



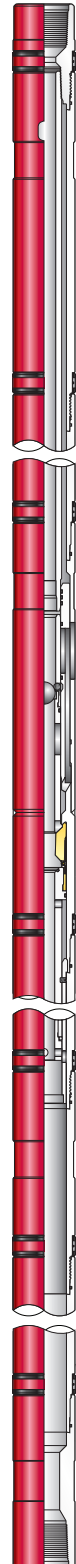
Model 4P Washdown Crossover Tool

Weatherford's Model 4P washdown crossover tool enables circulation through the crossover tool and washpipe when a gravel-pack assembly is deployed into a well. Should bridges be encountered or should fluid require change-out before gravel-pack operations begin, this tool enables circulation to the bottom of the screen assembly. The flow path in the crossover tool changes to a conventional gravel-packing path when the packer setting ball is dropped and the packer is set.

Like Weatherford's standard Model 4P crossover tool, this washdown crossover is constructed of high-quality low-alloy steel and uses durable bonded seals to maximize strength and ensure reliable and trouble-free operation. An assembly consisting of the BlackCat™ GP retrievable sealbore packer, the Model G1 closing sleeve, and this multiposition tool provides a robust, yet economical, completion system for wells in unconsolidated reservoirs that need gravel packs for prevention of unwanted production of formation sand.

Operation of the Model 4P tool washdown system is simple and very similar to that of the standard Model 4P crossover tool. The tool can be placed in the *squeeze*, *circulating*, or *reverse* positions with simple upward and downward movement of the work string. To place the tool in the *squeeze* position, simply slack weight off on the packer. The crossover ports align with the ports of the gravel-pack extension, and fluids can be pumped straight into the formation without transmission of fluid or pressure to the casing annulus above the packer. Raising the crossover tool exposes the return ports to the casing annulus; fluid pumped down the work string circulates in the annulus, around the screens, up the washpipe, and through the return bypass of the crossover tool, into the annulus above the packer. To achieve the *reverse* position, raise the crossover tool further until its ports are above the *BlackCat* packer and the formation is isolated while reversing out or circulating above the packer.

Should the need arise to circulate while tripping into the well with the gravel-pack assembly, fluid pumped down the work string travels through a straight path through the crossover tool and down the washpipe to the end of the screen. When the packer setting ball is dropped and pressure is applied, a piston shifts downward, redirecting the fluid path through the ports of the crossover tool, and the return path for circulating fluid is established.



Model 4P Washdown Crossover Tool

Applications

- Single or multizone gravel packs
- Conventional gravel pack
- Squeeze or circulating gravel packs
- Openhole gravel packs
- Standalone-screen installations

Features, Advantages and Benefits

- Washdown function enables circulation through the crossover tool and down the bottom of the screen assembly, washing through sand bridges or conditioning fluid in the openhole section before the packer is set.
- Primary and secondary ball seats provide a packer setting contingency in the event low bottomhole pressure causes a premature shear of the primary seat, eliminating the need to pull an unset packer out of the well.
- Large flow ports minimize turbulence, reducing erosion and damage to the gravel-pack sand.
- Large return area reduces backpressure and fluid loss, improving the chances of a successful gravel pack.
- Durable, bonded seals are resistant to damage from sand, improving tool longevity.
- Flapper-style reverse-out check valve isolates the formation from hydrostatic pressure and casing pressure while reversing, preventing fluid loss, which could be damaging to the formation or result in rig downtime

Specifications

Packer Bore Size (in./mm)	Part Number	Closing Sleeve Shifting Tool
3.000 76.20	TBD	781657
4.000 101.60	819755	174295
4.750 120.65	1138284	710810