WIRTGEN	**COMMISSIONING DOCUMENT** Installation and application PCD tool	**Subsidiary / dealer**

Customer:	
Machine type:	
Serial no.:	

Tool selection

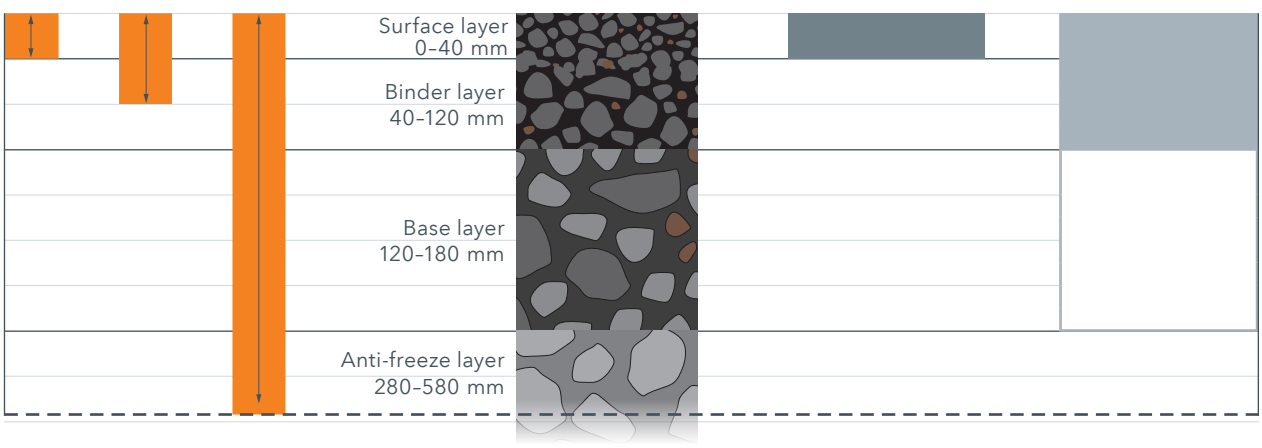
RECOMMENDED MILLING DEPTHS FOR LINE SPACINGS OF MILLING DRUM

CLASSIC STRUCTURE OF AN ASPHALT ROAD

PCD TOOLS

> *WD4-12 / HT22*

> *WD4-15 / HT22*



Highly recommended *Recommended* *Conditionally recommendable*

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Installation and application
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Tool selection

Material to be milled	Performance class, machine type / Tool designation, Part No.	Compact milling machines and large milling machines						
		W 100 F, W 120 F, W 130 F, W 100 CF, W 120 CF, W 130 CF, W 150, W 150 CF, W 1500, W 1900, W 195, W 2000, W 200, W 200 F, W 207 Fi, W 205, W 200 H, W 215, W 210, W 210 Fi, W 210 XP, W 2100, W 220, W 2200, W 250, W 240 CR, W 380 CR						
		Line spacing of milling drum						
	HT22	LA5	LA6	LA8	LA10	LA12	LA15	LA18
Asphalt	 **WD4-12 / HT22** # 2805803	●●	●●	●	●	○	○	○
	 **WD4-15 / HT22** # 2788432	○	○	●	●	●●	●●	●●

●● *Highly recommended* ● *Recommended* ○ *Conditionally recommendable*

Specifications also valid for all machines in "i" version.

> When it comes to breakage, PCD tools are not necessarily more durable than conventional carbide tools. They are built to be more wear resistant through the use of extremely hard materials (tungsten carbide bolster tip, polycrystalline diamond on the tip). Polycrystalline diamond is many times harder than the tungsten carbide tips used on conventional round-shank picks. Tungsten carbide bolster is many times harder than hardened steel bodies used on conventional round-shank picks. As a result, PCD tools last much longer than conventional round-shank picks within the nominal asphalt cutting conditions outlined above.

> Extremely hard materials are relatively brittle and more prone to breakage than relatively soft materials. Compared to a conventional carbide tool, the PCD tool features a larger amount of tungsten carbide that directly impacts the pavement. Increased tungsten carbide hardness and volume increases the risk of breakage, depending on the material milled. Consequently, PCD tools are most effective in shallow, nominal asphalt milling applications. A lower number of individual cuts per tool (reduced chip volume) reduces impact forces on the tools. Also, at shallower depths, there is a lower likelihood of striking hard objects below the surface, which can damage cutting tools of any kind.

> Small PCD tools (WD4-12 tools) are designed for fine milling operations (reduced chip volume) and to be equipped on milling drums with a tool spacing of LA10 and smaller. Milling drums with larger tool spacings should be equipped with larger PCD tools (WD4-15 tools), as these tools can withstand higher impact loads.

> Hard objects in the asphalt like markers and large granite/river-rock aggregate may cause the cutting tools to fracture regardless of the tool type (PCD or conventional round-shank picks). Depending on the asphalt milled (shearing/fracturing large granite/river-rock aggregate, etc.), the risk of cutting tool damage and the fracture rate increases. Anything that would fracture conventional carbide tools will most certainly fracture PCD tools.

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Installation

- Torque of 500 Nm/370 lbf-ft
- Installation requires striking the tool with a **copper hammer** to ensure that the tool is properly seated – **do not use a steel hammer**. Not adhering to the installation guidelines (see machine instruction manual) by using the wrong installation tools (i.e. striking the PCD tool with a steel hammer) will create micro fractures resulting in tool breakage during milling.
- Additionally, when using PCD tools, do not strike PCD/carbide tip/bolster during installation – instead, seat the tool by striking the steel base of the tool just above the bolted joint with a copper hammer (as mentioned above, do not use a steel hammer).
- Retighten the tools after the first day of operation (after approximately 10 hours of operation) to 500 Nm/370 lbf-ft.
- Retorque the tools every 500 hours.

Machine transport

- Transporting the machine can lead to tool breakage if the milling drum is placed directly on the trailer deck. Make sure that PCD tools do not come into contact with other objects, especially steel components, during loading/unloading/transport. Strictly adhere to all transport rules and guidelines.
- We recommend using mechanical leg stops that hold the drum approximately 20 mm off the deck – while strictly adhering to all machine transport rules and guidelines. If the milling drum needs to rest on wooden blocks during transport, try to use wooden blocks that come into contact with the drum body rather than the PCD tools, when possible. If PCD tools must rest on wooden blocks during transport, be advised that PCD tool damage may result. Again, strictly adhering to transport rules and guidelines is of paramount importance.

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WIRTGEN	**COMMISSIONING DOCUMENT** Installation and application PCD tool	**Subsidiary/dealer**

Machine operation

- Water cooling reduces the risk of damaging cutting tools (e.g. thermal overload, etc.). This is even more important for PCD tools; ensure that a sufficient supply of water is available (up to 100%) when the application allows.
- Lower the machine slowly and evenly into the cut rather than automatically plunging hard into the cut.
- Adjust the milling drum speed to the machine advance rate and milling depth. The goal is to achieve smooth, consistent operation, even if this means operating the machine at below maximum power.
- We recommend running the drum as slowly as possible to minimise abrasive cutting tool tip wear, but if there is significant vibration, increase drum speed as required. A high milling drum speed at a constant machine advance rate usually leads to accelerated tool tip wear, while a low milling drum speed increases tool body wear and reduces tool tip wear. When using PCD tools, a high milling drum speed should be selected to shift the abrasive wear to the extremely wear-resistant PCD (polycrystalline diamond) tip. If the tip fracture rate increases, it is likely due to milling high-performance asphalt pavement with hard, relatively large aggregate. Experiment with different drum speeds to determine what works best in challenging applications.
- There is no single way to guarantee the perfect performance of any type of cutting tool. It is ultimately up to the operator(s) to select the correct tools for the job and operate the machine in a way that maximises production while minimising operating costs.

PCD tool critical information disclosure	**Name and signature**
Customer	
Dealer representative (where applicable)	
WIRTGEN representative	

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