

## 1. Description



**T-Bolt Spring Hose Clamps**, also known as Spring-Loaded T-Bolt Clamps or Constant Tension T-Bolt Clamps, are advanced heavy-duty fasteners designed to provide a reliable and dynamic seal in applications experiencing thermal expansion and contraction or significant vibration. These clamps combine the robust T-bolt mechanism with an integrated spring assembly (often a coil spring or Belleville washers). This spring allows the clamp to automatically adjust its diameter, maintaining a consistent clamping force on the hose as it expands or contracts due to temperature changes or pressure fluctuations. This prevents leaks that might occur with standard clamps under such conditions, making them ideal for critical applications in automotive, heavy-duty vehicle, marine, and industrial sectors, especially with silicone hoses or in charge air cooler (CAC) systems.

## 2. Key Features

- **Constant Tension:** The integrated spring mechanism automatically compensates for the expansion and contraction of hoses and fittings due to temperature changes or pressure variations, maintaining a consistent sealing pressure.
- **Prevents "Cold Flow" Leaks:** By dynamically adjusting to changes in hose diameter, these clamps effectively prevent leaks that can occur when standard clamps lose tension.
- **High Clamping Force:** Retains the high clamping force characteristic of T-Bolt clamps, ensuring a secure grip even under demanding conditions.
- **Vibration Resistance:** The spring loading helps to absorb vibrations and maintain clamp tightness, preventing loosening over time.
- **Heavy-Duty Construction:** Features a strong band, robust T-bolt, nut, trunnion, and a durable spring assembly designed for high-stress environments.
- **Hose Protection:** Bands typically have rolled or smooth edges, and some designs may include a floating bridge or liner to protect the hose from damage, especially soft silicone hoses.
- **Extended Service Life:** By maintaining optimal sealing pressure, these clamps can contribute to the longevity of hose connections and reduce maintenance needs.
- **Suitable for Dynamic Systems:** Ideal for applications with frequent temperature cycles, such as engine coolant systems, charge air systems, and exhaust connections.
- **Corrosion Resistance:** Commonly manufactured from stainless steel or with protective plating for durability in various environments.

### 3. Technical Data

- **Type:** Spring-Loaded T-Bolt Band Clamp / Constant Tension T-Bolt Clamp
- **Common Materials:**
  - **Band & Bridge/Trunnion:** Stainless Steel (e.g., 300 Series like AISI 301, AISI 304).
  - **T-Bolt:** Stainless Steel (e.g., 300 Series, 400 Series for strength) or Plated Carbon Steel.
  - **Nut:** Plated Carbon Steel (often a nylon insert lock nut or self-locking type) or Stainless Steel.
  - **Spring Assembly:** High-quality Spring Steel (often plated for corrosion resistance) or Stainless Steel (e.g., Belleville washers).
- **Typical Material Grade Combinations:**
  - **W2 (Partial Stainless):** Stainless steel band and bridge/trunnion; plated carbon steel T-bolt, nut, and spring.
  - **W4 (All Stainless):** Band, bridge/trunnion, T-bolt, and nut typically from 300-series stainless steel; spring may be stainless or specially treated steel.
  - **W5 (High-Grade All Stainless):** All components, including the spring, made from high-grade stainless steel (e.g., AISI 316) for maximum corrosion resistance.
- **Band Design:** Typically a solid, non-perforated band with smooth or rolled edges. May include a floating bridge liner.
- **Band Widths (Common):** 19mm (3/4").
- **Band Thickness (Typical):** 0.025" (0.6mm).
- **Bolt/Screw Type:**
  - T-Bolt with a hex nut (M8).
  - Nut is often a self-locking type.
- **Spring Type:** Typically a coil spring integrated into the T-bolt assembly, or a stack of Belleville washers.
- **Clamping Diameter Range:**
  - Available in a wide range of sizes to fit various hose outside diameters, from approximately 1.5" (38mm) up to 8" (200mm) and larger.
  - Each clamp has a specific effective clamping range that accounts for the spring's travel.
- **Torque Specifications:**
  - Recommended Installation Torque: 75 in-lbs (8.5 Nm). It's crucial to follow manufacturer guidelines to ensure the spring is correctly preloaded but not fully compressed.
- **Relevant Standards:** SAE J1508 Type SLTB (Spring Loaded T-Bolt).

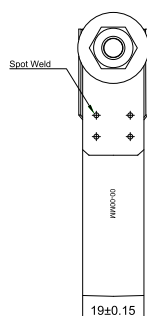
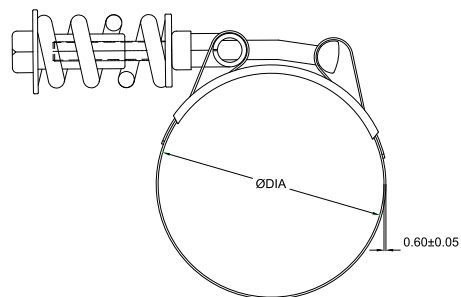
## 4. Common Applications

- **Automotive & Heavy-Duty Vehicles:**
  - Charge Air Cooler (CAC) systems (hot and cold side).
  - Engine coolant and heater hoses.
  - Turbocharger connections.
  - Air intake systems.
  - Exhaust systems (where temperature cycling is significant).
- **Industrial Equipment:** Machinery operating under fluctuating temperatures or pressures, hydraulic systems (low to medium pressure where thermal cycling occurs).
- **Marine Engines:** Cooling systems and wet exhaust applications.
- **Agricultural Machinery & Off-Road Equipment:** Engine systems and hydraulic connections exposed to variable conditions.
- **Generator Sets:** Coolant and air systems.
- **Applications using Silicone Hoses:** Especially effective due to silicone's tendency to "cold flow" or change durometer with temperature.

## 5. Installation Guidance

- **Select the Correct Clamp Size:** Choose a clamp where the hose's outside diameter (OD) falls within the clamp's specified effective diameter range, allowing for proper spring action.
- **Position the Clamp:** Slide the clamp over the hose before fitting the hose onto the spigot or pipe.
- **Attach Hose to Fitting:** Push the hose fully onto the fitting.
- **Position Clamp Correctly:** Place the clamp over the sealing area of the hose on the fitting. Ensure the band is straight and the T-bolt and spring mechanism are accessible and correctly oriented.
- **Tighten the Clamp:**
  - Use an appropriately sized socket wrench or spanner to tighten the nut on the T-bolt.
  - Tighten to the manufacturer's recommended installation torque. Crucially, do not fully compress (bottom out) the spring. There should be some remaining travel in the spring to allow for hose expansion and contraction. Some manufacturers recommend backing off the nut a specific number of turns (e.g., two full turns) from the coil-solid position if a torque wrench is not available, or checking for positive clearance between the middle spring coils.
- **Inspect:** Ensure the clamp is seated correctly, providing even pressure, and that the spring is appropriately loaded (not fully compressed).

## 6. Specifications



| Code   | Diameter (mm) | Band Width (mm) | Band Thickness (mm) |
|--------|---------------|-----------------|---------------------|
| STB052 | 46-52         | 19              | 0.6                 |
| STB057 | 49-57         | 19              | 0.6                 |
| STB060 | 52-60         | 19              | 0.6                 |
| STB064 | 56-64         | 19              | 0.6                 |
| STB067 | 59-67         | 19              | 0.6                 |
| STB073 | 65-73         | 19              | 0.6                 |
| STB079 | 71-79         | 19              | 0.6                 |
| STB084 | 76-84         | 19              | 0.6                 |
| STB086 | 78-86         | 19              | 0.6                 |
| STB091 | 83-91         | 19              | 0.6                 |
| STB098 | 90-98         | 19              | 0.6                 |
| STB100 | 92-100        | 19              | 0.6                 |
| STB111 | 103-111       | 19              | 0.6                 |
| STB117 | 109-117       | 19              | 0.6                 |
| STB124 | 116-124       | 19              | 0.6                 |
| STB130 | 122-130       | 19              | 0.6                 |
| STB136 | 129-136       | 19              | 0.6                 |
| STB140 | 132-140       | 19              | 0.6                 |
| STB146 | 138-146       | 19              | 0.6                 |
| STB146 | 141-149       | 19              | 0.6                 |
| STB155 | 147-155       | 19              | 0.6                 |
| STB162 | 154-162       | 19              | 0.6                 |
| STB168 | 160-168       | 19              | 0.6                 |
| STB174 | 166-174       | 19              | 0.6                 |
| STB181 | 173-181       | 19              | 0.6                 |
| STB187 | 179-187       | 19              | 0.6                 |
| STB195 | 187-195       | 19              | 0.6                 |

Please contact sales for customizing other specific sizes.

## 7. Maintenance & Safety

- **Proper Installation Torque & Spring Compression:** This is critical. Over-compressing the spring negates its constant tension function, effectively turning it into a solid spacer. Under-tightening may not provide an adequate seal.
- **Inspect Periodically:** Check for signs of corrosion, damage to the spring or band, and ensure the clamp remains secure.
- **Material Compatibility:** Ensure clamp materials are suitable for the operating environment and fluids.
- **Hose Condition:** Use on hoses that are in good condition.
- **Safety Equipment:** Wear gloves and safety glasses during installation and inspection.

**Disclaimer:** This datasheet provides general information typical for T-Bolt Spring Hose Clamps. Specific technical data, materials, performance characteristics, and installation torque values can vary significantly between different manufacturers and product lines. Always refer to the manufacturer's official documentation and specifications for the particular hose clamp being considered or used.