VOLKSWAGEN
AKTIENGESELLSCHAFT

Group Standard

VW 74136-1

Issue 2011-10

Class. No.: 69387

Descriptors: cable tie, fastener, wiring harness, fastening strap, cable, basic type

Cable Fastening Systems

Cable Ties

Basic Type, External Gear Rack

Previous issues

VW 74136-1: 1975-06, 1991-11, 2003-12

Changes

The following changes have been made compared with VW 74136-1: 2003-12:

- Title changed
- Type D added
- Section 5 "Point of origin for 3-D representation" added
- Applicable documents updated
- Appendix A removed

1 Scope

This standard applies to cable ties with external gear racks for bundling electrical wires or for fastening wiring harnesses, cables, pipes and hoses and specifies the basic shape, requirements and tests.

2 Type

There must be no letterings and markings on the inside, i.e. the side facing the cables and pipes. Ejectors are not permissible. If technically necessary, the ejector must be designed free of burrs and set at a lower level. For new parts, the design must be presented to the affected departments before tool manufacture.

For reduction of types and quality improvement, only cable ties with external gear rack (type C) must be used for newly designed parts. Good results have been achieved with this type. The cable tie and

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its lock must be designed as "small diameter". Cable ties of types A and B must no longer be used for bundling electrical wires because of their poor temperature resistance (type A) and because they have internal gear racks.

3 Description

Designation for a cable tie, type C, band width b = 4,6 mm, length l = 143 mm, material PA 66 and color black (sw):

Cable tie N 106 231 01[1)]

or cable tie VW 74136-1 – C 4,6 × 143 – PA 66 – sw

4 Dimensions

Cable ties do not have to correspond to the illustration, only the specified dimensions (see figure 1, figure 2, figure 3, table 1 and table 2) must be observed.

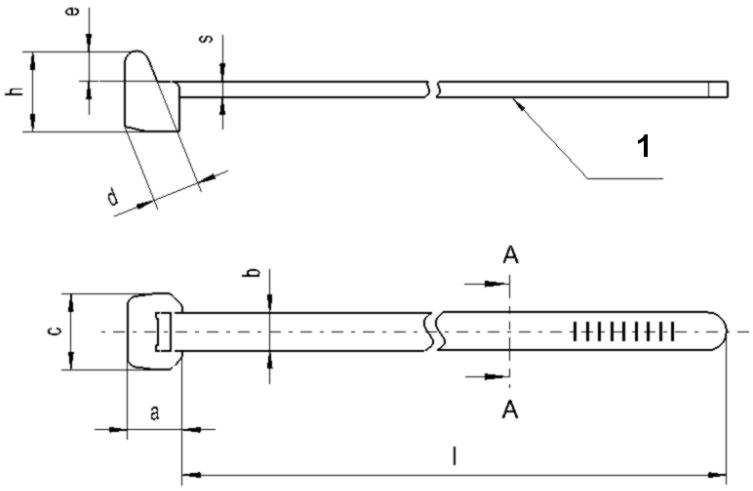


Figure 1 – Cable tie, type C

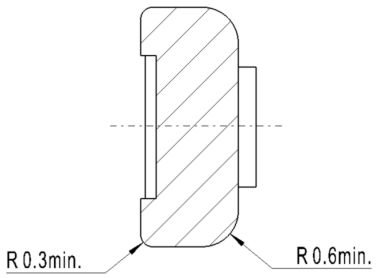


Figure 2 – Edge design (section A-A, magnified)

Legend

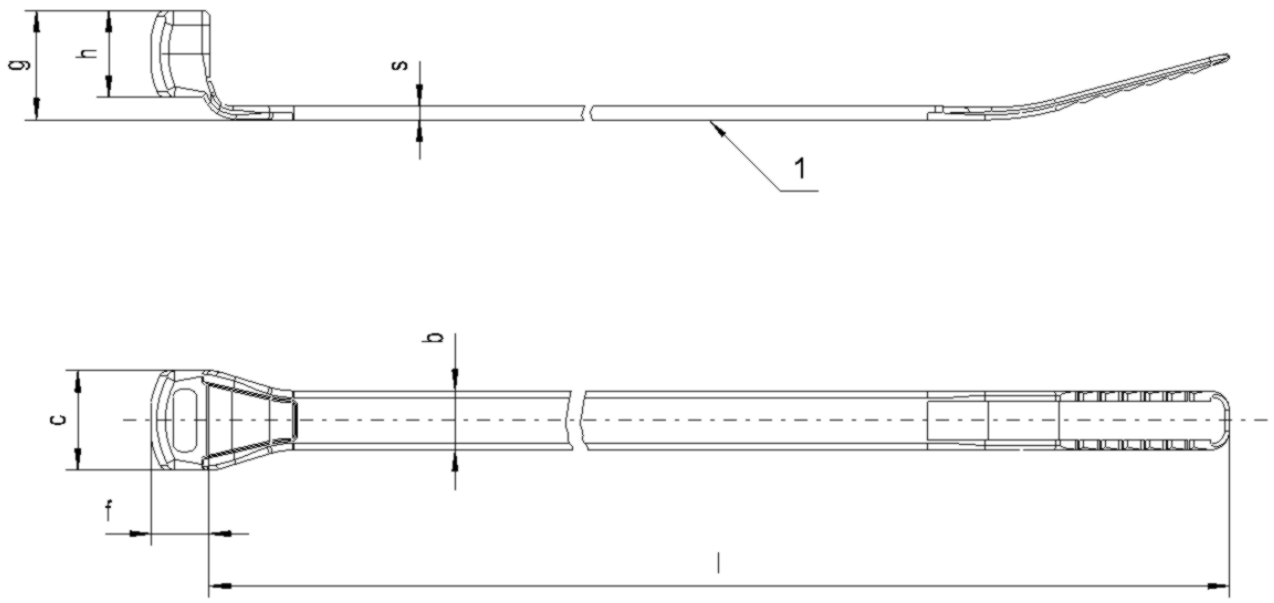
1 gear rack side

Table 1 – Cable tie dimensions, type C (in mm)

Nominal size	Bundle ∅	l ± 5	b ± 0,2	s ± 0,2	a ± 0,2	c ± 0,2	d ± 0,3	h ± 0,2	e ± 0,2	Minimum tensile strength (N)
C 2,5 × 95	1,0 to 22	95	2,5	1	5,2	5,2	4	4,1	0,9	80
C 3,4 × 139	1,6 to 35	139	3,4	1,2	5,7	6,1	4,3	4,5	1,3	135
C 3,4 × 194	1,6 to 50	194	3,4	1,2	5,7	6,1	4,3	4,5	1,3	135
C 4,6 × 143	1,6 to 35	143	4,6	1,3	6,7	7,9	5,4	5,9	2,1	225

1) Index for manufacturer's code, material and released parts, see Standards Parts Administration System "NVS", see also VW 60000 for released parts.

Nominal size	Bundle ∅	l ± 5	b ± 0,2	s ± 0,2	a ± 0,2	c ± 0,2	d ± 0,3	h ± 0,2	e ± 0,2	Minimum tensile strength (N)
C 4,6 × 193	1,6 to 50	193	4,6	1,3	6,7	7,9	5,4	5,9	2,1	225
C 4,6 × 377	1,6 to 110	377	4,6	1,3	6,7	7,9	5,4	5,9	2,1	225



Legend

1 gear rack side

Figure 3 – Cable tie, type D (edge design see figure 2)

Table 2 – Cable tie dimensions, type D (in mm)

Nominal size	Bundle ∅	l ± 5	b ± 0,2	s ± 0,2	c ± 0,2	f ± 0,2	g ± 0,2	h ± 0,2	Minimum tensile strength (N)
D 2,5 × 100,5	1,8 to 25,4	100,5	2,5	1	5	3,6	6,5	5,3	80
D 4,8 × 188,2	4,1 to 50,8	188,2	4,8	1,1	8,4	4,8	8,9	7,1	222

5 Point of origin for 3-D representation

Point of origin for 3-D representation for medium bundle diameter see figure 4.

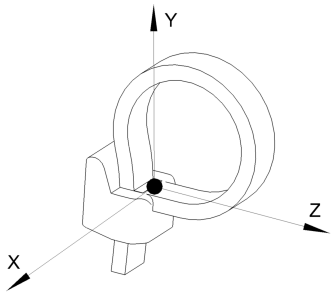


Figure 4 – Installed condition, example for type C.

6 Material

Polyamide 66 (PA 66): Heat-stabilized, temperature-resistant and functional from -40 °C to 125 °C for 3000 h, moisture content during assembly: 1,5 % to 3,5 %, color black

Polyamide 46 (PA 46): Temperature-resistant and functional from -40 °C to 150 °C for 3000 h, moisture content during assembly: 2.5% to 4.5%, color gray

7 Marking

The cable ties must at least be marked with the following information:

– manufacturer's identification or manufacturer's code as per VW 10540-1.
– material marking as per VDA 260

8 Requirements

The cable ties are subject to build sample approval.

8.1 General requirements

Avoidance of hazardous substances as per VW 91101 and emission behavior as per VW 50180. Proof must be submitted.

General component requirements as per VW 80000.

8.2 Low flammability

As per TL 1010.

8.3 Flaws

Free from flaws, e.g. cracks, blisters, inclusions, burrs, etc.

9 Tests

9.1 Test atmosphere

If no other test climate is specified, perform tests in the ISO 554-23/50 standard climate.

9.2 Behavior in elevated temperature aging test

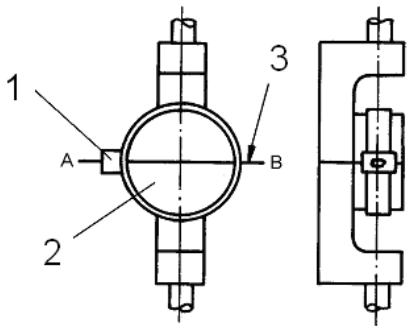
As per DIN 53497, method B, 48 h at 80 °C, recirculated air. No shape or surface flaws or crack formation must occur on the DUT.

9.3 Low-temperature behavior

After 24 h at -40 °C, no stress cracking must occur during and after the aging.

9.4 Minimum tensile strength

See figure 5 for test setup.



Legend

1 Cable tie closure lies on line A-B
2 Test mandrel
3 Line A-B divides test mandrel

Figure 5 – Test device

The tensile forces must not drop below minimum values, while the DUTs must not exhibit any cracks, breaks or deformation that has a negative effect on function. The lock function must be ensured.

10 Assembly specification

The band end of the cable tie must be introduced into the lock in such a way that the teeth are held by locking.

11 Applicable documents

The following documents cited in this Standard are necessary to its application.

Some of the cited documents are translations from the German original. The translations of German terms in such documents may differ from those used in this Standard, resulting in terminological inconsistency.

Standards whose titles are given in German may be available only in German. Editions in other languages may be available from the institution issuing the standard.

TL 1010	Materials for Vehicle Interiors; Burning Behavior; Material Requirements
VW 10540-1	Manufacturer's Code for Vehicle Parts

VW 50180	Components in the Passenger Compartment; Emission Behavior
VW 60000	Variant Reduction for Fasteners; VRV Catalog
VW 80000	Electric and Electronic Components in Motor Vehicles - General Component Requirements, Test Conditions and Tests
VW 91101	Environmental Standard for Vehicles; Vehicle Parts, Materials, Operating Fluids; Avoidance of Hazardous Substances
DIN 53497	Testing of Plastics; Hot Storage Test on Mouldings Made of Thermoplastic Moulding Materials without External Mechanical Stressing
ISO 554	Standard atmospheres for conditioning and/or testing; Specifications
VDA 260	Components of motor vehicles; marking of material