



Technical Bulletin-Fastening Black Label™ Decking

Fastening

Not all fasteners are created equal. There are many fastening options and systems available in the market today. Fastener selection will have a significant impact on the outcome of any deck installation. It is important to make certain that the fastener is appropriate for the deck material to be installed. Whatever system you chose it is important to remember that once selected liability for fastening performance shifts to the specifier, fastener company or contractor and away from the decking manufacturer, so consider your options carefully and follow the manufacturer's and fastening company's instructions carefully.

Selecting Screw Material

The use of high quality T316 stainless steel fasteners is recommended to provide superior service life and avoid potential galvanic reaction issues related to the connection of naturally durable wood products with treated softwood substructures. High quality T316 stainless will reduce staining which may result from the interaction between the natural tannins in the wood and lesser grade stainless steel. T316 stainless is the most resistant steel to corrosion caused by salt spray and should be used for construction in coastal environments. Strength is increased in T316 stainless by increasing the diameter of the screw shank i.e. a #8 T316 screw is roughly equivalent in strength to a #7 T305 Stainless screw. Regardless of the fastening system selected, performance evaluation and selection is the responsibility of the specifier or installer.

Selecting Screw Diameter, Length, Head Type and Drive Type

The general rule of thumb is that a screw should penetrate the substrate a minimum depth equal to the thickness of the decking. Recommended minimum shank diameter and screw length by net deck thickness as follows...

Nominal 1X and 5/4X Grooved For Hidden Fastener: #7x1-5/8" – Trim Head, Black Head Coat – Square or Torx Drive

Nominal 1X and 5/4X Drill, Screw and Plug: #8x2.5" Pro Plug Screw – Square or Torx Drive

Nominal 1X (net .75"): #8 x 2"-2.5" – Trim Head Countersunk – Square or Torx Drive

Nominal 5/4X (net 1"): #8 x 2.25"-2.5" – Trim Head Countersunk - Square or Torx Drive

Nominal 2X (net 1-1/2"): #12 x 3-4" – Flat Head Countersunk - Square or Torx Drive

Nominal 3X (Net 2.-1/2"): #14 x 5-6" – Flat Head Countersunk - Square or Torx Drive





Pre-Drill, Countersink and Screw Method

Pre-drill and countersink two holes per deck stringer intersection. Install self-drilling trim head or flat head screws. Drilling and screwing through the face of the deck boards provides the strongest mechanical connection. Drilling and screwing also allows the boards to expand and contract equally across the face ensuring that spaces between boards remain consistent in width. It is always recommended that you pre-drill and pre counter sink the boards, especially the ends of the boards, as the ends of the boards are the most susceptible to splitting. There are tools like the Black Label Pro™ Smart Bit™ drill and counter-sink tool and bit system that deliver the perfect depth countersink every time. Simply set the drill bit depth to the thickness of your decking as you do not want to predrill into a treated Sub Structure. If you are using a hardwood substructure drilling through the deck and into the stringer may be required. Be sure, not to over torque the screws as the head may cause the board to split. There are tools like the Black Label Pro™ Depth Setter™ System that prevent over countersinking and over torquing. Typically, commercial decks are constructed using the face screw method. Stainless steel fasteners are now available in both natural stainless (silver) if you intend to let the deck weather naturally, or with brown coated heads which can be used to match the Black Label King of Decks Wood Linup.



Self-Drilling/Self-Countersinking Screw Method

Black Label™ is very hard. The use of self-drilling, self-countersinking screws without pre drilling creates tension or pressure on the wood fibers and increases the possibility of splitting. This doesn't mean that you can't use self-drilling finish head screws... it just means that you will likely split some boards especially if you over torque the self-countersinking screw heads. There is one collated self-drilling screw system that has had good results. The Muro™ Ejector™ Screw and Driver System is designed to remove fiber from the hole as the screw penetrates the deck board reducing pressure on the wood fiber. T305 Stainless Steel Ejector™ Screws are required as they are designed specifically for this process and are not available with color coated heads. Typically we see this process in commercial applications where the decking is left to weather grey.

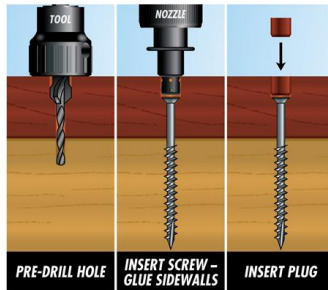


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Drill, Screw and Plug Method

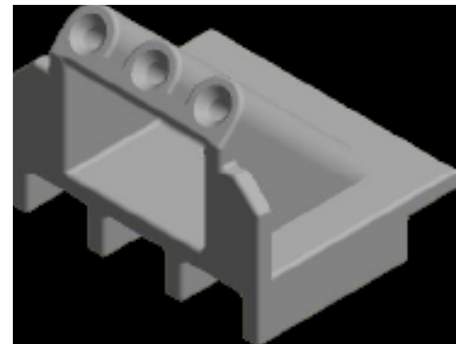
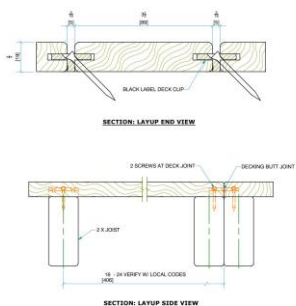
The drill, screw and plug method has all the mechanical benefits of the drill and face screw method, however the countersinks are deeper to allow for the application of adhesive and wood plugs to cover the screw head. Typically used in wood boat construction this method offers a unique appearance. Drill Screw and Plug systems like the Black Label™ Pro Plug™ system provide the Smart Bits™, Glue Injector Cap (regulates glue volume) and tapered wood plugs that facilitates quick installation by eliminating the need to trim and sand plugs after installation. Finished or left to weather, plugs maintain the same color appearance as the deck surface. Like face screwing, the drill, screw and plug method allows the deck boards to expand and contract equally in width so spaces between boards remain consistent.



Hidden Deck Clips

Typically referred to as hidden fasteners, this method requires either grooving or biscuit cutting the decking down the side of the board and connecting the decking to the stringers with clips. There are two types of clip systems available. **Mechanically Connected** and **Non-Mechanically Connected Systems**.

Mechanically Connected systems create a mechanical or structural connection between the board and the stringer by drilling and hole through one side of the board and setting a screw through the clip and board into the stringer. This allows the board to expand and contract towards and away from the mechanically connected edge maintaining a consistent spacing between boards. Boards should never share one clip at butt joints.





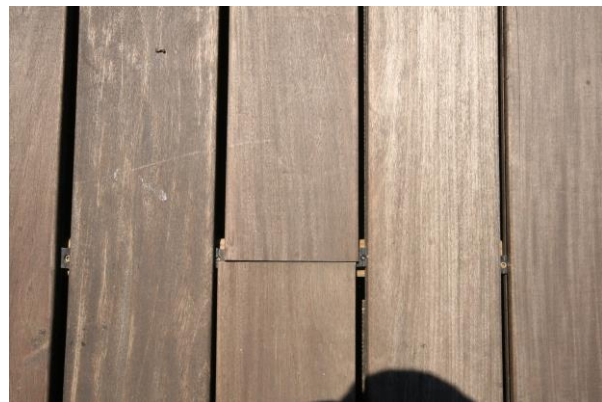
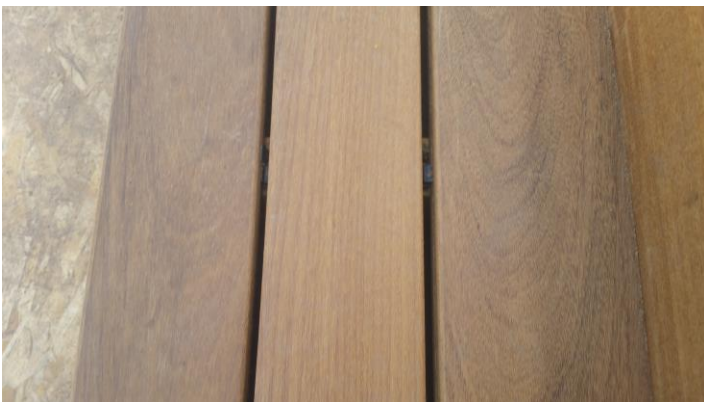
Black Label Premium Deck Clip System

The art of simplicity. The Black Label Pro Deck Clip™ state of the art design and materials, delivers a hidden deck fastening system that outperforms the competition. One clip, One Spacing, the Black Label Deck Clip creates a 3/16" gap. The clips 1.5" length provides a longer holding surface than the competition. The unique three hole design allows the clips to be applied with one screw for connection to center joists and two screws at butt joints by providing an aligned solid fastening platform that ties abutting boards, together. This unique design eliminates the potential for movement (snaking) at butt joints. As well as down the length of the deck boards.

Pre-drilling of hardwood decking for use of hidden fasteners is always recommended. The Black Label Pro Deck Clip™ System comes with our Black Label Drilling Guide™. This guide allows the installer to pre-drill holes through the decking at the proper angle for installation. It makes sure fasteners are installed properly unlike some clips that leave the drilling angle up to the installer. It is however important to avoid drilling into the joist, so set your drill bit to generate the right depth and avoid over-drilling.

It is important to understand that hidden fasteners are not completely hidden. You will see the fastener and screw head between the boards. We recommend the use of Kiln Dried hardwood decking only when using hidden fasteners. We recommend the use of Kiln Dried 5/4x4 decking for poorly ventilated decks or Kiln Dried 5/4x6 decking for well ventilated decks when using hidden fasteners. We do not recommend the use of Air-Dried Hardwood Decking when using hidden fasteners as shrinkage may reduce the contact surface between the clip and the deck. There are markets that are using 1x4 and 1x6 KD grooved decking. It should however be noted that clips are more visible vs 5/4x6 grooved decking as the shadow line is decreased and there is less board for fasteners to penetrate in 1X nominal decking. We do not recommend the use of Air Dried Grooved Decking with hidden fasteners under any conditions, as air dried decking has a greater potential for cupping and shrinkage that will drastically reduce if not eliminate the clips ability to hold the deck boards in place.

Some clip systems do-not create a mechanical or structural connection between the board and the stringer. It is important to remember that it is natural for a board to bow or curve as the natural tension in the wood fiber is released. Non-Mechanically connected systems allow the boards to move towards or away from the adjoining boards which may result in inconsistent or irregular spacing between boards. This movement is exaggerated at butt joints and when air dried decking is used. As such we do not recommend Non-Mechanically connected clips for use with wood decking.



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Fastening wood decking to metal framing presents a unique set of challenges. The use of hidden fasteners that create a mechanical connection between decking and stringer are almost impossible to instal as you will ned to pre-drill the metal framing and the drill bit will want to wander when trying to drill at a 45 degree angle.

You can use clips that don't create a mechanical connection but then your faced with the snaking issue again.

When fastening wood decking to metal framing, face fastening is your best option. Drill and Countersink the decking and then use a self tapping 410 stainless steel flat head screw. 410 stainless steel is used to give the screws the strength they need to self drill. The use of stainless steel reduces the potential for galvanic reaction between the fasteners and the steel stringers.



For more information see our Best Practices Guide at www.wearetropical.com or call us at 786-395-2974