

GM plast



## PRODUCT CATALOG 2018

### PIPE AND DUCT SYSTEMS

WWW.GM-PLAST.DK



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GM Plast, established in 1975, is a privately owned company with production facilities in Hedensted, Denmark. Produces plastic ducts and pipes for the telecommunication and electricity sectors.

## PIPE SYSTEMS PRODUCTION

Constantly developing and innovating itself, GM Plast has stayed at the forefront of the plastic extrusion field and has consistently been bringing new and innovative products onto the market.

GM Plast is currently expanding in eastern and southern Europe, as well as the Asia-Pacific region. Demand for high quality FTTx products such as the GM Flatliner, GM Microduct and GM Subduct, has meant that GM Plast has seen an explosive growth in these markets over the past few years.



## OUR EXPERIENCE

GM Plast has been producing ducts and pipes for over 40 years now and for the last 20 years we have been specializing in the fiber to the home ( FTTH ) market. We have been around the block (and underneath...) many times.

## OUR PRODUCTS:

- FLATLINERS
- MULTIDUCTS , MULTI SUB DUCTS
- SUBDUCTS
- MICRODUCTS
- CABLE DUCTS

We have been pushing, dragging, blowing and floating in pretty much everything imaginable since 1990's. GM Plast did a lot of pioneering and a lot of teaching, on how to install cable with air and water. We did the mistakes and we made the learnings.

The ability to tailor specific products for individual customers is something we take pride in as well. We listen to our customers and develop products that are specifically optimized for each customer's situation. With an experienced staff, that has decades of experience with FTTx, we have the ability to counsel and guide you when you are expanding and building your network.

With local production facilities and technicians, GM Plast offers an incredibly high level of flexibility and reliability of supply that you won't find matched anywhere else in the industry.



## GM EXPANSION

Over the past forty years, GM Plast has steadily grown and has expanded its production capacities and storage facilities throughout those years.

For the past decade, GM Plast has seen explosive growth in the FTTx- and adjacent markets and has been actively developing and reinventing FTTx products to facilitate simpler and more cost-effective network construction, expansion and maintenance for our customers.

With us as a partners in your project you are sure to work with the best.

## PRODUCT PORTFOLIO

The product portfolio has widened significantly, ranging from direct buried empty duct systems, to ducts suitable for ploughing, aerial, microtrenching and sewer installation.

The pervasive theme has always been to consistently keep developing and improving our products in terms of functionality, durability and price. As a result, our production facilities in Hedensted, Denmark, has grown rapidly to accommodate our product portfolio and to satisfy a demanding world market that continuously requires the highest level of quality in ever-increasing quantities.

This approach has provided us with a uniquely flexible and agile production environment and as a result, GM Plast is able to satisfy even the most particular demands from our customers.



## FTTx ACCESSORIES

No two FTTx networks are completely alike. Therefore you need the option to customize your network and your manholes, street cabinets and other components to exactly fit your specific network.

GM Plast supplies a wide range of accessories for use with our products. We frequently expand and widen our selection of available accessories.

Branching off, connecting and port reducing can all be done with the available GM Plast accessories.

Made from sturdy and high quality long-lasting materials, all accessories are reliable and proven products that are specifically made for use with GM Cable Ducts. Years of experience have told us exactly what works in the field when working with ducts and pipes every day.



In this catalogue we are summing up many years of our experiences. With us as a partners in your project you are sure to work with the best.

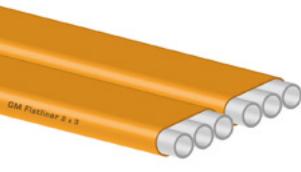
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**Ask us for any suggestions to get the job done, and if you like our ideas we would be glad to offer you the right material for the job that you want to have done.**

**SUBDUCTS & MICRODUCTS DL**

		Product Parameters
<b>SUBDUCTS / MICRODUCTS Page 10 - 11</b>		
	Subducts OD/ID in mm	5/3,4 6/4 7/5,5 8/6 10/8 12/10 14/12
	Microducts OD/ID in mm	6/3,5 7/4 8/4,5 10/6 12/8 14/10 16/12 18/14 20/15 20/16
	Drum size in mm	800x800 800x400 400x400 coils
	Inner Surface	Grooved surface / smooth surface
	Colour/Markings/Stripes	On customers demand

**FLATLINER**

		Product Parameters
<b>STANDARD FLATLINER Page 14 - 15</b>		
	Number of pipes	2 3 4 5 6 7 8 9 10 11 12
	Microducts OD/ID in mm	6/3,5 7/4 8/4,5 10/6 12/8 14/10 16/12 18/14 20/15 20/16
	Drum size in mm	2300x1215 2200x1200 1215x1212 coils
	Colour/Markings/Stripes	On customers demand

**FOLDABLE FLATLINER Page 16**

	Number of pipes	4 5 6 7 8 9 10 11 12
	Microducts OD/ID in mm	6/3,5 7/4 8/4,5 10/6 12/8 14/10 16/12 18/14 20/15 20/16
	Drum size in mm	2300x1215 2200x1200 1215x1212 coils
	Colour/Markings/Stripes	On customers demand

**KOMBI FLATLINER Page 17**

	Number of pipes	1/2+2 1/2+3 1/2+4 1/2+5 1/2+6 1/2+7
	Microducts OD/ID in mm	6/3,5 7/4 8/4,5 10/6 12/8 14/10 16/12 18/14 20/15 20/16
	Drum size in mm	2300x1215 2200x1200 1215x1212 coils
	Colour/Markings/Stripes	On customers demand

**HD/AERIAL FLATLINER Page 18-19**

	Number of pipes	1 2 3 4
	Microducts OD/ID in mm	6/3,5 7/4 8/4,5 10/6 12/8 14/10 16/12 18/14 20/15 20/16
	Drum size in mm	2300x1215 2200x1200 1215x1212 coils
	Colour/Markings/Stripes	On customers demand

## MULTIDUCT

		Product Parameters
<b>MULTIDUCTS</b> Page 22		
	Number of pipes	3 4 5 6 7 8 10 12 14 19 24
	Microducts OD/ID in mm	6/3,5 7/4 8/4,5 10/6 12/8 14/10 16/12 18/14 20/15 20/16
	Drum size in mm	2300x1215 2200x1200 1215x1212 coils
	Colour/Markings/Stripes	On customers demand

## MULTISUBDUCT

		Product Parameters
<b>MULTISUBDUCTS</b> Page 23		
	Number of pipes	5 6 7
	Microducts OD/ID in mm	10/8 12/10
	Drum size in mm	2300x1215 2200x1200 1215x1212
	Colour/Markings/Stripes	On customers demand

## CABLE DUCT

		Product Parameters
<b>CABLE DUCTS</b> Page 26		
	Number of pipes	1 2 3 4 taped solution
	Pipes OD/ID in mm	25 32 40 50
	Drum size in mm	2800x1600 2300x1215 2200x1200 1215x1212 coils
	Colour/Markings/Stripes	On customers demand

## CABLE PIPE

		Product Parameters
<b>CABLE PIPE smooth</b> Page 30		
	Pipes OD/ID in mm	50/46 63/57 75/69 82/78
		90/82 110/102 160/150
	Transport	Frames with couplers
	Colour/Markings/Stripes	On customers demand

**CABLE/FLEX DUCT**

Product Parameters		Product Parameters
<b>CABLE /FLEX DUCTS corrugated/smooth Page 31</b>		
	Pipes OD/ID in mm	40/31 50/42 75/63 90/77 110/95 117/103 120/100
		125/108 160/135 175/150 200/176
	Transport	Frames with couplers / Coils with couplers
	Colour/Markings/Stripes	On customers demand

**FLEX PIPE**

		Product Parameters
<b>FLEX PIPE corrugated Page 31</b>		
	Pipes OD/ID in mm	25/18 46/40 50/42 58/50 61/50 75/63 93/80 110/95
		160/145 200/184
	Transport	Coils with couplers
	Colour/Markings/Stripes	On customers demand

**SPLIT DUCT**

		Product Parameters
<b>SPLIT DUCTS smooth Page 32</b>		
	Pipes OD/ID in mm	58/50 110/100 160/138 120/110
	Meters per Unit	3m/5m
	Transport	Frames
	Colour/Markings/Stripes	On customers demand

**CABLE/FLEX DUCT BEND**

		Product Parameters
<b>DUCT BEND corrugated/smooth, smooth Page 33</b>		
	Pipes OD/ID in mm	50/42 63/52 75/63 90/75 110/95 117/100 120/100
		125/108 160/136 175/150 200/176
	Bending Radius/Length	550mm/1000-1500mm
	Colour/Markings/Stripes	On customers demand

## BANDS, MESH

		Product Parameters
<b>CABLE COVER BAND Page 34</b>		
	Thickness/Width in mm	1,5-5,0 / 75-500
	Length per Roll in meters	25 50 100 200
	Length per Pallet in meters	300 800 1000 1500 1600 2000 2700 3000
	Colour/Markings/Stripes	On customers demand

<b>CABLE COVER BAND Page 34</b>		
	Width in mm	4x400 ( On customers demand )
	Length per Drum in meters	200
	Length per Pallet in meters	800
	Colour/Markings/Stripes	On customers demand

<b>WARNING MESH Page 34</b>		
	Width in mm	100 200 300 500 1000
	Length per Roll in meters	50 100
	Addidional features	Metal detection core
	Colour/Markings/Stripes	On customers demand

<b>CABLE MARKING BAND Page 35</b>		
	Thickness/width in mm	0,35/25 0,05/50
	Length in meters	250 500
	Addidional features	Metal detection core
	Colour/Markings/Stripes	On customers demand

<b>TRACE WIRE Page 35</b>		
	Wire size	0,5 mm
	Wire cord size	2mm Special PE Insulation ( black / orange )
	Voltage	Voltage Test - 2,5 kV Operational Voltage - 100kV
	Length on Drum	2000 m



Flame retardant version available



## Product Description

- 5mm - 20mm in Diameter
- Extremely low friction for maximum installation lengths
- Manufactured from high density polyethylene (HDPE)
- Colour coded
- Flame-retardant version optional

Micro Subducts	5/3,5 6/4,0 7/5,5 8/6,0 10/8,0 12/10,0 14/11,6 14/12,0
Microducts	6/3,5 7/4,0 8/4,5 10/6,0 12/8,0 14/10,0 16/12,0 18/14,0 20/16,0

## Product Features

- Microducts / Micro Subducts can be supplied with either internally grooved surface or smooth inner surface. This is the customers choice.
- Microducts / Micro Subducts come in the color desired by the customer. However the default color is Orange RAL 2009 ( Masterbatch dosing 1-2% ). Colour applications are available in solid hues or in natural shade with a coloured stripe (4x or 2x ).
- Marking of pipes is the customer's choice, however this will always include Machine nr, Date, Time and job nr. This is for the tracking in our Quality System.
- Microducts are UV stabilized (max. two years – Central Europe)



Smooth surface



Inner ribs

## Product Delivery



T800x800 drum



T800x400 drum



T400x400 drum

### MICRO SUBDUCTS

Outside diameter	Drum size 800x400	Drum size 800x800
5/3,5	2500m	5000m
6/4,0	3500m	6000m
7/5,5	2500m	5000m
8/6,0	2000m	4000m
10/8,0	1250m	2500m
12/10,0	1000m	2000m
14/11,6	700m	1400m
14/12,0	700m	1400m

### MICRODUCTS

Outside diameter	Drum size 800x400	Drum size 800x800
6/3,5	3500m	6000m
7/4,0	2500m	5000m
8/4,5	2000m	4000m
10/6,0	1250m	2500m
12/8,0	1000m	2000m
14/10,0	700m	1400m
16/12,0	500m	1000m
18/14,0	400m	800m
20/16,0	350m	700m

## Material properties

INDICATIVE VALUES FOR GM MICRODUCTS MATERIALS	Value	Unit	Test
Material density	>955	kg/m <sup>3</sup>	ISO -1183 :
Melt flow index MFR (190°C/5kg)	0,3 -1,3	g/10min.	ISO -1133 :
Hardness +20°C	>55	Shore D	ISO - 868 :

The recommended installation temperature  
storage temperature  
operating temperature

-10°C to 65°C  
-30°C to 70°C  
-30°C to 70°C

## Tests

For detailed specifications ( including mechanical /envirometal properties) please contact our sales department.

Production tests*	
Outer Diameter	2x per Drum
Wall thickness	2x per Drum
Ovality	2x per Drum
Inner Diameter	2x per Drum
Weight per Meter	2x per Drum
Visually	Continuously
Marking	2x per Drum
Pressure Tests	1x per Drum

\* Additional tests can be made according to customers demands .

All tests are made at the independent Institutes:



At GM, we work according to the following standards dealing pipe production:

**PRNS2967:2001**      **EN50086**

**DIN 16874/16876**      **EN12201**

**DIN 8074/8075**      **EN13244**

## Additional products



Microcutter



Cutter



Cutter



End connectors



Connectors



Reifer



## RECOMMENDED - CABLE IN THE DUCT SIZES

CABLE77 EPFU Single Tube Micro Cable					
Fiber Number	2	4	6	8	12
Fiber Bundle	1x2	1x4	1x6	1x8	1x12
Cable Ø in mm	1,2	1,2	1,5	1,8	1,8
Recommended microduct inside Ø in mm	3,5- 4,5	3,5- 4,5	3,5- 4,5	3,5- 4,5	3,5- 4,5

CABLE77 Uni/Multi Tube PA-12												
Fiber Number	4	8	12	24	24	48	72	96	144	144	192	288
Fiber Bundle	1x4	1x8	1x12	1x24	2x12	4x12	6x12	8x12	12x12	6x24	8x24	12x24
Cable Ø in mm	2,5	2,5	2,5	4,0	5,3	5,3	5,3	6,1	7,9	8,2	8,3	9,5
Recommended microduct inside Ø in mm	4-6	4-6	4-6	6-10	8-16	8-16	8-16	10-16	12-16	12-16	12-16	16-20

CABLE77 Uni/Multi Tube PE								
Fiber Number	4	8	12	24	48	72	96	144
Fiber Bundle	1x4	1x8	1x12	2x12	4x12	6x12	8x12	12x12
Cable Ø in mm	3,5	3,5	3,5	4,0	5,3	5,3	6,1	7,9
Recommended microduct inside Ø in mm	6-10	6-10	6-10	8-16	8-16	8-16	10-16	12-16

CABLE77 Multi Tube 200microns PE				CABLE77 Multi Tube armoured PE					
Fiber Number	144	192	288	Fiber Number	12	24	48	72	96
Fiber Bundle	6x24	8x24	12x24	Fiber Bundle	1x12	2x12	4x12	6x12	8x12
Cable Ø in mm	5,7	6,7	8,7	Cable Ø in mm	11,9	11,9	11,9	11,9	13,1
Recommended microduct inside Ø in mm	8-14	10-14	12-16	Recommended microduct inside Ø in mm	26-40	26-40	26-40	26-40	26-40

CABLE77 DUCT CABLE Multi Tube PE									
Fiber Number	12	24	48	72	96	144	192	288	432
Fiber Number	2x12	4x12	6x12	8x12	12x12	6x24	8x24	12x24	18x24
Cable Ø in mm	10,6	10,6	10,6	10,6	12,0	14,6	14,2	17,3	18,0
Recommended microduct inside Ø in mm	16	16	16	16	18	20	20	26-40	26-40

CABLE77 Multi Loose Tube LSZH												
Fiber Number	24	48	72	96	120	144	168	192	216	240	264	288
Fiber Bundle	6x4	6x8	6x12	8x12	10x12	12x12	7x24	8x24	9x24	10x24	11x24	12x24
Cable Ø in mm	7,2	7,2	7,2	8,2	10,4	10,4	11,4	11,4	14,4	14,4	14,4	14,4
Recommended microduct inside Ø in mm	10-16	10-16	10-16	12-16	16	16	16	16	20	20	20	20



## Product Description

- Flat bundle of thick-walled microducts (2 to 12 coloured microducts)
- Outer shell of Flatliner is made of HDPE
- Outer layer is usually coloured either bright orange or a natural see-through colour
- Customization possible

Flatliner	2 - 12 pipes   OD/ID 7/4mm 2 - 12 pipes   OD/ID 8/5mm 2 - 12 pipes   OD/ID 10/6mm 2 - 12 pipes   OD/ID 12/8mm 2 - 12 pipes   OD/ID 14/10mm 2 - 6 pipes   OD/ID 16/12mm 2 - 5 pipes   OD/ID 20/16mm
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## Product Features

- Different combinations of flatliner with same number of pipes (foldable, separate, connection).



- Easy branching-off. For a blown fiber or multiduct system you need expensive tools for branch-offs. With the flatliner system you only need the cheap and easy to install connectors.



Branch-off with Connector

- Trace wire / Rip cord on demand.



- Outer layer colour on customers demand. Coloured stripes available.  
Text printing on customers demand.

Coloured stripes

## MICROLOGISTICS

- Reduction of logistical costs. No need for heavy machinery and cranes - everything is on pallets.

- Effectiveness in the field.

Flatliner as best solution for narrow streets and city centres

- easy roll out in trenches - easy handling
- installation teams working parallel in different locations
- faster deployment



Coil size

- Efficient use of materials

- pipe lengths adjusted precisely to trench distances
- less return waste



Coils on pallet

- All combinations of different pipe sizes in one Flatliner possible (Kombi, Power Flatliner ).

## ■ Product Delivery



T230/130 2300x1215    T8kantede 1200x2200

Type5 1215x1212

Pallets

FLATLINER	OD/ID 7mm/4mm		OD/ID 8mm/5mm		OD/ID 10mm/6mm	
Number of pipes	Drum size 1215x1200	Drum size 2200x1200	Drum size 1215x1200	Drum size 2200x1200	Drum size 1215x1200	Drum size 2200x1200
2	6000m	-	3000m	6000m	3000m	6000m
3	3000m	-	3000m	6000m	3000m	6000m
4	3000m	-	2000m	6000m	3000m	6000m
5	3000m	6000m	2000m	6000m	3000m	6000m
6	2000m	6000m	1500m	3000m	3000m	3000m
7	1500m	6000m	1500m	3000m	1500m	3000m
8	1500m	6000m	1200m	3000m	1500m	3000m
10	1000m	3000m	1200m	3000m	1500m	3000m
12	1000m	3000m	750m	3000m	600m	3000m

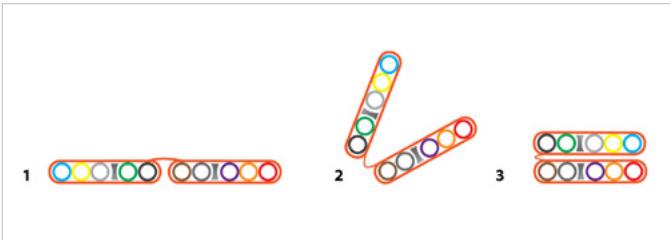
FLATLINER	OD/ID 12mm/8mm		OD/ID 14mm/10mm		OD/ID 16mm/12mm	
Number of pipes	Drum size 1215x1200	Drum size 2200x1200	Drum size 1215x1200	Drum size 2200x1200	Drum size 1215x1200	Drum size 2200x1200
2	2000m	4000m	1500m	3000m	1200m	4800m
3	2000m	4000m	1500m	3000m	800m	2400m
4	1000m	4000m	1000m	3000m	600m	2400m
5	1000m	2000m	750m	1500m	600m	1600m
6	800m	2000m	500m	1500m	400m	1600m
7	500m	2000m	500m	1500m	-	-
8	500m	2000m	430m	1500m	-	-
10	500m	1000m	375m	1000m	-	-
12	400m	1000m	300m	1000m	-	-

FLATLINER	OD/ID 20mm/16mm	
Number of pipes	Drum size 1215x1200	Drum size 2200x1200
2	750m	3000m
3	750m	1500m
4	500m	1500m
5	375m	750m
6	300m	750m



## Product Description

- Flat bundle of thick-walled microducts (2 to 12 coloured microducts)
- An extra topskin is applied onto the Flatliner. This secures a very flexible solution , that makes the folding easy
- Outer shell of Flatliner is made of HDPE
- Outer layer is usually coloured either bright orange or a natural see-through colour
- Customization possible



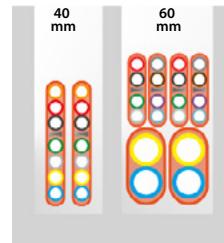
## Product Features

- Foldable Flatliner is perfect for microtrenching because it is flexible in deployment but stiff and stable on edge. Vertical installation is possible.

### MICROTRENCHING

- Microtrenching is the optimal solution for deploying both access- and backbone in especially urban areas – all in only one handling.
- An innovative deployment technique that is lower in costs, quicker and more environmentally friendly than traditional deployment.
- We believe this deployment method used on highways and local roads will maximise the opportunities in the roll out of infrastructure projects such as superfast broadband. FTTH and FTTX.
- Power Flatliner – a regular Flatliner equipped with a 220V power cable.

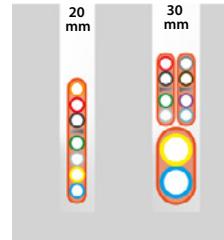
Microtrenching

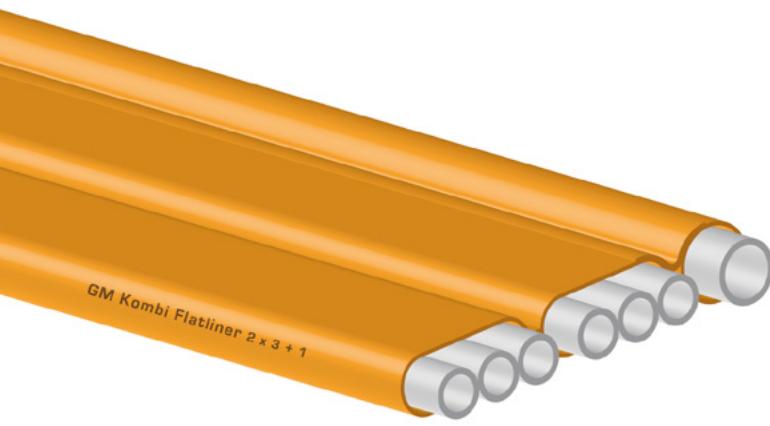


- Can be both traditionally trenched or microtrenched to ensure both power cable and fibre cable in one workflow.

- Ideal for situations where you need both power and network connectivity at your endpoints. Power supply for charging stations , CCTV cameras , parking machines , ticket machines , etc.

Microtrenching





## Product Description

- Flat bundle of thick-walled microducts (2 to 12 coloured microducts)
- Backbone and Access tubes are combined in the same line
- Outer shell of Flatliner is made of HDPE
- Outer layer is usually coloured either bright orange or a natural see-through colour
- Customization possible

	1 + 2		1 + 3 + 3
	1 + 3		1 + 6
	1 + 4		2 + 7
	1 + 4		2 + 4 + 3
	1 + 5		2 + 5 + 5

## Product Features

- You can mix all available duct sizes in one flatliner theoretically. A prevailing trend is the Comboflatliner, where Backbone and Access tubes are combined in the same line. It saves time and allows a good soil compaction of fillers.

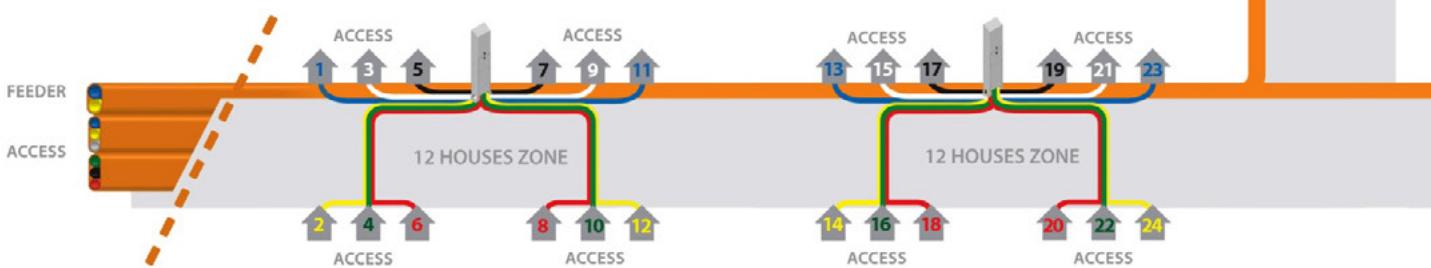
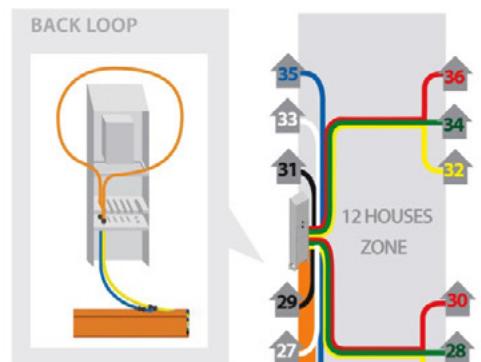
### COMBI FLATLINER 2 + 6

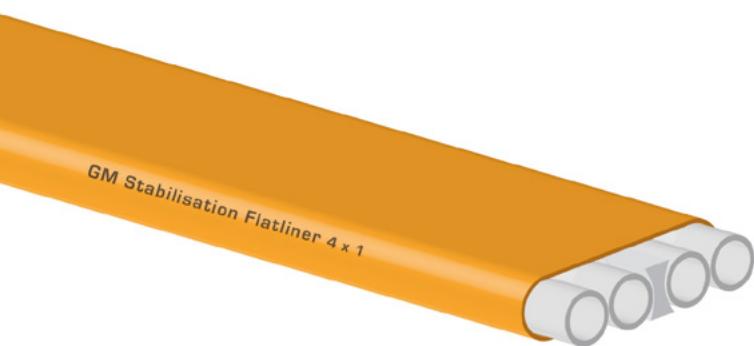
- 2 x Feeder ducts for transport of fibers
- 6 x Access ducts for the customer cable
- Small street cabinet for dividing 6 Access ducts into 12 houses

### Choosing 2 + 6 Combi Flatliner

- Improves the blowing success rate
- Makes the installation faster and easier
- Reduces the building costs
- Reduces the maintenance and longterm costs

- Build the most compact infrastructure possible
- Build long-lasting network





### Product Description

- Flat bundle of thick-walled microducts (2 to 12 coloured microducts)
- Stabilisation Stick between microducts
- Outer shell of Flatliner is made of HDPE
- Outer layer is usually coloured either bright orange or a natural see-through colour

Flatliners	4 - 12 pipes OD/ID 7/4mm 4 - 12 pipes OD/ID 8/4,5mm 4 - 12 pipes OD/ID 10/6mm 4 - 12 pipes OD/ID 12/8mm 4 - 12 pipes OD/ID 14/10mm 4 - 6 pipes OD/ID 16/12mm 4 - 6 pipes OD/ID 20/16mm
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### Product Features

- With the latest design GM Plast has build in a small profile as a “spacer” between the micro ducts, this gives the product higher stability and therefore also better blowing performance.
- The new spacer supports also the micro ducts in the case of cross or tensile that can appear when installers are building millions of meters of new trenches.
- The new spacer can be produced with a trace wire or a fiber rod inside. The trace wire will be then well protected and can actually be used in future when needed.
- The fiber rod is for extra tensile strength, developed for directional drilling, plowing or long sub duct installations.



20% higher tension strength



- additional features :  
trace wire, fiber rod



### Product Description

- Flat bundle of thick-walled microducts
- Strong fibre rods and a thick outer layer
- Outer shell of Flatliner is made of HDPE
- Outer layer is usually coloured bright orange
- HD Flatliner / Temperature Stable Flatliner ideal for plowing and underpassing



## Product Description

- Flat bundle of thick-walled microducts (2 to 12 coloured microducts)
- Power Flatliner – a regular Flatliner equipped with a 220V power cable
- Outer shell of Flatliner is made of HDPE
- Outer layer is usually coloured either bright orange or a natural see-through colour
- Customization possible



## Product Features

- Ideal for situations where you need both power and network connectivity at your endpoints. Power supply for charging stations , CCTV cameras , parking machines , ticket machines , etc.

Can be both traditionally trenched or microtrenched to ensure both power cable and fibre cable in one workflow.



## Product Description

- Bundle of thick-walled microducts (1 to 3 coloured microducts)
- For areas where trenching is not possible, we have designed the Aerial Flatliner which can be hung above ground to make it possible to reach destinations where traditional laying methods are not an option
- Outer shell of Flatliner is made of HDPE
- Outer layer is usually coloured either bright orange or a natural see-through colour
- Customization possible



## Product Specification

- GM's Flatliners are UV stabilized ( max. two years – Central Europe).
- The default colour of the outer sheath is visually similar to Orange RAL 2009 ( Masterbatch dosing 1-2% ). Colour applications are available in solid hues or in natural shade. Longitudinal coloured stripes available ( 1x stripe or 2x stripes ).
- Microducts used in this construction have the same properties as standard Microducts with respective dimensions (see the related product specification for Microducts)
- Marking of Microducts and Flatliners : machine nr., date, time and job nr.. Those data are part of mandatory information's required by GM tracking and Quality System.
- All drums are pressure tested in accordance with current pressure class.
- Ducts are calibrated with steel ball that matches max. 8% ovality in the pipe on the drum.

## Material properties

INDICATIVE VALUES FOR GM FLATLINER MATERIALS	Value	Unit	Test
Material density	>910	kg/m <sup>3</sup>	ISO -1183 :
Melt flow index MFR (190°C/5kg)	2,0 -4,0	g /10min.	ISO -1133 :
Hardness +20°C	>55	Shore D	ISO - 868 :

The recommended installation temperature  
storage temperature  
operating temperature

-10°C to 65°C  
-30°C to 70°C  
-30°C to 70°C

Production tests*	
Outer Diameter	2x per Drum
Wall thickness	2x per Drum
Ovality	2x per Drum
Inner Diameter	2x per Drum
Weight per Meter	2x per Drum
Visually	Continuously
Marking	2x per Drum
Pressure Tests	1x per Drum

\* Additional tests can be made according to customers demands .

All tests are made at the independent Institutes:



At GM, we work according to the following standards dealing pipe production:

**PRNS2967:2001      EN50086**

**DIN 16874/16876      EN12201**

**DIN 8074/8075      EN13244**





## Product Description

- Bundle of thick-walled microducts (3 to 24 coloured microducts)
- Multiduct are made from Prime Virgin raw materials
- UV stabilized HDPE outer sheet
- Micro-ribbed co-extruded lubricant low friction inner surface layer
- Customization possible

## Additional Features

- Trace wire - easy to locate
- Ripcord - easy to open
- Stabilisation sticks - double strength
- HD Multiduct - double thickness skin
- Can be produced in combinations according to customers requirements.
- Colour applications are available in solid hues or in natural shade with a coloured stripe.
- Individual text according to customers requirements.

## MULTIDUCTS - 3 - 24 pipes

Number of pipes	Pipe size in MM	Sections
3	5 6 7 8 10 12 14 16	
4	5 6 7 8 10	
4	14 16 20	
5	5 6 7 8 10 12 14 16	
5	5 6 7 8 10 12 14 16	
6	5 6 7 8 10 12 14 16	
6	5 6 7 8 10 12 14 16	
7	5 6 7 8 10 12 14	
8	5 6 7 8 10 12	
8	5 6 7 8 10 12	
10	5 6 7 8 10	
14	5 6 7 8 10	
19	5 6 7 8	
24	5 6 7 8	



## Product Description

- Bundle of thick-walled microducts (5 to 7 coloured microducts)
- Multiduct are made from Prime Virgin raw materials
- UV stabilized HDPE outer sheet
- Micro-ribbed co-extruded lubricant low friction inner surface layer
- Customization possible

### MULTI SUB FIX

Pipe diameter	Number of pipes	Sections
Ø 38	7x10/8      5x12/10	

#### SUB LOOSE

The microduct is laying loose in the protection pipe.

#### SUB SKIN

Ducts are produced with a SKIN that will fixate and protect them. That is done to ensure that they don't shrink into the protection duct in the winter and to increase the performance of blowing.

### MULTI SUB LOOSE

Pipe diameter	Number of pipes	Sections
Ø 40	5x10/8	
Ø 50	7x10/8      5x12/10	

#### SUB FIX

Microducts are fixed inside the protection duct.

### MULTI SUB SKIN

Pipe diameter	Number of pipes	Sections
Ø 40	5x10/8	
Ø 50	7x10/8      5x12/10	

## Product Specification

- GM's Multiducts are UV stabilized ( max. two years – Central Europe).
- The default colour of the outer sheath is visually similar to Orange RAL 2009 ( Masterbatch dosing 1-2% ). Colour applications are available in solid hues or in natural shade. Longitudinal coloured stripes available ( 1x stripe or 2x stripes ).
- Microducts used in this construction have the same properties as standard Microducts with respective dimensions (see the related product specification for Microducts)
- Marking of Microducts and Multiducts : machine nr., date, time and job nr.. Those data are part of mandatory information's required by GM tracking and Quality System.
- All drums are pressure tested in accordance with current pressure class.
- Ducts are calibrated with steel ball that matches max. 8% ovality in the pipe on the drum.

## Material properties

INDICATIVE VALUES FOR GM MULTIDUCTS MATERIALS	Value	Unit	Test
Material density	>910	kg/m <sup>3</sup>	ISO -1183 :
Melt flow index MFR (190°C/5kg)	2,0 -4,0	g/10min.	ISO -1133 :
Hardness +20°C	>55	Shore D	ISO - 868 :

The recommended installation temperature  
storage temperature  
operating temperature

-10°C to 65°C  
-30°C to 70°C  
-30°C to 70°C

Production tests*	
Outer Diameter	2x per Drum
Wall thickness	2x per Drum
Ovality	2x per Drum
Inner Diameter	2x per Drum
Weight per Meter	2x per Drum
Visually	Continuously
Marking	2x per Drum
Pressure Tests	1x per Drum

\* Additional tests can be made according to customers demands .

All tests are made at the independent Institutes:

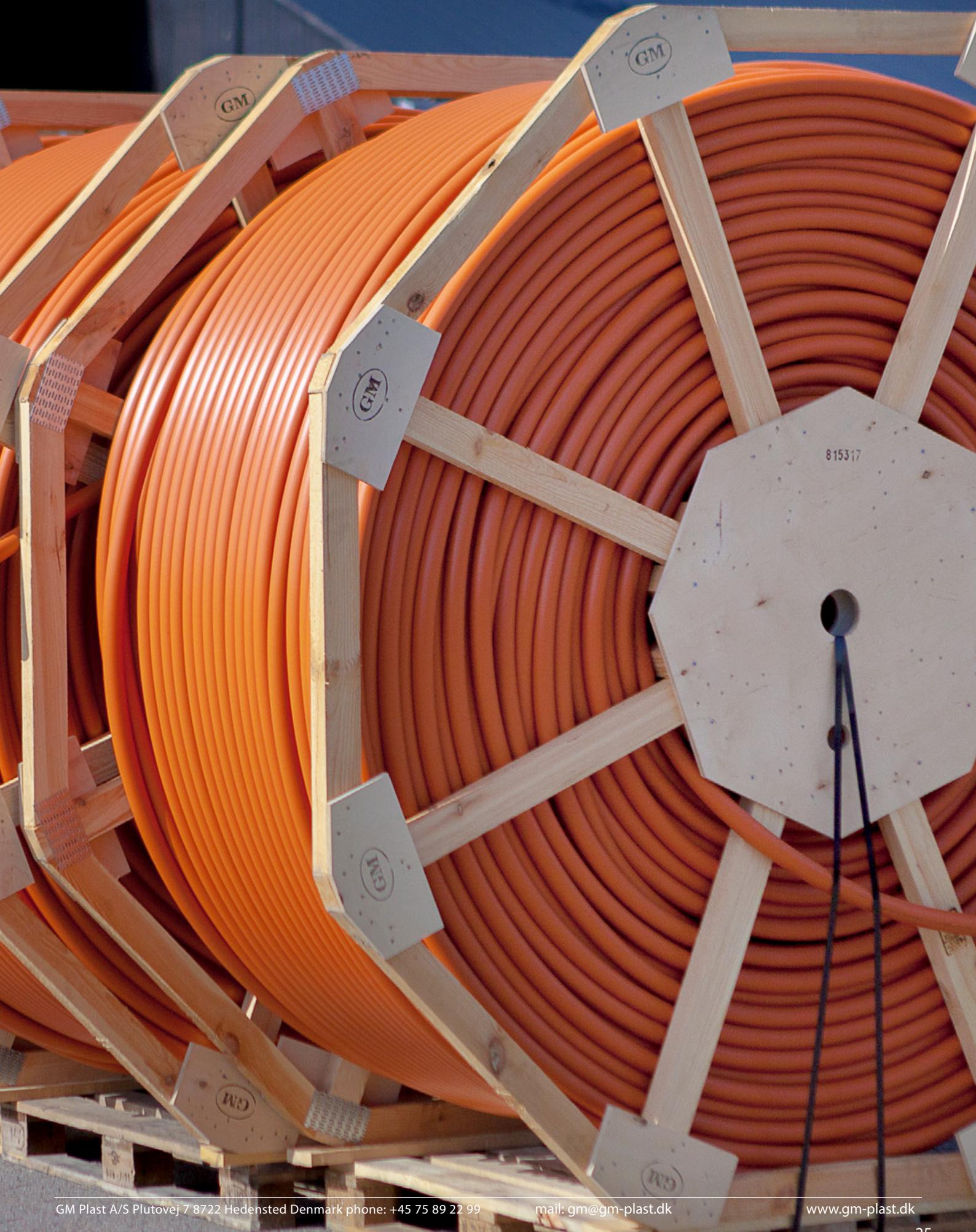


At GM, we work according to the following standards dealing pipe production:

**PRNS2967:2001**      **EN50086**

**DIN 16874/16876**      **EN12201**

**DIN 8074/8075**      **EN13244**





## Product Description

- GM's cable ducts for fiber blowing are low friction ducts, manufactured with or without a lubricant.
- GM manufactures a large number of various tubes and pipes. Colour, inside surface e.t.c can all be changed upon customers request.
- Customization possible



Smooth surface



Inner ribs



Double layer surface

## Additional Features

■ The taped solution brings together the cable ducts in a block. The tubes are taped together for optimized decoiling and easier handling of the cable ducts in the trenches. The tape is easy removable and leaves no problems when mounting the sleeves

■ By roadcrossings you can easily cut up the tape to loosen the cable ducts. Loose cable ducts have the advantage that they easily come through if by drilling an ovality in the the empty duct has occurred

■ GM's tape system combines the needs for holding together in the trenches and loose cable ducts in roadcrossings

### CABLE DUCT

Cable Ø in mm - 25 / 32 / 40 / 50

### DRUM SIZE 2200 X 1200 MM

Cable Ø in mm	●	●●	●●●	●●●●
25 mm	5000m	2500m	1250m	-
32 mm	3000m	1500m	900m	650m
40 mm	2000m	1000m	600m	400m
50 mm	1200m	600m	400m	250m

### DRUM SIZE 2800 X 1600 MM

Cable Ø in mm	●	●●	●●●	●●●●
32 mm	6000m	2900m	1800m	1300m
40 mm	4000m	1900m	1250m	900m
50 mm	2500m	1250m	800m	600m

## Product Delivery

### 1- WAY DRUMS



2200x1200



1215x1200

### (Returnable)



2200x1200

### 2- WAY DRUMS



2800x1600



## DOUBLE COUPLERS PE, PVC, POLYCON

All sizes - according to Duct measurements

- Corrugated double coupler is also manufactured as a watertight coupler ( by mounting a rubber ring between the grooves. )
- Also supplied in other dimensions upon request.



## END CAPS

All sizes - according to Duct measurements

- Also supplied in other dimensions upon request.



## PROTECTION CAPS

All sizes - according to Duct measurements

- Protection cap prevents dirt and rodents from entering the duct.
- Manufactured in dimensions Ø40-160 mm.

## Product Specification

- GM's Cable Ducts are UV stabilized ( max. two years – Central Europe).
- Cable ducts come in the color desired by the customer. However the default color is visually similar to Orange RAL 2009 or Black RAL 9017 ( Masterbatch dosing 1-2% ).
- Marking of Ducts : machine nr., date, time and job nr.. Those data are part of mandatory information's required by GM tracking and Quality System.
- All drums are pressure tested in accordance with current pressure class.
- Ducts are calibrated with steel ball that matches max. 8% ovality in the pipe on the drum.

## Material properties

INDICATIVE VALUES FOR GM DUCTS MATERIALS	Value	Unit	Test
Material density	>950	kg/m <sup>3</sup>	ISO -1183 :
Melt flow index MFR (190°C/5kg)	1,0 -1,6	g/10min.	ISO -1133 :
Hardness +20°C	>55	Shore D	ISO - 868 :

The recommended installation temperature  
storage temperature  
operating temperature

-10°C to 65°C  
-30°C to 70°C  
-30°C to 70°C

Production tests*	
Outer Diameter	2x per Drum
Wall thickness	2x per Drum
Ovality	2x per Drum
Inner Diameter	2x per Drum
Weight per Meter	2x per Drum
Visually	Continuously
Marking	2x per Drum
Pressure Tests	1x per Drum

\* Additional tests can be made according to customers demands .

All tests are made at the independent Institutes:



At GM, we work according to the following standards dealing pipe production:

**PRNS2967:2001      EN50086**

**DIN 16874/16876      EN12201**

**DIN 8074/8075      EN13244**





Frames with couplers



Frames with couplers



Coils with couplers

### Product Description

- GM smooth PEH cable pipe is a strong cablepipe, with a minimal frictional resistance when conveying cable.
- Is also produced in other colors and lengths upon request.
- Also delivered with coupler.

#### CABLE DUCT / SMOOTH PE

Diameter O/I	6 meters w/ coupler	Frame size	Art.Nr
40/35mm	x	570 m	13-040/035
50/46 mm	x	570 m	13-050/046
63/57 mm	x	570 m	13-063/057
75/69 mm	x	570 m	13-075/069
82/78 mm	x	288 m	13-082/078
90/82 mm	x	288 m	13-090/082
110/102 mm	x	288 m	13-110/102
160/150 mm	x	156 m	13-160/150

### Product Description

- Reeled GM flexipew/coupler has a smooth inside, which increases strength and minimizes the frictional resistance
- Polyethylene (PE)
- Is also produced in other colors and lengths upon request

#### FLEX DUCT CORRUGATED/SMOOTH PE

Diameter O/I	PEH in 50m. w/ pullcord	Colour	Art.Nr
40/31mm	x	red/orange	12-040/031
50/42 mm	x	red/orange	12-050/042
63/53 mm	x	red/orange	12-063/053
75/63 mm	x	red/orange	12-075/063
90/77 mm	x	red/orange	12-090/077
110/95 mm	x	red/orange	12-110/095
120/100 mm	x	red/orange	12-120/100
160/135 mm	x	red/orange	12-160/135
175/150 mm	x	red/orange	12-175/150
200/176 mm	x	red/orange	12-200/176



Frames with couplers



## Product Description

■ Is also produced in other colors and lengths upon request.

### FLEX PIPE / CORRUGATED PE

Diameter O/I	PEH in 50m. w/ pullcord	Frame size	Art.Nr
25/18mm	-	white	18-025/018
46/40 mm	x	red/orange	18-046/040
50/42 mm	x	red/orange	18-050/042
58/50 mm	x	red/orange	18-058/050
61/50 mm	x	red/orange	18-061/050
75/63 mm	x	red/orange	18-075/063
93/80 mm	x	red/orange	18-093/080
110/95 mm	x	red/orange	18-110/095
160/145 mm	x	red/orange	18-160/145
200/180 mm	x	red/orange	18-200/180

## Product Description

■ GM Corrugated cablepipe with a smooth inside complete with coupler  
 ■ Polyethylene (PE)  
 ■ Also supplied in other colors and lengths upon request

### CABLE DUCT CORRUGATED/SMOOTH PE

Diameter O/I	PEH 6 meters w/coupler	Bundle size	Art.Nr
50/42mm	x	1170 m	17-050/042
75/63 mm	x	978 m	17-050/063
90/77 mm	x	270 m	17-090/077
110/95 mm	x	402 m	17-110/095
117/103 mm	x	270 m	17-117/103
120/100 mm	x	270 m	17-120/100
125/108 mm	x	288 m	17-125/108
160/135 mm	x	198 m	17-160/135
175/150 mm	x	198 m	17-175/150
200/176 mm	x	120 m	17-200/176

**CABLE DUCT / smooth PE**

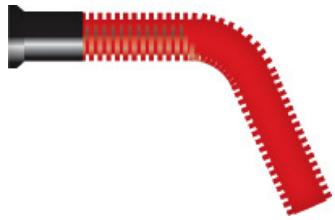
Diameter O/I	PEH in 6 m. w/ coupler	Frame size	Art.Nr
25/21mm	x	960 m	22-25/21
32/28 mm	x	570 m	22-32/28
40/36 mm	x	570 m	22-40/36
50/46 mm	x	570 m	22-50/46
63/59 mm	x	570 m	22-63/59
75/70 mm	x	570 m	22-75/70
90/85mm	x	288 m	22-90/85
110/104 mm	x	288 m	22-110/104
125/119 mm	x	288 m	22-125/119
160/152 mm	x	156 m	22-160/152
180/171 mm	x	156 m	22-180/171
200/191 mm	x	150 m	22-200/191
250/238 mm	x	96 m	22-250/238
280/268 mm	x	54 m	22-280/268
315/302mm	x	54 m	22-315/302

- GM smooth PEH cableduct with couple is a dimensionally stable cableduct, when glued it offers watertight solution, ideal for casting and digging. The PEH ensures minimal friction in the pipe.
- Can be produced in other dimensions or colours according to customers requirements.

**SPLIT Duct / smooth PE**

Diameter O/I	Meters per Unit	Frame size	Art.Nr
58/50 mm	5	525 m	13-058/50
110/100 mm	3	162 m	13-110/100
160/138 mm	3	72 m	13-160/138
120/110 mm	3	144 m	13-120/110

- GM Split Ducts (PEH) are due to a new construction easy to slide together - no tools necessary.
- Even when assembled in the trenches with dirt and sand, they slide together without any problems.
- Especially usefull when moving already laid cables or by repair.

**Cableduct Bend , Corrugated/Smooth, PE**

Diameter O/l	45° and 90°	Bending radius	Bending length	Art.Nr
50/42mm	x	550 mm	1000 mm	36-050/042
63/52 mm	x	550 mm	1000 mm	36-063/052
75/63 mm	x	550 mm	1000 mm	36-075/063
90/75 mm	x	550 mm	1500 mm	36-090/075
110/95 mm	x	550 mm	1500 mm	36-110/095
117/100 mm	x	550 mm	1500 mm	36-117/100
120/100mm	x	550 mm	1500 mm	36-120/100
125/108 mm	x	550 mm	1500 mm	36-125/108
160/136 mm	x	550 mm	1500 mm	36-160/136
175/150 mm	x	550 mm	1500 mm	36-175/150
200/176 mm	x	550 mm	1500 mm	36-200/176

- Can be produced in other dimensions or colours according to customers requirements.

**Cableduct Bend , Smooth, PE**

Diameter O/l	45° and 90°	Bending radius	Bending length	Art.Nr
32/28mm	x	300 mm	350 mm	26-032/028
40/36 mm	x	300 mm	450 mm	26-040/036
50/44 mm	x	550 mm	850 mm	26-050/044
63/57 mm	x	550 mm	850 mm	26-063/057
75/68 mm	x	550 mm	1100 mm	26-075/068
82/75 mm	x	550 mm	1100 mm	26-082/075
90/82mm	x	550 mm	1100 mm	26-090/082
110/100 mm	x	550 mm	1100 mm	26-110/100
160/150 mm	x	800 mm	1500 mm	26-160/150

- Can be produced in other dimensions or colours according to customers requirements.



### Cable Cover Band

Thickness x Width	Length per roll	Length per pallet	Art.Nr
1,5 x 75 mm	50m / 100m	3000 m	11-1,5/075
1,5 x 100 mm	50m / 100m	3000 m	11-1,5/100
1,5 x 150 mm	50m / 100m	1500 m	11-1,5/1800
1,6 x 100 mm	50m / 100m	3000 m	11-1,6/100
1,7 x 100 mm	50m / 100m	3000 m	11-1,7/100
1,8 x 100 mm	50m / 100m	2700 m	11-1,8/100
2,0 x 100 mm	50m / 100m	3000 m	11-2,0/100
2,2 x 170 mm	50m	2000 m	11-2,2/1500
2,2 x 200 mm	50m	1600 m	11-2,8/1500
2,8 x 100 mm	50m / 100m	3000 m	11-2,8/100
3,0 x 100 mm	40m	3000 m	11-3,0/2160
3,4 x 170 mm	50m	2000 m	11-3,4/170
3,4 x 200 mm	50m	1500 m	11-3,4/200
3,5 x 400 mm	25m	1000 m	11-3,5/675
3,5 x 450 mm	25m	1000 m	11-3,5/300

- GM cable cover bands are made from a soft PE which makes the cover band easy to handle when installing in a trench.

- Can be produced in other dimensions or colours according to customers requirements.

- Text customizable

- Standard colourways : red, orange , blue

- DEMKO certification
  - 1,8 x 100 mm
  - 2,2 x 170 mm
  - 2,2 x 200 mm
  - 3,0 x 100 mm
  - 3,4 x 170 mm
  - 3,4 x 200 mm

- Laying depth 0,35 m - 0,7 m



### Warning Mesh

Width	Length per roll	Various colours	Art.Nr
100 mm	100 m	x	15-100/100
200 mm	100 m	x	15-200/100
300 mm	100 m	x	15-300/100
500 mm	100 m	x	15-500/100
1000 mm	50 m	x	15-1000/100

- GM Warning Mesh is used to lay over cables, pipe lines and conduits.

- Mesh cover size is designed so that if an excavator should come in contact with it the teeth of the digger bucket catch the mesh thereby giving the operators ample warning of possible damage to underlying installations. The mesh is flexible and will follow up with the diggers bucket.

- GM Warning Mesh can be supplied with an intergrated metal detection core

- Individual text according to customers requirements



## Cable Marking Band

Thickness x Width	Text (print)	Length	Colour	Art.Nr
0,30 x 25 mm	Warning! Power cable below	250 m	Red	15-0010-00
0,30 x 25 mm	Warning! Main water pipe below	250 m	Blue	15-0010-00
0,30 x 25 mm	Warning! Tele cable below invisible laser light-Danger to eyesight	250 m	Orange	15-0010-00
0,30 x 25 mm	Warning! Tele cable below	250 m	Orange	15-0010-00
0,30 x 25 mm	Warning! Tele / Television cable below	250 m	Orange	15-0010-00
0,05 x 50 mm	Warning! High pressure steam pipe below	500 m	Purple	15-0010-00
0,05 x 50 mm	Warning! Television cable below	500 m	Orange	15-0010-00

- Marking Band can be produced in various lengths and colours.
- Individual text according to customers requirements.
- GM Marking Band can be supplied with an integrated metal detection core



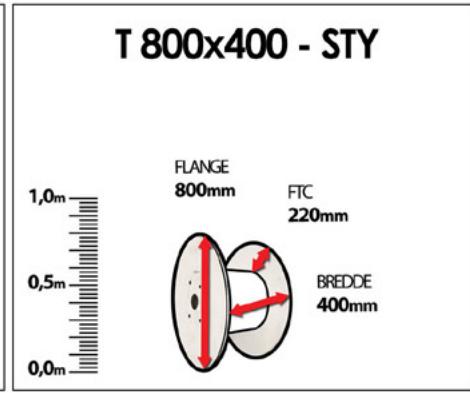
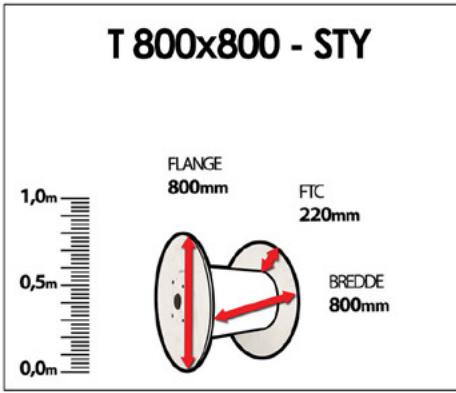
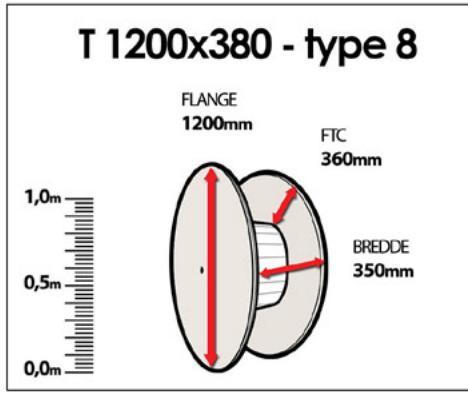
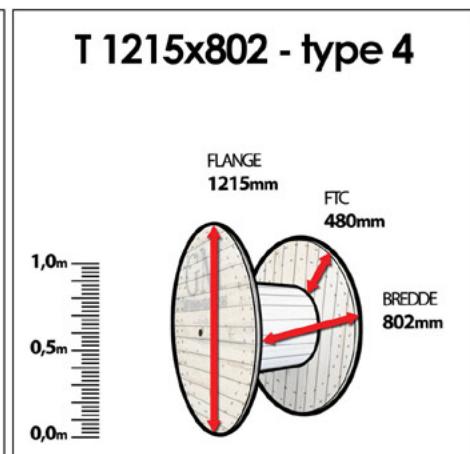
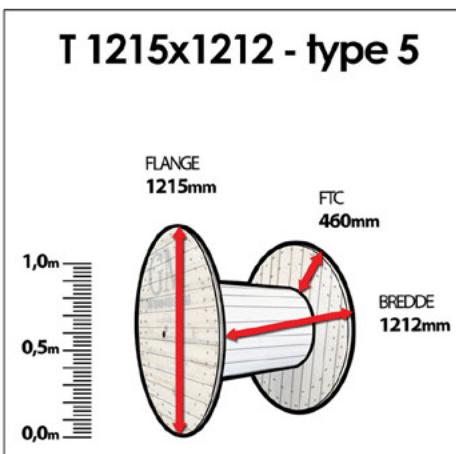
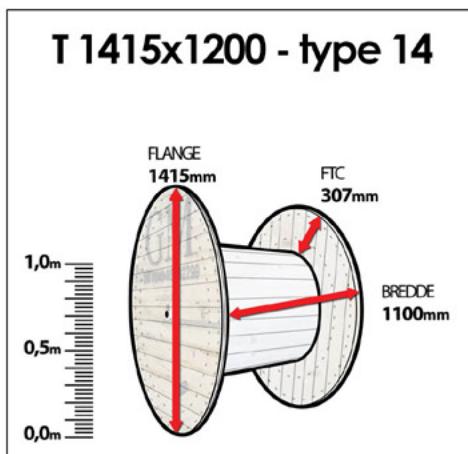
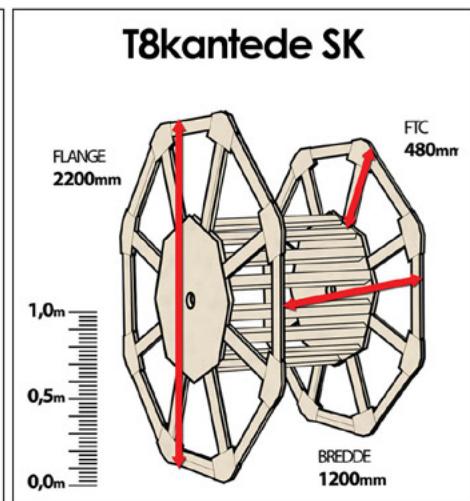
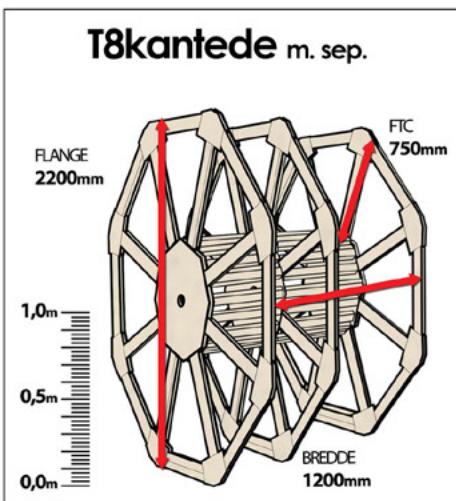
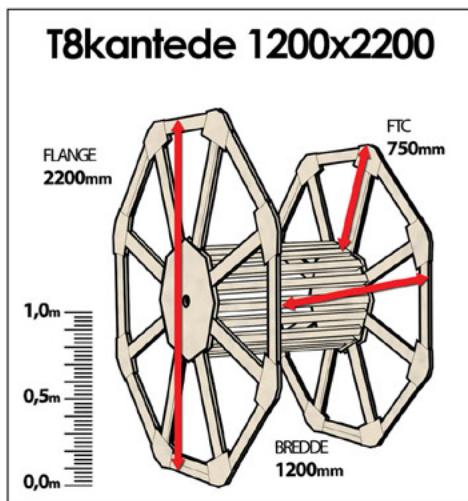
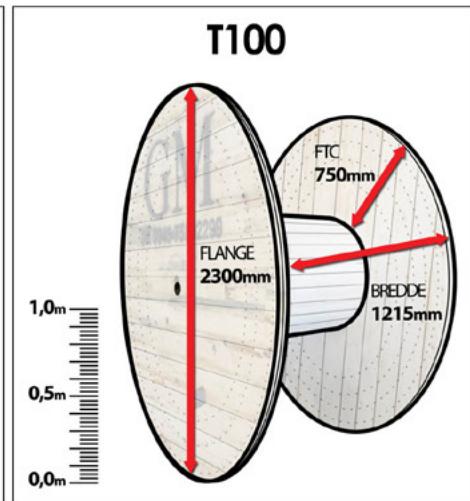
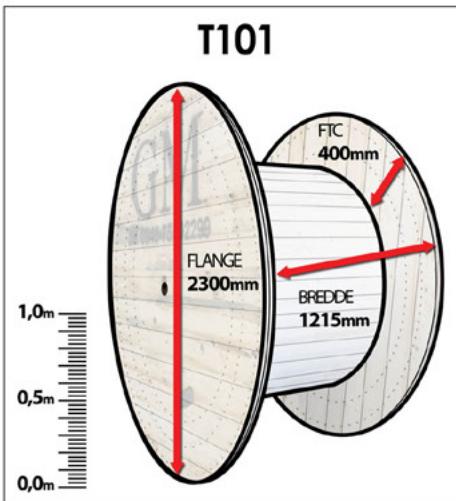
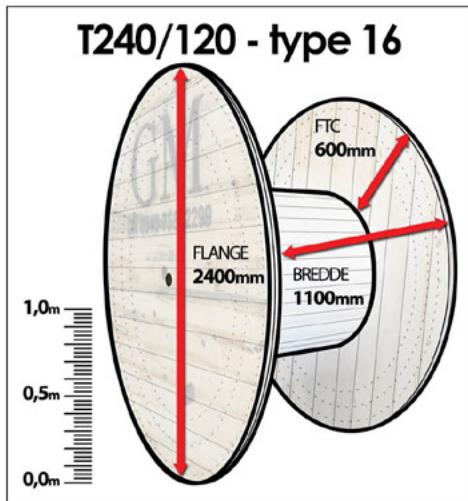
## Spacers

Measurements	2-4-6-8 pcs. spacers	Colour	Art.Nr
50 mm	x	black	26-D050
63 mm	x	black	26-D063
75 mm	x	black	26-D075
90 mm	x	black	26-D090
110 mm	x	black	26-D110
120 mm	x	black	26-D120
125 mm	x	black	26-D125
160 mm	x	black	26-D160
175 mm	x	black	26-D175
200 mm	x	black	26-D200

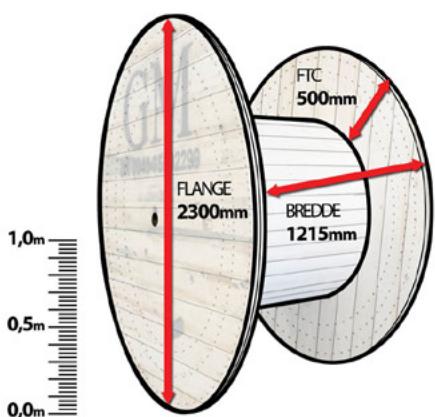


## TRACE WIRE 0,5 mm PE

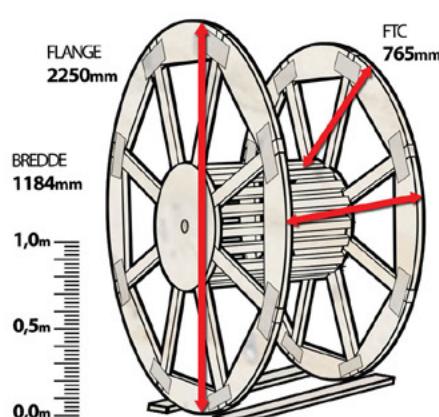
- Single-core cooper wire cord
- Special PE insulation - Insulation colour according to customer request
- Operational Temperature : -25°C to +70°C
- Permissible Temperature - short-circuit - +160°C
- Operational Voltage : 100V
- Voltage Test : 2,5kV



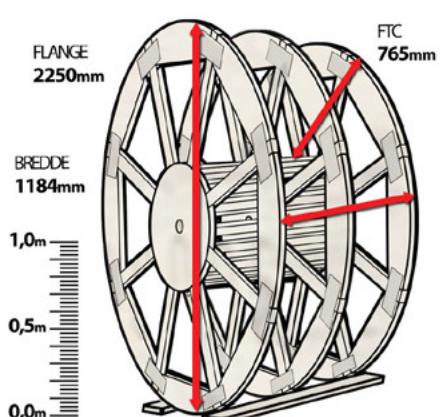
**T230/130** (multirør-1200m)



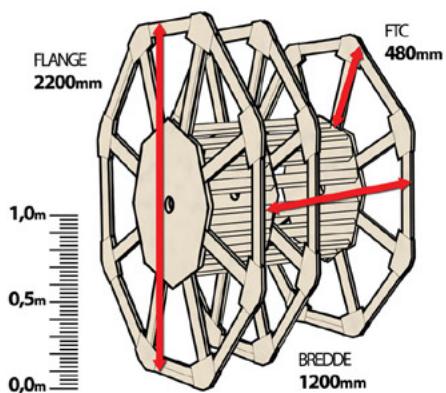
**T-rund** one-way type11



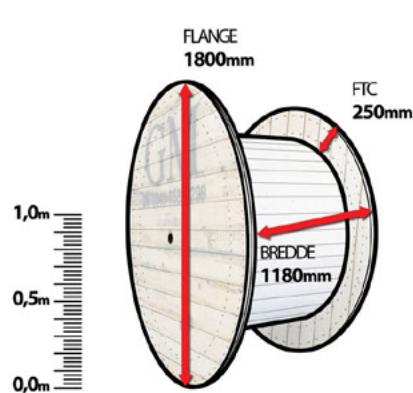
**T-rund** one-way type12 m. sep.



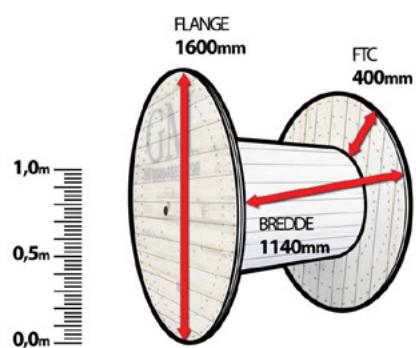
**T8kantede SK** m. sep.



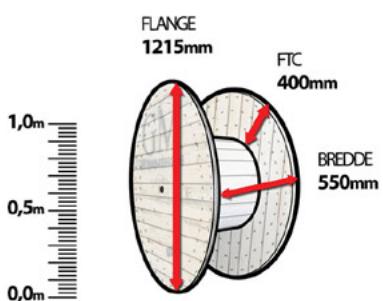
**T180/130** (multirør-500m)



**T160**



**T 1215x550 - type 2**



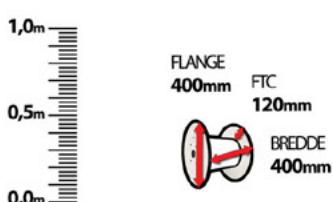
**Halvpalle** - 800x800



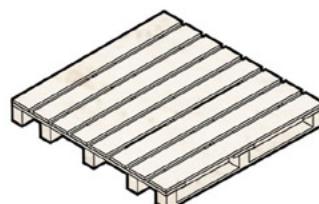
**Engangspalle** - 1300x1200

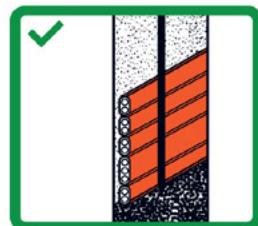
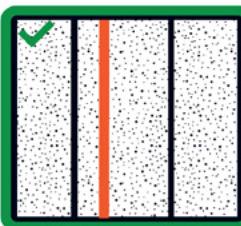
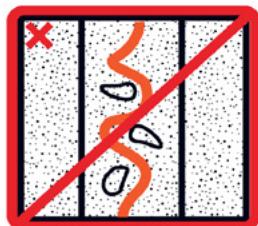
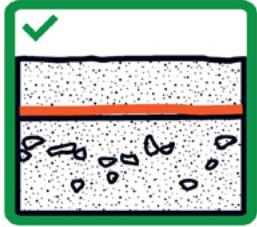
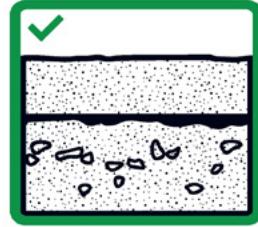
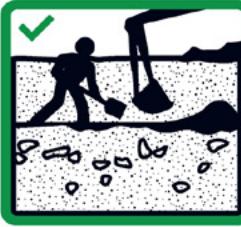
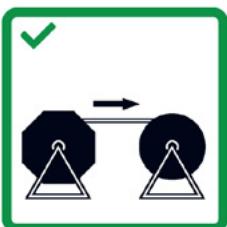


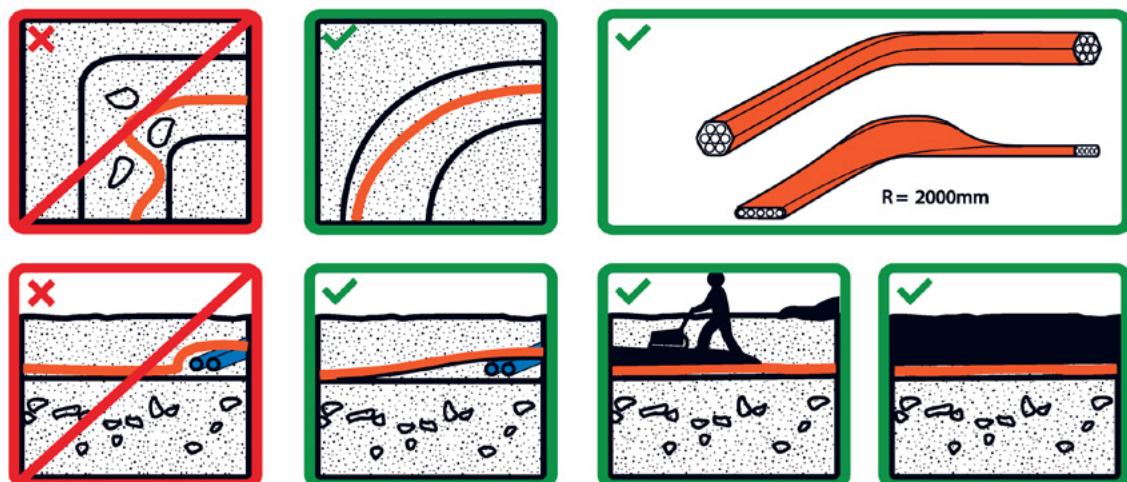
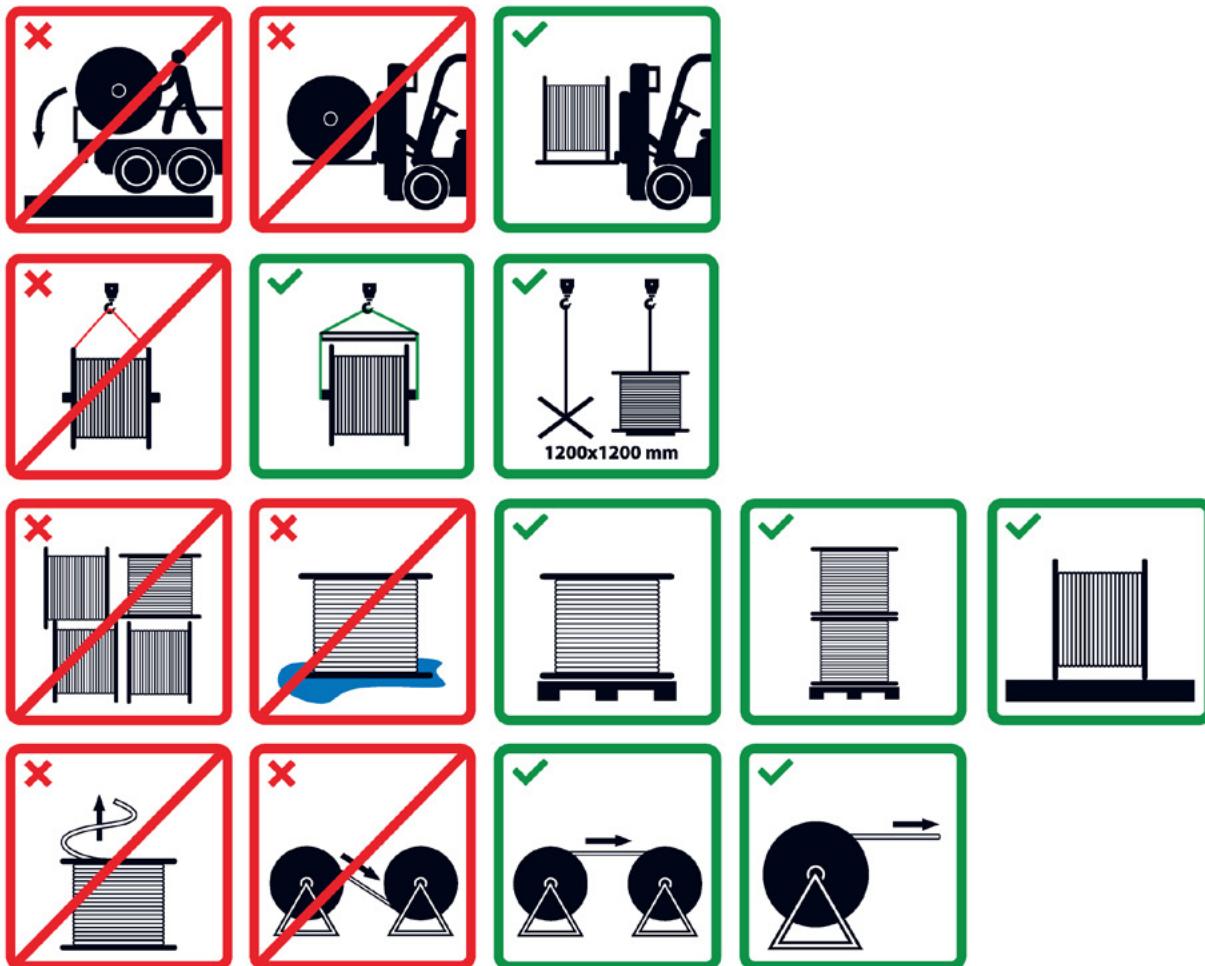
**T 400x400 - STY**



**DT - palle** - 1200x1200









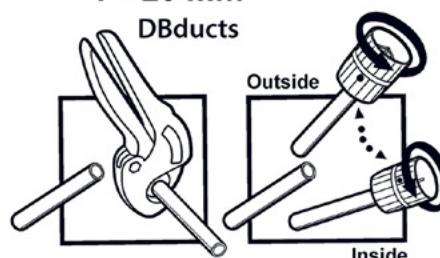
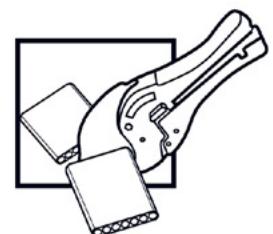
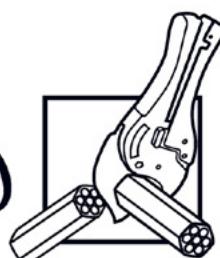
Microducts

**5 - 14 mm**

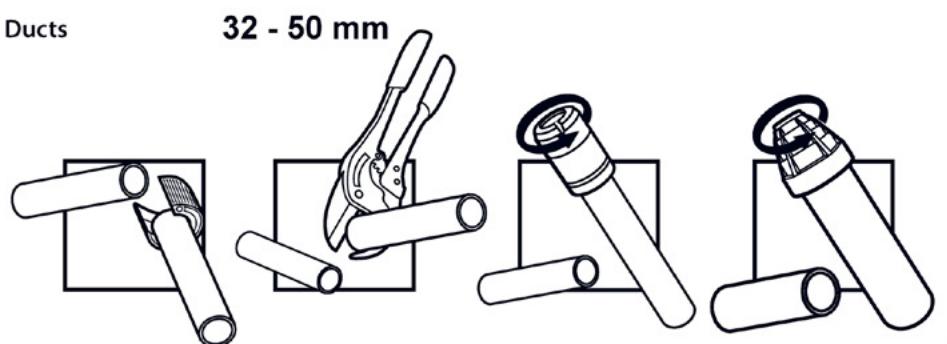
Subducts

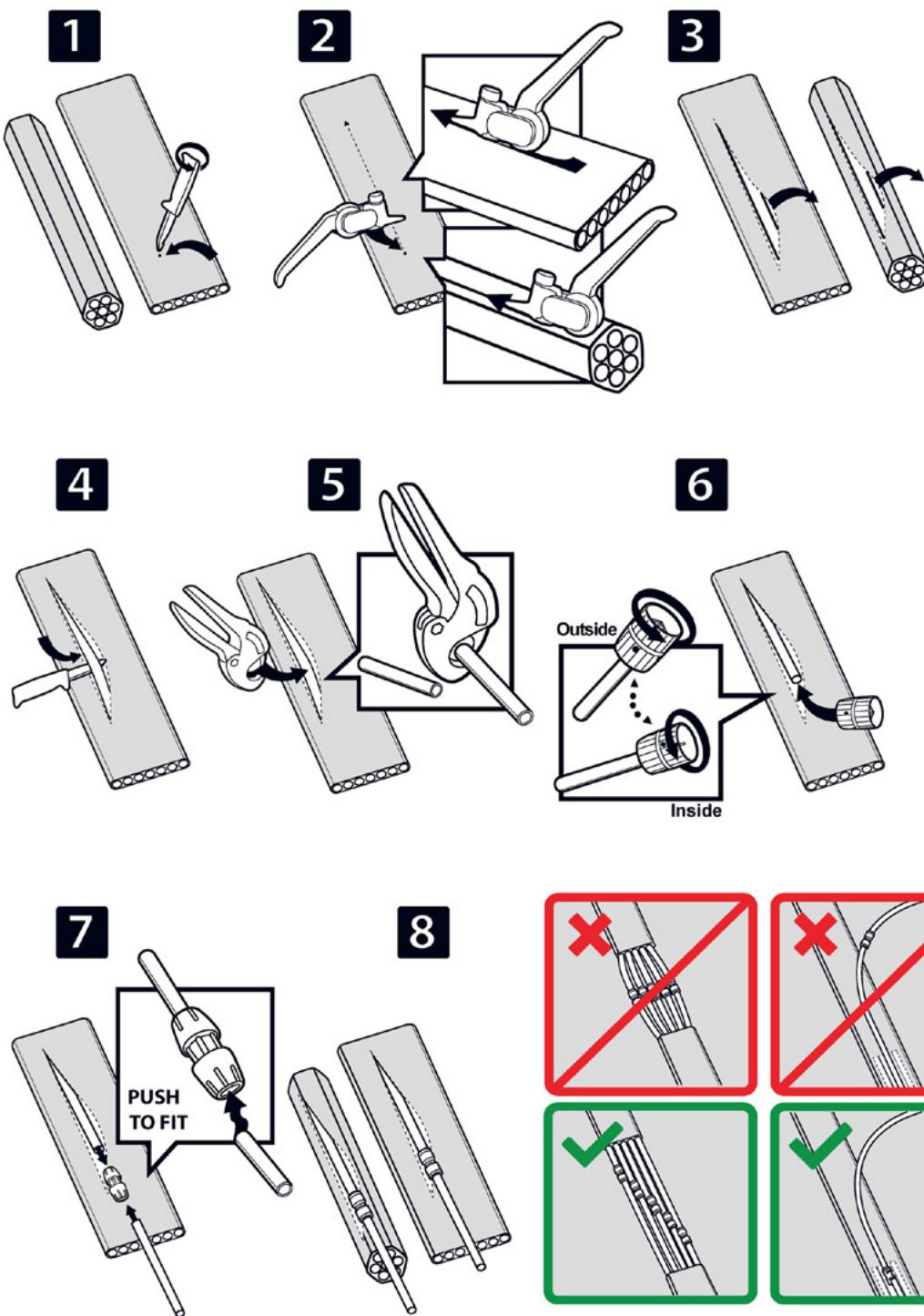
**7 - 20 mm**

DBducts

**25 - 50 mm**

Ducts

**32 - 50 mm**





#### ■ Best solution for narrow streets and city centres

- Reduction of logistical costs
- Effectiveness in the field
- Efficient use of materials

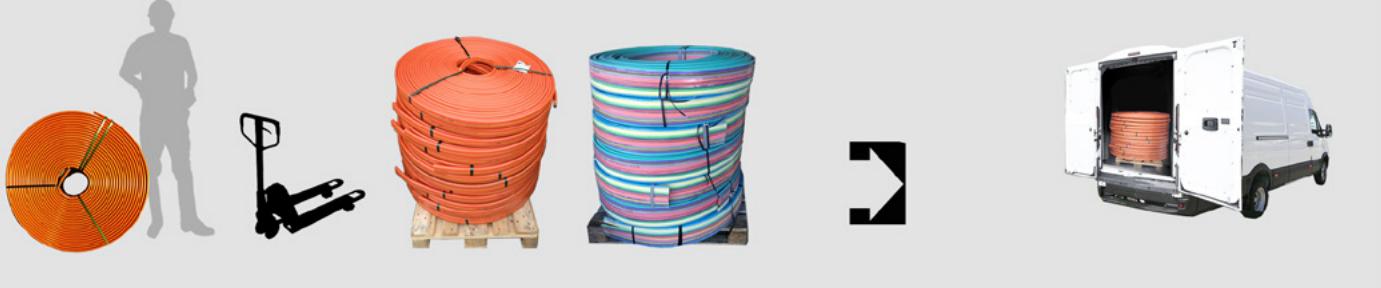
Smaller core = smaller drums  
Smaller drums = less space  
Delivery with truck with back lift = No crane  
One way logistics during the installation  
Drums Easy to lift with minni digger = no cable trailer



- No need for heavy machinery and cranes - everything is on pallets.
- Easy to transport - no need for trucks to transport drums
- Best solution for narrow streets and city centers
- No drums - less storage space needed
- Easy roll-out in trenches- easy handling
- Installation Teams working parallel in different locations
- Faster deployment
- Pipe length adjusted precisely to trench distances - less return waste



**1. 50 M. COILS** - Ready to use on site



**2. 1200X 800 MM DRUMS** - Ready to use on site



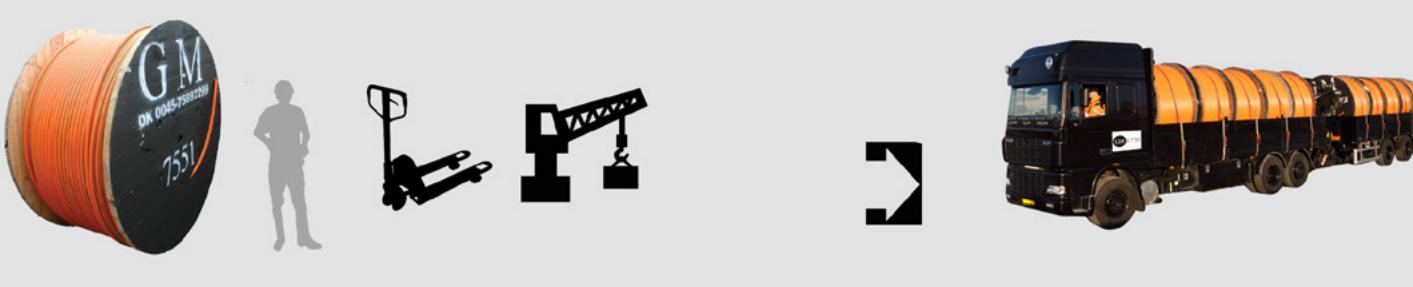
**3. 1200X 1250 MM DRUMS** - Ready to use on site



**4. 2200 x 1200 MM DRUMS**



**5. 2200 x 1200 MM DRUMS**



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13.10.2017