

# coolEX® honing tool technology

The coolEX® honing tool technology integrates conventional honing into a machining centre without any technical modifications needed on the machine, using regular honing kinematics (expansion during machining) –and with that - generating the classic cross hatch pattern in a defined honing angle. Enormous advantages will result by honing on a machining centre with the arrangement of both system parts (tool and work piece) in fixed clamping:

- only a small honing allowance is required, thus very short machining times
- separate dedicated honing machines can be eliminated
- highly scalable to fluctuations in production due to the useage of standard machining centres
- no restraints compared to conventional honing on honing machines
- process control and availability of advanced measuring systems enables 100% size control
- no additional costs for separate fixtures or gimbaled joints for the honing operation

coolEX® honing tools use the internal cooling fluid both for expansion of the hones and for process cooling directly at the point of contact of the hones and the bore, thus ensuring optimum cooling and chip removal. The required parameters (such as roughness, cycle time or cylindricity) can be adapted to required specifications by adjusting the coolant pressure (by release nozzles in the tool or controlled via the machine) and the specifications of the hones.

Depending on the requirements and the bore geometry, coolEX® honing tools can be used in different types:

- blind hole or through bore tools
- double-expansion tools
- replaceable tool heads tools on connecting rods

The use of in-process air measuring devices with an interface to gauging equipment with feedback into the CNC-controls of the machine ensures similar process control to “conventional” honing machines.

Projects with cool EX® honing tool technology			
2-step honing process: Plateau honing of bores in engine blocks (GM 4-cylinder engine block)	Part: Diameter: Material:	Engine block 69.90 mm EN-GJL-250	Machine manufacturer: Machine: Holding fixture:
			Hüller-Hille NBH 650 HSK-A100
2-step honing process: Plateau honing of bores in engine blocks (GM 4-cylinder engine block)	Part: Diameter: Material:	Engine block 73.40mm EN-GJL-250	Machine manufacturer: Machine: Holding fixture:
			Hüller-Hille NBH 650 HSK-A100
1-step honing process: Honing cracked connecting rods (big eye), process control by air measurement in the honing tool	Part: Diameter: Material:	Connecting rod 51.00mm 36MnVS4	Machine manufacturer: Machine: Holding fixture:
			AKS custom machine HSK-B80
1-step honing process: Honing cracked connecting rods (big eye), process control by time or by honing allowance	Part: Diameter: Material:	Connecting rod 37.00 - 51.00 mm 36MnVS4	Machine manufacturer: Machine: Holding fixture:
			AKS Custom machine HSK-A63
2-step honing process: Plateau honing of cylinder bores in compressor housings	Part: Diameter: Material:	Compressor 40.00mm EN-GJS-400	Machine manufacturer: Machine: Holding fixture:
			MAKINO a81 HSK-A100
1-step honing process: Honing of connecting rods (big eye) for racing car engines, process control by time or by honing allowance	Part: Diameter: Material:	Connecting rod 50.5mm 40SiNiCrMoV10	Machine manufacturer: Machine: Holding fixture:
			HELLER MCH-250 HSK-A63
1-step honing process: Honing of connecting rods (big eye) for racing car engines, process control by time or by honing allowance	Part: Diameter: Material:	Connecting rod 50.6mm 300M	Machine manufacturer: Machine: Holding fixture:
			HERMLE C40U dyn. HSK-A63
2-step honing process: Honing a screw barrel, bore length 600 mm	Part: Diameter: Material:	Pump housings 68.91mm EN-GJS-400	Machine manufacturer: Machine: Holding fixture:
			HELLER MCH-450 HSK-A100
1-step honing process: Honing of axial piston compressor housings (blind bore)	Part: Diameter: Material:	Compressor 23.50mm EN-GJS-600	Machine manufacturer: Machine: Holding fixture:
			DMG DMU 80 SK-40
1-step honing process: Honing of connecting rods (big eye) for stationary engines, process control by time or by honing allowance	Part: Diameter: Material:	Connecting rod 183.00mm 42CrMo4+HH	Machine manufacturer: Machine: Holding fixture:
			MAKINO a81 HSK-A100
1-step honing process: Honing of connecting rods (big eye), process control by time or by honing allowance	Part: Diameter: Material:	Connecting rod 50.6mm 36MnVS4	Machine manufacturer: Machine: Holding fixture:
			SW machines BA342 SK-40
1-step honing process: Honing a screw barrel, bore length 680mm	Part: Diameter: Material:	Pump housings 49.21mm EN-GJS-400	Machine manufacturer: Machine: Holding fixture:
			HELLER MCH-450 HSK-A100
1-step honing process: Honing star cylinders before and after nitrating	Part: Diameter: Material:	Star cylinder 43.00mm 42CrMoV4	Machine manufacturer: Machine: Holding fixture:
			HERMLE C40U dyn. SK-50
2-stage honing with one tool: Plateau honing of cylinder bores with double expansion coolEX®2 honing tool	Part: Diameter: Material:	Engine block 151.00mm EN-GJS-500	Machine manufacturer: Machine: Holding fixture:
			HELLER MCH-250 HSK-A100
1-step honing process: Honing of connecting rods (big eye), process control by time or by honing allowance	Part: Diameter: Material:	Connecting rod 50.6mm 34CrNiMo6	Machine manufacturer: Machine: Holding fixture:
			MAKINO a61NX HKS-A63
1-step honing process: Honing of connecting rods (big eye), process control by time or by honing allowance	Part: Diameter: Material:	Connecting rod 56.00mm 34CrNiMo6	Machine manufacturer: Machine: Holding fixture:
			HELLER MC 16 HKS-A63
1-step honing process: Honing of connecting rods (big eye), process control by time or by honing allowance	Part: Diameter: Material:	Connecting rod 37.00mm 40SiNiCrMoV10	Machine manufacturer: Machine: Holding fixture:
			HERMLE C40U dyn. HKS-A63
1-step honing process: Honing star cylinders before and after nitrating	Part: Diameter: Material:	Star cylinder 50.00mm 16MnCr5	Machine manufacturer: Machine: Holding fixture:
			HERMLE C40U dyn. SK-50
1-step honing process: Honing of rocker arms (intake and exhaust), process control by time or by honing allowance	Part: Diameter: Material:	Rocker arm 30.00mm 16MnCr5	Machine manufacturer: Machine: Holding fixture:
			MAKINO a51NX HKS-A63