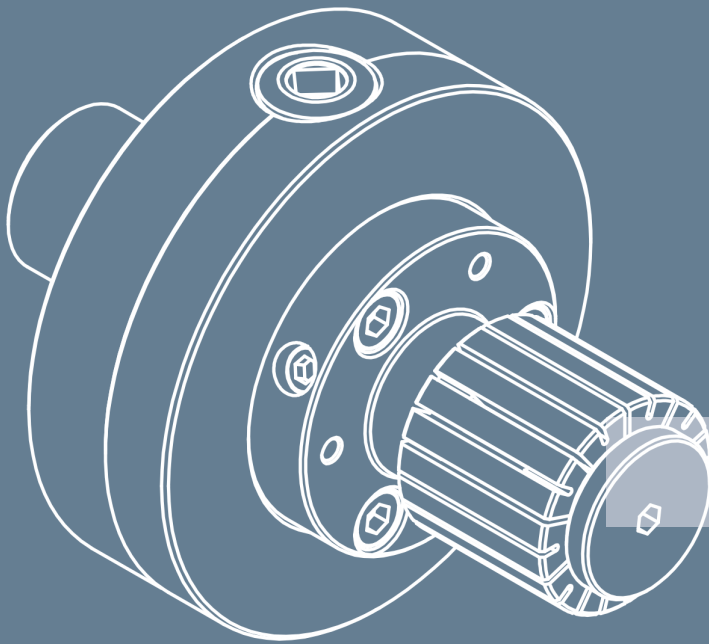
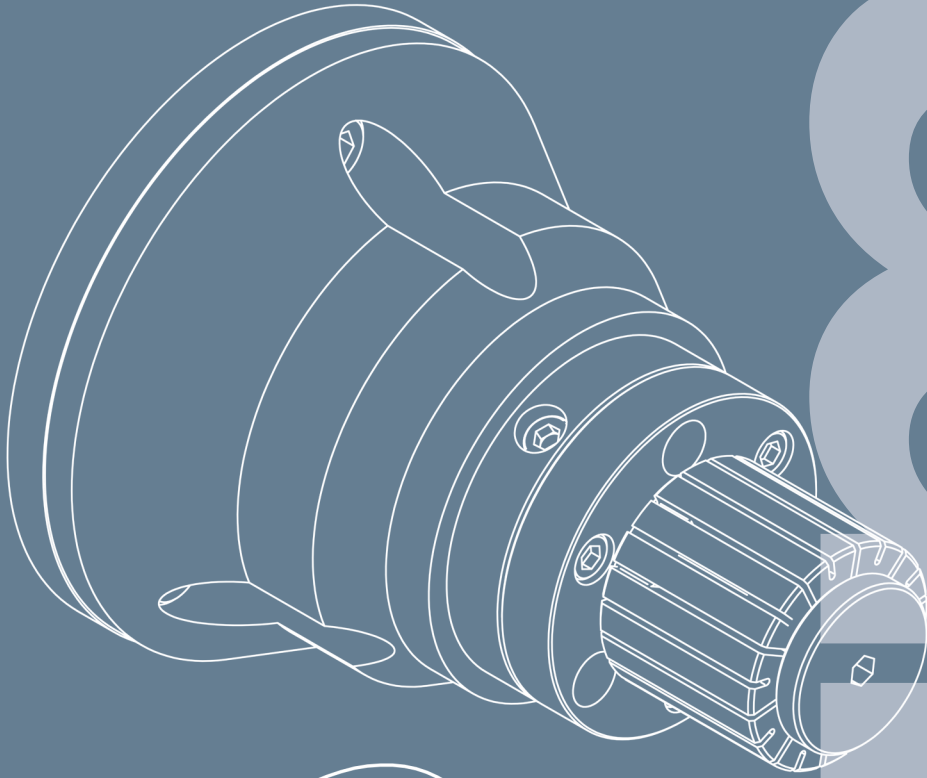


Expanding Mandrels

KEM Series



Power Expanding Mandrels for Lathes

Rigid and Accurate Workholding for Internal Diameters

Internal Clamping Offers Full Part Access

Allows for full access to the entire external profile of the workpiece so all external diameters can be turned in a single operation, guaranteeing perfect concentricity.

Quick & Easy Mounting

Klamp expanding mandrels mount directly to the lathe spindle or use a precision adaptor plate to ensure a consistent mounting without the need for correction. The precision fit of the Klamp collet chuck enhances the rigidity of the overall system. The need for adjustment is minimal, meaning less machine down-time.

High Accuracy & Rigidity

Pull-back design draws the workpiece securely against a part locator for 'dual-contact' rigidity.

Modular Design

All Mandrel models have a common flange configuration, enabling full interchangeability with all back bodies.

Parallel Expansion for Optimum Accuracy and Grip Force

The Klamp double-angle design provides parallel sleeve expansion, ensuring full-length part contact and positive release when the part is unclamped.



Two Regular Sleeve Types Available



Standard Sleeves

Cost effective sleeves where the expander pin is outside the sleeve body, with either a 0.5mm or 0.8 gripping range (see pages 51-53 for more detail), suitable for through bores and operated with a part locator.



Flush sleeves

Expander pin is inside/level with the sleeve body with either a 0.5mm or 0.8 gripping range (see pages 51-53 for more detail), suitable for blind bores and enables the sleeve to grip as much of the internal diameter as possible.

Customised Systems Available

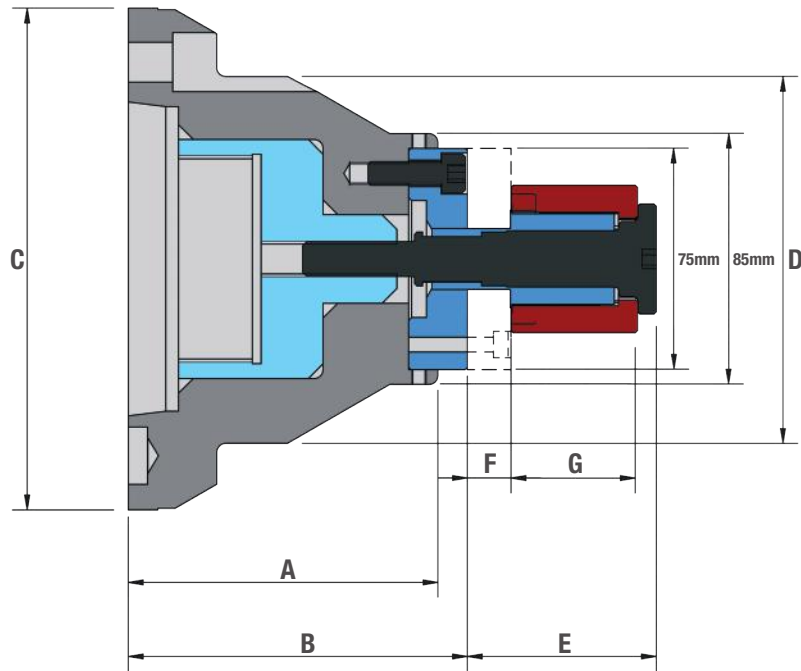


Dual sleeves (as shown above), extended length sleeves, 1/2 length sleeves and larger diameter sizes are on the market with up to 635mm ID gripping for supporting a wide range of parts.



A KEM dual sleeve system mounted on a rotary table. Actuated via a hydraulic cylinder and supported via a special hydraulic tailstock this setup is perfect for automated machining cells allowing multiple parts to be robot loaded and machined at the same time.

Power Expanding Mandrels for Lathes

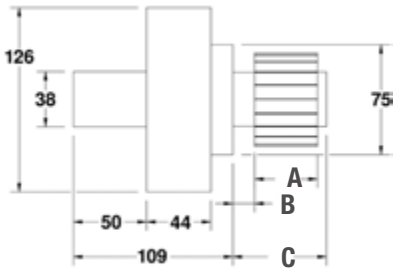


Mandrel Assembly Type	Spindle Mounting	Part Number	Suitable Sleeve Types	Sleeve Gripping Range*		Sleeve Increments	A	B	C	D	E	F	G Standard (G Flush)	Maximum Drawnut Thread Size	Maximum Pull Force kN	Maximum Gripping Force kN
				Min	Max											
KEM-AS	Z140	KEM-AS-14	Standard or Flush	12.4	22.4	0.5	83	103	160	100	39.9	14.5	22.1 (25.4)	M60 x 1.5	7	12.5
	A5	KEM-AS-A5					88	108	135	100				M60 x 1.5		
	A6	KEM-AS-A6					95	115	170	125				M75 x 1.5		
	A8	KEM-AS-A8					100	120	210	125				M90 x 2.0		
KEM-BS	Z140	KEM-BS-14	Standard or Flush	15.9	29.1	0.5	83	103	160	100	46	15	27.0 (31.0)	M60 x 1.5	10	17.8
	A5	KEM-BS-A5					88	108	135	100				M60 x 1.5		
	A6	KEM-BS-A6					95	115	170	125				M75 x 1.5		
	A8	KEM-BS-A8					100	120	210	125				M90 x 2.0		
KEM-CS	Z140	KEM-CS-14	Standard or Flush	21.9	40.3	0.8	83	103	160	100	52.1	15.5	32.0 (36.6)	M60 x 1.5	12	21.4
	A5	KEM-CS-A5					88	108	135	100				M60 x 1.5		
	A6	KEM-CS-A6					95	115	170	125				M75 x 1.5		
	A8	KEM-CS-A8					100	120	210	125				M90 x 2.0		
KEM-DS	Z140	KEM-DS-14	Standard or Flush	28.3	51.5	0.8	83	103	160	100	59	15.2	38.1 (43.8)	M60 x 1.5	18	32
	A5	KEM-DS-A5					88	108	135	100				M60 x 1.5		
	A6	KEM-DS-A6					95	115	170	125				M75 x 1.5		
	A8	KEM-DS-A8					100	120	210	125				M90 x 2.0		
KEM-ES	Z140	KEM-ES-14	Standard or Flush	41.1	82.7	0.8	83	103	160	100	64	14.7	43.0 (49.3)	M60 x 1.5	23	40.9
	A5	KEM-ES-A5					88	108	135	100				M60 x 1.5		
	A6	KEM-ES-A6					95	115	170	125				M75 x 1.5		
	A8	KEM-ES-A8					100	120	210	125				M90 x 2.0		

Manually Actuated Expanding Mandrels

Heavy Duty Gearing

The Klamp manually actuated mandrel (KEM-MA) provides a high gripping force utilising the same standard Klamp Mandrel assemblies as the power operated systems therefore giving you the ability to have an internal gripping solution that can be rapidly deployed with whatever standard workholding system your machine(s) has.



Two Regular Sleeve Types Available



Standard Sleeves

Cost effective sleeves where the expander pin is outside the sleeve body, with either a 0.5mm or 0.8 gripping range (see pages 51-53 for more detail), suitable for through bores and operated with a part locator.



Flush Sleeves

Expander pin is inside/level with the sleeve body with either a 0.5mm or 0.8 gripping range (see pages 51-53 for more detail), suitable for blind bores and enables the sleeve to grip as much of the internal diameter as possible.

Mandrel Assembly Type	Mounting	Part Number	Suitable Sleeve Type	Sleeve Gripping Range*		Sleeve Increments	A	B	C Standard (C Flush)
				Min	Max				
KEM-AS	Manual Actuator	KEM-AS-MA	Standard or Flush	12.4	22.4	0.5	39.9	14.5	22.1 (25.4)
KEM-BS	Manual Actuator	KEM-BS-MA		15.9	29.1	0.5	46	15	27.0 (31.0)
KEM-CS	Manual Actuator	KEM-CS-MA		21.9	40.3	0.8	52.1	15.5	32.0 (36.6)
KEM-DS	Manual Actuator	KEM-DS-MA		28.3	51.5	0.8	59	15.2	38.1 (43.8)
KEM-ES	Manual Actuator	KEM-ES-MA		41.1	82.7	0.8	64	14.7	43.0 (49.3)



Load the KEM-MA manual actuator into a three jaw or collet chuck, gripping on the 38mm location spigot.



Actuate the power chuck to ensure KEM-MA is locked in position, adjust T.I.R as required.



Load a workpiece's internal diameter over the sleeve and actuate the mandrel using the key provided.

Sleeve Options for all KEM Series



KEM-AS

Standard Sleeve		
Nominal Sleeve Ø	Gripping Range mm	Part Number
12.50	12.40 - 12.90	92.000.210.1250
13.00	12.90 - 13.40	92.000.210.1300
13.50	13.40 - 13.90	92.000.210.1350
14.00	13.90 - 14.40	92.000.210.1400
14.50	14.40 - 14.90	92.000.210.1450
15.00	14.90 - 15.40	92.000.210.1500
15.50	15.40 - 15.90	92.000.210.1550
16.00	15.90 - 16.40	92.000.210.1600

Flush Sleeve		
Nominal Sleeve Ø	Gripping Range mm	Part Number
16.50	16.40 - 16.90	92.001.210.1650
17.00	16.90 - 17.40	92.001.210.1700
17.50	17.40 - 17.90	92.001.210.1750
18.00	17.90 - 18.40	92.001.210.1800
18.50	18.40 - 18.90	92.001.210.1850
19.00	18.90 - 19.40	92.001.210.1900
19.50	19.40 - 19.90	92.001.210.1950
20.00	19.90 - 20.40	92.001.210.2000
20.50	20.40 - 20.90	92.001.210.2050
21.00	20.90 - 21.40	92.001.210.2100
21.50	21.40 - 21.90	92.001.210.2150
22.00	21.90 - 22.40	92.001.210.2200

KEM-BS

Standard Sleeve		
Nominal Sleeve Ø	Gripping Range mm	Part Number
16.00	15.90 - 16.40	92.050.210.1600
16.50	16.40 - 16.90	92.050.210.1650
17.00	16.90 - 17.40	92.050.210.1700
17.50	17.40 - 17.90	92.050.210.1750
18.00	17.90 - 18.40	92.050.210.1800
18.50	18.40 - 18.90	92.050.210.1850
19.00	18.90 - 19.40	92.050.210.1900
19.50	19.40 - 19.90	92.050.210.1950
20.00	19.90 - 20.40	92.050.210.2000
20.50	20.40 - 20.90	92.050.210.2050
21.00	20.90 - 21.40	92.050.210.2100
21.50	21.40 - 21.90	92.050.210.2150
22.00	21.90 - 22.40	92.050.210.2200

Flush Sleeve		
Nominal Sleeve Ø	Gripping Range mm	Part Number
22.00	21.90 - 22.70	92.051.210.2200
22.80	22.70 - 23.50	92.051.210.2280
23.60	23.50 - 24.30	92.051.210.2360
24.40	24.30 - 25.10	92.051.210.2440
25.20	25.10 - 25.90	92.051.210.2520
26.00	25.90 - 26.70	92.051.210.2600
26.80	26.70 - 27.50	92.051.210.2680
27.60	27.50 - 28.30	92.051.210.2760
28.40	28.30 - 29.10	92.051.210.2840

Sleeve Options for all KEM Series



KEM-CS

Standard Sleeve		
Nominal Sleeve Ø	Gripping Range mm	Part Number
22.00	21.90 - 22.70	92.100.210.2200
22.80	22.70 - 23.50	92.100.210.2280
23.60	23.50 - 24.30	92.100.210.2360
24.40	24.30 - 25.10	92.100.210.2440
25.20	25.10 - 25.90	92.100.210.2520
26.00	25.90 - 26.70	92.100.210.2600
26.80	26.70 - 27.50	92.100.210.2680
27.60	27.50 - 28.30	92.100.210.2760
28.40	28.30 - 29.10	92.100.210.2840

Flush Sleeve		
Nominal Sleeve Ø	Gripping Range mm	Part Number
28.40	28.30 - 29.10	92.101.210.2840
29.20	29.10 - 29.90	92.101.210.2920
30.00	29.90 - 30.70	92.101.210.3000
30.80	30.70 - 31.50	92.101.210.3080
31.60	31.50 - 32.30	92.101.210.3160
32.40	32.30 - 33.10	92.101.210.3240
33.20	33.10 - 33.90	92.101.210.3320
34.00	33.90 - 34.70	92.101.210.3400
34.80	34.70 - 35.50	92.101.210.3480
35.60	35.50 - 36.30	92.101.210.3560
36.40	36.30 - 37.10	92.101.210.3640
37.20	37.10 - 37.90	92.101.210.3720
38.00	37.90 - 38.70	92.101.210.3800
38.80	38.70 - 39.50	92.101.210.3880
39.60	39.50 - 40.30	92.101.210.3960

KEM-DS

Standard Sleeve		
Nominal Sleeve Ø	Gripping Range mm	Part Number
28.40	28.30 - 29.10	92.150.210.2840
29.20	29.10 - 29.90	92.150.210.2920
30.00	29.90 - 30.70	92.150.210.3000
30.80	30.70 - 31.50	92.150.210.3080
31.60	31.50 - 32.30	92.150.210.3160
32.40	32.30 - 33.10	92.150.210.3240
33.20	33.10 - 33.90	92.150.210.3320
34.00	33.90 - 34.70	92.150.210.3400
34.80	34.70 - 35.50	92.150.210.3480
35.60	35.50 - 36.30	92.150.210.3560
36.40	36.30 - 37.10	92.150.210.3640
37.20	37.10 - 37.90	92.150.210.3720
38.00	37.90 - 38.70	92.150.210.3800
38.80	38.70 - 39.50	92.150.210.3880
39.60	39.50 - 40.30	92.150.210.3960
40.40	40.30 - 41.10	92.150.210.4040
41.20	41.10 - 41.90	92.150.210.4120

Flush Sleeve		
Nominal Sleeve Ø	Gripping Range mm	Part Number
39.60	39.50 - 40.30	92.151.210.3960
40.40	40.30 - 41.10	92.151.210.4040
41.20	41.10 - 41.90	92.151.210.4120
42.00	41.90 - 42.70	92.151.210.4200
42.80	42.70 - 43.50	92.151.210.4280
43.60	43.50 - 44.30	92.151.210.4360
44.40	44.30 - 45.10	92.151.210.4440
45.20	45.10 - 45.90	92.151.210.4520
46.00	45.90 - 46.70	92.151.210.4600
46.80	46.70 - 47.50	92.151.210.4680
47.60	47.50 - 48.30	92.151.210.4760
48.40	48.30 - 49.10	92.151.210.4840
49.20	49.10 - 49.90	92.151.210.4920
50.00	49.90 - 50.70	92.151.210.5000
50.80	50.70 - 51.50	92.151.210.5080

Sleeve Options for all KEM Series



KEM-ES

Standard Sleeve		
Nominal Sleeve Ø	Gripping Range mm	Part Number
41.20	41.10 - 41.90	92.200.210.4120
42.00	41.90 - 42.70	92.200.210.4200
42.80	42.70 - 43.50	92.200.210.4280
43.60	43.50 - 44.30	92.200.210.4360
44.40	44.30 - 45.10	92.200.210.4440
45.20	45.10 - 45.90	92.200.210.4520
46.00	45.90 - 46.70	92.200.210.4600
46.80	46.70 - 47.50	92.200.210.4680
47.60	47.50 - 48.30	92.200.210.4760
48.40	48.30 - 49.10	92.200.210.4840
49.20	49.10 - 49.90	92.200.210.4920
50.00	49.90 - 50.70	92.200.210.5000
50.80	50.70 - 51.50	92.200.210.5080
51.60	51.50 - 52.30	92.200.210.5160
52.40	52.30 - 53.10	92.200.210.5240
53.20	53.10 - 53.90	92.200.210.5320
54.00	53.90 - 54.70	92.200.210.5400
54.80	54.70 - 55.50	92.200.210.5480
55.60	55.50 - 56.30	92.200.210.5560
56.40	56.30 - 57.10	92.200.210.5640
57.20	57.10 - 57.90	92.200.210.5720
58.00	57.90 - 58.70	92.200.210.5800
58.80	58.70 - 59.50	92.200.210.5880
59.60	59.50 - 60.30	92.200.210.5960
60.40	60.30 - 61.10	92.200.210.6040
61.20	61.10 - 61.90	92.200.210.6120
62.00	61.90 - 62.70	92.200.210.6200
62.80	62.70 - 63.50	92.200.210.6280

Flush Sleeve		
Nominal Sleeve Ø	Gripping Range mm	Part Number
50.80	50.70 - 51.50	92.201.210.5080
51.60	51.50 - 52.30	92.201.210.5160
52.40	52.30 - 53.10	92.201.210.5240
53.20	53.10 - 53.90	92.201.210.5320
54.00	53.90 - 54.70	92.201.210.5400
54.80	54.70 - 55.50	92.201.210.5480
55.60	55.50 - 56.30	92.201.210.5560
56.40	56.30 - 57.10	92.201.210.5640
57.20	57.10 - 57.90	92.201.210.5720
58.00	57.90 - 58.70	92.201.210.5800
58.80	58.70 - 59.50	92.201.210.5880
59.60	59.50 - 60.30	92.201.210.5960
60.40	60.30 - 61.10	92.201.210.6040
61.20	61.10 - 61.90	92.201.210.6120
62.00	61.90 - 62.70	92.201.210.6200
62.80	62.70 - 63.50	92.201.210.6280
63.60	63.50 - 64.30	92.201.210.6360
64.40	64.30 - 65.10	92.201.210.6440
65.20	65.10 - 65.90	92.201.210.6520
66.00	65.90 - 66.70	92.201.210.6600
66.80	66.70 - 67.50	92.201.210.6680
67.60	67.50 - 68.30	92.201.210.6760
68.40	68.30 - 69.10	92.201.210.6840
69.20	69.10 - 69.90	92.201.210.6920
70.00	69.90 - 70.70	92.201.210.7000
70.80	70.70 - 71.50	92.201.210.7080
71.60	71.50 - 72.30	92.201.210.7160
72.40	72.30 - 73.10	92.201.210.7240
73.20	73.10 - 73.90	92.201.210.7320
74.00	73.90 - 74.70	92.201.210.7400
74.80	74.70 - 75.50	92.201.210.7480
75.60	75.50 - 76.30	92.201.210.7560
76.40	76.30 - 77.10	92.201.210.7640
77.20	77.10 - 77.90	92.201.210.7720
78.00	77.90 - 78.70	92.201.210.7800
78.80	78.70 - 79.50	92.201.210.7880
79.60	79.50 - 80.30	92.201.210.7960
80.40	80.30 - 81.10	92.201.210.8040
81.20	81.10 - 81.90	92.201.210.8120
82.00	81.90 - 82.70	92.201.210.8200

Data required to manufacture drawtube actuator

Check which model is required

Fig. 1

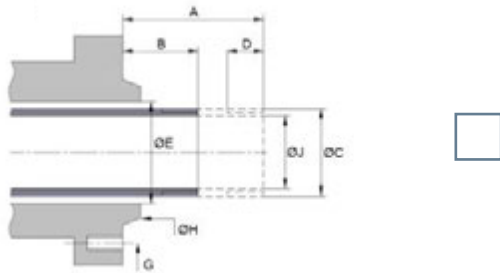


Fig. 2

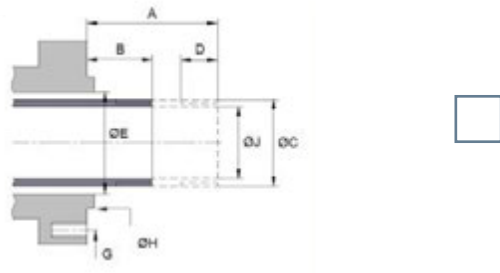


Fig. 3



Fig. 4



A) Forward position of (drawtube from spindle face)

B) Backward position of (drawtube from spindle face)

C) Thread diameter form and pitch

State if RH or LH and external or internal

D) Operative length of full thread

E) Spindle bore diameter

State if taper

G) Fixing details. Thread size =

PCD = _____ QTY = _____

Spacing = _____

J) Drawtube internal diameter

American spindle mount

State type

Straight spindle mount

State diameter

Drawtube Connector / Machine Spindle Information

Machine Make:

Model:

Year:

Chuck Make:

Model:

Serial Number:

Cylinder Make:

Model:

Serial Number:

Contact Name:	Position:
Company Name:	
Address:	
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Telephone:	Fax:
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