

# BODY ASSEMBLY



**70** Apply glue to the Tail Drive Gear (AK) and Tail Drive Cam Pieces (AJ) as shown.



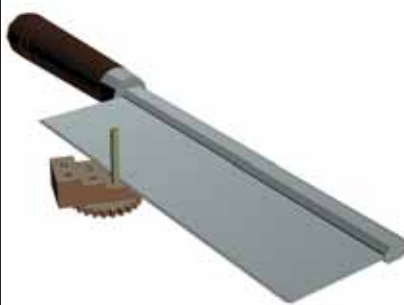
**71** Assemble the Tail Drive Assembly, carefully aligning the components as shown.



**72** Apply glue to one end of a long pin, and push it into the off center hole of the Head Drive Gear (AS).



**73** Press the pin into the Head Drive Gear (AS) until the end is flush with the marked side. Allow the glue to dry thoroughly.



**74** Using the #2 hole in the Trimming Guide, trim the pin using a razor saw.



**75** Smooth any rough edges.



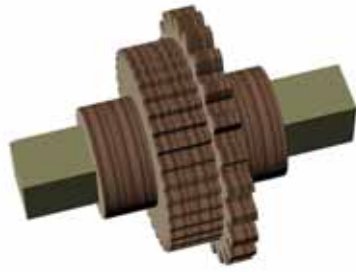
**76** Cut a length of square axle using the short notch in the Axle Guide Tool (T3) for reference



**77** Apply glue to the Shaft, Bearings, Driven Gear (AH), and Driven Pulleys (AG) as shown and assemble them to the shaft. The position isn't critical as long as at least 6.5mm (1/4") of shaft extends past the bearing.



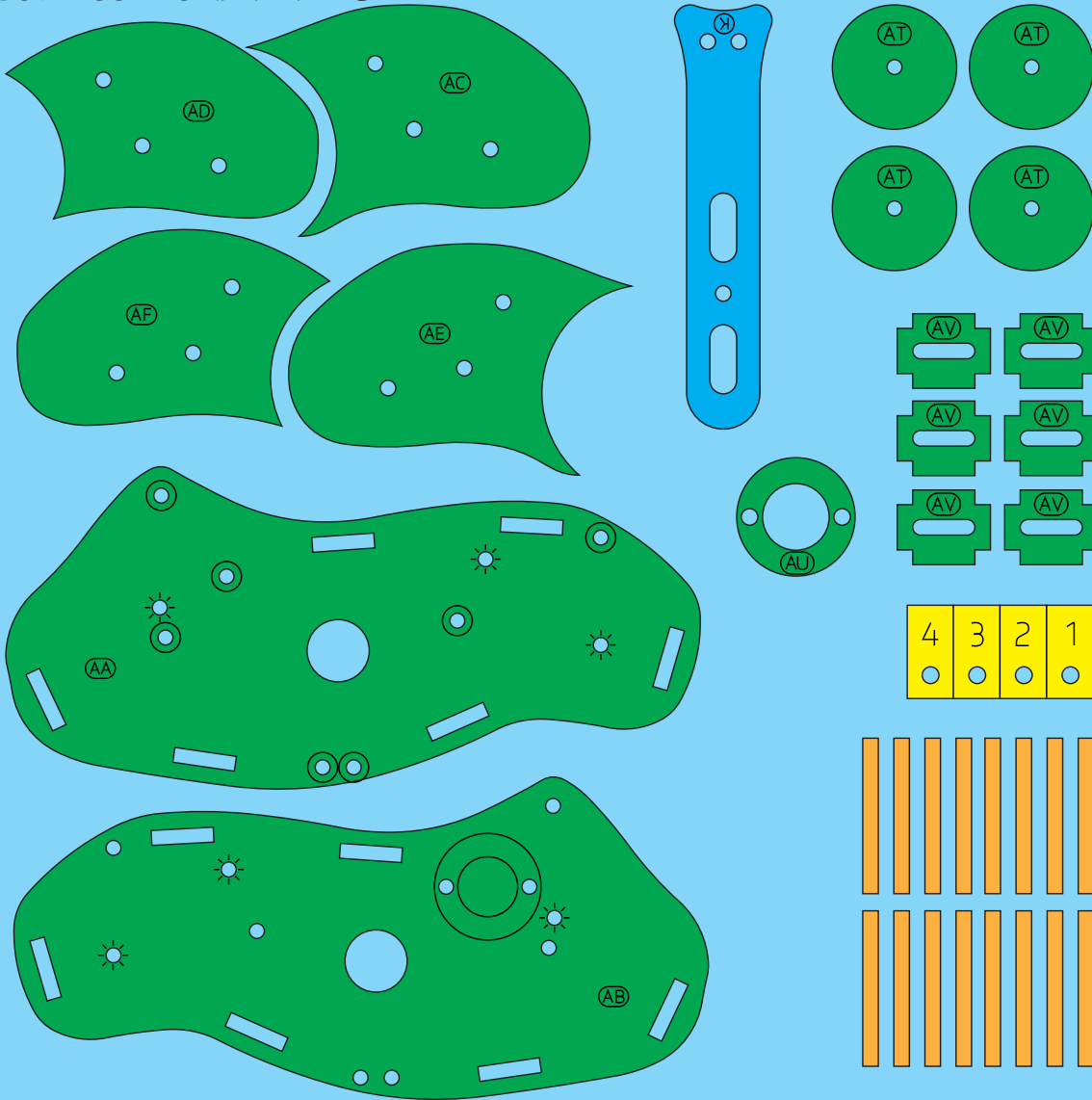
**78** Apply glue to the bearings and assemble them to the other end of the shaft.



79 Make sure all the pieces are firmly pressed together and are square on the shaft.

# BODY ASSEMBLY

## BODY COMPONENT PARTS



# BODY ASSEMBLY



Hole marked with circle  
Pin faces marked side



Hole marked with asterisk  
Pin faces unmarked side



**80** Apply glue to the end of six pins as shown and place them in the holes in the Left Body Plate (AA) and Right Body Plate (AB) marked with an asterisk (\*)



**81** Press the pins into place flush with the marked side of the Body Plates



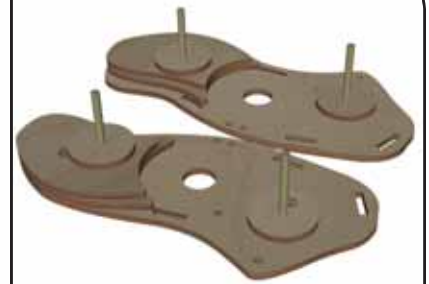
**82** Glue and assemble the Right Outer Hip (AD), Right Inner Hip (AC), and Mounting Plate (AT) to the unmarked side of the Right Body Plate (AB). Repeat for the Left Outer Hip (AF), Left Inner Hip (AE), Mounting Plate (AT) and Left Body Plate (AA).



**83** Trim the long pins to the hip pieces

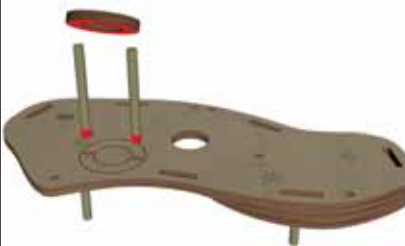


**84** Apply glue to two Mounting Plates (AT) and Long Pins as shown



**85** Assemble the Mounting Plates (AT) and Long Pins to Hip Pieces as shown.

**NOTE:** Do not trim the front leg pivot pins.



**86** Glue the Guide Ring (AU) and two long pins onto the marked side of Right Body Plate (AB) as shown.



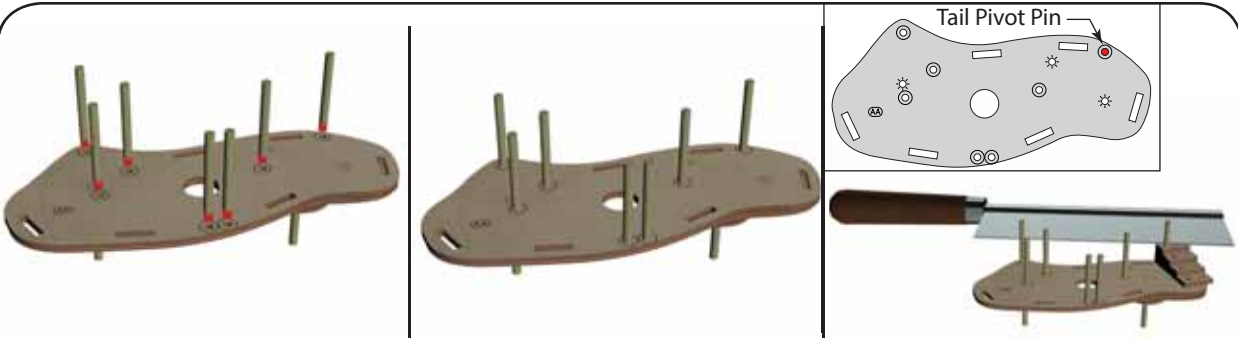
**87** Trim the pins to the Guide Ring (AU) using a razor saw, and sand them flush.



**88** The Right Body Plate (AB) is complete.

**NOTE:** The pins should be flush with the unmarked side of the Body Plate

# BODY ASSEMBLY

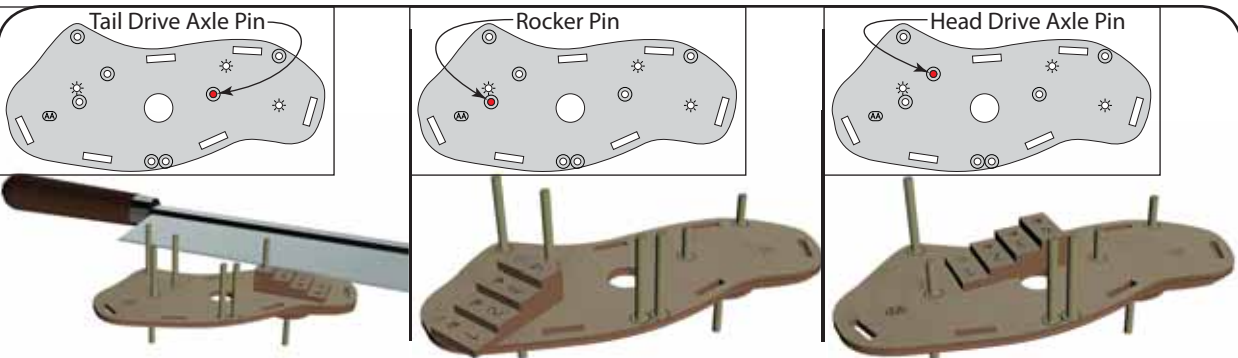


**89** Apply glue to seven (7) Long Pins pins as shown.

**90** Press the long pins into each of the holes in the Left Body Plate (AA) marked with a circle as shown.

**91** Using the Trimming Guide, trim the tail pivot pin as shown to level 4

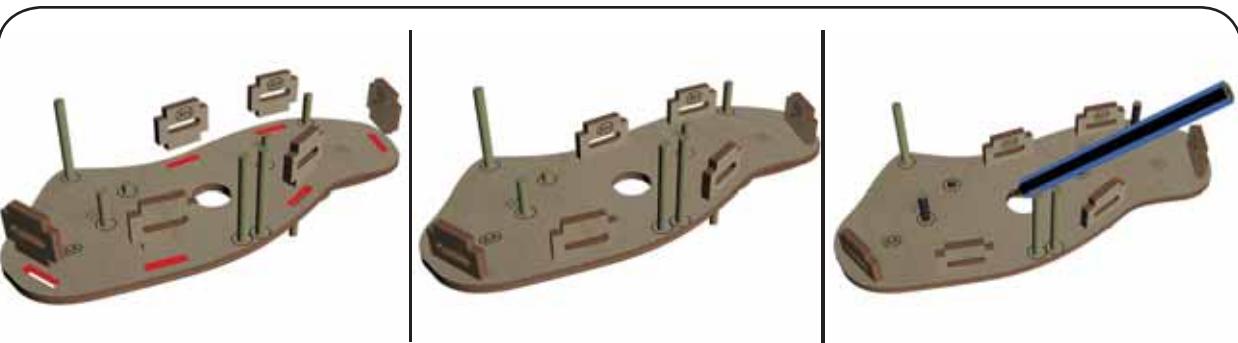
**NOTE:** The pins should be flush with the unmarked side of the Body Plate



**92** Using the Trimming Guide, trim the tail drive axle pin as shown to level 4

**93** Using the Trimming Guide, trim the rocker pin as shown to level 4

**94** Using the Trimming Guide, trim the head drive axle pin as shown to level 1

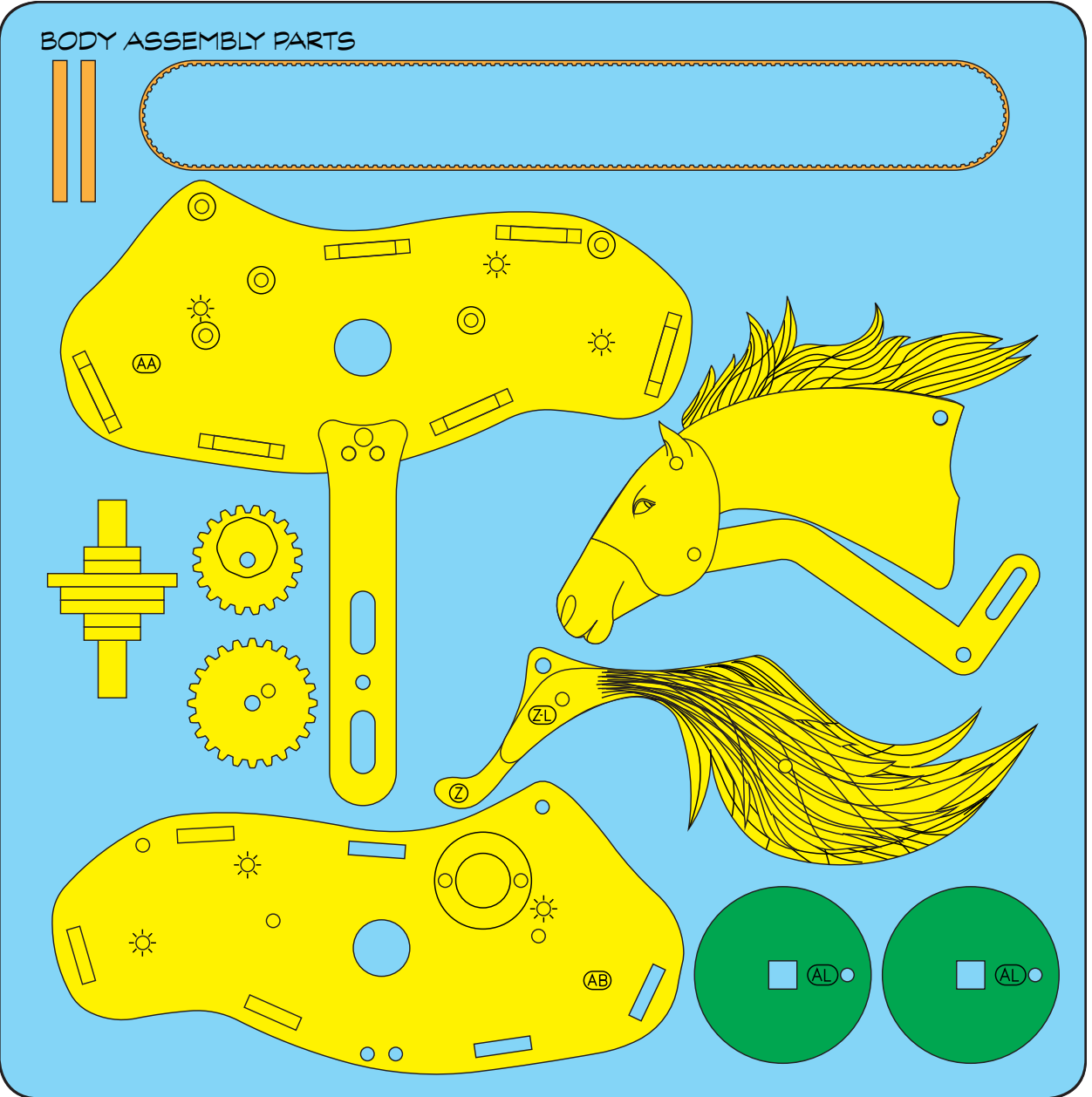
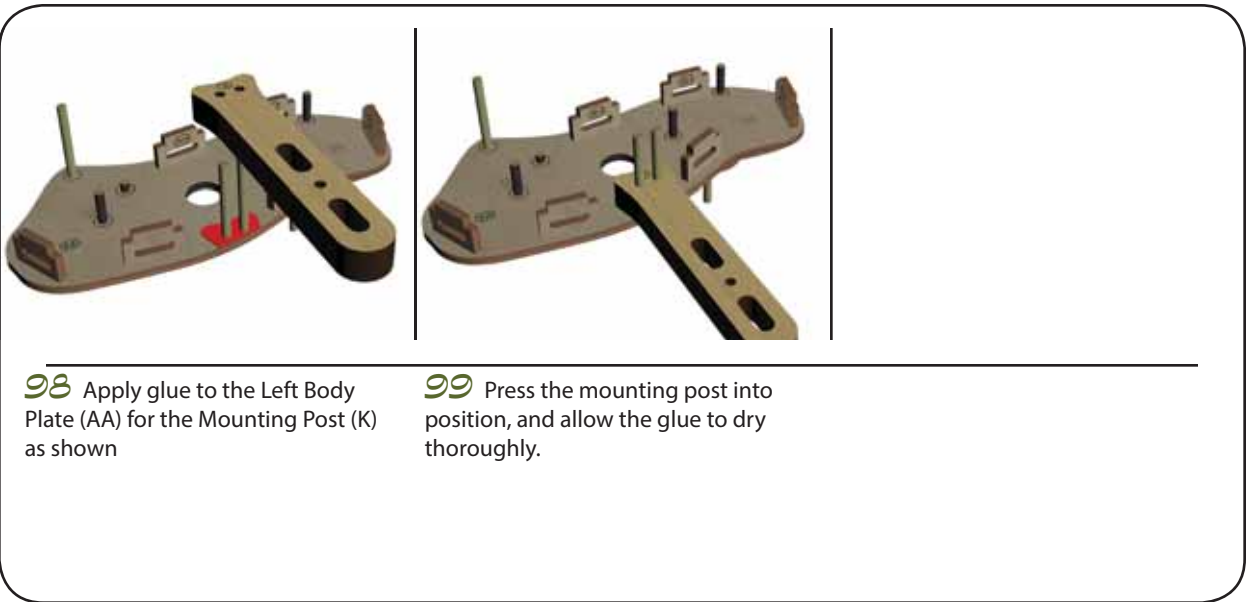


**95** Apply glue to the slots in the Left Body Plate (AB) and Six (6) Spacers (AV) as shown.

**96** Press the Spacers (AV) into place

**97** Using the supplied pencil lubricate to the bearing hole

# BODY ASSEMBLY

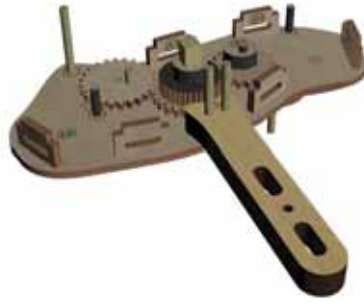




# BODY ASSEMBLY



**100** Apply graphite to the trimmed pins and all bearing surfaces



**101** Insert the Driven Shaft into the bearing hole on the Left Body Plate (AA), Place the Head Drive Gear and Tail Drive Gear onto their axles as shown.

**NOTE: Do not glue!**



**102** Place the assembled tail onto the tail pivot pin.

**NOTE: Do not glue!**



**103** Position the head and neck. The hole in the Rocker arm (AQ) is placed on the rocker pin, and the pin on the Head Drive Gear is positioned in the slot. The hole in the base of the neck is placed on the neck pivot pin.

**NOTE: Do not glue!**



**104** Position the drive belt over the driven pulley, with the teeth facing inwards

**NOTE: Do not glue!**



**105** Assemble the body, applying glue to the slots in the Right Body Plate (AB) and the Spacers (AV). "Sandwich" the moving parts in place.

**NOTE: The tabs on the Spacers (AV) must be fully inserted into the slots on the side plate as shown in the inset.**



**106** Double check that all parts move freely when the driven axle is turned.

**NOTE: Ensure all pins are inserted into their matching holes, the gears are meshed, and the slot on the Rocker Arm is engaged with the Head Drive Gear pin.**



**107** Trim the pins at the tail, neck, and mounting post flush to the body using a razor saw.

**NOTE: Do not trim the front and rear leg pivot pins!**



**108** Turn the driven axle until the neck is reaching as far forward as possible.

# BODY ASSEMBLY



**109** In the following steps the Drive Cranks (AL) will be attached to the drive axle at 90 degrees to each other to give the completed horse a realistic gait.



**110** Glue a Drive Crank (AL) onto the left side of the driven axle. The hole should be oriented towards the base with the neck fully extended. Glue a long pin into the hole in the Drive Crank (AL).



**111** Trim the square shaft flush with the Drive Crank (AL) using a razor saw. Sand the axle smooth as needed.

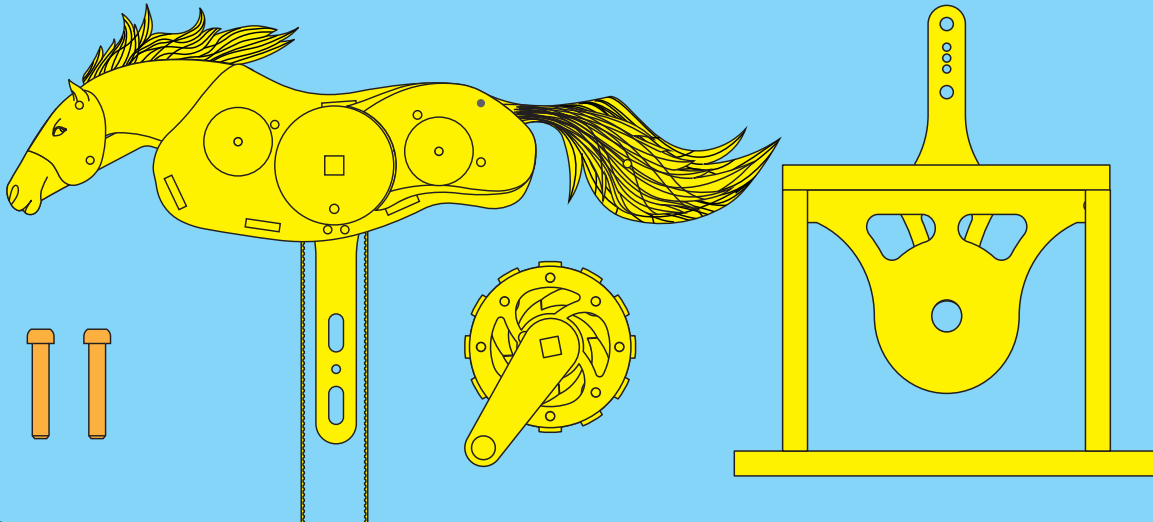


**112** Glue a Drive Crank (AL) onto the right side of the driven axle. The hole should be toward the front of the horse with the neck fully extended. Glue a long pin into the hole in the Drive Crank (AL).



**113** Trim the square shaft flush with the Drive Crank (AL) using a razor saw. Sand the axle smooth as needed.

## HEAD AND BASE ASSEMBLY PARTS



114 Thread the belt through the slot in the top and around the lower pulley. The teeth should face inward. Slip the the drive shaft bearing into the rear pillow block.



115 Press the pegs through the support stand and slots. Press a pin through the appropriate tensioning hole.

**NOTE: Normally pressing the tension pin into the center hole will provide the correct amount of tension.**



116 Glue the ratcheting crank to the front of the shaft



117 Ensure the mechanism is working properly. It should drive the belt in one direction only.



118 Press the retainer onto the shaft.



119 The shaft should turn freely.

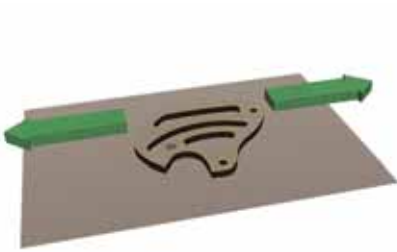
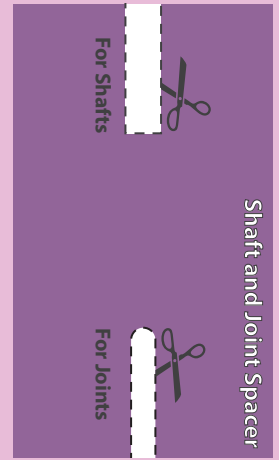
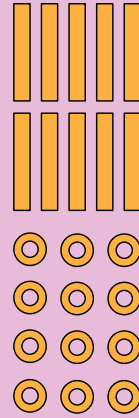
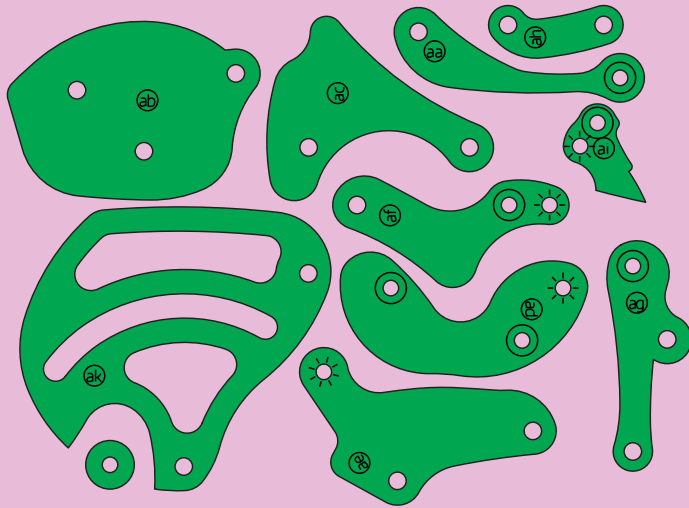
**NOTE: This part is press fit to allow for adjustment later, and is not glued.**

# BODY ASSEMBLY



# LEGS ASSEMBLY

## LEFT REAR LEG PARTS



**120** Sand the face of each piece with 180 and 220 grit sandpaper. Take extra care to remove any residue on the unmarked side, as it will be facing outwards.



**121** Clear residue and rough edges from all holes and openings



**122** Use sandpaper to smooth the sharp edges around the edge of the piece to reduce friction as parts slide against each other.



**123** Prepare all of the pieces for the leg in the same way.



**124** Taper one end of a short pin by pinching the end in a piece of sandpaper and twirling the other end. This allows for easier assembly of the retaining ring in later steps



**125** Where a hole is marked with an asterisk (\*), press the tapered end through the marked side.

# LEGS ASSEMBLY



**126** Apply glue around the end of the pin as shown.



**127** Press the glued end of the pin fully into the part.



**128** Taper one end of a short pin.



**129** Where a hole is marked with a circle, press the tapered end through the unmarked side. (do not glue pins into unmarked holes)



**130** Apply glue around the end of the pin on the unmarked side as shown.



**131** Press the glued end fully into the part.



**132** While the glue dries, check that all parts are secure and "square" or perpendicular to each other and sand the part to remove any rough or protruding edges.



**133** Assemble pins to the remaining pieces for this leg following the convention of asterisk and circle markings.



**134** The joint spacer ensures there is enough space between two parts so they can move freely. Here the shin (ag) is being attached to the hoof (ai). The added part is highlighted.



**135** Use the Press Tool (T2) to position a retaining ring firmly onto the pin. Press straight down and support the underside of the joint with the Anvil Tool (T1) to avoid cracking the pin or breaking it out of its base part altogether.



**136** Remove the tool.



**137** Trim the pin flush with the retaining ring.



**138** Smooth the joint with sandpaper if necessary.



**139** The parts should rotate easily at the joint.



**140** Attach the Thigh (af) to the Shin (ag) using a Retaining Ring

**NOTE:** If the retaining ring ever slips off, a small drop of "Crazy Glue" on the center of the pin will fix it in place. If you use too much, you may seize the joint.



**141** Some parts connect two joints. Pay close attention to the orientation of the parts, as the marked side of all parts face the same way. Attach the Hoof Link (ah) to the Hoof (ai) and Thigh (af) with retaining rings.



**142** Attach the Rear Rocker (ad) to the Thigh (af) with a retaining ring.



**143** Attach the Rocker Link (ae) to the Rear Rocker (ad) and the Shin (ag) using retaining rings.