

BALL INSERTS

XMB110A, XMB120C, XMB260T, XMB110D, XMB130A & XMM110V Series

CUTTING DATA

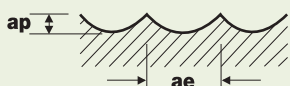
Stepover Cutting

MATERIAL	NON-ALLOYED STEEL & ALLOY STEEL				NON-ALLOYED STEEL & ALLOY STEEL			
Hardness	~ HB280 / ~ HRc30				~ HB280 / ~ HRc30			
Strength	~ 1000N/mm ²				~ 1000N/mm ²			
Series	XMB110A				XMM110V (Full Radius)			
Dia.	RPM	Feed	Vc	Fz	RPM	Feed	Vc	Fz
8	6370~12730	2550~5090	160~320	0.20~0.20	6370~12730	2550~5090	160~320	0.20~0.20
10, 11	5090~11460	2040~4580	160~360	0.20~0.20	5090~11460	2040~4580	160~360	0.20~0.20
12, 13	4240~10080	1700~4030	160~380	0.20~0.20	4240~10080	1700~4030	160~380	0.20~0.20
16, 17	3180~9550	1590~5730	160~480	0.25~0.30	3180~9550	1590~5730	160~480	0.25~0.30
20, 21	2550~9230	1270~7380	160~580	0.25~0.40	2550~9230	1270~7380	160~580	0.25~0.40
25, 26	2040~7640	1020~7640	160~600	0.25~0.50	2040~7640	1020~7640	160~600	0.25~0.50
30, 32, 33	1700~7430	850~8910	160~700	0.25~0.60	1700~7430	850~8910	160~700	0.25~0.60

MATERIAL	ALLOY STEEL & HEAT RESISTANT STEEL				DIE TOOL STEELS PRE-HARDENED			
Hardness	HB280 ~ HB380 / HRc30 ~ HRc40				HB380 ~ HB480 / HRc40 ~ HRc50			
Strength	1000 ~ 1250N/mm ²				1250 ~ 1500N/mm ²			
Series	XMB110A				XMB110A, XMB120C			
Dia.	RPM	Feed	Vc	Fz	RPM	Feed	Vc	Fz
8	4770~11140	1910~4460	120~280	0.20~0.20	3980~8750	1190~3500	100~220	0.15~0.20
10, 11	3820~9550	1530~3820	120~300	0.20~0.20	3180~8280	950~3310	100~260	0.15~0.20
12, 13	3180~9280	1270~3710	120~350	0.20~0.20	2650~7430	800~2970	100~280	0.15~0.20
16, 17	2390~7560	1190~45 40	120~380	0.25~0.30	1990~6960	800~4180	100~350	0.20~0.30
20, 21	1910~6680	950~5350	120~420	0.25~0.40	1590~6370	640~5090	100~400	0.20~0.40
25, 26	1530~6110	760~6110	120~480	0.25~0.50	1270~5730	510~5730	100~450	0.20~0.50
30, 32, 33	1270~5840	640~7000	120~550	0.25~0.60	1060~5310	420~6370	100~500	0.20~0.60

MATERIAL	HARDENED STEELS				HIGH HARDENED STEELS			
Hardness	HB420 ~ HB550 / HRc45 ~ HRc55				HB550 ~ HB740 / HRc55 ~ HRc65			
Strength	1500N/mm ² ~				1500N/mm ² ~			
Series	XMB120C				XMB260T			
Dia.	RPM	Feed	Vc	Fz	RPM	Feed	Vc	Fz
8	3180~7160	640~2860	80~180	0.10~0.20	3180~7160	640~2150	80~180	0.10~0.15
10, 11	2550~6370	510~2550	80~200	0.10~0.20	2550~6370	510~1910	80~200	0.10~0.15
12, 13	2120~5840	420~2330	80~220	0.10~0.20	2120~5840	420~1750	80~220	0.10~0.15
16, 17	1590~5170	480~3100	80~260	0.15~0.30	1590~5170	480~2590	80~260	0.15~0.25
20, 21	1270~5090	380~4070	80~320	0.15~0.40	1270~5090	380~2550	80~320	0.15~0.25
25, 26	1020~4580	310~4580	80~360	0.15~0.50	1020~4580	310~2290	80~360	0.15~0.25
30, 32, 33	850~4240	250~5090	80~400	0.15~0.60	850~4240	250~2550	80~400	0.15~0.30

MATERIAL	STAINLESS STEEL				GRAPHITE / ALUMINIUM				CAST IRON			
Series	XMB130A				XMB110D				XMB120C			
Dia.	RPM	Feed	Vc	Fz	RPM	Feed	Vc	Fz	RPM	Feed	Vc	Fz
8	3580~5170	720~1290	90~130	0.10~0.12	11940~15920	4770~6370	300~400	0.20~0.20	6370~12730	3820~5090	160~320	0.30~0.20
10, 11	2860~4140	720~1240	90~130	0.13~0.15	9550~12730	3820~5090	300~400	0.20~0.20	5090~11460	3060~6880	160~360	0.30~0.30
12, 13	2390~3450	720~1380	90~130	0.15~0.20	7960~10610	3180~4240	300~400	0.20~0.20	4240~10610	2550~6370	160~400	0.30~0.30
16, 17	1790~2590	540~1030	90~130	0.15~0.20	5970~7960	2980~4770	300~400	0.25~0.30	3180~9950	2230~5970	160~500	0.35~0.30
20, 21	1430~2070	430~830	90~130	0.15~0.20	4770~7640	2860~5350	300~480	0.30~0.35	2550~8750	1780~7000	160~550	0.35~0.40
25, 26	1150~1660	460~830	90~130	0.20~0.25	3820~7130	2670~5700	300~560	0.35~0.40	2040~7890	1430~7890	160~620	0.35~0.50
30, 32, 33	950~1380	380~690	90~130	0.20~0.25	3180~6900	2550~6900	300~650	0.40~0.50	1700~7640	1190~9170	160~720	0.35~0.60



ROUGHING **ap** - Up to Ø16 = 0.025 x D **ae** - 0.1 x D
Over Ø16 = 0.05 x D

FINISHING **ap** - 0.1mm **ae** - Up to Ø12 = 0.25mm
Ø12 - Ø20 = 0.30mm
Over Ø20 = 0.40mm

* When the length of overhang is over 4xD carbide shank holders are recommended and reduce the feed rate to 80%.

* When using long & intermediate type holders reduce the feed rate to 70~85%.



CORNER RADIUS INSERTS

XMR120C, XMR260T & XMF110V Series

CUTTING DATA

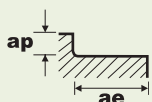
Side Cutting

MATERIAL	NON-ALLOYED STEEL & ALLOY STEEL				
Hardness	~ HB280 / ~ HRc30				
Strength	~ 1000N/mm ²				
Series	XMF110V (High Feed)				
Dia.	RPM	Feed	Vc	Fz	
8	5970~7960	7160~6370	150~200	0.60~0.40	
10	4770~6370	7160~6370	150~200	0.75~0.50	
12	3980~5310	7160~6370	150~200	0.90~0.60	
16	2980~3980	7160~6370	150~200	1.20~0.80	
20	2390~3180	7160~6370	150~200	1.50~1.00	
25	1910~2550	7640~7640	150~200	2.00~1.50	
32	1590~2120	7320~7640	150~200	2.30~1.80	

MATERIAL	DIE TOOL STEELS PRE-HARDENED				
Hardness	HB380 ~ HB480 / HRc40 ~ HRc50				
Strength	1250 ~ 1500N/mm ²				
Series	XMR120C				
Dia.	RPM	Feed	Vc	Fz	
8	3980~11140	990~1340	100~280	0.12~0.06	
10	3180~8910	800~1070	100~280	0.13~0.06	
12	2650~7430	660~890	100~280	0.12~0.06	
16	1990~5570	600~840	100~280	0.15~0.08	
20	1590~4460	480~670	100~280	0.15~0.08	
25	1270~3570	380~530	100~280	0.15~0.07	
32	1060~2970	320~450	100~280	0.15~0.08	

MATERIAL	HARDENED STEELS					HIGH HARDENED STEELS			
	STAINLESS STEEL								
Hardness	HB420 ~ HB550 / HRc45 ~ HRc55					HB550 ~ HB740 / HRc55 ~ HRc65			
Strength	1500N/mm ² ~					1500N/mm ² ~			
Series	XMR120C					XMR260T			
Dia.	RPM	Feed	Vc	Fz	RPM	Feed	Vc	Fz	
8	3180~8750	640~880	80~220	0.10~0.05	3180~8750	640~880	80~220	0.10~0.05	
10	2550~7000	510~700	80~220	0.10~0.05	2550~7000	510~700	80~220	0.10~0.05	
12	2120~5840	420~580	80~220	0.10~0.05	2120~5840	420~580	80~220	0.10~0.05	
16	1590~4380	420~530	80~220	0.15~0.06	1590~4380	480~530	80~220	0.15~0.06	
20	1270~3500	380~420	80~220	0.15~0.06	1270~3500	380~420	80~220	0.15~0.06	
25	1020~2800	310~340	80~220	0.15~0.06	1020~2800	310~340	80~220	0.15~0.06	
32	850~2330	250~280	80~220	0.15~0.06	850~2330	250~280	80~220	0.15~0.06	

MATERIAL	CAST IRON				
Series	XMR120C				
Dia.	RPM	Feed	Vc	Fz	
8	6370~15120	3820~6050	160~380	0.30~0.20	
10	5090~12100	3060~4840	160~380	0.30~0.20	
12	4240~10080	2550~4030	160~380	0.30~0.20	
16	3180~7560	2230~4540	160~380	0.35~0.30	
20	2550~6050	1780~3630	160~380	0.35~0.30	
25	2040~4840	1430~2900	160~380	0.35~0.30	
32	1700~4030	1190~2420	160~380	0.35~0.30	



ROUGHING **ap** - Up to Ø16 = 0.025 x D **ae** - 0.1 x D
Over Ø16 = 0.05 x D

FINISHING **ap** - Up to Ø16 = 0.1mm **ae** - 0.2mm
Over Ø16 = 0.2mm

* When the length of overhang is over 4xD carbide shank holders are recommended and reduce the feed rate to 80%.
* When using long & intermediate type holders reduce the feed rate to 70~85%.