



Welded Bow-Spring Centralizer

Weatherford's welded bow-spring centralizers are designed to centralize casing in the wellbore during running and cementing operations. Providing excellent downhole durability and performance, the centralizer features heat-treated, spring-steel bows that are welded to unique, rigid end collars.

The centralizer bows provide maximum standoff for efficient mud and cement displacement and are available in various heights to assure optimum restoring forces. The rigid end collars provide solid support for the end bands and are available in a slip-on or latch-on configuration for easy installation.

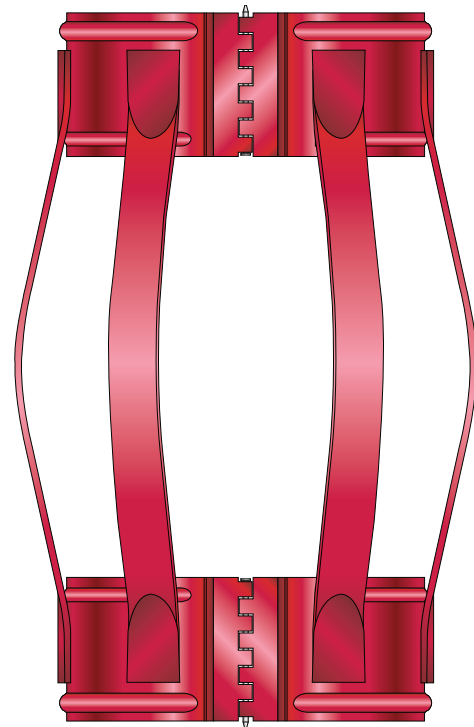
During the planning phase, Weatherford's CentraPro Plus® software is recommended to ensure optimum centralizer quantity and placement with minimized drag forces.

Applications

- Cased-hole and openhole applications
- Vertical or horizontal wells
- Underreamed and washed-out wells
- Casing or liner strings where reciprocation is advantageous

Features, Advantages and Benefits

- End collars are manufactured with a unique ribbed design, providing rigidity to the bands and protection for the bow springs.
- The high-quality, spring-steel bows are heat-treated, enabling the bows to return to their original shape after passing restrictions, contributing further to optimum standoff in underreamed holes and washed-out areas.
- Latch-on end collars feature an integral hinge that folds to the inside, adding strength and eliminating interference during run-in.
- High performance bows provide maximum standoff in a wide range of hole sizes, achieving the best possible chance of zonal isolation and reducing remedial cementing operations and costs.





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Features, Advantages and Benefits (continued)

- All common centralizer sizes have been tested and validated to American Petroleum Institute (API) 10D requirements, providing reliability and durability during operations.
- Various bow heights are available, assuring optimum restoring forces for most well requirements.
- Slip-on configurations feature single-piece end collars, enabling the device to be rotated in most situations.

Specifications

Hole Size (in./mm)	Casing Size (in.)																	
	2-3/8	2-7/8	3-1/2	4-1/2	5	5-1/2	6-5/8	7	7-5/8	8-5/8	9-5/8	10-3/4	11-3/4	13-3/8	16	18-5/8	20	
4-1/2 to 4-3/4 114.3 to 120.35	30	16 ^{1,3}	12 ^{1,3}	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5-3/4 to 6 146.05 to 152.4	36	30	25	12/16 ^{1,2,3}	12 ^{1,3}	--	--	--	--	--	--	--	--	--	--	--	--	--
6-1/8 to 6-3/8 155.5 to 161.9	46	30/36	30	16 ^{1,3}	12/16 ^{1,2,3}	--	--	--	--	--	--	--	--	--	--	--	--	--
6-1/2 to 6-3/4 165.1 to 171.45	46	46	36	25	16 ^{1,3}	12 ^{1,3}	--	--	--	--	--	--	--	--	--	--	--	--
7-3/8 to 7-7/8 187.3 to 200	57	46	46	36	30/36	25	12 ^{1,3}	--	--	--	--	--	--	--	--	--	--	--
8-3/8 to 8-5/8 212.7 to 219	57	57	46	36/46	36	30/36	16/25 ^{1,2,3}	16 ^{1,3}	12 ^{1,3}	--	--	--	--	--	--	--	--	--
8-3/4 to 9 222.2 to 228.6	85	57	57	46	46	36	25	25	12 ^{1,3}	--	--	--	--	--	--	--	--	--
9-1/2 to 10 241.3 to 254	85	85	--	57	46/57	46	36	36	25/30	--	--	--	--	--	--	--	--	--
10-5/8 to 11 269.8 to 279.4	--	85	85	57/85	57	57	46	46	36	25/30	12/16 ^{1,2,3}	--	--	--	--	--	--	--
12 to 12-1/4 304.8 to 311.15	--	--	85	85	85	85	57	57	57	46	36	25	--	--	--	--	--	--
14 to 15-1/2 355.6 to 393.7	--	--	--	--	85	85	85	85	85	57/85	46/57	46	36/46	--	--	--	--	--
17 to 18-5/8 431.8 to 473.07	--	--	--	--	--	--	--	--	--	85	85	57	57	46	25/36	--	--	--
19-1/2 to 20-1/2 495.3 to 520.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	57	--	--	--
22 to 23 558.8 to 584.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	85	46/57	46	--
24 609.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	57	46/57	--
26 660.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	85	57/85	--

Notes:

1. Close tolerance — integral stop-collar
2. Where two bow-spring sizes are indicated, the lower should be used for smaller hole sizes or with lightweight casing and two-centralizers-per-joint installations.
3. Type 12 and 16 bow springs are identical, 12 is for notched-in, 16 for lap-welded close-tolerance centralizer.

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Specifications (continued)

Casing Size (in.)	12 Bow		16 Bow		25 Bow		30 Bow		36 Bow		46 Bow		57 Bow		85 Bow	
	Maximum Bow OD (in.)	Minimum Comp.* OD (in.)	Maximum Bow OD (in.)	Minimum Comp. OD (in.)	Maximum Bow OD (in.)	Minimum Comp. OD (in.)	Maximum Bow OD (in.)	Minimum Comp. OD (in.)	Maximum Bow OD (in.)	Minimum Comp. OD (in.)	Maximum Bow OD (in.)	Minimum Comp. OD (in.)	Maximum Bow OD (in.)	Minimum Comp. OD (in.)	Maximum Bow OD (in.)	Minimum Comp. OD (in.)
4-1/2	6.000	5.500	6.250	5.500	7.250	5.500	7.550	5.500	8.500	5.500	9.250	5.500	11.500	5.500	14.500	5.500
5	6.500	6.000	6.750	6.000	7.875	6.000	8.250	6.000	8.750	6.000	9.750	6.000	12.000	6.000	15.000	6.000
5-1/2	7.000	6.500	7.250	6.500	8.375	6.500	8.750	6.500	9.125	6.500	10.250	6.500	12.500	6.500	15.500	6.500
6-5/8	8.125	7.625	8.375	7.625	9.500	7.625	9.875	7.625	10.375	7.625	11.375	7.625	13.625	7.625	16.625	7.625
7	8.500	8.000	8.750	8.000	9.875	8.000	10.250	8.000	10.750	8.000	11.750	8.000	14.000	8.000	17.000	8.000
7-5/8	9.125	8.625	9.375	8.625	10.500	8.625	11.000	8.625	11.500	8.625	12.375	8.625	14.625	8.625	17.625	8.625
8-5/8	10.250	9.625	10.500	9.625	11.500	9.625	12.000	9.625	12.500	9.625	13.875	9.625	15.625	9.625	18.625	9.625
9-5/8	11.250	10.750	11.500	10.750	12.500	10.750	13.000	10.750	13.500	10.750	14.875	10.750	16.625	10.750	19.625	10.750
10-3/4	12.375	11.875	12.625	11.875	13.625	11.875	14.125	11.875	14.625	11.875	15.875	11.875	17.750	11.875	20.875	11.875
11-3/4	13.375	12.875	13.625	12.875	14.625	12.875	15.125	12.875	15.625	12.875	16.875	12.875	18.750	12.875	21.875	12.875
13-3/8	15.000	14.500	15.250	14.500	16.250	14.500	16.750	14.500	17.250	14.500	18.750	14.500	20.375	14.500	23.500	14.500
16	17.625	17.125	17.875	17.125	18.875	17.125	19.375	17.125	19.875	17.125	21.375	17.125	23.000	17.125	26.125	17.125
18-5/8	20.250	19.750	20.500	19.750	21.500	19.750	22.000	19.750	22.50	19.750	24.000	19.750	25.625	19.750	28.750	19.750
20	21.625	21.125	21.875	21.125	22.875	21.125	23.375	21.125	23.875	21.125	25.375	21.125	27.000	21.125	30.125	21.125

Notes:

* Comp. = Compressed



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Options

- S-series, B-series, and P-series centralizers are available. S-series centralizers feature thicker bows for good standoff; B-series centralizers provides less running forces; and the P-series centralizers feature more bows, providing greater standoff.
- End collars are available in latch-on or slip-on configurations.
- Custom designs are available for nonstandard applications.