



Column strength is the ability of the lift shaft to hold compressive loads without buckling. With longer screw lengths, column strength may be substantially lower than nominal jack capacity.

If the lift shaft is in tension only, the screw jack travel is limited by the available screw material or by the critical speed of the screw. Refer to the ball screw technical section for critical speed limitations. If there is any possibility for the lift shaft to go into compression, the application should be sized for sufficient column strength.

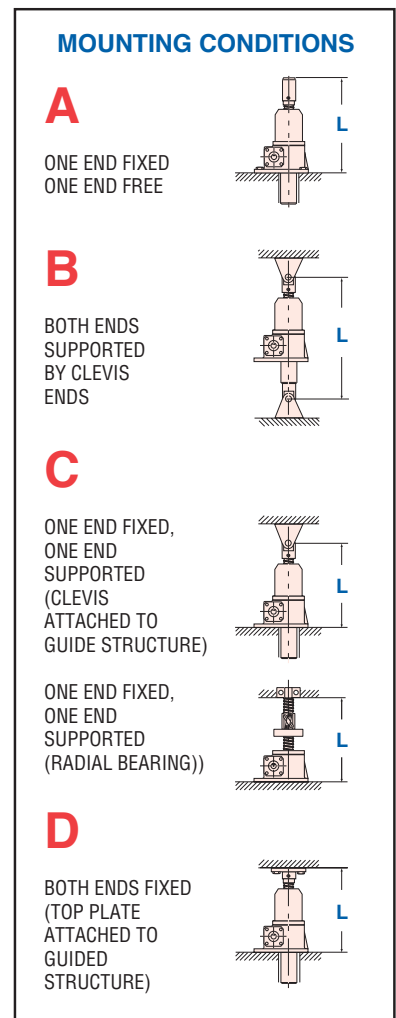
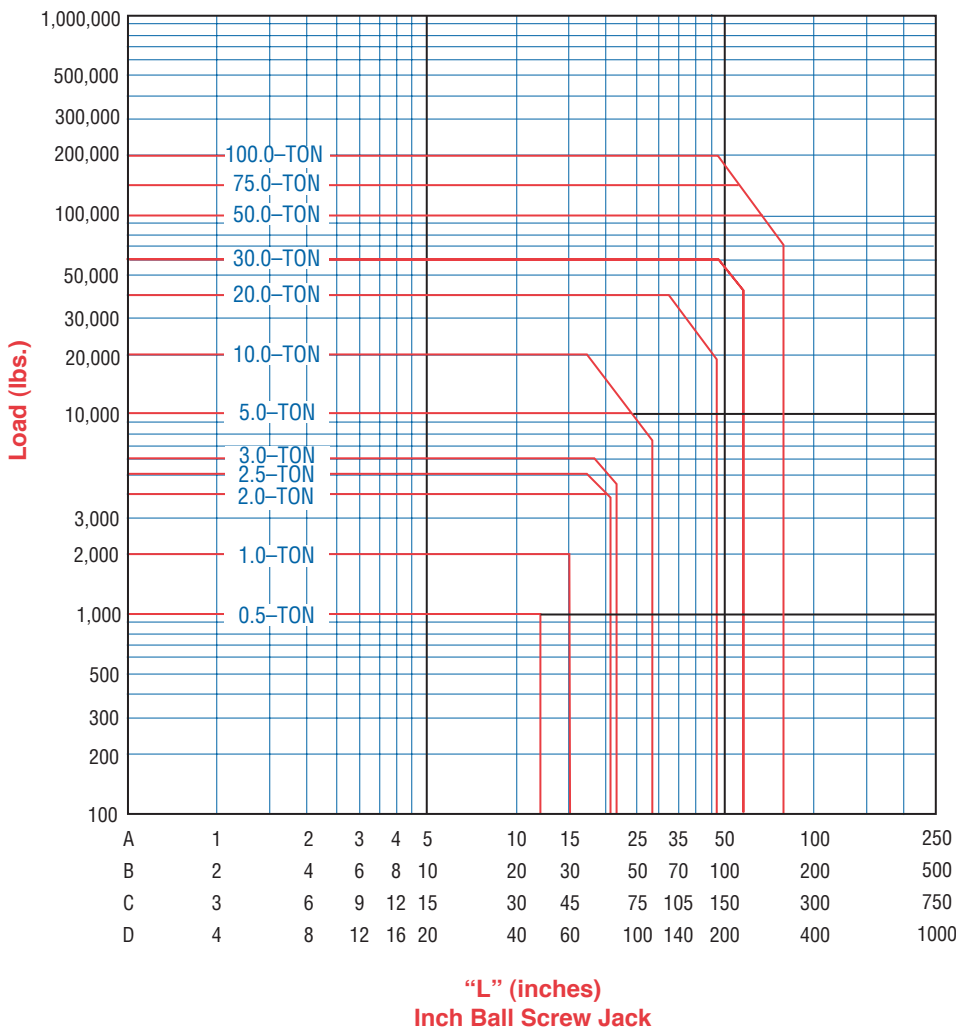
The chart below is used to determine the required jack size in applications where the lift shaft is loaded in compression.

To use this chart:

Find a point at which the maximum length “L” intersects the maximum load. Be sure the jack selected is above and to the right of that point.

**CAUTION:** chart does not include a design factor.

The chart assumes proper jack alignment with no bending loads on the screw. Effects from side loading are not included in this chart. Jacks operating horizontally with long lift shafts can experience bending from the weight of the screw. Consult Nook Industries, Inc. if side thrust is anticipated, operating horizontally, or maximum raise is greater than 30 times the screw diameter.



**AVAILABLE LIFT SCREW LENGTHS**

As a major manufacturer of industrial lead screws, Nook Industries stocks a wide selection of ball screws. Nook Industries has the capacity to make long ball screws for

special applications. Rotating screw jacks can be built with a larger diameter lift screw for greater column strength, or a different lead to change the jack operating speed.

The following chart provides the minimum life expectancy in total inches of travel for the ball screws.

| MODEL                | Operating Load (lbs) | MINIMUM INCHES OF TRAVEL (in. x 10 <sup>3</sup> ) |                |                             |                | Page Number |
|----------------------|----------------------|---|----------------|-----------------------------|----------------|-------------|
|                      |                      | UPRIGHT & INVERTED                                |                | UPRIGHT & INVERTED ROTATING |                |             |
|                      |                      | Standard (in)                                     | High-Lead (in) | Standard (in)               | High-Lead (in) |             |
| 0.5-BSJ<br>0.5HL-BSJ | 1,000                | 377   | 708            | 471                         | 885            | 297         |
|                      | 750                  | 893   | 1,678          | 116                         | 2,097          |             |
|                      | 500                  | 3,014   | 5,662          | 3,767                       | 7,078          |             |
|                      | 250                  | 24,111  | 45,299         | 56,623                      | 56,623         |             |
| 1-BSJ<br>1HL-BSJ     | 2,000                | 133   | 2,019          | 166                         | 2,524          | 298-299     |
|                      | 1,500                | 316   | 4,785.9        | 394                         | 5,982          |             |
|                      | 1,000                | 1,065   | 16,152         | 1,331                       | 20,190         |             |
|                      | 500                  | 8,518   | 129,218        | 10,648                      | 161,523        |             |
| 2-BSJ<br>2R-BSJ      | 5,000                | 52  | —              | 66                          | —              | 300-301     |
|                      | 3,750                | 124   | —              | 155                         | —              |             |
|                      | 2,500                | 419   | —              | 524                         | —              |             |
|                      | 1,250                | 3,351   | —              | 4,189                       | —              |             |
| 2.5-BSJ<br>2.5HL-BSJ | 5,000                | 27  | 63             | 34                          | 79             | 302-303     |
|                      | 3,750                | 64  | 149            | 79                          | 186            |             |
|                      | 2,500                | 215   | 503            | 268                         | 629            |             |
|                      | 1,250                | 1,716   | 4,026          | 2,145                       | 5,031          |             |
| 3-BSJ                | 6,000                | 219   | —              | 273                         | —              | 304         |
|                      | 4,500                | 518   | —              | 648                         | —              |             |
|                      | 3,000                | 1,750   | —              | 2,187                       | —              |             |
|                      | 1,500                | 13,996  | —              | 17,495                      | —              |             |
| 5-BSJ<br>5HL-BSJ     | 10,000               | 812   | 346            | 1,015                       | 432            | 305         |
|                      | 7,500                | 1,925   | 819            | 2,406                       | 1,024          |             |
|                      | 5,000                | 6,497   | 2,765          | 8,121                       | 1,024          |             |
|                      | 2,500                | 51,972  | 22,123         | 64,965                      | 27,653         |             |
| 10-BSJ<br>10HL-BSJ   | 20,000               | 102   | 43             | 127                         | 54             | 306         |
|                      | 15,000               | 241   | 103            | 301                         | 128            |             |
|                      | 10,000               | 812   | 346            | 1,015                       | 432            |             |
|                      | 5,000                | 6,497   | 2,765          | 8,121                       | 3,457          |             |
| 20-BSJ<br>20HL-BSJ   | 40,000               | 121   | 234            | 151                         | 292            | 307         |
|                      | 30,000               | 287   | 554            | 358                         | 692            |             |
|                      | 20,000               | 967   | 1,869          | 1,209                       | 2,336          |             |
|                      | 10,000               | 7,737   | 14,952         | 9,672                       | 18,690         |             |
| 30-BSJ<br>30HL-BSJ   | 60,000               | 323   | 572            | 403                         | 715            | 308         |
|                      | 45,000               | 764   | 1,355          | 955                         | 1,694          |             |
|                      | 30,000               | 2,579   | 4,574          | 3,223                       | 5,718          |             |
|                      | 15,000               | 20,630  | 36,596         | 25,787                      | 45,744         |             |
| 50-BSJ               | 100,000              | 505   | —              | 631                         | —              | 309         |
|                      | 75,000               | 1,196   | —              | 1,495                       | —              |             |
|                      | 50,000               | 4,037   | —              | 5,046                       | —              |             |
|                      | 25,000               | 32,292  | —              | 40,365                      | —              |             |
| 75-BSJ               | 150,000              | 150   | —              | 187                         | —              | 310         |
|                      | 112,500              | 354   | —              | 443                         | —              |             |
|                      | 75,000               | 1,196   | —              | 1,495                       | —              |             |
|                      | 37,500               | 9,568   | —              | 11,960                      | —              |             |
| 100-BSJ              | 200,000              | 63  | —              | 79                          | —              | 311         |
|                      | 150,000              | 150   | —              | 187                         | —              |             |
|                      | 100,000              | 505   | —              | 631                         | —              |             |
|                      | 50,000               | 4,037   | —              | 5,046                       | —              |             |

**LEAD ACCURACY**

The rolled thread ball screw, as employed in ActionJac™ products, is held within ±0.004" per foot cumulative from nominal dimension. Lift Shafts can be matched to within ±0.002" per foot when ordered as matched sets. Special ground threads having lead accuracies of ±0.0005" per foot can be provided.

**BACKLASH**

Axial backlash ranges from 0.005" to 0.012". Specify optional selective fit lift shaft for 0.003" to 0.005" backlash.

**MATERIAL HARDNESS**

Ball screws have a race hardness of Rockwell C 58 minimum. Core hardness will run from Rc 20 to 35.

**NOTES:**

- Refer to Lubrication Instructions in order to obtain maximum life from ball screw assemblies.
- These values may be greatly reduced if the units are subjected to misalignment, shock loads, side thrust, contamination or lack of proper lubrication and maintenance.