

# Plastic Phillips Pan Head Screws

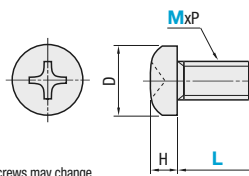
Material: PPS.PEEK (Available in Pkg.)



RoHS

1 pkg. contains 100 pcs.

| Type      | Material                    |
|-----------|-----------------------------|
| PACK-PPSA | PPS (Polyphenylenesulfide)  |
| PACK-PEKS | PEEK (Polyetheretherketone) |



1 pkg. contains 100 pcs.

The surface colors of plastic Phillips pan head screws may change somewhat depending on production lot and other conditions.

Sometimes black spots on the surface may be seen, which does not affect its performance.

| Part Number            | M x P | D          | H   | PACK-PPSA  |                      | PACK-PEKS  |                      |
|------------------------|-------|------------|-----|------------|----------------------|------------|----------------------|
|                        |       |            |     | Unit Price | Volume Discount Rate | Unit Price | Volume Discount Rate |
| Type                   | M-L   |            |     | 1-9        | 10-50                | 1-9        | 10-50                |
| PACK-PPSA<br>PACK-PEKS | 2.6-6 |            |     |            |                      |            |                      |
|                        | 8     | 2.6 x 0.45 | 4.5 | 1.7        |                      |            |                      |
|                        | 10    |            |     |            |                      |            |                      |
|                        | 12    |            |     |            |                      |            |                      |
| PACK-PPSA<br>PACK-PEKS | 3-6   |            |     |            |                      |            |                      |
|                        | 8     | 3 x 0.5    | 5.5 | 2          |                      |            |                      |
|                        | 10    |            |     |            |                      |            |                      |
|                        | 12    |            |     |            |                      |            |                      |
| PACK-PPSA<br>PACK-PEKS | 15    |            |     |            |                      |            |                      |
|                        | 20    |            |     |            |                      |            |                      |

| Part Number            | M x P | D       | H | PACK-PPSA  |                      | PACK-PEKS  |                      |
|------------------------|-------|---------|---|------------|----------------------|------------|----------------------|
|                        |       |         |   | Unit Price | Volume Discount Rate | Unit Price | Volume Discount Rate |
| Type                   | M-L   |         |   | 1-9        | 10-50                | 1-9        | 10-50                |
| PACK-PPSA<br>PACK-PEKS | 4-6   |         |   |            |                      |            |                      |
|                        | 8     | 4 x 0.7 | 7 | 2.6        |                      |            |                      |
|                        | 10    |         |   |            |                      |            |                      |
|                        | 12    |         |   |            |                      |            |                      |
| PACK-PPSA<br>PACK-PEKS | 15    |         |   |            |                      |            |                      |
|                        | 20    |         |   |            |                      |            |                      |
| PACK-PPSA<br>PACK-PEKS | 5-8   |         |   |            |                      |            |                      |
|                        | 10    | 5 x 0.8 | 9 | 3.3        |                      |            |                      |
|                        | 12    |         |   |            |                      |            |                      |
|                        | 15    |         |   |            |                      |            |                      |

| Part Number            | M x P | D       | H    | PACK-PPSA  |                      | PACK-PEKS  |                      |
|------------------------|-------|---------|------|------------|----------------------|------------|----------------------|
|                        |       |         |      | Unit Price | Volume Discount Rate | Unit Price | Volume Discount Rate |
| Type                   | M-L   |         |      | 1-9        | 10-50                | 1-9        | 10-50                |
| PACK-PPSA<br>PACK-PEKS | 6-10  |         |      |            |                      |            |                      |
|                        | 15    | 6 x 1.0 | 10.5 | 3.9        |                      |            |                      |
|                        | 20    |         |      |            |                      |            |                      |
|                        |       |         |      |            |                      |            |                      |

For orders larger than indicated quantity, please check with WOS.

Ordering Example: **Part Number** **PACK-PEKS4-20**

1 pkg. contains 100 pcs.

# Thumb Screws (Plastic Head) / Plastic Hex Spacers

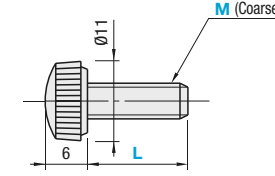
Both Ends Tapped



RoHS

**Thumb Screws (Plastic Head)**

CRKW (White)  
CRKB (Black)  
CRKR (Red)



M (Coarse)

Material Knurled Head: PC (Polycarbonate) screw EN 1.4567 Equiv.

| Part Number                                |      | Unit Price    | Volume Discount Rate |
|--------------------------------------------|------|---------------|----------------------|
| Type                                       | M-L  | 1 ~ 99 pc(s). | 100 ~ 500 pcs.       |
| CRKW (White)<br>CRKB (Black)<br>CRKR (Red) | 3- 6 |               |                      |
|                                            | 8    |               |                      |
|                                            | 10   |               |                      |
|                                            | 12   |               |                      |
|                                            | 15   |               |                      |
|                                            | 20   |               |                      |
|                                            | 4- 6 |               |                      |
|                                            | 8    |               |                      |
|                                            | 10   |               |                      |
|                                            | 12   |               |                      |
|                                            | 15   |               |                      |
|                                            | 20   |               |                      |



Ordering  
Example

Part Number

CRKW3-6

• Usable as screws for cover attachment.

## Mechanical Properties (Reference)

|      | Tensile Breaking Load N |           | Torsional Breaking Torque N · m |           |
|------|-------------------------|-----------|---------------------------------|-----------|
|      | PACK-PPSA               | PACK-PEKS | PACK-PPSA                       | PACK-PEKS |
| M2.6 | 440                     | 312       | 0.19                            | 0.16      |
| M3   | 570                     | 430       | 0.36                            | 0.3       |
| M4   | 980                     | 765       | 0.71                            | 0.64      |
| M5   | 1570                    | 1230      | 1.42                            | 1.28      |
| M6   | 2250                    | 1670      | 2.11                            | 2.26      |

- Shown above are reference values and not guaranteed.
- Recommended tightening torque is torsional shear torque x50%.
- Use a torque driver and torque wrench for tightening.
- Mechanical characteristics change depending on the operating environment.
- Testing is recommended under the applicable conditions prior to usage.

## Guideline for Selection of Plastic Screws by Material①

| Item                                     | RENY | PPS | PPS Non-Glass Fiber | PEEK |
|------------------------------------------|------|-----|---------------------|------|
| Lightness                                | △    | △   | ○                   | ○    |
| Water Absorption Stability               | ○    | ○   | ○                   | △    |
| Strength, Rigidity                       | ○    | ○   | ○                   | ○    |
| Impact Resistance                        | ○    | ○   | ○                   | ○    |
| Friction Resistance, Abrasion Resistance | ○    | ○   | ○                   | ○    |
| Heat Resistance                          | △    | ○   | ○                   | ○    |
| Flame Resistance                         | △    | ○   | ○                   | ○    |
| Electrical Properties                    | ○    | ○   | ○                   | ○    |
| Weather Resistance                       | ○    | ○   | ○                   | ○    |

○: Excellent ○: Good △: Questionable

## Chemical Resistance Data (Reference)

| Chemical Name                 | Temperature         | RENY | PPS / PPS Non-Glass Fiber | PEEK |
|-------------------------------|---------------------|------|---------------------------|------|
| Hydrochloric Acid 10%         | 80°C                | X    | ○                         | ○    |
| Hydrochloric Acid 10%         | Ambient Temperature | X    | ○                         | ○    |
| Nitric Acid 10%               | 80°C                | X    | △                         | ○    |
| Nitric Acid 10%               | Ambient Temperature | X    | ○                         | ○    |
| Sulfuric Acid 30%             | 80°C                | X    | ○                         | ○    |
| Sulfuric Acid 10%             | 80°C                | X    | ○                         | ○    |
| Sulfuric Acid 10%             | Ambient Temperature | X    | ○                         | ○    |
| Sodium Hydroxide 30%          | 80°C                | △    | ○                         | ○    |
| Sodium Hydroxide 10%          | Ambient Temperature | ○    | ○                         | ○    |
| Calcium Chloride (Saturation) | 80°C                | △    | ○                         | ○    |
| Acetone                       | Ambient Temperature | ○    | ○                         | ○    |
| Methanol                      | 60°C                | ○    | ○                         | ○    |
| Gasoline                      | Ambient Temperature | ○    | ○                         | ○    |
| Light Oil                     | Ambient Temperature | ○    | ○                         | ○    |
| Motor Oil                     | 80°C                | ○    | ○                         | ○    |
| Gear Oil                      | 100°C               | ○    | ○                         | ○    |

- Not Affected ○: Hardly Affected △: Somewhat Deteriorated
- Chemical resistances vary depending on the condition of use. Be sure to test the product before use under expected application conditions.

- RENY-Glassfiber Reinforced Polyamide MXD6  
RENY is based on polyamide MXD6 and is also a crystalline engineered plastic reinforced with 50% glass fiber. It has the highest strength and elasticity among engineered plastics, and excels in both oil and heat resistance. Thus, it is used as an alternative to metal.
- PPS-Polyphenylenesulfide  
PPS is a crystalline super engineered plastic. It has excellent heat resistance, and does not deteriorate in physical properties even when it is used for long durations in high temperature atmosphere. In addition, it excels in chemical resistance, mechanical characteristics, electrical properties and dimensional stability.
- PEEK-Polyetheretherketone  
PEEK is semicrystalline super engineered plastic with the highest performance. It has the highest chemical resistance among all engineered plastics. The only generally used chemical that can dissolve PEEK is concentrated sulfuric acid. PEEK also excels in heat resistance, abrasion resistance, flame resistance and hydrolysis resistance.

## Guideline for Selection of Plastic Screws by Material②

|                     |                                         |
|---------------------|-----------------------------------------|
| Strength            | RENY > PPS > PEEK > PPS Non-Glass Fiber |
| Heat Resistance     | PPS / PPS Non-Glass Fiber > PEEK > RENY |
| Chemical Resistance | PEEK > PPS / PPS Non-Glass Fiber > RENY |

- RENY and PPS contains glass fiber.
- Continuous Use Temperature RENY: 105°C PPS: PPS Non-Glass Fiber: 200°C PEEK: 180°C
- Combustibility RENY: UL94HB PPS: PPS Non-Glass Fiber: PEEK: UL94 V-0

## Physical Properties Table (Reference)③

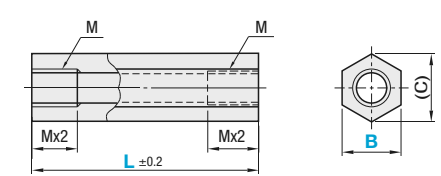
| Characteristics                             | Test Method (ASTM) | Unit                | RENY                | PPS                  | PPS Non-Glass Fiber  | PEEK                 |
|---------------------------------------------|--------------------|---------------------|---------------------|----------------------|----------------------|----------------------|
| <Mechanical Characteristics>                |                    |                     |                     |                      |                      |                      |
| Tensile Strength                            | D638               | MPa                 | 285                 | 196                  | 90                   | 91                   |
| Elongation                                  | D638               | %                   | 2.1                 | 2.2                  | -                    | 50~120               |
| Bending Strength                            | D790               | MPa                 | 380                 | 255                  | 140                  | 147                  |
| Flexural Modulus                            | D790               | GPa                 | 17.4                | 13.2                 | 3.8                  | 3.9                  |
| Izod Impact Strength (Notched)              | D256               | J/m                 | 110                 | 98                   | -                    | 88                   |
| Rockwell Hardness                           | D785               | R and M Scale       | M111                | M110                 | -                    | R126                 |
| <Thermal Characteristics>                   |                    |                     |                     |                      |                      |                      |
| Deflection Temperature under Load (1.82Mpa) | D648               | °C                  | 234                 | 270                  | 100                  | 152                  |
| Linear Expansion Coefficient                | D696               | 10 <sup>-5</sup> /K | 1.5                 | 1.0                  | -                    | 5.0                  |
| <Electrical Characteristics>                |                    |                     |                     |                      |                      |                      |
| Dielectric Constant (10 <sup>4</sup> Hz)    | D150               | -                   | 4                   | 4.6                  | 3.6                  | 3.3                  |
| Dielectric Tangent (10 <sup>4</sup> Hz)     | D150               | -                   | 0.009               | 0.002                | 0.001                | 0.004                |
| Volume Resistivity                          | D257               | Ω · cm              | 1.0×10 <sup>9</sup> | 1.0×10 <sup>16</sup> | 2.0×10 <sup>16</sup> | 4.9×10 <sup>16</sup> |
| Dielectric Breakdown Strength               | D149               | MV/mm               | 17                  | 12                   | -                    | 17                   |
| Arc Resistance                              | D495               | sec                 | 129                 | 120                  | -                    | 23                   |
| <Others>                                    |                    |                     |                     |                      |                      |                      |
| Specific Gravity                            | D792               | -                   | 1.65                | 1.66                 | 1.35                 | 1.3                  |
| Water Absorption (At 23°C in water x 24h)   | D570               | %                   | 0.14                | 0.015                | 0.02                 | 0.500                |
| Fiber Glass Content                         | -                  | %                   | 50                  | 40                   | -                    | -                    |

## Plastic Hex Spacers



RoHS

PEKP



<Cautions>

- The surface color may change depending on production lot and other conditions.
- For material data, see P221.
- The pilot hole for tapping goes through.

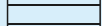
Material: PEEK (Polyetheretherketone)

| Part Number |    | L (Selection)        |   |      |   |   |   | M<br>(Coarse) | (C) | Unit Price |     |     |     |     |      |      |      |
|-------------|----|----------------------|---|------|---|---|---|---------------|-----|------------|-----|-----|-----|-----|------|------|------|
| Type        | B  |                      |   |      |   |   |   |               |     | L15        | L20 | L25 | L30 | L50 | L100 | L150 | L200 |
| PEKP        | 6  | 15 20 25 30 50       | 4 | 6.9  |   |   |   |               |     | -          | -   | -   |     |     |      |      |      |
|             | 7  | 20 25 30 50 100 150  | 3 | 8.1  | - |   |   |               |     |            |     | -   |     |     |      |      |      |
|             | 8  | 20 25 30 50 100 150  | 5 | 9.2  | - |   |   |               |     |            |     | -   |     |     |      |      |      |
|             | 10 | 25 30 50 100 150 200 | 6 | 11.5 | - | - |   |               |     |            |     |     |     |     |      |      |      |
|             | 13 | 50 100 150 200       | 8 | 15.0 | - | - | - | -             |     |            |     |     |     |     |      |      |      |

Ordering Example: **Part Number** **PEKP6** - **L** **20**

Alterations: **Part Number** **PEKP6** - **LC** **LC35**

Only applicable to PEKP.

| Alteration                                                                            | Code      | Spec.                                                                                                                                                                                                                                                                                                                                 |   |    |   |          |   |           |   |           |    |           |    |           |
|---------------------------------------------------------------------------------------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|---|----------|---|-----------|---|-----------|----|-----------|----|-----------|
| L Configurable                                                                        |           | Cuts L dimension in 1mm increment. The thread length does not change.<br><u>Ordering Code</u> LC55                                                                                                                                                                                                                                    |   |    |   |          |   |           |   |           |    |           |    |           |
|  | LC        | LC Specification Range <table border="1"><thead><tr><th>B</th><th>LC</th></tr></thead><tbody><tr><td>6</td><td>15&lt;LC&lt;50</td></tr><tr><td>7</td><td>20&lt;LC&lt;150</td></tr><tr><td>8</td><td>20&lt;LC&lt;150</td></tr><tr><td>10</td><td>25&lt;LC&lt;200</td></tr><tr><td>13</td><td>35&lt;LC&lt;200</td></tr></tbody></table> | B | LC | 6 | 15<LC<50 | 7 | 20<LC<150 | 8 | 20<LC<150 | 10 | 25<LC<200 | 13 | 35<LC<200 |
| B                                                                                     | LC        |                                                                                                                                                                                                                                                                                                                                       |   |    |   |          |   |           |   |           |    |           |    |           |
| 6                                                                                     | 15<LC<50  |                                                                                                                                                                                                                                                                                                                                       |   |    |   |          |   |           |   |           |    |           |    |           |
| 7                                                                                     | 20<LC<150 |                                                                                                                                                                                                                                                                                                                                       |   |    |   |          |   |           |   |           |    |           |    |           |
| 8                                                                                     | 20<LC<150 |                                                                                                                                                                                                                                                                                                                                       |   |    |   |          |   |           |   |           |    |           |    |           |
| 10                                                                                    | 25<LC<200 |                                                                                                                                                                                                                                                                                                                                       |   |    |   |          |   |           |   |           |    |           |    |           |
| 13                                                                                    | 35<LC<200 |                                                                                                                                                                                                                                                                                                                                       |   |    |   |          |   |           |   |           |    |           |    |           |

