

Technical Bulletin 46: Type Testing

In 1992, Slingmax[®] was the first to manufacture a roundsling using high performance fiber. K-Spec[®] was the first blended high-performance roundsling fiber, combining the benefits of the most state-of-the-art fibers on the market.

Thousands of tests have been performed on Twin-Path[®] high performance roundslings by Slingmax and our network of manufacturing dealers. Testing has included break tests, cycle tests, yarn-on-yarn abrasion tests, and exposure to UV, chemicals, heat, and cold just to name a few.

As time has gone on, the demand for larger capacity roundslings has increased, so in 2012 Slingmax set out to test the largest capacity slings listed in our catalog. Up until that point, no one had ever performed a tensile test on a roundsling larger than 2 million pounds. During this series of tests, we completed a 3-million-pound tensile test, greatly expanding our knowledge, and pushing the industry forward dramatically. All slings in this testing program were fabricated using our proprietary K-Spec core yarn and Rifled Cover[®] technology, exclusive to Slingmax.

Tests Performed:

Three sizes of Twin-Path roundslings were tested in this program, the model numbers, working load limits (WLL) and minimum breaking strengths (MBL) are listed in Table 1 below. Each sling had a 5:1 design factor.

Table 1 - Slings Tested

| Sling Model | Working Load Limit (lb) | Minimum Breaking Load (lb) |
|--------------------|--------------------------------|-----------------------------------|
| TPXC40000 | 400,000 | 2,000,000 |
| TPXC50000 | 500,000 | 2,500,000 |
| TPXC60000 | 600,000 | 3,000,000 |

Testing Parameters:

Tensile tests were performed on large capacity test beds at Yarbrough Cable Service in Memphis, TN and Bishop Lifting Products in Houston, TX. Images of the tests are shown in Figure 1 – 3 below, and the full test parameters are listed in Table 2. Both companies are licensed manufacturing Slingmax dealers.

Table 2 - Testing Parameters

| Sling Model | Testing Location | Pin Diameter | Sling Length |
|-------------|------------------|--------------|--------------|
| TPXC40000 | Yarbrough Cable | 18 in | 30 ft |
| TPXC50000 | Bishop Lifting | 16 in | 30 ft |
| TPXC60000 | Bishop Lifting | 16 in | 25 ft |

Test Results:

All three high capacity slings being tested achieved their minimum breaking load in the tests. In the case of the TPXC40000 and 50000, they were pulled to destruction. For the TPXC60000, the sling was pulled to the maximum load of the test bed – 3,000,000 lb – and held for 2 minutes with no failure of the sling. The full summary of the test results is listed in Table 3 below.

Table 3 - Test Results

| Sling Model | Ultimate Load (lbf) | Design Factor Achieved | Test type |
|-------------|---------------------|------------------------|-------------|
| TPXC40000 | 2,080,400 | 5.2:1 | Destruction |
| TPXC50000 | 2,607,800 | 5.2:1 | Destruction |
| TPXC60000 | 3,000,000 | 5.0:1 | Hold at MBL |

Conclusion:

Twin-Path slings are the most tested high-performance lifting sling available on the market. In addition to testing that has already been completed, Slingmax continues to perform tests as new testing technology and equipment become available.



Figure 1 - Yarbrough Test Bed



Figure 2 - Bishop Lifting Test Bed



Figure 3 - Bishop Lifting Test Bed