



**GRANIT**  
QUALITY PARTS



# COMBINATION SPANNERS PRODUCT BENCHMARK

## CUSTOMER INFORMATION

### THE FOLLOWING WERE COMPARED: COMBINATION SPANNERS AF13 AND AF17

The GRANIT BLACK EDITION combination spanners with part numbers 7301364 (AF13) and 7301368 (AF17) were compared with comparable tools from two leading German premium tool manufacturers, hereinafter referred to as brand manufacturer H and brand manufacturer K.

#### COMPARISON OF FEATURES

- » Analysis of the material composition
- » Hardness test, according to ISO 1711-1
- » Checking torques, according to ISO 1711-1, plus maximum torques

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#### TEST RESULTS

##### MATERIAL ANALYSIS:

This test provides information about the materials used. Selecting the right materials is crucial to ensuring the resilience and durability of the combination spanners. The material analysis is carried out with an optical emission spectrometer.

##### RESULTS:

GRANIT uses the same high-quality materials as brand manufacturer H. The material is an alloyed heat-treated steel which is ideal for use in the tool sector. Brand manufacturer K also performs well here.

It was found that the material used by all three manufacturers is 31CrV2 with material identification number 1.2208.

##### CONCLUSION:

Given that the choice of material is of fundamental importance for hand tools, it is important not to skimp here. GRANIT takes the right approach and uses a top-quality material.

## HARDNESS TEST ACCORDING TO ISO 1711-1:

The standard ISO 1711-1 specifies that the spanners compared must have a minimum hardness of 42 HRC (Rockwell hardness). The tools are divided into samples to allow the hardness test to be carried out.

When cutting the samples, care is taken to ensure that the release agents are well cooled during cutting so that any heat influence occurring does not alter the material structure in such a way as to produce a falsified result.

### RESULTS:

The hardness test showed that all manufacturers meet the hardness values required by the standard. However, it is noticeable that the tools from GRANIT significantly exceed the requirements of the standard. Brand manufacturer H also exceeds the requirements of the standard, but not quite to the extent that GRANIT does. Brand manufacturer K only achieves the limit values.

Supplier	Minimum hardness	Determined hardness
Combination spanner / AF13 Brand manufacturer K	42 HRC	42 HRC
Combination spanner / AF13 GRANIT	42 HRC	46 HRC
Combination spanner / AF13 Brand manufacturer H	42 HRC	46 HRC
Combination spanner / AF17 Brand manufacturer K	42 HRC	42 HRC
Combination spanner / AF17 GRANIT	42 HRC	48 HRC
Combination spanner / AF17 Brand manufacturer H	42 HRC	43 HRC

## CHECKING TORQUES, ACCORDING TO ISO 1711-1, PLUS MAXIMUM TORQUES:

The standard specifies that combination spanners must be able to withstand defined torques without deforming or breaking. During the test, these torque requirements are checked first. The torque is then increased until significant tool deformation or breakage occurs. The maximum torques achieved are then compared.

### RESULTS:

The tools from GRANIT meet all requirements of the standard. The two brand manufacturers also achieve the values required by the standard. GRANIT is in the top group of test results which represent the maximum torques achieved shortly before the tools fail. GRANIT achieves maximum torques that are up to 20% higher than those of brand manufacturer K. Compared to brand manufacturer H, the result is balanced. With spanner size 13, brand manufacturer H is slightly stronger than GRANIT. With spanner size 17, GRANIT is the clear winner with a torque of 336 Nm.

## CONCLUSION:

- In principle, all tool brands can be considered sufficient, as they all comply with the standard hardness requirements.
- Ultimately, however, GRANIT is most convincing in this area as the highest hardness values guarantee a very long service life in respect of jaw or ring deformation during use.