



DIE & MOLD SERIES

CATALOG NO. 10017

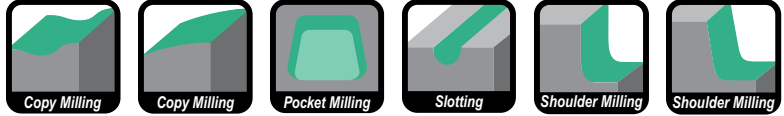
**HIGH PERFORMANCE DIE & MOLD
FINISHING APPLICATION**

MIRROR BALL MIRROR RADIUS

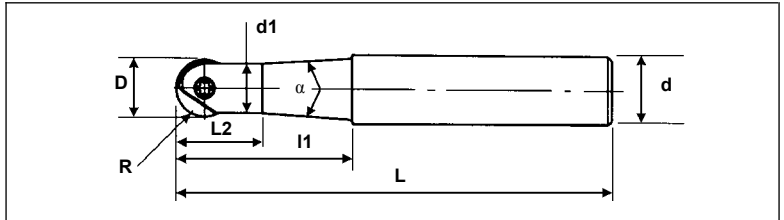


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Mirror Ball - Steel Shank



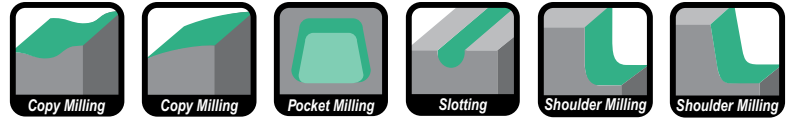
BNM Type - Taper Style



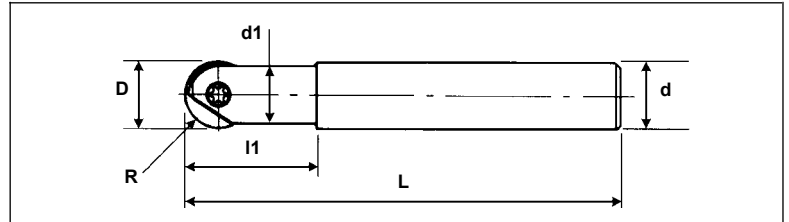
Specifications - Taper Style

CATALOG NUMBER	DIMENSIONS								INSERT INCH (METRIC)	PARTS	
	D	R	L	d1	I1	L2	d	α		Screw	Wrench
BNMS-060035T-S037	.250" (6mm)	.125	3.62	.212	1.37	.590	.375	12°	BME-0250 (BNM-060)	FSW-2005H	T-06
BNMS-080035T-S050	.312" (8mm)	.156	3.62	.283	1.37	.728	.500	21°17'	BME-0312 (BNM-080)	FSW-2506H	T-07
BNMM-080053T-S050	.312" (8mm)	.156	4.33	.283	2.08	.728	.500	8°			
BNML-080075T-S050	.312" (8mm)	.156	5.19	.283	2.95	.728	.500	3°40'			
BNMS-100035T-S050	.375" (10mm)	.187	3.62	.355	1.37	.827	.500	19°3'	BME-0375 (BNM-100)	FSW-3007H	T-08
BNMM-100053T-S050	.375" (10mm)	.187	4.33	.355	2.08	.827	.500	7°			
BNML-100075T-S050	.375" (10mm)	.187	5.19	.355	2.95	.827	.500	3°40'			
BNMM-120053T-S050	.500" (12mm)	.250	4.33	.393	2.08	.866	.500	3°	BME-0500 (BNM-120)	FSW-3509	T-10
BNML-120085T-S062	.500" (12mm)	.250	5.70	.393	3.34	.866	.625	3°			
BNMM-160063T-S062	.625" (16mm)	.312	4.84	.551	2.48	1.10	.625	2°48'	BME-0625 (BNM-160)	FSW-4013	T-15
BNML-160100T-S075	.625" (16mm)	.312	6.53	.551	3.93	1.10	.750	3°			
BNMM-200075T-S075	.750" (20mm)	.375	5.55	.669	2.95	1.34	.750	2°	BME-0750 (BNM-200)	FSW-5016	A-20
BNML-200115T-S100	.750" (20mm)	.375	7.51	.669	4.52	1.34	1.00	4°			
BNMM-250090T-S100	1.00" (25mm)	.500	6.53	.826	3.54	1.61	1.00	4°40'	BME-1000 (BNM-250)	FSW-6020	T-30
BNML-250135T-S125	1.00" (25mm)	.500	8.46	.826	5.31	1.61	1.25	3°			
BNMM-300106T-S125	1.25" (30mm or 32mm)	.625	7.32	1.02	4.17	1.93	1.25	5°30'	BME-1250 (BNM-300) (BNM-320)	FSW-8025	A-40
BNML-300160T-S125	1.25" (30mm or 32mm)	.625	9.44	1.02	6.29	1.93	1.25	2°20'			

Note: All cutters are supplied without inserts.



BNM Type - Straight Style

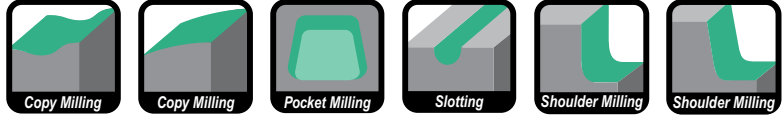


Specifications - Straight Style

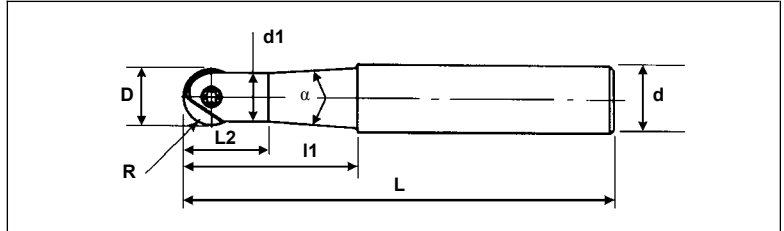
CATALOG NUMBER	DIMENSIONS							INSERT INCH (METRIC)	PARTS	
	D	R	L	d1	l1	d	α		Screw	Wrench
BNMS-120026S-S050	.500" (12mm)	.250	3.26	.393	1.02	.500	-	BME-0500 (BNM-120)	FSW-3509	T-10
BNMM-120032S-S050	.500" (12mm)	.250	5.13	.393	1.26	.500	-			
BNMM-120053S-S050	.500" (12mm)	.250	4.33	.393	2.08	.500	-			
BNML-120046S-S050	.500" (12mm)	.250	5.88	.393	1.81	.500	-			
BNMS-160032S-S062	.625" (16mm)	.312	3.62	.551	1.26	.625	-	BME-0625 (BNM-160)	FSW-4013	T-15
BNMM-160063S-S062	.625" (16mm)	.312	4.84	.551	2.48	.625	-			
BNMS-200038S-S075	.750" (20mm)	.375	4.09	.669	1.49	.750	-	BME-0750 (BNM-200)	FSW-5016	A-20
BNMM-200044S-S075	.750" (20mm)	.375	6.28	.669	1.73	.750	-			
BNMM-200075S-S075	.750" (20mm)	.375	5.55	.669	2.95	.750	-			
BNML-200060S-S075	.750" (20mm)	.375	6.88	.669	2.36	.750	-			
BNMS-250045S-S100	1.00" (25mm)	.500	4.76	.826	1.77	1.00	-	BME-1000 (BNM-250)	FSW-6020	T-30
BNMM-250070S-S100	1.00" (25mm)	.500	7.50	.826	2.76	1.00	-			
BNMM-250090S-S100	1.00" (25mm)	.500	6.53	.826	3.54	1.00	-			
BNML-250080S-S100	1.00" (25mm)	.500	9.06	.826	3.15	1.00	-			
BNMS-300053S-S125	1.25" (30mm or 32mm)	.625	5.23	1.02	2.08	1.25	-	BME-1250 (BNM-300 or BNM-320)	FSW-8025	A-40
BNMM-300106S-S125	1.25" (30mm or 32mm)	.625	7.32	1.02	4.17	1.25	-			

Note: All cutters are supplied without inserts.

Mirror Ball - Carbide Shank



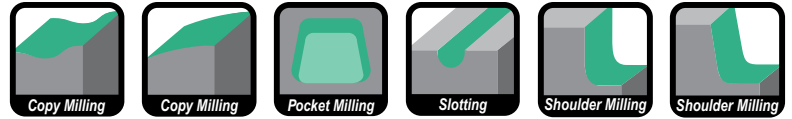
BNM-C Type - Taper Style



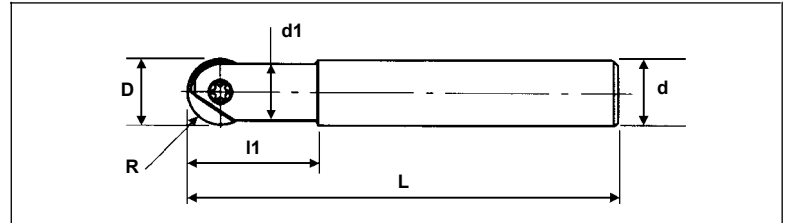
Specifications - Taper Style

CATALOG NUMBER	DIMENSIONS								INSERT INCH (METRIC)	PARTS	
	D	R	L	d1	l1	L2	d	α		Screw	Wrench
BNMS-060032T-S037C	.250" (6mm)	.125	3.50	.212	1.26	.492	.375	10°	BME-0250 (BNM-060)	FSW-2005H	T-06
BNMM-060050T-S037C	.250" (6mm)	.125	4.21	.212	1.96	.492	.375	5°			
BNML-060072T-S037C	.250" (6mm)	.125	5.07	.212	2.83	.492	.375	3°			
BNMXL-060092T-S037C	.250" (6mm)	.125	5.86	.228	3.62	.492	.375	2°			
BNMS-080035T-S050C	.312" (8mm)	.156	3.62	.283	1.37	.787	.500	10°	BME-0312 (BNM-080)	FSW-2506H	T-07
BNMM-080053T-S050C	.312" (8mm)	.156	4.33	.283	2.08	.787	.500	8°			
BNML-080075T-S050C	.312" (8mm)	.156	5.19	.283	2.95	.787	.500	5°			
BNMXL-080095T-S050C	.312" (8mm)	.156	6.30	.283	3.74	.787	.500	4°			
BNMS-100035T-S050C	.375" (10mm)	.187	3.62	.355	1.37	.886	.500	10°	BME-0375 (BNM-100)	FSW-3007H	T-08
BNMM-100053T-S050C	.375" (10mm)	.187	4.33	.355	2.08	.886	.500	6°			
BNML-100075T-S050C	.375" (10mm)	.187	5.19	.355	2.95	.886	.500	3°			
BNMXL-100095T-S050C	.375" (10mm)	.187	6.30	.355	3.74	.886	.500	3°			
BNMM-120053T-S050C	.500" (12mm)	.250	4.33	.393	2.08	1.02	.500	3°	BME-0500 (BNM-120)	FSW-3509	T-10
BNML-120085T-S062C	.500" (12mm)	.250	5.70	.393	3.34	1.02	.625	4°			
BNMXL-120130T-S062C	.500" (12mm)	.250	8.66	.393	5.11	1.02	.625	2°			
BNML-160100T-S075C	.625" (16mm)	.312	6.53	.551	3.93	1.22	.750	2°	BME-0625 (BNM-160)	FSW-4013	T-15
BNML-200115T-S100C	.750" (20mm)	.375	7.52	.669	4.52	1.41	1.00	5°	BME-0750 (BNM-200)	FSW-5016	A-20

Note: All cutters are supplied without inserts.



BNM-C Type - Straight Style

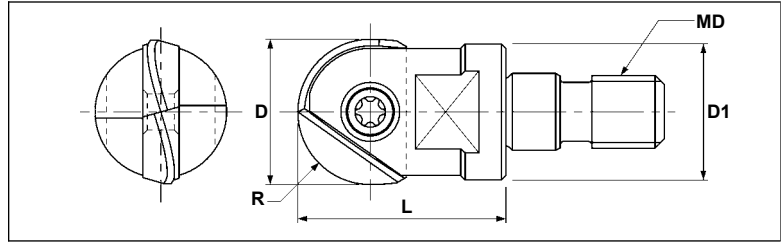


Specifications - Straight Style

CATALOG NUMBER	DIMENSIONS							INSERT INCH (METRIC)	PARTS	
	D	R	L	d1	l1	d	α		Screw	Wrench
BNMS-060038S-S025C	.250" (6mm)	.125	3.75	.212	1.50	.250	-	BME-0250 (BNM-060)	FSW-2005H	T-06
BNMM-060050S-S025C	.250" (6mm)	.125	4.25	.212	2.00	.250	-			
BNML-060076S-S025C	.250" (6mm)	.125	5.25	.212	3.00	.250	-			
BNMS-080038S-S031C	.312" (8mm)	.156	3.75	.283	1.50	.312	-	BME-0312 (BNM-080)	FSW-2506H	T-07
BNMM-080057S-S031C	.312" (8mm)	.156	4.50	.283	2.25	.312	-			
BNML-080089S-S031C	.312" (8mm)	.156	5.75	.283	3.50	.312	-			
BNMS-100038S-S037C	.375" (10mm)	.187	3.75	.354	1.50	.375	-	BME-0375 (BNM-100)	FSW-3007H	T-08
BNMM-100057S-S037C	.375" (10mm)	.187	4.50	.354	2.25	.375	-			
BNML-100089S-S037C	.375" (10mm)	.187	5.75	.354	3.50	.375	-			
BNMS-120029S-S050C	.500" (12mm)	.250	3.38	.393	1.14	.500	-	BME-0500 (BNM-120)	FSW-3509	T-10
BNMM-120063S-S050C	.500" (12mm)	.250	4.75	.393	2.50	.500	-			
BNML-120101S-S050C	.500" (12mm)	.250	6.35	.393	4.00	.500	-			
BNMS-160034S-S062C	.625" (16mm)	.312	3.70	.551	1.33	.625	-	BME-0625 (BNM-160)	FSW-4013	T-15
BNMM-160063S-S062C	.625" (16mm)	.312	4.84	.551	2.48	.625	-			
BNML-160114S-S062C	.625" (16mm)	.312	7.10	.551	4.50	.625	-			
BNMS-200038S-S075C	.750" (20mm)	.375	4.09	.669	1.49	.750	-	BME-0750 (BNM-200)	FSW-5016	A-20
BNMM-200075S-S075C	.750" (20mm)	.375	5.55	.669	2.95	.750	-			
BNML-200127S-S075C	.750" (20mm)	.375	8.00	.669	5.00	.750	-			
BNMM-250114S-S100C	1.00" (25mm)	.500	7.50	.826	4.50	1.00	-	BME-1000 (BNM-250)	FSW-6020	T-30
BNML-250152S-S100C	1.00" (25mm)	.500	10.00	.826	6.00	1.00	-			

Note: All cutters are supplied without inserts.

Modular Head

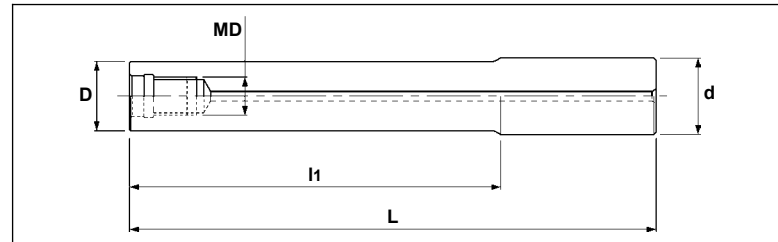


Specifications

CATALOG NUMBER	DIMENSIONS					HEAD TORQUE lbs./ft	PARTS		INSERT	
	D	R	L	D1	MD		Screw	Wrench	Inch	Metric
MBN-120-M6	.500"/12mm	.250	.787	.452	M6	10.85	FSW-3509	T-10	BME-0500	BNM-120
MBN-160-M8	.625"/16mm	.312	.903	.591	M8	16.9	FSW-4013	T-15	BME-0625	BNM-160
MBN-200-M10	.750"/20mm	.375	1.16	.728	M10	33.9	FSW-5016	A-20	BME-0750	BNM-200
MBN-250-M12	1.00"/25mm	.500	1.38	.945	M12	59	FSW-6020	T-30	BME-1000	BNM-250
MBN-300-M16	1.25"/30mm or 32mm	.625	1.72	1.14	M16	66.3	FSW-8025	A-40	BME-1250	BNM-300 or BNM-320

Note: All cutters are supplied without inserts.

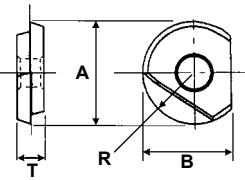
Carbide Holder with Coolant Hole



Specifications

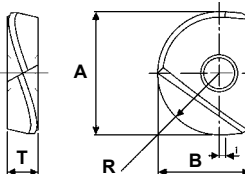
CATALOG NUMBER	DIMENSIONS					APPLICABLE HOLDERS
	D	l1	L	d	MD	
MSN-M6-1.0-S050C	.452	1.00	3.15	.500	M6	MBN-120, MRN-120
MSN-M6-2.0-S050C	.452	2.00	3.93	.500	M6	
MSN-M6-3.0-S050C	.452	3.00	5.12	.500	M6	
MSN-M8-2.0-S062C	.591	2.00	5.00	.625	M8	MBN-160-M8, MRN-160-M8
MSN-M8-4.0-S062C	.591	4.00	7.00	.625	M8	
MSN-M8-6.0-S062C	.591	6.00	9.00	.625	M8	
MSN-M10-2.0-S075C	.728	2.00	5.00	.750	M10	MBN-200-M10, MRN-2075-M10, MRN-200-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	MBN-250-M12, MRN-250-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	MBN-300-M16, MRN-300-M16, MRN-320-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	

Mirror Ball Inserts



	CATALOG NUMBER	DIMENSIONS				RECOMMENDED TORQUE (<i>lbs x ft</i>)	STOCK			
		R	A	B	T		COATED			
							JC5003	JC8003	JC5010	JC5015
INCH SIZES	BME-0250(A)	.125	.250	.196	.078	.68	•			•
	BME-0312(A)	.156	.312	.275	.094	1.22	•		•	•
	BME-0375(A)	.187	.375	.326	.102	1.63	•		•	•
	BME-0500(A)	.250	.500	.409	.118	2.72	•	•	•	•
	BME-0625(A)	.312	.625	.472	.157	4.08	•		•	•
	BME-0750(A)	.375	.750	.570	.196	5.44	•	•	•	•
	BME-1000(A)	.500	1.00	.736	.236	6.80	•	•	•	•
	BME-1250(A)	.625	1.25	.925	.275	8.16	•		•	•
METRIC SIZES	BNM-060	3	6	5	2	.68	•			•
	BNM-080	4	8	7	2.4	1.22	•			•
	BNM-100	5	10	8.5	2.6	1.63	•			•
	BNM-120	6	12	10	3	2.72	•			•
	BNM-160	8	16	12	4	4.08	•			•
	BNM-200(A)	10	20	15	5	5.44	•			•
	BNM-250	12.5	25	18.5	6	6.80	•			•
	BNM-300(A)	15	30	22.5	7	8.16	•			•
BNM-320	16	32	23.5	7	8.16	•			•	

Mirror Ball "S" Inserts



	CATALOG NUMBER	DIMENSIONS				RECOMMENDED TORQUE (<i>lbs x ft</i>)	STOCK			
		R	A	B	T		COATED			
							JC8008			
INCH SIZES	BME-0250-S	.125	.250	.196	.078	.68	•			
	BME-0312-S	.156	.312	.275	.094	1.22	•			
	BME-0375-S	.187	.375	.326	.102	1.63	•			
	BME-0500-S	.250	.500	.409	.118	2.72	•			
	BME-0625-S	.312	.625	.472	.157	4.08	•			
	BME-0750-S	.375	.750	.570	.196	5.44	•			
	BME-1000-S	.500	1.00	.736	.236	6.80	•			
	BME-1250-S	.625	1.25	.925	.275	8.16	•			
METRIC SIZES	BNM-060-S	3	6	5	2	.68	•			
	BNM-080-S	4	8	7	2.4	1.22	•			
	BNM-100-S	5	10	8.5	2.6	1.63	•			
	BNM-120-S	6	12	10	3	2.72	•			
	BNM-160-S	8	16	12	4	4.08	•			
	BNM-200-S	10	20	15	5	5.44	•			
	BNM-250-S	12.5	25	18.5	6	6.80	•			
	BNM-300-S	15	30	22.5	7	8.16	•			
BNM-320-S	16	32	23.5	7	8.16	•				

Note: Use Mirror "S" insert when encountering high hard material, for chatter reduction, semi-finishing (larger d.o.c.), or coolant is being used on the application.

General Cutting Data Recommendations

Table 1 - Nominal Cutting Speed and Feed Values for Steel Shank

Work Materials	Insert Grade	Cutting Speed V (ft/min)	RPM IPM	TOOL DIAMETER								Max. D.O.C. & PICK Finish
				.250"	.3125"	.375"	.500"	.625"	.750"	1.00"	1.25"	
Gray Cast Iron (HB 200-250)	JC5010	1,000	S (R.P.M.)	8,000	8,000	8,000	7,500	6,100	5,100	3,850	3,050	.012
			F (I.P.M.)	256	272	288	285	244	204	154	122	
Nodular Cast Iron (HB 180-250)	JC5010	900	S (R.P.M.)	8,000	8,000	8,000	6,900	5,500	4,600	3,450	2,750	.012
			F (I.P.M.)	256	272	316.8	262	220	184	138	110	
Carbon Steel (HRc-55)	JC5015	750	S (R.P.M.)	8,000	8,000	7,650	5,570	4,600	3,850	2,850	2,300	.012
			F (I.P.M.)	256	272	275	219	184	154	114	92	
Low Alloy Steel (HRc-55)	JC5003	600	S (R.P.M.)	8,000	7,350	6,100	4,600	3,700	3,050	2,300	1,850	.012
			F (I.P.M.)	256	250	220	175	148	122	92	74	
Tool & Die Steel (HRc-45)	JC5003	750	S (R.P.M.)	8,000	8,000	7,650	5,750	4,600	3,850	2,850	2,300	.012
			F (I.P.M.)	128	136	138	109	92	77	57	46	
Hardened Die Steel (HRC 50-60)	JC5003	600	S (R.P.M.)	8,000	7,350	6,150	4,600	3,700	3,050	2,300	1,850	.008
			F (I.P.M.)	128	125	111	87	74	61	46	37	
Stainless Steel (HRc-45)	JC5015	400	S (R.P.M.)	6,150	4,900	4,100	3,050	2,450	2,050	1,550	1,250	.012
			F (I.P.M.)	98	83	74	58	49	41	31	25	
Inconel, Titanium (HRc-45)	JC5003	150	S (R.P.M.)	2,293	1,834	1,529	1,146	917	764	573	459	.006
			F (I.P.M.)	9.2	7.8	6.9	5.4	4.6	3.8	2.9	2.3	
Aluminum Alloy (HB 30-100)	JC5010	1000	S (R.P.M.)	8,000	8,000	8,000	7,650	6,150	5,100	3,850	3,050	.012
			F (I.P.M.)	256	272	288	291	246	204	154	122	

NOTE: 1. Data is relevant to short series & middle series tools (over 1/2" diameter)
 2. See table 3 for additional data e.g. using long series tools & middle series tools (up to 1/2" diameter)

Table 2- Nominal Cutting Speed and Feed Values for Carbide Shank

Work Materials	Insert Grade	Cutting Speed V (ft/min)	RPM IPM	TOOL DIAMETER								Max. D.O.C. & PICK Finish
				.250"	.3125"	.375"	.500"	.625"	.750"	1.00"	1.25"	
Gray Cast Iron (HB 200-250)	JC5010	2,000	S (R.P.M.)	8,000	8,000	8,000	8,000	8,000	8,000	7,650	6,112	.008
			F (I.P.M.)	256	272	288	304	320	320	306	230	
Nodular Cast Iron (HB 180-250)	JC5010	1,800	S (R.P.M.)	8,000	8,000	8,000	8,000	8,000	8,000	6,900	5,500	.008
			F (I.P.M.)	256	272	288	304	320	320	276	132	
Carbon Steel (HRc-55)	JC5015	1,500	S (R.P.M.)	8,000	8,000	8,000	8,000	8,000	7,650	5,750	4,584	.010
			F (I.P.M.)	128	136	144	152	160	153	115	125	
Low Alloy Steel (HRc-55)	JC5003	1,200	S (R.P.M.)	8,000	8,000	8,000	8,000	7,350	6,150	4,600	3,667	.010
			F (I.P.M.)	256	272	288	304	294	246	184	73	
Tool & Die Steel (HRc-45)	JC5003	1,500	S (R.P.M.)	8,000	8,000	8,000	8,000	8,000	7,650	5,750	4,584	.012
			F (I.P.M.)	256	272	288	304	320	306	230	155	
Hardened Die Steel (HRC 50-60)	JC5003	1,200	S (R.P.M.)	8,000	8,000	8,000	8,000	7,350	6,150	4,600	3,667	.006
			F (I.P.M.)	128	136	144	152	147	123	92	73	
Stainless Steel (HRc-45)	JC5015	750	S (R.P.M.)	8,000	8,000	7,650	5,750	4,600	3,850	2,850	2,292	.012
			F (I.P.M.)	128	136	138	109	92	77	57	87	
Inconel, Titanium (HRc-45)	JC5003	300	S (R.P.M.)	4,600	3,700	3,050	2,300	1,850	1,550	1,150	1,058	.006
			F (I.P.M.)	18.4	15.7	13.7	10.9	9.3	7.8	5.8	4.7	
Aluminum Alloy (HB 30-100)	JC5010	2,000	S (R.P.M.)	8,000	8,000	8,000	8,000	8,000	8,000	7,650	6,112	.012
			F (I.P.M.)	128	136	144	152	160	160	153	145	

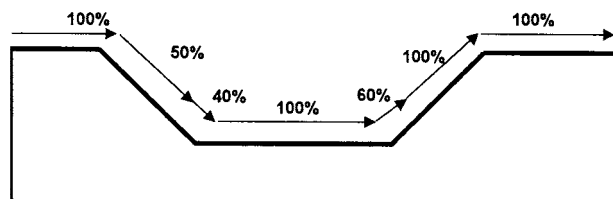
NOTE: 1. Data is relevant to short series & middle series tools (over 1/2" diameter)
 2. See table 3 for additional data e.g. using long series tools & middle series tools (up to 1/2" diameter)

Table 3 - Additional Cutting Data For Longer Tools

Reach/Dia.	~4.0	4.1~4.5	4.6~5.3	5.4~5.7	5.8~6.2	6.3~6.8	6.9~
rpm %	100	90	80	80	75	70	65
Feed %	100	90	90	80	75	70	65

NOTE: The above percentages should be applied, according to tool ratio.

Reduced Cutting Data For Cutting Pattern



NOTE: Feed should be reduced when cutting the above pattern.

Cutting Data for High Speed Machines

Table 1 - Nominal Cutting Speed and Feed Values for Steel Shank

Work Materials	Insert Grade	Cutting Speed V (ft/min)	RPM IPM	TOOL DIAMETER								Max. D.O.C. & PICK Finish
				.250"	.3125"	.375"	.500"	.625"	.750"	1.00"	1.25"	
Gray Cast Iron (HB 200-250)	JC5010	2,000	S (R.P.M.)	20,000	20,000	20,000	15,000	12,500	10,000	7,500	6,000	.012
			F (I.P.M.)	800	800	800	600	500	400	300	240	
Nodular Cast Iron (HB 180-250)	JC5010	1,800	S (R.P.M.)	20,000	20,000	18,000	13,500	11,000	9,000	7,000	5,500	.012
			F (I.P.M.)	800	800	720	540	440	360	280	220	
Carbon Steel (HRc-55)	JC5015	1,500	S (R.P.M.)	20,000	18,000	15,000	11,500	9,000	7,500	5,500	4,500	.012
			F (I.P.M.)	800	720	600	460	360	300	220	180	
Low Alloy Steel (HRc-55)	JC5003	1,200	S (R.P.M.)	18,000	15,000	12,000	9,000	7,500	6,000	4,500	3,600	.012
			F (I.P.M.)	720	600	480	360	300	240	180	144	
Tool & Die Steel (HRc-45)	JC5003	1,500	S (R.P.M.)	20,000	18,000	15,000	11,500	9,000	7,500	5,500	4,500	.012
			F (I.P.M.)	400	360	300	230	180	150	110	90	
Hardened Die Steel (HRC 50-60)	JC5003	1,200	S (R.P.M.)	18,000	15,000	12,000	9,000	7,500	6,000	4,500	3,600	.008
			F (I.P.M.)	360	300	240	180	150	120	90	72	
Stainless Steel (HRc-45)	JC5015	750	S (R.P.M.)	11,500	9,000	7,500	5,500	4,500	3,800	2,800	2,300	.012
			F (I.P.M.)	230	180	150	110	90	76	56	46	
Inconel, Titanium (HRc-45)	JC5003	150	S (R.P.M.)	2,300	1,800	1,500	1,150	900	750	550	450	.006
			F (I.P.M.)	11.50	9.00	7.50	5.75	4.50	3.75	2.75	2.25	
Aluminum Alloy (HB 30-100)	JC5010	3000	S (R.P.M.)	20,000	20,000	20,000	20,000	18,000	15,000	11,500	9,000	.012
			F (I.P.M.)	800	800	800	800	720	600	460	360	

NOTE: 1. Data is relevant to short series & middle series tools (over 1/2" diameter)
 2. See table 3 for additional data e.g. using long series tools & middle series tools (up to 1/2" diameter)

Table 2- Nominal Cutting Speed and Feed Values for Carbide Shank

Work Materials	Insert Grade	Cutting Speed V (ft/min)	RPM IPM	TOOL DIAMETER								Max. D.O.C. & PICK Finish
				.250"	.3125"	.375"	.500"	.625"	.750"	1.00"	1.25"	
Gray Cast Iron (HB 200-250)	JC5010	4,000	S (R.P.M.)	40,000	40,000	40,000	30,000	24,000	20,000	15,000	6,112	.008
			F (I.P.M.)	1,600	1,600	1,600	1,200	960	800	600	230	
Nodular Cast Iron (HB 180-250)	JC5010	3,600	S (R.P.M.)	40,000	40,000	36,000	27,500	22,000	18,000	13,500	5,500	.008
			F (I.P.M.)	1,600	1,600	1,440	1,100	880	720	540	132	
Carbon Steel (HRc-55)	JC5015	3,000	S (R.P.M.)	40,000	36,000	30,000	23,000	18,000	15,000	11,500	4,584	.010
			F (I.P.M.)	800	720	600	460	360	300	230	125	
Low Alloy Steel (HRc-55)	JC5003	2,400	S (R.P.M.)	36,000	30,000	24,000	18,000	15,000	12,000	9,000	3,667	.010
			F (I.P.M.)	1,440	1,200	960	720	600	480	360	73	
Tool & Die Steel (HRc-45)	JC5003	3,000	S (R.P.M.)	40,000	36,000	30,000	23,000	18,000	15,000	11,500	4,584	.012
			F (I.P.M.)	1,600	1,440	1,200	920	720	600	460	155	
Hardened Die Steel (HRC 50-60)	JC5003	2,400	S (R.P.M.)	36,000	30,000	24,000	18,000	15,000	12,000	9,000	3,667	.006
			F (I.P.M.)	720	600	480	360	300	240	180	73	
Stainless Steel (HRc-45)	JC5015	1,500	S (R.P.M.)	23,000	18,000	15,000	11,500	9,000	7,500	5,500	2,292	.012
			F (I.P.M.)	460	360	300	230	180	150	110	87	
Inconel, Titanium (HRc-45)	JC5003	300	S (R.P.M.)	4,500	3,600	3,000	2,300	1,800	1,500	1,150	1,058	.006
			F (I.P.M.)	22.5	18.00	15.00	11.50	9.00	7.50	5.75	4.7	
Aluminum Alloy (HB 30-100)	JC5010	6,000	S (R.P.M.)	40,000	40,000	40,000	40,000	36,000	30,000	23,000	6,112	.012
			F (I.P.M.)	800	800	800	800	720	600	460	145	

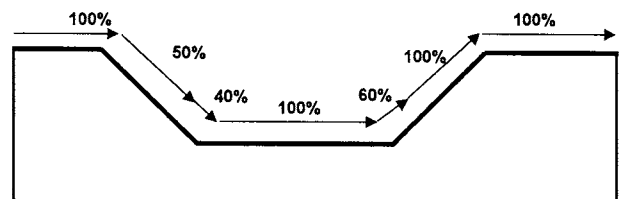
NOTE: 1. Data is relevant to short series & middle series tools (over 1/2" diameter)
 2. See table 3 for additional data e.g. using long series tools & middle series tools (up to 1/2" diameter)

Table 3 - Additional Cutting Data For Longer Tools

Reach/Dia.	~4.0	4.1~4.5	4.6~5.3	5.4~5.7	5.8~6.2	6.3~6.8	6.9~
rpm %	100	90	80	80	75	70	65
Feed %	100	90	90	80	75	70	65

NOTE: The above percentages should be applied, according to tool ratio.

Reduced Cutting Data For Cutting Pattern

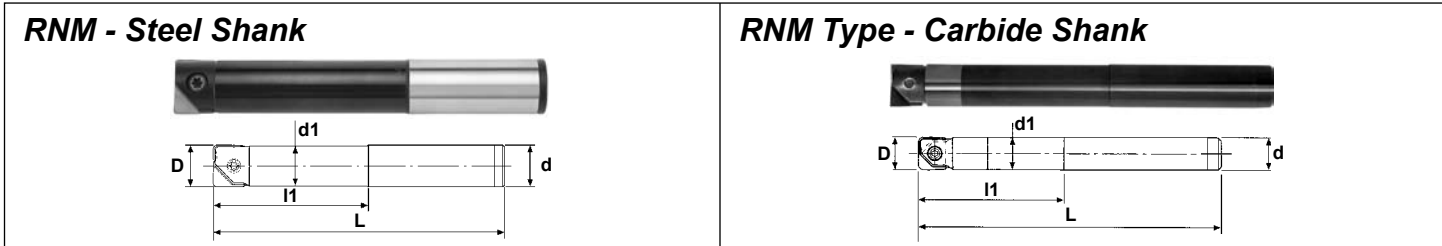


NOTE: Feed should be reduced when cutting the above pattern.

Mirror Radius



Mirror Radius



Specifications - Steel Shank

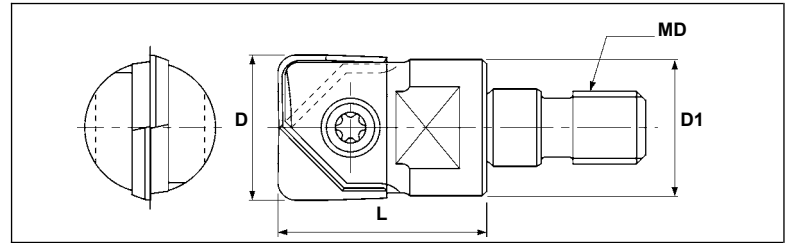
CATALOG NUMBER	DIMENSIONS					INSERT INCH	INSERT METRIC	PARTS	
	D	L	d1	l1	d			Screw	Wrench
RNMM-080057S-S031	.312	4.50	.307	2.25	.312	RME-0312-..	RNM-080-..	FSW-2506H	T-07
RNML-080088S-S031	.312	5.75	.307	3.50	.312				
RNMM-100057S-S037	.375	4.50	.366	2.25	.375	RME-0375-..	RNM-100-..	FSW-3007H	T-08
RNML-100088S-S037	.375	5.75	.366	3.50	.375				
RNMM-120063S-S050	.500	4.75	.492	2.50	.500	RME-0500-..		FSW-3509	T-10
RNML-120101S-S050	.500	6.35	.492	4.00	.500				
RNMM-160063S-S062	.625	4.75	.614	2.50	.625	RME-0625-..	RNM-160-..	FSW-4013	T-15
RNML-160114S-S062	.625	7.10	.614	4.50	.625				
RNMM-200088S-S075	.750	5.75	.740	3.50	.750	RME-0750-..	RNM-200-..	FSW-5016	A-20
RNML-200127S-S075	.750	8.00	.740	5.00	.750				
RNMM-250114S-S100	1.000	7.50	.976	4.50	1.00	RME-1000-..	RNM-250-..	FSW-6020	T-30
RNML-250152S-S100	1.000	10.00	.976	6.00	1.00				
RNMM-300114S-S125	1.250	7.50	1.17	4.50	1.25	RME-1250-..	RNM-300-.. RNM-320-..	FSW-8025	A-40
RNML-300152S-S125	1.250	10.00	1.17	6.00	1.25				

Specifications - Carbide Shank

CATALOG NUMBER	DIMENSIONS					INSERT INCH	INSERT METRIC	PARTS	
	D	L	d1	l1	d			Screw	Wrench
RNMS-080035U-S031C	.312	3.62	.295	1.37	.312	RME-0312-..	RNM-080-..	FSW-2506H	T-07
RNMM-080057S-S031C	.312	4.50	.307	2.25	.312				
RNML-080088S-S031C	.312	5.75	.307	3.50	.312	RME-0375-..	RNM-100-..	FSW-3007H	T-08
RNMS-100035U-S037C	.375	3.62	.354	1.37	.375				
RNMM-100057S-S037C	.375	4.50	.366	2.25	.375				
RNML-100088S-S037C	.375	5.75	.366	3.50	.375	RME-0500-..		FSW-3509	T-10
RNMS-120029U-S050C	.500	3.28	.480	1.14	.500				
RNMM-120063S-S050C	.500	4.75	.492	2.50	.500				
RNML-120101S-S050C	.500	6.35	.492	4.00	.500	RME-0625-..	RNM-160-..	FSW-4013	T-15
RNMS-160034U-S062C	.625	3.70	.602	1.33	.625				
RNMM-160063S-S062C	.625	4.75	.614	2.50	.625				
RNML-160114S-S062C	.625	7.10	.614	4.50	.625	RME-0750-..	RNM-200-..	FSW-5016	A-20
RNMS-200038U-S075C	.750	4.09	.728	1.49	.750				
RNMM-200088S-S075C	.750	5.75	.740	3.50	.750				
RNML-200127S-S075C	.750	8.00	.740	5.00	.750	RME-1000-..	RNM-250-..	FSW-6020	T-30
RNMM-250114S-S100C	1.000	7.50	.976	4.50	1.00				
RNML-250152S-S100C	1.000	10.00	.976	6.00	1.00				
RNMM-300114S-S125C	1.250	7.50	1.17	4.50	1.25	RME-1250-..	RNM-300-.. RNM-320-..	FSW-8025	A-40
RNML-300152S-S125C	1.250	10.00	1.17	6.00	1.25				

Note: All cutters are supplied without inserts.

Modular Head

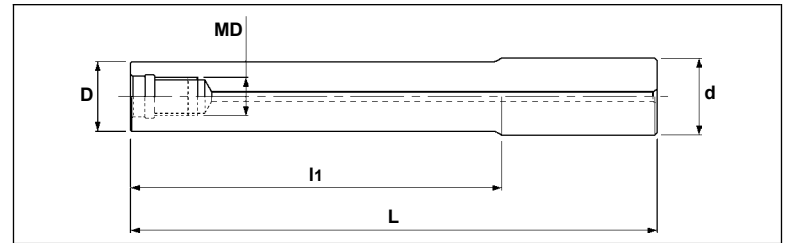


Specifications

CATALOG NUMBER	DIMENSIONS				HEAD TORQUE lbs./ft	PARTS		INSERT	
	D	L	D1	MD		Screw	Wrench	Inch	Metric
MRN-120-M6	.500"/12mm	.708	.453	M6	10.85	FSW-3509	T-10	RME-0500-..	RNM-120-..
MRN-160-M8	.625"/16mm	.905	.590	M8	16.9	FSW-4013	T-15	RME-0625-..	RNM-160-..
MRN-2075-M10	.750"	1.16	.728	M10	33.9	FSW-5016	A-20	RME-0750-..	RNM-200-..
MRN-200-M10	20mm	.900	.748	M10	33.9	FSW-5016	A-20		RNM-200-..
MRN-250-M12	1.00"/25mm	1.38	.945	M12	59	FSW-6020	T-30	RME-1000-..	RNM-250-..
MRN-300-M16	1.25" / 30mm	1.69	1.14	M16	66.3	FSW-8025	A-40	RME-1250-..	RNM-300-.. or RNM-320-..
MRN-320-M16	or 32mm	1.69	1.18	M16	66.3	FSW-8025	A-40		

Note: All cutters are supplied without inserts.

Carbide Holder with Coolant Hole



Specifications

CATALOG NUMBER	DIMENSIONS					APPLICABLE HOLDERS
	D	l1	L	d	MD	
MSN-M6-1.0-S050C	.452	1.00	3.15	.500	M6	MBN-120, MRN-120
MSN-M6-2.0-S050C	.452	2.00	3.93	.500	M6	
MSN-M6-3.0-S050C	.452	3.00	5.12	.500	M6	
MSN-M8-2.0-S062C	.591	2.00	5.00	.625	M8	MBN-160-M8, MRN-160-M8
MSN-M8-4.0-S062C	.591	4.00	7.00	.625	M8	
MSN-M8-6.0-S062C	.591	6.00	9.00	.625	M8	
MSN-M10-2.0-S075C	.728	2.00	5.00	.750	M10	MBN-200-M10, MRN-2075-M10, MRN-200-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	MBN-250-M12, MRN-250-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	MBN-300-M16, MRN-300-M16, MRN-320-M16
MSN-M16-2.0-S125C	1.14	2.00	5.00	1.25	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	

Mirror Radius



Mirror Radius Inserts - Inch

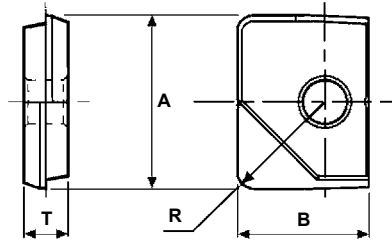
	CATALOG NUMBER	DIMENSIONS				RECOMMENDED TORQUE (lbs x ft)	STOCK	
		A	R	B	T		COATED	
							JC5003	JC5015
	RME-0312-015	.312	.0156	.275	.094	1.22	•	•
	RME-0312-031	.312	.0312				•	•
	RME-0312-062	.312	.0625				•	•
	RME-0375-015	.375	.0156	.326	.102	1.63	•	•
	RME-0375-031	.375	.0312				•	•
	RME-0375-062	.375	.0625				•	•
	RME-0500-015	.500	.0156	.409	.118	2.72	•	•
	RME-0500-031	.500	.0312				•	•
	RME-0500-062	.500	.0625				•	•
	RME-0625-031	.625	.0312	.472	.157	4.08	•	•
	RME-0625-062	.625	.0625				•	•
	RME-0625-125	.625	.1250				•	•
	RME-0750-031	.750	.0312	.570	.196	5.44	•	•
	RME-0750-062	.750	.0625				•	•
	RME-0750-125	.750	.1250				•	•
	RME-1000-031	1.00	.0310	.736	.236	6.80		•
	RME-1000-062	1.00	.0625				•	•
	RME-1000-125	1.00	.1250				•	•
	RME-1000-250	1.00	.2500				•	•
	RME-1250-062	1.25	.0625	.925	.275	8.16	•	•
RME-1250-125	1.25	.1250	•				•	
RME-1250-250	1.25	.2500	•				•	

High Feed Mirror Radius - Inch

	CATALOG NUMBER	DIMENSIONS				RECOMMENDED TORQUE (lbs x ft)	STOCK
		A	R	B	T		COATED
							JC8015
	HRE-0312-062	.312	.062	.274	.094	1.22	•
	HRE-0375-062	.375	.062	.325	.102	1.63	•
	HRE-0500-062	.500	.062	.407	.118	2.72	•
	HRE-0625-062	.625	.062	.470	.157	4.08	•
	HRE-0750-062	.750	.062	.572	.197	5.44	•
	HRE-0750-125	.750	.125	.572	.197	5.44	★
	HRE-1000-125	1.00	.125	.735	.236	6.80	★

★ Future Item

Mirror Radius Inserts - Metric



CATALOG NUMBER	DIMENSIONS				RECOMMENDED TORQUE (lbs x ft)	STOCK COATED		CATALOG NUMBER	DIMENSIONS				RECOMMENDED TORQUE (lbs x ft)	STOCK COATED	
	A	R	B	T		JC5003	JC5015		A	R	B	T		JC5003	JC5015
	RNM-080-R03	8	0.3	7		2.4	1.22		•	•	RNM-200-R03	20		0.3	15
RNM-080-R05	8	0.5	RNM-200-R05		20			0.5	•	•					
RNM-080-R10	8	1.0	RNM-200-R10		20			1.0	•	•					
RNM-100-R03	10	0.3	8.5	2.6	1.63	•	•	RNM-200-R15	20	1.5	18.5	6	6.80	•	•
RNM-100-R05	10	0.5				RNM-200-R20	20	2.0	•	•					
RNM-100-R10	10	1.0				RNM-250-R03	25	0.3	•	•					
RNM-100-R15	10	1.5				RNM-250-R05	25	0.5	•	•					
RNM-100-R20	10	2.0	10	3	2.72	•	•	RNM-250-R10	25	1.0	22.5	7	8.16	•	•
RNM-120-R03	12	0.3				RNM-250-R15	25	1.5	•	•					
RNM-120-R05	12	0.5				RNM-250-R20	25	2.0	•	•					
RNM-120-R10	12	1.0				RNM-300-R03	30	0.3	•	•					
RNM-120-R15	12	1.5	12	4	4.08	•	•	RNM-300-R05	30	0.5	23.5	7	8.16	•	•
RNM-120-R20	12	2.0				RNM-300-R10	30	1.0	•	•					
RNM-160-R03	16	0.3				RNM-300-R15	30	1.5	•	•					
RNM-160-R05	16	0.5				RNM-300-R20	30	2.0	•	•					
RNM-160-R10	16	1.0	16	1.5	4.08	•	•	RNM-320-R03	32	0.3	23.5	7	8.16	•	•
RNM-160-R15	16	1.5				RNM-320-R05	32	0.5	•	•					
RNM-160-R20	16	2.0				RNM-320-R10	32	1.0	•	•					
						RNM-320-R15	32	1.5	•	•					
						•	•	RNM-320-R20	32	2.0			•	•	

High Feed Mirror Radius - Metric

CATALOG NUMBER	DIMENSIONS				RECOMMENDED TORQUE (lbs x ft)	STOCK COATED	
	A	R	B	T		JC8015	
	HRM-080-R20	8	2	7		2.4	1.22
HRM-100-R20	10	2	8.5	2.6	1.63	•	
HRM-120-R20	12	2	10	3	2.72	•	
HRM-160-R30	16	3	12	4	4.08	•	
HRM-200-R30	20	3	15	5	5.44	•	

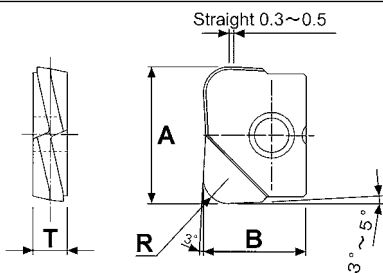


Table 1 - Cutting Speed and Feed Values for Steel Shank

Work Materials	Hardness	Insert Grade	Cutting Speed V(ft/min)	RPM IPM	TOOL DIAMETER							Max. D.O.C.	Max. Pick
					.3125"	.375"	.500"	.625"	.750"	1.00"	1.25"		
Gray Cast Iron	160-260HB	JC5003	800	RPM	9780	8150	6115	4890	4075	3056	2445	.025D	.03D
				IPM	137	130	110	98	81	61	49		
Nodular Cast Iron	170-300HB	JC5003	650	RPM	7945	6621	4966	3973	3310	2483	1986	.02D	.025D
				IPM	95	93	79	64	53	40	32		
Carbon Steel	180-280HB	JC5003	650	RPM	7945	6621	4966	3973	3310	2483	1986	.02D	.025D
		JC5015		IPM	95	93	79	64	53	40	32		
Low Alloy Steel	180-280HB	JC5003	600	RPM	7334	6112	4584	3667	3056	2292	1833	.02D	.025D
		JC5015		IPM	88	86	73	59	49	37	29		
Mold Steel	280-400HB	JC5003	500	RPM	6112	5093	3820	3056	2546	1910	1528	.02D	.025D
		JC5015		IPM	61	61	46	43	36	27	22		
Tool & Die Steel	180-255HB	JC5003	500	RPM	6112	5093	3820	3056	2546	1910	1528	.02D	.025D
		JC5015		IPM	61	61	46	43	36	27	22		
Hardened Die Steel	40-55HRC	JC5003	300	RPM	3667	3056	2292	1834	1528	1146	917	.015D	.02D
				IPM	37	34	27	22	18	14	11		
Hardened Die Steel	56-63HRC	JC5003	250	RPM	3056	2547	1910	1528	1273	955	764	.01D	.02D
				IPM	24	23	19	15	13	10	8		
Stainless Steel	150-250HB	JC5003	450	RPM	5500	4584	3438	2750	2292	1719	1375	.02D	.025D
		JC5015		IPM	55	55	41	38	32	24	19		
Inconel, Titanium	30-40HRC	JC5003	150	RPM	3667	3056	2292	1834	1528	1146	917	.01D	.02D
		JC5015		IPM	29	27	23	18	15	11	9		
Copper Alloy	80-150HB	JC5003	650	RPM	7945	6621	4966	3973	3310	2483	1986	.025D	.03D
				IPM	111	106	89	79	66	50	40		
Aluminum Alloy	30-100HB	JC5003	800	RPM	9779	8149	6112	4890	4075	3056	2445	.04D	.05D
				IPM	137	130	110	98	81	61	49		

NOTE: This data is relevant to middle series of tools, see Table 3 for additional data using long series tools.

Table 2 - Cutting Speed and Feed Values for Carbide Shank

Work Materials	Hardness	Insert Grade	Cutting Speed V(ft/min)	RPM IPM	TOOL DIAMETER							Max. D.O.C.	Max. Pick
					.3125"	.375"	.500"	.625"	.750"	1.00"	1.25"		
Gray Cast Iron	160-260HB	JC5003	1,300	RPM	15,890	13,242	9,932	7,945	6,621	4,966	3,973	.025D	.03D
				IPM	222	212	179	159	132	99	79		
Nodular Cast Iron	170-300HB	JC5003	1,000	RPM	12,224	10,187	7,640	6,112	5,093	3,820	3,056	.02D	.025D
				IPM	147	143	122	98	81	61	49		
Carbon Steel	180-280HB	JC5003	1,000	RPM	12,224	10,187	7,640	6,112	5,093	3,820	3,056	.02D	.025D
		JC5015		IPM	147	143	122	98	81	61	49		
Low Alloy Steel	180-280HB	JC5003	1,000	RPM	12,224	10,187	7,640	6,112	5,093	3,820	3,056	.02D	.025D
		JC5015		IPM	147	143	122	98	81	61	49		
Mold Steel	280-400HB	JC5003	1,000	RPM	12,224	10,187	7,640	6,112	5,093	3,820	3,056	.02D	.025D
		JC5015		IPM	122	122	92	86	71	54	43		
Tool & Die Steel	180-255HB	JC5003	1,000	RPM	12,224	10,187	7,640	6,112	5,093	3,820	3,056	.02D	.025D
		JC5015		IPM	122	122	92	86	71	54	43		
Hardened Die Steel	40-55HRC	JC5003	650	RPM	7,945	6,621	4,966	3,972	3,310	2,483	1,986	.015D	.02D
				IPM	79	73	60	48	40	30	24		
Hardened Die Steel	56-63HRC	JC5003	500	RPM	6,112	5,093	3,820	3,056	2,547	1,910	1,528	.01D	.02D
				IPM	49	46	38	31	25	19	15		
Stainless Steel	150-250HB	JC5003	850	RPM	10,390	8,658	6,494	5,195	4,329	3,247	2,597	.02D	.025D
		JC5015		IPM	104	104	91	73	61	46	36		
Inconel, Titanium	30-40HRC	JC5003	300	RPM	3,667	3,056	2,292	1,833	1,528	1,146	917	.01D	.02D
		JC5015		IPM	29	27	23	18	15	11	9		
Copper Alloy	80-150HB	JC5003	1,000	RPM	12,224	10,187	7,640	6,112	5,093	3,820	3,056	.025D	.03D
				IPM	171	163	137	122	102	76	61		
Aluminum Alloy	30-100HB	JC5003	1,500	RPM	18,336	15,280	11,460	9,168	7,640	5,730	4,584	.04D	.05D
				IPM	257	245	206	183	153	115	92		

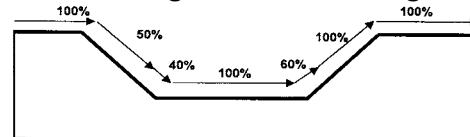
NOTE: This data is relevant to middle series of tools, see Table 3 for additional data using long series tools.

Table 3 - Additional Cutting Data For Longer Tools

Reach/Dia.	~4.0	4.1~4.5	4.6~5.3	5.4~5.7	5.8~6.2	6.3~6.8	6.9~
rpm %	100	90	80	80	75	70	65
Feed %	100	90	90	80	75	70	65

NOTE: The above percentages should be applied, according to tool ratio.

Reduced Cutting Data For Cutting Pattern



NOTE: Feed should be reduced when cutting the above pattern

Recommended Cutting Data for High Feed "Mirror Radius" Inserts

WORK MATERIAL	INSERT GRADE	5/16" (8mm)				3/8" (10mm)				1/2" (12mm)				5/8" (16mm)				3/4" (20mm)			
		L	Ap	N	F	L	Ap	N	F	L	Ap	N	F	L	Ap	N	F	L	Ap	N	F
Gray Cast Iron (HB160 ~ 260)	JC8015	1.37"	.016"	6415	225	1.37"	.016"	5350	210	1.14"	.020"	3960	156	1.33"	.032"	3175	125	1.49"	.032"	2380	94
		2.25"	.010"	6415	225	2.25"	.010"	5350	210	2.50"	.016"	3960	156	2.50"	.024"	3175	125	3.50"	.024"	2380	94
		3.50"	.008"	6415	225	3.50"	.008"	5350	210	4.00"	.009"	3960	156	4.50"	.016"	3175	125	5.00"	.016"	2380	94
														7.00"	.010"	3175	125	7.00"	.012"	2380	94
Nodular Cast Iron (HB170 ~ 300)	JC8015	1.37"	.016"	6415	225	1.37"	.016"	5350	210	1.14"	.020"	3960	156	1.33"	.032"	3175	125	1.49"	.032"	2380	94
		2.25"	.010"	6415	225	2.25"	.010"	5350	210	2.50"	.016"	3960	156	2.50"	.024"	3175	125	3.50"	.024"	2380	94
		3.50"	.008"	6415	225	3.50"	.008"	5350	210	4.00"	.009"	3960	156	4.50"	.016"	3175	125	5.00"	.016"	2380	94
														7.00"	.010"	3175	125	7.00"	.012"	2380	94
Carbon Steel (HB180 ~ 280)	JC8015	1.37"	.016"	7560	267	1.37"	.016"	6300	248	1.14"	.020"	4725	186	1.33"	.032"	3770	148	1.49"	.032"	2855	112
		2.25"	.010"	7560	267	2.25"	.010"	6300	248	2.50"	.016"	4725	186	2.50"	.024"	3770	148	3.50"	.024"	2855	112
		3.50"	.008"	7560	267	3.50"	.008"	6300	248	4.00"	.009"	4725	186	4.50"	.016"	3770	148	5.00"	.016"	2855	112
														7.00"	.010"	3770	148	7.00"	.012"	2855	112
Low Alloy Steel (HB180 ~ 280)	JC8015	1.37"	.016"	7560	267	1.37"	.016"	6300	248	1.14"	.020"	4725	186	1.33"	.032"	3770	148	1.49"	.032"	2855	112
		2.25"	.010"	7560	267	2.25"	.010"	6300	248	2.50"	.016"	4725	186	2.50"	.024"	3770	148	3.50"	.024"	2855	112
		3.50"	.008"	7560	267	3.50"	.008"	6300	248	4.00"	.009"	4725	186	4.50"	.016"	3770	148	5.00"	.016"	2855	112
														7.00"	.010"	3770	148	7.00"	.012"	2855	112
Mold Steel (HB280 ~ 400)	JC8015	1.37"	.016"	7155	254	1.37"	.016"	5985	235	1.14"	.020"	4440	175	1.33"	.032"	3470	136	1.49"	.032"	2665	105
		2.25"	.010"	7155	254	2.25"	.010"	5985	235	2.50"	.016"	4440	175	2.50"	.024"	3470	136	3.50"	.024"	2665	105
		3.50"	.008"	7155	254	3.50"	.008"	5985	235	4.00"	.009"	4440	175	4.50"	.016"	3470	136	5.00"	.016"	2665	105
														7.00"	.010"	3470	136	7.00"	.012"	2665	105
Tool & Die Steel (HB180 ~ 255)	JC8015	1.37"	.016"	7155	254	1.37"	.016"	5985	235	1.14"	.020"	4440	175	1.33"	.032"	3470	136	1.49"	.032"	2665	105
		2.25"	.010"	7155	254	2.25"	.010"	5985	235	2.50"	.016"	4440	175	2.50"	.024"	3470	136	3.50"	.024"	2665	105
		3.50"	.008"	7155	254	3.50"	.008"	5985	235	4.00"	.009"	4440	175	4.50"	.016"	3470	136	5.00"	.016"	2665	105
														7.00"	.010"	3470	136	7.00"	.012"	2665	105
Hardened Die Steel (HRC40 ~ 55)	JC8015	1.37"	.008"	6045	190	1.37"	.008"	4935	194	1.14"	.009"	3780	149	1.33"	.014"	2975	117	1.49"	.014"	2285	90
		2.25"	.006"	6045	190	2.25"	.006"	4935	194	2.50"	.008"	3780	149	2.50"	.012"	2975	117	3.50"	.012"	2285	90
		3.50"	.004"	6045	190	3.50"	.004"	4935	194	4.00"	.005"	3780	149	4.50"	.010"	2975	117	5.00"	.010"	2285	90
														7.00"	.006"	2975	117	7.00"	.008"	2285	90
Stainless Steel (HB150 ~ 250)	JC8015	1.37"	.016"	6750	238	1.37"	.016"	5670	223	1.14"	.020"	4250	167	1.33"	.032"	3370	133	1.49"	.032"	2570	101
		2.25"	.010"	6750	238	2.25"	.010"	5670	223	2.50"	.016"	4250	167	2.50"	.024"	3370	133	3.50"	.024"	2570	101
		3.50"	.008"	6750	238	3.50"	.008"	5670	223	4.00"	.009"	4250	167	4.50"	.016"	3370	133	5.00"	.016"	2570	101
														7.00"	.010"	3370	133	7.00"	.012"	2570	101
Copper Alloy (HB80 ~ 150)	JC8015	1.37"	.016"	8020	284	1.37"	.016"	6680	262	1.14"	.020"	5010	197	1.33"	.032"	4010	158	1.49"	.032"	3340	131
		2.25"	.010"	8020	284	2.25"	.010"	6680	262	2.50"	.016"	5010	197	2.50"	.024"	4010	158	3.50"	.024"	3340	131
		3.50"	.008"	8020	284	3.50"	.008"	6680	262	4.00"	.009"	5010	197	4.50"	.016"	4010	158	5.00"	.016"	3340	131
														7.00"	.010"	4010	158	7.00"	.012"	3340	131
Aluminum Alloy (HB30 ~ 100)	JC8015	1.37"	.016"	14030	497	1.37"	.016"	11140	439	1.14"	.020"	8770	345	1.33"	.032"	7015	276	1.49"	.032"	5845	230
		2.25"	.010"	14030	497	2.25"	.010"	11140	439	2.50"	.016"	8770	345	2.50"	.024"	7015	276	3.50"	.024"	5845	230
		3.50"	.008"	14030	497	3.50"	.008"	11140	439	4.00"	.009"	8770	345	4.50"	.016"	7015	276	5.00"	.016"	5845	230
														7.00"	.010"	7015	276	7.00"	.012"	5845	230
STEP OVER		.110"				.160"				.220"				.270"				.380"			

L = reach, Ap = depth of cut, N = RPM or spindle speed, F = IPM or feed.

Notes:

1. Above table should be adjusted according to the machine rigidity or work rigidity.
2. If chattering occurs, reduce the Ap (depth of cut) or spindle speed and feed.
3. If machine does not have enough power, reduce the Ap (depth of cut) or spindle speed and feed.
4. Use air thru.
5. If material is 50-55 HRC, reduce Ap, N & F by 30%.
6. Feed rate should be reduced for good surface finish requirement.
7. Maximum ramping of up to 2°30' recommended.

Controlled Torque Wrench

Wrenches are pre-set to protect screws and bodies against damage during both tightening and loosening process.



Controlled Torque Wrenches (with replaceable blades)

CATALOG NUMBER	TORQUE #	SCREW	REPLACEMENT BLADE	APPLICABLE INSERT
TQC-06	T6	.68	B-06	BME-0250, BNM-060
TQC-07	T7	1.22	B-07	BME-0312, RME-0312-R.., HRE-0312-R.. BNM-080, RNM-080-R.., HRM-080-R..
TQC-08	T8	1.63	B-08	BME-0375, RME-0375-R.., HRE-0375-R.. BNM-100, RNM-100-R.., HRM-100-R..
TQC-10	T10	2.72	B-10	BME-0500, RME-0500-R.., HRE-0500-R.. BNM-1200, RNM-120-R.., HRM-120-R..

Insert Mounting Information

1. Make sure that insert seat on body is carefully cleaned.
2. Make sure insert itself is clean, especially hole and face location.
3. Change insert screw when threads start to wear.
(approximately every 10-15 inserts)
4. Do not over tighten screw, see table for torque specifications.

Screw	Recommended Torque (lbs x ft)
FSW-2005H	.68
FSW-2506H	1.22
FSW-3007H	1.63
FSW-3509	2.72
FSW-4013	4.08
FSW-5016	5.44
FSW-6020	6.80
FSW-8025	8.16

Modular Head Mounting Information

1. Make sure mounting surface of modular head and carbide holder are clean.
2. Make sure after tightening there is no gap between head and carbide holder.
3. Do not over tighten head, see table for torque specifications.

Modular Head Thread Size	Recommended Torque (lbs x ft)
M6	10.85
M8	16.9
M10	33.9
M12	59
M16	66.3



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