



Ear Hose Clamps

1 Introduction

Note: Nothing in this standard supercedes applicable laws and regulations.

Note: In the event of conflict between the English and domestic language, the English language shall take precedence.

1.1 Purpose. This standard covers the materials, crimping and performance requirements for ear hose clamps.

1.2 Applicability. Ear clamps are relevant for use on rubber hoses on the vehicle with applications that do not require scheduled serviceability.

Common use of Ear Clamps are coolant and oil hoses, air intake systems, safety systems, steering and prop shafts, as mentioned in SAE J1508.

1.3 Remarks. Even though ear clamps can be manufactured in various materials, the use of stainless steel is preferred. Ear clamps are intended to be used with hose/nipple connections of a variety of dimensional ranges and must have a full open diameter large enough to install the ear clamp over a determined sealing area avoiding interference with the bead.

It is recommended Ear Clamps come part of the assembly and closed in supplier facilities

2 References

Note: Only the latest approved standards are applicable unless otherwise specified.

2.1 External Standards/Specifications.

SAE J1508

2.2 GM Standards/Specifications.

9985010	9986086	GMW3059	GMW14872
9985670	9986153	GMW3161	GMW17332
9985912	9986360	GMW3420	

3 Requirements

3.1 Material. Material used to produce ear clamps must meet the Stainless Steel specifications found in Table 1.

Table 1: Stainless Steel Specifications

GMW3161M-ST-S- Designation	Common Name	ASTM A240 Designation	ISO/EN Designation
GMW3161M-ST-S-X5CrNi18-10	304	S30400	EN-10088: X5CrNi18-10

Refer to GMW3161M for further material properties and characteristics. Other Material may be admissible after agreement from responsible engineer (GM Fastening Engineering).

3.2 Shape and delivery. All clamps must be assembled in a round shape and supplied pre-closed (See Figure 1 or Figure 2).

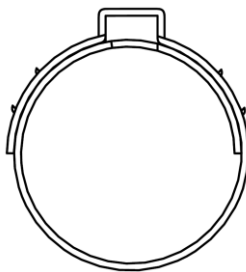


Figure 1: Assembled Ear Clamp

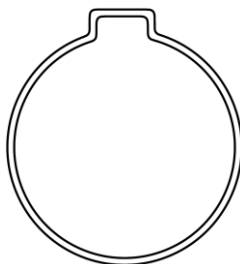


Figure 2: One Piece Ear Clamp

3.3 Surface treatment. Since ear clamps are specified in Stainless Steel material, no protective surface coating is required or recommended. They must be free of burrs to avoid damages to other components.

3.4 Performance Requirements.

3.4.1 Closing Force. Ear of the clamp must withstand the closing force without experiencing any cracks. Force > 1000 N will be applied and longitudinal clamp deformation must be as expected without radial biased.

3.4.2 Ear clamp construction. Ear clamps can be made in one (1) piece or be assembled. If assembled, the interlock (hooks that keep clamp together and support tensile loading during closure) must withstand when the maximum closing effort is applied and no damage must be seen. See Figure 3

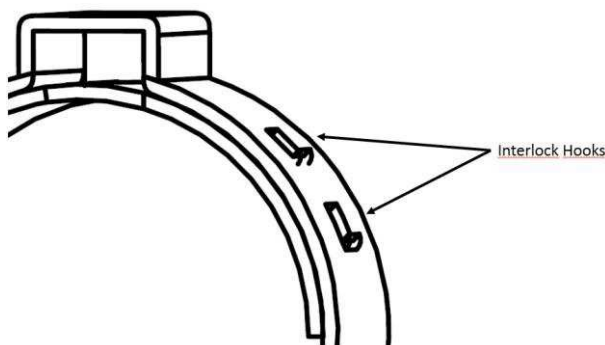


Figure 3: Interlock Illustration in Assembled Ear Clamps

3.4.3 Corrosion Resistance. Fixturing during test shall be such that accumulation of salt solution is minimized. After 1000 h, no red rust is allowed. Ear clamps must comply GMW14872 UH Exposure B with an All - Splash Protection location. In this test, all surfaces are considered significant.

3.4.4 Resistance to Underhood Fluids. Clamps shall be tested against common automotive fluids per the tests described in 3.5.4.1 thru 3.5.4.7. After exposure, the material shall not exhibit any damage or permanent stain.

3.4.4.1 Gasoline Resistance. Immerse clamps in current factory-fill gasoline (9986086) for 24 h at $23\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$.

3.4.4.2 Hot Oil Resistance. Immerse clamps in engine oil (see GMW17332) for 24 h at $66\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$.