LONYOU

TECHNICAL DATASHEET

1. Description

Constant Tension Hose Clamps are engineered to provide a reliable and dynamic seal on hose connections that are subject to fluctuations in temperature and pressure. These clamps incorporate a spring mechanism, often utilizing a series of Belleville washers (disc springs), integrated into the worm-drive housing. This design allows the clamp to automatically expand or contract with the hose and fitting as they change size due to thermal cycling or variations in system pressure. By maintaining a consistent clamping force, these clamps help to prevent "cold flow" leaks and ensure a tight seal over a wide range of operating conditions. They are particularly well-suited for demanding applications in automotive, heavy-duty vehicle, and industrial sectors where temperature extremes and pressure variations are common.

2. Key Features

- **Constant Tension Performance:** The integrated spring mechanism (e.g., Belleville washers) automatically adjusts the clamp diameter to maintain a consistent sealing pressure as hoses expand or contract.
- **Eliminates "Cold Flow" Leaks:** By compensating for changes in hose diameter, these clamps prevent leaks that can occur when standard clamps lose tension due to material compression set or thermal changes.
- **Extended Inner Liner (Common):** Many designs feature a smooth, extended inner liner that protects soft hoses (like silicone) from damage caused by perforations or sharp edges in the band, ensuring a true concentric seal.
- **Heavy-Duty Construction:** Typically built for durability and high-performance applications.
- Worm-Drive Mechanism: Utilizes a familiar and reliable worm gear screw for initial tightening and adjustment.
- **Vibration Resistance:** The constant tension helps to keep the clamp secure even under conditions of vibration.
- **Wide Application Range:** Suitable for various hose materials and demanding environments.

3. Technical Data

- **Type:** Worm-Drive Hose Clamp with Constant Tension Mechanism (e.g., Belleville Spring System)
- **Common Materials:**
  - **Band & Housing:** Stainless Steel (e.g., 300-Series Stainless Steel like AISI 304 for good corrosion resistance).
  - **Screw:** Stainless Steel (e.g., 400-Series Stainless Steel like AISI 410 for strength and corrosion resistance) or Plated Carbon Steel.
  - **Spring Mechanism:** Stainless Steel Belleville Washers (typically multiple stacked washers).
  - **Inner Liner:** Stainless Steel (integral part of the band).
  - **Typical Material Grade Combinations:** Often designed to meet W4 (all stainless steel, e.g., 304 SS band/housing/liner, 410 SS screw) or similar high-corrosion resistance specifications.
- **Band Design:** Typically a solid band with an integral smooth inner liner. Perforations may be present on the outer portion for screw engagement.
- **Band Widths (Common):** 9/16" (14.2mm), 5/8" (15.8mm)
- **Screw Head Type:** Typically a hexagonal head (e.g., 5/16" & 3/8" A/F), often slotted for use with a flathead screwdriver.
- **Clamping Diameter Range:**
  - Available in a wide range of sizes, from smaller diameters (e.g., 9/16" or 14mm) up to larger diameters (e.g., 9-1/8" or 232mm and beyond).
  - Sizes are often specified by their minimum and maximum effective clamping diameter (e.g., 32-54mm, 70-92mm).
- **Torque Specifications:**
  - Designed for specific installation torque ranges to ensure proper function of the constant tension mechanism (e.g., 50-125 in/lbs). Refer to manufacturer specifications.
- **Relevant Standards:**
  - Often designed to meet or exceed industry standards such as SAE J1508 Type SLF (Spring Loaded Flexible) & SLHD (Spring Loaded Heavy Duty).

4. Associated Products

- Silicone Hoses
- Rubber Hoses (especially in fluctuating temperature environments)
- Charge Air Coolers
- Radiators
- Torque Wrenches (for proper installation)

5. Common Applications

- **Automotive:** Coolant hoses, charge air cooler (CAC) hoses, heater hoses, turbocharger connections, and other systems experiencing temperature fluctuations.
- **Heavy-Duty Vehicles:** Trucks, buses, agricultural and construction equipment where engine temperatures and pressures vary significantly.
- **Industrial Equipment:** Machinery with fluid or air lines operating under variable temperatures or pressures.
- **Marine Engines:** Cooling systems and exhaust wet lines.
- Stationary Engines & Generators: Coolant and air intake systems.
- **Aerospace:** Certain fluid and air line connections.
- **Applications with Silicone Hoses:** The smooth inner liner and constant tension are ideal for preventing damage and maintaining a seal on soft silicone hoses.

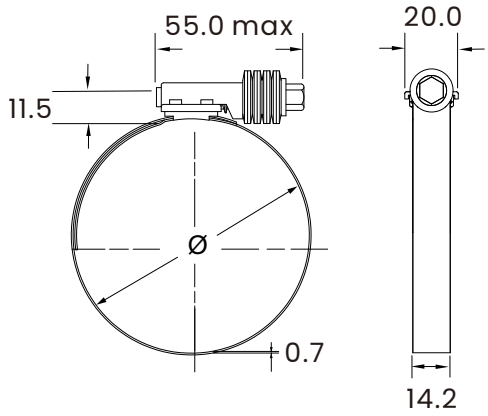
6. Installation Guidance

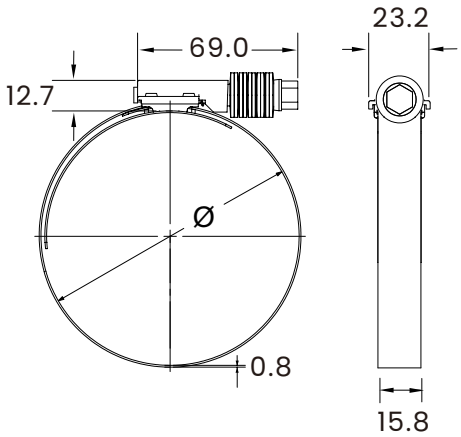
- **Select the Correct Clamp Size:** Choose a clamp where the hose's outside diameter (OD) falls within the clamp's specified effective diameter range.
- **Position the Clamp:** Slide the clamp over the hose before fitting the hose onto the spigot or pipe.
- **Attach Hose to Fitting:** Push the hose fully onto the fitting.
- **Position Clamp Correctly:** Place the clamp over the sealing area of the hose on the fitting, ensuring the extended inner liner is protecting the hose.
- **Tighten the Clamp:** Use a suitable screwdriver, nut driver, or torque wrench to tighten the screw. Apply the manufacturer's recommended installation torque. The spring mechanism will then provide the constant tension. Do not overtighten beyond the recommended torque, as this can damage the clamp or reduce the effectiveness of the spring system.
- **Inspect:** Ensure the clamp is seated correctly and providing even pressure.

7. Maintenance & Safety

- **Proper Installation Torque:** Adhering to the specified installation torque is critical for the clamp to function correctly and provide constant tension.
- **Inspect Periodically:** While designed for long-term performance, periodic inspection for any signs of damage or corrosion is good practice, especially in harsh environments.
- **Material Compatibility:** Ensure the clamp materials are compatible with the fluids being conveyed and the operating environment.
- **Avoid Over-Extension:** Do not use a clamp on a hose diameter outside its specified range, as this can compromise the spring mechanism's ability to provide constant tension.
- **Safety Equipment:** Wear gloves when handling metal clamps and safety glasses if there's any risk of flying debris during installation.

8. Specifications





Code	Inch(Ø)		mm(Ø)	
	min	max	min	max
CTA27	9/16	1-1/16	14	27
CTA32	11/16	1-1/4	17	32
CTA38	13/16	1-1/2	21	38
CTA44	13/16	1-3/4	21	44
CTA51	1-1/16	2	27	51
CTA57	1-5/16	2-1/4	33	57
CTA64	1-9/16	2-1/2	40	64
CTA70	1-13/16	2-3/4	46	70
CTA76	2-1/16	3	52	76
CTA83	2-5/16	3-1/4	59	83
CTA89	2-9/16	3-1/2	65	89
CTA95	2-13/16	3-3/4	71	95

To customize any other specific sizes, please contact sales.

Code	Inch(Ø)		mm(Ø)	
	min	max	min	max
CTB44	1	1-3/4	25	44
CTB54	1-1/4	2-1/8	32	54
CTB67	1-3/4	2-5/8	44	67
CTB79	2-1/4	3-1/8	57	79
CTB92	2-3/4	3-5/8	70	92
CTB105	3-1/4	4-1/8	83	105
CTB117	3-3/4	4-5/8	95	117
CTB130	4-1/4	5-1/8	108	130
CTB143	4-3/4	5-5/8	121	143
CTB156	5-1/4	6-1/8	133	156
CTB168	5-3/4	6-5/8	146	168
CTB181	6-1/4	7-1/8	159	181
CTB194	6-31/4	7-5/8	171	194
CTB206	7-1/4	8-1/8	184	206
CTB219	7-3/4	8-5/8	197	219
CTB232	8-1/4	9-1/8	210	232

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Disclaimer: This datasheet provides general information typical for Constant Tension 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.