



SOLID WASTE

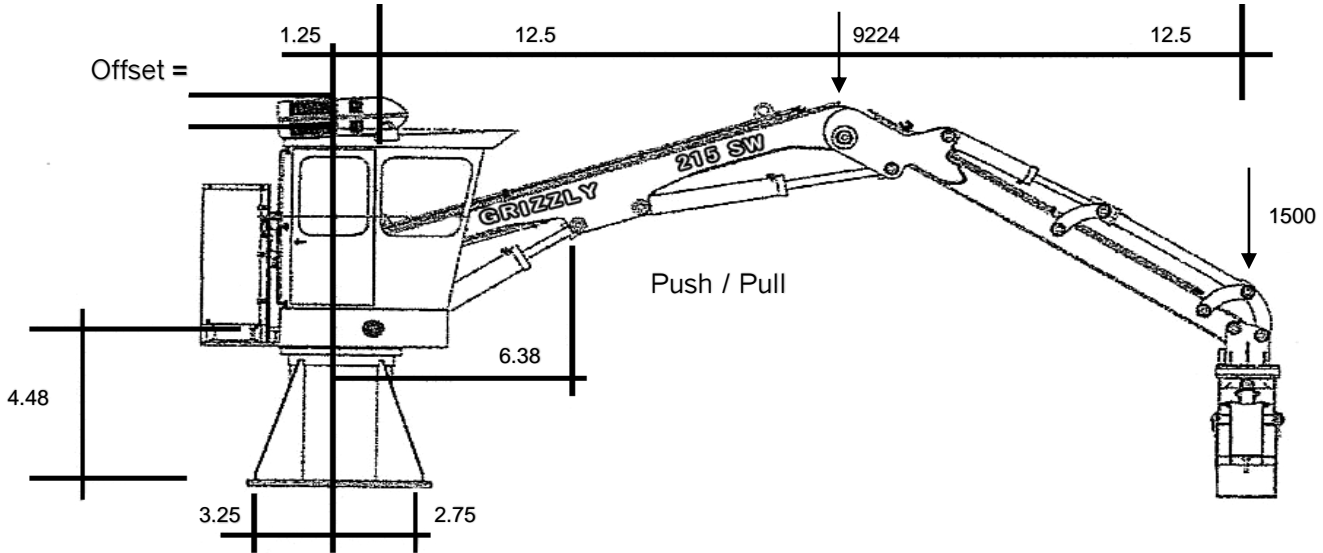
# CRANE EQUIPMENT MANUFACTURING CORP.



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

## Certified Grizzly Knuckleboom Cranes

Model 300 SW, 25 ft. Boom, 6 ft. Base, 7 in. (2) Cylinders



7" Diameter Main Cylinder  
 2250 psi Hydraulic Pressure  
 25' Boom  
 7040 Wt. of Boom & Jib  
 2184 Wt. Misc.  
 6' Base Plate  
 3" Diameter Rod  
 13° Angle of Main Cylinder

Push = Area x pressure = 173,180 lbs.  
 Pull = (A1-A2) x pressure = 141,372 lbs.  
 Push = Sin13° = 38,957 lbs.  
 Push = Cos13° = 168,742 lbs.  
 Pull = Sin13° = 31,802 lbs.  
 Pull = Cos13° = 137,748 lbs.

Net Pick  
 = (6.38 x 38957 + 11/12 x 168742 - 12.5 x 9224 - 25 x 1500) / 25 = 10,017 lbs.  
 Moment =  
 = 12.5 x 9224 + 25 x (10017 + 1500) = 403,226 ft. lbs.  
 Reaction B =  
 = ((12.5 - 2.75) x 9224 + (25 - 2.75) x (10017 + 1500)) / 6 = 57,698 lbs.  
 Reaction A =  
 = 57698 + 9224 + 10017 + 1500 = 78,439 lbs.  
 Net Push  
 = (6.38 x 31802 + 11/12 x 137748 + 12.5 x 9224 + 25 x 1500) / 25 = 19,279 lbs.  
 Moment =  
 = (12.5 x 9224 + (25 - 6.38) x 31802 - 11 x 137748 / 12) / 25 = 23,247 ft. lbs.  
 Reaction B =  
 = (3.25 x 23247 - 4.5 x 31802 + 4.48 x 137748) / 6 = 91,593 lbs.  
 Reaction A =  
 = 91593 + 31802 - 23247 = 100,148 lbs.  
 Moment =  
 = 4.48 x 137748 - 1.25 x 31802 = 577,360 ft. lbs.



SOLID WASTE

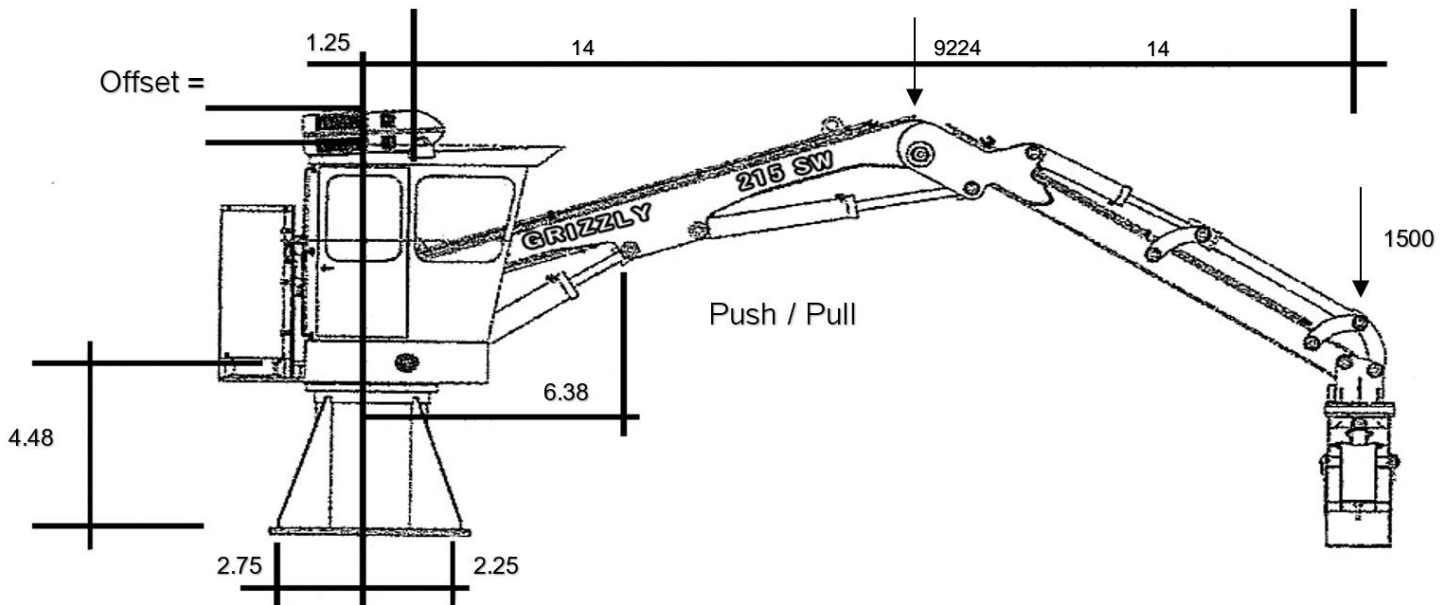


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## Certified Grizzly Knuckleboom Cranes

Model 300 SW, 28 ft. Boom, 5 ft. Base, 7 in. (2) Cylinder



7" Diameter Main Cylinder  
 2250 psi Hydraulic Pressure  
 28' Boom  
 7040 Wt. of Boom & Jib  
 2184 Wt. Misc.  
 5' Base Plate  
 3" Diameter Rod  
 13° Angle of Main Cylinder

Push = Area x pressure = 173,180 lbs.  
 Pull = (A1-A2) x pressure = 141,372 lbs.  
 Push = Sin13° = 38,957 lbs.  
 Push = Cos13° = 168,742 lbs.  
 Pull = Sin13° = 31,802 lbs.  
 Pull = Cos13° = 137,748 lbs.

Net Pick  
 =  $(6.38 \times 38957 + 11/12 \times 168742 - 14 \times 9224 - 28 \times 1500) / 28 =$  8,289 lbs.  
 Moment =  
 =  $14 \times 9224 + 28 \times (8289 + 1500) =$  403,226 ft. lbs.  
 Reaction B =  
 =  $((14 - 2.25) \times 9224 + (28 - 2.25) \times (8289 + 1500)) / 5 =$  72,089 lbs.  
 Reaction A =  
 =  $72089 + 9224 + 8289 + 1500 =$  91,102 lbs.  
 Net Push  
 =  $(6.38 \times 31802 + 11/12 \times 137748 + 14 \times 9224 + 28 \times 1500) / 28 =$  17,868 lbs.  
 Moment =  
 =  $(14 \times 9224 + (28 - 6.38) \times 31802 - 11 \times 137748 / 12) / 28 =$  24,658 ft. lbs.  
 Reaction B =  
 =  $(2.75 \times 24658 - 4 \times 31802 + 4.48 \times 137748) / 5 =$  111,543 lbs.  
 Reaction A =  
 =  $111543 + 31802 - 24658 =$  118,687 lbs.  
 Moment =  
 =  $4.48 \times 137748 - 1.25 \times 31802 =$  577,360 ft. lbs.

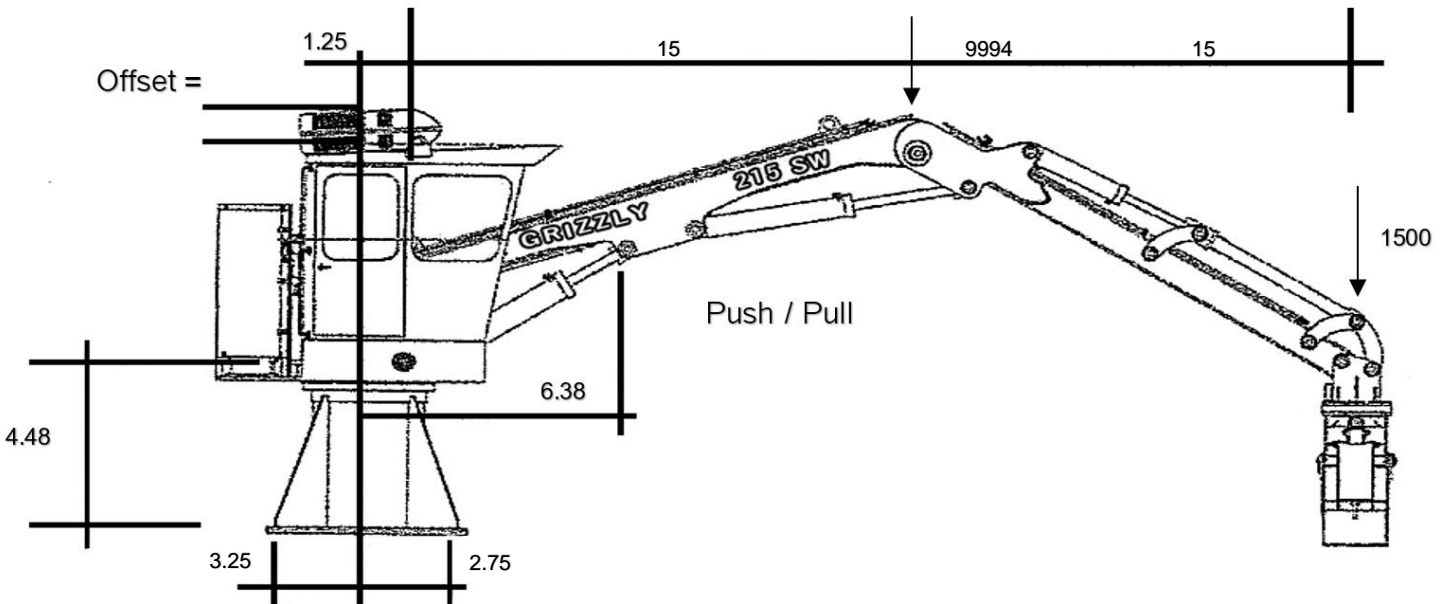


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## Certified Grizzly Knuckleboom Cranes

Model 300 SW, 30 ft. Boom, 6 ft. Base, 7 in. (2) Cylinder



7" Diameter Main Cylinder  
2250 psi Hydraulic Pressure  
30' Boom  
7810 Wt. of Boom & Jib  
2184 Wt. Misc.  
6' Base Plate  
3" Diameter Rod  
13° Angle of Main Cylinder

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

173,180 lbs.  
141,372 lbs.

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

38,957 lbs.  
168,742 lbs.  
31,802 lbs.  
137,748 lbs.

Net Pick

$$= (6.38 \times 38957 + 11/12 \times 168742 - 15 \times 9994 - 30 \times 1500) / 30 =$$

6,944 lbs.

Moment =

$$= 15 \times 9994 + 30 \times (6944 + 1500) =$$

403,226 ft. lbs.

Reaction B =

$$= ((15 - 2.75) \times 9994 + (30 - 2.75) \times (6944 + 1500)) / 6 =$$

58,754 lbs.

Reaction A =

$$= 58754 + 9994 + 6944 + 1500 =$$

77,192 lbs.

Net Push

$$= (6.38 \times 31802 + 11/12 \times 137748 + 15 \times 9994 + 30 \times 1500) / 30 =$$

17,469 lbs.

Moment =

$$= (15 \times 9994 + (30 - 6.38) \times 31802 - 11 \times 137748 / 12) / 30 =$$

25,827 ft. lbs.

Reaction B =

$$= (3.25 \times 25827 - 4.5 \times 31802 + 4.48 \times 137748) / 6 =$$

92,990 lbs.

Reaction A =

$$= 92990 + 31802 - 25827 =$$

98,965 lbs.

Moment =

$$= 4.48 \times 137748 - 1.25 \times 31802 =$$

577,360 ft. lbs.





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## Certified Grizzly Knuckleboom Cranes

Model	300 SW	300 SW	300 SW
Boom Length (ft.)	25	28	30
Base Plate (ft.)	6	5	6
Main Cylinder (in.)	7 (2)	7 (2)	7 (2)
Hydraulic Pressure (psi)	2,250	2,250	2,250
Boom / Misc. Wt. (lbs.)	9,224	9,224	9,994
Grapple Weight (lbs.)	1,500	1,500	1,500
Angle of Main Cylinder (°)	13	13	13
Net Lift (lbs.)	10,017	8,289	6,944
Net Push (lbs.)	19,279	17,868	17,469
Moment (ft. lbs.)	577,360	577,360	577,360
Base Uplift (lbs.)	100,148	118,687	98,965
Base Down Pressure (lbs.)	91,593	111,543	92,990
Bolt Tension / Bolt (lbs.)	14,021	20,770	13,855
Bolt Shear / Bolt (lbs.)	1,661	2,680	1,661
Base Torque (ft. lbs)	76,389	76,389	76,389