NOGA MT
MACHINE TOOLS

ULTIMATE UBACK! TOOLS

PRECISION BACK COUNTER SOLUTIONS

The Ultimate Back line brings together the innovative **UX** Tool-holders and **USPOT** & **UCHAMF** inserts to redefine machining precision. Featuring a patented hydraulic mechanism that ingeniously uses the machine's coolant liquid, this system delivers exceptional control over insert movement.
THE RESULT - Unparalleled accuracy, repeatability, and streamlined operations for back counterboring, back countersinking, and back spotfacing tasks.

ULTIMATE UBACK! TOOLS

PRECISION BACK COUNTER SOLUTIONS

NOGA MT's Ultimate Back series combines innovative **UX** Tool-holders with **USPOT** & **UCHAMF** inserts to deliver unparalleled precision in back spotfacing, back counterboring, and back countersinking operations. This system utilizes a registered patented hydraulic mechanism operated by the CNC machine's coolant, ensuring exceptional control over insert movement for accurate and repeatable machining which optimizes machining processes and reduces cycle times. Its advanced engineering ensures flawless results, making it the ultimate choice for professionals seeking precision and efficiency in their machining operations.

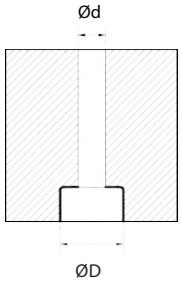
UBACK

Tool Holders Support Pilot Hole Diameters Ød
Ranging from Ø8.0-25.0mm (0.315-0.984")

USPOT
Inserts

Through-hole Back Counterboring or Spotfacing

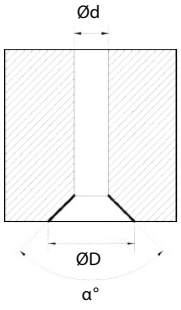
Spotface Diameters from Ø8.5-57.5mm (0.335-2.264")
Semi-Standard or Tailor-made Inserts



UCHAMF
Inserts

Through-hole Back Chamfering

Countersink Diameters from Ø8.5-46.0mm (0.335-1.811")
Available with Standard 82° and 90° Countersink Inserts



ULTIMATE UBACK! TOOLS

UBACK MAIN BENEFITS

OPERATIONAL

- Single-pass operation without workpiece rotation.
- Superior chip management.
- Streamlined insert replacement.
- Protected pilot hole integrity.

PRODUCTION

- **CAM Ready:** The UBACK tool-holders are included in SolidCAM libraries, providing quick access to specifications and applications for seamless integration. This simplifies programming, reduces cycle times and enhances overall efficiency.
- Automation-compatible design for optimizing efficiency.
- Cost-effective for all production volumes.

INDUSTRIAL APPLICATIONS

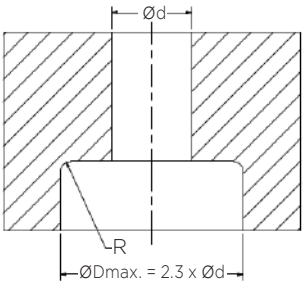
- Aerospace
- Automotive
- Medical
- Electronics

UBACK

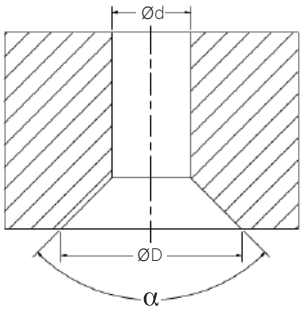
MAIN BENEFITS

Our patented hydraulic mechanism harnesses your machine's coolant liquid to deliver precise control over insert movement, ensuring exceptional accuracy and repeatability in:

BACK COUNTERBORING AND SPOTFACING



BACK COUNTERSINKING AND CHAMFERING



UBACK TOOL-HOLDERS FEATURES

- Innovative hydraulic coolant-powered precision control mechanism for controlling the insert retraction into the tool-holder body.
- Minimum pressure requirement: 6 bar / 90 PSI.
- Compatible to work with air, emulsion or MQL.
- Diameter range: Ø8 mm to Ø25 mm (0.315 - 0.984") with increments of 1 mm (0.039").
- Superior chip-control with coolant directed to the cutting edge.
- Compatible for both USPOT or UCHAMF inserts.

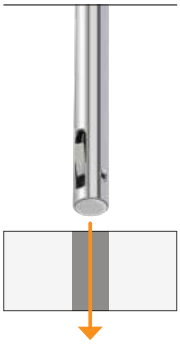
USPOT & UCHAMF INSERTS FEATURES

- High accuracy and repairability due to advanced production process.
- The USPOT inserts can reach up to 2.3 from the pilot-hole diameter.
- Specialized designs for specific machining operations.
- Easy single-screw replacement.
- Various coating options available.
- Customizable chip-formers and corner radii.
- Protective pilot hole design preventing scratches.

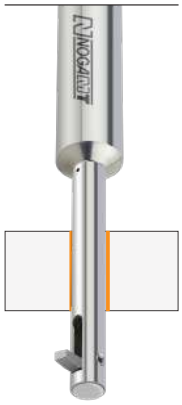
UBACK

HOW DOES UBACK WORK?

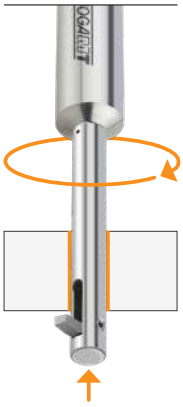
1. Tool-holder is above the pilot-hole. Coolant ON. Insert retracts inward.



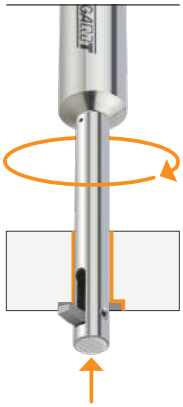
2. Tool-holder is below the pilot-hole. Coolant OFF. Insert retracts outward.



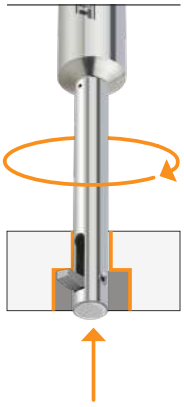
3. Tool-holder is 1 mm below the pilot-hole.



4. Tool-holder is machining the back counterbore. Coolant ON.



5. Back counterbore completed.



COMPARATIVE ANALYSIS

FEATURE	UBACK by NOGAMT	COMPETITOR "X"
TECHNOLOGY	Hydraulic mechanism for precise control	Mechanical and hydraulic mechanism
APPLICATIONS	Back spotfacing, counterboring, countersinking, including interrupted cut applications	Back spotfacing, counterboring, with limited interrupted cut applications
MATERIAL SUITABILITY	Compatible with all materials; offers advanced coatings and chip-formers (e.g. hardened steel, composites.	Limited materials; fewer coatings and chip-formers
AUTOMATION READINESS	Fully compatible with CNC and robotic systems	Limited CNC integration
INSERT RETRACTION	Precise hydraulic actuation	Controlled with hydraulic actuation
INSERT EXTENSION	Precise hydraulic actuation	Uses centrifugal force
COOLANT SYSTEM	Same tool-holder works for air, emulsion or MQL	Requires a different tool-holder system
SPEED & EFFICIENCY	Delivers faster cycle times and high repeatability	Standard operational speed
CHIP CONTROL	Advanced chip-formers and optimized coating for better control	Basic chip evacuation system
INSERT REPLACEMENT	Easy replacement with a single screw, no additional tools needed	Requires replacement pins and special mounting devices

VALUE PROPOSITION

The **UBACK** by NOGAMT redefines back machining with its combination of precision engineering and operational efficiency. Its innovative design enhances machining processes, ensuring consistent, high-quality results, while minimizing operational costs and maximizing productivity. This makes it the ideal solution for advanced manufacturing, excelling in precision, speed and material versatility.

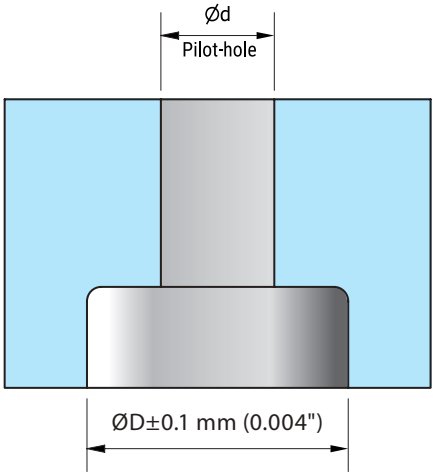
UBACK USPOT INSERT

SERIES AND RANGE

The **UBACK** line is divided into series or groups, with each series optimized for a specific pilot-hole range and determined by the type of insert family.

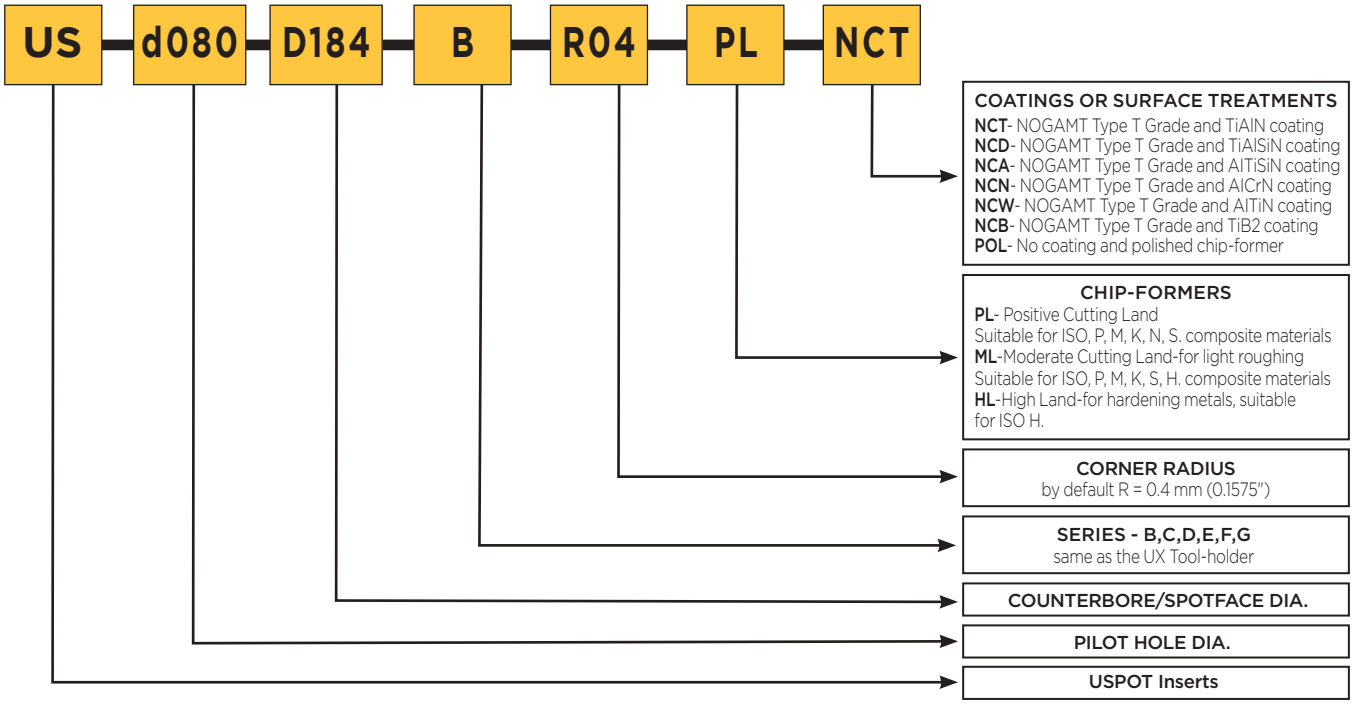
For **USPOT** inserts:

SERIES	Ød PILOT-HOLE RANGE mm / Inch	ØD COUNTERBORE RANGE mm / Inch
B	8.0 -10.0 / 0.315 - 0.394	8.5 -23.0 / 0.335 - 0.906
C	11.0 -13.0 / 0.433 - 0.512	11.5 - 30.0 / 0.453 - 1.181
D	14.0 -16.0 / 0.551 - 0.630	14.5 -37.0 / 0.571 - 1.457
E	17.0 -19.0 / 0.669 - 0.748	17.5 -44.0 / 0.689 - 1.732
F	20.0 -22.0 / 0.787 - 0.866	20.5 -50.5 / 0.807 - 1.988
G	23.0 -25.0 / 0.906 - 0.984	23.5 -57.5 / 0.925 - 2.264



The **USPOT inserts** are offered as semi-standard solutions tailored to meet customer-specific applications. It is mandatory to match the tool-holder series with the corresponding insert series.

USPOT INSERTS CODING SYSTEM SPECIFICATIONS AND IDENTIFICATION:



NOTES:

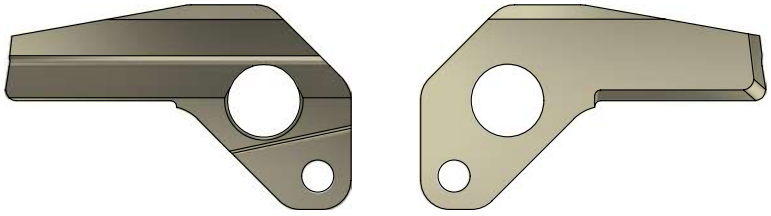
1. Coating: Our top recommendation is the NCT grade, featuring the versatile TiAlN PVD coating. It offers excellent thermal stability, oxidation resistance, and is compatible with a wide range of materials, including mild steels, stainless steel, and Inconel. For additional options, refer to the list of available coatings on page 37.

2. Tool-holders and **inserts** are sold separately.

UBACK USPOT INSERT

HOW TO ORDER A USPOT INSERT TO MATCH YOUR APPLICATION

The **USPOT** inserts are available only as semi-standard solutions tailored to customer applications.



- **CHOOSE THE APPROPRIATE TOOL-HOLDER BASED ON THE PILOT HOLE DIAMETER.** For instance, if the pilot hole diameter is 8.5 mm, select the **UX2080**, which supports a minimum diameter (Ødmin) of 8 mm.
- **SPECIFY THE REQUIRED PARAMETERS FOR THE USPOT INSERT,** including the pilot-hole diameter, counter-bore or spotface diameter, corner radius, chip-former and coating according to coding system page 26.
- **FILL IN THE RELEVANT DETAILS FOR THE USPOT INSERT** description as outlined in the coding system below.
- **ENSURE COMPATIBILITY BETWEEN THE USPOT INSERT SERIES AND THE CORRESPONDING UX TOOL-HOLDER**. The series of the insert must match the series of the **UX** tool-holder.

USPOT - EXAMPLE FOR ORDERING SEMI-STANDARD INSERT:

Here is an example of coding a semi-standard **USPOT** insert for the application shown below:

1. Ød = 8.7mm (0.343")

2. ØD = 17.6mm (0.693")

3. R = 0.2mm (0.032")

4. Material: AISI 4340 / 34CrNiMo6 (1.6582) / SNCM439, tempered to 42 HR

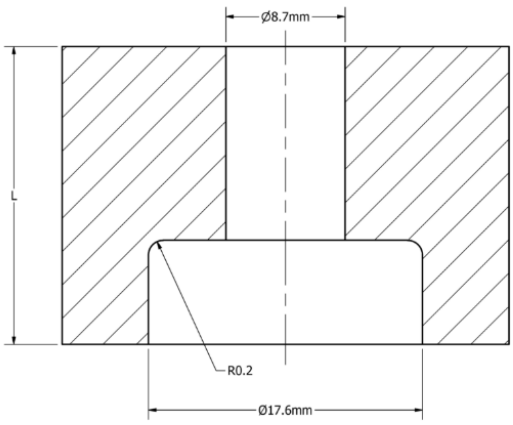
The recommended tool-holder is **UX2080 / UX-d080-B-C16-H62-L115**.

The corresponding insert is **US-d087-D176-B-R02-ML-NCT**

IMPORTANT NOTES:

Ensure that the pilot-hole length (L) is less than or equal to the RFC (Relief For Cutting) L<RFC ,as specified in the UBACK tool-holders table pages 28-29.

If you need further assistance, please don't hesitate to contact us:
Providing an application drawing or sketch, the raw material specifications, and any other relevant information will help us assist you more effectively.



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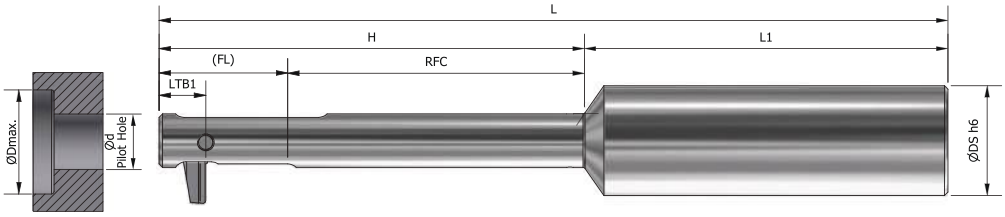


STANDARD TOOL-HOLDERS WITH USPOT INSERTS (mm)

Ød min. PILOT HOLE	SKU TOOL-HOLDER	DESCRIPTION TOOL-HOLDER	ØDS h6	FL(1)	RFC(2)	H	L	L1	LTB1(3) USPOT	ØD(4) max.	PISTON(6) PLUG MxPxL(mm)	INSERTING CLAMPING SCREW MxPxL(mm)	SERIES(5)
8	UX2080	UX-d080-B-C16-H62-L115	16	17	43	62	115	53	6.8	18.5	UX0011/ M5x0.8x6	UX0005/ M2.5x0.35x7B	B
9	UX2090	UX-d090-B-C16-H62-L115	16	17.8	43	62	115	53	6.8	21			B
10	UX2100	UX-d100-B-C16-H62-L115	16	18.8	43	62	115	53	6.8	23			B
11	UX3110	UX-d110-C-C16-H80-L133	16	27	52	80	133	53	11.4	26	UX0011/ M5x0.8x6	UX0006/ M3x0.35x10C	C
12	UX3120	UX-d120-C-C16-H80-L133	16	27.3	52	80	133	53	11.4	28			C
13	UX3130	UX-d130-C-C16-H80-L133	16	28	52	80	133	53	11.4	30			C
14	UX4140	UX-d140-D-C20-H105-L158	20	32.5	72.5	105	158	53	13.5	32.5	UX0012/ M6x1.0x6	UX0007/ M3x0.35x13D	D
15	UX4150	UX-d150-D-C20-H105-L158	20	32.5	72.5	105	158	53	13.5	34.5			D
16	UX4160	UX-d160-D-C20-H105-L158	20	32.5	72.5	105	158	53	13.5	37			D
17	UX5170	UX-d170-E-C20-H115-L170	20	38.5	76.5	115	170	55	16	39.5	UX0012/ M6x1.0x6	UX0008/ M3x0.35x16E	E
18	UX5180	UX-d180-E-C20-H115-L170	20	38.5	76.5	115	170	55	16	41.5			E
19	UX5190	UX-d190-E-C20-H115-L170	20	38.5	76.5	115	170	55	16	44			E
20	UX6200	UX-d200-F-C25-H120-L175	25	43.5	76.5	120	175	55	17.8	46	UX0013/ M8x1.25x6	UX0009/ M4x0.5x19F	F
21	UX6210	UX-d210-F-C25-H120-L175	25	43.5	76.5	120	175	55	17.8	48.5			F
22	UX6220	UX-d220-F-C25-H120-L175	25	43.5	76.5	120	175	55	17.8	50.5			F
23	UX7230	UX-d230-G-C25-H120-L175	25	48	72	120	175	55	20	53	UX0013/ M8x1.25x6	UX0010/ M4x0.5x21G	G
24	UX7240	UX-d240-G-C25-H120-L175	25	48	72	120	175	55	20	55.5			G
25	UX7250	UX-d250-G-C25-H120-L175	25	48	72	120	175	55	20	57.5			G

(1) FL – Folding Length.

(2) RFC – Relief For Cutting.

(3) LTB – (Length to bottom) parameter varies between **USPOT** and **UCHAMF** inserts.

(4) The achieved tolerance for the counterbore or spotface diameter ØD is ±0.1 mm (0.004").

(5) The insert series must match the series of the tool-holder**.**

(6) Piston plug for adapting various coolant systems (refer to page 37).

NOTE Tool-holders and inserts are sold separately.

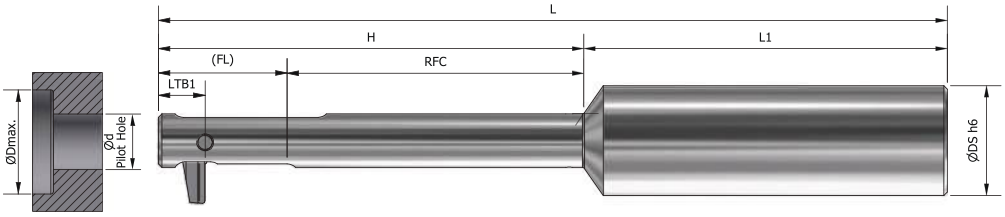
UX Tool-holder Spare Parts:

Hex L-Key - SP0105 0.050" 1 + 1 /16 /1 + 9/16

Insert Clamping Screw - according to the table above.

Pin - UX0003

UBACK



STANDARD TOOL-HOLDERS WITH USPOT INSERTS (Inch)

Ød min. PILOT HOLE	SKU TOOL-HOLDER	DESCRIPTION TOOL-HOLDER	ØDS h6	FL(1)	RFC(2)	H	L	L1	LTB1(3) USPOT	ØD(4) max.	PISTON(6) PLUG MxPxL(mm)	INSERTING CLAMPING SCREW MxPxL(mm)	SERIES(5)
0.315	UX2080	UX-d080-B-C16-H62-L115	0.630	0.669	1.693	2.441	4.528	2.087	0.268	0.728	UX0011/ M5x0.8x6	UX0005/ M2.5x0.35x7B	B
0.354	UX2090	UX-d090-B-C16-H62-L115	0.630	0.701	1.693	2.441	4.528	2.087	0.268	0.827			B
0.394	UX2100	UX-d100-B-C16-H62-L115	0.630	0.740	1.693	2.441	4.528	2.087	0.268	0.906			B
0.433	UX3110	UX-d110-C-C16-H80-L133	0.630	1.063	2.047	3.150	5.236	2.087	0.449	1.024	UX0011/ M5x0.8x6	UX0006/ M3x0.35x10C	C
0.472	UX3120	UX-d120-C-C16-H80-L133	0.630	1.075	2.047	3.150	5.236	2.087	0.449	1.102			C
0.512	UX3130	UX-d130-C-C16-H80-L133	0.630	1.102	2.047	3.150	5.236	2.087	0.449	1.181			C
0.551	UX4140	UX-d140-D-C20-H105-L158	0.787	1.280	2.854	4.134	6.220	2.087	0.531	1.280	UX0012/ M6x1.0x6	UX0007/ M3x0.35x13D	D
0.591	UX4150	UX-d150-D-C20-H105-L158	0.787	1.280	2.854	4.134	6.220	2.087	0.531	1.358			D
0.630	UX4160	UX-d160-D-C20-H105-L158	0.787	1.280	2.854	4.134	6.220	2.087	0.531	1.457			D
0.669	UX5170	UX-d170-E-C20-H115-L170	0.787	1.516	3.012	4.528	6.693	2.165	0.630	1.555	UX0012/ M6x1.0x6	UX0008/ M3x0.35x16E	E
0.709	UX5180	UX-d180-E-C20-H115-L170	0.787	1.516	3.012	4.528	6.693	2.165	0.630	1.634			E
0.748	UX5190	UX-d190-E-C20-H115-L170	0.787	1.516	3.012	4.528	6.693	2.165	0.630	1.732			E
0.787	UX6200	UX-d200-F-C25-H120-L175	0.984	1.713	3.012	4.724	6.890	2.165	0.701	1.811	UX0013/ M8x1.25x6	UX0009/ M4x0.5x19F	F
0.827	UX6210	UX-d210-F-C25-H120-L175	0.984	1.713	3.012	4.724	6.890	2.165	0.701	1.909			F
0.866	UX6220	UX-d220-F-C25-H120-L175	0.984	1.713	3.012	4.724	6.890	2.165	0.701	1.988			F
0.906	UX7230	UX-d230-G-C25-H120-L175	0.984	1.890	2.835	4.724	6.890	2.165	0.787	2.087	UX0013/ M8x1.25x6	UX0010/ M4x0.5x21G	G
0.945	UX7240	UX-d240-G-C25-H120-L175	0.984	1.890	2.835	4.724	6.890	2.165	0.787	2.185			G
0.984	UX7250	UX-d250-G-C25-H120-L175	0.984	1.890	2.835	4.724	6.890	2.165	0.787	2.264			G

(1) FL – Folding Length.

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(3) LTB – (Length to bottom) parameter varies between **USPOT** and **UCHAMF** inserts.

(4) The achieved tolerance for the counterbore or spotface diameter ØD is ±0.1 mm (0.004").

(5) The insert series must match the series of the tool-holder**.**

(6) Piston plug for adapting various coolant systems (refer to page 37).

NOTE Tool-holders and inserts are sold separately.

UX Tool-holder Spare Parts:

- Hex L-Key - SP0105 0.050" 1 + 1 /16 /1 + 9/16
- Insert Clamping Screw - according to the table above.
- Pin - UX0003

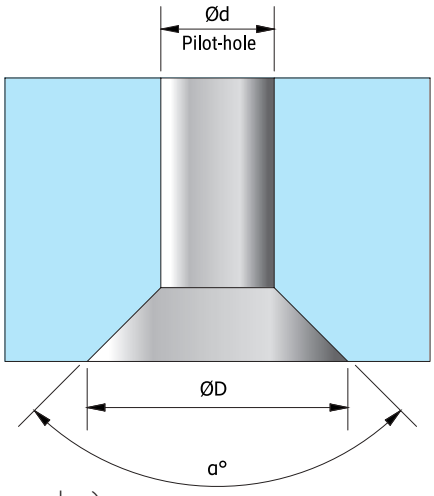
UBACK UCHAMF INSERT

SERIES AND RANGE

The **UBACK** line is divided into series or groups, with each series optimized for a specific pilot-hole range and determined by the type of insert family.

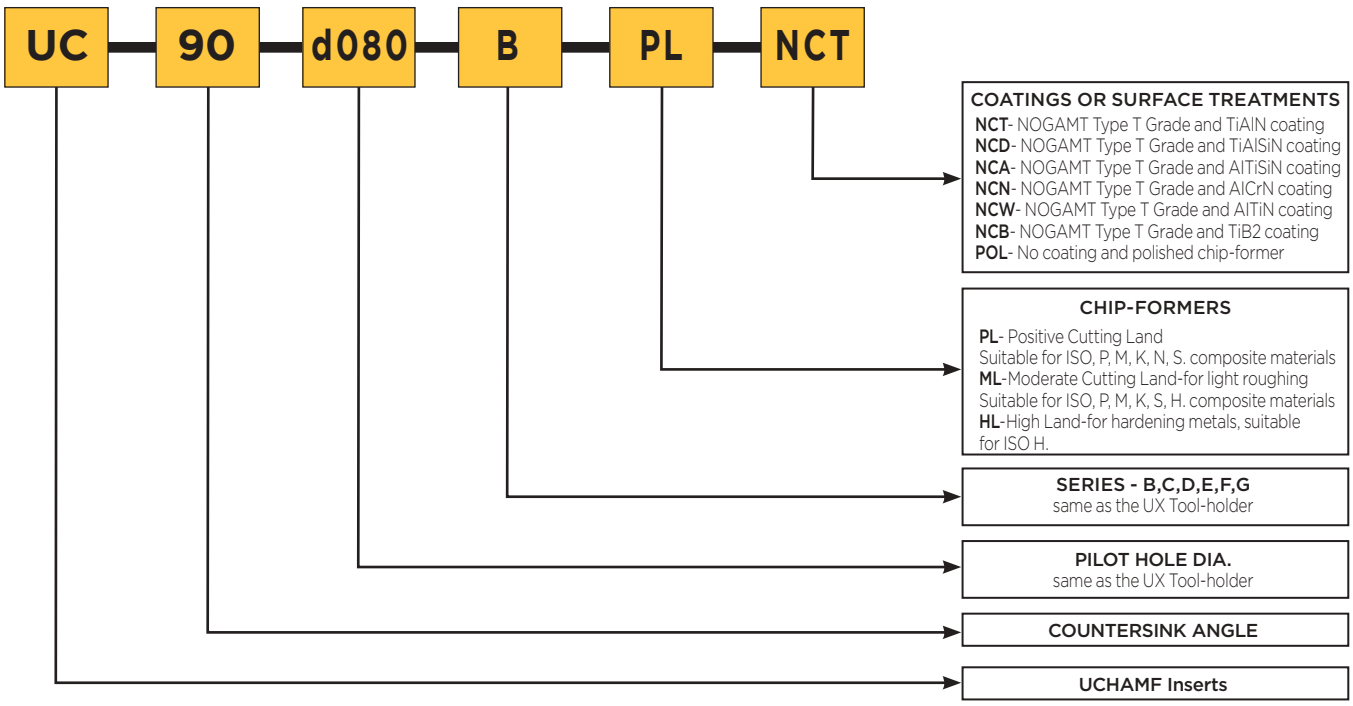
For **UCHAMF** inserts:

SERIES	Ød PILOT-HOLE RANGE mm / Inch	ØD COUNTERSINK RANGE for 82° mm / Inch	ØD COUNTERSINK RANGE for 90° mm / Inch
B	8.0-10.0 / 0.315-0.394	8.5-17.0 / 0.335 - 0.670	8.5-18.0 / 0.335 - 0.709
C	11.0-13.0 / 0.433-0.512	11.5-24.0 / 0.453-0.945	11.5-25.0 / 0.453-0.984
D	14.0-16.0 / 0.551-0.630	14.5-29.0 / 0.571-1.142	14.5-31.0 / 0.571-1.220
E	17.0-19.0 / 0.669-0.748	17.5-34.0 / 0.689-1.339	17.5-37.0 / 0.689-1.457
F	20.0-22.0 / 0.787-0.866	20.5-39.0 / 0.807-1.535	20.5-42.0 / 0.807-1.653
G	23.0-25.0 / 0.906-0.984	23.5-44.0 / 0.925-1.732	23.5-47.0 / 0.925-1.850



■ The **UCHAMF inserts** are offered as standard (82°, 90° countersink angles) or semi-standard solutions tailored to meet customer-specific applications. It is mandatory to match the tool-holder series with the corresponding insert series.

■ UCHAMF INSERTS CODING SYSTEM SPECIFICATIONS AND IDENTIFICATION:

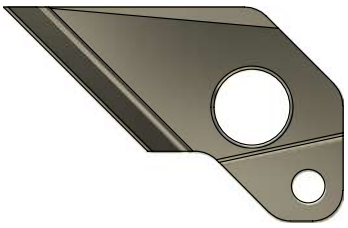


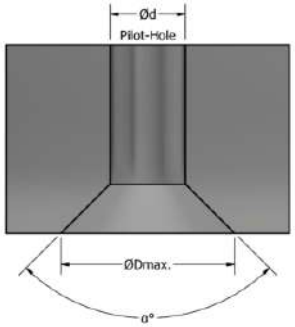
NOTES:

1. Coating: Our top recommendation is the NCT grade, featuring the versatile TiAlN PVD coating. It offers excellent thermal stability, oxidation resistance and is compatible with a wide range of materials, including mild steels, stainless steel, and Inconel. For additional options, refer to the list of available coatings on page 37.

2. Tool-holders and **inserts** are sold separately.

UBACK





UCHAMF 82°and 90° STANDARD INSERTS (mm/Inch)

Ødmin. PILOT HOLE mm /Inch	COUNTERSINK ANGLE α = 82°			COUNTERSINK ANGLE α = 90°			SERIES
	SKU	DESCRIPTION	Ø D MAX. mm /Inch	SKU	DESCRIPTION	Ø D MAX. mm /Inch	
8/0.315	UC2101	UC-82-d080-B-PL-NCT	15/0.591	UC2201	UC-90-d080-B-PL-NCT	16/0.630	B
9/0.354	UC2102	UC-82-d090-B-PL-NCT	16/0.630	UC2202	UC-90-d090-B-PL-NCT	17/0.669	
10/0.394	UC2103	UC-82-d100-B-PL-NCT	17/0.669	UC2203	UC-90-d100-B-PL-NCT	18/0.709	
11/0.433	UC3101	UC-82-d110-C-PL-NCT	22/0.866	UC3201	UC-90-d110-C-PL-NCT	23/0.906	C
12/0.472	UC3102	UC-82-d120-C-PL-NCT	23/0.906	UC3202	UC-90-d120-C-PL-NCT	24/0.945	
13/0.512	UC3103	UC-82-d130-C-PL-NCT	24/0.945	UC3203	UC-90-d130-C-PL-NCT	25/0.984	
14/0.551	UC4101	UC-82-d140-D-PL-NCT	27/1.063	UC4201	UC-90-d140-D-PL-NCT	29/1.142	D
15/0.591	UC4102	UC-82-d150-D-PL-NCT	28/1.102	UC4202	UC-90-d150-D-PL-NCT	30/1.181	
16/0.630	UC4103	UC-82-d160-D-PL-NCT	29/1.142	UC4203	UC-90-d160-D-PL-NCT	31/1.220	
17/0.669	UC5101	UC-82-d170-E-PL-NCT	32/1.260	UC5201	UC-90-d170-E-PL-NCT	35/1.378	E
18/0.709	UC5102	UC-82-d180-E-PL-NCT	33/1.299	UC5202	UC-90-d180-E-PL-NCT	36/1.417	
19/0.748	UC5103	UC-82-d190-E-PL-NCT	34/1.339	UC5203	UC-90-d190-E-PL-NCT	37/1.457	
20/0.787	UC6101	UC-82-d200-F-PL-NCT	37/1.457	UC6201	UC-90-d200-F-PL-NCT	40/1.575	F
21/0.827	UC6102	UC-82-d210-F-PL-NCT	38/1.496	UC6202	UC-90-d210-F-PL-NCT	41/1.614	
22/0.866	UC6103	UC-82-d220-F-PL-NCT	39/1.535	UC6203	UC-90-d220-F-PL-NCT	42/1.654	
23/0.906	UC7101	UC-82-d230-G-PL-NCT	42/1.654	UC7201	UC-90-d230-G-PL-NCT	45/1.772	G
24/0.945	UC7102	UC-82-d240-G-PL-NCT	43/1.693	UC7202	UC-90-d240-G-PL-NCT	46/1.811	
25/0.984	UC7103	UC-82-d250-G-PL-NCT	44/1.732	UC7203	UC-90-d250-G-PL-NCT	47/1.850	

UCHAMF - EXAMPLE FOR ORDERING SEMI-STANDARD INSERT:

Here is an example of coding a special **UCHAMF** insert for the application shown below:

1. Ød = 8.7mm (0.343").

2. Countersink Angle = 110°.

3. Material: AISI / EN AW / JIS - 7075.

The recommended tool-holder is **UX2080 / UX-d080-B-C16-H62-L115** with **Ød**$_{min}$ = 8mm (0.315").

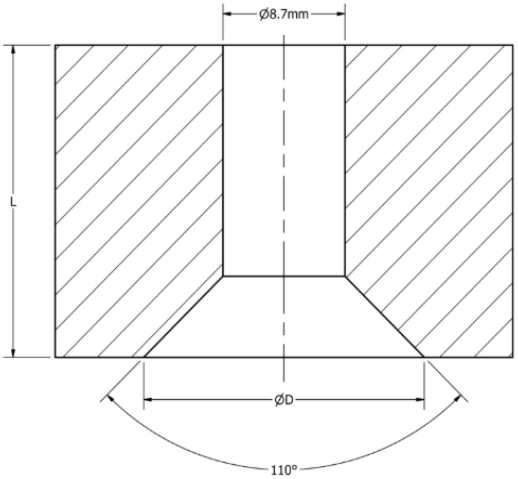
The corresponding insert is **UC-110-d080-B-PL-NCT.**

IMPORTANT NOTES:

1. Ensure that the pilot-hole length (L) is less than or equal to the RFC (Relief For Cutting): L ⩽ RFC, as specified in the UBACK tool-holders table below.

2. Ensure that the countersink diameter ØD is less than or equal to the maximum allowable diameter: ØD⩽ ØD$_{max}$, as specified in the UBACK tool-holders table pages 32-33.

If you need further assistance, please don't hesitate to contact us:
Providing an application drawing or sketch, the raw material specifications, and any other relevant information will help us assist you more effectively.



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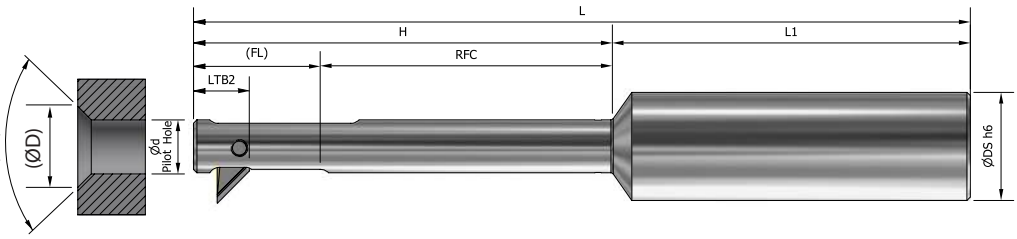


STANDARD TOOL-HOLDERS WITH UCHAMF INSERTS (mm)

Ød min. PILOT HOLE	SKU TOOL-HOLDER	DESCRIPTION TOOL-HOLDER	ØDS h6	FL (1)	RFC (2)	H	L	L1	LTB2 (3) UCHAMF	PISTON (5) PLUG MxPxL (mm)	INSERTING CLAMPING SCREW MxPxL (mm)	SERIES (4)
8	UX2080	UX-d080-B-C16-H62-L115	16	17	43	62	115	53	8.25	UX0011/ M5x0.8x6	UX0005/ M2.5x0.35x7B	B
9	UX2090	UX-d090-B-C16-H62-L115	16	17.8	43	62	115	53	8.25			B
10	UX2100	UX-d100-B-C16-H62-L115	16	18.8	43	62	115	53	8.25			B
11	UX3110	UX-d110-C-C16-H80-L133	16	27	52	80	133	53	13.6	UX0011/ M5x0.8x6	UX0006/ M3x0.35x10C	C
12	UX3120	UX-d120-C-C16-H80-L133	16	27.3	52	80	133	53	13.6			C
13	UX3130	UX-d130-C-C16-H80-L133	16	28	52	80	133	53	13.6			C
14	UX4140	UX-d140-D-C20-H105-L158	20	32.5	72.5	105	158	53	15.3	UX0012/ M6x1.0x6	UX0007/ M3x0.35x13D	D
15	UX4150	UX-d150-D-C20-H105-L158	20	32.5	72.5	105	158	53	15.3			D
16	UX4160	UX-d160-D-C20-H105-L158	20	32.5	72.5	105	158	53	15.3			D
17	UX5170	UX-d170-E-C20-H115-L170	20	38.5	76.5	115	170	55	18	UX0012/ M6x1.0x6	UX0008/ M3x0.35x16E	E
18	UX5180	UX-d180-E-C20-H115-L170	20	38.5	76.5	115	170	55	18			E
19	UX5190	UX-d190-E-C20-H115-L170	20	38.5	76.5	115	170	55	18			E
20	UX6200	UX-d200-F-C25-H120-L175	25	43.5	76.5	120	175	55	20	UX0013/ M8x1.25x6	UX0009/ M4x0.5x19F	F
21	UX6210	UX-d210-F-C25-H120-L175	25	43.5	76.5	120	175	55	20			F
22	UX6220	UX-d220-F-C25-H120-L175	25	43.5	76.5	120	175	55	20			F
23	UX7230	UX-d230-G-C25-H120-L175	25	48	72	120	175	55	22	UX0013/ M8x1.25x6	UX0010/ M4x0.5x21G	G
24	UX7240	UX-d240-G-C25-H120-L175	25	48	72	120	175	55	22			G
25	UX7250	UX-d250-G-C25-H120-L175	25	48	72	120	175	55	22			G

(1) FL – Folding Length.

(2) RFC – Relief For Cutting.

(3) LTB – (Length to bottom) parameter varies between **USPOT** and **UCHAMF** inserts.

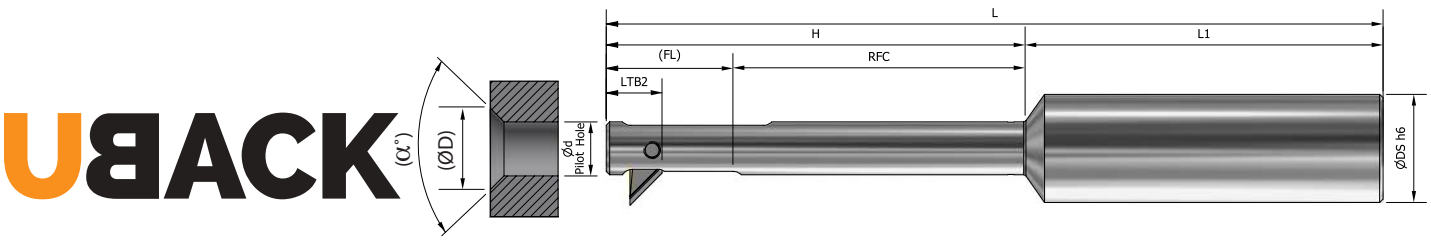
(4) The insert series must match the series of the tool-holder.

(5) Piston plug for adapting various coolant systems (refer to page 37).

NOTE Tool-holders and inserts are sold separately.

UX Tool-holder Spare Parts:

- Hex L-Key - SP0105 0.050" 1 + 1 /16 /1 + 9/16
- Insert Clamping Screw- according to the table above.
- Pin - UX0003



STANDARD TOOL-HOLDERS WITH UCHAMF INSERTS (Inch)

Ød min. PILOT HOLE	SKU TOOL-HOLDER	DESCRIPTION TOOL-HOLDER	ØDS h6	FL (1)	RFC (2)	H	L	L1	LTB2 (3) UCHAMF	PISTON (5) PLUG MxPxL (mm)	INSERTING CLAMPING SCREW MxPxL (mm)	SERIES (4)
0.315	UX2080	UX-d080-B-C16-H62-L115	0.630	0.669	1.693	2.441	4.528	2.087	0.325	UX0011/ M5x0.8x6	UX0005/ M2.5x0.35x7B	B
0.354	UX2090	UX-d090-B-C16-H62-L115	0.630	0.701	1.693	2.441	4.528	2.087	0.325			B
0.394	UX2100	UX-d100-B-C16-H62-L115	0.630	0.740	1.693	2.441	4.528	2.087	0.325			B
0.433	UX3110	UX-d110-C-C16-H80-L133	0.630	1.063	2.047	3.150	5.236	2.087	0.535	UX0011/ M5x0.8x6	UX0006/ M3x0.35x10C	C
0.472	UX3120	UX-d120-C-C16-H80-L133	0.630	1.075	2.047	3.150	5.236	2.087	0.535			C
0.512	UX3130	UX-d130-C-C16-H80-L133	0.630	1.102	2.047	3.150	5.236	2.087	0.535			C
0.551	UX4140	UX-d140-D-C20-H105-L158	0.787	1.280	2.854	4.134	6.220	2.087	0.602	UX0012/ M6x1.0x6	UX0007/ M3x0.35x13D	D
0.591	UX4150	UX-d150-D-C20-H105-L158	0.787	1.280	2.854	4.134	6.220	2.087	0.602			D
0.630	UX4160	UX-d160-D-C20-H105-L158	0.787	1.280	2.854	4.134	6.220	2.087	0.602			D
0.669	UX5170	UX-d170-E-C20-H115-L170	0.787	1.516	3.012	4.528	6.693	2.165	0.709	UX0012/ M6x1.0x6	UX0008/ M3x0.35x16E	E
0.709	UX5180	UX-d180-E-C20-H115-L170	0.787	1.516	3.012	4.528	6.693	2.165	0.709			E
0.748	UX5190	UX-d190-E-C20-H115-L170	0.787	1.516	3.012	4.528	6.693	2.165	0.709			E
0.787	UX6200	UX-d200-F-C25-H120-L175	0.984	1.713	3.012	4.724	6.890	2.165	0.787	UX0013/ M8x1.25x6	UX0009/ M4x0.5x19F	F
0.827	UX6210	UX-d210-F-C25-H120-L175	0.984	1.713	3.012	4.724	6.890	2.165	0.787			F
0.866	UX6220	UX-d220-F-C25-H120-L175	0.984	1.713	3.012	4.724	6.890	2.165	0.787			F
0.906	UX7230	UX-d230-G-C25-H120-L175	0.984	1.890	2.835	4.724	6.890	2.165	0.866	UX0013/ M8x1.25x6	UX0010/ M4x0.5x21G	G
0.945	UX7240	UX-d240-G-C25-H120-L175	0.984	1.890	2.835	4.724	6.890	2.165	0.866			G
0.984	UX7250	UX-d250-G-C25-H120-L175	0.984	1.890	2.835	4.724	6.890	2.165	0.866			G

(1) FL – Folding Length.

(2) RFC – Relief For Cutting.

(3) LTB – (Length to bottom) parameter varies between **USPOT** and **UCHAMF** inserts.

(4) The insert series must match the series of the tool-holder.

(5) Piston plug for adapting various coolant systems (refer to page 37).

NOTE Tool-holders and inserts are sold separately.

UX Tool-holder Spare Parts:

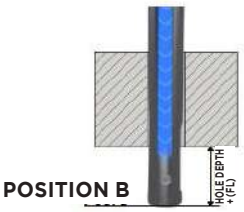
- Hex L-Key - SP0105 0.050" 1 + 1 /16 /1 + 9/16
- Insert Clamping Screw- according to the table above.
- Pin - UX0003

UBACK PROGRAMMING

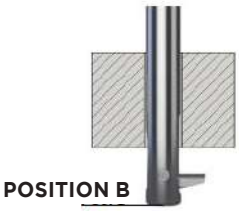
STEP 1
Move to Initial Position A to the safe height.

STEP 2
Turn coolant ON.

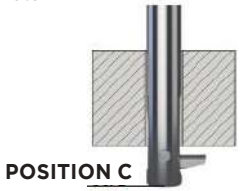
STEP 3
Move rapidly down to the pilot hole depth at the defined rapid feed rate.



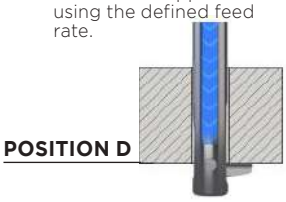
STEP 4
Turn coolant OFF.



STEP 5
Move below the workpiece to position C using a controlled feed rate.

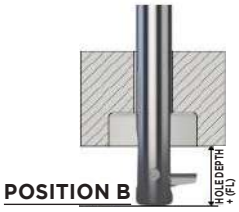


STEP 6
Move to initial position D. Turn coolant ON again and move the tool to touch the workpiece with a controlled approach using the defined feed rate.

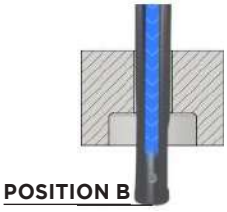


STEP 7
Machine the counterbore at the defined depth using a defined feed rate.

STEP 8
Moving to position B. Move rapidly down and turn coolant OFF. Retract the tool back to position B below the workpiece,



STEP 9
Turn coolant ON.

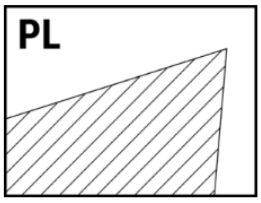


STEP 10
Moving to position A. Rapidly retract the tool to the safe height above the workpiece and turn the spindle and coolant off.

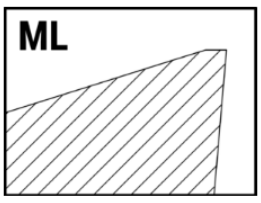
1. The Folding Length **(FL)** parameter is listed in the tool-holder tables and is the same for both **USPOT** inserts and **UCHAMF** inserts.
2. The illustrated operation sequence above demonstrates working with a **USPOT** insert but remains the same when using a **UCHAMF** insert.

UBACK CHIP-FORMERS

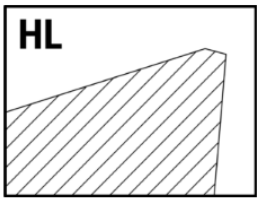
PL
POSITIVE CUTTING LAND
Suitable for all-round purpose and ISO, P, M, K, N, S. as well as composite materials



ML
MODERATE CUTTING LAND
Suitable for ISO, P, M, K, S, H. materials



HL
NEGATIVE CUTTING LAND
Suitable for ISO, P, M, K, S, H. materials



UBACK

INSERT REPLACEMENT

1

Press the insert down and hold.

2

While holding the insert down, insert the pin into the small hole at the base of the neck.

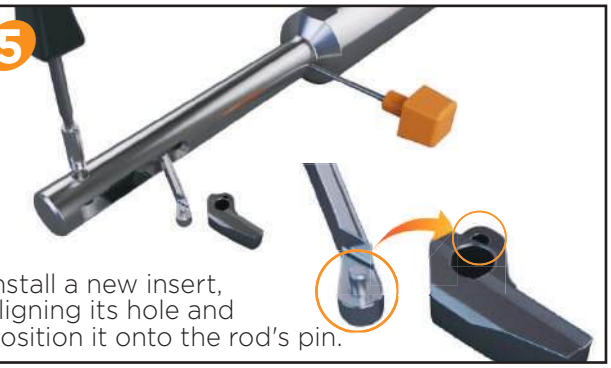
3

Loosen the screw and remove it from the tool-holder.

4

Push the connecting rod along with the wear insert.

5



Install a new insert, aligning its hole and position it onto the rod's pin.

6

Tighten the screw back in place.

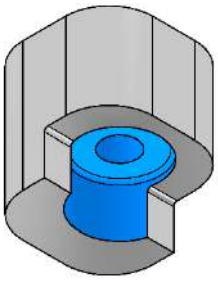
7

Pull the pin out to release the insert, allowing it to pop out.

The illustrated insert replacement above is demonstrated with a USPOT insert but remains the same when using a UCHAMF insert.

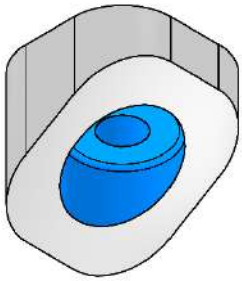
UBACK

COUNTERBORING MACHINING GUIDELINES FOR SPECIFIC CONDITIONS



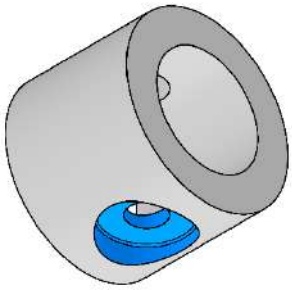
COUNTERBORE ON SHOULDER

- Fully Interrupted Cut.
- **Use external coolant only.**
- Consider reduced stability and adjust cutting parameters by reducing them by 30%.



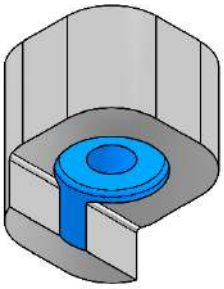
COUNTERBORE ON SLOPED SURFACE

- **Use external coolant only.**



COUNTERBORE ON CYLINDRICAL BORE

- **Use external coolant only.**



COUNTERBORE ON SHOULDER

- Fully Interrupted Cut.
- **Use external coolant only.**
- Consider reduced stability and adjust cutting parameters by reducing them by 30%.

COUNTERBORE ON SLOT

- Fully Interrupted Cut.
- **Use external coolant only.**
- Consider reduced stability and adjust cutting parameters by reducing them by 30%.

UBACK

CONFIGURING UBACK TOOL-HOLDERS FOR DIFFERENT COOLANT SYSTEMS

UBACK tool-holders are compatible with air, emulsion, or MQL coolant systems. When using air as the coolant, close off the back of the tool using the supplied plug screw set.

AVAILABLE COATING TYPES AND SURFACE TREATMENTS

NOGA'S Code	COATING	KEY FEATURES	APPLICATIONS	INDUSTRIES	MATERIAL EXAMPLES	ISO GROUP					
						P	M	K	N	S	H
NCT	**TiAlN**	Excellent thermal stability, oxidation resistance, and wear resistance.	High-speed cutting and general-purpose machining. Works in wet & dry conditions.	Aerospace, Automotive, General Engineering	AISI 304, 42CrMo4, GG (Grey Cast Iron), Ti6Al4V	√	√	√	X	√	√
NCD	**TiAlSiN**	Very high hardness, extreme oxidation resistance (>1200°C). Excels in dry machining at high speeds. Suitable for hardened steels >45 Rc.	High-performance machining in demanding environments.	Aerospace, Automotive, Die & Mold	Inconel 718, AISI 4140, Ti6Al4V, Hastelloy	√	√	X	X	√	√
NCA	**AlTiSiN**	High hardness, thermal stability, and wear resistance. Works well in dry, high-speed cutting. Suitable for hardened steels >45 Rc.	High-speed machining in extreme conditions.	Aerospace, Automotive, Precision Engineering	AISI 316, AISI H13, Hastelloy	√	√	X	X	√	√
NCN	**AlCrN**	High oxidation resistance (to 1100°C), toughness, abrasion resistance.	General machining in abrasive/wet conditions	Automotive, Aerospace, Die and Mold	AISI 304, AISI 1045, Grey Cast Iron (GG), AL6061, Die Steels	√	√	√	√	X	X
NCW	**AlTiN**	High hardness, wear resistance, and thermal stability up to 1100°C.	Ideal for heavy-duty maHeavy-duty machining and high-speed cutting. Dry & abrasive conditions.	Aerospace, Automotive, Heavy Engineering	AISI 4340, M2 HSS, Grey Cast Iron (GG)	√	√	√	X	√	X
NCB	**TiB_2**	Excellent thermal stability, hardness, and very high conductivity. Prevents material adhesion and BUE.	High-speed machining of non-ferrous metals.	Aerospace, Automotive, Electronics	AL7075, 6061-T6, Copper, Magnesium Alloys (AZ31), SiC composites	X	X	X	√	√	X
POL	**Polishing (Surface Treatment)**	Removes scratches, burrs, and micro-defects. Produces smooth finish and reduces friction.	High-speed finishing of non-ferrous materials. Improves MRR and surface aesthetics.	Aerospace, Automotive.	AL7075, 6061-T6, Copper, Magnesium Alloys (AZ31)	X	X	X	√	X	X

For additional details about our UBACK products, including the complete product range and technical guidelines, please visit our website at: https://nogamt.com/uback/

CUTTING RECOMMENDATIONS

(1) To ensure optimal performance and tool-life under varying conditions:

- For moderate tool-holder or workpiece stability, consider reducing feed rates by up to 10%.
- For poor tool-holder or workpiece stability, it's advisable to decrease feed rates by up to 30%.

ISO	MATERIAL		CONDITION	As is AISI/SAE/ASTM	DIN W.-Nr.
P	Non-Alloy Steel and Cast Steel Free Cutting Steel	<0.25%C	Annealed	1020	1.0044
		≥0.25%C	Annealed	1035	1.0501
		<0.55%C	Quenched and tempered	1045	1.1201
		≥0.25%C	Annealed	1055	1.0535
			Quenched and tempered	1060	1.1221
	Low Alloy and Cast Steel (less than 5% of Alloying Elements)		Annealed	G92600	1.5028
			Quenched and Tempered	4130	1.7218
				4142	1.2332
				5045	1.7006
	High-Alloy Steel, Cast Steel and Tool Steel		Annealed	H13	1.2344
			Quenched and Tempered	M33	1.3249
	Stainless Steel, Cast Steel		Ferritic / Martensitic	420	1.4021
			Martensitic		
M	Stainless Steel, Cast Steel		Austenitic, Duplex	304L	1.4306
K	Cast Iron (GG)		Ferritic / Pearlitic	Class 25	0.6015
			Pearlitic / Martensitic	Grade H20	36037
	Nodular Cast Iron (GGG)		Ferritic	60-40-18	0.7043
			Pearlitic	F33500	0.705
	Malleable Cast Iron		Ferritic	A47	0.8135
			Pearlitic	A220 Class	0.8155
N	Aluminum - Wrought Alloys		Not Hardenable	5005	3.3315
			Hardenable	7075	3.4365
	Aluminum - Cast Alloys	<12%Si	Not Hardenable	518	3.3292
			Hardenable	515	3.3241
		>12%Si	High Temperature	390	
	Copper Alloys	≥ 1% Pb	Free Cutting	C36000	2.0375
			Brass	C22000	2.023
			Electrolytic Copper	C63000	2.0966
	Non Metallic		Duroplastics, Fiber Plastics	Bakelite	
			Hard Rubber	Ebonite	
S	High Temperature Alloys	Fe based	Annealed	330	1.4864
			Hardened	S590	1.4977
		Ni or Co based	Annealed	Inconel 825	2.4858
			Hardened	Inconel 718	2.4668
			Cast	Nimocast K24	2.4674
	Titanium Alloys		Pure	Titanium G.1	3.7024
			Alpha+Beta Alloys, Hardened	Titanium G.5	3.7165
H	Hardened steel		Hardened	HARDOX 500	
			Hardened	HARDOX EXTREME	
	Chilled Cast Iron		Cast	A532 IIIA 25% Cr	0.965
	Cast Iron		Hardened	A532 IID 20% CrMo	0.9645

CUTTING RECOMMENDATIONS

The table shown on page 38-39 presents cutting recommendations, outlining initial feed rates and cutting speed for materials group based on ISO 513 and VDI 3323 standards.

Additionally, the operator must ensure the utilization of appropriate coolant media directed to the cutting tip of the blade and right-hand machining (clockwise).

ISO	Vc cutting speed (1) m/min. sfm	Series B fz (1) cutting speed mm/t. ipt	Series C fz (1) cutting speed mm/t. ipt	Series D fz (1) cutting speed mm/t. ipt	Series E fz (1) cutting speed mm/t. ipt	Series F fz (1) cutting speed mm/t. ipt	Series G fz (1) cutting speed mm/t. ipt	RECOMMENDED CHIP-FORMER	COOLANT
P	60 - 120 / 200 - 390	0.03 / 0.0012”	0.04 / 0.0016”	0.05 / 0.0020”	0.07 / 0.0028”	0.08 / 0.0031”	0.09 / 0.0035”	PL	AIR / WET
	50 - 120 / 165 - 390	0.03 / 0.0012”	0.04 / 0.0016”	0.05 / 0.0020”	0.07 / 0.0028”	0.08 / 0.0031”	0.09 / 0.0035”		
	50 - 100 / 165 - 330							ML	
	40 - 90 / 150 - 295	0.02 / 0.0008”	0.03 / 0.0012”	0.04 / 0.0016”	0.05 / 0.0020”	0.06 / 0.0024”	0.08 / 0.0031”		
M	50 - 100 / 165 - 330	0.03 / 0.0012”	0.04 / 0.0016”	0.05 / 0.0020”	0.07 / 0.0028”	0.08 / 0.0031”	0.09 / 0.0035”	PL	WET
K	60 - 120 / 200 - 395	0.03 / 0.0012”	0.04 / 0.0016”	0.05 / 0.0020”	0.07 / 0.0028”	0.08 / 0.0031”	0.09 / 0.0035”	PL	AIR / WET
	50 - 100 / 165 - 330	0.02 / 0.0008”	0.03 / 0.0012”	0.04 / 0.0016”	0.05 / 0.0020”	0.06 / 0.0024”	0.08 / 0.0031”		
N	100 - 160 / 330 - 525	0.05 / 0.0020”	0.06 / 0.0024”	0.08 / 0.0031”	0.10 / 0.0039”	0.12 / 0.0047”	0.14 / 0.0055”	PL	WET
	90 - 130 / 295 - 425								
	180 - 305 / 600 - 1000								
S	40 - 80 / 130 - 260	0.02 / 0.0008”	0.03 / 0.0012”	0.04 / 0.0016”	0.05 / 0.0020”	0.06 / 0.0024”	0.08 / 0.0031”	PL	WET
	25 - 40 / 80 - 130								
	30 - 60 / 100 - 180	0.02 / 0.0008”	0.03 / 0.0012”	0.04 / 0.0016”	0.05 / 0.0020”	0.06 / 0.0024”	0.08 / 0.0031”		
H	30 - 50 / 100 - 165	0.02 / 0.0008”	0.02 / 0.0008”	0.03 / 0.0012”	0.04 / 0.0016”	0.05 / 0.0020”	0.06 / 0.0024”	HL	AIR
	30 - 40 / 100 - 130								
	45 - 50 / 145 - 165	0.02 / 0.0008”	0.02 / 0.0008”	0.03 / 0.0012”	0.04 / 0.0016”	0.05 / 0.0020”	0.06 / 0.0024”	ML	
	30 - 50 / 100 - 165	0.02 / 0.0008”	0.02 / 0.0008”	0.03 / 0.0012”	0.04 / 0.0016”	0.05 / 0.0020”	0.06 / 0.0024”		