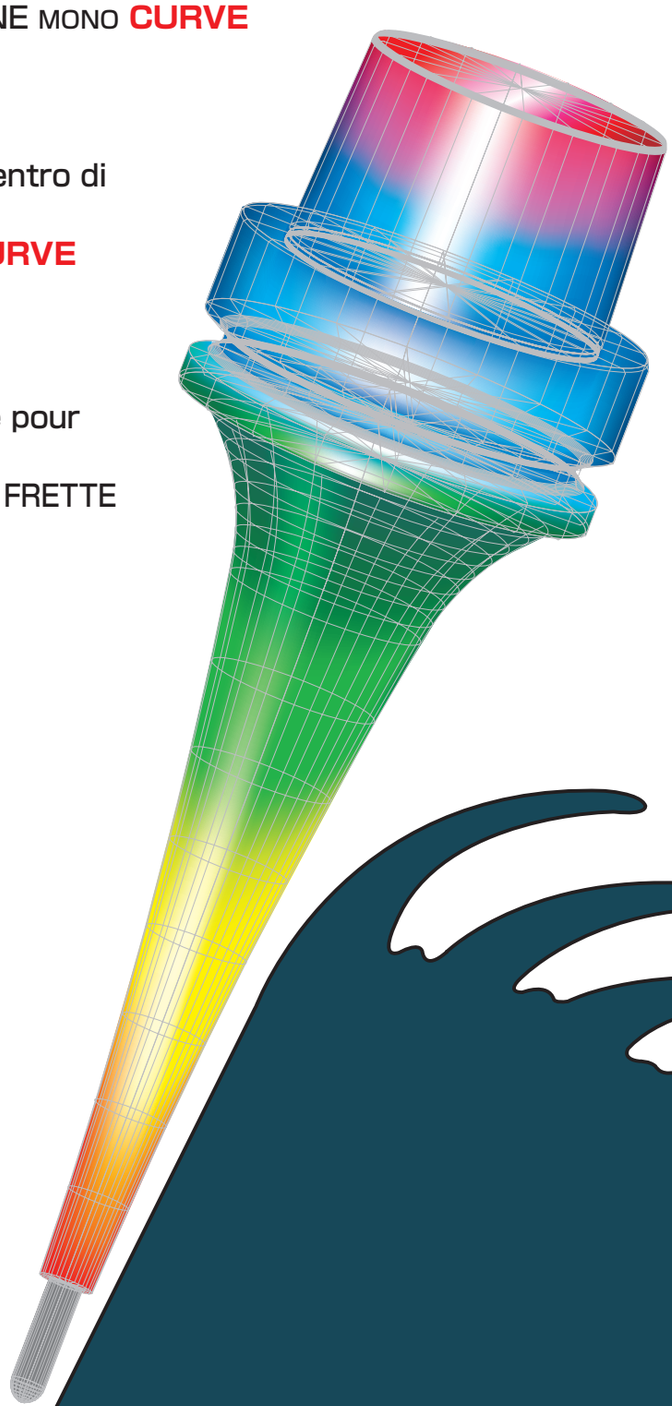
Optimum tool holder for 5 axis machining center
SHRINK-FIT HOLDER
SLIMLINE MONO CURVE

Der optimale Werkzeughalter für 5-Achsen-Bearbeitungszentren
SCHRUMPFHALTER SLIMLINE MONO **CURVE**

Portautensile ottimale per centro di lavoro a 5 assi supporto shrink-fit SLIMLINE MONO **CURVE**

Mandrin de frettage optimisé pour centre d' usinage 5 axes
PORTE-OUTIL A AJUSTEMENT FRETTE SLIMLINE MONO **CURVE**



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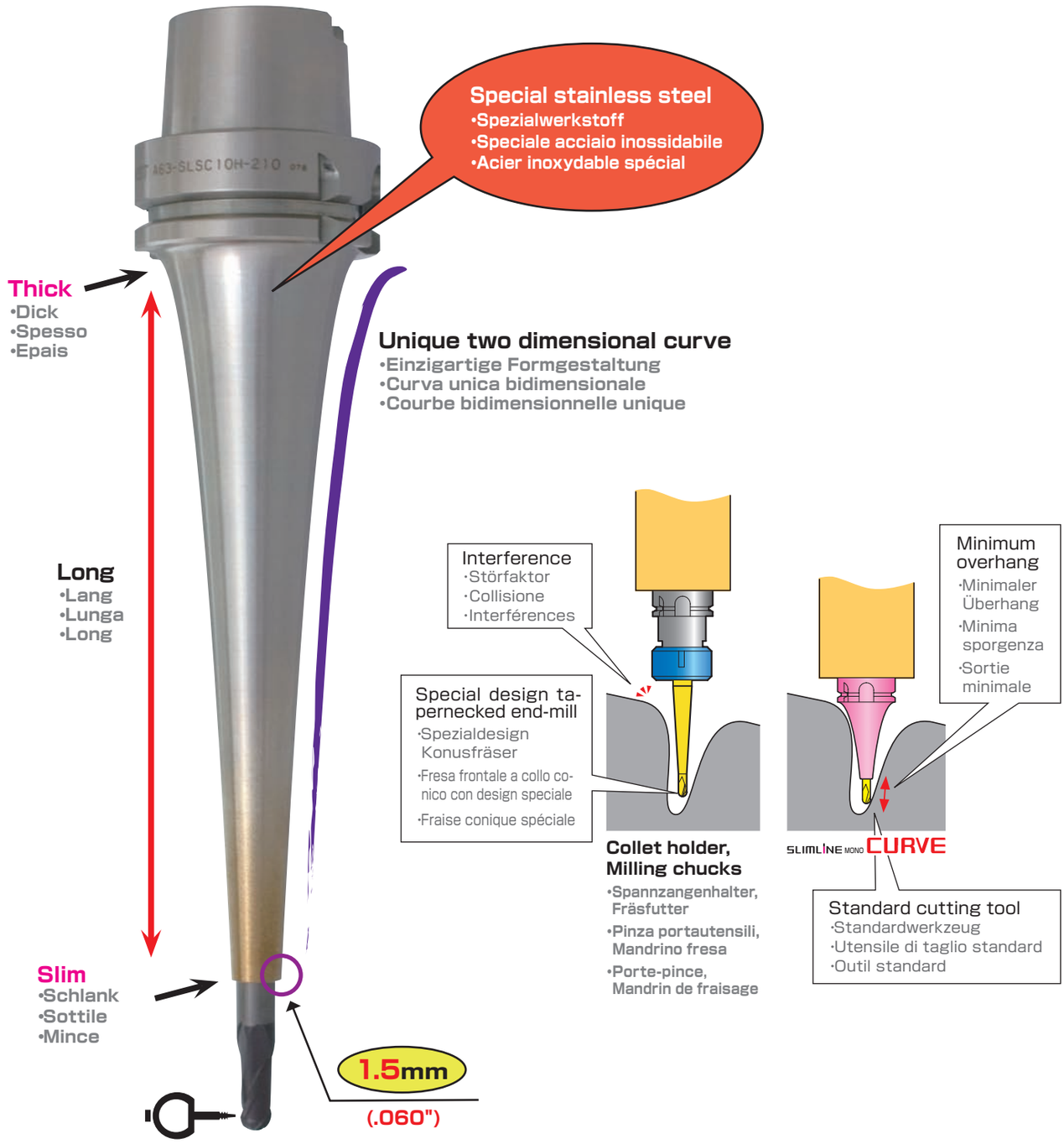
MST corporation
MADE IN JAPAN



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 long gauge length using this unique design.

Höchste Rundlaufgenauigkeit

3µm

Höchste Spannkraft

Verglichen mit Spannzangenhalter

3-fach

Hohe Steifigkeit

3-fach

Der nach dem neuesten Stand der Technik entwickelte Schrumpfhalter „Slimline Curve " besitzt einen aussergewöhnlich schlanken Ansatz und stabiles Basisdesign. Dank diesem speziellen Design wird höchste Steifigkeit selbst bei grossen Zuglängen erreicht.

Elevata precisione

3µm

Sicura forza di serraggio

In confronto al portapinza

3Volte

Elevata precisione

3Volte

Il portautensile "Slimline curve" MST shrink-fit, conforme allo stato attuale della tecnica, ha una punta notevolmente sottile e un design rigido di base. Esso raggiunge una rigidità eccezionale anche se la lunghezza di sezione è grande con l' utilizzo di questo design unico.

Très grande précision de faux-rond

3µm

Grande force de serrage

Comparé à un porte-pince

3fois

Haute rigidité

3fois

Le mandrin de frettage dernier cri de MST «Courbe Slimline» a un nez remarquablement mince et une base très large. Il conserve une très grande rigidité même avec une jauge de grande longueur grâce à sa conception unique.

5 axis machining center - Axis control type.

5-Achsen-Bearbeitungszentrum - Achsensteuerungtyp.

Centri di lavoro a 5 assi - Tipo di controllo assi.

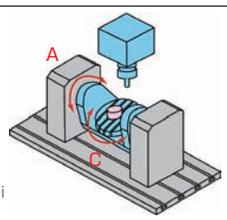
Centres d'usinage 5 axes - Type de commande d'axe.

5 axis control
- 5-Achsen-Steuerung
- Controllo a 5 assi
- Commande 5 axes

3 axis straight movement (X、Y、Z)
- 3-Achsen-Linearbewegung
- Movimento diritto a 3 assi
- Déplacement droit 3 axes

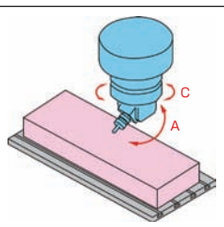
2 axis Table positioning (A、C)
- 2-Achsen-Tischpositionierung
- Posizionamento tavola a 2 assi
- Positionnement de la table 2 axes

Table Tilt type
- Dreh-/Kipptisch-Ausführung
- Tipo con ribaltamento tavola
- Modèle avec diviseur inclinable



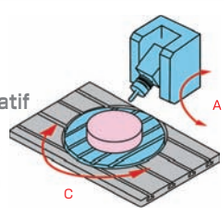
Small size work-piece
- Kleines Werkstück
- Pezzo di piccole dimensioni
- Pièce de petite taille

Head Tilt type
- Gabelkopf -Ausführung
- Tipo con ribaltamento testa
- Modèle avec tête inclinable



Large size work-piece
- Grosses Werkstück
- Pezzo di grandi dimensioni
- Pièce de grande taille

Table • Head Tilt type
- Drehtisch/Schwenkkopf Ausführung
- Tipo con ribaltamento tavola-testa
- Modèle avec tête orientable et plateau rotatif



Medium size work-piece
- Mittelgrosses Werkstück
- Pezzo di medie dimensioni
- Pièce de taille moyenne

Case study　Fallstudie　Studio analitico　Cas pratique

Simultaneous 5 axis machining
- Simultane 5-Achsen-Bearbeitung
- 5 assi simultanei
- Usinage simultané 5 axes

Simultaneous 5 axis machining is suitable for complicated 3D geometry work-pieces.
- Simultane 5-Achsen-Bearbeitung ist geeignet für Werkstücke mit komplizierten geometrischen 3D-Formen.
- La lavorazione a 5 assi simultanei è adatta per pezzi tridimensionali dalla geometria complessa.
- L'usinage simultané 5 axes est adapté aux pièces géométriques 3D compliquées.

Blisk
- Propeller / Turbine
- Blisk
- Turbine

Aviation components
- Luftfahrtkoponenten
- Componenti dell' aviazione
- Composants pour l' aviation

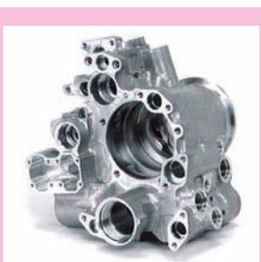
Medical components
- Medizinaurüstung
- Componenti medici
- Composants médicaux

Artifical bone
- künstliche Hüftgelenke
- Osso artificiale
- Os artificiel

Artifical joint
- Hüftprothesen
- Giunto artificiale
- Prothèse orthopédique

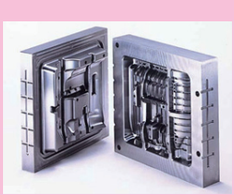
2 + 3 axis machining
- 2 + 3-Achsen-Bearbeitung
- Lavorazione a 2+3 assi
- Usinage 2+3 axes

Indexing a work piece by rotating and tilting 2 axis table, a spindle works with using 3 axis straight movememt.
- Bei Anwendungen mit einem Dreh-Kipptisch arbeitet die Frässpindel in linearen 3-Achs-Bewegungen.
- Indessaggio di un pezzo mediante rotazione e ribaltamento della tavola a 2 assi, un mandrino lavora con la movimentazione diritta di 3 assi.
- Indexage d'une pièce en tournant et en inclinant la table 2 axes, la broche fonctionne lors du déplacement droit 3 axes.



Complicated geometry components
- komplizierte geometrische Formen
- Componenti dalla geometria complessa
- Pièces avec géométries compliquées

DIE MOLD



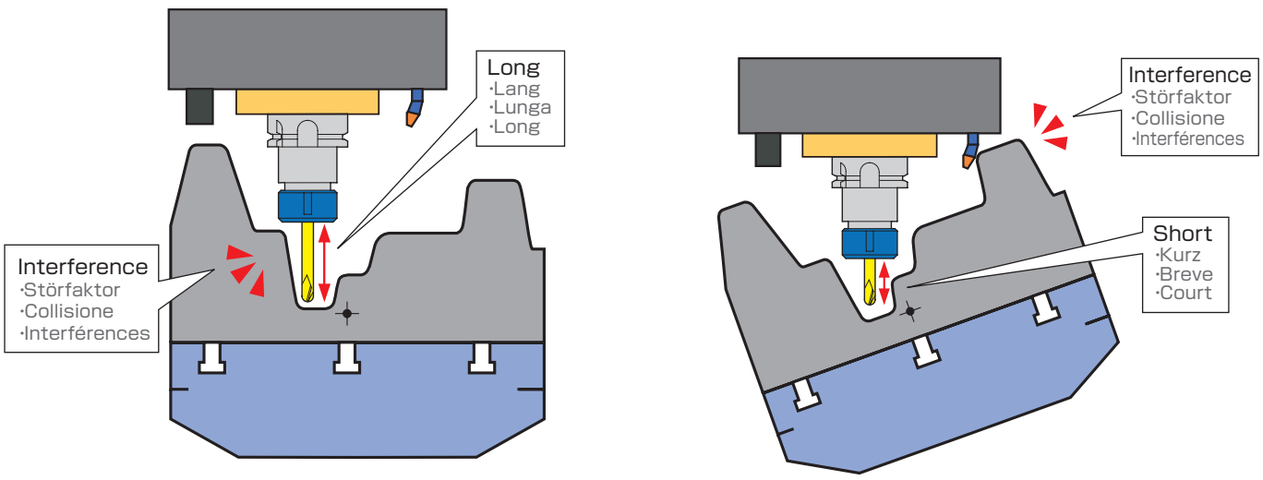
Injection mold
- Spritzgiessform
- Filiera ad iniezione
- Moule d' injection

The optimum tool holder design for 5 axis machining.

Der perfekte Halter für 5-Achsen-Anwendungen.

Design ottimale del portautensile per la lavorazione a 5 assi.

Conception de porte-outil optimale pour l'usinage 5 axes.



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.

Tiefenbearbeitung ohne Ausformschräge

3-Achsen-Bearbeitung

- Bei Tiefenbearbeitungen ohne grössere Ausformschräge sind lange Werkzeugauskragungen nötig, um Kollisionen während der 3-Achsen-Bearbeitung zu vermeiden.

5-Achsen-Bearbeitung

- Bei 5-Achsen-Bearbeitungen wird eine kürzere Werkzeugauskragung ermöglicht, da die Werkstücke frei bewegbar sind.....
- Jedoch entsteht ein Störfaktor zwischen Spindelnase und Werkstück.

Parete ripida a cavità profonda

Lavorazione a 3 assi

- Nella lavorazione di pareti ripide o a cavità profonda è richiesta una sporgenza di taglio più lunga onde evitare interferenze nella lavorazione a 3 assi.

Lavorazione a 5 assi

- Il rischio di collisione del portautensile diventa minore e la sporgenza dell' utensile più corta nella lavorazione a 5 assi a causa del ribaltamento libero di un pezzo mediante rotazione e ribaltamento del tavolo a 2 assi.
- Invece di questo vantaggio, si crea una collisione tra la punta del mandrino e il pezzo.

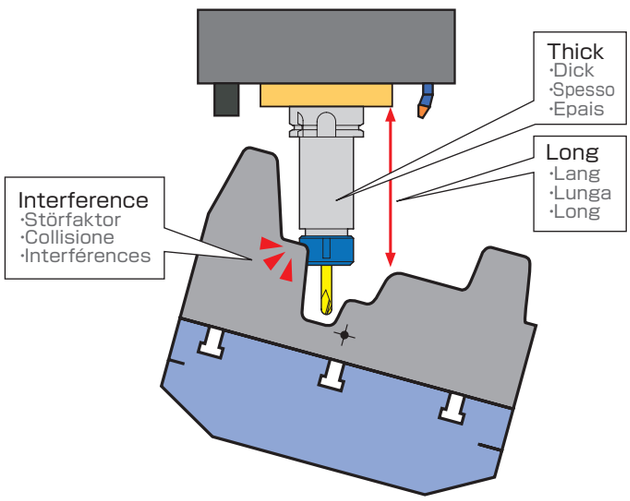
Cavité profonde Paroie raide

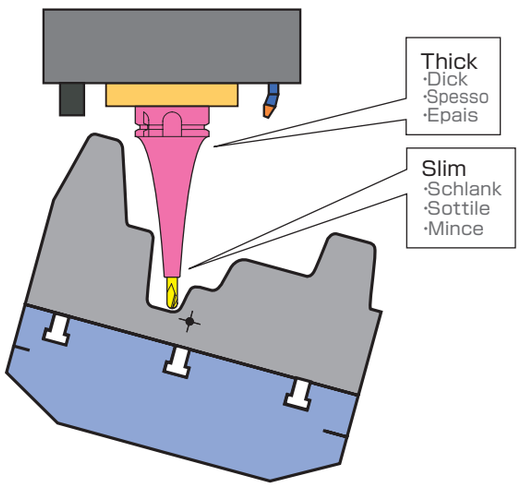
Usinage 3 axes

- Une sortie d' outil de coupe plus longue est nécessaire lors de l' usinage de cavité profonde ou de paroie raide pour éviter une interférence lors de l' usinage 3 axes

Usinage 5 axes

- L' interférence du porte-outil diminue et la sortie de l' outil est plus courte lors de l' usinage 5 axes du fait de l' inclinaison libre d' une pièce en tournant et en inclinant la table 2 axes.
- Au lieu de cet avantage, une interférence est générée entre le nez de broche et la pièce.





- To avoid this interference, 5 axis machining inevitably requires 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.

Optimum tool holder design

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

- Zur Kollisionsvermeidung benötigen 5-Achsenbearbeitungen zwangsläufig längere Einrichtungen (Halter + Schneidwerkzeug).
- Bei normalen Spannzangenhaltern und Fräserfuttern ist die Spannmutter grösser und daher ein wahrscheinlicher Störfaktor.

Optimales Halterdesign

- Der ideale Halter mit bemerkswert schlankem Ansatz und stabilem Basisdesign erreicht höchste Steifigkeit trotz grosser Zuglänge.

- Per evitare questa collisione, la lavorazione a 5 assi richiede inevitabilmente una regolazione più lunga dell' utensile (portautensile+utensile di taglio).
- Con i comuni portapinza e gli autocentranti di fresatura, la punta del supporto è più grande e più facile che vada in collisione.

Design ottimale del portautensile

- Il portautensile, dotato di una punta e un design notevolmente piccoli, raggiunge una rigidità eccezionale anche se la lunghezza di sezione è grande.

- Pour éviter cette interférence, l' usinage 5 axes requiert inévitablement un réglage d' outil plus long (porte-outil + outil d' usinage).
- Le diamètre en bout des porte-pince ou des mandrins de fraisage utilisés est plus grand et a plus de chances d'interférer.

Conception de porte-outil optimale

- Le mandrin de frettage à bout mince de conception unique conserve une très grande rigidité même avec une jauge de grande longueur.

Rigidity(Deflection)

Steifigkeit (Durchbiegung)
Elevata rigidità (Flessione)
Rigidité (déflexion)

Calculating formula of deflection amount

Durchbiegungsgrad-Kalkulationsschema

Formula di calcolo della quantità di flessioni

Formule pour le calcul de la valeur de déflexion

Deflection amount is proportional to the cube of length.

Durchbiegunggrad steigt proportional zum Längenkubus.

La quantità di flessioni è proporzionale al cubo della lunghezza.

La valeur de déflexion est proportionnelle au cube de longueur.

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

Deflection amount is inversely proportional to the fourth power of diameter.

Durchbiegunggrad ist umgekehrt proportional zum biquadratischen Durchmesser.

La quantità di flessioni è inversamente proporzionale alla quarta potenza del diametro.

La valeur de déflexion est inversement proportionnelle à la quatrième puissance du diamètre.

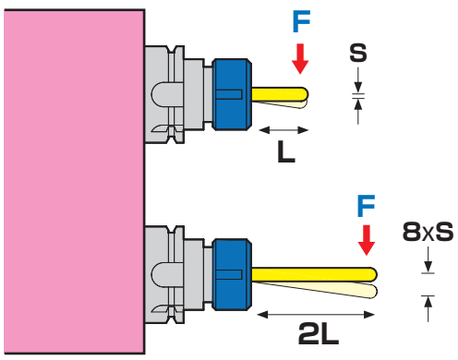
S : Deflection amount
D : Shank diameter
L : Projection
F : Load
E : Young' s module

S : Durchbiegungsgrad
D : Schaftdurchmesser
L : Überhang
F : Lastdruck
E : Modul Young

S : Quantità di deflessione
D : Diametro albero
L : Lunghezza della sporgenza
F : Carico
E : Modulo di Young

S : valeur de déflexion
D : diamètre de queue
L : Sortie
F : Force
E : module de Young

1 Deflection 8 times
- 8-fache Durchbiegung
- Flessioni moltiplicate per 8
- Déflexion 8 fois



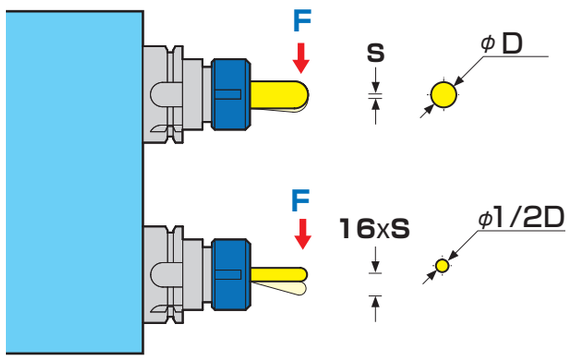
Diameter is same, cutter projection is twice.

Gleicher Durchmesser, 2-facher Überhang.

Il diametro è uguale, la sporgenza dell' utensile è doppia.

Le diamètre est identique, la sortie de l' outil est multipliée par 2

2 Deflection 16 times
- 16-fache Durchbiegung
- Flessioni moltiplicate per 16
- Déflexion 16 fois



Cutter projection is same, diameter is half.

Gleicher Überhang, halber Durchmesser.

La sporgenza dell' utensile è uguale, il diametro è la metà.

La sortie de l' outil est identique , le diamètre est deux fois plus petit.

Software of selecting optimum tool holder.

Software zur Ermittlung des optimalen Halters.
Software di selezione portautensile ottimale.
Logiciel de sélection du porte-outil optimal.

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.

Automatische Selektion eines Halters mit hoher Steifigkeit

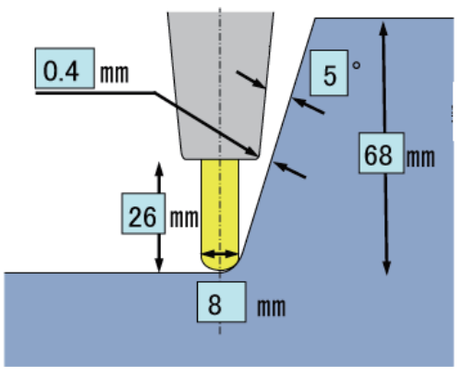
Nach Detaileingabe des Werkstückes und Schneidwerkzeuges wird automatisch der Slimline-Halter mit der grössten Steifigkeit ausgewählt.

Selezione automatica del portautensile ad alta rigidità

Quando si inseriscono le informazioni su pezzo e utensile di taglio, viene selezionato automaticamente il supporto sottile con la massima rigidità.

Sélection automatique du porte-outil ultra rigide

Une fois entrée l'information de la pièce et de l'outil d'usinage, le logiciel sélectionne automatiquement le porte-outil Slimline le plus rigide.



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

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

Simulation eines Werkzeugarbeitsgang mit Halter und Fräswerkzeug.
Simulazione di passata con portautensile e utensile di taglio.
Simulation pour un passage d'outil avec un porte-outil et un outil d'usinage.

Below CAM simulators have all of slimline geometry datas.

Alle unten angegebenen CAM-Simulatoren sind mit sämtlichen geometrischen Slimline-Daten ausgestattet.

I simulatori sotto CAM presentano tutti i dati geometrici di Slimline.

Les simulateurs FAO ci-dessous ont toutes les données géométriques Slimline.

VERICUT6.2

HYPER MILL

EDGECAM

TEBIS

JBM

WORK NC

G-NAVI

TOOLS V3

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

Fräser mit kurzer Gesamtlänge für Schrumpfhalter.

Fresa frontale a lunghezza breve integrale per supporto shrink-fit.

Fraise à queue courte pour le porte-outil àfretter.

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

Short shank → **Minimizing cutter projection**

Short cutting flute → **Increasing rigidity**

Fresa frontale a lunghezza breve integrale per supporto shrink-fit con codolo di taglio breve, la scanalatura di taglio breve è offerta dai produttori in basso.

Codolo breve → **Sporgenza utensile minima**

Scanalatura di taglio breve → **Aumento di rigidità**

Fräser mit kurzer Gesamtlänge für Schrumpfhalter und kurzer Schneidnut sind von den untenangegebenen Herstellern lieferbar.

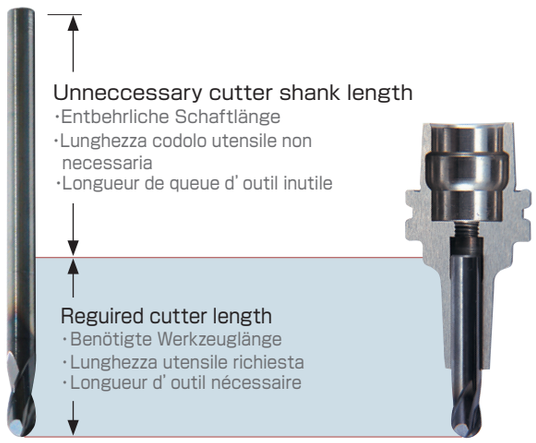
Kurzer Schaft → **Minimaler Werkzeugüberhang**

Kurze Schneidnut → **Minimaler Werkzeugüberhang**

Les fabricants ci-dessous proposent des fraise à queue courte pour les porte-outil à fretter.

Queue courte → **Sortie d'outil minimale**

Longueur de coupe courte → **Augmentation de la rigidité**



Standard end-mill
- Standardfräser
- Fresa frontale standard
- Fraise à queue standard

Short allover length end-mill for shrink-fit tool holder
- Fräser mit kurzer Gesamtlänge für Schrumpfaufnahme
- Fresa frontale a lunghezza breve integrale per portautensile shrink-fit
- Fraise à queue de longueur totale courte pour le porte-outil à ajustement fretté

MITSUBISHI MATERIALS

UNION TOOL

DIJET INDUSTORY

HITACHI TOOL

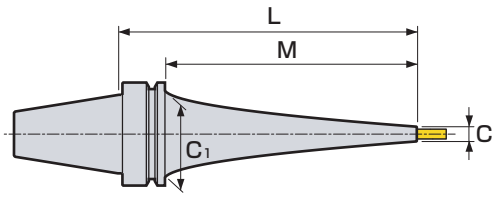
NS TOOL

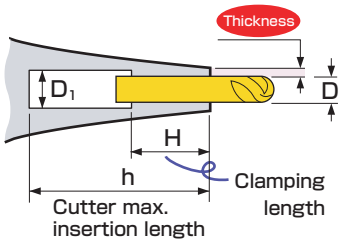
OSG CORPORATION

SUMITOMO HARD METAL

Dimensions BT30

BT30 — SLSA10-90 cv

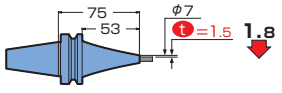




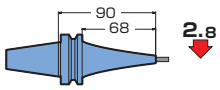
Scale model	CODE	φD	φC	Thick-ness	L	M	φC1	φD1	H	h	Kg	N	S
1	BT30—SLSA 4— 75 cv	4	7	1.5	75	53	34	5	12	99	0.5	1.0	1.8
2	— 90 cv				90	68				114		1.1	2.8
3	—120 cv				120	98				144		1.2	6.6
4	—SLRA 4— 90 cv	4	10	3	90	68	34	5	12	114	0.5	1.0	2.0
5	—120 cv				120	98				144		1.1	2.9
6	—SLSA 6— 75 cv	6	9	1.5	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

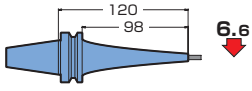
1 BT30—SLSA 4— 75 cv



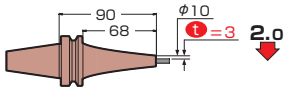
2 BT30—SLSA 4— 90 cv



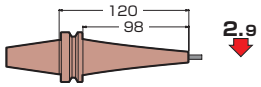
3 BT30—SLSA 4—120 cv



4 BT30—SLRA 4— 90 cv

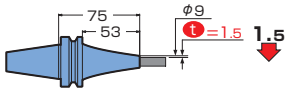


5 BT30—SLRA 4—120 cv

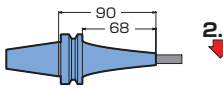


φ6

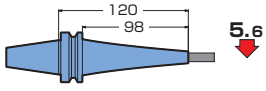
6 BT30—SLSA 6— 75 cv



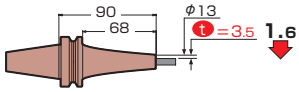
7 BT30—SLSA 6— 90 cv



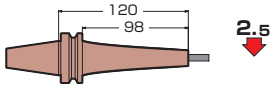
8 BT30—SLSA 6—120 cv



9 BT30—SLRA 6— 90 cv

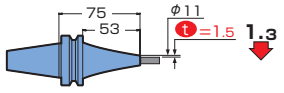


10 BT30—SLRA 6—120 cv

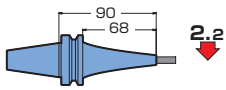


φ8

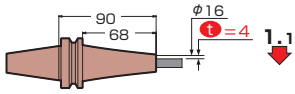
11 BT30—SLSA 8— 75 cv



12 BT30—SLSA 8— 90 cv

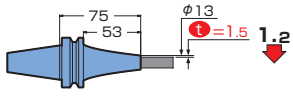


13 BT30—SLSA 8— 90 cv

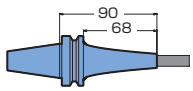


φ10

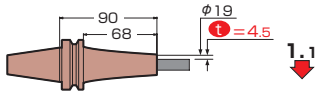
14 BT30—SLSA10— 75 cv



15 BT30—SLSA10— 90 cv

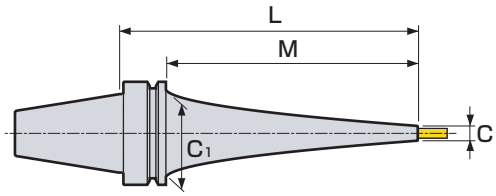


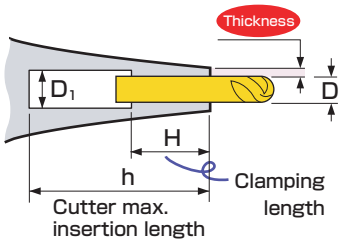
16 BT30—SLSA10— 90 cv



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.

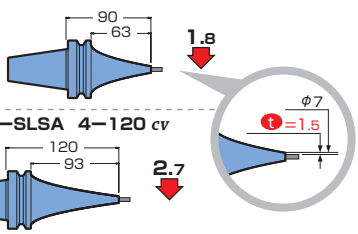
Please note that we changed model number for Slimline MONO CURVE due to additional model lineup.

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

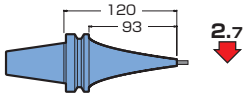
New model no. : A63-SLSA6-120 CV

φ4

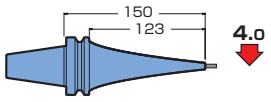
1 BT40—SLSA 4— 90 cv



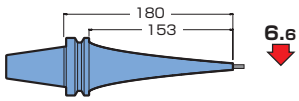
2 BT40—SLSA 4—120 cv



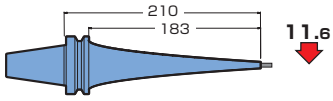
3 BT40—SLSA 4—150 cv



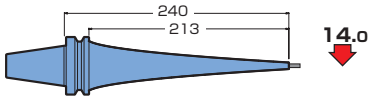
4 BT40—SLSA 4—180 cv



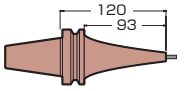
5 BT40—SLSA 4—210 cv



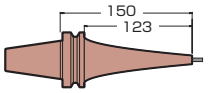
6 BT40—SLSA 4—240 cv

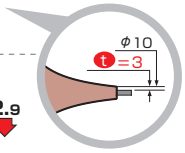


7 BT40—SLRA 4—120 cv

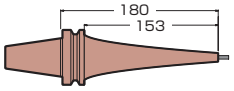


8 BT40—SLRA 4—150 cv

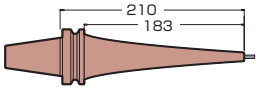




9 BT40—SLRA 4—180 cv

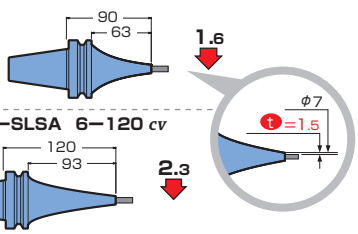


10 BT40—SLRA 4—210 cv

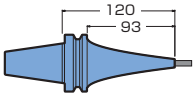


φ6

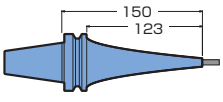
11 BT40—SLSA 6— 90 cv



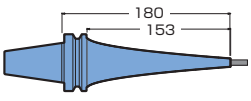
12 BT40—SLSA 6—120 cv



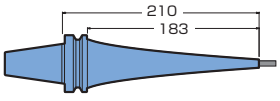
13 BT40—SLSA 6—150 cv



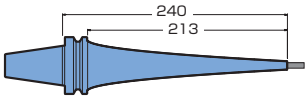
14 BT40—SLSA 6—180 cv



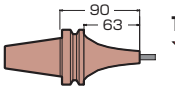
15 BT40—SLSA 6—210 cv



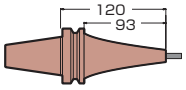
16 BT40—SLSA 6—240 cv



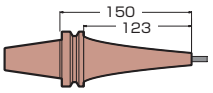
17 BT40—SLRA 6— 90 cv

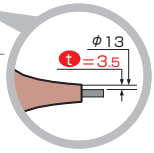


18 BT40—SLRA 6—120 cv

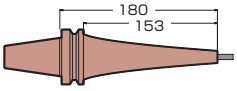


19 BT40—SLRA 6—150 cv

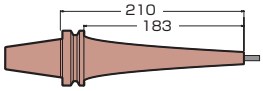




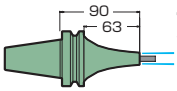
20 BT40—SLRA 6—180 cv



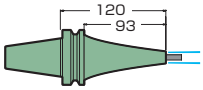
21 BT40—SLRA 6—210 cv

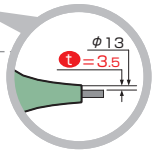


22 BT40—SLFA 6— 90 cv

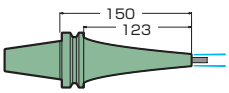


23 BT40—SLFA 6—120 cv

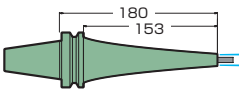




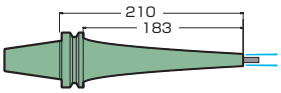
24 BT40—SLFA 6—150 cv



25 BT40—SLFA 6—180 cv

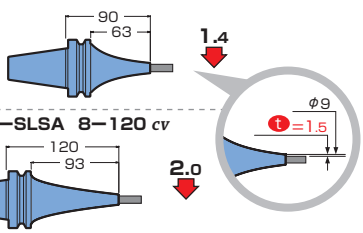


26 BT40—SLFA 6—210 cv

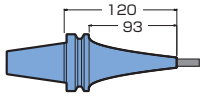


φ8

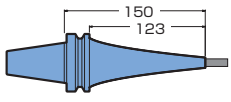
27 BT40—SLSA 8— 90 cv



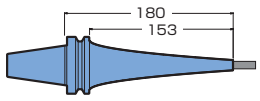
28 BT40—SLSA 8—120 cv



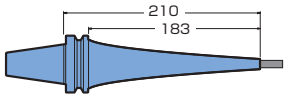
29 BT40—SLSA 8—150 cv



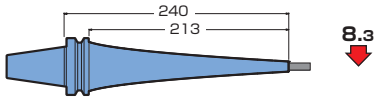
30 BT40—SLSA 8—180 cv



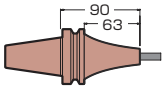
31 BT40—SLSA 8—210 cv



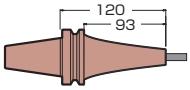
32 BT40—SLSA 8—240 cv



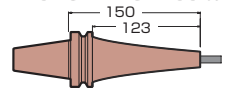
33 BT40—SLRA 8— 90 cv

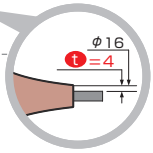


34 BT40—SLRA 8—120 cv

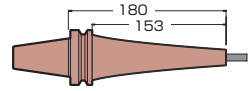


35 BT40—SLRA 8—150 cv

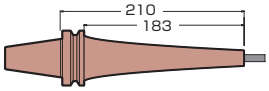




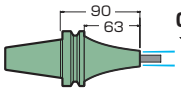
36 BT40—SLRA 8—180 cv



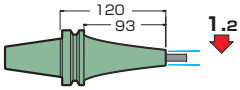
37 BT40—SLRA 8—210 cv

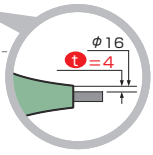


38 BT40—SLFA 8— 90 cv

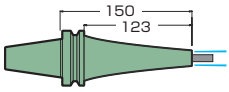


39 BT40—SLFA 8—120 cv

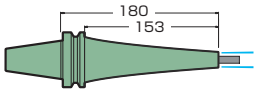




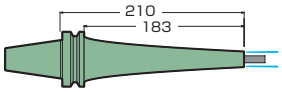
40 BT40—SLFA 8—150 cv



41 BT40—SLFA 8—180 cv

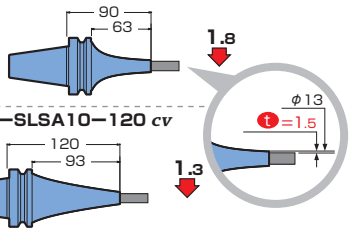


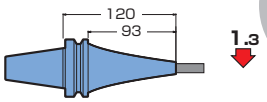
42 BT40—SLFA 8—210 cv

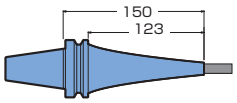


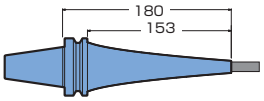
Scale model BT40

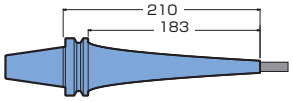
φ10

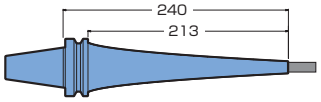
43 BT40−SLSA10− 90 cv


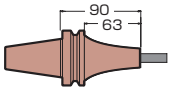
44 BT40−SLSA10−120 cv


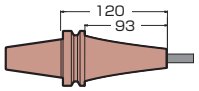
45 BT40−SLSA10−150 cv


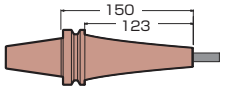
46 BT40−SLSA10−180 cv


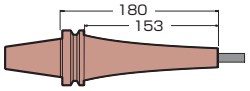
47 BT40−SLSA10−210 cv


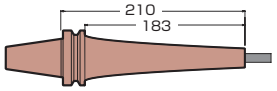
48 BT40−SLSA10−240 cv


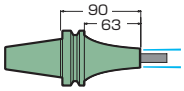
49 BT40−SLRA10− 90 cv


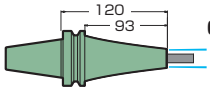
50 BT40−SLRA10−120 cv


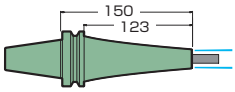
51 BT40−SLRA10−150 cv


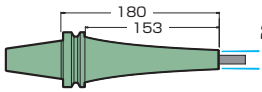
52 BT40−SLRA10−180 cv


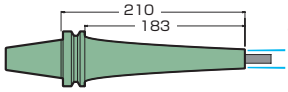
53 BT40−SLRA10−210 cv


54 BT40−SLFA10− 90 cv


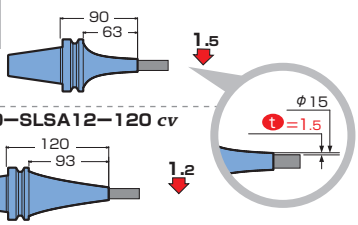
55 BT40−SLFA10−120 cv


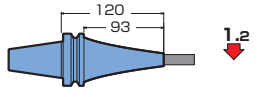
56 BT40−SLFA10−150 cv


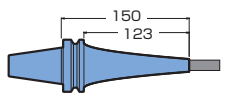
57 BT40−SLFA10−180 cv


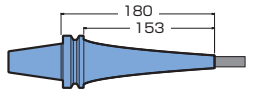
58 BT40−SLFA10−210 cv


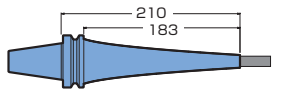
φ12

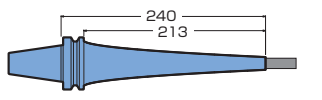
59 BT40−SLSA12− 90 cv


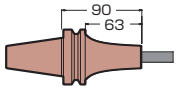
60 BT40−SLSA12−120 cv


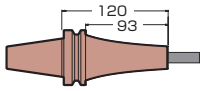
61 BT40−SLSA12−150 cv


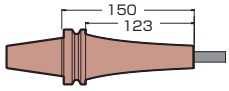
62 BT40−SLSA12−180 cv


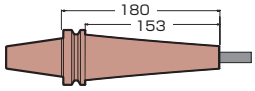
63 BT40−SLSA12−210 cv


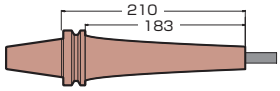
64 BT40−SLSA12−240 cv


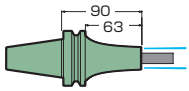
65 BT40−SLRA12− 90 cv


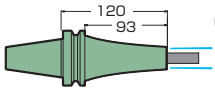
66 BT40−SLRA12−120 cv


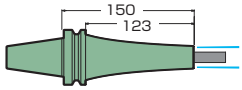
67 BT40−SLRA12−150 cv


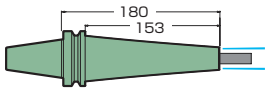
68 BT40−SLRA12−180 cv


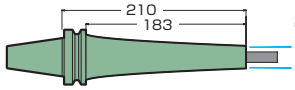
69 BT40−SLRA12−210 cv


70 BT40−SLFA12− 90 cv


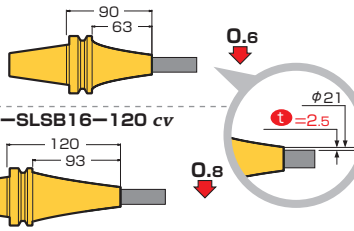
71 BT40−SLFA12−120 cv


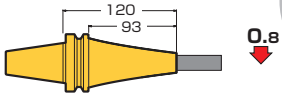
72 BT40−SLFA12−150 cv


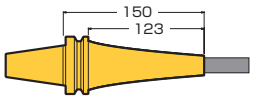
73 BT40−SLFA12−180 cv


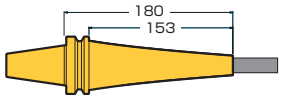
74 BT40−SLFA12−210 cv


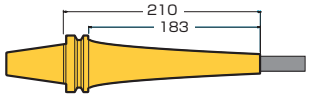
φ16

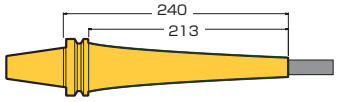
75 BT40−SLSB16− 90 cv


76 BT40−SLSB16−120 cv


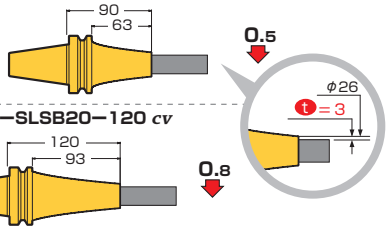
77 BT40−SLSA16−150 cv


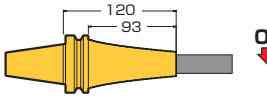
78 BT40−SLSB16−180 cv


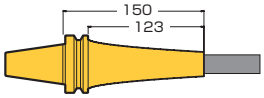
79 BT40−SLSB16−210 cv


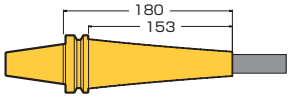
80 BT40−SLSB16−240 cv


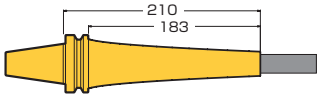
φ20

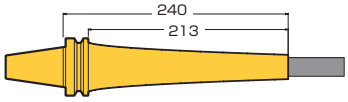
81 BT40−SLSB20− 90 cv


82 BT40−SLSB20−120 cv


83 BT40−SLSB20−150 cv


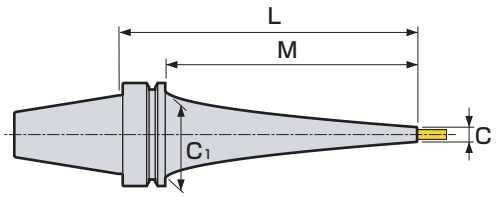
84 BT40−SLSB20−180 cv


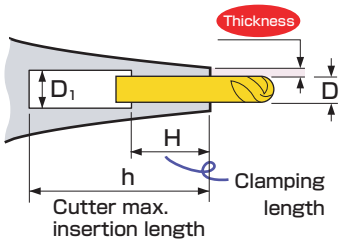
85 BT40−SLSB20−210 cv


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.

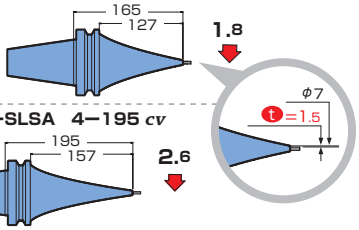
Please note that we changed model number for Slimline MONO CURVE due to additional model lineup.

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

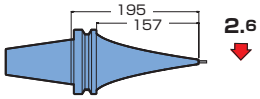
New model no. : A63-SLSA6-120 *CV*

φ4

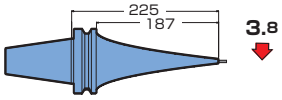
1 **BT50–SLSA 4–165 *cv***



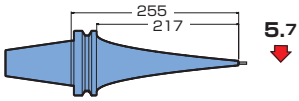
2 **BT50–SLSA 4–195 *cv***



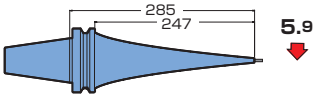
3 **BT50–SLSA 4–225 *cv***



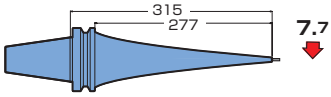
4 **BT50–SLSA 4–255 *cv***



5 **BT50–SLSA 4–285 *cv***

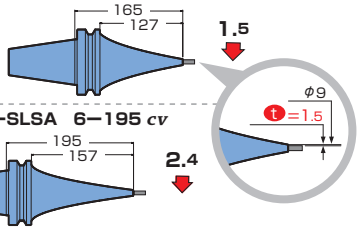


6 **BT50–SLSA 4–315 *cv***

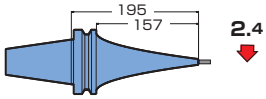


φ6

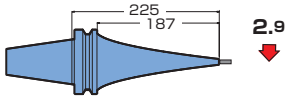
7 **BT50–SLSA 6–165 *cv***



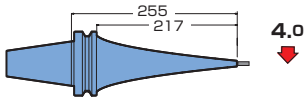
8 **BT50–SLSA 6–195 *cv***



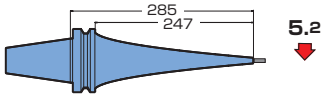
9 **BT50–SLSA 6–225 *cv***



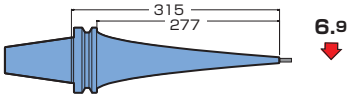
10 **BT50–SLSA 6–255 *cv***



11 **BT50–SLSA 6–285 *cv***

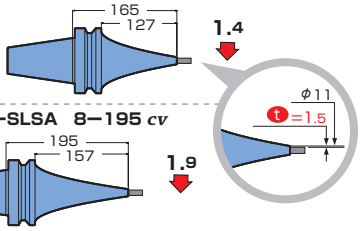


12 **BT50–SLSA 6–315 *cv***

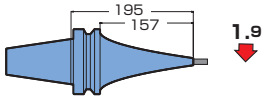


φ8

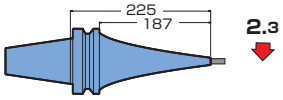
13 **BT50–SLSA 8–165 *cv***



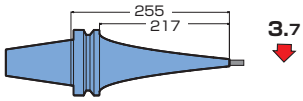
14 **BT50–SLSA 8–195 *cv***



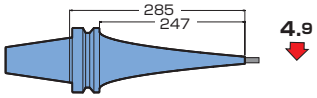
15 **BT50–SLSA 8–225 *cv***



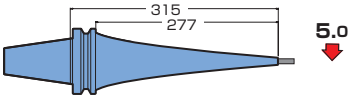
16 **BT50–SLSA 8–255 *cv***



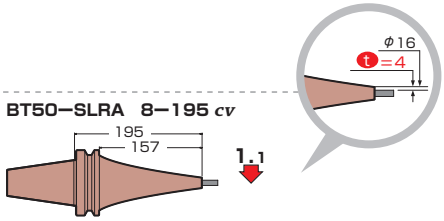
17 **BT50–SLSA 8–285 *cv***



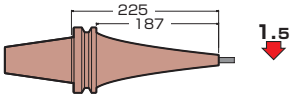
18 **BT50–SLSA 8–315 *cv***



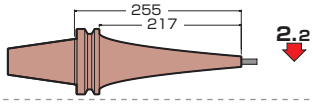
19 **BT50–SLRA 8–195 *cv***



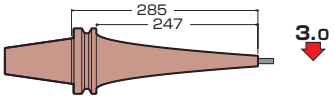
20 **BT50–SLRA 8–225 *cv***



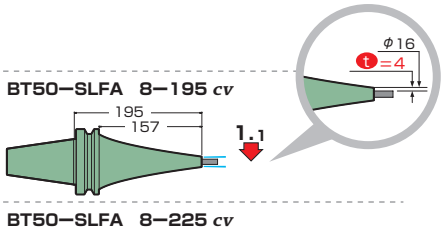
21 **BT50–SLRA 8–255 *cv***



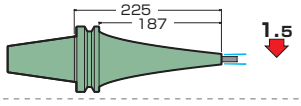
22 **BT50–SLRA 8–285 *cv***



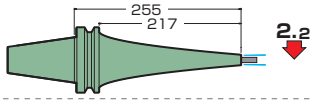
23 **BT50–SLFA 8–195 *cv***



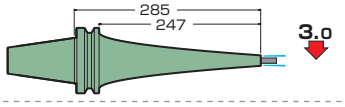
24 **BT50–SLFA 8–225 *cv***



25 **BT50–SLFA 8–255 *cv***

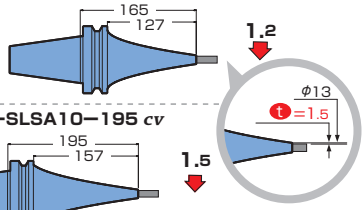


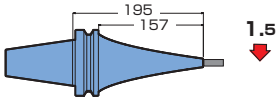
26 **BT50–SLFA 8–285 *cv***

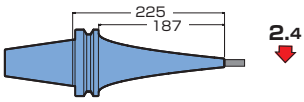


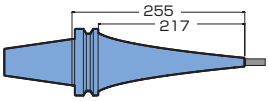
Scale model BT50

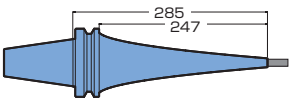
φ10

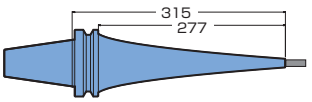
27 BT50-SLSA10-165 cv


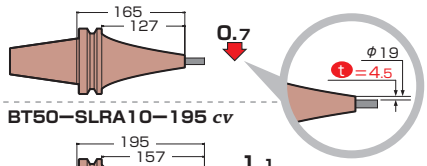
28 BT50-SLSA10-195 cv


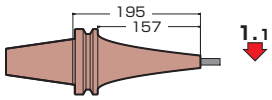
29 BT50-SLSA10-225 cv


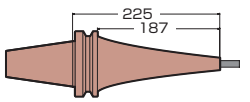
30 BT50-SLSA10-255 cv


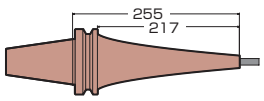
31 BT50-SLSA10-285 cv


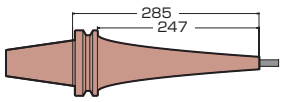
32 BT50-SLSA10-315 cv


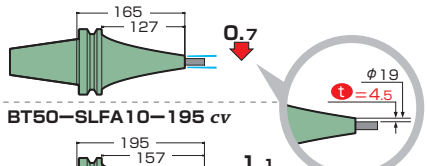
33 BT50-SLRA10-165 cv


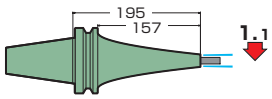
34 BT50-SLRA10-195 cv


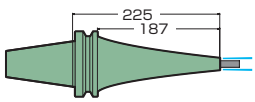
35 BT50-SLRA10-225 cv


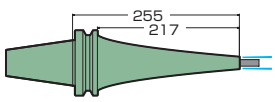
36 BT50-SLRA10-255 cv


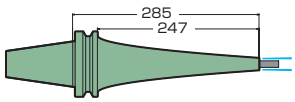
37 BT50-SLRA10-285 cv


38 BT50-SLFA10-165 cv


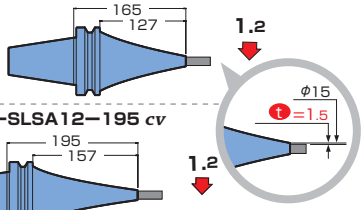
39 BT50-SLFA10-195 cv


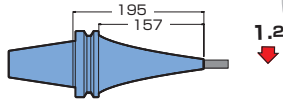
40 BT50-SLFA10-225 cv


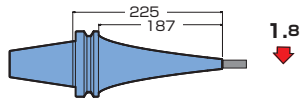
41 BT50-SLFA10-255 cv


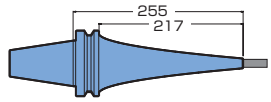
42 BT50-SLFA10-285 cv


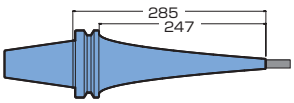
φ12

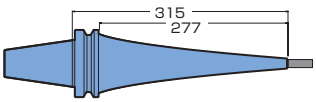
43 BT50-SLSA12-165 cv


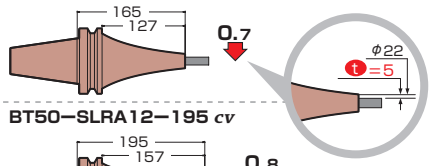
44 BT50-SLSA12-195 cv


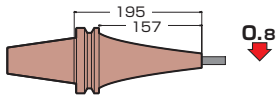
45 BT50-SLSA12-225 cv


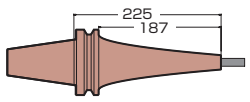
46 BT50-SLSA12-255 cv


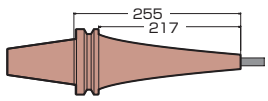
47 BT50-SLSA12-285 cv


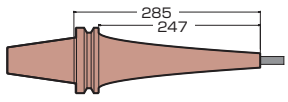
48 BT50-SLSA12-315 cv


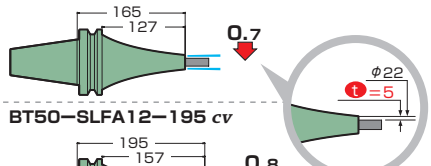
49 BT50-SLRA12-165 cv


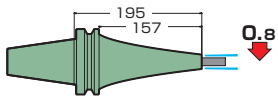
50 BT50-SLRA12-195 cv


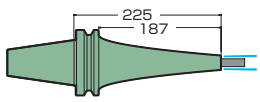
51 BT50-SLRA12-225 cv


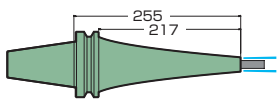
52 BT50-SLRA12-255 cv


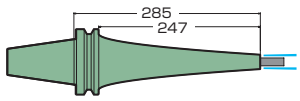
53 BT50-SLRA12-285 cv


54 BT50-SLFA12-165 cv


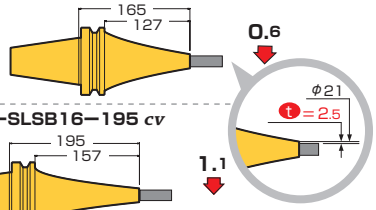
55 BT50-SLFA12-195 cv


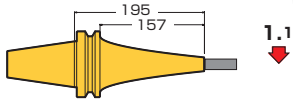
56 BT50-SLFA12-225 cv


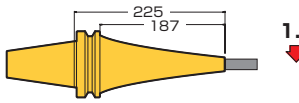
57 BT50-SLFA12-255 cv


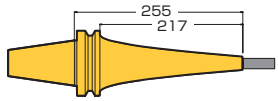
58 BT50-SLFA12-285 cv


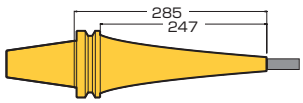
φ16

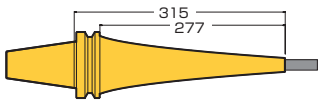
59 BT50-SLSB16-165 cv


60 BT50-SLSB16-195 cv


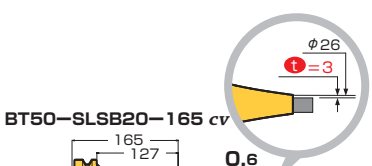
61 BT50-SLSB16-225 cv


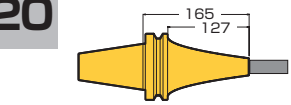
62 BT50-SLSB16-255 cv


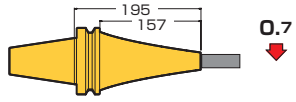
63 BT50-SLSB16-285 cv


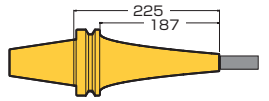
64 BT50-SLSB16-315 cv


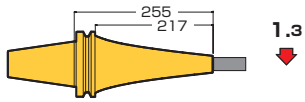
φ20

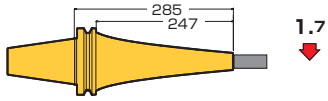
65 BT50-SLSB20-165 cv


66 BT50-SLSB20-195 cv


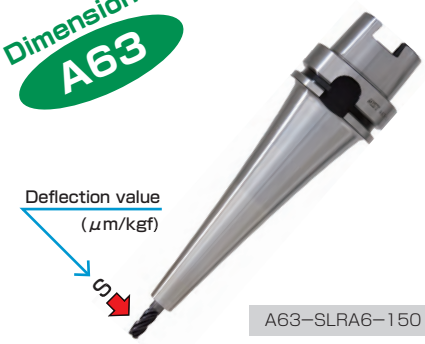
67 BT50-SLSB20-225 cv


68 BT50-SLSB20-255 cv


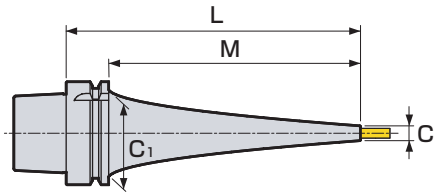
69 BT50-SLSB20-285 cv


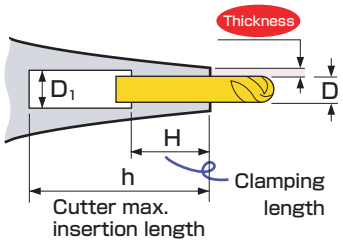
70 BT50-SLSB20-315 cv


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

1	A63−SLSA 4− 90 *cv*	90	64	1.8
2	A63−SLSA 4−120 *cv*	120	94	2.7
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
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

SLSA: φ7, t=1.5
SLRA: φ10, t=3

Scale model
A63

φ6

13	A63−SLSA 6− 90 *cv*	90	64	1.6
14	A63−SLSA 6−120 *cv*	120	94	2.3
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
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
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

SLSA: φ9, t=1.5
SLRA: φ13, t=3.5
SLFA: φ13, t=3.5

φ8

31	A63−SLSA 8− 90 *cv*	90	64	1.4
32	A63−SLSA 8−120 *cv*	120	94	2.0
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
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
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

SLSA: φ11, t=1.5
SLRA: φ16, t=4
SLFA: φ16, t=4

φ10

φ13 t=1.5

No.	Model	Length	Length	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

φ19 t=4.5

No.	Model	Length	Length	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	Length	Length	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

φ12

φ15 t=1.5

No.	Model	Length	Length	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

φ22 t=5

No.	Model	Length	Length	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	Length	Length	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

φ16

φ21 t=2.5

No.	Model	Length	Length	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

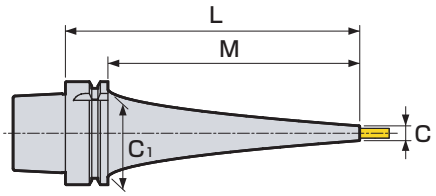
φ20

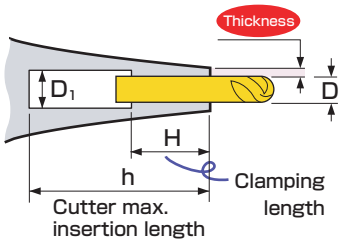
φ26 t=3

No.	Model	Length	Length	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

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.

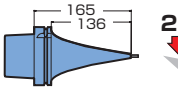
Please note that we changed model number for Slimline MONO CURVE due to additional model lineup.

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

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

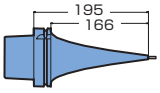
φ4

1 **A100−SLSA 4−165 *cv***

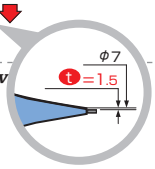


2.5

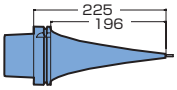
2 **A100−SLSA 4−195 *cv***



3.3

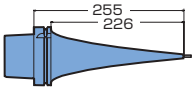


3 **A100−SLSA 4−225 *cv***



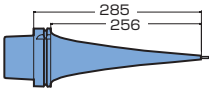
3.8

4 **A100−SLSA 4−255 *cv***



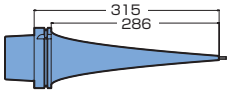
5.6

5 **A100−SLSA 4−285 *cv***



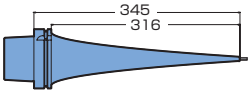
7.6

6 **A100−SLSA 4−315 *cv***



9.8

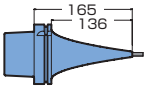
7 **A100−SLSA 4−345 *cv***



12.4

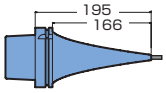
φ6

8 **A100−SLSA 6−165 *cv***

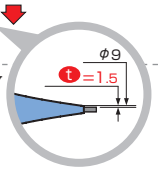


2.1

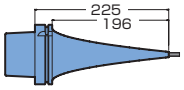
9 **A100−SLSA 6−195 *cv***



2.3

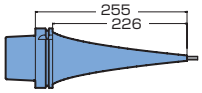


10 **A100−SLSA 6−225 *cv***



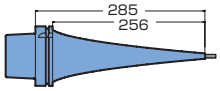
3.6

11 **A100−SLSA 6−255 *cv***



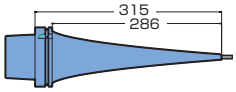
3.9

12 **A100−SLSA 6−285 *cv***



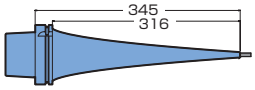
5.2

13 **A100−SLSA 6−315 *cv***



6.8

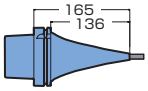
14 **A100−SLSA 6−345 *cv***



8.7

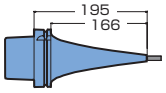
φ8

15 **A100−SLSA 8−165 *cv***

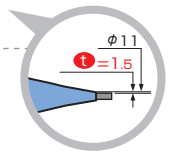


1.4

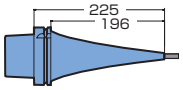
16 **A100−SLSA 8−195 *cv***



2.3

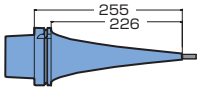


17 **A100−SLSA 8−225 *cv***



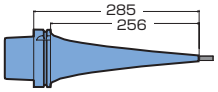
2.3

18 **A100−SLSA 8−255 *cv***



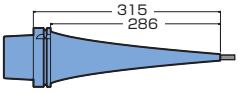
3.6

19 **A100−SLSA 8−285 *cv***



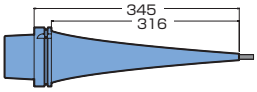
4.8

20 **A100−SLSA 8−315 *cv***

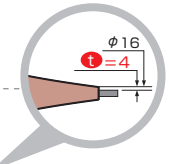


5.0

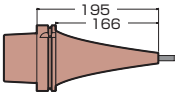
21 **A100−SLSA 8−345 *cv***



6.0

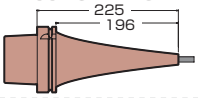


22 **A100−SLRA 8−195 *cv***



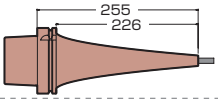
1.4

23 **A100−SLRA 8−225 *cv***



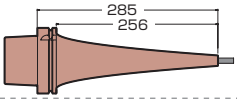
1.6

24 **A100−SLRA 8−255 *cv***

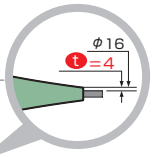


2.2

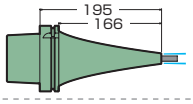
25 **A100−SLRA 8−285 *cv***



3.0

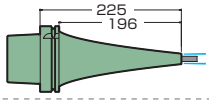


26 **A100−SLFA 8−195 *cv***



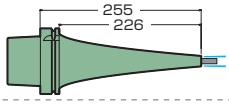
1.4

27 **A100−SLFA 8−225 *cv***



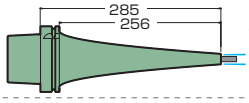
1.6

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

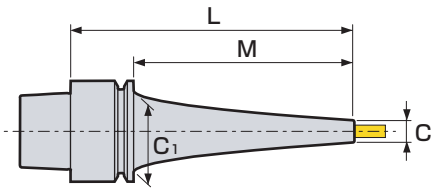
74 A100−SLSB20−255 *cv* — 1.3

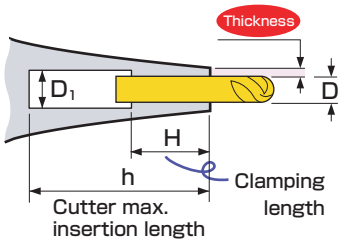
75 A100−SLSB20−285 *cv* — 2.1

76 A100−SLSB20−315 *cv* — 2.3

77 A100−SLSB20−345 *cv* — 2.9

Dimensions E32

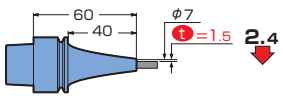




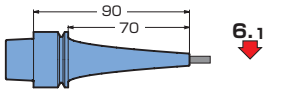
Scale model	CODE	φD	φC	Thick-ness	L	M	φC1	φD1	H	h	Kg	N	S
1	E32–SLSA 4– 60 cv	4	7	1.5	60	40	26	5	12	43	0.2	0.6	2.4
2	– 90 cv				90	70				73		0.8	6.1
3	–SLSA 6– 60 cv	6	9	1.5	60	40	26	7	18	43	0.2	0.7	1.9
4	– 90 cv				90	70				73		0.9	4.9
5	–SLSA 8– 60 cv	8	11	1.5	60	40	26	8.6	24	38	0.2	0.7	1.6
6	– 90 cv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

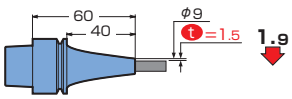


E32–SLSA 4–90 cv

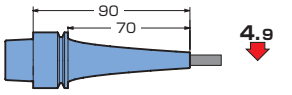


φ6

E32–SLSA 6–60 cv

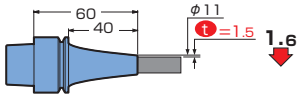


E32–SLSA 6–90 cv

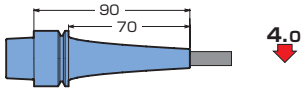


φ8

E32–SLSA 8–60 cv

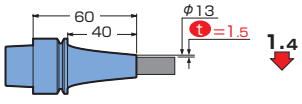


E32–SLSA 8–90 cv

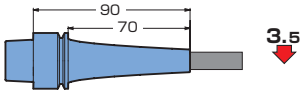


φ10

E32–SLSA10–60 cv



E32–SLSA10–90 cv



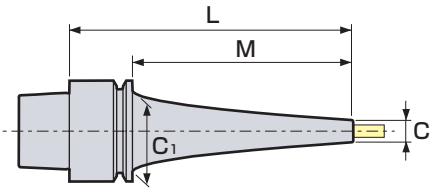
For Slimline MONO CURVE customers.

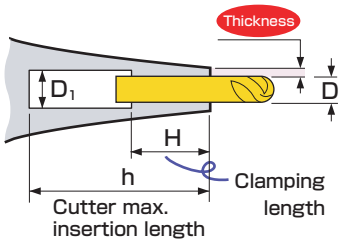
Please note that we changed model number for Slimline MONO CURVE due to additional model lineup.

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

New model no. : A63-SLSA6-120 CV

Dimensions E40

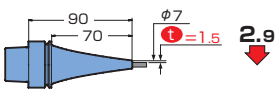




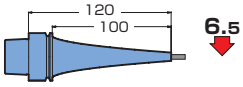
Scale model	CODE	φD	φC	Thick-ness	L	M	φC1	φD1	H	h	Kg	N	S
1	E40–SLSA 4– 90 cv	4	7	1.5	90	70	34	5	12	74	0.3	1.5	2.9
2	–120 cv				120	100				104	0.4	1.8	6.5
3	–150 cv				150	130				134	0.5	2.4	8.6
4	–SLRA 4– 90 cv	4	10	3	90	70	34	5	12	81	0.4	1.6	2.0
5	–120 cv				120	100				111		1.9	4.2
6	–SLSA 6– 90 cv	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

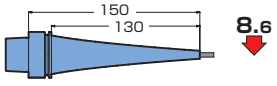
1 E40–SLSA 4– 90 cv



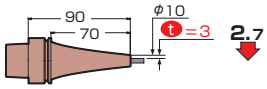
2 E40–SLSA 4–120 cv



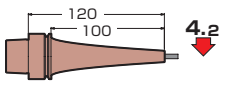
3 E40–SLSA 4–150 cv



4 E40–SLRA 4– 90 cv

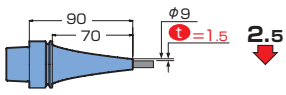


5 E40–SLRA 4–120 cv

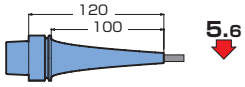


φ6

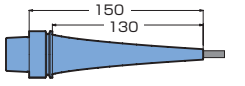
6 E40–SLSA 6– 90 cv



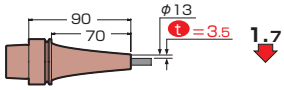
7 E40–SLSA 6–120 cv



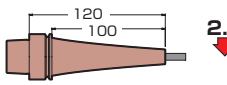
8 E40–SLSA 6–150 cv



9 E40–SLRA 6– 90 cv

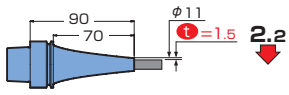


10 E40–SLRA 6–120 cv

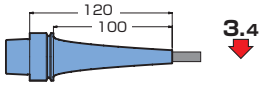


φ8

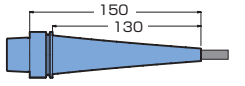
11 E40–SLSA 8– 90 cv



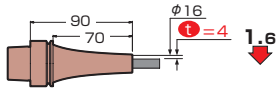
12 E40–SLSA 8–120 cv



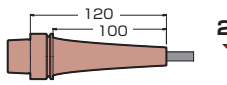
13 E40–SLSA 8–150 cv



14 E40–SLRA 8– 90 cv

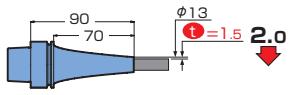


15 E40–SLRA 8–120 cv

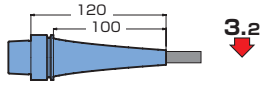


φ10

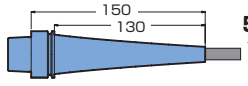
16 E40–SLSA10– 90 cv



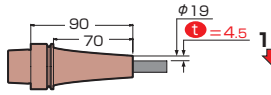
17 E40–SLSA10–120 cv



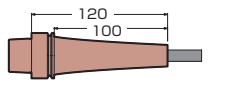
18 E40–SLSA10–150 cv



19 E40–SLRA10– 90 cv

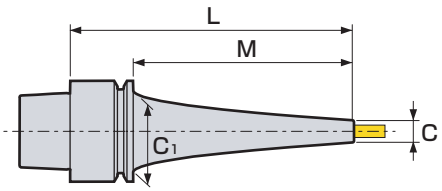


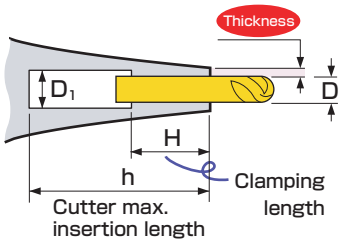
20 E40–SLRA10–120 cv



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

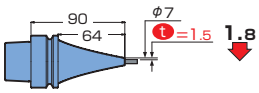
For Slimline MONO CURVE customers.
Please note that we changed model number for Slimline MONO CURVE due to additional model lineup.

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

New model no. : A63-SLSA6-120 CV

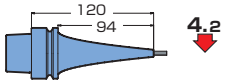
φ4

1 E50−SLSA 4− 90 cv



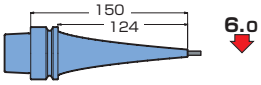
E50−SLSA 4−120 cv

2



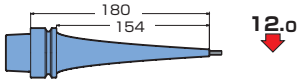
E50−SLSA 4−150 cv

3



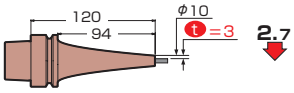
E50−SLSA 4−180 cv

4



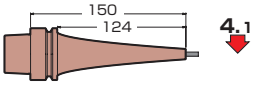
E50−SLRA 4−120 cv

5



E50−SLRA 4−150 cv

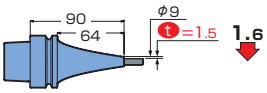
6



φ6

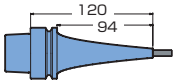
E50−SLSA 6− 90 cv

7



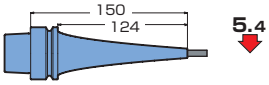
E50−SLSA 6−120 cv

8



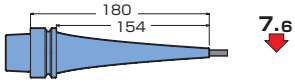
E50−SLSA 6−150 cv

9



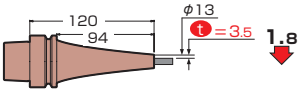
E50−SLSA 6−180 cv

10



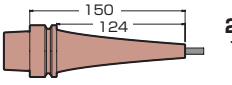
E50−SLRA 6−120 cv

11



E50−SLRA 6−150 cv

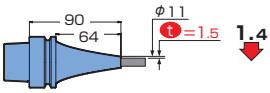
12



φ8

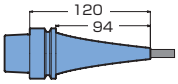
E50−SLSA 8− 90 cv

13



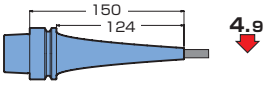
E50−SLSA 8−120 cv

14



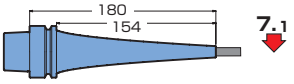
E50−SLSA 8−150 cv

15



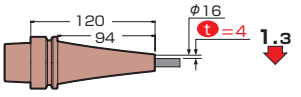
E50−SLSA 8−180 cv

16



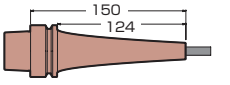
E50−SLRA 8−120 cv

17



E50−SLRA 8−150 cv

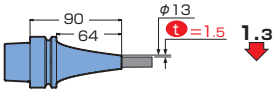
18



φ10

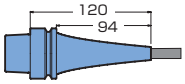
E50−SLSA10− 90 cv

19



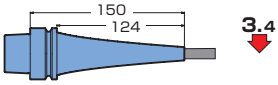
E50−SLSA10−120 cv

20



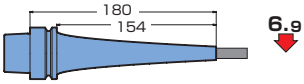
E50−SLSA10−150 cv

21



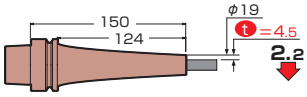
E50−SLSA10−180 cv

22



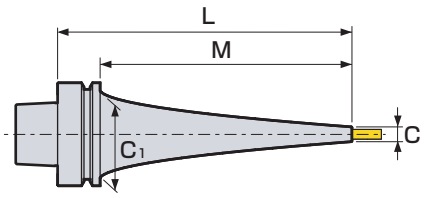
E50−SLRA10−150 cv

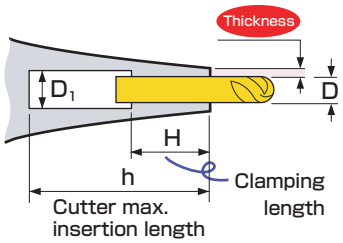
23



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.

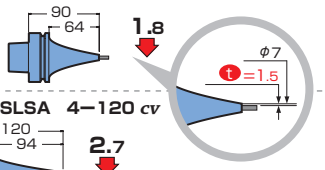
Please note that we changed model number for Slimline MONO CURVE due to additional model lineup.

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

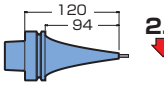
New model no. : A63-SLSA6-120 CV

φ4

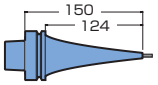
1 **F63—SLSA 4— 90 cv**



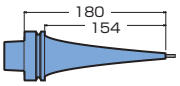
2 **F63—SLSA 4—120 cv**



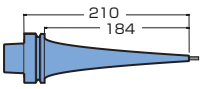
3 **F63—SLSA 4—150 cv**



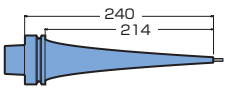
4 **F63—SLSA 4—180 cv**



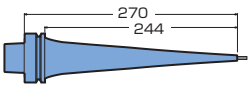
5 **F63—SLSA 4—210 cv**



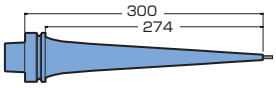
6 **F63—SLSA 4—240 cv**



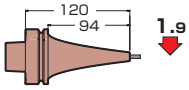
7 **F63—SLSA 4—270 cv**

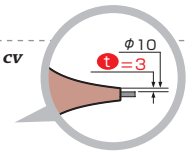


8 **F63—SLSA 4—300 cv**

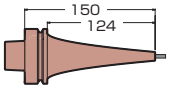


9 **F63—SLRA 4—120 cv**

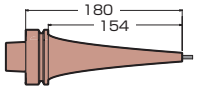




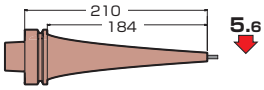
10 **F63—SLRA 4—150 cv**



11 **F63—SLRA 4—180 cv**

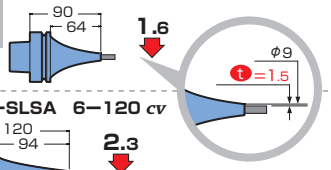


12 **F63—SLRA 4—210 cv**

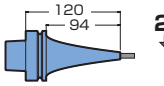


φ6

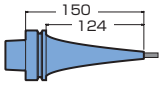
13 **F63—SLSA 6— 90 cv**



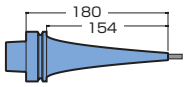
14 **F63—SLSA 6—120 cv**



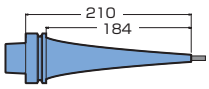
15 **F63—SLSA 6—150 cv**



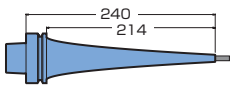
16 **F63—SLSA 6—180 cv**



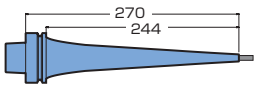
17 **F63—SLSA 6—210 cv**



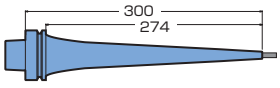
18 **F63—SLSA 6—240 cv**



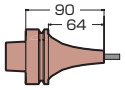
19 **F63—SLSA 6—270 cv**



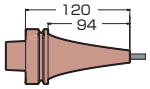
20 **F63—SLSA 6—300 cv**

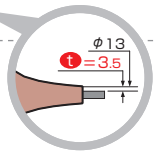


21 **F63—SLRA 6— 90 cv**

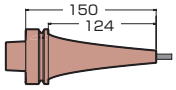


22 **F63—SLRA 6—120 cv**

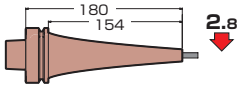




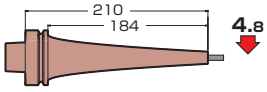
23 **F63—SLRA 6—150 cv**



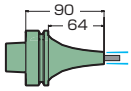
24 **F63—SLRA 6—180 cv**



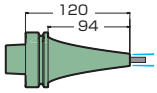
25 **F63—SLRA 6—210 cv**

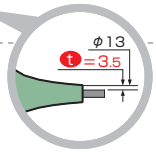


26 **F63—SLFA 6— 90 cv**

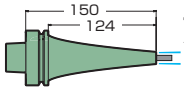


27 **F63—SLFA 6—120 cv**

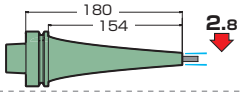




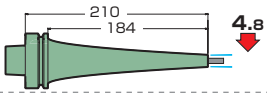
28 **F63—SLFA 6—150 cv**



29 **F63—SLFA 6—180 cv**

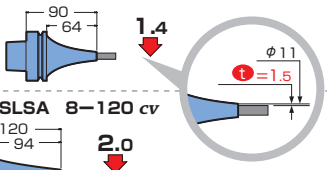


30 **F63—SLFA 6—210 cv**

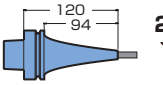


φ8

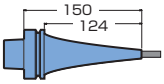
31 **F63—SLSA 8— 90 cv**



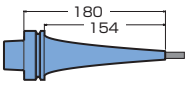
32 **F63—SLSA 8—120 cv**



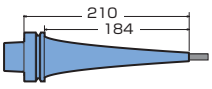
33 **F63—SLSA 8—150 cv**



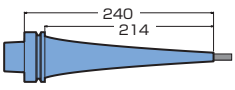
34 **F63—SLSA 8—180 cv**



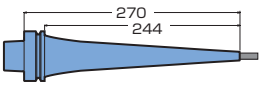
35 **F63—SLSA 8—210 cv**



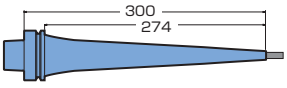
36 **F63—SLSA 8—240 cv**



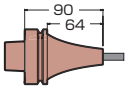
37 **F63—SLSA 8—270 cv**



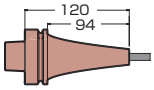
38 **F63—SLSA 8—300 cv**

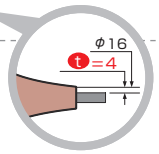


39 **F63—SLRA 8— 90 cv**

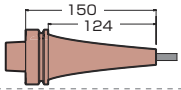


40 **F63—SLRA 8—120 cv**

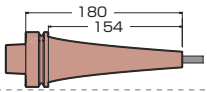




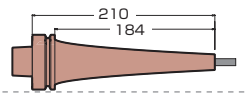
41 **F63—SLRA 8—150 cv**



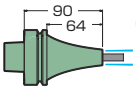
42 **F63—SLRA 8—180 cv**



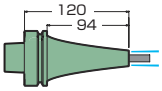
43 **F63—SLRA 8—210 cv**

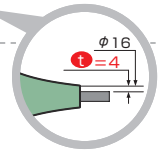


44 **F63—SLFA 8— 90 cv**

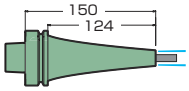


45 **F63—SLFA 8—120 cv**

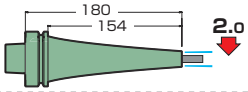




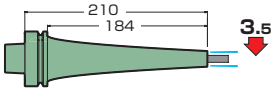
46 **F63—SLFA 8—150 cv**



47 **F63—SLFA 8—180 cv**



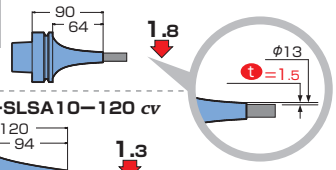
48 **F63—SLFA 8—210 cv**



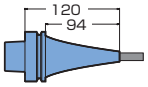
Scale model F63

φ10

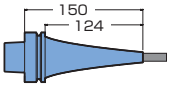
49 F63–SLSA10– 90 cv



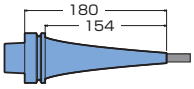
50 F63–SLSA10–120 cv



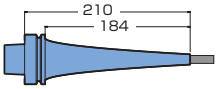
51 F63–SLSA10–150 cv



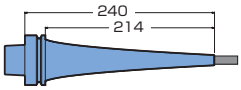
52 F63–SLSA10–180 cv



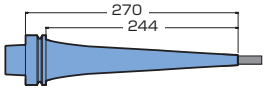
53 F63–SLSA10–210 cv



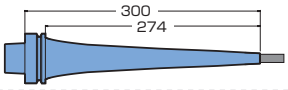
54 F63–SLSA10–240 cv



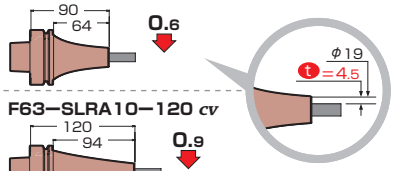
55 F63–SLSA10–270 cv



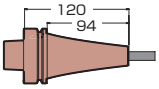
56 F63–SLSA10–300 cv



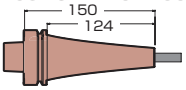
57 F63–SLRA10– 90 cv



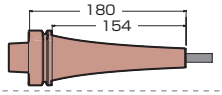
58 F63–SLRA10–120 cv



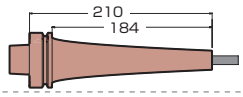
59 F63–SLRA10–150 cv



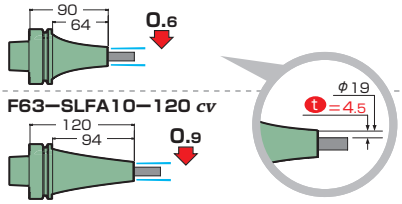
60 F63–SLRA10–180 cv



61 F63–SLRA10–210 cv

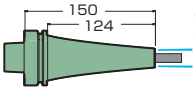


62 F63–SLFA10– 90 cv

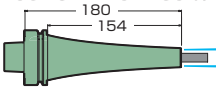


63 F63–SLFA10–120 cv

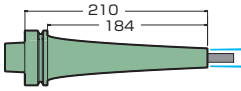
64 F63–SLFA10–150 cv



65 F63–SLFA10–180 cv

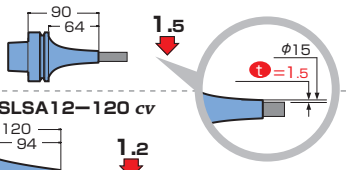


66 F63–SLFA10–210 cv

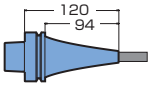


φ12

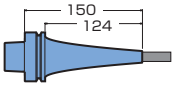
67 F63–SLSA12– 90 cv



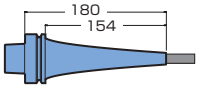
68 F63–SLSA12–120 cv



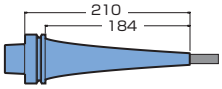
69 F63–SLSA12–150 cv



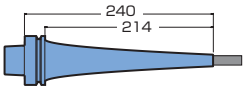
70 F63–SLSA12–180 cv



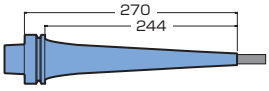
71 F63–SLSA12–210 cv



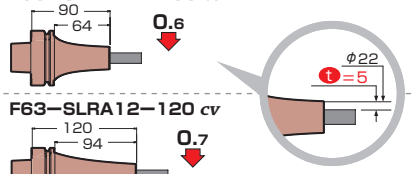
72 F63–SLSA12–240 cv



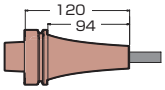
73 F63–SLSA12–270 cv



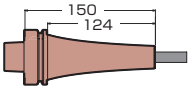
74 F63–SLRA12– 90 cv



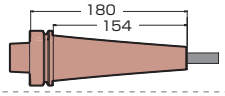
75 F63–SLRA12–120 cv



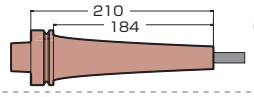
76 F63–SLRA12–150 cv



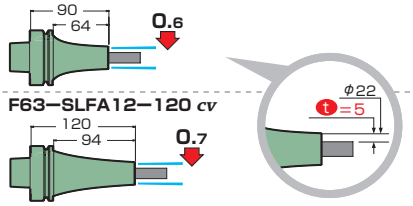
77 F63–SLRA12–180 cv



78 F63–SLRA12–210 cv

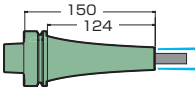


79 F63–SLFA12– 90 cv

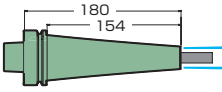


80 F63–SLFA12–120 cv

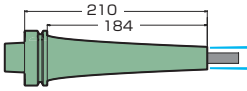
81 F63–SLFA12–150 cv



82 F63–SLFA12–180 cv

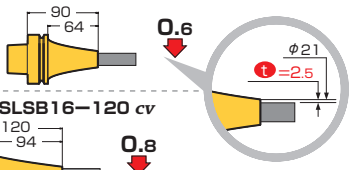


83 F63–SLFA12–210 cv

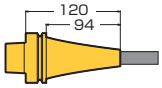


φ16

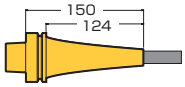
84 F63–SLSB16– 90 cv



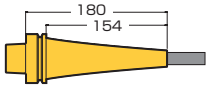
85 F63–SLSB16–120 cv



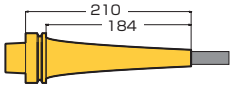
86 F63–SLSB16–150 cv



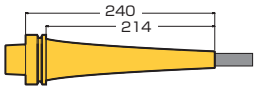
87 F63–SLSB16–180 cv



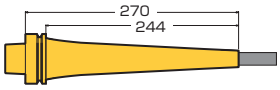
88 F63–SLSB16–210 cv



89 F63–SLSB16–240 cv

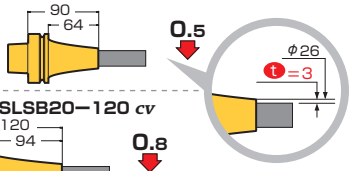


90 F63–SLSB16–270 cv

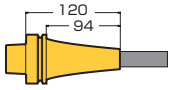


φ20

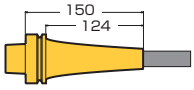
91 F63–SLSB20– 90 cv



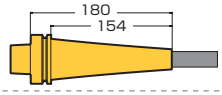
92 F63–SLSB20–120 cv



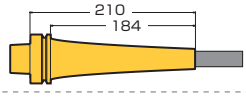
93 F63–SLSB20–150 cv



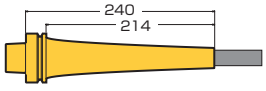
94 F63–SLSB20–180 cv



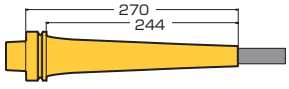
95 F63–SLSB20–210 cv



96 F63–SLSB20–240 cv

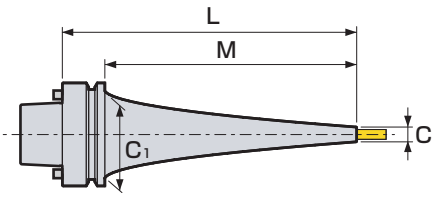


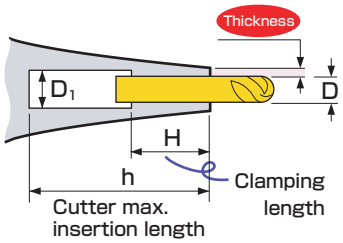
97 F63–SLSB20–270 cv



Dimensions F80PD For Makino

F80PD–SLRB16–75 cv

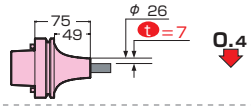




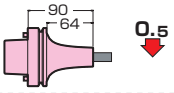
Scale model	CODE	φD	φC	Thick-ness	L	M	φC1	φD1	H	h	Kg	N	S
1	F80PD–SLRB12– 75 cv	12	26	7	75	49	67	13	30	48	1.4	4.8	0.4
2	– 90 cv				90	64				63		5.3	0.5
3	–120 cv				120	94				93	1.9	8.5	
4	–180 cv				180	154				153	2.5	12.8	0.9
5	–240 cv				240	214				213	2.9	15.7	1.8
6	F80PD–SLRB16– 75 cv	16	32	8	75	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

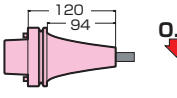
1 F80PD–SLRB12– 75 cv



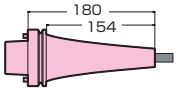
2 F80PD–SLRB12– 90 cv



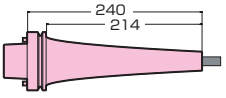
3 F80PD–SLRB12–120 cv



4 F80PD–SLRB12–180 cv

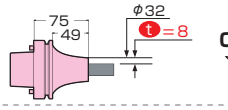


5 F80PD–SLRB12–240 cv

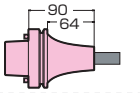


φ16

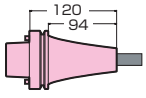
6 F80PD–SLRB16– 75 cv



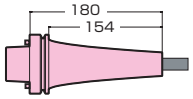
7 F80PD–SLRB16– 90 cv



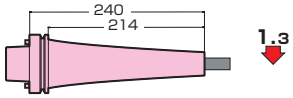
8 F80PD–SLRB16–120 cv



9 F80PD–SLRB16–180 cv

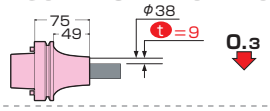


10 F80PD–SLRB16–240 cv

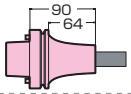


φ20

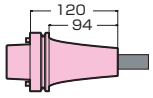
11 F80PD–SLRB20– 75 cv



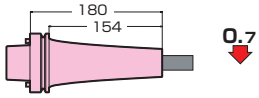
12 F80PD–SLRB20– 90 cv



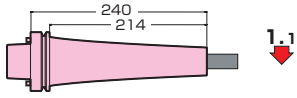
13 F80PD–SLRB20–120 cv



14 F80PD–SLRB20–180 cv

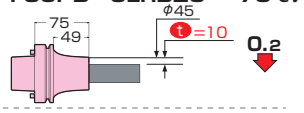


15 F80PD–SLRB20–240 cv

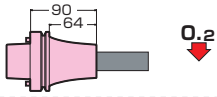


φ25

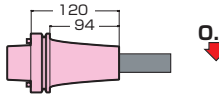
16 F80PD–SLRB25– 75 cv



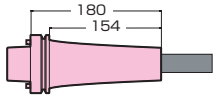
17 F80PD–SLRB25– 90 cv



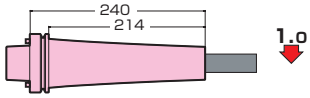
18 F80PD–SLRB25–120 cv



19 F80PD–SLRB25–180 cv



20 F80PD–SLRB25–240 cv



MST corporation
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