

* * *

2008/1/23:

2008/6/5:

(5) (\)

(100)

" "

.1 :

.3 . .2 .

"

)

(7) : (300

(5) :

(7) :

(Ra =1.2) :

:

Abstract :

The term deep hole originally referred to hole depth over (5* diameter) Deep hole drilling is a collective name for method for machining both short and deep holes. In deep hole drilling cutting fluid supply and chip transport play an important role in machining of hole depths of more than (100*diameter). The cutting tip geometry has a significant effect on a drills performance and on the quality of the machined holes by effecting on chips shape and

thickness, distribution of the cutting forces, and on the flow of the cutting fluid at the cutting edge. The gun drill is normally divided in three parts: 1. Drill tip 2. Shank. 3. Driver.

Depending on the application, the most common tool tip material is C2 carbide, which is one of the harder grades. This paper deals with experimental effect of gundrill tip geometry on the following properties of the hole: Hole straightness, Error shape in roundness, Dimension tolerance and Surface roughness. According to improvements of gun drill tip geometry in this work, the deep drilled holes properties are significantly improved with the following results: Hole straightness (7 μm), Error shape in roundness (5 μm), Dimension tolerance (7 μm) and Surface roughness (Ra 1.2 μm).

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[6],[5],[4]

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" " ([1] (Deep Drilling) [2]

[2] "

- .1
- .2
- .3

: Gun Drill

") ([3] "

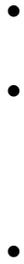
: [7] (2)

[12] [11]

: [13]

(V)

(115 °- 110°)



(180 °, 90 °)

. [8]

.1
.2
.3
.4

. [8]

, °(0.039 - 0.023)

. [10]

(ψ 1)

, (ψ 2)

, [14]

(3)

. [15]

. [10]

(IOTA)

(Taylor-Hobson)

(Ra)

(C.L.A.)

(4)
°(40 ,35 ,30 ,25)

°(20)

(φ 14 , φ 11 , φ 8)

, (300)

(φ 8)
(25)

, [17],[9],[5]

(9)

.1

(26 ,20 ,12)

)

:

)

(40 ,35 ,30

°(40,35,30,25

(φ 14) (φ 11)

.2

°(30,25,20,15)

.3

(5)

°(40 ,35 ,30 ,25)

, °(25,15) °(20,10) °(15,5)

°(20)

(φ 14 , φ 11 , φ 8)

.4

(φ 8)
(25)

°(+ 5, + 2.5, 0)

$\phi 8$)
 (25) ((11)
 (25 ,18 ,12)
 (Ra=1.1) °(40 ,35 ,30)
 (2.4 ,1.8 ,1.4)
) ($\phi 14$) ($\phi 11$)
 °(40 ,35 ,30)
 ($\phi 14$) ($\phi 11$) °(30 ,25)
 (25)

" (6)
 °(40 ,35 ,30 ,25)
 °(20)
 ($\phi 14$, $\phi 11$, $\phi 8$)
 °(30 ,25) ($\phi 8$)
 (25)
 °(30 ,25 ,20 ,15) (14)
 °(30) (27 ,20 ,15)
 ($\phi 14$, $\phi 11$, $\phi 8$) °(40 ,35 ,30)
 °(20) ($\phi 14$) ($\phi 11$)
 °(30 ,25)
 (9)

°(25 ,15)
 ($\phi 14$, $\phi 11$, $\phi 8$) (300)
 (12) (7)
 (5) °(35,40 ,30 ,25)
 (11) °(20)
 (Ra = 1.2) ($\phi 14$, $\phi 11$, $\phi 8$)
 ,+ 2.5 , 0) °(+ 5

(5) :

(7) :

(Ra =1.2) :

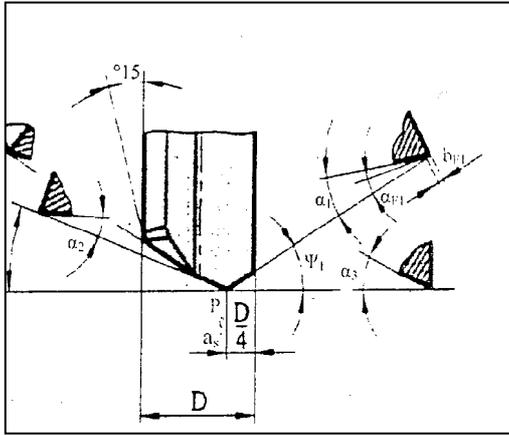
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(+ 2.5)

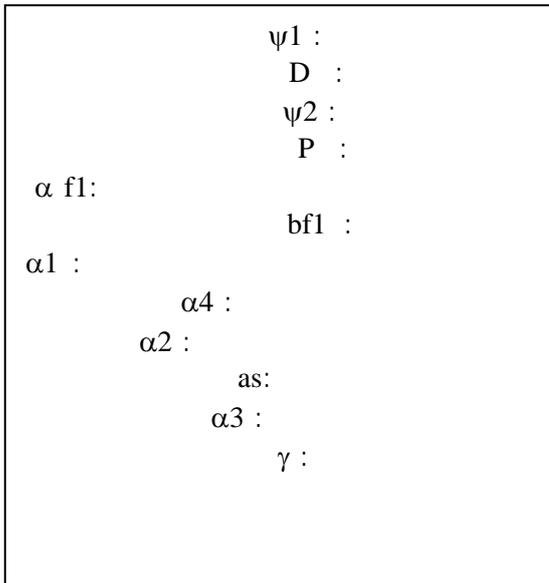
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(7) (2)



(8) (3)



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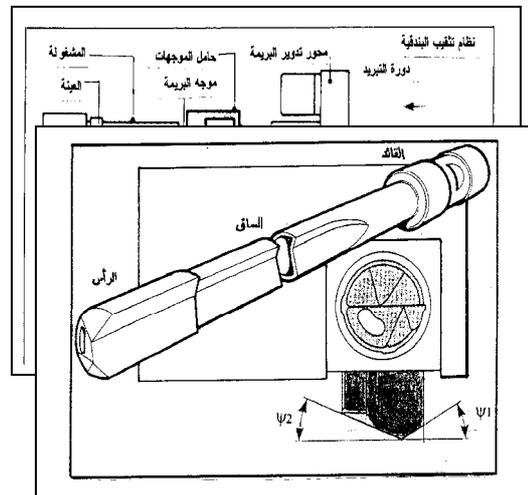
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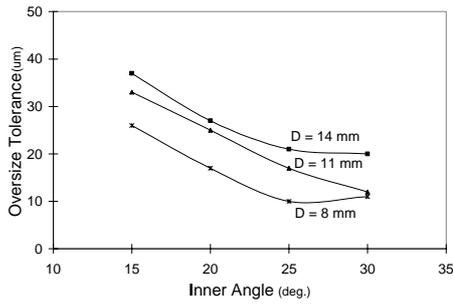
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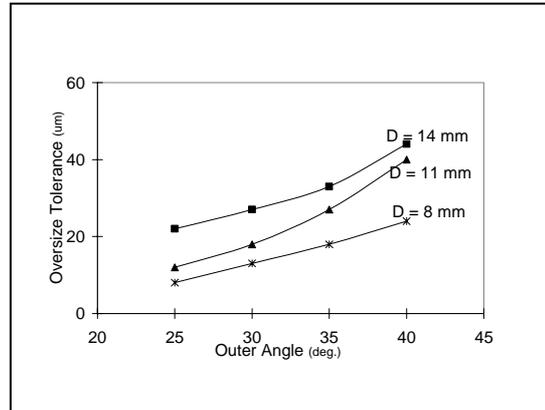
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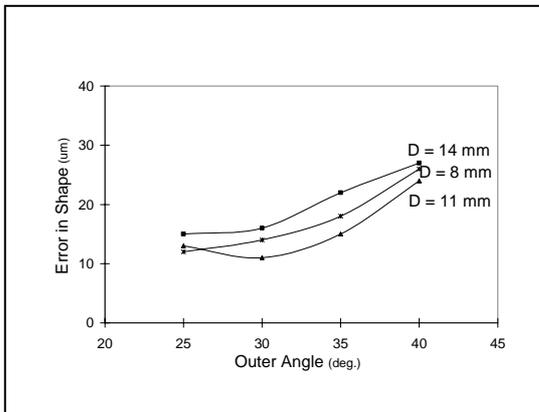




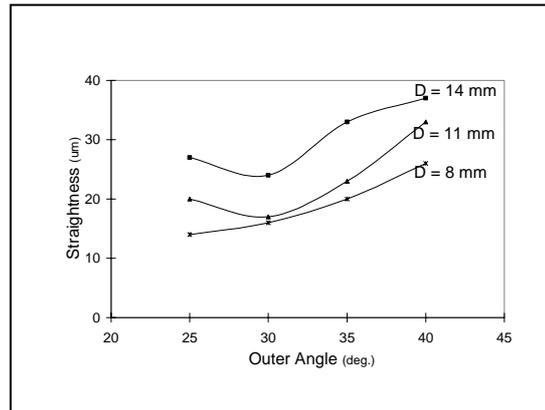
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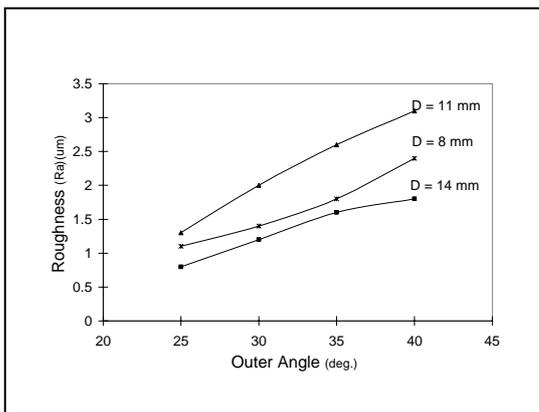
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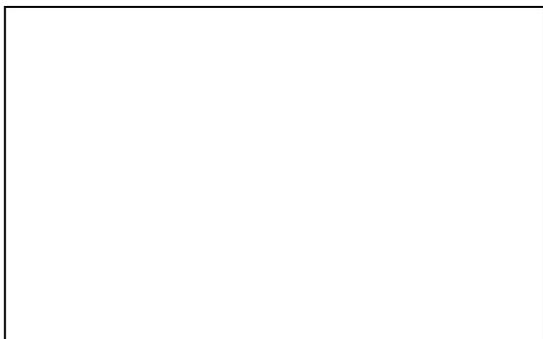
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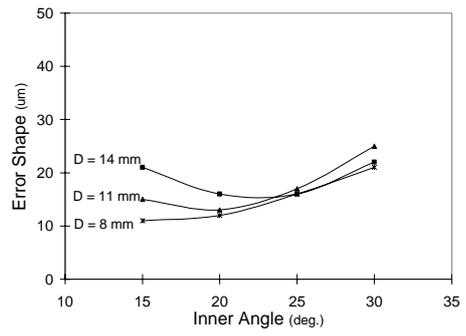
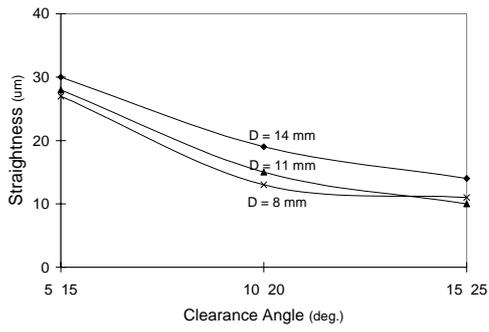


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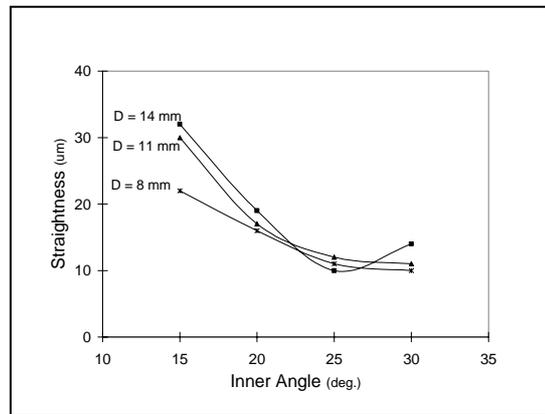
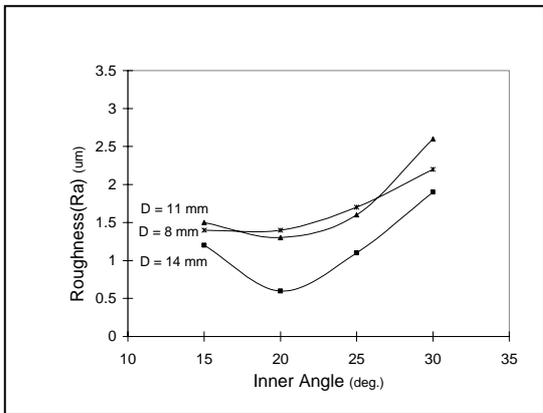


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