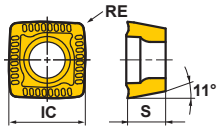
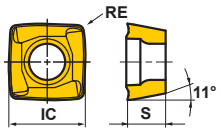
MVX

INSERTS

Shape	Drill Dia.	Insert Number	Dimensions (mm) IC	S	RE	Stock VP15TF	MC1020	MC5020	Geometry
UM	ø17—ø19.5	SOMX063005-UM	6	3	0.5	●	●	●	
	ø20—ø22.5	SOMX073505-UM	7	3.5	0.5	●	●	●	
	ø23—ø27.5	SOMX084005-UM	8.3	4	0.5	●	●	●	
	ø28—ø33	SOMX094506-UM	9.7	4.5	0.6	●	●	●	
	NEW ø33.5—ø39	SOMX115506-UM	11.6	5.5	0.6	●	●	●	
	NEW ø40—ø46	SOMX136008-UM	13.8	6	0.8	●	●	●	
	NEW ø47—ø56	SOMX166508-UM	16.5	6.5	0.8	●	●	●	
General purpose	NEW ø57—ø63	SOMX187008-UM	18.2	7	0.8	●	●	●	
NEW US	ø17—ø19.5	SOMX063005-US	6	3	0.5	●			
	ø20—ø22.5	SOMX073505-US	7	3.5	0.5	●			
	ø23—ø27.5	SOMX084005-US	8.3	4	0.5	●			
For stainless steel inner edge	ø28—ø33	SOMX094506-US	9.7	4.5	0.6	●			

*MC1020 and MC5020 are made exclusively for use as an outer insert.
*US breaker is designed exclusively for use as an inner insert.

RECOMMENDED CUTTING CONDITIONS

	Work material	Hardness	Cutting Speed Centre value (Min.—Max.) (m/min) l/d=2—6	ϕ17—ϕ19.5 Feed per Tooth Centre value (Min.—Max.) (mm/rev) l/d=2, 3	l/d=4, 5	l/d=6	ϕ20—ϕ23.5 Feed per Tooth Centre value (Min.—Max.) (mm/rev) l/d=2, 3	l/d=4, 5	l/d=6
P	Mild Steel (ASTM A36, AISI 1010etc.)	≤180HB	200 (180—235)	0.05 (0.04—0.06)	0.05 (0.04—0.06)	0.04 (0.04—0.05)	0.06 (0.04—0.08)	0.06 (0.04—0.07)	0.04 (0.04—0.05)
	Carbon Steel, Alloy Steel (AISI 1045, AISI 4140etc.)	180—280HB	140 (115—180)	0.08 (0.06—0.14)	0.08 (0.06—0.09)	0.05 (0.04—0.06)	0.10 (0.06—0.18)	0.09 (0.06—0.12)	0.07 (0.06—0.08)
	Carbon Steel, Alloy Steel (AISI 4340etc.)	280—350HB	100 (75—140)	0.08 (0.06—0.14)	0.08 (0.06—0.09)	0.05 (0.04—0.06)	0.10 (0.06—0.18)	0.09 (0.06—0.12)	0.07 (0.06—0.08)
	Alloy Tool Steel (SKD, SKTetc.)	≤350HB	135 (100—170)	0.08 (0.06—0.14)	0.08 (0.06—0.09)	0.05 (0.04—0.06)	0.10 (0.06—0.18)	0.09 (0.06—0.12)	0.07 (0.06—0.08)
M	Austenitic Stainless Steel (AISI 304, AISI 316etc.)	≤200HB	130 (80—180)	0.08 (0.06—0.12)	0.06 (0.04—0.08)	0.05 (0.04—0.06)	0.10 (0.06—0.14)	0.07 (0.06—0.08)	0.06 (0.06—0.07)
	Austenitic Stainless Steel (AISI 304LN, AISI 316LNetc.)	>200HB	130 (80—180)	0.08 (0.06—0.12)	0.06 (0.04—0.08)	0.05 (0.04—0.06)	0.10 (0.06—0.14)	0.07 (0.06—0.08)	0.06 (0.06—0.07)
	Ferritic and Martensitic Stainless Steel (AISI 410, AISI 430etc.)	≤200HB	120 (80—165)	0.08 (0.06—0.12)	0.06 (0.04—0.08)	0.05 (0.04—0.06)	0.10 (0.06—0.14)	0.07 (0.06—0.08)	0.06 (0.06—0.07)
	Ferritic and Martensitic Stainless Steel (AISI 431, AISI 420J2etc.)	>200HB	120 (80—165)	0.08 (0.06—0.12)	0.06 (0.04—0.08)	0.05 (0.04—0.06)	0.10 (0.06—0.14)	0.07 (0.06—0.08)	0.06 (0.06—0.07)
K	Gray Cast Iron (FC300etc.)	Tensile Strength ≤350MPa	160 (130—195)	0.11 (0.08—0.14)	0.09 (0.08—0.10)	0.05 (0.04—0.06)	0.14 (0.10—0.18)	0.10 (0.10—0.12)	0.07 (0.06—0.08)
	Ductile Cast Iron (FCD450etc.)	Tensile Strength ≤450MPa	100 (80—135)	0.11 (0.08—0.14)	0.09 (0.08—0.10)	0.05 (0.04—0.06)	0.13 (0.10—0.16)	0.10 (0.10—0.11)	0.07 (0.06—0.08)
	Ductile Cast Iron (FCD700etc.)	Tensile Strength ≤800MPa	100 (70—125)	0.11 (0.08—0.14)	0.09 (0.08—0.10)	0.05 (0.04—0.06)	0.13 (0.10—0.16)	0.10 (0.10—0.11)	0.07 (0.06—0.08)

Note 1) Reduce the cutting speed by 30% when VP15TF is used as an outer insert.
Note 2) L/D=3 is the recommended maximum depth when only external coolant is used.
Note 3) Internal through coolant is highly necessary when drilling stainless steel.

● : Inventory maintained in Japan.

RECOMMENDED CUTTING CONDITIONS

	Work material	Hardness	Cutting Speed Centre value (Min.—Max.) (m/min)	ϕ24—ϕ29.5 Feed per Tooth Centre value (Min.—Max.) (mm/rev)			ϕ30—ϕ33 Feed per Tooth Centre value (Min.—Max.) (mm/rev)		
			l/d=2—6	l/d=2, 3	l/d=4, 5	l/d=6	l/d=2, 3	l/d=4, 5	l/d=6
P	Mild Steel (ASTM A36, AISI 1010etc.)	≤180HB	200 (180—235)	0.07 (0.04—0.08)	0.06 (0.04—0.07)	0.05 (0.04—0.06)	0.08 (0.06—0.10)	0.07 (0.06—0.08)	0.06 (0.06—0.07)
	Carbon Steel, Alloy Steel (AISI 1045, AISI 4140etc.)	180—280HB	140 (115—180)	0.12 (0.08—0.18)	0.10 (0.08—0.12)	0.09 (0.08—0.10)	0.14 (0.08—0.24)	0.12 (0.08—0.16)	0.11 (0.10—0.12)
	Carbon Steel, Alloy Steel (AISI 4340etc.)	280—350HB	100 (75—140)	0.12 (0.08—0.18)	0.10 (0.08—0.12)	0.09 (0.08—0.10)	0.14 (0.08—0.24)	0.12 (0.08—0.16)	0.11 (0.10—0.12)
	Alloy Tool Steel (SKD, SKTetc.)	≤350HB	135 (100—170)	0.12 (0.08—0.18)	0.10 (0.08—0.12)	0.09 (0.08—0.10)	0.14 (0.08—0.24)	0.12 (0.08—0.16)	0.10 (0.08—0.12)
M	Austenitic Stainless Steel (AISI 304, AISI 316etc.)	≤200HB	130 (80—180)	0.10 (0.06—0.14)	0.08 (0.06—0.10)	0.07 (0.06—0.08)	0.10 (0.06—0.14)	0.09 (0.06—0.12)	0.07 (0.06—0.10)
	Austenitic Stainless Steel (AISI 304LN, AISI 316LNetc.)	>200HB	130 (80—180)	0.10 (0.06—0.14)	0.08 (0.06—0.10)	0.07 (0.06—0.08)	0.10 (0.06—0.14)	0.09 (0.06—0.12)	0.07 (0.06—0.10)
	Ferritic and Martensitic Stainless Steel (AISI 410, AISI 430etc.)	≤200HB	120 (80—165)	0.10 (0.06—0.14)	0.08 (0.06—0.10)	0.07 (0.06—0.08)	0.10 (0.06—0.14)	0.09 (0.06—0.12)	0.07 (0.06—0.10)
	Ferritic and Martensitic Stainless Steel (AISI 431, AISI 420J2etc.)	>200HB	120 (80—165)	0.10 (0.06—0.14)	0.08 (0.06—0.10)	0.07 (0.06—0.08)	0.10 (0.06—0.14)	0.09 (0.06—0.12)	0.07 (0.06—0.10)
K	Gray Cast Iron (FC300etc.)	Tensile Strength ≤350MPa	160 (130—195)	0.15 (0.10—0.20)	0.11 (0.10—0.13)	0.09 (0.08—0.10)	0.15 (0.10—0.20)	0.12 (0.10—0.13)	0.11 (0.10—0.12)
	Ductile Cast Iron (FCD450etc.)	Tensile Strength ≤450MPa	100 (80—135)	0.14 (0.10—0.18)	0.11 (0.10—0.12)	0.09 (0.08—0.10)	0.15 (0.10—0.20)	0.12 (0.10—0.13)	0.11 (0.10—0.12)
	Ductile Cast Iron (FCD700etc.)	Tensile Strength ≤800MPa	100 (70—125)	0.14 (0.10—0.18)	0.11 (0.10—0.12)	0.09 (0.08—0.10)	0.15 (0.10—0.20)	0.12 (0.10—0.13)	0.11 (0.10—0.12)

Note 1) Reduce the cutting speed by 30% when VP15TF is used as an outer insert.
Note 2) L/D=3 is the recommended maximum depth when only external coolant is used.
Note 3) Internal through coolant is highly necessary when drilling stainless steel.

	Work material	Hardness	Cutting Speed Centre value (Min.—Max.) (m/min)	ϕ33.5—ϕ63 Feed per Tooth Centre value (Min.—Max.) (mm/rev)		
			l/d=2—6	l/d=2, 3	l/d=4, 5	l/d=6
P	Mild Steel (ASTM A36, AISI 1010etc.)	≤180HB	200 (180—235)	0.08 (0.06—0.10)	0.07 (0.06—0.08)	0.06 (0.06—0.07)
	Carbon Steel,Alloy Steel (AISI 1045, AISI 4140etc.)	180—280HB	140 (115—180)	0.14 (0.08—0.24)	0.12 (0.08—0.16)	0.11 (0.10—0.12)
	Carbon Steel,Alloy Steel (AISI 4340etc.)	280—350HB	100 (75—140)	0.14 (0.08—0.24)	0.12 (0.08—0.16)	0.11 (0.10—0.12)
	Alloy Tool Steel (SKD, SKTetc.)	≤350HB	135 (100—170)	0.14 (0.08—0.24)	0.12 (0.08—0.16)	0.10 (0.08—0.12)
M	Austenitic Stainless Steel (AISI 304, AISI 316etc.)	≤200HB	130 (80—180)	0.09 (0.06—0.12)	0.08 (0.06—0.10)	0.07 (0.06—0.08)
	Austenitic Stainless Steel (AISI 304LN, AISI 316LNetc.)	>200HB	130 (80—180)	0.09 (0.06—0.12)	0.08 (0.06—0.10)	0.07 (0.06—0.08)
	Ferritic and Martensitic Stainless Steel (AISI 410, AISI 430etc.)	≤200HB	120 (80—165)	0.09 (0.06—0.12)	0.08 (0.06—0.10)	0.07 (0.06—0.08)
	Ferritic and Martensitic Stainless Steel (AISI 431, AISI 420J2etc.)	>200HB	120 (80—165)	0.09 (0.06—0.12)	0.08 (0.06—0.10)	0.07 (0.06—0.08)
K	Gray Cast Iron (FC300etc.)	Tensile Strength ≤350MPa	160 (130—195)	0.15 (0.10—0.20)	0.12 (0.10—0.13)	0.11 (0.10—0.12)
	Ductile Cast Iron (FCD450etc.)	Tensile Strength ≤450MPa	100 (80—135)	0.15 (0.10—0.20)	0.12 (0.10—0.13)	0.11 (0.10—0.12)
	Ductile Cast Iron (FCD700etc.)	Tensile Strength ≤800MPa	100 (70—125)	0.15 (0.10—0.20)	0.12 (0.10—0.13)	0.11 (0.10—0.12)

Note 1) L/D=3 is the recommended maximum depth when only external coolant is used.
Note 2) Internal through coolant is highly necessary when drilling stainless steel.