

# FREY PIVOT SERVICE

SEPTEMBER 30, 2025

WISH-119640

CUSTOMER : ROBBI SMITH

LINDSAY 9500 - 30  
11 TOWER - 1928.63 FT  
SYSTEM 1200 GPM @ 31 PSI

LEGAL : JOHANSON 2  
P.O. NO. : S/N LB5565

SENNINGER UP3 XCEL TOP  
SENNINGER 10 PSI REGULATORS  
NELSON SR-100 .75 TB  
ELEVATION 0 FT UP, 12 FT DOWN

77 COUNTY ROAD 40  
STAPLETON, NEBRASKA 69163  
(308)636-2327

---

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.

LINDSAY 9500 - 30

SEPTEMBER 30, 2025

WISH-119640

DEALER

FREY PIVOT SERVICE  
77 COUNTY ROAD 40  
STAPLETON, NEBRASKA 69163

IRRIGATOR

ROBBI SMITH  
JOHANSON 2  
S/N LB5565

TOTAL TARGET GPM	1200.00	FRICTION FACTOR USED	138	SPANS	LENGTH	PIPE I.D.
TOP OF PIVOT PRESSURE	31.00	TOTAL LENGTH	1928.63	1	181.60	7.782
ENDGUN TARGET GPM	122.81	NUMBER OF TOWERS	11	6	179.00	7.782
NUMBER OF OUTLETS	785	NUMBER OF SPRINKLERS	189	4	157.04	6.395
				OH	44.87	5.369

SENNINGER UP3 XCEL TOP  
SENNINGER PSR-2 10 PSI SERIES REGULATORS

ELEVATION IS 0 FT UP AND 12 FT DOWN

CAUTIONS AND WARNINGS

1. Over watering at beginning of system due to practical limitations on smallest nozzle sizes available and/or allowable for proper operation.
2. 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.
49		120.35	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	42
50		122.85	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	43
51		125.27	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	44
52	14.68	127.69	1.08	1.00	28.78	11.40	XCEL TOP UP3 6.5 GOLD	8	SPSR2-10	
53		130.19	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	45
54		132.69	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	46
55		135.02	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	47
56		137.50	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	48
57		139.83	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	49
58	14.64	142.33	1.21	1.16	28.80	11.40	XCEL TOP UP3 7 LIME	9	SPSR2-10	
59		144.83	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	50
60		147.25	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	51
61		149.67	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	52
62		152.17	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	53
63		154.59	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	54
64	14.68	157.01	1.33	1.35	28.90	11.40	XCEL TOP UP3 7.5 LIME	10	SPSR2-10	
65		159.51	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	55
66		161.93	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	56
67		164.35	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	57
68		166.85	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	58
69		169.27	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	59
70	14.68	171.69	1.36	1.35	29.05	11.40	XCEL TOP UP3 7.5 LIME	11	SPSR2-10	
71		174.19	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	60
72		176.69	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	61
73		179.02	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	62
TOWER 1	181.60	181.60	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	63
74		181.92	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	
75	12.81	184.50	1.33	1.35	28.91	11.40	XCEL TOP UP3 7.5 LIME	12	SPSR2-10	
76		186.83	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	64
77		189.33	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	65
78		191.83	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	66
79		194.25	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	67
80	12.17	196.67	1.39	1.35	28.61	11.40	XCEL TOP UP3 7.5 LIME	13	SPSR2-10	
81		199.17	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	68
82		201.59	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	69
83		204.01	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	70
84		206.51	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	71
85	12.26	208.93	1.48	1.53	28.23	11.40	XCEL TOP UP3 8 LAVENDER	14	SPSR2-10	
86		211.35	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	72
87		213.85	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	73
88		216.27	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	74
89		218.69	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	75
90	12.26	221.19	1.56	1.53	27.89	11.40	XCEL TOP UP3 8 LAVENDER	15	SPSR2-10	
91		223.69	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	76
92		226.02	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	77
93		228.50	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	78
94		230.83	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	79
95	12.14	233.33	1.65	1.73	27.60	11.40	XCEL TOP UP3 8.5 LAVENDER	16	SPSR2-10	



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.
144		353.19	-	-	-	-	-	-	-	119
145	12.34	355.69	2.57	2.63	27.03	11.34	XCEL TOP UP3 10.5 TURQ	26	SPSR2-10	
146		358.02	-	-	-	-	-	-	-	120
TOWER 2	179.00	360.60								
147		360.92	-	-	-	-	-	-	-	121
148		363.50	-	-	-	-	-	-	-	122
149		365.83	-	-	-	-	-	-	-	123
150	12.64	368.33	2.65	2.63	26.89	11.34	XCEL TOP UP3 10.5 TURQ	27	SPSR2-10	
151		370.83	-	-	-	-	-	-	-	124
152		373.25	-	-	-	-	-	-	-	125
153		375.67	-	-	-	-	-	-	-	126
154		378.17	-	-	-	-	-	-	-	127
155	12.26	380.59	2.70	2.63	26.49	11.34	XCEL TOP UP3 10.5 TURQ	28	SPSR2-10	
156		383.01	-	-	-	-	-	-	-	128
157		385.51	-	-	-	-	-	-	-	129
158		387.93	-	-	-	-	-	-	-	130
159		390.35	-	-	-	-	-	-	-	131
160	12.26	392.85	2.77	2.89	26.13	11.31	XCEL TOP UP3 11 YELLOW	29	SPSR2-10	
161		395.27	-	-	-	-	-	-	-	132
162		397.69	-	-	-	-	-	-	-	133
163		400.19	-	-	-	-	-	-	-	134
164		402.69	-	-	-	-	-	-	-	135
165	12.17	405.02	2.86	2.89	25.82	11.31	XCEL TOP UP3 11 YELLOW	30	SPSR2-10	
166		407.50	-	-	-	-	-	-	-	136
167		409.83	-	-	-	-	-	-	-	137
168		412.33	-	-	-	-	-	-	-	138
169		414.83	-	-	-	-	-	-	-	139
170	12.23	417.25	2.95	2.89	25.55	11.31	XCEL TOP UP3 11 YELLOW	31	SPSR2-10	
171		419.67	-	-	-	-	-	-	-	140
172		422.17	-	-	-	-	-	-	-	141
173		424.59	-	-	-	-	-	-	-	142
174		427.01	-	-	-	-	-	-	-	143
175	12.26	429.51	3.03	3.15	25.33	11.28	XCEL TOP UP3 11.5 YELLOW	32	SPSR2-10	
176		431.93	-	-	-	-	-	-	-	144
177		434.35	-	-	-	-	-	-	-	145
178		436.85	-	-	-	-	-	-	-	146
179		439.27	-	-	-	-	-	-	-	147
180	12.18	441.69	3.11	3.15	25.15	11.28	XCEL TOP UP3 11.5 YELLOW	33	SPSR2-10	
181		444.19	-	-	-	-	-	-	-	148
182		446.69	-	-	-	-	-	-	-	149
183		449.02	-	-	-	-	-	-	-	150
184		451.50	-	-	-	-	-	-	-	151
185	12.14	453.83	3.21	3.15	25.02	11.28	XCEL TOP UP3 11.5 YELLOW	34	SPSR2-10	
186		456.33	-	-	-	-	-	-	-	152
187		458.83	-	-	-	-	-	-	-	153
188		461.25	-	-	-	-	-	-	-	154
189		463.67	-	-	-	-	-	-	-	155
190	12.34	466.17	3.30	3.44	24.93	11.26	XCEL TOP UP3 12 RED	35	SPSR2-10	





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.
286		701.35	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	229
287		703.85	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	230
288	9.76	706.27	3.98	4.03	23.48	11.20	XCEL TOP UP3 13 WHITE	58	SPSR2-10	
289		708.69	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	231
290		711.19	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	232
291		713.69	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	233
292	9.75	716.02	4.15	4.03	23.46	11.20	XCEL TOP UP3 13 WHITE	59	SPSR2-10	
TOWER 4	179.00	718.60	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	
293		718.92	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	234
294		721.50	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	235
295		723.83	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	236
296	10.31	726.33	4.23	4.34	23.36	11.17	XCEL TOP UP3 13.5 WHITE	60	SPSR2-10	
297		728.83	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	237
298		731.25	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	238
299		733.67	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	239
300	9.84	736.17	4.17	4.03	23.06	11.20	XCEL TOP UP3 13 WHITE	61	SPSR2-10	
301		738.59	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	240
302		741.01	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	241
303		743.51	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	242
304	9.76	745.93	4.21	4.34	22.78	11.17	XCEL TOP UP3 13.5 WHITE	62	SPSR2-10	
305		748.35	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	243
306		750.85	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	244
307		753.27	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	245
308	9.76	755.69	4.27	4.34	22.53	11.17	XCEL TOP UP3 13.5 WHITE	63	SPSR2-10	
309		758.19	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	246
310		760.69	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	247
311		763.02	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	248
312	9.81	765.50	4.33	4.34	22.31	11.17	XCEL TOP UP3 13.5 WHITE	64	SPSR2-10	
313		767.83	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	249
314		770.33	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	250
315		772.83	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	251
316	9.75	775.25	4.37	4.34	22.12	11.17	XCEL TOP UP3 13.5 WHITE	65	SPSR2-10	
317		777.67	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	252
318		780.17	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	253
319		782.59	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	254
320	9.76	785.01	4.45	4.34	21.96	11.17	XCEL TOP UP3 13.5 WHITE	66	SPSR2-10	
321		787.51	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	255
322		789.93	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	256
323		792.35	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	257
324	9.84	794.85	4.52	4.66	21.82	11.13	XCEL TOP UP3 14 BLUE	67	SPSR2-10	
325		797.27	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	258
326		799.69	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	259
327		802.19	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	260
328	9.84	804.69	4.53	4.66	21.72	11.13	XCEL TOP UP3 14 BLUE	68	SPSR2-10	
329		807.02	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	261
330		809.50	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	262
331		811.83	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	263
332	9.64	814.33	4.58	4.66	21.65	11.13	XCEL TOP UP3 14 BLUE	69	SPSR2-10	





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.
428		9.76	1049.59	5.92	6.04	20.51	10.91 XCEL TOP UP3 16 ORANGE	93	SPSR2-10	
429			1052.01	-	-	-	- - - - -	-	-	336
430			1054.51	-	-	-	- - - - -	-	-	337
431			1056.93	-	-	-	- - - - -	-	-	338
432	9.76		1059.35	6.00	6.04	20.65	10.91 XCEL TOP UP3 16 ORANGE	94	SPSR2-10	
433			1061.85	-	-	-	- - - - -	-	-	339
434			1064.27	-	-	-	- - - - -	-	-	340
435			1066.69	-	-	-	- - - - -	-	-	341
436	9.84		1069.19	6.22	6.40	20.76	10.85 XCEL TOP UP3 16.5 ORANGE	95	SPSR2-10	
437			1071.69	-	-	-	- - - - -	-	-	342
438			1074.02	-	-	-	- - - - -	-	-	343
TOWER 6		179.00	1076.60							
439			1076.92	-	-	-	- - - - -	-	-	344
440	10.31		1079.50	6.25	6.40	20.70	10.85 XCEL TOP UP3 16.5 ORANGE	96	SPSR2-10	
441			1081.83	-	-	-	- - - - -	-	-	345
442			1084.33	-	-	-	- - - - -	-	-	346
443			1086.83	-	-	-	- - - - -	-	-	347
444	9.75		1089.25	6.14	6.04	20.53	10.91 XCEL TOP UP3 16 ORANGE	97	SPSR2-10	
445			1091.67	-	-	-	- - - - -	-	-	348
446			1094.17	-	-	-	- - - - -	-	-	349
447			1096.59	-	-	-	- - - - -	-	-	350
448	9.76		1099.01	6.22	6.04	20.26	10.91 XCEL TOP UP3 16 ORANGE	98	SPSR2-10	
449			1101.51	-	-	-	- - - - -	-	-	351
450			1103.93	-	-	-	- - - - -	-	-	352
451			1106.35	-	-	-	- - - - -	-	-	353
452	9.84		1108.85	6.30	6.40	20.02	10.85 XCEL TOP UP3 16.5 ORANGE	99	SPSR2-10	
453			1111.27	-	-	-	- - - - -	-	-	354
454			1113.69	-	-	-	- - - - -	-	-	355
455			1116.19	-	-	-	- - - - -	-	-	356
456	9.84		1118.69	6.29	6.40	19.81	10.85 XCEL TOP UP3 16.5 ORANGE	100	SPSR2-10	
457			1121.02	-	-	-	- - - - -	-	-	357
458			1123.50	-	-	-	- - - - -	-	-	358
459			1125.83	-	-	-	- - - - -	-	-	359
460	9.64		1128.33	6.35	6.41	19.63	10.85 XCEL TOP UP3 16.5 ORANGE	101	SPSR2-10	
461			1130.83	-	-	-	- - - - -	-	-	360
462			1133.25	-	-	-	- - - - -	-	-	361
463			1135.67	-	-	-	- - - - -	-	-	362
464	9.84		1138.17	6.44	6.41	19.48	10.85 XCEL TOP UP3 16.5 ORANGE	102	SPSR2-10	
465			1140.59	-	-	-	- - - - -	-	-	363
466			1143.01	-	-	-	- - - - -	-	-	364
467			1145.51	-	-	-	- - - - -	-	-	365
468	9.76		1147.93	6.47	6.41	19.36	10.85 XCEL TOP UP3 16.5 ORANGE	103	SPSR2-10	
469			1150.35	-	-	-	- - - - -	-	-	366
470			1152.85	-	-	-	- - - - -	-	-	367
471			1155.27	-	-	-	- - - - -	-	-	368
472	9.76		1157.69	6.54	6.41	19.27	10.85 XCEL TOP UP3 16.5 ORANGE	104	SPSR2-10	
473			1160.19	-	-	-	- - - - -	-	-	369
474			1162.69	-	-	-	- - - - -	-	-	370

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.
475		1165.02	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	371
476	9.81	1167.50	6.60	6.78	19.21	10.78	XCEL TOP UP3 17 DK GREEN	105	SPSR2-10	
477		1169.83	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	372
478		1172.33	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	373
479		1174.83	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	374
480	9.75	1177.25	6.63	6.78	19.18	10.78	XCEL TOP UP3 17 DK GREEN	106	SPSR2-10	
481		1179.67	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	375
482		1182.17	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	376
483		1184.59	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	377
484	9.76	1187.01	6.72	6.78	19.18	10.78	XCEL TOP UP3 17 DK GREEN	107	SPSR2-10	
485		1189.51	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	378
486		1191.93	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	379
487		1194.35	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	380
488	9.84	1196.85	6.80	6.78	19.21	10.78	XCEL TOP UP3 17 DK GREEN	108	SPSR2-10	
489		1199.27	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	381
490		1201.69	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	382
491		1204.19	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	383
492	9.84	1206.69	6.79	6.78	19.26	10.78	XCEL TOP UP3 17 DK GREEN	109	SPSR2-10	
493		1209.02	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	384
494		1211.50	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	385
495		1213.83	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	386
496	9.64	1216.33	6.84	6.78	19.35	10.78	XCEL TOP UP3 17 DK GREEN	110	SPSR2-10	
497		1218.83	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	387
498		1221.25	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	388
499		1223.67	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	389
500	9.84	1226.17	6.94	6.78	19.47	10.78	XCEL TOP UP3 17 DK GREEN	111	SPSR2-10	
501		1228.59	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	390
502		1231.01	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	391
503		1233.51	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	392
504	9.76	1235.93	6.97	6.78	19.61	10.78	XCEL TOP UP3 17 DK GREEN	112	SPSR2-10	
505		1238.35	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	393
506		1240.85	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	394
507		1243.27	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	395
508	9.76	1245.69	7.19	7.16	19.79	10.71	XCEL TOP UP3 17.5 DK GREEN	113	SPSR2-10	
509		1248.19	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	396
510		1250.69	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	397
511		1253.02	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	398
TOWER 7	179.00	1255.60	PIPE ID CHANGES FROM 7.782 TO 6.395							
512	10.23	1255.92	7.31	7.16	19.66	10.71	XCEL TOP UP3 17.5 DK GREEN	114	SPSR2-10	
513		1258.50	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	399
514		1260.83	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	400
515		1263.33	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	401
516	9.91	1265.83	7.19	7.16	19.46	10.71	XCEL TOP UP3 17.5 DK GREEN	115	SPSR2-10	
517		1268.25	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	402
518		1270.67	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	403
519		1273.17	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	404
520	9.76	1275.59	7.20	7.16	19.10	10.71	XCEL TOP UP3 17.5 DK GREEN	116	SPSR2-10	

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.
521		1278.01	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	405
522		1280.51	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	406
523		1282.93	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	407
524	9.76	1285.35	7.28	7.16	18.79	10.71	XCEL TOP UP3 17.5 DK GREEN	117	SPSR2-10	
525		1287.85	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	408
526		1290.27	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	409
527		1292.69	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	410
528	9.84	1295.19	7.30	7.16	18.51	10.71	XCEL TOP UP3 17.5 DK GREEN	118	SPSR2-10	
529		1297.69	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	411
530		1300.02	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	412
531		1302.51	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	413
532	9.65	1304.84	7.35	7.16	18.28	10.71	XCEL TOP UP3 17.5 DK GREEN	119	SPSR2-10	
533		1307.34	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	414
534		1309.84	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	415
535		1312.26	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	416
536	9.84	1314.68	7.49	7.55	18.08	10.64	XCEL TOP UP3 18 PURPLE	120	SPSR2-10	
537		1317.18	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	417
538		1319.68	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	418
539		1322.01	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	419
540	9.86	1324.54	7.51	7.55	17.92	10.64	XCEL TOP UP3 18 PURPLE	121	SPSR2-10	
541		1326.87	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	420
542		1329.37	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	421
543		1331.87	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	422
544	9.75	1334.29	7.53	7.55	17.80	10.64	XCEL TOP UP3 18 PURPLE	122	SPSR2-10	
545		1336.71	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	423
546		1339.21	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	424
547		1341.63	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	425
548	9.76	1344.05	7.62	7.55	17.72	10.64	XCEL TOP UP3 18 PURPLE	123	SPSR2-10	
549		1346.55	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	426
550		1348.97	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	427
551		1351.39	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	428
552	9.84	1353.89	7.71	7.55	17.68	10.64	XCEL TOP UP3 18 PURPLE	124	SPSR2-10	
553		1356.31	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	429
554		1358.73	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	430
555		1361.23	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	431
556	9.84	1363.73	7.68	7.55	17.68	10.64	XCEL TOP UP3 18 PURPLE	125	SPSR2-10	
557		1366.06	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	432
558		1368.54	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	433
559		1370.87	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	434
560	9.64	1373.37	7.74	7.55	17.72	10.64	XCEL TOP UP3 18 PURPLE	126	SPSR2-10	
561		1375.87	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	435
562		1378.29	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	436
563		1380.71	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	437
564	9.84	1383.21	7.85	7.95	17.80	10.57	XCEL TOP UP3 18.5 PURPLE	127	SPSR2-10	
565		1385.63	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	438
566		1388.05	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	439
567		1390.55	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	440
568	9.76	1392.97	7.87	7.95	17.92	10.57	XCEL TOP UP3 18.5 PURPLE	128	SPSR2-10	



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.
616		9.84	1510.93	8.61	8.76	16.37	10.42 XCEL TOP UP3 19.5 BLACK	140	SPSR2-10	
617			1513.35	-	-	-	-	-	-	477
618			1515.77	-	-	-	-	-	-	478
619			1518.27	-	-	-	-	-	-	479
620	9.84		1520.77	8.57	8.76	16.40	10.42 XCEL TOP UP3 19.5 BLACK	141	SPSR2-10	
621			1523.10	-	-	-	-	-	-	480
622			1525.58	-	-	-	-	-	-	481
623			1527.91	-	-	-	-	-	-	482
624	9.64		1530.41	8.62	8.76	16.47	10.42 XCEL TOP UP3 19.5 BLACK	142	SPSR2-10	
625			1532.91	-	-	-	-	-	-	483
626			1535.33	-	-	-	-	-	-	484
627			1537.75	-	-	-	-	-	-	485
628	9.84		1540.25	8.73	8.76	16.58	10.42 XCEL TOP UP3 19.5 BLACK	143	SPSR2-10	
629			1542.67	-	-	-	-	-	-	486
630			1545.09	-	-	-	-	-	-	487
631			1547.59	-	-	-	-	-	-	488
632	9.76		1550.01	8.75	8.76	16.73	10.42 XCEL TOP UP3 19.5 BLACK	144	SPSR2-10	
633			1552.43	-	-	-	-	-	-	489
634			1554.93	-	-	-	-	-	-	490
635			1557.35	-	-	-	-	-	-	491
636	9.76		1559.77	9.02	9.17	16.92	10.35 XCEL TOP UP3 20 DK TURQUOISE	145	SPSR2-10	
637			1562.27	-	-	-	-	-	-	492
638			1564.77	-	-	-	-	-	-	493
639			1567.10	-	-	-	-	-	-	494
TOWER 9		157.04	1569.68							
640	10.23		1570.00	9.14	9.18	16.90	10.35 XCEL TOP UP3 20 DK TURQUOISE	146	SPSR2-10	
641			1572.58	-	-	-	-	-	-	495
642			1574.91	-	-	-	-	-	-	496
643			1577.41	-	-	-	-	-	-	497
644	9.91		1579.91	8.98	9.17	16.76	10.35 XCEL TOP UP3 20 DK TURQUOISE	147	SPSR2-10	
645			1582.33	-	-	-	-	-	-	498
646			1584.75	-	-	-	-	-	-	499
647			1587.25	-	-	-	-	-	-	500
648	9.76		1589.67	8.96	8.76	16.47	10.43 XCEL TOP UP3 19.5 BLACK	148	SPSR2-10	
649			1592.09	-	-	-	-	-	-	501
650			1594.59	-	-	-	-	-	-	502
651			1597.01	-	-	-	-	-	-	503
652	9.76		1599.43	9.06	9.18	16.22	10.35 XCEL TOP UP3 20 DK TURQUOISE	149	SPSR2-10	
653			1601.93	-	-	-	-	-	-	504
654			1604.35	-	-	-	-	-	-	505
655			1606.77	-	-	-	-	-	-	506
656	9.84		1609.27	9.06	9.18	16.00	10.35 XCEL TOP UP3 20 DK TURQUOISE	150	SPSR2-10	
657			1611.77	-	-	-	-	-	-	507
658			1614.10	-	-	-	-	-	-	508
659			1616.59	-	-	-	-	-	-	509
660	9.65		1618.92	9.11	9.18	15.83	10.35 XCEL TOP UP3 20 DK TURQUOISE	151	SPSR2-10	
661			1621.42	-	-	-	-	-	-	510
662			1623.92	-	-	-	-	-	-	511





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.
758		7.34	1859.17	7.85	7.95	15.61	10.57 XCEL TOP UP3 18.5 PURPLE	180	SPSR2-10	
759			1861.67	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	579
760			1864.09	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	580
761	7.34		1866.51	7.87	7.95	15.77	10.57 XCEL TOP UP3 18.5 PURPLE	181	SPSR2-10	
762			1869.01	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	581
763			1871.43	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	582
764	7.34		1873.85	7.88	7.95	15.95	10.57 XCEL TOP UP3 18.5 PURPLE	182	SPSR2-10	
765			1876.35	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	583
766			1878.85	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	584
767	7.33		1881.18	9.08	9.18	15.98	10.35 XCEL TOP UP3 20 DK TURQUOISE	183	SPSR2-10	
TOWER 11	157.04	1883.76					PIPE ID CHANGES FROM 6.395 TO 5.369			
768			1885.87	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	585
769			1888.20	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	586
770	9.52		1890.70	9.11	9.18	15.96	10.35 XCEL TOP UP3 20 DK TURQUOISE	184	SPSR2-10	
771			1893.20	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	587
772			1895.62	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	588
773	7.34		1898.04	7.95	7.95	15.95	10.57 XCEL TOP UP3 18.5 PURPLE	185	SPSR2-10	
774			1900.54	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	589
775			1902.96	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	590
776	7.34		1905.38	7.98	7.95	15.94	10.57 XCEL TOP UP3 18.5 PURPLE	186	SPSR2-10	
777			1907.88	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	591
778			1910.30	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	592
779	7.34		1912.72	8.02	7.95	15.93	10.57 XCEL TOP UP3 18.5 PURPLE	187	SPSR2-10	
780			1915.22	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	593
781			1917.64	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	594
782	7.34		1920.06	8.10	7.95	15.92	10.57 XCEL TOP UP3 18.5 PURPLE	188	SPSR2-10	
783			1922.56	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	595
784			1925.06	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	596
785	7.33		1927.39	7.88	7.95	15.91	10.57 XCEL TOP UP3 18.5 PURPLE	189	SPSR2-10	
OVERHANG	44.87	1928.63		121.26 ENDGUN		( 1 ) NELSON SR-100 .75 TB				
						LINDSAY 5HP BOOSTER PUMP				

BOOSTER PUMP AT END ADDS 40.87 PSI TO PIPE PRESSURE FOR A PRESSURE OF 56.78 PSI  
 FRICTION LOSS THROUGH ENDGUN VALVE IS 1.14 PSI - ENDGUN PRESSURE IS 55.64 PSI

TOTAL GPM = 1200.82

GPA = 4.02

GPA for 180° Circle = 8.03

MINIMUM RECOMMENDED REGULATOR INLET PRESSURE IS 15.00 PSI  
 WITH GRADUATED ELEVATION OF .00 FT THE INLET PRESSURE IS 15.10 PSI FOR SPRINKLER 173  
 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	2.38	9.55	11.35	19%	4.77	0.011	0.38	0.51	0.63
2	7.00	28.11	28.01	0%	4.00	0.009	0.32	0.42	0.53
3	11.62	46.66	46.53	0%	4.00	0.009	0.32	0.42	0.53
4	16.24	65.22	65.42	0%	4.03	0.009	0.32	0.43	0.53
5	20.86	83.78	83.68	0%	4.01	0.009	0.32	0.43	0.53
6	25.49	102.34	102.69	0%	4.03	0.009	0.32	0.43	0.53
7	30.11	120.90	120.27	-1%	3.99	0.009	0.32	0.42	0.53
8	30.22	121.35	120.23	-1%	3.98	0.009	0.32	0.42	0.53
9	33.78	135.63	136.05	0%	4.03	0.009	0.32	0.43	0.53
10	37.33	149.91	149.56	0%	4.01	0.009	0.32	0.42	0.53
11	40.89	164.20	164.74	0%	4.03	0.009	0.32	0.43	0.53
OVERHANG	12.34	49.54	51.01	3%	4.13	0.009	0.33	0.44	0.55
ENDGUN	29.23	122.81	121.26	3%	4.15				
TOTAL	297.49	1200.00	1200.82		4.04				

**SUMMARY OF SPRINKLERS**

6 XCEL TOP UP3 6 GOLD  
2 XCEL TOP UP3 6.5 GOLD  
1 XCEL TOP UP3 7 LIME  
4 XCEL TOP UP3 7.5 LIME  
2 XCEL TOP UP3 8 LAVENDER  
3 XCEL TOP UP3 8.5 LAVENDER  
2 XCEL TOP UP3 9 GREY  
3 XCEL TOP UP3 9.5 GREY  
2 XCEL TOP UP3 10 TURQUOISE  
3 XCEL TOP UP3 10.5 TURQ  
3 XCEL TOP UP3 11 YELLOW  
7 XCEL TOP UP3 11.5 YELLOW  
10 XCEL TOP UP3 12 RED  
7 XCEL TOP UP3 12.5 RED  
5 XCEL TOP UP3 13 WHITE  
6 XCEL TOP UP3 13.5 WHITE  
7 XCEL TOP UP3 14 BLUE  
4 XCEL TOP UP3 14.5 BLUE  
8 XCEL TOP UP3 15 DK BROWN  
6 XCEL TOP UP3 15.5 DK BROWN  
5 XCEL TOP UP3 16 ORANGE  
8 XCEL TOP UP3 16.5 ORANGE  
8 XCEL TOP UP3 17 DK GREEN  
7 XCEL TOP UP3 17.5 DK GREEN  
22 XCEL TOP UP3 18 PURPLE  
15 XCEL TOP UP3 18.5 PURPLE  
8 XCEL TOP UP3 19 BLACK  
7 XCEL TOP UP3 19.5 BLACK  
11 XCEL TOP UP3 20 DK TURQUOISE  
6 XCEL TOP UP3 20.5 DK TURQ  
1 XCEL TOP UP3 21 MUSTARD

**596 PLUGS****SUMMARY OF REGULATORS**

189 Senn PSR2 10 psi

**TOTAL OF 189 REGULATORS**

## NOZZLE POSITION CHART

XCEL TOP UP3 6 GOLD	1, 2, 3, 4, 5, 6
XCEL TOP UP3 6.5 GOLD	7, 8
XCEL TOP UP3 7 LIME	9
XCEL TOP UP3 7.5 LIME	10, 11, 12, 13
XCEL TOP UP3 8 LAVENDER	14, 15
XCEL TOP UP3 8.5 LAVENDER	16, 17, 18
XCEL TOP UP3 9 GREY	19, 20
XCEL TOP UP3 9.5 GREY	21, 22, 23
XCEL TOP UP3 10 TURQUOISE	24, 25
XCEL TOP UP3 10.5 TURQ	26, 27, 28
XCEL TOP UP3 11 YELLOW	29, 30, 31
XCEL TOP UP3 11.5 YELLOW	32, 33, 34, 42, 43, 44, 45
XCEL TOP UP3 12 RED	35, 36, 37, 38, 41, 46, 47, 48, 49, 50
XCEL TOP UP3 12.5 RED	39, 40, 51, 52, 53, 54, 55
XCEL TOP UP3 13 WHITE	56, 57, 58, 59, 61
XCEL TOP UP3 13.5 WHITE	60, 62, 63, 64, 65, 66
XCEL TOP UP3 14 BLUE	67, 68, 69, 70, 71, 72, 73
XCEL TOP UP3 14.5 BLUE	74, 75, 76, 77
XCEL TOP UP3 15 DK BROWN	78, 79, 80, 81, 82, 83, 84, 85
XCEL TOP UP3 15.5 DK BROWN	86, 87, 88, 89, 90, 91
XCEL TOP UP3 16 ORANGE	92, 93, 94, 97, 98
XCEL TOP UP3 16.5 ORANGE	95, 96, 99, 100, 101, 102, 103, 104
XCEL TOP UP3 17 DK GREEN	105, 106, 107, 108, 109, 110, 111, 112
XCEL TOP UP3 17.5 DK GREEN	113, 114, 115, 116, 117, 118, 119
XCEL TOP UP3 18 PURPLE	120, 121, 122, 123, 124, 125, 126, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177
XCEL TOP UP3 18.5 PURPLE	127, 128, 129, 131, 132, 178, 179, 180, 181, 182, 185, 186, 187, 188, 189
XCEL TOP UP3 19 BLACK	130, 133, 134, 135, 136, 137, 138, 139
XCEL TOP UP3 19.5 BLACK	140, 141, 142, 143, 144, 148, 162
XCEL TOP UP3 20 DK TURQUOISE	145, 146, 147, 149, 150, 151, 152, 153, 154, 183, 184
XCEL TOP UP3 20.5 DK TURQ	155, 156, 157, 158, 159, 160
XCEL TOP UP3 21 MUSTARD	161

**FREY PIVOT SERVICE**  
**77 COUNTY ROAD 40**  
**STAPLETON, NEBRASKA 69163**

LINDSAY 9500 - 30

SEPTEMBER 30, 2025  
WISH-119640  
ROBBI SMITH  
JOHANSON 2

SENNINGER 10 PSI REGULATORS  
NO DROPS  
NELSON SR-100 .75 TB

Rotation time at 100% = 16.17 Hours Or 970 minutes

1200 GPM @ 31 PSI

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	Out #	Drop Len	Sprk #	Noz Size	Reg		
1	PLUG				61	PLUG				47		21	9.5	PSR210	33	PLUG					19	PLUG				
2	PLUG				62	PLUG				48	PLUG				34	PLUG					20	PLUG				
3	PLUG				63	PLUG				49	PLUG				35	PLUG					21	PLUG				
4	PLUG				64		10	7.5	PSR210	50	PLUG				36	PLUG					22	PLUG				
5	PLUG				65	PLUG				51	PLUG				37	PLUG					23	PLUG				
6	PLUG				66	PLUG				52	PLUG		22	9.5	PSR210	38	PLUG					24	PLUG			
7	PLUG				67	PLUG				53	PLUG				39	PLUG					25	PLUG				
8	PLUG				68	PLUG				54	PLUG				40	PLUG					26	PLUG				
9	PLUG				69	PLUG				55	PLUG				41	PLUG					27	PLUG				
10		1	6	PSR210	70		11	7.5	PSR210	56	PLUG				42	PLUG					28	PLUG				
11	PLUG				71	PLUG				57	PLUG				43	PLUG					29	PLUG				
12	PLUG				72	PLUG				58	PLUG				44	PLUG					30	PLUG				
13	PLUG				73	PLUG				59	PLUG				45	PLUG					31	PLUG				
14	PLUG					TOWER 1				60	PLUG				46	PLUG					32	PLUG				
15	PLUG					1	PLUG			61	PLUG				47	PLUG					33	PLUG				
16		2	6	PSR210	2		12	7.5	PSR210	62	PLUG				48	PLUG					34	PLUG				
17	PLUG				3	PLUG				63	PLUG				49	PLUG					35	PLUG				
18	PLUG				4	PLUG				64	PLUG				50	PLUG					36	PLUG				
19	PLUG				5	PLUG				65	PLUG				51	PLUG					37	PLUG				
20	PLUG				6	PLUG				66	PLUG				52	PLUG					38	PLUG				
21	PLUG				7		13	7.5	PSR210	67	PLUG				53	PLUG					39	PLUG				
22		3	6	PSR210	8	PLUG				68	PLUG				54	PLUG					40	PLUG				
23	PLUG				9	PLUG				69	PLUG				55	PLUG					41					
24	PLUG				10	PLUG				70	PLUG				56	PLUG					42	PLUG				
25	PLUG				11	PLUG				71	PLUG				57	PLUG					43	PLUG				
26	PLUG				12		14	8	PSR210	72	PLUG				58	PLUG					44	PLUG				
27		4	6	PSR210	13	PLUG				73	PLUG				59	PLUG					38	12	PSR210			
28	PLUG				14	PLUG					TOWER 2				60	PLUG					45					
29	PLUG				15	PLUG					1	PLUG				61	PLUG					46	PLUG			
30	PLUG				16	PLUG					2	PLUG				62	PLUG					47	PLUG			
31	PLUG				17		15	8	PSR210	3	PLUG				63	PLUG					48	PLUG				
32	PLUG				18	PLUG				4	PLUG				64	PLUG					49	PLUG				
33	PLUG				19	PLUG				5	PLUG				65	PLUG					50	PLUG				
34		5	6	PSR210	20	PLUG				6	PLUG				66	PLUG					51	PLUG				
35	PLUG				21	PLUG				7	PLUG				67	PLUG					52	PLUG				
36	PLUG				22		16	8.5	PSR210	8	PLUG				68	PLUG					53	PLUG				
37	PLUG				23	PLUG				9	PLUG				69	PLUG					54	PLUG				
38	PLUG				24	PLUG				10	PLUG				70	PLUG					55	PLUG				
39	PLUG				25	PLUG				11	PLUG				71	PLUG					56	PLUG				
40		6	6	PSR210	26	PLUG				12	PLUG				72	PLUG					57	PLUG				
41	PLUG				27		17	8.5	PSR210	13	PLUG				73	PLUG					58	PLUG				
42	PLUG				28	PLUG				14	PLUG				74	PLUG					59	PLUG				
43	PLUG				29	PLUG				15	PLUG				75	PLUG					60	PLUG				
44	PLUG				30	PLUG				16	PLUG				76	PLUG					61	PLUG				
45	PLUG				31	PLUG				17	PLUG				77	PLUG					62	PLUG				
46		7	6.5	PSR210	32		18	8.5	PSR210	18	PLUG				78	PLUG					63	PLUG				
47	PLUG				33	PLUG				19	PLUG				79	PLUG					64	PLUG				
48	PLUG				34	PLUG				20	PLUG				80	PLUG					65	PLUG				
49	PLUG				35	PLUG				21	PLUG				81	PLUG					66	PLUG				
50	PLUG				36	PLUG				22	PLUG				82	PLUG					67	PLUG				
51	PLUG				37		19	9	PSR210	23	PLUG				83	PLUG					68	PLUG				
52		8	6.5	PSR210	38	PLUG				24	PLUG				84	PLUG					69	PLUG				
53	PLUG				39	PLUG				25	PLUG				85	PLUG					70	PLUG				
54	PLUG				40	PLUG				26	PLUG				86	PLUG					71	PLUG				
55	PLUG				41	PLUG				27	PLUG				87	PLUG					72	PLUG				
56	PLUG				42		20	9	PSR210	28	PLUG				88	PLUG					73	44	11.5	PSR210		
57	PLUG				43	PLUG				29	PLUG				89	PLUG					74	11.5	PSR210			
58		9	7	PSR210	44	PLUG				30	PLUG				90	PLUG					75	11.5	PSR210			
59	PLUG				45	PLUG				31	PLUG				91	PLUG					76	11.5	PSR210			
60	PLUG				46	PLUG				32	PLUG				92	PLUG					77	11.5	PSR210			

**FREY PIVOT SERVICE  
77 COUNTY ROAD 40  
STAPLETON, NEBRASKA 69163**

LINDSAY 9500 - 30

SEPTEMBER 30, 2025  
WISH-119640  
ROBBI SMITH  
JOHANSON 2

**SENNINGER 10 PSI REGULATORS  
NO DROPS  
NELSON SR-100 .75 TB**

Rotation time at 100% = 16.17 Hours Or 970 minutes

1200 GPM @ 31 PSI

---

## Installation Chart

---

Page 2

**FREY PIVOT SERVICE  
77 COUNTY ROAD 40  
STAPLETON, NEBRASKA 69163**

LINDSAY 9500 - 30

SEPTEMBER 30, 2025

WISH-119640

## ROBBI SMITH

JOHANSON 2

## SENNINGER 10 PSI REGULATORS

## NO DROPS

NELSON SR-100 .75 TB

Rotation time at 100% = 16.17 Hours Or 970 minutes

1200 GPM @ 31 PSI

---

## Installation Chart

---

Page 3

**PRECIPITATION CHART FOR 180° CIRCLE**

WISH-119640

SEPTEMBER 30, 2025

DEALER - FREY PIVOT SERVICE

IRRIGATOR - ROBBI SMITH  
FIELD - JOHANSON 2

TOTAL LENGTH PIPE = 1928.63    SYSTEM PRESSURE = 31 PSI  
 GPM UNDER PIPE = 1079.56    TOTAL GPM = 1200.82  
 ACRES UNDER PIPE = 134.13  
 RANGE OF ENDGUN = 102.36    RUN FOR MINIMUM PRESSURE  
 GPM OF ENDGUN = 121.26  
 ACRES UNDER ENDGUN = 14.61  
 WATERING LENGTH = 2030.99

MOTOR SIZE (HP) = 3/4  
 LOADED MOTOR RPM = 1750  
 CENTER GEAR BOX RATIO = 40  
 WHEEL GEAR BOX RATIO = 50  
 TIRE SIZE = 11.2 X 38  
 LAST TOWER SPEED (FPM) = 12.20

PRECIPITATION DATA FIGURED WITH ENDGUN RUNNING

**PRECIPITATION BASED**

**% TIMER BASED**

PRECIPITATION INCHES	% TIMER SETTING	TIME HOURS	% TIMER SETTING	PRECIPITATION INCHES	TIME HOURS
.14	100.00	8.08 - 485(min)	100.00	.14	8.08 - 485(min)
.20	71.89	11.25	90.00	.16	8.98
.25	57.51	14.06	80.00	.18	10.11
.30	47.93	16.87	70.00	.21	11.55
.40	35.94	22.49	60.00	.24	13.47
.50	28.76	28.12	50.00	.29	16.17
.60	23.96	33.74	45.00	.32	17.97
.70	20.54	39.36	40.00	.36	20.21
.75	19.17	42.17	35.00	.41	23.10
.80	17.97	44.98	30.00	.48	26.95
.90	15.98	50.61	25.00	.58	32.34
1.00	14.38	56.23	20.00	.72	40.42
1.25	11.50	70.29	15.00	.96	53.90
1.50	9.59	84.35	10.00	1.44	80.85
1.75	8.22	98.40	5.00	2.88	161.69

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.