

H.O.T. PRODUCT MEMO # **038-W**

DSX Solid Carbide Drills



Product category: H.O.T. product

Application Area: Medium to high speed drilling applications in carbon steels, alloy steels, hard steels, cast irons, stainless steels, and ductile iron materials.

Target market: Automotive market such as chassis component, brake rotors and bearing manufacturers. Aerospace market such as jet engine component manufacturers, and contract shops. General CNC contract or job shops.

Features and Benefits:

- DSX uses grade AH180. AH180 is a micro-grain alloy so it has high toughness, along with our superior Flash Coat TiALN coating for excellent wear and heat resistance.
- Flash Coat is less affected by high heat, therefore can be run at higher speeds, improving OUTPUT. This heat resistance also allows the tools to be run DRY or semi dry as needed.
- DSX drills are designed with a 140° point angle along with special X thinning for reducing cutting forces and proper chip formation.
- Stock with L/D ratios of 3, 5, & 8.



DRILLING



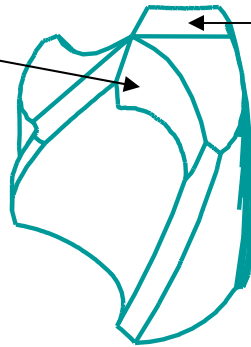
TUNGALOY AMERICA

Product Strengths:

- Wear resistance and toughness. Because of grade AH180 and the unique design of the DSX drill, tool life can generally be improved over current operation.
- Surface finish of new coating is greater than two times better compared to conventional TiAlN coating when measured on a profilometer.
- Because of the unique point geometry the DSX generates less cutting forces compared to some competitors drills. As a result, in some cases the DSX drills can be applied in less than optimal setups or in traditional HSS or Cobalt drill applications. Other drills cannot because of the excessive thrust force caused by their point geometry.
- Manufacturers Resharpener service. We can regrind the DSX (along with all Tungaloy drills) to the exact original geometry in our Wood Dale, IL office.

Technical Data:

New shaped X-thinning for excellent chip control and reducing cutting forces



140° point angle for reducing cutting force

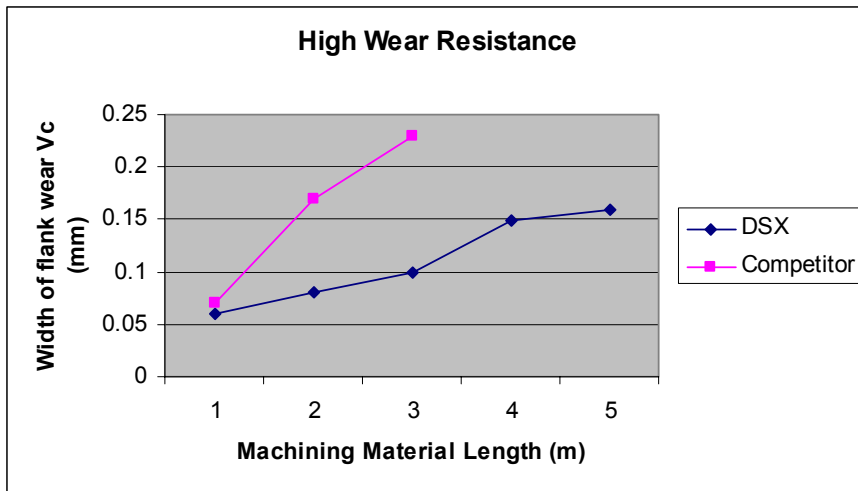
- Estimated drilling tool life. (this is a very general guide line)
 - Steels: 600~1200 inches.
 - Cast Irons: 800~1400 inches.
 - Stainless Steels: 300~600 inches.
 - Super Alloys: 25~200 inches.
- Cutting conditions
 - Please consult the general catalog by work material and diameter
 - The DSX drill point shape provides penetration rates over 100ipm. Please contact engineering for specific applications.
 - Peck cycles are not recommended, especially in materials that are prone to work hardening such as stainless steels.
 - Center drilling is not needed and not recommended. If you are drilling into other than flat surface, reduce the feed rate by 1/2 upon entrance and exit.
 - Water soluble coolant at a high rate of pressure and volume should be recommended. However some customers may want to run dry or semi-dry. This is possible with the DSX drill.
- Rigidity
 - It is important to have high rigidity in the workpiece, and holding device, but not mandatory. It is recommended to use a collet chucking system for general purpose drilling. Hydraulic chucks or shrink fit systems should be used on applications that require high accuracy.
- Set-up and Run-out
 - One of the most common reasons for short drill life is run-out. Before the first run of the drill the run-out of the drill should be checked **on the machine**. The indicated run-out should be within .0008”~.0012” depending on the diameter. If the run-out is more than this than the set-up must be checked. The cause will not be the drill itself as it is made with very tight run-out tolerance. For lathe applications the drill should be centered within .001”

Technical Data:

- Specifications
 - Point angle: 140°
 - Back Taper: .3~.35mm/100mm length
 - Spiral: right hand 28°~32°
 - Diameter tolerance: depends of the diameter +0.00/-0.00055 ~ -.0013”

Performance data:

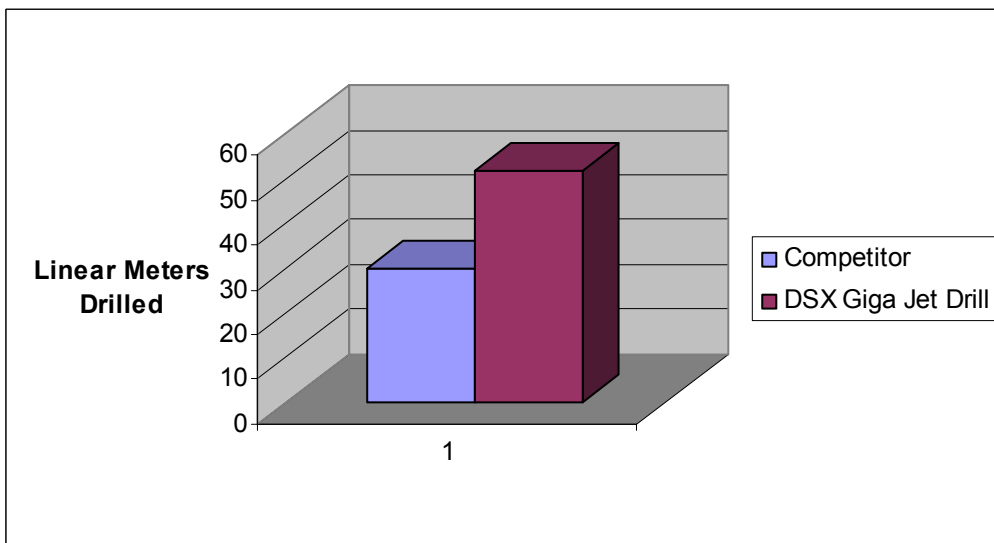
- *High wear resistance*



Dia: 8.0 mm Work material : SCM4400

V=80 m/min f=.02 mm/rev Drilling length : 40 mm

- *Longer Tool Life*



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Application Example:

- A customer was drilling a mounting bracket, that contained many .630” diameter, 1.25” deep holes. The results were:

	DSX	Competitor carbide
Speed (SFM)	350	250
Feed (ipr)	0.01	0.026
Cycle time (sec.)	3.6	2.4
# of holes	640	480
Drill cost per part	\$2.85	\$3.17

- The DSX drill produced the part with far superior surface finish and had longer tool life. Additionally, even though the purchase cost of the DSX was much higher than the Competitor drill; the total cost to machine the part was less. As the intention was to achieve better surface finish, the DSX drill demonstrated that along with increased tool life and lower machined part cost.
- **Conclusion: Advantage Tungaloy.**