








BEFORE YOU BEGIN, ENSURE THERE ARE NO MISSING OR DAMAGED PIECES IN THE KIT. A PARTS LIST IS PROVIDED TO HELP IDENTIFY EACH PIECE.

THE TIPS AND TRICKS SECTION INCLUDES SUGGESTIONS DISTILLED FROM YEARS OF BUILDING IN WOOD. A FEW MINUTES OF READING CAN MAKE A SIGNIFICANT DIFFERENCE IN HOW WELL YOUR FINISHED KIT LOOKS AND OPERATES.

FINALLY, READ THROUGH ALL THE INSTRUCTIONS BEFORE YOU BEGIN. IT WILL HELP YOU UNDERSTAND HOW THE VARIOUS PIECES FIT INTO THE FINAL PRODUCT.



LEGEND

-  Hardwood Part (laser cut)
-  Plywood Part (laser cut)
-  Cardstock Part
-  Miscellaneous Part
-  Assembly from previous step

DAMAGED OR MISSING PARTS?
email: service@abong.com

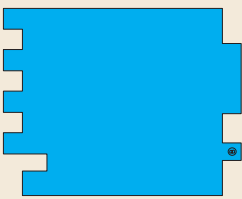




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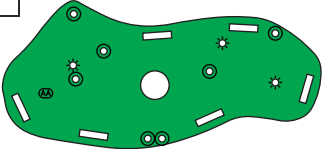

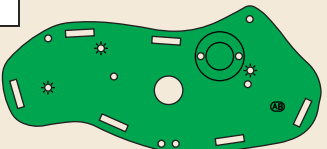

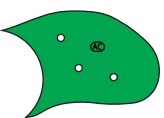


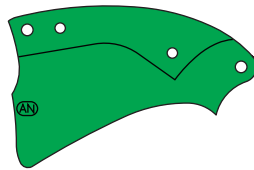
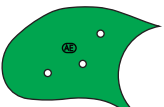
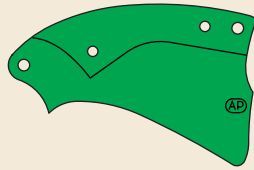
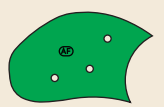
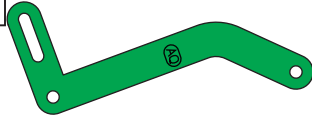








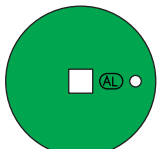



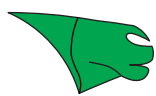
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HORSE AUTOMATON KIT



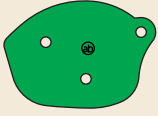
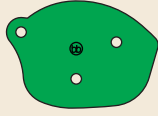


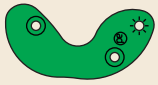
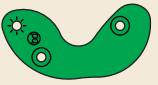
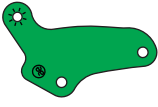
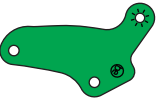

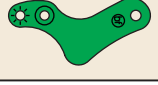











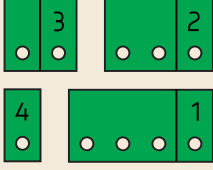

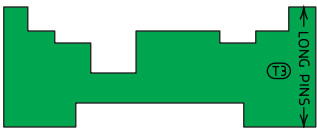
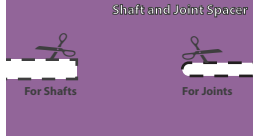
PARTS LIST

	A	Base		L	Crank Handle
	B	Right Side			Bearing (2)
	C	Left Side		Q	Ratchet
	D	Top		R	Ratchet Cover
	E	Front Pillow Block		S	Pulley Flange (2)
	F	Rear Pillow Block		U	Drive Pulley (2)
	G	Crank Base		V	Pawl (4)
	H	Rear Pedestal		W	Ratchet Spacer
	J	Front Pedestal		Y	Shaft Retainer
	K	Mounting Post		Z	Tail Core
				Z-L	Left Tail Face
				Z-R	Right Tail Face



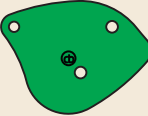
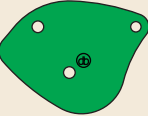

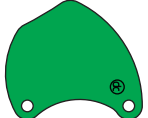
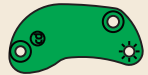
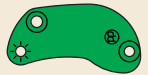











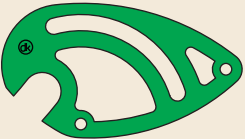


PARTS LIST

	AA	Left Body Plate			Left Muzzle
	AB	Right Body Plate			Right Head
	AC	Right Inner Hip			Left Head
	AD	Right Outer Hip		AN	Left Neck
	AE	Left Inner Hip		AP	Right Neck
	AF	Left Outer Hip		AQ	Rocker Arm
	AG	Driven Pulley (2)		AR	Neck Core
	AH	Driven Gear		AS	Head Drive Gear
	AJ	Tail Cam (2)		AT	Mounting Plate (4)
	AK	Tail Drive Gear		AU	Guide Ring
	AL	Drive Crank (2)		AV	Spacer (6)
	AM	Head Core			Bearing (6)
		Right Muzzle			






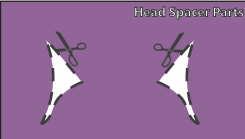

PARTS LIST

Left Rear Leg			Right Rear Leg		
	aa	Upper Crank Link		ba	Upper Crank Link
	ab	Pivot Plate		bb	Pivot Plate
	ac	Front Rocker		bc	Front Rocker
	ad	Rear Rocker		bd	Rear Rocker
	ae	Rocker Link		be	Rocker Link
	af	Thigh		bf	Thigh
	ag	Shin		bg	Shin
	ah	Hoof Link		bh	Hoof Link
	ai	Hoof		bi	Hoof
	ak	Lower Crank Link		bk	Lower Crank Link
		Retainer			Retainer
Tools					
	T1	Anvil Tool			Trimming Guide
	T2	Press Tool			
	T3	Axle Guide Tool			Joint/Axle Spacer Card

PARTS LIST

Left Front Leg			Right Front Leg		
	ca	Upper Crank Link		da	Upper Crank Link
	cb	Pivot Plate		db	Pivot Plate
	cc	Rear Rocker		dc	Front Rocker
	cd	Front Rocker		dd	Rear Rocker
	ce	Rocker Link		de	Rocker Link
	cf	Forearm		df	Forearm
	cg	Cannon		dg	Cannon
	ch	Hoof Link		dh	Hoof Link
	ci	Hoof		di	Hoof
	ck	Lower Crank Link		dk	Lower Crank Link
		Retainer			Retainer

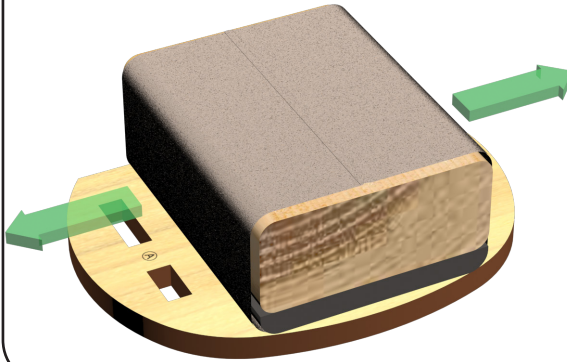
Miscellaneous Parts

	Square Drive Shaft Length: 190mm / 7.5"		Belt
	Pin Bundle		Fiber Retaining Ring (50)
	Handle		Head Spacer Card
	Peg (2)		

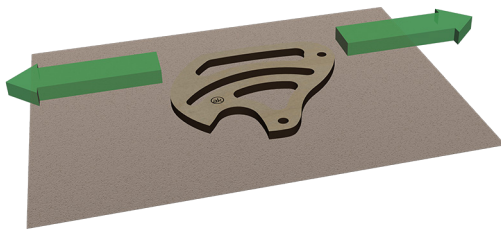
TIPS AND TRICKS



1 The only tools needed to assemble this kit are scissors and a razor saw. These are inexpensive and available from hobby shops and online retailers. Choose a razor saw with 42 teeth per inch (TPI) or more. You will also require two or three sheets of good quality, fine grit (180/220) sandpaper, carpenter's glue, some wax paper, and a handful of craft sticks for applying glue.



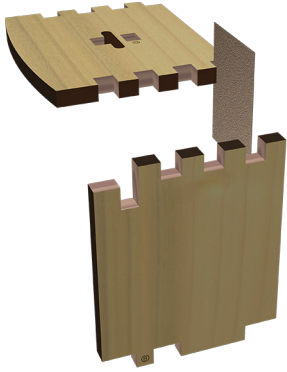
2 Using fine grit sandpaper (180/220), sand both faces of each part with the grain of the wood to remove blemishes and residue left by the laser cutting process. For large pieces, use a sanding block, which can be as simple as a piece of scrap wood with sandpaper wrapped around it.



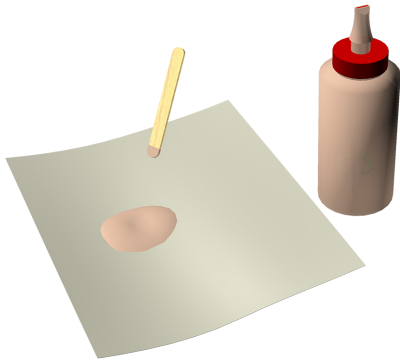
3 For small pieces, lay the sandpaper flat and move the part against it. Take care not to remove any laser etched marks. Taking a little extra care and patience to prepare each piece will make a huge impact on the appearance of the completed kit.



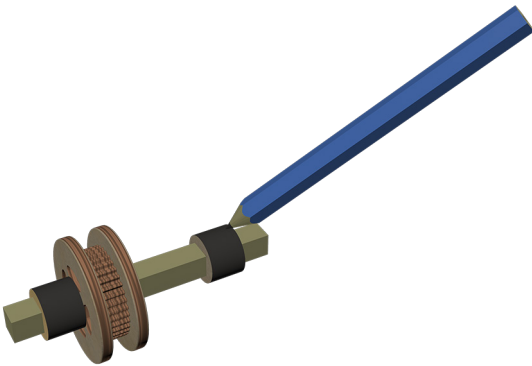
4 To sand holes and smaller openings, tear a small strip of sandpaper and tightly roll it into a cone shape small enough to fit. Work the sandpaper into the opening, twirling it as it is moved in and out.



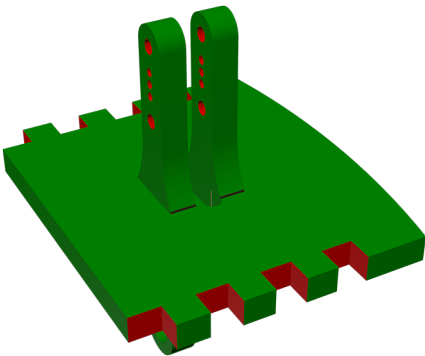
5 The decorative dark edge left by the laser cutting process is caused by natural resins in the wood. It is sticky, and does not bond well with glue. Lightly sand the dark edges that will be glued to expose the wood beneath. Don't forget that holes need to be sanded too! Before applying glue, always test the fit of the parts, carefully sanding to make any adjustments necessary.



6 Use a quality PVA (polyvinyl acetate) carpenter's glue intended for woodworking. Squeeze a little glue onto a piece of wax paper, and use a craft stick, toothpick, or scrap of cardboard to apply a thin, even coat of adhesive to parts that are being joined. If excess glue squeezes out of a joint, wipe it up with a damp paper towel before it sets.



7 Wherever parts slide or rotate against each other, carefully sand the dark edges and apply graphite as a lubricant. Standard pencil "lead" is made of graphite, and works very well for this purpose. A suitable pencil has been supplied with the kit.

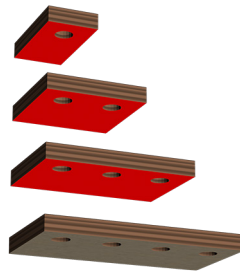
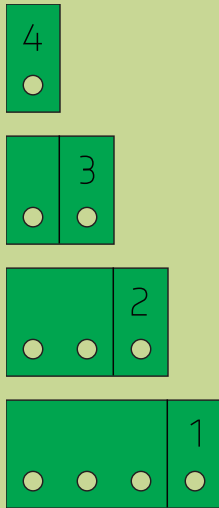


8 If you wish to apply a finish to the kit, a clear satin polyurethane product like Minwax Polyshades provides excellent results. Carefully apply the stain to completed components before assembling them further. Avoid getting finish onto any edge or surface that will be glued or have graphite applied in later steps. In the example diagram, green areas of the Top Assembly may have stain applied, red areas should not.

TIPS AND TRICKS

DRIVE ASSEMBLY

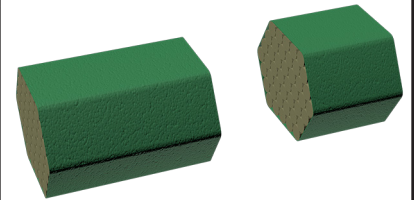
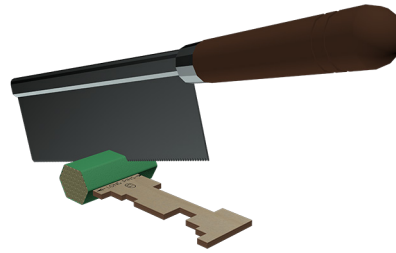
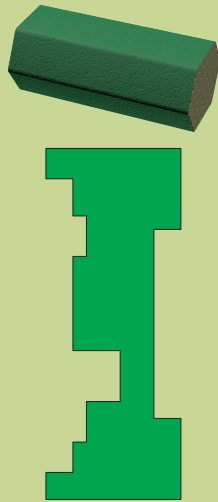
TRIMMING GUIDE PARTS



9 Apply glue to the unmarked side of the parts marked '4', '3', and '2' as shown.

10 Assemble the pin trim gauge as shown. Ensure the holes are aligned through all of the pieces.

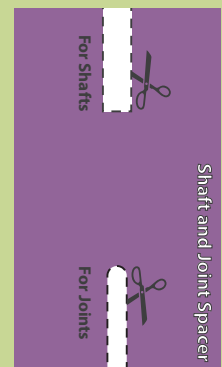
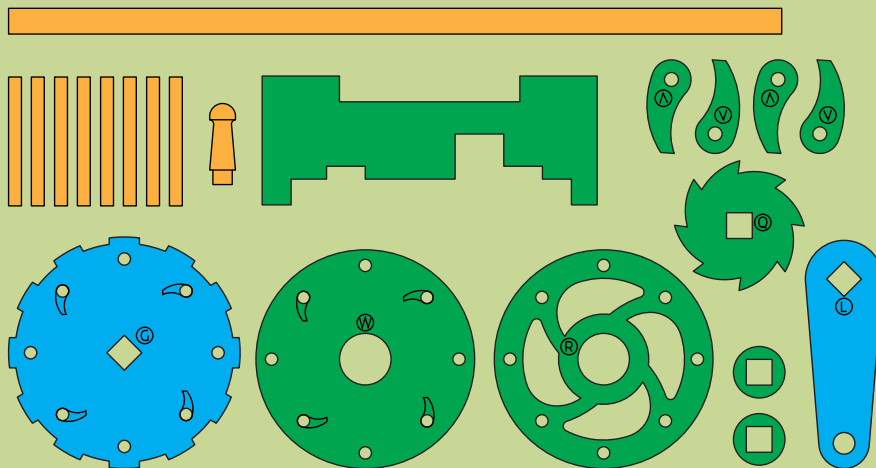
PIN BUNDLE



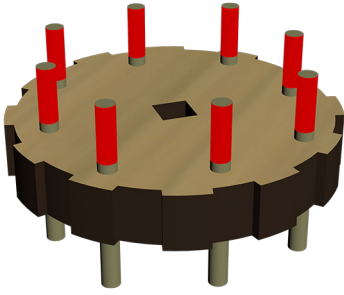
11 Using the end of the Axle Guide Tool (T3) for reference, cut the bundle of pins into two uneven pieces using a razor saw.

12 One bundle (the "Long Pins") should be approximately 32mm (1.25") long, while the other (the "Short Pins") should be close to 19mm (0.75") long.

RATCHET CRANK PARTS



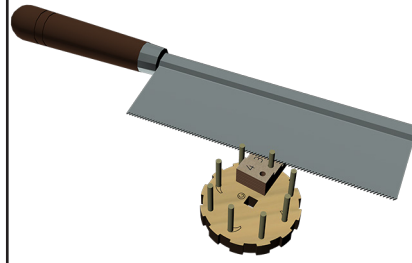
DRIVE ASSEMBLY



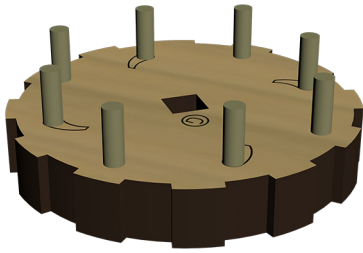
13 Press eight long pins through the unmarked side of the Ratchet Base (G), and apply glue to each of them as shown.



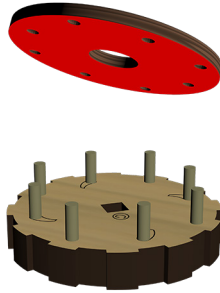
14 Press the pins into the Ratchet Base (G) until the ends are flush with the unmarked side. Allow the glue to dry thoroughly.



15 Trim each of the pins using a razor saw and the "3" hole on the Trimming Guide.



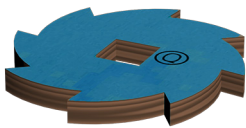
16 Sand any rough edges.



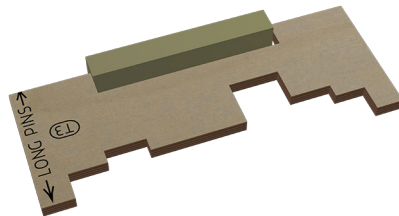
17 Apply glue to the unmarked side of the Ratchet Spacer (W).



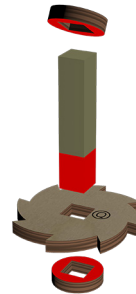
18 Align the markings for the Pawl pins and press the Ratchet Spacer (W) onto the Ratchet Base (G).



19 Thin the Ratchet (Q) slightly by sanding the front and back faces.



20 Using the short notch in the Axle Guide Tool (T3) as shown, cut a length of Square Axle for the ratchet axle.

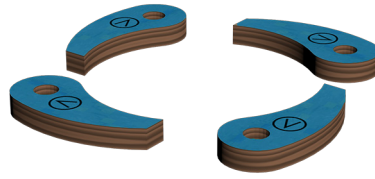


21 Apply glue to 9mm (3/16") of the axle and two plywood bearings.

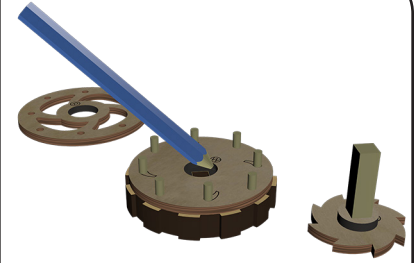
DRIVE ASSEMBLY



22 Assemble the Ratchet (Q) and bearings to the ratchet shaft as shown.



23 Thin the Pawls (V) slightly by sanding the front and back faces.



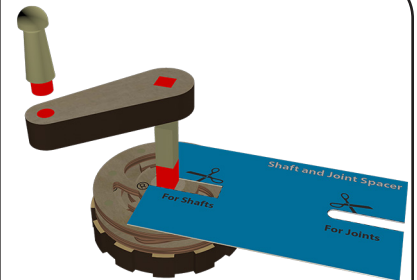
24 Use a pencil to lubricate all mating surfaces.



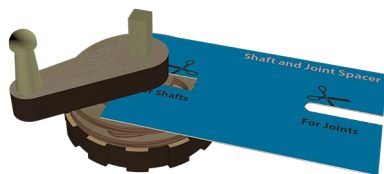
25 Place the pawls on the pins using the markings for reference, and sparingly apply glue to the end of each pin. Be sure no glue comes in contact with the moving parts



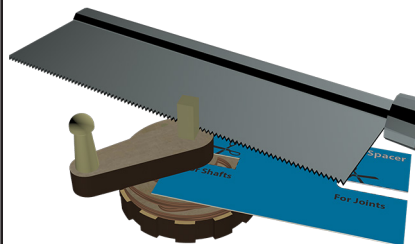
26 Press the Ratchet Cover (R) onto the pins, only until the pins are flush with the marked side of the part. The ratchet and pawls must move freely.



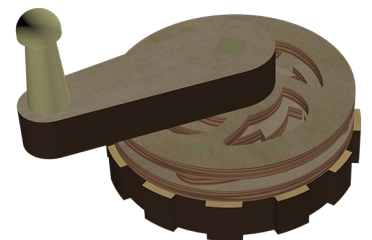
27 Position the Crank Handle (L) marked side down, and apply glue to the shaft and Crank Knob as shown, then place the Shaft and Joint Spacer on the Ratchet Cover.



28 Press the Crank Handle (L) into place on the shaft and press the Crank Knob into the Crank Handle (L).



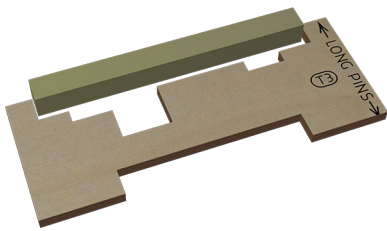
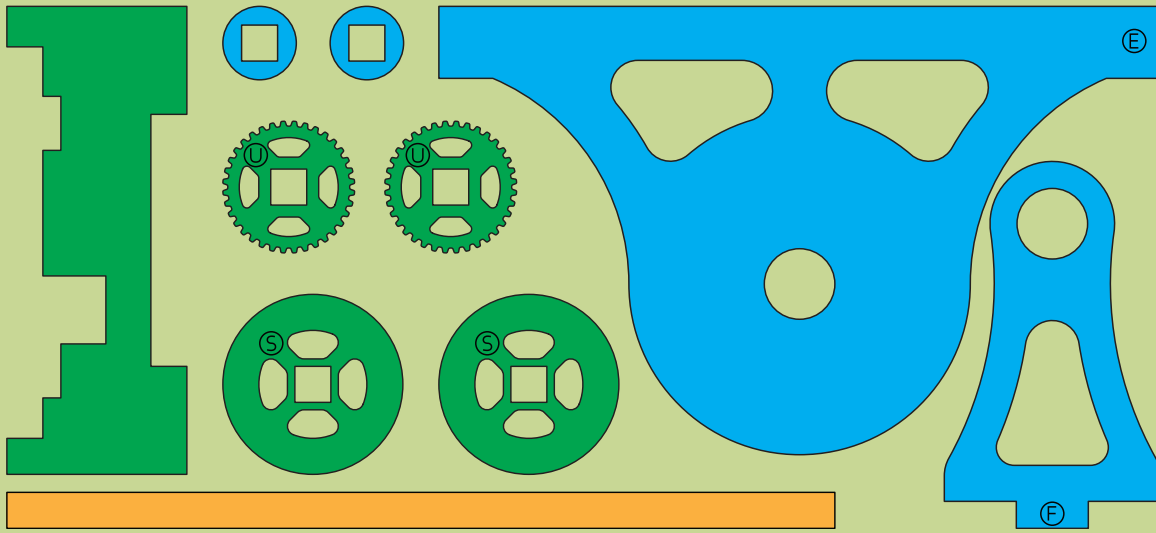
29 Trim the shaft flush to the Crank Handle (L)



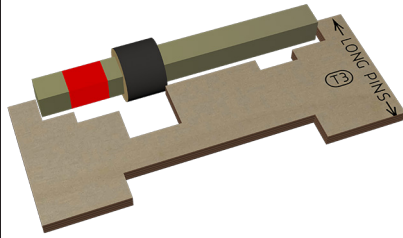
30 The handle should turn freely in one direction and lock to the base in the other.

DRIVE ASSEMBLY

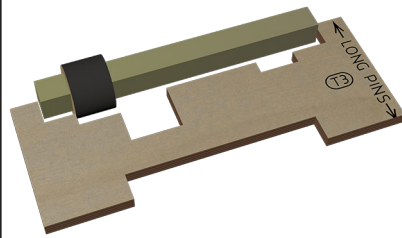
DRIVE AXLE PARTS



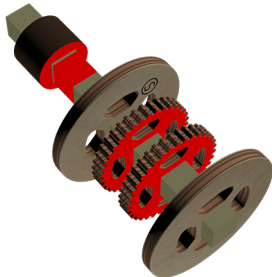
31 Using the long notch in the Axle Guide Tool (T3) for reference, cut a section of Square Drive Shaft to length.



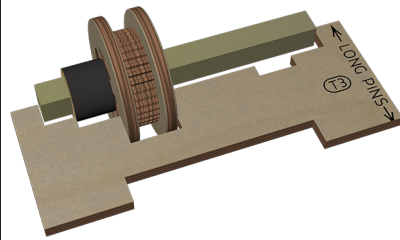
32 Slide a bearing onto the shaft, and apply glue to shaft using the Axle Guide Tool (T3) for reference.



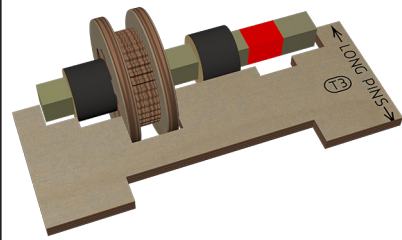
33 Slide the bearing into position as shown. Allow the glue to dry.



34 Apply glue to the bearing face, shaft, and both sides of the Drive Pulleys (U). Slide the Pulley Flanges (S) and Drive Pulleys (U) onto the shaft as indicated.

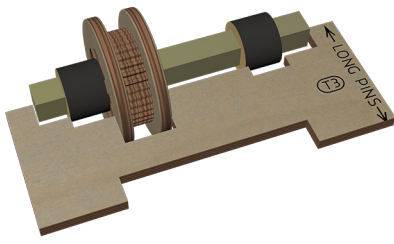


35 Press the pieces together, and position them using the Axle Guide Tool (T3).



36 Slide the second bearing onto the shaft. Using the Axle Guide Tool (T3) for reference, and apply glue to the shaft.

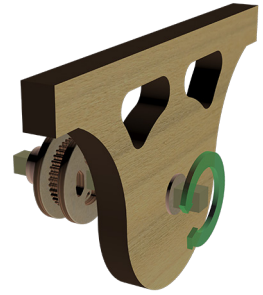
DRIVE ASSEMBLY



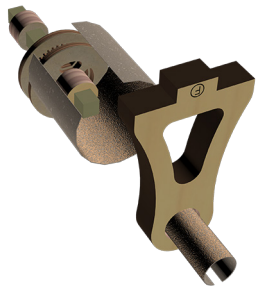
37 Slide the bearing into place, double checking its position with the Axle Tool Guide (T3).



38 Sand the Front Bearing and Front Pillow Block (E) so they fit together smoothly and the bearing turns easily without wobbling.



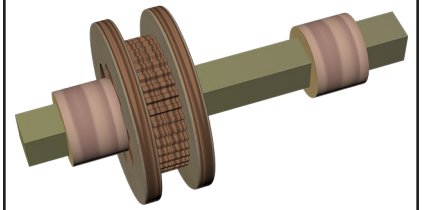
39 Test the fit. The axle should turn smoothly with no binding or rattling.



40 Sand the Rear Bearing and the Rear Pillow Block (F) so they fit together smoothly and the bearing turns easily without wobbling.

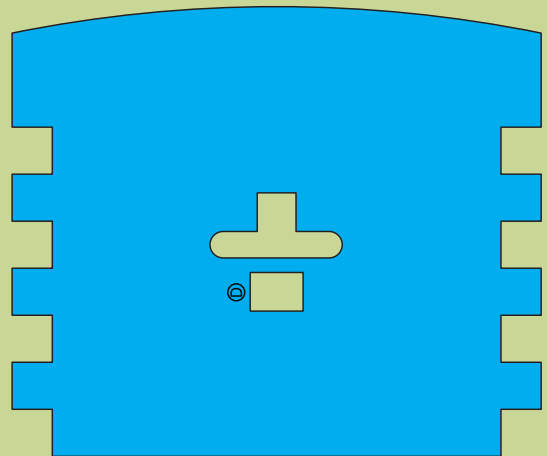
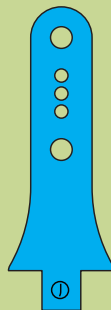
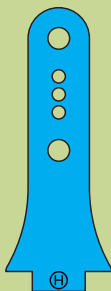
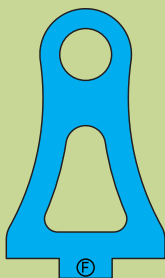


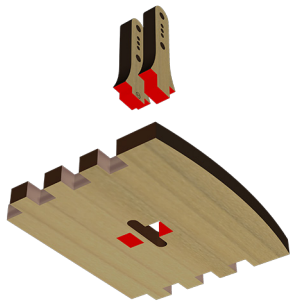
41 Test the fit. It should turn smoothly with no binding or rattling.



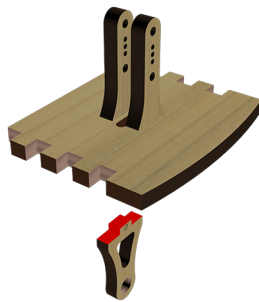
42 The completed Drive Axle!

BASE TOP PARTS





43 Apply glue to the Rear Pedestal (H) and Front Pedestal (J) as shown, and press them into the marked side of the top (D).

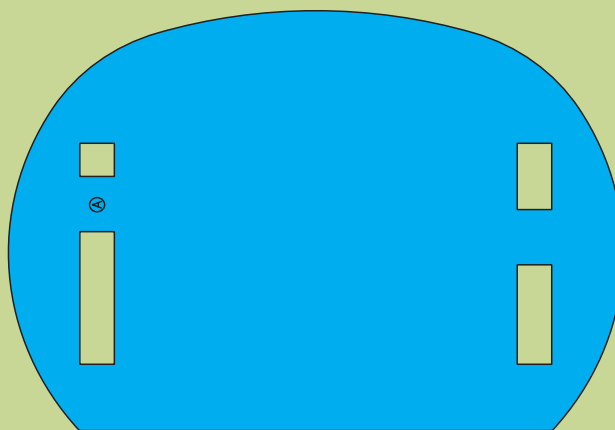
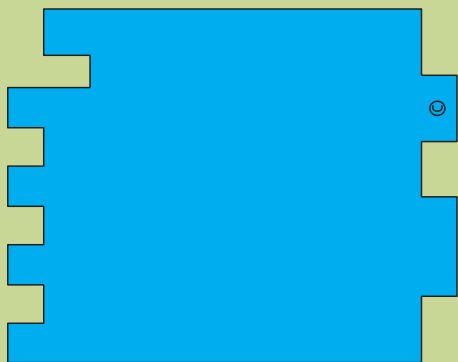
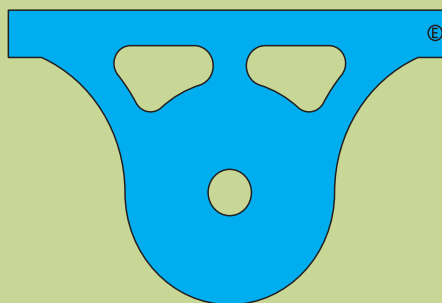
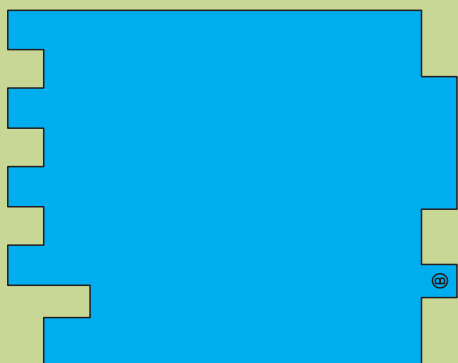
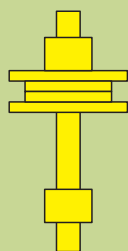
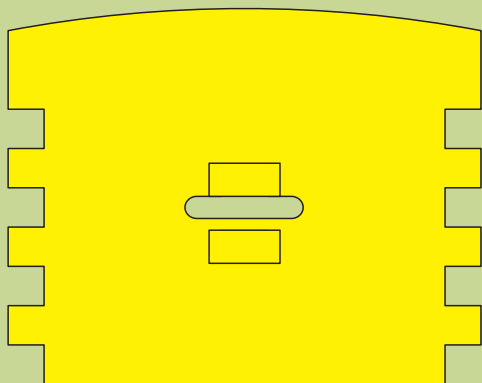


44 Apply glue to the Rear Pillow Block (F) and press it into the opposite side as shown beneath the rear pedestal as shown.



45 Allow the glue to dry thoroughly.

BASE PARTS



DRIVE ASSEMBLY

DRIVE ASSEMBLY



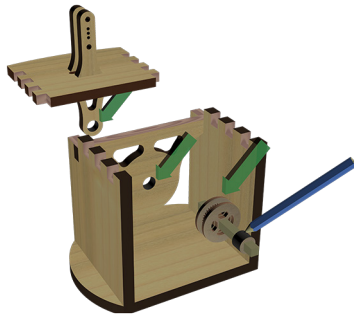
46 Prepare and arrange the Base (A), Right Side (B), Left Side (C), Front Pillow Block (E), and the Assembled Top pieces as shown



47 Dry fit the assembly to ensure all parts fit together, and make any adjustments before proceeding.



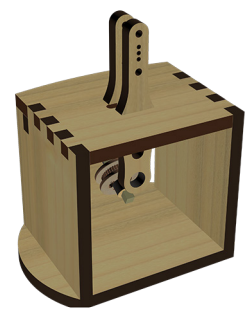
48 Apply glue to the mating surfaces of the Right Side (B), Left Side (C), Base (A) and Front Pillow Block (E) as shown.



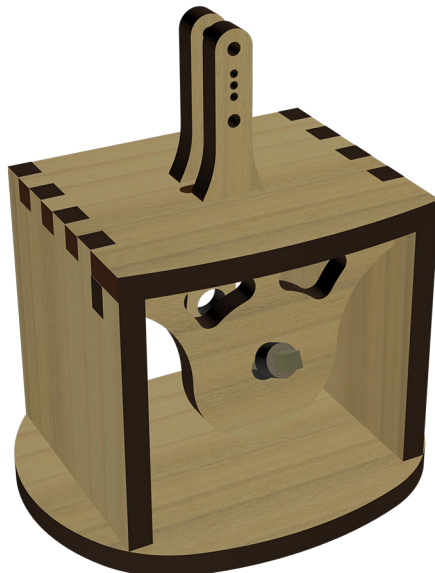
49 Assemble the components, and use the pencil to lubricate all of the moving surfaces as shown.



50 Place the longer end of the drive axle through the front pillow block as shown and apply glue to the mating surfaces of the base and top

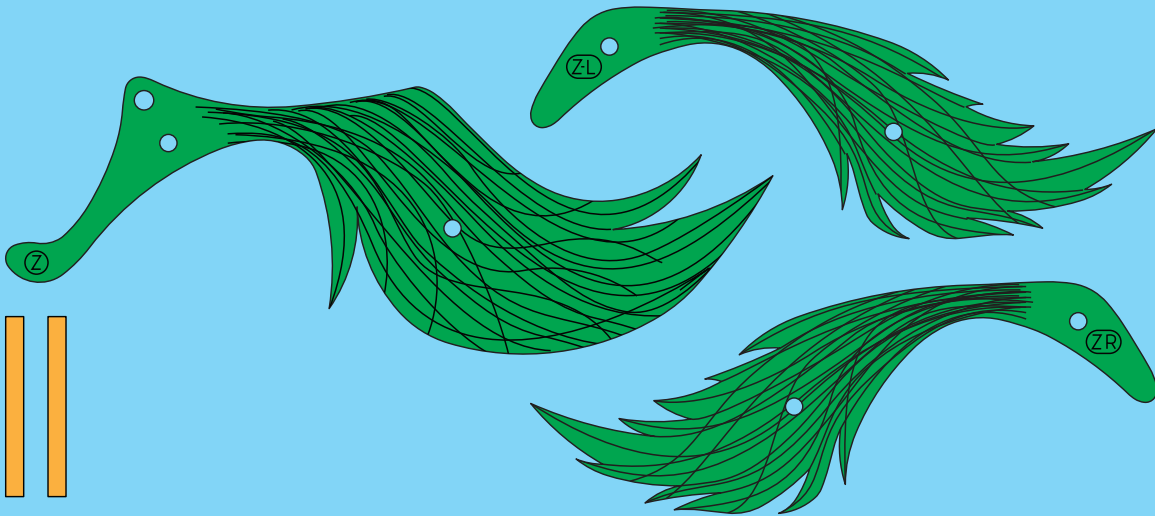


51 Assemble the top to the base and double check that all joints are fully engaged. The drive axle should be loosely hanging from the front pillow block.



BODY ASSEMBLY

TAIL PARTS

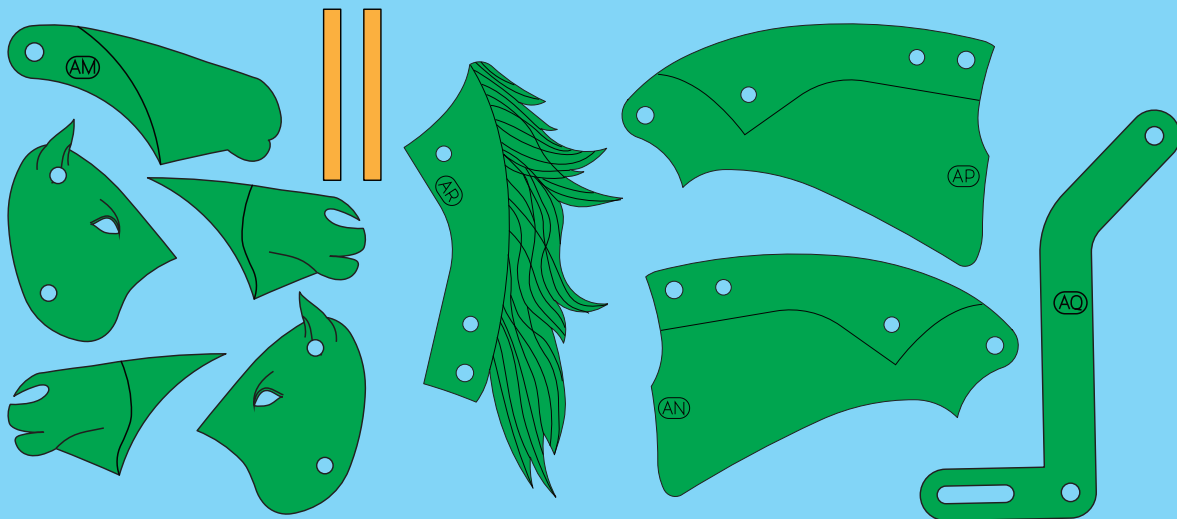


52 Apply glue and press two long pins through the Tail Core (Z), and apply glue to the unmarked sides of the Left Tail Face (Z-L) and Right Tail Face (Z-R).

53 Assemble the pieces, and when the glue is dry, trim the alignment pins flush with a razor saw.

54 The tail is complete!

HEAD PARTS



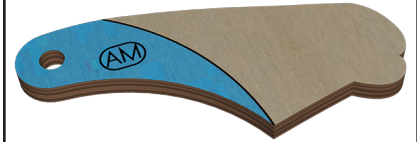
BODY ASSEMBLY



55 Apply glue to the Right Neck (AN) and Left Neck (AP) as shown. Apply glue to two long pins and press them through the Neck Core (AR)



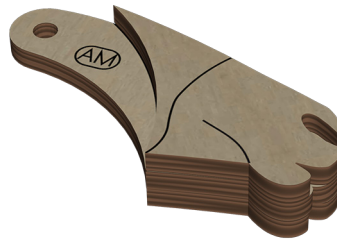
56 Press the Left Neck (AN) and Right Neck (AP) onto the Neck Core (AR). When the glue has dried, trim the pins flush with the neck using a razor saw. Sand the completed part if necessary.



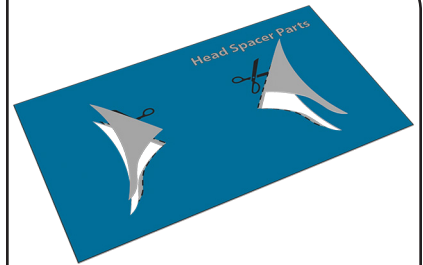
57 Sand the area marked in blue on the Head Core (AM) so that it is slightly thinner than the rest of the part.



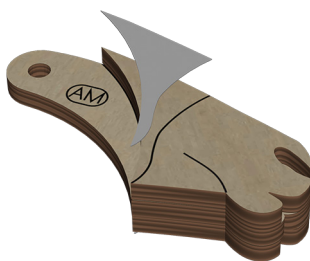
58 Apply glue to the Right Muzzle and Left Muzzle as shown



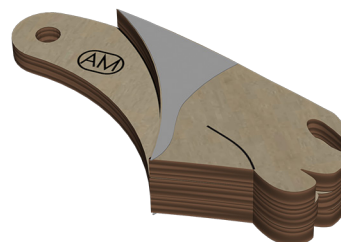
59 Assemble the muzzle, ensuring the parts are aligned.



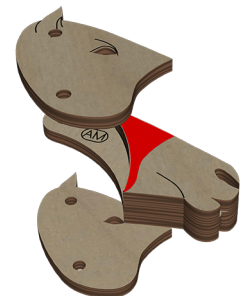
60 Cut the Head Spacer Parts from the Head Spacer Card



61 Glue the Head Spacer Pieces onto either side of the Head as shown

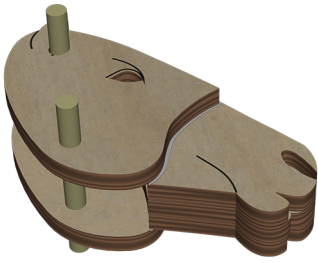


62 Allow the glue to dry thoroughly



63 Apply glue to the face of the Head Spacer Parts

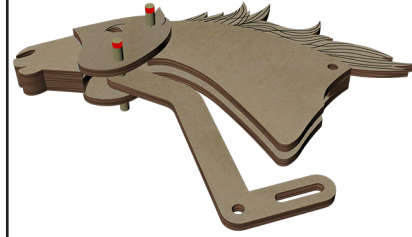
BODY ASSEMBLY



64 Assemble the Left and Right Head pieces as shown, using long pins to ensure the parts are accurately oriented.



65 Sand the faces of the Rocker Arm (AQ) to allow it to easily move in the groove of the neck.

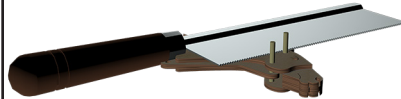


66 Assemble the Rocker Arm and the neck to the head using two long pins. Apply glue to the end of the alignment pins.

NOTE: Do not glue the pins in yet!



67 Press the alignment pins into the head.

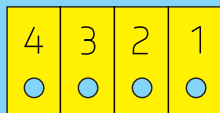
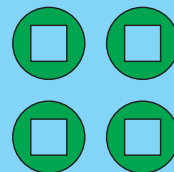
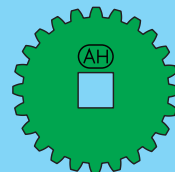
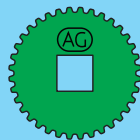
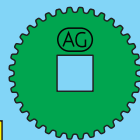
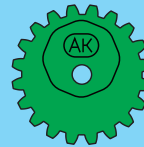
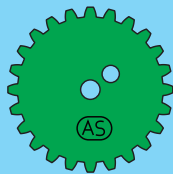
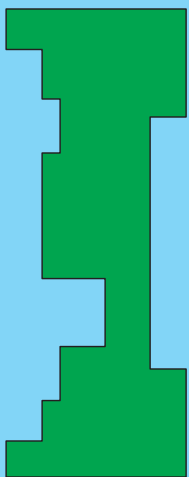


68 Use a razor saw to trim the alignment pins flush with the head.

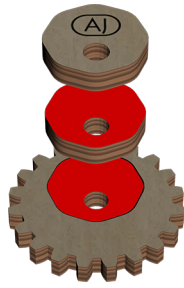


69 The head is complete!

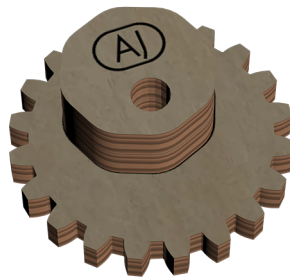
BODY DRIVE PARTS



BODY ASSEMBLY



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



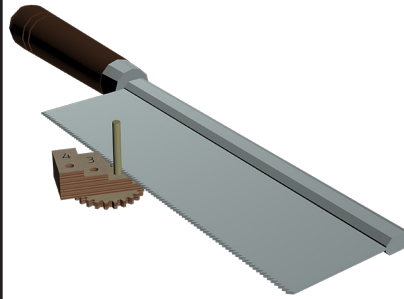
71 Assemble the Tail Drive Assembly, carefully aligning the components as shown.



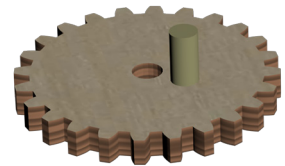
72 Apply glue to one end of a long pin, and push it into the off center hole of the Head Drive Gear (AS).



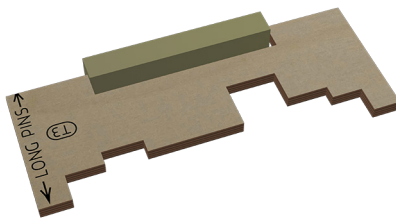
73 Press the pin into the Head Drive Gear (AS) until the end is flush with the marked side. Allow the glue to dry thoroughly.



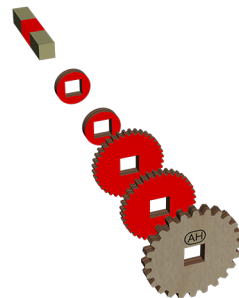
74 Using the #2 hole in the Trimming Guide, trim the pin using a razor saw.



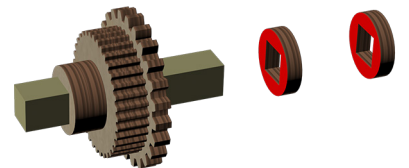
75 Smooth any rough edges.



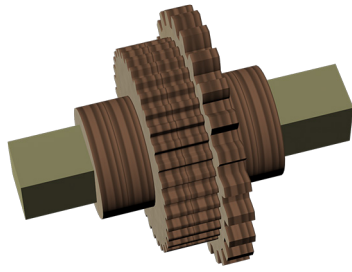
76 Cut a length of square axle using the short notch in the Axle Guide Tool (T3) for reference



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.



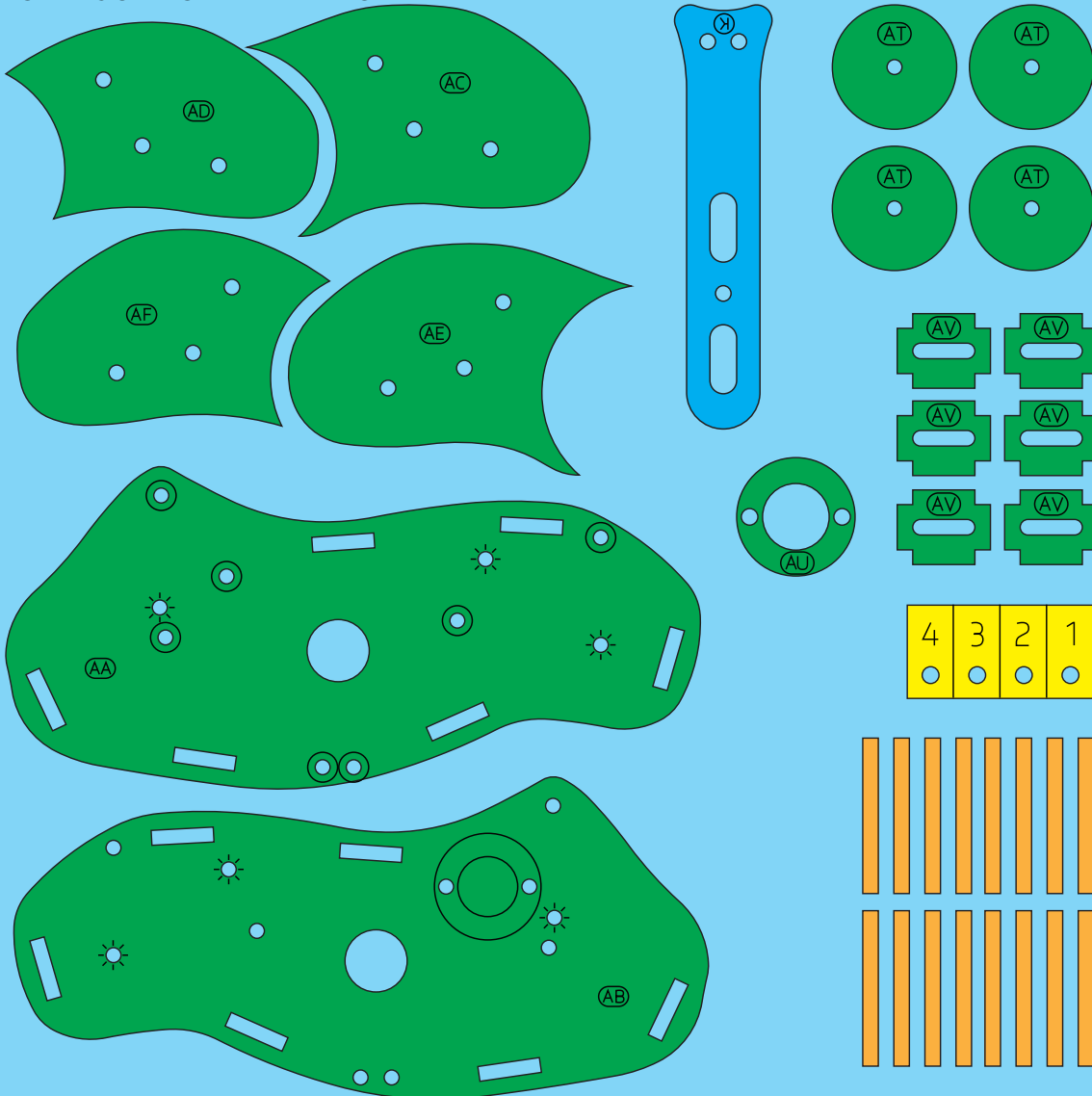
78 Apply glue to the bearings and assemble them to the other end of the shaft.





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



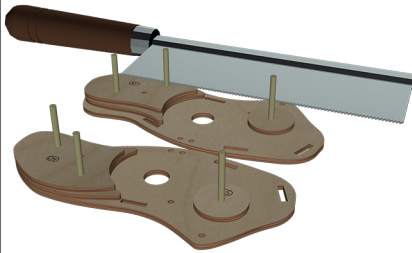
80 Apply glue to the end of six pins as shown and place them in the holes in the Left Body Plate (AA) and Right Body Plate (AB) marked with an asterisk (*)



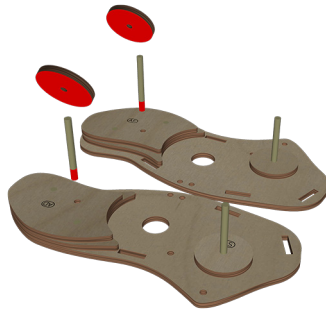
81 Press the long pins into place flush with the marked side of the Body Plates



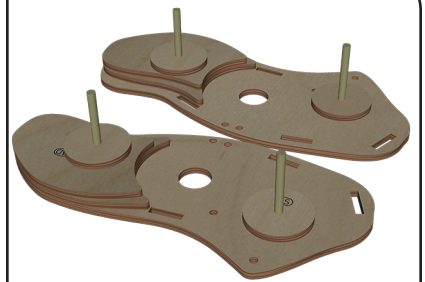
82 Glue and assemble the Right Outer Hip (AD), Right Inner Hip (AC), and Mounting Plate (AT) to the unmarked side of the Right Body Plate (AB). Repeat for the Left Outer Hip (AF), Left Inner Hip (AE), Mounting Plate (AT) and Left Body Plate (AA).



83 Trim the long pins to the hip pieces

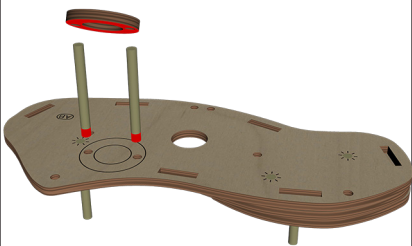


84 Apply glue to two Mounting Plates (AT) and Long Pins as shown

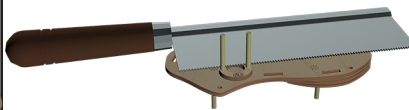


85 Assemble the Mounting Plates (AT) and Long Pins to Hip Pieces as shown.

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.



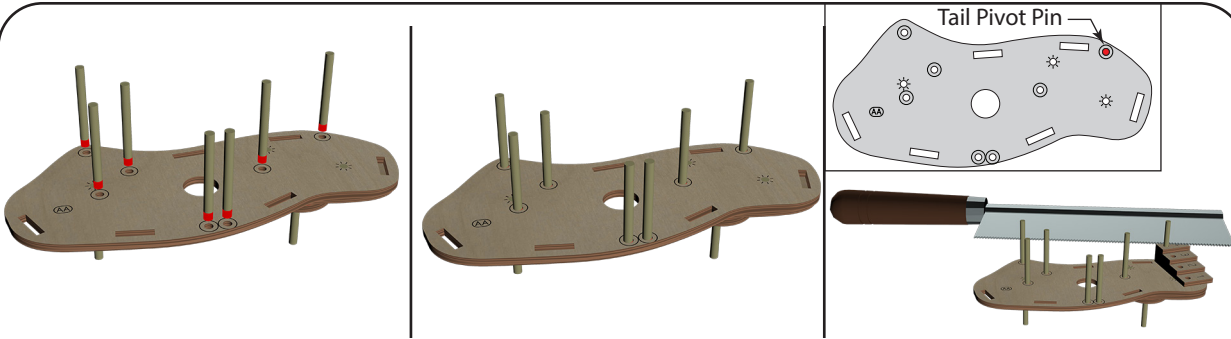
87 Trim the pins to the Guide Ring (AU) using a razor saw, and sand them flush.



88 The Right Body Plate (AB) is complete.

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

BODY ASSEMBLY

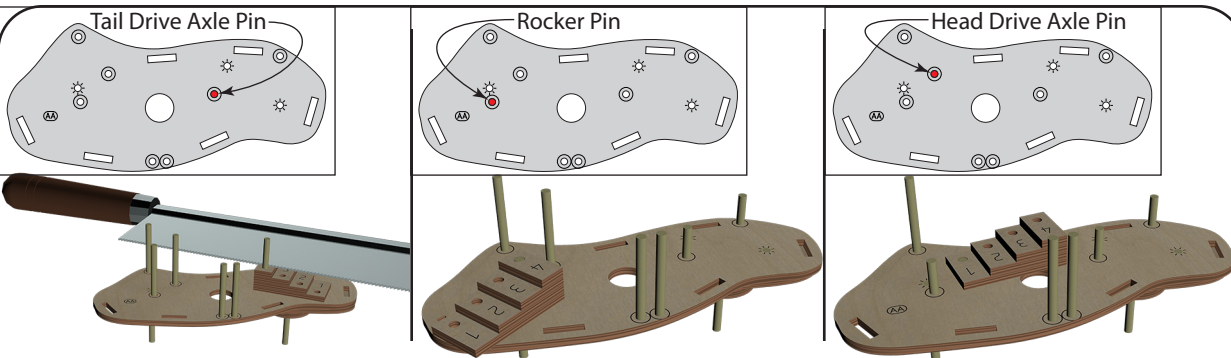


89 Apply glue to seven (7) Long Pins pins as shown.

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

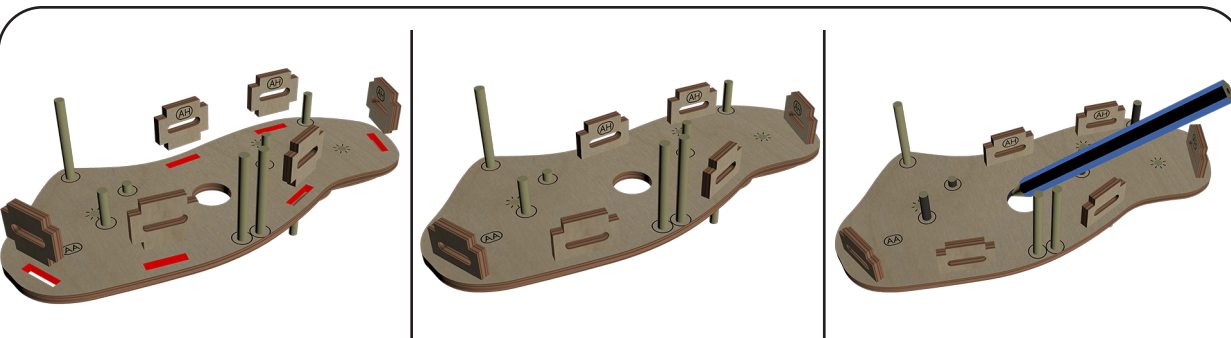
NOTE: The pins should be flush with the unmarked side of the Body Plate



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

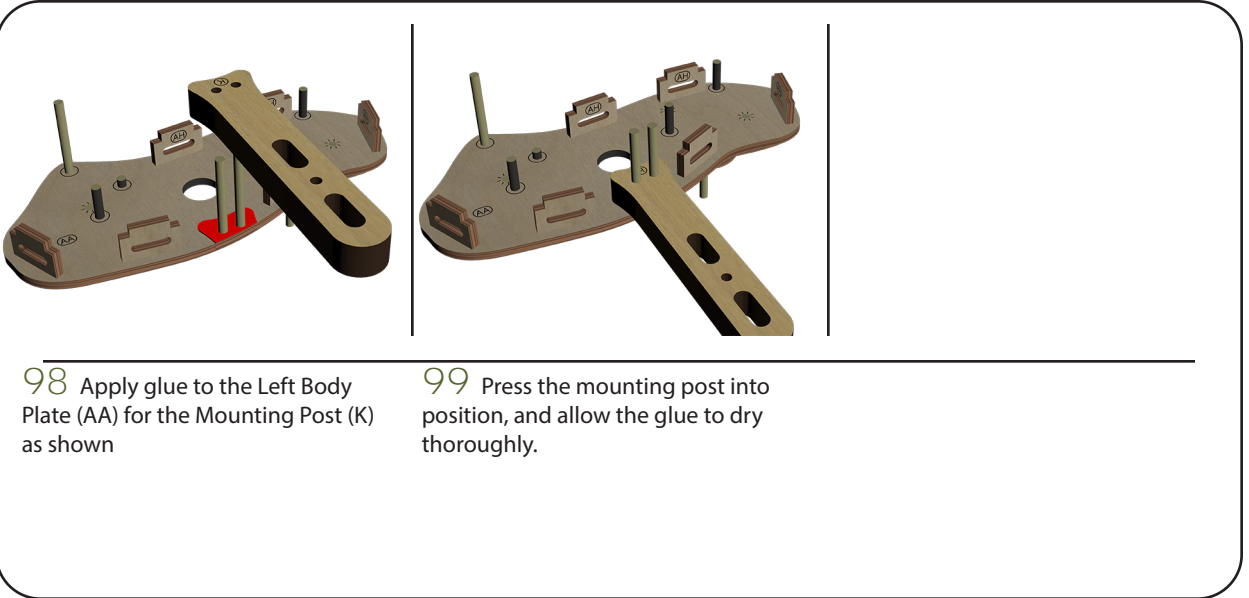


95 Apply glue to the slots in the Left Body Plate (AB) and Six (6) Spacers (AV) as shown.

96 Press the Spacers (AV) into place

97 Using the supplied pencil lubricate to the bearing hole

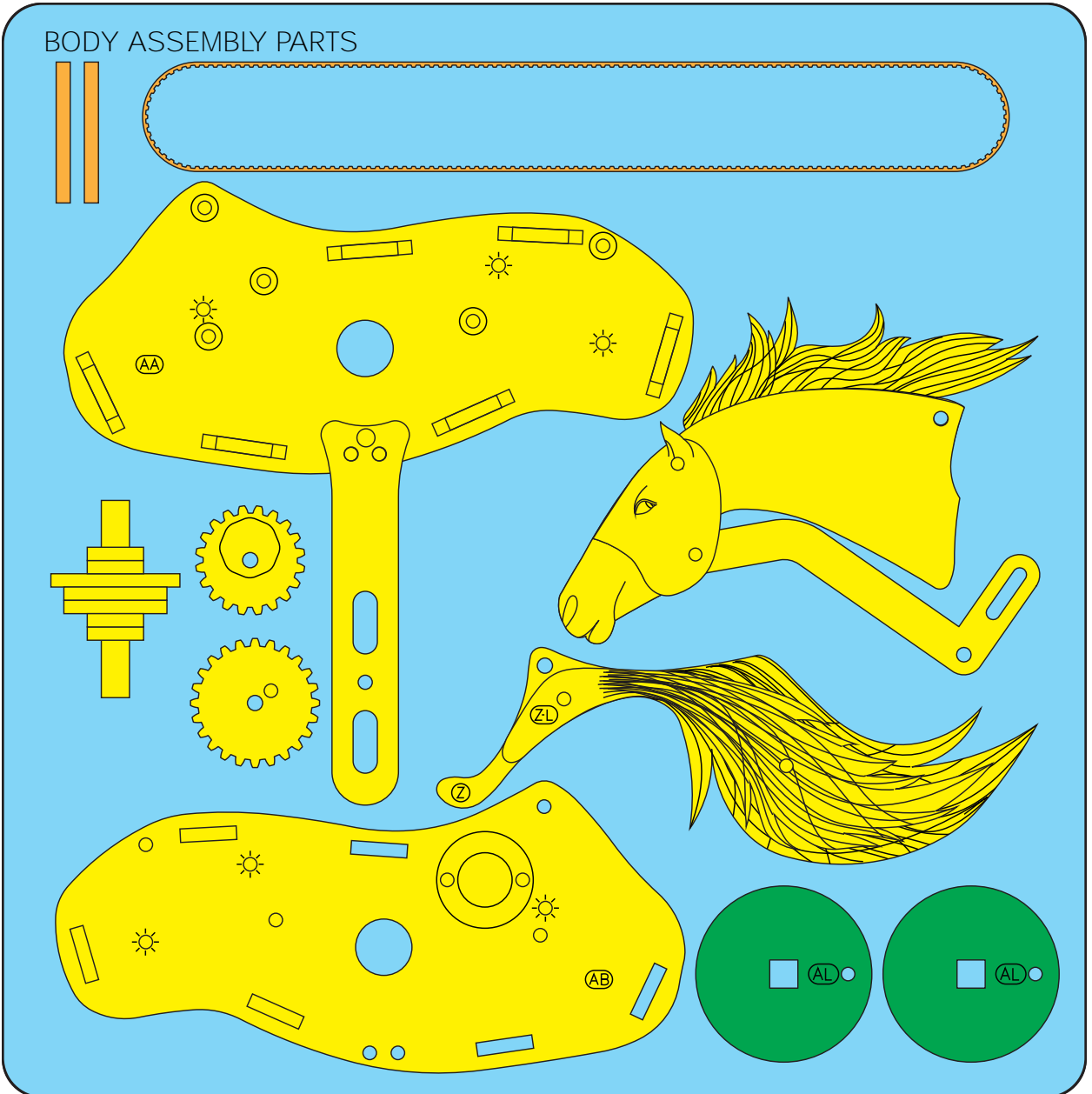
BODY ASSEMBLY



98 Apply glue to the Left Body Plate (AA) for the Mounting Post (K) as shown

99 Press the mounting post into position, and allow the glue to dry thoroughly.

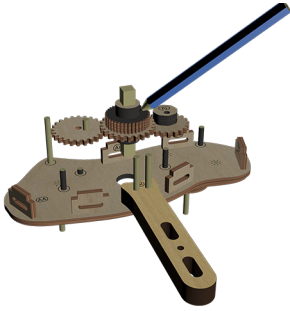
BODY ASSEMBLY PARTS



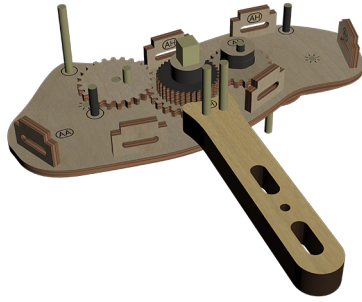
The parts list includes:

- Two orange vertical bars.
- A long, thin, orange, scalloped-edged strip.
- A large yellow body plate (AA) with various holes and slots.
- A yellow neck and head piece.
- A yellow tail piece (ZL) with a tail tuft.
- A yellow leg piece (Z).
- A yellow circular gear.
- A yellow circular gear.
- A yellow axle with a central hub.
- A yellow circular piece (AB) with a central hole and slots.
- Two green circular pieces (AL) with a square hole and a small circle.

BODY ASSEMBLY

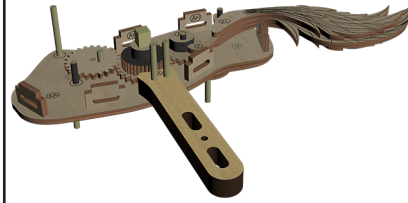


100 Apply graphite to the trimmed pins and all bearing surfaces



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!



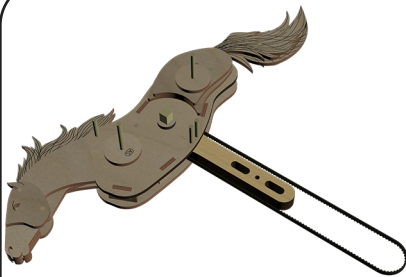
104 Position the drive belt over the driven pulley, with the teeth facing inwards

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.



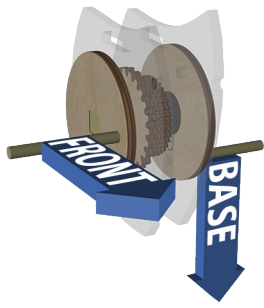
107 Trim the pins at the tail, neck, and mounting post flush to the body using a razor saw.

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

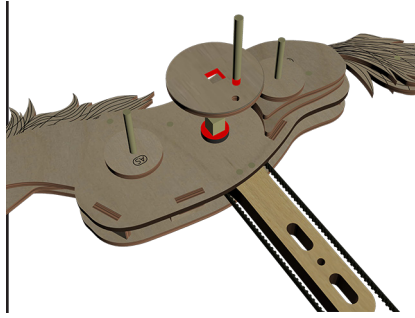


108 Turn the driven axle until the neck is reaching as far forward as possible.

BODY ASSEMBLY



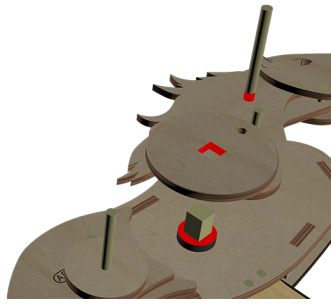
109 In the following steps the Drive Cranks (AL) will be attached to the drive axle at 90 degrees to each other to give the completed horse a realistic gait.



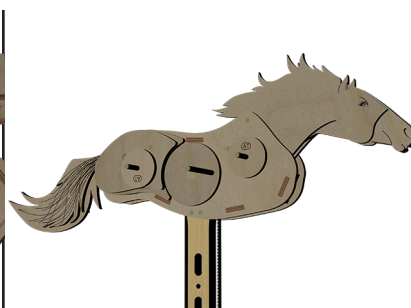
110 Glue a Drive Crank (AL) onto the left side of the driven axle. The hole should be oriented towards the base with the neck fully extended. Glue a long pin into the hole in the Drive Crank (AL).



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

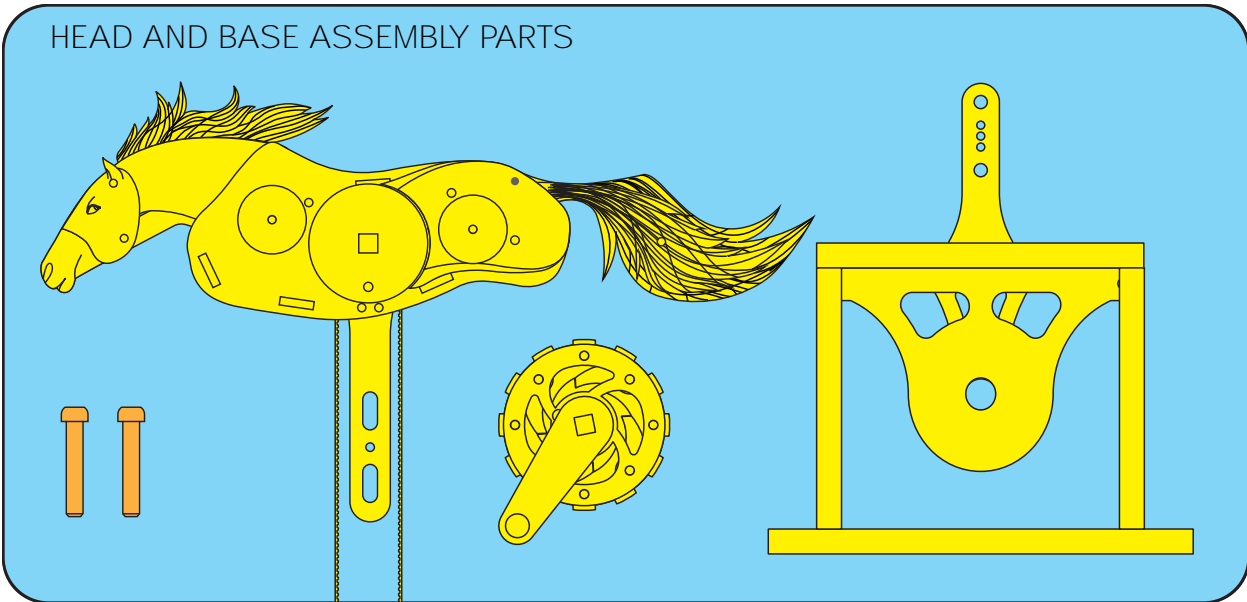


112 Glue a Drive Crank (AL) onto the right side of the driven axle. The hole should be toward the front of the horse with the neck fully extended. Glue a long pin into the hole in the Drive Crank (AL).

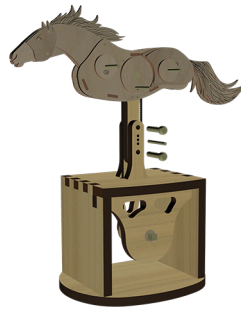


113 Trim the square shaft flush with the Drive Crank (AL) using a razor saw. Sand the axle smooth as needed.

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.



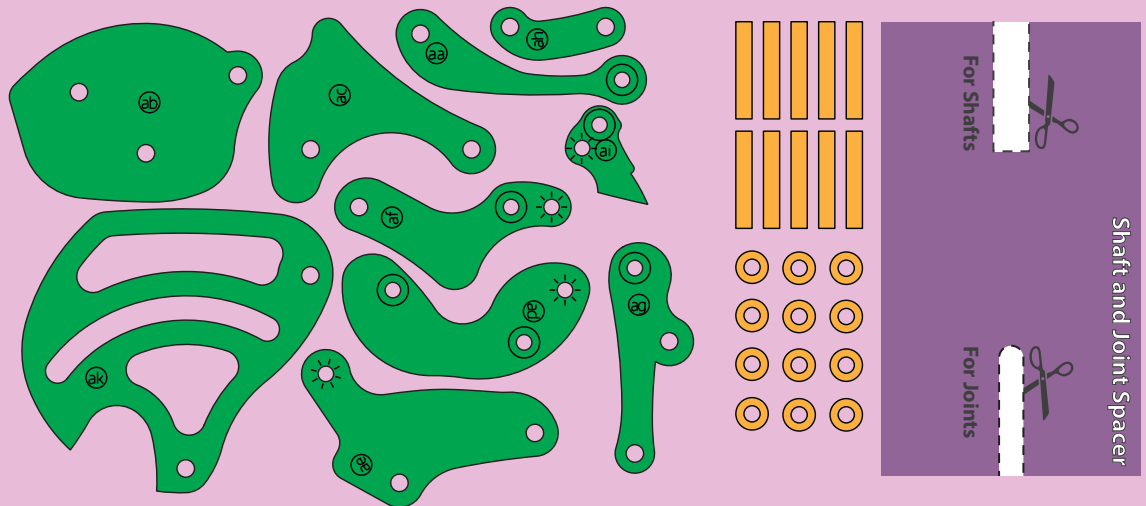
118 Press the retainer onto the shaft.



119 The shaft should turn freely.

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

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.



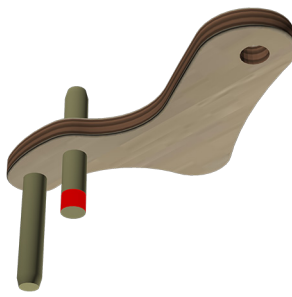
127 Press the glued end of the pin fully into the part.



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.



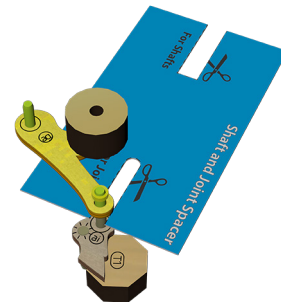
131 Press the glued end fully into the part.



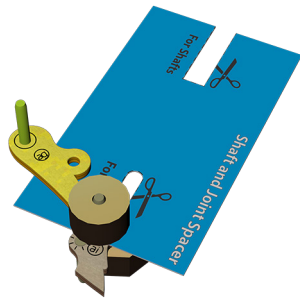
132 While the glue dries, check that all parts are secure and "square" or perpendicular to each other and sand the part to remove any rough or protruding edges.



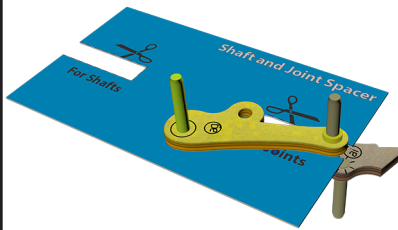
133 Assemble pins to the remaining pieces for this leg following the convention of asterisk and circle markings.



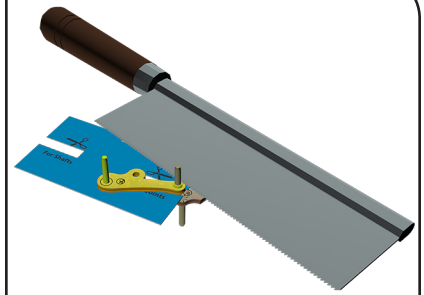
134 The joint spacer ensures there is enough space between two parts so they can move freely. Here the shin (ag) is being attached to the hoof (ai). The added part is highlighted.



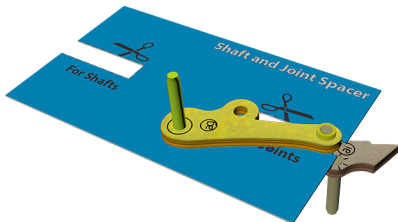
135 Use the Press Tool (T2) to position a retaining ring firmly onto the pin. Press straight down and support the underside of the joint with the Anvil Tool (T1) to avoid cracking the pin or breaking it out of its base part altogether.



136 Remove the tool.



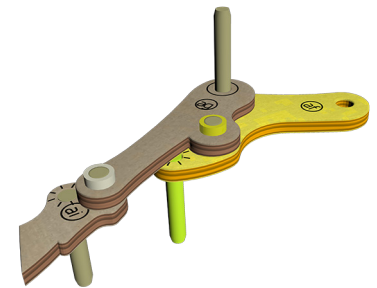
137 Trim the pin flush with the retaining ring.



138 Smooth the joint with sandpaper if necessary.

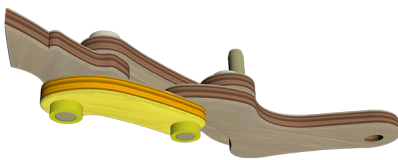


139 The parts should rotate easily at the joint.

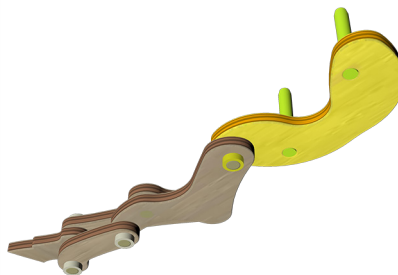


140 Attach the Thigh (af) to the Shin (ag) using a Retaining Ring

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.



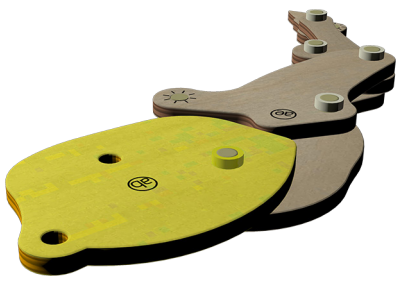
141 Some parts connect two joints. Pay close attention to the orientation of the parts, as the marked side of all parts face the same way. Attach the Hoof Link (ah) to the Hoof (ai) and Thigh (af) with retaining rings.



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.



144 Attach the Pivot Plate (ab) to the Rear Rocker (ad) with a retaining ring.

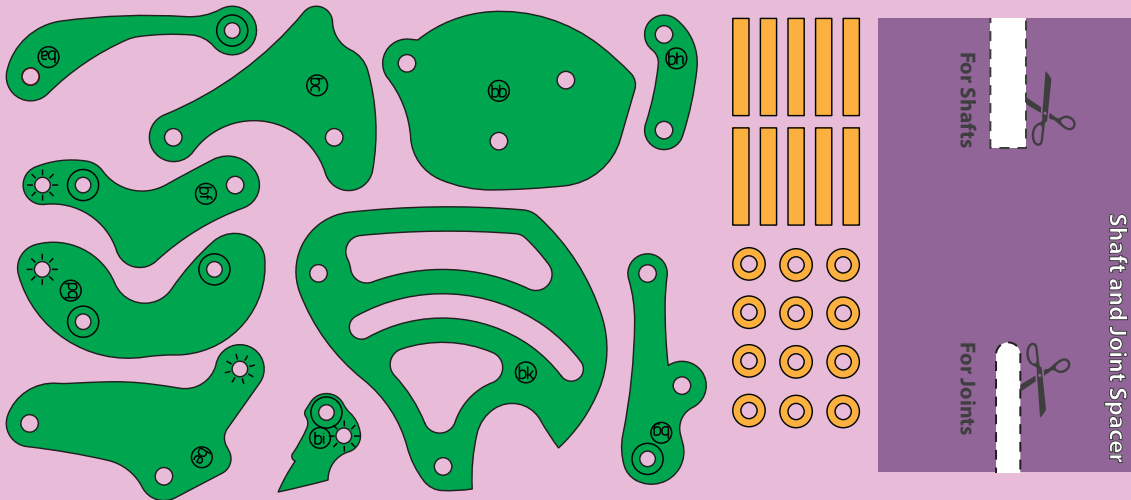


145 Attach the Upper Crank Link (aa) to the Pivot Plate (ab) using a retaining ring.



146 Both the Front Rocker (ac) and the Lower Crank Link (ak) are attached to the Rocker Link (ae). Check the orientation of the parts before using the spacer card and retaining ring to do so. The finished leg should move smoothly.

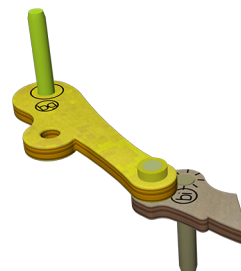
RIGHT REAR LEG PARTS



148 Prepare all of the pieces for the leg by sanding the faces and openings, and breaking all edges.

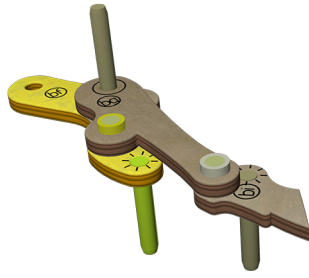


149 Assemble short pins to the pieces following the convention of asterisk and circle markings.

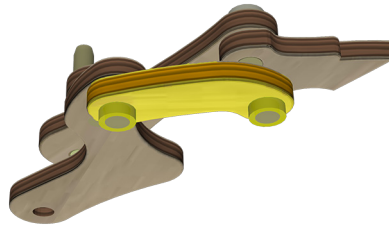


150 Attach the Shin (bg) to the Hoof (bi) using a Retaining Ring

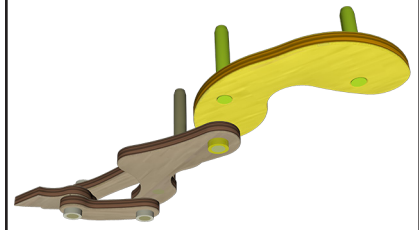
LEGS ASSEMBLY



151 Attach the Thigh (bf) to the Shin (bg) using a Retaining Ring



152 Attach the Hoof Link (bh) to the Hoof (bi) and Thigh (bf) with retaining rings.



153 Attach the Rear Rocker (bd) to the Thigh (bf) with a retaining ring.



154 Attach the Rocker Link (be) to the Rear Rocker (bd) and the Shin (bg) using retaining rings.



155 Attach the Pivot Plate (bb) to the Rear Rocker (bd) with a retaining ring.



156 Attach the Upper Crank Link (ba) to the Pivot Plate (bb) using a retaining ring.

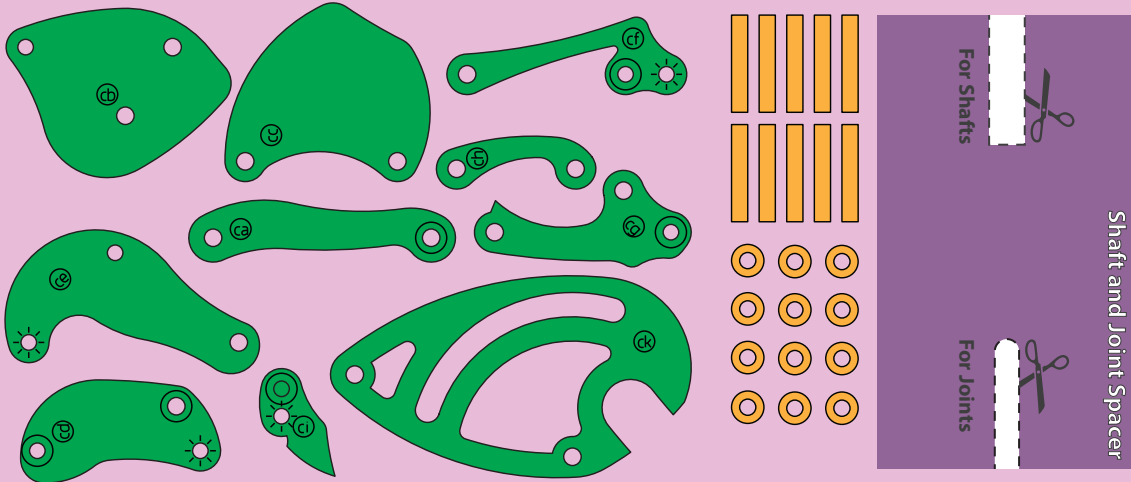


157 Attach the Front Rocker (bc) and the Lower Crank Link (bk) to the Rocker Link (be). Double check the orientation of the parts before using the spacer card and retaining ring to do so.



158 The finished leg should move smoothly.

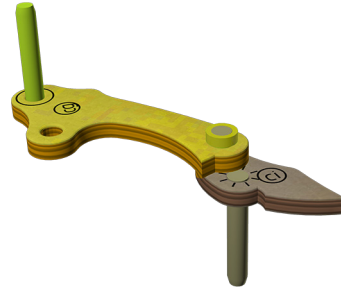
LEFT FRONT LEG PARTS



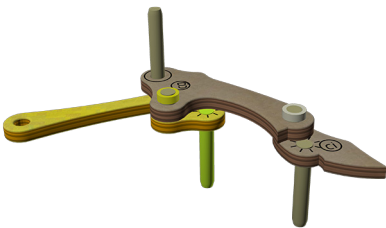
159 Prepare all of the pieces for the leg by sanding the faces and openings, and breaking all edges.



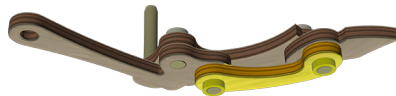
160 Assemble short pins to the pieces following the convention of asterisk and circle markings.



161 Attach the Cannon (cg) to the Hoof (ci) using a Retaining Ring



162 Attach the Forearm (cf) to the Cannon (cg) using a Retaining Ring



163 Attach the Hoof Link (ch) to the Hoof (ci) and Forearm (cf) with retaining rings.

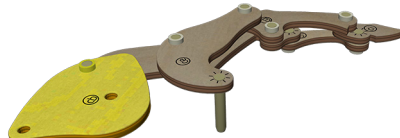


164 Attach the Front Rocker (cd) to the Forearm (cf) with a retaining ring.

LEGS ASSEMBLY



165 Attach the Rocker Link (ce) to the Front Rocker (cd) and the Cannon (cg) using retaining rings.



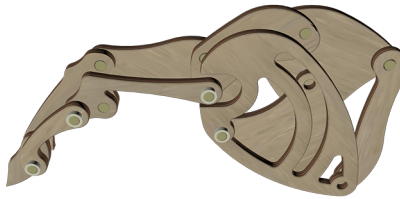
166 Attach the Pivot Plate (cb) to the Front Rocker (cd) with a retaining ring.



167 Attach the Upper Crank Link (ca) to the Pivot Plate (cb) using a retaining ring.

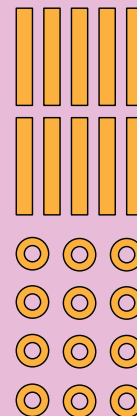
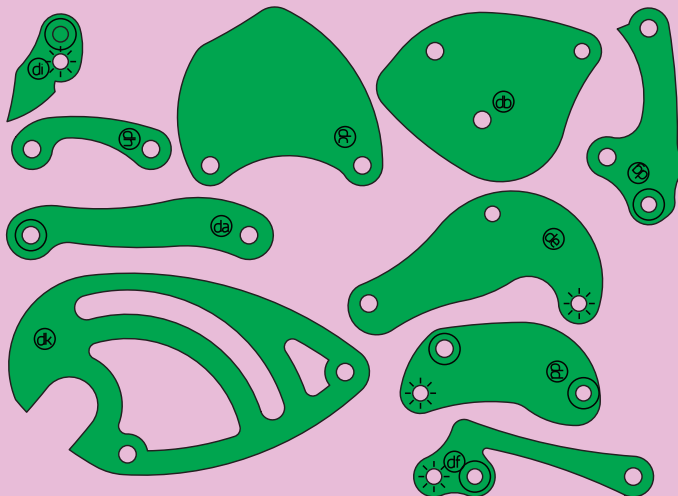


168 Attach the Rear Rocker (cc) and the Lower Crank Link (ck) to the Rocker Link (ce). Double check the orientation of the parts before using the spacer card and retaining ring to do so.



169 The finished leg should move smoothly.

RIGHT FRONT LEG PARTS



For Shafts

Shaft and Joint Spacer

For Joints

LEGS ASSEMBLY



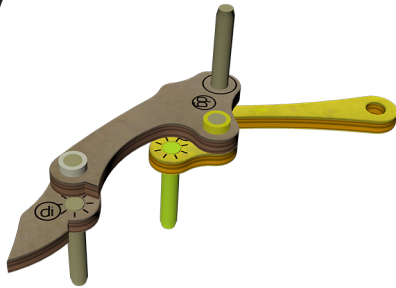
170 Prepare all of the pieces for the leg by sanding the faces and openings, and breaking all edges.



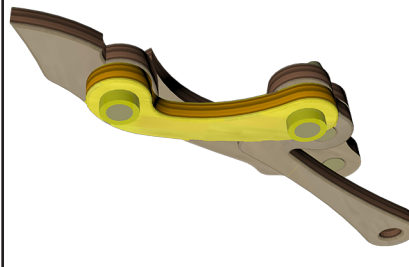
171 Assemble short pins to the pieces following the convention of asterisk and circle markings.



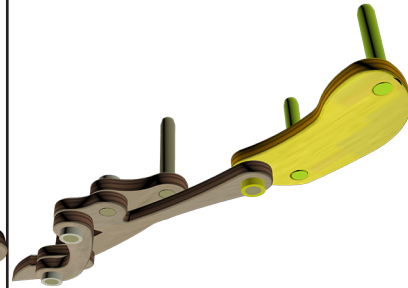
172 Attach the Cannon (dg) to the Hoof (di) using a Retaining Ring



173 Attach the Forearm (df) to the Cannon (dg) using a Retaining Ring



174 Attach the Hoof Link (dh) to the Hoof (di) and Forearm (df) with retaining rings.



175 Attach the Front Rocker (dd) to the Forearm (df) with a retaining ring.



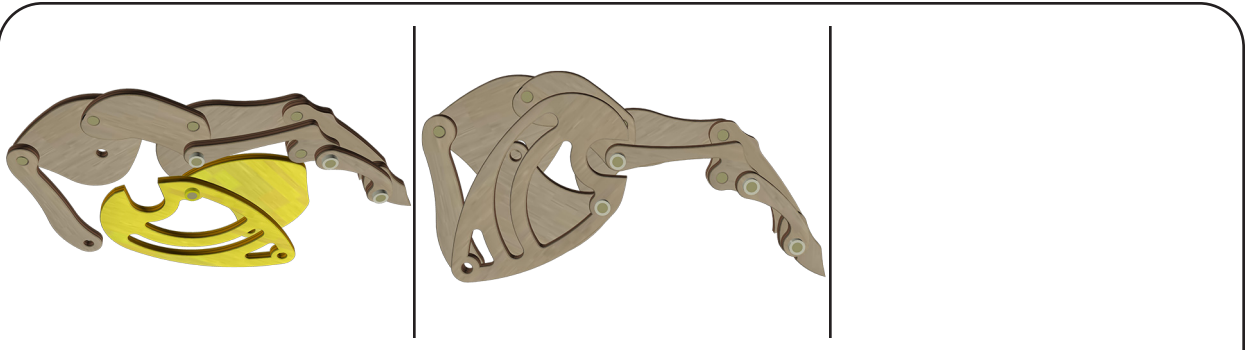
176 Attach the Rocker Link (de) to the Front Rocker (dd) and the Cannon (dg) using retaining rings.



177 Attach the Pivot Plate (db) to the Front Rocker (dd) with a retaining ring.

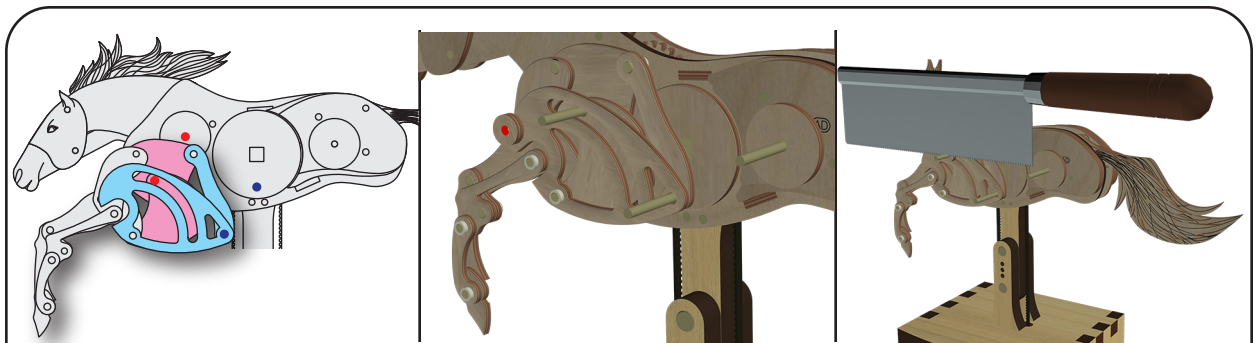
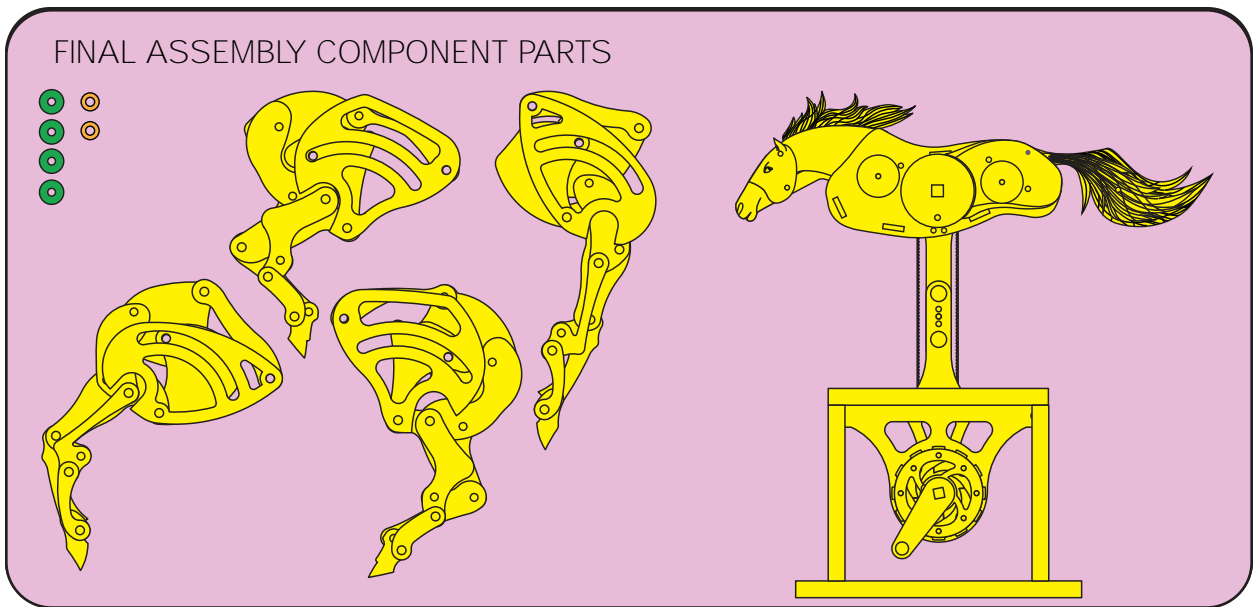


178 Attach the Upper Crank Link (da) to the Pivot Plate (db) using a retaining ring.



179 Attach the Rear Rocker (dc) and the Lower Crank Link (dk) to the Rocker Link (de). Double check the orientation of the parts before using the spacer card and retaining ring to do so.

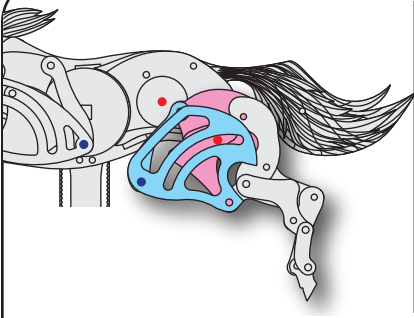
180 The finished leg should move smoothly.



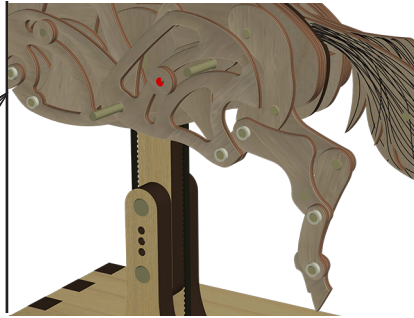
181 Place the left front leg onto the body. The Upper Crank Link (ca) and Lower Crank Link (ck) connect to the crank pin, (marked in blue), while the Pivot Plate (cb) and Rear Rocker (cc) are connected to the front leg pivot pin (marked in red).

182 Glue the retaining washer onto the pivot pin, using the joint spacer to ensure there is adequate room for the parts to move.

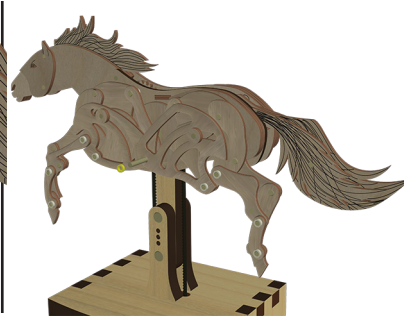
183 When the glue has dried, trim the pivot pin flush to the washer with a razor saw.



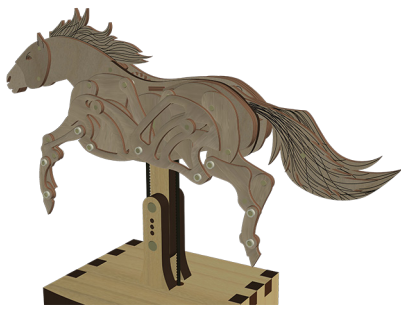
184 Place the left rear leg onto the body. The Upper Crank Link (aa) and Lower Crank Link (ak) connect to the crank pin, (marked in blue), while the Pivot Plate (ab) and Front Rocker (ad) are connected to the rear leg pivot pin (marked in red).



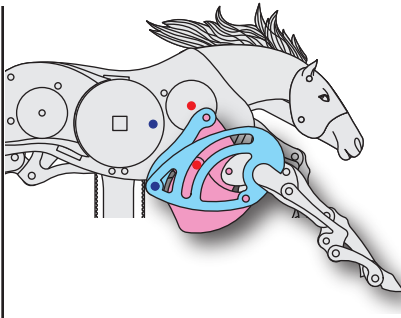
185 Glue the retaining washer onto the pivot pin, using the joint spacer, and when the glue has dried, trim the pivot pin flush with the washer with a razor saw.



186 Press a retaining ring onto the crank pin as shown. Support the back of the crank wheel (AT), and press the ring only until it is even with the retaining washer on the rear leg.



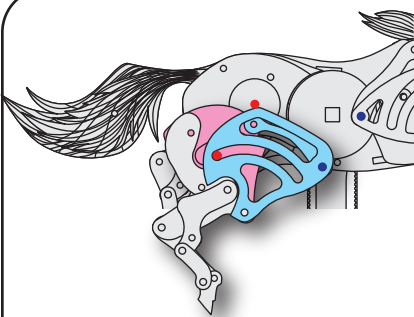
187 Trim the crank pin flush with the retaining ring.



188 Place the right front leg onto the body. The Upper Crank Link (da) and Lower Crank Link (dk) connect to the crank pin, (marked in blue), while the Pivot Plate (db) and Rear Rocker (dc) are connected to the front leg pivot pin (marked in red).



189 Glue the retaining washer onto the pivot pin, using the joint spacer, and when the glue has dried, trim the pivot pin flush to the washer with a razor saw.



190 Place the right rear leg onto the body. The Upper Crank Link (ba) and Lower Crank Link (bk) connect to the crank pin, (marked in blue), while the Pivot Plate (bb) and Front Rocker (bd) are connected to the rear leg pivot pin (marked in red).



191 Glue the retaining washer onto the pivot pin, using the joint spacer, and when the glue has dried, trim the pivot pin flush to the washer with a razor saw.



192 Press a retaining ring onto the crank pin as shown. Support the back of the crank wheel (AT), and press the ring only until it is even with the retaining washer on the rear leg, then trim the crank pin flush with the retaining ring.



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