

MEPNN Supplier Scouting Opportunity Synopsis

Section 1: General Information

Scouting Number	2025-367
Item to be Scouted	Plunger Valve
Days to be scouted	15
Response Due By	12/05/2025
Description	Plunger valve with diameters ranging from 4" diameter up to 42" diameter plunger valve for water flow control.

Section 2: Technical Information

Type of supplier being sought	Manufacturer
Reason	BABA
Describe the manufacturing processes (elaborate to provide as much detail as possible)	Metal Casting and Assembly. See attached spec sheet for additional information.
Provide dimensions / size / tolerances / performance specifications for the item	See attached PDF specifications.
List required materials needed to make the product, including materials of product components	See attached spec sheet.
Are there applicable certification requirements?	No
Are there applicable regulations?	Yes
Details	NSF/ ANSI 61 A weighted average lead content of 0.25% as determined by NSF/ ANSI 372.
Are there any other standards, requirements, etc.?	Yes
Details	1. American National Standards Institute (ANSI): a. B1.20.1, Pipe Threads, General Purpose (Inch). b. B16.1, Cast Iron Pipe Flanges and Flanged Fittings. c. B16.5, Steel Pipe Flanges and Flanged Fittings. 2. American Iron and Steel Institute (AISI): a. 304, Austenitic Stainless Steel (maximum percent: 0.08C, 2.0 Mn, 1.0 Si, 18 20Cr, 8 10.5 Ni). b. 420, Martensitic Stainless Steel (minimum percent: 0.15C, maximum percent: 1.0 Mn, 1.0 Si, 12 14 Cr, 0.0 Ni.). 3. ASTM International (ASTM): a. A48, Specification for Gray Iron Castings. b. A216, Specification for Steel Casting, Alloy, Specially Heat-Treated, for Pressure Containing Parts, Suitable for Common Requirements for Iron Castings for General Industrial Use. d. A743, Specification for Castings, Iron-Chromium, Iron-Chromium- Nickel, Corrosion Resistant, for General Application. 4. NSF International (NSF): a. NSF/ ANSI 61, Drinking Water System Components - Health Effects. b. NSF/ ANSI 372, Drinking Water System Components - Lead Content.
Additional Technical Comments	

Section 4: Business Information

Estimated potential business volume	5 units
Estimated target price / unit cost information (if unavailable explain)	\$170,000 per unit
When is it needed by?	Project dependent over next 8 years

Describe packaging requirements	Palletized products
Where will this item be shipped?	Clovis, NM

Additional Comments

Is there other information you would like to include?

SECTION 40 27 02.02
PLUNGER VALVES

PART 1 GENERAL

1.01 DESCRIPTION

- A. Furnish and install horizontal in-line plunger valve ANSI 150 class assemblies (V960), complete with electric modulating type actuator for flow control and isolation, factory tested, and operable, as shown on Drawings, and as specified herein.

1.02 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
 - 1. American National Standards Institute (ANSI):
 - a. B1.20.1, Pipe Threads, General Purpose (Inch).
 - b. B16.1, Cast Iron Pipe Flanges and Flanged Fittings.
 - c. B16.5, Steel Pipe Flanges and Flanged Fittings.
 - 2. American Iron and Steel Institute (AISI):
 - a. 304, Austenitic Stainless Steel (maximum percent: 0.08C, 2.0 Mn, 1.0 Si, 18-20 Cr, 8-10.5 Ni).
 - b. 420, Martensitic Stainless Steel (minimum percent: 0.15C, maximum percent: 1.0 Mn, 1.0 Si, 12-14 Cr, 0.0 Ni).
 - 3. ASTM International (ASTM):
 - a. A48, Specification for Gray Iron Castings.
 - b. A216, Specification for Steel Casting, Alloy, Specially Heat-Treated, for Pressure Containing Parts, Suitable for High Temperature Service.
 - c. A536, Specification for Common Requirements for Iron Castings for General Industrial Use.
 - d. A743, Specification for Castings, Iron-Chromium, Iron-Chromium-Nickel, Corrosion Resistant, for General Application.
 - 4. NSF International (NSF):
 - a. NSF/ANSI 61, Drinking Water System Components - Health Effects.
 - b. NSF/ANSI 372, Drinking Water System Components - Lead Content.

1.03 SUBMITTALS

- A. Manufacturer's data and descriptive literature written in the English language. Include catalog data, preliminary performance testing procedures, quality control procedures, calculations, detailed construction sheets showing all valve parts and descriptions of materials of construction with and applicable

USA material specifications such as AISI, ANSI, ASTM, American Society of Automotive Engineers (SAE), or the Copper Development Association (CDA). Identify each valve by tag number to which the catalog data and detail sheets pertain.

- B. Factory developed production drawings that clearly show valve dimensions, laying lengths, port sizes, component parts, and materials of construction. Provide graphical factory generated computer modeling results for both estimated noise levels in decibels and for cavitation and its control through the complete stroke of the valve and through all flow rates.
- C. Valve performance data, including Cv values, manufacturers recommended sigma, layout requirements for performance data, for all valve positions for the trim type provided.
- D. Shop assembly drawings that clearly shows dimensions and orientation of valve actuators as installed on the valves. Clearly show location of internal stops for gear actuators. Provide valve actuator safety verification through the complete stroke specifically noting values for both break torque under maximum differential as well as maximum dynamic torque. Use the ratio of actuator output torque over valve input torque for validation. Valve manufacturer's compliance shall be factory signed and dated.
- E. Shop coating and lining specifications, which clearly identify all valve linings and coatings.
- F. Coating and lining test reports that report and verify the valve interior lining condition is tested for absence of holidays, and lining thickness. Describe test results and repair procedures for each valve. Do not ship valves to Project Site until the reports have been approved by the Engineer and accepted by the Owner.
- G. Valve summary data sheet that provides the station, valve structure, type, manufacturer, size, pressure rating, minimum and maximum flow valve opening percentages, zeta value upstream and downstream, drilling pattern and model number of each valve; and type, manufacturer, and model number of the valve actuator.
- H. Factory shop hydrostatic test reports, functional performance test reports, and any other required test reports. Hydrostatic test reports shall be presented which reflect the requirement of the test procedures.
- I. Factory export packaging specifications, applicable to overseas shipping via surface carrier.
- J. Current quality assurance program certificate of compliance.

- K. Operations and Maintenance Manual for valve(s) as specified in Section 01 78 23 Operation and Maintenance Data. Manuals shall include installation instructions, maintenance procedures and operation parameters. Detail operating characteristics, limiting conditions, performance curves, engineering data, nameplate data, tests, complete nomenclature and parts numbers, parts list, illustrations, assembly drawings showing each part and part number and diagrams of required maintenance. Provide spare parts ordering instructions. Identify routine maintenance and schedule for such, troubleshooting guides, adjustment and checking procedures, list of relay settings, control, and alarm contact settings. Provide recommended spare parts list and current prices and recommended quantities. List briefly each maintenance operation required, frequency required, and lubricant (or other material) required. Refer to specific information in manufacturer's standard maintenance manual, where applicable. Provide local representative and corporate representative and their phones, emails, names, and addresses.
- L. Operations and maintenance data in accordance with Section 01 78 23, Operation and Maintenance Data.
- M. Manufacturer's Certificate of Compliance and Manufacturer's Certificate of Proper Installation, in accordance with Section 01 43 33, Manufacturers' Field Services.
- N. Certification for compliance to NSF/ANSI 61 and NSF/ANSI 372.

1.04 SUBSTITUTION

- A. Engineer knows of no "or-equals."

1.05 EXTRA MATERIALS

- A. Furnish, tag, and box for shipment and storage following spare parts and special tools.

Item	Quantity
Special tools required to maintain or dismantle	1 complete set

1.06 QUALITY ASSURANCE

- A. The manufacturer shall be ISO 9001 and ISO 14001 Certified.
- B. Shop Inspection: The manufacturer shall provide a 4-week advance notice to the Engineer prior to performing tests, and shall allow full access to designated Owner's representatives for inspection of manufacturing facilities and processes, and any specified testing. The manufacturer shall perform all

testing at manufacturer's cost, unless such testing is specifically indicated to be provided by the Owner.

C. Shop Testing:

1. Plunger valve and electric motor actuator assembly shall be shop tested prior to shipment in accordance with the following minimum standards:
 - a. Leakage Test: Plunger valves shall be qualitatively tested to 1.1 times valve pressure rating to identify drop tight closure of valve seat, seal leaks and other problems in the assembly process.
 - b. Hydrostatic Test: Plunger valves shall be hydrostatically tested to withstand 1.5 times of the valve's maximum design operating pressure rating.
 - c. Functional Flow Performance Test: Plunger valves shall be subjected to an operational/test using potable water. The test procedure shall include three complete open/close cycles of operation with the valve actuator settings in place (limit switches, torque switches, pilot pressure settings, etc.).

1.07 EXPERIENCE AND SERVICE RESPONSE

- A. The valve manufacturer shall have a minimum of 10 years of experience in the production and sales of plunger valves. The valve manufacturer shall also have at least 25 installed plunger valve references in North America that have been in operation in last 5 years. Valve manufacturer shall provide complete documentation to meet this requirement, including contact names and telephone and fax numbers that can verify field installations. Acceptance of the validity of submitted documentation is solely at the discretion of the client.

PART 2 PRODUCTS

2.01 GENERAL

- A. Components and Materials in Contact with Water for Human Consumption:
 1. Comply with the requirements of the Safe Drinking Water Act and other applicable federal, state, and local requirements. Provide certification by manufacturer or an accredited certification organization recognized by the Authority Having Jurisdiction that components and materials comply with:
 - a. NSF/ANSI 61.
 - b. A weighted average lead content of 0.25 percent as determined by NSF/ANSI 372.
 2. Use or reuse of components and materials without a traceable certification is prohibited.

3. Acceptable Product Marking: NSF 61 and NSF 372 (or NSF 61-G) or other accepted certifier marks demonstrating third party certification with these requirements.
4. Product shall be certified compliant with these requirements by an ANSI accredited certification organization.

2.02 PLUNGER VALVE PERFORMANCE REQUIREMENTS

- A. Valve performance requirements shall be achievable by the furnished valve in the layout depicted on Drawings.
- B. Performance: Each valve shall be designed to operate smoothly throughout the specified flow range without cavitation, excessive noise, or vibration for the conditions stated below.
 1. Valve design shall include a perforated cylinder insert to prevent cavitation and any special other features as required by the manufacturer for cavitation control to reduce pressure and provide flows specified below. Perforated cylinder inserts shall (both at high pressure differential and at low pressure differential operating conditions) not cause blockage in valves requiring maintenance other than simply opening or closing valve to dislodge and flush water out of valve. These criteria do not apply to those types of items (i.e., woody, fibrous, or hard particles) which would plug the valve openings anyway.
 2. Valve manufacturer shall notify Engineer in writing of any risk of cavitation damage to the piping downstream of the plunger valves due to the operating conditions indicated on Drawings and Specifications and suggest elongating straight piping downstream of the valve if such modifications are deemed needed to protect the downstream piping (including valves) from cavitation damage.
- C. Noise: Operating noise levels shall not exceed 95 decibels (dBA) at a distance of 3 feet from the valve at the normal flow point. Material stresses shall not exceed 1/5 of the ultimate or 1/3 of the yield strength of the material. Flow rate as a function of pressure drop across the valve shall be linear to within 3 percent.
- D. 4-inch, Flow Control Plunger Valve Operation Data: Intended valve use is to provide flow control and energy dissipation for pressure reductions ranging from 99 psid static pressure to 19 psig.
 1. Downstream Pressurized Discharge:
 - a. Normal Operating Range: 0.08 mgd to 0.43 mgd.
 - b. Maximum Operating Flow: 0.43 mgd.
 - c. Maximum Inlet Pressure: 137 psig.
 - d. Minimum Inlet Pressure: 74 psig (at 0.43 mgd).
 - e. Maximum Outlet Pressure: 55 psig (at all flow conditions).

- f. Minimum Outlet Pressure: 38 psig (at all flow conditions).
- g. Operating Function: Modulating/throttling flow control valve, may operate up to 365 days per year. Valve shall function as modulating flow control valve with flow setting and flow “dead band” width (flow variation from setting where valve will not move) setting selected by operator. Flows will be read at a meter upstream of valve and transmitted to control room at upstream water treatment plant. Actuator shall be equipped with a continuous position transmitter providing 4 mA to 20 mA signal output for feedback to control room and to allow for position/flow control.

2.03 PLUNGER VALVE OPERATING REQUIREMENTS

- A. Valve Assembly Components: Each plunger valve assembly shall consist of a flanged short conical inlet section having an internal cone to divert the water flow into the annular chamber of the body section.
- B. An oval body section with an inner annular chamber shall be formed by the body shell. The plunger with custom designed cylinder control trim is part of internal slider-crank mechanism and is driven by an outside 90-degree AWWA worm gear. The control trim cylinder shall be field removable and replaceable with alternate control trim when hydraulic conditions change or new operating parameters are required.
- C. The plunger shall move in an axial flow direction to reduce or enlarge the annular flow cross-section through slots in a degressive manner, and the medium will flow through the customized regulating cylinder from the outer annular chamber to the inner chamber of the plunger for flow control.
- D. The seals of the plunger valve shall allow the valve to be drip and bubble tight in both flow directions for the long term and without the need for premature seal replacement. The outside of the plunger shall seat against a quad-O-ring sealing ring. The quad-O-ring shall deflect and seal in both axial directions. The quad O-ring will provide the best available design for both modulating and for open close service in the prevention of twist, roll and point loading of the plunger seal. The seal shall be insensitive to debris. The elastomeric profile sealing ring shall seat leak tight at the downstream end of the plunger. The elastomeric profile sealing ring shall be mechanically retained in the downstream flange of the valve body by a stainless steel seat ring. It shall be recessed from the high velocity flow through the complete stroke of the valve. Valve shaft seals shall prevent the long term potential of water entering into the gear case. The valve operating shaft shall have five O-ring seals; two on the shaft at the crank mechanism and three on the shaft at the gear box. The O-ring seals shall maintain a drip tight seal regardless of modulation cycles or inactivity. The O-ring seals will prevent corrosion of the shaft body bore.

- E. Valves shall be provided with 4 integral support feet per each 180-degree circumference. There shall be four total lifting lugs, one per each foot. The four lifting lugs shall be factory drilled and taped. They shall be sufficiently broad in placement to assist with rigging of an unbalanced load.
- F. The valve shall function properly and without issue within any 180-degree flange rotation.

2.04 PLUNGER VALVE DESIGN FEATURES

- A. Plunger valve shall be a short body one-part-body design with interior geometry that provides water flow that is guided around a streamlined internal body. The design shall feature a geometrically optimized design, a continuous annular cross-sectional reduction from inlet to throttle cross-section, and continuous rise of flow velocity to the exit without producing cavitation.
- B. Plunger valve design shall feature a customized designed plunger with tailored anti-cavitation trim with slots or orifice holes to minimize cavitation. Slots or orifice shall be fully closed when the valve is placed in the closed position. The plunger shall be seated against the upstream quad O-ring and an elastomeric seat located in body downstream flange with the valve in the closed position. The elastomeric seat shall be properly kept in position in a groove in the body and the downstream stainless steel seat ring shall secure the elastomeric profile sealing ring from displacement. The profile seat ring shall not be penetrated by fasteners, exposed to the flow stream in the open position and shall not be subject to cold flow of the elastomer.
- C. Plunger valve design, when open during operation, shall feature plunger assembly movement in the upstream side direction to release water through the slots or orifice holes.
- D. Plunger valve design shall feature advance and retract axial strokes of the plunger, guided in the internal body by an internal slider-crank mechanism of stainless steel. The crank and push rod mechanism shall have an industry standard 90-degree angle of rotation stroke from open to close matching the travel for AWWA waterworks quarter turn valves. The provided actuator shall include a mechanical stop in the open and closed positions which will prevent attempts of actuator to hyper extend the plunger or place undesired stresses on the internal linkage system. The plunger shall slide and be contained in the axial position by guide rails. To prevent possible corrosion between the guide rails and the valve body, the guide rails shall be completely fused to the valve body in an overlay weld process to prevent any gaps or corrosion pathways. Guide rails which are riveted or bolted to the valve body are not acceptable for long-term operability and corrosion protection. The guide rails shall be bronze and shall be positioned around the plunger in an uneven quantity to reduce the potential for damaging harmonic vibration, clogging or excessive wear. The

guide rails shall be low to no lead and very low zinc content to prevent dezincification.

- E. Motion shall be controlled by means of electric actuator attached to the body section, equipped with a handwheel that can also be used to operate the valve manually or in the event of power failure to the actuator. Actuate plunger valve as specified and described in Section 40 27 02.03, Electric Motor Actuators. Valve supplier shall size the actuator and coordinate with the actuator manufacturer for proper fit.
- F. The design of the annular throat cross-section in any position of the plunger shall ensure linear regulation of flow.
- G. Flanged connections shall mate with adjacent Class 125 ductile iron flanges.
- H. The movement of the plunger shall be controlled by means of maintenance free irreversible, self-locking, quarter turn, 90-degree AWWA worm gear unit with externally adjustable mechanical stops to limit valve travel in both the open and closed positions. The valve stroke shall equal 90 degrees plus or minus 2 degrees, whereby the mechanical stops of the worm gear shall be engaged before the full extension or retraction of the plunger. In no instance shall the full output torque of actuator be allowed to be transmitted to the valve at its end of travel, either open or closed, without engaging the travel stops of the worm gear first. The AWWA worm gear unit shall be operated by a hand wheel or electric actuator.
- I. Plunger Valve Base Plates. Submit and obtain approval for, and provide, base plates for plunger valve. Base plates must be able to be unbolted to remove the valve from the adjacent process piping by sliding the valve up to 3 inches horizontally away from the upstream flange before it is lifted vertically. Base plates shall secure valve to a reinforced concrete base (by installation contractor) so that the plunger valve does not vibrate.

2.05 MATERIAL REQUIREMENTS

- A. Principal Component Parts Materials of Valve Construction:

Item	Size	Material	Specification
Valve Body	All	Ductile Iron	ASTM A536, GR. 60,40,18
Plunger	All	Stainless Steel	AISI 304
Regulating Cylinder	All	Stainless Steel	AISI 304
Shaft Bushing		Bronze	ASTM C90800/CuSn12
Crank Shaft	All	Stainless Steel	AISI 420

Item	Size	Material	Specification
Crank Mechanism (sizes 6" – 78")	All	Stainless Steel	AISI 304
Seat/Retaining Ring	All	Stainless Steel	AISI 304
Plunger Guide Rails	All	Bronze welded overlay	CuAl8 (lead <0.0020% Zinc <0.008%
Quad-Sealing-Ring	All	EPDM	Hardness A:80, (=/- 5). Elongation >200%, Tensile >12 N/mm, Elasticity >25%
Profile Sealing Ring	All	EPDM	Hardness A:80, (=/- 5). Elongation >200%, Tensile >12 N/mm, Elasticity >25%
O-Rings, Actuator Shaft	All	EPDM	Hardness A:80, (=/- 5). Elongation >200%, Tensile >12 N/mm, Elasticity >25%
Worm Gearbox			Housing: Ductile Iron GGG-40 Worm Wheel: GGG-60 or bronze Coupling: Quenched and tempered steel acc. to 10083-2 Input Drive Shaft (Secondary Gear): Stainless steel 10088-3

- B. Fasteners: All studs, bolts, washers, and nuts in contact with water shall be Type 304 or Type 316 stainless steel.
- C. All materials of moving components in contact with each other shall be of dissimilar hardness to prevent galling. The valve shall be moved through an open-close-open cycle three times after final assembly and prior to shipment to ensure this requirement.
- D. Coating shall be in accordance with Section 09 90 04, Painting, System No. 4. Valve shall be lined with manufacturer's standard fusion bonded epoxy for potable water service, NSF 61 compliant, 12 mils minimum dry film

thickness. Stainless steel parts, or parts requiring no lining for clearances, do not require a lining.

2.06 PLUNGER VALVE MANUFACTURER

- A. Armacon RKV11 slotted cylinder trim package.
- B. Erhard GmbH with trim package required to meet performance requirements.
- C. “Or-equal.”
- D. Note that vault layout, including piping and other features, is based on valve characteristics of the listed vendor. Additional pipe lengths may be required by other vendors to ensure proper installation. If another vendor is used, Contractor shall resize, redesign, and construct vault and any other relevant work to meet manufacturer’s recommended installation practices for the selected vendor, at no cost to Owner.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Valve installation shall be in strict accordance with the manufacturer’s printed recommendations, and the Contract Documents.

3.02 WORKMANSHIP

- A. Valves shall be free from manufacturing defects and shall be manufactured in a workmanlike manner. Valves shall be manufactured under the direction of a registered professional engineer.

3.03 FIELD TESTING AND PERFORMANCE

- A. Manufacturer shall furnish all required startup assistance and inspection of installed valve at the Owner’s facility.
- B. See Section 40 27 02, Valves and Operators for additional requirements.

3.04 TRAINING

- A. During startup and training, plunger valve manufacturer shall educate Owner’s staff of any cavitation and maintenance issues or concerns to watch for in operating the valves. Provide 1 person-day of training for this valve, as specified in Section 40 27 02, Valves and Operators.

3.05 WARRANTY

- A. The plunger valve manufacturer shall warrant its products, including actuators incorporated in the work, to be free from defects in materials, workmanship and performance for a period of 5 years from the date of recording the Notice of Completion. Upon notice by the Owner, any damage or defect found during the warranty period shall be promptly repaired or replaced by the manufacturer at no cost to the Owner.

END OF SECTION