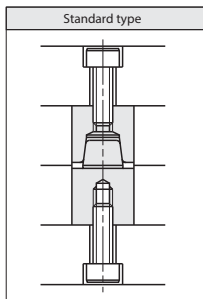


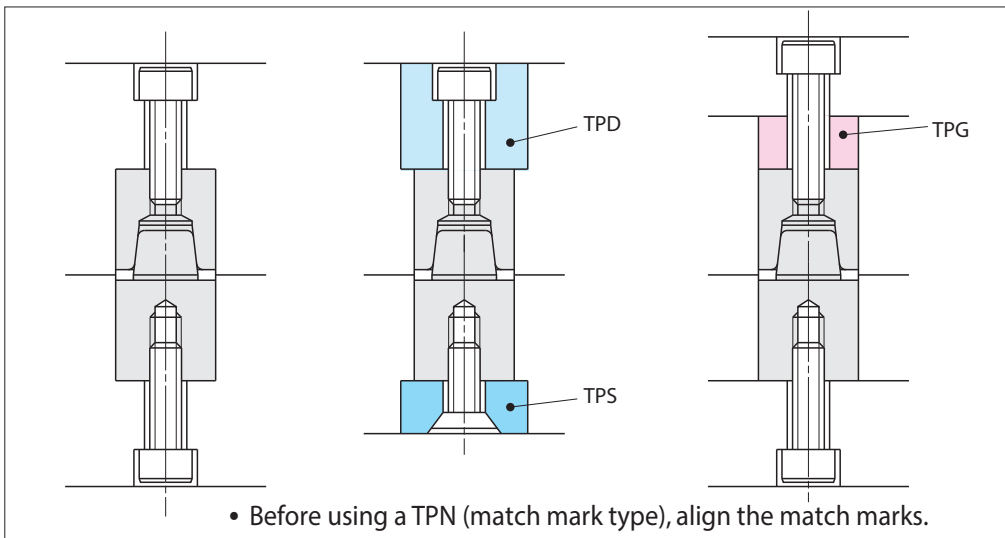
# Metric JIS Tapered Round Interlocks - Standard Installation Type

PCS Company offers Metric JIS Tapered Round Locks - Standard Installation in full sets, pin only or bushing only options. Lock diameters range from 8mm to 42mm.

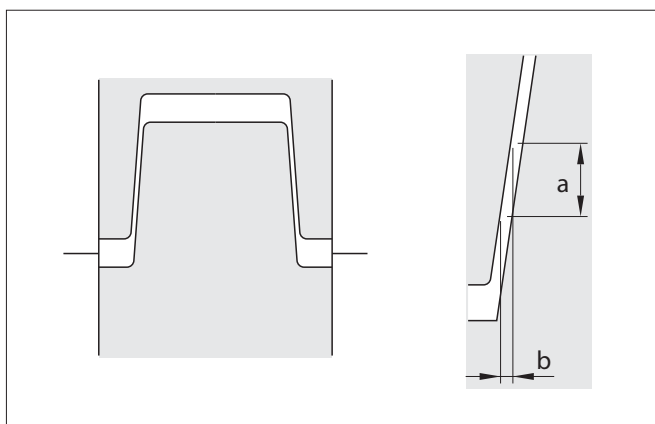


| Group           | Part Number |          |              | OD Tolerance                     | Concentricity of taper to OD of Pin and Bushing | Material         | Hardness |
|-----------------|-------------|----------|--------------|----------------------------------|-------------------------------------------------|------------------|----------|
|                 | Set         | Pin only | Bushing only |                                  |                                                 |                  |          |
| Standard        | TPN         | —        | —            | D <sub>k6</sub>                  | (Match mark type)                               | SKD11 equivalent | 58~62HRC |
|                 | TPNV        | TPNVP    | TPNVB        |                                  | 0.01 [.0004 inch] or less                       |                  |          |
| Precision       | VTPN        | VTPNP    | VTPNB        | D <sub>0</sub> <sup>+0.005</sup> | 0.005 [.0002 inch] or less                      |                  |          |
| Extra Precision | ZTPN        | ZTPNP    | ZTPNB        |                                  | 0.003 [.00012 inch] or less                     |                  |          |

## How to Mount



## When using



When the locking taper is large, the height of pin and bushing must be finely adjusted for tight locking. On the other hand, when the angle is small, it is necessary to consider possible sticking of the pin and bushing. At 0.5° and 1° taper (also 3° in some cases), sticking can be avoided by setting them slightly afloat as shown in the figure. The resulting clearance (b) for a small height difference (a) is very small to be concerned about positioning inaccuracies. \* For 0.5°, slightly afloat setting is especially recommended. Table below is provided for reference only.

| Angle | b                  |                    |                    |
|-------|--------------------|--------------------|--------------------|
|       | a = 0.1mm [.004"]  | a = 0.3mm [.012"]  | a = 0.5mm [.02"]   |
| 0.5°  | 0.0009mm [.00003"] | 0.0026mm [.00010"] | 0.0044mm [.00017"] |
| 1°    | 0.0017mm [.00007"] | 0.0052mm [.00021"] | 0.0087mm [.00034"] |
| 3°    | 0.0052mm [.0002"]  | 0.0157mm [.0006"]  | 0.0262mm [.001"]   |

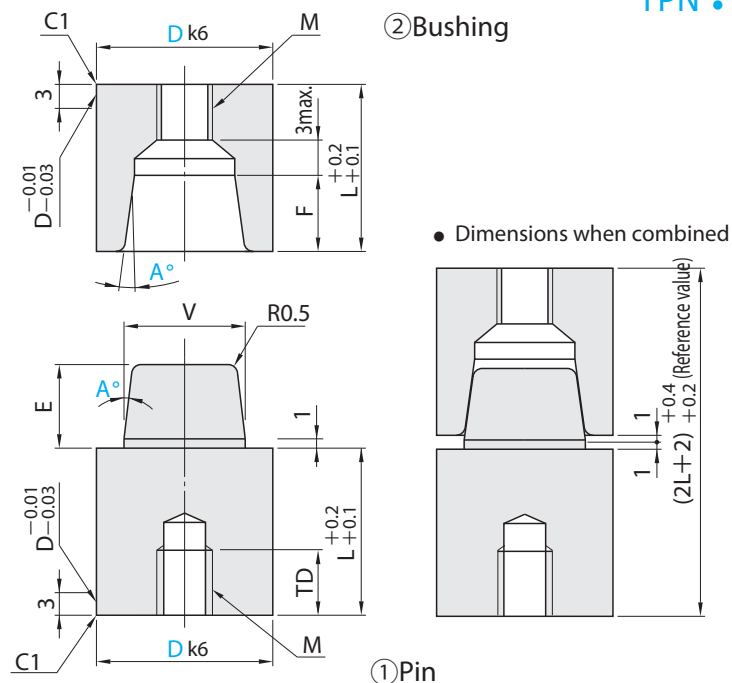
# Metric JIS Tapered Round Interlocks - Standard Installation Type

Standard Precision Group

TPN • TPNV

## Features:

- Unit of Measure: mm
- Material: SKD11 tool steel or equivalent
- Hardness: 58-62 HRC



| D  | L  | V  | E  | F  | M   | TD |
|----|----|----|----|----|-----|----|
| 10 | 14 | 7  | 6  | 5  | M4  | 10 |
| 13 | 14 | 7  | 6  | 5  | M4  | 10 |
| 16 | 14 | 10 | 6  | 5  | M5  | 10 |
| 20 | 19 | 13 | 9  | 8  | M6  | 12 |
| 25 | 24 | 16 | 12 | 11 | M8  | 16 |
| 30 | 29 | 20 | 15 | 14 | M10 | 20 |
| 32 | 29 | 20 | 15 | 14 | M10 | 20 |
| 35 | 34 | 24 | 18 | 17 | M12 | 24 |
| 42 | 39 | 30 | 24 | 23 | M12 | 24 |

Standard • Dk6 • Match Mark Type • Full Sets Only

| D k6 |               | Item Number - Full Set |         |           |          |
|------|---------------|------------------------|---------|-----------|----------|
|      |               | A = 1°                 | A = 3°  | A = 5°    | A = 10°  |
| 13   | +0.012/+0.001 | TPN13-1-1              | TPN13-3 | TPN13-5   | TPN13-10 |
| 16   | +0.012/+0.001 | TPN16-1                | TPN16-3 | TPN16-5   | TPN16-10 |
| 20   | +0.015/+0.002 | TPN20-1                | TPN20-3 | TPN20-5   | TPN20-10 |
| 25   | +0.015/+0.002 | TPN25-1                | TPN25-3 | TPN25-5   | TPN25-10 |
| 30   | +0.015/+0.002 | TPN30-1                | TPN30-3 | TPN30-5-1 | TPN30-10 |
| 32   | +0.018/+0.002 | TPN32-1                | TPN32-3 | TPN32-5   | TPN32-10 |
| 35   | +0.018/+0.002 | TPN35-1                | TPN35-3 | TPN35-5   | TPN35-10 |
| 42   | +0.018/+0.002 | TPN42-1                | TPN42-3 | TPN42-5   | TPN42-10 |

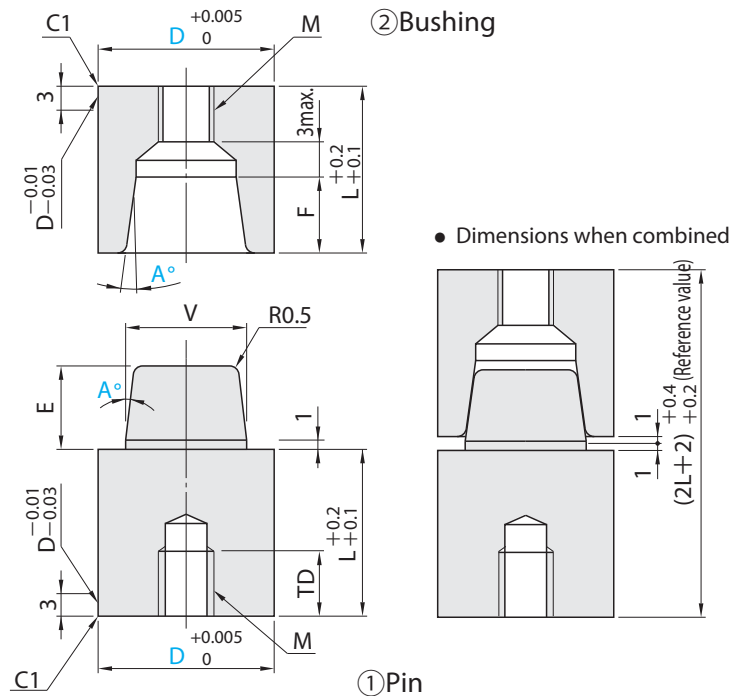
Standard • Dk6 • Component concentricity 0.01 or less

| D k6 |               | Item Number |           |           |          |           |           |          |           |           |
|------|---------------|-------------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|
|      |               | A = 1°      |           |           | A = 3°   |           |           | A = 5°   |           |           |
|      |               | Full Set    | Pin Only  | Bush Only | Full Set | Pin Only  | Bush Only | Full Set | Pin Only  | Bush Only |
| 10   | +0.01/+0.001  | TPNV10-1    | TPNVP10-1 | TPNVB10-1 | TPNV10-3 | TPNVP10-3 | TPNVB10-3 | TPNV10-5 | TPNVP10-5 | TPNVB10-5 |
| 13   | +0.012/+0.001 | TPNV13-1    | TPNVP13-1 | TPNVB13-1 | TPNV13-3 | TPNVP13-3 | TPNVB13-3 | TPNV13-5 | TPNVP13-5 | TPNVB13-5 |
| 16   | +0.012/+0.001 | TPNV16-1    | TPNVP16-1 | TPNVB16-1 | TPNV16-3 | TPNVP16-3 | TPNVB16-3 | TPNV16-5 | TPNVP16-5 | TPNVB16-5 |
| 20   | +0.015/+0.002 | TPNV20-1    | TPNVP20-1 | TPNVB20-1 | TPNV20-3 | TPNVP20-3 | TPNVB20-3 | TPNV20-5 | TPNVP20-5 | TPNVB20-5 |
| 25   | +0.015/+0.002 | TPNV25-1    | TPNVP25-1 | TPNVB25-1 | TPNV25-3 | TPNVP25-3 | TPNVB25-3 | TPNV25-5 | TPNVP25-5 | TPNVB25-5 |
| 30   | +0.015/+0.002 | TPNV30-1    | TPNVP30-1 | TPNVB30-1 | TPNV30-3 | TPNVP30-3 | TPNVB30-3 | TPNV30-5 | TPNVP30-5 | TPNVB30-5 |
| 32   | +0.018/+0.002 | TPNV32-1    | TPNVP32-1 | TPNVB32-1 | TPNV32-3 | TPNVP32-3 | TPNVB32-3 | TPNV32-5 | TPNVP32-5 | TPNVB32-5 |
| 35   | +0.018/+0.002 | TPNV35-1    | TPNVP35-1 | TPNVB35-1 | TPNV35-3 | TPNVP35-3 | TPNVB35-3 | TPNV35-5 | TPNVP35-5 | TPNVB35-5 |

# Metric JIS Tapered Round Interlocks - Standard Installation Type

Precision & Extra Precision Groups

VTPN • ZTPN



## Features:

- Unit of Measure: mm
- Material: SKD11 tool steel or equivalent
- Hardness: 58-62 HRC

| D  | L  | V  | E  | F  | M   | TD  |
|----|----|----|----|----|-----|-----|
| 8  | 13 | 5  | 6  | 5  | M3  | 7.5 |
| 10 | 14 | 7  | 6  | 5  | M4  | 10  |
| 13 | 14 | 7  | 6  | 5  | M4  | 10  |
| 16 | 14 | 10 | 6  | 5  | M5  | 10  |
| 20 | 19 | 13 | 9  | 8  | M6  | 12  |
| 25 | 24 | 16 | 12 | 11 | M8  | 16  |
| 30 | 29 | 20 | 15 | 14 | M10 | 20  |

**Precision** • Component concentricity 0.005 or less

| D <sup>+0.005</sup> <sub>0</sub> | Item Number |           |           |          |           |           |          |           |           |
|----------------------------------|-------------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|
|                                  | A = 1°      |           |           | A = 3°   |           |           | A = 5°   |           |           |
|                                  | Full Set    | Pin Only  | Bush Only | Full Set | Pin Only  | Bush Only | Full Set | Pin Only  | Bush Only |
| 8                                | VTPN8-1     | VTPNP8-1  | VTPNB8-1  |          |           |           |          |           |           |
| 10                               | VTPN10-1    | VTPNP10-1 | VTPNB10-1 | VTPN10-3 | VTPNP10-3 | VTPNB10-3 | VTPN10-5 | VTPNP10-5 | VTPNB10-5 |
| 13                               | VTPN13-1    | VTPNP13-1 | VTPNB13-1 | VTPN13-3 | VTPNP13-3 | VTPNB13-3 | VTPN13-5 | VTPNP13-5 | VTPNB13-5 |
| 16                               | VTPN16-1    | VTPNP16-1 | VTPNB16-1 | VTPN16-3 | VTPNP16-3 | VTPNB16-3 | VTPN16-5 | VTPNP16-5 | VTPNB16-5 |
| 20                               | VTPN20-1    | VTPNP20-1 | VTPNB20-1 | VTPN20-3 | VTPNP20-3 | VTPNB20-3 | VTPN20-5 | VTPNP20-5 | VTPNB20-5 |
| 25                               | VTPN25-1    | VTPNP25-1 | VTPNB25-1 | VTPN25-3 | VTPNP25-3 | VTPNB25-3 | VTPN25-5 | VTPNP25-5 | VTPNB25-5 |
| 30                               | VTPN30-1    | VTPNP30-1 | VTPNB30-1 | VTPN30-3 | VTPNP30-3 | VTPNB30-3 | VTPN30-5 | VTPNP30-5 | VTPNB30-5 |

**Extra Precision** • Component concentricity 0.003 or less

| D <sup>+0.005</sup> <sub>0</sub> | Item Number |          |           |           |          |           |           |          |           |           |
|----------------------------------|-------------|----------|-----------|-----------|----------|-----------|-----------|----------|-----------|-----------|
|                                  | A = 0.5°    | A = 1°   |           |           | A = 3°   |           |           | A = 5°   |           |           |
|                                  | Full Set    | Full Set | Pin Only  | Bush Only | Full Set | Pin Only  | Bush Only | Full Set | Pin Only  | Bush Only |
| 8                                |             | ZTPN8-1  | ZTPNP8-1  | ZTPNB8-1  |          |           |           |          |           |           |
| 10                               | ZTPN10-0.5  | ZTPN10-1 | ZTPNP10-1 | ZTPNB10-1 | ZTPN10-3 | ZTPNP10-3 | ZTPNB10-3 | ZTPN10-5 | ZTPNP10-5 | ZTPNB10-5 |
| 13                               | ZTPN13-0.5  | ZTPN13-1 | ZTPNP13-1 | ZTPNB13-1 | ZTPN13-3 | ZTPNP13-3 | ZTPNB13-3 | ZTPN13-5 | ZTPNP13-5 | ZTPNB13-5 |
| 16                               | ZTPN16-0.5  | ZTPN16-1 | ZTPNP16-1 | ZTPNB16-1 | ZTPN16-3 | ZTPNP16-3 | ZTPNB16-3 | ZTPN16-5 | ZTPNP16-5 | ZTPNB16-5 |
| 20                               | ZTPN20-0.5  | ZTPN20-1 | ZTPNP20-1 | ZTPNB20-1 | ZTPN20-3 | ZTPNP20-3 | ZTPNB20-3 | ZTPN20-5 | ZTPNP20-5 | ZTPNB20-5 |
| 25                               | ZTPN25-0.5  | ZTPN25-1 | ZTPNP25-1 | ZTPNB25-1 | ZTPN25-3 | ZTPNP25-3 | ZTPNB25-3 | ZTPN25-5 | ZTPNP25-5 | ZTPNB25-5 |

# Metric JIS Spacers for Tapered Round Locks

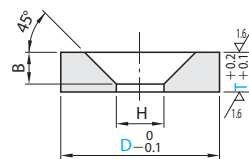
Spacers for use with Tapered Round Locks.

## Features:

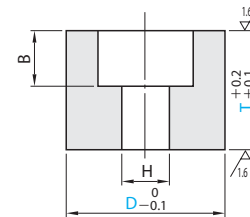
- Unit of Measure: mm
- Material: S45C steel
- Hardness: 46-50 HRC



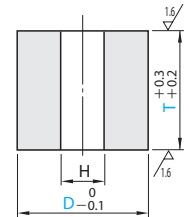
TPS



TPD



TPG



🔩 Screws are included in TPS and TPD

| Type | Item Number | D  | T  | H    | B   | Supplied Screw | * Lock OD |
|------|-------------|----|----|------|-----|----------------|-----------|
| TPS  | TPS16-5-1   | 16 | 5  | 4.5  | 3   | M4 X 10 FHCS   | 13        |
|      | TPS16-10-1  | 16 | 10 | 4.5  | 3   | M4 X 15 FHCS   |           |
|      | TPS20-5-1   | 20 | 5  | 5.5  | 3   | M5 X 12 FHCS   | 16        |
|      | TPS20-10-1  | 20 | 10 | 5.5  | 3   | M5 X 16 FHCS   |           |
|      | TPS25-5-1   | 25 | 5  | 6.5  | 4   | M6 X 12 FHCS   | 20        |
|      | TPS25-10-1  | 25 | 10 | 6.5  | 4   | M6 X 16 FHCS   |           |
|      | TPS32-5-1   | 32 | 5  | 8.5  | 4.5 | M8 X 15 FHCS   | 25        |
|      | TPS32-10-1  | 32 | 10 | 8.5  | 4.5 | M8 X 20 FHCS   |           |
|      | TPS35-10-1  | 35 | 10 | 10.5 | 7.5 | M10 X 20 FHCS  | 30        |
|      | TPS38-10-1  | 38 | 10 | 10.5 | 7.5 | M10 X 20 FHCS  | 32        |
| TPD  | TPD13-10-1  | 13 | 10 | 4.5  | 6   | M4 X 10 SHCS   | 10        |
|      | TPD13-15-1  | 13 | 15 | 4.5  | 6   | M4 X 15 SHCS   |           |
|      | TPD13-20-1  | 13 | 20 | 4.5  | 6   | M4 X 20 SHCS   |           |
|      | TPD13-25-1  | 13 | 25 | 4.5  | 6   | M4 X 25 SHCS   |           |
|      | TPD16-10-1  | 16 | 10 | 4.5  | 6   | M4 X 10 SHCS   | 13        |
|      | TPD16-15-1  | 16 | 15 | 4.5  | 6   | M4 X 15 SHCS   |           |
|      | TPD16-20-1  | 16 | 20 | 4.5  | 6   | M4 X 20 SHCS   |           |
|      | TPD16-25-1  | 16 | 25 | 4.5  | 6   | M4 X 25 SHCS   |           |
|      | TPD20-10-1  | 20 | 10 | 5.5  | 7   | M5 X 10 SHCS   | 16        |
|      | TPD20-15-1  | 20 | 15 | 5.5  | 7   | M5 X 15 SHCS   |           |
|      | TPD20-20-1  | 20 | 20 | 5.5  | 7   | M5 X 20 SHCS   |           |
|      | TPD20-25-1  | 20 | 25 | 5.5  | 7   | M5 X 25 SHCS   |           |
|      | TPD20-30-1  | 20 | 30 | 5.5  | 7   | M5 X 30 SHCS   |           |
|      | TPD20-35-1  | 20 | 35 | 5.5  | 7   | M5 X 35 SHCS   |           |
|      | TPD25-10-1  | 25 | 10 | 6.5  | 6   | M6 X 16 LHCS   | 20        |
|      | TPD25-15-1  | 25 | 15 | 6.5  | 9   | M6 X 15 SHCS   |           |
|      | TPD25-20-1  | 25 | 20 | 6.5  | 9   | M6 X 20 SHCS   |           |
|      | TPD25-25-1  | 25 | 25 | 6.5  | 9   | M6 X 25 SHCS   |           |
|      | TPD25-30-1  | 25 | 30 | 6.5  | 9   | M6 X 30 SHCS   |           |
|      | TPD25-40-1  | 25 | 40 | 6.5  | 9   | M6 X 40 SHCS   |           |
|      | TPD25-50-1  | 25 | 50 | 6.5  | 9   | M6 X 50 SHCS   |           |
|      | TPD32-15-1  | 32 | 15 | 8.5  | 10  | M8 X 15 SHCS   | 25        |
|      | TPD32-20-1  | 32 | 20 | 8.5  | 10  | M8 X 20 SHCS   |           |
|      | TPD32-25-1  | 32 | 25 | 8.5  | 10  | M8 X 25 SHCS   |           |
|      | TPD32-35-1  | 32 | 35 | 8.5  | 10  | M8 X 35 SHCS   |           |
|      | TPD32-45-1  | 32 | 45 | 8.5  | 10  | M8 X 45 SHCS   |           |
|      | TPD32-55-1  | 32 | 55 | 8.5  | 10  | M8 X 55 SHCS   |           |
|      | TPD35-20-1  | 35 | 20 | 10.5 | 12  | M10 X 20 SHCS  | 30        |
|      | TPD35-30-1  | 35 | 30 | 10.5 | 12  | M10 X 30 SHCS  |           |
|      | TPD35-40-1  | 35 | 40 | 10.5 | 12  | M10 X 40 SHCS  |           |
|      | TPD35-50-1  | 35 | 50 | 10.5 | 12  | M10 X 50 SHCS  |           |
|      | TPD38-20-1  | 38 | 20 | 10.5 | 12  | M10 X 20 SHCS  | 32        |
|      | TPD38-30-1  | 38 | 30 | 10.5 | 12  | M10 X 30 SHCS  |           |
|      | TPD42-15-1  | 42 | 15 | 12.5 | 9   | M12 X 25 LHCS  | 35        |
|      | TPD42-25-1  | 42 | 25 | 12.5 | 14  | M12 X 30 SHCS  |           |
|      | TPD48-20-1  | 48 | 20 | 12.5 | 14  | M12 X 25 SHCS  | 42        |
|      | TPD48-30-1  | 48 | 30 | 12.5 | 14  | M12 X 35 SHCS  |           |

| Type | Item Number | D  | T  | H    | Applicable Screw Size | * Lock OD |
|------|-------------|----|----|------|-----------------------|-----------|
| TPG  | TPG8-5-1    | 8  | 5  | 3.5  | M3                    | 8         |
|      | TPG8-10-1   | 8  | 10 | 3.5  |                       |           |
|      | TPG10-5-1   | 10 | 5  | 4.5  | M4                    | 10        |
|      | TPG10-10-1  | 10 | 10 | 4.5  |                       |           |
|      | TPG13-5-1   | 13 | 5  | 4.5  | M4                    | 13        |
|      | TPG13-10-1  | 13 | 10 | 4.5  |                       |           |
|      | TPG16-5-1   | 16 | 5  | 5.5  | M5                    | 16        |
|      | TPG16-10-1  | 16 | 10 | 5.5  |                       |           |
|      | TPG16-15-1  | 16 | 15 | 5.5  |                       |           |
|      | TPG16-20-1  | 16 | 20 | 5.5  |                       |           |
|      | TPG16-25-1  | 16 | 25 | 5.5  |                       |           |
|      | TPG16-30-1  | 16 | 30 | 5.5  | M6                    | 20        |
|      | TPG16-35-1  | 16 | 35 | 5.5  |                       |           |
|      | TPG20-5-1   | 20 | 5  | 6.5  |                       |           |
|      | TPG20-10-1  | 20 | 10 | 6.5  |                       |           |
|      | TPG20-15-1  | 20 | 15 | 6.5  |                       |           |
|      | TPG20-20-1  | 20 | 20 | 6.5  |                       |           |
|      | TPG20-25-1  | 20 | 25 | 6.5  |                       |           |
|      | TPG20-30-1  | 20 | 30 | 6.5  |                       |           |
|      | TPG20-40-1  | 20 | 40 | 6.5  |                       |           |
|      | TPG20-50-1  | 20 | 50 | 6.5  |                       |           |
|      | TPG25-5-1   | 25 | 5  | 8.5  | M8                    | 25        |
|      | TPG25-10-1  | 25 | 10 | 8.5  |                       |           |
|      | TPG25-15-1  | 25 | 15 | 8.5  |                       |           |
|      | TPG25-20-1  | 25 | 20 | 8.5  |                       |           |
|      | TPG25-25-1  | 25 | 25 | 8.5  |                       |           |
|      | TPG25-35-1  | 25 | 35 | 8.5  |                       |           |
|      | TPG30-5-1   | 30 | 5  | 10.5 | M10                   | 30        |
|      | TPG30-10-1  | 30 | 10 | 10.5 |                       |           |
|      | TPG30-15-1  | 30 | 15 | 10.5 |                       |           |
|      | TPG30-20-1  | 30 | 20 | 10.5 |                       |           |
|      | TPG30-30-1  | 30 | 30 | 10.5 |                       |           |
|      | TPG32-5-1   | 32 | 5  | 10.5 | M10                   | 32        |
|      | TPG32-10-1  | 32 | 10 | 10.5 |                       |           |
|      | TPG32-20-1  | 32 | 20 | 10.5 |                       |           |
|      | TPG32-30-1  | 32 | 30 | 10.5 |                       |           |
|      | TPG32-40-1  | 32 | 40 | 10.5 |                       |           |
|      | TPG35-5-1   | 35 | 5  | 12.5 | M12                   | 35        |
|      | TPG35-10-1  | 35 | 10 | 12.5 |                       |           |
|      | TPG35-15-1  | 35 | 15 | 12.5 |                       |           |
|      | TPG35-25-1  | 35 | 25 | 12.5 |                       |           |
|      | TPG35-45-1  | 35 | 45 | 12.5 |                       |           |
|      | TPG42-5-1   | 42 | 5  | 12.5 | M12                   | 42        |
|      | TPG42-10-1  | 42 | 10 | 12.5 |                       |           |

\* For reference, OD of applicable Taper Lock