



90 Degree Indexable Shoulder Cutter

Vol 1

OSG PHOENIX[®] PSE



For more information
scan the QR code to visit:
osgtool.com/pse

PHOENIX® PSE

PHOENIX® PSE is a versatile series of 90° end mills and facemills, ideal for a wide variety of rough and finish milling applications including facing, side milling, slotting, ramping and helical milling.



For more information use your phone to scan the QR code to the right and visit: osgtool.com/pse



List Numbers

- 78013 - PHOENIX® PSE SA/FA (Inch)
- 78011 - PHOENIX® PSE SS (MM)
- 78012 - PHOENIX® PSE Bore (Inch)
- 78010 - PHOENIX® PSE Bore (mm)
- 52601 - PHOENIX® PSE ASF (Inch)
- 78016 - PHOENIX® PSE SF (mm)
- 78PSE - PHOENIX® PSE Inserts
- 7808H - PHOENIX® PSE Accessories

Size Range

- 0.375"-1.5"
- 10mm-63mm
- 2"-6"
- 40mm-125mm
- 0.375"-1.5"
- 10mm-40mm

Primary Applications

- Any applications where ramping or helical milling is needed or could improve efficiency
- When high quality surface finish is desired in side milling operation
- When performing any shoulder milling operation

Features & Product Solutions

Superior Surface Finishes in Side Milling Applications

Side Cutting Edge Margins

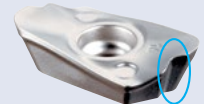
The margin on the side cutting edge of the PSE insert acts like a wiper, enabling superior surface finished in side milling applications.



Efficient Ramping and Helical Milling

Bottom Notch

The notch on the end cutting edge of the PSE insert breaks chips into small pieces, which prevents the jamming or wrapping of chips and enables the tool to perform ramping and helical milling efficiently.



Multiple Grades and Chip Breakers for all Materials

Insert Variety

Grade	CK010	XC3020 XP3025 XC3030 XP3035 XP2025 XP2040	XC5035 XC5040	XC3020 XP3025 XC3030 XP3035 XP2025 XP2040 XC1015	XC3020 XP3025 XC3030 XP3035 XP2040 XC1015	XP6015
Chip Breaker	NM	GL	SM	GM	GR	HR
Rake Angle	30°	25°	15°	15°	7°	3°
Application	Aluminum Alloy & Non-Ferrous Metal Machining	Low-Resistance Machining	Superalloy & Difficult-to-Cut Material Machining	Multi-Purpose Machining	Interrupted Machining & Long Overhang Machining	High-Hardened Material

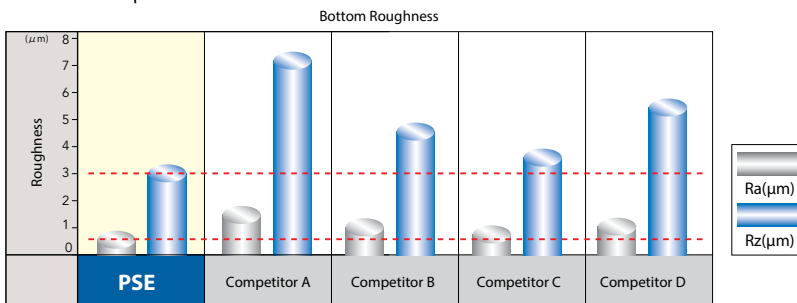


High Precision Insert

Bottom Roughness

The PSE showed an improvement at the bottom flat surface finish Rz 4µm and under.

Tool	PSE11R032SS32-5S
Insert (grade)	ZDKT11T304SR-GM (XP3035)
Work Material	1050 Steel
Cutting Speed	590 SFM (1790 RPM)
Feed	35.25 IPM (0.004 ipt)
Depth of Cut	Aa = 0.004 in, Ar = 1.008 in

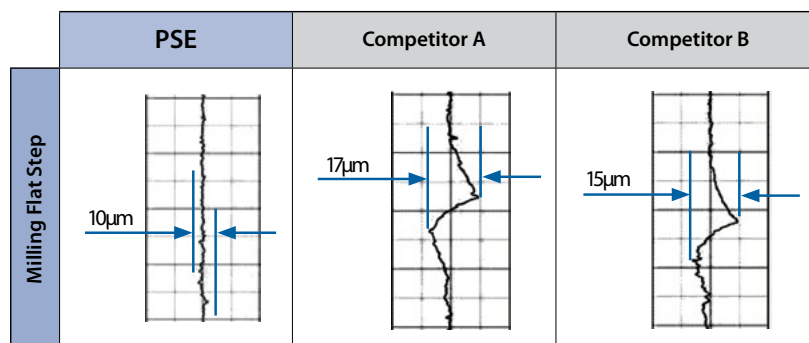


High Precision Insert

Side Milling Offset

PSE showed an improvement at side step machining as (measured) step was 10µm.

Tool	PSE15R032SS32-3S
Insert (grade)	ZDKT150508SR-GM (XP3035)
Work Material	1050 Steel
Cutting Speed	590 SFM (1790 RPM)
Feed	35.25 IPM (0.004 ipt)
Depth of Cut	Aa = 0.004 in, Ar = 1.008 in

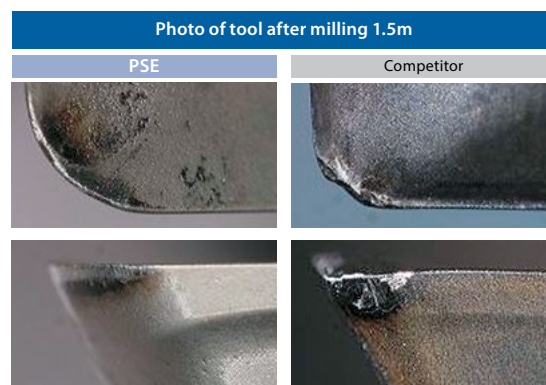


Long Tool Life in Heat Resistant Super Alloys

Inconel 718 (45 HRC)

OSG PHOENIX® PSE was able to mill at conditions that were 50% higher than those for conventional tools. It provided double the durability, wore normally and was able to continue milling.

Tool	PSE11R032SS32-5S	Competitor
Insert (grade)	ZDKT11T308ER-SM (XC5040)	Coated Carbide Chip
Work Material	Inconel 718 (45 HRC)	
Cutting Speed	98 SFM (298 RPM)	82 SFM (248 RPM)
Feed	4.72 IPM (0.003 ipt)	3.15 IPM (0.003 ipt)
Depth of Cut	Aa = 0.039 in, Ar = 0.787 in	
Coolant	Water Soluble	
Machine	Vertical Machining Center	

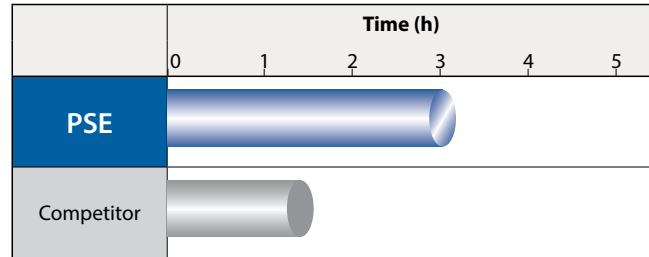


Long Tool Life in Mold Steel

NAK80 (40HRC)

The competitor tool chipped. The PSE, on the other hand, did not exhibit any chipping, performed stably and provided approximately double the durability under the same conditions.

Tool	PSE11R020SS20-3S	Competitor
Insert (grade)	ZDKT11T308SR-GL (XP2040)	Coated Carbide Chip
Work Material	NAK80 (40 HRC)	
Cutting Speed	426 SFM (2070 RPM)	
Feed	55.12 IPM (0.009 ipt)	
Depth of Cut	Aa = 0.012 in, Ar = 0.394 in	
Coolant	Air	
Machine	Vertical Machining Center	

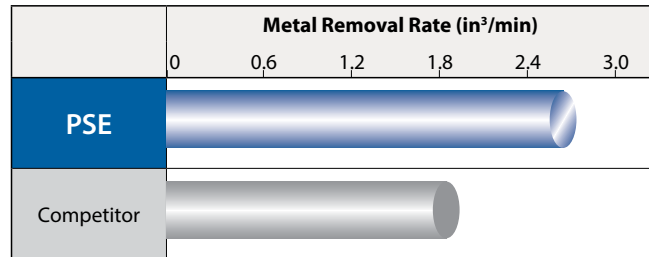


Increased Machining Efficiency in Stainless Steel

304 Stainless Steel

This process consisted of intermittent face milling a surface with multiple holes, and the PSE was able to mill with 1.4 times the efficiency versus the competitor. It also reduced heat generation, reducing the distortion of the workpiece as well as the effects passed on to the subsequent process.

Tool	PSE15R100M31.7-10	Competitor
Insert (grade)	ZDKT150508SR-GM (XP2040)	Coated Carbide Chip
Work Material	304 Stainless Steel	
Cutting Speed	492 SFM (478 RPM)	
Feed	28.35 IPM (0.006 ipt)	19.68 IPM (0.006 ipt)
Depth of Cut	Aa = 0.039 in, Ar = 2.362 in	
Coolant	Water Soluble	
Machine	Horizontal Machining Center	



Stable Machining

1050 Steel

Tool	PSE07R016SS16-4S (Ø16x4)
Insert (grade)	ZDKT070308SR-GM (XP3035)
Work Material	1050 Steel
Cutting Speed	492 SFM (2986 RPM)
Feed	23.5 IPM (0.002 in/t)
Depth of Cut	Aa = 0.138 in, Ar = 0.098 in
Coolant	Air
Machine	Vertical Machining Center



Wear amount after 1700 linear inches: 0.0047 in.



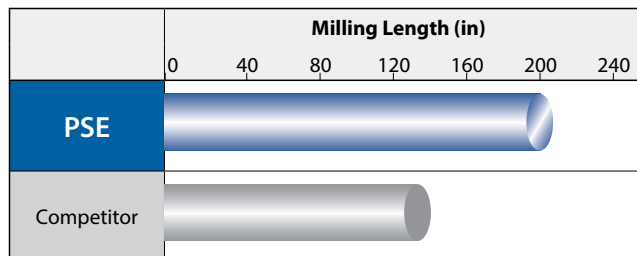
Wear amount after 1700 linear inches: 0.0059 in.

Wear & Chipping Resistance in Heat Resistant Super Alloys

Titanium-β Alloy

A competitor's product and the PSE were compared in the rough milling of aircraft parts under identical conditions. The competitor's product chipped, but the PSE wore normally and attained 1.5 times the durability.

Tool	PSE11R025SS25-4S	Competitor
Insert (grade)	ZDKT11T308ER-SM (XC5040)	Coated Carbide Chip
Work Material	Titanium-β Alloy	
Cutting Speed	131 SFM (510 RPM)	
Feed	6.30 IPM (0.003 ipt)	
Depth of Cut	Aa = 0.197 in, Ar = 0.394 in	
Coolant	Water Soluble	
Machine	Horizontal Machining Center	

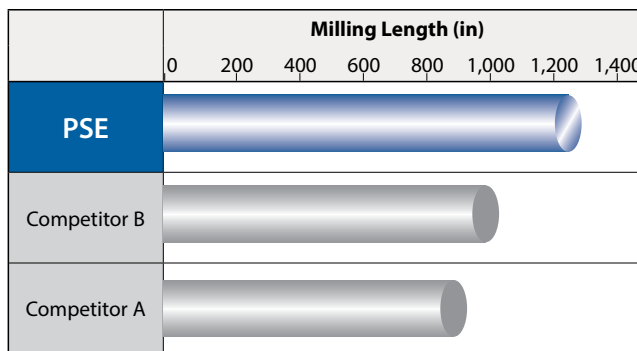


High Speed Machining in Carbon Steel

1050 Steel

In high speed machining of carbon steel, PSE's durability was 25% more than competitors without chipping.

Tool	PSE07R016SS16-4S	Competitor
Insert (grade)	XP3035	Coated Carbide Chip
Work Material	1050 Steel	
Cutting Speed	820 SFM (4,897 RPM)	
Feed	46.7 IPM (0.002 ipt)	
Depth of Cut	Aa = 0.079", Ar = 0.394"	
Coolant	Air	
Machine	Vertical Machining Center	



List 78013

PSE SA/FA (Inch)

NEW SIZES



SPEED FEED
P16-17

Recommended Materials: p18
Accessories & Inserts: p14-16
Ramping Angle: p19



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia.	No. of Teeth	Shank Dia.	Overall Length	Neck Length	Applicable Insert	Status			
					(inch)		(inch)	(inch)	(inch)					
					D	d			L	L1				
7801311	Cylindrical Shank Short	Normal	PSE07R038SA038-2S	1	0.375	2	0.375	1.969	0.472	ZDKT07...	●			
7801312			PSE07R050SA050-3S	1	0.500	3	0.500	1.969	0.472		●			
7801313			PSE07R063SA063-3S	1	0.625	3	0.625	3.543	0.984		●			
7801315			PSE07R075SA075-4S	1	0.750	4	0.750	3.937	1.181		●			
7801317			PSE07R100SA100-5S	1	1.000	5	1.000	4.724	1.378		●			
7801314		Close	PSE07R063SA063-4S	1	0.625	4	0.625	3.543	0.984	●				
7801316			PSE07R075SA075-5S	1	0.750	5	0.750	3.937	1.181	●				
7801318			PSE07R100SA100-6S	1	1.000	6	1.000	4.724	1.378	●				
7801300			Normal	PSE11R063SA063-2S	1	0.625	2	0.625	3.543	0.984	ZD_T11...	●		
7801301				PSE11R075SA075-3S	1	0.750	3	0.750	3.937	1.181		●		
7801302		PSE11R100SA100-3S		1	1.000	3	1.000	4.724	1.378	●				
7801303		PSE11R125SA125-3S		1	1.250	3	1.250	5.118	1.772	●				
7801304		Close		PSE11R100SA100-4S	1	1.000	4	1.000	4.724	1.378		ZDKT15...	●	
7801305			PSE11R125SA125-5S	1	1.250	5	1.250	5.118	1.772	●				
7801306			Normal	PSE15R100SA100-2S	1	1.000	2	1.000	4.724	1.378	ZDKT15...		●	
7801307				PSE15R125SA125-2S	1	1.250	2	1.250	5.118	1.772			●	
7801308				PSE15R150SA125-3S	2	1.500	3	1.250	5.512	1.969			●	
7801309		PSE15R125SA125-3S		1	1.250	3	1.250	5.118	1.772	●				
7801310		PSE15R150SA125-4S		2	1.500	4	1.250	5.512	1.969	●				
7801319		Cylindrical Shank Long	Normal	PSE07R038SA038-2L	1	0.375	2	0.375	3.150	0.787	ZDKT07...	●		
7801322	PSE07R050SA050-2L			1	0.500	2	0.500	3.150	0.787	●				
7801326	PSE07R063SA063-3L			1	0.625	3	0.625	5.906	0.984	●				
7801327	PSE07R075SA075-4L			1	0.750	4	0.750	6.299	1.181	●				
7801328	PSE07R100SA100-5L			1	1.000	5	1.000	6.693	1.378	●				
7801336	Normal		PSE11R063SA063-2L	1	0.625	2	0.625	5.906	1.969	ZD_T11...	●			
7801337			PSE11R075SA075-3L	1	0.750	3	0.750	6.299	2.362		●			
7801338			PSE11R100SA100-3L	1	1.000	3	1.000	6.693	2.756		●			
7801339			PSE11R125SA125-3L	1	1.250	3	1.250	7.480	3.543		●			
7801340			Close	PSE11R100SA100-4L	1	1.000	4	1.000	6.693		2.756	ZDKT15...	●	
7801341	PSE11R125SA125-5L			1	1.250	5	1.250	7.480	3.543	●				
7801342	Normal			PSE15R100SA100-2L	1	1.000	2	1.000	6.693	2.756	ZDKT15...		●	
7801343				PSE15R125SA125-2L	1	1.250	2	1.250	7.480	3.543			●	
7801344				PSE15R150SA125-3L	2	1.500	3	1.250	7.480	1.969			●	
7801345			Close	PSE15R125SA125-3L	1	1.250	3	1.250	7.480	3.543		ZDKT15...	●	
7801346				PSE15R150SA125-4L	2	1.500	4	1.250	7.480	1.969			●	
7801329	Weldon Shank Short			Normal	PSE07R038FA038-2S	1	0.375	2	0.375	2.035	0.472		ZDKT07...	●
7801331					PSE07R050FA050-3S	1	0.500	3	0.500	2.253	0.472			●
7801357					PSE07R063FA063-3S	1	0.625	3	0.625	2.890	0.984			●
7801359			PSE07R075FA075-4S		1	0.750	4	0.750	3.212	1.181	●			
7801361		PSE07R100FA100-5S	1		1.000	5	1.000	3.659	1.378	●				
7801358		Close	PSE07R063FA063-4S	1	0.625	4	0.625	2.890	0.984	ZDKT07...	●			
7801360			PSE07R075FA075-5S	1	0.750	5	0.750	3.212	1.181		●			
7801362			PSE07R100FA100-6S	1	1.000	6	1.000	3.659	1.378		●			
7801320			Normal	PSE11R063FA063-2S	1	0.625	2	0.625	3.205		1.299	ZD_T11...	●	
7801321				PSE11R075FA075-3S	1	0.750	3	0.750	3.583		1.551		●	
7801323		PSE11R100FA100-3S		1	1.000	3	1.000	3.831	1.551	●				
7801324		Close		PSE11R100FA100-4S	1	1.000	4	1.000	3.831	1.551	ZDKT15...		●	
7801325				PSE11R125FA125-5S	1	1.250	5	1.250	4.378	2.098			●	
7801330			Normal	PSE15R100FA100-2S	1	1.000	2	1.000	3.830	1.550		ZDKT15...	●	
7801332				PSE15R125FA125-2S	1	1.250	2	1.250	4.380	2.100			●	
7801334				PSE15R150FA125-3S	2	1.500	3	1.250	4.380	2.100			●	
7801333		Close		PSE15R125FA125-3S	1	1.250	3	1.250	4.380	2.100	ZDKT07...		●	
7801335				PSE15R150FA125-4S	2	1.500	4	1.250	4.380	2.100			●	
7801363			Weldon Shank Long	Normal	PSE07R038FA038-2L	1	0.375	2	0.375	2.547		0.984	ZDKT07...	●
7801364					PSE07R050FA050-2L	1	0.500	2	0.500	2.765		0.984		●
7801365	PSE07R063FA063-3L				1	0.625	3	0.625	3.874	1.969		●		
7801366	PSE07R075FA075-4L	1			0.750	4	0.750	4.394	2.362	●				
7801367	PSE07R100FA100-5L	1			1.000	5	1.000	5.035	2.756	●				

Packed: 1 pc. Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected.

The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).

● Stocked ○ Available Upon Request; Minimum Order Quantity May Apply ▲ Japan Stocked

Stock and availability vary - Please go to osgtool.com or contact customer service to confirm availability.



List 78013 (Continued)

NEW SIZES



SPEED FEED
P16-17



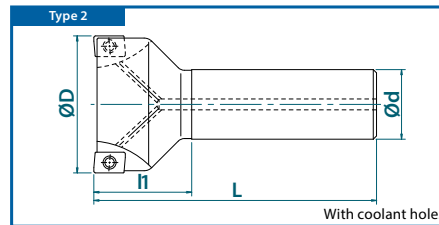
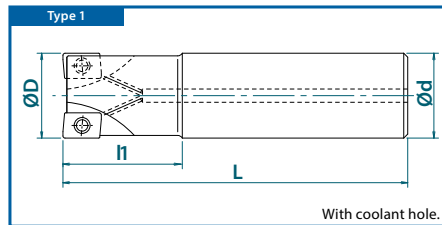
PSE SA/FA (Inch)

EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (inch)	No. of Teeth	Shank Dia. (inch)	Overall Length (inch)	Neck Length (inch)	Applicable Insert	Status
					D		d	L	L1		
7801347	Weldon Shank Long	Normal	PSE11R063FA063-2L	1	0.625	2	0.625	3.874	1.969	ZD_T11...	●
7801348			PSE11R075FA075-3L	1	0.750	3	0.750	4.394	2.362		●
7801349			PSE11R100FA100-3L	1	1.000	3	1.000	5.035	2.756		●
7801350		Close	PSE11R100FA100-4L	1	1.000	4	1.000	5.035	2.756		●
7801351			PSE11R125FA125-5L	1	1.250	5	1.250	5.823	3.543		●
7801352			PSE15R100FA100-2L	1	1.000	2	1.000	5.035	2.756		●
7801353		Normal	PSE15R125FA125-2L	1	1.250	2	1.250	5.823	3.543	●	
7801355			PSE15R150FA125-3L	2	1.500	3	1.250	5.823	2.100	●	
7801354			PSE15R125FA125-3L	1	1.250	3	1.250	5.823	3.543	●	
7801356		Close	PSE15R150FA125-4L	2	1.500	4	1.250	5.823	2.100	ZDKT15...	●

Packed: 1 pc. Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).

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List 78011

PSE SS (Metric)

NEW SIZES



SPEED FEED
P16-17



Recommended Materials: p18
Accessories & Inserts: p14-16
Ramping Angle: p19



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia.	No. of Teeth	Shank Dia.	Overall Length	Neck Length	Applicable Insert	Status	
					D		d	L	L1			
7803809	Cylindrical Shank Short	Normal	PSE07R010SS06-2S	2	10	2	6	50	12	ZDKT07...	▲	
7803810			PSE07R010SS10-2S	1	10	2	10	50	12		▲	
7803812			PSE07R016SS10-3S	2	16	3	10	50	10		▲	
7803813			PSE07R016SS16-3S	1	16	3	16	90	25		▲	
7803816			PSE07R020SS10-4S	2	20	4	10	50	12		▲	
7803817			PSE07R020SS20-4S	1	20	4	20	100	30		▲	
7803819		PSE07R025SS10-4S	2	25	4	10	50	12	▲			
7803811		Close	PSE07R012SS12-3S	1	12	3	12	50	12		▲	
7803814			PSE07R016SS16-4S	1	16	4	16	90	25		▲	
7803820			PSE07R025SS25-5S	1	25	5	25	120	35		▲	
7803815	Cylindrical Shank Long		Normal	PSE07R017SS16-3L	2	17	3	16	150	25	▲	
7803818		PSE07R021SS20-4L		2	21	4	20	160	30	▲		
7803821		PSE07R026SS25-5L		2	26	5	25	170	35	▲		
7801101	Cylindrical Shank Short	Normal	PSE11R020SS20-2S	1	20	2	20	100	30	ZD_T11...	▲	
7801102			PSE11R025SS25-3S	1	25	3	25	120	35		▲	
7801103			PSE11R032SS32-3S	1	32	3	32	130	45		▲	
7801100			Close	PSE11R016SS16-2S	1	16	2	16	90		25	▲
7801116				PSE11R018SS16-2S	2	18	2	16	90		25	▲
7801115		PSE11R020SS20-3S		1	20	3	20	100	30		▲	
7801117		PSE11R022SS20-3S		2	22	3	20	110	30		▲	
7801104		PSE11R025SS25-4S		1	25	4	25	120	35		▲	
7801118		PSE11R028SS25-4S	2	28	4	25	120	35	▲			
7801119		PSE11R030SS32-4S	1	30	4	32	130	45	▲			
7801105	Cylindrical Shank Long	Close	PSE11R032SS32-5S	1	32	5	32	125	40	ZDKT15...	▲	
7801120			PSE11R035SS32-5S	2	35	5	32	130	35		▲	
7801121			Normal	PSE11R016SS16-2L	1	16	2	16	150		50	▲
7801139				PSE11R017SS16-2L	2	17	2	16	150		25	▲
7801122				PSE11R018SS16-2L	2	18	2	16	150		25	▲
7801123		PSE11R020SS20-3L		1	20	3	20	160	60		▲	
7801140		PSE11R021SS20-3L		2	21	3	20	160	30		▲	
7801124		Close	PSE11R022SS20-3L	2	22	3	20	160	30		▲	
7801125			PSE11R025SS25-3L	1	25	3	25	170	70		▲	
7801141			PSE11R026SS25-3L	2	26	3	25	170	35		▲	
7801126	Normal		PSE11R028SS25-3L	2	28	3	25	170	35	▲		
7801127			PSE11R030SS32-3L	1	30	3	32	190	90	▲		
7801128		PSE11R032SS32-3L	1	32	3	32	190	90	▲			
7801142		PSE11R033SS32-3L	2	33	3	32	190	35	▲			
7801129		PSE11R035SS32-3L	2	35	3	32	190	35	▲			
7801107	Cylindrical Shank Short	Normal	PSE15R032SS32-2S	1	32	2	32	130	45	ZDKT15...	▲	
7801108			PSE15R040SS32-3S	2	40	3	32	140	50		▲	
7801109			PSE15R050SS32-3S	2	50	3	32	130	45		▲	
7801110			PSE15R063SS32-4S	2	63	4	32	130	45		▲	
7801106			Close	PSE15R025SS25-2S	1	25	2	25	120		35	▲
7801130		PSE15R028SS25-2S		2	28	2	25	120	35		▲	
7801131		PSE15R030SS32-3S		1	30	3	32	130	45		▲	
7801111		PSE15R032SS32-3S		1	32	3	32	130	45		▲	
7801132		PSE15R035SS32-3S		2	35	3	32	130	35		▲	
7801112		Normal	PSE15R040SS32-4S	2	40	4	32	140	50		▲	
7801113	PSE15R050SS32-5S		2	50	5	32	130	45	▲			
7801114	PSE15R063SS32-6S		2	63	6	32	130	45	▲			

Packed: 1 pc. Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).

● Stocked ○ Available Upon Request; Minimum Order Quantity May Apply ▲ Japan Stocked

Stock and availability vary - Please go to osgtool.com or contact customer service to confirm availability.



List 78011 (Continued)



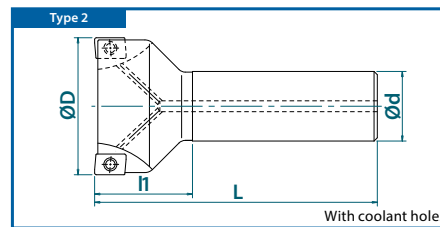
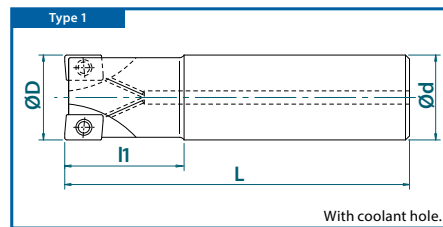
PSE SS (Metric)

EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm)	No. of Teeth	Shank Dia. (mm)	Overall Length (mm)	Neck Length (mm)	Applicable Insert	Status
					D		d	L	L1		
7801133	Cylindrical Shank Long	Close	PSE15R025SS25-2L	1	25	2	25	170	70	ZDKT15...	▲
7801143			PSE15R026SS25-2L	2	26	2	25	170	35		▲
7801134			PSE15R028SS25-2L	2	28	2	25	170	35		▲
7801135			PSE15R030SS32-3L	1	30	3	32	190	90		▲
7801136			PSE15R032SS32-3L	1	32	3	32	190	90		▲
7801144			PSE15R033SS32-3L	2	33	3	32	190	45		▲
7801137			PSE15R035SS32-3L	2	35	3	32	190	45		▲
7801138		Normal	PSE15R040SS32-3L	2	40	3	32	190	45		▲

Packed: 1 pc. Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).

● Stocked ○ Available Upon Request; Minimum Order Quantity May Apply ▲ Japan Stocked

Stock and availability vary - Please go to osgtool.com or contact customer service to confirm availability.



List 78012

PSE Bore (Inch)



SPEED FEED
P16-17

Recommended Materials: p18
Accessories & Inserts: p14-16
Ramping Angle: p19

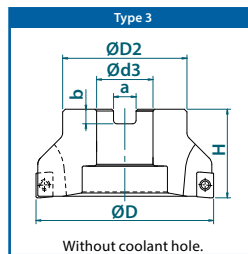
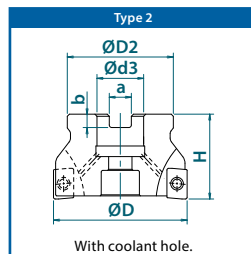


EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (inch)	No. of Teeth	Tool Height (inch)	Flange Dia. (inch)	Bore Hole Dia. (inch)	Keyway Width (inch)	Keyway Depth (inch)	Applicable Insert	Status
					D		H	D2	d3	a	b		
7801200	Bore	Normal	PSE11R200A075-5	2	2.000	5	1.575	1.772	0.750	0.315	0.197	ZD_T11...	●
7801201			PSE11R250A075-6	2	2.500	6	1.575	1.968	0.750	0.315	0.197		●
7801202			PSE11R300A100-7	2	3.000	7	1.968	2.362	1.000	0.375	0.236		●
7801203			PSE11R200A075-7	2	2.000	7	1.575	1.772	0.750	0.315	0.197		●
7801204		Close	PSE11R250A075-8	2	2.500	8	1.575	1.968	0.750	0.315	0.197		●
7801205			PSE11R300A100-10	2	3.000	10	1.968	2.362	1.000	0.375	0.236		●
7801206			PSE15R200A075-3	2	2.000	3	1.575	1.772	0.750	0.315	0.197	●	
7801207		Normal	PSE15R250A075-4	2	2.500	4	1.575	1.968	0.750	0.315	0.197	●	
7801208			PSE15R300A100-5	2	3.000	5	1.968	2.362	1.000	0.375	0.236	●	
7801209			PSE15R400A150-7	3	4.000	7	1.968	2.756	1.500	0.625	0.394	●	
7801210			PSE15R500A150-8	3	5.000	8	2.480	3.543	1.500	0.625	0.394	●	
7801216			PSE15R600A150-10	3	6.000	10	2.480	3.740	1.500	0.625	0.394	●	
7801211			Close	PSE15R200A075-5	2	2.000	5	1.575	1.772	0.750	0.315	0.197	●
7801212		PSE15R250A075-6		2	2.500	6	1.575	1.968	0.750	0.315	0.197	●	
7801213		PSE15R300A100-8		2	3.000	8	1.968	2.362	1.000	0.375	0.236	●	
7801214		PSE15R400A150-10		3	4.000	10	1.968	2.756	1.500	0.625	0.394	●	
7801215		PSE15R500A150-11		3	5.000	11	2.480	3.543	1.500	0.625	0.394	●	
7801217			PSE15R600A150-12	3	6.000	12	2.480	3.740	1.500	0.625	0.394	●	

Packed: 1 pc. Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).

● Stocked ○ Available Upon Request; Minimum Order Quantity May Apply ▲ Japan Stocked

Stock and availability vary - Please go to osgtool.com or contact customer service to confirm availability.



List 78010

PSE Bore (Metric)



SPEED FEED
P16-17

Recommended Materials: p18
Accessories & Inserts: p14-16
Ramping Angle: p19

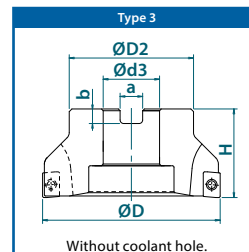
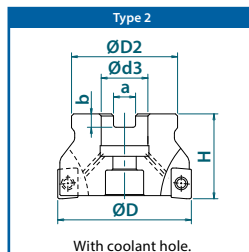
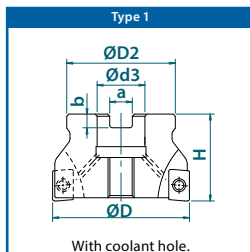


EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm)	No. of Teeth	Tool Height (mm)	Flange Dia. (mm)	Bore Hole Dia. (mm)	Keyway Width (mm)	Keyway Depth (mm)	Applicable Insert	Status
					D		H	D2	d3	a	b		
7801000	Bore	Normal	PSE11R040M16-4	1	40	4	40	38	16	8.4	5.6	ZD_T11...	▲
7801001			PSE11R050M22-5	1	50	5	40	45	22	10.4	6.3		▲
7801002			PSE11R063M22-6	2	63	6	40	50	22	10.4	6.3		▲
7801003			PSE11R080M27-7	2	80	7	50	60	27	12.4	7		▲
7801020			PSE11R080M25.4-7	2	80	7	50	60	25.4	9.5	6		▲
7801004			PSE11R040M16-6	1	40	6	40	38	16	8.4	5.6		▲
7801005		Close	PSE11R050M22-7	1	50	7	40	45	22	10.4	6.3	▲	
7801006			PSE11R063M22-8	2	63	8	40	50	22	10.4	6.3	▲	
7801007			PSE11R080M27-10	2	80	10	50	60	27	12.4	7	▲	
7801021			PSE11R080M25.4-10	2	80	10	50	60	25.4	9.5	6	▲	
7801008			Normal	PSE15R040M16-3	1	40	3	40	38	16	8.4	5.6	▲
7801009				PSE15R050M22-3	1	50	3	40	45	22	10.4	6.3	▲
7801010		PSE15R063M22-4		2	63	4	40	50	22	10.4	6.3	▲	
7801011		PSE15R080M27-5		2	80	5	50	60	27	12.4	7	▲	
7801022		PSE15R080M25.4-5		2	80	5	50	60	25.4	9.5	6	▲	
7801012		PSE15R100M32-7		2	100	7	50	70	32	14.4	8	▲	
7801023		Close	PSE15R100M31.7-7	3	100	7	50	70	31.75	12.7	8	▲	
7801024			PSE15R125M38.1-8	3	125	8	63	90	38.1	15.9	10	▲	
7801014			PSE15R040M16-4	1	40	4	40	38	16	8.4	5.6	▲	
7801015			PSE15R050M22-5	1	50	5	40	45	22	10.4	6.3	▲	
7801016			PSE15R063M22-6	2	63	6	40	50	22	10.4	6.3	▲	
7801017			PSE15R080M27-8	2	80	8	50	60	27	12.4	7	▲	
7801025		Normal	PSE15R080M25.4-8	2	80	8	50	60	25.4	9.5	6	▲	
7801018			PSE15R100M32-10	2	100	10	50	70	32	14.4	8	▲	
7801026			PSE15R100M31.7-10	3	100	10	50	70	31.75	12.7	8	▲	
7801027			PSE15R125M38.1-11	3	125	11	63	90	38.1	15.9	10	▲	
7801019			PSE15R125M38.1-11	3	125	11	63	90	38.1	15.9	10	▲	

Packed: 1 pc. Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).

● Stocked ○ Available Upon Request; Minimum Order Quantity May Apply ▲ Japan Stocked

Stock and availability vary - Please go to osgtool.com or contact customer service to confirm availability.



List 52601

PSE ASF (Inch)

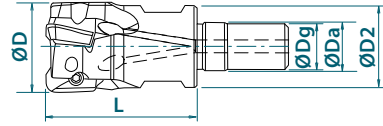
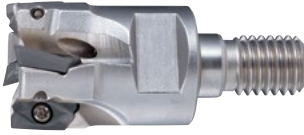
NEW SIZES



SPEED FEED
P16-17



Recommended Materials: p18
Accessories & Inserts: p14-16
Ramping Angle: p19



EDP No.	Body Type	Designation	Tool Dia. (inch)	No. of Teeth	Pilot Dia. (inch)	Thread Dia. (mm)	Overall Length (inch)	Flange Dia. (inch)	Wrench Size	Applicable Insert	Status
			D		Da	Dg	L	D2			
52601007	Screw Fit Head	PSE07R038ASF6-2	0.375	2	0.256	M6	1.024	0.354	7	ZDKT07...	○
52601008		PSE07R050ASF6-3	0.500	3	0.256	M6	1.024	0.433	7		○
52601009		PSE07R063ASF8-4	0.625	4	0.335	M8	1.063	0.571	10		○
52601010		PSE07R075ASF10-4	0.750	4	0.413	M10	1.299	0.709	14		○
52601011		PSE07R100ASF12-5	1.000	5	0.492	M12	1.378	0.905	17		○
52601012		PSE07R125ASF16-6	1.250	6	0.669	M16	1.575	1.102	22		○
52601000		PSE11R063ASF8-2	0.625	2	0.335	M8	1.063	0.571	10	ZD_T11...	●
52601001		PSE11R075ASF10-3	0.750	3	0.413	M10	1.299	0.709	14		●
52601002		PSE11R100ASF12-3	1.000	3	0.492	M12	1.378	0.905	17		●
52601003		PSE11R125ASF16-3	1.250	3	0.669	M16	1.575	1.102	22		●
52601004		PSE15R100ASF12-2	1.000	2	0.492	M12	1.378	0.905	17	ZDKT15...	●
52601005		PSE15R125ASF16-3	1.250	3	0.669	M16	1.575	1.102	22		●
52601006		PSE15R150ASF16-4	1.500	4	0.669	M16	1.575	1.102	22		●

Packed: 1 pc. Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).

● Stocked ○ Available Upon Request; Minimum Order Quantity May Apply ▲ Japan Stocked

Stock and availability vary - Please go to osgtool.com or contact customer service to confirm availability.



List 78016

PSE SF (Metric)

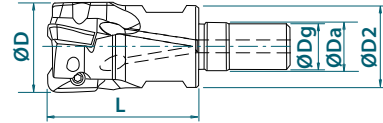
NEW SIZES



SPEED FEED
P16-17



Recommended Materials: p18
Accessories & Inserts: p14-16
Ramping Angle: p19



EDP No.	Body Type	Designation	Tool Dia. (mm)	No. of Teeth	Pilot Dia. (mm)	Thread Dia. (mm)	Overall Length (mm)	Flange Dia. (mm)	Wrench Size	Applicable Insert	Status	
			D		Da	Dg	L	D2				
7803822	Screw Fit Head	PSE07R010SF6-2	10	2	6.5	M6	26	9	7	ZDKT07...	▲	
7803823		PSE07R012SF6-3	12	3	6.5	M6	26	11	7		▲	
7803824		PSE07R016SF8-4	16	4	8.5	M8	27	14.5	10		▲	
7803825		PSE07R020SF10-4	20	4	10.5	M10	33	18	14		▲	
7803826		PSE07R025SF12-5	25	5	12.5	M12	35	23	17		▲	
7803827		PSE07R032SF17-6	32	6	17	M16	35	28	22		▲	
7801600		PSE11R016SF8-2	16	2	8.5	M8	27	14.5	10	ZD_T11...	▲	
7801612		PSE11R017SF8-2	17	2	8.5	M8	27	14.5	10		▲	
7801613		PSE11R018SF8-2	18	2	8.5	M8	27	14.5	10		▲	
7801601		PSE11R020SF10-3	20	3	10.5	M10	33	18	14		▲	
7801614		PSE11R021SF10-3	21	3	10.5	M10	33	18	14		▲	
7801615		PSE11R022SF10-3	22	3	10.5	M10	33	18	14		▲	
7801602		PSE11R025SF12-4	25	4	12.5	M12	35	23	17		▲	
7801616		PSE11R026SF12-3	26	3	12.5	M12	35	23	17		▲	
7801603		PSE11R028SF12-4	28	4	12.5	M12	35	23	17		▲	
7801604		PSE11R032SF16-5	32	5	17	M16	40	28	22		▲	
7801617		PSE11R033SF16-3	33	3	17	M16	40	28	22		▲	
7801605		PSE11R035SF16-5	35	5	17	M16	40	28	22		▲	
7801606		PSE11R040SF16-6	40	6	17	M16	40	28	22		▲	
7801607		PSE15R025SF12-2	25	2	12.5	M12	35	23	17		ZDKT15...	▲
7801618		PSE15R026SF12-2	26	2	12.5	M12	35	23	17			▲
7801608		PSE15R028SF12-2	28	2	12.5	M12	35	23	17			▲
7801609		PSE15R032SF16-3	32	3	17	M16	40	28	22			▲
7801619	PSE15R033SF16-3	33	3	17	M16	40	28	22	▲			
7801610	PSE15R035SF16-3	35	3	17	M16	40	28	22	▲			
7801611	PSE15R040SF16-4	40	4	17	M16	40	28	22	▲			

Packed: 1 pc. Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).

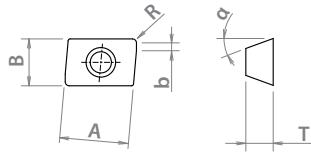
● Stocked ○ Available Upon Request; Minimum Order Quantity May Apply ▲ Japan Stocked

Stock and availability vary - Please go to osgtool.com or contact customer service to confirm availability.



List 78PSE

PSE/PSEL Inserts



Designation	No. of Cutting Edges	Insert Size				EDP Number											Status								
		AxB (mm)	T (mm)	α	R (mm)	b (mm)	Aa Max (mm)	CK010	XC3020	XP3025	XC3030	XP3035	XP2025	XP2040	XC1015	XC5035		XC5040	XP6015						
ZDKT070302FR-NM	2	7.8 x 4.9	3.18	15°	0.2	1.1	6	7811112	-	-	-	-	-	-	-	-	-	-	-	●					
ZDKT070304FR-NM					0.4	0.9		7811113	-	-	-	-	-	-	-	-	-	-	-	-	-	-	●		
ZDKT070304SR-GL					0.4	0.9		-	-	-	7814123	7826121	7813117	-	-	-	-	-	-	-	-	-	-	●	
ZDKT070308SR-GL					0.8	0.5		-	-	-	7825129	7814125	7826122	7813119	-	-	-	-	-	-	-	-	-	●	
ZDKT070302SR-GM					0.2	1.1		-	-	-	-	-	-	7813116	-	-	-	-	-	-	-	-	-	●	
ZDKT070304SR-GM					0.4	0.9		-	-	-	7825128	7814124	-	7813118	7812114	-	-	-	-	-	-	-	-	●	
ZDKT070308SR-GM					0.8	0.5		-	-	-	7825130	7814126	-	7813120	7812115	-	-	-	-	-	-	-	-	●	
ZDKT11T302FR-NM					3.8	3.5		15°	0.2	2.0	10	7811048	-	-	-	-	-	-	-	-	-	-	-	-	●
ZDKT11T304FR-NM									0.4	1.8		7811049	-	-	-	-	-	-	-	-	-	-	-	-	-
ZDKT11T308FR-NM		0.8	1.4	7811023			-		-	-		-	-	-	-	-	-	-	-	-	-	-	-	●	
ZDHT11T302FR-NM		0.2	2.0	7811010			-		-	-		-	-	-	-	-	-	-	-	-	-	-	-	●	
ZDHT11T304FR-NM		0.4	1.8	7811024			-		-	-		-	-	-	-	-	-	-	-	-	-	-	-	●	
ZDHT11T308FR-NM		0.8	1.4	7811014			-		-	-		-	-	-	-	-	-	-	-	-	-	-	-	●	
ZDHT11T312FR-NM		1.2	1.4	7811015			-		-	-		-	-	-	-	-	-	-	-	-	-	-	-	●	
ZDHT11T316FR-NM		1.6	1.4	7811017			-		-	-		-	-	-	-	-	-	-	-	-	-	-	-	●	
ZDHT11T320FR-NM		2.0	1.4	7811018			-		-	-		-	-	-	-	-	-	-	-	-	-	-	-	●	
ZDHT11T325FR-NM		2.5	1.4	7811019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	●					
ZDHT11T332FR-NM		3.2	0.8	7811020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	●					
ZDHT11T340FR-NM	4.0	-	7811021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	●						
ZDHT11T350FR-NM	5.0	-	7811022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	●						
ZDKT11T304SR-GL	0.4	1.8	-	-	-	7825024	7814024	-	-	-	-	-	-	-	-	-	-	-	●						
ZDKT11T308SR-GL	0.8	1.4	-	-	-	7827026	7828026	7825026	7814026	7826026	7813026	-	-	-	-	-	-	-	●						
ZDKT11T312SR-GL	1.2	1.0	-	-	-	-	-	-	-	-	7813034	-	-	-	-	-	-	-	●						
ZDKT11T320SR-GL	2.0	2.1	-	-	-	7825035	7814035	-	-	-	7813035	-	-	-	-	-	-	-	●						
ZDKT11T332SR-GL	3.2	1.5	-	-	-	-	-	-	-	-	7813036	-	-	-	-	-	-	-	●						
ZDKT11T304SR-GM	0.4	1.8	-	-	-	7827025	7828025	7825025	7814025	7826025	7813025	7812025	-	-	-	-	-	-	●						
ZDKT11T308SR-GM	0.8	1.4	-	-	-	7827032	7828032	7825032	7814032	7826032	7813032	-	-	-	-	-	-	-	●						
ZDKT11T312SR-GM	1.2	1.0	-	-	-	-	-	-	7814053	-	7813053	-	-	-	-	-	-	-	●						
ZDKT11T320SR-GM	2.0	2.1	-	-	-	-	-	-	7814038	-	7813038	-	-	-	-	-	-	-	●						
ZDKT11T325SR-GM	2.5	1.6	-	-	-	7825039	7814039	-	-	-	-	-	-	-	-	-	-	-	●						
ZDKT11T330SR-GM	3.0	1.5	-	-	-	-	-	-	7814054	-	7813054	-	-	-	-	-	-	-	●						
ZDKT11T340SR-GM	4.0	-	-	-	-	-	-	-	7814055	-	7813055	-	-	-	-	-	-	-	●						
ZDKT11T308SR-GR	0.8	1.4	-	-	-	7827033	7828033	7825033	7814033	-	7813033	7812033	-	-	-	-	-	-	●						
ZDKT11T308SR-HR	0.8	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7824035	●						
ZDKT11T304ER-SM	0.4	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7816034	-	●						
ZDKT11T308ER-SM	0.8	1.4	-	-	-	-	-	-	-	-	-	-	-	7815031	7816031	-	-	-	●						
ZDKT11T312ER-SM	1.2	1.1	-	-	-	-	-	-	-	-	-	-	-	-	7816040	-	-	-	●						
ZDKT11T316ER-SM	1.6	0.8	-	-	-	-	-	-	-	-	-	-	-	7815027	7816027	-	-	-	●						
ZDKT11T320ER-SM	2.0	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	7816041	-	-	●						
ZDKT11T325ER-SM	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7816042	-	-	●						
ZDKT11T332ER-SM	3.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7816043	-	-	●						
ZDKT11T340ER-SM	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7816044	-	-	●						
ZDKT150508FR-NM	0.8	1.6	-	-	-	7811046	-	-	-	-	-	-	-	-	-	-	-	-	●						
ZDKT150508SR-GL	0.8	1.6	-	-	-	7827057	7828057	7825057	7814057	7826057	7813057	-	-	-	-	-	-	-	●						
ZDKT150508SR-GM	0.8	1.6	-	-	-	7827028	7828028	7825029	7814029	7826029	7813028	7812029	-	-	-	-	-	-	●						
ZDKT150512SR-GM	1.2	1.2	-	-	-	-	-	-	7814077	-	7813077	-	-	-	-	-	-	-	●						
ZDKT150516SR-GM	1.6	0.8	-	-	-	-	-	-	7814078	-	7813078	-	-	-	-	-	-	-	●						
ZDKT150520SR-GM	2.0	2.1	-	-	-	-	-	-	7814079	-	7813079	-	-	-	-	-	-	-	●						
ZDKT150530SR-GM	3.0	1.9	-	-	-	-	-	-	7814080	-	7813080	-	-	-	-	-	-	-	●						
ZDKT150540SR-GM	4.0	1.1	-	-	-	-	-	-	7814081	-	7813081	-	-	-	-	-	-	-	●						
ZDKT150550SR-GM	5.0	0.7	-	-	-	-	-	-	7814082	-	7813082	-	-	-	-	-	-	-	●						
ZDKT150508SR-GR	0.8	1.6	-	-	-	7827058	7828058	7825058	7814058	-	7813058	7812058	-	-	-	-	-	-	●						
ZDKT150508SR-HR	0.8	1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7824036	●						
ZDKT150508ER-SM	0.8	1.6	-	-	-	-	-	-	-	-	-	-	-	7815056	7816056	-	-	-	●						

Packed: 10 pcs.


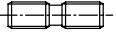
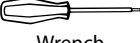
● Stocked ○ Available Upon Request; Minimum Order Quantity May Apply ▲ Japan Stocked

Stock and availability vary - Please go to osgtool.com or contact customer service to confirm availability.



List 7808H

PSE Accessories

Appearance	EDP No.	Designation	Applicable Insert	Applicable Cutter		Recommended Tightening Torque	Status
				(mm)	(inch)		
 Clamping Screw	7808098	FS18634P (M1.8 x 3.4, Torx 6IP)	ZDKT07...	PSE07 SS/SF Ø10-12	PSE07 SA/SF/ASF Ø.375-.500"	0.7 Nm	●
	7808099	FS18637P (M1.8 x 3.7, Torx 6IP)		PSE07 SS/SF Ø16-32	PSE07 SA/SF/ASF Ø.625-1.25"	0.7 Nm	●
	7808107	FS25656P (M2.5 x 5.6, Torx 8IP)	ZD_T11...	PSE SS/SF Ø16-35	PSE11 SA/FA/ASF Ø.625-1.25"	1.6 Nm	●
	7808109	FS25673P (M2.5 x 7.3, Torx 8IP)		PSE BORE Ø40-80	PSE11 BORE Ø2-3"	1.6 Nm	●
	7808115	FS35686P (M3.5 x 8.6, Torx 15IP)	ZDKT15...	PSE SS/SF Ø25-63 PSE BORE Ø40-125	PSE SA/FA/ASF Ø1-1.5" PSE15 BORE Ø2-6"	3.2 Nm	●
 Power Screw	7808150	PS0830 (M8x30)	ZD_T11... ZDKT15...	PSE BORE Ø40	n/a	15.0 Nm	●
	7808151	PS1031 (M10x31)	ZD_T11... ZDKT15...	PSE BORE Ø50	n/a	20.0 Nm	●
 Wrench	7808223	6IP-D (Torx 6IP)	ZDKT07...	PSE07 SS/SF Ø10-32	PSE07 SA/SF/ASF Ø.375-1.25"		●
	7808225	8IP-D (Torx 8IP)	ZD_T11...	PSE SS/SF Ø16-35 PSE BORE Ø40-80	PSE11 SA/FA/ASF Ø.625-1.25" PSE11 BORE Ø2-3"		●
	7808228	15IP-D (Torx 15IP)	ZDKT15...	PSE SS/SF Ø25-63 PSE BORE Ø40-125	PSE15 SA/FA/ASF Ø1-1.5" PSE15 BORE Ø2-6"		●

Packed: Clamping Screws = 10 pcs.; Power Screw = 1 pc.; Wrench = 1 pc.

Note: Wrench sold separately.

● Stocked ○ Available Upon Request; Minimum Order Quantity May Apply ▲ Japan Stocked

Stock and availability vary - Please go to osgtool.com or contact customer service to confirm availability.



Cutting Conditions

Work Material		Tensile Strength - Hardness	Insert Size ZDKT07...			
			Side Milling Aa: 0.236" • Ar: 0.15D		Face Milling Aa: 0.031" • Ar: 1.0D	
			Milling Speed Vc (SFM)	Feed Per Tooth fz(in/t)	Milling Speed Vc (SFM)	Feed Per Tooth fz(in/t)
P	Mild Steels, Carbon Steels (1010, 1018)	~180 HB	590 (330 - 820)	0.004 (0.001-0.005)	590 (330 - 820)	0.003 (0.001-0.004)
	Carbon Steels, Alloy Steels (1050, 4140)	~280 HB	590 (330 - 820)	0.003 (0.001-0.004)	590 (330 - 820)	0.003 (0.001-0.004)
	Die Steels (H13, D2)	~280 HB	460 (260 - 590)	0.003 (0.001-0.004)	460 (260 - 590)	0.003 (0.001-0.004)
M	Stainless Steels(Dry) (304SS, 420SS)	~250 HB	460 (260 - 590)	0.002 (0.001-0.003)	460 (260 - 590)	0.002 (0.001-0.004)
	Stainless Steels(Wet) (304SS, 420SS)	~250 HB	260 (195 - 330)	0.002 (0.001-0.003)	260 (195 - 330)	0.002 (0.001-0.004)
K	Cast Iron (FC250)	~350 N/mm ²	590 (330 - 985)	0.004 (0.001-0.005)	590 (330 - 985)	0.004 (0.001-0.005)
	Ductile Cast Iron (60-40-18)	~800 N/mm ²	590 (330 - 820)	0.003 (0.001-0.004)	590 (330 - 820)	0.002 (0.001-0.003)
N	Aluminum Alloys (6061, 7075)	~13% Si	985 (655 - 4920)	0.006 (0.001-0.012)	985 (655 - 4920)	0.005 (0.001-0.008)
S	Heat Resistant Alloys (Inconel 718)	-	115 (85 - 195)	0.003 (0.001-0.004)	115 (85 - 195)	0.002 (0.001-0.003)
	Titanium Alloy (Ti-6Al-4V)	-	150 (115 - 230)	0.003 (0.001-0.004)	150 (115 - 230)	0.003 (0.001-0.004)
H	Pre-hardened Steel (P20, Stavax)	40 - 43 HRC	330 (130 - 495)	0.003 (0.001-0.005)	330 (130 - 495)	0.002 (0.001-0.003)
	Die Cast Steels (A2, S7)	43 - 48 HRC	260 (130 - 330)	0.002 (0.001-0.003)	260 (130 - 330)	0.002 (0.001-0.003)
	Hardened Steels (D2)	50 - 55 HRC	195 (130 - 230)	0.002 (0.001-0.003)	195 (130 - 230)	0.002 (0.001-0.003)

Cutting Conditions

Work Material		Tensile Strength - Hardness	Insert Size							
			ZD T11...				ZDKT15...			
			Side Milling Aa: 0.394" • Ar: 0.2D		Face Milling Aa: 0.118" • Ar: 1.0D		Side Milling Aa: 0.551" • Ar: 0.2D		Face Milling Aa: 0.197" • Ar: 1.0D	
			Milling Speed Vc (SFM)	Feed Per Tooth fz(in/t)	Milling Speed Vc (SFM)	Feed Per Tooth fz(in/t)	Milling Speed Vc (SFM)	Feed Per Tooth fz(in/t)	Milling Speed Vc (SFM)	Feed Per Tooth fz(in/t)
P	Mild Steels, Carbon Steels (1010, 1018)	~180 HB	590 (330 - 820)	0.010 (0.008 - 0.020)	590 (330 - 820)	0.005 (0.002 - 0.008)	590 (330 - 820)	0.012 (0.008 - 0.024)	590 (330 - 820)	0.006 (0.002 - 0.010)
	Carbon Steels, Alloy Steels (1050, 4140)	~280 HB	590 (330 - 820)	0.008 (0.006 - 0.016)	590 (330 - 820)	0.004 (0.002 - 0.008)	590 (330 - 820)	0.010 (0.006 - 0.020)	590 (330 - 820)	.005 (.002 - .008)
	Die Steels (H13, D2)	~280 HB	495 (260 - 655)	0.008 (0.006 - 0.016)	495 (260 - 655)	0.004 (0.002 - 0.007)	495 (260 - 655)	0.010 (0.006 - 0.020)	495 (260 - 655)	.005 (.002 - .008)
M	Stainless Steels(Dry) (304SS, 420SS)	~250 HB	495 (260 - 655)	0.007 (0.006 - 0.016)	495 (260 - 655)	0.004 (0.004 - 0.007)	495 (260 - 655)	0.008 (0.006 - 0.018)	495 (260 - 655)	0.005 (0.004 - 0.008)
	Stainless Steels(Wet) (304SS, 420SS)	~250 HB	260 (195 - 395)	0.007 (0.006 - 0.016)	260 (195 - 395)	0.004 (0.004 - 0.007)	260 (195 - 395)	0.008 (0.006 - 0.018)	260 (195 - 395)	0.005 (0.004 - 0.008)
K	Cast Iron (FC250)	~350 N/ mm ²	590 (330 - 985)	0.010 (0.006 - 0.020)	590 (330 - 985)	0.005 (0.002 - 0.008)	590 (330 - 985)	0.012 (0.008 - 0.024)	590 (330 - 985)	0.006 (0.002 - 0.010)
	Ductile Cast Iron (60-40-18)	~800 N/ mm ²	590 (330 - 820)	0.006 (0.004 - 0.016)	590 (330 - 820)	0.005 (0.002 - 0.008)	590 (330 - 820)	0.008 (0.006 - 0.020)	590 (330 - 820)	0.006 (0.002 - 0.010)
N	Aluminum Alloys (6061, 7075)	~13% Si	985 (655 - 4920)	0.012 (0.008 - 0.020)	985 (655 - 4920)	0.006 (0.004 - 0.010)	985 (655 - 4920)	0.014 (0.008 - 0.024)	985 (655 - 4920)	0.007 (0.004 - 0.012)
S	Heat Resistant Alloys (Inconel 718)	-	115 (85 - 195)	0.006 (0.004 - 0.012)	115 (85 - 195)	0.004 (0.002 - 0.006)	115 (85 - 195)	0.008 (0.004 - 0.012)	115 (85 - 195)	0.004 (0.002 - 0.006)
	Titanium Alloy (Ti-6Al-4V)	-	130 (100 - 395)	0.007 (0.004 - 0.014)	130 (100 - 395)	0.004 (0.004 - 0.010)	130 (100 - 395)	0.009 (0.004 - 0.014)	130 (100 - 395)	0.004 (0.004 - 0.010)
H	Pre-hardened Steel (P20, Stavax)	40 - 43 HRC	330 (130 - 495)	0.007 (0.004 - 0.012)	330 (130 - 495)	0.004 (0.003 - 0.008)	330 (130 - 495)	0.008 (0.004 - 0.014)	330 (130 - 495)	0.005 (0.003 - 0.010)
	Die Cast Steels (A2, S7)	43 - 48 HRC	260 (130 - 395)	0.005 (0.003 - 0.008)	260 (130 - 395)	0.003 (0.002 - 0.006)	260 (130 - 395)	0.006 (0.003 - 0.010)	260 (130 - 395)	0.004 (0.002 - 0.008)
	Hardened Steels (D2)	50 - 55 HRC	195 (130 - 295)	0.004 (0.002 - 0.008)	195 (130 - 295)	0.002 (0.002 - 0.004)	195 (130 - 295)	0.005 (0.002 - 0.008)	195 (130 - 295)	0.003 (0.002 - 0.005)

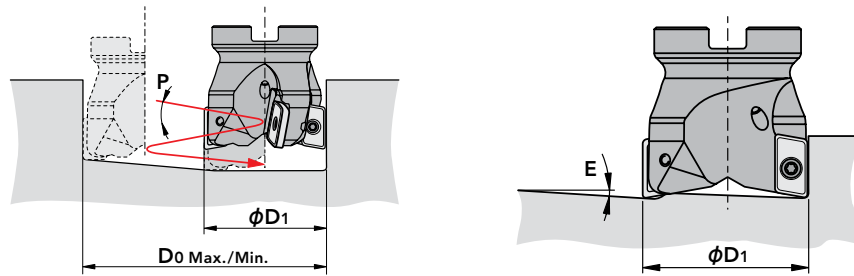
Recommended Materials by Application

Insert Grade	Chip Breaker	Coolant	P	M	K	N	S	H
CK010	NM	Yes				⊙		
XC3020	GL / GM / GR	-	⊙		○			
XP3025	GL / GM / GR	Yes	⊙		○			
XC3030	GL / GM / GR	-	⊙		○			
XP3035	GL / GM / GR	-	⊙	○	○			
XP2025	GL / GM	Yes	○	⊙			○	
XP2040	GL / GM / GR	-	○	○				○
		Yes	○	⊙			○	
XC1015	GM / GR	-			⊙			
XC5035	SM	-		⊙				
		Yes		○			○	
XC5040	SM	Yes		○			⊙	
XP6015	HR	-	○		○			⊙

GL:Light Cutting GM:Medium Cutting GR: Rough Cutting NM:Aluminum SM:Heat Resistant Alloy HR: Hardened Steel

○ good ⊙ best


Maximum Ramping Angle (E) & Helical Angle (P)



Insert Size	ZDKT07...			ZD_T11...			ZDKT15...					
Diameter (inch)	Ramping Angle	Helical Milling (inch)		Helical Angle	Ramping Angle	Helical Milling (inch)		Helical Angle	Ramping Angle	Helical Milling (inch)		Helical Angle
D1	E	D ₀ Min.	D ₀ Max.	P	E	D ₀ Min.	D ₀ Max.	P	E	D ₀ Min.	D ₀ Max.	P
0.375	6.0°	0.514	0.711	4.5°	-	-	-	-	-	-	-	-
0.500	4.5°	0.724	0.961	2.2°	-	-	-	-	-	-	-	-
0.625	2.8°	0.974	1.211	1.1°	10.8°	0.935	1.187	9.5°	-	-	-	-
0.750	2.1°	1.224	1.461	0.8°	9.8°	1.185	1.437	7.0°	-	-	-	-
1.000	1.6°	1.724	1.961	0.5°	7.4°	1.685	1.927	4.4°	9.5°	1.488	1.921	7.4°
1.250	-	-	-	-	4.8°	2.158	2.437	3.2°	6.8°	1.988	2.421	5.0°
1.500	-	-	-	-	2.9°	2.685	2.937	2.2°	5.1°	2.488	2.921	3.2°
2.000	-	-	-	-	2.1°	3.685	3.937	1.6°	2.4°	3.488	3.921	2.4°
2.500	-	-	-	-	1.8°	4.685	4.937	1.4°	2.3°	4.488	4.921	1.4°
3.000	-	-	-	-	1.4°	5.685	5.937	1.0°	2.0°	5.488	5.921	1.3°
4.000	-	-	-	-	-	-	-	-	1.4°	7.488	7.921	1.0°
5.000	-	-	-	-	-	-	-	-	0.8°	9.488	9.921	0.8°
6.000	-	-	-	-	-	-	-	-	0.7°	11.488	11.921	0.6°



shaping your dreams

 **Safe use of cutting tools**

- Use safety cover, safety glasses and safety shoes during operation.
- Do not touch cutting edges with bare hands.
- Do not touch cutting chips with bare hands. Chips will be hot after cutting.
- Stop cutting when the tool becomes dull.
- Stop cutting operation immediately if you hear any abnormal cutting sounds.
- Do not modify tools.
- Please use appropriate tools for the operation. Check dimensions to ensure proper selection.

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