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TOOL FOR ASSEMBLING COMPONENTS WITH CORRUGATED BELLOWS

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TOOL FOR ASSEMBLING COMPONENTS WITH CORRUGATED BELLOWS

Technical Tasks:

Pipes are provided with corrugated bellows to compensate for assembly tolerances, expansions and decoupling of vibrations. This corrugated bellows can compensate for geometric deviations by deformation. He has stiffness, similar to a spring. If it is deformed, a force must be used.

This results in an additional requirement, while installing components with corrugated bellows and a geometrical deviation, e.g. gap between two flanges. The flanges must be brought into position and the assembly process must be carried out simultaneously.

Initial Situation:

The simultaneous execution of two requirements can lead to difficulties when mounting by a person. Errors occur during assembly or during the deformation of the bellbellows, e.g. damage to the component due to unfavorable force transmission. In addition to that, injuries through slipping are possible.

Furthermore, work capacity is tied up during assembly by two persons. In addition, components with high geometric deviation cannot be mounted because the forces required for manual assembly are too large.

Solution:

A tool takes the component with corrugated bellows at a suitable location. The force transmission does not lead to a damage of the component. The tool can initiate a high force with low operating force and perform large deformations of the corrugated bellows.

The tool automatically holds the component in the desired position, no second person is required.

Example installation exhaust manifold Audi V6TDI Evo2: The tool stretches the corrugated bellows and holds the component in position. The flanges are brought into the correct position by the tool, the gap between two flanges is closed. A worker can carry out the assembly work with both hands.

Figure 1: The tool consists of a lower fork, guide pin (press fit in the lower fork), upper fork (clearance fit to the guide pin), screw for stretching the tool.

Figure 2: The tool in use on corrugated bellows of an exhaust manifold (engine: Audi V6 TDI evo2). The tool engages the stable support rings off he decoupling element. With the help of a screw, the tool can be extended with little force. The thread prevents an independent squeezing of the tool.

Figure 1

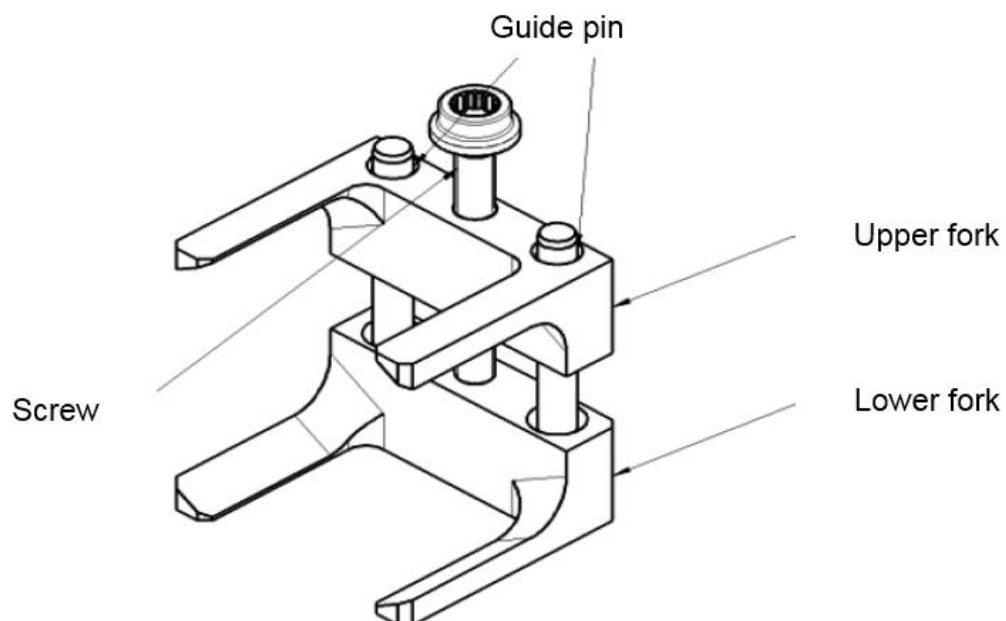


Figure 2



Advantages:

- No damage to the components during deformation of the Corrugated bellows
- Possibility of a large deformation of the corrugated bellows
- Independent holding of the component in assembly position (no additional worker required)
- Reduction of assembly errors during component assembly
- Reduction of the risk of injury during the assembly process