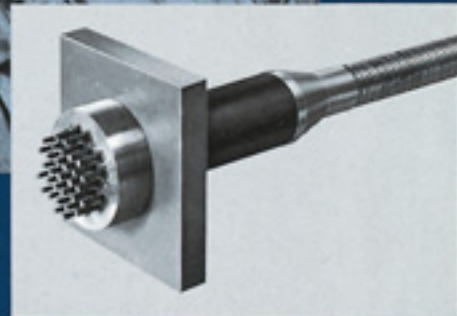
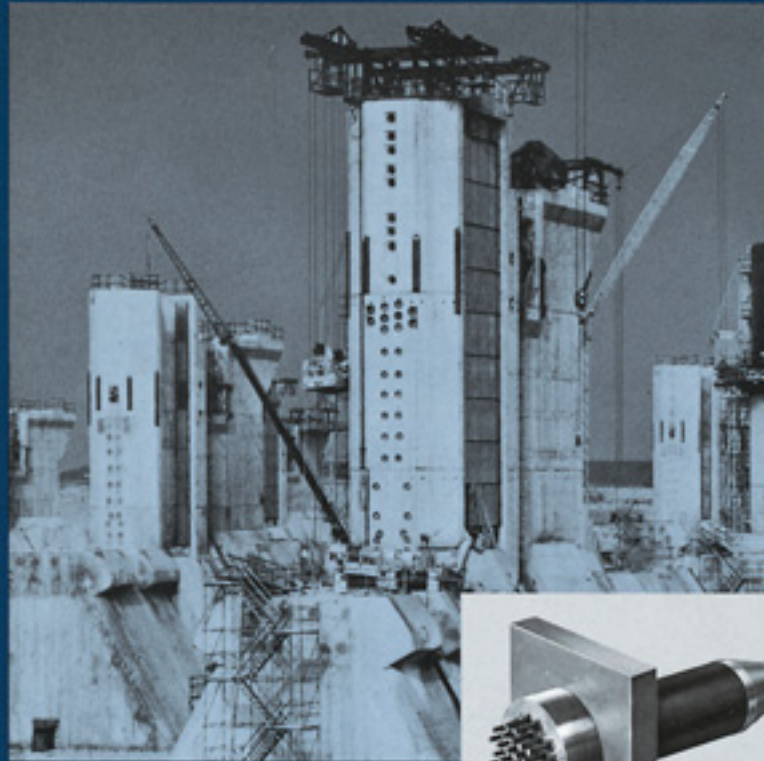


BBR CONA



CONA-Multi® System

The CONA-Multi prestressing method is a supplement to the BBRV wire method in cases where the use of strands is indicated.

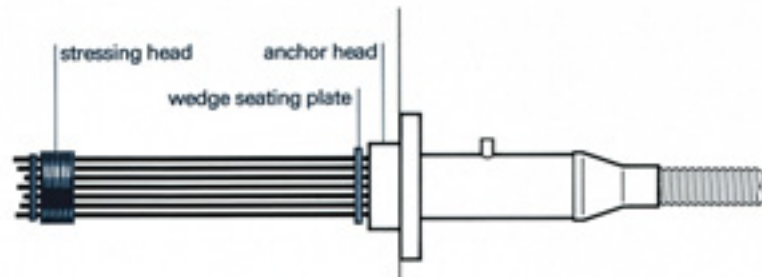
The CONA-Multi system is protected by patents in most countries.

The CONA-Multi system for strands has several outstanding features.

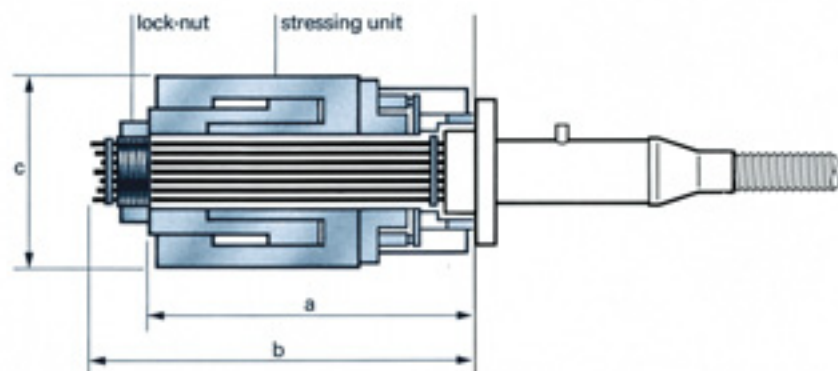
- Easy installing of the anchorages on strand bundles
- Quick connexion of stressing unit to tendon by means of a lock-nut

- Accurate and fast stressing with reliable CONA-Multi units
- Hydraulic seating for positive and equal gripping of all wedges

Strands installed in anchor and stressing head



Prestressing operation



CONA-Multi stressing units

number of strands dia. 0.5"		7	12	19	31	42	61
number of strands dia. 0.6"		4	7	12	19	31	42
type of stressing unit		CM 110	CM 200	CM 300	CM 500	CM 750	CM 1000
max. jack force	kN	1100	2000	3000	5000	7500	10000
stressing unit length	a	475	620	675	740	900	950
stressing unit weight	kg	180	260	410	710	1240	1920
strand length	b	660	750	810	890	1060	1130
jack type		NP 200	LP 200	LP 300	LP 500	LP 750	LP 1000
jack diameter	c	205	330	400	500	635	730
jack stroke		100	200	200	200	200	200

Dimensions in millimetres

Standard Tendons CONA-Multi

number of strands dia. 0.5"		7	12	19	31	42	61
tendon type		705	1205	1905	3105	4205	6105
ultimate tensile force 1)	kN	1309	2244	3553	5797	7854	11407
stressing force at 0.8 u.t.s.	kN	1047	1795	2842	4638	6283	9126
weight of strand bundle	kg/m	5.50	9.42	14.92	24.34	32.97	47.89
conduit I.D. pull through	mm	55	70	85	105	120	145
conduit I.D. assembled	mm	50	65	75	95	110	135

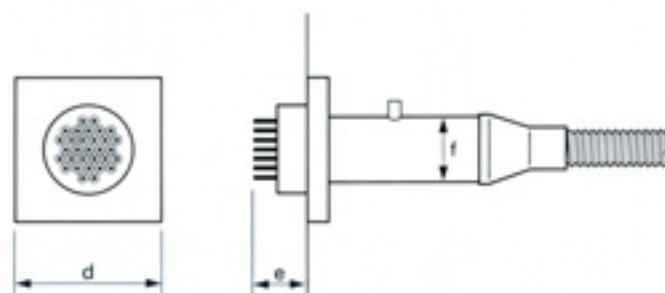
number of strands dia. 0.6"		4	7	12	19	31	42
tendon type		406	706	1206	1906	3106	4206
ultimate tensile force 1)	kN	1122	1964	3366	5330	8696	11781
stressing force at 0.8 u.t.s.	kN	898	1571	2693	4264	6956	9425
weight of strand bundle	kg/m	4.71	8.24	14.13	22.37	36.50	49.46
conduit I.D. pull through	mm	50	65	80	100	130	150
conduit I.D. assembled	mm	45	60	75	90	120	140

1) based on guaranteed u.t.s. of 1870 N/mm² and strand area for dia. 0.5" = 100 mm² and dia. 0.6" = 150 mm²

Stressing Anchorages CONA-Multi

In the table the standard sizes of the stressing anchorage type M are listed. If smaller tendons are required, strands are omitted.

The tendon can be restressed or entirely detensioned as long as the strand bundle projecting from the stressing anchorage is not cut off.



number of strands	anchorage type M	strand dia. 0.5"						strand dia. 0.6"					
		7	12	19	31	42	61	4	7	12	19	31	42
plate size	d	200	265	330	425	490	590	180	240	315	395	510	600
plate size	d	175	220	270	345	425	515	175	220	270	345	440	520
anchor length	e	80	90	100	110	120	150	90	90	100	110	120	150
trumpet dia.	f	79	112	142	182	219	268	74	96	138	174	225	268

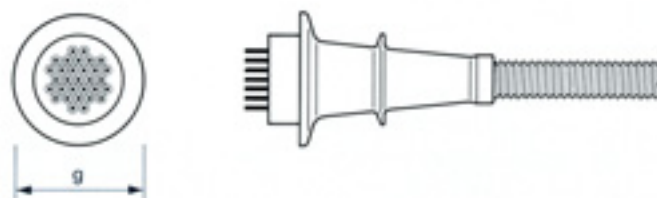
The choice of bearing plate sizes d depends mainly on the concrete strength.

Dimensions in millimetres

Bearing Plate Castings CONA-Multi

Alternatively to a fabricated bearing plate assembly as shown above, a casting can be used for stressing anchorages, fixed anchorages and couplings. This solution is particularly suited for large quantities of the same anchor size or if limited space is available in the anchorage zone of the structure.

Full prestressing is possible at a minimum concrete cube strength of 30 N/mm².



number of strands	plate size g	strand dia. 0.5"						strand dia. 0.6"					
		7	12	19	31	42	61	4	7	12	19	31	42
plate size	g	175	230	285	360	420	510	175	220	275	345	440	520

The bearing plate may be round or square.

Dimensions in millimetres

Fixed Anchorages CONA-Multi

The fixed anchorage type F is accessible during stressing operations and is identical to the stressing anchorage shown above.

The fixed anchorage type FC is cast in the concrete before stressing and the strands are anchored by means of wedges which are secured by button heads. A cap fastened to the bearing

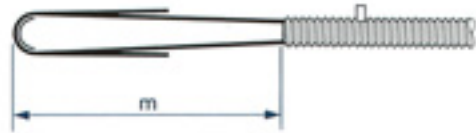
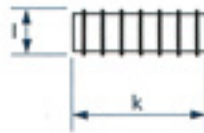
plate precludes intrusion of cement slurry into the anchorage. Dimensions are identical to the stressing anchorage type M.

Fixed Loop Anchorages CONA-Multi

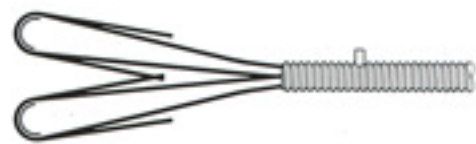
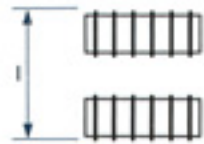
Each strand of the loop anchorage type E is provided with an individual short loop. As bending of the loops only requires a light and compact tool, this anchorage can easily be assembled on the construction site at the end of a strand bundle which is already installed in the conduit.

Full prestressing is possible at a min. concrete cube strength of 30N/mm². Special care must be paid to an adequate splitting reinforcement.

Anchorage with up to 7 strands



Anchorage with 8 to 19 strands



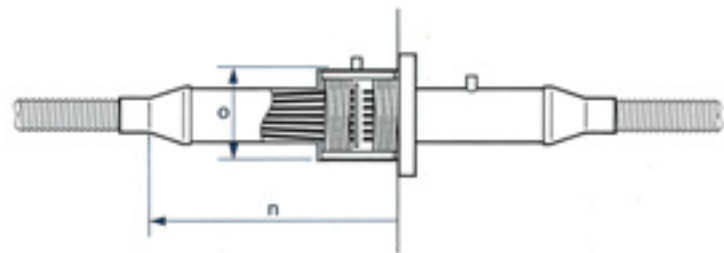
number of strands	type E	strand dia. 0.5"			strand dia. 0.6"		
		7	12	19	4	7	12
anchorage		705	1205	1905	406	706	1206
side length	k	350	300	500	240	420	360
side length	l	125	330	330	155	155	400
anchor length	m	700	700	900	900	900	900

Dimensions in millimetres

Couplings CONA-Multi

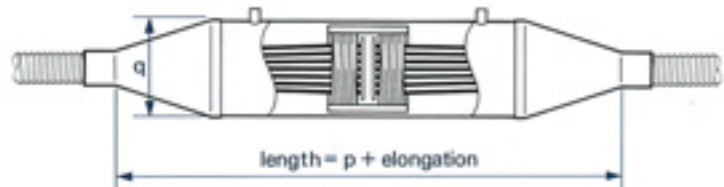
Fixed coupling type K

With the fixed coupling a further tendon can be connected at a construction joint to an already stressed anchorage. The anchor heads have an outside thread and are connected by means of a threaded coupling sleeve. In the coupling head, the strand heads are used to secure the wedges.



Movable coupling type KC

The anchor heads have an outside thread and are connected by means of a threaded coupling sleeve. The strands of both tendon-ends to be coupled are provided with button heads to secure the wedges.



number of strands	type K	strand dia. 0.5"						strand dia. 0.6"					
		7	12	19	31	42	61	4	7	12	19	31	42
fixed coupling		705	1205	1905	3105	4205	6105	406	706	1206	1906	3106	4206
length	n	390	570	750	930	1205	1485	410	480	710	900	1165	1445
diameter	o	155	200	245	305	375	450	155	195	245	300	380	445
movable coupling	type KC	705	1205	1905	3105	4205	6105	406	706	1206	1906	3106	4206
length = p+elongation	p	610	960	1290	1620	2145	2655	630	770	1210	1560	2065	2575
diameter	q	155	200	245	305	375	450	155	195	245	300	380	445

Dimensions in millimetres

Cover: Piers of the Eastern Scheldt Storm Surge Barrier, Netherlands, prestressed with CONA-Multi tendons.

Details are subject to change. Because of differences in building codes and available strands, it is recommended to contact the local BBR representative for detailed information.

