

## Landing Nipples and Lock Mandrels

This section describes LOG Oiltools's landing nipples and lock mandrels, as well as lock mandrels for wells without landing nipples.

### Selective by Running Tool

The LOG Oiltools's landing nipples and lock mandrels are selective by running tool consist of Otis® X® and R® series landing nipples and lock mandrels. The Otis XN® and RN® no-go landing nipples and no-go lock mandrels are also available.

#### Otis X and R Landing Nipples and Lock Mandrels

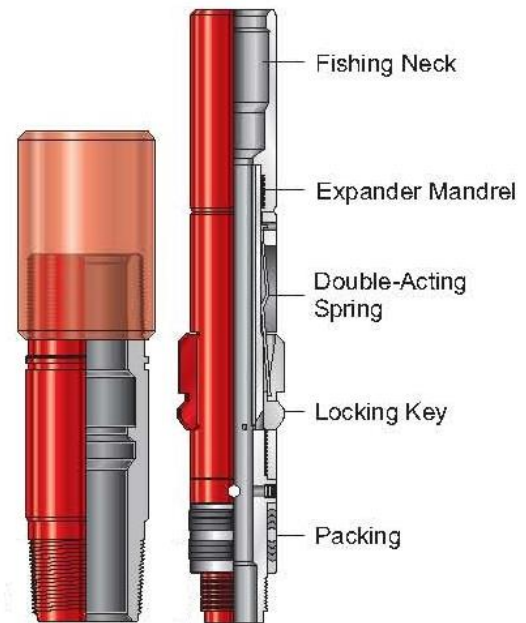
LOG Oiltools's Otis X and R landing nipples are run into the well on the completion tubing to provide a specific landing location for subsurface flow control equipment. The common internal profiles of these landing nipples make them universal. The Otis X landing nipple is used in standard weight tubing. The Otis R landing nipple is typically used with heavyweight tubing.

The completion can have as many selective nipples with the same ID in any sequence as desired on the tubing string. This versatility results in an unlimited number of positions for setting and locking subsurface flow controls. The flow control, which is attached to the required Otis X or R lock mandrel, is run in the well via the selective running tool on slickline.

The slickline operator using the selective running tool can set the flow control in any one of the landing nipples at the desired depth. If this location is unsatisfactory or if well conditions change, the flow control may be moved up or down the tubing string to another nipple location. These operations can be done by slickline under pressure without killing the well.

#### Otis XN and RN No-Go Landing Nipples and Lock Mandrels

This equipment is designed for use in single nipple installations or as the bottom nipple in a series of Otis X or R landing nipples. These landing nipples have the same packing bore ID for a particular tubing size and weight. Otis X and XN landing nipples are designed for use with standard weight tubing. Otis R and RN landing nipples are designed for use with heavyweight tubing. (The N designates no-go nipples.)



*Otis® X® Landing Nipple and Lock Mandrel*



*Otis® R® Landing Nipple and Lock Mandrel*

### Applications

- Gauge hangers for bottomhole pressure/temperature surveys
- Positive locator for straddle systems
- Plugging under pressure
- Almost unlimited locations for setting and locking subsurface flow controls
- Lock Mandrels
  - Retractable locking keys
  - Locks designed to hold pressure from above or below or from sudden reversals
  - Extra large ID for higher flow volumes

### Features

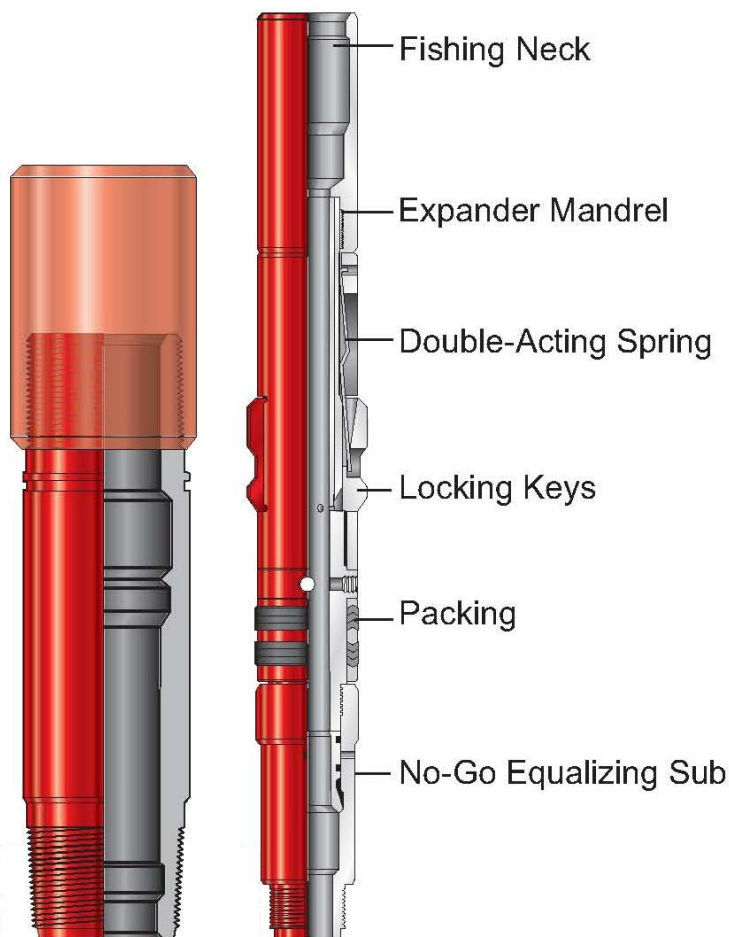
- Landing Nipples
  - Large bore for minimum restriction
  - Universal nipple with one internal profile
- Optional Holddown\*
  - Interference holddown for smaller locks
  - Shear pin holddown for larger locks

### Otis® X® and XN® Landing Nipples and Lock Mandrels

| Tubing |       |        |      |       |       |       |       | For Standard Tubing Weights |       |              |       |          |       | Lock Mandrel ID |       |
|--------|-------|--------|------|-------|-------|-------|-------|-----------------------------|-------|--------------|-------|----------|-------|-----------------|-------|
|        |       |        |      |       |       |       |       | X® Profile                  |       | XN® Profile  |       |          |       |                 |       |
| Size   |       | Weight |      | ID    |       | Drift |       | Packing Bore                |       | Packing Bore |       | No-Go ID |       | Lock Mandrel ID |       |
| in.    | mm    | lb/ft  | kg/m | in.   | mm    | in.   | mm    | in.                         | mm    | in.          | mm    | in.      | mm    | in.             | mm    |
| 2 3/8  | 60.33 | 4.6    | 6.85 | 1.995 | 50.67 | 1.901 | 48.29 | 1.875                       | 47.63 | 1.875        | 47.63 | 1.791    | 45.49 | 1.00            | 25.40 |
|        |       | 4.7    | 6.99 |       |       |       |       |                             |       |              |       |          |       |                 |       |
| 2 7/8  | 73.03 | 6.4    | 9.52 | 2.441 | 62.00 | 2.347 | 59.61 | 2.313                       | 58.75 | 2.313        | 58.75 | 2.205    | 56.01 | 1.38            | 35.05 |
|        |       | 6.5    | 9.67 |       |       |       |       |                             |       |              |       |          |       |                 |       |

### Benefits

- Landing Nipples
  - Versatility helps reduce completion and production maintenance costs
  - Simple operation
  - Multiple options when running, setting, or retrieving subsurface flow controls
- Lock Mandrels
  - Faster slickline service because of the retractable keys
  - Operator control of locating, landing, and locking in the selected nipple
  - Inside fishing neck provides large ID to maximize production
  - Optional holddown feature for high flow rates and safety valve installations



*Otis® XN® Landing Nipple  
and Lock Mandrel*

## Through-Tubing Plugging Equipment

### Plugs Set in Nipples

#### Otis® One-Trip Plug Choke Assemblies

*Note: Not recommended for use where debris can build up in or above the plug system. Please refer to the prong-type plug systems for a debris tolerant solution.*

Otis® one-trip plug choke assemblies consist of a lock mandrel, an equalizing sub-assembly, and a plug cap. These plug chokes are run and pulled on slickline to plug the tubing for various operations.

Otis one-trip plug chokes are available for all Otis key type locks. This style plug is also available for FBN® locks.

One-trip plug choke assemblies are designed to hold differential pressure from above or below for normal plugging operations. The equalizing sub provides an equalization path across the plug choke. Only one slickline trip is required to run or pull the plug.

#### Applications

- Normal plugging operations
- Setting and testing packers
- Removing the wellhead
- Testing tubing
- Separating zones during production tests or data gathering
- Assemblies for X®, XN®, R®, RX, RPT®, and FBN locks and nipples

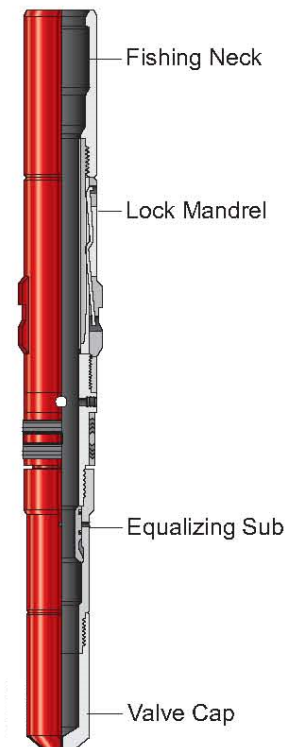
#### Features

- Balanced equalizing system
- Fluid bypass during running or retrieving operations

#### Benefits

- Requires only one slickline trip to run or pull
- Holds pressure from below or above

*Note: One-trip plug requires lock mandrel, equalizing valve, and valve cap, each ordered separately.*



Otis® XX Plug Choke Assembly

#### Ordering Information

**Specify:** lock type and size or part number, if known; plug type (one-trip, two-trip, pump through); service environment (standard, %H<sub>2</sub>S, %CO<sub>2</sub>, amines); temperature and pressure rating requirements; special material requirements, if applicable.



### Otis® Prong-Type Plug Choke Assemblies

Otis® prong-type plug choke assemblies consist of a lock mandrel and a prong equalizing housing. The plug chokes are run and pulled on slickline and used to plug the tubing for various operations, including setting and testing packers and testing tubing.

Otis prong-type plug chokes are made available for all Otis key-type lock mandrels.

Otis plug choke assemblies with equalizing prongs are used to plug the wellbore in either direction. They are designed for use where sediment might collect on the plug. Before the plug is retrieved from the wellbore on slickline, the prong is removed from the plug housing, providing an equalization path across the plug choke. Two slickline trips are required to run or pull the plug.

### Applications

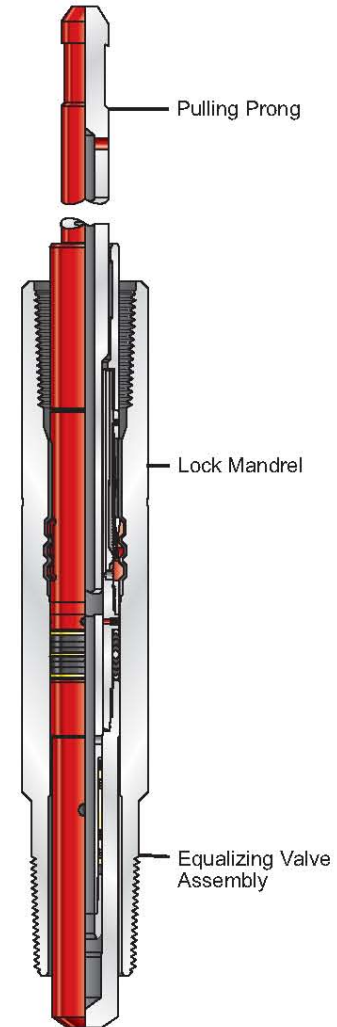
- Setting and testing packers
- Removing the wellhead
- Separating zones during production tests or data-gathering
- For use where sediment might collect on the plug
- Available for X®, XN®, RN®, RPT®, and FBN® locks and nipples

### Features

- Balanced equalizing prongs with seals for either standard or H<sub>2</sub>S service
- Fluid bypass during running or retrieving operations
- Extended-length prongs for use in completions with side-pocket mandrels or when a large amount of sediment is expected
- V-packing seals on equalizing prong

### Benefits

- Set and retrieved on slickline
- Holds pressure from below or above
- Dependable sealing in extreme environments
- Compatible with other LOG Oiltools's downhole landing nipples.



Otis® PRR Plug Choke Assembly

### Ordering Information

**Specify:** lock type and size or part number, if known; plug type (one-trip, two-trip, pump through); service environment (standard, %H<sub>2</sub>S, %CO<sub>2</sub>, amines); temperature and pressure rating requirements; special material requirements, if applicable.