

# PRODUCT NEWS

No. 335



## Rhombic Diemaster

### MXD/XDF



NEW PRODUCT

## "G-Body"

- Modular Heads type:  $\phi 16 \sim \phi 42 \dots 5$  items.
- Face mill type:  $\phi 52 \sim \phi 66 \dots 2$  items.

### From semi-finishing to finishing on all mold shapes.

Through coolant holes in the bodies for  
safe operations and longer tool life.

**G-Body**



MXD Heads type

**G-Body**  
carbide shank

**G-Body**



XDF Face mill type



DIJET INDUSTRIAL CO., LTD.

## Feature of product

# High efficient and multi purpose machining t

## Multi purpose tool

Different grade of insert for machining different kind of materials. This tool can make all kind of operations, from semi-finishing to finishing, in any kind of mold. The through coolant holes in the all bodies give longer tool life and safe operations in cavities .

## Double clamp system

Adopted double clamp system for deep cut applications.

## Adopted positive axial rake

- 02 & 03 inserts type → A.R.; +6°  
on Modular Heads type.
- 03 inserts type → A.R.; +8°  
on Face mill type.

## Variation

Many kinds of modular heads are available with combination of carbide shanks.



## G-Body

Adopted GN surface-hardening treatment on thermal resistant high strength steel gives high hardness over 65HRC and secure insert pocket and holder against thermal deformation, improved body durability and insert life by 30% or more. Make it difficult to be damaged even under severe cutting conditions. Also rust-proof and anti-welding effect is much improved.

ool for Die and mold.

All tool has coolant holes from each pockets



**G-Body**

## ● MXD heads type

● Through coolant hole



Fig.1

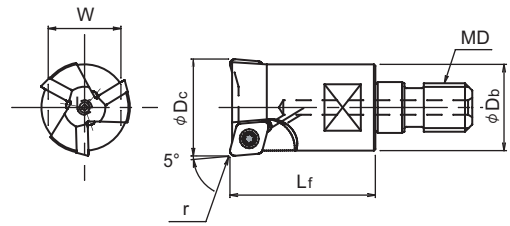
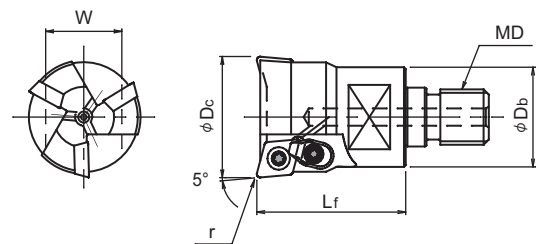


Fig.2



## ● Body

Cat. No.	Stock	No. of inserts	Dimensions (mm)						Inserts	Parts			Fig.
			φDc	r	Lf	φDb	MD	W		Clamp screw	Clamp set	Wrench	
MXD-2016-M8	●	2	16	0.5,1.0	23	15.4	M8	12	XDHW-0206-05,10	CSW-2547	—	A-07	1
MXD-3020-M10	●	3	20	0.5,1.0	30	17.8	M10	14	XDHW-0206-05,10	CSW-2547	—	A-07	1
MXD-3025-M12	●	3	25	0.5,1.0	35	20.8	M12	17	XDHW-0206-05,10	CSW-2547	—	A-07	1
MXD-3035-M16	●	3	35	1.0	43	28.8	M16	22	XDHW-0310-10	CSW-3575	DCM-18	A-15	2
MXD-4042-M16	●	4	42	1.0	43	28.8	M16	22	XDHW-0310-10	CSW-3575	DCM-18	A-15	2

● Standard stock items

Note) 1. All cutters are supplied without inserts.

2. Please see page 7-8 for cutting conditions.

## ● Recommended tightening torque for modular head

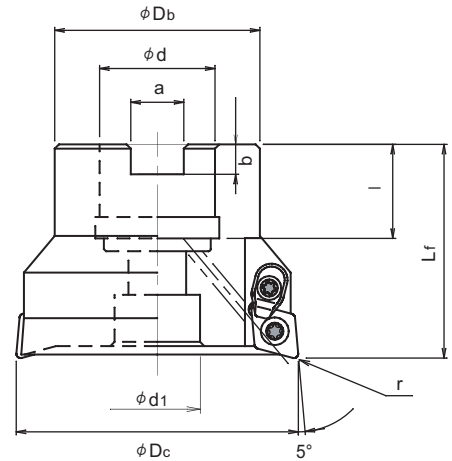
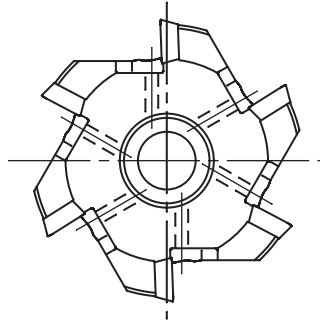
Thread	Tightening Torque	Wrench size
M8	23 N·m	10, 12
M10	46 N·m	14, 15
M12	80 N·m	17
M16	90 N·m	22, 26

### ★ 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. Please check even run-out.

## ● XDF Face mill type

● Through coolant hole



## ● Body

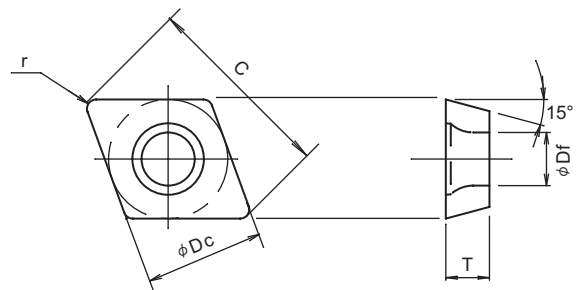
Cat. No.	Stock	No. of inserts	Dimensions (mm)									Inserts	Parts		
			$\phi D_c$	r	$L_f$	$\phi D_b$	$\phi d$	$\phi d_1$	a	b	l		Clamp screw	Clamp set	Wrench
XDF-5052R-22	●	5	52	1.0	50	40	22	17	10.4	6	20				
XDF-6066R-27	●	6	66	1.0	50	48	27	20	12.4	7	22				

● Standard stock items

Note) 1. All cutters are supplied without inserts.

2. Please see page 9 for cutting conditions.

## ● Inserts



Cat. No.	Coated				Dimensions (mm)				
	JC8003	JC8015	JC5015	JC5040	$\phi D_c$	T	C	r	$\phi D_f$
XDHW 0206-05	●	●		⊙	6.5	2.38	10.589	0.5	2.9
XDHW 0206-10	●	●		●	6.5	2.38	9.846	1.0	2.9
XDHW 0310-10	●	●	⊙	●	10	3.97	15.948	1.0	4

● Standard stock items ⊙ On request.

## MSN Carbide shank holder (Through coolant hole)

# 頑固一徹

- For high productivity
- Through coolant hole



### ■ End mill shank type



Fig.1

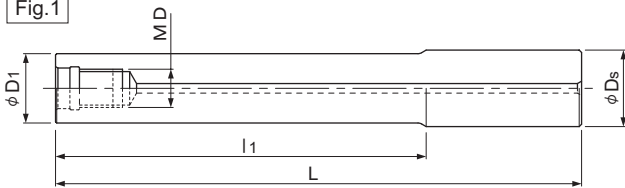
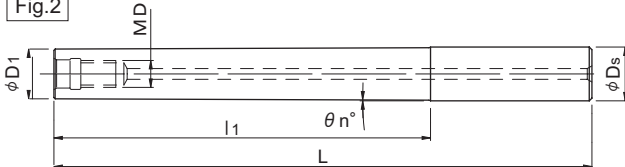
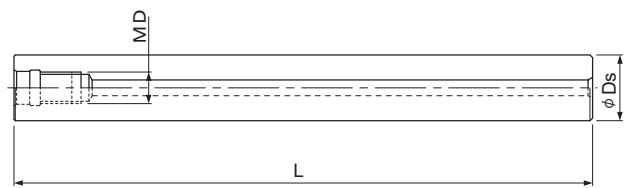


Fig.2



### ■ Straight arbor type



## Body

Cat. No.	Stock	Dimensions (mm)					Fig.			
		φDs	l1	L	φD1	MD				
<b>NEW</b> MSN-M8-20-S16C	●	16	20	75	15.5	M8	1			
MSN-M8-40-S16C	●		40	95						
MSN-M8-80-S16C	●		80	135						
MSN-M8-120-S16C	●		120	175						
MSN-M10-20-S20C※2	●	20	20	80	19.5	—	1			
MSN-M10-40-S20C※2	●		40	100						
<b>NEW</b> MSN-M10-40T-S20C	●		40	100				18.5	0°43'	2
MSN-M10-90-S20C※2	●		90	150				19.5	M10	—
<b>NEW</b> MSN-M10-90T-S20C	●	25	90	150	19.5	—	2			
MSN-M10-140-S20C※2	●		140	200				18.5	0°19'	
<b>NEW</b> MSN-M10-140T-S20C	●		140	200				18.5	0°12'	2
MSN-M12-25-S25C	●		25	90				24	M12	—
MSN-M12-55-S25C	●	55	120							
MSN-M12-105-S25C	●	105	170							
MSN-M12-155-S25C	●	155	220							
MSN-M16-25-S32C	●	32	25	90	29	M16	—	1		
MSN-M16-55-S32C	●		55	120						
MSN-M16-105-S32C	●		105	170						
MSN-M16-155-S32C	●		155	220						
MSN-M16-195-S32C	●	195	260							

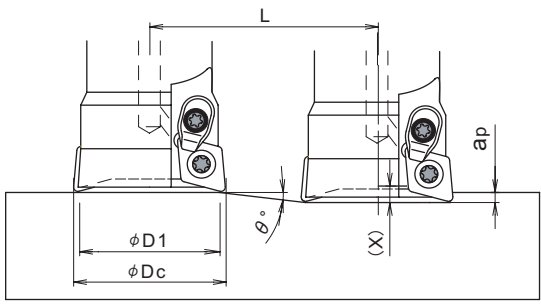
● : Standard stock items

Cat. No.	Stock	Dimensions (mm)		
		φDs	L	MD
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	●	250		
MSN-M12-185S-S23C	●	23	185	M12
MSN-M12-265S-S23C	●		265	
MSN-M12-145S-S25C	●	25	145	M12
MSN-M12-215S-S25C	●		215	
MSN-M12-285S-S25C	●	285		
MSN-M16-160S-S28C	●	28	160	M16
MSN-M16-230S-S28C	●		230	
MSN-M16-310S-S28C	●	310		
MSN-M16-157S-S32C	●	32	157	M16
MSN-M16-217S-S32C	●		217	
MSN-M16-287S-S32C	●	287		
MSN-M16-357S-S32C	●	357		

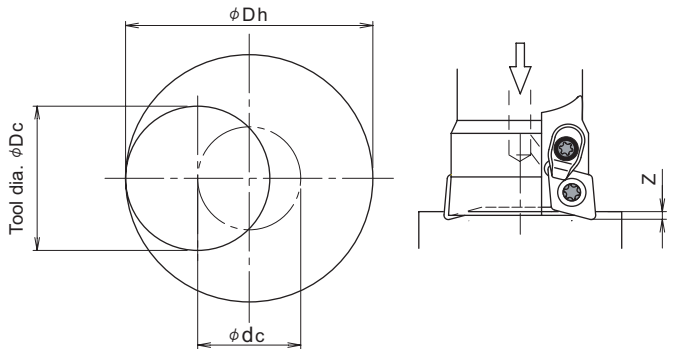
● : Standard stock items

## Attention for profile milling

### ● Ramping



### ● Helical interpolation



● Calculation of tool pass dia.

$$\phi dc = \phi Dh - \phi Dc$$

Tool pass dia.
Bore dia.
Tool dia.

- Depth of cut per one circuit should not exceed max. depth of cut  $a_p$ .
- Down cutting is recommended, so tool pass rotation should be counterclockwise.
- Do not continue ramping after drilling.

- In case of ramping and helical interpolation, apply 70% or less feed speed from standard cutting condition table.
- In case of drilling, apply 50% or less Z axis feed speed from standard cutting condition table.
- Long consecutive chips may come out in case of drilling, confirm the safe condition sufficiently.

Tool dia.	Insert size	$\phi D1$ Eff. Cutting dia. (mm)	$\phi Dh$ min Min. bore dia. (mm)	$\phi Dh$ max Max. bore dia. (mm)	Max. ramping angle $\theta^\circ$	$a_p$ Max. depth of cut (mm)	$(a_p)/L$ (mm) Total cutting length at Max. $a_p$	Z Max. drilling depth (mm)	X Depth of holder face (mm)
16	0206	14	28	32	7° 50'	1.0	7.3	1.0	1.8
20	0206	18	36	40	5° 30'	1.0	10.4	1.0	1.8
25	0206	23	46	50	4° 00'	1.0	14.3	1.0	1.8
35	0310	33	64	70	5° 10'	1.5	16.5	1.5	2.8
42	0310	40	78	84	4° 00'	1.5	21.4	1.5	2.8
52	0310	50	85	104	3° 00'	1.5	28.6	1.5	2.8
66	0310	64	113	132	2° 15'	1.5	38.1	1.5	2.8

## Recommended cutting conditions

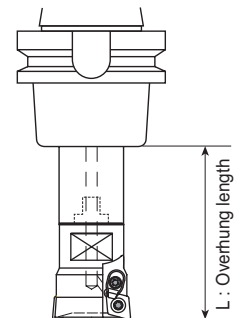
### ● MXD Modular Heads and MSN Carbide shank holder

Work materials	Grades	Tool dia. (mm)[insert type]											
		16 [0206]				20 [0206]				25 [0206]			
		No. of teeth 2N				No. of teeth 3N				No. of teeth 3N			
		L (mm)	a <sub>p</sub> (mm)	n (min <sup>-1</sup> )	V <sub>f</sub> (mm/min)	L (mm)	a <sub>p</sub> (mm)	n (min <sup>-1</sup> )	V <sub>f</sub> (mm/min)	L (mm)	a <sub>p</sub> (mm)	n (min <sup>-1</sup> )	V <sub>f</sub> (mm/min)
Carbon steel (C50,C55) Below 250HB	JC5040 JC8015	70	1	4,400	2,200	70	1	3,500	2,900	90	1	2,800	2,100
		120	0.7	4,400	2,200	120	0.7	3,500	2,900	140	0.7	2,800	2,100
		160	0.5	4,100	2,050	160	0.5	3,200	2,700	210	0.5	2,600	1,900
Mold steel (1.2311,P20) 30-43HRC	JC5040 JC8015 (JC8015 above 40HRC)	70	1	4,200	2,100	70	1	3,300	2,600	90	1	2,600	2,000
		120	0.7	4,200	2,100	120	0.7	3,300	2,600	140	0.7	2,600	2,000
		160	0.5	4,000	2,000	160	0.5	3,100	2,300	210	0.5	2,400	1,800
Die steel (1.2344,1.2379) Below 255HB	JC5040 JC8015	70	1	4,200	2,100	70	1	3,300	2,600	90	1	2,500	1,600
		120	0.7	4,200	2,100	120	0.7	3,300	2,600	140	0.7	2,500	1,600
		160	0.5	4,000	2,000	160	0.5	3,100	2,300	210	0.5	2,400	1,400
Stainless steel Below 250HB	JC8015	70	1	3,400	1,700	70	1	2,700	2,400	90	1	2,100	1,400
		120	0.7	3,400	1,700	120	0.7	2,700	2,400	140	0.7	2,100	1,400
		160	0.5	3,200	1,600	160	0.5	2,600	2,200	210	0.5	2,000	1,000
Hardened die steel (1.2344,1.2379) 40-50HRC	JC8015 (JC8003 above 50HRC)	70	0.6	2,900	1,450	70	0.6	2,500	2,000	90	0.6	1,900	1,400
		120	0.4	2,900	1,450	120	0.4	2,500	2,000	140	0.4	1,900	1,400
		160	0.3	2,600	1,300	160	0.3	2,200	1,800	210	0.3	1,800	1,000
Grey & Nodular cast iron (GG, GGG) Below 300HB	JC8015	70	1	3,800	1,900	70	1	3,050	2,600	90	1	2,500	2,200
		120	0.7	3,800	1,900	120	0.7	3,050	2,600	140	0.7	2,500	2,200
		160	0.5	3,700	1,850	160	0.5	2,900	2,400	210	0.5	2,300	1,700

L:Overhung length   a<sub>p</sub>:Depth of cut   n:Spindle speed   V<sub>f</sub>:Feed speed

**Note:**

1. The figure to be adjusted according to the machine rigidity or work rigidity.
2. In case of chatter occurring, recommend to reduce the depth of cut a<sub>p</sub> or Spindle speed and keep feed per tooth.
3. If machine does not have enough power, recommend to reduce the depth of cut a<sub>p</sub> or Spindle speed and Feed speed.
4. Use air blow.
5. In case of 50-55HRC, recommend to reduce 30% above a<sub>p</sub>, n, V<sub>f</sub>. (In the case of hardened die steel)



## Recommended cutting conditions

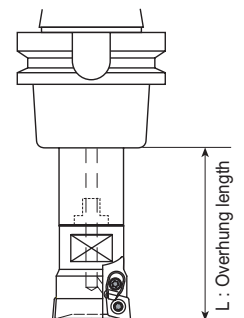
### MXD Modular Heads type and MSN type Carbide shank holder

		2/2											
Work materials	Grades	Tool dia. (mm) [insert type]											
		35 [0310]				42 [0310]							
		No. of teeth 3N (Double clamp)				No. of teeth 4N (Double clamp)							
		L (mm)	a <sub>p</sub> (mm)	n (min <sup>-1</sup> )	V <sub>f</sub> (mm/min)	L (mm)	a <sub>p</sub> (mm)	n (min <sup>-1</sup> )	V <sub>f</sub> (mm/min)	L (mm)	a <sub>p</sub> (mm)	n (min <sup>-1</sup> )	V <sub>f</sub> (mm/min)
Carbon steel (C50,C55) Below 250HB	JC5040 JC8015	100	1.5	2,100	1,900	100	1.5	1,900	2,300				
		150	1.0	2,100	1,900	150	1.0	1,900	2,300				
		210	0.6	2,000	1,600	210	0.6	1,800	2,200				
Mold steel (1.2311,P20) 30-43HRC	JC5040 JC8015 (JC8015 above 40HRC)	100	1.5	2,000	1,800	100	1.5	1,800	2,100				
		150	1.0	2,000	1,800	150	1.0	1,800	2,100				
		210	0.6	1,900	1,550	210	0.6	1,700	2,000				
Die steel (1.2344,1.2379) Below 255HB	JC5040 JC8015	100	1.5	2,000	1,800	100	1.5	1,800	2,100				
		150	1.0	2,000	1,800	150	1.0	1,800	2,100				
		210	0.6	1,900	1,500	210	0.6	1,700	2,000				
Stainless steel Below 250HB	JC8015	100	1.5	1,750	1,500	100	1.5	1,550	1,600				
		150	1.0	1,750	1,500	150	1.0	1,550	1,600				
		210	0.6	1,600	1,300	210	0.6	1,500	1,400				
Hardened die steel (1.2344,1.2379) 40-50HRC	JC8015 (JC8003 above 50HRC)	100	0.8	1,400	1,250	100	0.8	1,350	1,350				
		150	0.6	1,400	1,250	150	0.6	1,350	1,350				
		210	0.3	1,300	1,100	210	0.3	1,300	1,100				
Grey & Nodular cast iron (GG, GGG) Below 300HB	JC8015	100	1.5	1,900	1,700	100	1.5	1,700	2,050				
		150	1.0	1,900	1,700	150	1.0	1,700	2,050				
		210	0.6	1,800	1,600	210	0.6	1,600	1,800				

L: Overhung length   a<sub>p</sub>: Depth of cut   n: Spindle speed   V<sub>f</sub>: Feed speed

**Note:**

1. The figure to be adjusted according to the machine rigidity or work rigidity.
2. In case of chatter occurring, recommend to reduce the depth of cut a<sub>p</sub> or Spindle speed and keep feed per tooth.
3. If machine does not have enough power, recommend to reduce the depth of cut a<sub>p</sub> or Spindle speed and Feed speed.
4. Use air blow.
5. In case of 50-55HRC, recommend to reduce 30% above a<sub>p</sub>, n, V<sub>f</sub>. (In the case of hardened die steel)



## Recommended cutting conditions

### ● XDF Face Mill type

1/1

Work materials	Grades	Tool dia. (mm)[insert type]											
		52 [0310]				66 [0310]							
		No. of teeth 5N (Double clamp)				No. of teeth 6N (Double clamp)							
		L (mm)	a <sub>p</sub> (mm)	n (min <sup>-1</sup> )	V <sub>f</sub> (mm/min)	L (mm)	a <sub>p</sub> (mm)	n (min <sup>-1</sup> )	V <sub>f</sub> (mm/min)	L (mm)	a <sub>p</sub> (mm)	n (min <sup>-1</sup> )	V <sub>f</sub> (mm/min)
Carbon steel (C50, C55) Below 250HB	JC5040	150	1.5	1,300	1,700	150	1.5	980	1,140				
		200	1.2	1,300	1,820	200	1.2	980	1,300				
	JC8015	250	1.0	910	1,350	250	1.0	690	910				
		300	0.8	910	1,800	300	0.8	690	1,100				
		350	0.5	780	1,870	350	0.5	590	1,010				
		400	0.3	—	—	400	0.3	540	1,190				
Mold steel (1.2311, P20) 30-43HRC	JC5040	150	1.5	1,250	1,750	150	1.5	940	1,160				
		200	1.2	1,250	1,850	200	1.2	940	1,240				
	JC8015 (JC8015 above 40HRC)	250	1.0	880	1,760	250	1.0	660	970				
		300	0.8	880	1,760	300	0.8	660	1,180				
		350	0.5	750	1,800	350	0.5	560	1,120				
		400	0.3	—	—	400	0.3	520	1,140				
Die steel (1.2344, 1.2379) Below 255HB	JC5040	150	1.5	1,260	1,750	150	1.5	930	1,080				
		200	1.2	1,260	1,850	200	1.2	930	1,120				
	JC8015	250	1.0	880	1,760	250	1.0	650	850				
		300	0.8	880	1,760	300	0.8	650	1,040				
		350	0.5	750	1,850	350	0.5	560	870				
		400	0.3	—	—	400	0.3	510	1,100				
Stainless steel Below 250HB	JC8015	150	1.5	1,030	1,350	150	1.5	780	900				
		200	1.2	1,030	1,440	200	1.2	780	930				
	JC8050	250	1.0	720	1,060	250	1.0	550	730				
		300	0.8	720	1,420	300	0.8	550	830				
		350	0.5	620	1,490	350	0.5	470	690				
		400	0.3	—	—	400	0.3	430	940				
Hardened die steel (1.2344, 1.2379) 40-50HRC	JC8015 (JC8003 above 50HRC)	100	0.8	880	880	100	0.8	650	580				
		150	0.7	880	950	150	0.7	650	650				
		200	0.6	620	740	200	0.6	450	490				
		250	0.5	620	870	250	0.5	450	520				
		300	0.4	530	850	300	0.4	390	590				
		350	0.3	—	—	350	0.3	360	620				
Grey & Nodular cast iron (GG, GGG) Below 300HB	JC8015	150	1.5	1,170	1,820	150	1.5	880	1,370				
		200	1.2	1,170	2,000	200	1.2	880	1,440				
		250	1.0	820	1,470	250	1.0	620	1,120				
		300	0.8	820	1,800	300	0.8	620	1,240				
		350	0.5	700	1,680	350	0.5	530	1,160				
		400	0.3	—	—	400	0.3	480	1,220				

L: Overhung length a<sub>p</sub>: Depth of cut n: Spindle speed V<sub>f</sub>: Feed speed

Note:

1. The figure to be adjusted according to the machine rigidity or work rigidity.
2. In case of chatter occurring, recommend to reduce the depth of cut a<sub>p</sub> or Spindle speed and keep feed per tooth.
3. If machine does not have enough power, recommend to reduce the depth of cut a<sub>p</sub> or Spindle speed and Feed speed.
4. Use air blow.
5. In case of 50-55HRC, recommend to reduce 30% above a<sub>p</sub>, n, V<sub>f</sub>. (In the case of hardened die steel)

 **Note:**



# DIJET INDUSTRIAL CO., LTD.

Headquarters: 2-1-18, Kami-Higashi, Hirano-ku, Osaka 547-0002, Japan  
Phone: 81-6-6791-6781 Fax: 81-6-6793-1221



## Overseas Divisions:

### DIJET INDUSTRIAL CO., LTD. (Europe)

Unit 2 Mundells Court, Welwyn Garden City, Herts AL7 1EN, England  
Phone. 44-1707-325444 Fax. 44-1707-330197

### DIJET EUROPEAN TECHNICAL SERVICE (Italy)

Via Sega 2618/B 35010 San Giorgio in Bosco (PD) Italy  
Phone. 39-049-599-4392 Fax. 39-049-599-4935

### DIJET INDUSTRIAL CO., LTD. (Bangkok Representative Office)

699 Srinakarindr Road, Modernform Tower 15th Floor, Kweang Suanluang  
Khet Suanluang, Bangkok 10250, Thailand  
Phone. 66-2-722-8258, 8259 Fax. 66-2-722-8260

### DIJET INDUSTRIAL CO., LTD. (Shanghai Representative Office)

Room No.1007 Tomson Commercial Building., 710 Dongfang Rd.,  
Shanghai 200122, China  
Phone. 86-21-5058-1698 Fax. 86-21-5058-1699

### DIJET INDUSTRIAL CO., LTD. (Guandong Representative Office)

Rm. 1J2F, A Building, Lotus Plaza, Xianxidadao Road, Changan Town,  
Dongguan City, Guandong Provence, 523850 P. R. , China  
Phone. 86-769-8188-6001, 6002 Fax. 86-769-8118-6608

### DIJET INDUSTRIAL CO., LTD. (Mumbai Representative Office)

A-3/204, Happy Valley Homes,  
G.B. Road, Near Ti-ku-ji-ni Wadi, Chitalsar Manpada,  
Thane (West) Mumbai 400 607, India  
Phone. 91-22-4012-1231 Fax. 91-22-4012-1231

### DIJET Incorporated (U.S.A.)

45807 Helm Street, Plymouth, MI 48170 U.S.A.  
Phone. 1-734-454-9100 Fax. 1-734-454-9395

## Web Sites

<http://www.dijet.com> - <http://www.dijet.org>



#### 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.

Your local stockist is: