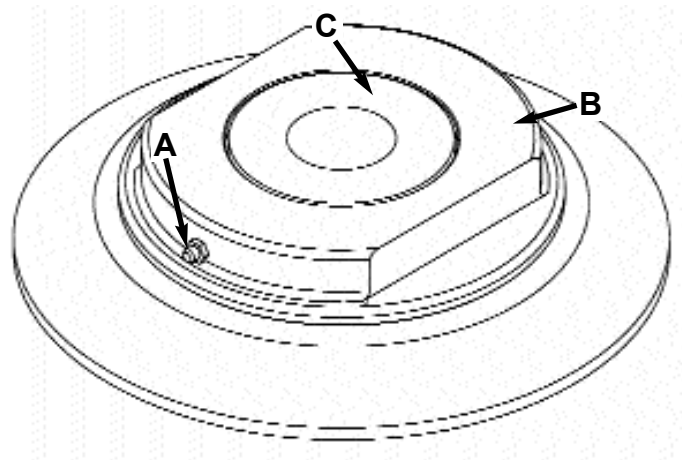
Step 1: Remove red plastic caps covering fittings (A).

Step 2: Properly seat grease nozzle on grease fitting.

Step 3: Add grease to pressure plate cap (B) and the pressure plate (C).

Step 4: Add grease everyday of operation.

NOTE: It is imperative that this bearing be re-greased after every clean -up especially if you use a high pressure washer. If this is not done on a daily basis, you will increase the chance of mechanical failure. Any failures due to lack of grease in the thrust bearing will not be covered under warranty.

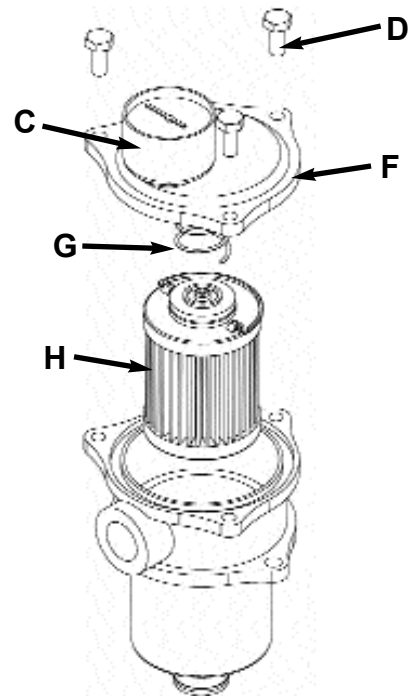
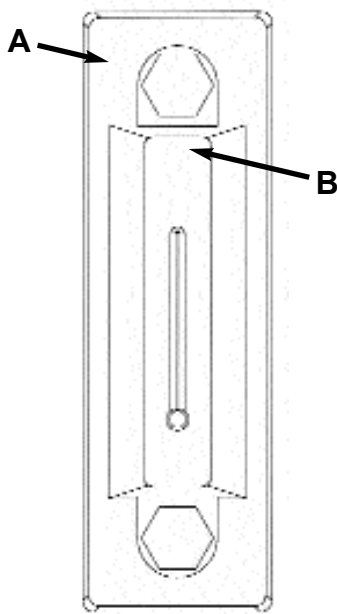


1A OPERATIONS

1.24 Hydraulic Preventive Maintenance

FILTER ASSEMBLY-039666 (E)

SIGHT GAUGE



1. On a daily basis, check for leaks around all hydraulic fittings. Tighten if necessary.
2. On a daily basis, check hydraulic hoses for any wear that might occur during operations.
3. On a daily basis, visually inspect for scoring on cylinder rod ends.
3. On a daily basis, check the hydraulic fluid level on the sight/temperature gauge (A). If you can see that the oil is not all the way to the top of the sight glass (B), then you will need add more hydraulic fluid using Mobil DTE 25 hydraulic fluid or equivalent. If temperature of hydraulic oil rises above 160 degrees, check to make sure the hydraulic oil is full. Also check to make sure that no damage is done to the cooler or any other hydraulic components. If the problem still persist then contact Allen Engineering Customer Service.
4. On a daily basis, check the gauge-039665 (C) located on top of the hydraulic oil tank. If the needle on the gauge reaches 20 PSIG or is in the red, then the oil filter is dirty and needs to be replaced. Replace with Filter part number 039664.

Steps for Replacing Filter:

- > First remove the three bolts (D) located on top the the filter assembly-039666 (E). Be sure to hold slight pressure on the cap (F). There is a spring (G) located underneath the cap.
- > Next remove and replace the filter-039664 (H).
- > Replace the cap and bolts. Tighten snug to ensure that the o-ring is properly seated.

Note: If you do not experience any problems with the filter, it is a good practice to replace the filter on a annual basis.

5. On a yearly basis, grease joystick mechanisms. Also check for tears and cracks in the rubber boots.
6. On a yearly basis, it is recommended to change hydraulic oil. It will take 4 gal. (15.14L) of Mobil DTE 25 hydraulic oil or equivalent fluid to completely change out the hydraulic oil system of your rider.

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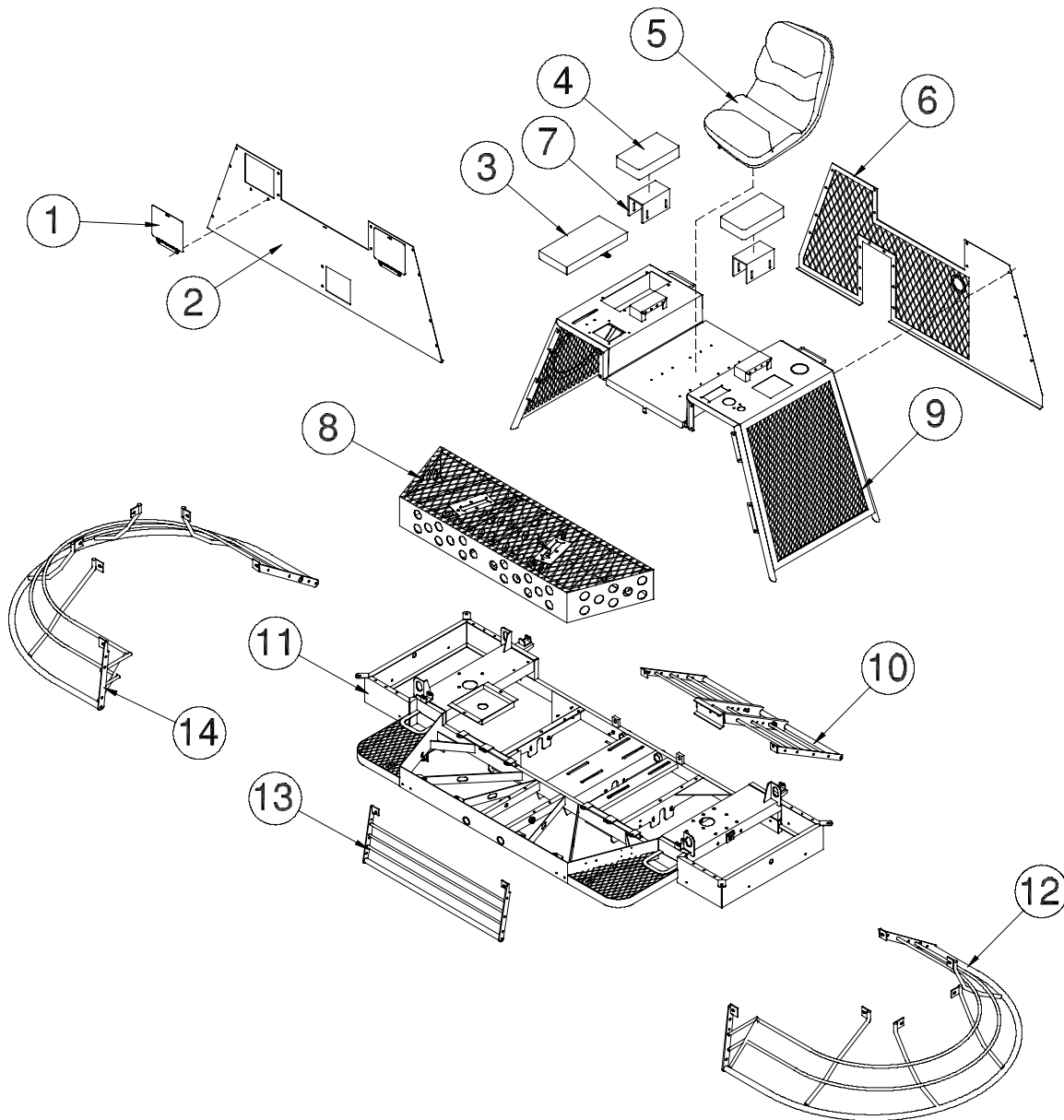
NOTE: All set screws used on MODEL SP500A-1500-XHD have blue (LOC-TITE™) applied at the factory. If set screw is removed or loosened for any reason re-apply blue (LOC-TITE™).

NOTE: All grease fittings on MODEL SP500A-1500-XHD are capped with CAP PLUG GC-5 part number #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 couplings, 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.

2A PARTS

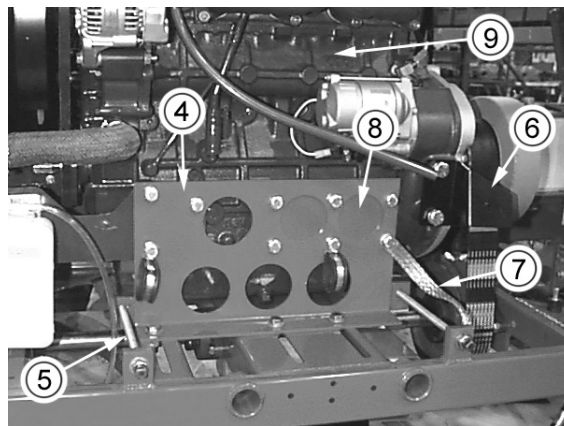
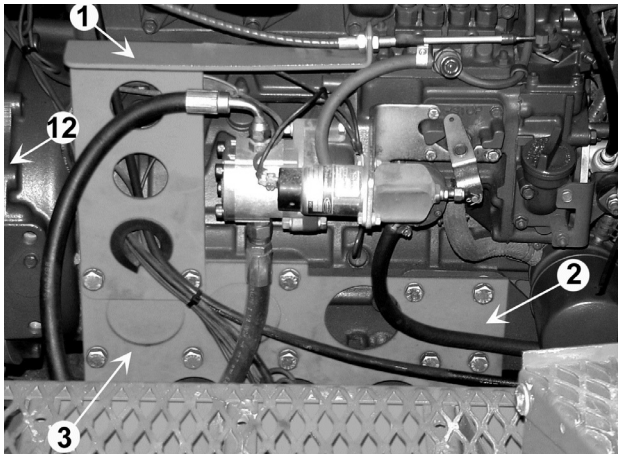
FRAME ASSEMBLY



ILL.	PART #	DESCRIPTION	QTY.
1.	.040270	ACCESS PANEL DOOR	3
2.	.040176	FRONT PANEL	1
3.	.040244	CONTROL PANEL LID	1
4.	.039991	ARM REST PAD	2
5.	.037769	SEAT	1
6.	.040257	REAR PANEL	1
7.	.040254	ARM REST MOUNT	2
8.	.039928	DECK, POWER STEERING	1
	.040580	DECK, MANUAL STEERING	1
9.	.039526	SEAT FRAME	1
10.	.039507	REAR RING	1
11.	.039470	MAIN FRAME, POWER STEERING	1
	.040621	MAIN FRAME, MANUAL STEERING	1
12.	.039855	LEFT HAND END RING	1
13.	.039551	FRONT RING	1
14.	.039854	RIGHT HAND END RING	1
15.	.039436	DOLLY JACK BRACKET (not shown)	1

ENGINE MOUNTING SYSTEM

2A PARTS

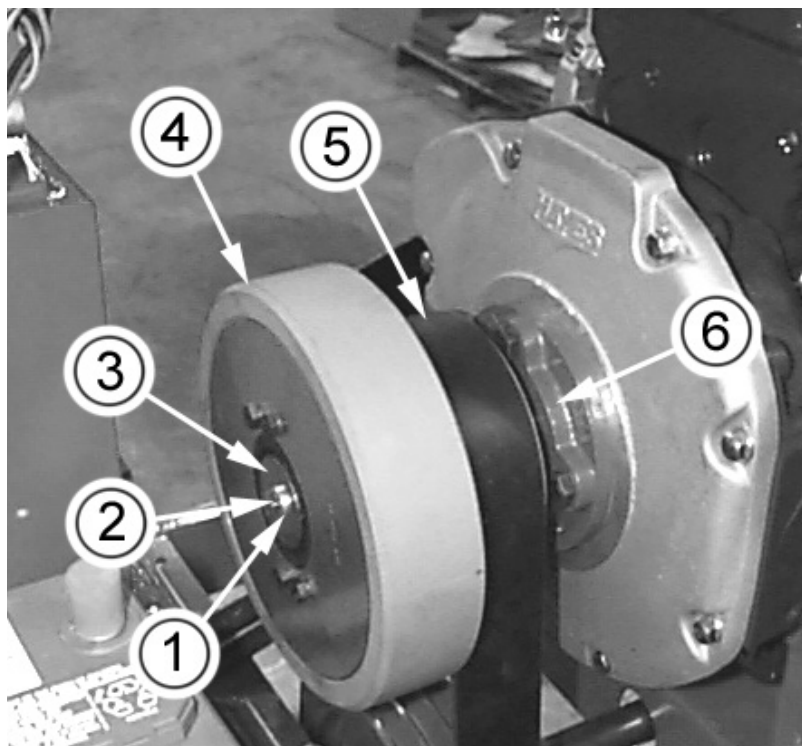


ILL.	PART #	DESCRIPTION	QTY.
1.	040140	THROTTLE BRACKET	.1
2.	039449	FRONT ENGINE PLATE	.1
3.	039444	FRONT ENGINE PLATE SPACER (BEHIND)	.1
4.	040180	REAR ENGINE PLATE	.1
5.	042270	ADJUSTMENT BOLT 1/2 X 13 X 9 SQHHS	.2
6.	039974	MUFFLER MOUNT BRACKET	.1
7.	040251	BRAIDED GROUND STRAP	.1
8.	039446	REAR ENGINE PLATE SPACER (BEHIND)	.1
9.	039758	ENGINE	.1
10.	039607	HYDRAULIC COOLER MOUNT*	.2
11.	039463	MUFFLER STRAP*	.2
12.	039956	HOUSING AND STUB SHAFT	.1
13.	039503	TAILPIPE, 90° *	.1
14.	040025	ALTERNATOR*	.1
15.	040232L	HYD. COOLER MOUNTING BRACKET LH*	.1
16.	040232R	HYD. COOLER MOUNTING BRACKET RH*	.1
17.	040401	MUFFLER AND TAILPIPE ASSEMBLY*	.1
18.	040533	HOSE, DRAIN OIL	.1

* = indicates parts not shown

2A PARTS

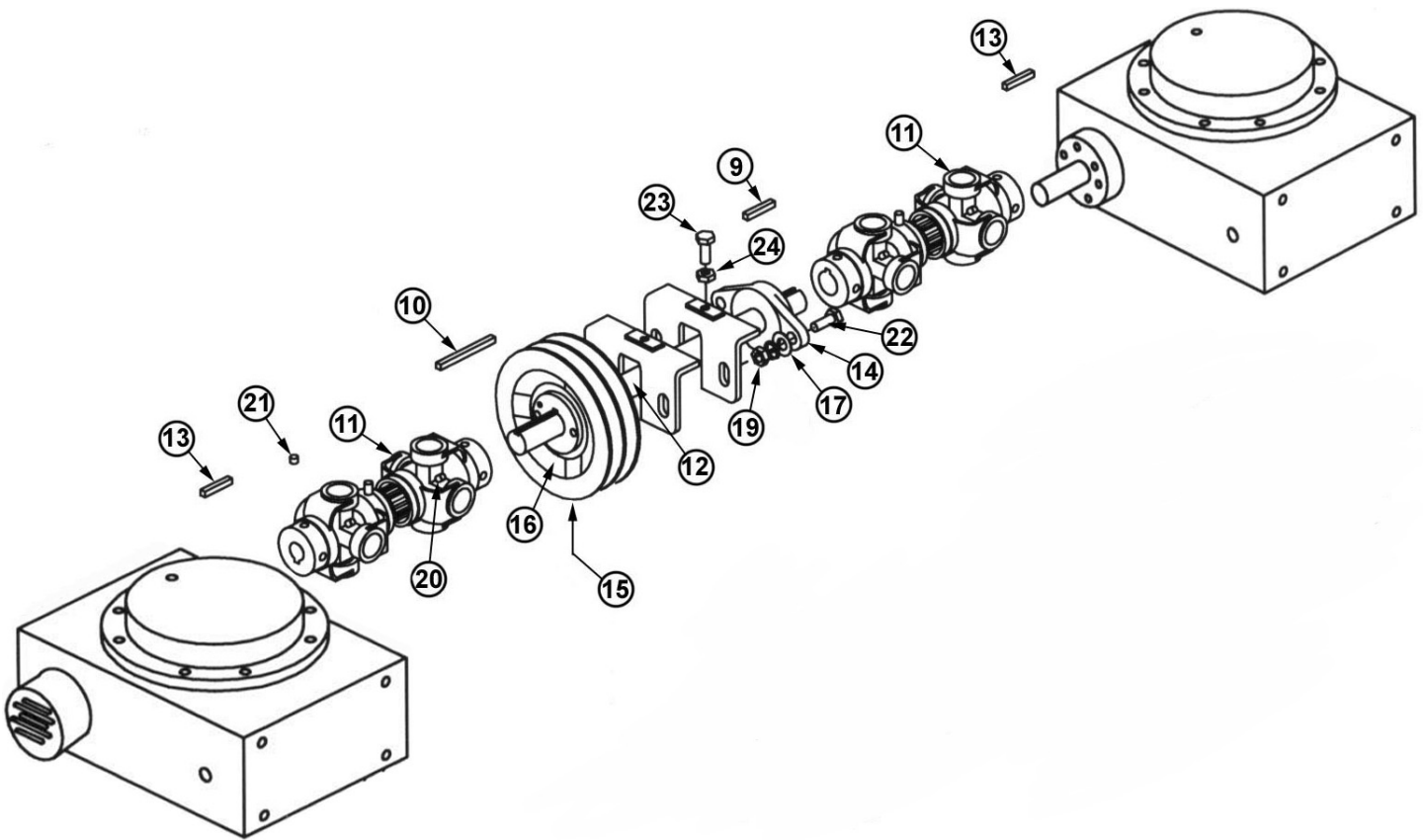
CLUTCH ASSEMBLY 6" PULLEY -- 1-1/4" BORE



ILL.	PART #	DESCRIPTION	QTY.
1.....	.010091	.FSTN, LW 3/8	1
2.....	.028402	.BOLT, CLUTCH (BOLT) 3/8 X 1 1/2 G128	1
3.....	.026433	.PRESSURE WASHER	1
4.....	.039950	.CLUTCH, 6" PULLEY 3 GROOVE	1
	.041264	.CLUTCH, 5VX 3 GROOVE	1
5.....	.040240	.BELT, 3B x 43	1
	.037764	.BELT, 3/5VX-450	1
6.....	.039769	.STUB SHAFT	1
7.....	.039176	.KEY, 3/8 x 5/16 x 3-3/4*	1

DRIVELINE ASSEMBLY

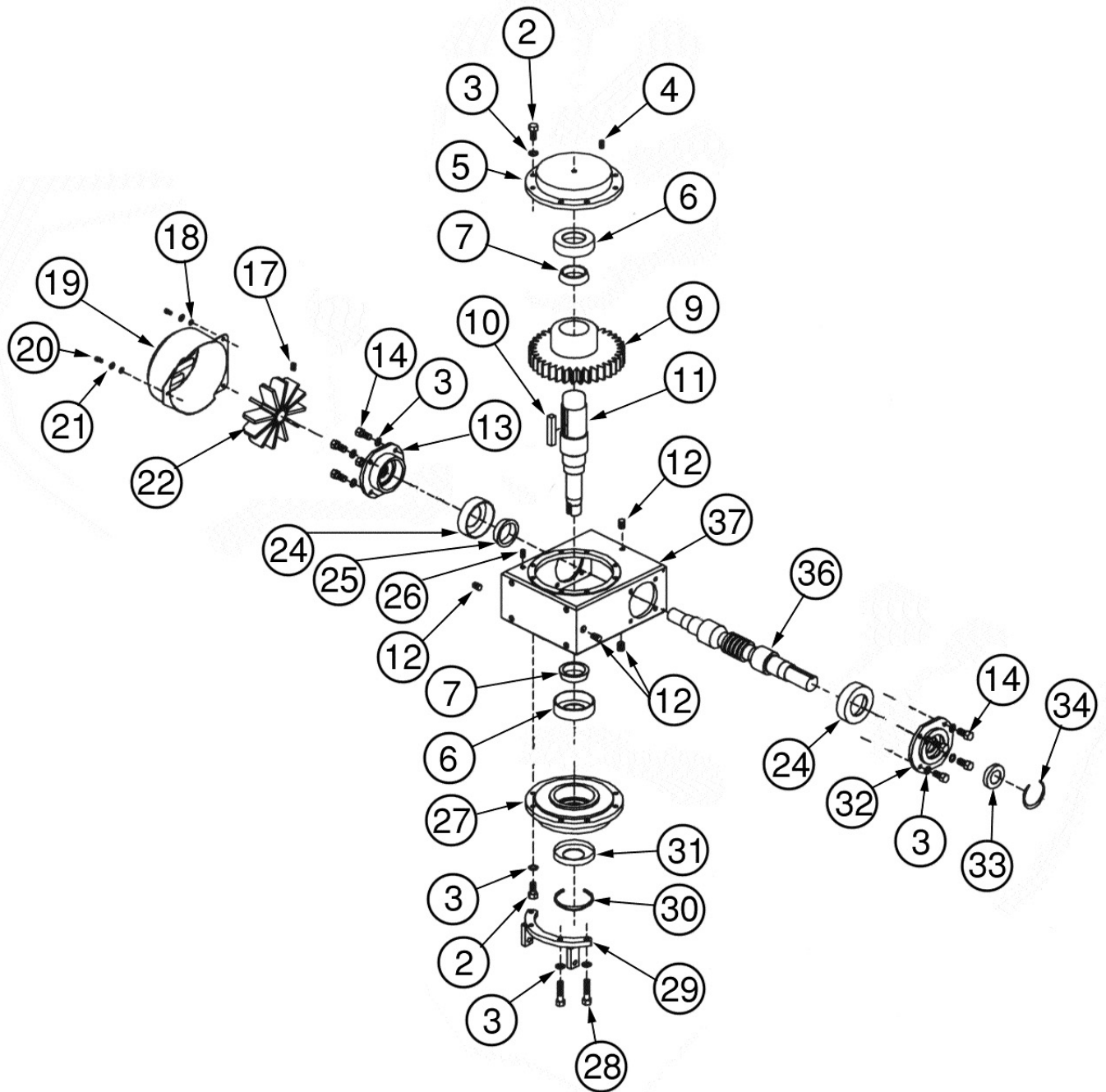
2A PARTS



ILL.	PART #	DESCRIPTION	QTY.
8.	.010458	SET SCREW 3/8-16 x 3/8	16
9.	.010307	KEY, 1/4 SQ. x 2"	1
10.	.024820	KEY, 1/4 SQ. x 4"	1
11.	.037684	U-JOINT ASSEMBLY	2
12.	.042536	SHAFT, CENTER DRIVE	1
13.	.010102	NUT, HEX 3/8-16	2
14.	.039130	BEARING, 2 HOLE FLANGE x 1-1/4" BORE	4
15.	.039757	PULLEY, 8" 3B	1
	.041266	PULLEY, 3-5V8.0SF	1
16.	.037766	BUSHING	1
	.041267	BUSHING, SF 1 1/4"	1
17.	.011490	FLAT WASHER 1/2" HARDENED	8
19.	.012981	1/2" X 20 STOVER	4
20.	.010513	GREASE FITTING 1/8-27 NPT	8
21.	.032745	PLUG, PLASTIC 1/8-27	8
22.	.010072	BOLT, 1-1/2 x 24	8
23.	.039970	BOLT, 3/8-16 x 1 1/4	2
24.	.010102	NUT, 3/8-16	2

2A PARTS

XHD GEARBOX RH #041568

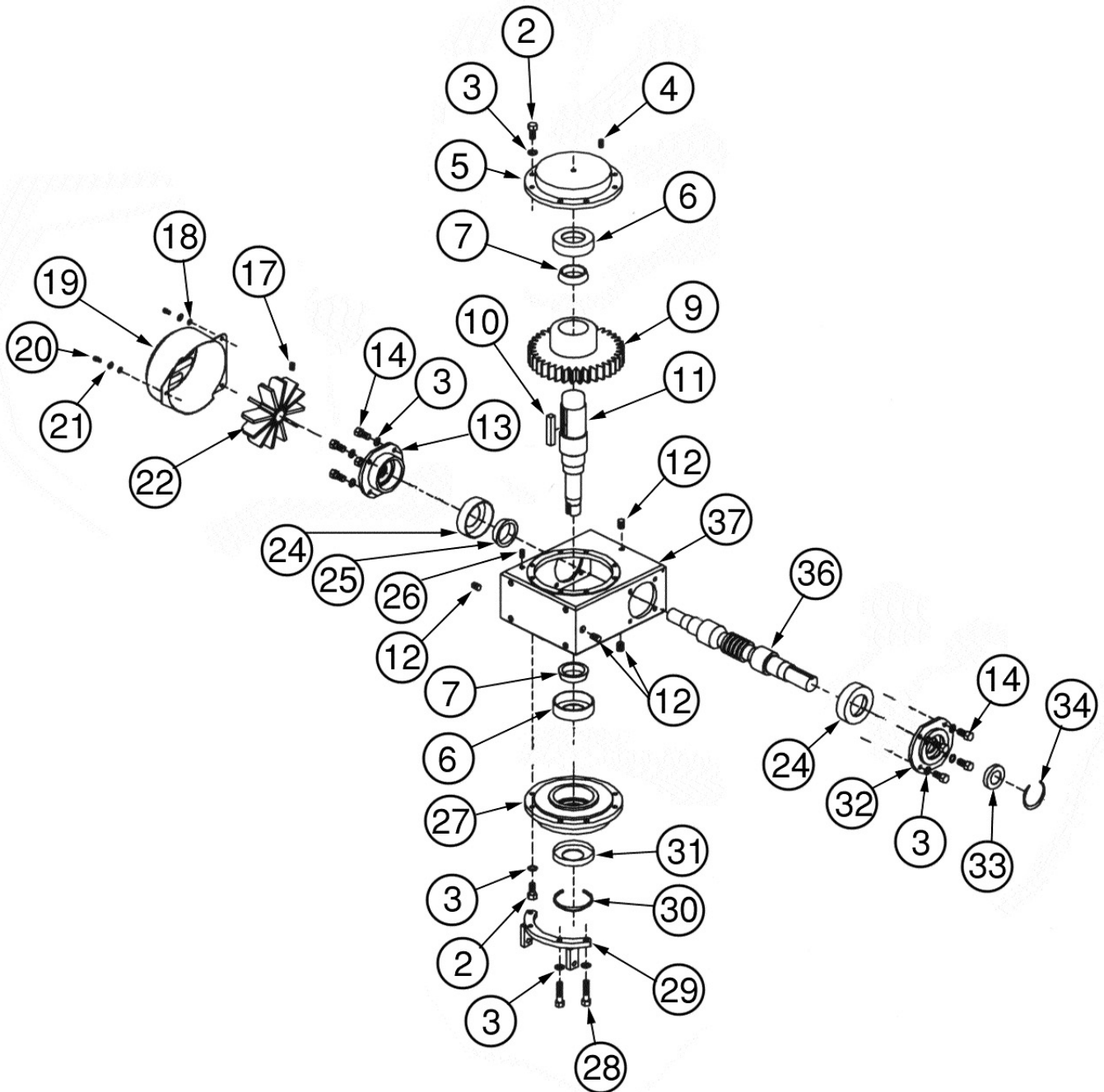


XHD GEARBOX RH #041568**2A
PARTS**

ILL.	PART #	DESCRIPTION	QTY.
2.	.010069	BOLT, 1/2-13 X 1 1/2	.12
3.	.010093	WASHER, LOCK 1/2	.24
4.	.032745	PLUG, PLASTIC P-18 1/8-27	.1
5.	.041548	PLATE, TOP	.1
6.	.029184	TIMKEN RACE 3720	.2
7.	.029183	TIMKEN CONE 3780	.2
9.	.041555	GEAR, BRONZE IRON RIGHT	.1
10.	.029146	KEY, GEAR	.2
11.	.041565	MAINSHAFT, RH XHD	.1
12.	.012953	PLUG 3/4 NPT	.3
13.	.041552	FLANGE, GEARBOX	.2
14.	.010068	BOLT, 1/2-13 X 1 1/4	.8
17.	.012869	SCREW, SET 1/4-20 X 3/8	.1
18.	.018072	WASHER, FLAT 3/16 SAE	.3
19.	.041579	SHROUD, FAN	.1
20.	.013484	SCREW, 10-24 X 1/2	.3
21.	.013740	WASHER, LOCK #10	.3
22.	.041578	FAN	.1
24.	.041560	TIMKEN RACE HM89410	.2
25.	.041561	TIMKEN CONE HM89443	.2
26.	.029529	VALVE, RELIEF 1/8-27 NPT	.1
27.	.041549	PLATE, BOTTOM	.1
28.	.013619	BOLT, 1/2-13 X 2	.4
29.	.042542	BRKT, MOUNT	.1
30.	.032715	RING, RETAINING UR275	.1
31.	.029180	NATIONAL SEAL 472572	.1
33.	.029179	NATIONAL SEAL 473215	.2
34.	.032714	RING, RETAINING UR237	.2
36.	.041563	SHAFT, COUNTER R.H. WORM	.1
37.	.041546	CASE, GEARBOX	.1
38.	.015672	SIGHT GLASS	.1
39.	.015673	OIL RINGS	.1
40.	.041571-10	.8 HOLE GASKET	AS REQ
41.	.041571-5	.8 HOLE GASKET	AS REQ
42.	.041571-3	.8 HOLE GASKET	AS REQ
43.	.041571-2	.8 HOLE GASKET	AS REQ
44.	.041570-10	.4 HOLE GASKET	AS REQ
45.	.041570-5	.4 HOLE GASKET	AS REQ
46.	.041570-3	.4 HOLE GASKET	AS REQ
47.	.041570-2	.4 HOLE GASKET	AS REQ

2A PARTS

XHD GEARBOX LH #041569

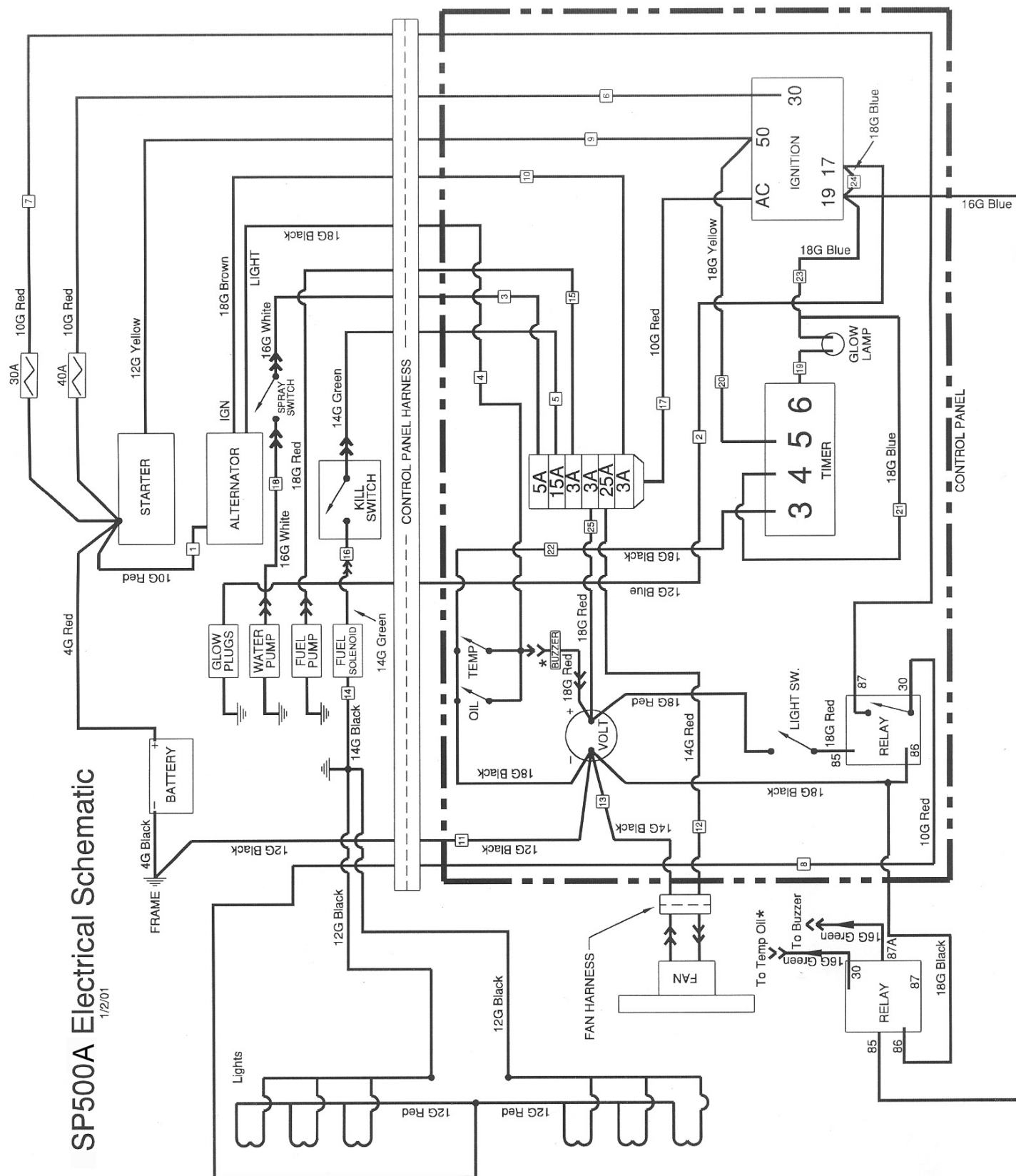


XHD GEARBOX LH #041569**2A
PARTS**

ILL.	PART #	DESCRIPTION	QTY.
2.	010069	BOLT, 1/2-13 X 1 1/2	.12
3.	010093	WASHER, LOCK 1/2	.24
4.	032745	PLUG, PLASTIC P-18 1/8-27	.1
5.	041548	PLATE, TOP	.1
6.	029184	TIMKEN RACE 3720	.2
7.	029183	TIMKEN CONE 3780	.2
9.	041555	GEAR, BRONZE IRON LEFT	.1
10.	029146	KEY, GEAR	.2
11.	041557	MAINSHAFT, LH XHD	.1
12.	012953	PLUG 3/4 NPT	.3
13.	041552	FLANGE, GEARBOX	.2
14.	010068	BOLT, 1/2-13 X 1 1/4	.8
17.	012869	SCREW, SET 1/4-20 X 3/8	.1
18.	018072	WASHER, FLAT 3/16 SAE	.3
19.	041579	SHROUD, FAN	.1
20.	013484	SCREW, 10-24 X 1/2	.3
21.	013740	WASHER, LOCK #10	.3
22.	041578	FAN	.1
24.	041560	TIMKEN RACE HM89410	.2
25.	041561	TIMKEN CONE HM89443	.2
26.	029529	VALVE, RELIEF 1/8-27 NPT	.1
27.	041549	PLATE, BOTTOM	.1
28.	013619	BOLT, 1/2-13 X 2	.4
29.	042542	BRKT, MOUNT	.1
30.	032715	RING, RETAINING UR275	.1
31.	029180	NATIONAL SEAL 472572	.1
33.	029179	NATIONAL SEAL 473215	.2
34.	032714	RING, RETAINING UR237	.2
36.	041553	SHAFT, COUNTER L.H. WORM	.1
37.	041546	CASE, GEARBOX	.1
38.	015672	SIGHT GLASS	.1
39.	015673	OIL RINGS	.1
40.	041571-10	8 HOLE GASKET	AS REQ
41.	041571-5	8 HOLE GASKET	AS REQ
42.	041571-3	8 HOLE GASKET	AS REQ
43.	041571-2	8 HOLE GASKET	AS REQ
44.	041570-10	4 HOLE GASKET	AS REQ
45.	041570-5	4 HOLE GASKET	AS REQ
46.	041570-3	4 HOLE GASKET	AS REQ
47.	041570-2	4 HOLE GASKET	AS REQ

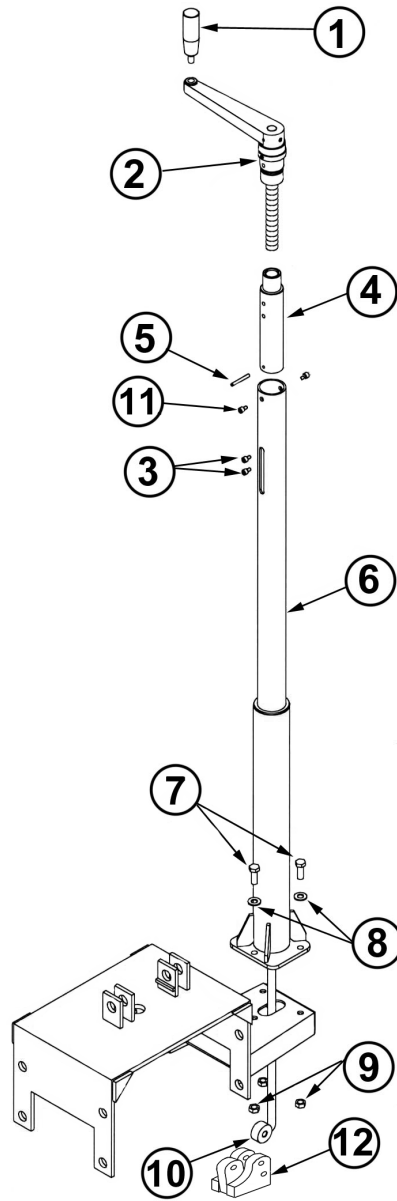
SP500A Electrical Schematic

1/2/01



PITCH CONTROL ASSEMBLY
PART # 040151

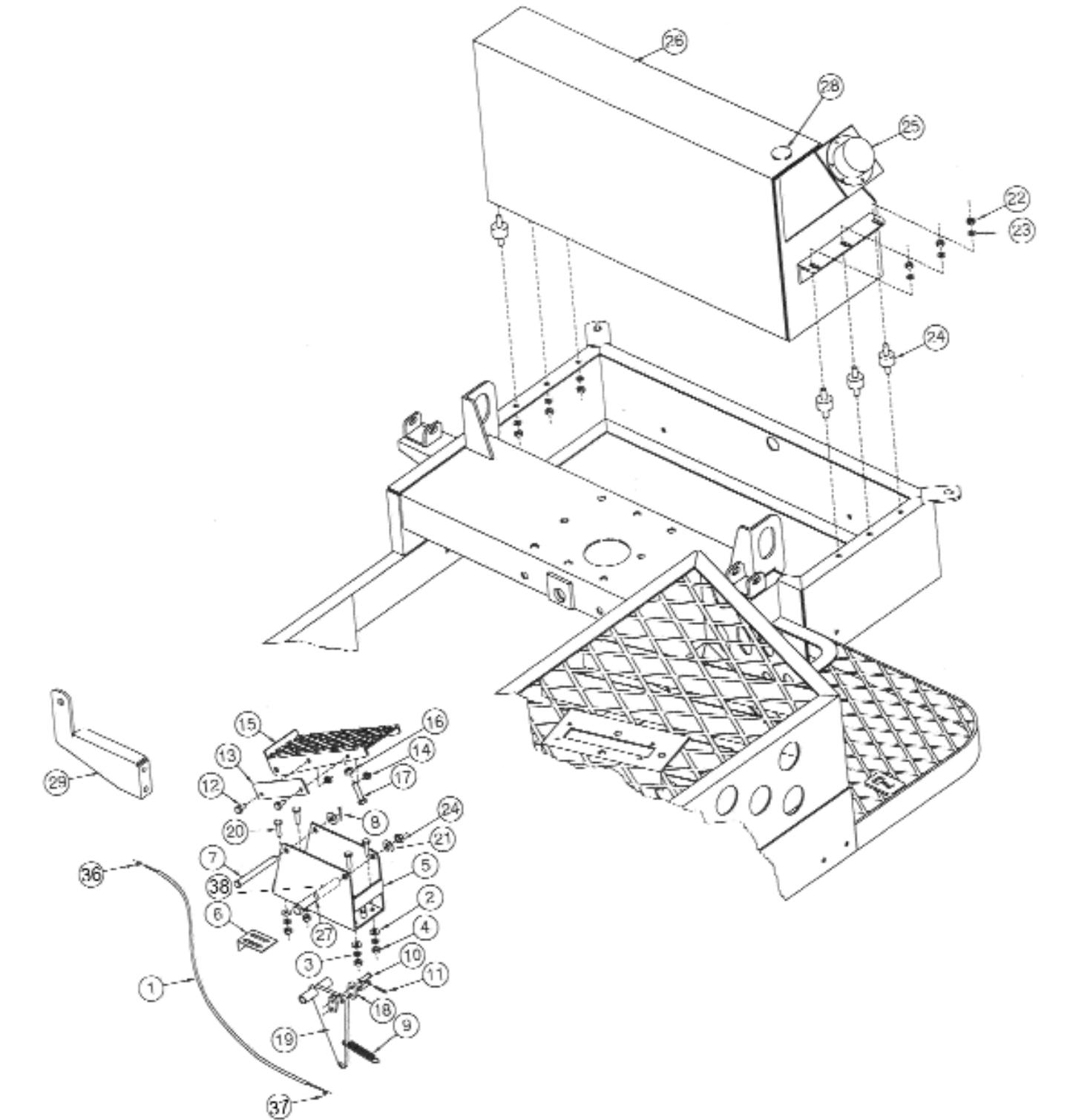
2A
PARTS



ILL.	PART #	DESCRIPTION	QTY.
1.	.032115	 KNOB, PITCH CONTROL	1
2.	.040147	 CRANK HANDLE ASSEMBLY	1
3.	.015768	 SOCKET HEAD CAP SCREW 1/4-20 X 1/4	2
4.	.029812	 BUSHING, SLIDE	1
5.	.040276	 PIN, SPIRAL 1/4 X 1-1/2	1
6.	.040228	 ASSEMBLY, TUBE AND PLATE	1
7.	.010036	 BOLT, 3/8-16 X 1	3
8.	.017751	 FW, HARD 3/8	3
9.	.010464	 NUT, NYLOCK 3/8-16	3
10.	.040135	 SHAFT	1
11.	.015410	 SCREW, 1/4-20 x 3/8	2
12.	.042540	 PITCH CONTROL ADAPTOR	1

2A PARTS

THROTTLE & FUEL SYSTEM ASSEMBLY



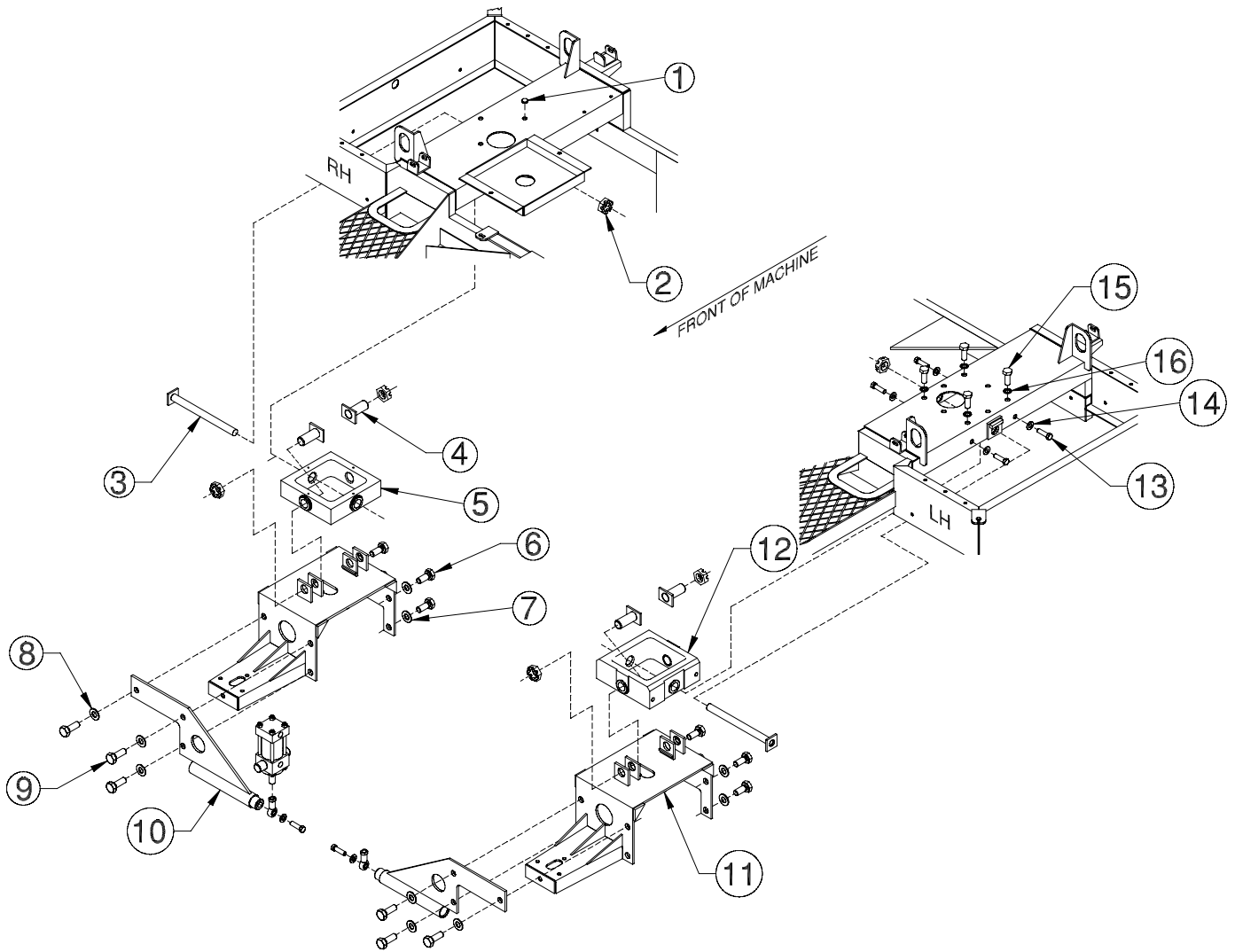
THROTTLE & FUEL SYSTEM ASSEMBLY (cont'd)

2A PARTS

ILL.	PART #	DESCRIPTION	QTY.
1.	040393	THROTTLE CABLE LONG THROW 3"	1
2.	010081	FLAT WASHER 1/4	10
3.	010089	LOCK WASHER 1/4	4
4.	010098	HEX NUT 1/4-20	4
5.	042337	BASE, FOOT SPEED	1
6.	039992	BRACKET, LOWER HD THROTTLE CABLE (LONG)	1
7.	028895	PIN, CLEVIS 3/8 x 3 1/2	1
8.	026226	PIN, COTTER 3/32 x 3/4 (MANUAL)	2
9.	024981	SPRING	1
10.	024982	PIN, CLEVIS 1/4 x 51/64	2
11.	010131	PIN, COTTER 1/16 x 1	2
12.	010001	BOLT, 1/4-20 x 1/2	2
13.	024985	PLATE, STOP	1
14.	020542	NUT, STOVER 1/4-20	2
15.	024839	PEDAL, FOOT SPEED	1
16.	010100	NUT, HEX 5/16-18	1
17.	010021	BOLT, 5/16-18 x 1 1/4	1
18.	040246	SHACKLE 1 1/4"	2
19.	024847	FULCRUM, FOOT SPEED	1
20.	010003	BOLT, 1/4-20 x 1	2
21.	010082	FLAT WASHER 5/16	2
22.	020514	NUT, STOVER 3/8-16	12
23.	010091	FLAT WASHER 3/8	12
24.	028556	RUBBER ISOLATOR	6
25.	039278R	CAP, FUEL FILTER ASSEMBLY	1
26.	039372	TANK, FUEL	1
27.	010046	BOLT, 3/8-16 x 3 1/2	1
28.	040350	GAUGE, GAS REMOTE	1
29.	040140	BRACKET, THROTTLE	1
30.			
31.	010006	BOLT, 1/4-20 x 1 3/4 (NOT SHOWN)	4
32.	010081	FLAT WASHER 1/4 (NOT SHOWN)	4
33.	015713	BUSHING, RUBBER (NOT SHOWN)	4
34.	020542	NUT, STOVER 1/4-20 (NOT SHOWN)	4
35.	010497	PLUG, 1/4 NPT BI SQ. PIPE (NOT SHOWN)	1
36.	024984	PIVOT, FOOT SPEED CONTROL	2
37.	010131	PIN, COTTER 1/16 x 1	2
38.	039894	PUSH TOOL ASSEMBLY	1

2A PARTS

CROSSHEAD AND PIVOT BOX ASSEMBLY



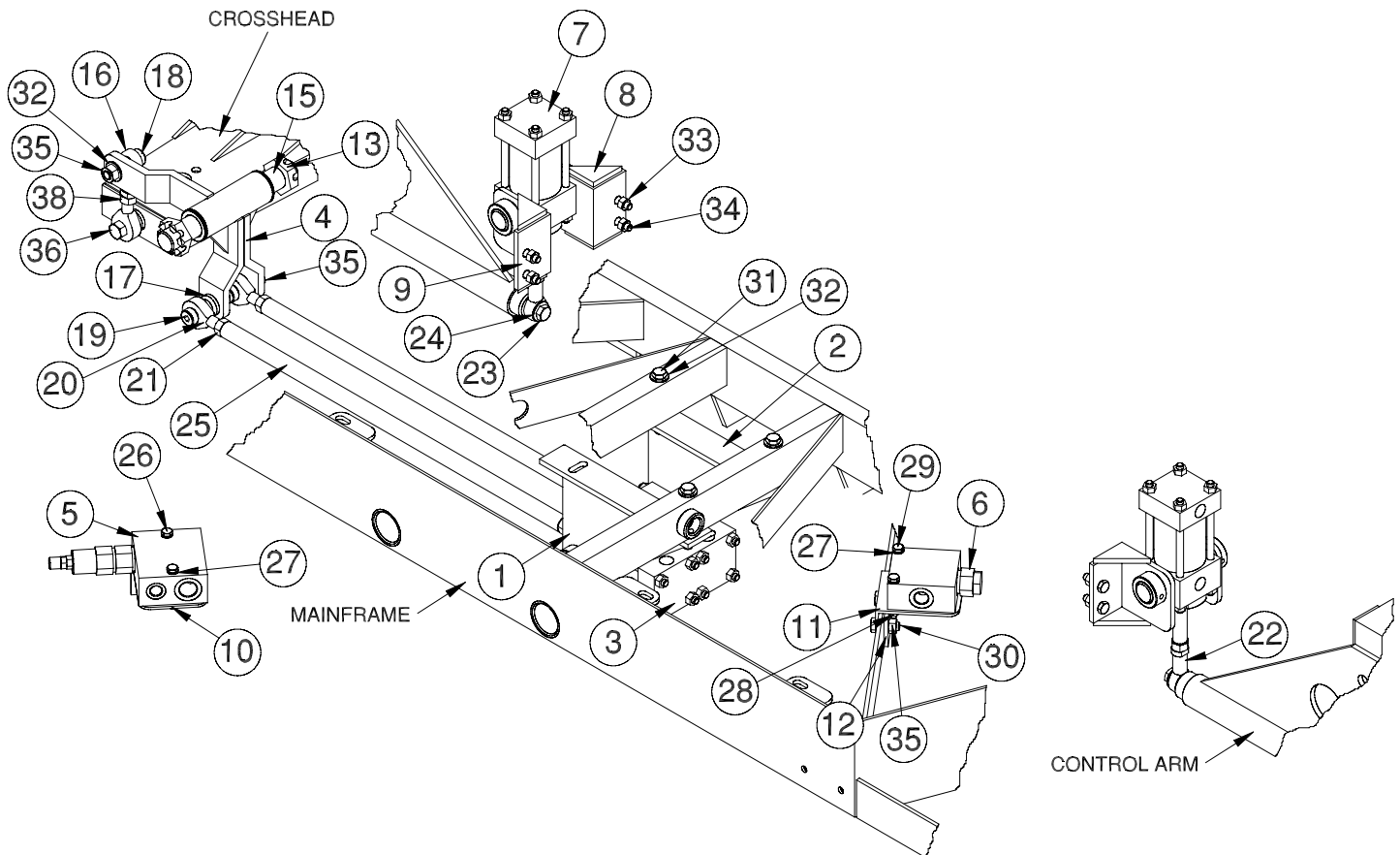
CROSSHEAD AND PIVOT BOX ASSEMBLY (cont'd)**2A
PARTS**

ILL.	PART #	DESCRIPTION	QTY.
1.	.026462	PLUG, CHROME 1/2"	.8
2.	.039823	NUT, SELF-LOCK 1"-8	.6
3.	.039358	CROSSHEAD PIN	.2
4.	.039832	CROSSHEAD BOLT	.4
5.	.039841R	CROSSHEAD BOX ASSEMBLY (RH)	.1
6.	.020915	BOLT, 5/8-11 x 1-1/2	.10
7.	.010095	LOCKWASHER, 5/8	.10
8.	SAME AS ITEM #7		.6
9.	.019969	BOLT, 5/8-11 x 1-3/4	.6
10.	.042544R	CROSSHEAD ARM RH	.1
	.042544L	CROSSHEAD ARM LH	.1
11.	.042545	CROSSHEAD	.2
12.	.039841L	CROSSHEAD BOX ASSEMBLY (LH)	.1
13.	.010070	BOLT, 1/2-13 x 1-3/4	.4
14.	.010093	LOCKWASHER, 1/2	.4
15.	.010066	BOLT, 1/2-13 x 3/4	.4
16.	SAME AS ITEM #14		.4

2A PARTS

HYDRAULIC STEERING ASSEMBLY

SEE PAGE 2A-20
FOR HOSE AND
TUBE LOCATION



**OPTIONAL HYDRAULIC REPAIR KIT
AVAILABLE FOR 3 & 7039670
ONE KIT EQUALS ONE CYLINDER**

HYDRAULIC STEERING ASSEMBLY (cont'd)

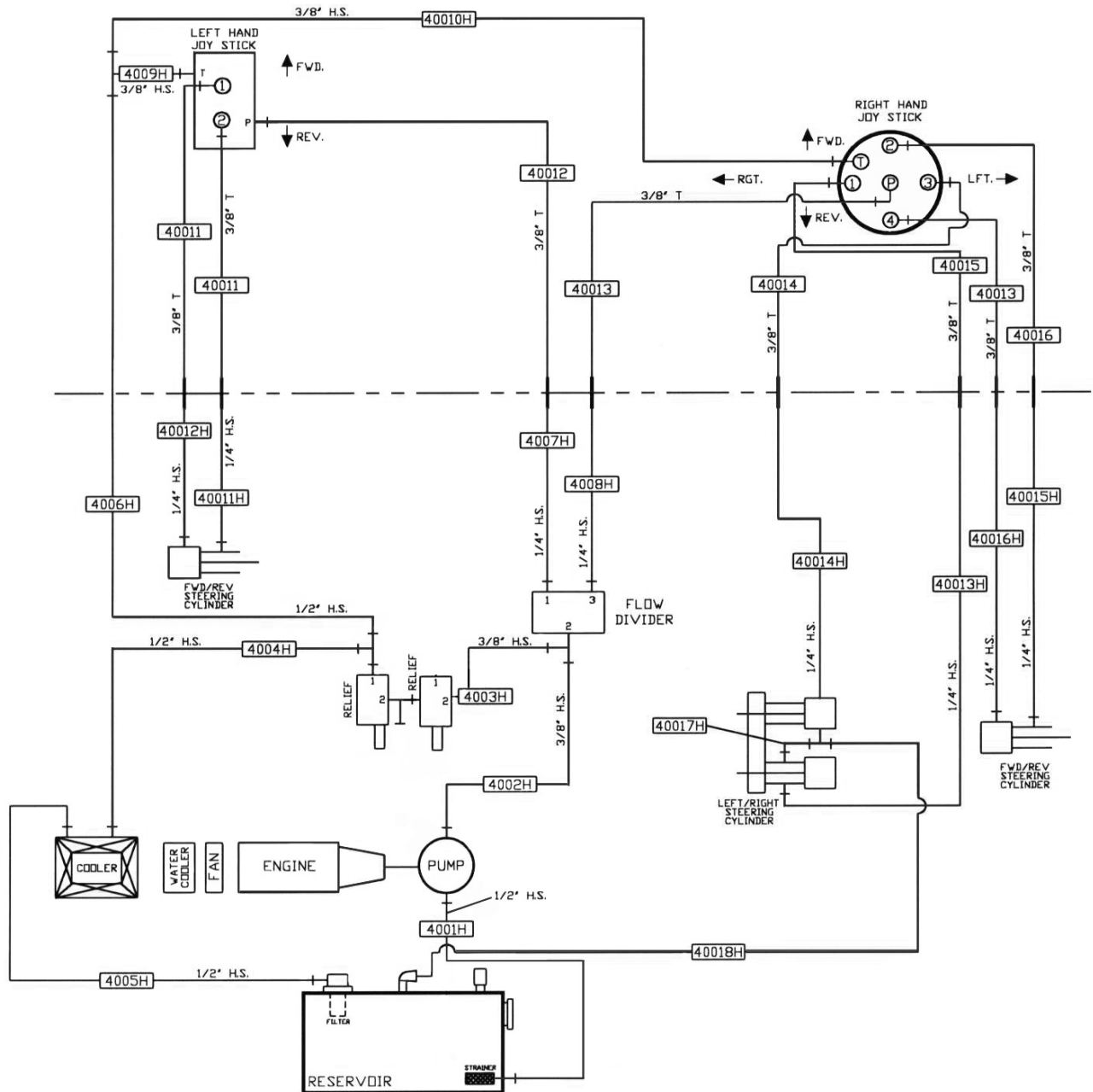
2A PARTS

ILL.	PART #	DESCRIPTION	QTY.	ILL.	PART #	DESCRIPTION	QTY.
1.	039659	Front Mnt Brkt	1	51.	AF1-D	Clamp Bolt Extender	1
2.	039660	Rear Mnt Brkt	1	52.	S11-D	Clamp Locking Plt.	1
3.	706-41716-000	Hyd. Cylinder	1	53.	SP-1D	Clamp Weld Plates	6
4.	040263	Fulcrum	1	54.	2501-8-8	Fitting	1
5.	??????	Relief Valve	1	55.	6400-8-8	Fitting	2
6.	PB10A/100B/J11	Flow Divider	1	56.	6400-6-6	Fitting	9
7.	K06723401	Hyd. Cylinder	2	57.	6801-8-10	Fitting	2
8.	040629L	LH Cyl. Mount	2	58.	6804-6-6-6	Fitting	3
9.	040629R	RH Cyl. Mount	2	59.	2406-6-4	Fitting	1
10.	040429	Mount Plate	1	60.	304-C-4	Fitting	1
11.	038206	Mount Plate	1	61.	6402-6-8	Fitting	1
12.	038201	Spacer	2	62.	2603-8-8-8	Fitting	2
13.	039823	Castle Nut	2	63.	6400-4-6	Fitting	6
14.	035944	Bushing, Bronze not shown	2	64.	6801-6-6	Fitting	3
15.	040259	Fulcrum Shaft	1	65.	6801-4-6	Fitting	2
16.	019900	Female Rod End 1/2"	1	66.	2501-6-6	Fitting	1
17.	026412	Thin Steering Spacer	2	67.	30-376	Fitting	2
18.	026268	Bolt, Shldr 1/2 x 1-1/4	1	68.	30-371	Fitting	1
19.	026267	Bolt, Shldr 1/2 x 1	2	69.	30-203	Fitting	5
20.	221408	Male Rod End 1/2"	3	70.	28-025	Fitting	1
21.	039677	Nut, 7/16 Hex Loc	4	71.	MFAS-4001H	Hose Assy	1
22.	038184	Female, Rod End 7/16"	2	72.	MFAS-4002H	Hose Assy	1
23.	017898	Bolt, 7/16-20 x 1-1/2	2	73.	MFAS-4003H	Hose Assy	1
24.	010092	Fstn, 7/16 LW	2	74.	MFAS-4004H	Hose Assy	1
25.	039485	Steering Bar	2	75.	MFAS-4005H	Hose Assy	1
26.	010006	Bolt, 1/4-20 x 1-3/4	2	76.	MFAS-4006H	Hose Assy	1
27.	010081	Fstn, 1/4 LW	2	78.	MFAS-4007H	Hose Assy	1
28.	020542	Nut, Stover 1/4-20	4	79.	MFAS-4008H	Hose Assy	1
29.	010007	Bolt, 1/4-20 x 2	2	80.	MFAS-4009H	Hose Assy	1
30.	010036	Bolt, 3/8-16 x 1	4	81.	MFAS-40010H	Hose Assy	1
31.	010044	Bolt, 3/8-16 x 3 Gr. 5	4	82.	MFAS-40011H	Hose Assy	1
32.	017751	Fstn, 3/8 Hard. FW	9	83.	MFAS-40012H	Hose Assy	1
33.	010109	Fstn, 5/16 Nylock	8	84.	MFAS-40013H	Hose Assy	1
34.	010020	Bolt, 5/16-18 x 1	8	85.	MFAS-40014H	Hose Assy	1
35.	010464	Nut, 3/8 Nylock	11	86.	MFAS-40015H	Hose Assy	1
36.	010070	Bolt, 1/2-13 x 1-3/4	1	87.	MFAS-40016H	Hose Assy	1
37.	011238	Nut, 1/2 Nylock	1	88.	MFAS-40017H	Hose Assy	1
38.	039678	Nut, 1/2-20 Hex Loc	3	89.	MFAS-40018H	Hose Assy	1
ITEMS LISTED BELOW ARE NOT SHOWN F/ CLARITY				90.	MFAS-40019H	Hose Assy	1
39.	TMF-05-0	Strainer, Suction	1	91.	MFAS-40020H	Hose Assy	1
40.	SNA2B/T0-1/2"UNC	Level Guage	1	92.	MFAS-40021H	Hose Assy	1
41.	SES3L-40-SB0	Filler/Breather Assy.	1	93.	MFAS-40022H	Hose Assy	1
42.	HF502-10.060-AS-SP	Return Line Filter (Tank)	1	94.	MFAS-40011	Tube Assy	2
43.	DHR-095-2-1-30	Oil Cooler	1	95.	MFAS-40012	Tube Assy	1
44.	L-84741	Cooler Mtng. Kits	4	96.	MFAS-40013	Tube Assy	2
45.	PLP10.4S0-C9W7-POB	Hyd. Pump (Engine)	1	97.	MFAS-40014	Tube Assy	1
46.	SV01-S/01V00-106A	Right Hand Joystick	1	98.	MFAS-40015	Tube Assy	1
47.	SV10-S/01V00-106MC	Left Hand Joystick	1	99.	MFAS-40016	Tube Assy	1
48.	1095/095DPP-PP	Tube Clamp Half Sets	7	100.	2 5/8 Steering Arm		1
49.	GD-1D	Tube Clamp Covers	6				
50.	AS-1D	Tube Clamp Bolts	6				

2A PARTS

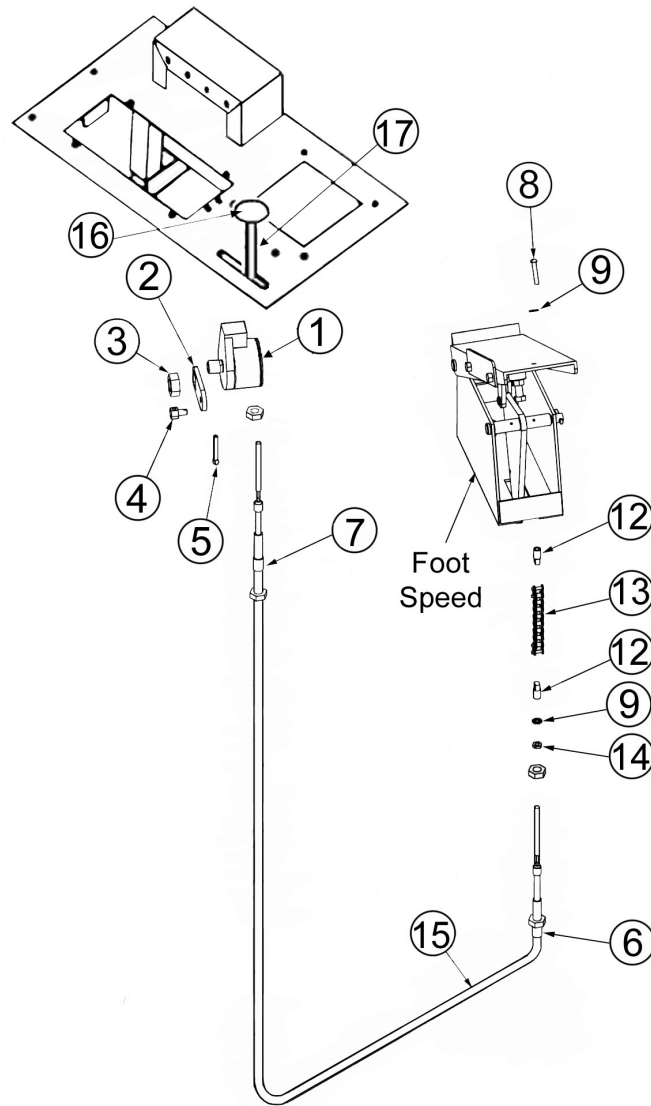
2A PARTS

HYDRAULIC SCHEMATIC



CRUISE CONTROL ASSEMBLY

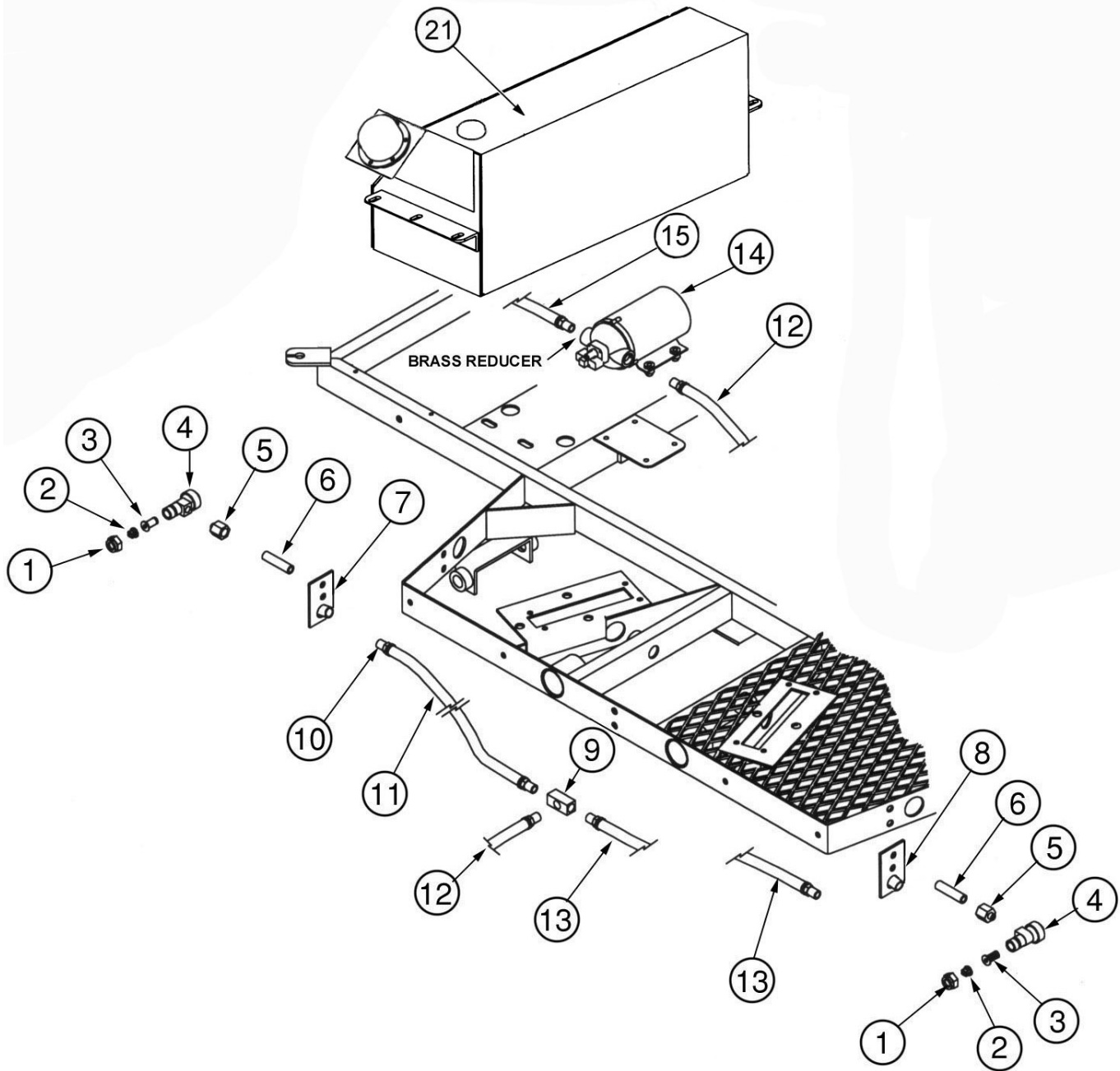
2A PARTS



ILL.	PART#	DESCRIPTION	QTY.
1.	.028018	LOCK, POSITIVE PITCH	1
2.	.028844	SIDE BRACKET, CRUISE CONTROL	1
3.	.020688	NUT, JAM 5/8-18 RH	1
4.	.024984	PIVOT, FOOT SPEED CONTROL	1
5.	.010972	PIN, COTTER 3/16 X 1 1/2	1
6.	.040223	BOTTOM CRUISE CONTROL BRACKET	1
7.	.040230	UPPER CRUISE CONTROL BRACKET	1
8.	.010382	SCREW, 10-32 X 1	1
9.	.032358	FSTN, STAR WASHER 10-32	2
12.	.028842	END, CRUISE CONTROL CHAIN	2
13.	.028033	CHAIN, CRUISE CONTROL	.25 ft.
14.	.010570	FSTN, NUT HEX 10-32	1
15.	.042033	THROTTLE, CABLE	1
16.	.034072	KNOB, POSITIVE LOCK	1
17.	.034071	HANDLE, POSITIVE LOCK	1
18.	.040230	CRUISE CONTROL BRKT. (not shown)	1

2A PARTS

SPRAY SYSTEM ASSEMBLY



SPRAY SYSTEM ASSEMBLY (cont'd)

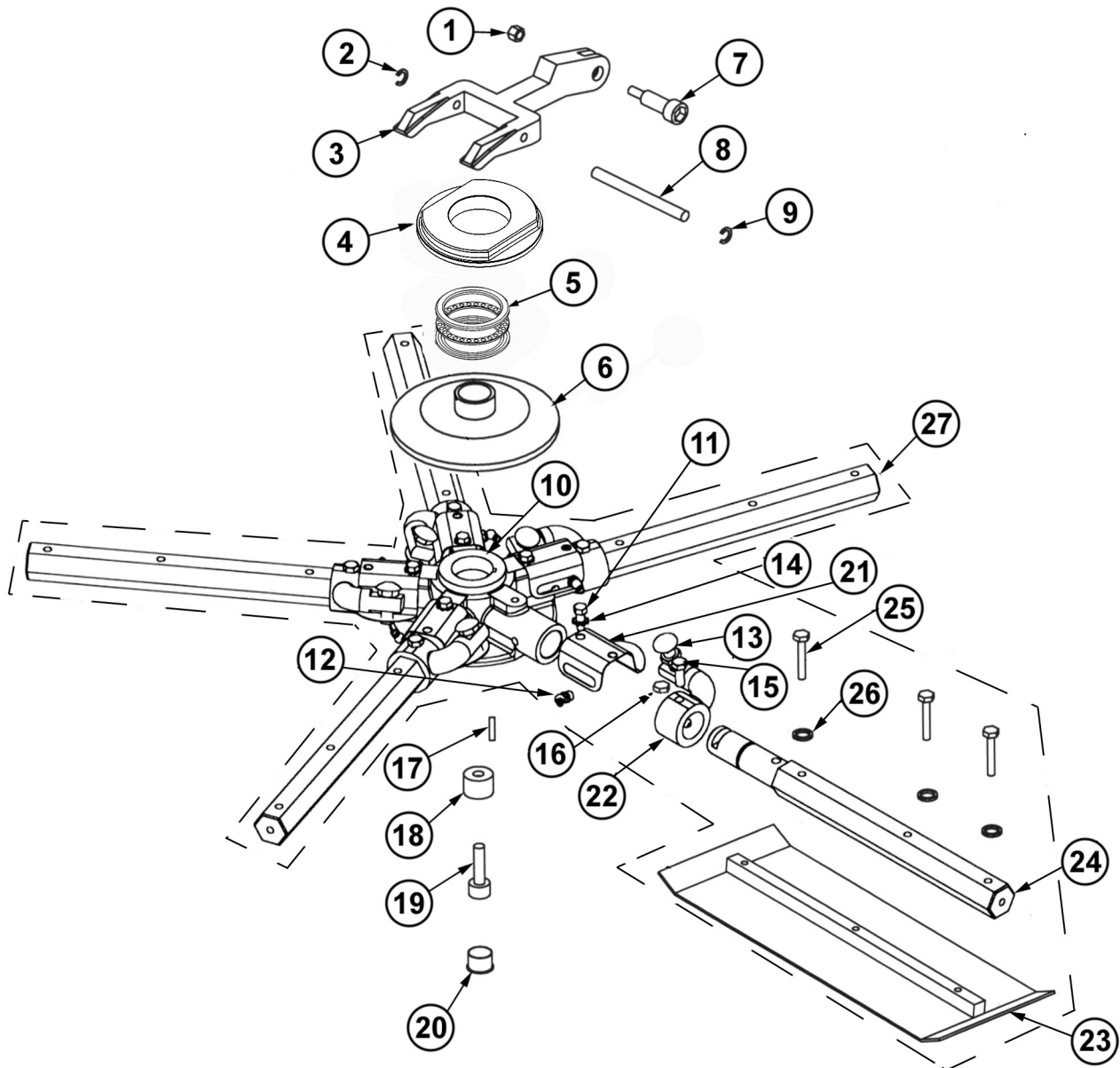
2A PARTS

ILL.	PART #	DESCRIPTION	QTY.
1.	012705	CAP, BRASS CP1325	2
2.	012702	TIP, SPRAY #8001 (FINE)	2
3.	012706	STRAINER, 5053100SS	2
4.	012704	VALVE, SPRAY RELIEF	2
5.	111001	FITTING, FATIGUE	2
6.	013499	NIPPLE, 1/4 x 2	2
7.	026930	BRACKET, SPRAY NOZZLE RIGHT HAND	1
8.	026931	BRACKET, SPRAY NOZZLE LEFT HAND	1
9.	036937	TEE, 1/4 BRASS	2
10.	010194	FITTING, MALE PUSHLOK	8
11.	013392	HOSE, PUSHLOK 3/8	L/F
12.	013392	HOSE, PUSHLOK 3/8	L/F
13.	013392	HOSE, PUSHLOK 3/8	L/F
14.	033735	PUMP, F/ SPRAY SYSTEM	1
15.	013392	HOSE, PUSHLOK 3/8	L/F
19.	037681	CLAMP, WIRE F/ SPRAY SYSTEM (MAN)	1
20.	038955	GAUGE, WATER SPRAY TANK	1
	040350	GAUGE, FUEL TANK (NOT SHOWN)	1
21.	039372	TANK	1
	039913	TANK, WATER F/ SP500A (NOT SHOWN)	1
	039456	TANK, HYDRAULIC (NOT SHOWN) PS ONLY	1
22.	034111	GASKET, F/ GAUGE	1

NOTE: Numbers 11, 12, 13 and 15 (013392) is sold in L/F by Allen Engineering. If you are ordering the 3/8 pushlock hose it will be sent to you by total length. When you order, please state which type of rider that you have. Lengths vary depending on which type of rider that you have.

2A PARTS

SPIDER ASSEMBLY LH SOM #039856
RH SOM #039857

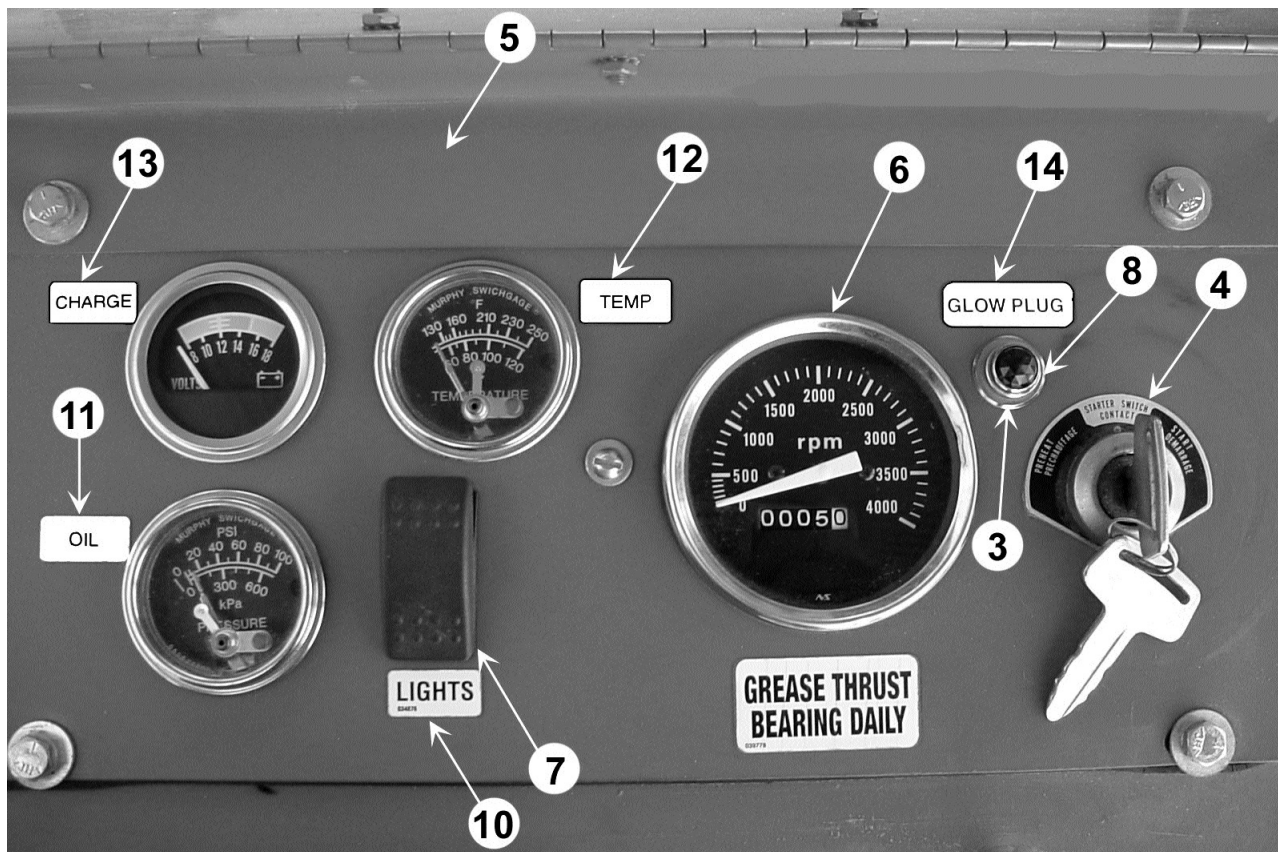


SPIDER ASSEMBLY (cont'd)**2A
PARTS**

ILL.	PART #	DESCRIPTION	QTY.
1.	.012612	NUT, HEX SELFLOCK 5/16-18	1
2.	.015677	E-RING RETAINER	1
3.	.039429	ARM, YOKE	1
4.	.039430	PRESSURE PLATE CAP	1
5.	.039912	BEARING, THRUST	1
6.	.039432	PLATE, PRESSURE	1
7.	.026504	BOLT, SHOULDER 3/8 x 1-1/4 W/ 5/16-18 THDS	1
8.	.039450	PIN, YOKE ARM RETAINER	1
9.	.015677	E-RING RETAINER (SAME AS ILL.# 2)	1
10.	.039431	BOSS F/ SPIDER RIGHT HAND	1
	.039882	BOSS F/ SPIDER LEFT HAND	1
11.	.015683	SCREW, DOG CAP 3/8-16 x 7/8	5
12.	.024755	GREASE FITTING 1/8-27 NPT 45°	5
	.015692	PLUG, PLASTIC CAP #GC-5 (NOT SHOWN)	5
13.	.028216	BOLT, CARRIAGE 1/2-13 x 1-1/4	5
14.	.015682	LOCK WASHER EXTERNAL STAR 3/8	5
15.	.040821	SET SCREW SQ. HEAD 3/8-16 x 1 1/4	4
16.	.015684	NUT, JAM 3/8-16	5
17.	.039926	KEY, 3/8 x 1	1
18.	.039927	WASHER RETAINING	1
19.	.015691	SCREW, SOCKET HEAD 1/2-13 x 1 1/2 LH	1
	.020155	SCREW, SOCKET HEAD 1/2-13 x 1 1/2 RH	1
20.	.015693	PLUG, PLASTIC CAP EC-12	2
21.	.039874	CLIP, SPRING UNIVERSAL	5
22.	.039880	LEVER, LIFT UNIVERSAL XHD	5
23.	.039831A	BLADE, 6 X 23 FINISH	5
24.	.039525	ARM, SPIDER F/ SP500A	4
25.	.010024	BOLT, 5/16-18 x 2 GR. 5	20
26.	.010090	LOCK WASHER 5/16	20
27.	.039857	SPIDER ASSEMBLY F/ SP500A RIGHT HAND	1
	.039856	SPIDER ASSEMBLY F/ SP500A LEFT HAND	1

2A PARTS

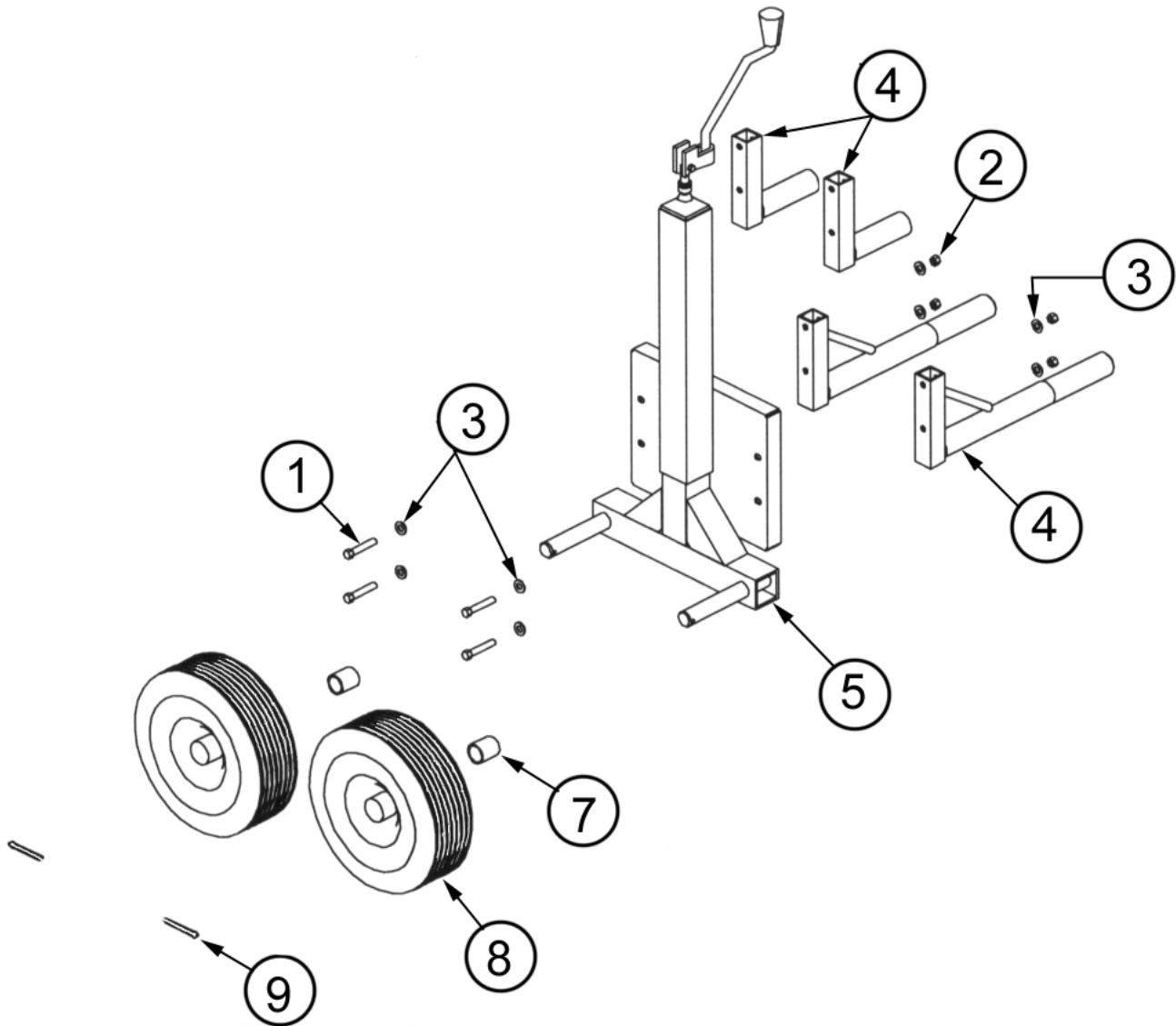
CONTROL PANEL ASSEMBLY



ILL.	PART#	DESCRIPTION	QTY.
3.	034614	LENS, RED	2
4.	037785	KEY SWITCH	1
5.	040231	SP500A-XHD CONTROL PANEL	1
6.	037788	TACHOMETER	1
7.	032125	SWITCH, ROCKER	1
8.	034610	FIXTURE, LIGHT	4
9.	034611	LIGHT-INSIDE LIGHT FIXTURE- (NOT SHOWN)	4
10.	034876	DECAL, "LIGHTS"	1
11.	036772	DECAL, "OIL"	1
12.	036771	DECAL, "TEMP"	1
13.	036770	DECAL, "CHARGE"	1
14.	037768	DECAL, "GLOW PLUG"	1
15.	040487	CONTROL PANEL GASKET	1

ACCESSORIES (cont'd)
SUPER PRO DOLLY JACK SYSTEM
SET PART # 039578

2A
PARTS



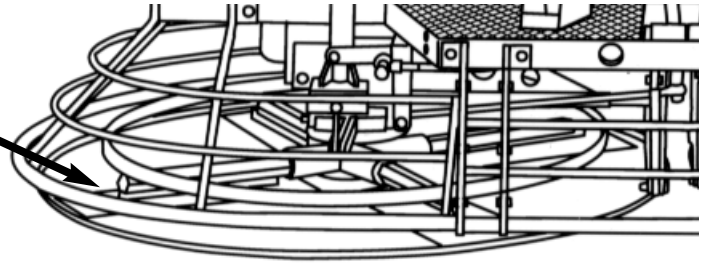
ILL.	PART#	DESCRIPTION	QTY.
1.	.010041	BOLT, 3/8-16 x 2-1/4	.8
2.	.010464	NUT, NYLON LOCK 3/8-16	.8
3.	.017751	FLAT WASHER 3/8	.8
4.	.040661	DOLLY JACK MOUNTING TUBES (FRONT)	.2
	.040352	DOLLY JACK MOUNTING TUBES (REAR)	.2
5.	.039091	DOLLY JACK	.2
6.	.039578	COMPLETE DOLLY JACK SET	.1
7.	.039094	WHEEL SPACER	.4
8.	.039095	TIRES	.4
9.	.010133	PIN, COTTER 3/16 x 2	.8

2A PARTS

ACCESSORIES (cont'd)

1500-5
FLOATING
DISCS (PANS)

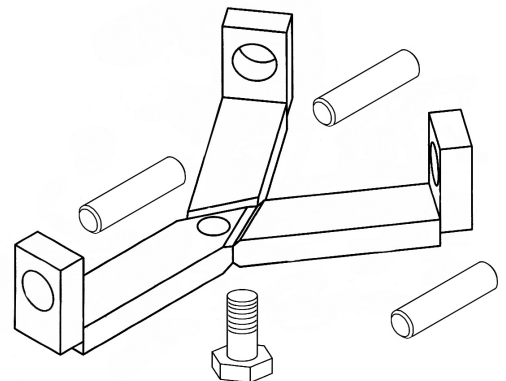
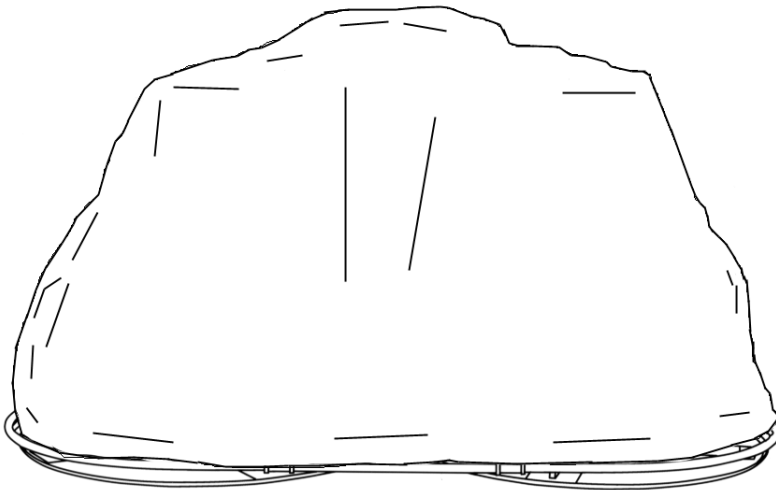
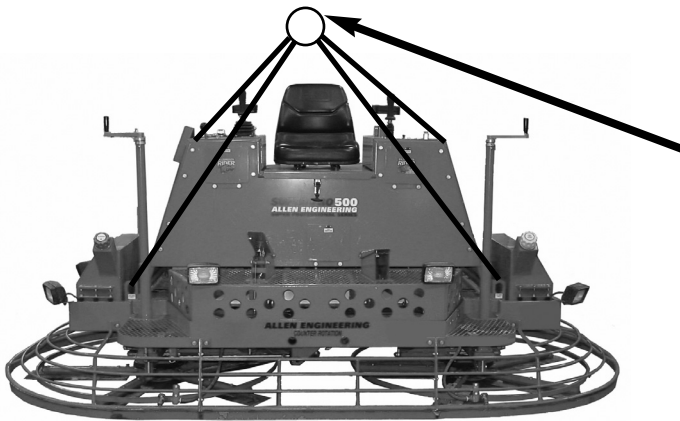
PART #: 039403-2



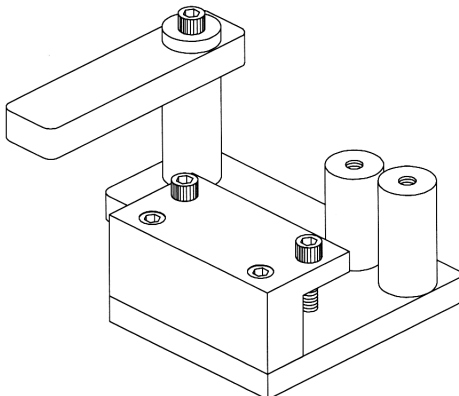
LIFTING
BRIDLE
(SLING TYPE)

PART #: 040041

SUPER PRO RIDING
TROWEL VINYL
COVER
PART #038035



SPIDER PULLER
KIT
PART #040906



TROWEL ARM
ALIGNMENT
JIG
PART #016863

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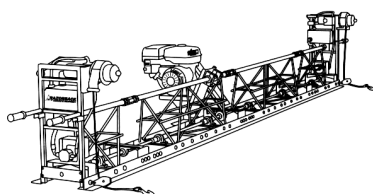
TRUSS SCREEDS

STEEL

12 SX
12 HD
12 SHD
12 ED
12 HED
12 SHED
12 QD

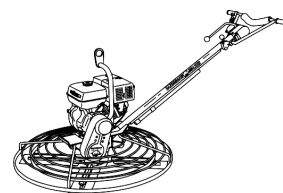
ALUMINUM

12 ECA
12 ECS
10 QX



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436 EDGER
442
446
446 SD



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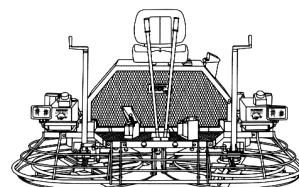
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