The Highest Leader of Cutting Tools

HOLE MAKING

HARRY HERSBACH TOOLS BV
www.hhtools.nl

KoreaTechnics Ltd.
HIGH SPEED CUTTING TOOLS

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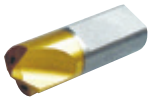
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Construction System of HIGH SPEED DRILL's Code No.

▶ Standard 'A' Type

HSD-V29530D S32

- Drill group
- Drilling diameter:Φ29.5
- Drilling depth:Dia×3
- Shank diameter:Φ32

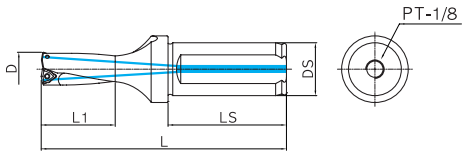
▶ Adjustment Type

STD-V606520D S40

- Drill group
- Drilling diameter:Φ60~Φ65(Adjustable)
- Drilling depth:Dia×2
- Shank diameter:Φ40

High Speed Drill

HSD-V & MCD



Shank ISO9766, Parallel with clamping flat

Code No.	Dimension(mm)					Insert	Component	
	D	L1	L	Ds	Ls		Screw	T-Driver
HSD-V13020D S20	13.0	29	99	20	50	WCMT03T104	TSB-18045	TXL-6
HSD-V13520D S20	13.5	30	100					
HSD-V14020D S20	14.0	31	101					
HSD-V14520D S20	14.5	32	102					
HSD-V15020D S20	15.0	33	103					
HSD-V15520D S20	15.5	34	104					
HSD-V16020D S25	16.0	35	116	25	56	WCMT030204	TSB-22045	
HSD-V16520D S25	16.5	36	117					
HSD-V17020D S25	17.0	37	118					
HSD-V17520D S25	17.5	38	119					
HSD-V18020D S25	18.0	39	120					
HSD-V18520D S25	18.5	40	121					
HSD-V19020D S25	19.0	41	122					
HSD-V19520D S25	19.5	42	123					
HSD-V20020D S25	20.0	43	124					

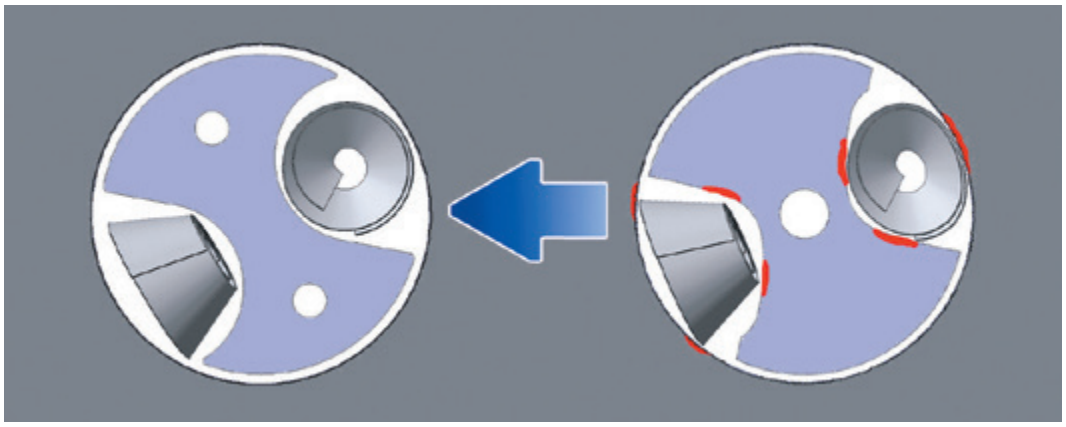
HSD-V

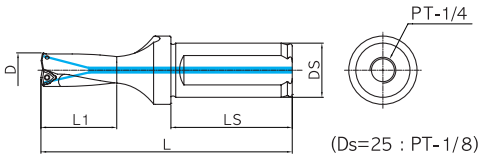
- HSD-V

The characteristic of HSD-V small drill

- Small dia drills are designed oil holes to 11 types so the hardness of the drill body is improved and the space of chip break is greately extended.
- The drilling performance and the surface roughness are excellent by the best design.

The widen chip discharging space



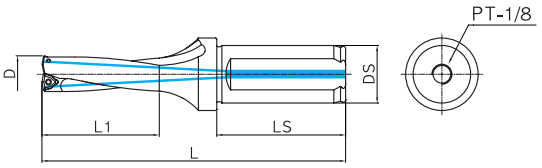


● Shank ISO9766, Parallel with clamping flat

Code No.	Dimension(mm)					Insert	Component	
	D	L1	L	Ds	Ls		Screw	T-Driver
HSD-V20520D S25	20.5	44	125	25	56	WCMT040204	TSB-25055	TXL-8
HSD-V21020D S25	21.0	45	126					
HSD-V21520D S25	21.5	46	127					
HSD-V22020D S25	22.0	47	128					
HSD-V22520D S25	22.5	48	129					
HSD-V23020D S25	23.0	49	130					
HSD-V23520D S25	23.5	50	131					
HSD-V24020D S25	24.0	51	132					
HSD-V24520D S25	24.5	52	133					
HSD-V25020D S25	25.0	53	134					
HSD-V25520D S32	25.5	54	144	32	60	WCMT050308	TSB-30070	
HSD-V26020D S32	26.0	55	145					
HSD-V26520D S32	26.5	56	146					
HSD-V27020D S32	27.0	57	147					
HSD-V27520D S32	27.5	58	148					
HSD-V28020D S32	28.0	59	149					
HSD-V28520D S32	28.5	60	150					
HSD-V29020D S32	29.0	61	151					
HSD-V29520D S32	29.5	62	152					
HSD-V30020D S32	30.0	63	153					
HSD-V31020D S32	31.0	65	155			WCMT06T308	TSB-35090	TXL-15
HSD-V32020D S32	32.0	67	157					
HSD-V33020D S32	33.0	69	159					
HSD-V34020D S32	34.0	71	161					
HSD-V35020D S32	35.0	73	163					
HSD-V36020D S32	36.0	75	165					
HSD-V37020D S32	37.0	77	167					
HSD-V38020D S32	38.0	79	169					
HSD-V39020D S32	39.0	81	171					
HSD-V40020D S32	40.0	83	173					
HSD-V41020D S32	41.0	85	175					
HSD-V42020D S40	42.0	87	192	40	70	WCMT080408	TSB-40110	
HSD-V43020D S40	43.0	89	194					
HSD-V44020D S40	44.0	91	196					
HSD-V45020D S40	45.0	93	198					
HSD-V46020D S40	46.0	95	200					
HSD-V47020D S40	47.0	97	202					
HSD-V48020D S40	48.0	99	204					
HSD-V49020D S40	49.0	101	206					
HSD-V50020D S40	50.0	103	208					
HSD-V51020D S40	51.0	105	210					
HSD-V52020D S40	52.0	107	212					
HSD-V53020D S40	53.0	109	214					
HSD-V54020D S40	54.0	111	216					
HSD-V55020D S40	55.0	113	218					
HSD-V56020D S40	56.0	115	220					
HSD-V57020D S40	57.0	117	222					
HSD-V58020D S40	58.0	119	224					

※ If you are working on the lathe, diameter ø40 or higher, we recommend using the VLT, FXD, VMD
The tool holder that locks with HSD-V is Side Lock Arbor.(P.78~P.90)

HIGH SPEED DRILL
HSD-V 3×D



● Shank ISO9766, Parallel with clamping flat

Code No.	Dimension(mm)					Insert	Component	
	D	L1	L	Ds	Ls		Screw	T-Driver
HSD-V13030D S20	13.0	42	112	20	50	WCMT03T104	TSB-18045	TXL-6
HSD-V13530D S20	13.5	44	114					
HSD-V14030D S20	14.0	45	115					
HSD-V14530D S20	14.5	47	117					
HSD-V15030D S20	15.0	48	118					
HSD-V15530D S20	15.5	50	120					
HSD-V16030D S25	16.0	51	132	25	56	WCMT030204	TSB-22045	
HSD-V16530D S25	16.5	53	134					
HSD-V17030D S25	17.0	54	135					
HSD-V17530D S25	17.5	56	137					
HSD-V18030D S25	18.0	57	138					
HSD-V18530D S25	18.5	59	140					
HSD-V19030D S25	19.0	60	141					
HSD-V19530D S25	19.5	62	143					
HSD-V20030D S25	20.0	63	144					

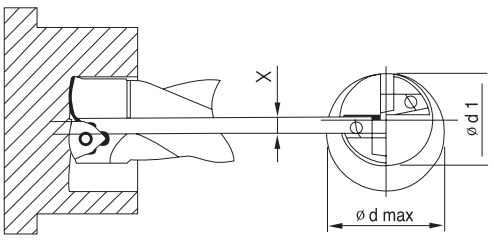
● HSD-V

• STD-V

● The characteristic of HSD-V middle and big diameter drills

• The chip discharging space for HSD-V middle dia and big dia drill(ø20.5~ø80)was greately extended. These drills are stable and surface roughness are excellent in the deep hole drilling also.

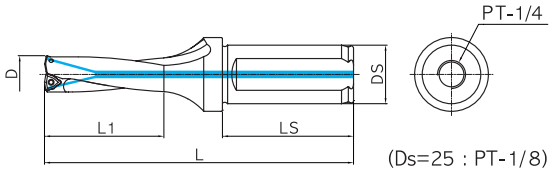
• Please make sure the proper oil pressure and the cutting data(P.124)for the best performance. (The proper pressure for HSD-V 2×D,3×D is over 3kg/㎠, the proper pressure for 4×D is over 4kg/㎠)



max. D = D + 2 × Adjustment

By offsetting a non-rotating drill in the direction of the outside cutting edge, holes lager than the tool's nominal diameter can be produced

HIGH SPEED DRILL
HSD-V 3×D

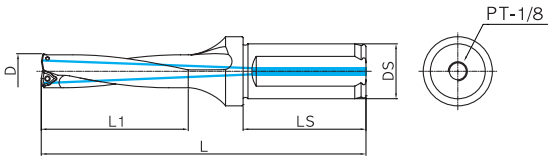


● Shank ISO9766, Parallel with clamping flat

Code No.	Dimension(mm)					Insert	Component	
	D	L1	L	Ds	Ls		Screw	T-Driver
HSD-V20530D S25	20.5	65	146	25	56	WCMT040204	TSB-25055	TXL-8
HSD-V21030D S25	21.0	66	147					
HSD-V21530D S25	21.5	68	149					
HSD-V22030D S25	22.0	69	150					
HSD-V22530D S25	22.5	71	152					
HSD-V23030D S25	23.0	72	153					
HSD-V23530D S25	23.5	74	155					
HSD-V24030D S25	24.0	75	156					
HSD-V24530D S25	24.5	77	158					
HSD-V25030D S25	25.0	78	159					
HSD-V25530D S32	25.5	80	170	32	60	WCMT050308	TSB-30070	
HSD-V26030D S32	26.0	81	171					
HSD-V26530D S32	26.5	83	173					
HSD-V27030D S32	27.0	84	174					
HSD-V27530D S32	27.5	86	176					
HSD-V28030D S32	28.0	87	177					
HSD-V28530D S32	28.5	89	179					
HSD-V29030D S32	29.0	90	180					
HSD-V29530D S32	29.5	92	182					
HSD-V30030D S32	30.0	93	183					
HSD-V31030D S32	31.0	96	186			WCMT06T308	TSB-35090	TXL-15
HSD-V32030D S32	32.0	99	189					
HSD-V33030D S32	33.0	102	192					
HSD-V34030D S32	34.0	105	195					
HSD-V35030D S32	35.0	108	198					
HSD-V36030D S32	36.0	111	201					
HSD-V37030D S32	37.0	114	204					
HSD-V38030D S32	38.0	117	207					
HSD-V39030D S32	39.0	120	210					
HSD-V40030D S32	40.0	123	213					
HSD-V41030D S32	41.0	126	216					
HSD-V42030D S40	42.0	129	234	40	70	WCMT080408	TSB-40110	
HSD-V43030D S40	43.0	132	237					
HSD-V44030D S40	44.0	135	240					
HSD-V45030D S40	45.0	138	243					
HSD-V46030D S40	46.0	141	246					
HSD-V47030D S40	47.0	144	249					
HSD-V48030D S40	48.0	147	252					
HSD-V49030D S40	49.0	150	255					
HSD-V50030D S40	50.0	153	258					
HSD-V51030D S40	51.0	156	261					
HSD-V52030D S40	52.0	159	264					
HSD-V53030D S40	53.0	162	267					
HSD-V54030D S40	54.0	165	270					
HSD-V55030D S40	55.0	168	273					
HSD-V56030D S40	56.0	171	276					
HSD-V57030D S40	57.0	174	279					
HSD-V58030D S40	58.0	177	282					

※ If you are working on the lathe, diameter ø40 or higher, we recommend using the VLT, FXD, VMD
The tool holder that locks with HSD-V is Side Lock Arbor.(P.78~P.90)

HIGH SPEED DRILL
HSD-V 4×D



● Shank ISO9766, Parallel with clamping flat

Code No.	Dimension(mm)					Insert	Component	
	D	L1	L	Ds	Ls		Screw	T-Driver
HSD-V13040D S20	13.0	55	125	20	50	WCMT03T104	TSB-18045	TXL-6
HSD-V13540D S20	13.5	57	127					
HSD-V14040D S20	14.0	59	129					
HSD-V14540D S20	14.5	61	131					
HSD-V15040D S20	15.0	63	133					
HSD-V15540D S20	15.5	65	135					
HSD-V16040D S25	16.0	67	148	25	56	WCMT030204	TSB-22045	
HSD-V16540D S25	16.5	69	150					
HSD-V17040D S25	17.0	71	152					
HSD-V17540D S25	17.5	73	154					
HSD-V18040D S25	18.0	75	156					
HSD-V18540D S25	18.5	77	158					
HSD-V19040D S25	19.0	79	160					
HSD-V19540D S25	19.5	81	162					
HSD-V20040D S25	20.0	83	164					

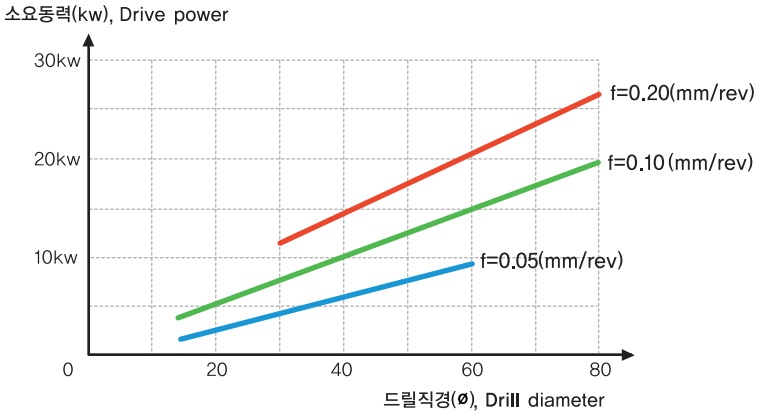
※ 최고의 결과물을 위해서는 절삭조건표(124페이지)와 절삭유 적정 압력을 확인해 주세요.(절삭유 적정압력은 5kg/㎠ 이상입니다.)
※ Please make sure the proper oil pressure and the cutting date(P.124)for the best performance.(The proper pressure is over 5kg/㎠)

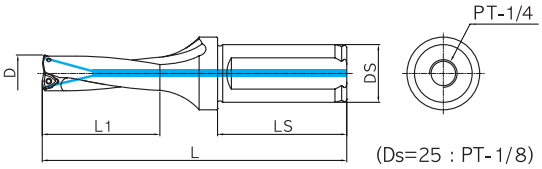
● HSD-V

Diameter	2×D	3×D	4×D
ø13 ~ø21.5	−0.10 ~ +0.15	−0.10 ~ +0.15	−0.15 ~ +0.20
ø22 ~ø50	−0.10 ~ +0.15	−0.12 ~ +0.20	−0.15 ~ +0.25
ø50 ~ø80	−0.15 ~ +0.20	−0.15 ~ +0.25	−0.15 ~ +0.30

※ The length of drill, kind of workpiece, machine stability, and cutting condition could affect the hole tolerance.

● Power Requirements





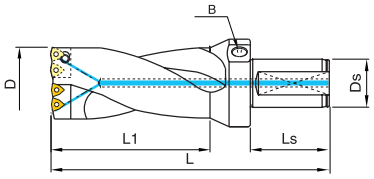
● Shank ISO9766, Parallel with clamping flat

Code No.	Dimension(mm)					Insert	Component	
	D	L1	L	Ds	Ls		Screw	T-Driver
HSD-V20540D S25	20.5	85	166	25	56	WCMT040204	TSB-25055	TXL-8
HSD-V21040D S25	21.0	87	168					
HSD-V21540D S25	21.5	89	170					
HSD-V22040D S25	22.0	91	172					
HSD-V22540D S25	22.5	93	174					
HSD-V23040D S25	23.0	95	176					
HSD-V23540D S25	23.5	97	178					
HSD-V24040D S25	24.0	99	180					
HSD-V24540D S25	24.5	101	182					
HSD-V25040D S25	25.0	103	184					
HSD-V25540D S32	25.5	105	195	32	60	WCMT050308	TSB-30070	
HSD-V26040D S32	26.0	107	197					
HSD-V26540D S32	26.5	109	199					
HSD-V27040D S32	27.0	111	201					
HSD-V27540D S32	27.5	113	203					
HSD-V28040D S32	28.0	115	205					
HSD-V28540D S32	28.5	117	207					
HSD-V29040D S32	29.0	119	209					
HSD-V29540D S32	29.5	121	211					
HSD-V30040D S32	30.0	123	213					
HSD-V31040D S32	31.0	127	217			WCMT06T308	TSB-35090	TXL-15
HSD-V32040D S32	32.0	131	221					
HSD-V33040D S32	33.0	135	225					
HSD-V34040D S32	34.0	139	229					
HSD-V35040D S32	35.0	143	233					
HSD-V36040D S32	36.0	147	237					
HSD-V37040D S32	37.0	151	241					
HSD-V38040D S32	38.0	155	245					
HSD-V39040D S32	39.0	159	249					
HSD-V40040D S32	40.0	163	253					
HSD-V41040D S32	41.0	167	257					
HSD-V42040D S40	42.0	171	276	40	70	WCMT080408	TSB-40110	
HSD-V43040D S40	43.0	175	280					
HSD-V44040D S40	44.0	179	284					
HSD-V45040D S40	45.0	183	288					
HSD-V46040D S40	46.0	187	292					
HSD-V47040D S40	47.0	191	296					
HSD-V48040D S40	48.0	195	300					
HSD-V49040D S40	49.0	199	304					
HSD-V50040D S40	50.0	203	308					
HSD-V51040D S40	51.0	207	312					
HSD-V52040D S40	52.0	211	316					
HSD-V53040D S40	53.0	215	320					
HSD-V54040D S40	54.0	219	324					
HSD-V55040D S40	55.0	223	328					
HSD-V56040D S40	56.0	227	332					
HSD-V57040D S40	57.0	231	336					
HSD-V58040D S40	58.0	235	340					

※ If you are working on the lathe, diameter ø40 or higher, we recommend using the VLT, FXD, VMD
The tool holder that locks with HSD-V is Side Lock Arbor.(P.78~P.90)

HIGH SPEED DRILL
HSD-V BIG DIAMETER DRILL(CARTRIDGE TYPE)

HSD-V



● Shank ISO9766, Parallel with clamping flat

▶ HSD-V 2×D (CARTRIDGE TYPE)

Code No.	Dimension(mm)					Insert	Component		Cartridge
	D	L1	L	Ds	Ls		Screw	T-Driver	
HSD-V596520D S40	59-65	130	240	40	70	WCMT06T308	TSB-35090	TXL-15	HSC-5965N/T
HSD-V657020D S40	65-70	140	250						HSC-6570N/T
HSD-V707520D S40	70-75	150	260						HSC-7075N/T
HSD-V758020D S40	75-80	160	270						HSC-7580N/T

▶ HSD-V 3×D (CARTRIDGE TYPE)

Code No.	Dimension(mm)					Insert	Component		Cartridge
	D	L1	L	Ds	Ls		Screw	T-Driver	
HSD-V596530D S40	59-65	195	305	40	70	WCMT06T308	TSB-35090	TXL-15	HSC-5965N/T
HSD-V657030D S40	65-70	210	320						HSC-6570N/T
HSD-V707530D S40	70-75	225	335						HSC-7075N/T
HSD-V758030D S40	75-80	240	350						HSC-7580N/T

▶ HSD-V 4×D (CARTRIDGE TYPE)

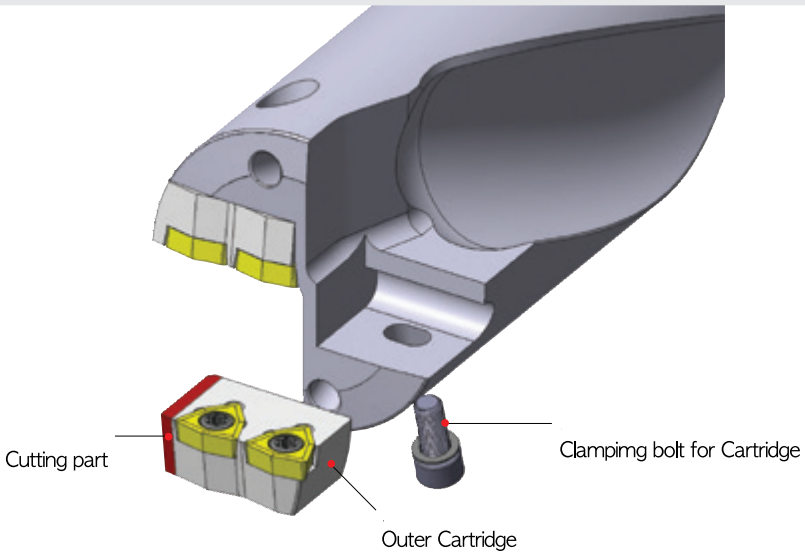
Code No.	Dimension(mm)					Insert	Component		Cartridge
	D	L1	L	Ds	Ls		Screw	T-Driver	
HSD-V596540D S40	59-65	260	370	40	70	WCMT06T308	TSB-35090	TXL-15	HSC-5965N/T
HSD-V657040D S40	65-70	280	390						HSC-6570N/T
HSD-V707540D S40	70-75	300	410						HSC-7075N/T
HSD-V758040D S40	75-80	320	430						HSC-7580N/T

※ If you are working on the lathe, diameter ø40 or higher, we recommend using the VLT, FXD, VMD
The tool holder that locks with HSD-V is Side Lock Arbor.(P.78~P.90)

• Please scan the QR code if you want to see HSD-V drill testing sample video.

HSD-V VIDEO

HSD-V
THE SETTING PROCEDURES FOR THE BIG DIA DRILL(CARTRIDGE TYPE)



1)
Loosen the clamping bolt of the outer cartridge and remove it from the drill body.

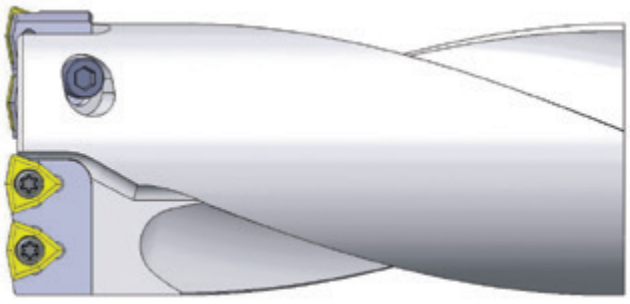
2)
Cut off the inside part, the comtacted side of the outer cartridge by milling after calculating the drilling diameter.

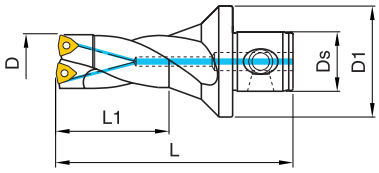
3)
Slick the sharp corner of the cut cartridge.

4)
Adhere the cartridge closely to the drill body not happen gap and fix the cartridge with bolt tightly.

Example

If you set HSD-V707530D to ø72
The standard drill diameter is ø75 so ø75-ø72=3→3÷2=1.5(calculation by semidiameter),
1.5mm is cut off

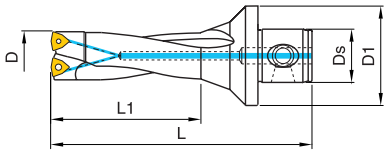




● EXT Modular Shank Type

Code No.	Dimension(mm)					Insert	Component	
	D	L1	L	D1	Ds		Screw	Driver
MCD-13020D	13	31	83	40	22	WCMX03T104	TSB-18045	TXL-6
MCD-14020D	14	33	85					
MCD-15020D	15	35	87					
MCD-16020D	16	37	89			WCMX030204	TSB-22045	
MCD-17020D	17	39	91					
MCD-18020D	18	41	93					
MCD-19020D	19	43	95					
MCD-20020D	20	45	97					
MCD-21020D	21	47	99			WCMX040204	TSB-25055	TXL-8
MCD-22020D	22	49	101					
MCD-23020D	23	51	103					
MCD-24020D	24	53	105					
MCD-25020D	25	55	107					
MCD-26020D	26	57	117	50	28	WCMX050308	TSB-30070	
MCD-27020D	27	59	119					
MCD-28020D	28	61	121					
MCD-29020D	29	63	123					
MCD-30020D	30	65	125					
MCD-31020D	31	67	127			WCMX06T308	TSB-35090	TXL-15
MCD-32020D	32	69	129					
MCD-33020D	33	71	131					
MCD-34020D	34	73	133					
MCD-35020D	35	75	135					
MCD-36020D	36	77	137					
MCD-37020D	37	79	139					
MCD-38020D	38	81	141					
MCD-39020D	39	83	143					
MCD-40020D	40	85	145					
MCD-41020D	41	87	147					
MCD-42020D	42	89	159	63	36	WCMX080408	TSB-40110	
MCD-43020D	43	91	161					
MCD-44020D	44	93	163					
MCD-45020D	45	95	165					
MCD-46020D	46	97	167					
MCD-47020D	47	99	169					
MCD-48020D	48	101	171					
MCD-49020D	49	103	173					
MCD-50020D	50	105	175					
MCD-51020D	51	107	177					
MCD-52020D	52	109	179					
MCD-53020D	53	111	181					
MCD-54020D	54	113	183					
MCD-55020D	55	115	185					
MCD-56020D	56	117	187					
MCD-57020D	57	119	189					
MCD-58020D	58	121	191					

※ If you are working on the lathe, diameter ø40 or higher, we recommend using the TMD, VMD
The tool holder that locks with MCD is EXT Modular Tool holder.(P.98~P.102)

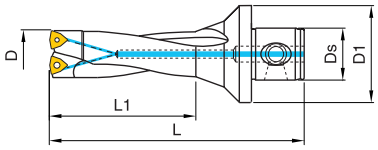


● EXT Modular Shank Type

Code No.	Dimension(mm)					Insert	Component	
	D	L1	L	D1	Ds		Screw	Driver
MCD-13025D	13	37	89	40	22	WCMX03T104	TSB-18045	TXL-6
MCD-14025D	14	40	92					
MCD-15025D	15	42	94					
MCD-16025D	16	45	97			WCMX030204	TSB-22045	
MCD-17025D	17	47	99					
MCD-18025D	18	50	102					
MCD-19025D	19	52	104					
MCD-20025D	20	55	107					
MCD-21025D	21	58	109			WCMX040204	TSB-25055	TXL-8
MCD-22025D	22	60	112					
MCD-23025D	23	63	115					
MCD-24025D	24	65	117					
MCD-25025D	25	68	119					
MCD-26025D	26	70	131	50	28	WCMX050308	TSB-30070	
MCD-27025D	27	73	133					
MCD-28025D	28	75	136					
MCD-29025D	29	78	138					
MCD-30025D	30	80	141					
MCD-31025D	31	83	143			WCMX06T308	TSB-35090	TXL-15
MCD-32025D	32	85	146					
MCD-33025D	33	88	148					
MCD-34025D	34	90	151					
MCD-35025D	35	93	153					
MCD-36025D	36	95	156					
MCD-37025D	37	98	158					
MCD-38025D	38	100	161					
MCD-39025D	39	103	163					
MCD-40025D	40	105	166					
MCD-41025D	41	108	168					
MCD-42025D	42	110	180	63	36	WCMX080408	TSB-40110	
MCD-43025D	43	113	183					
MCD-44025D	44	115	185					
MCD-45025D	45	118	188					
MCD-46025D	46	120	190					
MCD-47025D	47	123	193					
MCD-48025D	48	125	195					
MCD-49025D	49	128	198					
MCD-50025D	50	130	200					
MCD-51025D	51	133	203					
MCD-52025D	52	135	205					
MCD-53025D	53	138	208					
MCD-54025D	54	140	210					
MCD-55025D	55	143	213					
MCD-56025D	56	145	215					
MCD-57025D	57	148	218					
MCD-58025D	58	150	220					

※ If you are working on the lathe, diameter ø40 or higher, we recommend using the TMD, VMD
The tool holder that locks with MCD is EXT Modular Tool holder.(P.98~P.102)

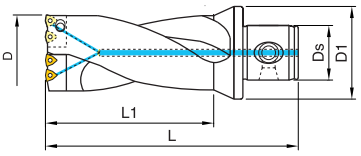
HIGH SPEED DRILL
MCD 3×D



● EXT Modular Shank Type

Code No.	Dimension(mm)					Insert	Component	
	D	L1	L	D1	Ds		Screw	Driver
MCD-13030D	13	44	96	40	22	WCMX03T104	TSB-18045	TXL-6
MCD-14030D	14	47	99					
MCD-15030D	15	50	102					
MCD-16030D	16	53	105			WCMX030204	TSB-22045	
MCD-17030D	17	56	108					
MCD-18030D	18	59	111					
MCD-19030D	19	62	114					
MCD-20030D	20	65	117					
MCD-21030D	21	68	120			WCMX040204	TSB-25055	TXL-8
MCD-22030D	22	71	123					
MCD-23030D	23	74	126					
MCD-24030D	24	77	129					
MCD-25030D	25	80	132					
MCD-26030D	26	83	144	50	28	WCMX050308	TSB-30070	
MCD-27030D	27	86	147					
MCD-28030D	28	89	150					
MCD-29030D	29	92	153					
MCD-30030D	30	95	156					
MCD-31030D	31	98	159			WCMX06T308	TSB-35090	TXL-15
MCD-32030D	32	101	162					
MCD-33030D	33	104	165					
MCD-34030D	34	107	168					
MCD-35030D	35	110	171					
MCD-36030D	36	113	174					
MCD-37030D	37	116	177					
MCD-38030D	38	119	180					
MCD-39030D	39	122	183					
MCD-40030D	40	125	186					
MCD-41030D	41	128	188					
MCD-42030D	42	131	201	63	36	WCMX080408	TSB-40110	
MCD-43030D	43	134	204					
MCD-44030D	44	137	207					
MCD-45030D	45	140	210					
MCD-46030D	46	143	213					
MCD-47030D	47	146	216					
MCD-48030D	48	149	219					
MCD-49030D	49	152	222					
MCD-50030D	50	155	225					
MCD-51030D	51	158	228					
MCD-52030D	52	161	231					
MCD-53030D	53	164	234					
MCD-54030D	54	167	237					
MCD-55030D	55	170	240					
MCD-56030D	56	173	243					
MCD-57030D	57	176	246					
MCD-58030D	58	179	249					

※ If you are working on the lathe, diameter ø40 or higher, we recommend using the TMD, VMD
The tool holder that locks with MCD is EXT Modular Tool holder.(P.98~P.102)



● EXT Modular Shank Type

▶ MCD 2×D (CARTRIDGE TYPE)

Code No.	Dimension(mm)					Insert	Component		Cartridge
	D	L1	L	Ds	Ls		Screw	T-Driver	
MCD-596520D	59-65	130	220	80	45	WCMX06T308	TSB-35090	TXL-15	HSC-5965N/T
MCD-657020D	65-70	140	230						MDC-080085N/T
MCD-707520D	70-75	150	240						MDC-085090N/T
MCD-758020D	75-80	160	250						MDC-090095N/T

▶ MCD 2.5×D (CARTRIDGE TYPE)

Code No.	Dimension(mm)					Insert	Component		Cartridge
	D	L1	L	Ds	Ls		Screw	T-Driver	
MCD-596525D	59-65	160	250	80	45	WCMX06T308	TSB-35090	TXL-15	HSC-5965N/T
MCD-657025D	65-70	175	265						MDC-080085N/T
MCD-707525D	70-75	190	280						MDC-085090N/T
MCD-758025D	75-80	200	290						MDC-090095N/T

▶ MCD 3×D (CARTRIDGE TYPE)

Code No.	Dimension(mm)					Insert	Component		Cartridge
	D	L1	L	Ds	Ls		Screw	T-Driver	
MCD-596530D	59-65	195	285	80	45	WCMX06T308	TSB-35090	TXL-15	HSC-5965N/T
MCD-657030D	65-70	210	300						MDC-080085N/T
MCD-707530D	70-75	225	315						MDC-085090N/T
MCD-758030D	75-80	240	330						MDC-090095N/T

※ If you are working on the lathe, diameter ø40 or higher, we recommend using the TMD, VMD
The tool holder that locks with MCD is EXT Modular Tool holder.(P.98~P.102)

Construction System of TURBO DRILL's Code No.

▶ Standard Type

FXD - 27540D S32

- FXD — Drill group
- 275 — Drilling diameter:Φ27.5
- 40 — Drilling depth:Dia×4
- S32 — Shank diameter:Φ32

▶ Adjustment Type

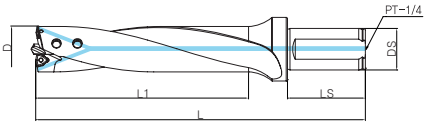
VLT - 758065D S40

- VLT — Drill group
- 75~80 — Drilling diameter:Φ75~Φ80(Adjustable)
- 65 — Drilling depth:Dia×6.5
- S40 — Shank diameter:Φ40

Turbo Drill

VLT

TURBO DRILL
VLT 5×D

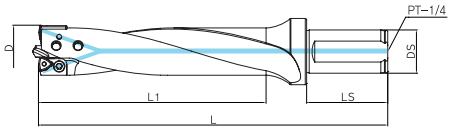


● Shank ISO9766, Parallel with clamping flat

▶ STANDARD TYPE

Code No.	Dimension(mm)					Pilot Drill	Insert	Component	
	D	L1	L	Ds	Ls			Screw	Driver
VLT-25050D S32	25	150	240	32	60	PLD-V0630 TiN	WCMX030204	TSB-22045	TXL-6
VLT-26050D S32	26						WCMX040204	TSB-25055	TXL-8
VLT-27050D S32	27								
VLT-28050D S32	28								
VLT-29050D S32	29								
VLT-30050D S32	30								
VLT-31050D S32	31	175	265			PLD-V0835 TiN	WCMX050308	TSB-30070	
VLT-32050D S32	32								
VLT-33050D S32	33								
VLT-34050D S32	34								
VLT-35050D S32	35								
VLT-36050D S32	36	200	290						
VLT-37050D S32	37								
VLT-38050D S32	38								
VLT-39050D S32	39								
VLT-40050D S32	40								

※ ø25~ø40 : 일반형 Standard Type



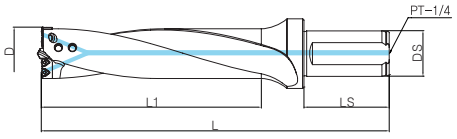
● Shank ISO9766, Parallel with clamping flat

Shank	Ds	Ls
S40	40	70

▶ SINGLE INSERT CARTRIDGE TYPE

Code No.	Dimension(mm)			Pilot Drill	Insert	Component		Cartridge	
	D	L1	L			Screw	Driver	Inner	Outer
VLT-414550D S40	41	225	330	PLD-V1035 TiN-H	WCMX 06T308	TSB-35078	TXL-15	VLC-410450N	VLC-000410T
	42								VLC-000420T
	43								VLC-000430T
	44								VLC-000440T
	45								VLC-000450T
VLT-465050D S40	46	250	355					VLC-460500N	VLC-000460T
	47								VLC-000470T
	48								VLC-000480T
	49								VLC-000490T
	50								VLC-000500T
VLT-515550D S40	51	275	380	PLD-V1238 TiN-H	WCMX 080408	TSB-40110		VLC-510550N	VLC-000510T
	52								VLC-000520T
	53								VLC-000530T
	54								VLC-000540T
	55								VLC-000550T
VLT-565950D S40	56	300	405					VLC-560590N	VLC-000560T
	57								VLC-000570T
	58								VLC-000580T
	59								VLC-000590T

※ ø41~ø59 : Adjustable 5mm unit when you replace individual outer cartridge(1mm)



● Shank ISO9766, Parallel with clamping flat

Shank	Ds	Ls
S40	40	70

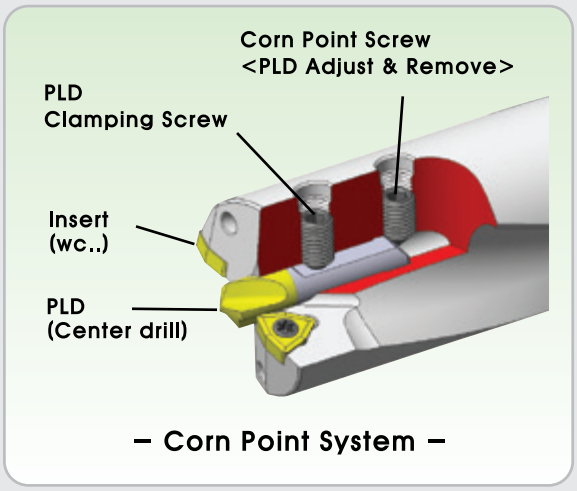
▶ DUAL INSERT CARTRIDGE TYPE

Code No.	Dimension(mm)			Pilot Drill	Insert	Component		Cartridge	
	D	L1	L			Screw	Driver	Inner	Outer
VLT-606550D S40	60~65	325	430	PLD-V1238 TiN-H	WCMX 050308	TSB-30070	TXL-8	VMC-060065N	VMC-060065T
VLT-657050D S40	65~70	350	455					VMC-065070N	VMC-065070T
VLT-707550D S40	70~75	375	480					VMC-070075N	VMC-070075T
VLT-758050D S40	75~80	400	505	PLD-V1645 TiN-H	WCMX 06T308	TSB-35090	TXL-15	VMC-075080N	VMC-075080T

※ ø60~ø80 : Cut the outer cartridge and setting.(adjust 5mm)

• Please scan the QR code if you want to see VLT drill testing sample video.

VLT VIDEO



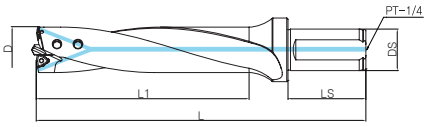
– Corn Point System –

▶ VLT A TYPE ø25mm~ø40mm(Standard Type)

▶ VLT B TYPE ø41mm~ø59mm(Single Insert Cartridge Type)

▶ VLT C TYPE ø60mm~ø80mm(Dual Insert Cartridge Type)

TURBO DRILL
VLT 6.5×D

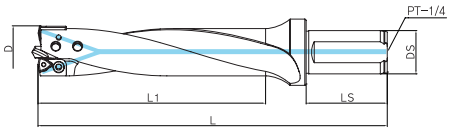


● Shank ISO9766, Parallel with clamping flat

▶ STANDARD TYPE

Code No.	Dimension(mm)					Pilot Drill	Insert	Component	
	D	L1	L	Ds	Ls			Screw	Driver
VLT-250650D S32	25	185	275	32	60	PLD-V0630 TiN	WCMX030204	TSB-22045	TXL-6
VLT-260650D S32	26						WCMX040204	TSB-25055	TXL-8
VLT-270650D S32	27								
VLT-280650D S32	28								
VLT-290650D S32	29								
VLT-300650D S32	30								
VLT-310650D S32	31	218	308			PLD-V0835 TiN	WCMX050308	TSB-30070	
VLT-320650D S32	32								
VLT-330650D S32	33								
VLT-340650D S32	34								
VLT-350650D S32	35								
VLT-360650D S32	36	250	340						
VLT-370650D S32	37								
VLT-380650D S32	38								
VLT-390650D S32	39								
VLT-400650D S32	40								

※ ø25~ø40 : Standard Type



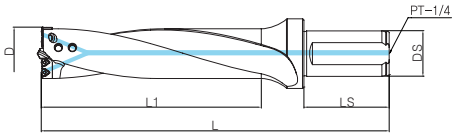
● Shank ISO9766, Parallel with clamping flat

Shank	Ds	Ls
S40	40	70

▶ SINGLE INSERT CARTRIDGE TYPE

Code No.	Dimension(mm)			Pilot Drill	Insert	Component		Cartridge	
	D	L1	L			Screw	Driver	Inner	Outer
VLT-414565D S40	41	283	388	PLD-V1035 TiN-H	WCMX 06T308	TSB-35078	TXL-15	VLC-410450N	VLC-000410T
	42								VLC-000420T
	43								VLC-000430T
	44								VLC-000440T
	45								VLC-000450T
VLT-465065D S40	46	315	420					VLC-460500N	VLC-000460T
	47								VLC-000470T
	48								VLC-000480T
	49								VLC-000490T
	50								VLC-000500T
VLT-515565D S40	51	348	453	PLD-V1238 TiN-H	WCMX 080408	TSB-40110		VLC-510550N	VLC-000510T
	52								VLC-000520T
	53								VLC-000530T
	54								VLC-000540T
	55								VLC-000550T
VLT-565965D S40	56	380	485					VLC-560590N	VLC-000560T
	57								VLC-000570T
	58								VLC-000580T
	59								VLC-000590T

※ ø41~ø59 : Adjustable 5mm unit when you replace individual outer cartridge(1mm)



● Shank ISO9766, Parallel with clamping flat

Shank	Ds	Ls
S40	40	70

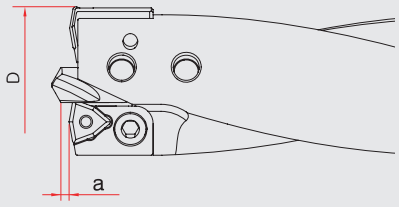
▶ DUAL INSERT CARTRIDGE TYPE

Code No.	Dimension(mm)			Pilot Drill	Insert	Component		Cartridge	
	D	L1	L			Screw	Driver	Inner	Outer
VLT-606565D S40	60~65	423	528	PLD-V1238 TiN-H	WCMX 050308	TSB-30070	TXL-8	VMC-060065N	VMC-060065T
VLT-657065D S40	65~70	455	560					VMC-065070N	VMC-065070T
VLT-707565D S40	70~75	488	593					VMC-070075N	VMC-070075T
VLT-758065D S40	75~80	520	625	PLD-V1645 TiN-H	WCMX 06T308	TSB-35090	TXL-15	VMC-075080N	VMC-075080T

※
※ ø60~ø80 : Cut the outer cartridge and setting.(adjust 5mm)

User Guide

▣ Pilot drill(PLD) setting



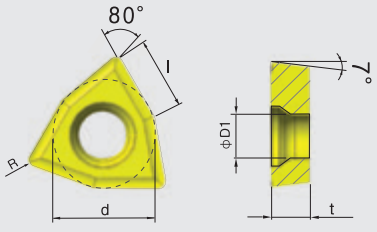
Dill dia. (ø)	a		
	non-alloy steels	alloy steels	non-ferrous metal
25-30	1.2	1	1.5
31-40	1.5	1.3	1.8
41-50	1.8	1.5	2.2
51-59	2.2	1.8	2.5
60-75	2.5	2	2.8
75-80	3	2.5	3.5

▣ Upgrade PLD-V type

• Existing PLD-application drill : TSD, VMD(MXD)

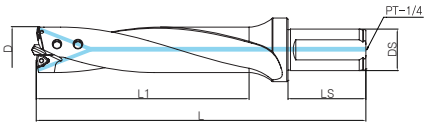
• Upgrade PLD-application drill : TSD, VMD(MXD) and VLT

▣ The insert for VLT-DRILL



Code No.	Dimension(mm)				
	R	d	D1	t	l
WCMX030204	0.4	5.56	2.5	2.38	3.8
WCMX040204	0.4	6.35	2.8	2.38	4.3
WCMX050308	0.8	7.94	3.4	3.18	5.4
WCMX06T308	0.8	9.525	4.4	3.97	6.5
WCMX080408	0.8	12.7	5.5	4.76	8.7

• The standard table above is for the reference of inserts for VLT-DRILL, we also sell different designs of the insert screws seperately.

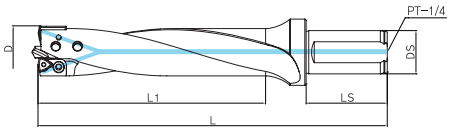


● Shank ISO9766, Parallel with clamping flat

▶ STANDARD TYPE

Code No.	Dimension(mm)					Pilot Drill	Insert	Component	
	D	L1	L	Ds	Ls			Screw	Driver
VLT-25080D S32	25	220	310	32	60	PLD-V0630 TiN	WCMX030204	TSB-22045	TXL-6
VLT-26080D S32	26						WCMX040204	TSB-25055	TXL-8
VLT-27080D S32	27								
VLT-28080D S32	28								
VLT-29080D S32	29								
VLT-30080D S32	30								
VLT-31080D S32	31	260	350			PLD-V0835 TiN	WCMX050308	TSB-30070	
VLT-32080D S32	32								
VLT-33080D S32	33								
VLT-34080D S32	34								
VLT-35080D S32	35								
VLT-36080D S32	36	300	390						
VLT-37080D S32	37								
VLT-38080D S32	38								
VLT-39080D S32	39								
VLT-40080D S32	40								

※ ø25~ø40 : Standard Type



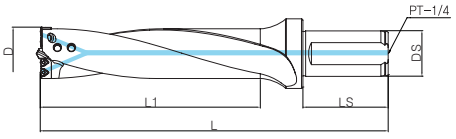
● Shank ISO9766, Parallel with clamping flat

Shank	Ds	Ls
S40	40	70

▶ SINGLE INSERT CARTRIDGE TYPE

Code No.	Dimension(mm)			Pilot Drill	Insert	Component		Cartridge	
	D	L1	L			Screw	Driver	Inner	Outer
VLT-414580D S40	41	340	445	PLD-V1035 TiN-H	WCMX 06T308	TSB-35078	TXL-15	VLC-410450N	VLC-000410T
	42								VLC-000420T
	43								VLC-000430T
	44								VLC-000440T
	45								VLC-000450T
VLT-465080D S40	46	380	485					VLC-460500N	VLC-000460T
	47								VLC-000470T
	48								VLC-000480T
	49								VLC-000490T
	50								VLC-000500T
VLT-515580D S40	51	420	525	PLD-V1238 TiN-H	WCMX 080408	TSB-40110		VLC-510550N	VLC-000510T
	52								VLC-000520T
	53								VLC-000530T
	54								VLC-000540T
	55								VLC-000550T
VLT-565980D S40	56	460	565					VLC-560590N	VLC-000560T
	57								VLC-000570T
	58								VLC-000580T
	59								VLC-000590T

※ ø41~ø59 : Adjustable 5mm unit when you replace individual outer cartridge(1mm)



● Shank ISO9766, Parallel with clamping flat

▶ DUAL INSERT CARTRIDGE TYPE

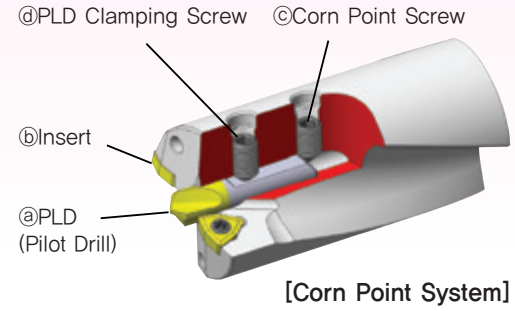
Shank	Ds	Ls
S40	40	70

Code No.	Dimension(mm)			Pilot Drill	Insert	Component		Cartridge	
	D	L1	L			Screw	Driver	Inner	Outer
VLT-606580D S40	60~65	520	625	PLD-V1238 TiN-H	WCMX 050308	TSB-30070	TXL-8	VMC-060065N	VMC-060065T
VLT-657080D S40	65~70	560	665					VMC-065070N	VMC-065070T
VLT-707580D S40	70~75	600	705					VMC-070075N	VMC-070075T
VLT-758080D S40	75~80	640	745	PLD-V1645 TiN-H	WCMX 06T308	TSB-35090	TXL-15	VMC-075080N	VMC-075080T

※ ø60~ø80 : Cut the outer cartridge and setting.(adjust 5mm)

Corn Point System

Anti-Vibration! Anti-Loose!

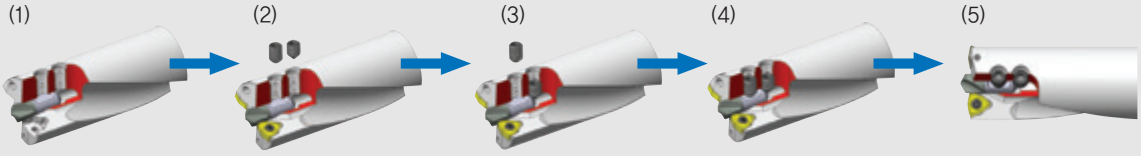


[Corn Point System]

▣ Corn Point System Characteristic

(1) It is fast and easy to adjust hight,
when you insert the PLD on the drill.
(2) The PLD is broken while you use,
you can remove of the corn-point-screw.
(3) The corn-point-screw treat prevent of unloose
when vibration occure, the PLD is not into the drill.

How to use (VLT, FXD)



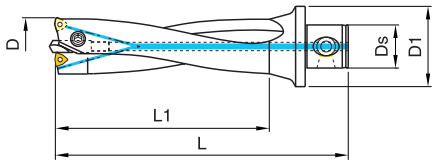
(1) First, The ⓐPLD insert to Hole.
(2) Locking the ⓑInsert. (Cartridge+Insert)
(3) The ⓐPLD hight control as the ⓒcorn-point-screw
(4) ⓓPLD-Clamping-screw tightly.
(5) Clamping of ⓒCorn-point-screw tightly again.
(※Important!)

[Corn Point System]

Prevention from screw loose.

• The corn-point-screw treat prevent of unloose when vibration occure, the PLD is not in to the drill (It can be reused several times)

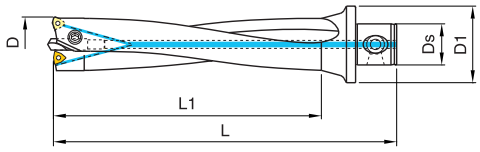
TURBO DRILL
TMD 5×D



● EXT Modular Shank Type

Code No.	Dimension(mm)					Pilot Drill	Insert	Component	
	D	L1	L	D1	Ds			Screw	Driver
TMD-25050D	25	150	210	50	28	PLD-V0630 TiN	WCMX030204	TSB-22045	TXL-6
TMD-26050D	26						WCMX040204	TSB-25055	TXL-8
TMD-27050D	27								
TMD-28050D	28								
TMD-29050D	29								
TMD-30050D	30								
TMD-31050D	31	175	235			PLD-V0835 TiN	WCMX050308	TSB-30070	
TMD-32050D	32								
TMD-33050D	33								
TMD-34050D	34								
TMD-35050D	35								
TMD-36050D	36	200	260						
TMD-37050D	37								
TMD-38050D	38								
TMD-39050D	39								
TMD-40050D	40								
TMD-41050D	41	225	295	63	36	PLD-V1035 TiN-H	WCMX06T308	TSB-35090	TXL-15
TMD-42050D	42								
TMD-43050D	43								
TMD-44050D	44								
TMD-45050D	45								
TMD-46050D	46	250	320						
TMD-47050D	47								
TMD-48050D	48								
TMD-49050D	49								
TMD-50050D	50								
TMD-51050D	51	275	345			PLD-V1238 TiN-H	WCMX080408	TSB-40110	
TMD-52050D	52								
TMD-53050D	53								
TMD-54050D	54								
TMD-55050D	55								
TMD-56050D	56	300	370						
TMD-57050D	57								
TMD-58050D	58								
TMD-59050D	59								

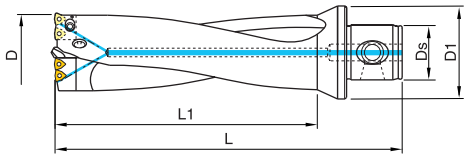
※ Turbo Drill is capable of high speed drilling without vibrations for up to lengths 5 times greater than the diameter, which is the drilling threshold for general insert assembly drills. It is capable of providing smooth drilling work for up to size 8 times greater than the diameter.



● EXT Modular Shank Type

Code No.	Dimension(mm)					Pilot Drill	Insert	Component	
	D	L1	L	D1	Ds			Screw	Driver
TMD-25080D	25	220	280	50	28	PLD-V0630 TiN	WCMX030204	TSB-22045	TXL-6
TMD-26080D	26						WCMX040204	TSB-25055	TXL-8
TMD-27080D	27								
TMD-28080D	28								
TMD-29080D	29								
TMD-30080D	30								
TMD-31080D	31	260	320			PLD-V0835 TiN	WCMX050308	TSB-30070	
TMD-32080D	32								
TMD-33080D	33								
TMD-34080D	34								
TMD-35080D	35								
TMD-36080D	36	300	360						
TMD-37080D	37								
TMD-38080D	38								
TMD-39080D	39								
TMD-40080D	40								
TMD-41080D	41	340	410	63	36	PLD-V1035 TiN-H	WCMX06T308	TSB-35090	TXL-15
TMD-42080D	42								
TMD-43080D	43								
TMD-44080D	44								
TMD-45080D	45								
TMD-46080D	46	380	450						
TMD-47080D	47								
TMD-48080D	48								
TMD-49080D	49								
TMD-50080D	50								
TMD-51080D	51	420	490			PLD-V1238 TiN-H	WCMX080408	TSB-40110	
TMD-52080D	52								
TMD-53080D	53								
TMD-54080D	54								
TMD-55080D	55								
TMD-56080D	56	460	530						
TMD-57080D	57								
TMD-58080D	58								
TMD-59080D	59								

※ Turbo Drill is capable of high speed drilling without vibrations for up to lengths 5 times greater than the diameter, which is the drilling threshold for general insert assembly drills. It is capable of providing smooth drilling work for up to size 8 times greater than the diameter.



TMD 5×D CARTRIDGE TYPE

● EXT Modular Shank Type

Code No.	Dimension(mm)					Pilot Drill	Insert	Component		Cartridge
	D	L1	L	D1	Ds			Screw	Driver	Inner/Outer
TMD-606550D	60~65	325	415	80	45	PLD-V1238 TiN-H	WCMX050308	TSB-30070	TXL-8	MDC-060065N/T
TMD-657050D	65~70	350	440							MDC-065070N/T
TMD-707550D	70~75	375	465							MDC-070075N/T
TMD-758050D	75~80	400	490			PLD-V1645 TiN-H	WCMX06T308	TSB-35090	TXL-15	MDC-075080N/T

※ Cut the outer cartridge and setting. (adjust 5mm)
Please place an order for poilot drills separately when ordering.

TMD 8×D CARTRIDGE TYPE

● EXT Modular Shank Type

Code No.	Dimension(mm)					Pilot Drill	Insert	Component		Cartridge
	D	L1	L	D1	Ds			Screw	Driver	Inner/Outer
TMD-606580D	60~65	520	610	80	45	PLD-V1238 TiN-H	WCMX050308	TSB-30070	TXL-8	MDC-060065N/T
TMD-657080D	65~70	560	650							MDC-065070N/T
TMD-707580D	70~75	600	690							MDC-070075N/T
TMD-758080D	75~80	640	730			PLD-V1645 TiN-H	WCMX06T308	TSB-35090	TXL-15	MDC-075080N/T

※ Please refer to the page 110~115 regarding cartridges and poilot drill.

TURBO DRILL(VLT,VSD,TMD)CHARACTERISTIC

1)
Turbo drill is drilled the length over 5 times from the drill diamerter without shanking at high speed.

2)
This drill is drilled smoothiy yhe max lenght 8 times from drill diameter.

3)

Especially, the big diameter drilling done without insert broken at the lathe.
(When drilling over ø40at the lathe, we recommend Turbo Drill or Max Drill then High Speed Drill.)

THE DIAMETER SETTING PROCEDURES OF THE VLT(VSD)SINGLE INSERT CARTRIDGE TYPE

1)
VLT Single cartridge type is supplied it individual cartridge by 1mm unit.

2)
Make sure of the setting range of the drill body and adhere an outer cartridge to the drill body.

Example

If setting VLT-465050D to ø48 seat
Adhere VLC-000480T(outer cartridge)to the outer cartridge putting place of the drill body.

VLT(VSD, VMD)
THE DIAMETER SETTING PROCEDURES OF THE VLT(VSD, VMD)DUAL INSERT CARTRIDGE TYPE

1)

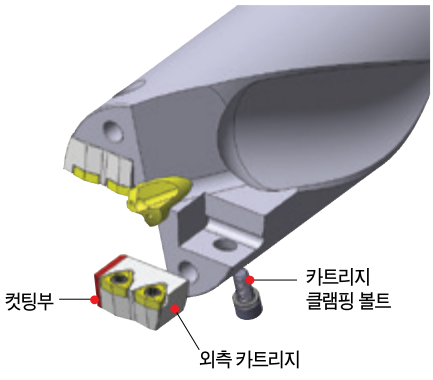
Loosen the clamping bolt of the outer cartridge and remove it from the drill body

2)

Cut off the inside part, the contacted side of the outer cartrodge by milling after calculating the drilling diameter

3)

Slick the sharp corner of the cut cartridge.



4)
Adhere the cartridge closely to the drill body not happen gap and fix the cartridge with bolt tigftly.

Example
VLT-657080D ø66

If setting VLT-657030D to ø66 seat
The standard drill diameter is ø70 so ø70-ø66=4→4÷2=2(calculation by semidiameter)
2mm is cut off.

Construction System of MAX DRILL's Code No.

▶ Adjustment Type

VMD - 125130

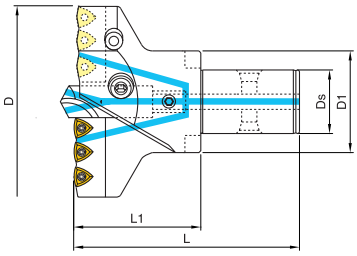
Drill group

Drilling diameter:Φ125~Φ130(Adjustable)

[MX MODULAR SYSTEM

V-Max Drill

VMD



● MX Modular Shank Type

Code No.	Dimension(mm)					Pilot Drill	Cartridge	Insert	Component	
	D	Ds	D1	L1	L				Screw	Driver
VMD-045050	45-50	13	28	50	85	PLD-V1035 TiN-H	VMC-045050N/T	WCMX030204	TSB-22045	TXL-6
VMD-050055	50-55	13	28	50	85		VMC-050055N/T			
VMD-055060	55-60	16	32	60	100	PLD-V1238 TiN-H	VMC-055060N/T	WCMX040204	TSB-25055	TXL-8
VMD-060065	60-65	16	32	60	100		VMC-060065N/T	WCMX050308	TSB-30070	
VMD-065070	65-70	16	32	60	100		VMC-065070N/T			
VMD-070075	70-75	22	40	70	115		VMC-070075N/T			
VMD-075080	75-80	22	40	70	115	PLD-V1645 TiN-H	VMC-075080N/T	WCMX06T308	TSB-35090	TXL-15
VMD-080085	80-85	22	40	70	115		VMC-080085N/T			
VMD-085090	85-90	27	48	70	120		VMC-085090N/T			
VMD-090095	90-95	27	48	70	120		VMC-090095N/T			
VMD-095100	95-100	27	48	70	120		VMC-095100N/T			
VMD-100105	100-105	32	58	80	130	PLD-2045 TiN-H	VMC-100105N/T	WCMX050308	TSB-30070	TXL-8
VMD-105110	105-110	32	58	80	130		VMC-105110N/T	WCMX06T308	TSB-35090	TXL-15
VMD-110115	110-115	32	58	80	130		VMC-110115N/T			
VMD-115120	115-120	40	70	90	145		VMC-115120N/T			
VMD-120125	120-125	40	70	90	145	PLD-2556 TiN-H	VMC-120125N/T			
VMD-125130	125-130	40	70	90	145		VMC-125130N/T			
VMD-130135	130-135	40	70	90	145		VMC-130135N/T			
VMD-135140	135-140	40	70	90	145		VMC-135140N/T			
VMD-140150	140-150	50	80	100	160		VMC-140150N/T	WCMX080408	TSB-40110	
VMD-150160	150-160	50	80	100	160		VMC-150160N/T			
VMD-160170	160-170	50	80	100	160	PLD-3068 TiN-H	VMC-160170N/T			
VMD-170180	170-180	50	80	100	160		VMC-170180N/T			

※ The drill body treated by forging was much solider and much stronger in impact.
※ The connecting strength by the MX modular system is excellent and the drilling depth is freely adjustable by connecting MXB, MXR and MXA.
※ Drill head is supplied with Max. diameter
※ Please refer to the page108 regarding WCMX insert.

• Please scan the QR code if you want to see VMD drill testing sample video.

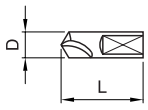
VMD VIDEO

CARTRIDGE

Drilling Range	Inner	Outer	Insert	No.of Insert	Component	
					Screw	Driver
45–50	VMC–045050N	VMC–045050T	WCMX030204	2	TSB–22045	TXL–6
50–55	VMC–050055N	VMC–050055T				
55–60	VMC–055060N	VMC–055060T	WCMX040204	2	TSB–25055	TXL–8
60–65	VMC–060065N	VMC–060065T	WCMX050308	2	TSB–30070	
65–70	VMC–065070N	VMC–065070T				
70–75	VMC–070075N	VMC–070075T				
75–80	VMC–075080N	VMC–075080T	WCMX06T308	2	TSB–35090	TXL–15
80–85	VMC–080085N	VMC–080085T				
85–90	VMC–085090N	VMC–085090T				
90–95	VMC–090095N	VMC–090095T				
95–100	VMC–095100N	VMC–095100T				
100–105	VMC–100105N	VMC–100105T	WCMX050308	3	TSB–30070	TXL–8
105–110	VMC–105110N	VMC–105110T	WCMX06T308	3	TSB–35090	TXL–15
110–115	VMC–110115N	VMC–110115T				
115–120	VMC–115120N	VMC–115120T				
120–125	VMC–120125N	VMC–120125T				
125–130	VMC–125130N	VMC–125130T				
130–135	VMC–130135N	VMC–130135T				
135–140	VMC–135140N	VMC–135140T				
140–150	VMC–140150N	VMC–140150T	WCMX080408	3	TSB–40110	
150–160	VMC–150160N	VMC–150160T				
160–170	VMC–160170N	VMC–160170T				
170–180	VMC–170180N	VMC–170180T				

※ Please place an order shorten the length of outer cartridge if smaller dia. is needed.(ex: ø77=by1.5mm cutting MDC–075080T)

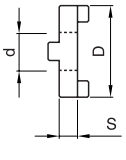
PILOT DRILL



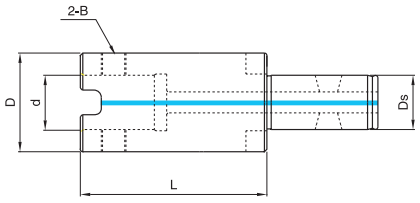
Code No.	Dimension(mm)	
	D	L
PLD–V1035 TiN–H	10	35
PLD–V1238 TiN–H	12	38
PLD–V1645 TiN–H	16	45
PLD–2045 TiN–H	20	
PLD–2556 TiN–H	25	56
PLD–3068 TiN–H	30	68

※ ex:PLD–2556 TiN–H(25TiN coated oil hole)

DRIVE RING



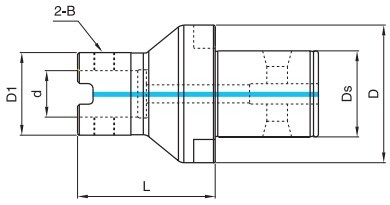
Code No.	Dimension(mm)		
	D	d	S
DVR–281310	28	13	10
DVR–321610	32	16	
DVR–402212	40	22	12
DVR–482712	48	27	
DVR–583214	58	32	14
DVR–704014	70	40	
DVR–805016	80	50	16



● MX Extension

▶ MXB

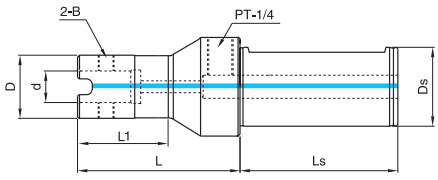
Code No.	Dimension(mm)				B	Drive Ring
	D	d	L	Ds		
MXB-2813115	28	13	115	13	MTB-08115	DVR-281310
MXB-2813150			150			
MXB-2813200			200			
MXB-2813300			300			
MXB-3216115	32	16	115	16		DVR-321610
MXB-3216200			200			
MXB-3216300			300			
MXB-4022113	40	22	113	22	MTB-10145	DVR-402212
MXB-4022200			200			
MXB-4022300			300			
MXB-4827113	48	27	113	27	MTB-12175	DVR-482712
MXB-4827200			200			
MXB-4827300			300			
MXB-5832186	58	32	186	32	MTB-12195	DVR-583214
MXB-5832300			300			
MXB-7040186	70	40	186	40	MTB-16260	DVR-704014
MXB-7040300			300			
MXB-7040500			500			
MXB-8050204	80	50	204	50		DVR-805016
MXB-8050300			300			
MXB-8050500			500			



● MX Reducer

▶ MXR

Code No.	Dimension(mm)					B	D1/Drive Ring	D/Drive Ring
	Ds	d	L	D	D1			
MXR-1613100	16	13	100	32	28	MTB-08115	DVR-281310	DVR-321610
MXR-2216100	22	16	100	40	32	MTB-08115	DVR-321610	DVR-402212
MXR-2722100	27	22	100	48	40	MTB-10145	DVR-402212	DVR-482712
MXR-3213100	32	13	100	58	28	MTB-08115	DVR-281310	DVR-583214
MXR-3216100	32	16	100	58	32	MTB-08115	DVR-321610	DVR-583214
MXR-3222100	32	22	100	58	40	MTB-10145	DVR-402212	DVR-583214
MXR-3227100	32	27	100	58	48	MTB-12175	DVR-482712	DVR-583214
MXR-4032100	40	32	100	70	58	MTB-12195	DVR-583214	DVR-704014
MXR-5013080	50	13	80	80	28	MTB-08115	DVR-281310	DVR-805016
MXR-5016080	50	16	80	80	32	MTB-08115	DVR-321610	DVR-805016
MXR-5022080	50	22	80	80	40	MTB-10145	DVR-402212	DVR-805016
MXR-5027080	50	27	80	80	48	MTB-12175	DVR-482712	DVR-805016
MXR-5032080	50	32	80	80	58	MTB-12195	DVR-583214	DVR-805016
MXR-5040150	50	40	150	80	70	MTB-16260	DVR-704014	DVR-805016

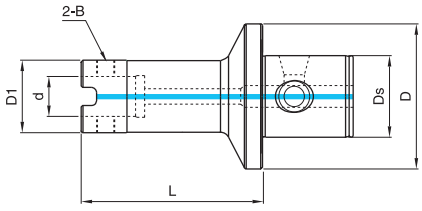


● MX + CYLINDRICAL Adaptor

▶ MXA

Code No.	Dimension(mm)						B	Drive Ring
	Ds	d	L	L1	D	Ls		
MXA-3213115	32	13	115	77	28	70	MTB-08115	DVR-281310
MXA-3213200		13	200	165	28			
MXA-3213300		13	300	265	28			
MXA-4016125	40	16	125	86	32	80		DVR-321610
MXA-4016200		16	200	161	32			
MXA-4016300		16	300	261	32			
MXA-4022148		22	148	109	40		MTB-10145	DVR-402212
MXA-4022200		22	200	161	40			
MXA-4022300		22	300	261	40			
MXA-4027168		27	168	133	48		MTB-12175	DVR-482712
MXA-4027300		27	300	265	48			
MXA-4032186		32	186	151	58		MTB-12195	DVR-583214
MXA-4032300		32	300	265	58			
MXA-W5040186	50	40	186	151	70		MTB-16260	DVR-704014
MXA-W5040300		40	300	265	70			
MXA-W5050184		50	184	149	80			DVR-805016
MXA-W5050300		50	300	265	80			

※ It is a Adaptor that converts the MX modular system to Side lock Type.



● MX + EXT Adaptor

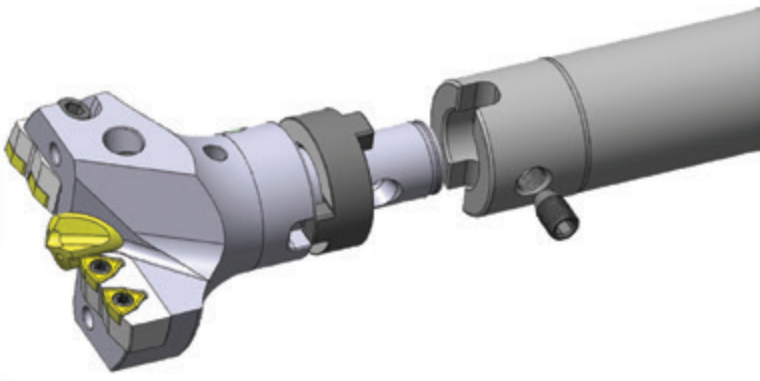
▶ MXE

Code No.	Dimension(mm)					B	D1/Drive Ring
	Ds	d	L	D	D1		
MXE-3613100	36	13	100	63	28	MTB-08115	DVR-281310
MXE-3616100		16			32	MTB-08115	DVR-32160
MXE-3622100		22			40	MTB-10145	DVR-402212
MXE-3627100		27			48	MTB-12175	DVR-482712
MXE-3632100		32			58	MTB-12195	DVR-583214
MXE-4513100	45	13		80	28	MTB-08115	DVR-281310
MXE-4516100		16			32	MTB-08115	DVR-321610
MXE-4522100		22			40	MTB-10145	DVR-402212
MXE-4527100		27			48	MTB-12175	DVR-482712
MXE-4532100		32			58	MTB-12195	DVR-583214

※ It is a Adaptor that converts the MX modular system to EXT modular system.

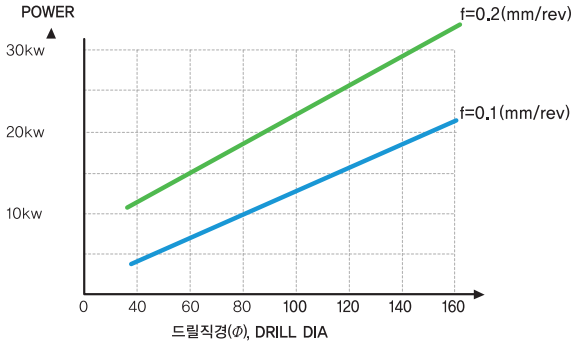
IMPROVED V-MAX DRILL!

- The drill body treated by forging was much solider and much stronger in impact.
- The especially treated surface of body make the inner-abrasion much better and the life make much longer
- As this drill was designed more stably, this drill is steady of drilling and is good of economical efficiency.
- Drilling diameters are from 45mm to 180mm and the drilling depth is freely adjustable by using the MX modular system
- As this drill is cartridge(VMC)type, the drilling diameters are adjustable.
- We can supply to customers promptiy by kepping stable stocks.



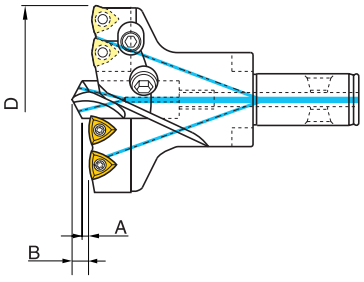
- The connecting strength by the MX modular system is excellent and the drilling depth is freely adjustable by connecting MXB, MXR and MXA.

POWER REQUIRMENTS



MAX DRILL

Pilot drill(PLD) setting



	2~4×D		4~6×D		6~8×D	
	A	B	A	B	A	B
45–55	1.6	4.0	1.8	4.2	2.0	4.4
55–75	1.8	5.4	2.0	5.6	2.2	5.8
75–100	2.2	6.5	2.5	6.8	2.8	7.1
100–120	2.4	7.7	2.8	8.1	3.2	8.5
120–170	3.2	9.9	3.6	10.3	4.0	10.7
170–180	3.5	12.2	3.9	12.6	4.3	13.0

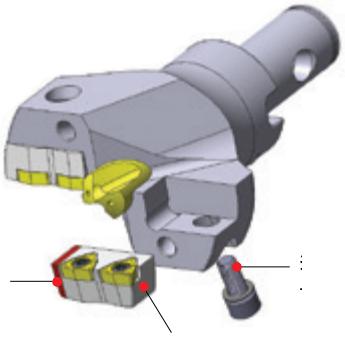
THE DIAMETER ADJUSTING PROCEDURES OF VMD(MXD)

1)

Loosen the clamping bolt of the outer cartridge and remove it from the drill body.

2)

Cut off the inside part, the contacted side of the outer cartrodge by milling after calculating the drilling diameter.



3)

Slick the sharp corner of the cut cartridge.

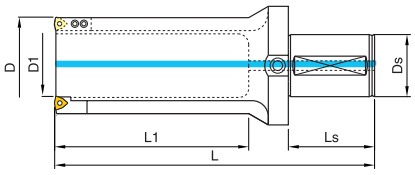
4)

Adhere the cartridge closely to the drill body not happen gap and fix the cartridge with bolt tigftly.

Example

If setting VMD–135140 to ø136 seat
The standard drill diameter is ø140 so ø140–ø136=4→4÷2=2(calculation by semidiameter)
2mm is cut off.

TREPANNING DRILL
TPD 2.5×D



● TPD Cylindrical Shank Type

Code No.	Dimension(mm)						Cartridge	Insert	Component	
	D	D1	L1	L	Ds	Ls			Screw	Driver
TPD-04025D	40	10	100	210	32	70	TDC-W0503N/T	WCMX050308	TSB-30070	TXL-8
TPD-04525D	45	15	100	210	40	80				
TPD-05025D	50	21	120	230						
TPD-05525D	55	26	120	230						
TPD-06025D	60	24.5	150	270			TDC-W06T3N/T	WCMX06T308	TSB-35090	TXL-15
TPD-06525D	65	30.5	150	270						
TPD-07025D	70	35.5	170	290						
TPD-07525D	75	40.5	170	290						
TPD-08025D	80	45.5	190	310						
TPD-08525D	85	50.5	190	330	50	100				
TPD-09025D	90	55	210	350						
TPD-09525D	95	60	210	350						
TPD-10025D	100	66	250	390						
TPD-11025D	110	76	250	390						

※ SPECIAL ORDER PRODUCTS
※ Trepanning Drill is capable of efficient drilling even when using low power equipment. As a general rule, the processing length should be 2.5 times greater than the diameter, and the rate of vibration is lower as the length is shorter. Please contact our company for more detailed information.

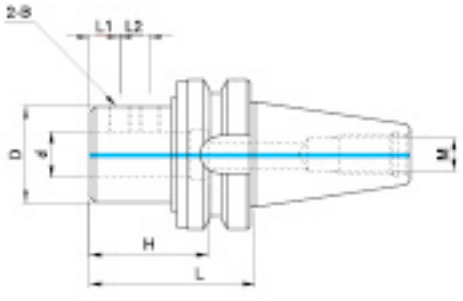
Tool Holder

SIDE LOCK ARBOR

(STANDARD)

- : KSD, STD-V, HSD-V, VLT, FXD, VMD(MXA (Extension
- Connecting tools : KSD, STD-V, HSD-V, VLT, FXD, VMD (If using MXA Extension)

SIDE LOCK ARBOR (STANDARD)
BT-SLA / BT-OMS

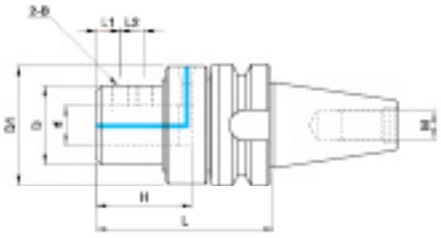


● MAS403 / BT side Lock Type

▶ BT-SLA

Code No.	Dimension(mm)							Component
	d	L	D	H	L1	L2	M	B
BT40-SLA-32090	32	90	65	70	20	20	M16	M1616SS
BT40-SLA-40105	40	105	70	80	20	25		M1616SS
BT50-SLA-20105	20	105	50	50	20	–	M24	M1215SS
BT50-SLA-25105	25	105	50	60	20	20		M1215SS
BT50-SLA-32105	32	105	65	70	20	20		M1415SS
BT50-SLA-40105	40	105	80	80	20	25		M1620SS
BT50-SLA-50130	50	130	90	100	35	35		M2020SS

※ It can be used efficiently in equipment capable of cutting oil injection inside the spindle.



(Basic Component)

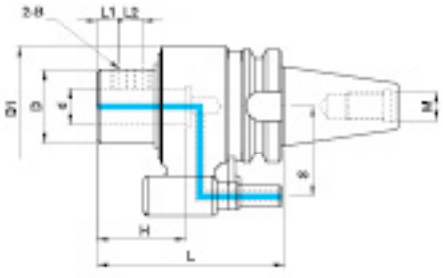
● MAS403 / BT side Lock Oil Feed Type

▶ BT-OMS

Code No.	Dimension(mm)								Component
	d	L	D	D1	H	L1	L2	M	B
BT40-OMS-20105	20	105	50	78	50	20	–	M16	M1215SS
BT40-OMS-25120	25	120	50	78	60	20	20		M1215SS
BT40-OMS-32125	32	125	65	98	70	20	20		M1415SS
BT50-OMS-20120	20	120	50	78	50	20	–	M24	M1215SS
BT50-OMS-25135	25	135	50	78	60	20	20		M1215SS
BT50-OMS-32135	32	135	65	98	70	20	20		M1415SS
BT50-OMS-40145	40	145	65	98	80	20	25		M1616SS
BT50-OMS-50170	50	170	90	123	90	35	35		M2020SS

※ It is a manual type internal oil hole holder with a special seal capable of long term operation without leakage.
(Max. 1,800RPM/refer to page 138)

SIDE LOCK ARBOR (STANDARD)
BT-OAS



● MAS403 / BT side Lock Auto Matic Type

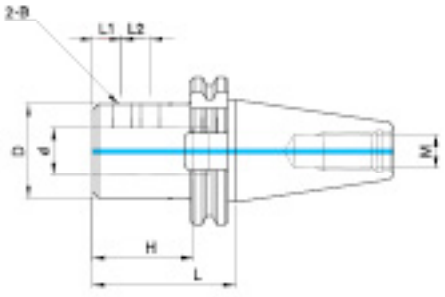
▶ BT-OAS

Code No.	Dimension(mm)								Component
	d	L	H	L1	L2	D	D1	S	B
BT40-OAS-20120	20	120	50	20	–	55	80	65	M1215SS
BT40-OAS-25140	25	140	60	20	20	55	80		M1215SS
BT40-OAS-32140	32	140	70	20	20	65	80		M1415SS
BT50-OAS-20145	20	145	50	20	–	55	100	80	M1215SS
BT50-OAS-25165	25	165	60	20	20	55	100		M1215SS
BT50-OAS-32165	32	165	70	20	20	65	100		M1415SS
BT50-OAS-40175	40	175	80	20	25	65	100		M1616SS

※ It is a tool holder capable of Automatic Tool Change (ATC). Adjust the height and angle of the Position Pin prior to use. (P.139)

※ It has a bearing and seal with outstanding heat-resistant and abrasion resistive properties, making it capable of stable operation for extended durations without leakage even in high speeds. (Max. 3,200RPM)

SIDE LOCK ARBOR (STANDARD)
SK-SLA / SK-OMS

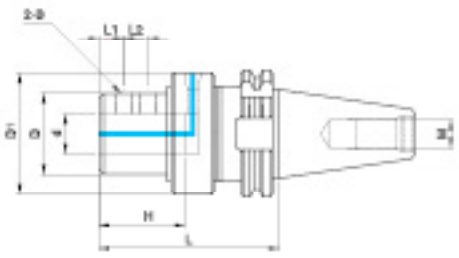


● DIN69871 / SK Side Lock Type

▶ SK-SLA

Code No.	Dimension(mm)							Component
	d	L	D	H	L1	L2	M	B
SK50-SLA-32105	32	105	65	70	20	20	M24	M1415SS
SK50-SLA-40105	40	105	65	80	20	25		M1620SS

※ It can be used efficiently in equipment capable of cutting oil injection inside the spindle.



(Basic Component)

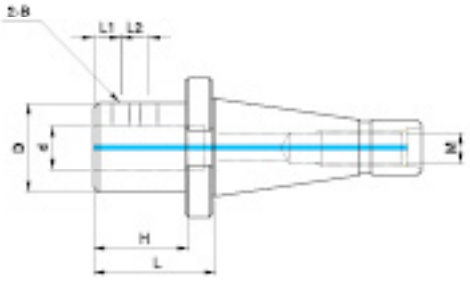
● DIN69871 / SK Side Lock Oil Feed Type

▶ SK-OMS

Code No.	Dimension(mm)								Component
	d	L	D	D1	H	L1	L2	M	B
SK40-OMS-20110	20	110	50	78	50	20	–	M16	M1215SS
SK40-OMS-25125	25	125	50	78	60	20	20		M1215SS
SK40-OMS-32130	32	130	65	98	70	20	20		M1415SS
SK50-OMS-20105	20	105	50	78	50	20	–	M24	M1215SS
SK50-OMS-25120	25	120	50	78	60	20	20		M1215SS
SK50-OMS-32125	32	125	65	98	70	20	20		M1415SS
SK50-OMS-40135	40	135	65	98	80	20	25		M1616SS
SK50-OMS-50165	50	165	90	123	90	35	35		M2020SS

※ It is a manual type internal oil hole holder with a special seal capable of long term operation without leakage.
(Max. 1,800RPM/refer to page 138)

SIDE LOCK ARBOR (STANDARD)
NT-SLA / NT-OMS

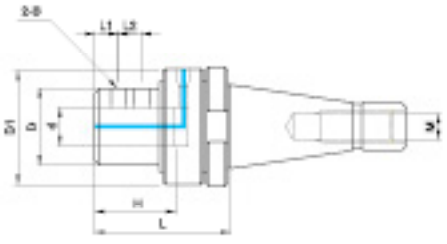


● DIN2080 / NT Side Lock Type

▶ NT-SLA

Code No.	Dimension(mm)							Component
	d	L	D	H	L1	L2	M	B
NT50-SLA-40090	40	90	65	80	20	25	1"- 8UNC	M1620SS
NT50-SLA-40090M	40	90	65	80	20	25	M24	

※ It can be used efficiently in equipment capable of cutting oil injection inside the spindle.



[Basic Component]

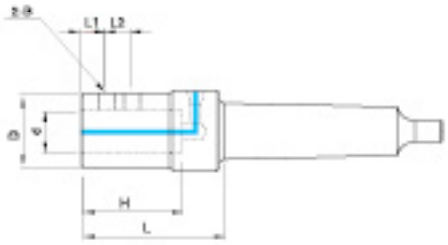
● DIN2080 / NT Side Lock Oil Feed Type

▶ NT-OMS

Code No.	Dimension(mm)								Component
	d	L	D	D1	H	L1	L2	M	B
NT40-OMS-20090	20	90	50	78	50	20	-	5/8-11UNC	M1215SS
NT40-OMS-25105	25	105	50	78	60	20	20		M1215SS
NT40-OMS-32110	32	110	65	98	70	20	20		M1415SS
NT50-OMS-20090	20	90	50	78	50	20	-	1"- 8UNC	M1215SS
NT50-OMS-25105	25	105	50	78	60	20	20		M1215SS
NT50-OMS-32105	32	105	65	98	70	20	20		M1415SS
NT50-OMS-40120	40	120	65	98	80	20	25		M1616SS
NT50-OMS-50145	50	145	90	123	90	35	35		M2020SS
NT40-OMS-20090M	20	90	50	78	50	20	-	M16	M1215SS
NT40-OMS-25105M	25	105	50	78	60	20	20		M1215SS
NT40-OMS-32110M	32	110	65	98	70	20	20		M1415SS
NT50-OMS-20090M	20	90	50	78	50	20	-	M24	M1215SS
NT50-OMS-25105M	25	105	50	78	60	20	20		M1215SS
NT50-OMS-32105M	32	105	65	98	70	20	20		M1415SS
NT50-OMS-40120M	40	120	65	98	80	20	25		M1616SS
NT50-OMS-50145M	50	145	90	123	90	35	35		M2020SS

※ It is a manual type internal oil hole holder with a special seal capable of long term operation without leakage.
(Max. 1,800RPM/refer to page 138)

SIDE LOCK ARBOR (STANDARD)
MT-SLA / MT-OMS

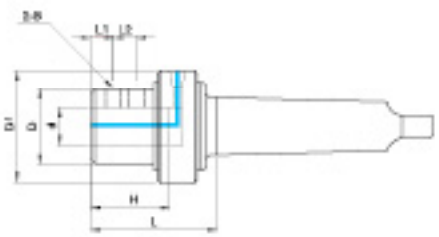


● DIN228B / MT Side Lock Type

▶ MT-SLA

Code No.	Dimension(mm)						Component
	d	L	D	H	L1	L2	B
MT4-SLA-32105	32	105	65	70	20	20	M1415SS
MT4-SLA-40105	40	105	65	80	20	25	M1620SS
MT5-SLA-32105	32	105	65	70	20	20	M1415SS
MT5-SLA-40105	40	105	65	80	20	25	M1620SS
MT5-SLA-50130	50	130	90	90	35	35	M2020SS

※ If a COTTER HOME is present, please make a separate assignment.



(Basic Component)

● DIN228B / MT Side Lock Oil Feed Type

▶ MT-OMS

Code No.	Dimension(mm)							Component
	d	L	D	D1	H	L1	L2	B
MT4-OMS-20080	20	80	50	78	50	20	-	M1215SS
MT4-OMS-25095	25	95	50	78	60	20	20	M1215SS
MT4-OMS-32100	32	100	65	98	70	20	20	M1415SS
MT5-OMS-20080	20	80	50	78	50	20	-	M1215SS
MT5-OMS-25095	25	95	50	78	60	20	20	M1215SS
MT5-OMS-32100	32	100	65	98	70	20	20	M1415SS
MT5-OMS-40110	40	110	65	98	80	20	25	M1616SS
MT5-OMS-50140	50	140	90	123	90	35	35	M2020SS
MT6-OMS-32105	32	105	65	98	70	20	20	M1415SS
MT6-OMS-40120	40	120	75	98	80	20	25	M1616SS
MT6-OMS-50140	50	140	90	123	90	35	35	M2020SS

※ It is a manual type internal oil hole holder with a special seal capable of long term operation without leakage.
(Max. 1,800RPM/refer to page 138)

Tool Holder

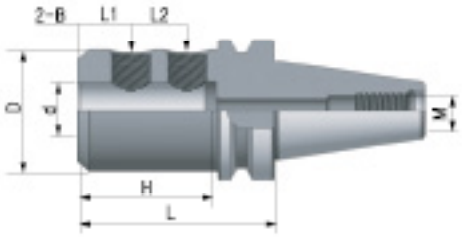
SIDE LOCK ARBOR

(WELDON-B)

※ CAUTION

Weldon-B Side Lock Arbor is not compatible with the Drill Sleeve. (P.115)

SIDE LOCK ARBOR (WELDON-B)
BT-WSA / BT-CMS

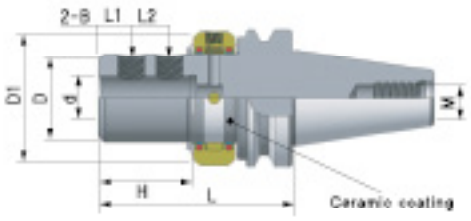


● MAS / BT Weldon-B Type

▶ BT-WSA

Code No.	Dimension(mm)							Component
	d	L	D	H	L1	L2	M	B
BT40-WSA-20070B	20	70	50	50	25	–	M16	M1617SS-P15
BT40-WSA-25090B	25	90	55	60	24	25		M1817SS-P20
BT40-WSA-32095B	32	95	65	70	24	28		M2017SS-P20
BT50-WSA-20085B	20	85	50	50	25	–	M24	M1617SS-P15
BT50-WSA-25105B	25	105	55	60	24	25		M1817SS-P20
BT50-WSA-32110B	32	110	65	70	24	28		M2017SS-P20
BT50-WSA-40120B	40	120	80	80	30	32		M2020SS-P20
BT50-WSA-50130B	50	130	90	80	35	35		M2420SS-P20

※ It can be used efficiently in equipment capable of cutting oil injection inside the spindle.



● MAS / BT Weldon-B Oil Feed Type

▶ BT-CMS

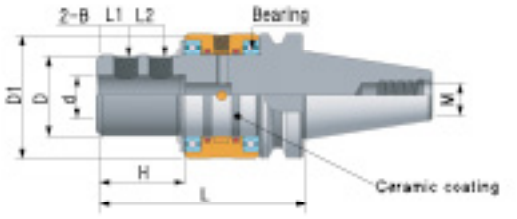
[Basic Component]

Code No.	Dimension(mm)								Component
	d	L	D	D1	H	L1	L2	M	B
BT40-CMS-20110B	20	110	50	83	50	25	–	M16	M1617SS-P15
BT40-CMS-25130B	25	130	55	88	60	24	25		M1817SS-P20
BT40-CMS-32135B	32	135	65	98	70	24	28		M2017SS-P20
BT50-CMS-20120B	20	120	50	83	50	25	–	M24	M1617SS-P15
BT50-CMS-25140B	25	140	55	88	62	24	25		M1817SS-P20
BT50-CMS-32145B	32	145	65	98	70	24	28		M2017SS-P20
BT50-CMS-40155B	40	155	80	113	80	30	32		M2020SS-P20
BT50-CMS-50170B	50	170	90	123	80	35	35		M2420SS-P20

※ It is a manual type internal oil hole holder with a special seal capable of long term operation without leakage.
(Max. 2,000RPM/refer to page 138)

※ The actual color of the Oil Cap is black.

SIDE LOCK ARBOR (WELDON-B)
BT-CMB / BT-CAW



(Basic Component)

● MAS / BT Weldon-B Oil Feed Bearing Type

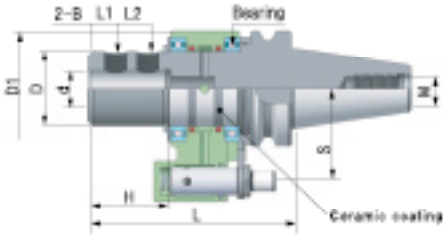
▶ BT-CMB

Code No.	Dimension(mm)								Component
	d	L	D	D1	H	L1	L2	M	B
BT40-CMB-20135B	20	135	50	82	50	25	-	M16	M1617SS-P15
BT40-CMB-25155B	25	155	55	90	60	24	25		M1817SS-P20
BT40-CMB-32165B	32	165	65	100	70	24	28		M2017SS-P20
BT50-CMB-20145B	20	145	50	82	50	25	-	M24	M1617SS-P15
BT50-CMB-25165B	25	165	55	90	60	24	25		M1817SS-P20
BT50-CMB-32170B	32	170	65	100	70	24	28		M2017SS-P20
★ BT50-CMB-40180B	40	180	65	100	80	30	32		M2020SS-P20
★ BT50-CMB-50190B	50	190	65	100	80	35	35		M2420SS-P20

★ : Couple type (Drill joint + Spindle joint)

The actual color of the Oil Cap is black

※ It is a manual type internal oil hole holder with a special seal capable of long term operation without leakage. (Max. 4,000RPM/refer to page 138)



● MAS / BT Weldon-B Auto Matic Type

▶ BT-CAW

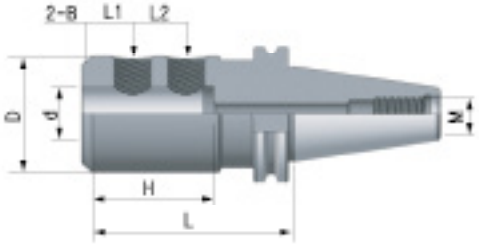
★ : Couple type (Drill joint + Spindle joint)

Code No.	Dimension(mm)									Component
	d	L	D	D1	H	L1	L2	M	S	B
BT40-CAW-20130B	20	130	50	80	50	25	-	M16	65	M1617SS-P15
★ BT40-CAW-25150B	25	150	58	80	60	24	25			M1817SS-P20
★ BT40-CAW-32155B	32	155	65	80	70	24	28			M2017SS-P20
BT50-CAW-20150B	20	150	50	100	50	25	-	M24	80	M1617SS-P15
BT50-CAW-25170B	25	170	55	100	60	24	25			M1817SS-P20
BT50-CAW-32180B	32	180	65	100	70	24	28			M2017SS-P20
★ BT50-CAW-40190B	40	190	65	100	80	30	32			M2020SS-P20
★ BT50-CAW-50200B	50	200	65	100	80	35	35			M2420SS-P20

※ It is a tool holder capable of Automatic Tool Change (ATC). Adjust the height and angle of the Position Pin prior to use. (P.139)

※ It has a bearing and seal with outstanding heat-resistant and abrasion resistive properties, making it capable of stable operation for extended durations without leakage even in high speeds. (Max. 4,000RPM)

SIDE LOCK ARBOR (WELDON-B)
SK-WSA / SK-CMS

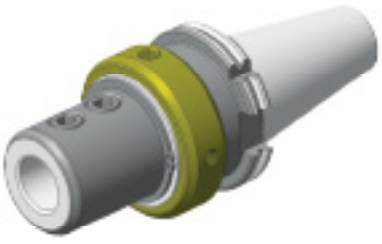


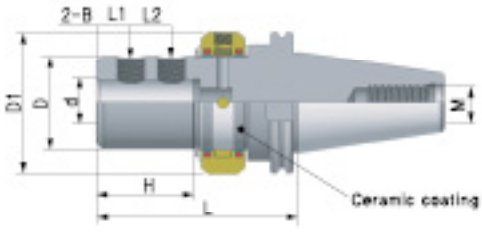
● DIN69871 / SK Weldon-B Type

▶ SK-WSA

Code No.	Dimension(mm)							Component
	d	L	D	H	L1	L2	M	B
SK40-WSA-20065B	20	65	50	50	25	-	M16	M1617SS-P15
SK40-WSA-25100B	25	100	55	60	24	25		M1817SS-P20
SK40-WSA-32105B	32	105	65	70	24	28		M2017SS-P20
SK50-WSA-20065B	20	65	50	50	25	-	M24	M1617SS-P15
SK50-WSA-25100B	25	100	55	60	24	25		M1817SS-P20
SK50-WSA-32105B	32	105	65	70	24	28		M2017SS-P20
SK50-WSA-40110B	40	110	80	80	30	32		M2020SS-P20
SK50-WSA-50125B	50	125	90	80	35	35		M2420SS-P20

※ It can be used efficiently in equipment capable of cutting oil injection inside the spindle.





● DIN69871 / SK Weldon-B Oil Feed Type

▶ SK-CMS

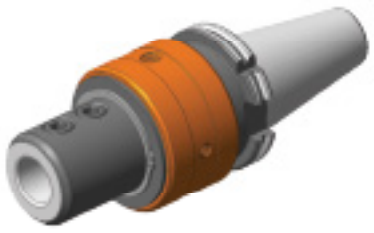
[Basic Component]

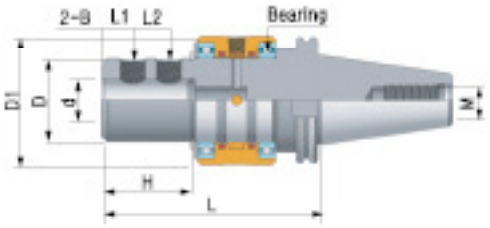
Code No.	Dimension(mm)								Component
	d	L	D	D1	H	L1	L2	M	B
SK40-CMS-20115B	20	115	50	83	50	25	-	M16	M1617SS-P15
SK40-CMS-25135B	25	135	55	88	60	24	25		M1817SS-P20
SK40-CMS-32140B	32	140	65	98	70	24	28		M2017SS-P20
SK50-CMS-20115B	20	115	50	83	50	25	-	M24	M1617SS-P15
SK50-CMS-25135B	25	135	55	88	62	24	25		M1817SS-P20
SK50-CMS-32140B	32	140	65	98	70	24	28		M2017SS-P20
SK50-CMS-40150B	40	150	80	113	80	30	32		M2020SS-P20
SK50-CMS-50165B	50	165	90	123	80	35	35		M2420SS-P20

※ It is a manual type internal oil hole holder with a special seal capable of long term operation without leakage.
(Max. 2,000RPM/refer to page 138)

※ The actual color of the Oil Cap is black

SIDE LOCK ARBOR (WELDON-B)
SK-CMB





● DIN69871 / SK Weldon-B Oil Feed Bearing Type

▶ SK-CMB

(Basic Component)

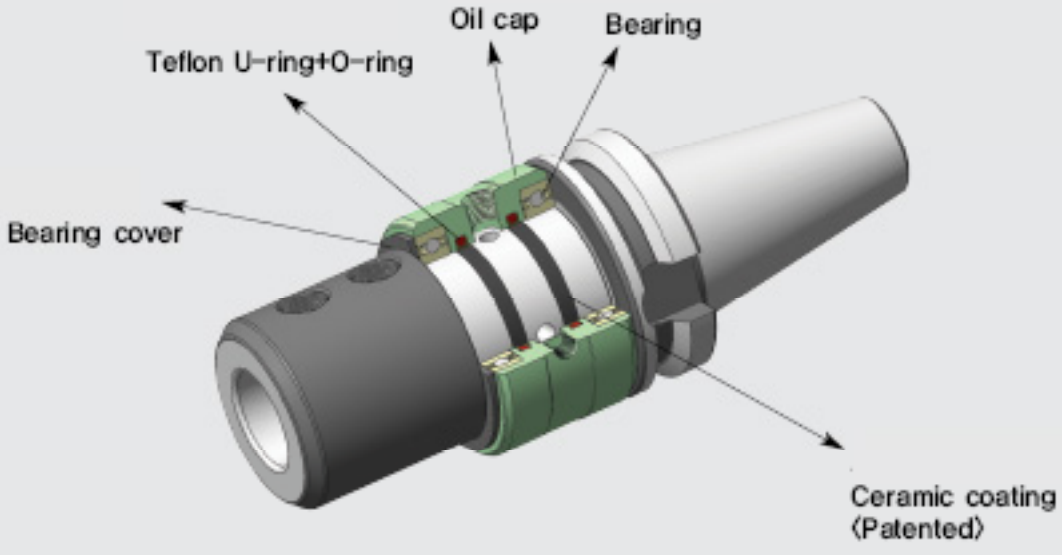
Code No.	Dimension(mm)								Component
	d	L	D	D1	H	L1	L2	M	B
SK40-CMB-20145B	20	145	50	82	50	25	–	M16	M1617SS-P15
SK40-CMB-25165B	25	165	55	90	60	24	25		M1817SS-P20
SK40-CMB-32170B	32	170	65	100	70	24	28		M2017SS-P20
SK50-CMB-20145B	20	145	50	82	50	25	–	M24	M1617SS-P15
SK50-CMB-25165B	25	165	55	90	62	24	25		M1817SS-P20
SK50-CMB-32170B	32	170	65	100	70	24	28		M2017SS-P20
★ SK50-CMB-40180B	40	180	80	100	80	30	32		M2020SS-P20
★ SK50-CMB-50190B	50	190	90	100	80	35	35		M2420SS-P20

★ :
★ : Couple type (Drill joint + Spindle joint)

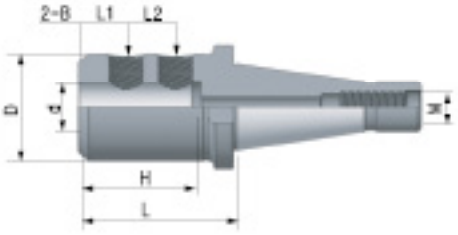
(Jack Oxid) The actual color of the Oil Cap is black.

※ It is a manual type internal oil hole holder with a special seal capable of long term operation without leakage. (Max. 4,000RPM/refer to page 138)

CMB ARBOR STRUCTURE



SIDE LOCK ARBOR (WELDON-B)
NT-WSA / NT-CMS

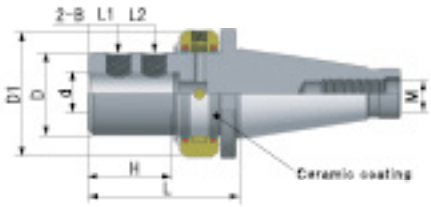


● DIN2080 / NT Weldon-B Type

▶ NT-WSA

Code No.	Dimension(mm)							Component
	d	L	D	H	L1	L2	M	B
NT40-WSA-20060B	20	60	50	50	25	-	5/8"-11UNC	M1617SS-P15
NT40-WSA-25080B	25	80	55	60	24	25		M1817SS-P20
NT40-WSA-32085B	32	85	65	70	24	28		M2017SS-P20
NT50-WSA-20065B	20	65	50	50	25	-	1"-8UNC	M1617SS-P15
NT50-WSA-25085B	25	85	55	60	24	25		M1817SS-P20
NT50-WSA-32090B	32	90	65	70	24	28		M2017SS-P20
NT50-WSA-40100B	40	100	80	80	30	32		M2020SS-P20
NT50-WSA-50110B	50	110	90	80	35	35		M2420SS-P20
NT40-WSA-20060MB	20	60	50	50	25	-	M16	M1617SS-P15
NT40-WSA-25080MB	25	80	55	60	24	25		M1817SS-P20
NT40-WSA-32085MB	32	85	65	70	24	28		M2017SS-P20
NT50-WSA-20065MB	20	65	50	50	25	-	M24	M1617SS-P15
NT50-WSA-25085MB	25	85	55	60	24	25		M1817SS-P20
NT50-WSA-32090MB	32	90	65	70	24	28		M2017SS-P20
NT50-WSA-40100MB	40	100	80	80	30	32		M2020SS-P20
NT50-WSA-50110MB	50	110	90	80	35	35		M2420SS-P20

※ It can be used efficiently in equipment capable of cutting oil injection inside the spindle.



● DIN2080 / NT Weldon-B Oil Feed Type

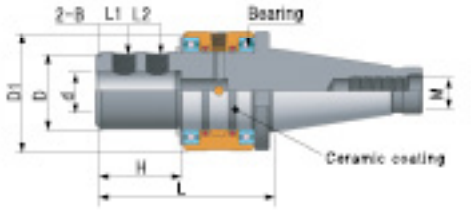
▶ NT-CMS

(Basic Component)

Code No.	Dimension(mm)								Component
	d	L	D	D1	H	L1	L2	M	B
NT40-CMS-20095B	20	95	50	83	50	25	-	5/8"-11UNC	M1617SS-P15
NT40-CMS-25115B	25	115	55	88	60	24	25		M1817SS-P20
NT40-CMS-32120B	32	120	65	98	70	24	28		M2017SS-P20
NT50-CMS-20095B	20	95	50	83	50	25	-	1"-8UNC	M1617SS-P15
NT50-CMS-25115B	25	115	55	88	62	24	25		M1817SS-P20
NT50-CMS-32120B	32	120	65	98	70	24	28		M2017SS-P20
NT50-CMS-40130B	40	130	80	113	80	30	32		M2020SS-P20
NT50-CMS-50140B	50	140	90	123	80	35	35		M2420SS-P20
NT40-CMS-20095MB	20	95	50	83	50	25	-	M16	M1617SS-P15
NT40-CMS-25115MB	25	115	55	88	60	24	25		M1817SS-P20
NT40-CMS-32120MB	32	120	65	98	70	24	28		M2017SS-P20
NT50-CMS-20095MB	20	95	50	83	50	25	-	M24	M1617SS-P15
NT50-CMS-25115MB	25	115	55	88	62	24	25		M1817SS-P20
NT50-CMS-32120MB	32	120	65	98	70	24	28		M2017SS-P20
NT50-CMS-40130MB	40	130	80	113	80	30	32		M2020SS-P20
NT50-CMS-50140MB	50	140	90	123	80	35	35		M2420SS-P20

The actual color of the Oil Cap is black

SIDE LOCK ARBOR (WELDON-B)
NT-CMB



(Basic Component)

● DIN2080 / NT Weldon-B Oil Feed Bearing Type

▶ NT-CMB

Code No.	Dimension(mm)								Component
	d	L	D	D1	H	L1	L2	M	B
NT40-CMB-20125B	20	125	50	82	50	25	–	5/8"-11UNC	M1617SS-P15
NT40-CMB-25145B	25	145	55	90	60	24	25		M1817SS-P20
NT40-CMB-32150B	32	150	65	100	70	24	28		M2017SS-P20
NT50-CMB-20125B	20	125	50	82	50	25	–	1"-8UNC	M1617SS-P15
NT50-CMB-25145B	25	145	55	90	60	24	25		M1817SS-P20
NT50-CMB-32150B	32	150	65	100	70	24	28		M2017SS-P20
★NT50-CMB-40160B	40	160	65	100	80	30	32		M2020SS-P20
★NT50-CMB-50170B	50	170	65	100	80	35	35		M2420SS-P20
NT40-CMB-20125MB	20	125	50	82	50	25	–	M16	M1617SS-P15
NT40-CMB-25145MB	25	145	55	90	60	24	25		M1817SS-P20
NT40-CMB-32150MB	32	150	65	100	70	24	28		M2017SS-P20
NT50-CMB-20125MB	20	125	50	82	50	25	–	M24	M1617SS-P15
NT50-CMB-25145MB	25	145	55	90	60	24	25		M1817SS-P20
NT50-CMB-32150MB	32	150	65	100	70	24	28		M2017SS-P20
★NT50-CMB-40160MB	40	160	65	100	80	30	32		M2020SS-P20
★NT50-CMB-50170MB	50	170	65	100	80	35	35		M2420SS-P20

(Max. 4,000RPM/138

[lack Oxid] The actual color of the Oil Cap is black

※ It is a manual type internal oil hole holder with a special seal capable of long term operation without leakage. (Max. 4,000RPM/refer to page 138)

★ : Couple type (Drill joint + Spindle joint)

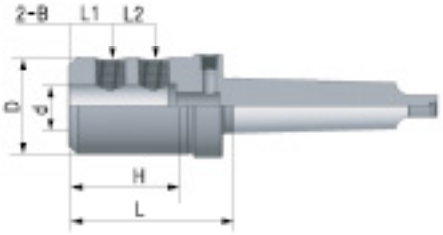
CMB, CAW ARBOR CHARACTERISTIC

▣ Asthe part of arbor body touched with teflon was treated by ceramic coating, The arbor lofe is much more upgraded

▣ The sliding nature of teflon is improved by adding the special ingredient.

▣ It is possible to turn with high speed by installing the bearings.(max. 4,000)

▣ The shank locking system was followed DIN regulation.

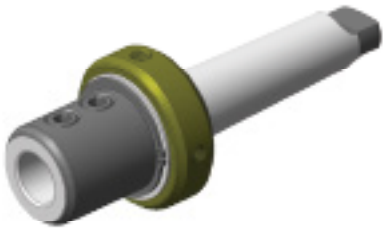


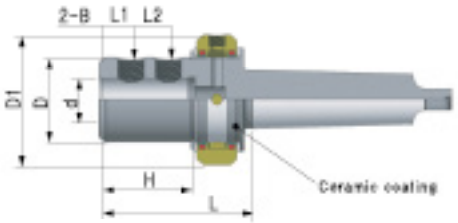
● DIN228B / MT Weldon-B Type

▶ MT-WSA

Code No.	Dimension(mm)						Component
	d	L	D	H	L1	L2	B
MT4-WSA-20075B	20	75	50	50	25	-	M1617SS-P15
MT4-WSA-25095B	25	95	55	60	24	25	M1817SS-P20
MT4-WSA-32105B	32	105	65	70	24	28	M2017SS-P20
MT5-WSA-20080B	20	80	50	50	25	-	M1617SS-P15
MT5-WSA-25100B	25	100	55	60	24	25	M1817SS-P20
MT5-WSA-32105B	32	105	65	70	24	28	M2017SS-P20
MT5-WSA-40115B	40	115	80	80	30	32	M2020SS-P20
MT6-WSA-32105B	32	105	65	50	25	-	M2017SS-P20
MT6-WSA-40115B	40	115	80	60	24	25	M2020SS-P20
MT6-WSA-50125B	50	125	90	70	24	28	M2420SS-P20

※ If a COTTER HOME is present, please make a separate assignment.





● DIN228B / MT Weldon-B Oil Feed Type

(Basic Component)

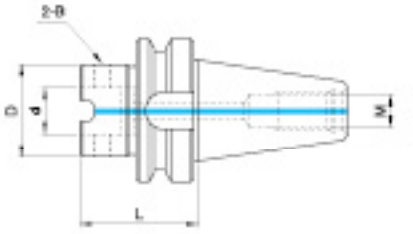
▶ MT-CMS

Code No.	Dimension(mm)							Component
	d	L	D	D1	H	L1	L2	B
MT4-CMS-20085B	20	85	50	83	50	25	-	M1617SS-P15
MT4-CMS-25110B	25	110	55	88	60	24	25	M1817SS-P20
MT4-CMS-32115B	32	115	65	88	70	24	28	M2017SS-P20
MT5-CMS-25110B	25	110	55	88	60	24	25	M1617SS-P15
MT5-CMS-32115B	32	115	65	98	70	24	28	M1817SS-P20
MT5-CMS-40125B	40	125	80	98	80	30	32	M2017SS-P20
MT6-CMS-32120B	32	120	65	98	50	25	-	M2017SS-P20
MT6-CMS-40130B	40	130	80	98	60	24	25	M2020SS-P20
MT6-CMS-50140B	50	140	90	98	70	24	28	M2420SS-P20

※ The actual color of the Oil Cap is black

Tool Holder

MX MODULAR SYSTEM

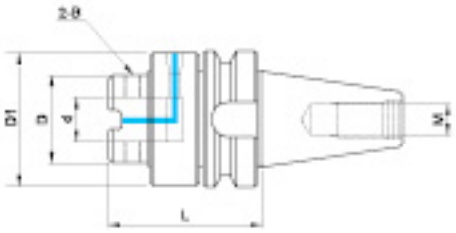


● MAS403 / BT MX Modular Type

▶ BT-MXA

Code No.	Dimension(mm)				Component
	d	L	D	M	B
BT40-MXA-32060	32	60	58	M16	MTB-12195
BT50-MXA-32070	32	70	58	M24	
BT50-MXA-50080	50	80	80	M24	MTB-16260

※ It can be used efficiently in equipment capable of cutting oil injection inside the spindle.



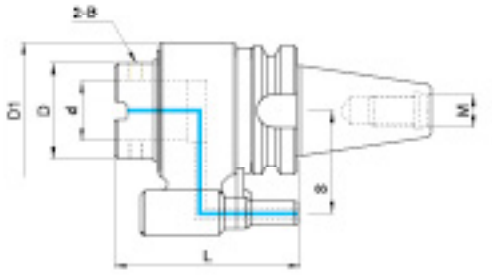
● MAS403 / BT MX Modular Oil Feed Type

▶ BT-OMX

Code No.	Dimension(mm)					Component
	d	L	D	D1	M	B
BT40-OMX-32095	32	95	65	98	M16	MTB-12175
BT50-OMX-32100	32	100	65	98	M24	
BT50-OMX-50110	50	110	80	115	M24	MTB-16225

※ It is a manual type internal oil hole holder with a special seal capable of long term operation without leakage.
(Max. 1,800RPM/refer to page 138)

(Max. 1,800RPM/138



● MAS403 / BT MX Modular Auto Matic Type

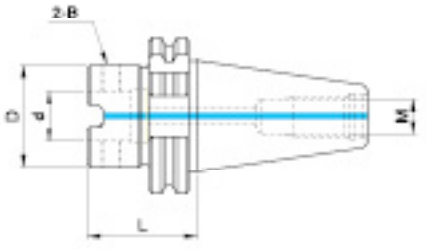
▶ BT-OAX

Code No.	Dimension(mm)						Component
	d	L	D	D1	S	M	B
BT40-OAX-32120	32	120	65	80	65	M16	MTB-12175
BT50-OAX-32145	32	145	65	98	80	M24	
BT50-OAX-50150	50	150	80	98	80	M24	MTB-16225

(Position Pin)

※ It is a tool holder capable of Automatic Tool Change (ATC). Adjust the height and angle of the Position Pin prior to use. (P.139)

※ It has a bearing and seal with outstanding heat-resistant and abrasion resistive properties, making it capable of stable operation for extended durations without leakage even in high speeds. (Max. 3,200RPM)

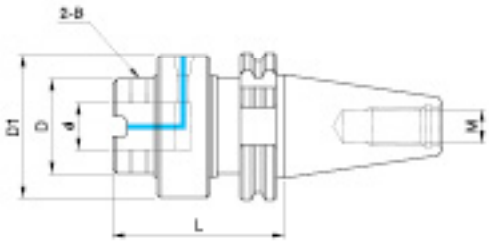


● DIN69871 Form AD / MX Modular Type

▶ SK-MXA

Code No.	Dimension(mm)				Component
	d	L	D	M	B
SK40-MXA-32065	32	60	58	M16	MTB-12195
SK50-MXA-32070	32	70	58	M24	
SK50-MXA-50070	50	70	80	M24	MTB-16260

※ It can be used efficiently in equipment capable of cutting oil injection inside the spindle.

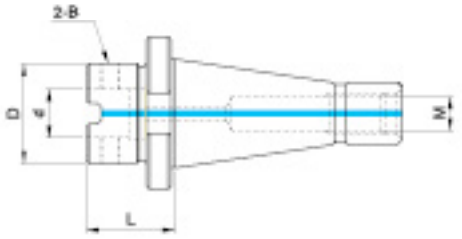


● DIN69871 Form AD / MX Modular Oil Feed Type

▶ SK-OMX

Code No.	Dimension(mm)					Component
	d	L	D	D1	M	B
SK40-OMX-32100	32	100	65	98	M16	MTB-12195
SK50-OMX-32100	32	100	65	98	M24	
SK50-OMX-50110	50	110	80	115	M24	MTB-16260

※ It is a manual type internal oil hole holder with a special seal capable of long term operation without leakage.
(Max. 1,800RPM/refer to page 138)

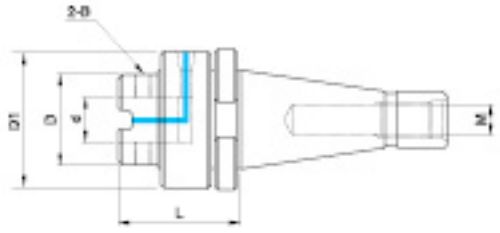


● DIN2080 / MX Modular Type

▶ NT-MXA

Code No.	Dimension(mm)				Component
	d	L	D	M	B
NT40-MXA-32050	32	50	58	5/8"-11UNC	MTB-12195
NT50-MXA-32050	32	50	58	1"-8UNC	
NT50-MXA-50080	50	80	80	1"-8UNC	MTB-16260
NT40-MXA-32050M	32	50	58	M16	MTB-12195
NT50-MXA-32050M	32	50	58	M24	
NT50-MXA-50080M	50	80	80	M24	MTB-16260

※ It can be used efficiently in equipment capable of cutting oil injection inside the spindle.

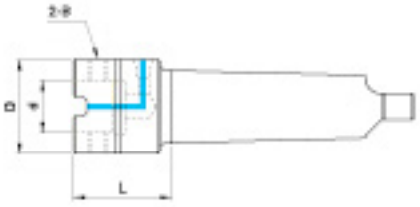


● DIN2080 / MX Modular Oil Feed Type

▶ NT-OMX

Code No.	Dimension(mm)					Component
	d	L	D	D1	M	B
NT40-OMX-32080	32	80	65	98	5/8"-11UNC	MTB-12195
NT50-OMX-32080	32	80	65	98	1"-8UNC	
NT50-OMX-50085	50	85	80	115	1"-8UNC	MTB-16260
NT40-OMX-32080M	32	80	65	98	M16	MTB-12195
NT50-OMX-32080M	32	80	65	98	M24	
NT50-OMX-50085M	50	85	80	115	M24	MTB-12195

※ It is a manual type internal oil hole holder with a special seal capable of long term operation without leakage.
(Max. 1,800RPM/refer to page 138)

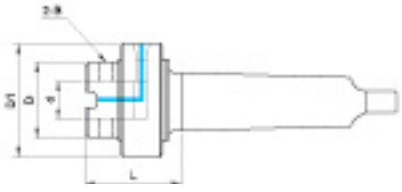


● DIN228B / MX Modular Type

▶ MT-MXA

Code No.	Dimension(mm)			Component
	d	L	D	B
MT4-MXA-32060	32	60	58	MTB-12195
MT5-MXA-32060	32	60	58	
MT5-MXA-50080	50	80	80	MTB-16260
MT6-MXA-32065	32	65	58	MTB-12195
MT6-MXA-50080	50	80	80	MTB-16260

※ If a COTTER HOME is present, please make a separate assignment.



● DIN228B / MX Modular Oil Feed Type

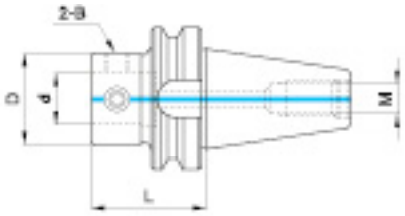
▶ MT-OMX

Code No.	Dimension(mm)				Component
	d	L	D	D1	B
MT4-OMX-32075	32	75	65	98	MTB-12195
MT5-OMX-32075	32	75	65	98	
MT5-OMX-50085	50	85	80	115	MTB-16260
MT6-OMX-32075	32	75	65	98	MTB-12195
MT6-OMX-50085	50	85	80	115	MTB-16260

※ If a COTTER HOME is present, please make a separate assignment.
※ It is a manual type internal oil hole holder with a special seal capable of long term operation without leakage.
(Max. 1,800RPM/refer to page 138)

Tool Holder

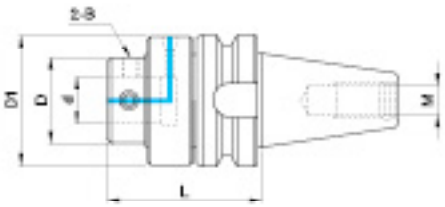
EXT MODULAR SYSTEM



● MAS403 / BT EXT Standard Holder

▶ BT-ETA

Code No.	Dimension(mm)				Component
	D	d	L	M	B
BT30-ETA-22045	40	22	45	M12	MTB-10145
BT30-ETA-28055	50	28	55		MTB-12175
BT40-ETA-22055	40	22	55	M16	MTB-10145
BT40-ETA-28055	50	28	55		MTB-12175
BT40-ETA-36055	63	36	55		MTB-16225
BT50-ETA-22065	40	22	65	M24	MTB-10145
BT50-ETA-28070	50	28	70		MTB-12175
BT50-ETA-36080	63	36	80		MTB-16225
BT50-ETA-45080	80	45	80		MTB-16260
BT50-ETA-55080	100	55	80		MTB-20330

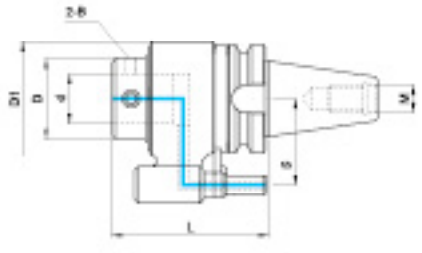


● MAS403 / BT EXT Modular Oil Feed Type

▶ BT-OME

Code No.	Dimension(mm)					Component
	d	L	D	D1	M	B
BT40-OME-22090	22	90	50	78	M16	MTB-10145
BT40-OME-28095	28	95	50	78		MTB-12175
BT40-OME-36100	36	100	65	98		MTB-16225
BT50-OME-22105	22	105	50	78	M24	MTB-10145
BT50-OME-28105	28	105	50	78		MTB-12175
BT50-OME-36120	36	120	65	98		MTB-16225
BT50-OME-45120	45	120	80	115		MTB-16260

※ It is a manual type internal oil hole holder with a special seal capable of long term operation without leakage.
(Max. 1800RPM/refer to page 138)



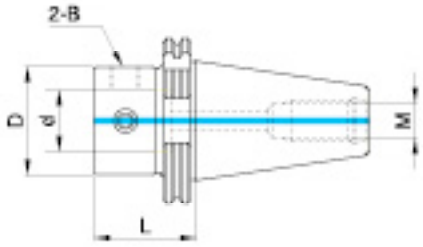
● MAS403 / BT EXT Modular Auto Matic Type

▶ BT- OAE

Code No.	Dimension(mm)						Component
	d	L	D	D1	S	M	B
BT40-OAE-22110	22	110	55	80	65	M16	MTB-10145
BT40-OAE-28115	28	115	55				MTB-12175
BT40-OAE-36120	36	120	65				MTB-16225
BT50-OAE-22135	22	135	55	100	80	M24	MTB-10145
BT50-OAE-28135	28	135	55				MTB-12175
BT50-OAE-36145	36	145	65				MTB-16225
BT50-OAE-45145	45	145	80				MTB-16260

※ It is a tool holder capable of Automatic Tool Change (ATC). Adjust the height and angle of the Position Pin prior to use. (P.139)

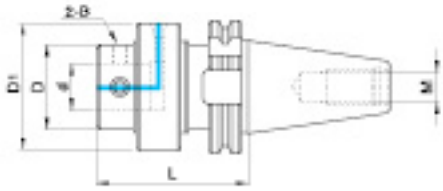
※ It has a bearing and seal with outstanding heat-resistant and abrasion resistive properties, making it capable of stable operation for extended durations without leakage even in high speeds. (Max. 3,200RPM)



● DIN69871 / SK EXT Standard Type

▶ SK-ETA

Code No.	Dimension(mm)				Component
	D	d	L	M	B
SK40-ETA-22045	40	22	45	M16	MTB-10145
SK40-ETA-28050	50	28	50		MTB-12175
SK40-ETA-36065	63	36	65		MTB-16225
SK50-ETA-22045	40	22	45	M24	MTB-10145
SK50-ETA-28050	50	28	50		MTB-12175
SK50-ETA-36060	63	36	60		MTB-16225
SK50-ETA-45060	80	45	60		MTB-16260

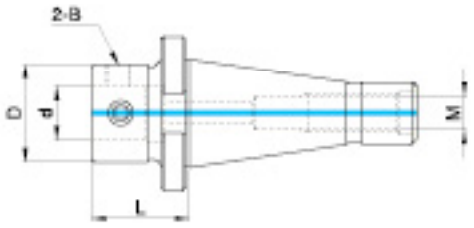


● DIN69871 / SK EXT Modular Oil Feed Type

▶ SK-OME

Code No.	Dimension(mm)					Component
	d	L	D	D1	M	B
SK40-OME-22095	22	95	50	78	M16	MTB-10145
SK40-OME-28100	28	100	50	78		MTB-12175
SK40-OME-36105	36	105	65	98		MTB-16225
SK50-OME-22090	22	90	50	78	M24	MTB-10145
SK50-OME-28105	28	105	50	78		MTB-12175
SK50-OME-36105	36	105	65	98		MTB-16225
SK50-OME-45105	45	105	80	115		MTB-16260

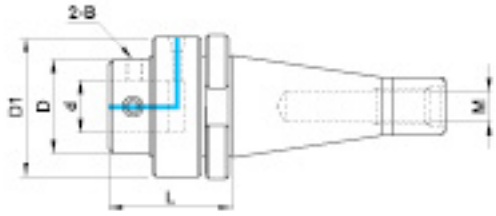
※ It is a manual type internal oil hole holder with a special seal capable of long term operation without leakage.
(Max. 1900RPM/refer to page 138)



● DIN2080 / NT EXT Standard Holder Type

▶ NT-ETA

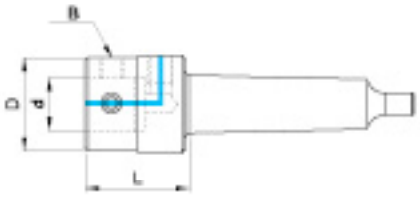
Code No.	Dimension(mm)				Component
	D	d	L	M	B
NT40-ETA-22040	40	22	40	5/8"-11UNC	MTB-10145
NT40-ETA-28045	50	28	45		MTB-12175
NT40-ETA-36065	63	36	65		MTB-16225
NT50-ETA-28055	50	28	55	1"-8UNC	MTB-12175
NT50-ETA-36060	63	36	60		MTB-16225
NT50-ETA-45060	80	45	60		MTB-16260
NT40-ETA-22040M	40	22	40	M16	MTB-10145
NT40-ETA-28045M	50	28	45		MTB-12175
NT40-ETA-36065M	63	36	65		MTB-16225
NT50-ETA-28055M	50	28	55	M24	MTB-12175
NT50-ETA-36060M	63	36	60		MTB-16225
NT50-ETA-45060M	80	45	60		MTB-16260



● DIN2080 / NT EXT Modular Oil Feed Type

▶ NT-OME

Code No.	Dimension(mm)					Component
	d	L	D	D1	M	B
NT40-OME-22075	22	75	50	78	5/8"-11UNC	MTB-10145
NT40-OME-28080	28	80	50	78		MTB-12175
NT40-OME-36090	36	90	65	98		MTB-16225
NT50-OME-22080	22	80	50	78	1"-8UNC	MTB-10145
NT50-OME-28080	28	80	50	78		MTB-12175
NT50-OME-36090	36	90	65	98		MTB-16225
NT50-OME-45090	45	90	80	115		MTB-16280
NT40-OME-22075M	22	75	50	78	M16	MTB-10145
NT40-OME-28080M	28	80	50	78		MTB-12175
NT40-OME-36090M	36	90	65	98		MTB-16225
NT50-OME-22080M	22	80	50	78	M24	MTB-10145
NT50-OME-28080M	28	80	50	78		MTB-12175
NT50-OME-36090M	36	90	65	98		MTB-16225
NT50-OME-45090M	45	90	80	115		MTB-16280

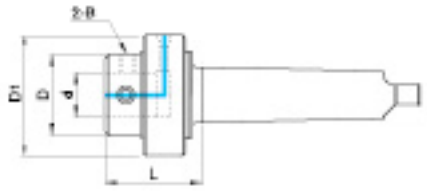


● DIN228B / MT EXT Standard Type

▶ MT-ETA

Code No.	Dimension(mm)			Component
	D	d	L	B
MT4-ETA-22045	40	22	45	MTB-10145
MT4-ETA-28060	50	28	60	MTB-12175
MT4-ETA-36065	63	36	65	MTB-16225
MT5-ETA-22045	40	22	45	MTB-10145
MT5-ETA-28060	50	28	60	MTB-12175
MT5-ETA-36065	63	36	65	MTB-16225
MT5-ETA-45075	80	45	75	MTB-16260
MT6-ETA-36065	63	36	65	MTB-16225
MT6-ETA-45075	80	45	75	MTB-16260

※ If a COTTER HOME is present, please make a separate assignment.



● DIN228B / MT EXT Modular Oil Feed Type

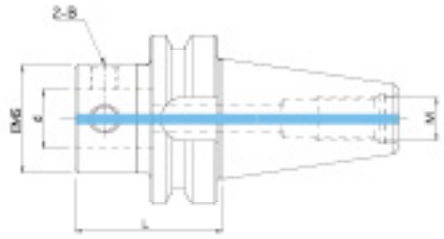
▶ MT-OME

Code No.	Dimension(mm)				Component
	d	L	D	D1	B
MT4-OME-22065	22	65	50	78	MTB-10145
MT4-OME-28075	28	75	50	78	MTB-12175
MT4-OME-36080	36	80	65	98	MTB-16225
MT5-OME-22065	22	65	50	78	MTB-10145
MT5-OME-28075	28	75	50	78	MTB-12175
MT5-OME-36080	36	80	65	98	MTB-16225
MT5-OME-45085	45	85	80	115	MTB-16260
MT6-OME-22070	22	70	50	78	MTB-10145
MT6-OME-28075	28	75	50	78	MTB-12175
MT6-OME-36085	36	85	65	98	MTB-16225
MT6-OME-45085	45	85	80	115	MTB-16260

※ It is a manual type internal oil hole holder with a special seal capable of long term operation without leakage.
(Max. 1800RPM/refer to page 138)

Tool Holder

EMS MODULAR SYSTEM

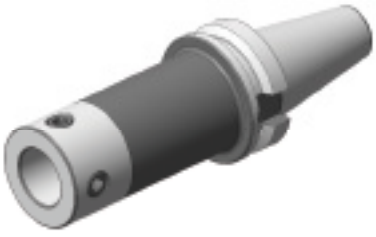


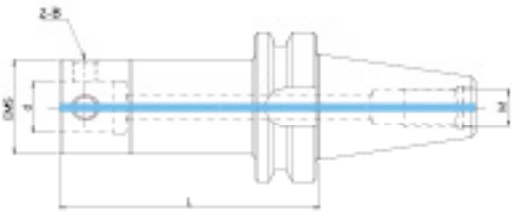
● MAS403 / BT EMS Standard Type Holder

▶ BT-ETA (standard)

Group	Code No.	Dimension(mm)				Component
		EMS	d	L	M	B
EMS25	BT40-ETA-14050	25	14	50	M16	MTB-06085
EMS32	BT40-ETA-18055	32	18	55		MTB-08115
EMS40	BT40-ETA-22055	40	22	55		MTB-10145
EMS50	BT40-ETA-28055	50	28	55		MTB-12175
EMS25	BT50-ETA-14060	25	14	60	M24	MTB-06085
EMS32	BT50-ETA-18065	32	18	65		MTB-08115
EMS40	BT50-ETA-22065	40	22	65		MTB-10145
EMS50	BT50-ETA-28070	50	28	70		MTB-12175
EMS63	BT50-ETA-36080	63	36	80		MTB-16225
EMS80	BT50-ETA-45080	80	45	80		MTB-16260

※ EMS Modular Standard Type Holder is used for boring tools, and it is interchangeable with EXT Modular Drills (MCD, TMD).



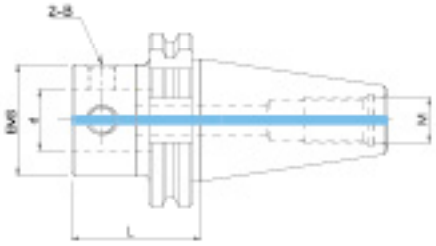


● MAS403 / BT EMS Long Type Holder

▶ BT-ETA (Long)

Group	Code No.	Dimension(mm)				Component
		EMS	d	L	M	B
EMS25	BT40-ETA-14080	25	14	80	M16	MTB-06085
EMS32	BT40-ETA-18095	32	18	95		MTB-08115
EMS40	BT40-ETA-22110	40	22	110		MTB-10145
EMS50	BT40-ETA-28130	50	28	130		MTB-12175
EMS25	BT50-ETA-14090	25	14	90	M24	MTB-06085
EMS32	BT50-ETA-18105	32	18	105		MTB-08115
EMS40	BT50-ETA-22120	40	22	120		MTB-10145
EMS50	BT50-ETA-28140	50	28	140		MTB-12175
EMS63	BT50-ETA-36165	63	36	165		MTB-16225
EMS80	BT50-ETA-45200	80	45	200		MTB-16260

※ EMS Modular Long Type Holder is used for boring tools, and please do not use for EXT Modular Drills (MCD, TMD).

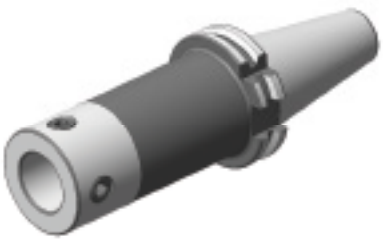


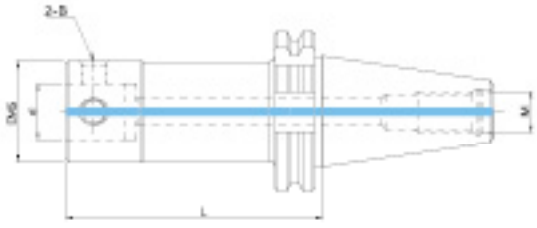
● DIN69871 / SK EMS Standard Type Holder

▶ SK-ETA (Standard)

Group	Code No.	Dimension(mm)				Component
		EMS	d	L	M	B
EMS25	SK40-ETA-14040	25	14	40	M16	MTB-06085
EMS32	SK40-ETA-18045	32	18	45		MTB-08115
EMS40	SK40-ETA-22045	40	22	45		MTB-10145
EMS50	SK40-ETA-28050	50	28	50		MTB-12175
EMS25	SK50-ETA-14040	25	14	40	M24	MTB-06085
EMS32	SK50-ETA-18045	32	18	45		MTB-08115
EMS40	SK50-ETA-22045	40	22	45		MTB-10145
EMS50	SK50-ETA-28050	50	28	50		MTB-12175
EMS63	SK50-ETA-36060	63	36	60		MTB-16225
EMS80	SK50-ETA-45060	80	45	60		MTB-16260

※ EMS Modular Standard Type Holder is used for boring tools, and it is interchangeable with EXT Modular Drills (MCD, TMD).



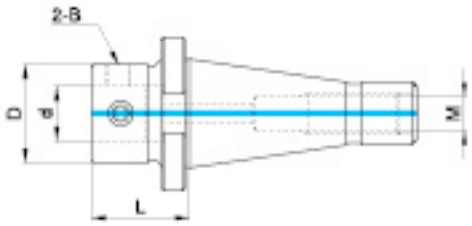


● DIN69871 / SK EMS Long Type Holder

▶ SK-ETA (Long)

Group	Code No.	Dimension(mm)				Component
		EMS	d	L	M	B
EMS25	SK40-ETA-14070	25	14	70	M16	MTB-06085
EMS32	SK40-ETA-18085	32	18	85		MTB-08115
EMS40	SK40-ETA-22100	40	22	100		MTB-10145
EMS50	SK40-ETA-28120	50	28	120		MTB-12175
EMS25	SK50-ETA-14070	25	14	70	M24	MTB-06085
EMS32	SK50-ETA-18085	32	18	85		MTB-08115
EMS40	SK50-ETA-22100	40	22	100		MTB-10145
EMS50	SK50-ETA-28120	50	28	120		MTB-12175
EMS63	SK50-ETA-36145	63	36	145		MTB-16225
EMS80	SK50-ETA-45180	80	45	180		MTB-16260

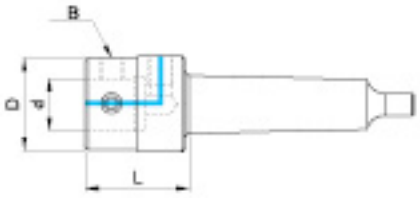
※ EMS Modular Long Type Holder is used for boring tools, and please do not use for EXT Modular Drills (MCD, TMD).



● DIN2080 / NT EMS Standard Type Holder

▶ NT-ETA

Group	Code No.	Dimension(mm)				Component
		EMS	d	L	M	B
EMS40	NT40-ETA-22040	40	22	40	5/8"-11UNC	MTB-10145
EMS50	NT40-ETA-28045	50	28	45		MTB-12175
EMS63	NT40-ETA-36065	63	36	65		MTB-16225
EMS50	NT50-ETA-28055	50	28	55	1"-8UNC	MTB-12175
EMS63	NT50-ETA-36060	63	36	60		MTB-16225
EMS80	NT50-ETA-45060	80	45	60		MTB-16260
EMS40	NT40-ETA-22040M	40	22	40	M16	MTB-10145
EMS50	NT40-ETA-28045M	50	28	45		MTB-12175
EMS63	NT40-ETA-36065M	63	36	65		MTB-16225
EMS50	NT50-ETA-28055M	50	28	55	M24	MTB-12175
EMS63	NT50-ETA-36060M	63	36	60		MTB-16225
EMS80	NT50-ETA-45060M	80	45	60		MTB-16260



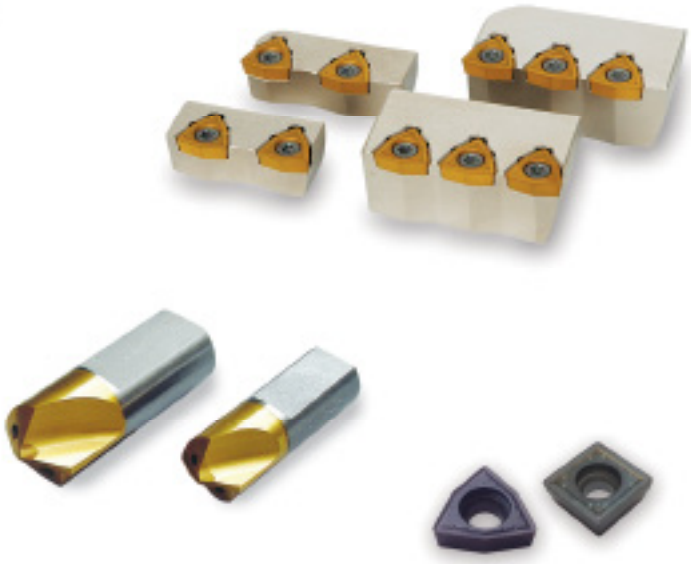
● DIN228B / MT EMS Standard Type Holder

▶ MT-ETA

Group	Code No.	Dimension(mm)			Component
		EMS	d	L	B
EMS40	MT4-ETA-22045	40	22	45	MTB-10145
EMS50	MT4-ETA-28060	50	28	60	MTB-12175
EMS63	MT4-ETA-36065	63	36	65	MTB-16225
EMS40	MT5-ETA-22045	40	22	45	MTB-10145
EMS50	MT5-ETA-28060	50	28	60	MTB-12175
EMS63	MT5-ETA-36065	63	36	65	MTB-16225
EMS80	MT5-ETA-45075	80	45	75	MTB-16260
EMS63	MT6-ETA-36065	63	36	65	MTB-16225
EMS80	MT6-ETA-45075	80	45	75	MTB-16260

※ If a COTTER HOME is present, please make a separate assignment.

ACCESSORIES



Inner	Outer	Insert	Screw	Driver	For Drill
HSC-5965N	HSC-5965T	WCMX06T308	TSB-35090	T-15	HSD-5965..D
HSC-6570N	HSC-6570T				HSD-6570..D
HSC-7075N	HSC-7075T				HSD-7075..D
HSC-7580N	HSC-7580T				HSD-7580..D
VMC-045050N	VMC-045050T	WCMX030204	TSB-22045	T-6	VMD-045050
VMC-050055N	VMC-050055T				VMD-050055
VMC-055060N	VMC-055060T	WCMX040204	TSB-25055	T-8	VMD-055060
VMC-060065N	VMC-060065T	WCMX050308	TSB-30070		VMD-060065, VLT·VSD-6065
VMC-065070N	VMC-065070T				VMD-065070, VLT·VSD-6570
VMC-070075N	VMC-070075T				VMD-070075, VLT·VSD-7075
VMC-075080N	VMC-075080T	WCMX06T308	TSB-35090	T-15	VMD-075080, VLT·VSD-7580
VMC-080085N	VMC-080085T				VMD-080085
VMC-085090N	VMC-085090T				VMD-085090
VMC-090095N	VMC-090095T				VMD-090095
VMC-095100N	VMC-095100T				VMD-095100
VMC-100105N	VMC-100105T	WCMX050308	TSB-30070	T-8	VMD-100105
VMC-105110N	VMC-105110T	WCMX06T308	TSB-35090	T-15	VMD-105110
VMC-110115N	VMC-110115T				VMD-110115
VMC-115120N	VMC-115120T				VMD-115120
VMC-120125N	VMC-120125T				VMD-120125
VMC-125130N	VMC-125130T				VMD-125130
VMC-130135N	VMC-130135T				VMD-130135
VMC-135140N	VMC-135140T				VMD-135140
VMC-140150N	VMC-140150T	WCMX080408	TSB-40110		VMD-140150
VMC-150160N	VMC-150160T				VMD-150160
VMC-160170N	VMC-160170T				VMD-160170
VMC-170180N	VMC-170180T				VMD-170180

※ Please place an order shorten the length of outer cartridge if smaller diameter is needed.
(ex : ø77=by 1.5mm cutting MDC-075080T)

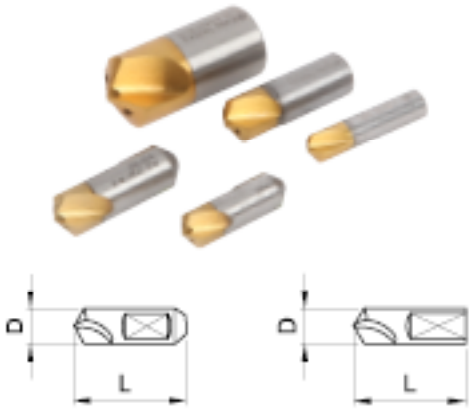
Inner	Outer	Insert	Screw	Driver	For Drill
HDC-5965N	HDC-5965T	WCMX06T308	TSB-35090	T-15	SFD·MCD-5965..D
MDC-045050N	MDC-045050T	WCMX030204	TSB-22045	T-6	MXD-045050
MDC-050055N	MDC-050055T				MXD-050055
MDC-055060N	MDC-055060T	WCMX040204	TSB-25055	T-8	MXD-055060
MDC-060065N	MDC-060065T	WCMX050308	TSB-30070	T-15	MXD-060065
MDC-065070N	MDC-065070T				MXD-065070, TSD·TMD-6570..D
MDC-070075N	MDC-070075T				MXD-070075, TSD·TMD-7075..D
MDC-075080N	MDC-075080T	WCMX06T308	TSB-35090		MXD-075080, TSD·TMD-7580..D
MDC-080085N	MDC-080085T				MXD-080085, SFD·MCD-6570..D
MDC-085090N	MDC-085090T				MXD-085090, SFD·MCD-7075..D
MDC-090095N	MDC-090095T				MXD-090095, SFD·MCD-7580..D
MDC-095100N	MDC-095100T				MXD-095100
MDC-100105N	MDC-100105T	WCMX050308	TSB-30070	T-8	MXD-100105
MDC-105110N	MDC-105110T	WCMX06T308	TSB-35090	T-15	MXD-105110
MDC-110115N	MDC-110115T				MXD-110115
MDC-115120N	MDC-115120T				MXD-115120
MDC-120125N	MDC-120125T				MXD-120125
MDC-125130N	MDC-125130T				MXD-125130
MDC-130135N	MDC-130135T				MXD-130135
MDC-135140N	MDC-135140T				MXD-135140
MDC-140150N	MDC-140150T	WCMX080408	TSB-40110		MXD-140150
MDC-150160N	MDC-150160T				MXD-150160
MDC-160170N	MDC-160170T				MXD-160170
MDC-170180N	MDC-170180T				MXD-170180

※ Please place an order shorten the length of outer cartridge if smaller diameter is needed.
(ex : ø77=by 1.5mm cutting MDC-075080T)

Inner	Outer	Insert	Insert Screw	Torx Driver	Clamping Bolt For Cartridge	For Drill
VLC-410450N	VLC-000410T	WCMX06T308	TSB-35078	T-15	M0510HC-W	VLT(VSD)-4145..D
	VLC-000420T					
	VLC-000430T					
	VLC-000440T					
	VLC-000450T					
VLC-460500N	VLC-000460T					VLT(VSD)-4650..D
	VLC-000470T					
	VLC-000480T					
	VLC-000490T					
	VLC-000500T					
VLC-510550N	VLC-000510T	WCMX080408	TSB-40110		M0614HC-W	VLT(VSD)-5155..D
	VLC-000520T					
	VLC-000530T					
	VLC-000540T					
	VLC-000550T					
VLC-560590N	VLC-000560T					VLT(VSD)-5659..D
	VLC-000570T					
	VLC-000580T					
	VLC-000590T					

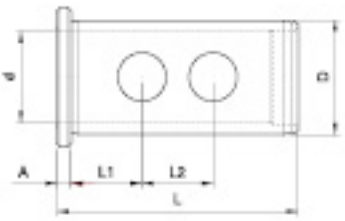
※ Adjustable 1mm unit when you replace individual outer cartridge(1mm)

Inner	Outer	Insert	Insert Screw	Torx Driver	Clamping Bolt For Cartridge	For Drill
TDC-W0503N	TDC-W0503T	WCMX050308	TSB-30070	T-8	M0412BH-W	TPD-040..D~TPD-055..D
TDC-W06T3N	TDC-W06T3T	WCMX06T308	TSB-35090	T-15	M0614HC-W	TPD-060..D~TPD-110..D



Code No.	D	L	For Drill
PLD-V0630 TiN	6	30	VLT, TSD, TMD
PLD-V0835 TiN	8	35	VLT, TSD, TMD
PLD-V1035 TiN-H	10	35	VMD, VLT, MXD, TSD, TMD
PLD-V1238 TiN-H	12	38	VMD, VLT, MXD, TSD, TMD
PLD-V1645 TiN-H	16	45	VMD, VLT, MXD, TSD, TMD
PLD-2045 TiN-H	20	45	VMD, MXD
PLD-2556 TiN-H	25	56	VMD, MXD
PLD-3068 TiN-H	30	68	VMD, MXD
PLD-0620 TiN	6	20	VSD, FXD
PLD-0825 TiN	8	25	VSD, FXD
PLD-1030 TiN-H	10	30	VSD, FXD
PLD-1236 TiN-H	12	36	VSD
PLD-1642 TiN-H	16	42	VSD

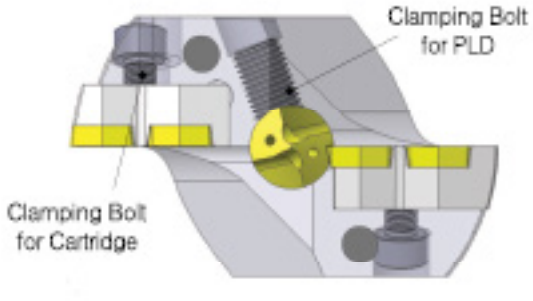
Code No.	D	d	S
DVR-281310	28	13	10
DVR-321610	32	16	
DVR-402212	40	22	12
DVR-482712	48	27	
DVR-583214	58	32	14
DVR-704014	70	40	
DVR-805016	80	50	16

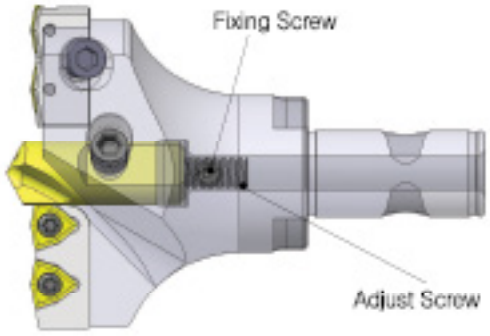


Code No.	D	d	L	L1	L2	A
DSL-322065	32	20	65	20	-	5
DSL-322565	32	25	65	20	20	
DSL-402075	40	20	75	20	-	
DSL-402575	40	25	75	20	25	
DSL-403275	40	32	75	20	25	
DSL-502095	50	20	95	35	-	
DSL-502595	50	25	95	35	-	
DSL-503295	50	32	95	35	35	
DSL-504095	50	40	95	35	35	

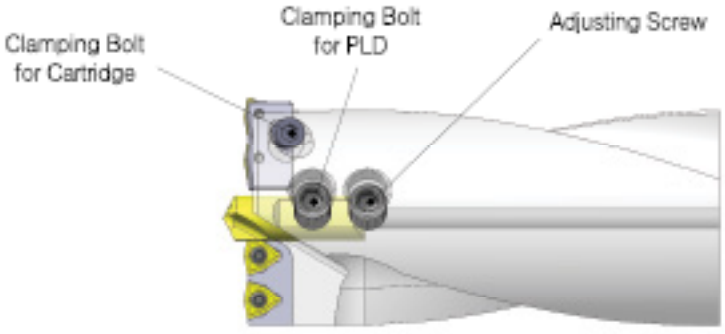
※ Drill Sleeve(DSL) is not compatible with the Weldon-B type Side lock Arbor.(P.84~90)

		Code No.	Description	Driver	Note
	DRILL & BORING	TSB-18045	M 1.8×4.5	T-6	
		TSB-20045	M 2.0×4.5	T-6	
		TSB-22045	M 2.2×4.5	T-6	
		TSB-22052	M 2.2×5.2	T-6	
		TSB-25055	M 2.5×5.5	T-8	
		TSB-25065	M 2.5×6.5	T-8	
		TSB-30070	M 3.0×7.0	T-8	
		TSB-30072	M 3.0×7.2	T-8	KSD(ø24~ø29.5)
		TSB-35078	M 3.5×7.8	T-15	VLT(ø41~ø59)
		TSB-35080	M 3.5×8.0	T-15	KSD, Boring Tool
		TSB-35090	M 3.5×9.0	T-15	
		TSB-40100	M 4.0×10.0	T-15	
		TSB-40110	M 4.0×11.0	T-15	
		TSB-50125	M 5.0×12.5	T-20	
	CUTTER	CSB-6012	M 6.0×12.0	4	
		CSB-8012	M 8.0×12.0	5	
		CSB-8018	M 8.0×18.0	6	
	BALL NOSE CUTTER	TSB-319	M 4.0×8.0	T-15	
		TSB-243	M 5.0×11.0	T-20	
		TSB-390	M 4.0×8.5	T-15	
	FINISHING BALL CUTTER	TSB-391	M 5.0×9.0	T-20	
		TSB-392	M 5.0×13.0	T-20	
		TSB-393	M 5.0×15.5	T-20	
		TSB-394	M 6.0×20.5	T-20	
		TSB-395	M 8.0×25.0	T-30	
	FINISHING BALL CUTTER	TSB-5114	M 4.0×13.0	T-15	
		TSB-5214	M 5.0×16.0	T-15	
		TSB-5314	M 6.0×21.0	T-20	
		TSB-5414	M 8.0×25.0	T-20	
	FINISHING BALL CUTTER	TSB-5116	M 3.5×8.5	T-15	
		TSB-5216	M 5.0×10.0	T-15	
		TSB-5314	M 5.0×13.0	T-20	
		TSB-5414	M 6.0×17.5	T-20	
	MODULAR ARBOR	MTB-06085	M 6.0×8.5	3	
		MTB-08115	M 8.0×11.5	4	
		MTB-10145	M 10.0×14.5	5	
		MTB-12175	M 12.0×17.5	6	
		MTB-16225	M 16.0×22.5	8	
		MTB-16260	M 16.0×26.5	8	
	SHIM	CST-43			





Code No.	Cartridge	Clamping Bolt For Cartridge	Pilot Drill	Clamping Bolt For PLD	Adjust Screw	Fixing Screw
VMD-045050	VMD-045050	M0410BH-W	PLD-V1035TiN-H	M0610SS	M0610SS-H	M0408SS
VMD-050055	VMD-050055					
VMD-055060	VMD-055060	M0512BH-W	PLD-V1238TiN-H	M0812SS	M0815SS-H	M0508SS
VMD-060065	VMD-060065					
VMD-065070	VMD-065070					
VMD-070075	VMD-070075			M0815SS		M0510SS
VMD-075080	VMD-075080	M0612HC-W	PLD-V1645TiN-H	M1015SS	M1015SS-H	M0610SS
VMD-080085	VMD-080085	M0614HC-W				
VMD-085090	VMD-085090	M0616HC-W		M1020SS	M1016SS-H	M0612SS
VMD-090095	VMD-090095					
VMD-095100	VMD-095100					
VMD-100105	VMD-100105	M0818HC-W	PLD-2045TiN-H	M1220SS	M1220SS-H	
VMD-105100	VMD-105100					
VMD-110115	VMD-110115					
VMD-115120	VMD-115120	M0820HC-W		M1225SS	M1420SS-H	
VMD-120125	VMD-120125	M0825HC-W	PLD-2556TiN-H	M1425SS		M0615SS
VMD-125130	VMD-125130					
VMD-130135	VMD-130135					
VMD-135140	VMD-135140					
VMD-140150	VMD-140150					
VMD-150160	VMD-150160					
VMD-160170	VMD-160170		PLD-3068TiN-H	M1625SS		M0620SS
VMD-170180	VMD-170180					



Code No.	Cartridge			Pilot Drill		
	Inner	Outer	Clamping Bolt For Cartridge	Pilot Drill	PLD Clamping Bolt For PLD	Adjusting Screw
VLT-250..D ~ VLT-280..D	x	x	x	PLD-V0630TiN	M0508SS	M0510CP
VLT-290..D ~ VLT-300..D	x	x	x		M0510SS	
VLT-310..D ~ VLT-340..D	x	x	x	PLD-V0835TiN	M0610SS	M0610CP
VLT-350..D ~ VLT-370..D	x	x	x		M0612SS	M0612CP
VLT-380..D ~ VLT-400..D	x	x	x		M0616SS	M0616CP
VLT-4145..D	VLC-410450N	VLC-000410T	M0510HC-W	PLD-V1035TiN-H	M0812SS	M0812CP
		VLC-000420T				
		VLC-000430T				
		VLC-000440T				
		VLC-000450T				
VLT-4650..D	VLC-460500N	VLC-000460T			M0815SS	M0816CP
		VLC-000470T				
		VLC-000480T				
		VLC-000490T				
		VLC-000500T				
VLT-5155..D	VLC-510550N	VLC-000510T	M0614HC-W	PLD-V1238TiN-H	M1015SS	M1016CP
		VLC-000520T				
		VLC-000530T				
		VLC-000540T				
		VLC-000550T				
		VLC-000560T				
VLT-5659..D	VLC-56059N	VLC-000570T				
		VLC-000580T				
		VLC-000590T				
		VLC-000600T				
VLT-6065..D	VMC-060065N	VMC-060065T	M0512BH-W		M1020SS	M1020CP
VLT-6570..D	VMC-065070N	VMC-065070T				
VLT-7075..D	VMC-070075N	VMC-070075T			M1025SS	M1025CP
VLT-7580..D	VMC-075080N	VMC-075080T	M0612HC-W	PLD-V1645TiN-H		

TECHNICAL DATA

Formula for Cutting operations

$$n = \frac{Vc \times 1{,}000}{D \times \pi}$$

[m/min]

$$Vc = \frac{\pi \times D \times n}{1{,}000}$$

[mm]

$$f = f_z \times Z$$

● [mm/min]

$$V_f = f \times n$$

$$P_{mot} = \frac{Q \times k_c}{60{,}000 \times \eta}$$

[Nm]

$$Mc = \frac{D^2 \times Kc \times f}{8{,}000} = \frac{P_{mot} \times 9{,}500}{n}$$

[N]

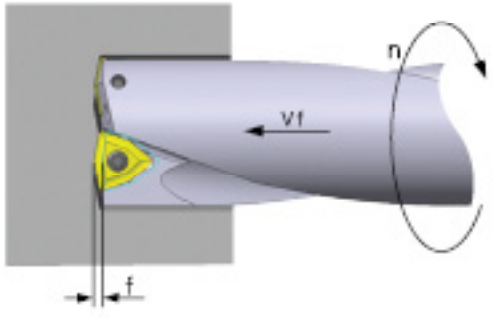
$$Ft = 0.63 \times \frac{f \times D \times k_c}{n}$$

● [cm3/min]

$$Q = \frac{V_f \times \pi \times D^2}{4{,}000}$$

- D : (mm)
- n : (min-1)
- Z :
- f : (mm)
- Vc : (m/min)
- Vf : (mm/min)
- kc : (N/mm2) -〉

- Pmot : (kW)
- Q : (cm3/min)
- η : (0.7-0.95)
- Mc : (Nm)
- Ft : (N)
- fz : (mm)



HSD-V, HSD

Recommended Cutting Values For HSD-V, HSD

		Vc (m/min)	(mm/rev)						
			ø13~ø15.5	ø16~ø20	ø20.5~ø25	ø25.5~ø30	ø31~ø41	ø42~ø58	ø59~ø80
P Steel	(-0.25%) (Unalloyed steel)	180-250	0.04-0.08	0.05-0.10	0.06-0.12	0.08-0.14	0.08-0.14	0.08-0.18	0.08-0.12
	(0.25%-) (Unalloyed steel)	150-220	0.05-0.08	0.06-0.12	0.07-0.14	0.08-0.18	0.12-0.22	0.12-0.25	0.10-0.18
	(-HB300) (Low-alloy steel)	120-220	0.05-0.08	0.06-0.10	0.07-0.14	0.08-0.18	0.10-0.20	0.12-0.24	0.10-0.18
	(HB300-) (High-alloy steel)	130-200	0.05-0.08	0.06-0.10	0.07-0.15	0.08-0.18	0.10-0.20	0.12-0.24	0.09-0.15
M Stainless steel	Stainless steel	150-220	0.04-0.08	0.05-0.09	0.06-0.12	0.07-0.13	0.08-0.16	0.10-0.20	0.08-0.15
K Cast iron	Grey cast iron	150-250	0.05-0.11	0.08-0.13	0.10-0.15	0.12-0.20	0.15-0.26	0.18-0.30	0.12-0.20
	Cast iron with nodular cast	120-200	0.05-0.10	0.06-0.12	0.08-0.14	0.10-0.18	0.14-0.24	0.15-0.25	0.10-0.18
N Nonferrous metals	Aluminium forging alloys	300-380	0.04-0.06	0.05-0.07	0.06-0.08	0.07-0.10	0.10-0.13	0.12-0.20	0.10-0.16
	Aluminium cast alloys	260-330	0.04-0.06	0.05-0.07	0.06-0.08	0.07-0.10	0.10-0.15	0.12-0.20	0.10-0.16
S Super-alloys and titanium	Super-alloys and titanium	40-80	0.03-0.05	0.04-0.06	0.04-0.07	0.05-0.08	0.06-0.10	0.07-0.13	0.06-0.10

● VLT Recommended Cutting Values For VLT

		Vc (m/min)	(mm/rev)						
			ø25	ø26~ø30	ø31~ø40	ø41~ø50	ø51~ø59	ø60~ø75	ø75~ø80
P Steel	(-0.25%) (Unalloyed steel)	130-190	0.06-0.10	0.07-0.11	0.08-0.12	0.08-0.14	0.10-0.18	0.08-0.12	0.1-0.14
	(0.25%-) (Unalloyed steel)	130-190	0.06-0.1	0.07-0.11	0.08-0.12	0.1-0.14	0.12-0.18	0.08-0.12	0.1-0.14
	(-HB300) (Low-alloy steel)	100-140	0.06-0.1	0.07-0.11	0.08-0.12	0.1-0.14	0.12-0.18	0.08-0.12	0.1-0.14
	(HB300-) (High-alloy steel)	60-100	0.05-0.07	0.05-0.07	0.06-0.08	0.06-0.1	0.09-0.13	0.06-0.08	0.06-0.1
M Stainless steel	Stainless steel	60-110	0.04-0.07	0.04-0.11	0.06-0.12	0.08-0.14	0.1-0.18	0.06-0.12	0.08-0.14
K Cast iron	Grey cast iron	130-190	0.07-0.13	0.07-0.15	0.08-0.16	0.1-0.18	0.12-0.22	0.08-0.16	0.1-0.18
	Cast iron with nodular cast iron	110-190	0.04-0.13	0.07-0.15	0.08-0.16	0.1-0.25	0.12-0.26	0.08-0.16	0.1-0.25
N Nonferrous metals	Aluminium forging alloys	200-300	0.04-0.06	0.07-0.12	0.08-0.13	0.09-0.15	0.12-0.2	0.08-0.13	0.09-0.15
	Aluminium cast alloys	140-300	0.04-0.06	0.06-0.12	0.08-0.13	0.09-0.15	0.12-0.2	0.08-0.13	0.09-0.15

● VMD Recommended Cutting Values For VMD

		Vc (m/min)	(mm/rev)						
			ø45~ø55	ø55~ø60	ø60~ø75	ø75~ø100	ø100~ø105	ø105~ø150	ø150~ø180
P Steel	(-0.25%) (Unalloyed steel)	120-180	0.06-0.10	0.07-0.11	0.08-0.12	0.08-0.14	0.08-0.18	0.08-0.12	0.10-0.14
	(0.25%-) (Unalloyed steel)	110-170	0.06-0.10	0.07-0.11	0.08-0.12	0.10-0.14	0.10-0.18	0.08-0.12	0.10-0.14
	(-HB300) (Low-alloy steel)	90-130	0.06-0.10	0.07-0.11	0.08-0.12	0.10-0.14	0.12-0.18	0.08-0.12	0.10-0.14
	(HB300-) (High-alloy steel)	60-100	0.05-0.07	0.05-0.07	0.06-0.08	0.06-0.10	0.09-0.13	0.06-0.08	0.06-0.10
M Stainless steel	Stainless steel	60-110	0.04-0.07	0.04-0.11	0.06-0.12	0.08-0.14	0.10-0.18	0.06-0.12	0.08-0.14
K Cast iron	Grey cast iron	120-180	0.07-0.13	0.07-0.15	0.08-0.16	0.10-0.18	0.12-0.22	0.08-0.16	0.10-0.18
	Cast iron with nodular cast iron	100-180	0.04-0.13	0.07-0.15	0.08-0.16	0.10-0.25	0.12-0.26	0.08-0.16	0.10-0.25
N Nonferrous metals	Aluminium forging alloys	180-280	0.04-0.06	0.07-0.12	0.08-0.13	0.09-0.15	0.12-0.20	0.08-0.13	0.09-0.15
	Aluminium cast alloys	120-270	0.04-0.06	0.06-0.12	0.08-0.13	0.09-0.15	0.12-0.20	0.08-0.13	0.09-0.15

Workpiece Group

ISO	Material Group	Composition		Tensile Strength (N/㎟)	Hardness (HB/HRC)	Cutting Groups	Kc값(Values) (N/㎟)
P Steel	(Unalloyed steel) (cast steel) (machining steel)	<0.25% C	annealed	420	125	1	2000
		>=0.25% C	annealed	650	190	2	2100
		<0.55% C	tempered	850	250	3	2150
		>=0.55% C	annealed	750	220	4	2200
			tempered	1000	300	5	2200
	(Low-alloy steel)		annealed	600	200	6	2100
			tempered	930	275	7	2100
				1000	300	8	2100
				1200	350	9	2100
	(High-alloy steel)		annealed	680	200	10	2500
			tempered	1100	325	11	3250
M Stainless steel	Stainless steel 스테인레스강		martensitic/ferrit	680	200	12	2300
			martensitic	820	240	13	2800
			austenitic	600	180	14	2600
K Cast iron	Grey cast iron		pearlitic/ferrit		180	15	1100
			pearlitic		260	16	1300
	Cast iron with nodular cast iron		ferritisc		160	17	1100
			pearlitic		250	18	1800
	Malleable cast iron		ferritisc		130	19	900
			pearlitic		230	20	1000
N Nonferrous metals	Aluminum Forging alloys		not heat treatable		60	21	500
			heat treatable		100	22	800
	Aluminum Cast alloys	<=12% Si	not heat treatable		75	23	800
			heat treatable		90	24	
		>12% Si	not heat treatable		130	25	
	Copper and copper alloys	>1% Pb	machining alloys		110	26	700
			CuZn, CuSnZn		90	27	700
			Cu, lead-fr		100	28	1700
S Super-alloys and titanium	Heat-resistant alloy	Fe-based	annealed		200	31	3000
			heat treatable		280	32	3100
		Ni-od Co-based	annealed		250	33	3300
			heat treatable		350	34	3300
			cast		320	35	3200
	Titanium alloys	Pure titanium		RM 400		36	1700
		α-β alloys		RM 1050		37	1700

Hardness Comparison Table

Rm, N/㎟	HV	HB	HRC
255	80	76.0	
270	85	80.7	
285	90	85.5	
305	95	90.2	
320	100	95.0	
335	105	99.8	
350	110	105	
370	115	109	
385	120	114	
400	125	119	
415	130	124	
430	135	128	
450	140	133	
465	145	138	
480	150	143	
495	155	147	
510	160	152	
530	165	156	
545	170	162	
560	175	166	
575	180	171	
595	185	176	
610	190	181	
625	195	185	
640	200	190	
660	205	195	
675	210	199	
690	215	204	
705	220	209	
720	225	214	
740	230	219	
755	235	223	
770	240	228	20.3
785	245	233	21.3
800	250	238	22.2
820	255	242	23.1
835	260	247	24.0
850	265	252	24.8
865	270	257	25.6
880	275	261	26.4
900	280	266	27.1
915	285	271	27.8
930	290	276	28.5
950	295	280	29.2
965	300	285	29.8
995	310	295	31.0
1030	320	304	32.2
1060	330	314	33.3
1095	340	323	34.4
1125	350	333	35.5
1155	360	342	36.6
1190	370	352	37.7
1220	380	361	38.8
1255	390	371	39.8
1290	400	380	40.8
1320	410	390	41.8
1350	420	399	42.7
1385	430	409	43.6

Rm, N/㎟	HV	HB	HRC
1420	440	418	44.5
1455	450	428	45.3
1485	460	437	46.1
1520	470	447	46.9
1555	480	[456]	47.7
1595	490	[466]	48.4
1630	500	[475]	49.1
1665	510	[485]	49.8
1700	520	[494]	50.5
1740	530	[504]	51.1
1775	540	[513]	51.7
1810	550	[523]	52.3
1845	560	[532]	53.0
1880	570	[542]	53.6
1920	580	[551]	54.1
1955	590	[561]	54.7
1995	600	[570]	55.2
2030	610	[580]	55.7
2070	620	[589]	56.3
2105	630	[599]	56.8
2145	640	[608]	57.3
2180	650	[618]	57.8
	660		58.3
	670		58.8
	680		59.2
	690		59.7
	700		61.1
	720		61.0
	740		61.8
	760		62.5
	780		63.3
	800		64.0
	820		64.7
	840		65.3
	860		65.9
	880		66.4
	900		67.0
	920		67.5
	940		68.0

	N/㎟	Rm
	136º F ≥98 NN/㎟	HV
HB=0,95*HV	0,102*F/D = 30 N/㎟ F= [N] D= [mm]	HB
C	120º 1471 ±9N	HRC

TECHNICAL DATA

Comparison of Work-Piece

ISO	Korea KS	United Kingdom BS	America AIS/SAE	German DIN	Spain UNF	Italy UNI	Sweden SS	France AFNOR	Japan JIS
P Steel	SM15C	080M15	1015	Ck15	C15K	C16	1370	XC12	S15C
	SM25C	-	1025	Ck25	-	-	-	-	S25C
	SM35C	060A35	1035(1037)	Ck35	-	C36	1572	XC38TS	S35C
	SM45C	080M46	1045(1049)	Ck45	C45K	C45	1672	XC42	S45C
	SM50C	060A52	1049	Ck50	-	C53	1674	XC48TS	S50C
	SM55C	070M62	1055	Ck55	C55K	C5	-	XC55	S55C
	SM58C	080A62	1060	Ck58	-	C60	1678	XC60	S58C
	-	212M36	1140	35S20	F210G	-	1957	35MF4	-
	SCMn1	150M28	1330	28Mn6	-	-	-	20M5	SCMn1
	-	230M07	1215	9SMn36	12SMn35	CF9SMN36	-	S300	-
	SMn438(H)	-	1355	36Mn5	36Mn5	-	2120	40M5	SMn738(H)
	sum22	230M07	1213	9SMn28	11SMn28	CF9SMN28	1912	S250	sum22
	Low alloy steels								
	SNC815	655M13	3310,3415	14NiCr14	-	-	-	12NC15	SNC815(H)
	SNC415	-	3415	14NiCr10	15NiCr11	16NiCr11	-	14NC11	SNC415(H)
	SNC236	640A35	3435	36NiCr6	-	-	-	35NC6	SNC236
	SCM420,SCM430	1717CS110	41300	25CrMo4	55Cr3	35CrMo(KB)	2225	25CD4	SM420:SCM430
	SCM432,SCCRM3	708A37	4137:4135	34CrMo4	34CrMo4	35CrMo4	2234	35CD4	SM432:SCCRM3
	SCM415	-	-	15CrMo5	12CrMo4	-	2216	12CD4	SCM415(H)
	SCM440	708A40	4140	42CrMo4	42CrMo4	42CrMo4	2244	42CD4	SCM440(H)
	SCM440	708A37	4140:4142	41CrMo4	42CrMo4	41CrMo4	2244	42CD4TS	SCM440
	-	820A16	-	17CrNiMo6	14NiCrMo13	-	-	18NCD6	-
	-	1503-245-420	4520	16Mo5	16Mo5	16Mo5	-	-	-
	SCMnH1	Z120M12	-	G-X120Mn12	X120Mn12	XG120Mn12	-	Z120M12	SCMnH/1
	SCr415	523M15	5015	15Cr3	-	-	-	12C3	SCr415(H)
	-	(527M20)	5115	16MnCr5	16MnCr5	16MnCr5	2511	16MC5	-
	SCr430	530A32	5130	34Cr4	35Cr4	34Cr4(KB)	-	32C4	SCr430(H)
	SCr440	530M40	5140	42Cr4	42Cr4	41Cr4	-	42C4	SCr440(H)
	SPS	735A50	6050	50CrV4	51CrV4	50CrV4	2230	50CA4	SUP10
	SPS9	572M60	5155	55Cr3	-	-	-	55Cr3	SUP9(A)
	-	905M39	-	41CrAlMo7	41CrAlMo7	41CrAMo7	2940	40CAD6,12	-
	SNCM220	850M20	8620	21NiCrMo22	20NiCrMo2	20NiCrMo2	2506	30NCD2	SNCM22(H)
	SNCM240	311-Type7	8637,8640	40NiCrMo22	40NiCrMo2	40NiCrMo2(KB)	-	-	SNCM240
	-	250A53	9255	55Si7	56Si7	55Si8	2085	55S7	-
	-	816M40	9840	36CrNiMo4	35NiCrMo4	38NiCrMo4(KB)	-	40NCD3	-
	SU2	534A99	52100	100Cr6	F.131	100Cr6	2258	100C6	SU2
	SUM22L	-	12L13	9SMnPb28	11SMnPb28	CF9SMnPb28	1914	S250Pb	SUM22L
	-	-	12L14	-SMnPb36	12SMnPb25	CF9SMnPb36	1926	S300Pb	-
	-	150-620Gr27	ASTM A182	13CrMo44	14CrMo45	14CrMo45	-	15CD3.5	-
	-	1501-622	ASTM A182	10CrMo910	TU.H	12CrMo9,10	2218	12CD9,10	-
	-	-	ASTM A350LF5	14Ni6	15Ni6	14Ni6	-	16N6	-
	-	1501-240	ASTM A204Gr.A	15Mo3	16Mo3	16Mo3KW	2912	15D3	-
	-	772M24	-13CrMo12	32CrMo12	F124.A	32CrMo12	2240	30Cd12	-
	High alloy steels								
	SDT1	BD3	D3	X210Cr12	X210Cr12	X210CrMoV13Ku	-	Z200C12	SKD1
	STS12	-	A2	Z100CrMoV5Z100CrV5	BA2	2260	Z100CrMoV51	Z100CrMoV51	SKD12
	-	-	-	X210CrW12	X210CrE12	X215CrW121Ku	2312	-	SKD2
	STD61	BH21	H21	X30WCrV9	X30WCrV9	X28W09KU	-	Z30WCV9	SKD5
	-	BH13	H13	X40CrMoV51	X40CrMoV5	X35CrMoVKU	2242	Z40CDV5	SKS31
	STS31	-	-	105WCr6	05WCr5	3KU	2140	105WC13	SKS43
	STS43	BW2	W210	100V1	-	-	-	Y105V	SKT4
	STF4	-	L6	55NiCrMoV6	F.520.S	-	-	55NCDV7	SUH1
	-	401S45	HW3	X45CrSi93	F322	10WCr6	-	Z45CS9	SKH55
	-	-	-	-	-	-	-	-	-
	SKH55	-	-	S6-5-2-5	HS6-5-2-5	-	2723	Z85WKCV2723	SKH3
	SKH3	BT4	T4	S18-1-2-5	HS18-1-1-5	X78WCo1805KU	-	Z80WKCV	SKH9
	SKH51	BM2	M2	S6-5-2	HS6-5-2	X82WCo1805KU	-2722	Z85WDCV	-
	-	-	-	M7	HS2-9-2	Z100WCWMoS2-9-2	2782	S2-9-2	-
	SKH2	BT1	T1	S18-0-1	HS18-0-1	X75W18Ku	-	Z08WCV	SKH2
	-	BS1	S1	45WCrV7	45WCrS8	45WCrV8Ku	2710	-	-

Comparison of Work-Piece

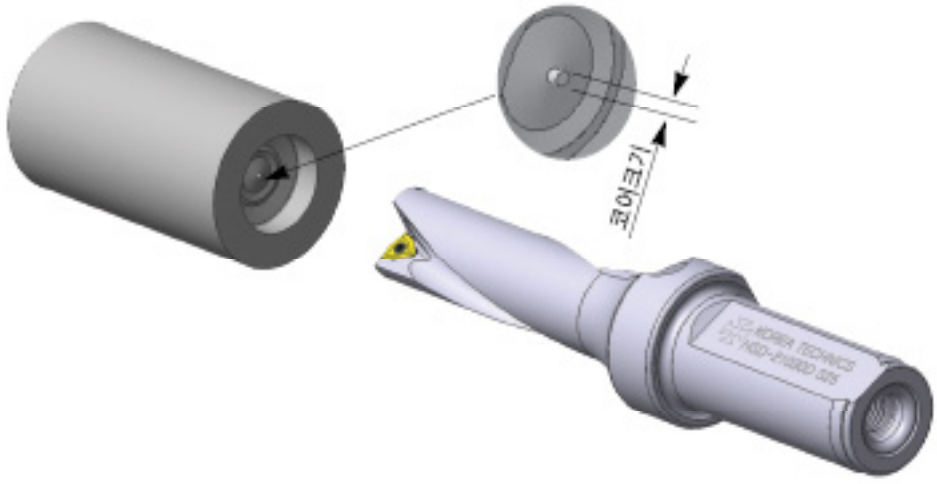
ISO	Korea KS	United Kongdom BS	America AIS/SAE	German DIN	Spain UNF	Italy UNI	Sweden SS	France AFNOR	Japan JIS
	Austenite range								
	STS301	-	301	X12CrNi177	-	2331	F.3517	Z12CN17.07/X12CrNi707	SUS301
	STS303	-	303	X10CrNiS189/X8CrNiS1809	-	2346	F.3517	X10CrNiS18.09	SUS303
	-	-	304	X5CrNi189	304S31	X5CrNi18	2332/2333F.3551	Z6CN18.09	SUS304
	STS304	304S15	304	X5CrNi189	F.3551	X5CrNi1810	2332	Z6CN18.09	SUS304
	STS304L	-	304L	X2CrNi1911	304C12	2333	-	-	SUS304L
	S9C16	-	304LX2CrNi1810	Z2CrNi1810	304S12	2352	F.3503	X2CrNi1011	SCS16
	STS304L	304S62	304LN	Z2CrNiN, 1810	-	-	2371	Z2CN1810	NSUS304LN
	STR3I	-	HW3X45CrSi93	Z45CrSi93	401S45	-	SF322	X45CrSi8	SUH1
	STR309	-	309	X15CrNiSi201	-	-	-	Z15CNS2012	SUH309
	STR310	310S24	X12CrNi2521	F.332	X60CrNi2520	2361	Z12CN2520	SUH310	
	STS316	-	316	X5CrNiMo1810	316S16	X5CrNiMo1712/2347	F.3543	Z6CND1711	SUS316
	STS316LN	-	316LN	X2CrNiMoN	-	2375	X2CND1713	SUS316LN	SUS316LN
	STS316L	-	316L	X2CrNiMo1812	-	-	-	-	SUS316L
	S9C16	-	316LXCrNiMo	Z2cndCND1712	316S13	2353	-	X2CrNiMo1712	SCS16
	-	320S17	316Ti	Z2CND1915	F.3535	X6CrNiMoTi1712	2350	Z6VDT17.12	-
	STS317L	-	317L	X24CrNiMo1816	317S12	2367	-	X2CrNiMo1816	317L
	-	-	X10CrNi	Z6CNDNb	-	-	-	X6CrNiMoNb	318
	-	-	S32304	"X2CrNiN,234"	-	-	2327	Z2CN23-04AZ	-
	-	-	S32900	X8CrNiMo.275	-	-	2324	-	-
	-	-	S31803	X2CrNiMoN	-	-	2377	Z2CND22-0503	-
	STS	35S12	321	X10CrNiTi	F.3553	X6CrNiTi1811	2337	Z6CNT18.10	SUS321
	STS347	-	347	X6CrNiNb189	347S17	X6CrNiNb18.10/338	F.3552	Z6CNNb18.10	SUS347
	STS12	BA2	A2	Z100CrMoV51	Z100CrMoV51	Z100CrMoV5 1KU	2260	Z100CDV5	SKD12
	Ferrite range Martensite range								
M	STS403	403S17	403	X7Cr13	F.3110	X6Cr13	2301	Z6C13	SUS403
	STS405	403S17	405	X10CrAl13	F.311	X10CrAl13	-	Z10C13	SUS405
	STS410	410S21	410	X10Cr13	F.3401	I13	2302	Z10C14	SUS410
	STS420J2	420S45	-	X46Cr13	F.3405	X40Cr145	2304	Z4CM	SUS420J2
Stainless steel	STS430	430S15	430	X8Cr17	F.3113	X8Cr17	2320	Z8C17	SUS430
	STS430F	-	430F	X12CrMoS17	F.3117	X10CrS17	2383	Z10CF17	SUS430F
	STS431	431S29	431	X22CrNi16	F.33427	X19CrNi16	2321	Z15CN16.02	SUS431
	STS434	434S17	434	X6CrMo17	-	Z8CrMo17	2325	Z8CD17.01	SUS434
	STR446	-	446	X10CrAl24	-	X16Cr26	2322	Z10CAC24	SUH446
	S9C5	425C11	-	X5CrNi134	-	-	-	Z6CND13.4M	SCS5
	STR35,STR36	348S54	Ev8	X53CrMnNiN219	-	X53CrMnNiN	-	Z52CMN21.09	SUH35,SUH36
	STR4	443S65	HNW6	X80CrNiSi20	F.3208	X60CrSiNi20	-	Z80CSN20.02	SUH4
	Heat resistance alloys								
	HRHC15	330C11	-	G-X40NiCrSi	-	XG50NiCr	-	-	SCH15
	STR330	-	X12NiCrSi	-	-	-	-	Z12NCS35.16	SUH330330
	-	3072-76	4676	NiCuG30Al	-	-	-	-	
	-	-	5390A	-	-	-	-	NC22Fed	
	-	3146-3	5391	G-NiCr19AlMoNb	-	-	-	NC12D	
	-	HR8	5383	NiCr19FeNbMo	-	-	-	NC19NB	
	-	-	5537C	CoCr20W15Ni	-	-	-	KC20WN	
	-	-	5960	NiFe35Cr14MoTi	-	-	-	Z8NCDT42	
	-	-	5666	NiCr22Mo9Nb	-	-	-	NC22FeDNB	
	-	-	AMS5397	NiCr15Cr10MoATi	-	-	-	-	
	-	-	AMS5399	NiCr19Co11MoTi	-	-	-	NC19KDT	
	-	-	AMS5544	NiCr19FeNbMo	-	-	-	NC20K14	
	-	-	AMS5772	CoCr22W14Ni	-	-	-	KC22WN	
	-	TA10-13/TA28	AMSR56400	TiA6V4	-	-	-	T-A6V	
	-	TA14/17	AMSR54520	TiAl5Sn2.5	-	-	-	T-A5E	

Comparison of Work-Piece

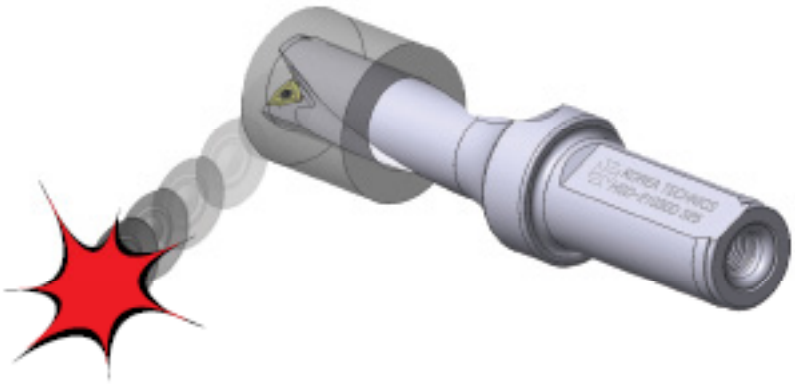
ISO	Korea KS	United Kingdom BS	America AIS/SAE	German DIN	Spain UNF	Italy UNI	Sweden SS	France AFNOR	Japan JIS
K Cast iron	Gray cast iron								
	GC100	-	No20B	GG10	-	G10	110	Ft10D	FC100
	GC150	Grade150	No25B	GG15	-	G14	115	Ft15D	FC150
	GC200	Grade220	No30B	GG20	-	G20	120	Ft20D	FC200
	GC250	Grade260	No35B	GG25	-	G25	125	Ft25D	Fc250
	GC300	Grade300	GNo45B	GG30	-	G30	130	Ft30D	FC300
	GC350	Grade350	No50B	GG35	-	G35	135	Ft35D	FC350
	GCD400	SNG420/2	60-40-18	GGG40	-	GS400-12	0717-02	FCS400-12	FCD400
	GCD500	SNG500/7	65-45-12	GGG50	-	GS500/7	0727-02	HGS500-7	FCD500
	GCD600	SNG600/3	80-55-06	GGG60	-	GS600/3	0732-03	FGS600-3	FCD600
	GCD700	SNG700/2	100-70-03	GGG70	-	GS700/2	0737-01	FGS700-2	FCD700
	Ductile cast iron								
	-	B340/12	32510	GTS-35	-	-	0815	MN35-10	-
	-	P440/7	40010	GTS-45	-	-	0852	-	-
	-	P510/4	50005	GTS-55	-	-	0854	MP50-5	-
	-	P570/3	70003	GTS-65	-	-	0858	MP60-3	-
Aluminium	Aluminium alloy								
	-	LM6	A413.2	G-AlSi12	-	-	4261	-	-
	-	LM9	A360.2	G-AlSi10Mg(Cu)	-	-	4253	-	-
	-	LM20	A413.1	G-AlSi12(Cu)	-	-	4260	-	-
	-	LM24	A380.1	GD-AlSi8Cu	-	-	4250	3-	-
	-	-	A413.0	GD-AlSi12	-	-	4247	-	-

Directions for the work of the lathe

In case of use the high speed drill first in the lathe, after drilling the workpiece around 5mm make sure the core size.
The core size should be 0.2mm~0.8mm.
If the core size is too small or the corner part in the center of inside insert break, it is desirable to work turning the drill to 180 angle.

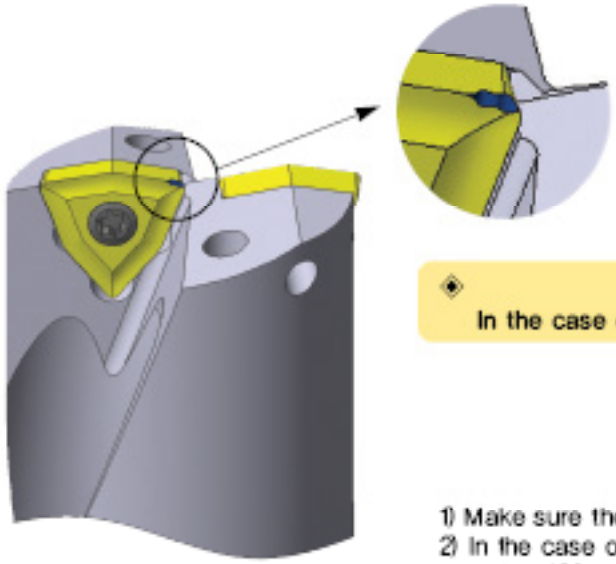


In case of doing also the penetrating work in the lathe, coming off The original thing(DISC) the wound can happen so absolutely use the safety cover.



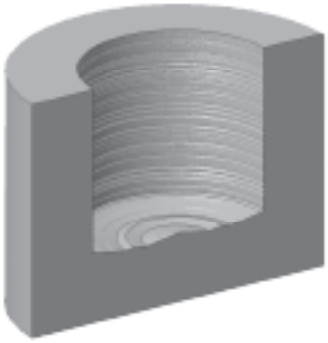
HIGH SPEED DRILL

Directions for the use of HIGH SPEED DRILL



◈ In the case of breaking the inside insert,

1) Make sure the workpiece and tool are fixed firmly.
2) In the case of drilling in the lathe, drill after turning the tool to 180 angle.
3) make sure the cutting condition is corret.
4) make sure the insert is correct for the workpiece.



◈ In the case that drilling density is rough,

1) The oil pressure raise and process it.
2) make sure the workpiece and tool are fixed firmly.
3) cutting speed raise and process it.

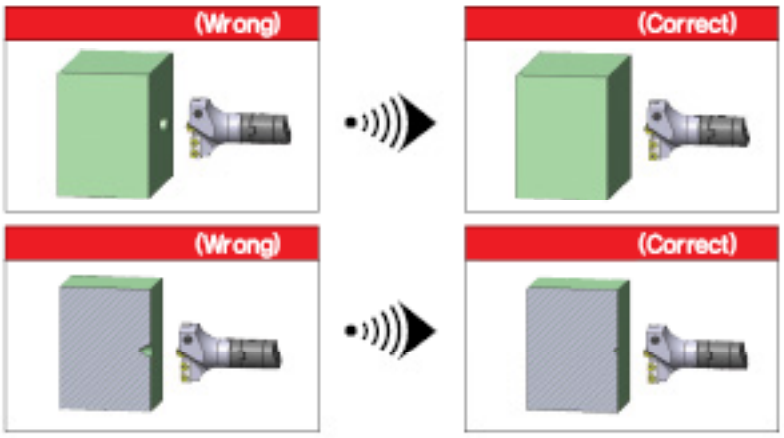
◈ In the case that drilling diameter is 0.3mm smaller and bigger.

1) Make sure the Nose 'R' size
2) Make sure there is foreign substance and make sure arbor inside diameter or when it turn, there is the one sided.
3) Make sure cutting condition is correct.

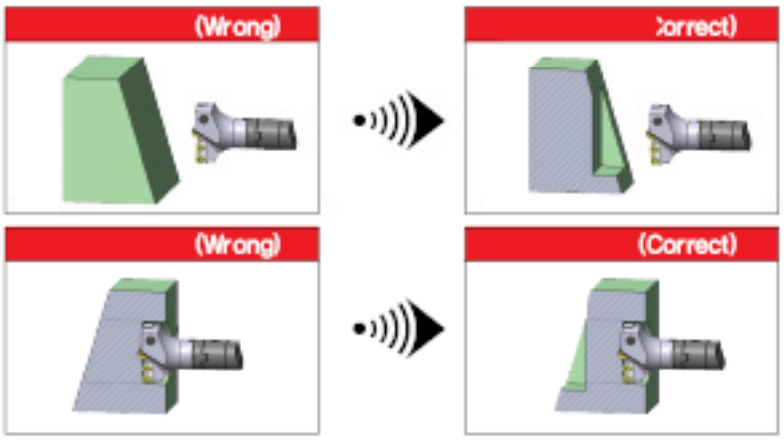
TURBO DRILL&MAX DRILL

Directions for the use TURBO DRILL&MAX DRILL

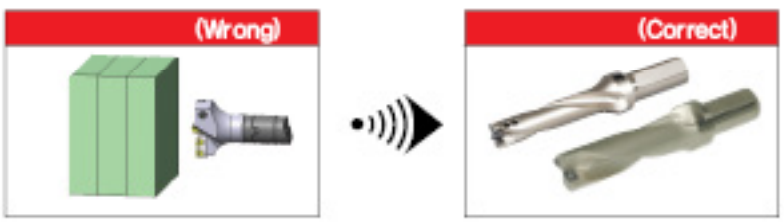
◈ As the below pictures in the case that there are biger hole than center drill or protruded part, The center drill and insert can be broken by hard vibration.



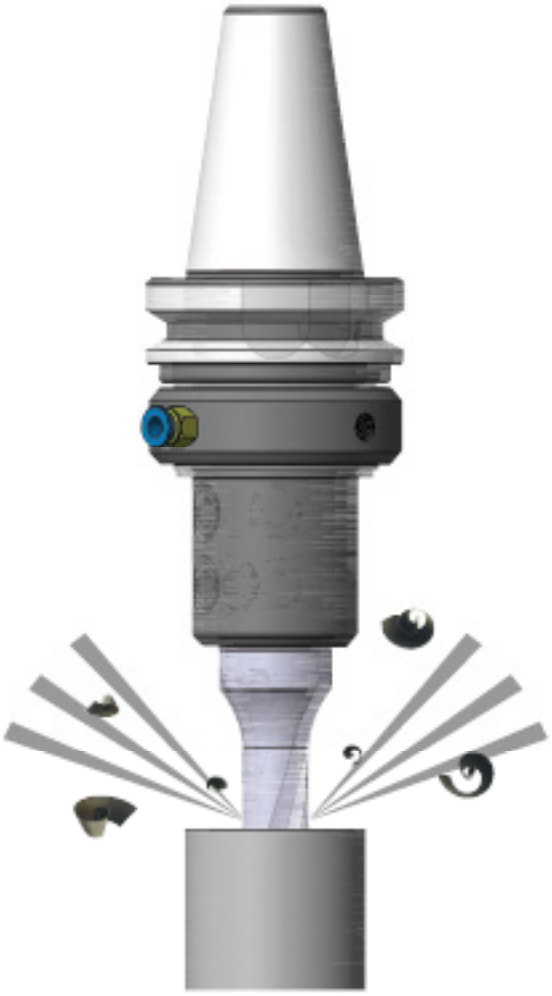
◈ In the case that there is inclined side, after make the part flat by milling work, please do drilling work.



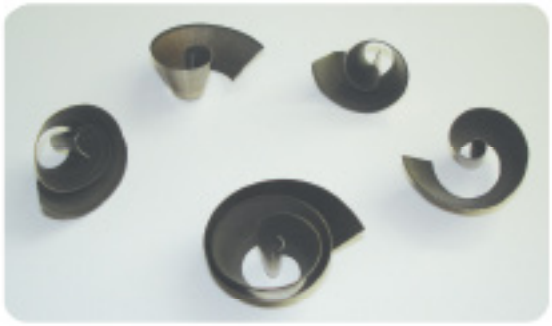
◈ Overlapped drilling is impossible. In case of wanting the overlapped drilling, Please use STD and FXD drill.



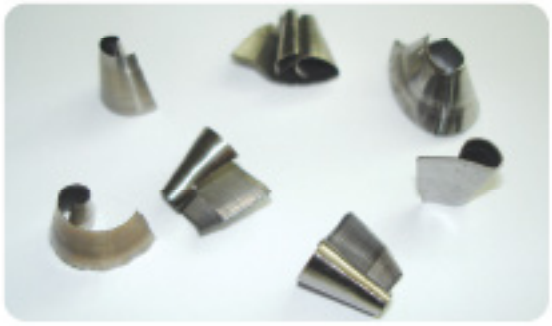
The solution according to the chip shape



Optimal Shape of chip)



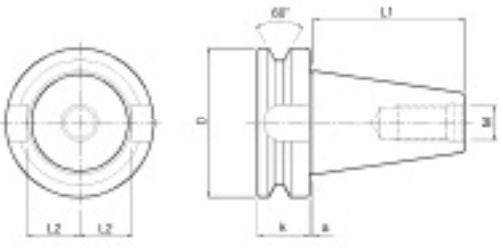
(Too Short)



▶ If short chip came out, the insert happen to break.
(1) Raise the oil pressure.
(2) After the turing speed and the feed ccme down, process it.

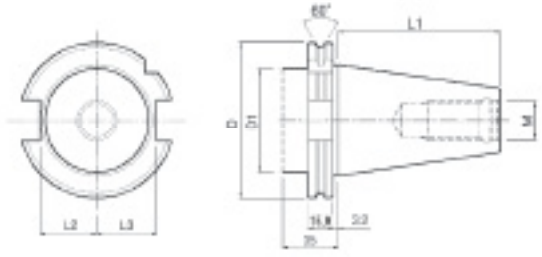
(Too Loose)

▶ If the chip is long, the chip does not ccme cut properly and it is entangled cn the drill.
It can arise tool damage and the drilled density is not good.
1) For mild steel and stainless steel contained the low carbon steel ccntent, please process making the turning speed high and feed low.
2) For carbon steel cr alloy cantained the lcw carbon content, process making the turning speed and feed high.



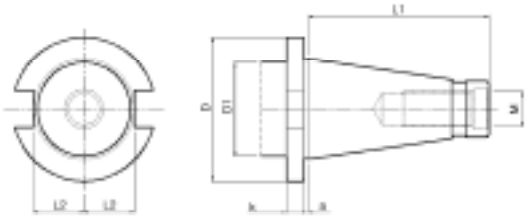
BT/MAS Holder

Taper No.	L1 mm	D mm	M mm	K mm	a mm	L2 mm
40	65.4	63	M16	25	2	22.8
50	100	100	M24	35	3	35.5



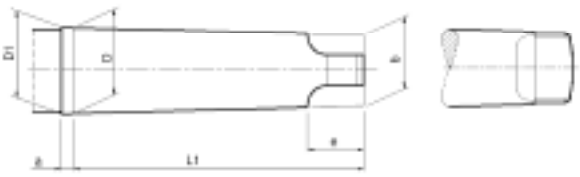
SK/DIN Holder

Taper No.	L1 mm	D (max.) mm	D1 mm	M mm	L2 mm	L3 mm
40	68.4	63.55	50	M16	22.8	25
50	101.75	97.5	80	M24	35.5	37.7



NT/DIN 2080 Holder

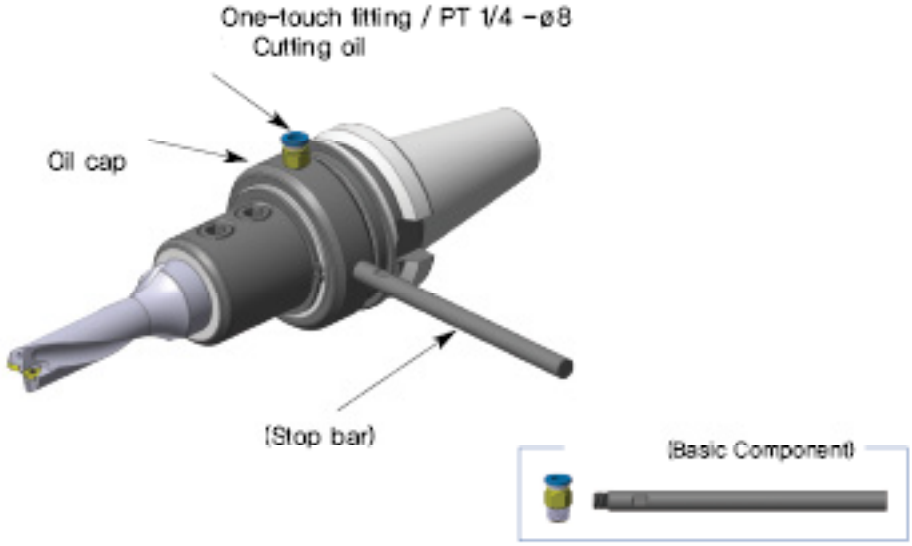
Taper No.	L1 mm	D mm	M mm/inch	K mm	a mm	L2 mm
40	93.4	63	M16	10	1.6	22.5
50	126.8	97.5	M24	12	3.2	35.3
40	93.4	63	5/8-11 UNC	10	1.6	22.5
50	126.8	97.5	1-8 UNC	12	3.2	35.3



MT/DIN 228 Holder

Taper No.	L1 mm	D mm	D1 mm	M mm	e mm	b mm
4	117.5	31.267	31.6	6.5	24	25.2
5	149.5	44.399	44.7	6.5	29	36.5
6	210	63.348	63.8	8	40	52.4

Oil feed arbor feature and use



(1) When the diameters to be processed are too large, or when deep holes are processed, the cutting-oil must be supplied into the interior of the device.

(2) The oil feed arbor is a useful tool that enables processing deep holes, even with general-purpose equipment.

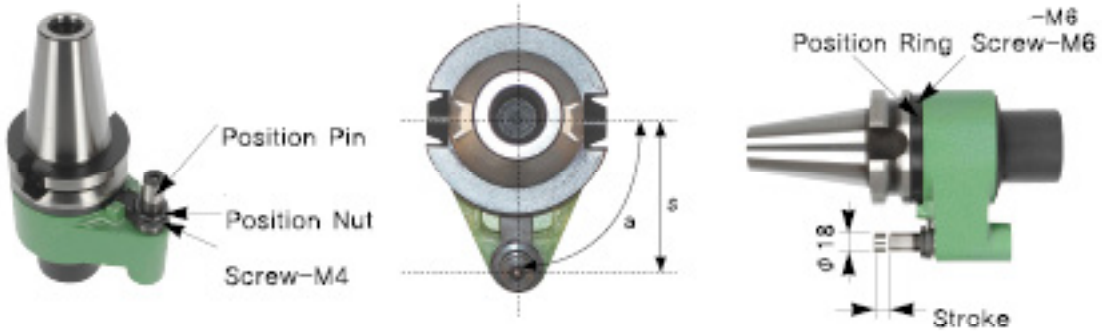
(3) Two threads are seen at 90 degrees from the outside of the oil cap : one for the feature where the cutting-oil is supplied, and the other for the feature where the stop bar is installed.

(4) There is a teflon seal inside the oil cap that keeps the cutting-oil from leaking and it also minimizes friction.

(5) When rotating, the cutting-oil is supplied with the oil cap stopped : the maximum rotation speed is 2,000 rpm. (CMB : 4,000 rpm)

(6) Arbor oil feed types include OMS, OME, OMX, CMS, CMB

Automatic arbor manuals



▶ The characteristics of Kprea Technics' Automatic Holder

- It has an internal fueling type ofcutting-oil supply apparatus with automatic tool changing function.
- Coated with teflon that has excellent heat-and wear-resistance characteristics via a specific coating process. As a result, no leakage occurs and friction is also decreased, which in turn allows prolonged rotation(maximum of 3,000rpm)
- The height and angle(a) of the positioning pin are adjustable depending on equipment dimensions.

▶ Adjustment methdo for the height of the positioning pin and angle(a) :

- Adjustment method for angle(a) :
  ① Unfasten the screw (2EA-M6)secured to the positioning ring with the wrench. (hex key wrench, 3mm)
  ② Rotate the oil case in line with the positioning control block installed in the M/C.
  ③ Completely fasten the screw(2EA-M6)when it is aligned in the proper position.
- Adjustment method for height of the positioning pin :
  ① Unfasten the positioning pin screw.(M4 : hex wrench, 2mm)and unt(hex key wrench, 27mm)
  ② Confirm the height of the positioning control block, and then, hold and turn using the vise-grip to adjust it.(※ stroke distance : BT40=4.5mm, BT50=7.5mm)
  ③ Completely fasten the screw and unt after setting.

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