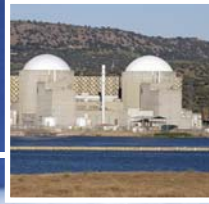




TENSION MAX

RANGE OF HYDRAULIC BOLT TENSIONERS



hydratight



The Next Generation of Bolt Tensioners has Arrived

Hydratight, one of the world's leading bolt tensioning and joint integrity companies, introduces TensionMax. Incorporating HydraMax and its sister range of subsea tensioners, AquaMax. It's the most complete range of multi-capable tensioners available.

Why Tension?

Safe, reliable and repeatable, the use of hydraulic tensioners has many advantages over other less accurate tightening methods:

Direct: Tension is applied directly to stretch the bolt, so we don't need to fight against friction or losses.

Accurate: The applied load is controlled very accurately, because it is directly proportional to the pressure applied to the tensioner.

Calculated: The load transfer factor is calculable, helping to give the correct residual load.

Fast: Operation of tooling and improved accuracy reduces time required to retighten the load.

Versatile: Tensioning allows for loading multiple fasteners in a joint at the same time.

Reliable: Uniform bolt loading ensures a high level of accuracy by applying a consistent force.

Stress-free: Purely axial, tensile loading ensures no torsional stresses are introduced.

TensionMax

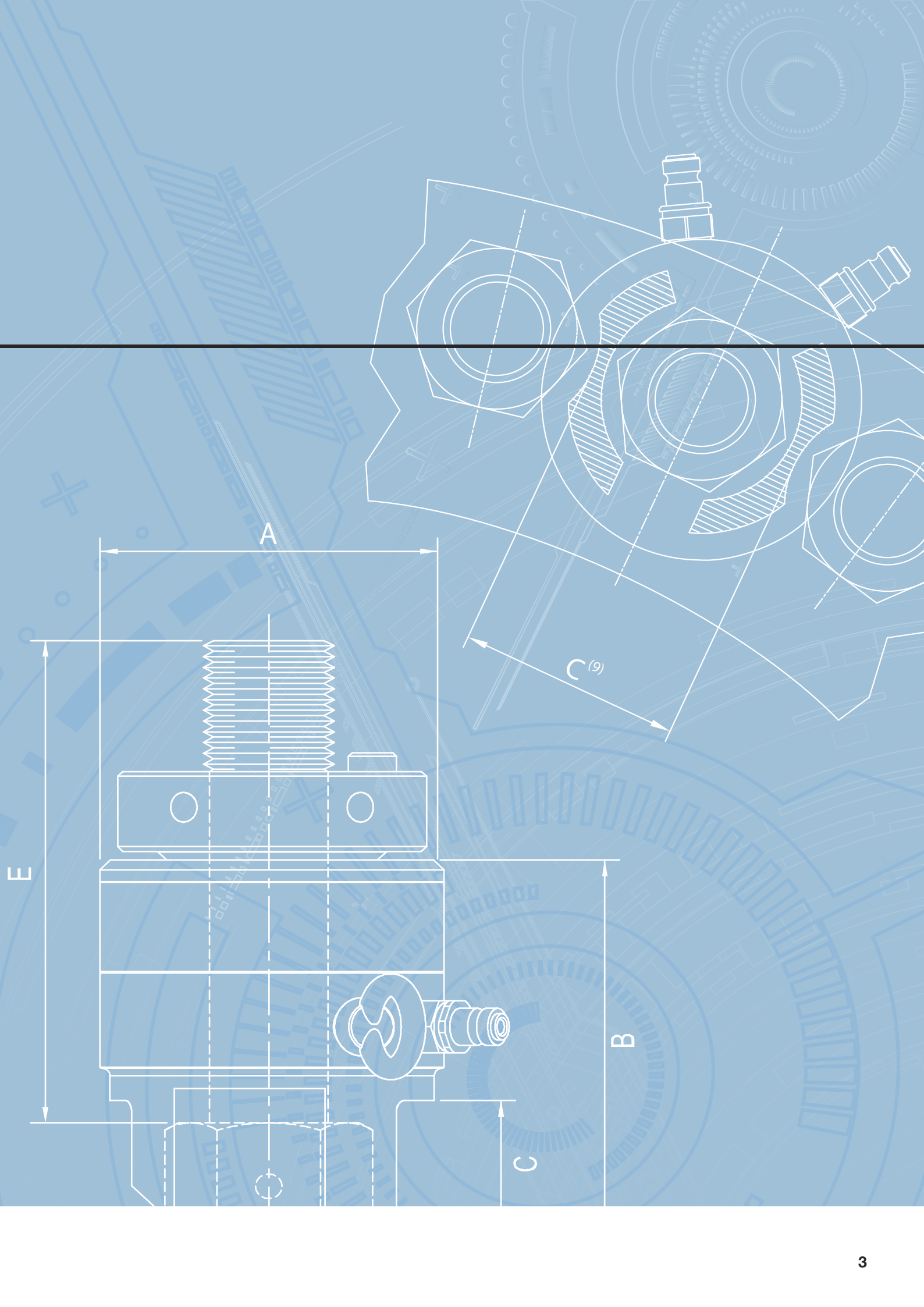
The MAX family of tensioners represents a giant leap in the specialist field of bolt tensioning technology. Unique, groundbreaking and world class, the accuracy and efficiency provided by a single Hydratight technician and tensioner for bolting applications, cannot be matched by any other current technology.

Outstanding results have kept projects on track and our customers keep coming back for more. With up to 30% more load generation than traditional tensioners, not to mention the speed associated with the spring return feature, it's no surprise that TensionMax is becoming THE tool to use in a wide range of industries.

Hydratight – Innovators in Joint Integrity

Over the last 30 years, Hydratight has built up expertise in calculating bolt loads for standard and specialised applications. Standard applications have always been governed by code formulas that only calculate the minimum bolt load required to provide a seal. In a bolted joint, the flange, bolts, nuts, gaskets, geometries and materials are all dimensioned and toleranced. Often however, the bolt load is overlooked. Hydratight has developed a methodology to overcome this, optimising the bolt load to give a safe, reliable and leak-free value.

Unlike other manufacturers, Hydratight takes all factors, including temperature into consideration, when it makes its calculations; delivering world-leading tensioning solutions. Hydratight can also demonstrate that the bolt load calculations it uses have been independently verified. This is a position which no other provider can provide.





HYDRAMAX

Packed with user-friendly features, Hydratight's HydraMax Topside Tensioner has also been cleverly designed to fit all standard flanges, including ANSI, API and Compact flanges based on Norsok L005 and generates 30% more load capacity.



With its compact fit and high load generation, alongside the flexibility to work with all standard flanges, the new HydraMax tool can be used in almost every industry and within so many different applications.

Although originally designed for customers in the Oil & Gas sector, requiring a tool for the

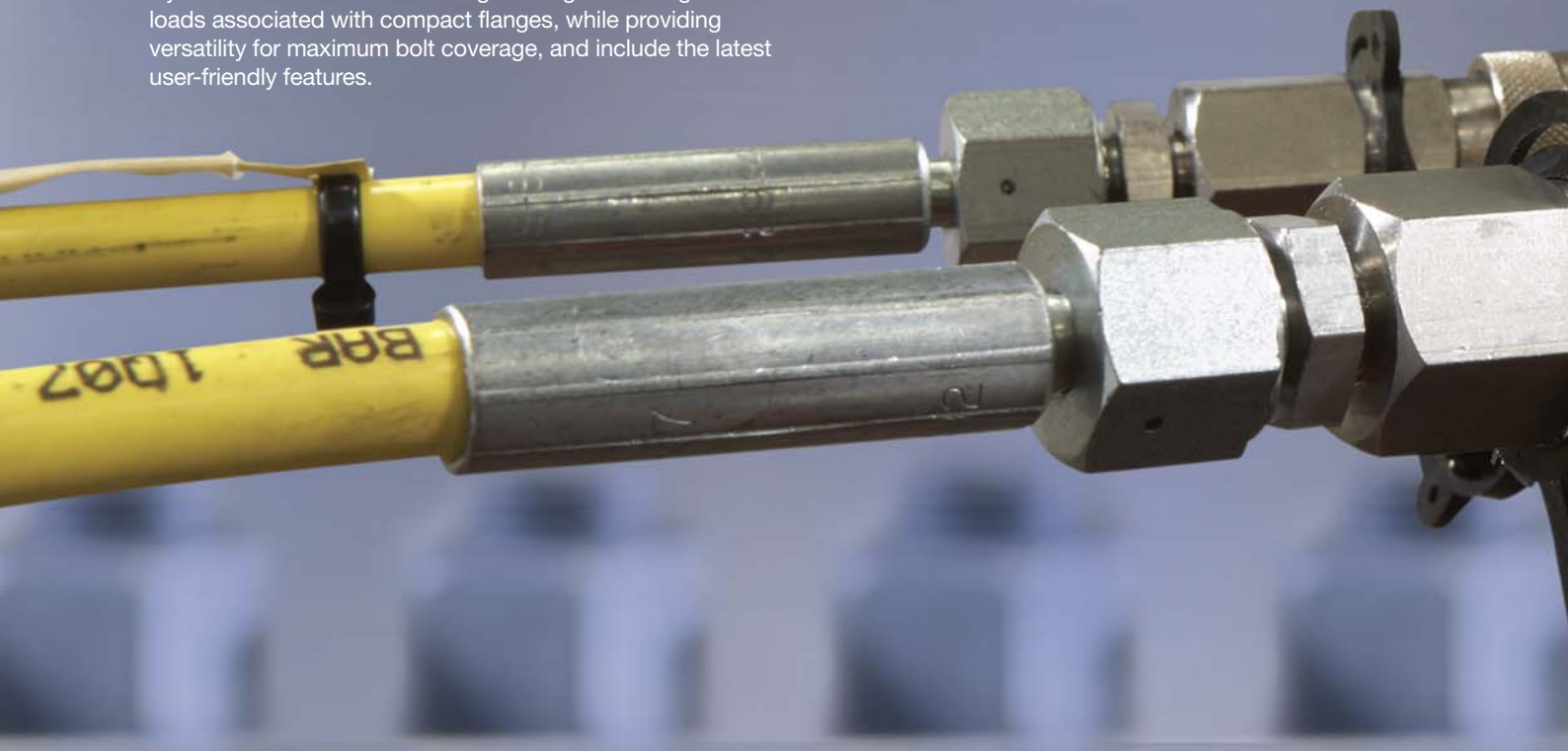
newly adopted compact flange, the opportunities for this tool's use are now vast. Its versatility provides clients with the need for less kit and therefore reduces total tool inventory.

HydraMax tools have been designed to generate high bolt loads associated with compact flanges, while providing versatility for maximum bolt coverage, and include the latest user-friendly features.

Based on attributes that are similar to the PS range of tools, and incorporating the proven sealing technology used in the Aquajack, HydraMax combines the reassurance of trusted technology with the usability of simple service operations.

Just like its sister, HydraMax offers:

- Up to 30% more load capacity (1500 bar/21,750 psi)
- Large stroke capability of 15mm (¹⁰/₁₆") with overstroke elimination
- Quick release bridge
- Stroke indicator
- Misalignment compensation
- Interchangeable adapter kits
- Quick, simple, hose connection







AQUA MAX

Made to fit where other tools can't, Hydratight's AquaMax Subsea Tensioner is a new tool specifically designed to tension Compact flanges as well as all standard ANSI, API and MSS types.



AquaMax is the only tool on the market that can offer such a high load capacity on such a wide variety of applications – up to 30% more than traditional tensioners.

Comprising 19 bolt diameter specific tools, with eight tools forming the core range, AquaMax features Aquajack's industry leading Quick Fastening Nut technology, guaranteed to save time and increase efficiency.

Primarily for use on subsea applications, each tool within the core range covers 100% of the standard flanges that utilize the bolt diameter it was designed for and approximately 80% of flanges that utilize the next size down.

Plus, you'll find all of the user-friendly features and service operations of the Aquajack range, providing a comprehensive solution to meet your load generation needs.

Fits all standard flanges including ANSI, API, Taperlok and Compact: reducing your need for kit and total tool inventory costs.

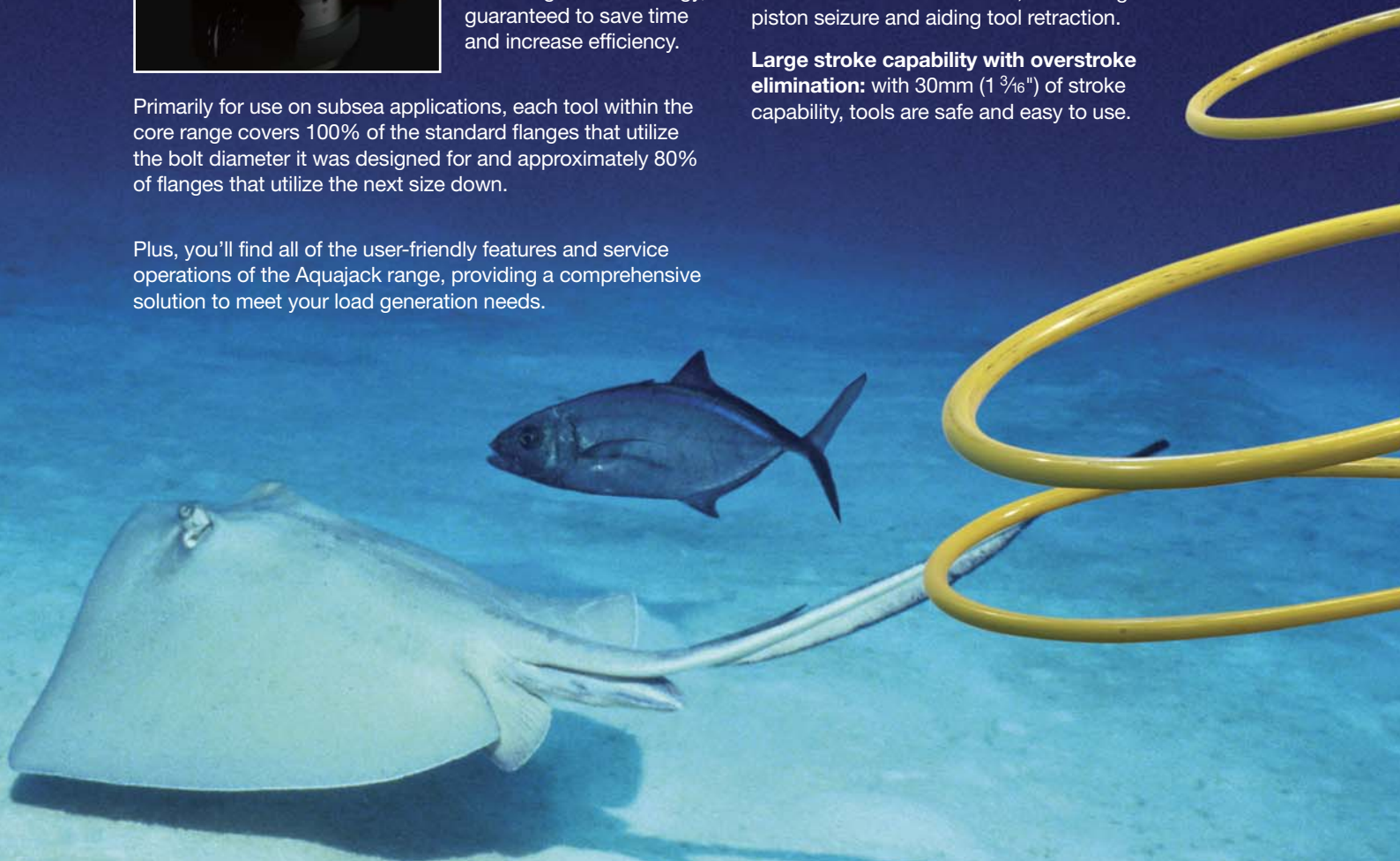
Generates up to 30% more load than traditional tensioners with a maximum working pressure of 1500 bar (21,750 psi).

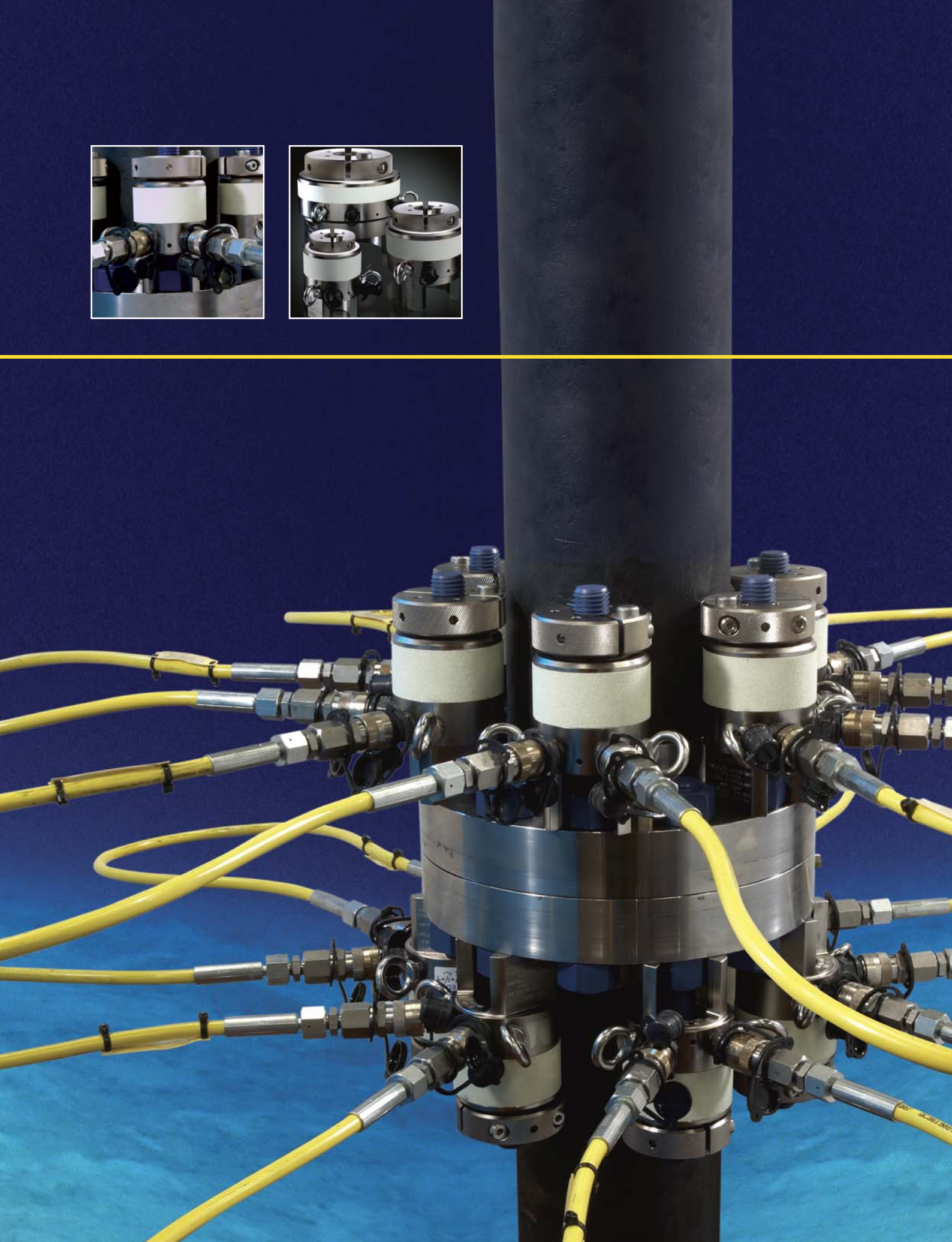
Reduces operator fatigue and operation time – ideal for applications in dangerous or problematic areas.

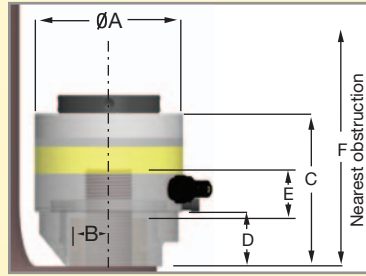
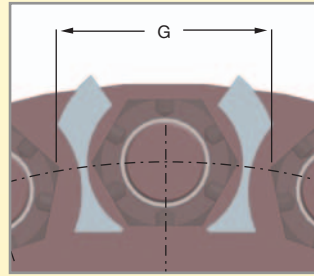
Quick fastening reaction nut: allows rapid tool application and removal regardless of bolt length, corrosion or thread damage.

Unique floating piston design: tilts in any direction without loss of load, eliminating piston seizure and aiding tool retraction.

Large stroke capability with overstroke elimination: with 30mm (1 3/16") of stroke capability, tools are safe and easy to use.



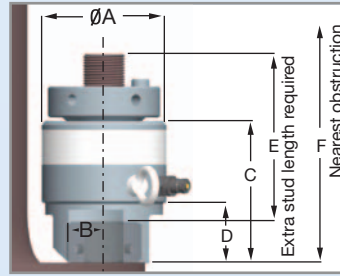
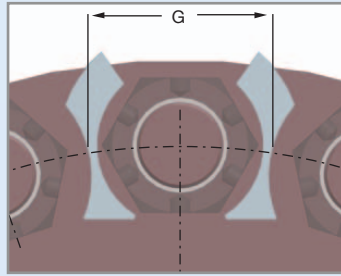




| Tool Ref | Bolt Diameter | | Tool HYD Area | | Max Load | | | Weight | | A | B | C | D | E | F | G |
|----------|---------------|-------|-----------------|-----------------|----------|---------|--------|--------|-------|-------|-------|-------|-------|-----|-------|-------|
| | in | mm | in ² | mm ² | Tonf | lbf | kN | lb | kg | | | | | | | |
| HM01 | 3/4" | M20 | 1.39 | 894 | 13.4 | 30124 | 134.0 | 4.5 | 2.06 | 61.0 | 15.0 | 96.3 | 27.5 | 20 | 208 | 48.0 |
| HM02 | 3/4" | M20 | 1.92 | 1240 | 18.7 | 41815 | 186.0 | 5.6 | 2.52 | 69.0 | 15.0 | 103.3 | 27.5 | 20 | 227 | 48.0 |
| | 7/8" | M22 | | | | | | 5.5 | 2.48 | | 18.4 | 103.3 | 27.5 | 22 | 225 | 55.0 |
| HM03 | 3/4" | M20 | 2.5 | 1628 | 24.5 | 54876 | 244.1 | 6.9 | 3.12 | 77.0 | 15.0 | 104.8 | 27.5 | 20 | 230 | 48.0 |
| | 7/8" | M22 | | | | | | 6.8 | 3.07 | | 18.4 | 104.8 | 27.5 | 22 | 228 | 55.0 |
| HM04 | 1" | M24 | 3.35 | 2159 | 32.5 | 72793 | 323.8 | 6.0 | 3.16 | 89.5 | 20.0 | 109.8 | 32.5 | 25 | 232 | 59.5 |
| | 7/8" | M22 | | | | | | 9.0 | 4.1 | | 18.4 | 112.3 | 27.5 | 22 | 250 | 55.0 |
| | 1" | M24 | | | | | | 9.1 | 4.15 | | 20.0 | 117.3 | 32.5 | 25 | 255 | 59.5 |
| | M27 | 9.1 | | | | | | 4.15 | 20.0 | | 117.3 | 33.5 | 27 | 256 | 59.5 | |
| HM05 | 1 1/8" | M30 | 4.27 | 2752 | 41.4 | 92779 | 412.7 | 9.1 | 4.15 | 99.0 | 23.4 | 120.3 | 35.5 | 30 | 257 | 67.2 |
| | 1" | M24 | | | | | | 11.5 | 5.2 | | 20.0 | 119.2 | 32.5 | 25 | 263 | 59.5 |
| | M27 | 11.4 | | | | | | 5.19 | 20.0 | | 119.2 | 33.5 | 27 | 263 | 59.5 | |
| | 1 1/8" | M30 | | | | | | 11.4 | 5.18 | | 23.4 | 122.2 | 35.5 | 30 | 261 | 67.2 |
| HM06 | 1 1/4" | M33 | 6.45 | 4162 | 62.6 | 140303 | 624.1 | 11.6 | 5.24 | 117.5 | 27.3 | 125.2 | 38.5 | 33 | 262 | 74.0 |
| | 1 1/8" | M30 | | | | | | 15.6 | 7.07 | | 23.4 | 125.0 | 35.5 | 30 | 266 | 67.2 |
| | 1 3/8" | M36 | | | | | | 15.7 | 7.11 | | 27.3 | 128.0 | 38.5 | 33 | 269 | 74.0 |
| HM07 | 1 3/8" | M36 | 7.72 | 4980 | 74.9 | 167887 | 746.8 | 15.0 | 7.24 | 127.0 | 31.8 | 131.0 | 41.5 | 36 | 273 | 86.4 |
| | 1 1/2" | M39 | | | | | | 16.2 | 7.35 | | 31.8 | 131.0 | 41.5 | 36 | 279 | 86.4 |
| | 1 1/4" | M33 | | | | | | 18.4 | 8.35 | | 33.2 | 134.0 | 44.5 | 39 | 280 | 86.4 |
| | 1 3/8" | M36 | | | | | | 18.7 | 8.47 | | 34.0 | 137.0 | 47.5 | 42 | 280 | 96.0 |
| HM08 | 1 3/8" | M36 | 9.10 | 5869 | 88.3 | 197854 | 880.1 | 19.0 | 8.64 | 136.5 | 31.8 | 132.5 | 41.5 | 36 | 283 | 86.4 |
| | 1 1/2" | M39 | | | | | | 21.0 | 9.96 | | 33.2 | 135.5 | 44.5 | 39 | 284 | 86.4 |
| | 1 3/8" | M36 | | | | | | 22.2 | 10.05 | | 34.0 | 138.5 | 47.5 | 42 | 284 | 96.0 |
| HM09 | 1 3/8" | M36 | 10.59 | 6834 | 102.9 | 230407 | 1024.9 | 23.1 | 10.47 | 144.5 | 39.3 | 141.5 | 50.5 | 45 | 285 | 96.8 |
| | 1 1/2" | M39 | | | | | | 25.1 | 11.38 | | 33.2 | 135.5 | 44.5 | 39 | 278 | 86.4 |
| | 1 3/8" | M36 | | | | | | 25.2 | 11.41 | | 34.0 | 138.5 | 47.5 | 42 | 281 | 96.0 |
| | 1 3/4" | M45 | | | | | | 25.8 | 11.71 | | 39.3 | 141.5 | 50.5 | 45 | 285 | 96.8 |
| HM10 | 1 3/8" | M36 | 12.20 | 7868 | 118.4 | 265230 | 1179.8 | 25.9 | 11.73 | 156.0 | 43.0 | 144.5 | 53.5 | 48 | 288 | 108.4 |
| | 1 1/2" | M39 | | | | | | 30.4 | 13.77 | | 34.0 | 142.5 | 47.5 | 42 | 289 | 96.0 |
| | 1 3/4" | M45 | | | | | | 30.1 | 13.67 | | 39.3 | 145.5 | 50.5 | 45 | 293 | 96.8 |
| | 1 7/8" | M48 | | | | | | 31.0 | 14.07 | | 43.0 | 148.5 | 53.5 | 48 | 296 | 108.4 |
| HM11 | 2" | M52 | 15.74 | 10152 | 152.8 | 342272 | 1522.5 | 31.6 | 14.35 | 174.5 | 44.1 | 152.5 | 57.5 | 52 | 301 | 116.6 |
| | 1 3/4" | M45 | | | | | | 38.8 | 17.59 | | 39.3 | 145.5 | 50.5 | 45 | 297 | 96.8 |
| | 1 7/8" | M48 | | | | | | 39.6 | 17.97 | | 43.0 | 148.5 | 53.5 | 48 | 301 | 108.4 |
| | 2" | M52 | | | | | | 40.2 | 18.24 | | 49.5 | 160.5 | 65.5 | 60 | 323 | 130.3 |
| HM12 | 2 1/4" | M56 | 19.72 | 12722 | 191.5 | 428868 | 1907.7 | 41.5 | 18.82 | 193.5 | 49.5 | 160.5 | 65.5 | 60 | 323 | 130.3 |
| | M60 | 49.6 | | | | | | 22.48 | 43.0 | | 148.5 | 53.5 | 48 | 301 | 108.4 | |
| | 2" | M52 | | | | | | 50.1 | 22.71 | | 44.1 | 152.5 | 57.5 | 52 | 306 | 116.6 |
| | 1 7/8" | M48 | | | | | | 51.4 | 23.3 | | 49.5 | 160.5 | 65.5 | 60 | 323 | 130.3 |
| HM13 | 2 1/2" | M64 | 26.29 | 16964 | 255.3 | 571914 | 2544.0 | 51.9 | 23.54 | 218.5 | 49.5 | 160.5 | 65.5 | 60 | 323 | 130.3 |
| | M68 | 52.4 | | | | | | 23.77 | 56.0 | | 164.5 | 69.5 | 64 | 320 | 143.5 | |
| | M72 | 71.4 | | | | | | 32.39 | 56.0 | | 172.2 | 69.5 | 64 | 337 | 143.5 | |
| | 3" | M76 | | | | | | 72.9 | 33.05 | | 63.0 | 180.2 | 77.5 | 70 | 350 | 158.7 |
| HM14 | 3" | M76 | 36.35 | 23451 | 352.9 | 790586 | 3516.7 | 72.8 | 33.01 | 259.0 | 69.0 | 184.5 | 81.7 | 72 | 349 | 176.0 |
| | M80 | 101.6 | | | | | | 46.1 | 69.0 | | 184.5 | 81.7 | 72 | 351 | 176.0 | |
| | M85 | 103.1 | | | | | | 46.75 | 69.0 | | 184.5 | 81.7 | 76 | 352 | 176.0 | |
| | M90 | 104.7 | | | | | | 47.5 | 69.6 | | 193.2 | 90.5 | 80 | 369 | 186.0 | |
| HM15 | 3 1/2" | M90 | 48.06 | 31008 | 466.7 | 1045362 | 4650.0 | 105.0 | 48.07 | 295.5 | 69.6 | 193.2 | 90.5 | 85 | 374 | 186.0 |
| | M95 | 108.6 | | | | | | 49.27 | 78.6 | | 198.2 | 95.5 | 90 | 389 | 200.0 | |
| | 4" | M100 | | | | | | 139.6 | 63.3 | | 78.6 | 199.3 | 95.5 | 90 | 389 | 200.0 |
| | | | | | | | | 150.4 | 68.24 | | 80.7 | 204.6 | 100.8 | 95 | 405 | 217.4 |
| | | | | | | | | 145.5 | 65.98 | | 89.9 | 210.9 | 107.1 | 102 | 421 | 232.0 |

Notes:

- Maximum Working Pressure 1500 Bar (21750psi)
- All tools have 15mm stroke except HM01 Stroke = 10mm.
- Weight includes head, bridge, socket and puller sleeve.
- Eccentric shaped tool applies to HM01, HM02 & HM03.
- HM01-HM05 have a mechanical overstroke prevention and no spring return.
- HM06-HM15 have a relief valve overstroke prevention and spring return.
- Alternative size adaptor kits can be supplied on request.
- Dimension 'G' measured across tool centreline.
- Product development is continually taking place and therefore certain dimensions could be subject to change.



| Tool Ref | Bolt Diameter | | Tool HYD Area | | Max Load | | | Weight | | A | B | C | D | E | F | G |
|----------|--------------------|------|-----------------|-----------------|----------|---------|--------|--------|-------|-------|------|-------|-------|-----|-------|-------|
| | in | mm | in ² | mm ² | Tonf | lbf | kN | lb | kg | mm | mm | mm | mm | mm | mm | mm |
| AM01 | 3/4" | M20 | 1.39 | 898 | 13.45 | 30128 | 134.0 | 3.6 | 1.65 | 64.0 | 15.6 | 96.0 | 35.0 | 101 | 224.0 | 48.1 |
| AM02 | 3/4" | M20 | 1.92 | 1241 | 18.67 | 41821 | 186.0 | 4.1 | 1.85 | 69.0 | 18.8 | 93.5 | 35.0 | 101 | 224.0 | 55.5 |
| | 7/8" | M22 | | | | | | | | | | | | | | |
| AM03 | 7/8" * 1" | M20 | 2.52 | 1627 | 24.48 | 54835 | 244.0 | 6.6 | 3 | 81.0 | 19.9 | 122.5 | 46.0 | 128 | 295.0 | 59.4 |
| | | M24 | | | | | | | | | | | | | | |
| | | M27 | | | | | | | | | | | | | | |
| AM04 | 1" 1 1/8" | M24 | 3.34 | 2154 | 32.42 | 72621 | 323.0 | 7.9 | 3.59 | 89.0 | 23.2 | 125.5 | 50.0 | 129 | 303.0 | 73.8 |
| | | M27 | | | | | | | | | | | | | | |
| | | M30 | | | | | | | | | | | | | | |
| AM05 | 1 1/8" * 1 1/4" | M30 | 4.26 | 2748 | 41.36 | 92646 | 412.1 | 9.8 | 4.45 | 98.0 | 27.2 | 130.8 | 52.0 | 134 | 313.0 | 74.0 |
| | | M33 | | | | | | | | | | | | | | |
| AM06 | 1 1/4" 1 3/8" | M33 | 5.29 | 3414 | 51.38 | 115091 | 512.0 | 11.6 | 5.24 | 107.0 | 31.6 | 132.0 | 55.0 | 128 | 309.0 | 86.4 |
| | | M36 | | | | | | | | | | | | | | |
| AM07 | 1 3/8" * 1 1/2" | M36 | 6.44 | 4155 | 62.53 | 140067 | 623.0 | 14.4 | 6.52 | 115.5 | 33.2 | 138.0 | 58.5 | 137 | 326.0 | 86.3 |
| | | M39 | | | | | | | | | | | | | | |
| AM08 | 1 1/2" 1 5/8" | M39 | 7.7 | 4969 | 74.78 | 167507 | 745.1 | 17.8 | 8.05 | 125.0 | 34.0 | 144.5 | 61.5 | 144 | 339.0 | 95.0 |
| | | M42 | | | | | | | | | | | | | | |
| AM09 | 1 5/8" * 1 3/4" | M42 | 9.08 | 5855 | 88.12 | 197389 | 878.1 | 21.5 | 9.76 | 133.5 | 38.2 | 153.0 | 65.5 | 154 | 360.0 | 96.8 |
| | | M45 | | | | | | | | | | | | | | |
| AM10 | 1 3/4" 1 7/8" | M45 | 10.57 | 6817 | 102.59 | 229802 | 1022.2 | 24.2 | 10.99 | 142.5 | 42.9 | 154.0 | 67.5 | 149 | 360.0 | 108.4 |
| | | M48 | | | | | | | | | | | | | | |
| AM11 | 1 7/8" 2" | M48 | 12.17 | 7849 | 118.13 | 264611 | 1177.1 | 27.1 | 12.27 | 152.0 | 49.3 | 155.0 | 70.0 | 147 | 363.0 | 116.5 |
| | | M52 | | | | | | | | | | | | | | |
| AM12 | 2" * 2 1/4" | M52 | 15.7 | 10130 | 152.46 | 341510 | 1519.1 | 35.3 | 16.03 | 170.5 | 49.3 | 164.0 | 76.0 | 156 | 382.0 | 130.2 |
| | | M56 | | | | | | | | | | | | | | |
| AM13 | 2 1/4" 2 1/2" | M56 | 19.68 | 12696 | 191.08 | 428019 | 1904.0 | 42.5 | 19.27 | 185.5 | 58.9 | 168.0 | 82.0 | 154 | 390.0 | 143.4 |
| | | M60 | | | | | | | | | | | | | | |
| | | M64 | | | | | | | | | | | | | | |
| AM14 | 2 1/2" * 2 3/4" | M60 | 21.82 | 14078 | 211.88 | 474611 | 2111.2 | 48.9 | 22.19 | 198.0 | 62.9 | 177.5 | 87.0 | 164 | 392.0 | 158.7 |
| | | M64 | | | | | | | | | | | | | | |
| | | M68 | | | | | | | | | | | | | | |
| | | M72 | | | | | | | | | | | | | | |
| AM15 | 2 3/4" 3" | M68 | 26.25 | 16934 | 254.85 | 570864 | 2539.4 | 61.4 | 27.86 | 214.5 | 68.6 | 188.0 | 95.0 | 173 | 438.0 | 175.0 |
| | | M72 | | | | | | | | | | | | | | |
| | | M76 | | | | | | | | | | | | | | |
| AM16 | 3" * 3 1/4" | M76 | 31.07 | 20048 | 301.72 | 675853 | 3006.3 | 75.2 | 34.12 | 233.0 | 69.4 | 195.0 | 103.0 | 183 | 460.0 | 186.1 |
| | | M80 | | | | | | | | | | | | | | |
| | | M85 | | | | | | | | | | | | | | |
| AM17 | 3 1/4" 3 1/2" | M80 | 36.3 | 23420.54 | 352.48 | 789555 | 3512.1 | 87.2 | 39.55 | 248.0 | 78.2 | 200.0 | 109.0 | 180 | 467.0 | 198.6 |
| | | M85 | | | | | | | | | | | | | | |
| | | M90 | | | | | | | | | | | | | | |
| AM18 | 3 1/2" 3 3/4" | M90 | 41.95 | 27062 | 407.29 | 912327 | 4058.2 | 116.3 | 52.77 | 270.0 | 80.6 | 222.5 | 114.5 | 217 | 520.0 | 217.4 |
| | | M95 | | | | | | | | | | | | | | |
| AM19 | 3 3/4" 4" | M95 | 47.99 | 30964 | 466.02 | 1043885 | 4643.4 | 139.7 | 63.37 | 288.0 | 89.7 | 234.2 | 121.0 | 223 | 544.0 | 232.0 |
| | | M100 | | | | | | | | | | | | | | |

Notes:

1. Maximum Working Pressure 1500 Bar (21750psi)
2. All tools have 30mm stroke except AM01 and AM02 = 20mm
3. Weight excludes Reaction Nut
4. Eccentric shaped tool applies to AM01, AM02 and AM03.
5. Tools forming the core range are AM03, AM05, AM07, AM09, AM11, AM13, AM15 & AM17

6. Dimension 'G' is measured on tool centreline.
7. Product development is continually taking place and therefore certain dimensions could be subject to change.
* Requires Reaction Nut Step-Up Washer

One Company – Setting International Standards

Over many years Hydratight has provided world class bolted joint solutions and continues to set international standards in joint integrity for its customers on a global scale.

For over 30 years, Hydratight has provided world-class bolted joint solutions and machining services to the Power Generation, Oil and Gas, Industrial and Aero industries. Today, the breadth and depth of our product and service offering is unrivalled in our specialist field. Through our ability to innovate technology that makes connections safe, efficient and environmentally friendly, Hydratight sets international standards in joint integrity, providing trusted solutions to customers on a global scale.

Our people are the key to our success: qualified, competent and innovative people, working closely with our customers ensures a total understanding of their requirements.

One Company – Meeting Quality Standards

Totally committed to safety and quality, all Hydratight products and services are designed, manufactured and carried out within a management system in accordance with ISO 9001:2008 (Quality Management) ISO 14001:2004 (Environmental Management) and OHSAS 18001:2007 (Occupational Health and Safety).

Our extensive engineering services include:

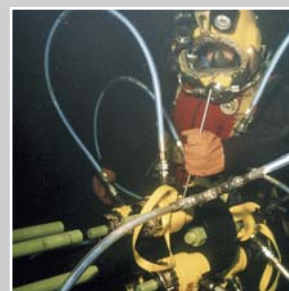
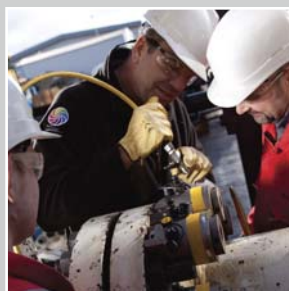
- Torque and Tension bolting equipment
- Machining equipment
- Product sales, rental and technical support
- Product service and training
- Software solutions
- Customised engineering solutions



INVESTOR IN PEOPLE

Training

Hydratight was founded on a culture devoted to safety. As a designer and manufacturer of high quality joint-integrity products, the safe and correct use of this equipment remains of prime importance in ensuring our 'right first time' philosophy.



As accredited training providers, Hydratight offers a range of courses to ensure all personnel are fully trained and assessed to industry best practice standards.

Our fully qualified training instructors are experts in their field and can deliver additional courses on the operation of Hydratight equipment or services on a global scale, as well as specially commissioned courses to suit your work systems and equipment. All courses are fully documented and content is available on request.

Course Contents:

- Safety procedures
- Safe and correct use of equipment - theory
- Safe and correct use of equipment – practical
- Equipment and tightening procedures
- Equipment specification
- Operation
- Features and benefits
- Maintenance of equipment
- Tool pressures and calculation methods



For more information on all Hydratight training and product familiarisation courses email training@hydratight.com



Global Standards Local Delivery

Our global network means you can rely on the right people, products and services wherever you are in the world.

Email us at: solutions@hydratight.com

Or find your local representative at:

hydratight.com/contact

