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## **BAYONET QUICK CONNECTION**

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Quick Connection (QC) – joining element of hoses and various pieces of industrial equipment. Quick Connection provides quick connection environment. QC types are divided into:

- 1) QC with easy access (no valves)
- 2) QC with a valve on one side (unilateral locking)
- 3) QC with valves on both sides (bilateral locking).

Quick couplings can be made from different materials (aluminum, steel, brass, titanium, bronze, various metal alloys, and various plastic compositions).

Quick couplings are widely applied.

Couplings are used in:

- connecting pneumatic tools (screw guns, air blowing guns, paint spray guns, grinders, drills, etc.)
- refueling process fluids (brake fluid, coolant)
- supply of hydraulic fluid.

Quick couplings for design are divided into:

- Spout lever-latch mechanisms;
- Nut Rotta;
- Nut Storz;
- Bayonet;
- Push-in connection;
- Dry compound;
- Rupture coupling.

In this paper we will examine the bayonet connection in detail.

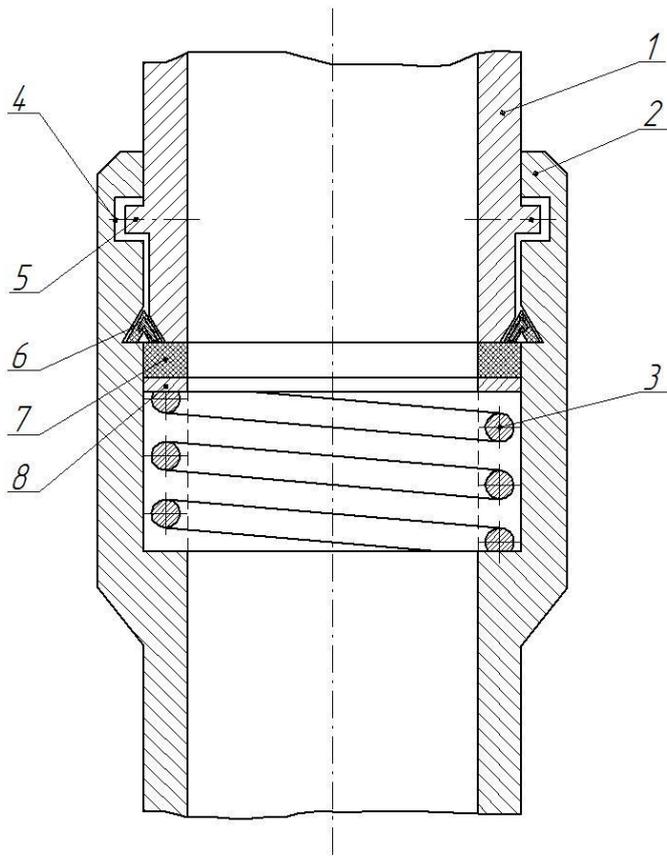
Bayonet connection - connection of parts quickly performed by axial displacement and rotation of one relative to another. Bayonet connection consists of two parts. There are different names for these parts. In most cases, the name applied «socket» and «plug», «coupling» and «adaptor», «mother» and «father», etc.

Coupling and adaptor usually consist of:

- case;
- locking mechanism;
- elastomeric packing.

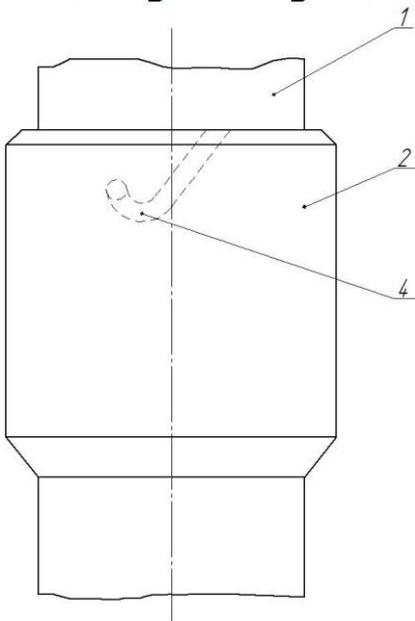
Principle of operation bayonet connection is diverse and depends on the type of coupling and adaptor.

Having considered the various designs options of quick bayonet coupling, we have designed a new connection (Fig. 1, 2).



*Fig. 1*

*1. Bow part; 2.Engagement part;  
3.Spring; 4.Slot; 5.Arm; 6.Ring elastic;  
7.Bearing; 8. Ring metal.*



*Fig. 2*

The invention relates to mechanical engineering and can be used to connect pipes and hoses of different diameters.

The compound works as follows. To assemble the bayonet connection bows part 1 is inserted into the engagement part 2 to the end, turning parts relative to each other, and the spring is compressed 3. The profile of each of the four slots 4 is in the form of oblique hook , so turning parts 1 bows accompanied her return translational motion, that is spring 3 is compressed and then somewhat weakened. Profile groove 4 is tilted to the compound accompanied by torsion parts for greater convenience. Secure fixation compound is only possible when each arm 5 reaches the end of each groove 4. Sealing is ensured by the fact that the elastic ring 6 is compressed axially and thus expands radially. Compression occurs by the force of the spring 3. Bearing 7 is designed to reduce the friction force when rotating parts 1 and 2. Reusable selected plain bearing made of polytetrafluoroethylene PTFE. Metal ring 8 allows you to distribute the load of the spring 3 to 7 bearing throughout its area.

The advantages of the invention are:

- Increased sealing;
- The possibility of inadvertent connection details;
- Simplicity of design allows you to place the assembly-disassembly as soon as possible;
- Assumes reuse.