

Engineering Specification

Job Name _____

Contractor _____

Job Location _____

Approval _____

Engineer _____

Contractor's P.O. No. _____

Approval _____

Representative _____

Series PWS15-L & PWS20-L

Locksmith™ Commercial Water Softening Systems

Connection Size: 1 1/2" & 2"

Flow Rates: Up to 119 gpm (541 lpm)

Watts Pure Water Locksmith™ PWS-L Series water softening systems are highly efficient cation exchange type water softeners. These pre-engineered systems are suitable for commercial applications ranging from 60,000 to grains of hardness removal and flow rates up to 119 gpm (541 lpm) gallons per minute. Where continuous softened water is required, PWS15T-L and PWS20T-L duplex alternating or PWS15P-L and PWS20P-L progressive systems can be specified for uninterrupted service. Regeneration is meter demand initiated. All cycles of regeneration are fully automatic and do not require manual actuation.

The Locksmith™ controller is a Watts exclusive, highly functional control board that operates 1.5" & 2" simplex, duplex, and multi-tank progressive flow softeners, with the ability to operate external devices for highly configurable systems to suit the needs of a wide variety of application requirements.

Watts Locksmith™ PWS-L Series water softeners are designed for point of use or point of entry applications where the benefits of softened water are required. These systems exchange scale forming calcium and magnesium ions with non-scale forming sodium ions to create soft water for a variety of applications.

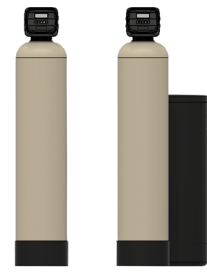
Steam boilers, make-up water heater pretreatment, reverse osmosis pretreatment, cooling tower make-up water, sterilizer make-up water, washing, and process water are all common applications for the Watts PWS-L Series water softeners. Watts PWS-L Series are ideal for commercial and industrial applications where high flow and high capacities are required to accommodate wide variances in flow rates.

Softened water provides a wide variety of benefits, from not introducing scale into pipes, valves, water heating equipment, heat exchangers, and cooling towers to reducing mineral buildup in areas that see excessive splashing, such as food preparation counters and sink areas. Softened water also conserves soaps and cleaning agents by eliminating the formation of soap curd, so your cleaners can work on cleaning—not reacting with the hardness in your water.

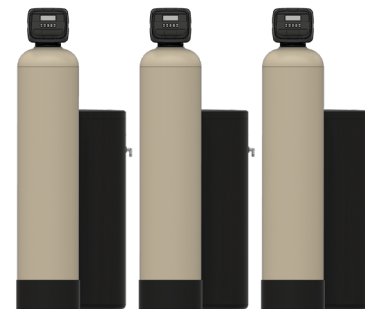
WATTS®
pure water



Series PWS15-L & PWS20-L



Series PWS15T-L & PWS20T-L



Series PWS15P-L & PWS20P-L

⚠ WARNING

Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.

NOTICE

The information contained herein is not intended to replace the full product installation and safety information available or the experience of a trained product installer. You are required to thoroughly read all installation instructions and product safety information before beginning the installation of this product.

Features

- Durable brass bodied control valve for years of service
- Fully automatic metered demand control valve certified to NSF/ANSI standards
- Sophisticated digital electronic controls that store operating history that can be accessed by the user
- Fully adjustable regeneration cycles
- High-capacity resin certified to NSF/ANSI standards
- Highly corrosion resistant fiberglass tanks certified to NSF/ANSI standards
- Durable polypropylene lower distribution system
- Locksmith™ Controller offering Improved functionality of a basic softener

PWS15-L & PWS20-L Features

- Model for capacities up to 600,000 grains per tank
- Each softening vessel comes complete with brine tank and meter
- All systems have stainless steel in-line flow meters
- Pre-engineered systems with up to 4 tanks in parallel for flow rates up to 119 gpm per tank
- Arrange up to 16 tanks in parallel for higher flow and capacity custom configurations
- All systems have no hard water bypass valve
- Modbus Capable

Standards

Control Valve - Certified to NSF/ANSI Std. 61 and 372

Ion Exchange Resin - Certified to NSF/ANSI Std. 61 and 372

Mineral Tank - Certified to NSF/ANSI Std. 44 or 61

Specification

A Watts Locksmith™ Series PWS15-L, PWS15T-L, PWS15P-L, PWS20-L, PWS20T-L, PWS20P-L water softening system shall be installed on the building's main water line just after it enters the building. The installation point shall be after any backflow prevention or pressure regulating valves. Other installation options are to install a system just before the water heater or other types of equipment needing the protection of softened water. In installations where dedicated cold water make up to a water heater is the installation point, a backflow preventer and a thermal expansion tank must be installed as well. The system shall be installed with a bypass valve to allow for the shut down and removal of the unit without interrupting the water supply to the building.

The water softener shall be a down flow regenerated, metered demand, sodium cycle cation exchange type system with all components necessary for proper operation.

Electrical requirements are 120-bolt 60 hertz. A local drain is required to accept drain water from the system. The feed water pressure must not fall below 25 psi or exceed 125 psi. Water temperature must not fall below 34°F or exceed 110°F (1°C - 43°C). The system shall provide softened water measuring less than one grain per gallon of hardness as Calcium Carbonate when operated within the manufacturer's operational guidelines.

Feed Water Guidelines

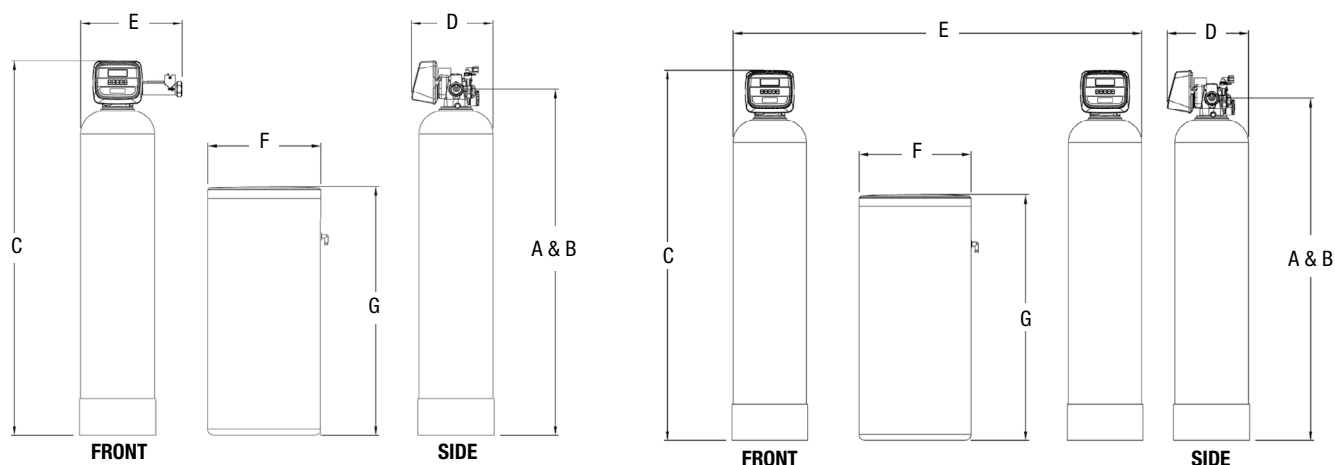
pH	6 to 10
Hardness (maximum)	Depends on customers acceptable hardness leakage level.
Water Pressure	25 psi to 125 psi (171 kPa to 8.5 bar)
Temperature	34 - 110°F (1 - 43°C)
Free Chlorine (maximum) . . .	1mg/L
Iron (maximum)	1mg/L
Oil and H2S	None Allowed
Turbidity	Less than 5.0 NTU
Total Dissolved Solids	Must be below 750 mg/l for the softener to produce less than 1 grain per gallon soft water.

For all other guideline information please contact your Watts representative.

Dimensions

PWS15-L, PWS15P-L*, PWS20-L, PWS20P-L*

PWS15T-L & PWS20T-L



Call customer service if you need assistance with technical details.

Dimensions & Weights

Series PWS15-L, PWS20-L, PWS15P-L* & PWS20P-L*

Model No.	Dimensions														Shipping Weight	
	A		B		C		D		E		F		G		lb	kg
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm		
PWS15L1C11	53 ¼	1353	53 ¼	1353	61	1550	12	305	16 ¾	425	18	457	40	1016	210	95
PWS15L1D11	68 ¼	1734	68 ¼	1734	73 5/8	1869	14	356	17 ¾	451	18	457	40	1016	240	109
PWS15L1E11	68 ¼	1734	68 ¼	1734	73 5/8	1869	16	406	18 ¾	476	18	457	40	1016	320	145
PWS15L1F11	68¼	1734	68¼	1734	73 5/8	1869	18	457	20 ¾	527	24	607	41	1041	380	172
PWS15L1G11	65 ¼	1657	65 ¼	1657	70 5/8	1793	21	533	21¼	540	24	607	41	1041	585	265
PWS15L1H11	75 ¼	1911	75 ¼	1911	80 5/8	2047	24	610	24 ¼	616	30	762	50	1270	710	322
PWS20L1D11	68 ½	1740	68 ½	1740	74 ¼	1886	15	381	17 ¾	451	18	457	40	1016	265	120
PWS20L1E11	68 ½	1740	68 ½	1740	74 ¼	1886	16	406	18 ½	470	18	457	40	1016	350	159
PWS20L1F11	68 ½	1740	68 ½	1740	74 ¼	1886	18	457	20 ½	521	24	607	41	1041	400	181
PWS20L1G11	65 ½	1664	65 ½	1664	73	1854	21	533	21 ¼	540	24	607	41	1041	600	272
PWS20L1H11	75 ½	1918	75 ½	1918	83	2108	24	610	24 ¼	616	30	762	50	1270	710	322
PWS20L1I11	75 ½	1918	75 ½	1918	83	2108	30	762	30 ¼	768	39	991	48	1219	1160	526
PWS20L1J11	75 ½	1918	75 ½	1918	83	2108	36	914	36 ¼	921	39	991	48	1219	1560	707

*Dimensional Data is for a single mineral tank system ONLY. PWS15P-L & PWS20P-L models are composed of multiple PWS15-L & PWS20-L systems which can be arranged according to suit floor space availability. See Space Required in table above for single tank systems and estimate 2 spaces for duplex, 3 spaces for triplex and 4 spaces for quadplex PWS15P-L & PWS20P-L systems.

Series PWS15T-L & PWS20T-L

Model No.	Dimensions														Shipping Weight	
	A		B		C		D		E		F		G			
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lb	kg
PWS15L1C21	53 ¼	1353	53 ¼	1353	61	1550	12	305	52	1320	18	457	40	1016	420	190
PWS15L1D21	68 ¼	1734	68 ¼	1734	73 5/8	1869	14	356	60	1524	18	457	40	1016	480	218
PWS15L1E21	68 ¼	1734	68 ¼	1734	73 5/8	1869	16	406	60	1524	18	457	40	1016	640	290
PWS15L1F21	68¼	1734	68¼	1734	73 5/8	1869	18	457	70	1778	24	607	41	1041	760	345
PWS15L1G21	65 ¼	1657	65 ¼	1657	70 5/8	1793	21	533	75	1905	24	607	41	1041	1170	531
PWS15L1H21	75 ¼	1911	75 ¼	1911	80 5/8	2047	24	610	87	2210	30	762	50	1270	1420	644
PWS20L1D21	68 ½	1740	68 ½	1740	74 ¼	1886	15	381	52	1320	18	457	40	1016	530	240
PWS20L1E21	68 ½	1740	68 ½	1740	74 ¼	1886	16	406	60	1524	18	457	40	1016	70	318
PWS20L1F21	68 ½	1740	68 ½	1740	74 ¼	1886	18	457	60	1524	24	607	41	1041	800	362
PWS20L1G21	65 ½	1664	65 ½	1664	73	1854	21	533	70	1778	24	607	41	1041	1200	544
PWS20L1H21	75 ½	1918	75 ½	1918	83	2108	24	610	75	1905	30	762	50	1270	1420	644
PWS20L1I21	75 ½	1918	75 ½	1918	83	2108	30	762	87	2210	39	991	48	1219	2320	1052
PWS20L1J21	75 ½	1918	75 ½	1918	83	2108	36	914	93	2362	39	991	48	1219	2840	1414

Specifications

Model No.	Mineral Tank			Brine Tank		Softening Capacity		LBS. Salt Per Regeneration		Flow Rate & Pressure		
	Tank Size	Resin Ft3	Gravel	Tank Size	Salt Fill	Max	Min	Max	Min	Serv GPM	Drop PSI	BKW GPM
PWS15L1C11	12" x 52"	3	30 lbs.	18" x 40"	400	60 K	40 K	30	12	25/40	15/25	4
PWS15L1D11	14" x 65"	3	60 lbs.	18" x 40"	400	90 K	60 K	45	18	35/55	15/25	5
PWS15L1E11	16" x 65"	4	80 lbs.	18" x 40"	400	120 K	80 K	60	24	57/65	15/25	7
PWS15L1F11	18" x 65"	5	100 lbs.	24" x 41"	600	150 K	100 K	75	30	60/77	15/25	11
PWS15L1G11	21" x 62"	7	100 lbs.	24" x 41"	800	210 K	140 K	105	42	74/97	15/25	13
PWS15L1H11	24" x 72"	10	200 lbs.	30" x 50"	1400	300 K	200 K	150	60	80/100	15/25	15
PWS20L1D11	14" x 65"	3	60 lbs.	18" x 40"	400	90 K	60 K	45	18	39/55	15/25	5
PWS20L1E11	16" x 65"	4	80 lbs.	18" x 40"	400	120 K	80 K	60	24	47/60	15/25	7
PWS20L1F11	18" x 65"	5	100 lbs.	24" x 41"	600	150 K	100 K	75	30	53/69	15/25	10
PWS20L1G11	21" x 62"	7	100 lbs.	24" x 50"	600	210 K	140 K	105	42	66/85	15/25	13
PWS20L1H11	24" x 72"	10	200 lbs.	30" x 50"	1400	300 K	200 K	150	60	73/94	15/25	15
PWS20L1I11	30" x 72"	15	400 lbs.	39" x 48"	2200	450 K	300 K	225	90	84/109	15/25	25
PWS20L1J11	36" x 72"	20	500 lbs.	39" x 48"	2200	600 K	400 K	300	120	93/119	15/25	35

NOTICE

Service gpm is for a single mineral tank and duplex alternating systems ONLY. For PWS15P-L & PWS20P-L Series Progressive systems, multiply the service gpm by (x2) for Duplex, (x3) for Triplex and (x4) for Quadplex systems. The maximum peak service flow rate capability of any progressive series system will be reduced by the service flow rate of one tank during regeneration.

NOTICE

Flow rates listed above are based on pressure drop only. Selecting a system based on pressure drop alone does not guarantee that the system will provide adequately softened water. System selection should be based on resin quantity, capacity required, feed water analysis, and application requirements.

NOTICE

Capacities are based on resin manufacturer's data and are dependent upon influent water TDS, temperature, bed depth, and flow rates. Feed water must be free of oil and color. Pipe size, tank size, and space requirements are in inches. Capacities and flow rates expressed above are per tank. Flow rates listed at 25 psi drops are for intermittent peak flow rates and are not to be used as continuous flows.

Ordering Information for 1-1/2" & 2" Simplex (PWS15-L & PWS20-L) Softeners

Model No.	Ordering Codes	Description	Space Required D X W X H	Shipping Weight LBS
PWS15L1C11	7101200	2 Cubic Foot 1-1/2" Simplex Softener with Flow Meter	24" x 44" x 75"	210
PWS15L1D11	7101201	3 Cubic Foot 1-1/2" Simplex Softener with Flow Meter	24" x 44" x 75"	240
PWS15L1E11	7101202	4 Cubic Foot 1-1/2" Simplex Softener with Flow Meter	24" x 44" x 75"	320
PWS15L1F11	7101203	5 Cubic Foot 1-1/2" Simplex Softener with Flow Meter	24" x 50" x 87"	380
PWS15L1G11	7101204	7 Cubic Foot 1-1/2" Simplex Softener with Flow Meter	24" x 52" x 84"	585
PWS15L1H11	7101205	10 Cubic Foot 1-1/2" Simplex Softener with Flow Meter	30" x 69" x 96"	710
PWS20L1D11	7101221	3 Cubic Foot 2" Simplex Softener with Flow Meter	24" x 44" x 87"	265
PWS20L1E11	7101222	4 Cubic Foot 2" Simplex Softener with Flow Meter	24" x 44" x 87"	350
PWS20L1F11	7101223	5 Cubic Foot 2" Simplex Softener with Flow Meter	24" x 48" x 89"	400
PWS20L1G11	7101224	7 Cubic Foot 2" Simplex Softener with Flow Meter	24" x 52" x 89"	600
PWS20L1H11	7101225	10 Cubic Foot 2" Simplex Softener with Flow Meter	30" x 69" x 96"	710
PWS20L1I11	7101226	15 Cubic Foot 2" Simplex Softener with Flow Meter	39" x 75" x 106"	1160
PWS20L1J11	7101227	20 Cubic Foot 2" Simplex Softener with Flow Meter	39" x 81" x 107"	1560

Ordering Information for 1-1/2" & 2" Duplex Alternating (PWS15T-L & PWS20T-L) Softeners

Model No.	Ordering Codes	Description	Space Required D X W X H	Shipping Weight LBS
PWS15L1C21	7101206	2 Cubic Foot 1-1/2" Duplex Alternating Softener with Flow Meter	24" x 64" x 75"	420
PWS15L1D21	7101207	3 Cubic Foot 1-1/2" Duplex Alternating Softener with Flow Meter	24" x 64" x 75"	480
PWS15L1E21	7101208	4 Cubic Foot 1-1/2" Duplex Alternating Softener with Flow Meter	24" x 64" x 75"	640
PWS15L1F21	7101209	5 Cubic Foot 1-1/2" Duplex Alternating Softener with Flow Meter	24" x 68" x 89"	760
PWS15L1G21	7101210	7 Cubic Foot 1-1/2" Duplex Alternating Softener with Flow Meter	24" x 72" x 84"	1170
PWS15L1H21	7101211	10 Cubic Foot 1-1/2" Duplex Alternating Softener with Flow Meter	30" x 89" x 96"	1420
PWS20L1D21	7101228	3 Cubic Foot 2" Duplex Alternating Softener with Flow Meter	24" x 64" x 87"	530
PWS20L1E21	7101229	4 Cubic Foot 2" Duplex Alternating Softener with Flow Meter	24" x 64" x 87"	700
PWS20L1F21	7101230	5 Cubic Foot 2" Duplex Alternating Softener with Flow Meter	24" x 68" x 89"	800
PWS20L1G21	7101231	7 Cubic Foot 2" Duplex Alternating Softener with Flow Meter	24" x 72" x 89"	1200
PWS20L1H21	7101232	10 Cubic Foot 2" Duplex Alternating Softener with Flow Meter	30" x 89" x 96"	1420
PWS20L1I21	7101233	15 Cubic Foot 2" Duplex Alternating Softener with Flow Meter	39" x 95" x 106"	1320
PWS20L1J21	7101234	20 Cubic Foot 2" Duplex Alternating Softener with Flow Meter	39" x 101" x 107"	2840

Ordering Information for 1-1/2" & 2" Duplex Progressive (PWS15P-L & PWS20P-L) Softeners

Model No.	Ordering Codes	Description	Space Required D X W X H	Shipping Weight LBS
PWS15L1F22	7101212	5 Cubic Foot 1-1/2" Progressive Duplex Softener with Flow Meter	38" x 59" x 87"	760
PWS15L1G22	7101213	7 Cubic Foot 1-1/2" Progressive Duplex Softener with Flow Meter	39" x 61" x 84"	1170
PWS15L1H22	7101214	10 Cubic Foot 1-1/2" Progressive Duplex Softener with Flow Meter	46" x 78" x 96"	1420
PWS20L1F22	7101235	5 Cubic Foot 2" Progressive Duplex Softener with Flow Meter	46" x 59" x 89"	800
PWS20L1G22	7101236	7 Cubic Foot 2" Progressive Duplex Softener with Flow Meter	49" x 62" x 89"	1200
PWS20L1H22	7101237	10 Cubic Foot 2" Progressive Duplex Softener with Flow Meter	59" x 69" x 96"	1420
PWS20L1I22	7101238	15 Cubic Foot 2" Progressive Duplex Softener with Flow Meter	74" x 85" x 106"	2320
PWS20L1J22	7101239	20 Cubic Foot 2" Progressive Duplex Softener with Flow Meter	80" x 94" x 107"	3120

Ordering Information for 1-1/2" & 2" Triplex Progressive (PWS15P-L & PWS20P-L) Softeners

Model No.	Ordering Codes	Description	Space Required D X W X H	Shipping Weight LBS
PWS15L1F33	7101215	5 Cubic Foot 1-1/2" Progressive Triplex Softener with Flow Meter	38" x 82" x 87"	1140
PWS15L1G33	7101216	7 Cubic Foot 1-1/2" Progressive Triplex Softener with Flow Meter	39" x 85" x 84"	1755
PWS15L1H33	7101217	10 Cubic Foot 1-1/2" Progressive Triplex Softener with Flow Meter	46" x 102" x 96"	2130
PWS20L1F33	7101240	5 Cubic Foot 2" Progressive Triplex Softener with Flow Meter	46" x 88" x 89"	1200
PWS20L1G33	7101241	7 Cubic Foot 2" Progressive Triplex Softener with Flow Meter	49" x 92" x 89"	1800
PWS20L1H33	7101242	10 Cubic Foot 2" Progressive Triplex Softener with Flow Meter	59" x 97" x 96"	2130
PWS20L1I33	7101243	15 Cubic Foot 2" Progressive Triplex Softener with Flow Meter	74" x 109" x 106"	3480
PWS20L1J33	7101244	20 Cubic Foot 2" Progressive Triplex Softener with Flow Meter	80" x 127" x 107"	4680

Ordering Information for 1-1/2" & 2" Quadplex Progressive (PWS15P-L & PWS20P-L) Softeners

Model No.	Ordering Codes	Description	Space Required D X W X H	Shipping Weight LBS
PWS15L1F44	7101218	5 Cubic Foot 1-1/2" Progressive Quaplex Softener with Flow Meter	38" x 109" x 87"	1520
PWS15L1G44	7101219	7 Cubic Foot 1-1/2" Progressive Quaplex Softener with Flow Meter	39" x 113" x 84"	2340
PWS15L1H44	7101220	10 Cubic Foot 1-1/2" Progressive Quaplex Softener with Flow Meter	46" x 115" x 96"	2840
PWS20L1F44	7101245	5 Cubic Foot 2" Progressive Quaplex Softener with Flow Meter	46" x 117" x 89"	1600
PWS20L1G44	7101246	7 Cubic Foot 2" Progressive Quaplex Softener with Flow Meter	49" x 123" x 89"	2400
PWS20L1H44	7101247	10 Cubic Foot 2" Progressive Quaplex Softener with Flow Meter	59" x 129" x 96"	2840
PWS20L1I44	7101248	15 Cubic Foot 2" Progressive Quaplex Softener with Flow Meter	74" x 145" x 106"	4640
PWS20L1J44	7101249	20 Cubic Foot 2" Progressive Quaplex Softener with Flow Meter	80" x 169" x 107"	6240



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