



Hydro chuck for CNC lathe ST-M-PHC



**High precision Hydro Chuck for
CNC Lathe machines to improve
machining quality + tool life.**

- Hydro's anti-vibration effect suppresses chattering during machining.
- Both ① and ② are hydraulically operated.
- Repeatability accuracy of 2µm or less
- Suppresses misalignment during cutter mounting

**Reduce hole variance and chattering
in drilling and boring applications!**



Advantages of Hydraulic System

- ① Highly accurate tool clamping due to contraction of the inside diameter!
- ② Reduces misalignment and self centers by expansion of the shank for retention!

Combination list



Ø20mm
Drill



Straight Collet
PHS-H



Hydro chuck
for CNC lathe
ST-M-PHC



Tool Holder Block for Turret
*Boring holders, U-drill holders, etc.



Ø6 - Ø16mm
Drill



Coolant Bit Sleeve
ST-H-CBS



Ø6 - Ø12mm
Boring Bar

Sealed coolant sleeve stops leakage from the flat part of the boring bar and supplies coolant to the cutting edge without loss!

See reverse side for details.

Hydro Chuck for CNC Lathe ST-M-PHC

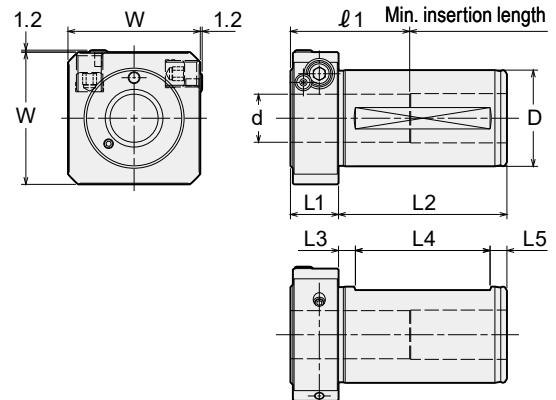
Code	Model	d	D	L1	L2	L3	L4	L5	W	l1	Hex Wrench Size
0480 04020000	ST40M-PHC20	20	40	20	70	7	56	7	55	50	5mm

- Use a cutting tool with a shank within the h6 tolerance range.
- Use a Tool Holder block for Turret with an inside diameter within the H7 tolerance range.

Ordering Example

ST40M - PHC20

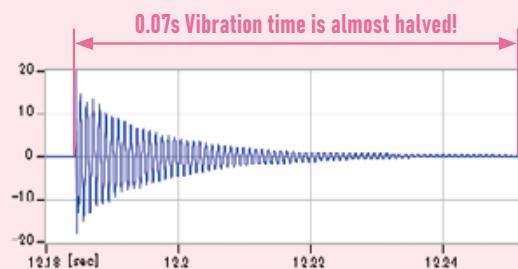
Shank size I.D.



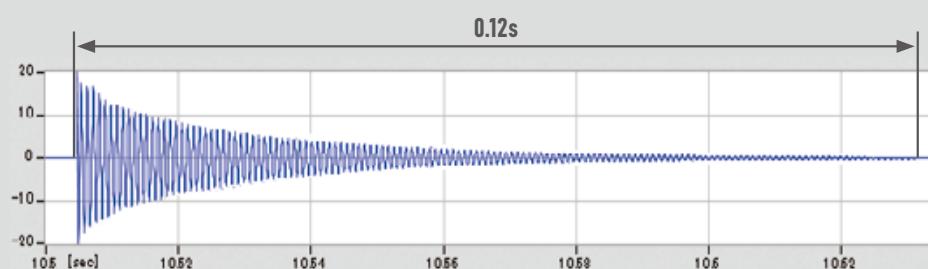
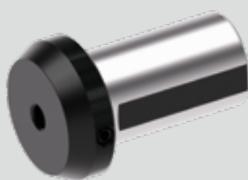
Anti-vibration effect

Special oil chamber around the chucking sleeve absorbs cutting vibrations.

Hydro Chuck for CNC Lathe ST-M-PHC

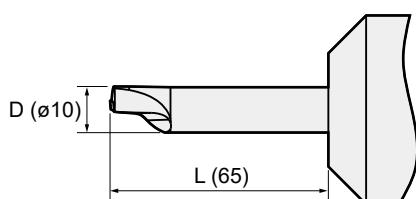


Side lock holder



Improvement example ①

Realized Ra: 0.95 μ m
in L/D:6.5 finishing!



Workpiece material	SCM440
Tool used Carbide	ø10 Boring bar
Insert	TPGT110304*
Machining diameter	ø14mm
Depth of cut	0.075mm
Cutting feed	0.09mm /rev
Circumferential speed	63.7m/min
Coolant	Center-through (water soluble)

Hydro Chuck for CNC Lathe ST-M-PHC



Ra:0.95
Possible to machine
without any problem!

Side lock holder



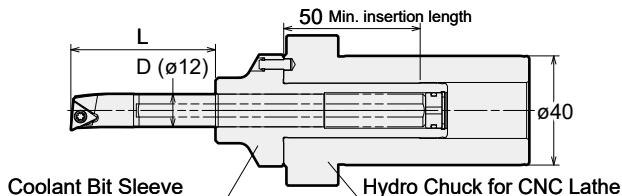
Machining not possible
due to long L/D

Improvement example ②

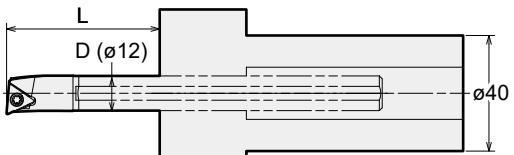
Realized Ra: 1.048µm
in L/D:4.75 finishing!

Workpiece material	S45C	Depth of cut	0.5mm
Tool used	Steel ø12 boring bar	Cutting feed	0.1mm/rev
Insert	TPMT110304*	Circumferential speed	200m/min
Machining diameter	ø15mm	Coolant	Center-through (water soluble)

Hydro Chuck for CNC Lathe ST-M-PHC with Coolant bit Sleeve



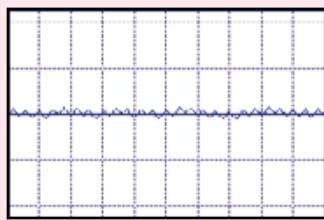
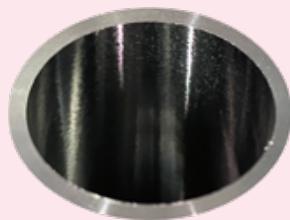
Side lock holder



Machining result

Boring bar protrusion

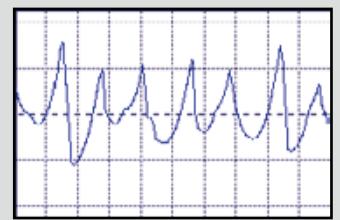
L/D	3.75	4	4.75	5.5	5.75
Judgment	✓	✓	✓	✓*	✗
Ra(µm)	0.972	0.905	1.048	1.306	7.956
Rz(µm)	5.634	5.096	6.608	8.247	42.690
Chattering noise	None	None	None	None *Slightly chattering	Yes



Machining result

Boring bar protrusion

L/D	3.75	4	4.75	5.5	5.75
Judgment	✓	✗	✗	✗	✗
Ra(µm)	1.007	10.888	-	-	-
Rz(µm)	6.100	66.995	-	-	-
Chattering noise	None	Yes	-	-	-



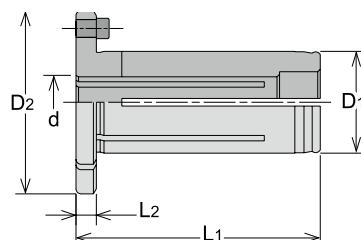
Collet with stopper pin for PHS•H

Coolant compatible collets
for ST-M-PHC.

OH Type



C Type



OH type : For cutter with oil hole

Code	Model	D ₁	D ₂	L ₁	L ₂	[d]
2584 300520***	PHS20H - [d] - OH	20	41	60	4	6, 8, 10, 12, 16

C type : For collet through coolant

Code	Model	D ₁	D ₂	L ₁	L ₂	[d]
2584 300620***	PHS20H - [d] - C	20	41	60	4	6, 8, 10, 12, 16

The *** in the code is followed by the inner diameter d.

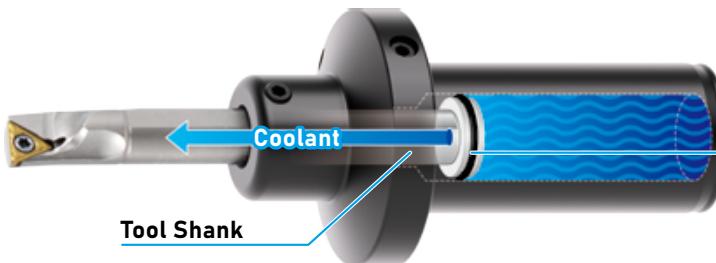
Min. Clamping length of cutter					
Collet I.D. [d]	6, 8	10, 12	16	20	25
Min. Clamping length	29	40	45	50	55

Ordering Example

PHS20H - 10 - OH
Shank size I.D. Type

Coolant Bit Sleeve ST-H-CBS

Prevents coolant leakage from tool shank!
Efficient coolant supply to I.D. of the workpiece!



Seal stopper (PAT.P)

Pushed by coolant pressure and adheres to the tool shank end face to prevent coolant leakage from the tool shank flat!

Comparison Video



Common Bit Sleeves

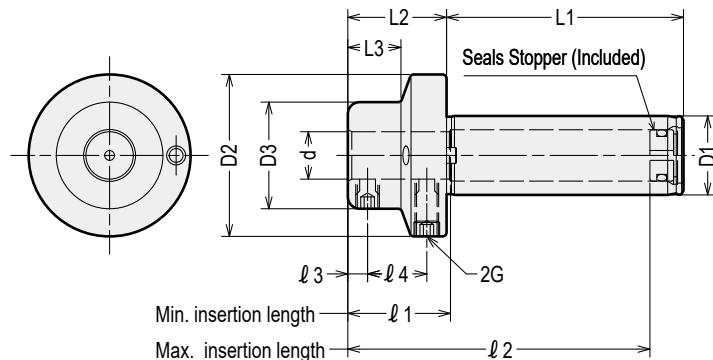
Coolant leaks from the shank flats!

- Lower coolant pressure at cutting edge
- Reduced chip removal

Coolant Bit Sleeves ST-H-CBS

No coolant leaks from the shank flats!

- No decrease in coolant pressure at cutting edge
- Improved chip removal



Code	Model	d	D1	D2	D3	L1	L2	L3	l1	l2	l3	l4	G
0484 02006000	ST20H - CBS06R	6	20	41	27	60	25	13.5	26	76	5	15	M5
0484 02008000	- CBS08R	8	20	41	27	60	25	13.5	26	76	5	15	M6
0484 02010000	- CBS10R	10	20	41	27	60	25	13.5	26	76	5	15	M6
0484 02012000	- CBS12R	12	20	41	27	60	25	13.5	26	76	5	15	M6

- Supported holders : Hydro Chuck for CNC Lathe ST-M-PHC
- Supported tool : Boring bar only
- Cutters must be inserted at least the minimum insertion length.
If the minimum insertion length is not met, the seal stopper will not function and coolant will leak.

Ordering Example

ST20H - CBS06R

Shank size

I.D.

NT TOOL CORPORATION

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