

Introduction to DDS

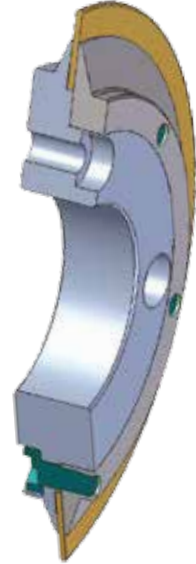


DDS (Diamond Dressing System) is a patent rotary dressing tool for CNC controlled dressing of Bonded and Super Abrasive grinding wheels.

WINTER have developed a new range of DDS rotary dressing tools, in addition to their current range of DDS tools, DDS Plus and DDS Cut to offer further CNC dressing advantages based on your application.

DDS Plus is a perfect combination of accurately positioned CVD logs and a metal bond providing a self-sharpening effect for dressing bonded wheels made of sintered grains.

DDS Cut is a continued development of the original DDS, specifically for dressing diamond or cBN grinding wheels with a vitrified or resin bond. Thanks to its radial cuts on the diamond layer, DDS Cut provides more aggressive behaviour, generating a rougher surface on the grinding wheel, reducing the grinding forces and chances of burns on the work piece.



Advantages of CNC dressing with DDS

DDS PLUS

- Constant diamond area throughout the dresser life resulting in reproducible overlap factor offering consistency on the work piece and surface roughness after the dressing cycle.
- Premium CVD logs are used for SiC grinding wheels or Sol-Gel grinding wheels.

DDS CUT

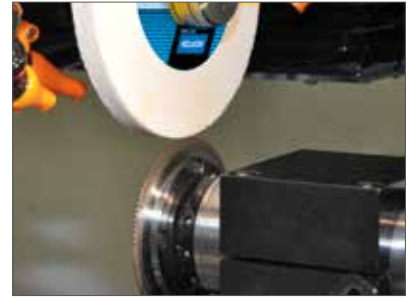
The radial slots on the diamond layer permits better exposure of the diamonds and together with the interrupted cut result on rougher, but accurate topography on the grinding wheel surface, bringing the following benefits to the grinding operation:

- More aggressive grinding behaviour and higher material removal rate shortening the grinding time
- Less grinding forces, thus less deflection and more accuracy in the work piece.
- More reliable process.



Applications

- All kinds of cylindrical grinding (straight or profiled wheels)
- Centerless grinding
- Flute grinding
- Surface grinding



Markets

Automotive



Tools

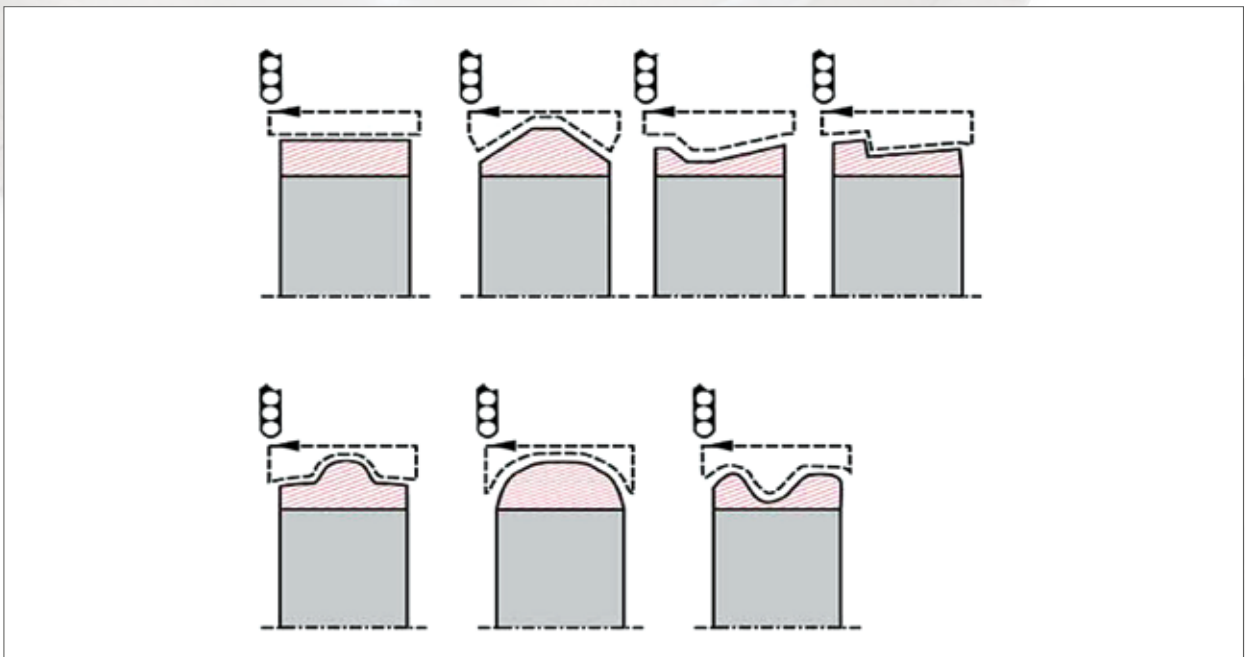


Bearing



Profile examples

The diagrams below show a range of profiles that can be created in one single working step with the DDS range.



DDS Standard Items

DDS

Profile	D	U	X	H	Abrasive	Body	Order Number	Type
3DS71P	150	1	6	25	D1001	Steel	60157684272	A
300DS71P	120	1	6	40	D1001	Steel	69014194133	B
3DS71P	100	1	6	40	D1181	Steel	69014194533	A
2DS71P	110	1	6	40	D1181	Steel	7958719710	A
2DS71P	130	1	6	40	D1181	Steel	66260372848	A
3DS71P	140	1	6	40	D1181	Steel	60157695241	A
5DS71P	150	1	6	40	D1181	Steel	60157694745	A
3DS71P	125	1.2	6	20	D14-16	Steel	7958727545	A
3DS71P	150	1.2	6	56	D14-16	Steel	66260381563	A
1DS71P	210	1.2	6	75	D14-16	Steel	69014124255	A
4DS71P	125	1.4	6	52	D14-16	Steel	7958772904	C

DDS PLUS

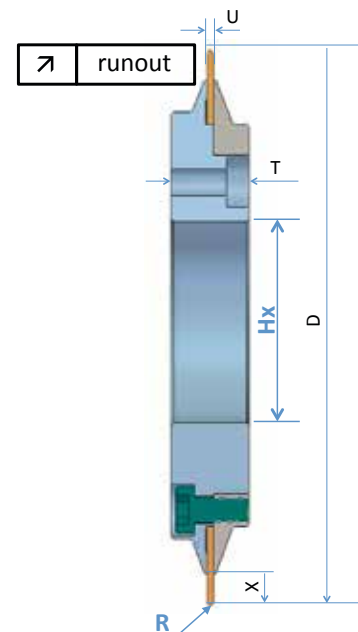
Profile	D	U	X	H	Abrasive	Body	Order Number	Type
3DS71P	120	1	6	40	CVD	Steel	7958773658	D
1DS71P	152	1.4	6	52	CVD	Steel	7958731191	A

DDS CUT

Profile	D	U	X	H	Abrasive	Body	Order Number	Type
35DS71P	120	1	6	40	D1001	Steel	7958755643	A
17DS71P	150	1	6	40	D1001	Steel	7958769818	A

Versions of Standard Shapes

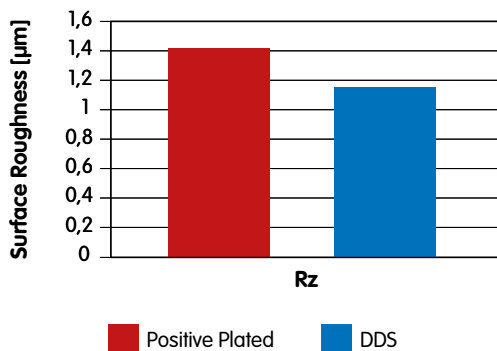
	Type A	Type B	Type C	Type D
OD runout	0,01	0,01	0,01	0,004
Bore tolerance	H5	H5	H3	H3
Radius	No	Yes	No	Yes



Case study

DDS vs Regular CNC dresser - Dressing of cylindrical grinding wheels

DDS-Roller Dresser <-> Positive Plated Roller dresser



Basic data

Machine:	Studer S32 Work piece
Material:	Si3N4 / K20
Grinding wheel spec:	V+ 2646Ø 400 mm, D64 C100 (diamond vitrified wheel) WINTER DDS Ø 120 mm, D 1181 µm

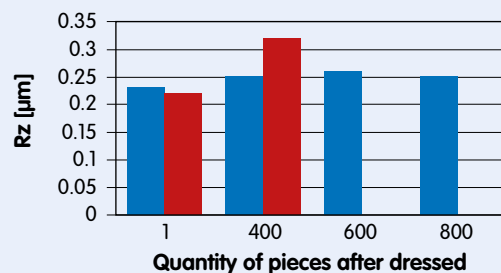
Grinding parameters

Stock removal:	0.5 mm
Infeed:	$v_f = 0.4$ mm/min
Grinding speed:	$v_c = 70$ m/s

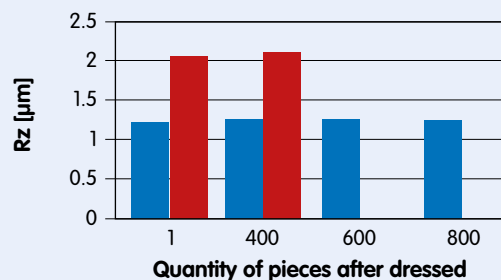
Dressing parameter

Unidirectional	
Grind Wheel speed:	$v_{cd} = 40$ m/s
Speed Factor:	$q_d = 0.63$
Infeed:	$a_{ed} = 3$ µm
Overlap factor:	$U_d = 2$

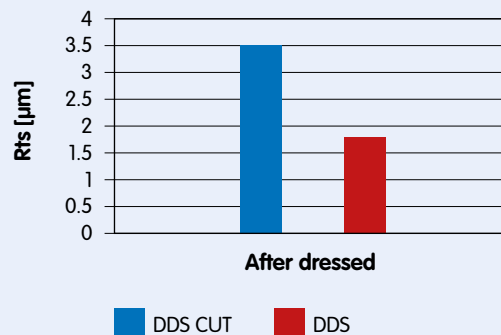
Work piece surface quality



Roundness



Grinding wheel active roughness



Checklist

for Diamond Dressing Systems

Customer:	
Customer no.:	

Machine

Machine type:	
Maximum acceptable dressing disc diameter (mm):	
Current dressing tool:	

Dressing unit

Arbor diameter (mm):	
Arbor length (mm):	

Workpiece

Workpiece drawing:	
Surface finish desired:	
Grinding allowance (mm / Ø):	

Grinding wheel

Specification:	
Dimensions:	

Parameters

Profile or straight dressing:	
Grinding wheel circumferential speed (m/s) or speed (rpm):	
Circumferential speed of dressing disc (m/s) or speed (rpm):	
Counter-directional (GGL) / uni-directional dressing (GL):	
Radial infeed per dressing pass (a_{ed}):	
Axial dressing feed (f_{ad}):	

Markets & Applications

Product availability

Case study

Checklist

Checklist

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WINTER is a registered trademark of Saint-Gobain
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