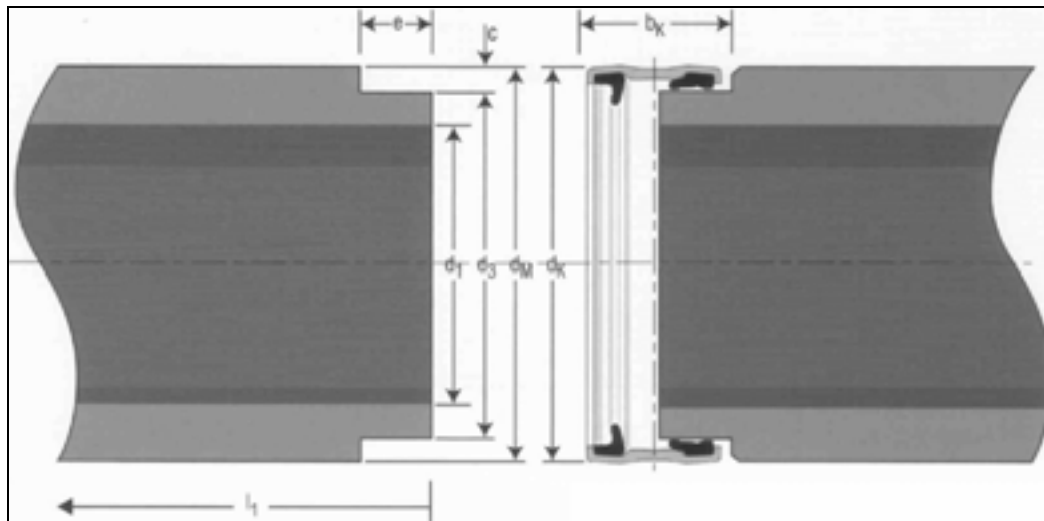


Jacking pipes from KERAMO-STEINZEUG



Coupling made of glass fibre reinforced polypropylene

Technical changes reserved.

DN	Diameter of the pipes			External diameter of the coupling		Effective length	Recess		Max. permissible jacking force		Average Weight
	Internal	Pipe end	Pipe body				l_1	e	C_{min}	$F_1^{(3)}$	
	d_1	$D_3^{(2)}$	d_M	d_K	width b_K	mm	mm	mm	kN	kN	kg/m
150	+1/-2	186 +/-2	213 +0/-4	207 +/-1	103 +/-1	497 +/-2	50 +3/-0	10	170	210	36
150	+1/-2	186 +/-2	213 +0/-4	207 +/-1	103 +/-1	997 +/-2	50 +3/-0	10	170	210	36

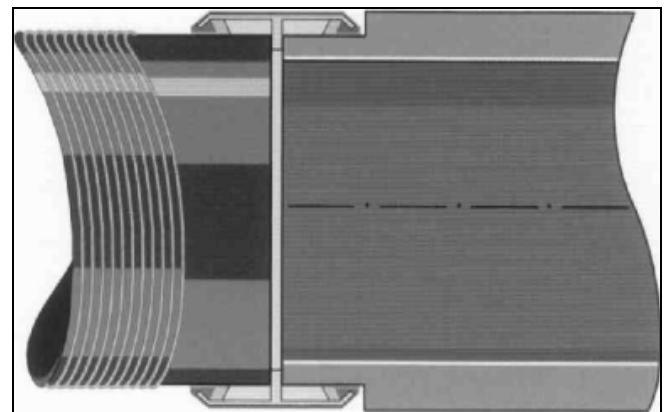
(2) Dimensions in mm,* circumferential dimension U/ .

(3) F_1 : Working jacking force with manual recording, safety factors 2 and 2 (standard mode of determination)

(4) F_2 : Working jacking force with automatic recording and control, safety factors 2 and 1.6

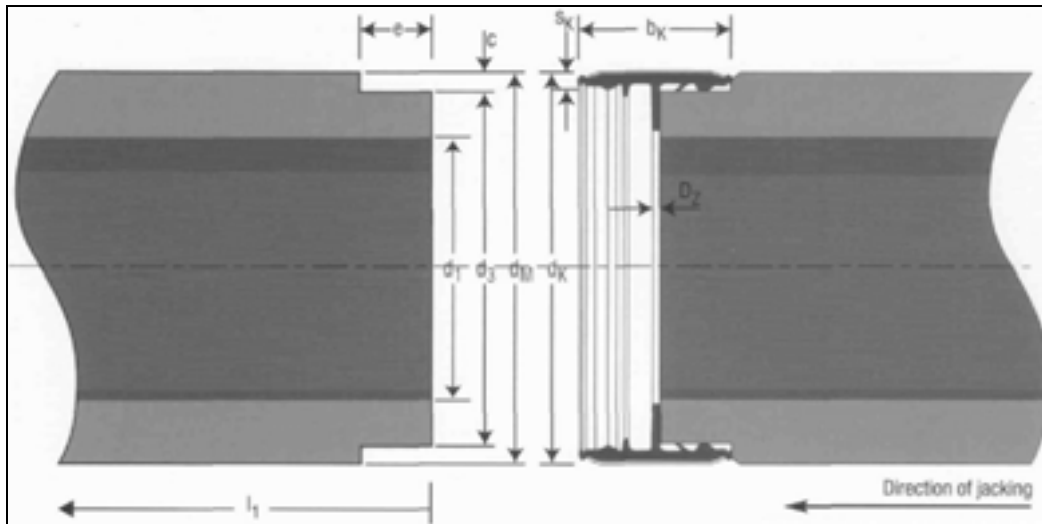
DN 150 jacking pipe with glass fibre reinforced polypropylene coupling

Vitrified clay DN 150 jacking pipes are used in the construction of house connections by microtunnelling. Pipe and seal form one unit, this being the precondition for high corrosion resistance, pipe rigidity with joint flexibility, tightness and resistance to shearing loads. The spigots of the jacking pipes are ground parallel. The coupling consists of glass fibre reinforced polypropylene. Vitrified clay DN 150 jacking pipes can be connected to KERAMO-STEINZEUG standard pipes directly with the jacking coupling or via the universal M-seals. Special adaptors are not required. DN 150 jacking pipes have also proved themselves for the making of connections underground to existing sewers by remote control. Via an adaptor especially developed for this purpose ("System Bohrtec"), the line of pipes is reliably and tightly connected to the main pipe. In this process the connection sewer is installed to the main sewer by underground construction.



"System Bohrtec" adaptor sleeve, drilled hole diameter 187 mm.

Stainless steel coupling for KERAMO-STEINZEUG jacking pipes



V4A Stainless steel coupling type 1

One of the company policy is continual innovation and product development. Therefore we reserve all rights to modify specification, dimensions or design at any time.

DM	Diameter of the pipes			Coupling						Effective length	Max. permissible jacking force	Average weight
	Internal	Spigot	External	e	C _{min}	d _k +/-1	b _k +/-2	S _k +/-0,2	Dz +/-1	l ₁ +/-1	F ₂ ⁽⁴⁾	kg/m
	d ₁	d ₃ ⁽²⁾	d _M max.								kN	
200	+/-3	244 +/-2	276 +0/-6	50 +3/-1	12	267	103	1,5	4	996	350	60
250	+/-3	322 +0/-1	360 +0/-6	50 +3/-0	12	343	106	1,5	4	996/1995	880	105
300	+/-5	374 +0/-1	406 +0/-10	50 +3/-0	12	395	106	2,0	4	996/1995	1000	125
400	+/-6	517 +0/-1	556 +0/-12	50 +3/-0	12	538	111	2,0	10 ⁽⁵⁾	990/1990	2200	240
500	+/-7,5	620 +0/-1	661+0/-15	55 +3/-0	12	640	128	2,5	16 ⁽⁵⁾	984/1984	2600	295

(2) Dimensions in mm; *Calculated from circumference (U)=U/ .
 (4) F₂: Jacking force for automatic recording. Safety factors 2/1.6
 (5) Particle board

Jacking pipes DN 200 to DN 500, stainless steel coupling type 1

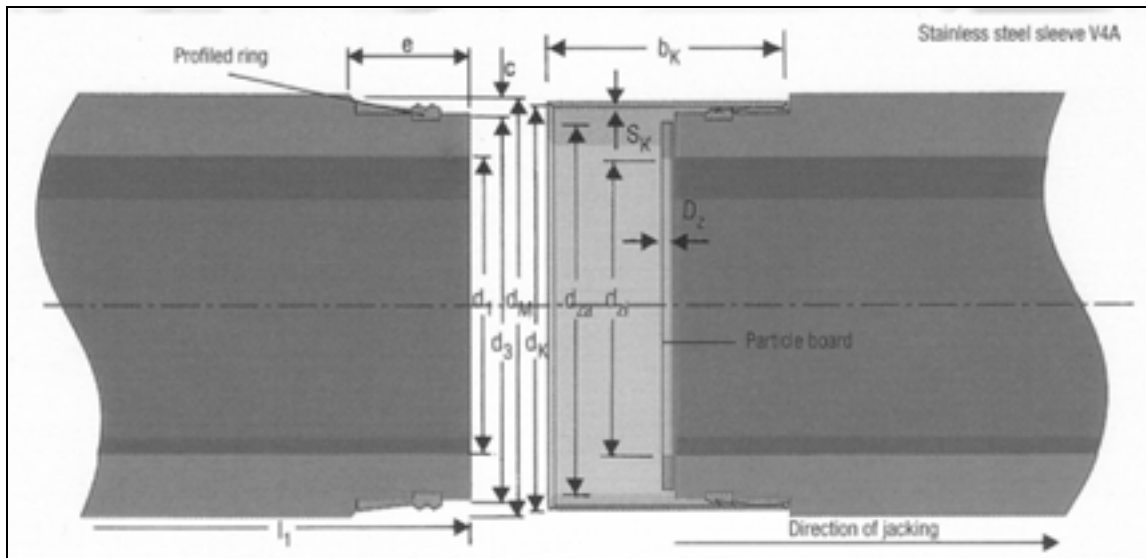
The stainless steel coupling type 1 consists of an integral SBR elastomer sealing element, permanently molded to the profiled stainless steel sleeve (Molybdenum Alloy EN grade 1.4571 - 316 Ti). Couplings for DN 200 -DN 300 have an integrated packing ring made of SBR elastomer, whereas sizes DN 400 -DN 500 are factory fitted with particle board packing rings.

The precision ground spigots, as for larger dimension jacking pipes, permit a safe internal working pressure of 2.4 bar being the requirement for water protection zone II.

The sealing capabilities of the coupler due to its special design not only guarantees joint integrity, but ensures full protection from the ingress of matter during the jacking process.

The new type 1 couplings will progressively replace existing design stainless steel and VT couplings.

Jacking pipes from KERAMO-STEINZEUG



DM	Diameter of the pipes			Coupling						Effective length	Max. permissible jacking force	Average weight
	Internal d_1	spigot $d_3^{(2)}$	External d_M max.	E +/-2	C_{min}	d_k +/-1	b_k +/-1	S_k +/-0,2	D_z +/-1	l_1 +/-1	$F_2^{(4)}$ kN	kg/m
600	600+/-9	719+0/-1	766+0/-18	65	10	729	130	3	16	984 1984	3000	350
700	700+/-12	815+0/-1	866+0/-24	65	10	827	130	4	16	1984	3000	380
800	800+/-12	921+0/-1	971+0/-24	65	10	933	133	4	19	1981	3000	460
1000	1000+/-15	1117+0/-1	1182+0/-30	65	10	1129	133	4	19	1981	3000	584

(2) Dimensions in mm; *Calculated from circumference (U)=U/ .
 (4) F_2 : Jacking force for automatic recording. Safety factors 2/1.6
 (5) Particle board

DN 250 to DN 1000 jacking pipes with stainless steel sleeves

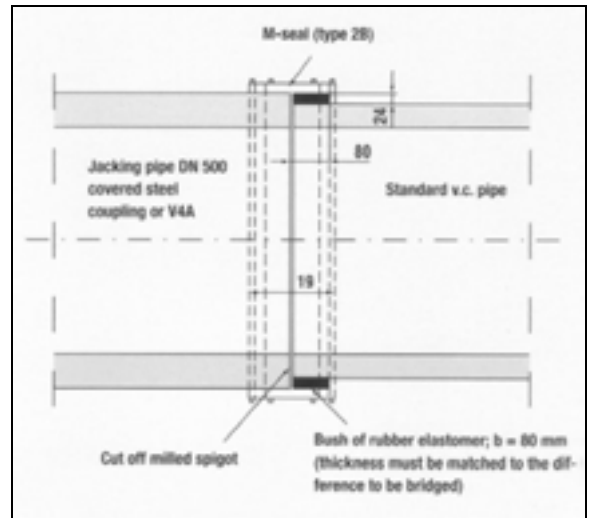
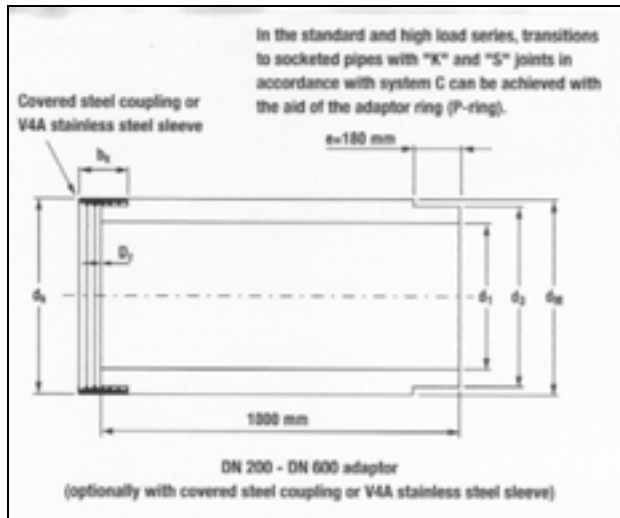
DN 250 to DN 1000 jacking pipes are fitted with V4A stainless steel sleeves (steel material 1.4571 - molybdenum alloyed steel) and are used especially in the case of relatively long manhole to manhole lengths and very difficult soil conditions. The packing ring required is integrated into the stainless steel sleeve. Pipe and seal form one unit and ensure in this way resistance to shear loads, flexibility, corrosion resistance and ease of laying.

Manhole to manhole lengths, economic use of vitrified clay jacking pipes:

The values in brackets give the maximum manhole to manhole lengths which have been driven up to the date of publication.

DN 250	60 – 80 m	(120 m)
DN 300	60 – 90 m	(120 m)
DN 400	70 – 100 m	(130 m)
DN 500	80 – 120 m	(140 m)
DN 600	80 – 120 m	(150 m)
DN 700	80 – 120 m	(160 m)
DN 800	80 – 120 m	(170 m)
DN 1000	80 – 120 m	(170 m)

Jacking pipes from KERAMO-STEINZEUG



DN	Pipe Diameter				Nominal length	Average weight
	D ₁	d ₃ +0/-1 (N)	d ₃ +0/-1 (H)	d _M max.		
200	200 +/-3	242	251	276	1000	160
250	250 +/-3	296	318	355	1000	105
300	300 +/-A	351	374	406	1000	125
400	402 +/-6	484	490	556	1000	240
500	503 W-7	581	607	858	1000	295
600	603 +/-9	687	721	760	1000	350

Dimensions in mm; technical changes reserved
See table on page 16 for dimensions of the covered steel coupling and V4A stainless steelsleeves

CreaDig DN	External diameter dM	M-Seal type2b	Width M-Seal
150	210	190-215	150
200	276	265-290	150
250	355	335-360	190
300	406	385-410	190
400	556	530-560	190
500	658		190
600	760		190
700	862		190
800	970		190
1000	1178		190

Vitrified clay adaptors are used for the transition to standard and high load series socketed pipes. The adaptors consist of 1.0 m long jacking pipes with a coupling on one end and the other end milled to the external diameter of the pipe to which the adaptor should be connected. With the aid of a P-ring, the transition to "K" or "S" jointed pipes (in accordance with jointing system C) can be created. A further way of achieving the transition from a

vitrified clay jacking pipe to a vitrified clay socketed pipe is provided by the use of an adaptor ring to equal out the different diameters. Then, with the aid of the wide M-seal (type 2B), a watertight and reliable connection is created. The external diameters of the components to be connected must be determined precisely prior to ordering the adaptor ring.