

**Rigid and Accurate ID Workpiece Gripping**



# KEM series

**ID clamping offers full OD part access**

**Parallel expansion for optimum accuracy and grip force**

**Expanding sleeves are fully sealed for complete protection**

■ **High Accuracy & Rigidity**

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

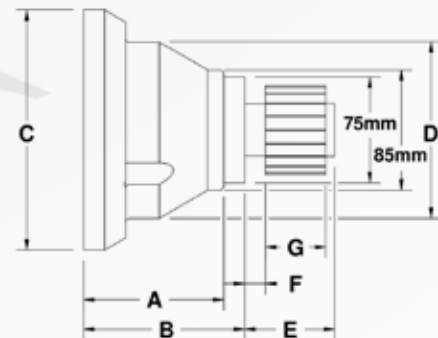
■ **Modular Design**

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

■ **Customised systems available**

Larger sizes on the market  
– up to 635mm ID gripping

1/2 length sleeves, extended length sleeves and dual sleeves are available for supporting a wide range of parts



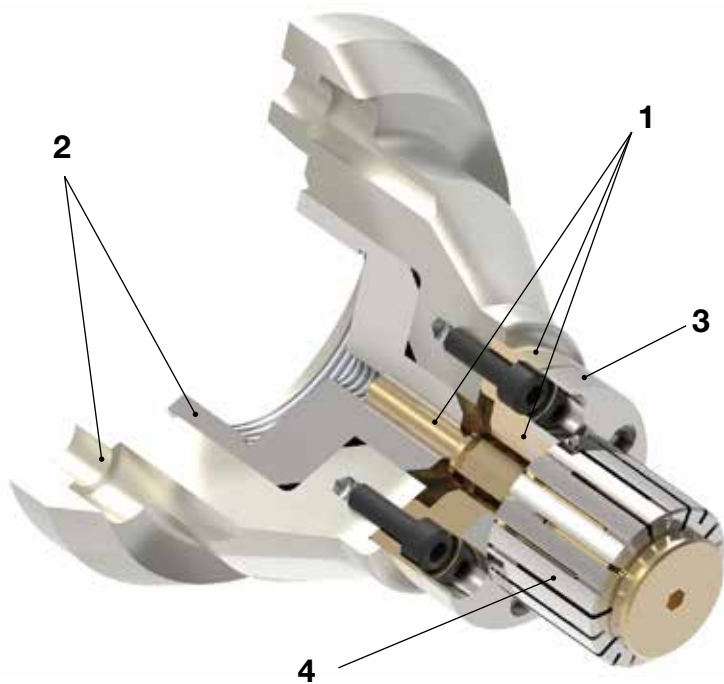
**MANDREL SPECIFICATIONS**

| Mandrel Model | Mandrel Gripping Range mm |      | Sleeve Gripping Range mm | Maximum Pull Force kN | Maximum Gripping Force kN |
|---------------|---------------------------|------|--------------------------|-----------------------|---------------------------|
|               | Min                       | Max  |                          |                       |                           |
| KEM-AS        | 12.4                      | 22.4 | 0.5                      | 7                     | 12.5                      |
| KEM-BS        | 15.9                      | 29.1 | 0.5                      | 10                    | 17.8                      |
| KEM-CS        | 21.9                      | 40.3 | 0.8                      | 12                    | 21.4                      |
| KEM-DS        | 28.3                      | 51.5 | 0.8                      | 18                    | 32                        |
| KEM-ES        | 41.1                      | 82.7 | 0.8                      | 23                    | 40.9                      |

**COMPLETE ASSEMBLY DIMENSIONS**

| Spindle Mount | A mm | B mm | C mm | D mm | E mm | F mm | G mm |
|---------------|------|------|------|------|------|------|------|
| A2-5          | 88   | 108  | 135  | 100  |      |      |      |
| A2-6          | 95   | 115  | 170  | 125  |      |      |      |
| 140mm         | 83   | 103  | 160  | 100  |      |      |      |
| A2-8          | 100  | 120  | 210  | 125  |      |      |      |

See Mandrel Chart Overleaf



## How to Order

**1. Choose the appropriate mandrel model** based upon the diameter(s) you plan to grip. All mandrels and bodies share a common mounting interface for full interchangeability. Each mandrel includes the expanding rod and an expanding rod adapter

**2. Choose the part number to suit your spindle mount** based upon the lathe spindle it will be mounted to. Just like with Kitagawa Europe Collet Chucks, each ID gripping system includes a drawtube connector that can be customised to your drawtube to ensure hassle-free installation

**3. If required, choose part locator(s)** to provide a banking surface for the workpiece

**4. Choose the appropriate sleeve(s)** based upon the diameter(s) you plan to grip

### 1. Choose the appropriate mandrel model

- Mandrel models are defined by their gripping range
- Expanding rod, expanding rod adapter, and mounting hardware included with each mandrel
- Order expanding sleeves separately

### 2. Choose the part number to suit your spindle mount

- The part number identifies the exact back body that provides a precision interface for connecting the mandrel to the spindle
- The part number includes mandrel, back body & blank drawtube connector (which can be machined by yourself or custom-machined by us) and mounting hardware
- Order sleeves, and part locators separately

### 3. Choose part locator

- Part locators are an optional accessory
- Locator bolts to the front of the mandrel and provides a square surface for the workpiece to locate against
- Wider locators available to accommodate short parts

#### KEM SERIES MANDREL MODELS

| Mandrel Model | Mandrel Gripping Range mm |      | E mm | F mm | G mm | G (Flush) mm | Spindle Mount | Part Number |
|---------------|---------------------------|------|------|------|------|--------------|---------------|-------------|
|               | Min                       | Max  |      |      |      |              |               |             |
| KEM-AS        | 12.4                      | 22.4 | 64   | 14.5 | 22.1 | 25.4         | A2-5          | KEM-AS-A5   |
|               |                           |      |      |      |      |              | A2-6          | KEM-AS-A6   |
|               |                           |      |      |      |      |              | A2-8          | KEM-AS-A8   |
|               |                           |      |      |      |      |              | Z140          | KEM-AS-14   |
| KEM-BS        | 15.9                      | 29.1 | 46   | 15   | 27   | 31           | A2-5          | KEM-BS-A5   |
|               |                           |      |      |      |      |              | A2-6          | KEM-BS-A6   |
|               |                           |      |      |      |      |              | A2-8          | KEM-BS-A8   |
|               |                           |      |      |      |      |              | Z140          | KEM-BS-14   |
| KEM-CS        | 21.9                      | 40.3 | 52.1 | 15.5 | 32   | 36.6         | A2-5          | KEM-CS-A5   |
|               |                           |      |      |      |      |              | A2-6          | KEM-CS-A6   |
|               |                           |      |      |      |      |              | A2-8          | KEM-CS-A8   |
|               |                           |      |      |      |      |              | Z140          | KEM-CS-14   |
| KEM-DS        | 28.3                      | 51.5 | 59   | 15.2 | 38.1 | 43.8         | A2-5          | KEM-DS-A5   |
|               |                           |      |      |      |      |              | A2-6          | KEM-DS-A6   |
|               |                           |      |      |      |      |              | A2-8          | KEM-DS-A8   |
|               |                           |      |      |      |      |              | Z140          | KEM-DS-14   |
| KEM-ES        | 41.1                      | 82.7 | 64   | 14.7 | 43   | 49.3         | A2-5          | KEM-ES-A5   |
|               |                           |      |      |      |      |              | A2-6          | KEM-ES-A6   |
|               |                           |      |      |      |      |              | A2-8          | KEM-ES-A8   |
|               |                           |      |      |      |      |              | Z140          | KEM-ES-14   |

#### KEM SERIES PART LOCATOR

| Fits Mandrel Model | Width mm | Outer Ø mm | Part Number |
|--------------------|----------|------------|-------------|
| KEM-AS             | 12       | 39.9       | KEM-AS-PL   |
| KEM-BS             | 12       | 39.9       | KEM-BS-PL   |
| KEM-CS             | 12       | 75.0       | KEM-CS-PL   |
| KEM-DS             | 12       | 75.0       | KEM-DS-PL   |
| KEM-ES             | 12       | 75.0       | KEM-ES-PL   |

**4. Choose the appropriate expanding sleeve(s)**

1/2 length sleeve, extended length &amp; dual length sleeves available

| KEM-AS           |                   |                 |                  |                   |                 |
|------------------|-------------------|-----------------|------------------|-------------------|-----------------|
| STANDARD SLEEVE  |                   |                 | FLUSH SLEEVE     |                   |                 |
| Nominal Sleeve Ø | Gripping Range mm | Part Number     | Nominal Sleeve Ø | Gripping Range mm | Part Number     |
| 12.50            | 12.40 - 12.90     | 92.000.210.1250 | 16.50            | 16.40 - 16.90     | 92.001.210.1650 |
| 13.00            | 12.90 - 13.40     | 92.000.210.1300 | 17.00            | 16.90 - 17.40     | 92.001.210.1700 |
| 13.50            | 13.40 - 13.90     | 92.000.210.1350 | 17.50            | 17.40 - 17.90     | 92.001.210.1750 |
| 14.00            | 13.90 - 14.40     | 92.000.210.1400 | 18.00            | 17.90 - 18.40     | 92.001.210.1800 |
| 14.50            | 14.40 - 14.90     | 92.000.210.1450 | 18.50            | 18.40 - 18.90     | 92.001.210.1850 |
| 15.00            | 14.90 - 15.40     | 92.000.210.1500 | 19.00            | 18.90 - 19.40     | 92.001.210.1900 |
| 15.50            | 15.40 - 15.90     | 92.000.210.1550 | 19.50            | 19.40 - 19.90     | 92.001.210.1950 |
| 16.00            | 15.90 - 16.40     | 92.000.210.1600 | 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  |                   |                 | FLUSH SLEEVE     |                   |                 |
| Nominal Sleeve Ø | Gripping Range mm | Part Number     | Nominal Sleeve Ø | Gripping Range mm | Part Number     |
| 16.00            | 15.90 - 16.40     | 92.050.210.1600 | 22.00            | 21.90 - 22.70     | 92.051.210.2200 |
| 16.50            | 16.40 - 16.90     | 92.050.210.1650 | 22.80            | 22.70 - 23.50     | 92.051.210.2280 |
| 17.00            | 16.90 - 17.40     | 92.050.210.1700 | 23.60            | 23.50 - 24.30     | 92.051.210.2360 |
| 17.50            | 17.40 - 17.90     | 92.050.210.1750 | 24.40            | 24.30 - 25.10     | 92.051.210.2440 |
| 18.00            | 17.90 - 18.40     | 92.050.210.1800 | 25.20            | 25.10 - 25.90     | 92.051.210.2520 |
| 18.50            | 18.40 - 18.90     | 92.050.210.1850 | 26.00            | 25.90 - 26.70     | 92.051.210.2600 |
| 19.00            | 18.90 - 19.40     | 92.050.210.1900 | 26.80            | 26.70 - 27.50     | 92.051.210.2680 |
| 19.50            | 19.40 - 19.90     | 92.050.210.1950 | 27.60            | 27.50 - 28.30     | 92.051.210.2760 |
| 20.00            | 19.90 - 20.40     | 92.050.210.2000 | 28.40            | 28.30 - 29.10     | 92.051.210.2840 |
| 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 |                  |                   |                 |

| KEM-CS           |                   |                 |                  |                   |                 |
|------------------|-------------------|-----------------|------------------|-------------------|-----------------|
| STANDARD SLEEVE  |                   |                 | FLUSH SLEEVE     |                   |                 |
| Nominal Sleeve Ø | Gripping Range mm | Part Number     | Nominal Sleeve Ø | Gripping Range mm | Part Number     |
| 22.00            | 21.90 - 22.70     | 92.100.210.2200 | 28.40            | 28.30 - 29.10     | 92.101.210.2840 |
| 22.80            | 22.70 - 23.50     | 92.100.210.2280 | 29.20            | 29.10 - 29.90     | 92.101.210.2920 |
| 23.60            | 23.50 - 24.30     | 92.100.210.2360 | 30.00            | 29.90 - 30.70     | 92.101.210.3000 |
| 24.40            | 24.30 - 25.10     | 92.100.210.2440 | 30.80            | 30.70 - 31.50     | 92.101.210.3080 |
| 25.20            | 25.10 - 25.90     | 92.100.210.2520 | 31.60            | 31.50 - 32.30     | 92.101.210.3160 |
| 26.00            | 25.90 - 26.70     | 92.100.210.2600 | 32.40            | 32.30 - 33.10     | 92.101.210.3240 |
| 26.80            | 26.70 - 27.50     | 92.100.210.2680 | 33.20            | 33.10 - 33.90     | 92.101.210.3320 |
| 27.60            | 27.50 - 28.30     | 92.100.210.2760 | 34.00            | 33.90 - 34.70     | 92.101.210.3400 |
| 28.40            | 28.30 - 29.10     | 92.100.210.2840 | 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  |                   |                 | FLUSH SLEEVE     |                   |                 |
| Nominal Sleeve Ø | Gripping Range mm | Part Number     | Nominal Sleeve Ø | Gripping Range mm | Part Number     |
| 28.40            | 28.30 - 29.10     | 92.150.210.2840 | 39.60            | 39.50 - 40.30     | 92.151.210.3960 |
| 29.20            | 29.10 - 29.90     | 92.150.210.2920 | 40.40            | 40.30 - 41.10     | 92.151.210.4040 |
| 30.00            | 29.90 - 30.70     | 92.150.210.3000 | 41.20            | 41.10 - 41.90     | 92.151.210.4120 |
| 30.80            | 30.70 - 31.50     | 92.150.210.3080 | 42.00            | 41.90 - 42.70     | 92.151.210.4200 |
| 31.60            | 31.50 - 32.30     | 92.150.210.3160 | 42.80            | 42.70 - 43.50     | 92.151.210.4280 |
| 32.40            | 32.30 - 33.10     | 92.150.210.3240 | 43.60            | 43.50 - 44.30     | 92.151.210.4360 |
| 33.20            | 33.10 - 33.90     | 92.150.210.3320 | 44.40            | 44.30 - 45.10     | 92.151.210.4440 |
| 34.00            | 33.90 - 34.70     | 92.150.210.3400 | 45.20            | 45.10 - 45.90     | 92.151.210.4520 |
| 34.80            | 34.70 - 35.50     | 92.150.210.3480 | 46.00            | 45.90 - 46.70     | 92.151.210.4600 |
| 35.60            | 35.50 - 36.30     | 92.150.210.3560 | 46.80            | 46.70 - 47.50     | 92.151.210.4680 |
| 36.40            | 36.30 - 37.10     | 92.150.210.3640 | 47.60            | 47.50 - 48.30     | 92.151.210.4760 |
| 37.20            | 37.10 - 37.90     | 92.150.210.3720 | 48.40            | 48.30 - 49.10     | 92.151.210.4840 |
| 38.00            | 37.90 - 38.70     | 92.150.210.3800 | 49.20            | 49.10 - 49.90     | 92.151.210.4920 |
| 38.80            | 38.70 - 39.50     | 92.150.210.3880 | 50.00            | 49.90 - 50.70     | 92.151.210.5000 |
| 39.60            | 39.50 - 40.30     | 92.150.210.3960 | 50.80            | 50.70 - 51.50     | 92.151.210.5080 |
| 40.40            | 40.30 - 41.10     | 92.150.210.4040 |                  |                   |                 |
| 41.20            | 41.10 - 41.90     | 92.150.210.4120 |                  |                   |                 |

| KEM-ES           |                   |                 |                  |                   |                 |
|------------------|-------------------|-----------------|------------------|-------------------|-----------------|
| STANDARD SLEEVE  |                   |                 | FLUSH SLEEVE     |                   |                 |
| Nominal Sleeve Ø | Gripping Range mm | Part Number     | Nominal Sleeve Ø | Gripping Range mm | Part Number     |
| 41.20            | 41.10 - 41.90     | 92.200.210.4120 | 50.80            | 50.70 - 51.50     | 92.201.210.5080 |
| 42.00            | 41.90 - 42.70     | 92.200.210.4200 | 51.60            | 51.50 - 52.30     | 92.201.210.5160 |
| 42.80            | 42.70 - 43.50     | 92.200.210.4280 | 52.40            | 52.30 - 53.10     | 92.201.210.5240 |
| 43.60            | 43.50 - 44.30     | 92.200.210.4360 | 53.20            | 53.10 - 53.90     | 92.201.210.5320 |
| 44.40            | 44.30 - 45.10     | 92.200.210.4440 | 54.00            | 53.90 - 54.70     | 92.201.210.5400 |
| 45.20            | 45.10 - 45.90     | 92.200.210.4520 | 54.80            | 54.70 - 55.50     | 92.201.210.5480 |
| 46.00            | 45.90 - 46.70     | 92.200.210.4600 | 55.60            | 55.50 - 56.30     | 92.201.210.5560 |
| 46.80            | 46.70 - 47.50     | 92.200.210.4680 | 56.40            | 56.30 - 57.10     | 92.201.210.5640 |
| 47.60            | 47.50 - 48.30     | 92.200.210.4760 | 57.20            | 57.10 - 57.90     | 92.201.210.5720 |
| 48.40            | 48.30 - 49.10     | 92.200.210.4840 | 58.00            | 57.90 - 58.70     | 92.201.210.5800 |
| 49.20            | 49.10 - 49.90     | 92.200.210.4920 | 58.80            | 58.70 - 59.50     | 92.201.210.5880 |
| 50.00            | 49.90 - 50.70     | 92.200.210.5000 | 59.60            | 59.50 - 60.30     | 92.201.210.5960 |
| 50.80            | 50.70 - 51.50     | 92.200.210.5080 | 60.40            | 60.30 - 61.10     | 92.201.210.6040 |
| 51.60            | 51.50 - 52.30     | 92.200.210.5160 | 61.20            | 61.10 - 61.90     | 92.201.210.6120 |
| 52.40            | 52.30 - 53.10     | 92.200.210.5240 | 62.00            | 61.90 - 62.70     | 92.201.210.6200 |
| 53.20            | 53.10 - 53.90     | 92.200.210.5320 | 62.80            | 62.70 - 63.50     | 92.201.210.6280 |
| 54.00            | 53.90 - 54.70     | 92.200.210.5400 | 63.60            | 63.50 - 64.30     | 92.201.210.6360 |
| 54.80            | 54.70 - 55.50     | 92.200.210.5480 | 64.40            | 64.30 - 65.10     | 92.201.210.6440 |
| 55.60            | 55.50 - 56.30     | 92.200.210.5560 | 65.20            | 65.10 - 65.90     | 92.201.210.6520 |
| 56.40            | 56.30 - 57.10     | 92.200.210.5640 | 66.00            | 65.90 - 66.70     | 92.201.210.6600 |
| 57.20            | 57.10 - 57.90     | 92.200.210.5720 | 66.80            | 66.70 - 67.50     | 92.201.210.6680 |
| 58.00            | 57.90 - 58.70     | 92.200.210.5800 | 67.60            | 67.50 - 68.30     | 92.201.210.6760 |
| 58.80            | 58.70 - 59.50     | 92.200.210.5880 | 68.40            | 68.30 - 69.10     | 92.201.210.6840 |
| 59.60            | 59.50 - 60.30     | 92.200.210.5960 | 69.20            | 69.10 - 69.90     | 92.201.210.6920 |
| 60.40            | 60.30 - 61.10     | 92.200.210.6040 | 70.00            | 69.90 - 70.70     | 92.201.210.7000 |
| 61.20            | 61.10 - 61.90     | 92.200.210.6120 | 70.80            | 70.70 - 71.50     | 92.201.210.7080 |
| 62.00            | 61.90 - 62.70     | 92.200.210.6200 | 71.60            | 71.50 - 72.30     | 92.201.210.7160 |
| 62.80            | 62.70 - 63.50     | 92.200.210.6280 | 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 |

- All expanding sleeves are bonded to ensure they are fully sealed against coolant and chip penetration
- A double-angle design of KEM Expanding Mandrels provides parallel expansion of the sleeve for full-length workpiece contact and ensures positive release when the part is unclamped
- All expanding sleeves collapse 0.1mm below nominal ground sleeve diameter size to ensure easy workpiece loading and unloading

## Manually Operated Expanding Mandrel Actuator



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



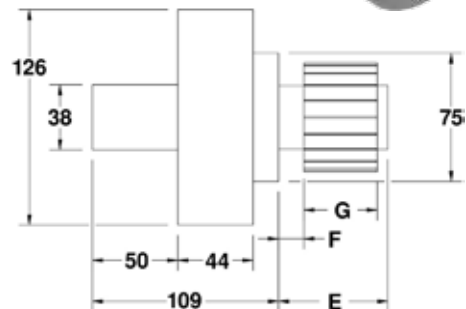
Actuate the power chuck to ensure KEM-MA is locked in position, adjust T.I.R as required.



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



This cutaway image shows the unit's heavy-duty precision gear train. The mechanical advantage of the gears in combination with our unique double-angle expanding sleeves produces outstanding grip force on the workpiece.



- KEM Series includes a manually-operated expanding mandrel actuator (called the KEM-MA) incorporating a precision-ground 38mm diameter location spigot that enables the unit to be held in any collet or jaw chuck, reducing setup times by eliminating the need to change the machine's three jaw chuck or collet chuck.
- These models utilise the same precision mandrels, expanding sleeves and locators as our CNC Expanding Mandrels see previous pages.

- Side-actuated with an included square-drive key means that this unit can accommodate parts with blind bores as well as those with thru-holes.
- Precision-ground for high accuracy in squareness and concentricity. If higher accuracy is needed the mandrel can be clocked-in once the unit is gripped in a chuck.
- Universal location spigot mount enables this ID workholding system to be easily moved from machine to machine as jobs require.
- A great option for low/medium-volume production. For high-production environments, use the Expanding Mandrels featured on the previous pages is recommended.
- When ordering, be sure to also order the appropriate threaded expanding rod adapter.

### MANUALLY OPERATED EXPANDING MANDREL ACTUATOR

| Description                                  | Part Number |
|--|-------------|
| Manually Operated Expanding Mandrel Actuator | KEM-MA      |
| Expanding Rod Adaptor – Fits Model KEM-AS    | KEM-AS-ERA  |
| Expanding Rod Adaptor – Fits Model KEM-BS    | KEM-BS-ERA  |
| Expanding Rod Adaptor – Fits Model KEM-CS    | KEM-CS-ERA  |
| Expanding Rod Adaptor – Fits Model KEM-DS    | KEM-DS-ERA  |
| Expanding Rod Adaptor – Fits Model KEM-ES    | KEM-ES-ERA  |