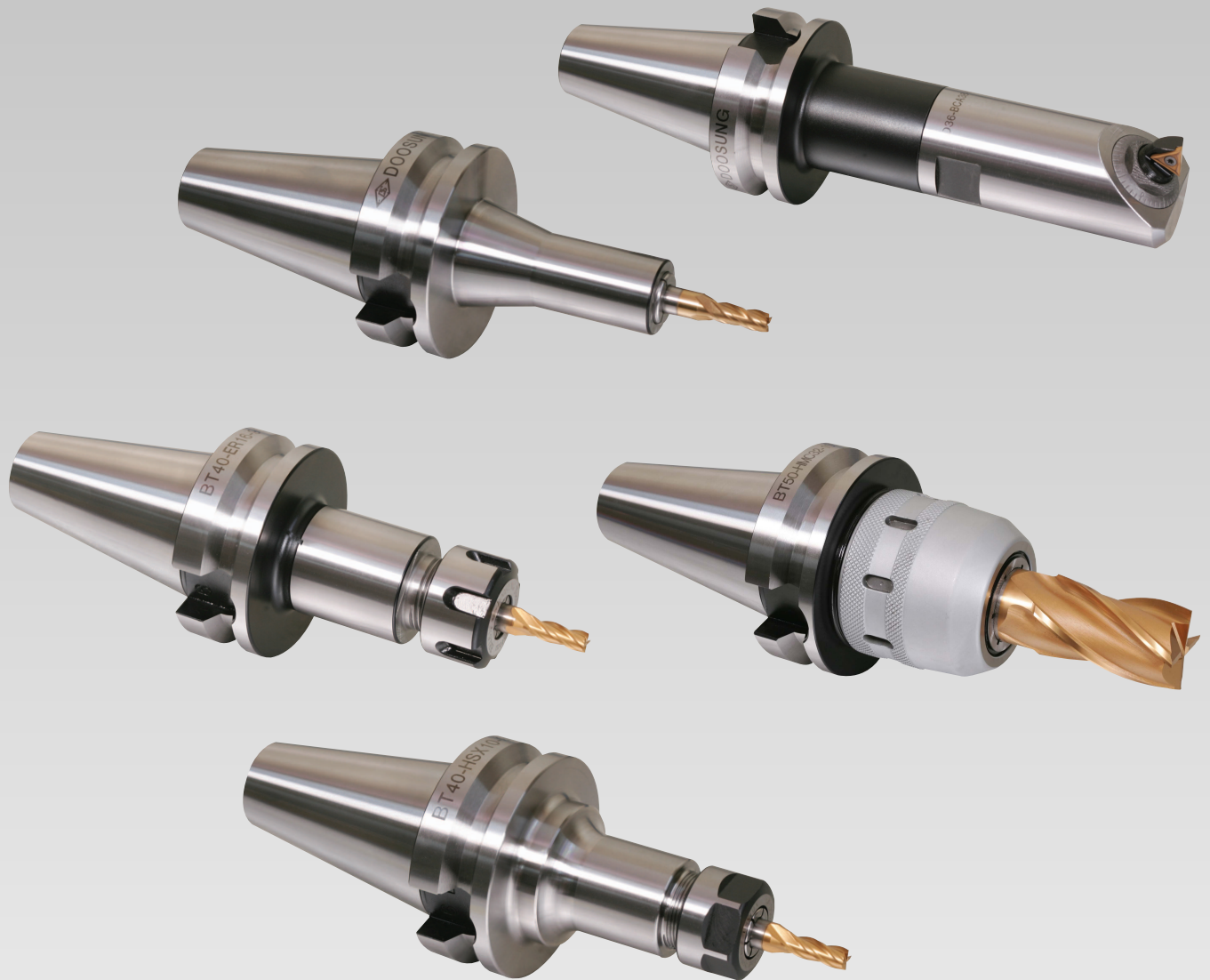


DSP TOOLING TECHNOLOGY

TOOLING SYSTEM



DOOSUNG PRECISION CO.



T.S.S.의 Mind

TECHNOLOGY

SOLUTION

SERVICE

고객을 먼저 생각하는 T.S.S 의 마음가짐으로
항상 최선을 다하는 DSP가 되겠습니다.

제품 특성 설명

MILLING CHUCK SYSTEM (C)	6
SX COLLET CHUCK SYSTEM (SX)	8
MX COLLET CHUCK SYSTEM (MX)	9
ER COLLET CHUCK SYSTEM (ER)	10
NC DRILL CHUCK SYSTEM (NPU)	11
MICRO BORING SYSTEM (BCA)	12
TAPPING CHUCK SYSTEM (TCH)	13
HSK TOOLING SYSTEM	14
BALANCING SYSTEM	17

제품 사양

MILLING CHUCK (C)	19
STRAIGHT COLLET (MC TYPE)	20
STRAIGHT COLLET (NC TYPE)	21
TAPER COLLET	22
DRILL CHUCK ARBOR	22
MILLING CHUCK P급 고속회전용(C-P)	23
MX COLLET CHUCK (MX)	24
MX COLLET	24
SX COLLET CHUCK (SX)	25
SX COLLET	27
SX COLLET CHUCK P급 고속회전용(SX-P)	28
ER COLLET CHUCK (ER)	29
ER COLLET	31
NC DRILL CHUCK (NPU)	32
JACOBS TAPER ARBOR (JTA)	33
MORSE TAPER HOLDER A TYPE (MTA)	34
MORSE TAPER HOLDER B TYPE (MTB)	35
SIDE LOCK HOLDER (SLA)	36
SIDE LOCK HOLDER (SL)	37
TAPPING CHUCK HOLDER (TCH)	38
TAP COLLET	39
SYNCHRO TAPPING CHUCK (PZ)	40
RIGID TAP SHANK	40
TAP COLLET (고정형 COLLET)	41
MICRO UNIT 사용 및 치수 조절법	42
MICRO BORING BAR (BCA)	43
MICRO BORE INSERT TYPE	44
S/T - BCA	45
BORING BAR PART LIST	45
SQUARE BORING BAR (BSA)	46
SQUARE BORING BAR (BSB)	47
FACE MILL ARBOR (FMA)	48
FACE MILL ARBOR (FMB)	49

TAPER SLEEVE ADAPTER (TSA)	50
FACE MILL ARBOR (FMC)	51
SHELL ENDMILL ARBOR (SMA)	52
SHELL ENDMILL ARBOR (SMB)	53
SIDE CUTTER ARBOR (SCA)	54
HSK TAPER SHANK (A-TYPE)	55
HSK MILLING CHUCK	56
HSK NC DRILL CHUCK	56
HSK SX COLLET CHUCK	57
HSK MORSE TAPER HOLDER	57
HSK ER COLLET CHUCK	58
HSK MX COLLET CHUCK	58
HSK SILM COLLET CHUCK	59
HSK SYNCHRO TAPPING CHUCK	59
HSK SIDE LOCK HOLDER	60
HSK FACE MILL ARBOR (A TYPE)	61
HSK FACE MILL ARBOR (C TYPE)	61
ANGULAR HEAD SYSTEM	62
ANGULAR HEAD SYSTEM	63
TOOL PRE – SETTER	64
TOOL PRE – SETTER	65
TOOL CLAMPER 및 HEIGHT PRE-SETTER	66
TEST BAR 및 TOUCH POINT SENSOR	67
PULL STUD BOLT	68
PULL STUD BOLT 비교표	69
NT MILLING CHUCK	70
NT MILLING CHUCK SET	71
NT ER COLLET CHUCK	72
NT NC DRILL CHUCK	72
NT FACE MILL ARBOR (A TYPE)	73
NT CENTERING PLUG	73
M/T MILLING CHUCK (TANG)	74
M/T MILLING CHUCK (SCREW)	74
M/T SX COLLET CHUCK (TANG)	75
M/T SX COLLET CHUCK (SCREW)	75
M/T TAPPING CHUCK (TANG)	76
M/T ER COLLET CHUCK (TANG)	77
M/T ER COLLET CHUCK (SCREW)	77
M/T NC DRILL CHUCK (TANG)	78
M/T FACE MILL ARBOR (TANG)	79
COTTER PIN	80
STRAIGHT MILLING CHUCK	81
STRAIGHT NC DRILL CHUCK	81
STRAIGHT SLIM COLLET CHUCK	82
STRAIGHT SX COLLET CHUCK	83
STRAIGHT TAPPING CHUCK	84
TECHNICAL DATA	85

MILLING CHUCK-P19



STRAIGHT COLLET (MC)-P20



ER COLLET CHUCK-P29



ER COLLET-P31



SX COLLET CHCUK-P25



SX COLLET-P27



TAPPING CHUCK HOLDER-P38



TAP COLLET-P39



MX COLLET CHUCK-P24



MX-COLLET-P24



MICRO BORING BAR-P43



MICRO UNIT-P45



고속회전용
MILLING CHUCK-P23



고속회전용
SX COLLET CHUCK-P28



MORSE TAPER ARBOR-P34
(A-TYPE)



MORSE TAPER ARBOR-P35
(B-TYPE)



NC DRILL CHUCK-P32



JACOBS TAPER ARBOR-P33



SIDE LOCK HOLDER-P36



SIDE LOCK HOLDER-P37
WELDON SHANK(SL)



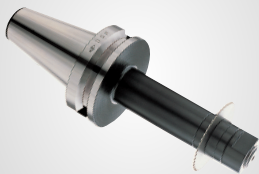
DSP TOOLING SYSTEM



SYNCHRO TAPPER CHUCK-P40
TAP COLLET-P41



SIDE CUTTER ARBOR-P54



PULL STUD-P68



HSK-MILLING CHUCK-P56



SQUARE BORING BAR
BSA-P46
BSB-P47



FACE MILL TRBOR
FMA-P48
FMB-P49
FMC-P51



HSK-SX COLLET CHUCK-P57



HSK-MX COLLET CHUCK-P58



ANGULAR HEAD-P62,63



TOOL PRE-SETTER-P64,65



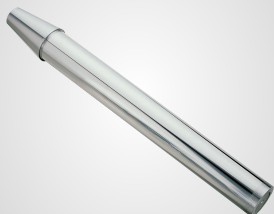
NT-MILLING CHUCK-P70



MT-MILLING CHUCK-P74



TEST BAR-P67



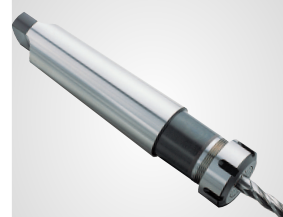
TOUCH POINT SENSOR-P67



MILLING CHUCK SET-P71



MT ER COLLET CHUCK-P77



TOOL CLAMPER-P66



HEIGHT PRE-SETTER-P66



NT-FACE MILL ARBOR-P73



STRAIGHT SLIM ER CHUCK-P82

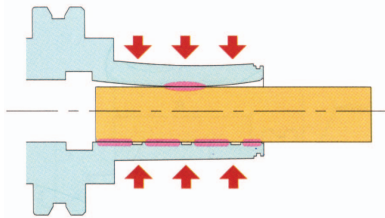


MILLING CHUCK SYSTEM



X-GROOVE System (PAT.)

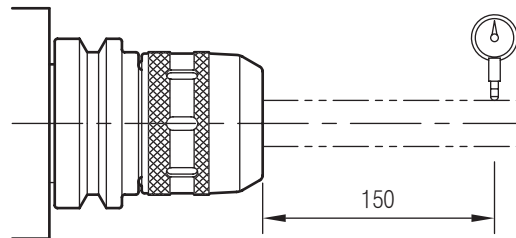
Combination of the Radial and Axial grooves



RADIAL GROOVE (반경방향 홈)
반지를 반경 방향의 SLOT홈이 내부에서 밀링척의 조임시 입구, 끝부분의 벌어짐을 보완하여 SLOT홈내부의 균등한 CLAMPING POWER를 제공하여 주는 SYSTEM!!!
만들수 있는 CLAMPING POWER와 정도 (RUN-OUT)를 제공, 가공상 절삭공구의 진동과 소음을 최소화하여 줍니다.



AXIAL GROOVE (축방향 홈)
축 방향의 세로 SLOT홈이 가공도중 밀링척 내부로 침투한 기름기 등을 외부로 배출하여 주면서 CLAMPING POWER 감소를 방지합니다.
내경 상크부와 콜렛주위의 CLAMPING POWER를 더욱 집중시킬 수 있는 SYSTEM!!!

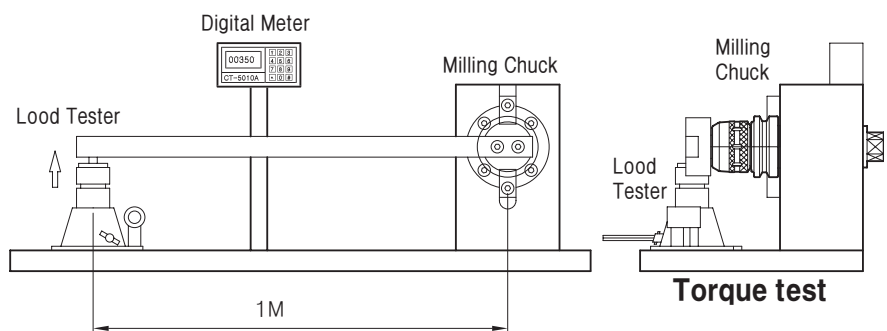


DSP만이 실현할 수 있는 정밀도 150mm 선단부에서 10 μ m 이내

Clamping Torque Test Data

Model (타사)	Torque kg f.m
C20	120
C4032	250
C5032	350
C5042	500

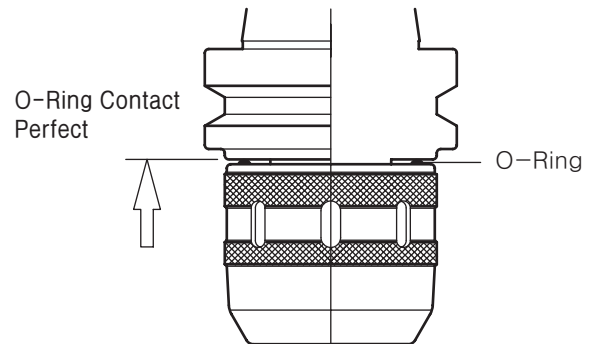
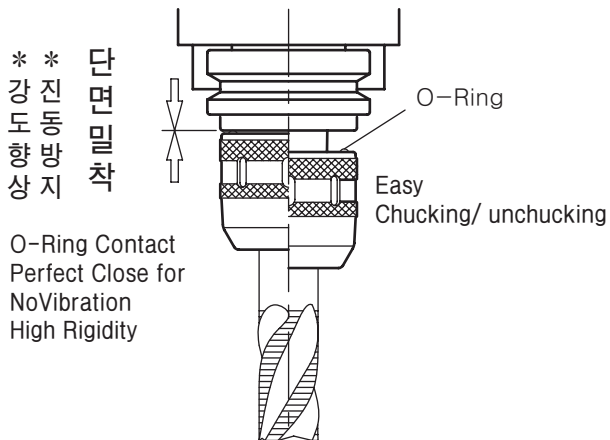
DSP	when oil removed completely with thinner cleanly
C20	130 kg f.m
C4032	260 kg f.m
C5032	360 kg f.m
C5042	520 kg f.m



MILLING CHUCK SYSTEM



■. High Rigidity Maximize Flexibility



Sub-Zero Treatment

DSP milling chuck are subjected to an ultra-low temperature treatment of -100°C to remove the holders residual austenite.

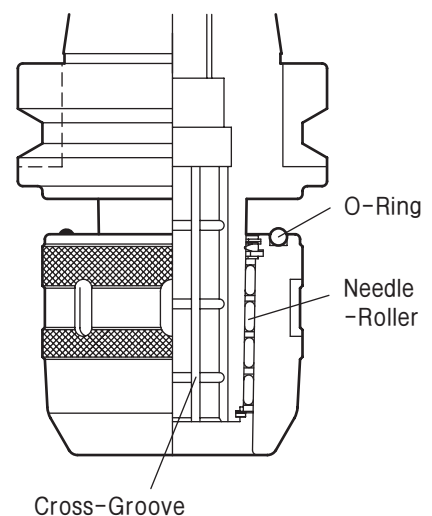
DSP milling chuck은 침탄 열처리를 한후 -100°C 이하에서 초저온(Subzero)처리를 하므로 남아있는 잔류 오스테나이트를 제거하였습니다.



Powerful and Stable Chucking

More than 80% taper contact guaranteed(AT3)
Heavy duty cutting power due to perfect face contact construction
Inside cross-groove system prevent tool slip and increase powerful clamping force
4 Needle roller system and ultra strong gripping torque

Taper 접촉율 80%, Taper공차 AT3을 보증 합니다.
완전한 단면 밀착형으로 강력 절삭이 가능 합니다.
내경부에는 십자형 Groove system 적용하여 절삭공구 Slip을 방지하므로 파지력이 높습니다.
4 배열 Roller system 방식으로 파악력이 좋습니다.

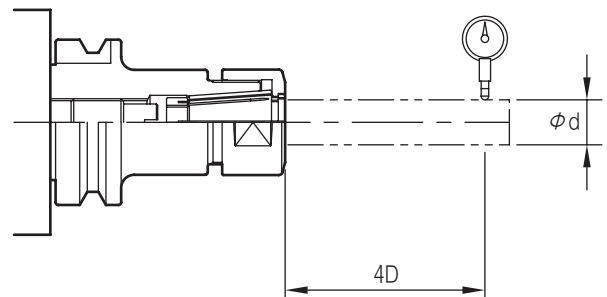




Excellent Runout Accuracy

다른 COLLET CHUCK SYSTEM에 비하여 SLIM하고 고속회전용으로 적합한 최적의 HOLDER!

Style & ϕd	T.I.R(μm)	
	Standard	P class
SX 6 - ϕd	0.005	0.003
SX10 - ϕd		
SX16 - ϕd		
SX25 - ϕd		



강한 CLAMPING POWER 및 고정도 (RUN-OUT)를 발휘합니다.

NUT부 특수이온 질화처리로 부드럽고 강력한 CLAMPING을 할 수 있으며 장기간 사용하셔도 마모가 적습니다.

Multi Purpose

- *. Powerful Clamping force
- *. Small chuck is using as a tool holder for drill, center, endmill, tap, boring, reamer

- *. 강력한 파지력
- *. 드릴, 센터드릴, 엔드밀, 탭, 소경 보링바, 리머용으로 사용



Drill



End mill



Reamer



Tap

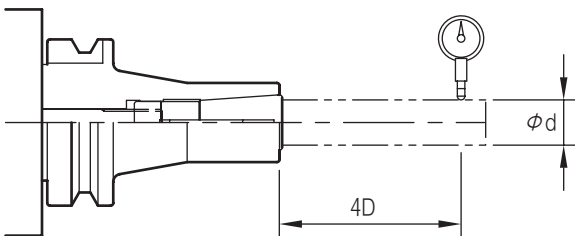
MX COLLET CHUCK SYSTEM



Excellent Right

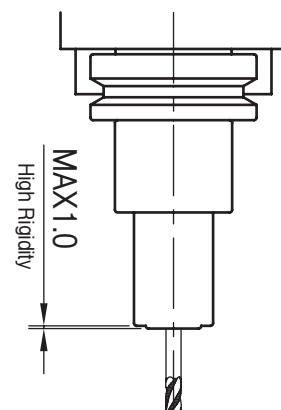
매우 SLIM하며 콜렛의 체결 구조상 강한 CLAMPING POWER를 유지합니다!
정도 (RUN-OUT) $3\mu\text{m}$ 이내!

- *. Excellent Rigidity
- *. 뛰어난 강성



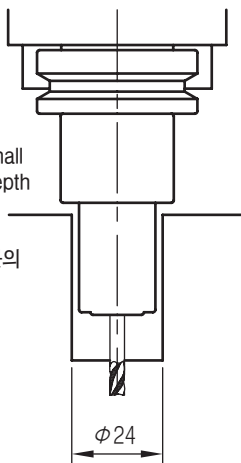
Narrow & Depth

- *. Narrow and Depth Place.
- *. 좁고 깊은곳



- *. Best suits for small diameter and depth cutting.

- *. 깊은곳 및 좁은곳의 가공에 적합.



Various Use

- *. Small chuck is using as a tool holder for drill, center drill, endmill, tap, boring, reamer
- *. 드릴, 센터드릴, 엔드밀, 탭, 소경 보링바, 리머용으로 사용

High Speed Capability

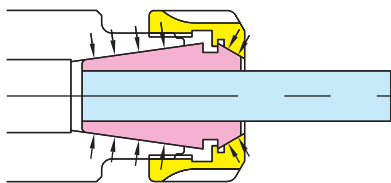
- *. Realization of 40,000 rpm
- *. It is stable strain structure no losse not only sudden-speed but sudden-stop
- *. 40,000 rpm 실현
- *. 급회전 급정지시도 풀리지 않은 취부 구조임.

ER COLLET CHUCK SYSTEM



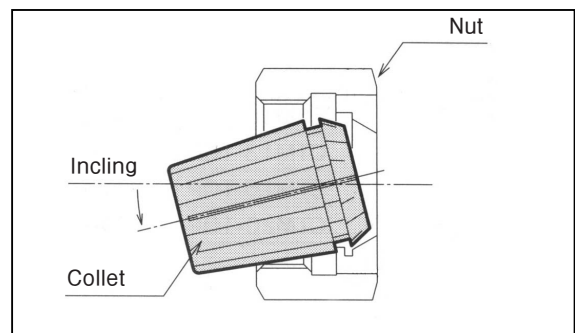
*. 전세계적으로 가장 많이 사용하는 보편화된 ER COLLET CHUCK!!!

*. 너트와 내경 테이퍼 부위를 동시에 잡아주는
더블 테이퍼 방식 → 강력한 파지력 발휘!!!



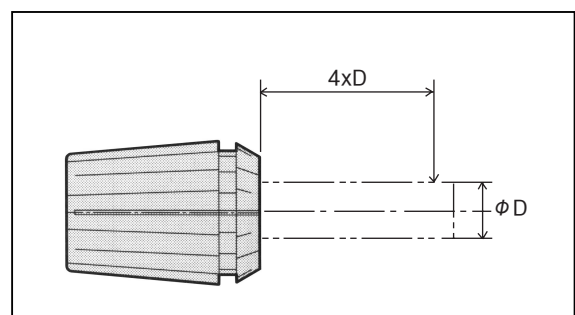
*. 간편한 착탈 방식

너트 내부 편심부위 홈부분에 끼워넣는 방식.
별도의 추출공구가 필요치 않고 간편하게 사용이 가능합니다.



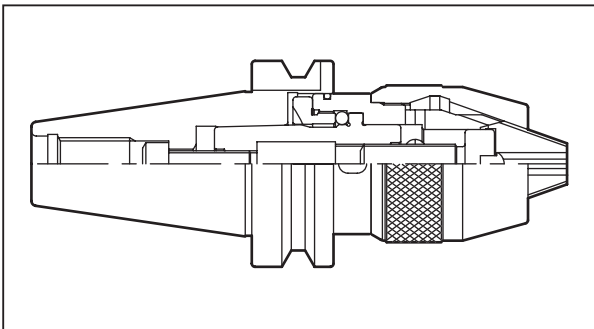
*. 다양한 사이즈의 콜릿 조합이 가능합니다.
NOSE부 4D 선단측정 10 μ m 이내.

콜릿등급(GRADE)	정도(RUN-OUT), μ m	
	입구부	선단
초정밀급	1	1
정밀급	2	5
일반급(STD)	5	10

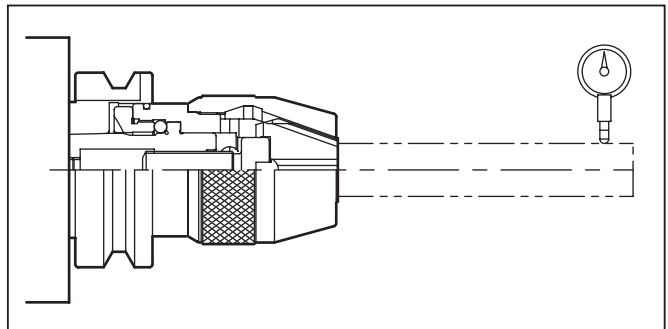




*.일체형,고강성 구조의 N.C DRILL CHUCK!



*.SHANK와 드릴척의 일체형으로 강한 내구성과 정도 (RUN-OUT) 0.04를 보장합니다.

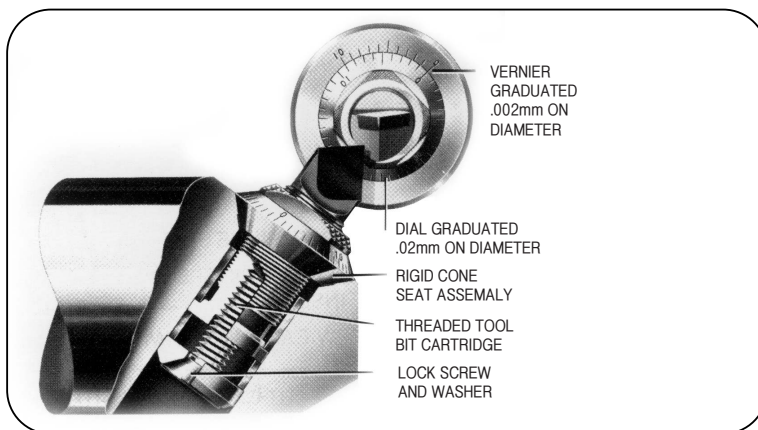


관통구멍 작업시 역추력 발생으로 인한 드릴 파손이 기존에 발생하였으나 DSP N.C DRILL CHUCK은 렌치를 사용하여 드릴과 척을 강력하게 조여 주므로 파손의 걱정이 없습니다.

구 분	Chucking 방법	비틀림Moment	비교%
시판Keyless Chuck	손	0.7kgf-m	100
DSP.NPU Chuck	손	0.7kgf-m	100
DSP.NPU+Wrench	부속 Wrench	2.2kgf-m	314



STANDARD TYPE UNIT

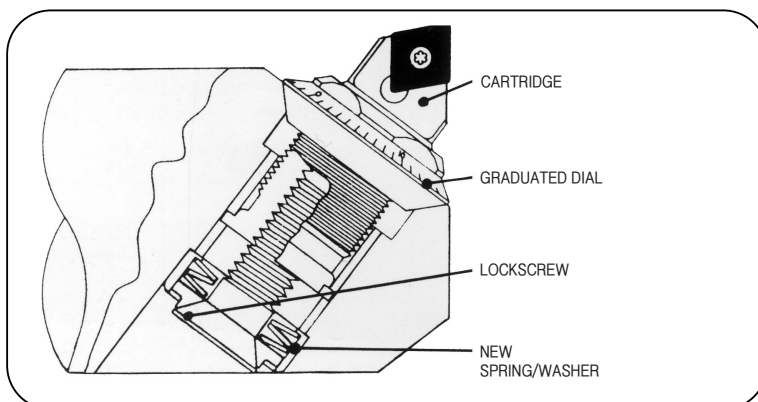


종전 표준 UNIT에 NEW SPRING WASHER를 사용하여 전면에서 DIAL 조작만으로 ONE TOUCH 방식으로 칩수 조정 가능함.

조정방법 : LOCK SCREW를 완전히 조인후 1/2바퀴 풀어준뒤 DIAL를 돌려 미세조정 (One Touch방식)

특징 : NEW SPRING WASHER를 사용하여 DIAL에서 미세조정 ($\phi 0.02$)을 할수 있어 칩수 조절이 매우 편리.

NEW SW TYPE UNIT



NEW SPRING WASHER 조절량

UNIT	M3	M5	M7	M10
STYLE 2	0.20	0.30	0.40	0.50
STYLE 5	0.25	0.40	0.50	0.66

예) M5A2TC-40SW

↓
NEW SPRING WASHER TYPE



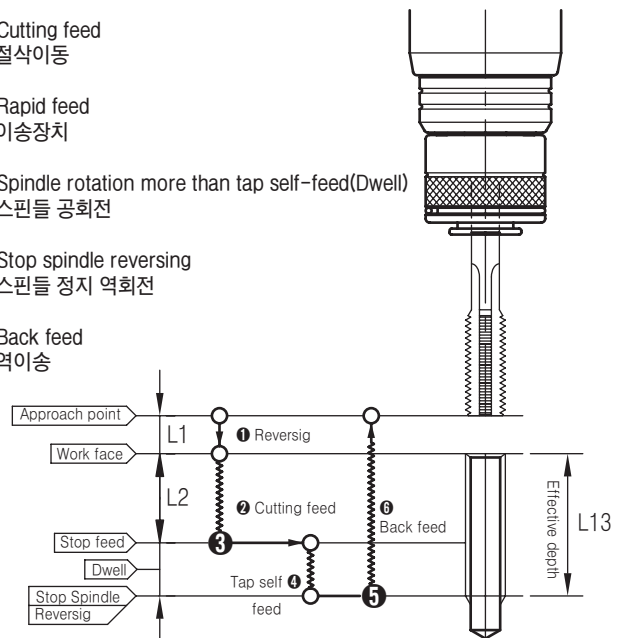
- *. 고정도, 긴수명, ONE TOUCH 교환방식!!!
- *. 탭의 교환이 신속하고 간단하여 사용이 편리합니다.
- *. 축방향 FLOATING방식으로 인장(TENSION),수축(COMPRESSION)장치가 붙어있는 탭핑척입니다.



- *. 토르크 내장형 탭콜릿
- *. 탭콜릿은 각 사이즈에 맞는 토르크 내장형.

Blind Holes, Tapered Screws ETC

- ① Rapid feed form approach point
주축 정회전(근접위치.급이송)
- ② Cutting feed
절삭이동
- ③ Rapid feed
이송장치
- ④ Spindle rotation more than tap self-feed(Dwell)
스핀들 공회전
- ⑤ Stop spindle reversing
스핀들 정지 역회전
- ⑥ Back feed
역이송



- Approach L1 = 13 mm or more
- Cutting Depth L3 = Effective tap depth L2
- Dwell time(sec)= $\times 60 = \frac{\text{Tension } F2}{\text{Tap pitch} \times \text{RPM}} \times 60$

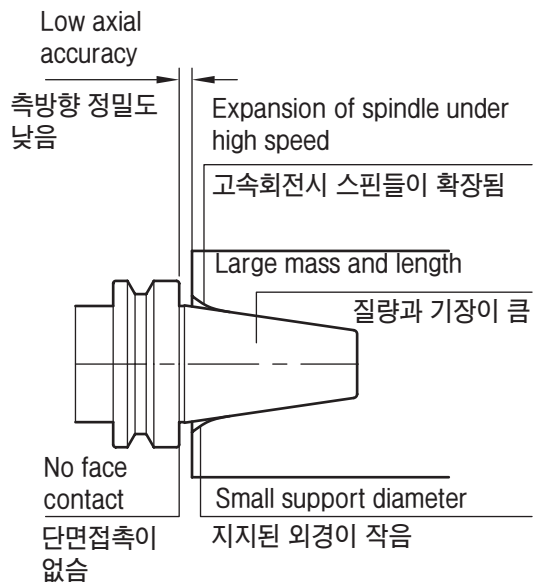
PERFECT TWO-SURFACE CONSTRAINED SYSTEM-HSK

완전 2면 구속형 HSK System

The widely accepted 7/24 taper shank tools have been pointed out their performance is inappropriate in terms of repeatability, joint stiffness and high speed machining.

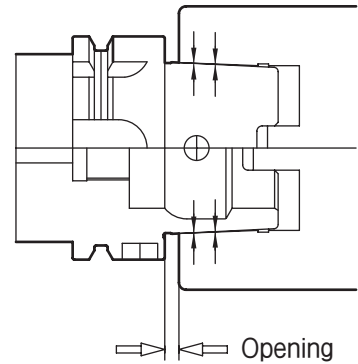
범용으로 사용되고 있는 7/24Taper shank tool은 반복성, 적합강성, 고속성 측면에서 적절한 성능을 얻을 수 없다는 지적이 있습니다.

BT shank constrained system BT Shank 구속



HSK shank perfect two-surface constrained system 2면 구속형 HSK Shank

Connecting

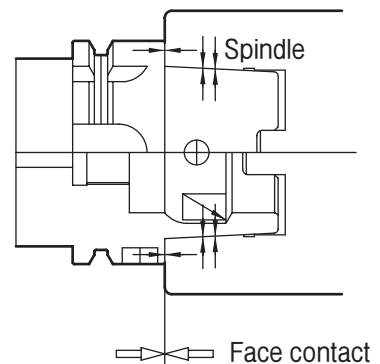


Elastic deformation of taper makes flange surface closely contact the spindle



Taper 탄성변형이 Flange 단면에 Spindle에 밀착시킴.

Clamping

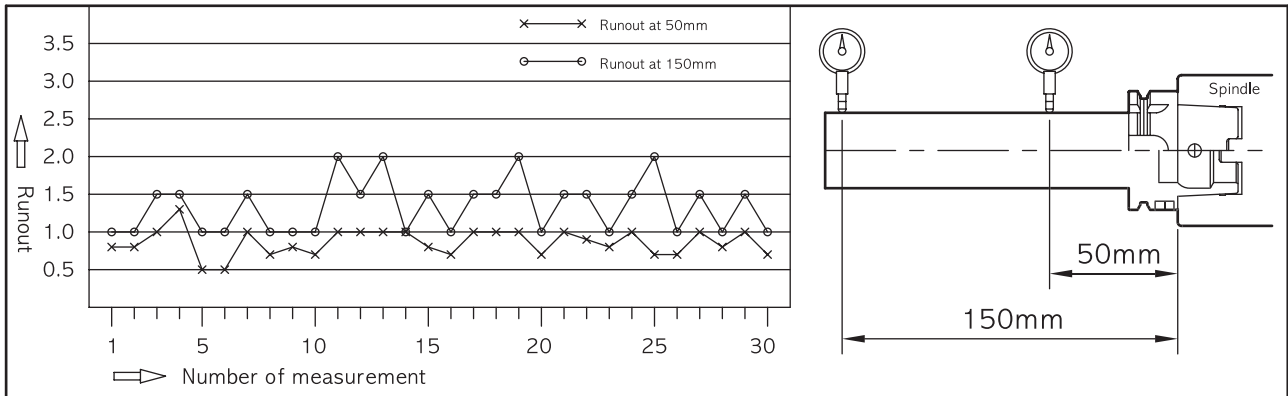


EXCELLENT REPEATABILITY RUNOUT ACCURACY.

As taper of holder will deform elastically following the profile of the spindle shape, there is no eccentricity between the spindle and the holder.

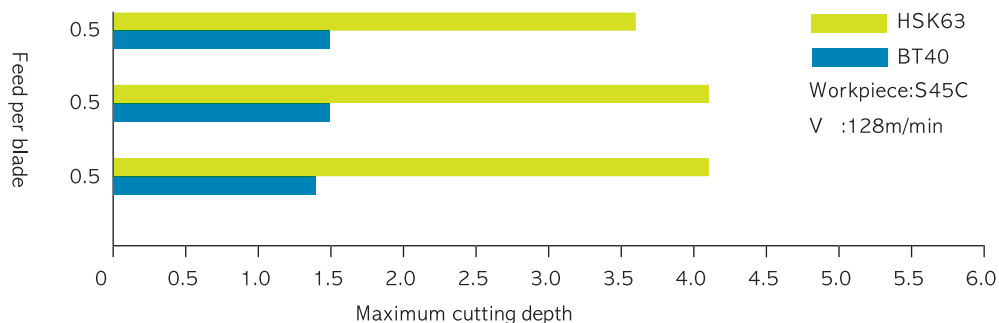
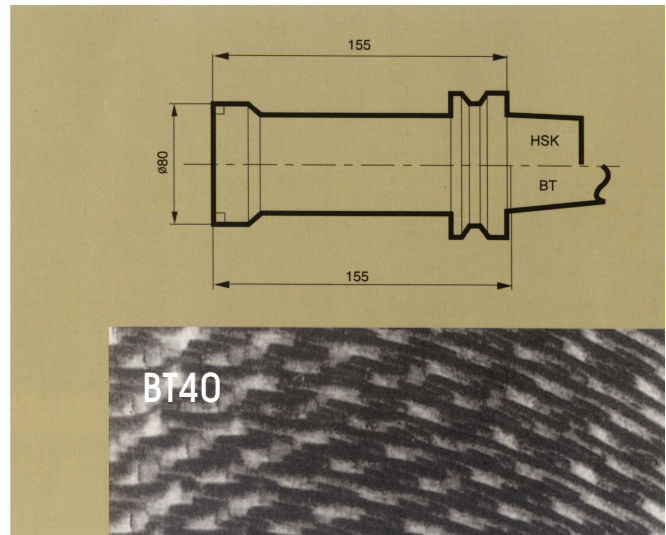
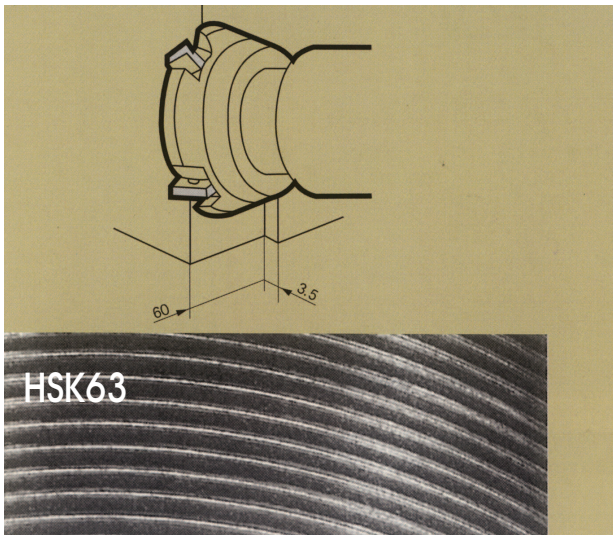
Also due to the perfect face contact between flange surface of the holder and spindle face, bending strength of the holder is very high, which makes radial and axial accuracy very high.

Holder의 Taper가 Spindle의 형상 측면에 따라 유연하게 변경되므로 Spindle과 Holder 사이에 편심력이 없게 된다. 또한 Holder Flange 단면과 Spindle 단면과의 완벽한 접촉으로 Holder의 굽힘 강도가 높게 되는데, 이로 인하여 회전 및 축 정도를 매우 높게 한다.

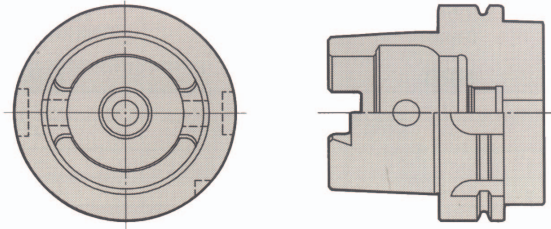


HIGH RIGIDITY AGAINST BENDING LOAD

Two surface (taper and flange) constrained tool interface utilizing appropriate contact pressure distribution and elastic deformation of the taper has an extraordinary bending strength and withstand heavy cutting with long projection length.

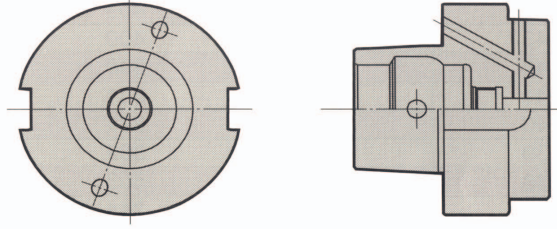


A type



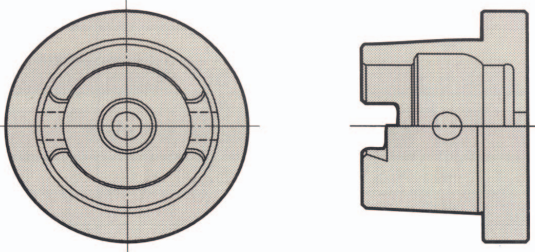
머시닝 센터용
테이퍼 끝 드라이빙 키홈에 의한 코르크 전달
ATC용 U홈 2개, 위치 결정용 노치

B type



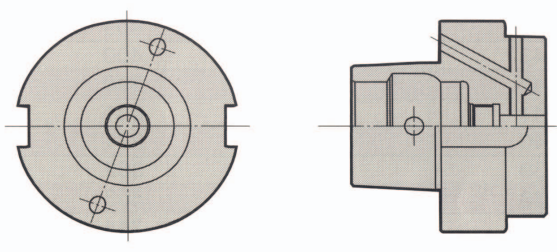
머시닝 센터, 범용밀링, 선반용
FLANGE THROUGH COOLANT(플랜지 쿨런트 방식)
플랜지부 U홈에 의한 토크 전달
위치결정 노치

C type



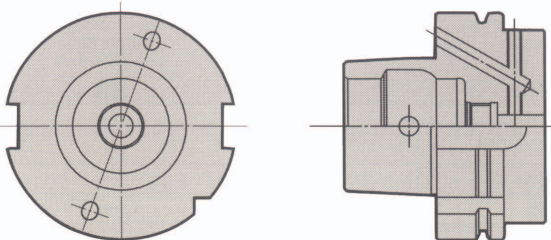
ATC가 없는 트랜스퍼 라인, 전용기 용
테이퍼 끝 드라이빙 키홈에 의한 토크 전달

D type



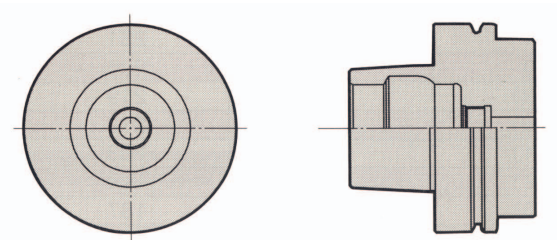
ATC가 없는 트랜스퍼 라인, 전용기 용
큰 플랜지 외경
FLANGE THROUGH COOLANT (플랜지 쿨런트 방식)
플랜지부 U홈에 의한 토크 전달

E type



고속회전용 머시닝센터
마찰에 의한 동력 전달
드라이빙 키홈이 없는 완전 대칭 형상

F type



고속회전용 머시닝센터
큰 플랜지 외경

BALANCING SYSTEM



The most optimal accuracy at high speed.

고속에서 최적의 정도를 보장.



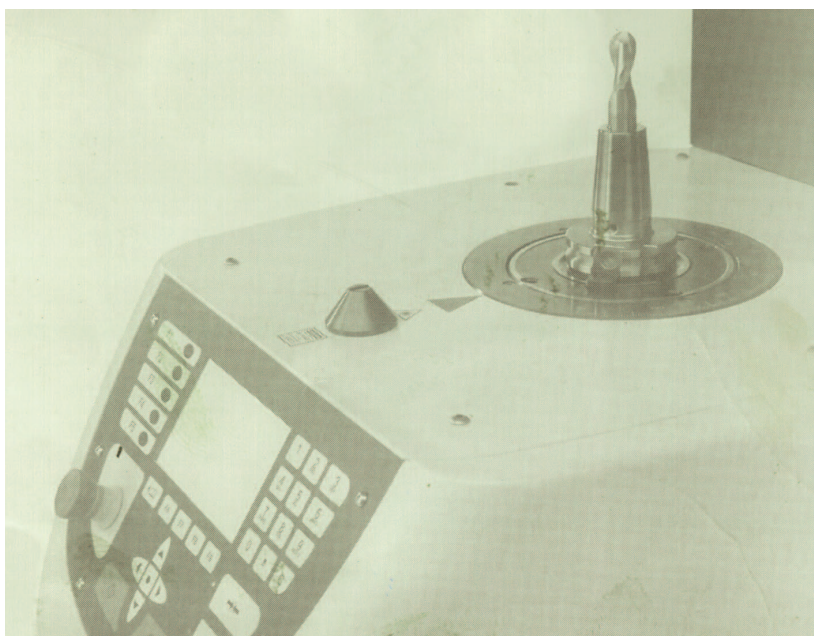
Laser Indicator



Balancing Kit



Balancing Ring



Calibration Unit



Mounting Adapter

BALANCING SYSTEM



Messlauf - Umschlagsmessung

Franz Haimer GmbH
www.haimer.de
technik@haimer.de

Werkzeug: HG 03 - Futter HSK 63 / A.63.122.03 / max. n = 19161 1/min

☐ Wiederholter Meßlauf zur Optimierung

Gemessene Unwucht oben

0.2 gmm

0.01 g

60.5°

Zusätzliche Informationen
Winkel für Zusatzmasse

240.5°

Unwuchtausgleich durch Bohren oben

Bohrdurchmesser: 6 mm

Bohrtiefe: 0.7 mm

Pos. 1: 60.5°

Pos. 2:

Pos. 3:

Aktueller Winkel

136.7°

Gemessene Unwucht unten

2.6 gmm

0.10 g

278.8°

F2 Spindel kompensieren

F3 Bearbeiten

F4 V

Werkzeugdaten bearbeiten

Franz Haimer GmbH
www.haimer.de
technik@haimer.de

Tool Dynamic 1.2

Bez.1 HG 03 - Futter HSK 63

Bez.2 A.63.122.03

Auswuchtverfahren 2 Ebenen (dynamisch)

Zulässige Restunwucht
☒ Auswuchtgüte nach DIN 1940
Wuchtgüte G = 2.5
Betriebsdrehzahl n = 15000 1/min
Gewicht M = 2.3 kg
☐ Eingabe Zahlenwert [gmm]
Uzul. oben = 1.83 Uzul. unten = 1.83

Ausgleich oben durch Bohren
☒ mit Drehingen
Bohrungsdurchmesser durch Bohren
Maximale Bohrtiefe oben = 15 mm
Dichte oben = 7800 kg/m³

Ausgleich unten durch Bohren
Bohrungsdurchmesser unten = 5 mm
Maximale Bohrtiefe unten = 15 mm
Dichte unten = 7800 kg/m³

F2 Messlauf

F3 Speichern

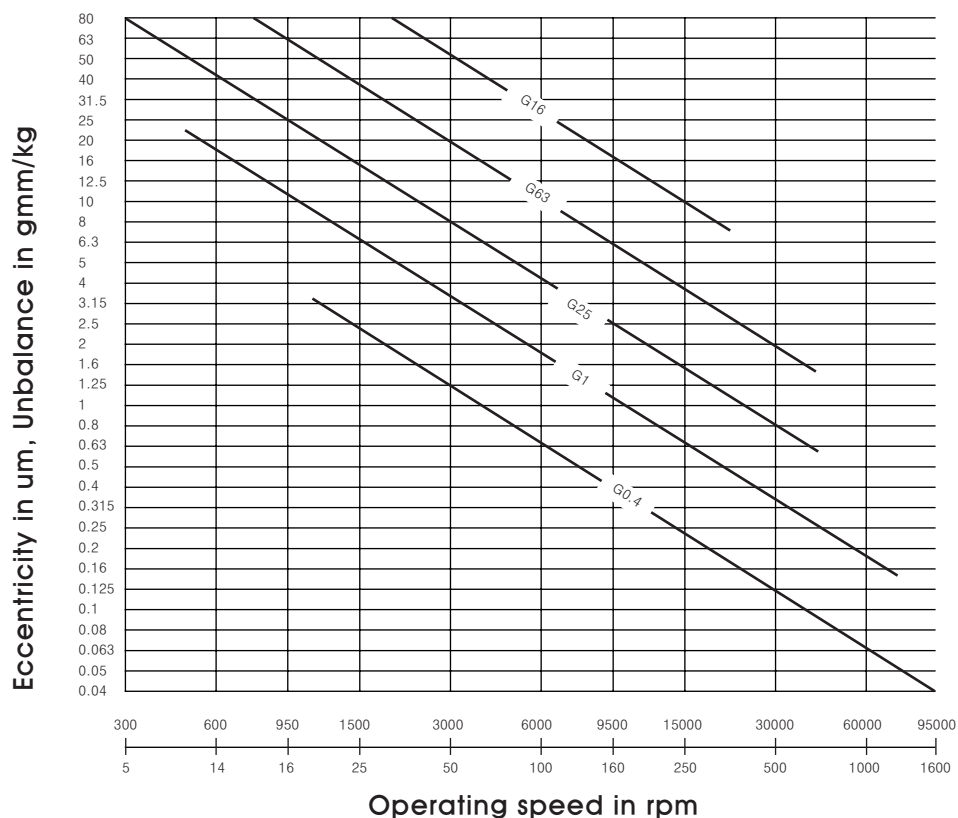
F4 Verwalten

F5 Kalibrieren

F10 Ende

Formula sheet

Rating Diagram According DIN-ISO 1940



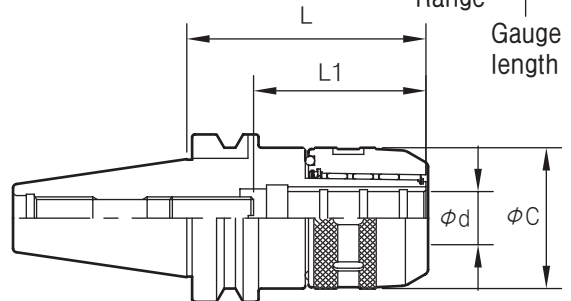
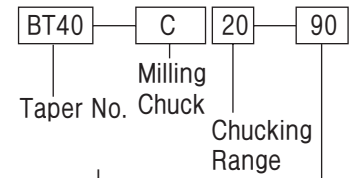
MILLING CHUCK



(PAT.)

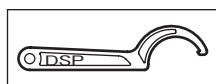


Ordering Example

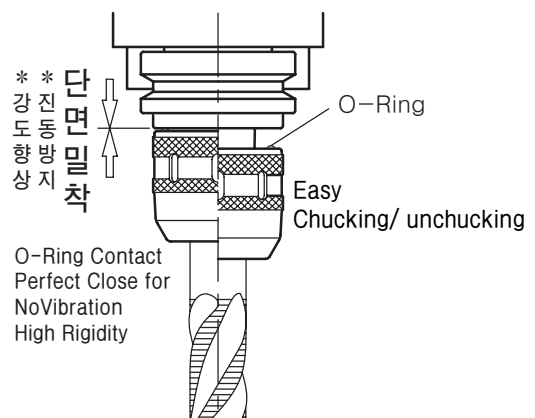


Taper No.	Code No.	φd	L	φC	L1		Collet	Weight (kg)	Stock
					Min	Max			
BT30	BT30-C20- 80	20	80					1.0	■
BT40	BT40-C20- 75		75					1.5	■
	BT40-C20- 90		90				MC20	1.7	■
	BT40-C20-105	20	105	53	45	70	NC20	2.0	■
	BT40-C20-120		120					2.2	■
	BT40-C32- 85		85				MC32	2.0	■
	BT40-C32-105	32	105	70	50	76	NC32	2.4	■
	BT40-C32-120		120					2.7	■
	BT40-C32-120		120					2.7	■
BT50	BT50-C20-105		105				MC20	4.4	■
	BT50-C20-135	20	135	53	45	70	NC20	4.8	■
	BT50-C20-165		165					5.3	■
	BT50-C32-105		105					4.9	■
	BT50-C32-120	32	120	74	60	95	MC32	5.3	■
	BT50-C32-135		135				NC32	5.7	■
	BT50-C32-165		165					6.5	■
	BT50-C42-105		105					5.5	■
	BT50-C42-120	42	120	92	60	98	MC42	6.2	■
	BT50-C42-135		135				NC42	6.9	■
	BT50-C42-165		165					8.3	■
	BT50-C42-165		165					8.3	■

- *. 밀링척은 Machining Center Base Tool Holder입니다.
- *. 밀링척 사용 시 BOX안에 사용설명서를 충분히 읽어보시고 사용 바랍니다.
- *. 밀링척 적용 Straight Shank 아래와 같습니다.
- ▷(ST-C32,42)밀링척 연장용 PAGE.80
- ▷(ST-SX) SX CHUCK PAGE.82 ▷(ST-ERM) ER SILM CHUCK PAGE.81
- ▷(K-NPU) NPU CHUCK PAGE.80
- *. 스페셜 사이즈 (내경 C3/4, 1.1/4)밀링척 주문 가능합니다.
- *. 바란싱 타입(고속회전용) 밀링척은 PAGE.23 참조하시기 바랍니다.
- *. Center Through Type 밀링척은 별도 주문 사양입니다.
- *. Flange Through TYPE 밀링척은 별도 주문 사양입니다.
- *. Spaner는 별매입니다. (범용 밀링척 동일 적용) C4020, C4032 C5032, C5042.



High Rigidity Maximize Flexibility



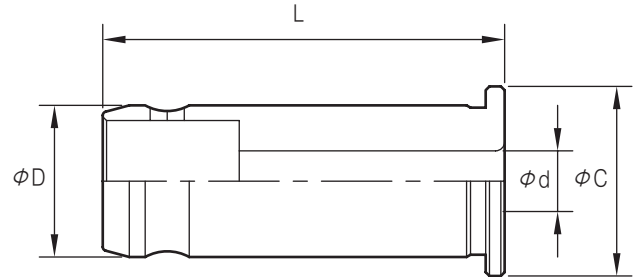
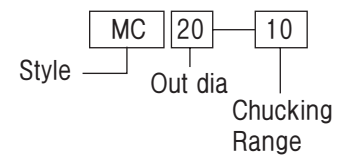
STRAIGHT COLLET(MC TYPE)



MC



Ordering Example

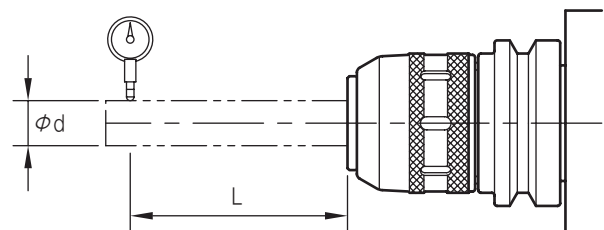


Style	Code No.	φd	φD	L	φC	적 용 MILLING CHUCK	Weight	Stock
							(kg)	
MC20	MC20- 6	6	20	53	25	C20	0.1	■
	MC20- 8	8					0.1	■
	MC20-10	10					0.1	■
	MC20-12	12					0.1	■
	MC20-16	16					0.1	■
MC25	MC25- 6	6	25	61.5	29	C25	0.2	■
	MC25- 8	8					0.2	■
	MC25-10	10					0.2	■
	MC25-12	12					0.2	■
	MC25-16	16					0.2	■
	MC25-20	20					0.2	■
MC32	MC32- 6	6	32	64.5	37	C32	0.3	■
	MC32- 8	8					0.3	■
	MC32-10	10					0.3	■
	MC32-12	12					0.3	■
	MC32-16	16					0.3	■
	MC32-20	20					0.3	■
	MC32-25	25					0.3	■
	MC42	MC42- 6					6	42
MC42- 8		8	78	0.5	■			
MC42-10		10		0.5	■			
MC42-12		12		0.5	■			
MC42-16		16		0.5	■			
MC42-20		20		0.5	■			
MC42-25		25		0.5	■			
MC42-32		32		0.5	■			

*.MC3/4, MC1.1/4 등 다양한 사이즈(φD)도 준비되어 있습니다.

*.표준품 외에 소수점 및 Inch Size도 준비되어 있습니다.

Style & ϕ d		L	T.I.R(μ m)
MC20	6, 8, 10	50	0.010
MC25	12, 16	75	
MC32			
MC42	20, 25, 32	100	

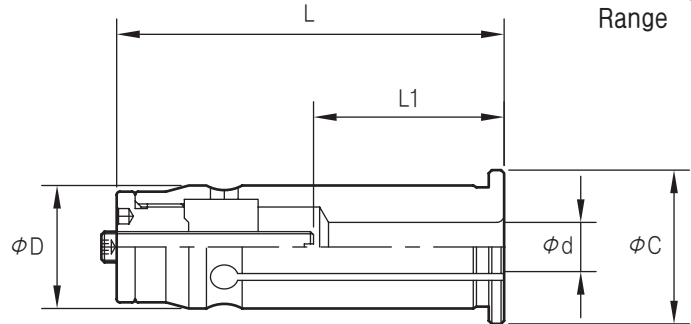
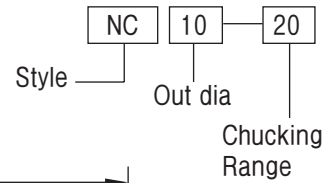


STRAIGHT COLLET(NC TYPE)



조절나사 부착(NC Collet)

Ordering Example

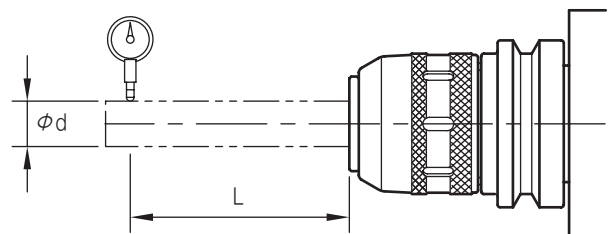


Style	Code No.	φ d	φ D	L	φ C	L1		적 용 MILLING CHUCK	Weight (kg)	Stock
						Min	Max			
NC20	NC20- 6	6	20	63	25	30	50	C20	0.2	■
	NC20- 8	8							0.2	■
	NC20-10	10							0.2	■
	NC20-12	12							0.2	■
	NC20-16	16							0.2	■
NC32	NC32- 6	6	32	75	37	30	60	C32	0.4	■
	NC32- 8	8							0.4	■
	NC32-10	10							0.4	■
	NC32-12	12							0.4	■
	NC32-16	16							0.4	■
	NC32-20	20							0.4	■
	NC32-25	25							0.4	■
NC42	NC42- 6	6	42	85	47	30	72	C42	0.7	□
	NC42- 8	8							0.7	□
	NC42-10	10							0.7	□
	NC42-12	12							0.7	□
	NC42-16	16							0.7	□
	NC42-20	20							0.7	□
	NC42-25	25							0.7	□
	NC42-32	32							0.7	□

*NC3/4, NC1.1/4 등 다양한 사이즈(φD)도 준비되어 있습니다.

*표준품 외에 소수점 및 Inch Size도 준비되어 있습니다.

Style & φ d	L	T.I.R(μm)
NC20,NC32,NC42-6	50	0.010
NC20,NC32,NC42-8		
NC20,NC32,NC42-10		
NC20,NC32,NC42-12	75	
NC20,NC32,NC42-16		
NC32,NC42,-20	100	
NC32,NC42,-25		
NC42-32		

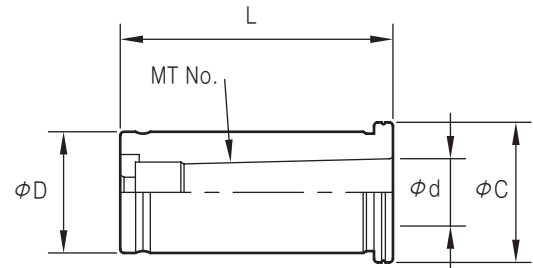
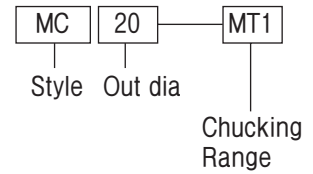


TAPER COLLET

MC-MT



Ordering Example



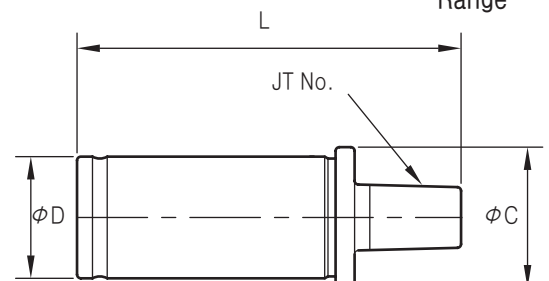
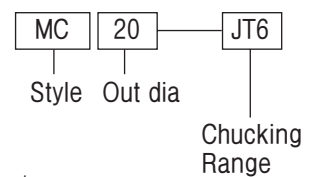
Style	Code No.	φd	MT No.	φD	L	φC	Weight (kg)	Stock
MC20	MC20-MT1	12.065	12.065	20	60	25		☐
	MC20-MT2	17.780	17.780		72			☐
MC32	MC32-MT1	12.065	12.065	32	60	37		☒
	MC32-MT2	17.780	17.780		72			☒
	MC32-MT3	23.825	23.825		90			☒
MC42	MC42-MT1	12.065	12.065	42	60	47		☒
	MC42-MT2	17.780	17.780		72			☒
	MC42-MT3	23.825	23.825		90			☒
	MC42-MT4	31.267	31.267		113			☒

DRILL CHUCK ARBOR

MC-JT



Ordering Example



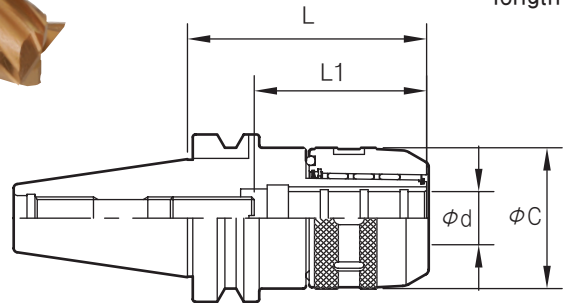
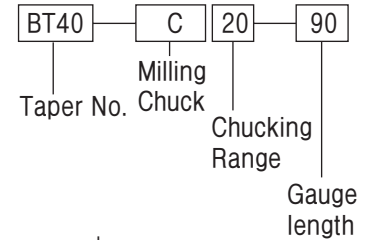
Style	Code No.	JT No.	φD	L	φC	적 용 MILLING CHUCK	Weight (kg)	Stock
MC20	MC20-JT6	JT6	20	93	25	C20		☐
MC32	MC32-JT6		32	101	37	C32		☒
MC42	MC42-JT6		42	101	47	C42		☒

MILLING CHUCK(고속회전용)

C-P



Ordering Example



DSP BALANCING SYSTEM!!!
MILLING CHUCK 고속 회전 (20,000RPM) !!!

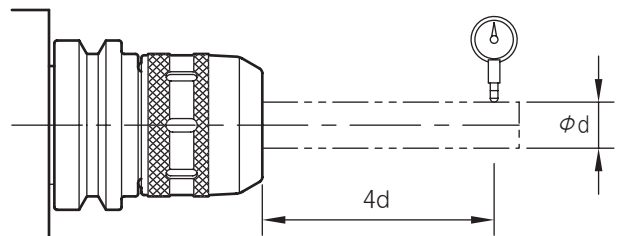
Taper No.	Code No.	φd	L	φC	L1	고속회전수 (rpm)	Collet	Weight (kg)	Stock
BT30	BT30-C20- 80P	20	80					1.0	■
BT40	BT40-C20- 75P	20	75	53	53	30,000	MC20 NC20	1.5	■
	BT40-C20- 90P		90					1.7	■
	BT40-C20-105P		105					2.0	■
	BT40-C20-85P		120					2.0	■
	BT40-C32-105P	32	85	70	70	20,000	MC32 NC32	2.4	■
	BT50-C20-105P		105					4.4	■
BT50	BT50-C20-135P	20	120	53	53	20,000	MC20 NC20	4.8	■
	BT50-C32-105P		105					4.9	■
	BT50-C32-120P	32	135	74	74	15,000	MC32 NC32	5.3	■
	BT50-C32-135P		165					5.7	■
	BT50-C42-105P	42	105	92	92	15,000	MC42 NC42	5.5	■
	BT50-C42-120P		12					6.2	■

- *.상기 표준품외에도 주문 제작 가능합니다.
- *.밀링척 사용 시 BOX안에 있는 사용설명서를 충분히 읽어보시고 사용 바랍니다.
- *.스퍼너는 별매입니다. 19PAGE 참조 하연주시기 바랍니다.

Excellent Runout Accuracy

■ 5μm (T.I.R)Runout at 4D Away form Shank Nose

Style & φd	L	T.I.R(μm)
C20	80	0.005
C32	120	
C42	160	



MX COLLET CHUCK

MX



Ordering Example

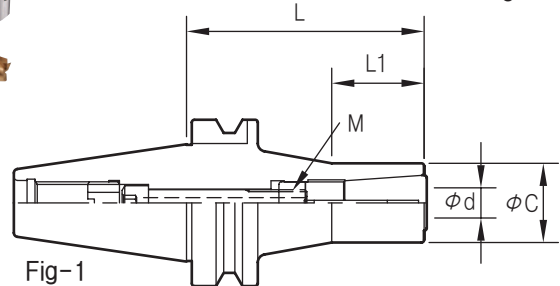
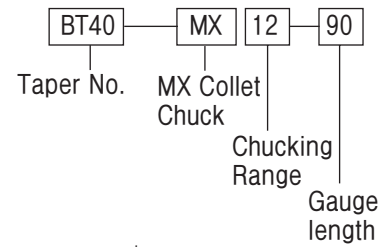


Fig-1

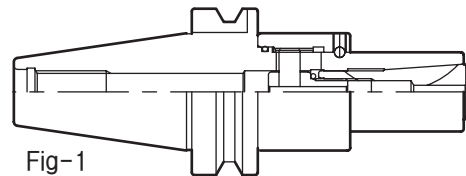


Fig-1

Super Fine Accuracy
Strong Gripping Power
High Speed Capability
Slim & Compact

Taper No.	Code No.	φd	L	φC	L1	M	Fig	Weight	Stock
								(kg)	
BT30	BT30-MX 8- 90	3.0~10.0	90	22	36	M8	1		■
	BT30-MX12-105	3.0~12.0	105	30	35	M10	2		□
BT40	BT40-MX 8- 85	3.0~10.0	85	22	36	M8	1		■
	BT40-MX 8- 105		105		40		2		□
	BT40-MX 8- 120		120		43				■
	BT40-MX12- 90	3.0~12.0	90	30	35	M10	1		■
	BT40-MX12-105		105		40		2		□
	BT40-MX12-120		120		60				□
	BT50		BT50-MX 8- 105		3.0~100		105	22	40
BT50-MX 8- 135		135	43	2			□		
BT50-MX 8- 165		165		2			□		
BT50-MX12-105		3.0~12.0	105	30	35	M10	1		■
BT50-MX12-135			135		60		2		□
BT50-MX12-165			165		70		2		□

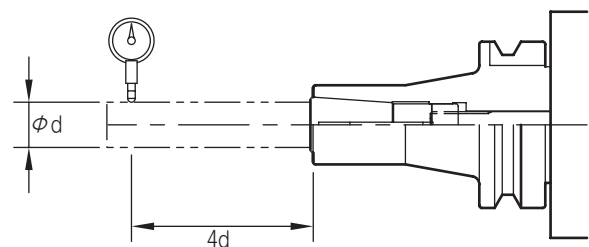
*. MX Collet Chuck Collet은 본페이지 표를 참조하시기 바랍니다.

*. MX Collet Chuck 은 Wrench가 부속되어 있지 않으므로 별도구매 바랍니다.

Excellent Runout Accuracy

*. All grounded super chuck for high speed and high accuracy.

Style & φd	T.I.R(μm)	
	Standard	P class
VX 8 - φd	0.005	0.003
VX12 - φd		

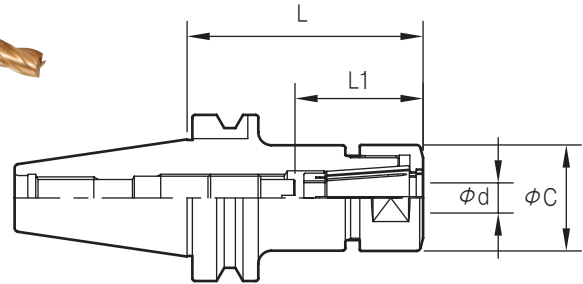
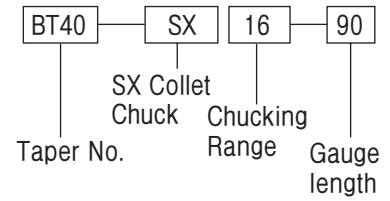


SX COLLET CHUCK

SX



Ordering Example



高精밀도 (5 μ m) 실현 !!!

고속형 M.C.T에 최적 !!!

본체 (BODY)와 나사까지 전체연마 !!!

다양한 작업의 유용성 (E/M, Drill, Reamer 등) !!!

NUT부 특수이온 질화처리로 부드럽고 강력한 CLAMPLING을 할 수 있으며 장기간 사용하셔도 마모가 적습니다.

Taper No.	Code No.	ϕd	L	ϕC	L1		Collet	Weight (kg)	Stock
					Min	Max			
BT30	BT30-SX 6- 60	0.7~6.0	60	19.5	21	35	SX 6		■
	BT30-SX 6- 90		90						■
	BT30-SX10- 45	1.75~10.0	45	27.5	30	50	SX10		■
	BT30-SX10- 60		60						■
	BT30-SX10- 90		90						■
	BT30-SX16- 60	2.75~16.0	60	40	45	60	SX16		■
	BT30-SX16- 90		90						■
	BT30-SX16-120		120						□
	BT30-SX16-150		150						□
	BT30-SX25- 90	16.0~25.4	90	55	55	75	SX25		■
BT40	BT40-SX 6- 60	0.7~6.0	60	19.5	19	34	SX 6		■
	BT40-SX 6- 90		90						■
	BT40-SX 6-120		120						□
	BT40-SX 6-150		150						□
	BT40-SX10- 60	1.75~10.0	60	27.5	30	50	SX10		■
	BT40-SX10- 90		90						■
	BT40-SX10-120		120						■
	BT40-SX10-150		150						■
	BT40-SX10-180		180						□
	BT40-SX16- 60	2.75~16.0	60	40	45	70	SX16		■
	BT40-SX16- 90		90						■
	BT40-SX16-120		120						■
	BT40-SX16-150		150						■
	BT40-SX16-180		180						□
	BT40-SX25- 75	16.0~25.4	75	55	55	85	SX25		■
	BT40-SX25- 90		90						■
	BT40-SX25-120		120						■
	BT50-SX 6-105	0.7~6.0	105	19.5	21	32	SX 6		■
BT50	BT50-SX 6-135		135						■
	BT50-SX 6-165		165						■
	BT50-SX 6-195		195						□

SX COLLET CHUCK

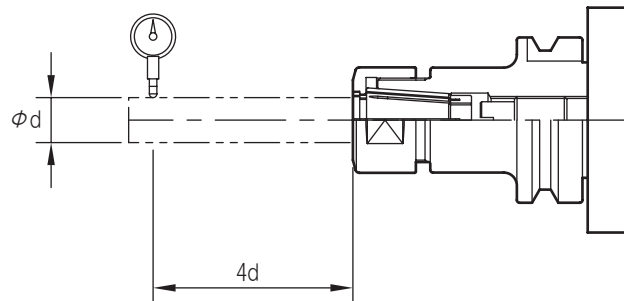
SX

Taper	Code No.	ϕd	L	ϕC	L1		Collet	Weight (kg)	Stock
					Min	Max			
BT50	BT50-SX10-105	1.75~10.0	105	27.5	30	50	SX10		■
	BT50-SX10-135		135						■
	BT50-SX10-165		165						■
	BT50-SX10-195		195						□
	BT50-SX16-105	2.75~16.0	105	40	40	70	SX16		■
	BT50-SX16-135		135						■
	BT50-SX16-165		165						■
	BT50-SX16-195		195						□
	BT50-SX25-105	16.0~25.4	105	55	55	85	SX25		■
	BT50-SX25-135		135						■
	BT50-SX25-165		165						■
	BT50-SX25-195		195						□

Excellent Runout Accuracy

*. All grounded collet chuck for high speed and high accuracy.

Style & ϕd	T.I.R.(μm)	
	Standard	P class
SX 6 - ϕd	0.005	0.003
SX10 - ϕd		
SX16 - ϕd		
SX25 - ϕd		



Multi Purpose

*. 강력한 척킹력 !!!

*. 폭넓은 사이즈의 고정밀도 Collet가 SX6, SX10, SX16, SX25의 본체와 결합하여 드릴, 센터드릴, 엔드밀, 탭, 소경, 보링바, 리머 작업으로 귀사의 요구에 최적입니다.



Drill



End mill



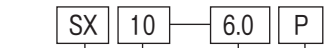
Reamer



Tap



Ordering Example

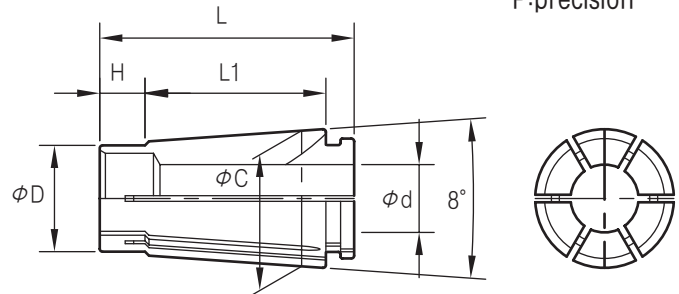


SX Collet

Chuckling Range

Style No.

None:standard
P:precision



SX Collet의 강력한 CLAMPING POWER과 고정밀도($3\mu\text{m}$)의 비결은 8° Tapper에 있습니다.

- 아래와 같이 SX Collet은 RUN-OUT이 $5\mu\text{m}$ 이내로 되어있고, 고정밀급 ($3\mu\text{m}$) 도 다양하게 준비가 되어있습니다.

Style	Code No.	Range
SX6	SX 6-0.8	0.7~0.8
	SX 6-1.0	0.9~1.0
	SX 6-1.25	1.1~1.25
	SX 6-1.5	1.25~1.5
	SX 6-1.75	1.5~1.75
	SX 6-2.0	1.75~2.0
	SX 6-2.25	2.0~2.25
	SX 6-2.5	2.25~2.5
	SX 6-2.75	2.5~2.75
	SX 6-3.0	2.8~3.0
	SX 6-3.5	3.0~3.5
	SX 6-4.0	3.5~4.0
	SX 6-4.5	4.0~4.5
	SX 6-5.0	4.5~5.0
	SX 6-5.5	5.0~5.5
SX 6-6.0	5.5~6.0	

SX10	SX10-2.0	1.75~2.0
	SX10-2.25	2.0~2.25
	SX10-2.5	2.25~2.5
	SX10-2.75	2.5~2.75
	SX10-3.0	2.75~3.0
	SX10-3.5	3.0~3.5
	SX10-4.0	3.5~4.0
	SX10-4.5	4.0~4.5
	SX10-5.0	4.5~5.0
	SX10-5.5	5.0~5.5
	SX10-6.0	5.5~6.0
	SX10-6.5	6.0~6.5
	SX10-7.0	6.5~7.0
SX10-7.5	7.0~7.5	
SX10-8.0	7.5~8.0	

Style	Code No.	Range
SX10	SX10-8.5	8.0~8.5
	SX10-9.0	8.5~9.0
	SX10-9.5	9.0~9.5
	SX10-10.0	9.5~10.0

SX16	SX16-3.0	2.75~3.0
	SX16-3.5	3.0~3.5
	SX16-4.0	3.5~4.0
	SX16-4.5	4.0~4.5
	SX16-5.0	4.5~5.0
	SX16-5.5	5.0~5.5
	SX16-6.0	5.5~6.0
	SX16-6.5	6.0~6.5
	SX16-7.0	6.5~7.0
	SX16-7.5	7.0~7.5
	SX16-8.0	7.5~8.0
	SX16-8.5	8.0~8.5
	SX16-9.0	8.5~9.0
	SX16-9.5	9.0~9.5
	SX16-10.0	9.5~10.0
	SX16-10.5	10.0~10.5
	SX16-11.0	10.5~11.0
	SX16-11.5	11.0~11.5
	SX16-12.0	11.5~12.0
	SX16-12.5	12.0~12.5
SX16-13.0	12.5~13.0	
SX16-13.5	13.0~13.5	
SX16-14.0	13.5~14.0	
SX16-14.5	14.0~14.5	
SX16-15.0	14.5~15.0	
SX16-15.5	15.0~15.5	
SX16-16.0	15.5~16.0	

Style	Code No.	Range
SX25	SX25-16.5	16.0~16.5
	SX25-17.0	16.5~17.0
	SX25-17.5	17.0~17.5
	SX25-18.0	17.5~18.0
	SX25-18.5	18.0~18.5
	SX25-19.0	18.5~19.0
	SX25-19.5	19.0~19.5
	SX25-20.0	19.5~20.0
	SX25-20.5	20.0~20.5
	SX25-21.0	20.5~21.0
	SX25-21.5	21.0~21.5
	SX25-22.0	21.5~22.0
	SX25-22.5	22.0~22.5
	SX25-23.0	22.5~23.0
	SX25-23.5	23.0~23.5
	SX25-24.0	23.5~24.0
SX25-24.5	24.0~24.5	
SX25-25.0	24.5~25.0	
SX25-25.4	25.0~25.4	

Dimension

Style	ϕ D	L	ϕ C	L1	H
SX 6	7.5	25	10	17.6	3.8
SX10	12	30.5	15	21.3	5
SX16	18.8	45	24	32	8
SX25	28.9	57	35	43	8.5

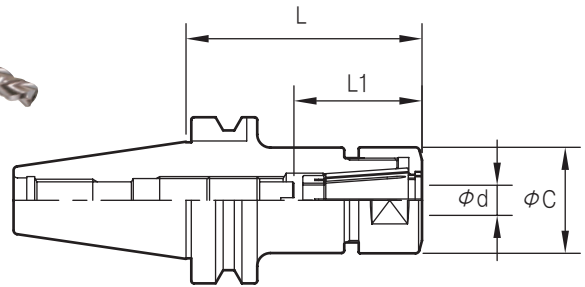
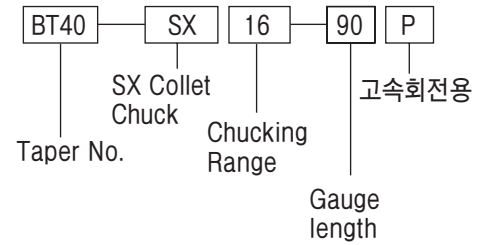
*. 고정밀 작업을 원할시에는 Chuck Range를 준수하여 주시기 바랍니다.

SX COLLET CHUCK(고속회전용)

SX-P



Ordering Example



- *. DSP BALANCING SYSTEM!!!
- *. SX COLLET CHUCK 고속 회전 (40,000RPM)!!!
- *. NUT부 특수이온 질화처리로 부드럽고 강력한 CLAMPLING을 할 수 있으며 장기간 사용하셔도 마모가 적습니다.

Taper No.	Code No.	φd	L	φC	L1		Collet	고속회전수 (rpm)	Stock
					Min	Max			
BT30	BT30-SX 6- 60P	0.7~6.0	60	19.5	21	35	SX6	40,000	■
	BT30-SX 6- 90P		90						■
	BT30-SX10- 45P	1.75~10.0	45	27.5	30	50	SX10		■
	BT30-SX10- 60P		60						■
	BT30-SX16- 60P	2.75~16.0	60	40	45	60	SX16		■
BT40	BT40-SX6 - 60P	0.7~6.0	60	19.5	19	34	SX6	30,000	■
	BT40-SX6 - 90P		90						■
	BT40-SX6 -120P		120						■
	BT40-SX10- 60P	1.75~10.0	60	27.5	30	50	SX10		■
	BT40-SX10- 90P		90						■
	BT40-SX10-120P		120						■
	BT40-SX16- 60P	2.75~16.0	60	40	45	70	SX16	25,000	■
	BT30-SX16- 90P		90						■
	BT40-SX16-120P		120						■
BT50	BT50-SX6 -105P	0.7~6.0	105	19.5	21	32	SX6	20,000	■
	BT50-SX6 -135P		135						■
	BT50-SX6 -165P		165						■
	BT50-SX10-105P	1.75~10.0	105	27.5	30	50	SX10		■
	BT50-SX10-135P		135						■
	BT50-SX10-165P		165						■
	BT50-SX16-105P	2.75~16.0	105	40	40	70	SX16		■
	BT50-SX16-135P		135						■
	BT50-SX16-165P		165						■
	BT50-SX25-105P	16.0~25.4	105	55	55	85	SX25		■
	BT50-SX25-135P		135						■
	BT50-SX25-165P		165						■

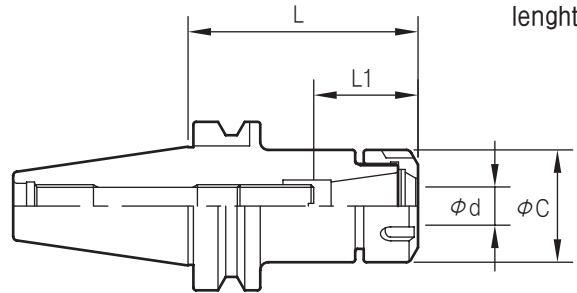
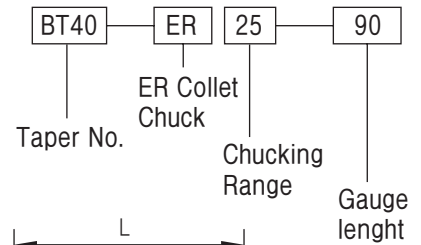
- *. 고속 회전용 CHUCK은 PAGE.28를 참조하시기 바랍니다.
- *. SX COLLET는 PAGE.27를 참조하시기 바랍니다.
- *. Straight Shank SX CHUCK 은 PAGE.82를 참조하시기 바랍니다.
- *. Center Through type SX CHUCK은 별도 주문 사양입니다.
- *. Flange Through Type SX CHUCK은 별도 주문 사양입니다.

- *. 스패너는 별매입니다.
SX6: SX6-SP, SX10: SX10-SP, SX16: SX16-SP, SX25: SX25-SP
- *. 기계사양에 맞는 최적의 BLANCING 이 가능합니다.
- *. 고속회전용 SX COLLET CHUCK 에는 SX COLLET P급 (PAGE26)가장 적합 합니다
- *. 스패너는 별매 입니다.26PAGE 참조하시기 바랍니다.

ER COLLET CHUCK



Ordering Example



*. 전세계의 기준 ER COLLET CHUCK !!!

*. D.S.P 만의 연삭가공 기술 !!!

Taper No.	Code No.	φd	L	φC	L1		Collet	Collet (kg)	Stock
					Min	Max			
BT30	BT30-ER11- 70	0.5~7.0	70	19	19	34	ER11		☐
	BT30-ER11-100		100						☐
	BT30-ER16- 70	0.5~10.0	70	32	23	43	ER16		☒
	BT30-ER16-100		100						☒
	BT30-ER20- 80	0.5~13.0	80	35	25	48	ER20		☒
	BT30-ER20-100		100						☒
	BT30-ER25- 70	0.5~16.0	70	42	34	54	ER25		☒
	BT30-ER25-100		100						☒
	BT30-ER32- 60	1.0~20.0	60	50	40	60	ER32		☒
	BT30-ER32- 90		90						☒
BT40	BT40-ER11- 60	0.5~7.0	60	19	19	34	ER11		☐
	BT40-ER11- 90		90						☐
	BT40-ER11-120		120						☐
	BT40-ER16- 60	0.5~10.0	60	32	23	43	ER16		☒
	BT40-ER16- 90		90						☒
	BT40-ER16-120		120						☒
	BT40-ER16-150		150						☐
	BT40-ER20- 60	0.5~13.0	60	35	25	48	ER20		☒
	BT40-ER20- 90		90						☒
	BT40-ER20-120		120						☒
	BT40-ER20-150		150						☐
	BT40-ER25- 60	0.5~16.0	60	42	34	54	ER25		☒
	BT40-ER25- 90		90						☒
	BT40-ER25-120		120						☒
	BT40-ER25-150		150						☐
	BT40-ER32- 60	1.0~20.0	60	50	40	60	ER32		☒
	BT40-ER32- 90		90						☒
	BT40-ER32-120		120						☒
	BT40-ER32-150		150						☐
	BT40-ER40- 90	2.0~26.0	90	63	50	80	ER40		☒
	BT40-ER40-120		120						☒
	BT40-ER40-150		150						☐

Taper No.	Code No.	ϕd	L	ϕC	L1		Collet	Weight (kg)	Stock
					Min	Max			
BT50	BT50-ER11- 90	0.5~7.0	90	19	19	34	ER11		☐
	BT50-ER11-105		105						☐
	BT50-ER11-135		135						☐
	BT50-ER11-165		165						☐
	BT50-ER16- 90	0.5~10.0	90	32	23	43	ER16		☐
	BT50-ER16-105		105						☒
	BT50-ER16-135		135						☒
	BT50-ER16-165		165						☒
	BT50-ER20- 90	0.5~13.0	90	35	25	48	ER20		☐
	BT50-ER20-105		105						☒
	BT50-ER20-135		135						☒
	BT50-ER20-165		165						☒
	BT50-ER25- 90	0.5~16.0	90	42	34	54	ER25		☐
	BT50-ER25-105		105						☒
	BT50-ER25-135		135						☒
	BT50-ER25-165		165						☒
	BT50-ER32- 90	1.0~20.0	90	50	40	60	ER32		☐
	BT50-ER32-105		105						☒
	BT50-ER32-135		135						☒
	BT50-ER32-165		165						☒
	BT50-ER40- 90	2.0~26.0	90	63	50	80	ER40		☐
	BT50-ER40-105		105						☒
	BT50-ER40-135		135						☒
	BT50-ER40-165		165						☒

*. ER COLLET CHUCK 은 Machining Center Base Tool Holder입니다.

*. 드릴, 엔드밀, 리머, 탭 작업등 다양한 작업이 가능합니다.

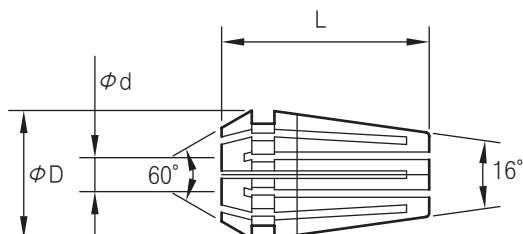
*. ER COLLET CHUCK는 공구 착탈이 용이 합니다.

*. S/T SILM COLLET CHUCK은 PAGE.81 참조하시기 바랍니다.

*. 스패너는 별매입니다. ER11SP, ER16SP, ER20SP, ER25SP, ER32SP, ER40SP

*. DSP에서는 ER COLLET를 공급하지 않습니다.

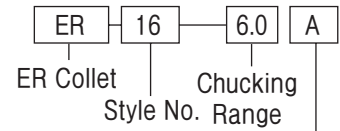
Dimension



Taper No	Range	ϕd	L
ER11- $\phi 1.0 \sim 7.0$	0.5	11.5	17.0
ER16- $\phi 1.0 \sim 10.0$	0.5	17.0	27.5
ER20- $\phi 1.0 \sim 13.0$	0.5	21.0	31.5
ER25- $\phi 2.0 \sim 16.0$	1.0	26.0	34.0
ER32- $\phi 2.0 \sim 20.0$	1.0	33.0	40.0
ER40- $\phi 3.0 \sim 26.0$	1.0	41.0	46.0



Ordering Example



None:standard
P:precision

Style	Code No.	Range
ER11	ER11-1.0	0.5~1.0
	ER11-1.5	1.0~1.5
	ER11-2.0	1.5~2.0
	ER11-2.5	2.0~2.5
	ER11-3.0	2.5~3.0
	ER11-3.5	3.0~3.5
	ER11-4.0	3.5~4.0
	ER11-4.5	4.0~4.5
	ER11-5.0	4.5~5.0
	ER11-5.5	5.0~5.5
	ER11-6.0	5.5~6.0
	ER11-6.5	6.0~6.5
	ER11-7.0	6.5~7.0

ER16	ER16-1.0	0.5~1.0
	ER16-2.0	1.0~2.0
	ER16-3.0	2.0~3.0
	ER16-4.0	3.0~4.0
	ER16-5.0	4.0~5.0
	ER16-6.0	5.0~6.0
	ER16-7.0	6.0~7.0
	ER16-8.0	7.0~8.0
	ER16-9.0	8.0~9.0
	ER16-10.0	9.0~10.0

ER20	ER20-2.0	1.0~2.0
	ER20-3.0	2.0~3.0
	ER20-4.0	3.0~4.0
	ER20-5.0	4.0~5.0
	ER20-6.0	5.0~6.0
	ER20-7.0	6.0~7.0
	ER20-8.0	7.0~8.0
	ER20-9.0	8.0~9.0
	ER20-10.0	9.0~10.0
	ER20-11.0	10.0~11.0
	ER20-12.0	11.0~12.0
	ER20-13.0	12.0~13.0

Style	Code No.	Range
ER25	ER25-2.0	1.0~2.0
	ER25-3.0	2.0~3.0
	ER25-4.0	3.0~4.0
	ER25-5.0	4.0~5.0
	ER25-6.0	5.0~6.0
	ER25-7.0	6.0~7.0
	ER25-8.0	7.0~8.0
	ER25-9.0	8.0~9.0
	ER25-10.0	9.0~10.0
	ER25-11.5	10.0~11.0
	ER25-12.0	11.0~12.0
	ER25-13.0	12.0~13.0
	ER25-14.0	13.0~14.0
	ER25-15.0	14.0~15.0
	ER25-16.0	15.0~16.0

ER32	ER32-3.0	2.0~3.0
	ER32-4.0	3.0~4.0
	ER32-5.0	4.0~5.0
	ER32-6.0	5.0~6.0
	ER32-7.0	6.0~7.0
	ER32-8.0	7.0~8.0
	ER32-9.0	8.0~9.0
	ER32-10.0	9.0~10.0
	ER32-11.0	10.0~11.0
	ER32-12.0	11.0~12.0
	ER32-13.0	12.0~13.0
	ER32-14.0	13.0~14.0
	ER32-15.0	14.0~15.0
	ER32-16.0	15.0~16.0
	ER32-17.0	16.0~17.0
	ER32-18.0	17.0~18.0
	ER32-19.0	18.0~19.0
	ER32-20.0	19.0~20.0

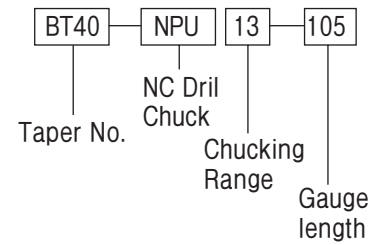
Style	Code No.	Range
ER40	ER40-4.0	3.0~4.0
	ER40-5.0	4.0~5.0
	ER40-6.0	5.0~6.0
	ER40-7.0	6.0~7.0
	ER40-8.0	7.0~8.0
	ER40-9.0	8.0~9.0
	ER40-10.0	9.0~10.0
	ER40-11.0	10.0~11.0
	ER40-12.0	11.0~12.0
	ER40-13.0	12.0~13.0
	ER40-14.0	13.0~14.0
	ER40-15.0	14.0~15.0
	ER40-16.0	15.0~16.0
	ER40-17.0	16.0~17.0
	ER40-18.0	17.0~18.0
	ER40-19.0	18.0~19.0
	ER40-20.0	19.0~20.0
	ER40-21.0	20.0~21.0
	ER40-22.0	21.0~22.0
	ER40-23.0	22.0~23.0
	ER40-24.0	23.0~24.0
	ER40-25.0	24.0~25.0
	ER40-26.0	25.0~26.0

Collet set

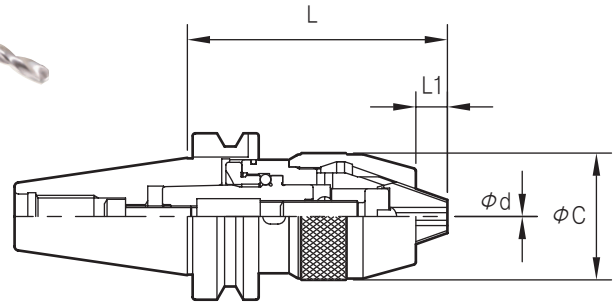
Order No.	Clamping Range	Pcs
ER11-Set	1.5~7.0	12
ER16-Set	1.0~10.0	10
ER20-Set	2.0~13.0	12
ER25-Set	2.0~16.0	15
ER32-Set	3.0~20.0	18
ER40-Set	6.0~26.0	21



Ordering Example



일체형 구조로 인하여 우수한 고정밀도 및 척킹력 실현 !!!
 주축 스피들의 급정지시에도 척의 풀림 현상이 없습니다. !!!
 손쉽게 강력한 CHUCKING 가능 !!!



Taper No.	Code No.	φd	L	φC	L1	Weight (kg)	Stock
BT30	BT30-NPU 8- 95	0.3~0.8	95	38	8.5		■
	BT30-NPU13-100	1.0~13.0	108	50	11.5		■
BT40	BT40-NPU 8- 85	0.3~0.8	87	38	8.5		■
	BT40-NPU 8- 120		120				■
	BT40-NPU 8- 150		150				□
	BT40-NPU13- 85	1.0~13.0	96	50	11.5		■
	BT40-NPU13-130		118				■
	BT40-NPU13-175		163				□
	BT40-NPU13-190		178				■
BT50	BT50-NPU 8- 95	0.3~0.8	98	38	8.5		■
	BT50-NPU 8- 120		120				■
	BT50-NPU 8- 150		150				□
	BT50-NPU13- 95	1.0~13.0	106	50	11.5		■
	BT50-NPU13-130		118				■
	BT50-NPU13-175		163				□
	BT50-NPU13-190		178				■

*. NC DRILL CHUCK은 Machining Center Base Tool Holder 일반적인 드릴링 공구입니다. !!!

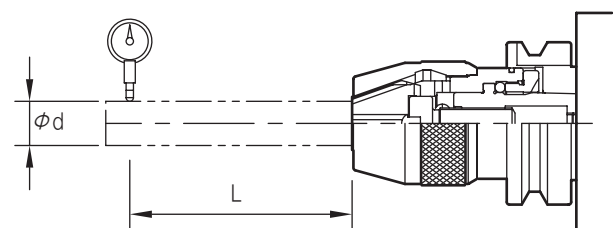
*. Straight Shank NC DRILL CHUCK은 PAGE.80 참조하시기 바랍니다.

*. 스패너는 척에 부착되어 있습니다.

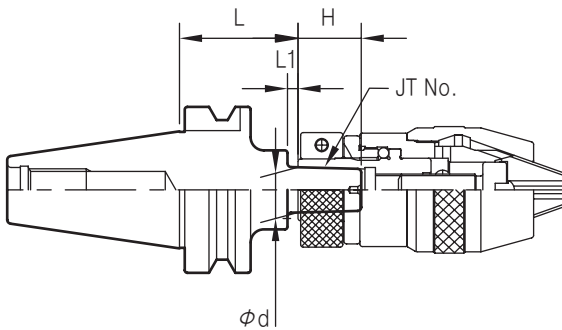
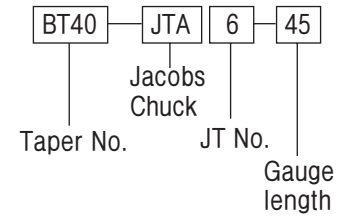
Runout Accuracy

*. 40 μm (T.I.R) Runout at 4D Away form Shank Nose

*. 0.04이하의 흔들림 정도



Ordering Example



*. Taper 접촉율이 80% 이상임으로 진동이 거의 없음
 *. Drill chuck 은 포함되어 있지 않습니다.

Taper No.	Code No.	φ d	JT No.	L	L1	H	Weight	Stock
							(kg)	
BT30	BT30-JTA2 - 30	14.199	2	30	4	20		☐
	BT30-JTA6 - 30	17.170	6			24		☒
BT40	BT40-JTA2 - 45	14.199	2	45		20		☐
	BT40-JTA2 - 90			90				☐
	BT40-JTA33- 45	15.850	33	45		24		☒
	BT40-JTA33- 90			90				☒
	BT40-JTA6 - 45	17.170	6	45				☐
	BT40-JTA6 - 90			90				☐
	BT40-JTA3 - 45	20.599	3	45	5	28		☒
	BT40-JTA3 - 90			90				☒
BT50	BT50-JTA2 - 45	14.199	2	45	4	20		☐
	BT50-JTA2 -105			105				☐
	BT50-JTA33- 45	15.850	33	45		24		☐
	BT50-JTA3 -105			105				☐
	BT50-JTA6 - 45	17.170	6	45				☐
	BT50-JTA6 -105			105				☒
	BT50-JTA3 - 45	20.599	3	45	5	28		☒
	BT50-JTA3 -105			105				☐



Ordering Example

BT40	MTA	3	75
Taper No.	MT Arbor	MT No.	Gauge length

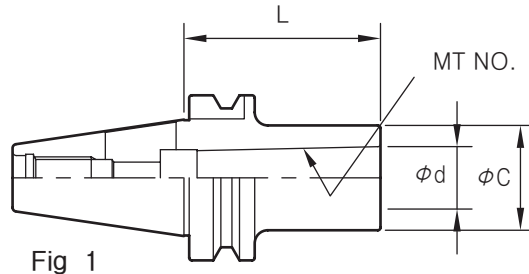


Fig 1

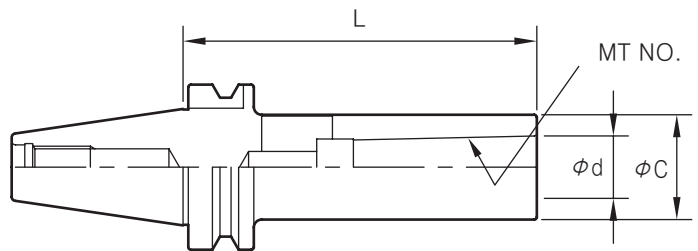


Fig 2

*. Taper 접촉율이 80% 이상임으로 진동이 거의 없음

Taper No.	Code No.	ϕd	MT No.	L	ϕC	Fig	Weight (kg)	Stock
BT30	BT30-MTA1- 45	12.065	1	45	25	1		■
	BT30-MTA2- 60	17.780	2	60	32			■
	BT30-MTA3- 80	23.825	3	80	40			■
BT40	BT40-MTA1- 45	12.065	1	45	25	1		■
	BT40-MTA1-120			120		2		■
	BT40-MTA2- 60	17.780	2	60	32	1		■
	BT40-MTA2-120			120		2		■
	BT40-MTA3- 75	23.825	3	75	40	1		■
	BT40-MTA3-135			135		2		■
	BT40-MTA4- 95	31.267	4	95	50	1		■
	BT40-MTA4-165			165		2		■
BT50	BT50-MTA1- 45	12.065	1	45	25	1		■
	BT50-MTA1-120			120		2		■
	BT50-MTA1-180			180				■
	BT50-MTA2- 45	17.780	2	45	32	1		■
	BT50-MTA2-135			135		2		■
	BT50-MTA2-180			180				■
	BT50-MTA3- 45	23.825	3	45	40	1		■
	BT50-MTA3-150			150		2		■
	BT50-MTA3-180			180				■
	BT50-MTA4- 75	31.267	4	75	50	1		■
	BT50-MTA4-180			180		2		■
	BT50-MTA5-105	44.399	5	105	65	1		■
	BT50-MTA5-210			210		2		□

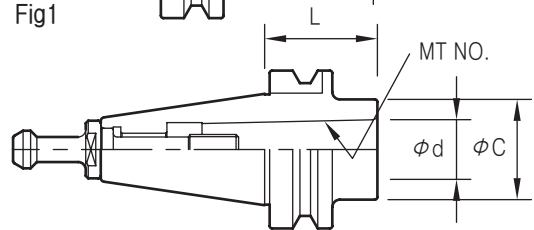
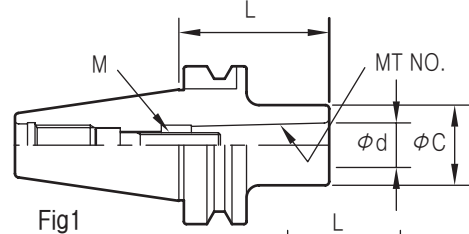
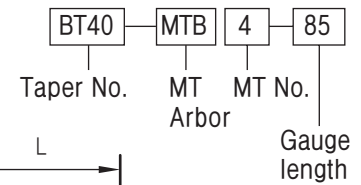
*. Drill, reamer, 기타(MT Shank type tool)등을 사용 할 수 있습니다.

MORSE TAPER HOLDER

MTB



Ordering Example



*. Taper 접촉율이 80% 이상임으로 진동이 거의 없음

Fig2

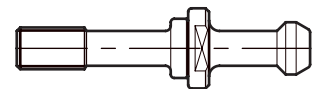
Taper No.	Code No.	φd	MT No.	L	φC	M	Fig	Weight (kg)	Stock
BT30	BT30-MTB1- 45	12.065	1	45	25	M6	1		☐
	BT30-MTB2- 60	17.780	2	60	32	M10	2		☐
	BT30-MTB3- 80	23.835	3	80	40	M12			☐
BT40	BT40-MTB1- 45	12.065	1	45	25	M6	1		☐
	BT40-MTB2- 45	17.780	2	45	32	M10			☐
	BT40-MTB3- 45	23.825	3	45	40	M12	2		☐
	BT40-MTB4- 85	31.267	4	85	50	M16			☐
BT50	BT50-MTB1- 45	12.065	1	45	25	M6	1		☐
	BT50-MTB2- 45	17.780	2	45	32	M10			☐
	BT50-MTB3- 60	23.825	3	60	40	M12			☐
	BT50-MTB4- 75	31.267	4	75	50	M16			☐
	BT50-MTB5-105	44.399	5	105	65	M20	2		☐

*. Fig 1의 경우 Draw screw 는 공급 합니다.

*. Fig 2의 경우 전용 pull stud bolt 가 필요 합니다.

Special pull stud bolt

Taper No.	P.S. Code No.	MTB2	MTB3	MTB4	MTB5
BT30	PS-16	PS-16-2	PS-16-3		
	PS-17	PS-17-2	PS-17-3		
BT40	PS-1		PS-1-3	PS-1-4	
	PS-2		PS-2-3	PS-2-4	
	PS-806		PS-806-3	PS-806-4	
	PS-51		PS-G51-3	PS-G51-4	
BT50	PS-5				PS-5-5
	PS-6				PS-6-5
	PS-0				PS-6-0



MT No.	M
1	M6×1.0
2	M10×1.5
3	M12×1.75
4	M16×2.0
5	M20×2.5

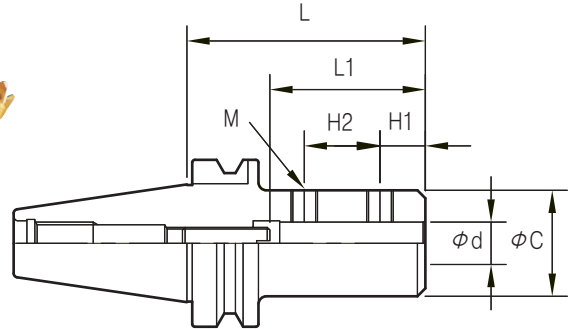
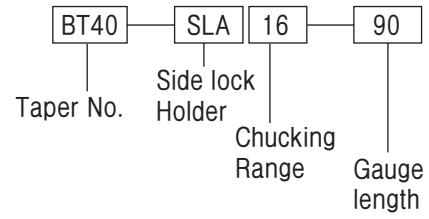
*. 전용 pull stud bolt 의 경우 주문 제작 합니다.

SIDE LOCK HOLDER

SLA



Ordering Example



*. Taper 접촉율이 80% 이상임으로 진동이 거의 없음

Taper No.	Code No.	φd	L	φC	L1		H1	H2	M	Weight (kg)	Stock
					Min	Max					
BT30	BT30-SLA 6- 60	6	60	25	20	35	18	-	M5		■
	BT30-SLA 8- 60	8	60	28	25	40	18	-	M6		■
	BT30-SLA10- 75	10	75	35	35	50	14	13	M8		■
	BT30-SLA12- 75	12	75	40	35	50	14	16	M10		■
	BT30-SLA16- 75	16	75	44	50	65	14	18	M12		■
	BT30-SLA20- 75	20	75	48	55	70	14	22	M14		■
	BT30-SLA25- 85	25	85	48	55	70	18	24	M14		■
	BT30-SLA32-105	32	105	60	65	80	25	5	M16		□
BT40	BT40-SLA 6- 75	6	75	25	20	35	18	-	M5		■
	BT40-SLA 8- 75	8	75	28	25	40	18	-	M6		■
	BT40-SLA10- 90	10	90	35	35	50	14	13	M8		■
	BT40-SLA12- 90	12	90	40	35	50	14	16	M10		■
	BT40-SLA16- 90	16	90	44	50	65	20	20	M12		■
	BT40-SLA20- 90	20	90	50	55	70	25	20	M14		■
	BT40-SLA25- 90	25	90	50	55	70	25	20	M14		■
	BT40-SLA32- 90	32	90	60	65	80	25	25	M16		■
	BT40-SLA40-105	40	105	63	65	80	25	25	M16		□
	BT40-SLA42-105	42	105	63	65	80	25	25	M16		□
BT50	BT50-SLA 6- 90	6	90	25	20	35	18	-	M5		■
	BT50-SLA 8- 90	8	90	28	25	40	18	-	M6		■
	BT50-SLA10- 90	10	90	35	35	50	14	13	M8		■
	BT50-SLA12- 90	12	90	40	35	50	14	16	M10		■
	BT50-SLA16- 90	16	90	44	50	65	20	20	M12		■
	BT50-SLA20-105	20	105	50	60	75	25	20	M14		■
	BT50-SLA25-105	25	105	50	60	75	25	20	M14		■
	BT50-SLA32-105	32	105	60	65	80	25	25	M16		■
	BT50-SLA40-105	40	105	75	65	80	25	25	M16		■
	BT50-SLA42-105	42	105	75	65	80	25	25	M16		■
	BT50-SLA50.8-120	50.8	120	100	50	84	34	36	M20		□

*. drill, endmill, 기타(small chuck, special tool)등을사용할 수 있습니다

*. ● Saddle pin type(DIN1835C)Endmill 용입니다.

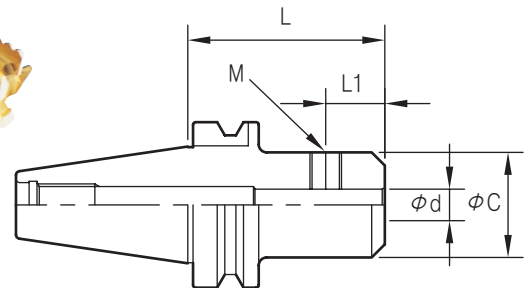
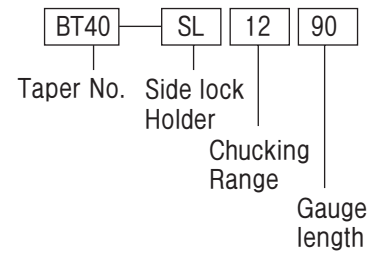
*. Long 사이즈도 다양하게 준비되어 있습니다.

SIDE LOCK(END MILL) HOLDER

SL



Ordering Example



*. Taper 접촉율이 80% 이상임으로 진동이 거의 없음

Taper No.	Code No.	φd	L	φC	L1	M	Weight (kg)	Stock
BT30	BT30-SL 6- 60	6	60	25	18	M6		☐
	BT30-SL 8- 60	8	60	28	18	M8		☐
	BT30-SL10-60	10	60	35	20	M10		☐
BT40	BT40-SL 6- 75	6	75	25	18	M6		☒
	BT40-SL 8- 75	8	75	28	18	M8		☒
	BT40-SL10-75	10	75	35	20	M10		☒
	BT40-SL12-90	12	90	40	22.5	M12		☒
BT50	BT50-SL 6- 90	6	90	25	18	M6		☒
	BT50-SL 8- 90	8	90	28	18	M8		☒
	BT50-SL10-90	10	90	35	20	M10		☒
	BT50-SL12-90	12	90	40	22.5	M12		☒
	BT50-SL16-90	16	90	46	24	M14		☒
	BT50-SL20-90	20	90	52	25	M16		☒

*. Weldon type endmill shank

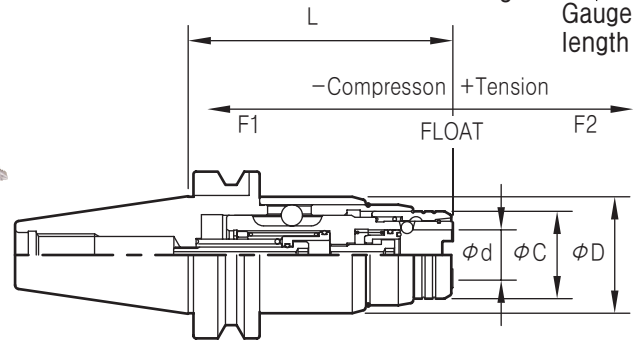
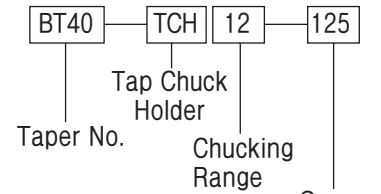
Purpose

Welden Shank	Flat Shank	Whistel Notch Shank

TAPPING CHUCK HOLDER



Ordering Example



Changing tap adapter by one-touch !!!
토크 안전장치로 탭의 파손 방지 !!!

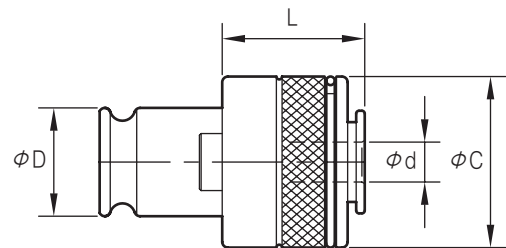
Taper No.	Code No.	ϕd	ϕD	L	ϕC	Float		Weight (kg)	Stock
						F1	F2		
BT30	BT30-TCH12-130	19	44	105	33	6	12		■
BT40	BT40-TCH12-125			100		6	12		■
	BT40-TCH12-165			140		6	12		■
	BT40-TCH22-180	31	61	147	48	10	15		■
	BT40-TCH22-210			177		10	15		■
BT50	BT50-TCH12-135	19	44	110	33	6	12		■
	BT50-TCH12-165			140		6	12		■
	BT50-TCH12-195			170		6	12		■
	BT50-TCH22-165	31	61	132	48	10	15		■
	BT50-TCH22-195			162		10	15		■
	BT50-TCH22-225			192		10	15		■
	BT50-TCH36-210	48	88	165	72	15	22		□

*. Floating 타입으로 인장, 수축장치가 있습니다.

*. Tap Collet은 PAGE.39 참조하여 주시기 바랍니다.

*. 막힌구멍 관통구멍의 tapping 및 모든 tapping작업이 가능합니다.

Dimension

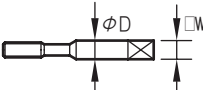


Code No.	ϕd	ϕD	L	ϕC	Tap Range		
					M	U(W)	P
STC1-MOO	4~8.5	19	25	32	3~12	1/4~9/16	1/8~1/4
STC2-MOO	6.2~17	31	33	50	8~22	3/8~7/8	1/8~1/2
STC3-MOO	12.5~28	48	45	72	16~36	5/8~1.3/8	1/4~1.1/8

*. 토크 안전장치가 내장되어 탭 파손을 방지할 수 있습니다.

Tapping Capacity



Style	Tap size			
	Metric	UNC		
	mm	inch	φD	□W
STC-1	M3.0,M3.5	No5 No6	4.0	3.2
	M4.0,M4.5		5.0	4
	M5.0,M5.5		5.5	4.5
	M6.0	U1/4"	6.0	4.5
		U5/16"	6.1	5
	M8.0,M7.0		6.2	5
	M1.0,M9.0	U3/8"	7.0	5.5
	M11	U7/16"	8.0	6
	M12		8.5	6.5
		U1/2"	9.0	7
STC-2	M14,M15	U9/16"	10.5	8
		U5/8"	12.0	9
	M16		12.5	10
	M17		13.0	10
	M18	U3/4"	14.0	11
	M20		15.0	12
	M22	U7/8"	17.0	13
	M24,25		19.0	15
STC-3				

Style	Metric	UNC	φD	□W
	mm	inch		
STC-3	M27,M26	U1"	20.0	15
	M28		21.0	17
		U1,1/8	22.0	17
	M30		23.0	17
	M32	U1,1/4	24.0	19
	M33		25.0	19
	M34,M35	U1.3/8	26.0	21
	M36,M38		28.0	21

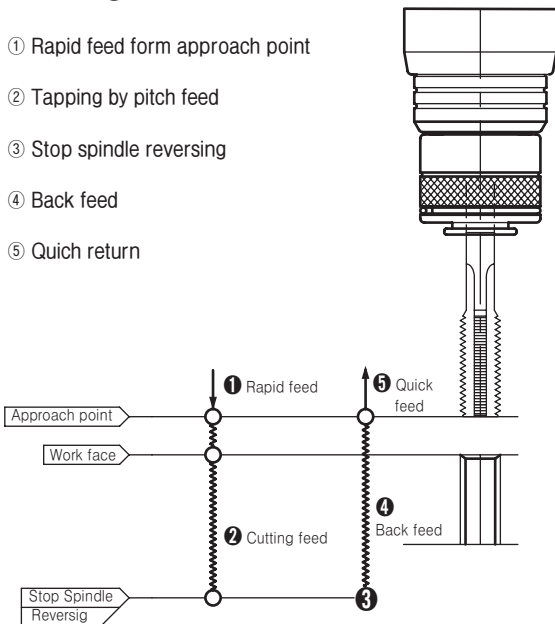
Style	PT	PF	φD	□W
	1/8"	1/8"		
STC-2	1/4"	1/4"	11.0	9
	3/8"	3/8"	14.0	11
	1/2"	1/2"	18.0	14
		5/8"	19.0	15
	3/4"	3/4"	23.0	17
		7/8"	24.0	19
	1"	1"	26.0	21
		1.1/8"	28.0	21

Tap sizes are based on old JIS standard.

How to Use

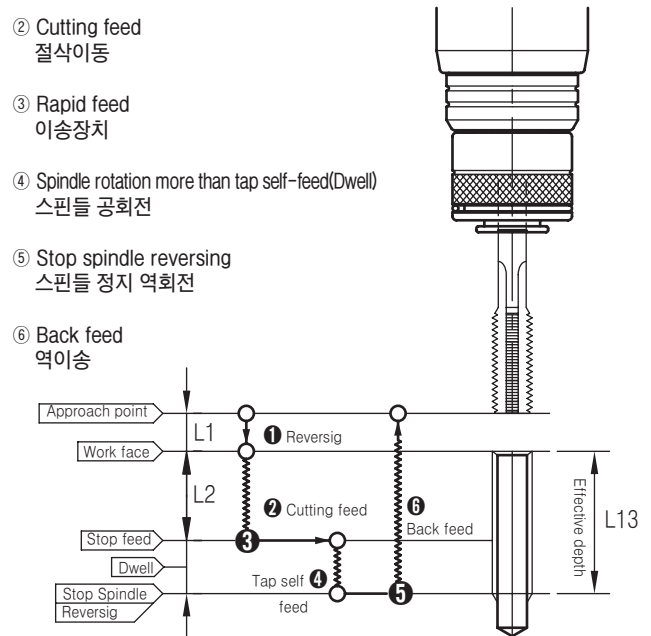
Through Hole

- ① Rapid feed form approach point
- ② Tapping by pitch feed
- ③ Stop spindle reversing
- ④ Back feed
- ⑤ Quick return



Blind Holes, Tapered Screws ETC

- ① Rapid feed form approach point
주축 정회전(근접위치.급이송)
- ② Cutting feed
절삭이동
- ③ Rapid feed
이송장치
- ④ Spindle rotation more than tap self-feed(Dwell)
스핀들 공회전
- ⑤ Stop spindle reversing
스핀들 정지 역회전
- ⑥ Back feed
역이송



○ Approach L1 = 13 mm or more

○ Cutting Depth L3 = Effective tap depth L2

○ Dwell time(sec)= $\times 60 = \frac{\text{Tension F2}}{\text{Tap pitch} \times \text{RPM}} \times 60$

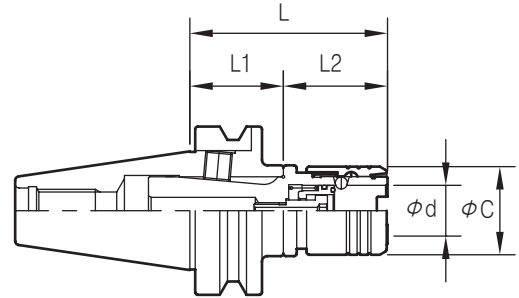
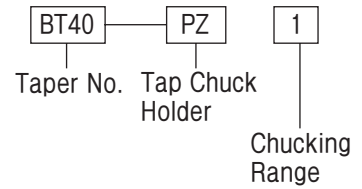
SYNCHRO TAPPING CHUCK

PZ

*. Synchronized tapping on machining centers with rigid tapping mechanism



Ordering Example

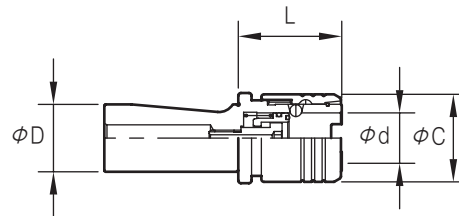


Taper No.	Code No.	ϕd	L	ϕC	L1	L2	Weight (kg)	Stock
BT40	BT40-PZ1	19	74	33	35	39		■
	BT40-PZ2	31	90	50		55		■
BT50	BT50-PZ1	19	84	33	45	39		■
	BT50-PZ2	31	100	50		55		■

*. 고정형 (Non-Floating)타입 입니다.

RIGID TAP SHANK

Center-thru coolant feed

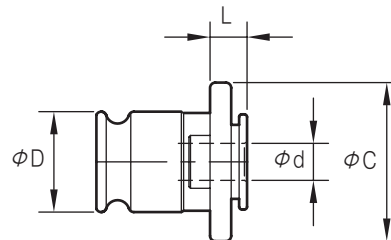


*. Whistle Notch shank.

Taper	Code No.	ϕd	ϕD	L	ϕC	Weight (kg)	Stock
ST1"	S1"-RTC1	19	25.4	39	33		■
	S1"-RTC2	31		55	50		■

*. 탭 어댑터는 원-터치로 교환이 됩니다.

Dimension



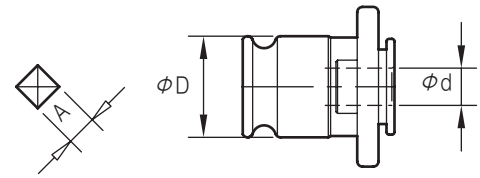
Code No.	ϕd	ϕD	L	ϕC	Tap Range		
					M	U(M)	P
STC1N-MOO	4~8.5	19	7	30	3~12	1/4~9/16	1/8~1/4
STC2N-MOO	6.2~17	31	11	48	8~22	3/8~7/8	1/8~1/2
STC3N-MOO	12.5~28	48	14	70	16~36	5/8~1.3/8	1/4~1.1/8

TAP COLLET



Ordering Example

Tap Collet No. **STC** **1N** **M5**
 Tap Range Size | Tap Size



*. Tap size are based old JIS standard.

Code No.	ϕ D	ϕ d	A	Weight (kg)	Stock
STC1N-M03	19	4.0	3.2		☐
-M3.5					☐
-No.5					☐
-No.6					☐
STC1N-M04		5.0	4.0		☐
-M4.5					☐
STC1N-M05		5.5	4.5		☐
-M5.5					☐
STC1N-M06		6.0	4.5		☐
-U1/4"					☐
STC1N-U5/16"		6.1	5.0		☐
STC1N-M07		6.2			☐
-M08				☐	
STC1N-M09		7.0	5.5		☐
-M10					☐
-U3/8"			6.0		☐
STC1N-M11					☐
-U7/16"		8.0		☐	
-PT/8"				☐	
STC1N-M12		8.5	6.5		☐
STC1N-U1/2"		9.0	7.0		☐
STC1N-M14		10.5	8.0		☐
-M15					☐
-U9/16"					☐

STC2N-U5/16"	31	6.1	5.0		☐
STC2N-M07		6.2			☐
-M08		7.0	5.5		☐
STC2N-M09					☐
-M10					☐
-U3/8"					☐
STC2N-M11		8.0	6.0		☐
-U7/16"					☐
-PT1/8"		8.5	6.0		☐
STC2N-M12					☐
STC2N-U1/2"		9.0	7.0		☐

Code No.	φD	φd	A	Weight (kg)	Stock
STC2N-M14	31	10.5	8.0		☐
-M15					☐
-U9/16"					☐
STC2N-PT1/4"		11.0	9.0		☐
STC2N-U5.8"		12.0	9.0		☐
STC2N-M16		12.5	10.0		☐
STC2N-M17		13.0	10.0		☐
STC2N-M18		14.0	11.0		☐
-U3/4"					☐
-PT3/8"		15.0	12.0		☐
STC2N-M20					☐
STC2N-M22		17.0	13.0		☐
-U7/8"		18.0	14.0		☐
STC2N-PT1/2"					☐
STC2N-M24		19.0	15.0		☐
-M25					☐

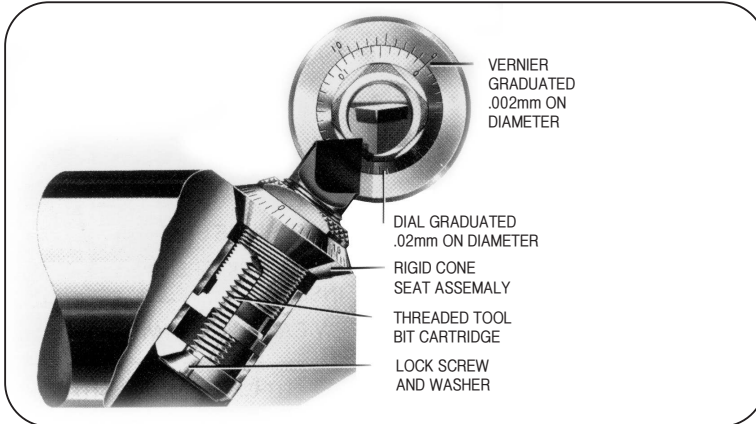
*. Tap size are based old ISO standard.

Code No.	φD	φd	A	Weight (kg)	Stock
STC1N-M03	19	3.5	2.7		☐
STC1N-M04		4.5	3.4		☐
STC1N-M05		6.0	4.9		☐
STC1N-M06		6.0	4.9		☐
STC1N-M08		8.0	6.2		☐
STC1N-M10		10.0	8.0		☐
STC1N-M12	31	9.0	7.0		☐
STC1N-M08		6.0	4.9		☐
STC1N-M10		10.0	8.0		☐
STC1N-M12		9.0	7.0		☐
STC1N-M14		11.0	9.0		☐
STC1N-M16		12.0	9.0		☐
STC1N-M18		14.0	11.0		☐
STC1N-M20		16.0	12.0		☐
STC1N-M22		18.0	14.5		☐
STC1N-M24		18.0	14.5		☐

MICRO UNIT 사용 및 치수 조절방법



STANDARD TYPE UNIT

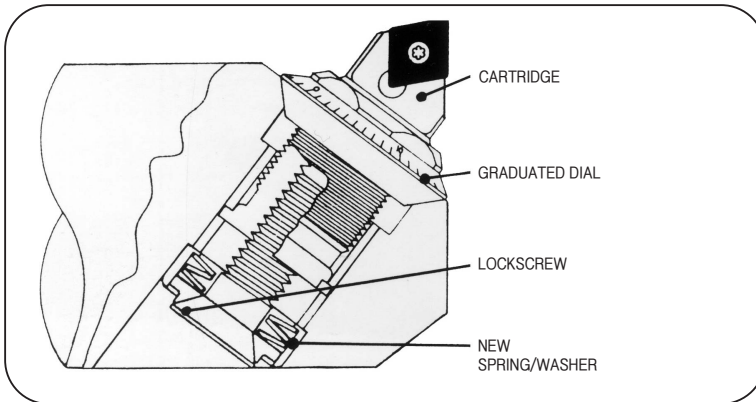


중전 표준 UNIT에 NEW SPRING WASHER를 사용하여 전면에서 DIAL 조작만으로 ONE TOUCH방식으로 칩수 조정 가능함.

조정방법: LOCK SCREW를 완전히 조인후 1/2바퀴 풀어준뒤 DIAL를 돌려 미세조정 (One TOUCH방식)

특징: NEW SPRING WASHER를 사용하여 DIAL에서 미세조정($\phi 0.02$)을 할수 있어 칩수 조절이 매우 편리.

NEW SW TYPE UNIT



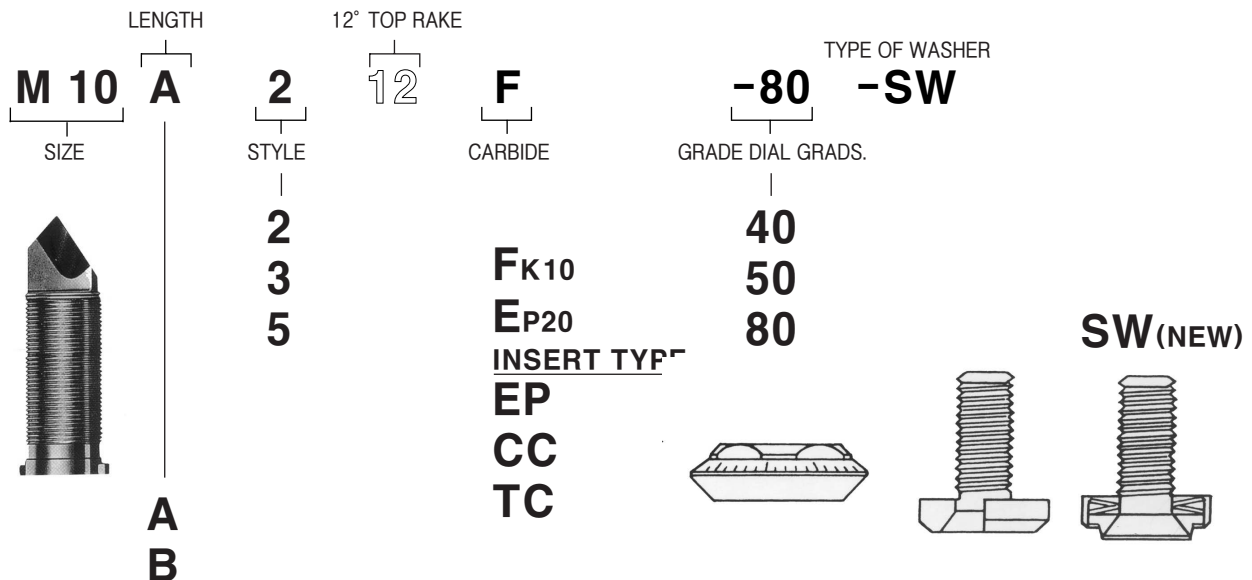
NEW SPRING WASHER TYPE

UNIT	M3	M5	M7	M10
STYLE2	0.20	0.30	0.40	0.50
STYLE5	0.25	0.45	0.50	0.66

예) M5A2TC-40SW

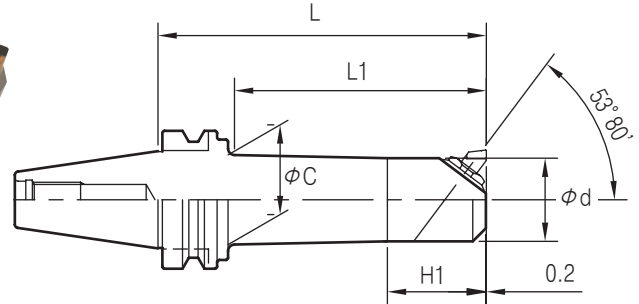
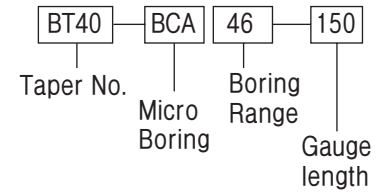
NEW SPRING WASHER TYPE

CARTRIDGE PART NUMBERS SYSTEM





Ordering Example



*. Dial Graduated 0.02mm On Diameter

Taper	Code No.	φ d	Borig Range		L	φ C	L1	H1	Unit	Weight	Stock
			min	max						(kg)	
BT30	BT30-BCA13.5-105	12	13.5	15.9	105	13	67	15	M1B2E(F)		☐
	BT30-BCA14.5-105		14.5	16.9	105	14		16			☐
	BT30-BCA16 -105	14	16	22.4	105	15	73	18	M1A2E(F)		☐
	BT30-BCA19 -120	16	19	23.0	120	18	86	23	M2B2EP		☐
BT40	BT40-BCA13.5-105	12	13.5	15.9	105	13	67	15	M1B2E(F)		☐
	BT40-BCA13.5-165				165			16			☐
	BT40-BCA14.5-105		14.5	16.9	105	14		16			☐
	BT40-BCA14.5-165				165						☐
	BT40-BCA16 -105	14	16	22.4	105	15	73	18	M1A2E(F)		☐
	BT40-BCA16 -180				180					☐	
	BT40-BCA19 -120	16	19	23.0	120	18	86	23	M2B2EP		☐
	BT40-BCA19 -180				180					☐	
	BT40-BCA13 -135	19	23	29.4	135	22	105	24	M3B2CC		☐
	BT40-BCA23 -195				195					☐	
	BT40-BCA29 -150	25	29	41.8	150	28	115	30	M3A2CC		☐
	BT40-BCA29 -195				195					☐	
	BT40-BCA38 -150	33	38	49.2	150	35	172	42	M5B2TC		☐
	BT40-BCA38 -210				210	37				☐	
	BT40-BCA46 -150	38	46	68.6	150	41	182	45	M5A2TC		☐
	BT40-BCA46 -225				225	44				☐	
	BT40-BCA62 -165	51	62	87.4	165	-	184	60	M7A2CC		☐
	BT40-BCA62 -225				225	57				☐	
	BT40-BCA83 -120	63	83	108	120	-	-	80			☐
	BT40-BCA83 -165				165						☐
	BT40-BCA83 -225				225						☐
	BT40-BCA98 -165	75	98	142	165			50	M10A2TC		☐
BT50	BT50-BCA13.5-120	12	13.5	15.9	120	13	67	15	M1B2E(F)		☐
	BT50-BCA13.5-195				195			15			☐
	BT50-BCA14.5-120		14.5	16.9	120	14		16			☐
	BT50-BCA14.5-195				195						☐
	BT50-BCA16 -120	14	16	22.4	120	15	73	18	M1A2E(F)		☐
	BT50-BCA16 -195				195					☐	

MICRO BORING BAR



Taper	Code No.	φ d	Boring Range		L	φ C	L1	H1	Unit	Weight	Stock
			min	max						(kg)	
BT50	BT50-BCA19-135	16	19	23.0	135	18	86	23	M2B2E(F)		☐
	BT50-BCA19-210				210						☐
	BT50-BCA23-150	19	23	29.4	150	22	105	24	M3B2CC		☐
	BT50-BCA23-225				225						☐
	BT50-BCA29-165	25	29	41.8	165	28	115	30	M3A2CC		☐
	BT50-BCA29-225				225						☐
	BT50-BCA38-165	33	38	49.2	165	35	172	42	M5B22TC		☐
	BT50-BCA38-225				225	37					☐
	BT50-BCA46-165	38	46	68.6	165	41	115	45	M5A2TC		☐
	BT50-BCA46-225				225	44	182				☐
	BT50-BCA46-255				255		206				☐
	BT50-BCA62-180	51	62	87.4	180	-	137	60	M7A2TC		☐
	BT50-BCA62-240				240	57	184				☐
	BT50-BCA62-330				330	59	280				☐
	BT50-BCA83-165	63	83	108	165	-	122	70	M7A2TC		☐
	BT50-BCA83-240				240	70	197				☐
	BT50-BCA83-345				345	76	295				☐
	BT50-BCA98-165	75	98	142	165	-	122	85	M10A2TC		☐
	BT50-BCA98-240				240	-	197				☐
	BT50-BCA98-345				345	92	302				☐
	BT50-BCA132-210	108	132	176	210	-	-	65	M10A2TC		☐
	BT50-BCA132-315				315						☐
	BT50-BCA166-225	142	166	210	225	-	-	70	M10A2TC		☐
	BT50-BCA166-315				315						☐
	BT50-BCA200-210	176	200	244	210	-	-	75	M10A2TC		☐

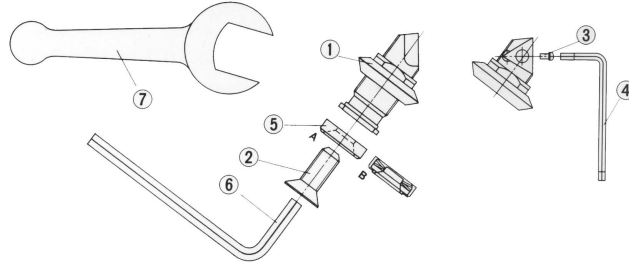
*. 부척의 눈금은 φ당 0.002mm.

*. Brazing Tip의 용도 (E=강용, F=주철용)

MICRO BORE-INSERT TYPE

Unit	Insert Tip	Screw	Insert Grade
M2A2EP(XD) M2B2EP(XD)	EPMW040202	-	W.C(P10)=for steel
M3A2EP(V) M3B2EP(V)	EPMT060202	F2505T	W.C(K10)=for cast, aluminum
M3A2CC M3B2CC	CCMT060202	F2505T	Cermet=for steel
M5A2TC(XT) M5B2TC(XT)	TCMT110202	D4008	Coated=for steel, cast
M7A2TC(XT) M7B2TC(XT)	TCMT16T304	D4012	stainless, etc
M10A2TC(XT) M5ABTC(XT)	TCMT16T304	D4012	

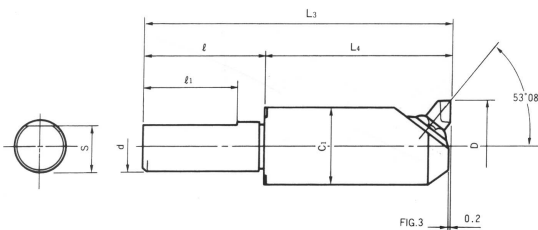
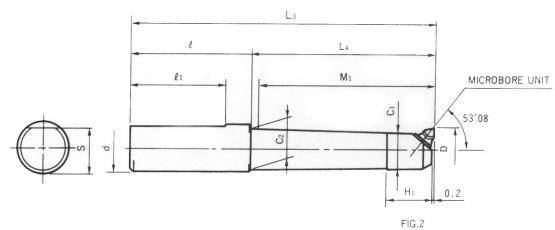
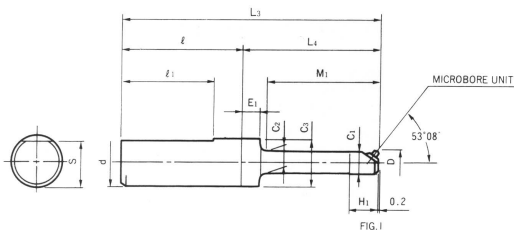
MICRO UNIT PART LIST



Component			Units	M1A(B)	M2A(B)	M3A(B)	M5A(B)	M7A(B)	M10A(B)
①	DIAL	각도		M1-40	M2-40	M3-40	M5-40	M7-80	M10-80
		직각		M1-50	M2-50	M3-50	M5-50	M7-100	M10-100
②	LOCK SCREW	AType		F-M3-0.5-8	F-M3-0.5-12	F-M4-0.7-15	F-M6-1.0-25	F-M10-1.5-30	F-M12-1.75-50
		BType		F-M3-0.5-6	F-M3-0.5-10	F-M4-0.7-12	F-M6-1.0-2.0	F-M10-1.5-25	F-M12-1.75-35
③	INSERT SCREW	EP, CC, TC			F2004T	F205ST	F205ST	D4012T	D4012T
		BS Type				N2008H	N2008H	N3512T	N3512T
④	T-WRENCH				T6	T7	T7	T15	T15
⑤	WRENCH	A			2306	3306	5306	7306	10306
		B(SW)				M3301	M5301	M7301	M10301
⑥	L/WRENCH					WR-2.5	WR-4	WR-6	WR-8
⑦	SPANNER			M1-DS	M2-DS	M3-DS	M5-DS	M7-DS	M10-DS
				1330A	2330A	2330A	5330A	5330A	5330A

STRAIGHT SHANK BORING BAR

ST-BCA



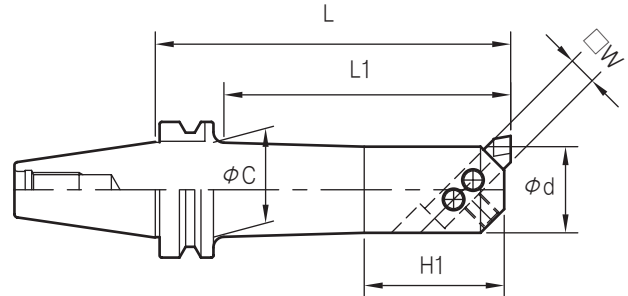
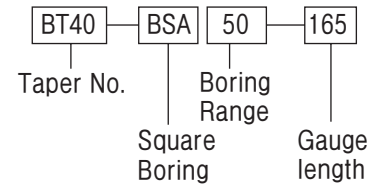
ϕd	S	ℓ	ℓ_1
$\phi 32g6$	30	80	80

Code No.	FIG.	D		L4	L3	M1	C1	C2	C3	H1	E1	Microbore Unit	WEIGHT (kg)
		MIN.	MAX.										
ST32-BCA13.5- 75	1	13.5	15.9	75	155	67	12	13	31	15	5	M1B2 _{EF} 40	0.5
ST32-BCA14.5- 75	1	14.5	16.9	75	155	67	12	14	31	15	5	M1B2 _{EF} 40	0.5
ST32-BCA16 - 90	1	16	22.4	90	170	73	14	15	31	18	13	M1A2 _{EF} 40	0.5
ST32-BCA19 - 90	2	19	23.0	90	170	86	16	18	-	23	-	M2B2 _{EF} 40	0.5
ST32-BCA23 -120	1	23	29.4	120	200	105	19	22	31	24	12	M3B2 _{CC} 40	1
ST32-BCA29 -120	3	29	41.8	120	200	115	25	28	-	30	-	M3A2 _{CC} 40	1
ST32-BCA38 -120	3	38	49.2	120	200	-	33	-	-	-	-	M5B2 _{TC} 40	1.5
ST32-BCA46 -120	3	46	68.6	120	200	-	38	-	-	-	-	M5A2 _{TC} 40	1.5
ST32-BCA62 -120	3	62	87.4	120	200	-	51	-	-	-	-	M7A2 _{TC} 80	2.5

SQUARE BORING BAR



Ordering Example

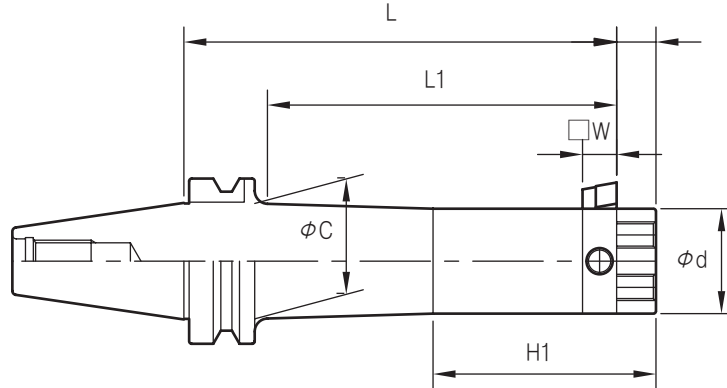
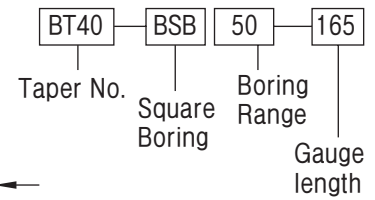


Taper No.	Code No.	φ d	Boring Range		L	φ C	L1	H1	□ W	Weight (kg)	Stock
			min	max							
BT30	BT30-BSA 25-120	20	25	38	120	22	92	35	08		☐
	BT30-BSA 30-150	24	30	42	150	26	121	40			☐
	BT30-BSA 38-165	30	38	52	165	33	135	50	10		☐
	BT30-BSA 42-165	34	42	56	165	37	138	60			☐
BT40	BT40-BSA 25-135	20	25	38	135	22	105	35	08		☐
	BT40-BSA 30-165	24	30	42	165	26	105	40			☐
	BT40-BSA 38-165	30	38	52	165	33	133	50	10		☐
	BT40-BSA 42-165	34	42	56	165	37	133	60			☐
	BT50-BSA 50-165	40	50	65	165	44	133	65	13		☐
	BT40-BSA 50-210				210	44	178				☐
	BT40-BSA 62-165	50	62	90	165	50	133	80	16		☐
	BT40-BSA 62-225				225	56	193				☐
	BT40-BSA 72-165	60	72	110	165	60	-	95	19		☐
	BT40-BSA 72-225				225	60	-				☐
	BT40-BSA 90-165	75	90	125	165	62	-	60	19		☐
	BT40-BSA 90-210				210	62	-				☐
BT50	BT50-BSA 25-135	20	25	38	135	22	92	35	08		☐
	BT50-BSA 30-165	24	30	42	165	26	122	40			☐
	BT50-BSA 38-180	30	38	52	180	33	137	50	10		☐
	BT50-BSA 42-210	34	42	56	210	37	167	60			☐
	BT50-BSA 50-180	40	50	65	180	46	137	65	13		☐
	BT50-BSA 50-240				240	46	197				☐
	BT50-BSA 62-195	50	62	90	195	56	152	80	16		☐
	BT50-BSA 62-270				270	56	227				☐
	BT50-BSA 72-195	60	72	110	195	66	152	95	19		☐
	BT50-BSA 72-285				285	66	242				☐
	BT50-BSA 90-210	75	90	125	210	80	167	110	19		☐
	BT50-BSA 90-300				300	80	257				☐
	BT50-BSA105-195	90	105	160	195	90	-	130	25		☐
	BT50-BSA105-285				285	94	-				☐
	BT50-BSA130-255	110	130	190	255	99	-	85	25		☐

*. 황삭용 Boring 및 중간정삭 Boring.

*. 막힌구멍과 관통된 구멍 Boring.

Ordering Example



Taper No.	Code No.	φ d	Boring Range		L	φ C	L1	H1	□ W	Weight (kg)	Stock
			min	max							
BT30	BT30-BSB25-120	20	25	52	120	22	92	50	08		☐
	BT30-BSB38-165	30	38	70	165	33	121	70	10		☐
	BT30-BSB50-165	40	50	90	165	44	135	85	13		☐
BT40	BT40-BSB25-135	20	25	52	135	22	90	50	08		☐
	BT40-BSB38-165	30	38	70	165	33	135	70	10		☐
	BT40-BSB50-165	40	50	90	165	44	135	85	13		☐
	BT40-BSB50-210	40	50	90	210	44	180	85	13		☐
	BT40-BSB62-165	50	62	115	165	-	135	95	16		☐
	BT40-BSB62-225	50	62	115	225	56	180	95	16		☐
	BT40-BSB72-165	60	72	135	165	-	135	110	19		☐
	BT40-BSB72-225	60	72	135	225	-	195	110	19		☐
	BT40-BSB90-165	75	90	150	165	-	-	130	19		☐
	BT40-BSB90-210	75	90	150	210	-	-	130	19		☐
BT50	BT50-BSB25-135	20	25	52	135	22	92	50	08		☐
	BT50-BSB38-180	30	38	70	180	33	137	70	10		☐
	BT50-BSB50-180	40	50	90	180	44	137	85	13		☐
	BT50-BSB50-240	40	50	90	240	44	197	85	13		☐
	BT50-BSB62-195	50	62	115	195	56	152	95	16		☐
	BT50-BSB62-270	50	62	115	270	56	227	95	16		☐
	BT50-BSB72-195	60	72	135	195	66	152	110	19		☐
	BT50-BSB72-285	60	72	135	285	66	242	110	19		☐
	BT50-BSB90-210	75	90	150	210	80	167	130	19		☐
	BT50-BSB90-300	75	90	150	300	80	257	130	19		☐
	BT50-BSB105-195	90	105	190	195	-	-	-	25		☐
	BT50-BSB105-285	90	105	190	285	94	-	150	25		☐
	BT50-BSB130-285	110	130	260	255	-	-	60	25		☐

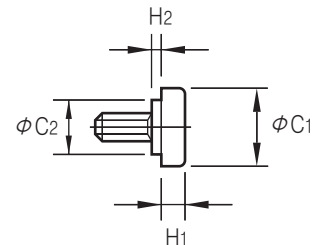
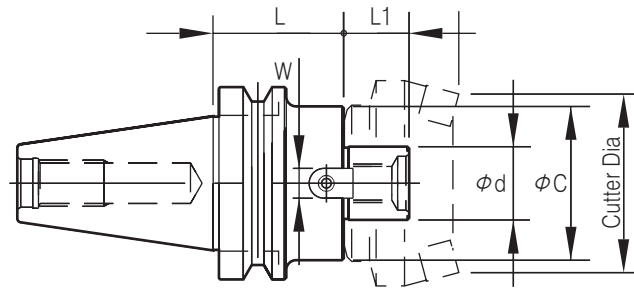
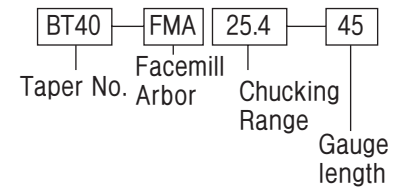
*. 황삭용 Boring 및 중간정삭 Boring.

*. 막힌구멍과 관통된 구멍 Boring.

FACE MILL ARBOR



Ordering Example



*. Taper 접촉율이 80% 이상임으로 진동이 거의 없음

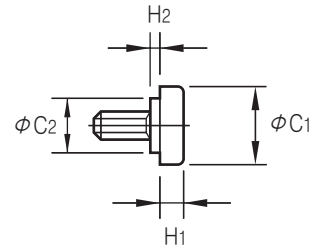
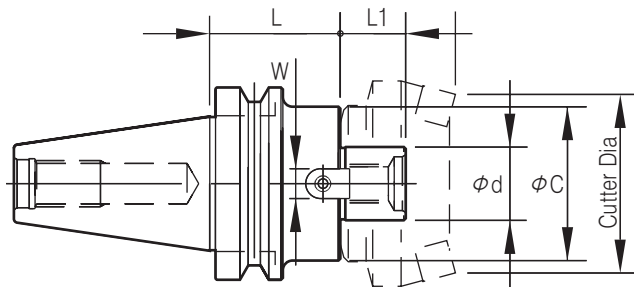
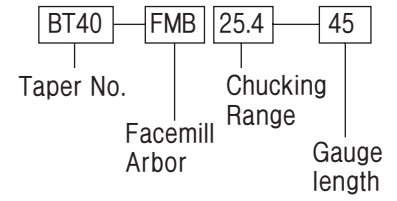
Taper No.	Code No.	φd	Cutter Dia	L	φC	L1	W	Weight (kg)	Stock
BT30	BT30-FMA25.4- 45	25.4	80	45	50	22	9.5		■
	BT30-FMA31.75- 45	31.75	100		60	30	12.7		■
BT40	BT40-FMA25.4- 45	25.4	80	45	50	22	9.5		■
	BT40-FMA25.4- 90			90					■
	BT40-FMA31.75- 45	31.75	100	45	60	30	12.7		■
	BT40-FMA31.75- 75			75					■
	BT50-FMA38.1- 60	38.1	125	60	80	34	15.87		■
	BT50-FMA38.1- 75			75					■
BT50	BT50-FMA25.4- 45	25.4	80	45	50	22	9.5		■
	BT50-FMA25.4- 90			90					■
	BT50-FMA25.4- 150			150					■
	BT50-FMA31.75- 45	31.75	100	45	60	30	12.7		■
	BT50-FMA31.75- 75			75					■
	BT50-FMA31.75-105			105					■
	BT50-FMA31.75-150			150					□
	BT50-FMA38.1- 45	38.1	125	45	80	34	15.87		■
	BT50-FMA38.1- 75			75					■
	BT50-FMA38.1- 105			105					■
	BT50-FMA38.1- 150			150					□
	BT50-FMA50.8- 45	50.8	160	45	100	36	19.05		■
	BT50-FMA50.8- 75			75					■
	BT50-FMA47.625-75	47.625	200	75	128	38	25.4		■

*. JIS B4113 Face Milling 용 입니다.

FACE MILL ARBOR

FMB

Ordering Example



*. Taper 접촉율이 80% 이상임으로 진동이 거의 없음

Taper No.	Code No.	φ d	Cutter Dia	L	φ C	L1	W	Weight	Stock
								(kg)	
BT30	BT30-FMB25.4 -45	25.4	80	45	80	26	9.5		☐
	BT30-FMB 27 -45	27					☐		
BT40	BT40-FMB25.4 -60	25.4	80	60	80		9.5		☐
	BT40-FMB25.4 -90			90				☐	
	BT40-FMB38.1 -60	38.1	100	60	85		15.87		☐
	BT40-FMB 27 -60	27	80	60	80		12		☐
	BT40-FMB 27 -90			90				☐	
	BT40-FMB 40 -60	40	100	60	85		16		☐
BT50	BT50-FMB25.4 -45	25.4	80	45	80		9.5		☐
	BT50-FMB25.4 -90			90					☐
	BT50-FMB25.4 -150			150					☐
	BT50-FMB38.1 -45	38.1	100	45	85		15.87		☐
	BT50-FMB38.1 -75			75					☐
	BT50-FMB38.1 -105			105					☐
	BT50-FMB38.1 -75		160	75	110			☐	

FACE MILL ARBOR



Taper No.	Code No.	φd		L	φC	L1	W	Weight	Stock
								(kg)	
BT50	BT50-FMB 27- 45	27	80	45	80	26	12		☐
	BT50-FMB 27- 90			90					☐
	BT50-FMB 27- 150			150					☐
	BT50-FMB 40- 45	40	100	45	85		16		☐
	BT50-FMB 40- 75			75					☐
	BT50-FMB 40- 105			105					☐
	BT50-FMB 40F-75			160				75	110
	BT40-FMB 60- 75	60	200	75	140	25	25.4		☐

*. Sandvik T-MAX face milling 용입니다.

TAPER SLEEVE ADAPTER



Ordering Example

BT40	TSA	30	U	45
Taper No.	Taper No.	Taper No.	Inch	Gauge
	Taper Adapter	Sleeve	mm	length

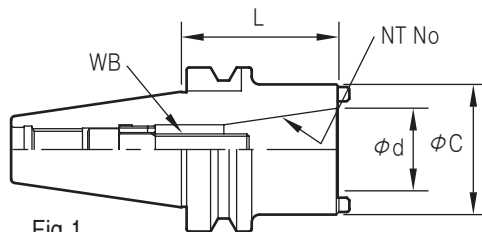


Fig 1

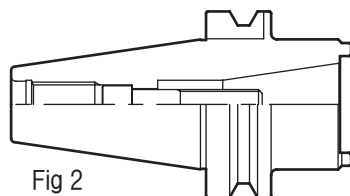


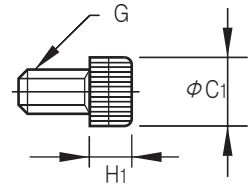
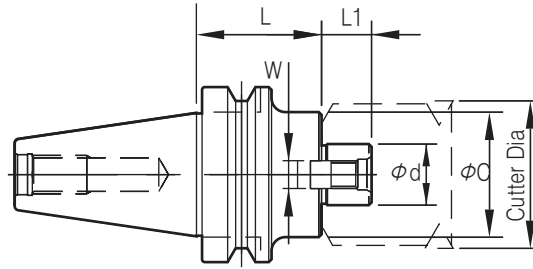
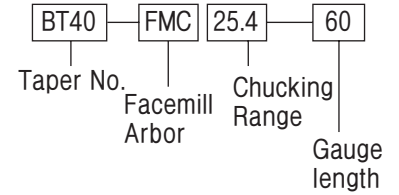
Fig 2

Taper No.	Code No.	ϕd	NT No.	L	ϕC	WB	Fig	Weight (kg)	Stock
BT50	BT40-TSA30U-60	$\phi 31.75$	NT30	60	50	UNC1/2-13	1		☐
	BT40-TSA30M-60					M12×1.75			☐
BT50	BT50-TSA40U-75	$\phi 44.45$	NT40	75	70	UNC5/8-11	2		☐
	BT50-TSA40M-75					M16×2.0			☐

FACE MILL ARBOR



Ordering Example

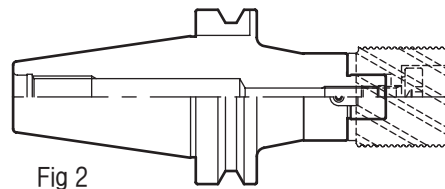
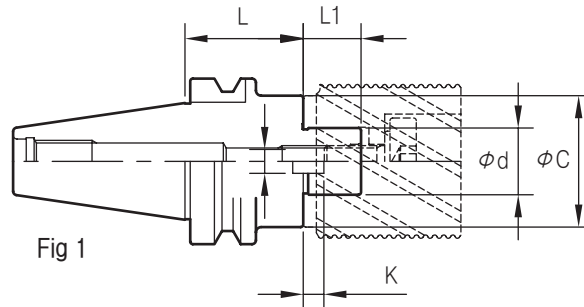
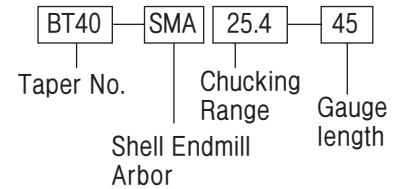


*. Taper 접촉율이 80% 이상임으로 진동이 거의 없음

Taper No.	Code No.	φd	Cutter Dia	L	φC	L1	W	Weight (kg)	Stock
BT30	BT30-FMC22-45	22	50,63	45	45	18	10		■
	BT30-FMC27-60	27	63,80	60	60	20	10		■
BT40	BT40-FMC22-45	22	50,63	45	45	18	10		■
	BT40-FMC22-90	22	50,63	90	45	18	10		■
	BT40-FMC25.4-60	25.4	63,80	60	60 (70)	20	9.5		□
	BT40-FMC25.4-90	25.4	63,80	90	60 (70)	20	9.5		□
	BT40-FMC27-60	27	63,80	60	60 (70)	20	12		■
	BT40-FMC27-90	27	63,80	90	60 (70)	20	12		■
	BT40-FMC32-60	32	100	60	85	22	14		■
	BT40-FMC32-90	32	100	90	85	22	14		■
	BT40-FMC38.1-60	38.1	100	60	85	22	15.87		□
	BT40-FMC38.1-90	38.1	100	90	85	22	15.87		□
BT50	BT50-FMC22-60	22	50,63	60	45	18	10		■
	BT50-FMC22-105	22	50,63	105	45	18	10		■
	BT50-FMC22-150	22	50,63	150	45	18	10		□
	BT50-FMC25.4-45	25.4	63,80	45	70 (60)	20	9.5		□
	BT50-FMC25.4-90	25.4	63,80	90	70 (60)	20	9.5		□
	BT50-FMC25.4-150	25.4	63,80	150	70 (60)	20	9.5		□
	BT50-FMC27-45	27	63,80	45	70 (60)	20	12		■
	BT50-FMC27-90	27	63,80	90	70 (60)	20	12		■
	BT50-FMC27-150	27	63,80	150	70 (60)	20	12		■
	BT50-FMC32-45	32	100	45	85	22	14		■
	BT50-FMC32-75	32	100	75	85	22	14		■
	BT50-FMC32-105	32	100	105	85	22	14		■
	BT50-FMC32-150	32	100	150	85	22	14		□
	BT50-FMC38.1-45	38.1	100	45	85	22	15.87		□
	BT50-FMC38.1-75	38.1	100	75	85	22	15.87		□
	BT50-FMC38.1-105	38.1	100	105	85	22	15.87		□

*. 상기 표준품 외에도 다양한 Long Size Arbor 가 준비되어 있습니다.

Ordering Example



Taper No.	TCode No.	φd	Cutter Dia	L	φC	L1	W	K	Fig	Weight (kg)	Stock
BT30	BT30-SMA16 - 30	16	35,40	30	34	17	8	3	1		☐
	BT30-SMA22 - 30	22	45,50		42	27		3.5	1		☐
	BT30-SMA25.4-45	25.4	60,70	45	50	36	10	4	1		☐
BT40	BT40-SMA16 - 60	16	35,40	60	34	17	8	3	1		☐
	BT40-SMA16 -120			120					1		☐
	BT40-SMA22 - 60	22	45,50	60	42	27		3.5	1		☐
	BT40-SMA22 -120			120					1		☐
	BT40-SMA25.4-45	25.4	60,75	45	50	36	10	4	1		☐
	BT40-SMA25.4-90			90					1		☐
	BT40-SMA27 - 45	27		45					1		☐
	BT40-SMA27 - 90			90					1		☐
	BT40-SMA31.75-45	31.75	100	45	60	38		4.5	1		☐
	BT40-SMA31.75-75			75					1		☐
	BT40-SMA32 - 45	32		45					1		☐
	BT40-SMA32 - 75			75					1		☐
	BT40-SMA38.1-60	38.1	125	60	80	12	5	1		☐	
	BT40-SMA40 - 60	40		60				1		☐	
BT50	BT50-SMA16 - 75	16	35,40	75	34	17	8	3	1		☐
	BT50-SMA16 -120			120					1		☐
	BT50-SMA22 - 45	22	45,50	45	42	27		3.5	1		☐
	BT50-SMA22 - 90			90					1		☐
	BT50-SMA22 -150			150					2		☐
	BT50-SMA25.4-45	25.4	60,70	45	50	36	10	4	1		☐
	BT50-SMA25.4-90			90					1		☐
BT50-SMA25.4-150	150			2						☐	

SHELL ENDMILL ARBOR

SMA

Taper No.	Code No.	φd	Cutter Dia	L	φC	L1	W	K	Fig	Weight (kg)	Stock
BT50	BT50-SMA27 - 60	27	60,75	60	50	36	10	4	1		☐
	BT50-SMA27 -105			105					2		☐
	BT50-SMA27 -150			150					2		☐
	BT50-SMA31.75-45	31.75	100	45	60	38		4.5	1		☐
	BT50-SMA31.75-75			75					1		☐
	BT50-SMA31.75-105			105					2		☐
	BT50-SMA32 - 45	32	100	45					1		☐
	BT50-SMA32 - 75			75					1		☐
	BT50-SMA32 -105			105					2		☐
	BT50-SMA38.1- 45	38.1	125	45	80	12	5	1		☐	
	BT50-SMA38.1- 75			75				1		☐	
	BT50-SMA40 - 45	40		125				45	1		☐
	BT50-SMA40 - 75							75	1		☐

*. JIS B4214 Shell Endmill Arbor.

SHELL ENDMILL ARBOR

SMB

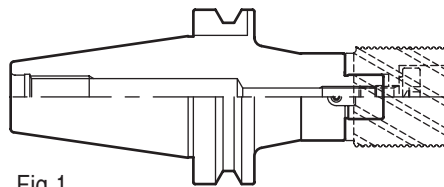


Fig 1

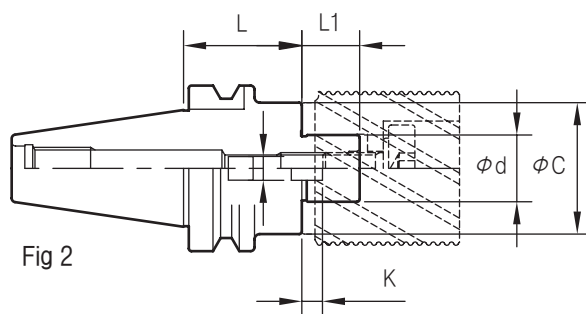
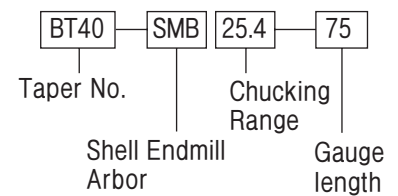


Fig 2

Ordering Example

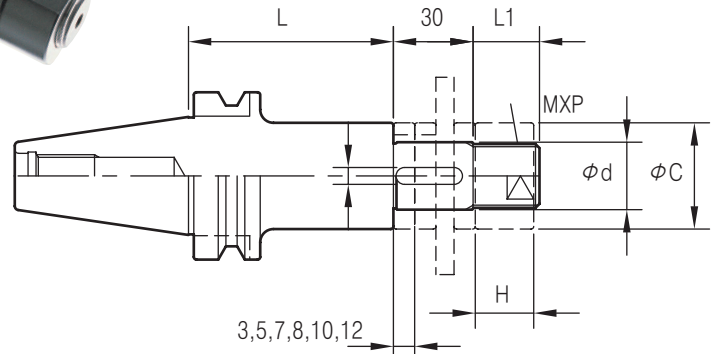
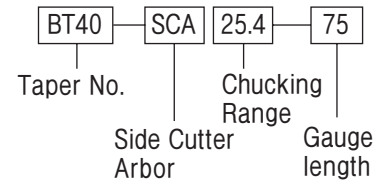


Taper No.	Code No.	ϕd	Cutter Dia	L	ϕC	L1	W	K	Fig	Weight (kg)	Stock
BT40	BT40-SMB31.75- 45	31.75	31.75	45	40	30	12.7	4.5	1		☐
	BT40-SMB31.75- 75			75					1		☐
	BT40-SMB38.1 - 60	38.1	38.1	60	50	36	15.9	5	1		☐
BT50	BT50-SMB31.75- 45	31.75	31.75	45	40	30	12.7	4.5	1		☐
	BT50-SMB31.75- 75			75					1		☐
	BT50-SMB31.75-105			105					2		☐
	BT50-SMB38.1 - 45	38.1	38.1	45	50	36	15.9	5	1		☐
	BT50-SMB38.1 - 75			75					1		☐

SIDE CUTTER ARBOR



Ordering Example

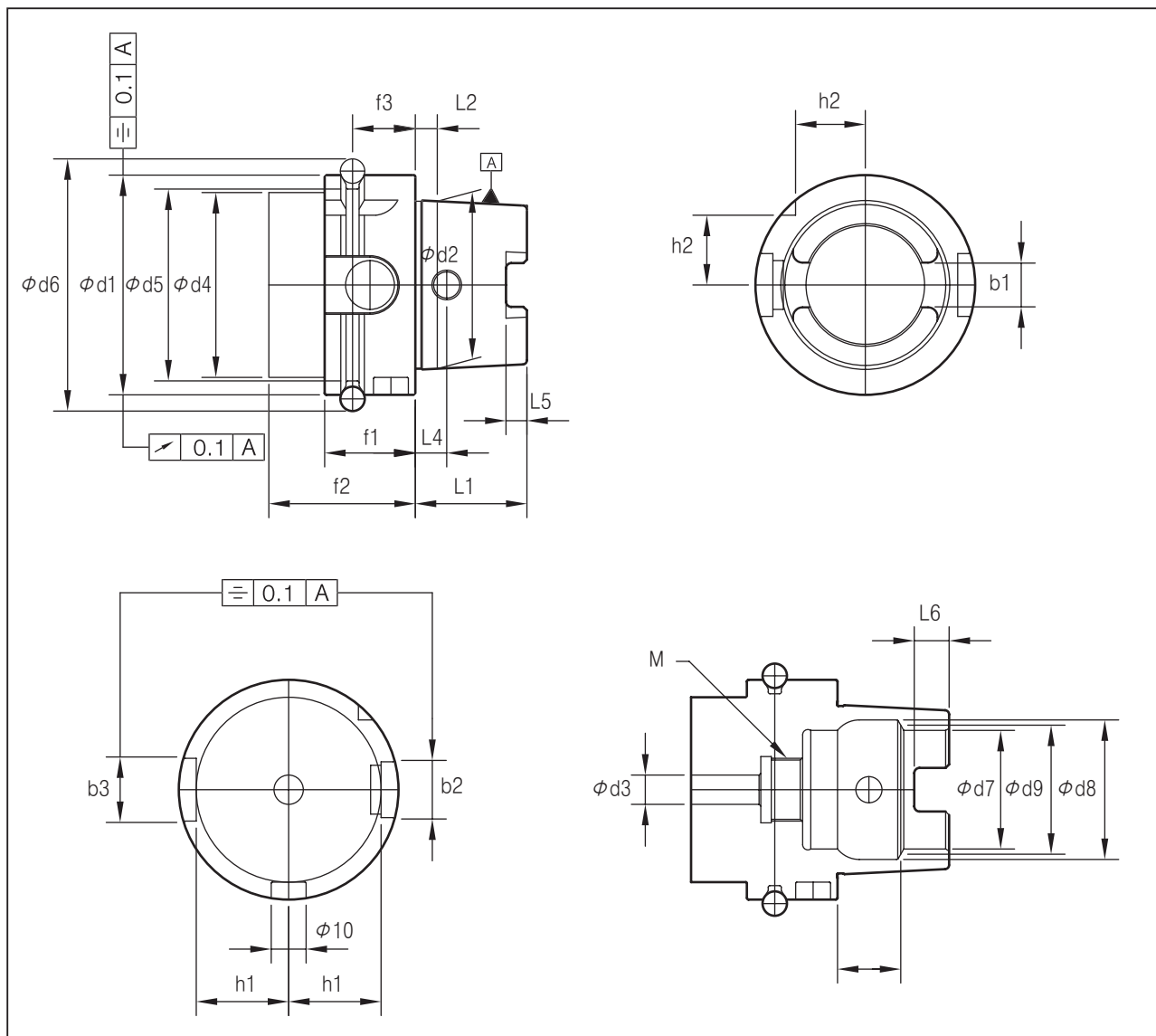


*. Taper 접촉율이 80% 이상임으로 진동이 거의 없음

Taper No.	Code No.	ϕd	L	ϕC	L1	W	H	MXP	Weight (kg)	Stock
BT30	BT30-SCA12.7 - 60	12.7	60	20	5	-	12	M12×1.25		☐
	BT30-SCA15.875- 60	15.875	60	26	16	3.18	13	M14×1.5		☐
	BT30-SCA15.875- 60	22.225	60	34	21	3.18	18	M20×1.5		☐
	BT30-SCA25.4 - 60	25.4	60	40	25	6.35		M24×1.5		☐
BT40	BT40-SCA12.7 - 75	12.7	75	20	15	-	12	M12×1.25		☐
	BT40-SCA12.7 -105		105							☐
	BT40-SCA15.875- 75	15.875	75	26	16	3.18	13	M14×1.5		☐
	BT40-SCA15.875-105		105							☐
	BT40-SCA22.225- 75	22.225	75	34	21	3.18	18	M20×1.5		☐
	BT40-SCA22.225-120		120							☐
	BT40-SCA25.4 - 75	25.4	75	40	25	6.35	21	M24×1.5		☐
	BT40-SCA25.4 -120		120							☐
	BT40-SCA31.75 - 90	31.75	90	46	30	7.93	26	M30×1.5		☐
	BT40-SCA31.75 -120		120							☐
BT50	BT50-SCA12.7 - 75	12.7	75	20	15	-	12	M12×1.25		☐
	BT50-SCA12.7 -105		105							☐
	BT50-SCA15.875- 90	15.875	90	26	16	3.18	13	M14×1.5		☐
	BT50-SCA15.875-120		120							☐
	BT50-SCA22.225- 90	22.225	90	34	21	3.18	18	M20×1.5		☐
	BT50-SCA22.225-135		135							☐
	BT50-SCA25.4 - 90	25.4	90	40	25	6.35	21	M24×1.5		☐
	BT50-SCA25.4 -135		135							☐
	BT50-SCA31.75 - 90	31.75	90	46	30	7.93	26	M30×1.5		☐
	BT50-SCA31.75 -135		135							☐
	BT50-SCA38.1 - 90	38.1	90	55	36	9.53	31	M36×1.5		☐
	BT50-SCA38.1 -135		135							☐

*. Key, collar 및 nut는 부착되어 있습니다.

DIN 69893



(mm)

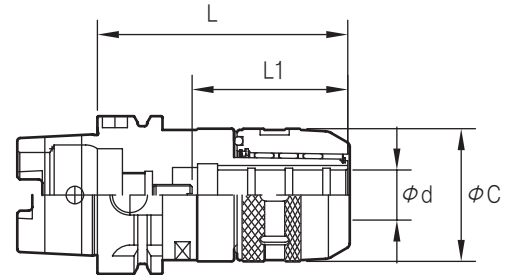
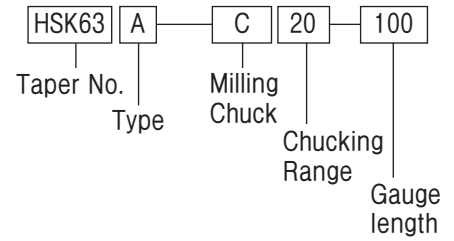
Taper No.	$\phi d1$	$\phi d2$	$\phi d3$	$\phi d4$	$\phi d5$	$\phi d6$	$\phi d7$	$\phi d8$	$\phi d9$	$h1$	$h2$	M
HSK50	50	38.009	6.8	42	43	59.3	26	32	29	21	15.5	M16×1.0
HSK63	63	48.010	8.4	53	55	72.3	34	40	37	26.5	20	M18×1.0
HSK100	100	75.013	12	88	92	109.75	53	53	58	44	31.5	M24×1.5

Taper No.	$b1$	$b2$	$b3$	$L1$	$L2$	$L3$	$L4$	$L5$	$L6$	$f1$	$f2$	$f3$
HSK50	10.54	12	14	25	5	14.13	7.5	4.5	7.5	26	42	18
HSK63	12.54	16	18	32	6.3	18.13	9	6	10	26	42	18
HSK100	20.02	20	22	50	10	28.56	15	10	15	29	45	20

MILLING CHUCK



Ordering Example



Taper No.	Code No.	ϕd	L	ϕC	L1		Collet	Weight (kg)	Stock
					Min	Max			
HSK63	HSK 63A -C20-100	20	100	53	45	70	MC20		☐
	HSK 63A -C32-105	32	105	74	60	95	MC32		☐
HSK100	HSK100A-C20-105	20	105	53	45	70	MC20		☐
	HSK100A-C20-135	32	135	74	60	95	MC32		☐
	HSK100A-C42-140	42	140	92	60	98	MC42		☐

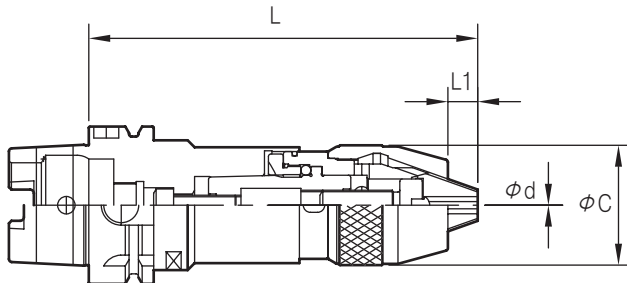
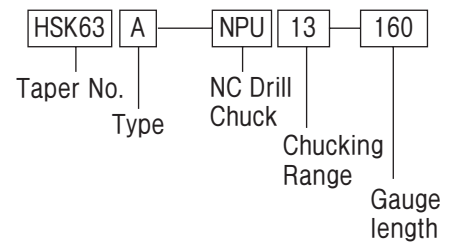
*. Adjustable screw 와 spanners 별도 판매 합니다.

*. Special size도 주문 제작 합니다.

NC DRILL CHUCK



Ordering Example

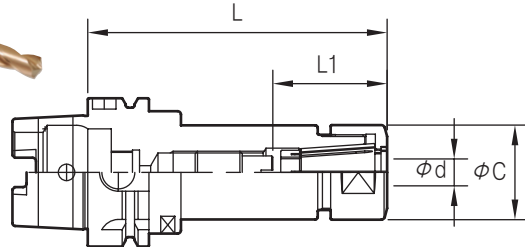
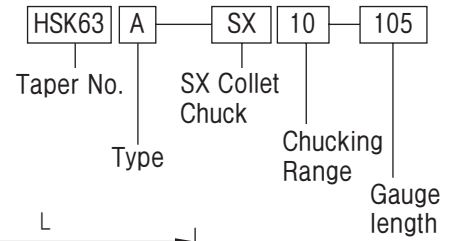


Taper No.	Code No.	ϕd	L	ϕC	L1	Weight (kg)	Stock
HSK63	HSK 63A-NPU8 -135	0.3~8.0	130	38	8.5		☐
	HSK 63A-NPU13-150	1.0~13.0	160	50	11.5		☐
HSK100	HSK100A-NPU8 -135	0.3~8.0	95	38	8.5		☐
	HSK100A-NPU13-135	1.0~13.0	185	50	11.5		☐

SX COLLET CHUCK



Ordering Example

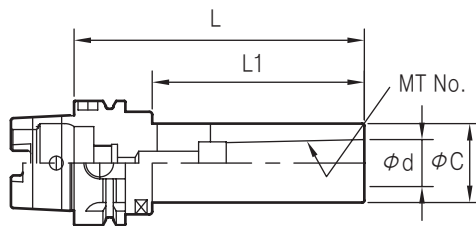
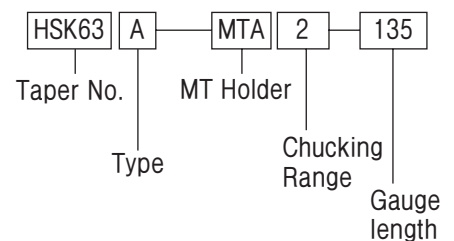


Taper No.	Code No.	ϕd	L	ϕC	L1		Collet	Weight (kg)	Stock
					Min	Max			
HSK63	HSK 63A -SX 6 -100	0.7~6.0	100	19.5	21	35	SX6		☐
	HSK 63A -SX10-105	1.75~10.0	105	27.5	30	50	SX10		☐
	HSK 63A -SX16-120	2.75~16.0	120	40	45	60	SX16		☐
	HSK 63A -SX25-145	16.0~25.0	145	55	55	75	SX25		☐
HSK100	HSK100A -SX 6 -120	0.7~6.0	120	19.5	21	35	SX6		☐
	HSK100A -SX10-125	1.75~10.0	125	27.5	30	50	SX10		☐
	HSK100A -SX16-140	2.75~16.0	140	40	45	60	SX16		☐
	HSK100A -SX25-155	16.0~25.4	155	55	55	75	SX25		☐

MORES TAPER HOLDER

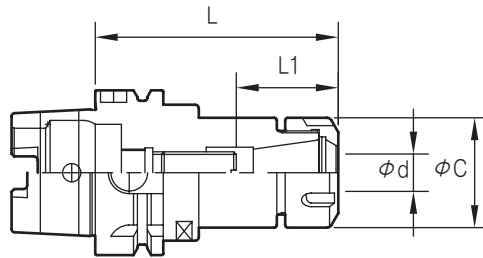


Ordering Example

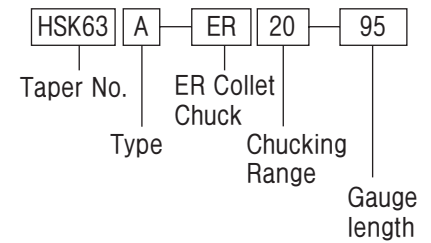


Taper No.	Code No.	ϕd	MT No	L	ϕC	L1	Weight (kg)	Stock
HSK63	HSK 63A -MTA1-120	12.065	1	120	25	78		☐
	HSK 63A -MTA2-135	17.780	2	135	32	93		☐
	HSK 63A -MTA3-150	23.825	3	150	40	108		☐
	HSK 63A -MTA4-165	31.267	4	165	50	123		☐
HSK100	HSK100A -MTA1-120	12.065	1	120	25	75		☐
	HSK100A -MTA2-135	17.780	2	135	32	90		☐
	HSK100A -MTA3-155	23.825	3	155	40	110		☐
	HSK100A -MTA4-180	31.267	4	180	50	135		☐
	HSK100A -MTA5-220	44.399	5	220	65	175		☐

ER COLLET CHUCK



Ordering Example

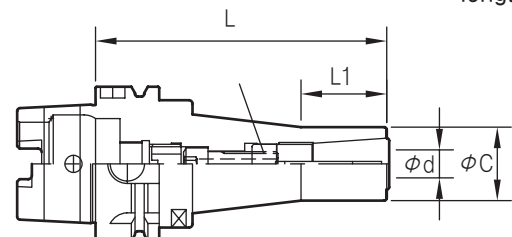
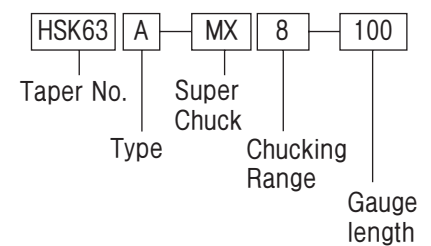


Taper No.	Code No.	ϕd	L	ϕC	L1		Collet	Weight (kg)	Stock
					Min	Max			
HSK63	HSK63A -ER11- 75	0.5~7.0	75	19	19	34	ER11		☐
	HSK63A -ER16- 95	0.5~10.0	95	32	23	43	ER16		☐
	HSK63A -ER20- 95	0.5~13.0	95	35	25	48	ER20		☐
	HSK63A -ER25- 95	0.5~16.0	95	42	34	54	ER25		☐
	HSK63A -ER32-110	1.0~20.0	110	50	40	60	ER32		☐
HSK100	HSK100A-ER11- 85	0.5~7.0	85	19	19	34	ER11		☐
	HSK100A-ER16- 95	0.5~10.0	95	32	23	43	ER16		☐
	HSK100A-ER20-105	0.5~13.0	105	35	25	48	ER20		☐
	HSK100A-ER25-110	0.5~16.0	110	42	34	54	ER25		☐
	HSK100A-ER32-120	1.0~20.0	120	50	40	60	ER32		☐
	HSK100A-ER40-130	2.0~26.0	130	63	50	80	ER40		☐

MX COLLET CHUCK



Ordering Example

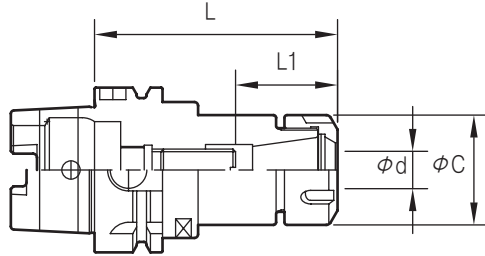
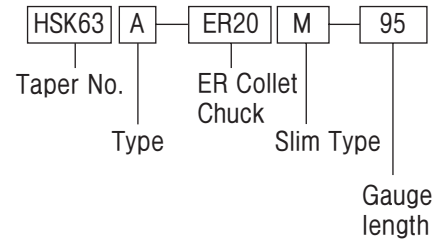


Taper No.	Code No.	ϕd	L	ϕC	L1	M	Weight (kg)	Stock
HSK63	HSK 63A-MX 8-100	3.0~10.0	100	22	36	M8		☐
	HSK 63A-MX12-110	3.0~12.0	110	30	35	M10		☐
HSK100	HSK100A-MX 8-115	3.0~10.0	115	22	36	M8		☐
	HSK100A-MX12-120	3.0~12.0	120	30	35	M10		☐

SLIM COLLET CHUCK



Ordering Example

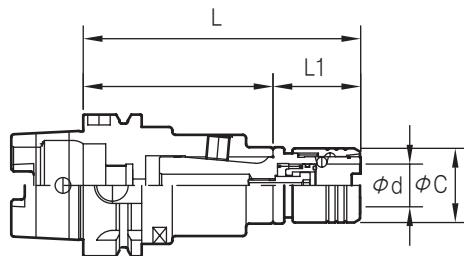
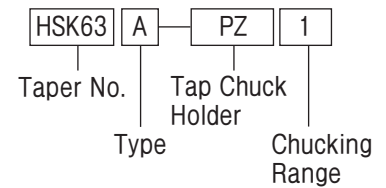


Taper No.	Code No.	φd	L	φC	L1		Collet	Weight (kg)	Stock
					Min	Max			
HSK63	HSK 63A -ER11M- 75	1.0~7.0	75	16	20	35	ER11		☐
	HSK 63A -ER16M- 85	1.0~10.0	85	22	30	45	ER16		☐
	HSK 63A -ER20M- 95	1.0~13.0	95	28	35	50	ER20		☐
	HSK 63A -ER25M-105	1.0~16.0	105	35	40	55	ER25		☐
HSK100	HSK100A-ER11M- 85	1.0~7.0	85	16	20	35	ER11		☐
	HSK100A-ER16M- 95	1.0~10.0	95	22	30	45	ER16		☐
	HSK100A-ER20M-105	1.0~13.0	105	28	35	50	ER20		☐
	HSK100A-ER25M-120	1.0~16.0	120	35	40	55	ER25		☐

SYNCHRO TAPPING CHUCK



Ordering Example

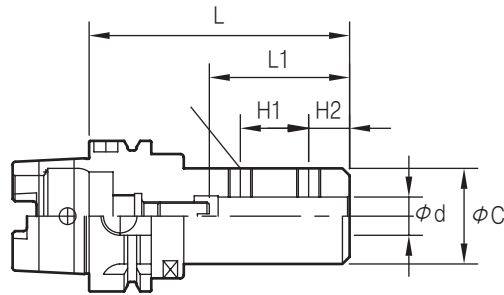
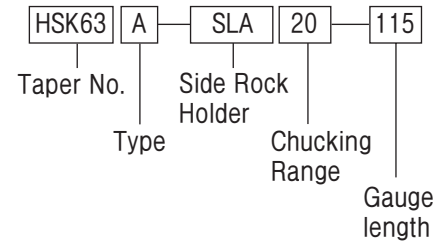


Taper No.	Code No.	φd	L	φC	L1	L2	Weight (kg)	Stock
HSK63	HSK 63A -PZ1	19	120	33	81	39		☐
	HSK 63A -PZ2	31	135	50	80	55		☐
HSK100	HSK100A-PZ1	19	135	33	96	39		☐
	HSK100A-PZ2	31	150	50	95	55		☐

SIDE LOCK HOLDER



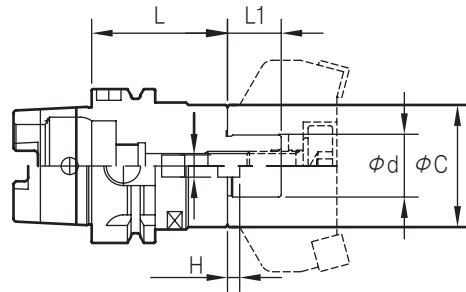
Ordering Example



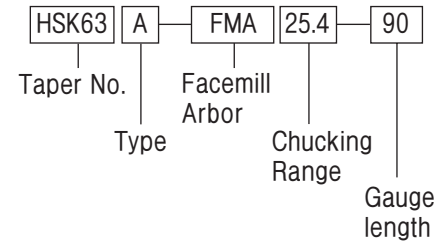
Taper No.	Code No.	φ d	L	φ C	L1		H1	H2	M	Weight (kg)	Stock
					Min	Max					
HSK63	HSK 63A -SLA 6 - 75	6	75	25	20	35	18	-	M5		☐
	HSK 63A -SLA 8 - 80	8	80	28	25	40	187	-	M6		☐
	HSK 63A -SLA 10- 90	10	90	35	35	50	14	13	M8		☐
	HSK 63A -SLA 12- 90	12	90	40	35	50	14	16	M10		☐
	HSK 63A -SLA 14-105	14	105	42	50	65	20	20	M12		☐
	HSK 63A -SLA 16-105	16	105	44	50	65	20	20	M12		☐
	HSK 63A -SLA 20-115	20	115	50	55	70	25	20	M14		☐
	HSK 63A -SLA 25-115	25	115	50	55	70	25	20	M14		☐
	HSK 63A -SLA 32-120	32	120	60	65	80	25	25	M16		☐
	HSK 63A -SLA 40-120	40	120	63	65	80	25	25	M16		☐
	HSK 63A -SLA 42-120	42	120	63	65	80	25	25	M16		☐
HSK100	HSK 100A-SLA 6 - 80	6	80	25	20	35	18	-	M5		☐
	HSK 100A-SLA 8 - 85	8	85	28	25	40	18	-	M6		☐
	HSK 100A-SLA10- 95	10	95	35	35	50	14	13	M8		☐
	HSK 100A-SLA12- 95	12	95	40	35	50	14	16	M10		☐
	HSK 100A-SLA14-110	14	110	42	50	65	20	20	M12		☐
	HSK 100A-SLA16-110	16	110	44	50	65	20	20	M12		☐
	HSK 100A-SLA20-120	20	120	50	60	75	25	20	M14		☐
	HSK 100A-SLA25-120	25	120	50	60	75	25	20	M14		☐
	HSK 100A-SLA32-125	32	125	60	65	80	25	25	M16		☐
	HSK 100A-SLA40-135	40	135	75	65	80	25	25	M16		☐
	HSK 100A-SLA42-135	42	135	75	65	80	25	25	M16		☐

*. Drill, endmill, 기타 (small chuck, special tool)등을 사용할 수 있습니다.

FACE MILL ARBOR



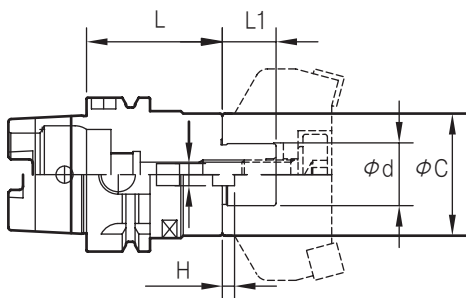
Ordering Example



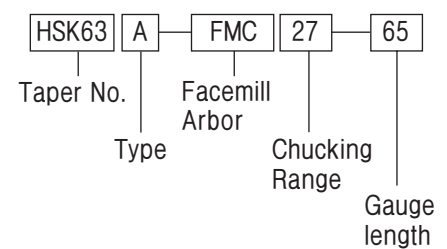
Taper No.	Code No.	ϕd	Cutter Dia	L	ϕC	L1	W	K	Weight (kg)	Stock
HSK63	HSK 63A -FMA25.4 - 60	25.4	80	60	50	22	9.5	5		☐
	HSK 63A -FMA31.75 - 65	31.75	100	65	60	30	12.7	7		☐
	HSK 63A -FMA38.1 - 75	38.1	125	75	80	34	15.87	9		☐
HSK100	HSK100A-FMA25.4 - 60	25.4	80	60	50	22	9.5	5		☐
	HSK100A-FMA31.75 - 65	31.75	100	65	60	30	12.7	7		☐
	HSK100A-FMA38.1 - 75	38.1	125	75	80	34	15.87	9		☐
	HSK100A-FMA50.8 - 80	50.8	160	80	100	36	19.05	10		☐
	HSK100A-FMA47.625-95	47.625	200	95	128	38	25.4	12.5		☐

*. JIS B4113 Face Milling 용 입니다.

FACE MILL ARBOR



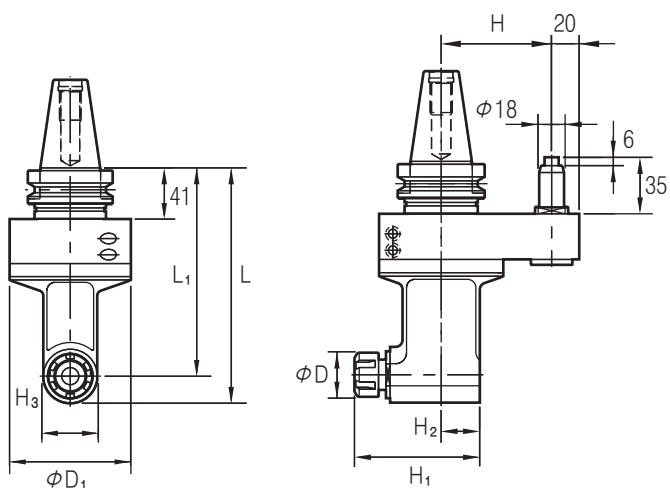
Ordering Example



Taper	Code No.	ϕd	Cutter Dia	L	ϕC	L1	W	K	Weight (kg)	Stock
HSK63	HSK 63A -FMC22-60	22	50,63	60	45	18	10	5.5		☐
	HSK 63A -FMC27-65	27	63,80	65	60	20	12	6		☐
	HSK 63A -FMC32-75	32	100	75	85	22	14	7		☐
HSK100	HSK100A-FMC22-60	22	50,63	60	45	18	10	5.5		☐
	HSK100A-FMC27-65	27	63,80	65	60	20	12	6		☐
	HSK100A-FMC32-75	32	100	75	85	22	14	7		☐

*. Sandvik T-MAX face shoulder arbor 입니다.

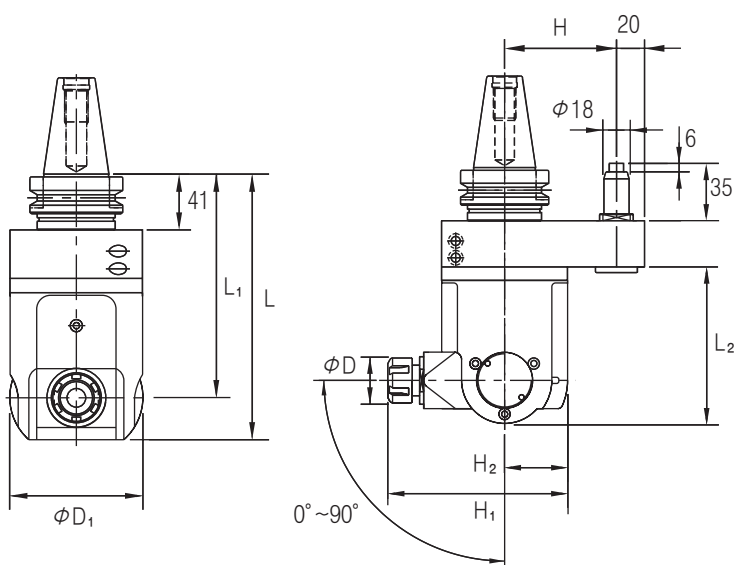
ANGULAR HEAD (90 °)



RPM max	"4,000"
회전비	1:1

Code No.		H	H1	H2	H3	L	L1	φD		φD1
BT40/50	T90-0.5	80/110	61	20	30	185/191	170/176	φ19	ER11	φ90
	T90-1.5		80	28	40	170/176	150/156	φ28	ER16	
	T90-2.5		115	35	58	179/185		φ42	ER25	
BT50-T90-35		110	147.5	46	75	203.5	166	φ50	ER32	φ110

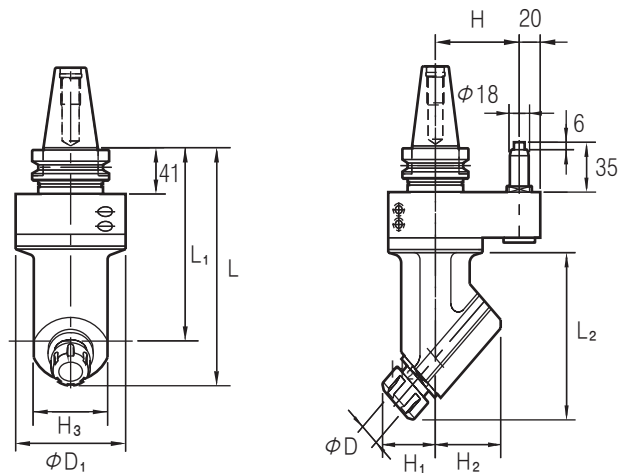
ANGULAR HEAD (UNIVERSAL)



RPM max	"4,000"
회전비	1:1

Code No.		H	H1	H2	L1	L2	L	φD		φD1
BT40	TCU-1.5	65	115	36.5	130	94.5	157.5	φ35	ER20	φ73
BT40/50	TCU-2.5	65/80	137.5	45	156	115.5	189.5/183.5	φ40	ER25	φ90
BT50-TCU-3.5		110	159	55	166	133	207	φ50	ER32	φ110

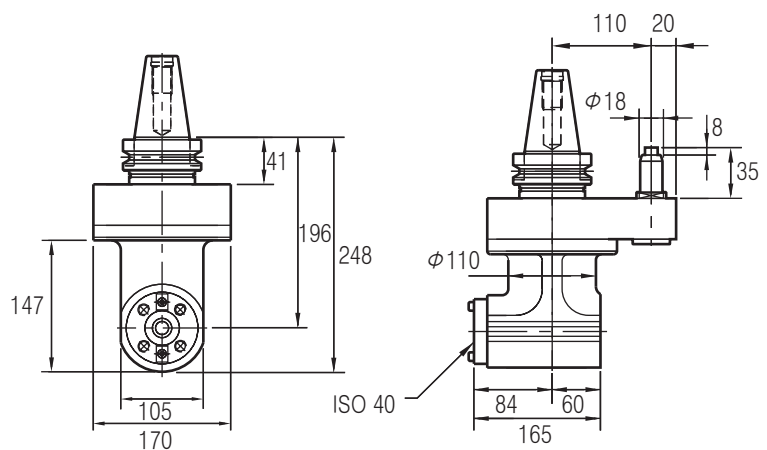
ANGULAR HEAD (45°)



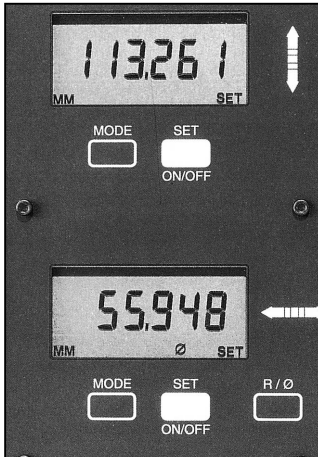
RPM max	1.5/2.5	"4,000"
	3.5	"3,500"
회전비	1:1	

Code No.		H	H1	H2	H3	L	L1	L2	ϕD	$\phi D1$
BT40/50	TA45-1.5	80/110	28	48	40	195/201	168/174	116	$\phi 28$	ER16 $\phi 90$
	TA45-2.5		46	65	58	219/225	173/179	139	$\phi 42$	
BT50-TA45-3.5		110	60	78	75	255	194	168	$\phi 50$	ER32 $\phi 110$

ANGULAR HEAD (NT40)



BT50-T90-5	RPM max	"3,500"
	회전비	1:1



TOOL PRE-SETTER

차세대의 PRE-SETTER, 정밀측정기구

활용성

- 모든 종류의 TOOL에 적용 가능한 넓은 측정 범위
측정범위 X:파이300mm
Z:400mm

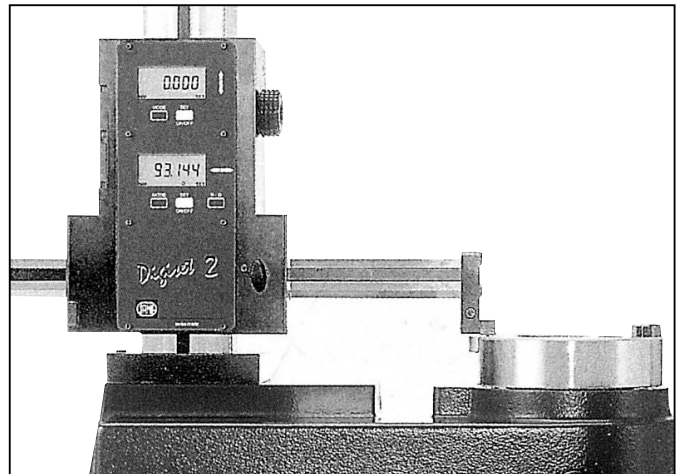
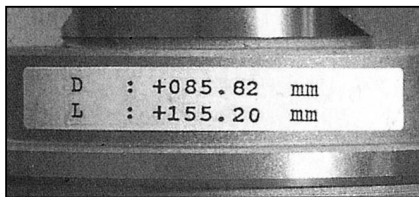
정밀도

- 디지털 표시방식
- 두개의 축 X(직경), Z(길이)는 디지털 식으로 0.01mm~0.001mm단위로 표시된다
- 단위표시는 mm, inch 변환할 수 있다

변환의 용이성

- 직경치수 또는 반경치수를 단추 하나로 쉽고 빠르게 변환시킬 수 있다

바른 "0"점 조정



■ 간편한 ZERO SETTING

직경측정용 ARM(X)은, DIGISET를 작동시킨 후 RESET BUTTON을 누르면 END STOP에서 "ZERO"상태로 된다

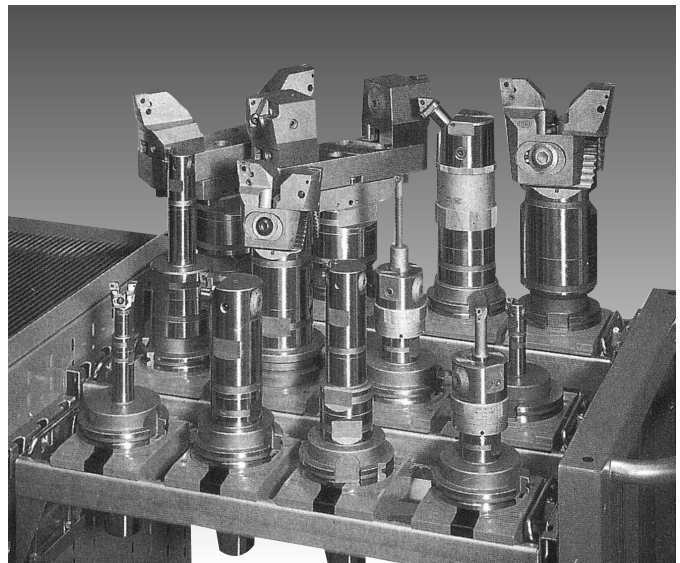
■ SETTING BAR 불필요함

(참고치수인 직경으로 ARM을 움직일 때)양 측정 ARM은 어느 위치에서나 참고 치수 (SETTING 치수)로 SETTING할 수 있다

측정 Data의 출력

- 측정한 TOOL의 직경, 길이를 Labelling 가능함

Opto RS232C와 SOFTWARE 이용하여 프린터로 출력 가능함



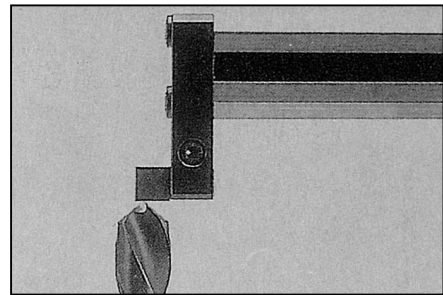


정밀성

- 안정된 측정 입력
- 양측의 측정거리 전체에 일정하게 측정압력이 유지되므로 안정된 정밀측정 가능
- 측정압력 1응답 2N(200g)허용

■ 용이한 이동

- 안정된 측정 slide로 미세한 이동 가능
- counter-balanced measuring carriage는 연삭된 스테인레스 가이드웨이와 열처리된 STEEL COLUMN 위에서 움직인다



■ 빠르고+간편하게

- 실용적인 SPINDLE 회전
- 고정밀 베어링 지지
- 어느 각도로도 쉽고 안정되게 회전 가능
- 스테인레스 재질로 제작된 스피들

사 양

Spinder taper	No.50 or No40
Measuring ranges	X: 300mm / 12.00"
	Z: 400mm / 15.75"
Resolution of digital indicator units	0.01mm / 0.001"
	or 0.01mm / 0.0001"
Concentricity of spindle unit related to axis of ISO 50 location	<0.01mm / 0.0004"
Squarness of measuring arm in relation to ISO location, max. error on height 400mm	<0.01mm / 0.0004"
Battery life approx.	400 hours
Weight	34kg / 75lb

주문번호

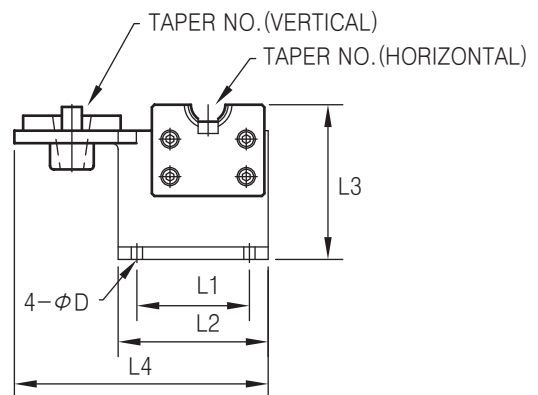
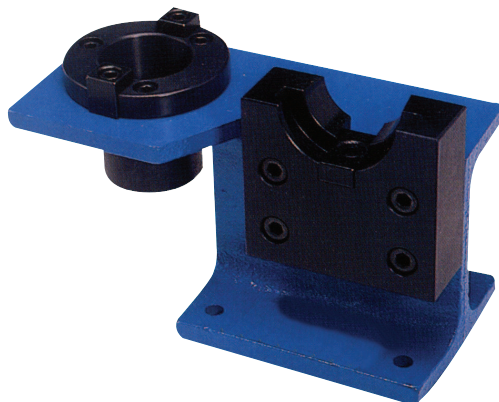
Complete pre-setting instrument with protection cover and instruction manual	No. 40 Part No. 96 10 40
	No. 50 Part No. 96 10 50

부속품

Reduce adapter	Part No. 96 50 40
Printer for data output including interface	on request
Special accessory	on request

TOOL STAND

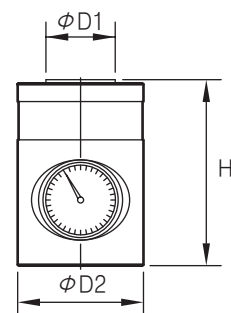
S TSS



CODE No.	TAPER No.	L1	L2	L3	L4	4-φD
TSS-30	30	93×67	120×98	125	205	φ10
TSS-40	40	93×70	120×98	130	205	φ10
TSS-50	50	110×113	160×115	195	275	φ10

HEIGHT PRE – SETTER

S HP

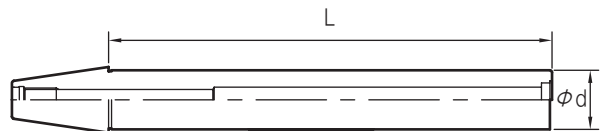
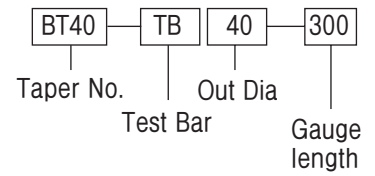


STYLE	φD1	φD2	H
HP-100	φ40	φ69	100±0.005

TEST BAR



Ordering Example



Taper	Code No.	φd	L	Weight	Stock
				(kg)	
BT30	BT30-TB30-200	30	200		☐
BT40	BT40-TB40-300	40	300		☐
BT50	BT50-TB50-300	50	300		☐

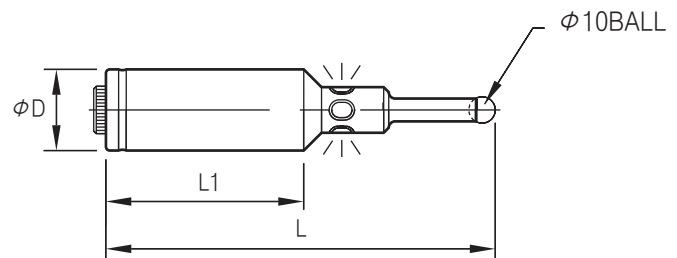
TOUCH POINT SENSOR



*.검출시 LED LAMP가 점등

*.φ10 BALL이 위치를 초과하여도내장된 스프링에 의한 파손방지

* Z축 방향은 FLOAT 기능이 없으므로 사용시 주의바랍니다



Code	φD	L	L1
TP-20	φ20	157	83
TP-32	φ32		78



Ordering Example

PS
1
 Code No. Style No.

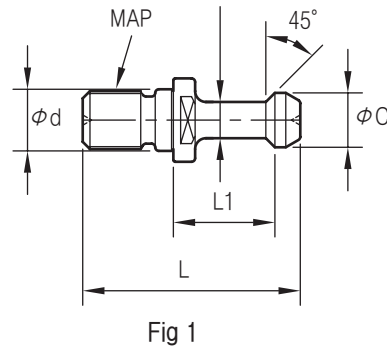


Fig 1

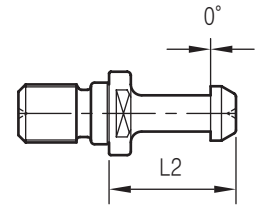


Fig 3

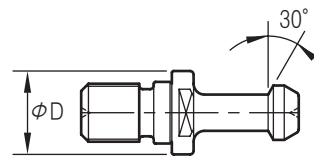


Fig 2

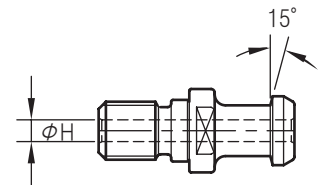


Fig 4

Center through type
PS-BOLT는 기계메이커에 첨부되어
있는 사양서를 첨부하여 주십시오.

Taper	Code No.	ϕd	ϕD	L	ϕC	$\phi C1$	L1	L2	M	ϕH	Stock
BT30	PS- 16	12.5	16.5	43	11	7	18	23	M12		■
	PS- 17	12.5	16.5	43	11	7	18	23	M12		■
BT40	PS- 1	17	23	60	15	10	28	35	M16		■
	PS- 2	17	23	60	15	10	28	35	M16		■
	PS- 73	17	23	60	15	10	28	35	M16	4	□
	PS- 75	17	23	60	15	10	28	35	M16	4	□
	PS- 08	17	23	60	15	10	28	35	M16		□
	PS- G5	17	23	54.6	15	10	22.6	29.6	M16		■
	PS-G58	17	23	44.106	18.796	12.446	14.026	19.106	M16		□
	PS-G51	17	23	44.106	18.796	12.446	14.026	19.106	M16	7	■
	PS-805	17	23	54	19	14	23	29	M16		■
	PS-806	17	23	54	19	14	23	29	M16	6	■
	PS- P5	17	23	50	15	10	18	25	M16		□
BT50	PS- 5	25	38	85	23	17	35	45	M24		■
	PS- 6	25	38	85	23	17	35	45	M24		■
	PS- 5E	25	38	85	23	17	35	45	M24	6	□
	PS- 6E	25	38	85	23	17	35	45	M24	6	□
	PS- 0	25	38	85	23	17	35	45	M24		■
	PS-H33	25	38	85	23	17	35	45	M24	8	□
	PS-G45	25	37	65.2	28.956	20.83	17.58	25.2	M24	6	□
	PS-G41	25	37	65.2	28.956	20.83	17.58	25.2	M24	10	■
	PS-809	25	38	74	28	21		34	M24		□
	PS-810	25	38	74	28	21		34	M24	10	□
	PS- P	25	36	71	24	18	23	31	M24		□
	PS- B1	25	36	110	22	16	62	72	M24		□

*. Special size 도 제작 합니다.

업체명	모델명	형식	주축	폴스터드볼트
WIA (KIA)	KV35	V	BT40	PS-08
	KV35-2	V	BT40	PS-1
	KV45	V	BT40	PS-1
	KV55	V	BT50	PS-6
	KV60	V	BT50	PS-5
	KV75	V	BT50	PS-5
	KV90	H	BT50	PS-5
	H40	H	BT40	PS-1
	H50	H	BT40	PS-1
	KH50G	H	BT50	PS-0
	KH63G	H	BT50	PS-0
	KBN135	B	BT50	PS-5
	KB10A	B	BT50	PS-5
DAEWOO	ACE-H63	H	BT50	PS-5
	ACE-H100	H	BT50	PS-5
	ACE-H180	H	BT50	PS-5
	ACE-H40	H	BT40	PS-1
	ACE-H50	H	BT40	PS-1
	ACE-V45	V	BT40	PS-1
	ACE-V35	V	BT40	PS-1
	ACE-V65	V	BT50	PS-5
	ACE-V85	V	BT50	PS-5
SAMSUNG	PVC40	V	BT40	PS-1
	PVC50	V	BT50	PS-5
	PCH40	H	BT40	PS-1
	PCH50	H	BT50	PS-5
	PCV510	V	BT50	PS-0
	PCV620	V	BT50	PS-0
	MH63	H	BT50	PS-0
	MH80	H	BT50	PS-0
TONG-IL	MCH-3	H	BT40	PS-2
	MCH-10/20/30/46	H	BT50	PS-6
	TNV40A	V	BT40	PS-2
	TNV80A	V	BT40	PS-2
HWACHEON	HORIMAC-450	H	BT40	PS-1
	HORIMAC-560	H	BT50	PS-0
	HORIMAC-630	H	BT50	PS-0
	ECOMIL43V	V	BT40	PS-1
	ECOMIL43VN	V	BT40	PS-1
	ECOMIL-520	V	BT50	PS-0
	ECOMIL-650	V	BT50	PS-0
	ECOMIL-VN630	V	BT50	PS-0
	ECOMIL-650	V	BT50	PS-0

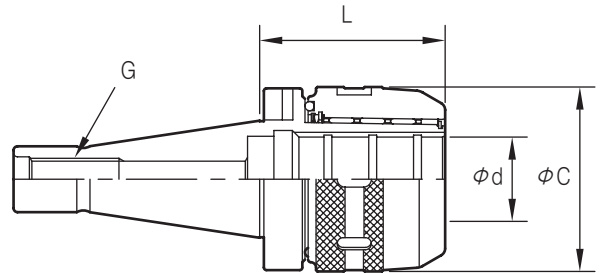
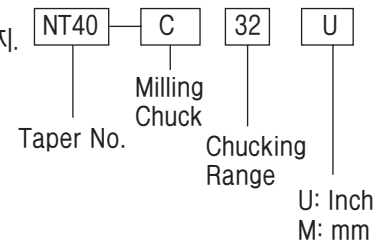
업체명	모델명	형식	주축	폴스터드볼트
HYUNDAI	RB 1N-4N		BT50	PS-6
	AJV18	V	BT40	PS-G51
	AJV25	V	BT50	PS-G41
	AJV32	V	BT50	PS-G41
	H-400	H	BT40	PS-G51
	H-630	H	BT50	PS-G41
	H-800	H	BT50	PS-G41
DOOSAN	REV051	V	BT40	PS-1
	VM43H	V	BT40	PS-1
	VM50	V	BT40	PS-1
	VM56	V	BT50	PS-6
	VM70T	V	BT50	PS-6
	VM70	V	BT50	PS-6
	VM84T	V	BT50	PS-6
	VM84	V	BT50	PS-6
HASS	VF0~9	V	BT40	PS-1
	VF10	V	BT50	PS-5
TOSHIBA	VMC4	V	BT40	PS-1
	BMC5-13B	H	BT50	PS-5
OKUMA-HOWA	MILLAC5VA	V	BT50	PS-6
	MILLAC4H	H	BT40	PS-1
	MILLAC-2	H	BT45	PS-4
MITU-BISHI	MC-1500H	H	BT45	PS-4
	MPA40A	H	BT50	PS-5
MAZAK	V-7.5	V	BT40	PS-G51
	V-12,20	V	BT50	PS-G41
	H10	H	BT40	PS-G51
	H15-25	H	BT50	PS-G41
	V7.5V10N	V	BT40	PS-G51
	V20V15N	V	BT50	PS-G41
IKGAYA	MX-3	H	BT40	PS-1
	AMC,ANC	H	BT50	PS-5
OKUMA	AMC,MCM,MCR	V	BT50	PS-6
	MC-5H,6H	H	BT50	PS-6
KIRA	KV-3MC	V	BT30	PS-18
	KV-5MC	V	BT40	PS-1
HITACHI-SEIKI	VA-35	V	BT40	PS-1
	VA-40,50	V	BT50	PS-5
TOYO-KOGYO	TM-4H	H	BT40	PS-1
	TM-60H	H	BT50	PS-5
TOYAMA	TMC40V	V	BT40	PS-1
	TMC50V	V	BT50	PS-5
NIGATA	EN40,50	H	BT40	PS-2
	HN50,100	H	BT50	PS-6
MORI-SEKI	MPA50A-80A	H	BT50	J1
	MV-40	V	BT40	F2
	MV-45	V	BT45	Y4

MILLING CHUCK



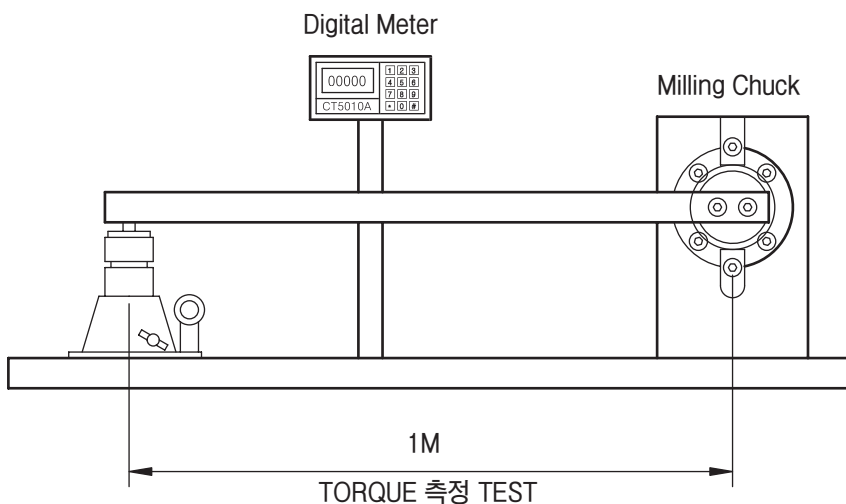
- *. 극한 절삭조건 상황에서도 고정도, 고강성을 유지하여 중절삭에 용이 합니다.
- *. 입구로부터 테스트바 4D선단 정도 (RUN-OUT) 10 μ m 이내 .
- *. 척 내부에 슬로트 홈이 있어 높은 CLAMPING POWER 을 유지하고 절삭 공구의 빠지는 형상을 방지.
- *. 주문시에 U(INCH), M(METRIC) 을 꼭 구분하여 주십시오.

Ordering Example



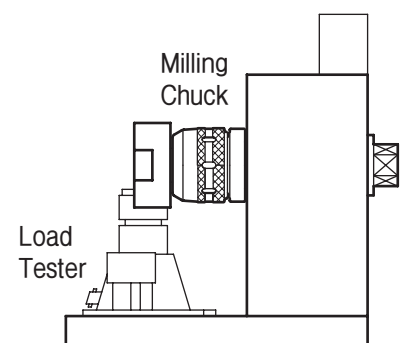
Taper No.	Code No.	ϕ d	L	ϕ C	G		Collet	Weight	Stock	
					UNC	M		(kg)		
NT30	NT30-C20U	20	70	53	U1/2-13	M12	MC20 NC20		☐	
	NT30-C20M								☐	
NT40	NT40-C20U				U5/8-11	M16		MC32 NC32		☐
	NT40-C20M									☐
	NT40-C32U	32	70.4	70					☒	
	NT40-C32M								☒	
NT50	NT50-C32U	85	74	U1"-8	M24	MC42 NC42		☒		
	NT50-C32M							☒		
	NT50-C42U	20	89.7				92		☒	
	NT50-C42M							☒		

*. Spanner는 별도 판매 합니다.



Model	Torque kg f.m
C20	130
C4032	260
C5032	360
C5042	520

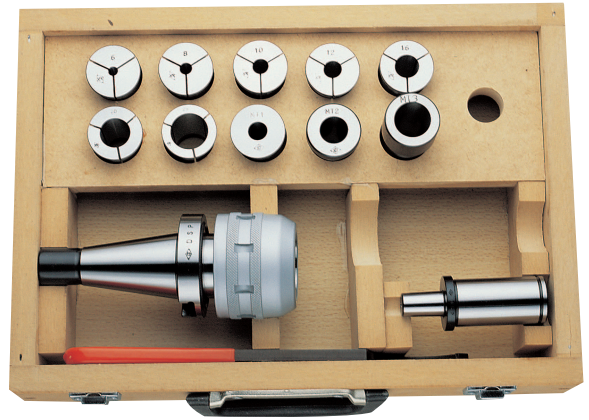
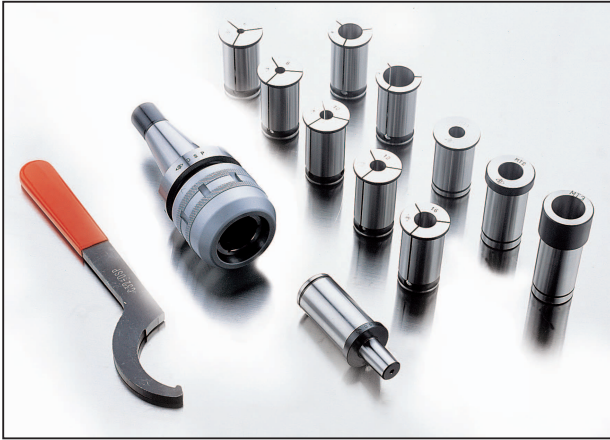
DSP MILLING CHUCK TORQUE 측정 DATA

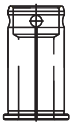
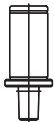


Model	Option Spanner
Style	
C20	C4020-SP
C4032	C4032-SP
C5032	C5032-SP
C5042	C5042-SP

MILLING CHUCK SET (NT)

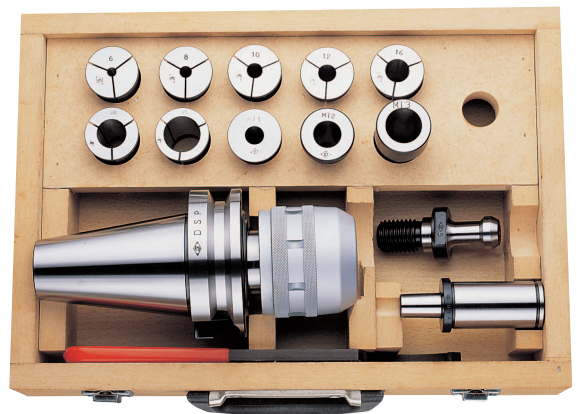
SET

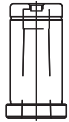


TAPER No.	SET Code No.	SET 내용 Code No.				
		MC 내경	CHUCK 본체		MT COLLET	DRILL CHUCK
						
NT30	S. NT30-20	φ20	NT30-20	MC20-6,8,10,12,16	MC20-MT1,2	MC20-6
NT40	S. NT40-32	φ32	NT40-32	MC32-6,8,10,12,16,20,25	MC32-MT1,2,3	MC32-6
NT50	S. NT50-32	φ32	NT50-32	MC32-6,8,10,12,16,20,25	MC32-MT1,2,3	MC32-6
	S. NT50-42	φ42	NT50-42	MC42-6,8,10,12,16,20,25,32	MC42-MT1,2,3,4	MC42-6

MILLING CHUCK SET (BT)

SET



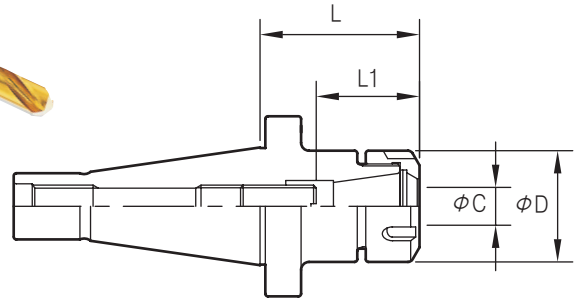
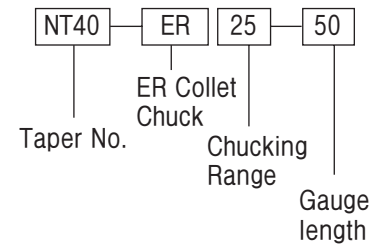
TAPER No.	SET Code No.	SET 내용 Code No.					
		MC 내경	CHUCK 본체		MT COLLET	DRILL CHUCK	PULL STUD
							
BT50	S.BT50-32	φ32	BT50-C32-105	MC32-6,8,10,12,16,20,25	MC32-MT1,2,3	MC32-6	PS-
	S.BT50-42	φ42	BT50-C42-105	MC42-6,8,10,12,16,20,25,32	MC42-MT1,2,3,4	MC42-6	PS-

*. 주문시 PULL STUD No를 지정하여 주십시오

ER COLLET CHUCK



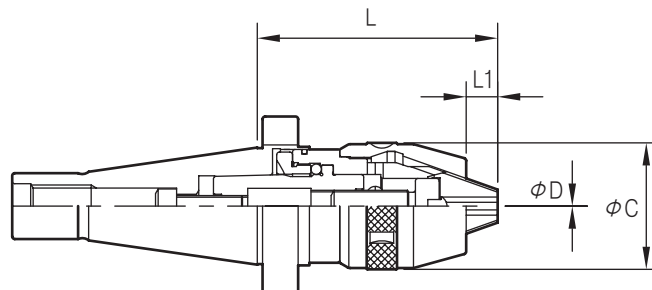
Ordering Example



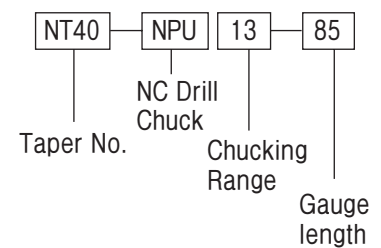
- *. 범용성으로 다양한 가공 가능 (엔드밀, 탭, 리머, 드릴 등)
- *. 테스트바 4D 선단으로 부터 정도 (RUN-OUT) 10 μ m 이내.

Taper No.	Code No.	ϕd	L	ϕC	L1		Collet	Weight (kg)	Stock
					Min	Max			
NT40	NT40-ER16-40	0.5~10.0	40	32	23	43	ER16		☐
	NT40-ER20-40	0.5~13.0	40	35	25	48	ER20		☐
	NT40-ER25-50	0.5~16.0	50	42	34	54	ER25		☐
	NT40-ER32-50	1.0~20.0	50	50	40	60	ER32		☐
	NT40-ER40-60	2.0~26.0	60	63	50	80	ER40		☐
NT50	NT50-ER16-40	0.5~10.0	40	32	23	43	ER16		☐
	NT50-ER20-40	0.5~13.0	40	35	25	48	ER20		☐
	NT50-ER25-50	0.5~16.0	50	42	34	54	ER25		☐
	NT50-ER32-60	1.0~20.0	60	50	40	60	ER32		☐
	NT50-ER40-60	2.0~26.0	60	63	50	80	ER40		☐
	NT50-ER50-60	2.0~34.0	60	78	55	80	ER50		☐

NC DRILL CHUCK



Ordering Example



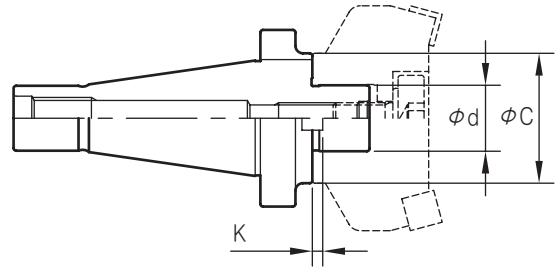
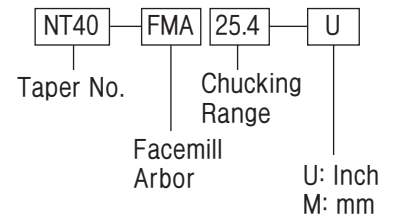
- *. 일체형 구조로 인한 우수한 내구성 및 척킹력 발휘

Taper No.	Code No.	ϕd	L	ϕC	L1	Weight (kg)	Stock
NT40	NT40-NPU13-85	1.0~13.0	85	48	11		☐
NT50	NT50-NPU13-95		90				☐

FACE MILL ARBOR



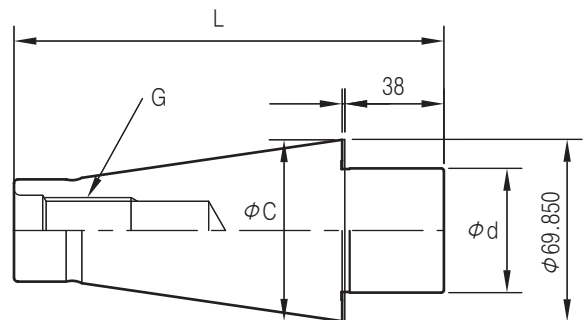
Ordering Example



Taper No.	Code No.	ϕd	Cutter Dia	L	ϕC	L1	W	K	Fig	Weight (kg)	Stock
NT40	NT40-FMA25.4 (3R)U	25.4	80	22	50	22	9.5	5	1		■
	NT40-FMA31.75 (4R)U	31.75	100	24	60	30	12.7	7	1		■
	NT40-FMA38.1 (5R)U	38.1	125	22	80	34	15.87	9	1		■
	NT40-FMA50.8 (6R)U	50.8	160	25	98	36	19.05	10	1		■
NT50	NT50-FMA25.4 (3R)U	25.4	80	26	50	22	9.5	5	1		■
	NT50-FMA1.75 (4R)U	31.75	100	28	60	30	12.7	7	1		■
	NT50-FMA38.1 (5R)U	38.1	125	26	80	34	15.87	9	1		■
	NT50-FMA50.8 (6R)U	50.8	160	26	98	36	19.05	10	1		■
	NT50-FMA47.625(8R)U	47.625	200	35	128	38	25.4	12.5	2		■

*. JIS B4113 Face Milling용 입니다.

CENTERING PLUG

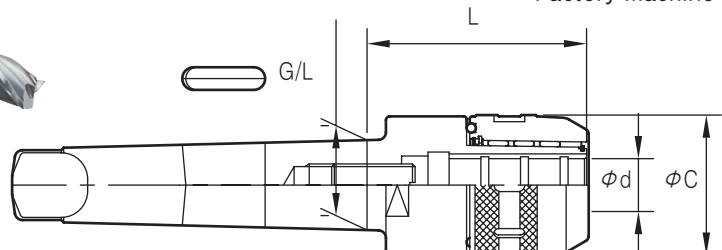
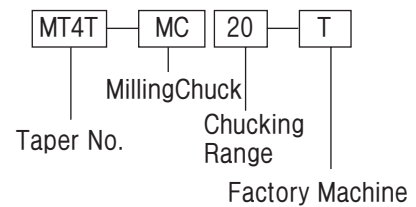


Taper No.	Code No.	ϕd	Cutter Dia	L	ϕC	G	Weight (kg)	Stock
NT50	NT50-CP(47.625)	47.625	200	164	69.56	UNC1"-8		■
	NT50-(60)	60	250					□

MT MILLING CHUCK(TANG)



Ordering Example



Taper No.	Code No.	ϕd	G/L	L	ϕC	Collet	Weight (kg)	Stock
MT4	MT4T-C20 (I)	20	31.267	80	53	MC20, NC20		☐
	MT4T-C20 (T)	32		90	70	MC32, NC32		☐
MT5	MT5T-C32 (I)	32	44.399	90	74	MC32, NC32		☐
	MT5T-C32 (T)							☒
	MT5T-C32 (D)							☐
MT6	MT6T-C42 (I)	42	63.348	98	92	MC42, NC42		☒
	MT6T-C42 (T)							☒
	MT6T-C42 (D)							☐
	MT6T-C42 (W)							☐

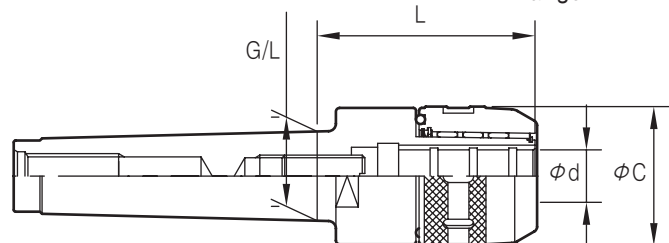
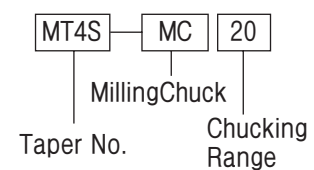
*. Cotter pin : 80 page 참조.

*. Special size도 주문 제작 합니다.

MT MILLING CHUCK(SCREW)



Ordering Example



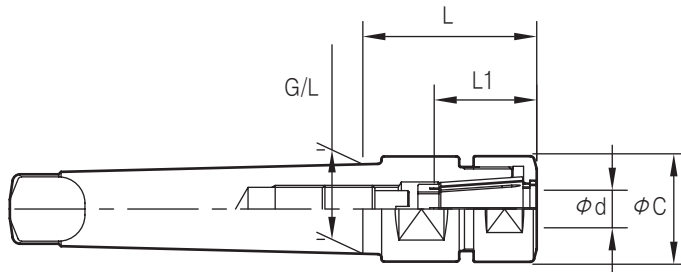
Taper No.	Code No.	ϕd	G/L	L	ϕC	Collet	Weight (kg)	Stock
MT3	MT3S-C20	20	23.825	85	53	MC20, NC20		☐
MT4	MT4S-C20		31.267	80				☐
	MT4S-C32	32		90	70	MC32, NC32		☐
MT5	MT5S-C20	20	44.399	80	53	MC20, NC20		☐
	MT5S-C32	32		90	74	MC32, NC32		☐

*. Adjustable screw 와 and spanners 따로 판매 합니다.

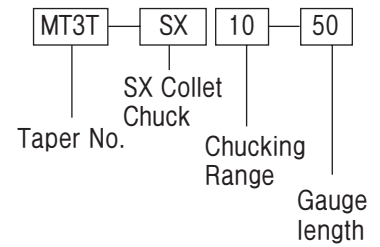
*. Special size도 주문 제작 합니다.

MT SX COLLET CHUCK(TANG)

SX



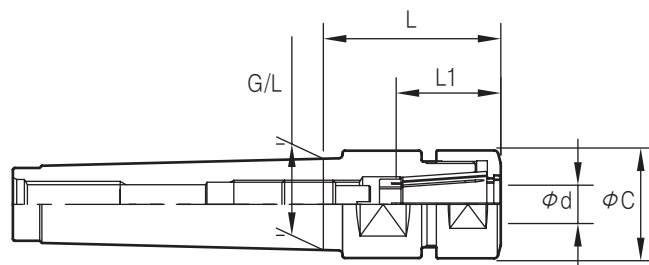
Ordering Example



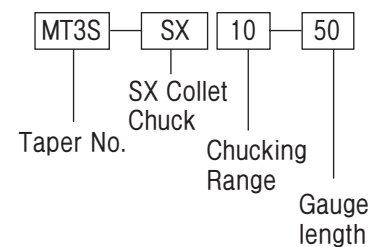
Taper No.	Code No.	φd	L	φC	L1		Collet	Weight (kg)	Stock
					Min	Max			
MT1	MT1T-SX 6 -45	0.7~6.0	45	19.5	21	35	SX 6		☐
	MT1T-SX10-60	1.75~10.0	60	27.5	30	50	SX10		☐
MT2	MT2T-SX 6 -45	0.7~6.0	45	19.5	21	35	SX 6		☐
	MT2T-SX10-50	1.75~10.0	50	27.5	30	50	SX10		☐
MT3	MT3T-SX 6 -45	0.7~6.0	45	19.5	21	35	SX 6		☐
	MT3T-SX10-50	1.75~10.0	50	27.5	30	50	SX10		☐
	MT3T-SX16-60	2.75~16.0	60	40	45	60	SX16		☐
MT4	MT4T-SX10-50	1.75~10.0	50	27.5	30	50	SX10		☐
	MT4T-SX16-70	2.75~16.0	70	40	45	60	SX16		☐
	MT4T-SX25-80	16.0~25.4	80	55	55	85	SX25		☐
MT5	MT5T-SX10-45	1.75~10.0	45	27.5	30	50	SX10		☐
	MT5T-SX16-60	2.75~16.0	60	40	45	60	SX16		☐
	MT5T-SX25-80	16.0~25.4	80	55	55	85	SX25		☐

MT SX COLLET CHUCK(SCREW)

SX



Ordering Example



Taper No.	Code No.	φd	L	φC	L1		Collet	Weight (kg)	Stock
					Min	Max			
MT1	MT1S-SX 6 -45	0.7~6.0	45	19.5	21	35	SX 6		☐
	MT1S-SX10-60	1.75~10.0	60	27.5	30	50	SX10		☐

*. Spanner는 별도 판매 합니다.

MT SX COLLET CHUCK(SCREW)



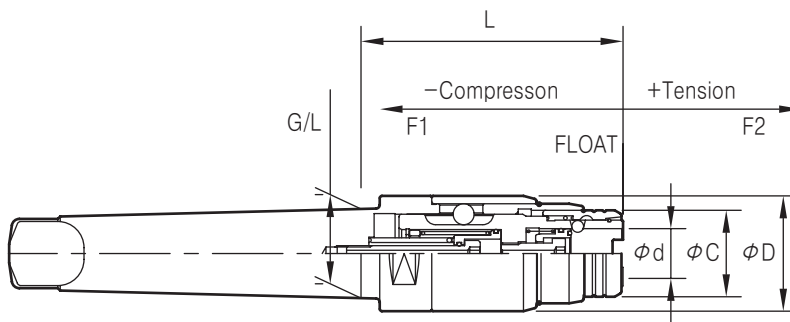
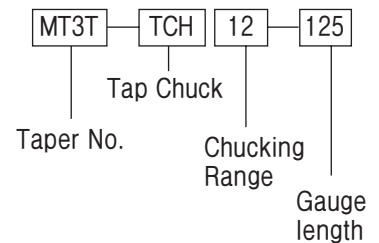
Taper No.	Code No.	ϕd	L	ϕC	L1		Collet	Weight (kg)	Stock
					Min	Max			
MT2	MT2S-SX 6-45	0.7~6.0	45	19.5	21	35	SX 6		☐
	MT2S-SX10-50	1.75~10.0	50	27.5	30	50	SX10		☐
MT3	MT3S-SX 6-45	0.7~6.0	45	19.5	21	35	SX 6		☐
	MT3S-SX10-50	1.75~10.0	50	27.5	30	50	SX10		☐
	MT3S-SX16-60	2.75~16.0	60	40	45	60	SX16		☐
MT4	MT4S-SX10-50	1.75~10.0	50	27.5	30	50	SX10		☐
	MT4S-SX16-70	2.75~16.0	70	40	45	60	SX16		☐
	MT4S-SX25-80	16.5~25.4	80	55	55	85	SX25		☐
MT5	MT5S-SX10-45	1.75~10.0	45	27.5	30	50	SX10		☐
	MT5S-SX16-60	2.75~16.0	60	40	45	60	SX16		☐
	MT5S-SX25-80	16.0~25.4	80	55	55	85	SX25		☐

*. Spanner는 별도 판매 합니다.

MT TAPPING CHUCK(TANG)



Ordering Example



Taper No.	Code No.	ϕd	ϕD	L	ϕC	Float		Weight (kg)	Stock
						F1	F2		
MT3	MT3T-TCH12-125	19	44	100	33	6	12		☐
MT4	MT4T-TCH12-125			100		6	12		☐
	MT4T-TCH22-170	31	61	137	48	10	15		☐
MT5	MT5T-TCH12-120	19	44	95	33	6	12		☐
	MT5T-TCH22-170	31	61	137	48	10	15		☐

*. Tap adapter : 29 page 참조

*. 플로팅(Floating)타입으로 인장,수축장치가 있습니다.

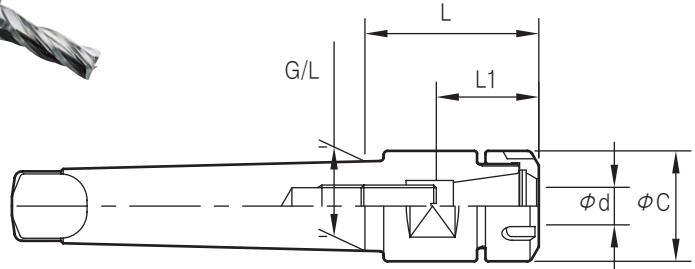
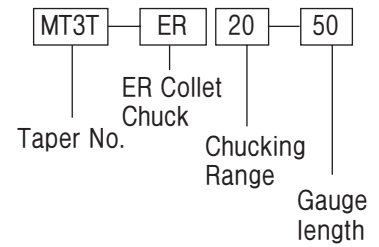
*. 막힌구멍 관통구멍의 tapping 및 모든 tapping 작업 가능합니다.

MT ER COLLET CHUCK(TANG)

S ER



Ordering Example

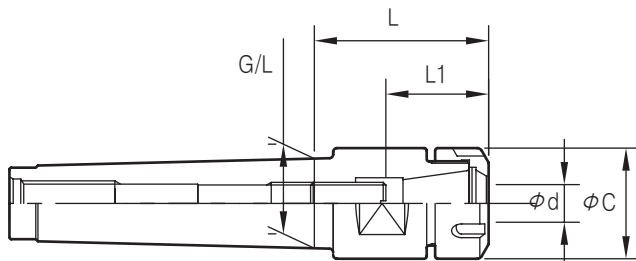


Taper No.	Code No.	φ d	L	φ C	L1		Collet	Weight (kg)	Stock
					Min	Max			
MT1	MT1T-ER11-40	0.5~7.0	70	19	19	34	ER11		☐
	MT1T-ER16-60	0.5~10.0	100	32	23	43	ER16		☐
MT2	MT2T-ER11-40	0.5~7.0	70	19	19	34	ER11		☐
	MT2T-ER16-50	0.5~10.0	100	32	23	43	ER16		☐
	MT2T-ER20-60	0.5~13.0	80	35	25	48	ER20		☐
MT3	MT3T-ER16-40	0.5~10.0	100	32	23	43	ER16		☐
	MT3T-ER20-50	0.5~13.0	70	35	25	48	ER20		☐
	MT3T-ER25-60	0.5~16.0	100	42	34	54	ER25		☐
MT4	MT4T-ER20-45	0.5~13.0	60	35	25	48	ER20		☐
	MT4T-ER25-50	0.5~16.0	90	42	34	54	ER25		☐
	MT4T-ER32-60	1.0~20.0	60	50	40	60	ER32		☐
MT5	MT5T-ER25-60	0.5~16.0	90	42	34	54	ER25		☐
	MT5T-ER32-60	1.0~20.0	120	50	40	60	ER32		☐
	MT5T-ER40-80	2.0~26.0	60	63	50	80	ER40		☐

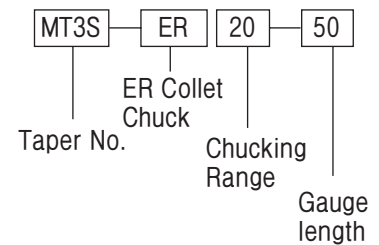
*. Spanner는 별도 판매 합니다.

MT ER COLLET CHUCK(SCREW)

S ER



Ordering Example



Taper No.	Code No.	φ d	L	φ C	L1		Collet	Weight (kg)	Stock
					Min	Max			
MT1	MT1S-ER11-40	0.5~7.0	70	19	19	34	ER11		☐
	MT1S-ER16-60	0.5~10.0	100	32	23	43	ER16		☐

MT MILLING CHUCK(SCREW)



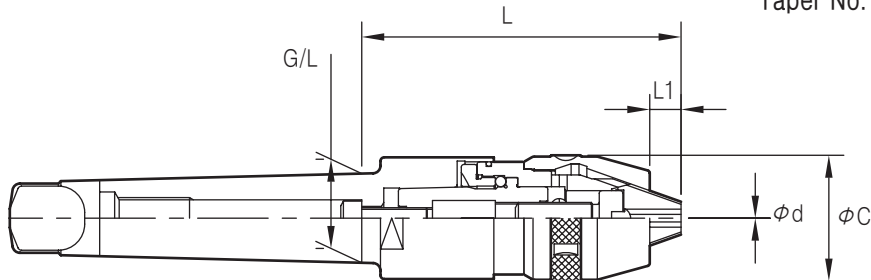
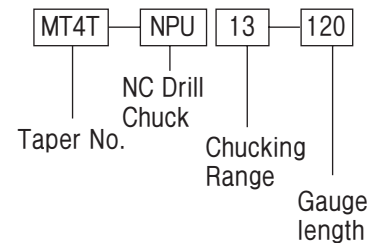
Taper No.	Code No.	ϕd	G/L	L	ϕC	L1		Collet	Weight (kg)	Stock
						Min	Max			
MT2	MT2S-ER11-40	0.5~7.0	17.780	40	19	19	34	ER11		☐
	MT2S-ER16-50	0.5~10.0		50	32	23	43	ER16		☐
	MT2S-ER20-60	0.5~13.0		60	35	25	48	ER20		☐
MT3	MT3S-ER16-40	0.5~10.0	23.825	40	32	23	43	ER16		☐
	MT3S-ER20-50	0.5~13.0		50	35	25	48	ER20		☐
	MT3S-ER25-60	0.5~16.0		60	42	34	54	ER25		☐
MT4	MT4S-ER20-45	0.5~13.0	31.267	45	35	25	48	ER20		☐
	MT4S-ER25-50	0.5~16.0		50	42	34	54	ER25		☐
	MT4S-ER32-60	1.0~20.0		60	50	40	60	ER32		☐
MT5	MT5S-ER25-60	0.5~16.0	44.399	60	42	34	54	ER25		☐
	MT5S-ER32-60	1.0~20.0		60	50	40	60	ER32		☐
	MT5S-ER40-80	2.0~26.0		80	63	50	80	ER40		☐

*. Spanner는 별도 판매 합니다.

MT NC DRILL CHUCK(TANG)



Ordering Example



Taper No.	Code No.	ϕd	G/L	L	ϕC	L1	Weight (kg)	Stock
MT3	MT3T-NPU8 -105	0.3~8.0	23.825	105	38	8.5		☐
MT4	MT4T-NPU8 -90	0.3~8.0	31.267	90	38	8.5		☐
	MT4T-NPU13-120	1.0~13.0		120	50	11.5		☐
MT5	MT5T-NPU8 -80	0.3~8.0	44.399	80	38	8.5		☐
	MT5T-NPU13-105	1.0~13.0		105	50	11.5		☐

*. Spanner는 별도 판매 합니다.

Ordering Example

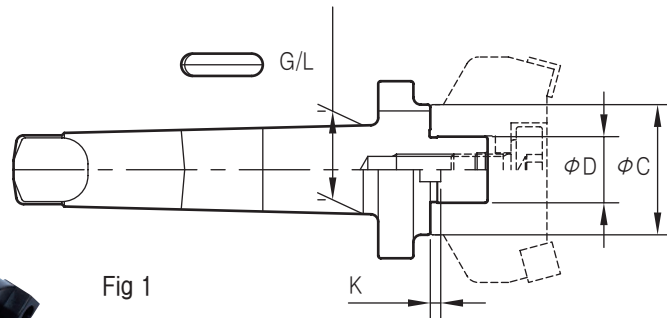
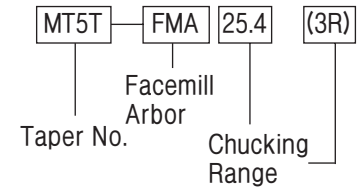


Fig 1

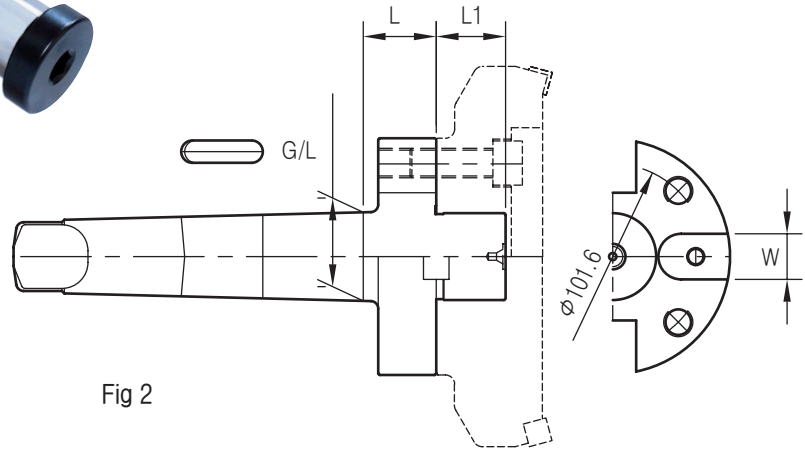


Fig 2

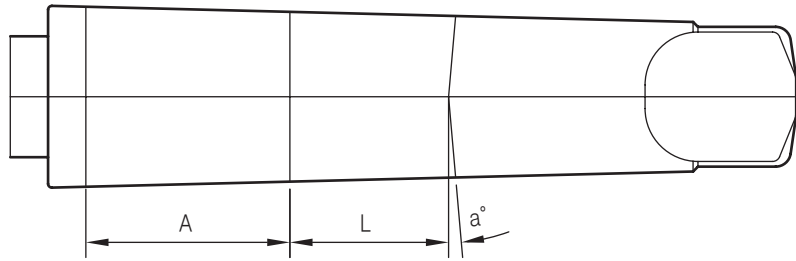
Taper No.	Code No.	φ d	Cutter Dia	L	φ C	L1	W	K	Fig	Weight (kg)	Stock
MT5	MT5T-FMA25.4 (3R)	25.4	80	22	50	22	9.5	5	1		☐
	MT5T-FMA31.75(3R)	31.75	100	26	60	30	12.7	7	1		☐
	MT5T-FMA38.1 (3R)	38.1	125	32	80	34	15.87	9	1		☐
	MT5T-FMA50.8 (3R)	50.8	160	32	98	36	19.05	10	1		☐
MT6	MT6T-FMA25.4 (3R)	25.4	80	22	50	22	9.5	5	1		☐
	MT6T-FMA31.75(3R)	31.75	100	26	60	30	12.7	7	1		☐
	MT6T-FMA38.1 (3R)	38.1	125	34	80	34	15.87	9	1		☐
	MT6T-FMA50.8 (3R)	50.8	160	36	98	36	19.05	10	1		☐
	MT6T-FMA47.625(3R)	47.625	200	38	128	38	25.4	12.5	2		☐

*. JIS B4113 Face Milling용 입니다.

*. Cotter pin : 70 page 참조

*. 대형 Endmill이나 Tapping등의 중절삭 가공시추력의 발생으로
툴의 빠짐을 Cotter pin 을 박음으로 방지 할 수 있음.

*. 장비 업체에 따라 Cotter pin 구멍이 다르므로 기계 회사명 및
A, B, L, 치수를 알려 주십시오.



*. 대형 Endmill이나 Tapping등의 중절삭 가공시
추력의 발생으로 툴의 빠짐을 Cotter pin을 박음
으로 방지 할 수 있음.

*. 장비 업체에 따라 Cotter pin 구멍이 다르므로
기계 회사명 및 A, B, L, 치수를 알려 주십시오.

(mm)

Taper No.	Maker	Cotter Pin Code	A	L	B	a°	Machine
MT4	Aoyama	A	44	25	12.2	-	
	Yoshida	Y	10	18	8.0	-	YR3
			14	15	8.0	-	YR2
			9	21	8.0	-	YD2, YD3
	Ooya	O	5	18	8.2	-	R2000
			9	10	8.2	-	RA2-1300
			10	10	8.2	-	RE-1250A
	Okuma	B	26	30	8.2	-	
MT5	Ikegai	I	33	24	10.0	8° 18'	
	Kurashiki	K	26.3	28.7	12.2	5°	
	Aoyama	A	48	38	13.3	5°	
	Yoshida	Y	9	31.7	13.0	5°	
	Ooya	O	22	15	12.2	-	RE2-1300
			15	20	12.2	-	RE3-1600
	Okuma	B	27	38.8	12.2	3° 30'	
	Ikegai	I	52	33	13.0	5°	
	Kurashiki	K	52	33	13.0	5°	
	Nomura	N	27	35	12.2	8° 18'	
	Shinada	S	37	37	16.0	-	
MT6	Toshiba	T	50	35	13.0	-	
	Daewoo	D	52	33	13.0	5°	
	Ooya	O	25	28	19.3	-	
	Okuma	B	37	46.7	16.4	3° 30'	
	Ikegai	I	52	42	16.2	5°	
	Kurashiki	K	54	37	16.3	8° 18'	
	Nomura	N	27	37.6	16.2	8° 18'	
	Shinada	S	56.5	46	19.0	-	
	Toshiba	T	54	40	16.0	-	
	Daewoo	D	52	45	16.2	5°	
	Kia	W	54	41.3	16.2	-	

STRAIGHT MILLING CHUCK(MILLING)



*. For Extension Milling Chuck.

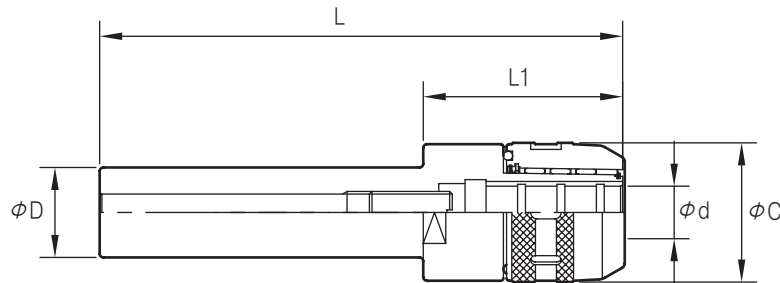
Ordering Example

ST32 C 20

Shank.

Milling Chuck

Chucking Range



Shank	Code No.	φd	φD	L	φC	L1	Collet	Weight (kg)	Stock
32	ST32-C20-220	20	20	220	53	80	MC20, NC20		☐
42	ST42-C20-220		32						☐
	ST42-C32-250	32		250	70	85	MC32, NC32		☐

*. 밀링척 (C)에 사용이 가능합니다.

*. Spanners 별도 판매 합니다.

STRAIGHT NC DRILL CHUCK(MILLING)



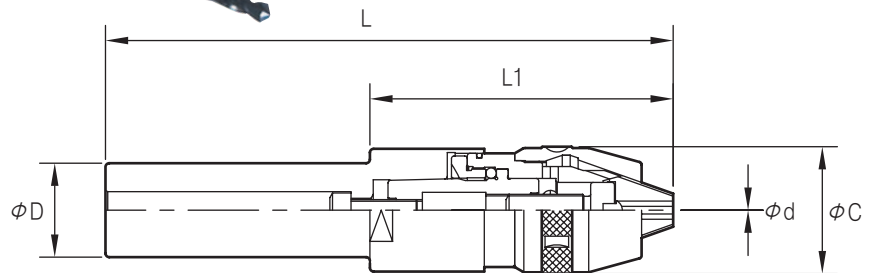
Ordering Example

ST32 NPU 13

Taper No.

NC Drill Chuck

Chucking Range



Shank	Code No.	φd	φD	L	φC	L1	Weight (kg)	Stock
32	ST32-NPU 8	0.3~8.0	32	150	38	80		☐
	ST32-NPU13	1.0~13.0		175	50	105		☐
42	ST42-NPU 8	0.3~8.0	42	155	38	80		☐
	ST42-NPU13	1.0~13.0		180	50	105		☐

*. Can be used with milling chuck.

*. Spanners are sold separately.

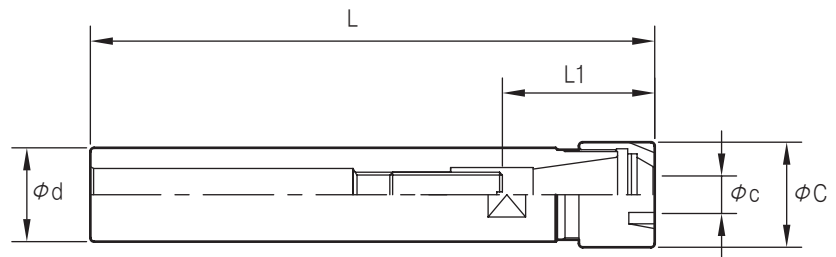
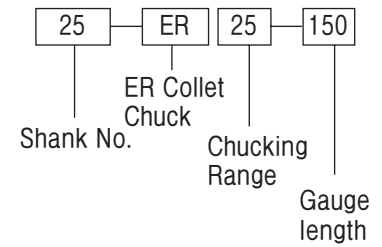
*. 밀링척에 사용이 가능합니다

*. Spanners 별도 판매 합니다.

STRAIGHT ER SLIM COLLET CHUCK(MILLING)

S ER-M

Ordering Example



Shank	Code No.	φd	φD	L	φC	L1		Collet	Weight	Stock
						Min	Max		(kg)	
16	ST16-ER11M-140	0.5~0.7	16	140	16	19	34	ER11		■
	ST16-ER11M-170			170						□
20	ST20-ER16M-140	0.5~1.0		140	22	23	43	ER16		■
	ST20-ER16M-180			180						□
	ST20-ER16M-250			250						□
	ST20-ER20M-140	0.5~13.0		140	28	25	48	ER20		■
	ST20-ER20M-180			180						□
	ST20-ER20M-250			250						□
	25	ST25-ER16M-140		0.5~10.0		140	22	23	43	ER16
ST25-ER16M-180		180				□				
ST25-ER16M-250		250				□				
ST25-ER20M-140		0.5~13.0	140	28		25	48	ER20		■
ST25-ER20M-185			185							□
ST25-ER20M-250			250							□
32		ST32-ER20M-200	0.5~13.0	32		200	28	25	48	ER20
	ST32-ER20M-300	300				□				
	ST32-ER25M-200	0.5~16.0	200		35	34	54	ER25		□
	ST32-ER25M-300		300							□

*. N.C 선반, 자동선반에서 기본으로 사용하는 홀더 입니다.

*. 드릴, 엔드밀, 탭, 리머, 작업 가공용으로 사용됩니다.

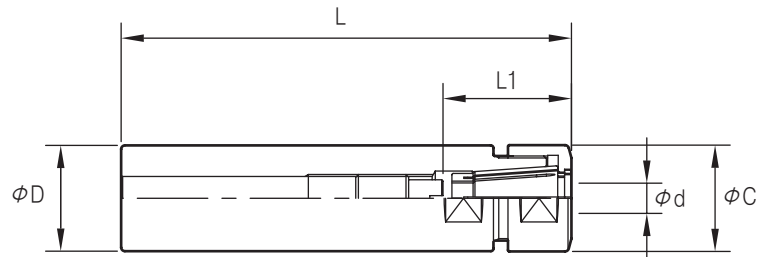
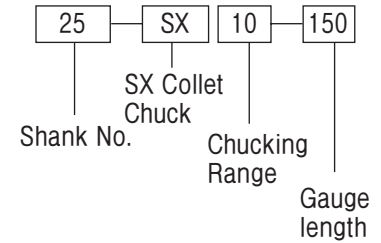
*. 콜릿 및 스페너는 별도로 판매 합니다.

STRAIGHT SX COLLET CHUCK(MILLING)

SX



Ordering Example

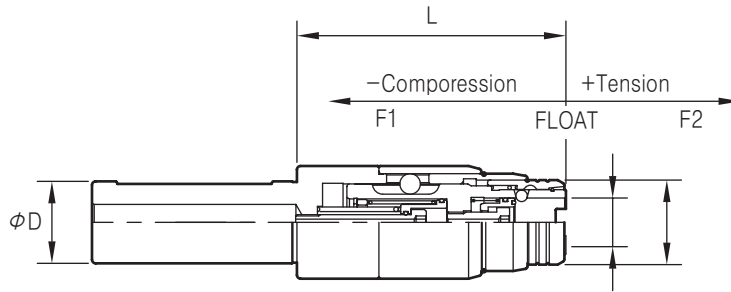


Shank	Code No.	φ d	φ D	L	φ C	L1		Collet	Weight	Stock					
						Min	Max		(kg)						
20	ST20-SX6-120	0.7~0.6	20	120	19.5	21	35	SX 6		☐					
	ST20-SX6-120			170						☐					
	ST20-SX10-120	1.75~10.0		130	27.5	30	50	SX10		☐					
	ST20-SX10-120			180						☐					
	ST20-SX10-120			220						☐					
25	ST25-SX10-120		25	150						☐					
	ST25-SX10-120			200						☐					
	ST25-SX10-120			250						☐					
32	ST32-SX10-120		2.75~16.0	32					150	40	45	70	SX16		☐
	ST32-SX10-120								200						☐
	ST32-SX10-120	250				☐									
	ST32-SX16-120	165				☐									
	ST32-SX16-120	210				☐									
42	ST32-SX16-120	16.0~25.4		42	250	55	55	85	SX25						☐
	ST42-SX16-120				180										☐
	ST42-SX16-120				250										☐
	ST42-SX25-120		200							☐					
	ST42-SX25-120		250							☐					
	ST42-SX25-120		300							☐					

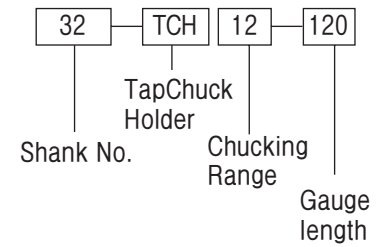
ST SX COLLET CHUCK

- *. 밀링척에 체결하여 사용할 수 있는 STRAIGHT 타입.
- *. 드릴, 엔드밀, 탭, 리머, 작업 가공용으로 사용됩니다.
- *. 콜릿 은 SX COLLET 27PAGE 를 참조하여 주십시오.

STRAIGHT TAPPING CHUCK



Ordering Example



- *. 축방향 플로팅 타입으로 인장, 압축이 가능한홀더
- *. 탭 콜릿은 자유로운 탈착이 가능한 체결방식.(one-touch)
- *. 하단부의 탭 콜릿 사이즈를 참조하여 주십시오.

Shank	Code No.	φd	L	φC	φD	Float		Weight (kg)	Stock
						F1	F2		
32	ST32-TCH12-120	19	95	33	32	6	12		☐
	ST32-TCH22-165	31	132	48		10	15		☐
40	ST40-TCH12-120	19	95	33	40	6	12		☐
	ST40-TCH22-165	31	132	48		10	15		☐
42	ST42-TCH12-120	19	95	33	42	6	12		☐
	ST42-TCH22-165	31	132	48		10	15		☐
50	ST50-TCH12-120	19	95	33	50	6	12		☐
	ST50-TCH22-165	31	132	48		10	15		☐

- *. Can be used with Milling chuck, and (SLA) Side lock holder.
- *. 밀링척 사이드 락 홀더(SLA)에 사용이 가능 합니다.

Style	Tap size			
	Metric	UNC		
	mm	inch	φD	□W
STC-1	M3.0	No5 No6	4.0	3.2
	M4.0,M4.5		5.0	4
	M5.0,M5.5		5.5	4.5
	M6.0	U1/4"	6.0	4.5
		U5/16"	6.1	5
	M8.0,M7.0		6.2	5
	M10,M9.0	U3/8"	7.0	5.5
	M11	U7/16"	8.0	6
	M12		8.5	6.5
		U1/2"	9.0	7
STC-2	M14,M15	U9/16"	10.5	8
		U5/8"	12.0	9
	M16		12.5	10
	M17		13.0	10
	M18	U3/4"	14.0	11
	M20		15.0	12
	M22	U7/8"	17.0	13
	M24,M25		19.0	15

Style	Metric	UNC	φD	□W
	mm	inch		
STC-3	M27,M26	U1"	20.0	15
	M28		21.0	17
		U1,1/8"	22.0	17
	M30		23.0	17
	M32	U1,1/4"	24.0	19
	M33		25.0	19
	M34,M35	U1,3/8"	26.0	21
	M36,M38		28.0	21

Style	PT	PF	φD	□W
STC-2	1/8"	1/8"	8.0	6
	1/4"	1/4"	11.0	9
	3/8"	3/8"	14.0	11
	1/2"	1/2"	18.0	14
		5/8"	19.0	15
	3/4"	3/4"	23.0	17
		7/8"	24.0	19
	1"	1"	26.0	21
		1.1/8"	28.0	21

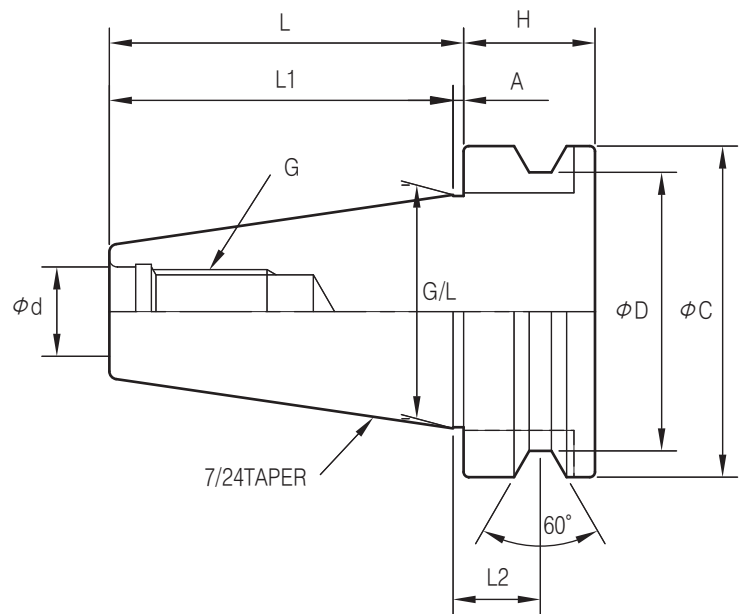
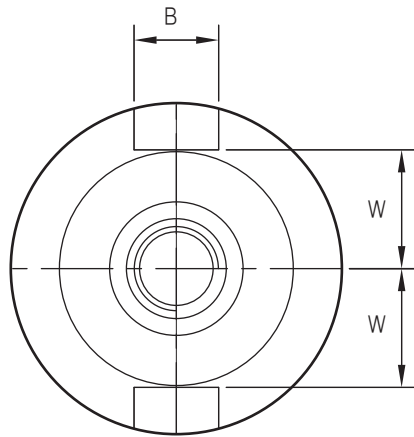


NATIONAL TAPER SHANK



BT

MAS 403(BT)



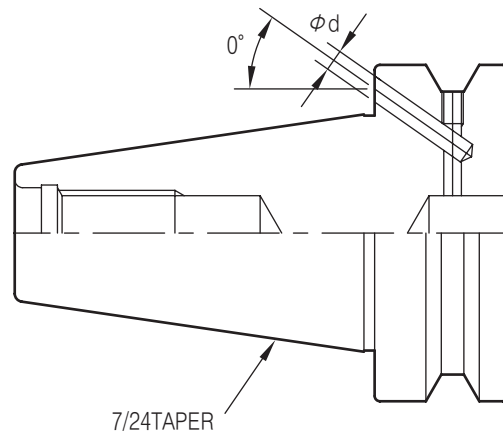
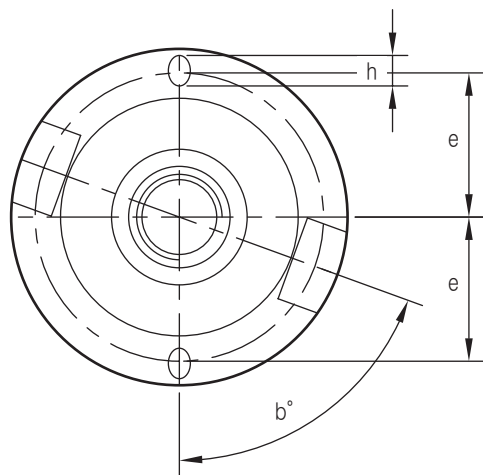
(mm)

Taper	ϕd	G/L	ϕD	L	ϕC	L1	L2	H	A	B	W	G
BT30	12.5	31.75	38	50.4	46	48.4	13.6	20	2	16.1	16.3	M12×1.75
BT40	17	44.45	53	67.4	63	65.4	16.6	25	2	16.1	22.6	M16×2.0
BT50	25	69.85	85	104.8	100	101.8	23.2	35	3	25.7	35.4	M24×3.0
BT60	31	107.95	135	164.8	155	161.8	28.2	45	3	25.7	60.1	M30×3.5

for Machining center
JIS B6339

NATIONAL TAPER SHANK**BT**

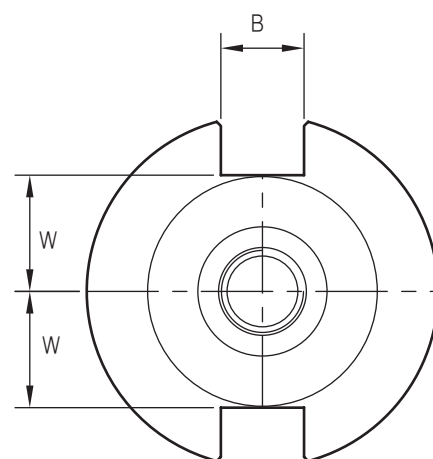
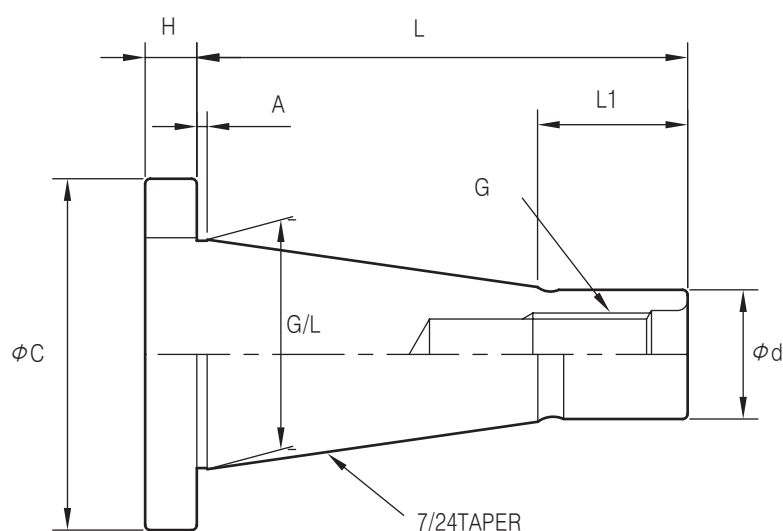
■ MAS 403(BT)



FLANGE THROUGH TYPE(B TYPE)

Taper	ϕd	$e \pm 0.1$	h max	α°	$b^\circ \pm 30'$
BT30	-	-	-	-	-
BT40	4	27	5	$0^\circ \sim 35^\circ$	70°
BT50	6	42	7		
BT60	-	-	-	-	-

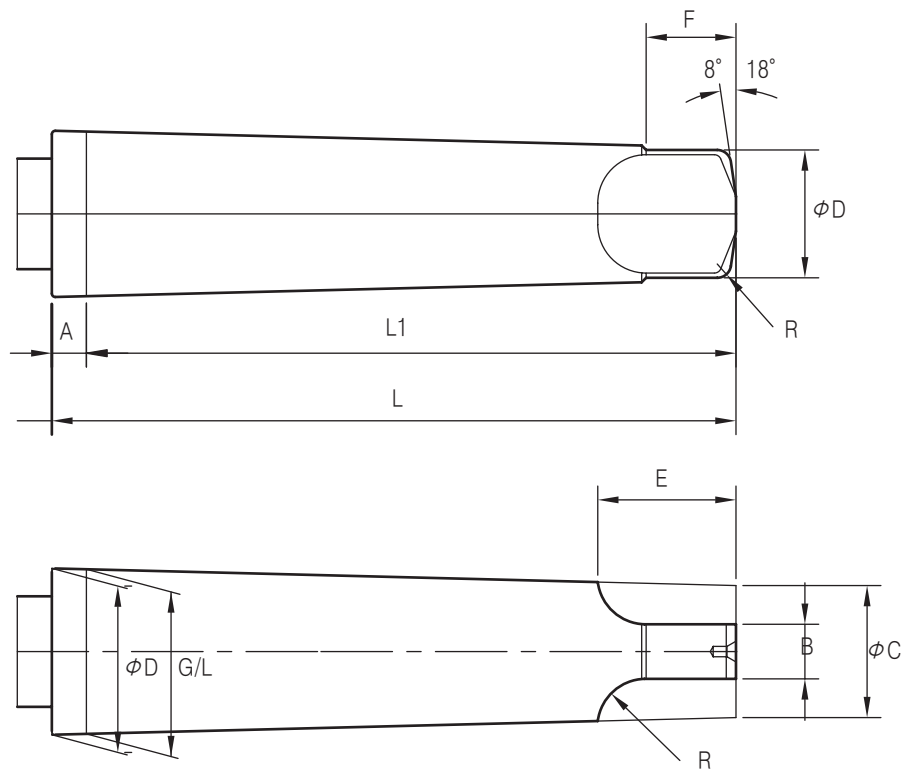
for Machining center
JIS B6339

NATIONAL TAPER SHANK**NT****DIN 2080(NT)**

Taper	ϕd	G/L	L	ϕC	L1	H	A	B	W	G
NT30	17.4	31.75	70	46	20	10	1.6	16.1	16.2	U1/2"-13
NT40	25	44.45	95	68	29	10	1.6	16.1	22.5	U5/8"-11
NT50	39	107.95	130	98	26	15	3.2	25.7	35	U1"-8
NT60	60.2	69.85	210	158	45	16	3.2	25.7	60.1	U1,1/4"-7

for General Use
JIS B4003

Tang Type

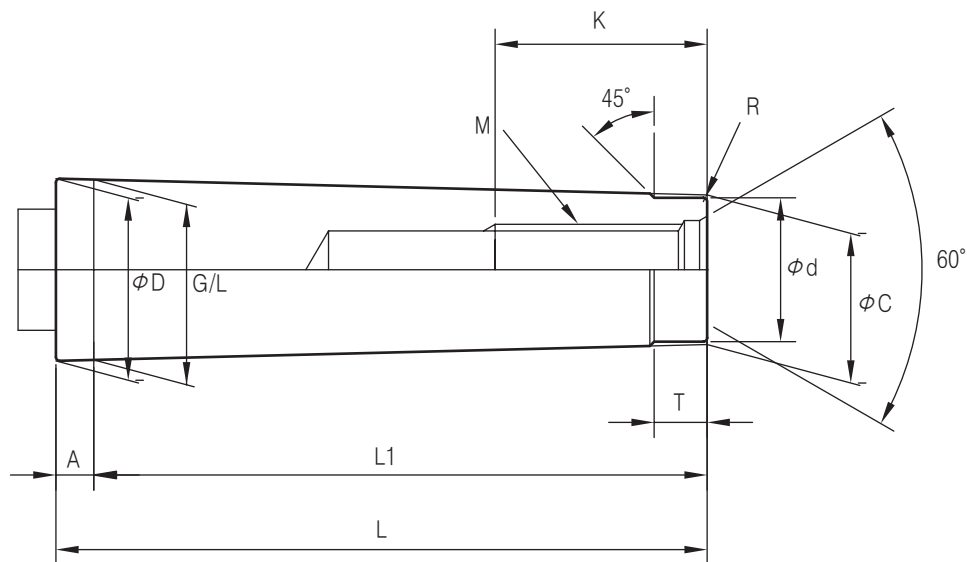


(mm)

MT No.	Taper	Angle ($\alpha / 2$)	G/L	ϕD	L	ϕC	L1	A	ϕd	B	E	F	R	r
MT 0	1/19.212	1° 29' 26.9"	9.045	9.201	59.5	6.104	56.5	3.0	6.0	3.9	10.5	6.5	4	1.0
MT 1	1/20.047	1° 25' 43.46"	12.065	12.240	65.5	8.972	62.0	3.5	8.7	5.2	13.5	8.5	5	1.2
MT 2	1/20.020	1° 25' 50.04"	17.780	18.030	80.0	14.034	75.0	5.0	13.5	6.3	16	10	6	1.6
MT 3	1/19.922	1° 26' 15.72"	23.825	24.076	99.0	19.107	94.0	5.0	18.5	7.9	20	13	7	2.0
MT 4	1/19.254	1° 29' 15.21"	31.267	31.605	124.0	25.164	117.5	6.5	24.5	11.9	24	16	8	2.5
MT 5	1/19.002	1° 30' 26.02"	44.399	44.741	156.0	36.531	149.5	6.5	35.7	15.9	29	19	10	3.0
MT 6	1/19.180	1° 29' 35.86"	63.348	63.765	218.0	52.399	210.0	8.0	51.0	19.0	40	27	13	4.0
MT 7	1/19.231	1° 29' 21.61"	83.058	83.578	296.0	68.186	286.0	10	66.8	28.6	54	35	19	5.0

for Conventional
JIS B4003

Screw Type



(mm)

MT No.	Taper	Angle ($\alpha / 2$)	G/L	ϕD	L	ϕC	L1	A	ϕd	M	K	T	R
MT 0	1/19.212	1° 29' 26.9"	9.045	9.201	53	6.442	50	3.0	6.0	–	–	4	0.3
MT 1	1/20.047	1° 25' 43.46"	12.065	12.240	57	9.396	53.5	3.5	9.0	M6	16	5	0.5
MT 2	1/20.020	1° 25' 50.04"	17.780	18.030	69	14.583	64	5.0	14.0	M10	24	5	0.5
MT 3	1/19.922	1° 26' 15.72"	23.825	24.076	86	19.759	81	5.0	19.0	M12	28	7	0.6
MT 4	1/19.254	1° 29' 15.21"	31.267	31.605	109	25.943	102.5	6.5	25.0	M16	32	9	1.0
MT 5	1/19.002	1° 30' 26.02"	44.399	44.741	136	37.584	129.5	6.5	35.7	M20	40	9	2.5
MT 6	1/19.180	1° 29' 35.86"	63.348	63.765	190	53.856	182	8.0	51.0	M24	50	12	4.0
MT 7	1/19.231	1° 29' 21.61"	83.058	83.578	260	70.058	250	10	65.0	M33	80	18.5	5.0

for Conventional
JIS B4003

Metric coarse screw thread

Nominal	Drill diameter	Nominal	Drill diameter	Nominal	Drill diameter	Nominal	Drill diameter
M1 ×0.25	0.75	M2.5×0.45	2.10	M9 ×125	7.80	M27×3	24.0
M1.1×0.25	0.85	M2.6×0.45	2.20	M10×1.5	8.50	M30×3.5	26.5
M1.2×0.25	0.95	M3 ×0.5	2.50	M11×1.5	9.50	M33×3.5	29.5
M1.4×0.3	1.10	M3.5×0.6	2.90	M12×1.75	10.3	M36×4	32.0
M1.6×0.35	1.25	M4 ×0.7	3.30	M14×2	12.0	M39×4	35.0
M1.7×0.35	1.35	M4.5×0.75	3.80	M16×2	14.0	M42×4.5	37.5
M1.8×0.35	1.45	M5 ×0.8	4.20	M18×2.5	15.5	M45×4.5	40.5
M2 ×0.4	1.60	M6 ×1.0	5.00	M20×2.5	17.5	M48×5	43.0
M2.2×0.45	1.75	M7 ×1.0	6.00	M22×2.5	19.5		
M2.3×0.4	1.90	M8 ×1.25	6.80	M24×3	21.0		

Metric coarse screw thread

Nominal	Drill diameter	Nominal	Drill diameter	Nominal	Drill diameter	Nominal	Drill diameter
M1 ×0.2	0.80	M11 ×1.0	10.0	M24×1.0	23.0	M38×1.5	36.5
M1.1×0.2	0.90	M11 ×0.75	10.3	M25 ×2.0	23.0	M39×3.0	36.0
M1.2×0.2	1.00	M12×1.5	10.5	M25×1.5	23.5	M39×2.0	37.0
M1.4×0.2	1.20	M12×1.25	10.8	M25×1.0	24.0	M39×1.5	37.5
M1.6×0.2	1.40	M12×1.0	11.0	M26×1.5	24.5	M40×3.0	37.0
M1.8×0.2	1.60	M14×1.5	12.5	M27×2.0	25.0	M40×2.0	38.0
M2 ×0.25	1.75	M14×1.0	13.0	M27×1.5	25.5	M40×2.5	38.5
M2.2×0.25	1.95	M15 ×1.5	13.5	M27×1.0	26.0	M42×1.5	38.0
M2.5×0.35	2.20	M15×1.0	14.0	M28×2.0	26.0	M42×1.0	39.0
M3 ×0.35	2.70	M16×1.5	14.5	M28×1.5	26.5	M42×2.0	40.0
M3.5×0.35	3.20	M16 ×1.0	15.0	M28×1.0	27.0	M42×1.5	40.5
M4 ×0.5	3.50	M17×1.5	15.5	M30×3.0	27.0	M45×1.0	41.0
M4.5×0.5	4.00	M17 ×1.0	16.0	M30×2.0	28.0	M45×3.0	42.0
M5 ×0.5	4.50	M18×2.0	16.0	M30×1.5	28.5	M45×2.0	43.0
M5.5×0.5	5.00	M18 ×1.5	16.5	M30×1.0	29.0	M45×1.5	43.5
M6 ×0.75	5.30	M18×1.0	17.0	M32×2.0	30.0	M48×1.0	44.0
M7 ×0.75	6.30	M20 ×2.0	18.0	M32×1.5	30.5	M48×2.0	45.0
M8 ×1.0	7.00	M20 ×1.5	18.5	M33×3.0	30.0	M48×1.5	46.0
M8 ×0.75	7.30	M20 ×1.0	19.0	M33×2.0	31.0	M48×3.0	46.5
M9 ×1.0	8.00	M22 ×2.0	20.0	M33×1.5	31.5	M50×3.0	47.0
M9 ×0.75	8.30	M22 ×1.5	20.5	M35×1.5	33.5	M50×2.0	48.0
M10 ×1.25	8.80	M22 ×1.0	21.0	M36×3.0	33.0	M50×1.5	48.5
M10 ×1.0	9.00	M24 ×2.0	22.0	M36×2.0	34.0		
M10 ×0.75	9.30	M24 ×1.5	22.5	M36×1.5	34.5		

유니파이나사 (UNC)

Nominal	Drill diameter	Nominal	Drill diameter
NO. 1-64 UNC	1.75	7/8-10 UNC	19.6
NO. 2-56 UNC	1.86	1-9 UNC	22.5
NO. 3-48 UNC	2.14	11/8-8 UNC	25.2
NO. 4-40 UNC	2.36	11/4-7 UNC	28.4
NO. 5-40 UNC	2.69	13/8-7 UNC	31.0
NO. 6-32 UNC	2.86	11/2-6 UNC	34.2
NO. 8-32 UNC	3.52	13/4-6 UNC	39.8
NO.10-24 UNC	3.91	2-5 UNC	45.3
NO.12-24 UNC	4.57	21/4-4 1/2 UNC	51.7
1/4-20UNC	5.25	21/2-4 1/2 UNC	57.3
5/16-18UNC	6.72	23/4-4 UNC	63.7
3/8-16UNC	8.15	3-4 UNC	70.0
7/16-14UNC	9.50	31/4-4 UNC	76.4
1/2-13UNC	11.0	31/2-4 UNC	82.7
9/16-12UNC	12.3	33/4-4 UNC	89.1
5/8-24UNC	13.8	4-4 UNC	95.4
3/4-11UNC	16.8		

관용나사

mm

Nominal	PF	리시머사용시	리시머불사용시	PF
1/6-28	6.79	6.11	6.23	6.49
1/8-28	8.80	8.11	8.24	8.50
1/4-19	11.8	10.8	10.9	11.3
1/8-19	15.3	14.2	14.2	14.9
1/2-14	19.1	17.7	18.0	18.5
5/8-14	21.1			
3/4-14	24.6	23.1	23.3	24.0
7/8-14	28.3			
1-11	30.9	29.1	29.4	31.1
11/8-11	35.5			
11/4-11	39.5	37.5	38.0	38.8
11/2-11	45.4	43.4	43.8	44.5
13/4-11	51.4			
2-11	57.2	54.9	55.4	56.5
21/4-11	63.3			72.0
21/2-11	72.8	70.2	70.7	84.7

		Class of geometrical tolerance zone of shafts																									
Above	Below	b9	c9	d8	d9	e7	e8	e9	f6	f7	f8	g5	g6	h5	h6												
–	3	-140	-60	-20	-20	-14	-14	-14	-6	-6	-6	-2	-2	0	0												
		-165	-85	-34	-45	-24	-28	-39	-12	-16	-20	-6	-8	-4	-6												
3	6	-140	-70	-30	-30	-20	-20	-20	-10	-10	-10	-4	-4	0	0												
		-170	-100	-48	-60	-32	-38	-50	-18	-22	-28	-9	-12	-5	-8												
6	10	-150	-80	-40	-40	-25	-25	-25	-13	-13	-13	-5	-5	0	0												
		-186	-116	-62	-76	-40	-47	-61	-22	-28	-35	-11	-14	-6	-9												
10	14	-150	-95	-50	-50	-32	-32	-32	-16	-16	-16	-6	-6	0	0												
14	18	-193	-138	-77	-93	-50	-59	-75	-27	-34	-43	-14	-17	-8	-11												
18	24	-160	-110	-65	-65	-40	-40	-40	-20	-20	-20	-7	-7	0	0												
24	30	-212	-162	-98	-117	-61	-73	-92	-33	-41	-53	-16	-20	-9	-13												
30	40	-170	-120	-80	-80	-50	-50	-50	-25	-25	-25	-9	-9	0	0												
40	50	-232	-182													-119	-142	-75	-89	-112	-41	-50	-64	-20	-25	-11	-16
50	65	-180	-130	-100	-100	-60	-60	-60	-30	-30	-30	-10	-10	0	0												
65	80	-242	-192													-146	-174	-90	-106	-134	-49	-60	-76	-23	-29	-13	-19
80	100	-190	-140	-120	-120	-72	-72	-72	-36	-36	-36	-12	-12	0	0												
100	120	-264	-214													-174	-207	-107	-126	-159	-58	-71	-90	-27	-34	-15	-22
120	140	-240	-180	-145	-145	-85	-85	-85	-43	-43	-43	-14	-14	0	0												
140	160	-327	-267													-208	-245	-125	-148	-185	-68	-83	-106	-32	-39	-18	-25
160	180	-360	-300													-210	-250	-130	-155	-195	-78	-95	-120	-41	-50	-21	-28
180	200	-380	-280	-170	-170	-100	-100	-100	-50	-50	-50	-15	-15	0	0												
200	225	-455	-355													-242	-285	-146	-172	-215	-79	-96	-122	-35	-44	-20	-29
225	250	-495	-395													-280	-320	-162	-191	-240	-88	-108	-137	-40	-49	-23	-32
250	280	-535	-435	-190	-190	-110	-110	-110	-56	-56	-56	-17	-17	0	0												
280	315	-610	-510													-271	-320	-162	-191	-240	-88	-108	-137	-40	-49	-23	-32
315	355	-670	-570													-210	-250	-130	-155	-195	-78	-95	-120	-41	-50	-21	-28
355	400	-740	-640	-210	-210	-125	-125	-125	-62	-62	-62	-18	-18	0	0												
400	450	-820	-720													-299	-350	-182	-214	-265	-98	-119	-151	-43	-54	-25	-36
450	500	-915	-815													-230	-270	-135	-165	-205	-85	-105	-135	-47	-57	-27	-37
400	450	-760	-660	-230	-230	-135	-135	-135	-68	-68	-68	-20	-20	0	0												
450	500	-840	-740													-327	-385	-198	-232	-290	-108	-131	-165	-47	-60	-27	-40

Class of geometrical tolerance zone of shafts																
h7	h8	h9	js5	js6	js7	k5	k6	m5	m6	n6	p6	r6	s6	t6	u6	x6
0 -10	0 -14	0 -25	±2	±3	±5	+4 +0	+6 +0	+6 +2	+8 +2	+10 +4	+12 +6	+16 +10	+20 +14	-	+24 +18	+26 +20
0 -12	0 -18	0 -30	±2.5	±4	±6	+6 +1	+9 +1	+9 +4	+12 +4	+16 +18	+20 +12	+23 +15	+27 +19		+31 +23	+36 +28
0 -15	0 -22	0 -36	±3	±4.5	±7	+7 +1	+10 +1	+12 +6	+15 +6	+19 +10	+24 +15	+28 +19	+32 +23		+37 +28	+43 +34
0 -18	0 -27	0 -43	±4	±5.5	±9	+9 +1	+12 +1	+15 +7	+18 +7	+23 +12	+29 +18	+34 +23	+39 +28	-	+44 +33	+51 +40 +56 +45
0 -21	0 -33	0 -52	±4.5	±6.5	±10	+11 +2	+15 +2	+17 +8	+21 +8	+28 +15	+35 +22	+41 +28	+48 +35	-	+54 +41	+67 +54
														+54 +41	+61 +48	+77 +64
0 -25	0 -39	0 062	±5.5	±8	±12	+13 +2	+18 +2	+20 +9	+25 +9	+33 +17	+42 +26	+50 +34	+59 +43	+64 +48 +70 +54	+76 60 +86 +70	-
0 -30	0 -46	0 074	±6.5	±9.5	±15	+15 +2	+21 +2	+24 +11	+30 +11	+39 +20	+51 +32	+60 +41 +62 +43	+72 +53 +78 +59	+85 +66 +94 +75	+106 +87 +121 +102	-
0 -35	0 -54	0 087	±7.5	±11	±17	+18 +3	+25 +3	+28 +13	+35 +13	+45 +23	+59 +37	+73 +51 +76 +54	+93 +71 +101 +79	+113 +91 +126 +104	+146 +124 +166 +144	-
0 -40	0 -63	0 -100	±9	±12.5	±20	+21 +3	+28 +3	+33 +15	+40 +15	+52 +27	+68 +43	+88 +63 +90 +65 +93 +68	+117 +92 +125 +100 +133 +108	+147 +122 +159 +134 +169 +146	-	-
0 -46	0 -72	0 -115	±10	±14.5	±23	+24 +4	+33 +4	+37 +17	+46 +17	+60 +31	+79 +50	+106 +77 +109 +80 +113 +84	+151 +122 +159 +130 +169 +140	-	-	-
0 -52	0 -81	0 130	±11.5	±16	±26	+27 +4	+36 +4	+43 +20	+52 +20	+66 +34	+88 +56	+126 +94 +130 +98	-	-	-	-
0 -57	0 -89	0 -140	±12.5	±18	±28	+29 +4	+40 +4	+46 +21	+57 +21	+73 +37	+98 +62	+144 +108 +150 +114	-	-	-	-
0 -63	0 -97	0 -155	±13.5	±20	±31	+32 +5	+45 +5	+50 +23	+63 +23	+80 +40	+108 68	166 +126 +172 +132	-	-	-	-

Class of geometrical tolerance zone of Hole																	
Above	Below	B10	C9	C10	D8	D9	D10	E7	E8	E9	F6	F7	F8	G6	G7	H6	H7
-	3	+180 +140	+85 +60	+100 +60	+34 +20	+45 +20	+60 +20	+24 +14	+28 +14	+39 +14	+12 +6	+16 +6	+20 +6	+8 +2	+12 +2	+6 0	+10 0
3	6	+188 +140	+100 +70	+118 +70	+48 +30	+60 +30	+78 +30	+32 +20	+38 +20	+50 +20	+18 +10	+22 +10	+28 +10	+12 +4	+16 +4	+8 0	+12 0
6	10	+208 150	+116 +80	+138 +80	+62 +40	+76 +40	+98 +40	+40 +25	+47 +25	+61 +25	+22 +13	+28 +13	+35 +13	+14 +5	+20 +5	+9 0	+15 0
10	14	+220 +150	+138 +95	+165 +95	+77 +50	+93 +50	+120 +50	+50 +32	+59 +32	+75 +32	+27 +16	+34 +16	+43 +16	+17 +6	+24 +6	+11 0	+18 0
14	18																
18	24	+244 +160	+162 +110	+194 +110	+98 +65	+117 +65	+149 +65	+61 +40	+73 +40	+92 +40	+33 +20	+41 +20	+53 +20	+20 +7	+28 +7	+13 0	+21 0
24	30																
30	40	+270 +170	+182 +120	+220 +120	+119 +80	+142 +80	+180 +80	+75 +50	+89 +50	+112 +50	+41 +25	+50 +25	+64 +25	+25 +9	+34 +9	+16 0	+25 0
40	50	+280 +180	+192 +130	+230 +130													
50	65	+310 +190	+214 +140	+260 +140	+146 +146	+174 +174	+220 +220	+90 +90	+106 +106	+134 +134	+49 +49	+60 +60	+76 +76	+29 +29	+40 +40	+19 +19	+30 +30
65	80	+320 +200	+224 +150	+270 +150	+100 +100	+100 +100	+100 +100	+60 +60	+60 +60	+60 +60	+30 +30	+30 +30	+30 +30	+10 +10	+10 +10	0 0	0 0
80	100	+360 +220	+257 +170	+310 +170	+174 +174	+207 +207	+260 +260	+107 +107	+126 +126	+159 +159	+58 +58	+71 +71	+90 +90	+34 +34	+47 +47	+22 +22	+35 +35
100	120	+380 +240	+267 +180	+320 +180	+120 +120	+120 +120	+120 +120	+72 +72	+72 +72	+72 +72	+36 +36	+36 +36	+36 +36	+12 +12	+12 +12	0 0	0 0
120	140	+420 +260	+300 +200	+360 +200													
140	160	+440 +280	+310 +210	+370 +210	+208 +145	+245 +145	+305 +145	+125 +85	+148 +85	+185 +85	+68 +43	+83 +43	+106 +43	+39 +14	+54 +14	25 0	+40 0
160	180	+470 +310	+330 +230	+390 +230													
180	200	+525 +340	+355 +240	+425 +240													
200	225	+565 +380	+375 +260	+445 +260	+242 +170	+285 +170	+355 +170	+146 +100	+172 +100	+215 +100	+79 +50	+96 +50	+122 +50	+44 +15	+61 +15	+29 0	+46 0
225	250	+605 +420	+395 +280	+465 +280													
250	280	+690 +480	+430 +300	+510 +300	+271 +190	+320 +190	+400 +190	+162 +110	+191 +110	+240 +110	+88 +56	+108 +56	+137 +56	+49 +17	+69 +17	+32 0	+52 0
280	315	+750 +540	+460 +330	+540 +330													
315	355	+830 +600	+500 +360	+590 +360	+299 +210	+350 +210	+440 +210	+182 +125	+214 +125	+265 +125	+98 +62	+119 +62	+151 +62	+54 +18	+75 +18	+36 0	+57 0
355	400	+910 +680	+540 +400	+630 +400													
400	450	+1010 +760	+595 +440	+690 +440	+327 +385	+385 +480	+480 +198	+198 +232	+232 +290	+290 +108	+108 +131	+131 +165	+165 +60	+60 +83	+83 +20	+40 0	+63 0
450	500	+1090 +840	+635 +480	+730 +480	+230 +230	+230 +230	+230 +230	+135 +135	+135 +135	+135 +135	+68 +68	+68 +68	+68 +68	+20 +20	+20 +20	0 0	0 0

Class of geometrical tolerance zone of Hole																	
H8	H9	H10	Js6	Js7	K6	K7	M6	M7	N6	N7	P6	P7	R7	S7	T7	U7	X7
+14 0	+25 0	+40 0	±3	±5	0 -6	0 -10	-2 -8	-2 -12	-4 -10	-4 -14	-6 -12	-6 -16	-10 -20	-14 -24	-	-18 -28	-20 -30
+18 0	+30 0	+48 0	±4	±6	+2 -6	+3 -9	-1 -9	0 -12	-5 -13	-4 -16	-9 -17	-8 -20	-11 -23	-15 -27	-	-19 -31	-24 -36
+22 0	+36 0	+58 0	±4.5	±7	+2 -7	+5 -10	-3 -12	0 -15	-7 -16	-4 -19	-12 -21	-9 -24	-13 -28	-17 -32	-	-22 -37	-28 -43
+27 0	+43 0	+70 0	±5.5	±9	+2 -9	+6 -12	-4 -15	0 18	-9 -20	-5 -23	-15 -26	-11 -29	-16 -34	-21 -39	-	-26 -44	-33 -51 -38 -56
+33 0	+52 0	+84 0	±6.5	±10	+2 -11	+6 -15	-4 -17	0 -21	-11 -24	-7 -28	-18 -31	-14 -35	-20 -41	-27 -48	-	-33 -54	-46 -67 -56 -77
+39 0	+62 0	+100 0	±8	±12	+3 -13	+7 -18	-4 -20	0 -25	-12 -28	-8 -33	-21 -37	-17 -42	-25 -50	-34 -59	-39 -64 -45 -70	-51 -76 -61 -86	-
+46 0	+74 0	+120 0	±9.5	±15	+4 -15	+9 -21	-5 -24	0 -30	-14 -33	-9 -39	-26 -45	-21 -51	-30 -60 -32 -62	-42 -72 -48 -78	-55 -85 -64 -94	-76 -106 -91 -121	-
+54 0	+87 0	+140 0	±11	±17	+4 -18	+10 -25	-6 -28	0 -35	-16 -38	-10 -45	-30 -52	-24 -59	-38 -73 -41 -76	-58 -93 -66 -101	-78 -113 -91 -126	-111 -146 -131 -166	-
+63 0	+100 0	+160 0	±12.5	±20	+4 -21	+12 -28	-8 -33	0 -40	-20 -45	-12 -52	-36 -61	-28 -68	-48 -88 -50 -90 -53 -93	-77 -117 -85 -125 -93 -133	-107 -147 -119 -159 -131 -171	-	-
+72 0	+115 0	+185 0	±14.5	±23	+5 -24	+13 -33	-8 -37	0 -46	-22 -51	-14 -60	-41 -70	-33 -79	-60 -106 -63 -109 -67 -113	-105 -151 -113 -159 -123 -169	-	-	-
+81 0	+130 0	+210 0	±16	±26	+5 -27	+16 -36	-9 -41	0 -52	-25 -57	-14 -66	-47 -79	-36 -88	-74 -126 -78 -130	-	-	-	-
+89 0	+140 0	+230 0	±18	±28	+7 -29	+17 -40	-10 -46	0 -57	-26 -62	-16 -73	-51 -87	-41 -98	-87 -144 -93 -150	-	-	-	-
+97 0	+155 0	+250 0	±20	±31	+8 -32	+18 -45	-10 -50	0 -63	-27 -67	-17 -80	-55 -95	-45 -108	-103 -166 -109 -172	-	-	-	-

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