



Indexable Centering and Chamfering Cutter

Vol 1

OSG PHOENIX[®] PLDS





OSG PHOENIX[®] PLDS

Indexable Centering and Chamfering Cutter

A versatile series of indexable end mills for spot drilling, countersinking & chamfering.

List 52512

PLDS SA (Inch)

List 78034

PLDS SS (Metric)

List 78134

PLDS SF (Metric)

List 78PLDS

PLDS Inserts

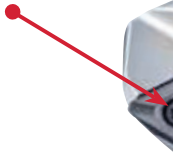
List 7808H

PLDS Accessories

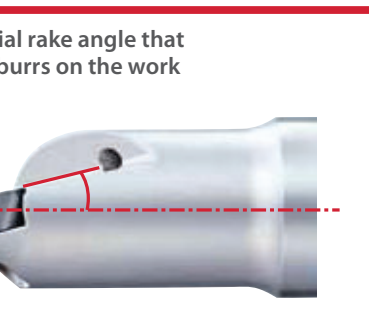


Features & Benefits

Economical 3-corner insert with both chipping resistance and sharpness.



Coolant hole to improve chip evacuation and cooling effect on the cutting edge.



Negative axial rake angle that suppresses burrs on the work surface.

Two types of bodies available: 90° and 120°

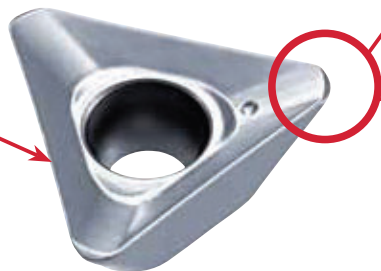
» Economic 3-Corner Insert Combines Chipping Resistance and Sharpness

High-strength insert grades that can be selected according to the work material.

XP9020 for steel and cast iron

XP2040 for stainless steel and heat resistant alloys

Large rake angle and low cutting resistance.

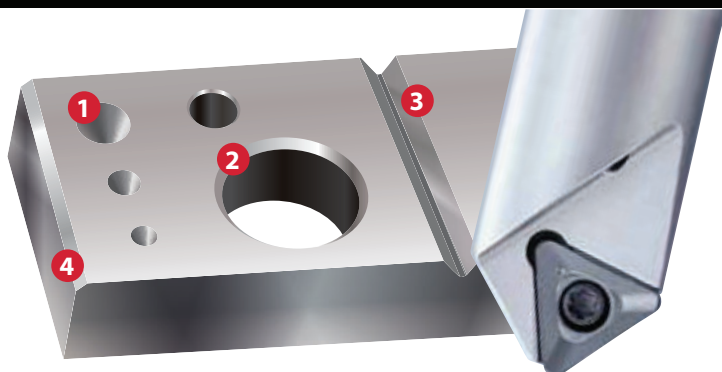


Highly rigid negative chamfer tip enables difficult centering operations.

Cutting edge specification enables optimal chip shape creation.

» Versatile Tool for Efficient Processing in Multiple Operations

1. Centering
2. Hole Entry Countersinking
3. V Slotting
4. Corner Chamfering

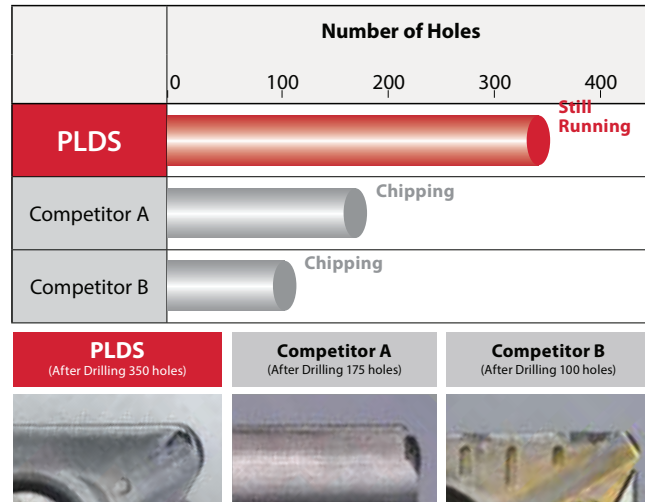


Processing Data

» 90° Centering in Stainless Steel - 304 Stainless Steel

The PLDS exhibits excellent wear resistance, and continues to perform, even after machining more than twice the number of holes as the competitor products.

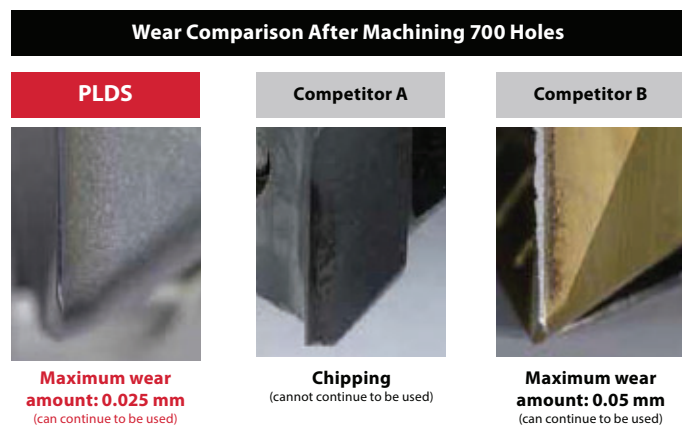
| | |
|----------------|---|
| Tool | PLDS11R002SS16-90 |
| Insert (Grade) | TPKT110308ER-DM (XP2040) |
| Work Material | 304 Stainless Steel |
| Cutting Speed | 206 SFM (2000 RPM) |
| Feed | 3.15 IPM (0.0016 in/rev) |
| Depth | 0.157 in (Ø0.394" Countersink diameter) |
| Coolant | Water-Soluble |
| Machine | HMC |



» 90° Centering in Carbon Steel - 1050 Carbon Steel

The PLDS exhibits minimal wear even after machining 700 holes.

| | |
|----------------|---|
| Tool | PLDS11R002SS16-90 |
| Insert (Grade) | TPKT110308ER-DM (XP9020) |
| Work Material | 1050 Carbon Steel |
| Cutting Speed | 308 SFM (3000 RPM) |
| Feed | 7.09 IPM (0.0024 in/rev) |
| Depth | 0.157 in (Ø0.394" Countersink diameter) |
| Coolant | Water-Soluble |
| Machine | HMC |



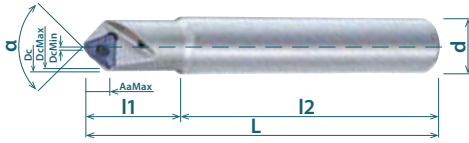
List 52512

PLDS SA (Inch)



NEW SPEED FEED P7

Recommended Materials: p7
Accessories & Inserts: p6



| EDP No. | Body Type | Teeth Type | Designation | Point Angle | Min Drill Hole Dia. (inch) | Max Drill Hole Dia. (inch) | Tool Dia. (inch) | No. of Teeth | Shank Dia. (inch) | Shank Length (inch) | Overall Length (inch) | Neck Length (inch) | Max Depth of Cut (inch) | Applicable Insert |
|----------|-------------------|------------|-----------------------|-------------|----------------------------|----------------------------|------------------|--------------|-------------------|---------------------|-----------------------|--------------------|-------------------------|-------------------|
| | | | | α | Dc Min | Dc Max | Aa Max | | d | I2 | L | I1 | Aa Max | |
| 52512000 | Cylindrical Shank | Normal | PLDS11R002SA0625-90 | 90° | 0.098 | 0.531 | 0.567 | 1 | 0.625 | 3.250 | 4.500 | 1.250 | 0.228 | TPKT11 |
| 52512001 | | | PLDS11R002SA0625-L90 | 90° | 0.098 | 0.531 | 0.567 | 1 | 0.625 | 6.750 | 8.000 | 1.250 | 0.228 | TPKT11 |
| 52512002 | | | PLDS11R002SA0625-L120 | 120° | 0.094 | 0.630 | 0.681 | 1 | 0.625 | 3.250 | 4.500 | 1.250 | 0.157 | TPKT11 |
| 52512003 | | | PLDS11R002SA0625-L120 | 120° | 0.094 | 0.630 | 0.681 | 1 | 0.625 | 6.750 | 8.000 | 1.250 | 0.157 | TPKT11 |

Packed: 1 pc.



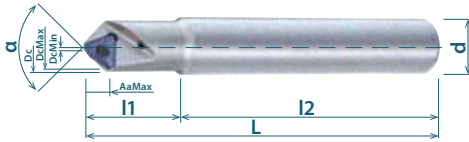
List 78034

PLDS SS (Metric)



NEW SPEED FEED P7

Recommended Materials: p7
Accessories & Inserts: p6



| EDP No. | Body Type | Teeth Type | Designation | Point Angle | Min Drill Hole Dia. (mm) | Max Drill Hole Dia. (mm) | Tool Dia. (mm) | No. of Teeth | Shank Dia. (mm) | Shank Length (mm) | Overall Length (mm) | Neck Length (mm) | Max Depth of Cut (mm) | Applicable Insert |
|---------|-------------------|------------|---------------------|-------------|--------------------------|--------------------------|----------------|--------------|-----------------|-------------------|---------------------|------------------|-----------------------|-------------------|
| | | | | α | Dc Min | Dc Max | Aa Max | | d | I2 | L | I1 | Aa Max | |
| 7803401 | Cylindrical Shank | Normal | PLDS11R002SS16-90 | 90° | 2.5 | 13.5 | 14.4 | 1 | 16 | 80 | 110 | 30 | 5.8 | TPKT11 |
| 7803402 | | | PLDS11R002SS16-L90 | 90° | 2.5 | 13.5 | 14.4 | 1 | 16 | 170 | 200 | 30 | 5.8 | TPKT11 |
| 7803403 | | | PLDS11R002SS16-120 | 120° | 2.4 | 16 | 17.3 | 1 | 16 | 80 | 110 | 30 | 4 | TPKT11 |
| 7803404 | | | PLDS11R002SS16-L120 | 120° | 2.4 | 16 | 17.3 | 1 | 16 | 170 | 200 | 30 | 4 | TPKT11 |

Packed: 1 pc.

Note: This is stocked overseas. Please contact OSG for availability and delivery.



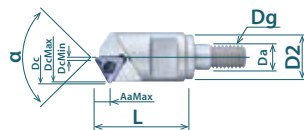
List 78134

PLDS SF (Metric)



NEW SPEED FEED P7

Recommended Materials: p7
Accessories & Inserts: p6
SF Arbors: p1462-1464 of
Cutting Tool Solutions 2020 catalog



| EDP No. | Body Type | Designation | Point Angle | Min Drill Hole Dia. (mm) | Max Drill Hole Dia. (mm) | Tool Dia. (mm) | No. of Teeth | Pilot Dia. (mm) | Thread Dia. (mm) | Overall Length (mm) | Flange Dia. (mm) | Max Depth of Cut (mm) | Wrench Size | Applicable Insert |
|---------|----------------|-------------------|-------------|--------------------------|--------------------------|----------------|--------------|-----------------|------------------|---------------------|------------------|-----------------------|-------------|-------------------|
| | | | α | Dc Min | Dc Max | Dc | | Da | Dg | L | D2 | Aa Max | | |
| 7803405 | Screw Fit Head | PLDS11R002SF8-90 | 90° | 2.5 | 13.5 | 14.4 | 1 | 8.5 | M8 | 32 | 14.5 | 5.8 | 10 | TPKT11 |
| 7803406 | | PLDS11R002SF8-120 | 120° | 2.4 | 16 | 17.3 | 1 | 8.5 | M8 | 32 | 14.5 | 4 | 10 | TPKT11 |

Packed: 1 pc.

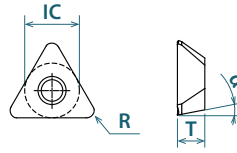
Note: This is stocked overseas. Please contact OSG for availability and delivery.



List 78PLDS

NEW

PLDS Inserts




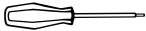
| Designation | No. of Cutting Edges | Insert Size | | | | EDP Number | |
|-----------------|----------------------|-------------|--------|----------|--------|------------|---------|
| | | IC (mm) | T (mm) | α | R (mm) | XP9020 | XP2040 |
| TPKT110308ER-DM | 3 | 6.35 | 3.18 | 11° | 0.8 | 7814205 | 7813205 |

Packed: 10 pcs.

PXI

List 7808H

PLDS Accessories

| Appearance | EDP No. | Designation | Applicable Insert | Recommended Tightening Torque |
|---|---------|----------------------------------|-------------------|-------------------------------|
|  Clamping Screw | 7808138 | FS22550P (M2.2 x 5, Torx 7IP) | TPKT11... | 1.0 Nm |
|  Wrench | 7808224 | 7IP-D (Torx 7IP) | TPKT11... | - |

Note: Wrench sold separately.

Packed: Clamping Screws = 10 pcs.; Wrench = 1 pc.

PXT

Cutting Conditions

| | Work Material | Tensile Strength - Hardness | Cutting Speed Vc (SFM) | Feed Rate f (in/rev) | |
|---|--|-----------------------------|------------------------|-------------------------|------------------------|
| | | | | Centering | Countersinking |
| P | Mild Steels, Carbon Steels (1010, 1018) | ~180 HB | 260 (200 - 400) | 0.0025 (0.001 - 0.003) | 0.003 (0.002 - 0.0045) |
| | Carbon Steels, Alloy Steels (1050, 4140) | ~280 HB | 260 (200 - 400) | 0.0025 (0.001 - 0.003) | 0.003 (0.002 - 0.0045) |
| | Die Steels (H13, D2) | ~280 HB | 260 (200 - 400) | 0.0025 (0.001 - 0.003) | 0.003 (0.002 - 0.0045) |
| M | Stainless Steels (304, 420) | ~250 HB | 260 (200 - 330) | 0.0025 (0.001 - 0.003) | 0.003 (0.002 - 0.0045) |
| K | Cast Iron (No. 35 B) | ~350 N/mm ² | 330 (200 - 460) | 0.0025 (0.001 - 0.003) | 0.003 (0.002 - 0.0045) |
| | Ductile Cast Iron (60-40-18) | ~800 N/mm ² | 330 (200 - 460) | 0.0025 (0.001 - 0.003) | 0.003 (0.002 - 0.0045) |
| N | Aluminum Alloys (6061, 7075) | ~13% Si | 500 (330 - 650) | 0.0025 (0.001 - 0.003) | 0.003 (0.002 - 0.0045) |
| S | Heat Resistant Alloys (Inconel 718) | - | 115 (80 - 200) | 0.0015 (0.001 - 0.0025) | 0.003 (0.002 - 0.0045) |
| | Titanium Alloy (Ti-6Al-4V) | - | 130 (100 - 330) | 0.0025 (0.001 - 0.003) | 0.003 (0.002 - 0.0045) |
| H | Pre-hardened Steel (P20, Stavax) | 40 - 43 HrC | 200 (165 - 260) | 0.0025 (0.001 - 0.003) | 0.003 (0.002 - 0.0045) |
| | Hardened Steels (D2) | 43 - 48 HrC | 165 (130 - 260) | 0.0025 (0.001 - 0.003) | 0.003 (0.002 - 0.0045) |

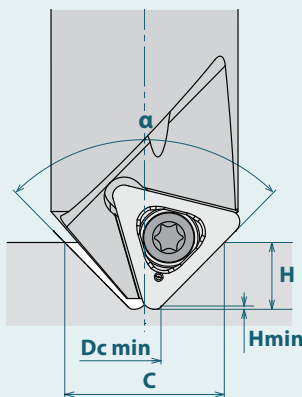
1. For V slotting, use 80% of the Countersinking feed rate shown in the above table.

Recommended Materials by Application

| Insert Grade | Chip Breaker | Coolant | P | M | K | N | S | H |
|--------------|--------------|---------|---|---|---|---|---|---|
| XP9020 | DM | Yes | ⊙ | ○ | ⊙ | ○ | ○ | ○ |
| XP2040 | DM | - | ○ | ○ | | | | |
| | | Yes | ○ | ⊙ | | ○ | ⊙ | ⊙ |

○ good ⊙ best

Standard Centering Depth (H)



When Point Angle (α) = 90°
Min. Centering Depth (H_{min}) = 0.25mm
Min. Drill Hole Diameter (D_{c min}) = Ø2.5mm

$$H = (C - D_{c \min}) \div 2 + H_{\min}$$

H = Centering Depth (in mm)
 C = Countersink Diameter (in mm)

Ex: If Point Angle (α) = 90° and Countersink Diameter (C) = Ø10mm, Centering Depth (H) = 4mm

When Point Angle (α) = 120°
Min. Centering Depth (H_{min}) = 0.1mm
Min. Drill Hole Diameter (D_{c min}) = Ø2.4mm

$$H = (C - D_{c \min}) \div 3.46 + H_{\min}$$

H = Centering Depth (in mm)
 C = Countersink Diameter (in mm)

Ex: If Point Angle (α) = 120° and Countersink Diameter (C) = Ø10mm, Centering Depth (H) = 2.3mm



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Safe use of cutting tools

- Use safety cover, safety glasses and safety shoes during operation.
- Do not touch cutting edges with bare hands.
- Do not touch cutting chips with bare hands. Chips will be hot after cutting.
- Stop cutting when the tool becomes dull.
- Stop cutting operation immediately if you hear any abnormal cutting sounds.
- Do not modify tools.
- Please use appropriate tools for the operation. Check dimensions to ensure proper selection.

FOR MORE INFORMATION CONTACT US

800-837-2223 • osgtool.com

