

REFERENCE WIRE SIZING CHART

Wire Sizing Chart for 24 VAC Solenoids*

Equivalent circuit length (in feet)

5.5 VA solenoid electric valves with 26.5 V transformer

		80 psi							
		Control Wire Size							
		18	16	14	12	10	8	6	4
Valve Common Size	18	3,000	3,700	4,300	4,800	5,200	5,500	5,200	5,800
	16	3,700	4,800	5,900	6,900	7,700	8,300	8,800	9,100
	14	4,300	5,900	7,700	9,400	11,000	12,300	13,300	14,000
	12	4,800	6,900	9,400	12,200	15,000	17,500	19,600	21,100
	10	5,200	7,700	11,000	15,000	19,400	23,900	27,800	31,100
	8	5,500	8,300	12,300	17,500	23,900	30,900	38,000	44,300
	6	5,700	8,800	13,300	19,600	27,800	38,000	49,200	60,400
	4	5,800	9,100	14,000	21,100	31,100	44,300	60,400	78,200

Multiplying factor for two valves per station: 0.42

		125 psi							
		Control Wire Size							
		18	16	14	12	10	8	6	4
Valve Common Size	18	2,600	3,200	3,800	4,200	4,600	4,800	5,000	5,100
	16	3,200	4,200	5,200	6,000	6,700	7,300	7,700	7,900
	14	3,800	5,200	6,700	8,200	9,600	10,800	11,600	12,200
	12	4,200	6,000	8,200	10,700	13,100	15,300	17,100	18,500
	10	4,600	6,700	9,600	13,100	17,000	20,900	24,400	27,300
	8	4,800	7,300	10,800	15,300	20,900	27,100	33,200	38,800
	6	5,000	7,700	11,600	17,100	24,400	33,200	43,100	52,900
	4	5,100	7,900	12,200	18,500	27,300	38,800	52,900	68,500

Multiplying factor for two valves per station: 0.38

For proper wire sizing the resistance must not exceed the maximum ohms per 1,000 feet listed below.

AWG Wire Size	Ohms per 1000 ft.
18	6.39
16	4.02
14	2.52
12	1.59
10	1.00
8	0.63

Resistance is determined by the formula:

$$R_w = \frac{AVL \times 1000}{L \times 2 \times I_{vs}}$$

R_w = Resistance of wire (ohms)

AVL = Allowable voltage loss
(Controller Output Voltage - Minimum Valve Operating Voltage)

L = Wire length, controller to valve

I_{vs} = Solenoid in-rush current (for number of valves)

		100 psi							
		Control Wire Size							
		18	16	14	12	10	8	6	4
Valve Common Size	18	2,800	3,500	4,100	4,500	4,900	5,200	5,400	5,500
	16	3,500	4,500	5,500	6,500	7,300	7,800	8,300	8,500
	14	4,100	5,500	7,200	8,900	10,300	11,600	12,500	13,200
	12	4,500	6,500	8,900	11,500	14,100	16,500	18,400	19,900
	10	4,900	7,300	10,300	14,100	18,300	22,500	26,200	29,300
	8	5,200	7,800	11,600	16,500	22,500	29,100	35,700	41,700
	6	5,400	8,300	12,500	18,400	26,200	35,700	46,300	56,900
	4	5,500	8,500	13,200	19,900	29,300	41,700	56,900	73,600

Multiplying factor for two valves per station: 0.40

		150 psi							
		Control Wire Size							
		18	16	14	12	10	8	6	4
Valve Common Size	18	2,400	3,000	3,500	3,900	4,300	4,500	4,600	4,700
	16	3,000	3,900	4,800	5,600	6,300	6,800	7,200	7,400
	14	3,500	4,800	6,200	7,700	9,000	10,000	10,800	11,400
	12	3,900	5,600	7,700	10,000	12,200	14,300	16,000	17,300
	10	4,300	6,300	9,000	12,200	15,900	19,500	22,800	25,400
	8	4,500	6,800	10,000	14,300	19,500	25,300	31,000	36,200
	6	4,600	7,200	10,800	16,000	22,800	31,000	40,200	49,400
	4	4,700	7,400	11,400	17,300	25,400	36,200	49,400	63,900

Multiplying factor for two valves per station: 0.31

Installation

- Pop-up rotary sprinklers should be installed with flexible risers to minimize pipe damage; swing-joint risers are recommended for projects where heavy grounds maintenance equipment is required

Operating Pressure

- Operating pressures listed are measured at base of sprinklers; sprinklers will not operate properly or give best distribution Pattern at pressures less than minimum listed in tables

Caution

- Water supply must be reasonably free of sand and debris to avoid malfunction and excessive wear
- When necessary, valve full and part circle sprinklers separately to avoid extreme variation in rates of precipitation

* American wire gauge solid copper