







## **Blow-In Systems for Fibre Optic Cables and Micro Pipes - Summary**

**Cable Laying Machinery** 

**Pipe Renewal Winches** 



#### **Injection System Powerflow Rapid**

For blowing in fibre optic cables 8-27 mm.

Maximum speed:
Required air flow:
Required air pressure:
The Flex-Block is already
included!
Order No.

80 m/min. 10 m<sup>3</sup>/min. 12 bar

111.200.10

**Injection System Miniflow** for blowing in fibre optic cables 4-11mm in tubes Ø: 10-20 mm

80 m/min. Maximum speed: Required air flow: 1 m<sup>3</sup>/min. Required air pressure: 15 bar Control unit and Power Pack (125 bar / 15 l/min) essential! Order No. 111.301.00



**Asphalt Recycler** 

## **Injection System Multiflow Rapid**

for blowing in micro tubes and convertible for fibre optic cable 8-27 mm.

Maximum speed:
Required air flow:
Required air pressure:
The Flex-Block is already
included!
Order No.

60	m/min.
10	m³/min.
12	bar

Accessories

111.250.65



#### **Injection System Microflow Touch**

for blowing in optical fibres 1-5 mm in tubes Ø: 5.7 or 10 mm

Maximum speed:	90 m/min.
Required air flow:	1 m³/min.
Required air pressure:	15 bar
Required electric power supply:	230 V
Rating:	180 W
Order No.	111.351.00

- Compressors must be equipped with an air cooler Alternatively Powerflow und Multiflow can also be operated by water!



## **Equipment for** fibre optic cable laying

**Cable Laying Machines** 

**Pipe Renewal Winches** 

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Accessories



#### Power Pack BHA 125/15

The Power Pack is required for Powerflow. Multiflow and Miniflow.

125 bar
15 l/min
84 kg
010.120.

Hydraulic tube 10m for BHA 125/15 Order-No. 003.558.02

0.120.00



#### Hydraulic control unit

With the control unit pressure and speed are regulated. The chains of the particular injection system are set in motion by the lever. The control unit is required for Powerflow, Multiflow and Miniflow.

Order No.

111.420.00



**Compressor Mobilair M 17** Suitable for Miniflow and Microflow

Air pressure max.: 15 bar Air flow:  $1 \text{ m}^3/\text{min}$ . Order No. 111.430.00

(An air cooler is necessary!)



#### **Compressor Mobilair M 125** suitable for Powerflow and Multiflow between 6-14

bar steplessly variable.

Air pressure max.: 14 bar Air flow: 11,5 m<sup>3</sup>/min. Order-No. 111.435.00

Air cooler included!



**Pipe Renewal Winches** 

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Accessories



#### **Injection System Powerflow Rapid**

Designed to blow in optical fibre cable from dia.: 8-27 mm into ducts of a dia. 32-50 mm. It is suitable for air- and water blowing. The drive chains are propelled by two low-wear and low-noise hydraulic motors which enable for- and backward movement of the cable. Only a few changes are necessary to change to different cable or pipe sizes.

Max. speed: Required air flow: Required air pressure: **Order No.**  80 m/min. 10 m<sup>3</sup>/min. 12 bar **111.200.10** 

*This System will delivered with Nylon-Applicator and Flex Block included.* 

Control unit and Power Pack (125 bar / 15 L/min) required!



#### Nylon-Applicator for micro ducts

This applicator assistance for micro duct is fastened to the Multiflow and bundles the different pipes. The number of holes can vary. Please specify this when ordering. (*Without Frame*)

Order No. 111.285.01



Flex Block (Blowing Junction Block)

Multiple micro ducts can be injected into protective ducts of 32, 40 and 50 mm diam. by air.

Order No. 111.282.10



#### Cable guide "flex" for single cable

Cable-ØOrder No.8-12 mm111.235.1013-17 mm111.236.1018-22 mm111.237.1023-27 mm111.238.10

Specifications are subject to change without notice. Output details are depending on use conditions.





**Pipe Renewal Winches** 

**Asphalt Recycler** 

Accessories

#### **Digital Odometer for Powerflow and Multiflow**

The measuring instrument could be attached to the Powerflow and the Multiflow. It shows depending to the forward and back movements the actual length. The data could be transferred to your EDP system. Measuring range: 0 - 9999 m.

Order No. 111.240.20

#### Chain rail

The chain rail, made from brass, supports the upper and lower drive chain. It is recommended to change the top / bottom rail at the same time.

Order No. 111.220.00

#### Drive chain

The drive unit constructed for cable dia. 8-22mm consists of two superimposed conveyor chains, provided with special rubber profile. The drive chains pull the cable from the drum into the blowing junction block wherefrom it is inserted into the tube by air or water pressure. It is recommended to change both drive chains at the same time.

Order No. 111.222.00

#### Cable guide rollers, horizontal

The horizontal cable guide rollers lead and protect the fibre cable by the entry into the Powerflow.

Order No. 111.224.00

Cable guide rollers, vertical Order No. 111.225.00











Specifications are subject to change without notice. Output details are depending on use conditions.



**Pipe Renewal Winches** 

**Asphalt Recycler** 

Accessories



#### **Blow-in System Multiflow Rapid**

Designed to blow in multiple micro ducts or single large size cables into ducts with a diam. of 32 up to 50 mm. It is suitable for air- and water blowing. The drive chains are propelled by two low-wear and low-noise hydraulic motors which enable forand backward movement of the cable. For fibre optic cable: 8-22 mm

Maximum speed:	60 m/min.
Required air flow:	10 m³/min.
Required air pressure:	12 bar
Order No.	111.250.65

This System will delivered with Nylon-Applicator and Flex Block included.

Control unit and Power Pack: (125 bar / 15 L/min) required!



#### Nylon-Applicator for micro ducts

This applicator assistance for micro duct is fastened to the Multiflow and bundles the different pipes. The number of holes can vary. Please specify this when ordering. (*Without Frame*)

Order No. 111.285.01



#### Flex Block (Blowing Junction Block)

Multiple micro ducts can be injected into protective ducts of 32, 40 and 50mm diam. by air.

Order No. 111.282.10

### Cable guide "flex" for single cable

Cable-Ø	Order No.
8-12 mm	111.235.10
13-17 mm	111.236.10
18-22 mm	111.237.10
23-27 mm	111.238.10

Specifications are subject to change without notice. Output details are depending on use conditions.





**Pipe Renewal Winches** 

Asphalt Recycler

Accessories

#### Sealing for micro ducts, 7 pieces

The sealing is for the use of the blowing junction block with micro ducts. Many different combinations are possible regarding size and number of holes to micro ducts. Please specify when ordering.

Sealing for micro ducts - 1 holeOrder No.Sealing for micro ducts - 13 holes111.290.00Sealing for micro ducts - 13 holes111.291.00Sealing for micro ducts - 15 holes111.292.00Sealing for micro ducts - 5 holes111.293.00Sealing for micro ducts - 7 holes111.294.00Plug for a 10mm sealing111.294.10

#### Chain rail

The chain rail, made from brass, supports the upper and lower drive chain. It is recommended to change the top / bottom rail at the same time.

Order No. 111.270.00

#### **Drive chain**

The drive unit consists of two superimposed conveyor chains and is provided with special rubber profile. Depending on the number and diameter of the Micro ducts appropriate chains are available. The drive chains pull the cable from the drum into the blowing junction block wherefrom it is inserted into the tube by air or water pressure. It is recommended to change the two drive chains at the same time.

Order No.	111.272.00	Chain for 7 duct bunch dia. 10mm
	111.273.00	Chain for 5/3 duct bunch dia. 10mm
	111.269.00	Chain for a single cable

#### Cable guide rollers, horizontal

The horizontal cable guide rollers lead and protect the fibre cable by the entry into the Multiflow.

Order No. 111.224.00

(can be used alternatively to 111.285.00)

Cable guide rollers, vertical Order No. 111.225.00

(can be used alternatively to 111.285.00)











Specifications are subject to change without notice. Output details are depending on use conditions.



**Pipe Renewal Winches** 

**Asphalt Recycler** 

Accessories



#### **Blow-in system Miniflow**

The Miniflow is used for blowing in fibre optic cables from 4 up to 11 mm into ducts from 10 up to 20 mm. The Miniflow has a robust and compact design and is very simple to operate. The drive chains are propelled by two low-wear and low-noise hydraulic motors which enable for- and backward movement of the cable.

Duct diameter:	DA 10-20 mm
Maximum speed:	80 m/min.
Required air flow:	1 m³/min.
Required air pressure:	15 bar
Order No.	111.301.00

Control unit and Power Pack (125 bar / 15L/min) required!



#### Note!

Especially for thinner cables there is a danger of compression. The display at the afloat bedded blowing junction unit indicates sequentially the rise of the friction forces between pipe and cable what enables an immediate reaction with increasing the aerial amount or a reducing the pushing speed. **Please use categorical Bagela Lube B50!** 

Order No. 111.340.00 - 240ml 111.340.60 - 470ml



#### Insert

The insert is available in different sizes and has to be reconciled to the actual size of the cable and the duct. Please specify the outer duct size.

Order-No.:	Pipe-ø mm
111.301.03	10
111.301.10	12
111.301.11	14
111.301.12	16
111.301.14	20





Pipe Renewal Winches

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Accessories

Cable sealing ring (At least 2 pieces are necessary!)

Order-No.:	Cable-ø mm
111.318.00	4.0
111.319.00	4.5
111.320.00	5.0
111.321.00	5.5
111.326.00	8.0

Nylon applicator The applicator leads the cable directly into the Miniflow

Order No. 111.334.00

Wear rail for Chain rail Order No. 111.315.11

#### **Drive chain**

The drive unit consists of two conveyor chains and is provided with special rubber profile. The drive chains pull the cable into the Miniflow. It is recommended to change the two drive chains at the same time. Order No. 111.315.00



Specifications are subject to change without notice. Output details are depending on use conditions.







**Pipe Renewal Winches** 

**Asphalt Recycler** 

Accessories



#### **Blow-in System Microflow Touch**

The Microflow is used for blowing in small fibre optic cable 1-4 mm. With the Microflow cable blowing is fully automated. It is operated by touch-screen. The continuously variable operation speed and the maximum speed are pre-selectable. A micro sensor supervises the linear course of the fibre optic. A lateral swivel out due to the rising friction or obstacles will cause an immediate stop and the cable is moved backwards.

Max. Speed:	90 m/min.
Required air flow:	1 m³/min.
Required air pressure:	15 bar
Required electric power supply:	230 V
Rating:	180 W
Order-No.	111.351.00

#### Microflow Log

The Microflow Log is for the same application as the Touch. But it is operated via a newly developed unit, which enables the issue of a protocol in accordance with the regulations of Deutsche Telekom. The log data can be transmitted via W-LAN or via mobile communications from the construction site to the client or the office. Order-No. 111.351.50



#### Adaption set

This is a complete set of format parts consisting of nylon fibre guide, wheels, top blowing junction block, bottom blowing junction block, fibre cable sensor arm and o-rings for the wheels. The Adaption set is available in different sizes and must be used according to the actual size of fibre cable and micro duct. Please specify the size of the fibre cable and micro duct.

Order-No.	Set	Cable-Ø mm	Pipe-Ø mm
111.352.00	А	1,0 - 1,7	5
111.351.02	В	1,8 - 2,6	7
111.354.00	С	2,7 - 3,8	10
111.355.01	D	3,9 - 4,6	10



# Blow-In System Microflow Accessories, Spare- and Wear-Parts

**Cable Laying Machines** 

**Pipe Renewal Winches** 

**Asphalt Recycler** 

Accessories

#### **Nylon Applicator**

The applicator leads the cable into the Microflow. It is available in different sizes according to the actual size of the fiber cable.

Order-No.	Applicator	Cable-Ø mm
111.362.00	А	1,0 - 1,7
111.363.00	В	1,8 - 2,6
111.364.00	С	2,7 - 3,8
111.365.00	D	3,9 - 4,6

#### Wheel

Two wheels pull the cable into the Microflow. The wheel is available in different sizes according to the size of the cable.

Order-No.	Wheel	Cable-Ø mm
111.366.00	А	1,0 - 1,7
111.367.00	В	1,8 - 2,6
111.368.00	С	2,7 - 3,8
111.369.00	D	3,9 - 4,6

#### Fibre cable sensor arm set

The set consits of two pieces, which fit into each other and is the unique protection technology of our Microflow. It stops the cable blowing machine as soon as the cable gets bent inside the blowing junction block and the cable cannot get damaged. The set available in different sizes according to the actual size of the fibre cable.

Sensor-Type	Cable-size	Order No.
A	1,0 - 1,7mm	111.380.02
В	1,8 - 2,6mm	111.381.02

#### O-Ring for wheel

It is available indifferent sizes according to he size of the wheel/cable.

Order-No.	O-Ring	Cable-Ø mm
111.385.00	Α	1,0 - 1,7
111.386.00	В	1,8 - 2,6
111.388.00	C + D	2,7 - 4,6



Specifications are subject to change without notice. Output details are depending on use conditions.











**Pipe Renewal Winches** 

**Asphalt Recycler** 

Accessories



#### **Blowing-in system Nanoflow Max**

For fibre to home installation, independent of other machines or tools, powered by rechargeable battery, double fibre protection, LED display showing speed, distance, fibre protection. Delivered in practical carrying case with quick guide, adapter set for fibre: 1.8 and 3.0 mm and sealings for pipes 3; 5;7; 8 and 10 mm.

Pipe diameter:	3 - 12,7 mm
Fibre diameter:	0,8 - 4,5 mm
Required air pressure:	0-10 bar
Order-No.	111.550.00



#### Reel holder for Nanoflow Max Order-No. 111.562.00



#### **Compressor Premium Compact 200/4**

Air pressure max.:	10 bar
Air flow:	113 l/min.
Order-No.	111.425.00



Accessories for calibration of the protection pipes

**Cable Laying Machines** 

**Pipe Renewal Winches** 

Asphalt Recycler

Accessories

Cable avoidance and transmitter locating system

Current laying techniques also includes direct blow-in methods, for which the cable ducts have to be gauged beforehand to check them for any internal deformations. This will ensure unhampered blow-in. The gauge, which contains a sonde, is blown through the cable duct by compressed air.

If the gauge with the sonde gets stuck in transit, its position can exactly be pinpointed down to a depth of 7 m by passing a receiver along the course of the cable duct. As soon as the receiver approaches the sonde, a continuous optical and acoustic signal will be emitted, which will reach its maximum level right above the location where the sonde got stucked.



Order No. 009.674.10

The additionally applications are the localization of underground laid cables, metal lines and house service lines. Lines can be irradiated with the transmitter that the signal will be strong enough for the receiver.

	Order No.	Weight	Batteries	Service life
<b>Receiver</b> Frequency 32768 Hz, 5 Hz	009.675.30	2.2 kg	8 x LR6 (1.5V)	>40 h
Sending gripper 100mm	009.675.34			
Transmitter Bag Sonde With adapter for glass fibre rods 9-16 mm	009.675.32 009.675.31 009.674.10	0.08 kg	1x CR 1/3N	5 h



#### **Calibration arbor**

Inner duct-Ø	Weight	Order No.	
28 mm	0.20 kg	009.677.00	
35 mm	0.25 kg	009.677.10	
40 mm	0.30 kg	009.677.20	
Delivered without sonde, just for illustration.			



**Pipe Renewal Winches** 

Asphalt Recycler

Accessories



#### Microsondes for calibration of micro pipes 33 kHz Simple localisation of pipe damages

Range: 2-3 m Scope of delivery: 1 Sonde, 2 Batteries, Storage Box

Diameter: 6,4mm Order-No.: 009.675.61

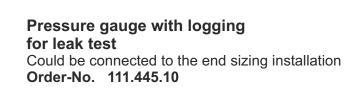




Diameter: 4,6mm Order-No.: 009.675.63



Battery Order-No.: 009.675.62 (without illustration)







Accessories for blow-in fiber optic cables

#### **Cable Laying Machines Pipe Renewal Winches Asphalt Recycler Accessories** Optical fiber plunger, flexible Inner duct-Ø Weight Order No. 28 mm 0,23 kg 009.955.50 32 mm 0,25 kg 009.956.00 009.956.50 35 mm 0.28 kg 40 mm 0,30 kg 009.957.00 009.958.00 50 mm 0,35 kg Fibre optic pull piston, for additional blowing Including 2 pulling grips and anti-twist swivel. Total Ø of both cables incl. grip max. 37 mm, Ø of laid cable: 10-18 mm.

Inner duct-Ø Weight **Order No.** 40 mm 0,75 mm **009.962.42** 

#### Speed piston 7 for tube ID 40 mm

Ø 37 mm, with adapter for 33 KHz sonde Order No. 111.490.00

#### Speed piston for adding

Ø 35 mm, adding 5 pipes to an installed cable Cable-Ø 10-16 mm Order No. 111.491.00 Cable-Ø 15-21 mm Order No. 111.492.00

#### Cable pulling grip

made of galvanised steel wire, one thimble, double reduced, single bound.

Cable- Ø	Order-No.
2.5 – 5.6mm	009.646.00
5.3 – 9.2mm	009.646.01
8.1 – 12.5mm	009.646.02
10.7 – 15.8mm	009.646.03
13.5 – 19.1mm	009.646.04
16.3 – 22.4mm	009.646.05
19.1 – 25.5mm	009.646.06



Specifications are subject to change without notice. Output details are depending on use conditions.

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## Accessories for blow-in fiber optic cables

**Cable Laying Machinery** 

**Pipe Renewal Winches** 

Asphalt Recycler

Accessories



End sizing installation with pressure gauge and compressed air connection. Weight: 3.1 kg Order No. 111.042.00

End sizing installation similar 111.042.00, with connection to pressure gauge with logging (not illustrated) Order No. 111.042.01

Fitting for 10 mm pipes (not illustrated) Order No. 111.042.02



Gliss F



lube P 640

Cable slip oil Gliss F 25l Can Order No. 117.053.00 Cable slip oil Lube P 640 19I Can Order No. 111.340.55



Arrester barrier for sleeved pistons and calibration arbor with sonde. Weight: 2.5 kg Order No. 111.041.00



Separable connector for pipe with inner-Ø 40 - 44 mm to connect flush mounted pipes in ducts for blowing-in cabel / Pipe up to dia. max. 25 mm.

Order No. 111.500.00



**Sponge** for inner-Ø 32 - 60 **Order No. 126.800.00** 

Specifications are subject to change without notice. Output details are depending on use conditions.





**Pipe Renewal Winches** 

Asphalt Recycler

Accessories

#### **Y-Fitting**

To blow in a second cable, or micro pipes the Y-Fitting joins the old pipe with an intermediate pipe which is connected with the Powerflow. The protective pipe gets locked on both sides.

Order No.111.242.10 (for 32, 40, 50mm pipes)Order No.111.242.20 (for 63mm pipes)

**Y-Block** - for pipes of 14 - 65mm Aluminium Adapter and sealings could be used from the blowing junction block of the blowing machine. Please order when not available.

Order No. 111.242.50



If it is not possible to insert the whole length in one step, the cable drum has to be positioned in the middle of the trail. The first length gets inserted in one direction and the remaining cable laid into the cage.

The uncoiling cages all owes a controlled and efficient uncoiling of the cable off the drum. The large version is dismountable for transport.

Diameter	Height	Weight	Order No.
2400 mm	1700 mm	77 kg	111.245.00







Specifications are subject to change without notice. Output details are depending on use conditions.

6-16



**Pipe Renewal Winches** 

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Accessories



#### Guidance unit for micro ducts

The guidance unit is to be positioned between the micro duct drums and the Multiflow. It ensures a regular uncoiling of the ducts.

Order No. 111.262.00



Additional acceptance for micro duct

This acceptance fits in all trailers of the series BKT 18 up to BKT 27.

Order No. 028.328.02



#### Sealing unit with manometer

Laterally of the drum is the inner end of the duct where this unit is to be inserted and remain fixed during the injection procedure. A pressure loss will become visible at the manometer immediately.

Order No. 111.261.00



#### **Overpressure testing unit**

Before the injection process all micro ducts are pressurised. This unit facilitates this procedure and shortens the temporal expenditure to a minimum. A pressure loss will become visible at the manometer immediately.

#### Order No. 111.260.00

(the connecting tubes to 111.261.00 are included)





**Pipe Renewal Winches** 

Asphalt Recycler

Accessories

#### Plug for micro ducts

The plug is equipped with a o-ring for 100 % sealing. It is easy to mount with self cutting thread. It is also available in other sizes. Please specify when ordering.

Micro pipe-Ø	Mat. thickness	Order No.
7 mm	1,5 mm	111.296.00
10 mm	1,0 mm	111.297.00
12 mm	1,0 mm	111.298.00
14 mm	2,0 mm	111.298.10
16 mm	2,0 mm	111.298.20
20 mm	2,5 mm	111.298.32



**Pipe Cutter for Pipe-ø 50mm** For lengthswise and crosswise cuts **Order No.** 111.444.00

Micro pipe cutter Order No. 111.261.50

Micro pipe cutter Order-No. 111.444.10







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**Pipe Renewal Winches** 

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Accessories



#### **Micro Pipe Pulling Unit**

Each strand has a tensile load of max. 300 kg. Attention: Please follow the tensile load limit restrictions of the appropriate micro pipe.

The single strands are to be assembled, please make your choice.

Order No.:	Outer dia. mm	Thickness mm	Strand length cm
111.295.11	1 x 7	1,5	40
111.295.12	1 x 7	1,5	50
111.295.13	1 x 7	1,5	60
111.295.14	1 x 7	1,5	70
111.295.21	1 x 10	1	40
111.295.22	1 x 10	1	50
111.295.23	1 x 10	1	60
111.295.24	1 x 10	1	70
111.295.31	1 x 12	1	40
111.295.32	1 x 12	1	50
111.295.33	1 x 12	1	60
111.295.34	1 x 12	1	70
111.295.41	1 x 14	2	40
111.295.42	1 x 14	2 2 2 2	50
111.295.43	1 x 14	2	60
111.295.44	1 x 14	2	70
111.295.51	1 x 16	2	40
111.295.52	1 x 16	2 2 2 2	50
111.295.53	1 x 16	2	60
111.295.54	1 x 16	2	70
444 005 04	1 00	25	40
111.295.61 111.295.62	1 x 20 1 x 20	2,5	40 50
111.295.62	1 x 20 1 x 20	2,5 2,5	50 60
111.295.64	1 x 20 1 x 20	2,5 2,5	70
107.070.00			10
	Shackle for pulling unit (to be ordered with the strands)		

Specifications are subject to change without notice. Output details are depending on use conditions.



Accessories for mini- / micro cable laying

**Asphalt Recycler** 

**Cable Laying Machines** 

**Pipe Renewal Winches** 

#### Afterblow adapter for mini cable

With the loops can be reduced down to approx. 70 mm. This rest could be carefully inserted into the micro pipe and the pipe ends connected with a bushing.

Duct diameter:	Order No.
7 mm	111.341.30
10 mm	111.341.00
12 mm	111.341.10
14 mm	111.341.20
16 mm	111.341.40



Accessories

#### Cable protection hood

Cable-Ø	Order No.	Cable-Ø	Order No.
2,0 mm	111.342.01	8,0 mm	111.342.08
2,5 mm	111.342.02	8,5 mm	111.342.09
4,0 mm	111.342.03	9,0 mm	111.342.10
5,0 mm	111.342.04	10,0 mm	111.342.11
6,0 mm	111.342.05	11,0 mm	111.342.12
6,5 mm	111.342.06	12,0 mm	111.342.13
7,0 mm	111.342.07		

#### Automatic lubrication unit

This pump enables a precise dosing for constant lubrication and increases the cable laying length a lot (for Powerflow und Multiflow).

Order No. 111.244.00 (without can of cable slip oil)







**Pipe Renewal Winches** 

Asphalt Recycler

Accessories



#### Lubricant Bagela Lube

This lubricant is characterized by excellent slipping quality. It is urgently recommended for the application with Miniflow and Microflow.

Order-No. 111.340.00 240 ml 111.340.60 470 ml



#### Lubricator

for Microflow und Miniflow. It nebulises the lubricant whereas the amount is adjustable. Alternatively, the airflow could be bypassed. The lubricator is suitable for any micro pipe. **Order-No. 111.450.00** 

#### Uncoiling cage for fibre optic cable

If it is not possible to insert the whole length in one step, the cable drum has to be positioned in the middle of the trail. The first length gets inserted in one direction and the remaining cable laid into the cage.

The uncoiling cages all owes a controlled and efficient uncoiling of the cable off the drum. The large version is dismountable for transport.

Diameter	Height	Weight	Order No.
880 mm	990 mm	25 kg	111.246.50



#### Drum Jack hinged and galvanized

Max.	Max.	Max. Load	Weight	Order No.
Drum-Ø	Drum-width	kg	kg	
800 mm	500 mm	150	10	009.499.00

