

THE NEW VALUE FRONTIER

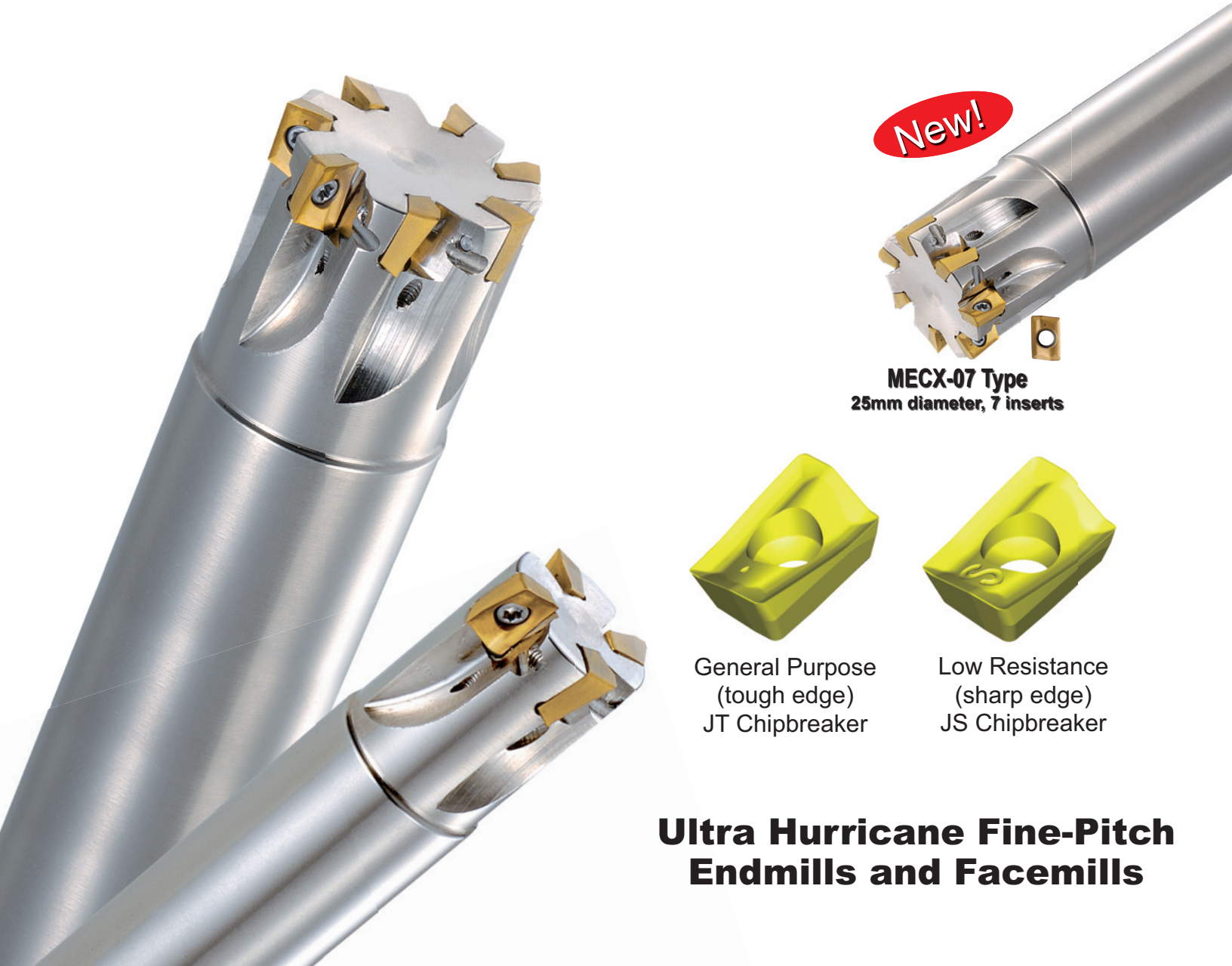


Excellent Surface  
Finishes

Perfect 90°  
Shoulders

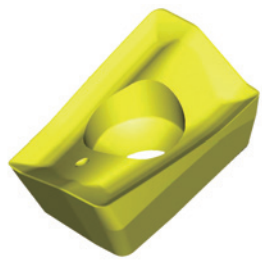
# MECX

High Efficiency / Low Cutting Force

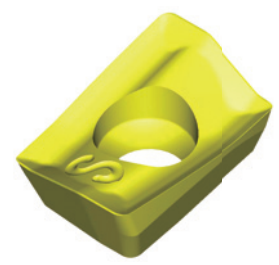


New!

MECX-07 Type  
25mm diameter, 7 inserts



General Purpose  
(tough edge)  
JT Chipbreaker



Low Resistance  
(sharp edge)  
JS Chipbreaker

**Ultra Hurricane Fine-Pitch  
Endmills and Facemills**

# MECX

Excellent Surface Finishes

Perfect 90° Shoulders



- Extra-fine pitch increases machining efficiency
- Low cutting forces
- Ideal for lower horsepower machines

## PVD Coated Carbide Grade Lineup

**General Steel**  
**PR830**

Work Material	General Steel			
Cutting Range	Finishing		Roughing	
ISO Class	P01	P10	P20	P30
Application Range	<b>PR830</b>			

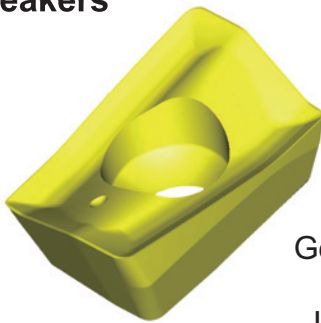
**Stainless Steel**  
**PR925** *NEW*

Work Material	Stainless Steel			
Cutting Range	Finishing		Roughing	
ISO Class	M01	M10	M20	M30
Application Range	<b>PR925</b>			

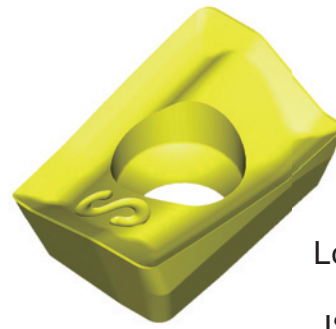
**Cast Iron**  
**PR905**

Work Material	Cast Iron			
Cutting Range	Finishing		Roughing	
ISO Class	K01	K10	K20	K30
Application Range	<b>PR905</b>			

## • Chipbreakers

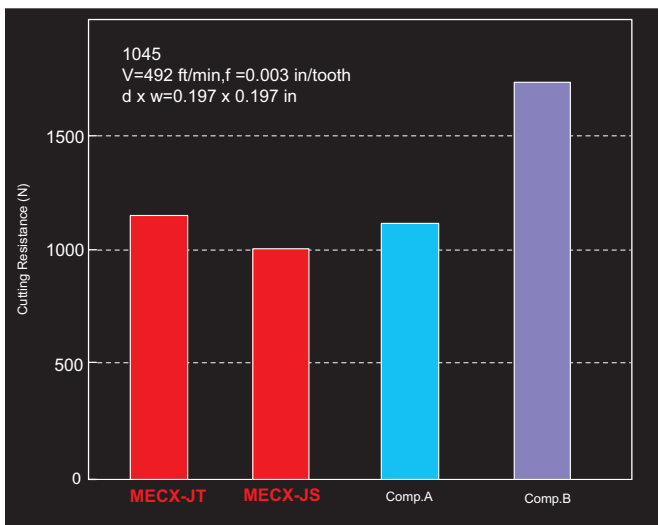


General Purpose  
(tough edge)  
JT Chipbreaker

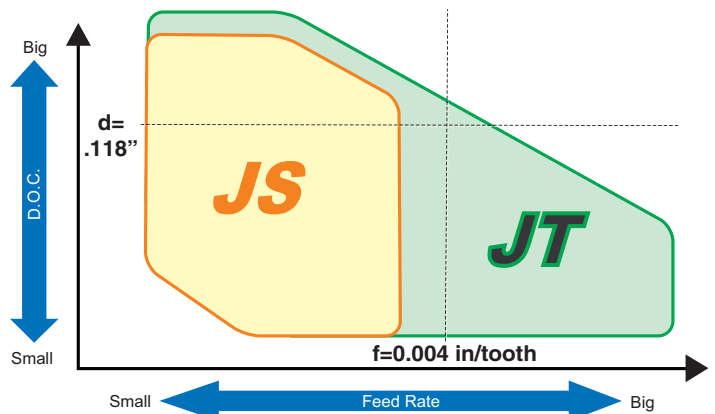


Low Resistance  
(sharp edge)  
JS Chipbreaker

## • Low Cutting Forces: 4140 Steel



## • Chipbreaker Application Chart



### ● Cutting Edge Strength Comparison

# of passes	25	50	75
<b>MECX-JT</b>	→		75
Competitor A	× 28		
	× 7		
Competitor B	× 24		
	× 20		

4140 Steel V=400 sfm, f=0.008ipt d x w = .08" x .4"




### ● Holder Strength Comparison

# of passes	100	200	300
<b>MECX-JT</b>	→		260
	→		330
Competitor A	× 60		
	× 96		
Competitor B	× 103		
	× 227		

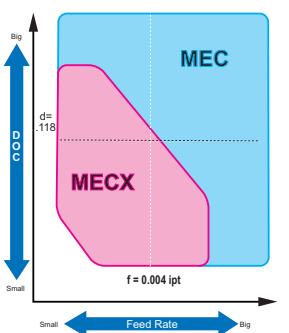
Tool diameter 1049 V=400 sfm, f=0.06 ipt d x w = .2 x .275" .787"

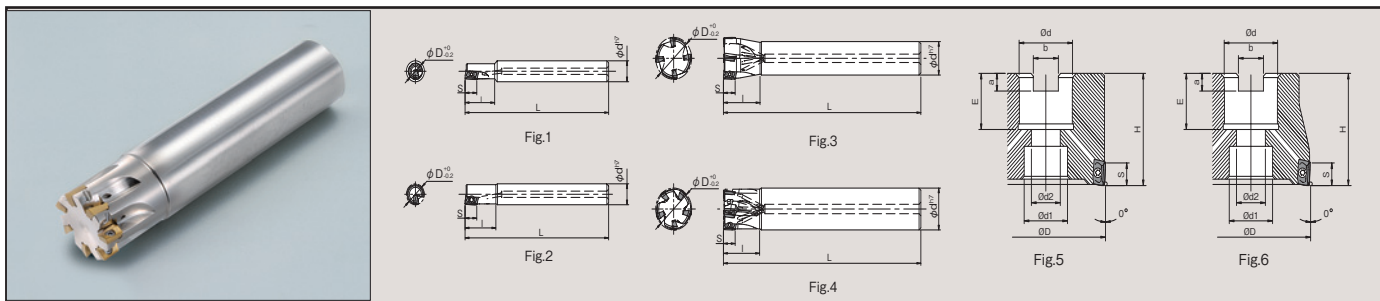
### ● MEC and MECX Comparison (1" diameter cutter)



MECX-07	MEC-11	MEC-17
		
BDMT070304ER-JT	BDMT11T308ER-JT	BDMT170408ER-JT
<ul style="list-style-type: none"> <li>1) Multiple edges promote increased table feeds and high efficiency machining</li> <li>2) Low resistance and high toughness, optimum for low horsepower machines</li> </ul>	<ul style="list-style-type: none"> <li>1) Low resistance and high toughness with a 11mm insert</li> <li>2) High efficiency machining by ensuring toolholder toughness and increased edge contact</li> </ul>	<ul style="list-style-type: none"> <li>1) 17mm edge length insert provides larger depths of cut</li> </ul>

### ● MEC and MECX Application Ranges





● MECX Endmills (Inch)

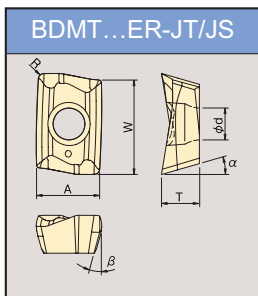
Description	Stock	# of Inserts	Dimensions					Rake Angle		Coolant Hole	Figure	Spare Parts		Applicable Insert	Maximum Revolution
			φD	φd	L	I	S	A.R. (max)	R.R.			Clamp Screw	Wrench		
Standard Shank MECX 0375-S375-07-1T 0500-S500-07-2T 0625-S625-07-3T 0750-S625-07-4T 0750-S625-07-5T 0750-S750-07-4T 0750-S750-07-5T 1000-S100-07-5T 1000-S100-07-7T 1000-S750-07-5T 1000-S750-07-7T	●	1	.375	.375	3.00	.669	.236	12.8	-19.7	yes	Fig. 1	SB-2035TRG	DTM-6	BDMT0703	47150
	●	2	.500	.500	3.27	.709		14.3	-12.9		Fig. 2				45800
	●	3	.625		3.50			-11.3	Fig. 3		43300				
	●	4	.750	.625	4.00			-10.9	16.3		Fig. 2	SB-2042TRG			40900
	●	5	.750		4.00	.787									Fig. 2
	●	4	.750	.750	4.00			-9.5	16.3		Fig. 2	SB-2042TRG			40900
	●	5	.750	.750	4.00	.984									Fig. 2
	●	5	1.00	1.00	4.50			-8.9	16.3		Fig. 2	SB-2042TRG			36900
	●	7	1.00	1.00	4.50										Fig. 2
	●	6	1.25	1.25	5.00	1.181		-8.9	16.3		Fig. 2	SB-2035TRG			33700
	●	8	1.25	1.25	5.00	1.181									Fig. 2
	Long Shank MECXL 0625-S625-07-3T 0750-S750-07-4T 1000-S100-07-5T 1250-S125-07-6T	●	3	.625	.625	5.10		2.165	.236		-11.3	-10.9			yes
●		4	.750	.750	5.50	2.362	-9.5	40900							
●		5	1.00	1.00	6.30	2.362	-8.9	36900							
●		6	1.25	1.25	7.90	2.559	-8.9	33700							

● MECX Facemills (Inch)

Description	# of Inserts	φD	Applicable Insert
MECX 1250R-07-8T	8	1.25	BDMT0703
1500R-07-10T	10	1.50	
2000R-07-12T	12	2.00	
2500R-07-14T	14	2.50	

MECX Facemills will be available in March 2007

● MECX Inserts



Description	Dimension					Angle (°)		Stock PVD Coated Carbide		
	A	T	φd	W	R	α	β	PR830	PR925	PR905
BDMT 070302ER-JT 070304ER-JT	.181	.102	.091	.264	0.008	16	15	●	●	●
					0.016			●	●	●
BDMT 070302ER-JS 070304ER-JS	.181	.102	.091	.264	0.008	16	15	●	●	●
					0.016			●	●	●

● Standard Stock ○ World Express Stock

● MECX Endmill (Metric)

Description	Stock	# of Inserts	Dimensions					Rake Angle		Shape	Spare Parts		Applicable Insert	Maximum Revolution										
			φD	φd	L	I	S	A.R. (max)	R.R.		Clamp Screw	Wrench												
Standard Shank Standard	○	1	8	10	80	16	6	11.7	-24.0	Fig.1	SB-2035TRG	DTM-6	BDMT0703	48,100										
		2	14	12		18								-12.1	44,800									
		3	17	100	20	-11.0								42,400										
			18			-10.9								41,600										
		4	20	110	25	-10.4								40,200										
			21			-10.1								39,500										
		5	25	120	25	-9.7								37,000										
			26			-9.5								36,500										
		6	33	32	130	30								-8.8	33,100									
		Standard	○	5	20	16								110	20	6	16.3	-10.4	Fig.3	SB-2042TRG	DTM-6	BDMT0703	40,200	
				7	25	20								120	25								-9.7	37,000
		Same Shank Size Standard	○	1	10	10								80	17	6	12.8	-18.7	Fig.2	SB-2035TRG	DTM-6	BDMT0703	47,100	
				2	12	12									18								-11.3	46,200
3	16			16	100	20	-10.4	43,200																
	20			20	110		-9.7	40,200																
5	25			25	120	25	-8.9	37,000																
	32			32	130	30	-8.9	33,600																
Fine pitch	○			4	16	16	100	20	6	16.3	-11.3	Fig.4	SB-2042TRG	DTM-6	BDMT0703								43,200	
				5	20	20	110	-10.4															40,200	
				7	25	25	120	25															-9.7	37,000
				8	32	32	130	30															-8.9	33,600
				4	16	16	100	20															-11.3	43,200
Long Shank Standard	○			3	17	16	130	20	6	16.3	-11.0	Fig.3	SB-2042TRG	DTM-6	BDMT0703								42,400	
				4	21	20	140	-10.1															39,500	
		5	26	25	160	25	-9.5	36,500																
		6	33	32	200	30	-8.8	33,100																

● MECX Facemill (Metric)

Description	# of Inserts	Dimension (mm)								Rake Angle		Shape	Maximum Revolution	
		φD	φd	φd1	φd2	H	E	a	b	S	A.R.			R.R.
MECX032R-07-8T-M	8	32	16	14	8.5	35	20	5.5	8.5	6	+7	-8.9	Fig.5	33,600
MECX040R-07-10T-M	10	40	22	18	12	40	22	6.3	10.4			-8.4		30,500
MECX050R-07-12T-M	12	50										-8.3	Fig.6	27,700
MECX063R-07-14T-M	14	63	-7.9	24,900										

**Maximum Revolution**

When running the endmill at the maximum recommended revolution, holder or insert breakage may occur due to the centrifugal force. In order to obtain a smooth surface with the MECX, take multiple cuts at d=.2" each.

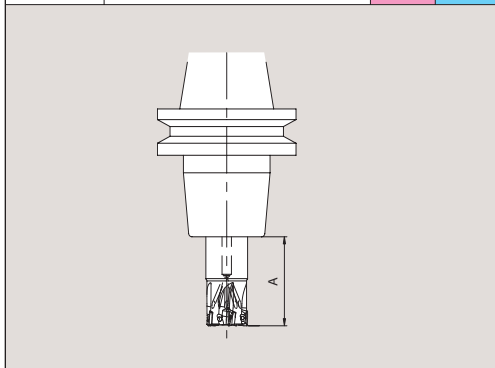
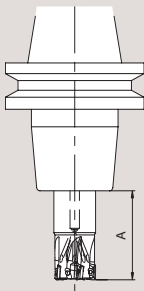
Standard Stock ships same day

World Express ships within 5 days

● Standard Stock ○ World Express Stock

V=492 SFM Workpiece : 1049

Cutting Diameter	Description	Overhang Length A(inch)	
		0.630	-
φ8mm	MECX08-S10-07-1T	.630	-
φ10mm	MECX10-S10-07-1T	.670	-
φ0.375"	MECX0375-S375-07-1T		
φ12mm	MECX12-S12-07-3T	.709	1.18
φ0.500"	MECX0500-S500-07-2T		
φ16mm	MECX16-S16-07-3T	.787	1.57
φ0.625"	MECX0625-S625-07-4T		
φ20mm	MECX20-S20-07-4T	.787	1.57
φ0.750"	MECX0750-S750-07-4T		
φ25mm	MECX25-S25-07-5T	1.00	1.97
φ1.000"	MECX1000-S100-07-5T		
φ32mm	MECX32-S32-07-6T	1.18	1.97
φ1.250"	MECX1250-S125-07-6T		



**Cutting condition of the JS Chipbreaker:**

**MECX Diameter .375"~.500"**  
 Decrease the feedrate by 25% according to cutting parameters

**MECX Diameter .625" and above**  
 Decrease the feed rate and D.O.C by 30% according to cutting parameters

Extending the overhang of 8mm and 10mm diameters is not recommended.

**Caution:**

1. If the tool is used over the maximum recommended revolution, the body of the tool may break and the inserts and clamp screws may be dispersed by centrifugal force.
2. Machine within the recommended cutting conditions of the insert.
3. When using at higher revolutions (over 10,000min-1), refer to the table shown on the right to adjust the balance by combining the MECX and a suitable arbor.

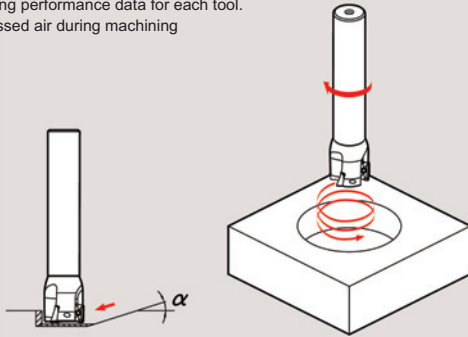
Description	W=φ D/2	Grooving
	Shouldering	Slant/Helical Milling
MECX08-S10-07-1T		
MECX0375-S375-07-1T MECX10-S10-07-1T		
MECX0500-S500-07-2T MECX12-S12-07-3T		
MECX0625-S625-07-4T MECX16-S16-07-3T		
MECX0750-S750-07-4T MECX20-S20-07-4T		
MECX1000-S100-07-5T MECX25-S25-07-5T		
MECX1250-S125-07-6T MECX32-S32-07-6T		

\* Above cutting capability list illustrates application range of standard edge number of JT Chipbreaker (PR830)  
 Use the multiple edge type when machining under 70% of D.O.C.

Maximum Revolution	JIS ISO
~20,000	G16
~30,000	G6.3
30,000~	G2.5

Slant Milling / Helical Milling

For plunge depth per revolution at helical milling, see the cutting performance data for each tool. use compressed air during machining



Cutting Diameter	Applicable Insert	Max.Ramping Angle( $\alpha^\circ$ )
$\phi$ .315	BDMT0703	Not Recommended
$\phi$ .394		1.5°
$\phi$ .472, $\phi$ .551		2°
$\phi$ .630		3°
$\phi$ .669, $\phi$ .709		1.5°
$\phi$ .787		2°
$\phi$ .827		1.8°
$\phi$ 1.00		1.3°
$\phi$ 1.02		1.2°
$\phi$ 1.26		0.8°
$\phi$ 1.30		0.5°

Recommended Cutting Conditions

(JT Chipbreaker)

Work Material	Feed Rate (in/tooth)	Insert Grade Speed		
		PR830	PR925	PR905
Stainless Steel	0.002-0.003-0.004		325-650	
Carbon Steel	0.003-0.004-0.006	400-600		
Alloy Steel	0.002-0.003-0.005	325-600		
Metal Mold Steel	0.002-0.003-0.005	250-500		
Gray Cast Iron	0.003-0.004-0.006			325-600
Ductile Iron	0.003-0.004-0.005			250-400

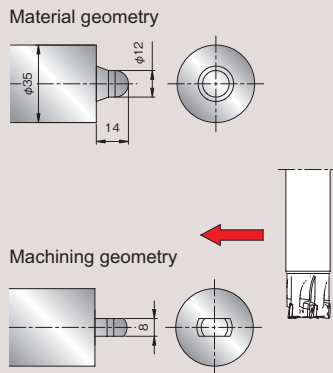
(JS Chipbreaker)

Work Material	Feed Rate (in/tooth)	Insert Grade Speed		
		PR830	PR925	PR905
Stainless Steel	0.0015-0.002-0.003		325-650	
Carbon Steel	0.0015-0.003-0.004	400-600		
Alloy Steel	0.0015-0.002-0.003	325-600		
Metal Mold Steel	0.0015-0.002-0.003	250-500		
Gray Cast Iron	0.0015-0.003-0.004			325-600
Ductile Iron	0.0015-0.002-0.003			250-400

Case Studies

4135 Steel

Oil Pressure part  
 V=525 SFM  
 N=2,550 min<sup>-1</sup>  
 w = 0.04 x 0.47 in  
 f = 0.004 ipt  
 F = 57 IPM  
 Coolant  
 MECX20-S20-07-5T  
 BDMT070304ER-JT  
 PR830

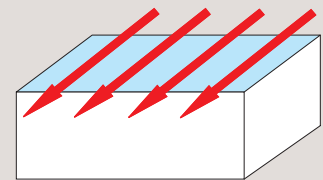


- Machining at the same cutting speed as competitor A (25 mm diameter, 3 edge line), MECX improved cutting efficiency because of increased feed rates, thus producing a greater number of parts.
- MECX's cutting noise was less than competitor A.

Evaluation from the user

1045 Steel

Plate  
 V=722 SFM  
 N=3,500 min<sup>-1</sup>  
 w = 0.04x0.79 in  
 f = 0.005 ipt  
 F = 82.7 IPM  
 Dry  
 MECX20-S20-07-5T  
 BDMT070304ER-JT  
 PR830



- Competitor B (20 mm, 3 edges) produces loud cutting noise and does not have much stability with a table feed of 49.6 IPM.
- The MECX (20 mm, 5 edges) is capable of handling a table feed of 82.7 IPM and its finishing efficiency was almost doubled.

Evaluation from the user

## MEC/MECX Machining Diameter Reference

( $\phi$ D) Dia.	( $\phi$ d) Shank	# of Inserts	Description	Notes	Applicable Inserts	
0.375	0.375	1	MECX 0375-S375-07-1T		BDMT0703	
0.500	0.500	1	MEC0500-S500-11		BDMT1103	
		2	MECX 0500-S500-07-2T		BDMT0703	
0.625	0.500	2	MEC 0625-S500-11T		BDMT11T3	
		3	MECXL 0625-S625-07-3T	Extra Long	BDMT0703	
	0.625	2	MEC 0625-S625-11T		BDMT11T3	
		3	MECX 0625-S625-07-3T		BDMT0703	
0.750	0.625	3	MEC 0750-S625-11T		BDMT11T3	
		4	MECX 0750-S625-07-4T		BDMT0703	
		5	MECX 0750-S625-07-5T		BDMT0703	
	0.750	0.750	2	MEC 0750-S750-5.2-11T	Extra Long	BDMT11T3
			3	MECXL 0750-S750-07-3T	Extra Long	BDMT0703
		3	MEC 0750-S750-11T		BDMT11T3	
		4	MECX 0750-S750-07-4T		BDMT0703	
		5	MECX 0750-S750-07-5T		BDMT0703	
1.000	0.750	2	MEC 1000-S750-17		BDMT1704	
		3	MEC 1000-S750-11T		BDMT11T3	
		5	MECX 1000-S750-07-5T		BDMT0703	
		7	MECX 1000-S750-07-7T		BDMT0703	
	1.000	1.000	2	MEC 1000-S100-6.3-11T	Extra Long	BDMT11T3
				MEC 1000-S100-17		BDMT1704
			3	MEC 1000-S100-6.3-17	Extra Long	BDMT1704
			3	MEC 1000-S100-11T		BDMT11T3
			5	MECX 1000-S100-07-5T		BDMT0703
			5	MECXL 1000-S100-07-5T	Extra Long	BDMT0703
7	MECX 1000-S100-07-7T		BDMT0703			
1.250	1.000	3	MEC 1250-S100-17		BDMT1704	
		4	MEC 1250-S100-11T		BDMT11T3	
	1.250	1.250	2	MEC 1250-S125-7.9-17	Extra Long	BDMT1704
			3	MEC 1250-S125-17		BDMT1704
			4	MEC 1250-S125-11T		BDMT11T3
			6	MECXL 1250-S125-07-6T	Extra Long	BDMT0703
			6	MECX 1250-S125-07-6T		BDMT0703
			8	MECX 1250-S125-07-8T		BDMT0703
1.500	1.250	2	MEC 1500-S125-9.5-17	Extra Long	BDMT1704	
		4	MEC 1500-S125-17		BDMT1704	
		5	MEC 1500-S125-11T		BDMT11T3	



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