

Valve Wire Sizing Tables

Lengths provided in Table A (AWG or Metric) are the maximum allowable lengths for the size noted, station and common wires. Lengths for other sizes can be determined by using multipliers in Table B. Read all notes and review the sizing example before using the tables.

$$\text{Maximum wire length for each of two wires (station \& common)} = \frac{\text{Base Length from Table A}}{\text{Size Factor from Table B}}$$

$$\text{Minimum Size Factor (See Table B)} = \frac{\text{Distance from Controller to Valve}}{\text{Base Length from Table A}}$$

Table A-Base Length (ft) AWG- Size 14

Min. Input Volts	Static Water Pressure Not Exceeding																			
	75 psi					100psi					125 psi					150 psi				
	Quantity of Valves per Station (see notes 1 & 2)																			
60 Hz	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
LM Series/LM 'A' Series/LM 'N' Series Controllers (see note 6)																				
110	3151	1060				1785	382				608									
115	3957	1453				2515	747				1289	132				217				
120	4807	1892				3323	1151				2043	509				923				
125	5662	2312				4117	1541				2784	873				1612	288			
LMC Series Controllers (see note 6)																				
110	3452	1283	559			2038	574	88			854					83				
115	4146	1643	811			2669	904	318			1438	289				637				
120	4894	2000	1033			3342	1226	519			2055	581	88			1221	164			
125	5641	2371	1280			4022	1563	743			2678	890	293			1811	456			
RM Series Controllers (see note 6)																				
110	4861	2121	1205			3408	1392	722			2142	763	302			1041	210			
115	5799	2613	1551			4280	1856	1046			2969	1197	608			1816	623	255		
120	6654	3048	1849			5073	2260	1322			3710	1577	866			2511	979	467		
125	7539	3487	2136			5895	2664	1587			4477	1954	1113			3230	1333	698		
SL Series Controllers (see note 6)																				
110	5403	2425	1448	970	655	3834	1646	934	573	342	2526	998	505	239	90	1682	579	227	0	0
115	6201	2793	1684	1179	836	4554	1977	1160	778	502	3181	1298	723	428	242	2299	860	441	204	73
120	7091	3260	2013	1388	1016	5365	2409	1445	962	677	3927	1700	972	609	397	3008	1246	669	383	218
125	7919	3702	2319	1602	1165	6128	2814	1723	1149	800	4635	2074	1219	770	502	3683	1602	899	528	323
Weathermate Series Controllers (see note 6)																				
110	3250	1160				1880	480				710									
115	4060	1550				2610	850				1390	210				410				
120	4900	1990				3420	1250				2140	550				1070				
125	5760	2410				4220	1640				2880	880				1710	350			

- ¹ Quantity of valves per station refers to Weathermatic valves of current manufacture.
- ² Master valve must be included in quantity of valves per station when master valve circuit is utilized.
- ³ Normal table use: If minimum job voltage is not listed, use next lower listed voltage; if maximum job static water pressure is not listed use next higher listed pressure.
- ⁴ Do not operate more valves than those for which factors are listed. More may be operated only with certain conditions; consult factory before attempting.
- ^{5a} Input to controllers must not exceed 125V, either operating or not operating, otherwise controller may malfunction or be damaged. Recommendation: Provide voltage of between 110V and 120V to controllers. (Input voltage is measured at terminals L1 and L2 in the controller.)
- ^{5b} E Models: Input to controllers must not exceed 240 volts on 220 V nominal connection or 260 volts on 240 V nominal connection, either operating or not operating, or be less than 200 volts on 220V nominal connection or 220 volts on 240 V nominal connection when operating; otherwise controller may malfunction or be damaged. Input voltage is measured across terminal L1 and L2 in the controller.
- ⁶ Use of Weathermatic pump start accessory package No. 952 does not affect valve wiring data shown on chart. CAUTION: Chart calculations may not apply if relay other than Weathermatic No. 952 used.

Nominal 220 & 240V/50Hz Controllers

Table A-Base Length (meters) Wire Size: 2.5

NOMINAL	Static Water Pressure Not Exceeding																				
	5 bar					7 bar					9 bar					10 bar					
	Quantity of Valves per Station (see notes 1 & 2)																				
Min. Input Volts	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
E Models: LM Series/LM 'A' Series/LM 'N' Series Controllers (see note 6)																					
200	220	1494	610			912	318				420	68				189					
210	230	1800	766			1193	460				679	199				438	77				
220	240	2055	917			1431	603				898	337				649	212				
230	250	2345	1063			1696	738				1142	460				884	332				
240	260	2589	1186			1921	852				1349	565				1083	433				
E Models: LMC Series Controllers (see note 6)																					
200	220	1542	571	246		899	248	31			582	89				406					
210	230	1774	705	338		1105	367	114			779	203				594	110				
220	240	2026	822	420		1327	472	186			987	302	73			791	204	8			
230	250	2244	942	508		1522	581	267			1173	406	151			969	304	82			
240	260	2433	1041	578		1688	669	330			1330	491	211			1118	385	140			
E Models: RM Series Controllers (see note 6)																					
200	220	2092	876	471		1454	558	259			909	285	77			656	158				
210	230	2449	1054	590		1781	722	367			1211	435	178			946	304	89			
220	240	2808	1244	712		2114	893	479			1520	593	279			1243	456	187			
230	250	3097	1387	817		2377	1027	577			1762	719	372			1476	577	277			
240	260	3409	1541	920		2663	1170	672			2026	850	459			1730	704	361			
SL Series Controllers (see note 6)																					
200	220	2039	905	541	362	242	1347	568	318	188	108	1012	404	209	103	44	819	310	148	53	0
210	230	2346	1055	629	427	303	1625	696	395	251	161	1278	522	282	165	92	1073	421	217	115	51
220	240	2617	1209	734	498	358	1867	839	484	311	210	1507	658	364	222	139	1292	549	293	169	96
230	250	2909	1352	845	576	415	2125	965	587	371	266	1751	780	460	279	193	1523	668	379	226	148
240	260	3177	1494	947	663	476	2363	1093	679	446	313	1977	902	552	345	235	1739	785	471	285	189
E Models: Weathermate Series Controllers (see note 6)																					
200	220	1530	570			900	280				500	80				290					
210	230	1770	705			1150	410				730	200				520	90				
220	240	2020	870			1500	540				940	310				720	210				
230	250	2290	1000			1600	650				1150	430				920	310				
240	260	2500	1110			1800	760				1340	520				1100	410				

Installation

Wiring

- Type UF is recommended for valve circuit wiring; type UF, with its heavier insulation, offers the advantage of longer trouble-free service; however, wire type and method of installation should be in accordance with local codes for NEC Class II circuits of 30V a.c. or less
- A single "station" wire from each solenoid to the controller and a "common" wire from all solenoids to the controller serves as the power supply

Valve Hook-Up

- All wire splices should be joined by positive mechanical connectors; splices must be properly insulated and water-proofed; dri-splice connectors are recommended (see valve accessories p.26)
- An expansion curl should be provided within three feet (1m) of each wire connection to a solenoid, and at least every 100 ft (30m) in length; expansion curls are easily formed by wrapping at least five turns of wire around a rod or pipe 1 inch (25mm) or more in diameter, then withdrawing rod

TABLE B. SIZE FACTORS
for station and common wire size combination

Station Wire Size AWG (1)	Common Wire Size: AWG (1)							
	18	16	14	12	10	8	6	4
18	.394	.484	.565	.631	.682	.718	.742	.759
16		.626	.770	.898	1.004	1.084	1.141	1.180
14			1.000	1.226	1.432	1.600	1.728	1.820
12				1.584	1.946	2.272	2.538	2.741
10					2.523	3.097	3.615	4.040
8						4.012	4.925	5.749
6							6.376	7.829
4								10.140

(1) American Wire Gauge; annealed copper

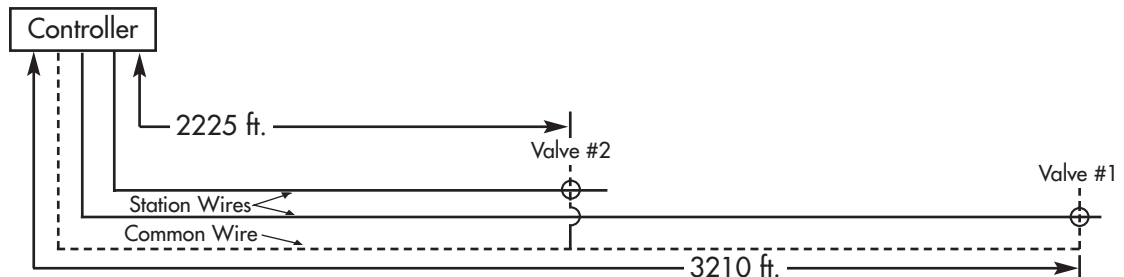
TABLE B. SIZE FACTORS Metric
for station and common wire size combination

Station Wire Size mm ² (1)	Common Wire Size: mm ² (1)							
	1.0	1.5	2.5	4.0	6.0	10.0	16.0	25.0
1.0	.400	.480	.571	.640	.686	.727	.753	.769
1.5		.600	.750	.872	.960	1.043	1.097	1.132
2.5			1.000	1.231	1.411	1.600	1.729	1.818
4.0				1.600	1.920	2.297	2.561	2.760
6.0					2.400	3.000	3.491	3.872
10.0						4.000	4.925	5.716
16.0							6.400	7.805
25.0								10.000

(1) Cross-sectional area of annealed copper conductor.

EXAMPLE:

An LMC Controller will be used to operate one valve per station in the detail drawing shown below; electrical input will be 115 volts minimum; water pressure will be 85 psi maximum.



VALVE No. 1:

Table A indicates a base length of 2669 for the LMC/115V/100 psi (see note 3).

$$\frac{\text{Distance (ft) to valve \#1}}{\text{Base Length from Table A}} = \frac{3210}{2669} = 1.20 \leftarrow \text{Minimum Size Factor}$$

Referring to Table B, size combination selected must have a listed factor of 1.20, or larger. A No. 12 common and a No. 14 station wire are selected for valve #1 with a size factor of 1.226.

VALVE No. 2:

No. 14 may also be used for the station wire size to valve #2 or it may be desirable to use a smaller size, if allowed. Common wire must remain No.12 size for valve #1.

Referring to Table B with a No. 12 common, station wire size can be No. 16 to valve #2 with a size factor of .898.

$$\frac{\text{Distance (ft) to valve \#2}}{\text{Base Length from Table A}} = \frac{2225}{2669} = .833 \leftarrow \text{Minimum Size Factor}$$