

**NTB *TuffCarb***  
**NTB *CeraTuff***



**ISO 9001:2015  
DNV CERTIFIED**



**NTB Tungsten Carbides &  
NTB Alumina, Zirconia and SiC Ceramics  
For Shale Oil & Gas Industry**

**NTB Components conform to NACE Standards**

**NTB Hitech Ceramics**, India is an ISO-9001:2015 certified organization, managed by a team of qualified professionals with 25 plus years of experience in this business. We are conveniently located at Chakan Pune, a leading hub of Automotive and Hitech-Engineering Industry. NTB offers Machined, Diamond Ground parts and components designed to reliably control the flow rate of fluids discharged from an Oil and Gas well.

NTB Choke and Valve components are lined with 6-10% Cobalt/Nickel bonded Tungsten Carbide hard-metals, with fine/medium grain carbides of 0.8-2  $\mu\text{m}$  and sintered to 95-99% Theoretical Density with Hardness=88-91 HRA & TRS=1800-2200 N/mm<sup>2</sup>. NTB also offers above wear components, Liners and Discs in Alumina, Zirconia and SiC Ceramics.

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### Tungsten Carbide Valve Seats & Balls

These are used in high wear assemblies of Gas Lift Valves, Wire Line Retrievable (WLR) & Injection Pressure Operated (IPO) Gas Lift Valves. Seats are made to perfect sizes and surface finish and balls to high roundness & polish, to insure leak-proof assembly.



### Tungsten Carbide Flow Cages & Plugs

Some newer designs of Choke Valves use Flow Cages & Plugs for accurate and precise flow control. These are manufactured in high wear-resistant carbide grades with 6-8% Cobalt. The location and dimensions of the holes are maintained within close tolerances with precise machining. Highly polished mating faces provide leak-proof shut-off at high temperatures and pressures

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### Tungsten Carbide Stabilizer Discs

This Special product used in the Oil & Gas Industry is manufactured from a high Nickel (27%) Bonded Tungsten Carbide grade. They are typically offered in four sizes and can also be customized.



### Tungsten Carbide Flow Trims

Flow Trims are manufactured with high accuracy and close tolerances. The location, dimensions of the holes and pockets is tightly controlled. Special Carbide grades with fine size grains provide high toughness and hardness and result in maximum operating life in tough Oil & Gas applications.

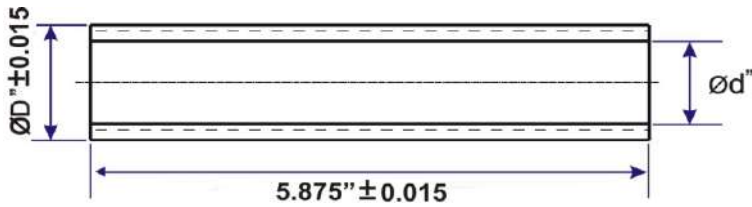
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### Tungsten Carbide Choke Sleeves (Tubes)

NTB Positive Chokes accept replaceable fixed orifice flow beans (Ceramic or Carbide lined for severe applications) that are measured in 64th. of an inch. Positive Choke beans range from 4/64" to 48/64" for 3/4" beans, 50/64" to 64/64" for the 1" beans and higher sizes customized upto 128/64". NTB positive bean chokes use highly wear resistant Tungsten Carbide Tubes (Sleeves) of suitable orifices that are high temperature brazed within the housing manufactured with SS410 or other Steels.

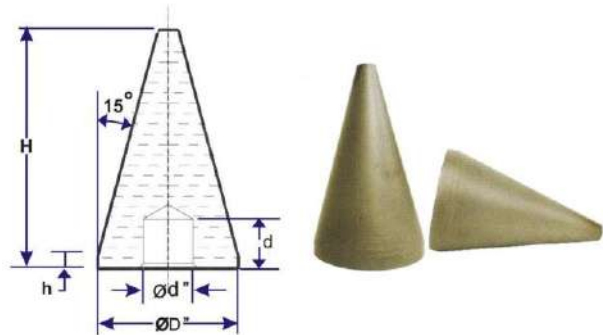
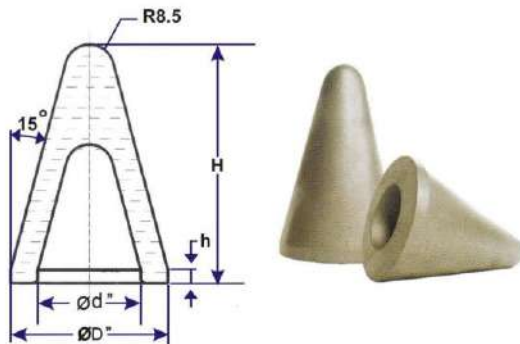


## POSITIVE CHOKE CARBIDE TUBES \*



OD", $\phi$ D"	0.375	0.5	0.625	0.75
ID", $\phi$ D"	3/64-8/64 $\pm$ 0.004	9/64-16/64 $\pm$ 0.004	17/64-24/64 $\pm$ 0.004	25/64-32/64 $\pm$ 0.005
OD", $\phi$ D"	0.875	1	1.125	1.25
ID", $\phi$ D"	33/64-40/64 $\pm$ 0.007	41/64-47/64 $\pm$ 0.007	48/64-59/64 $\pm$ 0.010	60/64-64/64 $\pm$ 0.010

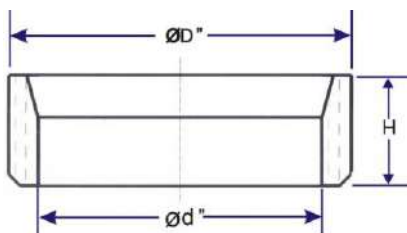
## STEM CARBIDE NEEDLES \*



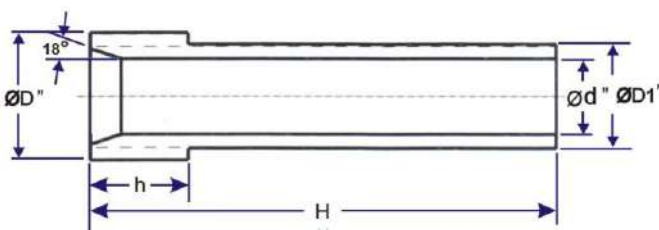
$\phi$ D"	$\phi$ d"	h"	H"
2.22	1.47	0.18	3.37

$\phi$ D"	H"	h"	$\phi$ d"	d"
1.04	1.66	0.13	0.38	0.38
1.16	1.88	0.13	0.38	0.50

## CHOKE CARBIDE LINER SLEEVES\*, PARTIAL/STEP/STRAIGHT(above)



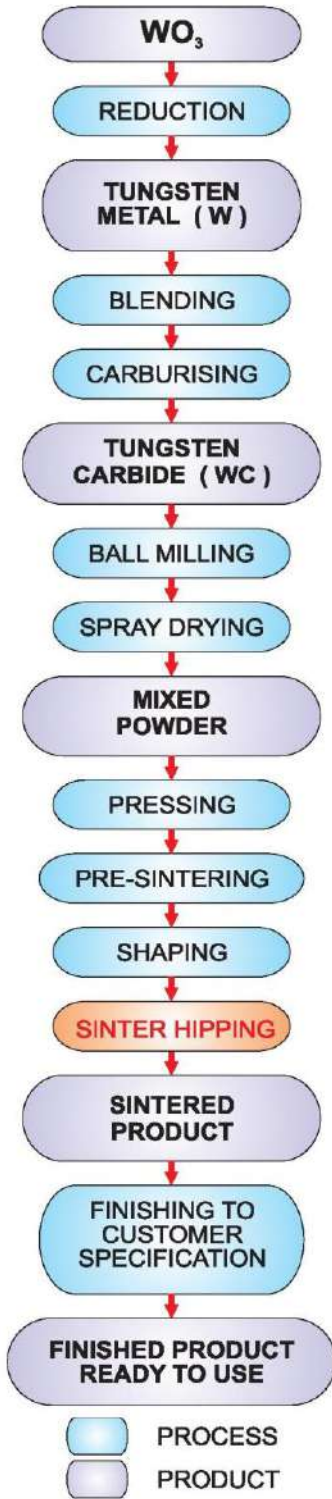
$\phi$ D"	$\phi$ d"	H"
2.420	2.000	0.790



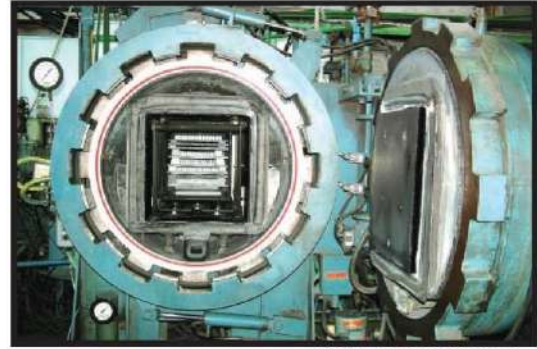
$\phi$ D"	$\phi$ d"	$\phi$ D1"	H"	h"
1.125	0.750	1.000	5.875	1.000
1.125	0.750	1.000	8.000	1.000

\* Specifications and Manufacturing Tolerances as per USA Carbide Companies

## PROCESS SEQUENCE



COLD ISOSTATIC PRESS



SINTER-HIP FURNACE



YOUNG'S MODULUS



THERMAL CONDUCTIVITY



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