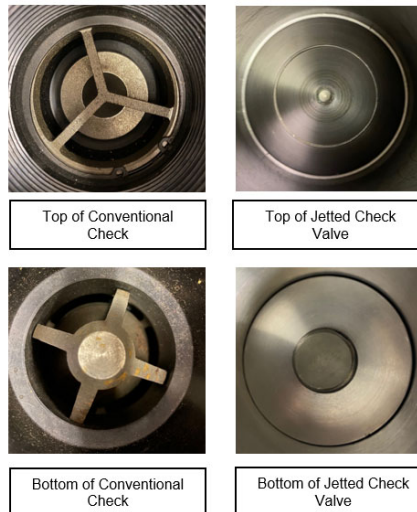


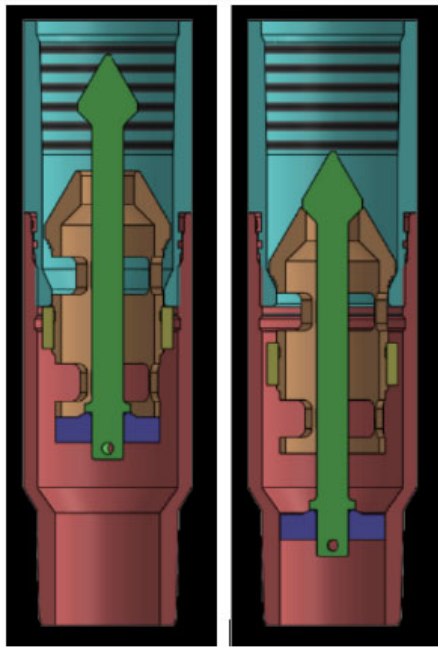
## Jet Check Valve

Republic Oil Tool's patented Jetted Check Valve (JCV) offers the latest evolution in solids avoidance tools for use with Electrical Submersible Pumping Systems. The JCV is designed to prevent solids from falling into the pump during a shut down and jet washes those solids away during start up. Typically, after an ESP shut down in an unconventional wellbore, frac sand immediately packs the pump full of solids causing a stuck pump or broken shaft when it is attempted to be restarted. The JCV prevents this from occurring by capturing all fluid and solids above the ESP. During start up there are two independent strokes that take place based on the condition of the fluid or solids above the valve. First, if there is a large amount of debris, the inner dart of the JCV will function as a jet nozzle to begin washing away solids on top of the valve. This is a high pressure, low volume nozzle that utilizes pressure from the ESP to blast its way through the initial layer of solids. Once the jet nozzle begins to clear solids, the primary sleeve can then be opened for high flow and high pressure to finish clearing the solids and resume production as normal.



Compared to traditional ESP check valves, the JCV optimizes surface area to maximize force in the up-hole direction during a restart. This enables it to be successful in wellbores where conventional check valves may be permanently checked after a shut down. Furthermore, since the area on the bottom of the inner dart is larger than the top, gas locking concerns that exist in conventional check valves are effectively eliminated.

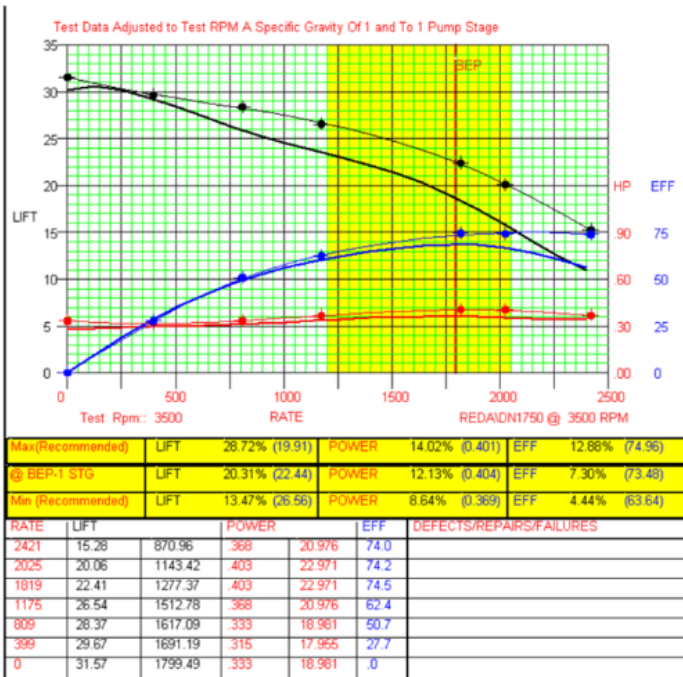




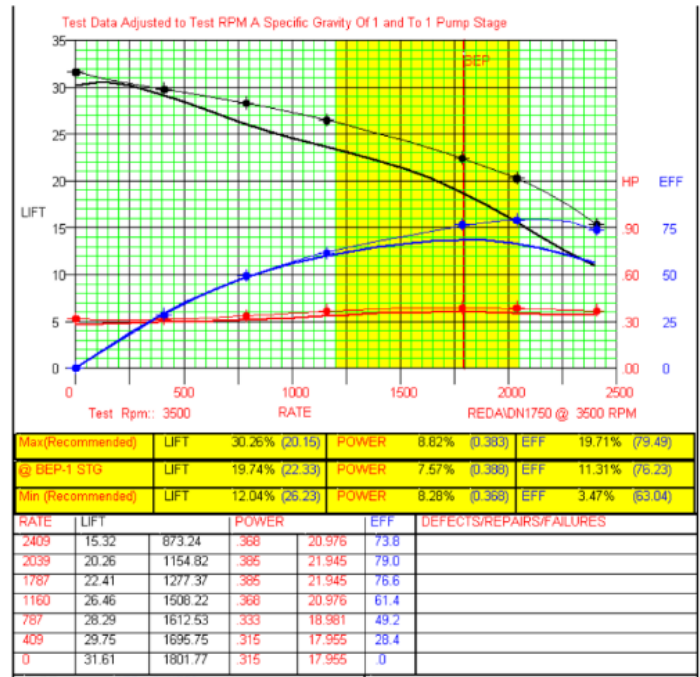
Pump On

Pump Off

Size	<b>2-7/8"</b>	<b>3-1/2"</b>
Housing Metallurgy	4140 / 440C	
Poppet Metallurgy	440C	
Thread Size	2-7/8" EUE 8rd	3-1/2" EUE 8rd
Outside Diameter (in)	3.685"	4.50"
Length (in)	14.25"	16.125"
M/U Torque (ft-lbs)	2300	3030
Temp Rating (F)	500	



Pressure Drop w/ JCV



Standard Test (no JCV)