

DIJET®

DIE & MOLD SERIES

CATALOG NO. 10010

**HIGH PERFORMANCE DIE & MOLD
ROUGHING APPLICATIONS**

SWING BALL END MILLS



DIJET INCORPORATED
www.dijetusa.com

Swing Ball

High Productivity Indexable Ball Nose End Mill

DIJET's Swing Ball end mills are designed for multi-directional milling of molds, dies and other similar type work pieces. This ball nose end mill can cut a wide range of materials including annealed or heat treated die steels and cast irons.



- **Lower Cutting Forces at Higher Feed Rates**

Cutting forces are reduced by up to 25% when compared with conventional type. This is achieved by the use of a positive style insert with chip breaker groove and edge notches. The double insert design gives the cutter a smooth cutting action and excellent production.

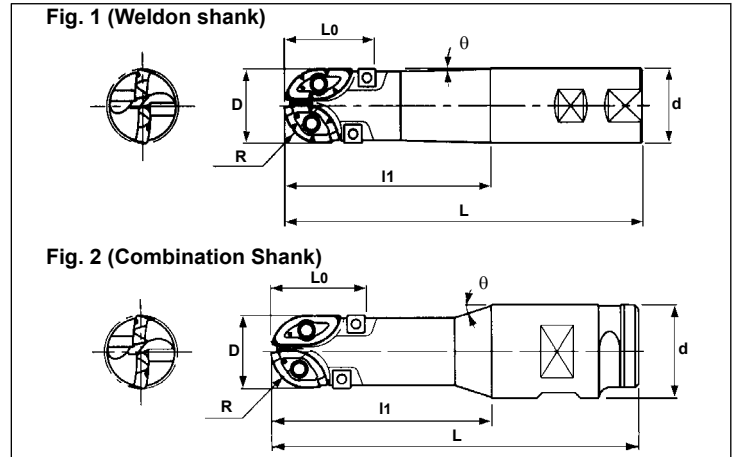
- **Plunge Cutting Possible**

By providing a sub chip pocket at spiral nose R position, this helps eject chips smoothly and improves resistance of chipping or cracking.

- **Reliable Insert Location**

Clamping key is improved to prevent insert movement during the cutting action, including heavy operations. Increased insert thickness provides higher impact strength for safe production.

Swing Ball - Inch



Specifications - Standard Length of Cut

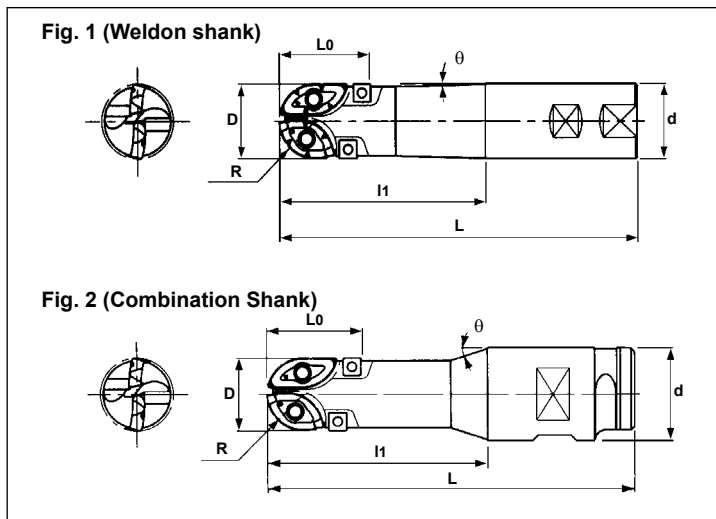
CATALOG NUMBER	DIMENSIONS						FIG.	θ	PARTS		INSERTS			
	D	R	L	L ₀	I ₁	d			Screw	Wrench				
SWB-2075-4	.750	.375	4.03	1.14	2.00	.750	1	-	DSW-307H (2) ESW-206 (2)	T-10SD T-08SD	SWB2075HM (1)* SWB2075HS (1)* ZCMT100308R (2)			
SWB-2075-6	.750	.375	6.03	1.14	3.75	1.00	1	6°						
SWB-2075-100-8	.750	.375	8.00	1.14	5.72	1.00	1	2°	DSW-4085 (2) ESW-206 (2)	T-15SD T-08SD	SWB2100HM (1)* SWB2100HS (1)* ZCMT100308R (2)			
SWB-2100-100-5	1.00	.500	5.00	1.40	2.75	1.00	1	-						
SWB-2100-100-8	1.00	.500	8.00	1.40	3.00	1.00	1	-						
SWB-2100-100-10	1.00	.500	10.00	1.40	5.00	1.00	1	-						
SWB-2100-125-6.5	1.00	.500	6.50	1.40	4.25	1.25	1	-						
SWB-2100-125-8	1.00	.500	8.00	1.40	5.50	1.25	1	7° 30'						
SWB-2125-125-6	1.25	.625	6.00	1.67	3.72	1.25	1	-				DSW-509 (2) CSW-407 (2)	A-20 T-15	SWB2125HM (1)* SWB2125HS (1)* IM-SP32GS (2)
SWB-2125-150-8	1.25	.625	8.00	1.67	5.31	1.50	1	2°						
SWB-2125-150-10	1.25	.625	10.00	1.67	6.75	1.50	1	1° 30'	TSW-511(2) CSW-407 (2)	A-20 T-15	SWB2150HMN (1)* SWB2150HSN (1)* IM-SP32GS (2)			
SWB-2150-150-6	1.50	.75	6.00	1.97	3.31	1.50	1	-						
SWB-2150-200-8	1.50	.75	8.00	1.97	4.75	2.00	1	30°						
SWB-2200-8-PN200	2.00	1.00	8.00	2.36	4.00	2.00	2	-	HSW-614H (2) EXW-510 (2)	T-30 A-20	SWB2200HMN (1)* SWB2200HSN (1)* IM-SP43GS (2)			
SWB-2200-10-PN200	2.00	1.00	10.00	2.36	6.00	2.00	2	-						
SWB-2200-12-PN200	2.00	1.00	12.00	2.36	8.00	2.00	2	-						

Specifications - Longer Length of Cut

CATALOG NUMBER	DIMENSIONS						FIG.	θ	PARTS		INSERTS
	D	R	L	L ₀	I ₁	d			Screw	Wrench	
SWB4-2200-8-PN200	2.00	1.00	8.00	3.15	4.75	2.00 w/ Putnum Lock	2	-	HSW-614H (2) EXW-510 (4)	T-30 A-20	SWB2200HMN (1)* SWB2200HSN (1)* IM-SP43GS (4)
SWB6-2200-10-PN200	2.00	1.00	10.00	3.93	6.75	2.00 w/ Putnum Lock	2	-			
SWB6-2200-12-PN200	2.00	1.00	12.00	3.93	8.75	2.00 w/ Putnum Lock	2	-	EXW-510 (6)	A-20	SWB2200HMN (1)* SWB2200HSN (1)* IM-SP43GS (6)

NOTE: All cutters supplied without inserts.
*May also use inserts for welds or hardened material (Figs. 5 & 6)

Swing Ball - Metric



Specifications - Standard Length of Cut

CATALOG NUMBER	DIMENSIONS						FIG.	θ	PARTS		INSERTS
	D	R	L	Lo	I1	d			Screw	Wrench	
SWB-220-100-4	20mm	10mm	4.00	1.18	1.72	1.00	1	30°	DSW-307H (2) ESW-206 (2)	T-10SD T-08SD	SWB220HM (1)* SWB220HS (1)* ZCMT100308R (2)
SWB-220-100-6	20mm	10mm	6.00	1.18	2.00	1.00	1	15°			
SWB-220-100-8	20mm	10mm	8.00	1.18	4.00	1.00	1	2°39'			
SWB-230-125-6	30mm	15mm	6.00	1.62	3.50	1.25	1	15°	DSW-509 (2) CSW-407 (2)	A-20 T-15	SWB230HM (1)* SWB230HS (1)* IM-SP32GS (2)
SWB-230-125-8	30mm	15mm	8.00	1.62	4.00	1.25	1	1° 30'			
SWBS4050C508	40mm	20mm	7.87	1.96	4.72	2.00 w/ Putnum Lock	2	18°	TSW-612 (2) ESW-406 (2)	T-25 T-15	SWB240HMN (1)* SWB240HSN (1)* IM-SP32GS (2)
SWBM4050C508	40mm	20mm	9.84	1.96	6.69		2	18°			
SWBL4050C508	40mm	20mm	11.81	1.96	8.66		2	6°			
SWBE4050C508	40mm	20mm	13.78	1.96	10.63		2	3°			
SWBS5060C508	50mm	25mm	7.87	2.36	4.72	2.00 w/ Putnum Lock	2	-	HSW-614H (2) EXW-510 (2)	T-30 A-20	SWB250HMN (1)* SWB250HSN (1)* IM-SP43GS (2)
SWBM5060C508	50mm	25mm	9.84	2.36	6.69		2	-			
SWBL5060C508	50mm	25mm	11.81	2.36	8.66		2	-			
SWBE5060C508	50mm	25mm	13.78	2.36	10.63		2	-			

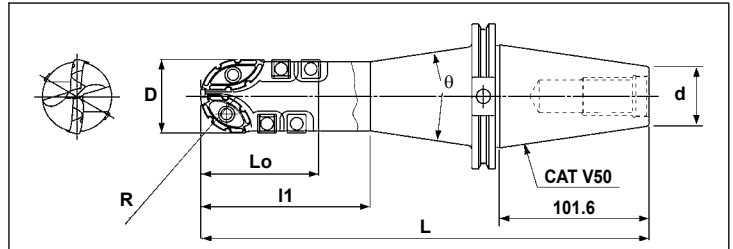
Specifications - Longer Length of Cut

CATALOG NUMBER	DIMENSIONS						FIG.	θ	PARTS		INSERTS
	D	R	L	Lo	I1	d			Screw	Wrench	
SWB4-250-8-PN200	50mm	25mm	8.00	3.15	4.75	2.00 w/ Putnum Lock	2	-	HSW-614H (2) EXW-510 (4)	T-30 A-20	SWB250HMN (1)* SWB250HSN (1)* IM-SP43GS (4)
SWB6-250-10-PN200	50mm	25mm	10.00	3.93	6.75	2.00 w/ Putnum Lock	2	-	HSW-614H (2) EXW-510 (6)	T-30 A-20	SWB250HMN (1)* SWB250HSN (1)* IM-SP43GS (6)

NOTE: All cutters supplied without inserts.

* May also use inserts for welds or hardened material (Figs. 5 & 6)

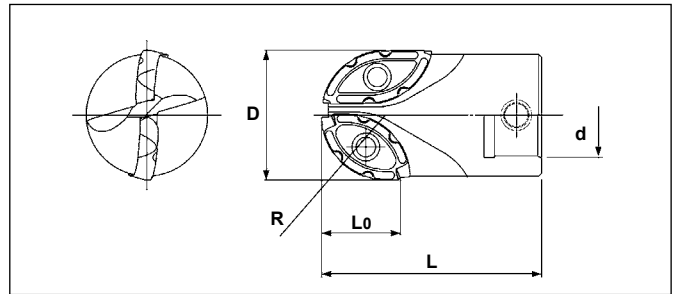
Cat V50 Shank - Metric



Specifications

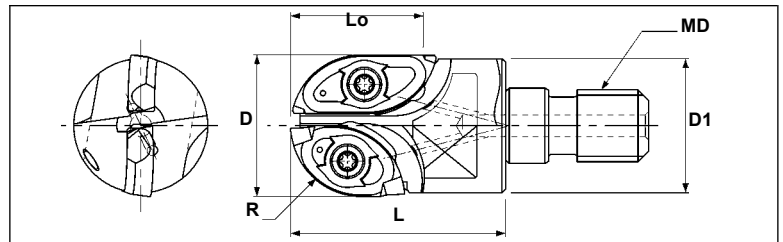
CATALOG NUMBER	DIMENSIONS						FIG.	θ	PARTS		INSERTS
	D	R	L	Lo	l1	d			Screw	Wrench	
SWB4-230-4-CV5	30mm	15mm	11.00	2.21	4.00	CV5	1	30°	DSW-509 (2) CSW-407 (4)	A-20 T-15	SWB230HM (1)* SWB230HS (1)* IM-SP32GS (4)
SWB4-230-6-CV5	30mm	15mm	13.00	2.21	6.00	CV5	1	30°			
SWB4-230-8-CV5	30mm	15mm	15.00	2.21	8.00	CV5	1	30°			
SWB4-250-6-CV5	50mm	25mm	10.00	3.15	4.52	CV5	1	55°	HSW-614H (2) EXW-510 (4)	T-30 A-20	SWB250HMN (1)* SWB250HSN (1)* IM-SP43GS (4)
SWB4-250-8-CV5	50mm	25mm	12.00	3.15	4.52	CV5	1	17°			
SWB4-250-10-CV5	50mm	25mm	14.00	3.15	4.52	CV5	1	10°			

End Cap Type - Inch



CATALOG NUMBER	DIMENSIONS					PARTS				INSERTS
	D	R	L	Lo	d	Screw	Wrench	Set Screw	Wrench	
SWB-2200-EC	2.00	1.00	3.38	1.18	1.250	HSW-614H	T-30	ECS-0030	A-316	SWB2200HMN SWB2200HSN

Modular Head - Inch

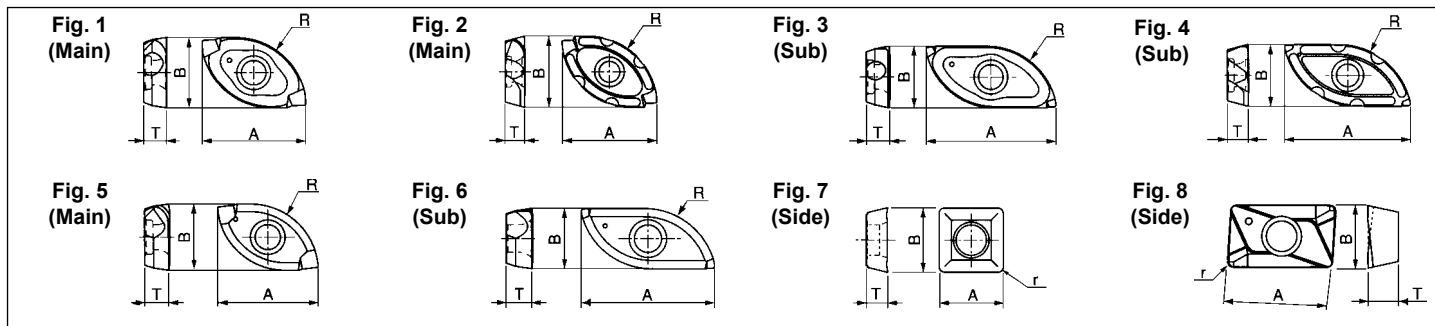


Specifications

CATALOG NUMBER	DIMENSIONS						HEAD TORQUE lbs./ft	PARTS		INSERT
	D	R	L	Lo	D1	MD		Screw	Wrench	
MSW-2075-M10	.750	.375	1.18	.700	.728	M10	33.9	DSW-307H	T-10SD	SWB2075HM (1)* SWB2075HS (1)*
MSW-2100-M12	1.00	.500	1.38	.860	.941	M12	59	DSW-4085	T-15SD	SWB2100HM (1)* SWB2100HS (1)*
MSW-2125-M16	1.25	.625	1.69	1.10	1.14	M16	66.3	DSW-509	A-20	SWB2125HM (1)* SWB2125HS (1)*

Note: All cutters are supplied without inserts.
*May also use inserts for welds or hardened material (Figs. 5 & 6)

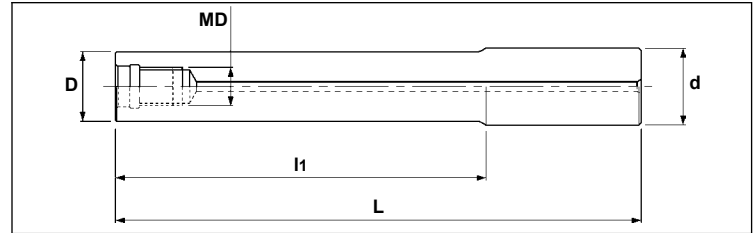
Inserts



	CATALOG NUMBER	DIMENSIONS				FIG.	COATED		
		R	A	B	T		JC5015	JC5040	JC8015
INCH SIZES	SWB2075HM	.375	.625	.372	.150	1	•	•	
	SWB2075HS	.375	.765	.307	.150	3	•	•	
	SWB2075MMW	.375	.625	.372	.150	5	•		*
	SWB2075MSW	.375	.765	.307	.150	6	•		*
	SWB2100HM	.500	.728	.487	.150	1	•	•	
	SWB2100HS	.500	.936	.413	.150	3	•	•	
	SWB225MMW	.500	.728	.487	.150	5	•		*
	SWB225MSW	.500	.936	.413	.150	6	•		*
	SWB2125HM	.625	.937	.630	.217	1	•	•	
	SWB2125HS	.625	1.16	.549	.217	3	•	•	
	SWB2125MMW	.625	.937	.630	.217	5	•		*
	SWB2125MSW	.625	1.16	.549	.217	6	•		*
	SWB2150HMN	.750	1.14	.772	.236	2	•	•	
	SWB2150HSN	.750	1.43	.610	.236	4	•	•	
	SWB2150MMW	.750	1.14	.772	.236	5	•		*
	SWB2150MSW	.750	1.43	.610	.236	6	•		*
	SWB2200HMN	1.00	1.35	1.01	.276	2	•	•	
	SWB2200HSN	1.00	1.68	.819	.276	4	•	•	
SWB2200MMW	1.00	1.35	1.01	.276	5	•		*	
SWB2200MSW	1.00	1.68	.819	.276	6	•		*	
ZCMT100308R	.031	.409	.250	.134	8	•	•		
IM-SP32GS	.016	.375	.375	.125	7	•	•		
IM-SP43GS	.031	.500	.500	.187	7	•	•		
METRIC SIZES	SWB220HM	10mm	.622	.390	.144	1	•	•	
	SWB220HS	10mm	.787	.323	.144	3	•	•	
	SWB220MMW	10mm	.622	.390	.144	5	•		*
	SWB220MSW	10mm	.787	.323	.144	6	•		*
	SWB230HM	15mm	.874	.583	.211	1	•	•	
	SWB230HS	15mm	1.08	.484	.211	3	•	•	
	SWB230MMW	15mm	.874	.583	.211	5	•		*
	SWB230MSW	15mm	1.08	.484	.211	6	•		*
	SWB240HMN	20mm	1.20	.819	.270	2	•	•	
	SWB240HSN	20mm	1.48	.642	.270	4	•	•	
	SWB240MMW	20mm	1.20	.819	.270	5	•		*
	SWB240MSW	20mm	1.48	.642	.270	6	•		*
	SWB250HMN	25mm	1.35	1.01	.276	2	•	•	
	SWB250HSN	25mm	1.68	.819	.276	4	•	•	
	SWB250MMW	25mm	1.35	1.01	.276	5	•		*
	SWB250MSW	25mm	1.68	.819	.276	6	•		*
	ZCMT100308R	.031	.409	.250	.134	8	•	•	
	IM-SP32GS	.016	.375	.375	.125	7	•	•	
IM-SP43GS	.031	.500	.500	.187	7	•	•		

*Coming Soon

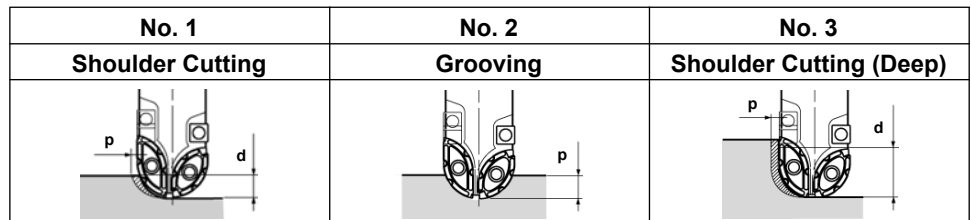
Modular Head Holders - Inch Carbide Holder with Coolant Hole



Specifications

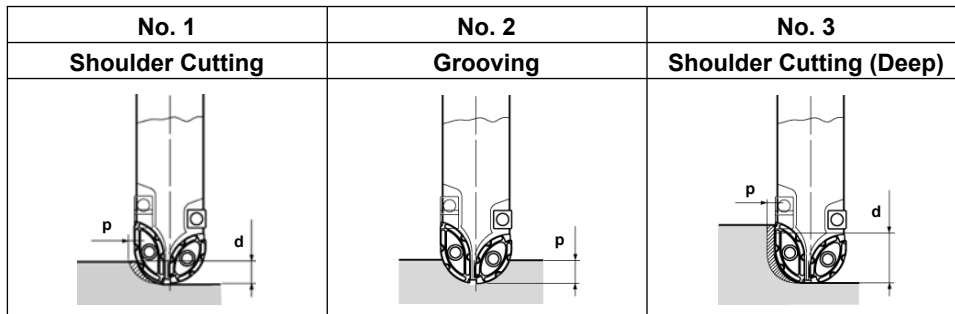
CATALOG NUMBER	DIMENSIONS					APPLICABLE HOLDERS
	D	I1	L	d	MD	
MSN-M10-2.0-S075C	.728	2.00	5.00	.750	M10	MSW-2075-M10
MSN-M10-4.0-S075C	.728	4.00	7.00	.750	M10	
MSN-M10-6.0-S075C	.728	6.00	9.00	.750	M10	
MSN-M12-2.0-S100C	.945	2.00	5.00	1.00	M12	MSW-2100-M12
MSN-M12-4.0-S100C	.945	4.00	7.00	1.00	M12	
MSN-M12-6.0-S100C	.945	6.00	9.00	1.00	M12	
MSN-M12-8.0-S100C	.945	8.00	11.00	1.00	M12	
MSN-M16-2.0-S125C	1.14	2.00	5.00	1.25	M16	MSW-2125-M16
MSN-M16-4.0-S125C	1.14	4.00	7.00	1.25	M16	
MSN-M16-6.0-S125C	1.14	6.00	9.00	1.25	M16	
MSN-M16-8.0-S125C	1.14	8.00	11.00	1.25	M16	

Recommended Cutting Conditions



WORK MATERIAL	INSERT GRADE	RATE	TOOL DIAMETER								
			0.75" (20 mm)			1.00"			1.25" (30mm)		
			TYPE OF CUTTING								
			No. 1	No. 2	No. 3	No. 1	No. 2	No. 3	No. 1	No. 2	No. 3
Gray Cast Iron (HB 160-260)	JC5015	RPM	3200	3200	2800	2600	2600	2300	2300	2300	1840
		IPM	52	46	30	45	40	26	55	45	25
		d / p	.200/.160	.200/-	.625/.080	.240/.200	.240/-	.800/.120	.400/.240	.400/-	1.10/.240
Nodular Cast Iron (HB 170-300)	JC5015	RPM	3000	3000	2700	2400	2400	2200	2050	2050	1650
		IPM	44	39	26	40	35	24	45	35	20
		d / p	.200/.160	.200/-	.625/.080	.240/.200	.240/-	.800/.120	.400/.240	.400/-	1.10/.240
Cast Steel (HB 150-255)	JC5040	RPM	3000	3000	2700	2400	2400	2200	2100	2100	1700
		IPM	36	32	21	34	30	20	36	30	17
		d / p	.200/.160	.200/-	.625/.080	.240/.200	.240/-	.800/.120	.400/.240	.400/-	1.10/.240
Mild Carbon Steel (HB 150-250)	JC5040	RPM	3200	3200	2860	2600	2600	2300	2300	2300	1800
		IPM	40	35	22	35	30	20	40	35	18
		d / p	.200/.160	.200/-	.625/.080	.240/.200	.240/-	.800/.120	.400/.240	.240/-	1.10/.240
Tool Steel (HB 150-255)	JC5015	RPM	2700	2700	2400	2200	2200	1900	2000	2000	2000
		IPM	32	27	19	27	24	17	32	25	16
		d / p	.200/.160	.200/-	.625/.080	.240/.200	.240/-	.800/.120	.400/.240	.240/-	1.10/.120
Die Steel (HRC 40-50)	JC5015	RPM	1750	1750	N/A	1600	1600	N/A	1600	1600	N/A
		IPM	16	14	N/A	16	14	N/A	20	16	N/A
		d / p	.080/.120	.080/-	N/A	.120/.160	.120/-	N/A	.160/.200	.160/-	N/A
Die Steel & Welding (HRC 55-63)	JC5015	RPM	1800	1800	N/A	1600	1600	N/A	1400	1400	N/A
		IPM	10	8	N/A	12	10	N/A	14	11	N/A
		d / p	.080/.120	.080/-	N/A	.120/.120	.120/-	N/A	.120/.200	.120/-	N/A
Stainless Steel (HRC 30-45)	JC5015-F JC5040-R	RPM	1800	1800	N/A	1600	1600	N/A	1600	1600	N/A
		IPM	14	12	N/A	16	14	N/A	20	16	N/A
		d / p	.080/.120	.080/-	N/A	.120/.160	.120/-	N/A	.160/.200	.160/-	N/A

Recommended Cutting Conditions for Swing Ball



WORK MATERIAL	INSERT GRADE	RATE	TOOL DIAMETER					
			1.50" (40mm)			2.00" (50mm)		
			TYPE OF CUTTING					
			No. 1	No. 2	No. 3	No. 1	No. 2	No. 3
Gray Cast Iron (HB 160-260)	JC5015	RPM	1850	1850	1500	1500	1500	1200
		IPM	60	45	22	60	40	20
		d / p	.400/.320	.500/-	1.40/.320	.400/.400	.600/-	1.60/.400
Nodular Cast Iron (HB 170-300)	JC5015	RPM	1650	1650	1320	1300	1300	1050
		IPM	45	32	18	40	30	15
		d / p	.400/.320	.500/-	1.40/.320	.400/.400	.600/-	1.60/.400
Cast Steel (HB 150-255)	JC5040	RPM	1670	1670	1340	1350	1350	1100
		IPM	38	28	16	35	25	15
		d / p	.400/.300	.500/-	1.40/.320	.400/.400	.600/-	1.60/.400
Mild Carbon Steel (HB 150-250)	JC5040	RPM	1850	1850	1500	1500	1500	1200
		IPM	42	32	18	40	30	18
		d / p	.400/.320	.500/-	1.40/.320	.400/.400	.600/-	1.60/.400
Tool Steel (HB 150-255)	JC5015	RPM	1560	1560	1250	1250	1250	1000
		IPM	32	24	14	30	25	12
		d / p	.400/.320	.500/-	1.40/.320	.400/.400	.600/-	1.60/.400
Die Steel (HRC 40-50)	JC5015	RPM	1200	1200		1200	1200	
		IPM	22	65	N/A	25	20	N/A
		d / p	.160/.200	.200/-		.200/.240	.240/-	
Die Steel & Welding (HRC 55-63)	JC5015	RPM	1300	1300		1200	1200	
		IPM	12	10	N/A	18	15	N/A
		d / p	.120/.200	.120/-		.120/.240	.120/-	
Stainless Steel (HRC 30-45)	JC5015-SF	RPM	1400	1400		1200	1200	
	JC5040-R	IPM	18	14	N/A	25	20	N/A
		d / p	.160/.200	.601/-		.200/.240	.240/-	

