

LoTORQTM Mechanical Friction- and Wear-Reduction Centralizer System

Weatherford developed the *LoTORQ* system as a centralizer and an axial and rotational friction-reduction system to perform independently of drilling or completion mud-film strength or lubricity. This unique system, which uses bidirectional rollers, has been proven on the world's most challenging wells. Rollers that are in contact with the inner pipe can achieve exceptionally low friction factors, with rotating coefficients in cement being as low as 0.04. Rollers with a higher profile for contacting the exterior wellbore wall have routinely reduced axial-friction factors by 60 percent.

The vast majority of *LoTORQ* tools have been used in extended-reach wells to run and rotate liners. The *LoTORQ* mechanical friction-reduction system now makes possible pipe rotation once limited by torque, providing optimal displacement efficiency and cement sheath.



Applications

The LoTORQ tools provide optimal performance when:

- Casing, liner, and screens are being run into horizontal and extended-reach wells
- · Long and/or heavy cemented liners are being rotated
- Health, safety, and environmental requirements ban the use of oil-based and pseudo-oil-based mud
- · Under-pressured formations may cause differential sticking
- · Run in conjunction with high-strength stop collars

Cementing



LoTORQ[™] Mechanical Friction- and Wear-Reduction Centralizer System

Features, Advantages and Benefits

- Bidirectional rollers provide low torque and axial drag to get casing, liners, or screens to bottom successfully, reducing rig time and costs.
- Low torque and drag allows for rotation and reciprocation, providing improved mud displacement and cement job.
- Minimal roller-contact area in openhole applications reduces the risk of differential sticking and provides optimal standoff, increasing operational efficiency.
- Rollers provide superior wear resistance and remain functional for the life of the well, allowing casing or tubing retrieval, if necessary.
- Unique engineering and material selection ensures that axle shear stresses remain within elastic limits, preventing roller failure.
- High-quality material selection provides excellent high temperature/pressure and corrosion resistance performance, reducing replacement costs.



Rotating Friction Factors For Liners

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Specifications

| Model Number | Part Number | Tubular Size (in.) | Hole Size (in.) | LoDRAG™ Over-Roller OD (in./ <i>mm</i>) | LoTORQ Under-Roller ID (in./ <i>mm</i>) | Body OD (in./ <i>mm</i>) | Cross-Sectional Area (in. ² /cm ²) |
|-----------------|----------------|--------------------------|--------------------|--|--|------------------------------|---|
| RCLQ 5000-8000 | 586545 | 5 | 8-1/8 to 8-1/2 | 8.000 203.20 | 5.053 128.35 | 7.805 198.25 | 44.47 273.99 |
| RCLQ 5500-7188 | 896409 | 5-1/2 | 7-3/8 to 7-3/4 | 7.188 182.58 | 5.580 141.73 | 7.062 179.37 | 41.10 265.28 |
| RCLQ 5500-8250 | 586548 | 5-1/2 | 8-3/8 to 8-3/4 | 8.250 209.55 | 5.580 141.73 | 8.050 204.47 | 42.80 276.22 |
| RCLQ 5500-9250 | 887160 | 5-1/2 | 9-3/8 to 9-3/4 | 9.243 234.77 | 5.618 <i>142.70</i> | 9.015 228.98 | 46.20 298.08 |
| RCLQ 6625-8250 | 795969 | 6-5/8 | 8-3/8 to 8-3/4 | 8.248 209.50 | 6.712 170.48 | 8.100 205.74 | 46.90 302.39 |
| RCLQ 7000-8375 | 798484 | 7 | 8-1/2 to 8-7/8 | 8.375 212.73 | 7.081 179.86 | 8.245 209.42 | 54.90 354.20 |
| RCLQ 7000-9250 | 880985 | 7 | 9-3/8 to 9-3/4 | 9.250 234.95 | 7.095 180.21 | 9.090 230.89 | 56.90 367.13 |
| RCLQ 7625-9625 | 588818 | 7-5/8 | 9-7/8 to 10-1/4 | 9.625 244.48 | 7.705 195.71 | 9.469 240.51 | 63.50 409.86 |
| RCLQ 9625-12030 | 586568 | 9-5/8 | 12-1/4 to 13-1/8 | 12.030 <i>305.5</i> 6 | 9.726 247.04 | 11.890 <i>302.01</i> | 98.90 638.19 |

Additional sizes available upon request

Options

Weatherford has developed an optional corrosion-resistant alloy (CRA) system for tubular applications to prevent direct, contaminating contact between the LoTORQ tool and CRA pipe. This optional corrosion-resistant compatibility system ensures that:

- Each centralizer and stop collar is completely coated with an isolating polyamid material or manufactured from CRA-compatible material.
- Rollers and stop-collar set screws are made of corrosion-resistant material that is compatible with the pipe alloy. Contact your Weatherford representative for details.

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