STRONGER THAN STEEL

HDS® FRAMING SYSTEM PRODUCT CATALOG

INTERIOR AND EXTERIOR FRAMING
The HDS® Framing System is a high-performance, cost-effective, multipurpose, heavy-duty framing stud for headers, jambs, posts and built-up tube truss chords and webs. The superior strength and carrying capacity of the HDS Framing System means higher performance with fewer members. It means eliminating box beam headers, nesting track and stud for posts and jambs, and eliminating multi-member built-up truss chords and webs. It also means improved finish quality by eliminating excessive material and screw head buildup around doors and windows.

The HDSC header bracket is the perfect complement to the HDS Framing System. This simple, yet innovative header bracket turns curtain wall header installation from a two-person job into a one-person job. This unique, prepunched clip also eliminates surface head fastener buildup that can create finishing challenges. Let the light-gauge framing experts at ClarkDietrich help you incorporate this cutting-edge, framing assembly into your next project.

CONSTRUCTION ADVANTAGES:
• Outstanding bending strength in two directions.
• Reduces installation time by 50%.
• Eliminates box beam header assembly.
• Reduces material and labor costs up to 50%.
• HDS can be screw-attached from either side.
• Eliminates stud-to-track nesting for post, header and jamb studs.
• Openings up to 15’ wide.
• Improves drywall finishing around doors and windows. No screw head buildup.
• Superior axial strength.

### HDSC HEADER BRACKET

<table>
<thead>
<tr>
<th>Product code</th>
<th>Thickness</th>
<th>Design thickness (ksi)</th>
<th>Fits HDS system size (in)</th>
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<td>0.0713</td>
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<td>3-1/2 x 3-1/16 x 2</td>
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<tr>
<td>HDSC 14 68</td>
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All material G90. Sold in pairs.

### HDSC HEADER BRACKETS ALLOWABLE LOADS (LBS)

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<td>948</td>
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</table>

*Indicates that h/t exceeds 200. Web stiffeners are required at bearing points. No holes in the web are permitted.

**Notes:**

1. Screws shall be #10-16 Buildex® or equivalent, with an ultimate shear capacity per screw of 1400 lbs.
2. Table to be used by qualified engineers only.
3. To determine the capacity of any given connection, compare the jamb and head values, and use the minimum. For example, if a 16 gauge, 50ksi jamb is used with a 3.625” HDS 18 gauge, 33ksi head, the design value for F1 is the minimum F1 value of 1680 lbs for the jamb and 673 lbs for the head. Therefore, the design value is 673 lbs.
4. For F1 and F2 occurring at the same time, use the squared interaction equation: (f1/F1)^2+(f2/F2)^2<=1.0.
5. Buildex® is a registered trademark of Illinois Tool Works, Inc.
**HDS® FRAMING SYSTEM**

**Product code | Thickness**
--- | ---
**HDS3** | 20 33 0.0346 33
18 43 0.0451 33
16 54 0.0566 50
14 68 0.0713 50
12 97 0.1017 50

**HDS® SECTION PROPERTIES**

**Web size (in) | Gauge | Mil | Fy (ksi) | Min. delivered thickness (in) | Area (in)
\^2 | Wt. (lb/ft) | Ix (in\(^4\)) | Jx1000 (in\(^4\)) | Cw | Xo (in) | Ro (in) | Beta**
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---
3-5/8 | 20 33 33 | 0.0329 | 0.445 | 1.52 | 0.934 | 0.515 | 1.418 | 0.631 | 1.426 | 0.405 | 1.190 | 0.178 | 4.624 | -3.485 | 3.957 | 0.224
18 43 33 | 0.0428 | 0.574 | 1.96 | 1.198 | 0.661 | 1.444 | 0.805 | 1.416 | 0.516 | 1.134 | 0.389 | 5.739 | -3.483 | 3.935 | 0.233
16 54 50 | 0.0638 | 0.715 | 2.43 | 1.483 | 0.818 | 1.441 | 0.990 | 1.406 | 0.632 | 1.177 | 0.764 | 6.894 | -3.480 | 3.946 | 0.222
14 68 50 | 0.0677 | 0.888 | 3.02 | 1.829 | 1.009 | 1.436 | 1.211 | 1.392 | 0.770 | 1.168 | 1.503 | 8.151 | -3.476 | 3.938 | 0.221
12 97 50 | 0.0966 | 1.239 | 4.22 | 2.520 | 1.390 | 1.426 | 1.645 | 1.367 | 1.039 | 1.152 | 4.271 | 10.420 | -3.449 | 3.906 | 0.220

4 | 20 33 33 | 0.0329 | 0.458 | 1.56 | 1.175 | 0.588 | 1.601 | 0.656 | 1.386 | 0.411 | 1.196 | 0.183 | 5.146 | -3.422 | 3.963 | 0.254
18 43 33 | 0.0428 | 0.591 | 2.01 | 1.509 | 0.754 | 1.598 | 0.838 | 1.376 | 0.523 | 1.190 | 0.400 | 6.425 | -3.418 | 3.956 | 0.254
16 54 30 | 0.0538 | 0.736 | 2.50 | 1.869 | 0.930 | 1.504 | 1.031 | 1.365 | 0.641 | 1.163 | 0.767 | 7.715 | -3.414 | 3.949 | 0.253
14 68 30 | 0.0677 | 0.914 | 3.11 | 2.307 | 1.154 | 1.588 | 1.261 | 1.351 | 0.782 | 1.175 | 1.548 | 9.159 | -3.409 | 3.940 | 0.261
12 97 30 | 0.0966 | 1.277 | 4.35 | 3.183 | 1.592 | 1.579 | 1.714 | 1.326 | 1.056 | 1.158 | 4.403 | 11.787 | -3.379 | 3.905 | 0.251

6 | 20 33 33 | 0.0329 | 0.610 | 2.08 | 3.034 | 1.011 | 2.230 | 0.993 | 1.441 | 0.644 | 1.276 | 0.244 | 24.960 | -3.636 | 4.452 | 0.333
18 43 33 | 0.0428 | 0.788 | 2.68 | 3.907 | 1.302 | 2.226 | 1.273 | 1.433 | 0.824 | 1.271 | 0.533 | 31.427 | -3.633 | 4.443 | 0.332
16 54 30 | 0.0538 | 0.864 | 3.35 | 4.856 | 1.619 | 2.222 | 1.573 | 1.424 | 1.016 | 1.265 | 1.052 | 38.080 | -3.630 | 4.440 | 0.332
14 68 30 | 0.0677 | 1.226 | 4.17 | 6.023 | 2.008 | 2.216 | 1.938 | 1.412 | 1.249 | 1.257 | 2.076 | 45.721 | -3.626 | 4.432 | 0.331
12 97 30 | 0.0966 | 1.722 | 5.96 | 8.390 | 2.763 | 2.206 | 2.662 | 1.390 | 1.707 | 1.243 | 5.936 | 60.191 | -3.602 | 4.403 | 0.331

8 | 20 33 33 | 0.0329 | 0.679 | 2.31 | 6.134 | 1.533 | 3.005 | 1.122 | 1.294 | 0.665 | 1.285 | 0.272 | 33.350 | -3.412 | 4.725 | 0.479
18 43 33 | 0.0428 | 0.878 | 2.99 | 7.909 | 1.977 | 3.001 | 1.439 | 1.286 | 0.851 | 1.280 | 0.594 | 42.201 | -3.406 | 4.716 | 0.478
16 54 30 | 0.0538 | 1.097 | 3.73 | 9.843 | 2.461 | 2.996 | 1.779 | 1.277 | 1.050 | 1.274 | 1.173 | 51.431 | -3.399 | 4.706 | 0.478
12 97 30 | 0.0966 | 1.926 | 6.55 | 17.075 | 4.269 | 2.978 | 3.013 | 1.243 | 1.766 | 1.251 | 6.637 | 82.848 | -3.360 | 4.661 | 0.480

*Indicates that h/t exceeds 200. Web stiffeners are required at bearing points. No holes in the web are permitted.

**Notes:**

1. 1 ft = 25.4 mm
2. Ix = Gross Moment Of Inertia about x-axis.
3. Sx = Gross Section Modulus about x-axis.
4. Rx = Gross Radius of Gyration about x-axis.
5. Ly = Gross Moment Of Inertia about y-axis.
6. xbar = The distance from the web centerline to the center of gravity.
7. Sy = Gross Section Modulus about y-axis.
8. Ry = Gross Radius of Gyration about y-axis.
10. Cw = Warping Torsion Constant.
11. xo = Distance from shear center to the centroid along the principal x-axis.
12. ro = Polar Radius of Gyration about the centroidal principal axis.
13. Beta = 1-(Xo/ro)\(^2\)
14. Stiffening Lip = 0.75" for all web sizes.

### HDS® EFFECTIVE PROPERTIES AND CAPACITIES

#### 3-5/8

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</table>

**Notes:**

1. Sx = Effective Section Modulus about x-axis.
2. Mxa = Allowable Moment about x-axis.
3. Sye = Effective Section Modulus about y-axis.
4. Mya = Allowable Moment about y-axis.
5. Iye = Effective Moment Of Inertia about y-axis.
6. Vy = Allowable Shear for bending about y-axis.
7. Lu = Maximum unbraced length to attain Mxa.
8. Vx = Allowable Shear for bending about x-axis.
9. Vy = Allowable Shear for bending about y-axis.

**HDS® FRAMING SYSTEM**

*Indicates that the h/t exceeds 200. Web stiffeners are required at bending points. No holes in the web are permitted.*

10. Pxy = For members having a web depth of less than 8”, and also having a thickness less than 97 mil, allowable web crippling per AISI Standard for CFS Wall Stud Design 2004. This value assumes the web resists web crippling and the HDS is nested in track having the same thickness. For other members, allowable end one flange web crippling per AISI NASPEC, 2001 w/2004 supplement.

11. Py = Allowable end one flange web crippling per AISI NASPEC, 2001 w/2004 supplement. This value assumes 2 flanges resist web crippling for a bearing length of 1-1/4”.

12. Unless otherwise noted, properties are computed according to the AISI NASPEC, 2001 w/2004 supplement.

13. Perforated properties are based on the standard 1-1/2” x 4” oval ClarkDietrich web knockout. The knockout is centered about the web, and is spaced no less than 24” o.c.

# HDS® Framing System Tables

## INTERIOR SPAN CHART

### ALLOWABLE HDS® HEADER SPANS FOR WINDOW AND DOOR OPENINGS

**Dead Load = 10psf & Wind Load = 5psf** (Dead Load Deflection limited to L/240 or a maximum of 0.5 in.)

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<th>Member size (in)</th>
<th>Gauge</th>
<th>Mil</th>
<th>Fy (ksi)</th>
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**Notes:**

1. Tabulated values are for a single HDS header installed with standard HDS clips. Each head-to-jamb connection requires (4) #10-16 screws to the header, and (4) #10-16 screws to the jamb. Tabulated values marked with an asterisk will require special engineering of the header-to-jamb connections.

2. Tabulated values include a connection check assuming 25 gauge jamb studs.

3. HDS header to be installed with open side facing up.

4. HDS properties computed in accordance with AISI NASPEC 2001.
# EXTERIOR SPAN CHART

## ALLOWABLE HDS® HEADER SPANS FOR WINDOW AND DOOR OPENINGS

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### Notes:
1. Tabulated values are for a single HDS header installed with standard HDSC clips. Each head-to-jamb connection requires 4 #10-16 screws to the header, and 4 #10-16 screws to the jamb. Tabulated values marked with an asterisk will require special engineering of the header-to-jamb connections.
2. Deflections are computed using 0.7 times the components and cladding wind load per Section B1 of the AISI Standard for Cold-Formed Steel Framing—Wall Design. Note that the 0.7 factor is not used for the interior 5psf loading condition.
3. Unless connections are engineered separately, jambs must be the same gauge and strength as the header.
4. HDS header to be installed with open side facing up.
5. HDS properties computed in accordance with AISI NASPEC 2001.
### HDS® Framing System Tables

#### ALLOWABLE OPENING WIDTHS FOR SINGLE HDS® FRAMING USED AS JAMB STUDS

<table>
<thead>
<tr>
<th>Wall Height (ft)</th>
<th>Member Size (in)</th>
<th>Height (in)</th>
<th>Gauge</th>
<th>Mil Thickness (mil)</th>
<th>Fy (ksi)</th>
<th>5psf</th>
<th>25psf</th>
<th>35psf</th>
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<tr>
<td>3-5/8</td>
<td>16' 0&quot;</td>
<td>12' 11&quot;</td>
<td>33</td>
<td>6' 8&quot;</td>
<td>14' 5&quot;</td>
<td>5' 6&quot;</td>
<td>15' 2&quot;</td>
<td>19' 3&quot;</td>
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<tr>
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<td>16' 0&quot;</td>
<td>12' 11&quot;</td>
<td>33</td>
<td>6' 8&quot;</td>
<td>14' 5&quot;</td>
<td>5' 6&quot;</td>
<td>15' 2&quot;</td>
<td>19' 3&quot;</td>
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<td>16' 0&quot;</td>
<td>12' 11&quot;</td>
<td>33</td>
<td>6' 8&quot;</td>
<td>14' 5&quot;</td>
<td>5' 6&quot;</td>
<td>15' 2&quot;</td>
<td>19' 3&quot;</td>
</tr>
</tbody>
</table>

*Depending on the actual window width versus the tabulated window width, cells marked with an * (asterisk) may require an end connection that will prevent web crippling. Web crippling is computed in accordance with the AISI Standard for CFS Wall Stud Design 2004. End track must have a minimum thickness equal to the jamb stud.

**Notes:**

1. The opening is centered vertically about the wall height.
2. The assumed stud spacing adjacent to the opening is 16" o.c. or less.
3. The tabulated values assume a single HDS member is used at each jamb stud.
4. The tabulated values are limited to 16' for 3-5/8" walls and 20' for 6" walls. For wider openings or other conditions, contact ClarkDietrich at 888.437.3244.
5. The tabulated values are based on an unbraced length for bending of 6'.
6. Deflections are computed using 0.7 times the components and cladding wind load per Section B1 of the AISI Standard for Cold-Formed Steel Framing—Wall Design. Note that the 0.7 factor is not used for the interior 5psf loading condition.
7. HDS properties computed in accordance with the 2001 AISI NASPEC.
8. Table not valid for openings in load-bearing walls.
**HDS® Framing Details**

### HDS® HEADER CONNECTIONS

- **Cripple Studs Above Opening**
- **HDS Header See Elevation for Member Size & Quantity**
- **HDS Sill See Elevation for Member Size & Quantity**
- **Attach Track to Stud Using: (2) #10-16 Screws @ 24” O.C.**

### HDS SILL CONNECTIONS

- **HDS Header See Elevation for Member Size & Quantity**
- **HDS Sill See Elevation for Member Size & Quantity**
- **Cripple Studs Below Opening**
- **HDS Jamb Stud See Elevation for Member Size & Quantity**

### Wall Height

- **Opening**
- **Opening Height**
- **Header Span**

### Sill Height

- **Opening**
- **Opening Height**
- **Sill Height**
- **Tabulated Width**

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For use with the HDS® Framing System.

The ClarkDietrich HDS Framing System provides outstanding bending strength in two directions and superior axial strength. Plus, it reduces material, labor costs and installation time by up to 50%. The superior strength and carrying capacity of the HDS means higher performance with fewer members, like eliminating box beam headers, nesting track and stud for posts and jambs. It also means improved finish quality by eliminating excessive material and screw head buildup around doors and windows. The HDSC header bracket is a unique, prepunched clip that turns curtain wall header installation from a two-man job into a one-man job.
Smarter engineering and technical expertise. It's support that extends beyond the structure itself.

From the initial design phase to jobsite installation, we are focused on providing inventive, yet practical and hands-on know-how to help you think outside the box—or to help you just get it done.

ClarkDietrich Engineering Services is a full-service consulting firm that believes strongly in value engineering and customer input. Our engineering fees and lead times are competitive, and our customer service exceeds the industry standard with consistent point-of-contact through our regional project managers.

We are able to exploit the vast advantages of building information modeling (BIM) with add-on tools that allow our products, and the rich data attached to them, to quickly be imported into digital designs. Our team is also comprised of LEED®-certified professionals to consult on sustainable building design.

- Electronically sealed shop drawings and calculations.
- Preliminary sizing and pre-bid engineering pricing.
- Reference plan on large projects.
- Detailed wall sections, full elevation opening design and C-stud truss design.

Our technical services team provides immediate response to questions ranging from general installation to detailed specification requirements and can deliver one-day turnaround on technical sizing. We are experts on industry standards such as AISI, ASTM and SFIA. Our team also supports our online product submittal system, SubmittalPro®, and our design/engineering software is available as a free download from www.clarkdietrich.com.

- Product support and typical member sizing.
- Framing detail recommendations.
- Compliance and industry standards, such as AISI, ASTM and SFIA.
- Engineering software and product submittal support.
- LEED requirements support.

TRADEMARKS AND WARRANTY

PATENTS
U.S. Patent No. 7,739,850 B2 is owned by ClarkDietrich Building Systems

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ClarkDietrich™ is a trademark of ClarkDietrich Building Systems. Clip Express™, Drop ‘N Lock™ Clip, HDS®, RedHeader RO, Stronger Than Steel®, SubmittalPro®, and SwiftClip™ are owned by ClarkDietrich Building Systems.

Buildex® is a registered trademark of Illinois Tool Works, Inc.

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Our products are manufactured in accordance with company standards and/or industry standards, as applicable. All ClarkDietrich Building Systems products are covered by our standard warranty which is contained in our Standard Terms and Conditions of Sale and which will be provided upon request. Generally, we warrant our products will be free from defects in material and workmanship at the time of shipment, subject to the limitations stated in the warranty. Unless specifically agreed in writing by us with respect to specific orders, we do not make any warranty of merchantability or fitness for a particular purpose. The buyer is responsible to assure that buyer orders the appropriate product for any applicable code or specification requirements.

NOTICE: Our liability is expressly limited to replacement of defective products. We shall not be liable for incidental and consequential damages, nor for any loss caused by misuse or misapplication of our products. Any claim shall be deemed waived unless made in writing to us within thirty (30) days from the date it was or reasonably should have been discovered.
CODE APPROVALS AND PERFORMANCE STANDARDS

ClarkDietrich products meet or exceed these applicable performance standards.

AISI "North American specification for the design of cold-formed steel structural members, 2001 w/2004 supplement"

ASTM American Society for Testing and Materials

Product specifications
- ASTM C645: Non-structural steel framing members
- ASTM C955: Load-bearing steel framing

Material specifications
- ASTM A1003 (NS33, ST33H, ST50H)
- ASTM A653: Zinc-coated hot-dip process

Protective coating standards
- ASTM A653: Non-structural steel framing members
- ASTM C955: Load-bearing steel framing
- ASTM A1003: Standard specification for steel sheet, carbon, metallic- and nonmetallic-coated for cold-formed framing members
- ASTM A653: Zinc-coated hot-dip process

UL® Underwriters Laboratories testing standard
UL 263 "Fire Tests of Building Construction and Materials"

LEED® Services
BUILD GREEN with ClarkDietrich Building Systems
ClarkDietrich Building Systems is an active member of the U.S. Green Building Council and is committed to supplying quality products that are environmentally responsible. We are continually working to develop greener building products and sustainable business practices. ClarkDietrich steel framing helps contribute points toward LEED® certification. For more details contact Technical Services at 888-437-3244 or visit www.clarkdietrich.com/LEED.

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  - F 951.360.3333
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  - F 951.360.3333
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  - F 860.584.6899
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  - F 352.518.4450
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  - F 678.304.5555
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  - F 330.372.4055
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  - F 281.573.1679
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  - F 866.638.1909
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- **Email** engineering@clarkdietrich.com

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