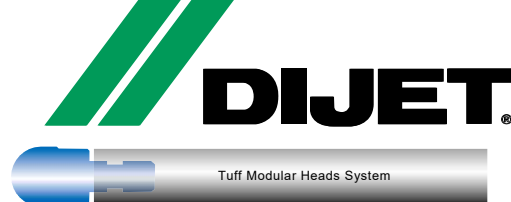


PRODUCT NEWS

No. PN-E-019

For Stainless steel,
Titanium alloy, and Inconel



Solid modular head

"Anti-vibration S-Head"

SMSR type

$\phi 16 \sim \phi 32$ / Corner R: R0.5-R3

Solid modular head SMSR type showed the same performance as the solid end mill.



Anti-vibration
S-Head
SMSR type

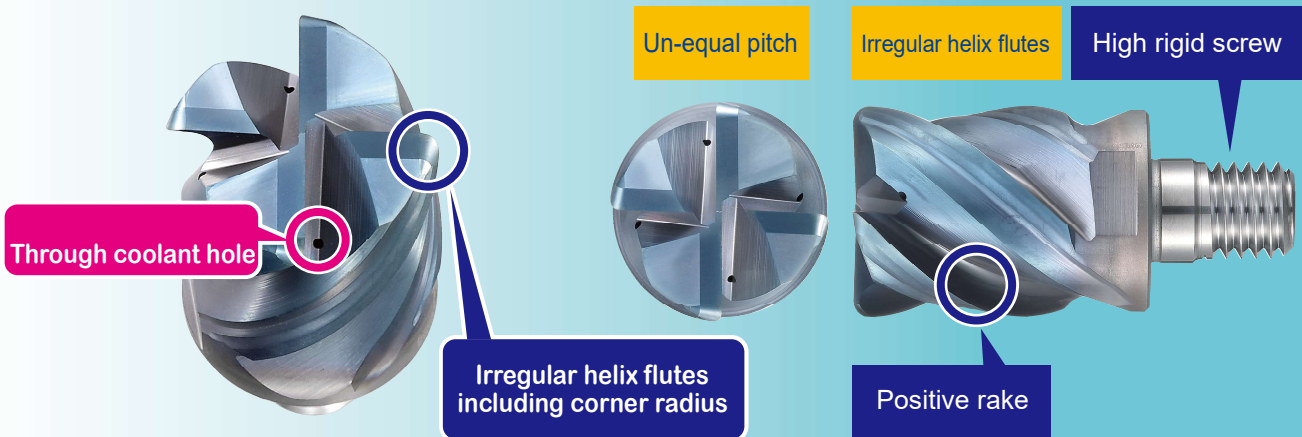


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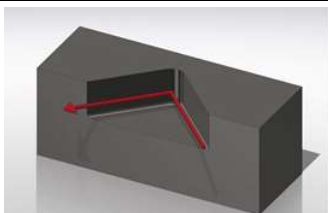
Solid modular head "Anti-vibration S-Head" SMSR type

Features

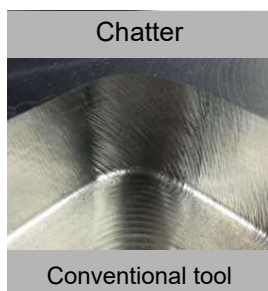
1. Adopted **new PVD coated grade "DH115"** consisting of the combination of DH COAT & micro-grained carbide.
Widely applied from carbon & mold steel to stainless steel & Ti-alloy.
2. **Un-equal pitch & irregular helix flutes** are excellent in **anti-vibration** and possible to stable machining.
And, achieved good surface roughness in case of machining very thin plate & corners of pockets, by the combination with carbide shank MSN type.
3. **Positive rake & coolant hole** prevented welding and improved chip ejection.
Suitable for machining Ti-alloy & heat-resistant alloy.



Cutting data



V-shaped machining
Overhung length : 80mm
Shoulder milling, Down cut



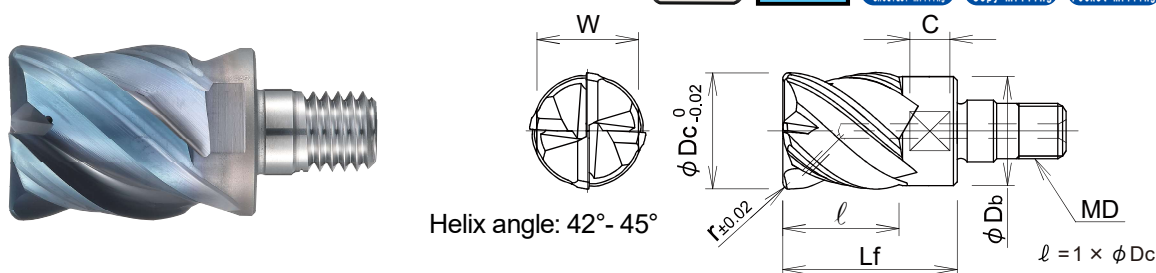
Work	Part name	Test piece
	Material	Ti-6Al-4V
	Hardness	36HRC
Tool	Tool No.	SMSR-4160R10-M8(φ 16-R1)+ MSN-M8-70-S16C
	Insert No.	—
Cutting conditions	Vc	Vc=100m/min
	f	f=0.20mm/rev
	Ap	16mm
	Ae	0.8mm
	Coolant	Internal coolant
	Machine	Vertical MC
Result	Achieved no chatter machining and improved surface roughness compared with conventional tool. Control vibration !	



Solid modular head "Anti-vibration S-Head" SMSR type

Through coolant hole

- 4 flutes / Helix angle 42°-45°
- Flute length 1D



Cat. No.	Stock	Grade	No. of inserts	Dimensions (mm)							
				r	φ Dc	ℓ	Lf	φ Db	MD	C	W
SMSR-4160R05-M8	●			0.5	16	16	24	15	M8	5.5	14
SMSR-4160R10-M8	●			1							
SMSR-4160R20-M8	●			2							
SMSR-4160R30-M8	●			3							
SMSR-4200R05-M10	●			0.5	20	20	29	19	M10	5.5	17
SMSR-4200R10-M10	●			1							
SMSR-4200R20-M10	●			2							
SMSR-4200R30-M10	●			3							
SMSR-4250R10-M12	●	DH115	4	1	25	25	35	24	M12	5.5	22
SMSR-4250R20-M12	●			2							
SMSR-4250R30-M12	●			3							
SMSR-4300R10-M16	□			1	30	30	44	29	M16	5.5	27
SMSR-4300R20-M16	□			2							
SMSR-4300R30-M16	□			3							
SMSR-4320R10-M16	●			1	32	32	46	30	M16	5.5	27
SMSR-4320R20-M16	●			2							
SMSR-4320R30-M16	●			3							

● : Standard stock items , □ : Stock in Japan

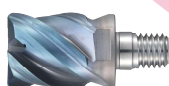
- Note) 1. When mounting head to shank, tighten with recommended tightening torque value not to be over-tightening.
(See the right table "Attention to mounting S-Head.")
2. Only use torque control spanner wrench or DIJET DS type spanner wrench.

Please see the catalogue PRODUCT NEWS or DIJET general catalogue for applicable MSN carbide shank holders.

Attention to mounting S-Head

Recommended tightening torque for S-Head

Please tighten the tightening torque by the power of about usual 1/5 to become uniting carbide head & shank.



Tool dia. φ DC (mm)	Spanner size W (mm)	Spanner wrench	Tightening torque
φ 16	14	DS-14	10~11N·m
φ 20	17	DS-17	10~16N·m
φ 25	22	DS-22	15~20N·m
φ 30	27	DS-27	20~25N·m
φ 32	27	DS-27	20~25N·m

※S-Head are supplied without spanner wrench.



Recommended cutting conditions for SMSR

● Shoulder cutting

Work materials	Carbon steel (C50, C55), below 250HB				Mold steel (1.2311, P20), 30-43HRC			
Tool dia. φDc (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)
16	2,980	1,430	~ 0.8Dc	~ 0.1Dc	2,390	1,150	~ 0.8Dc	~ 0.1Dc
20	2,390	1,150	~ 0.8Dc	~ 0.1Dc	1,910	920	~ 0.8Dc	~ 0.1Dc
25	1,910	920	~ 0.8Dc	~ 0.1Dc	1,530	730	~ 0.8Dc	~ 0.1Dc
30	1,590	760	~ 0.8Dc	~ 0.1Dc	1,270	610	~ 0.8Dc	~ 0.1Dc
32	1,490	720	~ 0.8Dc	~ 0.1Dc	1,190	570	~ 0.8Dc	~ 0.1Dc

Work materials	Hardened die steel (1.2344, 1.2379), 42-52HRC				Stainless steel, Below 250HB			
Tool dia. φDc (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)
16	1,390	670	~ 0.8Dc	~ 0.05Dc	1,990	960	~ 0.8Dc	~ 0.1Dc
20	1,110	540	~ 0.8Dc	~ 0.05Dc	1,590	760	~ 0.8Dc	~ 0.1Dc
25	890	430	~ 0.8Dc	~ 0.05Dc	1,270	610	~ 0.8Dc	~ 0.1Dc
30	740	360	~ 0.8Dc	~ 0.05Dc	1,060	510	~ 0.8Dc	~ 0.1Dc
32	700	330	~ 0.8Dc	~ 0.05Dc	1,000	480	~ 0.8Dc	~ 0.1Dc

Work materials	Titanium alloy (Ti-6Al-4V)				Inconel (Inco718)			
Tool dia. φDc (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)
16	1,590	640	~ 0.8Dc	~ 0.1Dc	1,000	200	~ 0.8Dc	~ 0.1Dc
20	1,270	510	~ 0.8Dc	~ 0.1Dc	800	160	~ 0.8Dc	~ 0.1Dc
25	1,020	410	~ 0.8Dc	~ 0.1Dc	640	130	~ 0.8Dc	~ 0.1Dc
30	850	340	~ 0.8Dc	~ 0.1Dc	530	110	~ 0.8Dc	~ 0.1Dc
32	800	320	~ 0.8Dc	~ 0.1Dc	500	100	~ 0.8Dc	~ 0.1Dc

Vc: Cutting speed, Vf: Feed speed, ap: Depth of cut, ae: Pick feed, n: Spindle speed

■ The reduction rate for SMSR type

※In case of lengthening overhung length, the figures above need to be reduced according to the reduction rate.

L/D	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)
L ≤ 4D	0%	0%	0%	0%
4D < L ≤ 6D	20% Reduction	30% Reduction	0%	~0.05Dc
6D < L	30% Reduction	50% Reduction	~0.5Dc	~0.025Dc

Note) Slotting is not recommended.

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