

# OSG PHOENIX<sup>®</sup> PZAG

Counterboring Cutter

*A versatile series of indexable end mills and facemills,  
ideal for counterboring and plunge cutting.*

## List 52510

PZAG SA (Inch)

## List 78321

PZAG SS (Metric)

## List 52511

PZAG Bore (Inch)

## List 78321

PZAG Bore (Metric)

## List 78PZAG

PZAG Inserts

## List 7808H

PZAG Accessories

## Features & Benefits

180° flat bottom edge specifically designed for counterboring.



**Optimized Chip Breaker**

Optimized chip breaker geometry creates small, broken chips, enhancing chip evacuation.



## Processing Data

» Stable Counterboring in Steel - A36 Steel

When counterboring in steel, the competitors' inability to break the chip into small, manageable pieces resulted in poor surface finish; however, PZAG is able to efficiently break chips, enabling stable processing and excellent surface finish.

Tool	PZAG09R032SS32-2	Competitors
Insert (Grade)	ZPNT090404EN (XP8030)	Coated Carbide Chip
Work Material	A36 Steel	
Cutting Speed	492 SFM (1490 RPM)	
Feed	9.41 IPM (0.006 in/rev)	
Depth of Hole	0.866 in	
Coolant	Water Soluble	
Machine	Vertical Machining Center	

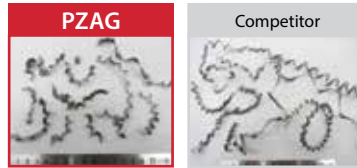


# Processing Data

## » Excellent Chip Evacuation in Stainless Steel - 304 Stainless Steel

In stainless steel, it is difficult to break chips; however, compared to the competitor, PZAG makes smaller chips and enables stable processing.

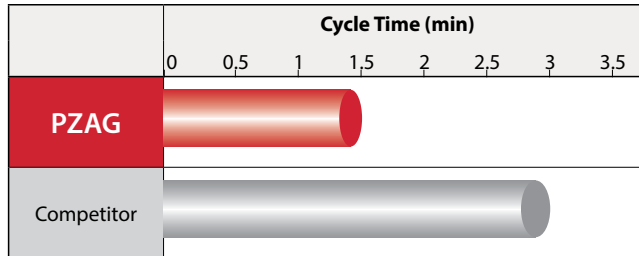
Tool	<b>PZAG09R032SS32-2</b>	Competitor
Insert (Grade)	ZPNT090404EN (XP8030)	Coated Carbide Chip
Work Material	304 Stainless Steel	
Cutting Speed	330 SFM (1000 RPM)	
Feed	13.38 IPM (0.013 in/rev)	
Depth of Hole	1.181 in	
Coolant	Water Soluble	
Machine	Vertical Machining Center	



## » Increased Productivity in Steel - A36 Steel

PZAG can be used to dramatically increase productivity in counterboring operations. In this application, the current process utilized a HSS drill and end mill to drill a pilot hole and countour mill the counterbore to size. By using PZAG, the customer was able to reduce the operation to a single tool and reduce machining time by 50%!

Tool	<b>PZAG17R076M22-4</b>	Competitor
Insert (Grade)	ZPNT170608EN (XP8030)	HSS Drill HSS End Mill
Work Material	A36 Steel	
Cutting Speed	367 SFM (470 RPM)	
Feed	5.51 IPM (0.012 in/rev)	
Depth of Hole	2.008 in	
Coolant	Air	
Machine	Vertical Machining Center	



## List 52510

PZAG SA (Inch)



NEW

SPEED  
FEED  
P72

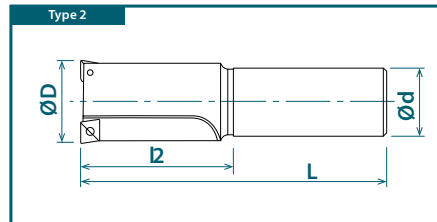
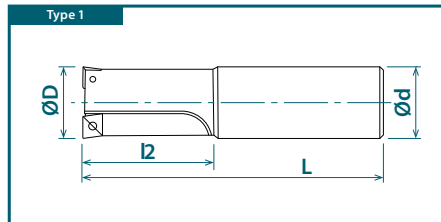


Recommended Materials: p72  
Accessories & Inserts: p70-71



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
					D		d	L	l2	
52510000	Cylindrical Shank	Normal	PZAG04R053SA075-2	1	0.5313	2	0.750	3.813	1.063	ZPNT04
52510001			PZAG04R063SA075-2	1	0.6250	2	0.750	4.000	1.250	
52510002			PZAG06R072SA075-2	1	0.7188	2	0.750	4.188	1.438	ZPNT06
52510003			PZAG06R075SA075-2	1	0.7500	2	0.750	4.250	1.500	
52510004			PZAG06R081SA100-2	1	0.8125	2	1.000	4.625	1.625	
52510005			PZAG06R091SA100-2	1	0.9063	2	1.000	4.813	1.813	ZPNT09
52510006			PZAG09R100SA100-2	1	1.0000	2	1.000	5.000	2.000	
52510007			PZAG09R119SA125-2	1	1.1875	2	1.250	5.525	2.375	
52510008			PZAG09R125SA125-2	1	1.2500	2	1.250	5.650	2.500	
52510009			PZAG09R138SA125-2	2	1.3750	2	1.250	5.900	2.750	
52510010			PZAG09R150SA125-2	2	1.5000	2	1.250	6.150	3.000	
52510011			PZAG09R163SA125-2	2	1.6250	2	1.250	6.400	3.250	ZPNT09
52510012	PZAG09R181SA125-2	2	1.8125	2	1.250	6.775	3.625			

Packed: 1 pc.



## List 78321

PZAG SS (Metric)



NEW

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P72



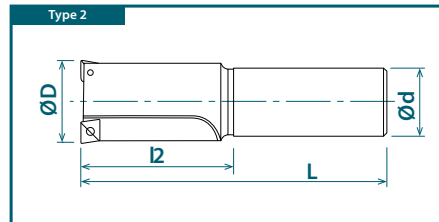
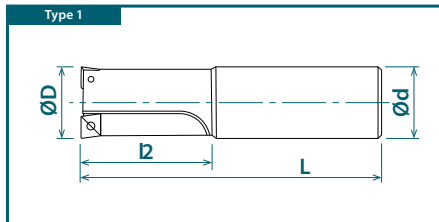
Recommended Materials: p72  
Accessories & Inserts: p70-71



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
					D		d	L	l2	
7832100	Cylindrical Shank	Normal	PZAG04R014SS20-2	1	14	2	20	100	30	ZPNT04
7832101			PZAG06R0175SS20-2	1	17.5	2	20	105	35	ZPNT06
7832102			PZAG06R020SS20-2	1	20	2	20	110	40	
7832103			PZAG06R023SS25-2	1	23	2	25	125	50	
7832104			PZAG09R026SS25-2	2	26	2	25	130	55	ZPNT09
7832105			PZAG09R029SS32-2	1	29	2	32	140	60	
7832106			PZAG09R032SS32-2	1	32	2	32	145	65	
7832107			PZAG09R035SS32-2	2	35	2	32	150	70	
7832108			PZAG09R039SS32-2	2	39	2	32	160	80	
7832109			PZAG09R043SS32-2	2	43	2	32	170	90	
7832110	PZAG09R048SS32-2	2	48	2	32	180	100			

Packed: 1 pc.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**



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## List 52511

PZAG Bore (Inch)



NEW

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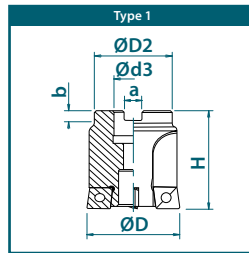


Recommended Materials: p72  
Accessories & Inserts: p70-71



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (inch)	No. of Teeth	Tool Height (inch)	Flange Dia. (inch)	Bore Dia. (inch)	Keyway Width (inch)	Keyway Depth (inch)	Applicable Insert
					D		H	D2	d3	a	b	
52511000	Bore	Normal	PZAG13R200A075-4	1	2.000	4	2.480	1.772	0.750	0.315	0.197	ZPNT13
52511001			PZAG13R238A075-4	1	2.375	4	2.480	1.772	0.750	0.315	0.197	
52511002			PZAG13R250A075-4	1	2.500	4	2.480	1.772	0.750	0.315	0.197	
52511003			PZAG13R275A100-4	1	2.750	4	2.480	2.362	1.000	0.375	0.236	ZPNT17
52511004			PZAG17R300A100-4	1	3.000	4	2.480	2.362	1.000	0.375	0.236	
52511005			PZAG17R313A100-4	1	3.125	4	2.480	2.362	1.000	0.375	0.236	

Packed: 1 pc.



## List 78321

PZAG Bore (Metric)



NEW

SPEED FEED  
P72



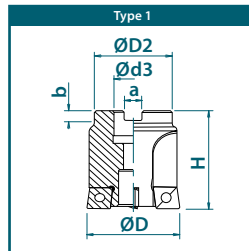
Recommended Materials: p72  
Accessories & Inserts: p70-71



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm)	No. of Teeth	Tool Height (mm)	Flange Dia. (mm)	Bore Dia. (mm)	Keyway Width (mm)	Keyway Depth (mm)	Applicable Insert
					D		H	D2	d3	a	b	
7832111	Bore	Normal	PZAG13R054M22-4	1	54	4	63	45	22	10.4	6.3	ZPNT13
7832112			PZAG13R058M22-4	1	58	4	63	45	22	10.4	6.3	
7832113			PZAG13R062M22-4	1	62	4	63	45	22	10.4	6.3	
7832114			PZAG13R067M22-4	1	67	4	63	45	22	10.4	6.3	
7832115			PZAG13R072M22-4	1	72	4	63	45	22	10.4	6.3	
7832116			PZAG17R076M22-4	1	76	4	63	45	22	10.4	6.3	ZPNT17
7832117			PZAG17R082M22-4	1	82	4	63	45	22	10.4	6.3	

Packed: 1 pc.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**



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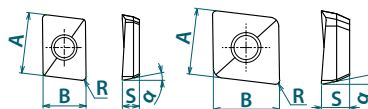
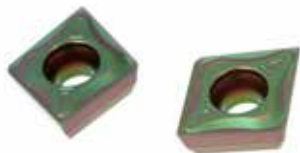
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## List 78PZAG

PZAG Inserts



Designation	No. of Cutting Edges	Insert Size					EDP Number	
		D (mm)	L (mm)	S (mm)	$\alpha$	R (mm)	XP8030	XC8035
ZPNT040204ER	2	4.5	4	1.8	11°	0.4	7814101	7815101
ZPNT050204EN		5.8	5	2.38		0.4	7814102	7815102
ZPNT060204EN		6.5	6	2.38		0.4	7814103	7815103
ZPNT070304EN		7.6	7	3.18		0.4	7814104	7815104
ZPNT080304EN		8.5	8	3.18		0.4	7814105	7815105
ZPNT090404EN		9.6	9	4.76		0.4	7814106	7815106
ZPNT100404EN		10.6	10	4.76		0.4	7814107	7815107
ZPNT100408EN		10.6	10	4.76		0.8	7814108	7815108
ZPNT130508EN		13.5	12.5	5.56		0.4	7814109	7815109
ZPNT130508EN		13.5	12.5	5.56		0.8	7814110	7815110
ZPNT170608EN		17.5	16	5.56		0.8	7814111	7815111


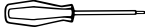
Packed: 10 pcs.





# List 7808H

PZAG Accessories

Appearance	EDP No.	Designation	Applicable Insert	Recommended Tightening Torque
 Clamping Screw	7808096	FS18536P (Torx 6IP) Screw	ZPNT04...	0.7 Nm
	7808139	FS20543P (Torx 6IP) Screw	ZPNT05...	0.7 Nm
	7808138	FS22550P (Torx 7IP) Screw	ZPNT06...	1.0 Nm
	7808136	FS25560P (Torx 8IP) Screw	ZPNT07...	1.6 Nm
	7808135	FS30570P (Torx 9IP) Screw	ZPNT08... ZPNT09...	2.2 Nm
	7808137	FS35586P (Torx 15IP) Screw	ZPNT10...	3.2 Nm
	7808114	FS45510P (Torx 20IP) Screw	ZPNT13... ZPNT17...	5.0 Nm
 Wrench	7808223	6IP-D (Torx 6IP) Wrench	ZPNT04... ZPNT05...	
	7808224	7IP-D (Torx 7IP) Wrench	ZPNT06...	
	7808225	8IP-D (Torx 8IP) Wrench	ZPNT07...	
	7808226	9IP-D (Torx 9IP) Wrench	ZPNT08... ZPNT09...	
	7808228	15IP-D (Torx 15IP) Wrench	ZPNT10...	
	7808229	20IP-D (Torx 20IP) Wrench	ZPNT13... ZPNT17...	

Packed: Clamping Screws = 10 pcs.; Wrench = 1 pc.  
Note: Wrench sold separately.



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**PZAG**

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## Cutting Conditions

Work Material	Tensile Strength – Hardness	Drilling Speed V <sub>c</sub> (SFM)	Feed Rate f (in/rev)					
			Ø0.531-0.625	Ø0.719-0.906	Ø1.000-1.813	Ø2.000-2.750	Ø3.000-0.313	
<b>P</b>	Mild Steels, Carbon Steels (1010, 1018)	~180 HB	525 (330 - 655)	0.0055 (0.003-0.008)	0.007 (0.004-0.010)	0.008 (0.005-0.012)	0.016 (0.008-0.024)	0.016 (0.008-0.024)
	Carbon Steels, Alloy Steels (1050, 4140)	~280 HB	495 (330 - 655)	0.0055 (0.003-0.008)	0.007 (0.004-0.010)	0.008 (0.005-0.012)	0.016 (0.008-0.024)	0.016 (0.008-0.024)
	Die Steels (H13, D2)	~280 HB	395 (265 - 590)	0.005 (0.003-0.006)	0.0055 (0.004-0.008)	0.007 (0.005-0.010)	0.016 (0.008-0.020)	0.016 (0.008-0.020)
<b>M</b>	Stainless Steels (304, 420)	~250 HB	425 (265 - 590)	0.004 (0.003-0.006)	0.005 (0.004-0.008)	0.006 (0.005-0.010)	0.014 (0.008-0.020)	0.014 (0.008-0.020)
<b>K</b>	Cast Iron (No. 35 B)	~350 N/mm <sup>2</sup>	655 (495 - 915)	0.006 (0.003-0.010)	0.008 (0.004-0.012)	0.012 (0.006-0.016)	0.024 (0.012-0.032)	0.024 (0.012-0.032)
	Ductile Cast Iron (60-40-18)	~800 N/mm <sup>2</sup>	525 (330 - 720)	0.0055 (0.003-0.008)	0.007 (0.004-0.010)	0.008 (0.006-0.012)	0.016 (0.012-0.032)	0.016 (0.012-0.032)

## Recommended Materials by Application

Insert Grade	Chip Breaker	Coolant	P	M	K	N	S	H
XP8030	-	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
XC8035	-	Yes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			

good  best