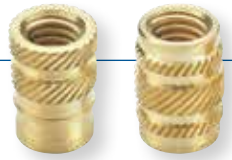
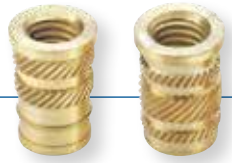
# SPIROL INSERTS

**SPIROL** has a broad range of Inserts for post-mould installation as well as a series of Moulded-In Inserts. Installation of Inserts after moulding reduces in-place cost by shortening moulding time and eliminating secondary cleaning. This method also reduces rejects and mould damage resulting from dislodged Inserts. Moulded-In Inserts are placed into the mould cavity prior to plastic injection and offer exceptional torque and pull-out resistance due to unrestricted plastic flow.

**HEAT/ULTRASONIC INSERTS** are designed for post-mould installation in thermoplastics. Heat and ultrasonic installation yield outstanding performance results. Available in long and short variations, long for maximum torque and pull-out resistance; short for less stringent requirements with the benefits of lower cost and reduced installation time.



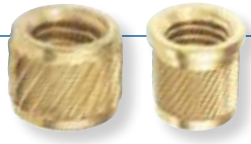
**Series 19 and 29** are designed for straight holes using standard core pins. The same hole diameter applies to all Inserts within these Series. Seating and installation are facilitated with a pilot and a tapered knurl and groove design. The Series 29 is symmetrical to eliminate the need for orientation.



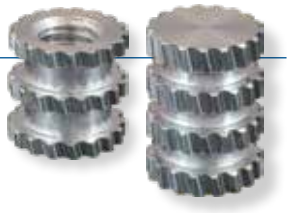
**Series 20 and 30** are headed versions using the same body style as Series 19 and 29 respectively.

**Series 14** are designed for use in tapered holes. The tapered hole facilitates proper seating and maximises the surface contact between the Insert and hole wall prior to the application of heat or ultrasonic vibration.

**SELF-TAPPING INSERTS** are available in **Series 10** which is a Thread Forming Insert for soft, flexible thermoplastics.



**PRESS-IN INSERTS** are ideal for use in softer plastics to provide a reusable thread which can meet the tightening torque requirements for a threaded joint. Moderate pull-out and good torque requirements are provided by the helical knurl which also facilitates good plastic flow. **Series 50** and **51** Inserts allow for easy and quick installation. The Series 50 is symmetrical with a generous pilot. Series 51 is the headed version which is also suitable for pull-through applications where high pull-out force is a requirement.

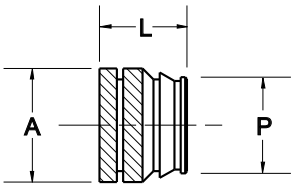


**MOULDED-IN INSERTS** are designed for maximum pull-out and torque performance, and are often the Insert of choice for thermosets and engineered plastics with a high percentage of filler. The minor thread diameter tolerance is controlled to ensure positive positioning and perpendicularity of the Insert on the core pin during the moulding process. **Series 63** is symmetrical eliminating orientation and **Series 65** is the same body style in a blind ended version. These Inserts are made from 2024 aluminium, a light-weight, lead-free grade.

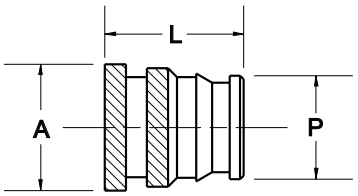
# SPIROL®

# HEAT-ULTRASONIC INSERTS
# STRAIGHT HOLE SERIES

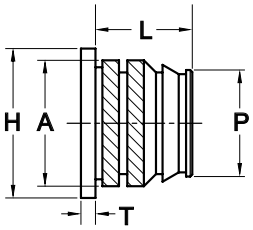
## Series 19 Short



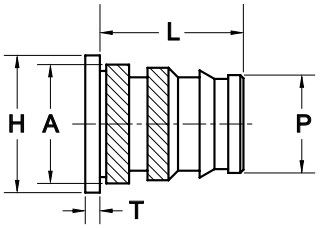

## Series 19 Long




## Series 20 Short




## Series 20 Long

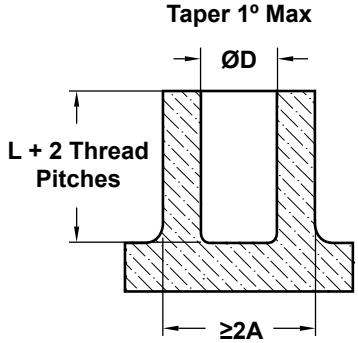



## DIMENSIONAL DATA

**LEGEND** | Inch | Metric Conversion

| Thread Size | | A Short Overknurl Ø | | A Long Overknurl Ø | | P Pilot Ø | | L Short Length | | L Long Length | | T Head Thickness | | H Head Ø | | D* Rec. Hole Ø | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tolerance ► | | Ref. | | Ref. | | ±.003 | ±0.08 | ±.005 | ±0.13 | ±.005 | ±0.13 | ±.003 | ±0.08 | ±.003 | ±0.08 | +.003 | +0.08 |
| 2-56 | M2 x 0.4 | .141 | 3.58 | .143 | 3.63 | .123 | 3.12 | .125 | 3.18 | .157 | 3.99 | .018 | 0.46 | .185 | 4.70 | .126 | 3.20 |
| 4-40 | M2.5 x 0.45<br>M3 x 0.5 | .182 | 4.62 | .187 | 4.75 | .154 | 3.91 | .140 | 3.56 | .226 | 5.74 | .021 | 0.53 | .216 | 5.49 | .157 | 3.99 |
| 6-32 | M3.5 x 0.6 | .213 | 5.41 | .218 | 5.54 | .185 | 4.70 | .150 | 3.81 | .281 | 7.14 | .027 | 0.69 | .247 | 6.27 | .188 | 4.78 |
| 8-32 | M4 x 0.7 | .246 | 6.25 | .251 | 6.38 | .218 | 5.54 | .185 | 4.70 | .321 | 8.15 | .033 | 0.84 | .278 | 7.06 | .221 | 5.61 |
| 10-24<br>10-32 | M5 x 0.8 | .277 | 7.04 | .282 | 7.16 | .249 | 6.32 | .250 | 6.35 | .375 | 9.53 | .040 | 1.02 | .310 | 7.87 | .252 | 6.40 |
| 1/4-20 | M6 x 1.0 | .340 | 8.64 | .345 | 8.76 | .312 | 7.92 | .312 | 7.92 | .500 | 12.70 | .050 | 1.27 | .372 | 9.45 | .315 | 8.00 |
| 5/16-18 | M8 x 1.25 | — | — | .407 | 10.34 | .374 | 9.50 | — | — | .500 | 12.70 | .050 | 1.27 | .435 | 11.05 | .377 | 9.58 |

## Recommended Hole Design*



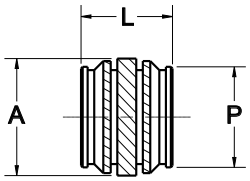

** See page 5 for more information on recommended hole design*

**To Order:** INS (Series #)/Thread Size / Length, Material, Finish
**Example:** INS 19/M5 / .250S EK

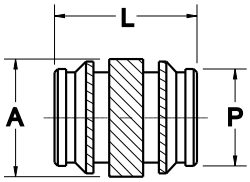
# SPIROL®

# HEAT-ULTRASONIC INSERTS
# STRAIGHT HOLE SERIES

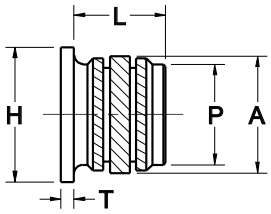
## Series 29 Short



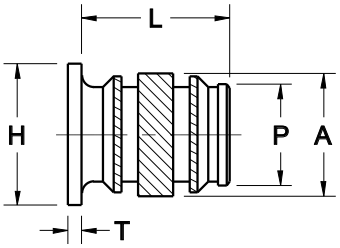

## Series 29 Long




## Series 30 Short




## Series 30 Long



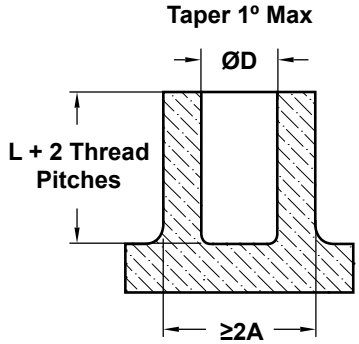

## DIMENSIONAL DATA

**LEGEND**

| Inch |
|---|
| Metric Conversion |

| Thread Size | | A Overknurl Ø | | P Pilot Ø | | L Short Length | | L Long Length | | T Head Thickness | | H Head Ø | | D* Rec. Hole Ø | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tolerance ► | | Ref. | | ±.003 | ±0.08 | ±.005 | ±0.13 | ±.005 | ±0.13 | ±.003 | ±0.08 | ±.003 | ±0.08 | +.003 | +0.08 |
| 2-56 | M2 x 0.4 | .143 | 3.63 | .123 | 3.12 | .125 | 3.18 | .157 | 3.99 | .018 | 0.46 | .185 | 4.70 | .126 | 3.20 |
| 4-40 | M2.5 x 0.45<br>M3 x 0.5 | .187 | 4.75 | .154 | 3.91 | .140 | 3.56 | .226 | 5.74 | .021 | 0.53 | .216 | 5.49 | .157 | 3.99 |
| 6-32 | M3.5 x 0.6 | .218 | 5.54 | .185 | 4.70 | .150 | 3.81 | .281 | 7.14 | .027 | 0.69 | .247 | 6.27 | .188 | 4.78 |
| 8-32 | M4 x 0.7 | .251 | 6.38 | .218 | 5.54 | .185 | 4.70 | .321 | 8.15 | .033 | 0.84 | .278 | 7.06 | .221 | 5.61 |
| 10-24<br>10-32 | M5 x 0.8 | .282 | 7.16 | .249 | 6.32 | .250 | 6.35 | .375 | 9.53 | .040 | 1.02 | .310 | 7.87 | .252 | 6.40 |
| 1/4-20 | M6 x 1.0 | .345 | 8.76 | .312 | 7.92 | .312 | 7.92 | .500 | 12.70 | .050 | 1.27 | .372 | 9.45 | .315 | 8.00 |
| 5/16-18 | M8 x 1.25 | .407 | 10.34 | .374 | 9.50 | — | — | .500 | 12.70 | .050 | 1.27 | .435 | 11.05 | .377 | 9.58 |

## Recommended Hole Design*

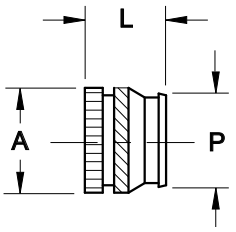



** See page 5 for more information on recommended hole design*

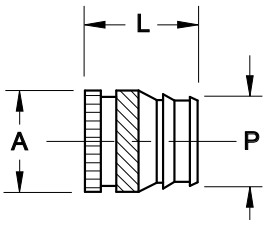
**To Order:** INS (Series #)/Thread Size / Length, Material, Finish
**Example:** INS 29/10-24 / .375L EK

# SPIROL® HEAT-ULTRASONIC INSERTS TAPERED HOLE SERIES

## Series 14 Short




## Series 14 Long



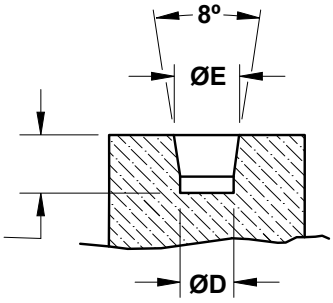

## DIMENSIONAL DATA

LEGEND: Inch / Metric Conversion

| | Thread Size | | A Overknurl Ø | | P Pilot Ø | | L Length | | E* Rec. Hole Ø at Entrance | | D* Rec. Hole Ø at Tapered End | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tolerance ► | | Ref. | | ±.003 | ±0.08 | ±.005 | ±0.13 | +.002 | +0.05 | +.002 | +0.05 |
| Short | 2-56 | M2 x 0.4 | .141 | 3.58 | .119 | 3.02 | .115 | 2.92 | .123 | 3.12 | .118 | 3.00 |
| | 4-40 | M2.5 x 0.45 | .174 | 4.42 | .156 | 3.96 | .135 | 3.43 | .159 | 4.04 | .153 | 3.89 |
| | 6-32 | M3 x 0.5 M3.5 x 0.6 | .221 | 5.61 | .203 | 5.16 | .150 | 3.81 | .206 | 5.23 | .199 | 5.05 |
| | 8-32 | M4 x 0.7 | .249 | 6.32 | .230 | 5.84 | .185 | 4.70 | .234 | 5.94 | .226 | 5.74 |
| | 10-24 10-32 | — | .297 | — | .272 | — | .225 | — | .277 | — | .267 | — |
| | — | M5 x 0.8 | — | 8.38 | — | 7.85 | — | 6.73 | — | 8.00 | — | 7.70 |
| | 1/4-20 | M6 x 1.0 | .378 | 9.60 | .356 | 9.04 | .300 | 7.62 | .363 | 9.22 | .349 | 8.86 |

| | Thread Size | | A Overknurl Ø | | P Pilot Ø | | L Length | | E* Rec. Hole Ø at Entrance | | D* Rec. Hole Ø at Tapered End | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tolerance ► | | Ref. | | ±.003 | ±0.08 | ±.005 | ±0.13 | +.002 | +0.05 | +.002 | +0.05 |
| Long | 2-56 | M2 x 0.4 | .141 | 3.58 | .112 | 2.84 | .188 | 4.78 | .123 | 3.12 | .107 | 2.72 |
| | 4-40 | M2.5 x 0.45 | .174 | 4.42 | .146 | 3.71 | .219 | 5.56 | .159 | 4.04 | .141 | 3.58 |
| | 6-32 | M3 x 0.5 M3.5 x 0.6 | .221 | 5.61 | .190 | 4.83 | .250 | 6.35 | .206 | 5.23 | .185 | 4.70 |
| | 8-32 | M4 x 0.7 | .249 | 6.32 | .213 | 5.41 | .312 | 7.92 | .234 | 5.94 | .208 | 5.28 |
| | 10-24 10-32 | — | .297 | — | .251 | — | .375 | — | .277 | — | .246 | — |
| | — | M5 x 0.8 | — | 8.38 | — | 7.19 | — | 11.13 | — | 8.00 | — | 7.06 |
| | 1/4-20 | M6 x 1.0 | .378 | 9.60 | .326 | 8.28 | .500 | 12.70 | .363 | 9.22 | .321 | 8.15 |
| | 5/16-18 | M8 x 1.25 | .469 | 11.91 | .406 | 10.31 | .562 | 14.27 | .448 | 11.38 | .401 | 10.19 |

## Recommended Hole Design*




* See page 5 for more information on recommended hole design

**To Order:** INS (Series #)/Thread Size / Length, Material, Finish
**Example:** INS 14/8-32 / .312L EK

# SPIROL® SELF-TAPPING INSERTS

Reduced thread profile and coarse pitch minimises radial stress and potential hole wall damage. The coarse thread also maximises the pull-out strength of these Self-Tapping Inserts.

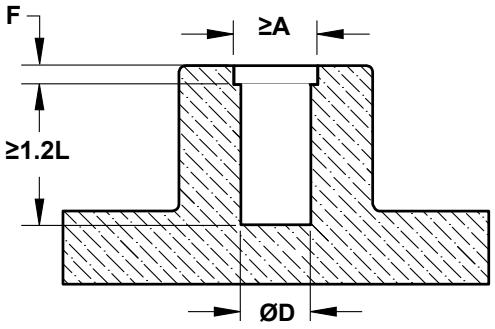
## Series 10
## Thread Forming


## DIMENSIONAL DATA

LEGEND: Inch / Metric Conversion

| Thread Size | | A Outer Thread Ø | | L Length | | D* Rec. Hole Ø | | F* Counterbore Depth | |
|---|---|---|---|---|---|---|---|---|---|
| Tolerance ► | | Ref. | | ±.010 | ±0.26 | +.003 | +0.08 | Ref. | |
| 4-40 | M3 x 0.5 | .188 | 4.78 | .250 | 6.35 | .169 | 4.29 | .042 | 1.07 |
| 6-32 | M3.5 x 0.6 | .219 | 5.56 | .281 | 7.14 | .199 | 5.05 | .042 | 1.07 |
| 8-32 | M4 x 0.7 | .250 | 6.35 | .312 | 7.92 | .228 | 5.79 | .050 | 1.27 |
| 10-24<br>10-32 | M5 x 0.8 | .281 | 7.14 | .375 | 9.53 | .250 | 6.35 | .063 | 1.60 |
| 1/4-20 | M6 x 1.0 | .344 | 8.74 | .438 | 11.13 | .312 | 7.92 | .071 | 1.81 |

## Recommended Hole Design*

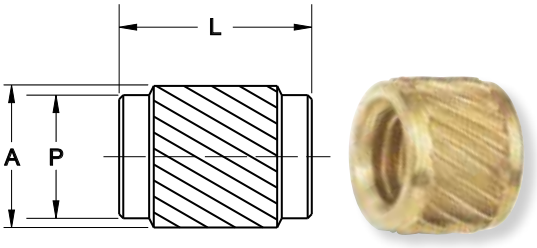



* See page 5 for more information on recommended hole design

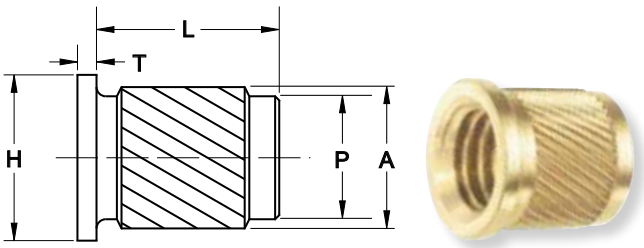
**To Order:** INS (Series #)/Thread Size / Length, Material, Finish
**Example:** INS 10/250-20 / .438 EK

# SPIROL® PRESS-IN INSERTS

## Series 50




## Series 51



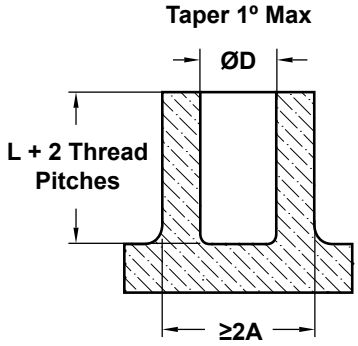

## DIMENSIONAL DATA

**LEGEND**

| Inch |
|---|
| Metric Conversion |

| Thread Size | | A Overknurl Ø | | P Pilot Ø | | L Length | | T Head Thickness | | H Head Ø | | D* Rec. Hole Ø | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tolerance ► | | Ref. | | ±.003 | ±0.08 | ±.005 | ±0.13 | ±.003 | ±0.08 | ±.003 | ±0.08 | +.003 | +0.08 |
| 2-56 | M2 x 0.4 | .134 | 3.40 | .121 | 3.07 | .125 | 3.18 | .018 | 0.46 | .185 | 4.70 | .124 | 3.15 |
| 4-40 | M2.5 x 0.45<br>M3 x 0.5 | .165 | 4.19 | .152 | 3.86 | .140 | 3.56 | .021 | 0.53 | .216 | 5.49 | .155 | 3.94 |
| 6-32 | M3.5 x 0.6 | .196 | 4.98 | .183 | 4.65 | .150 | 3.81 | .027 | 0.69 | .247 | 6.27 | .186 | 4.72 |
| 8-32 | M4 x 0.7 | .227 | 5.77 | .214 | 5.44 | .185 | 4.70 | .033 | 0.84 | .278 | 7.06 | .217 | 5.51 |
| 10-24<br>10-32 | M5 x 0.8 | .259 | 6.58 | .246 | 6.25 | .250 | 6.35 | .040 | 1.02 | .310 | 7.87 | .249 | 6.32 |
| 1/4-20 | M6 x 1.0 | .321 | 8.15 | .308 | 7.82 | .312 | 7.92 | .050 | 1.27 | .372 | 9.45 | .311 | 7.90 |
| 5/16-18 | M8 x 1.25 | .384 | 9.75 | .371 | 9.42 | .375 | 9.53 | .050 | 1.27 | .435 | 11.05 | .374 | 9.50 |

## Recommended Hole Design*

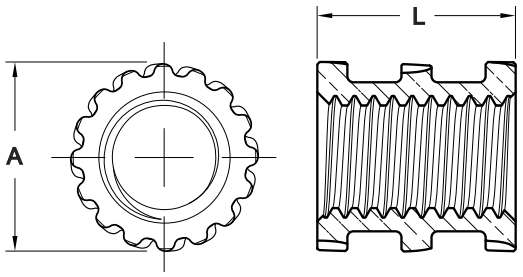



*See page 5 for more information on recommended hole design*

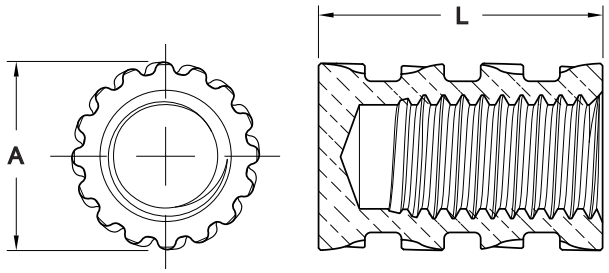
**To Order:** INS (Series #)/Thread Size / Length, Material, Finish
**Example:** INS 51/M4 / .185 EK

# SPIROL® MOULDED-IN INSERTS

## Series 63
## Through Hole




## Series 65
## Blind End




## DIMENSIONAL DATA

| Thread Size | | A Outer Ø | | L Length Series 63 | | L Length Series 65 | | Minimum # Threads Series 65 | | Minimum Minor Ø | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Tolerance ► | | Ref. | | ±.005 | ±0.13 | ±.005 | ±0.13 | — | | — | |
| 8-32 | M4 x 0.7 | .272 | 6.90 | .256 | 6.50 | .380 | 9.65 | 6 | 7 | .1365 | 3.289 |
| 10-24 | M5 x 0.8 | .309 | 7.85 | .325 | 8.25 | .459 | 11.65 | 5 | 8 | .1495 | 4.229 |
| 1/4-20 | M6 x 1.0 | .367 | 9.33 | .394 | 10.00 | .610 | 15.50 | 6 | 9 | .2005 | 4.991 |
| 5/16-18 | M8 x 1.25 | .463 | 11.75 | .463 | 11.75 | .697 | 17.70 | 6 | 8 | .2575 | 6.769 |

**LEGEND**

| Inch |
|---|
| Metric |

**To Order:** INS (Series #)/Thread Size / Length, Material, Finish
**Example:** INS 65/312-18 / .697 AK

# SPIROL® SPECIAL INSERTS AND MACHINED PRODUCTS

**SPIROL's** Application Engineers stand ready to help you with your threaded joint, whether it be the application of an Insert or a Compression Limiter, to ensure continued integrity of the bolted connection. When reviewing your design requirements, our Application Engineers will help you select the most appropriate component to achieve your performance and cost objectives. As it's beneficial to you, our first option will be to recommend the use of a standard Insert or Compression Limiter, but if these do not meet the application's requirements, we will design and produce a custom component which will.

## Examples of special offerings:

- **Threaded studs**
- **Special knurl configurations and external features for unique installation and performance requirements**
- **Special materials:**
  300 Series Austenitic Stainless Steel
  12L14 Steel
- **Special plating requirements:**
  Nickel Plate
  Zinc Plate
  Black Zinc Plate
- **Cross-drilled holes**
- **Special internal threads and hole dimensions**
- **Tighter than standard tolerances**
- **Unique diameter and length combinations**
- **Special designs for non-traditional plastics**

***Engage us early on your next design!***

# SPIROL®

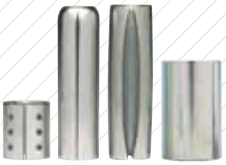
## Innovative fastening solutions. Lower assembly costs.

Coiled Spring Pins

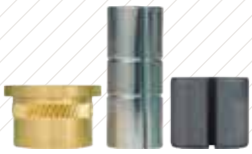
Slotted Spring Pins

Solid Pins

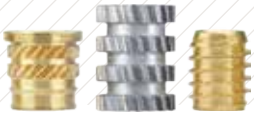
Alignment Dowels / Bushings



Spacers & Rolled Tubular Components



Compression Limiters



Threaded Inserts for Plastics

Railroad Nuts

Disc Springs

Precision Shims & Thin Metal Stampings

Precision Washers

Parts Feeding Technology

Pin Installation Technology

Insert Installation Technology

Compression Limiter Installation Technology

*Please refer to **www.SPIROL.co.uk** for current specifications and standard product offerings.*

SPIROL offers complimentary Application Engineering support! We will assist on new designs as well as help resolve issues, and recommend cost savings on existing designs. Let us help by visiting **Application Engineering Services** on **SPIROL**.co.uk.



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