

# Lifting & Spreader Beams

## Model BEF - Spreader Beam End Fittings



Shown full assembled with customer supplied rigging and bar.

**INSTOCK  
PROGRAM**

### PRODUCT FEATURES:

- Build your own spreader beam.
- Designed to work with a range of shackle sizes, both top and bottom.
- Complies with ASME standards when assembled to specifications using A53 Grade B, schedule 40 pipe.



### SPECIFICATIONS

Model No. Spread (ft.)	Capacity (tons)																		Weight (lbs.) Per Pair	
	4	5	6	8	10	12	14	15	16	18	20	22	24	26	28	30	32	34		36
BEF-2-1/2	7.5	7	6.5	5.5	4	2.9	2	1.8	-	-	-	-	-	-	-	-	-	-	-	18
BEF-5	17	17	17	17	17	16	15	14	13	12	10	8	7	6	5	4.5	-	-	-	76
BEF-8	39	39	39	39	39	38	36	36	35	33	31	29	27	25	23	21	19	16	15	285

**NOTE:** Capacity based on minimum 45° top rigging angle.  
Other sizes available, consult factory.

## Assembly Information

The Caldwell Model BEF is designed to use A53 Grade B, schedule 40 pipe as the central structural element between the end fittings. This structural material is readily available at most steel service centers. The Caldwell Model BEF-2 1/2 requires a 2-1/2" nominal size, the Model BEF-5 requires a 5" nominal size, and the BEF-8 requires an 8" nominal size A53 Grade B, schedule 40 pipe.

Other requirements are:

- The length of pipe used for this central element must be straight within 1/4" end to end.
- The pipe should have the ends cleanly cut square with its centerline.
- The A53 Grade B, schedule 40 pipe should not have any weld joint irregularities.
- Each end of the A53 Grade B, schedule 40 pipe must have the correct diameter holes drilled through both walls and both ends must be in line.
- The A53 Grade B, schedule 40 pipe used in this application does not need to pass any pressure testing.

The retaining bolts used to secure the Caldwell Model BEF 2-1/2 and 5 to the A53 Grade B, schedule 40 pipe must be a Grade 5 Hex Head Cap Screw 5/8-11 with minimum length of 4-1/2" and 8" respectively. The bolt for the BEF-8 is a Grade 5 Hex Head Cap Screw 1-8 with a minimum length of 11-1/2".

**NOTE:** Complete assembly instructions are provided with each set of end fittings.

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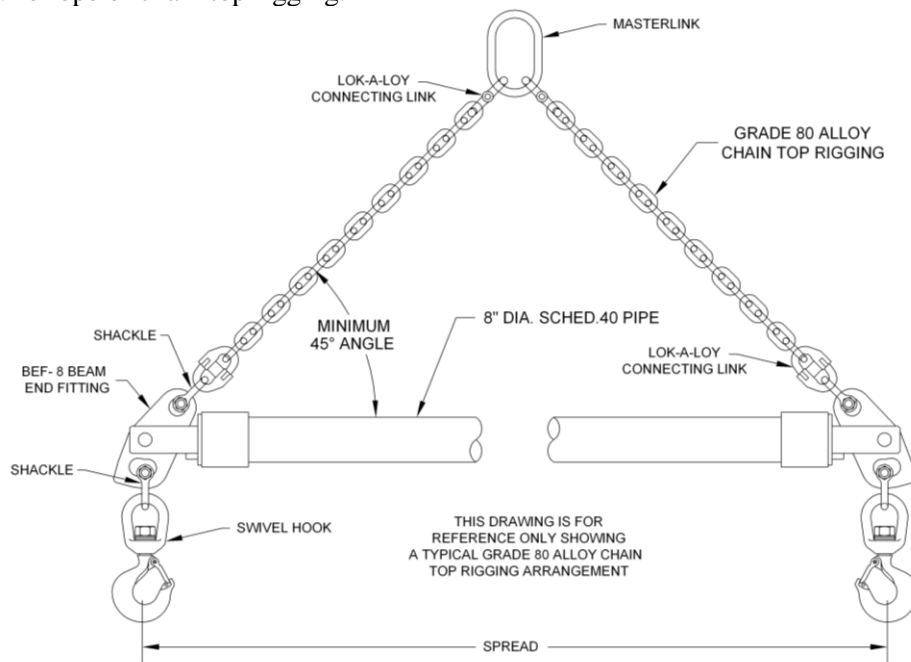
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## TECHNICAL DATA SHEET FOR MODEL BEF- 8 BEAM END FITTINGS

The Caldwell Model BEF Beam End Fittings allow qualified riggers to build SPREADER BEAMS in a range of spread lengths and capacities, meeting ASME B30.20 standards. Each SPREADER BEAM built to the specifications listed in this technical document, using the Caldwell Model BEF, is classified as a "Structural Lifting Device" and meets or exceeds ASME B30.20 design specifications. The BEF-8, beam end fittings, support loads up to the rated capacity as described in the tables listed in this document when used correctly. Use either wire rope or chain top rigging.



Top Rigging minimum angle is 45°. Angles less than 45° results in spreader system overload and load loss.

By observing the following operational procedures you can assure reliable handling of the loads you wish to lift.

1. INSPECT THE LIFTER FOR DAMAGE OR EXCESS WEAR BEFORE EACH USE. Check for structural bending, excess wear at load points and pins, cracked or broken welds, or deformed hooks. If this inspection reveals any defect, place unit out of service and report this to the designated person.
2. NEVER EXCEED RATED CAPACITY.
3. POSITION LIFTER SO THAT LOAD IS PROPERLY BALANCED AND LEVEL.
4. DO NOT LIFT PEOPLE. DO NOT LIFT OVER PEOPLE. DO NOT LIFT HIGHER THAN NECESSARY. DO NOT LEAVE LOAD UNATTENDED WHEN SUSPENDED.

## TECHNICAL DATA SHEET FOR MODEL BEF- 8 BEAM END FITTINGS

Use TABLE 1. Initiating the design of the desired spreader beam by selecting a rated capacity with a corresponding spread length.

*Example 1: If a spreader beam up to 36 Ton capacity is needed, Table 1 shows that a spread of up to 14ft. can be accommodated and this spreader beam will meet all of the structural strength requirements of ASME B30.20 when using 8" nominal diameter Schedule 40 pipe.*

*Example 2: If a beam with a spread of 26 ft is required, Table 1 shows that a capacity of up to 25 Ton can be attained.*

In each of these examples it is very important to follow all other specifications, regarding material, straightness, and rigging hardware size as described in this document.

The Caldwell Model BEF-8 Beam End Fitting has a capacity range of 15 Ton (30,000 lbs) at a 36 ft spread up to 39 Ton (78,000 lbs) at a 10 ft spread.

The Caldwell Model BEF-8 Beam End Fitting accepts a range of rigging shackles on both the top and bottom rigging connect points. The top rigging connect points accept a rigging angle of 45-60 degrees, accommodating the Crosby Bolt Type Anchor Shackles or equivalent, with a capacity of up to 35 Ton (70,000 lbs). The bottom rigging connect points accepts Crosby Bolt Type Anchor Shackles or equivalent, with a capacity of up to 25 Ton (50,000 lbs).

TABLE 1. Shows the maximum capacity for a range of spread lengths.

Model BEF- 8 Maximum Capacity at Listed Hook Spread													
Spread (in feet)	4 to 10	12	14	16	18	20	22	26	28	30	32	34	36
Capacity (tons)	39	38	36	35	33	31	29	25	23	21	19	16	15
Pipe Size	8" Nominal Size Schedule 40 ERW pipe (A53, Grade B, Schedule 40 Pipe) 8.625" OD, .322" Wall												

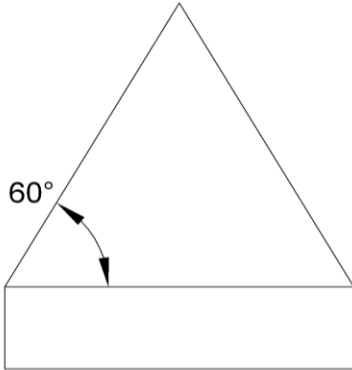
Table 1.

**WARNING: DO NOT EXCEED THE MAXIMUM CAPACITY DEFINED FOR EACH SPREAD LENGTH.**

## TECHNICAL DATA SHEET FOR MODEL BEF- 8 BEAM END FITTINGS

The top rigging capacity must be sized to account for the top rigging angle and must be capable of lifting the beam capacity plus the additional weight of the spreader beam system. The spreader beam weight equals: the weight of two beam end fittings, 266 pounds, plus 29 pounds per foot of pipe, 8" nominal size Schedule 40 ERW pipe, 8.625" O.D. x .322" wall thickness.

60° Rigging Angle



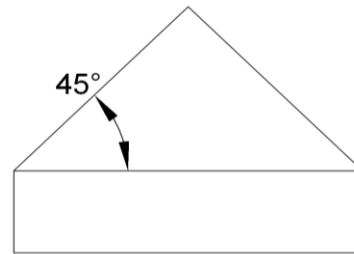
Rated Capacity for 6 X 19 Extra Improved  
Plow with Independent Wire Rope Core

Wire Rope Sling Diameter	60° Rigging Angle	45° Rigging Angle
1"	34,000 lbs.	28,000 lbs.
1-1/8"	42,000 lbs.	34,000 lbs.

Rated Capacity for 6 X 37 Extra Improved  
Plow with Independent Wire Rope Core

1-1/4"	52,000 lbs.	42,000 lbs.
1-3/8"	62,000 lbs.	50,000 lbs.
1-1/2"	74,000 lbs.	60,000 lbs.
1-3/4"	98,000 lbs.	80,000 lbs.

45° Rigging Angle



Rated Capacity for Grade 80 Alloy Chain

Grade 80 Alloy Chain Size	60° Rigging Angle	45° Rigging Angle
5/8"	31,300 lbs.	25,600 lbs.
3/4"	49,000 lbs.	40,000 lbs.
7/8"	59,200 lbs.	48,400 lbs.
1"	82,600 lbs.	67,400 lbs.

### Top Rigging Capacity Chart Table 2.

**Example:** If a spreader beam of 25 Ton capacity with a spread of 26 ft. and a minimum of 45° top rigging angle is needed, the top rigging capacity must be sized as follows: The required length of the 8" nominal size Schedule 40 ERW pipe (A53, Grade B, Schedule 40 Pipe) from table 4 is 293.25 inches or approximately 24.44 ft long. The Beam capacity = 50,000 lbs.

The beam weight is 290 lbs + (29 lb/ft X 25.1 ft) = 993 lbs.

The total top rigging minimum capacity is 50,000 lbs + 1018 lbs. = 51,018 lbs.

Based on the chart in table 2. for a 45° top rigging angle it is required to use 1" Grade 80 alloy chain or 1-1/2" 6X37 Extra Improved Plow with Independent Wire Rope Core wire sling.

## TECHNICAL DATA SHEET FOR MODEL BEF- 8 BEAM END FITTINGS

Top rigging component configuration depends on the crane hook size and type of top rigging used. These top rigging components need to be sized to a rated capacity equal to or greater than the capacity of the Grade 80 alloy chain, 6X19, or 6X37 Extra Improved Plow with Independent Wire Rope Core wire sling that is used. If there are questions on proper sizing of rigging components, contact The Caldwell Group or your rigging supplier.

TABLE 3: Shows the recommended sizes and capacity for the hardware tabulated by spreader beam capacity in tons. Hardware must be rated at least the minimum capacity defined in TABLE 3. for either the Top Rigging or Bottom Rigging based on the tabulated spreader beam capacity.

### Caldwell Model BEF-8 Spreader System Rigging Hardware Selection Table

#### Top Rigging

Spreader Cap. (in Tons)	Crosby Shackle Description	Part Number
21	17T BTAS	S-2130
22	17T BTAS	S-2130
23	17T BTAS	S-2130
24	25T BTAS	S-2130
25	25T BTAS	S-2130
26	25T BTAS	S-2130
27	25T BTAS	S-2130
28	25T BTAS	S-2130
29	25T BTAS	S-2130
30	25T BTAS	S-2130
31	25T BTAS	S-2130
32	25T BTAS	S-2130
33	25T BTAS	S-2130
34	25T BTAS	S-2130
35	35T BTAS	S-2130
36	35T BTAS	S-2130
37	35T BTAS	S-2130
38	35T BTAS	S-2130
39	35T BTAS	S-2130

#### Bottom Rigging

Crosby Shackle Description	Part Number	Crosby Hook Description	Part Number
12T BTAS	S-2130	11T Swivel Hook	322A
12T BTAS	S-2130	11T Swivel Hook	322A
12T BTAS	S-2130	15T Swivel Hook	322A
12T BTAS	S-2130	15T Swivel Hook	322A
13 ½T BTAS	S-2130	15T Swivel Hook	322A
13 ½T BTAS	S-2130	15T Swivel Hook	322A
13 ½T BTAS	S-2130	15T Swivel Hook	322A
17T BTAS	S-2130	15T Swivel Hook	322A
17T BTAS	S-2130	15T Swivel Hook	322A
17T BTAS	S-2130	15T Swivel Hook	322A
17T BTAS	S-2130	22T Swivel Hook	322A
17T BTAS	S-2130	22T Swivel Hook	322A
17T BTAS	S-2130	22T Swivel Hook	322A
17T BTAS	S-2130	22T Swivel Hook	322A
25T BTAS	S-2130	22T Swivel Hook	322A
25T BTAS	S-2130	22T Swivel Hook	322A
25T BTAS	S-2130	22T Swivel Hook	322A
25T BTAS	S-2130	22T Swivel Hook	322A
25T BTAS	S-2130	22T Swivel Hook	322A

\* BTAS indicates Bolt Type Anchor Shackle  
Table 3.

## TECHNICAL DATA SHEET FOR MODEL BEF- 8 BEAM END FITTINGS

Use only Schedule 40 ERW pipe (A53, Grade B, Schedule 40 Pipe) as the central structural element between The Caldwell Model BEF-8, beam end fittings. This structural material is readily available in most locations. Caldwell Model BEF-8 requires an 8" nominal size Schedule 40 ERW pipe (A53, Grade B, Schedule 40 Pipe) 8.625" OD, .322" Wall. The length of pipe used for this central structural component must be straight within 1/2" end to end. This is required to prevent structural failure of the pipe from buckling due to an offset load on the pipe. If an inspection reveals that the pipe is damaged or bent, tag the unit with an "Out of Service" tag, remove the unit from service, and report it to a designated person.

The ends must be cut cleanly and square with the centerline of the pipe. The Schedule 40 pipe (A53, Grade B, Schedule 40 Pipe) should not have any weld joint irregularities. The Schedule 40 ERW pipe (A53, Grade B, Schedule 40 Pipe) used in this application does not need to pass any pressure testing.

Drill a through hole on each end of the Schedule 40 ERW pipe (A53, Grade B, Schedule 40 Pipe) as shown in Figure 1.

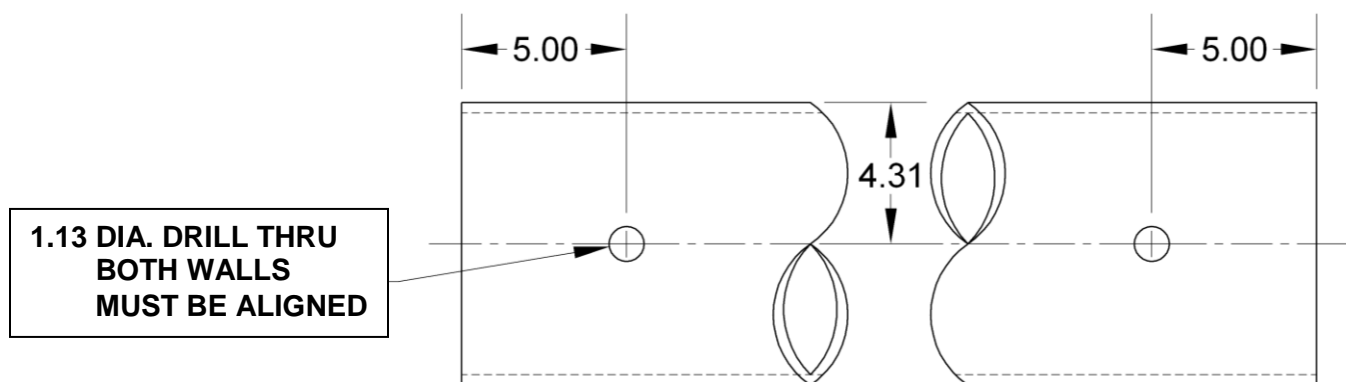


Figure 1.

The retaining bolt used to secure the Caldwell Model BEF-8 to the Schedule 40 ERW pipe (A53, Grade B, Schedule 40 Pipe) must be a Grade 5 Hex Head Cap Screw 1-8 with a minimum length of 11 1/2".

# **TECHNICAL DATA SHEET FOR MODEL BEF- 8 BEAM END FITTINGS**

TABLE 4. Defines the minimum sling length and pipe length for each spread, using Schedule 40 ERW pipe (A53, Grade B, Schedule 40 Pipe).

<b>Caldwell Model BEF-8 Spreader System Top Rigging Sling Leg Length</b>		
<b>Spread Length (feet)</b>	<b>Minimum Sling Leg Length (feet)</b>	<b>Schedule 40 ERW Pipe (A53, Grade B, Schedule 40 Pipe) Pipe Length (inches)</b>
10	8	101.25
11	8	113.25
12	9	125.25
13	10	137.25
14	10	149.25
15	11	161.25
16	12	173.25
17	13	185.25
18	13	197.25
19	14	209.25
20	15	221.25
21	15	233.25
22	16	245.25
23	17	257.25
24	17	269.25
25	18	281.25
26	19	293.25
27	20	305.25
28	20	317.25
29	21	329.25
30	22	341.25
32	23	365.25
34	24	389.25
36	25	413.25

Table 4.

## TECHNICAL DATA SHEET FOR MODEL BEF- 8 BEAM END FITTINGS

### Precautions:

1. Never attempt to lift loads beyond the specified maximum capacity.
2. Verify the top rigging is at a minimum angle of 45 degrees. If this angle is lower than 45 degrees, the spreader system is at risk of overloaded and load loss.

### Inspection & Maintenance:

1. Inspect all welds or cracks.
2. Inspect all rigging and hardware for wear and fit.

### Additional ASME B30.20 requirements:

1. Rated Load Marking (ASME B30.20 Section 20-1.2.1 Marking)  
The rated load of the lifting device shall be marked on the main structure where it is visible. If the lifting device is made up of several lifters, each detachable from the group, these lifters shall also be marked with their individual rated loads.
2. Identification (ASME B30.20 Section 20-1.2.1 Marking)  
A nameplate or other permanent marking shall be affixed displaying the following information:
  1. Manufacturer's name and address
  2. Serial Number
  3. Lifter Weight, if over 100 lbs (45 kg)
  4. Rated Load

**NOTE: When tags and product safety labels are damaged, worn, or missing, contact The Caldwell Group for complimentary replacements.**

ASME BTH-1  
DESIGN CATEGORY: B  
SERVICE CLASS: 0

BEF-8 (REV\_05)