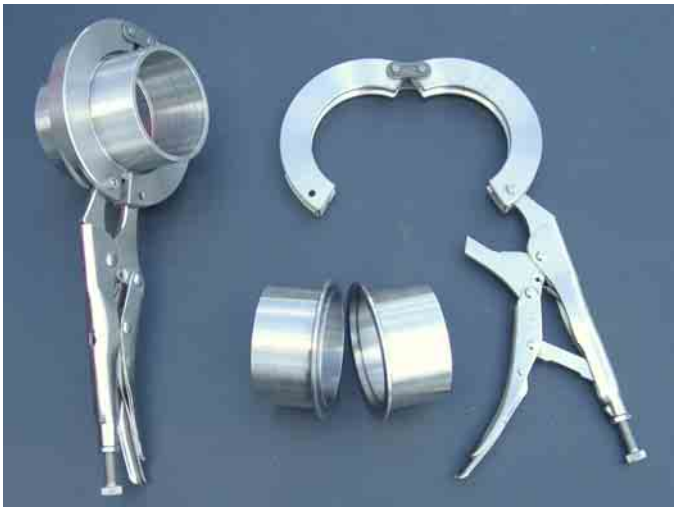
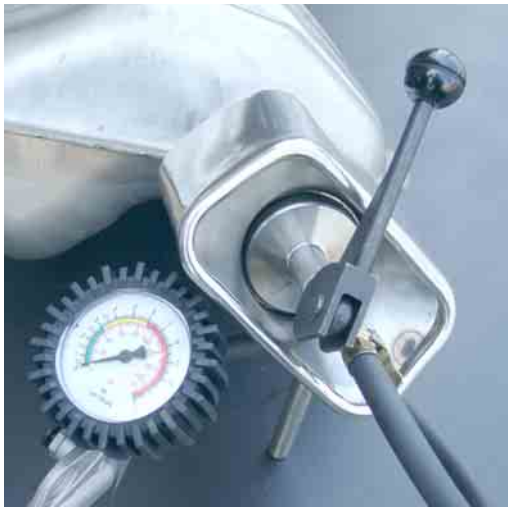
S. Bleyer GmbH

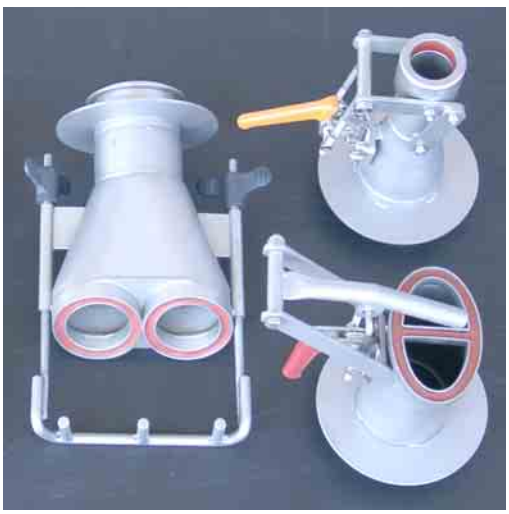
Problem Lösungen

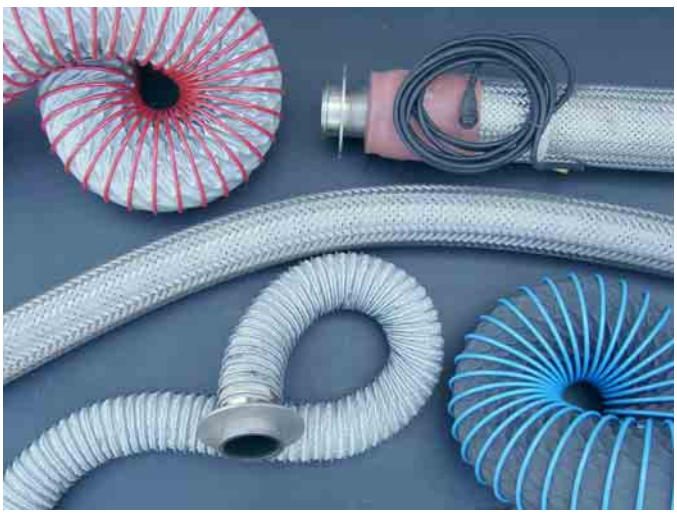
und Funktionsoptimierung
in Metall

Exhaust Gas Engineering









The content of this release was carefully checked for correctness. Nevertheless, errors cannot be completely excluded. Please inform S. Bleyer GmbH if you find any errors.

The right to make technical modifications at any time without notification is reserved.

The target group is users with technical knowledge in the area of motor vehicle test engineering.

Please order the current version of this documentation at any time at S. Bleyer GmbH.

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Locking Pliers and Pipe Fittings

The locking pliers developed by Bleyer are used to clamp together two pipe fittings, with flange and without flange. The pipe fittings are located on the exhaust gas removal adapter, at both ends of the exhaust gas removal hose (see page 5) and on the adapter for under-floor piping (see page 6).

With the locking pliers the exhaust gas removal adapter can be connected to the exhaust gas removal hose and the exhaust gas removal hose can be connected to the under-floor adapter quickly and easily.

The pipe fittings cannot slip against one another because they are of connector / socket design and intermesh. A graphite seal allows closure of the pipe fitting connection which is both gas-tight and resistant to high temperatures.

Constantly available diameters of pipe fittings: 52 mm, 64 mm and 72 mm. Bleyer produces other diameters on request.

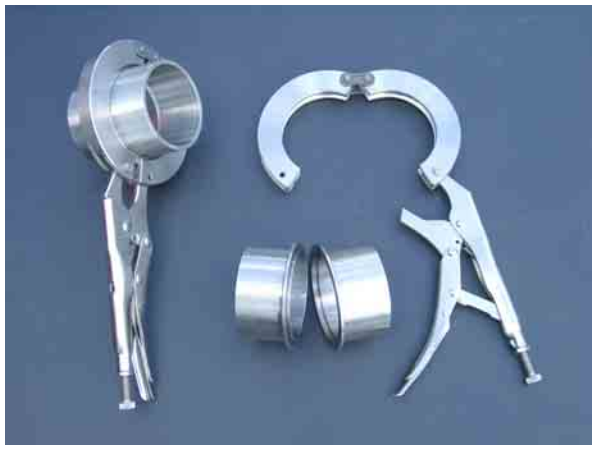
The clamping tool consists of lockable pliers which clamp together two crescent-shaped jaws, which in turn press together the joins of the pipe fittings. The connection made in this way between two pipe fittings has no play on account of the shape of the crescent-shaped jaws.

The pipe fittings can be connected or released within a matter of seconds because handling the locking pliers is easy. Especially after emission measurement, when the entire apparatus is still very hot owing to high exhaust gas temperatures, the locked pliers can be detached very easily, quickly and without any risk of injury, using a lever which is integrated into the lower grip.

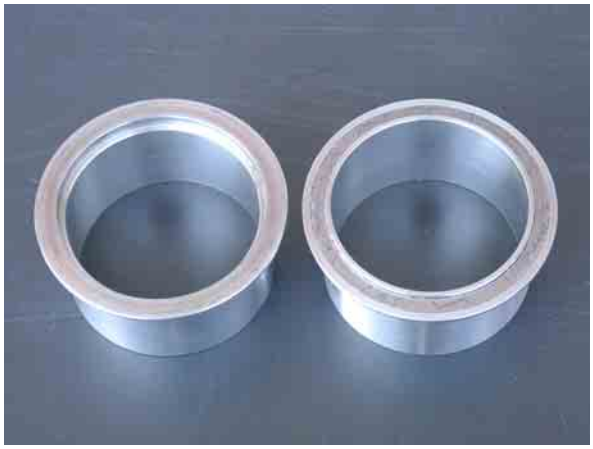
This shortens set-up time for emission measurement and exhaust gas removal considerably.

The pressure applied by the pliers can be accurately adjusted with a set screw so a firm join of the crescent-shaped jaws / pipe fittings can always be guaranteed.

The pipe fittings are made of stainless steel. The materials used and the workmanship on the entire locking pliers ensure a high level of robustness and durability.



The closed locking pliers (left) hold two pipe fittings together. The open pliers and pipe fittings are on the right.



The pipe fittings are of connector / socket design and the graphite seal is resistant to high temperatures.

The pipe fittings are clamped to the Teflon hoses and large metal rings provide impact protection for the flange.

Exhaust Gas Removal Adapter

The exhaust gas removal adapter makes a gas-tight connection between the exhaust and the exhaust gas removal hose, via which the exhaust gas is removed through the flue or is fed to an emission measuring system.

S. Bleyer GmbH has so far developed adapters for vehicle models produced by Adam Opel AG, Audi AG, DaimlerChrysler AG and Ford AG, which are matched to the respective exhaust size and vehicle contours. For different makes of exhaust customised versions can also be designed and manufactured.

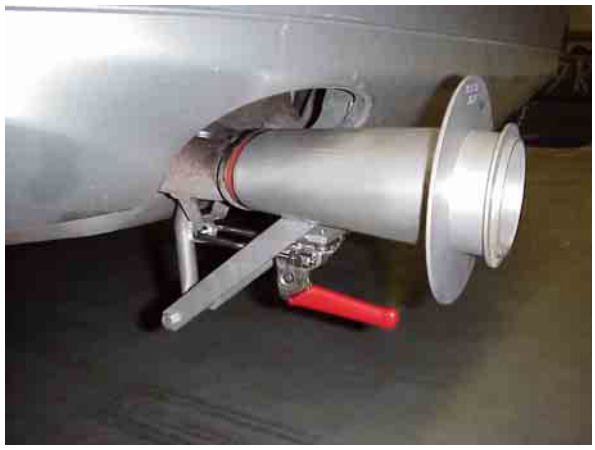
The exhaust gas removal adapters from Bleyer are made of stainless steel. One of their special features is their extremely easy handling: With just a few simple actions the adapter is attached to the exhaust using one or two levers to make a gas-tight connection so there are no cumbersome screw clips or slip-on hoses and set-up takes just a few seconds.

After conditioning or emission measurement, especially if the adapter is heated up by the hot exhaust gases, it can be detached from the exhaust simply and quickly. The grip made of heat-resistant plastic acts as insulation so fire injuries are very easy to avoid.

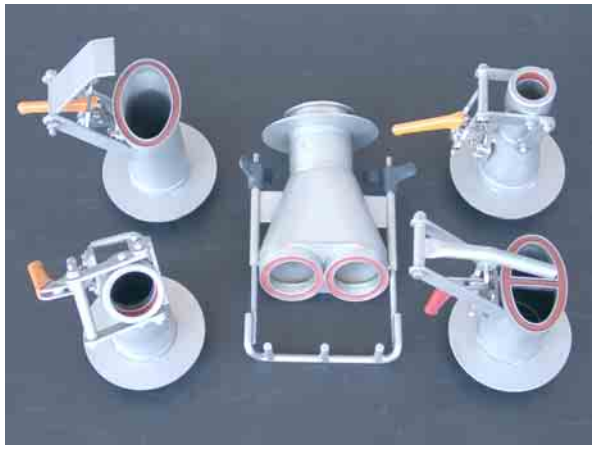
Connection to the exhaust gas removal hose is conducted by attaching the fitting of the adapter to that of the hose using the locking pliers (see pages 3 and 5), making a gas-tight connection. Impact protection for the flange of the fitting is provided by a large metal ring which is welded to the adapter.

For double-flow exhaust systems S. Bleyer GmbH has developed so-called “antlers”, which are coupled to the two exhausts by means of two exhaust gas removal adapters. It takes the exhaust gases via expansion joints to a Y-piece, to which an exhaust gas removal hose is also connected for further removal of the exhaust gases. The spacing of the two exhaust fittings is variable so it can be adapted to various vehicles. All connections can be made quickly with locking pliers (see page 3).

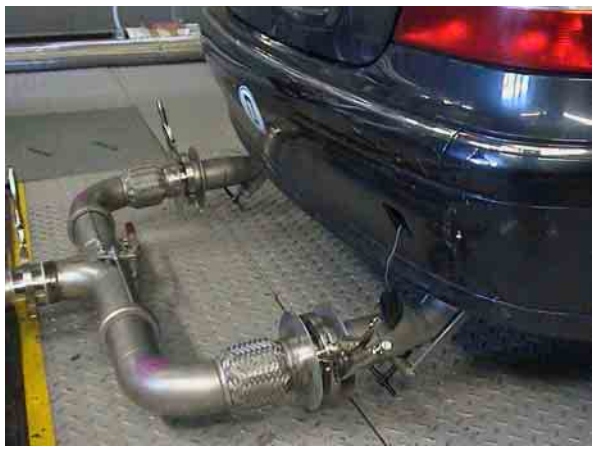
The exhaust gas removal adapters are certification-compliant so they can be used for all emission measurements.



The exhaust gas removal adapter is attached to the exhaust pipe with the red lever, making a gas-tight connection.



Different exhaust cross-sections call for creative designs. The focus is always on good operability.



For cars with a double-flow exhaust system the Bleyer staff designed these “antlers”, which have a variable width.

Exhaust Gas Removal Hoses with Pipe Fittings

The exhaust gas removal hose bridges the distance between the exhaust gas removal adapter on the vehicle and the interface for further exhaust gas treatment.

Bleyer supplies flexible hoses with outer metal fabric made of stainless steel (heated and unheated) as well as hoses with multi-layer plastic fabric with an internal Teflon layer resistant to high temperatures and an outer steel coil. The steel coil provides kink protection for the hose and also ensures enormous flexibility.

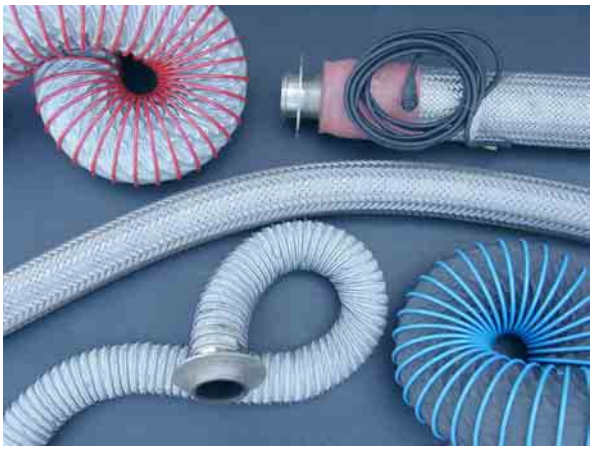
The hoses are available in all lengths. The outside diameter is 100 mm for the unheated metal hose and 130 mm for the heated metal hose. The Teflon hose has an outside diameter of 100 mm.

In order to be able to use the locking pliers to connect the hose to the exhaust gas removal adapter at one end (see page 4) and to the adapter of the under-floor piping at the other (see page 6) the matching pipe fittings (with flange and without flange) are welded by Bleyer to the metal hose or permanently clamped to the plastic hose with a clip. In this way the hose serves as an extension. Several hoses can also be combined in order to bridge lengthy distances in the test chamber. This provides very flexible handling for various test environments.

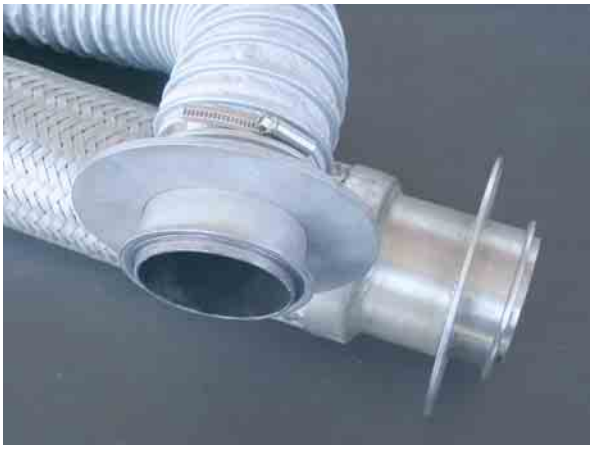
The constantly available pipe fittings have a nominal diameter of 52 mm, 64 mm or 72 mm. Different diameters are available at any time according to customers' specifications.

Impact protection for the flange takes the form of a large metal ring which is welded to the fitting. Consequently the risk of pipe fittings being damaged in transit or storage is reduced. The metal hoses are much more robust than the Teflon hoses – on the other hand the plastic hoses are much more flexible, lighter and less expensive.

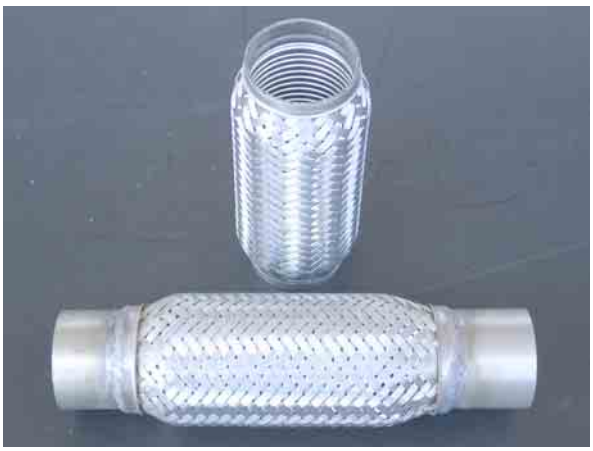
Expansion joints and metal bellows based on flexible hoses are elastic and so they absorb movements, stresses and strains within rigid piping. There are no pressure losses. Leaks due to misalignment or axial offset are also avoided. Bleyer supplies the expansion joints in any length, with pipe fittings if required.



Different types: Stainless steel hoses, heated and unheated, as well as Teflon hoses with steel coil.



The pipe fitting is welded to a metal hose or clamped to a Teflon hose with a clip. Both connections are gas-tight.



Flexible hose expansion joints with stainless steel fabric reduce axial, angular and lateral vibrations.

Over-floor and Under-floor Piping

Before emission measurement the engine is first warmed up (conditioned) and the resulting exhaust gases must be removed from the test chamber through the flue. For subsequent emission measurement the exhaust gases are fed into different measuring systems, depending on the type of engine (petrol or diesel).

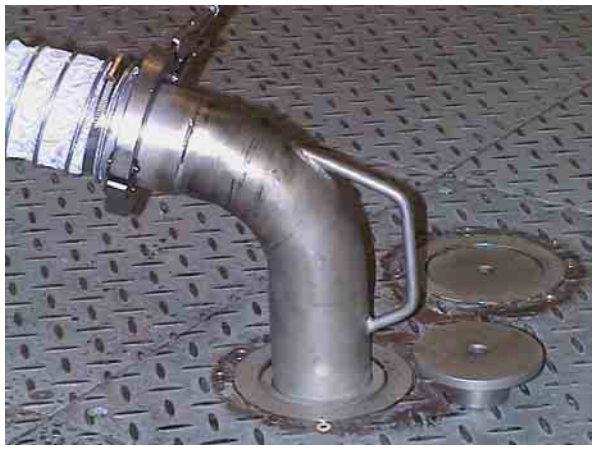
For this purpose S. Bleyer GmbH installs three sockets made of stainless steel in the floor of the test chamber for the conditioning exhaust gases, petrol engine exhaust gases and diesel exhaust gases. The exhaust gas removal hose is coupled to a special-purpose under-floor adapter using locking pliers and a pipe fitting, making a gas-tight connection. The under-floor adapter is plugged into one of the three rubber-sealed sockets. Bleyer can also supply this under-floor adapter as a Y-piece for vehicles with a double-flow exhaust system – it is also made of stainless steel.

If the rubber seal of the socket is damaged or becomes brittle, it can very easily be replaced by unscrewing the rose surrounding the socket. The sockets make connections with the under-floor stainless-steel pipes to the exhaust gas flue or to the emission measuring systems. Bleyer lays the under-floor piping with the angle of inclination necessary for emission measurement.

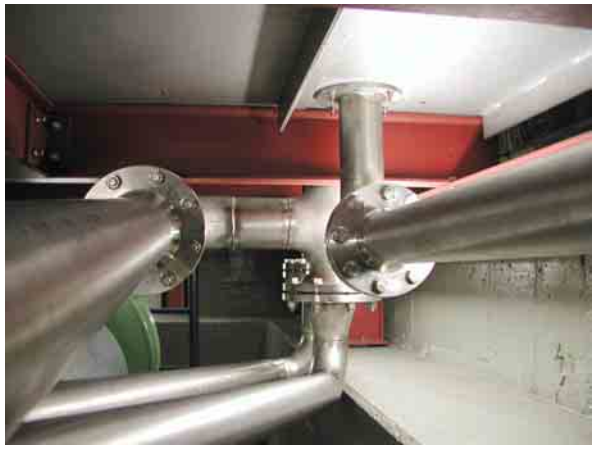
The advantage of this under-floor piping is that test chamber personnel do not have to take the exhaust gas removal hose right across the test chamber, thus avoiding the risk of stumbling.

In addition to under-floor piping S. Bleyer GmbH also installs over-floor piping systems and customised systems based on customers' specifications, e.g. continuation of exhaust gas pipes from the dynamometer pit to the emission measuring system, to the exhaust gas filter and to the flue.

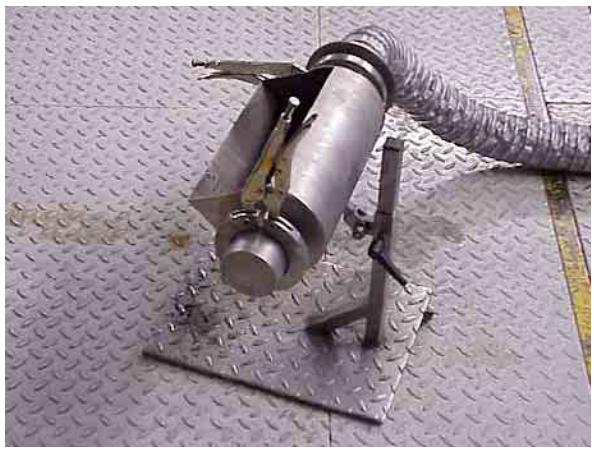
The exhaust gas collecting funnel has been specially developed by S. Bleyer GmbH for conditioning purposes: the collecting funnel is placed at the exhaust. A Teflon hose is connected to one end which leads to the flue of the test chamber via the under-floor piping. In this way the exhaust gas is extracted during the conditioning process.



Adapter which connects the exhaust gas removal hose to the under-floor piping via the socket.



Under-floor piping: From the sockets in the floor of the dynamometer Bleyer has laid pipes to the emission measuring systems.



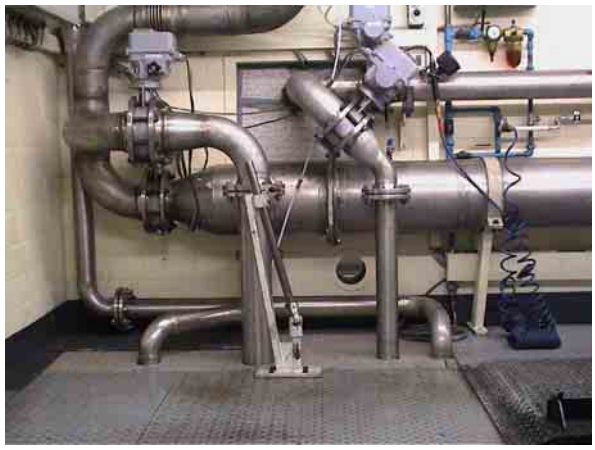
The collecting funnel is placed at the exhaust when a vehicle is being conditioned in order to extract the exhaust gases.

Plant Construction

S. Bleyer GmbH produces and installs the exhaust removal systems and associated instruments for quality control test beds and certification test beds, for example.

This includes CVS piping and all components associated with the dilution tunnel of engine test beds and roller dynamometers.

In cooperation with the operator, S. Bleyer GmbH manages the entire plant engineering project, procures and/or produces all the necessary parts, and performs all installation work in a very reliable way.



Sealing Plugs

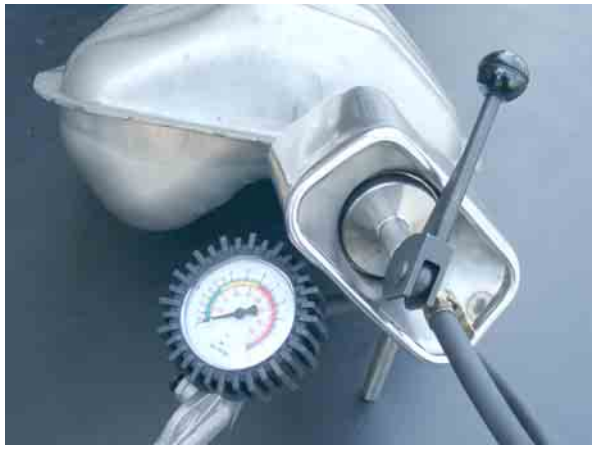
The sealing plugs developed by S. Bleyer GmbH are used to check the exhaust system of a vehicle for leaks. For this purpose the sealing plug is inserted into the exhaust with the engine switched off and the lever is shifted. As a result a wide rubber ring expands and closes off the exhaust pipe making it gas-tight. Next to the lever there is a valve which passes through the sealing plug. Now compressed air is admitted to the exhaust system from outside via this valve in order to check whether all the connections in the exhaust system are gas-tight.

The expanded rubber seal also bridges production tolerances in the diameter of the exhaust pipe. Via a thread inside the lever the degree of expansion can be adjusted very finely.

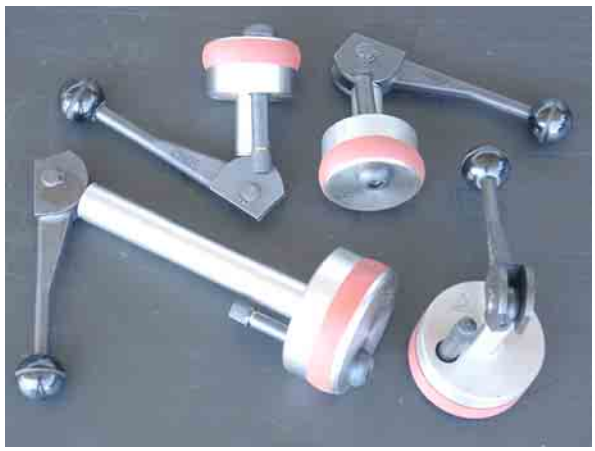
The sealing plug withstands a pressure of at least 0.5 bar provided it is properly attached to the end of the exhaust pipe.

All required diameters of sealing plugs are available according to customers' requirements. The insertion depth (distance between lever suspension and plug) can also be variable as agreed. Consequently, it is possible, for example, for the plug to be inserted a short distance into the exhaust pipe and only then tightened up.

The plug is made of stainless steel. With the lever, handling the sealing plug is very easy so set-up time for measurement is extremely short.



A sealing plug is fitted inside an exhaust and through the valve pressure is admitted to the system via a tyre inflator.



Sealing plug using various diameters and insertion depths. When the lever is shifted, the red rubber seal expands.

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