



SOLID WASTE

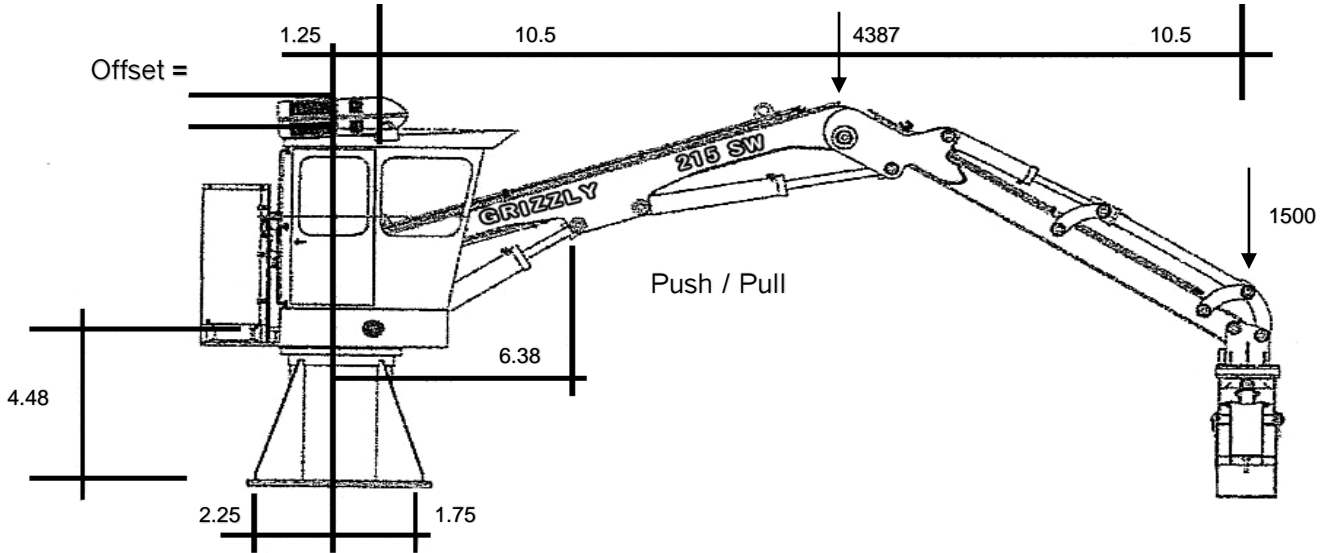
CRANE EQUIPMENT MANUFACTURING CORP.



33740 Seavey Loop • Eugene OR 97405-9602
www.grizzlycranes.com • ☎ (541) 746-9681 • 📠 (541) 746-8928

Certified Grizzly Knuckleboom Cranes

Model 160 SW, 21 ft. Boom, 4 ft. Base, 6 in. Cylinder



6" Diameter Main Cylinder
 2250 psi Hydraulic Pressure
 21' Boom
 2945 Wt. of Boom & Jib
 1442 Wt. Misc.
 4' Base Plate
 3" Diameter Rod
 13° Angle of Main Cylinder

Push = Area x pressure = 63,617 lbs.
 Pull = (A1-A2) x pressure = 47,713 lbs.
 Push = Sin13° = 14,311 lbs.
 Push = Cos13° = 61,987 lbs.
 Pull = Sin13° = 10,733 lbs.
 Pull = Cos13° = 46,490 lbs.

63,617 lbs.
 47,713 lbs.
 14,311 lbs.
 61,987 lbs.
 10,733 lbs.
 46,490 lbs.

Net Pick

$$= (6.38 \times 14311 + 11/12 \times 61987 - 10.5 \times 4387 - 21 \times 1500) / 21 =$$

3,360 lbs.

Moment =

$$= 10.5 \times 4387 + 21 \times (3360 + 1500) =$$

148,124 ft. lbs.

Reaction B =

$$= ((10.5 - 1.75) \times 4387 + (21 - 1.75) \times (3360 + 1500)) / 4 =$$

32,985 lbs.

Reaction A =

$$= 32985 + 4387 + 3360 + 1500 =$$

42,232 lbs.

Net Push

$$= (6.38 \times 10733 + 11/12 \times 46490 + 10.5 \times 4387 + 21 \times 1500) / 21 =$$

8,984 lbs.

Moment =

$$= (10.5 \times 4387 + (21 - 6.38) \times 10733 - 11 \times 46490 / 12) / 21 =$$

7,636 ft. lbs.

Reaction B =

$$= (2.25 \times 7636 - 3.5 \times 10733 + 4.48 \times 46490) / 4 =$$

46,973 lbs.

Reaction A =

$$= 46973 + 10733 - 7636 =$$

50,070 lbs.

Moment =

$$= 4.48 \times 46490 - 1.25 \times 10733 =$$

194,859 ft. lbs.

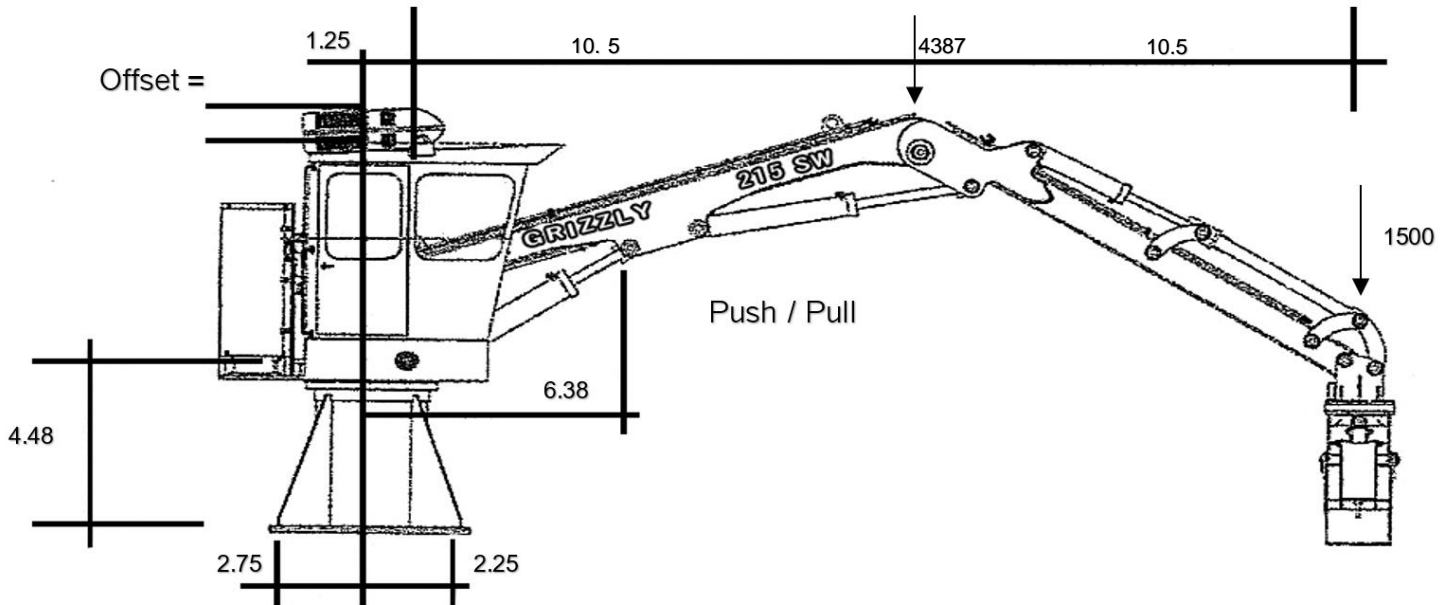


CRANE EQUIPMENT MANUFACTURING CORP.

33740 Seavey Loop • Eugene OR 97405-9602
www.grizzlycranes.com • ☎ (541) 746-9681 • 📠 (541) 746-8928

Certified Grizzly Knuckleboom Cranes

Model 160 SW, 21 ft. Boom, 5 ft. Base, 6 in. Cylinder



6" Diameter Main Cylinder
2250 psi Hydraulic Pressure
21' Boom
2945 Wt. of Boom & Jib
1442 Wt. Misc.
5' Base Plate
3" Diameter Rod
13° Angle of Main Cylinder

Push = Area x pressure =
Pull = (A1-A2) x pressure =

63,617 lbs.
47,713 lbs.

Push = Sin13° =
Push = Cos13° =
Pull = Sin13° =
Pull = Cos13° =

14,311 lbs.
61,987 lbs.
10,733 lbs.
46,490 lbs.

Net Pick

$$= (6.38 \times 14311 + 11/12 \times 61987 - 10.5 \times 4387 - 21 \times 1500) / 21 =$$

3,360 lbs.

Moment =

$$= 10.5 \times 4387 + 21 \times (3360 + 1500) =$$

148,124 ft. lbs.

Reaction B =

$$= ((10.5 - 2.25) \times 4387 + (21 - 2.25) \times (3360 + 1500)) / 5 =$$

25,464 lbs.

Reaction A =

$$= 25464 + 4387 + 3360 + 1500 =$$

34,711 lbs.

Net Push

$$= (6.38 \times 10733 + 11/12 \times 46490 + 10.5 \times 4387 + 21 \times 1500) / 21 =$$

8,984 lbs.

Moment =

$$= (10.5 \times 4387 + (21 - 6.38) \times 10733 - 11 \times 46490 / 12) / 21 =$$

7,636 ft. lbs.

Reaction B =

$$= (2.75 \times 7636 - 4 \times 10733 + 4.48 \times 46490) / 5 =$$

37,268 lbs.

Reaction A =

$$= 37268 + 10733 - 7636 =$$

40,366 lbs.

Moment =

$$= 4.48 \times 46490 - 1.25 \times 10733 =$$

194,859 ft. lbs.

Manufacturers of **"GRIZZLY"** Knuckleboom Cranes



Since 1977

Weights Certified by SSW Engineers



SOLID WASTE

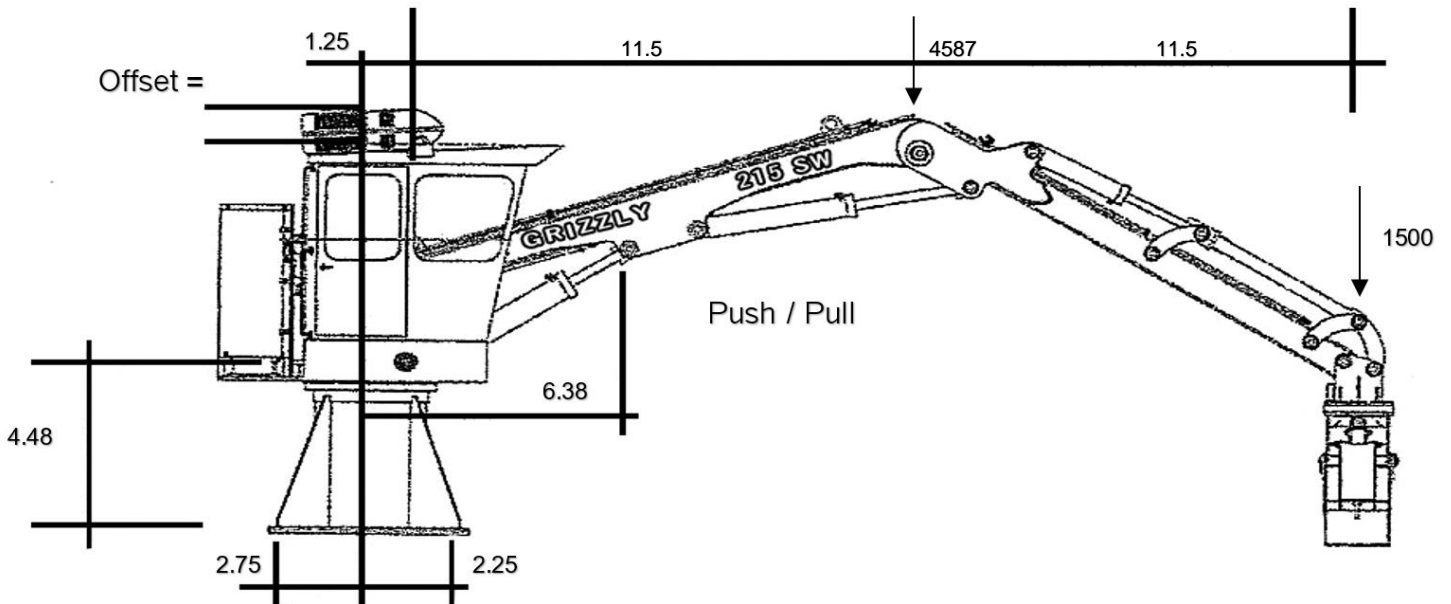


CRANE EQUIPMENT MANUFACTURING CORP.

33740 Seavey Loop • Eugene OR 97405-9602
www.grizzlycranes.com • ☎ (541) 746-9681 • 📠 (541) 746-8928

Certified Grizzly Knuckleboom Cranes

Model 160 SW, 23 ft. Boom, 5 ft. Base, 6 in. Cylinder



6" Diameter Main Cylinder
 2250 psi Hydraulic Pressure
 23' Boom
 3145 Wt. of Boom & Jib
 1442 Wt. Misc.
 5' Base Plate
 3" Diameter Rod
 13° Angle of Main Cylinder

Push = Area x pressure =
 Pull = (A1-A2) x pressure =

63,617 lbs.
 47,713 lbs.

Push = Sin13° =
 Push = Cos13° =
 Pull = Sin13° =
 Pull = Cos13° =

14,311 lbs.
 61,987 lbs.
 10,733 lbs.
 46,490 lbs.

Net Pick

$$= (6.38 \times 14311 + 11/12 \times 61987 - 11.5 \times 4587 - 23 \times 1500) / 23 =$$

2,647 lbs.

Moment =

$$= 11.5 \times 4587 + 23 \times (2647 + 1500) =$$

148,124 ft. lbs.

Reaction B =

$$= ((11.5 - 2.25) \times 4587 + (23 - 2.25) \times (2647 + 1500)) / 5 =$$

25,695 lbs.

Reaction A =

$$= 25695 + 4587 + 2647 + 1500 =$$

34,428 lbs.

Net Push

$$= (6.38 \times 10733 + 11/12 \times 46490 + 11.5 \times 4587 + 23 \times 1500) / 23 =$$

8,624 lbs.

Moment =

$$= (11.5 \times 4587 + (23 - 6.38) \times 10733 - 11 \times 46490 / 12) / 23 =$$

8,196 ft. lbs.

Reaction B =

$$= (2.75 \times 8196 - 4 \times 10733 + 4.48 \times 46490) / 5 =$$

37,576 lbs.

Reaction A =

$$= 37576 + 10733 - 8196 =$$

40,114 lbs.

Moment =

$$= 4.48 \times 46490 - 1.25 \times 10733 =$$

194,859 ft. lbs.

Manufacturers of



Knuckleboom Cranes

Since 1977

Weights Certified by SSW Engineers



SOLID WASTE

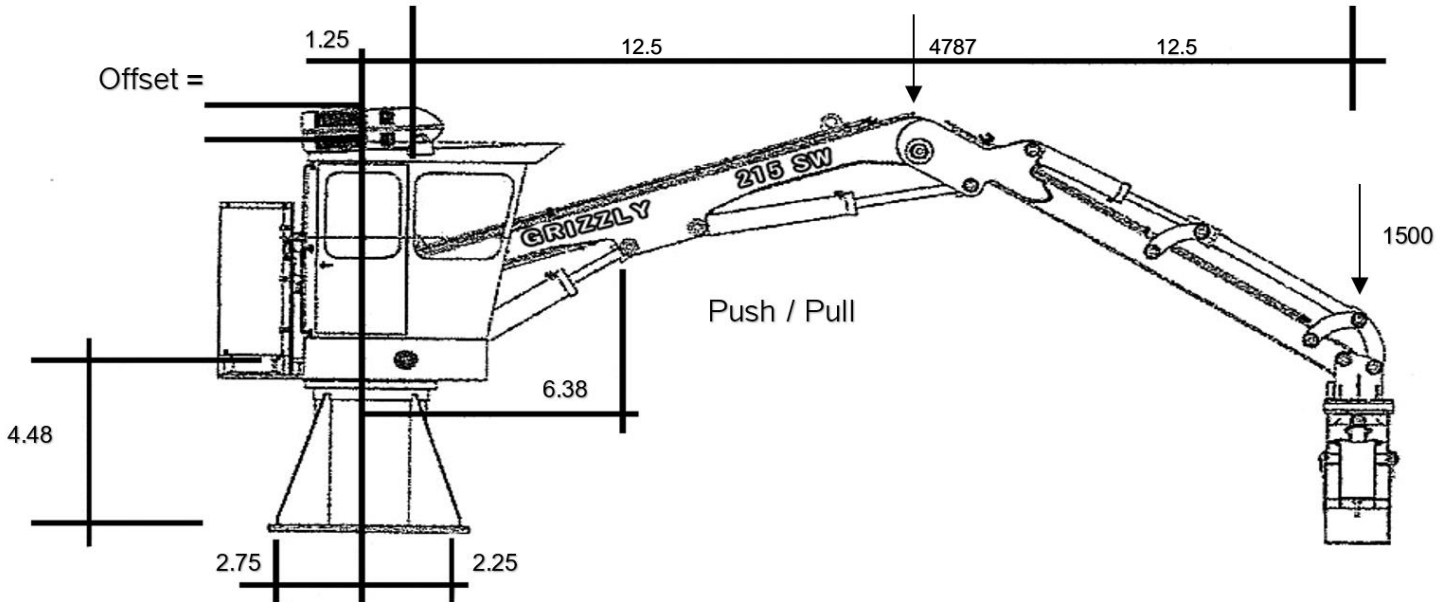


CRANE EQUIPMENT MANUFACTURING CORP.

33740 Seavey Loop • Eugene OR 97405-9602
www.grizzlycranes.com • ☎ (541) 746-9681 • 📠 (541) 746-8928

Certified Grizzly Knuckleboom Cranes

Model 160 SW, 25 ft. Boom, 5 ft. Base, 6 in. Cylinder



6" Diameter Main Cylinder
 2250 psi Hydraulic Pressure
 25' Boom
 3345 Wt. of Boom & Jib
 1442 Wt. Misc.
 5' Base Plate
 3" Diameter Rod
 13° Angle of Main Cylinder

Push = Area x pressure =
 Pull = (A1-A2) x pressure =

63,617 lbs.
 47,713 lbs.

Push = Sin13° =
 Push = Cos13° =
 Pull = Sin13° =
 Pull = Cos13° =

14,311 lbs.
 61,987 lbs.
 10,733 lbs.
 46,490 lbs.

Net Pick

$$= (6.38 \times 14311 + 11/12 \times 61987 - 12.5 \times 4787 - 25 \times 1500) / 25 =$$

2,031 lbs.

Moment =

$$= 12.5 \times 4787 + 25 \times (2031 + 1500) =$$

148,124 ft. lbs.

Reaction B =

$$= ((12.5 - 2.25) \times 4787 + (25 - 2.25) \times (2031 + 1500)) / 5 =$$

25,881 lbs.

Reaction A =

$$= 25881 + 4787 + 2031 + 1500 =$$

34,200 lbs.

Net Push

$$= (6.38 \times 10733 + 11/12 \times 46490 + 12.5 \times 4787 + 25 \times 1500) / 25 =$$

8,337 lbs.

Moment =

$$= (12.5 \times 4787 + (25 - 6.38) \times 10733 - 11 \times 46490 / 12) / 25 =$$

8,683 ft. lbs.

Reaction B =

$$= (2.75 \times 8683 - 4 \times 10733 + 4.48 \times 46490) / 5 =$$

37,844 lbs.

Reaction A =

$$= 37844 + 10733 - 8683 =$$

39,894 lbs.

Moment =

$$= 4.48 \times 46490 - 1.25 \times 10733 =$$

194,859 ft. lbs.

Manufacturers of



Knuckleboom Cranes

Since 1977

Weights Certified by SSW Engineers



CRANE EQUIPMENT MANUFACTURING CORP.

33740 Seavey Loop • Eugene OR 97405-9602
www.grizzlycranes.com • ☎ (541) 746-9681 • 📠 (541) 746-8928

Certified Grizzly Knuckleboom Cranes

Model	160 SW	160 SW	160 SW	160 SW
Boom Length (ft.)	21	21	23	25
Base Plate (ft.)	4	5	5	5
Main Cylinder (in.)	6	6	6	6
Hydraulic Pressure (psi)	2,250	2,250	2,250	2,250
Boom / Misc. Wt. (lbs.)	4,387	4,387	4,587	4,787
Grapple Weight (lbs.)	1,500	1,500	1,500	1,500
Angle of Main Cylinder (°)	13	13	13	13
Net Lift (lbs.)	3,360	3,360	2,647	2,031
Net Push (lbs.)	8,984	8,984	8,624	8,337
Moment (ft. lbs.)	194,859	194,859	194,859	194,859
Base Uplift (lbs.)	50,070	40,366	40,114	39,894
Base Down Pressure (lbs.)	46,973	37,268	37,576	37,844
Bolt Tension / Bolt (lbs.)	8,762	7,064	7,020	6,982
Bolt Shear / Bolt (lbs.)	3,395	2,680	2,680	2,680
Base Torque (ft. lbs)	76,389	76,389	76,389	76,389

