

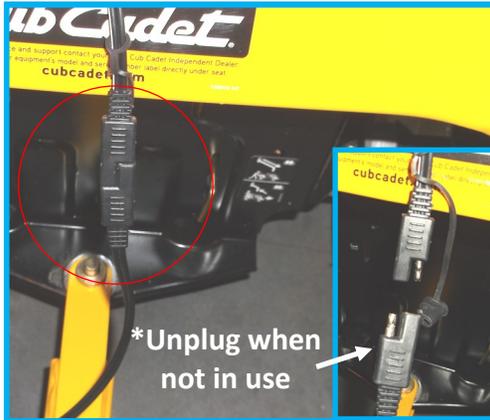
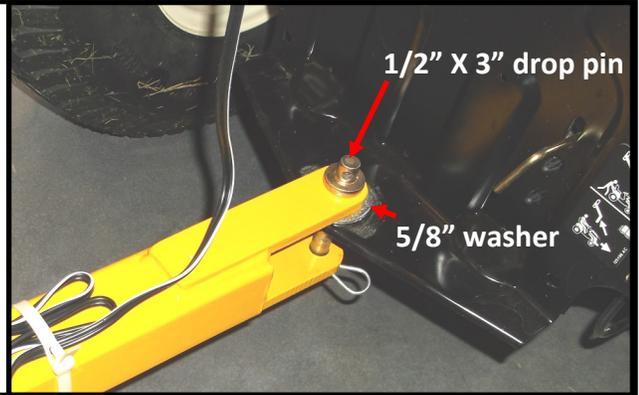


To eliminate the need for routine battery charging, the Motor Grader is powered by the tow vehicle's 12 volt battery. The device plugs into a battery connection wire when in use. Two shorter battery connection wires are included. They are compatible with tow vehicles with the battery located toward the rear. A 12 foot extension wire (sold separately) is required for tow vehicles with the battery located toward the front.



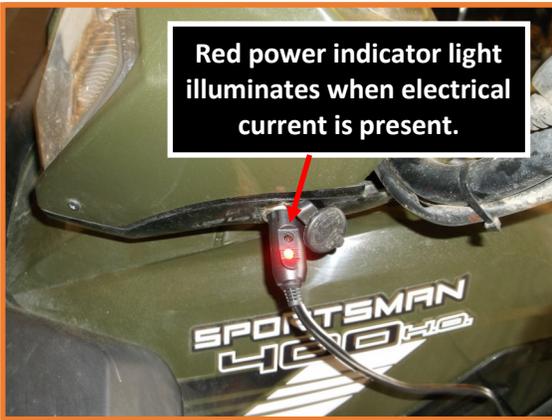
Hitching Up:

- Requires a drop pin receptacle no more than 12 inches high. On ATVs with a hitch receiver, use a hitch ball mount without the ball.
- Connect using a 1/2" X 3" hitch pin with a 5/8" washer underneath the tongue to reduce wear on the surface below (not included).



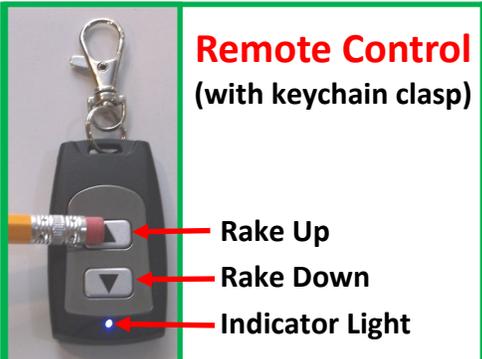
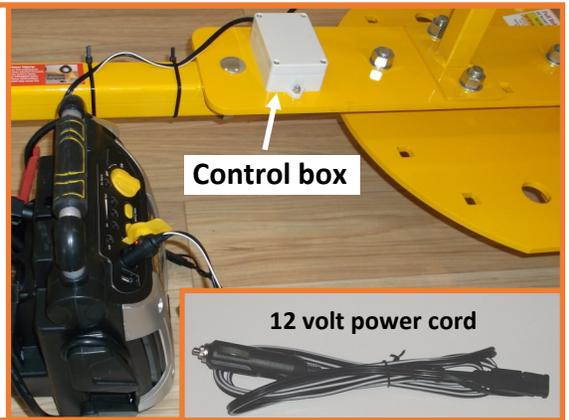
Powering Up:

- The wire from the control box is plugged into the tow vehicle's battery connection wire. When not in use, the wires should be unplugged. Note: even when the electric actuator is not being operated, the control box uses a small amount of power (.01 amps) and can discharge the battery over time.
- A reusable zip tie is included to secure excess wire to the tongue tube.



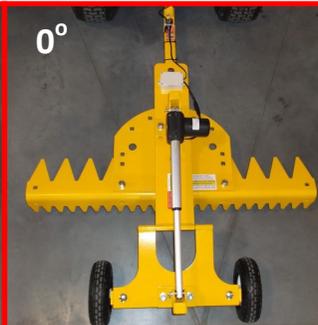
12 Volt Power Cord

A six foot long power cord is also included and will plug in to standard 12 volt sockets. Also, a portable automobile battery jumper fastened securely to the tow vehicle can provide sufficient power.

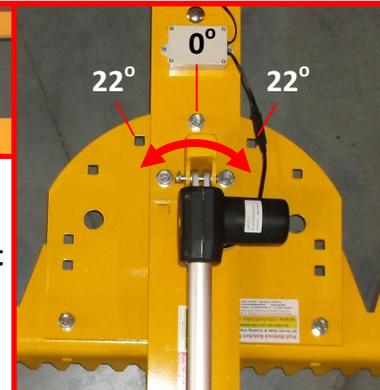


Each remote control produces a unique signal which is received by a compatible control box. A free matching replacement remote is also included. Both of the remotes are shipped with the batteries installed. An indicator light illuminates when the up or down button is pressed. To eliminate complicated remote control signal recalibrations, the control box and remotes will be replaced in matching sets.

Angle Adjustments



To adjust rake angle, remove bolt #2 and loosen bolt #3. Turn rake to desired setting. Reinsert and tighten bolt #2 then tighten bolt #3. Note: A 45° angle setting is not possible due to inadequate wheel clearance.



Extra Height for Long Tines

The long tines are 2 1/2" longer than the short tines. Repositioning the actuator mount rearward to the R set of square holes will increase the long tines fully raised ground clearance by over 2 inches.



Yearly Maintenance:

Lubricate swing arm with thin oil (motor oil is fine).

Fuse Replacement:
automotive - small style.



7.5 amp

*Grader draws about 3 amps

One Year Warranty

All parts (except the free replacement remote control) are fully covered by a 1 year warranty and 30 day satisfaction guarantee.

Trouble shooting – Actuator doesn't respond to remote control...

- #1 Check the indicator light on the remote. If it does not illuminate when an arrow is pressed, replace batteries.
- #2 Power up the control box using the 12 volt plug (6 feet long). The 12 volt plug has a red indicator light that will illuminate when power is supplied. If the actuator then operates properly using the 12 volt cord, check the tow vehicles battery connection wire for damage or a blown fuse and also the battery terminals for corrosion.
- #3 With the 12 volt plug powered up (red power indicator light illuminating) and connected to the control box, pressing either of the arrows on the remote control should produce a clicking sound inside the control box. If there is no clicking sound, then the control box is not working.
- #4 If the control box produces a clicking sound and the actuator doesn't respond, the actuator is likely not working. To confirm the actuator is faulty, bypass the control box. With the 12 volt cord powered up (red power indicator light illuminating), plug it directly into the actuator, the actuators ram should fully extend.

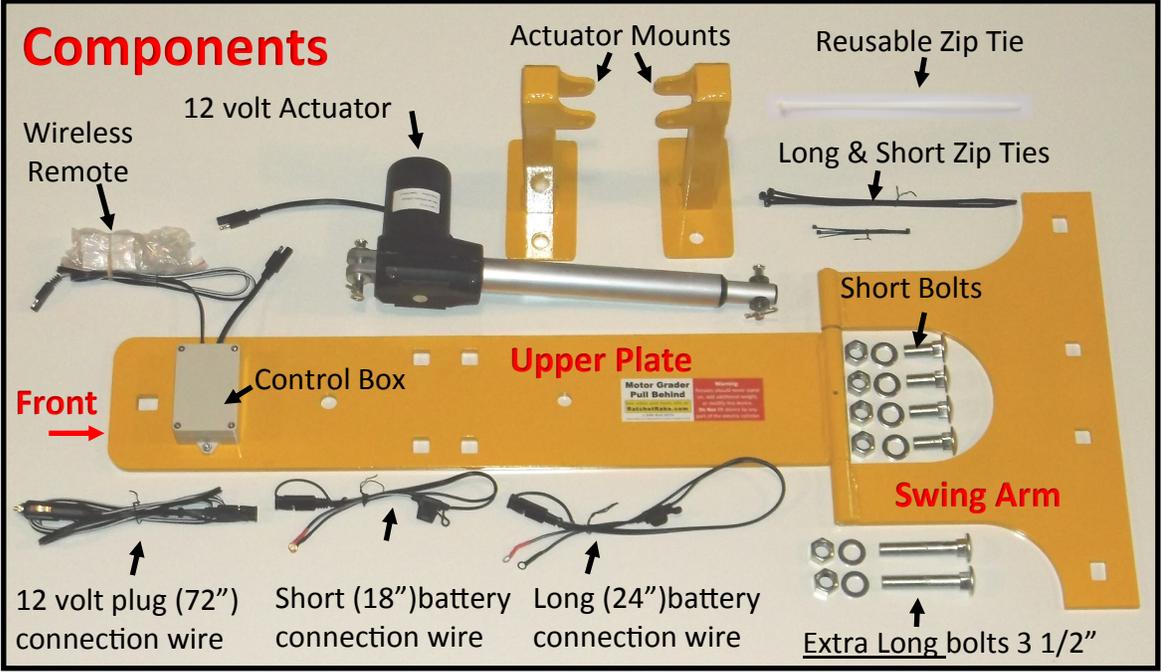
Warning: Failure to follow the safety precautions below can lead to serious injury, death, & damage to equipment.

- Persons should never stand on or ride on the Motor Grader at any time.
- Persons should never add additional weight or modify the Motor Grader in any way.
- Persons should never lift the Motor Grader by any part of the electric actuator.
- All bolts should be checked and tightened if needed before every use.
- The Motor Grader should be assembled as instructed by the Assembly Direction sheet
- The Motor Grader should not be cleaned with a power washer or submerged in water (a garden hose is fine).
- When backing up the tow vehicle, the Motor Graders rake tines must always be elevated.
- The maximum tow vehicle weight is 1000 pounds and should not exceed 5 mph when using the Motor Grader.
- Do not back up the motor graders rear swing arm/wheel assembly into trees or other objects.

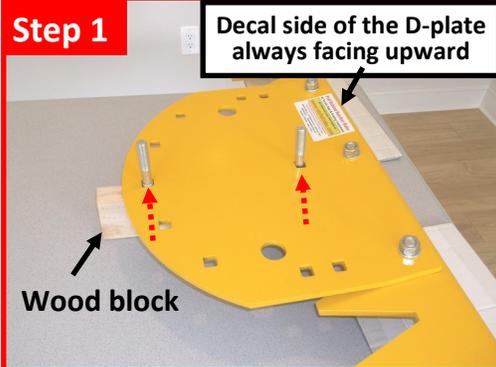
- Additional tow vehicles: Universal SAE trickle charge battery harnesses are readily available and can be installed on additional tow vehicles to provide power to the Motor Grader. (The battery connections are all the same as the diagram on pg.4)
- The 12 volt actuator and control box are water resistant but we recommend indoor storage.

Ratchet Rake Motor Grader Assembly Directions: pages 3 & 4

Components



-Due to the heavy weight of some of the components, 2 persons may be required for assembly.
 -The motor grader should be assembled on a flat surface preferable the floor of a garage or shed.
 -Tools required: **1.** 15/16", or 24 mm, or large adjustable wrench **2.** 3/8" wrench to disassemble the packaging. **3.** Other tools will be required to install the connection wires on to your battery's terminals.



Step 1
 Place a support block under the curved edge of the D-plate. Insert the two extra long bolts up through the square holes in the D-plate.



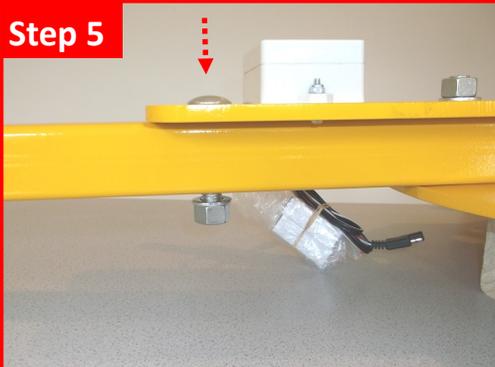
Step 2
 Position the tongue tube over the two extra long bolts as pictured.



Step 3
 Position the upper plate over the two extra long bolts as pictured.



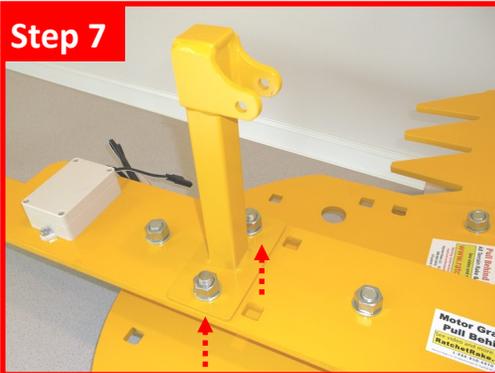
Step 4
 Place washers over the threads of the two extra long bolts. Hand tighten the nuts.



Step 5
 Inset a long bolt down thru the rectangular hole in the front of the upper plate as pictured. Add washer and nut.



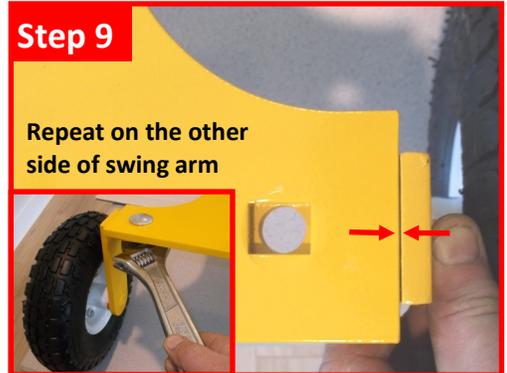
Step 6
 Finish tightening the three bolts with a 15/16 inch, or 24mm wrench, or large adjustable wrench.



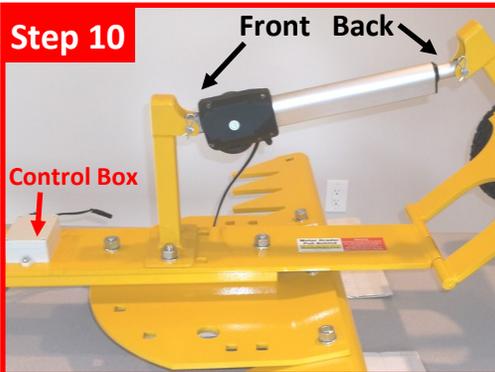
Step 7
Secure the front actuator mount by inserting two short bolts up thru the front set of square holes of the top plate as pictured. Add washers & tighten nuts with wrench.



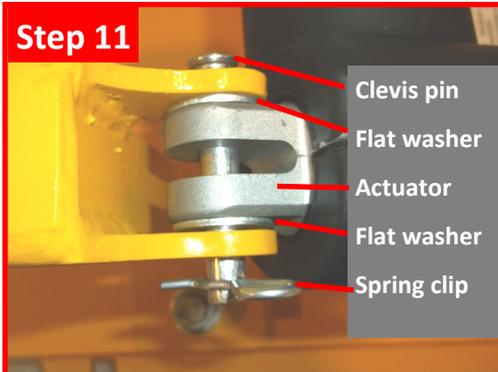
Step 8
Secure the rear actuator mount by inserting two short bolts up thru the square holes of the swing arm as pictured. Add washers and tighten nuts with wrench.



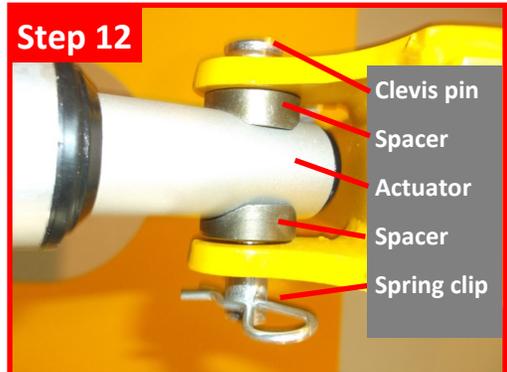
Step 9
Repeat on the other side of swing arm
Positioning the top of the wheel assembly against one side of the swing arm. Insert its short bolt down thru the rectangular hole. Add washers & tighten the nuts.



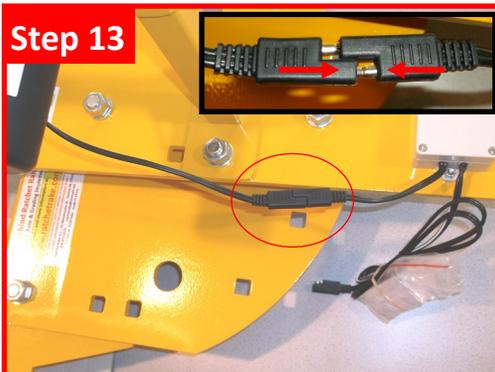
Step 10
Install the 12 volt actuator with its power cord orientated toward the control box as pictured.



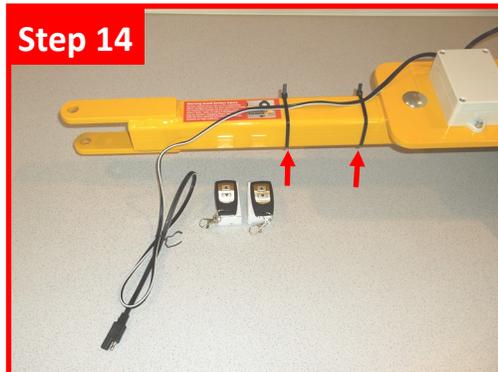
Step 11
The front "power cord" end of the 12 volt actuator is connected to the actuator mount as pictured.



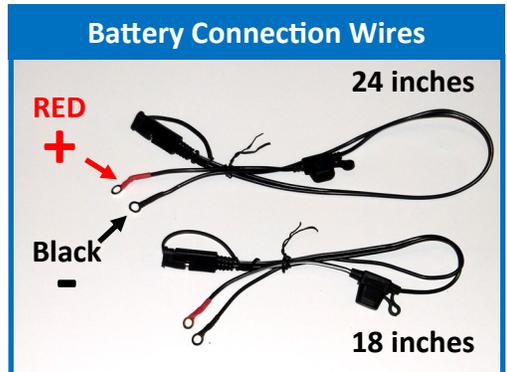
Step 12
The back end of the 12 volt actuator is connected to the actuator mount as pictured.



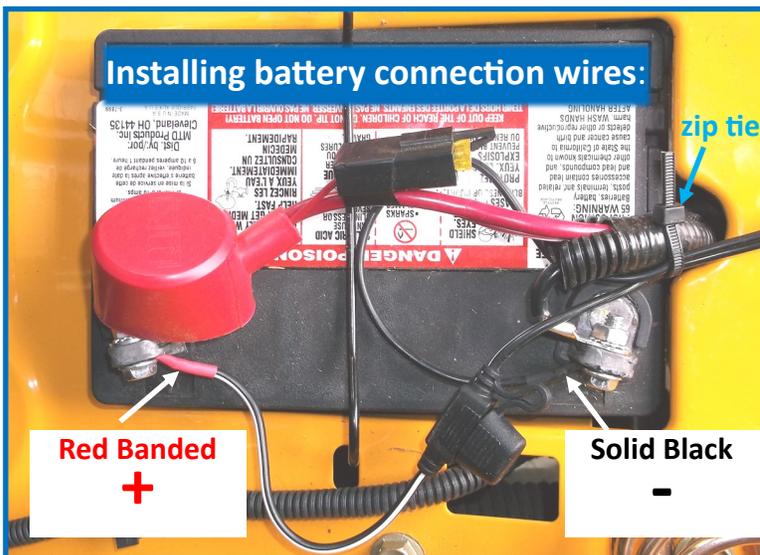
Step 13
Connect the power wire from the 12 volt actuator to short wire from control box.



Step 14
Secure the long wire from control box to the tongue tube with long zip ties.



Battery Connection Wires
24": recommended for most ATVs
18": recommended for most lawn tractors



Lawn tractor connection wire
Red Banded wire (with white stripe) must be connected to the Positive (+) terminal of the battery.
The Solid Black wire must be connected to the Negative (-) terminal of the battery.



ATV connection wire
Red Banded wire (with white stripe) must be connected to the Positive (+) terminal of the battery.
The Solid Black wire must be connected to the Negative (-) terminal of the battery.

Caution: Reversing the connection wires on the battery terminal will permanently damage the control box!
Route the plug end of the connection wires rearward toward the center of the machine. Secure the wire with the short zip ties.