



**New**

New Indexable Drill For Hole Making

**Drill  
Series**

# LPDA & SPDA & NPDA

## Features

**Excellent chip evacuation due to the specially designed flute**

- Special surface treatment of shank provides long durability
- 4 cutting-edge using economical geometry of insert
- Various chip breakers & grades are available for variety of application

- LPDA  $\varnothing 0.484'' \sim \varnothing 0.531''$
- SPDA  $\varnothing 0.500'' \sim \varnothing 0.875''$
- NPDA  $\varnothing 0.937'' \sim \varnothing 2.375''$
- NPDA Cartridge  $\varnothing 2.466'' \sim \varnothing 3.900''$



Drilling



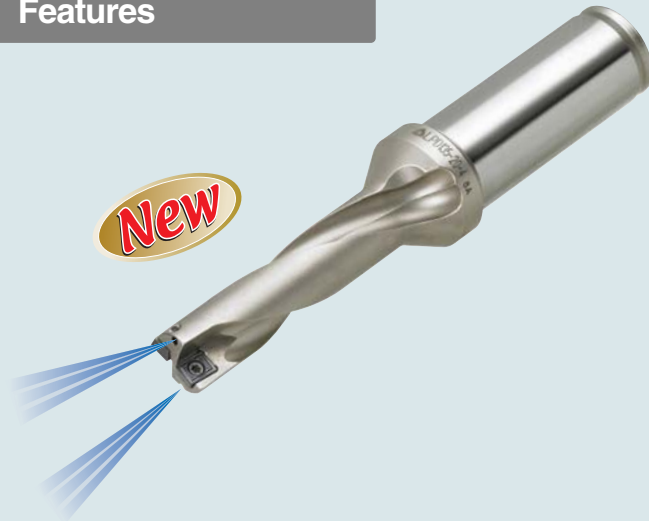
Through Coolant System



# LPDA & SPDA & NPDA

Features of LPDA

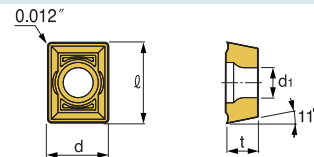
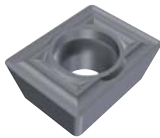
## Features



**NEW KORLOY  
INDEXABLE DRILL SERIES**

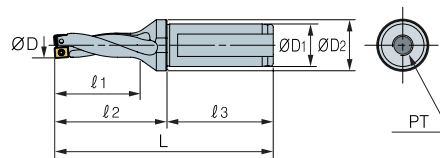
**For small hole drilling  
LPDA(Ø0.484"~Ø0.531")**

## LPDA Insert



Holder	Stock	Hole size(inch)	l	d	t	d <sub>1</sub>	Grade
LPMT040203-DF	●	Ø0.484~Ø0.531	0.244	0.185	0.094	0.091	PC3525

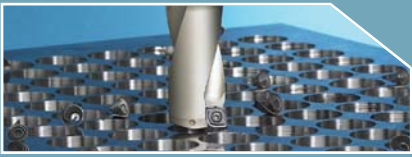
## LPDA



(inch)

Holder	Stock	Dimensions (inch)									Insert	Parts	
		ØD	ØD <sub>1</sub>	ØD <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	L	PT	Screw		Wrench	
LPDA0484-075-2		0.484	31/64	0.75	0.94	0.94	1.61	1.97	3.58	1/8	LPMT040203-DF	FTNA0204	TW06P
LPDA0500-075-2		0.500	1/2	0.75	0.94	1.02	1.69	1.97	3.66	1/8	LPMT040203-DF	FTNA0204	TW06P
LPDA0531-075-2		0.531	17/32	0.75	0.94	1.02	1.69	1.97	3.66	1/8	LPMT040203-DF	FTNA0204	TW06P
LPDA0484-075-3		0.484	31/64	0.75	0.94	1.42	2.09	1.97	4.06	1/8	LPMT040203-DF	FTNA0204	TW06P
LPDA0500-075-3		0.500	1/2	0.75	0.94	1.54	2.20	1.97	4.17	1/8	LPMT040203-DF	FTNA0204	TW06P
LPDA0531-075-3		0.531	17/32	0.75	0.94	1.54	2.20	1.97	4.17	1/8	LPMT040203-DF	FTNA0204	TW06P
LPDA0484-075-4		0.484	31/64	0.75	0.94	1.89	2.56	1.97	4.53	1/8	LPMT040203-DF	FTNA0204	TW06P
LPDA0500-075-4		0.500	1/2	0.75	0.94	2.05	2.72	1.97	4.69	1/8	LPMT040203-DF	FTNA0204	TW06P
LPDA0531-075-4		0.531	17/32	0.75	0.94	2.05	2.72	1.97	4.69	1/8	LPMT040203-DF	FTNA0204	TW06P

● Stock item, ○ Under preparing for stock

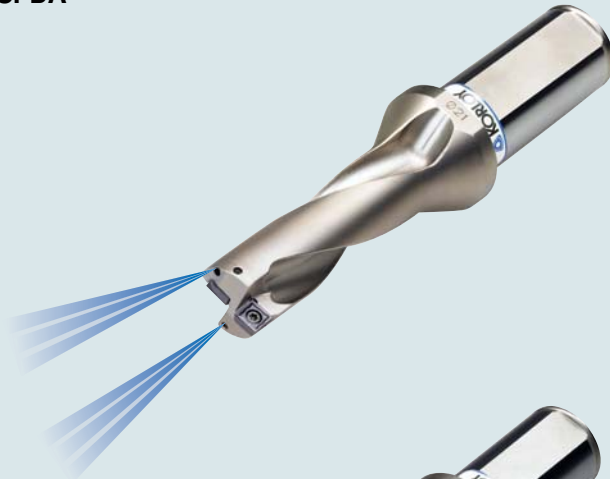


# LPDA & SPDA & NPDA

Features of SPDA & NPDA

## Features

### ■ SPDA

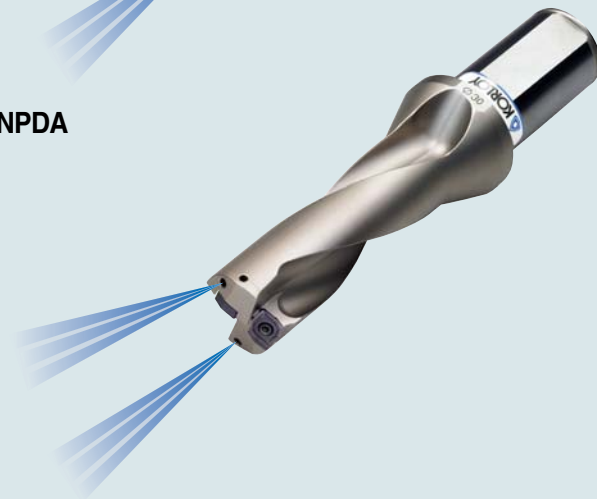


- Rigid Drill
  - Stronger drill shank and excellent design optimize the performance of hole making
  - Abrasive wear resistance of shank with machined chip has been improved due to the special surface treatment
  - It represents good performance even in difficult cutting condition

- Specially designed flute
  - Excellent chip evacuation due to the specially designed flute guarantees long durability

- Economical merits
  - Reducing of tool cost by using 4 cutting edges
  - Using same insert at both positions of insert pocket of drill

### ■ NPDA



- Recommendation of chip breaker & grade as per workpiece

Workpiece	Insert	Grade
Alloy Steel	DM	PC3525
Carbon Steel	DF	PC9530
Cast iron	DM	PC6510
Stainless steel	DS, DF	PC9530
Aluminum	DA	H01
Soft steel	DR	PC3525

## SPDA, NPDA

### ■ SPDA (Superior Piercing Drill)



Available diameter :  $\varnothing 0.05'' \sim \varnothing 0.875''$

### ■ NPDA (New Piercing Drill)



Available diameter :  $\varnothing 0.937'' \sim \varnothing 2.375''$



# LPDA & SPDA & NPDA

Features of LPDA & SPDA & NPDA

## Insert for LPDA



PC3525(Steel)

### ■ 2 cutting-edge using insert

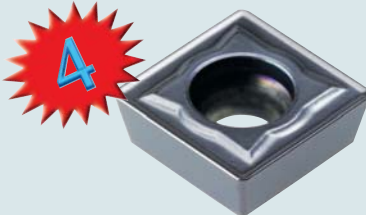
- For small hole drilling
- For LPDA size :  $\varnothing 0.484'' \sim \varnothing 0.531''$

### ■ LPDA clamping method



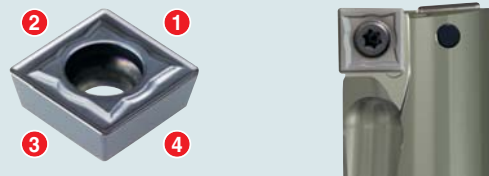
## Insert for SPDA

### ■ 4 cutting-edge using insert



- Chip breaker of SPDA insert provides excellent chip control due to its engineered design
- Easy & simple change of cutting edge

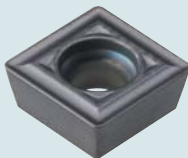
### ■ Same insert is available for both position of insert pocket of drill



- Economical by using the same insert at both positions of insert pocket of drill
- Available SPDA size :  $\varnothing 0.5'' \sim \varnothing 0.875''$
- Since SPDA makes small-sized chip, it is effective for small hole drilling

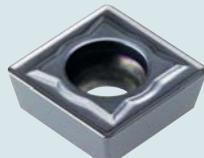
### ■ Recommendation of chip breaker & grade as per workpiece

DF



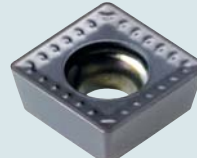
PC3525 (Steel)  
PC9530 (Stainless steel)

DM



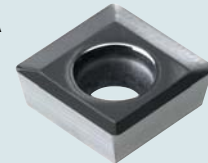
PC3525, PC9530(Steel)  
PC6510(Cast iron)

DS



PC9530  
(Stainless steel)

DA



H01(Aluminum)

## Insert for NPDA

### ■ 4 cutting-edge using insert



- Since NPDA has strong cutting edge, it is suitable for big hole drilling
- Available NPDA size :  $\varnothing 0.937'' \sim \varnothing 2.375''$

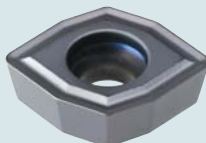
### ■ How to use 4 cutting edge of NPDA insert



- At first, use No ①② edges at the outer position of insert pocket and then take the insert to the inner position of insert pocket of drill to use ③④

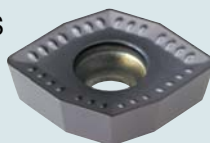
### ■ Recommendation of chip breaker & grade as per workpiece

DM



PC3525(Steel) / PC6510(Cast iron)

DS



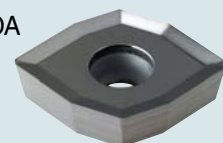
PC9530(Stainless steel)

DR



PC3525(Soft steel)

DA



H01(Aluminum)

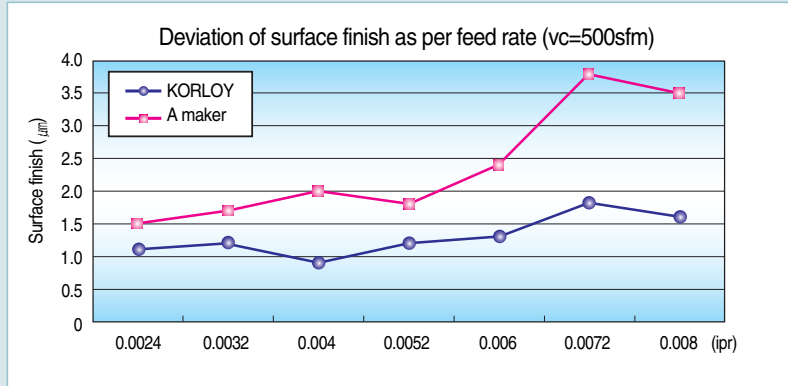


# LPDA & SPDA & NPDA

Features of SPDA & NPDA

## Excellent surface finish

### Deviation of surface finish



• KORLOY's NPDA & SPDA show excellent surface finish even in high feed operation

#### Cutting condition

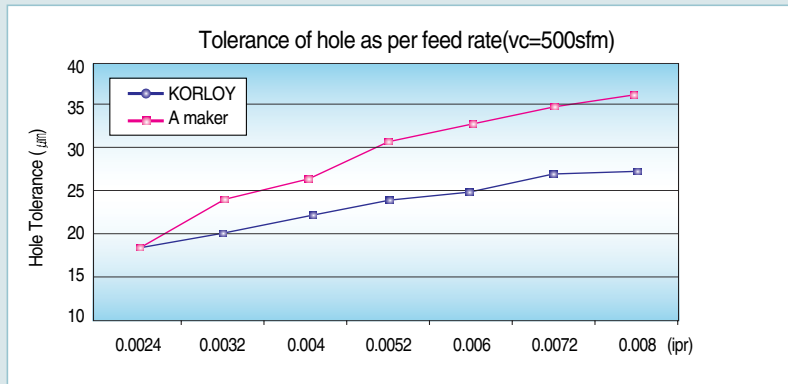
- KORLOY Drill : SPDA0750-100-3  
Insert : SPMT060204-DM(PC3525)  
vc=500sfm, d=1inch, wet
- Workpiece : AISI4140, 42CrMo4

#### Test result

- SPDA has got surface finish Ra under 2.0 µm which is much better than competitor's

## Precise hole diameter

### Tolerance of machined hole



#### Cutting condition

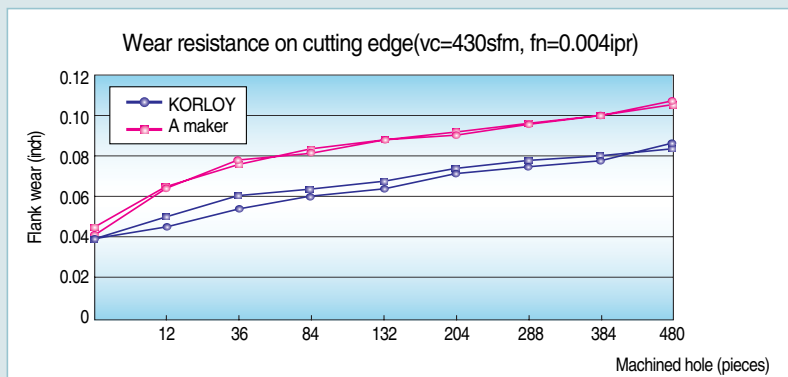
- KORLOY Drill : NPDA1031-125-3  
Insert : NPMT252808-DM(PC3525)  
vc=500sfm, d=1inch, wet
- Workpiece : AISI4140, 42CrMo4

#### Test result

- NPDA has got less tolerance than competitor's as per feed rate variation

## Long tool life

### Wear on cutting edge as per machined hole



#### Cutting condition

- KORLOY Drill : SPDA0750-100-3  
Insert : SPMT060204-DM(PC3525)  
vc=363sfm, fn=0.004ipr, d=1inch, wet
- Workpiece : AISI4140, 42CrMo4 480holes

#### Test result

- Longer tool life and better wear resistance than A-maker's



# LPDA & SPDA & NPDA

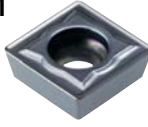
SPDA & NPDA Insert

## SPDA Insert

DF



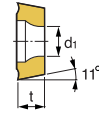
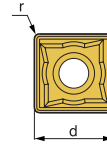
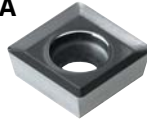
DM



DS



DA



Designation	Stock	Diameter(inch)	d	t	r	d <sub>1</sub>	Grade
SPMT050203-DF	●	Ø0.500~Ø0.562	0.209	0.094	0.012	0.091	PC9530
SPMT060204-DF	●	Ø0.625~Ø0.750	0.244	0.098	1/64	0.098	
SPMT070204-DF	●	Ø0.812~Ø0.875	0.283	0.098	1/64	0.110	
SPMT050203-DM	●	Ø0.500~Ø0.562	0.209	0.094	0.012	0.091	PC3525/PC3535
SPMT060204-DM	●	Ø0.625~Ø0.750	0.244	0.098	1/64	0.098	
SPMT070204-DM	●	Ø0.812~Ø0.875	0.283	0.098	1/64	0.110	
SPMT050203-DS	●	Ø0.500~Ø0.562	0.209	0.094	0.012	0.091	PC9530
SPMT060204-DS	●	Ø0.625~Ø0.750	0.244	0.098	1/64	0.098	
SPMT070204-DS	●	Ø0.812~Ø0.875	0.283	0.098	1/64	0.110	
SPET050203-DA	●	Ø0.500~Ø0.562	0.209	0.094	0.012	0.091	H01
SPET060204-DA	●	Ø0.625~Ø0.750	0.244	0.098	1/64	0.098	
SPET070204-DA	●	Ø0.812~Ø0.875	0.283	0.098	1/64	0.110	

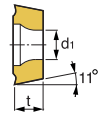
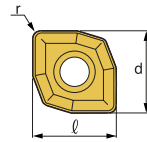
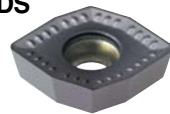
● Stock item, ○ Under preparing for stock

## NPDA Insert

DM

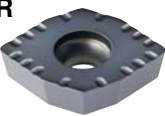


DS

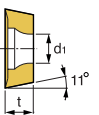
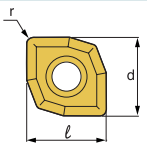


Designation	Stock	Diameter(inch)	l	d	t	r	d <sub>1</sub>	Grade
NPMT222408-DM	●	Ø0.937	0.327	0.323	0.098	1/32	0.110	PC3525 PC3535 PC6510
NPMT252808-DM	●	Ø0.100~Ø1.187	0.366	0.362	0.130	1/32	0.134	
NPMT293208-DM	●	Ø1.250~Ø1.312	0.406	0.402	0.130	1/32	0.134	
NPMT334008-DM	●	Ø1.375~Ø1.562	0.512	0.508	5/32	1/32	0.157	
NPMT415008-DM	●	Ø1.625~Ø2.000	0.602	0.598	0.187	1/32	0.177	
NPMT516012-DM	●	Ø2.062~Ø2.375	0.720	0.717	0.204	3/64	0.217	PC9530
NPMT222408-DS	●	Ø0.937	0.327	0.323	0.098	1/32	0.110	
NPMT252808-DS	●	Ø0.625~Ø1.187	0.366	0.362	0.130	1/32	0.134	
NPMT293208-DS	●	Ø0.812~Ø1.312	0.406	0.402	0.130	1/32	0.134	
NPMT334008-DS	●	Ø0.500~Ø1.562	0.512	0.508	5/32	1/32	0.157	
NPMT415008-DS	●	Ø0.625~Ø2.000	0.602	0.598	0.187	1/32	0.177	H01
NPMT516012-DS	●	Ø0.812~Ø2.375	0.720	0.717	0.204	3/64	0.217	

DR

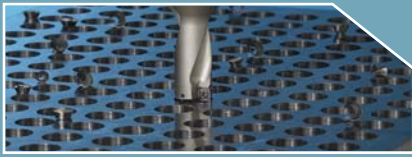


DA



Designation	Stock	Diameter(inch)	l	d	t	r	d <sub>1</sub>	Grade
NPET222408-DR	●	Ø0.937	0.327	0.323	0.098	1/32	0.110	PC3525 PC3535
NPET252808-DR	●	Ø0.100~Ø1.187	0.366	0.362	0.130	1/32	0.134	
NPET293208-DR	●	Ø1.250~Ø1.312	0.406	0.402	0.130	1/32	0.134	
NPET334008-DR	●	Ø1.375~Ø1.562	0.512	0.508	5/32	1/32	0.157	
NPET415008-DR	●	Ø1.625~Ø2.000	0.602	0.598	0.187	1/32	0.177	
NPET516012-DR	●	Ø2.062~Ø2.375	0.720	0.717	0.204	3/64	0.217	H01
NPET222408-DA	●	Ø0.937	0.327	0.323	0.098	1/32	0.110	
NPET252808-DA	●	Ø0.625~Ø1.187	0.366	0.362	0.130	1/32	0.134	
NPET293208-DA	●	Ø0.812~Ø1.312	0.406	0.402	0.130	1/32	0.134	
NPET334008-DA	●	Ø0.500~Ø1.562	0.512	0.508	5/32	1/32	0.157	
NPET415008-DA	●	Ø0.625~Ø2.000	0.602	0.598	0.187	1/32	0.177	H01
NPET516012-DA	●	Ø0.812~Ø2.375	0.720	0.717	0.204	3/64	0.217	

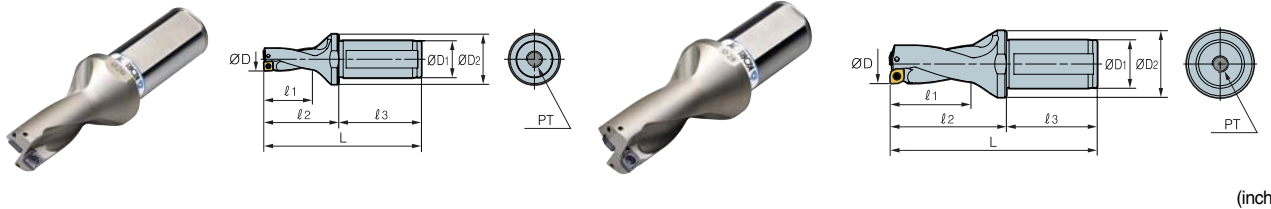
● Stock item, ○ Under preparing for stock



# LPDA & SPDA & NPDA

LPDA & SPDA & NPDA 2D

## LPDA, SPDA, NPDA 2D



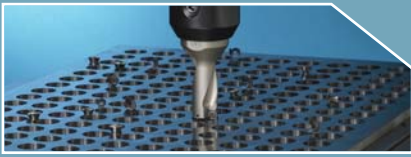
(inch)

Holder	Stock	Dimensions (inch)									Insert	Parts	
		øD	øD <sub>1</sub>	øD <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	L	PT	Screw		Wrench	
LPDA0484-075-2		0.484	31/64	0.75	0.94	0.94	1.61	1.97	3.58	1/8	LPMT040203-DF	FTNA0204(M2.0)	TW06P
LPDA0500-075-2		0.500	1/2	0.75	0.94	1.02	1.69	1.97	3.66	1/8	LPMT040203-DF	FTNA0204(M2.0)	TW06P
LPDA0531-075-2		0.531	17/32	0.75	0.94	1.02	1.69	1.97	3.66	1/8	LPMT040203-DF	FTNA0204(M2.0)	TW06P
SPDA0500-075-2		0.500	1/2	0.75	0.94	1.02	1.69	1.97	3.66	1/8	SPMT050203-□□	FTNA0204(M2.0)	TW06P
SPDA0531-075-2		0.531	17/32	0.75	0.94	1.02	1.69	1.97	3.66	1/8	SPMT050203-□□	FTNA0204(M2.0)	TW06P
SPDA0562-075-2		0.562	9/16	0.75	0.94	1.10	1.81	1.97	3.78	1/8	SPMT050203-□□	FTNA0204(M2.0)	TW06P
SPDA0625-100-2		0.625	5/8	1.00	1.34	1.26	2.01	2.20	4.21	1/8	SPMT060204-□□	FTKA02206S(M2.2)	TW07S
SPDA0687-100-2		0.687	11/16	1.00	1.34	1.34	2.09	2.20	4.29	1/8	SPMT060204-□□	FTKA02206S(M2.2)	TW07S
SPDA0750-100-2		0.750	3/4	1.00	1.34	1.50	2.28	2.20	4.49	1/8	SPMT060204-□□	FTKA02206S(M2.2)	TW07S
SPDA0812-100-2		0.812	13/16	1.00	1.34	1.57	2.44	2.20	4.65	1/8	SPMT070204-□□	FTKA02565(M2.5)	TW07S
SPDA0875-100-2		0.875	7/8	1.00	1.34	1.73	2.60	2.20	4.80	1/8	SPMT070204-□□	FTKA02565(M2.5)	TW07S
NPDA0937-125-2		0.937	15/16	1.25	1.73	1.89	2.83	2.36	5.20	1/4	NPM(E)T222408-□□	FTKA02565(M2.5)	TW07S
NPDA1000-125-2		1.000	1	1.25	1.73	1.97	2.95	2.36	5.31	1/4	NPM(E)T252808-□□	FTKA0307(M3.0)	TW09S
NPDA1031-125-2		1.031	1 1/32	1.25	1.73	2.05	3.03	2.36	5.39	1/4	NPM(E)T252808-□□	FTKA0307(M3.0)	TW09S
NPDA1062-125-2		1.062	1 1/16	1.25	1.73	2.13	3.15	2.36	5.51	1/4	NPM(E)T252808-□□	FTKA0307(M3.0)	TW09S
NPDA1125-125-2		1.125	1 1/8	1.25	1.73	2.20	3.27	2.36	5.63	1/4	NPM(E)T252808-□□	FTKA0307(M3.0)	TW09S
NPDA1187-125-2		1.187	1 3/16	1.25	1.73	2.36	3.50	2.36	5.87	1/4	NPM(E)T293208-□□	FTKA0307(M3.0)	TW09S
NPDA1250-125-2		1.250	1 1/4	1.25	1.73	2.52	3.66	2.36	6.02	1/4	NPM(E)T293208-□□	FTKA0307(M3.0)	TW09S
NPDA1312-150-2		1.312	1 5/16	1.50	1.93	2.60	3.86	2.76	6.61	3/8	NPM(E)T334008-□□	FTKA03508(M3.5)	TW15S
NPDA1375-150-2		1.375	1 3/8	1.50	1.93	2.76	4.02	2.76	6.77	3/8	NPM(E)T334008-□□	FTKA03508(M3.5)	TW15S
NPDA1437-150-2		1.437	1 7/16	1.50	1.93	2.83	4.13	2.76	6.89	3/8	NPM(E)T334008-□□	FTKA03508(M3.5)	TW15S
NPDA1500-150-2		1.500	1 1/2	1.50	1.93	2.99	4.33	2.76	7.09	3/8	NPM(E)T334008-□□	FTKA03508(M3.5)	TW15S
NPDA1562-150-2		1.562	1 9/16	1.50	1.93	3.15	4.53	2.76	7.28	3/8	NPM(E)T334008-□□	FTKA03508(M3.5)	TW15S
NPDA1625-150-2		1.625	1 5/8	1.50	2.28	3.23	4.69	2.76	7.44	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA1687-150-2		1.687	1 11/16	1.50	2.28	3.39	4.88	2.76	7.64	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA1750-150-2		1.750	1 3/4	1.50	2.28	3.46	4.96	2.76	7.72	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA1812-150-2		1.812	1 13/16	1.50	2.28	3.62	5.16	2.76	7.91	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA1875-150-2		1.875	1 7/8	1.50	2.28	3.70	5.28	2.76	8.03	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA1937-150-2		1.937	1 15/16	1.50	2.28	3.86	5.51	2.76	8.27	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA2000-150-2		2.000	2	1.50	2.28	4.02	5.75	2.76	8.50	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA2062-150-2		2.062	2 1/16	1.50	2.68	4.09	5.91	2.76	8.66	3/8	NPM(E)T516012-□□	FTNC04511(M4.5)	TW20S
NPDA2125-150-2		2.125	2 1/8	1.50	2.68	4.25	6.06	2.76	8.82	3/8	NPM(E)T516012-□□	FTNC04511(M4.5)	TW20S
NPDA2187-150-2		2.187	2 3/16	1.50	2.68	4.33	6.14	2.76	8.90	3/8	NPM(E)T516012-□□	FTNC04511(M4.5)	TW20S
NPDA2250-150-2		2.250	2 1/4	1.50	2.68	4.49	6.38	2.76	9.13	3/8	NPM(E)T516012-□□	FTNC04511(M4.5)	TW20S
NPDA2313-150-2		2.313	2 5/16	1.50	2.68	4.65	6.54	2.76	9.29	3/8	NPM(E)T516012-□□	FTNC04511(M4.5)	TW20S
NPDA2375-150-2		2.375	2 3/8	1.50	2.68	4.72	6.61	2.76	9.37	3/8	NPM(E)T516012-□□	FTNC04511(M4.5)	TW20S

● Stock item, ○ Under preparing for stock

## Examples of choosing proper tool

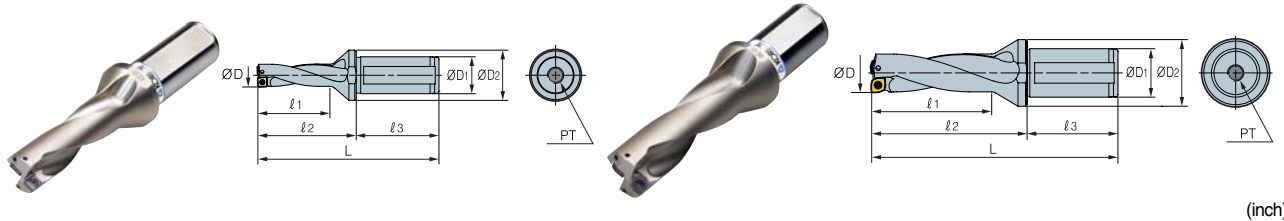
- **Workpiece : 4140, Hole size :  $\varnothing 0.625''$ , Depth : 1.8''**  
 Insert : SPMT060204-DM PC3525  
 Drill : SPDA0625-100-3
- **Workpiece : Stainless steel, Hole size :  $\varnothing 1.0''$ , Depth : 2.0''**  
 Insert : NPMT252808-DS PC9530  
 Drill : NPDA1000-125-2



# LPDA & SPDA & NPDA

LPDA & SPDA & NPDA 3D

## LPDA, SPDA, NPDA 3D



(inch)

Holder	Stock	Dimensions (inch)									Insert	Parts	
		$\varnothing D$	$\varnothing D_1$	$\varnothing D_2$	$l_1$	$l_2$	$l_3$	L	PT	Screw		Wrench	
LPDA0484-075-3		0.484	31/64	0.75	0.94	1.42	2.09	1.97	4.06	1/8	LPMT040203-DF	FTNA0204(M2.0)	TW06P
LPDA0500-075-3		0.500	1/2	0.75	0.94	1.54	2.20	1.97	4.17	1/8	LPMT040203-DF	FTNA0204(M2.0)	TW06P
LPDA0531-075-3		0.531	17/32	0.75	0.94	1.54	2.20	1.97	4.17	1/8	LPMT040203-DF	FTNA0204(M2.0)	TW06P
SPDA0500-075-3		0.500	1/2	0.75	0.94	1.54	2.20	1.97	4.17	1/8	SPMT050203-□□	FTNA0204(M2.0)	TW06P
SPDA0531-075-3		0.531	17/32	0.75	0.94	1.54	2.20	1.97	4.17	1/8	SPMT050203-□□	FTNA0204(M2.0)	TW06P
SPDA0562-075-3		0.562	9/16	0.75	0.94	1.65	2.36	1.97	4.33	1/8	SPMT050203-□□	FTNA0204(M2.0)	TW06P
SPDA0625-100-3		0.625	5/8	1.00	1.34	1.89	2.64	2.20	4.84	1/8	SPMT060204-□□	FTKA02206S(M2.2)	TW07S
SPDA0687-100-3		0.687	11/16	1.00	1.34	2.01	2.76	2.20	4.96	1/8	SPMT060204-□□	FTKA02206S(M2.2)	TW07S
SPDA0750-100-3		0.750	3/4	1.00	1.34	2.24	3.03	2.20	5.24	1/8	SPMT060204-□□	FTKA02206S(M2.2)	TW07S
SPDA0812-100-3		0.812	13/16	1.00	1.34	2.36	3.23	2.20	5.43	1/8	SPMT070204-□□	FTKA02565(M2.5)	TW07S
SPDA0875-100-3		0.875	7/8	1.00	1.34	2.60	3.46	2.20	5.67	1/8	SPMT070204-□□	FTKA02565(M2.5)	TW07S
NPDA0937-125-3		0.937	15/16	1.25	1.73	2.83	3.78	2.36	6.14	1/4	NPM(E)T222408-□□	FTKA02565(M2.5)	TW07S
NPDA1000-125-3		1.000	1	1.25	1.73	2.95	3.94	2.36	6.30	1/4	NPM(E)T252808-□□	FTKA0307(M3.0)	TW09S
NPDA1031-125-3		1.031	1 1/32	1.25	1.73	3.07	4.06	2.36	6.42	1/4	NPM(E)T252808-□□	FTKA0307(M3.0)	TW09S
NPDA1062-125-3		1.062	1 1/16	1.25	1.73	3.19	4.21	2.36	6.57	1/4	NPM(E)T252808-□□	FTKA0307(M3.0)	TW09S
NPDA1125-125-3		1.125	1 1/8	1.25	1.73	3.31	4.37	2.36	6.73	1/4	NPM(E)T252808-□□	FTKA0307(M3.0)	TW09S
NPDA1187-125-3		1.187	1 3/16	1.25	1.73	3.54	4.69	2.36	7.05	1/4	NPM(E)T293208-□□	FTKA0307(M3.0)	TW09S
NPDA1250-125-3		1.250	1 1/4	1.25	1.73	3.78	4.92	2.36	7.28	1/4	NPM(E)T293208-□□	FTKA0307(M3.0)	TW09S
NPDA1312-150-3		1.312	1 5/16	1.50	1.93	3.90	5.16	2.76	7.91	3/8	NPM(E)T334008-□□	FTKA03508(M3.5)	TW15S
NPDA1375-150-3		1.375	1 3/8	1.50	1.93	4.13	5.39	2.76	8.15	3/8	NPM(E)T334008-□□	FTKA03508(M3.5)	TW15S
NPDA1437-150-3		1.437	1 7/16	1.50	1.93	4.25	5.55	2.76	8.31	3/8	NPM(E)T334008-□□	FTKA03508(M3.5)	TW15S
NPDA1500-150-3		1.500	1 1/2	1.50	1.93	4.49	5.83	2.76	8.58	3/8	NPM(E)T334008-□□	FTKA03508(M3.5)	TW15S
NPDA1562-150-3		1.562	1 9/16	1.50	1.93	4.72	6.10	2.76	8.86	3/8	NPM(E)T334008-□□	FTKA03508(M3.5)	TW15S
NPDA1625-150-3		1.625	1 5/8	1.50	2.28	4.84	6.30	2.76	9.06	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA1687-150-3		1.687	1 11/16	1.50	2.28	5.08	6.57	2.76	9.33	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA1750-150-3		1.750	1 3/4	1.50	2.28	5.20	6.69	2.76	9.45	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA1812-150-3		1.812	1 13/16	1.50	2.28	5.43	6.97	2.76	9.72	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA1875-150-3		1.875	1 7/8	1.50	2.28	5.55	7.13	2.76	9.88	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA1937-150-3		1.937	1 15/16	1.50	2.28	5.79	7.44	2.76	10.20	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA2000-150-3		2.000	2	1.50	2.28	6.02	7.76	2.76	10.51	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA2062-150-3		2.062	2 1/16	1.50	2.68	6.14	7.95	2.76	10.71	3/8	NPM(E)T516012-□□	FTNC04511(M4.5)	TW20S
NPDA2125-150-3		2.125	2 1/8	1.50	2.68	6.38	8.19	2.76	10.94	3/8	NPM(E)T516012-□□	FTNC04511(M4.5)	TW20S
NPDA2187-150-3		2.187	2 3/16	1.50	2.68	6.50	8.31	2.76	11.06	3/8	NPM(E)T516012-□□	FTNC04511(M4.5)	TW20S
NPDA2250-150-3		2.250	2 1/4	1.50	2.68	6.73	8.62	2.76	11.38	3/8	NPM(E)T516012-□□	FTNC04511(M4.5)	TW20S
NPDA2313-150-3		2.313	2 5/16	1.50	2.68	6.97	8.86	2.76	11.61	3/8	NPM(E)T516012-□□	FTNC04511(M4.5)	TW20S
NPDA2375-150-3		2.375	2 3/8	1.50	2.68	7.09	8.98	2.76	11.73	3/8	NPM(E)T516012-□□	FTNC04511(M4.5)	TW20S

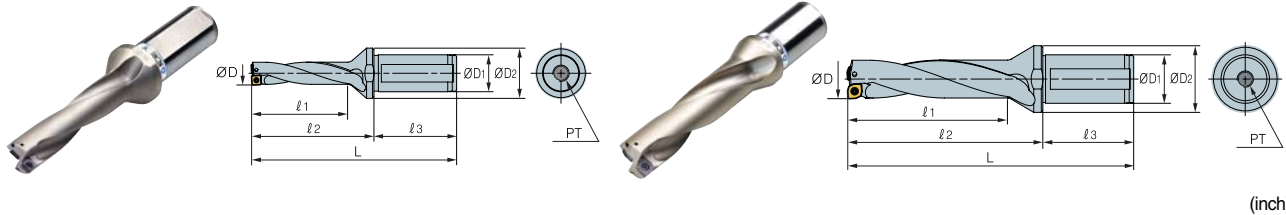
● Stock item, ○ Under preparing for stock



# LPDA & SPDA & NPDA

LPDA & SPDA & NPDA 4D

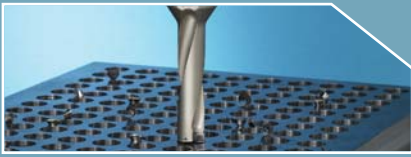
## LPDA, SPDA, NPDA 4D



(inch)

Holder	Stock	Dimensions (inch)									Insert	Parts	
		øD	øD <sub>1</sub>	øD <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	L	PT	Screw		Wrench	
LPDA0484-075-4		0.484	31/64	0.75	0.94	1.89	2.56	1.97	4.53	1/8	LPMT040203-DF	FTNA0204(M2.0)	TW06P
LPDA0500-075-4		0.500	1/2	0.75	0.94	2.05	2.72	1.97	4.69	1/8	LPMT040203-DF	FTNA0204(M2.0)	TW06P
LPDA0531-075-4		0.531	17/32	0.75	0.94	2.05	2.72	1.97	4.69	1/8	LPMT040203-DF	FTNA0204(M2.0)	TW06P
SPDA0500-075-4		0.500	1/2	0.75	0.94	2.05	2.72	1.97	4.69	1/8	SPMT050203-□□	FTNA0204(M2.0)	TW06P
SPDA0531-075-4		0.531	17/32	0.75	0.94	2.05	2.72	1.97	4.69	1/8	SPMT050203-□□	FTNA0204(M2.0)	TW06P
SPDA0562-075-4		0.562	9/16	0.75	0.94	2.20	2.91	1.97	4.88	1/8	SPMT050203-□□	FTNA0204(M2.0)	TW06P
SPDA0625-100-4		0.625	5/8	1.00	1.34	2.52	3.27	2.20	5.47	1/8	SPMT060204-□□	FTKA02206S(M2.2)	TW07S
SPDA0687-100-4		0.687	11/16	1.00	1.34	2.68	3.43	2.20	5.63	1/8	SPMT060204-□□	FTKA02206S(M2.2)	TW07S
SPDA0750-100-4		0.750	3/4	1.00	1.34	2.99	3.78	2.20	5.98	1/8	SPMT060204-□□	FTKA02206S(M2.2)	TW07S
SPDA0812-100-4		0.812	13/16	1.00	1.34	3.15	4.02	2.20	6.22	1/8	SPMT070204-□□	FTKA02565(M2.5)	TW07S
SPDA0875-100-4		0.875	7/8	1.00	1.34	3.46	4.33	2.20	6.54	1/8	SPMT070204-□□	FTKA02565(M2.5)	TW07S
NPDA0937-125-4		0.937	15/16	1.25	1.73	3.78	4.72	2.36	7.09	1/4	NPM(E)T222408-□□	FTKA02565(M2.5)	TW07S
NPDA1000-125-4		1.000	1	1.25	1.73	3.94	4.92	2.36	7.28	1/4	NPM(E)T252808-□□	FTKA0307(M3.0)	TW09S
NPDA1031-125-4		1.031	1 1/32	1.25	1.73	4.09	5.08	2.36	7.44	1/4	NPM(E)T252808-□□	FTKA0307(M3.0)	TW09S
NPDA1062-125-4		1.062	1 1/16	1.25	1.73	4.25	5.28	2.36	7.64	1/4	NPM(E)T252808-□□	FTKA0307(M3.0)	TW09S
NPDA1125-125-4		1.125	1 1/8	1.25	1.73	4.41	5.47	2.36	7.83	1/4	NPM(E)T252808-□□	FTKA0307(M3.0)	TW09S
NPDA1187-125-4		1.187	1 3/16	1.25	1.73	4.72	5.87	2.36	8.23	1/4	NPM(E)T293208-□□	FTKA0307(M3.0)	TW09S
NPDA1250-125-4		1.250	1 1/4	1.25	1.73	5.04	6.18	2.36	8.54	1/4	NPM(E)T293208-□□	FTKA0307(M3.0)	TW09S
NPDA1312-150-4		1.312	1 5/16	1.50	1.93	5.20	6.46	2.76	9.21	3/8	NPM(E)T334008-□□	FTKA03508(M3.5)	TW15S
NPDA1375-150-4		1.375	1 3/8	1.50	1.93	5.51	6.77	2.76	9.53	3/8	NPM(E)T334008-□□	FTKA03508(M3.5)	TW15S
NPDA1437-150-4		1.437	1 7/16	1.50	1.93	5.67	6.97	2.76	9.72	3/8	NPM(E)T334008-□□	FTKA03508(M3.5)	TW15S
NPDA1500-150-4		1.500	1 1/2	1.50	1.93	5.98	7.32	2.76	10.08	3/8	NPM(E)T334008-□□	FTKA03508(M3.5)	TW15S
NPDA1562-150-4		1.562	1 9/16	1.50	1.93	6.30	7.68	2.76	10.43	3/8	NPM(E)T334008-□□	FTKA03508(M3.5)	TW15S
NPDA1625-150-4		1.625	1 5/8	1.50	2.28	6.46	7.91	2.76	10.67	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA1687-150-4		1.687	1 11/16	1.50	2.28	6.77	8.27	2.76	11.02	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA1750-150-4		1.750	1 3/4	1.50	2.28	6.93	8.43	2.76	11.18	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA1812-150-4		1.812	1 13/16	1.50	2.28	7.24	8.78	2.76	11.54	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA1875-150-4		1.875	1 7/8	1.50	2.28	7.40	8.98	2.76	11.73	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA1937-150-4		1.937	1 15/16	1.50	2.28	7.72	9.37	2.76	12.13	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA2000-150-4		2.000	2	1.50	2.28	8.03	9.76	2.76	12.52	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA2062-150-4		2.062	2 1/16	1.50	2.68	8.19	10.00	2.76	12.76	3/8	NPM(E)T516012-□□	FTNC04511(M4.5)	TW20S
NPDA2125-150-4		2.125	2 1/8	1.50	2.68	8.50	10.31	2.76	13.07	3/8	NPM(E)T516012-□□	FTNC04511(M4.5)	TW20S
NPDA2187-150-4		2.187	2 3/16	1.50	2.68	8.66	10.47	2.76	13.23	3/8	NPM(E)T516012-□□	FTNC04511(M4.5)	TW20S
NPDA2250-150-4		2.250	2 1/4	1.50	2.68	8.98	10.87	2.76	13.62	3/8	NPM(E)T516012-□□	FTNC04511(M4.5)	TW20S
NPDA2313-150-4		2.313	2 5/16	1.50	2.68	9.29	11.18	2.76	13.94	3/8	NPM(E)T516012-□□	FTNC04511(M4.5)	TW20S
NPDA2375-150-4		2.375	2 3/8	1.50	2.68	9.45	11.34	2.76	14.09	3/8	NPM(E)T516012-□□	FTNC04511(M4.5)	TW20S

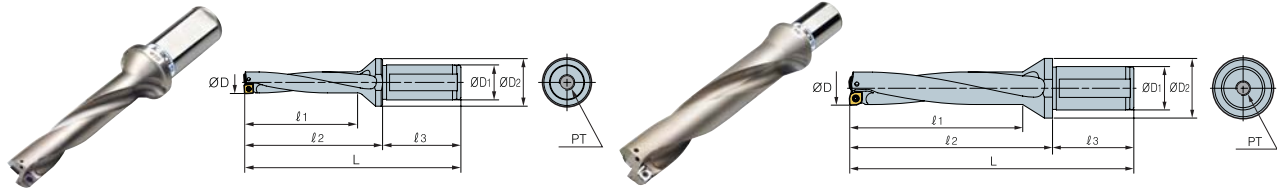
● Stock item, ○ Under preparing for stock



# LPDA & SPDA & NPDA

SPDA & NPDA 5D

## SPDA, NPDA 5D



(inch)

Holder	Stock	Dimensions (inch)									Insert	Parts	
		$\varnothing D$	$\varnothing D_1$	$\varnothing D_2$	$\ell_1$	$\ell_2$	$\ell_3$	L	PT	Screw		Wrench	
SPDA0625-100-5		0.625	5/8	1.00	1.34	3.15	3.90	2.20	6.10	1/8	SPMT060204-□□	FTKA02206S(M2.2)	TW07S
SPDA0687-100-5		0.687	11/16	1.00	1.34	3.35	4.09	2.20	6.30	1/8	SPMT060204-□□	FTKA02206S(M2.2)	TW07S
SPDA0750-100-5		0.750	3/4	1.00	1.34	3.74	4.53	2.20	6.73	1/8	SPMT060204-□□	FTKA02206S(M2.2)	TW07S
SPDA0812-100-5		0.812	13/16	1.00	1.34	3.94	4.80	2.20	7.01	1/8	SPMT070204-□□	FTKA02565(M2.5)	TW07S
SPDA0875-100-5		0.875	7/8	1.00	1.34	4.33	5.20	2.20	7.40	1/8	SPMT070204-□□	FTKA02565(M2.5)	TW07S
NPDA0937-125-5		0.937	15/16	1.25	1.73	4.72	5.67	2.36	8.03	1/4	NPM(E)T222408-□□	FTKA02565(M2.5)	TW07S
NPDA1000-125-5		1.000	1	1.25	1.73	4.92	5.91	2.36	8.27	1/4	NPM(E)T252808-□□	FTKA0307(M3.0)	TW09S
NPDA1031-125-5		1.031	1 1/32	1.25	1.73	5.12	6.10	2.36	8.46	1/4	NPM(E)T252808-□□	FTKA0307(M3.0)	TW09S
NPDA1062-125-5		1.062	1 1/16	1.25	1.73	5.31	6.34	2.36	8.70	1/4	NPM(E)T252808-□□	FTKA0307(M3.0)	TW09S
NPDA1125-125-5		1.125	1 1/8	1.25	1.73	5.51	6.57	2.36	8.94	1/4	NPM(E)T252808-□□	FTKA0307(M3.0)	TW09S
NPDA1187-125-5		1.187	1 3/16	1.25	1.73	5.91	7.05	2.36	9.41	1/4	NPM(E)T293208-□□	FTKA0307(M3.0)	TW09S
NPDA1250-125-5		1.250	1 1/4	1.25	1.73	6.30	7.44	2.36	9.80	1/4	NPM(E)T293208-□□	FTKA0307(M3.0)	TW09S
NPDA1312-150-5		1.312	1 5/16	1.50	1.93	6.50	7.76	2.76	10.51	3/8	NPM(E)T334008-□□	FTKA03508(M3.5)	TW15S
NPDA1375-150-5		1.375	1 3/8	1.50	1.93	6.89	8.15	2.76	10.91	3/8	NPM(E)T334008-□□	FTKA03508(M3.5)	TW15S
NPDA1437-150-5		1.437	1 7/16	1.50	1.93	7.09	8.39	2.76	11.14	3/8	NPM(E)T334008-□□	FTKA03508(M3.5)	TW15S
NPDA1500-150-5		1.500	1 1/2	1.50	1.93	7.48	8.82	2.76	11.57	3/8	NPM(E)T334008-□□	FTKA03508(M3.5)	TW15S
NPDA1562-150-5		1.562	1 9/16	1.50	1.93	7.87	9.25	2.76	12.01	3/8	NPM(E)T334008-□□	FTKA03508(M3.5)	TW15S
NPDA1625-150-5		1.625	1 5/8	1.50	2.28	8.07	9.53	2.76	12.28	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA1687-150-5		1.687	1 11/16	1.50	2.28	8.46	9.96	2.76	12.72	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA1750-150-5		1.750	1 3/4	1.50	2.28	8.66	10.16	2.76	12.91	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA1812-150-5		1.812	1 13/16	1.50	2.28	9.06	10.59	2.76	13.35	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA1875-150-5		1.875	1 7/8	1.50	2.28	9.25	10.83	2.76	13.58	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA1937-150-5		1.937	1 15/16	1.50	2.28	9.65	11.30	2.76	14.06	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA2000-150-5		2.000	2	1.50	2.28	10.04	11.77	2.76	14.53	3/8	NPM(E)T415008-□□	FTKA0410(M4.0)	TW15S
NPDA2062-150-5		2.062	2 1/16	1.50	2.68	10.24	12.05	2.76	14.80	3/8	NPM(E)T516012-□□	FTNC04511(M4.5)	TW20S
NPDA2125-150-5		2.125	2 1/8	1.50	2.68	10.63	12.44	2.76	15.20	3/8	NPM(E)T516012-□□	FTNC04511(M4.5)	TW20S
NPDA2187-150-5		2.187	2 3/16	1.50	2.68	10.83	12.64	2.76	15.39	3/8	NPM(E)T516012-□□	FTNC04511(M4.5)	TW20S
NPDA2250-150-5		2.250	2 1/4	1.50	2.68	11.22	13.11	2.76	15.87	3/8	NPM(E)T516012-□□	FTNC04511(M4.5)	TW20S
NPDA2313-150-5		2.313	2 5/16	1.50	2.68	11.61	13.50	2.76	16.26	3/8	NPM(E)T516012-□□	FTNC04511(M4.5)	TW20S
NPDA2375-150-5		2.375	2 3/8	1.50	2.68	11.81	13.70	2.76	16.46	3/8	NPM(E)T516012-□□	FTNC04511(M4.5)	TW20S

● Stock item, ○ Under preparing for stock

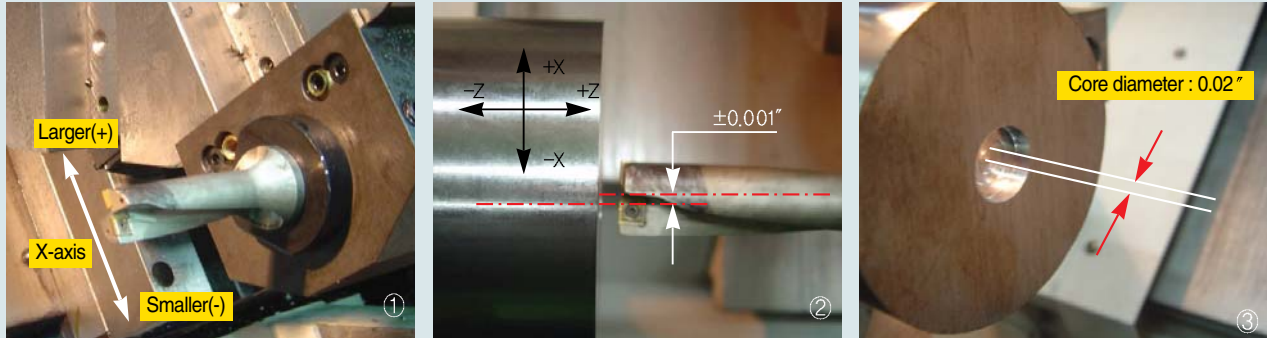


# LPDA & SPDA & NPDA

Setting of drill in turning machine

## Setting of drill in turning machine

### Setting of drill in turning machine



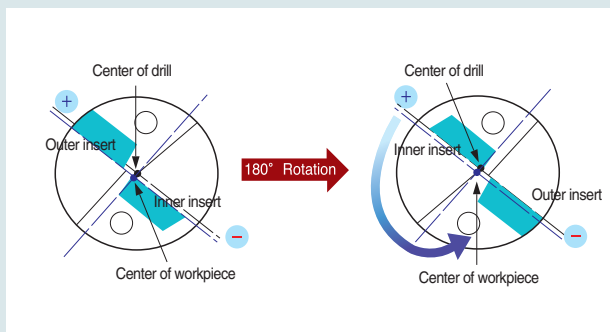
- ① The cutting edge of insert **should be parallel to X-axis** to make it possible to do offset cutting. Since a flat part on shank for side lock clamping has been made parallel with the cutting edge line of insert, operator can set the drill as per flat part of shank.
- ② The outer insert should be located in the direction(+) of X-axis to allow offset cutting and then **the inner insert should face the operator**.
- ③ To check up the setting of drill before use, test it by drilling about 0.02inch depth and then measure the core size if it is **around 0.02inch**.  
\* Please check the side lock position when you clamp

### Drill setting by core size

According to machine condition, miss-match between the center of the workpiece and the drill could cause un-preferable core size, like too big core or nothing. Since it is the main point to get good quality, please be fully aware of the data written below.

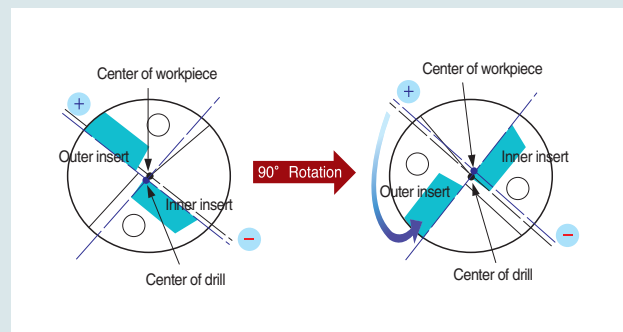
#### When the core has not made

- ① It could cause damage on insert and serious vibration of tool in drilling.
- ② To fix the trouble, re-clamp it by rotating the holder 180° and check the core size again.



#### When the core is larger than 0.04"

- ① The big core of workpiece could generate big cutting force against drilling which cause vibration of tool.
- ② To figure out the trouble, rotate the drill 90° by countering-clockwise and re-clamping it.



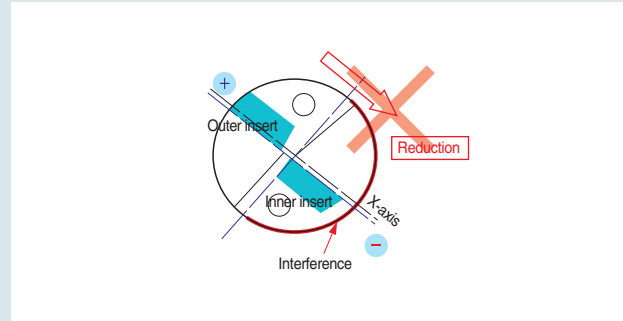
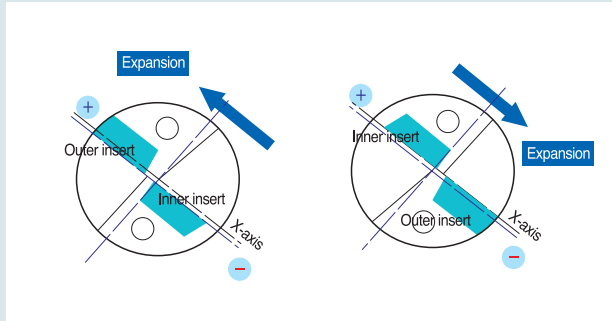


# LPDA & SPDA & NPDA

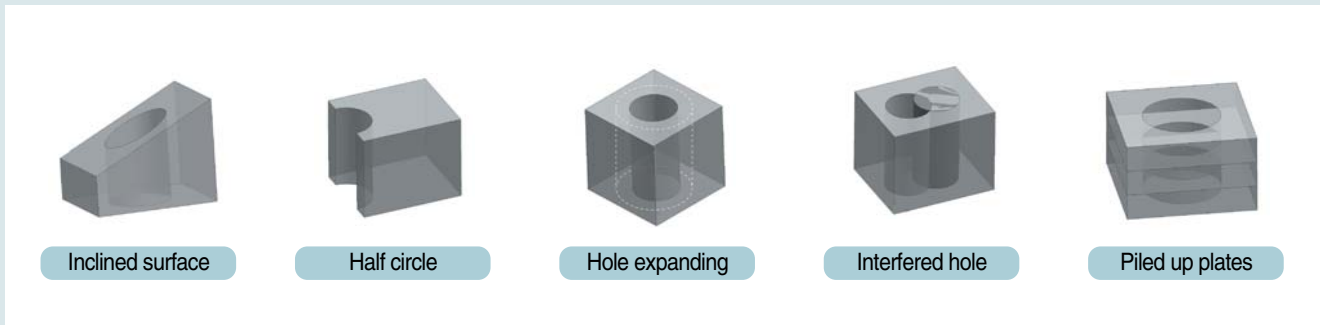
LPDA & SPDA & NPDA Technical information

## ■ Making expanded hole

- ① The cutting edge of external insert and X-axis of machine should be parallel to each other.
- ② Expanding of hole size by moving the drill to the outer direction of X-axis is possible.  
(Please refer to the expanding hole range by drill diameter at the table shown below.)
- ③ **Don't use in smaller hole machining than the drill diameter.**  
: A damage on workpiece could be caused by interference between drill's shank and operated hole.



## ■ Applications need special care



• In case of applications shown above, please decrease the feed rate 30-50% from the recommended data

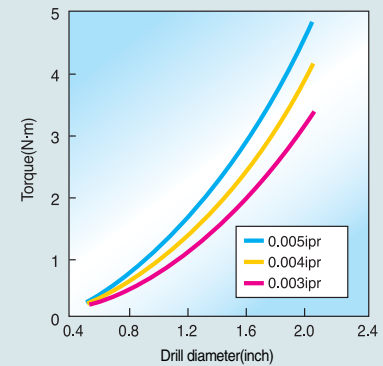
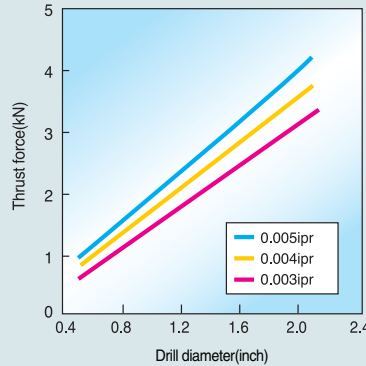
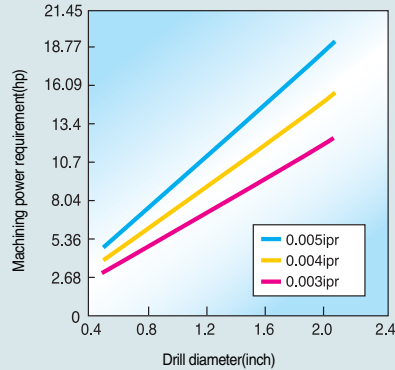


# LPDA & SPDA & NPDA

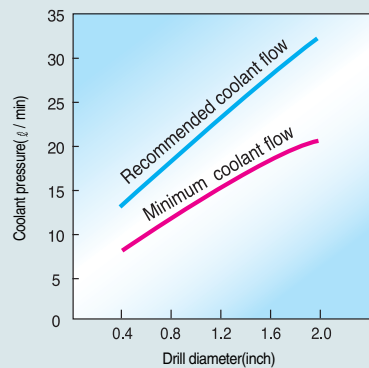
LPDA & SPDA & NPDA Technical information

## SPDA & NPDA Technical information

### Machining power requirement



### Coolant pressure



- Appropriate pressure for NPDA & SPDA is over 7 lpsi
- Since the information shown above is basic data for normal drilling, adjustment as per workpiece & cutting conditions are necessary

### Machined hole tolerance as per D.O.C

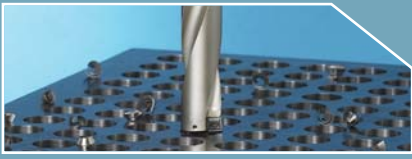
D.O.C	Machined Hole Tolerance	Test Cutting Condition
2 X D	D $+0.008''$ $-0.004''$	<ul style="list-style-type: none"> <li>• vc : 430 ~ 660sfm</li> <li>• fn : 0.0016 ~ 0.0006ipr</li> <li>• Workpiece : AISI4140</li> <li>• Coolant : Over 7 lpsi</li> </ul>
3 X D	D $+0.012''$ $-0.004''$	
4 X D	D $+0.016''$ $-0.004''$	

- vc : 330sfm
- Workpiece : AISI4140
- Through coolant system

### Trouble Shooting

Trouble	Condition	Trouble	Condition
Size change of hole	Size change of the hole between inlet and outlet	Chip clogging	Increase 'Velocity' Decrease 'Feed rate'
Reduction of hole size	Reduction of hole size compared to drill diameter	Center position of workpiece is lower than cutting edge of inner insert.	Refer to the drill setting by core condition (Previous pages)
Scratch of steel part of holder by touching of wall of hole	Touch of the workpiece and the drill's shank	The Inaccurate center of workpiece and drill	
Vibration	Long Chip	Vibration happens due to poor chip evacuation.	Soft steel, Stainless steel Increase 'Velocity' Decrease 'Feed rate'
	Short Chip	Vibration happens due to the overload from severe chip breaking	Alloy steel, Carbon steel Increase 'Velocity' Increase 'Feed rate'
			Increase 'Velocity' Decrease 'Feed rate' Increase 'Coolant pressure'

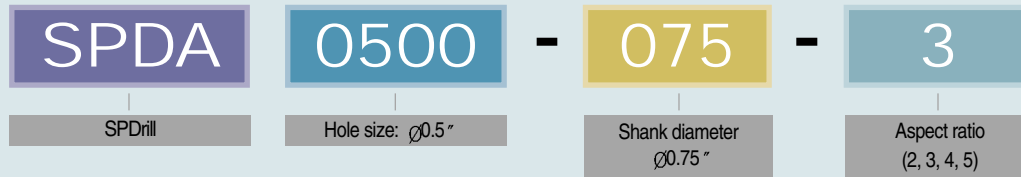
- Since the coolant pressure is very important factor for drilling, in-sufficient coolant pressure might cause chattering or wear on cutting edge occurring short tool life.



# LPDA & SPDA & NPDA

LPDA & SPDA & NPDA Technical information

## ■ LPDA & SPDA & NPDA Code System



- Use LPD for diameter  $\varnothing 0.484'' \sim \varnothing 0.531''$ , SPD for diameter  $\varnothing 0.5'' \sim \varnothing 0.875''$ , NPD for diameter  $\varnothing 0.937'' \sim \varnothing 2.375''$
- When choosing drill, please consider about the aspect ratio (flute length / hole diameter) of drill.

## ■ How to calculate machining power of drilling : P(kW)

$$P = 425 \times K_s \times v_c \times f_n \times D / 10^7 (\text{kW})$$

- Specific cutting force :  $K_s(\text{kg}/\text{mm}^2)$ \_see KORLOY catalogue
- Cutting speed :  $v_c(\text{sfm})$  Feed rate:  $f_n(\text{ipr})$  Drill diameter :  $\varnothing D(\text{inch})$

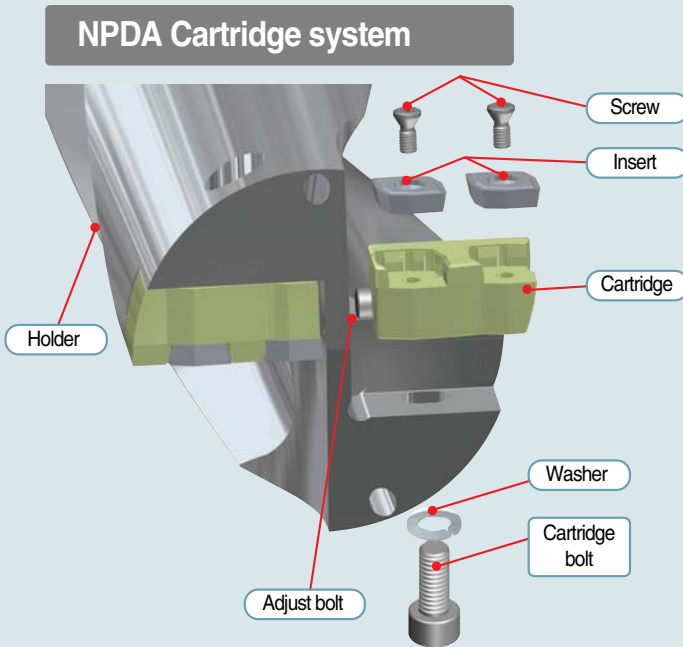
### ● Example

Workpiece = 4140,  $K_s=254\text{kg}/\text{mm}^2$ ,  $v_c=330\text{sfm}$ ,  $f_n=0.004\text{ipr}$ ,  $D=0.787''$   
 $P(\text{kW})=425 \times 254 \times 100 \times 0.1 \times 20/10,000,000=2.159\text{kW}$



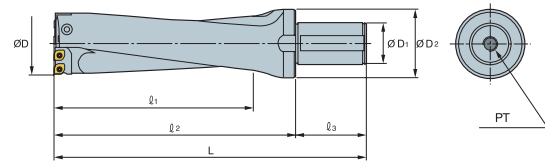
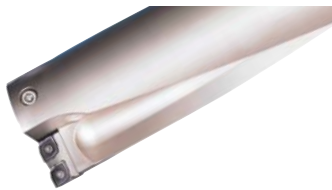
# LPDA & SPDA & NPDA

NPDA Cartridge system



- Using big hole drilling  $\varnothing 2.40'' \sim \varnothing 3.90''$
- Indexable cartridge & insert are able to pursue the economy and convenience of customer
- Drill diameter can be extended table below( $\varnothing D$ ) by adjusting outer cartridge
- An adjust bolt makes handling easy for extension of drill diameter
- Excellent chip control guarantees good cutting performance in deep hole drilling
- Various chip breakers & grades are available for variety of application

## NPDA Cartridge Type



(inch)

Holder	Stock	Dimensions (inch)									Insert	Cartridge		Parts	
		$\varnothing D$	$\varnothing D_1$	$\varnothing D_2$	$l_1$	$l_2$	$l_3$	L	PT	Center		Peripheral	Screw	Wrench	
NPDA240253-200-3		2.40 ~ 2.53	2 13/32 ~ 2 17/32	2.0	3.15	7.68	9.45	3.35	12.80	PT3/8	NPM(E)T293208-□□	NPCA240253C	NPCA240253P	FTKA0307	TW09S
NPDA253275-200-3		2.53 ~ 2.75	2 17/32 ~ 2 3/4	2.0	3.46	8.27	10.04	3.35	13.39	PT3/8	NPM(E)T334008-□□	NPCA253275C	NPCA253275P	FTKA03508	TW15S
NPDA275293-200-3		2.75 ~ 2.93	2 3/4 ~ 2 15/16	2.0	3.46	8.86	10.63	3.35	13.98	PT3/8	NPM(E)T334008-□□	NPCA275293C	NPCA275293P	FTKA03508	TW15S
NPDA293312-200-3		2.93 ~ 3.12	2 15/16 ~ 3 1/8	2.0	3.46	9.45	11.22	3.35	14.57	PT3/8	NPM(E)T334008-□□	NPCA293312C	NPCA293312P	FTKA03508	TW15S
NPDA312334-200-3		3.12 ~ 3.34	3 1/8 ~ 3 11/32	2.0	3.46	10.04	11.81	3.35	15.16	PT3/8	NPM(E)T415008-□□	NPCA312334C	NPCA312334P	FTKA0410	TW15S
NPDA334353-200-3		3.34 ~ 3.53	3 11/32 ~ 3 17/32	2.0	3.74	10.63	12.40	3.35	15.75	PT3/8	NPM(E)T415008-□□	NPCA334353C	NPCA334353P	FTKA0410	TW15S
NPDA353371-200-3		3.53 ~ 3.71	3 17/32 ~ 3 23/32	2.0	3.74	11.22	12.99	3.35	16.34	PT3/8	NPM(E)T415008-□□	NPCA353371C	NPCA353371P	FTKA0410	TW15S
NPDA371390-200-3		3.71 ~ 3.90	3 23/32 ~ 3 29/32	2.0	3.74	11.81	13.58	3.35	16.93	PT3/8	NPM(E)T516012-□□	NPCA371390C	NPCA371390P	FTNC04511	TW20S
NPDA240253-200-4		2.40 ~ 2.53	2 13/32 ~ 2 17/32	2.0	3.15	10.24	12.01	3.35	15.35	PT3/8	NPM(E)T293208-□□	NPCA240253C	NPCA240253P	FTKA0307	TW09S
NPDA253275-200-4		2.53 ~ 2.75	2 17/32 ~ 2 3/4	2.0	3.46	11.02	12.80	3.35	16.14	PT3/8	NPM(E)T334008-□□	NPCA253275C	NPCA253275P	FTKA03508	TW15S
NPDA275293-200-4		2.75 ~ 2.93	2 3/4 ~ 2 15/16	2.0	3.46	11.81	13.58	3.35	16.93	PT3/8	NPM(E)T334008-□□	NPCA275293C	NPCA275293P	FTKA03508	TW15S
NPDA293312-200-4		2.93 ~ 3.12	2 15/16 ~ 3 1/8	2.0	3.46	12.60	14.37	3.35	17.72	PT3/8	NPM(E)T334008-□□	NPCA293312C	NPCA293312P	FTKA03508	TW15S
NPDA312334-200-4		3.12 ~ 3.34	3 1/8 ~ 3 11/32	2.0	3.46	13.39	15.16	3.35	18.50	PT3/8	NPM(E)T415008-□□	NPCA312334C	NPCA312334P	FTKA0410	TW15S
NPDA334353-200-4		3.34 ~ 3.53	3 11/32 ~ 3 17/32	2.0	3.74	14.17	15.94	3.35	19.29	PT3/8	NPM(E)T415008-□□	NPCA334353C	NPCA334353P	FTKA0410	TW15S
NPDA353371-200-4		3.53 ~ 3.71	3 17/32 ~ 3 23/32	2.0	3.74	14.96	16.73	3.35	20.08	PT3/8	NPM(E)T415008-□□	NPCA353371C	NPCA353371P	FTKA0410	TW15S
NPDA371390-200-4		3.71 ~ 3.90	3 23/32 ~ 3 29/32	2.0	3.74	15.75	17.52	3.35	20.87	PT3/8	NPM(E)T516012-□□	NPCA371390C	NPCA371390P	FTNC04511	TW20S

● Stock item, ◻ Under preparing for stock



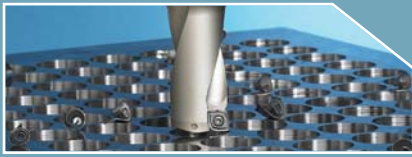
# LPDA & SPDA & NPDA

Recommended cutting condition

## Recommended cutting condition

Workpiece				C/B and Grade			vc sfm	Condition(L=3D) fn(ipr)			
ISO	KS	Material	Hardness (HB)		C/B	Grade		~15	16~24	25~32	33~40
P	SM15C SM25C SM35C	Low carbon steel	80-180	1st	DM	PC3525	630(430-825)	0.0016-0.003	0.0016-0.003	0.0016-0.003	0.002-0.004
				2nd	DS	PC9530	560(360-760)	0.0016-0.003	0.0016-0.003	0.0016-0.003	0.002-0.004
	SM45C SM58C SCMn1 SMn438(H) SUM22 SNC236	High carbon steel	180-280	1st	DM	PC3525	460(265-660)	0.0016-0.004	0.0016-0.005	0.002-0.006	0.003-0.007
	SCM4105 SCM440 SCMnH1 SCr440 SNCM220 SNCM240	Low alloy steel	140-260	1st	DM	PC3525	430(230-660)	0.0016-0.004	0.0024-0.005	0.003-0.006	0.003-0.008
				2nd	DS	PC9530	400(165-595)	0.0016-0.004	0.0024-0.005	0.003-0.006	0.003-0.008
		Low alloy steel (heat)	200-400	1st	DM	PC3525	330(165-495)	0.0016-0.004	0.0016-0.005	0.0024-0.006	0.003-0.008
				2nd	DR	PC3525	300(165-460)	0.0016-0.004	0.0016-0.005	0.0024-0.0065	0.003-0.008
	STD1 STD61 STS43 SKH55 SKH3 SKH51 SKH51	High alloy steel	50-260	1st	DM	PC3525	330(165-530)	0.0016-0.003	0.0016-0.005	0.0024-0.0065	0.003-0.007
				2nd	DS	PC9530	300(165-495)	0.0016-0.003	0.0016-0.005	0.0024-0.0065	0.003-0.007
		High alloy steel (heat)	220-450	1st	DM	PC3525	230(100-400)	0.0016-0.003	0.0016-0.005	0.0024-0.0055	0.003-0.0065
				2nd	DR	PC3525	200(100-365)	0.0016-0.003	0.0016-0.005	0.0024-0.0055	0.003-0.0065
	M	STS304 STR31 STR316 STR316 B11SSC16 STS321 STS12 STS403 STS410	Austenite	135-275 Ni>8%	1st	DS	PC9530	330(165-495)	0.0016-0.004	0.0016-0.005	0.0024-0.0055
				2nd	DM	PC9530	300(130-495)	0.0016-0.004	0.0016-0.005	0.0024-0.0055	0.0024-0.0065
		Austenite (Cast steel)	150-250	1st	DS	PC9530	265(130-430)	0.0016-0.003	0.0016-0.005	0.0024-0.0055	0.0024-0.0065
				2nd	DM	PC9530	265(130-400)	0.0016-0.003	0.0016-0.005	0.0024-0.0055	0.0024-0.0065
STS420 STS430 STR446 STR36 STR446		Ferrite Martensite	135-275	1st	DR	PC3530	400(200-560)	0.0016-0.004	0.0016-0.005	0.0024-0.0055	0.0024-0.0065
				2nd	DS	PC9530	365(200-530)	0.0016-0.004	0.0016-0.005	0.0024-0.0055	0.0024-0.0065
HRSC15 STR330 NiCu30Al CoCr22W 14Ni		Ni-alloy	130-400	1st	DS	PC9530	165(100-330)	0.0016-0.0024	0.0016-0.003	0.0024-0.004	0.0024-0.005
				2nd	DM	PC9530	130(100-300)	0.0016-0.0024	0.0016-0.003	0.0024-0.004	0.0024-0.005
TiAl5Sn2.5		Ti-alloy	130-400	1st	DR	PC3530	165(100-300)	0.0016-0.003	0.0016-0.004	0.0024-0.005	0.003-0.0055
		High hardness	400 Over	1st	DR	PC3530	130(65-265)	0.0016-0.003	0.0016-0.004	0.0024-0.005	0.003-0.0055
K	GC100 GC150 GC200 GC250 GC350 GC400 GCD500 GCD600 GCD700	Gray	150-220	1st	DM	PC6510	630(495-825)	0.0016-0.005	0.0024-0.0065	0.003-0.007	0.004-0.0085
		Ductile	130-240	1st	DM	PC6510	495(330-660)	0.0016-0.004	0.002-0.0055	0.0024-0.0065	0.003-0.008
				2nd	DR	PC6510	430(300-595)	0.0016-0.004	0.002-0.0055	0.0024-0.0065	0.003-0.008
	GTS-35 GTS 45 GTS-55	Graphite	200-300	1st	DM	PC6510	430(230-560)	0.0016-0.004	0.002-0.005	0.0024-0.0065	0.003-0.007
				2nd	DR	PC6510	365(230-495)	0.0016-0.004	0.002-0.005	0.0024-0.0065	0.003-0.007
				1st	DA	H01	990(660-1320)	0.0016-0.005	0.0024-0.0065	0.003-0.007	0.004-0.0085
				2nd	DM	H01	925(660-1155)	0.0016-0.005	0.0024-0.0065	0.003-0.007	0.004-0.0085
		Aluminum	30-150	1st	DA	H01	925(660-1155)	0.0016-0.005	0.0024-0.0065	0.003-0.007	0.004-0.0085
				2nd	DM	H01	925(660-990)	0.0016-0.005	0.0024-0.0065	0.003-0.007	0.004-0.0085
		Copper	150-160	1st	DA	H01	925(660-1155)	0.0016-0.005	0.0024-0.0065	0.003-0.007	0.004-0.0085
			2nd	DM	H01	925(660-990)	0.0016-0.005	0.0024-0.0065	0.003-0.007	0.004-0.0085	

- Decrease feed rate 20~50% when using aspect ratio 4D, 5D drill.  
(You may increase feed rate 10~20% when using aspect ratio 2D drill)
- Apply appropriate cutting condition according to workpiece shape and hardness.
- Decrease feed rate 30~50% when overlapped board drilling.

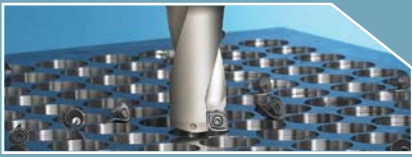


# LPDA & SPDA & NPDA

Recommended cutting condition

	Condition(L=4D)					Condition(L=5D)				
	fn(ipr)					fn(ipr)				
Over 41	~15	16~24	25~32	33~40	Over 41	~15	16~24	25~32	33~40	Over 41
0.0024-0.005	0.0016-0.003	0.0016-0.003	0.0016-0.003	0.002-0.004	0.003-0.005	0.0016-0.002	0.0016-0.002	0.0016-0.002	0.002-0.003	0.003-0.0035
0.003-0.005	0.0016-0.003	0.0016-0.003	0.0016-0.003	0.002-0.004	0.003-0.005	0.0016-0.002	0.0016-0.002	0.0016-0.002	0.002-0.003	0.003-0.0035
0.004-0.0085	0.0016-0.004	0.0016-0.005	0.002-0.0065	0.003-0.0065	0.004-0.007	0.0016-0.003	0.0016-0.0035	0.002-0.005	0.003-0.0055	0.004-0.0055
0.003-0.0095	0.0016-0.004	0.0024-0.005	0.003-0.0055	0.003-0.007	0.003-0.008	0.0016-0.003	0.0024-0.0035	0.003-0.0045	0.003-0.005	0.003-0.006
0.003-0.0095	0.0016-0.004	0.0024-0.005	0.003-0.0055	0.003-0.007	0.003-0.008	0.0016-0.003	0.0024-0.0035	0.003-0.0045	0.003-0.005	0.003-0.006
0.003-0.0095	0.0016-0.004	0.0024-0.005	0.003-0.0055	0.003-0.007	0.003-0.008	0.0016-0.003	0.0024-0.0035	0.003-0.0045	0.003-0.005	0.003-0.006
0.003-0.0085	0.0016-0.004	0.0024-0.005	0.003-0.0055	0.003-0.0065	0.003-0.007	0.0016-0.003	0.0024-0.0035	0.003-0.0045	0.003-0.005	0.003-0.006
0.003-0.0085	0.0016-0.003	0.0016-0.005	0.0024-0.0065	0.003-0.007	0.003-0.0085	0.0016-0.0024	0.0016-0.0035	0.0024-0.0045	0.003-0.005	0.003-0.006
0.003-0.0085	0.0016-0.003	0.0016-0.005	0.0024-0.0065	0.003-0.007	0.003-0.0085	0.0016-0.0024	0.0016-0.0035	0.0024-0.0045	0.003-0.005	0.003-0.006
0.003-0.008	0.0016-0.003	0.0016-0.005	0.0024-0.0055	0.003-0.0065	0.003-0.008	0.0016-0.0024	0.0016-0.003	0.0024-0.004	0.003-0.005	0.003-0.0055
0.003-0.008	0.0016-0.003	0.0016-0.005	0.0024-0.0055	0.003-0.0065	0.003-0.008	0.0016-0.0024	0.0016-0.003	0.0024-0.004	0.003-0.005	0.003-0.0055
0.0024-0.008	0.0016-0.004	0.0016-0.005	0.0024-0.005	0.0024-0.0055	0.0024-0.0065	0.0016-0.0024	0.0016-0.003	0.0024-0.004	0.0024-0.005	0.0024-0.005
0.0024-0.008	0.0016-0.004	0.0016-0.005	0.0024-0.005	0.0024-0.0055	0.0024-0.0065	0.0016-0.0024	0.0016-0.003	0.0024-0.004	0.0024-0.005	0.0024-0.005
0.0024-0.008	0.0016-0.003	0.0016-0.005	0.0024-0.005	0.0024-0.0055	0.0024-0.006	0.0016-0.0024	0.0016-0.003	0.0024-0.004	0.0024-0.005	0.0024-0.005
0.0024-0.008	0.0016-0.003	0.0016-0.005	0.0024-0.005	0.0024-0.0055	0.0024-0.006	0.0016-0.0024	0.0016-0.003	0.0024-0.004	0.0024-0.005	0.0024-0.005
0.0024-0.008	0.0016-0.004	0.0016-0.005	0.0024-0.005	0.0024-0.0055	0.0024-0.0065	0.0016-0.0024	0.0016-0.003	0.0024-0.004	0.0024-0.005	0.0024-0.005
0.0024-0.008	0.0016-0.004	0.0016-0.005	0.0024-0.005	0.0024-0.0055	0.0024-0.0065	0.0016-0.0024	0.0016-0.003	0.0024-0.004	0.0024-0.005	0.0024-0.005
0.0024-0.005	0.0016-0.0024	0.0016-0.003	0.0024-0.004	0.0024-0.004	0.0024-0.004	0.0016-0.0024	0.0016-0.0024	0.0024-0.003	0.0024-0.003	0.0024-0.003
0.0024-0.005	0.0016-0.0024	0.0016-0.003	0.0024-0.004	0.0024-0.004	0.0024-0.004	0.0016-0.0024	0.0016-0.0024	0.0024-0.003	0.0024-0.003	0.0024-0.003
0.003-0.0065	0.0016-0.003	0.0016-0.0035	0.0024-0.0045	0.003-0.0055	0.003-0.0065	0.0016-0.0024	0.0016-0.0035	0.0024-0.0035	0.003-0.0045	0.003-0.005
0.003-0.0065	0.0016-0.003	0.0016-0.0035	0.0024-0.0045	0.003-0.0055	0.003-0.0065	0.0016-0.0024	0.0016-0.0035	0.0024-0.0035	0.003-0.0045	0.003-0.005
0.004-0.010	0.0016-0.0045	0.0024-0.0055	0.003-0.0065	0.004-0.008	0.005-0.0085	0.0016-0.004	0.0024-0.005	0.003-0.005	0.004-0.0055	0.005-0.0065
0.004-0.0085	0.0016-0.0035	0.002-0.005	0.0024-0.006	0.003-0.007	0.004-0.008	0.0016-0.003	0.002-0.0035	0.0024-0.0035	0.003-0.005	0.004-0.0055
0.004-0.0085	0.0016-0.0035	0.002-0.005	0.0024-0.006	0.003-0.007	0.004-0.008	0.0016-0.003	0.002-0.0035	0.0024-0.0035	0.003-0.005	0.004-0.0055
0.004-0.008	0.0016-0.0035	0.002-0.005	0.0024-0.006	0.003-0.007	0.004-0.008	0.0016-0.003	0.002-0.0035	0.0024-0.0035	0.003-0.005	0.004-0.0055
0.004-0.008	0.0016-0.0035	0.002-0.005	0.0024-0.006	0.003-0.007	0.004-0.008	0.0016-0.003	0.002-0.0035	0.0024-0.0035	0.003-0.005	0.004-0.0055
0.004-0.0095	0.0016-0.004	0.0024-0.0055	0.003-0.0065	0.004-0.008	0.004-0.008	0.0016-0.0035	0.0024-0.0045	0.003-0.005	0.004-0.0055	0.004-0.0065
0.004-0.0095	0.0016-0.004	0.0024-0.0055	0.003-0.0065	0.004-0.008	0.004-0.008	0.0016-0.0035	0.0024-0.0045	0.003-0.005	0.004-0.0055	0.004-0.0065
0.004-0.0095	0.0016-0.004	0.0024-0.0055	0.003-0.0065	0.004-0.008	0.004-0.008	0.0016-0.0035	0.0024-0.0045	0.003-0.005	0.004-0.0055	0.004-0.0065
0.004-0.0095	0.0016-0.004	0.0024-0.0055	0.003-0.0065	0.004-0.008	0.004-0.008	0.0016-0.0035	0.0024-0.0045	0.003-0.005	0.004-0.0055	0.004-0.0065

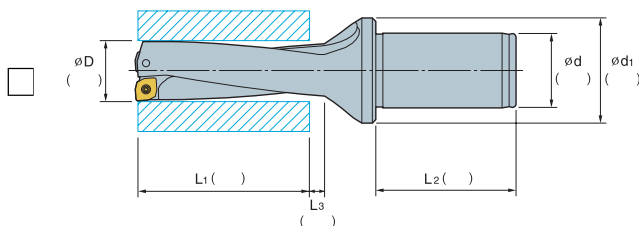
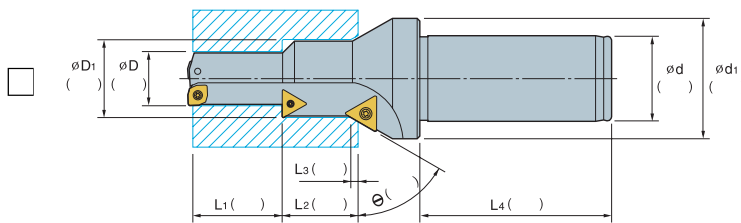
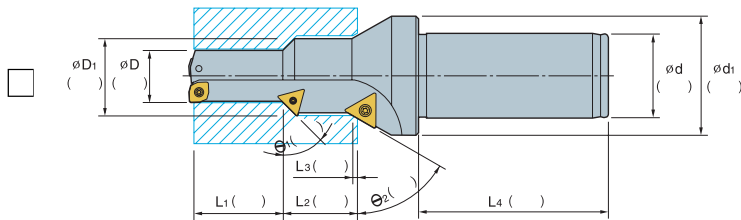
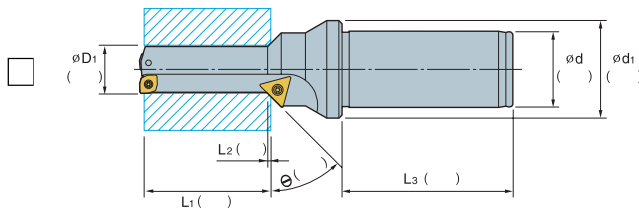
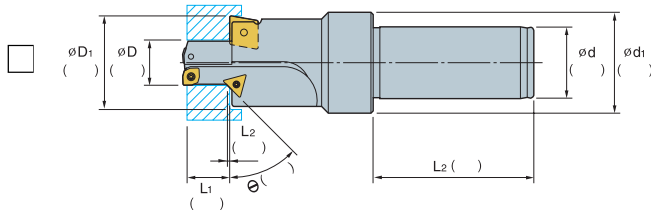
- Decrease feed rate 20~30% when poor workpiece clamping and low rigidity of machine.
- Decrease feed rate 30~50% early in the operation when inclined surface drilling.  
(In case of bad chip evacuation, apply step drilling of change to longer drill)
- When hole expanding, adjust cutting speed and feed rate. (It may cause long chip)



# LPDA & SPDA & NPDA

LPDA & SPDA & NPDA special item order form

Customer : \_\_\_\_\_  Tel : \_\_\_\_\_  Person in charge : \_\_\_\_\_  
 Machine part : \_\_\_\_\_  Workpiece : \_\_\_\_\_  Order quantity : \_\_\_\_\_ pcs



※ Please fill out the requirement of tolerance for  $\varnothing D$ ,  $\varnothing D1$

## Coolant

- Through coolant
- Outer coolant(no oil hole)
- Side coolant(CNC)

## Machining type

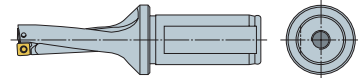
- Blind hole
- Through hole

## Shank type

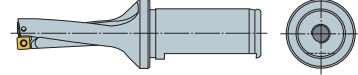
- F : Flat type
- W : Weldon type
- T : Whistle notch type

## Position of side lock flat

- General-Parallel with outer cutting edge line



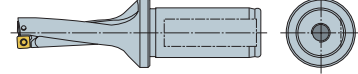
- 90° with outer cutting edge line



- 150° with outer cutting edge line



- 180° with outer cutting edge line

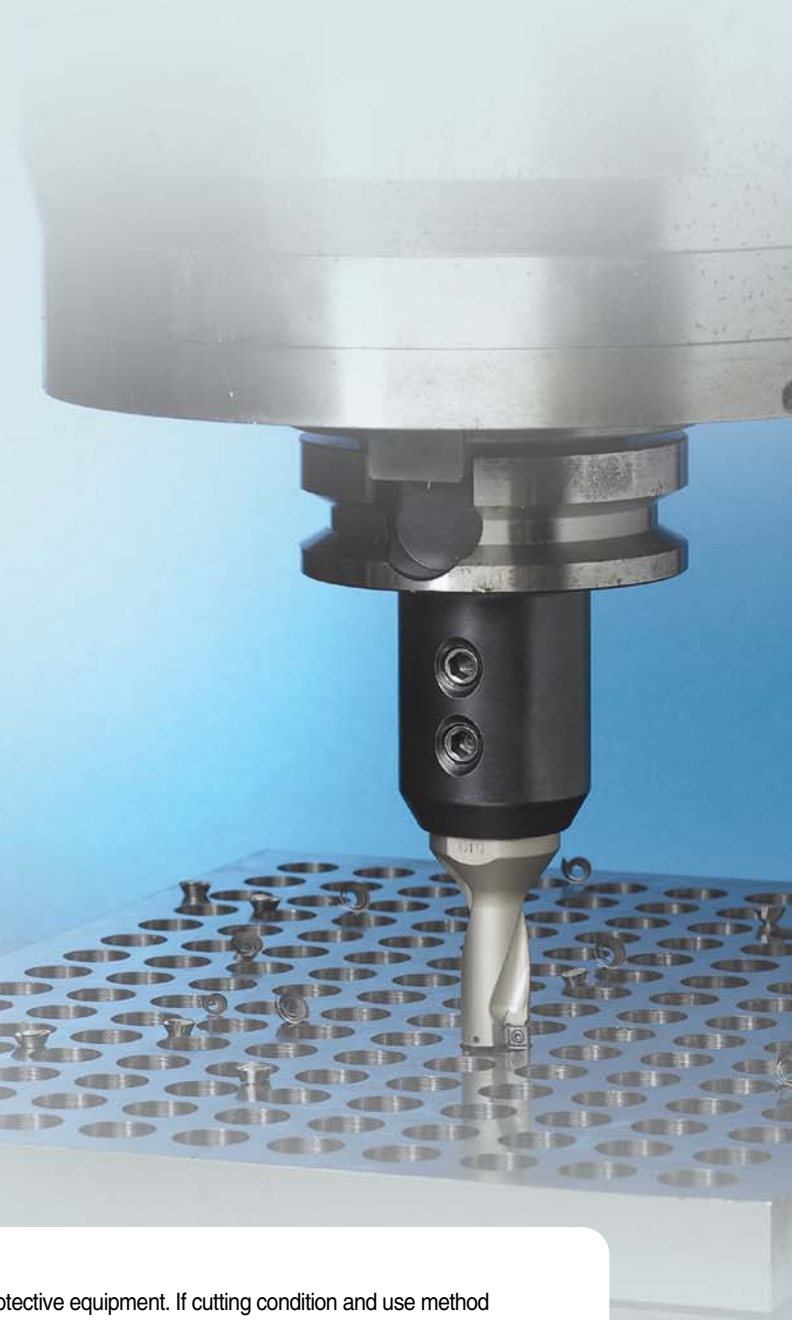


## Note

- Present tool
- Cutting condition
  - $n(\text{min}^{-1})$  or  $vc(\text{sfm})$  :
  - $vf(\text{mm/min})$  or  $fn(\text{ipr})$  :
  - $ap(\text{inch})$  :
- Tool life
- Facilities
  - Machining center
  - General lathe
  - CNC lathe



## LPDA & SPDA & NPDA



**Warning**

### ※ Safety instruction

- Use glasses safely and face cover with protective equipment. If cutting condition and use method are inaccurate, you may be injured by broken tools or scattered chips.
- Excessive cutting load may influence badly on both tool and machine.  
Make suitable tool replacement for preventing failure of machining.
- After machine stopped, clean remained chips from machine with special cleaning equipment.
- Keep safety distance from acute and hot chip during machining.
- Make precaution for prevention of fire in advance when you use insoluble cutting oil.
- Assembled parts may be scattered at high speed cutting. Please use protective equipment.



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