

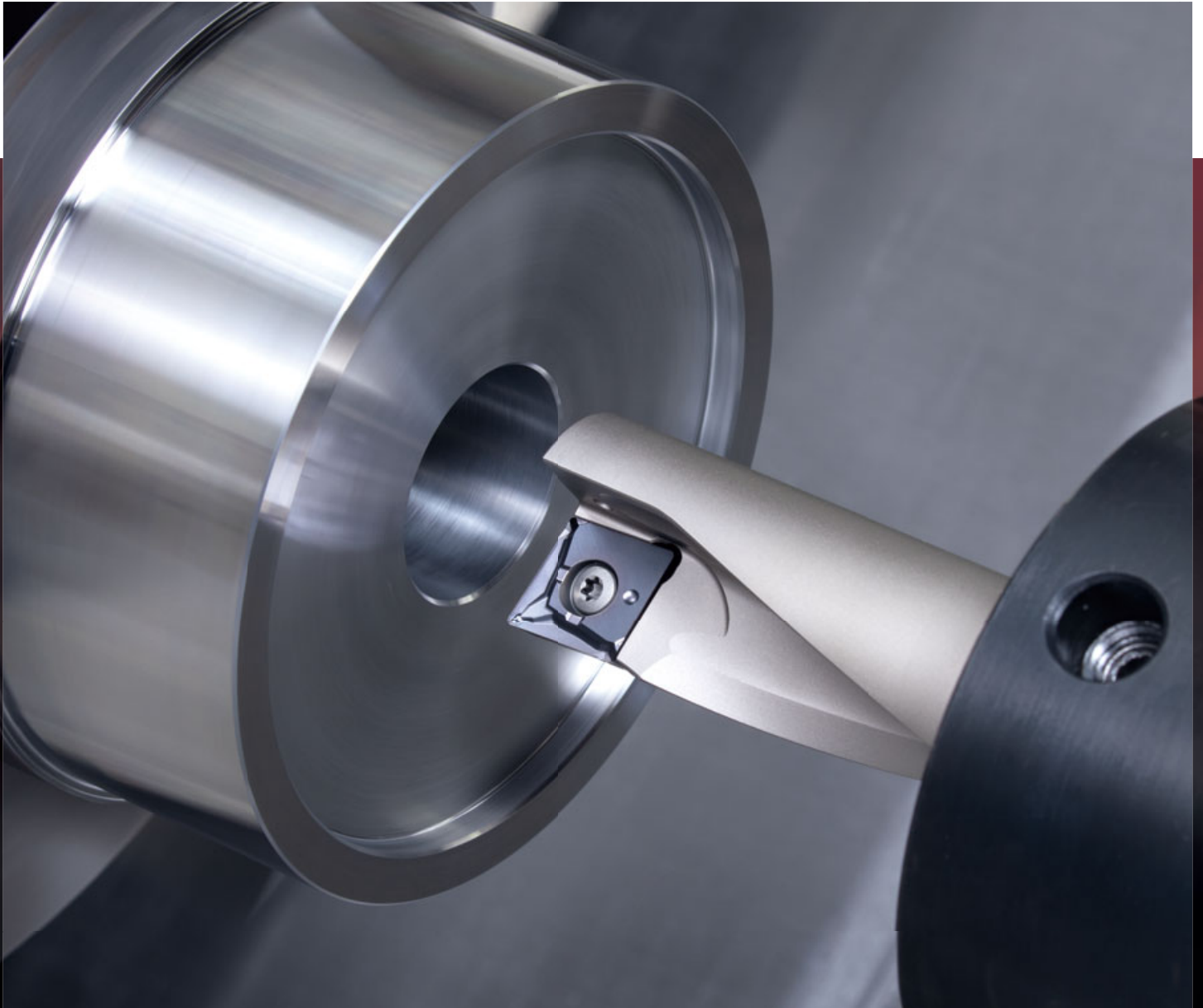


Multifunctional tool for drilling and turning

TUNGB^{ORE}MINI

Tungaloy Report No. 529S2-G

Expansion of **DMIN 18 - 32 mm** line up



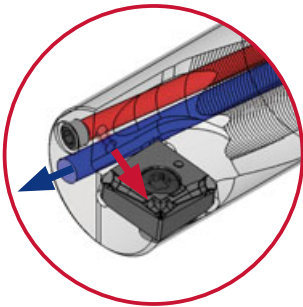
Adding new toolholder sizes to expand the application coverages

■ New Line ups

- New toolholders for the minimum bore diameter (DMIN) range of $\varnothing 18 - 32$ mm

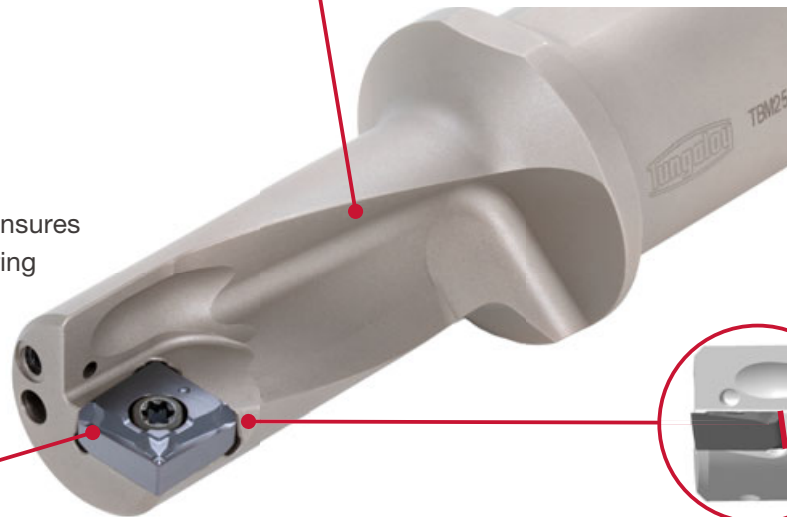
		Minimum bore diameter: DMIN (mm)							
		$\varnothing 10$	$\varnothing 12$	$\varnothing 14$	$\varnothing 16$	$\varnothing 18$	$\varnothing 20$	$\varnothing 25$	$\varnothing 32$
TUNGB ^{ORE} MINI	Line up	Line up				New			

■ Features



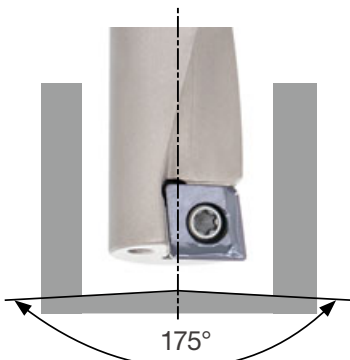
The flute is designed to promote smooth chip flow, while ensuring tool rigidity

Optimized through-coolant ensures effective chip evacuation during machining

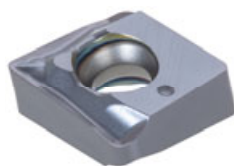


Double-sided insert with 2 corners

Dovetail interlocking ensures rigid insert clamping



Creates a near-flat hole bottom

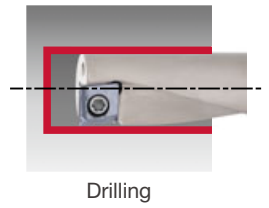


Optimized chipbreaker design enables effective chip control in all applications

CUTTING PERFORMANCE

Drilling

P Holder : TBM25RF32-2.25
 Insert : XOMU120404-PS AH725
 Workpiece material : S45C / C45
 Application : Drilling
 Coolant : Internal

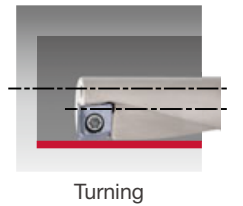


0.05	0.07	0.09	0.11	0.13
Feed: f (mm/rev)				

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

Internal turning

P Holder : TBM25RF32-2.25
 Insert : XOMU120404-PS AH725
 Workpiece material : S45C / C45
 Application : Internal turning
 Coolant : Internal

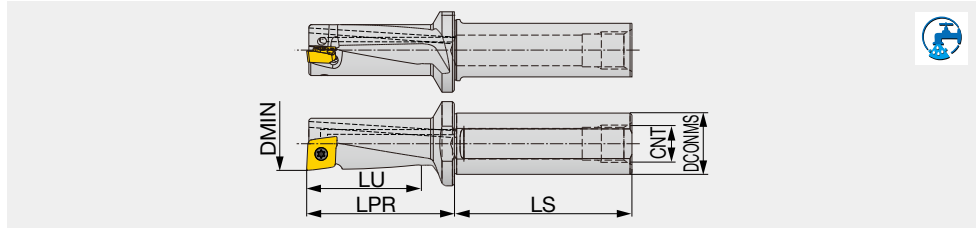


Depth of cut: ap (mm)	2					
	1					
	0.5					
		0.1	0.15	0.2	0.25	0.3
		Feed: f (mm/rev)				

Excellent chip control during I.D. finishing operation.

TBM

Maximum hole depth for L/D = 2.25



Designation	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

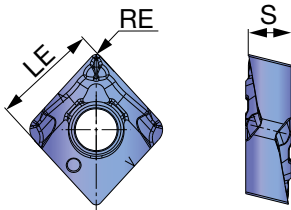
SPARE PARTS



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

★ : First choice

Designation	RE	Coated										S	LE		
		AH725													
XOMU05X204-PS	0.4	●												2.3	5.56
XOMU06H204-PS	0.4	●												2.7	6.3
XOMU07H304-PS	0.4	●												3.3	7.3
XOMU08T304-PS	0.4	●												3.97	8.3
XOMU09T304-PS	0.4	●												3.97	9.3
XOMU100404-PS	0.4	●												4.76	10.3
XOMU120404-PS	0.4	●												4.76	12.8
XOMU160508-PS	0.8	●												5.56	16.3

● : New
● : Line up

STANDARD CUTTING CONDITIONS

Drilling

ISO	Workpiece materials	Cutting speed Vc (m/min)	Minimum bore diameter: DMIN (mm)							
			ø10	ø12	ø14	ø16	ø18	ø20	ø25	ø32
P	Low carbon steel Carbon steel	50 - 180	0.02 - 0.05	0.02 - 0.07	0.01 - 0.075	0.01 - 0.08	0.05 - 0.13	0.05 - 0.13	0.05 - 0.14	0.05 - 0.14
M	Stainless steel	50 - 160	0.02 - 0.05	0.02 - 0.07	0.01 - 0.075	0.01 - 0.08	0.05 - 0.13	0.05 - 0.13	0.05 - 0.14	0.05 - 0.14
K	Cast iron	50 - 180	0.02 - 0.05	0.02 - 0.07	0.01 - 0.075	0.01 - 0.08	0.05 - 0.13	0.05 - 0.13	0.05 - 0.14	0.05 - 0.14
N	Aluminium alloys	100 - 300	0.02 - 0.05	0.02 - 0.07	0.01 - 0.075	0.01 - 0.08	0.05 - 0.13	0.05 - 0.13	0.05 - 0.14	0.05 - 0.14

Internal turning





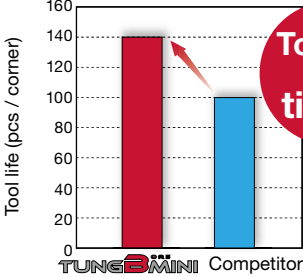
ISO	Workpiece materials	Cutting speed Vc (m/min)	Minimum bore diameter: DMIN (mm)							
			ø10	ø12	ø14	ø16	ø18	ø20	ø25	ø32
P	Low carbon steel Carbon steel	50 - 180	Depth of cut: ap (mm)							
			0.5 - 3	0.5 - 3.5	0.5 - 4.5	0.5 - 5	0.5 - 5.5	0.5 - 6	0.5 - 6.5	0.5 - 7
			Feed: f (mm/rev)							
			0.05 - 0.2	0.05 - 0.2	0.05 - 0.2	0.05 - 0.2	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3	0.1 - 0.4

ISO	Workpiece materials	Cutting speed Vc (m/min)	Minimum bore diameter: DMIN (mm)							
			ø10	ø12	ø14	ø16	ø18	ø20	ø25	ø32
M	Stainless steel	50 - 160	Depth of cut: ap (mm)							
			0.5 - 3	0.5 - 3.5	0.5 - 4.5	0.5 - 5	0.5 - 5.5	0.5 - 6	0.5 - 6.5	0.5 - 7
			Feed: f (mm/rev)							
			0.05 - 0.2	0.05 - 0.2	0.05 - 0.2	0.05 - 0.2	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3	0.1 - 0.4

ISO	Workpiece materials	Cutting speed Vc (m/min)	Minimum bore diameter: DMIN (mm)							
			ø10	ø12	ø14	ø16	ø18	ø20	ø25	ø32
K	Cast iron	50 - 180	Depth of cut: ap (mm)							
			0.5 - 3	0.5 - 3.5	0.5 - 4.5	0.5 - 5	0.5 - 5.5	0.5 - 6	0.5 - 6.5	0.5 - 7
			Feed: f (mm/rev)							
			0.05 - 0.2	0.05 - 0.2	0.05 - 0.2	0.05 - 0.2	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3	0.1 - 0.4

ISO	Workpiece materials	Cutting speed Vc (m/min)	Minimum bore diameter: DMIN (mm)							
			ø10	ø12	ø14	ø16	ø18	ø20	ø25	ø32
N	Aluminium alloys	100 - 300	Depth of cut: ap (mm)							
			0.5 - 3	0.5 - 3.5	0.5 - 4.5	0.5 - 5	0.5 - 5.5	0.5 - 6	0.5 - 6.5	0.5 - 7
			Feed: f (mm/rev)							
			0.05 - 0.2	0.05 - 0.2	0.05 - 0.2	0.05 - 0.2	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3	0.1 - 0.4

PRACTICAL EXAMPLES

Workpiece type		Knob part	Bearing part
Toolholder		TBM18RF25-2.25	TBM25RF32-2.25
Insert		XOMU09T304-PS	XOMU120404-PS
Grade		AH725	AH725
Workpiece material		S45C / C45  P	FCD450 / GGG45  K
Cutting conditions	Cutting speed: V_c (m/min)	Drilling: 70, Internal turning: 70	Internal turning: 60, Face turning: 100
	Feed : f (mm/rev)	Drilling: 0.09, Internal turning: 0.25	Internal turning: 0.2, Face turning: 0.15
	Coolant	Wet	Wet
Results		  <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>Tool life 1.4 times!</p> <p>TUNGBOREMINI Competitor</p> <p>TungBoreMini provided 1.4x tool life increase over the competitor tool.</p>

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