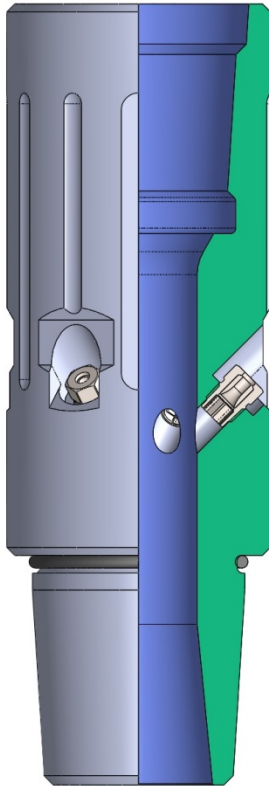


Water Bypass AV Sub

This simple sub has two to six ports that bypass fluid to the side of the BHA. This allows pumping flow rates that are higher than the allowable ratings for motors or other equipment connected below.



A proprietary analysis program supplied with the Water Bypass Sub allows the operator to select the correct port size for the job. Integrated into the MGS™ software, all pertinent parameters of the job are entered, and the program allows the user to select the appropriate orifice size by calculating and displaying key performance characteristics. Bypass orifices have carbide inserts for consistent performance on long runs. These inserts can even survive weighted fluids or abrasive additives.

Applications

- Higher flow for better cleaning of large well bores and horizontals
- Used with PDMs, HydroPull® and JetRotor™ tools
- New multiport configurations provide some well bore jet cleaning

Simple and Reliable

- No moving parts
- No through flow restrictions
- Compact length does not impact setup of the BHA
- Software supported port sizing/setup
- Field adjustable bypass flow
- Compatible with common well service fluids

Tool diameter	1.69 in. (43 mm)	2.12 in. (54mm)	2.38 in. (60mm)	2.88 in. (70mm)	3.12 in. (79mm)	3.38 in. (86mm)
Length (connected)	3.6 in. (90 mm)	5.5 in. (140 mm)	5.5 in. (140 mm)	6.0 in. (152 mm)	6.0 in. (152 mm)	
Max Bypass Rate at 1,000 psi	1.2 bpm (190 lpm)	1.5 bpm (240 lpm)	2.4 bpm (380 lpm)	3.0 bpm (480 lpm)	2.0 bpm (310 lpm)	
Maximum temperature	570°F (300°C)					
Fluid compatibility	Water, nitrogen, polymer gels, solvents, bleach, brine, surfactants, 1% acid, 3% KCl, scale solvers, frac oil, weighted mud.					