Case Study:
Why use Dixon Triplex and Quintuplex Manifolds on HHP Hydraulic Fracturing Pumps?

The Right Connection®

FACTS

- The Fluid End (FE) is a main consumable of the High Horsepower (HHP) pump used in hydraulic fracturing operations
- Current life span of a FE ranges from 200 to 1,400 hours.
- Fundamental root causes of FE failure:
  - Cracking of the cross bores
  - Cracking of the valve seat deck
  - Corrosion pitting
  - Cavitation, pump damage due to flow restrictions
- End-user cost for 3-Port FE on a HHP pump ranges from $25K to $60K, and the price is dependent on the brand and/or the material of the FE.
- End-user cost for the 5-port FE on an HHP pump ranges from $55K to$130K, and the price is dependent on the brand and/or material of the FE.

Dixon Actions & Results:

Focus is to eliminate flow restrictions and welds when designing intake manifolds. Combine iron manufacturing technology with flow geometry to eliminate welds (7-18 seams). Minimize sand dropout existing in the suction manifolds used today. Include user-friendly inspection ports.

- Designed and patented 3-port and 5-port intake manifolds for HHP pumps.
- Lab tests completed for pressure (350 PSI) and cold (-62°F)
- All new manifold assemblies are pressure tested to 700 PSIG
- Lab test are available by contacting engineering@dixonvalve.com.

END-USER FEEDBACK

>> Well service company maintenance personnel state that carbon steel manifolds are working okay. Leaks along the weld seams are a regular nuisance, and repair consists of re-welding and/or use of rubber washers with screws.

>> Sand dropout causing flow restrictions is common, and some manifold designs last longer than others. End-users reported that 600-800 hours in service is considered a very good performance.

***Left**: Inside suction manifold is a failing weld, and is packed with sand. **Right**: A failed FE with attached 5-port suction manifold.*

>> Lab tests and field trials were recommended per the following application parameters.:

> Low temperature with CO2 at -30°F
> ASTM spec calls for -62°F
> Maximum working pressure is 350 PSIG, and test pressure should be 1½ times working pressure or 525 PSIG
> Acidizing well treatments use Hydrochloric (HCL) and Hydrofluoric (HFL) acids in concentrations ranging 15-28%

Bottom line is save time and money with Dixon!