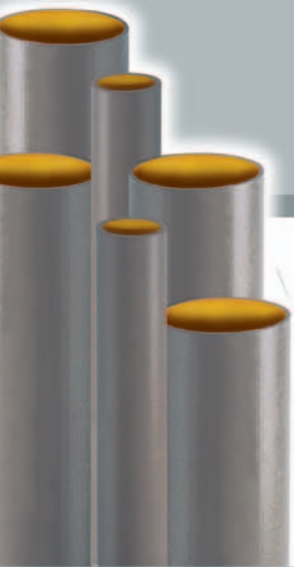


MLK



Specifier's manual

Düker cast iron drainage pipe system
for aggressive waste waters in building drainage

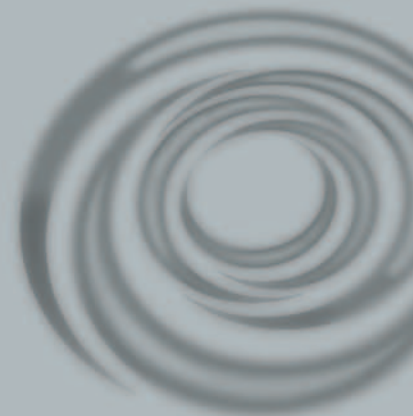


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MILK DK DIN DIN EN 877  **Made in Germany**

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DÜKER MLK PIPE SYSTEM

According to EN 12056
"Gravity drainage within buildings"
As well as EN 752, parts 1-7
"Drainage systems outside of buildings"

Areas of application

MLK is appropriate for draining aggressive waste waters in domestic or similar applications, such as canteens, hotel kitchens and restaurants. Under certain circumstances we recommend to consult Düker for very aggressive waste waters, e.g. for food and beverage industry, for thermal, mineral and medical spas, for non-industrial laboratories, for special areas in hospitals, for animal breeding and veterinary installations etc.

Areas of application

The European Standard EN 877 is valid for prefabricated parts of cast iron pipes for drainage systems inside and outside of buildings between DN 40 and 600. The Düker MLK drainage pipe system was developed especially for the drainage of aggressive waste water in domestic applications – see also the resistance chart on page 8 and 9. The nominal diameter range of MLK is between DN 50 and 200.

Furthermore, most other SML fittings in DN 50 to 200 can be supplied with MLK coating on request. The Düker MLK drainage pipe system corresponds to EN 877 and surpasses its requirements in many areas by far.

The material features

Düker drainage pipe systems are manufactured of grey cast iron GG according to EN 1561 - type at least EN-GJL - 150 (formerly GG 15 according to DIN 1691), which means an iron and carbon alloy with high graphite content, which is integrated in lamella form and finely distributed within the metallic base compound. This Düker-typical crystalline structure gives the material high strength, wear and temperature resistance, excellent corrosion resistance (as compared with steel), and a very high damping capacity. Düker MLK drainage pipes distinguish themselves by robustness, durability, fire-resistance and silent operation - even without special insulation or soundproofing.

Design and installation

Planning and installation of the MLK pipes have to follow EN 12056 and EN 752 as well as DIN 1986 or local rules and regulations as well as the Düker installation and fixing instructions (see Düker SML Specifier's manual).

Applicable standards

Düker MLK meets the requirements of

ISO 6594

EN 877

DIN 19522

and other international standards.

Approvals

Düker MLK, as a special and improved variation of the standard Düker SML, does not require a separate approval in most countries.

Düker SML is officially approved in

Australia	No. SMKP 20057
Czech Republic	No. J-30-20817-04
Finland	No. YM 110/6221/2006
Germany	No. 110001436/01/01
Hungary	No. A-725/2004
Norway	No. 0401 and 0408
Russia	No. POCC DE. E01.B29539
Sweden	No. 0041/04
Switzerland	No. 23005
Ukraine	No. UA1.070.0059132-05
United Kingdom	Agrément No. 04/4189

The MLK coating

The MLK drainage pipes bear an outside spray zinc coating (density 130 g/m²) and a grey epoxy cover coating with a thickness of at least 60 µ and are therefore suitable for underground installation.

The inside coating is a 200 - 240 µ thick fully cross-linked epoxy coating with high resistance against chemical and mechanical influences.

The properties of this coating exceed by far the requirements of EN 877. Therefore Düker MLK drainage systems are especially protected against domestic sewage becoming more and more aggressive due to water-saving devices and separate drainage of rainwater and sewage.

The Düker production process guarantees very smooth inside pipe surfaces, which is the best precondition for equal and faultless inside coatings. The pipes can be cut without damaging the coating.

The Düker MLK fittings bear an inside and outside fully cross-linked epoxy coating of minimum 200 µ.

With regard to fire protection and sound insulation, the excellent properties of the Düker SML system are fully maintained.

MLK drainage pipe systems – Guarantee

Düker guarantees that the pipes, fittings and couplings supplied have been manufactured in accordance with the standards and approvals valid at the time of manufacturing. In the case of defects, Düker will, during a period of 5 years, replace the defective parts free of charge. Without specific agreement, Düker will not accept liability for consequential losses.

IZEG information centre / GEG quality association

Some non-European manufacturers destroy the quality reputation of cast iron sewage pipe systems. In order to withstand this trend and to fulfil the increasing safety requirements of our partners in plumbing, trade, planning and authorities, the European cast iron pipe industry as well as suppliers of accessories founded the IZEG. IZEG and the integrated quality association GEG award a RAL quality label to cast iron drainage pipes and fittings that have passed numerous tests surpassing the requirements of EN 877.



Düker Quality System

Düker was one of the first companies of the trade to achieve the ISO 9001 certification and was even awarded the "Bavarian Quality Award" in 1999. This quality award encourages us to continue doing what we started decades ago: keeping the quality standard of cast iron drainage pipes at a high level with continual new ideas, dependable system solutions and first-class finish of our products.



MLK drainage pipe systems and environmental protection

Grey cast iron - the material from which Düker MLK pipes are manufactured - is 100 % recyclable. Pipe cuttings can be included in the recycling circle without any trouble of waste disposal, also because **the coating is free of benzo(e)pyrene and other environmentally dangerous chemicals.**

Cost considerations

Cost comparisons between MLK pipeline systems and alternative materials must not only compare the cost of pipe per meter. An evaluation must also consider the following advantages of MLK:

- Easy and fast installation with no specialists required; normal plumber's skills are sufficient.
- No special equipment required.
- Full compatibility with Düker SML drainage pipe systems without special transition
- No costly fire protection collars.
- Lower fire insurance premiums.
- Fewer brackets due to superior stability.
- No thermal expansion sockets.
- No calculation of deflection legs with anchored and sliding fixings.
- Excellent sound absorption, no overall noise insulation or additional noise protection walls necessary.
- High resistance to positive and negative pressure, axial restraint up to 10 bar possible, therefore no need to change material in sensitive areas.
- Lower maintenance costs for damages by use or vandalism.
- Full recyclability means lower removal costs at the end of the lifetime of the building.

DÜKER MLK RESISTANCE CHART

The following resistance chart should give the specifier some information on the material to select.

The chart is not complete and is valid for non-pressure pipe systems in the specified temperature range.

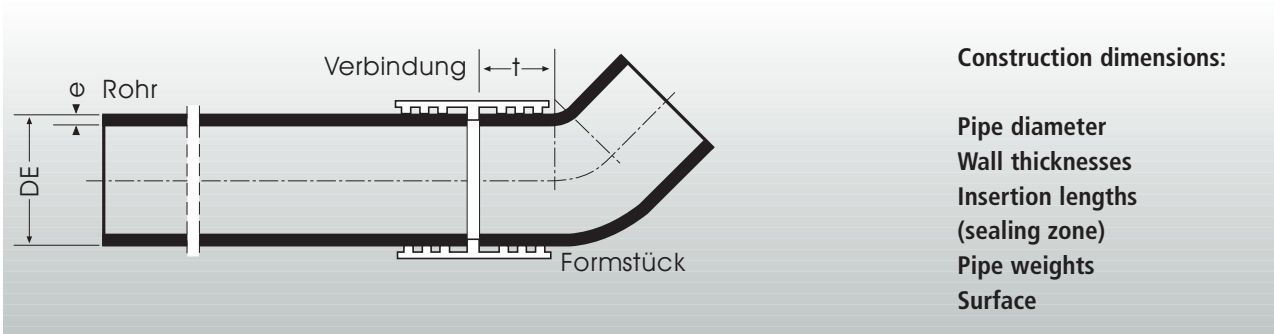
It shows the resistance of the inside coating of MLK pipes and fittings and of the EPDM and NBR rubber sealings.

	temperatures °C											
	0°–20°			20°–50°			50°–70°			70°–90°		
1 = Interior coating of MLK pipes and fittings 2 = sealing EPDM 3 = sealing NBR	1	2	3	1	2	3	1	2	3	1	2	3
Acids												
sulphuric acid 10%	A	A	C	A	A	D						
sulphuric acid 20%	A	A	C	A	A	D						
sulphuric acid 30%	A	A	C	B	A	D	C	C	D			
sulphuric acid 50%	B	A	D									
sulphuric acid 90%	D	C	D									
nitric acid 10%	B	A	D									
nitric acid 30%	B	A	D	D								
nitric acid 50%	B	C	D									
nitric acid 100%	D	D	D									
acidic acid 10%	C	A	A	D								
acidic acid 20%	D	A	C									
phosphoric acid 20%	B	A	C	D	A	C						
phosphoric acid 85 %	D	A	D									
hydrofluoric acid 2 %	C	A	D									
hydrofluoric acid 10 %	D	C	D									
chromic acid	C	A	D									
SO ₂ (dry gas)	A	A	A									
hydrochloric acid 10 %	A	A	C	B	A	D						
hydrochloric acid 30 %	A	A	D	B	A	D	C	C				
hydrochloric acid 37 %	A	A	D	C	C	D						
Bases												
sodium base 10 %	A	A	A	A	A	A	A	A	C	C	A	
sodium base 30 %	A	A	A	A	A	A	A	A	C	C	A	
sodium base 50 %	A	A	A	A	A	A	A	A	C	C	A	
potassium base 10 %	A	A	A	A	A	A	A	A	C	A		
potassium base 30 %	A	A	A	A	A	A	A	A	C			
potassium base 50 %	A	A	A	A	A	A	A	A	C	A		
ammonium solution 10 %	D	A	C									
ammonium solution 20 %	D	A	C									
Javelle water	B	A	D	D	A	D						
Salts												
rich uric acid	B	A	A									
sodium chlorate	A	A	A									
potassium chlorate	A	A	A									
ammonium sulfate	A	A	A									
solution of trisodium phosphate	A	A	A	A	A	A	A	A	A			

A = resistance, B = resistance to wetting and steam, C = limited resistance, D = no resistance

As the level of chemical resistance is also dependent on the combination of various factors such as temperature, pressure, duration of contact, volume and concentration, this chart should be used as a guideline only. If you are in doubt, please contact our technical staff, also for chemicals not mentioned.

	temperatures °C											
	0°–20°			20°–50°			50°–70°			70°–90°		
sugar	A	A	A	A	A	A						
molasses	A	A	A	A	A	A						
Water												
fresh water	A	A	A	A	A	A	A	A	A	A	A	A
salt water	A	A	A	A	A	A	A	A	A			
distilled water	A			A			C					
Detergents												
pure teepol	B	A			B	A		D	A			
solution of water with 5% teepol	A	A		A	A							
Non-aromatic hydrocarbons												
terpentine	A	D	A	C		A						
super petrol	A	D	A	C			A					
diesel	A	D	A	C			A					
crude oil	A	D	A	A			C					
kerosene	C	D	A	D			C					
Aromatic hydrocarbons												
xylene	C	D	D									
toluene	C	D	D									
bencene	D	D	C									
styrene	D	D	D									
naphta	D	D	A									
Alcohols												
denturated ethyl alcohol	A	A	A	B	A	A						
ethanol	A	A	A									
50% ethyl alcohol	B	A	A	C	A	A						
glycol	A	A	A									
Chlorinated hydrocarbons												
trichlorethylene	D	D	D									
carbon tetrachloride	D	D	D									
Oils												
lubricant on base of oil	A	C	A	A	D	A						
lubricant on organic base	C	A	A									



Construction dimensions:

- Pipe diameter
- Wall thicknesses
- Insertion lengths (sealing zone)
- Pipe weights
- Surface

MLK-Pipes and Fittings (DIN EN 877 and 19 522)								
nominal diameter		exterior Ø		wall thickness		insertion lengths	pipe weight	surface
DN	DE	tolerance	nominal	minimum	(sealing zone)	t	empty ca. kg/m	ca. m ² je m
50	58	+2/-1	3,5	3,0	30		4,3	0,18
70*	78		3,5	3,0	35		5,9	0,25
80**	83		3,5	3,0	35		6,3	0,26
100	110		3,5	3,0	40		8,4	0,35
125	135	+2/-2	4,0	3,5	45		11,8	0,42
150	160		4,0	3,5	50		14,1	0,50
200	210		5,0	4,0	60		23,1	0,65

all dimensions in mm

* obsolete model, on request

** The nominal diameter DN 80 with a minimum interior diameter of 75 mm corresponds to DN 80 as per DIN EN 12056-2 as well as to DN 75 as per EN 877 (product standard).

Pipes



MLK-pipe DIN 19522 - DN 50x3000

L = 3000 mm

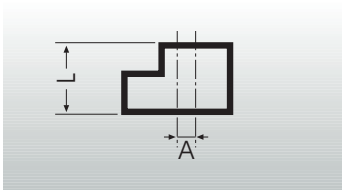
DN	kg	item no.
50	13,5	660008
70*	18,3	660098
80	18,9	235441
100	26,5	660188
125	37,0	660278
150	43,5	660368
200	78,0	660458

* obsolete model, on request

Cutting edge protection is added without charge.

Important notice: variable values in the item indications are printed in italics. (example: **MLK-pipe DIN 19522-DN 50 x 3000**)

Reducers (R) (adapters)

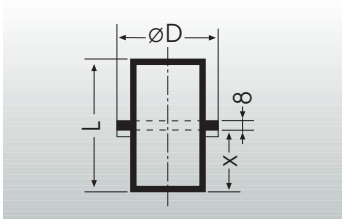


MLK-reducer DIN 19522 - 70 x 50 R

DN	A	L	kg	item no.
70x50*	10	75	0,5	662508
80x50	12,5	80	0,7	235459
100x50	25	80	0,9	662518
100x70*	16	85	0,9	662528
100x80	13,5	90	1,1	235460
125x50	38,5	85	1,4	662538
125x70*	28,5	90	1,5	662548
125x80	26	95	1,7	235461
125x100	12,5	95	1,5	662558
150x50	51	95	2,0	662568
150x70*	41	100	2,0	662578
150x80	37,5	100	2,3	235462
150x100	25	105	2,2	662588
150x125	12,5	110	2,2	662598
200x100	50	115	4,1	662608
200x125	37,5	120	4,1	662618
200x150	25	125	4,3	662628

* obsolete model, on request

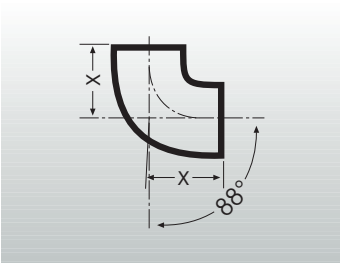
Down pipe supports (FS)



MLK-down pipe support DIN 19522-100 FS

DN	D	X	L	kg	item no.
					support
					without
					bearing ring
100	145	96	200	2,3	661568
125	170	96	200	3,0	661578
150	195	96	200	4,0	661588
200	245	96	200	6,0	661598

Bend 88°

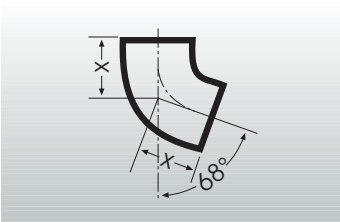


MLK-bend DIN 19522-100-88

DN	X	kg	item no.
50	75	0,7	661058
70*	90	1,1	661118
80	95	1,4	235446
100	110	2,1	661178
125	125	3,2	661238
150	145	4,9	661298

* obsolete model, on request

Bends 68°



DN	X	kg	Art.Nr.
50	65	0,7	661038
70*	75	1,1	661098
80	80	1,2	235445
100	90	1,9	661158
125	105	2,9	661218
150	120	4,9	661278

* obsolete model, on request

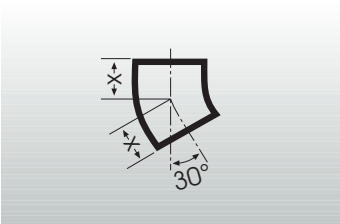
Bends 45°



DN	X	kg	item no.
50	50	0,5	661028
70*	60	0,9	661088
80	60	1,0	235444
100	70	1,6	661148
125	80	2,3	661208
150	90	3,5	661268
200	110	6,5	661328

* obsolete model, on request

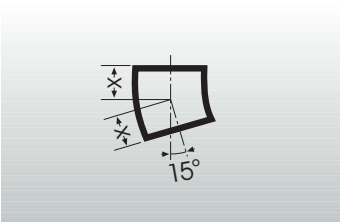
Bends 30°



DN	X	kg	item no.
50	45	0,5	661018
70*	50	0,7	661078
80	60	0,8	235443
100	60	1,3	661138
125	70	2,0	661198
150	80	3,0	661258

* obsolete model, on request

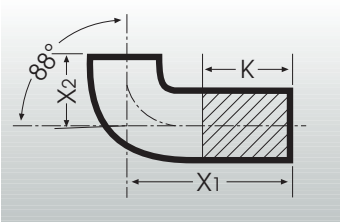
Bends 15°



DN	X	kg	item no.
50	40	0,4	661008
70*	45	0,6	661068
80	50	0,7	235442
100	50	1,0	661128
125	60	1,7	661188
150	65	2,5	661248

* obsolete model, on request

Bends 88° with 250 mm spigot (LB)

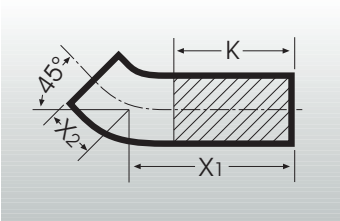


MLK-bend DIN 19522-100-88-LB

DN	X ₁	X ₂	K*	kg	item no.
100	250	110	140	4,6	662088

* dimension for maximum cut-back

Bends 45° with 250 mm spigot (LB)

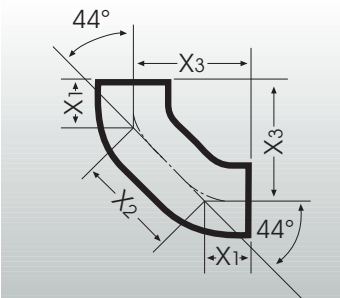


MLK-bend DIN 19522-100-45-LB

DN	X ₁	X ₂	K*	kg	item no.
100	250	70	280	4,2	662078

* dimension for maximum cut-back

Double bends 88° from 2 bends 44° (DB)

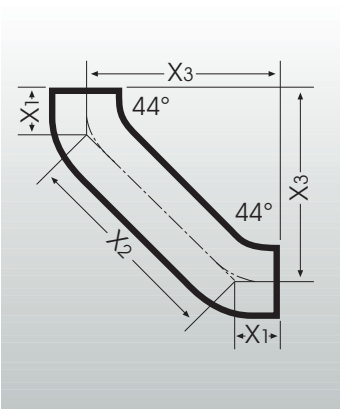


MLK-bend DIN 19522-100-88-DB

DN	X ₁	X ₂	X ₃	kg	item no.
100	70	140	170	3,2	661508
150**	90	180	219	7,0	661528

** obsolete model

Bends 88° (BB) with 250 mm steadying distance for adapting down pipes to draft pipes

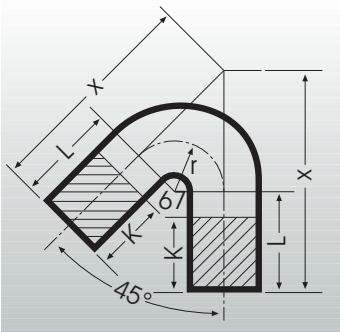


MLK-bend DIN 19522-100-88-BB

DN	X ₁	X ₂	X ₃	kg	item no.
70**	60	301	273	3,2	662738
100	70	312	291	4,8	662748
125**	80	322	308	6,8	662758

** obsolete model

Bends 135° für ventilation
(bypass)



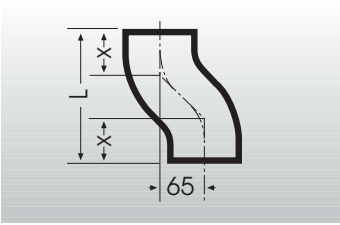
MLK-bend DIN 19522-100-135

DN	X	K*	L	kg	item no.
100	312	100	150	5,0	662778



* dimension for maximum cut-back

S-bends (SP)
offset (A) = 65 mm



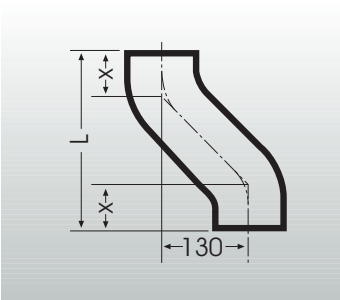
MLK-S-bend DIN 19522-100-65 SP

DN	X	L	kg	item no.
100**	70	205	2,5	662868



** obsolete model

S-bends (SP)
offset (A) = 130 mm



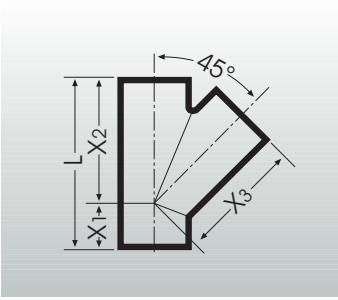
MLK-S-bend DIN 19522-100-130 SP

DN	X	L	kg	item no.
100**	70	270	3,5	662878



** obsolete model

branches 45°



Due to the appearance of the European standard for SML pipes and fittings DIN EN 877, the new version of German DIN 19522 also had to be changed regarding dimensions and measures of SML fittings (values in brackets=old standard version)

Düker produces these items exclusively as per the latest version of DIN 19522. Due to possible stocks of the old standard version please check the actual dimensions of delivered fittings when pre-manufacturing or pre-installing.

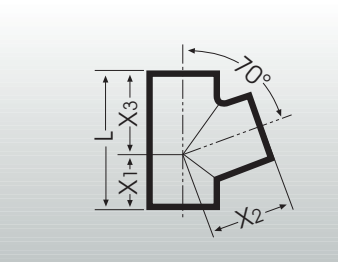
MLK-branch DIN 19522-70x50-45

DN	X ₁	X ₂	X ₃	L	kg	item no.
50x50	50 (45)	135 (115)	135 (115)	185 (160)	1,4	663008
70x50*	40	150 (130)	150 (130)	190 (170)	1,6	663038
80x50	50	140	140	190	1,8	235450
70x70*	55	160 (145)	160 (145)	215 (200)	2,3	663068
80x80	65	160	160	225	2,4	235451
100x50	35 (30)	165 (150)	165 (150)	200 (180)	2,5	663098
100x70*	50 (45)	185 (170)	185 (170)	235 (215)	3,3	663128
100x80	55	175	175	230	3,3	235452
100x100	70	205 (190)	205 (190)	275 (260)	4,2	663158
125x50	20	185 (170)	185 (170)	205 (190)	3,2	663188
125x70*	40	200 (185)	200 (185)	240 (225)	4,0	663218
125x80	40	200	200	240	4,4	235453
125x100	60	220 (210)	220 (210)	280 (270)	5,2	663248
125x125	80 (75)	240 (230)	240 (230)	320 (305)	6,4	663278
150x70*	30	215 (205)	215 (205)	245 (235)	5,3	663338
150x80	40	215	215	245	5,9	235454
150x100	55	240 (225)	240 (225)	295 (280)	6,6	663368
150x125	70	255 (245)	255 (245)	325 (315)	8,0	663398
150x150	90	265	265	355	9,2	663428
200x70*	15	240 (235)	240 (235)	255 (250)	8,1	663488
200x80	15	240	240	255	8,5	235455
200x100	40	265 (260)	265 (260)	305 (300)	10,0	663518
200x125	55	280	280	335	11,9	663548
200x150	75	300	300	375	13,3	663578
200x200	115	340	340	455	17,2	663608

* obsolete model, on request

Branches 70°

(no longer listed in the new German standard version)

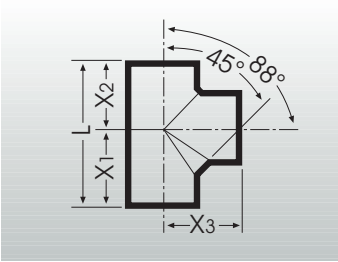


MLK-branch DIN 19522-100x50-70°

DN	X ₁	X ₂	X ₃	L	kg	item no.
100x50	55	110	100	155	1,9	663108
100x70*	70	120	110	180	2,3	663138
100x100	85	130	130	215	3,0	663168
125x100*	85	145	140	225	4,8	663258

* obsolete model, on request

Branches 88°
access angle 45°

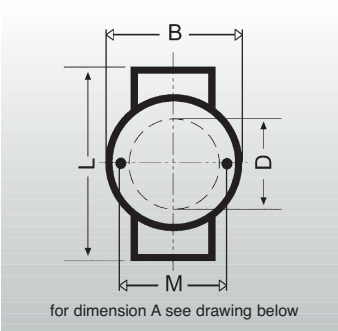


MLK-branch DIN 19522-70x50-88

DN	X1	X2	X3	L	kg	item no.
50x50	79	66	80	145	0,9	663028
70x50*	83	72	90	155	1,4	663058
80x50	95	85	90	180	1,5	235456
70x70*	97	83	95	180	1,7	663088
80x80	95	85	95	180	1,7	235457
100x50	94	76	105	170	2,1	663118
100x70*	102	88	110	190	2,4	663148
100x80	105	85	110	190	2,6	235458
100x100	115	105	120	220	2,9	663178

* obsolete model, on request

Inspection pipes for down pipes,
with round opening (RRrd)



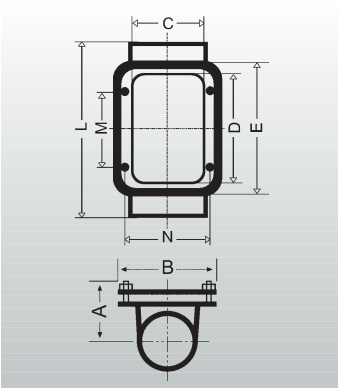
MLK-inspection pipe DIN 19522 – 100 RRrd

DN	A	B	D	L	M	kg	item no.
50	59	105	53	190	80	2,3	669637
70*	69	125	73	210	100	2,9	669638
80	74	135	78	220	110	3,1	235447
100	84	159	104	260	130	5,0	669639

* obsolete model, on request

with toroidal sealing ring in EPDM as per DIN 4060

Inspection pipes for horizontal
and down pipes, with rectangular
opening (RRrk)

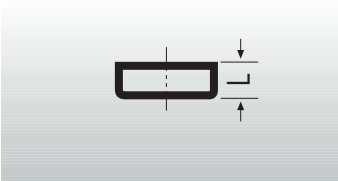


MLK-inspection pipe DIN 19522 – 100 RRrk

DN	A	B	C	D	E	L	M	N	kg	item no.
100	83	160	100	200	230	340 (320)	130	130	7,6	669648
125	101	190	125	225	255	370 (355)	150	160	10,3	669649
150	112	215	150	250	280	395	170	180	14,5	669650
200	137	262	200	300	330	465	200	235	22,0	669651

with toroidal sealing ring in EPDM

Plugs (ED)

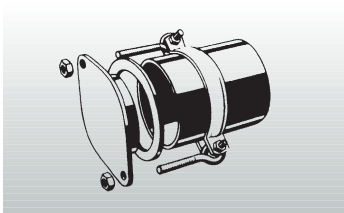


MLK-plug DIN 19522 – 100 ED

DN	L	kg	item no.
50	30	0,2	665508
70*	35	0,4	665518
80	35	0,5	235448
100	40	0,5	665528
125	45	1,1	665538
150	50	1,7	665548
200	60	3,1	665558

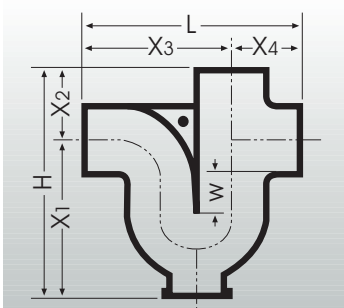
* obsolete model, on request

Hermetic plugs with security collars



MLK-hermetic plug		
DN	kg	item no.
100	1,1	664808
125	1,5	664818
150	2,1	664828
200	3,3	

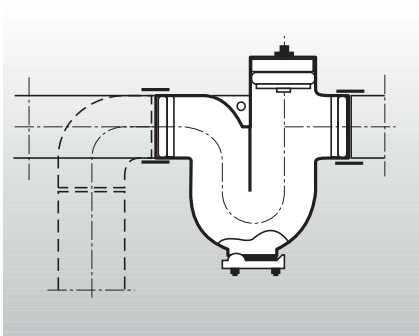
Siphons (G)



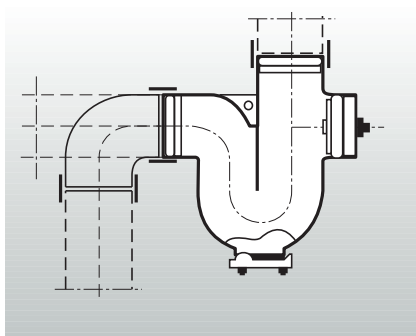
MLK-siphon DIN 19522 – 100 – G									
DN	L	H	X ₁	X ₂	X ₃	X ₄	W	kg	item no.
50	190	250	182	68	122	68	60	2,8	669662
70*	265	293	200	93	172	93	60	5,0	669663
80	265	285	190	95	170	95	80	5,8	235449
100	325	392	282	110	215	110	100	8,5	669664
125	390	446	316	130	260	130	100	13,0	669665
150	470	493	348	145	325	145	100	19,5	669666
200	600	600	420	180	400	200	100	33,7	

* obsolete model, on request

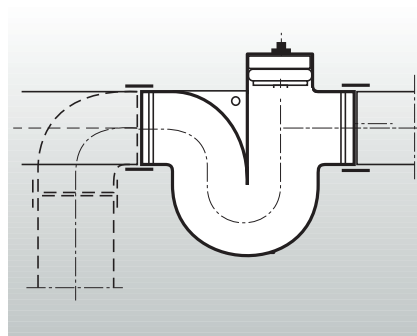
Installation examples



horizontal supply

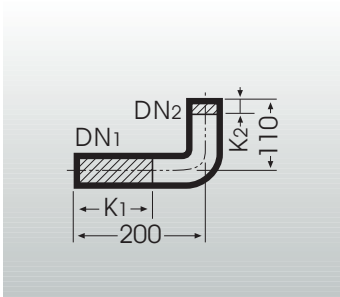


vertical supply



version DN 200

Wash basin connecting bends 90° for sinks and urinals (OL)

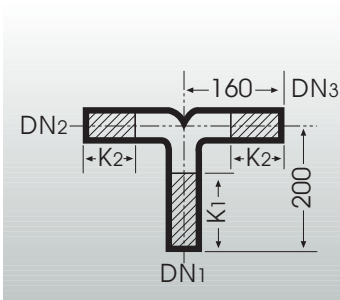


MLK-wash basin connecting bend DIN 19522 – 50x40-90 – OL

DN		K1*	K2*	kg	item no.
1	2				
40	x 50 long	120	20	1,4	661748
50	x 50 long	120	25	1,5	661758
60	x 50 long	120	30	1,5	661768

*dimension for maximum cut-back

Wash basin y-joint 90° (OH)

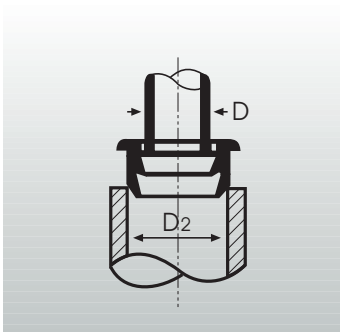


MLK-wash basin connecting bend DIN 19522 – 50x50x50 – 90 – OH

DN			K1*	K2*	kg	item no.
1	2	3				
50	x 50	x 50	125	85	2,5	661798

*dimension for maximum cut-back

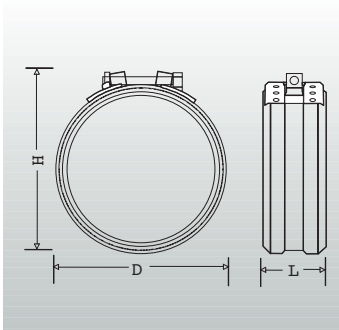
Rubber connections



for MLK-bend DN	D2	D (connecting pipe)	marks**	item no.
50x40	40	28-34	40x30 small	100088
50x50/40x50	50	28-34	40x30 large	100125
50x50/40x50	50	38-44	40x40	100089
50x60	60	28-34	50x30	100092
50x60	60	38-44	50x40	100091
50x60	60	48-54	50x50	100090

** Please note: the rubber push-in connectors for the bends 40x50, 50x50 and 50x60 bear marks which differ from the normal widths.





**OUR RECOM-
MENDATION!** !

Dükorapid® coupling

DN	D _≈	H _≈	L _≈	item no.
	maximum dimensions after installation ≈			
50	71	83	45	218592
70*	91	103	45	218593
80	96	115	45	235494
100	123	135	45	214405
125	152	164	52	218594
150	177	189	52	218595
200	227	244	70	659556

* obsolete model, on request

One screw coupling

German Approval no.:

DN 50-150: ABP Nr. P-110002488-01/01

DN 200: ABP Nr. P-110002011

Material metal collar:

W2, stabilised stainless steel, 1.4510/11 as per EN 10088

Material locking parts:

lock 1.4301 or 1.4510/11

DN 50-150: screw and square nut steel with zinc lamellae coating, washer A2 as per DIN 125

DN 200: screw, washer and square nut galvanised, yellow-chromated

Material sealing:

EPMD

Axial restraint:

up to 0.5 bar

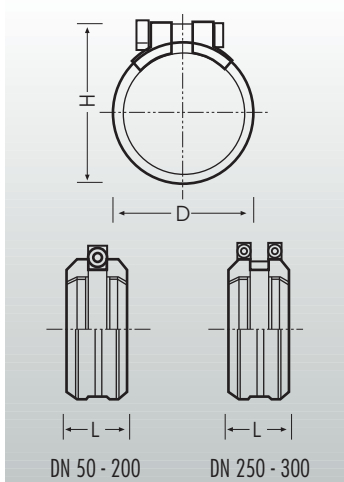
Screw size:

DN 50-150: M8; DN 200: M10

Torque:

DN 50-150: 10-20 Nm

DN 200: until both fastening heads come together



**OUR RECOM-
MENDATION!** !
FOR INSTALLATION UNDERGROUND
AND OUTSIDE OF BUILDINGS

Rapid Inox coupling

DN	D	H	L	item no.
	maximum dimensions after installation ≈			
50	70	80	39,5	234826
70*	90	100	39,5	234827
80	95	105	39,5	235472
100	125	135	45,4	234828
125	147	162	54,5	234829
150	172	187	54,5	234830
200	227	244	70,0	234831

* obsolete model, on request

One screw coupling for soil installation without additional corrosion protection and for installation outside of buildings

Attention: particularly aggressive soils may call for an additional corrosion protection (e.g. shrinking hose)

German Approval no.:

Ü DIN EN 877

Material metal collar:

W5, austenitic stainless steel, 1.4571 as per EN 10088

Material locking parts:

austenitic stainless steel, 1.4571 as per EN 10088; screw, washer and square nut A4

Material sealing:

EPDM. NBR on request for waste water containing oil, animal grease, solvents or petrol

Axial restraint:

up to 0.5 bar

Screw size:

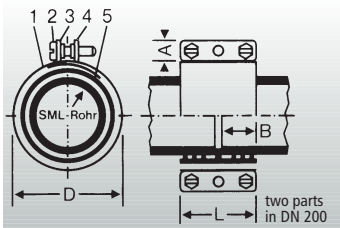
hexagon socket screw; DN 50 - 150: M 8; DN 200: M 10

Torque:

until both fastening heads come together

Marking:

Marking W5 on the metal collar



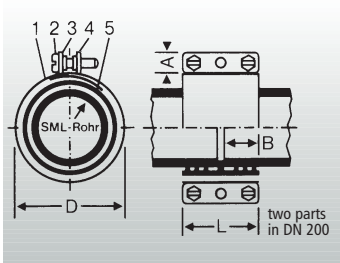
CV coupling					
DN	A	B	D \approx	L	item no.
50*	14	22,5	65	48	659436
70*	14	22,5	85	48	659437
80*	14	22,5	88	48	235859
100*	18	25,5	115	54	659438
125*	18	31	140	65	659439
150*	18	31	170	65	659440
200*	18	37	220	78	659441

Double screw coupling. The metal collar is opened completely for installation, therefore the coupling is suitable for use in situations for reduced space.

Attention: not suitable for installation near ceiling and wall breakthroughs with fire protection requirements (unless installed with Düker SML fire protection coupling)

- Material metal collar: stabilised stainless steel, material no. 1.4510/11 as per EN 10088
- Material locking parts: galvanised steel
- Material sealing: EPDM
- Axial restraint: -
- Screw size: slotted hexagonal screws; DN 50 - 70: M 6; DN 100 - 200: M 8
- Torque: alternately, uniformly hand tight

* obsolete model

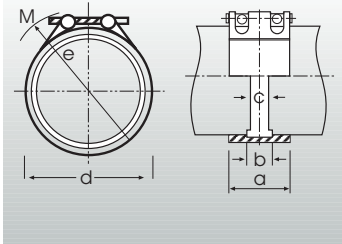


CE coupling					
DN	A	B	D \approx	L	item no.
50*	14	22,5	65	48	100240
70*	14	22,5	85	48	100236
100*	18	25,5	115	54	100185
125*	18	31	140	65	100237
150*	18	31	170	65	100241
200*	18	37	220	78	100186

Double screw coupling for soil installation (only with additional corrosion protection)

- German Approval no.: Ü DIN EN 877
- Material metal collar: W4, austenitic stainless steel, 1.4301 as per EN 10088
- Material locking parts: austenitic stainless steel, 1.4301/1.4541 as per EN 10088
- Material sealing: EPDM. NBR on request for waste water containing oil, animal grease, solvents or petrol
- Axial restraint: -
- Screw size: hexagonal screws (slotted on DN 50-100); DN 50 - 70: M 6; DN 100 - 200: M 8
- Torque: alternately, uniformly hand tight
- Marks: CE, W4

* obsolete model

**Connect-F Inox coupling**

DN	a	b	c	d	e	item no.
100	98	40	25	133	148	234834
125	113	50	35	166	194	234835
150	113	50	35	186	210	234836
200	138	74	35	240	270	234837

coupling for installation in the soil or outside of buildings

Attention: particularly aggressive soils may call for an additional corrosion protection (e.g. shrinking hose)

Material metal collar: austenitic stainless steel, 1.4571 as per EN 10088

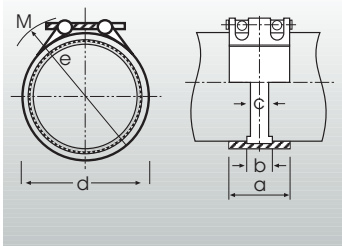
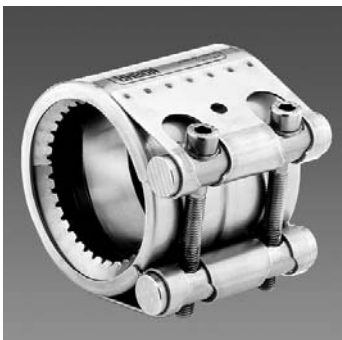
Material locking parts: bolts 1.4401, screws 1.4404 as per EN 10088

Material sealing: EPDM. NBR on request for waste water containing oil, animal grease, solvents or petrol

Axial restraint: -

Screw size: DN 100: M 8; DN 125 - 150: M 10; DN 200: M 12

Torque: as stated on the coupling

**Connect-G Inox coupling**

DN	a	b	c	d	e	item no.
50	78	29	17	85	105	234843
70*	98	40	25	100	120	234844
80	98	40	25	105	125	235482
100	98	40	25	130	150	234845
125	115	50	35	165	195	234846
150	115	50	35	185	215	234847
200	140	67	35	240	270	234848

coupling with axial restraint for installation in the soil or outside of buildings

Attention: particularly aggressive soils may call for an additional corrosion protection (e.g. shrinking hose)

Material metal collar: casing austenitic stainless steel 1.4571, claw ring 1.4310 as per EN 10088

Material locking parts: bolts 1.4401, screws 1.4404 as per EN 10088

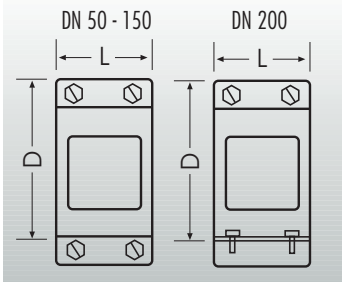
Material sealing: EPDM. NBR on request for waste water containing oil, animal grease, solvents or petrol

Axial restraint: up to 10 bar

Screw size: DN 50: M 8; DN 70 - 100: M 10; DN 125 - 150: M 12; DN 200: M 16

Torque: as stated on the coupling

* obsolete model, on request



Döker Kombi-grip collar EK

DN	D	L	item no.
50	124	72	235360
70*	144	72	235361
80	149	72	235498
100	180	87	235280
125	210	98	235315
150	230	98	235316
200	275	111	235281

Security collar with axial restraint for all Rapid and CV/CE couplings

German Approval no.: ABP Nr. P-110002089

Material metal collar: galvanised steel

Material locking parts: galvanised steel, yellow chromated 8µ 8.8

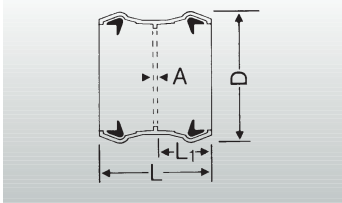
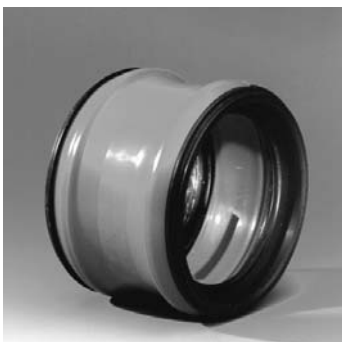
Material sealing: -

Axial restraint: DN 50-100: up to 10 bar; DN 125-150: up to 5 bar; DN 200: up to 3 bar

Screw size: DN 50-80: round head screws with hexagon socket with washers M 8 x 30; DN 100-150: round head screws with hexagon socket with washers M 10 x 35; DN 200: hexagonal screw with washers and self-locking nut galvanised M 10 x 30

Torque: DN 50-80: 20-25 Nm; DN 100-150: 35-40 Nm; DN 200: 50-65 Nm

* obsolete model, on request



SVE coupling

DN	D	L	L ₁	A	item no.
50	77	60	29	2	659468
80	103,5	65,5	32	2	235483
100	134	82	39,5	3	659478
125	161	103	50	3	659479
150	186	103	50	3	659480
200	238	114	55,5	3	659481

plug connector for soil installation

German Approval no.: Z-42.5-273

Material metal collar: Polypropylene-CO

Material locking parts: -

Material sealing: sealing lips NR-SBR

Axial restraint: -

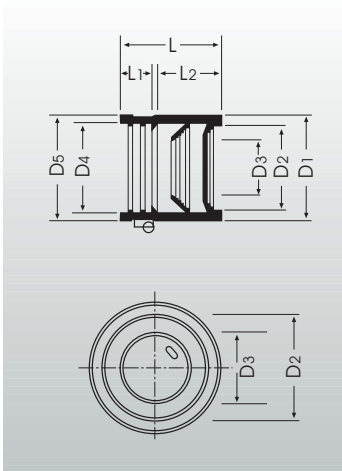
Screw size: -

Torque: -



EK Düker Fix coupling

DN	D ₁	D ₂	D ₃	D ₄	D ₅	L	L ₁	L ₂	Ø connection	item no.
50	72	56	30	57	67,5	63	19	40	40-56	100270
70*	92	75	41	77	86,5	77	19	52,5	56-75	100271
80	108	75	41	81	91	83	20	52,5	56-75	236756
80	108	90	41	81	91	83	20	55	75-90	235346
100	128	110	78	108	118	95	21	65	104-110	100272
125	145	125	90	132	145	103	26	72	125	100273



for connecting pipes of other materials to cast iron sewage pipes

German Approval no.: Z-42.5-299

Material: EPDM

Material locking parts: W2, worm thread clamp stainless steel 1.406, screw chromated steel Cq15.

Axial restraint: -

Screw size: cross-slotted screw, width 7

Torque: ca. 2 Nm

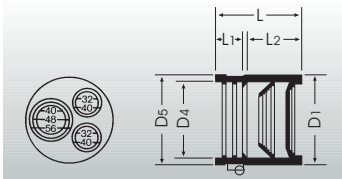
Einschubtiefen: DN 50: 42 mm; DN 70: 55 mm; DN 80: 55-60 mm; DN 100: 65 mm; DN 125: 75 mm

* obsolete model



Konfix Multi coupling

DN	D ₁	D ₂	D ₃	D ₄	D ₅	L	L ₁	L ₂	item no.
100	134	connections see illustration		108	116	90,5	35,5	40	100030



for connecting pipes of other materials to cast iron sewage pipes, up to three connecting pipes

German Approval no.: Z-42.5-240

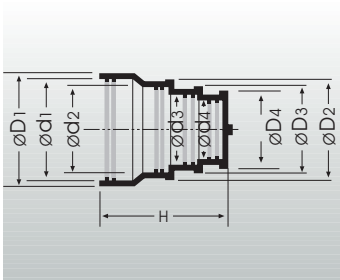
Material: EPDM

Material locking parts: worm thread clamp stainless steel 1.406, screw galvanised steel

Axial restraint: -

Screw size: worm thread screw SW7

Torque: 5.0 + 0.5 Nm

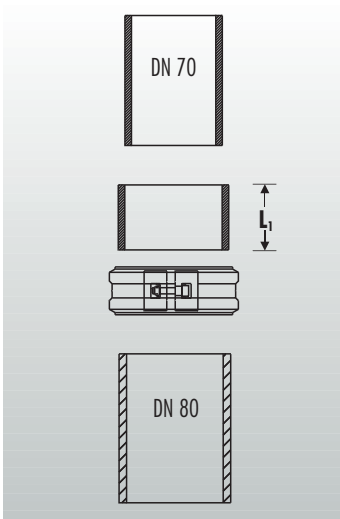


Multiquick coupling

DN	$\varnothing D1$	$\varnothing D2$	$\varnothing D3$	$\varnothing D4$	$\varnothing d1$	$\varnothing d2$	$\varnothing d3$	$\varnothing d4$	H	item no.
100x70	117	111	101	81	108	104	93	74	107	234859

transition coupling for socketless cast iron sewage pipes DN 100 or old cast iron socket pipes DN 100 with an exterior diameter of max. 115 mm to other materials with an exterior diameter of 72 - 110 mm.

- German Approval no.: Z-42.5-240
- Material: EPDM
- Material locking parts: worm thread clamps chromium steel 1.406, screw galvanised steel
- Axial restraint: -
- Screw size: worm thread screw SW7
- Torque: 5.0 + 0.5 Nm

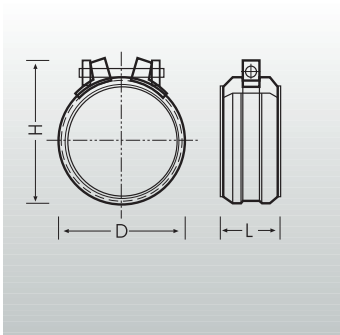


Transition coupling

DN	D_{\sim}	H_{\sim}	L	L_1	item no.
70x80	96	115	45	30	235347

transition coupling for socketless cast iron sewage pipes and fittings DN 70 and DN 80

- Material metal collar: W2, stabilised stainless steel, 14510/11 as per EN 10088
- Material locking parts: lock 1.4301, screw, washer, square nut galvanised, yellow-chromated
- Material sealing: EPDM
- Axial restraint: -
- Screw size: M-8-screw with 6 mm hexagon socket
- Torque: 10-20 Nm



10829 Berlin, 8. Juli 1999
Kolonnenstraße 30 L
Telefon: (0 30) 7 87 99 - 278
Telefax: (0 30) 7 87 30 - 330
GeschZ: W 22-1.42.6-1696

Allgemeine bauaufsichtliche Zulassung

Zulassungsnummer: Z-43.5-291

Antragsteller: Eisenwerke Friedr. Wilh. Düker GmbH & Co.
Münzburger Straße 16
97753 Kitzschbach

Zulassungsgegenstand: Spannbänder mit der Bezeichnung "Spannopic" in den Nennweiten DN 50 bis DN 180 für die Hauptanwendung

Datum der Zulassung: 30. Juni 1994

Die vorliegende Zulassung genehmigt die Formel allgemein bauaufsichtlich zugelassen. Eine allgemeine bauaufsichtliche Zulassung enthält weder Gewähr noch Haftung.



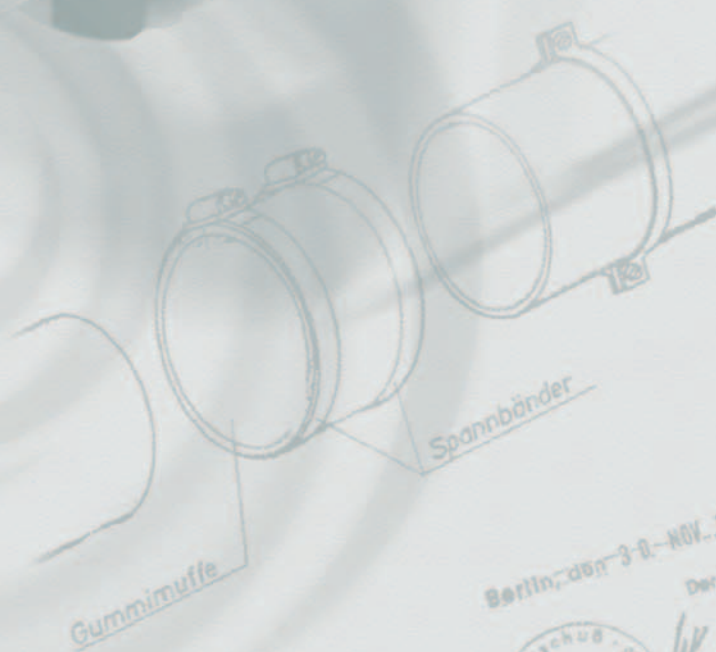
Prüfbescheid für Grundstücksentwässerungsgegenstände
beim Länder-Hochverordnungsamt für neue Baustoffe und Bauteile
Geschäftsstelle beim Senator für Bau- und Wohnungswesen Berlin

1 Berlin 30, den 30. 11. 1997
Potsdamer Straße 180/189
Telefon 67 05 91 App. 5129

NR: 5.1 - 2102 - 67

Prüfbescheid

Prüfzeichen:
PA4
1559



Friedr. Wilh. Düker GmbH & Co.

Berlin, den 30. NOV. 1997

Der Vorsitzende

W. Lange
Baudirektor



Treatment of pipes / cutting edge protection

Düker MLK pipes are delivered in 3 m lengths. Just like standard SML pipes, MLK pipes can be cut to fit the required installation lengths. In order not to disrupt the protection coat, the cut pipes must be provided with a cutting edge protection. For this purpose, a coating material in a light grey colour is delivered free of charge with the pipes.

The coating has to be applied to the raw cutting edges and – depending on the nominal diameter – an insertion length of 2.5 to 4 cm on the pipe ends (sealing zone of the couplings). Observe exactly all following indications regarding the application of the coating.

Cutting edge coating grey for Düker MLK pipes

Characteristics:

Air-drying one-component coating with very good adhesion on iron and non-ferrous metals. The mechanical properties are excellent due to the raw materials.

Surface:

Has to be ready for paint, that means dry, free of dirt, grease, rust or other substances.

Paint:

Apply with a brush in sufficient quantities. If the pipes are used for aggressive mediums apply a second coating after 15 min. Close the tin immediately.

Drying:

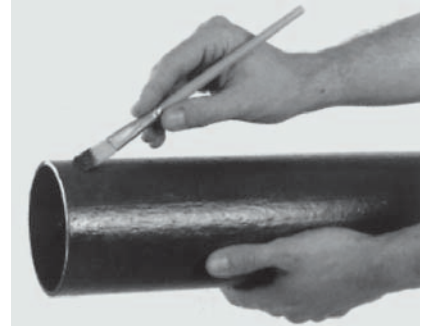
In normal climate (+20°C / 65% air moisture) dry to the touch after 5 minutes; completely dry after 1 - 2 hours.

Storage:

Up to 12 months in a cold place (unopened tin).

Cleaning:

Wet brushes can be cleaned with a thinner.



Installation instructions as well as mounting and laying regulations for Düker couplings are to be found in the SML Specifier's manual.

Basic rules and further information on fixing of Düker pipelines are also to be found in the SML Specifier's manual.

1. Selection of Material

The product standard EN 877, paragraph 4.8.3.2, contains exact specifications for the required outside coating on cast iron drainage pipe systems installed underground: "Pipes shall have an outside coating comprising a layer of metallic zinc covered by a finishing paint compatible with zinc. (...) When measured, the mean mass of zinc per unit area shall not be less than 130g/m².(..)" Paragraph 4.8.3.3 says: "Fittings and accessories shall have a coating (...) of a quality at least equivalent to that of the pipes e.g. (...) epoxy resin based coatings."

The Düker pipe systems TML, MLK and MLB satisfy these requirements. SML, however, is not appropriate for underground installation.

Furthermore EN 877 says: "By agreement between the manufacturer and purchaser other external coatings (...) can be applied in accordance with the conditions of use, provided that sufficient protection against corrosion is obtained." On this basis, other appropriate coating systems such as enamel, high-quality epoxy or bitumen wrappings can be used.

In paragraph 4.8.4.1, there are specifications for the materials of couplings in underground installation: "All parts of couplings or clamping components shall be made of cast iron and coated in accordance with 4.8.3.3, or from austenitic stainless steel in accordance with EN 10088-1, EN 10088-2 and EN 10088-3 with at least 16.5% chrome and 8.5% nickel or equivalent, or from material of comparable resistance".

The stainless steel collars and clampings of all Inox couplings correspond to these requirements (Rapid-Inox, Connect-F-Inox, Connect-G-Inox). The SVE coupling can be considered a "material of comparable resistance". Due to their ease of installation however we recommend to use Rapid couplings.

Attention: CE couplings which used to be common practice in underground installation do not consist of a material that is up to the requirements of paragraph 4.8.4.1 of EN 877. Should any components be installed that do not correspond to paragraph 4.8 of EN 877, these items must be given a later corrosion protection e.g. a bituminous wrapping of the manufacturer Denso.

2. Soil Conditions

The soil aggressiveness is to be determined on the basis of many factors, such as soil type, state, water content, pH value, content in sulphide, sulphate and chloride.

Düker TML, MLK and MLB as well as Inox couplings are appropriate for the following soil grades as per German DVGW worksheet GW9: Ia (practically not aggressive), Ib (slightly aggressive) and II (aggressive).

In case of very aggressive soils (soil grade III), an additional corrosion protection such as Denso must be applied to the complete pipeline. The same applies to laying in ground water.

3. Pipe Bedding

Planning and execution of pipe bedding are to be carried out as per EN 1610 paragraph 7; the German ATV-DVWK worksheet A139 „Installation and inspection of waste water pipelines and canals“, or corresponding local regulations are also to be recommended.

The thickness of the lower bedding layer of compressible material is at least 100 mm; this value should be increased by one tenth of the pipe diameter. In case of very hard soil, the value is at least 150 mm and should be increased by one fifth of the pipe diameter.

The thickness of the upper bedding layer is to be determined by the specifier.

For couplings if necessary holes should be provided for in the bedding so the pipeline does not rest on the connections.

4. Static Calculation

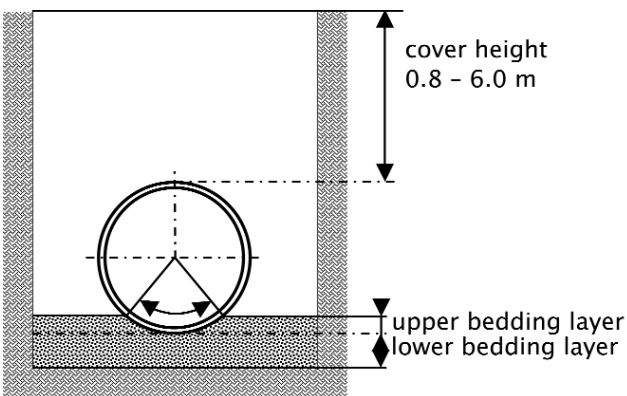
The static calculation follows German ATV-DVWK worksheet A127 „Guidelines for the static calculation of waste water pipelines and canals“, or local regulations.

5. Compression of Trench Filling Material

The compression is to be carried out according to EN 1610, paragraph 11 as well as German ATV-DVWK worksheet A 139 „Installation and inspection of waste water pipelines and canals“ or corresponding local regulations.

6. Bearing Load

The bearing capacity of cast iron drainage pipes can be determined on the basis of EN 877, annex C.2. Due to the superior material stability, TML, MLK and MLB can be used for all cover heights including traffic and surface loads common in site drainage praxis. In case of correct and expert installation, a cover height of 0.8 to 6 m and a simultaneous traffic load of SLW 60 can be assumed as a guideline.



7. Leak Test

The water tightness of underground waste water pipelines must be proven as per EN 1610. The test is prescribed after filling the pipe trench; an additional test before filling is however recommendable, together with a thorough visual inspection of the pipeline.

The leak test can on principle be carried out with air or with water. Should a test with air fail, a test with water can be done instead. However, we recommend to test with water from the start.

Leak test with air

The leak test with air is to be carried out according to table 3 of EN 1610. The German plumbers' association ZVSHK recommends the test method LC with a test pressure of 100 mbar, an admissible pressure decrease of 15 mbar, and a test duration of 3 to 8 minutes depending on the pipeline diameter.

At first, the pressure is kept up by adding air. This period serves to compensate for temperature differences in the added air. After that, no more air is added and the pressure loss after a defined period of time is measured.

For measuring, electronic devices or the U-pipe-manometer have proved themselves.

Leak test with water

The test can be carried out on the complete pipeline or on defined pipeline sections.

At first, the length of the pipeline must be determined, in order to calculate the inner surface and the admissible quantity of water to be added.

The test pressure is to be calculated as per the pressure of a water column from the pipe crest of the section to be tested up to the ground level, e.g. 2.5 m = 25 kPa (250 mbar). The test pressure is minimum 10 kPa, maximum 50 kPa.

The pipeline is slowly filled with water at the lowest point so the air contained in it is expelled at the highest points. Upon reaching the test pressure, the pipeline must remain completely filled for one hour in order to compensate for temperature differences.

After that begins the test period of 30 minutes. The pressure is to be kept permanently on the level of the predefined test pressure within a tolerance of 1kPa, by refilling water to compensate for any water leakage. The height of the water column above ground level must not surpass 10 cm in order to prevent increasing the pressure by more than 1 kPa.

The quantity of refilled water is to be reported. Within the test period it may not surpass

- 0.15 l/m² interior surface for pipelines
- 0.20 l/m² interior surface for pipelines including shafts
- 0.40 l/m² interior surface for shafts and inspection openings

Securing against slipping

During the recommended leak test in the open trench, the connections must be secured against slipping.

As the test is carried out at a maximum of 0.5 bar, we recommend using couplings such as Rapid-Inox, which are axially restrained up to 0.5 bar.

Should higher pressures occur, it is possible to use Connect-G-Inox. Grip collars (e.g. Kombi grip collar) can also be combined with metallic couplings; however these grip collars must either be removed before filling the trench or they must be given an additional corrosion protection.

Connections can also be secured with abutments, particularly at changes of direction, such as poles driven into the ground, concrete abutments, cones of filled-on material etc.



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