

# Flow Control Device

Tool Type: FCD-NOZZLES:



**Top Connection:** Material: 4145 HMOD. As per Customer request.

## Inflow and Outflow Devices:

Inflow Control Device (ICD) and Outflow Control Device (OCD) can vary with Custom Design. A typical ICD/OCD may consist of a combination of the following main components: Nozzles, Shifting Sleeves, Sand Control

## Nozzles / Port Control Types:

**Drilled Port Holes:** Material: 4045 H-MOD, API J55, K55, L80, P110

Configuration: Singular or Multiple Holes drill Perpendicular to Mandrel/Base Pipe

Assembly: No assembly required. Drilled direct to Mandrel/Base Pipe

Opening: Circular opening. Custom Design 1/64"Ø increments.

Hardness: 18RC - 28RC. Controlled by Base Pipe chemical makeup. No further Heat Treat.

Resistance: Low resistance to Erosion, Corrosion, and Scaling.

**Nozzle Inserts:** Material: EN30B, 440SS, Zirconia Ceramic, Tungsten Carbide.

Configuration: Singular or Multiple Nozzles placed circumferentially on Mandrel/Base Pipe

Assembly: Threaded, Welded, Soldered to Mandrel/Base Pipe

Opening: Controlled Diameter, Angle, and Length of opening. Custom designed to well's characteristics such as Steam Breakthrough. Custom Design 1/64"Ø increments. Flat or Protruding Nozzles fixed to Mandrel/Base Pipe.

Hardness: EN30B - Hardened, Tempered, Stress Relieved. 65RC throughout.

440 Stainless Steel - Hardened Air Tempered. 60RC throughout.

Tungsten Carbide - Cast. 73RC throughout.

Ceramics Zirconia - Fire Kiln. 85RC throughout, diamond polished

ports.

Resistance: High resistance to Erosion, Corrosion, and Scaling.

**Bottom Connection:** Material: 4145 HMOD. As per customer request

*All tools are custom designed. Customer would receive technical data sheet with actual dimensions, threads and performance data.*



**CORE  
DESIGN**

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