

HOLZFASTER'S EQUIPMENT INC.

SEPTEMBER 25, 2025

WISH-119618

CUSTOMER : MARQUARDT FOUNDATION

LINDSAY 9500 - 90
7 TOWER - 1286.13 FT
SYSTEM 680 GPM @ 30 PSI

LEGAL : NW 1/4 23-11-44

NELSON D3000 SPRAY NOZZLES
NELSON 10 PSI REGULATORS
NELSON R65i #65 ORANGE
ELEVATION 20 FT UP, 15 FT DOWN

FIELD : PIVOT #4
SN: LE30709

701 SOUTH HIGHWAY 61
OGALLALA, NEBRASKA 69153
(308)284-3343

WARRANTY

WATER APPLICATION UNIFORMITY OBTAINED WITH THIS SYSTEM CAN BE ADVERSELY AFFECTED BY MANY VARIABLES INCLUDING THE IMPROPER MAKEUP OR INSTALLATION OF THE SPRINKLER OR SPRAY NOZZLE PACKAGE, OBSTRUCTED NOZZLES, MAINTAINING INCORRECT PIVOT PRESSURE, UNFAVORABLE CLIMATIC CONDITIONS, TIGHT AND/OR SLOPING SOILS, IMPROPER END GUN ARC SETTINGS, ERRATIC AND IMPROPER OPERATING SPEED OF THE SYSTEM, POOR QUALITY OF WATER WITH ABRASIVES, CORROSIVES, AND/OR SOLIDS WHICH CAN CAUSE PLUGGING AND JAMMING, AS WELL AS INHERENT VARIABLES IN THE MANY COMPONENTS COMPRISING THE SYSTEM. THEREFORE WESTERN IRRIGATION SUPPLY HOUSE, INC., MAKES NO WARRANTY AS TO THE UNIFORMITY OF COVERAGE OBTAINED FROM THIS WATER APPLICATION PRINTOUT OTHER THAN ITS MATHEMATICAL ACCURACY.

IT IS THE RESPONSIBILITY OF THE END USER TO DETERMINE IF ANY INCOMPATIBILITY EXISTS BETWEEN THE WATER DISTRIBUTION DEVICES AND THE CROP, THE SOIL, AND THE PHYSICAL STRUCTURE OF THE MECHANICAL MOVE SYSTEM. WESTERN IRRIGATION SUPPLY HOUSE, INC., THEREFORE, DISCLAIMS ANY LIABILITY FOR DAMAGES DUE TO FAILURE OF THE SYSTEM TO PERFORM AS CONTEMPLATED.

FIGURES PRESENTED ON THIS COMPUTER PRINTOUT ARE BASED ON THE FOLLOWING:

1. DATA FURNISHED TO WESTERN IRRIGATION SUPPLY HOUSE, INC., ON PIPE LENGTH, DIAMETER, SURFACE FINISH, OUTLET SPACINGS, WATER FLOW, PIVOT PRESSURE AND ALL OTHER APPLICABLE INFORMATION.
2. THERE IS 100% WATER APPLICATION EFFICIENCY (ZERO WIND VELOCITY AND NO EVAPORATION).
3. PIVOT PRESSURE IS MEASURED ON THE MAIN HORIZONTAL DISTRIBUTION PIPE JUST AFTER THE LAST ELBOW.
4. MAIN PIPE PRESSURE IS CALCULATED AS IF THE PIVOT IS ALWAYS ON LEVEL GROUND.
5. SPRINKLER OR SPRAY NOZZLE BASE PRESSURE MAY BE LESS THAN MAIN LINE PIPE PRESSURE DUE TO THE USE OF PRESSURE REGULATORS. WHERE DROP PIPES ARE USED THE STATIC HEAD IS ADDED TO AND FRICTION LOSS IS SUBTRACTED FROM THE MAIN LINE PIPE PRESSURE TO DETERMINE INLET PSI. REGULATORS ARE CONSIDERED MOUNTED AT THE SAME HEIGHT AS THE SPRINKLING DEVICE UNLESS NOTED.

DEALER
HOLZFASTER'S EQUIPMENT INC.
701 SOUTH HIGHWAY 61
OGALLALA, NEBRASKA 69153

IRRIGATOR
MARQUARDT FOUNDATION
NW 1/4 23-11-44

				SPAN #	LENGTH	PIPE I.D.	# OF HEADS
TOTAL TARGET GPM	680.00	FRICTION FACTOR USED	138				
TOP OF PIVOT PRESSURE	30.00	TOTAL LENGTH	1286.13	1	167.26	6.395	20
ENDGUN TARGET GPM	40.38	NUMBER OF TOWERS	7	2	179.00	6.395	24
NUMBER OF OUTLETS	181	NUMBER OF SPRINKLERS	170	3	179.00	6.395	24
				4	179.00	6.395	24
NELSON D3000 SPRAY NOZZLES - MULTI-TRAJECTORY ORANGE 21 COARSE GROOVE PLATES FIRST SPAN				5	179.00	6.395	24
NELSON A3000 ACCELERATORS - D6 GOLD PLATES BALANCE				6	179.00	6.395	24
NELSON BLUE TOP 10 PSI INTEGRAL SERIES REGULATORS				7	179.00	6.395	24
POLYDROPS® AVERAGE 7.5 FT				OH	44.87	5.369	6
ELEVATION IS 20 FT UP AND 15 FT DOWN							

CAUTIONS AND WARNINGS

1. Inadequate crop clearance and/or structural interference may cause poor water distribution, resulting in decreased uniformity and possible streaking.

2. Over watering at beginning of system due to practical limitations on smallest nozzle sizes available and/or allowable for proper operation.

3. This system designed for minimum pressure. Failure to deliver indicated pressure at the top of pivot point will adversely affect regulator and/or sprinkler/spray performance. Elevations, pipe sizes and type of drop pipe must be as shown.

OUTLET NO.	LAST OUTLET	DISTANCE TO PIVOT	GPM NEED	GPM DEL.	PIPE PSI	NOZZLE PSI	SPRINKLER LABEL AND NOZZLE SIZE					SPRK NO.	REG SIZE	PLUG NO.	DROP LENGTH
1		2.92	-	-	-	-	-	-	-	-	-	-	-	1	
2		7.76	-	-	-	-	-	-	-	-	-	-	-	2	
3		15.26	-	-	-	-	-	-	-	-	-	-	-	3	
4	22.59	22.59	0.27	0.48	29.77	11.82	D3000	9	LT	BL/BEIGE		1	NNB10LF		84
5	7.34	29.93	0.17	0.48	29.69	11.82	D3000	9	LT	BL/BEIGE		2	NNB10LF		90
6	7.33	37.26	0.21	0.48	29.61	11.82	D3000	9	LT	BL/BEIGE		3	NNB10LF		90
7	7.50	44.76	0.26	0.48	29.54	11.83	D3000	9	LT	BL/BEIGE		4	NNB10LF		96
8		49.49	-	-	-	-	-	-	-	-	-	-	-	4	
9	7.33	52.09	0.29	0.48	29.46	11.82	D3000	9	LT	BL/BEIGE		5	NNB10LF		96
10		54.69	-	-	-	-	-	-	-	-	-	-	-	5	
11	7.33	59.42	0.34	0.48	29.39	11.83	D3000	9	LT	BL/BEIGE		6	NNB10LF		102
12	7.50	66.92	0.38	0.48	29.31	11.83	D3000	9	LT	BL/BEIGE		7	NNB10LF		102
13	7.33	74.25	0.42	0.48	29.23	11.82	D3000	9	LT	BL/BEIGE		8	NNB10LF		102
14	7.17	81.42	0.46	0.48	29.16	11.82	D3000	9	LT	BL/BEIGE		9	NNB10LF		102
15	7.50	88.92	0.51	0.48	29.08	11.82	D3000	9	LT	BL/BEIGE		10	NNB10LF		102
16	7.33	96.25	0.54	0.59	29.01	11.78	D3000	10		BEIGE		11	NNB10LF		102
17	7.34	103.59	0.59	0.59	28.93	11.78	D3000	10		BEIGE		12	NNB10LF		102
18	7.33	110.92	0.63	0.59	28.86	11.77	D3000	10		BEIGE		13	NNB10LF		96
19	7.50	118.42	0.66	0.70	28.78	11.74	D3000	11		BEIGE/GOLD		14	NNB10LF		96
20	7.00	125.42	0.70	0.70	28.71	11.73	D3000	11		BEIGE/GOLD		15	NNB10LF		96
21	7.50	132.92	0.76	0.70	28.63	11.72	D3000	11		BEIGE/GOLD		16	NNB10LF		90
22	7.33	140.25	0.79	0.85	28.56	11.67	D3000	12		GOLD		17	NNB10LF		84
23	7.34	147.59	0.84	0.85	28.49	11.67	D3000	12		GOLD		18	NNB10LF		84
24	7.33	154.92	0.89	0.85	28.41	11.66	D3000	12		GOLD		19	NNB10LF		78
25	7.50	162.42	1.10	1.14	28.34	11.58	D3000	14		LIME		20	NNB10LF		72
TOWER 1	167.26	167.26													
26		168.25	-	-	-	-	-	-	-	-	-	-	-	6	
27	10.00	172.42	1.16	1.14	28.24	11.57	A3000	14		LIME		21	NNB10LF		72
28	7.50	179.92	1.03	0.99	28.06	11.61	A3000	13		GOLD/LIME		22	NNB10LF		78
29	7.33	187.25	1.06	0.99	27.82	11.61	A3000	13		GOLD/LIME		23	NNB10LF		84
30	7.34	194.59	1.10	1.14	27.61	11.57	A3000	14		LIME		24	NNB10LF		84
31	7.33	201.92	1.16	1.14	27.41	11.57	A3000	14		LIME		25	NNB10LF		90
32	7.50	209.42	1.17	1.14	27.22	11.56	A3000	14		LIME		26	NNB10LF		90
33	7.00	216.42	1.21	1.14	27.06	11.56	A3000	14		LIME		27	NNB10LF		96
34	7.50	223.92	1.28	1.32	26.91	11.51	A3000	15		LIME/LAV		28	NNB10LF		96
35	7.33	231.25	1.31	1.32	26.77	11.52	A3000	15		LIME/LAV		29	NNB10LF		102
36	7.34	238.59	1.35	1.32	26.65	11.51	A3000	15		LIME/LAV		30	NNB10LF		102
37	7.33	245.92	1.41	1.32	26.55	11.51	A3000	15		LIME/LAV		31	NNB10LF		102
38	7.50	253.42	1.42	1.50	26.47	11.46	A3000	16		LAVENDER		32	NNB10LF		102
39	7.00	260.42	1.46	1.50	26.40	11.46	A3000	16		LAVENDER		33	NNB10LF		102
40	7.50	267.92	1.53	1.50	26.35	11.46	A3000	16		LAVENDER		34	NNB10LF		102
41	7.33	275.25	1.56	1.50	26.31	11.46	A3000	16		LAVENDER		35	NNB10LF		102
42	7.34	282.59	1.60	1.69	26.29	11.41	A3000	17		LAV/GRAY		36	NNB10LF		102
43	7.33	289.92	1.66	1.69	26.29	11.41	A3000	17		LAV/GRAY		37	NNB10LF		96
44	7.50	297.42	1.66	1.69	26.31	11.41	A3000	17		LAV/GRAY		38	NNB10LF		96
45	7.00	304.42	1.70	1.69	26.33	11.40	A3000	17		LAV/GRAY		39	NNB10LF		90
46	7.50	311.92	1.78	1.87	26.38	11.36	A3000	18		GRAY		40	NNB10LF		90
47	7.33	319.25	1.81	1.87	26.45	11.36	A3000	18		GRAY		41	NNB10LF		84

OUTLET NO.	LAST OUTLET	DISTANCE TO PIVOT	GPM NEED	GPM DEL.	PIPE PSI	NOZZLE PSI	SPRINKLER LABEL AND NOZZLE SIZE			SPRK NO.	REG SIZE	PLUG NO.	DROP LENGTH
48	7.34	326.59	1.85	1.87	26.53	11.36	A3000	18	GRAY	42	NNB10LF		84
49	7.33	333.92	1.91	1.87	26.62	11.36	A3000	18	GRAY	43	NNB10LF		78
50	7.50	341.42	2.31	2.32	26.61	11.25	A3000	20	TURQUOISE	44	NNB10LF		72
TOWER 2	179.00	346.26											
51		347.25	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	7	
52	10.00	351.42	2.37	2.32	26.52	11.25	A3000	20	TURQUOISE	45	NNB10LF		72
53	7.50	358.92	2.05	2.09	26.35	11.30	A3000	19	GRAY/TURQ	46	NNB10LF		78
54	7.33	366.25	2.07	2.09	26.13	11.30	A3000	19	GRAY/TURQ	47	NNB10LF		84
55	7.34	373.59	2.11	2.09	25.92	11.29	A3000	19	GRAY/TURQ	48	NNB10LF		84
56	7.33	380.92	2.18	2.09	25.73	11.29	A3000	19	GRAY/TURQ	49	NNB10LF		90
57	7.50	388.42	2.17	2.09	25.55	11.29	A3000	19	GRAY/TURQ	50	NNB10LF		90
58	7.00	395.42	2.21	2.32	25.40	11.24	A3000	20	TURQUOISE	51	NNB10LF		96
59	7.50	402.92	2.30	2.32	25.25	11.24	A3000	20	TURQUOISE	52	NNB10LF		96
60	7.33	410.25	2.32	2.32	25.12	11.24	A3000	20	TURQUOISE	53	NNB10LF		102
61	7.34	417.59	2.36	2.32	25.01	11.24	A3000	20	TURQUOISE	54	NNB10LF		102
62	7.33	424.92	2.43	2.52	24.92	11.19	A3000	21	TURQ/YEL	55	NNB10LF		102
63	7.50	432.42	2.42	2.32	24.85	11.23	A3000	20	TURQUOISE	56	NNB10LF		102
64	7.00	439.42	2.46	2.52	24.79	11.19	A3000	21	TURQ/YEL	57	NNB10LF		102
65	7.50	446.92	2.56	2.52	24.74	11.19	A3000	21	TURQ/YEL	58	NNB10LF		102
66	7.33	454.25	2.57	2.52	24.72	11.19	A3000	21	TURQ/YEL	59	NNB10LF		102
67	7.34	461.59	2.61	2.52	24.71	11.19	A3000	21	TURQ/YEL	60	NNB10LF		102
68	7.33	468.92	2.68	2.78	24.72	11.12	A3000	22	YELLOW	61	NNB10LF		96
69	7.50	476.42	2.66	2.78	24.74	11.12	A3000	22	YELLOW	62	NNB10LF		96
70	7.00	483.42	2.70	2.78	24.78	11.12	A3000	22	YELLOW	63	NNB10LF		90
71	7.50	490.92	2.81	2.78	24.84	11.12	A3000	22	YELLOW	64	NNB10LF		90
72	7.33	498.25	2.82	2.78	24.91	11.12	A3000	22	YELLOW	65	NNB10LF		84
73	7.34	505.59	2.86	2.78	25.00	11.12	A3000	22	YELLOW	66	NNB10LF		84
74	7.33	512.92	2.93	3.01	25.11	11.07	A3000	23	YEL/RED	67	NNB10LF		78
75	7.50	520.42	3.52	3.57	25.12	10.94	A3000	25	RED/WHITE	68	NNB10LF		72
TOWER 3	179.00	525.26											
76		526.25	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	8	
77	10.00	530.42	3.58	3.57	25.04	10.94	A3000	25	RED/WHITE	69	NNB10LF		72
78	7.50	537.92	3.08	3.01	24.88	11.07	A3000	23	YEL/RED	70	NNB10LF		78
79	7.33	545.25	3.09	3.01	24.67	11.07	A3000	23	YEL/RED	71	NNB10LF		84
80	7.34	552.59	3.13	3.01	24.47	11.07	A3000	23	YEL/RED	72	NNB10LF		84
81	7.33	559.92	3.20	3.31	24.29	11.00	A3000	24	RED	73	NNB10LF		90
82	7.50	567.42	3.17	3.31	24.12	11.00	A3000	24	RED	74	NNB10LF		90
83	7.00	574.42	3.21	3.31	23.98	11.00	A3000	24	RED	75	NNB10LF		96
84	7.50	581.92	3.33	3.31	23.85	11.00	A3000	24	RED	76	NNB10LF		96
85	7.33	589.25	3.33	3.31	23.74	11.00	A3000	24	RED	77	NNB10LF		102
86	7.34	596.59	3.38	3.31	23.64	11.00	A3000	24	RED	78	NNB10LF		102
87	7.33	603.92	3.45	3.57	23.56	10.93	A3000	25	RED/WHITE	79	NNB10LF		102
88	7.50	611.42	3.42	3.31	23.49	11.00	A3000	24	RED	80	NNB10LF		102
89	7.00	618.42	3.46	3.57	23.45	10.93	A3000	25	RED/WHITE	81	NNB10LF		102
90	7.50	625.92	3.58	3.57	23.42	10.93	A3000	25	RED/WHITE	82	NNB10LF		102
91	7.33	633.25	3.58	3.57	23.41	10.93	A3000	25	RED/WHITE	83	NNB10LF		102
92	7.34	640.59	3.62	3.57	23.41	10.93	A3000	25	RED/WHITE	84	NNB10LF		102
93	7.33	647.92	3.71	3.57	23.43	10.93	A3000	25	RED/WHITE	85	NNB10LF		96

OUTLET NO.	LAST OUTLET	DISTANCE TO PIVOT	GPM NEED	GPM DEL.	PIPE PSI	NOZZLE PSI	SPRINKLER LABEL AND NOZZLE SIZE			SPRK NO.	REG SIZE	PLUG NO.	DROP LENGTH
94	7.50	655.42	3.67	3.57	23.47	10.93	A3000	25	RED/WHITE	86	NNB10LF		96
95	7.00	662.42	3.71	3.56	23.52	10.93	A3000	25	RED/WHITE	87	NNB10LF		90
96	7.50	669.92	3.83	3.85	23.60	10.85	A3000	26	WHITE	88	NNB10LF		90
97	7.33	677.25	3.83	3.85	23.68	10.85	A3000	26	WHITE	89	NNB10LF		84
98	7.34	684.59	3.88	3.85	23.79	10.85	A3000	26	WHITE	90	NNB10LF		84
99	7.33	691.92	3.96	3.85	23.91	10.85	A3000	26	WHITE	91	NNB10LF		78
100	7.50	699.42	4.73	4.76	23.93	10.61	A3000	29	BLUE/DK BRN	92	NNB10LF		72
TOWER 4	179.00	704.26											
101		705.25	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	9	
102	10.00	709.42	4.79	4.76	23.87	10.61	A3000	29	BLUE/DK BRN	93	NNB10LF		72
103	7.50	716.92	4.10	4.12	23.73	10.78	A3000	27	WHITE/BLUE	94	NNB10LF		78
104	7.33	724.25	4.10	4.12	23.53	10.78	A3000	27	WHITE/BLUE	95	NNB10LF		84
105	7.34	731.59	4.14	4.12	23.34	10.77	A3000	27	WHITE/BLUE	96	NNB10LF		84
106	7.33	738.92	4.23	4.12	23.18	10.78	A3000	27	WHITE/BLUE	97	NNB10LF		90
107	7.50	746.42	4.18	4.12	23.03	10.77	A3000	27	WHITE/BLUE	98	NNB10LF		90
108	7.00	753.42	4.22	4.12	22.90	10.78	A3000	27	WHITE/BLUE	99	NNB10LF		96
109	7.50	760.92	4.36	4.46	22.78	10.68	A3000	28	BLUE	100	NNB10LF		96
110	7.33	768.25	4.35	4.46	22.68	10.68	A3000	28	BLUE	101	NNB10LF		102
111	7.34	775.59	4.39	4.46	22.60	10.68	A3000	28	BLUE	102	NNB10LF		102
112	7.33	782.92	4.48	4.46	22.54	10.68	A3000	28	BLUE	103	NNB10LF		102
113	7.50	790.42	4.42	4.46	22.49	10.68	A3000	28	BLUE	104	NNB10LF		102
114	7.00	797.42	4.46	4.46	22.46	10.68	A3000	28	BLUE	105	NNB10LF		102
115	7.50	804.92	4.61	4.46	22.44	10.68	A3000	28	BLUE	106	NNB10LF		102
116	7.33	812.25	4.60	4.46	22.44	10.68	A3000	28	BLUE	107	NNB10LF		102
117	7.34	819.59	4.64	4.76	22.46	10.60	A3000	29	BLUE/DK BRN	108	NNB10LF		102
118	7.33	826.92	4.74	4.76	22.50	10.60	A3000	29	BLUE/DK BRN	109	NNB10LF		96
119	7.50	834.42	4.67	4.76	22.55	10.60	A3000	29	BLUE/DK BRN	110	NNB10LF		96
120	7.00	841.42	4.71	4.76	22.62	10.59	A3000	29	BLUE/DK BRN	111	NNB10LF		90
121	7.50	848.92	4.86	4.76	22.71	10.60	A3000	29	BLUE/DK BRN	112	NNB10LF		90
122	7.33	856.25	4.85	4.76	22.81	10.60	A3000	29	BLUE/DK BRN	113	NNB10LF		84
123	7.34	863.59	4.89	4.76	22.93	10.60	A3000	29	BLUE/DK BRN	114	NNB10LF		84
124	7.33	870.92	4.99	5.06	23.07	10.51	A3000	30	DK BROWN	115	NNB10LF		78
125	7.50	878.42	5.94	6.07	23.10	10.23	A3000	33	ORN/DK GRN	116	NNB10LF		72
TOWER 5	179.00	883.26											
126		884.25	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	10	
127	10.00	888.42	6.00	6.07	23.07	10.23	A3000	33	ORN/DK GRN	117	NNB10LF		72
128	7.50	895.92	5.13	5.06	22.94	10.51	A3000	30	DK BROWN	118	NNB10LF		78
129	7.33	903.25	5.12	5.06	22.75	10.51	A3000	30	DK BROWN	119	NNB10LF		84
130	7.34	910.59	5.16	5.06	22.59	10.51	A3000	30	DK BROWN	120	NNB10LF		84
131	7.33	917.92	5.26	5.35	22.44	10.42	A3000	31	DK BRN/ORN	121	NNB10LF		90
132	7.50	925.42	5.18	5.06	22.30	10.50	A3000	30	DK BROWN	122	NNB10LF		90
133	7.00	932.42	5.22	5.35	22.19	10.42	A3000	31	DK BRN/ORN	123	NNB10LF		96
134	7.50	939.92	5.38	5.35	22.09	10.42	A3000	31	DK BRN/ORN	124	NNB10LF		96
135	7.33	947.25	5.37	5.35	22.00	10.43	A3000	31	DK BRN/ORN	125	NNB10LF		102
136	7.34	954.59	5.41	5.35	21.94	10.43	A3000	31	DK BRN/ORN	126	NNB10LF		102
137	7.33	961.92	5.51	5.35	21.89	10.43	A3000	31	DK BRN/ORN	127	NNB10LF		102
138	7.50	969.42	5.43	5.35	21.85	10.42	A3000	31	DK BRN/ORN	128	NNB10LF		102
139	7.00	976.42	5.48	5.35	21.84	10.42	A3000	31	DK BRN/ORN	129	NNB10LF		102

OUTLET NO.	LAST OUTLET	DISTANCE TO PIVOT	GPM NEED	GPM DEL.	PIPE PSI	NOZZLE PSI	SPRINKLER LABEL AND NOZZLE SIZE			SPRK NO.	REG SIZE	PLUG NO.	DROP LENGTH
140	7.50	983.92	5.65	5.72	21.84	10.32	A3000	32	ORANGE	130	NNB10LF		102
141	7.33	991.25	5.62	5.72	21.86	10.32	A3000	32	ORANGE	131	NNB10LF		102
142	7.34	998.59	5.66	5.72	21.89	10.32	A3000	32	ORANGE	132	NNB10LF		102
143	7.33	1005.92	5.77	5.72	21.94	10.32	A3000	32	ORANGE	133	NNB10LF		96
144	7.50	1013.42	5.68	5.72	22.01	10.32	A3000	32	ORANGE	134	NNB10LF		96
145	7.00	1020.42	5.72	5.72	22.09	10.31	A3000	32	ORANGE	135	NNB10LF		90
146	7.50	1027.92	5.89	6.06	22.19	10.22	A3000	33	ORN/DK GRN	136	NNB10LF		90
147	7.33	1035.25	5.87	5.72	22.31	10.32	A3000	32	ORANGE	137	NNB10LF		84
148	7.34	1042.59	5.91	6.07	22.45	10.22	A3000	33	ORN/DK GRN	138	NNB10LF		84
149	7.33	1049.92	6.01	6.07	22.60	10.22	A3000	33	ORN/DK GRN	139	NNB10LF		78
150	7.50	1057.42	7.15	7.08	22.65	10.06	A3000	36	PURPLE	140	NNB10LF		72
TOWER 6	179.00	1062.26											
151		1063.25	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	11	
152	10.00	1067.42	7.21	7.08	22.63	10.06	A3000	36	PURPLE	141	NNB10LF		72
153	7.50	1074.92	6.16	6.07	22.52	10.22	A3000	33	ORN/DK GRN	142	NNB10LF		78
154	7.33	1082.25	6.14	6.07	22.35	10.22	A3000	33	ORN/DK GRN	143	NNB10LF		84
155	7.34	1089.59	6.18	6.06	22.19	10.22	A3000	33	ORN/DK GRN	144	NNB10LF		84
156	7.33	1096.92	6.30	6.41	22.06	10.12	A3000	34	DK GREEN	145	NNB10LF		90
157	7.50	1104.42	6.20	6.06	21.93	10.22	A3000	33	ORN/DK GRN	146	NNB10LF		90
158	7.00	1111.42	6.24	6.41	21.83	10.12	A3000	34	DK GREEN	147	NNB10LF		96
159	7.50	1118.92	6.42	6.41	21.75	10.12	A3000	34	DK GREEN	148	NNB10LF		96
160	7.33	1126.25	6.39	6.41	21.68	10.12	A3000	34	DK GREEN	149	NNB10LF		102
161	7.34	1133.59	6.43	6.41	21.62	10.12	A3000	34	DK GREEN	150	NNB10LF		102
162	7.33	1140.92	6.55	6.41	21.59	10.12	A3000	34	DK GREEN	151	NNB10LF		102
163	7.50	1148.42	6.45	6.41	21.57	10.12	A3000	34	DK GREEN	152	NNB10LF		102
164	7.00	1155.42	6.49	6.41	21.56	10.12	A3000	34	DK GREEN	153	NNB10LF		102
165	7.50	1162.92	6.69	6.74	21.57	10.06	A3000	35	DK GRN/PUR	154	NNB10LF		102
166	7.33	1170.25	6.65	6.74	21.60	10.06	A3000	35	DK GRN/PUR	155	NNB10LF		102
167	7.34	1177.59	6.69	6.74	21.65	10.06	A3000	35	DK GRN/PUR	156	NNB10LF		102
168	7.33	1184.92	6.80	6.74	21.71	10.06	A3000	35	DK GRN/PUR	157	NNB10LF		96
169	7.50	1192.42	6.69	6.74	21.79	10.06	A3000	35	DK GRN/PUR	158	NNB10LF		96
170	7.00	1199.42	6.73	6.74	21.89	10.06	A3000	35	DK GRN/PUR	159	NNB10LF		90
171	7.50	1206.92	6.93	7.08	22.00	10.06	A3000	36	PURPLE	160	NNB10LF		90
172	7.33	1214.25	6.88	6.74	22.13	10.06	A3000	35	DK GRN/PUR	161	NNB10LF		84
173	7.34	1221.59	6.93	7.08	22.27	10.06	A3000	36	PURPLE	162	NNB10LF		84
174	7.33	1228.92	7.04	7.08	22.44	10.06	A3000	36	PURPLE	163	NNB10LF		78
175	7.50	1236.42	7.97	7.99	22.49	10.05	A3000	38	BLACK	164	NNB10LF		72
TOWER 7	179.00	1241.26											
PIPE ID CHANGES FROM 6.395 TO 5.369													
176	9.21	1245.63	8.02	7.99	22.49	10.05	A3000	38	BLACK	165	NNB10LF		72
177	7.50	1253.13	7.17	7.08	22.49	10.06	A3000	36	PURPLE	166	NNB10LF		72
178	7.33	1260.46	7.16	7.08	22.48	10.06	A3000	36	PURPLE	167	NNB10LF		72
179	7.34	1267.80	7.22	7.08	22.48	10.06	A3000	36	PURPLE	168	NNB10LF		72
180	7.33	1275.13	7.42	7.56	22.48	10.06	A3000	37	PUR/BLK	169	NNB10LF		72
181	7.50	1282.63	7.53	7.56	22.48	10.06	A3000	37	PUR/BLK	170	NNB10LF		72
OVERHANG	44.87	1286.13		40.62	ENDGUN	(1)	NELSON R65i	#65	ORANGE				

THERE IS NO BOOSTER PUMP

FRICITION LOSS THROUGH ENDGUN VALVE IS 0.10 PSI - ENDGUN PRESSURE IS 22.38 PSI

TOTAL GPM = 680.65
GPA = 5.36

MINIMUM RECOMMENDED REGULATOR INLET PRESSURE IS 15.00 PSI
WITH GRADUATED ELEVATION OF 20.00 FT THE INLET PRESSURE IS 15.93 PSI FOR SPRINKLER 170
THIS POSITION IS THE CLOSEST TO THE MINIMUM RECOMMENDED INLET PRESSURE

HYDRAULICS SUMMARY									
TOWER NUMBER	ACRES UNDER SPAN	GPM NEED	ACTUAL GPM	PERCENT DEVIATION	GPM PER ACRE	AVERAGE IN. PER HR DELIVERED UNDER SPAN	AVERAGE IN. DELIVERED FOR REVOLUTION TIME		
							36 HR	48 HR	60 HR
1	2.02	10.82	12.34	14%	6.11	0.014	0.49	0.65	0.81
2	6.63	35.54	35.47	0%	5.35	0.012	0.43	0.57	0.71
3	11.25	60.32	60.25	0%	5.35	0.012	0.43	0.57	0.71
4	15.87	85.10	84.47	-1%	5.32	0.012	0.42	0.56	0.71
5	20.49	109.88	109.60	0%	5.35	0.012	0.43	0.57	0.71
6	25.12	134.66	134.42	0%	5.35	0.012	0.43	0.57	0.71
7	29.74	159.44	159.35	0%	5.36	0.012	0.43	0.57	0.71
OVERHANG	8.18	43.85	44.15	1%	5.40	0.012	0.43	0.57	0.72
ENDGUN	6.75	40.38	40.62	12%	6.02				
TOTAL	126.05	680.00	680.65		5.40				

SUMMARY OF SPRINKLERS

10 D3000 9 LT BL/BEIGE
3 D3000 10 BEIGE
3 D3000 11 BEIGE/GOLD
3 D3000 12 GOLD
1 D3000 14 LIME
2 A3000 13 GOLD/LIME
5 A3000 14 LIME
4 A3000 15 LIME/LAV
4 A3000 16 LAVENDER
4 A3000 17 LAV/GRAY
4 A3000 18 GRAY
5 A3000 19 GRAY/TURQ
7 A3000 20 TURQUOISE
5 A3000 21 TURQ/YEL
6 A3000 22 YELLOW
4 A3000 23 YEL/RED
7 A3000 24 RED
10 A3000 25 RED/WHITE
4 A3000 26 WHITE
6 A3000 27 WHITE/BLUE
8 A3000 28 BLUE
9 A3000 29 BLUE/DK BRN
5 A3000 30 DK BROWN
8 A3000 31 DK BRN/ORN
7 A3000 32 ORANGE
9 A3000 33 ORN/DK GRN
8 A3000 34 DK GREEN
7 A3000 35 DK GRN/PUR
8 A3000 36 PURPLE
2 A3000 37 PUR/BLK
2 A3000 38 BLACK

11 PLUGS**SUMMARY OF DROPS**

19 72 IN DROP
13 78 IN DROP
27 84 IN DROP
27 90 IN DROP
29 96 IN DROP
55 102 IN DROP

TOTAL OF 170 DROPS**SUMMARY OF REGULATORS**

170 Nelson Blue Int Uni Flo 10 psi

TOTAL OF 170 REGULATORS

NOZZLE POSITION CHART

D3000 9 LT BL/BEIGE	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
D3000 10 BEIGE	11, 12, 13
D3000 11 BEIGE/GOLD	14, 15, 16
D3000 12 GOLD	17, 18, 19
D3000 14 LIME	20
A3000 13 GOLD/LIME	22, 23
A3000 14 LIME	21, 24, 25, 26, 27
A3000 15 LIME/LAV	28, 29, 30, 31
A3000 16 LAVENDER	32, 33, 34, 35
A3000 17 LAV/GRAY	36, 37, 38, 39
A3000 18 GRAY	40, 41, 42, 43
A3000 19 GRAY/TURQ	46, 47, 48, 49, 50
A3000 20 TURQUOISE	44, 45, 51, 52, 53, 54, 56
A3000 21 TURQ/YEL	55, 57, 58, 59, 60
A3000 22 YELLOW	61, 62, 63, 64, 65, 66
A3000 23 YEL/RED	67, 70, 71, 72
A3000 24 RED	73, 74, 75, 76, 77, 78, 80
A3000 25 RED/WHITE	68, 69, 79, 81, 82, 83, 84, 85, 86, 87
A3000 26 WHITE	88, 89, 90, 91
A3000 27 WHITE/BLUE	94, 95, 96, 97, 98, 99
A3000 28 BLUE	100, 101, 102, 103, 104, 105, 106, 107
A3000 29 BLUE/DK BRN	92, 93, 108, 109, 110, 111, 112, 113, 114
A3000 30 DK BROWN	115, 118, 119, 120, 122
A3000 31 DK BRN/ORN	121, 123, 124, 125, 126, 127, 128, 129
A3000 32 ORANGE	130, 131, 132, 133, 134, 135, 137
A3000 33 ORN/DK GRN	116, 117, 136, 138, 139, 142, 143, 144, 146
A3000 34 DK GREEN	145, 147, 148, 149, 150, 151, 152, 153
A3000 35 DK GRN/PUR	154, 155, 156, 157, 158, 159, 161
A3000 36 PURPLE	140, 141, 160, 162, 163, 166, 167, 168
A3000 37 PUR/BLK	169, 170
A3000 38 BLACK	164, 165

HOLZFASTER'S EQUIPMENT INC.

701 SOUTH HIGHWAY 61

OGALLALA, NEBRASKA 69153

SEPTEMBER 25, 2025

WISH-119618

MARQUARDT FOUNDATION

NW 1/4 23-11-44

680 GPM @ 30 PSI

LINDSAY 9500 - 90
NELSON D3000 SPRAY NOZZLES
NELSON 10 PSI REGULATORS
POLYDROPS®
NELSON R65i #65 ORANGE

Rotation time at 100% = 9.33 Hours Or 560 minutes

Installation Chart

Page 1

Out #	Drop Len	Sprk #	Noz Size	Reg	Out #	Drop Len	Sprk #	Noz Size	Reg	Out #	Drop Len	Sprk #	Noz Size	Reg	Out #	Drop Len	Sprk #	Noz Size	Reg
1	PLUG				9	96	52	20	10LF	17	102	108	29	10LF	25	72	164	38	10LF
2	PLUG				10	102	53	20	10LF	18	96	109	29	10LF	TOWER 7	72	165	38	10LF
3	PLUG				11	102	54	20	10LF	19	96	110	29	10LF		72	166	36	10LF
4	84	1	9	10LF	12	102	55	21	10LF	20	90	111	29	10LF		72	167	36	10LF
5	90	2	9	10LF	13	102	56	20	10LF	21	90	112	29	10LF		72	168	36	10LF
6	90	3	9	10LF	14	102	57	21	10LF	22	84	113	29	10LF		72	169	37	10LF
7	96	4	9	10LF	15	102	58	21	10LF	23	84	114	29	10LF		72	170	37	10LF
8	PLUG				16	102	59	21	10LF	24	78	115	30	10LF					
9	96	5	9	10LF	17	102	60	21	10LF	25	72	116	33	10LF					
10	PLUG				18	96	61	22	10LF	TOWER 5									
11	102	6	9	10LF	19	96	62	22	10LF	1	PLUG								
12	102	7	9	10LF	20	90	63	22	10LF	2	72	117	33	10LF					
13	102	8	9	10LF	21	90	64	22	10LF	3	78	118	30	10LF					
14	102	9	9	10LF	22	84	65	22	10LF	4	84	119	30	10LF					
15	102	10	9	10LF	23	84	66	22	10LF	5	84	120	30	10LF					
16	102	11	10	10LF	24	78	67	23	10LF	6	90	121	31	10LF					
17	102	12	10	10LF	25	72	68	25	10LF	7	90	122	30	10LF					
18	96	13	10	10LF	TOWER 3					8	96	123	31	10LF					
19	96	14	11	10LF	1	PLUG				9	96	124	31	10LF					
20	96	15	11	10LF	2	72	69	25	10LF	10	102	125	31	10LF					
21	90	16	11	10LF	3	78	70	23	10LF	11	102	126	31	10LF					
22	84	17	12	10LF	4	84	71	23	10LF	12	102	127	31	10LF					
23	84	18	12	10LF	5	84	72	23	10LF	13	102	128	31	10LF					
24	78	19	12	10LF	6	90	73	24	10LF	14	102	129	31	10LF					
25	72	20	14	10LF	7	90	74	24	10LF	15	102	130	32	10LF					
TOWER 1					8	96	75	24	10LF	16	102	131	32	10LF					
1	PLUG				9	96	76	24	10LF	17	102	132	32	10LF					
2	72	21	14	10LF	10	102	77	24	10LF	18	96	133	32	10LF					
3	78	22	13	10LF	11	102	78	24	10LF	19	96	134	32	10LF					
4	84	23	13	10LF	12	102	79	25	10LF	20	90	135	32	10LF					
5	84	24	14	10LF	13	102	80	24	10LF	21	90	136	33	10LF					
6	90	25	14	10LF	14	102	81	25	10LF	22	84	137	32	10LF					
7	90	26	14	10LF	15	102	82	25	10LF	23	84	138	33	10LF					
8	96	27	14	10LF	16	102	83	25	10LF	24	78	139	33	10LF					
9	96	28	15	10LF	17	102	84	25	10LF	25	72	140	36	10LF					
10	102	29	15	10LF	18	96	85	25	10LF	TOWER 6									
11	102	30	15	10LF	19	96	86	25	10LF	1	PLUG								
12	102	31	15	10LF	20	90	87	25	10LF	2	72	141	36	10LF					
13	102	32	16	10LF	21	90	88	26	10LF	3	78	142	33	10LF					
14	102	33	16	10LF	22	84	89	26	10LF	4	84	143	33	10LF					
15	102	34	16	10LF	23	84	90	26	10LF	5	84	144	33	10LF					
16	102	35	16	10LF	24	78	91	26	10LF	6	90	145	34	10LF					
17	102	36	17	10LF	25	72	92	29	10LF	7	90	146	33	10LF					
18	96	37	17	10LF	TOWER 4					8	96	147	34	10LF					
19	96	38	17	10LF	1	PLUG				9	96	148	34	10LF					
20	90	39	17	10LF	2	72	93	29	10LF	10	102	149	34	10LF					
21	90	40	18	10LF	3	78	94	27	10LF	11	102	150	34	10LF					
22	84	41	18	10LF	4	84	95	27	10LF	12	102	151	34	10LF					
23	84	42	18	10LF	5	84	96	27	10LF	13	102	152	34	10LF					
24	78	43	18	10LF	6	90	97	27	10LF	14	102	153	34	10LF					
25	72	44	20	10LF	7	90	98	27	10LF	15	102	154	35	10LF					
TOWER 2					8	96	99	27	10LF	16	102	155	35	10LF					
1	PLUG				9	96	100	28	10LF	17	102	156	35	10LF					
2	72	45	20	10LF	10	102	101	28	10LF	18	96	157	35	10LF					
3	78	46	19	10LF	11	102	102	28	10LF	19	96	158	35	10LF					
4	84	47	19	10LF	12	102	103	28	10LF	20	90	159	35	10LF					
5	84	48	19	10LF	13	102	104	28	10LF	21	90	160	36	10LF					
6	90	49	19	10LF	14	102	105	28	10LF	22	84	161	35	10LF					
7	90	50	19	10LF	15	102	106	28	10LF	23	84	162	36	10LF					
8	96	51	20	10LF	16	102	107	28	10LF	24	78	163	36	10LF					

PRECIPITATION CHART FOR FULL CIRCLE

WISH-119618

SEPTEMBER 25, 2025

DEALER - HOLZFASTER'S EQUIPMENT INC.

IRRIGATOR - MARQUARDT FOUNDATION

FIELD - NW 1/4 23-11-44

TOTAL LENGTH PIPE = 1286.13 SYSTEM PRESSURE = 30 PSI
GPM UNDER PIPE = 640.03 TOTAL GPM = 680.65
ACRES UNDER PIPE = 119.30
RANGE OF ENDGUN = 35.90 RUN FOR MINIMUM PRESSURE
GPM OF ENDGUN = 40.62
ACRES UNDER ENDGUN = 6.75
WATERING LENGTH = 1322.03

MOTOR SIZE (HP) = 3/4
LOADED MOTOR RPM = 1750
CENTER GEAR BOX RATIO = 40
WHEEL GEAR BOX RATIO = 50
TIRE SIZE = 12.4 X 38
LAST TOWER SPEED (FPM) = 13.93

PRECIPITATION DATA FIGURED WITH ENDGUN RUNNING

PRECIPITATION BASED			% TIMER BASED		
PRECIPITATION INCHES	% TIMER SETTING	TIME HOURS	% TIMER SETTING	PRECIPITATION INCHES	TIME HOURS
.11	100.00	9.33 - 560(min)	100.00	.11	9.33 - 560(min)
.20	55.31	16.87	90.00	.12	10.37
.25	44.25	21.09	80.00	.14	11.66
.30	36.87	25.31	70.00	.16	13.33
.40	27.65	33.74	60.00	.18	15.55
.50	22.12	42.18	50.00	.22	18.66
.60	18.44	50.61	45.00	.25	20.74
.70	15.80	59.05	40.00	.28	23.33
.75	14.75	63.27	35.00	.32	26.66
.80	13.83	67.49	30.00	.37	31.10
.90	12.29	75.92	25.00	.44	37.33
1.00	11.06	84.36	20.00	.55	46.66
1.25	8.85	105.45	15.00	.74	62.21
1.50	7.37	126.54	10.00	1.11	93.31
1.75	6.32	147.62	5.00	2.21	186.63

CAUTION: The relationship between precipitation rate, timer setting, and hours per revolution provided above are theoretical numbers based on the data list at the top of the page. Actual precipitation rates may vary due to the following field and machine conditions: wind drift; evaporation; tire slippage, tire loaded radius; drive train efficiency; elevation changes; soil type. Due to these varying field and machine conditions the above chart should be used as a guide only.

DEALER - HOLZFASTER'S EQUIPMENT INC.

IRRIGATOR - MARQUARDT FOUNDATION
FIELD - NW 1/4 23-11-44

SPAN 1 <u>POS/LEN</u>	SPAN 2 <u>POS/LEN</u>	SPAN 3 <u>POS/LEN</u>	SPAN 4 <u>POS/LEN</u>	SPAN 5 <u>POS/LEN</u>	SPAN 6 <u>POS/LEN</u>	SPAN 7 <u>POS/LEN</u>	ENDBOOM <u>POS/LEN</u>
1 - 84	21 - 72	45 - 72	69 - 72	93 - 72	117 - 72	141 - 72	165 - 72
2 - 90	22 - 78	46 - 78	70 - 78	94 - 78	118 - 78	142 - 78	166 - 72
3 - 90	23 - 84	47 - 84	71 - 84	95 - 84	119 - 84	143 - 84	167 - 72
4 - 96	24 - 84	48 - 84	72 - 84	96 - 84	120 - 84	144 - 84	168 - 72
5 - 96	25 - 90	49 - 90	73 - 90	97 - 90	121 - 90	145 - 90	169 - 72
6 - 102	26 - 90	50 - 90	74 - 90	98 - 90	122 - 90	146 - 90	170 - 72
7 - 102	27 - 96	51 - 96	75 - 96	99 - 96	123 - 96	147 - 96	
8 - 102	28 - 96	52 - 96	76 - 96	100 - 96	124 - 96	148 - 96	
9 - 102	29 - 102	53 - 102	77 - 102	101 - 102	125 - 102	149 - 102	
10 - 102	30 - 102	54 - 102	78 - 102	102 - 102	126 - 102	150 - 102	
11 - 102	31 - 102	55 - 102	79 - 102	103 - 102	127 - 102	151 - 102	
12 - 102	32 - 102	56 - 102	80 - 102	104 - 102	128 - 102	152 - 102	
13 - 96	33 - 102	57 - 102	81 - 102	105 - 102	129 - 102	153 - 102	
14 - 96	34 - 102	58 - 102	82 - 102	106 - 102	130 - 102	154 - 102	
15 - 96	35 - 102	59 - 102	83 - 102	107 - 102	131 - 102	155 - 102	
16 - 90	36 - 102	60 - 102	84 - 102	108 - 102	132 - 102	156 - 102	
17 - 84	37 - 96	61 - 96	85 - 96	109 - 96	133 - 96	157 - 96	
18 - 84	38 - 96	62 - 96	86 - 96	110 - 96	134 - 96	158 - 96	
19 - 78	39 - 90	63 - 90	87 - 90	111 - 90	135 - 90	159 - 90	
20 - 72	40 - 90	64 - 90	88 - 90	112 - 90	136 - 90	160 - 90	
	41 - 84	65 - 84	89 - 84	113 - 84	137 - 84	161 - 84	
	42 - 84	66 - 84	90 - 84	114 - 84	138 - 84	162 - 84	
	43 - 78	67 - 78	91 - 78	115 - 78	139 - 78	163 - 78	
	44 - 72	68 - 72	92 - 72	116 - 72	140 - 72	164 - 72	

SUMMARY OF DROPS

19 - 72 IN DROP
13 - 78 IN DROP
27 - 84 IN DROP
27 - 90 IN DROP
29 - 96 IN DROP
55 - 102 IN DROP

TOTAL OF 170 DROPS

POLY SENN GRAY FEMALE X PLASTIC MALE