

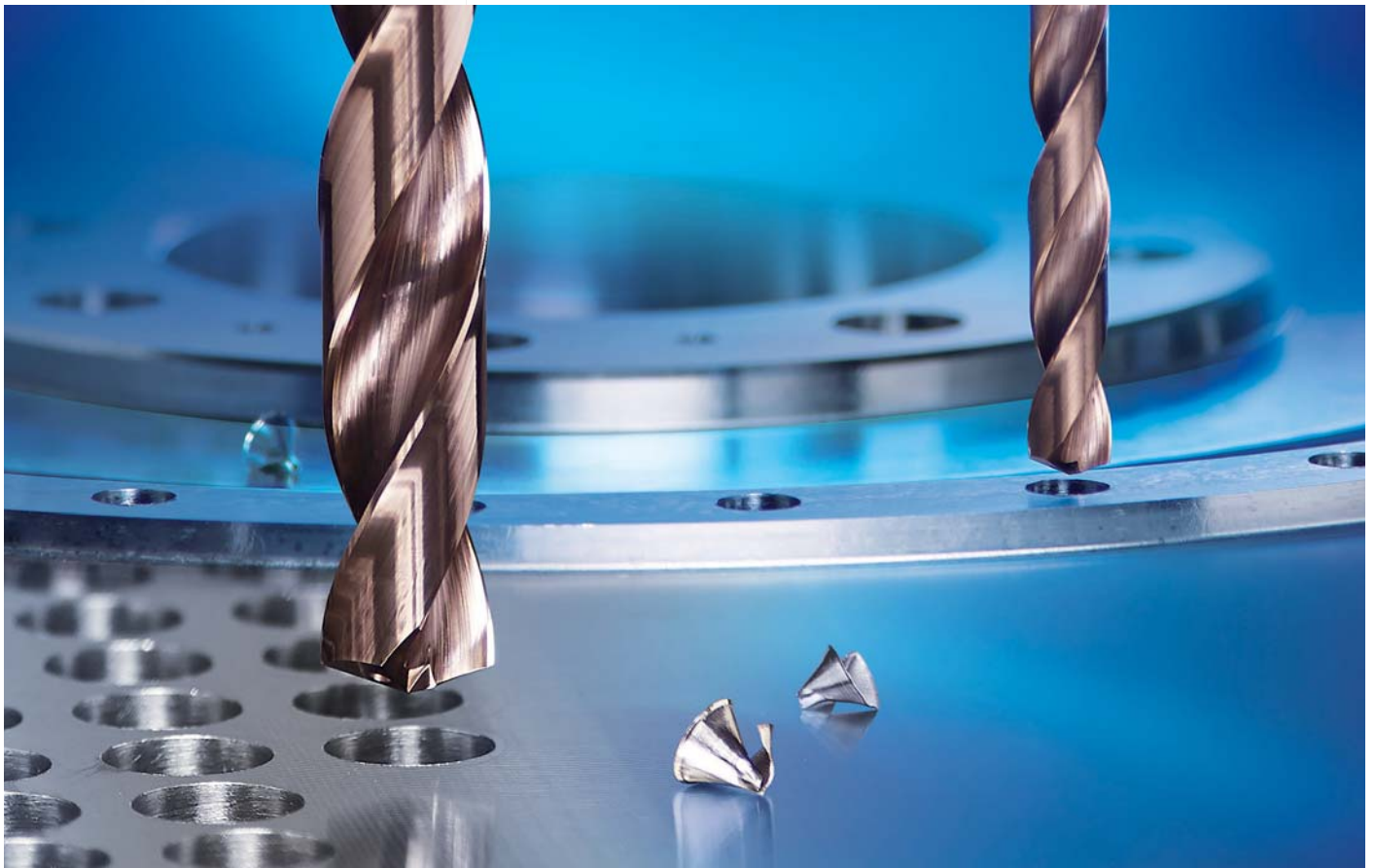
MSD Plus-S



Mach Solid Drill Plus-S for Hole Making of Inconel and Titanium

Specialized for heat-resistant alloys used in the aerospace, energy, power generation and automotive industries

- ▣ **Improved Productivity and Excellent Machinability**
Ensuring machinability with optimized blade design and chip pockets
- ▣ **Stronger Resistance to Wear**
Extended tool life due to excellent high temp resistance to chipping



Drills Specialized for Machining Inconel & Titanium

Components Used in Aerospace, Power Generation and Energy Industries



MSD Plus-S

For inconel and titanium

In recent years, the weight and efficiency of key components in the aerospace, power generation and energy industries have been improved, and the use of heat-resistant alloys, with light weight and high strength properties, has greatly increased.

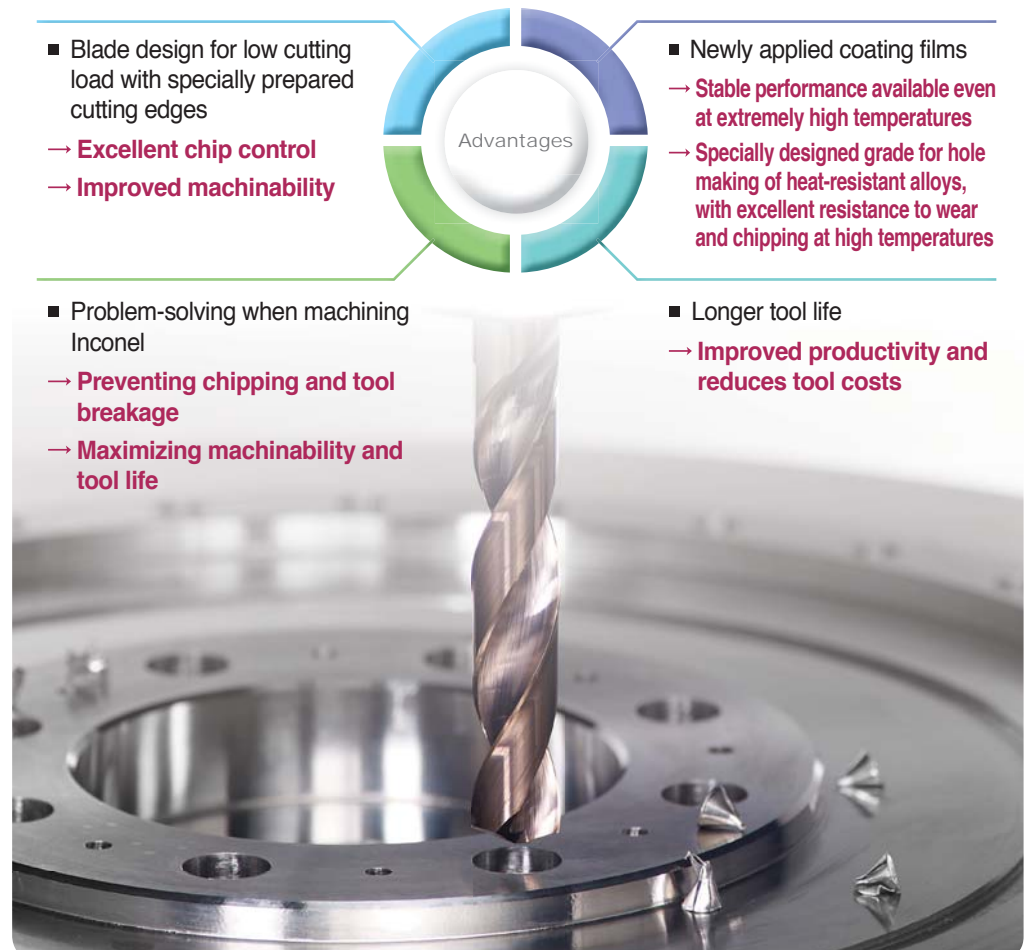
Among the heat-resistant alloys, inconel and titanium alloys have characteristics of high temp high strength and low heat conductivity, which causes problems such as thermal shock, work hardening and vibrations due to high concentration of cutting heat during machining; and shorter tool life and lower productivity due to chipping and breakage.

To meet these challenges, KORLOY has developed the MSD Plus-S, specialized for inconel and titanium machining, designed to greatly improve machinability and tool life.

The MSD Plus-S prevents chipping and sudden breakage with notch-controlled cutting edges and special edge preparation. Wide chip pockets and the optimized tip flank design significantly improve chip- and heat evacuation. This boosts productivity with stable machining even in high temp cutting conditions.

The new grade **PC325T** features stable tool life with excellent heat resistance and oxidation resistance, its exceptional surface finish minimizes built-up edges while smooth chip flow reduces the cutting load at high temperature.

We assure our customers that the MSD Plus-S is the next-generation solution for hole making of components made of inconel & titanium in the aerospace, power generation and energy industries.



Code System

[Standard type]

| | | | | |
|-------------------------------------|-------------------|---|---------------------------|-----------------------|
| MSDP(H) | 060 | - | 5 | S |
| Oil hole | Drill dia. | | Aspect ratio (L/D) | Machining area |
| None: MSDP With oil holes: MSDPH | 060: Ø6 | | 3D, 5D | S: HRSA |

[Special type]

| | | | | | | | | |
|-------------------------------------|-------------------|---|---------------------|-----------------------|---|-----------------------|---|-------------------|
| MSDP(H) | 060 | - | 50 | S | - | 100L | - | 5S |
| Oil hole | Drill dia. | | Flute length | Machining area | | Overall length | | Shank dia. |
| None: MSDP With oil holes: MSDPH | 060: Ø6 | | 50: 50mm | S: HRSA | | 100L: 100mm | | 5S: Ø5 |

Features

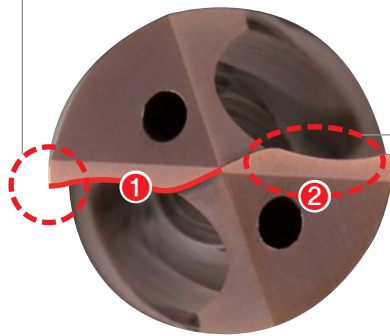
- Specially prepared cutting edges and optimized blade design prevent chipping and sudden tool breakage
- Optimized tip flank design improves heat evacuation

Flute design

- Wider chip pockets improve chip evacuation

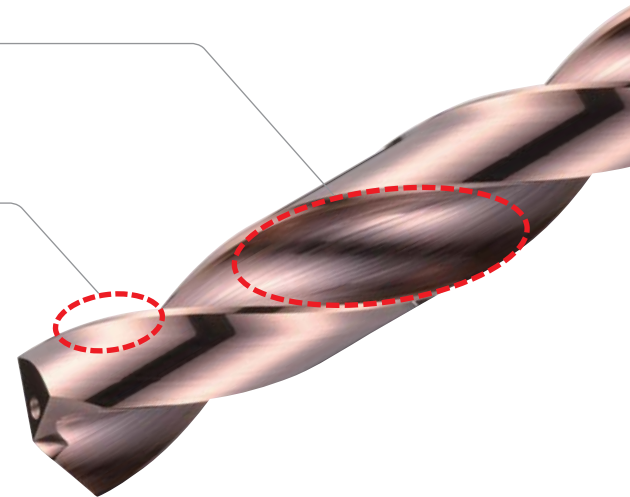
Optimized margin and back-tapered design

- Reduced friction resistance and cutting temperature



Cutting-edge design

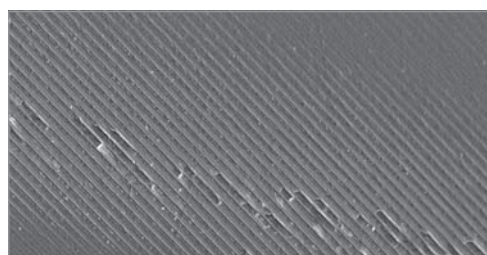
- Notch-controlled blade design and specially treated cutting edges prevent chipping and breakage
 - ① Cutting edges designed for low cutting resistance
 - ② Tip relief angle and shape optimized for heat evacuation



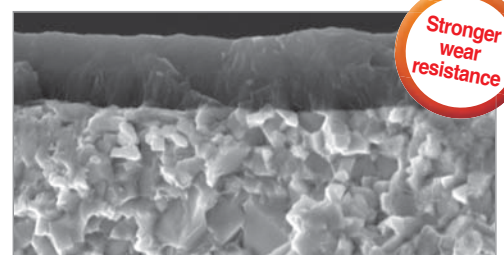
- Improved resistance to heat and oxidation thanks to the newly applied grade, PC325T
- Wear resistance stays excellent even at high temperatures

The new grade PC325T

- Reduced friction resistance and improved chip evacuation due to excellent surface finish
- Exceptional wear resistance when machining heat-resistant alloys at high temperatures



[Smooth coating surface]



[PC325T]



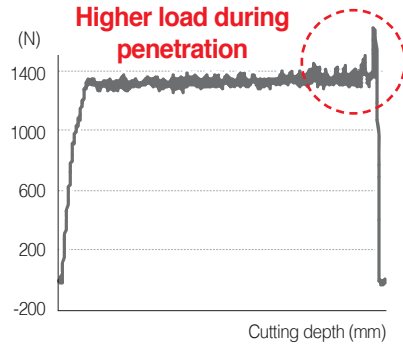
⇒ Performance Evaluation

- Improved chip flow reduces cutting load better than the competitor's
- Cutting load stays consistent during penetration, allowing stable hole making

Cutting load

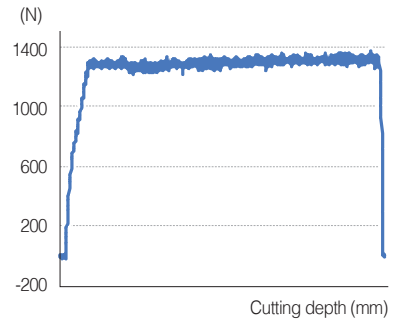
- Workpiece Inconel718 (HrC40~45)
- Cutting conditions Tool dia. (mm) = Ø6, vc (m/min) = 20, fn (mm/rev) = 0.09, ap (mm) = 25, wet
- Tool MSDPH060-5S (PC325T)

Average thrust: 1350N, Standard deviation: 45



[Competitor]

Average thrust: 1300N, Standard deviation: 25



[MSD Plus-S]

- Good surface finish due to stable hole making

Surface roughness

- Workpiece Inconel718 (HrC40~45)
- Cutting conditions Tool dia. (mm) = Ø10, vc (m/min) = 20, fn (mm/rev) = 0.09, ap (mm) = 30, wet
- Tool MSDPH100-5S (PC325T)



[Competitor]



[MSD Plus-S]

- Workpiece Ti-6Al-4V (HrC42~47)
- Cutting conditions Tool dia. (mm) = Ø10, vc (m/min) = 40, fn (mm/rev) = 0.09, ap (mm) = 30, wet
- Tool MSDPH100-5S (PC325T)



[Competitor]



[MSD Plus-S]

⇒ Performance Evaluation

• Good chip shape due to specially prepared cutting edges and the optimized blade design

Chip control

- Workpiece Inconel718 (H_RC40~45)
- Cutting conditions Tool dia. (mm) = Ø10
vc (m/min) = 20
fn (mm/rev) = 0.09
ap (mm) = 25
wet
- Tool MSDPH100-5S (PC325T)



[Competitor]



[MSD Plus-S]

- Workpiece Ti-6Al-4V (H_RC42~47)
- Cutting conditions Tool dia. (mm) = Ø10
vc (m/min) = 40
fn (mm/rev) = 0.09
ap (mm) = 25
wet
- Tool MSDPH100-5S (PC325T)



[Competitor]



[MSD Plus-S]

⇒ Application Examples

Inconel718 (H_RC40~45)

- Workpiece Aircraft parts (turbine disks, turbine shafts, etc.) and components used in the power generation industry
- Cutting conditions Tool dia. (mm) = Ø6.0, vc (m/min) = 20, fn (mm/rev) = 0.09, ap (mm) = 30, wet
- Tool MSDPH060-5S

MSD Plus-S

2m (66 holes)

Competitor

1m (33 holes)

100%
longer

➔ Stable machining and 50% longer max. tool life compared to the competitor

Ti-6Al-4V (H_RC42~47)

- Workpiece Aircraft parts (engines, engine housings and turbine disks) and components used in the power generation industry
- Cutting conditions Tool dia. (mm) = Ø6.0, vc (m/min) = 40, fn (mm/rev) = 0.09, ap (mm) = 30, wet
- Tool MSDPH060-5S

MSD Plus-S

30m (1,000 holes)

Competitor

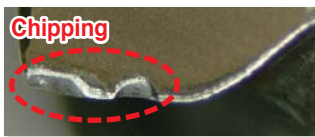
25m (833 holes)

20%
longer

➔ 20% longer tool life compared to the competitor



[MSD Plus-S]



[Competitor]



[MSD Plus-S]

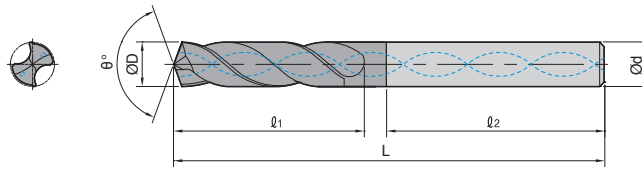


[Competitor]

⇒ Recommended Cutting Conditions

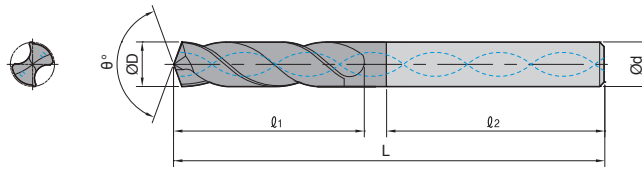
| Workpiece | | Hardness (H _R C) | Grade | Cutting speed vc (m/min) | Feed (aspect ratio = 3D~5D) | | | | |
|-----------|--|-----------------------------|-------|--------------------------|--|------------|------------|-------------|-----------|
| | | | | | Feed rate, fn (mm/rev) per drill dia. (mm) | | | | |
| ISO | Workpiece materials | | | | Ø2.5~Ø5.0 | Ø5.1~Ø8.0 | Ø8.1~Ø12.0 | Ø12.1~Ø16.0 | |
| S | HRSA (Inconel 718 and etc.) | Fe-base | 25~35 | PC325T | 25~30 | 0.055~0.07 | 0.07~0.10 | 0.08~0.13 | 0.10~0.15 |
| | | Ni or Co base | 35~45 | PC325T | 20~25 | 0.045~0.06 | 0.06~0.09 | 0.07~0.12 | 0.09~0.14 |
| | Titanium alloy (Ti-6Al-4V and etc.) | Pure titanium | 10~15 | PC325T | 40~50 | 0.07~0.11 | 0.09~0.14 | 0.12~0.18 | 0.16~0.23 |
| | | α and β alloys | 35~45 | PC325T | 30~40 | 0.05~0.09 | 0.07~0.12 | 0.10~0.16 | 0.14~0.21 |

* Cutting conditions above are for the case of less than 5D depth of cut and through coolant system applied.



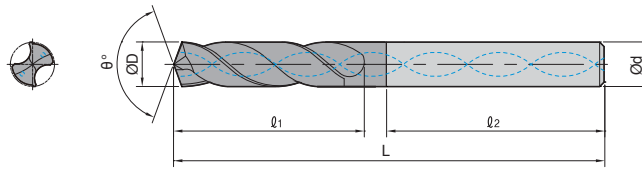
| Specification | S |
|------------------------|-------------|
| Grade | PC325T |
| Tolerance (Drill dia.) | h7 |
| Tolerance (Shank dia.) | h6 |
| Point angle (θ°) | 140° |
| Twist angle | 30° |
| Thinning | X Type |
| Coolant | Internal |
| International standard | DIN 6537 |
| Shank type | DIN 6535 HA |

| Designation | ØD | | Ød | 3S | | 5S | | ℓ ₂ |
|---------------------|------|-------|----|----------------|----|----------------|----|----------------|
| | mm | inch | | ℓ ₁ | L | ℓ ₁ | L | |
| MSDPH 030-□S | 3.0 | | 6 | 20 | 62 | 28 | 66 | 36 |
| 031-□S | 3.1 | | 6 | 20 | 62 | 28 | 66 | 36 |
| 0318-□S | 3.18 | 1/8 | 6 | 20 | 62 | 28 | 66 | 36 |
| 032-□S | 3.2 | | 6 | 20 | 62 | 28 | 66 | 36 |
| 033-□S | 3.3 | | 6 | 20 | 62 | 28 | 66 | 36 |
| 034-□S | 3.4 | | 6 | 20 | 62 | 28 | 66 | 36 |
| 035-□S | 3.5 | | 6 | 20 | 62 | 28 | 66 | 36 |
| 0357-□S | 3.57 | 9/64 | 6 | 20 | 62 | 28 | 66 | 36 |
| 036-□S | 3.6 | | 6 | 20 | 62 | 28 | 66 | 36 |
| 037-□S | 3.7 | | 6 | 20 | 62 | 28 | 66 | 36 |
| 038-□S | 3.8 | | 6 | 24 | 66 | 36 | 74 | 36 |
| 039-□S | 3.9 | | 6 | 24 | 66 | 36 | 74 | 36 |
| 0397-□S | 3.97 | 5/32 | 6 | 24 | 66 | 36 | 74 | 36 |
| 040-□S | 4.0 | | 6 | 24 | 66 | 36 | 74 | 36 |
| 041-□S | 4.1 | | 6 | 24 | 66 | 36 | 74 | 36 |
| 042-□S | 4.2 | | 6 | 24 | 66 | 36 | 74 | 36 |
| 043-□S | 4.3 | | 6 | 24 | 66 | 36 | 74 | 36 |
| 0437-□S | 4.37 | 11/64 | 6 | 24 | 66 | 36 | 74 | 36 |
| 044-□S | 4.4 | | 6 | 24 | 66 | 36 | 74 | 36 |
| 045-□S | 4.5 | | 6 | 24 | 66 | 36 | 74 | 36 |
| 046-□S | 4.6 | | 6 | 24 | 66 | 36 | 74 | 36 |
| 047-□S | 4.7 | | 6 | 24 | 66 | 36 | 74 | 36 |
| 0476-□S | 4.76 | 3/16 | 6 | 28 | 66 | 44 | 82 | 36 |
| 048-□S | 4.8 | | 6 | 28 | 66 | 44 | 82 | 36 |
| 049-□S | 4.9 | | 6 | 28 | 66 | 44 | 82 | 36 |
| 050-□S | 5.0 | | 6 | 28 | 66 | 44 | 82 | 36 |
| 051-□S | 5.1 | | 6 | 28 | 66 | 44 | 82 | 36 |
| 0516-□S | 5.16 | 13/64 | 6 | 28 | 66 | 44 | 82 | 36 |
| 052-□S | 5.2 | | 6 | 28 | 66 | 44 | 82 | 36 |
| 053-□S | 5.3 | | 6 | 28 | 66 | 44 | 82 | 36 |
| 054-□S | 5.4 | | 6 | 28 | 66 | 44 | 82 | 36 |
| 055-□S | 5.5 | | 6 | 28 | 66 | 44 | 82 | 36 |
| 0556-□S | 5.56 | 7/32 | 6 | 28 | 66 | 44 | 82 | 36 |
| 056-□S | 5.6 | | 6 | 28 | 66 | 44 | 82 | 36 |
| 057-□S | 5.7 | | 6 | 28 | 66 | 44 | 82 | 36 |
| 058-□S | 5.8 | | 6 | 28 | 66 | 44 | 82 | 36 |
| 059-□S | 5.9 | | 6 | 28 | 66 | 44 | 82 | 36 |
| 0595-□S | 5.95 | 15/64 | 6 | 28 | 66 | 44 | 82 | 36 |
| 060-□S | 6.0 | | 6 | 28 | 66 | 44 | 82 | 36 |



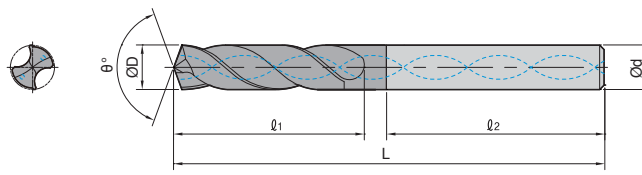
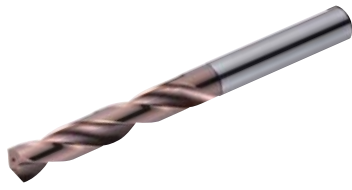
| Specification | S |
|------------------------|-------------|
| Grade | PC325T |
| Tolerance (Drill dia.) | h7 |
| Tolerance (Shank dia.) | h6 |
| Point angle (θ°) | 140° |
| Twist angle | 30° |
| Thinning | X Type |
| Coolant | Internal |
| International standard | DIN 6537 |
| Shank type | DIN 6535 HA |

| Designation | ØD | | Ød | 3S | | 5S | | ℓ2 |
|---------------------|------|-------|----|----|----|----|-----|----|
| | mm | inch | | ℓ1 | L | ℓ1 | L | |
| MSDPH 061-□S | 6.1 | | 8 | 34 | 79 | 53 | 91 | 36 |
| 062-□S | 6.2 | | 8 | 34 | 79 | 53 | 91 | 36 |
| 063-□S | 6.3 | | 8 | 34 | 79 | 53 | 91 | 36 |
| 0635-□S | 6.35 | 1/4 | 8 | 34 | 79 | 53 | 91 | 36 |
| 064-□S | 6.4 | | 8 | 34 | 79 | 53 | 91 | 36 |
| 065-□S | 6.5 | | 8 | 34 | 79 | 53 | 91 | 36 |
| 066-□S | 6.6 | | 8 | 34 | 79 | 53 | 91 | 36 |
| 067-□S | 6.7 | | 8 | 34 | 79 | 53 | 91 | 36 |
| 0675-□S | 6.75 | 17/64 | 8 | 34 | 79 | 53 | 91 | 36 |
| 068-□S | 6.8 | | 8 | 34 | 79 | 53 | 91 | 36 |
| 069-□S | 6.9 | | 8 | 34 | 79 | 53 | 91 | 36 |
| 070-□S | 7.0 | | 8 | 34 | 79 | 53 | 91 | 36 |
| 071-□S | 7.1 | | 8 | 41 | 79 | 53 | 91 | 36 |
| 0714-□S | 7.14 | 9/32 | 8 | 41 | 79 | 53 | 91 | 36 |
| 072-□S | 7.2 | | 8 | 41 | 79 | 53 | 91 | 36 |
| 073-□S | 7.3 | | 8 | 41 | 79 | 53 | 91 | 36 |
| 074-□S | 7.4 | | 8 | 41 | 79 | 53 | 91 | 36 |
| 075-□S | 7.5 | | 8 | 41 | 79 | 53 | 91 | 36 |
| 0754-□S | 7.54 | 19/64 | 8 | 41 | 79 | 53 | 91 | 36 |
| 076-□S | 7.6 | | 8 | 41 | 79 | 53 | 91 | 36 |
| 077-□S | 7.7 | | 8 | 41 | 79 | 53 | 91 | 36 |
| 078-□S | 7.8 | | 8 | 41 | 79 | 53 | 91 | 36 |
| 079-□S | 7.9 | | 8 | 41 | 79 | 53 | 91 | 36 |
| 0794-□S | 7.94 | 5/16 | 8 | 41 | 79 | 53 | 91 | 36 |
| 080-□S | 8.0 | | 8 | 41 | 79 | 53 | 91 | 36 |
| 081-□S | 8.1 | | 10 | 47 | 89 | 61 | 103 | 40 |
| 082-□S | 8.2 | | 10 | 47 | 89 | 61 | 103 | 40 |
| 083-□S | 8.3 | | 10 | 47 | 89 | 61 | 103 | 40 |
| 0833-□S | 8.33 | 21/64 | 10 | 47 | 89 | 61 | 103 | 40 |
| 084-□S | 8.4 | | 10 | 47 | 89 | 61 | 103 | 40 |
| 085-□S | 8.5 | | 10 | 47 | 89 | 61 | 103 | 40 |
| 086-□S | 8.6 | | 10 | 47 | 89 | 61 | 103 | 40 |
| 087-□S | 8.7 | | 10 | 47 | 89 | 61 | 103 | 40 |
| 0873-□S | 8.73 | 11/32 | 10 | 47 | 89 | 61 | 103 | 40 |
| 088-□S | 8.8 | | 10 | 47 | 89 | 61 | 103 | 40 |
| 089-□S | 8.9 | | 10 | 47 | 89 | 61 | 103 | 40 |
| 090-□S | 9.0 | | 10 | 47 | 89 | 61 | 103 | 40 |
| 091-□S | 9.1 | | 10 | 47 | 89 | 61 | 103 | 40 |
| 0913-□S | 9.13 | 23/64 | 10 | 47 | 89 | 61 | 103 | 40 |



| Specification | S |
|------------------------|-------------|
| Grade | PC325T |
| Tolerance (Drill dia.) | h7 |
| Tolerance (Shank dia.) | h6 |
| Point angle (θ°) | 140° |
| Twist angle | 30° |
| Thinning | X Type |
| Coolant | Internal |
| International standard | DIN 6537 |
| Shank type | DIN 6535 HA |

| Designation | ØD | | Ød | 3S | | 5S | | ℓ2 |
|---------------------|-------|-------|----|----|-----|----|-----|----|
| | mm | inch | | ℓ1 | L | ℓ1 | L | |
| MSDPH 092-□S | 9.2 | | 10 | 47 | 89 | 61 | 103 | 40 |
| 093-□S | 9.3 | | 10 | 47 | 89 | 61 | 103 | 40 |
| 094-□S | 9.4 | | 10 | 47 | 89 | 61 | 103 | 40 |
| 095-□S | 9.5 | | 10 | 47 | 89 | 61 | 103 | 40 |
| 0953-□S | 9.53 | 3/8 | 10 | 47 | 89 | 61 | 103 | 40 |
| 096-□S | 9.6 | | 10 | 47 | 89 | 61 | 103 | 40 |
| 097-□S | 9.7 | | 10 | 47 | 89 | 61 | 103 | 40 |
| 098-□S | 9.8 | | 10 | 47 | 89 | 61 | 103 | 40 |
| 099-□S | 9.9 | | 10 | 47 | 89 | 61 | 103 | 40 |
| 0992-□S | 9.92 | 25/64 | 10 | 47 | 89 | 61 | 103 | 40 |
| 100-□S | 10.0 | | 10 | 47 | 89 | 61 | 103 | 40 |
| 101-□S | 10.1 | | 12 | 55 | 102 | 71 | 118 | 45 |
| 102-□S | 10.2 | | 12 | 55 | 102 | 71 | 118 | 45 |
| 103-□S | 10.3 | | 12 | 55 | 102 | 71 | 118 | 45 |
| 1032-□S | 10.32 | 13/32 | 12 | 55 | 102 | 71 | 118 | 45 |
| 104-□S | 10.4 | | 12 | 55 | 102 | 71 | 118 | 45 |
| 105-□S | 10.5 | | 12 | 55 | 102 | 71 | 118 | 45 |
| 106-□S | 10.6 | | 12 | 55 | 102 | 71 | 118 | 45 |
| 107-□S | 10.7 | | 12 | 55 | 102 | 71 | 118 | 45 |
| 1072-□S | 10.72 | 27/64 | 12 | 55 | 102 | 71 | 118 | 45 |
| 108-□S | 10.8 | | 12 | 55 | 102 | 71 | 118 | 45 |
| 109-□S | 10.9 | | 12 | 55 | 102 | 71 | 118 | 45 |
| 110-□S | 11.0 | | 12 | 55 | 102 | 71 | 118 | 45 |
| 111-□S | 11.1 | | 12 | 55 | 102 | 71 | 118 | 45 |
| 1111-□S | 11.11 | 7/16 | 12 | 55 | 102 | 71 | 118 | 45 |
| 112-□S | 11.2 | | 12 | 55 | 102 | 71 | 118 | 45 |
| 113-□S | 11.3 | | 12 | 55 | 102 | 71 | 118 | 45 |
| 114-□S | 11.4 | | 12 | 55 | 102 | 71 | 118 | 45 |
| 115-□S | 11.5 | | 12 | 55 | 102 | 71 | 118 | 45 |
| 1151-□S | 11.51 | 29/64 | 12 | 55 | 102 | 71 | 118 | 45 |
| 116-□S | 11.6 | | 12 | 55 | 102 | 71 | 118 | 45 |
| 117-□S | 11.7 | | 12 | 55 | 102 | 71 | 118 | 45 |
| 118-□S | 11.8 | | 12 | 55 | 102 | 71 | 118 | 45 |
| 119-□S | 11.9 | | 12 | 55 | 102 | 71 | 118 | 45 |
| 1191-□S | 11.91 | 15/32 | 12 | 55 | 102 | 71 | 118 | 45 |
| 120-□S | 12.0 | | 12 | 55 | 102 | 71 | 118 | 45 |
| 121-□S | 12.1 | | 14 | 60 | 107 | 77 | 124 | 45 |
| 122-□S | 12.2 | | 14 | 60 | 107 | 77 | 124 | 45 |
| 123-□S | 12.3 | 31/64 | 14 | 60 | 107 | 77 | 124 | 45 |
| 124-□S | 12.4 | | 14 | 60 | 107 | 77 | 124 | 45 |



| Specification | S |
|------------------------|-------------|
| Grade | PC325T |
| Tolerance (Drill dia.) | h7 |
| Tolerance (Shank dia.) | h6 |
| Point angle (θ°) | 140° |
| Twist angle | 30° |
| Thinning | X Type |
| Coolant | Internal |
| International standard | DIN 6537 |
| Shank type | DIN 6535 HA |

| Designation | ØD | | Ød | 3S | | 5S | | ℓ2 |
|---------------------|-------|-------|----|----|-----|----|-----|----|
| | mm | inch | | ℓ1 | L | ℓ1 | L | |
| MSDPH 125-□S | 12.5 | | 14 | 60 | 107 | 77 | 124 | 45 |
| 126-□S | 12.6 | | 14 | 60 | 107 | 77 | 124 | 45 |
| 127-□S | 12.7 | 1/2 | 14 | 60 | 107 | 77 | 124 | 45 |
| 128-□S | 12.8 | | 14 | 60 | 107 | 77 | 124 | 45 |
| 129-□S | 12.9 | | 14 | 60 | 107 | 77 | 124 | 45 |
| 130-□S | 13.0 | | 14 | 60 | 107 | 77 | 124 | 45 |
| 131-□S | 13.1 | | 14 | 60 | 107 | 77 | 124 | 45 |
| 132-□S | 13.2 | | 14 | 60 | 107 | 77 | 124 | 45 |
| 133-□S | 13.3 | | 14 | 60 | 107 | 77 | 124 | 45 |
| 134-□S | 13.4 | | 14 | 60 | 107 | 77 | 124 | 45 |
| 1349-□S | 13.49 | 17/32 | 14 | 60 | 107 | 77 | 124 | 45 |
| 135-□S | 13.5 | | 14 | 60 | 107 | 77 | 124 | 45 |
| 136-□S | 13.6 | | 14 | 60 | 107 | 77 | 124 | 45 |
| 137-□S | 13.7 | | 14 | 60 | 107 | 77 | 124 | 45 |
| 138-□S | 13.8 | | 14 | 60 | 107 | 77 | 124 | 45 |
| 139-□S | 13.9 | | 14 | 60 | 107 | 77 | 124 | 45 |
| 140-□S | 14.0 | | 14 | 60 | 107 | 77 | 124 | 45 |
| 141-□S | 14.1 | | 16 | 65 | 115 | 83 | 133 | 48 |
| 142-□S | 14.2 | | 16 | 65 | 115 | 83 | 133 | 48 |
| 1429-□S | 14.29 | 9/16 | 16 | 65 | 115 | 83 | 133 | 48 |
| 143-□S | 14.3 | | 16 | 65 | 115 | 83 | 133 | 48 |
| 144-□S | 14.4 | | 16 | 65 | 115 | 83 | 133 | 48 |
| 145-□S | 14.5 | | 16 | 65 | 115 | 83 | 133 | 48 |
| 146-□S | 14.6 | | 16 | 65 | 115 | 83 | 133 | 48 |
| 147-□S | 14.7 | | 16 | 65 | 115 | 83 | 133 | 48 |
| 148-□S | 14.8 | | 16 | 65 | 115 | 83 | 133 | 48 |
| 149-□S | 14.9 | | 16 | 65 | 115 | 83 | 133 | 48 |
| 150-□S | 15.0 | | 16 | 65 | 115 | 83 | 133 | 48 |
| 151-□S | 15.1 | | 16 | 65 | 115 | 83 | 133 | 48 |
| 152-□S | 15.2 | | 16 | 65 | 115 | 83 | 133 | 48 |
| 153-□S | 15.3 | | 16 | 65 | 115 | 83 | 133 | 48 |
| 154-□S | 15.4 | | 16 | 65 | 115 | 83 | 133 | 48 |
| 155-□S | 15.5 | | 16 | 65 | 115 | 83 | 133 | 48 |
| 156-□S | 15.6 | | 16 | 65 | 115 | 83 | 133 | 48 |
| 157-□S | 15.7 | | 16 | 65 | 115 | 83 | 133 | 48 |
| 158-□S | 15.8 | | 16 | 65 | 115 | 83 | 133 | 48 |
| 1587-□S | 15.87 | 5/8 | 16 | 65 | 115 | 83 | 133 | 48 |
| 159-□S | 15.9 | | 16 | 65 | 115 | 83 | 133 | 48 |
| 160-□S | 16.0 | | 16 | 65 | 115 | 83 | 133 | 48 |

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