

Drill dia.	Shank dia.	Overall length	Drill length	Workpiece end-face Hole size
Dc	Ds	L	ℓ	Dw

JIS

①

Spiral Fluted Taps
(for blind hole)

②

Spiral Fluted Taps
(for through hole)

③

Spiral Pointed Taps
(for through hole)

④

Hand Taps

⑤

Cemented
Carbide Taps

⑥

Roll Taps

⑦

Special Thread Taps
Simple Inspection Tools

⑧

Pipe Taps

⑨

Thread Mills
Premium Thread Mills

⑩

Dies

⑪

Center Drills
Centering Tools

⑫

Precision Machinery/
Medical Surgical Instruments

JIS

⑪-35

S

MHCDS

Center Drills for Carbon Steels of Medium Hardness for Running at High Speed

Specification



Cutting Speed depending on Materials

Medium carbon steels
中炭素鋼
20~40
(m/min)

High carbon steels
高炭素鋼
20~40
(m/min)

Alloy steels
合金鋼
20~40
(m/min)

Thermal refined steels
調質鋼
10~20
(m/min)

Tool steels
工具鋼
15~30
(m/min)

Ductile cast irons
強靱鑄鉄
15~40
(m/min)

25~35HRC



Product Features

- In order to improve positioning accuracy of projection and shank tolerance, MHCDS has the cutting edge only on one end.
- Considering clearance between center point and bottom of center hole, cutting edge length (ℓ) is made as short as possible to increase toughness.
- To increase centrality, drill point has 3 rakes and X thinning design, which enables high speed cutting and feeding.
- Increased centrality leads to great improvement of surface finish and circularity of center-drilled hole.

Cutting Data

Great extension of tool life with MHCDS

Right pictures show difference of the damage on cutting edge between CD-S and MHCDS after 480 hole cuttings under same cutting condition (stated in right) MHCDS has smaller wear and edge damage. This tells we can continue to use MHCDS further.

Cutting condition [$3 \times 60^\circ \times 8$]

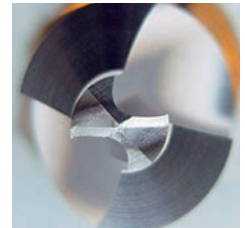
Work material	S55C
Cutting speed	30m/min (1,200min ⁻¹)
Feed	0.15mm/rev
Machine	NC lathe
Cutting Fluid	Water soluble cutting fluid

<After drilling 480 holes>
Large wear



CD-S

<After drilling 480 holes>
Small wear



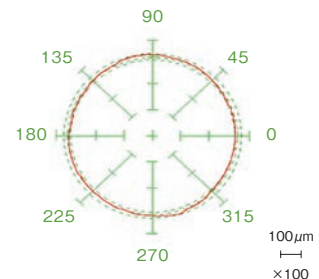
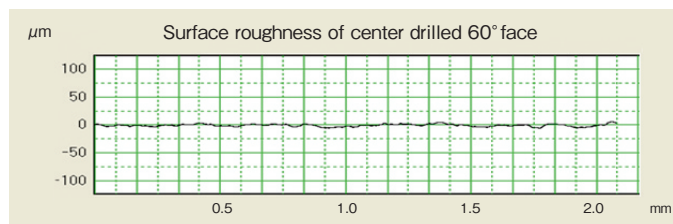
MHCDS

Great improvement in surface roughness and circularity with MHCDS

Under the cutting condition stated above, the surface finish of center-drilled hole has greatly been improved. Circularity of center drilled hole as well as run-out tolerance of turning axis has been improved.



Enlarged picture



Circularity of center drilled 60° face

Recommended cutting condition

● Material : Carbon Steels(S55C) Alloy Steels(SCM440)

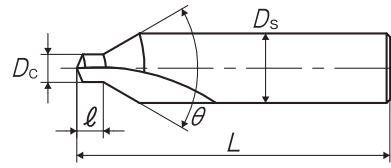
Designation Dc $\times\theta\times$ Ds	Feed (mm/rev)	Revolution speed (min ⁻¹)
1 \times 60° \times 4	0.1	3,800
1.5 \times 60° \times 5		2,400
2 \times 60° \times 6		1,900
2.5 \times 60° \times 8		1,500
3 \times 60° \times 8	0.15	1,200
4 \times 60° \times 10		1,000
5 \times 60° \times 12		800
6 \times 60° \times 16		600

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JIS

TYPE: 1



Segment : 51

Size Dc × θ × Ds	Code	Dc (mm)	Ds (mm)	L (mm)	ℓ (mm)	Dw (mm)	TYPE	MSRP
1 × 60° × 4	VMHCD1.0S	1	4	30	1	2.5	1	¥ 2,600
1.5 × 60° × 5	VMHCD1.5S	1.5	5	30	1.5	4	1	¥ 2,470
2 × 60° × 6	VMHCD2.0S	2	6	30	1.9	5	1	¥ 2,700
2.5 × 60° × 8	VMHCD2.5S	2.5	8	40	2.4	6.5	1	¥ 3,270
3 × 60° × 8	VMHCD3.0S	3	8	40	2.8	6.5	1	¥ 3,270
4 × 60° × 10	VMHCD4.0S	4	10	45	3.8	8.5	1	¥ 4,780
5 × 60° × 12	VMHCD5.0S	5	12	55	4.6	10	1	¥ 6,170
6 × 60° × 16	VMHCD6.0S	6	16	65	5.5	13.5	1	¥ 14,400

- Machining conditions are calculated based on the workpiece end-face hole size Dw.
- For details on machining conditions, see TECHNICAL INFORMATION, "27. Table of recommend centering condition."

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