

Metal Screws

Strong-Drive® XL LARGE-HEAD METAL Screw

Steel decking or other cold-formed steel framing; connectors to structural steel

Strong-Drive XL Large-Head Metal screws are load-tested and code-listed, allowing you to get the for maximum load values for installation. These screws are the perfect choice when high shear or uplift resistance is required and can be excellent 1-for-1 replacements for pins.

Features:

- 5/16" hex drive (replacement driver bit — BITHEXR516-134)
- #5 drill point
- Quik Guard® coating
- 5/8"-diameter integral washer
- This screw is also available collated for the Quik Drive® system; see p. 210 for details

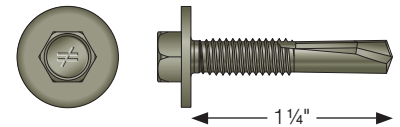
Codes/Standards: IAPMO UES ER-326, FM Approval 3050714, State of Florida FL16937, City of Los Angeles RR26009, SDI DDM03 Appendix IX, SDI DDM04

US Patent Pending

For Technical Data and Loads, see Technical Supplement

Warning: Industry studies show that hardened fasteners can experience performance problems in wet or corrosive environments. Accordingly, use this product in dry, interior and noncorrosive environments only.

For more information regarding fastening steel decking, see Technical Supplement.



Quik Guard® Coating

| Size | Length (in.) | Hex Head Size (in.) | Washer Dia. (in.) | Threads Per Inch | Point Size | Suitable Material Thickness (in.) | Bulk | |
|------|--------------|---------------------|-------------------|------------------|------------|-----------------------------------|-------------|----------------|
| | | | | | | | Carton Qty. | Model No. |
| #12 | 1 1/4 | 5/16 | 0.63 | 24 | #5 | 0.13–0.5 | 2,000 | XLQ114B1224-2K |

Strong-Drive® XM MEDIUM-HEAD METAL Screw

Steel decking to structural members involving wide or narrow valley; nestable or interlocking steel decking

Strong-Drive metal screws are load-tested and code-listed, allowing you to get the maximum load values for installation. Comparison testing shows Strong-Drive XM Medium-Head Metal screws are stronger than many alternative fastener types in 33 ksi and 50 ksi steel decking.

Features:

- 5/16" hex drive (replacement driver bit — BITHEXR516-134)
- 1/2"-dia. hex washer head is ideal for narrow-channel steel decking
- Available only in 1 1/4" length with #5 drill point
- Available in Quik Guard coating
- This screw is also available collated for the Quik Drive system; see p. 210 for details

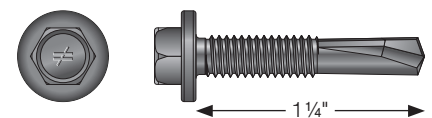
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US Patent Pending

For Technical Data and Loads, see Technical Supplement

Warning: Industry studies show that hardened fasteners can experience performance problems in wet or corrosive environments. Accordingly, use this product in dry, interior and noncorrosive environments only.

For more information regarding fastening steel decking, see Technical Supplement.



Quik Guard® Coating

| Size | Length (in.) | Hex Head Size (in.) | Washer Dia. (in.) | Threads Per Inch | Point Size | Suitable Material Thickness (in.) | Bulk | |
|------|--------------|---------------------|-------------------|------------------|------------|-----------------------------------|-------------|----------------|
| | | | | | | | Carton Qty. | Model No. |
| #12 | 1 1/4 | 5/16 | 0.48 | 24 | #5 | 0.13–0.5 | 2,000 | XMQ114B1224-2K |

Steel Deck

Strong-Drive® XL LARGE-HEAD and XM MEDIUM-HEAD METAL Screws

High-Performance Screw Alternative to Welds and Pins

Strong-Drive® metal screws are load-tested and code-listed, allowing you to get the maximum load values for installation. Strong-Drive XL Large-Head Metal screws are the perfect choice when high shear or uplift resistance is required. Strong-Drive XM Medium-Head Metal screws, with their 1/2" washer head, are designed for narrow flutes commonly found on interlocking deck profiles. In high-strength decks ($F_y = 50$ ksi), these screws are excellent 1-for-1 replacements for pins. The Self-Drilling X Metal screw is your go-to screw for lighter-duty support fastening and stitching applications. These screws are available in bulk or collated for Quik Drive® steel-decking systems.

Simpson Strong-Tie provides a full offering of code-listed fasteners for your next steel-decking job.

US Patent 9,518,599

For more information, see pp. 91 and 210, C-F-2019 Fastening Systems Catalog



DDM03 APPENDIX VII, IX DDM04



IAPMO UES ER-326



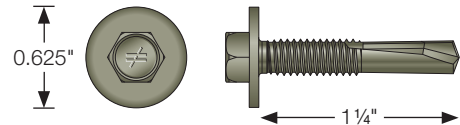
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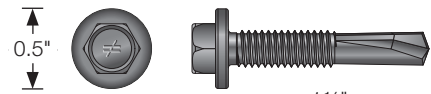
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State of Florida FL16937



Strong-Drive XL Large-Head Metal Screw

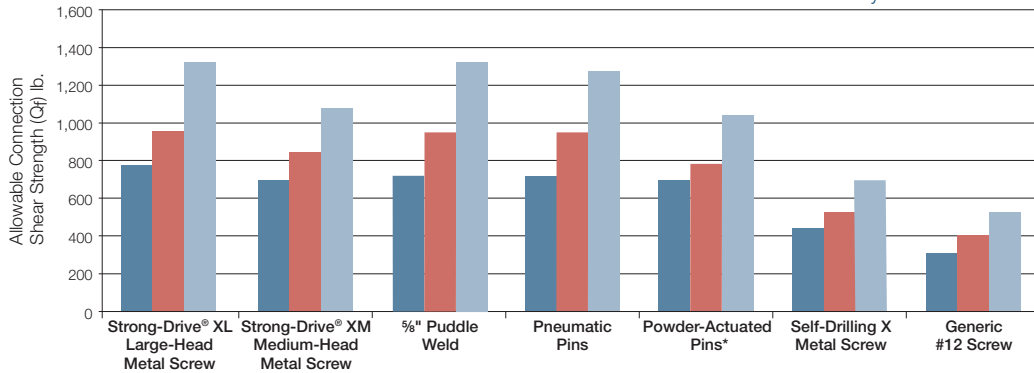


Strong-Drive XM Medium-Head Metal Screw

Strength in Numbers

Comparison testing shows that Strong-Drive XL Large-Head Metal screws and Strong-Drive XM Medium-Head Metal screws are stronger than many alternative fastener types in 33 ksi and 50 ksi steel decking.

For Standard SDI DDM03 and DDM04 Decks with $F_y = 33$ ksi



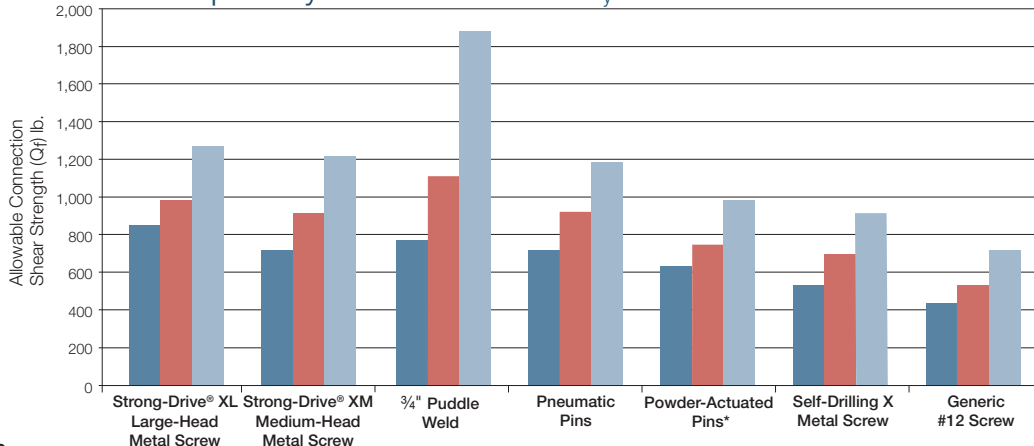
Wind Load

- 22 ga. deck
- 20 ga. deck
- 18 ga. deck
- Standard screw based on AISI Eq.
- PAF values based on SDI DDM03 and DDM04 Manuals
- Values based on 1/4" support thickness
- Safety factors per DDM03 and DDM04

*Average



For Proprietary Steel Decks with $F_y = 50$ ksi



Seismic Load

- 22 ga. deck
- 20 ga. deck
- 18 ga. deck
- Standard screw based on AISI Eq.
- PAF values based on SDI DDM03 and DDM04 Manuals
- Values based on 1/4" support thickness
- Safety factors per DDM03 and DDM04

*Average

Steel Deck

Strong-Drive® XL LARGE-HEAD and XM MEDIUM-HEAD METAL Screws (cont.)

Screw Shear and Tension Strengths

| Size (in.) | Model (Model No.) | Factor | Support Thickness (in.) | Nominal | | Reference Connection Shear Strength, Qf (lb.), and Flexibility, Sf (in./kip) | | | | | | | |
|------------|---|--------|-------------------------|-----------------|-----------------|--|-------------|-------------|-------------|---------------------------|-------------|-------------|-------------|
| | | | | Shear (lb.) | Tension (lb.) | GR33 / GR40 | | | | GR50 | | | |
| | | | | | | Deck Thickness, ga. (in.) | | | | Deck Thickness, ga. (in.) | | | |
| | | | | P _{ss} | P _{ts} | 22 (0.0295) | 20 (0.0358) | 18 (0.0474) | 16 (0.0598) | 22 (0.0295) | 20 (0.0358) | 18 (0.0474) | 16 (0.0598) |
| #12 x 1 ¼ | XL Large-Head Metal Screw (XLQ114T1224, XLQ114B1224) | Qf | 0.375 | 3,110 | 4,985 | 1,985 | 2,410 | 3,110 | — | 2,030 | 2,465 | 3,110 | 3,110 |
| | | | 0.25 | | | 1,870 | 2,270 | 3,005 | 3,110 | 2,465 | 2,465 | 3,110 | 3,110 |
| | | | 0.1875 | | | 1,790 | 2,170 | 2,875 | 3,110 | 1,945 | 2,360 | 3,110 | 3,110 |
| | | | 0.125 | | | 1,685 | 2,045 | 2,705 | 3,110 | 1,830 | 2,220 | 2,940 | 3,110 |
| | | Sf | 0.125–0.375 | | | 0.0076 | 0.0069 | 0.006 | 0.0053 | 0.0076 | 0.0069 | 0.006 | 0.0053 |
| #12 x 1 ¼ | XM Medium-Head Metal Screw (XMQ114S1224, XMQ114B1224) | Qf | 0.375 | 3,110 | 4,985 | 1,565 | 1,895 | 2,510 | 3,110 | 1,780 | 2,200 | 2,995 | 3,110 |
| | | | 0.25 | | | 1,565 | 1,895 | 2,510 | 3,110 | 1,780 | 2,200 | 2,995 | 3,110 |
| | | | 0.1875 | | | 1,215 | 1,625 | 2,475 | 3,110 | 1,655 | 2,050 | 2,790 | 3,110 |
| | | | 0.125 | | | 1,215 | 1,625 | 2,475 | 3,110 | 1,495 | 1,850 | 2,520 | 3,110 |
| | | Sf | 0.125–0.375 | | | 0.0076 | 0.0069 | 0.006 | 0.0053 | 0.0076 | 0.0069 | 0.006 | 0.0053 |

1. P_{ss} and P_{ts} are nominal shear strength and nominal tension strength for the screw itself, respectively, and are the average (ultimate) value of all tests determined by independent laboratory testing.

2. The ASD and LRFD loads for tension are calculated using a safety factor Ω of 3.0 and the resistance factor ϕ of 0.5, respectively.

3. For tension connection: the smallest of the screw tension strength, pull-over strength and pull-out strength shall be used for design.

Structural Screw Pull-Over Strength with Steel Minimum Yield Strength $F_y = 33$ ksi

| Size (in.) | Model (Model No.) | Design Basis | Reference Pull-Over Loads (lb.) | | | | | | | |
|------------|--|--------------|---------------------------------|-------------|-------------|-------------|---------------------------|-------------|-------------|-------------|
| | | | GR33 | | | | GR40 / GR50 | | | |
| | | | Deck Thickness, ga. (in.) | | | | Deck Thickness, ga. (in.) | | | |
| | | | 22 (0.0295) | 20 (0.0358) | 18 (0.0474) | 16 (0.0598) | 22 (0.0295) | 20 (0.0358) | 18 (0.0474) | 16 (0.0598) |
| #12 x 1 ¼ | XL Large-Head Metal Screw ² (XLQ114T1224, XLQ114B1224) | Nominal | 1,295 | 1,705 | 2,490 | 2,775 | 1,575 | 1,990 | 2,820 | 3,075 |
| | | LRFD | 840 | 1,100 | 1,625 | 1,810 | 1,020 | 1,285 | 1,840 | 2,005 |
| | | ASD | 525 | 690 | 1,015 | 1,135 | 635 | 800 | 1,150 | 1,255 |
| #12 x 1 ¼ | XM Medium-Head Metal Screw ² (XLM114S1224, XLM114B1224) | Nominal | 750 | 1,020 | 1,400 | 1,930 | 910 | 1,190 | 1,590 | 2,135 |
| | | LRFD | 485 | 655 | 915 | 1,260 | 595 | 775 | 1,035 | 1,395 |
| | | ASD | 305 | 415 | 570 | 790 | 370 | 485 | 650 | 870 |

1. Values are based on steel members with a minimum yield strength of $F_y = 33$ ksi and tensile strength of $F_u = 45$ ksi.

2. The values for 16 ga., 18 ga., 20 ga. and 22 ga. are based on tests per AISI Standard Test Method S905.

3. The safety factor Ω and resistance factor ϕ used to determine the ASD and LRFD strengths are based on AISI S100.

4. The values for 16 ga., 18 ga., 20 ga. and 22 ga. are based on the calculations per AISI S100.

5. For tension connection: the smallest of the screw tension strength, pull-over strength and pull-out strength shall be used for design.

Structural Screw Pull-Out Strength

| Size (in.) | Model (Model No.) | Design Basis | Reference Pull-Out Loads (lb.) | | | |
|------------|---|---|--------------------------------|-------|-------|-------|
| | | | Support Thickness | | | |
| | | | 1/8" | 3/16" | 1/4" | 3/8" |
| #12 x 1 ¼ | XL Large-Head Metal Screw (XLQ114T1224, XLQ114B1224) | Minimum Tensile Strength of Steel, $F_u = 65$ ksi | | | | |
| | | Nominal | 1,490 | 2,240 | 2,985 | 4,475 |
| | | LRFD | 745 | 1,120 | 1,490 | 2,240 |
| | | ASD | 495 | 745 | 995 | 1,490 |
| | | Minimum Tensile Strength of Steel, $F_u = 50$ ksi | | | | |
| | | Nominal | 1,150 | 1,720 | 2,295 | 3,445 |
| | XM Medium-Head Metal Screw (XMQ114S1224, XMQ114B1224) | LRFD | 575 | 860 | 1,150 | 1,720 |
| | | ASD | 385 | 575 | 765 | 1,150 |

1. Values are based on calculations per AISI S100.

2. The tabulated ASD and LRFD loads are based upon a safety factor Ω of 3.0 and the resistance factor ϕ of 0.5.

3. For tension connection: the smallest of the screw tension strength, pull-over strength and pull-out strength shall be used for design.

For more information regarding these tables, please refer to IAPMO UES ER-326.