



SECTION XIV: LOCK MANDRELS

2021

REBCO

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LOCK MANDRELS were designed to land and set into downhole pre-positioned Landing Nipples (see [Section XIII](#)) in the well. The Lock Mandrels can be Selective or No-Go type depending on flow control accessory type attached to it.

The following pages will list some of the most common types of **LOCKS** for Landing Nipples and Tubing, offered by **Rebco**.

Rebco Type '**ROTR**', '**ROTRN**', '**ROTX**', '**ROTXN**', Lock Mandrels are offered with following features.

| Product Code | Size Range | Feature |
|--------------|---------------|-------------------------------|
| 10 | 1.25" - 4.81" | Standard |
| 17 | 1.78" - 2.87" | Interference Hold Down |
| 18 | 3.31" - 4.81" | Safety Spring |

TUBING MANDRELS are designed to lock and pack off Wireline retrievable flow controls in wells that do not have Landing Nipples.



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A. For LANDING NIPPLES

Product Code: 10

Type 'ROTR' Lock Mandrel Assembly: 1.500" – 4.813"

Rebco Type 'ROTR' Lock Mandrel is a Selective Set Lock to be set in Type 'ROTR' Landing Nipple of the same Size.

Lock Mandrels with **Safety Spring**, and **Interference Hold Down** are available, see **PRODUCT 17 and 18**

| | | | | | |
|------------------|-------------|-------------|-------------|-------------|-------------|
| NIPPLE SEAL BORE | 1.500" | 1.710" | 1.781" | 1.875" | 2.000" |
| ASSEMBLY NUMBER | 10132015030 | 10132017130 | 10132017830 | 10132018730 | 10132020030 |

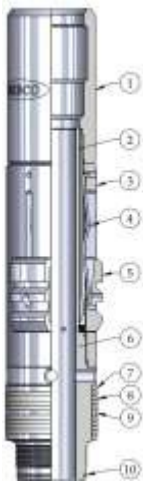


| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO | PART NO |
|---|---------------------|-------|---------|---------|---------|---------|---------|
| 1 | FISHING NECK | 1 | | | | | |
| 2 | EXPANDER SLEEVE | 1 | | | | | |
| 3 | KEY RETAINER SLEEVE | 1 | | | | | |
| 4 | SPRING | 3 | | | | | |
| 5 | KEY | 3 | | | | | |
| 6 | PACKING MANDREL | 1 | | | | | |
| 7 | FEMALE ADAPTER | 2 | | | | | |
| 8 * | 'V' PACKING | Noted | (6) | (7) | (7) | (8) | (8) |
| 9 | CENTRE ADAPTER | 1 | | | | | |
| REDRESS KIT (* Included as part of Kit) | | | | | | | |

ENGINEERING DATA:

| | | | | | |
|------------------------|-------------|-------------|-------------|-------------|-------------|
| LOCK ID | .62" | .75" | .88" | .88" | .88" |
| PACKING OD | 1.500" | 1.710" | 1.781" | 1.875" | 2.000" |
| LENGTH | 13.4" | 13.4" | 13.4" | 13.4" | 13.4" |
| MATERIAL * | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy |
| BOTTOM THREAD | 1 1/8" - 16 | 1 1/8" - 16 | 1 3/8" - 14 | 1 3/8" - 14 | 1 3/8" - 14 |
| RUNNING TOOL - 'ROTR' | 41132015000 | 41132017100 | 41132017800 | 41132018700 | 41132020000 |
| PULLING TOOL - 'ROTGR' | 40051315000 | 40051315000 | 40051317800 | 40051318700 | 40051318700 |
| WEIGHT lbs (kg) | 3.9 (1.77) | 4.3 (1.95) | 4.8 (2.20) | 5.6 (2.54) | 6.0 (2.72) |

| | | | | | |
|------------------|-------------|-------------|-------------|-------------|-------------|
| NIPPLE SEAL BORE | 2.125" | 2.188" | 2.313" | 2.562" | 2.750" |
| ASSEMBLY NUMBER | 10132021230 | 10132021830 | 10132023130 | 10132025630 | 10132027530 |



| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO | PART NO |
|---|---------------------|-------|---------|---------|---------|---------|---------|
| 1 | FISHING NECK | 1 | | | | | |
| 2 | EXPANDER SLEEVE | 1 | | | | | |
| 3 | KEY RETAINER SLEEVE | 1 | | | | | |
| 4 | SPRING | 3 | | | | | |
| 5 | KEY | 3 | | | | | |
| 6 | PACKING MANDREL | 1 | | | | | |
| 7 | FEMALE ADAPTER | 2 | | | | | |
| 8 * | 'V' PACKING | Noted | (8) | (8) | (7) | (8) | (8) |
| 9 | CENTRE ADAPTER | 1 | | | | | |
| 10 * | 'O' RING SEAL | 1 | NONE | NONE | NONE | | |
| REDRESS KIT (* Included as part of Kit) | | | | | | | |

ENGINEERING DATA:

| | | | | | |
|------------------------|-------------|-------------|-------------|-------------|---------------|
| LOCK ID | .88" | 1.12" | 1.12" | 1.38" | 1.50" |
| PACKING OD | 2.125" | 2.188" | 2.313" | 2.562" | 2.750" |
| LENGTH | 13.4" | 13.8" | 13.8" | 13.3" | 13.7" |
| MATERIAL * | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy |
| BOTTOM THREAD | 1 3/8" - 14 | 1 3/4" - 12 | 1 3/4" - 12 | 2"-12 SLB | 2 1/4"-12 SLB |
| RUNNING TOOL - 'ROTR' | 41132021200 | 41132021800 | 41132023100 | 41132025600 | 41132027500 |
| PULLING TOOL - 'ROTGR' | 40051318700 | 40051321800 | 40051323100 | 40051323100 | 40051327500 |
| WEIGHT lbs (kg) | 6.2 (2.8) | 7.3 (3.30) | 9.2 (4.10) | 10.2 (4.6) | 11.3 (5.10) |

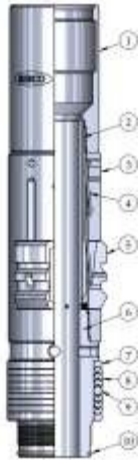


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Type 'ROTR' Lock Mandrel Assembly: Continued

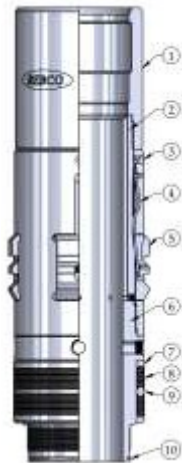


| | | | | | |
|------------------|-------------|-------------|-------------|-------------|-------------|
| NIPPLE SEAL BORE | 2.813" | 2.875" | 3.125" | 3.437" | 3.688" |
| ASSEMBLY NUMBER | 10132028130 | 10132028730 | 10132031230 | 10132034330 | 10132036830 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO | PART NO |
|---|---------------------|-------|---------|---------|---------|---------|---------|
| 1 | FISHING NECK | 1 | | | | | |
| 2 | EXPANDER SLEEVE | 1 | | | | | |
| 3 | KEY RETAINER SLEEVE | 1 | | | | | |
| 4 | SPRING | Noted | (3) | (3) | (4) | (4) | (4) |
| 5 | KEY | Noted | (3) | (3) | (4) | (4) | (4) |
| 6 | PACKING MANDREL | 1 | | | | | |
| 7 | FEMALE ADAPTER | 2 | | | | | |
| 8 * | 'V' PACKING | 8 | | | | | |
| 9 | CENTRE ADAPTER | 1 | | | | | |
| 10 * | 'O' RING SEAL | 1 | | | | | |
| REDRESS KIT (* Included as part of Kit) | | | | | | | |

ENGINEERING DATA:

| | | | | | |
|------------------------|---------------|---------------|---------------|---------------|----------------|
| LOCK ID | 1.50" | 1.50" | 1.94" | 1.94" | 2.38" |
| PACKING OD | 2.813" | 2.875" | 3.125" | 3.437" | 3.688" |
| LENGTH | 13.7" | 13.7" | 13.7" | 14.2" | 14.37" |
| MATERIAL * | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy |
| BOTTOM THREAD | 2 1/4"-12 SLB | 2 1/4"-12 SLB | 2 5/8"-12 SLB | 2 3/4"-12 SLB | 3 1/16"-12 SLB |
| RUNNING TOOL - 'ROTR' | 41132028100 | 41132028700 | 41132031200 | 41132034300 | 41132036800 |
| PULLING TOOL - 'ROTGR' | 40051327500 | 40051327500 | 40051331200 | 40051331200 | 40051336804 |
| WEIGHT lbs (kg) | 11.6 (5.30) | 12.0 (5.5) | 16.7 (7.57) | 19.1 (8.70) | 18.2 (8.3) |



| | | | | | |
|------------------|-------------|-------------|-------------|-------------|-------------|
| NIPPLE SEAL BORE | 3.813" | 4.125" | 4.313" | 4.562" | 4.813" |
| ASSEMBLY NUMBER | 10132038130 | 10132041230 | 10132043130 | 10132045630 | 10132048130 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO | PART NO |
|---|---------------------|-------|---------|---------|---------|---------|---------|
| 1 | FISHING NECK | 1 | | | | | |
| 2 | EXPANDER SLEEVE | 1 | | | | | |
| 3 | KEY RETAINER SLEEVE | 1 | | | | | |
| 4 | SPRING | 4 | | | | | |
| 5 | KEY | 4 | | | | | |
| 6 | PACKING MANDREL | 1 | | | | | |
| 7 | FEMALE ADAPTER | 2 | | | | | |
| 8 * | 'V' PACKING | Noted | (6) | (8) | (8) | (8) | (10) |
| 9 | CENTRE ADAPTER | 1 | | | | | |
| 10 * | 'O' RING SEAL | 1 | | | | | |
| REDRESS KIT (* Included as part of Kit) | | | | | | | |

ENGINEERING DATA:

| | | | | | |
|------------------------|----------------|---------------|---------------|---------------|--------------|
| LOCK ID | 2.12" | 2.75" | 2.62" | 2.85" | 3.12" |
| PACKING OD | 3.813" | 4.125" | 4.313" | 4.562" | 4.813" |
| LENGTH | 14.77" | 14.38" | 14.39" | 14.92" | 14.6" |
| MATERIAL * | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy |
| BOTTOM THREAD | 3 1/16"-12 SLB | 3 1/4"-12 SLB | 3 1/4"-12 SLB | 3 3/4"-12 SLB | 4"-12 SLB |
| RUNNING TOOL - 'ROTR' | 41132038100 | 41132041200 | 41132043100 | 41132045600 | 41132048100 |
| PULLING TOOL - 'ROTGR' | 40051336804 | 40051436804 | 40051336804 | 40051345600 | 40051345600 |
| WEIGHT lbs (kg) | 24.8 (11.0) | 22.0 (9.9) | 28.6 (13.0) | 29.4 (13.4) | 31.8 (14.40) |

* Norm Alloy is suitable for H₂S Service (NACE MR-01-75, Latest Revision)

NOTE: Lock Mandrels Sizes 3.437" - 4.813" without Safety Spring (Product 18) are Special Order Locks



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Product Code: 10

Type 'ROTRN' Lock Mandrel Assembly: 1.500" – 4.813"

Rebco Type 'ROTRN' Lock Mandrel has chamfered Keys, and when a Bottom Sub is added, it becomes a No-Go Lock Mandrel. It is to be landed in a Type 'ROTRN' Landing Nipple of the same size.

Lock Mandrels are available in a variety of Materials, suitable to down-hole conditions.

Lock Mandrels with **Safety Spring**, and **Interference Hold Down** are available, see **PRODUCT 17 and 18**



| NIPPLE SEAL BORE | 1.500" | 1.710" | 1.781" | 1.875" | 2.000" |
|------------------|-------------|-------------|-------------|-------------|-------------|
| ASSEMBLY NUMBER | 10131015030 | 10131017130 | 10131017830 | 10131018730 | 10131020030 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO | PART NO |
|--|---------------------|-------|---------|---------|---------|---------|---------|
| 1 | FISHING NECK | 1 | | | | | |
| 2 | EXPANDER SLEEVE | 1 | | | | | |
| 3 | KEY RETAINER SLEEVE | 1 | | | | | |
| 4 | SPRING | 3 | | | | | |
| 5 | KEY | 3 | | | | | |
| 6 | PACKING MANDREL | 1 | | | | | |
| 7 | FEMALE ADAPTER | 2 | | | | | |
| 8 * | 'V' PACKING | Noted | (6) | (7) | (7) | (8) | (8) |
| 9 | CENTRE ADAPTER | 1 | | | | | |
| REDRESS KIT (* Included as part of Kit) | | | | | | | |

ENGINEERING DATA:

| | | | | | |
|------------------------|-------------|-------------|-------------|-------------|-------------|
| LOCK ID | .62" | .75" | .88" | .88" | .88" |
| PACKING OD | 1.500" | 1.710" | 1.781" | 1.875" | 2.000" |
| LENGTH | 13.4" | 13.4" | 13.4" | 13.4" | 13.4" |
| MATERIAL * | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy |
| BOTTOM THREAD | 1 1/8" - 16 | 1 1/8" - 16 | 1 3/8" - 14 | 1 3/8" - 14 | 1 3/8" - 14 |
| RUNNING TOOL - 'ROTR' | 41132015000 | 41132017100 | 41132017800 | 41132018700 | 41132020000 |
| PULLING TOOL - 'ROTGR' | 40051315000 | 40051315000 | 40051317800 | 40051318700 | 40051318700 |
| WEIGHT lbs (kg) | 3.9 (1.77) | 4.3 (1.95) | 4.8 (2.20) | 5.6 (2.54) | 6.0 (2.72) |

| NIPPLE SEAL BORE | 2.125" | 2.188" | 2.313" | 2.562" | 2.750" |
|------------------|-------------|-------------|-------------|-------------|-------------|
| ASSEMBLY NUMBER | 10131021230 | 10131021830 | 10131023130 | 10131025630 | 10131027530 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO | PART NO |
|--|---------------------|-------|---------|---------|---------|---------|---------|
| 1 | FISHING NECK | 1 | | | | | |
| 2 | EXPANDER SLEEVE | 1 | | | | | |
| 3 | KEY RETAINER SLEEVE | 1 | | | | | |
| 4 | SPRING | 3 | | | | | |
| 5 | KEY | 3 | | | | | |
| 6 | PACKING MANDREL | 1 | | | | | |
| 7 | FEMALE ADAPTER | 2 | | | | | |
| 8 * | 'V' PACKING | Noted | (8) | (8) | (7) | (8) | (8) |
| 9 | CENTRE ADAPTER | 1 | | | | | |
| 10 * | 'O' RING SEAL | 1 | NONE | NONE | NONE | | |
| REDRESS KIT (* Included as part of Kit) | | | | | | | |

ENGINEERING DATA:

| | | | | | |
|------------------------|-------------|-------------|-------------|-------------|---------------|
| LOCK ID | .88" | 1.12" | 1.12" | 1.38" | 1.50" |
| PACKING OD | 2.125" | 2.188" | 2.313" | 2.562" | 2.750" |
| LENGTH | 13.4" | 13.8" | 13.8" | 13.3" | 13.7" |
| MATERIAL * | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy |
| BOTTOM THREAD | 1 3/8" - 14 | 1 3/4" - 12 | 1 3/4" - 12 | 2"-12 SLB | 2 1/4"-12 SLB |
| RUNNING TOOL - 'ROTR' | 41132021200 | 41132021800 | 41132023100 | 41132025600 | 41132027500 |
| PULLING TOOL - 'ROTGR' | 40051318700 | 40051321800 | 40051323100 | 40051323100 | 40051327500 |
| WEIGHT lbs (kg) | 6.2 (2.8) | 7.3 (3.30) | 9.2 (4.10) | 10.2 (4.6) | 11.3 (5.10) |





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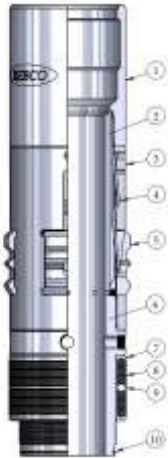
2021



Type 'ROTRN' Lock Mandrel Assembly: Continued

| | | | | | |
|------------------|-------------|-------------|-------------|-------------|-------------|
| NIPPLE SEAL BORE | 2.813" | 2.875" | 3.125" | 3.437" | 3.688" |
| ASSEMBLY NUMBER | 10131028130 | 10131028730 | 10131031230 | 10131034330 | 10131036830 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO | PART NO |
|--|---------------------|-------|---------|---------|---------|---------|---------|
| 1 | FISHING NECK | 1 | | | | | |
| 2 | EXPANDER SLEEVE | 1 | | | | | |
| 3 | KEY RETAINER SLEEVE | 1 | | | | | |
| 4 | SPRING | Noted | (3) | (3) | (4) | (4) | (4) |
| 5 | KEY | Noted | (3) | (3) | (4) | (4) | (4) |
| 6 | PACKING MANDREL | 1 | | | | | |
| 7 | FEMALE ADAPTER | 2 | | | | | |
| 8 * | 'V' PACKING | 8 | | | | | |
| 9 | CENTRE ADAPTER | 1 | | | | | |
| 10 * | 'O' RING SEAL | 1 | | | | | |
| REDRESS KIT (* Included as part of Kit) | | | | | | | |



ENGINEERING DATA:

| | | | | | |
|------------------------|---------------|---------------|---------------|---------------|----------------|
| LOCK ID | 1.50" | 1.50" | 1.94" | 1.94" | 2.38" |
| PACKING OD | 2.813" | 2.875" | 3.125" | 3.437" | 3.688" |
| LENGTH | 13.7" | 13.7" | 13.7" | 14.2" | 14.37" |
| MATERIAL * | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy |
| BOTTOM THREAD | 2 1/4"-12 SLB | 2 1/4"-12 SLB | 2 5/8"-12 SLB | 2 3/4"-12 SLB | 3 1/16"-12 SLB |
| RUNNING TOOL - 'ROTR' | 41132028100 | 41132028700 | 41132031200 | 41132034300 | 41132036800 |
| PULLING TOOL - 'ROTGR' | 40051327500 | 40051327500 | 40051331200 | 40051331200 | 40051336804 |
| WEIGHT lbs (kg) | 11.6 (5.30) | 12.0 (5.5) | 16.7 (7.57) | 19.1 (8.70) | 18.2 (8.3) |

| | | | | | |
|------------------|-------------|-------------|-------------|-------------|-------------|
| NIPPLE SEAL BORE | 3.813" | 4.125" | 4.313" | 4.562" | 4.813" |
| ASSEMBLY NUMBER | 10131038130 | 10131041230 | 10131043130 | 10131045630 | 10131048130 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO | PART NO |
|--|---------------------|-------|---------|---------|---------|---------|---------|
| 1 | FISHING NECK | 1 | | | | | |
| 2 | EXPANDER SLEEVE | 1 | | | | | |
| 3 | KEY RETAINER SLEEVE | 1 | | | | | |
| 4 | SPRING | 4 | | | | | |
| 5 | KEY | 4 | | | | | |
| 6 | PACKING MANDREL | 1 | | | | | |
| 7 | FEMALE ADAPTER | 2 | | | | | |
| 8 * | 'V' PACKING | Noted | (6) | (8) | (8) | (8) | (10) |
| 9 | CENTRE ADAPTER | 1 | | | | | |
| 10 * | 'O' RING SEAL | 1 | | | | | |
| REDRESS KIT (* Included as part of Kit) | | | | | | | |



ENGINEERING DATA:

| | | | | | |
|------------------------|----------------|---------------|---------------|---------------|--------------|
| LOCK ID | 2.12" | 2.75" | 2.62" | 2.85" | 3.12" |
| PACKING OD | 3.813" | 4.125" | 4.313" | 4.562" | 4.813" |
| LENGTH | 14.77" | 14.38" | 14.39" | 14.92" | 14.6" |
| MATERIAL * | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy |
| BOTTOM THREAD | 3 1/16"-12 SLB | 3 1/4"-12 SLB | 3 1/4"-12 SLB | 3 3/4"-12 SLB | 4"-12 SLB |
| RUNNING TOOL - 'ROTR' | 41132038100 | 41132041200 | 41132043100 | 41132045600 | 41132048100 |
| PULLING TOOL - 'ROTGR' | 40051336804 | 40051436804 | 40051336804 | 40051345600 | 40051345600 |
| WEIGHT lbs (kg) | 24.8 (11.0) | 22.0 (9.9) | 28.6 (13.0) | 29.4 (13.4) | 31.8 (14.40) |

* Norm Alloy is suitable for H₂S Service (NACE MR-01-75, Latest Revision)

NOTE: Lock Mandrels Sizes 3.437" - 4.813" without Safety Spring (**Product 18**) are Special Order Locks

ALL Lock Mandrels are available in a variety of Materials, suitable for down-hole conditions



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Product Code: 5

Type 'ROTR' and Type 'ROTRN' Lock Mandrel Assembly with Interference Hold Down

Rebco Lock Mandrels with **Interference Hold Down** feature provide positive latching structure which minimizes the possibility of the lock mandrel accidentally unlocking due to vibration at high flow rates.

Lock Mandrels with **Interference Hold Down** safety feature are available in a variety of Materials, suitable to down-hole conditions.

| NIPPLE SEAL BORE | | 1.781" | 1.875" | 2.000" | 2.125" | 2.188" | 2.313" |
|------------------|-------|-------------|-------------|-------------|-------------|-------------|-------------|
| ASSEMBLY NUMBER | ROTR | 17132017830 | 17132018730 | 17132020030 | 17132021230 | 17132021830 | 17132023130 |
| | ROTRN | 17131017830 | 17131018730 | 17131020030 | 17131021230 | 17131021830 | 17131023130 |

ENGINEERING DATA:

| | | | | | | |
|------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| LOCK ID | .88" | .88" | .88" | .88" | 1.12" | 1.12" |
| PACKING OD | 1.781" | 1.875" | 2.000" | 2.125" | 2.188" | 2.313" |
| BOTTOM THREAD | 1 3/8" - 14 | 1 3/8" - 14 | 1 3/8" - 14 | 1 3/8" - 14 | 1 3/4" - 12 | 1 3/4" - 12 |
| LENGTH | 13.4" | 13.4" | 13.4" | 13.4" | 13.8" | 13.8" |
| MATERIAL * | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy |
| REDRESS KIT | 10132024178 | 10182024187 | 10132024200 | 10132024212 | 10132024218 | 10182024231 |
| RUNNING TOOL - 'ROTR' | 41132017800 | 41132018700 | 41132020000 | 41132021200 | 41132021800 | 41132023100 |
| PULLING TOOL - 'ROTRN' | 40051317800 | 40051318700 | 40051318700 | 40051318700 | 40051321800 | 40051323100 |



'ROTR' Lock

| NIPPLE SEAL BORE | | 2.562" | 2.750" | 2.813" | 2.875" |
|------------------|-------|-------------|-------------|-------------|-------------|
| ASSEMBLY NUMBER | ROTR | 17132025630 | 17132027530 | 17132028130 | 17132028730 |
| | ROTRN | 17131025630 | 17131027530 | 17131028130 | 17131028730 |

ENGINEERING DATA:

| | | | | |
|------------------------|-------------|---------------|---------------|---------------|
| LOCK ID | 1.38" | 1.50" | 1.50" | 1.50" |
| PACKING OD | 2.562" | 2.750" | 2.813" | 2.875" |
| BOTTOM THREAD | 2"-12 SLB | 2 1/4"-12 SLB | 2 1/4"-12 SLB | 2 1/4"-12 SLB |
| LENGTH | 13.3" | 13.7" | 13.7" | 13.7" |
| MATERIAL * | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy |
| REDRESS KIT | 10132024256 | 10182024275 | 10182024281 | 10182024287 |
| RUNNING TOOL - 'ROTR' | 41132025600 | 41132027500 | 41132028100 | 41132028700 |
| PULLING TOOL - 'ROTRN' | 40051323100 | 40051327500 | 40051327500 | 40051327500 |

* Norm Alloy is suitable for H₂S Service (NACE MR-01-75, Latest Revision)



'ROTRN' Lock



SECTION XIV: LOCK MANDRELS

2021



Product Code: 18

Type 'ROTR' and Type 'ROTRN' Lock Mandrel Assembly with Safety Spring

Rebco Lock Mandrels with **Safety Spring** and **Shear Pin(s)** feature holds the Key Expander Sleeve locked under flowing conditions.

Lock Mandrels (**PRODUCT CODE 18**) in addition to **Safety Spring and Shear Pin(s)**, have **Expander Sleeve (DET 2)** and **Key Retainer (DET 3)** different than the ones used in **Product Code 10** Lock Mandrels.

NOTE: When ordering, **Rebco** will supply these Lock Mandrels as a first option. Lock Mandrels shown in **Product Code 10** within the same Size Range itemized below are not stocked.

| | | | | | | |
|------------------|-------|-------------|-------------|-------------|-------------|-------------|
| NIPPLE SEAL BORE | | 3.437" | 3.688" | 3.813" | 4.125" | 4.313" |
| ASSEMBLY NUMBER | ROTR | 18132034330 | 18132036830 | 18132038130 | 18132041230 | 18132043130 |
| | ROTRN | 18131034330 | 18131036830 | 18131038130 | 18131041230 | 18131043130 |

ENGINEERING DATA:

| | | | | | |
|------------------|---------------|----------------|----------------|---------------|---------------|
| LOCK ID | 1.94" | 2.38" | 2.12" | 2.75" | 2.62" |
| PACKING OD | 3.437" | 3.688" | 3.813" | 4.125" | 4.313" |
| BOTTOM THREAD | 2 3/4"-12 SLB | 3 1/16"-12 SLB | 3 1/16"-12 SLB | 3 1/4"-12 SLB | 3 1/4"-12 SLB |
| LENGTH | 14.2" | 14.37" | 14.77" | 14.38" | 14.39" |
| MATERIAL * | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy |
| WEIGHT lbs (kgs) | 19.1 (8.70) | 18.2 (8.3) | 24.8 (11.0) | 22.0 (9.9) | 28.6 (13.0) |

ACCESSORIES:

| | | | | | | |
|------------------------|---------|-------------|-------------|-------------|-------------|-------------|
| REDRESS KIT | Mandrel | 10132024343 | 10132024368 | 10132024381 | 10132024412 | 10132024431 |
| | Safety | 18132024343 | 18132024368 | 18132024381 | 18132024412 | 18132024431 |
| RUNNING TOOL - 'ROTR' | | 41132034300 | 41132036800 | 41132038100 | 41132041200 | 41132043100 |
| PULLING TOOL - 'ROTRN' | | 40051331200 | 40051336804 | 40051336804 | 40051436804 | 40051336804 |



'ROTR' Lock

| | | | |
|------------------|-------|-------------|-------------|
| NIPPLE SEAL BORE | | 4.562" | 4.813" |
| ASSEMBLY NUMBER | ROTR | 18132045630 | 18132048130 |
| | ROTRN | 18131045630 | 18131048130 |

ENGINEERING DATA:

| | | |
|------------------|---------------|--------------|
| LOCK ID | 2.85" | 3.12" |
| PACKING OD | 4.562" | 4.813" |
| BOTTOM THREAD | 3 3/4"-12 SLB | 4"-12 SLB |
| LENGTH | 14.92" | 14.6" |
| MATERIAL * | Norm Alloy | Norm Alloy |
| WEIGHT lbs (kgs) | 29.4 (13.4) | 31.8 (14.40) |

ACCESSORIES:

| | | | |
|------------------------|---------|-------------|-------------|
| REDRESS KIT | Mandrel | 10132024456 | 10132024481 |
| | Safety | 18132024456 | 18132024481 |
| RUNNING TOOL - 'ROTR' | | 41132045600 | 41132048100 |
| PULLING TOOL - 'ROTRN' | | 40051345600 | 40051345600 |

* Norm Alloy is suitable for H₂S Service (NACE MR-01-75, Latest Revision)

Lock Mandrels with **Safety Spring and Shear Pin(s)** feature are available in a Variety of Materials, suitable for down-hole conditions.



'ROTRN' Lock



SECTION XIV: LOCK MANDRELS

2021

REBCO

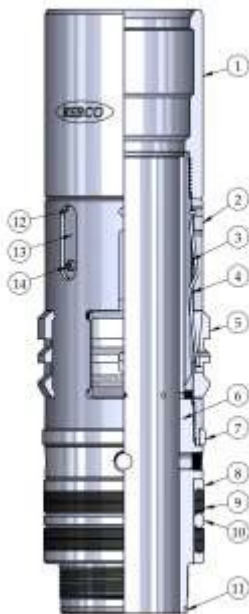
Product Code: 18

Type 'ROTRQ' Lock Mandrel Assembly with Safety Spring and Shear Pin(s)

Rebco Type 'ROTRQ' Lock Mandrels with Safety Spring and Shear Pin(s) are Top No-Go Lock Mandrels designed to land and lock Sub-Surface Safety Valves in Type 'ROTRQ' Landing Nipples.

Other Sizes (not listed) are available, please inquire

| | | | | |
|------------------|-------------|-------------|-------------|-------------|
| NIPPLE SEAL BORE | 3.813" | 4.125" | 4.562" | 6.000" |
| ASSEMBLY NUMBER | 18131238130 | 18131241230 | 18131245630 | 18131260030 |



| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO |
|--|---------------------|-------|---------|---------|---------|---------|
| 1 | FISHING NECK | 1 | | | | |
| NS * | SET SCREW | 1 | None | None | None | |
| 2 | KEY RETAINER SLEEVE | 1 | | | | |
| 3 | EXPANDER SLEEVE | 1 | | | | |
| 4 | SPRING | Noted | (3) | (4) | (4) | (4) |
| 5 | KEY | Noted | (3) | (4) | (4) | (4) |
| 6 | PACKING MANDREL | 1 | | | | |
| 7 | NO-GO RING | 1 | | | | |
| 8 | FEMALE ADAPTER | 2 | | | | |
| 9 * | 'V' PACKING | 6 | | | | |
| 10 | CENTRE ADAPTER | 1 | | | | |
| 11 * | 'O' RING SEAL | 1 | | | | |
| 12 | SHEAR PIN | 2 | | | | |
| 13 | SPRING | 2 | | | | |
| 14 | BUTTON HEAD SCREW | 2 | | | | |
| REDRESS KIT (* Included as part of Kit) | | | | | | |

ENGINEERING DATA:

| | | | | |
|------------------------------------|--------------------|--------------------|--------------------|--------------------|
| LOCK ID | 2.62" | 2.75" | 3.12" | 4.125" |
| FISHING NECK ID | 3.12" | 3.12" | 4.00" | 5.38" |
| PACKING OD (Max) | 3.83" | 4.14" | 4.58" | 6.018" |
| NO-GO RING OD | 3.86" | 4.19" | 4.63" | 6.10" |
| LENGTH | 14.37" | 19.6" | 14.69" | 14.18" |
| MATERIAL * | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy |
| BOTTOM THREAD | 3 1/16"-12 SLB | 3 1/4"-12 SLB | 4"-12 SLB | 5 1/16"-8 SLB |
| RUNNING TOOL - Type 'ROTRX' | 41131838113 | 41131841210 | 41131845611 | 41131860010 |
| PULLING TOOL - 'ROTGR' | 40051336804 | 40051436804 | 40051345600 | 40051359600 |
| WEIGHT lbs (kg) | 24.8 (11.0) | 22.0 (9.9) | 28.6 (13.0) | 55.1 (24.99) |

Large Size Lock Mandrels are available, please Inquire.



5.875"



5.963"



SECTION XIV: LOCK MANDRELS

2021

REBCO

Product Code: 10

Type 'ROTX' Lock Mandrel Assembly: 1.250" – 4.562"

Rebco Type 'ROTX' Lock Mandrel is a Selective Set Lock to be set in Type 'ROTX' Landing Nipple of the same Size.

Lock Mandrels are available in a variety of Materials, suitable for down-hole conditions.

Lock Mandrels with **Safety Spring**, and **Interference Hold Down** are available, see **PRODUCT 17** and **18**



| | | | | |
|------------------|-------------|-------------|-------------|-------------|
| NIPPLE SEAL BORE | 1.250" | 1.500" | 1.625" | 1.875" |
| ASSEMBLY NUMBER | 10182012530 | 10182015030 | 10182016230 | 10182018730 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO |
|--|---------------------|-----|---------|---------|---------|---------|
| 1 | FISHING NECK | 1 | | | | |
| 2 | EXPANDER SLEEVE | 1 | | | | |
| 3 | KEY RETAINER SLEEVE | 1 | | | | |
| 4 | SPRING | 2 | | | | |
| 5 | KEY | 2 | | | | |
| 6 | PACKING MANDREL | 1 | | | | |
| 7 | FEMALE ADAPTER | 2 | | | | |
| 8 * | 'V' PACKING | 6 | | | | |
| 9 | CENTRE ADAPTER | 1 | | | | |
| REDRESS KIT (* Included as part of Kit) | | | | | | |

ENGINEERING DATA:

| | | | | |
|-------------------------------|--------------------|--------------------|--------------------|--------------------|
| LOCK ID | .62" | .75" | .75" | 1.00" |
| FISHING NECK ID | .88" | 1.06" | 1.06" | 1.38" |
| PACKING OD | 1.250" | 1.500" | 1.625" | 1.875" |
| LENGTH | 13.32" | 13.44" | 13.44" | 13.38" |
| MATERIAL * | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy |
| BOTTOM THREAD | 7/8" - 20 | 1 1/8" - 16 | 1 1/8" - 16 | 1 3/8" - 14 |
| RUNNING TOOL - 'ROTX' | 41182012500 | 41182015000 | 41182016200 | 41182018700 |
| PULLING TOOL - 'ROTGR' | 40051312500 | 40051315000 | 40051315000 | 40051318700 |
| WEIGHT lbs (kg) | 2.1 (.95) | 4.1 (1.9) | 4.6 (2.1) | 5.1 (2.3) |

| | | | | |
|------------------|-------------|-------------|-------------|-------------|
| NIPPLE SEAL BORE | 2.313" | 2.750" | 2.813" | 2.875" |
| ASSEMBLY NUMBER | 10182023130 | 10182027530 | 10182028130 | 10182028730 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO |
|--|---------------------|-------|---------|---------|---------|---------|
| 1 | FISHING NECK | 1 | | | | |
| 2 | EXPANDER SLEEVE | 1 | | | | |
| 3 | KEY RETAINER SLEEVE | 1 | | | | |
| 4 | SPRING | Noted | (2) | (3) | (3) | (3) |
| 5 | KEY | Noted | (2) | (3) | (3) | (3) |
| 6 | PACKING MANDREL | 1 | | | | |
| 7 | FEMALE ADAPTER | 2 | | | | |
| 8 * | 'V' PACKING | 6 | | | | |
| 9 | CENTRE ADAPTER | 1 | | | | |
| 10 * | 'O' RING SEAL | 1 | None | | | |
| REDRESS KIT (* Included as part of Kit) | | | | | | |

ENGINEERING DATA:

| | | | | |
|-------------------------------|--------------------|--------------------|--------------------|--------------------|
| LOCK ID | 1.38" | 1.75" | 1.75" | 1.75" |
| FISHING NECK ID | 1.81" | 2.31" | 2.31" | 2.31" |
| PACKING OD | 2.313" | 2.750" | 2.813" | 2.875" |
| LENGTH | 13.50" | 13.75" | 13.75" | 13.75" |
| MATERIAL * | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy |
| BOTTOM THREAD | 1 3/4" - 12 | 2 1/4" - 12 SLB | 2 1/4" - 12 SLB | 2 1/4" - 12 SLB |
| RUNNING TOOL - 'ROTX' | 41182023100 | 41182027500 | 41182028100 | 41182028700 |
| PULLING TOOL - 'ROTGR' | 40051323100 | 40051327500 | 40051327500 | 40051327500 |
| WEIGHT lbs (kg) | 7.0 (3.2) | 9.6 (4.4) | 10.2 (4.6) | 11.2 (5.1) |





SECTION XIV: LOCK MANDRELS

2021

REBCO

Product Code: 10 and 18 Continued

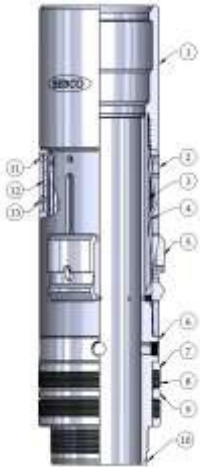
Type 'ROTX' Lock Mandrel Assembly: 3.313" – 4.562" Product Code 18

Safety Spring Feature is a positive locking feature preventing the Lock Mandrel to unlock due to some forces caused by well conditions.

Shear Pin is installed prior to running the Lock into the well, once set, the Shear Pin lodges itself between the Expander Sleeve and Key Retainer, creating positive feature.

| | | | | |
|------------------|-------------|-------------|-------------|-------------|
| NIPPLE SEAL BORE | 3.313" | 3.813" | 4.313" | 4.562" |
| ASSEMBLY NUMBER | 18182033130 | 18182038130 | 18182043130 | 18182045630 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO |
|--|---------------------|-------|---------|---------|---------|---------|
| 1 | FISHING NECK | 1 | | | | |
| 2 | EXPANDER SLEEVE | 1 | | | | |
| 3 | KEY RETAINER SLEEVE | 1 | | | | |
| 4 | SPRING | Noted | (3) | (3) | (4) | (4) |
| 5 | KEY | Noted | (3) | (3) | (4) | (4) |
| 6 | PACKING MANDREL | 1 | | | | |
| 7 | FEMALE ADAPTER | 2 | | | | |
| 8 * | 'V' PACKING | Noted | (8) | (6) | (7) | (6) |
| 9 | CENTRE ADAPTER | 1 | | | | |
| 10 * | 'O' RING SEAL | 1 | | | | |
| 11 | SHEAR PIN | Noted | (1) | (1) | (2) | (1) |
| 12 | SPRING | Noted | (1) | (1) | (2) | (1) |
| 13 | RETAINER SCREW | Noted | (1) | (1) | (2) | (1) |
| REDRESS KIT (* Included as part of Kit) | | | | | | |



ENGINEERING DATA:

| | | | | |
|------------------------------|--------------------|--------------------|--------------------|--------------------|
| LOCK ID | 2.12" | 2.62" | 2.62" | 3.12" |
| FISHING NECK ID | 2.62" | 3.12" | 3.12" | 4.00" |
| PACKING OD | 3.313" | 3.813" | 4.313" | 4.562" |
| LENGTH | 14.51" | 14.25" | 14.39" | 14.69" |
| MATERIAL * | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy |
| BOTTOM THREAD | 2 3/4"-12 SLB | 3 1/16"-12 SLB | 3 1/4"-12 SLB | 4" – 12 SLB |
| RUNNING TOOL - 'ROTX' | 41182033100 | 41182038100 | 41182043100 | 41182045600 |
| PULLING TOOL - 'ROTR' | 40051331202 | 40051336804 | 40051336804 | 40051345600 |
| WEIGHT lbs (kg) | 14.7 (6.7) | 17.2 (7.80) | 28.6 (13.0) | 25.8 (11.7) |

* Norm Alloy is suitable for H₂S Service (NACE MR-01-75, Latest Revision)



Rebco offers **Check Set Tools (Product Code 41)** for all 'ROTX', 'ROTXN', 'ROTR' and 'ROTRN' Type Locks

Check Set Tool is used to "Check" the proper setting of the Lock in the Landing Nipple.

See **Section II - C: SPECIALTY SERVICE TOOLS**



SECTION XIV: LOCK MANDRELS

2021

REBCO

Product Code: 10

Type 'ROTXN' Lock Mandrel Assembly: 1.250" – 4.562"

Rebco Type 'ROTXN' Lock Mandrel has chamfered keys, and when a Bottom Sub is added, it becomes a No-Go Lock Mandrel. It is to be landed in a Type 'ROTXN' Landing Nipple of the same size.



| | | | | |
|------------------|-------------|-------------|-------------|-------------|
| NIPPLE SEAL BORE | 1.250" | 1.500" | 1.625" | 1.875" |
| ASSEMBLY NUMBER | 10181012530 | 10181015030 | 10181016230 | 10181018730 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO |
|--|---------------------|-----|---------|---------|---------|---------|
| 1 | FISHING NECK | 1 | | | | |
| 2 | EXPANDER SLEEVE | 1 | | | | |
| 3 | KEY RETAINER SLEEVE | 1 | | | | |
| 4 | SPRING | 2 | | | | |
| 5 | KEY | 2 | | | | |
| 6 | PACKING MANDREL | 1 | | | | |
| 7 | FEMALE ADAPTER | 2 | | | | |
| 8 * | 'V' PACKING | 6 | | | | |
| 9 | CENTRE ADAPTER | 1 | | | | |
| REDRESS KIT (* Included as part of Kit) | | | | | | |

ENGINEERING DATA:

| | | | | |
|-------------------------------|--------------------|--------------------|--------------------|--------------------|
| LOCK ID | .62" | .75" | .75" | 1.00" |
| FISHING NECK ID | .88" | 1.06" | 1.06" | 1.38" |
| PACKING OD | 1.250" | 1.500" | 1.625" | 1.875" |
| LENGTH | 13.32" | 13.44" | 13.44" | 13.38" |
| MATERIAL * | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy |
| BOTTOM THREAD | 7/8" - 20 | 1 1/8" - 16 | 1 1/8" - 16 | 1 3/8" - 14 |
| RUNNING TOOL - 'ROTX' | 41182012500 | 41182015000 | 41182016200 | 41182018700 |
| PULLING TOOL - 'ROTGR' | 40051312500 | 40051315000 | 40051315000 | 40051318700 |
| WEIGHT lbs (kg) | 2.1 (.95) | 4.1 (1.9) | 4.6 (2.1) | 5.1 (2.3) |

| | | | | |
|------------------|-------------|-------------|-------------|-------------|
| NIPPLE SEAL BORE | 2.313" | 2.750" | 2.813" | 2.875" |
| ASSEMBLY NUMBER | 10181023130 | 10181027530 | 10181028130 | 10181028730 |



| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO |
|--|---------------------|-------|---------|---------|---------|---------|
| 1 | FISHING NECK | 1 | | | | |
| 2 | EXPANDER SLEEVE | 1 | | | | |
| 3 | KEY RETAINER SLEEVE | 1 | | | | |
| 4 | SPRING | Noted | (2) | (3) | (3) | (3) |
| 5 | KEY | Noted | (2) | (3) | (3) | (3) |
| 6 | PACKING MANDREL | 1 | | | | |
| 7 | FEMALE ADAPTER | 2 | | | | |
| 8 * | 'V' PACKING | 6 | | | | |
| 9 | CENTRE ADAPTER | 1 | | | | |
| 10 * | 'O' RING SEAL | 1 | | | | |
| REDRESS KIT (* Included as part of Kit) | | | | | | |

ENGINEERING DATA:

| | | | | |
|-------------------------------|--------------------|--------------------|--------------------|--------------------|
| LOCK ID | 1.38" | 1.75" | 1.75" | 1.75" |
| FISHING NECK ID | 1.81" | 2.31" | 2.31" | 2.31" |
| PACKING OD | 2.313" | 2.750" | 2.813" | 2.875" |
| LENGTH | 13.31" | 13.75" | 13.75" | 13.75" |
| MATERIAL * | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy |
| BOTTOM THREAD | 1 3/4" - 12 | 2 1/4"-12 SLB | 2 1/4"-12 SLB | 2 1/4"-12 SLB |
| RUNNING TOOL - 'ROTX' | 41182023100 | 41182027500 | 41182028100 | 41182028700 |
| PULLING TOOL - 'ROTGR' | 40051323100 | 40051327500 | 40051327500 | 40051327500 |
| WEIGHT lbs (kg) | 7.0 (3.2) | 9.6 (4.4) | 10.2 (4.6) | 11.2 (5.1) |

* Norm Alloy is suitable for H₂S Service (NACE MR-01-75, Latest Revision)



SECTION XIV: LOCK MANDRELS

2021

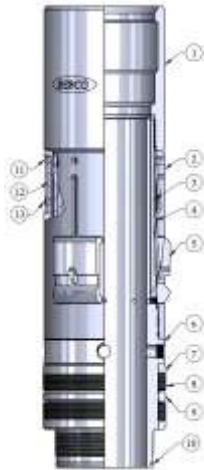
REBCO

Product Code: 10 and 18 Continued

Type 'ROTXN' Lock Mandrel Assembly: 3.313" – 4.562" Product Code 18

Safety Spring Feature is a positive locking feature preventing the Lock Mandrel to unlock due to some forces caused by well conditions.

Shear Pin (**DET 11**) is installed prior to running the Lock into the well, once set, the Shear Pin lodges itself between the Expander Sleeve (**DET 2**) and Key Retainer (**DET 3**), creating positive feature.



| | | | | |
|------------------|-------------|-------------|-------------|-------------|
| NIPPLE SEAL BORE | 3.313" | 3.813" | 4.313" | 4.562" |
| ASSEMBLY NUMBER | 18181033130 | 18181038130 | 18181043130 | 18181045630 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO |
|--|---------------------|-------|---------|---------|---------|---------|
| 1 | FISHING NECK | 1 | | | | |
| 2 | EXPANDER SLEEVE | 1 | | | | |
| 3 | KEY RETAINER SLEEVE | 1 | | | | |
| 4 | SPRING | Noted | (3) | (3) | (4) | (4) |
| 5 | KEY | Noted | (3) | (3) | (4) | (4) |
| 6 | PACKING MANDREL | 1 | | | | |
| 7 | FEMALE ADAPTER | 2 | | | | |
| 8 * | 'V' PACKING | 6 | | | | |
| 9 | CENTRE ADAPTER | 1 | | | | |
| 10 * | 'O' RING SEAL | 1 | | | | |
| 11 | SHEAR PIN | Noted | (1) | (1) | (2) | (1) |
| 12 | SPRING | Noted | (1) | (1) | (2) | (1) |
| 13 | RETAINER SCREW | Noted | (1) | (1) | (2) | (1) |
| REDRESS KIT (* Included as part of Kit) | | | | | | |

ENGINEERING DATA:

| | | | | |
|-------------------------------|--------------------|--------------------|--------------------|--------------------|
| LOCK ID | 2.12" | 2.62" | 2.62" | 3.12" |
| FISHING NECK ID | 2.62" | 3.12" | 3.12" | 4.00" |
| PACKING OD | 3.313" | 3.813" | 4.313" | 4.562" |
| LENGTH | 14.51" | 14.25" | 14.39" | 14.69" |
| MATERIAL * | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy |
| BOTTOM THREAD | 2 3/4"-12 SLB | 3 1/16"-12 SLB | 3 1/4"-12 SLB | 4" - 12 SLB |
| RUNNING TOOL - 'ROTX' | 41182033100 | 41182038100 | 41182043100 | 41182045600 |
| PULLING TOOL - 'ROTGR' | 40051331200 | 40051336804 | 40051336804 | 40051345600 |
| WEIGHT lbs (kg) | 14.7 (6.7) | 17.0 (7.7) | 28.6 (13.0) | 25.8 (11.7) |

* Norm Alloy is suitable for H₂S Service (NACE MR-01-75, Latest Revision)



SECTION XIV: LOCK MANDRELS

2021

REBCO

Product Code: 17

Type 'ROTX' and Type 'ROTXN' Lock Mandrel Assembly with Interference Hold Down

Rebco Lock Mandrels with Interference Hold Down feature provide positive latching structure which minimizes the possibility of the lock mandrel accidentally unlocking due to vibration at high flow rates.

Lock Mandrels with **Interference Hold Down** safety feature are available in a variety of Materials and Sizes, suitable to down-hole conditions.



'ROTX' Lock



'ROTXN' Lock

| | | | |
|------------------|-------|-------------|-------------|
| NIPPLE SEAL BORE | | 1.875" | 2.313" |
| ASSEMBLY NUMBER | ROTX | 17182018730 | 17182023130 |
| | ROTXN | 17181018730 | 17181023130 |

ENGINEERING DATA:

| | | |
|-----------------------|-------------|-------------|
| LOCK ID | 1.00" | 1.38" |
| PACKING OD | 1.875" | 2.313" |
| BOTTOM THREAD | 1 3/8" - 14 | 1 3/4" - 12 |
| LENGTH | 13.4" | 13.31" |
| MATERIAL * | Norm Alloy | Norm Alloy |
| REDRESS KIT | 10182024187 | 10182024231 |
| RUNNING TOOL - 'ROTX' | 41182018700 | 41182023100 |
| PULLING TOOL - 'ROTR' | 40051318700 | 40051323100 |

Helpful Hint: Illustration of the Lock Mandrel KEY Profile types



Type 'ROTX' Key



Type 'ROTXN' Key



Type 'ROTR' Key



Type 'ROTRN' Key

Product Code: 10

Additional types of **Lock Mandrels** offered by **Rebco**: 'H', 'J', 'N', 'P', 'Q', 'S', 'T'

NOTE: When ordering specify: Type, Size, Material, Service, Position (as in 'S' and 'T' Locks) and any accessories required.



SECTION XIV: LOCK MANDRELS

2021

REBCO

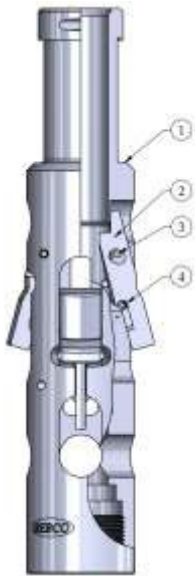
Product Code: 10

Type 'ROTS-1' & 'ROTS-2' Lock Mandrel Sub-Assembly: 1.660" – 4.50"

Rebco Type 'ROTS-1 & 'ROTS-2' Lock Mandrel Sub-Assembly is a Selective Non Flowing Lock. Lock Mandrel Sub-Assembly has Dogs (**DET 2**) facing both ways, up facing Dogs prevent Lock moving upward, and down facing prevent the Lock moving downward.

NOTE: Required **Running** and **Pulling** Tools with appropriate **Probes** are shown in **ENGINEERING DATA** for Type of **Accessories** attached to the Lock Mandrel Sub-Assembly.

Rebco Type 'ROTS-1' and 'ROTS-2' Lock Mandrel Sub-Assemblies are available in variety of Materials, suitable for down-hole conditions.



| | | | | | |
|----------------|------------------------|---------------|---------------|---------------|---------------|
| NOMINAL SIZE | | 1.660" | 1.900" | 2 1/16" | 2 3/8" |
| SEAL BORE SIZE | | 1.18" - 1.25" | 1.43" - 1.50" | 1.56" - 1.62" | 1.78" - 1.87" |
| SUB ASSEMBLY | TYPE of LOCK - (DET 2) | 'ROTS-1' | 'ROTS-2' | 'ROTS-2' | 'ROTS-2' |
| | SUB-ASS'Y NUMBER | 10141201660 | 10142201900 | 10142202060 | 10142202370 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO |
|-----|--------------|-----|---------|---------|---------|---------|
| 1 | LOCK MANDREL | 1 | | | | |
| 2 | LOCK (DOG) | 4 | | | | |
| 3 | LOCK PIN | 4 | | | | |
| 4 | LOCK SPRING | 4 | | | | |

ENGINEERING DATA:

| | | | | |
|-------------------|-----------|-------------|------------|------------|
| MAXIMUM OD | 1.156" | 1.406" | 1.531" | 1.750" |
| FISHING NECK SIZE | .875" | 1.187" | 1.187" | 1.375" |
| MINIMUM ID | .50" | .75" | .75" | .88" |
| LENGTH | 6.94" | 7.69" | 7.56" | 9.12" |
| WEIGHT lbs (kg) | 1.0 (.45) | 2.32 (1.05) | 2.4 (1.09) | 2.9 (1.32) |
| MATERIAL | Alloy | Alloy | Alloy | Alloy |

| | | | | | |
|----------------|------------------------|---------------|-------------|---------------|---------------|
| NOMINAL SIZE | | 2 7/8" | 3 1/2" | 3 1/2" | 4 1/2" |
| SEAL BORE SIZE | | 2.25" - 2.31" | 2.56" | 2.75" - 2.81" | 3.68" - 3.81" |
| SUB ASSEMBLY | TYPE of LOCK - (DET 2) | 'ROTS-2' | 'ROTS-2' | 'ROTS-2' | 'ROTS-1' |
| | SUB-ASS'Y NUMBER | 10142202870 | 10142202560 | 10142203500 | 10141204500 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO |
|-----|--------------|---------|---------|---------|---------|---------|
| 1 | LOCK MANDREL | 1 | | | | |
| 2 | LOCK (DOG) | (Noted) | (4) | (4) | (4) | (6) |
| 3 | LOCK PIN | (Noted) | (4) | (4) | (4) | (6) |
| 4 | LOCK SPRING | (Noted) | (4) | (4) | (4) | (6) |

ENGINEERING DATA:

| | | | | |
|-------------------|------------|-----------|------------|-------------|
| MAXIMUM OD | 2.188" | 2.500" | 2.688" | 3.562" |
| FISHING NECK SIZE | 1.750" | 1.750" | 2.313" | 3.125" |
| MINIMUM ID | 1.19" | 1.20" | 1.44" | 2.06" |
| LENGTH | 9.38" | 10.47" | 10.47" | 12.06" |
| WEIGHT lbs (kg) | 4.2 (1.91) | 6.6 (3.0) | 7.8 (3.54) | 12.6 (5.72) |
| MATERIAL | Alloy | Alloy | Alloy | Alloy |

For Type 'ROTT'S' Lock Sub-Assemblies, see **Product Code 10, SECTION XIV, Page XIV-22**



SECTION XIV: LOCK MANDRELS

2021

REBCO

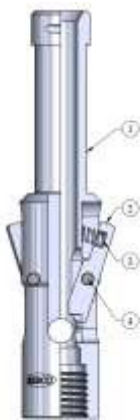
Product Code: 10

Type 'ROTW-1' & 'ROTW-2' Lock Mandrel Sub-Assembly: 1.660" – 4.50"

Rebco Type 'ROTW-1 & 'ROTW-2' is a **Top No-Go**, Non Flowing Lock. Lock Mandrel Sub-Assembly has Locks (Dogs) which prevent upward movement and a No-Go shoulder that seats in the upper part of a seating product to prevent downward movement.

NOTE: Required **Running** and **Pulling** Tools with appropriate **Probes** are shown in **ENGINEERING DATA** for Type of **Accessories** attached to the Lock Mandrel Sub-Assembly.

Rebco Type 'ROTW-1' and 'ROTW-2' Lock Mandrel Sub-Assemblies are available in variety of Materials, suitable for down-hole conditions.

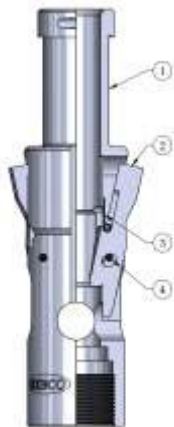


| | | | | | |
|----------------|------------------------|-------------|-------------|-------------|-------------|
| NOMINAL SIZE | | 1.660" | 1.900" | | 2 1/16" |
| SEAL BORE SIZE | | 1.18" | 1.43" | 1.50" | 1.56" |
| SUB ASSEMBY | TYPE of LOCK - (DET 2) | 'ROTW-1' | 'ROTW-2' | | 'ROTW-2' |
| | SUB-ASS'Y NUMBER | 10171201180 | 10172201430 | 10172201500 | 10172201560 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO |
|-----|--------------|-----|---------|---------|---------|---------|
| 1 | LOCK MANDREL | 1 | | | | |
| 2 | LOCK (DOG) | 2 | | | | |
| 3 | LOCK SPRING | 2 | | | | |
| 4 | LOCK PIN | 2 | | | | |

ENGINEERING DATA:

| | | | | |
|--------------------|----------|-----------|------------|-----------|
| MAXIMUM OD (No-Go) | 1.240" | 1.490" | 1.552" | 1.615" |
| FISHING NECK SIZE | .875" | 1.187" | 1.187" | 1.187" |
| MINIMUM ID | .50" | .75" | .75" | .75" |
| LENGTH | 6.12" | 6.62" | 6.44" | 6.44" |
| WEIGHT lbs (kg) | .8 (.40) | 1.9 (.86) | 1.92 (.87) | 2.0 (.91) |
| MATERIAL | Alloy | Alloy | Alloy | Alloy |



| | | | | | |
|----------------|------------------------|---------------|-------------|-------------|-------------|
| NOMINAL SIZE | | 2 3/8" | | 2 7/8" | |
| SEAL BORE SIZE | | 1.78" - 1.81" | 1.87" | 2.25" | 2.31" |
| SUB ASSEMBY | TYPE of LOCK - (DET 2) | 'ROTW-2' | | 'ROTW-2' | |
| | SUB-ASS'Y NUMBER | 10172202370 | 10172201870 | 10172202250 | 10172202310 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO |
|-----|--------------|-----|---------|---------|---------|---------|
| 1 | LOCK MANDREL | 1 | | | | |
| 2 | LOCK (DOG) | 2 | | | | |
| 3 | LOCK SPRING | 2 | | | | |
| 4 | LOCK PIN | 2 | | | | |

ENGINEERING DATA:

| | | | | |
|--------------------|------------|------------|------------|------------|
| MAXIMUM OD (No-Go) | 1.865" | 1.928" | 2.303" | 2.365" |
| FISHING NECK SIZE | 1.375" | 1.375" | 1.750" | 1.750" |
| MINIMUM ID | .88" | .88" | 1.19" | 1.19" |
| LENGTH | 7.53" | 7.53" | 7.69" | 7.69" |
| WEIGHT lbs (kg) | 2.3 (1.05) | 2.4 (1.10) | 3.4 (1.50) | 3.6 (1.60) |
| MATERIAL | Alloy | Alloy | Alloy | Alloy |

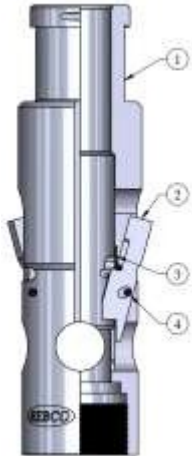


SECTION XIV: LOCK MANDRELS

2021

REBCO

Type 'ROTW-1' & 'ROTW-2' Lock Mandrel Sub-Assembly: Continued

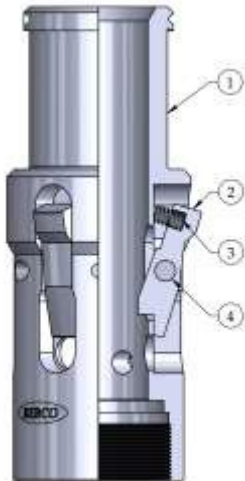


| | | | | | |
|----------------|------------------------|-------------|-------------|-------------|-------------|
| NOMINAL SIZE | | 3 1/2" | | | |
| SEAL BORE SIZE | | 2.56" | 2.75" | 2.81" | 2.87" |
| SUB ASSEMBLY | TYPE of LOCK - (DET 2) | 'ROTW-2' | | | |
| | SUB-ASS'Y NUMBER | 10172202560 | 10172202750 | 10172202810 | 10172202870 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO |
|-----|--------------|-----|---------|---------|---------|---------|
| 1 | LOCK MANDREL | 1 | | | | |
| 2 | LOCK (DOG) | 2 | | | | |
| 3 | LOCK SPRING | 2 | | | | |
| 4 | LOCK PIN | 2 | | | | |

ENGINEERING DATA:

| | | | | |
|--------------------|------------|------------|------------|------------|
| MAXIMUM OD (No-Go) | 2.625" | 2.802" | 2.865" | 2.915" |
| FISHING NECK SIZE | 1.750" | 2.313" | 2.313" | 2.313" |
| MINIMUM ID | 1.20" | 1.44" | 1.44" | 1.44" |
| LENGTH | 8.25" | 10.47" | 10.47" | 10.47" |
| WEIGHT lbs (kg) | 5.1 (2.30) | 8.4 (3.80) | 8.8 (4.00) | 9.0 (4.08) |
| MATERIAL | Alloy | Alloy | Alloy | Alloy |



| | | | | |
|----------------|------------------------|-------------|-------------|-------------|
| NOMINAL SIZE | | 4 1/2" | | |
| SEAL BORE SIZE | | 3.68" | 3.75" | 3.81" |
| SUB ASSEMBLY | TYPE of LOCK - (DET 2) | 'ROTW-1' | | |
| | SUB-ASS'Y NUMBER | 10171203680 | 10171203750 | 10171203810 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO |
|-----|--------------|-----|---------|---------|---------|
| 1 | LOCK MANDREL | 1 | | | |
| 2 | LOCK (DOG) | 3 | | | |
| 3 | LOCK SPRING | 3 | | | |
| 4 | LOCK PIN | 3 | | | |

ENGINEERING DATA:

| | | | |
|--------------------|-------------|-------------|-------------|
| MAXIMUM OD (No-Go) | 3.740" | 3.802" | 3.864" |
| FISHING NECK SIZE | 3.125" | 3.125" | 3.125" |
| MINIMUM ID | 2.06" | 2.06" | 2.06" |
| LENGTH | 9.93" | 9.93" | 9.93" |
| WEIGHT lbs (kg) | 12.4 (5.60) | 12.5 (5.67) | 12.6 (5.72) |
| MATERIAL | Alloy | Alloy | Alloy |



SECTION XIV: LOCK MANDRELS

2021



Product Code: 10

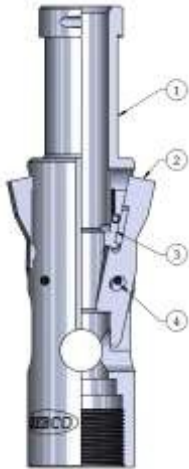
Type 'ROTZ-1' & 'ROTZ-2' Lock Mandrel Sub-Assembly: 1.660" – 4.50"

Rebco Type 'ROTZ-1 & 'ROTZ-2' is a Bottom No-Go, Non Flowing Lock.

Lock Mandrel Sub-Assembly has Locks (Dogs) facing up which prevent upward movement, but depends on **accessory** No-Go shoulder to prevent the Lock Mandrel from downward movement. The Lock Mandrel can be used in a Bottom No-Go type Nipple only.

NOTE: Required **Running** and **Pulling** Tools with appropriate **Probes** are shown in **ENGINEERING DATA** for Type of **Accessories** attached to the Lock Mandrel Sub-Assembly.

Rebco Type 'ROTZ-1' and 'ROTZ-2' Lock Mandrel Sub-Assemblies are available in variety of Materials, suitable for down-hole conditions.

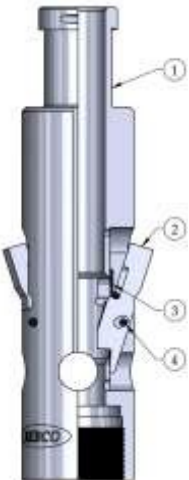


| | | | | | |
|----------------|--|-------------------------|-------------------------|-------------------------|-------------------------|
| NOMINAL SIZE | | 1.660" | 1.900" | 2 1/16" | 2 3/8" |
| SEAL BORE SIZE | | 1.18" - 1.25" | 1.43" - 1.50" | 1.56" | 1.78" - 1.87" |
| SUB ASSEMBY | TYPE of LOCK - (DET 2) SUB-ASS'Y NUMBER | 'ROTZ-1' 10221201660 | 'ROTZ-2' 10222201900 | 'ROTZ-2' 10222202060 | 'ROTZ-2' 10222202370 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO |
|-----|--------------|-----|---------|---------|---------|---------|
| 1 | LOCK MANDREL | 1 | | | | |
| 2 | LOCK (DOG) | 2 | | | | |
| 3 | LOCK PIN | 2 | | | | |
| 4 | LOCK SPRING | 2 | | | | |

ENGINEERING DATA:

| | | | | |
|-------------------|----------|-----------|-----------|------------|
| MAXIMUM OD | 1.156" | 1.406" | 1.531" | 1.750" |
| FISHING NECK SIZE | .875" | 1.187" | 1.187" | 1.375" |
| MINIMUM ID | .87" | .75" | .75" | .88" |
| LENGTH | 6.12" | 6.62" | 6.44" | 7.53" |
| WEIGHT lbs (kg) | .8 (.35) | 1.8 (.82) | 1.9 (.86) | 2.2 (1.00) |
| MATERIAL | Alloy | Alloy | Alloy | Alloy |



| | | | | | |
|----------------|--|-------------------------|-------------------------|-------------------------|-------------------------|
| NOMINAL SIZE | | 2 7/8" | 3 1/2" | 3 1/2" | 4 1/2" |
| SEAL BORE SIZE | | 2.25" - 2.31" | 2.56" | 2.75" - 2.81" | 3.68" - 3.81" |
| SUB ASSEMBY | TYPE of LOCK - (DET 2) SUB-ASS'Y NUMBER | 'ROTZ-2' 10222202870 | 'ROTZ-2' 10222202560 | 'ROTZ-2' 10222203500 | 'ROTZ-1' 10221204500 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO |
|-----|--------------|---------|---------|---------|---------|---------|
| 1 | LOCK MANDREL | 1 | | | | |
| 2 | LOCK (DOG) | (Noted) | (2) | (2) | (2) | (3) |
| 3 | LOCK SPRING | (Noted) | (2) | (2) | (2) | (3) |
| 4 | LOCK PIN | (Noted) | (2) | (2) | (2) | (3) |

ENGINEERING DATA:

| | | | | |
|-------------------|------------|------------|-------------|-------------|
| MAXIMUM OD | 2.188" | 2.500" | 2.688" | 3.562" |
| FISHING NECK SIZE | 1.750" | 1.750" | 2.313" | 3.125" |
| MINIMUM ID | 1.19" | 1.20" | 1.44" | 2.06" |
| LENGTH | 7.69" | 8.25" | 10.47" | 9.93" |
| WEIGHT lbs (kg) | 3.2 (1.50) | 5.0 (2.25) | 8.00 (3.65) | 12.0 (5.45) |
| MATERIAL | Alloy | Alloy | Alloy | Alloy |

Product Code: 10

Type **'ROTG'**, **'ROTN'**, **'ROTL'**, and **'ROTR'** Lock Mandrel Sub-Assemblies are devices used to position and secure Wireline retrievable downhole equipment into pre-set Tubing Nipples with appropriate profiles.

These Locks have External Fishing Neck and large flow areas for use in high volume completions. The Latch with Collet type locking fingers prevent upward movement, while **No-Go** shoulders prevent downward movement.

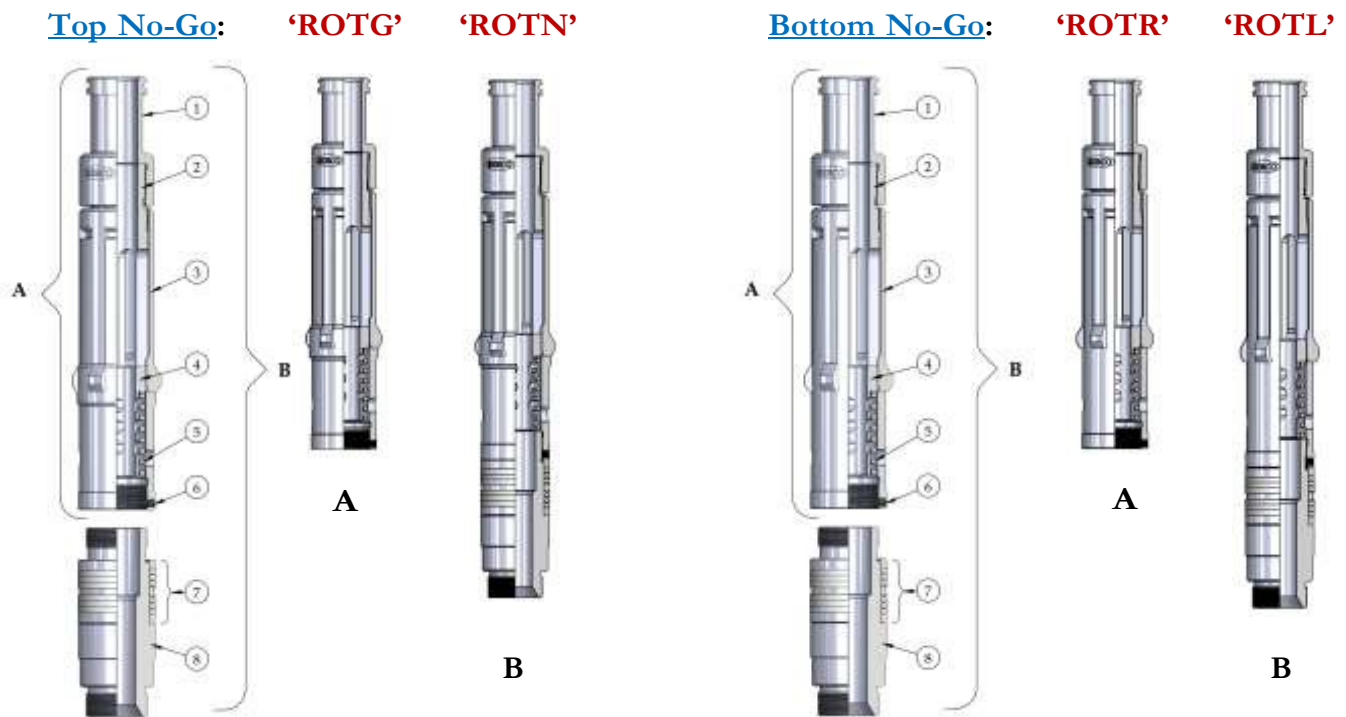


Table 1: Running and Pulling Tools required

| LOCK SIZE | | TO RUN | | TO PULL | |
|-----------|-----------|--------------------------|-----------------------|-------------------------|-----------------------|
| NOM | SEAL BORE | RUNNING TOOL 'ROTC-1' | SHANK 'BN-1' | PULLING TOOL 'ROTRB' | PROBE 'BN-1' |
| 2 3/8" | 1.781 | 2 3/8" 41021202370 | 2 3/8" 81101852301 | 2" 4013012000 | 2 3/8" 41011012370 |
| | 1.812 | | | | |
| | 1.875 | | | | |
| 2 7/8" | 2.250 | 2 7/8" 41021202870 | 2 7/8" 81101852701 | 2 1/2" 4013012500 | 2 7/8" 41011012870 |
| | 2.312 | | | | |



SECTION XIV: LOCK MANDRELS

2021



Product Code: 10

Type 'ROTG' & 'ROTN' (Top No-Go) Lock Mandrel Sub-Assembly: 2 3/8" – 2 7/8"

Rebco Type 'ROTG' and Type 'ROTN' are Top No-Go, Lock Mandrel Sub-Assembly to be set into Type 'BF' and Type 'BJ' Landing nipples, and Type 'BL' Sliding Sleeve.

Type 'ROTG' Lock is basically a Type 'ROTN' Lock Sub-Assembly less the Packing Unit and Packing Mandrel.

| | | | | | |
|----------------|-------------|--------|--------|-----------------|--------|
| NOMINAL SIZE | 2" (2 3/8") | | | 2 1/2" (2 7/8") | |
| SEAL BORE SIZE | 1.781" | 1.812" | 1.875" | 2.250" | 2.312" |

| | | | | | | |
|--------------------------|--|-------------|-------------|-------------|-------------|-------------|
| LOCK MANDREL SUB ASSEMBY | TYPE 'ROTG' (DET 1-6) SUB-ASS'Y NUMBER | 10052017803 | 10052018103 | 10052018703 | 10052022503 | 10052023103 |
| | TYPE 'ROTN' (DET 1-8) SUB-ASS'Y NUMBER | 10102017803 | 10102018103 | 10102018703 | 10102022503 | 10102023103 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO | PART NO |
|-----------------------|---------------|---------------------------|---------|---------|---------|---------|---------|
| TYPE 'ROTG' (DET 1-6) | | LOCK MANDREL SUB-ASSEMBLY | | | | | |
| 1 | FISHING NECK | 1 | | | | | |
| 2 | LATCH MANDREL | 1 | | | | | |
| 3 | LATCH | 1 | | | | | |
| 4 | PLUNGER | 1 | | | | | |
| 5 | SPRING | 1 | | | | | |
| 6 * | SET SCREW | 2 | | | | | |

| TYPE 'ROTN' (DET 1-6, 7,8) | | LOCK MANDREL SUB-ASSEMBLY | | | | | |
|----------------------------|-----------------|---------------------------|--|--|--|--|--|
| 7 | PACKING MANDREL | 1 | | | | | |
| 8 * | PACKING UNIT | 1 Set | | | | | |

| | | | | | | | |
|---|--|--|--|--|--|--|--|
| Re Dress Kit (* Included as Part of Kit) NOTE: For Packing Unit (DET 8) - only 'V' Packing | | | | | | | |
| TYPE 'ROTG' (DET 3) | | | | | | | |
| TYPE 'ROTN' (DET 3 and 'V' Packing) | | | | | | | |

ENGINEERING DATA:

| | | | | | | | |
|------------------------|-------------|-----|-------------|-------------|-------------|-------------|-------------|
| MAXIMUM OD (No-Go) | | | 1.802" | 1.865" | 1.925" | 2.302" | 2.364" |
| FISHING NECK SIZE (ID) | | | 1.375" | 1.375" | 1.375" | 1.750" | 1.750" |
| TYPE 'ROTG' | BOTTOM | BOX | 1.406" - 14 | 1.406" - 14 | 1.406" - 14 | 1.813" - 14 | 1.813" - 14 |
| | THREAD | PIN | 1.470" - 14 | 1.470" - 14 | 1.470" - 14 | 1.802" - 14 | 1.802" - 14 |
| MINIMUM ID | TYPE 'ROTG' | | .807" | .807" | .807" | 1.12" | 1.12" |
| | TYPE 'ROTN' | | .807" | .807" | .807" | 1.12" | 1.12" |
| LENGTH | TYPE 'ROTG' | | 12.75" | 12.75" | 12.75" | 12.75" | 12.75" |
| | TYPE 'ROTN' | | 17.38" | 17.38" | 17.38" | 17.38" | 17.38" |
| WEIGHT lbs (kg) | TYPE 'ROTG' | | 3.9 (1.80) | 3.9 (1.80) | 3.9 (1.80) | 5.8 (2.65) | 5.8 (2.65) |
| | TYPE 'ROTN' | | 6.7 (3.04) | 6.7 (3.04) | 6.7 (3.04) | 8.9 (4.04) | 8.9 (4.04) |
| MATERIAL | | | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy |

Tools Required: For Running and Pulling, with **Accessories** - SEE PAGE (XIV-17) above

Lock Mandrel Sub-Assemblies are available in variety of Materials, suitable for down-hole conditions.



SECTION XIV: LOCK MANDRELS

2021

REBCO

Product Code: 10

Type **'ROTR'** & **'ROTL'** (Bottom No-Go) Lock Mandrel Sub-Assembly: 2 3/8" – 2 7/8"

Rebco Type **'ROTR'** and Type **'ROTL'** are Bottom No-Go, Lock Mandrel Sub-Assembly to be set into Type **'BR'** Landing nipple.

Type **'ROTR'** Lock is basically a Type **'ROTL'** Lock Sub-Assembly less the Packing Unit and Packing Mandrel.

| | | | | |
|----------------|-------------|--------|--------|-----------------|
| NOMINAL SIZE | 2" (2 3/8") | | | 2 1/2" (2 7/8") |
| SEAL BORE SIZE | 1.781" | 1.812" | 1.875" | 2.250" |

| | | | | | |
|--------------------------|---|-------------|-------------|-------------|-------------|
| LOCK MANDREL SUB ASSEMBY | TYPE 'ROTR' (DET 1-6) SUB-ASS'Y NUMBER | 10132017803 | 10132018103 | 10132018703 | 10132022503 |
| | TYPE 'ROTL' (DET 1-8) SUB-ASS'Y NUMBER | 10082017803 | 10082018103 | 10082018703 | 10082022503 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO |
|------------------------------|---------------|---------------------------|---------|---------|---------|---------|
| TYPE 'ROTR' (DET 1-6) | | LOCK MANDREL SUB-ASSEMBLY | | | | |
| 1 | FISHING NECK | 1 | | | | |
| 2 | LATCH MANDREL | 1 | | | | |
| 3 | LATCH | 1 | | | | |
| 4 | PLUNGER | 1 | | | | |
| 5 | SPRING | 1 | | | | |
| 6 * | SET SCREW | 2 | | | | |

| TYPE 'ROTL' (DET 1-6, 7,8) | | LOCK MANDREL SUB-ASSEMBLY | | | | |
|-----------------------------------|-----------------|---------------------------|--|--|--|--|
| 7 | PACKING MANDREL | 1 | | | | |
| 8 * | PACKING UNIT | 1 Set | | | | |

| | | | | | | |
|---|--|--|-------------|-------------|-------------|-------------|
| Re Dress Kit (* Included as Part of Kit) | | | | | | |
| NOTE: For Packing Unit (DET 8) - only 'V' Packing | | | | | | |
| TYPE 'ROTR' (DET 3) | | | 10052024237 | 10052024237 | 10052024237 | 10052024287 |
| TYPE 'ROTL' (DET 3 and 'V' Packing) | | | 10102024178 | 10102024181 | 10102024187 | 10102024225 |

ENGINEERING DATA:

| | | | | | | |
|------------------------|--------------------|-----|-------------|-------------|-------------|-------------|
| MAXIMUM OD (No-Go) | | | 1.771" | 1.802" | 1.865" | 2.245" |
| FISHING NECK SIZE (ID) | | | 1.375" | 1.375" | 1.375" | 1.750" |
| TYPE 'ROTR' | BOTTOM | BOX | 1.406" - 14 | 1.406" - 14 | 1.406" - 14 | 1.813" - 14 |
| | THREAD | PIN | 1.470" - 14 | 1.470" - 14 | 1.470" - 14 | 1.802" - 14 |
| MINIMUM ID | TYPE 'ROTR' | | .807" | .807" | .807" | 1.12" |
| | TYPE 'ROTL' | | .807" | .807" | .807" | 1.12" |
| LENGTH | TYPE 'ROTR' | | 12.75" | 12.75" | 12.75" | 12.75" |
| | TYPE 'ROTL' | | 17.38" | 17.38" | 17.38" | 17.38" |
| WEIGHT lbs (kg) | TYPE 'ROTR' | | 3.9 (1.80) | 3.9 (1.80) | 3.9 (1.80) | 5.8 (2.65) |
| | TYPE 'ROTL' | | 6.7 (3.04) | 6.7 (3.04) | 6.7 (3.04) | 8.9 (4.04) |
| MATERIAL | | | Norm Alloy | Norm Alloy | Norm Alloy | Norm Alloy |

Tools Required: For Running and Pulling, with Accessories - SEE PAGE (XIV-17) above

Lock Mandrel Sub-Assemblies are available in variety of Materials, suitable for down-hole conditions.



SECTION XIV: LOCK MANDRELS

2021

REBCO

Product Code: 10

Type **'ROTF'**, **'ROTM'**, **'ROTE'**, and **'ROTK'** Lock Mandrel Sub-Assemblies are devices used to position and secure Wireline retrievable downhole equipment into pre-set Tubing Nipples with appropriate profiles.

The Locks provide a large flow areas through internal Fishing Neck. The Latch with Collet type locking fingers prevent upward movement, while **No-Go** shoulders prevent downward movement.

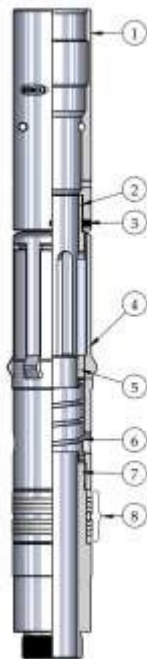
Type **'ROTF'** & **'ROTM'** (Top No-Go) Lock Mandrel Sub-Assembly: 2.750" – 3.812"

Rebco Type **'ROTF'** and Type **'ROTM'** are **Top No-Go**, Lock Mandrel Sub-Assembly to be set into Type **'BF'** and Type **'BJ'** Landing nipples, and Type **'BL'** Sliding Sleeve.

Type **'ROTF'** Lock is basically a Type **'ROTM'** Lock Sub-Assembly less the Packing Unit and Packing Mandrel.



Type **'ROTF'**



Type **'ROTM'**

| | | | |
|--------------------------|------------------------------|-------------|-------------|
| NOMINAL SIZE | | 3 1/2" | |
| SEAL BORE SIZE | | 2.75" | 2.81" |
| LOCK MANDREL SUB ASSEMBY | TYPE 'ROTF' (DET 1-6) | | |
| | SUB-ASS'Y NUMBER | 10252027503 | 10252028103 |
| LOCK MANDREL SUB ASSEMBY | TYPE 'ROTM' (DET 1-8) | | |
| | SUB-ASS'Y NUMBER | 10092027503 | 10092028103 |

| DET | PART NAME | QTY | PART NO | PART NO |
|------------------------------|---------------|---------------------------|---------|---------|
| TYPE 'ROTF' (DET 1-6) | | LOCK MANDREL SUB-ASSEMBLY | | |
| 1 | FISHING NECK | 1 | | |
| 2 | LATCH MANDREL | 1 | | |
| 3 * | SET SCREW | 4 | | |
| 4 | LATCH | 1 | | |
| 5 | PLUNGER | 1 | | |
| 6 | SPRING | 1 | | |

| TYPE 'ROTM' (DET 1-6, 7,8) | | LOCK MANDREL SUB-ASSEMBLY | | |
|-----------------------------------|-----------------|---------------------------|--|--|
| 7 | PACKING MANDREL | 1 | | |
| 8 * | PACKING UNIT | 1 Set | | |

| Re Dress Kit (* Included as Part of Kit) | | | |
|---|--|-------------|-------------|
| NOTE: For Packing Unit (DET 8) - only 'V' Packing | | | |
| TYPE 'ROTF' (DET 3) | | 10252024275 | 10252024281 |
| TYPE 'ROTM' (DET 3 and 'V' Packing) | | 10092024275 | 10092024281 |

ENGINEERING DATA:

| | | | | |
|------------------------|--------------------|------------|------------------|------------------|
| MAXIMUM OD (No-Go) | | 2.803" | 2.872" | |
| FISHING NECK SIZE (ID) | | 2.31" | 2.31" | |
| TYPE 'ROTF' | BOTTOM | BOX | 2 21/64" - 16 | 2 21/64" - 16 |
| | THREAD | PIN | 2 7/64" - 11 1/2 | 2 7/64" - 11 1/2 |
| MINIMUM ID | TYPE 'ROTF' | | 1.84" | 1.84" |
| | TYPE 'ROTM' | | 1.75" | 1.75" |
| LENGTH | TYPE 'ROTF' | | 16.81" | 16.81" |
| | TYPE 'ROTM' | | 22.74" | 22.74" |
| WEIGHT lbs (kg) | TYPE 'ROTF' | | 20.9 (9.48) | 21.0 (9.53) |
| | TYPE 'ROTM' | | 14.4 (6.55) | 14.5 (6.58) |
| MATERIAL | | Norm Alloy | Norm Alloy | |

| | | |
|---------------------------------------|-------------|-------------|
| Running/Pulling Tool - 'ROTGS' | 40051427500 | 40051427500 |
| Running/Pulling Prong - 'ROTM' | 41092750 | 41092810 |



SECTION XIV: LOCK MANDRELS

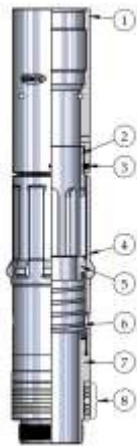
2021

REBCO

Type 'ROTF' & 'ROTM' (Top No-Go) Lock Mandrel Sub-Assembly: Continued



Type 'ROTF'



Type 'ROTM'

| | | | | |
|--------------------------|-----------------------|-------------|-------------|-------------|
| NOMINAL SIZE | | 4 1/2" | | |
| SEAL BORE SIZE | | 3.688" | 3.750" | 3.812" |
| LOCK MANDREL SUB ASSEMBY | TYPE 'ROTF' (DET 1-6) | | | |
| | SUB-ASS'Y NUMBER | 10252036803 | 10252037503 | 10252038103 |
| LOCK MANDREL SUB ASSEMBY | TYPE 'ROTM' (DET 1-8) | | | |
| | SUB-ASS'Y NUMBER | 10092036803 | 10092037503 | 10092038103 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO |
|---------------------------|---------------|-----|---------|---------|---------|
| TYPE 'ROTF' (DET 1-6) | | | | | |
| LOCK MANDREL SUB-ASSEMBLY | | | | | |
| 1 | FISHING NECK | 1 | | | |
| 2 | LATCH MANDREL | 1 | | | |
| 3 * | SET SCREW | 4 | | | |
| 4 | LATCH | 1 | | | |
| 5 | PLUNGER | 1 | | | |
| 6 | SPRING | 1 | | | |

| TYPE 'ROTM' (DET 1-6, 7,8) | | LOCK MANDREL SUB-ASSEMBLY | | | |
|----------------------------|-----------------|---------------------------|--|--|--|
| 7 | PACKING MANDREL | 1 | | | |
| 8 * | PACKING UNIT | 1 Set | | | |

| Re Dress Kit (* Included as Part of Kit) | | | |
|---|-------------|-------------|-------------|
| NOTE: For Packing Unit (DET 8) - only 'V' Packing | | | |
| TYPE 'ROTF' (DET 3) | 10252024368 | 10252024375 | 10252024381 |
| TYPE 'ROTM' (DET 3 and 'V' Packing) | 10092024368 | 10092024375 | 10092024381 |

ENGINEERING DATA:

| | | | | |
|------------------------|---------------|--------|--------------|--------------|
| MAXIMUM OD (No-Go) | | 3.740" | 3.802" | 3.864" |
| FISHING NECK SIZE (ID) | | 3.12" | 3.12" | 3.12" |
| TYPE 'ROTF' | BOTTOM THREAD | BOX | 3 3/8" - 8 | 3 3/8" - 8 |
| TYPE 'ROTM' | THREAD | PIN | 3 1/32" - 12 | 3 1/32" - 12 |
| MINIMUM ID | TYPE 'ROTF' | | 2.75" | 2.75" |
| | TYPE 'ROTM' | | 2.43" | 2.43" |
| LENGTH | TYPE 'ROTF' | | 20.56 | 20.50" |
| | TYPE 'ROTM' | | 25.96" | 25.96" |
| WEIGHT lbs (kg) | TYPE 'ROTF' | | 14.39 (6.53) | 14.45 (6.55) |
| | TYPE 'ROTM' | | 19.24 (8.73) | 19.85 (9.00) |
| MATERIAL | | | Norm Alloy | Norm Alloy |

| | | | |
|--------------------------------|-------------|-------------|-------------|
| Running/Pulling Tool - 'ROTGS' | 40051436804 | 40051436804 | 40051436804 |
| Running/Pulling Prong - 'ROTM' | 41094500 | 41094500 | 41094500 |

Rebco Type 'ROTF' and 'ROTM' Lock Mandrel Sub-Assemblies are available in variety of Materials, suitable for down-hole conditions.



SECTION XIV: LOCK MANDRELS

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REBCO

Type 'ROTE' & 'ROTK' (Bottom No-Go) Lock Mandrel Sub-Assembly: 2.750" – 3.812"

Rebco Type 'ROTE' and Type 'ROTK' are Bottom No-Go, Lock Mandrel Sub-Assembly to be set into Type 'BR' Landing nipple.

Type 'ROTK' Lock is basically a Type 'ROTE' Lock Sub-Assembly less the Packing Unit and Packing Mandrel.



Type 'ROTE'



Type 'ROTK'

| | | | |
|---------------------------|-----------------------|-------------|-------------|
| NOMINAL SIZE | | 3 1/2" | |
| SEAL BORE SIZE | | 2.75" | 2.81" |
| LOCK MANDREL SUB ASSEMBLY | TYPE 'ROTE' (DET 1-6) | | |
| | SUB-ASS'Y NUMBER | 10042027503 | 10042028103 |
| | TYPE 'ROTK' (DET 1-8) | | |
| | SUB-ASS'Y NUMBER | 10242027503 | 10242028103 |

| DET | PART NAME | QTY | PART NO | PART NO |
|-----------------------|---------------|---------------------------|---------|---------|
| TYPE 'ROTE' (DET 1-6) | | LOCK MANDREL SUB-ASSEMBLY | | |
| 1 | FISHING NECK | 1 | | |
| 2 | LATCH MANDREL | 1 | | |
| 3 * | SET SCREW | 4 | | |
| 4 | LATCH | 1 | | |
| 5 | PLUNGER | 1 | | |
| 6 | SPRING | 1 | | |

| TYPE 'ROTK' (DET 1-6, 7,8) | | LOCK MANDREL SUB-ASSEMBLY | | |
|----------------------------|-----------------|---------------------------|--|--|
| 7 | PACKING MANDREL | 1 | | |
| 8 * | PACKING UNIT | 1 Set | | |

| Re Dress Kit (* Included as Part of Kit) | | | |
|---|--|-------------|-------------|
| NOTE: For Packing Unit (DET 8) - only 'V' Packing | | | |
| TYPE 'ROTE' (DET 3) | | 10252024275 | 10252024281 |
| TYPE 'ROTK' (DET 3 and 'V' Packing) | | 10092024275 | 10092024281 |

ENGINEERING DATA:

| | | | |
|------------------------|--------------|------------------|------------------|
| MAXIMUM OD | Body | 2.71" | 2.71" |
| | Packing Unit | 2.750" | 2.812" |
| FISHING NECK SIZE (ID) | | 2.31" | 2.31" |
| TYPE 'ROTE' | BOTTOM BOX | 2 21/64" - 16 | 2 21/64" - 16 |
| TYPE 'ROTK' | THREAD PIN | 2 7/64" - 11 1/2 | 2 7/64" - 11 1/2 |
| MINIMUM ID | TYPE 'ROTE' | 1.84" | 1.84" |
| | TYPE 'ROTK' | 1.75" | 1.75" |
| LENGTH | TYPE 'ROTE' | 16.78" | 16.78" |
| | TYPE 'ROTK' | 22.74" | 22.74" |
| WEIGHT lbs (kg) | TYPE 'ROTE' | 9.88 (4.48) | 9.88 (4.48) |
| | TYPE 'ROTK' | 15.02 (6.81) | 15.09 (6.84) |
| MATERIAL | | Norm Alloy | Norm Alloy |

| | | |
|--------------------------------|-------------|-------------|
| Running/Pulling Tool - 'ROTGS' | 40051427500 | 40051427500 |
| Running/Pulling Prong - 'ROTM' | 41092750 | 41092810 |



SECTION XIV: LOCK MANDRELS

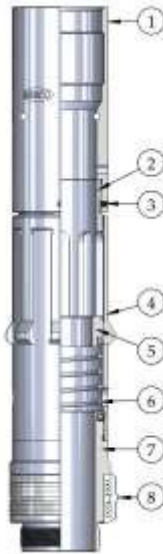
2021

REBCO

Type 'ROTE' & 'ROTK' (Bottom No-Go) Lock Mandrel Sub-Assembly: Continued



Type 'ROTE'



Type 'ROTK'

| | | | | |
|---------------------------|-----------------------|-------------|-------------|-------------|
| NOMINAL SIZE | | 4 1/2" | | |
| SEAL BORE SIZE | | 3.688" | 3.750" | 3.812" |
| LOCK MANDREL SUB ASSEMBLY | TYPE 'ROTE' (DET 1-6) | | | |
| | SUB-ASS'Y NUMBER | 10252036803 | 10252037503 | 10252038103 |
| LOCK MANDREL SUB ASSEMBLY | TYPE 'ROTK' (DET 1-8) | | | |
| | SUB-ASS'Y NUMBER | 10092036803 | 10092037503 | 10092038103 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO |
|-----------------------|---------------|---------------------------|---------|---------|---------|
| TYPE 'ROTE' (DET 1-6) | | LOCK MANDREL SUB-ASSEMBLY | | | |
| 1 | FISHING NECK | 1 | | | |
| 2 | LATCH MANDREL | 1 | | | |
| 3 * | SET SCREW | 4 | | | |
| 4 | LATCH | 1 | | | |
| 5 | PLUNGER | 1 | | | |
| 6 | SPRING | 1 | | | |

| TYPE 'ROTK' (DET 1-6, 7,8) | | LOCK MANDREL SUB-ASSEMBLY | | | |
|----------------------------|-----------------|---------------------------|--------------|--------------|--------------|
| 7 | PACKING MANDREL | 1 | 2230120203 | 2340106703 | 2230120303 |
| 8 * | PACKING UNIT | 1 Set | 186010136801 | 186010137501 | 186010138101 |

| Re Dress Kit (* Included as Part of Kit) | | | | | |
|---|--|--|-------------|-------------|-------------|
| NOTE: For Packing Unit (DET 8) - only 'V' Packing | | | | | |
| TYPE 'ROTE' (DET 3) | | | 10252024368 | 10252024375 | 10252024381 |
| TYPE 'ROTK' (DET 3 and 'V' Packing) | | | 10092024368 | 10092024375 | 10092024381 |

ENGINEERING DATA:

| MAXIMUM OD | Body | | 3.62" | 3.62" | 3.62" |
|------------------------|--------------|-----|--------------|--------------|--------------|
| | Packing Unit | | 3.688" | 3.750" | 3.812" |
| FISHING NECK SIZE (ID) | | | 3.12" | 3.12" | 3.12" |
| TYPE 'ROTE' | BOTTOM | BOX | 3 3/8" - 8 | 3 3/8" - 8 | 3 3/8" - 8 |
| | THREAD | PIN | 3 1/32" - 12 | 3 1/32" - 12 | 3 1/32" - 12 |
| MINIMUM ID | TYPE 'ROTE' | | 2.75" | 2.75" | 2.75" |
| | TYPE 'ROTK' | | 2.43" | 2.43" | 2.43" |
| LENGTH | TYPE 'ROTE' | | 16.39" | 16.39" | 16.39" |
| | TYPE 'ROTK' | | 20.57" | 20.57" | 20.57" |
| WEIGHT lbs (kg) | TYPE 'ROTE' | | 14.25 (6.46) | 14.25 (6.46) | 14.25 (6.46) |
| | TYPE 'ROTK' | | 19.1 (8.66) | 19.67 (8.92) | 19.67 (8.92) |
| MATERIAL | | | Norm Alloy | Norm Alloy | Norm Alloy |

| | | | |
|---------------------------------|-------------|-------------|-------------|
| Running/Pulling Tool - 'ROTKS' | 40051436804 | 40051436804 | 40051436804 |
| Running/Pulling Prong - 'ROTKM' | 41094500 | 41094500 | 41094500 |

Rebco Type 'ROTE' and 'ROTK' Lock Mandrel Sub-Assemblies are available in variety of Materials, suitable for down-hole conditions.



SECTION XIV: LOCK MANDRELS

2021

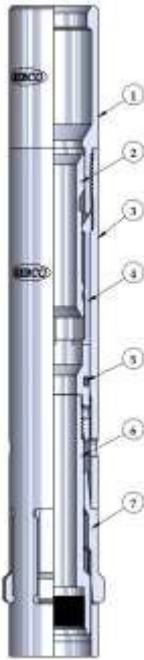
REBCO

B. For TUBING

Product Code: 10

Type 'ROTD' Collar Lock Mandrel Sub-Assembly: 2 3/8" – 3 1/2"

Rebco Type 'ROTD' Collar Lock Mandrel Sub-Assembly is designed to be set in API Tubing Collars. The Tubing is sealed off by adding the Type 'ROTD' Element Assembly, and variety of Sub-Assemblies to suit application; capable to hold pressure differentials in both directions.



| | | | |
|---------------------|-------------|-------------|-------------|
| NOMINAL SIZE | 2" | 2 1/2" | 3" |
| SUB-ASSEMBLY NUMBER | 10032020030 | 10032025030 | 10032030030 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO |
|--|----------------|-----|---------|---------|---------|
| 1 | FISHING NECK | 1 | | | |
| 2 | LOCKING SLEEVE | 1 | | | |
| 3 | SLEEVE | 1 | | | |
| 4 | COLLET LOCK | 1 | | | |
| 5 * | 'O' RING SEAL | 1 | | | |
| 6 | LOCK MANDREL | 1 | | | |
| 7 | DOGS | 4 | | | |
| REDRESS KIT (* Included as part of Kit) | | | | | |

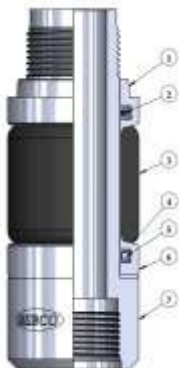
ENGINEERING DATA:

| MAXIMUM OD | BODY | 1.84" | 2.28" | 2.84" |
|---------------------|---------------|--------------|---------------|-------------|
| | DOGS EXPANDED | 2.11" | 2.55" | 3.11" |
| MINIMUM ID | | .94" | 1.38" | 1.75" |
| FISHING NECK SIZE | | 1.38" | 1.81" | 2.31" |
| BOTTOM THREAD - BOX | | 1 5/16" - 18 | 1 21/32" - 14 | 2 1/8" - 12 |
| LENGTH | | 13.50" | 13.50" | 13.88" |
| MATERIAL | | Norm Alloy | Norm Alloy | Norm Alloy |
| WEIGHT lbs (kg) | | 5.37 (2.44) | 7.13 (3.23) | 10.5 (4.76) |

| | | | |
|-------------------------|---------------|---------------|---------------|
| RUNNING TOOL - 'ROTDO' | 4103202000 | 4103202500 | 4103203000 |
| PULLING TOOL - 'ROTGSL' | 4005140817800 | 4005140821800 | 4005140827500 |

Product Code: 310

Rebco Type 'ROTD' Element Assembly (DET 8) is available as a Redress Kit.



| | | | |
|-------------------------|-----------|-----------|-----------|
| NOMINAL SIZE | 2" | 2 1/2" | 3" |
| ELEMENT ASSEMBLY NUMBER | 310032048 | 310032053 | 310032057 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO |
|-----|------------------|-----|---------|---------|---------|
| 1 | 'O' RING CAGE | 1 | | | |
| 2 | 'O' RING SEAL | 2 | | | |
| 3 | ELEMENT | 1 | | | |
| 4 | RING | 2 | | | |
| 5 | RING | 2 | | | |
| 6 | ELEMENT EXPANDER | 1 | | | |
| 7 | PACKING MANDREL | 1 | | | |

ENGINEERING DATA:

| | | | |
|-----------------------|--------------|---------------|-------------|
| OD - ELEMENT EXPANDED | 2.125" | 2.625" | 3.203" |
| MINIMUM ID | .94" | 1.38" | 1.75" |
| THREAD CONNECTIONS | 1 5/16" - 18 | 1 21/32" - 14 | 2 1/8" - 12 |
| LENGTH | 5.06" | 5.06" | 5.06" |
| MATERIAL | Norm Alloy | Norm Alloy | Norm Alloy |



SECTION XIV: LOCK MANDRELS

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Product Code: 10

Type **'ROTT'S'** Collar Lock Mandrel Sub-Assembly: **2 3/8" – 3 1/2"**

Rebco Type **'ROTT'S'** Collar Lock Mandrel Sub-Assembly is designed to be set in **API** Tubing Collars.

Type **'ROTT'S'** Collar Lock Mandrel is basically the same as Type **'ROTS-2'** Lock Mandrel Sub-Assembly (**Product 10**); with modified Keys (**DET 2**) to be able to locate in the Tubing Collars.



| NOMINAL SIZE | | 2 3/8" | 2 7/8" | 3 1/2" |
|--------------|------------------------|---------------|---------------|---------------|
| SUB ASSEMBY | TYPE of LOCK - (DET 2) | 'ROTT'S' | 'ROTT'S' | 'ROTT'S' |
| | SUB-ASSY NUMBER | 1015142202370 | 1015142202870 | 1015142203500 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO |
|-----|--------------|-----|---------|---------|---------|
| 1 | LOCK MANDREL | 1 | | | |
| 2 | LOCK (DOG) | 4 | | | |
| 3 | LOCK PIN | 4 | | | |
| 4 | LOCK SPRING | 4 | | | |

ENGINEERING DATA:

| | | | |
|-------------------|------------|------------|------------|
| MAXIMUM OD | 1.750" | 2.188" | 2.688" |
| FISHING NECK SIZE | 1.375" | 1.750" | 2.313" |
| MINIMUM ID | .88" | 1.19" | 1.44" |
| LENGTH | 9.12" | 9.38" | 10.47" |
| WEIGHT lbs (kg) | 2.9 (1.32) | 4.2 (1.91) | 7.8 (3.54) |
| MATERIAL | Alloy | Alloy | Alloy |



SECTION XIV: LOCK MANDRELS

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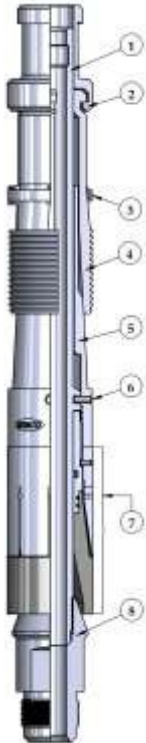
REBCO

Product Code: 10

Type 'ROTW' Tubing Slip Mandrel Sub-Assembly: 1 3/4" – 4 1/2"

Rebco Type 'ROTW' Slip Mandrel Sub-Assembly is to be set into the Tubing without Nipples. The Element Sub-Assembly is designed to pack off the tubing ID.

NOTE: Type 'ROTW' Mandrel, attached with various types of Equalizing Sub-Assemblies, is designed to hold pressure from below only.



| | | | | |
|---------------------|-------------|-------------|-------------|-------------|
| NOMINAL SIZE | 1 3/4" | 2" | 2 1/2" | 3 1/2" |
| SUB-ASSEMBLY NUMBER | 10172017500 | 10172020000 | 10172025000 | 10172030000 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO |
|-----|-------------------|-----|---------|---------|---------|---------|
| 1 | MAIN MANDREL | 1 | | | | |
| 2 | SLIP CARRIER | 1 | | | | |
| 3 | BAND | 1 | | | | |
| 4 | SLIPS | 3 | | | | |
| 5 | SLIP MANDREL | 1 | | | | |
| 6 | SHEAR PIN | 2 | | | | |
| 7 | ELEMENT SUB-ASS'Y | 1 | | | | |
| 8 | ELEMENT EXPANDER | 1 | | | | |

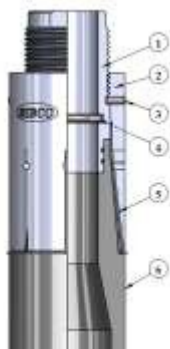
ENGINEERING DATA:

| MAXIMUM OD | SLIPS RETRACTED | 1.59" | 1.86" | 2.31" | 2.84" |
|---------------------|-----------------|-----------|-----------|-------------|-------------|
| | SLIPS EXPANDED | 1.82" | 2.09" | 2.53" | 3.08" |
| ELEMENT OD | | 1.609" | 1.859" | 2.297" | 2.843" |
| MINIMUM ID | | .56" | .69" | .88" | 1.38" |
| FISHING NECK OD | | 1.187" | 1.375" | 1.750" | 2.313" |
| RUNNING NECK ID | | .69" | .80" | .98" | 1.89" |
| BOTTOM THREAD - PIN | | 7/8" - 14 | 1" - 14 | 1 1/4" - 12 | 1 1/2" - 12 |
| LENGTH | | 15.56" | 18.88" | 19.38" | 20.26" |
| MATERIAL | | Alloy | Alloy | Alloy | Alloy |
| WEIGHT lbs (kg) | | 4.0 (1.8) | 7.0 (3.2) | 12.2 (5.6) | 15.4 (7.0) |

| | | | | |
|------------------------|------------|------------|------------|------------|
| RUNNING TOOL - 'ROTW' | 4117201500 | 4117202025 | 4117202025 | 4117203000 |
| PULLING TOOL - 'ROTRB' | 4013011500 | 4013012000 | 4013012500 | 4013013000 |

Product Code: 91

Rebco Type 'ROTW' Element Sub-Assembly (DET 7) is available as a Redress Kit.



| | | | | |
|-----------------------------|------------|------------|------------|------------|
| NOMINAL SIZE | 1 3/4" | 2" | 2 1/2" | 3 1/2" |
| ELEMENT SUB-ASSEMBLY NUMBER | 9109201750 | 9109202000 | 9109202500 | 9109203000 |

| DET | PART NAME | QTY | PART NO | PART NO | PART NO | PART NO |
|-------|-------------------|-----|---------|---------|---------|---------|
| 1 & 6 | SUB-ASSEMBLY | 1 | | | | |
| 2 | ELEMENT CAP | 1 | | | | |
| 3 | PIN | 2 | | | | |
| 4 | 'O' RING SEAL | 3 | | | | |
| 5 | ELEMENT CAP LINER | 1 | | | | |

ENGINEERING DATA:

| | | | | |
|-----------------|--------------|-------------|-------------|-------------|
| MAXIMUM OD | 1.609" | 1.924" | 2.309" | 2.843" |
| PIN THREAD | 1 3/16" - 16 | 1 3/8" - 12 | 1 3/4" - 12 | 2 1/4" - 12 |
| LENGTH | 4.27" | 5.48" | 5.50" | 5.53" |
| MATERIAL | Alloy | Alloy | Alloy | Alloy |
| WEIGHT lbs (kg) | .8 (.36) | 1.3 (.60) | 1.6 (.73) | 2.7 (1.25) |



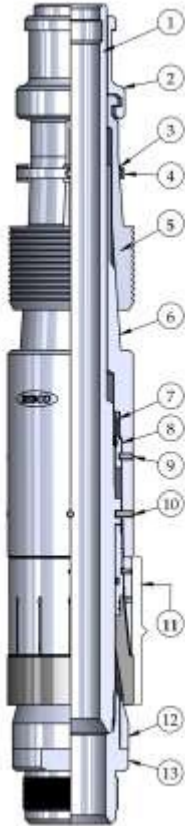
SECTION XIV: LOCK MANDRELS

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REBCO

Product Code: 10

Type 'ROTW' Tubing Slip Mandrel Sub-Assembly: Continued



| | |
|---------------------|-------------|
| NOMINAL SIZE | 4" |
| SUB-ASSEMBLY NUMBER | 10172040000 |

| DET | PART NAME | QTY | PART NO |
|-----|-------------------|-----|---------|
| 1 | MAIN MANDREL | 1 | |
| 2 | SLIP CARRIER | 1 | |
| 3 | BAND | 1 | |
| 4 | SCREW | 4 | |
| 5 | SLIPS | 3 | |
| 6 | SLIP MANDREL | 1 | |
| 7 | COLLET | 1 | |
| 8 | BOWL | 1 | |
| 9 | SHEAR PIN | 2 | |
| 10 | SHEAR PIN | 4 | |
| 11 | ELEMENT SUB-ASS'Y | 1 | |
| 12 | BUSHING | | |
| 13 | ELEMENT EXPANDER | 1 | |

ENGINEERING DATA:

| | | |
|---------------------|-----------------|-------------|
| MAXIMUM OD | SLIPS RETRACTED | 3.78" |
| | SLIPS EXPANDED | 4.03" |
| ELEMENT OD | | 3.781" |
| MINIMUM ID | | 1.75" |
| FISHING NECK OD | | 2.750" |
| RUNNING NECK ID | | 1.91" |
| BOTTOM THREAD - PIN | | 2 7/8" - 12 |
| LENGTH | | 24.9" |
| MATERIAL | | Alloy |
| WEIGHT lbs (kg) | | 37.4 (16.9) |

| | |
|------------------------|------------|
| RUNNING TOOL - 'ROTW' | 4117203500 |
| PULLING TOOL - 'ROTRB' | 4013013500 |

Product Code: 91

Rebco Type 'ROTW' Element Sub-Assembly (DET 11) is available as a Redress Kit.



| | |
|-----------------------------|------------|
| NOMINAL SIZE | 4" |
| ELEMENT SUB-ASSEMBLY NUMBER | 9109204000 |

| DET | PART NAME | QTY | PART NO |
|-------|-------------------|-----|---------|
| 1 & 6 | SUB-ASSEMBLY | 1 | |
| 2 | ELEMENT CAP | 1 | |
| 3 | PIN | 4 | |
| 4 | 'O' RING SEAL | 3 | |
| 5 | ELEMENT CAP LINER | 1 | |

ENGINEERING DATA:

| | | |
|-----------------|--|--------------|
| MAXIMUM OD | | 3.70" |
| PIN THREAD | | 3 3/16" - 12 |
| LENGTH | | 5.47" |
| MATERIAL | | Alloy |
| WEIGHT lbs (kg) | | 4.2 (1.91) |