

THE DECKLOK SYSTEM

Description and Purpose

The DeckLok System is a lateral reinforcement and anchor system for decks, sunrooms and additions that are not supported by a traditional foundation. Through the use of pre-engineered, economical metal connectors, the DeckLok system reinforces the critical connections of the structure to allow for long-term structural integrity of the substructure. Connections that rely on nails installed in tension are reinforced by bolted connections with fasteners arranged in shear. Typical locations requiring DeckLok brackets are the deck-to-house (ledger board) connection, the railing posts-to- deck connection, and the stair stringers-to-deck connection.

Specific Descriptions:

LEDGER BOARD CONNECTORS - The brackets provide a link between timber decks and the home's timber structural system to prevent catastrophic failure of the deck due to lateral pullout. DeckLok systematically transfers lateral loads from a residential timber deck to the structural system of the house, allowing both structures to move and flex as one unit and resist the detachment that leads to collapse. The product integrates the deck ledger board, house band board and floor joists to act as a single structural unit in resisting lateral loads applied to the deck.

RAILING CONNECTORS - When installed on the top mounting bolt of a typical timber or composite 4x4(un-notched) rail post, The DeckLok bracket provides substantial lateral resistance for safety and code compliance. The DeckLok system transfers the lateral load being applied to the rail post directly to the joists of the deck

STAIR STRINGER CONNECTORS - Frequently, the integrity of the connection of stairs to a deck relies on the anchoring of the stringers where they are in contact with the ground. If this point of attachment should fail (through weathering, rot, etc) the staircase, as a unit, could shift forward, detach, and collapse. DeckLok brackets should be bolted to the center stringer and to the deck sub-structure to create a bolted connection that is arranged in shear.

Applications

The DeckLok System can be applied to new construction or to existing construction as a retrofit. DeckLok should only be used where the deck's supports are plumb, stable and not subject to excessive settlement.

Lateral Anchoring of Ledger Board

The DeckLok connector is applied to the inside of a house at the interface between the band board and joist. Connection bolts are then installed through DeckLok, the band board and deck ledger beam; and separately through the DeckLok device and the joists. Typically, two DeckLok devices (a "system") are applied to every third joist within the limits of the deck with a minimum of two pair of DeckLok brackets per structure. The maximum spacing between pairs of brackets is 72" with a maximum distance of 36" from either end.

Lateral Anchoring of Railing Posts

The DeckLok connector is applied to the deck floor joist at the interface between the rail post and joist. Connection bolts are then installed through DeckLok, the rim joist and the rail post; and separately through the DeckLok device and the deck joist. It is recommended that brackets be installed on each railing post and that two brackets, one on the rim joist and one on the deck joist reinforce the corner posts.

Lateral Anchoring of Stair Stringers

The DeckLok connector is applied at the interface between the stair stringer and the substructure of the deck. Connection bolts are then installed through DeckLok, the band board and deck substructure; and separately through the DeckLok device and the stair stringer. Typically, two DeckLok devices (a "system") are applied to the stair stringer. It is recommended that a set of brackets be installed on the center stringer of each set of stairs.

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Features

- Unique design allows for easy installation by contractor or homeowner to new or existing construction.
- May be applied to any timber structural system framed directly into the house band board for support. Examples include timber decks, sunrooms and screened-in porches, etc.
- Versatile bracket design allows for a single product to be used in all applications.
- The DeckLok system may be applied to a variety of home construction-types including typical “2 x ” construction, and, with modified application details, I-beam joist systems, 2” x 4” truss type joist systems and frame houses using OSB band boards.
- The DeckLok system may be applied to a variety of framing configurations such as floor joists in parallel to the deck ledger board.
- Galvanized finish provides a maintenance, worry-free system, particularly important where system will ultimately be hidden by drywall.
- DeckLok bolts may be retightened, when necessary, due to timber shrinkage.

Limitations

- The DeckLok lateral-restraint system is designed for use on residential timber/wood product construction only.
- Railings at 42” require the installation of a 2-1/4” load plate.
- The DeckLok system shall be used only where deck supports are plumb, stable and not subject to excessive settlement.
- DeckLok is designed for secondary (incidental) lateral loads only.

Delivery, Storage and Handling

Product should be delivered to the job site in manufacturer’s packaging undamaged.

Application/ Execution

Lateral Anchoring of Ledger Board

1. Apply DeckLok bracket at joist/band board interface.
2. Mark hole for one bolt to go through the band board and joist.
3. Drill ½” diameter hole through band board and ledger board.
4. Re-apply DeckLok bracket; install bolt through band board and ledger board. Leave the bolt loose.
5. Drill hole in the joist through one of the four holes in the decklok bracket. Care shall be taken in drilling holes in joist so that holes line up with adjacent DeckLok bracket. Install a ½” by 2½” bolt.
6. Install second DeckLok bracket on opposite side of joist; install flat washer, lock washer and retaining nut. Hand tighten retaining nut.
7. Choose the hole that is diagonally opposed to the other bolt location and drill another hole in the joist. Install a second ½” by 2½” bolt. This bolt must protrude through the second bracket. Install flat washer, lock washer and retaining nut; hand tighten.
8. Drill hole in band board and ledger board through the second DeckLok bracket. Install bolt through band board and ledger board.
9. Install flat washer, lock washer and nuts on outside.

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10. Tighten all nuts to torque of 20-25 ft/lbs. DO NOT CRUSH TIMBER THROUGH OVERTIGHTENING OF FASTENERS.

Lateral Anchoring of Railing Posts

1. Apply DeckLok bracket at joist/rail post interface. DeckLok bracket must be located on the top retaining bolt for the rail post.
2. Locate bracket as high on the joist as possible.
3. Drill ½ “ holes in the rail post and rim joist to mount rail post.
4. Install ½” x 6” bolts through rail post and rim joist.
5. Slide DeckLok bracket onto the top bolt, install flat washers, lock washers and retaining nuts; hand tighten
6. Mark hole for one bolt to go through the joist.
7. Drill ½” diameter hole through joist.
8. Choose the hole that is diagonally opposed to the other bolt location and drill another hole in the joist. Install two ½” by 2½” bolts. Install flat washers, lock washers and retaining nuts; hand tighten.
9. Tighten all nuts to torque of 20-25 ft/lbs. DO NOT CRUSH TIMBER THROUGH OVERTIGHTENING OF FASTENERS.

Lateral Anchoring of Stair Stringers

1. Apply DeckLok bracket at joist/stringer interface.
2. Mark hole for one bolt to go through the joist.
3. Drill ½” diameter hole through joist.
4. Re-apply DeckLok bracket; install bolt through joist. Leave the bolt loose. Drill hole in the stringer through one of the four holes in the DeckLok bracket. Care shall be taken in drilling holes so that holes line up with adjacent DeckLok bracket. Install a ½” by 2½” bolt.
5. Install second DeckLok bracket on opposite side of stringer; install flat washer, lock washer and retaining nut. Hand tighten retaining nut.
6. Choose the hole that is diagonally opposed to the other bolt location and drill another hole in the stringer. Install a second ½” by 2½” bolt. This bolt must protrude through the second bracket. Install flat washer, lock washer and retaining nut; hand tighten.
7. Drill hole in joist through the second DeckLok bracket. Install bolt through joist.
8. Install flat washer, lock washer and nuts on outside.
9. Tighten all nuts to torque of 20-25 ft/lbs. DO NOT CRUSH TIMBER THROUGH OVERTIGHTENING OF FASTENERS.

Product Specifications

Stainless Steel Brackets:

Material: 16-gauge 316 stainless steel conforming to ASTM A240/A240M.

Finish: none required

Fasteners: 1/2” diameter stainless steel bolts conforming to ASTM 300 SERIES Stainless Steel, ASTM 300 SERIES nuts, lock washers and flat washers.

Hot-Dip Galvanized Brackets:

Material: 16-gauge steel conforming to ASTM A653.

Finish: Galvanized in accordance with ASTM A153

Fasteners: 1/2” diameter zinc-coated bolts conforming to ASTM A307, ASTM A563 Grade A with nuts, lock washers and flat washers.

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Lateral Load Capacities

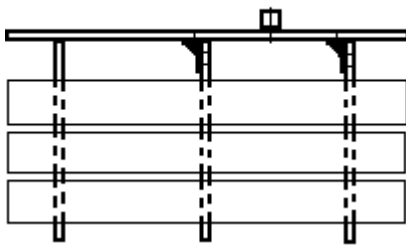
The capacity of the DeckLok bracket to withstand lateral loads is determined by the connection resistance of the timber members to which the bracket is attached. The brackets have been tested in the various scenarios in which they are intended to be used, that is, bolted to timber members. In each test, the timber has failed before failure of the bracket occurred. Therefore, the capacities given below are a function of the strength of the timber used, rather than an indication of the capacity of the actual bracket. The tables below are applicable to both the galvanized and stainless steel DeckLok brackets.

SUMMARY TEST RESULTS

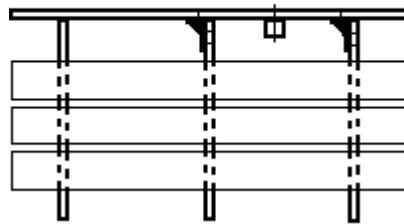
Ledger & Stringer Configuration	Load capacity without DeckLok	Load capacity with DeckLok	% Increase	Mode of Ultimate Failure with DeckLok
Ledger, 2x8 Joists	:	4,100 lbs	-	Timber failure
Ledger – Wood I Joists	:	2,950 lbs	-	Timber failure
Stair Stringers	:	2,950 lbs	-	Timber failure

Railing Configuration	Load capacity without DeckLok	Load capacity with DeckLok	% Increase	Mode of Ultimate Failure with DeckLok
Test Unit 1	150 lbs	608 lbs	405%	Timber
Test Unit 2	100 lbs	517 lbs	517%	Timber
Test Unit 3	75 lbs	1,150 lbs	1533%	Timber*
Test Unit 4	65 lbs	925 lbs	1423%	Timber*
Test Unit 5	220 lbs	1,400 lbs	636%	None

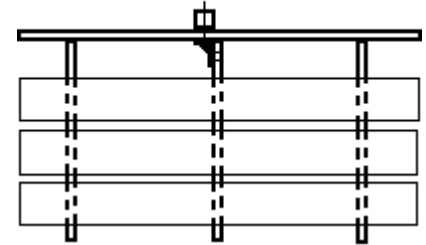
*Includes some or all units that did not fail.



TEST UNIT #1



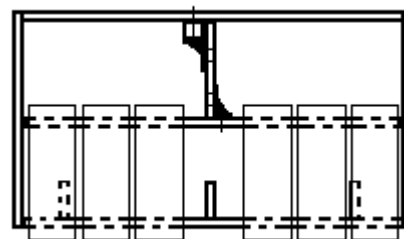
TEST UNIT #2



TEST UNIT #3



TEST UNIT #4



TEST UNIT #5

Note

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Fasteners that come into contact with timbers using ACQ preservative must be specifically designed for this application.

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