

# Operating Instructions

## Pipe Sealing- and Bypass Bags

for Fire Services



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## Important information

The air has been completely suctioned out of the sealing pad to simplify shipping.

However, the pad must **NOT** be stored in this condition.

When you unpack the pad, put the venting nipple on the coupling to allow air to penetrate back in. That lets the pad obtain its normal cylinder shape again.

If necessary, fill the pad with additional compressed air, but only to the point that it obtains its normal shape.

## 1. Introduction

The precondition for the safe use and the defect-free operation of Vetter pipe and test sealing bags is the knowledge and the observance of this operating manual as well as the safety instructions.

**DIN 7716 is to be adhered to in cases of long-term storage.**



In addition to this, the pertinent work protection regulations, work safety regulations and accident prevention regulations are to be observed the same as the generally recognized technology laws.

The operating instructions given here are to be regarded as part of the product and are to be kept for the complete life duration of the product. In case the product should be passed on to a successive user then the operating instructions must also be included.

### 1.1 Symbols used

The following symbols are used in the text for dangers and warnings:



This symbol means that there is imminent danger. If it is not avoided then death or serious injury will result.



This symbol means that there is a possible dangerous situation. If it is not avoided then death or serious injury could result.



This symbol means that there is possibly a dangerous situation. If it is not avoided then light injuries or slight injuries could result.



This symbol means that there is the possibility of damage being caused. If it is not avoided then the product or something else in its vicinity could be damaged.

## 1.2 Correct handling and usage

Vetter pipe sealing- and bypass bags must, depending on the purpose of the task, only be inflated with compressed air to the corresponding pressure level using original inflation fittings.

Inflation with inflation fittings from another manufacturer is classified as contrary to the regulations for correct use.

They are exclusively used for blocking the intended pipes, for leak sealing testing of pipelines and for construction of a bypass.

Any other application or use going beyond this is classified as contrary to the regulations for correct use.

An application contrary to the regulations for correct use of Vetter pipe sealing- and bypass bags includes:

- ✓ Incorrect use, operation or maintenance of pipe sealing- and bypass bags.
- ✓ Use of the Vetter pipe sealing- and bypass bags with defective safety devices or incorrectly fitted or non-functional inflation fittings.
- ✓ Non-observance of the instructions given in the operating manual concerning storage, operation and maintenance of pipe sealing- and bypass bags.
- ✓ Insufficient monitoring of accessory parts subject to wear.
- ✓ Incorrectly carried out maintenance work.

Correct use according to regulations also includes

- ✓ The observance of all instructions given in this operating manual.
- ✓ The observance of the set periods for maintenance and care specified in the chapter „Maintenance and Care“.

## 2. Safety instructions

The knowledge and observance of this operating manual are the preconditions for the use of Vetter pipe sealing- and bypass bags.

### 2.1 General information

The observance of all pertinent work protection regulations and safety regulations, accident prevention regulations (e.g. safety regulations from the technical authorities) as well as the recognized technical laws are to be carried out.

The pipeline is to be inspected for damage before using pipe sealing- and bypass bag. The area in the pipe for the pipe sealing- and bypass bag must be free of deposits, dirt and foreign bodies, such as fragments, sharp-edged objects etc.

Necessary personal protection devices must be made available: protection clothing, clothes, helmets, facial and/or eye protection etc.

Pipe sealing- and bypass bags must be positioned full length in the pipeline and with the sealing area on the inside wall of the pipe.

All pipe sealing- and bypass bags must be non-positively and positively positioned and fitted.

## 2.2 Information about the dangers

Changes and modifications to the sealing bags, inflation fittings and inflation hoses are not permitted. Operation of Vetter pipe sealing- and bypass bags are only permitted with original Vetter inflation fittings and inflation hoses. Parts made by another manufacturer can influence safety.

Pipe sealing- and bypass bags are made of a strong expanding material. If this material is expanded beyond its permitted maximum range then this can cause bursting. No person is allowed to remain within the working area during the pressure test.

After positioning the pipe sealing- and/or bypass bag it is to be ensured that nobody remain in the channel or in front of the pipe during inflation, as well as during the test procedure and emptying sequence. Before removing the set-up make certain that the pipeline is not under any pressure and is completely empty.

## 2.3 Warnings

The pipe sealing- and bypass bags as well as the accessories must be checked for perfect condition before and after each operation. Outside the pipeline, Vetter pipe sealing- and bypass bags 1.5 bar, must only be filled to maximum of 0.5 bar.

All controllers are fitted with a safety valve that has a permitted maximum operating pressure corresponding to the pipe sealing- and bypass bags. If the maximum operating pressure of 1.5 bar is exceeded then the safety valve will activate. The tolerance for opening and closing of the safety valve is only permitted to be a maximum of +/- 10 %. The set pressure must not be changed. If the sealing on the top part of the valve is removed then its operation is no longer guaranteed and the safety valve must be exchanged. The permitted inlet pressure on the controller (marking on the inlet coupling) must not be exceeded.



## 3. Operation of Pipe Sealing- and Bypass Bags

This chapter informs you about which compressed air sources you can use with the Vetter pipe sealing- and bypass bags.

**Observe the corresponding pressure level with operation of pipe and bypass bags.**



### 3.1 Operation with controller, inflation hose and compressed air bottle

**Note! In the following presented figures the sequence of events uses the pressure level of 1.5 bar as an example. The corresponding bags and accessories must be used for other pressure levels and other sources of air.**



#### Pipe sealing- or bypass bag

- ✓ Step 1  
Connect pipe sealing- or bypass bag 1.5 bar to the inflation hose.

#### Inflation hose

- ✓ Step 2  
Connect the inflation hose to the controller.

**The inflation hose, the sealing bag and the controller must have the same pressure level.**

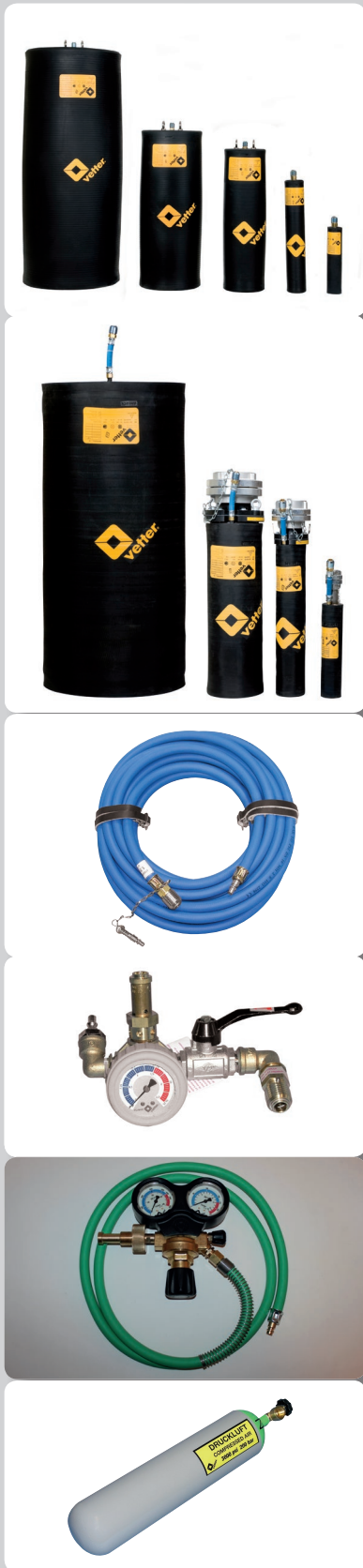
#### Controller

- ✓ Step 3  
Connect the connection hose of the pressure regulator to the inlet coupling of the controller. In doing this it is imperative that the permitted inlet pressure of the controller is observed.

#### Pressure regulator

- ✓ Step 4  
Screw-in the connection thread of the pressure regulator into the inside thread of the valve on the compressed air bottle.

#### Compressed air bottle



### 3.2 Operation with controller, inflation hose and other compressed air sources

Observe the maximum inlet pressure from the compressed air source for the different pressure levels (refer to the table below).



Applied pressure level	Maximum inlet pressure of the compressed air source
0.5 bar	2 bar
1.0 bar	2 bar
1.5 bar	2 bar
2.5 bar	4 bar

#### Adapters in the adapter set

The adapter set contains adapters for the following air sources:

#### Truck compressed air connection and dummy coupling

Close the control line with the dummy coupling.

#### Local compressed air network

Connection on the output coupling of a compressed air network.

#### Truck tyre valve

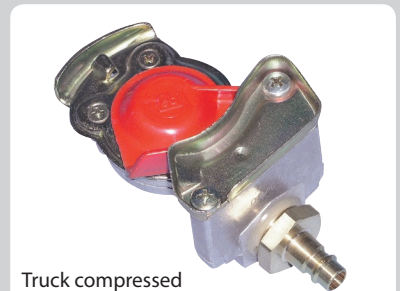
For inflation with a normal hand pump or foot pump.

#### Truck tyre valve connection

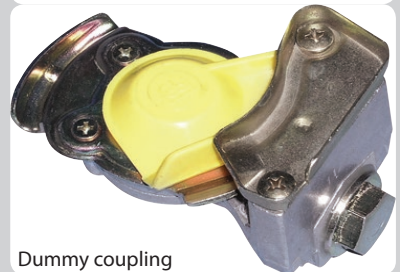
For taping off air from a spare wheel.

#### Air supply hose, 10 m with blocking valve

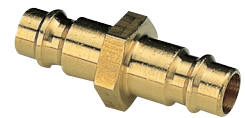
The air supply hose with blocking valve can be used as an extension between the air source and the controller.



Truck compressed air connection



Dummy coupling







## Hand pump and foot pump

Hand pump or foot pump with 2 m connection hose to the connection onto the inlet coupling of a controller. Hand pump and foot pump do not belong to the delivery package of the adapter set.

### 3.3 Operation with a foot pump 1.5 bar having a safety valve

Foot operated air pump, 1.5 bar with safety valve and 2 m connection hose for inflation of sealing bags in connection with an inflation hose.

## 4. Operation of Pipe Sealing- & Bypass Bags

In this chapter you will find out how the Vetter pipe sealing- and bypass bags are applied.

**When using the pipe sealing- and bypass bags, observe the safety instructions given in chapter 2 as well as the pertinent regulations for work protection and safety protection, accident prevention regulations (e. g. the safety regulations of the technical authorities) and the generally recognized laws of technology.**



### 4.1 Preparations for operation

- ✓ Ensure that only authorized staff are in the working area and danger area.
- ✓ Select a suitable pipe and/or bypass bag which corresponds to the requirements.
- ✓ Check the bag and the accessories to be used for completeness and damage.
- ✓ Damaged bags and damaged accessory parts must not be used!
- ✓ The bag diameter must be smaller than the inside diameter of the pipeline.
- ✓ Inflation hose and controller must already be connected to the sealing bag.
- ✓ Mark the working area.
- ✓ Position the bag (full length) into the pipe.
- ✓ The sealing bag in the pipe is to be supported.



- ✓ Draw the sealing bag to the support structure and inflate so that it can still be moved in the pipeline.
- ✓ Secure the sealing bag with a securing line in order to avoid the bag slipping back when deflated.
- ✓ The support structure should be made so that the sealing bag can be supported over a large area.
- ✓ Leave the shaft and/or pipeline.
- ✓ Make certain that no staff remain in the area of danger.
- ✓ Inflate the sealing bag to the permitted maximum operating pressure from a safe position

There is a danger of the bag catapulting outwards. The pressure or water column must be completely reduced within the pipeline before the support structure is removed. Otherwise the sealing bag could catapult outwards. After completion of the work, pressure reduction is to be carried out via the inflation hose (ventilation nipple) or the controller (pressure reduction via the knurled screw of the safety valve). Generally this must be made outside the pipeline or shaft.

- ✓ If the water has completely flowed out of the shaft/pipeline then release the compressed air out of the bag.
- ✓ Now remove the support structure and take the bag out of the shaft/pipeline.

## 4.2 Support structure

The type of support structure depends on the structural factors in the pipe, the pipe itself and the counter-pressure to be expected. The following support possibilities are only drawing diagrams and are given as examples.

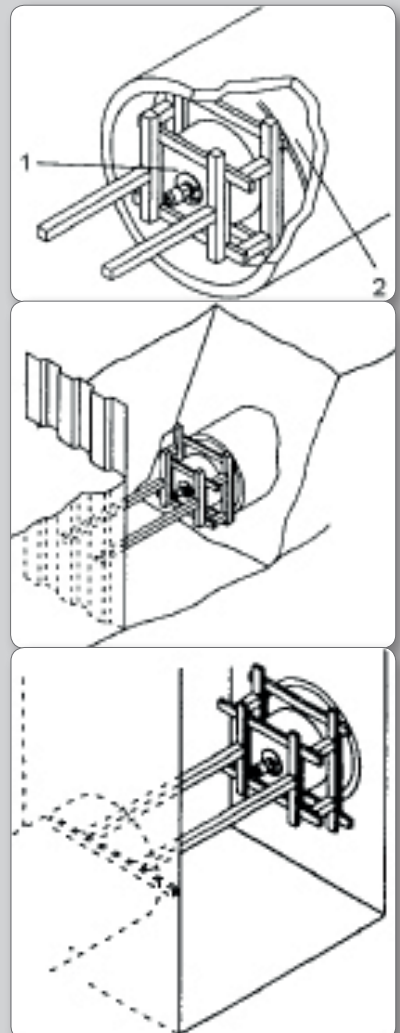
### General details of support (presented as a diagram)

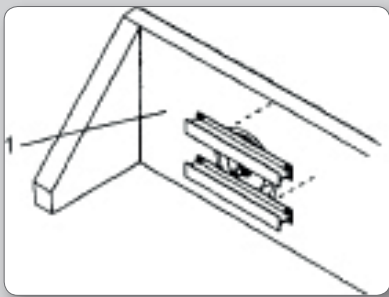
- 1 Bag centre
- 2 Inflatable bag sleeve

### Support suggestion for a ditch (presented as a diagram)

### Support suggestion for a street inlet shaft (presented as a diagram)

 **DANGER**





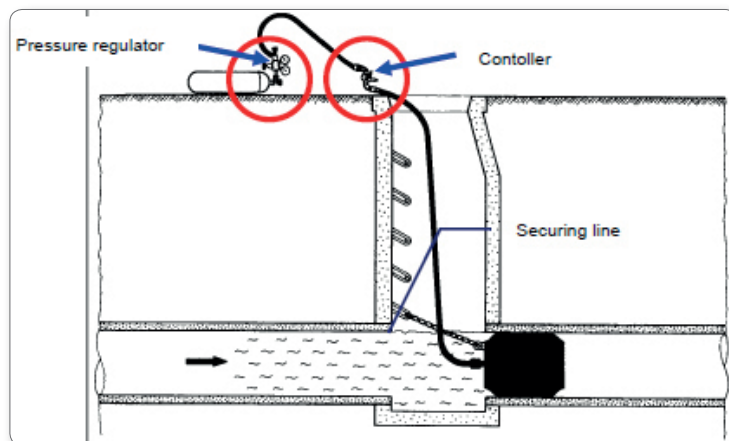
## Support suggestion for a pipe opening on the outside wall (presented as a diagram)

1 Outside wall with pipe opening

### 4.3 Blocking a pipeline

The support structure of a pipeline under pressure must never be removed. Pipe sealing and/or bypass bags could suddenly catapult outwards. During a pressure test nobody is permitted to remain in the shafts or on and in the pipelines under pressure.

- ✓ Vetter pipe sealing- and bypass bags are used in different pipe diameters (refer to the marking on the sealing bags).
- ✓ Select pipe sealing bag, inflation hose, controller and air source.
- ✓ There must be no branches, house connections or similar things in the pipe area to be blocked.
- ✓ If the pipe sealing bag is positioned in the direction of flow then securing can be made with, for example, securing lines.
- ✓ Connect pipe sealing bags to the inflation hose and controller and position in the pipe.
- ✓ Secure with securing lines if positioned in the direction of flow or with the corresponding support if positioned against the direction flow.
- ✓ Inflate the pipe sealing bag to the permitted maximum operating pressure from a safe position.
- ✓ If a pipeline has to be blocked with a pipe sealing bag or bypass bag then the operating pressure is to be monitored with the controller (e.g. possible pressure changes caused by deviations in temperature).



#### 4.4 Emptying the pipeline

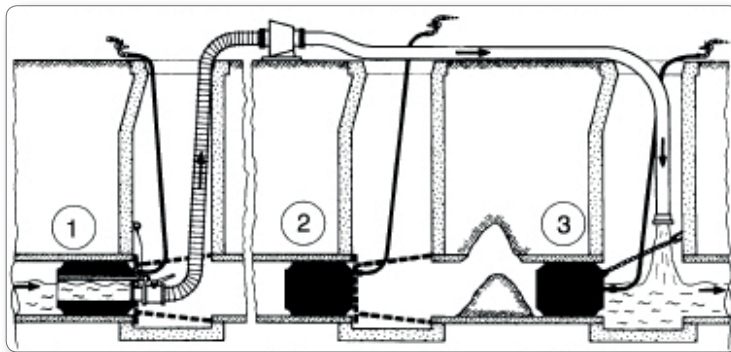
- ✓ It is to be ensured that nobody remains in the shaft or pipe before emptying the pipeline.
- ✓ Empty the secured sealing bag via the controller so the dammed liquid is able to slowly flow pass the sealing bag and support structure.
- ✓ The support structure of a pipeline under pressure must never be removed. Pipe sealing- and/or bypass bags could suddenly catapult outwards.

#### 4.5 Construction of a temporary bypass

Persons can be endangered by sudden inrushes of water, therefore an additional pipe sealing bag (2) must be installed in order to ensure the safety of the construction area. The safety regulations and information issued by the corresponding authorities are to be observed!

#### Construction of a temporary bypass

(schematic diagram)



- ✓ Due to presentation reasons, the support structure and securing lines are schematically presented and simplified.
- ✓ Fit the corresponding bypass adapter in order to bypass the sealing bag. Insert the bypass bag (1) at the top of the construction site into the pipe.
- ✓ Support the bag according to shape.
- ✓ Ensure the bag additionally with a securing line.
- ✓ Connect the Storz coupling (A resp. B) to the suction pump installed above ground via the suction hose.
- ✓ Make certain that the level of dammed liquid does not exceed 5m water column.
- ✓ Connect a hose to the pump on the pressure side and position it into the pipe system at the back of the construction site.
- ✓ Insert an additional pipe sealing bag (3) in order to avoid a backflow into the construction area.

 **DANGER**

 **DANGER**

**CAUTION**

## 5. Care, maintenance and storage

This chapter gives you information about care of your Vetter pipe and test sealing bag and the maintenance intervals which must be observed.

### 5.1 Care

The sealing bag equipment is to be cleaned after each operation. Cleaning is normally carried out with warm water and a detergent.

**Cleaning must never be carried out with a chemical cleaning agent and never with high-pressure hot water devices.**



Drying is made at normal room temperature.

### 5.2 Maintenance intervals

A function test of the safety valve must only be carried out **without** the pipe sealing and bypass bag. Maximum pressure area!

A function test of the safety valve **with** the pipe sealing- and/or bypass bag outside the pipeline or test pipe can cause bursting of the bag.

The function test of the pipe sealing- and bypass bag at the maximum operating pressure in the permitted maximum pipe diameter must only be carried out in a resistive pipe. A pipe which is too weak will explode when a bag is inflated to the maximum operating pressure!

When?	What?	What is to be done?
After each operation	Pipe sealing- and bypass bag and accessories	Check for completeness, perfect condition and function. Visual check and function check. Clean the pipe sealing- and bypass bag with warm water, a neutral cleaning agent and, if necessary, with a cleaning brush. Finally dry it at room temperature.
At least once per year	Controller	Visual check and function check. Check the functional capability of the coupling, nipple, manometer and safety valve
At least once per year	Inflation hose	Visual check and function check. Check the functional capability and sealing of the connection nipple and couplings.
At least once per year	Sealing bag	Visual check and function check. Check the functional capability of the connection coupling. Check for cracks and/or cuts, abrasions and changes in the surface caused by chemical effects.

### 5.3 Storage

**When stored and handled properly, the properties of rubber products remain nearly constant for a long period of time. However when handled improperly and under unfavourable storage conditions, their physical properties and/or service life are shortened!**



Please comply with the following storage conditions:

Store in a place that is cool, dry, dust-free and moderately ventilated.

The storage temperature should be approx. 15 °C; never let it exceed 25 °C.

The temperature should also not fall below -10 °C.

If there are heating appliances and heating conductors in the storage room, they must be appropriately insulated so that the temperature of 25 °C is not exceeded. Maintain a minimum clearance between the heating appliances and the stored goods of 1 m.

Do not store rubber products in moist storage rooms. The relative humidity should be less than 65 %.

Protect the rubber products from light (direct exposure to sunlight, artificial light with high proportion of UV). The windows in the storage room need to be correspondingly darkened.

Make sure that the storage room does not contain any appliances that cause ozone.

The storage room must be free of solvents, fuels, lubricants, chemicals, acids, etc.

Store rubber products without pressure, tensile stress or similar distortions since that can promote deformations or crack development.

Some metals such as copper and manganese can also have a damaging effect on rubber products.

For more information please refer to DIN 7716.



## 6. VETTER Pipe Sealing Bags 1.5 bar FS

### 6.1 Description

Due to their design, Vetter pipe sealing bags 1.5 bar can be used for sealing off pipelines and channelling e. g. for storage of extinguishing water.

- ✓ When selecting the pipe sealing bag please observe the max. counterpressure. (Refer to "Technical Data")
- ✓ Connect the inflation hose to the pipe sealing bag and then to the controller 1.5 bar.
- ✓ Position the pipe sealing bag, along its whole length, into the pipeline and suitably secure it, e. g. with a structure support, depending on the work to be carried out.
- ✓ Inflation of the pipe sealing bag can be carried out according to chapter 4.

### 6.2 Technical data pipe sealing bags 1.5 FS

Art. No.		1482000700	1482000800	1482000900
Art. No. with integrated inflation hose		1482000100	1482000200	1482000300
Description		RDK 7/15 FS	RDK 10/20 FS	RDK 20/40 FS
Pipe diameter	cm	7 - 15	10 - 20	20 - 40
	inch	3 - 6	4 - 8	8 - 16
Diameter	cm	6.8	9	19.5
	inch	2.7	3.5	7.7
Cylinder length	cm	30	51	65.5
	inch	12	20	25.8
Total length	cm	34.5	55.5	70.5
	inch	13.6	21.9	27.8
Air requirement	l	9.5	28.8	160
	cu.ft.	0.3	1	5.7
Weight, approx.	kg	0.5	0.9	3.5
	lbs	1.1	2	7.7
Weight, approx. with integrated inflation hose, 10 m	kg	3.3	3.5	6.1
	lbs	7.3	7.7	13.4

Operating pressure: 1.5 bar (21.75 psi)

Test pressure: 1.95 bar (28.28 psi)

Test counterpressure: 5 m water column (7.25 psi)

<b>Art. No.</b>		<b>1482001000</b>	<b>1482001100</b>	<b>1482001200</b>
<b>Art. No. with integrated inflation hose</b>		<b>1482000400</b>	<b>1482000500</b>	<b>1482000600</b>
Description		RDK 30/60 FS	RDK 50/100 FS	RDK 80/140 FS
Pipe diameter	cm	30 - 60	50 - 100	80 - 140
	inch	12 - 24	20 - 40	32 - 55
Diameter	cm	29.5	45	78.5
	inch	11.6	17.7	30.9
Cylinder length	cm	73.5	111	181
	inch	28.9	43.7	71.3
Total length	cm	78	117	185.5
	inch	30.7	46.1	73
Air requirement	l	362.5	1525	3125
	cu.ft.	12.8	53.8	110.3
Weight, approx.	kg	7.3	16.5	48
	lbs	16.1	36.4	105.8
Weight, approx. with integrated inflation hose, 10 m	kg	9.6	21.3	53.6
	lbs	21.2	47	118.2

Operating pressure: 1.5 bar (21.75 psi)

Test pressure: 1.95 bar (28.28 psi)

Test counterpressure: 5 m water column (7.25 psi)

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## 7. VETTER Bypass Bags 1.5 bar FS

### 7.1 Description

Vetter bypass bags 1.5 bar can, for example, be used for purposeful de-tour or for pumping out extinguishing water. They can also be used for channel repairs and reconstruction as two-sided, temporary blocking with conduction and pressure relief from the incoming pipeline to the outgoing pipeline.

- ✓ Please observe the permitted maximum counter-pressure of 5 m water column, resp. 0.5 bar, when using bypass bags.
- ✓ Connect the inflation hose, 1.5 bar, to the bypass bag and the single controller, 1.5 bar fitting.
- ✓ Insert the bypass bag along its full length into the pipeline and secure it against catapulting out using suitable devices, e.g. a structure support. Inflation of the bypass bag can then be made as described in chapter 4.

### 7.2 Technical data Bypass Bags 1.5 bar FS

Art. No.		1483002200	1483001400	1483001500
Art. No. with integrated inflation hose		1483002100	1483001100	1483001200
Description		BK 7/15 FS	BK 10/20 FS	BK 20/50 FS
Bypass size		1"	2 1/2"	4"
Pipe diameter	cm	7 - 15	10 - 20	20 - 50
	inch	3 - 6	4 - 8	8 - 20
Diameter	cm	6.8	9.7	19.5
	inch	2.7	3.8	7.7
Cylinder length	cm	30	48.5	55
	inch	12	19.1	21.7
Total length	cm	36	55.5	67
	inch	14.2	21.9	26.4
Air requirement	l	6.4	22.5	157.5
	cu.ft.	0.2	0.8	5.6
Weight, approx.	kg	3.4	3.4	9.4
	lbs	7.5	7.5	20.7
Weight, approx. with integrated inflation hose, 10 m	kg	6.2	6.2	12.2
	lbs	13.7	13.7	26.9

Operating pressure: 1.5 bar (21.75 psi)

Test pressure: 1.95 bar (28.28 psi)

Test counterpressure: 5 m water column (7.25 psi)

Art. No.		1483001600	1483003400
Art. No. with integrated inflation hose		1483001300	
Description		BK 50/120 FS	BK 80/140 FS
Bypass size		4"	2"
Pipe diameter	cm	50 - 120	80 - 140
	inch	20 - 47	32 - 55
Diameter	cm	45	78.5
	inch	17.7	30.9
Cylinder length	cm	92	181
	inch	36.2	71.3
Total length	cm	94	193
	inch	37	76
Air requirement	l	1420	3075
	cu.ft.	50.1	108.6
Weight, approx.	kg	52.2	69
	lbs	115.1	152.2
Weight, approx. with integrated inflation hose, 10 m	kg	55.0	74.6
	lbs	121.3	164.5

Operating pressure: 1.5 bar (21.75 psi)

Test pressure: 1.95 bar (28.28 psi)

Test counterpressure: 5 m water column (7.25 psi)

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## 8. Material and resistance charts

### 8.1 Material chart

Products	Material	Support material	Manufacturing process
Pipe sealing and bypass bags 1.5 bar for fire services	CR	Nylon cord/Aramide	Hot vulcanised
Inflation hoses and air supply hoses	EPDM	Polyester	-

### 8.2 Temperature resistance

Products	Cold resistance	Cold flexibility	Heat resistance long term	Heat resistance short term
Hot vulcanised	-40 °C	-20 °C	+90 °C	+115 °C
Rubber hoses	-40 °C	-30 °C	+90 °C	
Controllers	-20 °C		+55 °C	

## 8.3 Resistance chart

Description of material	CR	Material	
		NR	EPDM
Acetone	o	+	-
Acetylene	+	+	-
Alum watery	+	+	-
Aluminum chloride	+	+	+
Aniline	-	n.d.	n.d.
ASTM Oil 1	o	-	-
Petrol	o	-	n.d.
Benzene	-	-	-
Boric acid	+	+	+
Bromine (moist)	-	-	-
Butyric acid	-	-	n.d.
Chlorine gas (moist)	-	-	n.d.
Chorine, wet	o	-	0
Diesel fuel	o	-	-
Iron chloride	+	+	+
Crude oil	o	-	-
Acetic acid	o	+	o
Fatty acid	+	o	-
Formaldehyde	+	+	+
Glucose	+	+	+
Heating oil	+	-	-
Potassium chloride	+	+	+
Calcium chloride	+	+	+
Calcium nitrate	+	+	+
Carbon dioxide	+	+	+
Carbon monoxide	+	+	+
Copper sulphate	+	+	+
Adhesive	+	+	+
Methyl chloride	-	-	o
Sea water	+	+	n.d.
Mineral oil	+	-	-
Sodium carbonate	+	+	-
Ozone	+	-	+
Paraffin	+	-	-
Perchloric acid	o	n.d.	+
Phenol (watery)	-	-	+
Phosphoric acid (consentrated)	-	-	-
Mercury	+	+	+
Nitric acid (fuming)	-	-	-
Sulphur dioxide (dry)	-	o	n.d.
Sulphuric acid (50%)	+	-	-
Nitrogen	+	+	+
Carbon tetrachloride	-	-	-
Animal fat	+	-	+
Toluene	-	-	-

+ resistant 0 conditionally resistant - non-resistant n.d. no detailse

## **Place your trust in emergency pneumatics!**

We are the company who can help you, find a solution to your problem!

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