

Install Guide

Tools & Equipment

- 12g & 14g hex tek driver
- PentaForce anti-tamper tek driver
- Ø4.5mm steel drill bit
- Battery powered drill with a low torque setting
- PentaForce self-drilling tek setting tool
- Hacksaw, battery powered reciprocating saw or 5" grinder with cutting blade.
- Laser
- Long tape measure
- Pocket tape measure
- Ground marking paint
- String line and pegs
- 2 x small magnetic spirit level
- 1 x long spirit level
- Metal file
- Sturdy steel pegs 600mm long
- Zinc rich epoxy primers paint (recommend application with small brush not aerosol can)
- Colored paint (recommend application with small brush not aerosol can)
- Rubber mallet
- Scissor shovel
- Crow bar
- Mini digger or equivalent with auger



Hazards

- **Electrocution** or injury as a result of contact with underground services during excavation of post footings. *Controls:* Based on a site specific risk assessment complete dial before you dig searches, carry out underground service location, mark services on site plan, mark services on the ground with color coded marking paint, and seek plans from property owner. Induct all persons digging holes.
- **Laceration** as a result of contact of cutting tools with body resulting in laceration. *Controls:* Competent in use of tools, proper guarding and PPE.
- **Crush injury** as a result of panels, gates or posts falling over. *Controls:* Secure panels and gates when awaiting installation, make sure materials are stable and secure when stored.
- **Crush injury** as a result of contact with moving vehicles or equipment. *Controls:* Based on a site specific risk assessment deploy safety signage, safety barriers, workers to wear hi-viz, carry out higher risk work at lower traffic periods, develop a traffic management plan.

Drawings

- Bluedog SecuraTop assembly drawings
- Install instruction ball bearing hinges
- Install instructions HD1/ HD2 hinges

Material checklist

Item	Item Name	Detail	Quantity	Weight
1.	Panel	1800-2100 high x 2400mm long.	1 per bay	35kg
2.	Post	65x65x1.6 x 2400-2660mm long* *Longer posts may be required for sloped ground and level panels	2 per bay	

3.	Post cap	To suit 65x65 post	1 per post
4.	Security bracket	Attached the 40x40mm rail of the panel to the post.	4 per panel
5.	Splay bracket	To suit changes of direction in the fence. Attaches the 40x40mm rail of the panel to the post.	2 per panel
6.	Rake bracket	To suit panels raked more than 10 degrees. Attaches the 40x40mm rail of the panel to the post.	4 per panel
7.	12g tek	Fixes the security bracket to the post and panel. 12g self-drilling tek screw with hex head or anti-tamper drive, supplied colored or galvanised.	3 per bracket
8.	Gate leaf	40x40 stiles and rails; or 65x65 stiles and rails.	As ordered
9.	Hinge	Goliath ball bearing hinge set (left and right); or Heavy duty hinge arrangement.	2 sets gate leaf; or 1 set per gate leaf.
10.	Goliath hinge fasteners	Hinge to stile: 1 x M8x60mm LG bolt, washer and nut Hinge to post (75sq/ 100sq): M8x100mm LG bolt, washer and nut	2 per gate leaf
11.	Latch	Ø20mm slide bolt and receiver	1 per gate leaf
12.	Drop bolt	Ø16x550mm long drop bolt and guide	2 per double gate
13.	14g tek	14g self-drilling tek screw (gal)	2 per goliath hinge 4 per latch 4 per drop bolt

GENERAL PRINCIPLES

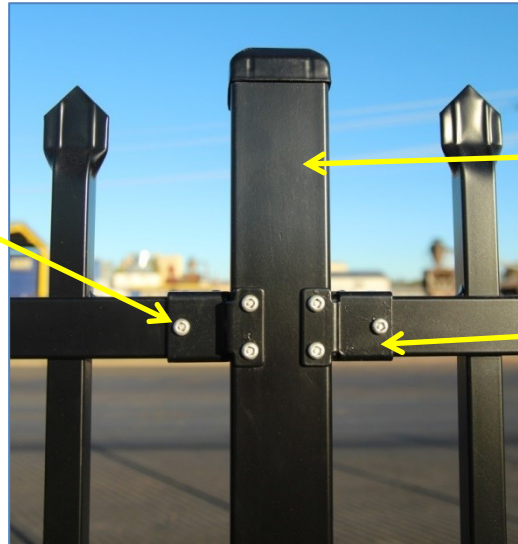
1. When installing the fencing consider:
 - a. The posts can be spaced so that the panels do not need to be cut except where the post needs to be set short for some specific reason.
 - b. When a post has to be placed short of a full panel, position the post so that when the panel is cut the 'outboard' as each end of the panel (the distance from the last picket to the end of the panel) is nominally 92mm. This looks better and allows sufficient room to fit the security bracket.
 - c. As much as possible set the fencing in runs of straight runs rather than a gradual curve. This will make installation easier and quicker and give a better aesthetic result.
 - d. If a progressive change of direction is needed, make position the posts to make the changes of direction as gradual and uniform as possible. This will again make fence installation easier and achieve a better visual outcome.
 - e. Set the height of the posts to make the gradient of the fence as consistent as possible. This will make installation of the fence easier and will achieve a

better visual outcome. As a guide, set the top of the post should be the same height as the top of the panel.

- f. Longer posts will be required when using level panels on sloped ground.

INSTALLING THE FENCE SYSTEM

12g x 25 long anti-tamper self-drilling tek screw



Post

Bluedog
Security
Bracket

2. Measure the distance of each run and draw up a plan (if there is not already one). Calculate the number of posts in each run by dividing the total length of the run by the standard post centre spacing (this is the distance between the centre of each post, not the gap between each post). Refer to the drawings for the standard post centres. For a 65x65mm post, the post centres are 2480mm (rail 2400mm long + 15mm to allow for bracket + 65mm for the post = 2480mm).

SETTING OUT THE POSTS

3. Set up a string line along the proposed alignment taking into account any boundaries (normally with the string on the outside face of the posts). Clearly mark the location of any underground services along the alignment. We recommend setting the string line 300mm above ground level. A good method is to mark the **post centres** along the run using a long tape: i.e. 2480, 4960, 7440mm and so on. Mark the post centre with a line across the run. Then use a long spirit level held plumb just off the inside of the string line. Use this method to mark the post centre in from the string line (i.e. 32.5mm for a 65x65 post). Clearly mark the centre of the holes along the line with a large cross on the ground. Make the resulting cross big enough so that it is not lost under the excavated spoil.
4. Manipulate the position of the fence posts to achieve the best all round outcome taking into consideration:
 - a) As much as possible set the fencing in runs of straight lines.
 - b) The need to step panels at particular points along the run to suit changes in gradient.
 - c) A full panel either side of a change of direction and at gates for security and aesthetic reasons.
 - d) Shorten or lengthen the run a fraction to avoid having to cut a panel or eliminate a short panel that can look a bit odd.
 - e) The location of underground services where you may need to shorten bays to accommodate.
 - f) Hazards along the run that might influence the position of the fence.

5. Double check all measurements and then excavate the footings. We would recommend a 250mm (min.) diameter x 600mm deep footing for a 2100mm high fence assembly. If the ground is sandy or likely to have higher loads applied we would recommend a 300mm (min.) diameter x 900mm deep footing. Think about where you put the excavated spoil as you excavate so as to avoid double handling. You may want to rake out along the fence align at the time. After excavation of the holes we recommend again checking the post spacing. Remark and/ or adjust the holes to suit. It is a real headache having to rework holes once concrete is in the hole.
6. We recommend that you break the run into sections (as long as possible) of the same gradient to make the install easier and achieve a better aesthetic outcome. Using a laser, take a series of heights along the run to establish what the fall is if any over each run and break into sections of the roughly the same gradient. The work out the fall over each panel in a section.

SETTING POST HEIGHTS ON LEVEL GROUND

7. Allowing for the standard post spacing place a peg at each end of the run. We suggest a sturdy peg at least every 30 metres. Then set the string line at 300mm above ground level on these pegs (ensure the pegs are firm in the ground). The string line should run level 300mm above ground level. This approach also removes the effect of marginal ups and downs in each section.
8. Mark the posts with a pencil 1850mm down from the top. By then setting this mark level with the string line at 300mm above ground level it will result in the top of post being set at 2150mm above ground level. This will achieve a gap of 50mm nominally under the 2100mm high panel once installed.
9. Adjust the use of this method to achieve the desired finish height of the fence. The standard assembly has the top height of the panel rail of 2150-2200mm above ground level.
10. Alternatively, set up a laser and a reader attached to the post to set the post to height.

SETTING POST HEIGHTS ON SLOPED GROUND

11. Assume in a 100 metre run, the first 30 metres is a 3 degree fall, the next 40 metres is 8 degrees and the final 30 metres is level. Allowing for the standard post spacing place a peg at each change of gradient (i.e. at 2 points in the 100 metre run) and at the start and finish of the run. Then set the string line at 300mm above ground level on the pegs (ensure the pegs are firm). As a result the angle of the string line will reflect the prevailing gradient in each of the three sections. This approach also removes the effect of marginal ups and downs in each section.
12. This means that in the first section the fall over each panel (bay) is 150mm. This means that posts need to be set 150mm higher than normal to allow the install of the level panels.
13. Mark the posts with a pencil 2000mm down from the top (150mm more than for level ground). By then setting this mark level with the string line it will result in the top of post being set at 2300mm above ground level. Imagine facing the fence with the ground sloping away to your left. On the post to your right the top bracket will be set such that the bottom of the panel at that end is about 20mm off the ground. This means that once the level panel is installed the panel will be about 170mm off the ground at that left hand (downhill) end. Hence the reason the post needs to be set nominally 150mm higher.

14. Adjust the use of this method to achieve the desired finish height of the fence. The standard assembly has the top height of the panel rail of 2150-2200mm above ground level.

SETTING THE POSTS

15. Calculate the volume of concrete required based on the volume of the footings excavated and allow a waste factor of the 1.1. We recommend pre-mix concrete off the chute of the agitator or mixing in a concrete mixer.
16. Using 20-25MPa concrete to set the posts in place, finishing the top of the footing neatly about 50mm below ground level. Check the posts are in line, to height and plumb. Posts can sink or move while the concrete is wet. If the consistency of the concrete is right the posts should not move easily. We recommend placing the concrete in the hole (without the post in the hole) to the desired height and then lowering the post in until the mark on the post lines up with the string line. Use the marking on the ground to get the correct post centre and then check with a tape measure (or post spacer). Position the posts so that they are consistently about 2mm off the string line (avoid the posts touching the line as it will deflect it). Use two spirit levels (magnetic) to confirm the post is plumb along, and across the fence line.
17. About 20 minutes after setting the posts recheck them for movement and confirm that the posts are still at the desired height and plumb. If a post has been set high for some reason it can be trimmed down later to match. We recommend allowing 24 hours for the footings to set before installing the panels.

INSTALLING THE BRACKETS ON LEVEL GROUND

18. Measure down from the top of the post to the top of the leg on the bracket so as to achieve the desired height of the panel. On level ground the leg of the bracket should be 150mm down from the top of the post (assumes the post has been set to the desired height) so that the top of the panel is level with the top of the post. Mark all the posts.
19. Facing the fence from the inside, fix a bracket to the first post on your right hand side at the top mark. Set a low torque setting on the drill to avoid overtightening the tek screw resulting in a compromised fixing. The leg is normally fitted to the inside (non-visual) side of the post (see image right). Only install one tek at this stage. Place a bracket on the other three ends of the panel. Insert the top right hand end rail of the panel into this first bracket (don't fix the rail in the bracket at this stage). Lift the panel in line with the second post (P2) to your left. If the posts are set at the correct spacing there should be about 15mm total tolerance between the panel and post. Bring the left hand end of the panel to level (check with a spirit level sitting on the top rail). Fix the left hand bracket to P2 with one tek to the post. The panel is now supported with two teks in the upper two corners. Do not install any other teks at this stage.

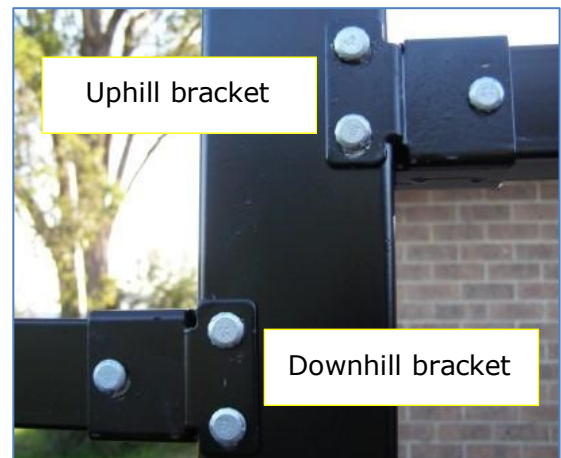


The opposing brackets on the post are set level to suit the level gradient

20. Place another bracket on the opposing side of P2 and set level with the bracket just installed (see image right). Repeat the process to swing the second panel.

INSTALLING THE BRACKETS ON SLOPED GROUND

21. Facing the fence from the inside, fix a bracket to the first post (P1) on your right hand such that the panel is at least 20mm off the ground. The method is to set the panel lower at the uphill end to minimise the gap under the fence at the down hill end.
22. Place brackets on ends of the panel, lift panel to level and fix to P2. The gap under the panel will be 20mm + the fall over the bay. For example, if the fall is 150mm then the gap will be 20 + 150 = 170mm.
23. Place another bracket on the opposing side of P2. If the fall is 150mm, then this bracket will be set 150mm lower than the bracket just fixed to P2 (see image above right). Repeat the process to swing the second panel.
24. Repeat the above process. Once the panels are set for a section check the overall look of the panels. Adjust the brackets up or down as required. Centre the panels on the brackets. Install the balance of the tek screws. Set a low torque setting on the drill to avoid overtightening the tek screw resulting in a compromised fixing.
25. Where a bay is shorter than the standard panel length, the panel will need to be cut to suit the post spacing. We recommend shortening the panel so as to maintain the outboard as close to 90mm as possible (the distance from the last picket to the end of the rail).



The opposing brackets on the post are stepped to suit sloped ground

INSTALLING THE GATES

26. First work out the post centre spacing of the gate posts. To do this, first **measure the width of the gate leaf to be installed**, allow for the hinge gap, latch gap and the gate post size.
27. For example, assume the gap for hinges and latch is 25mm. Therefore, for a single 2 metre leaf the working is 2000mm (leaf) + 25mm (hinge) + 25mm (latch) + 75mm (gate post) = 2125mm post centres. This will give an opening (gap between posts) of 2050mm (post centres minus the size of one (1) gate post). Mark on the ground the post centres. Refer to the drawings.
28. Excavate and place the gate posts as above. Remember to check the opening size during the process.
29. Orientate the hinge to suit the gate swinging in or out. Fit the hinges per the instructions. Fix the hinges to the gate post first.
30. Once the gate posts are set, we recommend putting the gate leaf in place in line with the gate posts and then chocking up with timber to the desired height to match the adjacent fencing. Check the gate is level. Lubricate the hinges once installed.
31. Fit the latch and drop bolt.



Goliath hinges fitted the gate post and hinge stile of the gate leaf.



Heavy duty (HD1) tapered roller bearing.

Revisions

REV.	SECTION	SUB-SEC.	PARA.	DATE	AUTHORISED BY
A (original)	-	-	-	14/8/16	S. Belfield