

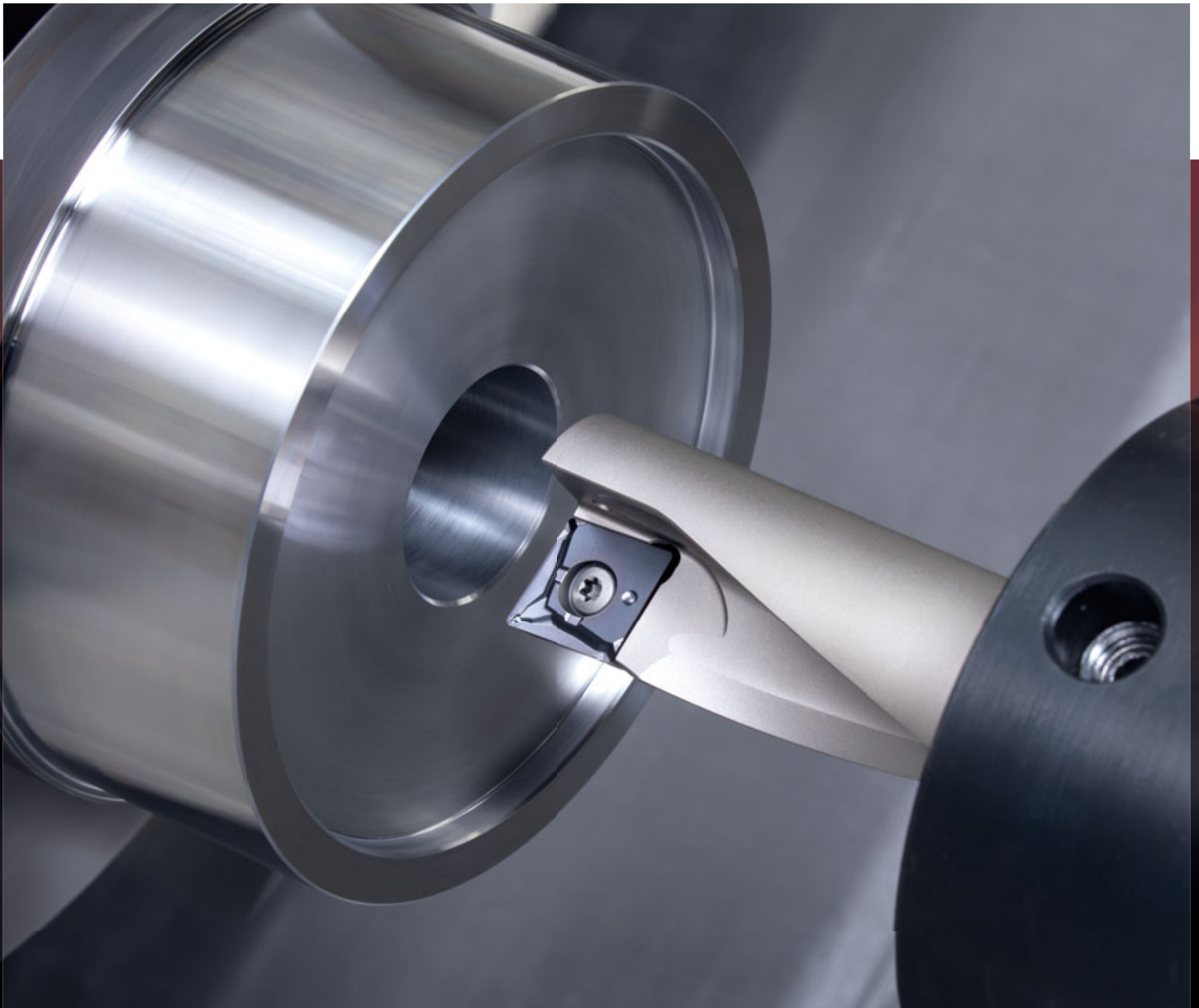


Multifunctional tool for drilling and turning

TUNGB^{ORE}MINI

Tungaloy Report No. 529S2-US

Introducing toolholders with **large diameter metric shanks**, as well as with **inch size shanks**



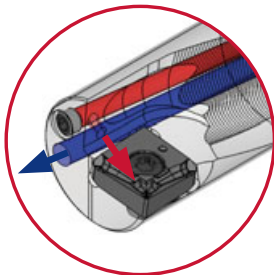
Adding new toolholder sizes to expand the range of applications covered

■ New Line ups

- New toolholders with inch size shanks for Dmin of $\varnothing 0.394''$ - $\varnothing 1.260''$ (10 - 32 mm)
- New toolholders for the minimum bore diameter (Dmin) range of 18 - 32 mm

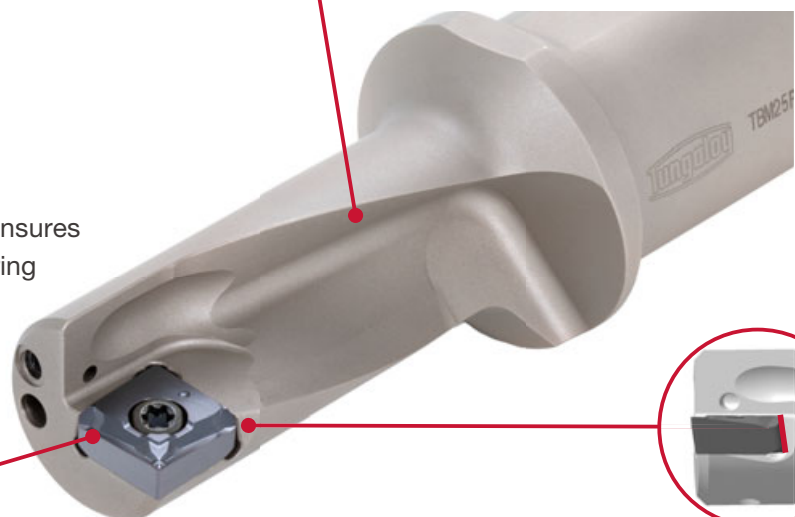
		DMIN (in)							
		0.394	0.472	0.551	0.630	0.709	0.787	0.984	1.260
TUNGB ^{ORE} MINI Inch shanks		New							
		DMIN (mm)							
		10	12	14	16	18	20	25	32
TUNGB ^{ORE} MINI Metric shanks		Line up					New		

■ Features

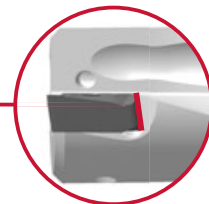


The flute is designed to promote smooth chip flow, while ensuring tool rigidity

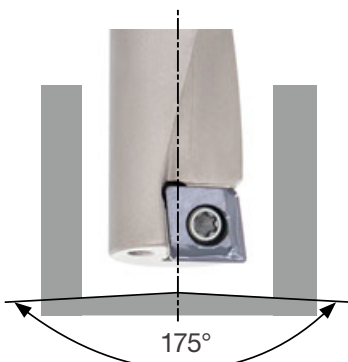
Optimized through-coolant ensures effective chip evacuation during machining



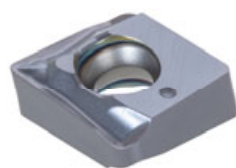
Double-sided insert with 2 corners



Dovetail interlocking ensures rigid insert clamping



Creates a near-flat hole bottom

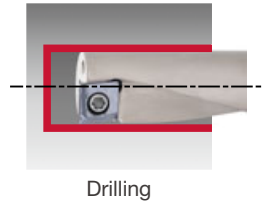


Optimized chipbreaker design enables effective chip control in all applications

CUTTING PERFORMANCE

Drilling

P Holder : TBM25RF318-2.25
 Insert : XOMU120404-PS AH725
 Workpiece material : 1045
 Application : Drilling
 Coolant : Internal

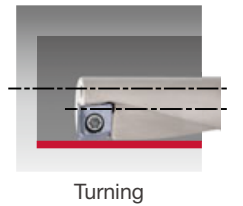


0.002	0.003	0.0035	0.0043	0.0051
Feed: f (ipr)				

Stable machining and excellent chip control during the hole making process.

Internal turning

P Holder : TBM25RF318-2.25
 Insert : XOMU120404-PS AH725
 Workpiece material : 1045
 Application : Internal turning
 Coolant : Internal

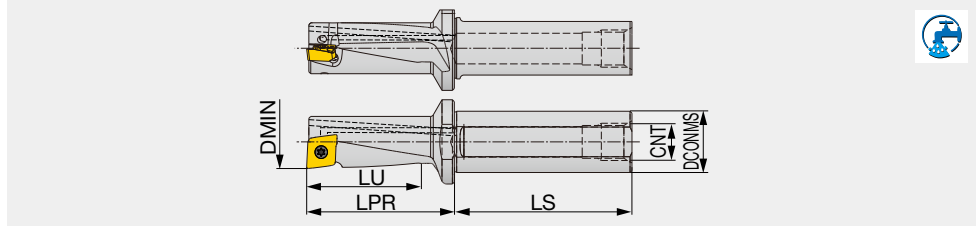


Depth of cut: ap (in)	2					
	1					
	0.5					
		0.004	0.006	0.008	0.010	0.012
		Feed: f (ipr)				

Excellent chip control during I.D. finishing operation.

TBM

Maximum hole depth for L/D = 2.25



Inch	DMIN	DCONMS	LU	LS	LPR	CNT	Insert
New TBM10R/LF127-2.25	0.394	0.500	0.886	1.600	1.120	UNF 5/16-24	XOMU05X204-PS
New TBM12R/LF159-2.25	0.472	0.625	1.063	1.890	1.320	G 1/8	XOMU06H204-PS
New TBM14R/LF159-2.25	0.551	0.625	1.240	1.890	1.519	G 1/8	XOMU07H304-PS
New TBM16R/LF19-2.25	0.630	0.75	1.417	2.000	1.689	G 1/8	XOMU08T304-PS
New TBM18RF254-2.25	0.709	1.000	1.594	2.280	2.124	G 1/8	XOMU09T304-PS
New TBM20RF254-2.25	0.787	1.000	1.772	2.280	2.163	G 1/8	XOMU100404-PS
New TBM25RF318-2.25	0.984	1.250	2.224	2.280	2.717	G 1/8	XOMU120404-PS
New TBM32RF381-2.25	1.260	1.500	2.835	2.688	3.463	G 1/8	XOMU160508-PS

Metric	DMIN	DCONMS	LU	LS	LPR	CNT	Insert
TBM10R/LF12-2.25	10	12	22.5	41.5	28.45	UNF 5/16-24	XOMU05X204-PS
TBM12R/LF16-2.25	12	16	27	43.9	33.53	G 1/8	XOMU06H204-PS
TBM14R/LF16-2.25	14	16	31.5	46.4	38.57	G 1/8	XOMU07H304-PS
TBM16R/LF20-2.25	16	20	36	57.1	42.9	G 1/8	XOMU08T304-PS
New TBM18RF25-2.25	18	25	40.5	54	53.96	G 1/8	XOMU09T304-PS
New TBM20RF25-2.25	20	25	45	54	54.94	G 1/8	XOMU100404-PS
New TBM25RF32-2.25	25	32	56.5	59	69	G 1/8	XOMU120404-PS
New TBM32RF40-2.25	32	40	72	69	87.95	G 1/8	XOMU160508-PS

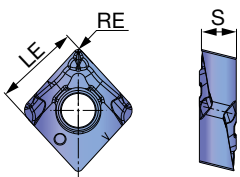
SPARE PARTS



Designation	Clamping screw	Wrench
TBM10R...	CSTB-2L040	T-6D
TBM12R...	CSPB-2.2	IP-7D
TBM14R...	CSPB-2.5	IP-8D
TBM16R..., TBM18RF...	CSTB-3	T-9D
TBM20RF...	CSPB-3.5	IP-15D
TBM25RF...	CSTB-4	T-15D
TBM32RF...	CSTB-4.5L110P	T-15D

INSERT

XOMU-PS



	P	M	K	N	S	H
Steel	★					
Stainless	★					
Cast iron	★					
Non-ferrous	★					
Superalloys						
Hard materials						

★ : First choice

Designation	RE (in)	Coated								S (in)	LE (in)
		AH725									
XOMU05X204-PS	0.0157	●								0.091	0.219
XOMU06H204-PS	0.0157	●								0.106	0.248
XOMU07H304-PS	0.0157	●								0.13	0.287
XOMU08T304-PS	0.0157	●								0.156	0.327
XOMU09T304-PS	0.0157	●								0.156	0.375
XOMU100404-PS	0.0157	●								0.187	0.375
XOMU120404-PS	0.0157	●								0.187	0.500
XOMU160508-PS	0.0315	●								0.219	0.625

● : New
● : Line up

STANDARD CUTTING CONDITIONS

Drilling

ISO	Workpiece materials	Cutting speed Vc (sfm)	Minimum bore diameter: DMIN							
			ø0.394" (ø10 mm)	ø0.472" (ø12 mm)	ø0.551" (ø14 mm)	ø0.630" (ø16 mm)	ø0.709" (ø18 mm)	ø0.787" (ø20 mm)	ø0.984" (ø25 mm)	ø1.260" (ø32 mm)
			Depth of cut: ap (in)							
P	Low carbon steel Carbon steel	164 - 591	0.0008 - 0.0020	0.0008 - 0.0028	0.0004 - 0.0030	0.0004 - 0.0031	0.0020 - 0.0051	0.0020 - 0.0051	0.0020 - 0.0055	0.0020 - 0.0055
M	Stainless steel	164 - 525	0.0008 - 0.0020	0.0008 - 0.0028	0.0004 - 0.0030	0.0004 - 0.0031	0.0020 - 0.0051	0.0020 - 0.0051	0.0020 - 0.0055	0.0020 - 0.0055
K	Cast iron	164 - 591	0.0008 - 0.0020	0.0008 - 0.0028	0.0004 - 0.0030	0.0004 - 0.0031	0.0020 - 0.0051	0.0020 - 0.0051	0.0020 - 0.0055	0.0020 - 0.0055
N	Aluminum alloys	328 - 984	0.0008 - 0.0020	0.0008 - 0.0028	0.0004 - 0.0030	0.0004 - 0.0031	0.0020 - 0.0051	0.0020 - 0.0051	0.0020 - 0.0055	0.0020 - 0.0055

Internal turning





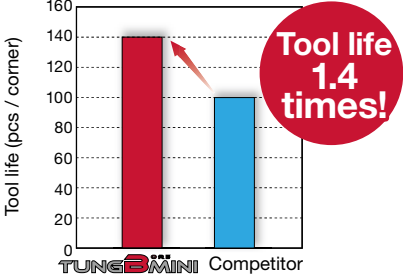
ISO	Workpiece materials	Cutting speed Vc (sfm)	Minimum bore diameter: DMIN							
			ø0.394" (ø10 mm)	ø0.472" (ø12 mm)	ø0.551" (ø14 mm)	ø0.630" (ø16 mm)	ø0.709" (ø18 mm)	ø0.787" (ø20 mm)	ø0.984" (ø25 mm)	ø1.260" (ø32 mm)
			Depth of cut: ap (in)							
P	Low carbon steel Carbon steel	164 - 591	0.0197 - 0.1181	0.0197 - 0.1378	0.0197 - 0.1772	0.0197 - 0.1969	0.0197 - 0.2165	0.0197 - 0.2362	0.0197 - 0.2559	0.0197 - 0.2756
			Feed: f (ipr)							
			0.0020 - 0.0079	0.0020 - 0.0079	0.0020 - 0.0079	0.0020 - 0.0079	0.0039 - 0.0118	0.0039 - 0.0118	0.0039 - 0.0118	0.0039 - 0.0157

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			Feed: f (ipr)							
			0.0020 - 0.0079	0.0020 - 0.0079	0.0020 - 0.0079	0.0020 - 0.0079	0.0039 - 0.0118	0.0039 - 0.0118	0.0039 - 0.0118	0.0039 - 0.0157

PRACTICAL EXAMPLES

Workpiece type		Knob part	Bearing part
Toolholder		TBM18RF254-2.25	TBM25RF318-2.25
Insert		XOMU09T304-PS	XOMU120404-PS
Grade		AH725	AH725
Workpiece material		1045  P	60-40-18  K
Cutting conditions	Cutting speed: V_c (sfm)	Drilling: 230, Internal turning: 230	Internal turning: 197, Face turning: 328
	Feed : f (ipr)	Drilling: 0.004, Internal turning: 0.010	Internal turning: 0.008, Face turning: 0.006
	Coolant	Wet	Wet
Results		  <p>TUNGBOREMINI</p> <p>Conventional tooling (for roughing and finishing)</p> <p>A single TungBoreMini performed three different operations, allowing significant productivity improvement.</p>	 <p>Tool life (pcs / corner)</p> <p>TUNGBOREMINI Competitor</p> <p>Tool life 1.4 times!</p> <p>TungBoreMini provided 1.4x tool life increase over the competitor tool.</p>

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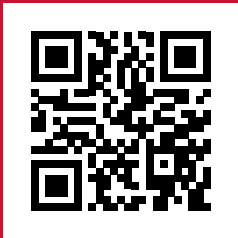
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