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PLASTIC CLIP FOR INTEGRATION ON HOLDER GEOMETRIES

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PLASTIC CLIP FOR INTEGRATION ON HOLDER GEOMETRIES MADE OF PLASTIC FOR EASY MOUNTING ON THREADED/COARSE THREADED BOLTS

Technical task:

The assembly of a conventional holder with screw or nut takes production time for setting and tightening. Furthermore, an additional tool (torque wrench) is required for the assembly process. However, some of these add-on parts do not require a fastening procedure using a defined tightening torque.

Initial situation:

Attachments such as holders, for example, are currently fastened by means of a screw in a threaded hole or nut on a threaded or coarse threaded bolt, see Figs. 1 and 2. However, many of these attachments do not require a fastening method using a defined tightening torque, as the forces to be transmitted are low.

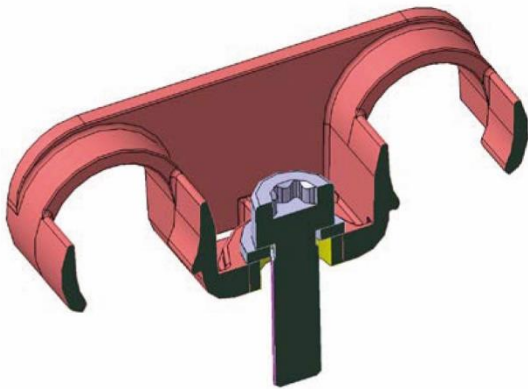


Figure 1: Assembly of a plastic holder using a washer and a screw

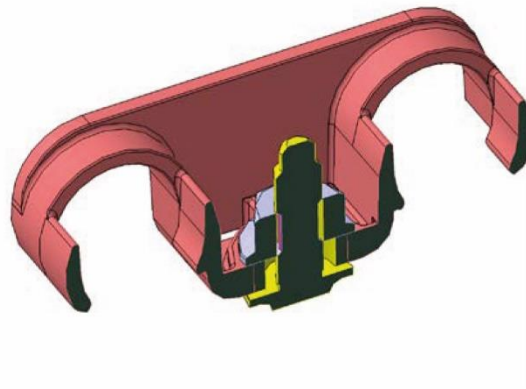


Figure 2: Mounting a plastic holder on a threaded bolt and a flange nut.

Solution:

A plastic clip for integration into already existing holder geometries made of plastic, which is pre-assembled on the holder instead of a metal sleeve and is simply pushed on via the threaded or coarse threaded bolt. Thus, no setting and tightening is necessary.

Advantage:

The described design offers the advantage that the plastic holder does not have to be fixed with an assembly tool. The worker can insert the holder over the threaded or coarse threaded bolt. Thus, only one working step is necessary. By means of the plastic clip for mounting on threaded/coarse threaded bolts the following advantages can be achieved during the assembly process:

1. screwing on the nut/bolt is replaced by a slip-on. This saves production time and the fitter has fewer components to handle in the assembly scope.
2. assembly step "Tightening of the nut/bolt by means of assembly tool/torque wrench" is not necessary
3. saving of various small parts and the assembly tool in the assembly

As shown in Figs. 1 and 2, the plastic clip for attachment to threaded/coarse threaded bolts saves the following small parts per attachment point:

- 1x metal bushing on the plastic holder
- 1x flange nut or screw with washer

In addition to improved assembly, the design offers the advantage of being able to react flexibly in product development without having to develop new components. For example, the holder with metal sleeve can still be installed if this is necessary for highly stressed areas and a tight screw connection using a defined torque is required, see Figure 3.

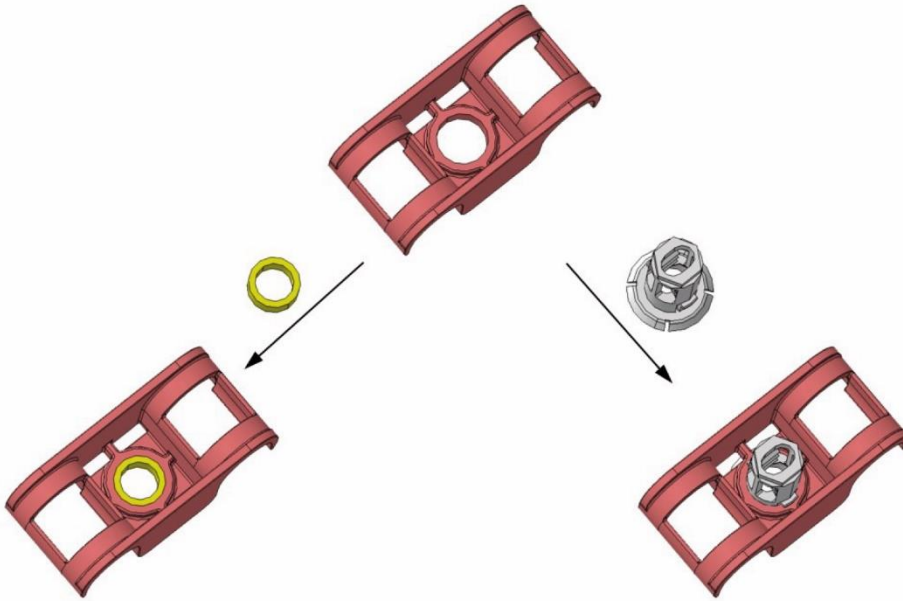


Figure 3: Possible variations of a plastic holder with metal sleeve or plastic clip

Technical implementation:

Figure 4 shows one of the possible ways to realize the component. The outer contour of the fastening element is cylindrical so that it can be mounted in a likewise cylindrical opening on the plastic holder. At least two locking lugs, which are integrated on the side of the plastic clip, engage at the upper edge of the cylindrical opening on the holder and thus prevent the fastening element from being lost during installation. Once the plastic clip is mounted on a threaded/coarse threaded bolt, the bolt itself prevents the locking hooks from bending inwards. Spring elements made of plastic inside the plastic clip, which extend horizontally to the vertical axis of the plastic clip, get caught in the thread flanks of the bolts during assembly and thus ensure a secure connection between the holder and the threaded bolt. The resilient elements are designed in such a way that pulling the holder or the plastic clip against the mounting direction causes self-locking. This means that the plastic clip cannot be removed without destroying it.

The geometry of the springy elements is suitable for mounting the plastic clip on the coarse threaded bolts CT5 and CT6 as well as on a threaded bolt M6. A slotted hole in the direction of the vertical axis allows for compensation of mounting tolerances. A hexagonal geometry is provided at the upper end of the plastic clip for disassembly. The material of the plastic clip consists of either PA6 or PA66.

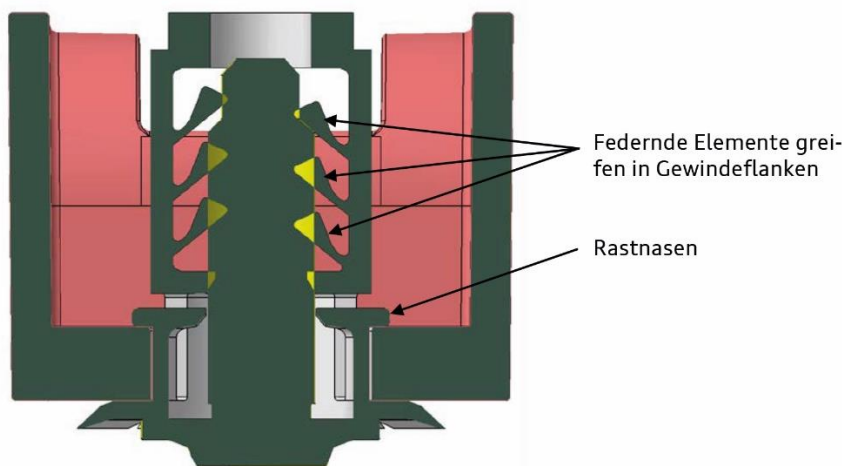


Figure 4: Sectional view of plastic clip with holder and threaded bolt

The following two illustrations show a variant of the plastic clip from the front view and top view.

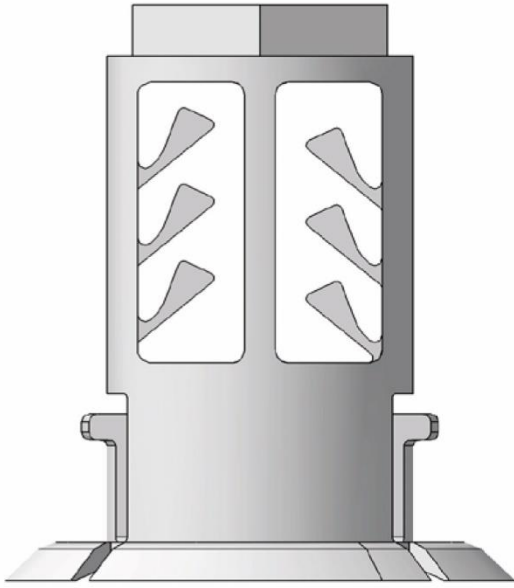


Figure 5: Plastic clip in front view

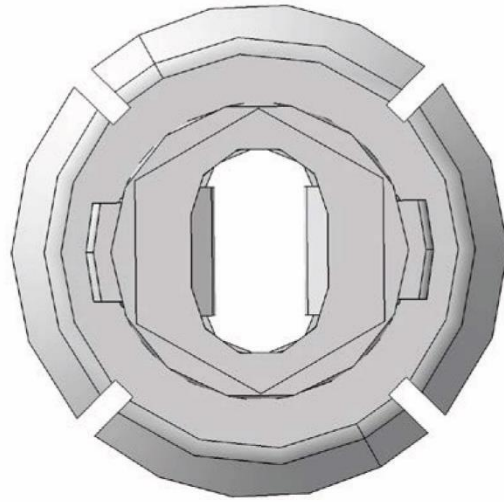


Figure 6: Top view of plastic clip