

PRODUCT NEWS

No. 307 B



MSN Universal Carbide Shank Holders

- Fits all major manufacturers
- Straight Neck type 25 Items
- Taper Neck type 3 Items
- Straight Arbor type 29 Items

FULL LINEUP

Different type carbide shank holder from M6 to M16 bore diameters with through coolant hole.



頑固一徹



DIJET INDUSTRIAL CO., LTD.



MSN Universal Carbide Shank Holder

Performance comparison test Carbide shank VS Steel shank

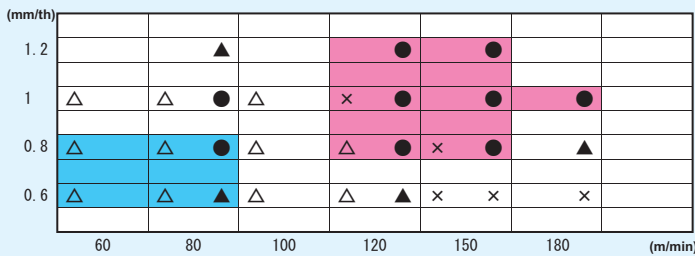
■ Cutting conditions

- Tool: Steel shank SKS-2020-130-S20
Carbide shank MSN-M10-140-S20C+MSH-2020-M10
- Insert No.: WDMW050316ZTR (JC5040)
- Work material: S55C
- Hardness: 201HB

- Depth of cut: $a_p=0.3\text{mm}$
- Pick feed: $a_e=12\text{mm}$
- Coolant: Air blow
- Machine: Vertical MC
- Overhung length: $L=190\text{mm}$
- Down cutting

	Low speed	High speed
Cutting speed	$V_c = 80\text{m/min}$	$V_c = 150\text{m/min}$
Spindle speed	$n = 1,270\text{min}^{-1}$	$n = 2,390\text{min}^{-1}$
Feed speed	$V_f = 2,000\text{mm/min}$	$V_f = 4,800\text{mm/min}$
feed per revolution	$f = 1.6\text{mm/rev}$	$f = 2.0\text{mm/rev}$

■ Cutting area comparison



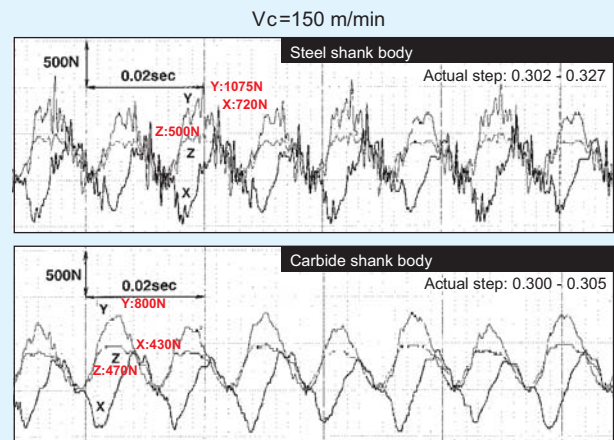
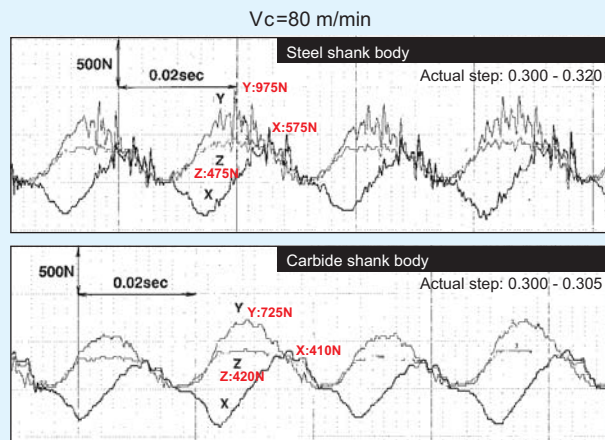
Steel shank body: SKS-2020-130-S20 (O, Δ, ×)

Carbide shank body: MSN-M10-140-S20C+MSH-2020-M10 (●, ▲, ×)

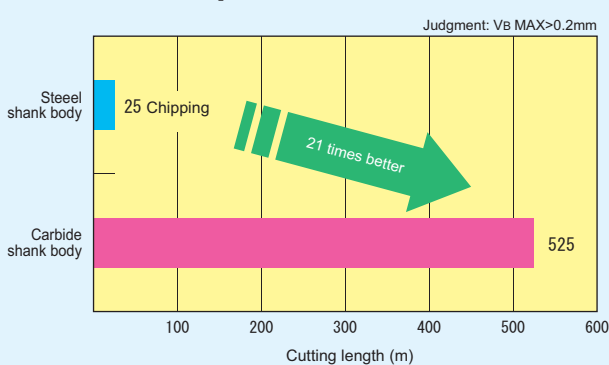
O, ●: No chatter Δ, ▲: Small chatter ×: Big chatter

Improved efficiency by 3 times!

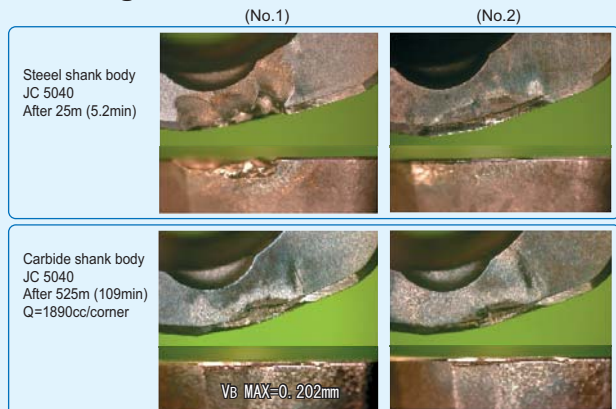
■ Cutting force comparison



■ Tool life comparison



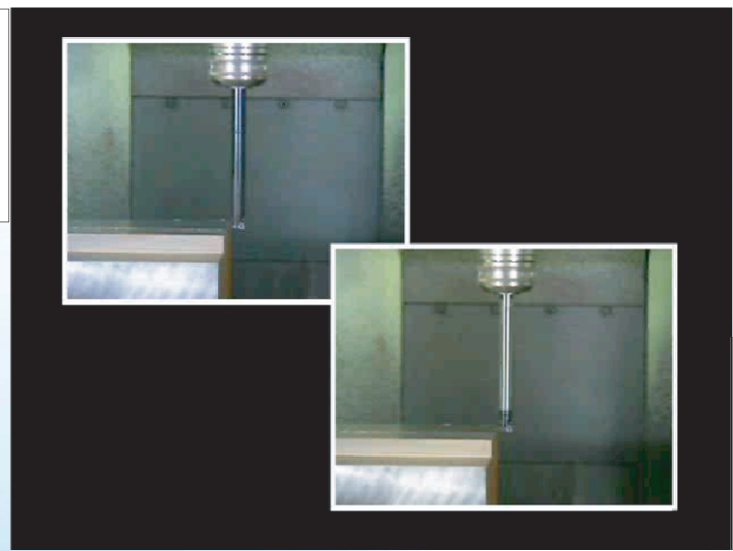
■ Damaged condition of inserts



- Results
 - Tool life was greatly improved.
 - No chatter in low speed and high speed conditions.

Performance comparison (L/D=9.5)

Steel shank
 N=1270min-1
 Vc=80m/min
 Vf=2000mm/min
 f=1.6mm/rev
 Ap=0.3mm



Carbide shank
 N=2390min-1
 Vc=150m/min
 Vf=4800mm/min
 f=2.0mm/rev
 Ap=0.3mm

F=2,000mm/min for steel body, F=4,800mm/min for Carbide body, 2.4 times faster!

Hardness and Young's modulus comparison

	Carbide	Alloy Steels
Hardness (GPa)	12,5	6,7
Young's Modulus (GPa)	520	206

2.5 times larger Young's modulus than steel.

Tough to deflect and vibrate

E = Young's modulus Steel = 206 GPa Carbide = 520 GPa	$I = \pi / 64 \times d^4$
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Influence of tool deflection

Machining problem

1. Cutting condition can not increase.
2. Trouble in machining accuracy.
3. Large vibration sound.

Tools problem

1. Tool breakage by impact repeatedly.
2. No of tools increase to avoid the breakage.

High efficiency can not achieve.

How to reduce the deflection

1. Use large Young's modulus shank material.
2. Reduce overhung length as much as possible.
3. Neck dia. has to be fat as much as possible.

High efficient machining is possible

Use Solid Carbide shank
 Use low cutting resistance tool.

Advantage of using carbide shank

- Any modular head in combination with carbide shank gives high efficient machining and longer tool life even in case of deep applications.
- Huge reduction of machining time by great increased cutting conditions.
- Stable machining without chattering is possible even in case of machining depth L/D=6 or more for deep processing.

Carbide Holders

series

FULL LINEUP

MSN
TYPE

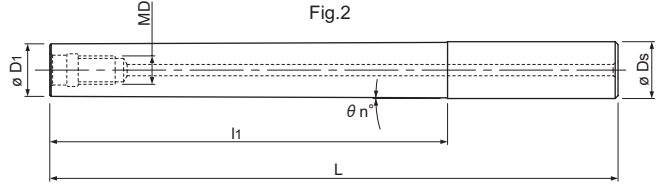
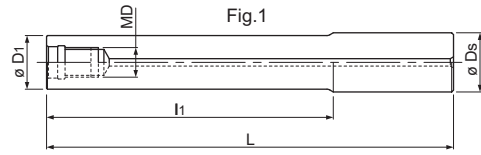
MSN Universal Carbide Shank Holder

Through coolant hole

End mill shank type

頑固一徹

- For high productivity
- High rigidity
- Fits all Major Manufacturers



Body

Cat. No.	Stock	Dimensions (mm)						Fig.
		ϕD_s	l_1	L	ϕD_1	θn°	MD	
NEW MSN-M6-12-S10C	●	10	12	60	9.7	—	M6	1
NEW MSN-M6-15-S12C	●	12	15	60	11.5	—	M6	1
MSN-M6-30-S10C	●		30	80				
MSN-M6-50-S10C	●	10	50	100	9.7	—	M6	1
MSN-M6-80-S10C	●		80	130				
MSN-M6-30-S12C	●		30	80				
MSN-M6-50-S12C	●	12	50	100	11.5	—	M6	1
MSN-M6-80-S12C	●		80	130				
NEW MSN-M8-20-S16C	●		20	75				
MSN-M8-40-S16C	●	16	40	95	15.5	—	M8	1
MSN-M8-80-S16C	●		80	135				
MSN-M8-120-S16C	●		120	175				
NEW MSN-M10-20-S20C ※2	●		20	80	19.5	—		1
MSN-M10-40-S20C ※2	●		40	100	19.5			
NEW MSN-M10-40T-S20C	●		40	100	18.5	0° 29'		2
MSN-M10-90-S20C ※2	●	20	90	150	19.5	—	M10	1
NEW MSN-M10-90T-S20C	●		90	150	18.5	0° 17'		2
MSN-M10-140-S20C ※2	●		140	200	19.5	—		1
NEW MSN-M10-140T-S20C	●		140	200	18.5	0° 12'		2
NEW MSN-M12-25-S25C	●		25	90				
MSN-M12-55-S25C	●	25	55	120	24	—	M12	1
MSN-M12-105-S25C	●		105	170				
MSN-M12-155-S25C	●		155	220				
NEW MSN-M16-25-S32C	●		25	90				
MSN-M16-55-S32C	●		55	120				
MSN-M16-105-S32C	●	32	105	170	29	—	M16	1
MSN-M16-155-S32C	●		155	220				
MSN-M16-195-S32C	●		195	260				

● Standard stock items

※2: In case of machining perpendicular wall, check shank clearance in combination with modular heads.

Thread	Tightening Torque	Wrench size
M6	8.0N·m	8
M8	23N·m	10, 12
M10	46N·m	14, 15
M12	80N·m	17
M16	90N·m	22, 26

Recommended tightening torque for modular head

★ Attention to mounting head

Clean the contact surface of head and carbide holder, and also confirm there is no gap between head and holder after tightening.



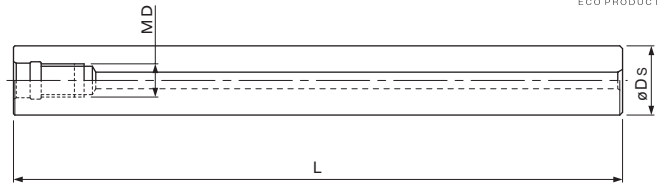
MSN Universal Carbide Shank Holder

Through coolant hole

Straight arbor type

頑固一徹

- For high productivity
- High rigidity
- Fits all Major Manufacturers



■ Body

Cat. No.	Stock	Dimensions (mm)		
		øDs	L	MD
NEW MSN-M6-67S-S9.8C	●	9.8	67	M6
NEW MSN-M6-107S-S9.8C	●		107	
NEW MSN-M6-82S-S10C	●	10	82	M6
NEW MSN-M6-122S-S10C	●		122	
NEW MSN-M6-80S-S11.8C	●	11.8	80	M6
NEW MSN-M6-120S-S11.8C	●		120	
NEW MSN-M6-90S-S12C	●	12	90	M6
NEW MSN-M6-130S-S12C	●		130	
MSN-M8-97S-S15C	●	15	97	M8
MSN-M8-147S-S15C	●		147	
MSN-M8-107S-S16C	●	16	107	M8
MSN-M8-157S-S16C	●		157	
MSN-M10-130S-S18C	●	18	130	M10
MSN-M10-190S-S18C	●		190	
MSN-M10-130S-S20C	●	20	130	M10
MSN-M10-190S-S20C	●		190	
MSN-M10-250S-S20C	●	23	250	M12
MSN-M12-185S-S23C	●		185	
MSN-M12-265S-S23C	●	25	265	M12
MSN-M12-145S-S25C	●		145	
MSN-M12-215S-S25C	●	285	215	M16
MSN-M12-285S-S25C	●		285	
MSN-M16-160S-S28C	●	28	160	M16
MSN-M16-230S-S28C	●		230	
MSN-M16-310S-S28C	●	32	310	M16
MSN-M16-157S-S32C	●		157	
MSN-M16-217S-S32C	●	287	217	M16
MSN-M16-287S-S32C	●		287	
MSN-M16-357S-S32C	●	357		

● Standard stock items

Note) Please see page 3 for recommended tightening torque.



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WARNING:

Grinding produces hazardous dust.
To avoid adverse health, adequate ventilation and
read Material Safety Data Sheet First.
Cutting tools may fragment in use.
Wear eye protection in the vicinity of their operation.

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