

**DIMENSIONS, MATERIAL AND HEAT TREATMENT, AND PERFORMANCE OF HEAVY DUTY SPRING BAND HOSECLAMPS****1. SCOPE**

This standard covers the dimensions, material and heat treatment, and performance of heavy duty spring band hoseclamps in a range of nominal sizes between 13 mm and 61 mm inclusive, for application within a temperature range from -40 °C to +150 °C.

NOTE: Clipped pre-opened design has been made obsolete and not for new design, this information has been moved to WK902 Appendix A.

**1.1 REFERENCES**

ISO 6507/1 Metallic materials - Vickers hardness test - Part 1: Test method  
ISO 2768 General tolerances

**2. GENERAL REQUIREMENTS:****2.1 MATERIAL AND HEAT TREATMENT**

Hoseclamps shall be manufactured using Cold-Rolled Strip. The steel may be purchased to International, Regional, or National standards. For example, 51CrV4, C75S, UNS G61500, or UNS G10860 providing the chemical compositions shown in Table 1 are met.

Phosphating as a process aid for producing the cold-rolled strip steel is not permitted.

The spring band clamps shall be austempered to 510 to 580 HV10 / HV30. The hardness is to be measured on the front face of the spring band hoseclamp that has been ground and polished by approximately 0.3mm. The hardness test shall be conducted in accordance with ISO 6507/1.

Alternative hardness test methods may be used; however, in cases of dispute the Vickers test method in accordance with ISO6507/1 is the referee method.

**Table 1 – Chemical Composition / %**

| Table 1     |             |           |            |           |        |        |       |             |
|-------------|-------------|-----------|------------|-----------|--------|--------|-------|-------------|
| C           | Si          | Mn        | Cr         | V         | P      | S      | Al    | Mo          |
| 0.5 – 0.55  | 0.15 – 0.35 | 0.8 – 1.1 | 0.9 – 1.2  | 0.1 – 0.2 | <0.025 | <0.015 | -     | -           |
| 0.7 – 0.8   | 0.10 – 0.40 | 0.6 – 0.9 | 0.15 – 0.4 | <0.15     | <0.03  | <0.025 | <0.05 | -           |
| 0.5 – 0.58  | 0.15 – 0.35 | 0.8 – 1.1 | 0.9 – 1.2  | 0.1 – 0.2 | <0.025 | <0.015 | -     | 0.15 – 0.25 |
| 0.48 – 0.53 | 0.15 – 0.35 | 0.7 – 0.9 | 0.80 – 1.1 | <0.15     | <0.035 | <0.040 |       |             |

**2.1.1 Residual Heat Treatment Salts**

Excessive amounts of residual heat treatment salt on clamps before coating have been shown to affect the adhesion and/or corrosion performance of some coatings. Surface contaminants such as heat treatment salts, residual oils, etc, must be controlled to a level sufficient to meet the functional / performance requirements outlined in this fastener standard as well as applicable finish specifications.

**2.2 GENERAL TEST CONDITIONS****2.2.1 RELEASE OF PREOPENED CLAMPS**

In order to prevent damage, pre opened clamps shall be released on an EPDM hose/Spigot combination that has a diameter in accordance with the respective clamp nominal diameter.

### 2.2.2 PRECONDITIONING

Prior to the dimensional and force testing requirements, all clamps shall be fully opened to diameter  $D_o$  and released.

## 2.3 STRESS CORROSION TEST

Prior to coating, clamps shall be assembled on a plastic mandrel and exposed to a 0.9% HCl solution at room temperature. The clamps shall withstand 8 minutes without breaking. The diameter of the plastic mandrel shall be 0.3 mm less than the full open diameter  $D_{o \min}$

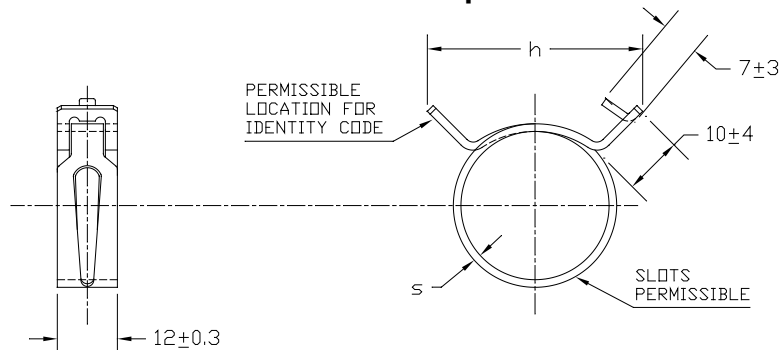
## 2.4 DIMENSIONS AND TOLERANCES

The dimensions and tolerances shall be in accordance with Figures 1, 2 and 3 and Tables 2 and 3. All dimensions are in millimetres. General tolerances shall be in accordance with ISO 2768.

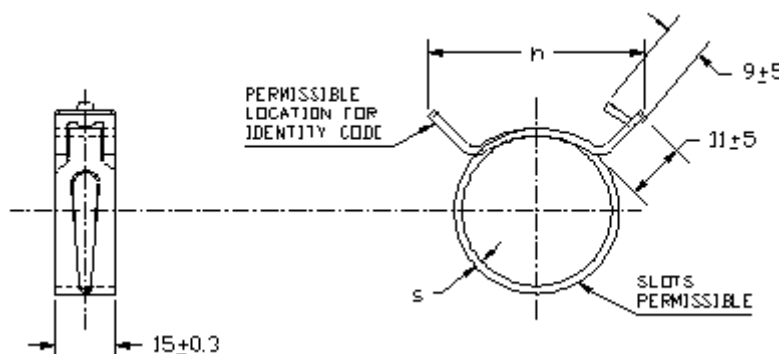
### 2.4.1 CLIPLESS PREOPENED CLAMPS

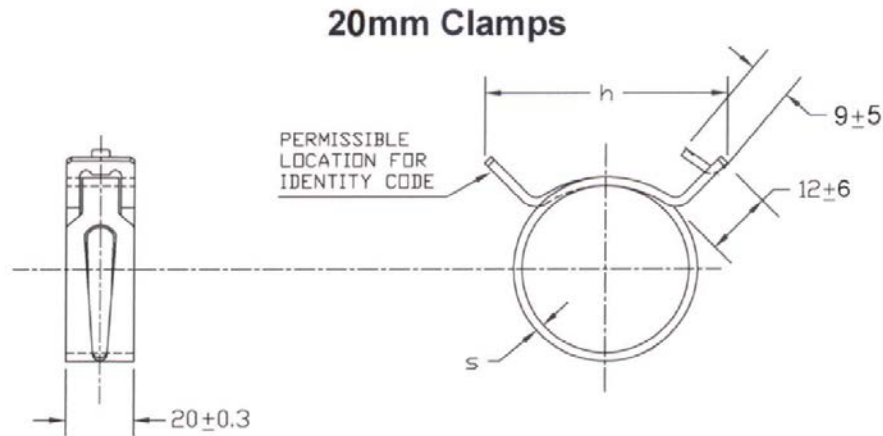
The design or method used to hold the clamp open shall be at the discretion of the clamp manufacturer and Ford. The clamp shall be retained open to diameter of  $D_{PO \min}$ . The clamp shall remain in the open position during normal handling. The clipless clamp shall be releasable for assembly using a suitable simple tool (e.g. pliers, flat blade screwdriver or clamp release tool) recommended by the clamp manufacturer and approved by Ford. The torque to release the clamps shall not exceed 10Nm.

**Figure 1**  
**12mm Clamps**



**15mm Clamps**





Dimension 'h' shall be measured with the clamp mounted on a steel mandrel of diameter  $d_p$   
 All edges of the clamps shall be free from burrs and shall not inhibit joint integrity.

**Figure 2**

