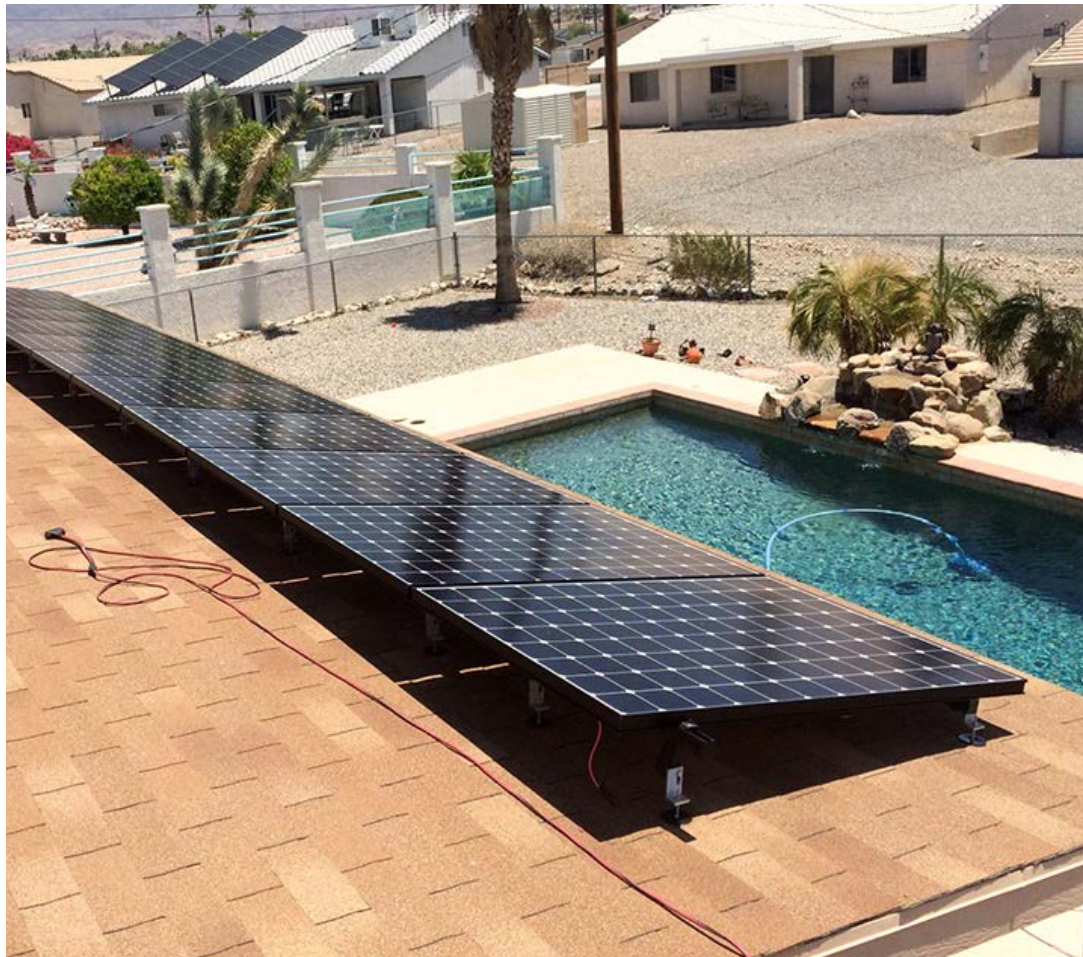


16317

DECK MOUNT
FOR ASPHALT, EPDM, & TPO ROOFS



A DIVISION OF QUICKSCREWS INTERNATIONAL CORP

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ENGINEERING REPORT #1

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TAS 100(A) TESTING

28

PE STAMPED LETTER

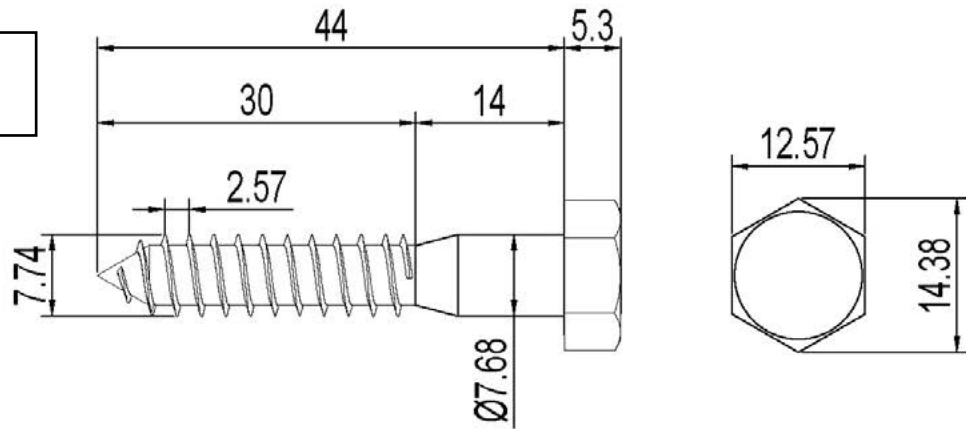
INCLUDES PULLOUT STRENGTH & SPAN REPORT

SPEC SHEET

Part #	Box Quantity
16317	36 Mounts + 144 Screws w/Umbrella Washers

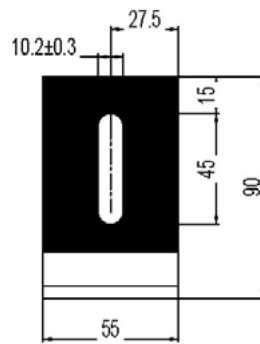
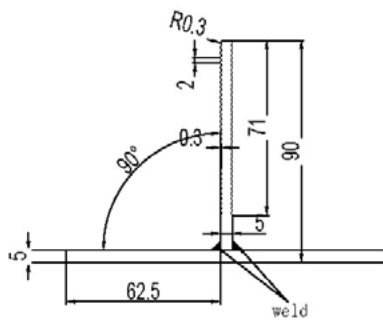
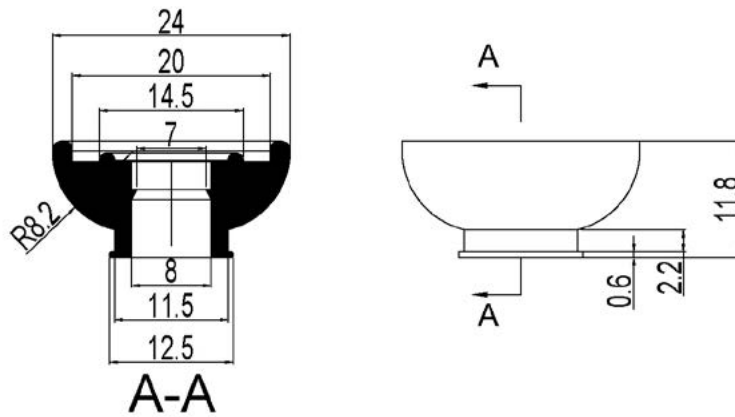


PN# 16317
Screws



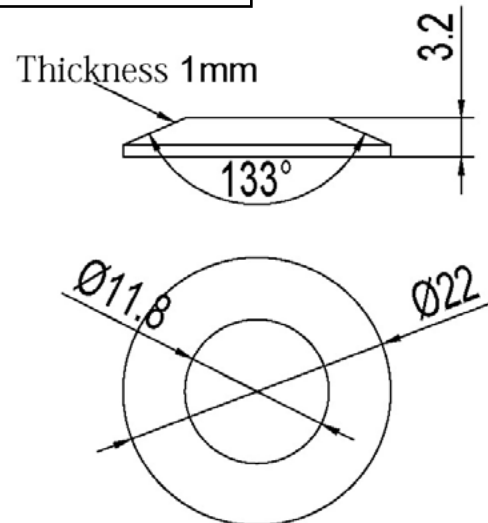
Tolerance Range				QuickBOLT	
Baiting tolerance	±2 mm				
Hole tolerance	±0.3 mm				
Hole distance tolerance	±0.5 mm	Design		Scale	Quantity
Form tolerance	±2 mm	Drawing		Material	SUS304
Thickness tolerance	±0.1 mm	Confirm		Drawing No.	
Angle tolerance	±1° mm	Verify		Finish	

PN# 16317
Umbrella Washer



PN# 16317
T-Foot

PN# 16317
Silicone backing



CERTIFICATE OF COMPLIANCE

Certificate Number E493748
Report Reference E493748-20170817
Date 2023-April-07

Issued to: QuickBOLT a Division of Quickscrews International Corp
5830 Las Positas Rd
Livermore CA, 94551 US

**This is to certify that
representative samples of**

MOUNTING SYSTEMS, MOUNTING DEVICES, CLAMPING
DEVICES AND GROUND LUGS FOR USE WITH
PHOTOVOLTAIC MODULES AND PANELS - COMPONENT

See Addendum Page for Product Designation(s).

Have been evaluated by UL in accordance with the component
requirements in the Standard(s) indicated on this Certificate. UL
Recognized components are incomplete in certain constructional
features or restricted in performance capabilities and are
intended for installation in complete equipment submitted for
investigation to UL LLC.


Standard(s) for Safety: UL 2703, Mounting systems, mounting devices,
clamping/retention devices, and ground lugs for use with flat-
plate photovoltaic modules and panels-.

Additional Information: See the UL Online Certifications Directory at
<https://iq.ulprospector.com> for additional information

This Certificate of Compliance indicates that representative samples of the product described in the certification
report have met the requirements for UL certification. It does not provide authorization to apply the UL
Recognized Component Mark. Only the Authorization Page that references the Follow-Up Services Procedure
for ongoing surveillance provides authorization to apply the UL Mark.

Only those products bearing the UL Recognized Component Mark should be considered as being UL Certified
and covered under UL's Follow-Up Services.

Look for the UL Recognized Component Mark on the product.


Deborah Jennings-Conner, VP Regulatory Services
UL LLC

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contact a local UL Customer Service Representative at <http://ul.com/aboutul/locations/>



CERTIFICATE OF COMPLIANCE

Certificate Number E493748
Report Reference E493748-20170817
Date 2023-April-07

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements

Models:

USR – Component, Roof Mounting Hook Units, Models 15891 15893 15987 16000 16317 16318 16319 16320 16988 16990 16991 16993 17508 17509 17510 17511 17512 17513 17514 17515 17516 17517 17518 17519 17520 17521 17522 17523 17524 17525 17526 17527 17536 17537 17538 17539 17540 17541 17542 17543 17544 17545 17546 17547 17548 17549 17550 17551 17552 17553 17554 17555 17556 17558 17559 17560 17566 17567 17568 17569 17570 17571 17572 17573 17574 17575 17576 17577 17578 17579 17580 17585 17586 17587 17588 17589 17592 17596 17597 17598 17599 17600 17601 17606 17607 17608 17609 17610 17611 17612 17613 17614 17615 17616 17617 17618 17620 17621 17622 17623 17624 17625 17626 17627 17628 17629 17630 17631 17632 17633 17636 17637 17638 17639 17640 17641 17642 17643 17646 17647 17648 17649 17650 17651 17652 17653 17654 17659 17664 17667 17669 17670 17671 17672 17673 17678 17679 17680 17681 17686 17687 17688 17689 17700 17701 17702 17703 17704 17705 17706 17707 17708 17709 17710 17711 17712 17717 17718 17750 17751 17752 17753 17759 15891-10 15891BLK-10 15987A 15987B 17667SS 17672SS 17680SS 17688SS 17713SS 17720 17721SS 17723 17724SS 17726 17727SS 17729 17730SS 15894SS 15891SS 15987BSS 17660 17661 17662 17663 17747 17748

Deborah Jennings-Conner

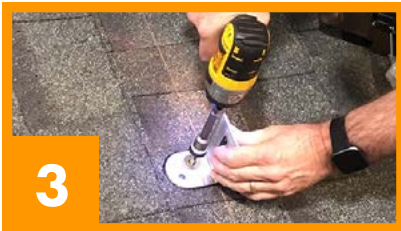
Deborah Jennings-Conner, VP Regulatory Services

UL LLC

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INSTALL INSTRUCTIONS



DECK MOUNT (16317)

RECOMMENDED MATERIALS

- MFG approved sealant
- 1/2" Nut Setter

INSTALLATION INSTRUCTIONS

The Deck Mount may be installed directly to the roof deck or into rafters. Ensure you have the proper design and engineering to support your installation type.

Install anywhere on roof. No need to locate rafters

1. Place sealant around the bottom of the T-Foot
2. Place the T-Foot onto the roof
3. Insert first 5/16" x 1-3/4" Hex Lags into T-Foot
4. Drive the screw until the Umbrella Washer is compressed
5. Repeat with remaining screws

When performing a deck mounting installation, there's a small chance that even with accurate roof inspection, installers might hit a rafter with the Deck Mount lag bolts. A primary indicator is increased resistance or tension on the drill. If this happens:

1. Back out the lag bolt
2. Drill a pilot hole
3. Redrive the bolt
4. Continue with the installation, being aware of rafter direction and alignment to prevent further incidents

When performing a rafter installation with the included lag bolts, installers must predrill pilot holes into the rafter.

- * To Drive Screws and Set Umbrella Washers Properly
Torque PSI should not Exceed 57 Lbs/Inch

BUILDING CODE LETTER



March 22nd, 2023

To whom this may concern,

QuickBOLT is committed to excellence. The parts tested are durable goods, meaning the material composition and detailed specifications of the parts do not change. Therefore, all stamps are current. Any part tested will have the same results no matter what year the tests are performed. All testing and reports are current and valid with 2022 CBC standards.

SolarRoofHook is the previous name of QuickBOLT. Any test result referencing SolarRoofHook is referring to a QuickBOLT product.

All our parts were tested by a third-party test facility, in possession of a current engineering license for the state where the tests were performed for the following.

1. Uplift test
2. Downward load test
3. Lateral Test – Asphalt Mounts, and Metal Mounts only
4. ASTM E2440 and ASTM E330 Waterproof Tests - QuickBOLT only

The following is an excerpt from:

CALIFORNIA BOARD FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS
guide to Engineering & Land Surveying for City and County Officials
Page 12, Line 27

27. If the license has expired between the time the engineering documents were prepared and the time when the local agency's review is performed, do the documents need to be re-sealed by a licensee with a current license? (B&P Code §§ 6733, 6735, 6735.3, 6735.4)

As long as the license was current at the time the engineering documents were prepared, the documents do not need to be re-sealed prior to review by the local agency. However, any changes (updates or modifications) to the documents that are made following the review by the local agency would have to be prepared by a licensed engineer with a current license and those changes would have to be signed and sealed.

We trust the information provided will resolve any request for the test reports submitted to have a stamp from the current year.

Regards,

Rick Gentry
Executive Vice President

ENGINEERING REPORT #1



QUICKSCREWS INTERNATIONAL CORP. TEST REPORT

SCOPE OF WORK

LOAD TESTING of Part# 16317 and 16318 Deck Mount Kit Stand

REPORT NUMBER

L2941.02-301-18- R0

TEST DATE

08/31/20

ISSUE DATE

09/14/20

PAGES

11

DOCUMENT CONTROL NUMBER

GFT-OP-10c (AUGUST 27, 2018)

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TEST REPORT FOR QUICKSCREWS INTERNATIONAL CORP.

Report No.: L2941.02-301-18- R0

Date: 09/14/20

REPORT ISSUED TO

QUICKBOLT - A DIVISION OF QUICKSCREWS INTERNATIONAL CORP.

5830 Las Positas Road
Livermore, California 94551

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by Quickscrews to perform additional load testing on their Part# 16317 and 16318 Deck Mount Kit Stand Testing was conducted at the Intertek B&C test facility in Fresno, California.

Intertek B&C in Fresno, California has demonstrated compliance with ISO/IEC International Standard 17025 and is consequently accredited as a Testing Laboratory (TL-264) by International Accreditation Service, Inc. (IAS).

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. Intertek B&C will service this report for the entire test record retention period. The test record retention period ends five years after the test date. Test records, such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained for the entire test record retention period.



2020.09.14 12:24:17 -07'00'

For INTERTEK B&C:

COMPLETED BY: Dennis Janzen

TITLE: Technician

SIGNATURE:

Dennis Janzen

Digitally Signed by: Dennis Janzen

DATE: 09/14/20

TW:ms

REVIEWED BY: Tyler Westerling, P.E.

TITLE: Operations Manager

SIGNATURE:

Tyler Westerling

Digitally Signed by: Tyler Westerling

DATE: 09/14/20

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Facsimile: 717-764-4129
www.intertek.com/building

TEST REPORT FOR QUICKSCREWS INTERNATIONAL CORP.

Report No.: L2941.02-301-18- R0

Date: 09/14/20

SECTION 2

SUMMARY OF TEST RESULTS

JOIST CONNECTION PERFORMANCE (DIRECT VERTICAL LOAD - SHEAR PERPENDICULAR) ¹	Deck Mount Kit Stand Part# 16317	Load at 1/8 in Displacement
---	----------------------------------	-----------------------------

SECTION 3

TEST METHODS

ASTM D7147-11 (Reapproved 2018), *Standard Specification for Testing and Establishing Allowable Loads of Joist Hangers*

Limitations

Bracket systems to the supporting structure is not included in the scope of this testing and would need to be evaluated separately.

SECTION 4

MATERIAL SOURCE/INSTALLATION

All anchor components including wood posts used for the testing reported herein were supplied by Quickscrews and were not independently sampled or selected by a third-party inspection agency.

SECTION 5

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Tyler Westerling	Intertek B&C
Dennis Janzen	Intertek B&C

TEST REPORT FOR QUICKSCREWS INTERNATIONAL CORP.

Report No.: L2941.02-301-18- R0

Date: 09/14/20

SECTION 6

TEST PROCEDURE

Specimens were mounted to an Asphalt shingle covered 2x6 lumber frame with 5/8" plywood. Vertical load was applied to the bearing block through a load cell attached to the testing machine. Test speed was 0.200 in/min. Displacement was taken with one linear transducer, attached to the frame, which were zeroed at zero load. Ultimate load was the maximum load the test assembly could withstand in that direction without deflection exceeding 1/8". See photographs in Section 10 for typical test set-up.

SECTION 7

TEST SPECIMEN DESCRIPTION

COMPONENT	MATERIAL	DESCRIPTION
Deck Mount Kit Stand Part# 16317	Stainless Steel	Bracket (0.20" thick) Backed with 0.040" thick silicone
Mount Screw with Umbrella Washer	Stainless Steel	Stainless Steel Lag 5/16" diameter by 2" long with stainless steel and EPDM washer

Refer to photographs in Section 10 and drawings in Section 11 for additional details.

TEST REPORT FOR QUICKSCREWS INTERNATIONAL CORP.

Report No.: L2941.02-301-18- R0

Date: 09/14/20

SECTION 8

TEST RESULTS

Connection Performance Testing (Direct Vertical Load - Shear - Perpendicular)

The purpose of this testing was to determine the direct load capacity of the L-foot in three direction in accordance with ASTM D7147.

Specimen No. 1-3

Pounds Load at 0.125" deflection				
Load Direction	Anchor #1	Anchor #2	Anchor #3	Average
Bending (weak direction)	201 lbs	192 lbs	196 lbs	196 lbs
Pullout	148 lbs	143 lbs	136 lbs	142 lbs
Shear	95lbs	103 lbs	110 lbs	103 lbs

Test/Ultimate loads should not be used as design loads or safe working loads.

TEST REPORT FOR QUICKSCREWS INTERNATIONAL CORP.

Report No.: L2941.02-301-18- R0

Date: 09/14/20

SECTION 9

PHOTOGRAPHS



Photo No. 1
Pullout Test

TEST REPORT FOR QUICKSCREWS INTERNATIONAL CORP.

Report No.: L2941.02-301-18- R0

Date: 09/14/20

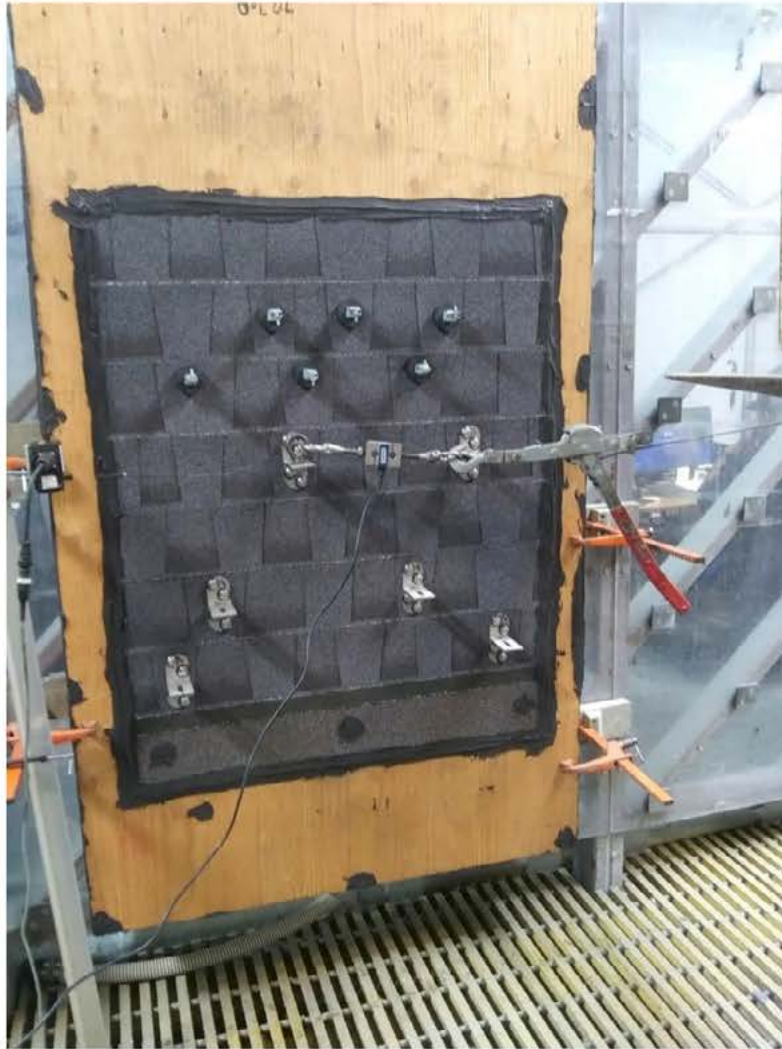


Photo No. 2
Shear Test

TEST REPORT FOR QUICKSCREWS INTERNATIONAL CORP.

Report No.: L2941.02-301-18- R0

Date: 09/14/20

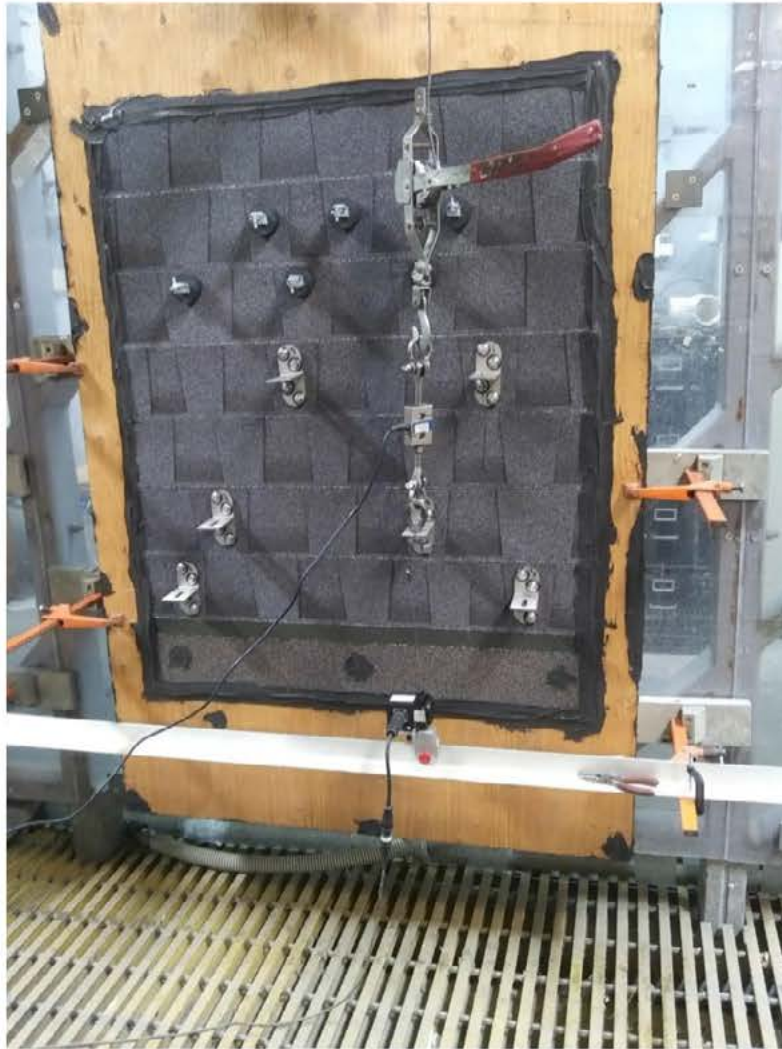


Photo No. 3
Bending Weak

TEST REPORT FOR QUICKSCREWS INTERNATIONAL CORP.

Report No.: L2941.02-301-18- R0

Date: 09/14/20



Photo No. 4
Deck Mount

TEST REPORT FOR QUICKSCREWS INTERNATIONAL CORP.

Report No.: L2941.02-301-18- R0

Date: 09/14/20



Photo No. 5
Instrumentation

TEST REPORT FOR QUICKSCREWS INTERNATIONAL CORP.

Report No.: L2941.02-301-18- R0

Date: 09/14/20

SECTION 10
REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	09/14/20	N/A	Original Report Issue

ENGINEERING REPORT #2



QUICKSCREWS INTERNATIONAL CORP. TEST REPORT

SCOPE OF WORK

TAS 100(A) TESTING on Part# 16317 and 16318 Deck Mount Kit Stand

REPORT NUMBER

L2941.01-301-18 R1

TEST DATE

08/31/20

ISSUE DATE

09/14/20

REVISION 1 DATE

09/14/20

RECORD RETENTION END DATE

08/31/30

PAGES

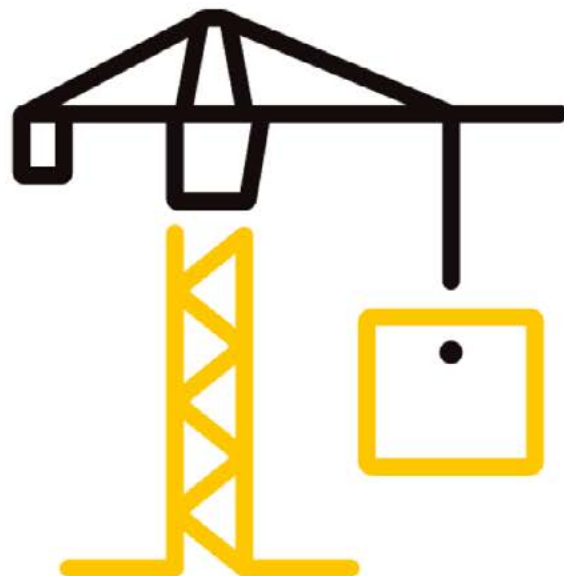
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DOCUMENT CONTROL NUMBER

ATI 00479 (07/24/17)

RT-R-AMER-Test-2805

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TEST REPORT FOR QUICKSCREWS INTERNATIONAL CORP.

Report No.: L2941.01-301-18 R1

Date: 09/14/20

REPORT ISSUED TO

QUICKBOLT - A DIVISION OF QUICKSCREWS INTERNATIONAL CORP.

5830 Las Positas Road
Livermore, California 94551

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by Quickscrews Company to perform testing in accordance with TAS 100(A) – 95 testing on their Part# 16317 and 16318 Deck Mount Kit Stand. Results obtained are tested values and were secured by using the designated test method. Testing was conducted at Intertek B&C test facility in Fresno, California.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

SECTION 2

SUMMARY OF TEST RESULTS

The specimens tested met the performance requirements set forth in the protocols.

Product Type: Solar Mounting Fastener

Series/Model: Part# 16317 and 16318 Deck Mount Kit Stand

SPEC.	TEST PROTOCOL	LEVEL
1	TAS 100(A) – 95	110 MPH



For INTERTEK B&C:

COMPLETED BY: Dennis Janzen
TITLE: Technician
SIGNATURE: *Dennis Janzen*
Digitally Signed by: Dennis Janzen
DATE: 09/14/20

2020.09.14 14:12:39 -07'00'

REVIEWED BY: Tyler Westerling, P.E.
TITLE: Operations Manager
SIGNATURE: *Tyler Westerling*
Digitally Signed by: Tyler Westerling
DATE: 09/14/20

TW:ms

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TEST REPORT FOR QUICKSCREWS INTERNATIONAL CORP.

Report No.: L2941.01-301-18 R1

Date: 09/14/20

SECTION 3

TEST METHOD

The specimens were evaluated in accordance with the following:

Testing Application Standard (TAS) No. 100(A) - 1995, Test Procedure for Wind and Wind Driven Rain Resistance and/or Increased Windspeed Resistance of Soffit Ventilation Strip and Continuous or Intermittent Ventilation System Installed at the Ridge Area

SECTION 4

MATERIAL SOURCE/INSTALLATION

Test specimen were provided by the client. Representative samples of the test specimen will be retained by Intertek B&C for a minimum of five years from the test completion date.

The specimen was installed into an asphalt shingle test buck with lexan viewing window on the underside. Installation of the tested product was performed by Intertek B&C.

COMPONENT	MATERIAL	DESCRIPTION
Deck Mount Kit Stand Part# 16317	Stainless Steel	Bracket (0.20" thick) Backed with 0.040" thick silicone
Mount Screw with Umbrella Washer	Stainless Steel	Stainless Steel Lag 5/16" diameter by 2" long with stainless steel and EPDM washer

SECTION 5

EQUIPMENT

Calibrated Wind Generator - Reference calibration report I6737.03-801-44-r0 for calibration results.

SECTION 6

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Dennis Janzen	Intertek B&C
Tyler Westerling	Intertek B&C

TEST REPORT FOR QUICKSCREWS INTERNATIONAL CORP.

Report No.: L2941.01-301-18 R1

Date: 09/14/20

SECTION 7

TEST RESULTS

Protocol TAS 100(A) – 95, Wind Driven Rain Resistance

Test Date: 08/31/20

The temperature during testing was 35°C (95°F). The results are tabulated as follows:

Test Specimen test results:

Wind Speed	Gallons Sprayed	Inches Per Hour	Gallons Collected	Notes
35	77.02	10.30	0	15 Minutes
70	75.11	10.04	0	15 Minutes
90	79.89	10.68	0	15 Minutes
110	27.88	10.08	0	5 Minutes
Total	259.9	11.18	0	
1% of total water sprayed	2.59 Gallons		0 Gallons Collected	Pass

General Note: All testing was performed in accordance with the referenced standard.

SECTION 8

CONCLUSIONS

Intertek B&C observed no signs of failure in any area of the test specimens during the test; as such, the test specimens satisfy the requirements of TAS 100(A) – 95.

TEST REPORT FOR QUICKSCREWS INTERNATIONAL CORP.

Report No.: L2941.01-301-18 R1

Date: 09/14/20

SECTION 9

PHOTOGRAPHS



Photo No. 1

TEST REPORT FOR QUICKSCREWS INTERNATIONAL CORP.

Report No.: L2941.01-301-18 R1

Date: 09/14/20



Photo No. 2

TEST REPORT FOR QUICKSCREWS INTERNATIONAL CORP.

Report No.: L2941.01-301-18 R1

Date: 09/14/20



Photo No. 3



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TEST REPORT FOR QUICKSCREWS INTERNATIONAL CORP.

Report No.: L2941.01-301-18 R1

Date: 09/14/20

SECTION 10

REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	09/14/20	N/A	Original Report Issue.
1	09/14/20	4	Correction of Test Date.

PE STAMPED LETTER

Technology,
Engineering &
Consulting for the
Solar Industry

TECSI
Solar

May 6, 2022

Engineering Report
Document# 001102

QuickBOLT
Division of Quickscrews International Corporation
5830 Las Positas Road
Livermore, CA 94551

Attn: Rick Gentry, VP Sales
RGentry@quickscrews.com

SUBJECT: QuickBOLT Deck Mount 16317 and 16318, Structural Evaluation and Associated Installation Guidelines

Dear Rick,

Per your request, the structural suitability of your QuickBOLT Deck Mount product (Product Numbers 16317 and 16318), installed on asphalt shingle roofing, was evaluated by TECSI Solar Inc. for its ability to resist anticipated loads. We have analyzed the QuickBOLT Deck Mount product and determined that, for the configurations and criteria described below, it is in compliance with the applicable sections of the following reference documents:

- California Building Code 2019 Edition
- ASCE/SEI 7-16 Minimum Design Loads for Buildings & Other Structures, Mostly Section 29.4.4
- ANSI/AWC NDS National Design Specification for Wood Construction 2018 Edition

To accomplish this, TECSI performed standard and generally accepted engineering analysis of the withdrawal and shear capacities of the fasteners and the QuickBolt Deck Mount product. The analysis carried out by this office indicated an allowable pull-out strength of 95 lbs per fastener (380 lbs/mount) with a factor of safety of about 3.33 inherent in the specification. Furthermore, it should be understood by the client that the applied factors of safety and other assumptions of the design process result in installations that maintain life safety, but do not necessarily prevent damage, for example in a severe wind event.

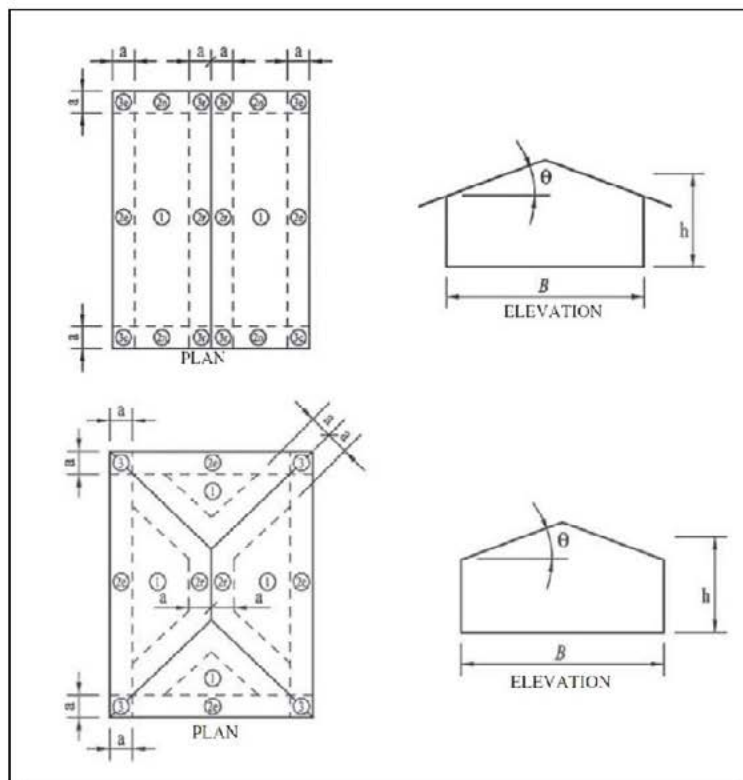
Table 1 lists the design and installation limitations relevant to our analysis. These parameters, which were provided by QuickBOLT, represent worst case conditions to which their product is to be installed. Our analysis was performed as prescribed by the referenced codes to verify the suitability of your product using these specific design assumptions. The product was found to meet the code requirements. Installations where the parameters listed differ only as indicated under Allowable Deviation are also acceptable configurations covered by this report.

Lag bolts may not be installed such that they penetrate roof sheathing closer than 1 ½" (as measured from center of bolt) from an unblocked sheathing edge. Photovoltaic panels must be installed parallel to the roof surface and the top surface of the panels shall be no more than 6" from the roof surface. Note that these recommendations require that the panels be installed wholly within Roof Wind Zone 1 as defined by ASCE 7-16. See Figure 1 for definitions of Zone 1 for applicable roof configurations.

Parameter	Assumption	Allowable Deviation
Design Wind Speed (ASCE 7-16)	120 mph	Slower
Ground Snow Load (ASCE 7-16)	70 psf	Less
Max Building Height	30 ft	Less
Wind Exposure	Exposure C	Exposure B
Panel Size	72 Cell, (85"x42")	Smaller Panel
Roof Zone (Figure 1)	Zone 1	None Allowed
Sheathing Thickness	7/16"	Thicker
Roof Slope	12:12	Lower
Panel Height Above Roof	6"	Lower
Panel Gap	0.25"	Greater
Mount Spacing	4'-0"	Less
Cantilever	18" *	less
Panel Orientation	Portrait	None Allowed

* Cantilever length also limited by rail manufacture.

Table 1 – Design & Installation Limitations



a: 10% of the least horizontal dimension or 0.4*(Mean Roof Height) whichever is smaller, but not less than either 4% of the least horizontal dimension or 3'.

Figure 1 - Roof Zone 1

These recommendations assume that the asphalt roofing and the roof sheathing are in good condition, and the sheathing is properly attached to rafters, and that the rafters are also in good condition with no visible degradation (such as dry rot or sagging) that would indicate compromised strength. In addition, the QuickBOLT Deck Mount product must be installed following its manufacture's recommendations, along with recommendations provided by the rail and panel manufacture. Failure to follow installation instruction could result in system failures leading to fires, personal injury, or death.

This report does not consider the reliability or structural capacity of any other component of the installed system including the panels, mounting rails and the structural elements of the roof. These recommendations are not proof of liability of the author or any associated organization. These recommendations may not consider all possible failure modes or accurately capture the extent of any given failure mode, nor do they consider site specific risks. The system designer is fully responsible for incorporating site specific risks and unique failure modes.

Please contact our office with any questions about this report or the implementation of its recommendations.

Sincerely,



Ronald Migdal SE
Structural Engineer

