

AUPEQ AUPES

The Single-Ended
Coated Point Drills

Advanced developments in Point Drills !!

AUPEQ AUPES



Single-Ended Coated Point Drill PE-90°

AUPEQ **HSS** Coating



Single-Ended Coated Point Drill PE-60°

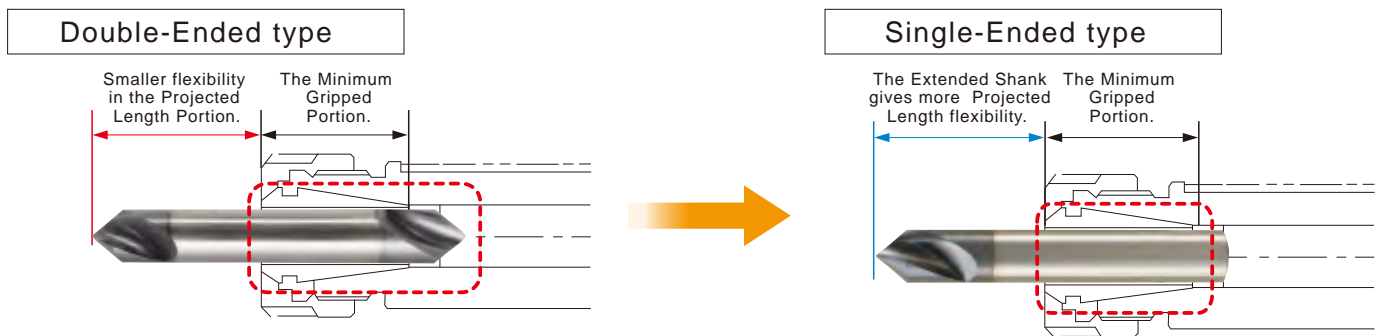
AUPES **HSS** Coating



Characteristics

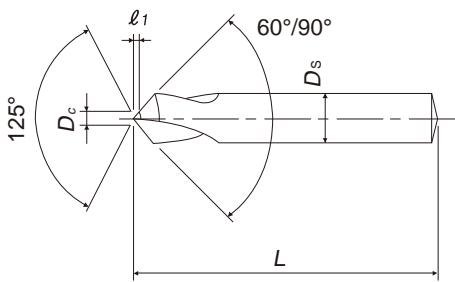
- An excellent surface finish is created from the sharp cutting edge that has a high helixed design and an accuracy improvement with a Single-Ended Drill design.
- High speed drilling can now be achieved from high rigidity.
- Solve the drill breakage problem during the process with the AUPEQ and AUPES Drills.
- Simultaneous hole positioning and chamfering, straight edge chamfering and multi-purpose processes such as slotting and channeling can now be achieved with one tool.
- Higher accuracy processes with 125° wide angled end of the chamfering portion for better positioning.
- Smooth chip ejection is performed by a larger and more flexible ejection portion of the drill.

The difference in the ejection portion and its adjustment flexibility



Dimension and Sizes

Ds:3-12

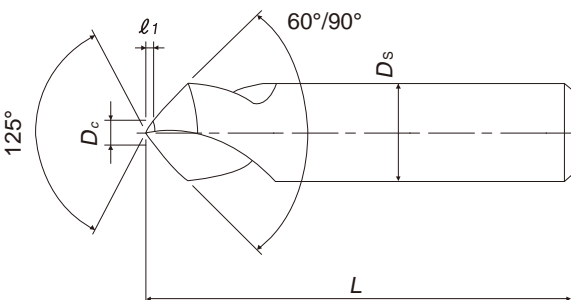


AUPEQ (90°)

unit mm

size DsxDc x θ	Ds	Dc	L	l ₁	Product code	MSRP (JPY)
3x0.5x90°	3	0.5	35	0.13	PZ93.00ZNETZ	3,060
4x1x90°	4	1	35	0.26	PZ94.00ZNETZ	2,770
6x2x90°	6	2	45	0.52	PZ96.00ZNETZ	3,080
8x2.5x90°	8	2.5	50	0.65	PZ98.00ZNETZ	3,790
10x3x90°	10	3	55	0.78	PZ910.0ZNETZ	4,900
12x3.5x90°	12	3.5	65	0.91	PZ912.0ZNETZ	6,290
16x4x90°	16	4	70	1.04	PZ916.0ZNETZ	9,400
20x5x90°	20	5	80	1.30	PZ920.0ZNETZ	14,300

Ds:16-20



AUPES (60°)

unit mm

size DsxDc x θ	Ds	Dc	L	l ₁	Product code	MSRP (JPY)
3x0.5x90°	3	0.5	35	0.13	PZ63.00ZNETZ	3,060
4x1x90°	4	1	35	0.26	PZ64.00ZNETZ	2,770
6x2x90°	6	2	45	0.52	PZ66.00ZNETZ	3,080
8x2.5x90°	8	2.5	50	0.65	PZ68.00ZNETZ	3,790
10x3x90°	10	3	55	0.78	PZ610.0ZNETZ	4,900
12x3.5x90°	12	3.5	65	0.91	PZ612.0ZNETZ	6,290
16x4x90°	16	4	70	1.04	PZ616.0ZNETZ	9,400
20x5x90°	20	5	80	1.30	PZ620.0ZNETZ	14,300

Applications

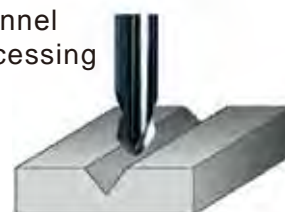
- Hole Centering or Chamfering



- Corner Chamfering



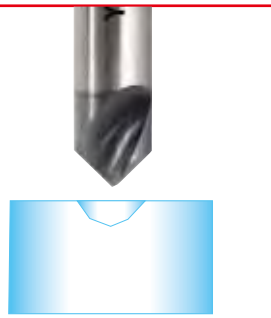
- Channel Processing



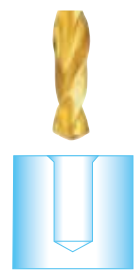
Production Process

Point Drilling

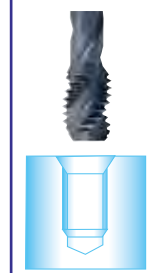
Hole Centering and Chamfering performed at the same time



Drilling



Tapping

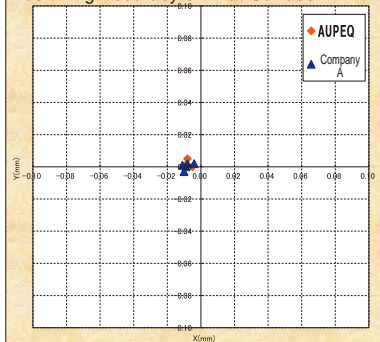


Process Data

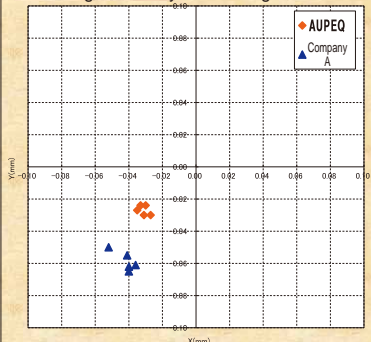
Size	Φ12X90°
Product	AUPEQ, Company A's item
Workpiece Material	SCM440(Alloy Steel)
Part for process	Flat surface, 15°inclined surface
Drilling Speed	25m/min

Feed	0.15mm/rev
Chamfered hole dia	Φ8(on the flat surface)
Machine	Machining Center Vertical Type
Drilling Fluid	Water soluble (emulsion x 20)

Positioning Accuracy on Flat Surface



Positioning Accuracy on 15°angled Surface



Testing



Recommendations for Centering Process

HSS+TiCN

Workpiece Material	Soft Steels SS400		Carbon Steels S50C		Alloy Steels SCM440		Thermal Refined Steels		Stainless Steels SUS304		Aluminum Alloy Castings AC4B	
Drilling Speed (m/min)	38-48		28-38		26-33		13-17		13-20		84-120	
Diameter (mm)	RPM (min-1)	Feed (mm/rev)	RPM (min-1)	Feed (mm/rev)	RPM (min-1)	Feed (mm/rev)	RPM (min-1)	Feed (mm/rev)	RPM (min-1)	Feed (mm/rev)	RPM (min-1)	Feed (mm/rev)
3	4550	0.04-0.08	3500	0.04-0.08	3150	0.04-0.08	1800	0.03-0.06	1750	0.04-0.08	10800	0.10-0.22
4	3400	0.05-0.10	2650	0.05-0.10	2350	0.05-0.10	1200	0.04-0.08	1300	0.05-0.10	8100	0.12-0.26
6	2300	0.06-0.12	1750	0.06-0.12	1550	0.06-0.12	800	0.05-0.10	900	0.06-0.12	5400	0.15-0.30
8	1700	0.08-0.15	1300	0.08-0.15	1150	0.08-0.15	600	0.06-0.12	650	0.08-0.15	4050	0.18-0.35
10	1350	0.10-0.18	1050	0.10-0.18	950	0.10-0.18	500	0.08-0.15	500	0.10-0.18	3250	0.21-0.40
12	1150	0.12-0.22	900	0.12-0.22	800	0.12-0.22	400	0.10-0.18	450	0.12-0.22	2700	0.25-0.45
16	850	0.16-0.26	650	0.16-0.26	600	0.16-0.26	300	0.12-0.22	350	0.16-0.26	2050	0.32-0.50
20	700	0.20-0.35	500	0.20-0.35	450	0.20-0.35	250	0.16-0.26	250	0.20-0.35	1800	0.40-0.60

Associated Product

SHANK EXTENSION

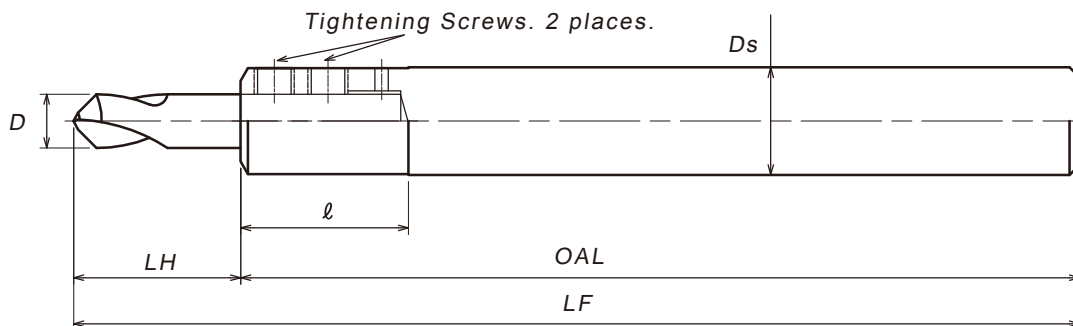


Characteristics

- Shank Extensions equipped with the Single-Ended Coated Center Drill AUCES, AUCDS, AUPES and AUPEQ now make long shank processing achievable.
- Shank diameters of D_s :16, D_s :20 available for the general tooling.

Dimension and Sizes

- Total Overall Length LF: 150mm for the Single-Ended Coated Center Drill AUCES, AUCES, AUPES and AUPEQ.



SHANK EXTENSION

unit mm

size $D \times D_s \times LF$	D	D_s	OAL	LF	LH	l	Product code	MSRP (JPY)
SHANK EXTENSION D06 DS16 LF-150	6	16	128	150	22	23	SE0616M	11,900
SHANK EXTENSION D08 DS16 LF-150	8	16	125	150	25	25	SE0816M	11,900
SHANK EXTENSION D10 DS20 LF-150	10	20	123	150	27	28	SE1020M	13,300

Cautions

- Insert a Center Drill or a Point Drill deep into the Shank Extension until the shank is under the two set screws. In order to prevent misalignment, alternatively tighten the 2 set screws for a balanced fastening.

Warning

- ◆ Tools may shatter. Wear cover or eye glasses to avoid injury during tapping.
- ◆ Tools may shatter. Use tools under the proper tapping condition.
- ◆ Never wear gloves during turning operations as the gloves may get caught with the tools.
- ◆ Wear safety shoes to avoid injuring yourself by the falling tools.
- ◆ On attaching tools to the machine, fasten firmly to avoid chattering and run-out.
- ◆ Fasten the work pieces firmly so that they never move during operation. Never use worn tools or damaged tools with chipping.
- ◆ Take a special care to fire trouble. High temperature during machining may cause fire.

YAMAWA Mfg. Co., Ltd.

Head office

Nakajima Gold bldg.13-10 Kyobashi
3chome, Chuo-ku, Tokyo 104-0031, JAPAN

Website: <http://www.yamawa.com>

YAMAWA group for Overseas

YAMAWA International Co., Ltd.

