

TurnLine

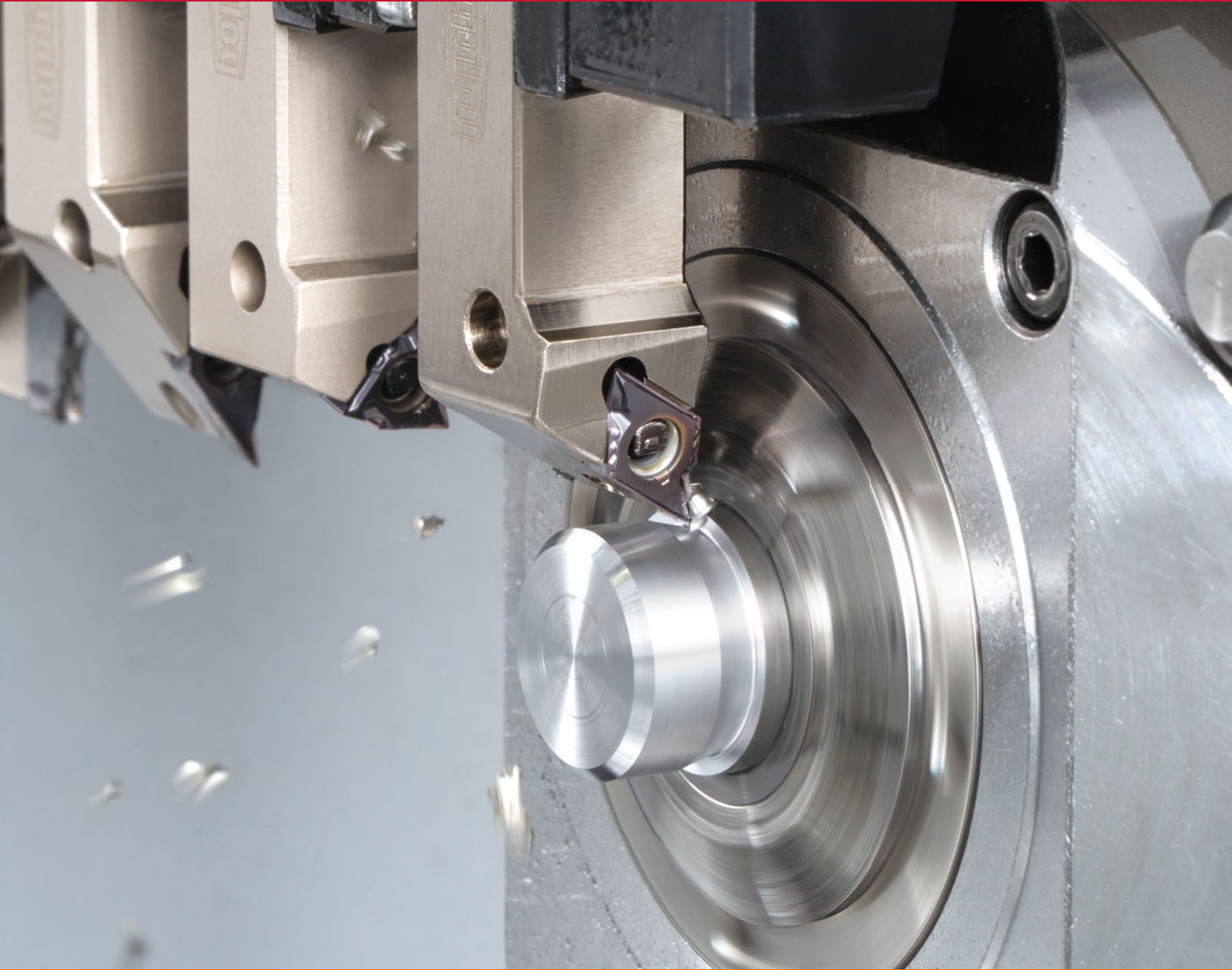


MINIFORCE TURN

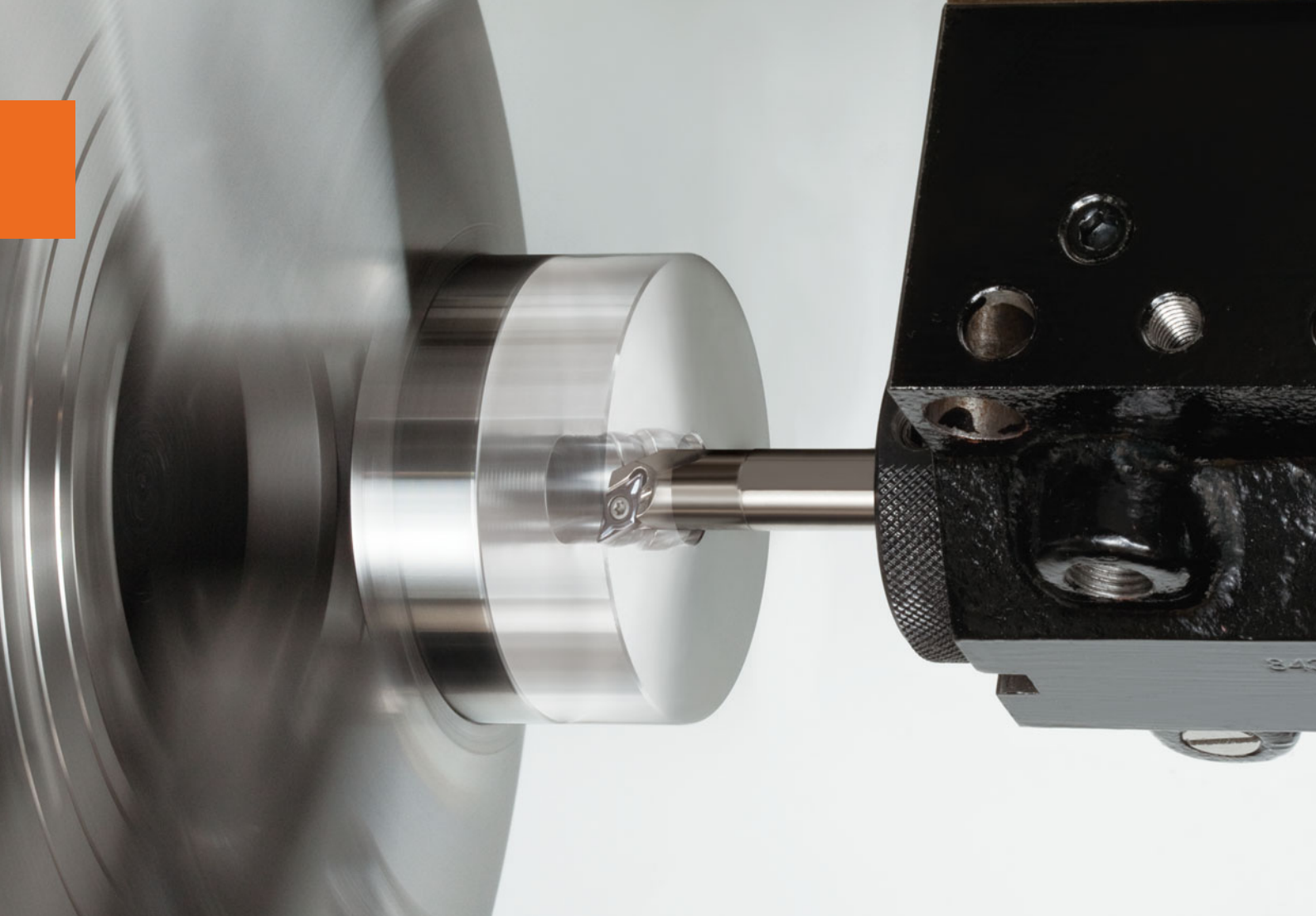
www.tungaloy.com

Tungaloy Report No. 417-G

**New chipbreaker** for improved chip control  
in small part machining



**INDUSTRY 4.0**  
*FEED the SPEED!*



ACCELERATED MACHINING



Improved chip control with new chipbreaker  
and AH8000 grade series

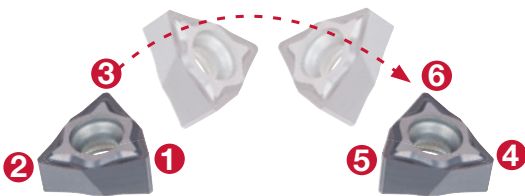


# Economical double-sided positive insert

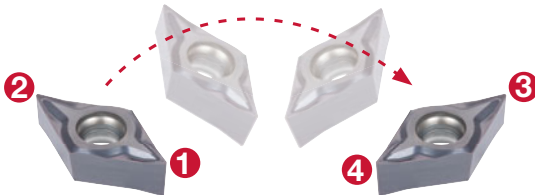
Innovative geometry and seat interface ensures stability and high performance

## Inserts

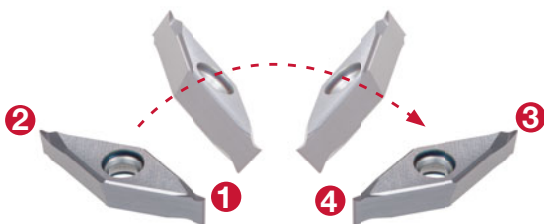
**WXGU0403**.. 6 positive cutting edges



**DXGU0703**.. 4 positive cutting edges

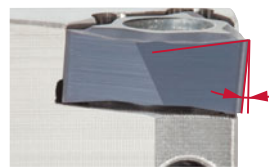


**VXGU09T2**.. 4 positive cutting edges

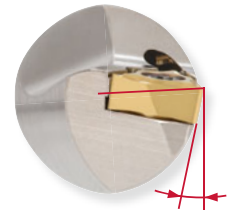


## High rake angle

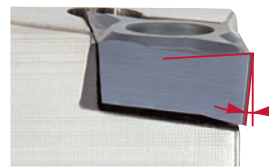
External turning



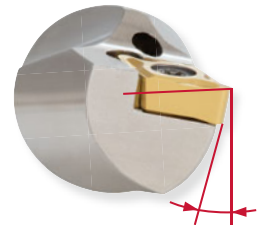
Internal turning



External turning



Internal turning

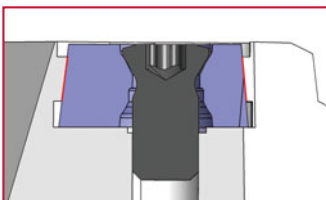


External turning



## Toolholders

Dovetail clamping ensures secure insert retention



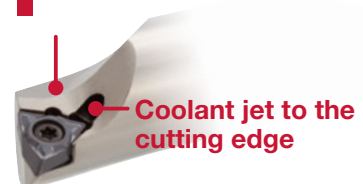
External turning

The JP holder screw is accessible from either side



Internal turning

Optimal design for smooth chip flow



Coolant jet to the cutting edge

## Square shank holder lineup for general lathes

Square shank sizes 2020 and 2525 are available for OD turning

**MINIF<sup>o</sup>TURN**



**TURNINGA**



**ISOE<sup>o</sup>TURN**

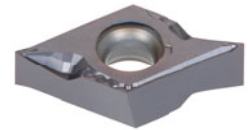


## Light cutting chipbreaker

### **New JS chipbreaker - features and benefits**

- Provides excellent chip control in a wide range of applications
- A large inclination angle on the cutting edge ensures free cutting
- Excellent cutting edge integrity for smooth surface finishing

Note: Due to chipbreaker profile, max aP for face turning is 1 mm



DXGU0703...-JS

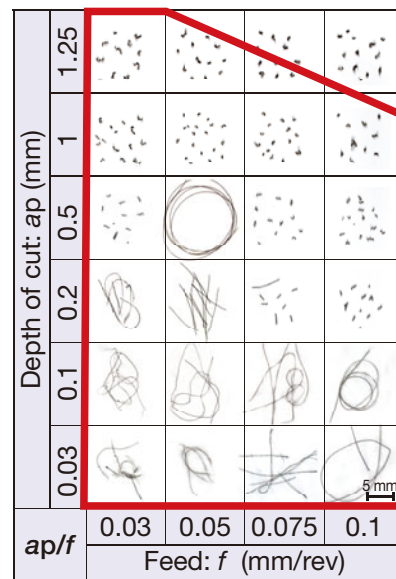
## CHIP CONTROL

**P**



Workpiece : S45C / C45  
 Insert : DXGU070302MFL-**JS** SH725  
 Toolholder : JSDJ2XR1212X07  
 Cutting speed : Vc = 100 m/min  
 Coolant : Wet

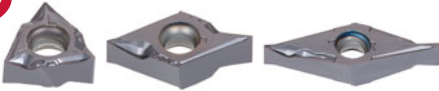
**M**



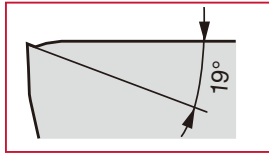
Workpiece : SUS316L  
 Insert : DXGU070302MFL-**JS** SH725  
 Toolholder : JSDJ2XR1212X07  
 Cutting speed : Vc = 50 m/min  
 Coolant : Wet

## JS chipbreaker

**New**



WXGU0403.. DXGU0703.. VXGU0903..



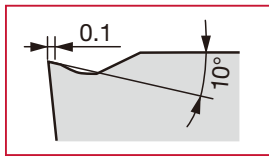
- First choice chipbreaker for medium to finish cutting
- Excellent chip control
- Ideal for small part machining

**P M**

## TS / JTS / TSW chipbreaker



WXGU0403.. DXGU0703..



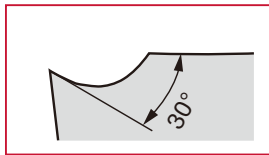
- First choice chipbreaker for medium to finish cutting
- Excellent chip control
- Ideal for small part machining

**P M K**

## SS / JSS chipbreaker



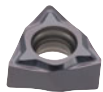
WXGU0403.. DXGU0703..



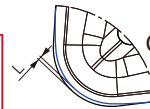
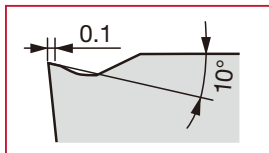
- General purpose chipbreaker with excellent chip control
- Recommended for stainless steel machining

**M P**

## TSW chipbreaker (Wiper)



WXGU0403..



Offset: L = 0.05 mm

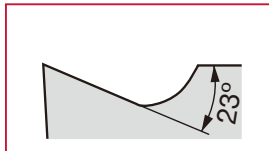
Built-in wiper for better surface finish at high feed rates

**P M K**

## JRP chipbreaker



DXGU0703.. VXGU09T2..



Sharp cutting edge and ground chipbreaker with excellent chip control

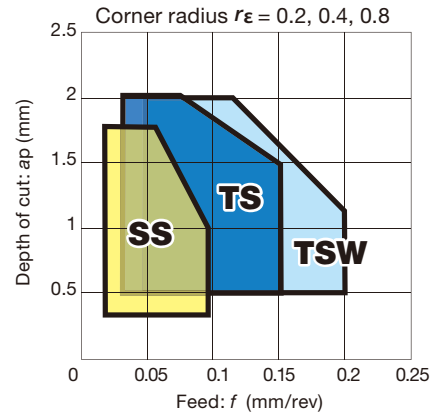
## Chipbreakers for general purpose machining

**WXGU0403.. - TS/SS/TSW**

**DXGU0703.. - TS/SS**

Strong cutting edge for semi-finishing and finishing operations at medium to low feed rates

■ Application area



## Chipbreakers for small part machining

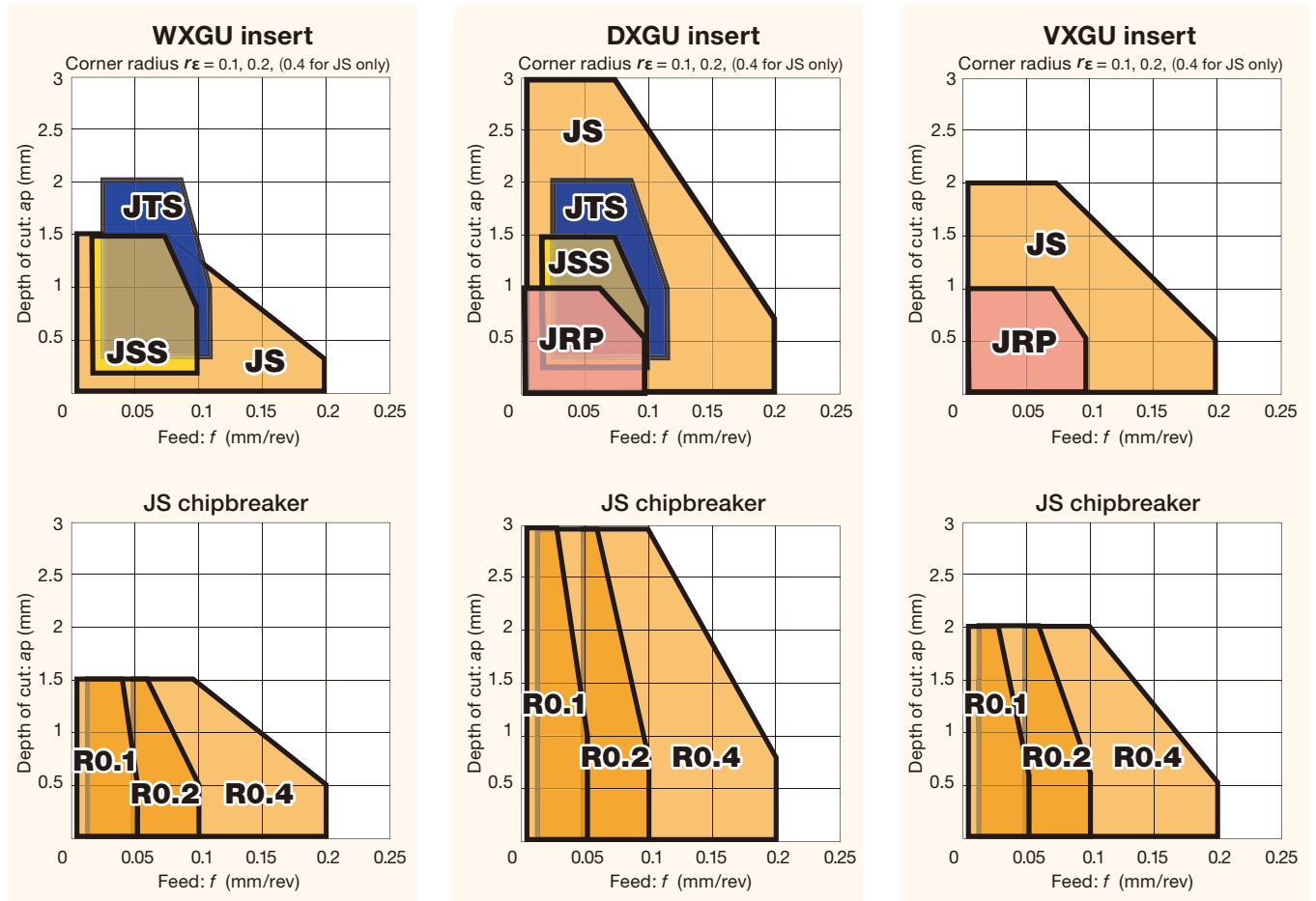
**WXGU0403.. - JTS/JSS/JS**

**DXGU0703.. - JRP/JTS/JSS/JS**

**VXGU09T2.. - JRP/JS**

Extra sharp cutting edge used at low feeds for finishing operations. An excellent solution to reduce vibration.

■ Application areas



## TUNGJET Thru-coolant holder system

Jets of coolant are supplied through the holder to facilitate **Improved chip control and reduced machine downtime**



Eliminates chip re-cutting



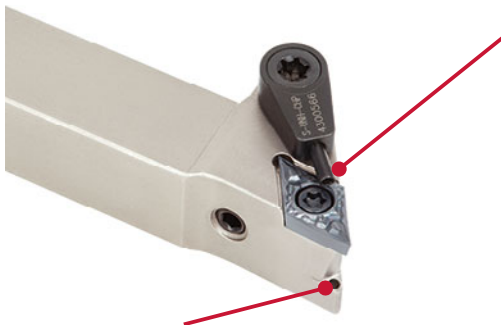
External coolant supply (at normal pressure)



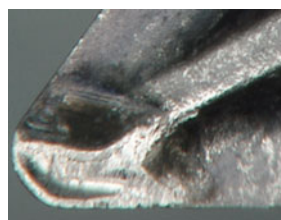
High pressure coolant (>7MPa)

## Coolant supply both over and under the insert improves tool life and efficiency

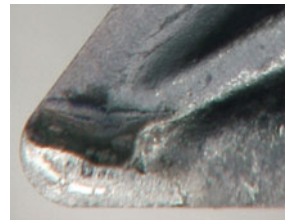
- Coolant jet over the insert  
Ensures stable chip control



Coolant jet is directed close to the cutting point  
Reduces crater and notch wear

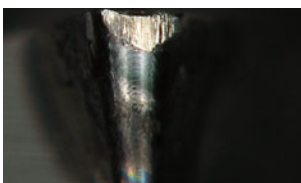


External coolant supply (at normal pressure)

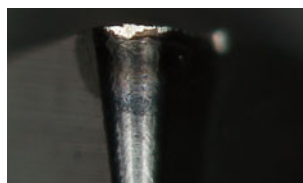


High pressure coolant (>7MPa)

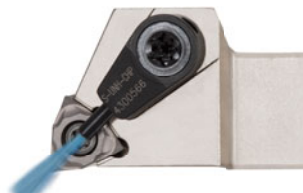
Coolant jet under the insert  
Reduces flank wear



External coolant supply (at normal pressure)



High pressure coolant (>7MPa)



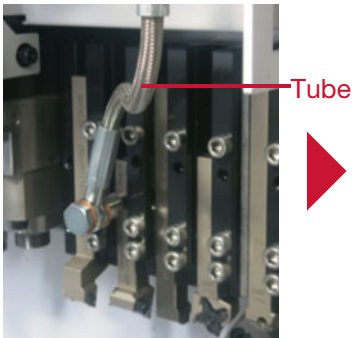
Nozzle extends to ensure optimal coolant delivery



# DIRECTTUNGJET system

## Tubeless design streamlines tool setup Through-coolant supply enables high productivity

External coolant tube

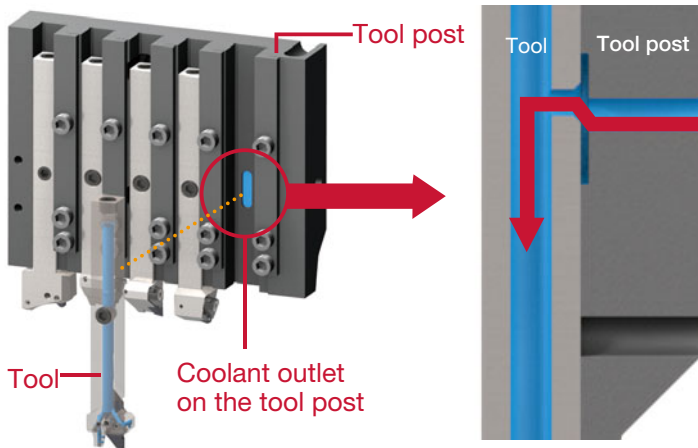


DirectTungJet system

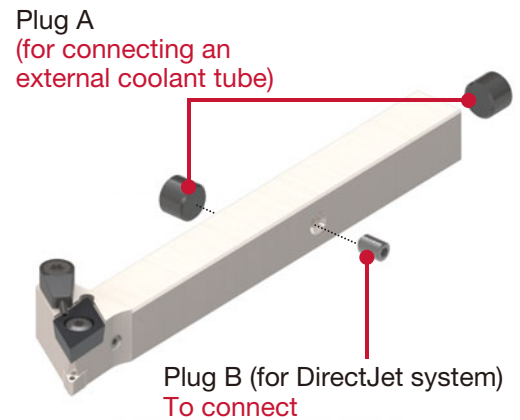


No need for coolant tube setups. Eliminates chip entanglement on tubes and streamlines tool replacements.

### Coolant is supplied from the tool post directly to the tools

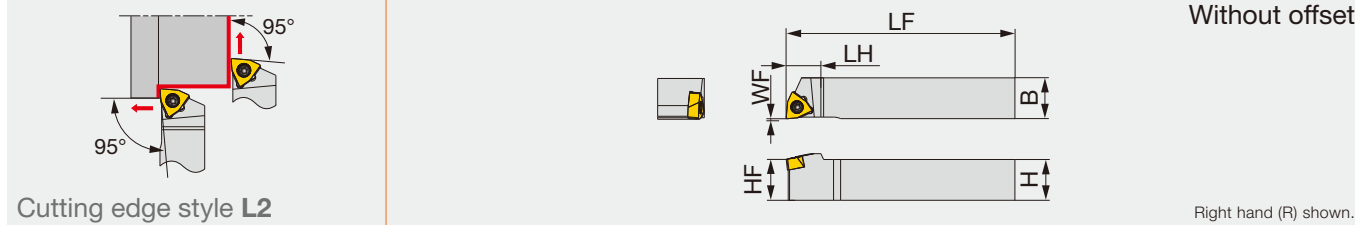


Use a non-coolant-through tool when coolant supply is not needed through the tool.



## JSWL2XR/L

Screw-on toolholder without offset with 95° approach angle, for WXGU inserts



Designation	H	B	LF	LH	HF	WF	RE**	Insert	Torque*
JSWL2XR/L1010X04	10	10	120	11	10	0	0.2	WXGU0403**L/R...	0.9
JSWL2XR/L1212F04	12	12	85	11	12	0	0.2	WXGU0403**L/R...	0.9
JSWL2XR/L1212X04	12	12	120	11	12	0	0.2	WXGU0403**L/R...	0.9
JSWL2XR/L1616X04	16	16	120	13	16	0	0.2	WXGU0403**L/R...	0.9
JSWL2XR/L2020H04	20	20	100	13	20	0	0.2	WXGU0403**L/R...	0.9

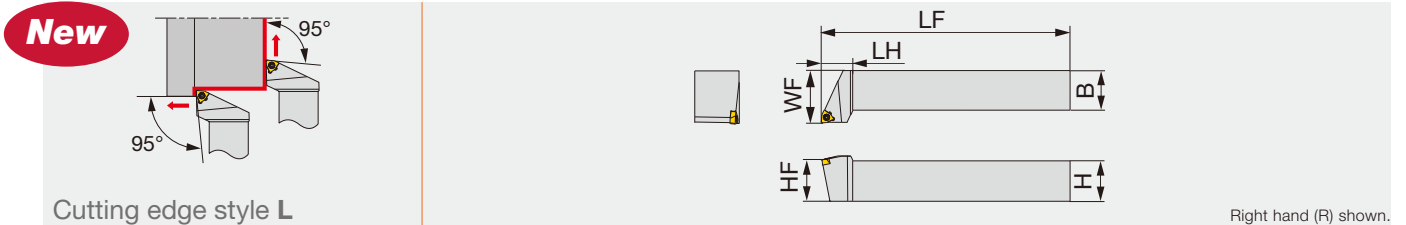
\*Torque: Recommended torque (N-m) for clamping \*\*RE: The holder measurements are true with this insert radius  
 Note: Use the right-hand toolholder (R) for the left-hand insert (L). Use the left-hand toolholder (L) for the right-hand insert (R)

### SPARE PARTS

Designation	Clamping screw	Wrench
JSWL2XR/L...	SR34-514	T-7F

## JSWLXR/L

Screw-on toolholder without offset with 95° approach angle, for WXGU inserts



Designation	H	B	LF	LH	HF	WF	RE**	Insert	Torque*
JSWLXR/L2020K04	20	20	125	15	20	25	0.4	WXGU0403**L/R...	0.9
JSWLXR/L2525M04	25	25	150	19	25	32	0.4	WXGU0403**L/R...	0.9

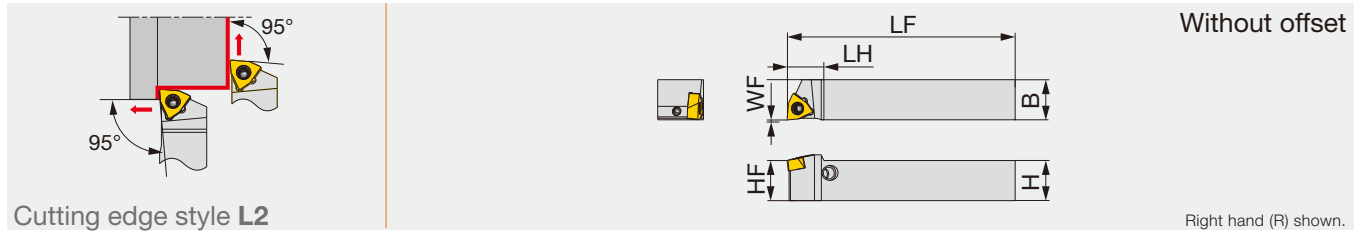
\*Torque: Recommended torque (N-m) for clamping \*\*RE: The holder measurements are true with this insert radius  
 Note: Use the right-hand toolholder (R) for the left-hand insert (L). Use the left-hand toolholder (L) for the right-hand insert (R)

### SPARE PARTS

Designation	Clamping screw	Wrench
JSWLXR/L...	SR34-514	T-7F

## JPWL2XR/L

Lever lock type toolholder without offset with 95° approach angle, for WXGU inserts



Cutting edge style L2

Designation	H	B	LF	LH	HF	WF	RE**	Insert	Torque*
JPWL2XR/L1010X04	10	10	120	11	10	0	0.2	WXGU0403**L/R...	0.9
JPWL2XR/L1212F04	12	12	85	11	12	0	0.2	WXGU0403**L/R...	0.9
JPWL2XR/L1212X04	12	12	120	11	12	0	0.2	WXGU0403**L/R...	0.9
JPWL2XR/L1616X04	16	16	120	13	16	0	0.2	WXGU0403**L/R...	0.9

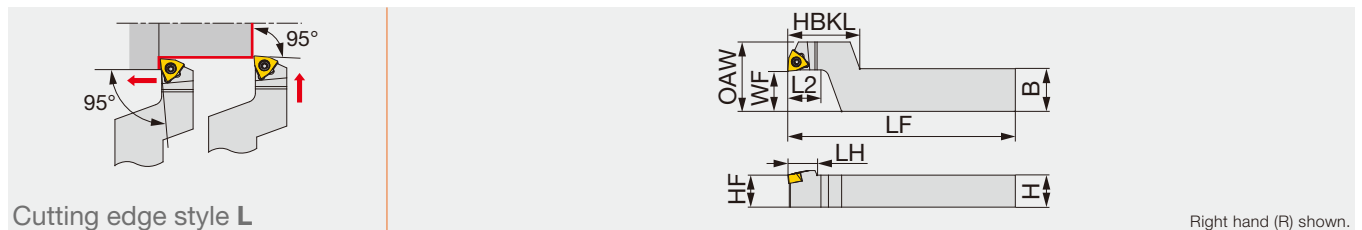
\*Torque: Recommended torque (N-m) for clamping \*\*RE: The holder measurements are true with this insert radius  
 Note: Use the right-hand toolholder (R) for the left-hand insert (L). Use the left-hand toolholder (L) for the right-hand insert (R)

### SPARE PARTS

Designation	Lever	Pin	Clamping screw	Wrench
JPWL2XR/L...	SLLV-2	SL-PI-2	SR10400611	HW2.0/5RED

## JSWLXR-F

Screw-on stepped-head toolholder with 95° approach angle, for WXGU inserts



Cutting edge style L

Designation	H	B	LF	L2	HBKL	LH	HF	WF	OAW	RE**	Insert	Torque*
JSWLXR1016X04-F15	10	16	120	12	27	11	10	15	26	0.2	WXGU0403**L...	0.9
JSWLXR1216F04-F15	12	16	85	12	27	11	12	15	26	0.2	WXGU0403**L...	0.9
JSWLXR1216X04-F15	12	16	120	12	27	11	12	15	26	0.2	WXGU0403**L...	0.9
JSWLXR1620X04-F15	16	20	120	12	27	11	16	15	26	0.2	WXGU0403**L...	0.9

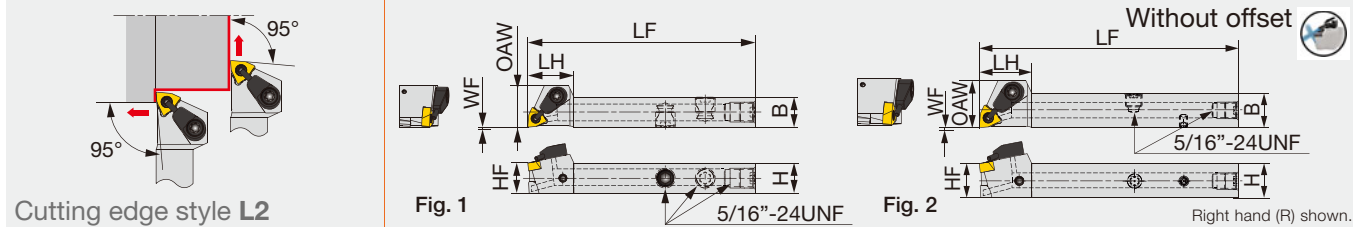
\*Torque: Recommended torque (N-m) for clamping \*\*RE: The holder measurements are true with this insert radius  
 Note: Use the right-hand toolholder (R) for the left-hand insert (L)

### SPARE PARTS

Designation	Clamping screw	Wrench
JSWLXR**-F15	SR34-514	T-7F

## JSWL2XR/L-CHP

Screw-on toolholder without offset with 95° approach angle, for WXGU inserts, with channels for high pressure coolant



Designation	H	B	LF	LH	HF	WF	OAW	RE**	Insert	Torque*	Fig.
JSWL2XR/L1212F04-CHP	12	12	85	18	12	0	16.5	0.2	WXGU0403**L/R...	0.9	1
JSWL2XR1212X04-CHP	12	12	120	18.5	12	0	16.5	0.2	WXGU0403**L	0.9	2
JSWL2XR1616X04-CHP	16	16	120	18.5	16	0	16.5	0.2	WXGU0403**L	0.9	2

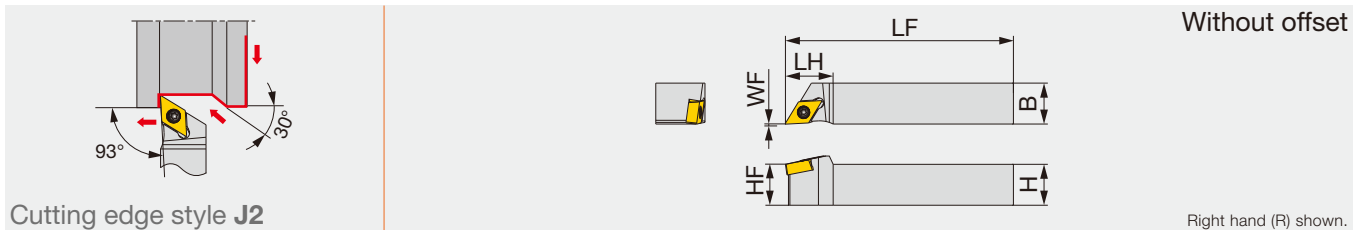
\*Torque: Recommended torque (N·m) for clamping \*\*RE: The holder measurements are true with this insert radius  
 Note: Use the right-hand toolholder (R) for the left-hand insert (L). Use the left-hand toolholder (L) for the right-hand insert (R)

### SPARE PARTS

Designation	Clamping screw	Coolant unit	Wrench
JSWL2XR**04-CHP	SR34-514	S-CU-CHP	T-7F

## JSDJ2XR/L

Screw-on toolholder without offset with 93° approach angle, for DXGU inserts



Designation	H	B	LF	LH	HF	WF	RE**	Insert	Torque*
JSDJ2XR/L1010X07	10	10	120	14	10	0	0.2	DXGU0703**L/R...	0.9
JSDJ2XR/L1212F07	12	12	85	14	12	0	0.2	DXGU0703**L/R...	0.9
JSDJ2XR/L1212X07	12	12	120	14	12	0	0.2	DXGU0703**L/R...	0.9
JSDJ2XR/L1616X07	16	16	120	18	16	0	0.2	DXGU0703**L/R...	0.9
JSDJ2XR/L2020H07	20	20	100	18	20	0	0.2	DXGU0703**L/R...	0.9

\*Torque: Recommended torque (N·m) for clamping \*\*RE: The holder measurements are true with this insert radius  
 Note: Use the right-hand toolholder (R) for the left-hand insert (L). Use the left-hand toolholder (L) for the right-hand insert (R)

### SPARE PARTS

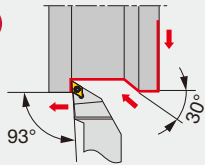
Designation	Clamping screw	Wrench
JSDJ2XR/L...	SR34-514	T-7F



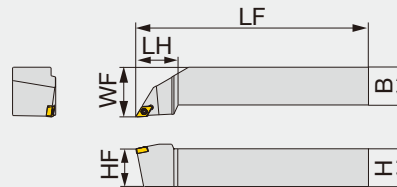
## JSDJXR/L

Screw-on toolholder without offset with 93° approach angle, for DXGU inserts

**New**



Cutting edge style J



Right hand (R) shown.

Designation	H	B	LF	LH	HF	WF	RE**	Insert	Torque*
JSDJXR/L2020K07	20	20	125	27	20	25	0.4	DXGU0703**L/R...	0.9
JSDJXR/L2525M07	25	25	150	27	25	32	0.4	DXGU0703**L/R...	0.9

\*Torque: Recommended torque (N-m) for clamping \*\*RE: The holder measurements are true with this insert radius  
 Note: Use the right-hand toolholder (R) for the left-hand insert (L). Use the left-hand toolholder (L) for the right-hand insert (R)

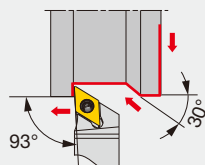
### SPARE PARTS



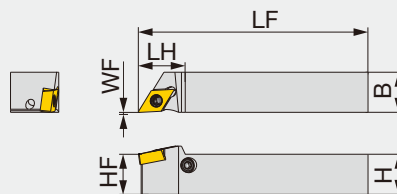
Designation	Clamping screw	Wrench
JSDJXR/L...	SR34-514	T-7F

## JPDJ2XR/L

Lever lock type toolholder without offset with 93° approach angle, for DXGU inserts



Cutting edge style J2



Without offset

Right hand (R) shown.

Designation	H	B	LF	LH	HF	WF	RE**	Insert	Torque*
JPDJ2XR/L1010X07	10	10	120	14	10	0	0.2	DXGU0703**L/R...	0.9
JPDJ2XR/L1212F07	12	12	85	14	12	0	0.2	DXGU0703**L/R...	0.9
JPDJ2XR/L1212X07	12	12	120	14	12	0	0.2	DXGU0703**L/R...	0.9
JPDJ2XR/L1616X07	16	16	120	18	16	0	0.2	DXGU0703**L/R...	0.9

\*Torque: Recommended torque (N-m) for clamping \*\*RE: The holder measurements are true with this insert radius  
 Note: Use the right-hand toolholder (R) for the left-hand insert (L). Use the left-hand toolholder (L) for the right-hand insert (R)

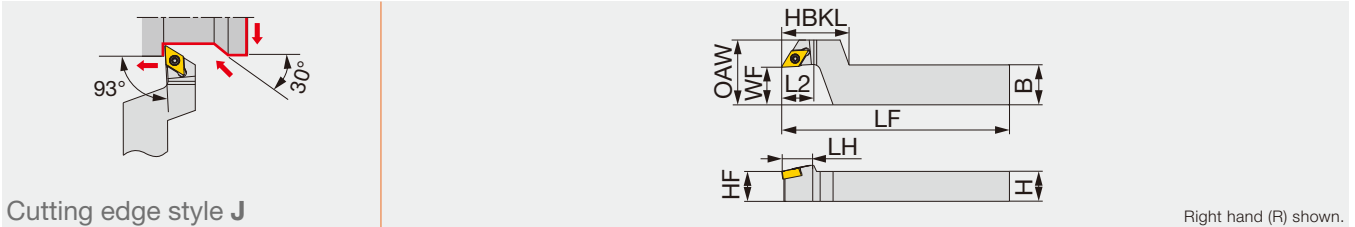
### SPARE PARTS



Designation	Lever	Pin	Clamping screw	Wrench
JPDJ2XR/L...	SLLV-2	SL-PI-2	SR10400611	HW2.0/5RED

## JSDJXR-F

Screw-on stepped-head toolholder with 93° approach angle, for DXGU inserts



Cutting edge style J

Right hand (R) shown.

Designation	H	B	LF	L2	HBKL	LH	HF	WF	OAW	RE**	Insert	Torque*
JSDJXR1016X07-F15	10	16	120	12	27	14	10	15	26	0.2	DXGU0703**L...	0.9
JSDJXR1216F07-F15	12	16	85	12	27	14	12	15	26	0.2	DXGU0703**L...	0.9
JSDJXR1216X07-F15	12	16	120	12	27	14	12	15	26	0.2	DXGU0703**L...	0.9
JSDJXR1620X07-F15	16	20	120	12	27	14	16	15	26	0.2	DXGU0703**L...	0.9

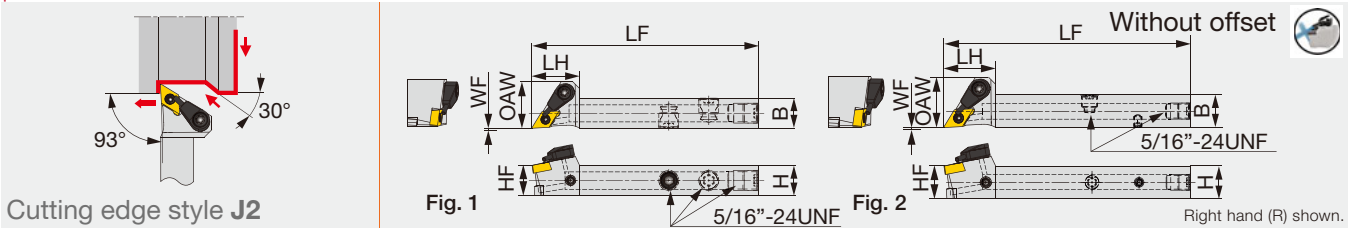
\*Torque: Recommended torque (N-m) for clamping \*\*RE: The holder measurements are true with this insert radius  
 Note: Use the right-hand toolholder (R) for the left-hand insert (L)

### SPARE PARTS

Designation	Clamping screw	Wrench
JSDJXR**-F15	SR34-514	T-7F

## JSDJ2XR/L-CHP

Screw-on toolholder without offset with 93° approach angle, for DXGU inserts, with channels for high pressure coolant



Cutting edge style J2

Right hand (R) shown.

Designation	H	B	LF	LH	HF	W	OAW	RE**	Insert	Torque*	Fig.
JSDJ2XR/L1212F07-CHP	12	12	85	19	12	0	18.5	0.2	DXGU0703**L/R...	0.9	1
JSDJ2XR1212X07-CHP	12	12	120	19	12	0	18.5	0.2	DXGU0703**L	0.9	2
JSDJ2XR1616X07-CHP	16	16	120	19	16	0	18.5	0.2	DXGU0703**L	0.9	2

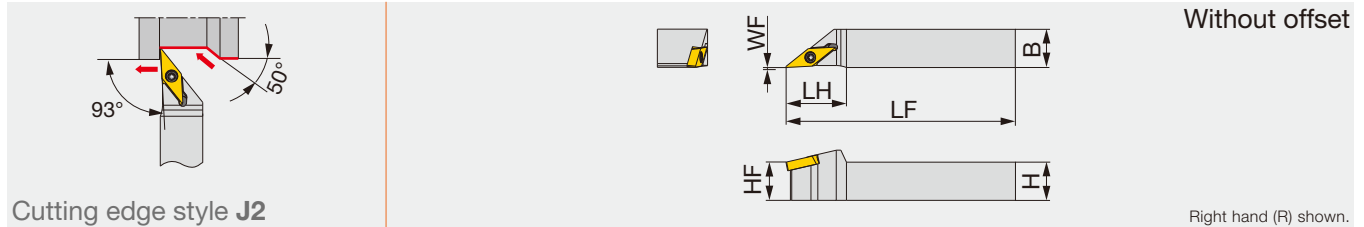
\*Torque: Recommended torque (N-m) for clamping \*\*RE: The holder measurements are true with this insert radius  
 Note: Use the right-hand tool holder (R) for the left-hand insert (L). Use the left-hand tool holder (L) for the right-hand insert (R).

### SPARE PARTS

Designation	Clamping screw	Coolant unit	Wrench
JSDJ2XR**07-CHP	SR34-514	S-CU-CHP	T-7F

## JSVJ2XR/L

Screw-on toolholder without offset with 93° approach angle, for VXGU inserts



Designation	H	B	LF	LH	HF	WF	RE**	Insert	Torque*
JSVJ2XR/L1010X09	10	10	120	17	10	0	0.2	VXGU09T2**/L/R...	0.9
JSVJ2XR/L1212F09	12	12	85	19	12	0	0.2	VXGU09T2**/L/R...	0.9
JSVJ2XR/L1212X09	12	12	120	19	12	0	0.2	VXGU09T2**/L/R...	0.9
JSVJ2XR/L1616X09	16	16	120	19	16	0	0.2	VXGU09T2**/L/R...	0.9
JSVJ2XR/L2020H09	20	20	100	19	20	0	0.2	VXGU09T2**/L/R...	0.9

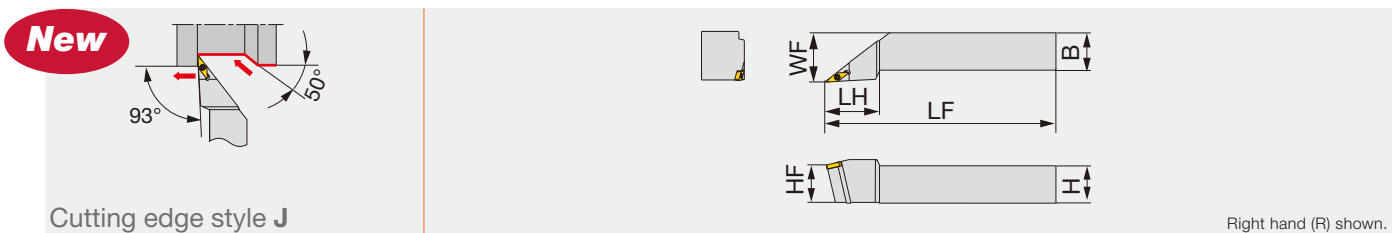
\*Torque: Recommended torque (N-m) for clamping \*\*RE: The holder measurements are true with this insert radius  
 Note: Use the right-hand toolholder (R) for the left-hand insert (L). Use the left-hand toolholder (L) for the right-hand insert (R)

### SPARE PARTS

Designation	Clamping screw	Wrench
JSVJ2XR/L...	SR34-508	T-7F

## JSVJXR/L

Screw-on toolholder without offset with 93° approach angle, for VXGU inserts



Designation	H	B	LF	LH	HF	WF	RE**	Insert	Torque*
JSVJXR/L2020K09	20	20	125	35	20	25	0.4	VXGU09T2**/L/R...	0.9
JSVJXR/L2525M09	25	25	150	35	25	32	0.4	VXGU09T2**/L/R...	0.9

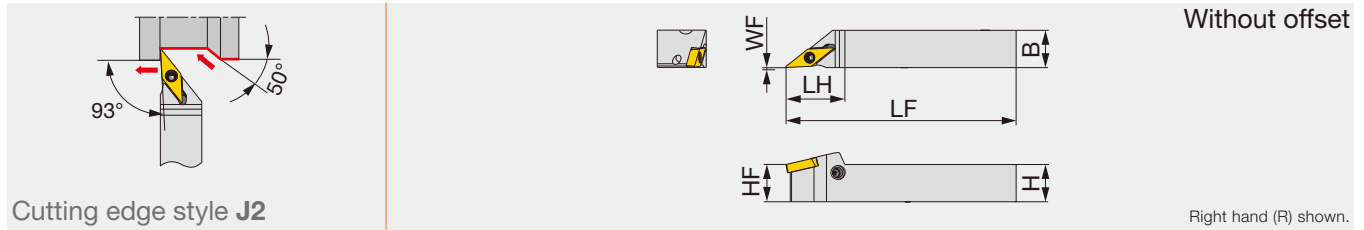
\*Torque: Recommended torque (N-m) for clamping \*\*RE: The holder measurements are true with this insert radius  
 Note: Use the right-hand toolholder (R) for the left-hand insert (L). Use the left-hand toolholder (L) for the right-hand insert (R)

### SPARE PARTS

Designation	Clamping screw	Wrench
JSVJXR/L...	SR34-508	T-7F

## JPVJ2XR/L

Lever lock type toolholder without offset with 93° approach angle, for VXGU inserts



Cutting edge style **J2**

Designation	H	B	LF	LH	HF	WF	RE**	Insert	Torque*
JPVJ2XR/L1010X09	10	10	120	19	10	0	0.2	VXGU09T2**/L/R...	0.9
JPVJ2XR/L1212F09	12	12	85	19	12	0	0.2	VXGU09T2**/L/R...	0.9
JPVJ2XR/L1212X09	12	12	120	19	12	0	0.2	VXGU09T2**/L/R...	0.9
JPVJ2XR/L1616X09	16	16	120	19	16	0	0.2	VXGU09T2**/L/R...	0.9

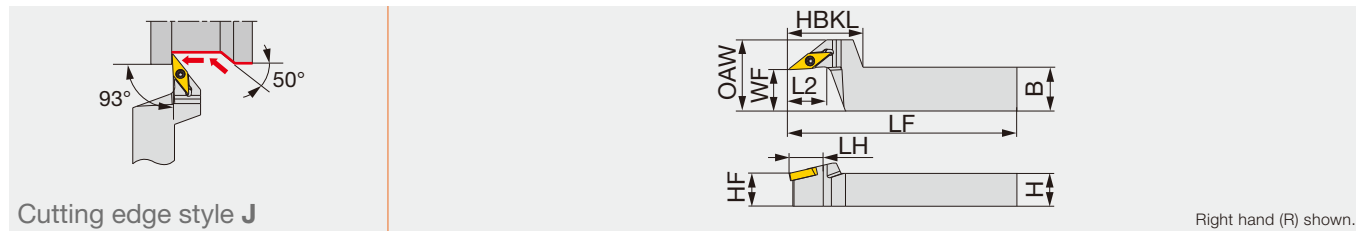
\*Torque: Recommended torque (N-m) for clamping \*\*RE: The holder measurements are true with this insert radius  
 Note: Use the right-hand toolholder (R) for the left-hand insert (L). Use the left-hand toolholder (L) for the right-hand insert (R)

### SPARE PARTS

Designation	Lever	Pin	Clamping screw	Wrench
JPVJ2XR/L...	SLLV-1	SL-PI-2	SR10400611	HW2.0/5RED

## JSVJXR-F

Screw-on stepped-head toolholder with 93° approach angle, for VXGU inserts



Cutting edge style **J**

Designation	H	B	LF	L2	HBKL	LH	HF	WF	OAW	RE**	Insert	Torque*
JSVJXR1016X09-F15	10	16	120	12	27	19	10	15	26	0.2	VXGU09T2**/L...	0.9
JSVJXR1216F09-F15	12	16	85	12	27	19	12	15	26	0.2	VXGU09T2**/L...	0.9
JSVJXR1216X09-F15	12	16	120	12	27	19	12	15	26	0.2	VXGU09T2**/L...	0.9
JSVJXR1620X09-F15	16	20	120	12	27	19	16	15	26	0.2	VXGU09T2**/L...	0.9

\*Torque: Recommended torque (N-m) for clamping \*\*RE: The holder measurements are true with this insert radius  
 Note: Use the right-hand toolholder (R) for the left-hand insert (L)

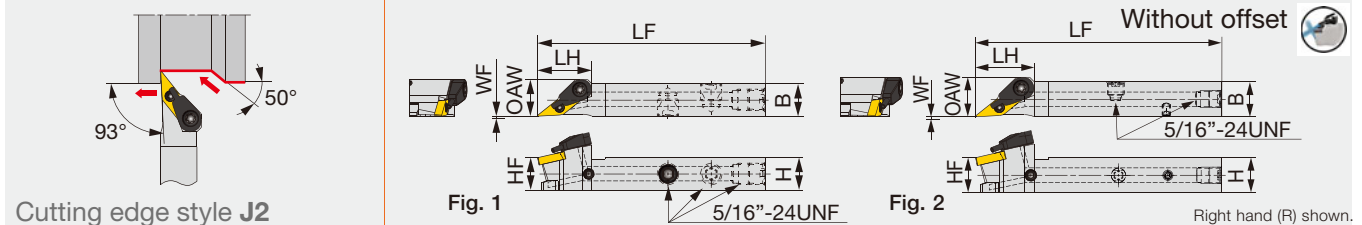
### SPARE PARTS

Designation	Clamping screw	Wrench
JSVJXR**-F15	SR34-508	T-7F



## JSVJ2XR/L-CHP

Screw-on toolholder without offset with 93° approach angle, for VXGU inserts, with coolant nozzle for high pressure



Designation	H	B	LF	LH	HF	WF	OAW	RE**	Insert	Torque*	Fig.
JSVJ2XR/L1212F09-CHP	12	12	85	20	12	0	13.5	0.2	VXGU09T2**L/R...	0.9	1
JSVJ2XR1212X09-CHP	12	12	120	19.5	12	0	13.4	0.2	VXGU09T2**L	0.9	2
JSVJ2XR1616X09-CHP	16	16	120	19.5	16	0	16	0.2	VXGU09T2**L	0.9	2

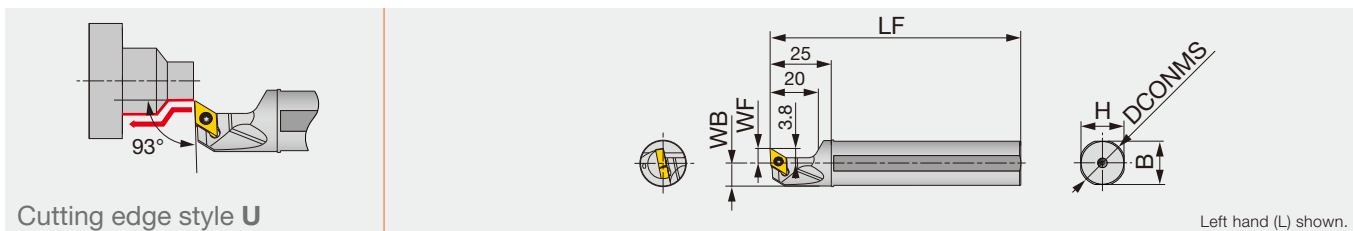
\*Torque: Recommended torque (N-m) for clamping \*\*RE: The holder measurements are true with this insert radius  
 Note: Use the right-hand toolholder (R) for the left-hand insert (L). Use the left-hand toolholder (L) for the right-hand insert (R)

### SPARE PARTS

Designation	Clamping screw	Coolant unit	Wrench
JSVJ2XR**F09-CHP	SR34-508	S-CU-CHP	T-7F

## JS-SDUXL

Screw-on toolholder with 93° approach angle, for DXGU inserts



Designation	DCONMS	WF	LF	H	B	WB	RE**	Insert	Torque*
JS14H-SDUXL07	14	6	100	13	13	6.75	0.2	DXGU0703**L...	0.9
JS159F-SDUXL07	15.875	6	85	15	15	7.687	0.2	DXGU0703**L...	0.9
JS16F-SDUXL07	16	6	85	15	15	7.75	0.2	DXGU0703**L...	0.9
JS19G-SDUXL07	19.05	6	90	18	18	9.275	0.2	DXGU0703**L...	0.9
JS19X-SDUXL07	19.05	6	120	18	18	9.275	0.2	DXGU0703**L...	0.9
JS20G-SDUXL07	20	6	90	19	19	9.75	0.2	DXGU0703**L...	0.9
JS20X-SDUXL07	20	6	120	19	19	9.75	0.2	DXGU0703**L...	0.9
JS22H-SDUXL07	22	10	120	21	21	10.75	0.2	DXGU0703**L...	0.9
JS25H-SDUXL07	25	10	100	24	24	12.25	0.2	DXGU0703**L...	0.9
JS254X-SDUXL07	25.4	10	120	24	24	12.45	0.2	DXGU0703**L...	0.9

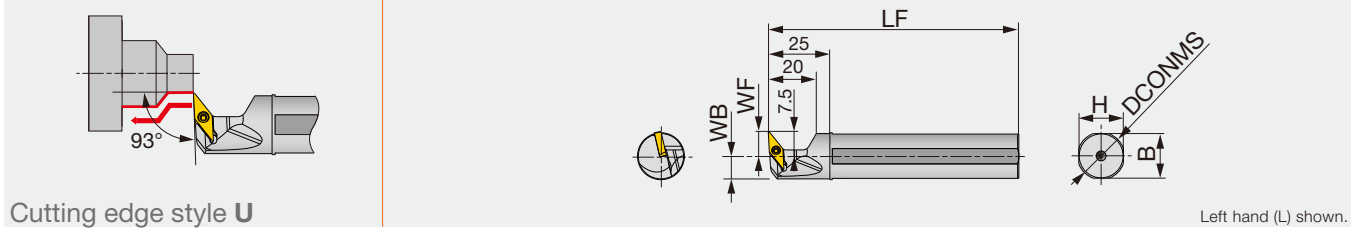
\*Torque: Recommended torque (N-m) for clamping \*\*RE: The holder measurements are true with this insert radius  
 Note: Use the left-hand toolholder (L) for the left-hand insert (L)

### SPARE PARTS

Designation	Clamping screw	Wrench
JS**-SDUXL07	SR34-514	T-7F

## JS-SVUXL

Screw-on toolholder with 93° approach angle, for VXGU inserts



Cutting edge style U

Designation	DCONMS	WF	LF	H	B	WB	RE**	Insert	Torque*
JS159F-SVUXL09	15.875	10	85	15	15	7.7	0.2	VXGU09T2**L...	0.9
JS16F-SVUXL09	16	10	85	15	15	7.7	0.2	VXGU09T2**L...	0.9
JS19G-SVUXL09	19.05	10	90	18	18	9.2	0.2	VXGU09T2**L...	0.9
JS19X-SVUXL09	19.05	10	120	18	18	9.2	0.2	VXGU09T2**L...	0.9
JS20G-SVUXL09	20	10	90	19	19	9.7	0.2	VXGU09T2**L...	0.9
JS20X-SVUXL09	20	10	120	19	19	9.7	0.2	VXGU09T2**L...	0.9
JS22X-SVUXL09	22	10	120	21	21	10.7	0.2	VXGU09T2**L...	0.9
JS25H-SVUXL09	25	10	100	24	24	12.2	0.2	VXGU09T2**L...	0.9
JS254X-SVUXL09	25.4	10	120	24	24	12.4	0.2	VXGU09T2**L...	0.9

\*Torque: Recommended torque (N-m) for clamping \*\*RE: The holder measurements are true with this insert radius  
 Note: Use the left-hand toolholder (L) for the left-hand insert (L)

### SPARE PARTS

Designation	Clamping screw	Wrench
JS**-SVUXL09	SR34-508	T-7F

## CUTTING PERFORMANCE

### ● Excellent chatter stability

**MINIFURN**  
TUNGALOY

Depth of cut: ap (mm)	2.0	OK	OK	OK	OK
	1.5	OK	OK	OK	OK
	1.0	OK	OK	OK	OK
	0.5	OK	OK	OK	OK
ap/f		0.05	0.10	0.15	0.20
Feed: f (mm/rev)					

Workpiece : S45C / C45  
 Insert : WXGU040304L-TS AH725  
 Toolholder : A12M-SWLXR04-D140  
 Cutting speed : Vc = 150 m/min  
 Overhang length : 36 mm (L/D = 3)  
 Coolant : Wet (internal supply)

### ISO positive insert

Depth of cut: ap (mm)	2.0	OK	OK	OK	OK
	1.5	OK	OK	OK	OK
	1.0	OK	OK	OK	OK
	0.5	OK	OK	OK	OK
ap/f		0.05	0.10	0.15	0.20
Feed: f (mm/rev)					

## CHIP CONTROL

**P**

Depth of cut: ap (mm)	2.0				
	1.5				
	1.0				
	0.5				
ap/f		0.05	0.10	0.15	0.20
Feed: f (mm/rev)					

Workpiece : S45C / C45  
 Insert : WXGU040304L-TS AH725  
 Toolholder : A12M-SWLXR04-D140  
 Cutting speed : Vc = 150 m/min  
 Boring depth : H = 36 mm (L/D = 3)  
 Coolant : Wet (internal supply)

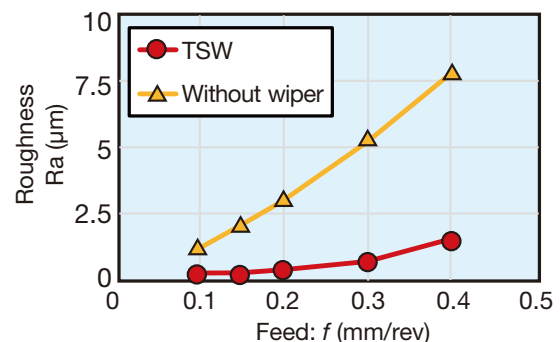
**M**

Depth of cut: ap (mm)	1.50				
	1.00				
	0.50				
	0.25				
ap/f		0.05	0.075	0.10	0.15
Feed: f (mm/rev)					

Workpiece : SUS304 / X5CrNi18-9  
 Insert : WXGU040304L-SS AH725  
 Toolholder : E12Q-SWLXR04-D140  
 Cutting speed : Vc = 150 m/min  
 Boring depth : H = 60 mm (L/D = 5)  
 Coolant : Wet (internal supply)

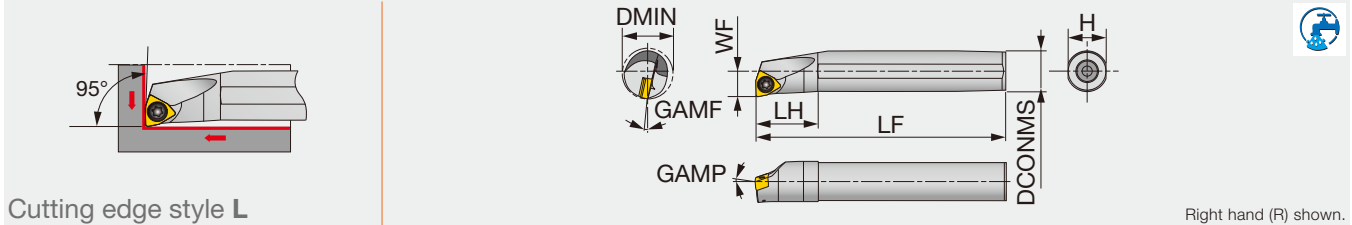
## WIPER PERFORMANCE

Workpiece : S45C / C45  
 Insert : WXGU040304L-TSW  
 CCMT09T304-\*\*(Without wiper)  
 Toolholder : E16R-SWLXR04-D180  
 Cutting speed : Vc = 150 m/min  
 Depth of cut : ap = 0.5 mm  
 Hole depth : H = 48 mm (L/D = 3)  
 Coolant : Wet (internal supply)



## A/E-SWLXR/L

For trigon insert with 6 edges



Cutting edge style L

Right hand (R) shown.

Designation	Material	DMIN	DCONMS	WF	LF	LH	H	GAMP	GAMF	RE**	Insert	Torque*
A10K-SWLXR/L04-D120	STEEL	12	10	6	125	20	9	-10	-16	0.4	WXGU0403**L/R...	0.9
A12M-SWLXR/L04-D140	STEEL	14	12	7	150	24	11	-10	-14	0.4	WXGU0403**L/R...	0.9
A16Q-SWLXR/L04-D180	STEEL	18	16	9	180	32	15	-10	-11	0.4	WXGU0403**L/R...	0.9
A20R-SWLXR/L04-D220	STEEL	22	20	11	200	36	18	-10	-10	0.4	WXGU0403**L/R...	0.9
E10M-SWLXR/L04-D120	CARBIDE	12	10	6	150	25	9	-10	-16	0.4	WXGU0403**L/R...	0.9
E12Q-SWLXR/L04-D140	CARBIDE	14	12	7	180	27	11	-10	-14	0.4	WXGU0403**L/R...	0.9
E16R-SWLXR/L04-D180	CARBIDE	18	16	9	200	32	15	-10	-11	0.4	WXGU0403**L/R...	0.9
E20S-SWLXR/L04-D220	CARBIDE	22	20	11	250	36	18	-10	-10	0.4	WXGU0403**L/R...	0.9

\*Torque: Recommended torque (N-m) for clamping \*\*RE: The holder measurements are true with this insert radius

Note: Use the right hand toolholder (R) for the left hand insert (L). Use the left hand toolholder (L) for the right hand insert (R)

### SPARE PARTS



Designation	Clamping screw	Wrench
A/E**-SWLXR/L...	SR34-514	T-7F

- 1 Use the right hand toolholder (R) for the left hand insert (L)
- 2 Use the left hand toolholder (L) for the right hand insert (R)



1 Right hand toolholder with left hand insert shown

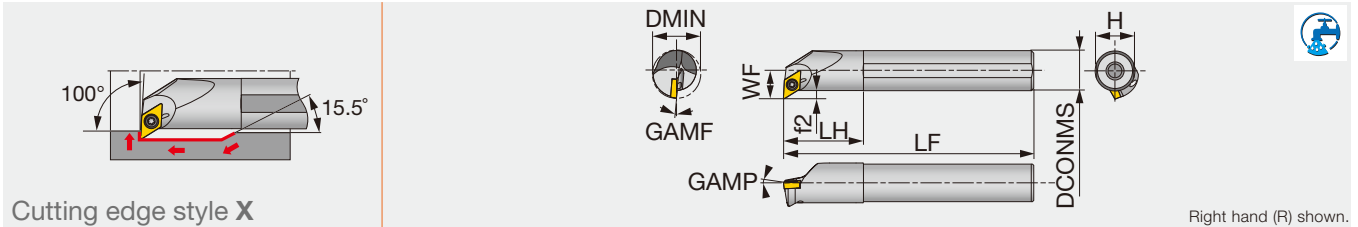


2 Left hand toolholder with right hand insert shown



## A/E-SDXXR/L

For 55° rhombic insert with 4 edges



Right hand (R) shown.

Designation	Material	DMIN	DCONMS	WF	LF	LH	H	f2	GAMP	GAMF	RE**	Insert	Torque*
A10K-SDXXR/L07-D130	STEEL	13	10	7.6	125	20	9	2.6	-14	-16	0.4	DXGU0703**L/R...	0.9
A12M-SDXXR/L07-D160	STEEL	16	12	8.6	150	24	11	2.6	-14	-14	0.4	DXGU0703**L/R...	0.9
A16Q-SDXXR/L07-D200	STEEL	20	16	10.6	180	32	15	2.6	-13	-13	0.4	DXGU0703**L/R...	0.9
A20R-SDXXR/L07-D240	STEEL	24	20	12.6	200	36	18	2.6	-13	-12	0.4	DXGU0703**L/R...	0.9
E10M-SDXXR/L07-D130	CARBIDE	13	10	7.6	150	25	9	2.6	-14	-16	0.4	DXGU0703**L/R...	0.9
E12Q-SDXXR/L07-D160	CARBIDE	16	12	8.6	180	27	11	2.6	-14	-14	0.4	DXGU0703**L/R...	0.9
E16R-SDXXR/L07-D200	CARBIDE	20	16	10.6	200	32	15	2.6	-13	-13	0.4	DXGU0703**L/R...	0.9
E20S-SDXXR/L07-D240	CARBIDE	24	20	12.6	250	36	18	2.6	-13	-12	0.4	DXGU0703**L/R...	0.9

\*Torque: Recommended torque (N-m) for clamping \*\*RE: The holder measurements are true with this insert radius

Note: Use the right hand toolholder (R) for the left hand insert (L). Use the left hand toolholder (L) for the right hand insert (R)

### SPARE PARTS

Designation	Clamping screw	Wrench
A/E**-SDXXR/L...	SR34-514	T-7F

- 1 Use the right hand toolholder (R) for the left hand insert (L)
- 2 Use the left hand toolholder (L) for the right hand insert (R)



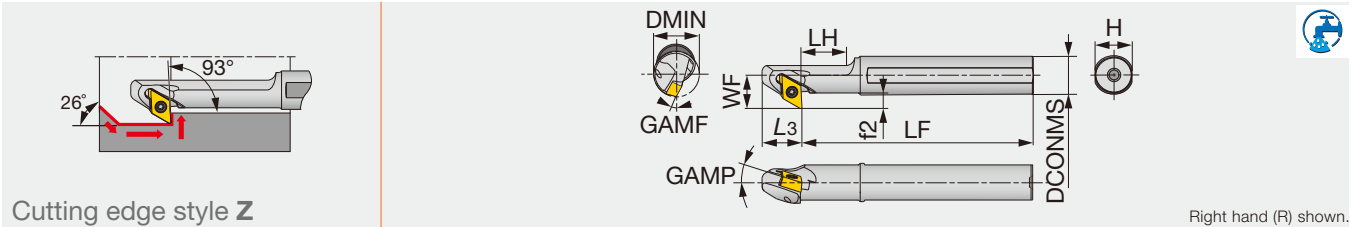
1 Right hand toolholder with left hand insert shown



2 Left hand toolholder with right hand insert shown

## A/E-SDZXR/L

For 55° rhombic insert with 4 edges



Right hand (R) shown.

Designation	Material	DMIN	DCONMS	WF	LF	LH	L3	H	f2	GAMP	GAMF	RE**	Insert	Torque*
A12M-SDZXR/L07-D140	STEEL	14	12	10.5	150	30	13	11	4.5	-10	-14	0.4	DXGU0703**R/L...	0.9
A16Q-SDZXR/L07-D160	STEEL	16	16	12.5	180	35	13	15	4.5	-10	-12.5	0.4	DXGU0703**R/L...	0.9
A20R-SDZXR/L07-D200	STEEL	20	20	14.5	200	40	13	18	4.5	-10	-10.5	0.4	DXGU0703**R/L...	0.9
E12Q-SDZXR/L07-D180	CARBIDE	18	12	10.5	180	-	13	11	4.5	-11	-11	0.4	DXGU0703**R/L...	0.9
E16R-SDZXR/L07-D220	CARBIDE	22	16	12.5	200	-	13	15	4.5	-11	-9	0.4	DXGU0703**R/L...	0.9

\*Torque: Recommended torque (N·m) for clamping \*\*RE: The holder measurements are true with this insert radius  
 Note: Use the right hand toolholder (R) for the right hand insert (R). Use the left hand toolholder (L) for the left hand insert (L)

### SPARE PARTS

Designation	Clamping screw	Wrench
A/E**-SDZXR/L...	SR34-514	T-7F

- ① Right hand toolholders (R) are used with right hand inserts (R)
- ② Left hand toolholders (L) are used with left hand inserts (L)

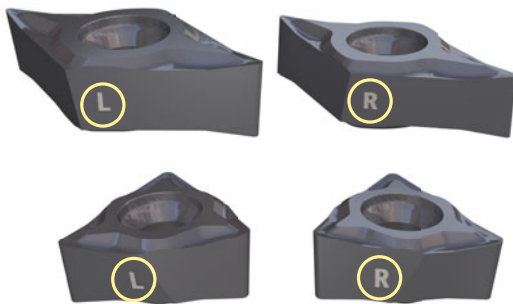


① Right hand toolholder with right hand insert shown



② Left hand toolholder with left hand insert shown

## MARKING



Insert hand is identified on the flank side













## STANDARD CUTTING CONDITIONS

### FOR INTERNAL TURNING

ISO	Workpiece material	Grade			Cutting speed Vc (m/min)	Depth of cut ap (mm)	Feed f (mm/rev)
		First choice	For surface finish	For wear resistance (High speed)			
<b>P</b>	Low carbon steel SS400, S25C, etc. E275A, C25, etc.	AH725	-	-	50 - 180	0.3 - 2	0.08 - 0.3
		-	-	AH8015	50 - 200	0.3 - 2	0.08 - 0.3
		-	NS9530	-	80 - 250	0.3 - 2	0.08 - 0.3
		-	GT9530	-	80 - 300	0.3 - 2	0.08 - 0.3
	Carbon steel S45C, S55C, etc. C45, C55, etc.	AH725	-	-	50 - 180	0.3 - 2	0.08 - 0.3
		-	-	AH8015	50 - 200	0.3 - 2	0.08 - 0.3
		-	NS9530	-	80 - 250	0.3 - 2	0.08 - 0.3
	Low alloy steel SCM415, etc. 18CrMo4, etc.	-	GT9530	-	80 - 300	0.3 - 2	0.08 - 0.3
		AH725	-	-	50 - 180	0.3 - 2	0.08 - 0.3
		-	-	AH8015	50 - 200	0.3 - 2	0.08 - 0.3
	Alloy steel SCM440, SCr420, etc. 42CrMo4, 20Cr4, etc.	-	NS9530	-	80 - 250	0.3 - 2	0.08 - 0.3
		-	GT9530	-	80 - 300	0.3 - 2	0.08 - 0.3
AH725		-	-	50 - 180	0.3 - 2	0.08 - 0.3	
<b>M</b>	Stainless steel (Austenitic) SUS304, SUS316, etc. X5CrNi18-9, X5CrNiMo17-12-3, etc.	AH8015	-	-	50 - 150	0.3 - 2	0.08 - 0.3
		AH8015	-	-	50 - 150	0.3 - 2	0.08 - 0.3
		AH8015	-	-	50 - 150	0.3 - 2	0.08 - 0.3
<b>K</b>	Grey cast iron FC250, etc. 250, etc.	AH725	-	-	50 - 180	0.3 - 2	0.08 - 0.3
		-	-	AH8015	50 - 200	0.3 - 2	0.08 - 0.3
		-	NS9530	-	80 - 250	0.3 - 2	0.08 - 0.3
	Ductile cast iron FCD700, etc. 600-3, etc.	-	GT9530	-	80 - 300	0.3 - 2	0.08 - 0.3
		AH725	-	-	50 - 180	0.3 - 2	0.08 - 0.3
		-	-	AH8015	50 - 200	0.3 - 2	0.08 - 0.3
<b>N</b>	Non ferrous Metal Aluminum alloy, etc.	-	NS9530	-	80 - 250	0.3 - 2	0.08 - 0.3
		-	GT9530	-	80 - 300	0.3 - 2	0.08 - 0.3
<b>S</b>	Heat-resistant alloys Titanium alloys, etc.	AH8015	-	-	20 - 80	0.3 - 2	0.08 - 0.3
		AH8015	-	-	20 - 80	0.3 - 2	0.08 - 0.3

## GRADES

**AH725****P M K****PREMIUMTEC**  
TUNGALOY

- Versatile PVD coated grade suitable for a wide range of work materials
- Demonstrates a balanced resistance to wear and fracture

**New****AH8015****P M K S****PREMIUMTEC**  
TUNGALOY

- PVD coated grade with a balanced resistance to wear and fracture
- First choice for stainless steel and heat-resistant superalloys

**SH725****P M K**

- PVD coating grade most suited for sharp cutting edges
- Suitable for machining of small and precision parts

**GT9530****P K****PREMIUMTEC**  
TUNGALOY

- Coated cermet grade with PremiumTec treatment for exceptional wear resistance
- Provides remarkable performance in high-speed finishing of steel

**NS9530****P K****PREMIUMTEC**  
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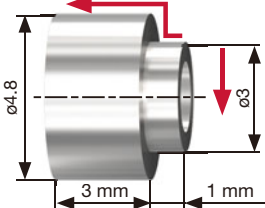
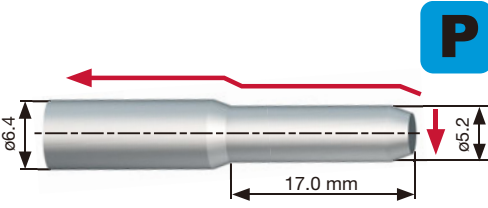
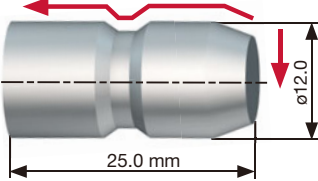
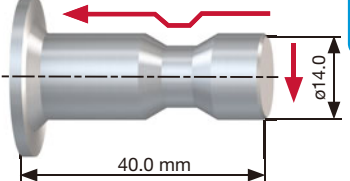
- General-purpose cermet grade with incredible fracture and wear resistance.
- Ensures long tool life and excellent surface finishing of steel

**KS05F****N**

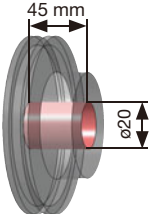
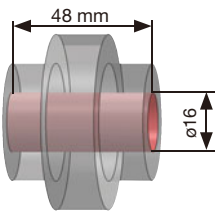
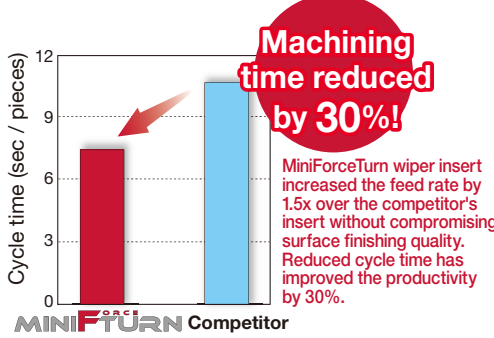
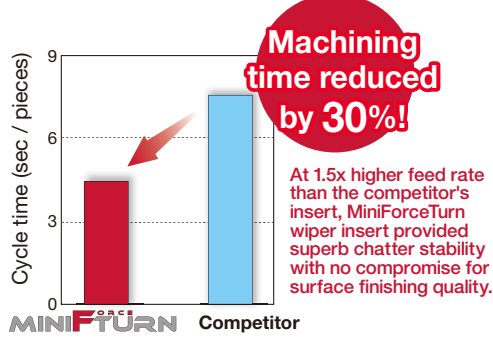
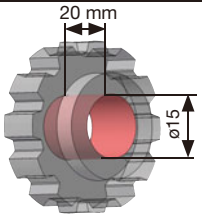
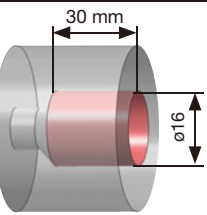
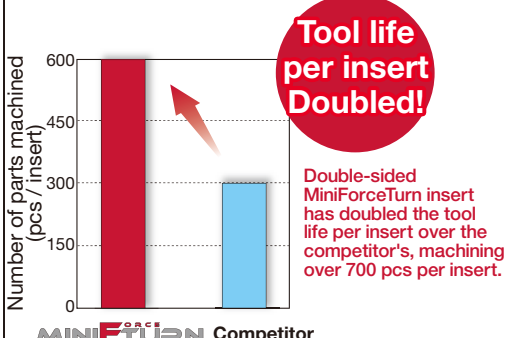
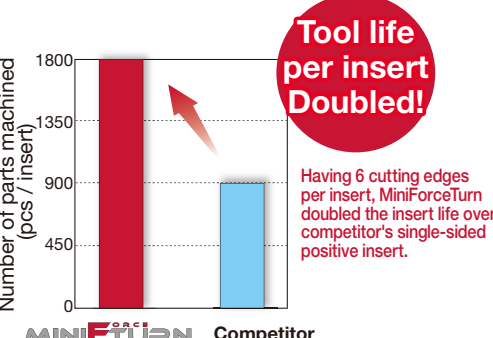
- Sub-micron grain cemented carbide with balanced wear and impact resistance
- Homogeneous fine-grained structure provides excellent resistance to wear, fracture, and built-up edge

# PRACTICAL EXAMPLES

## External turning

Workpiece		Shaft	Shaft												
Toolholder		JSDJ2XR1212X07	JSWL2XR1212X04												
Insert		DXGU070301MFL-JS	WXGU040302L-TS												
Grade		SH725	AH725												
Workpiece material		SUS316 / X5CrNiMo17-12-3	S45C / C45												
Cutting conditions															
Cutting speed: $V_c$ (m/min)		61	66 - 80												
Feed : $f$ (mm/rev)		0.02	0.15												
Depth of cut : $ap$ (mm)		0.12	0.6												
Machining		External	External												
Coolant		Wet	Wet												
Results		 <p><b>Tool life 1.3 times!</b></p> <p>MiniForceTurn improved chip control, while the SH725 grade increased tool life by 1.3x.</p> <p>Number of parts machined (pcs / corner)</p> <table border="1"> <tr> <th>Tool</th> <th>Number of parts machined (pcs / corner)</th> </tr> <tr> <td>MINIFORCE</td> <td>~1000</td> </tr> <tr> <td>Competitor</td> <td>~750</td> </tr> </table>	Tool	Number of parts machined (pcs / corner)	MINIFORCE	~1000	Competitor	~750	 <p><b>Number of parts machined 3 times!</b></p> <p>Double-sided MiniForceTurn insert machined 3x more parts per insert than the competitor's single-sided insert, due to extended tool life and increased number of cutting edges. Cost-per-edge was also reduced.</p> <p>Number of parts machined (pcs / insert)</p> <table border="1"> <tr> <th>Tool</th> <th>Number of parts machined (pcs / insert)</th> </tr> <tr> <td>MINIFORCE</td> <td>~6000</td> </tr> <tr> <td>Competitor</td> <td>~2000</td> </tr> </table>	Tool	Number of parts machined (pcs / insert)	MINIFORCE	~6000	Competitor	~2000
Tool	Number of parts machined (pcs / corner)														
MINIFORCE	~1000														
Competitor	~750														
Tool	Number of parts machined (pcs / insert)														
MINIFORCE	~6000														
Competitor	~2000														
Workpiece		Shaft	Shaft												
Toolholder		JSDJ2XR1212X07	JSVJ2XR1212X09												
Insert		DXGU070301ML-JSS	VXGU09T202MFLE-JRP												
Grade		AH725	SH725												
Workpiece material		Alloy steels	Low carbon steel (cold drawn)												
Cutting conditions															
Cutting speed: $V_c$ (m/min)		66 - 80	170												
Feed : $f$ (mm/rev)		0.15	0.03												
Depth of cut : $ap$ (mm)		0.6	0.2												
Machining		External	External												
Coolant		Wet	Wet												
Results		 <p><b>Number of parts machined Doubled!</b></p> <p>Double-sided MiniForceTurn insert machined 2x as many number of parts.</p> <p>Number of parts machined (pcs / insert)</p> <table border="1"> <tr> <th>Tool</th> <th>Number of parts machined (pcs / insert)</th> </tr> <tr> <td>MINIFORCE</td> <td>~2000</td> </tr> <tr> <td>Competitor</td> <td>~1000</td> </tr> </table>	Tool	Number of parts machined (pcs / insert)	MINIFORCE	~2000	Competitor	~1000	 <p><b>Tool life 2.4 times!</b></p> <p>A combination of JRP chipbreaker and SH725 grade provided high wear resistance and improved surface finishing, extending tool life by 2.4x over the competitor's insert.</p> <p>Number of parts machined (pcs / insert)</p> <table border="1"> <tr> <th>Tool</th> <th>Number of parts machined (pcs / insert)</th> </tr> <tr> <td>MINIFORCE</td> <td>~1200</td> </tr> <tr> <td>Competitor</td> <td>~500</td> </tr> </table>	Tool	Number of parts machined (pcs / insert)	MINIFORCE	~1200	Competitor	~500
Tool	Number of parts machined (pcs / insert)														
MINIFORCE	~2000														
Competitor	~1000														
Tool	Number of parts machined (pcs / insert)														
MINIFORCE	~1200														
Competitor	~500														

## Internal turning

Workpiece		Machine Parts	Machine Parts
Toolholder		A16Q-SWLXR04-D180	E12Q-SWLXR04-D140
Insert		WXGU040304L-TSW	WXGU040304L-TSW
Grade		AH725	GT9530
Workpiece material		S45C / C45	SCM435 / 34CrMo4
			
Cutting conditions	Cutting speed: $V_c$ (m/min)	160	200
	Feed : $f$ (mm/rev)	0.10 → 0.15	0.10 → 0.15
	Depth of cut : $ap$ (mm)	0.5	0.2
	Machining	Internal Turning (continuous cutting)	Internal Turning (continuous cutting)
	Coolant	Wet	Wet
Results		 <p><b>Machining time reduced by 30%!</b></p> <p>MiniForceTurn wiper insert increased the feed rate by 1.5x over the competitor's insert without compromising surface finishing quality. Reduced cycle time has improved the productivity by 30%.</p>	 <p><b>Machining time reduced by 30%!</b></p> <p>At 1.5x higher feed rate than the competitor's insert, MiniForceTurn wiper insert provided superb chatter stability with no compromise for surface finishing quality.</p>
Workpiece		Machine Parts	Machine Parts
Toolholder		A10K-SWLXR04-D120	A10K-SDXXR07-D130
Insert		WXGU040302L-SS	DXGU070304L-TS
Grade		KS05F	KS05F
Workpiece material		CAC406 / Bronze casting	A5056 (Al - Mg)
			
Cutting conditions	Cutting speed: $V_c$ (m/min)	70	200
	Feed : $f$ (mm/rev)	0.1	0.1
	Depth of cut : $ap$ (mm)	1.0	1.0
	Machining	Internal Turning (continuous cutting)	Internal Turning (continuous cutting)
	Coolant	Wet	Wet
Results		 <p><b>Tool life per insert Doubled!</b></p> <p>Double-sided MiniForceTurn insert has doubled the tool life per insert over the competitor's, machining over 700 pcs per insert.</p>	 <p><b>Tool life per insert Doubled!</b></p> <p>Having 6 cutting edges per insert, MiniForceTurn doubled the insert life over competitor's single-sided positive insert.</p>

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