

## Liner Tieback

Metal-to-metal, gas-tight liner tieback system



**Pressure:**  
up to 7,985 psi [55 MPa]



**Temperature:**  
up to 150 degC [302 degF]



**Axial Load:**  
up to 1,500,000 lbf [6.6 MN]

### Applications

- Extended-reach drilling
- Wells with architecture or conditions that make it challenging to run long casing strings

### Benefits

- Enables the permanent connection of a liner to a tieback string of casing using a durable metal-to-metal seal
- Provides flexibility in landing casing and liner space-out
- Eliminates the risks of conventional elastomeric seals by providing a metal-to-metal seal

### Features

- ISO 14310 V0-rated
- High axial load-bearing capability
- Ability to be run with or without conventional liner hanger equipment
- Connection of a liner and tieback casing into a single casing string
- Effectiveness for the life of the well
- NACE compatibility

The metal-to-metal, gas-tight liner tieback connects liners to a tieback string of casing with a permanent high axial load, durable seal. The unique Metalmorphology\* metal-to-metal sealing and anchoring technology shapes metal downhole to create metal-to-metal solutions that conform perfectly to the shape of the casing string.

To reach setting depths of 30,000 ft [9,144 m] or more, operators are increasing the number of casing strings in well designs. Tighter annular clearances require the use of more flush joint connections.

Conventional liner hanger equipment is unable to match the ratings of the casing in these well designs, especially when the liner must be tied back to surface. With the liner tieback system, operators are able to run a conventional hanger system and tie the liner string back to the wellhead without sacrificing casing integrity or rating.

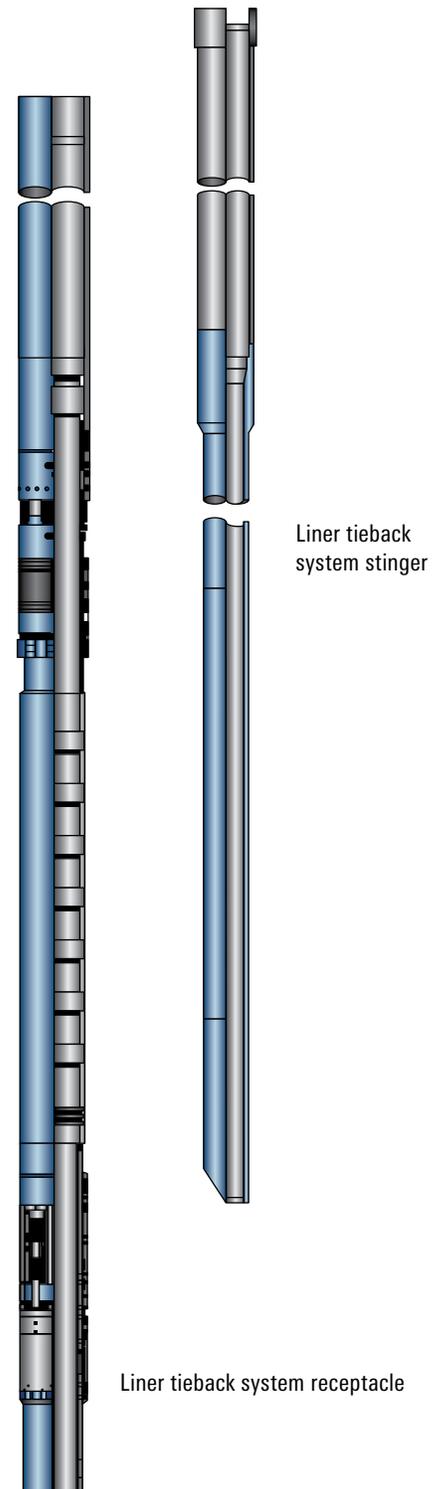
If running a long casing string becomes difficult due to casing string length or wellbore instability, running the lower stage as a liner and then tying back to surface with a metal-to-metal tieback string recreates the integrity of a full casing string. This method has the added benefit of reducing the equivalent circulating density. It also enables the operator to space out the tieback into the wellhead in a controlled environment. Running the liner tieback system in the liner hanger assembly provides the operator with full ISO 14310 V0-rated downhole casing connection integrity.

### Liner tieback for demanding hole conditions

When a long casing string must be run into a challenging wellbore, the inability to rotate and circulate quickly may result in the casing not reaching total depth (TD) and having to be pulled for a wiper trip.

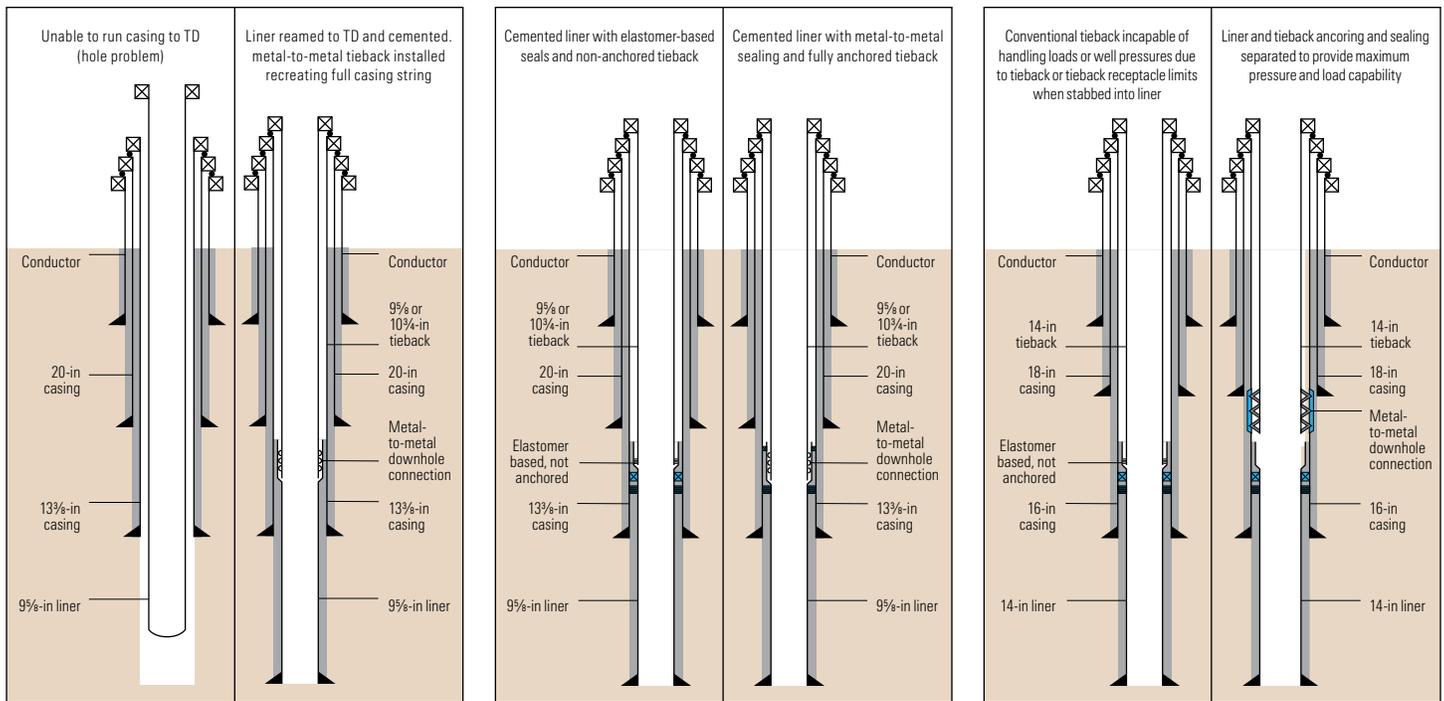
The lower section of the casing string can be run as a liner with a heavy-duty running tool enabling push, pull, rotate, and circulate capability. The system has no moving parts, gauge rings, elements, or slips, which is ideal when dealing with poor hole conditions. After the liner is cemented in place and the running tools are removed from the well, the metal-to-metal stinger and tieback casing are run, spaced out, and hung in the wellhead. The stinger is then expanded into the liner tieback receptacle, creating a continuous metal-to-metal casing string from surface to TD.

This method is ideally suited for offshore wells where limited slots drive the need for casing getting to TD every time.



Hydraulic rotating liner system with liner tieback receptacle and stinger.

# Liner Tieback



## Integrated liner tieback and liner hanger system

A variety of technologies is used when a liner system is run and requires tieback. These include cemented tiebacks, hydraulic anchors, elastomer and thermoplastic seals, and mid-string packers. Many of these rely on complex operations or leave potential leak paths in the production casing.

The integrated liner tieback with liner hanger system enables liner rotation and the creation of an annular VO seal. The tieback system has a full metal-to-metal connection that is made downhole below the liner polished-bore receptacle, creating gas-tight metal-to-metal sealing from surface to TD. This fully anchored nonelastomeric solution is currently available for 9 5/8- x 13 3/8-in [24.44- x 33.97-cm] liner applications and allows 9 5/8-, 10 3/4-, and 11 3/4-in [24.44-, 27.31-, and 29.85-mm] tiebacks to be installed above. This system is compatible with liner equipment from other suppliers.

## Liner tieback for deep well applications

Operators are increasing the number of casing strings in well designs to reach ultradeep setting depths. These are typically thick-walled casings to accommodate the high loads seen in these wells. The resulting clearance between these casings is low; traditional liner hanger equipment cannot be engineered with sufficient load rating to allow these strings to be run in sections to reduce the wellhead landing weight and remain within the rig's handling capability.

The liner tieback system for deep well applications can be used to tie back into a casing or liner to provide the capability to handle loads that are required in the wellbore. The system is capable of axial loads up to 2,500,000 lbf [11.1 MN] and pressures up to 10,350 psi [71.3 MPa]. The profiles required by the system can be preinstalled in several places within the parent liner or casing, which provides flexibility for future sidetrack and tieback options. The metal-to-metal gas-tight seal accommodates a high axial load for complete integrity over the life of the well.

### Liner Tieback Specifications

						High-Pressure Systems
Size, in [mm]	7 [177.8]	9.625 [202.2]	9.875 [250.8]	13.375 [339.7]	13.625 [346.0]	14 [355.6]
Casing weight, lbm [kg]	29 [13.2]	53.5 [24.3]	66.4 [30.1]	72 [32.7]	88.2 [40.0]	115 [52.2]
OD, in [mm]	8.350 [212.1]	12.097 [307.3]	12.035 [305.7]	16.750 [425.4]	17.000 [431.8]	17.25 [438.1]
Standard ID, in [mm]	6.184 [157.1]	8.535 [216.8]	8.553 [217.2]	12.347 [313.6]	12.375 [314.3]	12.346 [313.6]
Internal pressure, psi [MPa]	5,000 [34.5]	7,985 [55.1]	7,180 [49.5]	6,151 [42.4]	5,966 [41.1]	6,500 [44.8]
External pressure, psi [MPa]	4,250 [29.3]	7,930 [54.7]	5,510 [38]	2,880 [19.9]	4,570 [31.5]	1,500 [10.3]

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