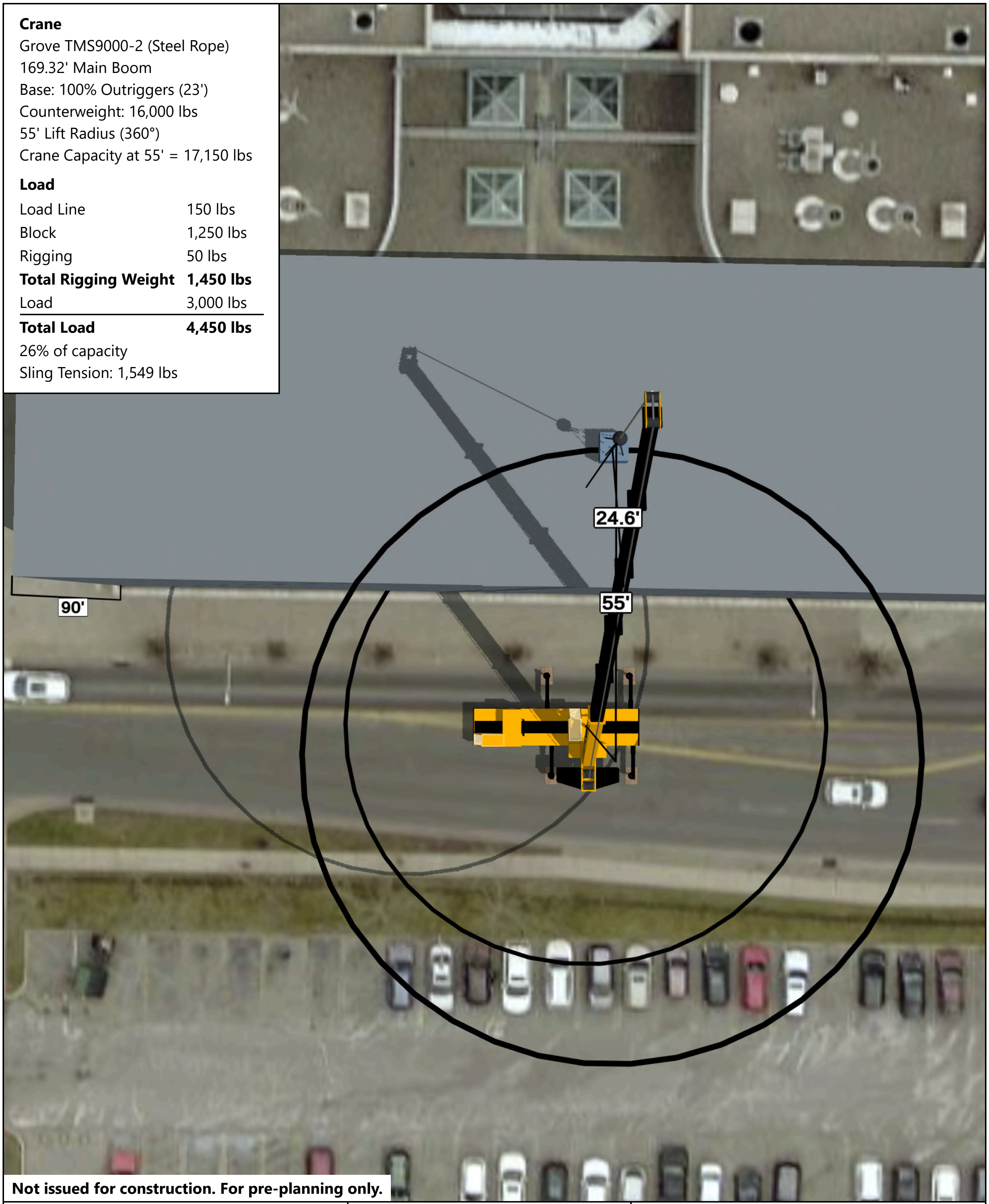
Crane

Grove TMS9000-2 (Steel Rope)
169.32' Main Boom
Base: 100% Outriggers (23')
Counterweight: 16,000 lbs
55' Lift Radius (360°)
Crane Capacity at 55' = 17,150 lbs

Load

Load Line	150 lbs
Block	1,250 lbs
Rigging	50 lbs
Total Rigging Weight	**1,450 lbs**
Load	3,000 lbs
Total Load	**4,450 lbs**

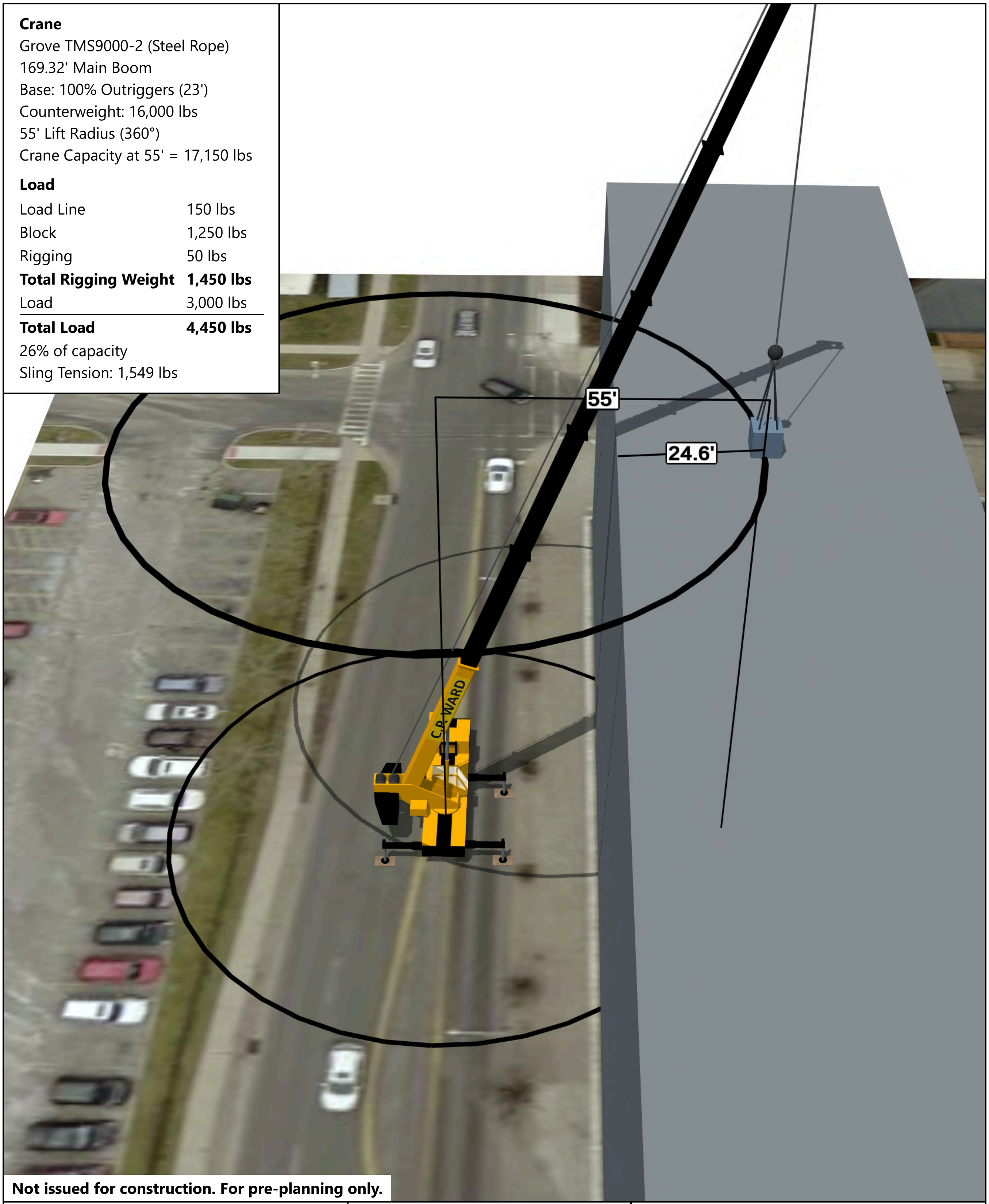
26% of capacity
Sling Tension: 1,549 lbs



Not issued for construction. For pre-planning only.

Title	Lift Plan
Project	Upstate IHP
Customer	Cooling Tower Specialties
Description	Cooling towers
Drawn By	CP Ward 4/17/2026

Created with 3D Lift Plan *www.3dliftplan.com*



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Customer	Cooling Tower Specialties	
Description	Cooling towers	
Drawn By	CP Ward	4/17/2026

Created with 3D Lift Plan *www.3dliftplan.com*

Critical Lift Worksheet

Title:
Date: 4/17/2026
Project: Upstate IHP
Job Number: TBD
Description: Cooling towers
Jobsite Address: 505 Irving Ave Syracuse
Customer: Cooling Tower Specialties
P.O./ Contract#: TBD
Lift Plan Drawing and Load Placement Drawing attached? Yes
Notes:

Crane Information

Manufacturer: Grove
Model: TMS9000-2 (Steel Rope)
Serial #: 237702
Crane Rating: 115 t
Crane Inspection Date:
Notes:

Lift Information

Crane Radius: 55 ft
Crane Capacty at Radius: 17,150 lbs
Capacity at Pick Point: 17,150 lbs
Capacity at Set Point: 17,150 lbs
Notes:

Crane Configuration

Crane Carrier: 100% Outriggers (23')
Counterweight: 16,000 lbs
Chart Capacity: 17,150 lbs
Main Boom Length: 169.32' Main Boom
Boom Sections: 100-100-100-100-100
Parts of Line: 1
Line Size: 19 mm
Capacity of Line @ Parts: 17,150 lbs
Radius: 55 ft
Boom Angle: 69.7°
Tip Height: 169.1 ft
Jib Used? No
Jib: N/A
Jib Offset: N/A
Jib Angle from Ground: N/A
Outrigger Load: 36,546 lbs at 270° Swing Angle

Setup Information

Crane Setup: 360°
Setup Distance:
Mat Used? Yes
Mat Dimensions: 3ft x 3ft x 1in
Ground Bearing Pressure below Mat: 4,061 psf
Notes:

Load Configuration

Gross Load Weight: 4,450 lbs
Description: Cooling Tower Parts
Dimensions: 5 ft x 5 ft, Height: 5 ft
Load Weight: 3,000 lbs
Rigging Weight: 50 lbs
Hook Weight: 0 lbs
Block Weight: 1,250 lbs
Load Line Weight: 150 lbs
Hook Height: 107 ft
Sling Length: 12 ft
Sling Angle: 79.8°
Sling Equipment #: EE2-802
Sling Type: Nylon
Spreader Bar #: N/A
Spreader Bar Capacity: N/A
Hook Block: N/A
Shackle Type: Crosby G-209
Shackle Qty: as needed
Shackle Capacity: 6.5t
Additional Rigging: 0 lbs
Additional Rigging Capacity:
% of Chart Capacity: 26%
Chart Capacity Deduction:
Deduct Capacity:
Notes:

Not for construction use. For pre-planning only.

Title:
Date: 4/17/2026
Project: Upstate IHP
Job Number:

Notes:
Notes:

Pre-Lift Checklist

Crane Operator: Name:
Signalperson Assigned: Name:
Communication Method:

Crane Inspected by Operator?	Yes	No
Rigging Inspected?	Yes	No
All Permits Obtained?	Yes	No
Are weather conditions OK?	Yes	No
Wind OK?	Yes	No
Are there Power Lines?	Yes	No
Is Operators Certification Card current?	Yes	No
Is area OK for entry and exit of jobsite?	Yes	No
Has a pre-lift meeting between operator, signalperson, supervisor, and any and all other persons occured?	Yes	No

Other Considerations:

Signatures

Engineer:	Name:	Signature:	Date:
Supervisor:	Name:	Signature:	Date:
Operator:	Name:	Signature:	Date:
Client:	Name:	Signature:	Date:

Not for construction use. For pre-planning only.

Load Chart

Project	Upstate IHP
Customer	Cooling Tower Specialties
Description	Cooling towers

Grove TMS9000-2

Boom:	Main Boom
Jib:	-
Base:	100% Outriggers (23')
Counterweight:	16,000 lbs
Range:	360°
Capacity:	85%
Chart ID:	80100590

Boom Section Percentages	Boom Length (ft)	Boom Angle	Jib Length (ft)	Jib Offset	Tip Height (ft)	Lift Radius (ft)	Capacity (lbs)
100-100-100-100-100	169.32	80.9°	-	-	175.9	30	21,200
100-100-100-100-100	169.32	79.2°	-	-	174.7	35	21,200
100-100-100-100-100	169.32	77.5°	-	-	173.3	40	21,200
100-100-100-100-100	169.32	75.7°	-	-	171.8	45	21,200
100-100-100-100-100	169.32	73.9°	-	-	170.1	50	20,450
100-100-100-100-100	**169.32**	**72.1°**	**-**	**-**	**168.3**	**55**	**17,150**
100-100-100-100-100	169.32	70.3°	-	-	166.2	60	14,750
100-100-100-100-100	169.32	68.4°	-	-	164	65	12,600
100-100-100-100-100	169.32	66.5°	-	-	161.6	70	10,800
100-100-100-100-100	169.32	64.6°	-	-	158.9	75	9,320
100-100-100-100-100	169.32	62.6°	-	-	156.1	80	8,040
100-100-100-100-100	169.32	60.7°	-	-	153	85	6,930
100-100-100-100-100	169.32	58.6°	-	-	149.7	90	5,960
100-100-100-100-100	169.32	56.5°	-	-	146.1	95	5,110
100-100-100-100-100	169.32	54.4°	-	-	142.2	100	4,360
100-100-100-100-100	169.32	52.1°	-	-	138	105	3,680
100-100-100-100-100	169.32	49.8°	-	-	133.4	110	3,080
100-100-100-100-100	169.32	47.4°	-	-	128.5	115	2,540
100-100-100-100-100	169.32	44.9°	-	-	123.1	120	2,040
100-100-100-100-100	169.32	42.3°	-	-	117.2	125	1,590
100-100-100-100-100	169.32	39.5°	-	-	110.7	130	1,180

This data is for reference use only. Operator must refer to in-cab charts to determine allowable lifting capacities.

Rigging List

Project	Upstate IHP
Customer	Cooling Tower Specialties
Description	Cooling towers

Grove TMS9000-2

169.32' Main Boom
Base: 100% Outriggers (23')
Counterweight: 16,000 lbs
55' Lift Radius (360°)
Crane Capacity at 55' = 17,150 lbs

Item	Capacity	Weight	Qty	Total Weight
Load Line		150 lbs	1	150 lbs
Block		1,250 lbs	1	1,250 lbs
Hook			1	0 lbs
Sling			4	0 lbs
Rigging		50 lbs	1	50 lbs
Total Rigging Weight				**1,450 lbs**
Load				3,000 lbs
Total Load				**4,450 lbs**

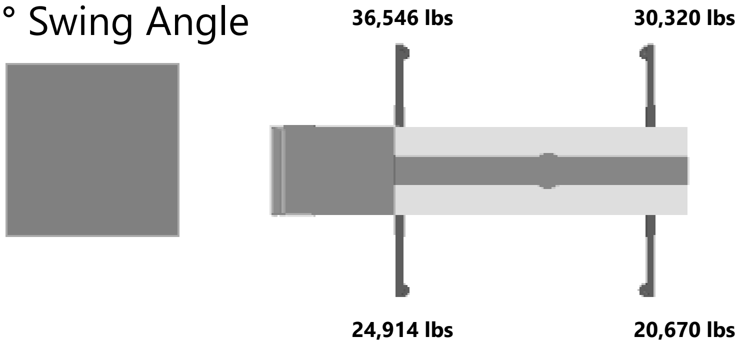
26% of capacity

Outrigger Loads

Job Information

Project	Upstate IHP
Customer	Cooling Tower Specialties
Description	Cooling towers
Drawn By	CP Ward
Date	4/17/2026

270° Swing Angle



Crane Information

Grove TMS9000-2
169.32' Main Boom
100% Outriggers (23')
Cwt: 16,000 lbs
55' Lift Radius

Crane Weights

TMS 9000/2	108,000 lbs
Net Load Weight	4,450 lbs
Total Weight	**112,450 lbs**

Not for construction use. For pre-planning only.

Ground Bearing Pressure Below Crane Mats

Job Information

Project	Upstate IHP
Customer	Cooling Tower Specialties
Description	Cooling towers
Drawn By	CP Ward
Date	4/17/2026

Crane Information

Grove TMS9000-2	
169.32' Main Boom	
100% Outriggers (23')	
Cwt: 16,000 lbs	
Outrigger Load 'P'	36,545.92 lbs
Transition Pad Length 'L_p'	4 ft
Transition Pad Width 'W_p'	3 ft

Calculations

Ground Bearing Pressure below mat...

q = P / (L × W) **4,061 psf**

Bigfoot 1" Ultra Pad P363610

Capacity	93,000 lbs	
Outrigger Load	36,546 lbs	**OK**
Crush Rating	200 psi	
Pressure into Mat	21.1 psi	**OK**

= P / (L_p × W_p)

Mat Information

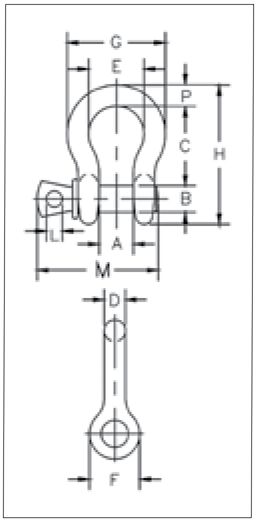
Mat Material	Bigfoot 1" Ultra Pad P363610
Mat Thickness	1 in
Mat Length 'L'	3 ft
Mat Width 'W'	3 ft
Mat Weight	45 lbs

Notes

Not for construction use. For pre-planning only.

G-209/S-209

- Meets performance requirements of Grade 6 shackles.
- Forged, Quenched & Tempered, with alloy pins.
- Working Load Limit and Grade 6 permanently shown on every shackle.
- Hot-dip galvanized (G) or self colored (S).
- Sizes 3/8 inch and below are mechanically galvanized.
- Fatigue rated at 1-1/2 times the Working Load Limit at 20,000 cycles.
- Shackles can be furnished proof tested with certificates to designated standards, such as ABS, DNV, Lloyds, or other certifications. Proof testing and certification available when requested at the time of order, charges will apply.
- Approved for use at -40° F (-40° C) to 400° F (204° C).
- All 209 and 210 shackles can meet charpy requirements of 31 ft-lb (42 Joules) avg. at -4° F (-20° C) upon special request.
- Meets or exceeds all requirements of ASME B30.26.
- Type Approval certification in accordance with ABS 2016 Steel Vessel Rules and ABS Guide for Certification of Lifting Appliances available. Certificates available when requested at time of order and may include additional charges.
- G-209 Screw pin anchor shackles meet the performance requirements of Federal Specification RR-C-271H, Type IVA, Grade A, Class 2, except for those provisions required of the contractor.
- Look for the Red Pin®... the mark of genuine Crosby quality.



G-209 / S-209 Screw Pin Anchor Shackles

Nominal Size (in)	Working Load Limit (t)	Stock No.		Weight Each (lb)	Dimensions (in)											Tolerance (+/- in)	
		G-209	S-209		A	B	C	D	E	F	G	H	L	M	P	C	A
3/16	0.33	1018357	–	.06	.38	.25	.88	.19	.60	.56	.98	1.47	.16	1.14	.19	.06	.06
1/4	0.5	1018375	1018384	.10	.47	.31	1.13	.25	.78	.62	1.28	1.84	.19	1.43	.25	.06	.06
5/16	0.75	1018393	1018400	.18	.53	.38	1.21	.31	.84	.75	1.46	2.09	.22	1.71	.31	.06	.06
3/8	1	1018419	1018428	.31	.66	.44	1.45	.38	1.03	.92	1.79	2.50	.25	2.06	.38	.13	.06
7/16	1.5	1018437	1018446	.38	.75	.50	1.69	.44	1.16	1.06	2.04	2.91	.31	2.37	.44	.13	.06
1/2	2	1018455	1018464	.72	.81	.62	1.88	.50	1.31	1.18	2.31	3.28	.38	2.69	.50	.13	.06
5/8	3.25	1018473	1018482	1.37	1.06	.75	2.38	.62	1.69	1.50	2.93	4.19	.44	3.34	.69	.13	.06
3/4	4.75	1018491	1018507	2.35	1.25	.88	2.81	.75	2.00	1.81	3.50	4.97	.50	3.97	.81	.25	.06
7/8	6.5	1018516	1018525	3.62	1.44	1.00	3.31	.88	2.28	2.10	4.04	5.83	.50	4.50	.97	.25	.06
1	8.5	1018534	1018543	5.03	1.69	1.12	3.76	1.00	2.69	2.38	4.69	6.56	.56	5.13	1.06	.25	.06
1-1/8	9.5	1018552	1018561	7.41	1.81	1.25	4.27	1.16	2.91	2.68	5.15	7.47	.63	5.97	1.25	.25	.06
1-1/4	12	1018570	1018589	9.50	2.03	1.38	4.69	1.29	3.26	3.00	5.76	8.26	.69	6.50	1.38	.25	.06
1-3/8	13.5	1018598	1018605	13.53	2.25	1.53	5.22	1.42	3.62	3.31	6.38	9.16	.75	6.93	1.50	.25	.13
1-1/2	17	1018614	1018623	17.20	2.38	1.63	5.76	1.53	3.88	3.62	6.94	10.00	.81	7.43	1.62	.25	.13
1-3/4	25	1018632	1018641	27.78	2.88	2.00	7.00	1.84	5.00	4.19	8.80	12.34	1.00	9.19	2.25	.25	.13
2	35	1018650	1018669	45.00	3.25	2.25	7.75	2.08	5.75	4.81	10.15	13.68	1.13	10.36	2.40	.25	.13
2-1/2	55	1018678	1018687	85.75	4.12	2.75	10.51	2.72	7.25	5.81	12.75	17.92	1.38	13.17	3.13	.25	.25

6:1 Design Factor. Maximum Proof Load is 2 times the Working Load Limit. For Working Load Limit reduction due to side loading applications, see Warnings & Applications.

APPLICATION AND WARNING INFORMATION
SECTION 17