

CK BORING SYSTEM

SW A41
EWN HEAD A50

BBT A76
SHANK

HSK C26
SHANK

FACE MILL
ARBOR TYPE FMH

BBT A114
SHANK

BDV B16
SHANK

HSK C29
SHANK

Boring Bar

Details F9

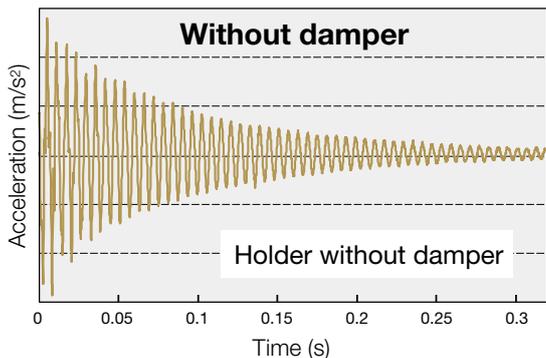
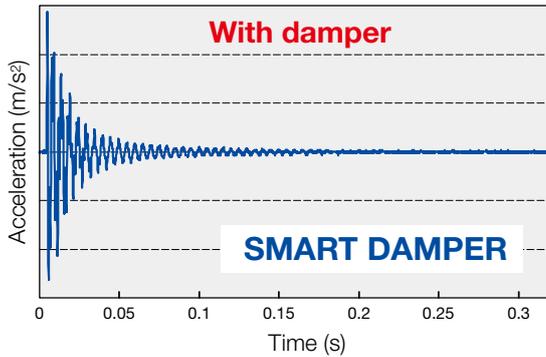


- Unique dynamic damper eliminates chatter!
- Achieves high speed and high efficiency machining for work requiring a long projection length.

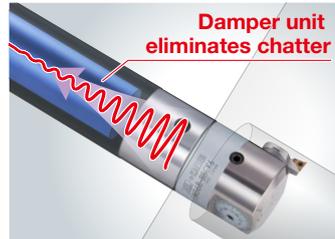


Comparison of oscillatory waveforms with and without dampers

The Smart Damper incorporates a damping mechanism and reduces chatter instantly. The Smart Damper solves various problems caused by chatter due to long projection, such as inadequate surface roughness, defective dimensions of machined workpiece and shortened tool life.



Chatter suppressing mechanism



An incorporated unique damper that functions as both a counter damper and friction damper. Patent-pending counter weight maximizes effect of the friction damper. Chatter is absorbed effectively and higher machining accuracy is achieved.

Finish Boring of Ductile Cast Iron (FCD500)

× = Chattering ○ = Good ◎ Excellent surface finish

Boring holder	Cutting speed (m/min)			
	25	50	100	150
Holder without damper	○	×	×	◎ (with ×)
Built-in Damper SMART DAMPER BBT50-CKB6DP-380	◎	◎	◎	◎ (with ◎)

Results: 6 times greater productivity.
Superior surface finish and better tool life due to increased cutting speed.

Cutting Conditions

Machine	Horizontal MC	BIG-PLUS BBT50	Insert radius	R0.4
Boring diameter	ø68mm		Feed	0.2mm/rev
Depth	408mm (L/D=6)		Depth of cut	0.3mm/ø

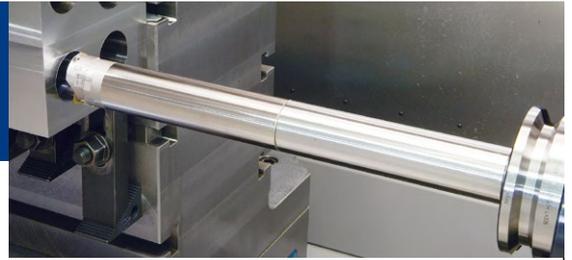


Chatter caused by long tools could be solved by reducing the bending force. Using an insert with smaller nose radius is effective in boring operation, and using a cutter with large peripheral cutting edge angle helps for face milling.

Abundant series available for various machining requirements

CK Boring Series with Built-In Damper

High-efficiency deep hole finish boring is available



EWN BORING HEAD Type

Boring head with a built-in damper. The EWN Boring Head functions are maintained, featuring integrated damper.

SW BORING HEAD Type PAT.

Boring head with a built-in damper. Damper located closer to the cutting edge provides greater damping effect.

CK Shank Type PAT.

A damper is built into the CK Shank. L/D = 6x

CK Extension Type PAT.

Just combine it with your standard CK Boring Head/CK Shank to achieve damping countermeasures.

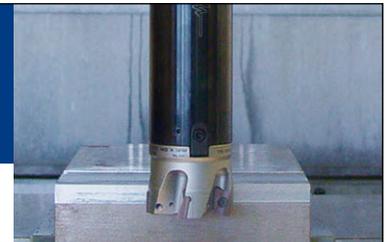


Highly reliable scale plate
With vernier scale
enabling 1-micron adjustment



FACE MILL ARBOR TYPE FMH with Built-in Damper

Modular system allows versatile combinations



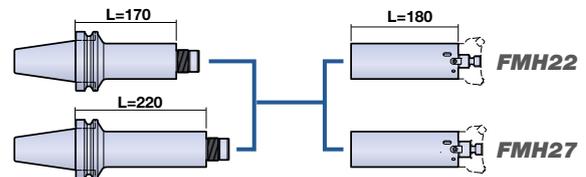
Basic Holder
(BBT50/BDV50/HSK-A100)

Damper head

FMH22 / FMH27

Basic holders of different lengths can be used with one damper head (for BBT/BDV/HSK Shank in common).

<Example for BBT50 Shank ø60 Type>



Internal Turning Tool with Built-in Damper BORING BAR

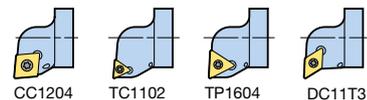
Eliminates chatter in internal turning



The heaviest damper in the series of Smart Dampers instantly absorbs chatter in both rough and finish operations.



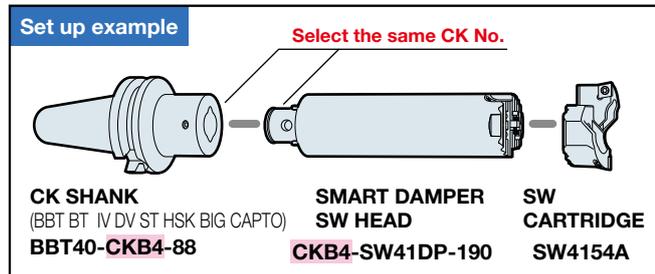
Cartridges can be exchanged according to the application (ISO insert).



Built-In Damper
SMART DAMPER SW BORING HEAD (For Roughing) PAT.

Center through

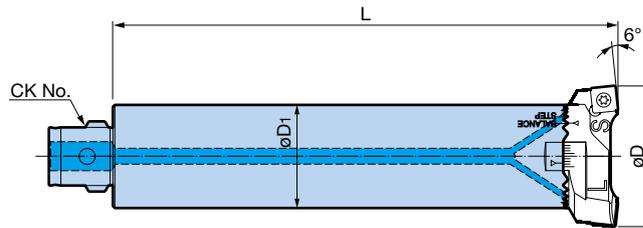
SW rough boring head integrated with the Smart Damper.



● Head Model Description

CKB4 - SW 41 DP - 190

- CK No.
- Min. diameter
- Built-in damper type
- L dimension
- ROUGH BORING HEAD



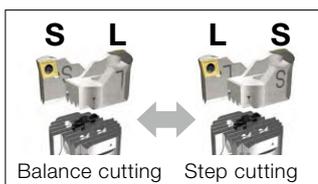
A Type for Through-Holes

Balance cutting
Balance cutting only.

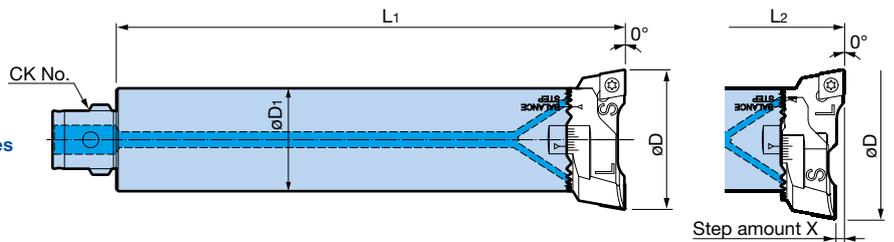
● A Type for Through-Holes (4 corners of the insert can be used)

Diameter ϕD	Head Model	CK No.	Cartridge Model	Insert Model	ϕD_1	L	Clamp Screw Set (spare)	Belleville Spring Set (spare)	Weight (kg)
41 - 54	CKB4-SW41DP-190	CK4	SW4154A	SC09	39	190	SW41SS	SW41BS	2.4
53 - 66			SW5366A						
53 - 70	CKB5-SW53DP-220	CK5	SW5370A	SC12	50	220	SW53SS	SW53BS	4.5
69 - 86			SW6986A						
68 - 90	CKB6-SW68DP-245	CK6	SW6890A	SC12	64	245	SW68SS	SW53BS	8.3
88 - 110			SW88110A						

Refer to the remarks in the table below.



Adapted for both balance and step cutting by simple replacement of standard cartridges (for blind holes).



E Type for Blind Holes

Balance cutting

Step cutting

● E Type for Blind Holes (To shape flat surfaces)

Diameter ϕD	Head Model	CK No.	Cartridge Model	Insert Model	ϕD_1	L ₁	L ₂	Step Amount X	Clamp Screw Set (spare)	Belleville Spring Set (spare)	Weight (kg)
41 - 54	CKB4-SW41DP-190	CK4	SW4154E	CC09	39	190	190.2	0.4	SW41SS	SW41BS	2.4
53 - 66			SW5366E								
53 - 70	CKB5-SW53DP-220	CK5	SW5370E	CC12	50	220	220.2	0.4	SW53SS	SW53BS	4.5
69 - 86			SW6986E								
68 - 90	CKB6-SW68DP-245	CK6	SW6890E	CC12	64	245	245.2	0.4	SW68SS	SW53BS	8.3
88 - 110			SW88110E								

- Clamp screws and belleville springs are included.
- Compatible set items in the table are not included but must be ordered separately if required.
- Cartridges and inserts must be ordered separately.
- Coolant through is standard for all the SW heads.
- The diameter range is the value when inserts with nose radius 0.8 are used.
- For screws and bolts, A97

For SW cartridges, A42

For holders, A73

Diameter: $\phi 32 - \phi 203$

CK BORING SYSTEM

Center through

Built-In Damper

SMART DAMPER EWN BORING HEAD (for finishing)

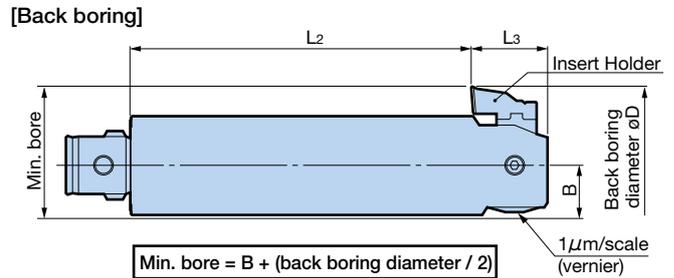
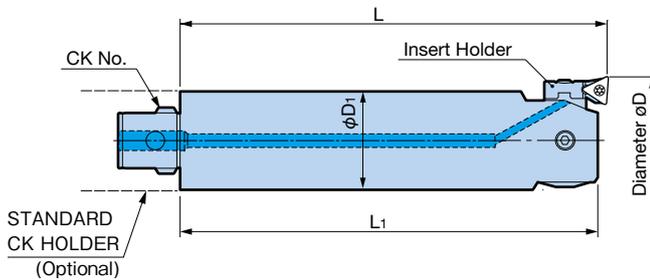
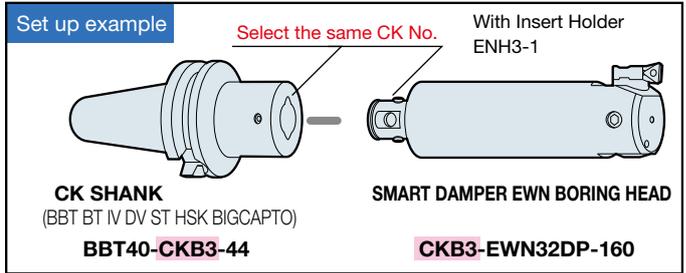
Combination of the popular EWN boring head with the Smart Damper.



● Model Description

CKB3 - EWN 32 DP - 160

- CK No.
- Finish Head
- Min. diameter
- Built-In Damper type
- L dimension



Model	CK No.	Insert Holder	Boring			Back Boring				ϕD_1	Weight (kg)	Insert
			Diameter ϕD	L	L ₁	Diameter ϕD	L ₂	L ₃	B			
CKB3-EWN 32DP-160 <small>NEW</small>	CK3	ENH3-1	32 - 42	160	155	-	130	25	16	31	1.2	TP08
		ENH3-2	41 - 51			-						
		ENH3-3	50 - 60			57 - 60						
CKB4-EWN 41DP-185	CK4	ENH4-1	41 - 54	185	181	-	152	29	20	39	2.3	TC11
		ENH4-2	50 - 63			61 - 63						
		ENH4-3	61 - 74			67 - 74						
CKB5-EWN 53DP-210	CK5	ENH5-1	53 - 70	210	206	-	172	34	25.5	50	4.4	TC11
		ENH5-2	65 - 82			74 - 82						
		ENH5-3	78 - 95			78 - 95						
CKB6-EWN 68DP-240	CK6	ENH6-1	68 - 100	240	236.2	90 - 100	191	45.2	32.5	64	8.3	TC11
		ENH6-2	94 - 126			94 - 126						
		ENH6-3	118 - 150			118 - 150						
CKB6-EWN100DP-240 <small>NEW</small>	CK6	ENH6-1	100 - 153	240	236.2	107 - 153	191	45.2	45.5	64	8.8	TC11
		ENH6-2	126 - 179			126 - 179						
		ENH6-3	150 - 203			150 - 203						
CKB7-EWN100DP-240 <small>NEW</small>	CK7	ENH6-1	100 - 153	240	236.2	116 - 153	191	45.2	45.5	90	16.4	TC11
		ENH6-2	126 - 179			126 - 179						
		ENH6-3	150 - 203			150 - 203						

1. Max. and min. diameters are the values when nose radius 0.2 is used for insert TP08, and radius 0.4 for insert TC11.
2. ENH○-1 insert holder is included. ENH○-2 and 3 must be ordered separately if required.
3. During back boring, the rotation direction will be reversed.
4. Inserts are not included.



For holders, **A73**

For insert holders, **A52**

For boring head screws, **A98**

● Wide variety of Insert Holders offers versatility.

Example: CKB3-EWN32DP-160

Standard Accessory	Optional Accessory	
ENH3-1  $\phi 32 - \phi 42$	ENH3-2  $\phi 41 - \phi 51$	ENH3-3  $\phi 50 - \phi 60$

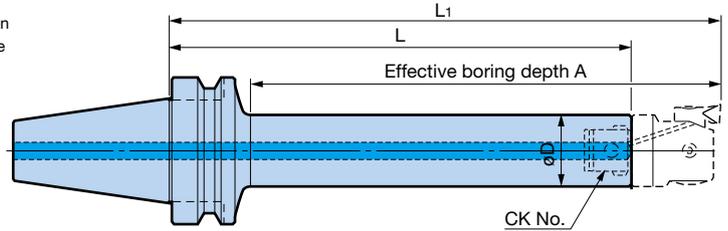
In addition to the above, various insert holders for EWN BORING HEAD such as the "Insert Holder to Undercut Corners" can be used.  **A52**

Built-in Damper **SMART DAMPER** PAT.

- Built-in damper eliminates chatter in deep hole boring.



[BBT Shank Type]



BIG-PLUS (BBT Shank) tools can be used on both BIG-PLUS spindles and conventional **BT spindles**.

BIG-PLUS BBT SHANK Model	CK No.	øD	L	L ₁	A	Weight (kg)
BBT50-CKB4DP-252	CK4	39	252	299	246	5.7
-CKB5DP-314	CK5	50	314	371	318	7.8
-CKB6DP-380	CK6	64	380	451	408	12.3

1. The L₁ and A dimensions in the table are the reference values when EWN BORING HEAD is attached.
2. Cutting edges and drive keys are aligned with boring heads mounted.
3. Head and inserts must be ordered separately.
4. Extension should not be used due to possible chatter.

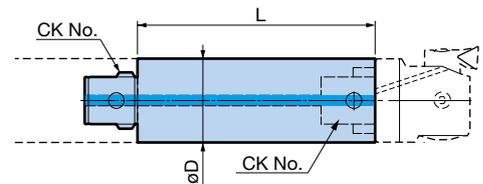
For heads, **A49**



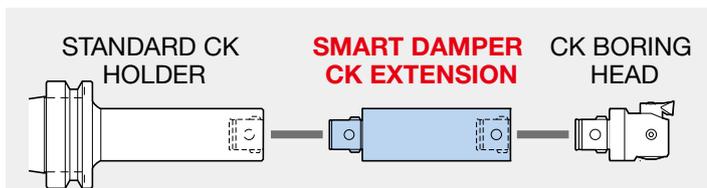
[Extension Type]



● Model Description
CKB44 DP - 120
 ● Extension length L
 ● Built-in damper type
 ● Connection of **CK4** and **CK4**



Standard CK holders can be used.



Model	CK No.	øD	L	Weight (kg)
CKB44DP-120	CK4	39	120	1.3
CKB55DP-150	CK5	50	150	2.6
CKB66DP-180	CK6	64	180	5.3

1. Center through coolant supply is available.
2. Should not be used with a conventional extension due to possible chatter.

For heads, **A49**



SMART DAMPER
 integrated with boring head is also available.

EWN BORING HEAD **A50**

SW BORING HEAD PAT. **A41**



Built-in Damper SMART DAMPER PAT.

- Built-in damper eliminates chatter in deep hole boring.

● Model Description

HSK-A100 - **CKB4** **DP** - **241**

- HSK Shank Type
- CK No.
- Built-in Damper Type
- L dimension

A Type (DIN 69893-1) (ISO 12164)

Model	CK No.	øD	L	L ₁	A	Weight (kg)
HSK-A100-CKB4DP-241	CK4	39	241	288	246	4.3
-CKB5DP-303	CK5	50	303	360	318	6.5
-CKB6DP-379	CK6	64	379	450	408	11.2

1. The L₁ and A dimensions in the table are the reference values when EWN BORING HEAD is attached.
2. Cutting edges and drive keys are aligned with boring heads mounted.
3. Head and inserts are not included.
4. Extension should not be used due to possible chatter.
5. Coolant pipe is not included.

SMART DAMPERS other than the above are also available.



FINISH BORING HEAD and SMART DAMPER have been integrated

SMART DAMPER EWN BORING HEAD

For details, **A50**



Instantly absorbs chatter even for rough boring with high load

SMART DAMPER SW HEAD PAT.

For details, **A41**



Standard CK Shanks can be used, allowing flexible tool layout

SMART DAMPER Extension

For details, **A76**

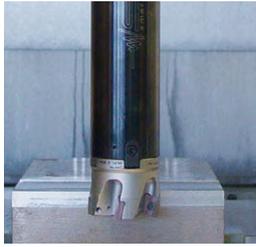
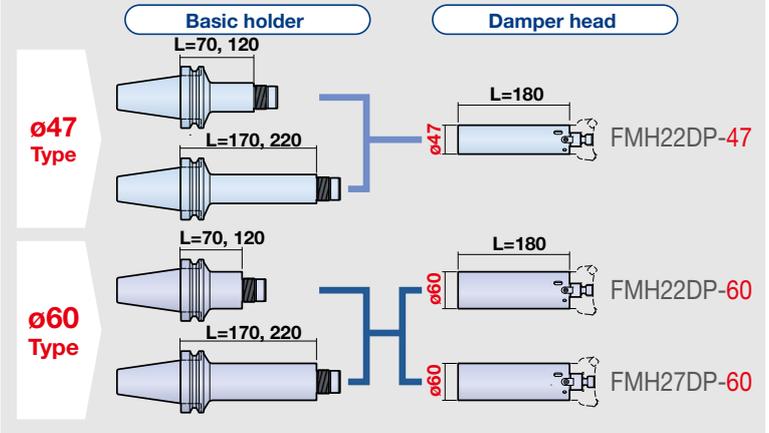
Built-in Damper SMART DAMPER

- Dynamic damper eliminates chatter.
- Modular system allows versatile combinations.



System layout diagram (for BBT50 Shank)

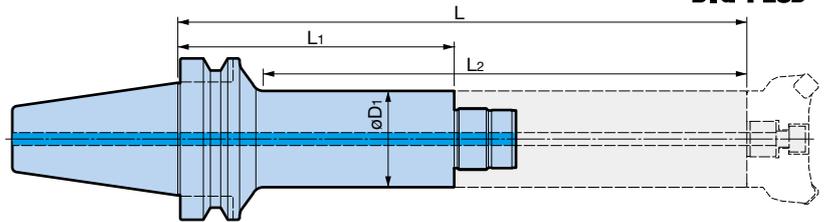
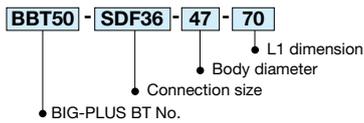
Basic holders of different lengths can be used with one damper head (for BBT/HSK Shank in common).



[Basic Holder]



● Model Description



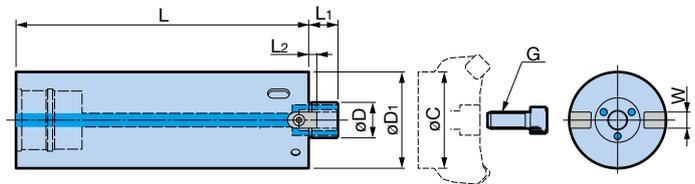
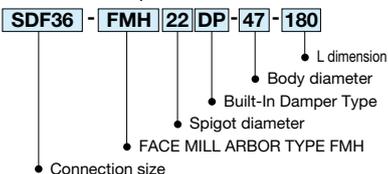
BIG-PLUS (BBT Shank) tools can be used on both BIG-PLUS spindles and conventional BT spindles.

BIG-PLUS BBT SHANK Model	øD ₁	L	L ₁	L ₂	Weight (kg)	Applicable damper head
BBT50-SDF36-47- 70	47	250	70	197	4.3	FMH□□DP-47
-47-120		300	120	247	5.0	
-47-170		350	170	297	5.6	
-47-220		400	220	347	6.3	
-SDF36-60- 70	60	250	70	197	4.6	FMH□□DP-60
-60-120		300	120	247	5.7	
-60-170		350	170	297	6.7	
-60-220		400	220	347	7.8	

[Damper Head]



● Model Description



Model	øD	øD ₁	L	L ₁	L ₂	W	G	Weight (kg)	Wrench Model	Min. flange diameter øC
SDF36-FMH22DP-47-180	22	47	180	18	5	10	M10	3.0	FK45-50L	36
-60-180	22	60	180	18	5	10	M10	4.5	FK58-62L	49
-FMH27DP-60-180	27	60	180	20	6	12	M12	4.5		46

1. Refer to the operation manual regarding the mounting method to the basic holder.
2. The weight does not include the cutter.
3. Hook wrench and cutter clamping screw are included.
4. If the provided clamping screw is not compatible, separately select one from the clamping screw table on A115.
5. øC indicates the smallest mounting surface diameter of the cutter that can be mounted on the arbor.
Be careful when using a cutter with the mounting diameter considerably smaller than the cutting diameter, as it may not fit.

FACE MILL ARBOR TYPE FMH

General Toolholder

DUAL CONTACT
BDV/DV
SHANK

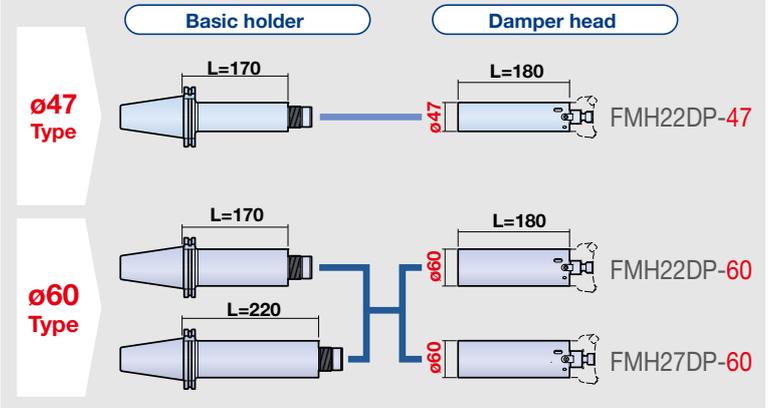
Built-in Damper SMART DAMPER

- Dynamic damper eliminates chatter.
- Modular system allows versatile combinations.



System layout diagram (for BDV50 Shank)

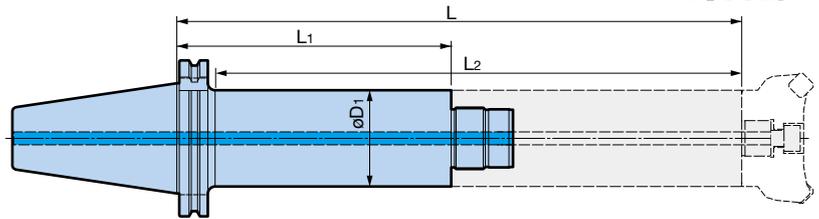
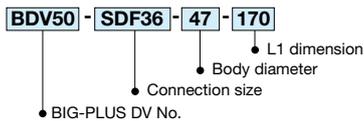
Basic holders of different lengths can be used with one damper head (for BBT/BDV/HSK Shank in common).



[Basic Holder]



● Model Description



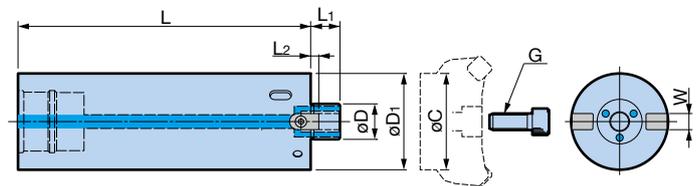
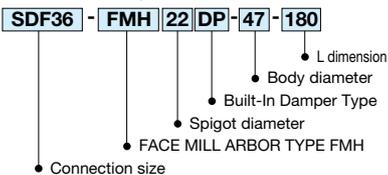
BIG-PLUS (BDV Shank) tools can be used on both BIG-PLUS spindles and conventional DV spindles.

BIG-PLUS BDV SHANK Model	øD ₁	L	L ₁	L ₂	Weight (kg)	Applicable damper head
BDV50-SDF36-47-170	47	350	170	325	4.9	FMH□□DP-47
-60-170	60	350	170	325	6.2	FMH□□DP-60
-220		400	220	375	7.3	

[Damper Head]



● Model Description



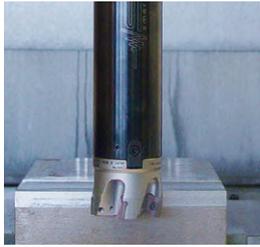
Model	øD	øD ₁	L	L ₁	L ₂	W	G	Weight (kg)	Wrench Model	Min. flange diameter øC
SDF36-FMH22DP-47-180	22	47	180	18	5	10	M10	3.0	FK45-50L	36
-60-180	22	60	180	18	5	10	M10	4.5	FK58-62L	49
-FMH27DP-60-180	27	60	180	20	6	12	M12	4.5		46

1. Refer to the operation manual regarding the mounting method to the basic holder.
2. The weight does not include the cutter.
3. Hook wrench and cutter clamping screw are included.
4. If the provided clamping screw is not compatible, separately select one from the clamping screw table on A115.
5. øC indicates the smallest mounting surface diameter of the cutter that can be mounted on the arbor.
Be careful when using a cutter with the mounting diameter considerably smaller than the cutting diameter, as it may not fit.

Built-in Damper SMART DAMPER

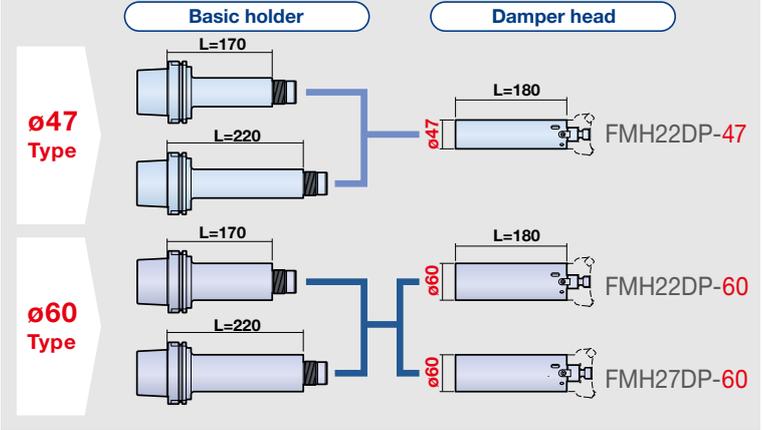
- Eliminates chatter in deep hole boring.

Center through

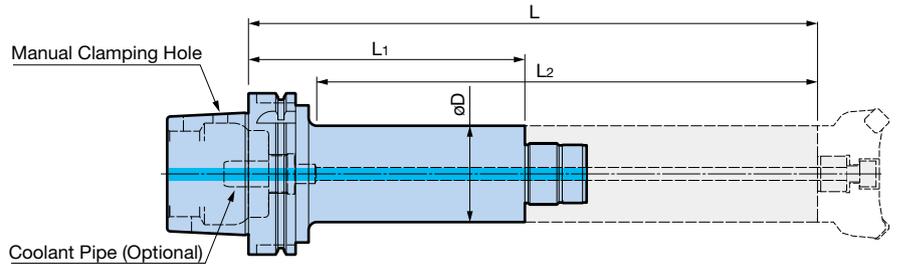


System layout diagram (for HSK-100 Shank)

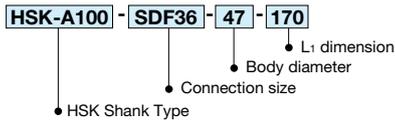
Basic holders of different lengths can be used with one damper head (for BBT/HSK Shank in common).



[Basic Holder]



● Model Description

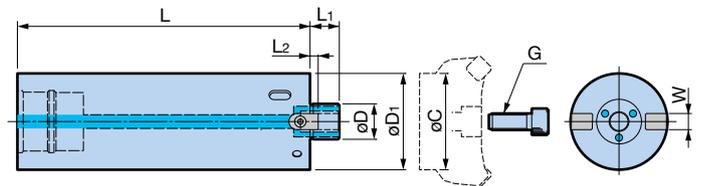


A Type (DIN 69893-1) (ISO 12164)

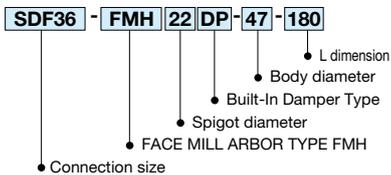
Model	øD	L	L ₁	L ₂	Weight (kg)	Compatible Damper Head
HSK-A100-SDF36-47-170 -47-220	47	350	170	310	4.4	FMH□□DP-47
		400	220	360	5.0	
-SDF36-60-170 -60-220	60	350	170	310	5.5	FMH□□DP-60
		400	220	360	6.5	

1. Coolant pipe is not included. C65

[Damper Head]



● Model Description



Model	øD	øD ₁	L	L ₁	L ₂	W	G	Weight (kg)	Wrench Model	Min. flange diameter øC
SDF36-FMH22DP-47-180	22	47	180	18	5	10	M10	3.0	FK45-50L	36
-60-180	22	60	180	18	5	10	M10	4.5	FK58-62L	49
-FMH27DP-60-180	27	60	180	20	6	12	M12	4.5		46

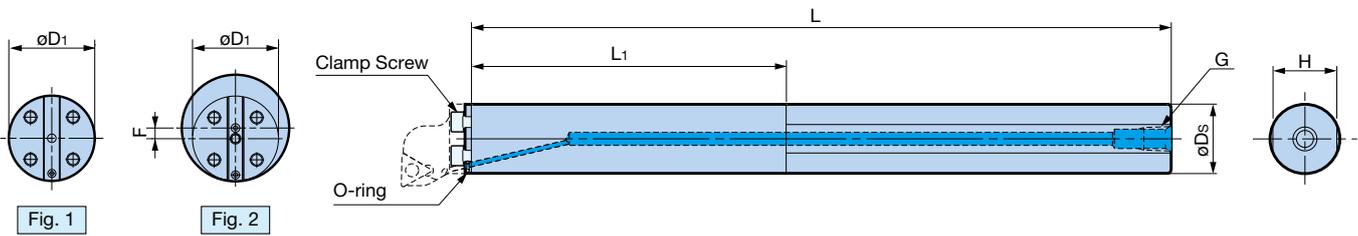
1. Refer to the operation manual regarding the mounting method to the basic holder.
2. The weight does not include the cutter.
3. Hook wrench and cutter tightening clamp screw are included.
4. If the provided clamping screw is not compatible, separately select one from the clamping screw table on C30.
5. øC indicates the smallest mounting surface diameter of the cutter that can be mounted on the arbor.
Be careful when using a cutter with the mounting diameter considerably smaller than the cutting diameter, as it may not fit.

Boring Bar

Damper mechanism eliminates chatter in internal turning.



Body



Model	Fig.	Cartridge Model	ϕD_s	ϕD_1	Min. Diameter	L	L ₁	H	G	F	Clamp Screw (1)	O-Ring Set (2)	Weight (kg)
ST32-SDB40DP-320	1	B32-...	32	32	40	320	144	30	PT1/4	—	C0510(M5×10L)	SDB20 OR	2.3
ST40-SDB50DP-410	1	B40-...	40	40	50	410	170	37	PT3/8	—	C0610(M6×10L)		4.5
ST50-SDB60DP-520	2	B40-...	50	40	60	520	190	47	PT3/8	5	C0610(M6×10L)		8.9

1. Clamp screws (3 pcs) and O-rings (2 pcs) are included.
2. Cartridges must be ordered separately.
3. Inserts must be ordered separately.
4. Coolant through is standard for all models.
5. Do not clamp the L₁ dimension, where the damper is built-in.
6. ST50 shank tip cartridge is common with the ST40 shank.

Cartridge

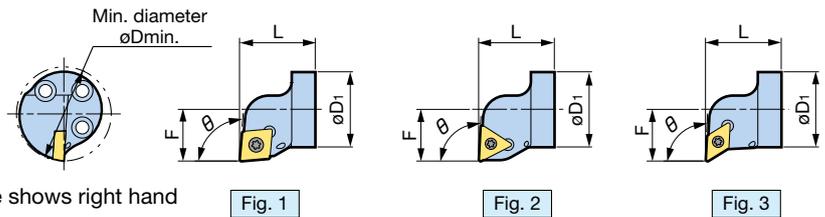


Figure shows right hand

Model	Fig.	Insert (ISO)	Hand	ϕD_{min}	ϕD_1	F	L	θ	Insert Clamping Screw Set	Weight (kg)
B32-SCLCR-22032-12	1	CC1204	Right hand	40	32	22	32	95°	S5S-20IP	0.1
-STUCR-22032-11	2	TC1102						93°	S2.5S-7IP	
-STUPR-22032-16		TP1604						S4S-15IP		
-SDUCR-22032-11	3	DC11T3						S4S-15IP		
B40-SCLCR-27032-12	1	CC1204	Right hand	50	40	27	32	95°	S5S-20IP	0.2
-STUCR-27032-11	2	TC1102						93°	S2.5S-7IP	
-STUPR-27032-16		TP1604						S4S-15IP		
-SDUCR-27032-11	3	DC11T3						S4S-15IP		

Cartridge includes 1 insert clamping wrench.

1. Inserts must be ordered separately. Compatible with ISO standard inserts.
2. The insert clamping screw set (optional) contains 10 screws and 1 wrench.