

Well Intervention and Integrity

Production Optimization

Kinley Perforator

The Kinley Perforator enables a cost effective solution for remedial gas lift operations to punch a clean, round hole and inserts check valves or orifices in tubing. It is ideal for most sizes, standard weights and alloys of pipe from 2 3/8" through to 5 1/2" OD.

A mechanical tubing punch powered by an optimized propellant capsule, which can be functioned via slickline or electric line.

When the call is for a communication port between the production tubing and the annulus, the regular or senior perforator is the answer. The Kinley Perforators use a small capsule of propellant to stroke a mechanical punch through the wall of the pipe. The punch creates a perfectly round hole of the desired diameter. The punch can be replaced with a self-seating metal orifice to limit the erosive effect of flowing fluids.

Alternatively, check valve insert assembly can replace the punch. The check valve remains in the wall of the pipe to allow for a temporary controlled injection point for gas lift operations. In either case, there is no damage to the casing beyond the limited stroke of punch action.

Features and benefits

- Perforates most weights and tubing sizes from 2 3/8" thru 5 1/2" OD
- Maximum pressure rating: +15,000 psi and maximum temperature: 320°F
- Tubing grades perforated: J-55, N80, L80, P105, plus 9 & 13 Chrome
- Maximum tubing wall thickness perforated: .403"
- Smaller diameter perforators are available on request for 1", 1 1/4", 1 1/2" and 2 1/16", tubing
- Runs on economical slick (measuring) line or on electric line
- Safe to operate, uses a small class C propellant charge
- Does not burn but punches a round hole of a known diameter (0.253, 0.344, 0.482, or .750")
- Can insert specific size check valves or orifices
- Perforates in any fluid or gas. H2S rated
- Temporarily substitutes expensive gas-lift mandrel
- Allows precise calculation of pumping rates, volume and pressure in any circulating application
- Expensive electric lines and surface read-out equipment are not required, virtually any conveyance method available at well site can be used



Applications

- Punch a hole to circulate and kill a well
- To drain the tubing and prevent pulling wet strings
- Provides inexpensive gas lift or chemical injection (inhibitor, paraffin solvent, glycol, or hot oil)
- Can lift water from low-pressure gas wells
- Circulate out annular sand or mud bridges
- Provides injection point for wire line retrievable pack-off gas lift valves
- To operate plunger lift installations
- To open alternate zones when sliding sleeves can't be opened
- To eliminate sliding sleeve valves for alternate zones

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Kinley Perforator - Inserts and Buttons

The Kinley Senior Perforator is ideal for most sizes and weights of pipe from 3-1/2" through 5 1/2" OD.

The flange on the insert lets it project only 3/16" beyond the tubing to eliminate damage to the casing. Most inserts make an orifice hole 20° from horizontal. This deviation directs the flow up the tubing, preventing it from spending its full force on the opposite wall, thus increase tubing life. In the Kinley Perforator, the force that places the insert or punches the hole in the tubing comes from a mechanical action and not the propellant charge.






Applications

- **Check valve & insert applications:**
 - Provide one-way flow for economical temporary gas lift
 - Circulate Hot Oil for paraffin removal
 - Inject glycol or chemicals for maintenance
- **Button used to punch holes to:**
 - Circulate and kill well
 - Loosen a sand or mud bridge in the annulus
 - Drain tubing and avoid pulling a wet string
 - Plunger Lift Installations

Features and benefits

- Perforator can be run on economical slick (measuring) line or electric line
- Perforator punches a hole or an insert and does not harm the casing
- Light jar action required for mechanical tool ignition, none for electric
- Quick operation can be verified

Specifications

Check valve inserts	Standard orifice inserts	Jumbo orifice inserts		New super jumbo orifice inserts	Circulating buttons
2/64"	● 2/64"	● 8/64"	● 12/64"	● 24/64"	● .344
3/64"	● 3/64"				
4/64"	● 4/64"	● 9/64"	● 14/64"	● 28/64"	● .482
5/64"	● 5/64"				
6/64"	● 6/64"	● 10/64"	● 16/64"	● 32/64"	● .750
7/64"	● 7/64"				
8/64"	● 7/64"	● 11/64"	● 20/64"		
9/64"					
10/64"					
12/64"					
14/64"					
16/64"					
	Side view	Side view		Side view	Side view
					

1. 20/64" Jumbo orifice insert is straight hole and not angled.



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Kinley Perforator - specifications

Kinley Perforator - Regular specifications	
Minimum drift	1.91" (48.3mm) (2 3/8" tubing, 4.7 lbs/ft)
Maximum ID	4.09" (103.9mm) (4 1/2" tubing, 9.5 lbs/ft)
Service type	H2S, CO2
Working pressure	+15,000 psi (+72.4 MPa)
Working temperature	320°F (160°C)
Tensile strength	20,000 lbs (9,072 kg)

Kinley Perforator - Senior specifications	
Minimum drift	2.797" (71.0mm) (3 1/2" tubing, 10.3 lbs/ft)
Maximum ID	4.832" (124.3mm) (5 1/2" tubing, 17.0 lbs/ft)
Service type	H2S, CO2
Working pressure	+15,000 psi (+72.4 MPa)
Working temperature	320°F (160°C)
Tensile strength	20,000 lbs (9,072 kg)