

TRSV Flow Tube Exercise Tool (FTET)

NOV's TRSV Flow Tube Exercise Tool (FTET) is wireline deployed accessory tool designed to shift or "exercise" a fouled, or stuck, flow tube of a downhole tubing retrievable safety valve (TRSV). Flow tube fouling can occur from well bore fluid precipitates falling out of solution during production and solidifying around the inside of the TRSV. Scale and other solids can accumulate around the outside of the flow tube over time and increase the operating friction within the valve. The increase in friction can lead to situations where the safety valve power spring cannot adequately close the flapper and the hydraulic piston cannot open the flapper. When this occurs, the FTET is required to manually shift the flow tube, physically assisting in clearing the debris or scale. Used in conjunction with the hydraulics, the FTET can manipulate the flow tube until normal operation is restored.

The FTET is deployed with standard wireline equipment (spang jar and weight bars) until it lands on the "no-go" shoulder within the safety valve. Mechanical jarring engages the FTET's grip segments within the TRSV's flow tube. Upward jarring engages the flow tube, clearing debris and scale while pulling it into the fully closed position. Cycling the safety valve with alternating hydraulic pressure and upward jarring will help free the flow tube. Continued upward jarring will release the flow tube grip segments and allow the FTET to be easily recovered from the well.

The FTET is a simple, proven, and robust accessory tool for manipulating stuck "smooth bore" flow tubes within downhole safety valves, sliding sleeves, or other tools. It does not require fluid within the well or additional wellbore hydraulic pressure to successfully function and can be modified to accommodate internal fishing profiles if needed.

Contact NOV for specific FTET application information. Reference the appropriate safety valve technical operating manual for more information.

Features

- Simple, robust design
- Straightforward operation
- Interchangeable No-Go Ring for different lock profiles
- Minimal components
- Easily field redressed
- Long, low-stress slips
- Modular and adjustable slip designs, if required

Benefits

- Standard wireline operations
- Flow tube manipulation achieved with minimal wireline operation
- All tool components collapse within the outside diameter
- Used with "smooth bore" safety valve flow tubes

Applications

- Tubing retrievable safety valve flow tube exercise or shifting



Flow Tube Exercise Tool Engineering Data[†]

Tubing Size in (mm)	Max OD in (mm)	Polished Bore Diameter in (mm)	Overall Length in (cm)	Weight lbs (kg)
2.875 (73.03)	2.298 (58.37) 2.395 (59.92)	2.250 (57.15) 2.313 (58.75)	63.64 (161.65)	42.50 (19.27)
3.500 (88.90)	2.796 (71.02) 2.859 (72.62)	2.750 (69.85) 2.813 (71.45)	63.64 (161.65)	89.56 (40.62)

[†]The engineering data provided illustrate the scope of this product offering and are not all inclusive. Additional sizes and functionality is available upon request.