

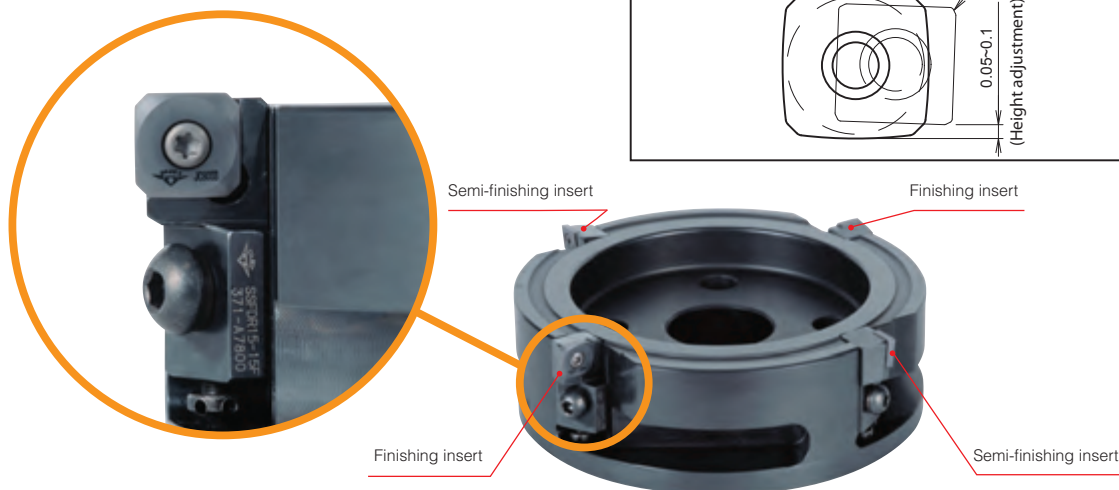
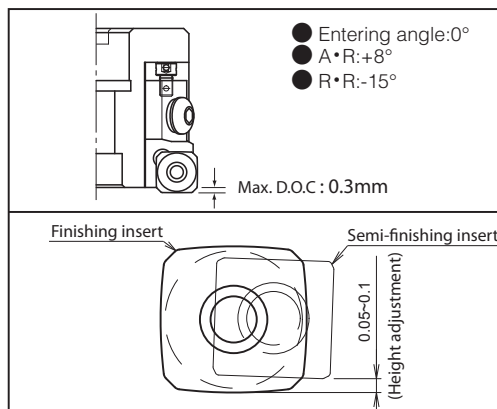
Finish Jet Mill

FJMTYPE



● Super Finishing Milling Application

1. The combination of 2 finishing cartridges and 2 semi-finishing cartridges gives stable finishing quality of unreliable removal stock on cast iron and cast steel.
2. Maximum $ap=0.3\text{mm}$ (3 times larger than competitor's ap)
Consolidate to one process of semi-finishing and super-finishing
3. Two semi-finishing inserts protect the finishing inserts and also achieve longer tool life with reducing cutting force.
4. Easy to adjust the face runout by adjusting the cartridges.
5. JC8003 for cast iron and stainless steel, Cermet grade CX75 for general steels.



■ BODY

Fig.1

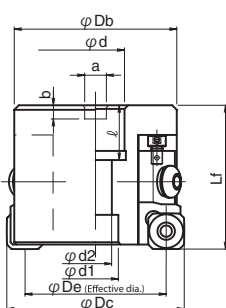


Fig.2

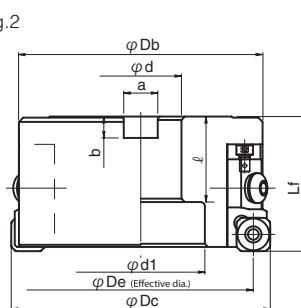
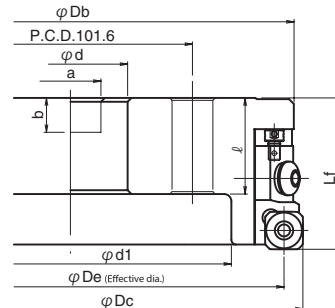


Fig.3



Cat. No.	Stock	No. of Inserts	Dimensions (mm)									Weight (kg)	Fig.	
			ϕDc	ϕDe (Eff. dia.)	Db	Lf	ϕd	$\phi d1$	$\phi d2$	a	b			l
FJM-4080R-27	●	2 Finishing & 2 Semi-finishing inserts	80	65	71	63	27	20	14.3	12.4	7	22	1.7	1
FJM-4100R-32	●		100	85	90	63	32	26	17	14.4	8	32	2.7	1
FJM-4125R-40	●		125	110	114	63	40	60	—	16.4	9	40	3.9	2
FJM-4160R-40	●		160	145	148	63	40	75	—	16.4	9	40	6.1	2
FJM-4200R-60	●		200	185	186	63	60	134	—	25.7	14	40	8.6	3
FJM-4250R-60	□		250	235	237	63	60	182	—	25.7	14	40	14.8	3

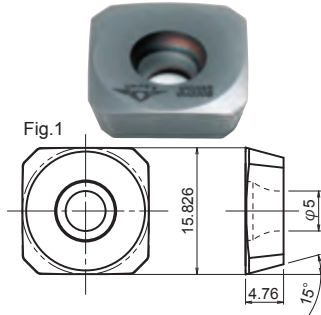
Note) 1. All cutter bodies are supplied without inserts.
2. Please refer page C258 for recommended cutting conditions.

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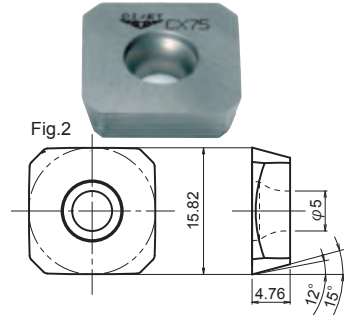
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■ INSERTS

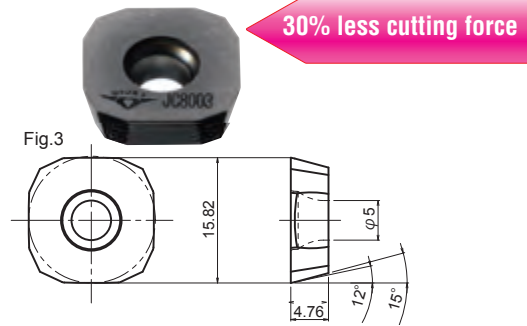
SDHW1504ADFN-W1



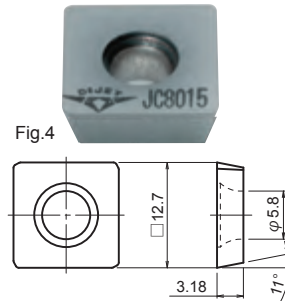
SDHW1 504ADE(F)N-W2



SDHW1504ADEN-F1



SPHW1203ZPTR





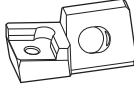
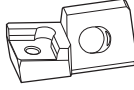
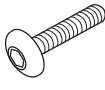
Cat. No.	PVD coated		Cermet	Tolerance	Fig.	Application
	DH103	JC8015	CX75			
SDHW1504ADFN-W1 (finishing insert)	●			H	1	Cast iron • Cast steel
SDHW1504ADFN-W2 (finishing insert)			●	H	2	Carbon steel • Alloy steel
SDHW1504ADEN-W2 (finishing insert)	●			H	2	Mold steel • Die steel
SDHW1504ADEN-F1 (finishing insert for low rigid work)	●		●	H	3	DH103...(Cast iron • Cast steel) CX75...(Carbon steel • Alloy steel)
SPHW1203ZPTR (Semi-finishing insert)		●		H	4	


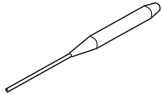

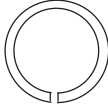
4 inserts per case, but in case of SPHW1203ZPTR: 10 piece per case.

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PARTS

Clamp screw	Wrench	Cartridge for finishing insert	Cartridge for semi-finishing insert	Set bolt for cartridge
				
Recommended torque 6.0N·m				
DSW-4510H	A-20 (φ80~φ200) A-20L (φ250)	SSFDR15-15F	SSFPR15-12R	BBH-825

Wrench for cartridge	Wrench for axial adjust screw	Axial adjust screw	Spring washer
			
LW-050	AD-2080	ADS-513	SBZ-8

RECOMMENDED CUTTING CONDITIONS

	Work Materials	Inserts	Insert Grades	Vc (m/min)	f (mm/rev)	ap (mm)	ae (mm)
P	Low carbon & Mild steel S20C, SS400 (C20) Below 255HB	SDHW1504ADFN-W2 (SDHW1504ADEN-F1)	CX75	250~300	4~5	up to 0.3mm	up to 0.8De
	Medium carbon steel S50C (C50) Below 255HB	SDHW1504ADFN-W2 (SDHW1504ADEN-F1)	CX75	200~250	4~5	up to 0.3mm	up to 0.8De
	Alloy & Die steel SCM440, SKD11 (1.7223, 1.2379) Below 255HB	SDHW1504ADFN-W2 (SDHW1504ADEN-F1)	CX75	100~150	4~5	up to 0.3mm	up to 0.8De
M	Stainless steel SUS304, 316 Below 250HB	SDHW1504ADFN-W2 (SDHW1504ADEN-F1)	JC8003	80~120	2~4	up to 0.2mm	up to 0.8De
K	Grey cast iron FC250, FC300 (GG25, GG30) Below 300HB	SDHW1504ADFN-W2 (SDHW1504ADEN-F1)	JC8003	130~200	4~6	up to 0.3mm	up to 0.8De
	Nodular cast iron FCD500, FCD700 (GGG50, GGG70) Below 300HB	SDHW1504ADFN-W2 (SDHW1504ADEN-F1)	JC8003	110~180	4~6	up to 0.3mm	up to 0.8De
H	Mold steel HPM7, PX5, NAK80, P20 (1.2311, P20) Below 30-40HRC	SDHW1504ADFN-W2 (SDHW1504ADEN-F1)	JC8003	100~140	2~4	up to 0.2mm	up to 0.8De
	Hardened die steel SKD61, DAC, DHA (1.2311, P20) Below 40-55HRC	SDHW1504ADFN-W2 (SDHW1504ADEN-F1)	JC8003	40~60	0.3~0.7	up to 0.1mm	up to 0.7De

Vc: Cutting speed, f: Feedrate, ap: Depth of cut, ae: Width of cut

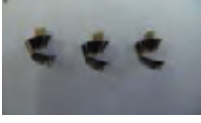
Note) 1. In case of stainless steel, recommend wet cutting.
2. Recommend to use-F1 type insert for low rigid work.

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■ CHIP SHAPE COMPARISON

Work material: S15C, Tool dia.: $\phi 200\text{mm}$, $V_c=300\text{m/min}$, $f=4\text{mm/rev}$, $a_e=137\text{mm}$

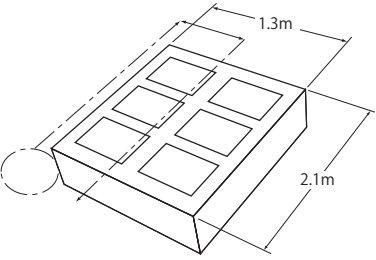
	DIJET		Competitor B
	Chips by finishing insert	Chips by semi-finishing insert	
$a_p=0.05\text{mm}$			
$a_p=0.1\text{mm}$			
$a_p=0.2\text{mm}$			

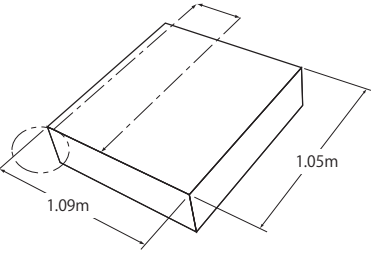
- FJM obtains excellent surface roughness and longer tool life by stable cutting due to adopting the combination of 2 semi-finishing inserts and 2 finishing inserts. This combination divides the chips and cutting force. Competitor B got chipping problem by excessive cutting force due to increasing a_p .
- There is no step on the surface which is machined by FJM.

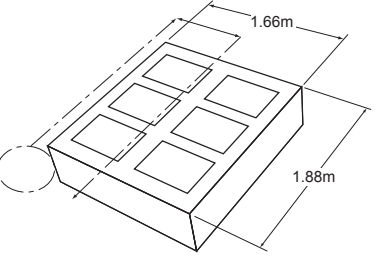
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CASE STUDIES

<p>Work size: 2.1m x 1.3m Step between finishing insert and semi-finishing insert: 0.1mm</p> 		Work	Part name	Stamping die
			Material	FC250
		Tool	Hardness	-
			Tool No.	FJM-4200R
		Cutting conditions	Grade	SDHW1504ADFN-W1 (JC8003) (1N) + SPHW1203ZPTR (JC8015) (1N)
			Vc, (n)	183m/min (292min ⁻¹)
			Vf, (f z)	1,460mm/min(5mm/rev)
			ap (mm)	0.3 (mm)
			ae (mm)	180 (mm)
			Coolant	Dry
Result	FJM obtained same surface roughness with 80% faster feed speed than competitorB.	Machine	Double column MC	

<p>Worksize:1050mm x 1090mm x 60mm</p> 		Work	Part name	Injection mold
			Material	S45C
		Tool	Hardness	Non heat treatment
			Tool No.	FJM-4200R
		Cutting conditions	Grade	SDHW1504ADFN-W2 (CX75) (2N) + SPHW1203ZPTR (JC8015) (2N)
			Vc, (n)	207m/min (330min ⁻¹)
			Vf, (f z)	1,050mm/min (3.2mm/rev)
			ap (mm)	0.2 (mm)
			ae (mm)	180 (mm)
			Coolant	Dry
Result	FJM improved machining efficiency by 2.6 times and surface roughness compared with competitor B	Machine	Double column MC	

<p>Work size: 1668mm x 1880mm x 300mm</p> 		Work	Part name	-
			Material	SKT4
		Tool	Hardness	35 HRC
			Tool No.	FJM-4160R
		Cutting conditions	Grade	SDHW1504ADEN-F1 (JC8003) (2N) + SPHW1203ZPTR (JC8015) (2N)
			Vc, (n)	120m/min (240min ⁻¹)
			Vf, (f z)	800mm/min (1.67mm/rev)
			ap (mm)	0.2 (mm)
			ae (mm)	120 (mm)
			Coolant	Dry
Result	F1 type insert for low rigid work achieved surface roughness Ra=0.8μm at feed speed 800mm/min under unstable clamping condition.	Machine	Double column MC	