

KS

KOREAN INDUSTRIAL STANDARD

Hose Clamps for Automobiles

KS R 2045 : 1998

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Hose Clamps for Automobiles

1. Scope

This Korean Industrial Standard specifies hose clamps (hereafter referred to as "clamps") mainly used to connect the hose with the joint or pipes for cooling, suction of air, fuel, lubrication and air-conditioning systems in automobiles.

2. Normative References

The following standards contain provisions which, through reference in this text, constitute provisions of this standard. The most recent editions of the standards indicated below shall be applied.

- KS B 0201 Metric Coarse Screw Threads
- KS B 0211 Limits of Sizes and Tolerances for Metric Coarse Screw Threads
- KS B 0233 Mechanical Properties of Steel Bolts and Screws
- KS B 0806 Method of Rockwell and Rockwell Superficial Hardness Test
- KS B 0811 Method of Vickers Hardness Test
- KS B 1002 Hexagon Head Bolts and Hexagon Head Screws
- KS B 1021 Slotted Head Machine Screws
- KS B 1023 Cross-Recessed Head Machine Screws
- KS D 3510 Hard Drawn Steel Wire
- KS D 3512 Cold Reduced Carbon Steel Sheets and Strips
- KS D 3551 Cold Rolled Special Steel Strip
- KS D 3552 Low Carbon Steel Wires
- KS D 3556 Piano Wires
- KS D 3597 Cold Rolled Steel Strips for Springs
- KS D 3698 Cold Rolled Stainless Steel Plates, Sheets and Strip
- KS D 3702 Stainless Steel Wire Rods
- KS D 3752 Carbon Steel for Machine Structural Use
- KS D 9502 Methods of Neutral Salt Spray Testing
- KS R 0013 General Rules of Electroplating for Automobile Parts

3. Classification

Clamps shall be classified into 10 types as given in Table 1.

Table 1 Classification of Clamps

Type	Classification	Constructions and shape		Applicable nominal size	Applicable Annex Tables
Screw type	Class A1	Clamp plate shall be flat.		6 to 136	Annex Table 1
	Class A2	Clamp plate shall be diaphragm type.		20 to 136	
Worm drive type	Class 1	The clamp shall have the width of normal band.		18 to 55	Annex Table 2
	Class 2	The clamp shall have the width of wide band.		22 to 100	
Spring action type	Class 1 A	The body shall be wire type.		65 to 540	Annex Table 3
	Class 1 B				
	Class 2 A	The body shall be plate type.	One fold	70 to 370	Annex Table 4
	Class 2 B				
	Class 3 A		Twofold	105 to 270	Annex Table 5
	Class 3 B				

4. Shape and Dimension

The shape and dimension of clamps shall be in accordance with Annex Tables 1 to 5.

5. Quality

5.1 Appearance

The surface of the clamp shall be smooth, and it shall be also free from such defects of harmful cracks, twist, burrs, flaws and rust etc. to use. Especially, the inside diameter of worm drive type band and the clamp of Class 2 and Class 3 of spring action type shall be free from burrs and flash.

5.2 Surface Treatment

The surface treatment shall be performed for the component parts of the clamp as shown in Table 2 as a rule, other kinds of surface treatments shall be agreed between the parties concerned in delivery.

Table 2 Method of Surface Treatment

Classifications	Method of surface treatment	Methods
Screw type	Electrical galvanizing	It shall be in accordance with MFZn5-B or MFZn5-C of KS R 0013, and the ring made of galvanized wire shall be excluded.
Worm drive type	Electrical galvanizing	It shall be in accordance with MFZn8-C of KS R 0013.
	Zinc chromate compound coating	Coated amount shall be not less than 20g/m ² .
Spring action type	Electrical galvanizing	It shall be in accordance with MFZn5-C of KS R 0013.
	Zinc coating containing chrome	Coated amount shall be not less than 20g/m ² .

Remark The baking treatment shall be performed on the surface of the electrically galvanized clamp.

5.3 Operation of Screw

The operation of screw shall be smooth when the clamp is tightened. As for the worm drive type of clamp, the worm screw thread shall fit in the band thoroughly when the clamp is fastened.

5.4 Corrosion Resistance

The worm type and spring action type of clamps, which are galvanized electrically with carbon steel, shall be tested according to 7. for the time specified in Table 5 of 7.3 (Corrosion Resistance Test) of KS R 0013, and the test shall satisfy the requirements of Table 8 of 8.3 (Acceptance criteria on Corrosion Resistance) of KS R 0013. The clamp, which is treated with carbon steel in zinc chromate compound coating, shall be tested according to 7., and it shall take not less than 480h till the rust appears on the screw.

5.5 Hardness

The hardness of Class 2 and Class 3 of spring action type of clamps shall be as given in Table 3.

Table 3 Classification of Hardness

Hardness	Thickness (mm)	Electrical galvanizing	Zinc coating containing chrome
Vickers hardness	0.5, 0.6	420 to 520 HV20	420 to 550 HV20
	0.7 to 1.8	420 to 520 HV50	420 to 550 HV50
Rockwell hardness	0.7 to 1.8	42 to 50 HRC	42 to 52 HRC

Remark If there is any doubt in the judgment of qualification and disqualification as to the hardness, the Vickers hardness shall be applied.

6. Materials

The materials of clamps shall be in accordance with Table 4 as a rule.

Table 4 Materials of Clamps

Types	Name of parts		Materials	Remarks
Screw type	Ring		High carbon steel wires or galvanized steel wires	HSW 1 of KS D 3510 . MSW-B, MSW-G3 of KS D 3552 .
	Bolt		Steel	Materials equivalent to 4T of KS B 0233 .
	Clamp plate		Cold rolled steel sheets Class 1	SCP of KS D 3512 .
	Washer		Cold rolled steel sheets Class 1	SCP of KS D 3512 .
	Bridge		Cold rolled steel sheets Class 1	SCP of KS D 3512 .
Worm drive type	Band		Cold rolled stainless steel sheets and strips	STS201, STS301, STS304 of KS D 3698 .
	Housing			
	Worm screw	M1	Stainless steel wire rods	STS304, STS305 of KS D 3702 .
		M2	Carbon steel for machine structural use	SM10C to SM15C, SM45C of KS D 3752⁽¹⁾ .
Spring action type	Class 1 A		HSW (High carbon steel wires), or PW (Piano wires)	KS D 3510 or KS D 3556 .
	Class 1 B			
	Class 2 A		S50CM-S70CM or SK5M (Special steel strip) S50C-CSP-S70C-CSP or SK5-CSP (Cold rolled steel strips for springs)	KS D 3551 or KS D 3597 .
	Class 2 B			
	Class 3 A			
	Class 3 B			