

Operating Instruction Conical Plug

1 bar working pressure

Attention! Please study this operating instruction carefully before the work!



Table of Contents

Page

1 Definition of terms	3
2 Important safety instructions	4
3 Steps before work	5-7
3.1 General steps	5
3.2 Safeguard	6
3.3 State control of the application area	6
3.4 Selection of the correct size	6
3.5 State control of the conical plug	6-7
4 Installation and filling	7-11
4.1 Installation	7
4.2 Filling	8-10
4.3 Additional bracing of a form-fitting extension	11
5 Working inside the pipe or manhole	12
6 Emptying and removing after work	12-14
7 Leak Tests with Conical Plug	14
8 Tests, repairs and storage	14-16
8.1 General comments	14
8.2 Cleanings and tests after use	14-15
8.3 Annual tests	15
8.4 5-years tests	15
8.5 Documentation of the tests	16
8.6 Repairs	16
8.7 Storage	16
9 Test record book	17
10 Delivery program	18-19

1 Definition of terms

The below definitions are designed to help you understand some of the terms used in the operating instructions:

A) Conical Plug:

A non-ductile shut off device, which can be filled with air or liquid, without the possibility of passing through water or air.

B) Conical Plug with bypass :

A non-ductile shut off device, which can be filled with air or liquid, with the additional possibility of passing through water or air.

C) Special plug:

A foam rubber ring surrounding the Conical Plug. It is necessary for tightness tests to close any folds 100% airtight. Also required for the use in special profiles.

D) Working pressure = operating pressure:

The specified internal pressure with which the Conical Plugs have to be filled and operated.

E) Back pressure = counter pressure:

The accumulated hydrostatic water pressure or air pressure behind / between the Conical Plug. 1 m water column corresponds to a pressure of approx. 0.1 bar hydrostatic water pressure.

F) Safety Fitting = filling fitting:

Control unit for filling and pressure control of the Conical Plug including manometer and safety valve.

G) Filling Hose = air hose

Air hose between safety fitting and Conical Plug, for filling the Conical Plug.

H) Pre pressure

The pressure from the air source, between air source and safety fitting.

i) Expert

A qualified expert is a person, who has sufficient knowledge in the field of shut off devices gained through professional training and experience and an Expert is familiar with the relevant state health and safety regulations, accident prevention regulations and generally accepted rules of technology (eg BG rules, DIN and EN standards, technical rules of other member states of the EU or other Contracting States to the Agreement on the European Economic Area). And who is sufficiently familiar with it to be able to assess the safe working condition of pneumatic shut off devices.

2 Important safety instructions

Conical Plugs are pressure vessels, all relevant legal, labor or safety regulations must be observed.

Pressure vessels can be dangerous due to possible bursting. The instructions in this manual must be carefully read and observed.

According to current national rules and regulations, the operator of pneumatic shut-off devices, such as Conical Plugs, must carry out a risk assessment before use! (Further national regulations must be observed!)

Conical Plugs can be used, without an additional bracing without a risk, if:

- The operator can be 100% sure, that the maximum operating limits (maximum working pressure in the cushion: 1 bar, maximum backpressure behind the cushion: 0.5 bar (5 m water column) or 0, 2 bar air or vacuum) of the Conical Plug can not be exceeded.
- There is the opportunity to permanently check the working pressure in the Conical Plug and, if necessary, to regulate it.
- Filling happens only via the original filling system, filling with third-party products or completely without a safety system is extremely dangerous and is not permitted!
- The back pressure behind the Conical Plug has completely been reduced before removing the cushion.

Furthermore, the following points have to be considered:

- Always use deep enough, front flush and parallel to the axis in the clean pipe up to max. 60°C. (140°F)
- Always protect the cushion against damages caused by sharp corners, spikes, sharp edges, etc.!
- Protect the Conical Plug against direct sunlight and solar radiation.
- The installation site has to be controlled before the work and must be 100% safe!
- Completely deflate the cushion before removal.
- Check the equipment before and after each use. (Every 5 years, inspection should be carried out by PlugCo)
- Do not use any damaged Conical Plugs and accessories! A repair must be carried out only by agreement with the manufacturer. Improperly repaired Conical Plugs must not be used under any circumstances.

The detailed operation of our Conical Plugs, as well as other, special danger statements, can be found on the following pages, which must be read carefully before use.

Important information: the operator himself is responsible for the correct and safe use of the Conical Plugs.

3 Steps before work

3.1 General steps

- All work with Conical Plugs has to be conducted by qualified supervisors. They must ensure the correct execution of the work.
- All work must be supervised by authorized persons.
- A risk assessment must be carried out before work commences. All dangers must be determined, assessed and documented. Due to the uncontrollable failure of pipe shut-off devices such as Conical Plugs, the following dangers may arise for persons in the danger area:
 - Workers can be hit by the shut-off device.
 - Drowning when the work area is flooded.
 - Suffocation / poisoning due to the sudden release of gases from the closed pipe.
 - Burst and / or pressure trauma, due to the bursting of a Conical Plug.
- Protective measures and possible dangers must be stipulated in a separate operating instruction document by the manager or supervisor and briefed to all workers.
- Adequate ventilation must be provided for all work in the pipe or manhole or in other enclosed areas. The oxygen content must not fall below 20.9% by volume.
- The permitted concentrations of hazardous substances in the air must not be exceeded.
- There must be no explosive atmosphere.
- At all times suitable measuring instruments (Gas warning devices) with optical and acoustic warning option must be used.
- The Manager or responsible supervisor must always ensure, that the following Person Protective Equipment and rescue items are available to the workers
 - Head protection (helmet)
 - Foot protection (safety shoes)
 - Hand protection (protective gloves)
 - Recovery / rescue harness
 - Gas warning device
 - Other necessary protective equipment, e.g. Hand lights, Eye Protection, Skin Protection, Self-Retractors, etc.

3.2 Safeguard

- When working in pipelines, manholes, or other enclosed areas with a depth of more than 1 m, a second person (safeguard) must be present outside the enclosed area.
- The working person in the pipeline or manhole should be in a constant line of sight with the safeguard (optimum). The persons have to be able to communicate by calling (minimum).
- Always ensure, that rescue from a dangerous situation can be guaranteed without delay. Appropriate equipment for rescue from deeper manholes or enclosed spaces, e.g. abseiling- and rescue lifting devices, tripod and rescue harnesses, or similar must be available.

3.3 State control of the application area

- Prior to the installation of the Conical Plugs, all pipelines in the immediate area of application must be examined for obvious defects.
- The pipelines and manholes must be sufficiently stable, flat, clean and free from sharp objects, sharp edges or other deposits which might damage the Conical Plug in the installation area.
- Larger dirt deposits in the installation area, which make a visible examination of the installation area more difficult, have to be removed (e.g. by the help of a suction truck).

3.4 Selection of the correct size

- All Conical Plugs are designed for a certain diameter range. Note that the pipe diameter to be shut off is always within the range of this diameter range.
- Conical Plugs can also be used in non-round special profiles, e.g. In egg profiles, dragon profiles, mouth profiles, rectangular profiles, etc., please check with the manufacturer or with authorized partners before using in non-round special profiles.

3.5 State control of the Conical Plugs

- Prior to each use, the Conical Plugs have to be inspected for obvious defects, e.g. Incisions, cracks, or similar damages.
- All safety fittings and filling hoses have to be checked for functionality and possible damage before use.

- If the proper condition of the Conical Plugs is not guaranteed during visible inspection, a tightness test of the Conical Plugs must be done: Fill the Conical Plug outside a pipe with an operating pressure of 200 mbar and test it for 15 minutes. The max allowed pressure loss, or pressure increase is 1-2%.
- In case of any defects, damage or other uncertainties, the work must not be taken up or must be stopped immediately.
- Possible damaged Conical Plugs, safety fittings and filling hoses have to be identified, marked and sorted out for repair.
- Repairs are to be carried out only after consultation with the manufacturer or any authorized partner. (See point 8.6 Repairs).

4 Installation and filling

4.1 Installation

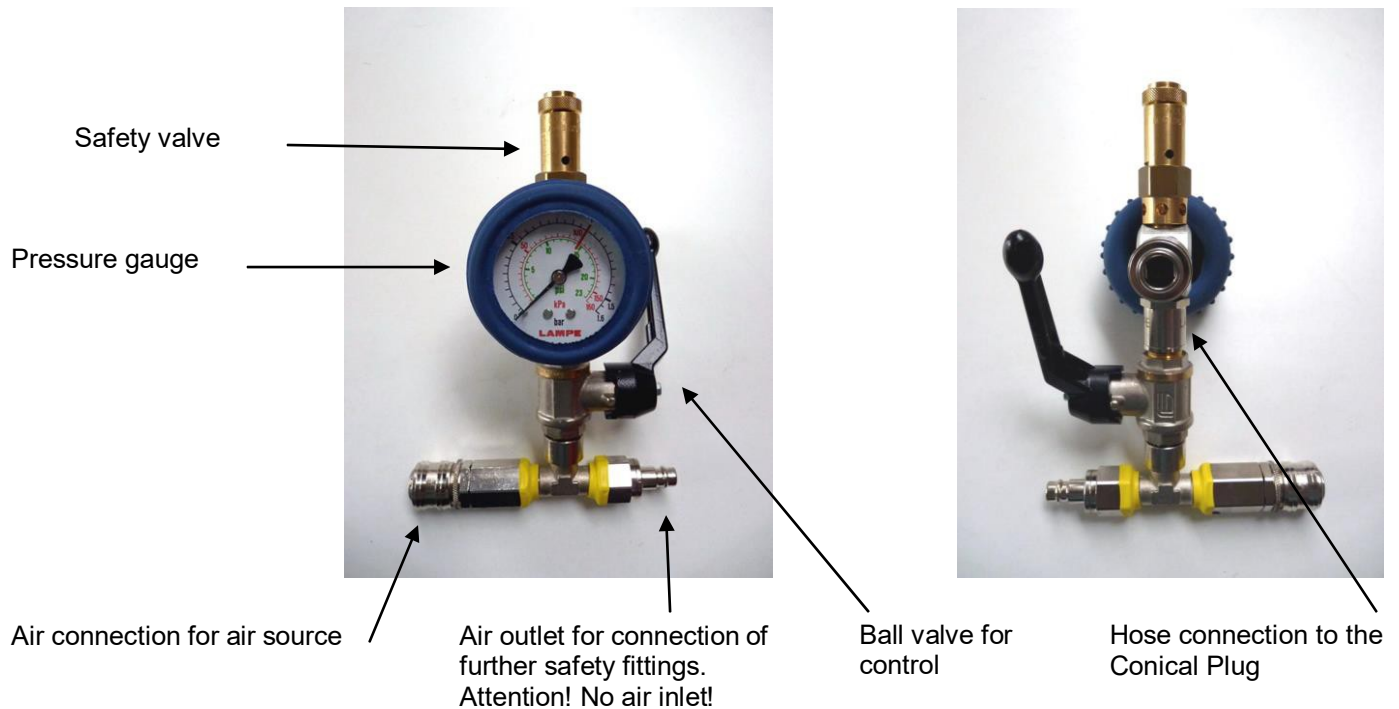
- Generally, the Conical Plugs should always be installed against the flow (installation with the flow is possible and can be coordinated with the manufacturer before use).
- The Conical Plugs can be installed by insertion or, in case of strong flow, by pulling in or by floating in from the next manhole.
- Fold the SConical Plug before the installation as follows: with the air connection open, you should apply an even fold from the front to the rear cone on the left and right; if necessary, fold the cushion into a third, central fold.



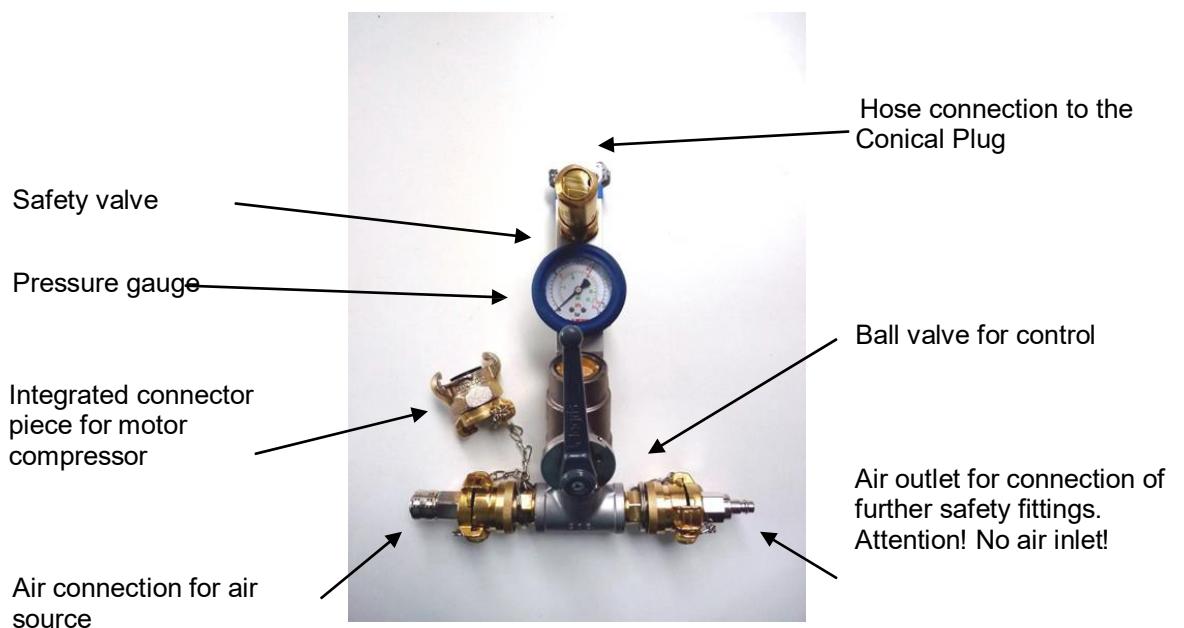
- If you attach a rope on the eyelets of the Conical Plugs, please make sure, that the corresponding ropes are not tensioned and there is always sufficient "room to move" in the ropes. Also note, that the Conical Plug is shortened when it is inflated and applied to the pipe and care must be taken, that the tension in the rope loosens.
- Always insert the Conical Plugs in its entire length, parallel to the axis and flush with the end of the pipe. The front, conical part must sit as centrally as possible in the pipe, the orientation is the yellow label.

4.2 Filling

- Filling must always be carried out using the original filling accessories. Filling with third-party products or without a separate safety fitting and suitable filling hoses is extremely dangerous and not permitted.
- Structure of the ½" safety system for filling all Conical Plugs up to type 1-1200:



- Structure of the 1" safety system for filling all Conical Plugs from type 1-1400:



- First select a connector piece suitable for the air source for connection to the safety fitting, e.g. double nipple jack for compressors with 7.2mm Euronorm coupling as output, pressure reducer for compressed air bottles, compressor claw coupling for motor compressors, or similar. (See accessory list).
- For filling, proceed as follows:



1. Close the air source.



2. Couple the pre-pressure hose on the left coupling (yellow) of the safety fitting and lock the connection by turning the screw retention. Please ensure, that the ball valve always stands transverse to the flow direction.



3. Couple the blue-marked coupling of the filling hose on the nipple of the Conical Plug and lock the connection by turning the screw retention.



4. Connect the other side of the filling hose (nipple) with the blue-marked coupling on the bottom side of the safety fitting and lock the connection by turning the screw retention.



5. Open the air source



6. Open the ball valve of the safety fitting **slowly**. Now the air can run into the cushion



7. Fill the Conical Plug until the material will lay around the pipe wall without any pressure.



8. Leave the manhole! Pressurization with the full working pressure of 1 bar must be carried out from outside the manhole.



9. Now, the cushion has been inflated. While reaching the maximum pressure of 1 bar, the safety valve will open automatically and blow-off the air.



10. Close the ball valve of the safety fitting and break the air flow until the safety valve will close



11. Close the air source



12. Now open again the ball valve for a short time, which the pre pressure is able to flow out.

- Alternatively, you can also use the 1" fitting as shown above in combination with the 1" filling hose.
- The pressure must be checked regularly, a pressure loss of <10% in 24 hours is permissible and must be supplemented by refilling if necessary. Automatically constant pressure monitoring is possible, when using the Automatic Safety Fitting (Part No. 71425).

4.3 Additional bracing of a form-fitting extension

- In our view, an additional bracing (blocking) of the frequently bursting balloon devices with a small contact surface and low contact pressure, in particular of those with a core, is absolutely necessary. The bracing is intended to replace a possible loss of the static friction by using a form-fitting additional bracing. Such a bracing can also be easily attached (if desired) to the front cones of our devices. In this case, the surface of the Conical Plugs has to be enlarged and protected, in particular when using sharp steel supports, by supporting rescue wood. This is especially the case when a bracing is used on the cones, which in any case must be protected well against incisions caused by the bracing by the laying of planks.
- An additional bracing is technically not necessary in the case of sufficient roughness (as in normal clean concrete or PVC pipe without deposits) while using our Conical Plugs and does not bring any advantages with these devices.
- The following preconditions are absolutely necessary for the employment without an additional bracing
 - The water pressure of 0.5 bar (= 5 m water head) at an operation pressure of the Conical Plug of 1 bar must, under safe conditions, not be exceeded. Safe conditions are present when, for example, the manhole section in front of the Conical Plug is not higher than 5 m above the pipe bottom at the Conical Plug and when a sudden pressure increase (for example by connected pump works etc.) can be excluded and when no other shock-like pressure change is possible.
 - Furthermore, it is essential to make sure, that the static friction is normal, it must not be reduced by soap, ice etc. If in doubt, an additional bracing must be applied.
- Note: There are no technical reasons why bracings should be applied to our Conical Plugs (for our larger devices such as type 1-2200 it does not make sense and is even dangerous) as the water will always exit under the Conical Plug and will thus warn the workers. As a sudden pressure increase in water in DN 2000 is impossible up to > 1 bar because of the reasons mentioned, a bracing is redundant in such a case. For larger diameters > DN 1000 (pipe inside diameters of more than 1,000 mm) this effect works so well that, as mentioned above, the water can even be discharged underneath the cushion without any problems. A bracing does not provide additional safety, the opposite is the case, when the bracing is faulty it may even cause damage on the cushion which again is highly dangerous especially when large sections of the textile fabric are scratched or cut by sharp iron parts. The bracing only makes sense in small pipe diameters up to DN 800 (pipe inside diameter 800 mm). The early warning time for DN 200 (pipe inside diameter 200 mm) is extremely short when the water pressure approaches the absolute limit of 1 bar or 10m water head or when the pressure inside the Conical Plug drops unnoticed. If there are doubts in respect to the hydraulic situation (are there any pumps connected in an industrial facility?) then Conical Plugs with small diameter should be braced.

5 Working inside the pipe or manhole

- If people are working downstream in the pipe or manhole, ensure that the danger zone, if danger occurs, can be immediately evacuated, for example in case of an unexpected pressure increase of the accumulated water. A sure sign of a danger is given, when the water under the Conical Plug begins to flow off. Basically, if the construction site is not 100% safe, staying in the hazardous area is forbidden!
- As additional safety when working in the pipe- or manhole area, it is always advisable, to place an additional Conical Plug the next position upstream to build an additional safety zone, this will increase the warning time and a possible evacuation time in case of emergency.
- If people stay in the manhole or the pipe during water retention, it is imperative, that a further safe guard permanently controls the blocked water column. The blocked water column is, in this case, e.g. to be kept as low as possible by the use of pumps or other possible tools! The accumulation of water up to the absolute maximum of 5m should be prevented in this case and a sufficient evacuation time should be calculated until the maximum permissible back pressure of 5m water column is reached.

6 Emptying and removing after work

- All work on the fulfilled Conical Plugs has to be carried out only from above, outside the manhole. During venting (as well as during the pressurization, after fulfilling and installation when the Conical Plug has reached the pipe wall without pressure) staying in the manhole in front of the Conical Plug is strictly forbidden. Before the Conical Plugs are taken out of the pipe, the pressure relief of the water behind the Conical Plugs must be ensured.
- The pressure relief of the blocked pressure can be achieved by pumping away the water with a pump (the simplest and safest way), or even at low water level and afterwards by carefully ventilating the Conical Plugs. The venting is performed at the safety fitting by opening the safety valve.
- If you want to drain the water under the Conical Plug without pumping away the water with a pump, slowly open the safety valve. As soon as the working pressure in the Conical Plug reaches the same pressure as the blocked accumulated hydrostatic water pressure, the Conical Plugs slowly drains water at the bottom of the pipe.

- As soon as this effect occurs, close the safety valve and wait for the water to drain out of the bottom until no more water flows.
- Repeat the last two steps carefully until water pressure is no longer present and the pressure gauge of the safety valve no longer shows any working pressure in the Conical Plug.
- During the deflation of the Conical Plugs and when both pressures are more or less the same - water pressure behind the cushion/air pressure inside the cushion – the water flows underneath the cushion without the cushion being removed from its tight seat inside the concrete pipe. This applies especially to Conical Plugs with a larger pipe diameter from DN 1000 (pipe diameter 1,000 mm) onwards as the pressure difference of the water pressure inside the pipe, that means from the bottom to the top, is particularly large. At DN 1000, this pressure difference amounts to 0.1 bar. Now, different physical influences are present which make the employment of our devices so interesting.
- Caution: Such a procedure requires experience and utmost care. You should practice this in advance in order to find the best position for a quick discharge. We offer suitable practice opportunities for pipe and Conical Plugs on our research and test station.
- If Conical Plugs are to be deflated inside pipes with smaller diameters there is danger of them being shot out of the pipe when they are not braced. After having exited the pipe, the Conical Plug will expand to its maximum diameter of the respective type. When the work is being done from above and when the worker is outside the manhole, the only thing that can happen is that the Conical Plug gets lost. When there is an obstruction of the pipe and a quick current, however, the water is able to fill the whole manhole quickly, thus creating an extremely dangerous situation for persons inside the manhole. This is why it is strictly forbidden to stay inside the manhole for the purpose of the regulation of the pressure inside the Conical Plugs or for any other reasons.
- After the pressure relief of the Conical Plugs, they must be completely vented, preferably by sucking the air with the help of an ejector (art. No. 71957) (see separate operating instruction ejector) or by using a suction pump. Only if it is certain, that there is no water pressure behind the Conical Plug, the quick coupling 1" on the cushion itself may be opened for quicker venting in the event of missing suitable other devices for venting and the Conical Plugs subsequently removed from the pipe. If the cushions are not completely empty and still have contact with the pipe wall, there is a risk of damage during removal, even in the case of completely pressure less Conical Plugs.
- When a working rope is attached to the Conical Plug prior to its deflation, it should be taken into consideration, that there is sufficient maneuvering space left for the cushion. Caution: The water pressure behind the Conical Plug generates considerable force! In a pipe DN 1000 (pipe inside diameter 1,000 mm) with a diameter of 1 m there is a force at 5m water head of approximately $4 \text{ to } 39.25 \text{ kN}$. It is not possible to fix the cushion with a rope as the breaking load of the large 90 mm D-bracket is $<10 \text{ kN} = 1 \text{ to}$. It is therefore wrong, to deflate the Conical Plug and try to fix it with the help of a rope

if there is water pressure imminent. The cushion must always fix itself by means of sufficient internal pressure or it must be braced. Otherwise fittings, loops and rings would tear off and the Conical Plug would be damaged.

7 Leak tests with Conical Plugs

- The guideline for tightness tests with air or water is the European Norm EN1610 (Construction and testing of drains and sewers)
- Shut-off of the pipe is done with a suitable Conical Plug with special sealing (for pressure tests with air) or Conical Plugs with bypass and special sealing (for leak tests with water).
- The filling of the pipe with the test medium, as well as the measurement of the test pressure, have to be done with a Conical Plug with bypass and special sealing.
- Staying in the pipe or manhole during an ongoing leak test is very dangerous and strictly forbidden!
- Leak tests with water: For the shut-off of the pipe, an additional Conical Plug with bypass and special sealing with a suitable deflation hose connected upstream is used. The remaining air in the pipe is deflated over this deflation hose.

8 Tests, repairs and storage

8.1 General comments

- Regarding maintenance and care, please also note all valid national regulations and rules such as: Operating Safety Ordinance, Occupational Safety and Health Regulations, etc.
- All tests and maintenance should only be carried out by a qualified expert.
- All tests and maintenance on the Conical Plugs must never be carried out under direct sunlight.

8.2 Cleanings and tests after use

- After each use, check the Conical Plugs and accessories for function and damage and carefully clean with warm soapy water (especially clean the hose couplings carefully and, if necessary, grease them slightly with acid-free Vaseline).
- To test, first fill the Conical Plugs with a pressure of <0.01 bar (ie fill it tightly without pressure) and carefully check for cuts when cleaning with soapy water. Cuts in the rubber, which intersect the underlying fibers of the fabric, are very dangerous, because the strength of the pressure vessel is destroyed by cuts into the fibers. Caution: It may be, that air bubbles come out at the overlaps of the adhesive seams, this is construction-conditioned and usually not considered as damage.
- Severely soiled cushions (tar or other substances) are to be cleaned with ethyl acetate (inflammable!). Be careful, ethyl acetate dissolves the printing colour on

the type plate. No special treatment of the cushions is necessary after they have been cleaned. The use of French chalk can also not be recommended as this makes the surface of the cushions smoother which again makes them more difficult to handle.

- If no cuts or other damages were detected, implement a pressure test with 0.5 bar for 15 minutes.
- Caution, always ensure sufficient safety distance to the cushion during this test.
- This security is given, if the Conical Plugs is placed behind a wall corner. Since metal parts of a bursting device can fly very far and with high energy, these protections are absolutely necessary because of the danger to life. After 15 minutes, there should be no pressure drop on the manometer (attend a settling time of 15 minutes before the start of the test so that the pressure can adapt to the temperatures.)
- After each employment, the pressure gauge and the safety valves on the safety fittings are to be checked for functionality or soiling respectively. The setting of the safety valves was to a pressure of 1 bar. No unauthorized person is allowed to change their setting, only experts may do so. An employment (inflation) of the Conical Plugs without the original safety fittings with safety valves supplied by us is not allowed. Testing of the safety valve and the pressure gauge is by means of a suitable test manometer. Should such a device not be available on the site then the test may also be effected on an inflated cushion inside a pipe by comparing the readings of at least three safety fittings connected to this cushion. The fittings must show the same pressure readings 0-1 bar on their gauges, and the safety valves must begin to blow off at a pressure of 1 bar. The test is later to be repeated with the test manometer, this is compulsory for the annual test (item 8.3).

8.3 Annual tests

- Once a year, the entire system is carefully to be tested. The test procedure is described above. In addition, the Conical Plugs are inflated to the operation pressure of 1 bar for a maximum of 15 minutes. This test should be made inside of a pipe. All hoses and safety fittings (functioning of pressure gauge and safety valve) are carefully tested. Caution, the operation pressure may under no circumstances remain in a device. Because of the high energy released during a burst at 1 bar, safety zones are carefully to be determined and marked as described above.
- Conical Plugs whose expert inspection has been carried out for more than one year, may no longer be used!

8.4 5-years tests

- Every 5 years at the latest, the devices are to be returned for testing to the factory or to an authorized test station nominated.

8.5 Documentation of the tests

- The implemented tests are to be recorded in a test record book (see separate test record book). The record of the test is compulsory, the test record book is to be kept separate from the devices at a suitable place until the 5-year-test , a copy of it is to accompany the devices sent to factory.

8.6 Repairs

- Immediately identify any damaged Conical Plugs for repairs and mark them, e.g. with a tag.
- If Conical Plugs were damaged during a hard employment, they should be returned for repair or should be repaired with an original repair set according to the repair instructions. Conical Plugs can be repaired without problems, but improperly effected repairs are dangerous and may lead to the burst of the Conical Plug. Repairs are only to be effected by qualified specialists and in accordance with our repair instructions.
- Prior to repair, the equipment must always be checked very carefully to ensure, that the reinforcement next to the damaged area has not been damaged.
- Always carry out repairs only after consultation with the manufacturer.
- The use of improperly repaired Conical Plugs is very dangerous and can lead to serious accidents with serious injuries or even deaths!

8.7 Storage

- Always store the carefully checked Conical Plugs with accessories in the shade, clean, cool and dry.

We would be grateful for any reports of spectacular usages for the Conical Plug (if possible with a picture).

In our company we carry out regular training courses, you should participate in such a training, You will surely learn a lot of new things that will save money and secure orders for your company.

Test record book
for conical plugs with double cones
Working pressure 1 bar

Kind of test: 1. after an employment; 2. annual test, 3. repeated test by the factory (mark appropriate column with X)

[illegible]

MODEL	CONICAL PLUG	PIPE DIAMETER MM
CP80150	Conical Plug 80150	80-150 mm
CP90150	Conical plug 90150 with special sealing	90-150 mm
CP100400	Conical Plug 100400	100-400 mm
CP150400	Conical Plug 150400 with special sealing	150-400 mm
CTP150400	Conical Plug 150400 with bypass 1"	150-400 mm
CTP150400	Conical Plug 150400 with bypass 1" + special sealing	150-400 mm
CP200600	Conical Plug 200600	200-600 mm
CP250600	Conical Plug 250600 with special sealing	250-600 mm
CTP250600	Conical Plug 250600 with bypass 3"	250-600 mm
CTP250600	Conical Plug 250600 with bypass 3 " + special sealing	250-600 mm
CP300800	Conical Plug 300800	300-800 mm
CP300800	Conical Plug 300800 with special sealing	300-800 mm
CTP300800	Conical Plug 300800 with bypass 3 "	300-800 mm
CTP300800	Conical Plug 300800 with bypass 3 " + special sealing	300-800 mm
CP4001000	Conical Plug 4001000	400-1000 mm
CP4001000	Conical Plug 4001000 with special sealing	400-1000 mm
CTP4001000	Conical Plug 4001000 with bypass 3 "	400-1000 mm
CTP4001000	Conical Plug 4001000 with bypass 3 " + special sealing	400-1000 mm
CP5001200	Conical Plug 5001200	500-1200 mm
CP5001200	Conical Plug 5001200 with special sealing	500-1200 mm
CTP5001200	Conical Plug 5001200 with bypass 3 "	500-1200 mm
CTP5001200	Conical Plug 5001200 with bypass 3 " + special sealing	500-1200 mm
CP5001400	Conical Plug 5001400	500-1400 mm
CP5001400	Conical Plug 5001400 with special sealing	500-1400 mm
CTP5001400	Conical Plug 5001400 with bypass 3 "	500-1400 mm
CTP5001400	Conical Plug 5001400 with bypass 3 " + special sealing	500-1400 mm
CP5001500	Conical Plug 5001500	500-1500 mm
CP5001500	Conical Plug 5001500 with special sealing	500-1500 mm
CTP5001500	Conical Plug 5001500 with bypass 3 "	500-1500 mm
CTP5001500	Conical Plug 5001500 with bypass 3 " + special sealing	500-1500 mm
CP6001600	Conical Plug 6001600	600-1600 mm
CP6001600	Conical Plug 6001600 with special sealing	600-1600 mm
CTP6001600	Conical Plug 6001600 with bypass 3 " + special sealing	600-1600 mm
C10001800	Conical Plug 10001800	1000-1800 mm
CP10001800	Conical Plug 10001800 with special sealing	1000-1800 mm
CTP10001800	Conical Plug 10001800 with bypass 3 " + special sealing	1000-1800 mm
CP10002200	Conical Plug 10002200	1000-2200 mm
CP10002200	Conical Plug 10002200 with special sealing	1000-2200 mm
CTP10002200	Conical Plug 10002200 with bypass 3 " + special sealing	1000-2200 mm
CP12002400	Conical Plug 12002400	1200-2400 mm
CP12002400	Conical Plug 12002400 with special sealing	1200-2400 mm
CTP12002400	Conical Plug 12002400 with bypass 3 " + special sealing	1200-2400 mm
CP15002800	Conical Plug 15002800 with special sealing	1500-2800 mm
CTP15002800	Conical Plug 15002800 with bypass 3 " + special sealing	1500-2800 mm
CP18003200	Conical Plug 18003200 with special sealing	1800-3200 mm
CTP18003200	Conical Plug 18003200 with bypass 3 " + special sealing	1800-3200 mm
CP22003600	Conical Plug 22003600 with special sealing	2200-3600 mm
CTP22003600	Conical Plug 22003600 with bypass 3 " + special sealing	2200-3600 mm
--	Safety fitting 1 bar	
--	Automatic safety fitting (Pressure control device)	
--	Large safety fitting 1"	
--	Pressure reducer 200/300 bars	
--	Filling hose 5 m	
--	Filling hose 10 m	
--	Transparent hose 1", 10 m	

--	Deflation hose 1", 2 m, D-Storz-coupling, for bypass of Conical Plug type 1-400
--	Deflation hose 3", 2 m, B-Storz-coupling, for bypass of Conical Plug \geq type 1-600
--	Pre-pressure extension hose 5 m
--	Pre-pressure extension hose 40 m
--	Adapter piece motor vehicle tyre valve
--	Adapter piece double plug-in nipple
--	Adapter piece compressor coupling for motor compressors
--	Foot pump
--	Hand pump
--	Ejector for SSC, for fast deflating, <1900 ltrs./min.

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