LIMITED WARRANTY

Effective Date: March 18, 2021

This Limited Warranty applies to all Simpson Strong-Tie products ("Products") purchased after the Effective Date while this Limited Warranty remains in effect, other than those Simpson Strong-Tie products that have a separate Limited Warranty applicable to such products. For purchases after the Effective Date, please consult **strongtie.com/limited-warranties**, as this Limited Warranty may be updated by Simpson from time to time. All future purchases of Products are subject to the terms of the Limited Warranty in effect as of the purchase date.

This Limited Warranty must be read in conjunction with all applicable **General Notes**, **General Instructions for the Installer**, **General Instructions for the Designer**, Building Codes, **Corrosion Information**, and Terms & Conditions of Sale, along with any other information or specifications published by Simpson Strong-Tie Company Inc. ("Simpson") or available on the **strongtie.com** website ("Website") or on the product package, label or product manual. All of this information is referred to collectively as the "Simpson Strong-Tie Documentation." All applicable Simpson Documentation must be carefully reviewed each time any Product is used.

Simpson Strong-Tie warrants, to the original purchaser only, that each Product will be free from substantial defects in materials, manufacturing and design if properly specified, installed, and maintained, and when used in accordance with the design limits and the structural, technical, and environmental specifications in the Simpson Strong-Tie Documentation. This Limited Warranty is void and does not apply to any (a) Product purchased from an unauthorized dealer, retailer or distributor, (b) Product deterioration or damage due to environmental conditions or inadequate or improper handling, transportation, storage or maintenance, (c) cosmetic defects, including discoloration, (d) failure or damage caused by improper installation, application, mixing or preparation, (e) use of a Product in temperatures or environmental conditions outside the ranges specified for such Product in the Simpson Strong-Tie Documentation, (f) use of a Product outside of its shelf-life specifications, (g) normal wear and tear, (h) failure or damage caused by the use of a Product with any fasteners, pins, screwstrips, products or accessories other than authentic Simpson Strong-Tie products, (i) Product that was subjected to negligence or excessive or improper use, including any use not in accordance with the Simpson Strong-Tie Documentation, (j) failure or damage caused by the building site, foundation, or any third-party products, building materials or components, (k) failure or damage caused by use of a Product in a structure that has a design or other defect or that does not comply with all applicable building codes, laws, rules and regulations, (l) modified Product, or any nonstandard use or application of a Product, (m) failure or damage caused by corrosion, termites or other wood destroying organisms, animal or insect activity, wood fungal decay, rot, mold, mildew, exposure to chemicals or other hazardous substances, a corrosive environment or materials, inadequate moisture protection, or premature deterioration of building materials, (n) failure or damage caused by an act of God, including any hurricane, earthquake, tornado, lightning, ice, snow, high wind, flood or other severe weather or natural phenomena, (o) installation services or workmanship, including any failure or damage caused by installation of any Product, whether or not in accordance with the Simpson Strong-Tie Documentation, or (p) failure or damage caused by the gross negligence, willful misconduct, or other acts or omissions of the builder, general contractor, installer or any third party, including the building owner. Notwithstanding the foregoing, Simpson Strong-Tie disclaims and does not provide any warranty related to the design of any custom-order or non-catalog Product.

Although Products are designed for a wide variety of uses, Simpson Strong-Tie assumes no liability for confirming that any Product is appropriate for an intended use, and each intended use of a Product must be reviewed and approved by qualified professionals. Each Product is designed for the load capacities and uses listed in the Simpson Strong-Tie Documentation, subject to the limitations and other information set forth in the Simpson Strong-Tie Documentation.

Due to the particular characteristics of potential impact events such as earthquakes and high velocity winds, the specific design and location of the structure, the building materials used, the quality of construction, or the condition of the soils or substrates involved, damage may nonetheless result to a structure and its contents even if the loads resulting from the impact event do not exceed Simpson Strong-Tie's specifications and the Products are properly installed in accordance with applicable building codes, laws, rules and regulations.

Product demonstrations, training, operator examinations, technical and customer support and other services provided by Simpson Strong-Tie are based on Simpson Strong-Tie's present knowledge and experience, are conducted for illustrative or instructive purposes only, do not constitute a warranty of Product capabilities, specifications or installation and do not modify the applicable Limited Warranty for Products set forth herein. Any services provided by Simpson Strong-Tie are provided without any representation or warranty of any kind, and Simpson Strong-Tie assumes no liability for any representations or statements made as part of such Product demonstrations, training, operator examinations or other services. In the event of any inconsistency between any information provided during any such demonstration or service, and the information in any applicable Simpson Strong-Tie Documentation, the information in the Simpson Strong-Tie Documentation shall govern. In the event of any inconsistency between any information provided on the Website, and the information in any other Simpson Strong-Tie Documentation, the information on the Website shall govern.

LIMITED WARRANTY

ALL WARRANTY OBLIGATIONS OF SIMPSON STRONG-TIE SHALL BE LIMITED, AT SIMPSON STRONG-TIE'S ABSOLUTE DISCRETION, TO EITHER REPAIRING THE DEFECTIVE PRODUCT OR PROVIDING A REPLACEMENT FOR THE DEFECTIVE PRODUCT. THIS REMEDY CONSTITUTES SIMPSON STRONG-TIE'S SOLE OBLIGATION AND LIABILITY AND THE SOLE AND EXCLUSIVE REMEDY OF PURCHASER AND, WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, EXCLUDES ANY LABOR OR OTHER COSTS INCURRED IN CONNECTION WITH A WARRANTY CLAIM. PURCHASER ASSUMES ALL RISK AND LIABILITY ASSOCIATED WITH ANY USE OF THE PRODUCT, INCLUDING BUT NOT LIMITED TO SUITABILITY FOR ITS INTENDED USE.

THE LIMITED WARRANTY HEREIN IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, AND, WHERE LAWFUL, SIMPSON STRONG-TIE DISCLAIMS ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND WARRANTIES ARISING FROM COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE. IN NO EVENT WILL SIMPSON STRONG-TIE BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR SPECIAL DAMAGES OR DIRECT OR INDIRECT LOSS OF ANY KIND, INCLUDING BUT NOT LIMITED TO PROPERTY DAMAGE, DEATH AND PERSONAL INJURY. SIMPSON STRONG-TIE'S ENTIRE LIABILITY IS LIMITED TO THE PURCHASE PRICE OF THE DEFECTIVE PRODUCT. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, OR THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

To obtain warranty service, you must contact Simpson Strong-Tie promptly at (800) 999-5099 or at Simpson Strong-Tie Company Inc., 5956 West Las Positas Boulevard, Pleasanton, CA 94588, regarding any potential claim, no later than sixty (60) days after you discover the potential claim. Upon request by Simpson Strong-Tie, you must provide Simpson Strong-Tie with: (a) proof of purchase and written records evidencing, in reasonable detail, the date and manner of installation, application, mixing and preparation of the Products, as applicable, (b) a reasonable opportunity to inspect the site where the Product was installed, and (c) samples of the Products from the actual installation in sufficient quantities in order for Simpson Strong-Tie to perform testing to determine whether or not the Product failed as set forth herein. Simpson Strong-Tie may, in its absolute discretion, request that you return the allegedly defective Products to Simpson Strong-Tie, in which case Simpson Strong-Tie will issue a Return Materials Authorization (RMA), which must be completed and returned to Simpson Strong-Tie with the Product. Simpson Strong-Tie is not responsible for any costs or expenses incurred in connection with any inspection (other than by Simpson Strong-Tie employees) or in connection with the return of Products to Simpson Strong-Tie, but Simpson Strong-Tie shall bear all costs and expenses incurred in connection with the shipment of replacement Products in the event that Simpson Strong-Tie determines that the Product should be replaced in accordance with this Limited Warranty. If Simpson Strong-Tie elects to repair or replace the Product, Simpson Strong-Tie shall have a reasonable time to do so.

No one is authorized to change or add to this Limited Warranty. If at any time Simpson Strong-Tie does not enforce any of the terms, conditions or limitations stated in this Limited Warranty, Simpson Strong-Tie shall not have waived the benefit of said term, condition or limitation and can enforce it at any time. This Limited Warranty is extended only to the original purchaser and is not transferrable. It is not intended nor shall it be construed to create rights in any third party.

Simpson Strong-Tie Brand Tools One-Year Limited Warranty

Effective Date: March 18, 2021

Simpson Strong-Tie Company Inc. (“Simpson”) provides this Limited Warranty to original purchasers of the Simpson Strong-Tie® brand tool product (“Product”). This Limited Warranty is effective as of the date of purchase. This Product, if properly stored, maintained and used in compliance with all instructions and warnings, will be free from substantial defects in material and manufacturing for one year of purchase. This Limited Warranty does not cover normal wear and tear, as determined by Simpson in its absolute discretion, and is null and void with respect to: (a) any Product that was purchased from an unauthorized dealer, retailer or distributor, (b) any Product that was modified or altered, (c) any Product that was improperly or inadequately serviced or maintained, (d) any Product that was subject to negligence or excessive or improper use, including use in improper conditions, as determined by Simpson in its absolute discretion, (e) any failure or damage caused by the use of a Product with any accessories other than authentic Simpson products, or (f) any Product that was subject to any use not in accordance with the applicable specifications provided with the Product or on the strongtie.com website. If any Product fails to conform to this Limited Warranty, original purchaser's sole and exclusive remedy is either the replacement or repair, at Simpson's election, of the defective Product. Original purchaser must return the Product to Simpson along with satisfactory proof of purchase, with return shipping prepaid by original purchaser. To obtain warranty service, go to www.strongtie.com or contact Simpson promptly at (800) 999-5099. The repaired or replaced Product is warranted under the terms of this Limited Warranty.

THE LIMITED WARRANTY HEREIN IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, AND, WHERE LAWFUL, SIMPSON DISCLAIMS ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND WARRANTIES ARISING FROM COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE BEYOND THIS WARRANTY PERIOD. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. WHERE LAWFUL, UNDER NO CIRCUMSTANCES SHALL SIMPSON BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR SPECIAL DAMAGES OR DIRECT OR INDIRECT LOSS OF ANY KIND, INCLUDING BUT NOT LIMITED TO BODILY INJURY, DEATH OR PROPERTY DAMAGE. SIMPSON’S ENTIRE LIABILITY IS LIMITED TO THE PURCHASE PRICE OF THE DEFECTIVE PRODUCT. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. SIMPSON IS IN NO WAY LIABLE FOR INCIDENTS RESULTING FROM USE WITHOUT PROPER CERTIFICATION OR DISREGARD OF INSTRUCTIONS AND WARNINGS. THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

Quik Drive Limited Warranty

Effective Date: March 18, 2021

LIMITED LIFETIME WARRANTY

The following Limited Lifetime Warranty applies to all Quik Drive products (each a "Quik Drive Product"), except the QDA158 product (which has a Limited 90-Day Warranty discussed below), and must be read in conjunction with the **General Notes**, **Terms and Conditions of Sale**, and **Corrosion Resistance** information contained in the current Fastening Systems catalog and at **www.strongtie.com/info**, along with any information provided with a Quik Drive Product. The screwgun that is supplied with the Quik Drive Product is not manufactured by Simpson. As a result, the screwgun is exclusively warranted by the screwgun manufacturer and not by Simpson. Simpson does not warranty, and assumes no liability for the operation or functionality of, the screwgun. This Limited Lifetime Warranty is effective as of the date of any purchase. For all future purchases, please consult this page for current warranty information, as this page may be updated by Simpson from time to time.

Simpson warrants each Quik Drive Product, only to the original purchaser, to be free from substantial defects in materials, manufacturing and design for the lifetime of the Quik Drive Product, if properly stored, maintained and used. This Limited Lifetime Warranty does not cover normal wear and tear, as determined by Simpson in its absolute discretion, and is null and void with respect to: (a) any Quik Drive Product that was purchased from an unauthorized dealer, retailer or distributor, (b) any Quik Drive Product that was modified or altered, (c) any failure or defect caused by improper installation of any Quik Drive Product; (d) any Quik Drive Product that was improperly or inadequately serviced or maintained, (e) any Quik Drive Product that was subject to negligence or excessive or improper use, including use in improper conditions, as determined by Simpson in its absolute discretion, or (f) any Quik Drive Product that was subject to any use not in accordance with the specifications in the Quik Drive catalog provided with the Quik Drive Product or provided on this website. If any Quik Drive Product fails to conform to this Limited Lifetime Warranty, original purchaser's sole and exclusive remedy is either the replacement or repair, at Simpson's election, of such Quik Drive Product. Original purchaser must return the Quik Drive Product to Simpson along with satisfactory proof of purchase, with return shipping prepaid by original purchaser. To obtain warranty service, go to www.strongtie.com or contact Simpson promptly at (800) 999-5099. The repaired or replaced Quik Drive Product is warranted under the terms of this Limited Lifetime Warranty.

THE LIMITED WARRANTY HEREIN IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, AND, WHERE LAWFUL, SIMPSON DISCLAIMS ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND WARRANTIES ARISING FROM COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE. IN NO EVENT WILL SIMPSON BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR SPECIAL DAMAGES OR DIRECT OR INDIRECT LOSS OF ANY KIND, INCLUDING BUT NOT LIMITED TO PROPERTY DAMAGE AND PERSONAL INJURY. SIMPSON'S ENTIRE LIABILITY IS LIMITED TO THE PURCHASE PRICE OF THE DEFECTIVE QUIK DRIVE PRODUCT. SOME STATES DO NOT ALLOW LIMITATIONS ON IMPLIED WARRANTIES, OR THE EXCLUSION OR LIMITATION OF INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR SPECIAL DAMAGES, SO THE ABOVE LIMITATIONS AND EXCLUSIONS MAY NOT APPLY. THIS LIMITED WARRANTY GIVES SPECIFIC LEGAL RIGHTS. OTHER RIGHTS THAT VARY FROM STATE TO STATE MAY BE APPLICABLE.

QDA158 Limited 90 Day Warranty

Effective Date: March 18, 2021

This Limited 90-Day Warranty applies to the QDA158 product and must be read in conjunction with the General Notes, Terms and Conditions of Sale, and Corrosion Resistance information contained in the current Fastening Systems catalog and at www.strongtie.com/info, along with any information provided with a QDA158 product. The screwgun that is supplied with the QDA158 product is not manufactured by Simpson. As a result, the screwgun is exclusively warranted by the screwgun manufacturer and not by Simpson. Simpson does not warranty, and assumes no liability for the operation or functionality of, the screwgun. This Limited 90-Day Warranty is effective as of the date of any purchase. For all future purchases, please consult this page for current warranty information, as this page may be updated by Simpson from time to time.

Simpson warrants each QDA158 product only to the original purchaser to be free from substantial defects in material, manufacturing and design for 90 days from the date of purchase, if properly stored, maintained and used. This Limited 90-Day Warranty does not cover normal wear and tear, as determined by Simpson in its absolute discretion, and is null and void with respect to: (a) any QD158 product that was purchased from an unauthorized dealer, retailer or distributor, (b) any QD158 product that was modified or altered, (c) any failure or defect caused by improper installation of any QD158 product, (d) any QD158 product that was improperly or inadequately serviced or maintained, (e) any QD158 product that was subject to negligence or excessive or improper use, including use in improper conditions, as determined by Simpson in its absolute discretion, or (f) any QD158 product that was subject to any use not in accordance with the specifications in the Quik Drive catalog provided with the QDA158 product or provided on this website. If any QDA158 product fails to conform to this Limited 90-Day Warranty, original purchaser's sole and exclusive remedy is either the replacement or repair, at Simpson's election, of the defective QDA158 product. Original purchaser must return the QDA158 product to Simpson along with satisfactory proof of purchase, with return shipping prepaid by original purchaser. To obtain warranty service, go to www.strongtie.com or contact Simpson promptly at (800) 999-5099. The repaired or replaced QDA158 product is warranted under the terms of this Limited 90-Day Warranty.

THE LIMITED 90-DAY WARRANTY HEREIN IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, AND, WHERE LAWFUL, SIMPSON DISCLAIMS ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND WARRANTIES ARISING FROM COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE. IN NO EVENT WILL SIMPSON BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR SPECIAL DAMAGES OR DIRECT OR INDIRECT LOSS OF ANY KIND, INCLUDING BUT NOT LIMITED TO PROPERTY DAMAGE AND PERSONAL INJURY. SIMPSON'S ENTIRE LIABILITY IS LIMITED TO THE PURCHASE PRICE OF THE DEFECTIVE QDA158 PRODUCT. SOME STATES DO NOT ALLOW LIMITATIONS ON IMPLIED WARRANTIES, OR THE EXCLUSION OR LIMITATION OF INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR SPECIAL DAMAGES, SO THE ABOVE LIMITATIONS AND EXCLUSIONS MAY NOT APPLY. THIS LIMITED WARRANTY GIVES SPECIFIC LEGAL RIGHTS. OTHER RIGHTS THAT VARY FROM STATE TO STATE MAY BE APPLICABLE.

Repair, Protection and Strengthening (RPS) Systems and Products for Concrete and Masonry Limited Warranty

Effective Date: February 15, 2024

This Limited Warranty applies to all Simpson Strong-Tie Repair, Protection and Strengthening Systems and Products for Concrete and Masonry ("RPS Products") purchased after the Effective Date while this Limited Warranty remans in effect, other than those Simpson Strong-Tie products that have a separate Limited Warranty applicable to such products. The duration of this Limited Warranty ("Warranty Period") for each RPS Product is set forth below. For future purchases, please consult www.strongtie.com/limited-warranties, as this Limited Warranty may be updated by Simpson Strong-Tie from time to time. All future purchases of RPS Products are subject to the terms of the Limited Warranty in effect as of the purchase date.

This Limited Warranty must be read in conjunction with all applicable notes for Repair, Protection and Strengthening Systems for Concrete and Masonry, Technical And Installation Notes, Product Data Sheets, Product Safety Data Sheets (SDS), Building Codes, Corrosion Information, and Terms & Conditions of Sale, along with any other information or specifications published by Simpson Strong-Tie Company Inc. ("Simpson Strong-Tie") or available on the www.strongtie.com website ("Website") or on the product package, label or product manual. (All of this information is referred to collectively as the "Simpson Strong-Tie Documentation.") All applicable Simpson Strong-Tie Documentation must be carefully reviewed each time any RPS Product is used.

Simpson Strong-Tie warrants, to the original purchaser only, during the Warranty Period, that each RPS Product will be free from substantial defects in materials, manufacturing and design if properly specified, installed, and maintained, and when used in accordance with the design limits and the structural, technical, and environmental specifications in the Simpson Strong-Tie Documentation. This Limited Warranty is void and does not apply to any (a) RPS Product purchased from an unauthorized dealer, retailer or distributor, (b) RPS Product deterioration or damage due to environmental conditions or inadequate or improper handling, transportation, storage or maintenance, (c) cosmetic defects, including discoloration, (d) failure or damage caused by improper installation, application, mixing or preparation, (e) use of a RPS Product in temperatures or environmental conditions outside the ranges specified for such RPS Product in the Simpson Strong-Tie Documentation, (f) use of a RPS Product outside of its shelf-life specifications, (g) normal wear and tear, (h) failure or damage caused by the use of a RPS Product with any fasteners, pins, screwstrips, products or accessories other than authentic Simpson Strong-Tie products, (i) RPS Product that was subjected to negligence or excessive or improper use, including any use not in accordance with the Simpson Strong-Tie Documentation, (j) failure or damage caused by the building site, foundation, or any third-party products, building materials or components, (k) failure or damage caused by use of a RPS Product in a structure that has a design or other defect or that does not comply with all applicable building codes, laws, rules and regulations, (l) modified RPS Product, or any nonstandard use or application of a RPS Product, (m) failure or damage caused by corrosion, termites or other wood destroying organisms, animal or insect activity, wood fungal decay, rot, mold, mildew, exposure to chemicals or other hazardous substances, a corrosive environment or materials, inadequate moisture protection, or premature deterioration of building materials, (n) failure or damage caused by an act of God, including any hurricane, earthquake, tornado, lightning, ice, snow, high wind, flood or other severe weather or natural phenomena, (o) installation services or workmanship, including any failure or damage caused by installation of any RPS Product, whether or not in accordance with the Simpson Strong-Tie Documentation, or (p) failure or damage caused by the gross negligence, willful misconduct, or other acts or omissions of the builder, general contractor, installer or any third party, including the building owner. Notwithstanding the foregoing, Simpson Strong-Tie disclaims and does not provide any warranty related to the design of any custom-order or non-catalog RPS Product.

Although RPS Products are designed for a wide variety of uses, Simpson Strong-Tie assumes no liability for confirming that any RPS Product is appropriate for an intended use, and each intended use of a RPS Product must be reviewed and approved by qualified professionals. Each RPS Product is designed for the load capacities and uses listed in the Simpson Strong-Tie Documentation, subject to the limitations and other information set forth in the Simpson Strong-Tie Documentation.

Due to the particular characteristics of potential impact events such as earthquakes and high velocity winds, the specific design and location of the structure, the building materials used, the quality of construction, or the condition of the soils or substrates involved, damage may nonetheless result to a structure and its contents even if the loads resulting from the impact event do not exceed Simpson Strong-Tie's specifications and the RPS Products are properly installed in accordance with applicable building codes, laws, rules and regulations.

RPS Product demonstrations, training, operator examinations, technical and customer support and other services provided by Simpson Strong-Tie are based on Simpson Strong-Tie's present knowledge and experience, are conducted for illustrative or instructive purposes only, do not constitute a warranty of RPS Product capabilities, specifications or installation and do not modify the applicable Limited Warranty for RPS Products set forth herein. Any services provided by Simpson Strong-Tie are provided without any representation or warranty of any kind, and Simpson Strong-Tie assumes no liability for any representations or statements made as part of such RPS Product demonstrations, training, operator examinations or other similar services. In the event of any inconsistency between any information provided during any such demonstration or service, and the information in any applicable the Simpson Strong-Tie Documentation, the information in the Simpson Strong-Tie Documentation shall govern. In the event of any inconsistency between any information provided on the Website, and the information in any other Simpson Strong-Tie Documentation, the information on the Website shall govern.

Repair, Protection and Strengthening (RPS) Systems and Products for Concrete and Masonry Limited Warranty

ALL WARRANTY OBLIGATIONS OF SIMPSON STRONG-TIE SHALL BE LIMITED, AT SIMPSON STRONG-TIE'S ABSOLUTE DISCRETION, TO EITHER REPAIRING THE DEFECTIVE RPS PRODUCT OR PROVIDING A REPLACEMENT FOR THE DEFECTIVE RPS PRODUCT. THIS REMEDY CONSTITUTES SIMPSON STRONG-TIE'S SOLE OBLIGATION AND LIABILITY AND THE SOLE AND EXCLUSIVE REMEDY OF PURCHASER AND, WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, EXCLUDES ANY LABOR OR OTHER COSTS INCURRED IN CONNECTION WITH A WARRANTY CLAIM. PURCHASER ASSUMES ALL RISK AND LIABILITY ASSOCIATED WITH ANY USE OF THE RPS PRODUCT, INCLUDING BUT NOT LIMITED TO SUITABILITY FOR ITS INTENDED USE.

THE LIMITED WARRANTY HEREIN IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, AND, WHERE LAWFUL, SIMPSON STRONG-TIE DISCLAIMS ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND WARRANTIES ARISING FROM COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE. IN NO EVENT WILL SIMPSON STRONG-TIE BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR SPECIAL DAMAGES OR DIRECT OR INDIRECT LOSS OF ANY KIND, INCLUDING BUT NOT LIMITED TO PROPERTY DAMAGE, DEATH AND PERSONAL INJURY. SIMPSON STRONG-TIE'S ENTIRE LIABILITY IS LIMITED TO THE PURCHASE PRICE OF THE DEFECTIVE RPS PRODUCT. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, OR THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

The Warranty Period for each RPS Product is set forth below:

RPS Product	Warranty Period
Simpson Strong-Tie Composite Strengthening Systems	5 Year
All other RPS Products	1 Year

As used herein, the term "System" means a group of RPS Products that are used together in the same installation. In order for the Warranty Period for a System to apply, the System must be comprised exclusively of RPS Products and must be installed by a Simpson Strong-Tie trained installer. Otherwise, the Warranty Period applicable to all other RPS Products shall apply.

To obtain warranty service, you must contact Simpson Strong-Tie promptly at (800) 999-5099 or at Simpson Strong-Tie Company Inc., 5956 West Las Positas Boulevard, Pleasanton, CA 94588, regarding any potential claim, no later than sixty (60) days after you discover the potential claim. Upon request by Simpson Strong-Tie, you must provide Simpson Strong-Tie with: (a) proof of purchase and written records evidencing, in reasonable detail, the date and manner of installation, application, mixing and preparation of the RPS Products, as applicable, (b) a reasonable opportunity to inspect the site where the RPS Product was installed, and (c) samples of the RPS Products from the actual installation in sufficient quantities in order for Simpson Strong-Tie to perform testing to determine whether or not the RPS Product failed as set forth herein. Simpson Strong-Tie may, in its absolute discretion, request that you return the allegedly defective RPS Products to Simpson Strong-Tie, in which case Simpson Strong-Tie will issue a Return Materials Authorization (RMA), which must be completed and returned to Simpson Strong-Tie with the RPS Product. Simpson Strong-Tie is not responsible for any costs or expenses incurred in connection with any inspection (other than by Simpson Strong-Tie employees) or in connection with the return of RPS Products to Simpson Strong-Tie, but Simpson Strong-Tie shall bear all costs and expenses incurred in connection with the shipment of replacement RPS Products in the event that Simpson Strong-Tie determines that the RPS Product should be replaced in accordance with this Limited Warranty. If Simpson Strong-Tie elects to repair or replace the RPS Product, Simpson Strong-Tie shall have a reasonable time to do so. Any RPS Products repaired or replaced under this Limited Warranty are subsequently warranted only for the remaining unexpired portion of the Warranty Period applicable to the original RPS Product.

No one is authorized to change or add to this Limited Warranty. If at any time Simpson Strong-Tie does not enforce any of the terms, conditions or limitations stated in this Limited Warranty, Simpson Strong-Tie shall not have waived the benefit of said term, condition or limitation and can enforce it at any time. This Limited Warranty is extended only to the original purchaser and is not transferrable. It is not intended nor shall it be construed to create rights in any third party.

Drill Bit Warranty Claims

Effective Date: March 18, 2021

Definitions & Procedures

Failures

Warranty claims will occur on less than ½ of 1% of the Simpson Strong-Tie Anchor Systems® carbide-tipped bits used. This estimate is based on experience with many millions of bits in various tools and materials.

The following information has been produced to enable you to improve your ability to fairly determine defects. BITS ARE WARRANTED FOR REPLACEMENT ONLY AND IN NO CIRCUMSTANCES WILL SIMPSON BE LIABLE FOR MERCHANTABILITY OR LOSS OF SERVICE.

If the defect is not obvious, please return the bit to our home office in Pleasanton, CA. Warranty decisions will be made within 48 hours after receiving the returned item(s).

Wear Life Guidelines

FOR BEST BIT WEAR LIFE / PRODUCTION OUTPUT USE THE FOLLOWING GUIDELINES:

- Ensure that the tool holders are in good shape. Deformation of the slots or contours of the bit shanks are a positive indication of tool holder wear. Worn tool holders reduce rotational and energy transfer efficiencies. Repair or replacement is required for efficient hole production.
- The lines of force should be kept as close as possible to 90° to the axis. The tool and bit should be kept directly in line with the hole.
- The bit should not be used as a hammer support when working in walls. Such use reduces energy transfer, slows rotation, accelerates flute wear, and is indicative of poor workmanship. The hammer should be supported at all times when working in walls.
- Only a slight "guiding pressure" is required to assist hammers when working on a horizontal surface. The weight of the hammer itself is almost sufficient for optimum production. Some guiding pressure absorbs recoil and assists in hole production. Obviously, compensation for the pressure which the weight of the hammer produces, must be made when working in ceilings and walls. Caution must be taken not to apply too much pressure as this retards hole production.
- Generally speaking, when a bit becomes very dull, it should be retired; it has done its job. Note: resharpening of drill bits voids the warranty.
- Bit life is generally measured by flute wear. We measure the diameter of the flutes directly behind the tip (area of most wear) and compare that reading to the diameter at the top of the bit (area of least wear). The resultant difference indicates wear life. If a measurement is greater than the standard shown in the chart, the bit is considered to be out of warranty.

Bit Dia. (in.)	Wear Diff. (in.)	Bit Dia. (in.)	Wear Diff. (in.)	Bit Dia. (in.)	Wear Diff. (in.)	Bit Dia. (in.)	Wear Diff. (in.)
3/16	.008	1/2	.020	7/8	.028	1 3/8	.043
1/4	.008	9/16	.024	1	.032	1 1/2	.048
5/16	.012	5/8	.024	1 1/8	.036	1 3/4	.048
3/8	.016	11/16	.024	1 1/4	.039	2	.048
7/16	.020	3/4	.024	-	-	-	-

Drill Bit Warranty Claims

Definitions & Procedures

Failures

Warranty claims will occur on less than **1/2** of 1% of the Simpson Strong-Tie Anchor Systems® carbide-tipped bits used. This estimate is based on experience with many millions of bits in various tools and materials.

The following information has been produced to enable you to improve your ability to fairly determine defects. BITS ARE WARRANTED FOR REPLACEMENT ONLY AND IN NO CIRCUMSTANCES WILL SIMPSON BE LIABLE FOR MERCHANTABILITY OR LOSS OF SERVICE.

If the defect is not obvious, please return the bit to our home office in Pleasanton, CA. Warranty decisions will be made within 48 hours after receiving the returned item(s).

Wear Life Guidelines

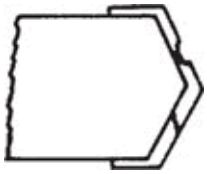
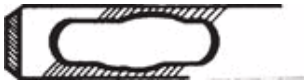
FOR BEST BIT WEAR LIFE / PRODUCTION OUTPUT USE THE FOLLOWING GUIDELINES:

- Ensure that the tool holders are in good shape. Deformation of the slots or contours of the bit shanks are a positive indication of tool holder wear. Worn tool holders reduce rotational and energy transfer efficiencies. Repair or replacement is required for efficient hole production.
- The lines of force should be kept as close as possible to 90° to the axis. The tool and bit should be kept directly in line with the hole.
- The bit should not be used as a hammer support when working in walls. Such use reduces energy transfer, slows rotation, accelerates flute wear, and is indicative of poor workmanship. The hammer should be supported at all times when working in walls.
- Only a slight "guiding pressure" is required to assist hammers when working on a horizontal surface. The weight of the hammer itself is almost sufficient for optimum production. Some guiding pressure absorbs recoil and assists in hole production. Obviously, compensation for the pressure which the weight of the hammer produces, must be made when working in ceilings and walls. Caution must be taken not to apply too much pressure as this retards hole production.
- Generally speaking, when a bit becomes very dull, it should be retired; it has done its job. Note: resharpening of drill bits voids the warranty.
- Bit life is generally measured by flute wear. We measure the diameter of the flutes directly behind the tip (area of most wear) and compare that reading to the diameter at the top of the bit (area of least wear). The resultant difference indicates wear life. If a measurement is greater than the standard shown in the chart, the bit is considered to be out of warranty.

Drill Bit Warranty Claims

Bit Failures

BIT FAILURES CAN OCCUR IN THE FOLLOWING WAYS:

Carbide tip fractures: Carbide fracture can be caused by two primary reasons: hitting an extremely hard foreign object in the concrete or hitting and staying on reinforcing steel. Steel strikes are readily identifiable. The bit steel will be damaged as well as the tip itself. The operator should cease hole production when the bit stops turning and start a new hole. Bits damaged due to steel strikes are not warranted.	
Shaft Breakage behind the head: If the break area shows jagged steel and no notch, the bit has been over-torqued by jamming in the hole. The bit is not covered by warranty.	
Shank transition area on upper shaft is polished: This is a positive indication that the bit has been used to produce deeper holes than it should. This means that debris has not been able to clear the hole readily, producing excessive heat buildup, which destroyed the bit—no warranty replacement. (User should purchase longer bits or use a lighter-duty hammer with small diameter bits).	
Tool holder slots, dimples, or recesses show wear: This indicates the hammer tool holder should be repaired or replaced—no warranty replacement.	

Simpson Strong-Tie Saw Products One-Year Limited Warranty

Effective Date: October 21, 2024

This Limited Warranty applies to all Simpson Strong-Tie Saw Products (defined below) purchased after the Effective Date while this Limited Warranty remains in effect. For purchases after the Effective Date, please consult www.strongtie.com/limited-warranties, as this Limited Warranty may be updated by Simpson Strong-Tie Company Inc. ("Simpson Strong-Tie") from time to time. All future purchases of Simpson Strong-Tie Saw Products are subject to the terms of the applicable Simpson Strong-Tie Saw Products Limited Warranty in effect as of the purchase date.

As used herein, "Simpson Strong-Tie Saw Products" means the saws and saw systems sold by Simpson Strong-Tie, including EasyFrame, EasyCut, DeRobo, DeSawyer, DeSauw, DeWall or other saws and saw systems sold by Simpson Strong-Tie under the EstiFrame Technologies or Monet DeSauw trademarks; provided, however, that the Simpson Strong-Tie Saw Products do not include any products that are not manufactured by Simpson Strong-Tie. Any products manufactured by a third party, including, but not limited to, any computer, touch-screen monitor and printing equipment (collectively, "Third-Party Equipment") will be subject to the terms of any warranty provided to the original purchaser by such third party. Simpson Strong-Tie shall assign to the original purchaser of any Simpson Strong-Tie Saw Products any warranties in favor of Simpson Strong-Tie with respect to any Third-Party Equipment purchased from Simpson Strong-Tie, if such warranties may legally be assigned by Simpson Strong-Tie to such purchaser. Simpson Strong-Tie does not warrant, and assumes no liability for the operation or functionality of, Third-Party Equipment.

This Limited Warranty must be read in conjunction with the Simpson Strong-Tie Saw Products Terms and Conditions of Sale available at **www.strongtie.com/information/saw-terms-and-conditions** and all applicable information or specifications published by Simpson Strong-Tie or available on www.strongtie.com, **www.easyframesaw.com** or **www.desauw.net** (collectively, the "Website") or on the product package, label or product manual. All of this information is referred to collectively as the "Simpson Strong-Tie Documentation." All applicable Strong-Tie Documentation must be carefully reviewed each time any Simpson Strong-Tie Saw Product is used.

Simpson Strong-Tie warrants, to the original purchaser only, that each Simpson Strong-Tie Saw Product will be free from substantial defects in materials, manufacturing and design for one (1) year following the date of installation by Simpson Strong-Tie of the Simpson Strong-Tie Saw Product, if properly stored, maintained and used in accordance with the Simpson Strong-Tie Documentation.

This Limited Warranty does not cover normal wear and tear, as determined by Simpson in its absolute discretion, and is null and void and does not apply to any (a) Simpson Strong-Tie Saw Product purchased from an unauthorized dealer, retailer or distributor, (b) Simpson Strong-Tie Saw Product deterioration or damage due to environmental conditions or inadequate or improper handling, transportation, storage or maintenance, (c) cosmetic defects, including discoloration, (d) failure or damage caused by improper operation or use, or improper electrical supply or wiring, including but not limited to incorrect voltage, current, frequency, or any issue resulting from noisy electrical supply or fluctuating supply, (e) use of a Simpson Strong-Tie Saw Product in temperatures or environmental conditions outside the ranges specified for such Simpson Strong-Tie Saw Product in any applicable Simpson Strong-Tie Documentation, (f) use of a Simpson Strong-Tie Saw Product outside of its intended use, (g) maintenance, repair, adjustments or replacement of parts due to normal wear and tear, (h) failure or damage caused by the use of a Simpson Strong-Tie Saw Product with any ink, saw blades, products, parts or accessories other than authentic Simpson Strong-Tie products for which the Simpson Strong-Tie Saw Product is intended to be used, (i) Simpson Strong-Tie Saw Product that was subjected to negligence or excessive or improper use, including any use not in accordance with the Simpson Strong-Tie Documentation, (j) failure or damage caused by any third-party products, materials, components or services, including any failure or damage caused by repair, servicing or alteration of any Simpson Strong-Tie Saw Product by any person other than by Simpson Strong-Tie employees, (k) modified Simpson Strong-Tie Saw Product, or any nonstandard use or application of a Simpson Strong-Tie Saw Product, or (l) failure or damage caused by the gross negligence, willful misconduct, or other acts or omissions of the user of the Simpson Strong-Tie Saw Product.

Although Simpson Strong-Tie Saw Products are designed for a wide variety of uses, Simpson Strong-Tie assumes no liability for confirming that any Simpson Strong-Tie Saw Product is appropriate for an intended use, and each intended use of a Simpson Strong-Tie Saw Product must be reviewed and approved by qualified professionals. Each Simpson Strong-Tie Saw Product is designed for the uses listed in the Simpson Strong-Tie Documentation, subject to the limitations and other information set forth in the Simpson Strong-Tie Documentation.

Simpson Strong-Tie Saw Product demonstrations, training, operator examinations, technical and customer support and other services provided by Simpson Strong-Tie are based on Simpson Strong-Tie's present knowledge and experience, are conducted for illustrative or instructive purposes only, do not constitute a warranty of Simpson Strong-Tie Saw Product capabilities, specifications or installation and do not modify the applicable Limited Warranty for Simpson Strong-Tie Saw Products set forth herein. Any services provided by Simpson Strong-Tie are provided without any representation or warranty of any kind, and Simpson Strong-Tie assumes no liability for any representations or statements made as part of such Simpson Strong-Tie Saw Product demonstrations, training, operator examinations or other services. In the event of any inconsistency between any information provided during any such demonstration or service, and the information in any applicable Simpson Strong-Tie Documentation, the information in the Simpson Strong-Tie Documentation shall govern. In the event of any inconsistency between any information provided on the

Simpson Strong-Tie Saw Products One-Year Limited Warranty

Website, and the information in any other Simpson Strong-Tie Documentation, the information on the Website shall govern.

ALL WARRANTY OBLIGATIONS OF SIMPSON STRONG-TIE SHALL BE LIMITED, AT SIMPSON STRONG-TIE'S ABSOLUTE DISCRETION, TO EITHER REPAIRING THE DEFECTIVE SIMPSON STRONG-TIE SAW PRODUCT OR PROVIDING A REPLACEMENT FOR THE DEFECTIVE SIMPSON STRONG-TIE SAW PRODUCT. THIS REMEDY CONSTITUTES SIMPSON STRONG-TIE'S SOLE OBLIGATION AND LIABILITY AND THE SOLE AND EXCLUSIVE REMEDY OF PURCHASER AND, WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, EXCLUDES ANY LABOR OR OTHER COSTS INCURRED IN CONNECTION WITH A WARRANTY CLAIM. PURCHASER ASSUMES ALL RISK AND LIABILITY ASSOCIATED WITH ANY USE OF THE SIMPSON STRONG-TIE SAW PRODUCT, INCLUDING BUT NOT LIMITED TO SUITABILITY FOR ITS INTENDED USE.

THE LIMITED WARRANTY HEREIN IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, AND, WHERE LAWFUL, SIMPSON STRONG-TIE DISCLAIMS ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND WARRANTIES ARISING FROM COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE. IN NO EVENT WILL SIMPSON STRONG-TIE BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR SPECIAL DAMAGES OR DIRECT OR INDIRECT LOSS OF ANY KIND, INCLUDING BUT NOT LIMITED TO PROPERTY DAMAGE, DEATH AND PERSONAL INJURY. SIMPSON STRONG-TIE'S ENTIRE LIABILITY IS LIMITED TO THE PURCHASE PRICE OF THE DEFECTIVE SIMPSON STRONG-TIE SAW PRODUCT. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, OR THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

To obtain warranty service, you must contact Simpson Strong-Tie promptly at (800) 999-5099 or at Simpson Strong-Tie Company Inc., 5956 West Las Positas Boulevard, Pleasanton, CA 94588, regarding any potential claim, no later than sixty (60) days after you discover the potential claim. Upon request by Simpson Strong-Tie, you must provide Simpson Strong-Tie with proof of purchase and written records evidencing, in reasonable detail, the date and manner of any servicing or prior repair of the Simpson Strong-Tie Saw Products, as applicable. Simpson Strong-Tie may, in its absolute discretion, request that you return the allegedly defective Simpson Strong-Tie Saw Products or component parts to Simpson Strong-Tie, in which case Simpson Strong-Tie will issue a Return Materials Authorization (RMA), which must be completed and returned to Simpson Strong-Tie with the Simpson Strong-Tie Saw Product or component parts. Simpson Strong-Tie is not responsible for any costs or expenses incurred in connection with any inspection of the Simpson Strong-Tie Saw Products (other than by Simpson Strong-Tie employees) or in connection with the return of Simpson Strong-Tie Saw Products or component parts to Simpson Strong-Tie, but Simpson Strong-Tie shall bear all costs and expenses incurred in connection with the shipment of replacement Simpson Strong-Tie Saw Products or component parts in the event that Simpson Strong-Tie determines that the Simpson Strong-Tie Saw Product or component parts should be replaced in accordance with this Limited Warranty. If Simpson Strong-Tie elects to repair or replace the Simpson Strong-Tie Saw Product, Simpson Strong-Tie shall have a reasonable time to do so. The repaired or replaced Simpson Strong-Tie Saw Product is warranted under the terms of this Limited Warranty.

No one is authorized to change or add to this Limited Warranty. If at any time Simpson Strong-Tie does not enforce any of the terms, conditions or limitations stated in this Limited Warranty, Simpson Strong-Tie shall not have waived the benefit of said term, condition or limitation and can enforce it at any time. This Limited Warranty is extended only to the original purchaser and is not transferrable. It is not intended nor shall it be construed to create rights in any third party.

Corrosion Information

Understanding the Corrosion Issue

Metal connectors, fasteners and anchors can corrode and lose carrying capacity when installed in corrosive environments or when installed in contact with corrosive materials. The many variables present in a building environment make it impossible to predict accurately whether, or when, corrosion will begin to reach a critical level. This relative uncertainty makes it crucial that specifiers and users be knowledgeable about the potential risks and select a product suitable for the intended use. When there is any uncertainty about the possible corrosion risks of any installation, a qualified professional should be consulted. Because of the risks posed by corrosion, periodic inspections should be performed by a qualified engineer or qualified inspector and maintenance performed accordingly.

It's common to see some corrosion in outdoor applications. Even stainless steel can corrode. The presence of some corrosion does not mean that load capacity has been affected or that failure is imminent.

If significant corrosion is apparent or suspected, then the wood, fasteners, anchors, and connectors should be inspected by a qualified engineer or qualified inspector. Replacement of affected components may be appropriate.

Because of the many variables involved, Simpson Strong-Tie cannot provide estimates of the service life of connectors, anchors, and fasteners. We suggest that all users and specifiers obtain recommendations on corrosion from the suppliers of the materials that will be used with Simpson Strong-Tie products, in particular, treated wood or concrete. We have attempted to provide basic knowledge on the subject here, and have additional information in our technical bulletins on the topic (strongtie.com/info). The Simpson Strong-Tie website should always be consulted for the latest information.

Corrosion Conditions

Corrosion can result from many combinations of environmental conditions, materials, construction design, and other factors, and no single guideline addresses all corrosion possibilities. Nevertheless, important corrosion information can be obtained from the American Wood Protection Association (AWPA), the International Building Code® (IBC®), International Residential Code® (IRC®), and local building codes. The following discussion provides general guidelines and approaches for the selection of Simpson Strong-Tie products for various construction conditions, but is not intended to supersede the guidelines of the AWPA, IBC, IRC, or local building codes.

Corrosion issues for Simpson Strong-Tie products generally fall into five categories:

1. Environmental and Construction Factors
   Many environments and materials can cause corrosion, including ocean salt air, condensation, duration of wetness, fire retardants, fumes, fertilizers, chlorides, sulfates, preservative-treated wood, de-icing salts, dissimilar metals, soils, and more. Designers must take all of these factors into account when deciding which Simpson Strong-Tie products to use with which corrosion-resistant coatings or materials.

   The design, quality of construction, and misinstallation can directly affect the corrosion resistance of products. A product intended and installed for use in dry-service environment may corrode if the structure design or building materials allow moisture intrusion, or expose the product to corrosive conditions, such as moisture or chemicals contained in the construction materials, soils, or atmospheres.

2. Chemically Treated Lumber
   Some wood-preservative or fire-retardant chemicals or chemical retention levels create increased risk of corrosion and are corrosive to steel connectors and fasteners. For example, testing by Simpson Strong-Tie has shown that ACQ-Type D is more corrosive than Copper Azole, Micronized Copper Azole, or CCA-C. At the same time, other tests have shown that inorganic boron treatment chemicals, specifically SBX-DOT, are less corrosive than CCA-C.
   Because different chemical treatments of wood have different corrosion effects, it's important to understand the relationship between the wood treatment chemicals and the coatings and base metals of Simpson Strong-Tie products.
   The preservative-treated wood supplier should provide all of the pertinent information about the treated wood product. The information should include the AWPA Use Category Designation, wood species group, wood treatment chemical, and chemical retention. See building code requirements and appropriate evaluation reports for corrosion effects of wood treatment chemicals and for fastener corrosion resistance recommendations.

   With Fire-Retardant (FRT) Wood, the 2015 and 2018 IBC Section 2304.10.5, 2021 IBC Section 2304.10.6, and 2015, 2018 and 2021 IRC Section R317.3.4 refer to the manufacturers for fastener corrosion reqirements. In the absence of recommendations from the FRT manufacturer, the building codes require fasteners to be hot-dip galvanized, stainless steel, silicon bronze or copper. Simpson Strong-Tie further requires that the fastener is compatible with the metal connector hardware. Fastener shear and withdrawal allowable loads may be reduced in FRT lumber. Refer to the FRT manufacturer's evaluation report for potential reduction factors.

3. Dissimilar Metals and Galvanic Corrosion
   Galvanic corrosion occurs when two electrochemically dissimilar metals contact each other in the presence of an electrolyte (such as water) that acts as a conductive path for metal ions to move from the more anodic to the more cathodic metal. Good detailing practice, including the following, can help reduce the possibility of galvanic corrosion of fasteners and connectors.

   - Use fasteners or anchors and connectors with similar electrochemical properties
   - Use insulating materials to separate dissimilar metals
   - Ensure that the fastener or anchor is the cathode when dissimilar connector metals are present
   - Prevent exposure to and pooling of electrolytes

Corrosion Information

Galvanic Series of Metals

Corroded End (Anode)
Magnesium, Magnesium alloys, Zinc
Aluminum 1100, Cadmium, Aluminum 2024-T4, Iron and Steel
Lead, Tin, Nickel (active), Inconel Ni-Cr alloy (active), Hastelloy alloy C (active)
Brasses, Copper, Cu-Ni alloys, Monel
Nickel (passive)
304 stainless steel (passive), 316 stainless steel (passive), Hasteloy alloy C (passive)
Silver, Titanium, Graphite, Gold, Platinum
Protected End (Cathode)

If you are uncertain about the galvanic corrosion potential of any installation, always consult with a corrosion expert. See the product pages for particular parts for more information regarding what coating systems are recommended or required for use with the parts in question.

4. Hydrogen-Assisted Stress Corrosion Cracking
   Some hardened fasteners may experience premature failure from hydrogen-assisted stress-corrosion cracking if exposed to moisture. These fasteners are recommended for use only in dry-service conditions.
5. Indoor Swimming Pools
   Indoor swimming pool environments are extremely corrosive to steel products. And some stainless steel is highly susceptible to stress corrosion cracking (SCC) under sustained loads in this environment. SCC can result in sudden failures. Instead of stainless steel, it is advised to use a duplex coated, post-hot-dip galvanized or ZMAX® coated low carbon steel for any load bearing components used in swimming pool environments. Regular maintenance is strongly advised. See strongtie.com/corrosion for additional information.

Guidelines for Selecting Materials and Coatings

In the discussion and charts of this section, Simpson Strong-Tie presents a three-step system to determine which product coatings and base metals to use in a range of corrosion conditions. These are general guidelines that may not consider all relevant application criteria. Refer to product-specific information for additional guidance.

Simpson Strong-Tie evaluated the AWPA Use Categories (See AWPA U1-16) and ICC-ES AC257 Exposure Conditions and developed a set of corrosion resistance recommendations. These recommendations address the coating systems and materials used by Simpson Strong-Tie for fastener, connector, and anchor products. Although the AWPA Use Categories and ICC-ES AC257 Exposure Conditions specifically address treated-wood applications and some common corrosion agents, Simpson Strong-Tie believes that its recommendations may be applied more generally to other application conditions, insofar as the service environments discussed are similar. You should consult with a corrosion engineer concerning the application where advisable.

Step 1 of 3 — Evaluate The Corrosion Conditions

- **Dry Service:** Generally INTERIOR applications including wall and ceiling cavities, and in raised floor applications in enclosed buildings that have been designed to prevent condensation and exposure to other sources of moisture. Prolonged periods of wetness during construction should also be considered, as this may constitute a Wet Service or Elevated Service condition. Dry Service is typical of AWPA UC1 and UC2 for wood treatment and AC257 Exposure Condition 1. Keep in mind that dry-service environment may contain airborne salts. AC257 Exposure Condition 2 reflects the presence of airborne salt in a dry-service environment and corrosion hazard to exposed metal surfaces. It does not include effects of treatment chemicals. This condition is generally considered in Elevated and Uncertain assessments.
- **Wet Service:** Generally EXTERIOR construction in conditions other than elevated service. These include Exterior Protected and Exposed and General Use Ground Contact as described by AWPA UC4A. The AWPA U1 standard classifies exterior above-ground treatments as Use Categories UC3 (A and B) depending on moisture run-off; and for exterior ground-contact levels of protection, it has Use Categories UC4 (A-C). ICC-ES AC257 considers the exterior exposure to be limited by the presence of treatment chemicals, and corrosion accelerators. In general, the AC257 Exposure Condition 1 includes AWPA Use Categories UC1 (interior/dry) and UC2 (interior/damp), while Exposure Condition 3 is a surrogate to UC3A, 3B, and 4A (exterior, above-ground and ground-contact, general use). The ICC-ES AC257 Exposure Conditions 2 and 4 are exposures that are salt environments.
- **Elevated Service:** Includes fumes, fertilizers, soil, some preservative-treated wood (AWPA UC4B and UC4C), industrial-zone atmospheres, acid rain, salt air, and other corrosive elements.
- **Uncertain:** Unknown exposure, materials, or treatment chemicals.
- **Ocean/Water Front Service:** Marine environments that include airborne chlorides, salt air, and some salt splash. Environments with de-icing salts are included.

Step 2 of 3 — Determine Your Corrosion Resistance Classification

Corrosion Resistance Classifications

Environment	Material to Be Fastened						
	Untreated Wood or Other Material	Preservative-Treated Wood					FRT Wood
		SBX-DOT Zinc Borate	Chemical Retention ≤ AWPA, UC4A	Chemical Retention > AWPA, UC4A	ACZA	Other or Uncertain	
Dry Service	Low	Low	Low	High	Medium	High	Medium
Wet Service	Medium	N/A	Medium	High	High	High	High
Elevated Service	High	N/A	Severe	Severe	High	Severe	N/A
Uncertain	High	High	High	Severe	High	Severe	Severe
Ocean/Water Front	Severe	N/A	Severe	Severe	Severe	Severe	N/A

Additional Considerations

1. Always consider the importance of the connection as well as the cost of maintenance and replacement.
2. If the information about treatment chemicals in an application is incomplete, or if there is any uncertainty as to the service environment of any application, Simpson Strong-Tie recommends the use of a Type 300 Series stainless steel. Simpson Strong-Tie has evaluated the corrosion effects of various formulations of wood treatment chemicals ACZA, ACQ, CCA, MCA, CA, and salt as corrosion accelerators. Simpson Strong-Tie has not evaluated all formulations and retentions of the named wood treatment chemicals other than to use coatings and materials in the severe category. Manufacturers may independently provide test results or other product information. Simpson Strong-Tie expresses no opinion regarding such information.
3. Type 316/305/304 stainless-steel products are recommended where preservative-treated wood used in ground contact has a chemical retention level greater than those for AWPA UC4A; CA-C, 0.15 pcf (pounds per cubic foot); CA-B, 0.21 pcf; micronized CA-C, 0.14 pcf; micronized CA-B, 0.15 pcf; ACQ-Type D (or C), 0.40 pcf. When wood treated with micronized CA-C and micronized CA-B with treatment retentions up to UC4B is in dry service, hot-dip galvanized fasteners and connectors may be suitable.
4. Mechanical galvanizations C3 and N2000 should not be used in conditions that would be more corrosive than AWPA UC3A (exterior, above ground, rapid water run off).
5. Some chemically treated wood may have chemical retentions greater than specification, particularly near the surface, making it potentially more corrosive than chemically treated wood with lower retentions. If this condition is suspected, use Type 316/305/304 stainless-steel, silicon bronze, or copper fasteners.
6. Some woods, such as cedars, redwood, and oak, contain water-soluble tannins and are susceptible to staining when in contact with metal connectors and fasteners. According to the California Redwood Association, applying a quality finish to all surfaces of the wood prior to installation can help reduce staining.
7. Anchors, fasteners and connectors in contact with FRT lumber shall be hot-dip galvanized or stainless steel, unless recommended otherwise by the FRT manufacturer. Many FRT manufacturers permit low-corrosion-resistant connector and fastener coatings for dry-service conditions.
8. Simpson Strong-Tie does not recommend painting stainless-steel anchors, fasteners or connectors. Imperfections or damage to the paint can facilitate collection of dirt and water that can degrade or block the passive formation of the protective chromium oxide film. When this happens, crevice corrosion can initiate and eventually become visible as a brown stain or red rust. Painting usually does not improve the corrosion resistance of stainless steel.

Corrosion Information

Guidelines for Selecting Materials and Coatings (cont.)

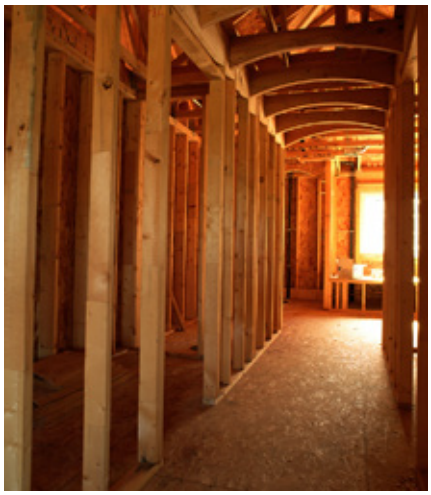
Step 3 of 3 — Match Your Corrosion Resistance Classification to the Coatings and Materials Available

Not all products are available in all finishes. Contact Simpson Strong-Tie for product availability, ordering information and lead times.

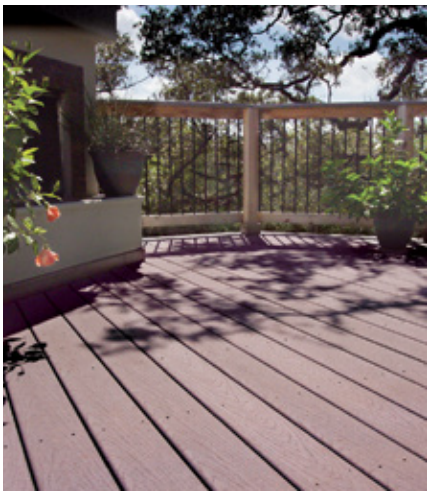
Coatings and Materials Available for Connectors

Level of Corrosion	Coating or Material	Description	Compatible Fastener/Anchor Material or Finish
		Connectors	
Low	Gray or Black Paint	Organic paint intended to protect the product while it is warehoused and in transit to the jobsite.	Bright, Hot-Dip Galvanized, Mechanically Galvanized, or Double-Barrier Coating
	Powder Coating	Baked-on paint finish that is more durable than standard paint.	
	Galvanized	Standard (G90) zinc-galvanized coating containing 0.90 oz. of zinc per square foot of surface area (per ASTM A653) total for both sides.	
Medium	ZMAX G185	Galvanized (G185) 1.85 oz. of zinc per square foot of surface area (hot-dip galvanized per ASTM A653) total for both sides. Products with a powder-coat finish over a ZMAX® base have the same level of corrosion resistance.	Hot-Dip Galvanized, Mechanically Galvanized, or Double-Barrier Coating ** Bright fasteners may be used with ZMAX or HDG connectors where low corrosion resistance is allowed.*
	HOT DIP HDG GALVANIZED®	Products are hot-dip galvanized after fabrication (14 ga. and thicker). The coating weight increases with material thickness. The minimum average coating weight is 2.0 oz./ft.^{2} (per ASTM A123) total for both sides. Anchor bolts are hot-dip galvanized per ASTM F2329.	
High/Severe	316 Stainless Steel — Type 316 Stainless Steel	Type 316 stainless steel is a nickel-chromium austenitic grade of stainless steel with 2–3% molybdenum. Type 316 stainless steel is not hardened by heat treatment and is inherently nonmagnetic. It provides a level of corrosion protection suitable for severe environments, especially environments with chlorides.	Type 316 Stainless Steel

Dry Service



Wet Service



Elevated Service / Severe

Corrosion Information

Guidelines for Selecting Materials and Coatings (cont.)

Step 3 of 3 — Match Your Corrosion Resistance Classification to the Coatings and Materials Available (cont.)

Not all products are available in all finishes. Contact Simpson Strong-Tie for product availability, ordering information and lead times.

Coatings and Materials Available for Fasteners

Level of Corrosion	Coating or Material	Description	
Fasteners			**Applicable Products**
Low	Bright	No surface coating.	Nails
	Electrocoating (E-Coating)	Electrocoating utilizes electrical current to deposit the coating material on the fastener. After application, the coating is cured in an oven. Electrocoating provides a minimum amount of corrosion protection and is recommended for dry, low-corrosive applications.	Strong-Drive® SDWF FLOOR-TO-FLOOR, SDW™ TRUSS-PLY, SDW EWP-PLY and SDWV SOLE-TO-RIM Screws
	Clear, Yellow and Bright-Blue Zinc	Zinc coatings applied by electrogalvanizing processes to fasteners that are used in dry service and with no environmental or material corrosion hazard.	Strong-Drive SDCF TIMBER-CF Screw SDHR COMBO-HEAD Screw SD8 Wafer Head Screw
Medium	Zinc Plating with Baked-On Ceramic Coating	A baked ceramic barrier coating applied over top of electroplated zinc provides increased protection in mildly corrosive environments.	Titen Turbo™ Concrete and Masonry Screw
	HOT DIP HDG GALVANIZED® ASTM A153, Class D	Hot-dip galvanized fasteners 3/8" and smaller in diameter in accordance with ASTM A153, Class D. Hot-dip galvanized fasteners are compliant with the 2015, 2018 and 2021 IRC® and IBC®.	Strong-Drive SCN CONNECTOR Nail
	Type 410 Stainless Steel with Protective Top Coat	Carbon martensitic grade of stainless steel that is inherently magnetic, with an added protective top coat. This material can be used in mild atmospheres and many mild chemical environments.	Titen® Stainless-Steel Concrete and Masonry Screw
	Mechanically Galvanized Coating, ASTM B695	Simpson Strong-Tie Strong-Drive SD Connector screws are manufactured with a mechanically applied zinc coating in accordance with ASTM B695, Class 55, with a supplemental overcoat. Titen HD® Mechanically Galvanized anchors comply with ASTM B695, Class 65. These fasteners are compatible with painted and zinc-coated (G90 and ZMAX®) connectors and are recognized in evaluation reports that can be found on **strongtie.com**.	Strong-Drive SD CONNECTOR Screw Titen HD Mechanically Galvanized
	Double-Barrier Coating	Simpson Strong-Tie Strong-Drive SDS Heavy-Duty Connector screws and Outdoor Accents® structural wood screws are manufactured with double-barrier coating that provides a level of corrosion protection equaling that provided by HDG coating and are recognized in evaluation reports that can be found on strongtie.com.	Strong-Drive SDS HEAVY-DUTY CONNECTOR Screw Outdoor Accents Connector Screw and Structural Wood Screw
High/Severe	HOT DIP HDG GALVANIZED® ASTM A153, Class C	Simpson Strong-Tie Strong-Drive Timber-Hex screws are hot-dip galvanized in accordance with ASTM A153, Class C. These hot-dip galvanized fasteners have a minimum average of 1.25 oz./ft.2 of zinc coating and are compliant with the 2015, 2018 and 2021 IRC (R317.3) and IBC.	Strong-Drive TIMBER-HEX HDG Screw
	316 Stainless Steel Type 316 Stainless Steel	Type 316 stainless steel is a nickel-chromium austenitic grade of stainless steel with 2–3% molybdenum. It provides a level of corrosion protection suitable for severe environments, especially environments with chlorides. Type 316 stainless-steel fasteners are compliant with the 2015, 2018 and 2021 IRC and IBC.	Strong-Drive SCNR™ CONNECTOR Nail Strong-Drive SDS HEAVY-DUTY CONNECTOR Screw Strong-Drive SD CONNECTOR SS Screw Strong-Drive SDWS™ TIMBER SS Screw

Warning

Simpson Strong-Tie Company Inc. structural connectors, anchors, and other products are designed and tested to provide specified design loads. To obtain optimal performance from Simpson Strong-Tie products and achieve maximal allowable design load, the products must be properly installed and used in accordance with the corrosion information, installation instructions and design limits provided by Simpson Strong-Tie. To ensure proper installation and use, designers and installers must carefully read the following General Notes, General Instructions for the Installer, General Instructions for the Designer and Corrosion Information, as well as consult the applicable catalog pages for specific product installation instructions and notes.

Proper product installation requires careful attention to all notes and instructions, including these basic rules:

1. Be familiar with the application and correct use of the connector.
2. Read and follow all instructions and warnings on our website,in this and any other applicable catalog, in the *Installer's Pocket Guide* and all other Simpson Strong-Tie publications.If any instructions or warnings are unclear, do not use the product and contact Simpson Strong-Tie.
3. Install all required fasteners per installation instructions provided by Simpson Strong-Tie: (a) use proper fastener type; (b) use proper fastener quantity; (c) fill all fastener holes; (d) do not overdrive or underdrive nails, including when using power nailers; and (e) ensure screws are completely driven.
4. Only bend products that are specifically designed to be bent. For those products that require bending (such as strap-type holdowns, straight-end twist straps, etc.), do not bend more than one full cycle.
5. Cut joists to the correct length, do not "short-cut." The gap between the end of the joist and the header material should be no greater than ⅛" unless otherwise noted.
6. Wear head, skin, eye and ear protection when installing the products or visiting a jobsite.

Failure to follow fully all of the notes and instructions provided by Simpson Strong-Tie may result in improper installation of products. Improperly installed products may not perform to the specifications set forth in this catalog and may reduce a structure's ability to resist the movement, stress, and loading that occurs from gravity loads as well as impact events such as earthquakes and high-velocity winds.

Simpson Strong-Tie provides no warranty for any products that have been modified, improperly installed or not used in accordance with the information set forth in this catalog or on our website.

Important Information

In addition to following the basic rules provided above as well as all notes, warnings and instructions provided in the catalog, installers, designers, engineers and consumers must consult the Simpson Strong-Tie website at strongtie.com each time a product is used to obtain additional design and installation information.

Terms and Conditions of Sale

Product Use

Products in this catalog are designed and manufactured for the specific purposes shown, and should not be used with other connectors not approved by a qualified licensed/certified building design professional, a licensed professional engineer or licensed architect ("designer"). You should review our website and consult a qualified designer familiar with all applicable building codes each time you use a Simpson Strong-Tie product.

Indemnity

Any designer or other person who modifies any products, changes any installation procedures or designs any non-catalog products for fabrication by Simpson Strong-Tie Company Inc. shall, regardless of specific instructions to the user, indemnify, defend, and hold harmless Simpson Strong-Tie Company Inc. for any and all claimed loss or damage occasioned in whole or in part by such products.

Non-Catalog and Modified Products

Modifications to products or changes in installation procedures should only be made by a qualified professional designer. The performance of such modified products or altered installation procedures is the sole responsibility of the designer. Any person modifying Simpson Strong-Tie products must provide the installer with specific instructions on the modified products' specifications, installation and use.

Consult Simpson Strong-Tie Company Inc. for applications for which there is no catalog product, or for connectors for use in hostile environments, with excessive wood shrinkage, or with abnormal loading or erection requirements.

Non-catalog products must be designed by a qualified designer and will be fabricated by Simpson Strong-Tie in accordance with customer specifications.

Any modified, special order or non-catalog products, or any products that are not installed strictly in accordance with Simpson Strong-Tie installation procedures, are provided "AS IS" and without any representation or warranty of any kind.

General Notes

These general notes are provided to ensure proper installation of Simpson Strong-Tie products and must be followed fully.

a. Simpson Strong-Tie reserves the right to change specifications, designs and models without notice or liability for such changes. Review our website each time you use our products.

b. Steel used for each Simpson Strong-Tie product is individually selected based on the product's steel specifications, including strength, thickness, formability, finish and weldability. Contact Simpson Strong-Tie for steel information on specific products.

c. Unless otherwise noted, dimensions are in inches, loads are in pounds.

d. Unless otherwise noted, welds, screws, bolts and nails may not be combined to achieve highest load value. 0.131" x 2½", 0.148" x 3" and 0.162" x 3½" specify common nails that meet the requirements of ASTM F1667. When a shorter nail is specified, it will be noted (for example 0.131" x 1½"). Refer to Simpson Strong-Tie Nailing Guide, NDS (National Design Specification) and ASTM F1667 (American Society of Testing and Materials) for more nail info.

e. Do not overload. Do not exceed catalog allowable loads.

f. Unless otherwise noted, allowable loads are for Douglas Fir-Larch under continuously dry conditions. Allowable loads for other species or conditions must be adjusted according to the code. Allowable loads for alternate species may be determined as outlined in Simpson Strong-Tie engineering letter L-ALTSPECIES on **strongtie.com**. This chart shows specific gravity and perpendicular-to-grain compression capacities for the different wood species:

Species	$Fc_{\perp}$	Specific Gravity
Douglas fir–larch (DF)	625 psi	0.50
Southern pine (SP)	565 psi	0.55
Spruce-pine-fir (SPF)	425 psi	0.42
Hem-fir (HF)	405 psi	0.43
Spruce-pine-fir south (SPF-S)	335 psi	0.36
Western Cedar	425 psi	0.36
Glulam	650 psi	0.50
LVL (DF/SP)	750 psi	0.50
LSL ($E = 1.3 \times 10^6$)	680 psi	0.50
LSL ($E \geq 1.5 \times 10^6$)	880 psi	0.50
Parallam® PSL	625 psi	0.50

g. Simpson Strong-Tie Company Inc. will manufacture non-catalog products provided prior approval is obtained and an engineering drawing is included with the order. Steel specified on the drawings as ⅛", 3⁄16" and ¼" will be 11 ga. (0.120"), 7 ga. (0.179") and 3 ga. (0.239"), respectively. The minimum yield and tensile strengths are 33 ksi and 52 ksi, respectively.

h. All references to bolts are for structural quality through bolts (not lag screws or carriage bolts) equal to or better than ASTM Standard A307, Grade A. Nuts shall be ASTM A563, Grade A or better, unless noted otherwise.

i. Unless otherwise noted, bending steel in the field may cause fractures at the bend line. Fractured steel will not carry load and must be replaced.

j. A fastener that splits the wood will not take the design load. Evaluate splits to determine if the connection will perform as required. Dry wood may split more easily and should be evaluated as required. If wood tends to split, consider pre-boring holes with diameters not exceeding 0.75 of the nail diameter (2015/2018 NDS 12.1.5.3). Use a 5⁄32" bit for Strong-Drive® SDS Heavy-Duty Connector screws and a 3⁄32" bit for Strong-Drive SD9/SD10 Connector screws.

k. Wood shrinks and expands as it loses and gains moisture, particularly perpendicular to its grain. Take wood shrinkage into account when designing and installing connections. Simpson Strong-Tie manufactures products to fit common dry-lumber dimensions. If you need a connector with dimensions other than those listed in this catalog, Simpson Strong-Tie may be able to vary connector dimensions; contact Simpson Strong-Tie. The effects of wood shrinkage are increased in multiple lumber connections, such as floor-to-floor installations. This may result in the vertical rod nuts becoming loose, requiring post-installation tightening. (Reference ICC-ES ESR-2320 for information on Take Up Devices.)

l. Top-flange hangers may cause unevenness. Possible remedies should be evaluated by a professional and include using a face-mount hanger, and routering the beam or cutting the subfloor to accommodate the top flange thickness.

m. Built-up lumber (multiple plies) must be fastened together to act as one unit to resist the applied load (fastening of the members together does not include the connector fasteners). This must be determined by the designer.

n. Some model configurations may differ from those shown in this catalog. Contact Simpson Strong-Tie for details.

o. Hanger Options (Simpson Strong-Tie Hanger Options Matrix and Hanger Option General Notes pp. 101–103) — some combinations of hanger options are not available. In some cases, combinations of these options may not be installable. Horizontal loads induced by sloped joists must be resisted by other members in the structural system.

p. A qualified designer must always evaluate each connection, including carried and carrying member limitations, before specifying the product. Fill all fastener holes with fastener types specified in the tables, unless otherwise noted. Hanger configurations, height and fastener schedules may vary from the tables depending on joist size, skew and slope. See the allowable table load for the non-modified hanger, and adjust as indicated. Gauge may vary from that specified depending on the manufacturing process used. Simpson Strong-Tie will calculate the net height for a sloped seat. The customer must provide the H1 joist height before slope.

q. Truss plates shown are the responsibility of the truss designer.

r. Do not weld products listed in this catalog unless this publication specifically identifies a product as acceptable for welding, or unless specific approval for welding is provided in writing by Simpson Strong-Tie. Some steels have poor weldability and a tendency to crack when welded. Cracked steel will not carry load and must be replaced. See Simpson Strong-Tie Hanger Options Matrix and Hanger Option General Notes on pp. 101–103 for hangers that may be welded and Straps and Ties General Notes on pp. 276–277 for straps that may be welded.

s. Unless noted otherwise, all references to standard-cut washers refer to Type A plain washers (W) conforming to the dimensions shown in ASME B18.22.1 for the appropriate rod size in accordance with 2015/2018 NDS Appendix L. Some products require SAE narrow washers (N) to fit in a tight space and are noted accordingly.

t. To achieve tabulated values for embedded concrete/masonry products, full consolidation of concrete or grout is required whether mounted to the form prior to the pour or wet set.

General Instructions for the Installer

These general instructions for the installer are provided to ensure proper selection and installation of Simpson Strong-Tie Company Inc. products and must be followed carefully. These general instructions are in addition to the specific installation instructions and notes provided for each particular product, all of which should be consulted prior to and during installation of Simpson Strong-Tie Company Inc. products.

a. All specified fasteners must be installed according to the instructions in this catalog. Incorrect fastener quantity, size, placement, type, material, or finish may cause the connection to fail. Prior to using a particular fastener, please consult Connector Fastener types on pp. 23–24.

- Larger-diameter fasteners may be substituted for smaller-diameter fasteners in connectors provided the larger fastener does not cause splitting in the wood member and the connector holes are not enlarged.
- Simpson Strong-Tie Strong Drive® SD Connector screws are available for use with our connectors. They are designed to replace nails in certain products. See pp. 362–366 for information. Screws not manufactured by Simpson Strong-Tie are not supported in our products.

b. Fill all fastener holes as specified in the installation instructions for that product. Refer to p. 22 for the requirements of the various shapes of fastener hole.

c. Do not overdrive nails. Overdriven nails reduce shear capacity. See "Over-Driven Nails in Connectors and Straps" on p. 24 for additional information.

d. Products shall be installed for the use specified. Use the materials specified in the installation instructions. Substitution of or failure to use specified materials may cause the connection to fail. Do not alter installation procedures from those set forth in this catalog. See Terms and Conditions of Sale.

e. Do not add fastener holes or otherwise modify Simpson Strong-Tie Company Inc. products. The performance of modified products may be substantially weakened. Simpson Strong-Tie will not warrant or guarantee the performance of such modified products.

f. The proper use of certain products requires that the product be bent. For those products, installers must not bend the product more than one time (one full cycle).

g. Bolt holes shall be at least a minimum of 1/32" and no more than a maximum of 1/16" larger than the bolt diameter (per the 2015/2018 NDS, Section 12.1.3.2 and AISI S100, Table J3, if applicable).

h. Install all specified fasteners before loading the connection.

i. Some hardened fasteners may have premature failure if exposed to moisture. These fasteners are recommended to be used in dry interior applications.

j. Use proper safety equipment.

k. Welding galvanized steel may produce harmful fumes; follow proper welding procedures and safety precautions. Welding should be in accordance with A.W.S. (American Welding Society) standards. Unless otherwise noted Simpson Strong-Tie connectors cannot be welded.

l. Pneumatic or power-actuated fasteners may deflect and injure the operator or others. Pneumatic nail tools may be used to install connectors, provided the correct quantity and type of nails (length and diameter) are properly installed in the nail holes. Connectors with tool embossments or tools with nail hole-locating mechanisms should be used. MASOZ™ mudsill anchor works with several manufacturers' full round-head pneumatic framing tools. Visit **strongtie.com/masoz** for additional information. Follow the manufacturer's instructions and use the appropriate safety equipment. Contact Simpson Strong-Tie. Power-actuated fasteners should not be used to install connectors, unless noted otherwise. Reference pp. 173 and 175 for top-flange hanger installation with powder-actuated fasteners.

m. Joist shall bear completely on the connector seat and the gap between the joist end and abutting material, such as the adjacent header or any hanger section between the header and the joist, shall not exceed 1/8" per ICC-ES AC13 test standards (unless specifically noted otherwise).

n. Fasteners are permitted to be installed through metal truss plates when approved by the Truss Designer in accordance with ANSI/TPI 1-2014, Section 7.5.3.4 and 8.9.2. Installation of Simpson Strong-Tie Strong-Drive SDS Heavy-Duty Connector screws through metal connector plates requires the plates to be predrilled using a maximum of a 5/32" bit. Do not drive nails through the truss plate on the opposite side of single-ply trusses which could force the plate off the truss.

o. Nuts shall be installed such that the end of the threaded rod or bolt is at least flush with the top of the nut.

p. When installing hurricane ties on the inside of the wall special considerations must be taken to prevent condensation on the inside of the completed structure in cold climates.

q. Unless otherwise noted, connectors shown in this catalog have been designed to be installed at the time the framing members are installed. Contact Simpson Strong-Tie for retrofit suitability of specific connectors including those manufactured in accordance with the hanger options section of this catalog.

General Instructions for the Designer

These general instructions for the designer are provided to ensure proper selection and installation of Simpson Strong-Tie Company Inc. products and must be followed carefully. These general instructions are in addition to the specific design and installation instructions and notes provided for each particular product, all of which should be consulted prior to and during the design process.

a. The term "designer" used throughout this catalog is intended to mean a licensed/certified building design professional, a licensed professional engineer, or a licensed architect.

b. All connected members and related elements shall be designed by the designer.

c. All installations should be designed only in accordance with the allowable load values set forth in this catalog.

d. See p. 12 for allowable load information.

e. See p. 277 for connections with simultaneous loads.

f. Loads are based on the 2015/2018 NDS and AISI S100 if applicable, unless otherwise specified. Other code agencies may use different allowable loads.

g. Unless otherwise noted, loads include Load Duration, Group Action and Toe-Nail factors from the NDS as applicable. The application of additional adjustment factors shall be by the designer. Duration of load adjustments as specified by the code are as follows:
"PERMANENT" — 90% of the design load.
"FLOOR" and "DOWN" (100) — no increase for duration of load.
"SNOW" (115) — 115% of design load for two month duration of load.
"ROOF LOAD" (125) — 125% of design load for seven day duration of load.
"EARTHQUAKE / WIND / UPLIFT" (160) — 160% of design load for earthquake/wind loading.

h. Unless otherwise noted, wood shear is not considered in the loads given; reduce allowable loads when wood shear is limiting.

i. Simpson Strong-Tie strongly recommends the following addition to construction drawings and specifications: "Simpson Strong-Tie connectors are specifically required to meet the structural calculations of plan. Before substituting another brand, confirm load capacity based on reliable published testing data or calculations. The Engineer/Designer of Record should evaluate and give written approval for substitution prior to installation."

j. Verify that the dimensions of the supporting member are sufficient to receive the specified fasteners, and develop the top flange bearing length.

k. Some catalog illustrations show connections that could cause cross-grain tension or bending of the wood during loading if not sufficiently reinforced. In this case, mechanical reinforcement should be considered.

l. The allowable loads published in this catalog are for use when utilizing the traditional Allowable Stress Design methodology. A method for converting allowable stress design values to Load and Resistance Factor Design (LRFD) is given in the 2015/2018 NDS, Appendix N. A method for using LRFD for cold-formed steel has also been published in the AISI S100-16. When designing with LRFD, reference lateral resistances must be used. Contact Simpson Strong-Tie for reference lateral resistances of products listed in this catalog.

m. For joist hangers, Simpson Strong-Tie recommends the hanger height shall be at least 60% of joist height for stability against rotation while under construction prior to sheathing install.

n. For cold-formed steel applications, as a minimum all screws must comply with Society of Automotive Engineers (SAE) Standard J78, Steel Self-Drilling/Tapping Screws, and must have a Type II coating in accordance with ASTM B 633, Electrodeposited Coatings of Zinc on Iron and Steel. Screw strength shall be calculated in accordance with AISI S100 Section J4, if applicable, or shall be based on the manufacturer's design capacity determined from testing.

o. Local and/or regional building codes may require meeting special conditions. Building codes often require special inspection of anchors installed in concrete and masonry. For compliance with these requirements, it is necessary to contact the local and/or regional building authority. Except where mandated by code, Simpson Strong-Tie products do not require special inspection.

p. Throughout the catalog there are installation drawings showing the load transfer from one element in the structure to another. Additional connections may be required to safely transfer the loads through the structure. It is the designer's responsibility to specify and detail all necessary connections to ensure that a continuous load path is provided as required by the building code.

q. Top flange hanger allowable loads are typically based on testing with solid headers. Load reductions may apply when using headers comprised of multiple plies of dimensioned lumber or SCL. See technical bulletin T-C-MPLYHEADR at **strongtie.com** for more information.

r. For connections involving members with different specific gravities, use the allowable load corresponding to the lowest specific gravity in the connection, unless noted otherwise.