

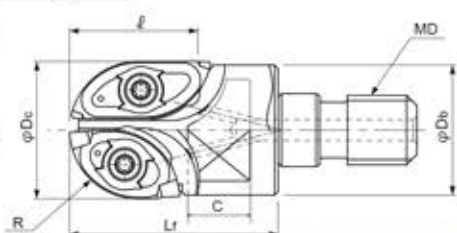
Swing Ball

MSW TYPE

G-Body

Through Coolant Hole

Clamp Screw	Recommended Torque N·m
DSW-2563H	0.9
DSW-307H	1.8
DSW-4085	3.6
DSW-511H	6.1
TSW-511	5.5



BODY

Arbor B193

Cat. No.	Stock	No. of flutes	Dimensions (mm)								Inserts	Parts	
			R	φDc	ℓ	Lr	φDb	MD	C	W		Clamp Screw	Wrench
MSW-1615-M8	●	2	8	16	15	23	15	M8	8	12	SWB216HM SWB216HS	DSW-2563H	A-08SD
MSW-2018-M10	●	2	10	20	18.5	30	18.7	M10	9	14	SWB220HM/HM-H/MMW SWB220HS/MSW	DSW-307H	A-10
MSW-2522-M12	●	2	12.5	25	21.9	35	23.5	M12	10	17	SWB225HM/HM-H/MMW SWB225HS/MSW	DSW-4085	A-15
MSW-3025-M16	□	2	15	30	25.9	43	28.2	M16	12.5	22	SWB230HM/HM-H/MMW SWB230HS/MSW	DSW-511H	A-20
MSW-3225-M16	●	2	16	32	29.5	43	29.9	M16	12.5	22	SWB232HM-G/MMW-G SWB232HS-G/MSW-G	TSW-511	A-20

Note) 1. Please refer page B105-B106 for recommended cutting conditions

2. All cutters are supplied without inserts.

3. Please refer page B009 for recommended tightening torque.

Inserts series expansion.



① Insert for welded & hardened steel (-W type)

1. Improved insert strength
2. Suitable for welded & hardened steel (over 50HRC).

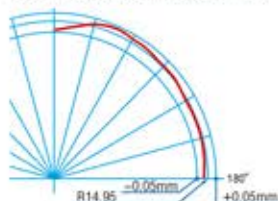


② Insert for semi-finishing (main blade -H type)

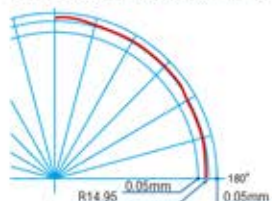
1. Main blades -H type for semi-finishing are available for φ20mm, φ25mm and φ30mm. In case of using -H type blade please confirm the grade of both inserts. It should be the same grade.
2. Able to use for semi-finishing by improving nose radius accuracy.
Do not recommend to use for roughing.

● Insert comparison

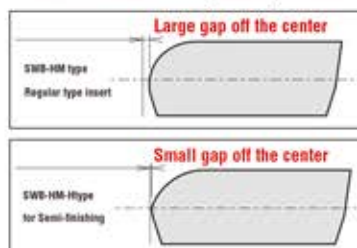
SWB-HM type for Regular purpose insert



SWB-HM-H type Insert for Semi-finishing



Radius form accuracy on body



Swing Ball

MSW_{TYPE}

■ INSERTS

Fig. 1 (Main blade)



Fig. 2 (Sub blade)



Fig. 3 (Main blade for welded & hardened steel) Fig. 4 (Sub blade for welded & hardened steel)

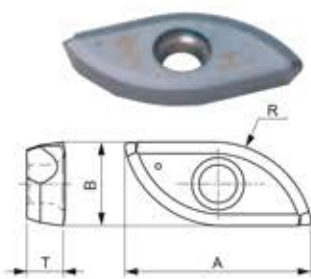
■ SWB-Htype
(Main blade for semi-finishing)1. Added-H type semi-finishing main blade for $\phi 20$, $\phi 25$ and $\phi 30$.2. For use in semi-finishing only
(Not recommend for roughing.)

Fig. 5 (Main blade for semi-finishing)



Cat. No.	PVD coated				Dimensions (mm)				Fig.
	JC 5118	JC 8015	JC 8050	JC 5040	R	A	B	T	
SWB216HM	●		●		8	15	7.9	3	1
SWB216HS	●		●		8	16.1	6.6	3	2
SWB220HM		●		●	10	15.8	9.9	3.65	1
SWB220HM-H		●			10	16	9.9	3.65	5
SWB220MMW		●			10	15.8	9.9	3.65	3
SWB220HS		●		●	10	20	8.2	3.65	2
SWB220MSW		●			10	20	8.2	3.65	4
SWB225HM		●		●	12.5	18.5	12.4	3.8	1
SWB225HM-H		□			12.5	18.9	12.4	3.8	5
SWB225MMW		●			12.5	18.5	12.4	3.8	3
SWB225HS		●		●	12.5	23.8	10.5	3.8	2
SWB225MSW		●			12.5	23.8	10.5	3.8	4
SWB230HM		□		□	15	22.2	14.8	5.35	1
SWB230HM-H		□			15	22.4	14.8	5.35	5
SWB230MMW		□			15	22.2	14.8	5.35	3
SWB230HS		□		□	15	27.5	12.3	5.35	2
SWB230MSW		□			15	27.5	12.3	5.35	4
SWB232HM-G		●		●	16	26	16	5.35	1
SWB232MMW-G		●			16	26	16	5.35	3
SWB232HS-G		●		●	16	31.7	13.9	5.35	2
SWB232MSW-G		●			16	31.7	13.9	5.35	4

10 inserts per case, but SWB232HS-G and SWB232MSW-G : 5 pieces per case.

Note) 1. Please refer page B110 for machining form by swing ball.

2. In case of using main blade -H type for semi-finishing, be sure to use the same grade of sub blade.

Swing Ball

SWBTYPE

G-Body



Fig.1

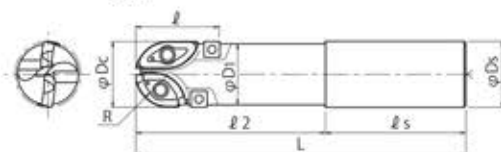


Fig.2

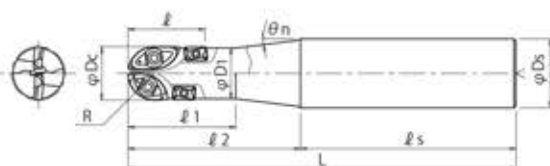
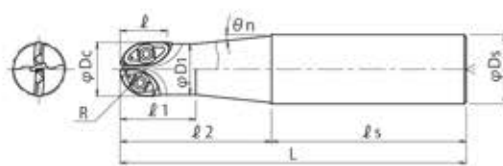


Fig.3



BODY

Type	Cat. No.	Stock	No. of inserts			Dimensions (mm)										Fig.	
			Main Blade	Sub Blade	Peripheral Blade	R	φDc	ℓ	ℓ2	ℓs	L	ℓ1	φD1	θn	φDs		Md
Straight Shank	SWB-20080S-S20	●	1	1	2			30	80	80	160	-	18.7	-	20	-	1
	SWB-20120S-S20	□	1	1	2			30	120	80	200	-	18.7	-	20	-	1
	SWB-20170S-S20	□	1	1	2			30	170	80	250	-	18.7	-	20	-	1
	SWBS2030S25	●	1	1	2	10	20	30	80	100	180	40	18.7	3°30'	25	-	2
	SWBM2030S25	●	1	1	2			30	100	100	200	40	18.7	2°	25	-	2
	SWBS2018S25	●	1	1	-			18	70	90	160	30	18.7	3°30'	25	-	3
	SWBS2535S32	●	1	1	2			35	80	100	180	50	23.5	7°	32	-	2
	SWBM2535S32	●	1	1	2	12.5	25	35	100	100	200	50	23.5	4°	32	-	2
	SWBS2522S32	●	1	1	-			22	70	90	160	35	23.5	6°	32	-	3
	SWBS3242S32-G	●	1	1	2	16	32	44	60	120	180	-	29.9	-	32	-	1
SWBM3242S32-G	●	1	1	2			44	60	160	220	-	29.9	-	32	-	1	

- Note) 1) All cutters are supplied without inserts
 2) Please refer page C167-C171 for recommended cutting conditions and refer page C170 for machined form.
 3) Please refer page C164 for selection of inserts.

Modular Head Type Please refer Page B107

Swing Ball

SWBTYPE

Straight Shank Type

Fig.2

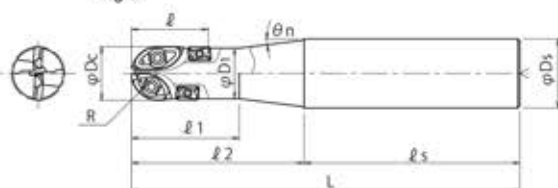
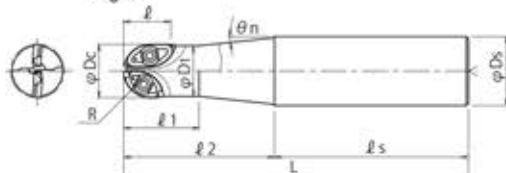


Fig.3



BODY

Type	Cat. No.	Stock	No. of inserts			Dimensions (mm)											Fig.
			Main Blade	Sub Blade	Peripheral Blade	R	φDc	ℓ	ℓ ₂	ℓ _s	L	ℓ ₁	φD ₁	θ _n	φD _s	Md	
Straight Shank	SWBL2030S25	□	1	1	2			30	100	150	250	40	18.7	2°	25	-	2
	SWBL2030S32	□	1	1	2			30	100	150	250	40	18.7	5°30'	32	-	2
	SWBE2030S32	□	1	1	2			30	110	190	300	40	18.7	4°30'	32	-	2
	SWBM2018S25	●	1	1	-	10	20	18	100	100	200	30	18.7	2°	25	-	3
	SWBL2018S25	□	1	1	-			18	110	140	250	30	18.7	1°30'	25	-	3
	SWBL2018S32	□	1	1	-			18	110	140	250	30	18.7	4°	32	-	3
	SWBE2018S32	●	1	1	-			18	120	180	300	30	18.7	3°30'	32	-	3
	SWBSS2535S25	●	1	1	2			35	70	80	150	-	23.5	-	25	-	2
	SWBML2535S25	□	1	1	2			35	70	150	220	-	23.5	-	25	-	2
	SWBL2535S32	□	1	1	2			35	110	140	250	50	23.5	3°30'	32	-	2
	SWBE2535S32	●	1	1	2	12.5	25	35	120	180	300	50	23.5	3°	32	-	2
	SWBM2522S32	□	1	1	-			22	100	100	200	35	23.5	3°	32	-	3
	SWBL2522S32	●	1	1	-			22	110	140	250	35	23.5	2°40'	32	-	3
	SWBE2522S32	□	1	1	-			22	120	180	300	35	23.5	2°20'	32	-	3
	SWBL3242S32-G	●	1	1	2	16	32	44	60	190	250	-	29.9	-	32	-	2
	SWBE3242S32-G	●	1	1	2			44	60	240	300	-	29.9	-	32	-	2

- Note) 1) All cutters are supplied without inserts
 2) Please refer page C167-C171 for recommended cutting conditions and refer page C170 for machined form.
 3) Please refer page C164 for selection of inserts.

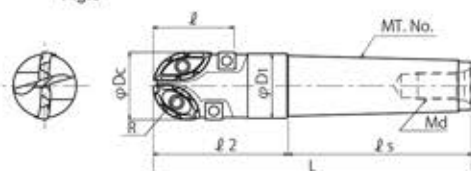
Modular Head Type Please refer Page B107

Swing Ball

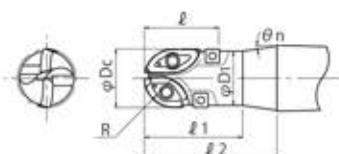
SWBTYPE

MT Shank Type / Weldon Shank Type / BT Shank Type

Fig.8



SWB-20070-MT3.
SWB-20100-MT3.
SWB-40090-MT5



BODY

Type	Cat. No.	Stock	No. of inserts			Dimensions (mm)											Fig.
			Main Blade	Sub Blade	Peripheral Blade	R	φDc	l	l_2	l_s	L	l_1	φD_1	θ_n	φD_s	Md	
Straight Shank	SWB-20070-MT3	<input type="checkbox"/>	1	1	2	10	20	30	70	86	156	40	18.7	4°	MT3	M12×1.75	8
	SWB-20100-MT3	<input type="checkbox"/>	1	1	2			30	100	86	186	40	18.7	2°	MT3	M12×1.75	8
	SWB-25070-MT3	<input type="checkbox"/>	1	1	2	12.5	25	35	70	86	156	-	23.5	-	MT3	M12×1.75	8
	SWB-25100-MT3	<input type="checkbox"/>	1	1	2			35	100	86	186	-	23.5	-	MT3	M12×1.75	8
	SWB-32070-MT4-G	<input type="checkbox"/>	1	1	2	16	32	44	70	109	179	-	30.4	-	MT4	M16×2	8
	SWB-32100-MT4-G	<input type="checkbox"/>	1	1	2			44	100	109	209	-	30.4	-	MT4	M16×2	8
	SWB-40090-MT4	<input type="checkbox"/>	1	1	2	20	40	50	90	109	199	-	36.9	-	MT4	M16×2	8
	SWB-40090-MT5	<input type="checkbox"/>	1	1	2			50	90	136	226	66.8	36.9	8°	MT5	M20×2.5	8
	SWB-50100-MT5	<input type="checkbox"/>	1	1	2	25	50	60	100	136	236	-	46.8	-	MT5	M20×2.5	8
	SWB-50120-MT5	<input type="checkbox"/>	1	1	2			60	120	136	256	-	46.8	-	MT5	M20×2.5	8
	SWB-50150-MT5	<input type="checkbox"/>	1	1	2			60	150	136	286	-	46.8	-	MT5	M20×2.5	8
	SWB-50170-MT5	<input type="checkbox"/>	1	1	2			60	170	136	306	-	46.8	-	MT5	M20×2.5	8

- Note) 1) All cutters are supplied without inserts.
2) Please refer page C167-C171 for recommended cutting conditions and refer page C170 for machined form.
3) Please refer page C164 for selection of inserts.

Modular Head Type Please refer Page B107

Swing Ball

SWB_{TYPE}

■ INSERTS

■ SWB-N type (For low cutting forces)

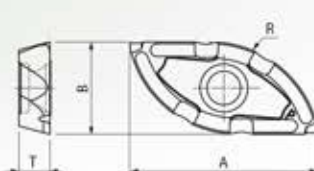
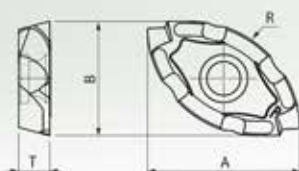
- N type insert for low cutting forces. Suitable for heavy roughing.
- Reduced cutting forces compared with regular type by 15%. More smooth and calm cutting is possible.



Fig.1 (Main blade for low cutting forces)



Fig.2 (Sub blade for low cutting forces)



■ SWB-H type (Main blade for semi-finishing)

- H type semi-finishing main blade for $\varnothing 20$, $\varnothing 25$, $\varnothing 30$
- For use in semi-finishing only. (Not recommended for Roughing)

Fig.3 (Main blade for semi-finishing)



Fig.4 (Main blade)



Fig.5 (Main blade)



Fig.6 (Sub blade)

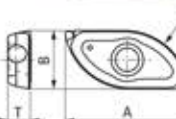


Fig.7 (Sub blade)

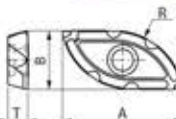


Fig.8 (Main blade for welded & hardened steel)

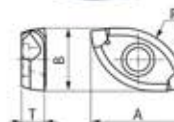


Fig.9 (Sub blade for welded & hardened steel)

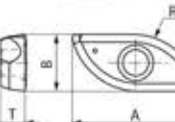


Fig.10 (Peripheral blade)



Fig.11 (Peripheral blade)

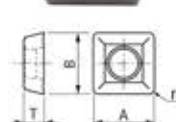
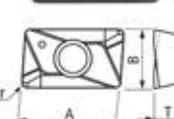


Fig.12 (Peripheral blade)



Swing Ball

SWBTYPE

■ INSERTS

Cat. No.	Type	PVD coated					Dimensions (mm)					Fig.
		JC5015	JC5118	JC8015	JC8050	JC5040	R	A	B	T	r	
SWB220HM	Main blade			●		●	10	15.8	9.9	3.65	-	4
SWB220HM-H				●				16	9.9	3.65	-	3
SWB220MMW				●				15.8	9.9	3.65	-	8
SWB220HS	Sub blade			●		●	10	20	8.2	3.65	-	6
SWB220MSW				●				20	8.2	3.65	-	9
SWB225HM	Main blade			●		●	12.5	18.5	12.4	3.8	-	4
SWB225HM-H				□				18.9	12.4	3.8	-	3
SWB225MMW				●				18.5	12.4	3.8	-	8
SWB225HS	Sub blade			●		●	12.5	23.8	10.5	3.8	-	6
SWB225MSW				●				23.8	10.5	3.8	-	9
SWB232HM-G	Main blade			●		●	16	26	16	5.35	-	4
SWB232MMW-G				●				26	16	5.35	-	8
SWB232HS-G		Sub blade			●			●	31.7	13.9	5.35	-
SWB232MSW-G				●			31.7	13.9	5.35	-	9	
SWB240HMN	Main blade			●		●	20	30.4	20.8	6.85	-	5
SWB240MMW				□				30.4	20.8	6.85	-	8
SWB240HSN		Sub blade			●			●	37.5	16.3	6.85	-
SWB240MSW				□			37.5	16.3	6.85	-	9	
SWB250HMN-N	Main blade			●		●	25	34.4	25.7	7	-	1
SWB250MMW				●				34.4	25.7	7	-	8
SWB250HSN-N		Sub blade			●			●	42.6	20.8	7	-
SWB250MSW				●			42.6	20.8	7	-	9	
SPGA090304	Peripheral blade					●	-	9.525	9.525	3.18	0.4	10
SPMA090304		●		□			9.525	9.525	3.18	0.4	10	
IM-SP43GS			●			●	12.70	12.70	4.76	0.8	11	
ZCMT100308R		●				●	10.4	6.35	3.4	0.8	12	

10 inserts per case, but main blade (R20, R25) and sub blade (R16, R20, R25) are packed in 5pcs. per case.

- Note) 1. Please refer page C167-C171 for recommended cutting conditions and refer page C170 for machined form.
 2. In case of using main blade -H type for semi-finishing, be sure to use the same grade for sub blade.
 3. In case of using -N type for low cutting force, be sure to use the same notched inserts (-N type) for main blade and sub blade.