Schlumberger

Y-Tool and Bypass System

Well access below your ESP

APPLICATIONS

- Wireline or coiled tubing logging
- Memory gauge deployment
- Tubing-conveyed perforating gun deployment and detonation
- Well stimulation through bypass or coiled tubing
- Wireline perforating
- Bottomhole sample collection
- Installing dual ESP systems
- Bridge plug setting for water shutoff
- Well work without pulling the ESP

ADVANTAGES

- Accurate production logging in ESP wells
- Reduced downtime
- Reservoir access below an ESP

FEATURES

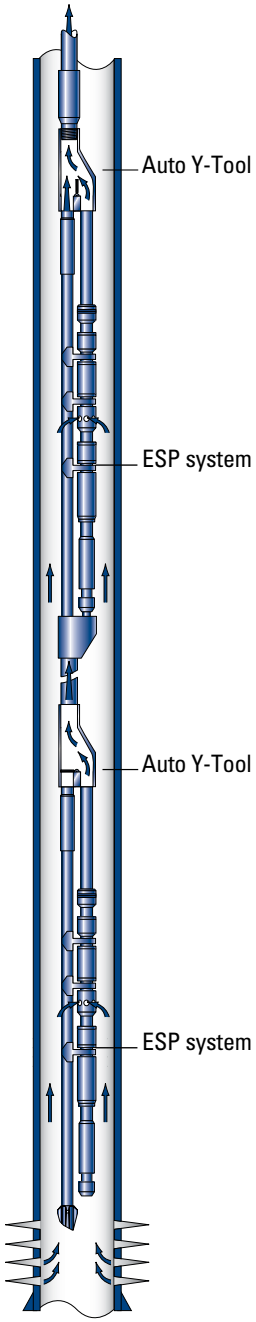
- Concentric conduit from surface to reservoir
- Manual or automatic switching
- Logging and blanking plugs
- Isolation sleeves

The Y-tool and bypass system is a solution to enable intervention or logging with wireline or coiled tubing below an ESP. It also provides a method to configure more than one ESP in a well to accomplish production goals.

The Y-tool is installed on the production tubing, providing two separate conduits. One conduit is concentric with the production tubing and enables access to the reservoir below the ESP. The second conduit is offset and used to support the ESP system. The bypass tubing is clamped to the ESP for support. Wireline or coiled tubing plugs can be supplied to seat in a nipple profile in the Y-tool to enable intervention or logging operations without retrieval of the completion. If required, the ESP can be run with these plugs in place to perform production logging or other operations.

The Y-tool is available as a standard system in which blanking plugs and isolation sleeves are deployed, utilizing slickline services. This prevents recirculation of production fluids during normal operation. The Auto Y-Tool* subsurface automatic diverter system option is also available. This proprietary Y-tool offering uses flapper valve technology and is actuated by differential pressure. Thus, when the pump is operating, the flapper will seal the bypass tubing side and prevent recirculation.

Refer to the table for maximum sizes of bypass tubing for a given casing size and ESP OD.



Y-tool and bypass system utilizing the Auto Y-Tool option.

Y-Tool and Bypass System

Bypass Tubing Selection Matrix							
	Maximum OD of ESP Assembly (in)						
	3.750	4.000	4.562	5.130	5.400	5.400	5.625
Casing Size	**Bypass Tubing OD† (in)**						
6⅝ in (20.0 lbm/ft)	2.125	1.500	na ‡	na	na	na	na
6⅝ in (24.0–32.0 lbm/ft)	1.500	1.500	na	na	na	na	na
7 in (23.0–26.0 lbm/ft)	2.375	2.125	na	na	na	na	na
7 in (29.0–35.0 lbm/ft)	2.125	1.500	na	na	na	na	na
7⅝ in (26.4–33.7 lbm/ft)	2.875	2.375	2.125	1.500	na	na	na
8⅝ in (28.0 lbm/ft)	2.875	2.875	2.875	2.375	2.375	2.375	2.125
8⅝ in (32.0 lbm/ft)	2.875	2.875	2.875	2.375	2.375	2.125	2.125
8⅝ in (36.0 lbm/ft)	2.875	2.875	2.875	2.375	2.125	2.125	1.500
9⅝ in (40.0–47.0 lbm/ft)	2.875	2.875	2.875	2.875	2.875	2.875	2.875
9⅝ in (53.5 lbm/ft)	2.875	2.875	2.875	2.875	2.875	2.875	2.375
10¾ in (51.0–60.7 lbm/ft)	≥3.500	≥3.500	≥3.500	≥3.500	≥3.500	≥3.500	3.500

† See accompanying table
‡ na = not applicable

Standard Bypass Tubing Data						
OD, in	3.500	2.875	2.750	2.375	2.125	1.500
ID, in	2.992	2.441	2.362	1.995	1.869	1.244
Drift, in	2.875	2.347	2.268	1.901	1.775	1.150

DIVERTER OPTION

The Auto Y-Tool option is an addition to the ESP bypass product range. Consisting of a spring-loaded diverter valve that seals off the bypass tubing whenever the pump is running, the tool saves time in wireline and coiled tubing operations, typically reducing the number of runs by two on any given well intervention.

The tool is automatically closed by the flow produced by the downhole pump. The diverter, which starts off the flow path of the pump, will hinge over and seal off the bypass tubing. The pressure generated by the pump will keep the diverter closed while the pump is running.

When the pump is shut down and the pressure across the diverter has equalized, the spring on the diverter will return to the open position, allowing well intervention by wireline or coiled tubing if required.

The diverter can be locked in the open position by landing a logging plug into the nipple below, which extends up into the Y-tool and prevents the diverter from closing. This allows logging to be performed while the pump is running.

Additionally, no access to the wellbore is required to switch between the upper and lower ESPs. Simply stopping one ESP and starting the other will cause the diverter to switch positions, allowing production from whichever ESP is required while eliminating fluid recirculation.

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