



Copy Milling



Shoulder Milling



Slotting

Swing Ball

High Productivity Indexable Ball Nose End Mill

DIJET's Swing Ball end mills are designed for multi-directional milling of molds, dies and other similar type work pieces. This ball nose end mill can cut a wide range of materials including annealed or heat treated die steels and cast irons.



- **Lower Cutting Forces at Higher Feed Rates**

Cutting forces are reduced by up to 25% when compared with conventional type. This is achieved by the use of a positive style insert with chip breaker groove and edge notches. The double insert design gives the cutter a smooth cutting action and excellent production.

- **Plunge Cutting Possible**

By providing a sub chip pocket at spiral nose R position, this helps eject chips smoothly and improves resistance of chipping or cracking.

- **Reliable Insert Location**

Clamping key is improved to prevent insert movement during the cutting action, including heavy operations. Increased insert thickness provides higher impact strength for safe production.



Swing Ball

METRIC

END MILLS SWB Type



Fig. 1

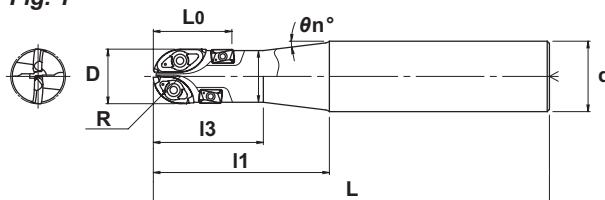
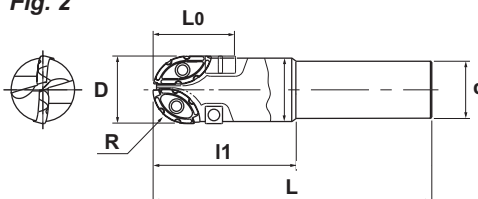


Fig. 2



Specifications - Standard Length of Cut

CATALOG NUMBER	STK	DIMENSIONS								FIG.	INSERT	PARTS	
		D	R	L	L0	I1	I3	d	θn°			Screw	Wrench
SWBS2030S25	•	20	10	180	30	80	40	25	3°30'	1	SWB220HM (1) SWB220HS (1) ZCMT100308R (2)	DSW-307H (2) ESW-206 (2)	A-10 A-08SD
SWBM2030S25	•	20	10	200	30	100	40	25	2°	1			
SWBL2030S25	•	20	10	250	30	100	40	25	2°	1			
SWBL2030S32	•	20	10	250	30	100	40	32	5°30'	1			
SWBE2030S32	•	20	10	300	30	110	40	32	4°30'	1			
SWBSS2535S25	•	25	12.5	150	35	70	-	25	-	1	SWB225HM (1) SWB225HS (1) ZCMT100308R (2)	DSW-4085 (2) ESW-206 (2)	A-15 A-08SD
SWBML2535S25	•	25	12.5	220	35	70	-	25	-	1			
SWBS2535S32	•	25	12.5	180	35	80	50	32	7°	1			
SWBM2535S32	•	25	12.5	200	35	100	50	32	4°	1			
SWBL2535S32	•	25	12.5	250	35	110	50	32	3°30'	1			
SWBE2535S32	•	25	12.5	300	35	120	50	32	3°	1	SWB230HM (1) SWB230HS (1) IM-SP32GS (2)	DSW-509 (2) CSW-407 (2)	A-20 A-15
SWBSS3040S32	•	30	15	170	41	80	50	32	3°	1			
SWBS3040S32	•	30	15	200	41	120	60	32	1°	1			
SWBM3040S32	•	30	15	250	41	150	60	32	0°40'	1			
SWBL3040S32	•	30	15	300	41	200	60	32	0°30'	1			
SWBE3040S32	•	30	15	350	41	200	60	32	0°30'	1	SWB232HM-G (1) SWB232HS-G (1) ZCMT100308R (2)	TSW-511 (2) ESW-206 (2)	A-20 A-08SD
SWBE3040S32LS	■	30	15	350	40	100	60	32	2°	1			
SWBE3040S42LS	■	30	15	350	40	100	60	42	9°	1	SWB240HMN (1) SWB240HSN (1) SPGA090304 (2) or SPMA090304 (2)	TSW-614H (2) ESW-406 (2)	A-25 A-15
SWBS3242S32-G	•	32	16	180	44	60	-	32	-	1			
SWBM3242S32-G	•	32	16	220	44	60	-	32	-	1			
SWBL3242S32-G	•	32	16	250	44	60	-	32	-	1			
SWBE3242S32-G	•	32	16	300	44	60	-	32	-	1			
SWBSS4050S42	•	40	20	160	50	80	-	42	-	1	SWB250HMN-N (1) SWB250HSN-N (1) IM-SP43GS (2)	HSW-614H (2) CSW-510 (2)	A-30 A-20
SWBS4050S42	•	40	20	200	50	120	-	42	-	1			
SWBM4050S42	•	40	20	250	50	150	120	42	2°30'	1			
SWBL4050S42	•	40	20	300	50	200	150	42	1°30'	1			
SWBE4050S42	•	40	20	350	50	200	150	42	1°30'	1			
SWBE4050S42LS	■	40	20	350	50	100	60	42	3°	1	SWB250HMN-N (1) SWB250HSN-N (1) IM-SP43GS (2)	HSW-614H (2) CSW-510 (2)	A-30 A-20
SWBS5060S42	•	50	25	200	60	100	-	42	-	2			
SWBM5060S42	•	50	25	250	60	100	-	42	-	2			
SWBL5060S42	•	50	25	300	60	150	-	42	-	2			
SWBE5060S42	•	50	25	350	60	150	-	42	-	2			

Note: All cutters are supplied without inserts.



METRIC

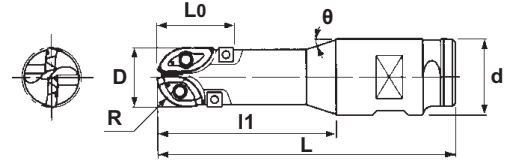
Swing Ball

END MILLS SWB Type



Combination Shank

Fig. 1



Specifications - Standard Length of Cut

CATALOG NUMBER	STK	DIMENSIONS								FIG.	INSERT	PARTS	
		D	R	L	L0	I1	I3	d	θ			Screw	Wrench
SWBSS4050C508	■	40	20	160	50	80	60	50.8	18°	1	SWB240HMN (1) SWB240HSN (1) SPGA090304 (2) or SPMA090304 (2)	TSW-614H (2) ESW-406 (2)	A-25 A-15
SWBS4050C508	■	40	20	200	50	120	100	50.8	18°	1			
SWBMS4050C508	■	40	20	220	50	140	120	50.8	18°	1			
SWBM4050C508	■	40	20	250	50	170	150	50.8	18°	1			
SWBL4050C508	■	40	20	300	50	220	170	50.8	6°	1			
SWBE4050C508	■	40	20	350	50	270	170	50.8	3°	1			
SWBSS5060C508	■	50	25	160	60	80	-	50.8	-	1	SWB250HMN-N (1) SWB250HSN-N (1) IM-SP43GS (2)	HSW-614H (2) CSW-510 (2)	A-30 A-20
SWBS5060C508	■	50	25	200	60	120	-	50.8	-	1			
SWBMS5060C508	■	50	25	220	60	140	-	50.8	-	1			
SWBM5060C508	■	50	25	250	60	170	-	50.8	-	1			
SWBL5060C508	■	50	25	300	60	220	-	50.8	-	1			
SWBE5060C508	■	50	25	350	60	270	-	50.8	-	1			

Note: All cutters are supplied without inserts.

Specifications - Longer Length of Cut

CATALOG NUMBER	STK	DIMENSIONS								FIG.	INSERT	PARTS	
		D	R	L	L0	I1	I3	d	θ			Screw	Wrench
SWBS5080C508	■	50	25	200	80	120	-	50.8	-	1	SWB250HMN-N (1) SWB250HSN-N (1) IM-SP43GS (4)	HSW-614H (2) CSW-510 (4)	A-30 A-20
SWBM5080C508	■	50	25	250	80	170	-	50.8	-	1			
SWBL5080C508	■	50	25	300	80	220	-	50.8	-	1			

Note: All cutters are supplied without inserts.

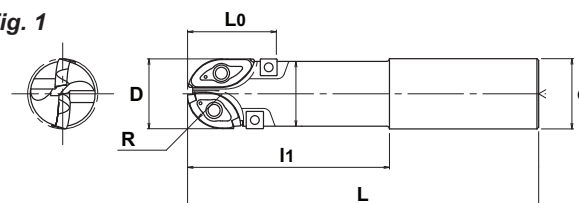
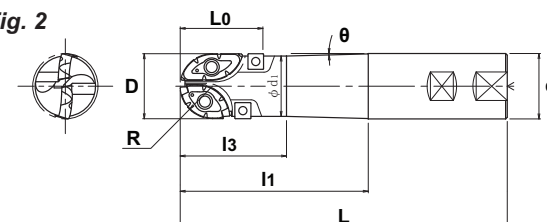
May also use inserts for welds or hardened material.



Swing Ball

METRIC

END MILLS SWB Type


Fig. 1

Fig. 2


Specifications - Standard Length of Cut

CATALOG NUMBER	STK	DIMENSIONS								FIG.	INSERT	PARTS	
		D	R	L	L0	L1	L3	d	θ			Screw	Wrench
SWB-20080S-S20	■	20	10	160	30	80	-	20	-	1	SWB220HM (1)	DSW-307H (2)	A-10
SWB-20120S-S20	■	20	10	200	30	120	-	20	-	1	SWB220HS (1)	ESW-206 (2)	A-08SD
SWB-20170S-S20	■	20	10	250	30	170	-	20	-	1	ZCMT100308R (2)		
SWB-25080S-S25	■	25	12.5	160	35	80	-	25	-	1	SWB225HM (1)	DSW-4085 (2)	A-15
SWB-25120S-S25	■	25	12.5	200	35	120	-	25	-	1	SWB225HS (1)	ESW-206 (2)	A-08SD
SWB-25170S-S25	■	25	12.5	250	35	170	-	25	-	1	ZCMT100308R (2)		
SWB-30120S-S32	■	30	15	200	41	120	-	32	-	1	SWB230HM (1)	DSW-509 (2)	A-20
SWB-30170S-S32	■	30	15	250	41	170	-	32	-	1	SWB230HS (1)	CSW-407 (2)	A-15
SWB-30220S-S32	■	30	15	300	41	220	-	32	-	1	IM-SP32GS (2)		

Note: All cutters are supplied without inserts.

Specifications - Longer Length of Cut

CATALOG NUMBER	STK	DIMENSIONS								FIG.	INSERT	PARTS	
		D	R	L	L0	L1	L3	d	θ			Screw	Wrench
SWBM3056S32	■	30	15	200	56	120	-	32	-	1	SWB230HM (1)	DSW-509 (2)	A-20
SWBL3056S32	■	30	15	250	56	170	-	32	-	1	SWB230HS (1)	CSW-407 (4)	A-15
											IM-SP32GS (4)		

Note: All cutters are supplied without inserts.

Specifications - With Weldon Shank

CATALOG NUMBER	STK	DIMENSIONS								FIG.	INSERT	PARTS	
		D	R	L	L0	L1	L3	d	θ			Screw	Wrench
SWB-32070-W32-G	•	32	16	150	44	70	-	W32	-	2	SWB232HM-G (1)	TSW-511 (2)	A-10
SWB-32090-W32-G	•	32	16	170	44	90	-	W32	-	2	SWB232HS-G (1)	ESW-206 (2)	A-08SD
SWB-32115-W40-G	•	32	16	200	44	115	50	W40	4°10'	2	ZCMT100308R (2)		
SWB-32165-W40-G	•	32	16	250	44	165	50	W40	2°20'	2			
SWB-40090-W40	•	40	20	175	50	90	-	W40	-	2	SWB240HMN (1)	TSW-614H (2)	A-25
SWB-40115-W40	•	40	20	200	50	115	65	W40	1°30'	2	SWB240HSN (1)	ESW-406 (2)	A-15
											SPGA090304 (2)		
											or SPMA090304 (2)		
SWB-50100-W50	•	50	25	200	60	100	-	W50	-	2	SWB250HMN-N (1)	HSW-614H (2)	A-30
SWB-50150-W50	•	50	25	250	60	150	-	W50	-	2	SWB250HSN-N (1)	CSW-510 (2)	A-20
											IM-SP43GS (2)		

Note: All cutters are supplied without inserts.

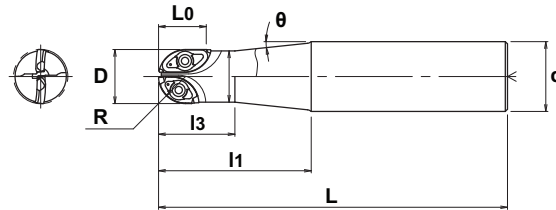
May also use inserts for welds or hardened material.



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Swing Ball

END MILLS SWB Type



Specifications - Straight Shank

CATALOG NUMBER	STK	DIMENSIONS								INSERT	PARTS	
		D	R	L	L0	L1	L3	d	θ		Screw	Wrench
SWBS2018S25	•	20	10	160	18	70	30	25	3°30'	SWB220HM (1) SWB220HS (1)	DSW-307H (2)	A-10
SWBM2018S25	•	20	10	200	18	100	30	25	2°			
SWBL2018S25	•	20	10	250	18	110	30	25	1°30'			
SWBL2018S32	•	20	10	250	18	110	30	32	4°			
SWBE2018S32	•	20	10	300	18	120	30	32	3°30'			
SWBS2522S32	•	25	12.5	160	22	70	35	32	6°	SWB225HM (1) SWB225HS (1)	DSW-4085 (2)	A-15
SWBM2522S32	•	25	12.5	200	22	100	35	32	3°			
SWBL2522S32	•	25	12.5	250	22	110	35	32	2°40'			
SWBE2522S32	•	25	12.5	300	22	120	35	32	2°20'			
SWBS3025S32	•	30	15	170	25	80	40	32	2°	SWB230HM (1) SWB230HS (1)	DSW-509 (2)	A-20
SWBS3025S32	•	30	15	200	25	120	50	32	1°			
SWBM3025S32	■	30	15	250	25	170	50	32	0°40'			
SWBS4035S42	•	40	20	200	35	120	-	42	-	SWB240HMN (1) SWB240HSN (1)	TSW-614H (2)	A-25
SWBM4035S42	•	40	20	250	35	170	120	42	2°			

Note: All cutters are supplied without inserts.

Specifications - Long Straight Shank

CATALOG NUMBER	STK	DIMENSIONS								INSERT	PARTS	
		D	R	L	L0	L1	L3	d	θ		Screw	Wrench
SWBX2018S32LS	■	20	10	350	18	70	30	32	8°30'	SWB220HM (1) SWB220HS (1)	DSW-307H (2)	A-10
SWBX2522S32LS	■	25	12.5	350	22	70	35	32	6°	SWB225HM (1) SWB225HS (1)	DSW-4085 (2)	A-15
SWBE3025S32LS	■	30	15	350	25	100	50	32	1°30'	SWB230HM (1) SWB230HS (1)	DSW-509 (2)	A-20
SWBE3025S42LS	■	30	15	350	25	100	50	42	7°			
SWBE4035S42LS	■	40	20	350	35	100	60	42	3°	SWB240HMN (1) SWB240HSN (1)	TSW-614H (2)	A-25

Note: All cutters are supplied without inserts.

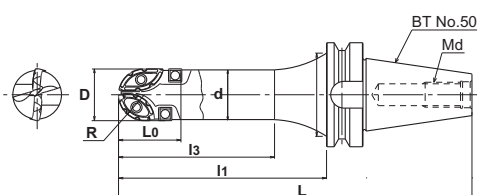
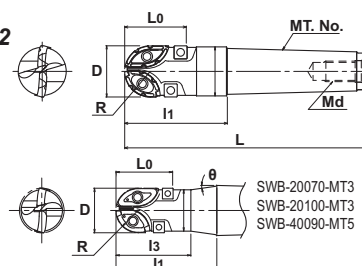
May also use inserts for welds or hardened material.



Swing Ball

METRIC

END MILLS SWB Type


Fig. 1

Fig. 2


Specifications - BT50 Shank

CATALOG NUMBER	STK	DIMENSIONS								FIG.	INSERT	PARTS	
		D	R	L	L0	I1	I3	d	θ			Screw	Wrench
SWB-50200-BT50	•	50	25	339.8	60	200	150	BT50	-	1	SWB250HMN-N (1) SWB250HSN-N (1) IM-SP43GS (2)	HSW-614H (2) CSW-510 (2)	A-30 A-20
SWB-50250-BT50	•	50	25	339.8	60	250	200	BT50	-	1			

Note: All cutters are supplied without inserts.

Specifications - Morse Taper Shank

CATALOG NUMBER	STK	DIMENSIONS								FIG.	INSERT	PARTS	
		D	R	L	L0	I1	I3	d	θ			Screw	Wrench
SWB-20070-MT3	•	20	10	156	30	70	40	MT3	4°	2	SWB220HM (1) SWB220HS (1) ZCMT100308R (2)	DSW-307H (2) ESW-206 (2) Md=M12x1.75	A-10 A-08SD
SWB-20100-MT3	•	20	10	186	30	100	40	MT3	2°	2			
SWB-25070-MT3	•	25	12.5	156	35	70	-	MT3	-	2	SWB225HM (1) SWB225HS (1) ZCMT100308R (2)	DSW-4085 (2) ESW-206 (2) Md=M12x1.75	A-15 A-08SD
SWB-25100-MT3	•	25	12.5	186	35	100	-	MT3	-	2			
SWB-30080-MT4	•	30	15	189	41	80	-	MT4	-	2	SWB230HM (1) SWB230HS (1) IM-SP32GS (2)	DSW-509 (2) CSW-407 (2) Md=M16x2	A-20 A-15
SWB-30120-MT4	•	30	15	229	41	120	-	MT4	-	2			
SWB-32070-MT4-G	•	32	16	179	44	70	-	MT4	-	2	SWB232HM-G (1) SWB232HS-G (1) ZCMT100308R (2)	TSW-511 (2) ESW-206 (2) Md=M16x2	A-20 A-08SD
SWB-32100-MT4-G	•	32	16	209	44	100	-	MT4	-	2			
SWB-40090-MT4	•	40	20	199	50	90	-	MT4	-	2	SWB240HMN (1) SWB240HSN (1) SPGA090304 (2) or SPMA090304 (2)	TSW-614H (2) ESW-406 (2)	A-25 A-15
SWB-40090-MT5	•	40	20	226	50	90	66.8	MT5	8°	2			
SWB-50100-MT5	•	50	25	236	60	100	-	MT5	-	2			
SWB-50120-MT5	•	50	25	256	60	120	-	MT5	-	2	SWB250HMN-N (1) SWB250HSN-N (1) IM-SP43GS (2)	HSW-614H (2) CSW-510 (2) Md=M20x25	A-30 A-20
SWB-50150-MT5	•	50	25	286	60	150	-	MT5	-	2			
SWB-50170-MT5	•	50	25	306	60	170	-	MT5	-	2			

Note: All cutters are supplied without inserts.

May also use inserts for welds or hardened material.

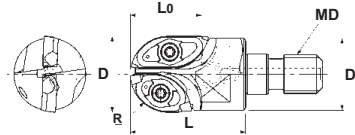


METRIC

Swing Ball

MODULAR HEADS

MSW Type



Specifications - Modular Heads

CATALOG NUMBER	STK	DIMENSIONS						HEAD TORQUE Nm	INSERT	PARTS	
		D	R	L	L0	D1	MD			Screw	Wrench
MSW-2018-M10	•	20	10	30	18.5	18.7	M10	16	SWB220HM (1) SWB220HS (1)	DSW-307H	A-10
MSW-2522-M12	•	25	12.5	35	21.9	23.5	M12	20	SWB225HM (1) SWB225HS (1)	DSW-4085	A-15
MSW-3025-M16	•	30	15	43	25.9	28.2	M16	25	SWB230HM (1) SWB230HS (1)	DSW-509	A-20
MSW-3225-M16	•	32	16	43	29.5	29.9	M16	25	SWB232HM-G (1) SWB232HS-G (1)	TSW-511	A-20

Note: All cutters are supplied without inserts.

May also use inserts for welds or hardened material.

MODULAR HEAD HOLDER

(carbide with coolant hole)

MSN Type



Fig. 1

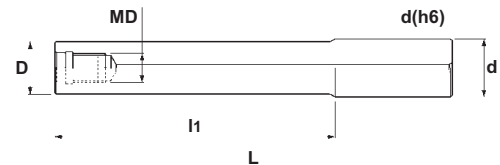
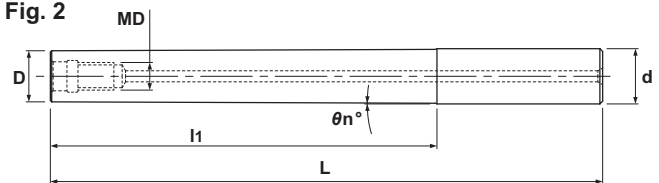


Fig. 2



Specifications

CATALOG NUMBER	STK	DIMENSIONS						FIG.	APPLICABLE HOLDERS
		D	l1	L	d	θ_n°	MD		
MSN-M10-20-S20C	•	19.5	20	80	20	-	M10	1	MSW-2018-M10
MSN-M10-40-S20C	•	19.5	40	100	20	-	M10	1	
MSN-M10-40T-S20C	•	19.5	40	100	20	0°29'	M10	2	
MSN-M10-70-S20C	•	19.5	70	130	20	-	M10	1	
MSN-M10-90-S20C	•	19.5	90	150	20	-	M10	1	
MSN-M10-90T-S20C	•	19.5	90	150	20	0°17'	M10	2	
MSN-M10-140-S20C	•	19.5	140	200	20	-	M10	1	
MSN-M10-140T-S20C	•	19.5	140	200	20	0°12'	M10	2	
MSN-M12-25-S25C	•	24	25	90	25	-	M12	1	MSW-2522-M12
MSN-M12-55-S25C	•	24	55	120	25	-	M12	1	
MSN-M12-105-S25C	•	24	105	170	25	-	M12	1	
MSN-M12-155-S25C	•	24	155	220	25	-	M12	1	
MSN-M16-25-S32C	•	29	25	90	32	-	M16	1	MSW-3025-M16, MSW-3225-M16
MSN-M16-55-S32C	•	29	55	120	32	-	M16	1	
MSN-M16-105-S32C	•	29	105	170	32	-	M16	1	
MSN-M16-155-S32C	•	29	155	220	32	-	M16	1	
MSN-M16-195-S32C	•	29	195	260	32	-	M16	1	
MSN-M16-225-S32C	•	29	225	290	32	-	M16	1	
MSN-M16-245-S32C	•	29	245	310	32	-	M16	1	
MSN-M16-295-S32C	■	29	295	360	32	-	M16	1	

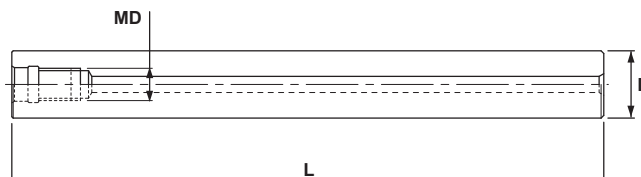
Note: See pages A-175 thru A-177 for weights and coolant hole sizes.



Swing Ball

METRIC

MODULAR HEAD HOLDER

(carbide with coolant hole)
MSN Type - Straight


Specifications

CATALOG NUMBER	STK	DIMENSIONS			APPLICABLE HOLDERS
		D	L	MD	
MSN-M10-130S-S18C	•	18	130	M10	MSW-2018-M10
MSN-M10-190S-S18C	•	18	190	M10	
MSN-M10-130S-S20C	•	20	130	M10	
MSN-M10-190S-S20C	•	20	190	M10	
MSN-M10-250S-S20C	•	20	250	M10	
MSN-M12-185S-S23C	•	23	185	M12	MSW-2522-M12
MSN-M12-265S-S23C	•	23	265	M12	
MSN-M12-145S-S25C	•	25	145	M12	
MSN-M12-215S-S25C	•	25	215	M12	
MSN-M12-285S-S25C	•	25	285	M12	
MSN-M16-160S-S28C	•	28	160	M16	MSW-3025-M16, MSW-3225-M16
MSN-M16-230S-S28C	•	28	230	M16	
MSN-M16-310S-S28C	•	28	310	M16	
MSN-M16-157S-S32C	•	32	157	M16	
MSN-M16-217S-S32C	•	32	217	M16	
MSN-M16-287S-S32C	•	32	287	M16	
MSN-M16-357S-S32C	•	32	357	M16	

Note: See pages A-175 thru A-177 for weights and coolant hole sizes.

NOTES ON MOUNTING HEADS:

Clean the contact surface of head and carbide holder. After tightening, confirm that there is no gap between head and holder.



METRIC

Swing Ball

INSERTS

Fig. 1

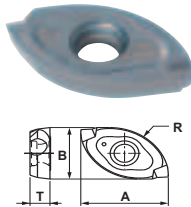


Fig. 2

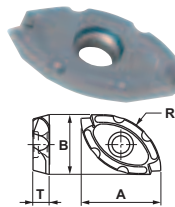


Fig. 3

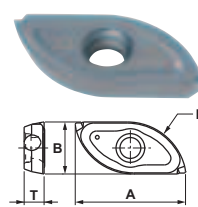


Fig. 4

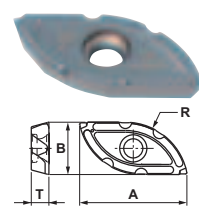


Fig. 5 (For welds or hardened material)

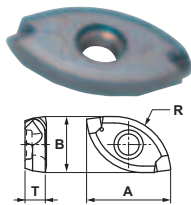


Fig. 6 (For welds or hardened material)

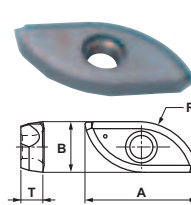


Fig. 7

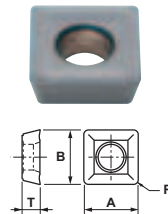


Fig. 8

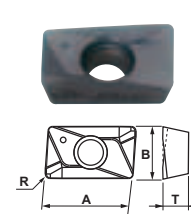
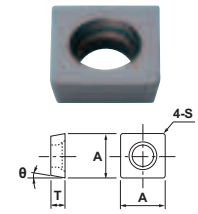


Fig. 9



Specifications

CATALOG NUMBER	DIMENSIONS				FIG.	COATED		
	R	A	B	T		JC5015	JC5040	JC8015
SWB220HM	10	15.8	9.9	3.65	1		•	•
SWB220HS	10	20	8.2	3.65	3		•	•
SWB220MMW	10	15.8	9.9	3.65	5			•
SWB220MSW	10	20	8.2	3.65	6			•
SWB225HM	12.5	18.5	12.4	3.8	1		•	•
SWB225HS	12.5	23.8	10.5	3.8	3		•	•
SWB225MMW	12.5	18.5	12.4	3.8	5			•
SWB225MSW	12.5	23.8	10.5	3.8	6			•
SWB230HM	15	22.2	14.8	5.35	1		•	•
SWB230HS	15	27.5	12.3	5.35	3		•	•
SWB230MMW	15	22.2	14.8	5.35	5			•
SWB230MSW	15	27.5	12.3	5.35	6			•
SWB232HM-G	16	26	16	5.35	1		•	•
SWB232HS-G	16	31.7	13.9	5.35	3		•	•
SWB232MMW-G	16	26	16	5.35	5			•
SWB232MSW-G	16	31.7	13.9	5.35	6			•
SWB240HMN	20	30.4	20.8	6.85	1		•	•
SWB240HSN	20	37.5	16.3	6.85	3		•	•
SWB240MMW	20	30.4	20.8	6.85	5			•
SWB240MSW	20	37.5	16.3	6.85	6			•
SWB250HMN-N	25	34.4	25.7	7	2		•	•
SWB250HSN-N	25	42.6	20.8	7	4		•	•
SWB250MMW	25	34.4	25.7	7	5			•
SWB250MSW	25	42.6	20.8	7	6			•
ZCMT100308R	.8	10.4	6.35	3.4	8	•	•	
IM-SP32GS	.4	9.525	9.525	3.18	7	•	•	
IM-SP43GS	.8	12.7	12.7	4.76	7	•	•	■
SPGA090304	.4	9.525	9.525	3.18	9		•	
SPMA090304	.4	9.525	9.525	3.18	9	•		•



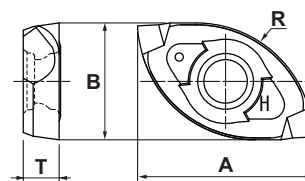
METRIC

Swing Ball

SWB-H Main Insert for semi-finishing

- For use in semi-finishing only
- Not recommended for roughing

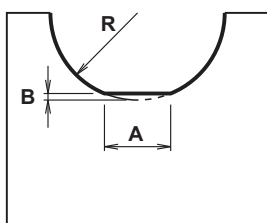
Fig. 1



Specifications

CATALOG NUMBER	DIMENSIONS				FIG.	COATED	
	R	A	B	T		JC5040	JC8015
SWB220HM-H	10	16	9.9	3.65	1		•
SWB225HM-H	12.5	18.9	12.4	3.8	1		•
SWB230HM-H	15	22.4	14.8	5.35	1		•

Machined form by Swing Ball



SWB type insert

DIMENSIONS		
R	A	B
10	2.1	0.05
12.5	3.0	0.09
15	3.3	0.09
16	3.4	0.09
20	4.3	0.12
25	5.2	0.14

SWB-H type insert

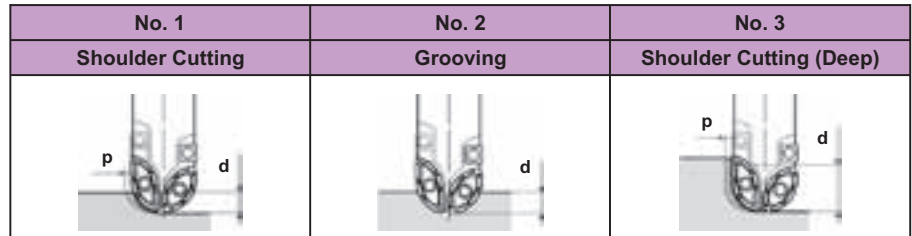
DIMENSIONS		
R	A	B
10	0.6	0.01
12.5	0.7	0.01
15	0.9	0.01



METRIC

Swing Ball

Recommended Cutting Data



Work Materials	Insert Grade	Parameter	Tool Diameter											
			20mm				25mm				32mm / 30mm			
			Type of Cutting											
			No. 1	No. 2	No. 3	No. 1	No. 2	No. 3	No. 1	No. 2	No. 3			
Medium Carbon Steel (C50, C55) 150-250HB	JC5040	N (min ⁻¹)	3,180	3,180	3,180	2,860	2,550	2,550	2,550	2,290	2,300	2,300	2,300	1,800
		Vf (mm/min)	1,000	800	890	570	890	690	760	500	1,020	770	800	450
		Ap (mm)	5	10	5	16	6	12.5	6	20	10	16	10	28
		Ae (mm)	4	5	-	2	5	6.5	-	3	6	9	-	6
Cast Steel (1.7225) 150-280HB	JC5040 JC8015 (above 40HRC)	N (min ⁻¹)	3,020	3,020	3,020	2,700	2,400	2,400	2,160	2,090	2,090	2,090	1,670	
		Vf (mm/min)	920	760	820	540	840	640	720	480	920	700	720	420
		Ap (mm)	5	10	5	16	6	12.5	6	20	10	16	10	28
		Ae (mm)	4	5	-	2	5	6.5	-	3	6	9	-	6
Die Steel (1.2379) 150-255HB	JC5040	N (min ⁻¹)	2,700	2,700	2,700	2,390	2,160	2,160	1,910	1,950	1,950	1,950	1,560	
		Vf (mm/min)	810	630	680	480	690	540	590	420	810	600	630	390
		Ap (mm)	5	10	5	16	6	12.5	6	20	10	16	10	28
		Ae (mm)	4	5	-	2	6	6.5	-	3	6	9	-	3
Hardened Steel (1.2344) 40-50HRC	MMW MSW JC8015	N (min ⁻¹)	1,750	1,750	1,750	-	1,600	1,600	1,600	-	1,600	1,600	1,600	-
		Vf (mm/min)	400	320	350	-	400	350	350	-	480	600	400	-
		Ap (mm)	Up to 2	Up to 4	Up to 2	-	Up to 3	Up to 5	Up to 3	-	Up to 4	Up to 6.5	Up to 4	-
		Ae (mm)	3	4	-	-	4	5	-	-	5	8	-	-
Welding & Hardened Steel (1.2379) 53-63HRC	MMW MSW JC8015	N (min ⁻¹)	1,400	-	1,400	-	1,400	-	1,400	-	1,400	-	1,400	-
		Vf (mm/min)	350	-	280	-	350	-	280	-	350	-	280	-
		Ap (mm)	Up to 1	-	Up to 1	-	Up to 2	-	Up to 2	-	Up to 3	-	Up to 3	-
		Ae (mm)	3	-	-	-	4	-	-	-	5	-	-	-
Cast Iron (GG25) 160-260HB	JC8015 (JC5040)	N (min ⁻¹)	3,180	3,180	3,180	2,860	2,550	2,550	2,290	2,300	2,300	2,300	1,840	
		Vf (mm/min)	1,300	1,040	1,160	740	1,150	900	1,000	650	1,380	1,020	1,140	640
		Ap (mm)	5	10	5	16	6	12.5	6	20	10	16	10	28
		Ae (mm)	4	5	-	2	5	6.5	-	3	6	9	-	6
Nodular Cast Iron (GGG70) 170-300HB	JC8015 (JC5040)	N (min ⁻¹)	3,020	3,020	3,020	2,700	2,400	2,400	2,160	2,060	2,060	2,060	1,650	
		Vf (mm/min)	1,100	910	980	650	1,000	770	860	600	1,130	820	890	500
		Ap (mm)	5	10	5	16	6	12.5	6	20	10	16	10	28
		Ae (mm)	4	5	-	2	5	6.5	-	3	6	9	-	6

Work Materials	Insert Grade	Parameter	Tool Diameter								
			40mm			50mm					
			Type of Cutting								
			No. 1	No. 2	No. 3	No. 1	No. 2	No. 3			
Medium Carbon Steel (C50, C55) 150-250HB	JC5040	N (min ⁻¹)	1,850	1,850	1,850	1,500	1,500	1,500	1,500	1,200	
		Vf (mm/min)	1,070	740	800	480	1,000	680	720	420	
		Ap (mm)	10	20	12	35	10	25	15	40	
		Ae (mm)	8	12	-	8	10	15	-	10	
Cast Steel (1.7225) 150-280HB	JC5040 JC8015 (above 40HRC)	N (min ⁻¹)	1,670	1,670	1,670	1,340	1,350	1,350	1,350	1,100	
		Vf (mm/min)	960	670	720	420	900	600	650	380	
		Ap (mm)	10	20	12	35	10	25	15	40	
		Ae (mm)	8	12	-	8	10	15	-	10	
Die Steel (1.2379) 150-255HB	JC5040	N (min ⁻¹)	1,560	1,560	1,560	1,250	1,250	1,250	1,250	1,000	
		Vf (mm/min)	810	560	620	350	750	500	550	300	
		Ap (mm)	10	20	12	35	10	25	15	40	
		Ae (mm)	8	12	-	4	10	15	-	5	
Hardened Steel (1.2344) 40-50HRC	MMW MSW JC8015	N (min ⁻¹)	1,200	1,200	1,200	-	1,200	1,200	1,200	-	
		Vf (mm/min)	540	420	420	-	540	400	420	-	
		Ap (mm)	Up to 4	Up to 6.5	Up to 5	-	Up to 5	Up to 8	Up to 6	-	
		Ae (mm)	5	8	-	-	6	10	-	-	
Welding & Hardened Steel (1.2379) 53-63HRC	MMW MSW JC8015	N (min ⁻¹)	1,000	-	1,000	-	1,200	-	1,200	-	
		Vf (mm/min)	350	-	350	-	400	-	360	-	
		Ap (mm)	Up to 3	-	Up to 3	-	Up to 3	-	Up to 3	-	
		Ae (mm)	5	-	-	-	6	-	-	-	
Cast Iron (GG25) 160-260HB	JC8015 (JC5040)	N (min ⁻¹)	1,850	1,850	1,850	1,500	1,500	1,500	1,500	1,200	
		Vf (mm/min)	1,500	1,000	1,100	570	1,400	900	970	480	
		Ap (mm)	10	20	12	35	10	25	15	40	
		Ae (mm)	8	12	-	8	10	15	-	10	
Nodular Cast Iron (GGG70) 170-300HB	JC8015	N (min ⁻¹)	1,650	1,650	1,650	1,320	1,300	1,300	1,300	1,050	
		Vf (mm/min)	1,100	760	830	450	1,000	650	700	370	
		Ap (mm)	10	20	12	35	10	25	15	40	
		Ae (mm)	8	12	-	8	10	15	-	10	

- Note:**
1. N: Spindle speed (min⁻¹), Vf: Feed speed (mm/min)
 2. The Speeds and Feeds should be adjusted according to the machine and work rigidity.
 3. Use air.



Swing Ball

METRIC

Recommended Cutting Data for MSW with Carbide MSN

Work Materials	Insert Grade	Tool Diameter														
		20					25					30 / 32				
		L (mm)	Ap (mm)	Ae (mm)	N (min ⁻¹)	F (mm/min)	L (mm)	Ap (mm)	Ae (mm)	N (min ⁻¹)	F (mm/min)	L (mm)	Ap (mm)	Ae (mm)	N (min ⁻¹)	F (mm/min)
Carbon Steel (C50, C55) Below 250HB	JC5040	70	1.3	1.3	4,800	3,360	90	1.3	1.3	3,800	2,700	100	1.5	1.5	3,000	2,100
		120	0.8	0.8	4,800	3,360	140	0.8	0.8	3,800	2,700	150	1.0	1.0	3,000	2,100
		190	0.3	0.4	4,000	2,800	210	0.3	0.5	3,200	2,200	210	0.3	0.7	2,650	1,860
Cast Steel (1.7225) Below 285HB	JC5040 JC8015 (above 40HRC)	70	1.3	1.3	4,000	2,800	90	1.3	1.3	3,200	2,240	100	1.5	1.5	2,600	1,820
		120	0.8	0.8	4,000	2,800	140	0.8	0.8	3,200	2,240	150	1.0	1.0	2,600	1,820
		190	0.3	0.4	3,600	2,500	210	0.3	0.5	2,800	1,960	210	0.3	0.7	2,300	1,600
Die Steel (1.2379) Below 255HB	JC5040	70	1.3	1.3	4,000	2,800	90	1.3	1.3	3,200	2,240	100	1.5	1.5	2,600	1,820
		120	0.8	0.8	4,000	2,800	140	0.8	0.8	3,200	2,240	150	1.0	1.0	2,600	1,820
		190	0.3	0.4	3,600	2,500	210	0.3	0.5	2,800	1,960	210	0.3	0.7	2,300	1,600
Welds & Hardened Die Steel (1.2344) 40-50HRC	MMW MSW JC8015	70	0.5	1.0	3,000	1,500	90	0.5	1.0	2,500	1,250	100	0.8	0.8	2,000	1,000
		120	0.3	0.4	2,500	1,250	140	0.3	0.5	2,000	1,000	150	0.5	0.7	1,800	900
		190	-	-	-	-	210	-	-	-	-	210	0.2	0.7	1,600	800
Hardened Die Steel (1.2379) 55-62HRC	MMW MSW JC8015	70	0.5	0.5	2,300	920	90	0.5	0.7	1,900	760	100	0.6	0.8	1,600	720
		120	0.3	0.4	2,000	800	140	0.3	0.5	1,600	640	150	0.3	0.7	1,300	590
		190	-	-	-	-	210	-	-	-	-	210	-	-	-	-
Gray & Nodular Cast Iron (GG, GGG) Below 300HB	JC8015	70	1.5	1.5	4,000	3,200	90	1.5	1.5	3,200	2,560	100	1.5	1.5	2,600	2,100
		120	1.0	1.0	4,000	3,200	140	1.0	1.0	3,200	2,560	150	1.0	1.0	2,600	2,100
		190	0.3	0.4	3,600	2,900	210	0.3	0.5	2,800	2,240	210	0.3	0.7	2,300	1,800

Note: 1. The figure should be adjusted according to the machine and work rigidity.
2. If chatter occurs, reduce the Ap or N by 30% and keep the feed per tooth the same.