

Selecting the Right Hose Clamp Can Save Time/Costs

by Joe Cappello

Customers looking for cost reduction ideas are considering the self-compensating hose clamp in place of the screw/worm type version for low-pressure applications. The three major types, the single and double wire, and Constant Tension Band (CTB) clamps, provide an alternative to the traditional (and more costly) screw clamp to secure hoses to fittings. Self-compensating hose clamps are used in a wide range of applications as diverse as securing radiator and heater hoses in automobiles to facilitating the flow of beverages in vending machines and attaching hoses to water jets in spas. Self-compensating hose clamps feature ease of manufacture and a variety of benefits for use, giving the customer a low cost alternative to the screw clamp in low-pressure applications.

Creating the Clamp

To produce hose clamps, large coils of wire/steel are fed into machines, where they are formed and cut out into their special shape. They are then “heat treated” where the soft metal is made stronger by conditioning it to “behave” like a spring. A variety of finishes are available for corrosion protection as well as color-coding to meet certain automotive requirements.

In contrast, the screw/worm clamp involves not only producing the band itself, but also a mechanism that houses the screw. In some cases this mechanism is spot welded to the band, adding to the manufacturing steps and, ultimately, the cost.

Benefits to Self-Compensating Clamps

The spring feature of the self-compensating hose clamp is what makes the difference. Unlike screw clamps, which must be tightened using the screw mechanism, self-compensating clamps behave like springs and, once expanded and released on the hose, retain a tight fit around the circumference of the hose compensating for both pressure and temperature changes, while creating an extremely durable seal. It's as though they gain a “memory” once installed, taking a variety of positions on the hose in response to external changes.

Other types of hose clamps must be physically adjusted to compensate for external changes. For example, a clamp fitted on an automobile in a warm climate area will behave much differently than one in a cold or frigid climate. When temperatures and pressures on the hose change, many standard worm/screw hose clamps cannot adjust, causing leaks by becoming too loose, creating a leak path, or too tight, resulting in cuts to the hose that may also cause leaks. Self-compensating hose clamps on the other hand, compensate for these changes within a preset range. That way, if a hose clamp is transported from the humidity of one area to the cooler temperatures of another location, it will adjust; screw clamps on an automobile, for example, may have to be returned to the dealer to be re-adjusted to compensate for the temperature change.

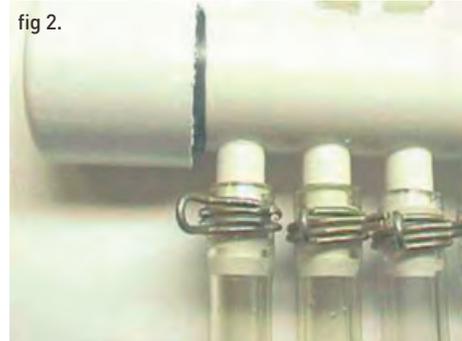
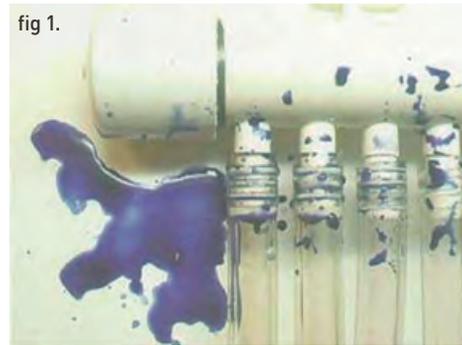


fig 1. Gluing hoses to fittings (fig 1.) in this spa application is messy and difficult to maintain. Replacing the gluing with a double wire hose clamp (fig 2.) eliminates the mess and makes removal of the hoses fast and easy.

Varieties of Self-Compensating Hose Clamps

There is a variety of self-compensating hose clamps on the market to suit many different low-pressure applications. There is the single wire hose clamp, made out of premium grade spring wire and finished with Peen-Plate Zinc and commonly used on truck engines, spa assemblies, appliances, irrigation systems and more. The double wire hose clamp is made of the same materials as the single, and can be used on products such as appliances, pumps or water valves, spa assemblies and automotive coolant tanks.

Also offered are the Constant Tension Band hose clamps, commonly known as “CTB’s” and made from either chrome vanadium steel or lower cost carbon steel. These are typically used on automotive heater and radiator hoses, but are versatile for a variety of other non-automotive applications including spa hose assemblies and

appliances. There is also another version of the self-compensating hose clamp, known as the Constant Tension Band Light (CTL) clamp, which will work in the same manner as the other products in the line, yet serving smaller engine applications with lower pressures, like those found in lawnmowers and vending machines.

Conclusion

In some instances, use of a screw clamp is “overkill.” There is a mistaken notion that this is the only viable clamp to use in any fluid-handling situation. But the self-compensating clamp is gaining prominence as a viable alternative to the screw type version as more engineers and end users discover its reliability and gain confidence in its performance. They also offer the best opportunity for reduction in costs and installation time in a variety of low-pressure applications.

COMPARISON: SELF-COMPENSATING HOSE CLAMP VS. SCREW/WORM TYPE CLAMP



Self-Compensating Hose Clamp	Screw/Worm Type Clamp
SELF-COMPENSATING--Expands and Contracts with hose in response to temperature changes.	Must be MANUALLY ADJUSTED
CAN NOT BE OVER TORQUED	Screw mechanism may be over tightened causing damage to the hose.
CAN NOT BE UNDER TORQUED	Screw mechanism may be under tightened resulting in leaks.
Can be installed AUTOMATICALLY using a pneumatic tool which eliminates Carpal Tunnel Syndrome (CTS), a nerve disorder of the hand and wrist.	Must be installed/removed MANUALLY using a ratchet tool which also takes additional time.

