

SP 510™ HARDNESS MONITOR



Applications

- Drinking Water
- Wastewater
- Power
- Industrial Water

Maximize your softener cycle time and minimize your regeneration cost.

The Hach Hach SP 510 Hardness Monitor is reliable, accurate, and virtually maintenance free. It can operate unattended for two months and still promptly and immediately signal hardness breakthrough to activate regeneration. Use it to make water softening systems more efficient and less costly.

Continuous Hardness Detection

The SP 510 monitor detects hardness breakthrough when the capacity of a water softener is exhausted, immediately signaling the need for regeneration. Alarm points are 0.3, 1, 2, 5, 10, 20, 50, and 100 ppm (expressed as mg/L of CaCO₃) and are selected by choosing the appropriate model. Easy to read LED indicators show a simple "HARD" or "SOFT" sample status. You can also use SP 510's built-in alarm relay to actuate an external annunciator.

Low Maintenance Requirements

The SP 510 samples water every two minutes, operating automatically for up to 60 days. It is virtually maintenance-free, requiring only about 15 minutes every two months to replenish and standardize the reagents. Replace tubing in the pump system every six months.

Convenient, Trouble-Free Operation

The SP 510 monitor makes your water softening system more efficient and less costly. It eliminates the guesswork so your softener is regenerated only when needed. Regeneration based on calculation or set times can be replaced with continuous monitoring and automatic control, lowering reagent consumption.

Rugged, Lightweight and Self-Contained

The SP 510 case is made of ABS plastic which is lightweight, corrosion-resistant, and shatterproof. This sealed case is IP62-rated and has a hinged door for easy access to internal components.

Specifications*

Range	Hardness levels: 0.3, 1, 2, 5, 10, 20, 50, 100 ppm (expressed as mg/L CaCO ₃)
Accuracy	±25% of set point value
Repeatability	±10% of set point value in 0.3 to 2 mg/L ranges ±4% of set point value in 5 to 100 mg/L ranges
Operating Humidity Range	5 to 95%, noncondensing
Storage Temperature	-40 to 60°C (-40 to 140°F)
Sample Inlet Pressure to Instrument	1 to 5 psig, 1.5 psig is optimum
Analysis Method	Colorimetric
Light Source	LED with peak wavelength of 610 nm
Cycle Time	1.9 minutes (60 Hz) or 2.3 minutes (50 Hz), selectable
Sample Flow Rate	50 to 500 mL/min (1.8 to 18.0 oz/min) flow rate required
Sample Conditioning Inlet Pressure	1.5 to 75 psig
Operating Temperature	5 to 40°C (32 to 104°F)
Inlet Fitting	1/4-in. OD tube quick-disconnect fitting
Outlet Fitting	1/2-in. ID flexible hose

Reagent Use	500 mL each indicator and buffer every 2 months
Output	1 SPDT relay for external annunciator or automatic water softener shutoff/regeneration cycle (rated 5 amp resistive at 115 Vac)
Alarm Delay	2 consecutive cycles above set point activate alarm 1 cycle below set point cancels alarm
Alarm Type	LED indicators, HARD or SOFT
Enclosure	ABS plastic, IP62 enclosure rating, wall-mountable (brackets included), large plastic windows to view alarm and reagents levels
Power	Selectable between 115 Vac at 60 Hz and 220 Vac at 50 Hz
Service	Standardize and replenish reagents every 2 months using EDTA or high-level sample Replace pump tubes every 6 months
Certification	NRTL certified to UL and CSA standards, and CE approved
Dimensions	Approximately 41.9 x 31.8 x 17.8 cm (16.5 x 12.5 x 7 in.)
Weight	11.3 kg (25 lb.)

*Subject to change without notice

Principle of Operation

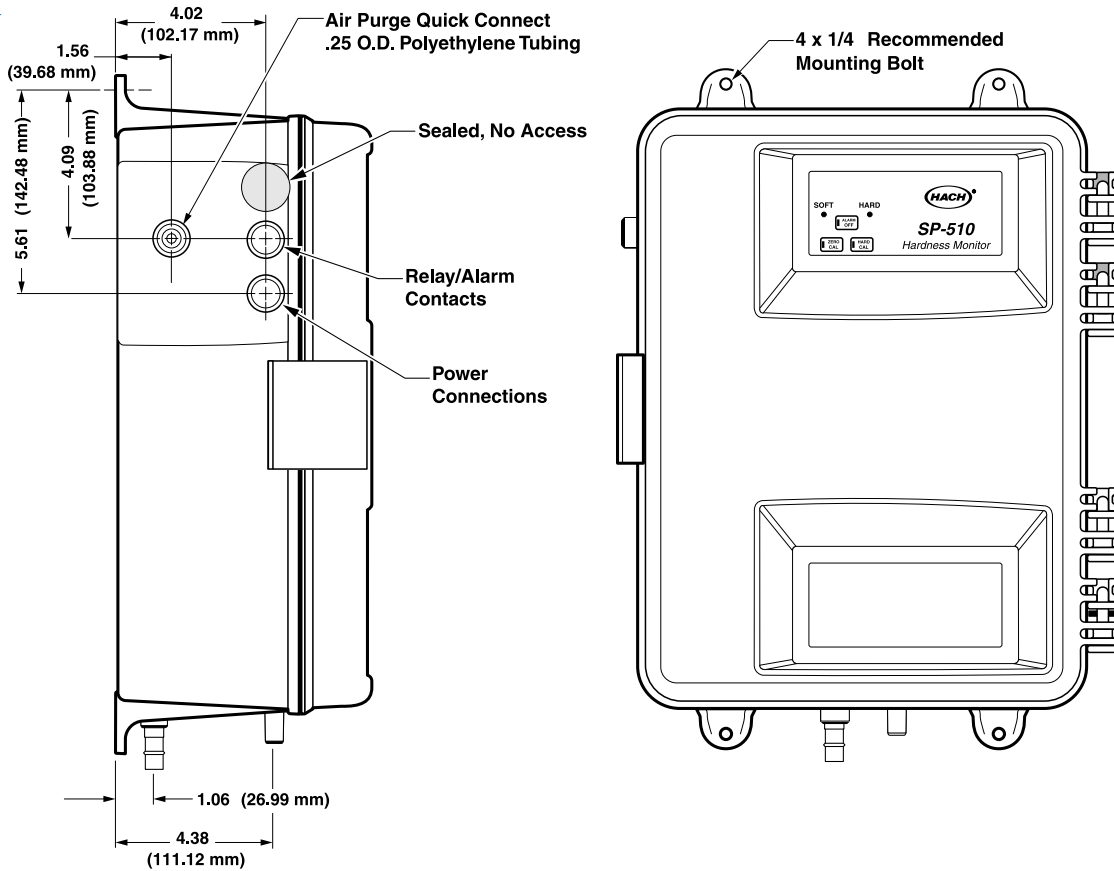
The Hach SP 510 Hardness Monitor consists of five main components—a linear peristaltic pump, an electronic control panel, a colorimeter with a solid-state mixing system, a two month supply of Hach reagents, and a corrosion-resistant case.

- A linear peristaltic pump/valve module is the heart of the SP 510 monitor. This module precisely controls flow of the incoming sample, meters reagents and sample, and injects them into the sample cell.
- Following injection, a magnetic stirrer mixes the sample and reagents in the cell, causing color development to take place.
- Light transmittance through the sample is then measured photometrically.
- A new sample is introduced and an analysis performed every two minutes. A hard water condition is indicated by the "HARD" LED display. Two consecutive "HARD" readings are required (over a span of approximately four minutes) before the alarm circuit is activated—eliminating alarms caused by momentary fluctuations. One "SOFT" indication is required before an alarm is canceled.
- A SPDT relay in the instrument can be configured to trigger remote alarms or drive regeneration controls.

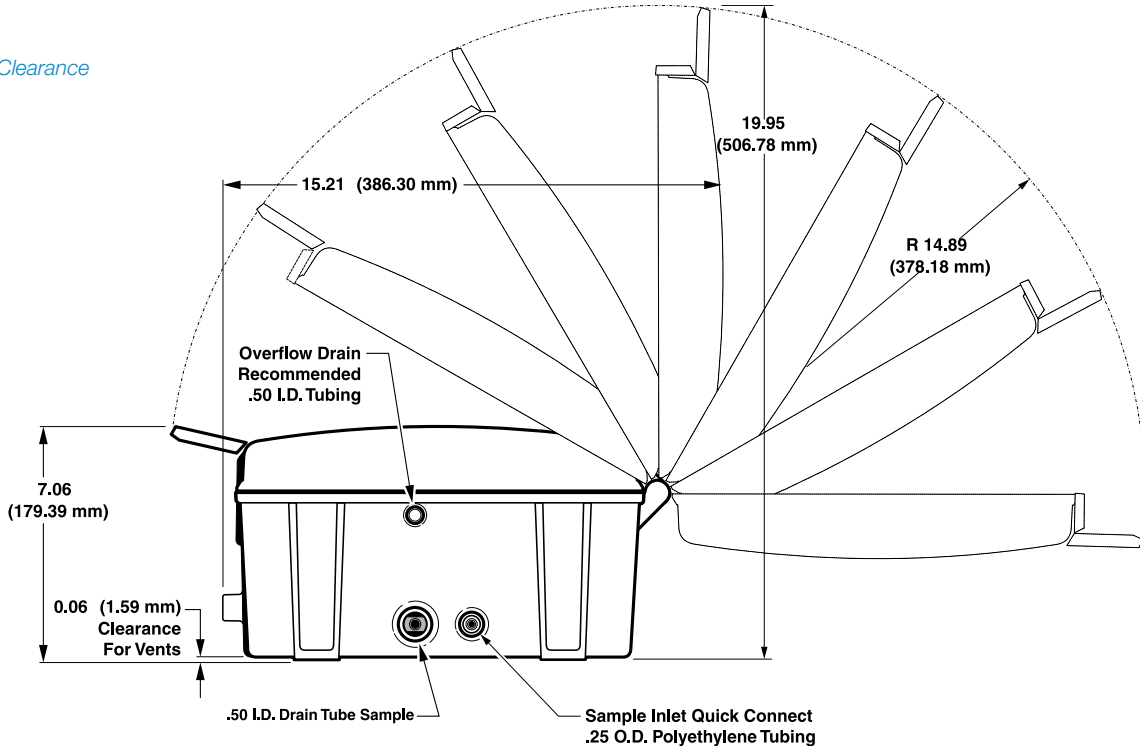
Dimensions

The Hach SP 510 Hardness Monitor is designed to be wall-mounted with four 1/4-inch screws. Adequate clearance must be left at the sides and bottom of the case for plumbing and electrical connections. The sample inlet connection is 1/4-inch quick-disconnect fitting and the drain connection is 1/2-inch flexible hose. Electrical connections are made inside the instrument case. Holes for two 1/2-inch conduit fittings are provided.

Side and Front



Bottom and Clearance



Ordering Information

The Hach SP 510 Hardness Monitor includes: installation kit, maintenance kit (stirring bar, strainer, spare tube assemblies, shut-off valve) and two-month supply of reagents.

NOTE: When choosing the appropriate model/trip point, the alarm trip point selected should be 40 to 50% higher than the normal effluent hardness. Call Hach Company for assistance in ordering the SP 510 Hardness Monitor that is appropriate for the application

Instrument

5410003	SP 510 Hardness Monitor with 0.3 mg/L Trip Point
5410001	SP 510 Hardness Monitor with 1 mg/L Trip Point
5410002	SP 510 Hardness Monitor with 2 mg/L Trip Point
5410005	SP 510 Hardness Monitor with 5 mg/L Trip Point
5410010	SP 510 Hardness Monitor with 10 mg/L Trip Point
5410020	SP 510 Hardness Monitor with 20 mg/L Trip Point
5410050	SP 510 Hardness Monitor with 50 mg/L Trip Point
5410099	SP 510 Hardness Monitor with 100 mg/L Trip Point

Accessories

4630600	Power Cord, 115 Vac
4630800	Power Cord, 220 Vac

Buffer and Indicator Reagents

Buffer and Indicator are sold separately. All orders are for 2-month supply.

Buffer	Indicator	Range
2768549	2794649	0.3 mg/L
2768549	2769049	1 mg/L
2768549	2769149	2 mg/L
2768549	2769249	5 mg/L
2768649	2769249	10 mg/L
2768749	2769249	20 mg/L
2768849	2769249	50 mg/L
2768949	2769249	100 mg/L

Replacement Parts

5516500	Maintenance Kit
5411900	Pump Motor Assembly
5516200	Colorimeter Flow Cell Assembly
6869800	Stir Bar

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Hach Company reserves the right to alter specifications to equipment at any time.



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