

# SANIYA TOOLS

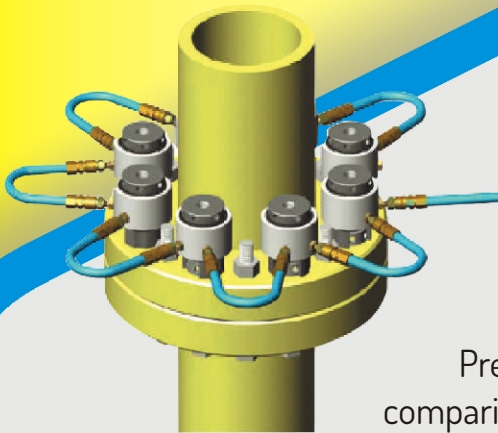
An ISO 9001:2008 Company & CE Marked Products

**BOLT TIGHTENING SOLUTIONS**



**JETORQUE<sup>®</sup>**

**Hydraulic Bolt Tensioner**



Bolt tensioning is now the preferred method of tightening bolts and studs on all critical applications. Bolt tensioners are designed for operation in a wide variety of applications including pipeline flanges, heat exchangers, pressure vessels, compressor covers, boiler feed pumps, windmills and many others. We provide a comprehensive range of bolt tensioners for optimum solutions to bolt tensioning requirements. Our Bolt tensioners and accessories are CE marked in accordance with Pressure Equipment and Machinery Directives, as applicable. In comparison to traditional tightening methods, tightening with

**bolt tensioners offers significant advantages:**

- No torsional loading of fasteners.
- Direct loading - no damage to assembly.
- Easy and fast operation.
- Very high accuracy and repeatability.
- Automation feasible and can be used for critical applications.



## JET SERIES TOP SIDE BOLT TENSIONERS

PST Series Bolt Tensioners are designed for operation in a wide variety of applications including pipeline flanges, heat exchangers, pressure vessels, compressor covers, boilers feed pumps, anchors bolts and many others.

Bolt Tensioner is very simple to use and consists of four parts - Threaded Puller, Load Cell, Bridge and Nut Driver (Nut Rotating Socket).

Threaded Puller



Load Cell



Bridge



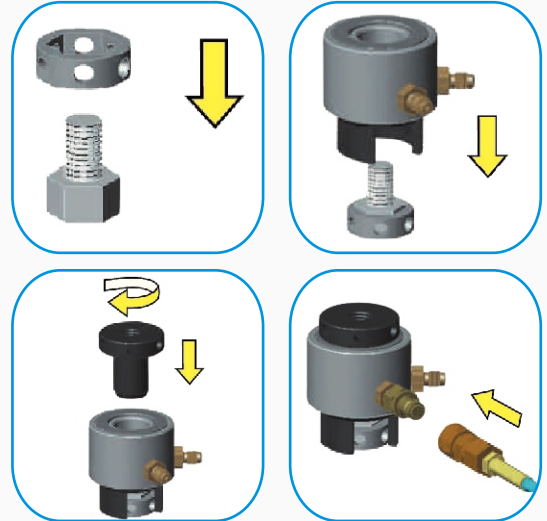
Nut Driver



## Brief Operational Sequence

The nut-driver is placed over the nut. The bridge and load cell is then placed over the bolt. The Puller is then screwed over the stud protruding above the nut face making sure that at least 1x diameter of bolt is engaged with the Threaded Puller.

Desired hydraulic pressure is now applied to load cell, which stretches the bolt. The nut is turned down using the nut-driver and tommy bar. The Pressure is then released leaving the stud loaded to the desired value.



THE PST SERIES TOPSIDE BOLT TENSIONERS IS ONE OF THE MOST LIGHT, COMPACT AND VERSATILE LINE OF TENSIONERS AVAILABLE:

## Features

**Versatile Design:** The PST Series standard variable tensioners are designed to provide a wide range of flexibility, covering stud sizes from 3/4" to 5.3/4" (M-16 to M-150). Different stud sizes are accommodated by the same load cell by simply changing the adaptor kit consisting of Threaded Puller, Bridge and Nut Driver.

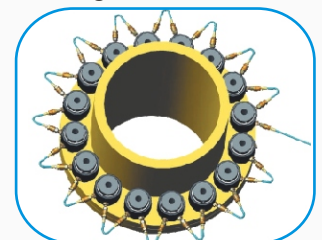
**High Strength Aircraft Quality Alloy Steel:** The PST Series tensioners operate at a maximum pressure of 1500 Bar and are manufactured from high strength AISI 4340 alloy steel parts for long lasting trouble free performance.

**Stroke Indicator:** The PST Series tensioners have and an exceptional stroke of 15 mm. The Integral Stroke Indicator allows the piston stroke to be viewed while tensioning is in progress. A Red line on piston indicates an over stroke ensuring safe operation.

**Safe Design in event of Piston 'Over Stroke':** The PST series tensioners are designed so that in event of overstroke the high pressure fluid will be released from the inner side of the load cell, thus saving the operator from any potential exposure.

**Multi Tensioning:** The PST Series load cell is provisioned with two connections and this acts as a manifold for multi tensioning applications. By using high pressure link hoses, any number of bolt tensioners can be connected and used simultaneously. This ensures equal tightening of all bolts on the flange and reduces work time.

**Anti Roll, Composite Material Seals:** All PST Tensioners are fitted with Anti Roll, Composite Material seals for longer life and high reliability.





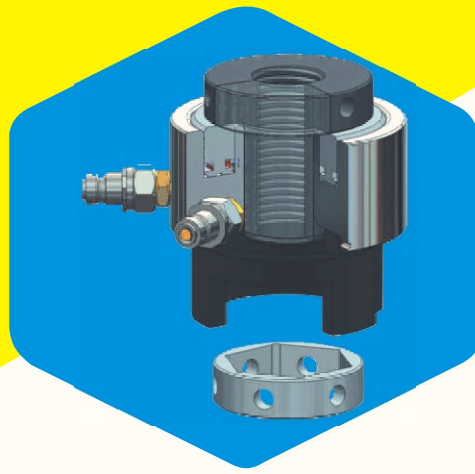


# **JETORQUE®** **HYDRAULIC BOLT TENSIONER**

## **TECHNICAL SPECIFICATION**

| Model No.    |             | Bolt Size |    | Max Load |      | Hyd Area        |                 | O.D. | Min Pitch | Relief C | Height A | Clearance B | Weight |
|--------------|-------------|-----------|----|----------|------|-----------------|-----------------|------|-----------|----------|----------|-------------|--------|
| Load Cell    | Adaptor Kit | inch      | mm | Ton      | kN   | in <sup>2</sup> | mm <sup>2</sup> | mm   | mm        | mm       | mm       | mm          | kg.    |
| <b>JST-1</b> | A1-0.12     | 3/4       |    |          |      |                 |                 |      | 46        | 26       | 76       | 145         | 3.5*   |
|              | A1-M20      |           | 20 |          |      |                 |                 |      | 47        | 26       | 76       | 145         | 1.3    |
|              | A1-0.14     | 7/8       |    | 38.1     | 339  | 3.50            | 2257            | 84   | 53        | 30       | 84       | 153         | 1.4    |
|              | A1-M24      |           | 24 |          |      |                 |                 |      | 54        | 30       | 84       | 153         | 1.4    |
|              | A1-1.00     | 1         |    |          |      |                 |                 |      | 55        | 30       | 84       | 153         | 1.4    |
| <b>JST-2</b> | A2-M27      |           | 27 |          |      |                 |                 |      | 56        | 29       | 88       | 157         | 4.5*   |
|              | A2-1.02     | 1.1/8     |    |          |      |                 |                 |      | 59        | 32       | 89       | 158         | 1.8    |
|              | A2-M30      |           | 30 |          |      |                 |                 |      | 62        | 32       | 89       | 162         | 1.9    |
|              | A2-1.04     | 1.1/4     |    | 44.7     | 397  | 4.11            | 2649            | 98   | 67        | 35       | 91       | 167         | 2.0    |
|              | A2-M33      |           | 33 |          |      |                 |                 |      | 68        | 35       | 91       | 168         | 2.1    |
|              | A2-1.06     | 1.3/8     |    |          |      |                 |                 |      | 72        | 38       | 93       | 173         | 2.3    |
|              | A2-M36      |           | 36 |          |      |                 |                 |      | 73        | 38       | 93       | 174         | 2.3    |
| <b>JST-3</b> | A3-1.04     | 1.1/4     |    |          |      |                 |                 |      | 69        | 37       | 92       | 162         | 5.9*   |
|              | A3-M33      |           | 33 |          |      |                 |                 |      | 70        | 37       | 92       | 162         | 2.4    |
|              | A3-1.06     | 1.3/8     |    | 71.8     | 639  | 6.60            | 4259            | 115  | 74        | 40       | 94       | 166         | 2.9    |
|              | A3-M36      |           | 36 |          |      |                 |                 |      | 75        | 40       | 94       | 167         | 2.9    |
|              | A3-1.08     | 1.1/2     |    |          |      |                 |                 |      | 80        | 43       | 98       | 175         | 3.0    |
| <b>JST-4</b> | A3-M39      |           | 39 |          |      |                 |                 |      | 80        | 43       | 98       | 175         | 3.0    |
|              | A4-1.06     | 1.3/8     |    |          |      |                 |                 |      | 75        | 41       | 94       | 167         | 7.7*   |
|              | A4-M36      |           | 36 |          |      |                 |                 |      | 76        | 41       | 94       | 167         | 3.4    |
|              | A4-1.08     | 1.1/2     |    | 81.1     | 721  | 7.45            | 4808            | 128  | 81        | 43       | 98       | 172         | 3.6    |
|              | A4-M39      |           | 39 |          |      |                 |                 |      | 81        | 43       | 98       | 172         | 3.6    |
|              | A4-1.10     | 1.5/8     |    |          |      |                 |                 |      | 86        | 46       | 100      | 176         | 3.9    |
| <b>JST-5</b> | A4-M42      |           | 42 |          |      |                 |                 |      | 86        | 46       | 100      | 177         | 3.9    |
|              | A4-1.12     | 1.3/4     |    |          |      |                 |                 |      | 91        | 49       | 101      | 181         | 4.0    |
|              | A5-1.10     | 1.5/8     |    |          |      |                 |                 |      | 87        | 47       | 102      | 182         | 11.4*  |
|              | A5-M42      |           | 42 |          |      |                 |                 |      | 87        | 47       | 102      | 184         | 5.2    |
|              | A5-1.12     | 1.3/4     |    |          |      |                 |                 |      | 92        | 50       | 106      | 189         | 5.4    |
|              | A5-M45      |           | 45 | 105.9    | 942  | 9.73            | 6280            | 145  | 93        | 50       | 106      | 190         | 5.4    |
|              | A5-1.14     | 1.7/8     |    |          |      |                 |                 |      | 98        | 53       | 109      | 196         | 5.6    |
| <b>JST-6</b> | A5-M48      |           | 48 |          |      |                 |                 |      | 98        | 53       | 109      | 196         | 5.6    |
|              | A5-2.00     | 2         |    |          |      |                 |                 |      | 104       | 56       | 109      | 201         | 6.3    |
|              | A5-M52      |           | 52 |          |      |                 |                 |      | 105       | 56       | 109      | 201         | 5.9    |
|              | A6-1.14     | 1.7/8     |    |          |      |                 |                 |      | 99        | 54       | 109      | 194         | 14.8*  |
|              | A6-M48      |           | 48 |          |      |                 |                 |      | 99        | 54       | 109      | 194         | 7.1    |
|              | A6-2.00     | 2         |    | 152.2    | 1354 | 13.99           | 9028            | 165  | 105       | 57       | 112      | 199         | 7.6    |
| <b>JST-6</b> | A6-M52      |           | 52 |          |      |                 |                 |      | 106       | 57       | 112      | 199         | 7.6    |
|              | A6-M56      |           | 56 |          |      |                 |                 |      | 113       | 61       | 116      | 208         | 7.8    |
|              | A6-2.04     | 2.1/4     |    |          |      |                 |                 |      | 114       | 61       | 116      | 209         | 7.8    |

\* Indicates weight of Load Cell +Adaptor Kit of particular size.



# JETORQUE<sup>®</sup>

## HYDRAULIC BOLT TENSIONER

### TECHNICAL SPECIFICATION

| Model No. |             | Bolt Size |     | Max Load |      | Hyd Area |       | O.D. | Min Pitch | Relief C | Height A | Clearance B | Weight |
|-----------|-------------|-----------|-----|----------|------|----------|-------|------|-----------|----------|----------|-------------|--------|
| Load Cell | Adaptor Kit | inch      | mm  | Ton      | kN   | in²      | mm²   | mm   | mm        | mm       | mm       | mm          | kg.    |
| JST-7     | A7-M56      | 2.1/4     | 56  | 185.6    | 1651 | 17.06    | 11006 | 180  | 112       | 59       | 117      | 205         | 18.1*  |
|           | A7-2.04     |           | 60  |          |      |          |       |      | 112       | 59       | 117      | 207         | 9.3    |
|           | A7-M60      |           |     |          |      |          |       |      | 117       | 61       | 122      | 214         | 9.4    |
|           | A7-2.08     | 2.1/2     | 64  |          |      |          |       |      | 125       | 66       | 125      | 221         | 9.7    |
|           | A7-M64      |           |     |          |      |          |       |      | 125       | 66       | 125      | 221         | 9.7    |
|           | A7-M68      |           | 68  |          |      |          |       |      | 129       | 66       | 130      | 231         | 10.0   |
|           | A7-2.12     | 2.3/4     |     |          |      |          |       |      | 136       | 72       | 133      | 237         | 11.5   |
| JST-8     | A8-2.08     | 2.1/2     | 64  | 222.4    | 1978 | 20.44    | 13188 | 198  | 129       | 70       | 127      | 226         | 23.4*  |
|           | A8-M64      |           |     |          |      |          |       |      | 129       | 70       | 127      | 226         | 12.1   |
|           | A8-M68      |           |     |          |      |          |       |      | 2.3/4     | 68       | 132      | 69          | 132    |
|           | A8-2.12     | 139       | 75  |          |      |          |       |      |           | 132      | 235      | 12.5        |        |
|           | A8-M72      | 72        | 141 |          |      |          |       |      |           | 75       | 135      | 240         | 12.5   |
| JST-9     | A9-2.12     | 2.3/4     | 72  | 253.7    | 2257 | 23.30    | 16485 | 215  | 139       | 75       | 137      | 241         | 29.3*  |
|           | A9-M72      |           |     |          |      |          |       |      | 76        | 141      | 75       | 137         | 241    |
|           | A9-M76      | 3         | 76  |          |      |          |       |      | 150       | 80       | 141      | 249         | 17.2   |
|           | A9-3.00     |           |     |          |      |          |       |      | 150       | 80       | 141      | 255         | 17.2   |
| JST-10    | A10-M80     | 3.1/4     | 80  | 342.5    | 3047 | 31.48    | 20312 | 244  | 160       | 87       | 152      | 258         | 40.3*  |
|           | A10-3.04    |           | 85  |          |      |          |       |      | 162       | 87       | 152      | 261         | 24.0   |
|           | A10-M85     |           |     |          |      |          |       |      | 164       | 87       | 154      | 264         | 24.5   |
|           | A10-3.08    | 3.1/2     | 90  |          |      |          |       |      | 174       | 93       | 158      | 268         | 22.6   |
|           | A10-M90     |           |     |          |      |          |       |      | 175       | 93       | 158      | 269         | 22.6   |
|           | A10-M95     |           | 95  |          |      |          |       |      | 179       | 93       | 164      | 280         | 22.8   |
|           | A10-3.12    | 3.3/4     | 100 |          |      |          |       |      | 191       | 105      | 164      | 280         | 22.9   |
|           | A10-M100    |           |     |          |      |          |       |      | 195       | 105      | 171      | 293         | 22.1   |
| A10-4.00  | 4           | 197       | 105 | 171      | 293  | 22.1     |       |      |           |          |          |             |        |
| JST-11    | A11-3.12    | 3.3/4     | 100 | 423.5    | 3768 | 38.94    | 25120 | 280  | 192       | 106      | 167      | 282         | 52.7*  |
|           | A11-M100    |           |     |          |      |          |       |      | 196       | 106      | 174      | 289         | 31.4   |
|           | A11-4.00    |           |     |          |      |          |       |      | 4         | 198      | 106      | 174         | 291    |
|           | A11-4.04    | 209       | 111 |          |      |          |       |      |           | 181      | 304      | 36.4        |        |
|           | A11-M110    | 4.1/4     | 110 |          |      |          |       |      | 210       | 111      | 181      | 305         | 36.4   |
|           | A11-4.08    |           |     |          |      |          |       |      | 222       | 118      | 186      | 316         | 39.7   |
|           | A11-M120    |           | 120 |          |      |          |       |      | 226       | 118      | 193      | 198         | 41.4   |
|           | A11-4.12    | 4.3/4     | 125 |          |      |          |       |      | 229       | 121      | 197      | 334         | 42.3   |
| A11-M125  | 233         |           |     | 121      | 197  | 338      | 43.3  |      |           |          |          |             |        |
| JST-12    | A12-M125    | 5         | 125 | 534.4    | 4754 | 49.13    | 31694 | 325  | 236       | 124      | 199      | 346         | 89.6*  |
|           | A12-5.00    |           | 130 |          |      |          |       |      | 243       | 129      | 199      | 351         | 60.3   |
|           | A12-M130    |           |     |          |      |          |       |      | 243       | 126      | 202      | 354         | 63.1   |
|           | A12-5.04    | 5.1/4     | 140 |          |      |          |       |      | 254       | 135      | 205      | 357         | 63.1   |
|           | A12-5.08    |           |     |          |      |          |       |      | 5.1/2     | 266      | 141      | 212         | 372    |
|           | A12-M140    |           | 140 |          |      |          |       |      | 260       | 135      | 212      | 372         | 70.6   |
|           | A12-5.3/4   | 5.3/4     | 150 |          |      |          |       |      | 276       | 145      | 213      | 381         | 70.8   |
| A12-M150  | 275         |           |     | 141      | 216  | 388      | 73.3  |      |           |          |          |             |        |

\* Weight of Load Cell + Adaptor Kit of particular size.

Please refer to catalog sheet - 'Basics of Tensioning' for Bolt Tensioners application and tool pressure calculation.