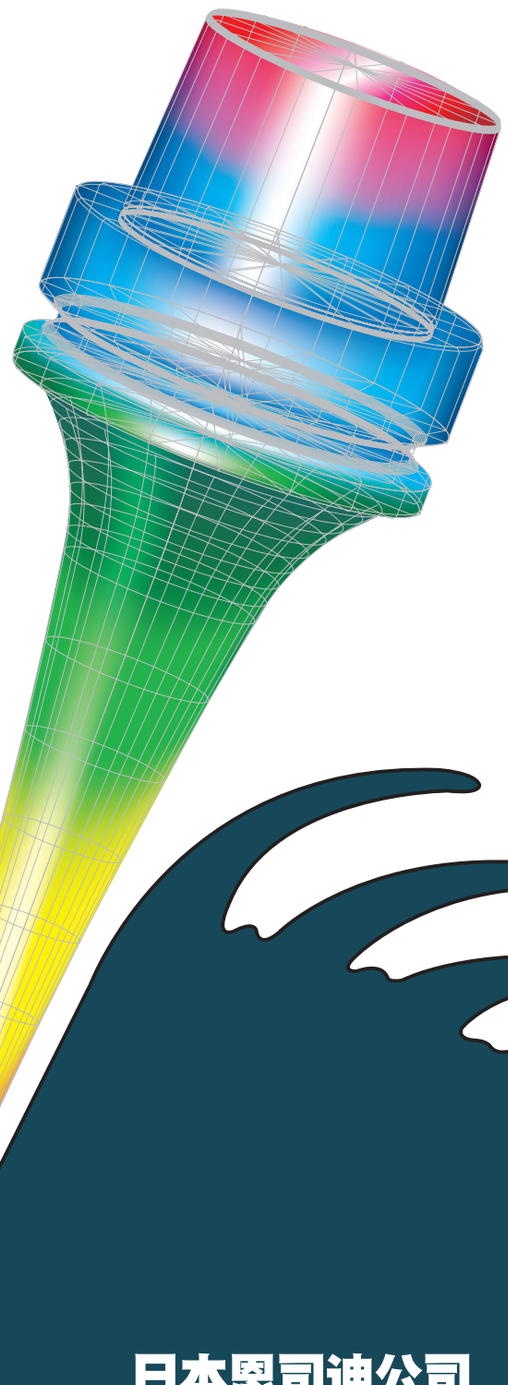
5 轴控制加工中心用最佳刀柄
热装式刀柄
SLIMLINE MONO CURVE
PAT.P

5축 가공센터를 위한 최적의 공구 홀더
열박음 홀더 SLIMLINE MONO **CURVE**

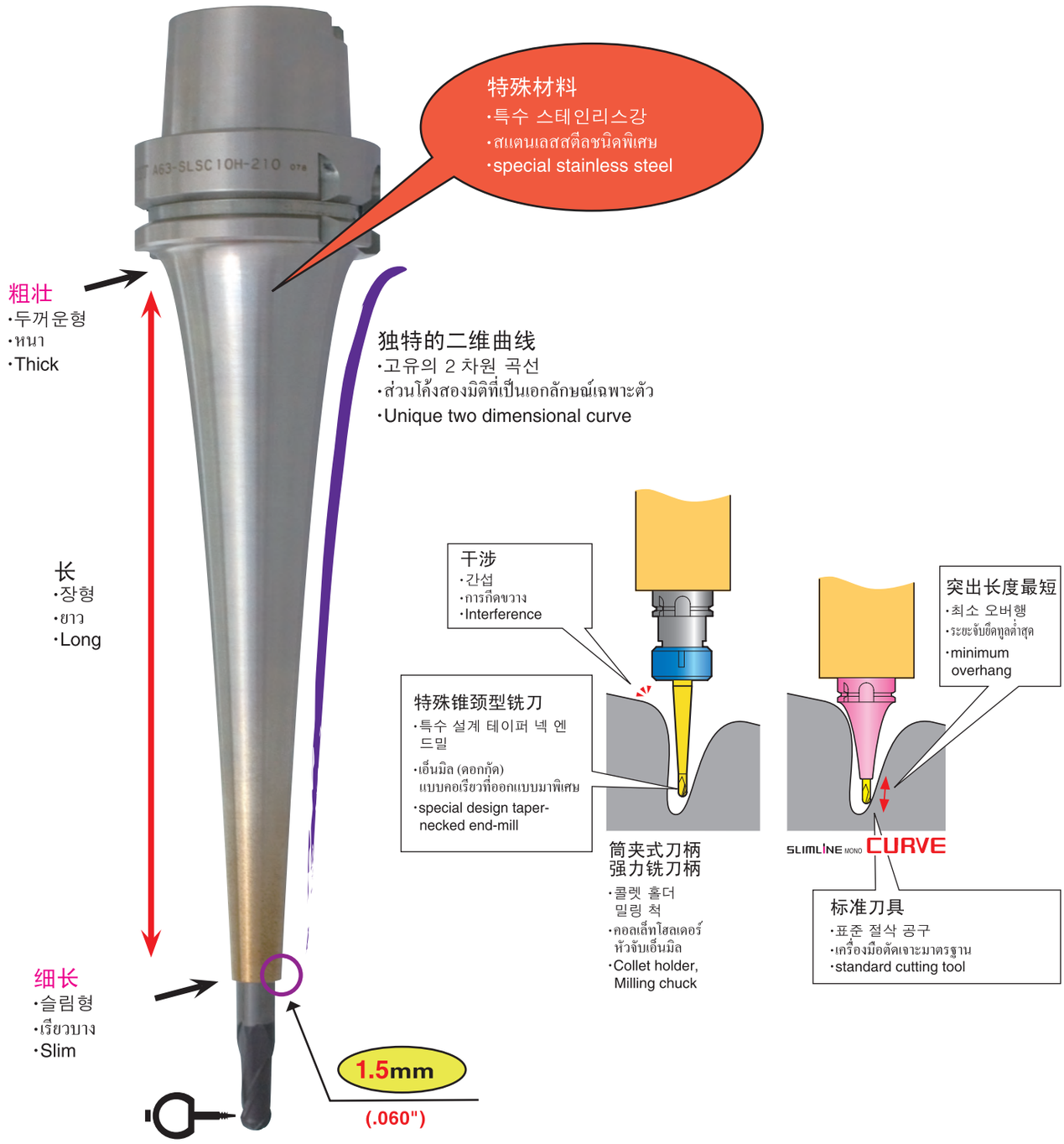
ทูลโฮลเดอร์ที่เหมาะสมสำหรับเครื่องแมชชีนนิงเซ็นเตอร์
ระบบ 5 แกน
ชริงฟิต โฮลเดอร์ SLIMLINE MONO **CURVE**

Optimum tool holder for 5 axis
machining center
SHRINK-FIT HOLDER
SLIMLINE MONO **CURVE**



1011CKTE

日本恩司迪公司
MST corporation
MADE IN JAPAN



高精度

3μm

高夹持力

筒夹式刀柄的（与之相比较）

3倍

高刚性

3倍

MST 的热装式流线型刀柄 [Slimline Curve] 是前端极限细长，根部尽可能粗壮，不仅体长而且具有刚性的刀柄。

초정밀 런아웃 정확도

3μm

강력한 체결력

콜렛 홀더와 비교

3배

높은 강성

3배

MST의 최첨단 열박음 공구 홀더 "Slimline" Curve는 매우 얇은 노즈와 고정 베이스의 독특한 설계를 통해 긴 게이지 길이에서도 대단히 높은 강성을 제공합니다.

ความร่วมศูนย์ (run-out) ที่เที่ยงตรงอย่างยิ่ง

3μm

แรงจับยึดที่แข็งแรง

เมื่อเปรียบเทียบกับคอลเล็ทโฮลเดอร์

3เท่า

ความแข็งแรงสูง

3เท่า

"Slimline curve" ชริงฟิตทูลโฮลเดอร์ที่ทันสมัยที่สุดของ MST ได้รับการออกแบบมาให้มีส่วนหัวเรียวบางและส่วนฐานแข็งแกร่งเป็นเยี่ยม ด้วยการออกแบบที่เป็นเอกลักษณ์เฉพาะทำให้ทูลโฮลเดอร์รุ่นนี้มีความแข็งแกร่งเป็นเลิศ แม้จะมีความยาวรวมมากก็ตาม

super run-out accuracy

3μm (.0001")

Strong chucking force

compared with collet holder

3times

High rigidity

3times

MST's state of the art shrink fit tool holder "Slimline curve" has remarkable slim nose and rigid base design. It achieves super rigidity even though long gauge length with using this unique design.

5 轴控制加工中心 – 控制轴的构成 .

5 축 가공센터 - 축 제어 형식

เครื่องแมชชีนนิงเซ็นเตอร์ระบบ 5 แกน - รูปแบบการควบคุมระบบแกน

5-Axis Machining Center - Axis control type.

5 轴控制
·5 축 제어
·การควบคุมระบบ 5 แกน
·5 axis control

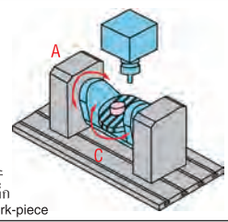
↓

3 轴直进 (X, Y, Z)
·3 축 직선 운동
·การเคลื่อนที่แนวตรงระบบ 3 แกน
·3 axis straight movement

＋

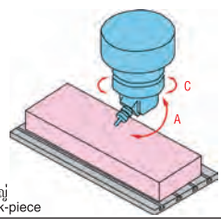
2 轴回转 (A, C)
·2 축 테이블 포지셔닝
·การวางตำแหน่งโต๊ะงานระบบ 2 แกน
·2 axis table positioning

工作台 旋转型
·테이블 틸트 형식
·แบบปรับเอียงโต๊ะงาน
·Table Tilt type



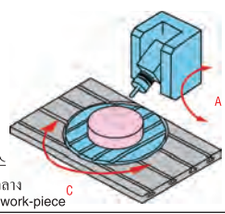
小型工件
·소형 워크피스
·ชิ้นงานขนาดเล็ก
·Small size work-piece

主轴头 旋转型
·헤드 틸트 형식
·แบบปรับเอียงหัวสปินเดิล
·Head Tilt type



大型工件
·대형 워크피스
·ชิ้นงานขนาดใหญ่
·Large size work-piece

工作台、主轴混合 旋转型
·테이블 · 헤드 틸트 형식
·แบบปรับเอียงโต๊ะงาน·หัวสปินเดิล
·Table·Head Tilt type



中型工件
·중형 워크피스
·ชิ้นงานขนาดกลาง
·Medium size work-piece

加工实例　사례 연구　กรณีศึกษา　Case study

5 轴联动加工

·동시 5 축 가공
·การทำงานพร้อมกันทั้ง 5 แกน
·Simultaneous 5 axis machining

5 个轴同时运动，加工复杂的三维形状

· 동시 5 축 가공은 복잡한 3D 형상의 워크피스에 적합합니다 .

· การทำงานพร้อมกันทั้ง 5 แกน เหมาะสำหรับชิ้นงานที่มีรูปทรงสามมิติที่ซับซ้อน

· Simultaneous 5 axis machining is suitable for complicated 3D geometry work-pieces.

整体叶盘
·블리스크
·บลิสก์
·Blisk

航空零部件
·항공기 부품
·ชิ้นส่วนอุปกรณ์ทางอากาศยาน
·Aviation components

医疗器械零部件
·의료 부품
·ชิ้นส่วนอุปกรณ์ทางการแพทย์
·Medical components

人工骨
·인공 뼈
·กระดูกเทียม
·Artificial bone

人工关节
·인공 관절
·ข้อเทียม
·Artificial joint

2+3 轴加工

·2+3 축 가공
·การทำงานในระบบ 2+3 แกน
·2+3 axis machining

用回转 2 轴分度，用直线 3 轴进行加工

· 2 축 테이블을 회전 및 틸팅하여 워크피스를 인덱싱하고 스핀들이 3 축 직선 운동으로 작동합니다 .

· ในการแบ่งพิกัดชิ้นงานโดยการหมุนและเอียงโต๊ะงานระบบ 2 แกน เพลาหมุนจะทำงานร่วมกับใช้การเคลื่อนที่แนวตรงระบบ 3 แกน

· Indexing a work piece by rotating and tilting 2 axis table, a spindle works with using 3 axis straight movement.

复杂形状零部件
·복잡한 형상의 부품
·ชิ้นส่วนที่มีรูปทรงซับซ้อน
·Complicated geometry components

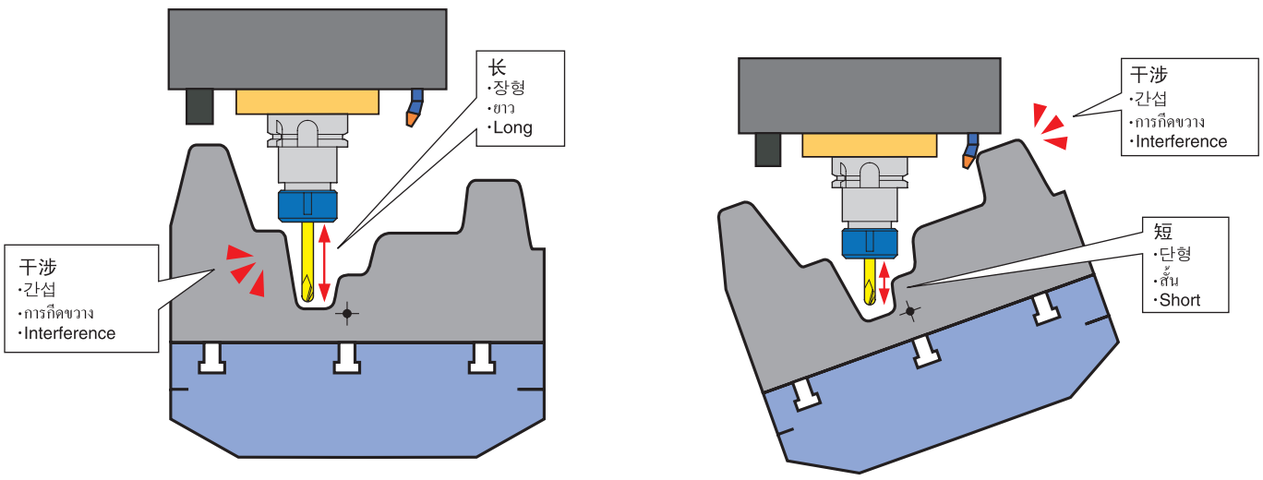
射出成型模具
·사출 몰드
·แม่พิมพ์ฉีด
·Injection mold

5 轴加工时最佳刀柄形状

5 축 가공을 위한 최적의 공구 홀더 설계

การออกแบบทูลโฮลเดอร์ที่เหมาะสมสำหรับการทำงานระบบ 5 แกน

The optimum tool holder design for 5 axis machining.



深腔 陡壁

3 轴加工

- 在 3 轴加工深腔且有陡壁的工件时，为了避免和刀柄前端部的干涉，刃具的突出量需要放长。

5 轴加工

- 5 轴加工时，工件相对于主轴自由倾斜旋转，刀柄的干涉减少，刃具的突出长度可放短。。。
- 但是，主轴头和工件之间会产生干涉。

깊은 구멍 급경사 벽면

3 축 가공

- 깊은 구멍 또는 급경사 벽면을 가공할 경우 3 축 가공의 간섭을 피하기 위해 절삭 공구의 돌출량을 길게 해야 합니다 .

5 축 가공

- 5 축 가공에서는 2 축 테이블을 회전 및 틸팅하여 워크피스를 자유롭게 틸팅할 수 있으므로 공구 홀더의 간섭을 줄이고 커터 돌출을 짧게 할 수 있습니다 .
- 이러한 이점이 있는 반면 , 스핀들 노즈와 워크피스 사이에 간섭이 발생합니다 .

ร่องลึก ผนังชัน

การทำงานในระบบ 3 แกน

- ในการตัดเฉือนชิ้นงานที่มีร่องลึกหรือผนังชันจำเป็นจะต้องใช้ทูลที่มีความยาวเพิ่มมากขึ้นเพื่อหลีกเลี่ยงสิ่งกีดขวางในการทำงานที่พบในการทำงานระบบ 3 แกน

การทำงานในระบบ 5 แกน

- ในการทำงานระบบ 5 แกนนั้น สิ่งกีดขวางทูลโฮลเดอร์จะน้อยกว่าและระยะจับยึดทูลจะสั้นกว่า เนื่องจากสามารถเอียงชิ้นงานได้อย่างอิสระด้วยการหมุนและการเอียงโต๊ะหมุนระบบ 2 แกน
- แทนที่จะเกิดผลดี แต่กลับทำให้เกิดการกีดขวางระหว่างหัวเพลาหมุนกับชิ้นงาน

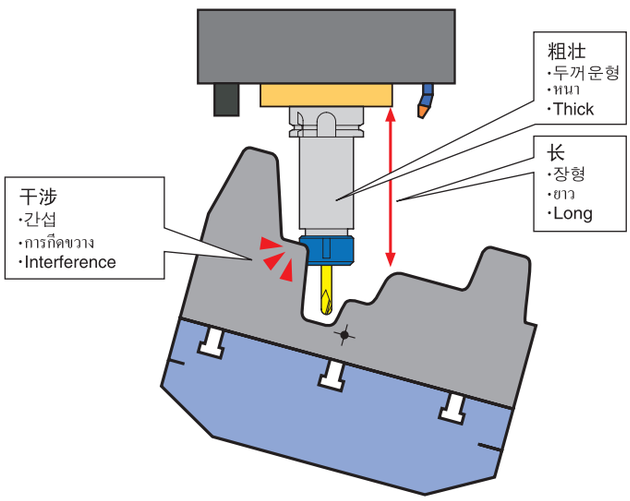
Deep cavity Steep wall

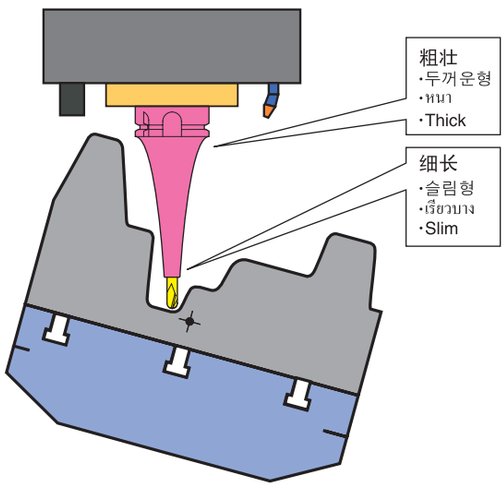
3 axis machining

- Longer cutter projection is required in deep cavity or steep wall machining in order to avoid an interference in 3 axis machining.

5 axis machining

- It becomes less interference of tool holder and cutter projection shorter in 5 axis machining because of freely tilting a work-piece by rotating and tilting 2 axis table.
- Instead of this advantage, it creates an interference between spindle nose and work-piece.





理想的刀柄设计是

- 为了避免干涉，工具（刀柄 + 刀具）的全长必然会变长。
- 传统的刀柄（筒夹式刀柄、强力铣刀柄）由于前端部体积大，容易对工件产生干涉。

- 前端极限的细长，根部尽可能粗壮，不仅体长而且又具有刚性。

최적 공구 홀더 설계

- 이와 같은 간섭을 피하기 위해 5 축 가공은 불가피하게 더 긴 공구 셋업 (공구 홀더 + 절삭 공구) 이 필요합니다 .
- 일반적으로 사용되는 콜렛 홀더와 밀링 척의 경우 홀더의 노즈가 크고 쉽게 간섭이 발생할 수 있습니다.

- SLIMLINE 공구 홀더는 매우 얇은 노즈와 슬림한 디자인으로 긴 게이지 길이에서도 탁월한 강성을 제공합니다 .

การทำงานในระบบ 5 แกน จำเป็นต้องใช้ทูลที่ยาวกว่า (โฮลเดอร์+ทูล) เพื่อหลีกเลี่ยงการกีดขวางที่เกิดขึ้น

- ในคอลเล็ทโฮลเดอร์และหัวจับดอกสว่านที่ใช้กันโดยทั่วไป ส่วนหัวของโฮลเดอร์จะใหญ่กว่าและก่อให้เกิดอุปสรรคในการทำงานได้มากกว่า

การออกแบบทูลโฮลเดอร์ที่เหมาะสมที่สุด

- ทูลโฮลเดอร์ซึ่งมีส่วนหัวและรูปแบบเรียวบางเป็นพิเศษนี้ มีความแข็งเป็นพิเศษแม้จะต้องใช้ทูลที่ยาว

Optimum tool holder design

- To avoid this interference, 5 axis machining inevitablyrequires longer tool set-up (Tool holder+cutting tool).
- With commonly used collet holder and milling chucks,the nose of the holder is larger and more likely to interfere.

- The tool holder which has remarkable slim nose and design achieves super rigidity even though long gauge length.

刚性（弯曲量）

강성（휨）
ความแข็งแรง (การโก่งตัว)
Rigidity (Deflection)

弯曲量计算公式

휨량 계산 공식

สูตรการคำนวณหาค่าการโก่งตัว

Calculating formula of deflection amount

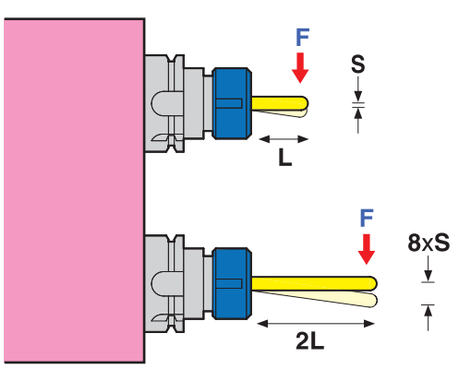
弯曲量和长度的 3 次方成正比。	휨량은 길이의 3 승에 비례합니다 .	ค่าการโก่งตัวจะเป็นสัดส่วนโดยตรงกับค่าความยาวยกกำลังสาม	Deflection amount is proportional to the cube of length.

$$S = \frac{6.8 \times F \times L^3}{E \times D^4}$$

弯曲量和直径的 4 次方成反比。	휨량은 직경의 4 승에 반비례합니다 .	ค่าการโก่งตัวจะเป็นสัดส่วนผกผันกับขนาดเส้นผ่านศูนย์กลางยกกำลังสี่	Deflection amount is inversely proportional to the fourth power of diameter.

S ：弯曲量	S ：휨량	S ：ค่าการโก่งตัว	S ： Deflection amount
D ：轴径	D ：샹크 직경	D ：เส้นผ่านศูนย์กลางของก้าน	D ： Shank Diameter
L ：突出长度	L ：돌출	L ：ระยะจับยึด	L ： Projection
F ：负荷	F ：부하	F ：แรงที่มากระทำ	F ： Load
E ：杨氏系数	E ：종탄성계수 (Young's module)	E ：ค่าโมดูลัสของยัง (Young's module)	E ： Young's module

1 8 倍弯曲
·휨 8 배
·การโก่งตัว 8 เท่า
·Deflection 8 times



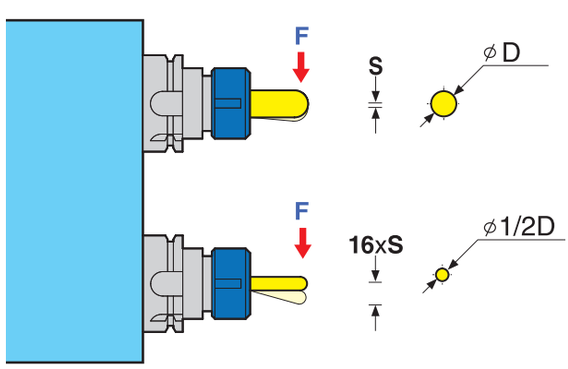
轴径相同，突出长度为 2 倍时

직경은 같으며 , 커터 돌출은 2 배입니다 .

เส้นผ่านศูนย์กลางเท่าเดิม
ระยะจับยึดทูลเพิ่มเป็น 2 เท่า

Diameter is same,cutter projection is twice.

2 16 倍弯曲
·휨 16 배
·การโก่งตัว 16 เท่า
·Deflection 16 times



突出长度相同，轴径为 2 倍时

커터 돌출은 같으며 직경은 절반입니다 .

ระยะจับยึดทูลเท่าเดิม
เส้นผ่านศูนย์กลางลดลงครึ่งหนึ่ง

Cutter projection is same, diameter is half.

最佳刀柄选择软件

최적 공구 홀더 선정 소프트웨어

ซอฟต์แวร์สำหรับเลือกทูลโฮลเดอร์ที่เหมาะสมที่สุด

Software of selecting optimum tool holder.

自动选定刚性较高的刀柄

只需输入工件以及刀具信息，就可自动选择刚性最高的刀柄。

자동으로 최고 강성의 공구 홀더를 선정해 줍니다 .

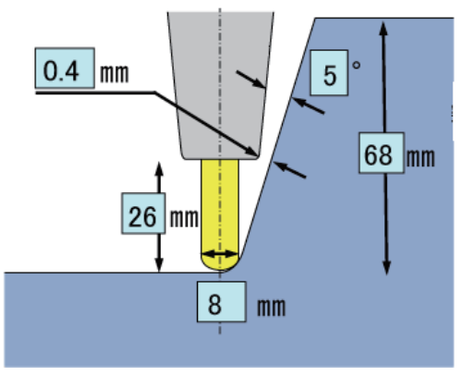
워크피스와 절삭 공구 정보를 입력하면 자동으로 최고 강성의 Slimline 홀더를 선정해 줍니다 .

การเลือกทูลโฮลเดอร์ที่มีความแข็งแรงสูงโดยอัตโนมัติ

เมื่อป้อนข้อมูลของชิ้นงานและทูลเข้าไป สลิมไลน์โฮลเดอร์ที่มีความแข็งแรงสูงสุดจะถูกเลือกโดยอัตโนมัติ

Automatic selection of high rigidity tool holder

When input the information of work-piece and cutting tool, the highest rigidity slimline holder is selected automatically.



Priority	Type	Model no.	Collet no.	Deflection amount	L/D	Projection	Angle	Effective depth
1	MONO	BT40-SLSA8-95-M42		3.433	6.2	26.0	5.0	68.3
2	2P	BT40-SLK12-45F	CS12-8-55	3.625	6.3	26.0	5.0	71.1
3	2P	BT40-SLK12-45	CS12-8-55	3.643	6.3	26.0	5.0	71.1
4	MOND	BT40-SLSA8-125-M42		5.316	6.3	26.0	5.0	68.3
5	MOND	BT40-SLSA-8-155-M42	CR12-6-55	5.332	6.4	26.0	5.0	68.3

利用刀柄刀具形状尺寸数据进行刀轨模拟

공구 홀더 및 절삭 공구를 사용한 공구 패스 시뮬레이션

การจำลองการทำงานของทูลขณะที่ติดตั้งเข้ากับโฮลเดอร์

Simulation for a tool pass with a tool holder and cutting tool.

下列 CAM 软件，可以搭载热装式刀柄的全部外观形状数据资料。

아래 CAM 시뮬레이터에는 모든 Slimline 형상 데이터가 포함되어 있습니다 .

เครื่องจำลองแบบ CAM มีข้อมูลทางเรขาคณิตทั้งหมดของสลิมไลน์

Below CAM simulators have all of Slimline geometry datas.

CAM-TOOL

EDGECAM

FF/cam

HYPER MILL

TEBIS

WORK NC

JBM

GENETEC

CAD meister

VERICUT

热装专用短尺寸铣刀

열박음 홀더용 짧은 전장 엔드밀

เอ็นมิล (ดอกกัด) ที่มีความยาวรวมสั้นสำหรับชริงฟิต โฮลเดอร์

Short allover length end-mill for shrink-fit holder.

对于热装式刀柄最佳的［柄部短］、［刃部短］的热装专用短尺寸铣刀，由以下各刀具公司提供。

柄部短 → 突出量最短

刃部短 → 刚性提高

짧은 절삭 플루트가 있는 열박음 공구 홀더용 짧은 전장 엔드밀은 아래 제조업체에서 제공됩니다 .

짧은 샹크 → 최소 커터 돌출

짧은 커터 플루트 → 강성 증가

บริษัทผู้ผลิตเอ็นมิล(ดอกกัด)ที่มีความยาวรวมสั้นสำหรับใช้กับชริงฟิตทูลโฮลเดอร์ที่มีก้านดอกกัดและระยะกินลึกสั้นจะแสดงอยู่ด้านล่าง

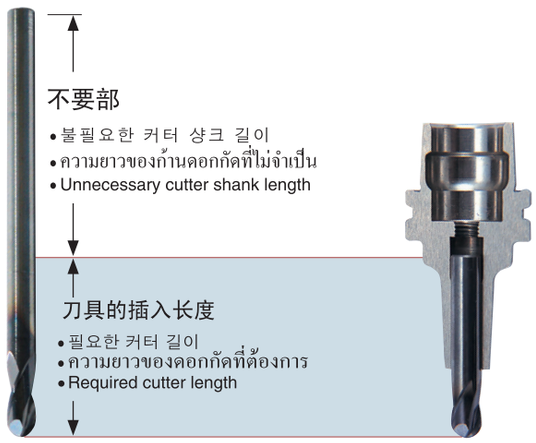
ก้านสั้น → ระยะจับยึดทูลต่ำสุด

ระยะกินลึกสั้น → ความแข็งแรงที่เพิ่มขึ้น

The short allover length end-mill for shrink-fit holder which has short cutter shank, short cutting flute is provided by manufacturers below.

Short shank → Minimum cutter projection

Short cutting flute → Increasing rigidity



普通的铣刀
- 표준 엔드밀
- เอ็นมิล (ดอกกัด) มาตรฐาน
- Standard end-mill

热装专用短尺寸铣刀
- 열박음 공구 홀더용 짧은 전장 엔드밀
- เอ็นมิล (ดอกกัด) ที่มีความยาวรวมสั้นสำหรับชริงฟิตทูลโฮลเดอร์
- short allover length end-mill for shrink-fit tool holder

MITSUBISHI MATERIALS

UNION TOOL

DIJET INDUSTRIAL

HITACHI TOOL

NS TOOL

OSG CORPORATION

SUMITOMO ELECTRIC

MST corporation

日本恩司迪公司

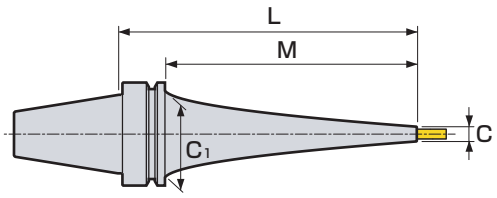
1738 Kita-tahara, ikoma, Nara 630-0142 Japan
TEL : +81 (0)743 78 1931
FAX : +81 (0)743 78 3854
http://www.mst-corp.co.jp

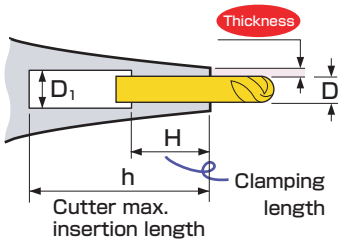
U.S.Patent No.5,311,654 ; U.S.Patent No.5,582,494

10110100.50071TC_ｺｰﾄ90k

Dimensions BT30

BT30 — SLSA10-90 cv

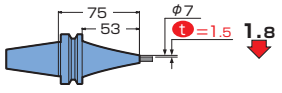




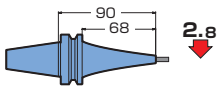
Scale model	CODE	φD	φC	Thick-ness	L	M	φC1	φD1	H	h	Kg	N	S
1	BT30—SLSA 4— 75 cv	4	7	1.5	75	53	34	5	12	99	0.5	1.0	1.8
2	— 90 cv				90	68				114		1.1	2.8
3	—120 cv				120	98				144		1.2	6.6
4	—SLRA 4— 90 cv	4	10	3	90	68	34	5	12	114	0.5	1.0	2.0
5	—120 cv				120	98				144		1.1	2.9
6	—SLSA 6— 75 cv	6	9	1.5	75	53	34	7	18	99	0.5	1.3	1.5
7	— 90 cv				90	68				114		1.0	2.4
8	—120 cv				120	98				144		1.2	5.6
9	—SLRA 6— 90 cv	6	13	3.5	90	68	34	7	18	114	0.5	1.1	1.6
10	—120 cv				120	98				144		1.2	2.5
11	—SLSA 8— 75 cv	8	11	1.5	75	53	34	9	24	99	0.5	1.1	1.3
12	— 90 cv				90	68				114	0.6	1.6	2.2
13	—SLRA 8— 90 cv	8	16	4	90	68	34	9	24	114	0.5	1.2	1.1
14	—SLSA10— 75 cv	10	13	1.5	75	53	34	11	30	99	0.5	1.6	1.2
15	— 90 cv				90	68				114		1.4	2.0
16	—SLRA10— 90 cv	10	19	4.5	90	68	34	11	30	114	0.6	1.5	1.1

φ4

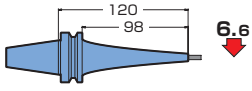
1 BT30—SLSA 4— 75 cv



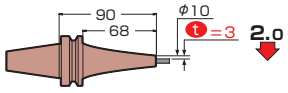
2 BT30—SLSA 4— 90 cv



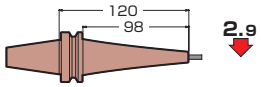
3 BT30—SLSA 4—120 cv



4 BT30—SLRA 4— 90 cv

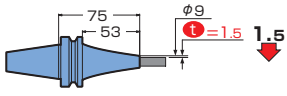


5 BT30—SLRA 4—120 cv

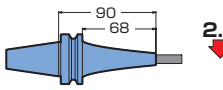


φ6

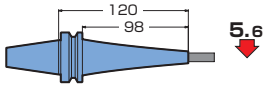
6 BT30—SLSA 6— 75 cv



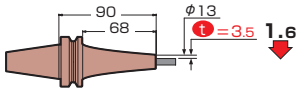
7 BT30—SLSA 6— 90 cv



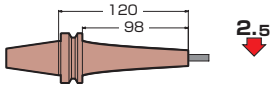
8 BT30—SLSA 6—120 cv



9 BT30—SLRA 6— 90 cv

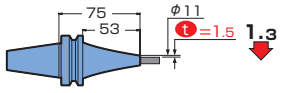


10 BT30—SLRA 6—120 cv

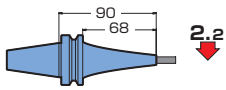


φ8

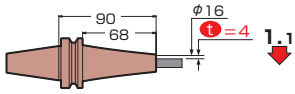
11 BT30—SLSA 8— 75 cv



12 BT30—SLSA 8— 90 cv

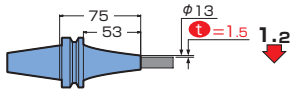


13 BT30—SLSA 8— 90 cv

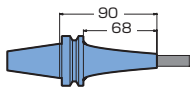


φ10

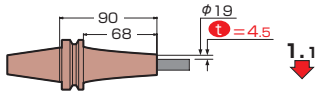
14 BT30—SLSA10— 75 cv



15 BT30—SLSA10— 90 cv

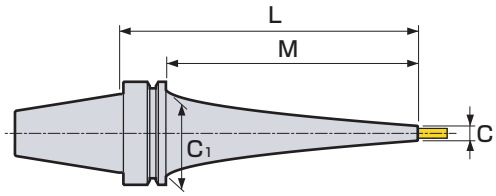


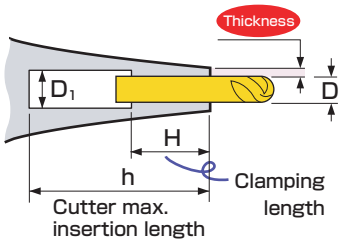
16 BT30—SLSA10— 90 cv



Dimensions BT40

BT40–SLSA6–150 cv





Scale model	CODE	φD	φC	Thick-ness	L	M	φC1	φD1	H	h	Kg	N	S
1	BT40–SLSA 4– 90 cv	4	7	1.5	90	63	53	5	12	125	1.2	3.3	1.8
2	–120 cv				120	93				155	1.3	3.8	2.7
3	–150 cv				150	123				185	1.5	4.4	4.0
4	–180 cv				180	153				215		4.8	6.6
5	–210 cv				210	183				245	1.6	4.9	11.6
6	–240 cv				240	213				275	1.8	5.8	14.0
7	–SLRA 4–120 cv	4	10	3	120	93	53	5	12	155	1.3	3.9	1.9
8	–150 cv				150	123				185	1.4	4.3	2.9
9	–180 cv				180	153				215	1.5	5.1	4.2
10	–210 cv				210	183				245	1.7	5.7	5.7
11	–SLSA 6– 90 cv	6	9	1.5	90	63	53	7	18	125	1.2	3.3	1.6
12	–120 cv				120	93				155	1.3	3.8	2.3
13	–150 cv				150	123				185	1.5	4.3	3.6
14	–180 cv				180	153				215		4.9	5.7
15	–210 cv				210	183				245	1.7	5.7	7.3
16	–240 cv				240	213				275	1.8	5.9	12.0
17	–SLRA 6– 90 cv	6	13	3.5	90	63	53	7	18	125	1.2	3.3	1.2
18	–120 cv				120	93				155	1.3	4.0	1.7
19	–150 cv				150	123				185	1.5	4.8	2.1
20	–180 cv				180	153				215	1.7	5.6	2.8
21	–210 cv				210	183				245		5.9	4.8
22	–SLFA 6– 90 cv	6	13	3.5	90	63	53	7	18	125	1.2	3.3	1.2
23	–120 cv				120	93				155	1.3	4.0	1.7
24	–150 cv				150	123				185	1.5	4.8	2.1
25	–180 cv				180	153				215	1.7	5.6	2.8
26	–210 cv				210	183				245		5.9	4.8
27	–SLSA 8– 90 cv	8	11	1.5	90	63	53	9	24	125	1.2	3.3	1.4
28	–120 cv				120	93				155	1.3	4.0	2.0
29	–150 cv				150	123				185	1.5	4.8	2.7
30	–180 cv				180	153				215	1.6	4.9	5.0
31	–210 cv				210	183				245	1.7	5.8	6.6
32	–240 cv				240	213				275	1.9	6.7	8.3
33	–SLRA 8– 90 cv	8	16	4	90	63	53	9	24	125	1.2	3.8	0.7
34	–120 cv				120	93				155	1.4	4.2	1.2
35	–150 cv				150	123				185	1.6	4.9	1.8
36	–180 cv				180	153				215	1.7	5.7	2.6
37	–210 cv				210	183				245	1.8	6.5	3.5
38	–SLFA 8– 90 cv	8	16	4	90	63	53	9	24	125	1.2	3.8	0.7
39	–120 cv				120	93				155	1.4	4.2	1.2
40	–150 cv				150	123				185	1.6	4.9	1.8
41	–180 cv				180	153				215	1.7	5.7	2.6
42	–210 cv				210	183				245	1.8	6.5	3.5

Scale model	CODE	φD	φC	Thick-ness	L	M	φC1	φD1	H	h	Kg	N	S
43	BT40—SLSA10— 90 CV	10	13	1.5	90	63	53	11	30	125	1.2	3.3	1.8
44	—120 CV				120	93				155	1.5	4.3	1.3
45	—150 CV				150	123				185	1.6	4.9	2.2
46	—180 CV				180	153				215	1.7	5.6	3.4
47	—210 CV				210	183				245		6.0	6.0
48	—240 CV				240	213				275	2.0	7.9	5.8
49	—SLRA10— 90 CV	10	19	4.5	90	63	53	11	30	125	1.3	3.8	0.7
50	—120 CV				120	93				155	1.4	4.6	0.9
51	—150 CV				150	123				185	1.6	5.4	1.4
52	—180 CV				180	153				215	1.8	6.3	2.0
53	—210 CV				210	183				245		7.2	3.1
54	—SLFA10— 90 CV	10	19	4.5	90	63	53	11	30	125	1.3	3.8	0.7
55	—120 CV				120	93				155	1.4	4.6	0.9
56	—150 CV				150	123				185	1.6	5.4	1.4
57	—180 CV				180	153				215	1.8	6.3	2.0
58	—210 CV				210	183				245		7.2	3.1
59	—SLSA12— 90 CV	12	15	1.5	90	63	53	14	30	125	1.3	3.7	1.5
60	—120 CV				120	93		13		155	1.5	4.6	1.2
61	—150 CV				150	123				185		4.9	2.4
62	—180 CV				180	153				215	1.7	5.7	3.3
63	—210 CV				210	183				245	1.9	6.6	4.6
64	—240 CV				240	213				275	2.0	8.0	5.5
65	—SLRA12— 90 CV	12	22	5	90	63	53	14	30	125	1.3	3.9	0.6
66	—120 CV				120	93				155	1.6	5.1	0.7
67	—150 CV				150	123		13		185	1.7	6.0	1.1
68	—180 CV				180	153				215		6.9	1.9
69	—210 CV				210	183				245	1.8	7.7	2.8
70	—SLFA12— 90 CV	12	22	5	90	63	53	14	30	125	1.3	3.9	0.6
71	—120 CV				120	93				155	1.6	5.1	0.7
72	—150 CV				150	123		13		185	1.7	6.0	1.1
73	—180 CV				180	153				215		6.9	1.9
74	—210 CV				210	183				245	1.8	7.7	2.8
75	—SLSB16— 90 CV	16	21	2.5	90	63	53	17	32	100	1.3	4.2	0.6
76	—120 CV				120	93				130	1.5	5.5	0.8
77	—150 CV				150	123				160	1.6	6.2	1.5
78	—180 CV				180	153				190	1.9	7.5	1.9
79	—210 CV				210	183				220	2.0	8.2	3.0
80	—240 CV				240	213				250	2.2	9.5	3.7
81	—SLSB20— 90 CV	20	26	3	90	63	50.5	21	40	100	1.3	4.4	0.5
82	—120 CV				120	93	53			130	1.5	5.8	0.8
83	—150 CV				150	123				160	1.6	6.7	1.3
84	—180 CV				180	153				190	1.9	8.0	1.8
85	—210 CV				210	183				220	2.1	9.4	2.3
86	—240 CV				240	213				250	2.4	10.7	3.0

For Slimline MONO CURVE customers.

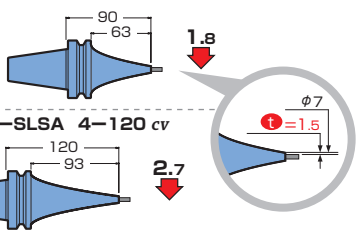
Please note that we changed model number for Slimline MONO CURVE due to additional model lineup.

Example; Previous model no. : A63-SLSC6-120

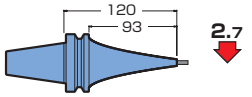
New model no. : A63-SLSA6-120 CV

φ4

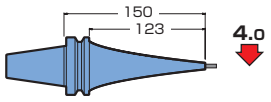
1 BT40—SLSA 4— 90 cv



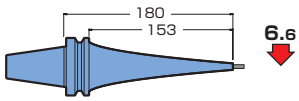
2 BT40—SLSA 4—120 cv



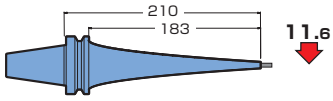
3 BT40—SLSA 4—150 cv



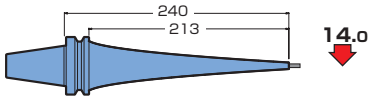
4 BT40—SLSA 4—180 cv



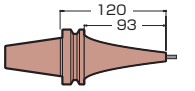
5 BT40—SLSA 4—210 cv



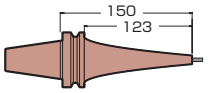
6 BT40—SLSA 4—240 cv

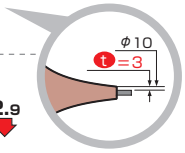


7 BT40—SLRA 4—120 cv

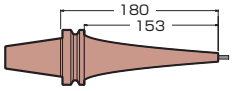


8 BT40—SLRA 4—150 cv

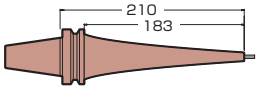




9 BT40—SLRA 4—180 cv

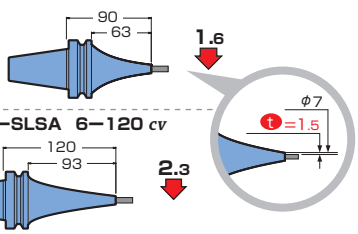


10 BT40—SLRA 4—210 cv

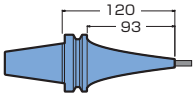


φ6

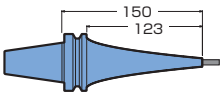
11 BT40—SLSA 6— 90 cv



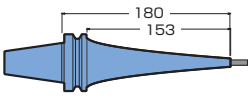
12 BT40—SLSA 6—120 cv



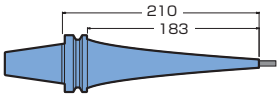
13 BT40—SLSA 6—150 cv



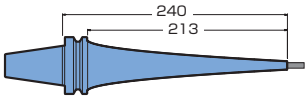
14 BT40—SLSA 6—180 cv



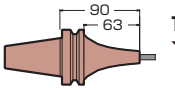
15 BT40—SLSA 6—210 cv



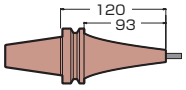
16 BT40—SLSA 6—240 cv



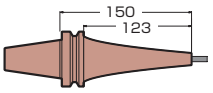
17 BT40—SLRA 6— 90 cv

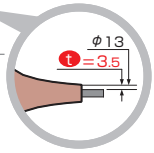


18 BT40—SLRA 6—120 cv

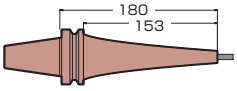


19 BT40—SLRA 6—150 cv

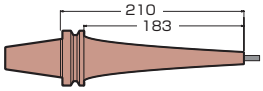




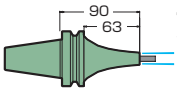
20 BT40—SLRA 6—180 cv



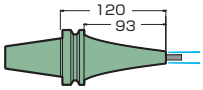
21 BT40—SLRA 6—210 cv

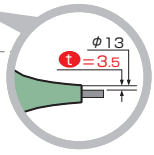


22 BT40—SLFA 6— 90 cv

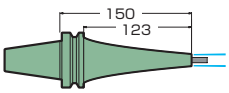


23 BT40—SLFA 6—120 cv

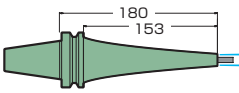




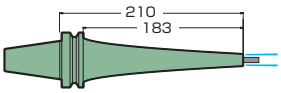
24 BT40—SLFA 6—150 cv



25 BT40—SLFA 6—180 cv

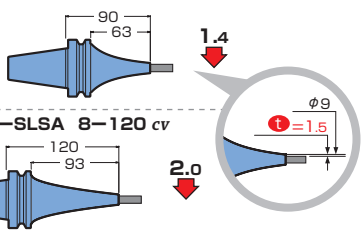


26 BT40—SLFA 6—210 cv

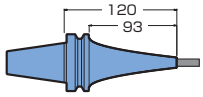


φ8

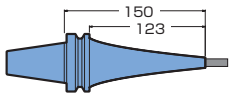
27 BT40—SLSA 8— 90 cv



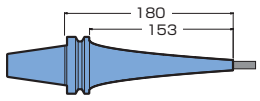
28 BT40—SLSA 8—120 cv



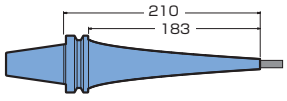
29 BT40—SLSA 8—150 cv



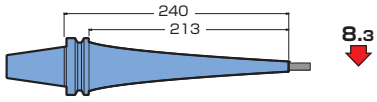
30 BT40—SLSA 8—180 cv



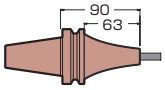
31 BT40—SLSA 8—210 cv



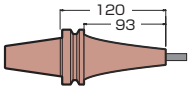
32 BT40—SLSA 8—240 cv



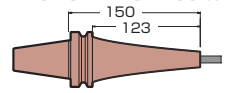
33 BT40—SLRA 8— 90 cv

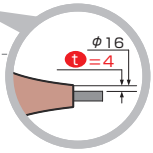


34 BT40—SLRA 8—120 cv

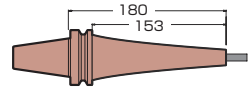


35 BT40—SLRA 8—150 cv

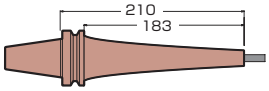




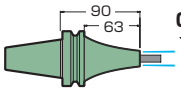
36 BT40—SLRA 8—180 cv



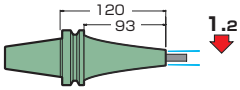
37 BT40—SLRA 8—210 cv

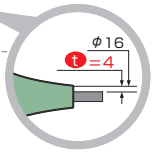


38 BT40—SLFA 8— 90 cv

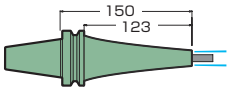


39 BT40—SLFA 8—120 cv

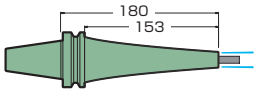




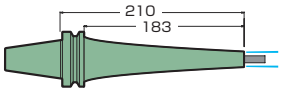
40 BT40—SLFA 8—150 cv



41 BT40—SLFA 8—180 cv

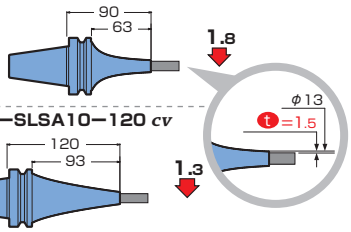


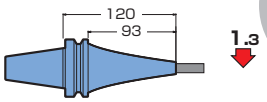
42 BT40—SLFA 8—210 cv

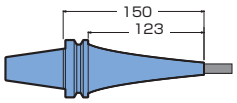


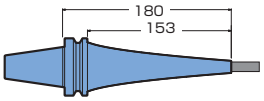
Scale model BT40

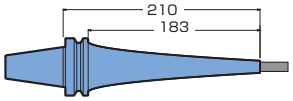
φ10

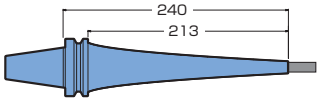
43 BT40−SLSA10− 90 cv


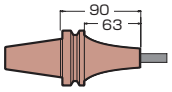
44 BT40−SLSA10−120 cv


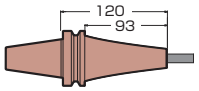
45 BT40−SLSA10−150 cv


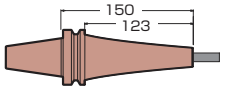
46 BT40−SLSA10−180 cv


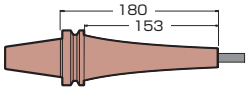
47 BT40−SLSA10−210 cv


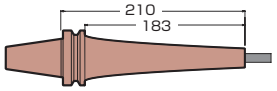
48 BT40−SLSA10−240 cv


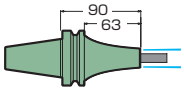
49 BT40−SLRA10− 90 cv


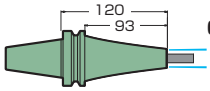
50 BT40−SLRA10−120 cv


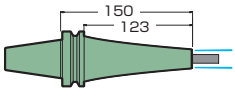
51 BT40−SLRA10−150 cv


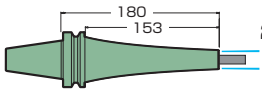
52 BT40−SLRA10−180 cv


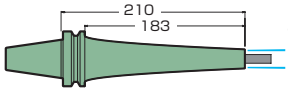
53 BT40−SLRA10−210 cv


54 BT40−SLFA10− 90 cv


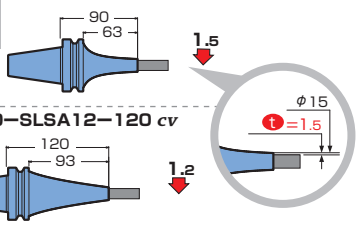
55 BT40−SLFA10−120 cv


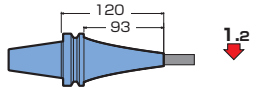
56 BT40−SLFA10−150 cv


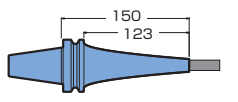
57 BT40−SLFA10−180 cv


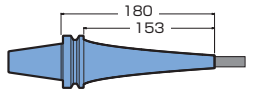
58 BT40−SLFA10−210 cv


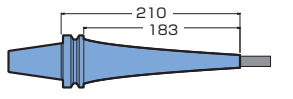
φ12

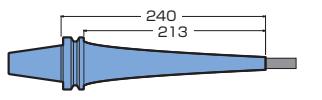
59 BT40−SLSA12− 90 cv


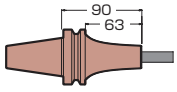
60 BT40−SLSA12−120 cv


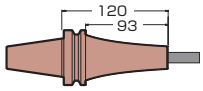
61 BT40−SLSA12−150 cv


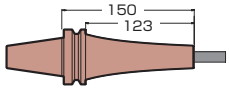
62 BT40−SLSA12−180 cv


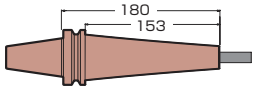
63 BT40−SLSA12−210 cv


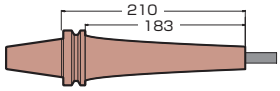
64 BT40−SLSA12−240 cv


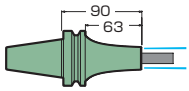
65 BT40−SLRA12− 90 cv


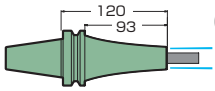
66 BT40−SLRA12−120 cv


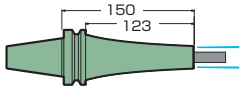
67 BT40−SLRA12−150 cv


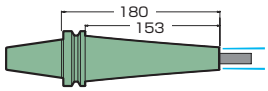
68 BT40−SLRA12−180 cv


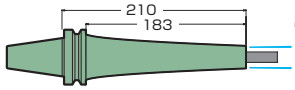
69 BT40−SLRA12−210 cv


70 BT40−SLFA12− 90 cv


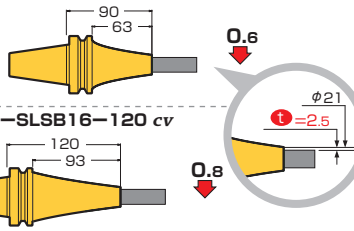
71 BT40−SLFA12−120 cv


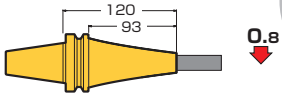
72 BT40−SLFA12−150 cv


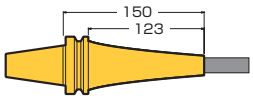
73 BT40−SLFA12−180 cv


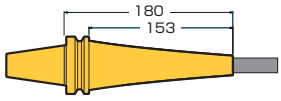
74 BT40−SLFA12−210 cv


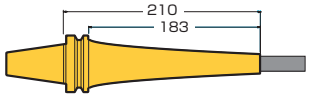
φ16

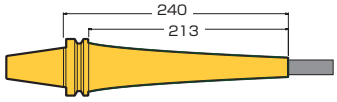
75 BT40−SLSB16− 90 cv


76 BT40−SLSB16−120 cv


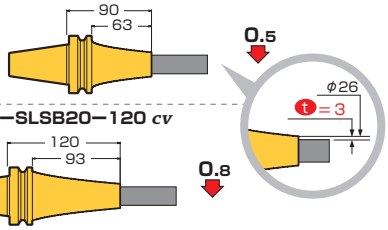
77 BT40−SLSA16−150 cv


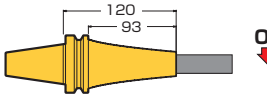
78 BT40−SLSB16−180 cv


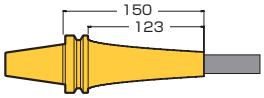
79 BT40−SLSB16−210 cv


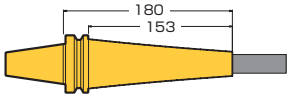
80 BT40−SLSB16−240 cv


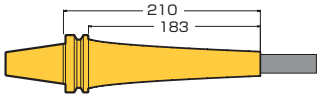
φ20

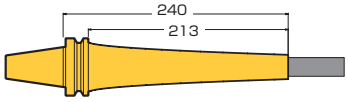
81 BT40−SLSB20− 90 cv


82 BT40−SLSB20−120 cv


83 BT40−SLSB20−150 cv


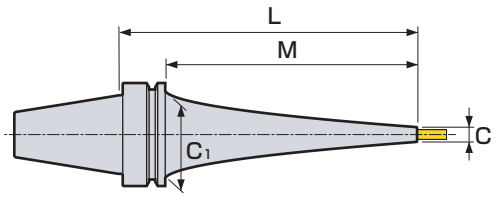
84 BT40−SLSB20−180 cv


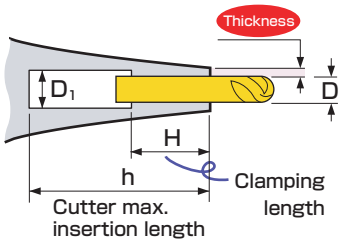
85 BT40−SLSB20−210 cv


86 BT40−SLSB20−240 cv


Dimensions BT50

BT50–SLSA6–225 cv





Scale model	CODE	φD	φC	Thick-ness	L	M	φC1	φD1	H	h	Kg	N	S
1	BT50–SLSA 4–165 cv	4	7	1.5	165	127	85	5	12	220	5.2	15.4	1.8
2	–195 cv				195	157				250	5.3	15.9	2.6
3	–225 cv				225	187				280	5.5	16.4	3.8
4	–255 cv				255	217				310	5.6	16.9	5.7
5	–285 cv				285	247				340	6.4	19.5	5.9
6	–315 cv				315	277				370	8.3	26.0	7.7
7	–SLSA 6–165 cv	6	9	1.5	165	127	85	7	18	220	5.1	15.1	1.5
8	–195 cv				195	157				250	5.2	15.5	2.4
9	–225 cv				225	187				280	5.7	16.8	2.9
10	–255 cv				255	217				310	5.9	18.4	4.0
11	–285 cv				285	247				340	6.2	19.5	5.2
12	–315 cv				315	277				370	8.4	26.8	6.9
13	–SLSA 8–165 cv	8	11	1.5	165	127	85	9	24	220	4.9	14.7	1.4
14	–195 cv				195	157				250	5.3	16.1	1.9
15	–225 cv				225	187				280	5.8	17.7	2.3
16	–255 cv				255	217				310		17.9	3.7
17	–285 cv				285	247				340	6.0	19.1	4.9
18	–315 cv				315	277				370	8.4	28.0	5.0
19	–SLRA 8–195 cv	8	16	4	195	157	85	9	24	250	5.4	17.3	1.1
20	–225 cv				225	187				280	5.6	18.3	1.5
21	–255 cv				255	217				310	5.8	19.1	2.2
22	–285 cv				285	247				340	5.9	19.9	3.0
23	–SLFA 8–195 cv	8	16	4	195	157	85	9	24	250	5.4	17.3	1.1
24	–225 cv				225	187				280	5.6	18.3	1.5
25	–255 cv				255	217				310	5.8	19.1	2.2
26	–285 cv				285	247				340	5.9	19.9	3.0
27	–SLSA10–165 cv	10	13	1.5	165	127	85	11	30	220	4.9	14.9	1.2
28	–195 cv				195	157				250	5.5	16.9	1.5
29	–225 cv				225	187				280	5.4	16.8	2.4
30	–255 cv				255	217				310	6.1	19.8	2.6
31	–285 cv				285	247				340	6.3	21.2	3.7
32	–315 cv				315	277				370	8.4	28.6	4.6
33	–SLRA10–165 cv	10	19	4.5	165	127	85	11	30	220	5.1	15.9	0.7
34	–195 cv				195	157				250	5.2	16.6	1.1
35	–225 cv				225	187				280	5.9	19.7	1.2
36	–255 cv				255	217				310	6.1	20.3	1.7
37	–285 cv				285	247				340	6.2	21.1	2.4
38	–SLFA10–165 cv	10	19	4.5	165	127	85	11	30	220	5.1	15.9	0.7
39	–195 cv				195	157				250	5.2	16.6	1.1
40	–225 cv				225	187				280	5.9	19.7	1.2
41	–255 cv				255	217				310	6.1	20.3	1.7
42	–285 cv				285	247				340	6.2	21.1	2.4

Scale model	CODE	φD	φC	Thick-ness	L	M	φC1	φD1	H	h	Kg	N	S
43	BT50—SLSA12—165 *cv*	12	15	1.5	165	127	84	13	30	220	4.8	14.6	1.2
44	—195 *cv*				195	157	85			250	5.6	17.6	
45	—225 *cv*				225	187				280	5.8	18.5	1.8
46	—255 *cv*				255	217				310	6.0	19.3	2.6
47	—285 *cv*				285	247				340	6.2	21.2	3.5
48	—315 *cv*				315	277				370	8.5	29.2	3.6
49	BT50—SLRA12—165 *cv*	12	22	5	165	127	85	14	30	220	5.1	16.1	0.7
50	—195 *cv*				195	157		13		250	5.6	18.0	0.8
51	—225 *cv*				225	187				280		18.6	1.3
52	—255 *cv*				255	217				310	5.8	20.7	1.6
53	—285 *cv*				285	247				340	6.1	22.4	2.1
54	BT50—SLFA12—165 *cv*	12	22	5	165	127	85	14	30	220	5.1	16.1	0.7
55	—195 *cv*				195	157		13		250	5.6	18.0	0.8
56	—225 *cv*				225	187				280		18.6	1.3
57	—255 *cv*				255	217				310	5.8	20.7	1.6
58	—285 *cv*				285	247				340	6.1	22.4	2.1
59	—SLSB16—165 *cv*	16	21	2.5	165	127	85	17	32	220	5.4	17.8	0.6
60	—195 *cv*				195	157				250		17.7	1.1
61	—225 *cv*				225	187				280	6.3	21.1	1.2
62	—255 *cv*				255	217				310	6.1	20.9	2.0
63	—285 *cv*				285	247				340	7.0	24.3	
64	—315 *cv*				315	277				370	8.6	30.9	2.6
65	—SLSB20—165 *cv*	20	26	3	165	127	85	21	40	220	5.4	17.4	0.6
66	—195 *cv*				195	157				250	6.1	20.8	0.7
67	—225 *cv*				225	187				280	5.8	20.5	1.2
68	—255 *cv*				255	217				310	6.7	23.9	1.3
69	—285 *cv*				285	247				340	7.0	25.4	1.7
70	—315 *cv*				315	277				370	8.9	32.4	2.3

For Slimline MONO CURVE customers.

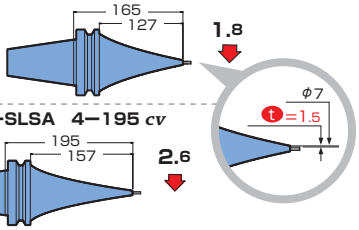
Please note that we changed model number for Slimline MONO CURVE due to additional model lineup.

Example; Previous model no. : A63-SLSC6-120

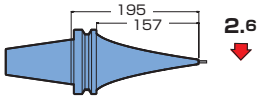
New model no. : A63-SLSA6-120 *CV*

φ4

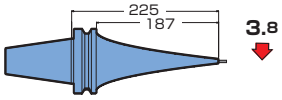
1 **BT50–SLSA 4–165 *cv***



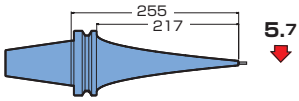
2 **BT50–SLSA 4–195 *cv***



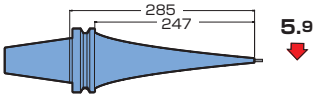
3 **BT50–SLSA 4–225 *cv***



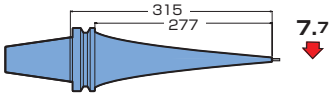
4 **BT50–SLSA 4–255 *cv***



5 **BT50–SLSA 4–285 *cv***

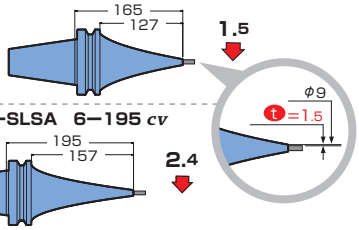


6 **BT50–SLSA 4–315 *cv***

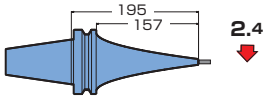


φ6

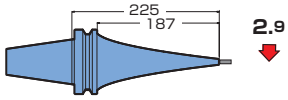
7 **BT50–SLSA 6–165 *cv***



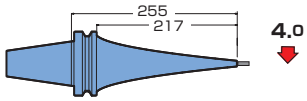
8 **BT50–SLSA 6–195 *cv***



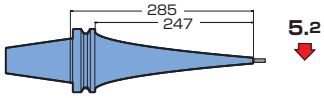
9 **BT50–SLSA 6–225 *cv***



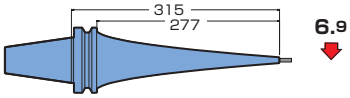
10 **BT50–SLSA 6–255 *cv***



11 **BT50–SLSA 6–285 *cv***

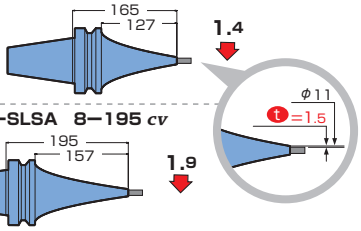


12 **BT50–SLSA 6–315 *cv***

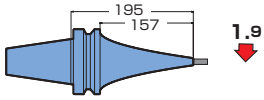


φ8

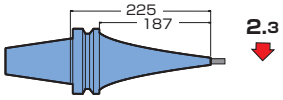
13 **BT50–SLSA 8–165 *cv***



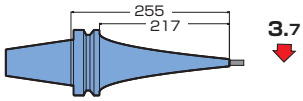
14 **BT50–SLSA 8–195 *cv***



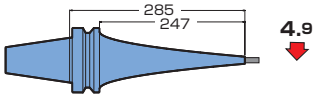
15 **BT50–SLSA 8–225 *cv***



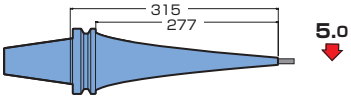
16 **BT50–SLSA 8–255 *cv***



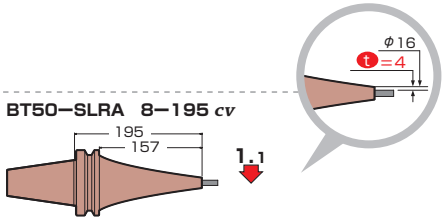
17 **BT50–SLSA 8–285 *cv***



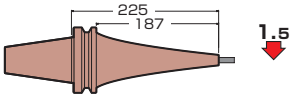
18 **BT50–SLSA 8–315 *cv***



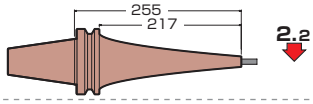
19 **BT50–SLRA 8–195 *cv***



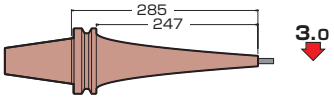
20 **BT50–SLRA 8–225 *cv***



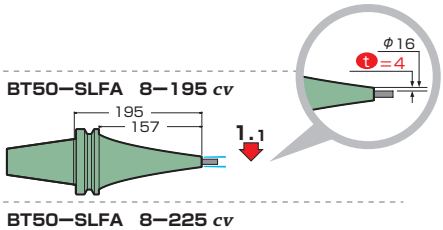
21 **BT50–SLRA 8–255 *cv***



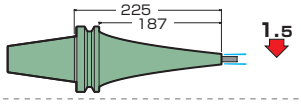
22 **BT50–SLRA 8–285 *cv***



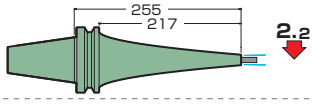
23 **BT50–SLFA 8–195 *cv***



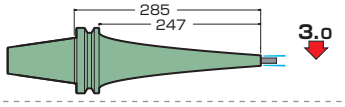
24 **BT50–SLFA 8–225 *cv***



25 **BT50–SLFA 8–255 *cv***

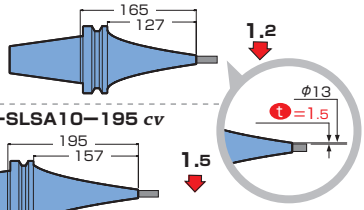


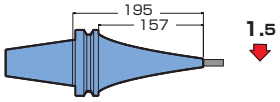
26 **BT50–SLFA 8–285 *cv***

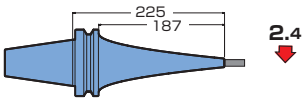


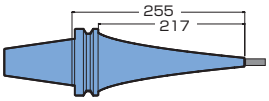
Scale model BT50

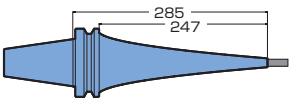
φ10

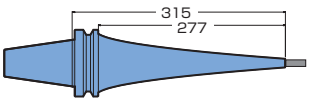
27 BT50-SLSA10-165 cv


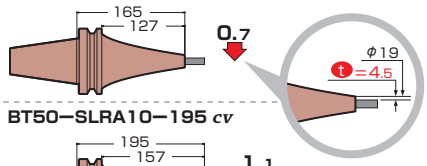
28 BT50-SLSA10-195 cv


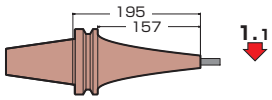
29 BT50-SLSA10-225 cv


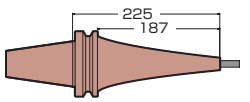
30 BT50-SLSA10-255 cv


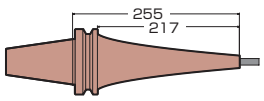
31 BT50-SLSA10-285 cv


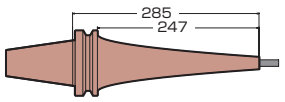
32 BT50-SLSA10-315 cv


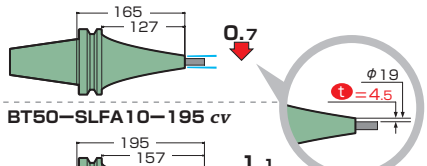
33 BT50-SLRA10-165 cv


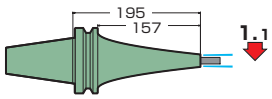
34 BT50-SLRA10-195 cv


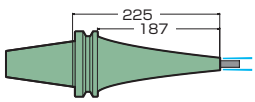
35 BT50-SLRA10-225 cv


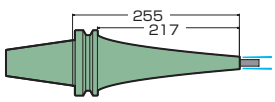
36 BT50-SLRA10-255 cv


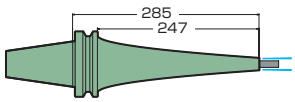
37 BT50-SLRA10-285 cv


38 BT50-SLFA10-165 cv


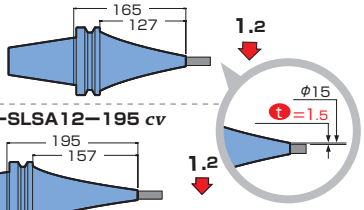
39 BT50-SLFA10-195 cv


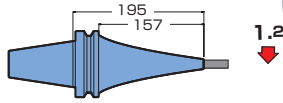
40 BT50-SLFA10-225 cv


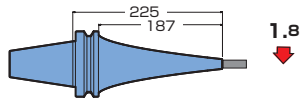
41 BT50-SLFA10-255 cv


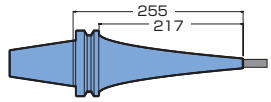
42 BT50-SLFA10-285 cv


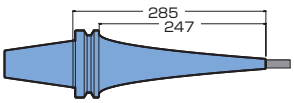
φ12

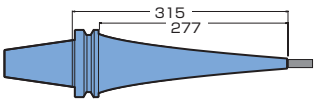
43 BT50-SLSA12-165 cv


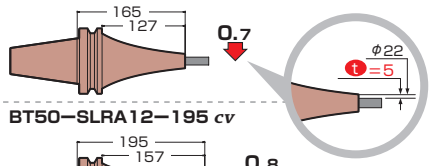
44 BT50-SLSA12-195 cv


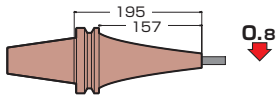
45 BT50-SLSA12-225 cv


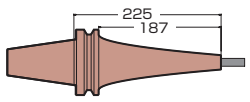
46 BT50-SLSA12-255 cv


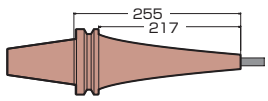
47 BT50-SLSA12-285 cv


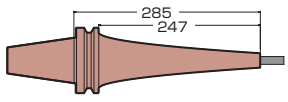
48 BT50-SLSA12-315 cv


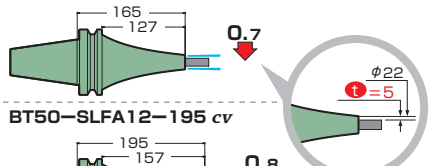
49 BT50-SLRA12-165 cv


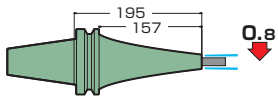
50 BT50-SLRA12-195 cv


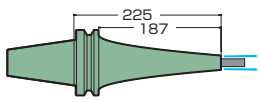
51 BT50-SLRA12-225 cv


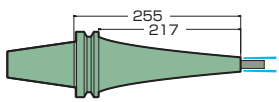
52 BT50-SLRA12-255 cv


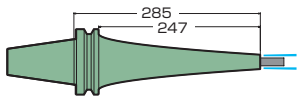
53 BT50-SLRA12-285 cv


54 BT50-SLFA12-165 cv


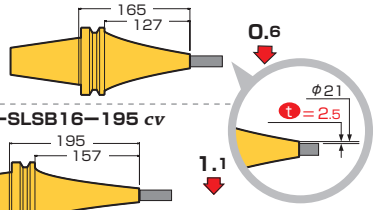
55 BT50-SLFA12-195 cv


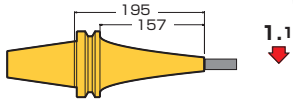
56 BT50-SLFA12-225 cv


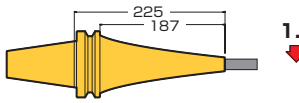
57 BT50-SLFA12-255 cv


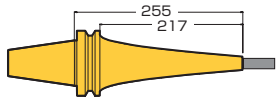
58 BT50-SLFA12-285 cv


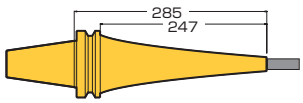
φ16

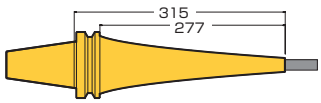
59 BT50-SLSB16-165 cv


60 BT50-SLSB16-195 cv


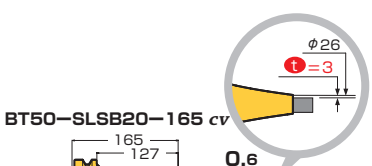
61 BT50-SLSB16-225 cv


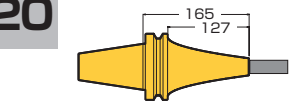
62 BT50-SLSB16-255 cv


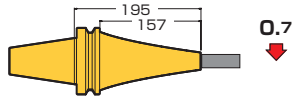
63 BT50-SLSB16-285 cv


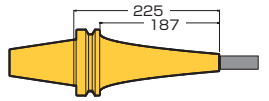
64 BT50-SLSB16-315 cv


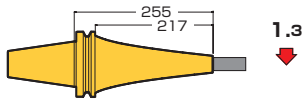
φ20

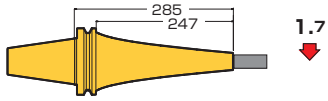
65 BT50-SLSB20-165 cv


66 BT50-SLSB20-195 cv


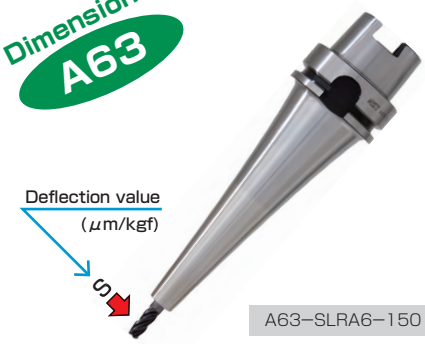
67 BT50-SLSB20-225 cv


68 BT50-SLSB20-255 cv


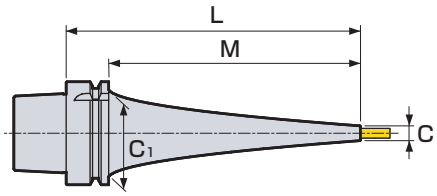
69 BT50-SLSB20-285 cv


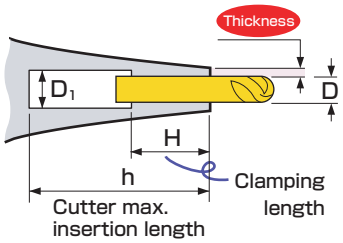
70 BT50-SLSB20-315 cv


Dimensions A63



A63–SLRA6–150 cv





Scale model	CODE	φD	φC	Thick-ness	L	M	φC1	φD1	H	h	Kg	N	S
1	A63–SLSA 4– 90 cv	4	7	1.5	90	64	53	5	12	65	1.0	9.3	1.8
2	–120 cv				120	94				95	1.1	10.1	2.7
3	–150 cv				150	124				125	1.3	11.0	4.0
4	–180 cv				180	154				154	1.4	11.6	6.6
5	–210 cv				210	184				185		11.8	11.6
6	–240 cv				240	214				214	1.6	13.1	14.0
7	–270 cv				270	244				245	2.0	15.4	11.9
8	–300 cv				300	274				275	2.1	16.3	15.9
9	–SLRA 4–120 cv	4	10	3	120	94	53	5	12	95	1.0	8.6	1.9
10	–150 cv				150	124				125	1.1	9.3	2.9
11	–180 cv				180	154				155	1.4	10.9	3.3
12	–210 cv				210	184				185		11.3	5.6
13	–SLSA 6– 90 cv	6	9	1.5	90	64	53	7	18	65	1.0	9.4	1.6
14	–120 cv				120	94				95	1.1	10.1	2.3
15	–150 cv				150	124				125	1.3	11.0	3.6
16	–180 cv				180	154				154	1.4	11.7	5.7
17	–210 cv				210	184				184	1.6	13.0	7.3
18	–240 cv				240	214				214		13.3	12.0
19	–270 cv				270	244				245	2.1	16.3	8.5
20	–300 cv				300	274				275	2.3	17.2	11.7
21	–SLRA 6– 90 cv	6	13	3.5	90	64	53	7	18	65	1.0	8.3	0.8
22	–120 cv				120	94				95	1.1	9.3	1.2
23	–150 cv				150	124				125	1.3	10.1	1.9
24	–180 cv				180	154				155	1.4	11.1	2.8
25	–210 cv				210	184				185		11.5	4.8
26	–SLFA 6– 90 cv	6	13	3.5	90	64	53	7	18	65	1.0	8.3	0.8
27	–120 cv				120	94				95	1.1	9.3	1.2
28	–150 cv				150	124				125	1.3	10.1	1.9
29	–180 cv				180	154				155	1.4	11.1	2.8
30	–210 cv				210	184				185		11.5	4.8
31	–SLSA 8– 90 cv	8	11	1.5	90	64	53	9	24	65	1.0	9.4	1.4
32	–120 cv				120	94				94	1.1	10.3	2.0
33	–150 cv				150	124				124	1.3	11.5	2.7
34	–180 cv				180	154				155	1.4	11.8	5.0
35	–210 cv				210	184				184	1.6	13.2	6.6
36	–240 cv				240	214				214	1.8	14.4	8.3
37	–270 cv				270	244				244	2.2	17.2	6.9
38	–300 cv				300	274				274	2.4	18.5	8.9
39	–SLRA 8– 90 cv	8	16	4	90	64	53	9	24	65	1.0	8.4	0.7
40	–120 cv				120	94				95	1.2	9.6	1.0
41	–150 cv				150	124				125	1.4	10.8	1.4
42	–180 cv				180	154				155	1.5	12.0	2.0
43	–210 cv				210	184				185	1.6	12.5	3.5
44	–SLFA 8– 90 cv	8	16	4	90	64	53	9	24	65	1.0	8.4	0.7
45	–120 cv				120	94				95	1.2	9.6	1.0
46	–150 cv				150	124				125	1.4	10.8	1.4
47	–180 cv				180	154				155	1.5	12.0	2.0
48	–210 cv				210	184				185	1.6	12.5	3.5

Scale model	CODE	φD	φC	Thick-ness	L	M	φC1	φD1	H	h	Kg	N	S
49	A63−SLSA10− 90 CV	10	13	1.5	90	64	53	11	30	65	1.0	9.4	1.8
50	−120 CV				120	94				95	1.3	10.9	1.3
51	−150 CV				150	124				125	1.4	11.8	2.2
52	−180 CV				180	154				154	1.6	12.9	3.4
53	−210 CV				210	184				184		13.3	6.0
54	−240 CV				240	214				212	2.1	16.0	5.8
55	−270 CV				270	244				244		17.5	6.6
56	−300 CV				300	274				274	2.3	18.7	8.6
57	−SLRA10− 90 CV	10	19	4.5	90	64	53	11	30	65	1.0	8.5	0.6
58	−120 CV				120	94				95	1.2	9.6	0.9
59	−150 CV				150	124				125	1.3	10.9	1.4
60	−180 CV				180	154				155	1.5	12.1	2.0
61	−210 CV				210	184				185	1.6	13.3	3.1
62	−SLFA10− 90 CV	10	19	4.5	90	64	53	11	30	65	1.0	8.5	0.6
63	−120 CV				120	94				95	1.2	9.6	0.9
64	−150 CV				150	124				125	1.3	10.9	1.4
65	−180 CV				180	154				155	1.5	12.1	2.0
66	−210 CV				210	184				185	1.6	13.3	3.1
67	−SLSA12− 90 CV	12	15	1.5	90	64	53	14	30	64	1.1	9.9	1.5
68	−120 CV				120	94		13		94	1.3	11.3	1.2
69	−150 CV				150	124				124	1.4	11.8	2.4
70	−180 CV				180	154				154	1.6	13.0	3.3
71	−210 CV				210	184				184	1.8	14.3	4.6
72	−240 CV				240	214				212	2.1	16.2	5.5
73	−270 CV				270	244				244	2.3	18.4	5.4
74	−SLRA12− 90 CV	12	22	5	90	64	53	14	30	64	1.0	8.5	0.6
75	−120 CV				120	94				94	1.3	10.4	0.7
76	−150 CV				150	124		13		124	1.5	11.7	1.1
77	−180 CV				180	154				154		12.8	1.8
78	−210 CV				210	184				184	1.6	14.0	2.8
79	−SLFA12− 90 CV	12	22	5	90	64	53	14	30	64	1.0	8.5	0.6
80	−120 CV				120	94				94	1.3	10.4	0.7
81	−150 CV				150	124		13		124	1.5	11.7	1.1
82	−180 CV				180	154				154		12.8	1.8
83	−210 CV				210	184				184	1.6	14.0	2.8
84	−SLSB16− 90 CV	16	21	2.5	90	64	53	17	32	62	1.1	10.5	0.6
85	−120 CV				120	94				92	1.5	12.4	0.8
86	−150 CV				150	124				122	1.6	13.5	1.5
87	−180 CV				180	154				152	1.9	15.4	1.9
88	−210 CV				210	184				182	2.1	16.5	3.0
89	−240 CV				240	214				212	2.4	18.4	3.7
90	−270 CV				270	244				242	2.2	20.3	4.6
91	−SLSB20− 90 CV	20	26	3	90	64	51	21	40	62	1.2	10.7	0.5
92	−120 CV				120	94	53			92	1.5	12.8	0.8
93	−150 CV				150	124				122	1.7	14.1	1.3
94	−180 CV				180	154				152	2.0	16.2	1.8
95	−210 CV				210	184				182	2.4	18.2	2.3
96	−240 CV				240	214				212	2.7	20.2	3.0
97	−270 CV				270	244				242	2.5	22.8	3.4

For Slimline MONO CURVE customers.

Please note that we changed model number for Slimline MONO CURVE due to additional model lineup.

Example; Previous model no. : A63-SLSC6-120

New model no. : A63-SLSA6-120 CV

φ4

No.	Model	Length		Value	Detail
1	A63−SLSA 4− 90 *cv*	90	64	1.8	
2	A63−SLSA 4−120 *cv*	120	94	2.7	φ7, t=1.5
3	A63−SLSA 4−150 *cv*	150	124	4.0	
4	A63−SLSA 4−180 *cv*	180	154	6.6	
5	A63−SLSA 4−210 *cv*	210	184	11.6	
6	A63−SLSA 4−240 *cv*	240	214	14.0	
7	A63−SLSA 4−270 *cv*	270	244	11.9	
8	A63−SLSA 4−300 *cv*	300	274	15.9	
9	A63−SLRA 4−120 *cv*	120	94	1.9	φ10, t=3
10	A63−SLRA 4−150 *cv*	150	124	2.9	
11	A63−SLRA 4−180 *cv*	180	154	3.3	
12	A63−SLRA 4−210 *cv*	210	184	5.6	

φ6

No.	Model	Length		Value	Detail
13	A63−SLSA 6− 90 *cv*	90	64	1.6	
14	A63−SLSA 6−120 *cv*	120	94	2.3	φ9, t=1.5
15	A63−SLSA 6−150 *cv*	150	124	3.6	
16	A63−SLSA 6−180 *cv*	180	154	5.7	
17	A63−SLSA 6−210 *cv*	210	184	7.3	
18	A63−SLSA 6−240 *cv*	240	214	12.0	
19	A63−SLSA 6−270 *cv*	270	244	8.5	
20	A63−SLSA 6−300 *cv*	300	274	11.7	
21	A63−SLRA 6− 90 *cv*	90	64	0.8	
22	A63−SLRA 6−120 *cv*	120	94	1.2	φ13, t=3.5
23	A63−SLRA 6−150 *cv*	150	124	1.9	
24	A63−SLRA 6−180 *cv*	180	154	2.8	
25	A63−SLRA 6−210 *cv*	210	184	4.8	
26	A63−SLFA 6− 90 *cv*	90	64	0.8	
27	A63−SLFA 6−120 *cv*	120	94	1.2	φ13, t=3.5
28	A63−SLFA 6−150 *cv*	150	124	1.9	
29	A63−SLFA 6−180 *cv*	180	154	2.8	
30	A63−SLFA 6−210 *cv*	210	184	4.8	

φ8

No.	Model	Length		Value	Detail
31	A63−SLSA 8− 90 *cv*	90	64	1.4	
32	A63−SLSA 8−120 *cv*	120	94	2.0	φ11, t=1.5
33	A63−SLSA 8−150 *cv*	150	124	2.7	
34	A63−SLSA 8−180 *cv*	180	154	5.0	
35	A63−SLSA 8−210 *cv*	210	184	6.6	
36	A63−SLSA 8−240 *cv*	240	214	8.3	
37	A63−SLSA 8−270 *cv*	270	244	6.9	
38	A63−SLSA 8−300 *cv*	300	274	8.9	
39	A63−SLRA 8− 90 *cv*	90	64	0.7	
40	A63−SLRA 8−120 *cv*	120	94	1.0	φ16, t=4
41	A63−SLRA 8−150 *cv*	150	124	1.4	
42	A63−SLRA 8−180 *cv*	180	154	2.0	
43	A63−SLRA 8−210 *cv*	210	184	3.5	
44	A63−SLFA 8− 90 *cv*	90	64	0.7	
45	A63−SLFA 8−120 *cv*	120	94	1.0	φ16, t=4
46	A63−SLFA 8−150 *cv*	150	124	1.4	
47	A63−SLFA 8−180 *cv*	180	154	2.0	
48	A63−SLFA 8−210 *cv*	210	184	3.5	

Scale model A63

φ10

No.	Model	Dimensions	Value
49	A63−SLSA10− 90 *cv*	90 / 64	1.8
50	A63−SLSA10−120 *cv*	120 / 94	1.3
51	A63−SLSA10−150 *cv*	150 / 124	2.2
52	A63−SLSA10−180 *cv*	180 / 154	3.4
53	A63−SLSA10−210 *cv*	210 / 184	6.0
54	A63−SLSA10−240 *cv*	240 / 214	5.8
55	A63−SLSA10−270 *cv*	270 / 244	6.6
56	A63−SLSA10−300 *cv*	300 / 274	8.6

φ13, t=1.5

No.	Model	Dimensions	Value
57	A63−SLRA10− 90 *cv*	90 / 64	0.6
58	A63−SLRA10−120 *cv*	120 / 94	0.9
59	A63−SLRA10−150 *cv*	150 / 124	1.4
60	A63−SLRA10−180 *cv*	180 / 154	2.0
61	A63−SLRA10−210 *cv*	210 / 184	3.1

φ19, t=4.5

No.	Model	Dimensions	Value
62	A63−SLFA10− 90 *cv*	90 / 64	0.6
63	A63−SLFA10−120 *cv*	120 / 94	0.9
64	A63−SLFA10−150 *cv*	150 / 124	1.4
65	A63−SLFA10−180 *cv*	180 / 154	2.0
66	A63−SLFA10−210 *cv*	210 / 184	3.1

φ19, t=4.5

φ12

No.	Model	Dimensions	Value
67	A63−SLSA12− 90 *cv*	90 / 64	1.5
68	A63−SLSA12−120 *cv*	120 / 94	1.2
69	A63−SLSA12−150 *cv*	150 / 124	2.4
70	A63−SLSA12−180 *cv*	180 / 154	3.3
71	A63−SLSA12−210 *cv*	210 / 184	4.6
72	A63−SLSA12−240 *cv*	240 / 214	5.5
73	A63−SLSA12−270 *cv*	270 / 244	5.4

φ15, t=1.5

No.	Model	Dimensions	Value
75	A63−SLRA12− 90 *cv*	90 / 64	0.6
76	A63−SLRA12−120 *cv*	120 / 94	0.7
77	A63−SLRA12−150 *cv*	150 / 124	1.1
78	A63−SLRA12−180 *cv*	180 / 154	1.8
79	A63−SLRA12−210 *cv*	210 / 184	2.8

φ22, t=5

No.	Model	Dimensions	Value
80	A63−SLFA12− 90 *cv*	90 / 64	0.6
81	A63−SLFA12−120 *cv*	120 / 94	0.7
82	A63−SLFA12−150 *cv*	150 / 124	1.1
83	A63−SLFA12−180 *cv*	180 / 154	1.8
84	A63−SLFA12−210 *cv*	210 / 184	2.8

φ22, t=5

φ16

No.	Model	Dimensions	Value
85	A63−SLSB16− 90 *cv*	90 / 64	0.6
86	A63−SLSB16−120 *cv*	120 / 94	0.8
87	A63−SLSB16−150 *cv*	150 / 124	1.5
88	A63−SLSB16−180 *cv*	180 / 154	1.9
89	A63−SLSB16−210 *cv*	210 / 184	3.0
90	A63−SLSB16−240 *cv*	240 / 214	3.7
91	A63−SLSB16−270 *cv*	270 / 244	4.6

φ21, t=2.5

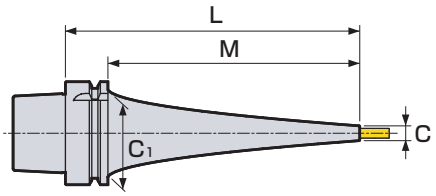
φ20

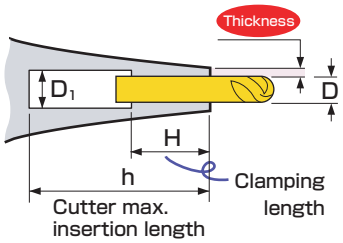
No.	Model	Dimensions	Value
92	A63−SLSB20− 90 *cv*	90 / 64	0.5
93	A63−SLSB20−120 *cv*	120 / 94	0.8
94	A63−SLSB20−150 *cv*	150 / 124	1.3
95	A63−SLSB20−180 *cv*	180 / 154	1.8
96	A63−SLSB20−210 *cv*	210 / 184	2.3
97	A63−SLSB20−240 *cv*	240 / 214	3.0
98	A63−SLSB20−270 *cv*	270 / 244	3.4

φ26, t=3

Dimensions A100

A100–SLSA16–165 cv





Scale model	CODE	φD	φC	Thick-ness	L	M	φC1	φD1	H	h	Kg	N	S
1	A100–SLSA 4–165 cv	4	7	1.5	165	136	85	5	12	133	3.4	29.0	2.5
2	–195 cv				195	166				163	3.7	30.6	3.3
3	–225 cv				225	196				196	4.3	33.0	3.8
4	–255 cv				255	226				226	4.4	34.1	5.6
5	–285 cv				285	256				256	4.6	35.5	7.6
6	–315 cv				315	286				286	4.9	37.1	9.8
7	–345 cv				345	316				316	5.2	38.8	12.4
8	–SLSA 6–165 cv	6	9	1.5	165	136	85	7	18	136	3.3	28.8	2.1
9	–195 cv				195	166				166	4.0	32.0	2.3
10	–225 cv				225	196				196	4.1	32.4	3.6
11	–255 cv				255	226				226	4.8	35.9	3.9
12	–285 cv				285	256				256	5.0	37.4	5.2
13	–315 cv				315	286				286	5.3	38.9	6.8
14	–345 cv				345	316				316	5.6	40.3	8.7
15	–SLSA 8–165 cv	8	11	1.5	165	136	85	9	24	136	3.7	30.7	1.4
16	–195 cv				195	166				166		31.0	2.3
17	–225 cv				225	196				196	4.6	35.3	
18	–255 cv				255	226				226		35.9	3.6
19	–285 cv				285	256				256	4.9	37.4	4.8
20	–315 cv				315	286				286	5.7	41.9	5.0
21	–345 cv				345	316				311	6.1	45.1	6.0
22	–SLRA 8–195 cv	8	16	4	195	166	85	9	24	166	3.7	28.5	1.4
23	–225 cv				225	196				196	4.4	32.3	1.6
24	–255 cv				255	226				226	4.6	33.6	2.2
25	–285 cv				285	256				256	4.8	34.8	3.0
26	–SLFA 8–195 cv	8	16	4	195	166	85	9	24	166	3.7	28.5	1.4
27	–225 cv				225	196				196	4.4	32.3	1.6
28	–255 cv				255	226				226	4.6	33.6	2.2
29	–285 cv				285	256				256	4.8	34.8	3.0
30	–SLSA10–165 cv	10	13	1.5	165	136	85	11	30	136	3.5	29.4	1.4
31	–195 cv				195	166				166	4.3	33.6	1.5
32	–225 cv				225	196				196	4.2	33.4	2.4
33	–255 cv				255	226				226	4.5	34.3	3.5
34	–285 cv				285	256				251	5.1	38.3	3.6
35	–315 cv				315	286				286		39.9	4.8
36	–345 cv				345	316				311	5.9	42.7	5.5
37	–SLRA10–165 cv	10	19	4.5	165	136	85	11	30	136	3.5	27.6	1.0
38	–195 cv				195	166				166	4.0	30.1	1.1
39	–225 cv				225	196				196	4.1	31.1	1.6
40	–255 cv				255	226				226	4.9	35.3	1.7
41	–285 cv				285	256				256	5.0	36.2	2.4
42	–SLFA10–165 cv	10	19	4.5	165	136	85	11	30	136	3.5	27.6	1.0
43	–195 cv				195	166				166	4.0	30.1	1.1
44	–225 cv				225	196				196	4.1	31.1	1.6
45	–255 cv				255	226				226	4.9	35.3	1.7
46	–285 cv				285	256				256	5.0	36.2	2.4

Scale model	CODE	φD	φC	Thick-ness	L	M	φC1	φD1	H	h	Kg	N	S
47	A100−SLSA12−165 *cv*	12	15	1.5	165	136	85	13	30	133	4.2	34.1	1.2
48	−195 *cv*				195	166				163	4.1	33.6	
49	−225 *cv*				225	196				175	4.8	38.3	1.8
50	−255 *cv*				255	226				190		37.8	2.6
51	−285 *cv*				285	256				251	5.5	42.5	3.5
52	−315 *cv*				315	286				281	5.9	44.6	4.3
53	−345 *cv*				345	316				311	6.2	46.7	5.3
54	−SLRA12−165 *cv*	12	22	5	165	136	85	13	30	133	3.6	27.9	0.8
55	−195 *cv*				195	166		14		163	4.4	32.2	
56	−225 *cv*				225	196		13		159		32.7	1.3
57	−255 *cv*				255	226				221	4.6	36.1	1.6
58	−285 *cv*				285	256				251	5.0	38.5	2.1
59	−SLFA12−165 *cv*	12	22	5	165	136	85	13	30	133	3.6	27.9	0.8
60	−195 *cv*				195	166		14		163	4.4	32.2	
61	−225 *cv*				225	196		13		159		32.7	1.3
62	−255 *cv*				255	226				221	4.6	36.1	1.6
63	−285 *cv*				285	256				251	5.0	38.5	2.1
64	−SLSB16−165 *cv*	16	21	2.5	165	136	85	17	32	131	4.2	34.2	0.6
65	−195 *cv*				195	166				161	4.0	33.7	1.1
66	−225 *cv*				225	196				191	4.8	38.4	1.2
67	−255 *cv*				255	226				221	4.7	38.0	2.0
68	−285 *cv*				285	256				251	5.5	42.6	
69	−315 *cv*				315	286				281	5.9	44.8	2.6
70	−345 *cv*				345	316				311	6.2	46.9	3.3
71	−SLSB20−165 *cv*	20	26	3	165	136	85	21	40	132	4.0	33.6	0.6
72	−195 *cv*				195	166				161	4.9	38.1	0.7
73	−225 *cv*				225	196				191	4.6	37.4	1.2
74	−255 *cv*				255	226				221	5.5	42.1	1.3
75	−285 *cv*				285	256				251	5.2	41.2	2.1
76	−315 *cv*				315	286				281	6.1	46.0	2.3
77	−345 *cv*				345	316				311	6.4	47.9	2.9

For Slimline MONO CURVE customers.

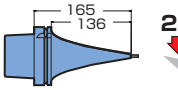
Please note that we changed model number for Slimline MONO CURVE due to additional model lineup.

Example; Previous model no. : A63-SLSC6-120

New model no. : A63-SLSA6-120 *CV*

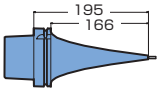
φ4

1 **A100−SLSA 4−165 *cv***

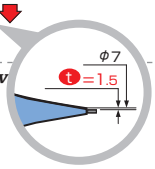


2.5

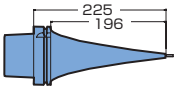
2 **A100−SLSA 4−195 *cv***



3.3

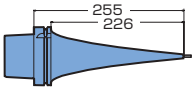


3 **A100−SLSA 4−225 *cv***



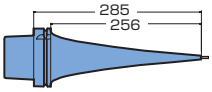
3.8

4 **A100−SLSA 4−255 *cv***



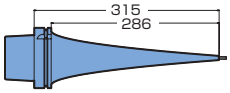
5.6

5 **A100−SLSA 4−285 *cv***



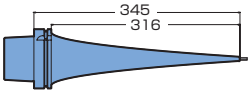
7.6

6 **A100−SLSA 4−315 *cv***



9.8

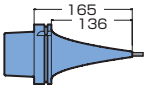
7 **A100−SLSA 4−345 *cv***



12.4

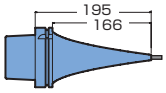
φ6

8 **A100−SLSA 6−165 *cv***

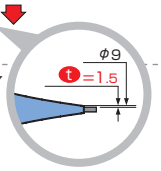


2.1

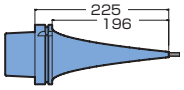
9 **A100−SLSA 6−195 *cv***



2.3

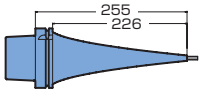


10 **A100−SLSA 6−225 *cv***



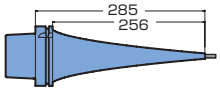
3.6

11 **A100−SLSA 6−255 *cv***



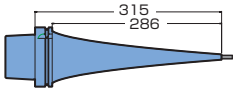
3.9

12 **A100−SLSA 6−285 *cv***



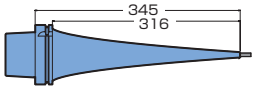
5.2

13 **A100−SLSA 6−315 *cv***



6.8

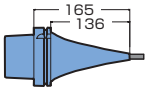
14 **A100−SLSA 6−345 *cv***



8.7

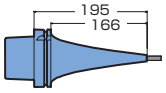
φ8

15 **A100−SLSA 8−165 *cv***

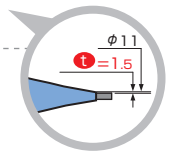


1.4

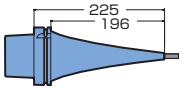
16 **A100−SLSA 8−195 *cv***



2.3

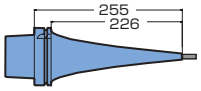


17 **A100−SLSA 8−225 *cv***



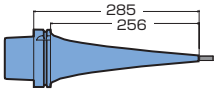
2.3

18 **A100−SLSA 8−255 *cv***



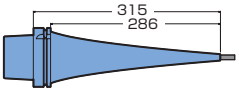
3.6

19 **A100−SLSA 8−285 *cv***



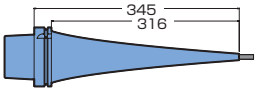
4.8

20 **A100−SLSA 8−315 *cv***

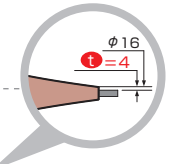


5.0

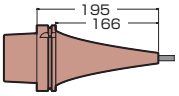
21 **A100−SLSA 8−345 *cv***



6.0

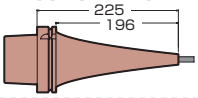


22 **A100−SLRA 8−195 *cv***



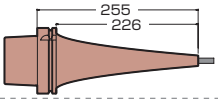
1.4

23 **A100−SLRA 8−225 *cv***



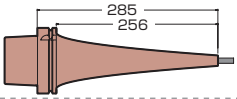
1.6

24 **A100−SLRA 8−255 *cv***

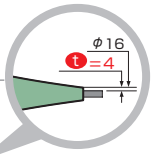


2.2

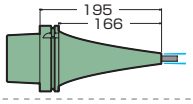
25 **A100−SLRA 8−285 *cv***



3.0

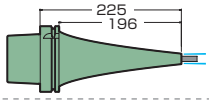


26 **A100−SLFA 8−195 *cv***



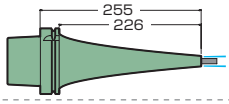
1.4

27 **A100−SLFA 8−225 *cv***



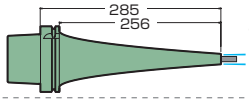
1.6

28 **A100−SLFA 8−255 *cv***



2.2

29 **A100−SLFA 8−285 *cv***



3.0

Scale model A100

φ10

30 A100−SLSA10−165 *cv* — 1.4

31 A100−SLSA10−195 *cv* — 1.5

32 A100−SLSA10−225 *cv* — 2.4

33 A100−SLSA10−255 *cv* — 3.5

34 A100−SLSA10−285 *cv* — 3.6

35 A100−SLSA10−315 *cv* — 4.8

36 A100−SLSA10−345 *cv* — 5.5

37 A100−SLRA10−165 *cv* — 1.0

38 A100−SLRA10−195 *cv* — 1.1

39 A100−SLRA10−225 *cv* — 1.6

40 A100−SLRA10−255 *cv* — 1.7

41 A100−SLRA10−285 *cv* — 2.4

42 A100−SLFA10−165 *cv* — 1.0

43 A100−SLFA10−195 *cv* — 1.1

44 A100−SLFA10−225 *cv* — 1.6

45 A100−SLFA10−255 *cv* — 1.7

46 A100−SLFA10−285 *cv* — 2.4

φ12

47 A100−SLSA12−165 *cv* — 1.2

48 A100−SLSA12−195 *cv* — 1.2

49 A100−SLSA12−225 *cv* — 1.8

50 A100−SLSA12−255 *cv* — 2.6

51 A100−SLSA12−285 *cv* — 3.5

52 A100−SLSA12−315 *cv* — 4.3

53 A100−SLSA12−345 *cv* — 5.3

54 A100−SLRA12−165 *cv* — 0.8

55 A100−SLRA12−195 *cv* — 0.8

56 A100−SLRA12−225 *cv* — 1.3

57 A100−SLRA12−255 *cv* — 1.6

58 A100−SLRA12−285 *cv* — 2.1

59 A100−SLFA12−165 *cv* — 0.8

60 A100−SLFA12−195 *cv* — 0.8

61 A100−SLFA12−225 *cv* — 1.3

62 A100−SLFA12−255 *cv* — 1.6

63 A100−SLFA12−285 *cv* — 2.1

φ16

64 A100−SLSB16−165 *cv* — 0.6

65 A100−SLSB16−195 *cv* — 1.1

66 A100−SLSB16−225 *cv* — 1.2

67 A100−SLSB16−255 *cv* — 2.0

68 A100−SLSB16−285 *cv* — 2.0

69 A100−SLSB16−315 *cv* — 2.6

70 A100−SLSB16−345 *cv* — 3.3

φ20

71 A100−SLSB20−165 *cv* — 0.6

72 A100−SLSB20−195 *cv* — 0.7

73 A100−SLSB20−225 *cv* — 1.2

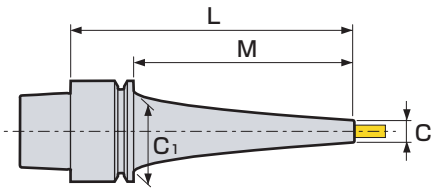
74 A100−SLSB20−255 *cv* — 1.3

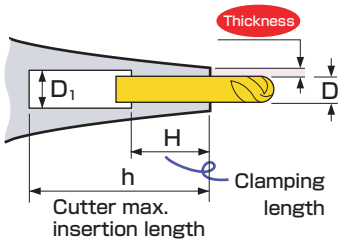
75 A100−SLSB20−285 *cv* — 2.1

76 A100−SLSB20−315 *cv* — 2.3

77 A100−SLSB20−345 *cv* — 2.9

Dimensions E32

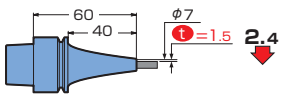




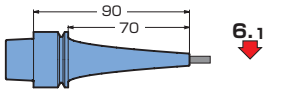
Scale model	CODE	φD	φC	Thick-ness	L	M	φC1	φD1	H	h	Kg	N	S
1	E32–SLSA 4– 60 cv	4	7	1.5	60	40	26	5	12	43	0.2	0.6	2.4
2	– 90 cv				90	70				73		0.8	6.1
3	–SLSA 6– 60 cv	6	9	1.5	60	40	26	7	18	43	0.2	0.7	1.9
4	– 90 cv				90	70				73		0.9	4.9
5	–SLSA 8– 60 cv	8	11	1.5	60	40	26	8.6	24	38	0.2	0.7	1.6
6	– 90 cv				90	70						1.0	4.0
7	–SLSA10– 60 cv	10	13	1.5	60	40	26	10.6	30	48	0.2	0.8	1.4
8	– 90 cv				90	70				60		1.1	3.5

φ4

E32–SLSA 4–60 cv

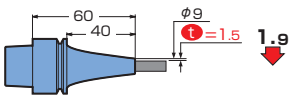


E32–SLSA 4–90 cv

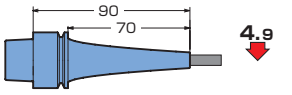


φ6

E32–SLSA 6–60 cv

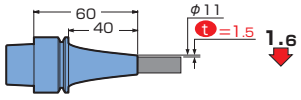


E32–SLSA 6–90 cv

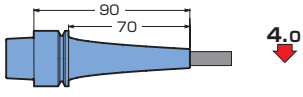


φ8

E32–SLSA 8–60 cv

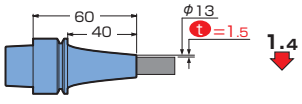


E32–SLSA 8–90 cv

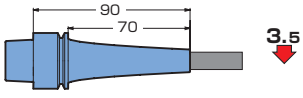


φ10

E32–SLSA10–60 cv



E32–SLSA10–90 cv



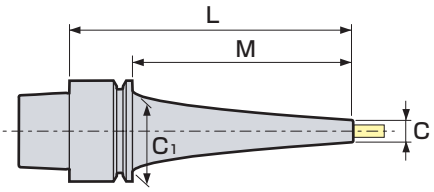
For Slimline MONO CURVE customers.

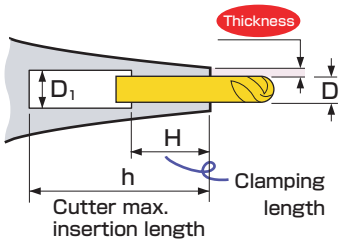
Please note that we changed model number for Slimline MONO CURVE due to additional model lineup.

Example; Previous model no. : A63-SLSC6-120

New model no. : A63-SLSA6-120 CV

Dimensions E40

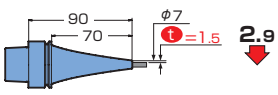




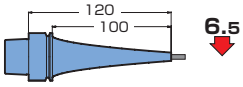
Scale model	CODE	φD	φC	Thick-ness	L	M	φC1	φD1	H	h	Kg	N	S
1	E40–SLSA 4– 90 cv	4	7	1.5	90	70	34	5	12	74	0.3	1.5	2.9
2	–120 cv				120	100				104	0.4	1.8	6.5
3	–150 cv				150	130				134	0.5	2.4	8.6
4	–SLRA 4– 90 cv	4	10	3	90	70	34	5	12	81	0.4	1.6	2.0
5	–120 cv				120	100				111		1.9	4.2
6	–SLSA 6– 90 cv	6	9	1.5	90	70	34	7	18	74	0.3	1.6	2.5
7	–120 cv				120	100				104	0.4	1.9	5.6
8	–150 cv				150	130				134	0.5	2.5	7.7
9	–SLRA 6– 90 cv	6	13	3.5	90	70	34	7	18	74	0.4	1.7	1.7
10	–120 cv				120	100				104	0.5	2.4	2.6
11	–SLSA 8– 90 cv	8	11	1.5	90	70	34	9	24	74	0.3	1.7	2.2
12	–120 cv				120	100				104	0.4	2.0	3.4
13	–150 cv				150	130				134	0.5	3.0	5.1
14	–SLRA 8– 90 cv	8	16	4	90	70	34	9	24	74	0.4	1.8	1.6
15	–120 cv				120	100				104	0.5	2.5	2.4
16	–SLSA10– 90 cv	10	13	1.5	90	70	34	11	30	74	0.3	1.7	2.0
17	–120 cv				120	100				104	0.4	2.4	3.2
18	–150 cv				150	130				134	0.5	3.1	5.0
19	–SLRA10– 90 cv	10	19	4.5	90	70	34	11	30	74	0.4	2.1	1.1
20	–120 cv				120	100				104	0.5	2.9	2.0

φ4

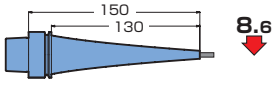
1 E40–SLSA 4– 90 cv



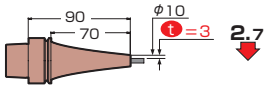
2 E40–SLSA 4–120 cv



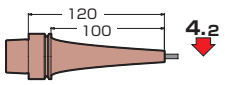
3 E40–SLSA 4–150 cv



4 E40–SLRA 4– 90 cv

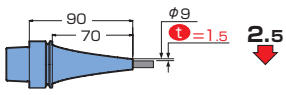


5 E40–SLRA 4–120 cv

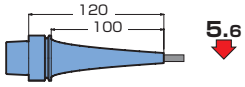


φ6

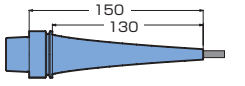
6 E40–SLSA 6– 90 cv



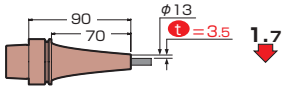
7 E40–SLSA 6–120 cv



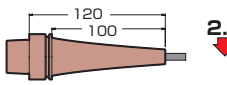
8 E40–SLSA 6–150 cv



9 E40–SLRA 6– 90 cv

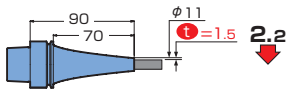


10 E40–SLRA 6–120 cv

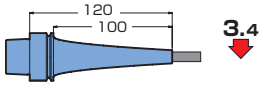


φ8

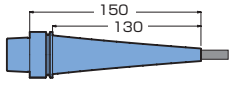
11 E40–SLSA 8– 90 cv



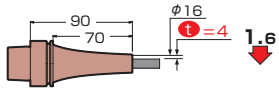
12 E40–SLSA 8–120 cv



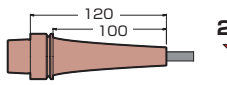
13 E40–SLSA 8–150 cv



14 E40–SLRA 8– 90 cv

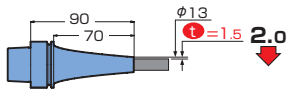


15 E40–SLRA 8–120 cv

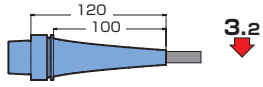


φ10

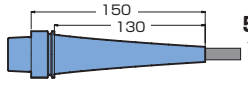
16 E40–SLSA10– 90 cv



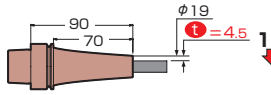
17 E40–SLSA10–120 cv



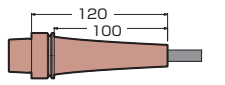
18 E40–SLSA10–150 cv



19 E40–SLRA10– 90 cv

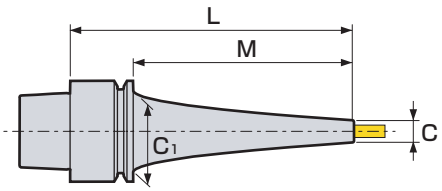


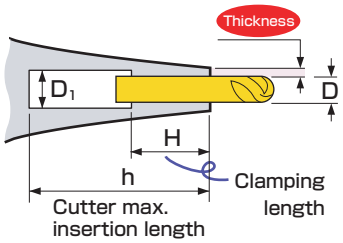
20 E40–SLRA10–120 cv



Dimensions E50

E50–SLSA6–120 cv





Scale model	CODE	φD	φC	Thick-ness	L	M	φC1	φD1	H	h	Kg	N	S
1	E50–SLSA 4– 90 cv	4	7	1.5	90	64	42	5	12	74	0.6	2.2	1.8
2	–120 cv				120	94				104		2.6	4.2
3	–150 cv				150	124				134	0.7	3.3	6.0
4	–180 cv				180	154				164	0.8	3.5	12.0
5	–SLRA 4–120 cv	4	10	3	120	94	42	5	12	104	0.7	2.8	2.7
6	–150 cv				150	124				134	0.8	3.4	4.1
7	–SLSA 6– 90 cv	6	9	1.5	90	64	42	7	18	74	0.6	2.3	1.6
8	–120 cv				120	94				104		2.7	3.5
9	–150 cv				150	124				134	0.7	3.4	5.4
10	–180 cv				180	154				164	0.9	4.2	7.6
11	–SLRA 6–120 cv	6	13	3.5	120	94	42	7	18	104	0.8	3.3	1.8
12	–150 cv				150	124				132	0.9	4.0	2.7
13	–SLSA 8– 90 cv	8	11	1.5	90	64	42	9	24	74	0.6	2.5	1.4
14	–120 cv				120	94				104	0.7	3.2	2.2
15	–150 cv				150	124				134		3.5	4.9
16	–180 cv				180	154				164	0.8	4.2	7.1
17	–SLRA 8–120 cv	8	16	4	120	94	42	9	24	102		3.8	1.3
18	–150 cv				150	124				132	0.9	4.0	2.7
19	–SLSA10– 90 cv	10	13	1.5	90	64	42	11	30	74	0.6	2.5	1.3
20	–120 cv				120	94				104	0.7	3.3	2.1
21	–150 cv				150	124				134	0.8	4.1	3.4
22	–180 cv				180	154				164		4.3	6.9
23	–SLRA10–150 cv	10	19	4.5	150	124	42	11	30	132	0.9	4.4	2.2

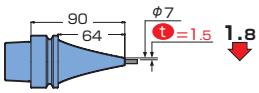
For Slimline MONO CURVE customers.
Please note that we changed model number for Slimline MONO CURVE due to additional model lineup.

Example; Previous model no. : A63-SLSC6-120

New model no. : A63-SLSA6-120 CV

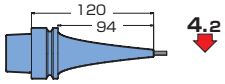
φ4

1 E50−SLSA 4− 90 cv



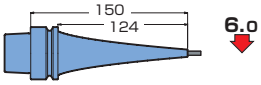
E50−SLSA 4−120 cv

2



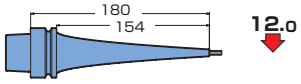
E50−SLSA 4−150 cv

3



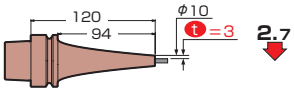
E50−SLSA 4−180 cv

4



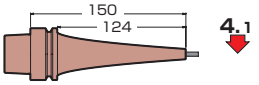
E50−SLRA 4−120 cv

5



E50−SLRA 4−150 cv

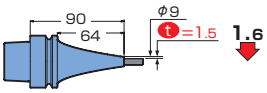
6



φ6

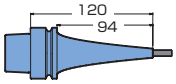
E50−SLSA 6− 90 cv

7



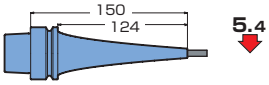
E50−SLSA 6−120 cv

8



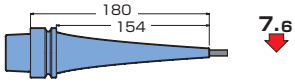
E50−SLSA 6−150 cv

9



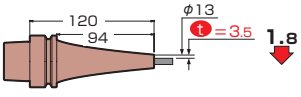
E50−SLSA 6−180 cv

10



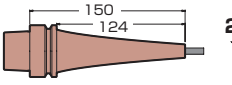
E50−SLRA 6−120 cv

11



E50−SLRA 6−150 cv

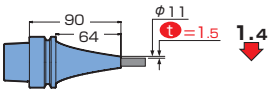
12



φ8

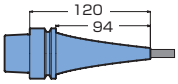
E50−SLSA 8− 90 cv

13



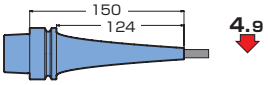
E50−SLSA 8−120 cv

14



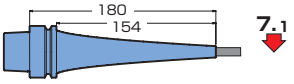
E50−SLSA 8−150 cv

15



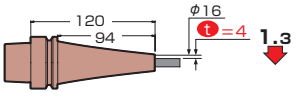
E50−SLSA 8−180 cv

16



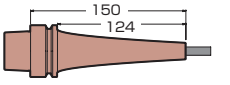
E50−SLRA 8−120 cv

17



E50−SLRA 8−150 cv

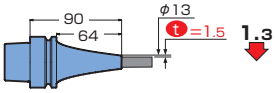
18



φ10

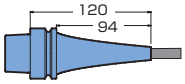
E50−SLSA10− 90 cv

19



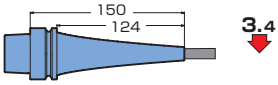
E50−SLSA10−120 cv

20



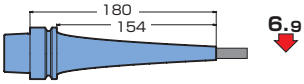
E50−SLSA10−150 cv

21



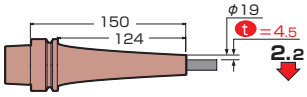
E50−SLSA10−180 cv

22



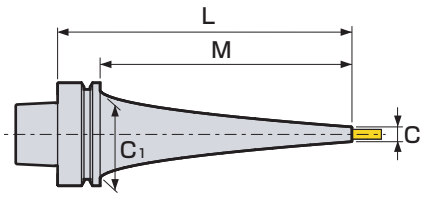
E50−SLRA10−150 cv

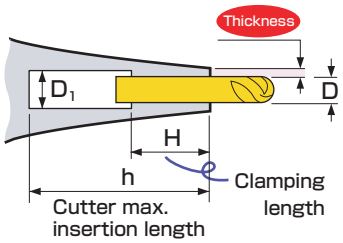
23



Dimensions F63

F63–SLSA6–90 cv





Scale model	CODE	φD	φC	Thick-ness	L	M	φC1	φD1	H	h	Kg	N	S
1	F63–SLSA 4– 90 cv	4	7	1.5	90	64	53	5	12	65	0.9	2.7	1.8
2	–120 cv				120	94				95	1.0	3.6	2.7
3	–150 cv				150	124				125	1.2	4.4	4.0
4	–180 cv				180	154				154	1.3	5.0	6.6
5	–210 cv				210	184				185		5.3	11.6
6	–240 cv				240	214				214	1.6	6.5	14.0
7	–270 cv				270	244				245	1.9	8.8	11.9
8	–300 cv				300	274				275	2.0	9.7	15.9
9	–SLRA 4–120 cv	4	10	3	120	94	53	5	12	95	1.0	3.6	1.9
10	–150 cv				150	124				125	1.1	4.4	2.9
11	–180 cv				180	154				155	1.4	6.0	3.3
12	–210 cv				210	184				185	1.5	6.2	5.6
13	–SLSA 6– 90 cv	6	9	1.5	90	64	53	7	18	65	0.9	2.8	1.6
14	–120 cv				120	94				95	1.0	3.6	2.3
15	–150 cv				150	124				125	1.2	4.4	3.6
16	–180 cv				180	154				154	1.3	5.2	5.7
17	–210 cv				210	184				184	1.5	6.4	7.3
18	–240 cv				240	214				214	1.6	6.7	12.0
19	–270 cv				270	244				245	2.0	9.7	8.5
20	–300 cv				300	274				275	2.2	10.6	11.7
21	–SLRA 6– 90 cv	6	13	3.5	90	64	53	7	18	65	1.0	3.4	0.8
22	–120 cv				120	94				95	1.2	4.3	1.2
23	–150 cv				150	124				125	1.3	5.2	1.9
24	–180 cv				180	154				155	1.4	6.1	2.8
25	–210 cv				210	184				185	1.5	6.6	4.8
26	–SLFA 6– 90 cv	6	13	3.5	90	64	53	7	18	65	1.0	3.4	0.8
27	–120 cv				120	94				95	1.2	4.3	1.2
28	–150 cv				150	124				125	1.3	5.2	1.9
29	–180 cv				180	154				155	1.4	6.1	2.8
30	–210 cv				210	184				185	1.5	6.6	4.8
31	–SLSA 8– 90 cv	8	11	1.5	90	64	53	9	24	65	0.9	2.9	1.4
32	–120 cv				120	94				94	1.1	3.8	2.0
33	–150 cv				150	124				124	1.3	5.0	2.7
34	–180 cv				180	154				155		5.2	5.0
35	–210 cv				210	184				184	1.5	6.6	6.6
36	–240 cv				240	214				214	1.8	7.8	8.3
37	–270 cv				270	244				244	2.1	10.7	6.9
38	–300 cv				300	274				274	2.3	11.9	8.9
39	–SLRA 8– 90 cv	8	16	4	90	64	53	9	24	65	1.0	3.4	0.7
40	–120 cv				120	94				95	1.2	4.6	1.0
41	–150 cv				150	124				125	1.4	5.9	1.4
42	–180 cv				180	154				155	1.6	7.0	2.0
43	–210 cv				210	184				185		7.6	3.5
44	–SLFA 8– 90 cv	8	16	4	90	64	53	9	24	65	1.0	3.4	0.7
45	–120 cv				120	94				95	1.2	4.6	1.0
46	–150 cv				150	124				125	1.4	5.9	1.4
47	–180 cv				180	154				155	1.6	7.0	2.0
48	–210 cv				210	184				185		7.6	3.5

Scale model	CODE	φD	φC	Thick-ness	L	M	φC1	φD1	H	h	Kg	N	S
49	F63−SLSA10− 90 CV	10	13	1.5	90	64	53	11	30	65	0.9	2.9	1.8
50	−120 CV				120	94				95	1.2	4.4	1.3
51	−150 CV				150	124				125	1.3	5.2	2.2
52	−180 CV				180	154				154	1.5	6.3	3.4
53	−210 CV				210	184				184	1.6	6.8	6.0
54	−240 CV				240	214				212	2.0	9.4	5.8
55	−270 CV				270	244				244	2.1	10.9	6.6
56	−300 CV				300	274				274	2.3	12.2	8.5
57	−SLRA10− 90 CV	10	19	4.5	90	64	53	11	30	65	1.0	3.5	0.6
58	−120 CV				120	94				95	1.2	4.6	0.9
59	−150 CV				150	124				125	1.4	5.8	1.4
60	−180 CV				180	154				155	1.6	7.2	2.0
61	−210 CV				210	184				185		8.0	3.1
62	−SLFA10− 90 CV	10	19	4.5	90	64	53	11	30	65	1.0	3.5	0.6
63	−120 CV				120	94				95	1.2	4.6	0.9
64	−150 CV				150	124				125	1.4	5.8	1.4
65	−180 CV				180	154				155	1.6	7.2	2.0
66	−210 CV				210	184				185		8.0	3.1
67	−SLSA12− 90 CV	12	15	1.5	90	64	53	14	30	64	1.0	3.4	1.5
68	−120 CV				120	94		13		94	1.2	4.7	1.2
69	−150 CV				150	124				124	1.3	5.2	2.4
70	−180 CV				180	154				154	1.5	6.5	3.3
71	−210 CV				210	184				184	1.7	7.7	4.6
72	−240 CV				240	214				212	2.0	9.6	5.5
73	−270 CV				270	244				244	2.2	11.8	5.4
74	−SLRA12− 90 CV	12	22	5	90	64	53	14	30	64	1.0	3.6	0.6
75	−120 CV				120	94				94	1.3	5.5	0.7
76	−150 CV				150	124		13		124	1.5	6.7	1.1
77	−180 CV				180	154				154	1.6	7.5	1.8
78	−210 CV				210	184				184	1.7	8.5	2.8
79	−SLFA12− 90 CV	12	22	5	90	64	53	14	30	64	1.0	3.6	0.6
80	−120 CV				120	94				94	1.3	5.5	0.7
81	−150 CV				150	124		13		124	1.5	6.7	1.1
82	−180 CV				180	154				154	1.6	7.5	1.8
83	−210 CV				210	184				184	1.7	8.5	2.8
84	−SLSB16− 90 CV	16	21	2.5	90	64	53	17	32	62	1.1	3.9	0.6
85	−120 CV				120	94				92	1.4	5.8	0.8
86	−150 CV				150	124				122	1.5	6.9	1.5
87	−180 CV				180	154				152	1.9	8.8	1.9
88	−210 CV				210	184				182	2.0	9.9	3.0
89	−240 CV				240	214				212	2.3	11.8	3.7
90	−270 CV				270	244				242	2.2	13.7	4.6
91	−SLSB20− 90 CV	20	26	3	90	64	51	21	40	62	1.1	4.2	0.5
92	−120 CV				120	94	53			92	1.4	6.2	0.8
93	−150 CV				150	124				122	1.6	7.6	1.3
94	−180 CV				180	154				152	2.0	9.6	1.8
95	−210 CV				210	184				182	2.3	11.6	2.3
96	−240 CV				240	214				212	2.6	13.7	3.0
97	−270 CV				270	244				242	2.4	16.3	3.4

For Slimline MONO CURVE customers.

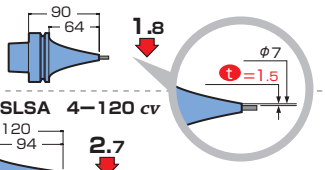
Please note that we changed model number for Slimline MONO CURVE due to additional model lineup.

Example; Previous model no. : A63-SLSC6-120

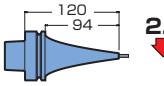
New model no. : A63-SLSA6-120 CV

φ4

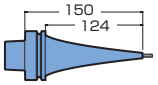
1 **F63—SLSA 4— 90 cv**



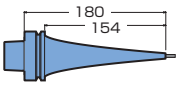
2 **F63—SLSA 4—120 cv**



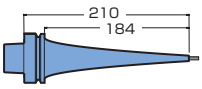
3 **F63—SLSA 4—150 cv**



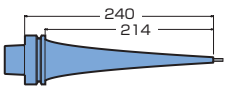
4 **F63—SLSA 4—180 cv**



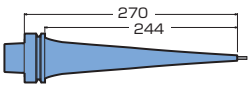
5 **F63—SLSA 4—210 cv**



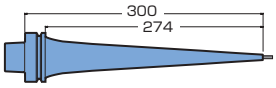
6 **F63—SLSA 4—240 cv**



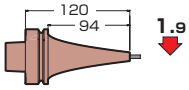
7 **F63—SLSA 4—270 cv**

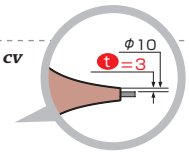


8 **F63—SLSA 4—300 cv**

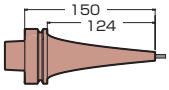


9 **F63—SLRA 4—120 cv**

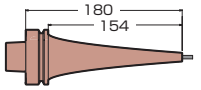




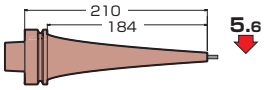
10 **F63—SLRA 4—150 cv**



11 **F63—SLRA 4—180 cv**

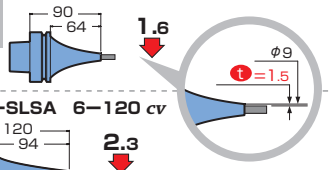


12 **F63—SLRA 4—210 cv**

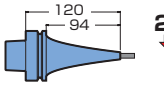


φ6

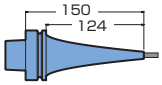
13 **F63—SLSA 6— 90 cv**



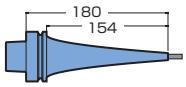
14 **F63—SLSA 6—120 cv**



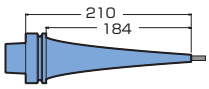
15 **F63—SLSA 6—150 cv**



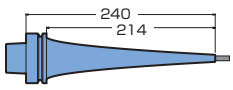
16 **F63—SLSA 6—180 cv**



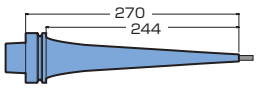
17 **F63—SLSA 6—210 cv**



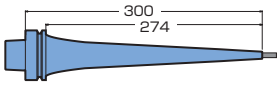
18 **F63—SLSA 6—240 cv**



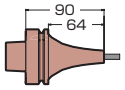
19 **F63—SLSA 6—270 cv**



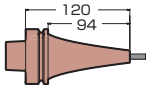
20 **F63—SLSA 6—300 cv**

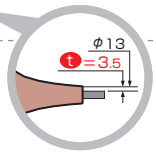


21 **F63—SLRA 6— 90 cv**

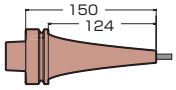


22 **F63—SLRA 6—120 cv**

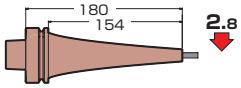




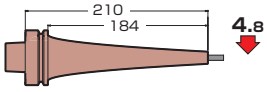
23 **F63—SLRA 6—150 cv**



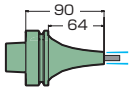
24 **F63—SLRA 6—180 cv**



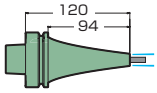
25 **F63—SLRA 6—210 cv**

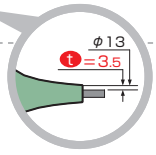


26 **F63—SLFA 6— 90 cv**

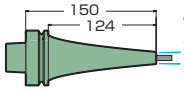


27 **F63—SLFA 6—120 cv**

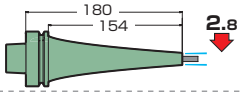




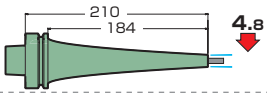
28 **F63—SLFA 6—150 cv**



29 **F63—SLFA 6—180 cv**

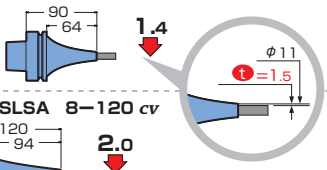


30 **F63—SLFA 6—210 cv**

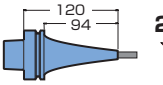


φ8

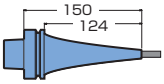
31 **F63—SLSA 8— 90 cv**



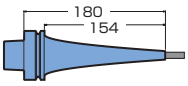
32 **F63—SLSA 8—120 cv**



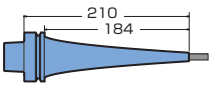
33 **F63—SLSA 8—150 cv**



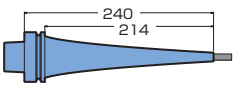
34 **F63—SLSA 8—180 cv**



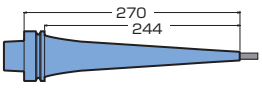
35 **F63—SLSA 8—210 cv**



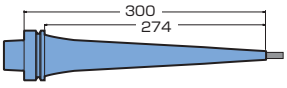
36 **F63—SLSA 8—240 cv**



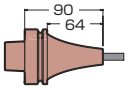
37 **F63—SLSA 8—270 cv**



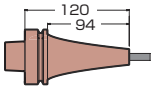
38 **F63—SLSA 8—300 cv**

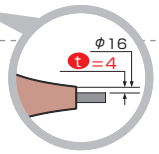


39 **F63—SLRA 8— 90 cv**

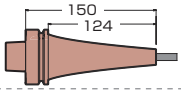


40 **F63—SLRA 8—120 cv**

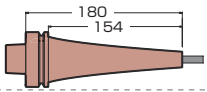




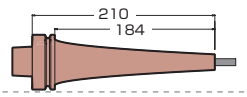
41 **F63—SLRA 8—150 cv**



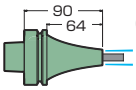
42 **F63—SLRA 8—180 cv**



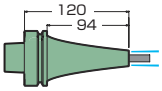
43 **F63—SLRA 8—210 cv**

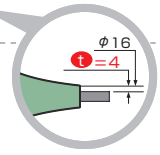


44 **F63—SLFA 8— 90 cv**

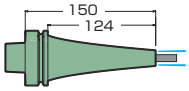


45 **F63—SLFA 8—120 cv**

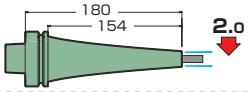




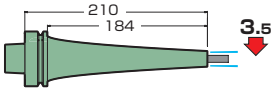
46 **F63—SLFA 8—150 cv**



47 **F63—SLFA 8—180 cv**



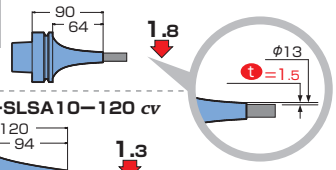
48 **F63—SLFA 8—210 cv**



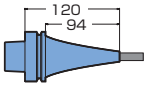
Scale model F63

φ10

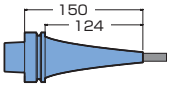
49 F63–SLSA10– 90 cv



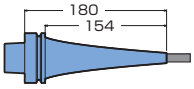
50 F63–SLSA10–120 cv



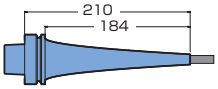
51 F63–SLSA10–150 cv



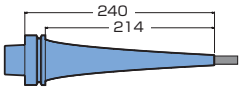
52 F63–SLSA10–180 cv



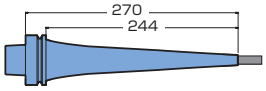
53 F63–SLSA10–210 cv



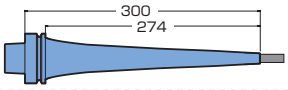
54 F63–SLSA10–240 cv



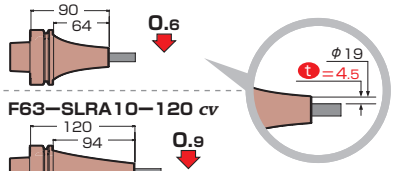
55 F63–SLSA10–270 cv



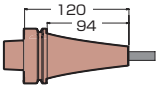
56 F63–SLSA10–300 cv



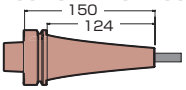
57 F63–SLRA10– 90 cv



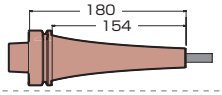
58 F63–SLRA10–120 cv



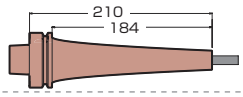
59 F63–SLRA10–150 cv



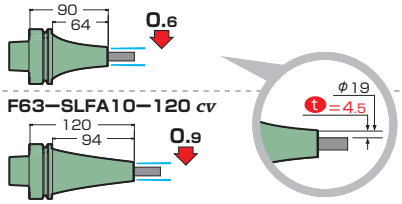
60 F63–SLRA10–180 cv



61 F63–SLRA10–210 cv

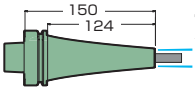


62 F63–SLFA10– 90 cv

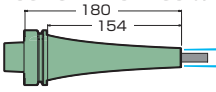


63 F63–SLFA10–120 cv

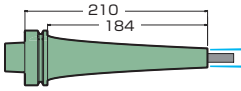
64 F63–SLFA10–150 cv



65 F63–SLFA10–180 cv

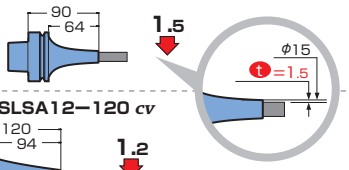


66 F63–SLFA10–210 cv

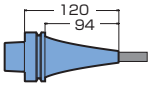


φ12

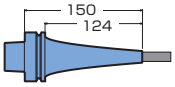
67 F63–SLSA12– 90 cv



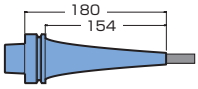
68 F63–SLSA12–120 cv



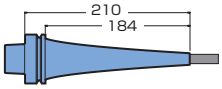
69 F63–SLSA12–150 cv



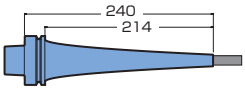
70 F63–SLSA12–180 cv



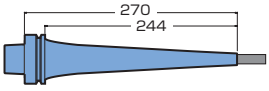
71 F63–SLSA12–210 cv



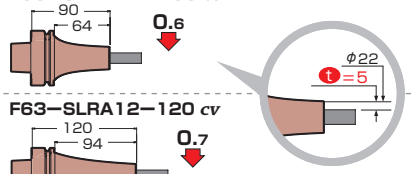
72 F63–SLSA12–240 cv



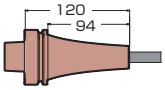
73 F63–SLSA12–270 cv



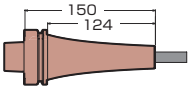
74 F63–SLRA12– 90 cv



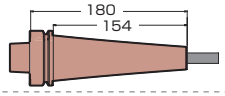
75 F63–SLRA12–120 cv



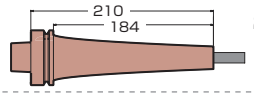
76 F63–SLRA12–150 cv



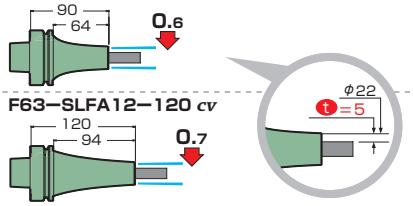
77 F63–SLRA12–180 cv



78 F63–SLRA12–210 cv

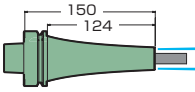


79 F63–SLFA12– 90 cv

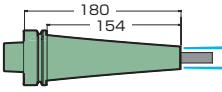


80 F63–SLFA12–120 cv

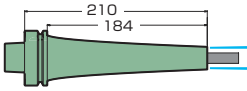
81 F63–SLFA12–150 cv



82 F63–SLFA12–180 cv

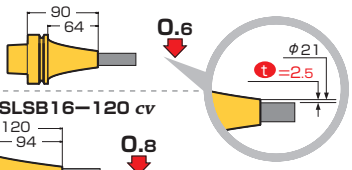


83 F63–SLFA12–210 cv

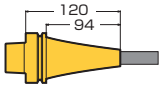


φ16

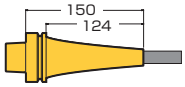
84 F63–SLSB16– 90 cv



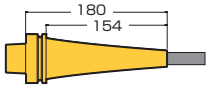
85 F63–SLSB16–120 cv



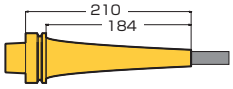
86 F63–SLSB16–150 cv



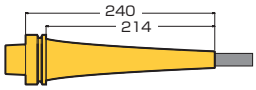
87 F63–SLSB16–180 cv



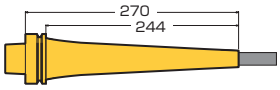
88 F63–SLSB16–210 cv



89 F63–SLSB16–240 cv

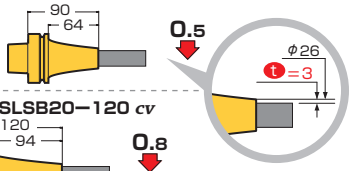


90 F63–SLSB16–270 cv

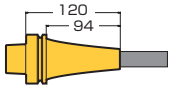


φ20

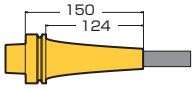
91 F63–SLSB20– 90 cv



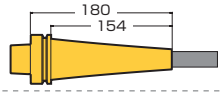
92 F63–SLSB20–120 cv



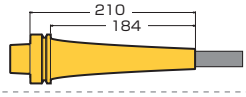
93 F63–SLSB20–150 cv



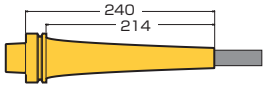
94 F63–SLSB20–180 cv



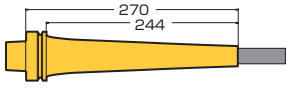
95 F63–SLSB20–210 cv



96 F63–SLSB20–240 cv

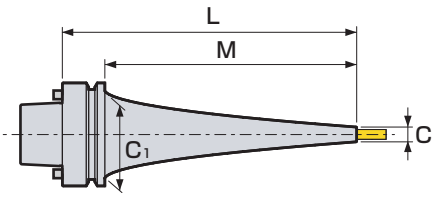


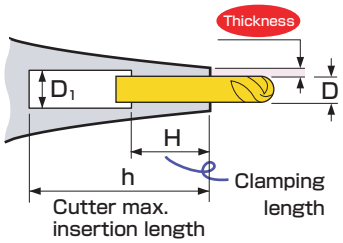
97 F63–SLSB20–270 cv



Dimensions F80PD For Makino

F80PD–SLRB16–75 cv

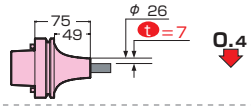




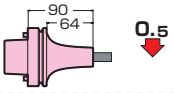
Scale model	CODE	φD	φC	Thick-ness	L	M	φC1	φD1	H	h	Kg	N	S
1	F80PD–SLRB12– 75 cv	12	26	7	75	49	67	13	30	48	1.4	4.8	0.4
2	– 90 cv				90	64				63		5.3	0.5
3	–120 cv				120	94				93	1.9	8.5	
4	–180 cv				180	154				153	2.5	12.8	0.9
5	–240 cv				240	214				213	2.9	15.7	1.8
6	F80PD–SLRB16– 75 cv	16	32	8	75	49	67	17	32	48	1.5	5.4	0.3
7	– 90 cv				90	64				63	1.6	6.7	
8	–120 cv				120	94				93	2.1	9.9	0.4
9	–180 cv				180	154				153	2.7	14.1	0.8
10	–240 cv				240	214				213	3.4	19.5	1.3
11	F80PD–SLRB20– 75 cv	20	38	9	75	49	67	21	40	48	1.5	5.8	0.3
12	– 90 cv				90	64				63	1.7	7.2	0.2
13	–120 cv				120	94				93	2.1	10.5	0.4
14	–180 cv				180	154				153	2.8	15.8	0.7
15	–240 cv				240	214				213	3.7	22.1	1.1
16	F80PD–SLRB25– 75 cv	25	45	10	75	49	67	26	42	48	1.6	6.6	0.2
17	– 90 cv				90	64			45	63	1.9	8.6	
18	–120 cv				120	94				93	2.3	11.9	0.3
19	–180 cv				180	154				153	3.1	18.6	0.6
20	–240 cv				240	214				213	4.1	25.2	1.0

φ12

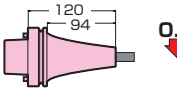
1 F80PD–SLRB12– 75 cv



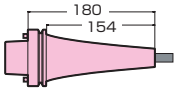
2 F80PD–SLRB12– 90 cv



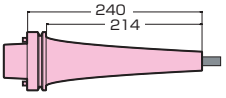
3 F80PD–SLRB12–120 cv



4 F80PD–SLRB12–180 cv

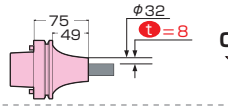


5 F80PD–SLRB12–240 cv

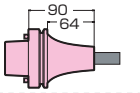


φ16

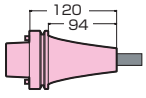
6 F80PD–SLRB16– 75 cv



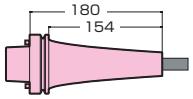
7 F80PD–SLRB16– 90 cv



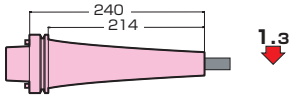
8 F80PD–SLRB16–120 cv



9 F80PD–SLRB16–180 cv

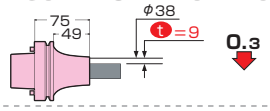


10 F80PD–SLRB16–240 cv

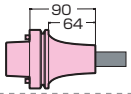


φ20

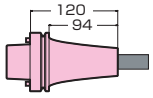
11 F80PD–SLRB20– 75 cv



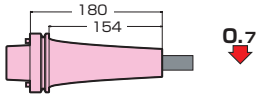
12 F80PD–SLRB20– 90 cv



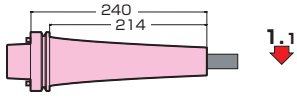
13 F80PD–SLRB20–120 cv



14 F80PD–SLRB20–180 cv

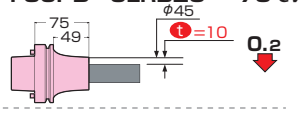


15 F80PD–SLRB20–240 cv

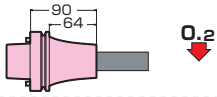


φ25

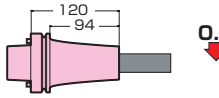
16 F80PD–SLRB25– 75 cv



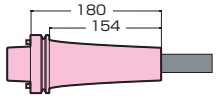
17 F80PD–SLRB25– 90 cv



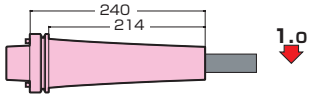
18 F80PD–SLRB25–120 cv



19 F80PD–SLRB25–180 cv



20 F80PD–SLRB25–240 cv



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