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Pre-Fabricated Bases and Walls
For domestic buildings

Durabase Plus Assembly Instructions

Steel Base - Walls & Skirts

GUIDELINES, TOOLS AND TIPS
READ THIS SECTION CAREFULLY

Contained within this instruction manual are step by step instructions to guide you through the installation of your Durabase base and wall system.

IMPORTANT
Read **ALL** the instructions completely BEFORE commencing any work, more than one read may be necessary. Understanding these instructions and familiarity with procedures will make the build process much easier and an enjoyable project to undertake. **NOTE-not reading the instructions could lead to problems later on in the build**.

Be aware of the temperature during the building process, the mortar and construction adhesive supplied can be used in temperatures between 5°C and 35°C. Do not carry out any jointing work if rain is expected.

RECOMMENDED TOOLS & EQUIPMENT. Tools can vary depending external wall finish

- Wheel barrow
- Builder's shovel
- Extension lead
- Tape measure (5m min.)
- Spirit level
- Electric drill (Inc hammer action)
- Steel drill bits: 5.5mm & 10mm.
- Masonry drill bits: 8mm, 10mm & 16mm.
- Cordless screwdriver 12v. Min.
- Posi screwdriver bits
- 8mm tech driver
- Spanners 11mm, 13mm, 30mm & 34mm or adjustable wrench.
- Socket 17mm.
- Silicone Gun
- Stanley knife
- Cross cut saw
- Skill Saw
- Bucket
- Soft brush
- Pointing Tool
- Pointing Trowel

HEALTH, SAFETY & ENVIROMENTAL ISSUES
As with any type of construction work, there inherent dangers when assembling a conservatory base. The following supplement is designed to supply the installer with general
health safety and environmental information that may be required during the assembly of a Durabase. The appendix is a guide to 'best practise' but cannot be considered as comprehensive.
You are advised to work safely at all times.

1. General Site Safety

All sites are different and have different hazards. Have a general regard to what can cause harm. The construction site itself should be made a restricted area. Particularly at risk are children and animals. You also need to consider the security issue.
Organise your space. Don't open boxes haphazardly and leave components lying around that can get damaged, lost or pose a trip hazard. Be aware of the weather forecast. Wet conditions cause specific hazards. Put controls in place to manage any possible vehicular movement on site. Protect the environment by disposing of your rubbish appropriately.

2. Personal Protective Clothing
The following PPE should be worn throughout the construction:

Safety footwear

The following PPE should be worn under certain conditions: (Follow machinery guidelines where applicable)
Safety glasses when drilling
Hearing protection when drilling
Dust mask if dust is likely to be generated
Gloves as applicable
Advisable to keep arms and legs covered.

Be aware of sharp edges on steelwork.
It is advisable to have a first aid kit handy – just in case.

TOOLS & EQUIPMENT

Check the condition of your tools prior to use, for obvious damage. Get them checked out if in doubt. Arrange for your tools to have a portable appliance test.
Any electric hand tools are 110 volts or used in conjunction with a residual circuit breaker.
Don't use tools other than for their intended purpose.
Follow manufacturer's guidelines as applicable.

FORMAL PROCEEDURE FOR THE USE OF KNIVES AND CHISELS
Ensure when using a knife / chisel you always keep your hands behind the blade. Ensure that you cut away from your body – NEVER towards yourself.
Ensure that the position of others is away from the cutting direction.
Keep the tooling in a sharp condition so you don't have to exert excessive force to cut.
Always pick up the tool by the handle.
Always ensure the tool is stored safely where a sharp edge cannot cause injury.
Only use the tooling for its intended purpose where possible.

4. MANUAL HANDLING
All modular wall sections are a two-man lift. Lift correctly. **STOP & THINK.** Plan the lift.

Where is the load going to be placed?
Use appropriate handling aids if possible.

Do you need help with the load?

Remove obstructions such as discarded wrapping materials. For a long lift, such as floor to shoulder, consider resting the load mid-way on a table or bench in order to change grip.

PLACE YOUR FEET.
Feet apart, giving balanced and stable base for lifting. Leading leg as far forward as is comfortable.

ADOPT A GOOD POSTURE
Bend the knees so that the hands when grasping the load are as nearly level with the waist as possible. Don't kneel or over flex the knees. Keep the back straight and lean forward slightly over the load if necessary to get a good grip. Keep the shoulders level and facing in the same direction as the hips.

GET A FIRM GRIP
Try to keep the arms within the boundary formed by the legs. The optimum position and nature of the grip depends on the circumstances and individual's preference, but it must be secure. A hook grip is less fatiguing than keeping the fingers straight. If it is necessary to vary the grip as the lift proceeds, do this as smoothly as possible.

- **DON'T JERK**
- **MOVE THE FEET**
- **KEEP CLOSE TO THE LOAD**

PUT DOWN, THEN ADJUST

If precise positioning of the load is necessary, put it down first, and then slide it into the desired position.

TEAM LIFTING

It is important that team members are physically evenly matched. One person should take responsibility and co-ordinate their actions.

ADEQUATE VISION

Clear vision may mean multiple trips with smaller loads, but it is safer.

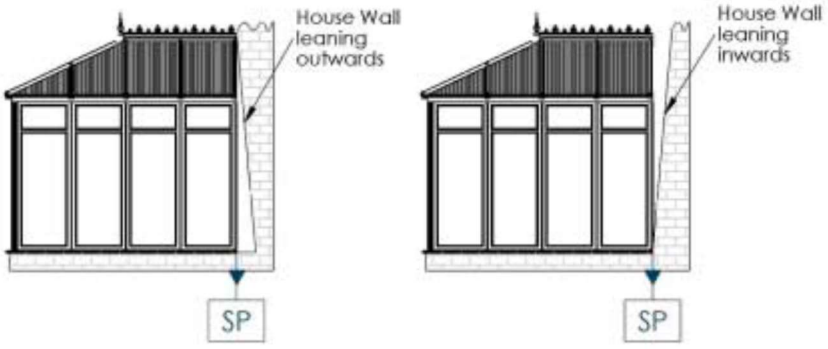
5. CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH.

Pre-packed concrete and pointing mortar.
Portland and other cements when mixed with water can cause skin irritation. If eye contamination occurs wash out with copious amounts of water and if irritation persists seek medical advice.
Brick adhesives and sealers- You are advised to follow the guidance on the packaging

SETTING THE BASE OUT

This section explains the necessity to ensure that your base is assembled in the correct position from the parent wall. Any discrepancies should be noted and measures taken to adjust as necessary.

The wall(s) you are fixing the Durabase and conservatory/extension against must be of sound construction and flat, any render, pebble dash, cladding etc. will need to be checked before the Durabase can be fixed into position.



Setting Out Point (SP)
As the conservatory/extension will need to be built at 90° to the ground it is important to check the angle of the wall/s you are building against. If the wall/s leans outwards, a plumb line should be fixed to the highest point where the roof will touch the wall. Where the plumb line meets the ground is where the base should be set out from (SP). The gap will need to be filled with packers (not supplied) so that the wall bar can be attached vertically. The base and dwarf wall size will need to be started from this point. If the wall leans backwards the base should be started against the wall (SP). The gap in this situation is at the top therefore packers (not supplied) will be needed to ensure the wall bar is attached vertically.

Please note: Any additional trims to cover large gaps are not included with the base or conservatory/extension and should be purchased separately.

PREPARING THE SITE

The Durabase sits on a number of concrete pads and are required under each load bearing adjustable leg, except on the rear sill section, which are non-load bearing. Any legs fitted to the rear sill section are used for levelling and need to rest on something firm.

Refer to concrete pad layout plan

For each pad dig out a hole, 450mm square x 450mm deep. *(The 450mm depth is a minimum and it may be necessary to check with local building regulations).* If the base of the hole is not firm it will be necessary to dig deeper until you reach firm ground. Fill the holes with concrete (RC40 recommended) to the level specified on the ***concrete pad layout plan*.**

Typical Concrete Pad finish

On the pad plan there will be a height from top of pads to top of steel base. This height will be calculated from the depth of skirt and the height from ground to dpc on the order form.

Note: The top of steel base line is also top of skirt line.

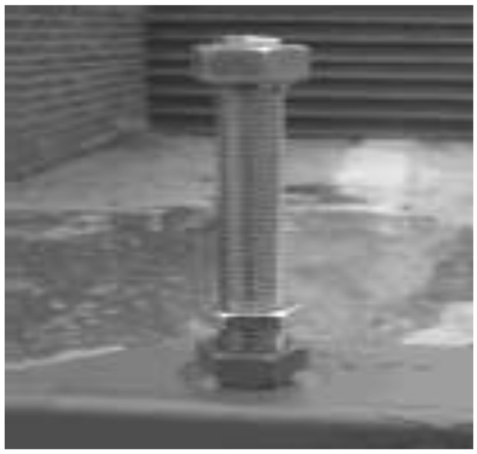
If all measurements are correct the bottom of the skirt panels should not touch the top of the concrete pad.

The skirt should be deep enough to go into the ground for a clean and tidy finish and the top of the concrete pad should be low enough to not hit the bottom of the skirt.

NOTE: If the top of the concrete pad is above ground level, there may be something wrong.

ASSEMBLY

Refer to steelwork layout plan.



Screw lock nuts onto all adjustable legs.

Screw adjustable legs into the nuts welded onto the underside of the back-sill section. Position the 80x80x3 rear sill section against the house wall in the required position, the setting out height of this section depends on the thickness of underfloor insulation being used. (refer to table below)

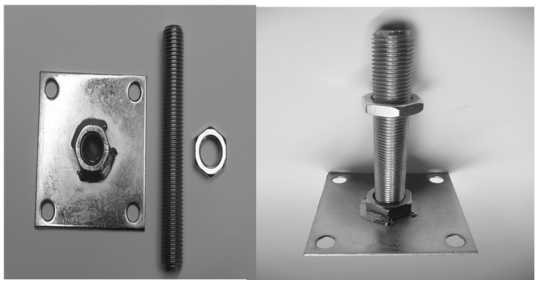
Insulation Thickness	Height from Finished Floor Level to top of Back-Sill
75mm	106mm
100mm	131mm
120mm	151mm

When matching your extension floor level to the existing house floor lever you will also need to add the thickness of your floor finish to these measurements

Note: The back-sill section (against the house wall) will be shorter than the overall base size because of the way the Durabase is constructed.
Rest the legs on something firm to prevent them sinking.
Adjust the jacking legs to the required level.
The rear sill section is set down lower than the outside steel to allow for the ply and underfloor insulation.
If the chipboard floor panels land lower than the dpc it will be necessary to insert a vertical damp proof barrier.

Ensure the sill is level then pilot drill through the fixing holes using a 10mm masonry drill bit.

Remove the sill section and re drill pilot holes to a depth of 70mm using a 16mm masonry drill bit. Insert the Rawl bolts into the holes and remove the bolts. Replace the back-sill section, insert bolts and tighten using a 17mm socket.



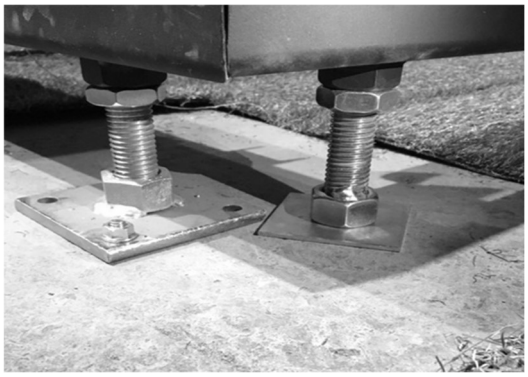
Assemble fixing down plate and legs, including lock nuts, and screw into the nuts welded onto the underside of the side sections.

Fit the side sill sections to the back sill section by locating onto the pre-welded studs with the corner fixing bracket. Fix with nut supplied but **do not fully tighten at this stage.**

Screw adjustable legs into the nuts welded onto the underside of the front sill section.
Note; Use only one fixing down leg assembly on each concrete pad. For second legs landing on a pad use standard legs as picture opposite. Attach to the side sill sections in the same manner.

Position the load bearing plates (75mm square washers) under all standard legs.
Working your way around, adjust the legs to the required height and level using a spirit level. Check that the base is square and tighten all joints. Re-check levels and tighten lock nuts on the jacking legs

Your Durabase should now be square and level.

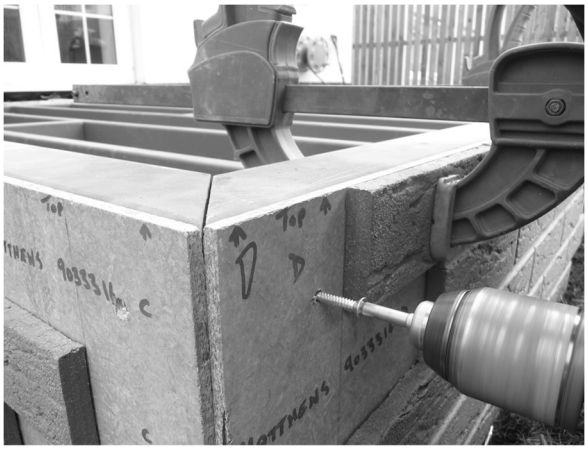


Slot the floor joists into the ‘u’ support brackets, and secure using M6 x 60 bolts and nuts supplied. Tighten with 10mm spanner. The joist supports should be fitted centre of joist length and the legs adjusted and locked at this stage.

Fix leg assembly down to concrete pad using M10 x 50mm sleeve anchors supplied. Only one fixing per fixing down plate is required. Pre-drill concrete using 10mm masonry bit.

Fitting Skirt Panels – For Brick Skirts please refer *to skirt plan. *For Plain and Render Skirts, please see additional information below.*

Lay out the skirt sections in the order they are to be fitted. The panels are lettered to correspond with the skirt plan and the brick slips are flush to the top edge. Fit panels so the top edge, lines up with the top edge of the steel base. The ends of the panels that correspond with an external corner of the base frame must line up with the edge of the steel base frame. Do not overlap other panels on the corners.



Using the screws supplied, fix where brick slips are still to be fitted and through perpendicular mortar joints if extra fixing is required.

***Plain Skirts.** Fix in the same way as brick skirts using the 50mm screws provided. You will need to cut to length before fitting. It is recommended that air vents be fitted in the side skirt panels.

***Ready to Render skirts.** Fix in the same way as a brick and plain skirt using the 50mm screws provided. You will need to cut to length before fitting. It is recommended that air vents be fitted in the side skirt panels. Please refer to section **Rendering** for jointing and finishing.

Fitting Walls

The wall panels are heavy on the outer side and could tip over easily. Be careful to ensure that they are propped up until fixed. Lay out the wall sections in the order they are to be fitted. The panels are numbered to correspond with the wall plan. (The first level is numbered. Subsequent levels are numbered followed by 'A' second level; 'B' third level etc).

Note: Be aware of the weather forecast during the building process, construction adhesive supplied can be used in temperatures between 5°C and 35°C.

Please check with local authorities if a Radon Gas barrier is required as this may need to be fitted before the walls.

Refer to Wall Layout Plan

Prior to fitting the damp course membrane lay a line of construction adhesive (supplied) along the join between the steel frame and the back edge of the skirt panel. If fitting a plain or render skirt lay the glue in the same position (back edge of the panel).

Lay the damp proof membrane so that the outer edge lines up with the outer edge of the skirt panel (allowances may need to be made for render thickness or other external finishes).
Cut to length and press into the bead of adhesive.

Lay another bead of construction adhesive along the top edge of the damp proof membrane approximately 15mm back from the outer edge.

Fitting Walls cont.

Starting with the first panel against the house wall place a bead of mastic approximately 15mm from the outer edge of the end that butts against the house. Offer panel up to the house wall but **do not** fix in position.
Reminder: The wall panels are heavy on the outer side and could tip over easily.

For walls with more than one level, follow instructions and fix the lower level first.
Continue to assemble subsequent levels once the lower level is fixed

Once all panels are correctly sited, you can secure to the house wall. Check that the panel is upright before drilling an 8mm dia. hole 80mm deep through the holes provided into the house wall.

If you cannot utilise the holes provided drill a 10mm dia hole through the metalwork in the required position. Secure with the frame fixings supplied.

Once fixed to the house wall, check that all panels are in-line and the brick/external render board/cement board is flush. The panels can now be fixed to the steel base using the hexagon headed tech screws supplied.

It will help to pre-drill the wall panels with a 5.5mm dia. drill, taking care not to drill through the steel base. Then tighten all M8x20 bolts in the panels making sure that all panels are correctly positioned.

Note For Render Walls. When the walls are in position, there should be a gap of approximately 3mm to 5mm between the edges of the external render board for correct jointing.

Rendering. **DO NOT** apply a sand and cement, Monocouche, dash or thick coat render system to Knauf Aquapanel Exterior. Any render finish lining the foundation below the DPC, must not join the cladding above. Please see additional instructions on Aquapanel Exterior-

Taping and Jointing 3,4. Finishing 5,6,7. Exterior Render 8.

Brick Walls

Once fully constructed, seal the joins in the brick backer panels with the construction adhesive supplied. Use the same adhesive to stick the spare brick tiles in place. You will need to use some 10mm spacers to position the brick slips on the skirt panels. Press bricks firmly into place.

Note: Do Not be tempted to strike off when the mortar is too moist.
Overworking the mortar may create colour changes. Every time you work it the moisture is drawn out, and could result in a lighter colour mortar when dry.

To point the joints, mix the mortar supplied with water until a consistency of a stiff cream is achieved. Fill the joints around the bricks completely using a pointing bag, these can be purchased from Durabase.
Ensure you follow the instructions on the mortar supplied.

Note: Check correct consistency by filling the bag, the mortar should hang from the end of the nozzle when the bag is shaken down.
Allow the mortar to dry until fairly firm. *(We would recommend that the mortar is firm enough that when pushed in with a finger only a small indentation is left behind).* It should have a dull finish, be moist but not wet and somewhat gritty. Use a curved pointing tool to remove any remaining mortar with a soft brush when almost dry.

It is advised to fit the conservatory at this stage, before fitting the 9mm ply, under-floor insulation and Chipboard Flooring

Please follow conservatory manufacturer's assembly guidelines.
Conservatory sills can be secured to the top of the walls and steel base, using the 60mm long self-drilling screws supplied

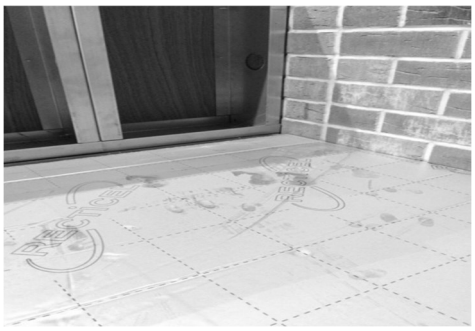
Fitting the 9mm ply, under floor insulation and flooring

In areas where there might be landfill gas, methane gas or radon gas contamination, special precautions may be necessary.

Note: This is a floating floor so if finishing with a floor tile or similar, we recommend seeking advice. If extra fixings are required, long self-drilling screws are available from Durabase (price on request).

It is advised to make a note of the joist centres so that lines can be drawn on the flooring to guarantee the correct fixing down positions into the steel joists.

Deck out the floor area with 9mm thick ply board, fixing down with the 50mm self-drilling screws supplied. Once the 9mm ply is fitted, fill the same area with the underfloor insulation.



The top of the insulation will finish flush with the top of the outer steel frame

Start laying the floor-boards directly onto the insulation from the rear left-hand side of the conservatory, looking towards the house. Lay the sheets the correct way up as marked. Use the off-cut from the last run to start the next. It is advisable to glue the joins with water-resistant wood glue.
It is recommended to allow a 10mm expansion gap around the outside edges of the flooring.
The floor is now ready for finishing with your choice of covering.

Please note that at the time of printing every care has been taken to ensure that these instructions are as accurate as possible.
We reserve the right to make modifications from time to time without notice to ensure the ongoing integrity of the product.
For Technical Assistance Call 01432 266507