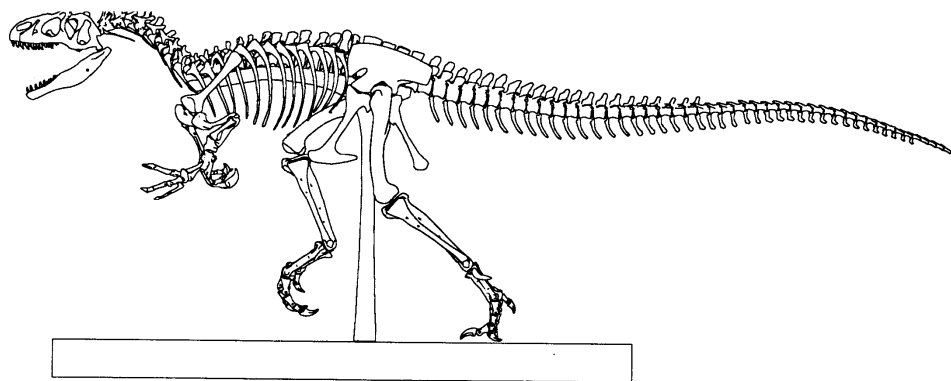


ASSEMBLY INSTRUCTIONS

If you have any questions, suggestions, or problems with the assembly of your *Allosaurus fragilis* model, feel free to call us at 1•800•642•9267 and we will do our best to assist you.



Part Number	Part Name
<input type="checkbox"/> 001	Face
<input type="checkbox"/> 002	Palate
<input type="checkbox"/> 003	Base of Skull
<input type="checkbox"/> 004	Mandible
<input type="checkbox"/> 005	Cervical vertebra 1,2 (C1,2)
<input type="checkbox"/> 006	C1,2 left rib
<input type="checkbox"/> 007	C1,2 right rib
<input type="checkbox"/> 008	C3
<input type="checkbox"/> 009	C3 left rib
<input type="checkbox"/> 010	C3 right rib
<input type="checkbox"/> 011	C4
<input type="checkbox"/> 012	C4 left rib
<input type="checkbox"/> 013	C4 right rib
<input type="checkbox"/> 014	C5
<input type="checkbox"/> 015	C5 left rib
<input type="checkbox"/> 016	C5 right rib
<input type="checkbox"/> 017	C6
<input type="checkbox"/> 018	C6 left rib
<input type="checkbox"/> 019	C6 right rib
<input type="checkbox"/> 020	C7
<input type="checkbox"/> 021	C7 left rib
<input type="checkbox"/> 022	C7 right rib
<input type="checkbox"/> 023	C8
<input type="checkbox"/> 024	C8 left rib
<input type="checkbox"/> 025	C8 right rib
<input type="checkbox"/> 026	C9
<input type="checkbox"/> 027	C9 left rib
<input type="checkbox"/> 028	C9 right rib

Part Number	Part Name
<input type="checkbox"/> 029	Dorsal vertebra 1 (D1)
<input type="checkbox"/> 030	D1 left rib
<input type="checkbox"/> 031	D1 right rib
<input type="checkbox"/> 032	D2
<input type="checkbox"/> 033	D2 left rib
<input type="checkbox"/> 034	D2 right rib
<input type="checkbox"/> 035	D3
<input type="checkbox"/> 036	D3 left rib
<input type="checkbox"/> 037	D3 right rib
<input type="checkbox"/> 038	D4
<input type="checkbox"/> 039	D4 left rib
<input type="checkbox"/> 040	D4 right rib
<input type="checkbox"/> 041	D5
<input type="checkbox"/> 042	D5 left rib
<input type="checkbox"/> 043	D5 right rib
<input type="checkbox"/> 044	D6
<input type="checkbox"/> 045	D6 left rib
<input type="checkbox"/> 046	D6 right rib
<input type="checkbox"/> 047	D7
<input type="checkbox"/> 048	D7 left rib
<input type="checkbox"/> 049	D7 right rib
<input type="checkbox"/> 050	D8
<input type="checkbox"/> 051	D8 left rib
<input type="checkbox"/> 052	D8 right rib
<input type="checkbox"/> 053	D9
<input type="checkbox"/> 054	D9 left rib
<input type="checkbox"/> 055	D9 right rib
<input type="checkbox"/> 056	D10
<input type="checkbox"/> 057	D10 left rib
<input type="checkbox"/> 058	D10 right rib

Part Number	Part Name
<input type="checkbox"/> 059	D11
<input type="checkbox"/> 060	D11 left rib
<input type="checkbox"/> 061	D11 right rib
<input type="checkbox"/> 062	D12
<input type="checkbox"/> 063	D12 left rib
<input type="checkbox"/> 064	D12 right rib
<input type="checkbox"/> 065	D13
<input type="checkbox"/> 066	D13 left rib
<input type="checkbox"/> 067	D13 right rib
<input type="checkbox"/> 068	D14 and ribs

Part Number	Part Name
<input type="checkbox"/> 069	Sacral vertebrae
<input type="checkbox"/> 070	Right ilium
<input type="checkbox"/> 071	Left ilium
<input type="checkbox"/> 072	Pubes
<input type="checkbox"/> 073	Ischia

Part Number	Part Name
<input type="checkbox"/> 074	Right femur
<input type="checkbox"/> 075	Right tibia
<input type="checkbox"/> 076	Right fibula
<input type="checkbox"/> 077	Right tarsus
<input type="checkbox"/> 078	Right 1st digit
<input type="checkbox"/> 079	Right 2nd digit
<input type="checkbox"/> 080	Right 3rd digit
<input type="checkbox"/> 081	Right 4th digit
<input type="checkbox"/> 082	Right 5th digit
<input type="checkbox"/> 083	Left femur
<input type="checkbox"/> 084	Left tibia
<input type="checkbox"/> 085	Left fibula
<input type="checkbox"/> 086	Left tarsus
<input type="checkbox"/> 087	Left 1st digit
<input type="checkbox"/> 088	Left 2nd digit
<input type="checkbox"/> 089	Left 3rd digit
<input type="checkbox"/> 090	Left 4th digit
<input type="checkbox"/> 091	Left 5th digit

Part Number	Part Name
<input type="checkbox"/> 092	Right scapula and coracoid
<input type="checkbox"/> 093	Right humerus
<input type="checkbox"/> 094	Right ulna
<input type="checkbox"/> 095	Right radius
<input type="checkbox"/> 096	Right 1st digit and carpal bones
<input type="checkbox"/> 097	Right 2nd digit
<input type="checkbox"/> 098	Right 3rd digit
<input type="checkbox"/> 099	Left scapula and coracoid
<input type="checkbox"/> 100	Left humerus
<input type="checkbox"/> 101	Left ulna
<input type="checkbox"/> 102	Left radius
<input type="checkbox"/> 103	Left 1st digit and carpal bones
<input type="checkbox"/> 104	Left 2nd digit
<input type="checkbox"/> 105	Left 3rd digit

Part Number	Part Name
<input type="checkbox"/> 106	Tail vertebra 1 (T1)
<input type="checkbox"/> 107	T2
<input type="checkbox"/> 108	T2 chevron
<input type="checkbox"/> 109	T3
<input type="checkbox"/> 110	T3 chevron
<input type="checkbox"/> 111	T4
<input type="checkbox"/> 112	T4 chevron
<input type="checkbox"/> 113	T5
<input type="checkbox"/> 114	T5 chevron
<input type="checkbox"/> 115	T6 and chevron
<input type="checkbox"/> 116	T7 and chevron
<input type="checkbox"/> 117	T8 and chevron
<input type="checkbox"/> 118	T9 and chevron
<input type="checkbox"/> 119	T10 and chevron
<input type="checkbox"/> 120	T11 and chevron
<input type="checkbox"/> 121	T12 and chevron
<input type="checkbox"/> 122	T13 and chevron
<input type="checkbox"/> 123	T14 and chevron
<input type="checkbox"/> 124	T15 and chevron
<input type="checkbox"/> 125	T16 and chevron
<input type="checkbox"/> 126	T17 and chevron
<input type="checkbox"/> 127	T18 and chevron
<input type="checkbox"/> 128	T19 and chevron
<input type="checkbox"/> 129	T20 and chevron
<input type="checkbox"/> 130	T21 and chevron
<input type="checkbox"/> 131	T22 and chevron
<input type="checkbox"/> 132	T23 and chevron
<input type="checkbox"/> 133	T24 and chevron
<input type="checkbox"/> 134	T25 and chevron
<input type="checkbox"/> 135	T26 and chevron

Part Number	Part Name
<input type="checkbox"/> 136	T27 and chevron
<input type="checkbox"/> 137	T28 and chevron
<input type="checkbox"/> 138	T29 and chevron
<input type="checkbox"/> 139	T30 and chevron
<input type="checkbox"/> 140	T31 and chevron
<input type="checkbox"/> 141	T32 and chevron
<input type="checkbox"/> 142	T33 and chevron
<input type="checkbox"/> 143	T34 and chevron
<input type="checkbox"/> 144	T35 and chevron
<input type="checkbox"/> 145	T36 and chevron
<input type="checkbox"/> 146	T37 and chevron
<input type="checkbox"/> 147	T38
<input type="checkbox"/> 148	T39
<input type="checkbox"/> 149	T40
<input type="checkbox"/> 150	T41

Part Number	Part Name
<input type="checkbox"/> 151	Zap
<input type="checkbox"/> 152	Plastistat
<input type="checkbox"/> 153	File
<input type="checkbox"/> 154	Allen Wrench
<input type="checkbox"/> 155	Allen Head Bolt
<input type="checkbox"/> 156	Hobby Knife
<input type="checkbox"/> 157	Armature
<input type="checkbox"/> 158	Base
<input type="checkbox"/> 159	Text

Our *Allosaurus fragilis* model is designed to be constructed by modelmakers familiar with the use of files, hobbyknives and cyanoacrylate cements. These tools need to be used in a proper manner. Safety instructions are listed on the bottle of adhesive—care must be taken with the pointed file and surgical blade on the hobbyknife. The model was not designed to be constructed by children—an adult should closely assist and monitor any young person as the model is assembled.

The following rules can assist you:

RULE 1 • TAKE CARE WHEN HANDLING THE PARTS

The model is constructed of a polyurethane resin, a plastic that can be filed and scraped to remove any flashing or orientation marks. Although the material is not brittle, it will break if bent excessively. Please be careful when handling the individual parts—they were designed to be replicas of actual bone and may be delicate in thin places.

RULE 2 • READ THE INSTRUCTION ON THE BOTTLE OF CYANOACRYLATE CEMENT

The cyanoacrylate cement (superglue) bonds the dinosaur parts very effectively. It takes approximately 5 seconds for the cement to work; so you have some time to position pieces before they are fused. Cyanoacrylate cement can be loosened by using cement debonders that can be purchased in a hobby shop, but it is advisable to use the glue sparingly and make sure the parts are in the right places before you cement them.

RULE 3 • TRIAL FIT EACH PART

Although each piece of *Allosaurus fragilis* is handcast in a silicone mold, some work may be required to fit parts together properly.

RULE 4 • USE A TOOTHPICK TO APPLY ADHESIVE TO THE MODEL

Since you do not have total control of the amount of adhesive that comes directly out of the bottle, place a small quantity of adhesive on a piece of waxed paper; then transfer a small amount of adhesive to the part with a wooden applicator or toothpick. Try to apply the glue in a spot that cannot be seen.

RULE 5 • REMOVE EACH PART FROM THE BAG AS YOU NEED IT.

Do not remove all the parts from the bags at the same time. Many of the bones are very similar in shape and can be easily confused.

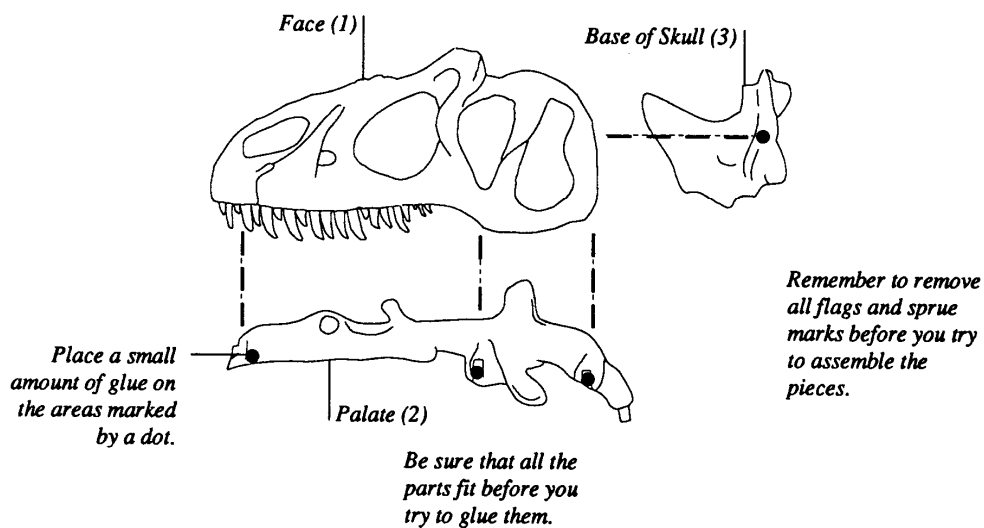
Remember, *Allosaurus fragilis* is more than a scientific model—it is designed to be an effective educational tool. Read about each part in the book as you assemble it. By the time you finish the model, you will have a sophisticated knowledge of the anatomy and biomechanics of one of the most fantastic animals that has ever lived!

The model is assembled in subsections. These subsections are then joined to complete the finished model. It is important to follow the instructions exactly—some parts will not fit properly unless they are assembled in precise order.

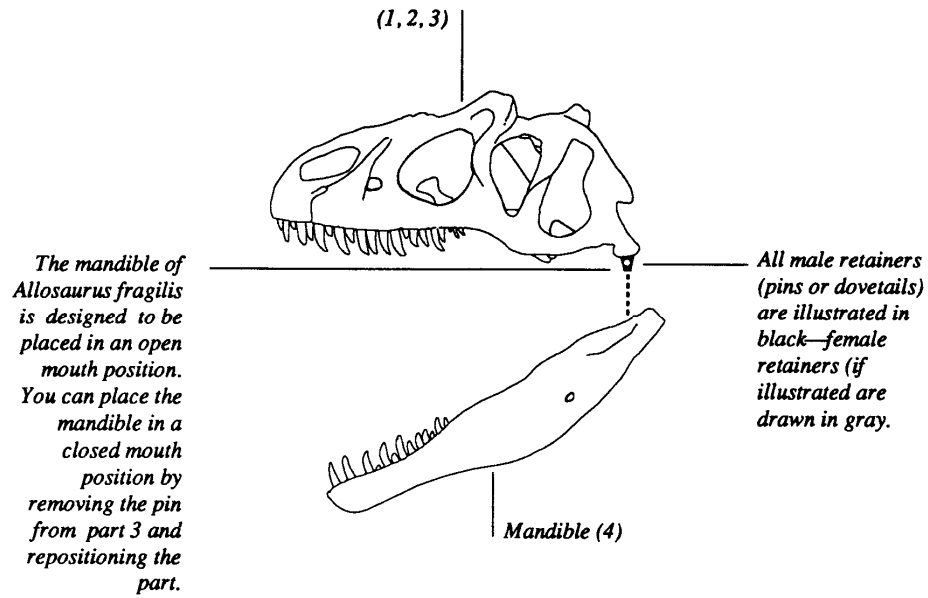
The instructions are designed to guide you through the assembly process. Here are some other suggestion that may make assembly easier:

Apply glue in areas marked with a black (●) or white (■) dot. A dashed line (— — —) indicates that parts fit together. Check each box (□) as you complete a step. This will help you keep track of the assembly process. The part number is indicated in parenthesis (21).

SKULL



- Join the face (1) to the palate (2); then join the cranial base (3) to (1).

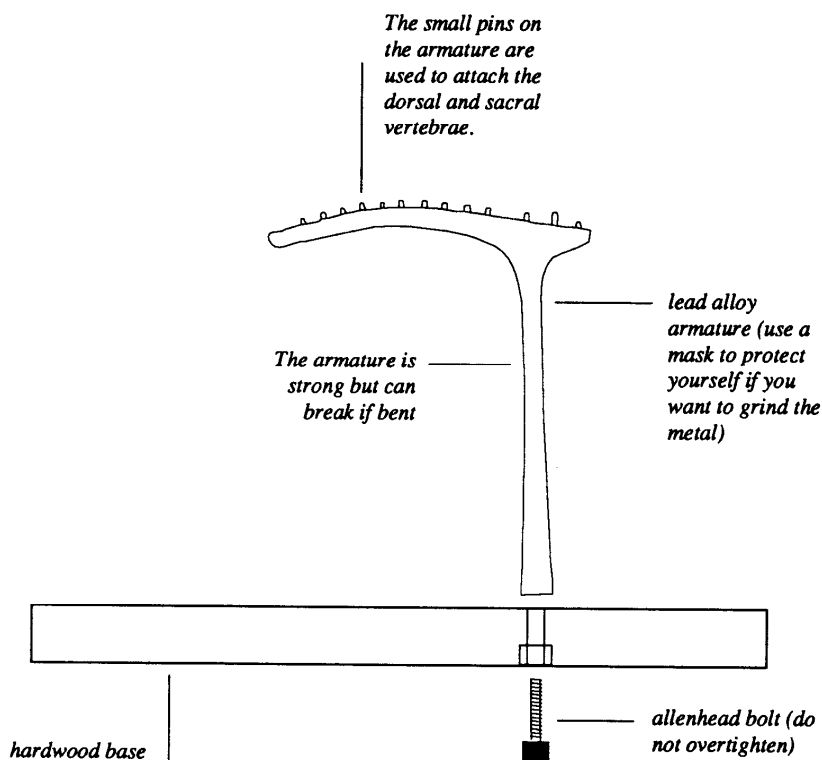


- Join the mandible (4) to the complete skull (1, 2, 3).

SACRUM

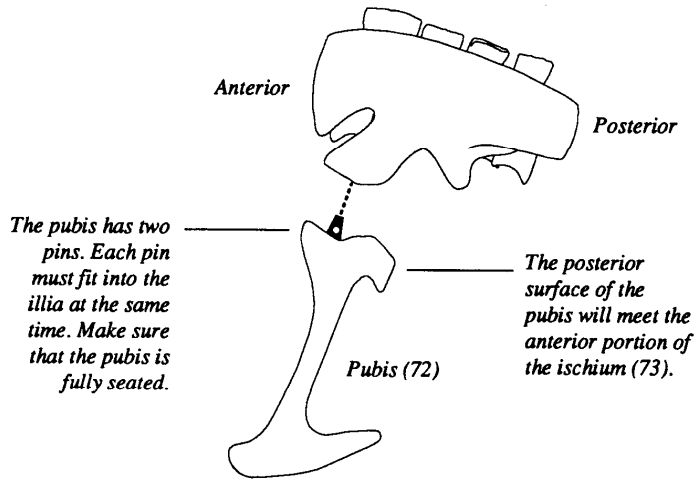
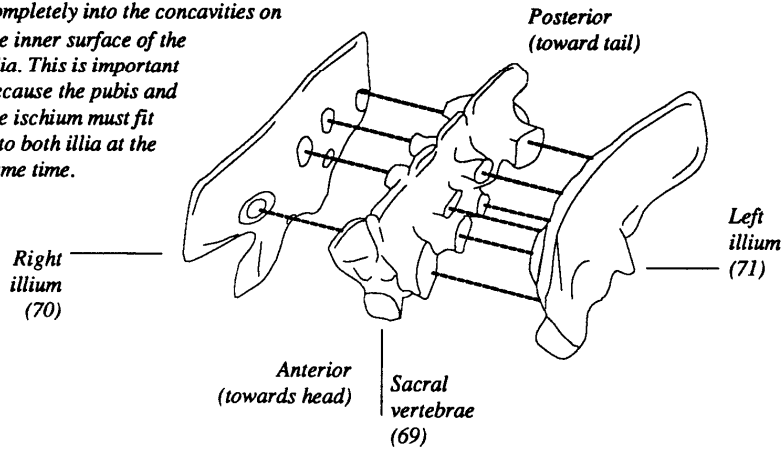
The sacrum and dorsal vertebrae attach to the metal armature that is included in the kit; the armature is, in turn, attached to the hardwood base. This forms the base for the whole skeleton.

- Join the hardwood base to the metal armature with the socket head bolt and allenhead wrench. Make sure that you do not tighten the bolt too tightly—the bolt could strip the threads inside the armature. The horizontal portion of the armature (the part of the armature that will hold the dorsal vertebrae) should be parallel to the long axis of the base.

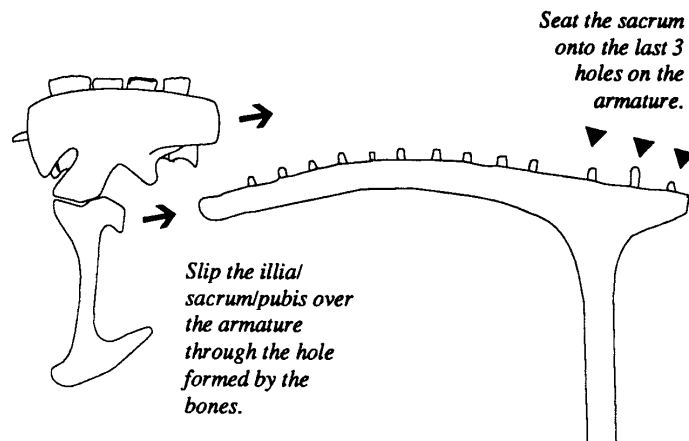


- Join the right and left illia (70, 71) to the sacrum (69).

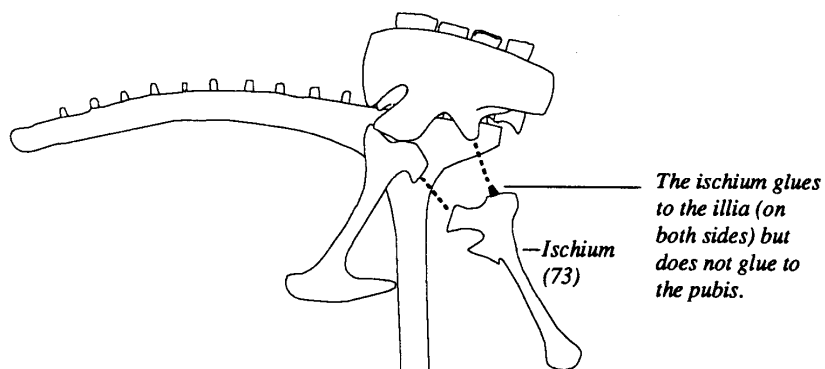
The right and left illia must accurately attach to the sacrum. Make sure that the male hemispheres on the sacrum fit completely into the concavities on the inner surface of the illia. This is important because the pubis and the ischium must fit into both illia at the same time.



- Then join the pubis (72) to the completed illia/sacrum complex.
- Slip the completed sacrum/illia/pubis over the head of the armature through the hole formed by joining of these bones. Then slip the sacrum onto the last three armature pins. Seat firmly. Make sure that the sacrum is seated



in an upright position and not tilted to one side or another.

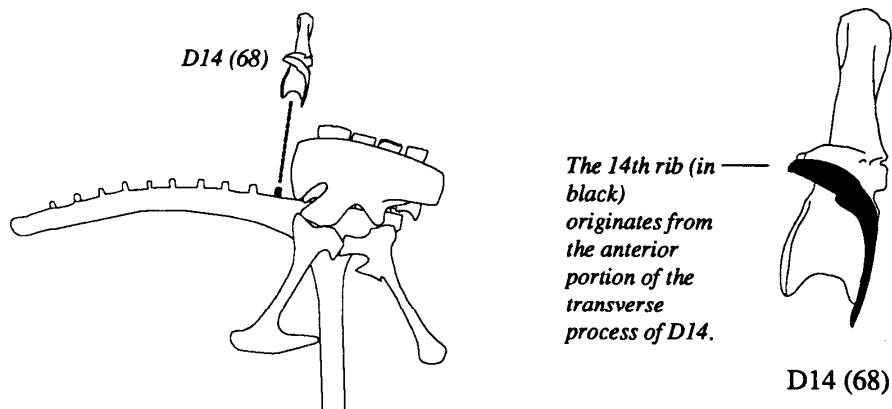


- Join the ischium (73) to the illia.

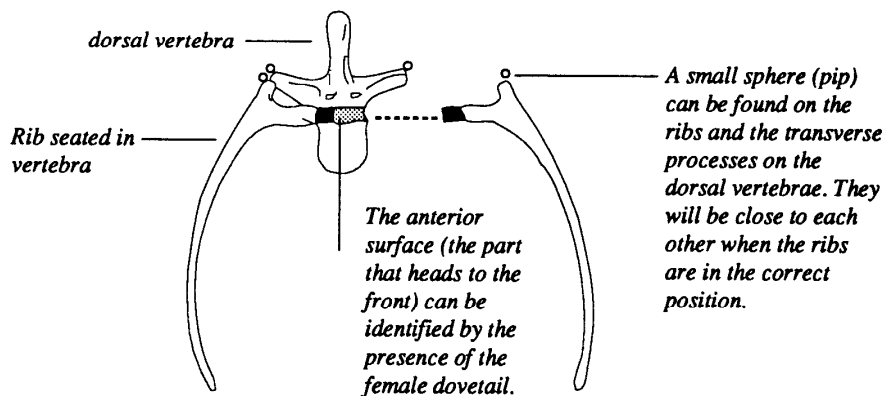
DORSAL VERTEBRAE

The dorsal vertebrae are attached to the metal armature starting with fourteenth dorsal vertebra (D14). With the exception of D14, all dorsal vertebrae require that the ribs be attached prior to the placement of the armature. Like the cervical vertebrae, each rib has a male dovetail that attaches to the female dovetail on the vertebral centrum. In most cases, the dovetail is on the anterior surface of the vertebra, but it is moved to the ventral surface on those anterior dorsal vertebrae not supported by the armature.

- Place the fourteenth dorsal vertebra (68) onto the armature. It fits onto the

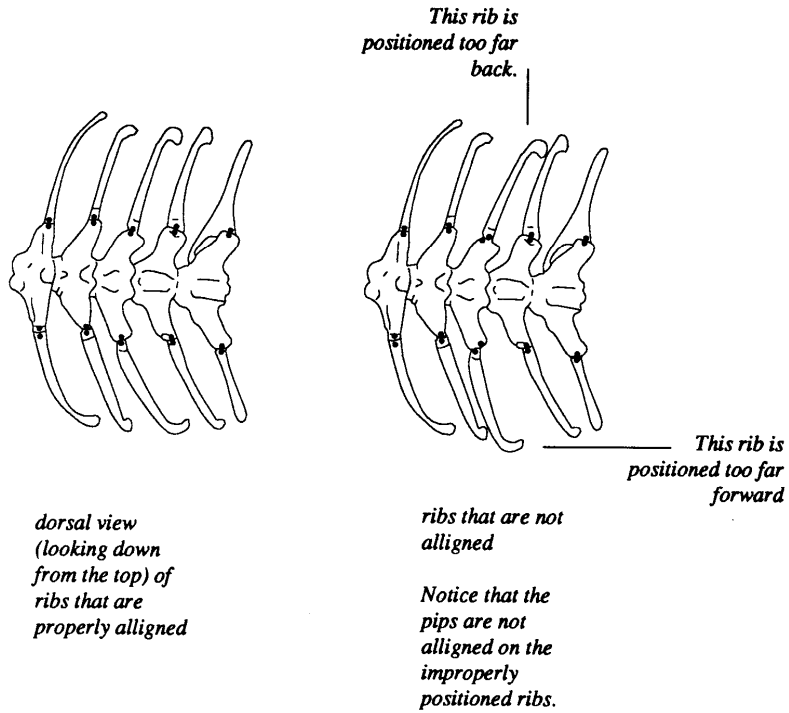


pin immediately anterior to the sacral vertebrae.



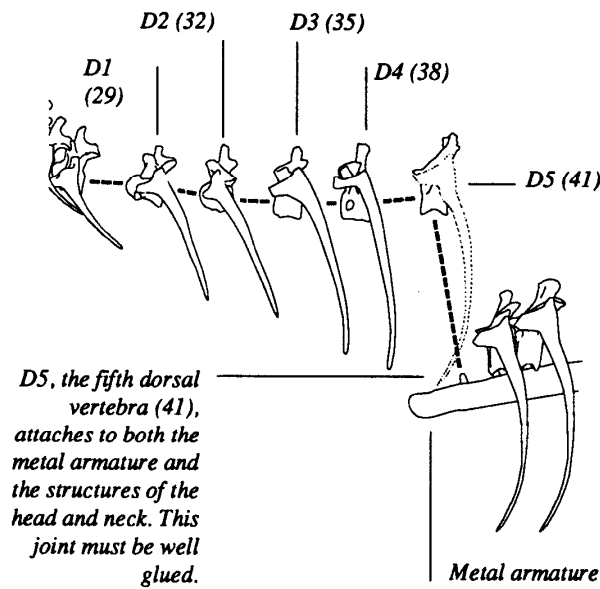
Typical vertebra and ribs

- Join the right and left dorsal ribs to the appropriate dorsal vertebra.
- Starting with D13 and continuing to D5, place the vertebrae and ribs onto the armature. Place the vertebrae firmly onto the armature. Try to center them in a way that will evenly separate one rib from the next. Glue each

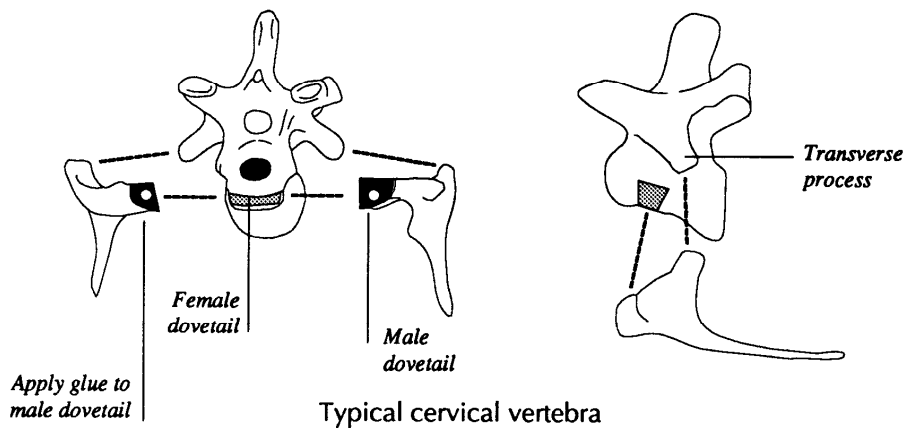


vertebra to the armature.

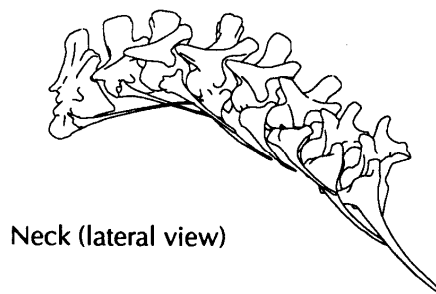
- You will find that D5, the fifth dorsal vertebra (41) not only attaches to the metal armature, but also has a pin that will attach to D4 (38) as well. This arrangement permits the cervical vertebrae and the anterior dorsal vertebrae to attach to the armature. Glue D5 firmly to the armature. This joint is important because it supports the head and the cervical vertebrae.
- Join D5 (41) to D4 (38.)
- Join D4 to D3 (35).
- Join D3 to D2 (32).
- Join D2 to D1 (29).



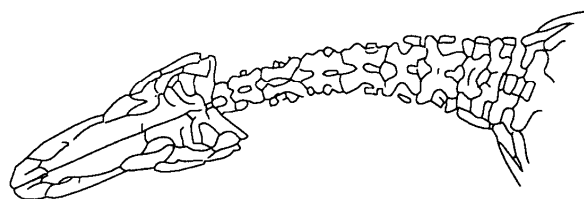
- Add ribs to the 9th cervical vertebra (C9) first then the eighth cervical vertebra, then the seventh, etc., through the second cervical vertebra (remember there is no rib attached to C1, the first cervical vertebra). Use the parts list to identify the numbered ribs and vertebrae.



around the male/female attachments. You are now ready to complete the neck. The neck vertebrae will form a gentle curve that is described as being slightly S-curved. The neck will also turn slightly

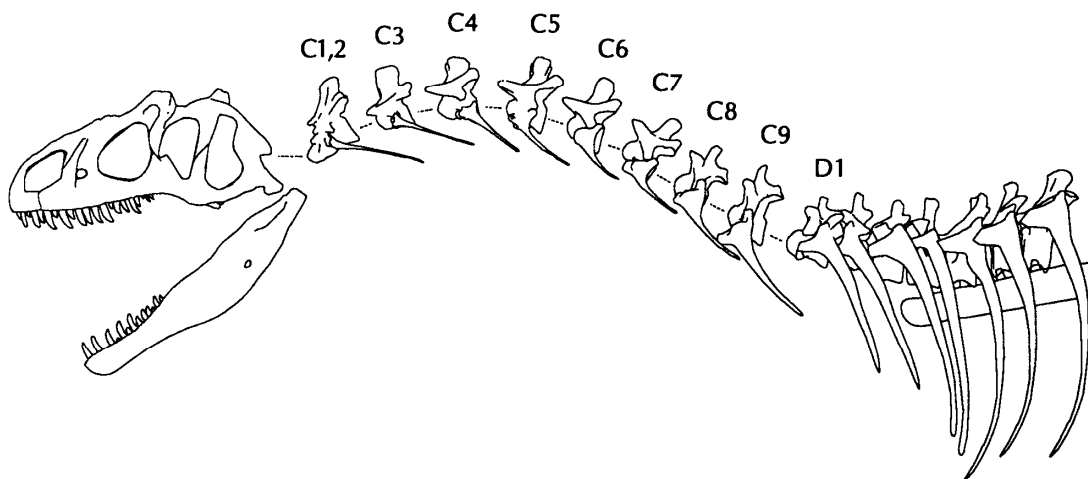
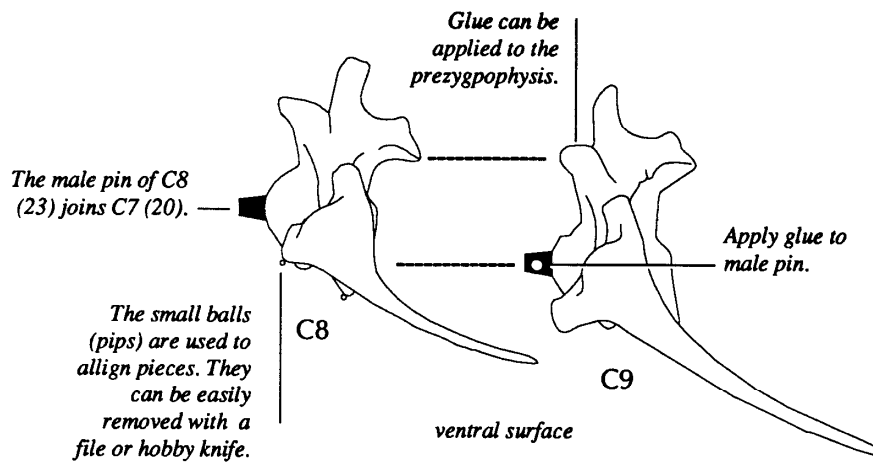


Neck (lateral view)



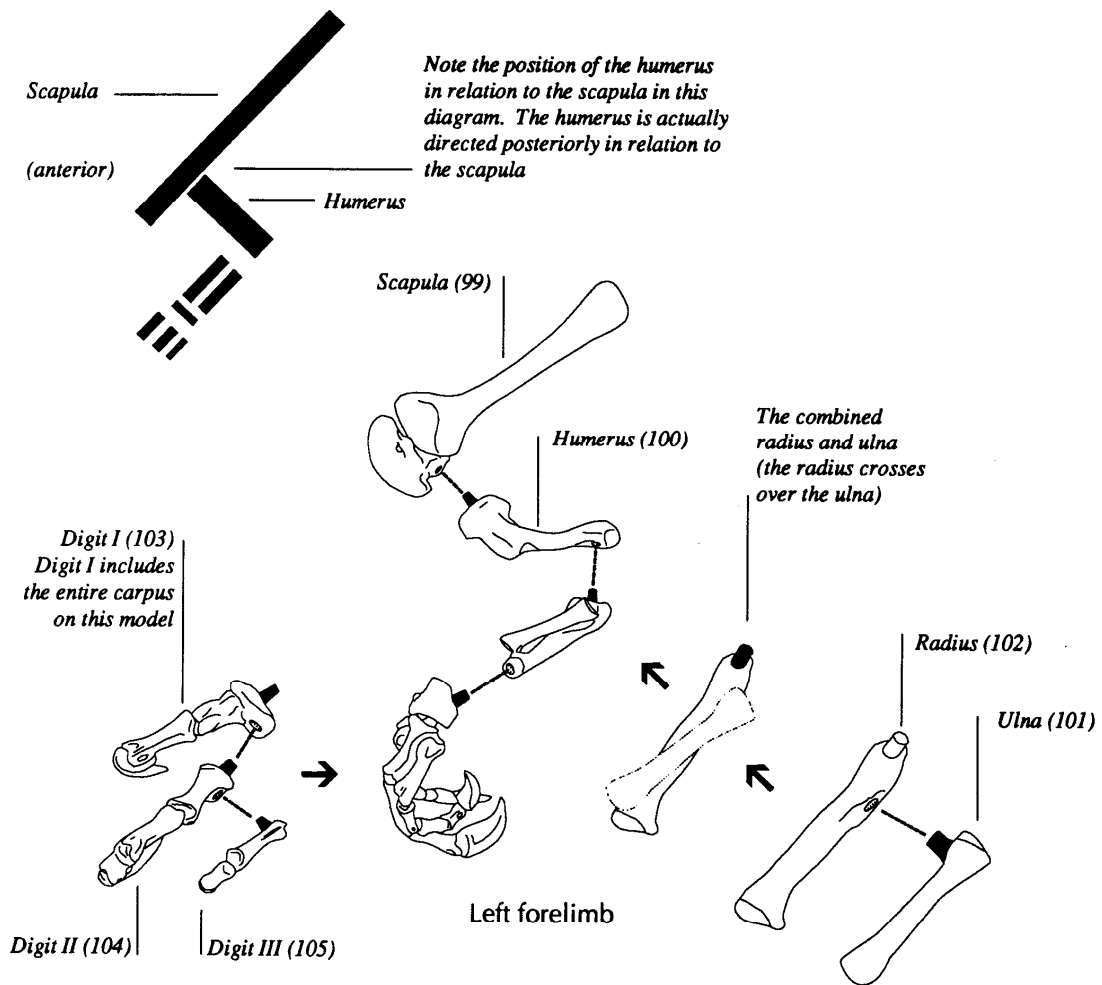
Neck (dorsal view)

- Join C9 to D1, then repeat the process joining C9 to C8, C8 to C7. etc. The head can then be attached to C1, 2. Try to align the small pips (found on the ventral [belly] surface of the cervical vertebra). It is easy to misalign the vertebra by twisting them around the male/female attachments. The ribs may get in the way to a certain degree when the vertebrae are articulated. Care must be taken to adjust the vertebral position for proper fit. Make sure that extra glue is used on all the cervical joints.

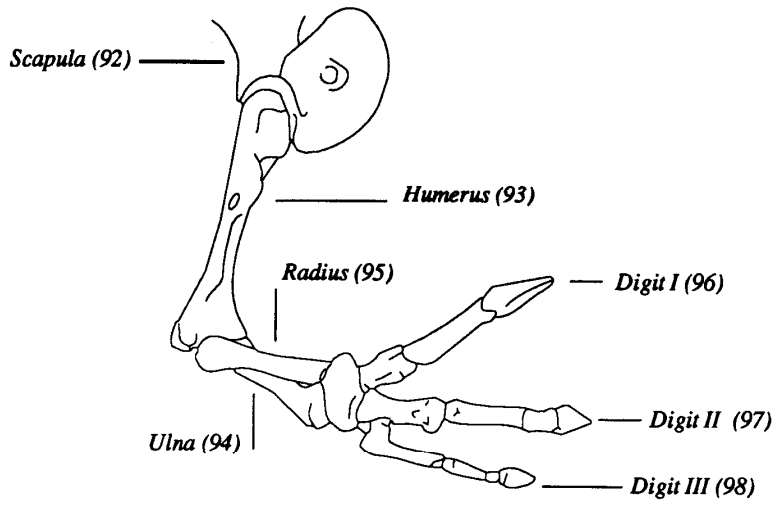


FORELIMB

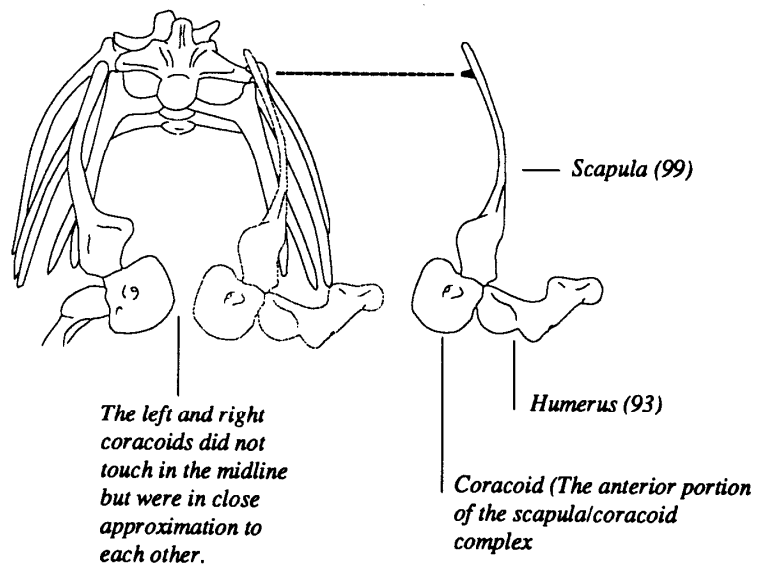
- Assemble the left forelimb first. Starting with the digits (fingers), join the first digit (103), the second digit (104), and the third digit (105).
- Join the radius (102) to the ulna (101).
- Join the scapula (99), humerus (100), the radius/ulna (101, 102) and completed manus (hand) (103, 104, 105) to form the completed left



forearm.



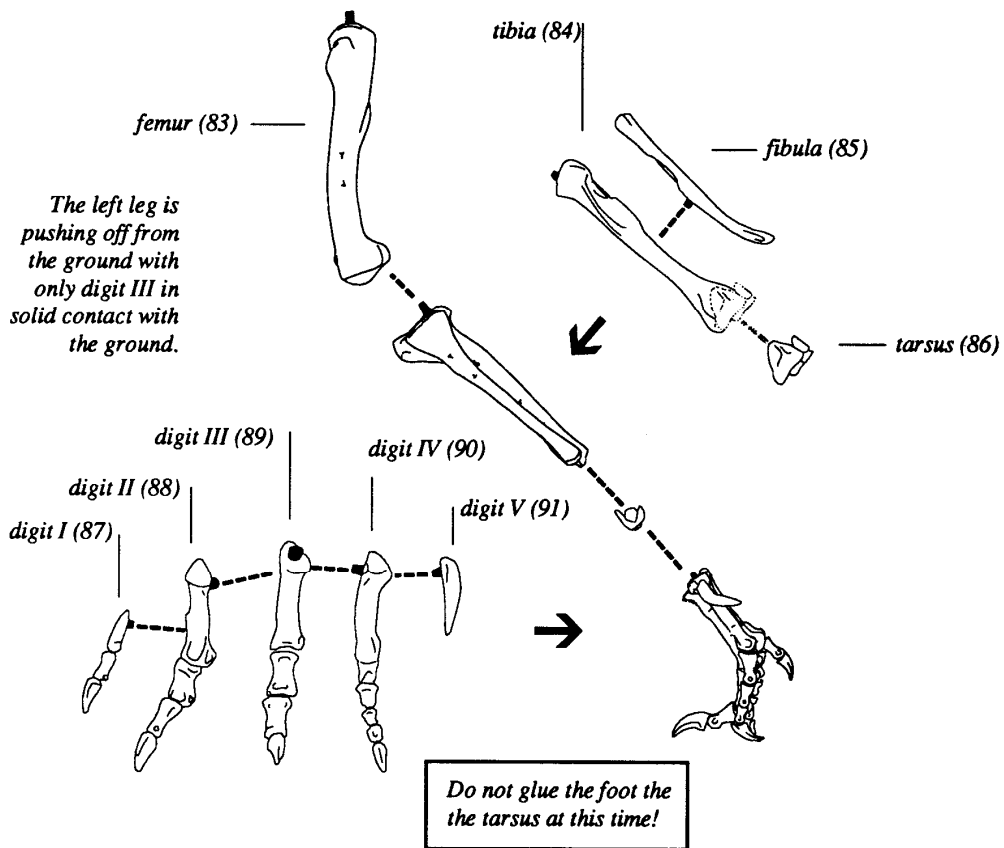
- Repeat the process to assemble the right forelimb.
- Join the right and left forearms to the completed armature. The left scapula (99) attaches to the left fourth dorsal rib (39). The right scapula



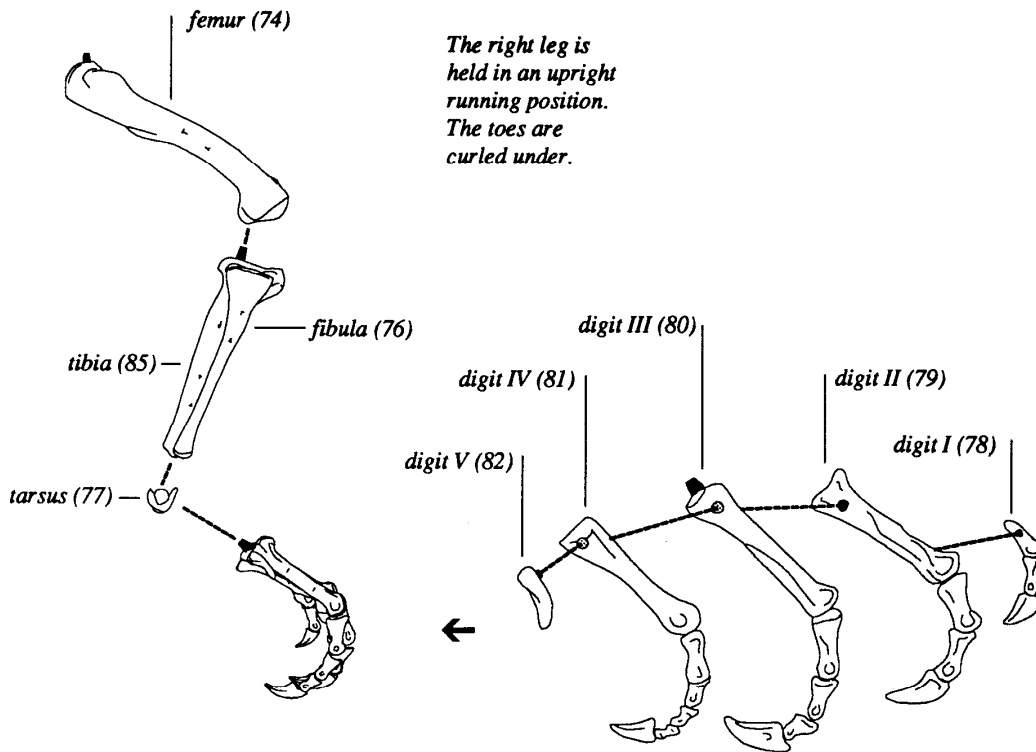
(92) attaches to the right fourth dorsal rib (40).

HINDLIMB

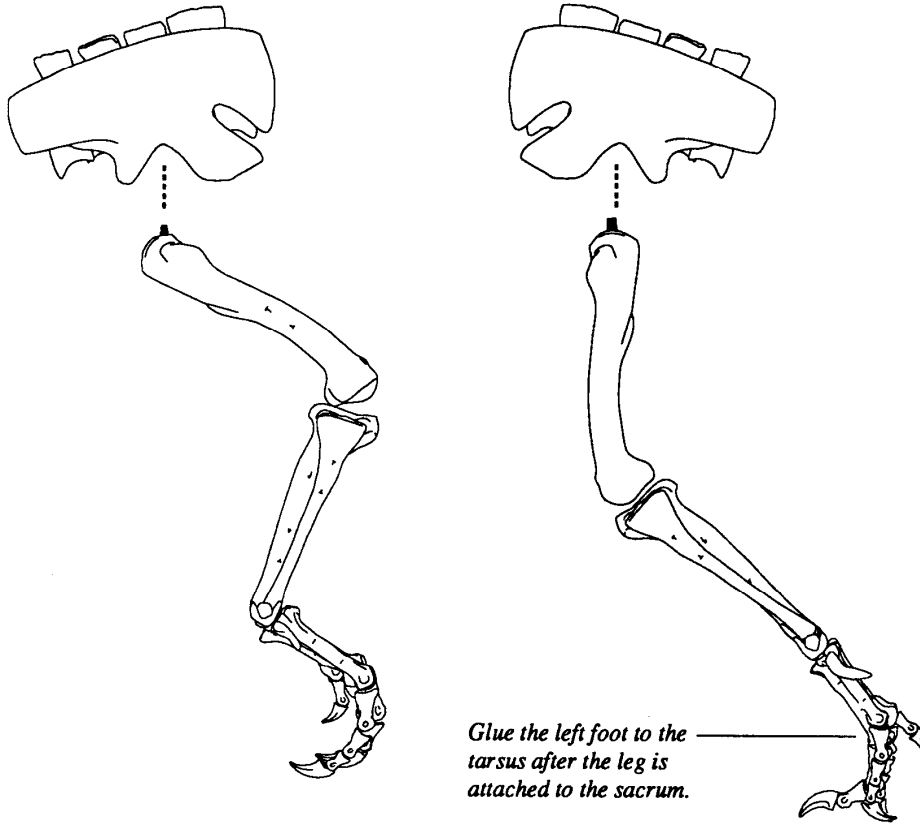
- Join the left fibula (85) to the left tibia (84).
- Join the left femur (83) to the left tibia (84).
- Join the left tarsus (86) to the left tibia (84)
- Join the foot parts (78, 79, 80, 81, 82) together and then join *but do not glue the foot into the tarsus*. You will want to position the foot flat against the wooden stand after you attach the leg to the left femur (83) to the sacrum (71).



- Join the right femur (74) to the right tibia (75).
- Join the right fibula (76) to the right tibia.
- Join the right tarsus (77) to the right tibia.
- Join the foot parts (78, 79, 80, 81, 82) together and then join that unit to the tarsus.



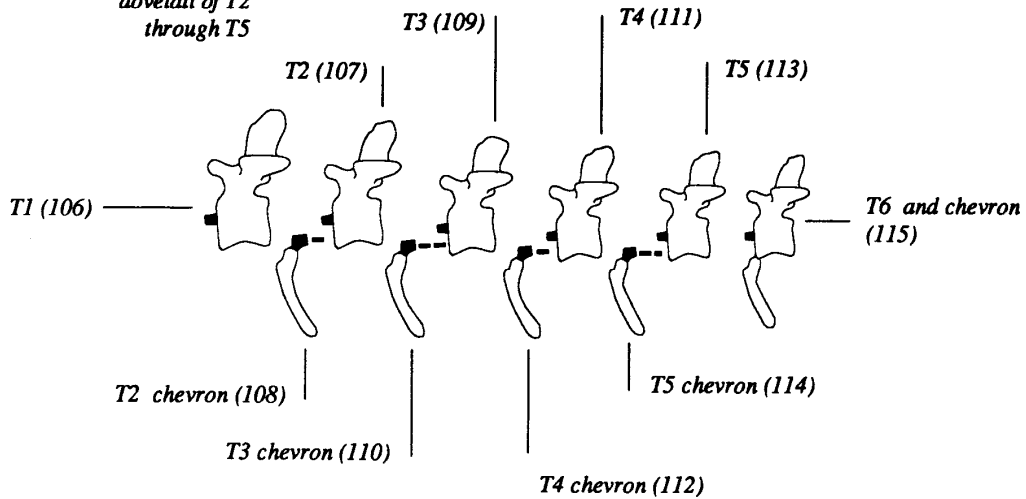
- Join the completed right and left legs to the right and left illia.



TAIL

- Starting with T2, join the chevrons to the caudal vertebrae (T1 does not have a chevron).

The dovetail of the chevrons fit into the anterior female dovetail of T2 through T5



- Join T1 (106) to the sacrum, then join T2 to T1, T3 to T2, etc. until the forty-one caudal vertebrae (107-150) are united together. The tail will not be straight; rather it will follow a curved path similar to the illustrations below. The vertebrae will give general guidance to the structure of the tail but care must be taken to create a natural flow from one vertebrae to the next.. The tail is now complete.

