KORLOY High Pressure Coolant Holder

KHP

KORLOY TECH-NEWS

- 300% increased productivity on Inconel machining vs. low pressure coolant system
- Cooling, tool life, and chip control are improved by the high volume coolant multi-directional injection system

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TECH-NEWS

High Pressure Coolant Holder for Inconel Machining

KHP

The HRSA (Inconel, titanium and stainless steel) have high strength and low thermal conductivity used in the space, aircraft, and offshore machining industries, results in structure failures causes chipping on the cutting edge due to heat shock and work hardening and decreases tool life rapidly in machining.

The existing coolant spraying to wide parts is not able to reduce the focused heat on the cutting part in HRSA machining effectively. Therefore, to improve the productivity with high efficient cooling, a solution is needed. That is spraying the high pressure coolant directly on the cutting edge.

A high pressure coolant holder will have the optimal distance between the insert cutting edge and the jet orifice, the ideal place of the streamlined jet orifice of the coolant. KORLOY's new **KHP** sprays high pressure coolant enhancing chip control and wear resistance.

Our **KHP** High pressure coolant holder's sliding clamp system provides easy change of inserts and optimal nozzle cooling.

KORLOY **KHP** High pressure coolant holder provides the best solution meeting the customers' needs with high productivity and highly precise machining, by reducing workpiece damage by limiting fracture of insert, and long chips, for heat removal in HRSA machining.

High productivity

- Tested up to 300% increased tool life comparing to machining with low pressure coolant system
- Increased cutting speeds and high feeds

Excellent coolant effect

- Direct spraying coolant on the edge of insert and on the top and bottom sides of insert

Improved chip control

- Better chip evacuation

Easy to clamp

- Sliding clamp system

Code System

P	C	L	N	R	25	25	-	M	12	-	KHP

Clamping method of insert
P: Lever lock system

Insert shape
C: C type
D: D type
W: W type
V: V type

Holder style
L: 95°
J: 93°

Clearance angle of insert
N: 0°
B: 5°

Hand
R: Right handed

Height of shank
25mm, 32mm

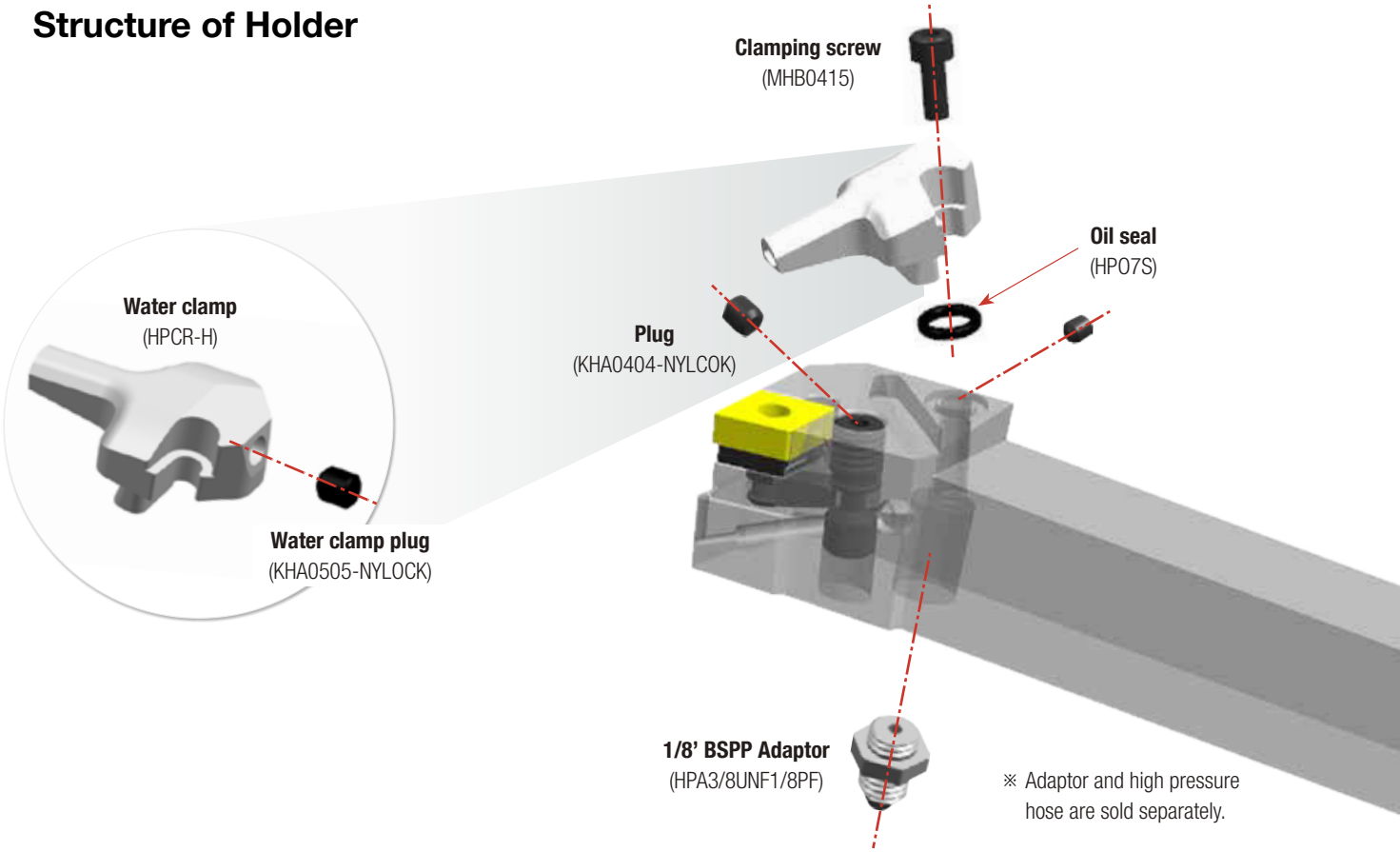
Width of shank
25mm, 32mm

Length of holder
M: 150mm
P: 180mm

Length of insert cutting edge
08, 12, 15, 16

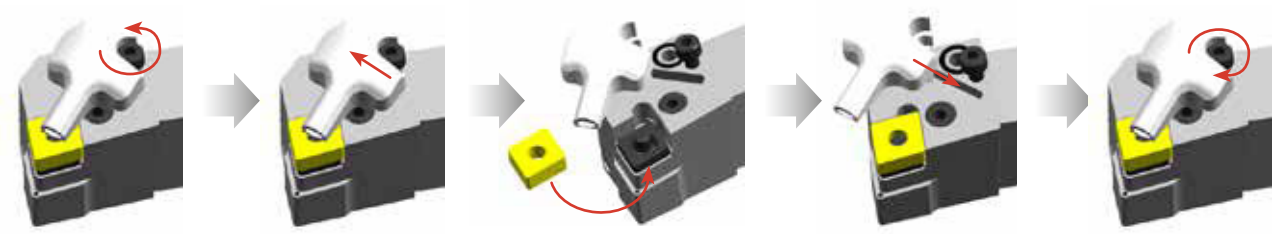
KORLOY High Pressure coolant

Structure of Holder



※ Adaptor and high pressure hose are sold separately.

How to use the water clamp



Unscrew the clamping screw.

Move the water clamp to the edge of the holder.

Put an insert to the tip seat.

Move the water clamp back to its original position.

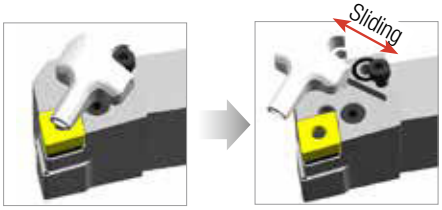
Screw the clamping screw.

Features

- Increased tool life due to the direct spraying coolant of the edge of insert
- Improved chipping resistance and limited notch wear
- High feed machining due to spraying coolant to the part of the nose R intensively
- Better chip control with high pressure in machining

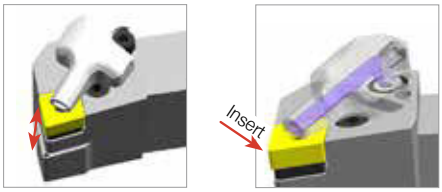
Water clamp

- The optimal distance between the insert and the jet orifice and the ideal place of the jet orifice
- Maximized pressure of coolant due to the streamlined jet orifice
- Easy to clamp an insert for sliding clamp system



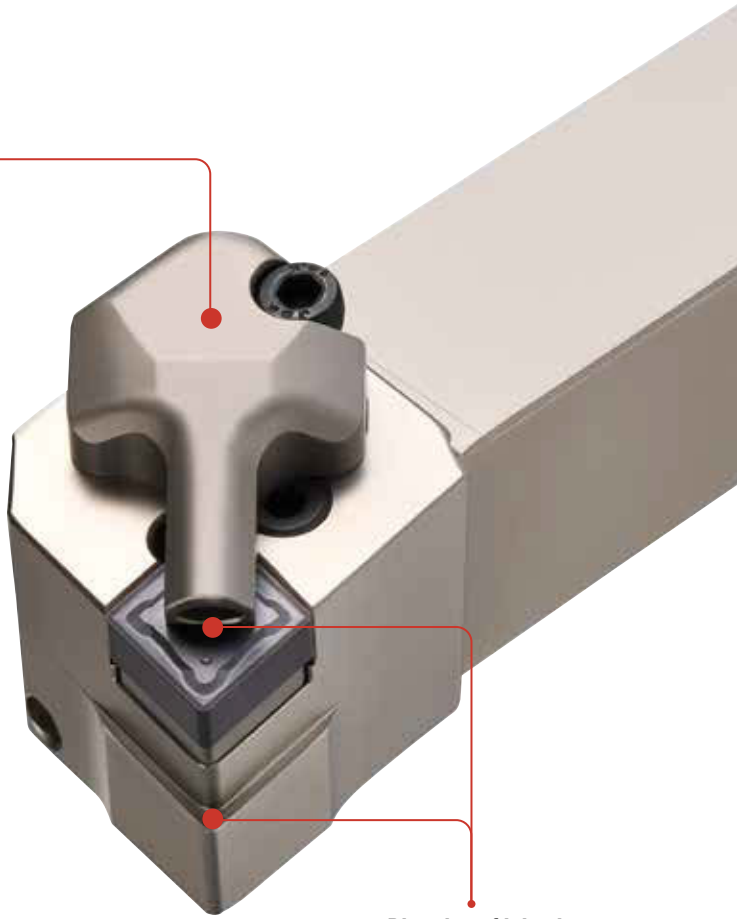
The original position of water clamp

The position of placing insert



Optimal position and distance of spraying

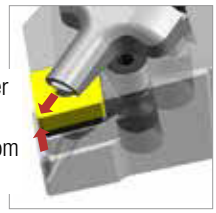
Oval direct spray



Direction of injection

Spray to the upper surface of insert

Spray to the bottom surface of insert



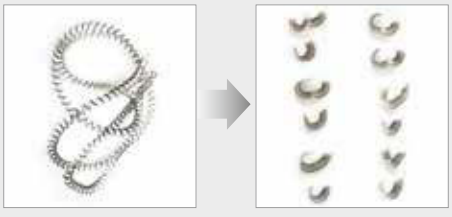
MAX 300 bar

Workpiece		The minimum pressure	The maximum pressure
P	Steel	50	300
M	Stainless Steel	70	
K	Cast iron	60	
N	Non ferrous	50	
S	HRSA	70	

Improved chip control

Improved chip control

- **Workpiece** HRSA (Inconel718, HRC42)
- **Cutting conditions** vc (m/min) = 50, fn (mm/rev) = 0.25, ap (mm) = 2, wet (70 bar)
- **Tool** **Insert** CNMG120408-VP4
  Holder PCLNR2525-M12-KHP



(10 bar) **(70 bar)**

Performance Evaluation

Wear resistance

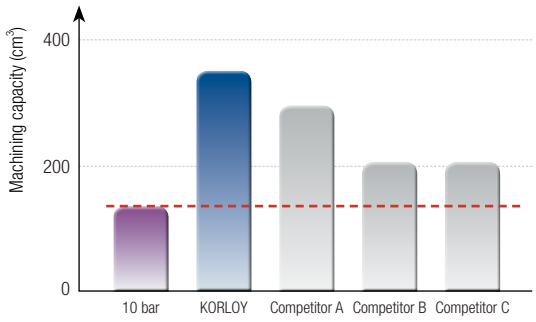
- **Workpiece** HRSA (Inconel718, HRC42)
- **Cutting conditions** vc (m/min) = 50, fn (mm/rev) = 0.25, ap (mm) = 2, wet (70 bar)
- **Tool** **Insert** CNMG120408-VP4 **Holder** PCLNR2525-M12-KHP

KORLOY

Competitor A's

Competitor B's

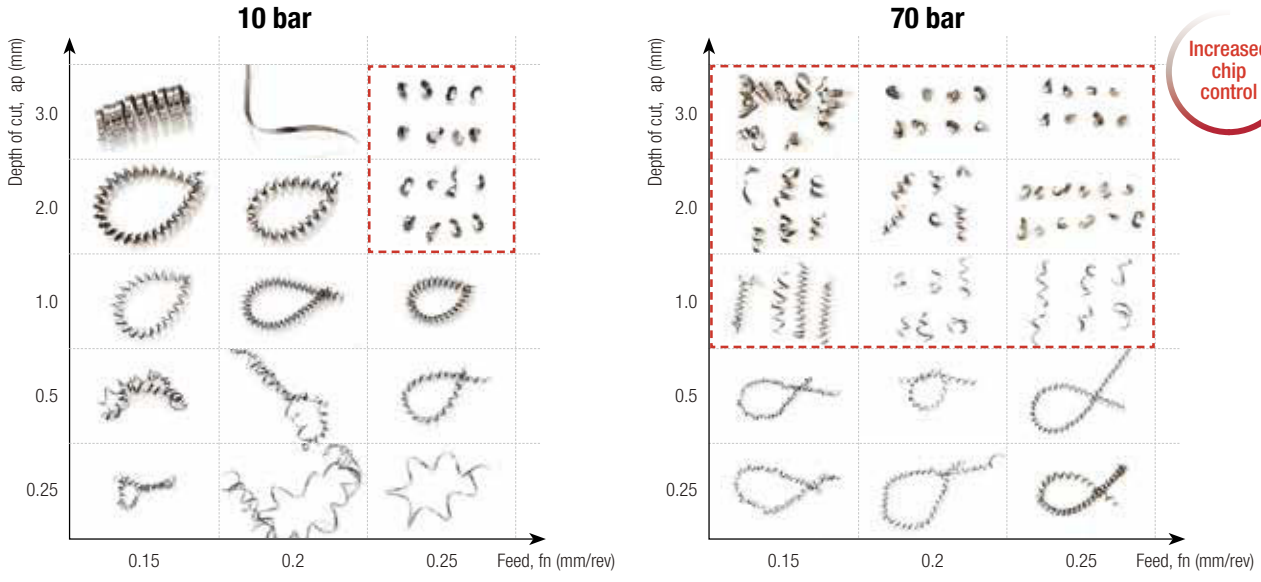
Competitor C's



- ▶ **Tool life increases up to 60% compared to competitor's in HRSA (Inconel etc.) machining.**
- ▶ **Decreased notch wear and wear on the nose radius and increased chipping resistance**

Chip control

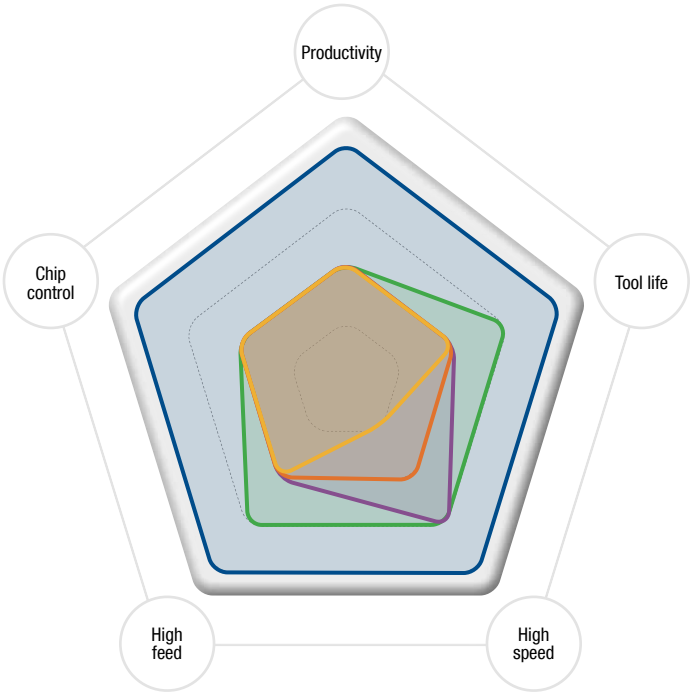
- **Workpiece** HRSA (Inconel718, HRC42)
- **Cutting conditions** vc (m/min) = 50, fn (mm/rev) = 0.25, ap (mm) = 2
- **Tool** **Insert** CNMG120408-VP4 **Holder** PCLNR2525-M12-KHP



- ▶ **Preventing early fracture of the tool and workpiece due to long chip**
- ▶ **Longer tool life and improved chip control with direct spraying coolant to the nose R of the insert instead of spraying on the top and bottom sides of the insert**

Holder Selection Guide

KHP — Lever lock system — Double clamp system — Screw on system — Multi lock system



KHP new

Longer tool life
Better chip control

Lever lock system

Easy to clamp

Double clamp system

Solid clamping force
Easy to clamp

Screw on system

For small diameter internal machining

Multi lock system

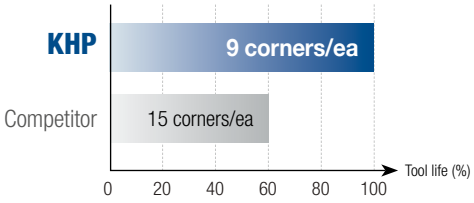
Solid clamping force

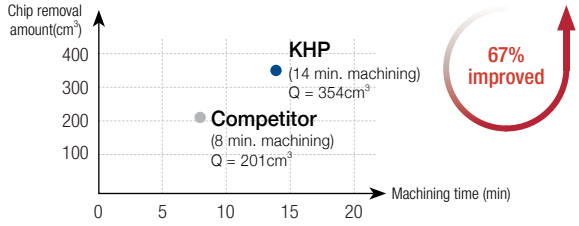
Tools	Productivity	Tool life	High speed	High feed	Chip control
KHP new	★★★★	★★★★	★★★★	★★★★	★★★★
Lever lock system	★★	★★	★★★	★★	★★
Double clamp system	★★	★★★	★★★	★★★	★★
Screw on system	★★	★★	★	★★	★★
Multi lock system	★★	★★	★★	★★	★★

Application Examples

Aviation turbine case

- **Workpiece** HRSA (Inconel718, HRC42)
- **Cutting conditions** vc (m/min) = 50-80, fn (mm/rev) = 0.25, ap (mm) = 2, wet (70 bar)
- **Tool** **Insert** CNMG120408-VP4 (PC8115) **Holder** PCLNR2525-M12-KHP

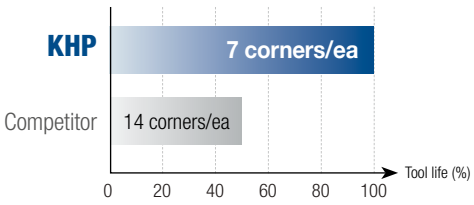


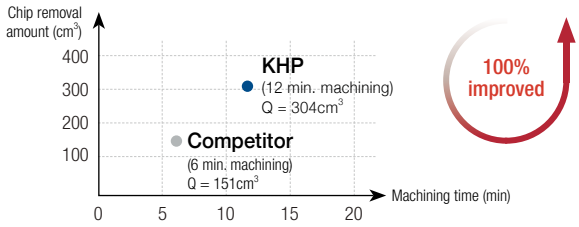


▶ **67% longer tool life per corner**

Aviation turbine disc

- **Workpiece** HRSA (Inconel718, HRC42)
- **Cutting conditions** vc (m/min) = 50-80, fn (mm/rev) = 0.25, ap (mm) = 2, wet (70 bar)
- **Tool** **Insert** CNMG120408-VP4 (PC8115) **Holder** PCLNR2525-M12-KHP

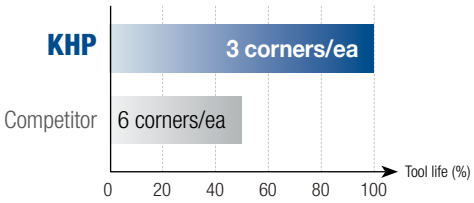


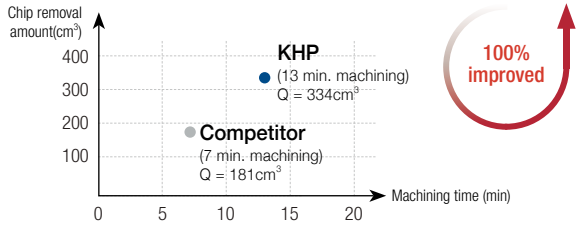


▶ **100% longer tool life per corner**

Aviation turbine spool

- **Workpiece** HRSA (Inconel718, HRC42)
- **Cutting conditions** vc (m/min) = 50-80, fn (mm/rev) = 0.25, ap (mm) = 2, wet (70 bar)
- **Tool** **Insert** CNMG120408-VP4 (PC8115) **Holder** PCLNR2525-M12-KHP

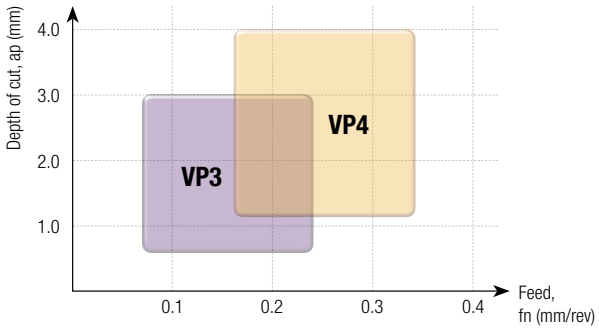




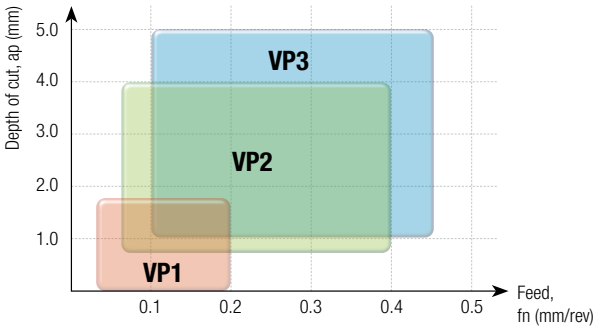
▶ **100% longer tool life per corner**

Application Range

HRSA (Inconel)

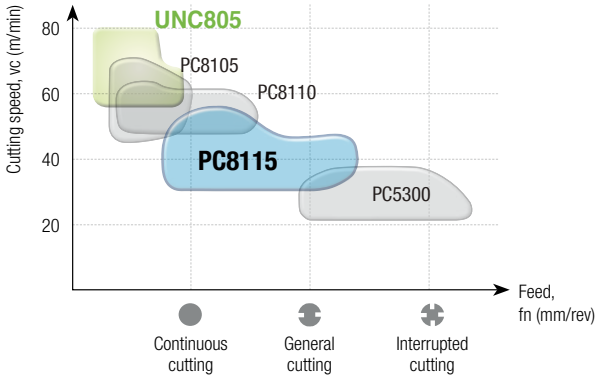


Titanium alloy

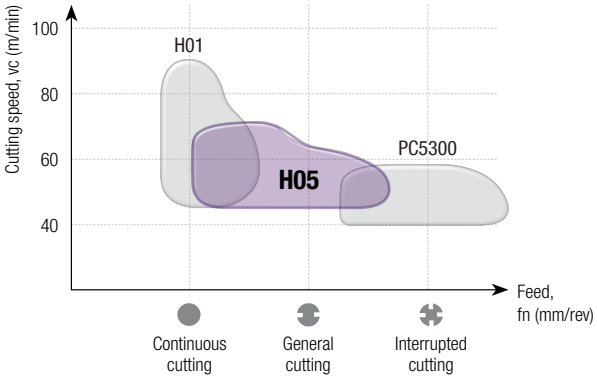


Grade Line-up

HRSA (Inconel)



Titanium alloy



Chip Breaker Comparison (HRSA/Titanium alloy)

Application	KORLOY	Competitor A	Competitor B	Competitor C	Competitor D	Competitor E	Competitor F	Competitor G
Roughing	**VP4**	SMR	RS, GJ	TF	MS	ET	MR4	NRT, NRS
Medium cutting	**VP3**	SM	MS	VL	MU	EM	MR3	NMS
Medium cutting to finishing	**VP2**	NGP	MJ	PP	TK	ML	MF1	NMT
Finishing	**VP1**	SF	LS, FJ	SF	MQ	EA	M1	NFT

Grade Comparison (HRSA)

ISO	KORLOY	Competitor A	Competitor B	Competitor C	Competitor D	Competitor E	Competitor F	Competitor G
S05	**PC8105**	S05F	MP9005 VP05RT	IC808	PR1305	TT5080	TS2000	WSM10
S10	**PC8110**	GC1105	VP10RT	IC907	PR1310			
S15	**PC8115**	GC1115	MP9015	-	-			

Grade Comparison (Titanium)

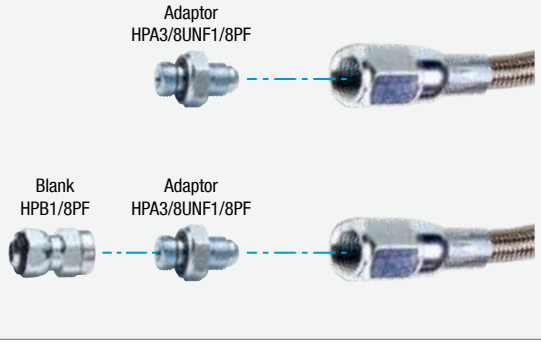
ISO	KORLOY	Competitor A	Competitor B	Competitor C	Competitor D	Competitor E	Competitor F	Competitor G
S05	**H01**	-	-	-	-	-	-	-
S10	**H05**	H13A	MT9015	IC20	-	TT5080	THR	WS10
S15	**PC5300**	GC1125	RT9015	IC908	PR1125 PR1325	TT9030 TT9080	CP500 TS2500	WSM20

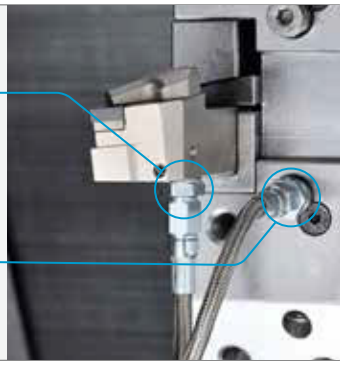
How to Clamp the KHP

Easy to clamp with 3 types of installation system.
The banjo type hose provides wider area for machining than other types.

Straight Port (S)
Tooling side

Straight Port (S)
Machinery side

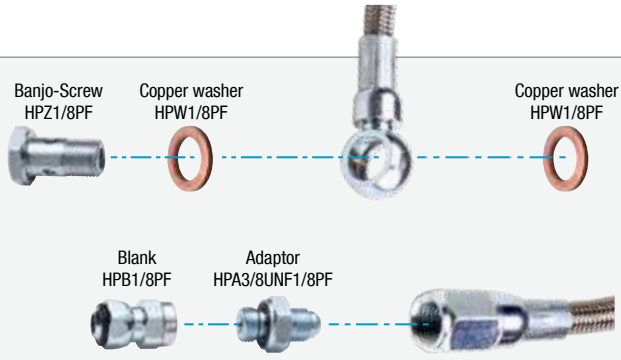


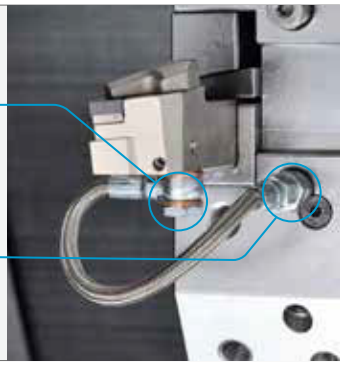


Banjo Port (B)
Tooling side

Straight Port (S)
Machinery side

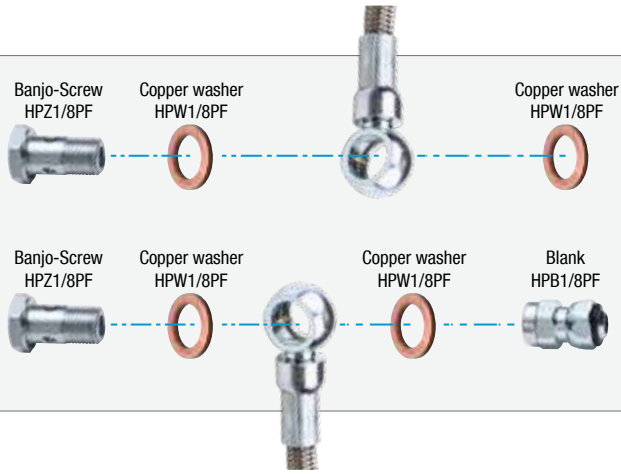
Including
spare washer

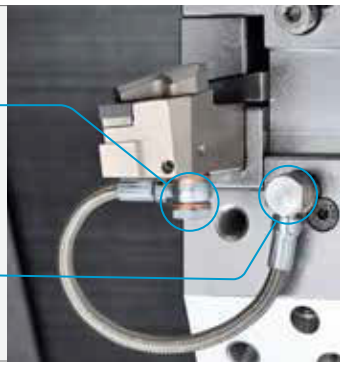




Banjo Port (B)
Tooling side

Banjo Port (B)
Machinery side





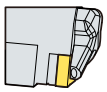
Components of KHP

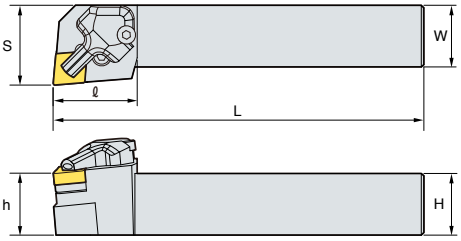
The components of high pressure coolant are sold separately.
Various components are available according to different machining sites and uses machining with high pressure coolant.

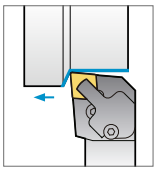
Designation	Shape	Hose length	High pressure hose	Blank	Adaptor	Banjo screw	Copper washer	Pic No.
HPH3/8UNF-200-SET	S S	200 mm	1 EA	1 EA	2 EA	-	-	1
HPH3/8UNF-250-SET		250 mm						
HPH3/8UNF1/8PF-200-SET	S B	200 mm			1 EA	1 EA	3 EA	2
HPH3/8UNF1/8PF-250-SET		250 mm						
HPH1/8PF-200-SET	B B	200 mm			-	2 EA	5 EA	3
HPH1/8PF-250-SET		250 mm						

PCLNR

CN __







95°

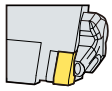
R type insert

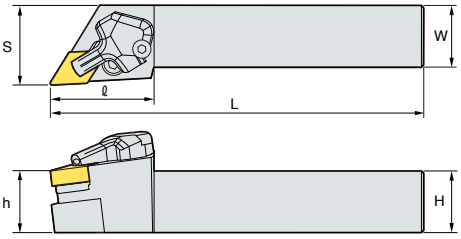
(mm)

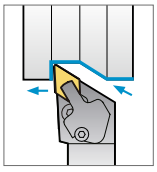
	Designation	H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim pin	Wrench	Shim pin punch	Clamp	Clamping screw	Oil seal	Plug
PCLNR	**2525-M12-KHP**	25	25	150	32	25	34	CN__1204__	LV4N	VHX0820N	SC42N	SP4N	HW20L HW30L	LSPS4	HPCR-H	MHB0415	HP07S	KHA0404-NYLOCK
	3232-P12-KHP	32	32	170	40	32	34											

PDJNR

DN __







93°

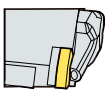
R type insert

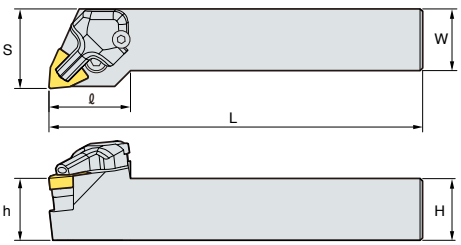
(mm)

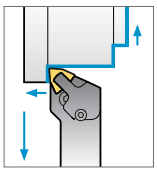
	Designation	H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim pin	Wrench	Shim pin punch	Clamp	Clamping screw	Oil seal	Plug
PDJNR	**2525-M11-KHP**	25	25	150	32.25	25	42	DN__1104__	LV3AN	VHX0617N	SD32N	SP3	HW20L HW25L HW30L	LSPS3	HPCR-H	MHB0415	HP07S	KHA0404-NYLOCK
	2525-M1504-KHP	25	25	150	32.25	25	42	DN__1504__	LV4BN	VHX0821N	SD42N	SP4N	HW20L HW30L	LSPS4				
	2525-M1506-KHP	25	25	150	32.25	25	42	DN__1506__			SD43N							

PWLNR

WN __







95°

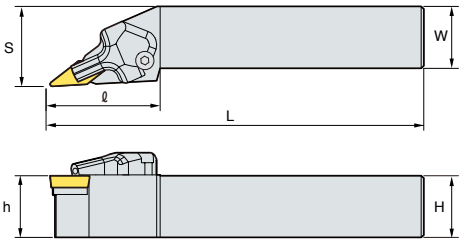
R type insert

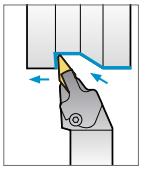
(mm)

	Designation	H	W	L	S	h	ℓ	Insert	Lever	Screw	Shim	Shim pin	Wrench	Shim pin punch	Clamp	Clamping screw	Oil seal	Plug
PWLNR	**2525-M08-KHP**	25	25	150	32.25	25	33	WN__0803__	LV4N	VHX0820N	SW42N	SP4N	HW20L HW30L	LSPS4	HPCR-H	MHB0415	HP07S	KHA0404-NYLOCK
	3232-P08-KHP	32	32	170	39.25	32	33											

SVJBR

VB __





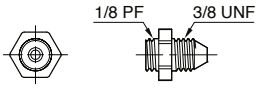
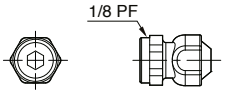
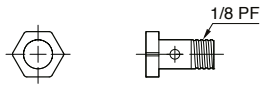
93°

R type insert

(mm)

Designation	H	W	L	S	h	ℓ	Insert	Screw	Shim screw	Shim	Wrench	Clamp	Clamping screw	Oil seal
SVJBR 2525-M16-KHP	25	25	150	32.5	25	46.5	VB_ _1604_ _	FTGA03512	SHXN0509F	SV32S	TW15P HW30L HW35L	HPCR-H	MHB0415	HP07S

Parts

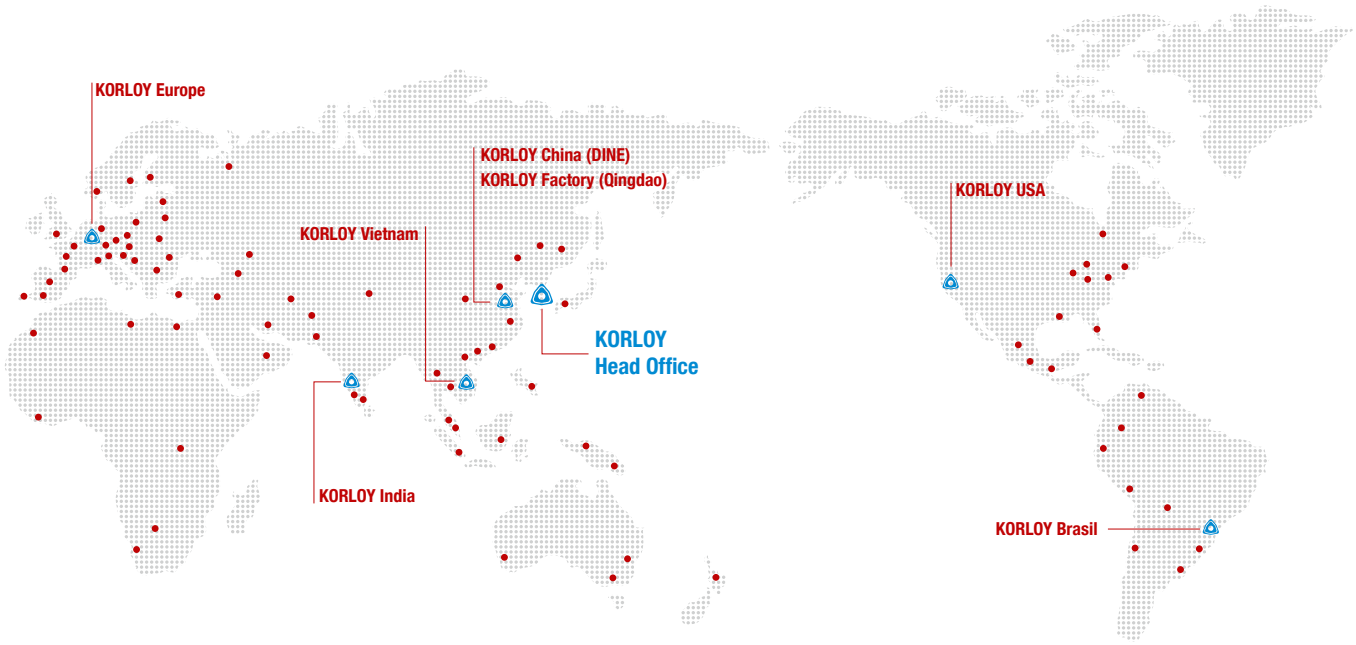
Parts	Designation	Shape of parts	
Adaptor	**HPA3/8UNF1/8PF**		
Blank	**HPB1/8PF**		
Banjo screw	**HPZ1/8PF**		
Copper washer	**HPW1/8PF**		

High Pressure Hose

The shape of the high pressure hose		Length	Standard S	Standard B
Straight to straight (S-S) (HPH3/8UNF)	S  S	200 mm 250 mm	3/8 UNF	-
Straight to banjo (S-B) (HPH3/8UNF1/8PF)	S  B	200 mm 250 mm	3/8 UNF	1/8 PF
Banjo to banjo (B-B) (HPH1/8PF)	B  B	200 mm 250 mm	-	1/8 PF

Notice

- Use a standard spanner in clamping.
- Be careful of spraying coolant injected by the residual pressure in using high pressure coolant.
- Clamp the parts tightly.
- Clean the turning machine before clamping.
- The O-ring is included in the parts. Don't have to purchase it separately.



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