Tools for Cable Tie Tighten Pistols

- *Guideline for Testing the Tensile Strength of Cable Ties*
- *Guideline for Testing Cable Tie Tighten Pistols*

Cable Ties: Testing cable tie tighten pistols

Tool Testing - Determination of Tensions:

The test equipment for cable tie tighten pistols (cable application tools, e.g. HerllermannTyton MK7, MK9, ML3PNSP, etc.) is used to determine the tensile forces of the tools and to guarantee the quality of the tools. The tension force can be adjusted on many of the cable tie models and should be checked in regular intervals and if necessary should also be readjusted. For testing cable tie tools, it is of supreme importance to comply with a standardized procedure and consistent test conditions. In general, the speed of cut-off, the position of the tool to the cable tie, the condition of the wearing parts in the tool and the state of the cable tie play a fundamental role in the determination of tensile forces. The recommendation of the respective manufacturer of the tools should be observed.

We point out that the herein exemplified indicated tension forces are provided as approximate values for the description if the test procedure and must only be regarded as guide values for your information. The tensile force of the cable tie tool can be adjusted with the help of the below described test apparatus, As a guideline for the tensile force e.g. the company HellermannTyton recommends to use half of the minimum tensile strength of the cable tie. The minimum tensile strength is the least force which the cable can withstand before it tears or stretches (see also leaflet “Determination of minimum tensile strength” of cable ties). The following formula can be used for guidance as to the correct tensile force of the tool:

$$\textit{Recommended tensile force} = ½ \bullet \textit{Minimum tensile strength}.$$

This tensile force can of course be adjusted up or down in line with the corresponding application. It is only a guide value and can vary from manufacturer to manufacturer.

Test set-up for determination of the tensile strength of cable tie tools

The KBP tool set is designed to determine the tensile force of cable tie hand tools. The set consists of a plug-plate with 3 pins of diameter 12, 20 and 30 mm for assembly on the measuring point of the tester and a special fixture for the cable tie pistol for assembly on the load bar of the tester.

To carry out the test, the cable tie is looped around one of the 3 pins and the strip end is guided through the cable tie head. The tie is then tightened firmly enough so that one stroke of the tool Is enough to tension and cut off. The free strip end is inserted into the open side of the cable tie tool head with the tension mechanism. The tool head must have a distance of only a few mm to the cable head. Now the manual lever of the cable tie tool is pulled one or more times to the stop. Once the pre-selected tension is reached, the free tie end is automatically cut off. The tension achieved at cut-off is determined by the tester and indicated on the display.

Instead of the 3-pin plug-in plate, also suitable quick-action clamps can be used on the measuring point. The special fixtures for the cable tie tools are designed for the corresponding tool models. Due to the manifold cable tie pistol models with different shapes and dimensions, there exists no all-purpose fixture, which is suitable for all models. Basically, fixtures for all hand operated, electric or pneumatic cable tie pistols can be manufactured. In our standard delivery program, we consistently provide fixtures for cable tie tool models HellermannTyton MK 7, MK 7HT, MK 7P, MK9, MK 9HT, MK3SP, MK3PNSP, MK 6PN as well as Panduit GS2B, GS4H, GTS, PPTS. The tool sets are available for all MAV tester models up to a nominal load of 1000 N with parallel stroke of the load bar and basic GAMA tool receptions. We recommend the use of our Clip Gun Tester Model CGT.

Tool Set KBP-MK 9 on a Clip Gun Tester CGT

MAV PRÜFTECHNIK GmbH D - 12047 Berlin

Sanderstr. 28 * Telefon (030) 693 10 53 * Telefax (030) 693 10 69 * eMail: info@mav-germany.de

Tools for Cable Tie Tighten Pistols

- *Guideline for Testing the Tensile Strength of Cable Ties*
- *Guideline for Testing Cable Tie Tighten Pistols*

Testing Cable Ties: Determination of Minimum Tensile Strength

General Information:

The versatility of MAV testing units in combination with suitable clamping tools and fixtures provides flexible test systems for varying test applications in research, development, quality control, incoming inspection and industry. Herewith we present a special application using a small tester model CT 50 with 2 different tool sets for testing cable ties and cable tie application tools. Please gather some general information and technical data of the CT 50 Tester from our catalogue.

The clamping tools and test fixtures for determination of the minimum tensile strength of cable ties and for testing cable tie tighten pistols (cable tie tools) are available for all MAV force tester models up to a nominal load of 1000 N.

Minimum Tensile Strength of Cable Ties:

The minimum tensile strength is a critical selection criterion for cable ties. It expresses how much loading a cable tie can bear. The minimum tensile strength is the force up to which the cable tie bears up before the cable tie fail or before the material shows a plastic deformation. This minimum tensile strength is determined e.g. in accordance with the Military Specification and Standards of the USA. Test conditions being laid down precisely in MIL-S-23190E such as conditioning of the test pieces, construction of the test apparatus, application of the ties on a split test probe and test speed.

This minimum tensile strength is used to calculate the mass with which the tie can be loaded. This derives from the formula: $\boldsymbol{Force = Mass \cdot Acceleration\ due\ to\ gravity.}$ The unit for the force is [N] (1[N] = 1[kg· m/s²]).

The resulting formula is: $\boldsymbol{Mass = \frac{minimum\ tensile\ acceleration}{acceleration\ due\ to\ gravity}}$. The acceleration due to gravity is 9.81m/s². At a minimum tensile strength of 225 N: $\boldsymbol{Mass = \frac{225\ N}{9.81\ m/s^2}}$ the mass amounts to 22.9 kg.

The Test Procedure to Determine the Minimum Tensile Strength:

1. The cable tie is fixed onto a split mandrel test probe with suitable cable tie application so the cable tie head should be to the side of the split mandrel's slit.
2. For testing the cable tie, the mandrel is opened using the drive unit of the tester. When using a motorized tester, the mandrel can be opened at a defined speed.
3. The loading at which the cable tie fails or at which the material begins to show plastic deformation is determined. This force value is stated in Newton [N] (figure 3).

Test Fixture for Testing Cable Ties: Step Cone KBS

The Step Cone KBS is a split stepped mandrel for determination of the tensile strength of cable ties with different sizes. The cable tie is fixed onto a step of the mandrel with suitable diameter. Care should be taken to ensure that the cable tie head is on the side of the mandrel's slit.

The standard version of the KBS tool provides 5 graduations with diameters of 18, 38, 48, 68 and 86 mm. Additionally the diameters can be adapted by the length adjustment of the tester's load bar fixing.

Figure 1

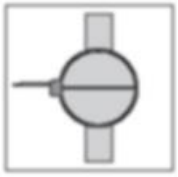


Figure 2

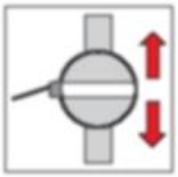
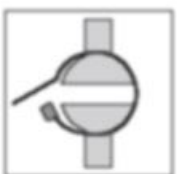
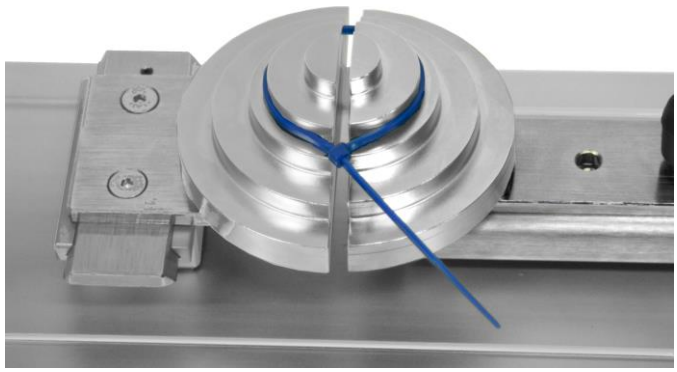


Figure 3





Tool Set KBS on a C50 Tester

MAV PRÜFTECHNIK GmbH D - 12047 Berlin

Sanderstr. 28 * Telefon (030) 693 10 53 * Telefax (030) 693 10 69 * eMail: info@mav-germany.de