

1. Description



V-Band Hose Clamps, also known as V-Band Couplings or V-Clamps, are specialized fastening devices designed to provide a strong, secure, and often quick-release connection for flanged joints. Unlike traditional hose clamps that wrap around a hose to secure it to a fitting, V-Band clamps are used to join two flanges that have V-shaped profiles. The clamp itself typically consists of one or more V-shaped retainer segments (forming a circular band) and a tightening mechanism, commonly a T-bolt and nut, or sometimes a quick-release latch. When tightened, the V-shaped retainer exerts a wedging action, drawing the flanges together and creating a very strong, leak-proof seal. They are widely used in high-performance and heavy-duty applications where robust connections and resistance to high temperatures and pressures are critical.

2. Key Features

- Strong and Secure Connection:** Provides a very high-strength and rigid connection between flanged components.
- Leak-Proof Seal:** The wedging action of the V-retainer on the flanges creates an excellent seal, often capable of handling high pressures and temperatures without gaskets (though gaskets can be used in some applications).
- Quick Assembly/Disassembly (especially with quick-release variants):** Allows for relatively fast and easy connection and disconnection of components, which is beneficial for maintenance or modular systems.
- Even Clamping Force:** Distributes clamping force uniformly around the circumference of the flanges.
- High Temperature and Pressure Resistance:** Suitable for demanding environments such as exhaust systems, turbochargers, and industrial piping.
- Vibration Resistance:** The robust design provides good resistance to loosening under vibration.
- Compact Design:** Can offer a more compact and lighter solution compared to traditional bolted flange connections.
- Reusable:** Generally designed to be reusable multiple times.
- Misalignment Tolerance:** Can accommodate slight misalignments between the mating flanges.

3. Technical Data

- **Type:** V-Band Clamp / V-Band Coupling
- **Common Materials:**
 - Band (V-Retainer Segments): Stainless Steel (e.g., 300 Series like AISI 301, AISI 304 for good strength and corrosion resistance). High-performance materials like Inconel may be used for extreme temperature applications.
 - T-Bolt: Stainless Steel (e.g., 300 Series, 400 Series like AISI 410 for strength) or Plated Carbon Steel.
 - Nut: Stainless Steel (often a self-locking type, e.g., nylon insert or all-metal lock nut) or Plated Carbon Steel.
 - Trunnion/Bridge (for T-Bolt): Stainless Steel (e.g., 300 Series).
 - Quick-Release Mechanism (if applicable): Typically Stainless Steel.
- **Band Width:** Varies depending on the clamp diameter and application requirements (e.g., 0.750", 0.875", 0.91").
- **Band Thickness:** Varies based on design and strength requirements (e.g., 0.031", 0.035", 0.040", 0.050", 0.062").
- **Flange Compatibility:** Designed to mate with flanges that have a specific V-groove profile. Flange design (angle, depth) is critical for proper sealing.
- **Nominal Diameter Range:**
 - Available in a wide range of nominal diameters, typically from around 1.5" (38mm) up to 12" (305mm) and larger for specialized applications.
 - Sizing is based on the diameter of the mating flanges.
- **Tightening Mechanism:**
 - T-Bolt and Nut (common, e.g., 1/4" or 5/16" T-bolt).
 - Quick-Release Latch (e.g., over-center latch) for applications requiring frequent disassembly without tools after initial setup.
- **Torque Specifications:**
 - Recommended installation torque varies significantly based on clamp size, material, bolt size, and application pressure (e.g., 60 in-lbs to 150 in-lbs or higher). Always refer to manufacturer specifications.
- **Temperature Range:** Dependent on materials used. Stainless steel versions can typically handle very high temperatures (e.g., up to 650°C or even 1050°C for specialized alloys).
- **Pressure Rating:** Capable of handling high internal pressures, dependent on size, material, and proper installation.

4. Common Applications

- **Automotive & Motorsport:** Exhaust systems (joining pipes, mufflers, catalytic converters), turbocharger connections (compressor outlet, turbine outlet), intake systems, intercooler piping.
- **Heavy-Duty Diesel Engines:** Exhaust gas recirculation (EGR) systems, diesel particulate filters (DPFs), turbochargers.
- **Aerospace:** Ducting, fluid transfer lines, and exhaust components.
- **Industrial Equipment:** Filter housings, pumps, process piping, material handling systems.
- **Marine Engines:** Exhaust systems and other high-temperature piping.
- **Food & Chemical Processing:** Connecting sanitary piping where secure, leak-proof, and often quick-disconnect joints are needed (specific sanitary V-Band designs).
- **General Industrial Applications:** Joining flanged pipes and components in various systems.

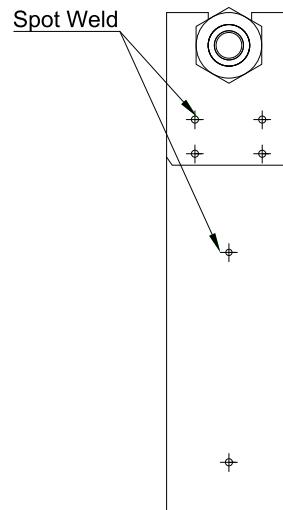
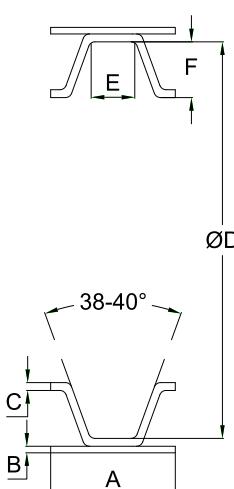
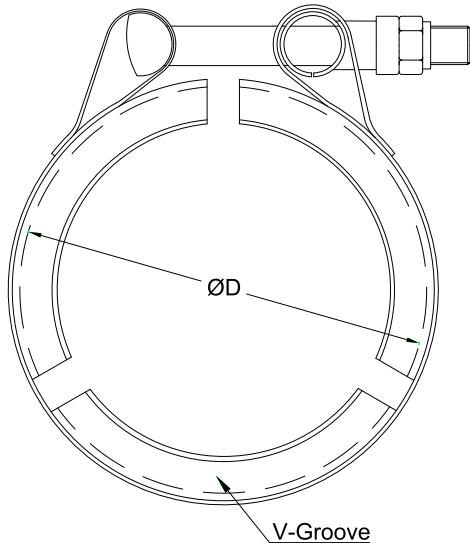
5. Associated Products

- Mating V-Band Flanges (male/female or identical, designed to be welded to pipes/components)
- Gaskets (sometimes used, though many V-Band connections are designed to be metal-to-metal seals)
- Torque Wrenches (essential for proper T-Bolt installation)
- Anti-Seize Lubricant (recommended for T-Bolt threads in high-temperature applications)

6. Installation Guidance

- **Ensure Flange Alignment:** Properly align the two mating V-flanges. Ensure flange faces are clean and free from debris or damage.
- **Position Gasket (if used):** If the application requires a gasket, place it correctly between the flanges.
- **Place the V-Band Clamp:** Open the V-Band clamp (if it has a quick-release mechanism or by loosening the T-bolt nut) and position the V-shaped retainer segments over the aligned flanges. Ensure the V-retainers engage correctly with the V-grooves of both flanges.
- **Initial Tightening:** For T-Bolt Clamps: Hand-tighten the nut on the T-bolt until the clamp is snug.
- **Uniform Seating:** Gently tap around the circumference of the V-Band clamp with a soft-faced mallet. This helps to seat the clamp and flanges properly, ensuring even contact.
- **Final Tightening (T-Bolt):** Using a torque wrench, tighten the nut to the manufacturer's recommended torque specification. Apply torque evenly. It's often recommended to tighten in increments and re-tap the clamp circumference to ensure optimal seating and sealing. Do not overtighten.
- **Inspect:** Check the connection for a uniform gap (if any, depending on design) around the circumference and ensure the clamp is securely fastened.

7. Specifications



Code	D (inch)	A (mm)	B (mm)	C (mm)	E (cm)	F (cm)	Bolt
VB15	1.5	19	1	1.2	6.0	3.8	M6X75
VB20	2	19	1	1.2	6.5	4.8	M6X75
VB25	2.5	19	1	1.2	6.5	4.8	M6X75
VB30	3	19	1	1.2	6.5	4.8	M6X75
VB35	3.5	19	1	1.2	6.5	4.8	M6X75
VB40	4	22	1	1.2	6.5	4.8	M8X100
VB45	4.5	22	1	1.2	6.5	4.8	M8X100
VB50	5	22	1	1.2	6.5	4.8	M8X100
VB55	5.5	22	1	1.2	6.5	4.8	M8X100
VB60	6	22	1	1.2	6.5	4.8	M8X100
VB70	7	22	1	1.2	6.5	4.8	M8X100
VB80	8	22	1	1.2	6.5	4.8	M8X100

Please contact sales for more information about other sizes.

8. Maintenance & Safety

- **Proper Installation Torque:** Adhering to the specified installation torque is critical for achieving a leak-proof seal and preventing damage to the clamp or flanges.
- **Inspect Periodically:** In critical or high-vibration applications, periodically inspect clamps for any signs of damage, corrosion, or loosening. Re-torque if necessary, following manufacturer guidelines.
- **Material Compatibility:** Ensure clamp and flange materials are suitable for the operating temperatures, pressures, and fluids/gases being handled.
- **Flange Condition:** Ensure mating flanges are not damaged, warped, or excessively worn, as this can compromise the seal.
- **Safety Equipment:** Wear appropriate PPE, such as gloves and safety glasses, during installation, removal, or inspection, especially in high-temperature or high-pressure systems.
- **Lubrication:** For high-temperature applications, using an appropriate anti-seize compound on the T-bolt threads can prevent galling and ease future disassembly.

Disclaimer: This datasheet provides general information typical for V-Band 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 V-Band clamp and flanges being considered or used.