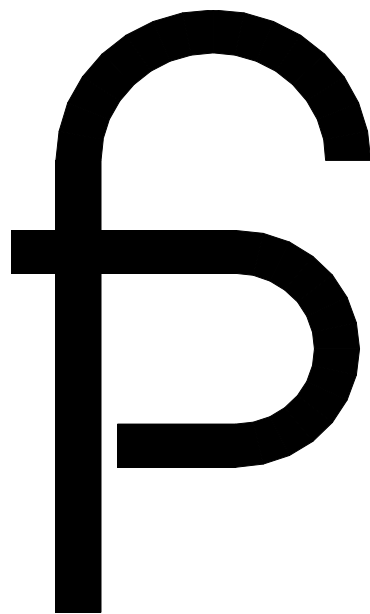


OPERATOR'S MANUAL & PARTS LIST



AERA-vator

MODEL AE40E

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Printed in U.S.A.
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INTRODUCTION

Thank you for purchasing an AREA-vator. This piece of equipment has been carefully engineered and manufactured to provide years of reliable service.

The AERA-vator is one of the most unique and versatile pieces of equipment on the market today. It is designed for the practices of turf cultivation, seed bed preparation, and bare soil conditioning in your toughest soils.

We recommend that you carefully read the owners and operators manual prior to operation. Also ensure that all future operators read this manual and become fully trained before allowing them to use or maintain this equipment. Time spent becoming acquainted with the safe operation, performance, and maintenance of the AERA-vator will add longer life and greater satisfaction to your new purchase.

This machine is designed with safety in mind. However, if the machine is handled carelessly and not as instructed it can be a dangerous piece of equipment. Observe all safety information in this manual and decals on the equipment. You the operator are responsible when operating this equipment.

The illustrations and data used in the manual were current at time of printing. The manufacturer reserves the right to make changes or add improvements to its products at any time without incurring any obligation to make such changes to products manufactured previously.

REMEMBER SAFETY IS ALWAYS FIRST !

ATTENTION:

- **Read and understand the instructions and warnings carefully before using this machine.**
- **Read the warranty located on page 17. Fill in the required information on the warranty registration provided and return to the address on the front of this manual. The warranty registration must be returned to validate warranty.**
- **For engine operation and maintenance standards, refer to the enclosed engine Owner's Manual.**

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SAFETY SYMBOLS



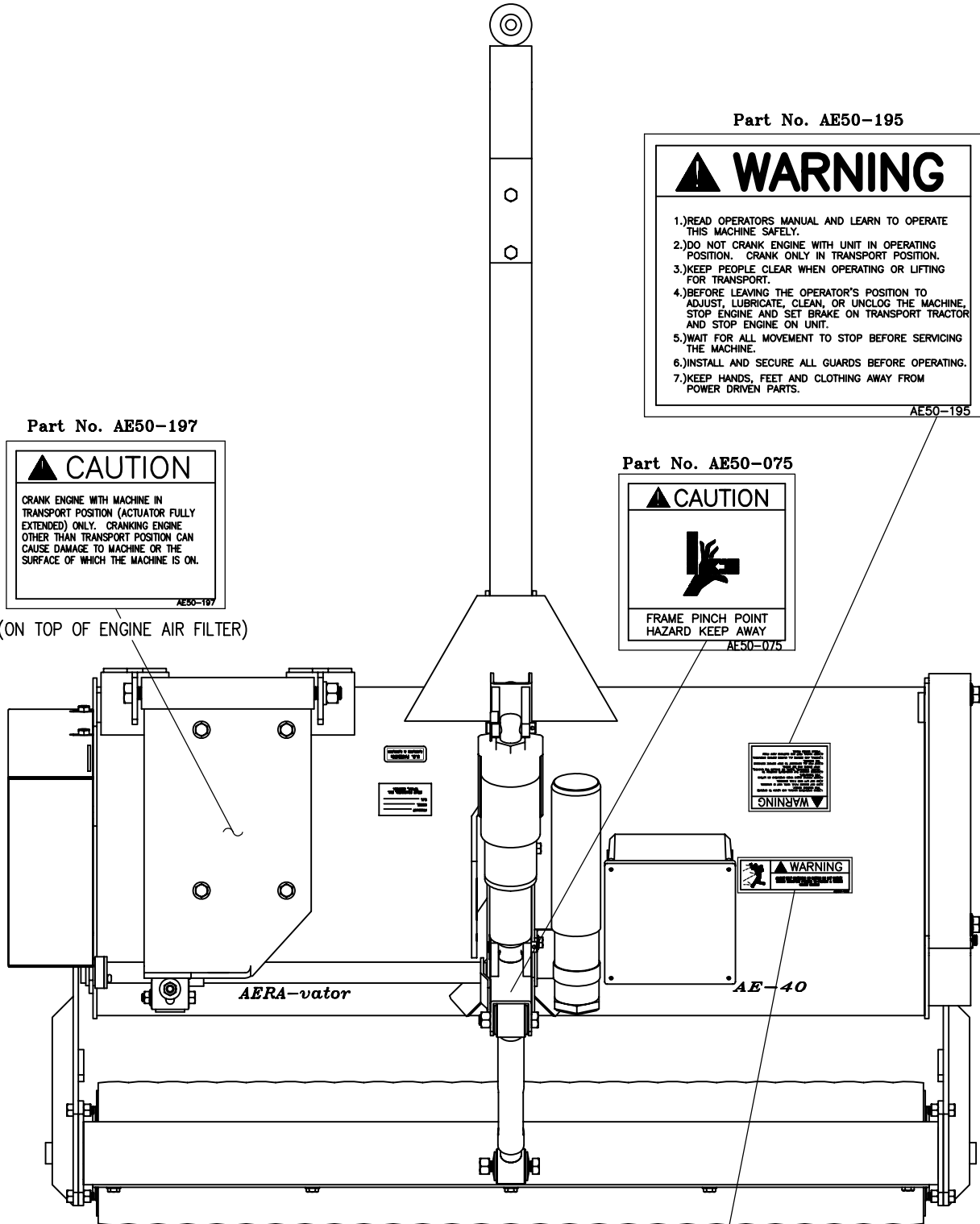
This is a standard safety alert symbol meaning **ATTENTION ! BECOME ALERT ! YOUR SAFETY IS INVOLVED !**

⚠ CAUTION Indicates hazardous situation, injury may occur, used to alert against carelessness.

⚠ WARNING Indicates potentially hazardous situation. Death or serious injury may occur if proper procedures are not followed.

⚠ DANGER Indicates most hazardous situation. Death or serious injury will occur if proper procedures are not followed.

SAFETY DECALS



Part No. AE50-197

CAUTION

CRANK ENGINE WITH MACHINE IN TRANSPORT POSITION (ACTUATOR FULLY EXTENDED) ONLY. CRANKING ENGINE OTHER THAN TRANSPORT POSITION CAN CAUSE DAMAGE TO MACHINE OR THE SURFACE OF WHICH THE MACHINE IS ON.

AE50-197

(ON TOP OF ENGINE AIR FILTER)

Part No. AE50-195


WARNING

- 1.) READ OPERATORS MANUAL AND LEARN TO OPERATE THIS MACHINE SAFELY.
- 2.) DO NOT CRANK ENGINE WITH UNIT IN OPERATING POSITION. CRANK ONLY IN TRANSPORT POSITION.
- 3.) KEEP PEOPLE CLEAR WHEN OPERATING OR LIFTING FOR TRANSPORT.
- 4.) BEFORE LEAVING THE OPERATOR'S POSITION TO ADJUST, LUBRICATE, CLEAN, OR UNCLG THE MACHINE, STOP ENGINE AND SET BRAKE ON TRANSPORT TRACTOR AND STOP ENGINE ON UNIT.
- 5.) WAIT FOR ALL MOVEMENT TO STOP BEFORE SERVICING THE MACHINE.
- 6.) INSTALL AND SECURE ALL GUARDS BEFORE OPERATING.
- 7.) KEEP HANDS, FEET AND CLOTHING AWAY FROM POWER DRIVEN PARTS.

AE50-195

Part No. AE50-075


CAUTION



FRAME PINCH POINT
HAZARD KEEP AWAY

AE50-075

Part No. AE50-196



WARNING

ADJUST BELT CLUTCHING SO ROTORS DO NOT ROTATE DURING TRANSPORT POSITION TO PREVENT A THROWN OBJECT HAZARD

AE50-196

GENERAL SAFETY PRECAUTIONS

OPERATE SAFELY

- Clear work area of objects that might be thrown or that might damage the machine.
- If you hit an object, stop the machine and inspect it. Keep machine properly maintained and in good working order. Keep all shields and guards in place.
- Do not leave machine unattended when it is running.
- Only operate during daylight or with good artificial light.
- Be careful of traffic when operating near or crossing roadways.

AVOID TIPPING

- The towing vehicle must weigh a minimum of 400 lbs. and have good brakes to stop and hold the machine on slopes.
- DO NOT drive where machine could slip or tip.
- Stay alert for holes or other hidden hazards in the terrain.
- Keep away from drop-offs.
- Slow down before you make a sharp turn or operate on a slope.
- Drive up and down a hill - not across. Be careful when you change direction on a slope.

OPERATOR TRAINING REQUIRED

- Study this manual before operating the machine.
- Operate machine in an open, unobstructed area until you become familiar with it.
- Learn use of all controls.

MACHINE SETUP

READ THE OWNER'S & OPERATOR'S MANUAL PROVIDED WITH THE ENGINE BEFORE PROCEEDING WITH THIS SECTION.

HITCHING TO LAWN TRACTOR

The following figure shows the four different hitch positions available on the AE40E. To determine the best hitch position for your tractor, follow these steps: (*REFER TO ASSEMBLING WIRING HARNESS SECTION BEFORE PROCEEDING*)

1. Park your lawn tractor on a flat level surface such as a driveway.
2. Measure the distance from the surface to the TOP of the hitch.
3. From the following figure, choose the hitch position in which the ground clearance dimension best matches the dimension taken.
4. After assembling the hitch, assemble the hitch pin to the tractor hitch as shown in Figure 2.

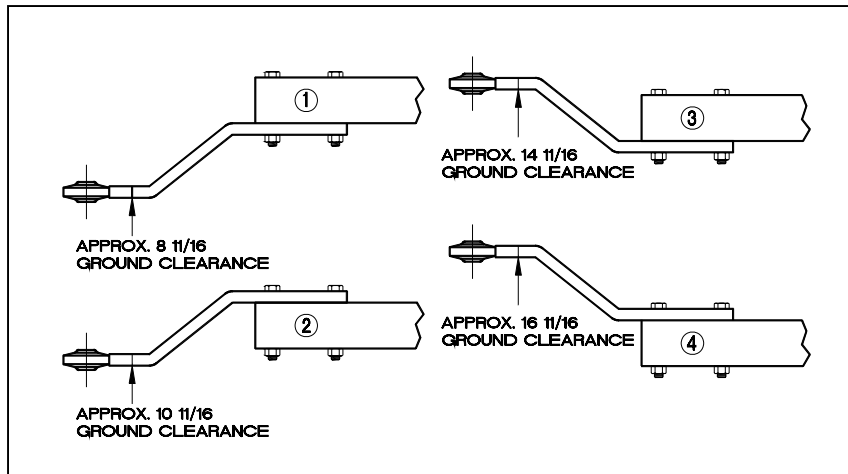


Figure 1. Hitch Positions

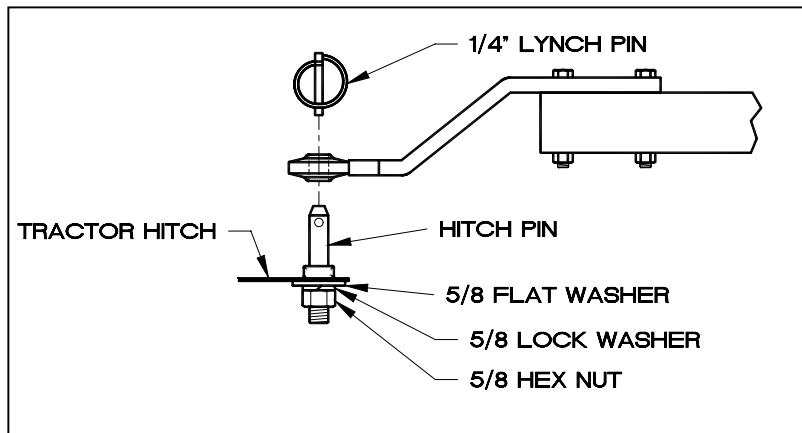


Figure 2. Hitch Assembly

ASSEMBLING WIRING HARNESS

1. Connect the positive (+) battery cable to the positive battery terminal and the negative (-) battery cable to the negative battery terminal as shown in Figure 3. Route the plug out to the hitch area of the tractor, bundle and secure surplus wire to prevent entanglement in moving components. Use a 12 volt battery for this application. **Connect the battery end of the wiring harness to the battery before connecting the unit end.** This will reduce the chance of creating a spark which may cause the battery to explode.

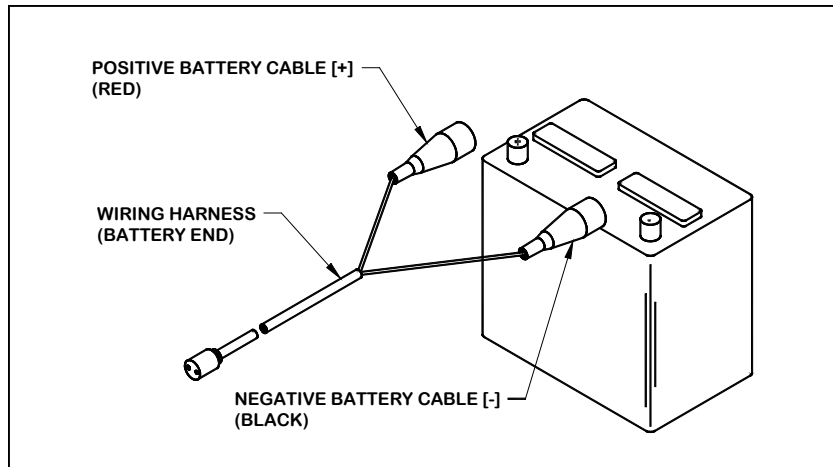


Figure 3. Battery Connections

WARNING

- The battery gives off explosive gases; keep sparks, flames and cigarettes away. Provide adequate ventilation when connecting remote battery cables to terminals.
- Read all warning labels on battery before making any connections.

2. Route the Control wiring harness from the control box thru the hole in the main frame thru the hitch tube allowing the plug end to hang out as shown in Figure 4. This should be done while assembling the hitch tube.
3. Connect the battery wiring harness to the plug on the unit. Refer to the *Understanding the Remote Actuator Controls* before operating the lift system.

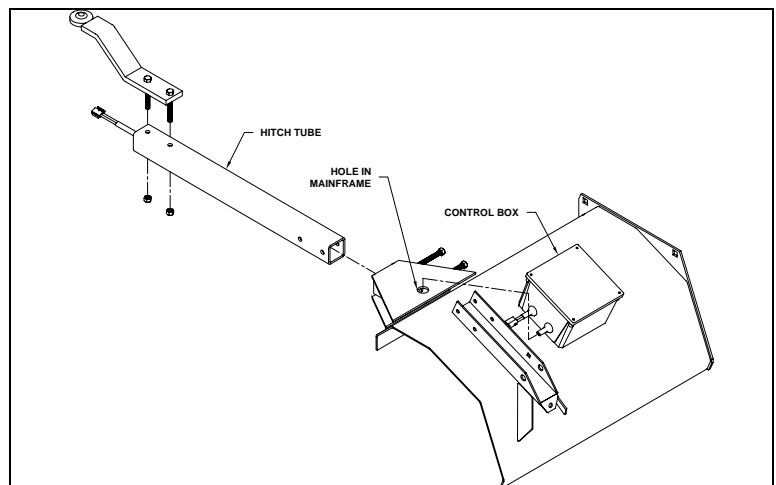


Figure 4. Control Wiring Harness

OPERATION

1. Adjust the machine to aerate at the desired depth (see *Gauging Depth* pg. 11)
2. With the machine in transport position, start the engine and set the engine speed. **Note: Never start engine in any other position.**
3. Using the provided remote switch raise and lower the machine a few times to make sure the belt drive is engaging and disengaging properly (see *Adjusting Belt Drive* as needed). **Note: The remote actuator controls are made with one touch of the button on the remote switch for raising or lowering, the unit will cycle until it is completely lowered or raised. Do not lower unless machine is over soil.**
4. Lower the machine into operating position and set the forward speed of the lawn tractor. Slower speeds will result in a higher degree of soil loosening.
5. When an obstacle, such as walkway is encountered, stop the lawn tractor and raise the machine into transport position for crossing.



Always make sure the machine is in transport position and that the belt drive is disengaged before crossing obstacles. Failure to do so may damage the machine and or the obstacle being crossed.

MAINTENANCE SAFETY

- Never attempt to clean, adjust, lubricate or perform any maintenance on the AE40E while the engine is running.
- **SAFETY BLOCKS** should be used to support the AE40E when in the raised position during service.
- When installing tines, performing any rotor shaft service, or removing debris from the rotors, ensure that the rotor shaft does not rotate because a serious pinch injury could occur.
- Make sure the belt clutching operation is operating correctly. The spinning rotors create a flying object hazard when they are lowered into the ground.

ROUTINE MAINTENANCE

- Refer to Engine Owner's Manual for routine maintenance.
- After the first two hours of operation tighten all tines to 210-ft. lbs. Check for loose tines daily.
- Check for loose fasteners daily. Refer to the applicable parts break down illustration on pp. 18-24.
- Check belt tension every 4 hrs. of operation for the first 12 hrs. and every 100 hrs. thereafter. Also, tighten belts if shaft hesitation is noticed during operation. Over tightening belts may cause damage to the machine. Be sure to re-install belt shield after servicing (See Page 9-11).
- The AE40E rotor shaft and rotor bearings are sealed and permanently lubricated requiring no routine maintenance.
- Clean rotor shaft and rotors of debris daily.
- Check electrical connection for any loose or damaged connections daily.
- Grasp tines on each rotor and check for side-to-side movement. If movement occurs stop frequently during operation and check for increased movement and extreme heat (paint discoloration, smoke, etc) leading to bearing failure. Timely rotor bearing replacement may prevent more expensive damage.



BE SURE ALL SAFETY SHIELDS ARE INSTALLED PRIOR TO RETURNING THIS MACHINE TO SERVICE.

ADJUSTING BELT DRIVE



WARNING

The machine must be hitched to a lawn tractor (pg. 6) with the lynch pin in place and the tines lifted above the floor prior to cranking the engine. **Do not lower the tines with the engine running except over soil to be aerated.**

The engagement and disengagement of the belt drive on the AE40E is determined by the position of the cam (see Figure 6). The position of the cam is directly related to the position of the actuator and therefore to the position of the machine. Thus, when the machine is lowered (Actuator fully retracted) into operating position, the cam raises the engine engaging the belts. In turn, when the machine is raised (Actuator fully extended) into transport position, the cam lowers the engine disengaging the belts.

CHECK BELT TENSION every 4 hrs. of operation for the first 12 hrs. and every 100 hrs. thereafter. Also, tighten belts if shaft hesitation is noticed during operation. Over tightening belts may cause damage to the machine and effect the belt clutching. Be sure to re-install belt shield after servicing.

The belt drive must be properly adjusted for the machine to operate as described above. If the belt drive does not disengage when the machine is in transport position, the belts are too tight and/or the belt rod and/or skid shoe needs adjusting. If the drive does not engage when the machine is in operating position, the belts are too loose or the cam needs adjusting.

==> Belt drive does not disengage properly

First check for proper belt tension then check the position of the belt rod. There should be approximately 1/8 of an inch between the belts and the rod when the belts are tight. If the belt rod is correctly positioned and the belt drive still will not disengage, check the skid shoe adjustment. ***New machines may require break in time for belts to remove paint from rotor shaft pulley before proper clutching will occur.*** When adjusting belts, make sure the cam follower is in the

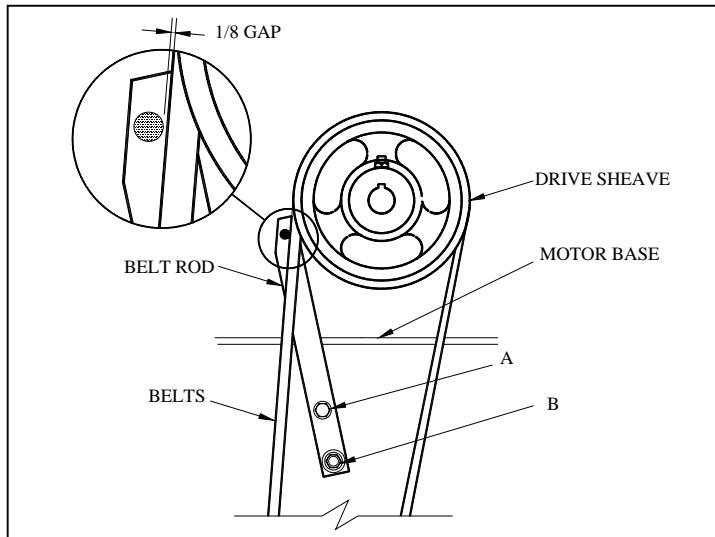


Figure 5. Belt Rod Adjustment

operating position as shown in Figure 6A. If the cam follower is not in the correct position as shown when the Actuator is fully retracted, see Figure 7 for adjusting the cam follower.

Adjusting Belt Rod

1. Remove the belt shield.
2. Loosen Bolt A & B.
3. Adjust belt rod so that it is in the correct position.
4. Tighten bolt B first then A.
5. Replace the belt shield.

Loosening The Belts (see Figure 6A)

1. Loosen flange lock nuts A and hex nut B.
2. Turn hex nut C counterclockwise approximately two full turns.
3. Tighten flange lock nuts A and hex nut C.
4. Repeat steps 1 through 3 until the belt drive disengages properly.
5. Tighten hex nut B when finished.
(NOTE: Cam Follower Bracket located directly behind engine)

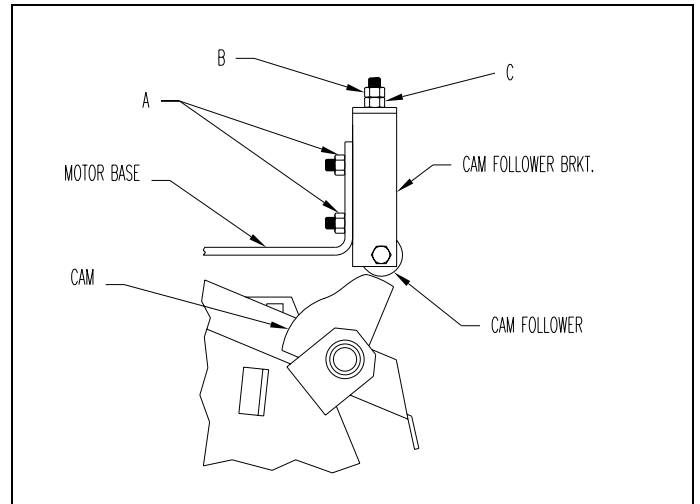


Figure 6A. *Loosening/Tightening Belts*

Skid Shoe Adjustment (see Figure 6B)

1. The endplate of the machine is made so the Skid shoe can be adjusted to fit closely to the lower pulley.
2. The gap between the Skid shoe and the Lower pulley should be at least $\frac{3}{32}$ ".
3. If the Skid shoe is not adjusted properly, the belts will not raise off the engine pulley enough to allow it to clutch.

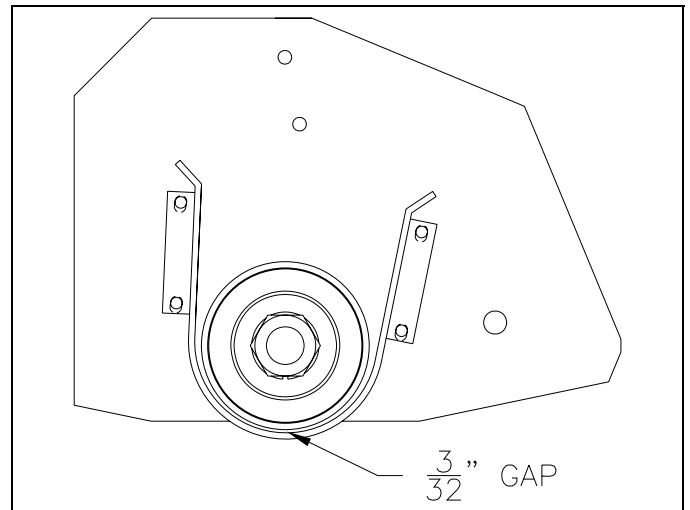


Figure 6B. *Skid Shoe Adjustment*

==> Belt drive does not engage properly.

Tightening The Belts (see Figure 6)

1. Loosen flange lock nuts A and hex nut B.
2. Turn hex nut C clockwise approximately two full turns.
3. Tighten flange lock nuts A and hex nut C.
4. Repeat steps 1 through 3 until the belt drive engages properly.
5. Tighten hex nut B when finished.

Cam Follower Adjustment (see Figure 7)

1. Remove belts off of engine sheave.
2. Cycle Actuator so that it is fully retracted (Operating Position).
3. Loosen bolt in adjusting slot that connects Cam Shaft to Ternary Link.
4. Rotate Cam Shaft so that the cam and cam follower are positioned as shown in Figure 6A.
5. Tighten bolt and cycle the Actuator a few times to see if the cam is adjusted properly.
6. Install belts and proceed with belt adjustment.

If there is no adjustment left in the cam follower bracket, the rear of the engine base needs to be moved from position **1** to position **2** as shown, (see Figure 7). The belt drive will then need to be adjusted either by loosening or tightening the belts as described previously. **NOTE:** New belt installation may require position change in engine base if it has been moved from **1** to **2**.

WARNING

**REPLACE ALL SHIELDS
BEFORE OPERATING
MACHINE**

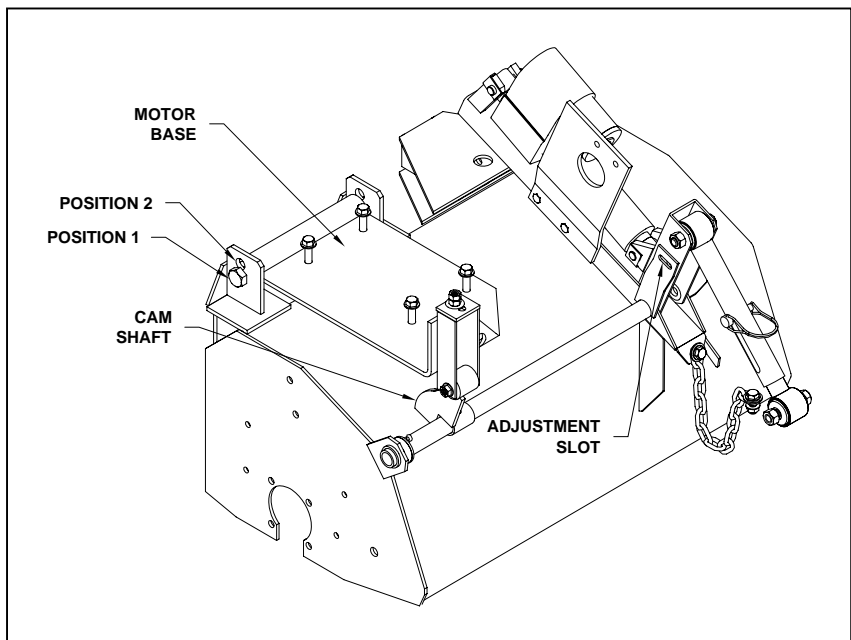


Figure 7. Motor Base/Cam Shaft Adjustment

GAUGING DEPTH

The depth of aeration is controlled by the position of the pin in the slip linkage as shown in Figure 8. The following table list the pin position and the corresponding depth of aeration.

Pin Position	Approximate Aeration Depth
A	1 1/2"
B	2"
C	2 1/2"
D	3"
E	Full Depth

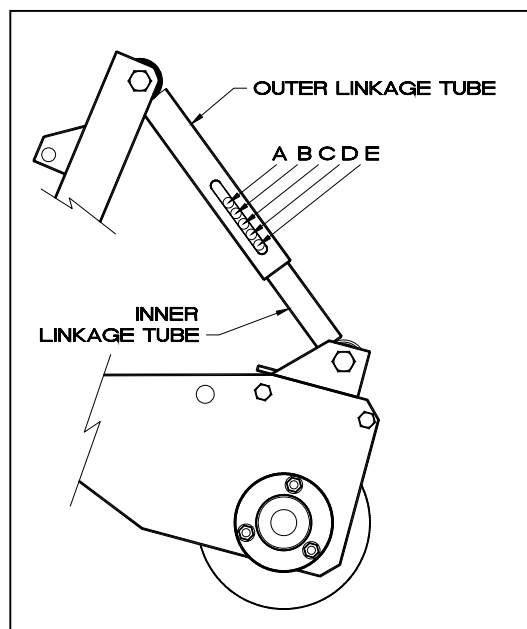


Figure 8. Depth Control

To change the pin position, lower the machine on un-aerated soil until the pin holes in the inner linkage tube are visible in the slot of the outer linkage tube and pin in the desired position.

GROOM RAKE/BRUSH ADJUSTMENT

- 1) The Rake/Brush can be used without the use of the aerator (NOTE: This is done with the engine not running.) Adjust chain on the Rake/Brush so it will contact the ground before the rotor tines. This allows the Rake/Brush to be raised and lowered using the lift system on the unit.
- 2) The Rake/Brush can be adjusted so it is used during operation and raised and lowered with unit.
- 3) The Chain assembly can be adjusted so the Rake/Brush will not be used during machine operation.

UNDERSTANDING THE REMOTE ACTUATOR CONTROLS

The unit is equipped with a two button remote switch for raising and lowering. One button for raising and the other for lowering. The controller, inside the control box, is programmed so that when either one of the buttons is pressed, it activates the controller therefore begins cycling the actuator. The cycle will not stop until it reaches it fully retracted or extended position. The button on the remote switch should be only pressed until the unit begins cycling.



MAKE SURE ENGINE IS NOT RUNNING WHILE THE OPERATOR LEARNS AND UNDERSTANDS THE CONTROLS OF THE UNIT.

NOTE: The unit will stop operating for 30 seconds if any combination of the remote switch buttons 1 and/or 2 are pressed eight times in a 30 second period. After 30 seconds, the unit will automatically rest to standard operating mode.

AE40E SERVICE INSTRUCTIONS

ROTOR SHAFT

I. Removal & Disassembly (Clean the machine thoroughly with a pressure washer)

A. Removal of Rotor Shaft Assembly from Main Frame.

(This may require an overhead lift. **For safety reasons, only lift the Aera-vator approximately two inches above the work surface**).

1. Remove belt cover and drive belts.
2. Remove skid shoe.
3. Remove 3/8" carriage bolts holding end rotor shaft bearings (see Figure 9).
4. Move frame slightly to right and lift off of rotor shaft assembly. **Refer to General Assembly for identifying listed components not shown, pg. 19**

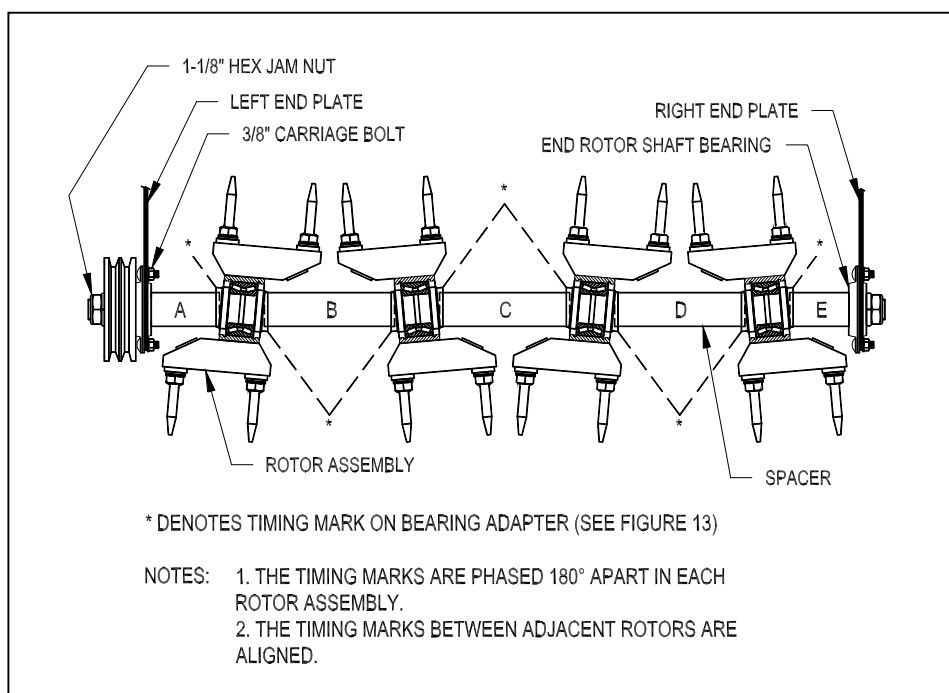


Figure 9. Rotor Shaft Assembly

B. Disassembly of Rotor Shaft Assembly

1. Remove the 1-1/8" hex jam nut from the shaft nearest to the damaged rotor (see Figure 9).
2. Only remove the rotors and spacers as required to reach the damaged component and wipe the shaft clean before each rotor is removed. The rotor bearings have individual cones on each side that separate slightly before seal resistance is felt. It is important to keep the cones pushed tightly together to keep dirt from entering the bearing between the cones.

CAUTION

IF THE ROTOR ASSEMBLIES DO NOT SLIP FREELY OFF THE ROTOR SHAFT DO NOT APPLY FORCE AGAINST THE ROTORS OR ROTOR TEETH. USE A BLUNT PUNCH OR BAR AGAINST THE THICK FACE OF THE INSIDE BEARING ADAPTER TO DRIVE THE ROTORS ALONG THE SHAFT. OTHERWISE THE SEAL IN THE TAPERED ROLLER BEARING WILL BE DESTROYED AND IT IS NOT REPLACEABLE (SEE FIGURE 10).

C. Rotor Disassembly.

1. With a pry bar remove the external seals (see Figure 11) on both sides. Generally, seals are damaged and are not reused.
2. Remove the internal snap rings on both sides.
3. With the Rotor sitting on the press table press out the bearing assembly.

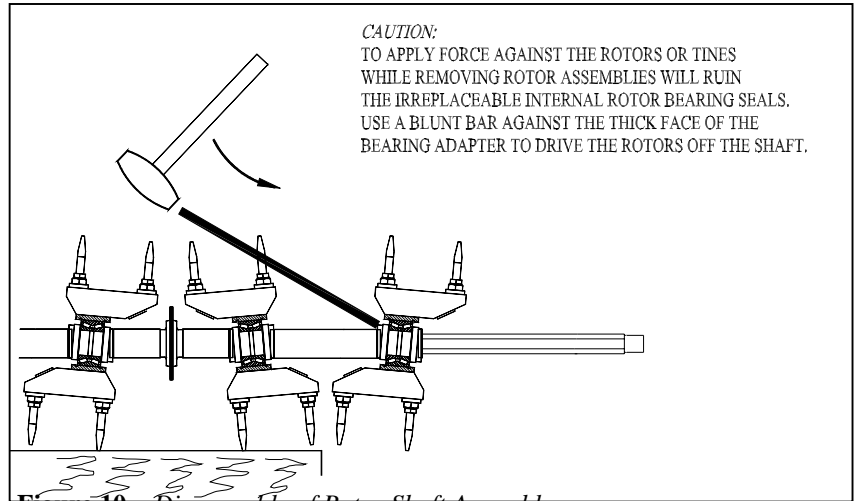


Figure 10. Disassembly of Rotor Shaft Assembly

II. Reassembly and Installation

(Be careful to keep all components clean to prevent bearing grease contamination)

A. Rotor Hub Re-Assembly.

1. Install internal snap ring in one side of rotor.
2. Press bearing and adapter assembly tight against the ring (see Figure 12).
3. Install second snap ring.
4. Apply a ribbon of general purpose grease between the snap ring ID and bearing adapter OD on both sides of rotor.

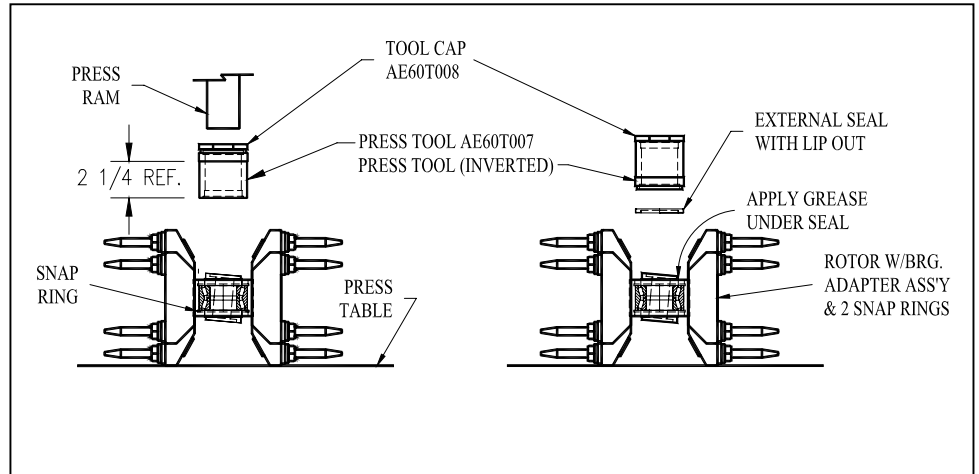


Figure 11. Rotor Assembly

5. With the press tool inverted to fit the external seals, press the seals in both ends of the rotor **with the lips out**. Wipe off excess grease. Be sure seals are not bent or cut and are seated firmly. **If the seals are not tight, use a hammer and punch to stake the hub faces at about 90° intervals.**

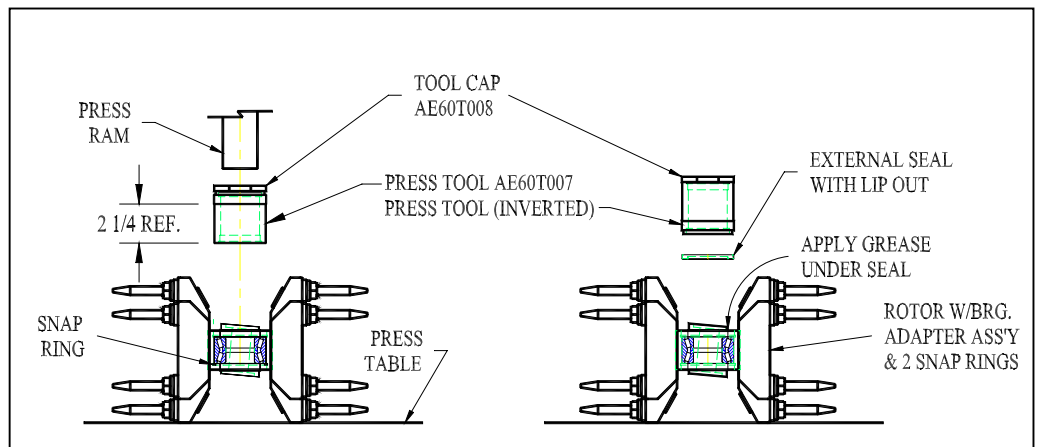


Figure 12. Rotor Hub Assembly

B. Assembly of Rotor Shaft.

CAUTION

IF THE BEARING ADAPTERS ARE NOT PRECISELY TIMED 180 DEGREES APART IN EACH ROTOR AND ALIGNED BETWEEN ROTORS, SERIOUS DAMAGE WILL RESULT.

1. Rotate the adapters in each rotor so the timing marks (see Figure 13) are phased 180 degrees apart with hex bores aligned.
2. To assist with aligning timing marks between rotors, use chalk or marker to mark two rotor shaft flats 180 degrees apart next to the threaded end. The selected flats would have to align with the timing marks on any rotors not removed during servicing.
3. Install the required components in the sequence shown in Figure 9, double-checking the timing mark locations and spacer lengths (see following table) as each rotor is installed.

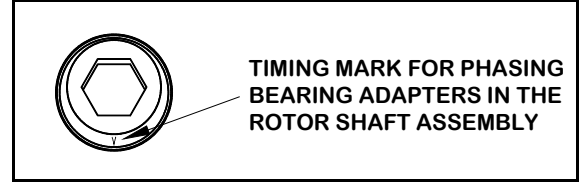


Figure 13. Timing Mark

SPACER	LENGTH (inches)
A	3 13/16
B	7 1/4
C	7 1/4
D	7 1/4
E	3 5/16

CAUTION

CLEAN THE ROTOR SHAFT THOROUGHLY REMOVING ANY BURRS THAT WOULD KEEP THE ROTOR ASSEMBLIES FROM SLIDING ON FREELY. IF A BEARING ADAPTER JAMS, THE INTERNAL BEARING SEAL COULD BE FORCED OUT AND IT IS NOT REPLACEABLE.

NOTE: THE SPACERS MUST BE FULLY SEATED IN EACH ADAPTER COUNTER BORE BEFORE TIGHTENING. DO NOT FORGET TO PLACE THE BEARING STAMPINGS ON EACH OF THE SHAFT BEARINGS DURING REASSEMBLY. ALSO, THE 3/8" CARRIAGE BOLTS SHOULD BE PLACED IN THE BEARING STAMPINGS ON THE DRIVE END OF THE SHAFT BEFORE THE SHEAVE IS REPLACED.

4. Replace the 1-1/8" hex jam nut and rotate each rotor occasionally as the nut is being torqued to 350 ft-lbs. If any rotor locks up, the bearing adapters in the rotor are probably not phased 180 degrees apart.

D. Installation of Main Shaft Assembly

Reinstall the rotor shaft into main frame by reversing the shaft removal steps outlined in I-A. Refer to Figure 9 for correct location of bearing stampings, bolts, etc. Tighten the 3/8 flange lock nuts at each bearing to 35 ft-lbs.

CAUTION

THE TWO STAMPINGS ON EACH BEARING ARE IN CONTACT WITH EACH OTHER IN THE ASSEMBLY. NEVER SEPARATE THE BEARING STAMPINGS TO STRADDLE A FRAME MEMBER.

- E. After installing the belts and cover, run the machine and check for loose or improperly installed components.

TINE REPLACEMENT

Assemble tines to rotor as shown in the following figure. Torque tines to 210 ft-lbs.

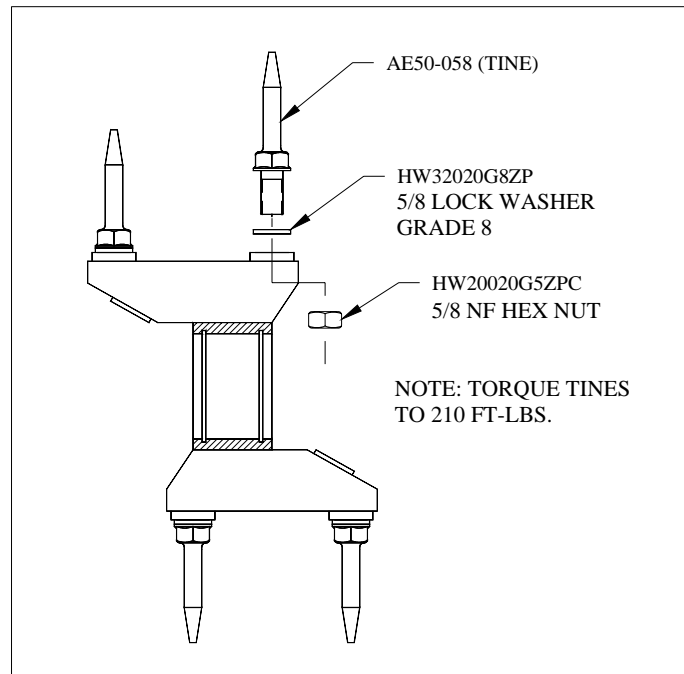


Figure 14. *Tine Replacement*

THE REMOTE ACTUATOR CONTROLS

1. Check all connection, at the battery, the plug at the hitch, and the plug at the actuator.
2. Make sure power is available at the plug end of the battery wiring harness and at the connection to the controller inside of the control box.
3. While pressing any one of the buttons on the remote switch, the red led indicator should light up, if not check battery in remote switch and replace if needed.
4. Remove cover and top layer of foam from control box, there are eight small switches on the controller. Check to make sure all are switched to the "ON" positions, if all are "ON" proceed to next step.
5. Look for the red led indicator light on the controller itself. If it is lighting up when either button on the Remote switch is pressed, proceed to step 6, if not, go to step 7.
6. Check the connections of the Brown and Yellow wires from the controller to the Black and White wire of the wiring harness going to the actuator. Unplug harness and check for any loose connections.
7. Check fuses, if bad replace with correct size. If the fuses continue to be blown, check for any short-circuited connections.
8. If problems still exist; contact your dealer for further instructions.

WARRANTY INFORMATION

ONE YEAR LIMITED WARRANTY

FIRST PRODUCTS INC. WARRANTS THIS PRODUCT TO BE FREE OF DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF TWELVE MONTHS FROM THE ORIGINAL DELIVERY DATE. THIS WARRANTY DOES NOT COVER PARTS CAUSED TO BE DEFICIENT DUE TO NORMAL WEAR, MISUSE, ACCIDENTS, OR LACK OF PROPER MAINTENANCE.

ANY PARTS THOUGHT TO BE DEFECTIVE MUST BE RETURNED TO THE DEALER/DISTRIBUTOR FOR WARRANTY CONSIDERATION JOINTLY WITH FACTORY REPRESENTATIVES. A RETURN AUTHORIZATION NUMBER MUST BE OBTAINED AND CLEARLY MARKED ON ALL PACKAGES OF PARTS REQUIRING RETURN TO THE FACTORY.

THE OBLIGATION OF FIRST PRODUCTS INC. UNDER THIS WARRANTY SHALL BE EXCLUSIVELY LIMITED TO REPLACEMENT OF PARTS DETERMINED TO BE DEFECTIVE BY FIRST PRODUCTS INC. WITH FREIGHT PREPAID. IN NO EVENT SHALL FIRST PRODUCTS INC. BE LIABLE FOR INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH THE USE OF THIS PRODUCT.

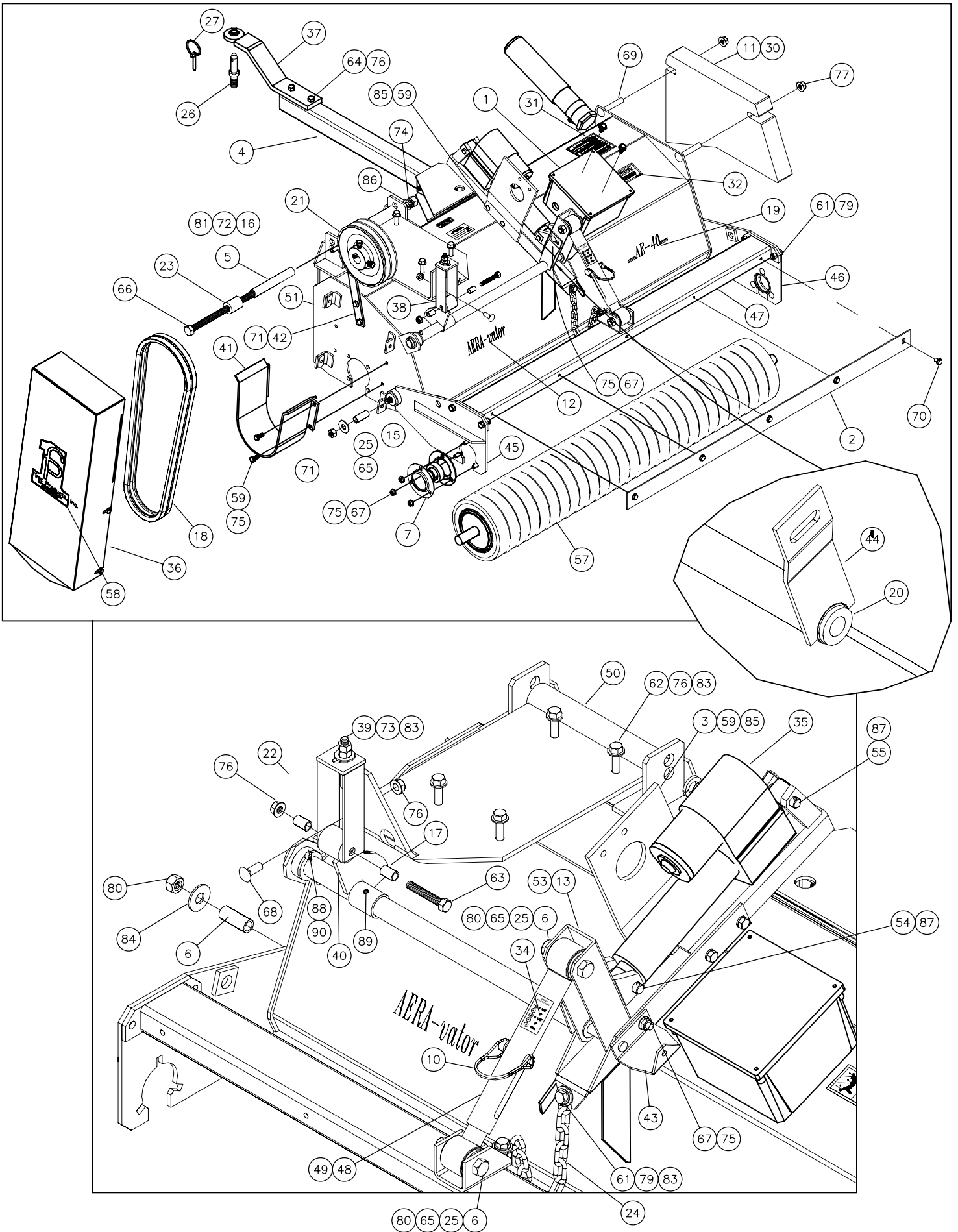
FIRST PRODUCTS INC. RESERVES THE RIGHT TO MAKE CHANGES OR ADD IMPROVEMENTS TO ITS PRODUCTS AT ANY TIME WITHOUT OBLIGATION TO MAKE SUCH CHANGES OR IMPROVEMENTS ON PRODUCTS SOLD PREVIOUSLY.

GENERAL ASSEMBLY (PARTS LIST)

ITEM	PART NO.	DESCRIPTION	ITEM	PART NO.	DESCRIPTION
1		*SEE REMOTE ACTUATOR CONTROLS	46	AE80-098	ROLLER END PLATE 40 - RT
2	AE23-225	SCRAPER - 40E	47	AE80-103	ROLLER BRACE TUBE - 40E
3	AE23-242	LIFT HOOK - 40E - 2001	48	AE80-105	LINKAGE OUTER TUBE
4	AE24-034	HITCH TUBE	49	AE80-106	LINKAGE INNER TUBE
5	AE24-043	BUSHING SPACER	50	AE80-138	MOTOR MOUNT
6	AE24-046	SHOCK BUSHING SLEEVE	51	AE80-140	MAIN FRAME - 40E - 2001
7	AE50-013	52MM X 3 HOLE FLANGE	52	AE80-151	EXTENDED ACTUATOR MOUNT-2004
8	AE50-030	BLANK SERIAL # TAG	53	AE80-152	TERNARY LINK-2004
9	AE50-032	PATENT DECAL	54	AE80-153	PIN, ROD
10	AE50-040	3/8 X 1-1/2 SNAPPER PIN	55	AE80-154	PIN, BASE
11	AE50-059	SMALL FP DECAL	56	AE81-059	PARTS BOOK TUBE ASS'Y
12	AE50-063	AERA-VATOR DECAL	57	AE81-081	TIRE ROLLER
13	AE50-075	PINCH POINT CAUTION DECAL	58	FB50-068	F.P. LOGO DECAL
14	AE50-085	1/4 SQ. X 2 KEY - 1045	59	HW01010024G5ZPC	5/16 x 3/4 HEX CAPSCREW GD 5
15	AE50-103	1" DIA X 52 MM SPH. W/SETSCREW	60	HW01010056G5ZPC	5/16 X 1 3/4 HEX CAPSCREW GD 5
16	AE50-110	CAM SHAFT BEARING	61	HW01012032G5ZPC	3/8 X 1 HEX CAPSCREW GD 5
17	AE50-119	3/8 X 1/2 X 3/4 BRONZE BEARING	62	HW01012056G5ZPC	3/8 X 1 3/4 HEX CAPSCREW GD 5
18	AE50-121	CLUTCH BELT	63	HW01012072G5ZPC	3/8 X 2 1/4 HEX CAPSCREW GD 5
19	AE50-124	AE40 DECAL	64	HW01012096G5ZPC	3/8 x 3 HEX CAPSCREW GD 5
20	AE50-125	1/2 X 3/4 X 1/2 FLANGE BEARING	65	HW01016080G5ZPC	1/2 X 2 1/2 HEX CAPSCREW GD 5
21	AE50-126	2B6.4 X 1 SHEAVE	66	HW01020320G2ZPC	5/8 X 10 HEX CAPSCREW
22	AE50-127	1/2 X 1 3/8 BONDED RUBB. BSHG.	67	HW03010024G5ZPC	5/16 X 3/4 CARRIAGE BOLT GD 5
23	AE50-128	5/8 X 1 1/4 BONDED RUBB. BSHG.	68	HW03012032G5ZPC	3/8 X 1 CARRIAGE BOLT GD 5
24	AE50-137	3/16 PROOF COIL CHAIN	69	HW03016096G5ZPC	1/2 X 3 CARRIAGE BOLT GD 5
25	AE50-147	SHOCK BUSHING	70	HW04010016PLC	5/16 X 1/2 HEX HD SELF THREAD
26	AE50-148	CAT 0 HITCH PIN	71	HW06010024G5ZPC	5/16 X 3/4 HEX FLG LK SCREW
27	AE50-149	1/4 LYNCH PIN	72	HW07010032PLC	5/16 X 1 SQ HEAD SETSCREW
28	AE50-175	CHECK BELT DECAL	73	HW20012G5ZPC	3/8 HEX NUT
29	AE50-179	11 HP. HONDA ENGINE	74	HW20020G5ZPC	5/8 HEX NUT
30	AE50-180	FRAME WEIGHT - 40E - 2001	75	HW22010G5ZPC	5/16 FLANGE LOCK NUT
31	AE50-195	GENERAL WARNING DECAL - 40E	76	HW22012G5ZPC	3/8" FLANGE LOCK NUT
32	AE50-196	THROWN OBJ. WARNING DECAL-40E	77	HW22016G5ZPC	1/2 FLANGE LOCK NUT
33	AE50-197	CRANKING CAUTION DECAL	78	HW24010GBZPC	5/16 STOVER LOCK NUT
34	AE50-199	DEPTH ADJUSTMENT DECAL - 40E	79	HW24012GBZPC	3/8 STOVER LOCK NUT
35	AE50-236	ACTUATOR	80	HW24016GBZPC	1/2 STOVER LOCK NUT
36	AE80-076	BELT SHEILD-40E	81	HW25010G5ZPC	5/16 JAM NUT
37	AE80-077	HITCH EXTENSION	82	HW30010TAZP	5/16 FLAT WASHER
38	AE80-078	CAM FOLLOWER BKT.	83	HW30012TAZP	3/8 FLATWASHER
39	AE80-079	ADJUSTMENT SCREW	84	HW30016TAZP	1/2 FLATWASHER
40	AE80-080	CAM	85	HW32010G5ZP	5/16 LOCKWASHER
41	AE80-081	SKID SHOE - 40E	86	HW32020G5ZP	5/8 LOCKWASHER
42	AE80-082	BELT PRESSURE ROD	87	HW40005032ZP	5/32 X 1 COTTER PIN
43	AE80-083	CAM SHAFT PIN	88	HW40006048ZP	3/16 X 1 1/2 COTTER PIN
44	AE80-084	CAM SHAFT	89	HW42008040ZP	1/4 X 1 1/4 ROLL PIN
45	AE80-097	ROLLER END PLATE 40 - LT	90	HW6003204810GZP	1"ID X 1 1/2 OD 10GA BUSHING

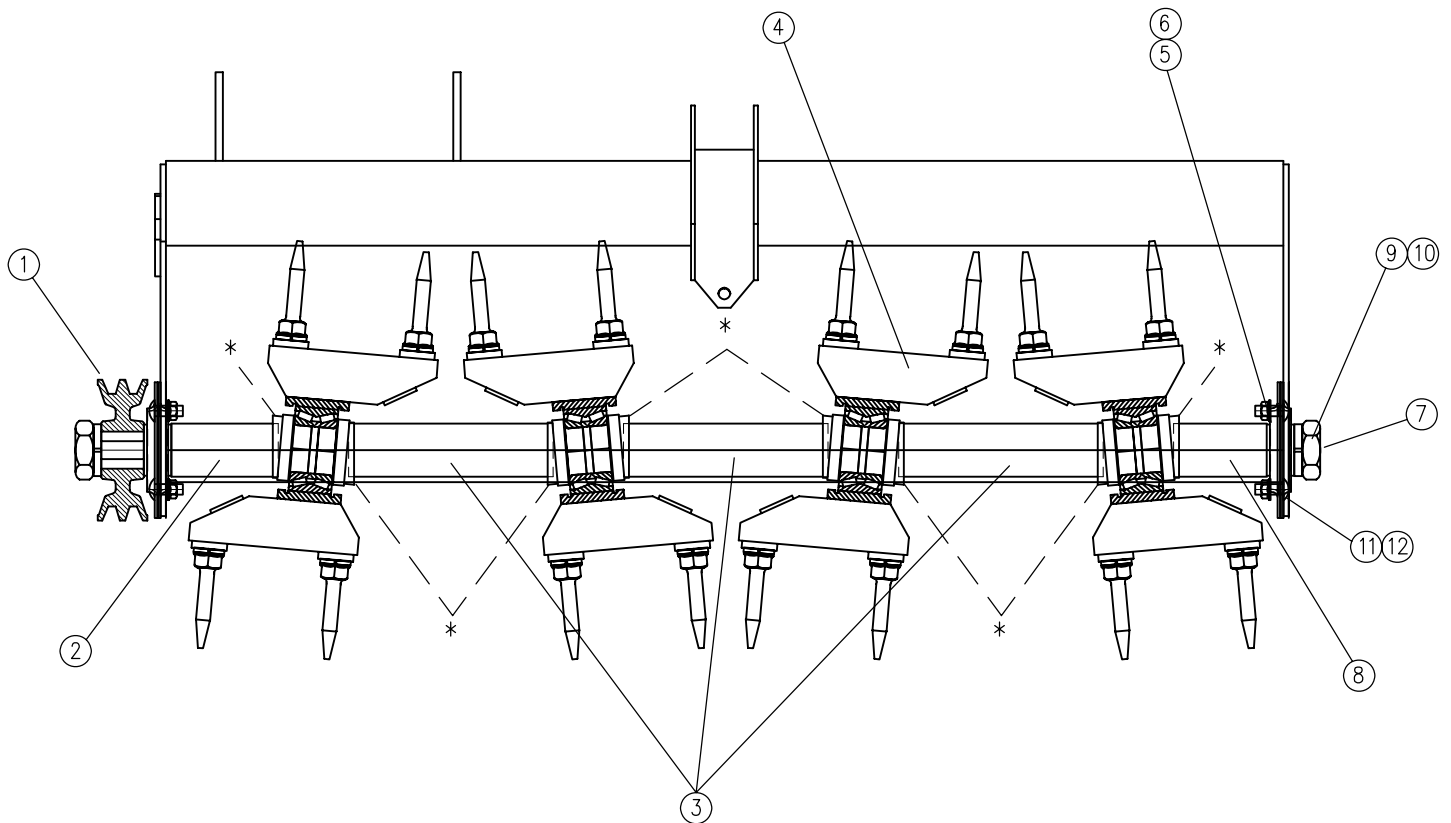
HIGHLIGHTED ITEMS ARE NOT SHOWN

GENERAL ASSEMBLY



ROTOR SHAFT TO MAIN FRAME ASSEMBLY

ITEM NO.	ORDER NO.	DESCRIPTION
1	AE50-086	2B 4.65 X 1 1/8" HEX BORE SHEAVE
2	AE24-027	DRIVE END SPACER (3 13/16")
3	AE24-011	LONG SPACER (7 1/4")
4	AE81-012	ROTOR COMPLETE
5	AE50-094	72MM X 4 HOLE FLANGE
6	AE50-090	1 1/8" HEX BEARING
7	AE26-034	ROTOR SHAFT -40
8	AE24-029	RIGHT END SPACER (3 5/16")
9	HW32036G5ZP	1 1/8" LOCK WASHER
10	HW25036G5ZPF	1 1/8" -12 JAMNUT N.F.
11	HW03012032G5ZPC	3/8" X 1" CARRIAGE BOLT
12	HW22012G5ZPC	3/8" FLANGE LOCKNUT



* DENOTES TIMING MARK ON BEARING ADAPTER

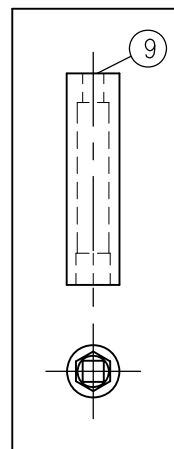
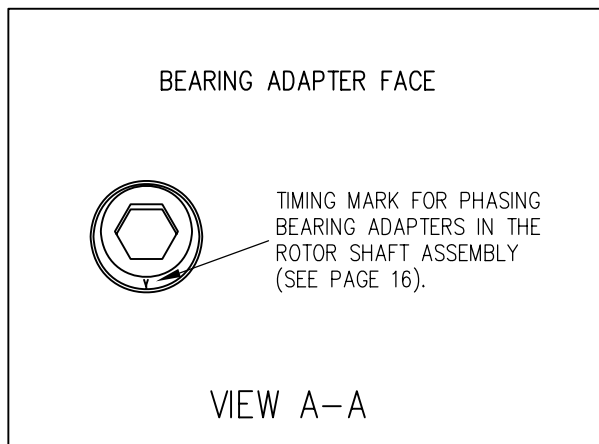
NOTES: 1. THE TIMING MARKS ARE PHASED 180° APART IN EACH ROTOR ASSEMBLY.
2. THE TIMING MARKS BETWEEN ADJACENT ROTORS ARE ALIGNED.

ROTOR ASSEMBLY

AE81-011 Consists of:

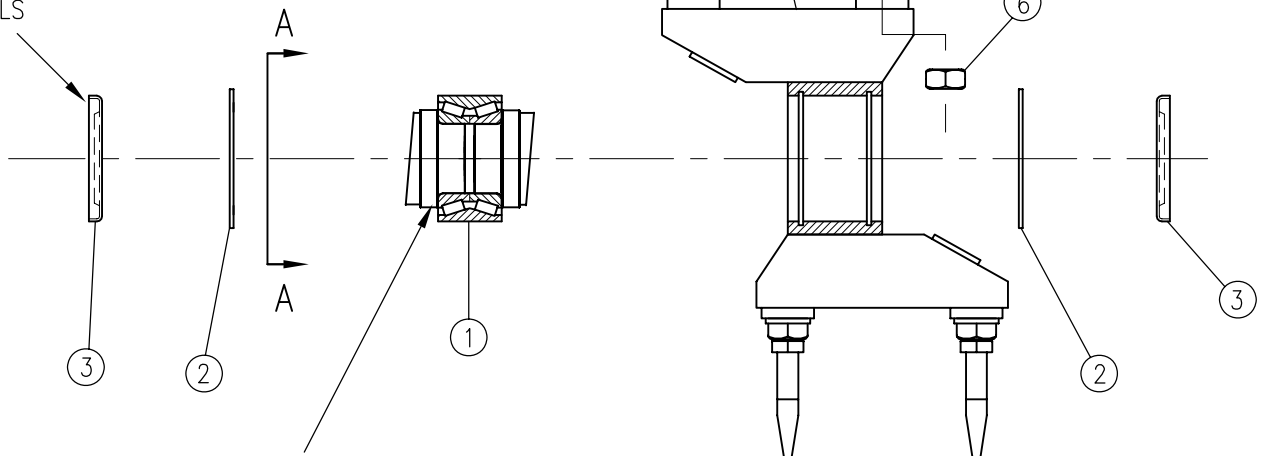
- AE50-055 ROTOR BEARING
- AE50-004 BRG. ADAPTER
- AE50-029 3" SNAP RING - INT.
- AE50-005 EXTERNAL ROTOR SEAL
- AE80-027 ROTOR

ITEM NO.	ORDER NO.	DESCRIPTION
1	AE81-010	AE 5° BRG. & ADAPTER
2	AE50-029	3" SNAP RING-INTERNAL
3	AE50-005	EXTERNAL ROTOR SEAL
4	AE50-058	TINE-5/8 N.F.
5	HW32020G8ZP	5/8" LOCK WASHER GRD. 8
6	HW20020G5ZPC	5/8" HEX NUT
7	AE80-027	ROTOR ONLY
8	AE81-011	ROTOR ASSEMBLY W/O TINES
9	AE60T003	EXTRA DEEP IMPACT SOCKET



NOTE: TORQUE TINES TO 210 FT. LBS.

ASSEMBLE SEALS WITH LIP OUT

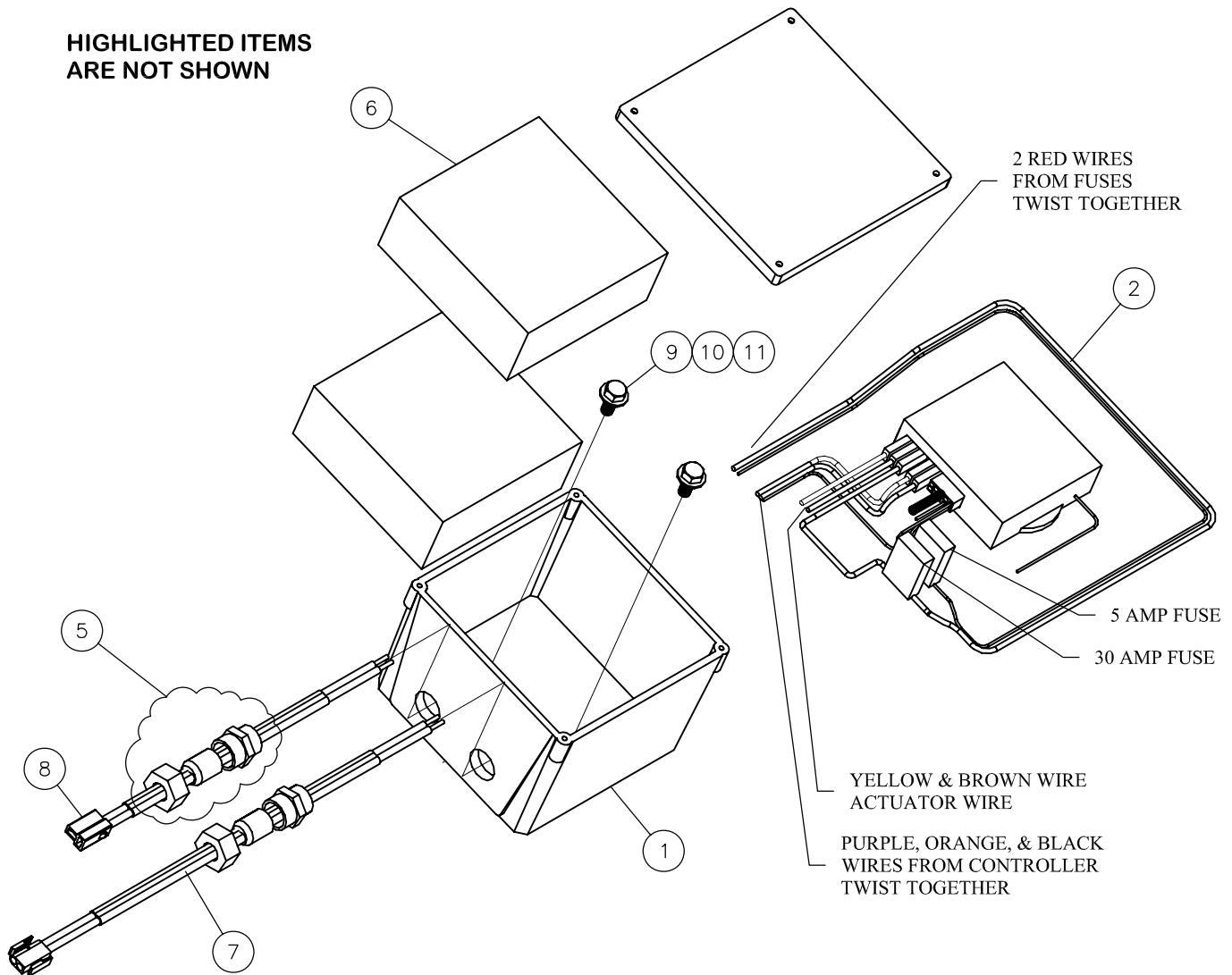


CAUTION: INTERNAL BEARING SEALS ARE NOT TO BE REMOVED.

REMOTE ACTUATOR CONTROL ASSEMBLY

ITEM	PART NO.	DESCRIPTION
1	AE50-237	CONTROL BOX
2	AE50-238	ACTUATOR REMOTE CONTROLLER
3	AE50-243	WIRE CAP
4	AE50-248	ACTUATOR REMOTE
5	AE50-249	WEATHERTIGHT CONNECTOR
6	AE50-247	FOAM
7	AE81-090	WIRING HARNESS-CONNTROLLER
8	AE81-092	WIRING HARNESS-ACTUATOR
9	HW01010024G5ZPC	5/16 x 3/4 HEX CAPSCREW GD 5
10	HW24010GBZPC	5/16 STOVER LOCK NUT
11	HW32010G5ZP	5/16 LOCKWASHER

HIGHLIGHTED ITEMS ARE NOT SHOWN



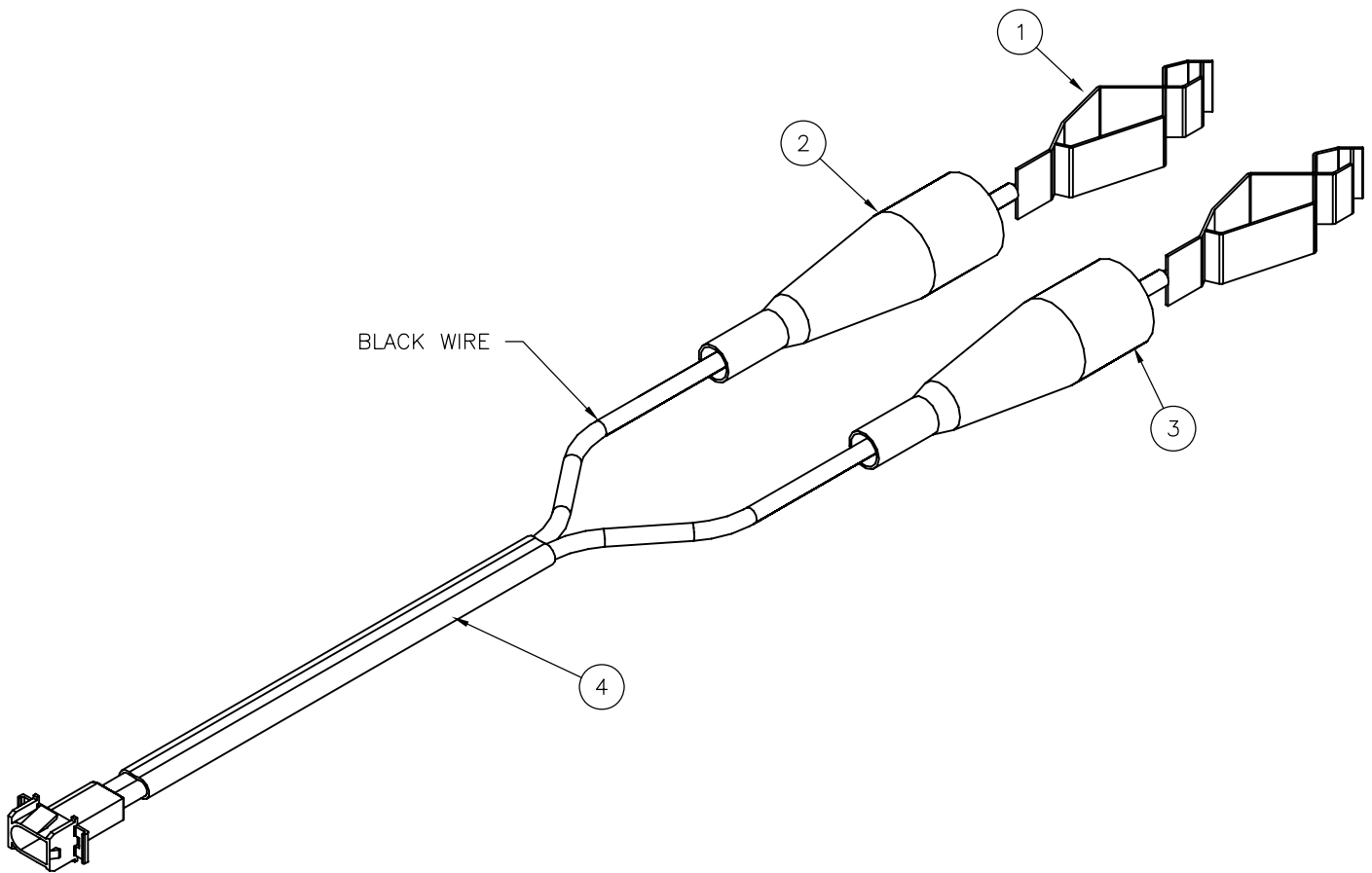
WIRE CONECTIONS:

RED WIRES FROM CONTROLLER CONNECTS TO BLACK WIRE OF CONTROLLER HARNESS
 PURPLE, ORANGE, & BLACK WIRE ON CONTROLLER CONNECTS TO WHITE WIRE OF CONTROLLER HARNESS
 YELLOW WIRE ON CONTROLLER CONNECTS TO THE BLACK WIRE OF ACTUATOR HRANESS
 BROWN WIRE ON CONTROLLER CONNECTS TO THE WHITE WIRE ON ACTUATOR HARNESS

WIRING HARNESS-BATTERY

COMPLETE HARNESS #: AE81-091

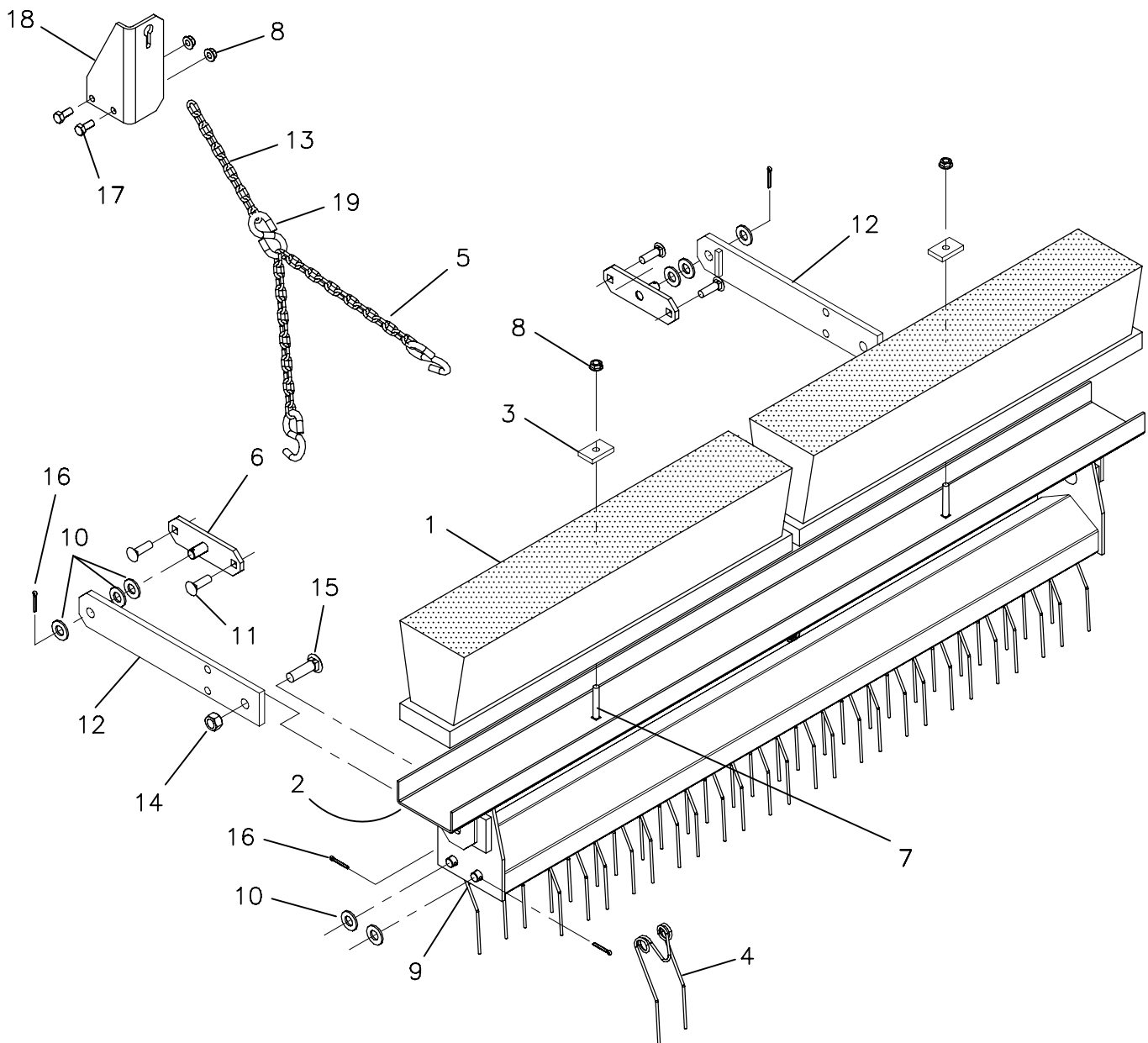
ITEM	NAME	DESCRIPTION
1	AE50-129	2-7/8 TEST CLIP
2	AE50-130	RED INSULATOR
3	AE50-131	BLACK INSULATOR
4	AE81-093	WIRING HARNESS-BATTERY W/O CLIPS



GROOMING RAKE & BRUSH

ORDER NO. AE82-026

ITEM NO.	ORDER NO.	DESCRIPTION	ITEM NO.	ORDER NO.	DESCRIPTION
1	AE50-159	Brush	10	HW31016TAZP	1/2" Flat Washer Sae
2	AE80-131	Groom Rake/Brush Frame	11	HW03012040G5ZPC	3/8 x 1 1/4 Carriage Bolt G5
3	AE23-205	Washer	12	AE80-134	Groom Rake/Brush Arm
4	AE50-178	Rake Tine	13	AE50-193	Hanger Chain - 40E
5	AE50-192	Hanger Chain - 40	14	HW24016GBZPC	1/2 Stover Lock Nut
6	AE80-133	Groom Rake/Brush Mount	15	HW03016056G5ZPC	1/2" x 1 3/4" Carriage Bolt
7	HW03010064G2ZPC	5/16" x 2" Carriage Bolt	16	HW40004032ZP	1/8 x 1 Cotter Pin
8	HW22010G5ZPC	5/16" Hex Flange Lock Nut	17	HW01010024G5ZPC	5/16 X 3/4 Hex Capscrew
9	AE80-130	Tine Rod - 40	18	AE23-243	Chain Catch - 40E
			19	AE50-160	2 1/4" "S" Hook



AE40E SPECIFICATIONS

WEIGHT	550 lbs.
OVERALL WIDTH	47"
WORKING WIDTH	40"
ENGINE	11 HP HONDA w/ 6:1 Reduction
END DRIVE	2 Bx Belts
TINES	$\frac{9}{16}$ " x 3 $\frac{3}{4}$ " Forged & Hardened
TINE VIBRATION FREQUENCY	825 Cycles/Min @ 3600 RPM
OUTSIDE TO OUTSIDE TINE TRAVEL	1 $\frac{3}{8}$ "
VIBRATING DEPTH	3 $\frac{3}{4}$ " Including Tine nut
AERATION DENSITY	6 Holes per Sq. FT
ROTOR BEARINGS	Double Sealed Tapered Roller
FINISH – BASIC UNIT	Black & Grey Acrylic W/Red Trim
TOWING VEHICLE REQUIREMENT:	
VOLTAGE	12 Volts
TONGUE DRAFT PULL	100 lbs. (Operation)
WEIGHT CAPACITY	400 lbs.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE