

METRIC INSERTS

Tridair's full line of Metric KEENSERTS Inserts are used in the same way and have the same design features as the General Purpose Inserts shown in this catalog.

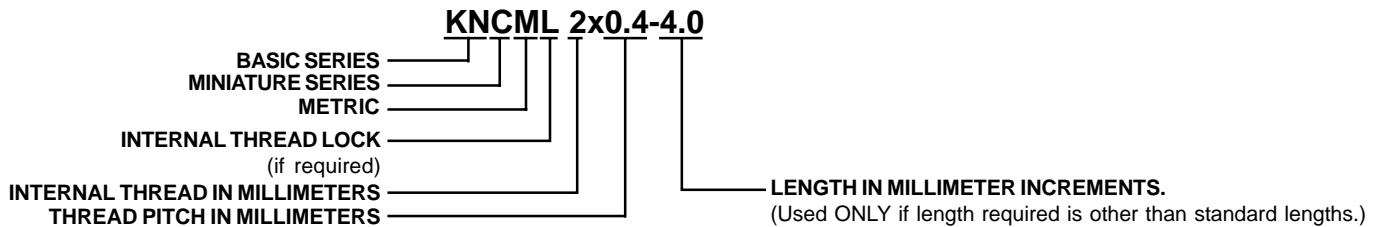
SPECIFICATIONS:

All dimensions are in millimeters.
 Shear engagement area dimensions in MM².
 Other materials available upon request.
 Other materials available upon request. Threads are manufactured to I.S.O. stds.

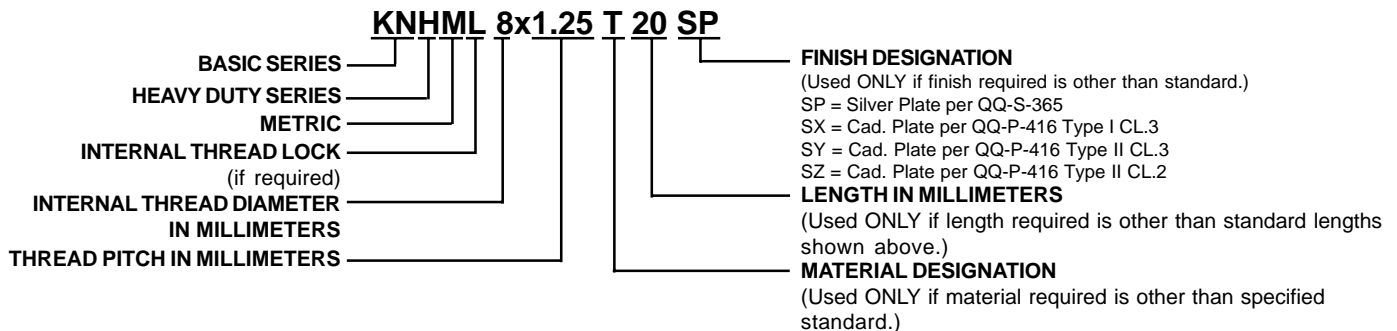
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How To Order: **Standard Material and Finish:** 303 CRES (passivated). Has no identifying marks on insert. ■ Order by part numbers tabulated unless special finish, length or material is required. In this case, use the ordering code below.
 ■ **KEES:** 302 corrosion resistant steel. This ordering code may be used for all inserts in this section except the KNMF Series Inserts on Page 28 which are supplied in Carbon Steel only.

Miniature Insert Series:

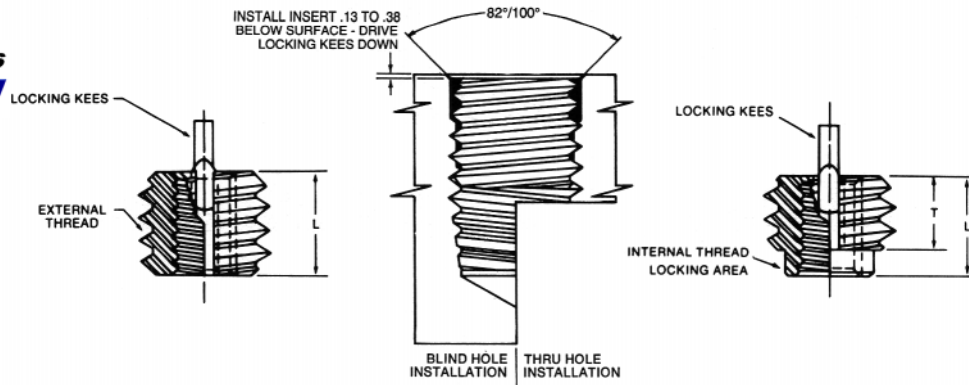


Lightweight and Heavy Duty Series:



MX = Chrome Moly Steel 160,000 P.S.I. MIN. identified on top of insert (TYP.) by two parallel dash marks (cad. plated per QQ-P-416 TYPE 1 CL.3).
 T = A286 CRES (passivated) identified on top of insert (TYP.) by one dash mark.
 BR = Bronze, completely non-magnetic inserts (cad. plated per QQ-P-416 TYPE II CL.3)

Minature Inserts

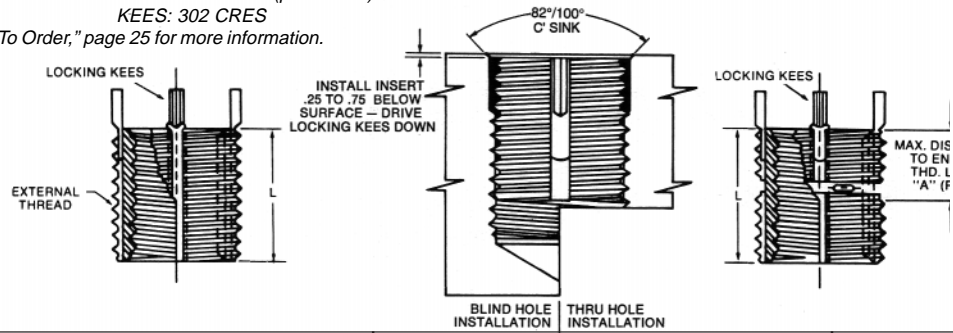


| PART NO. | | DIMENSIONS | | | | | INSTALLATION DATA | | | | | REMOVAL DATA | |
|---------------|-------------------------|--------------------------|-----------------|--------------|---------|---|-------------------|-----------------------|---------------|------------|-------------------------------|--------------|-------|
| NON-LOCKING | INTERNAL THREAD LOCKING | INTERNAL THREAD CLASS 5H | EXTERNAL THREAD | | L ±0.25 | T | TAP DRILL DIA. | C'SINK DIA. +.25 -.00 | THREAD TAP | | INSTALLATION TOOL PART NUMBER | DRILL | |
| | | | SIZE CLASS 4h | SHEAR ENGAG. | | | | | SIZE CLASS 6h | MIN. DEPTH | | SIZE | DEPTH |
| KNCM 2x0.4 | | M 2x0.4 | M 4x0.7 | 16.5 | 3.0 | | 3.4 | 4.1 | M 4x0.7 | 4.0 | TKNCM 2x0.4 | 2.8 | 2.00 |
| | KNCML 2x0.4 | | | 10.3 | | | | | | | | | |
| KNCM 2.5x0.45 | | M 2.5x0.45 | M 4.5x0.75 | 26.5 | 3.8 | | 3.9 | 4.6 | M 4.5x0.75 | 5.0 | TKNCM 2.5x0.45 | 3.0 | 2.00 |
| | KNCML 2.5x0.45 | | | 15.9 | | | | | | | | | |
| KNCM 3x0.5 | | M 3x0.5 | M 5x0.8 | 33.1 | 4.25 | | 4.4 | 5.1 | M 5x.8 | 5.5 | TKNCM 3x0.5 | 3.5 | 2.25 |
| | KNCML 3x0.5 | | | 21.4 | | | | | | | | | |
| KNCM 4x0.7 | | M 4x0.7 | M 6x0.75 | 58.4 | 5.25 | | 5.5 | 6.1 | M 6x0.75 | 6.5 | TKNCM 4x0.7 | 4.6 | 2.50 |
| | KNCML 4x0.7 | | | 42.9 | | | | | | | | | |

EXTERNAL THREAD FURNISHED WITH 2 LOCKING KEES. STANDARD MATERIALS: Insert: 303 CRES (passivated) KEES: 302 CRES

See "How To Order," page 25 for more information.

Lightweight Inserts



INSTALLATION TAP-DRILL TOLERANCE
4.0 TO 12.70 = -.025 + .100
ABOVE 12.70 = -.025 + .130

| PART NO. | | DIMENSIONS | | | | | INSTALLATION DATA | | | | | REMOVAL DATA | |
|----------------------|-------------------------|--------------------------|-----------------|--------------|--------|---|-------------------|-----------------------|---------------|------------|-------------------------------|--------------|-------|
| NON-LOCKING INTERNAL | INTERNAL THREAD LOCKING | INTERNAL THREAD CLASS 5H | EXTERNAL THREAD | | L ±0.3 | A | TAP DRILL DIA. | C'SINK DIA. +.25 -.00 | THREAD TAP | | INSTALLATION TOOL PART NUMBER | DRILL | |
| | | | SIZE CLASS 4h | SHEAR ENGAG. | | | | | SIZE CLASS 6H | MIN. DEPTH | | SIZE | DEPTH |
| KNM 5x0.8 | | M 5x0.8 | M 8x1.25 | 104.9 | 8.0 | - | 6.9 | 8.25 | M 8x1.25 | 9.5 | TM - 5 | 5.50 | 4.00 |
| | KNML 5x0.8 | | | 83.1 | | | | | | | | | |
| KNM 5x0.5 | | M 5x0.5 | M 8x1.25 | 104.9 | 8.0 | - | 6.9 | 8.25 | M 8x1.25 | 9.5 | TM - 5 | 5.50 | 4.00 |
| | KNML 5x0.5 | | | 83.1 | | | | | | | | | |
| KNM 6x1.0 | | M 6x1.0 | M 10x1.25 | 177.7 | 10.0 | - | 8.8 | 10.25 | M 10x1.25 | 11.5 | TM - 6 | 7.50 | 4.75 |
| | KNML 6x1.0 | | | 152.7 | | | | | | | | | |
| KNM 6x0.75 | | M 6x0.75 | M 10x1.25 | 177.7 | 10.0 | - | 8.8 | 10.25 | M 10x1.25 | 11.5 | TM - 6 | 7.50 | 4.75 |
| | KNML 6x0.75 | | | 152.7 | | | | | | | | | |
| KNM 8x1.25 | | M 8x1.25 | M 12x1.25 | 266.7 | 12.0 | - | 10.8 | 12.25 | M 12x1.25 | 13.5 | TM - 8 | 9.50 | 4.75 |
| | KNML 8x1.25 | | | 242.5 | | | | | | | | | |
| KNM 8x1.0 | | M 8x1.0 | M 12x1.25 | 266.7 | 12.0 | - | 10.8 | 12.25 | M 12x1.25 | 13.5 | TM - 8 | 9.50 | 4.75 |
| | KNML 8x1.0 | | | 242.5 | | | | | | | | | |
| KNM 10x1.5 | | M 10x1.5 | M 14x1.5 | 341.6 | 14.0 | - | 12.8 | 14.25 | M 14x1.5 | 15.5 | TM - 10 | 11.50 | 4.75 |
| | KNML 10x1.5 | | | 316.4 | | | | | | | | | |
| KNM 10x1.25 | | M 10x1.25 | M 14x1.5 | 341.6 | 14.0 | - | 12.8 | 14.25 | M 14x1.5 | 15.5 | TM - 10 | 11.50 | 4.75 |
| | KNML 10x1.25 | | | 316.4 | | | | | | | | | |
| KNM 12x1.75 | | M 12x1.75 | M 16x1.5 | 470.2 | 16.0 | - | 14.75 | 16.25 | M 16x1.5 | 17.5 | TM - 12 | 13.50 | 4.75 |
| | KNML 12x1.75 | | | 441.4 | | | | | | | | | |
| KNM 12x1.25 | | M 12x1.25 | M 16x1.5 | 470.2 | 16.0 | - | 14.75 | 16.25 | M 16x1.5 | 17.5 | TM - 12 | 13.50 | 4.75 |
| | KNML 12x1.25 | | | 441.4 | | | | | | | | | |

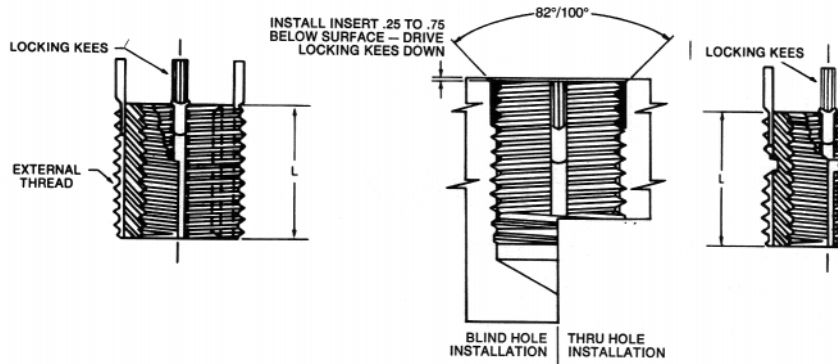
STANDARD MATERIALS: Insert: 303 CRES (passivated)

KEES: 302 CRES

See "How To Order," Page 25 for more information.

INSERTS WITH INTERNAL THREAD SIZES OF KNM 6 AND UNDER ARE FURNISHED WITH 2 LOCKING KEES, KNM 8 AND ABOVE SIZES ARE FURNISHED WITH 4 LOCKING KEES.

Heavy Duty Inserts



| PART NO. | | DIMENSIONS | | | | | INSTALLATION DATA | | | | | REMOVAL DATA | |
|--------------|-------------------------|--------------------------|-------------------------------|----------------------------------|--------|------|-------------------|-----------------------|---------------|------------|-------------------------------|--------------|-------|
| NON-LOCKING | INTERNAL THREAD LOCKING | INTERNAL THREAD CLASS 5H | EXTERNAL THREAD SIZE CLASS 4h | SHEAR ENGAG. (MM ²)* | L ±0.3 | A | TAP DRILL DIA. | C'SINK DIA. +.25 -.00 | THREAD TAP | | INSTALLATION TOOL PART NUMBER | DRILL | |
| | | | | | | | | | SIZE CLASS 6H | MIN. DEPTH | | SIZE | DEPTH |
| KNHM 4x0.7 | | M 4x0.7 | M 8x1.25 | 104.9 | 8.0 | 8.0 | 6.9 | 8.25 | M 8x1.25 | 9.5 | THM - 4 | 5.50 | 4.00 |
| | KNHML 4x0.7 | | | 83.1 | | | | | | | | | |
| KNHM 5x0.8 | | M 5x0.8 | M 10x1.25 | 177.7 | 10.0 | 8.7 | 8.8 | 10.25 | M 10x1.25 | 12.5 | THM - 5 | 7.50 | 4.75 |
| | KNHML 5x0.8 | | | 152.7 | | | | | | | | | |
| KNHM 6x1.0 | | M 6x1.0 | M 12x1.25 | 266.7 | 12.0 | 9.5 | 10.8 | 12.25 | M 12x1.25 | 14.5 | THM - 6 | 9.50 | 4.75 |
| | KNHML 6x1.0 | | | 242.5 | | | | | | | | | |
| KNHM 8x1.25 | | M 8x1.25 | M 14x1.5 | 341.6 | 14.0 | 10.0 | 12.8 | 14.25 | M 14x1.5 | 16.5 | THM - 8 | 11.50 | 4.75 |
| | KNHML 8x1.25 | | | 316.4 | | | | | | | | | |
| KNHM 8x1.0 | | M 8x1.0 | M 14x1.5 | 341.6 | 14.0 | 10.0 | 12.8 | 14.25 | M 14x1.5 | 16.5 | THM - 8 | 11.50 | 4.75 |
| | KNHML 8x1.0 | | | 316.4 | | | | | | | | | |
| KNHM 10x1.5 | | M 10x1.5 | M 16x1.5 | 470.2 | 16.0 | 10.0 | 14.75 | 16.25 | M 16x1.5 | 18.5 | THM - 10 | 13.50 | 4.75 |
| | KNHML 10x1.5 | | | 441.4 | | | | | | | | | |
| KNHM 10x1.25 | | M 10x1.25 | M 16x1.5 | 470.2 | 16.0 | 10.0 | 14.75 | 16.25 | M 16x1.5 | 18.5 | THM - 10 | 13.50 | 4.75 |
| | KNHML 10x1.25 | | | 441.4 | | | | | | | | | |
| KNHM 12x1.75 | | M 12x1.75 | M 18x1.5 | 608.5 | 18.0 | 10.7 | 16.75 | 18.25 | M 18x1.5 | 20.5 | THM - 12 | 15.50 | 4.75 |
| | KNHML 12x1.75 | | | 561.8 | | | | | | | | | |
| KNHM 12x1.5 | | M 12x1.5 | M 18x1.5 | 608.5 | 18.0 | 10.7 | 16.75 | 18.25 | M 18x1.5 | 20.5 | THM - 12 | 15.50 | 4.75 |
| | KNHML 12x1.5 | | | 561.8 | | | | | | | | | |
| KNHM 12x1.25 | | M 12x1.25 | M 18x1.5 | 608.5 | 18.0 | 10.7 | 16.75 | 18.25 | M 18x1.5 | 20.5 | THM - 12 | 15.50 | 4.75 |
| | KNHML 12x1.25 | | | 561.8 | | | | | | | | | |
| KNHM 14x2.0 | | M 14x2.0 | M 20x1.5 | 770.5 | 20.0 | 12.4 | 18.75 | 20.25 | M 20x1.5 | 22.5 | THM - 14 | 17.50 | 4.75 |
| | KNHML 14x2.0 | | | 724.4 | | | | | | | | | |
| KNHM 14x1.5 | | M 14x1.5 | M 20x1.5 | 770.5 | 20.0 | 12.4 | 18.75 | 20.25 | M 20x1.5 | 22.5 | THM - 14 | 17.50 | 4.75 |
| | KNHML 14x1.5 | | | 724.4 | | | | | | | | | |
| KNHM 16x2.0 | | M 16x2.0 | M 22x1.5 | 896.8 | 22.0 | 12.4 | 20.5 | 22.25 | M 22x1.5 | 24.5 | THM - 16 | 17.75 | 6.35 |
| | KNHML 16x2.0 | | | 855.2 | | | | | | | | | |
| KNHM 16x1.5 | | M 16x1.5 | M 22x1.5 | 896.8 | 22.0 | 12.4 | 20.5 | 22.25 | M 22x1.5 | 24.5 | THM - 16 | 17.75 | 6.35 |
| | KNHML 12x1.5 | | | 855.2 | | | | | | | | | |
| KNHM 18x1.5 | | M 18x1.5 | M 24x1.5 | 1084.4 | 24.0 | 16.8 | 22.5 | 24.25 | M 24x1.5 | 26.5 | THM - 18 | 19.75 | 6.35 |
| | KNHML 18x1.5 | | | 1051.5 | | | | | | | | | |
| KNHM 20x2.5 | | M 20x2.5 | M 30x2.0 | 1774.3 | 30.0 | 17.5 | 28.0 | 30.25 | M 30x2.0 | 34.5 | THM - 20 | 25.75 | 6.35 |
| | KNHML 20x2.5 | | | 1736.4 | | | | | | | | | |
| KNHM 20x1.5 | | M 20x1.5 | M 30x2.0 | 1774.3 | 30.0 | 17.5 | 28.0 | 30.25 | M 30x2.0 | 34.5 | THM - 20 | 25.75 | 6.35 |
| | KNHML 20x1.5 | | | 1736.4 | | | | | | | | | |
| KNHM 22x1.5 | | M 22x1.5 | M 32x2.0 | 2045.9 | 32.0 | 18.3 | 30.0 | 32.25 | M 32x2.0 | 36.5 | THM - 22 | 27.75 | 6.35 |
| | KNHML 22x1.5 | | | 2014.7 | | | | | | | | | |
| KNHM 24x3.0 | | M 24x3.0 | M 33x2.0 | 2189.4 | 33.0 | 19.0 | 31.0 | 33.25 | M 33x2.0 | 37.5 | THM - 24 | 28.75 | 6.35 |
| | KNHML 24x3.0 | | | 2161.9 | | | | | | | | | |
| KNHM 24x2.0 | | M 24x2.0 | M 33x2.0 | 2189.4 | 33.0 | 19.0 | 31.0 | 33.25 | M 33x2.0 | 37.5 | THM - 24 | 28.75 | 6.35 |
| | KNHML 24x2.0 | | | 2161.9 | | | | | | | | | |

INSERTS WITH INTERNAL THREAD SIZES OF KNM 6 AND UNDER ARE FURNISHED WITH 2 LOCKING KEES. KNM 8 AND ABOVE SIZES ARE FURNISHED WITH 4 LOCKING KEES.

INSTALLATION TAP-DRILL TOLERANCE
4.0 TO 12.70= -.025 + .100
ABOVE 12.70= -.025 + .130

*TO CONVERT MM² TO IN² MULTIPLY MM² BY .001550

STANDARD MATERIALS: Insert: 303 CRES (passivated)
KEES: 302 CRES

See "How To Order," Page 25 for more information.

Thinwall & Heavy Duty Series

(Carbon Steel Material only)

| PART NO. | INSTALLATION DATA | | | | | | | REMOVAL DATA | |
|---------------|----------------------|----------------------|--------|----------------|-------------|-----------|----------------------|--------------|-------|
| | INTERNAL THREAD SIZE | EXTERNAL THREAD SIZE | LENGTH | TAP DRILL DIA. | C'SINK DIA. | TAP SIZE | INSERT TOOL PART NO. | DRILL | |
| | | | | | | | | SIZE | DEPTH |
| ▲KNM 5x0.8F | M 5x0.8 | M 8x1.25 | 8 | 6.9 | 8.25 | M 8x1.25 | TRKM 5 | 5.50 | 4.00 |
| ▲KNM 6X1F | M 6x1.0 | M 10x1.25 | 10 | 8.8 | 10.25 | M 10x1.25 | TRKM 6 | 7.50 | 4.75 |
| KNM 7X1F | M 7x1.0 | M 11x1.0 | 11 | 9.8 | 11.25 | M 11x1.0 | TRKM 7 | 8.50 | |
| ▲KNM 8X1F | M 8x1.0 | M 12x1.25 | 12 | 10.8 | 12.25 | M 12x1.25 | TRKM 8 | 9.50 | |
| ▲KNM 8X1.25F | M 8x1.25 | M 12x1.25 | | | | | | | |
| ▲KNM 10X1.25F | M 10x1.25 | M 14x1.5 | 14 | 12.8 | 14.25 | M 14x1.5 | TRKM 10 | 11.50 | |
| ▲KNM 10X1.5F | M 10x1.5 | M 14x1.5 | | | | | | | |
| ▲KNM 12X1.25F | M 12x1.25 | M 16x1.5 | 16 | 14.75 | 16.25 | M 16x1.5 | TRKM 12 | 13.50 | |
| ▲KNM 12X1.75F | M 12x1.75 | M 16x1.5 | | | | | | | |
| KNM 14X1.5F | M 14x1.5 | M 20x1.5 | 20 | 18.75 | 20.25 | M 20x1.5 | TRKHM 14 | 17.50 | |
| KNM 14X2F | M 14x2.0 | M 20x1.5 | | | | | | | |
| KNM 16X1.5F | M 16x1.5 | M 22x1.5 | 22 | 20.5 | 22.25 | M 22x1.5 | TRKHM 16 | 17.75 | |
| KNM 18X1.5F | M 18x1.5 | M 24x1.5 | 24 | 22.5 | 24.25 | M 24x1.5 | TRKHM 18 | 19.75 | |
| KNM 20X1.5F | M 20x1.5 | M 30x2 | 30 | 28.0 | 30.25 | M 30x2.0 | TRKHM 20 | 25.75 | |
| KNM 22X1.5F | M 22x1.5 | M 32x2 | 32 | 30.0 | 32.25 | M 32x2.0 | TRKHM 22 | 27.75 | |
| KNM 24X2F | M 24x2.0 | M 33x2 | 33 | 31.0 | 33.25 | M 33x2.0 | TRKHM 24 | 28.75 | 6.35 |

▲ indicates that parts are normally available from stock.

Countersink diameters are optional providing KEENSERTS insert installs below flush of surface.

Other sizes are available on request.

Material: C1215 Steel or equivalent.

KEENSERTS Inserts are also available under the Aerospace Industries Association of America's 'NA' part numbers. NA0145 Through NA0151 can be obtained from:

National Standards Association, Inc.
5161 River Road
Washington, D.C. 20016