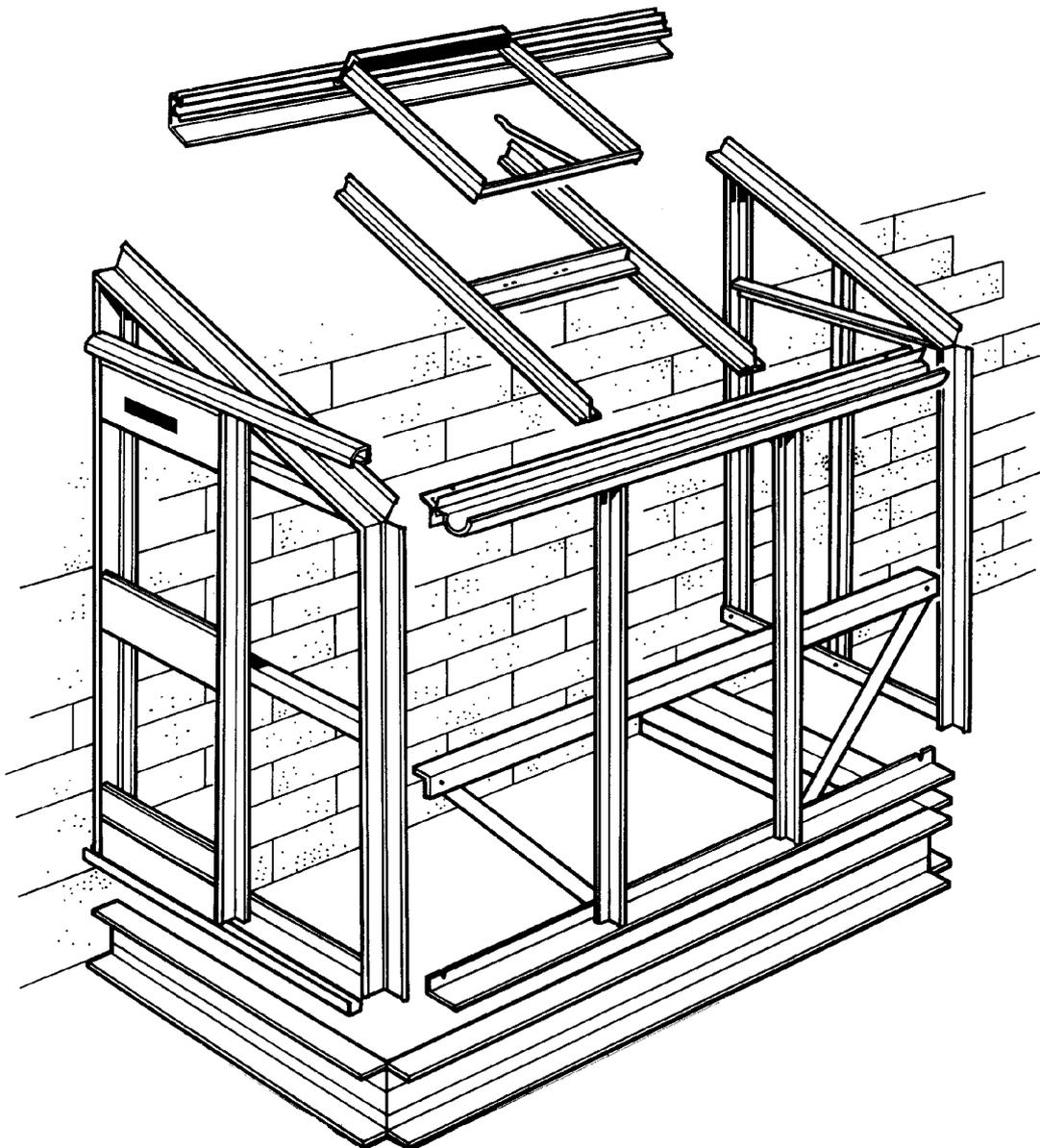




INSTRUCTIONS & ILLUSTRATIONS FOR THE
4'4" WIDE WINDSOR LEAN-TO



ELITE GREENHOUSES LTD

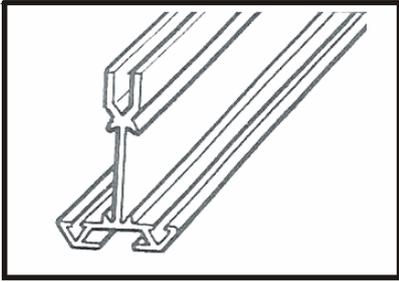
BENT SPUR ROAD, KEARSLEY, BOLTON BL4 8PD

TEL: 01204 791488 FAX: 01204 862412

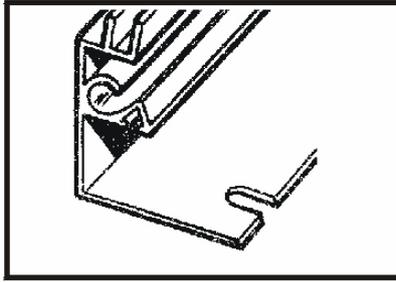
enquiries@elite-greenhouses.co.uk

www.elite-greenhouses.co.uk

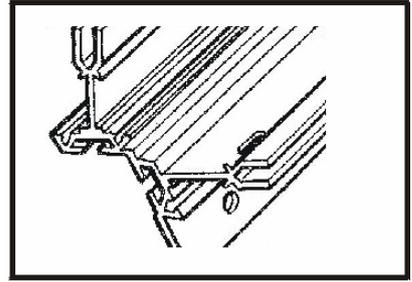
COMPONENT DRAWINGS (NOT TO SCALE)



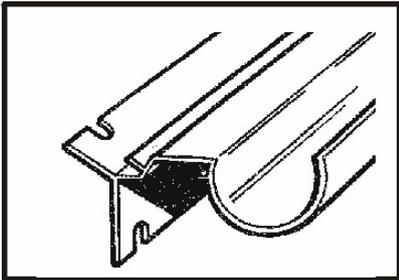
GLAZING BARS



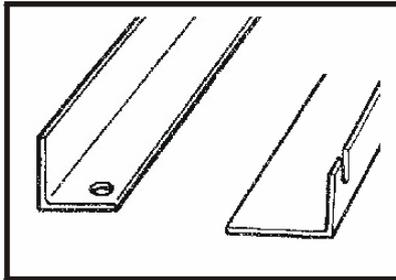
LEAN-TO RIDGE



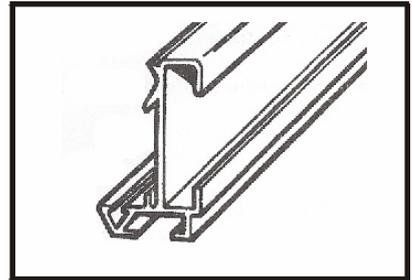
CORNER BAR



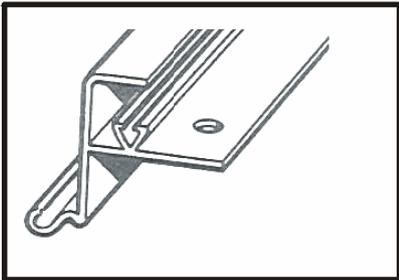
EAVES BAR/GUTTER



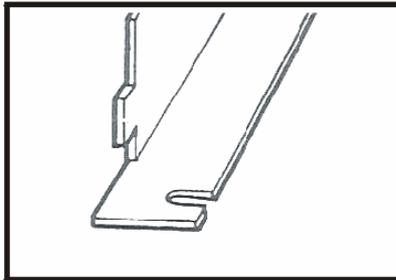
BRACING ANGLE & HORIZONTAL BRACE



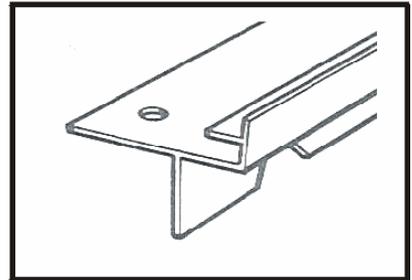
WALL BAR & DOUBLE DOOR POST



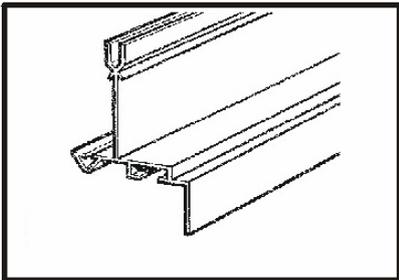
VENT TOP RAIL



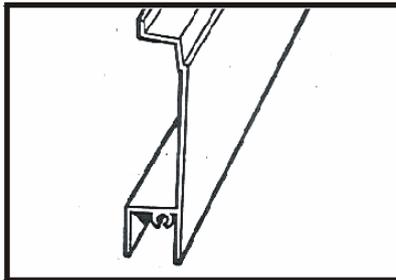
VENT SLAM BAR



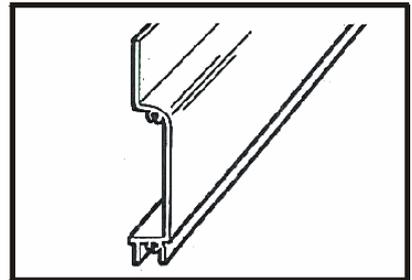
VENT BOTTOM RAIL



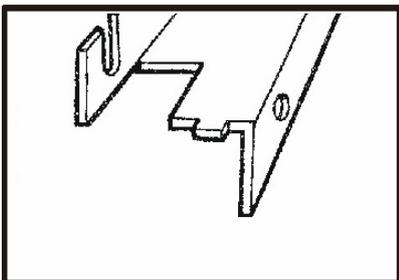
VENT SIDE RAIL



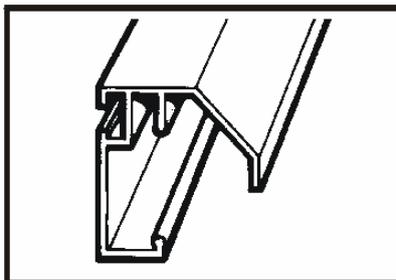
DOOR INFILL PANEL



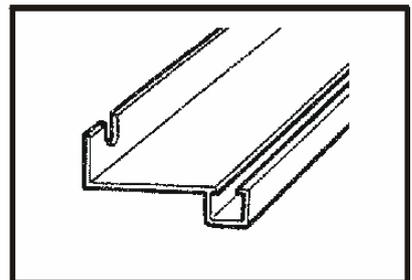
DOOR TOP/BOTTOM PANEL



DOOR TRACK SUPPORT

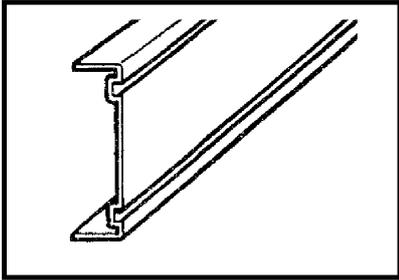


TOPDOOR TRACK

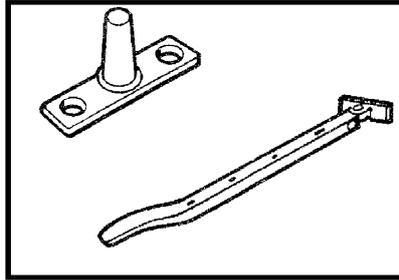


BOTTOM CILL

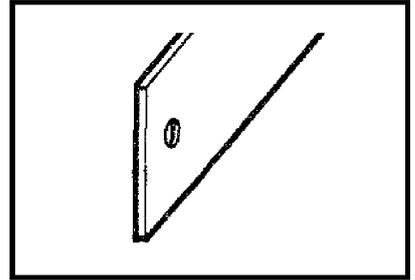
FITTINGS WITHIN THE KIT (NOT TO SCALE)



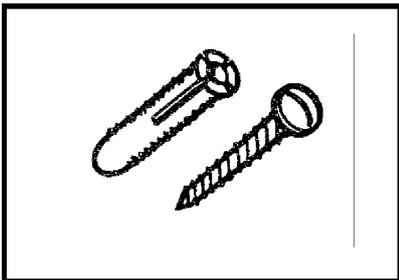
BASE (ALLOY)



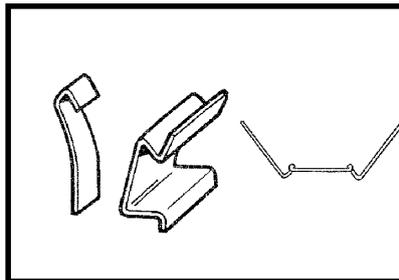
CASEMENT STAY + PINS



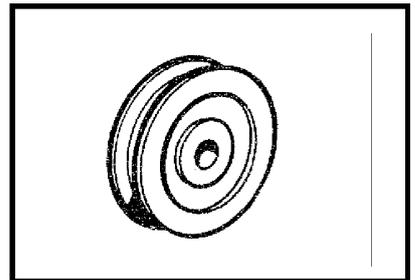
FLAT BAR



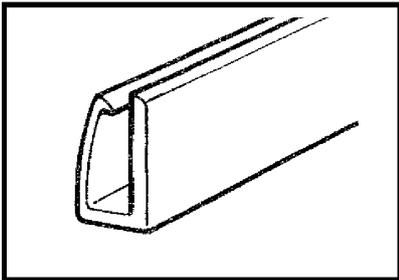
RAWL PLUGS & WOOD SCREW



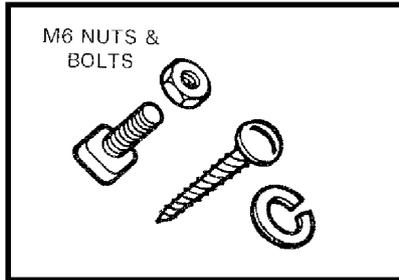
OVERLAP, SPRING + WIRE CLIPS



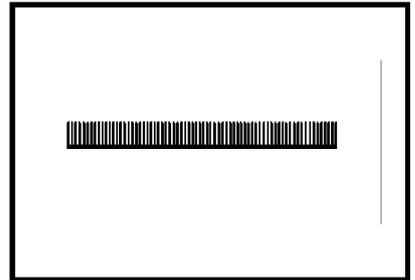
DOOR WHEEL



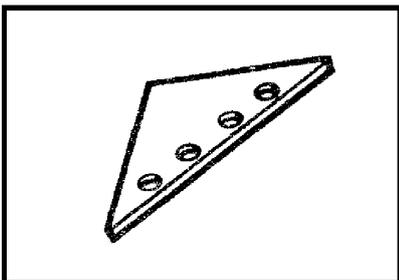
BLACK DOOR SKID



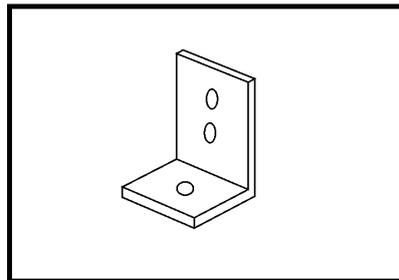
**M6 NUTS &
BOLTS**
SELF TAPPING SCREWS
SPRING WASHER



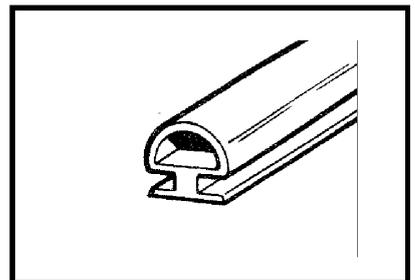
BRUSH DRAUGHT EXCLUDER



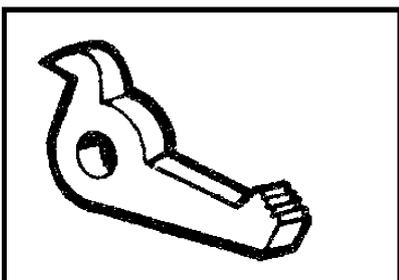
EAVE GUSSET PLATES



ANGLE BRACKET



NEOPRENE BEADING



SINGLE DOOR CATCH

PARTS LIST

			6 x 4	8 x 4	10 x 4	12 x 4
1	50' glazing beading		1	0	1	0
2	100' glazing beading		1	2	2	3
3	Eave gusset plate		2	2	2	2
4	Black draught excluder		2	2	2	2
5	Gutter/Eave	Taped together	1	1	1	1
6	Front cill		1	1	1	1
7	Heavy angle brace		1	1	1	1
8	Front glazing bars – marked front		2	3	4	5
9	Front diagonal angles		2	2	2	2
10	Ridge	Taped together	1	1	1	1
11	Roof glazing bars		2	3	4	5
12	Right hand end glazing bar	Taped together	1	1	1	1
13	Right hand end wall bar		1	1	1	1
14	Right hand end corner bars side/ roof		1/1	1/1	1/1	1/1
15	Left hand end glazing bar	Taped together	1	1	1	1
16	Left hand end wall bar		1	1	1	1
17	Left hand end corner bars side/ roof		1/1	1/1	1/1	1/1
18	Door end cill	Taped together	1	1	1	1
19	Door end horizontal bracing angle		1	1	1	1
20	Short bracing angles marked door end		1	1	1	1
21	Rear end cill	Taped together	1	1	1	1
22	Rear end horizontal bracing angle		1	1	1	1
23	Door glazing bars – marked door		2	2	2	2
24	Top door panel	Taped together and marked door	1	1	1	1
25	Bottom door panel		1	1	1	1
26	Door infill panels		2	2	2	2
27	Door track support		1	1	1	1
28	Door track		1	1	1	1
29	Vent (in packs)		1	1	1	1

The following items can be found in the bag of fittings or additional packages.

Skeleton gun, tube of silicone, rolls of foam seal, anchor brackets, stainless steel screws, M10 nuts and bolts, stainless steel clips, wire clip, overlap clips, casement stays, stay pins, M4 pins, nuts and bolts, door catch, short and long self tapping screws, spring washers, door skids, door wheels and fittings.

Glass

For both toughened glass and horticultural glass, please refer to the relevant glass plans towards the rear of this booklet.

HELPFUL HINTS

Please do take your time during construction and be sure to read all instructions carefully.

Ensure that your base is level and square and built to the precise measurements indicated on 'Base Preparation Section of this booklet. Also your base must be at 90° to the wall it leans against.

Do not attempt assembly of frame or glazing in high winds.

Please remember that if the lean-to is being situated over an entrance to a house or dwelling, 4mm safety glass to eave level **MUST** be used. Horticultural standard is not acceptable in that situation.

Do not place the structure in a vulnerable situation. Children should not play near glass greenhouses. Remember glass is fragile so please handle with care at all times, using gloves and eye protection where appropriate. (Failure to observe these rules could result in personal injury or property damage).

This plan covers the entire range of Windsor lean-to's and their options such as door positions. The following detailed instructions will attempt to explain the construction procedures you need to install your particular building.

Take your time, follow the plan and observe the safety code.

If you have a painted model you will find a number of small holes at the top/bottom of some of the bars. These are jig holes for the painting process and form no part of the construction.

SAFETY

- When using electrical equipment outside always use a circuit breaker.
- Do not attempt to construct frame or glazing of lean-to in high winds.
- Glass is fragile, so safety gloves and eye protection should be worn when glazing any part of the structure.
- Please remember that if lean-to is to be situated over an entrance to a house or dwelling, safety glass must be used to eave level. Horticultural glass is unacceptable in this situation.
- Do not place structure in vulnerable situation. Children should not play near glass greenhouses.

Failure to observe these rules could result in personal injury or property damage.

REQUIRED TOOLS

1. 10mm spanner
2. Heavy duty flat screwdriver
3. Pair of pliers
4. Electric drill/circuit breaker
5. Masonry bits
6. Hacksaw
7. Sharp cutting tool
8. Metal file
9. Step Ladders

Please ensure you have suitable experience/training to use the items above.

CONSTRUCTION OF THE FRAMEWORK AND GENERAL INTRODUCTION

The building is divided into a number of different frame assemblies:

1. Right hand gable end frame
2. Left hand gable end frame
3. Roof vent assembly
4. Front frame
5. Door frame
6. Louvre frame. Optional extra
7. Shelf installation. Optional extra
8. Roof assembly. This procedure is not done by constructing a frame like the rest of the units, but is put together in situ, one piece at a time. More detail on this procedure can be found on the page title GENERAL ASSEMBLY
9. Glazing – general comments thereon

The installation procedure should follow the above format and it is recommended that you complete each one fully before moving onto the next frame.

For the purposes of general assembly detail we have used the 6 x 4 Windsor as the basis for construction. If you have purchased another size, the principles of the job are identical.

BASE SIZE AND PREPARATION (for brick/concrete bases only)

Windsor 4	Length (Dimension B)	Width (Dimension A)	√ Square	External ridge height
6 x 4 model	1.960m	1.297m	2.3503m	2.007m
8 x 4 model	2.578m	1.297m	2.8859m	2.007m
10 x 4 model	3.196m	1.297m	3.4492m	2.007m
12 x 4 model	3.814m	1.297m	4.0285m	2.007m

All bases, of any material must be level and square and built to the exact outside measurements

If laying bricks on a flagged floor, usually additional footings will not be required but it is best to check before hand.

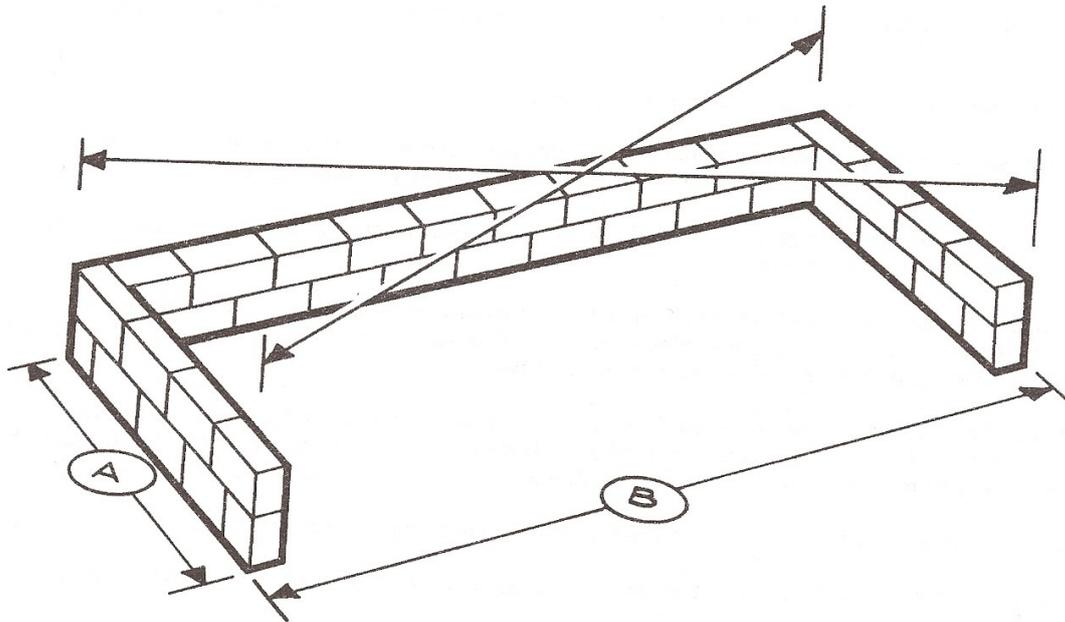
If you are putting a concrete footing down it is wise to dig a trench around the perimeter removing all top soil, insert some hard-core (broken brick etc.) into the trench and back fill with concrete. You can now begin to lay the required course of brick, remembering to insert a damp-proof strip one or two courses above the ground level.

ELITE GREENHOUSES BASE DIMENSIONS

For brick, Block, Concrete or Timber

The dimensions given on the previous page must be used to locate the position of your lean-to greenhouse brick base.

If a brick, concrete or timber base is to be laid, construct it as shown ensuring that dimensions A & B are not **exceeded** as these are the precise outside measurements enabling the cill to overhang the edges. ENSURE that the base is square by measuring across the corners, only when equal is it square. Check the level using a builders spirit level.



If you have a patio floor you can lay the bricks directly on top of the flags provided they have a proper foundation. If you don't have hard standing underneath you may need to lift the outer flags and insert some firmer material such as aggregate before laying the bricks.

Please proceed along the following format.

Before commencing the detailed frame assemblies, you must decide which gable is going to be the door end, and which is to be fixed end. (**Key Point**). For the purposes of this plan, we have made the left hand gable the door end, but it can just as easily be the right hand end, so please read the instructions with the alternative in mind (**Key Point**).

If you have bought an alloy base to go with the house, start with this.

1. Lay the three base sections on level ground in a rectangle with the bolt channels facing inward and the flanges facing outwards, remembering to put the **wider** of the two flanges towards the floor. **(Key Point)**.
 2. Slide a bolt into each end of the bolt channels in each section (i.e 2 bolts at each end of each base piece).
 3. The base leg/corner bracket is fitted to each corner in such a way that part of the base leg will be buried underground (if fitted to soft ground) see picture on page 9.
 4. If you plan to erect the greenhouse on a patio or flagged area, mark and cut off the section of base leg that would have gone into the ground. Now you need to insert some extra bolts in the lower channel of the base (generally 1 every 2').
 5. Attach the base leg/corner bracket to the first corner by pushing the bolts through the holes in the base leg angle and securing with a nut. You do not need to fasten them tightly at this stage.
 6. Repeat this with the other corner.
 7. Ensure that the frame is square by measuring from corner to corner. Only when the diagonals are equal is the frame square. Tighten all the nuts. **(Key Point)**.
 8. Get someone to help you carry the base frame to place where you want the greenhouse to be situated.
 9. a) If you are erecting on soil, mark where the corners will be and follow points 10 to 12 below.
b) If you are putting on a patio or flagged area, jump to point 13*.
 10. Lift the base frame clear of the site and dig a hole at each corner, sufficient in depth to take the base leg angles.
 11. Re-position the base in the desired position, ensure that it is still square by checking the diagonals again and then that it is level using a spirit level. When you are sure that both are correct give the nuts a final tightening.
- N.B.** It is advisable to concrete the corner stakes after you have erected the greenhouse. If you do it before and are slightly out of square you cannot make any adjustments. **(Key Point)**.
12. Skip the next points and go to greenhouse assembly.
 13. *You must ensure that your patio is level. If it is not, you must level it up first or the greenhouse will not be level and will not glaze properly.
 14. Attach some angle brackets along the length and width of the base as indicated on the next page. **(Key Point)**. Angle brackets can be found in the greenhouse fitting pack (not with the base).
 15. Check that the base is still square by measuring the diagonals again, and level by using a spirit level.
 16. Space the bolts in the sides and ends at equal distance and place the angle brackets on them, securing them with a nut.



BEWARE OF
SHARP EDGES!

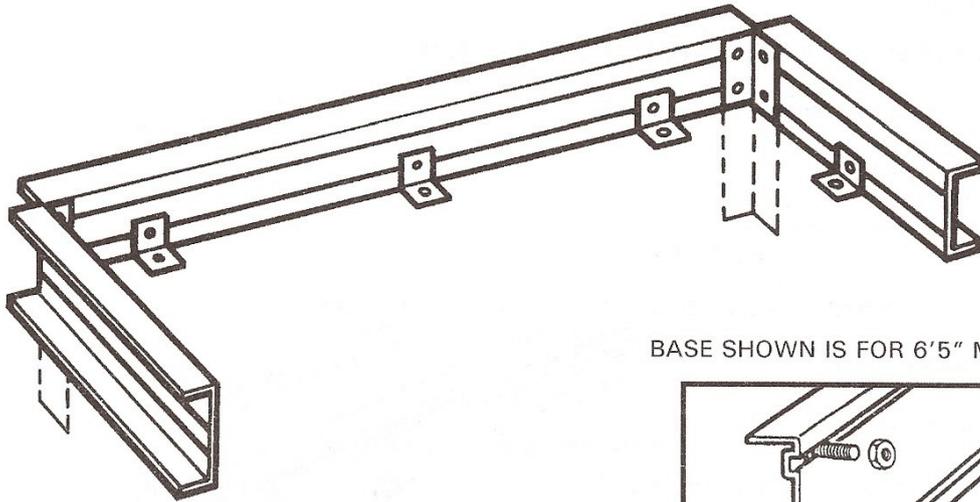
17. Do not anchor down at this stage **(Key Point)**.

Beware of sharp edges on the corners. Do not over tighten nuts as the bolts could snap.

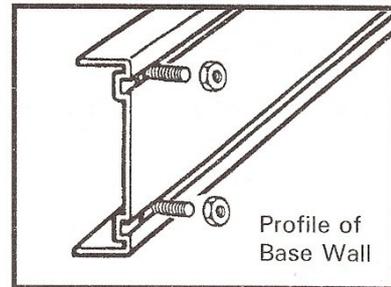
ALLOY BASE ASSEMBLY

Alloy base (when fitted to concrete or patio floor).

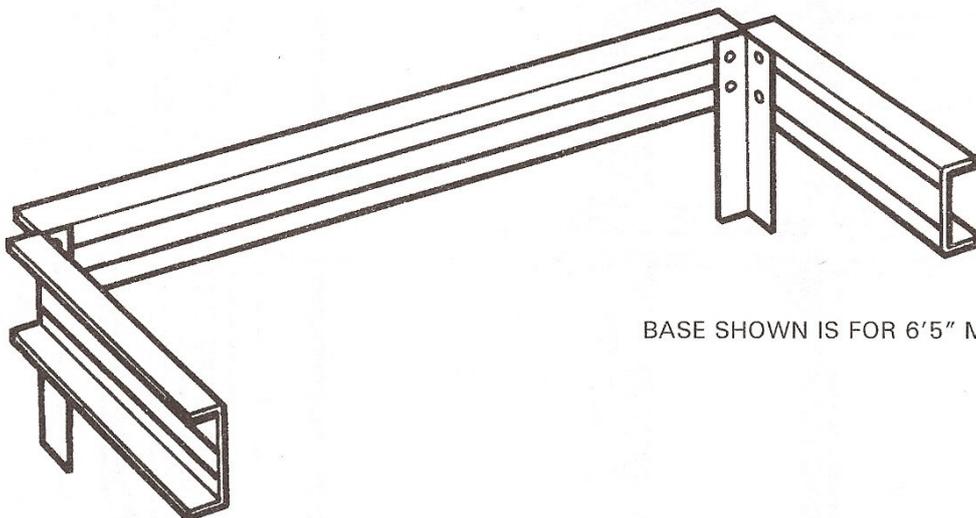
N.B. The holes in the top flange of the base are drilled when the greenhouse has been erected and put onto the base. The dotted line on the corner bracket show the part to be cut off.



BASE SHOWN IS FOR 6'5" MODEL



Alloy base (when fitted to soil floor).



BASE SHOWN IS FOR 6'5" MODEL

Having assembled the base, proceed to the greenhouse construction.

N.B. The wider of the two small flanges goes towards the floor.

RIGHT HAND GABLE END FRAME

From the main box you require:

1. Pack of corner bars and glazing bars marked RIGHT HAND.
2. Pack of one angle and cill marked REAR END.
3. FITTING
 - a) gusset plate
 - b) coil of glazing beading
 - c) nuts and bolts

N.B. For the purpose of this plan, this gable is the fixed end one. But if you want it to be the door gable the horizontal brace is replaced by 2 short braces and a door track support. Please read page 12 in conjunction with this page.

Procedure:

1. Split the tape holding the corner bars and glazing bars together and slide the beading into the two outer grooves (beading channel) of the two corner bars and glazing bars.

2. One of the bars (the longer one) is the wall bar and has only one groove for glazing beading. The other is a 'T' shaped glazing bar and has two grooves for glazing beading.

3. Next you must identify the corner bars into roof and side ones.

a) The roof is 1308mm long and has 3 holes in the flange and is mitred at both ends.

b) The side is 1584mm long and has one hole in the flange and is mitred at only one end.

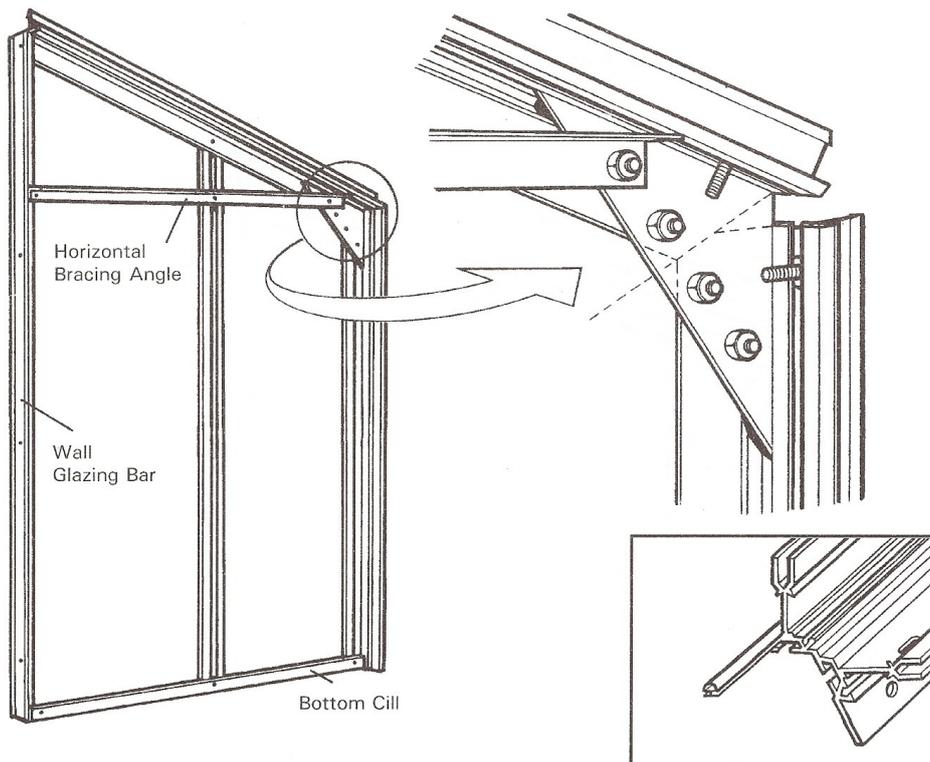
Having determined which is the roof and side, you must now establish which way round they go for assembly purposes.

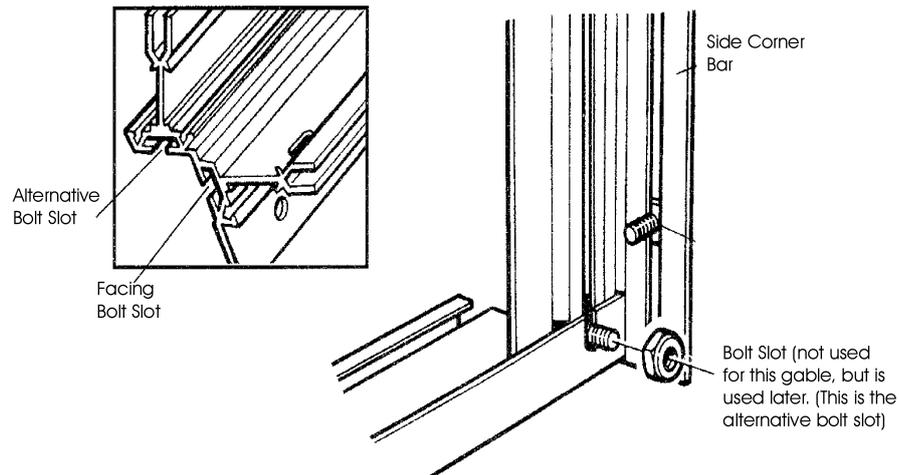
c) SIDE CORNER BAR

The end that is mitred and with one hole in the flange near to the mitre is the top of the side corner bar, the bolt slots are on the inside for assembly purposes only.

d) ROOF CORNER BAR

There is a mitre at both ends and there are three holes in the flange, the smaller of the two mitres is at the top i.e. nearest the ridge. The other end with the most severe mitre will go to the eave to marry up with the side corner bar.





4. You must now connect the two corner bars together with the use of the gusset plate.
 - a) First slide a bolt into each end of corner bars into the alternative bolt-slot, put an extra bolt into the side corner bar, making 3 in total, put a nut on and finger tip tighten leaving them approximately 3 inches from each end. These will be used later in the general assembly. **(Key Point)**. If a vent is to be fitted to the end bay of the greenhouse, you must add an additional bolt into the alternative bolt channel of the roof corner bar concerned.
 - b) Lay the two corner bars on the ground as though you were on the inside i.e. with the facing bolt slot uppermost **(Key Point)**. Starting with the side corner bar slide a bolt into the facing bolt slot at the top of the bar, put the gusset plate over the bolt utilising the bottom hole in the plate. Slide the plate left and right, until the next hole i.e. 2nd from the bottom in the gusset plate, lines up with the hole in the flange of the side corner bar.
 - c) Put the nuts on and finger tip tighten. Next insert a bolt into the facing bolt slot at the bottom of the roof corner bar, put the gusset plate over the bolt utilising the top bolt hole. **DO NOT** put the nut on at this stage **(Key Point)**. Slide the gusset plate left or right until the last hole not used i.e. 2nd hole from top (3rd hole from bottom) lines up with the hole in the flange of the roof corner bar. Put a nut on this bolt and finger tip tighten.

5. Next, attach the bottom cill to the bottom of the corner bar by inserting a bolt into the facing bolt slot, line up the slotted hole at the end of the cill with the facing bolt slot, slide the bolt downward, and into the slot, put a nut on and finger tip tighten.

6. Next, attach the wall bar and middle glazing bar to the cill, having firstly threaded the glazing beading into the channels on both bars **(Key Point)**. Starting with the wall bar, insert one bolt into the bolt slot, offer the bar to the slotted hole in the end of the cill, move the bolt downwards into the slotted hole, put a nut on and finger tip tighten.

7. The middle glazing bar can now be fitted to the bottom cill. Insert a bolt into the bolt slot and push the bolt through the middle hole in the bottom cill, put a nut on and finger tip tighten.

8. These two bars can now be fitted to the flange of the roof corner bar. Insert **TWO** bolts into the top of each bar and position the last one near the end of each bar. Insert the bolts through the holes in the flange of the corner bar, put nuts on and finger tip tighten.

9. Next the horizontal bracing angle can be fitted. The angle can be fitted either upwards or downwards. Place one end onto the top bolt of the gusset plate. Put a nut on and finger tip tighten. Now, utilising the extra bolt you inserted in 8) above. Slide the bolts down to the angle and insert them through the holes at the end and middle, put nuts on and finger tip tighten. **N.B.** The “extra” hole in the middle of the angle means that the angle can go at either end, thus making either end the fixed gable. Please note if this end is to be your door end you do not fit this brace, you fit the door

end ones.

10. This gable is almost complete, so now we must tighten all nuts with a spanner. Before tightening, you must ensure;

- a) The corner joint behind the eave gusset plate is tight i.e. corner bars are touching behind the gusset plate. Please note carefully from the diagram the precise relationship the two corner bars have at the eave.
- b) The glazing bars are pushed right down into the angle of the cill.
- c) The glazing bars are pushed right up into the corner bar.
- d) The horizontal bracing angle is on top bolt of the eave gusset plate and that it is parallel to the bottom cill. (**Key Point**).

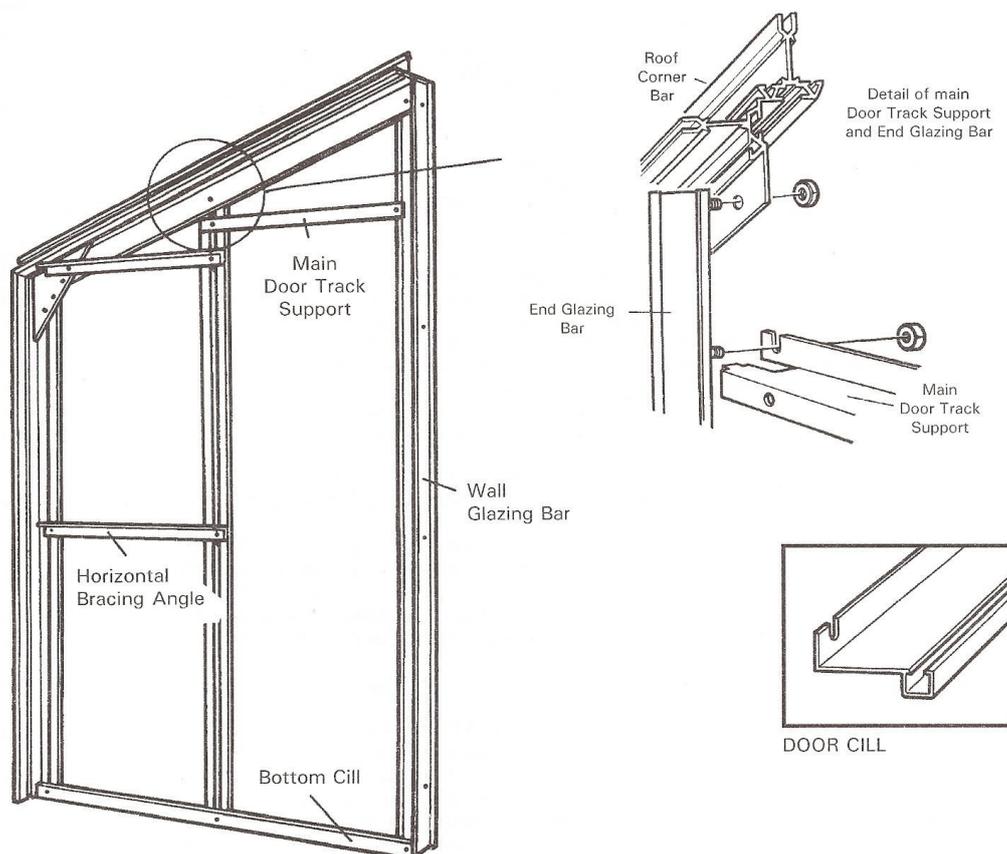
When tightening the alloy nuts and bolts do not over do it. Normally, finger tip tighten then a 1/2" turn with a spanner is enough. The fixed end is now complete.

LEFT HAND GABLE

Please note that for the purpose of this plan, we have made the left hand gable the door gable, but it could just as easily be the right hand gable end, so please read this section and the proceeding one with the alternative in mind.

From the main box you will require:

1. Pack of corner bars, glazing bars and cill marked left hand
2. Pair of horizontal angles, marked door end
3. Main door track support (taped up with the door panels)
4. Fittings a) gusset plate
b) coil of glazing beading
c) nuts and bolts



PROCEDURE

1. The construction of this gable is identical to the right hand gable up to and including No.8, with one exception, you must insert 4 extra bolts into the top of the middle glazing bar NOT TWO, and an extra bolt into the facing bolt channel of the side corner bar (**Key Point**).

2. The long horizontal brace on the fixed end is replaced by one angle and one main door track support and in addition a lower horizontal bracing angle. (The main door track support is taped up with the door panels). The shorter of the two angles bolts onto the upper bolt of the gusset plate and travels horizontally along to the middle bar, where you secure the angle.

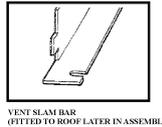
The main door track support will bolt onto the middle glazing bar approx. 4" above the angle you have just fixed. When you have attached the middle bar to the corner bar, the main door track support is fitted just underneath the fixing point. **N.B.** the end slotted holes must face upwards, like a letter 'U'. (**Key Point**). See diagram.

3. The gable is almost complete, all that is needed now is to tighten all the nuts remembering not to over tighten them. (**Key Point**).

N.B. DO NOT fit the door at this stage, this will be done later at general assembly.

ROOF VENT ASSEMBLY

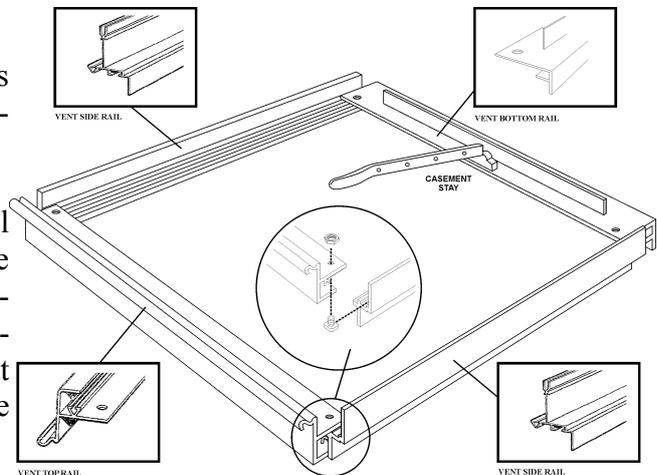
The roof vent pack has 5 pieces of aluminium and from the main box of fittings you require 6' of glazing beading, 4 nuts and bolts, 2 casement stay pins, 1 casement stay and 6 M4 stainless steel nuts and bolts.



PROCEDURE

1. Identify the slam bar and attach the 2 stay pins to the outer side of the angles using the M4 stainless steel nuts and bolts.

2. Lay the 4 edge pieces of the vent on a level surface as though you were on the inside of the vent (with the bolt slots of the side bars uppermost and the 'V' slots of the bottom rail uppermost. The top rail is arranged in such a way that the squared off end is to the bottom and the hooked hinge uppermost).



3. Slide the glazing beading into the slots in the side and top rails and trim to suit.

4. Insert a bolt into each end of the side rail bolt slots, put these bolts through the holes in the top and bottom rails, add nuts and lightly tighten. Check that all joints are secure and that the vent is square, then tighten up the nuts.

5. Fit the casement stay using the M4 stainless steel nuts and bolts, putting the bolts through the holes in the saddle of the stay and through the 2 elongated holes in the bottom rail. Hold the nuts in place and tighten the bolts with a screwdriver. Both the casement stay and the two stay pins can be adjusted later to effect good fitting.

Do the same with the other vents.

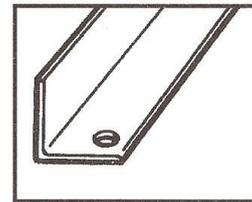
FRONT FRAME

In the pack marked 'front bars' there are 7 pieces of alloy for a 6 x 4 Windsor.

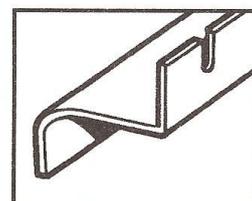
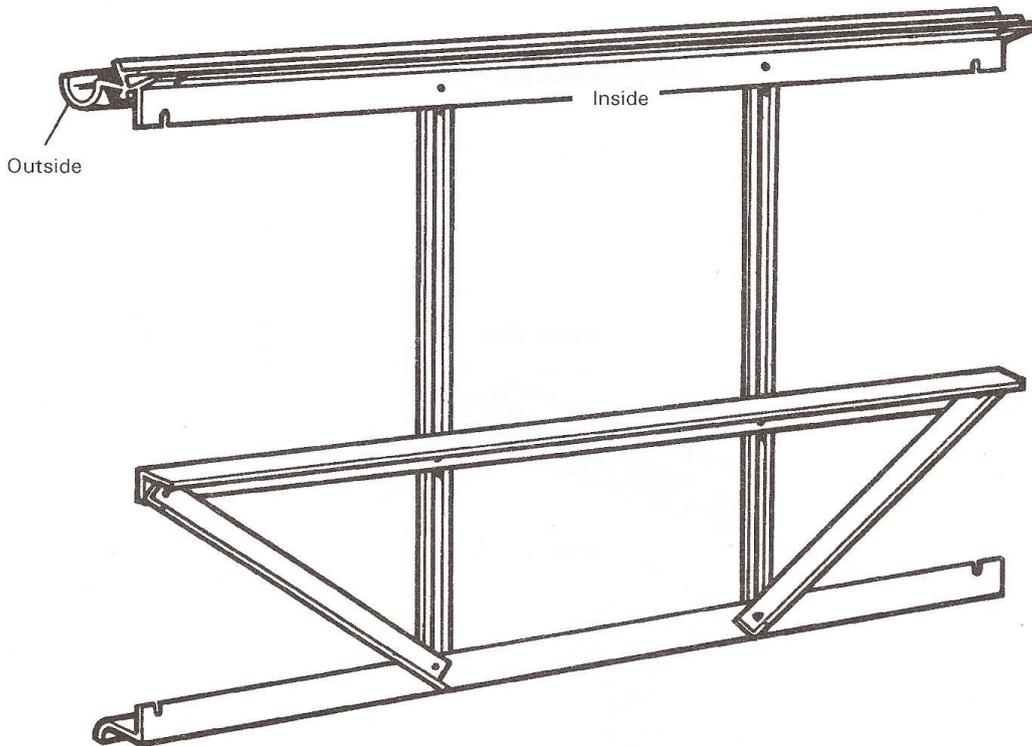
1. Eave/gutter bar
2. Cill
3. 2 glazing bars
4. 2 diagonal braces
5. 1 horizontal angle brace

You will require from the main box and bag of fittings:

1. 6 nuts and bolts
2. 20ft glazing beading



BRACING
ANGLE

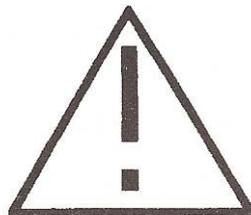
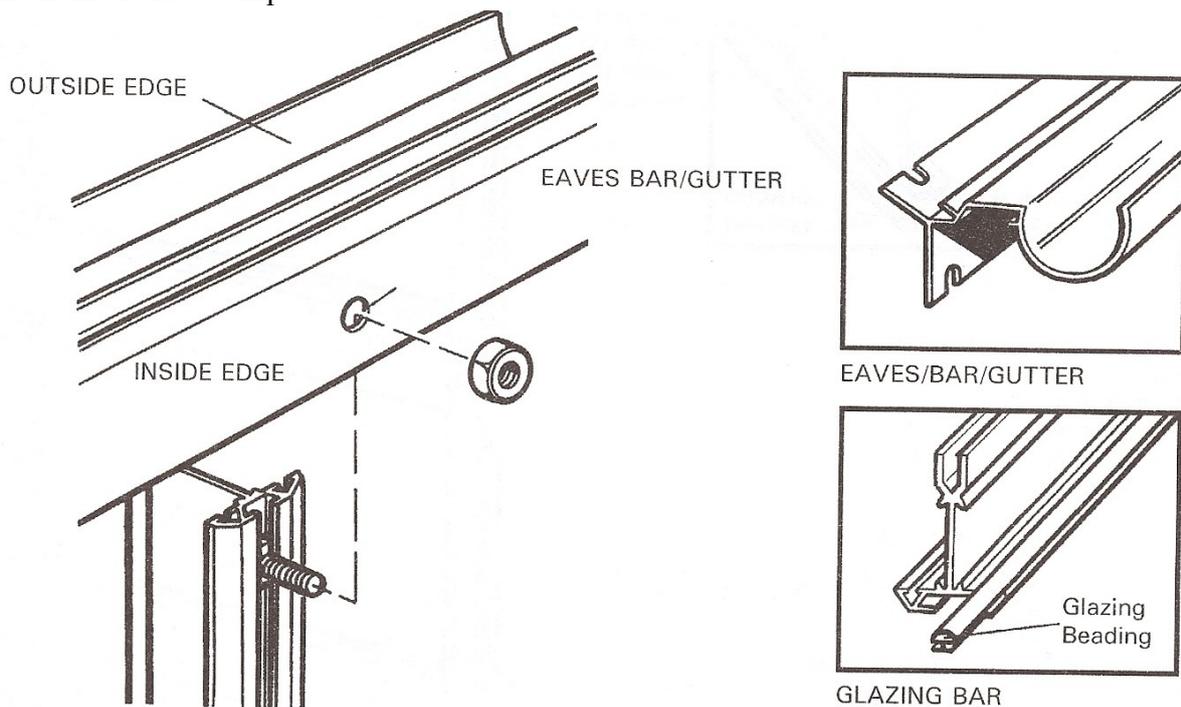


FRONT CILL

Procedure:

1. Lay out the component parts on a flat surface, with the inside of the bars (i.e. the bolt slot) uppermost, the gutter and cill are facing the ground. **(Key Point)**.
2. Thread the glazing beading into the two glazing bars, utilising both beading and grooves.
3. Insert 3 bolts into each glazing bar attach the gutter/eave to the glazing bar as illustrated below.
4. The cill will bolt to the bottom of the glazing bar in a similar manner. Before securing the nut onto the bottom bolt, place the diagonal braces over the bolt. This diagonal bracing angle must be arranged so that the inside of the angles are facing each other. **(Key Point)**.
5. Attach the horizontal angle brace (utilising the 2nd bolt that was inserted and located in the middle – see no. 3 above) to the middle of the glazing bars, ensuring that they are parallel to the eave/gutter and cill. Do not attach the horizontal angle and diagonal angles together at this stage.
6. Ensure that all joints are tight and the frame is square before tightening the nuts.

Front frame is now complete.



**BEWARE OF
SHARP EDGES!**

DOOR FRAME ASSEMBLY

Components consist of:

2 door glazing bars

2 infill panels

2 top and bottom door panels

From the main bag of fittings you require

2 door wheels

1 clip on nylon door skid

2 lengths of black brush draught excluder + carrier

Door catch, self tapping screws and spring washers.

1. Place the two side door glazing bars on a level surface roughly two feet apart with the bolt slots facing **downwards**. The top of each side door glazing bar has two screw holes in it, the bottom has three. Insert the glazing beading into the inside of both bars. **(Key Point)**.

2. Place the top, bottom and two infill panels in position as shown by the position of the screw holes in the side pieces of the panels. The top panel has the greenhouse name on it and two holes for the wheels. The bottom panel has the edge for the door skids to fit on (this may already be done for you). The lower infill panel locks on to the bottom panel.

3. Fix the door together by screwing through the side door glazing bars into the screw eyes in the door top, bottom and infill panels with the self-tapping screws. **DO NOT** fix the top left hand side screw yet. The screws will go in more easily and without danger of trying to go crooked if you can put a small amount of grease on the panel before assembling the doors. Alternatively, you could insert the screws into the screw eyes of the door panels before assembling the doors, this would have the effect of pre-self tapping the panels prior to assembly making assembly easier.

4. Fix the top left hand side with the longer screw provided (if the door is on the right hand gable, it is the top right hand that has the long screw). Put the screw through the door catch so that the serrated part is facing outwards and upwards. Next slip two spring washers on to the screw, and then fix the screw through the side of the door and into the top panel. **(Key Point)**.

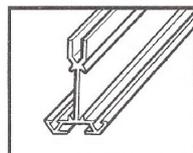
5. Make sure all the angles are square and tighten all screws.

6. Fix each door wheel into position by pushing the bolt provided through the centre of the wheel and then through the hole in the top door panel from underneath (i.e. from the inside of the door). Put the washer over the bolt and secure with the nut provided, tightening until there is no movement on the bolt. The nuts are lock-nuts and are harder to put on than normal nuts in general assembly. The wheel will revolve freely because it has ball bearings in it. **(Key Point)**. The wheels have a protruding collar or washer on one side, this collar must go against the alloy flange of the top panel (on the inside).

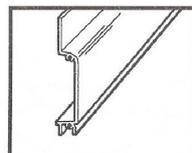
7. Slip the nylon door skid on the end of the bottom panel. (This may already be done prior to delivery).

8. Turn the door over and insert the black brush draught excluders in the groove (bolt slot) in each side door glazing bar. Push up to the top of the door and trim off surplus at the bottom. Insert a nut and bolt at the bottom of each door post so that the brush will not slip down when the door is in its upright position.

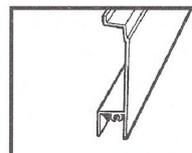
9. Do not fit the door at this stage, see later page for this detail.



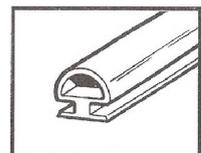
END GLAZING BARS AND DOOR POSTS



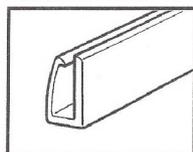
DOOR TOP PANEL



DOOR INFILL PANEL



GLAZING BEADING



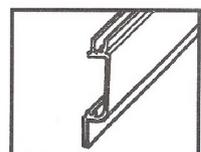
BLACK DOOR SKID



BLACK DRAUGHT EXCLUDER

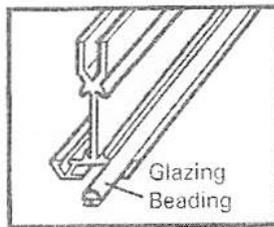
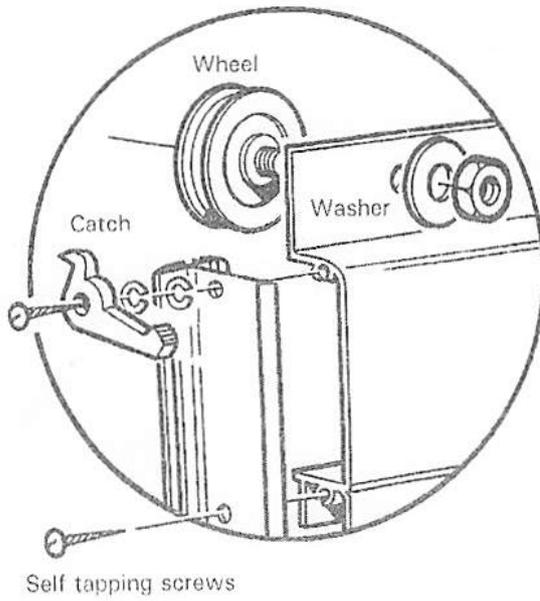


BEWARE OF SHARP EDGES!

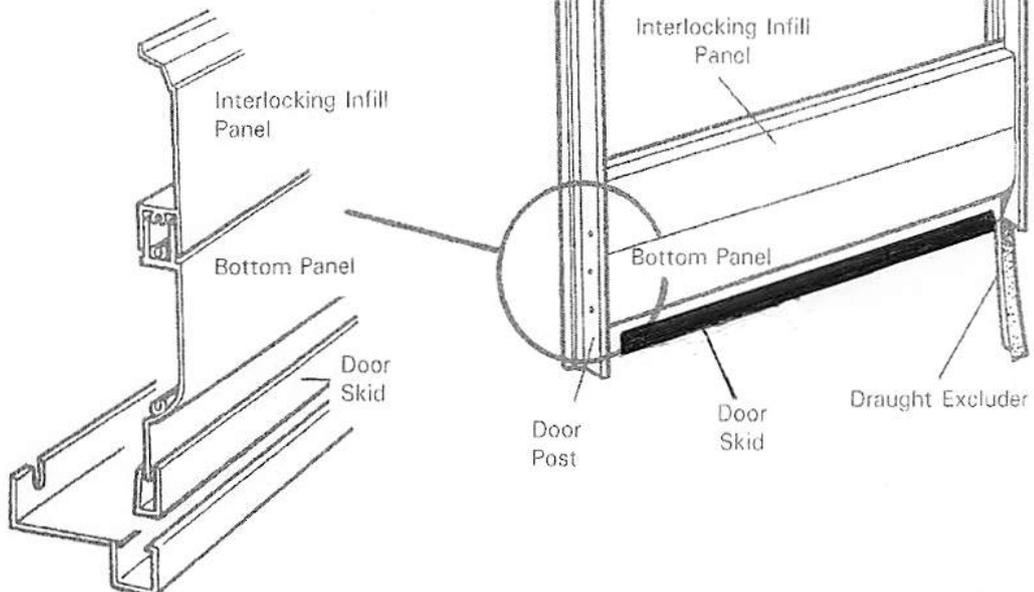


DOOR BOTTOM PANEL

DOOR FRAME ASSEMBLY



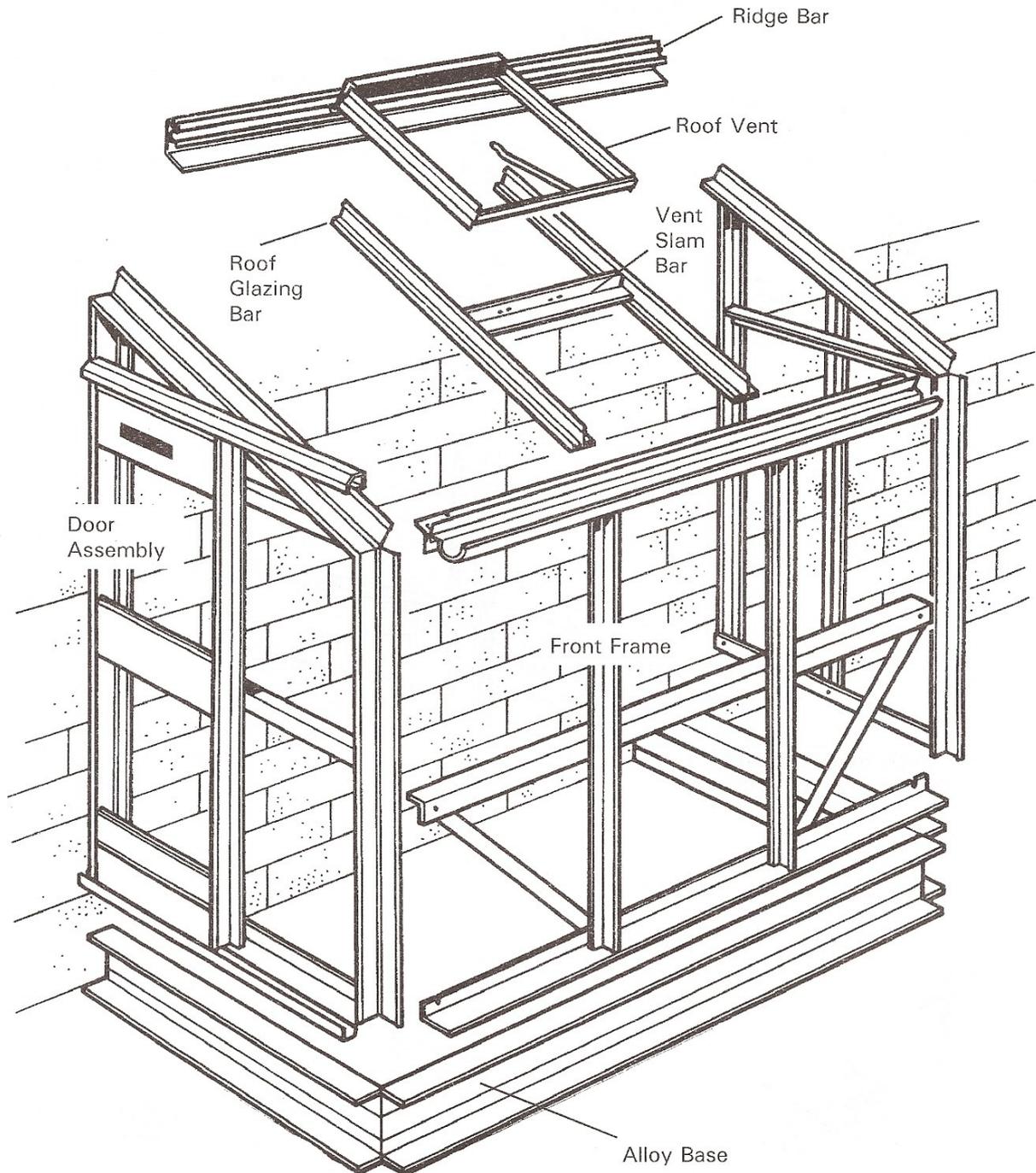
The black draught excluder is 69" long and will require trimming to length.
The interlocking infill panel and the infill panel are identical.



ASSEMBLY OF GREENHOUSE UNIT

These five frames are now completed, and ready for assembling into the completed unit. Please follow the next steps carefully and observe all safety precautions.

An extra pair of willing hands would be useful at this stage.



A Attach right and left hand gables to front frame.

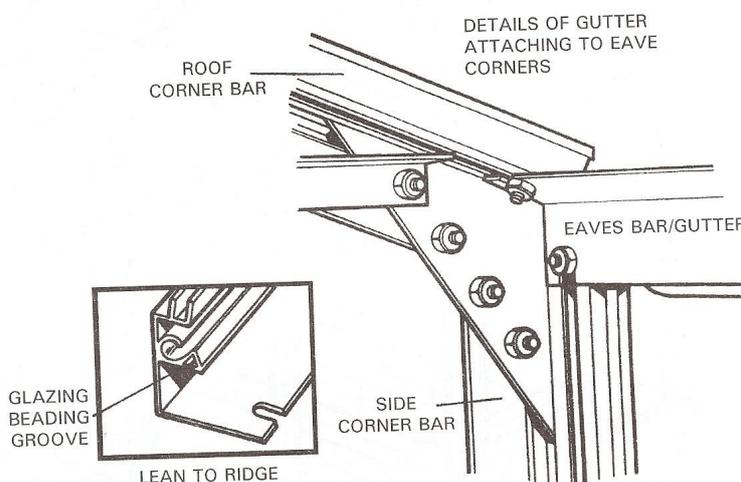
1. Stand the right hand end frame and the front up so that they meet at the right front corner. Push the gutter/eave bar into the small gap between the roof and side corner bars so that the slotted holes at the end of the eave flanges line up with the bolt slot in the corner bar. The gutter is OUTSIDE the end frame and the two flanges that form the angle of the roof and side are INSIDE and tight up against the bolt slots of the roof and side corner bars. **(Key Point)**.

The extra bolts inserted into the alternative bolt slot of the corner bar during gable end assembly can now be slid into the slots in the eave bar to secure the corner.

2. The bottom cill attaches to the inside of the corner bar. The bolt placed in the bolt slot at gable end assembly will slide down into the slotted hole at the end of the cill.

3. Do the same operation with the left hand gable and front frame.

4. Next, attach the horizontal front angle and two diagonal angles to the extra, third bolt inserted in the side corner bars.



B The next step is to put the roof on and this is done in 3 stages.

1 Attaching the ridge.

Insert the glazing beading into the 'V' groove, then in the same way the gutter slotted into the corner bars so too does the ridge. Slot the ridge on to the corner bar, ensuring that the flat side of the ridge is facing the wall. The bolts inserted in the roof corner bars at original frame assembly can now be slid into the slots at the end of the ridge. **(Key Point)**.

2 Securing the roof bars.

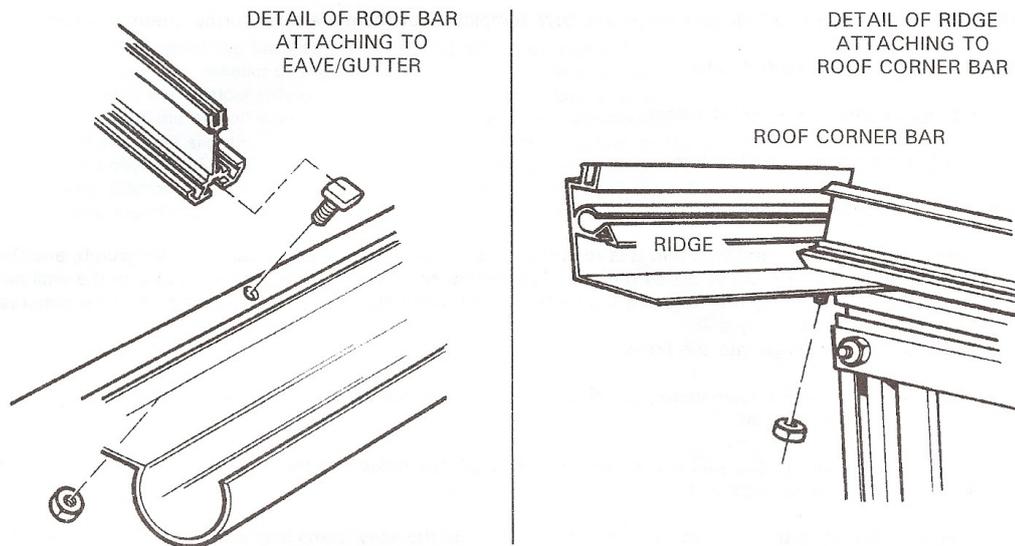
Firstly insert the glazing beading into both sides of the two glazing bars.

Put one bolt into one bar and place it through the hole in the flange on the ridge. Put a nut on and tighten up. Do the same with the other roof bar.

From the bottom of the roof bar insert 2 bolts into the bolt slot. Put the last bolt through the holes in the upper flange of the gutter, put a nut on and tighten up. The extra bolt will be used later to secure the vent slam bar. **(Key Point)**.

N.B. You must ensure that the roof bars are pushed up tight against the ridge and gutter flange before tightening the nuts.

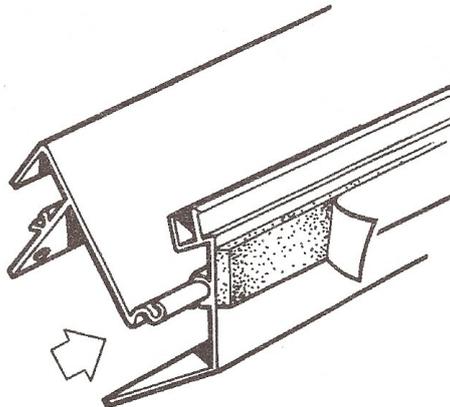
If your greenhouse is longer than 6' then the middle bolt on the roof bars is only inserted into bars that a vent will close on. A 4' long model (or where a vent is fitted to the end bay in the roof) needs an additional bolt in the roof corner bar where the vent closes.



3 Sliding the vent into position.

To prevent the vent sliding left/right during operation, insert a small bead of silicone in the hinge section of the ridge at the end of the vent top rail, once the vent is in the correct position (page 23).

The hinge is a groove 'C' joint, one 'C' is an integral part of the ridge, the other 'C' being a part of the vent top rail. (**Key Point**).



Firstly identify these two sections and then slide the vent onto the ridge from one end. With the vent in the open position, push the vent along the ridge until it covers the middle section. The two side rails of the vent will overlap the outside edges of the middle two roof bars.

The vent slam can now be fitted to the roof bars just underneath the bottom rail of the vent. The ends of the slam bar are cut out to go round the profile of the roof glazing bar. Secure the slam bar with the two bolts that were inserted when you fitted the bottom of the roof bars to the eave.

The slam bar is an unequal angle and it attaches to the roof with the longer part of the angle pointing skywards, i.e. toward the bottom rail of the vent, and the shorter part of the angle pointing to the gutter, i.e. the outside corner of the angle is facing inside the structure. (**Key Point**).

The correct position of the slam bar is immediately underneath the casement stay of the vent bottom rail and just above the two 'v' notches of the bottom rail i.e. the 'v' notches are below the slam bar.

The frame assemblies and final unit shape are now complete, but there are three further steps to take:

1. **Securing to the wall and base**
2. **Fitting the door track and the door**
3. **Glazing the completed structure**

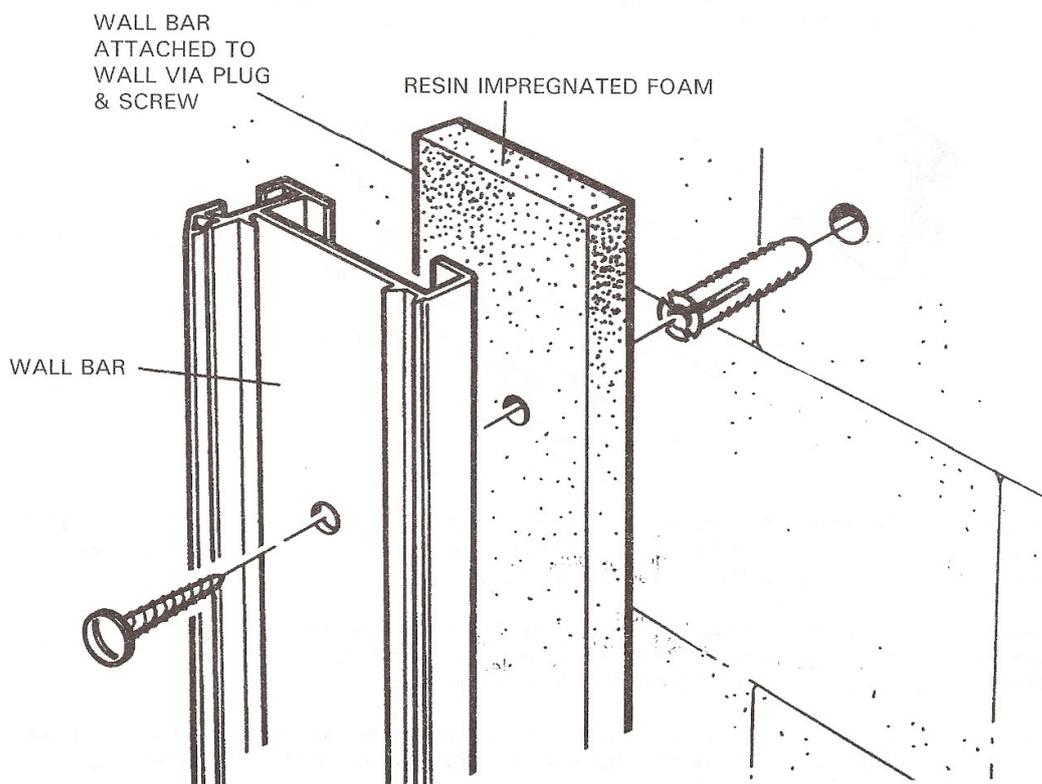
Securing to the wall and base

1. Offer the structure to the wall that it is to abut, ensuring that the verticals are plumb, and that the building is square and at 90° to the wall. **(Key Point)**. Mark the wall through the holes in the wall bar and ridge. Then remove the structure to another location and drill through into the wall at the pre-marked locations with a masonry drill. Insert the plastic plugs into the holes.
2. The coil of paper-back resin impregnated foam rubber can now be stuck on to the wall side of the ridge and wall bars. **(Key Point)**.
3. Offer the structure to the wall again and screw through the holes into the pre-located plastic plugs in the wall with the screws provided.

If your wall is not plumb, it may require packing between the alloy frame and wall. Tighten up the screw onto your spacer/packing piece until it is fully home.

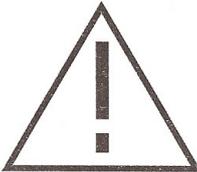
Do the same at each screw location utilising your spacer/packing piece where necessary.

4. Having successfully anchored the structure to the wall you can now secure it to its base. You must ensure that the structure is square and level and that your wall is plumb and the base (alloy or brick) is set at 90° to the wall it abuts. **(Key Point)**.

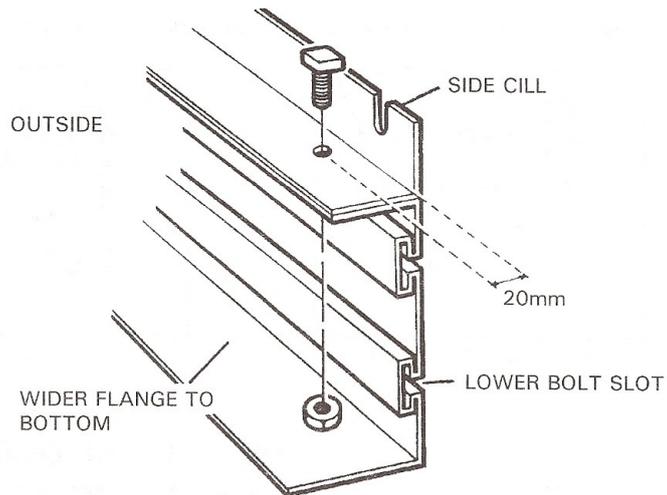


A Alloy base

Having assembled the base as previously described earlier in the booklet place the greenhouse on top of the upper base flange, i.e. smaller of the two flanges, position the greenhouse so that the back vertical edge of the cill is level with the vertical side of the base. Because our base is assembled by using bolt slots, it is not too difficult to adjust the overall length and width of the base by loosening the nuts holding the corners and moving the wall of the base slightly in or out to line up the precise position of the greenhouse. Having arrived at this position you need to drill through the cill and the upper flange of the base at the positions indicated. Drill 7mm holes, 20mm in from the corner of the cill/angles, put holes in the cill in the centre between the vertical glazing bars, insert a bolt from the top and put a nut on from the underside, tighten all nuts. (**Key Point**).



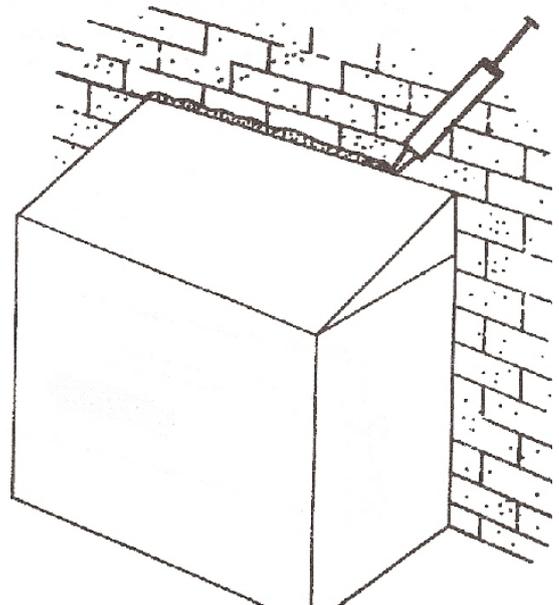
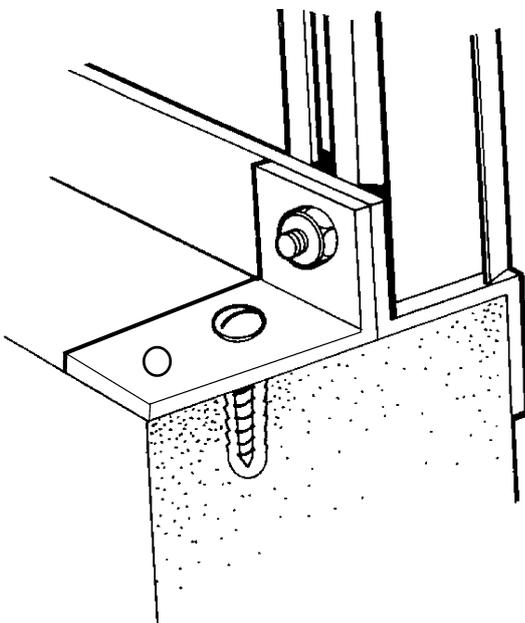
DANGER PLEASE USE
EXTREME CARE WHEN
USING AN ELECTRIC
DRILL



B Brick base

There are a number of small angle brackets in the pack of fittings, these are to be bolted onto the upright glazing bars at the point where the cills are attached to them. Before bolting them to the frame, first mark the brickwork where the holes are to be drilled. Drill the holes with a masonry bit and insert the plastic plug. Secure the small angle to the uprights and screw through the hole in the angle into the plug as illustrated.

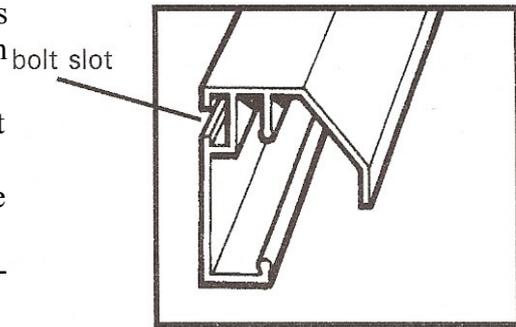
The structure is now ready for the final sealant. There is a tube of silicon and a skeleton gun in the pack which you can now use to seal between the wall bars and ridge and the brick wall, and either side of the vent to stop lateral movement.



FITTING THE DOOR TRACK

1. Holding the door track in the correct direction as illustrated, insert 4 bolts into the bolt slot i.e. the one on the back of the section. **(Key Point)**.

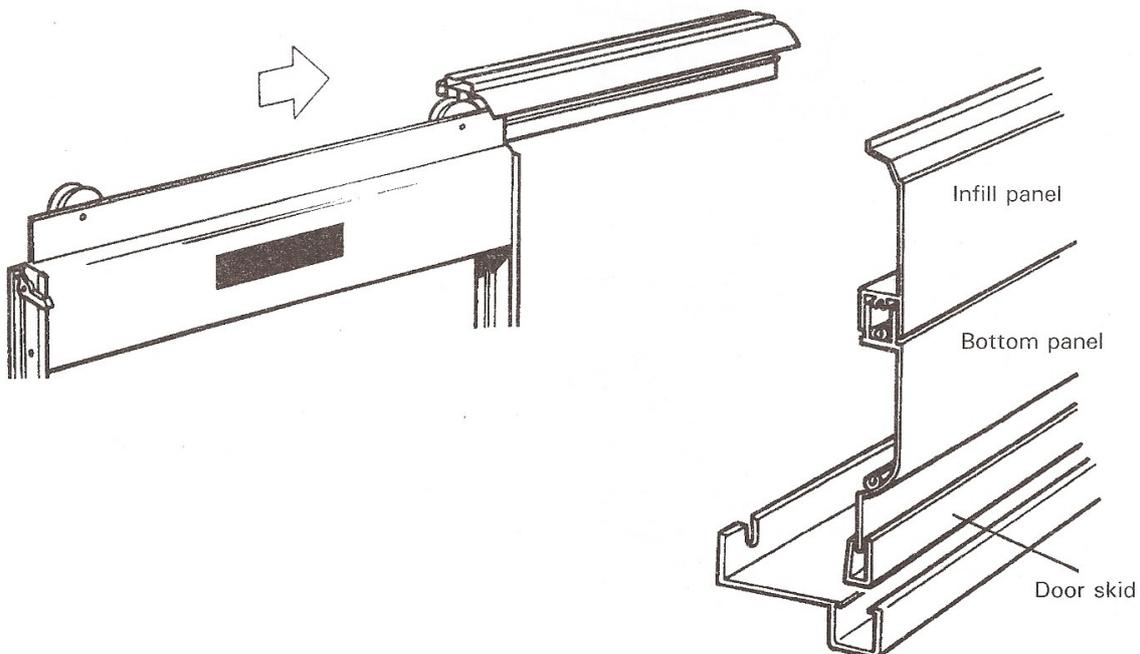
Offer the door track to the front of the door track support and insert 3 of the bolts into the three holes of the facing edge of the door track support. Put the nuts on but before tightening move the top door track left or right so that the end of the track (nearest to the wall bar) is just touching or overlapping it by 1mm. **(Key Point)**. You can now tighten the nuts. Do not try to adjust the height of the track or attach the other end of the frame at this point.



TOP DOOR TRACK

FITTING THE DOOR

- Hold the door frame assembly to the end of the top door track furthest away from the wall
- Align the door wheels with the guides in the upper track.
- Set the first door wheel into the track with the bottom of the door inside the cill section
- Slowly push the door towards the wall, making sure the nylon door skid remains in the bottom cill guide.
- Continue moving the door to the wall making sure the second wheel correctly enters the top door track. When the first black brush draught excluder butts up to the glazing bar, carefully ease the door past the bar by moving it inwards to allow the door to move past. **(Key Point)**.
- Make sure the nylon guide remains in the door guide at the bottom.
- The door can now be adjusted slightly up or down to afford proper unhindered movement by loosening the bolts holding the door track support and moving it up and down. **(Key Point)**.



FINISHING OFF

To prevent the door from sliding past its opening, you must fix 2 angle brackets to the door end assembly.

Insert a cropped head bolt into the bolt channel at the top of the centre glazing bar and fix an angle bracket as shown in the picture below.

The bracket must be fitted at the same height as the door panel so that, as the door moves left or right, the bracket prevents the door from moving too far along the top door track.

Repeat at the bottom of the door.

To facilitate smooth running of the door, fit 1 flat bar at the end of the top door track, at the eaves side of the bar.

The flat bar has 2 holes of different size.

Loosely fix the larger hole to the bolt channel at the back of the top door track using a short bolt and allow the flat bar to hang vertically down.

Move the flat bar along the top door track until the small hole in the flat bar meets the self tapping screw groove in the roof corner bar.

Fix the small hole in the flat bar to the corner bar using a self tapping screw.



GLAZING THE STRUCTURE

Having anchored the structure to the wall and its base, observing the earlier comments about levels, square etc, you can commence glazing.

If you are out on any of the 4 key points i.e.

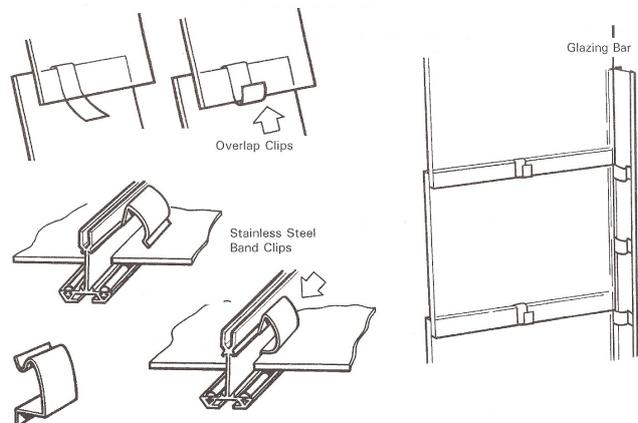
1. Plumb wall
2. Level base
3. Square base
4. Base set at 90° to wall

Then you will have difficulty in glazing. So please be sure before starting this section of construction

1. Horticultural glass

Each section has a number of panes, please refer to the chart on the next page for the specific sizes and quantities.

With each section start with the bottom pane of glass (**Key Point**) insert, 2 stainless steel band clips approx 6" (150mm) from the bottom, and 2 more approx 3/4" (20mm) from the top. Put one overlap clip on to the top of the pane of glass with the tail outside. Offer the next pane of glass to the glazing bars resting the glass on to the two upper clips. Exert some pressure onto the upper pane of glass with one hand and bend the overlap upwards to form a hook with the other hand. Insert 4 more stainless steel clips as outlined above. Do the same with the next pane of glass and throughout the rest of the glazing. **N.B.** The vent slam bar can be adjusted up/down to afford proper opening and closing and to ensure that the glass panes under the vent fit correctly.



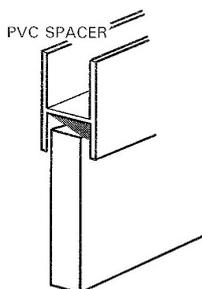
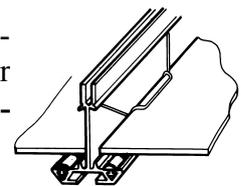
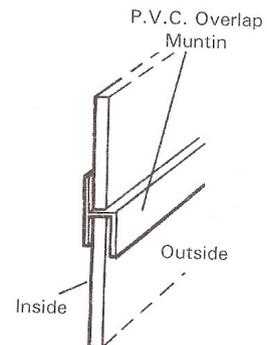
2. Toughened Glass

(for optional bar capping, please consult the separate fitting sheet packed with the capping strips **BEFORE** starting to glaze)

The toughened glass option is in single sheets, apart from the shapes. The glass fits in the same way as the horticultural but there are no overlaps, use 8 stainless steel clips per large pane of glass.

Where you have an "overlap" you use the P.V.C. muntin as indicated. If you have purchased the bar-capping, you need to glaze with the stainless steel wire clips (packed with capping) and not the band clips. The capping is placed over the bars and the wire clips then held with self tapping screws (packed with capping), see separate instructions with the bar capping for fitting.

N.B. There are a small number of stainless steel wire clips which you use immediately behind the door i.e. the section of glass that the door opens on to. **This applies to both the horticultural and toughened glass options.**



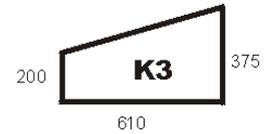
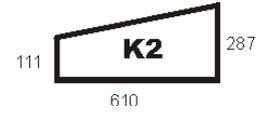
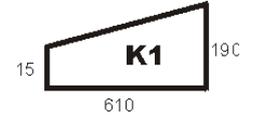
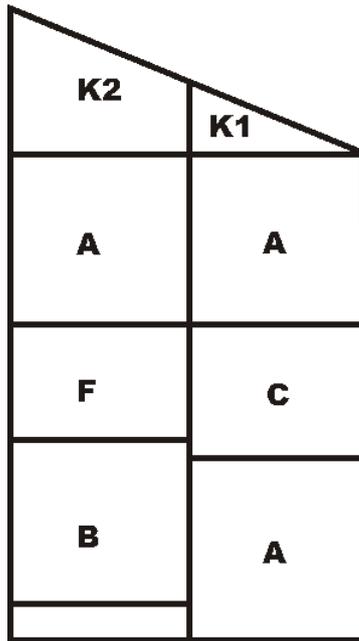
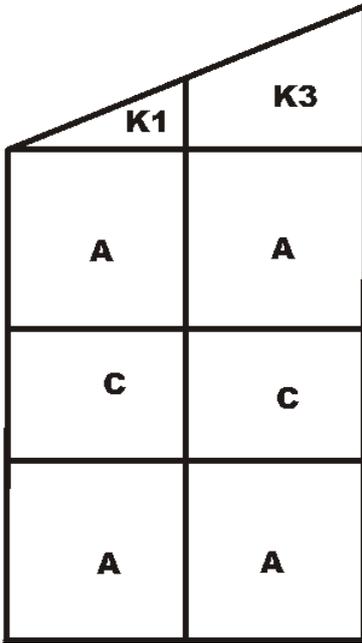
Front toughened glass application.

You will find a number of P.V.C. spacers packed in with your glass, this is inserted onto the top of the glass on the front panes and then pushed under the gutter bar.

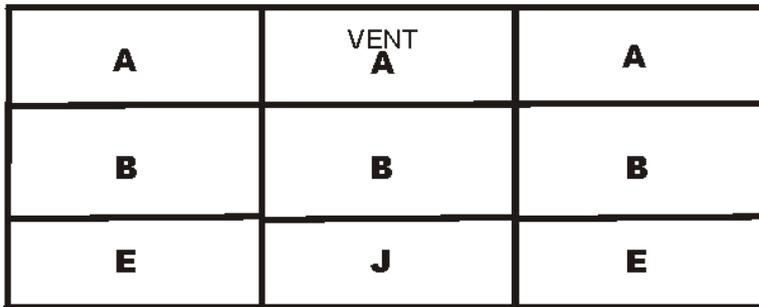
HORTICULTURAL GLASS & MULTI-SHEET TOUGHENED GLASS

REAR END

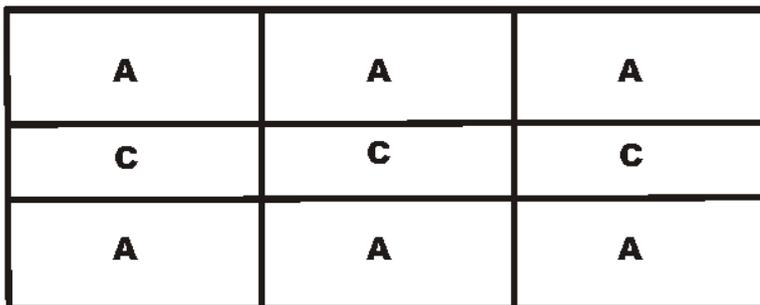
DOOR END



ROOF



FRONT

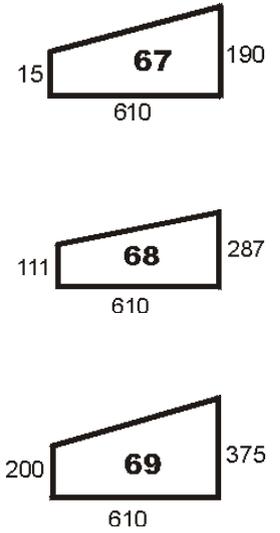
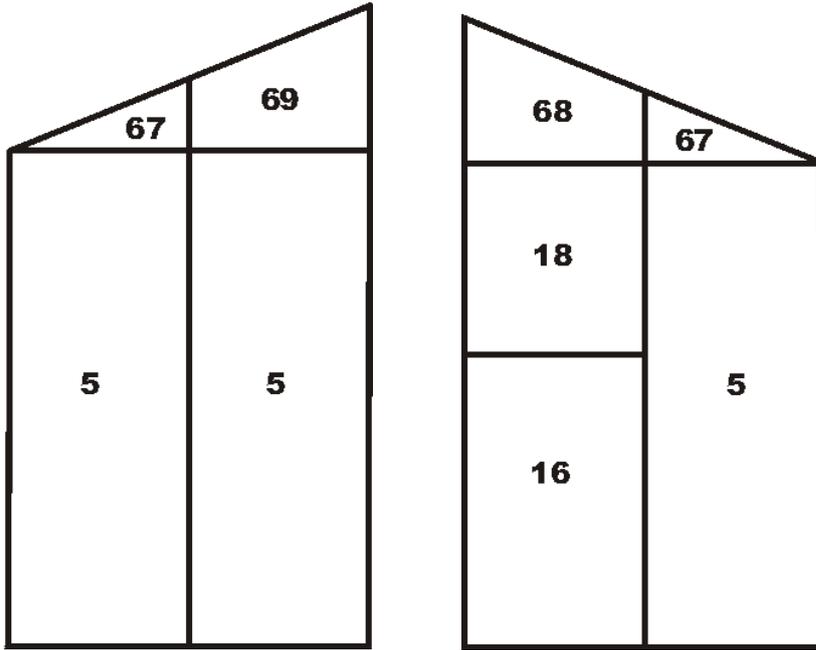


Code	Width (mm)	Length (mm)
A	610	610
B	610	457
C	610	407
E	610	305
F	610	267
J	610	280

TOUGHENED GLASS

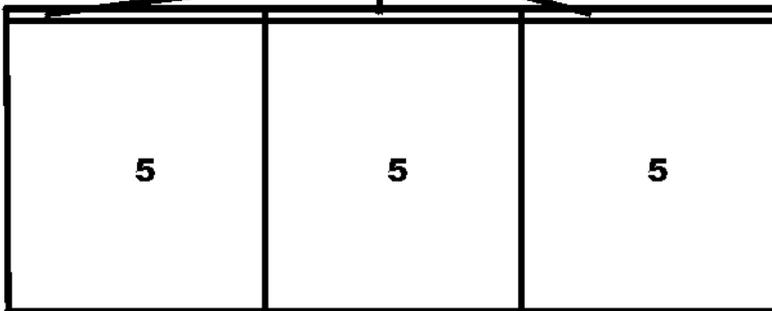
REAR END

DOOR END

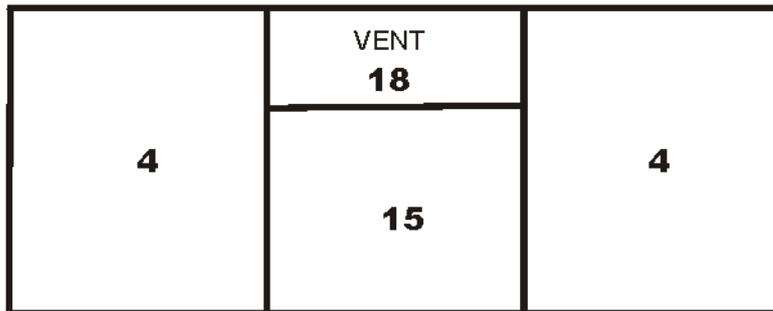


FRONT

SPACER



ROOF



If you have a 5 blade louvre, replace 1 x ref 5 with a 610 x 140mm and louvre (packed together) and 1 x 610 x 976mm pane.

Code	Width (mm)	Length (mm)
4	610	1322
5	610	1563
15	610	725
16	610	699
18	610	610

ELITE 1709