Tooling News No.535

SUMITOMO
CARBIDE - CBN - DIAMOND
Global Support, Global Solutions.

High-Productivity High-Feed Cutter for Rough Milling

SEC-Sumi Dual Mill DMSW series

Rev. 2

For ultra-high-feeds and large depths of cut

6-cornered Double-sided Inserts

Expansion Coated Carbide Grades For Milling
Lineup of 7 items

Expansion Shell Type Body
Lineup of 4 items

Expansion Strong Edged Chipbreaker
H Type lineup

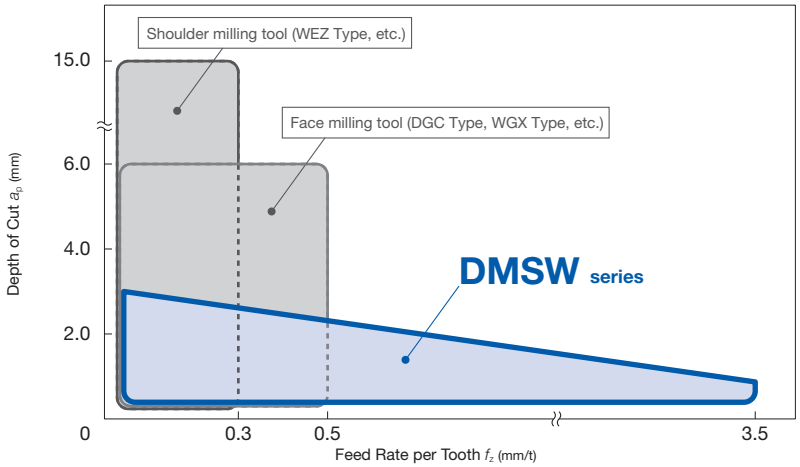
P M K N S H

SUMITOMO ELECTRIC GROUP

■ General Features

- Complex arc-shaped cutting edge achieves a smaller cutting angle and a larger depth of cut simultaneously
  High-efficiency machining at maximum feed rate per tooth of 3.5mm/t is possible
- Small cutting angle (15°) controls cutting force toward the back force direction
  Stable machining without chatter even with long tool overhang

■ Application Range



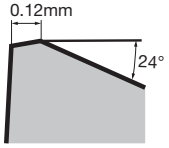
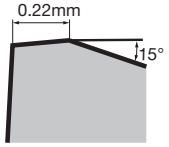
- Capable of significantly higher feed per tooth rates compared with shoulder milling or face milling tools, thus reducing machining time.
- Capable of increasing efficiency even in situations where low rigidity prevents a large axial depth of cut.

■ Product Range

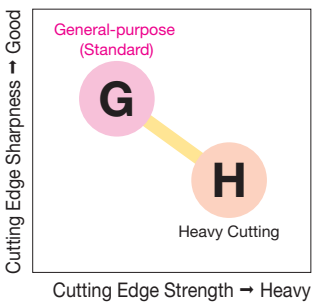
Type	Cat. No.	Max. Diameter (mm) ø35	ø40	ø42	ø50	ø52	ø63	ø66	ø80	ø85	ø100	ø125	ø160	Shape
Shell	DMSW 08000RS				4 5	4 5	4 5* 6*	5 6	6 8	6 8	6	8	10	
Shell	DMSW 08000R (Inch)				4 5		4 5 6		6 8		6	8	10	
Shank	DMSW 08000E	2	3		3		4							
Shank	DMSW 08000EL	2	3		3		4							
Modular	DMSW 08000M	2	3	3										

Number in ●●● shows the number of teeth (Inch) Inch Bore * mark: Different-diameter mounting sizes in stock

■ Chipbreaker

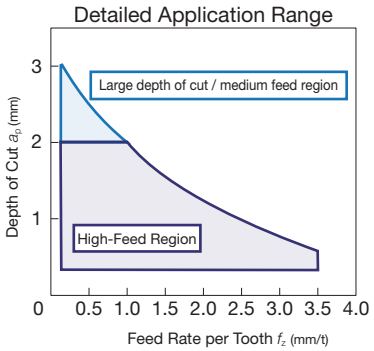
Work Material	P Steel, M Stainless Steel, K Cast Iron	P Steel, M Stainless Steel, K Cast Iron, H Hardened Steel
Applications	Main Chipbreaker, General-purpose to Interrupted Milling	Roughing, Heavy Interrupted Cutting and Hardened Steel Milling
Features	General-purpose Type	Strong-edged Type
Chipbreaker	G Type	H Type
		
Cutting Edge Cross Section		

■ Chipbreaker Selection Guide

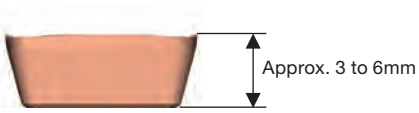


■ Features

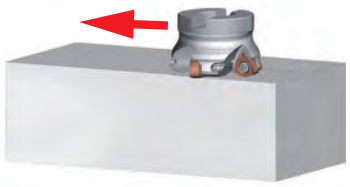
● Complex arc-shaped cutting edge achieves a smaller cutting angle and a larger depth of cut simultaneously.
High-efficiency machining at maximum feed rate per tooth of 3.5mm/t is possible.

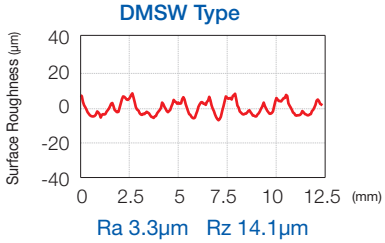


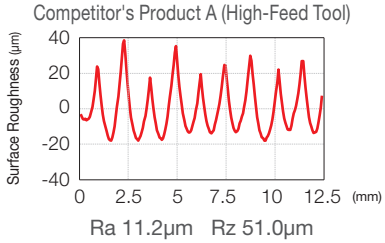
● Economical double-sided insert with 6-corner specification. Reassuringly thick at 7mm.



● Even at high feed rates of 2.0mm/t or more, a reasonable surface finish can be attained without a wiper insert.



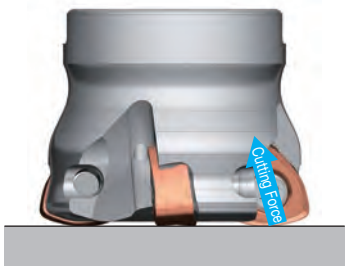




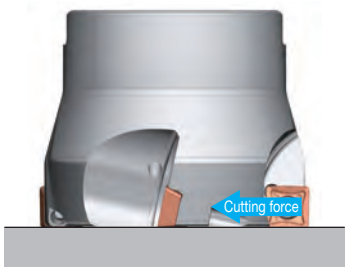
Machine: Vertical Machining Centre BT50, Work Material: S50C Insert: WNMU 0807ZNER-G (ACU2500)
Tool: DMSW 08063RS04 (ø63, 4-tooth) Cutting Conditions: v_c = 150m/min, f_z = 2.5mm/t, a_p = 0.5mm, a_e = 40mm, Dry

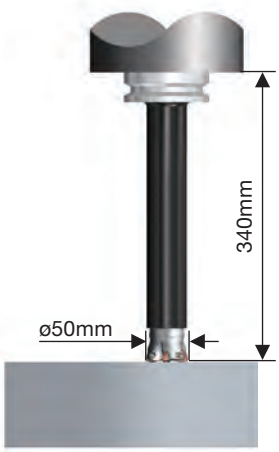
● Small cutting angle controls cutting force toward the back force direction
Suppresses chatter in long tool overhang machining, increasing efficiency

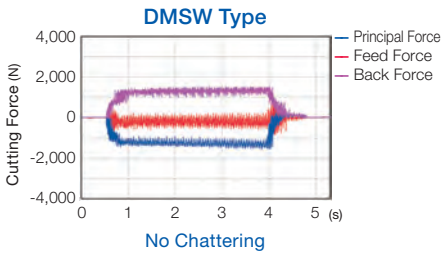
DMSW Type

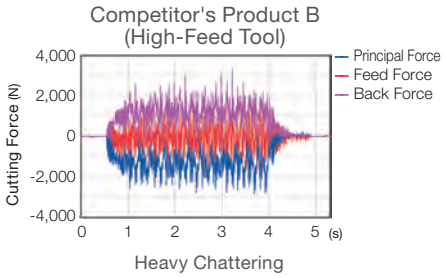


(Reference) Shoulder Milling Tool





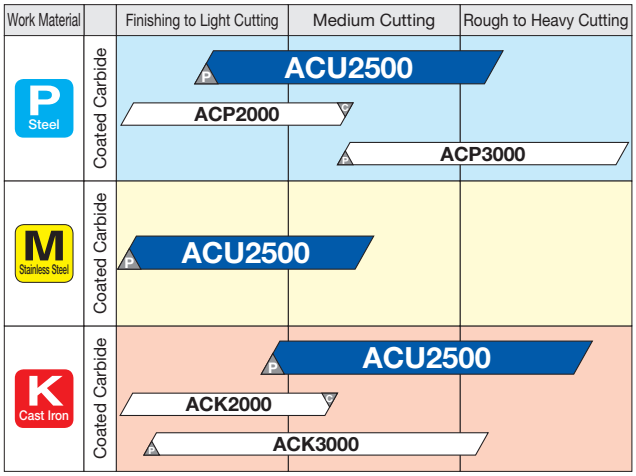




Machine: Vertical Machining Centre BT50 Work Material: S50C
Tool: DMSW 08050RS04 (ø50 4-tooth)
Insert: WNMU 0807ZNER-G (ACU2500)
Cutting Conditions: v_c = 160m/min, f_z = 0.65mm/t, a_p = 0.80mm, a_e = 45mm, Dry

■ Grade Application Range

In addition to **ACU2500** (applicable to various work materials), Steel Milling Grades **ACP2000**/**ACP3000** and Cast Iron Milling Grades **ACK2000**/**ACK3000** have now been added to the lineup.



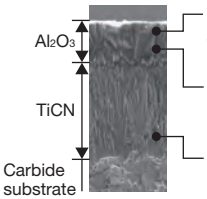
The letters "C" and "P" at the end of each grade indicate the coating type.

▽ : CVD △ : PVD

■ Grade Features

New coating technology that realises absolute stability
ABSOTECH™ (absolute technology)

ABSOTECH CVD



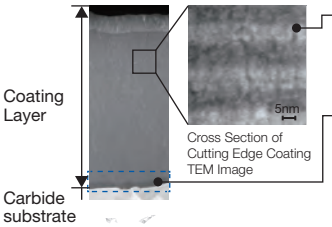
Special Surface Treatment
Suppresses thermal cracking by introducing high compressive stress, resulting in chipping resistance more than twice that of conventional types

Crystal Orientation Control Al_2O_3
By controlling the growth direction, Al_2O_3 is reinforced for crater wear resistance more than twice that of conventional types

High Hardness TiCN
Increased TiCN hardness by using a C-rich composition for flank wear resistance more than twice that of conventional types

Applicable Grades: ACP2000, ACK2000

ABSOTECH PVD



New Super Multi-Layered Structure
Higher hardness and twice the conventional wear resistance due to a fine crystal structure AlTiCrBN-based nano-layered coating

High Adhesion Strength
Coating adhesion significantly increased twice or more than conventional chipping resistance

Applicable Grades: ACU2500, ACP3000, ACK3000

■ Grade Characteristic Values

CVD

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating Type	Coating Thickness (μm)	Features	Old Grade
P Steel	**ACP2000**	89.5	3.2	Absotech	10	· For high-speed machining of steel · Stable long tool life in high-speed machining is realised by adopting a tough carbide substrate and a new coating with excellent thermal crack resistance	ACP100
K Cast Iron	**ACK2000**	91.7	3.1	Absotech	10	· For high-speed cast iron milling · Stable long tool life in high-speed machining is realised by adopting a tough carbide substrate and a new coating with excellent thermal resistance	ACK100 ACK200

PVD

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating Type	Coating Thickness (μm)	Features	Old Grade
P Steel	**ACU2500**	91.6	3.8	Absotech	3	· General-purpose grade suitable for steel, stainless steel, and cast iron machining · Adopts a carbide substrate with excellent fracture resistance and wear resistance, plus a new coating with excellent wear resistance and chipping resistance, realising stable long tool life on various work materials	—
	ACP3000	89.5	3.2	Absotech	3	· Our 1st recommended grade for milling steel · Carbide substrate with excellent thermal crack resistance, plus a new coating with excellent wear resistance and chipping resistance, realises stable long tool life over a wide range of cutting conditions	ACP200 ACP300
K Cast Iron	**ACK3000**	91.7	3.1	Absotech	3	· Our 1st recommended grade for milling cast iron · Adopts a high thermal conductivity carbide substrate and a new coating with excellent wear resistance and chipping resistance, realizing stable long tool life over a wide range of cast iron machining operations	ACK300

■ Precautions for Corner Finishing

* Corners will have unmachined surfaces or gouges with respect to the expected corner profile.

Fig 1

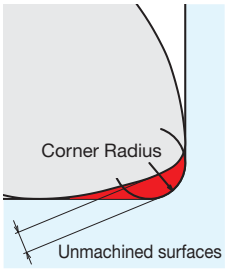
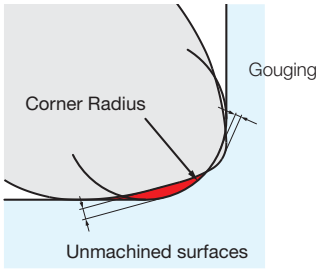


Fig 2

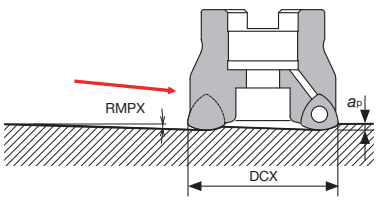


Corner Radius	Unmachined surfaces	Gouging	Fig
2.0	1.22	0	1
2.5	1.08	0	1
3.0	0.95	0	1
3.5	0.83	0.04	2

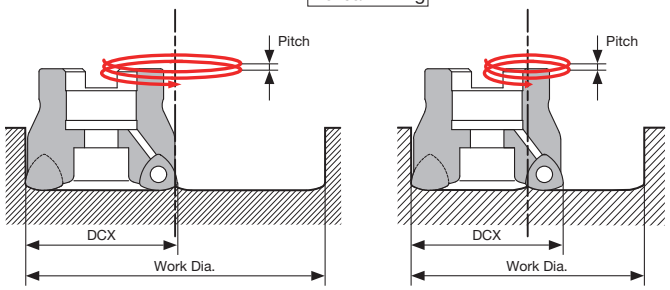
(mm)

■ Ramping/Helical Milling Upper Limit

Ramping



Helical Milling

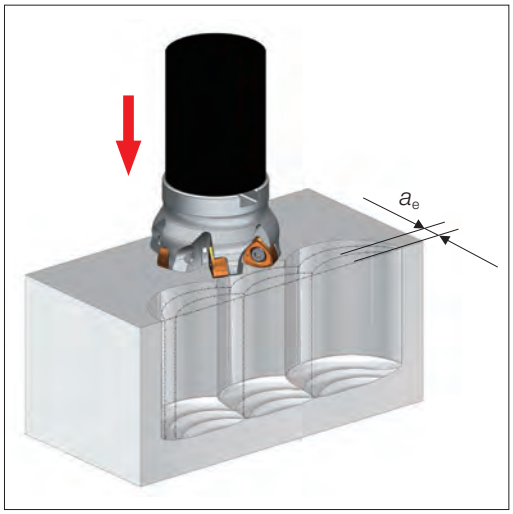


Precautions for Helical Milling

- Above the max. machining diameter, the centre uncut portion can be removed by traverse cutting with the same cutter.
- Below the min. machining diameter, the centre uncut portion cannot be removed with the same cutter.

Max. Dia. DCX (mm)	Ramping	Helical Milling					
	Max. Ramping Angle RMPX (°)	Max. Machining Dia. (mm)	Max. Pitch (mm/rev)	Standard Diameter (mm)	Max. Pitch (mm/rev)	Min. Machining Dia. (mm)	Max. Pitch (mm/rev)
35	0.5	069.3	1.3	53.5	0.5	052.0	0.5
40	0.8	079.3	2.0	63.4	1.0	060.2	0.5
42	0.8	083.3	2.0	67.4	1.0	063.9	0.5
50	1.4	099.3	2.0	83.3	2.0	079.1	1.0
52	1.4	103.3	2.0	87.3	2.0	082.8	1.0
63	1.2	125.3	2.0	109.3	2.0	103.6	1.0
66	1.2	131.3	2.0	115.3	2.0	109.4	1.0
80	1.2	159.3	2.0	143.2	2.0	134.0	1.0
85	1.2	169.3	2.0	153.2	2.0	144.0	1.0
100	0.8	199.3	2.0	183.2	2.0	174.0	1.0
125	Not recommended						
160	Not recommended						

■ Plunge Cutting Upper Limit



Max. a_e (mm)	Max. f_z (mm/t)
10	0.2

DMSW 08000R(S) type

Expansion

P Steel M Stainless Steel K Cast Iron H Hardened Steel

Rake Angle		
	Radial	-7° to -10°
	Axial	-6°

3mm 15°

Fig 1

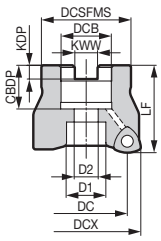


Fig 2

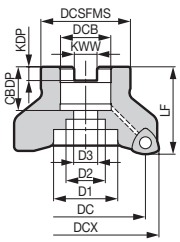


Fig 3

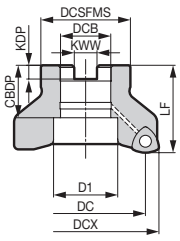


Fig 4

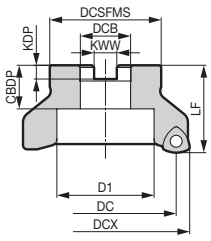
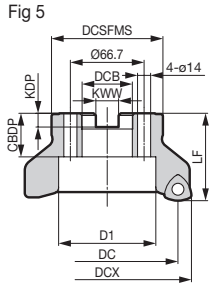


Fig 5



■ Body (Shell Type)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	DMSW 08050RS04	●	50	33.4	41	40	22	10.4	6.3	20	16.7	11	—	4	0.25	1
	08050RS05	●	50	33.4	41	40	22	10.4	6.3	20	16.7	11	—	5	0.24	1
	08052RS04		52	35.4	41	40	22	10.4	6.3	20	17	11	—	4	0.27	1
	08052RS05		52	35.4	41	40	22	10.4	6.3	20	17	11	—	5	0.25	1
	08063RS04	●	63	46.4	50	40	22	10.4	6.3	20	18	11	—	4	0.46	1
	08063RS05	●	63	46.4	50	40	22	10.4	6.3	20	18	11	—	5	0.46	1
	08063RS06	●	63	46.4	50	40	22	10.4	6.3	20	18	11	—	6	0.44	1
	08063RS05-27	●	63	46.4	50	50	27	12.4	7	22	20	14	—	5	0.55	1
	08063RS06-27	●	63	46.4	50	50	27	12.4	7	22	20	14	—	6	0.53	1
	08066RS05-27		66	49.4	50	50	27	12.4	7	22	20	14	—	5	0.60	1
	08066RS06-27		66	49.4	50	50	27	12.4	7	22	20	14	—	6	0.58	1
	08080RS06	●	* 80	63.3	55	50	27	12.4	7	22	20	14	—	6	0.88	1
	08080RS08	●	* 80	63.3	55	50	27	12.4	7	22	20	14	—	8	0.84	1
	08085RS06		* 85	68.3	55	50	27	12.4	7	22	20	14	—	6	1.01	1
	08085RS08		* 85	68.3	55	50	27	12.4	7	22	20	14	—	8	0.99	1
	08100RS06	●	100	83.3	70	50	32	14.4	8	32	46	—	—	6	1.29	3
	08125RS08	●	125	108.3	80	63	40	16.4	9	29	52	29	—	8	2.41	1
	08160RS10	●	160	143.3	130	63	40	16.4	9	29	90	—	—	10	4.73	5
Inch	DMSW 08050R04	●	50	33.4	41	40	22.225	8.4	5	20	16.7	11	—	4	0.25	1
	08050R05	●	50	33.4	41	40	22.225	8.4	5	20	16.7	11	—	5	0.24	1
	08063R04	●	63	46.4	50	40	22.225	8.4	5	20	18	11	—	4	0.46	1
	08063R05	●	63	46.4	50	40	22.225	8.4	5	20	18	11	—	5	0.46	1
	08063R06	●	63	46.4	50	40	22.225	8.4	5	20	18	11	—	6	0.44	1
	08080R06	●	* 80	63.3	70	63	31.75	12.7	8	32	27	18	—	6	1.32	1
	08080R08	●	* 80	63.3	70	63	31.75	12.7	8	32	27	18	—	8	1.28	1
	08100R06	●	* 100	83.3	70	63	31.75	12.7	8	32	46	27	18	6	1.75	2
	08125R08	●	125	108.3	80	63	38.1	15.9	10	35.5	55	30	—	8	2.55	1
	08160R10	●	160	143.3	100	63	50.8	19.1	11	38	72	—	—	10	4.18	4

Take note of the cutter mounting size (DCB) when selecting a cutter. Inserts are sold separately.

For mounting the ø80, ø85, and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hexagonal socket bolt (metric specification: M12 x 30 to 35mm, inch specification: M16 x 40 to 45mm).

Note: The values in red have been changed from the 2021-2022 General Catalogue.

■ Parts

Applicable Cutter	Flat Insert Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
DMSW08160R(S)10	BFTX0513IP	5.0	TRDR20IP	—	—	SUMI-P
Other than above			—	HPL2025	TRB20IP	

■ Identification Code

DMSW 08 063 R S 05 - 27

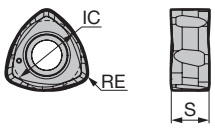
DMSW	08	063	R	S	05	27
Series	Insert Size	Max. Dia.	Feed Direction	Metric Bore	Number of Teeth	Mounting Size

■ Insert

Dimensions (mm)

Grade Classification		Coated Carbide								
Process	High-speed/Light Cutting		P		K					
	General-purpose	M	P	P	K	K				
	Roughing	M		P		K				
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	Inscribed Circle IC	Thickness S	Corner Radius RE	Fig
WNMU 0807ZNER-G		●	●	●	●	●	13	7	1.6	1
WNMU 0807ZNER-H		●	●	●			13	7	1.6	1

Fig 1



Recommended Cutting Conditions P7

N·m Recommended Tightening Torque (N·m) ●mark: Standard stocked item ●mark: Standard stocked item (expanded item) Blank: Made-to-order item

DMSW 08000E(L) type

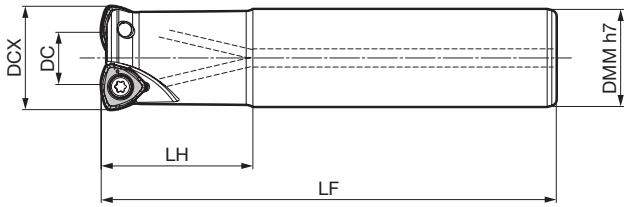
Expansion

P Steel | M Stainless Steel | K Cast Iron | H Hardened Steel

Rake Angle		
	Radial	-10° to -13°
	Axial	-6°

3mm, 15°

Fig 1



■ Body (Shank Type)

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
DMSW 08035E02	●	**35**	18.6	32	50	150	2	0.85	1
08040E03	●	**40**	23.5	32	50	150	3	0.86	1
08050E03-42	●	**50**	33.4	42	50	150	3	1.51	1
08063E04-42		**63**	46.4	42	50	150	4	1.66	1

Inserts are sold separately.

Note: The values in red have been changed from the 2021-2022 General Catalogue.

■ Body (Long Shank Type)

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
DMSW 08035EL02	●	**35**	18.6	32	60	210	2	1.21	1
08040EL03	●	**40**	23.5	32	60	210	3	1.22	1
08050EL03-42	●	**50**	33.4	42	50	250	3	2.54	1
08063EL04-42		**63**	46.4	42	50	250	4	2.68	1

Inserts are sold separately.

Note: The values in red have been changed from the 2021-2022 General Catalogue.

■ Parts

Flat Insert Screw		Integrated Wrench	Anti-seizure Cream
	N·m		
BFTX0513IP	**5.0**	TRDR20IP	SUMI-P

■ Identification Code

DMSW Series — **08** Insert Size — **050** Max. Dia. — **E** Shank Type — **L** Long Shank — **03** Number of Teeth — **42** Shank Dia.

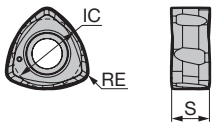
■ Insert

Dimensions (mm)

Grade Classification		Coated Carbide				
Process	High-speed/Light Cutting		P		K	
	General-purpose	M/K	P	P	K	K
	Roughing	M/K		P		K

Cat. No.	ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	Inscribed Circle IC	Thickness S	Corner Radius RE	Fig
WNMU 0807ZNER-G	●	●	●	●	●	13	7	1.6	1
WNMU 0807ZNER-H	●	●	●			13	7	1.6	1

Fig 1



■ Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.
P	General Steel	Below 280HB	100 - **160** - 250	1.0 - **1.5** - 2.0
P	Alloy Steel	Below 280HB	100 - **160** - 200	1.0 - **1.5** - 1.8
P	Alloy Steel	Below 42HRC	100 - **150** - 180	0.8 - **1.0** - 1.2
M	Stainless Steel	—	80 - **120** - 150	0.8 - **1.0** - 1.2
K	Cast Iron	—	100 - **160** - 250	1.0 - **1.5** - 1.8
H	Hardened Steel	Below 52HRC	80 - **100** - 120	0.3 - **0.5** - 0.7

Note
- The above figures are guidelines for use with BT50 machine tools at depth of cut (a_p) of 1.5mm.
- The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.

N·m Recommended Tightening Torque (N·m) ●mark: Standard stocked item ●mark: Standard stocked item (expanded item) Blank: Made-to-order item

DMSW 08000M type

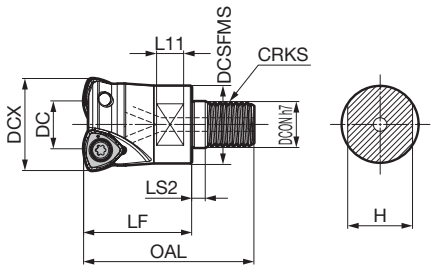
SEC-Modular Tool | Expansion

P Steel | M Stainless Steel | K Cast Iron | H Hardened Steel

Rake Angle		
	Radial	-11° to -13°
	Axial	-6°

3mm 15°

Fig 1



■ Head

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Chamfer L11	Width H	Number of Teeth	Weight (kg)	Fig
DMSW 08035M16Z2	●	**35**	18.6	28.5	17	**M16**	63	40	5	10	24	2	0.19	1
08040M16Z3	●	**40**	23.5	28.5	17	**M16**	63	40	5	10	24	3	0.21	1
08042M16Z3		**42**	25.5	28.5	17	**M16**	63	40	5	10	24	3	0.23	1

Inserts are sold separately.

Note: The values in red have been changed from the 2021-2022 General Catalogue.

■ Parts

Flat Insert Screw		Integrated Wrench	Anti-seizure Cream
			
BFTX0513IP	**5.0**	TRDR20IP	SUMI-P

■ Identification Code

DMSW (Series) **08** (Insert Size) **040** (Max. Dia.) **M16** (Mounting Screw Size) **Z3** (Number of Teeth)

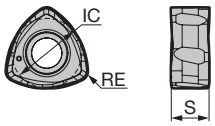
■ Insert

Dimensions (mm)

Grade Classification		Coated Carbide				
Process	High-speed/Light Cutting		P		K	
	General-purpose	M	P	P	K	K
	Roughing	M		P		K

Cat. No.	ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	Inscribed Circle IC	Thickness S	Corner Radius RE	Fig
WNMU 0807ZNER-G	●	●	●	●	●	13	7	1.6	1
WNMU 0807ZNER-H	●	●	●			13	7	1.6	1

Fig 1



■ Recommended Cutting Conditions

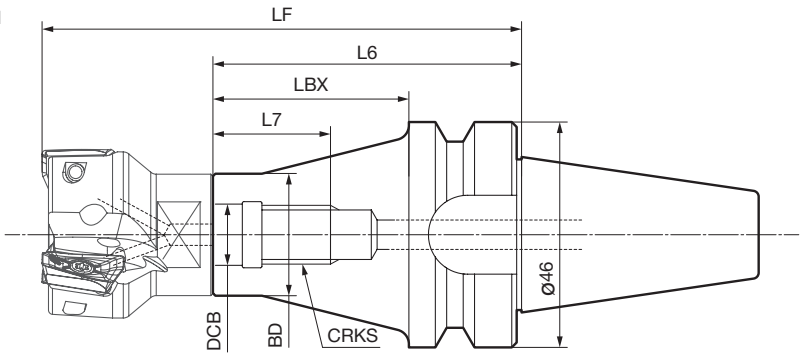
ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.
P	General Steel	Below 280HB	100 - **160** - 250	1.0 - **1.5** - 2.0
P	Alloy Steel	Below 280HB	100 - **160** - 200	1.0 - **1.5** - 1.8
P	Alloy Steel	Below 42HRC	100 - **150** - 180	0.8 - **1.0** - 1.2
M	Stainless Steel	—	80 - **120** - 150	0.8 - **1.0** - 1.2
K	Cast Iron	—	100 - **160** - 250	1.0 - **1.5** - 1.8
H	Hardened Steel	Below 52HRC	80 - **100** - 120	0.3 - **0.5** - 0.7

Note
- The above figures are guidelines for use with BT50 machine tools at depth of cut (a_p) of 1.5mm.
- The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.

N·m Recommended Tightening Torque (N·m) ●mark: Standard stocked item ●mark: Standard stocked item (expanded item) Blank: Made-to-order item

SEC-Modular Tools Special Arbors (BBT Integrated Type)

Fig 1



■ BBT Integrated Arbor

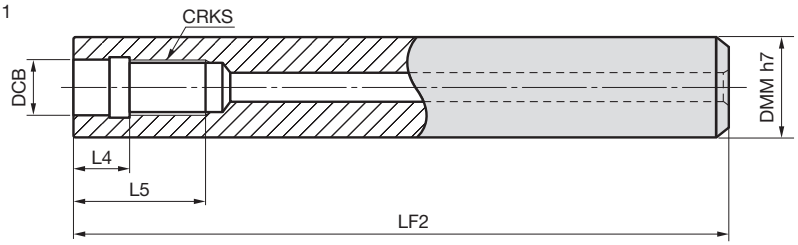
Dimensions (mm)

Cat. No.	Stock	Screws CRKS	Hole Dia. DCB	External BD	Body Overhang L6	Length LBX	Thread Depth L7	Overhang LF*1	Coolant Hole	Fig
BBT30-M16-35	●	**M16**	17	31.9	58	35	24	98	Yes	1

*1: Overhang length for LF is with head mounted.
Can also be used with BT30 spindle machines.

SEC-Modular Tools - Special Arbors (Carbide Arbors / Steel Arbors)

Fig 1



■ Carbide Arbor

Dimensions (mm)

Cat. No.	Stock	Screw CRKS	Bore Dia. DCB	Shank DMM	Overall Length LF2	Depth L4	Thread Depth L5	Overhang LF*2	Fig
MA28M16L200C	●	**M16**	17	28	200	10	24	240	1
MA28M16L300C	●	**M16**	17	28	300	10	24	340	1
MA32M16L200C	●	**M16**	17	32	200	10	24	240	1
MA32M16L300C	●	**M16**	17	32	300	10	24	340	1

■ Steel Arbor

Dimensions (mm)

Cat. No.	Stock	Screw CRKS	Bore Dia. DCB	Shank DMM	Overall Length LF2	Depth L4	Thread Depth L5	Overhang LF*2	Fig
MA32M16L200S	●	**M16**	17	32	200	10	24	240	1

■ Identification Code

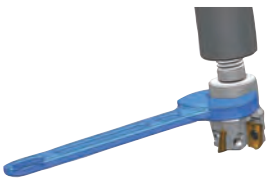
MA **15** **M08** **L120** **C**

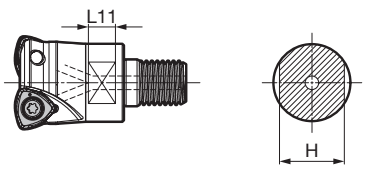
MA	15	M08	L120	C
Series	Shank Dia.	Mounting Screw Size	Arbor Overall Length	Arbor Materials C: Carbide S: Steel

● Set Dimensions (*2)

Recommended Tightening Torque (N·m)

* Take note when tightening the head.
· When mounting the head to an arbor, follow the standard tightening torque in the table below.
· Check the mounting screw size for the head and arbor beforehand.





Screw Size	Regulated Tightening Torque (N·m)	Tool Dimensions	
		L11	H
M16	**80**	10	24

●mark: Standard stocked item

■ Application Examples

Tool Steel SKD61 (45HRC) Mold		Sumitomo	Competitor's Product
Vertical Machining Centre BT50	Tool	DMSW08050RS05	Double-Sided, 6 Corners
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	50	50
	Number of Teeth	5	4
	v_c (m/min)	130	130
	v_f (mm/min)	2,500	2,500
	f_z (mm/t)	0.75	0.6
	a_p (mm)	0.5	0.5
	a_e (mm)	35	35
	Coolant	Dry	Dry
	Results	Minimal damage to insert even after 50 minutes of machining, stable chip shape	

Prehardened Steel (40HRC) Test Piece		Sumitomo	Competitor's Product
Boring Machine BT50	Tool	DMSW08100R06	Double-Sided, 6 Corners
	Grade	ACP3000	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	100	100
	Number of Teeth	6	6
	v_c (m/min)	180	120
	v_f (mm/min)	5,160	3,440
	f_z (mm/t)	1.5	1.5
	a_p (mm)	1	1
	a_e (mm)	65	65
	Coolant	Dry	Dry
	Results	No chatter even when the cutting speed is increased at an overhang amount of 380mm (steel arbor), efficiency increased 1.5x	

Tempered Steel SCM440 (40HRC) Machine Component		Sumitomo	Competitor's Product
Horizontal Machining Centre: BT50	Tool	DMSW08050RS04	Single-Sided, 3 Corners
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	50	50
	Number of Teeth	4	4
	v_c (m/min)	210	210
	v_f (mm/min)	5,825	5,825
	f_z (mm/t)	1.1	1.1
	a_p (mm)	1.5	1.5
	a_e (mm)	25	25
	Coolant	Dry	Dry
	Results	Stable machining without chipping is possible even with heat-treated work material	

Alloy Steel SCM430 Large Oil Drilling Tool		Sumitomo	Competitor's Product
	Tool	DMSW08080R08	—
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	80	—
	Number of Teeth	8	—
	v_c (m/min)	180	—
	v_f (mm/min)	3,400	—
	f_z (mm/t)	0.6	—
	a_p (mm)	1.9	—
	a_e (mm)	57	—
	Coolant	Dry	—
	Results	Capable of machining single corner of large workpiece (nearly 300 minutes), long tool life	

Manganese Steel Construction Machine Component		Sumitomo	Competitor's Product
Horizontal Machining Centre: BT50	Tool	DMSW08080RS06	Single-Sided, 2 Corners
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	80	80
	Number of Teeth	6	5
	v_c (m/min)	80	80
	v_f (mm/min)	900	900
	f_z (mm/t)	0.47	0.56
	a_p (mm)	1	1
	a_e (mm)	60	60
	Coolant	Wet	Wet
	Results	Machining without chatter even for castings with low clamp rigidity Stability with no sudden fractures even on mill-scale work, and a longer tool life (1.3x)	

Alloy Steel SCM415 Machine Component		Sumitomo	Competitor's Product
Horizontal Machining Centre BT40	Tool	DMSW08125RS08	Double-Sided, 10 Corners
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	125	125
	Number of Teeth	8	13
	v_c (m/min)	280	200
	v_f (mm/min)	4,280	2,185
	f_z (mm/t)	0.75	0.33
	a_p (mm)	1.5	2.0
	a_e (mm)	100	100
	Coolant	Dry	Wet
	Results	Efficiency improved 1.5x, no sudden fractures, improved tool life and increased stability	

Carbon Steel S45C Large Mold Part		Sumitomo	Competitor's Product
Boring Machine BT50	Tool	DMSW08050RS05	Single-Sided, 4 Corners
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	50	50
	Number of Teeth	5	5
	v_c (m/min)	189	189
	v_f (mm/min)	5,000	5,000
	f_z (mm/t)	0.83	0.83
	a_p (mm)	1	1
	a_e (mm)	50	50
	Coolant	Dry	Dry
	Results	Effective without chatter even when using a 200mm long steel arbor Achieves roughing (240 minutes) of large workpieces without indexing the inserts	

Low Carbon Steel SS400 Machine Component		Sumitomo	Competitor's Product
Vertical Machining Centre BT40	Tool	DMSW08040E03	Double-Sided, 4 Corners
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	40	32
	Number of Teeth	3	6
	v_c (m/min)	150	120
	v_f (mm/min)	3,800	3,800
	f_z (mm/t)	1.0	0.5
	a_p (mm)	0.5	0.5
	a_e (mm)	30	30
	Coolant	Dry	Dry
	Results	2x tool life	

Stainless Steel SUS304 Machine Component		Sumitomo	Competitor's Product
Vertical 5-axis Machining Centre BT50	Tool	DMSW08080R08	Single-Sided, 2 Corners
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	80	80
	Number of Teeth	8	7
	v_c (m/min)	120	176
	v_f (mm/min)	2,675	490
	f_z (mm/t)	0.7	0.1
	a_p (mm)	1	2
	a_e (mm)	40	40
	Coolant	Dry	Dry
	Results	Efficiency increased 2.7x, tool life increased 6x or more	

Gray Cast Iron FC250 Mold		Sumitomo	Competitor's Product
Vertical Machining Centre BT50	Tool	DMSW08100R06	Single-Sided, 4 Corners
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	100	100
	Number of Teeth	6	6
	v_c (m/min)	100	100
	v_f (mm/min)	1,910	1,910
	f_z (mm/t)	1	1
	a_p (mm)	1.5	1.5
	a_e (mm)	50	50
	Coolant	Wet	Wet
	Results	Sudden fractures during mill-scale cutting eliminated, tool life increased	

Gray Cast Iron FC250 Machine Component		Sumitomo	Competitor's Product
Vertical Machining Centre BT50	Tool	DMSW08063R05	Single-Sided, 3 Corners
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	63	63
	Number of Teeth	5	4
	v_c (m/min)	158	158
	v_f (mm/min)	4,000	1,500
	f_z (mm/t)	1.0	0.47
	a_p (mm)	2	1
	a_e (mm)	50	50
	Coolant	Dry	Dry
	Results	Capable of increasing the number of teeth, feed rate and depth of cut, efficiency increased 5x or more	

Ductile Cast Iron FCD540 Large Mold Part		Sumitomo	Competitor's Product
Horizontal Machining Centre: BT50	Tool	DMSW08050RS04	Double-Sided, 4 Corners
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	50	50
	Number of Teeth	4	4
	v_c (m/min)	125	125
	v_f (mm/min)	3,000	3,000
	f_z (mm/t)	1	1
	a_p (mm)	1.5	1.5
	a_e (mm)	25	25
	Coolant	Dry	Dry
	Results	Minimal damage to insert even after 300 minutes of machining	

Ductile Cast Iron Machine Component		Sumitomo	—
Vertical 5-axis Machining Centre BT40	Tool	DMSW08050RS05	—
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	50	—
	Number of Teeth	5	—
	v_c (m/min)	210	—
	v_f (mm/min)	5,350	—
	f_z (mm/t)	0.8	—
	a_p (mm)	1	—
	a_e (mm)	30	—
	Coolant	Dry	—
	Results	Smooth and stable machining even with low-rigidity equipment Minimal insert damage even after 220 minutes of machining	

Tool Steel SKD61 (48HRC) Forge Mold		Sumitomo	Competitor's Product
Vertical Machining Centre BT40	Tool	DMSW08050RS05	Single-Sided, 2 Corners
	Grade	ACU2500	—
	Chipbreaker	H	—
	Cutter Dia. (mm)	50	30
	Number of Teeth	5	7
	v_c (m/min)	120	70
	v_f (mm/min)	7,000	3,110
	f_z (mm/t)	1.83	0.6
	a_p (mm)	0.5	0.15
	a_e (mm)	36	22
	Coolant	Wet	Wet
	Results	Larger diameter for increased tool rigidity, higher feed per tooth rate reduces machining time to 1/6	

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< SAFETY NOTES >

- Very hot or lengthy chips may be discharged while the machine is in operation. Therefore, machine guards, safety goggles or other protective covers must be used. Fire safety precautions must also be considered.
- Please handle with care as this product has sharp edges.
- Improper cutting conditions or mis-handling of the tool may result in breakages or projectiles. Therefore, please use the tool within its recommended conditions.
- When using non-water soluble cutting oil, precautions against fire must be taken and please ensure that a fire extinguisher is placed near the machine.

Sumitomo Electric Industries, Ltd.

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