

Title (en)  
FRICTION SPOT WELDING TOOL

Title (de)  
REIBPUNKTSCHWEIßWERKZEUG

Title (fr)  
OUTIL DE SOUDAGE PAR FRICTION

Publication  
**EP 2516097 A1 20121031 (DE)**

Application  
**EP 10796035 A 20101221**

Priority  
• EP 09015880 A 20091222  
• EP 2010070345 W 20101221  
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Abstract (en)  
[origin: EP2338632A1] The friction point welding tool for connecting flat workpiece (3) on position on which it overlaps, comprises a stamp (2) pressing against the workpiece, a pin (6) arranged to the stamp and/or a sleeve (5) concentrically connected to the pin. The sleeves are axially movable independent from one another in the stamp. The pin and/or the sleeve are set in rotation. The friction point welding tool is equipped with channels and cavities for cooling the pin, sleeve and the stamp with a cooling liquid that is directly sprayed to the pin and the sleeve. The friction point welding tool for connecting flat workpiece (3) on position on which it overlaps, comprises a stamp (2) pressing against the workpiece, a pin (6) arranged to the stamp and/or a sleeve (5) concentrically connected to the pin. The sleeves are axially movable independent from one another in the stamp. The pin and/or the sleeve are set in rotation. The friction point welding tool is equipped with channels and cavities for cooling the pin, sleeve and the stamp with a cooling liquid that is directly sprayed to the pin and the sleeve. Sealing devices are arranged at the tool side and workpiece side. The emerging of the cooling liquid between the pin, the sleeve and the stamp is strongly hindered by the sealing devices. The stamp consists of two concentric parts that are arranged between a cavity (8, 9, 10) and the passage channel for the cooling liquid. The sealing device comprises ring-sealings and comprises capillary sealing column between the pin and the sleeve and optionally between the stamp and the pressing stamp. Sealings are provided at machine side or in related to the workpiece side. Ring grooves or threads are provided at the circumference of the pin and/or the sleeve at the end of workpiece side. The workpiece-side end of the pin and/or the sleeve is surface-treated. The ends are coated with surface layers. A diamond-like carbon layer or zinc oxide layer or titanium aluminum nitride layer is applied in the area of the sealing on pin, sleeve and the stamp. The pin comprises bores for the supply or discharge of the cooling liquid. The pin, sleeve and/or the stamp or the parts consist of hard metal or non-metallic hard material such as ceramics. The pin is supported in an interval of workpiece side end with a push fit on the internal surface of the sleeve. The pin and/or the sleeve are movable in axial direction through increasing the cooling liquid pressure. The sealings are formed for passing a slight quantity of the cooling liquid. The welding tool comprises a counter holder with device for influencing the temperature. The welding tool is provided with device for increasing the power by which the pin and/or the sleeve are pressed against the workpiece and comprises weight for initiating short-term increasing power, and a tensionable mechanical or gas-pressure spring element for initiating short-term increasing power.

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Citation (search report)  
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