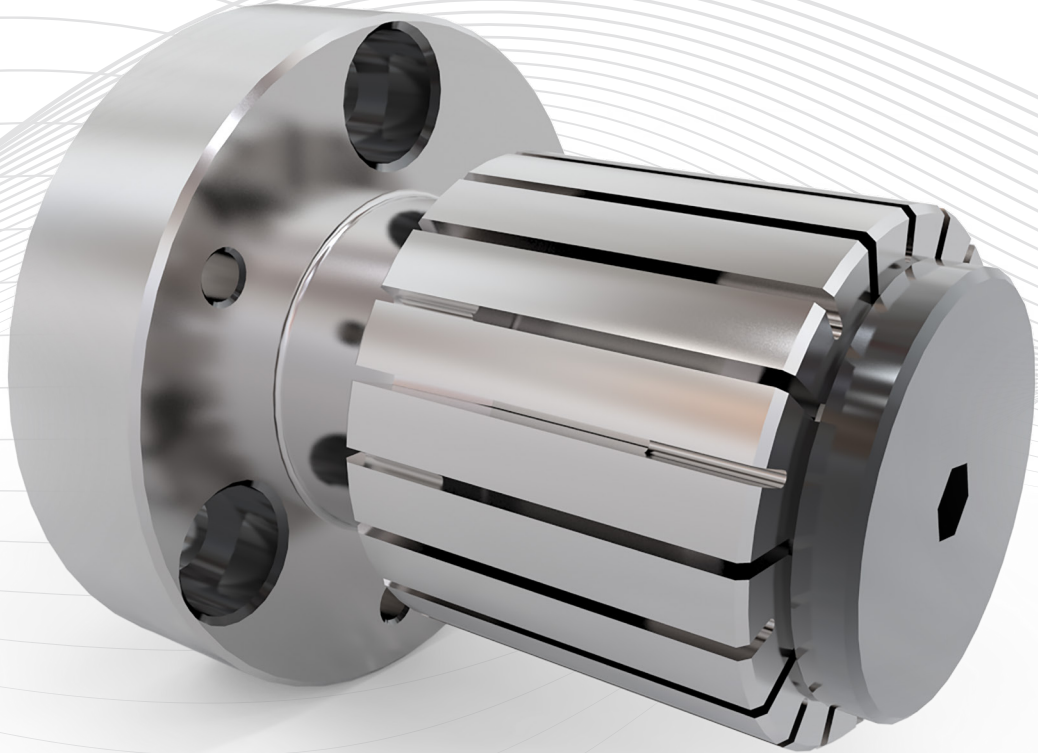




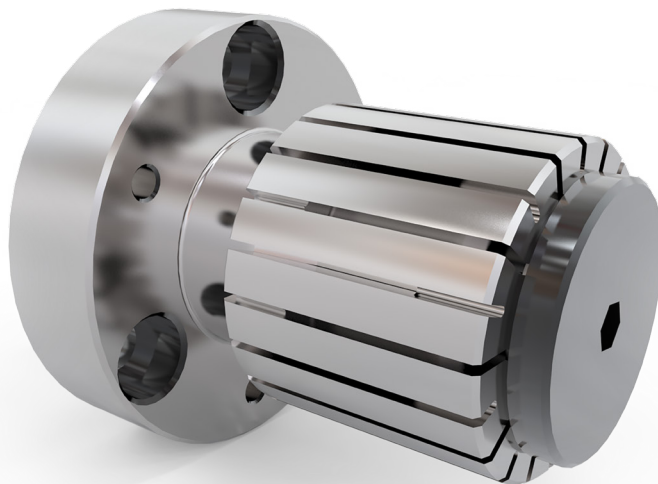
FORKARDT.DE



EM CLAMPING MANDREL

FORKARDT®

EM clamping mandrel



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More information at: www.Forkardt.com

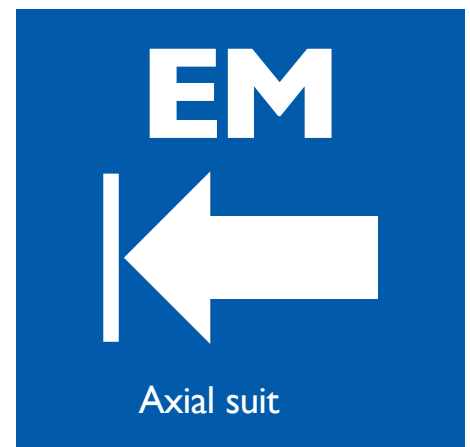
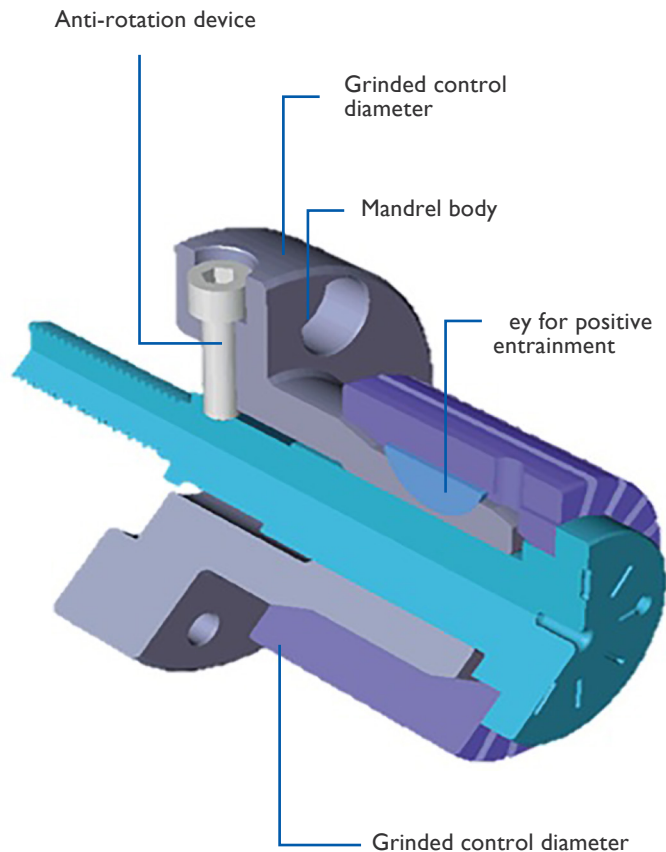
Since we are constantly working to improve our products, the dimensions and the dimensions and data in this publication may not always correspond to the latest versions. Current data can be found on our website.

Clamping mandrel EM Flexibility due to exchangeable clamping sleeves

The clamping sleeves are modularly exchangeable without readjustment and can also be ground in by yourself. The double taper expansion of the clamping sleeves by 0,8 mm creates the desired, perfect clamping geometry. The repeatability is thus in the range of 0,012 mm. Special clamping sleeves are also supplied for clamping profiled, internally toothed, stepped or conical workpiece bores.

Benefits::

- Expansion of the clamping sleeves of 0,8 mm
- Suitable for automatic loading
- Repeat clamping accuracy 0,012 mm
- Sealing of the sleeve slots ((vulcanization) available as standard
- Simple and safe handling due to stroke limitation

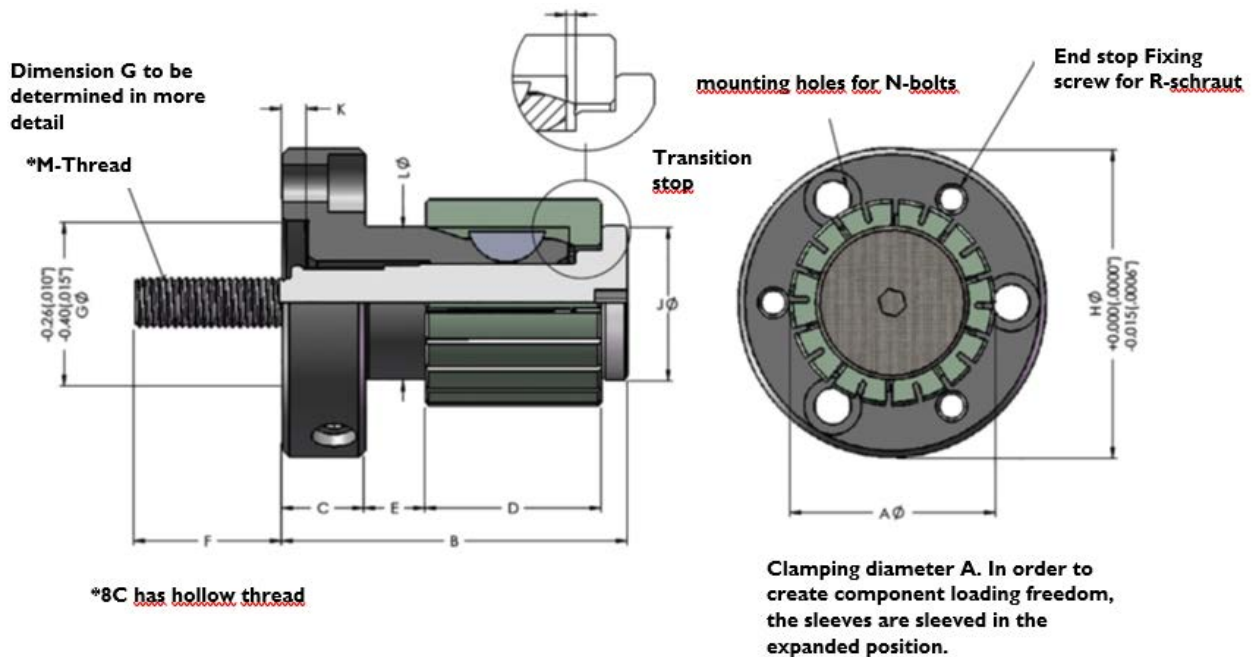


FORKARDT® EM Clamping mandrel Tie rods actuated mandrel over operated

The drawbar-operated mandrel can be used for general turning and grinding operations on any machine equipped with a drawbar device. Suitable adapter plates for mounting on the machine can be manufactured either by Forkardt or by the customer. Component end stops, either of fixed or compensating design (for non-rectangular stop faces), can also be manufactured individually to your requirements.

The natural retraction movement of the sleeve ensures that the component rests firmly against the stop surface. An overvoltage stop in the expansion pin serves to prevent overloading of the sleeve.

To achieve maximum efficiency, the expansion sleeves should be pretensioned. This ensures contact with the mandrel double cones at all times.

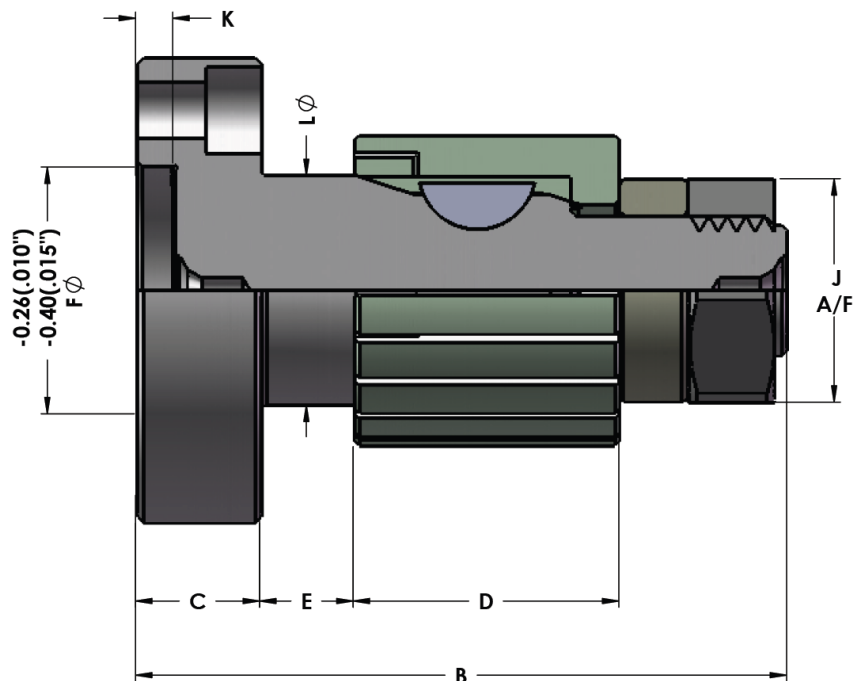


Type	Total clamping range		B	C	D		E	F	G	H	J	K	L	M	N Mounting subc.. screw.		R Strokes subc. screw.		Fmax (daN)
	Min.	Max.			C1	C2													
3A	12,5	16,0	60	20	22,0	26,0	14,6	20	40	75	11,0	6	12,6	M4	58	M8	28	M4	500
2C	16,0	22,0	66	20	27,0	32,0	15,0	22	40	75	15,0	6	14,1	M8	58	M8	28	M4	1000
1C	22,0	28,5	72	20	32,0	38,0	15,5	30	40	75	20,0	6	20,7	M8	58	M8	58	M6	1200
18C	28,5	41,0	79	20	38,0	45,0	15,3	31	40	75	26,5	6	26,3	M10	58	M8	58	M6	1800
4C	41,0	63,5	84	20	43,0	50,0	14,8	36	40	75	37,5	6	37,0	M12	58	M8	58	M6	2300
5C	63,5	76,2	109	25	51,0	60,0	25,3	36	60	120	55,0	6	57,3	M20	94	M10	94	M8	2800
6C	76,2	89,0	118	25	57,0	69,0	24,7	37	60	120	74,5	6	71,1	M20	94	M10	94	M8	3200
7C	89,0	130,0	133	30	63,5	78,5	25,2	47	100	180	86,5	6	84,1	M24	150	M12	150	M10	3700
8C	130	178,0	153	30	79,5	99,5	24,6	22	100	180	124,0	6	123,0	M36	150	M12	150	M10	5500

FORKARDT® EM clamping mandrel **clamping screws actuated** **mandrel Manually actuated**

Manually operated mandrels are mainly used for small series production or as test mandrels. The dimension is "G" tolerated as a fit dimension so that precise mounting on flanges is possible. The flangeless version is normally received between two 60° centers. End stops can be mounted on the diameter "L".

The clamping mandrel operated via clamping screw can be used for general turning and grinding operations on any machine equipped with a turning spindle. Suitable adapter disks for mounting on the machine can be manufactured either by Forkardt or by the customer. Component end stops either in fixed or compensating. The sleeve design (for non-rectangular stop surfaces) can also be manufactured individually according to your requirements. The natural retraction movement of the sleeve ensures that the component rests firmly against the stop surface. An overstress stop in the expansion pin serves to prevent overloading of the sleeve. For maximum efficiency, the expansion sleeves should be preloaded. This ensures contact with the mandrel double taper at all times.



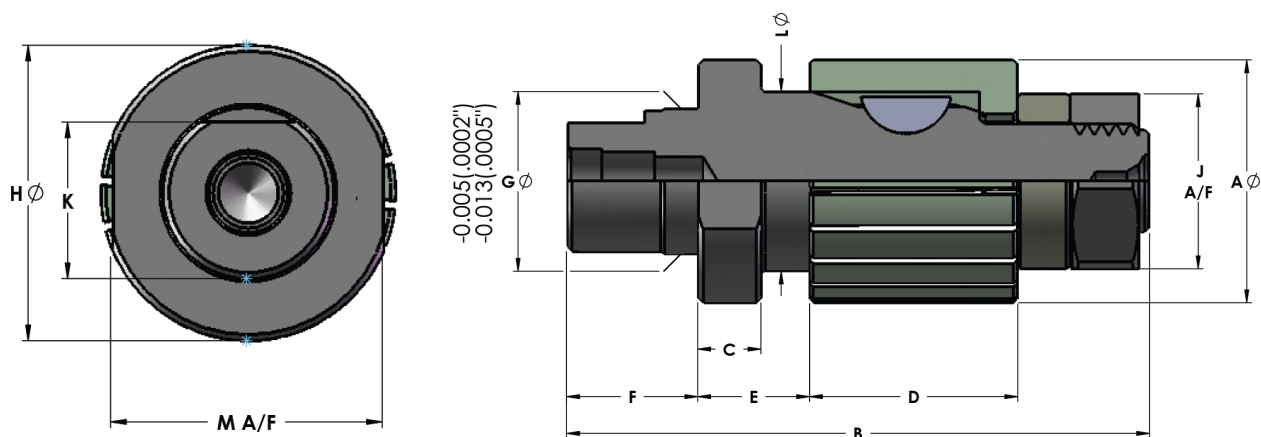
Type	A		B	C	D	E	F	G	H	J	K	L	M	Fmax (daN)
	Min.	Max.												
3A	12,5	16,0	66	11	22	9,8	20	20	26	11,0	14	9,5	M4	700
2C	16,0	22,0	70	11	27	8,0	20	20	26	15,0	18	14,1	M8	1000
1C	22,0	28,5	85	11	32	10,0	27	30	40	20,0	17	20,7	M8	1200
18C	28,5	41,0	92	11	38	10,5	27	30	40	26,5	18	36,3	M10	1800
4C	41,0	63,5	99	13	43	9,5	27	30	50	37,5	21	37,0	M12	2300

FORKARDT® EM clamping mandrel clamping screws actuated mandrel manually actuated between centers

The mandrel operated between centers is mounted between 60°-degree centers and can be driven by a driver or a drive pulley. If desired, there is the possibility to mount a simple component end stop at diameter L.

There is a ground diameter G over which this mandrel can be adapted to the mounted clamping plate by means of an adapter disc, if desired. Suitable adapter discs for mounting on the machine can be manufactured either by Forkardt or by the customer. Component end stops of either fixed or compensating design (for non-rectangular stop surfaces), are also available or can be manufactured by the customer.

These mandrels are mainly used for small batch machining operations. They are hand-operated by means of conventional wrenches and are often used for testing purposes. To achieve maximum efficiency, the expanding sleeves should be preloaded. This ensures contact with the mandrel double taper at all times.



Type	A		B	C	D	E	F	G	H	J A/F	K	L	M
	Min.	Max.											
3A	12,5	16,0	77	11,0	22,0	21,0	20	20	26,0	10	18	9,5	22
2C	16,0	22,0	83	11,0	27,0	20,0	20	20	26,0	13	18	14,1	22
1C	22,0	28,5	99	11,0	32,0	21,5	27	30	40,0	19	27	20,7	36
18C	28,5	41,0	107	11,0	38,0	21,2	27	30	40,0	24	27	26,3	36
4C	41,0	63,5	120	13,0	43,0	23,0	27	30	50,0	36	27	37,0	46
5C	63,5	76,2	145	-	51,0	26,0	35	40	57,3	55	35	57,	50
6C	76,2	89,0	155	-	57,0	26,3	35	50	71,1	65	45	71,1	60
7C	89,0	130,0	206	-	63,5	44,0	50	60	84,1	85Ø	55	84,1	70
8C	130,0	178,0	206	-	79,5	55,5	50	80	123,0	124Ø	73	123,1	105

FORKARDT® EM clamping mandrel Article numbers

Tie rods actuated mandrel Power operated

Type	Article number
3AI	D2096000000
2CI	D2096000001
1CI	D2096000002
18CI	D2096000003
4CI	D2096000004
5CI	D2096000005
6CI	D2096000006
7CI	D2096000007
8CI	D2096000008

Clamping screws actuated mandrel,, manually operated

Type	Article number
3AI	D2096000017
2CI	D2096000018
1CI	D2096000019
18CI	D2096000020
4CI	D2096000021
5CI	D2096000075
6CI	D2096000076
7CI	D2096000077
8CI	D2096000089

Clamping screws actuated mandrel, manually operated between tips

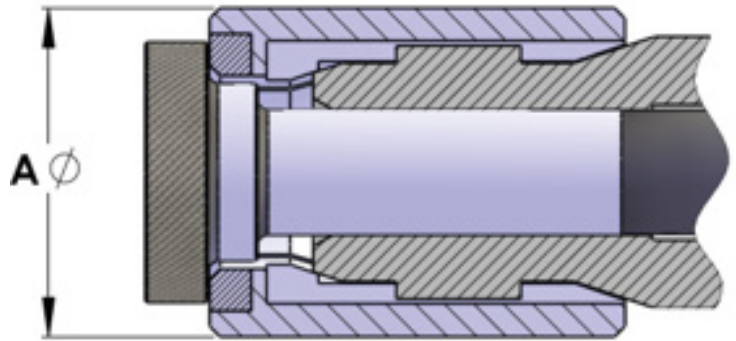
Type	Article number
3AI	D2096000023
2CI	D2096000024
1CI	D2096000025
18CI	D2096000026
4CI	D2096000027
5CI	D2096000028
6CI	D2096000074
7CI	D2096000030
8CI	D2096000085

FORKARDT® EM clamping mandrel

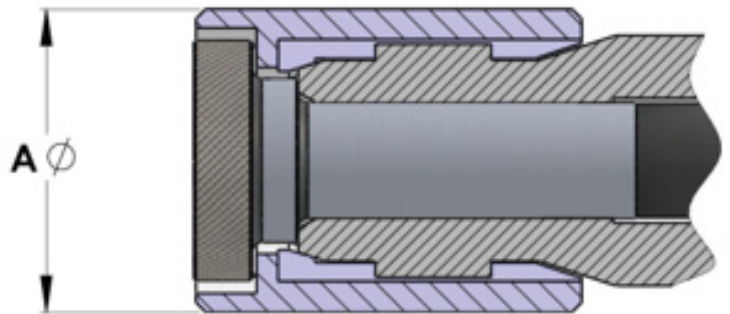
Standard clamping sleeves

Our sleeves with standard length can be used on all types of mandrels be used and are mutually interchangeable within the diameter range of each type. For example, the mandrel operated by tie rod A allows the use of a standard type A1 sleeve or a retractable type A2 sleeve that may have originally been used on a thread-operated type A mandrel.

To keep the double angle die free of grinding dust, Forkardt also supplies vulcanized sleeves, which helps extend sleeve life and accuracy.



Standard arbor



Retractable mandrel

Type	Clamping diameter		length	Preload
	Min.	Max.		
3A1	12,5	16,0	22,0	0,13
2C1	16,0	22,0	27,0	0,13
1C1	22,0	28,5	32,0	0,13
18C1	28,5	41,0	38,0	0,13
4C1	41,0	63,5	43,0	0,26
5C1	63,5	76,2	51,0	0,26
6C1	76,2	89,0	57,0	0,26
7C1	89,0	130,0	63,5	0,39
8C1	130,0	178,0	80,0	0,39

Type	Clamping diameter		length	Preload
	Min.	Max.		
3A2	16,5	22,0	26,0	0,13
2C2	22,0	28,5	32,0	0,13
1C2	28,0	40,0	38,0	0,13
18C2	40,0	51,0	45,0	0,13
4C2	51,0	73,0	50,0	0,26
5C2	73,0	89,0	60,0	0,26
6C2	89,0	102,0	69,0	0,26
7C2	101,0	143,0	78,5	0,39
8C2	143,0	178,0	99,5	0,39

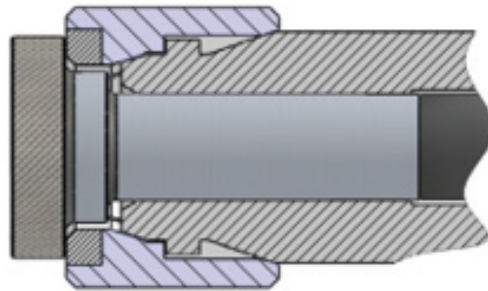
FORKARDT® EM clamping mandrel

Special clamping sleeves

Extraordinary tasks can be solved in a simple way by means of specially shaped adapter sleeves. For example, extended or profiled adapter sleeves with internal toothing or multi-spline profile are supplied for clamping in the root circle or in the pitch circle. We also supply segment clamping sleeves for extremely high transmission forces, if required.

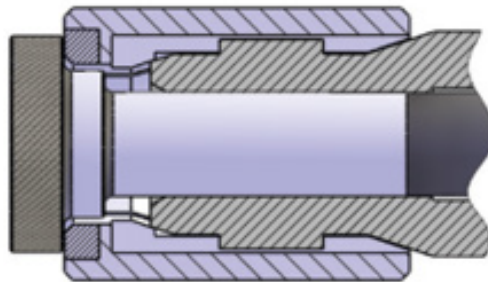
Short length (I/2CI)

There are many situations where the customer's component is too short for our standard sleeve. We therefore offer a complete range of short sleeves.



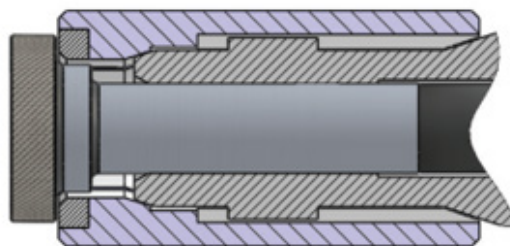
Standard length (CI)

In order to provide accuracy and positive clamping, the standard sleeves have the double tapers are split at their optimum position.



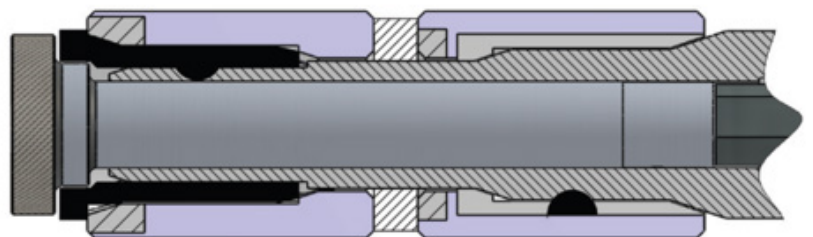
Overlength(CII)

There are many situations where the customer's component is too long for our standard sleeve. We therefore offer a complete range of long sleeves.



Double sleeve

There are many situations where the customer's component is too long for our extended sleeves. In these cases we can mount the above mentioned sleeves in double combination. In this way, rigid clamping of a long component is also possible.



FORKARDT®

CLAMPING TECHNOLOGY WORLDWIDE

Michigan, USA ○

○ Reutlingen, Germany
○ Noisy-Le-Sec, France

○ Hyderabad, India

○ Shanghai, China



WWW.FORKARDT.COM

Hardinge Worldwide
800-843-8801
info@hardinge.com
parts@hardinge.com
service@hardinge.com