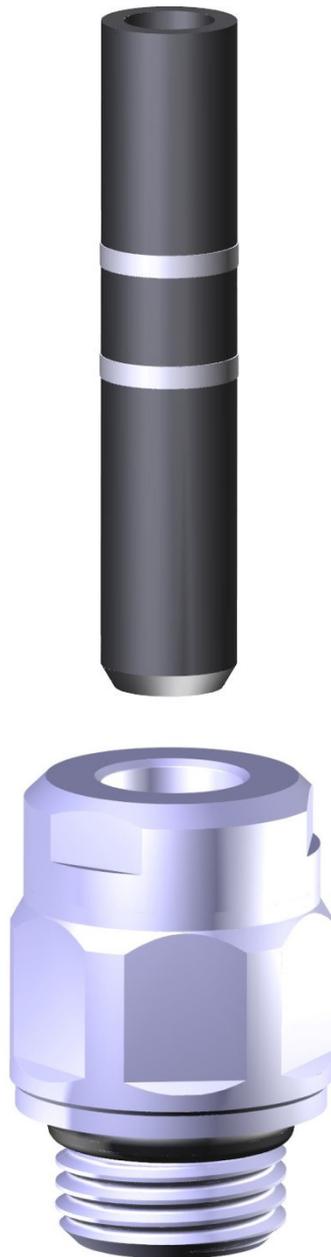


## Assembly instructions

### VOSS quick connect system 203<sup>N</sup>



The optimized classic

## A. Important notices

### Please observe before using the quick connect system

- ➔ VOSS quick connect system 203<sup>N</sup> is suitable for air suspensions in vehicles.
- ➔ Temperature range from -40 °C to +100 °C, 250 h at +120 °C
- ➔ Maximum operating pressure 22 bar, the maximum permissible operating pressure of the tube acc. to DIN 73378 has to be observed.
- ➔ When using the quick connect system in other applications, suggestions are welcome on request.

### Please observe during the assembly of the quick connect system

- ! The assembly of the quick connect system must be conducted by professional mechanics subject to these assembly instructions.
- ! Incorrectly assembled connections can result in leakage or failure of the system.
- ! VOSS quick connect system 203<sup>N</sup> may only be used with tubes made of materials described in chapter B.4. ("Polyamide tubes")

### System properties

- + VOSS quick connect system 203<sup>N</sup> permits rapid and safe connection of polyamide tubes to system components made of different materials, or as a connection in valves, manifolds and multi-connectors.
- + The only tool required for disconnection is a wrench (see wrench sizes in table 2 in section C.2.). In addition, the tube can be detached with a tool.
- + VOSS quick connect system 203<sup>N</sup> features a particularly space-saving construction, making it useful in tight installation spaces.
- + Tube markings and push-in depths for quick connect systems 203 and 203<sup>N</sup> are identical.

## B. Components and materials

### 1. Tube dimensions and nominal sizes

System components (predominantly made of aluminum) are available for tube dimensions as shown in table 1.

Tube dimensions		Nominal sizes (NS)	Thread sizes
4 x 1	4 x 0.85	4	M 8 x 1
6 x 1	6 x 1.5	6	M 10 x 1

Table 1: Tube dimensions VOSS quick connect system 203<sup>N</sup>



Fig. 1: VOSS quick connect system 203<sup>N</sup> in nominal sizes 4 and 6

## 2. Components of VOSS quick connect system 203<sup>N</sup>

The quick connector mainly consists of the male fitting (pos. 7+8 in fig. 2) and the sealing set (pos. 1-6 in fig. 2). The quick connector can be screwed directly into a profiled bore.

As a prerequisite for the use of the quick connector, the bore in the system component must be designed as a profiled bore (see section B.3.). The integral construction features a particularly space-saving design and is particularly suitable for direct connection of tubes to valves, manifolds and system components. The quick connector consists of the following parts:

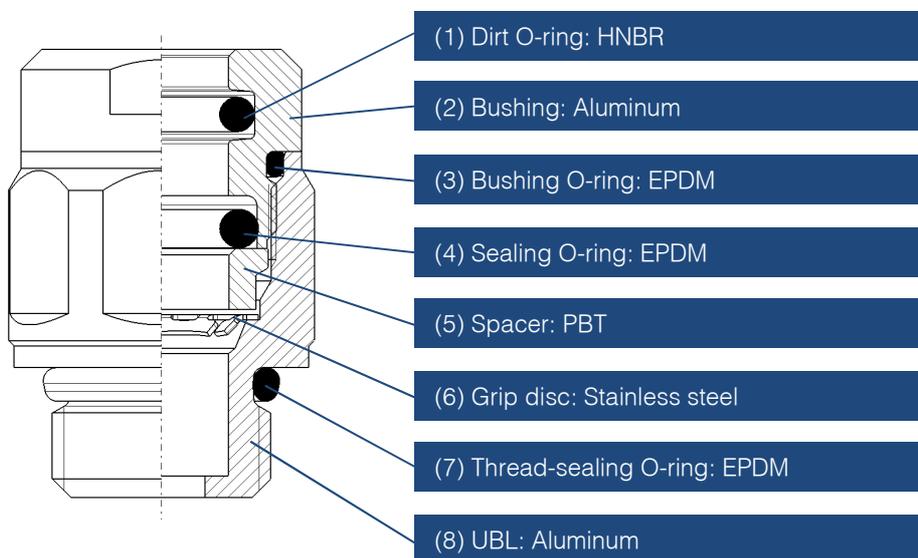


Fig. 2: Components of VOSS quick connect system 203<sup>N</sup>

### Functional description

- The polyamide tube is inserted into the quick connector up to the tube stop.
- The sealing of the inserted tube against the medium is made by an O-ring (pos. 4 in fig. 2).
- A second O-ring (pos. 1 in fig. 2) prevents the ingress of dirt from the environment.
- The grip disc (pos. 6 in fig. 2) holds the inserted tube in the connection.

## 3. Profiled bore for VOSS quick connect system 203<sup>N</sup>

Today the profiled bore is standard in automobile engineering. Its overall contour provides for the optimal thread sealing function of VOSS quick connect systems 203 and 203<sup>N</sup>.

Current standard profiled bore for VOSS quick connect system 203<sup>N</sup> is the version for metal housings, mechanically manufactured by form drilling (figs. 3-6).

On request we would gladly provide you with comprehensive design specifications for the profiled bore. As an alternative, a metal profiled bore of VOSS quick connect system 203<sup>N</sup> can be used.

### Profiled bore for VOSS quick connect system 203<sup>N</sup>

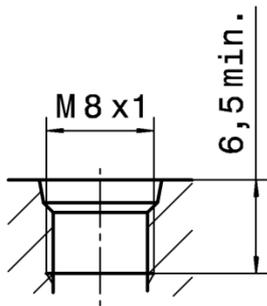


Fig. 3: Profiled bore for thread M 8 x 1 (203<sup>N</sup>)

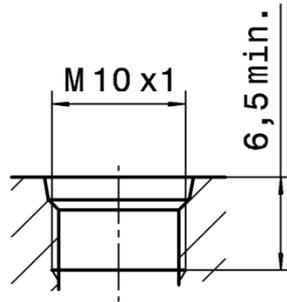


Fig. 4: Profiled bore for thread M 10 x 1 (203<sup>N</sup>)

### Profiled bore for VOSS quick connect systems 203 and 203<sup>N</sup>

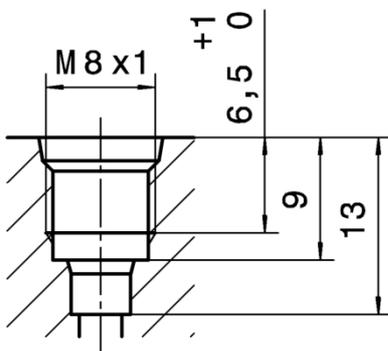


Fig. 5: Profiled bore for thread M 8 x 1 (203 und 203<sup>N</sup>)

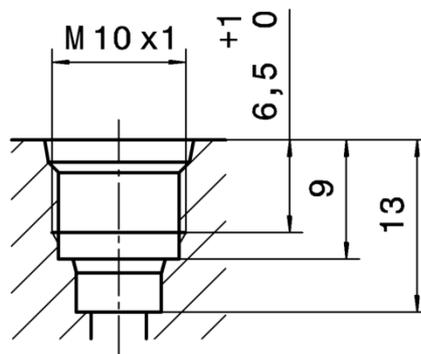


Fig. 6: Profiled bore for thread M 10 x 1 (203 und 203<sup>N</sup>)

## 4. Polyamide tubes

Polyamide tubes are in general use today in air suspension systems in vehicles. Polyamide tubes are not prone to corrosion, vibration and torsional stress in vehicle bodywork. The following factors are essential for their functional reliability:

-  Correct material and proper handling
-  Appropriate connection fittings
-  Correct assembly

Depending on the application, the following polyamide tubes may be applied to quick connect system 203<sup>M</sup>:

PA 11 – PHL

PA 12 – PHL

PA 11 – PHL Y

PA 12 – PHL Y

Other materials on request.

The properties of polyamide tubes and details of its use are defined in DIN 73 378 (Polyamide tubing for motor vehicles).

## C. Assembly instructions

### 1. Execution of the tube ends

- ❗ The tube must be cut at a right angle. We recommend using the VOSS cutting pliers for polyamide tubes.
- ❗ The surface of the push-in section of the tube must be undamaged and clean.
- ❗ Cutting edges must be free of burrs, so that connection sealings will not be damaged.

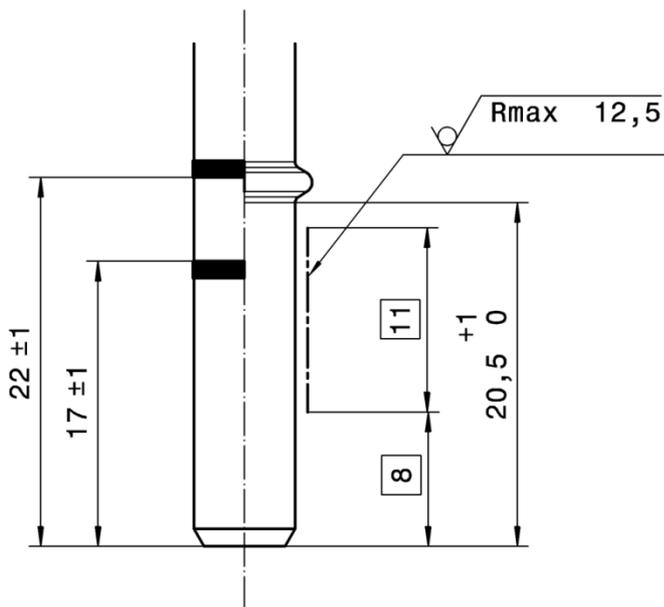


Fig. 7: Execution of tube ends

On request we would gladly provide you with an execution drawing for the tube ends.

## 2. Assembly of the quick connector

### Step 1

Check the connecting bore.

- ! To ensure functional reliability, the connecting bore must be cleaned thoroughly before assembly.



Fig. 8: Clean and correct connecting bores

### Step 2

Place the quick connector at right angles and centered.



Fig. 9: Positioning the quick connector at right angles

### Step 3

Screw in the quick connector manually.

- ! The first two thread pitches must be screwed centrally into the bore without applying pressure.

**Screw in at least two revolutions manually!**



Fig. 10: Screwing in the quick connector manually

## Step 4

Tighten the quick connector with a torque wrench.

- ⚠ Tightening torques for the corresponding sizes and materials can be taken from table 2.



Fig. 11: Tightening the quick connector with a torque wrench.

Thread sizes	Tightening torques in aluminum with a minimum tensile strength of 220 N/mm <sup>2</sup>		
	Nominal size NS	Across flats SW	Tightening torque Nm
M 8 x 1	4	11	4+1 Nm
M 10 x 1	6	13	4+1 Nm

Table 2: Tightening torques in aluminum connector



Fig. 12: Tightened quick connector

- ➡ The assembly of the quick connector can also be carried out by applying an appropriate automated screwing process.

## 3. Fitting the polyamide tube into the quick connector

### Step 1

Push the polyamide tube without tools into the quick connector to the tube stop.



Fig. 13: Polyamide tube with push-in depth markings

- ! Mind the push-in depth when pushing the polyamide tube into the quick connector. See fig. 7 regarding push-in depth, tube markings and tube bead.
- ! After the complete push-in process the lower marking must not be visible.

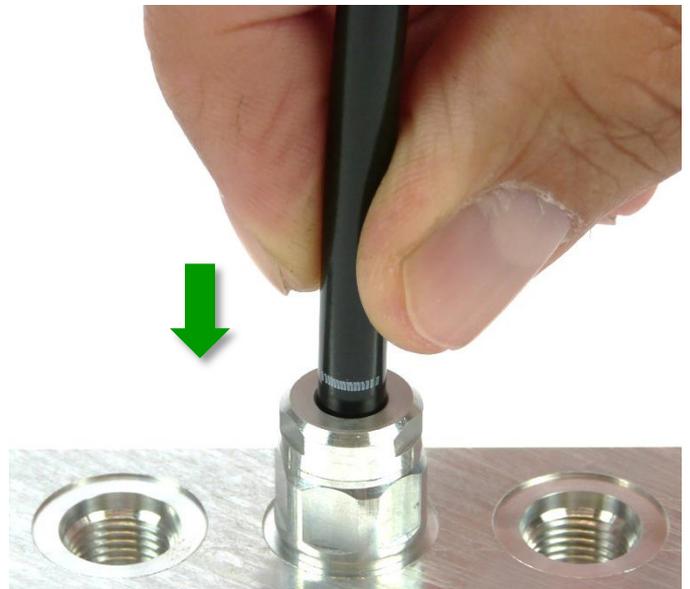


Fig. 14: Pushing-in the polyamide tube to the tube stop

## 4. Replacing a system component or a connection

The quick connector is screwed out of the system component or the connection. The quick connector remains on the polyamide tube. Before reassembly the individual parts should be cleaned, as required (see section C.2.).



Before disconnecting, the line must be free of pressure.



Fig. 15: Disconnected tube with quick connector

## 5. Replacing a defective system line

### Step 1

Screw the quick connector with system line out of the component or connection.



Fig. 16: Unscrewed quick connector with polyamide tube

### Step 2

Open the quick connector. Screw the sealing set out of the male fitting with a tool.



Fig. 17: Screwing the sealing set out of the male fitting



Fig. 18: Unscrewed sealing set with polyamide tube

## Step 3

Cut the grip disc with a tool at one position.



Fig. 19: Cutting the grip disc

## Step 4

Cut the grip disc with a tool at the opposite position.



Fig. 20: Cutting the grip disc at the opposite position

## Step 5

Detach spacer and grip disc.



Fig. 21: Detached spacer and cut grip disc

## Step 6

Pull the bushing off the tube.



Fig. 22: Bushing pulled off the tube

For reassembly, always a new quick connector has to be used. All detached parts must be disposed of.

## Step 7

Screw a new quick connector into the system component or the connection, as specified in section C.2. and push-in a new system line as described in section C.3.

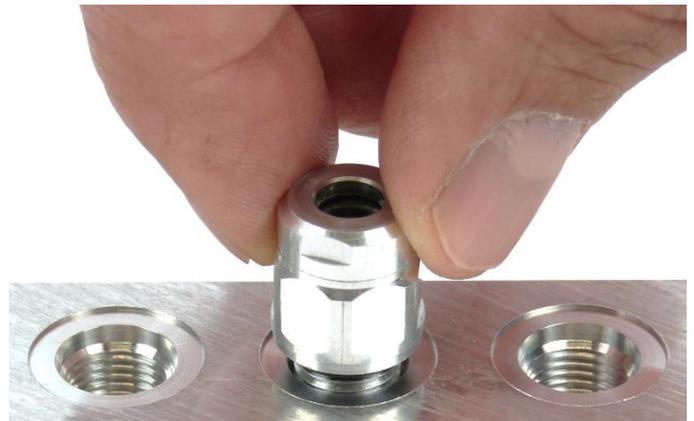


Fig. 23: Screwing in a new quick connector

## 6. Protective plugs

The quick connector can be protected by a protective plug. It can be purchased separately from VOSS.



In case of repeated assembly/disassembly it should be ensured that dirt particles cannot get into the quick connector by grease sticking on the protective plug.



Fig. 24: Protective plugs, NS 4 (white), NS 6 (black)

## 7. Leak test

If necessary, a leak or function test of the system component can be carried out by using a male gauge as specified in the schematic diagram (fig. 25). On request we will gladly supply you with implementing regulations for male gauges.

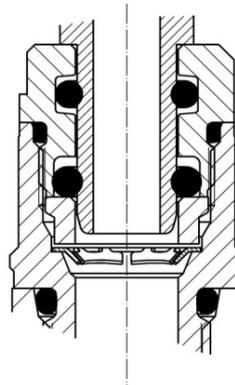


Fig. 25: Schematic diagram for a male gauge

## Customer service

Contact VOSS for questions concerning quick connectors, nylon tubes, line routing, etc.

## Property rights

All rights reserved in regard to patents, registered designs, and trademarks. Drawings of the VOSS quick connect system 203<sup>N</sup> may not be reproduced or made accessible to third parties without our prior consent.

Patents pending:

DE 10 2016 101 533.4

DE 10 2015 122 766.5

WO 2017/129667 A1

WO 2017/108730 A1

Technical modifications and errors excepted.

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