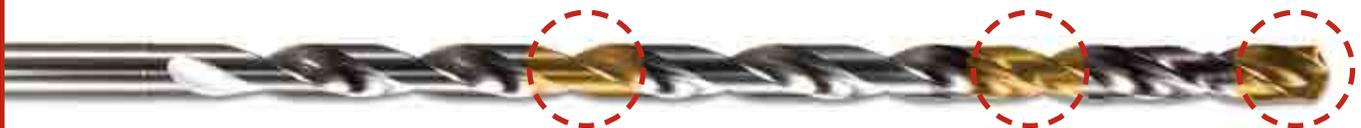


Ingersoll introduces the new... **DRILL^oIN^{XL}**™ drill, for deep hole drilling up to 20xD. This new drill has optimised geometries for smooth chip evacuation with low cutting forces. A pecking cycle is not required – this drill gives high productivity machining. The new drill gives the customer reliable machining with excellent cost savings and is designed to work with M.Q.L Systems.



FEATURES of **DRILL^oIN^{XL}**™

- Unique geometry with high performance
 - The strong cutting edge resists chipping and breakage
- Wide flute design and lapping on the flute for smooth chip evacuation
 - Ultra fine substrate with TiAlN coating for a high level of wear-resistance and toughness
- Increased body rigidity and high quality of holes with low cutting force

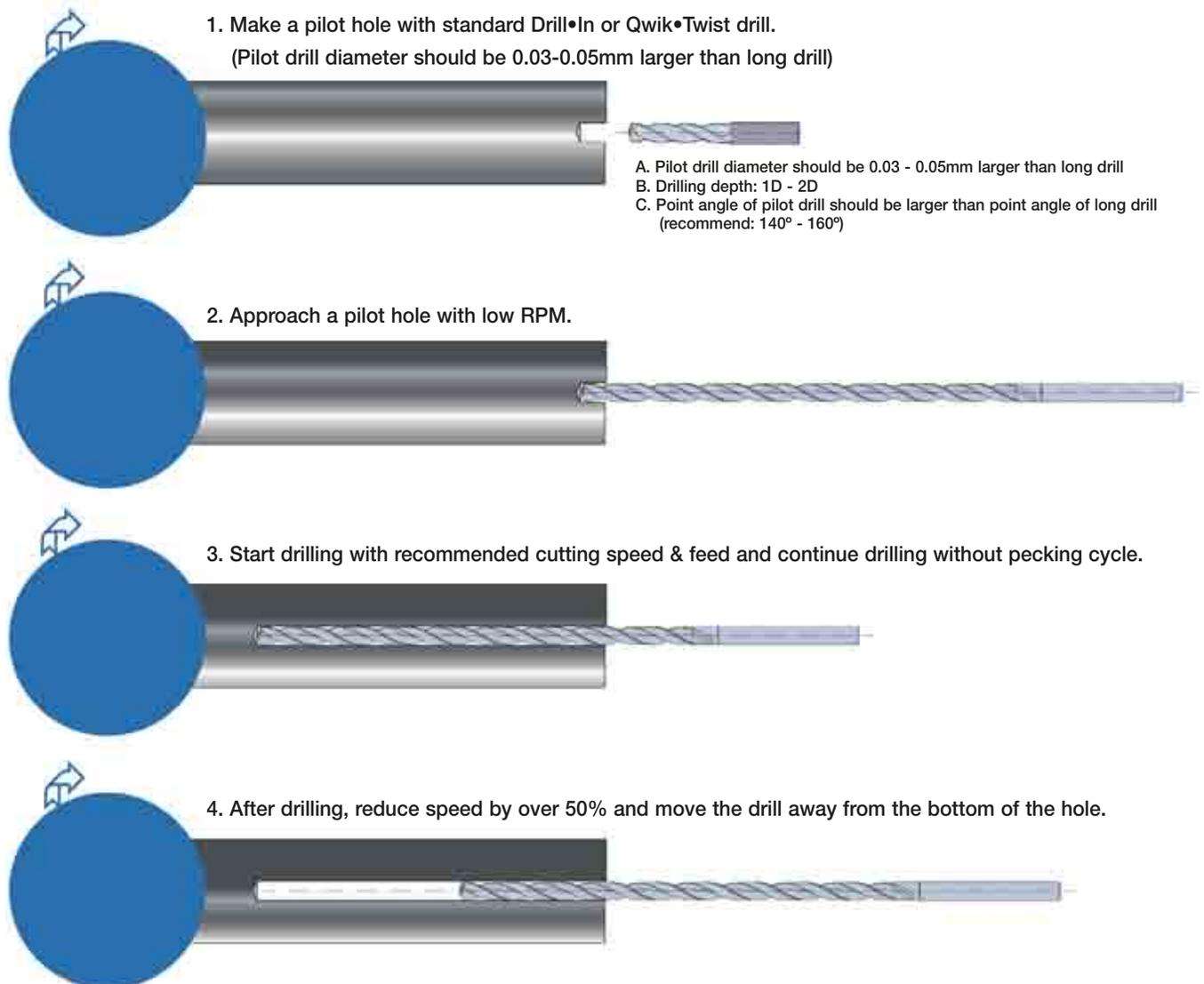


ADVANTAGE:

- Deep hole drilling up to 20xD without Pecking cycle.
- Higher productivity compared to conventional deep hole drills such as HSS drills & Gun drills.
- Application on conventional machining center.

APPLICATION:

- Automotive Parts (i.e. Cylinder block, Crank shaft, Connecting rod)
- Mold & Die Parts
- Machine Tool Parts

RECOMMENDED DRILLING PROCESS:

M.Q.L. MACHINING (Minimal Quantity Lubrication):

M.Q.L. is a new machining method that delivers the required minimum quantity of lubricant mixed with air and performs machining through a continuous supply of an oil/air mixture to the cutting edges. The M.Q.L. makes it possible to reduce the amount of coolant used to nearly zero.

In conventional mass-production system such as the automotive industry, a large volume of cutting fluid is used to improve productivity and machining accuracy.

Recently, the negative effects of cutting fluid upon people and the environment as well as high maintenance cost have become a serious problem, so the reduction of coolant is strongly required.

ADVANTAGES OF M.Q.L.:

Cut production costs

- No need for cutting fluid
- No need for cooling utilities

Improve productivity

- Remarkable reduction of production time
- High cutting efficiency and tool life
- No need to clean the work-piece after machining

Risks of machining with coolant

- Harm to humans
- Pollution
- High maintenance cost

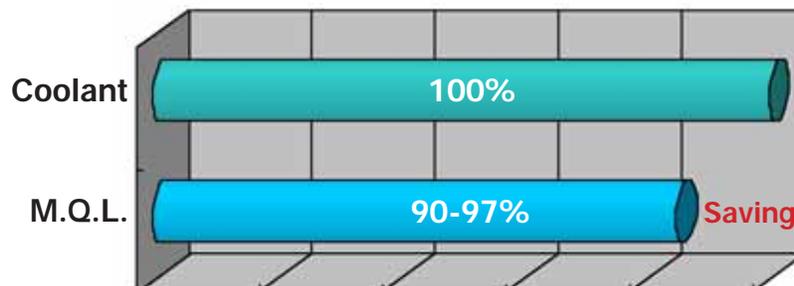


Advantages of M.Q.L.

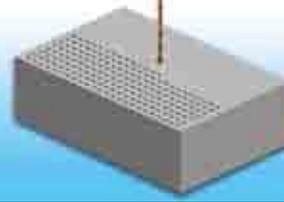
- Safe
- Environmental-friendly
- Longer tool life
- Production efficiency

MACHINING COST COMPARISON:

M.Q.L. vs. Coolant



Tool Life: 1020 holes



CASE STORY #1:

General Information

Part Name:	Test workpiece
Material:	KP 4 (Mould steel_HB280-320)
Machine:	Vertical Machining center (DAEWOO)

Cutting Condition

Drill:	DRXL0700210UAR01 (Special 30xD)
Drill Diameter:	7.0[mm]
Speed (v):	262 (SFM)
Feed (f):	.008 (IN/REV)
Depth:	4.13 (IN)
Coolant:	M.Q.L. system
Air pressure:	8.5 [kgf/cm ²], Oil quantity: 12.5 [cc/h]

Tool Life: 200 holes



CASE STORY #2:

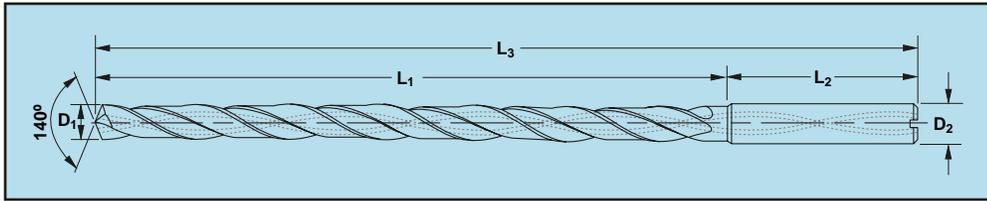
General Information

Part Name:	Crank shaft (Oil way hole)
Material:	S45CVMn (HBc 22-27)
Machine:	Horizontal Machining center (HORKOS)

Cutting Condition

Drill:	DRXL0580184T7R01 (Special 30xD)
Drill Diameter:	7.0[mm]
Speed (v):	265 (SFM)
Feed (f):	.007 (IN/REV)
Depth:	3.275 (IN)
Coolant:	M.Q.L. system
Air pressure:	7-8 [kgf/cm ²], Oil quantity: 40-50 [cc/h]

20 x D:



D ₁ Diameter mm inch	Dimensions (mm unless otherwise noted)				
	Drill Number	D ₂ Shank Dia.	L ₁ Max. DOC	L ₂ Shank Length	L ₃ Overall Length
5.0	DRXL0500100U1R01	5.0	115	50	165
6.0	DRXL0600120T7R01	6.0	140	50	190
7.0	DRXL0700140UAR01	7.0	160	50	210
8.0	DRXL0800160T0R01	8.0	180	50	230
9.0	DRXL0900180U9R01	9.0	205	60	265
10.0	DRXL1000200T1R01	10.0	225	60	285
.250 in.	DRXL0635127R6R01	.250 in.	5.79 in.	2.0 in.	7.75 in.
.312 in.	DRXL0793158R7R01	.312 in.	7.04 in.	2.0 in.	9.00 in.
.375 in.	DRXL0952190R8R01	.375 in.	8.48 in.	2.36 in.	10.45 in.

*Internal coolant is available.

RECOMMENDED DRILLING CONDITIONS:

Drill	Carbon Steel (-HRC 30)		Alloy Steel (-HRC 45)		Stainless Steel		Cast Iron (GG25)		Ductile Cast Iron (GGG25)	
	V(SFM)	f(in/rev)	V(SFM)	f(in/rev)	V(SFM)	f(in/rev)	V(SFM)	f(in/rev)	V(SFM)	f(in/rev)
5.0	200-400	.005-.010	165-330	.004-.008	100-200	.003-.006	200-400	.006-.012	130-260	.006-.010
6.0		.005-.010		.006-.010		.004-.007		.006-.010		.006-.010
7.0-8.0		.006-.012		.006-.012		.004-.008		.006-.012		.006-.012
9.0-10.0		.006-.012		.004-.008		.003-.006		.008-.014		.008-.014

AVAILABILITY:

Items listed in Stock. Specials available upon request.



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