

Attachment 1: Project Cover Sheet



**Keanland Park 761
Well Pump Replacement and Upgrades**

CI-76-761

Site Address

**8535 Viewcrest Ln SE, Olympia, WA 98501
Gate to pumphouse between 8531 and 8545 Viewcrest Ln.
Will need code for access**

**Prepared by: Kim Gubbe
Director of Planning and Compliance
kgubbe@Thurstonpud.org
360-688-0827**

**1230 Ruddell Rd SE, Lacey WA 98503
Phone: (360) 357-8783**

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Attachment 2: Instructions to Bidders

INSTRUCTIONS TO BIDDERS

1. Proposal

Bids for this improvement will be received by Thurston PUD (District) until Wednesday, July 28, 2021 by 3:00 pm. Deliver bid proposal to Kim Gubbe, Director of Planning and Compliance, by one of the following methods:

- E-mail: kgubbe@thurstonpud.org

Bid Proposals must include a list of three projects that compare to work to be completed in this bid packet with references for each project.

2. Basis of Award

The estimated cost of the Work, including taxes, is less than \$300,000 and, therefore, solicitations for bids have been requested from contractors registered on District's Small Works Contractor Roster. The Contract shall be awarded to the qualified and responsible bidder submitting the lowest and the most responsive bid, but the District shall determine, at its own discretion, whether a bidder is qualified to perform the Contract, whether the bidder meets the supplemental responsible bidder criteria, if included, what bid is the lowest and best, and whether it is to the interest of the District to accept the bid. The District reserves the right to reject all bids and not award a Contract.

3. Local Conditions

Bidders are notified that they must carefully examine the plans, specifications, instructions to bidders, special provisions and Standard Specifications, and familiarize themselves with all State, City, County and other laws pertaining to this improvement. They must also examine and judge for themselves as to the locations and character of the proposed work, the amounts and quality of the materials required and the work to be done. If there is any doubt or obscurity as to the meaning of any part of the Contract Documents, it shall be brought to the attention of the District in order that the necessary explanations or corrections may be made before submitting the bid.

4. State Sales Tax

The payment of State sales tax, where applicable, shall be made by the District to the Contractor in compliance with current Tax Commission rules.

5. Payments and Retainage

The District will withhold five percent (5%) of the Contract Price as a retainage fund pursuant to RCW 60.28.011. The District shall release the retainage, less any amounts the District is entitled to withhold, to Contractor not later than sixty (60) days after the latest of the following dates: (a) acceptance of the Work by District; (b) the receipt of all necessary releases from the Departments of Revenue, Labor and Industries and Employment Security; or (c) the settlement of any liens.

6. Contract

The bidder to whom the award is made shall be required to enter into a written contract, included in the Bid Documents, with the District within two (2) working days after being notified of the acceptance of his proposal. Prospective bidders are advised to acquaint themselves fully with the provisions of all Contract Documents before submitting their bids.

7. Notice to Proceed.

The Work shall not commence until the District has given notice to proceed.

8. Time of Completion

Building shall be completed within fifteen (15) calendar days of the date of Notice to Proceed.

9. Utility Location

The Contractor shall be responsible for coordinating the location of existing underground utilities. The Contractor shall arrange for location through any affected utility, the Utilities Underground Location Center or with a private utility location service.

10. Permits

All permits, plan review or inspection fees shall be the responsibility of the Contractor. The cost of said fees shall be the responsibility of the Contractor and shall be included in the Contract Price.

11. Bonding

The District shall require a performance bond unless the Contract Price is less than \$25,000.

12. Prevailing Wage Rates to be Paid

The wage rates to be paid all laborers, workers, and mechanics who perform any part of this Contract shall be not less than the prevailing wage rate as required by the Revised Code of Washington (RCW) Chapter 39.12. This requirement applies to laborers, workers and mechanics whether they are employed by the Contractor, Subcontractors, Sub-subcontractors, or any other person who performs a portion of the Work contemplated in the Contract Documents.

The Contractor shall, pursuant to RCW. 39.12.040, file with the District, a "Statement of Intent to Pay Prevailing Wages" and an "Affidavit of Wages Paid" for itself and all Subcontractors and Sub-subcontractors in performance of the Work. Such Statements require the approval of, and the Affidavits of Certification of, the Industrial Statistician of the Department of Labor and Industries before such Statements or Affidavits are submitted to the District. The Department of Labor and Industries charges a fee for such approval and certification, which fee shall be paid by the Contractor. Any change in the fee will not be grounds for the revision in Contract Sum.

13. Responsible Bidder and Supplemental Responsible Bidder Criteria

For purpose of this bid packet the term **responsible bidder** shall mean a contractor who meets the criteria set forth in RCW 39.04.350 and the District's Competitive Bidding and Procurement Procedure (Compliance Policy No. 200-013), and satisfies all supplemental responsible bidder criteria, which shall include:

- a. The ability, capacity, and skill of the bidder to perform the contract or provide the service required;
- b. The character, integrity, reputation, judgment, experience, and efficiency of the bidder;
- c. Whether the bidder can perform the contract within the time specified;
- d. The quality of performance of previous contracts or services;
- e. The previous and existing compliance by the bidder with laws relating to the contract or services; and
- f. Such other information as may be secured having a bearing on the decision to award the contract.

The District reserves the right to check references, whether identified by the bidder or not, on all bidders, including using itself as a reference in applicable situations in considering supplemental responsible bidder criteria. The above supplemental criteria shall be considered within the definition of responsible bidder under District policy and applicable law, and shall be considered by the District in making a responsible bidder determination.

Attachment 3: Bid Proposal

BID PROPOSAL

To: PUBLIC UTILITY DISTRICT #1 of THURSTON COUNTY
 RE: Keanland Park Well Pump Replacement and Upgrades
 Location: 8535 Viewcrest Ln SE, Olympia WA 98501

The scope of the project is to:

- See Attachment 7 for Scope of Work and Specifications

Please complete the tables below for your bid

SCHEDULE A

Item No.	Bid Item	Total Price
1	Attach estimate with work detailed to complete scope above	\$
2	Extra line items, if needed above scope	\$
3		
	Total Schedule A	\$
	WA State Sales Tax, 8.0%	\$
	Total Bid, Schedule A	\$

The undersigned hereby certifies that he has personally examined the location and construction details of work as outlined on the plans and specifications and has read and thoroughly understands the plans and specifications and Contract governing the work required for this improvement and the method by which payment will be made for said work embraced in this improvement in accordance with said plans, specifications, Contract, and at the attached prices.

CONTACTOR			
ADDRESS			
BY			
	Signature	Title	Phone

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Attachment 4: Contract

CONTRACT

THIS AGREEMENT, made and entered into this _____ day of _____ 2021, by and between Thurston PUD, hereinafter called the District and _____, hereinafter called the Contractor.

WITNESSETH:

That in consideration of the terms and conditions contained herein, and the Special Provisions attached as Attachment 5 which is hereby incorporated and made a part of this agreement (collectively the "Contract"), the parties hereto covenant and agree as follows:

- I. The Contractor shall obtain and furnish all permits, labor, tools, materials and equipment for the work described in the Contract for Keanland Park 761 Well Pump Replacement and Upgrades. The contract shall be performed in accordance with District Standards. The Contractor shall perform any alterations in or additions to the work provided under this Contract and every part thereof, if first approved by the District on the Change Order form, Attachment 6.
- II. Work shall commence within ten (10) days after the date of Notice to Proceed and shall be completed in accordance with the standards within fifteen (15) calendar days.
- III. The District shall pay the Contractor the lump sum price of \$ _____ excluding sales tax, as full consideration for the Contractor's duties under the Contract, except as may be amended by the parties in writing, including change orders. This is a lump sum bid and may be altered only in conformance with the provisions of the Contract Documents.
- IV. It is further provided that no liability shall attach to the District by reason of entering into this Contract except as expressly provided herein.
- V. The work shall not be accepted until inspected and approved by the District. District shall have the right to inspect the Work at all times. No portion of the Work shall be covered until approved by the District.
- VI. In the event of a breach of this agreement by Contractor, District is authorized, upon notice to Contractor, to cause the Work to be completed at Contractor's expense.
- VII. This agreement cannot be modified, nor any provision waived, except in a written document signed by both parties.
- VIII. In the event any party hereto engages Legal Counsel to enforce any of the terms hereof, the non-prevailing party in any resulting court proceeding, arbitration or mediation shall pay to the prevailing party a reasonable attorney fee and costs incurred.

IN WITNESS OF the parties hereto have caused this agreement to be executed the day and year first hereinabove written.

DISTRICT

CONTRACTOR

Signature: _____

Print Name: John Weidenfeller

Attachments: Attachments 1-7

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Attachment 5: Special Provisions

SPECIAL PROVISIONS

Notice to Proceed

The Work shall not commence until the District has given Notice to Proceed.

Time of Completion

Scope of Work shall be completed within fifteen (15) calendar days of the date of Notice to Proceed.

Utility Location

The Contractor shall be responsible for coordinating the location of existing underground utilities. The Contractor shall arrange for location through any affected utility, the Utilities Underground Location Center or with a private utility location service.

Permits

All permits, plan review or inspection fees shall be the responsibility of the Contractor. The cost of said fees shall be the responsibility of the Contractor and shall be included in the Contract Price.

Bonding

The District shall require a performance bond unless the Contract Price is less than \$25,000.

Payments and Retainage

The District will withhold five percent (5%) of the Contract Price as a retainage fund pursuant to RCW 60.28.011. The District shall release the retainage less any amounts the District is entitled to withhold to Contractor not later than sixty (60) days after the latest of the following dates: (a) acceptance of the Work by District; (b) the receipt of all necessary releases from the Departments of Revenue, Labor and Industries and Employment Security; or (c) the settlement of any liens.

Prevailing Wage Rates to be Paid

The wage rates to be paid all laborers, workers, and mechanics who perform any part of this Contract shall be not less than the prevailing wage rate as required by the Revised Code of Washington (RCW) Chapter 39.12. This requirement applies to laborers, workers and mechanics whether they are employed by the Contractor, Subcontractors, Sub-subcontractors, or any other person who performs a portion of the Work contemplated in the Contract Documents.

The Contractor shall, pursuant to RCW. 39.12.040, file with the District, a "Statement of Intent to Pay Prevailing Wages" and an "Affidavit of Wages Paid" for itself and all Subcontractors and Sub-subcontractors in performance of the Work. Such Statements require the approval of, and the Affidavits of certification of, the Industrial Statistician of the Department of Labor and Industries before such Statements or Affidavits are submitted to the District. The Department of Labor and Industries charges a fee for such approval and certification, which fee shall be paid by the Contractor. Any change in the fee will not be grounds for the revision in Contract Sum.

Inspection

The Contractor shall be fully responsible for all improvements and workmanship and shall provide all inspections as required to ensure full compliance with the Contract Documents. Contractor shall provide safe and sufficient access by the District or permit authorities at all times for additional inspection.

Lot Corners and Permanent Control Points

All lot corners or corners of tracts, section corners, or permanent markers of subdivisions therein, including street monuments, shall be carefully noted and maintained by the Contractor. Any such pin, pipe, stone, plaque or monument that is removed or disturbed by the Contractor shall be accurately located and replaced at the expense of the Contractor.

Restoration of Improvements

The Contractor shall be responsible for all existing improvements within the project. Compensation for replacement of said improvements, unless specifically made a bid item of this contract, shall be considered as incidental to other items included herein.

Protection of any trees, buildings, or other similar type of improvements that are proximate to the Contractor's operations, shall be the sole responsibility of the Contractor. All such types of improvements, if, damaged, shall be restored to their original condition.

Overtime and Holiday Work

The number of calendar days provided in the contract is intended to be sufficient time to complete the project without weekend or holiday work.

The Contractor shall furnish necessary manpower and equipment to ensure completion of the Contract within the specified number of days.

Payment for Extra Work

The District may order changes to the work without invalidating this agreement. No payment for extra work will be allowed until authorized in writing by the District with any additional compensation or time extension therefore agreed to and recorded.

Supervision

The contractor shall maintain competent and adequate supervision of his own at all times. At a minimum, the contractor's central point of contact for the project shall be equipped with a cellular phone and shall be accessible during normal business hours.

Warranties

The Contractor shall guarantee that the items installed and workmanship performed under these specifications meet with the requirements of the specifications, are new and of good quality, and that he will make good, at the Contractor's sole expense, any defects or inoperable conditions that may develop within one year from the date of completion.

Traffic

Barricades, signs, warning devices and/or flaggers required to maintain traffic control shall be the responsibility of the Contractor, shall be utilized in accordance with the applicable law including the Manual on Uniform Traffic Control Devices, and shall be considered as incidental to other items of the contract.

Materials and Equipment Substitution

Wherever in the plans and specifications any item of equipment or material is designated by reference to a particular brand, manufacturer, or trade name, a product approved in writing as equivalent and acceptable by the District may be substituted by the bidder of Contractor. The District shall be the sole authority as to equivalent status of any substituted item request.

Final Payment and Waiver

The acceptance by the Contractor of the final payment shall constitute a waiver of all claims against the District arising out of the Contract.

Pre-Construction Conference

Prior to beginning construction, the Contractor shall arrange a time for a meeting with the District, and utility personnel to discuss scheduling and possible conflicts. The person (s) who will be responsible for the project, including the field superintendent, must attend.

Operation and Maintenance Manuals

The Contractor shall furnish three (3) complete sets of operation and maintenance manuals and product literature for all installed equipment. Manuals shall be supplied in three ring binders. Manuals shall be supplied for all meters, valves, and appurtenant equipment and other improvements as may be appropriate.

Insurance Requirements (Updated April 2, 2021)

COMPENSATION, PUBLIC LIABILITY, AND PROPERTY DAMAGE INSURANCE

Indemnification / Hold Harmless

The Contractor shall defend, indemnify and hold the Public Entity, its officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits including attorney fees, arising out of or in connection with the performance of this Agreement, except for injuries and damages caused by the sole negligence of the Public Entity.

However, should a court of competent jurisdiction determine that this Agreement is subject to RCW 4.24.115, then, in the event of liability for damages arising out of bodily injury to persons or damages to property caused by or resulting from the concurrent negligence of the Contractor and the Public Entity, its officers, officials, employees, and volunteers, the Contractor's liability hereunder shall be only to the extent of the Contractor's negligence. It is further specifically and expressly understood that the indemnification provided herein constitutes the Contractor's waiver of immunity under Industrial Insurance, Title 51 RCW, solely for the purposes of this indemnification. This waiver has been mutually negotiated by the parties. The provisions of this section shall survive the expiration or termination of this Agreement.

Insurance Term

The Contractor shall procure and maintain insurance, as required in this Section, without interruption from commencement of the Contractor's work through the term of the Contract and for thirty (30) days after the Physical Completion date, unless otherwise indicated herein.

No Limitation

The Contractor's maintenance of insurance, its scope of coverage and limits as required herein shall not be construed to limit the liability of the Contractor to the coverage provided by such insurance, or otherwise limit the Public Entity's recourse to any remedy available at law or in equity.

- A. Minimum Scope of Insurance** The Contractor's required insurance shall be of the types and coverage as stated below:
1. Automobile Liability insurance covering all owned, non-owned, hired and leased vehicles. Coverage shall be at least as broad as Insurance Services Office (ISO) form CA 00 01.
 2. Commercial General Liability insurance shall be at least as broad as ISO occurrence form CG 00 01 and shall cover liability arising from premises, operations, stop gap liability, independent contractors, products-completed operations for a period of three years following substantial completion of the work for the benefit of the Public Entity, personal injury and advertising injury, and liability assumed under an insured contract. The Commercial General Liability insurance shall be endorsed to provide a per project general aggregate limit, using ISO form CG 25 03 05 09 or an endorsement providing at least as broad coverage. There shall be no exclusion for liability arising from explosion, collapse or underground property damage. The Public Entity shall be named as an additional insured under the Contractor's Commercial General Liability insurance policy with respect to the work performed for the Public Entity using ISO Additional Insured endorsement CG 20 10 10 01 and Additional Insured-Completed Operations endorsement CG 20 37 10 01 or substitute endorsements providing at least as broad coverage.

3. Workers' Compensation coverage as required by the Industrial Insurance laws of the State of Washington.
4. Builders Risk insurance covering interests of the Public Entity, the Contractor, Subcontractors, and Sub-subcontractors in the work. Builders Risk insurance shall be on a special perils policy form and shall insure against the perils of fire and extended coverage and physical loss or damage including flood, earthquake, theft, vandalism, malicious mischief, and collapse. The Builders Risk insurance shall include coverage for temporary buildings, debris removal, and damage to materials in transit or stored off-site. This Builders Risk insurance covering the work will have a deductible of \$5,000 for each occurrence, which will be the responsibility of the Contractor. Higher deductibles for flood and earthquake perils may be accepted by the Public Entity upon written request by the Contractor and written acceptance by the Public Entity. Any increased deductibles accepted by the Public Entity will remain the responsibility of the Contractor. The Builders Risk insurance shall be maintained until the Public Entity has granted substantial completion of the project. An installation floater may be acceptable in lieu of Builders Risk for renovation projects only if approved in writing by the Public Entity.

B. Minimum Amounts of Insurance The Contractor shall maintain the following insurance limits:

1. Automobile Liability insurance with a minimum combined single limit for bodily injury and property damage of \$1,000,000 per accident.
2. Commercial General Liability insurance shall be written with limits no less than \$2,000,000 each occurrence, \$2,000,000 general aggregate and a \$2,000,000 products- completed operations aggregate limit.
3. Builders Risk insurance shall be written in the amount of the completed value of the project with no coinsurance provisions.

Public Entity Full Availability of Contractor Limits

If the Contractor maintains higher insurance limits than the minimums shown above, the Public Entity shall be insured for the full available limits of Commercial General and Excess or Umbrella liability maintained by the Contractor, irrespective of whether such limits maintained by the Contractor are greater than those required by this Contract or whether any certificate of insurance furnished to the Public Entity evidences limits of liability lower than those maintained by the Contractor.

Other Insurance Provision

The Contractor's Automobile Liability, Commercial General Liability and Builders Risk insurance policies are to contain, or be endorsed to contain that they shall be primary insurance as respect the Public Entity. Any insurance, self-insurance, or self-insured pool coverage maintained by the Public Entity shall be excess of the Contractor's insurance and shall not contribute with it.

Contractor's Insurance for Other Losses

The Contractor shall assume full responsibility for all loss or damage from any cause whatsoever to any tools, Contractor's employee owned tools, machinery, equipment, or motor vehicles owned or rented by the Contractor, or the Contractor's agents, suppliers, contractors or subcontractors as well as to any temporary structures, scaffolding and protective fences.

Waiver of Subrogation

The Contractor and the Public Entity waive all rights against each other, any of their Subcontractors, Sub-subcontractors, agents and employees, each of the other, for damages caused by fire or other perils to the extent covered by Builders Risk insurance or other property insurance obtained pursuant to the Insurance Requirements Section of this Contract or other property insurance applicable to the work. The policies shall provide such waivers by endorsement or otherwise.

Acceptability of Insurers

Insurance is to be placed with insurers with a current A.M. Best rating of not less than A: VII.

Verification of Coverage

The Contractor shall furnish the Public Entity with original certificates and a copy of the amendatory endorsements, including but not necessarily limited to the additional insured endorsements, evidencing the Automobile Liability and Commercial General Liability insurance of the Contractor before commencement of the work. Before any exposure to loss may occur, the Contractor shall file with the Public Entity a copy of the Builders Risk insurance policy that includes all applicable conditions, exclusions, definitions, terms and endorsements related to this project. Upon request by the Public Entity, the Contractor shall furnish certified copies of all required insurance policies, including endorsements, required in this Contract and evidence of all subcontractors' coverage.

Subcontractors

The Contractor shall cause each and every Subcontractor to provide insurance coverage that complies with all applicable requirements of the Contractor-provided insurance as set forth herein, except the Contractor shall have sole responsibility for determining the limits of coverage required to be obtained by Subcontractors. The Contractor shall ensure that the Public Entity is an additional insured on each Subcontractor's Commercial General liability insurance policy using an endorsement as least as broad as ISO CG 20 10 10 01 for ongoing operations and CG 20 37 10 01 for completed operations.

Notice of Cancellation

The Contractor shall provide the Public Entity and all Additional Insureds for this work with written notice of any policy cancellation within two business days of their receipt of such notice.

Failure to Maintain Insurance

Failure on the part of the Contractor to maintain the insurance as required shall constitute a material breach of contract, upon which the Public Entity may, after giving five business days notice to the Contractor to correct the breach, immediately terminate the Contract or, at its discretion, procure or renew such insurance and pay any and all premiums in connection therewith, with any sums so expended to be repaid to the Public Entity on demand, or at the sole discretion of the Public Entity, offset against funds due the Contractor from the Public Entity.

Right of Way/Permits

The District shall provide all easements, rights-of-way and permits necessary for the Work. Contractor shall comply with all permit requirements and conditions

Hold Harmless and Indemnity

The Contractor shall defend, indemnify and hold the District, its officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits including attorney fees, arising out of or in connection with the performance of this Agreement, except for injuries and damages caused by the sole negligence of the District.

Should a court of competent jurisdiction determine that this Agreement is subject to RCW 4.24.115, then, in the event of liability for damages arising out of bodily injury to persons or damages to property caused by or resulting from the concurrent negligence of the Contractor and the District, its officers, officials, employees, and volunteers, the Contractor's liability hereunder shall be only to the extent of the Contractor's negligence. It is further specifically and expressly understood that the indemnification provided herein constitutes the Contractor's waiver of immunity under Industrial Insurance, Title 51 RCW, solely for the purposes of this indemnification. This waiver has been mutually negotiated by the parties. The provisions of this section shall survive the expiration or termination of this Agreement.

Compliance

Contractor shall comply with all federal, State and local laws, regulations and ordinances governing, controlling or limiting in any way the Work or the persons engaged in the Work, including, but not limited to the prevailing wage requirements of State of Washington, RCW 39.12 and the Retainage Requirements of RCW 60.28.011.

Safety Precautions

Contractor shall be solely and completely responsible for working conditions on or near the job site, including safety of all persons and property during performance of work. If the Contractor fails to initiate and maintain reasonable safety measures, the District, within twenty-four (24) hours of written notice of such non-compliance of this provision, may implement whatever safety measures are deemed necessary to correct the situation and may deduct the cost from any amounts due the Contractor.

Cleanup

Contractor agrees to:

- a. Cleanup and remove from each Construction Project site all rubbish and debris accumulated after completion of his work.
- b. Prior to completion or immediately upon receipt of a request by the District, to remove any rubbish and debris that accumulated during the performance of the Contractor's work; and
- c. To repair all damage that occurs in any portion on the Construction Project Site in which the Contractor is working.

It is expressly agreed that the commencement of work by the Contractor shall be deemed an acknowledgment by Contractor that no damage or soiling exists in any portion of each Construction Project Site in which the contractor commences work, including, but not limited to, the sufficiency of grading work when concrete is being poured and the sufficiency of sheet rock and wood surfaces when said surfaces are to be painted or stained by the Contractor. In the event the Contractor determines that damage, soiling or inadequate prior work exists at the time that work is commenced by the contractor, then the District may require, without further payment of any kind, the rectification of such damage, soiling or inadequate work by the contractor if the District determines that the Contractor is responsible for such defects.

Termination

This Agreement may be terminated by the District. The Contractor, upon written notice of termination by the District, shall immediately stop work. If this Agreement is terminated, the Contractor agrees that the District will only be liable for labor, material, equipment and costs, including reasonable profit, provided pursuant to this Agreement to the date of work stoppage.

Hazardous Wastes

The Contractor shall at its expense comply and have full responsibility for compliance with all applicable environmental laws, regulations, rules and orders, including those relating to health, safety, noise, environmental protection, waste disposal, and water and air quality. Should any hazardous or toxic waste, discharge, leakage, spillage, emission asbestos, petrochemical contamination, pollution or environmental harm of any type occur due to or resulting from the Work on the Project, the Contractor, at its expense, shall be obligated to clean and remediate the Project to the satisfaction of any governmental body having jurisdiction.

The Contractor shall not bury any construction materials, paint, trash, equipment or other items on the Project. The Contractor hereby represents and warrants that neither the Contractor nor its Subcontractors of any tier will bury any construction materials, paint, trash, equipment or other items on the Project Site. Any hazardous materials or related construction debris removed from the property shall be removed to an appropriately permitted landfill.

Attachment 6: Change Order Form

CHANGE ORDER

Change Order Number _____ Date _____

Project _____

Contractor _____

District Public Utility District #1 of Thurston County

Description of Change

Reason for Change

Original Contract Price, including tax \$ _____

Changes in Contract Price from Previous Change Orders, including tax \$ _____

Contract Price Prior to This Change Order, including tax \$ _____

Contract Price will (increase or decrease) by the Change Order \$ _____

Change Order Sales Tax (Rate 8.0%) \$ _____

New Contract Price after Change Order Adjustment, including tax \$ _____

Recommended by: _____, Engineer Date: _____

Accepted by: _____, Contractor Date: _____

Approved by: _____, District Date: _____

Attachment 7: Scope of Work

Scope of Work for Keanland Well Project

Replace the current well pumps and design with:

- 2 - 5 hp 60 gpm 4" submersible well pumps, like one enclosed
- 2 - 5hp 3 phase 230 v 4" motors, like the one enclosed
- 2 - VFD Pentair Pentek IntelliDrives
- Reconfigure the single 2" drop pipe to 2 separate 2" drop pipes, one for each pump
- Each drop pipe will have its own pitless adapter - contractor will determine what size will work best for this application
- New 8" well cap

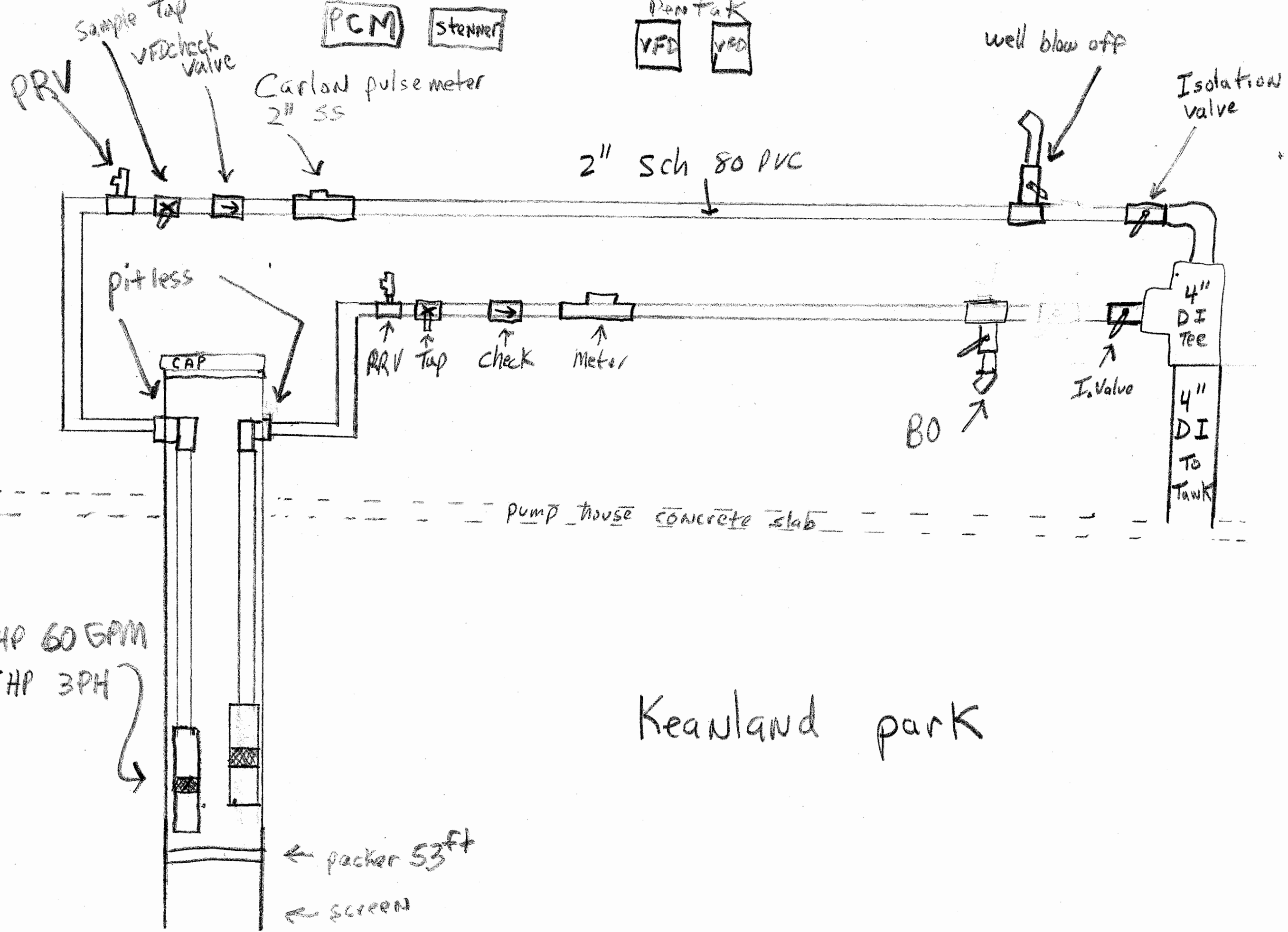
New plumbing should be two 2" manifolds to the 4" fill line, each will include (see drawing):

- Sample tap,
- PRV
- VFD 2" check valve
- 1 New 2" Carlon source meter, see cut sheet
- 1 New Stenner chlorine pump and Stenner Pump Control Module see cut sheet
- 2" Blow offs, out of the building, with ball valves
- Isolation 2" ball valve on each line.

Construction will be to TPUD standards to include: Schedule 80 PVC, stainless parts, VFD check valves, new wire and chlorination and flushing the well clear before putting back into service.

Note: Electrical may need to be upsized to support upgrades

Well log is enclosed



Submersible Pumps

4" High Capacity Pump - Features



FPS 4400

Features:

- 4 performance ranges - 35, 45, 60, and 90 gpm.
- Stainless steel discharge head and motor bracket.
- High flow impellers and stages are glass-filled Noryl® for maximum efficiency.
- Ceramic shaft sleeve and rubber discharge bearing eliminates sand wear.
- Intermediate bearing for increased shaft stability.
- Floating eye and hub seals for improved performance and efficiency.
- Stainless steel hex pump shaft, shell, and shaft coupling.
- High capacity upthrust assembly for protection during start-up and operation (45, 60, and 90 gpm models).
- Powered by Franklin's corrosion-resistant 4" submersible motors.
- 2" NPT discharge.
- Check valve must be ordered separately. See page 76.

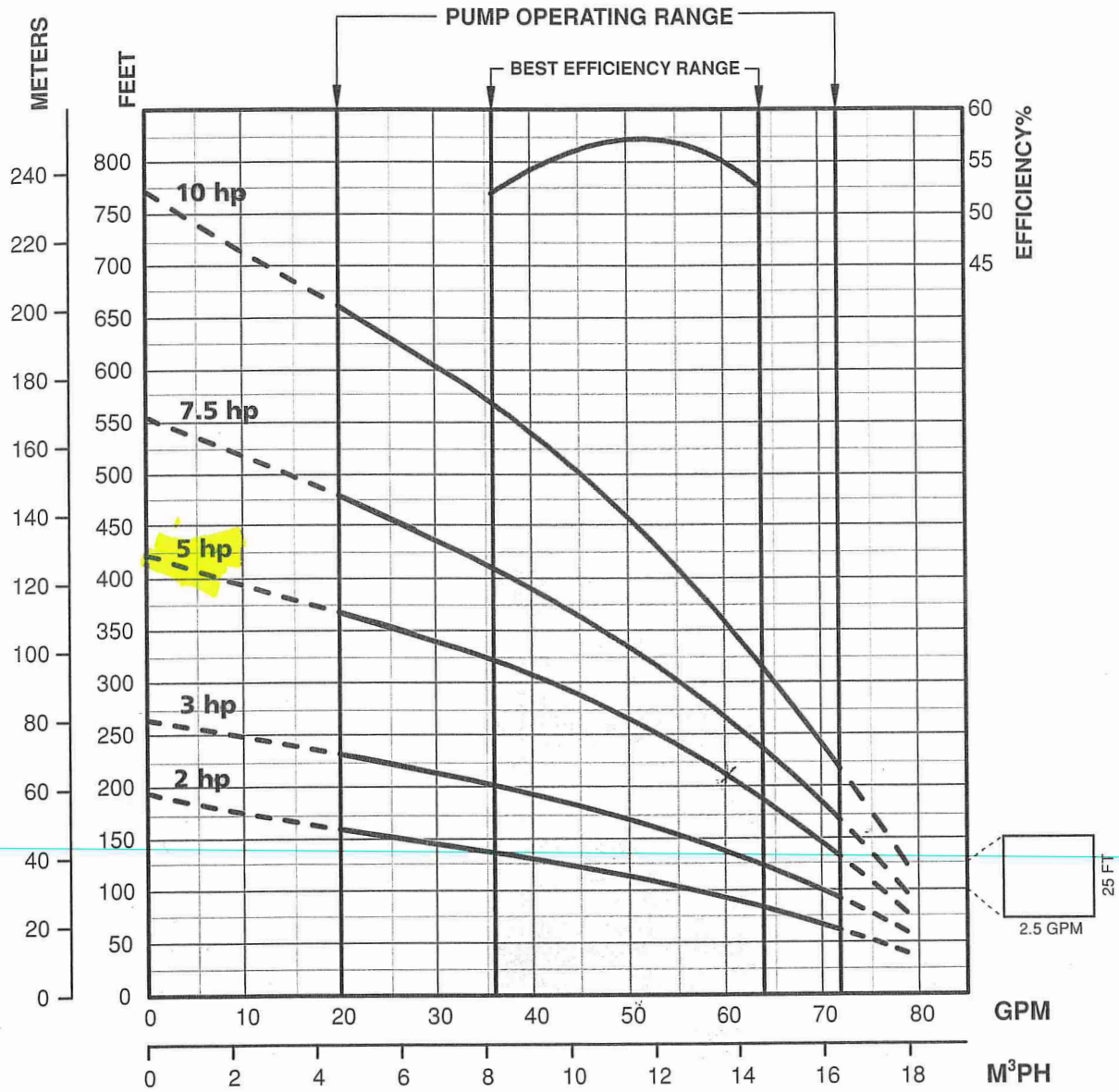
Noryl® is a registered trademark of G.E.



UL 778
CSA 108
NSF/ANSI 372
NSF/ANSI 61 (Pump end only)

Submersible Pumps

4" High Capacity Pumps - 60 GPM





PENTAIR PENTEK INTELLIDRIVE™
CONSTANT PRESSURE CONTROLLER

1-Phase In / 1/3-Phase Out

Horsepower Rating: 5HP

Enclosure Rating: Type 3R (Outdoor)

Model No.:

PID50-01

SW: 3.07/3.07



PID50-01

Assembled in USA

CALIFORNIA PROP. 65



4" SAND FIGHTER SUBMERSIBLE MOTORS SINGLE-PHASE 2-5 HP & THREE-PHASE 3-10 HP

APPLICATIONS

These motors are built for superior dependability in 4" diameter or larger sandy water wells.

SAND FIGHTER™ MOTOR FEATURES

- Corrosion-Resistant Construction
- Stainless Steel Splined Shaft

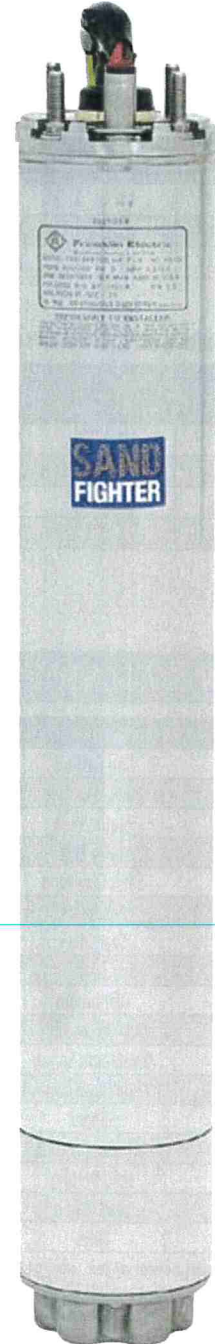
FEATURES

- Single-phase 230 V 60 Hz
- Three-phase 200 V, 230 V, 380 V, 575 V 60 Hz, 460/380 V 60/50 Hz
- Corrosion-Resistant Construction
- Stainless Steel Splined Shaft
- 3 & 5 hp High Thrust are built using the advanced Power-Dense 24-slot stator to maximize available horsepower per linear inch of motor length
- Hermetically-Sealed Windings
- Anti-Track Self-Healing Resin System
- Water Lubricated Bearings
- Filter Check Valve
- Kingsbury-type Thrust Bearing rated for 1500 lbs downthrust
- Pressure Equalizing Diaphragm
- Built-in Lightning Arrestors (single-phase)
- Removable Water-Bloc Lead
- NEMA Pump Mounting Dimensions
- UL 778 Recognized
- CSA C22.2 #108 Certified
- Temperature and time rating continuous in 86 °F (30 °C) water at 1/4 ft per second flow past motor
- Single-phase rotation, CCW; three-phase, electrically reversible

CONTROL BOXES

- Franklin's single-phase submersible Control Boxes are suitable for outdoor mounting with operation over temperature ranges of +14 °F (-10 °C) to +122 °F (50 °C)
- Start and run winding overloads protect the motor from failure due to abnormal operating conditions
- Available in 3 and 5 hp ratings, the DELUXE Control Box incorporates a magnetic line contactor to eliminate the need for auxiliary contactors and heavy duty pressure switches
- A heavy duty terminal strip with box type lugs makes it easy to install up to #2 AWG wire
- Ground lugs provide a means of grounding the motor and Control Box to the power supply ground in compliance with NEC and other national and local codes

WARNING: Serious or fatal electrical shock or fire hazard may result from failure to follow the instructions for proper installation and use which accompany this equipment. Do not use motor in swimming areas.



4" SAND FIGHTER SUBMERSIBLE MOTORS

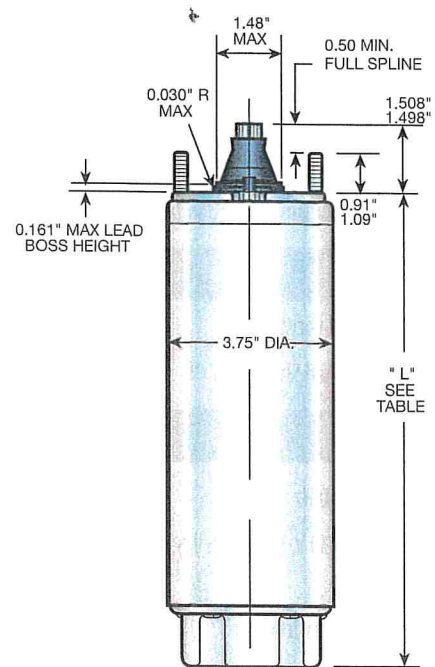
AVAILABILITY

Single-phase Capacitor Start, Capacitor Run (Control Box Required)

HP	KW	"L" Dim Inches	Shipping Weight	
			LBS	KG
2	1.5	19.2	42	20
3	2.2	22.49	47	21
5	3.7	27.41	64	29

Three-phase, 60 Hz - 3450 RPM (50 Hz - 2875 RPM)

HP	KW	"L" Dim Inches	Shipping Weight	
			LBS	KG
3	2.2	19.44	41	19
5	3.7	22.49	50	23
7.5	5.5	27.41	64	29
10	7.5	30.48	72	33



CONSTRUCTION MATERIALS

Component	Standard Water Well
1 Top Casting	304 SS
2 Bottom Casting	303 SS Over Painted Cast Iron
3 Stator Shell	301 SS
4 Stator Ends	Low Carbon Steel
5 Shaft Extension	17-4 SS on 5 - 10 hp
6 Fasteners	300 Series SS
7 Seal Cover	Sintered Bronze
8 Seal	Sand Fighter™ SiC/SiC Mech Seal
9 Diaphragm	Nitrile Rubber
10 Diaphragm Plate	304 SS
11 Diaphragm Spring	302 SS
12 Diaphragm Cover	304 SS
13 Slinger	Nitrile Rubber
14 Lead Wire (or Cable)	XLPE Ⓢ
15 Lead Potting	Epoxy
16 Lead Clamp	300 Series SS
17 Filter	Delrin & Polyester

* Removable type leads installed. Consult the Franklin Electric Technical Service Hotline at 800.348.2420 for information regarding replacement leads. Specifications subject to change without notice. Contact Franklin Electric if current material types are required for bid specifications.

SSM[®] SERIES METERS

NSF / ANSI 372

SSM[®] METER



SSMRS[®] METER



The SSM[®] series have stainless steel meter bodies, tested and certified to NSF/ANSI 372 for lead free compliance and meet or exceed AWWA specifications. The SSM[®] Multi-Jet meter has a long meter life and good tolerance to contaminants. The series is well suited for industrial, commercial and residential applications. The dry sealed registers are easy to read and will retain their clear view display. The SSM[®] series meter is available in sizes from 5/8" x 1/2" to 2" with maximum flow rates up to 160 GPM and pressures up to 150 psi. Registrations are available in gallons, cubic feet or liters.

The SSM[®] meter is a totalizing multi-jet meter for those applications that only need to read the totalized flow at the meter. The SSMRS[®] which is equipped with a reed switch for a dry contact electrical output.



1710 EATON DRIVE • GRAND HAVEN, MICHIGAN 49417
PHONE (616) 842-0420 • FAX (616) 842-1265
E-MAIL CARLON@CARLONMETER.COM • WEBSITE WWW.CARLONMETER.COM

METER SELECTION CHART

METER / PIPE SIZE	MODEL	*CONTINUOUS FLOW	FLOW RANGE	WEIGHT	LENGTH	HEIGHT	WIDTH	CONNECTION LENGTH (X2)
5/8" X 1/2"	625SSM	8 GPM	1/4 - 20 GPM	3.3 lbs.	7 1/2"	4 1/4"	3 5/8"	2"
5/8" X 3/4"	6251SSM	10 GPM	1/4 - 20 GPM	3.3 lbs.	7 1/2"	4 1/4"	3 5/8"	2"
3/4" X 3/4"	750SSM	15 GPM	1/2 - 30 GPM	3.4 lbs.	7 1/2"	4 5/8"	3 7/8"	2"
1"	1000SSM	25 GPM	3/4 - 50 GPM	5.7 lbs.	10 1/4"	4 5/8"	3 7/8"	2 1/4"
1 1/2"	150SSM	50 GPM	2 - 100 GPM	10.6 lbs.	11 7/8"	5 1/2"	4 7/8"	2 1/2"
2"	200SSM	80 GPM	2 - 160 GPM	13 lbs.	11 7/8"	5 1/2"	4 7/8"	2 3/4"

***Continuous Flow:** The size of meter selected should be based upon continuous flow, GPM, as opposed to pipe size. For example, if it is determined that continuous flow is 25 GPM, a 1" meter should be selected rather than a 3/4" meter.

ORDERING INFORMATION: Select the meter model number from the Meter Selection Chart above.

Add a **G** for Gallon reading or a **C** for Cubic Feet reading or an **L** for Liters reading.

Example: 1 1/2" Meter with Cubic Feet register = 150SSM-C.

X = AVAILABLE CONTACT SETTINGS

(All contact settings are pre-set at the factory to your specification)

GPC = Gallons Per Contact • LPC = Liters Per Contact • CFPC = Cubic Feet Per Contact

METER / PIPE SIZE	MODEL	0.1 GPC	1 GPC	10 GPC	100 GPC	.01 CFPC	0.1 CFPC	1 CFPC	10 CFPC	1 LPC	10 LPC	100 LPC	1000 LPC
5/8" X 1/2"	625SSMRS	X	X	X	X	X	X	X	X	X	X	X	X
5/8" X 3/4"	6251SSMRS	X	X	X	X	X	X	X	X	X	X	X	X
3/4" X 3/4"	750SSMRS	X	X	X	X	N/A	X	X	X	X	X	X	X
1"	1000SSMRS	X	X	X	X	N/A	X	X	X	X	X	X	X
1 1/2"	150SSMRS	N/A	X	X	X	N/A	X	X	X	X	X	X	X
2"	200SSMRS	N/A	X	X	X	N/A	X	X	X	X	X	X	X

SSM® METER SPECIFICATIONS

- Reed Switch:** Dry Contact type, Normally Open (N/O), 24v / 10mA (for maximum life)
- Pressure Rating:** Maximum 150 psi.
- Temperature Range:** 35° - 122°F. Protect the meter from freezing.
- PH Level Range:** 6.5 – 8.0
- Accuracy:** +/- 1.5% of maximum flow when operating between minimum and maximum flow range.
- Register Options:** U.S. Gallons, Cubic Feet and Liters

Installation Instructions:

1. Flush the line thoroughly after all plumbing changes to prevent contaminants from entering the meter.
2. Install horizontally with the register facing up and inlet port facing the water supply line.
3. For outdoor installation, protect meter from direct exposure to the elements.
4. Protect meter from backflow of water opposite of indicated flow direction.

Helpful Hints:

1. All values used in a water line need to be operated slowly, and all electrically actuated valves should be slow closing. This will eliminate possible meter damage from water hammer in your system. Carlon offers an excellent slow closing valve (SCV).
2. Install a strainer upstream of your water meter to protect the meter and any other in-line process equipment from becoming jammed by particulate matter.

Warranty: Carlon Meter, Inc. warrants its products to be free of defect in material or workmanship for a period of twelve months from the date of purchase. Contact us to obtain a copy of our complete statement of warranty.

PCM - SPECIFICATIONS

STENNER PUMPS



The Pump Control Module (PCM) is a time adjusted controller that powers the pump. A pulsing flow meter sends a signal to the PCM which actuates the pump to deliver the desired dose based upon water volume. The PCM has a locking feature on the adjustment knob.

TIME RANGE IN SECONDS

PCM1: 0.1-1.0

PCM5: 0.5-5.0

PCM10: 1.0-10.0

PCM20: 2.0-20.0

NOTE: The time range can be changed by adjusting the internal jumper setting as indicated above.

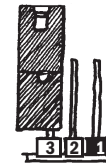
INTERCHANGEABLE TIME RANGE SETTINGS



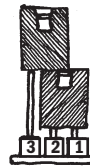
0.1-1 second
(Jumper 2 & 1)



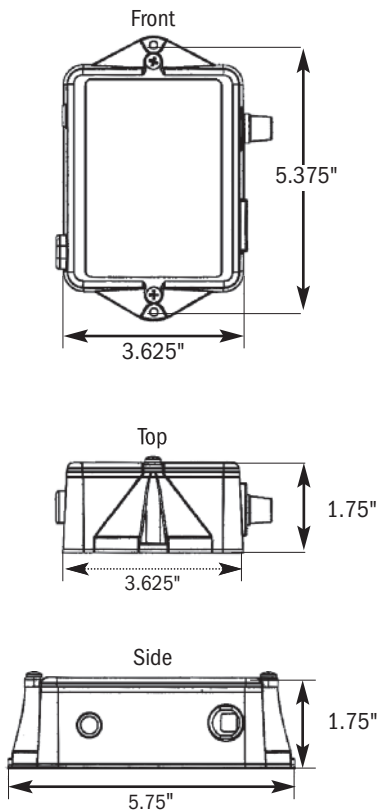
0.5-5 seconds
(Jumper 3 & 2)



1-10 seconds
(Jumper 3)



2-20 seconds
(Jumper 3 & 2, 2 & 1)



TIMER

Microcontroller with triac output

NO LOAD CURRENT

0.45mA AC maximum

TURNDOWN RATIO

10:1

OUTPUT ELECTRICAL

Maximum device load,
1.8 amp at 120V

INPUT SIGNAL

Non-voltage dry contact, water meter

HOUSING MATERIAL

Polycarbonate plastic

RESET TIME

Immediate

BOX DIMENSIONS: L x W x H

8 x 8 x 6 in. (20.3 x 20.3 x 15.2 cm)

MINIMUM SIGNAL DURATIONS

10 milliseconds

SHIPPING WEIGHT

2 lbs (0.9 kg)

INPUT ELECTRICAL

120V 60Hz

The information contained in this flyer is not intended for specific application purposes. Stenner Pump Company reserves the right to make changes to prices, products, and specifications at any time without prior notice.



Stenner Pump Company
3174 DeSalvo Road
Jacksonville, Florida 32246 USA

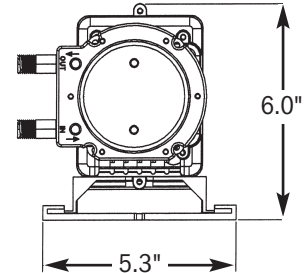
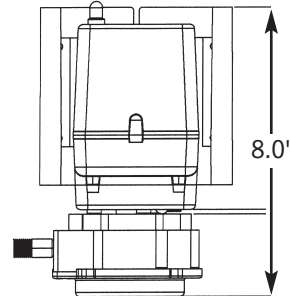
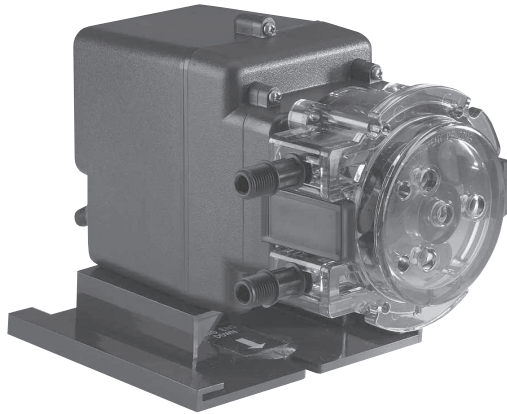
Phone 904.641.1666
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www.stenner.com
sales@stenner.com

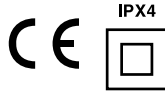
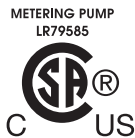
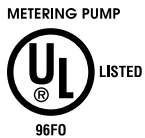
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FSPECPCM 0314

CLASSIC SERIES SINGLE HEAD FIXED SPECIFICATIONS

STENNER PUMPS®



SHIPPING WEIGHT 8 lbs (3.4 kg)



THIS PUMP IS TESTED AND CERTIFIED BY WQA ACCORDING TO NSF/ANSI 61 FOR CONTACT WITH SODIUM HYPOCHLORITE AND WATER ONLY AND NSF/ANSI 372.



Intertek
94247
**CONFORMS TO
ANSI/NSF STD. 50**
Equipment for swimming pools,
spas, hot tubs and other
recreational water facilities.
USE ONLY WITH ANSI/NSF 50
LISTED CONTROLLERS

Agency listings vary by model. Contact factory for details.

FEATURES

- 3-point roller design assists in anti-siphon protection
- Pump head requires no valves, allows for easy maintenance
- Self-priming against maximum working pressure, foot valve not required
- Pump does not lose prime or vapor lock
- Pumps off-gassing solutions and can run dry
- Output volume is not affected by back pressure
- Injection check valve included with models rated up to 100 psi (6.9 bar) maximum
- Easy to change pump tube; lubrication is not required
- Pump tubes and pump heads interchange between models
- Models (Santoprene® only) tested by Water Quality Association to conform to ANSI/NSF STD 61
- Fixed output models (Santoprene® only) tested by ETL to conform to ANSI/NSF STD 50 only when used with ANSI/NSF STD 50 listed controllers

CLASSIC SERIES SINGLE HEAD FIXED SPECIFICATIONS

STENNER PUMPS®

FLOW RATE OUTPUT CONTROL

Fixed output

MAXIMUM WORKING PRESSURE

25 psi (1.7 bar), 100 psi (6.9 bar)

MAXIMUM OPERATING TEMPERATURE

125°F (52°C)

MAXIMUM SUCTION LIFT

25 ft (7.6 m) vertical lift, based on water

MOTOR TYPE 1/30 HP, shaded pole, class B

SHAFT RPM (average maximum) 26 or 44

DUTY CYCLE Continuous

MOTOR VOLTAGE (Amp Draw)

120V 60Hz 1PH (1.7)

220V 60Hz 1PH (0.9)

230V 50Hz 1PH (0.9)

250V 50Hz 1PH (0.9)

POWER CORD TYPE

120V 60Hz, 220V 60Hz: SJTOW

230V 50Hz, 250V 50Hz: H05VV-F

POWER CORD PLUG END

120V 60Hz NEMA 5-15P

220V 60Hz NEMA 6-15P

230V 50Hz CEE CEE7/7

250V 50Hz CEE CEE7/7

MATERIALS OF CONSTRUCTION

All Housings Polycarbonate

Pump Tube

Santoprene®, FDA approved or Versilon***

Check Valve Duckbill

Santoprene®, FDA approved or Pellethane®†

Pump Head Rollers Polyethylene

Roller Bushings Oil impregnated bronze

Suction/Discharge Tubing, Ferrules

Polyethylene, FDA approved

Tube and Injection Fittings

PVC or Polypropylene, NSF listed

Connecting Nuts PVC, NSF listed

Suction Line Strainer and Cap

PVC or Polypropylene, NSF Listed, with Ceramic Weight

All Fasteners Stainless steel

Pump Head Latches Polypropylene

ACCESSORY KIT SHIPPED WITH EACH PUMP

3 Connecting nuts 1/4" or 3/8"

3 Ferrules 1/4" or 6 mm *Europe*

1 Injection check valve 100 psi (6.9 bar) max.
OR **1** Injection fitting 25 psi (1.7 bar) max.

1 Weighted suction line strainer
1/4", 3/8" or 6 mm *Europe*

1 20' Roll suction/discharge tubing
1/4" or 3/8", white or UV black

OR 6 mm White *Europe*

1 Additional pump tube

2 Additional latches

1 Mounting bracket

1 Manual

* Santoprene® is a registered trademark of Exxon Mobil Corporation.

** Versilon® is a registered trademark of Saint-Gobain Performance Plastics.

† Pellethane® is a registered trademark of Lubrizol Advanced Materials, Inc.

FLOW RATE OUTPUT CHART

Single Head Fixed - Flow Rate Output Chart 25 psi (1.7 bar) maximum

Model	Item Number Prefix	Pump Tube	Gallons per Day	Gallons per Hour	Ounces per Minute	Liters per Day	Liters per Hour	Milliliters per Minute	Liters per Day	Liters per Hour	Milliliters per Minute	
45 SERIES	45MP1	45MFL1	1	3.0	0.13	0.27	11.4	0.48	7.92	9.1	0.38	6.32
	45MP2	45MFL2	2	10.0	0.42	0.89	37.9	1.58	26.32	30.3	1.26	21.04
	45MP3	45MFL3	3	22.0	0.92	1.96	83.3	3.47	57.85	66.6	2.78	46.25
	45MP4	45MFL4	4	35.0	1.46	3.11	132.5	5.52	92.01	106.0	4.42	73.61
	45MP5	45MFL5	5	50.0	2.08	4.44	189.3	7.89	131.43	151.4	6.31	105.14
85 SERIES	85MP1	85MFL1	1	5.0	0.21	0.44	18.9	0.79	13.13	15.1	0.63	10.49
	85MP2	85MFL2	2	17.0	0.71	1.51	64.4	2.68	44.65	51.5	2.15	35.76
	85MP3	85MFL3	3	40.0	1.67	3.55	151.4	6.31	105.14	121.1	5.05	84.10
	85MP4	85MFL4	4	60.0	2.50	5.33	227.1	9.46	157.71	181.7	7.57	126.18
	85MP5	85MFL5	5	85.0	3.54	7.55	321.8	13.40	223.40	257.4	10.73	178.75
Approximate Output @ 60Hz									Approximate Output @ 50Hz			

Single Head Fixed - Flow Rate Output Chart 100 psi (6.9 bar) maximum

Model	Item Number Prefix	Pump Tube	Gallons per Day	Gallons per Hour	Ounces per Minute	Liters per Day	Liters per Hour	Milliliters per Minute	Liters per Day	Liters per Hour	Milliliters per Minute	
45 SERIES	45MPHP2	45MFH1	1	3.0	0.13	0.27	11.4	0.48	7.92	9.1	0.38	6.32
	45MPHP10	45MFH2	2	10.0	0.42	0.89	37.9	1.58	26.32	30.3	1.26	21.04
	45MPHP22	45MFH7	7	22.0	0.92	1.96	83.3	3.47	57.85	66.6	2.78	46.25
85 SERIES	85MPHP5	85MFH1	1	5.0	0.21	0.44	18.9	0.79	13.13	15.1	0.63	10.49
	85MPHP17	85MFH2	2	17.0	0.71	1.51	64.4	2.68	44.65	51.5	2.15	35.76
	85MPHP40	85MFH7	7	40.0	1.67	3.55	151.4	6.31	105.14	121.1	5.05	84.10
Approximate Output @ 60Hz									Approximate Output @ 50Hz			

* Injection check valve included with pumps rated 100 psi (6.9 bar) maximum.



NOTICE: The information within this chart is solely intended for use as a guide. The output data is an approximation based on pumping water under a controlled testing environment. Many variables can affect the output of the pump. Stenner Pump Company recommends that all metering pumps undergo field calibration by means of analytical testing to confirm their outputs. The information contained in this flyer is not intended for specific application purposes. Stenner Pump Company reserves the right to make changes to prices, products, and specifications at any time without prior notice.

PCM SERIES

PUMP CONTROL MODULE

INSTALLATION AND MAINTENANCE MANUAL

 WARNING

TO BE INSTALLED AND MAINTAINED BY PROPERLY TRAINED PROFESSIONAL INSTALLER ONLY. READ MANUAL & LABELS FOR ALL SAFETY INFORMATION & INSTRUCTIONS.

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INSTALLATION..... 12-13

TROUBLESHOOTING 14

OPERATING RANGE CONVERSION 15

IMPCM 032620

WARRANTY AND CUSTOMER SERVICE

LIMITED WARRANTY

Stenner Pump Company will for a period of one (1) year from the date of purchase (proof of purchase required) repair replace at out option all defective parts. Stenner Pump Company is not responsible for any removal or installation costs. Stenner Pump Company will incur shipping costs for warranty products shipped from our factory in Jacksonville, Florida. Any tampering with major components, chemical damage, faulty wiring, weather conditions, power surges, or products not used with reasonable care and maintained in accordance with the instructions will void the warranty. Stenner Pump Company limits its liability solely to the cost of the original product. We make no other warranty expressed or implied.

RETURNS

Stenner offers a 30-day return policy. Except as otherwise provided, no material will be accepted for return after 30 days from purchase. To return merchandise at any time, call Stenner at 800-683-2378 for a Return Merchandise Authorization (RMA) number. A 15% re-stocking fee will be applied. Include a copy of your invoice or packing slip with your return.

DAMAGED OR LOST SHIPMENTS

All shipments: Check your order immediately upon arrival. All damage must be noted on the delivery receipt. Call Stenner Customer Service at 800-683-2378 for all shortages and damages within seven (7) days of receipt.

DISCLAIMER

The information contained in this manual is not intended for specific application purposes. Stenner Pump Company reserves the right to make changes to prices, products, and specifications at any time without prior notice.

IMPORTANT SAFETY INSTRUCTIONS

When installing and using this electrical equipment, basic safety precautions should always be followed, including the following:

READ AND FOLLOW ALL INSTRUCTIONS



⚠ WARNING Warns about hazards that **CAN** cause death, serious personal injury, or property damage if ignored.



ELECTRIC SHOCK HAZARD



⚠ WARNING This information contained in this manual is for reference only. Prior to beginning any water treatment regimen, always consult with a water treatment professional and adhere to the information contained in the chemical manufacturer's Material Safety Data Sheet.



⚠ WARNING Equipment is supplied with grounding power cord and attached plug. To reduce risk of electrical shock, connect only to a properly grounded, grounding type receptacle. Install only on a circuit protected by a Ground-Fault Circuit-Interrupter (GFCI).



DO NOT alter the power cord or plug end.



DO NOT use receptacle adapters.



DO NOT use PCM with a damaged or altered power cord or plug. Contact the factory for repair.



⚠ WARNING HAZARDOUS VOLTAGE

DISCONNECT power cord before removing cover for service. **Electrical service by trained personnel only.**



⚠ WARNING EXPLOSION HAZARD

This equipment **IS NOT** explosion proof. **DO NOT** install or operate in an explosive environment.



⚠ WARNING RISK OF FIRE HAZARD

DO NOT install or operate on any flammable surface.









⚠ CAUTION Warns about hazards that **WILL** or **CAN** cause minor personal injury or property damage if ignored.




⚠ CAUTION Final settings on Stenner Metering Pumps or Pump Control Modules must be determined through analytical testing of the treated water. The formulas contained herein are intended solely as a guide to be used to assist in the proper application of Stenner Pumps. The Stenner Pump Company makes no guarantee as to the accuracy of the information contained herein. User assumes all risk and liability from use of the information contained in this manual.


IMPORTANT SAFETY INSTRUCTIONS continued


 **NOTICE:** Indicates special instructions or general mandatory action.

-  **DO** read all product manuals for proper safety and complete operation instructions.
-  **DO NOT** attempt installation or service prior to reading and understanding all safety hazards. This equipment is designed for installation and service by trained personnel.
-  **DO** install PCM so that it is in compliance with all national and local codes.
-  **DO** use all required personal protective equipment when working on or near chemical metering pumps.
-  Before installing or servicing the PCM, read the PCM manual for all safety information and complete instructions. The PCM is designed for installation and service by properly trained personnel.
-  Installation and product must adhere to all regulatory and compliance codes applicable to the area.

 **This is the safety alert symbol. When displayed in this manual or on the equipment, look for one of the following signal words alerting you to the potential for personal injury or property damage.**

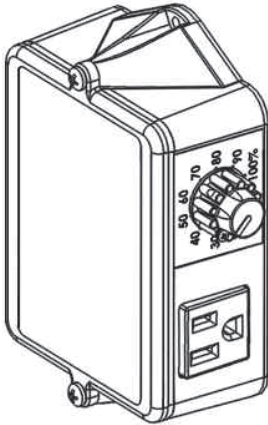
 **PCM INTENDED FOR INDOOR USE.**

 Electrical installation should adhere to all national and local codes. Consult a licensed professional for assistance with proper electrical installation.

 **WARNING** To reduce the risk of injury, do not permit children to use this product. This appliance is not to be used by persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.

SAVE THESE INSTRUCTIONS

SPECIFICATIONS



HOUSING

Polycarbonate

TIMER

Microcontroller with triac output

TURNDOWN RATIO

10:1

INPUT SIGNAL

Non-voltage dry contact water meter

RESET TIME

Immediate

MINIMUM SIGNAL DURATION

10 milliseconds

INPUT ELECTRICAL

120V 60Hz

MAXIMUM LOAD

1.8 A @ 120V 60Hz/216 V-A

NO LOAD CURRENT

0.45mA AC maximum

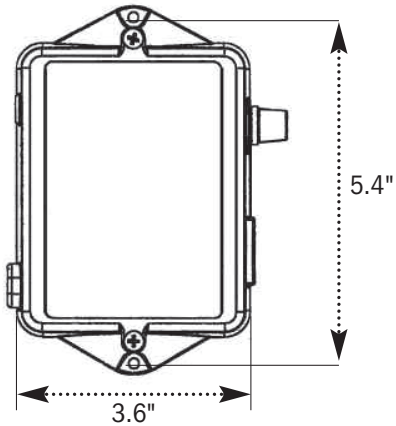
SHIPPING WEIGHT

2 lbs (0.9 kg)

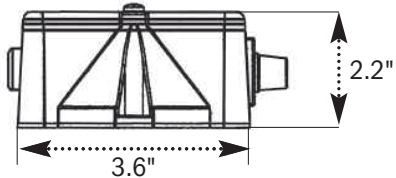
BOX DIMENSIONS

9 x 8 x 7 in. (23 x 20 x 18 cm)

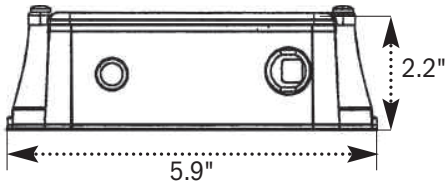
Front



Top



Side



-sizing

PRE-SIZING REQUIREMENTS

- Maximum system flow rate or well pump flow rate in gallons per minute (gpm) or liters per minute (lpm)
- Dosage in parts per million (ppm)
- Solution strength in parts per million (ppm)
- Water meter contacts per gallon (cpg or ppg) or per liter (cpl or ppl)
- Stenner fixed output metering pump

Key

min.	minute
sec.	second
ppm	parts per million
cpg	contacts per gallon
ppg	pulse per gallon
gpm	gallons per minute
gpd	gallons per day
spg	seconds per gallon
cpl	contacts per liter
ppl	pulse per liter
lpm	liters per minute
lpd	liters per day
spl	seconds per liter

SIZING IN GALLONS

Pre-Programming Requirements

- A. Determine the Maximum System Flow Rate or Well Pump Flow Rate in Gallons per Minute.**

If well pump output is unknown, refer to example below:

Calculate well pump output rate (gpm).

Determine the output rate by opening a faucet until the well pump turns on. Immediately turn off the faucet and time how long the well pump runs. Next, measure the volume of water drawn from the faucet until the well pump turns on again.

$$\frac{\text{Volume of water until the pump turns on (gallon)}}{\text{How long the pump runs (min.)}} = \text{Well Pump Output Rate (gpm)}$$

Example: After drawing 10 gallons of water, the well pump took 2 minutes to fill the pressure tank and stop.

$$\frac{10 \text{ gallons}}{2 \text{ minutes}} = 5 \text{ gpm}$$

- B. Determine Solution Strength Percentage and the Dosage Requirement in Parts per Million.**

If dosage is unknown, refer to example below:

Calculate required dosage (ppm).

Refer to Oxidation Rates below. Estimate dosage and include the ppm of required residual.

Common Chemical Solution Strengths in ppm

Name	%	ppm
Sodium Hypochlorite	5.25	52,500
	6.125	61,250
	12.5	125,000
Potassium Permanganate Dissolved at 1/4 lb per gallon	3	30,000
Hydrogen Peroxide	7	70,000
Polyphosphate Dissolved at 1 lb per 10 gallons	1.2	12,000

Oxidation Rates

For each ppm of	Iron	Manganese	Hydrogen Sulfide
Required ppm of Chlorine	1	2	3
Required ppm of Hydrogen Peroxide	0.5	1	1.5

Example: To treat a water supply containing 2 ppm iron and 4 ppm hydrogen sulfide with a chlorine residual of 1 ppm, a dosage of 15 ppm of chlorine is required.

$$2 \text{ ppm iron} \times 1 \text{ ppm chlorine} = 2$$

$$4 \text{ ppm hydrogen sulfide} \times 3 \text{ ppm chlorine} = 12$$

$$1 \text{ ppm chlorine residual} = 1$$

$$\text{Total } 2 + 12 + 1 = 15 \text{ ppm}$$

-sizing in Gallons

Pre-Programming Requirements continued

C. Calculate Metering Pump Output Requirement in Gallons per Day.

$$\frac{\text{Maximum System Flow Rate (gpm)} \times \text{Dosage (ppm)} \times 1440}{\text{Solution Strength ppm}^*} = \text{Metering Pump Output Requirement (gpd)}$$

* Solution Strength % x 10,000 = Solution Strength ppm

D. Reference the chart below to confirm the selected pump's maximum output slightly exceeds the pump output requirement calculated in C.

Stenner Fixed Output Pumps (26-100 psi)

Model	Pump Tube	Maximum Output (gpd)
45MPHP2	#1	3
45MPHP10	#2	10
45MPHP22	#7	22
85MPHP5	#1	5
85MPHP17	#2	17
85MPHP40	#7	40

SIZING IN GALLONS continued

1. Calculate the **Available Dose Time in Seconds.**

The Available Dose Time is the minimum time interval between water meter contact closures. Each closure sends an input signal to the PCM.

$$\begin{aligned} \text{a. } & \frac{60}{\text{Maximum System Flow Rate (gpm)}} = \text{Maximum System Flow Rate (spg)} \\ \text{b. } & \frac{\text{Maximum System Flow Rate (spg)}}{\text{Water Meter's contacts per gallon (cpg)}^*} = \text{Available Dose Time (sec.)} \end{aligned}$$

* Refer to the water meter model number to confirm the contact rate (cpg).

2. Calculate the **PCM Operating Time in Seconds.**

Calculate the PCM Operating Time based on pump selection in D, solution and dosage in B and use the formula below.

$$\frac{\text{Pump Output Requirement (gpd)} \times \text{Available Dose Time (sec.)}}{\text{Pump's Maximum Output (gpd)}} = \text{PCM Operating Time (sec.)}$$



WARNING PCM OPERATING TIME EXCEEDING AVAILABLE DOSE TIME

MAY LEAD TO DOSING ERRORS. To reduce PCM Operating Time, select a pump with a higher output or use stronger solution strength.

SIZING IN GALLONS continued

3. Select **PCM Model** based on PCM Operating Time determined in #2, refer to the chart below.

PCM Models

Model	Operating Range* (seconds)
PCM1	0.1 to 1.0
PCM5	0.5 to 5.0
PCM10	1.0 to 10.0
PCM20	2.0 to 20.0

* Factory preset

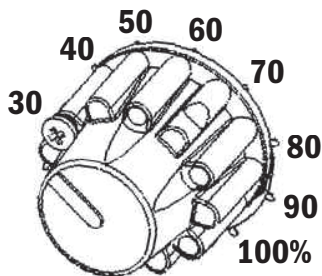
⚠ WARNING **PCM OPERATING TIME EXCEEDING AVAILABLE DOSE TIME MAY LEAD TO DOSING ERRORS.** To reduce PCM Operating Time, select a pump with a higher output or use stronger solution strength.

4. Determine **PCM Setting Percentage**.

$$\frac{\text{PCM Operating Time (sec.)}}{\text{Maximum PCM Operating Time (sec.)}^{**}} \times 100 = \text{PCM Setting Percentage (\%)}$$

** Value can only be 1, 5, 10 or 20

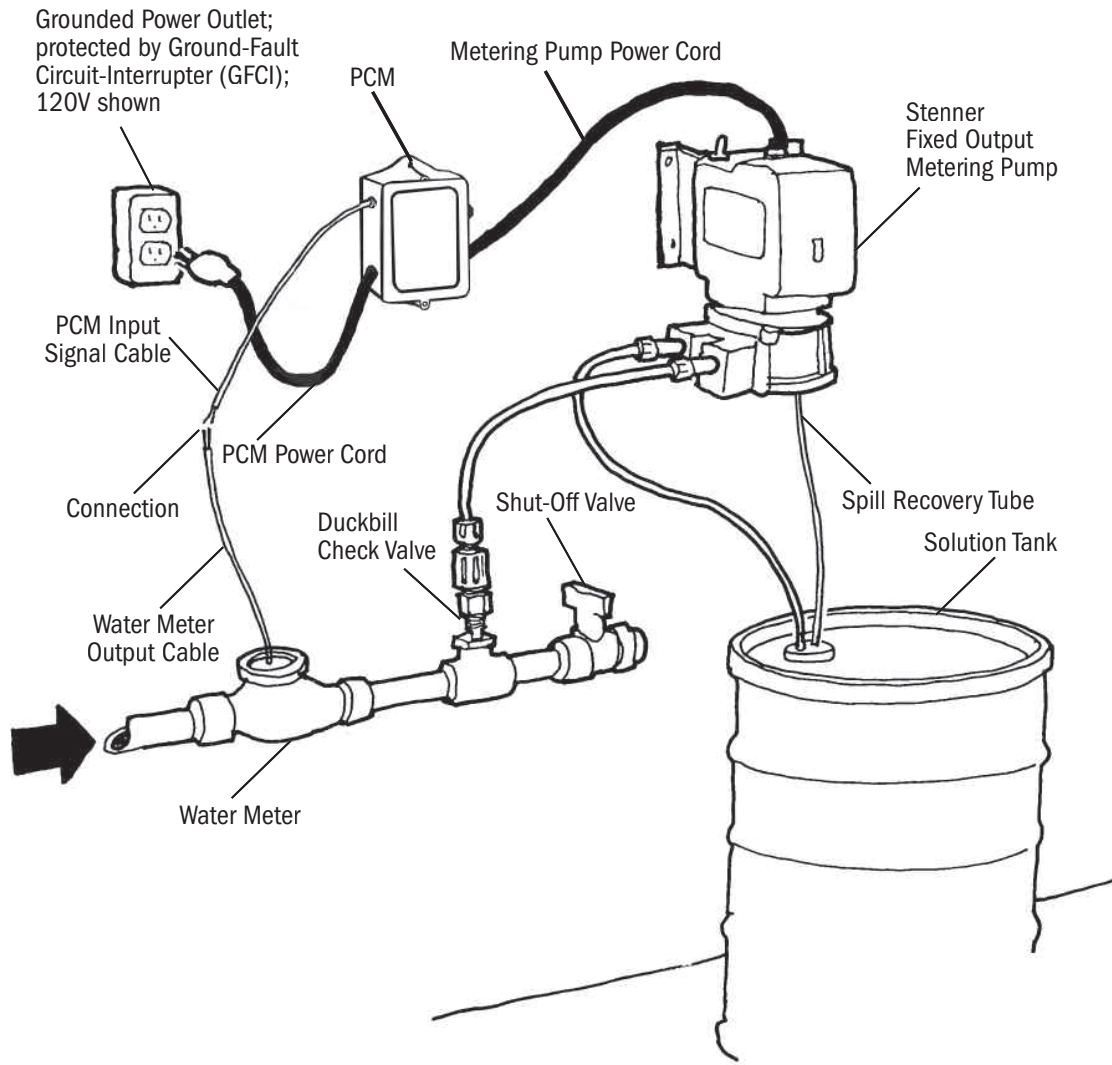
Turn the PCM knob to adjust to the percentage setting calculated. Use the locking screw located on the PCM knob to secure it.



INSTALLATION

- ❗ **Mount PCM in a dry location to avoid water intrusion and damage.**
 1. Position the PCM within 6 feet of the Stenner fixed output metering pump and mount to a suitable surface using adequate fasteners through the mounting holes.
- ❗ **Check supply voltage prior to connecting power cord to prevent damage. The use of a GFCI circuit is recommended.**
 2. Uncoil the input signal cable and remove approximately 2 inches of the outer cable jacket.
- ❗ **DO NOT connect PCM input signal cord to any AC voltage supply.**
- ❗ **DO NOT connect PCM input signal cord to any hall effect, 4-20mA or voltage carrying signal source.**
 3. Strip the ends of the two wires within the cable approximately one-half inch.
- ❗ **Use PCM only with a dry contact, reed switch style water meter.**
 4. Attach the two wires to the contact output water meter or relay switch.
 5. Adjust the knob to the desired on-time duration. Refer to the “Sizing” in this manual for assistance.
- ❗ **If using an adjustable metering pump, it is recommended that the pump be set at 100%.**
 6. With necessary suction, discharge and point of injection connections secured, prime the pump by plugging it into a 120V receptacle and turning on the power switch.
 7. Unplug the fixed output metering pump’s power cord from receptacle and plug into the PCM’s receptacle.
 8. Plug the PCM power cord into a properly grounded, 120V receptacle.

INSTALLATION DIAGRAM



TROUBLESHOOTING

LACK OF INPUT SUPPLY VOLTAGE (120V)

Plug the fixed output chemical metering pump directly into the 120V receptacle into which the PCM was originally plugged. This will bypass the PCM. If the pump does not run, the power source or pump is defective. If the metering pump operates, proceed to *LACK OF PROPER INPUT SIGNAL*.

LACK OF PROPER INPUT SIGNAL

Plug the metering pump into the PCM and the PCM into the receptacle tested in *Step 1*. Remove the PCM input signal cable from the water meter or relay and touch the two wires together. The pump should operate for the pre-determined run time setting and then stop.

- If the metering pump runs, the failure is in the water meter.
- If the metering pump does not run, the failure is in the PCM.
- Contact the factory for information on service and repair.

PCM OPERATING RANGE CONVERSION



WARNING HAZARDOUS VOLTAGE

DISCONNECT power cord before removing cover for service. **Electrical service by trained personnel only.**

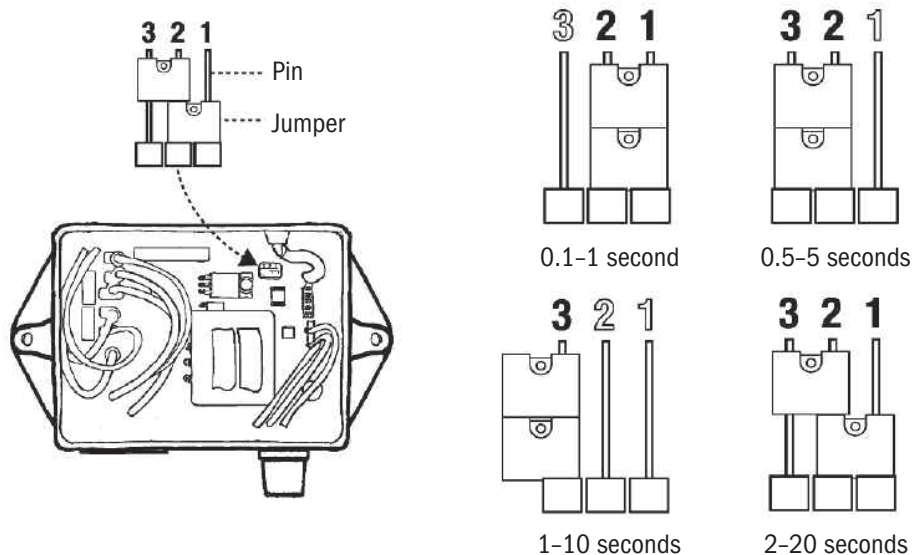
The PCM operating range is factory set according to the specific model. The operating range can be changed to convert a PCM to any of four available operating ranges without purchasing another model.

The operating range is converted by changing the position of the jumpers on the circuit board located under the PCM's cover. *Illustration A.* The PCM is equipped with two jumpers that are positioned over the pins labeled 3, 2, 1. *Illustration B.*

To change the time range:

1. Unplug the PCM power cord from the input power supply.
2. Remove the cover and reposition the jumpers to correspond with the desired operating range. *Refer to Interchangeable Operating Range Settings below.*
3. Replace the PCM cover.
4. **IMPORTANT!** Update the PCM data label to represent the converted model and operating range for accurate sizing.

OPERATING RANGE SETTINGS






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