



## *Bow-Spring Centralizer Sub* *Models 541 and 541R*

Weatherford's patented bow-spring centralizer sub is designed to keep the casing centralized in the well while cement slurry is pumped between the casing and the wellbore. The bow-spring centralizer sub is ideal for use in casing strings with ultratight clearance. Available in nonrotating (Model 541) and rotating (Model 541R) versions, the centralizer sub meets special drilling requirements by running casing inside previous casing or openhole sections with extremely close annular clearances.

This unique centralizer recesses completely into the sub body to permit passage through the tightest restrictions, and then expands into underreamed or openhole sections to provide excellent centralization. Models 541 and 541R are engineered to enable the maximum possible fluid bypass to minimize the effect on circulating pressure.

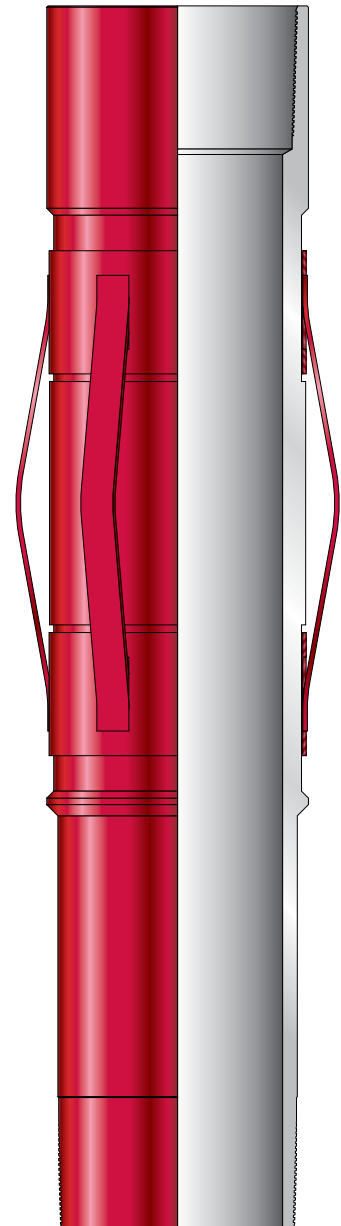
This centralizer sub combines its slimhole capabilities with the proven quality of Weatherford's welded centralizers. The sub body is manufactured from one piece of steel, which is selected by weight and grade to match the burst, collapse, and tensile ratings of most casing sizes. In all casing sizes, drift diameter is maintained.

### *Applications*

- Running casing inside previous casing or openhole sections with extremely close annular clearances

### *Features, Advantages and Benefits*

- Bows recess completely into the tool body to allow passage through close-tolerance sections and to protect the bows from damage.
- Bows expand to provide excellent casing centralization in openhole or underreamed sections.
- Models 541 and 541R bow-spring centralizers are available in float-collar, float-shoe, and guide-shoe configurations to reduce the number of premium threads required in the casing string.
- Manufactured to the exacting standards of ISO 9001 and API Q1 quality systems, Models 541 and 541R bow-spring centralizers provide reliability and durability during operations.





## *Bow-Spring Centralizer Sub Models 541 and 541R*

### *Specifications\**

Casing Size (in./mm)	Previous Casing Minimum Drift ID (in./mm)	Open Hole Size (in./mm)	Number of Bow Springs (ea)	
3-1/2 88.9	4 101.6	4-1/2 to 8-3/4 114.3 to 222.3	4	
4-1/2 114.3	5 127.0	5-3/4 to 9-7/8 146.1 to 250.8		
5 127.0	5-1/2 139.7	6 to 10-5/8 152.4 to 269.9		
5-1/2 139.7	6 152.4	6-1/2 to 10-5/8 165.1 to 269.9		
7 177.8	7-1/2 190.5	7-7/8 to 12-1/4 200.0 to 311.2		
7-5/8 193.7	8-1/8 206.4	8-1/2 to 12-1/4 215.9 to 311.2	6	
7-3/4 196.9	8-1/4 209.6			
8-5/8 219.1	9-1/8 231.8	9-5/8 to 13-1/2 244.5 to 342.9		
9-5/8 244.5	10-1/8 257.2	10-1/2 to 14-3/4 266.7 to 374.7		
9-7/8 250.8	10-3/8 261.0			
10-3/4 273.1	11-1/4 285.8	12-1/4 to 15-1/2 311.2 to 393.7		
11-3/4 298.5	12-1/4 311.2	13-1/2 to 16 342.9 to 406.4		
11-7/8 301.6				
13-3/8 339.7	13-7/8 352.4	14-3/4 to 17-1/2 374.7 to 444.5		8
13-5/8 346.1	14-1/8 358.8			
16 406.4	16-1/2 419.1	17-1/2 to 22 444.5 to 558.8	10	

### *Options*

- Rotating (Model 541R) and nonrotating (Model 541) versions are available.
- The bow-spring centralizer sub can be ordered with flush-joint connections.

\*For specific performance data on starting, moving, and restoring forces, contact a Weatherford representative.