



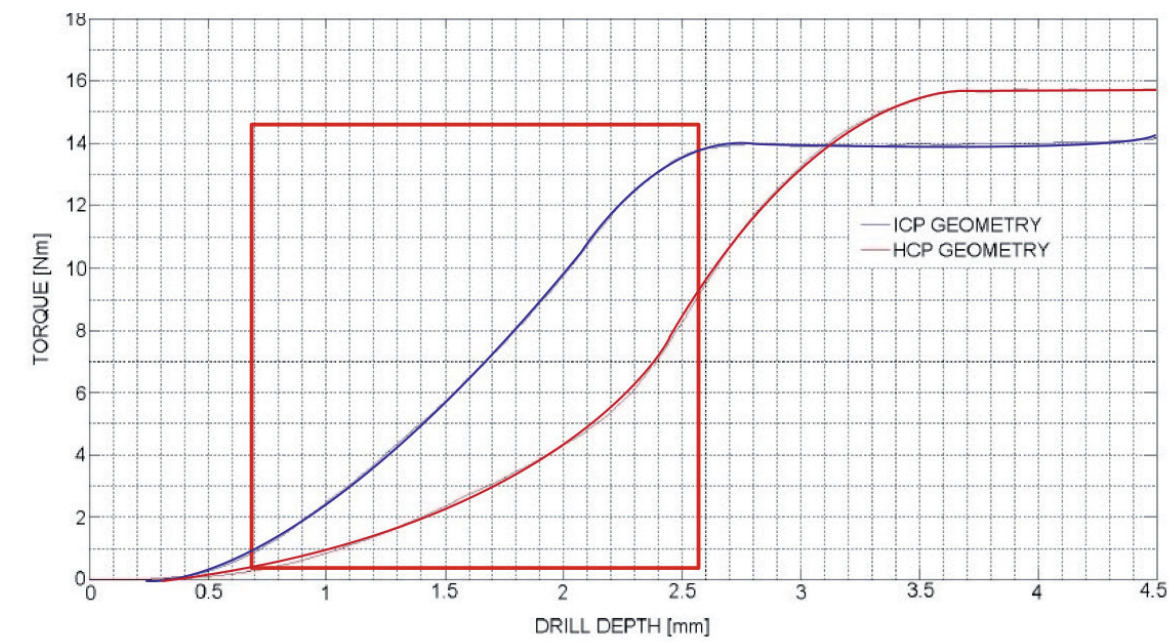
### Geometric Tolerances

The table below indicates the obtainable geometrical hole tolerances. The data below refers to the maximum values that were measured during tests.  
ICP-2M/ICK-2M heads were tested applying pre-hole operations, while the HCP heads were tested by single drilling (without pre-hole operation). In each case, a standard DCN 12XD drill was used.

SAE4340 (alloy steel):			
Hole form tolerance		HCP	ICP 2M
Straightness		0.1mm	0.1mm
Circular form		0.02mm	0.02mm
Cylindrical form		0.02mm	0.02mm
ASTM 516A (low carbon steel):			
Hole form tolerance		HCP	ICP 2M
Straightness		0.1mm	0.1mm
Circular form		0.02mm	0.015mm
Cylindrical form		0.02mm	0.02mm
GG30 (grey cast iron):			
Hole form tolerance		HCP	ICK 2M
Straightness		0.1mm	0.1mm
Circular form		0.02mm	0.02mm
Cylindrical form		0.02mm	0.02mm



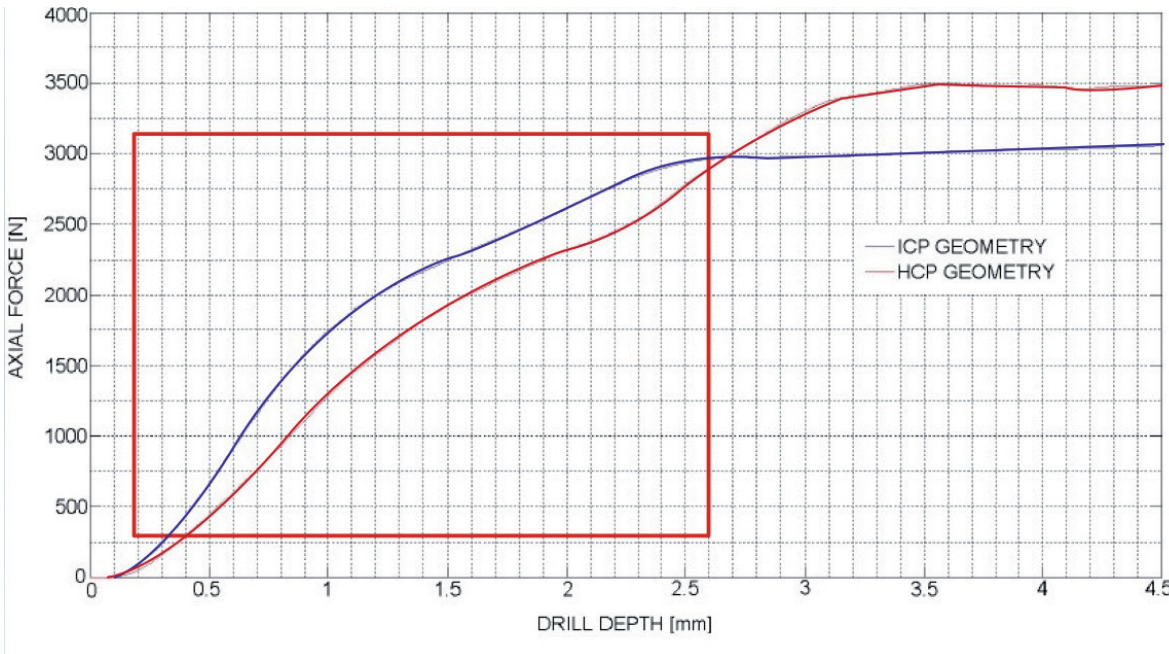
### The HCP geometry allows gradual penetration in to material with reduction of torque



**ICP 12.0 Vs. HCP 12.0  
Torque Measurement**  
f= 0.3 mm/rev  
Vc= 100 m/min  
AISI 4340

HCP torque smaller than ICP torque during penetration, leading to better hole quality

### The HCP geometry allows gradual penetration in to material with reduction of cutting forces.



**ICP 12.0 Vs. HCP 12.0  
Axial Force Measurement**  
f= 0.3 mm/rev  
Vc= 100 m/min  
AISI 4340

HCP axial force smaller than ICP axial force during penetration, leading to better hole quality