BID OF_____

2023

PROPOSAL, CONTRACT, BOND AND SPECIFICATIONS

FOR

FELLAND RESERVOIR BOOSTER PUMP INSTALL

MILKY WAY RESERVOIR VALVE INSTALL

CONTRACT NO. 9336

MUNIS NO. 14413

IN

MADISON, DANE COUNTY, WISCONSIN

AWARDED BY THE COMMON COUNCIL
MADISON, WISCONSIN ON_____

CITY ENGINEERING DIVISION
1600 EMIL STREET
MADISON, WISCONSIN 53713

https://bidexpress.com/login

FELLAND RESERVOIR BOOSTER PUMP INSTALL

MILKY WAY RESERVOIR VALVE INSTALL

CONTRACT NO. 9336

INDEX

This Proposal, and Agreement have
been prepared by:

CITY ENGINEERING DIVISION
CITY OF MADISON
MADISON, DANE COUNTY, WISCONSIN

for:
Pete Holmgren, P.E.
Madison Water Utility
Chief Engineer

PEH:

08/24/2023
(Revised 09/19/2023)

SECTION A: ADVERTISEMENT FOR BIDS AND INSTRUCTIONS TO BIDDERS

REQUEST FOR BID FOR PUBLIC WORKS CONSTRUCTION
CITY OF MADISON, WISCONSIN

A BEST VALUE CONTRACTING MUNICIPALITY

PROJECT NAME:	FELLAND RES. BOOSTER PUMP INSTALL
CONTRACT NO.:	9336
DBE GOAL	8%
BID BOND	5%
DBE PRE BID MEETING	See Pre-Bid Meeting info below
PRE BID MEETING-PROJECT OVERVIEW (10:00A.M.)	September 11, 2023
PREQUALIFICATION APPLICATION DUE (2:00 P.M.)	September 14, 2023
BID SUBMISSION (2:00 P.M.)	September 21, 2023
BID OPEN (2:30 P.M.)	September 21, 2023
PUBLISHED IN WSJ	August 24 & 31, & September 7 & 14, 2023

DBE PRE BID MEETING: Meetings are not being held in person at this time. Contractors can schedule one-on-one phone calls with Tracy Lomax, Affirmative Action Division, to count towards good faith efforts. Tracy may be reached at (608) 266-6510, or by email, TLomax@cityofmadison.com.

PRE BID MEETING – PROJECT OVERVIEW: A Pre-Bid Project Overview Meeting will be held on September 11, 2023, at Reservoir #229, 1224 Felland Road, Madison, WI 53718, to discuss project constraints, objectives, schedules, and to answer any questions.

PREQUALIFICATION APPLICATION: Forms are available on our website, www.cityofmadison.com/business/pw/forms.cfm. If not currently prequalified in the categories listed in Section A, an amendment to your Prequalification will need to be submitted prior to the same due date. Postmark is not applicable.

BIDS TO BE SUBMITTED by hand to 1600 EMIL ST., MADISON, WI 53713 or online at www.bidexpress.com.

Bids may be submitted on line through Bid Express or in person at 1600 Emil St. The bids will be posted on line after the bid opening. If you have any questions, please call Alane Boutelle at (608) 267-1197, or John Fahrney at (608) 266-9091.

STANDARD SPECIFICATIONS

The City of Madison's Standard Specifications for Public Works Construction - 2023 Edition, as supplemented and amended from time to time, forms a part of these contract documents as if attached hereto.

These standard specifications are available on the City of Madison Public Works website, www.cityofmadison.com/Business/PW/specs.cfm.

The Contractor shall review these Specifications prior to preparation of proposals for the work to be done under this contract, with specific attention to Article 102, "BIDDING REQUIREMENTS AND CONDITIONS" and Article 103, "AWARD AND EXECUTION OF THE CONTRACT." For the convenience of the bidder, below are highlights of three subsections of the specifications.

SECTION 102.1: PRE-QUALIFICATION OF BIDDERS

In accordance with Wisconsin State Statutes 66.0901 (2) and (3), all bidders must submit to the Board of Public Works proof of responsibility on forms furnished by the City. The City requires that all bidders be qualified on a biennial basis.

Bidders must present satisfactory evidence that they have been regularly engaged in the type of work specified herein and they are fully prepared with necessary capital, materials, machinery and supervisory personnel to conduct the work to be contracted for to the satisfaction of the City. All bidders must be pre-qualified by the Board of Public Works for the type of construction on which they are bidding prior to the opening of the bid.

In accordance with Section 39.02(9)(a)l. of the General Ordinances, all bidders shall submit in writing to the Affirmative Action Division Manager of the City of Madison, a Certificate of Compliance or an Affirmative Action Plan at the same time or prior to the submission of the proof of responsibility forms.

The bidder shall be disqualified if the bidder fails to or refuses to, prior to opening of the bid, submit a Certificate of compliance, Affirmative Action Plan or Affirmative Action Data Update, as applicable, as defined by Section 39.02 of the General Ordinances (entitled Affirmative Action) and as required by Section 102.11 of the Standard Specifications.

SECTION 102.4 PROPOSAL

No bid will be accepted that does not contain an adequate or reasonable price for each and every item named in the Schedule of Unit Prices.

A lump sum bid for the work in accordance with the plans and specifications is required. The lump sum bid must be the same as the total amounts bid for the various items and it shall be inserted in the space provided.

All papers bound with or attached to the proposal form are considered a part thereof and must not be detached or altered when the proposal is submitted. The plans, specifications and other documents designated in the proposal form will be considered a part of the proposal whether attached or not.

A proposal submitted by an individual shall be signed by the bidder or by a duly authorized agent. A proposal submitted by a partnership shall be signed by a member/partner or by a duly authorized agent thereof. A proposal submitted by a corporation shall be signed by an authorized officer or duly authorized registered agent of such corporation, and the proposal shall show the name of the State under the laws of which such corporation was chartered. The required signatures shall in all cases appear in the space provided thereof on the proposal.

Each proposal shall be placed, together with the proposal guaranty, in a sealed envelope, so marked as to indicate name of project, the contract number or option to which it applies, and the name and address of the Contractor or submitted electronically through Bid Express (www.bidexpress.com). Proposals will be accepted at the location, the time and the date designated in the advertisement. Proposals received after the time and date designated will be returned to the bidder unopened.

SECTION 102.5: BID DEPOSIT (PROPOSAL GUARANTY)

All bids, sealed or electronic, must be accompanied with a Bid Bond (City of Madison form) equal to at least 5% of the bid or a Certificate of Annual/Biennial Bid Bond or certified check, payable to the City Treasurer. Bid deposit of the successful bidders shall be returned within forty-eight (48) hours following execution of the contract and bond as required.

MINOR DISCREPENCIES

Bidder is responsible for submitting all forms necessary for the City to determine compliance with State and City bidding requirements. Nothwithstanding any language to the contrary contained herein, the City

may exercise its discretion to allow bidders to correct or supplement submissions after bid opening, if the minor discrepancy, bid irregularity or omission is insignificant and not one related to price, quality, quantity, time of completion or performance of the contract.

Bidders for this Contract(s) must be Pre-Qualified for at least one of the following type(s) of construction denoted by an ☒

Building Demolition

101 ☐ Asbestos Removal
120 ☐ House Mover
110 ☐ Building Demolition

Street, Utility and Site Construction

201 ☐ Asphalt Paving
205 ☐ Blasting
210 ☐ Boring/Pipe Jacking
215 ☐ Concrete Paving
220 ☐ Con. Sidewalk/Curb & Gutter/Misc. Flat Work
221 ☐ Concrete Bases and Other Concrete Work
222 ☐ Concrete Removal
225 ☐ Dredging
230 ☐ Fencing
235 ☐ Fiber Optic Cable/Conduit Installation
240 ☐ Grading and Earthwork
241 ☐ Horizontal Saw Cutting of Sidewalk
242 ☐ Infrared Seamless Patching
245 ☐ Landscaping, Maintenance
246 ☐ Ecological Restoration
250 ☐ Landscaping, Site and Street
251 ☐ Parking Ramp Maintenance
252 ☐ Pavement Marking
255 ☐ Pavement Sealcoating and Crack Sealing
260 ☐ Petroleum Above/Below Ground Storage Tank Removal/Installation
262 ☐ Playground Installer
265 ☐ Retaining Walls, Precast Modular Units
270 ☐ Retaining Walls, Reinforced Concrete
275 ☐ Sanitary, Storm Sewer and Water Main Construction
276 ☐ Sawcutting
280 ☐ Sewer Lateral Drain Cleaning/Internal TV Insp.
285 ☐ Sewer Lining
290 ☐ Sewer Pipe Bursting
295 ☐ Soil Borings
300 ☐ Soil Nailing
305 ☐ Storm & Sanitary Sewer Laterals & Water Svc.
310 ☐ Street Construction
315 ☐ Street Lighting
318 ☐ Tennis Court Resurfacing
320 ☐ Traffic Signals
325 ☐ Traffic Signing & Marking
332 ☐ Tree pruning/removal
333 ☐ Tree, pesticide treatment of
335 ☐ Trucking
340 ☐ Utility Transmission Lines including Natural Gas, Electrical & Communications
399 ☐ Other_____

Bridge Construction

501 ☐ Bridge Construction and/or Repair

Building Construction

401 ☐ Floor Covering (including carpet, ceramic tile installation, rubber, VCT
402 ☐ Building Automation Systems
403 ☐ Concrete
404 ☐ Doors and Windows
405 ☐ Electrical - Power, Lighting & Communications
410 ☐ Elevator - Lifts
412 ☐ Fire Suppression
413 ☐ Furnishings - Furniture and Window Treatments
415 ☐ General Building Construction, Equal or Less than $250,000
420 ☐ General Building Construction, $250,000 to $1,500,000
425 ☐ General Building Construction, Over $1,500,000
428 ☐ Glass and/or Glazing
429 ☐ Hazardous Material Removal
430 ☐ Heating, Ventilating and Air Conditioning (HVAC)
433 ☐ Insulation - Thermal
435 ☐ Masonry/Tuck pointing
437 ☐ Metals
440 ☐ Painting and Wallcovering
445 ☒ Plumbing
450 ☐ Pump Repair
455 ☒ Pump Systems
460 ☐ Roofing and Moisture Protection
464 ☐ Tower Crane Operator
461 ☐ Solar Photovoltaic/Hot Water Systems
465 ☐ Soil/Groundwater Remediation
466 ☐ Warning Sirens
470 ☐ Water Supply Elevated Tanks
475 ☐ Water Supply Wells
480 ☐ Wood, Plastics & Composites - Structural & Architectural
499 ☐ Other_____
_____

State of Wisconsin Certifications

1 ☐ Class 5 Blaster - Blasting Operations and Activities 2500 feet and closer to inhabited buildings for quarries, open pits and road cuts.
2 ☐ Class 6 Blaster - Blasting Operations and Activities 2500 feet and closer to inhabited buildings for trenches, site excavations, basements, underwater demolition, underground excavations, or structures 15 feet or less in height.
3 ☐ Class 7 Blaster - Blasting Operations and Activities for structures greater than 15 ' in height, bridges, towers, and any of the objects or purposes listed as “Class 5 Blaster or Class 6 Blaster”.
4 ☐ Petroleum Above/Below Ground Storage Tank Removal and Installation (Attach copies of State Certifications.)
5 ☐ Hazardous Material Removal (Contractor to be certified for asbestos and lead abatement per the Wisconsin Department of Health Services, Asbestos and Lead Section (A&LS).) See the following link for application: www.dhs.wisconsin.gov/Asbestos/Cert. State of Wisconsin Performance of Asbestos Abatement Certificate must be attached.
6 ☐ Certification number as a Certified Arborist or Certified Tree Worker as administered by the International Society of Arboriculture
7 ☐ Pesticide application (Certification for Commercial Applicator For Hire with the certification in the category of turf and landscape (3.0) and possess a current license issued by the DATCP)
8 ☐ State of Wisconsin Master Plumbers License.

SECTION B: PROPOSAL

Please refer to the Bid Express Website at https://bidexpress.com look up contract number and go to Section B: Proposal Page

You can access all City of Madison bid solicitations for FREE at www.bidexpress.com

Click on the "Register for Free" button and follow the instructions to register your company and yourself. You will be asked for a payment subscription preference, since you may wish to bid online someday. Simply choose the method to pay on a 'per bid' basis. This requires no payment until / unless you actually bid online. You can also choose the monthly subscription plan at this time. You will, however, be asked to provide payment information. Remember, you can change your preference at anytime. You will then be able to complete your free registration and have full access to the site. Your free access does not require completion of the 'Digital ID' process, so you will have instant access for viewing and downloading. To be prepared in case you ever do wish to bid online, you may wish to establish your digital ID also, since you cannot bid without a Digital ID.

If you have any problems with the free registration process, you can call the bidexpress help team, toll free at 1-888-352-2439 (option 1, option1).

SECTION C: DISADVANTAGED BUSINESS ENTERPRISE

Instructions to Bidders
City of Madison
DBE Program Information

Disadvantaged Business Enterprise (DBE) Program Information

This project anticipates financing in whole or in part by the Wisconsin Department of Natural Resources (DNR) through the Clean Water Fund Program (CWFP) or the Safe Drinking Water Loan Program (SDWLP). The City of Madison and all Contractors on this project must make good faith efforts to utilize DBEs. The Wisconsin DNR provides a Contract Packet for DBE compliance which contains information for compliance with the EPA's DBE regulations and DBE program policies.

The DBE Compliance packet, and copies of required forms are available for reference at: https://dnr.wi.gov/Aid/documents/EIF/Guide/DBE.html

Additional questions regarding the DBE Program provisions of this Contract, including the attached Environmental Improvement Fund (EIF) DBE Good Faith Certification forms and the DBE Subcontractor Utilization forms, should be directed to:

> Tracy Lomax, Affirmative Action Division Manager, City Civil Rights Department, at (608) 266-6510, or by email MGombar@cityofmadison.com
> – OR –
> Adam Wiederhoeft, PE, Design & Construction Engineer, Madison Water Utility, at (608) 266-9121, or by email at awiederhoeft@madisonwater.org

A copy of the complete City of Madison Disadvantaged Business Enterprise Program and/or DBE Directory may be obtained by calling the City Civil Rights Department at (608) 267-8759, or online at: https://wisconsindot.gov/Pages/doing-bus/civil-rights/dbe/certified-firms.aspx.

2.1 Program Overview and Requirements

The City of Madison, in awarding prime contracts, and the primary contractor, in awarding subcontractors, are required to make a good faith effort to achieve a combined minimum goal of 8% participation for DBE utilization. This procurement will be subject to regulations contained in NR162, Wisconsin Administrative Code and appropriate State Statutes. Any contract awarded under this Invitation to Bid must demonstrate positive good faith efforts to utilize disadvantaged business enterprises (DBE). The City of Madison encourages DBE, including qualifying women-owned business enterprises (WBE) and minority-owned business enterprises (MBE), to submit Bid Proposals.

Failure to comply could result in the reduction in loan eligibility and/or could result in the contract being awarded to the lowest bidder demonstrating a positive effort to utilize women, minority, and small businesses.

The Contractor shall demonstrate positive efforts to utilize disadvantaged business enterprises (DBE). The Contractor's documentation regarding positive effort to utilize DBE shall be submitted with the Bid. Refer to the following sections for submittal requirements. Utilize the forms enclosed therein to demonstrate good faith effort and DBE utilization. Completed forms must be included with the bid documents submitted at the time of Bid Opening.

Bidders may contact prospective DBE on the Wisconsin Unified Certification Program Eligibility Directory to solicit bids from these firms (available on the Wisconsin Department of Transportation's website: https://wisconsindot.gov/Pages/doing-bus/civil-rights/dbe/certified-firms.aspx).

For contractors utilizing DBE the appropriate form(s) must be submitted with the Bid to document the DBE subcontractors to be used in the Work.

Contractors are strongly encouraged to submit an advertisement to an industrial trade publication or regional newspaper to meet the good faith efforts required.

2.2 Good Faith Efforts

Prime contractors and subcontractors participating in a CWFP or SDWLP funded project must also make good faith efforts whenever they subcontract for construction work, equipment, raw materials, or supplies. The Environmental Protection Agency (EPA) identifies Six Good Faith Efforts which are required to ensure that all DBEs have the opportunity to compete for procurements funded in whole or part by EPA financial assistance dollars. In order to demonstrate a good faith effort, the recipient and the prime contractor must, at a minimum, fulfill the following six (6) affirmative steps:

1. Include qualified DBEs on solicitation lists.

2. Assure that potential DBEs are solicited whenever they are potential sources.

3. Divide scope of work (total requirements), when economically feasible, into smaller tasks or quantities to permit maximum participation of DBEs.

4. Establish delivery schedules (for projects where the requirements of the work allow) that will encourage participation by DBEs.

5. Use the services and assistance of the following, as appropriate:
   - Small Business Administration - https://www.sba.gov/
   - Minority Business Development Agency - https://www.mbda.gov/
   - U.S. Department of Commerce - https://www.commerce.gov/
   - See the List of Certified DBEs for agencies in Wisconsin and bordering states providing similar support. - https://dnr.wi.gov/Aid/documents/EIF/Guide/MBElist.html

6. If the prime contractor awards contracts/procurements, require subcontractors to take the affirmative steps above.

2.3 Solicitation Requirements

To make a good faith effort when subcontracting, a Prime Contractor should advertise for subcontractors with an ad that includes a statement such as, “An 8% DBE participation goal is set for this project. DBEs are encouraged to submit proposals.” If just one advertisement is published for all areas of work that may be subcontracted, it should indicate those types of work that could be subcontracted.

The advertisement(s) should appear in an industry trade publication and/or the official newspaper of public record for the municipality to effectively maximize the effectiveness of the effort.

The Prime Contractor shall supply a copy of the advertisement to the Engineer upon award of the Contract, or whenever solicitation occurs beyond the time of the bid submittal. A copy of the advertisement is not required as component of the Prime Contractor’s bid submittal or award of the Contract.

Prime Contractors are required to contact DBEs on a Unified Certification Program (UCP) List to solicit bids from these firms (e.g., firms registered in the WisDOT UCP, https://wisconsindot.gov/Pages/doing-bus/civil-rights/dbe/certified-firms.aspx). Document all the contacts, using Form 8700-294A, the DBE Contacts Worksheet and submit the form with the bid,

and subsequently, to the Engineer, whenever solicitation occurs beyond the time of the bid submittal.

In addition to Form 8700-294A documenting DBE solicitation efforts, the DBE Program Subcontractor Utilization Form (EPA Form 6100-4) must be completed for all DBEs selected and/or intended for utilization on the project, including an estimated dollar value of their subcontract. The total subcontract values of eligible DBE subcontractors will determine whether the 8% utilization goal has been met. Submit the completed and signed form(s) with the bid, and subsequently, to the Engineer, whenever additional DBE utilization occurs beyond the time of the bid submittal.

Additional solicitation steps are identified and provided for reference on Form 8700-294, DBE Good Faith Certification Form. This form is not required for submittal by the Prime Contractor.

2.4 Required Submittals by Bidder / Prime Contractor

The following forms and solicitation documentation materials must be completed and submitted with the bid in order to be considered eligible for award of the Contract.

1) **DNR Form 8700-294A**
   The Environmental Improvement Fund (EIF) DBE Contacts Worksheet

2) **EPA Form 6100-4**
   The DBE Program Subcontractor Utilization Form captures the prime's intended use of an identified DBE subcontractor, and the estimated dollar amount of the subcontract.

2.5 Additional Solicitation Information

1) **Example Contractor's Advertisement Soliciting DBE Proposals**
   A sample ad format is provided for reference.

2) **DNR Form 8700-294** (*not required for submittal by the Prime Contractor*)
   The DBE Good Faith Certification Form provides additional solicitation steps, included for reference purposes. This form is not required for submittal by the Prime Contractor.

2.6 Contract Administration Requirements

Upon award and through the completion of contract, the following provisions are required to prevent unfair practices that adversely affect DBEs. Those provisions are as follows:

1) The Prime Contractor shall pay its subcontractor for satisfactory performance no later than 30 days from the Prime Contractor's receipt of payment from the City of Madison.

2) The City of Madison, through the Affirmative Action Division Manager and Engineer, must be notified in writing by its Prime Contractor prior to any termination of a DBE subcontractor for convenience by the Prime Contractor.

3) If a DBE subcontractor fails to complete work under the subcontract for any reason, the Prime Contractor is required to employ the six good faith efforts if soliciting a replacement subcontractor.

4) The Prime Contractor shall employ the six good faith efforts even if the Prime Contractor has achieved its fair share objectives for the project.

State of Wisconsin
Department of Natural Resources
Bureau of Community Financial Assistance
101 S. Webster St., PO Box 7921
Madison WI 53707-7921
Phone No. (608) 266-7555 FAX (608) 267-0496
Website: dnr.wi.gov/Aid/EIF.html

Environmental Improvement Fund (EIF)
DBE Contacts Worksheet

Form 8700-294A (R 03/17)

NOTE: This form is authorized by chs. NR 162 and NR 166, Wis. Adm. Code. The information requested on this form is necessary for the review of solicitation of Disadvantaged Business Enterprises (DBEs). This form is intended to be a tool to assist those seeking funding from the EIF (Clean Water Fund Program or Safe Drinking Water Loan Program) to meet the DBE requirements of EIF programs. Submitting this form to the Department is optional. Applicants may submit the form as the required documentation of solicitation efforts or provide the information in some other format. Personally identifiable information provided on this form will only be used in determining whether or not DBE requirements are met. Failure to complete or submit this form has no impact on the applicant. For complete information regarding DBE requirements, see the Contract Packet for DBE Compliance on DNR's website at http://dnr.wi.gov/Aid/documents/EIF/Guide/DBE.html.

Contact DBEs on a Unified Certification Program (UCP) List to solicit bids from DBE firms (e.g., firms registered in the WisDOT UCP, http://wisconsindot.gov/pages/doing-bus/civil-rights/dbe/certified-firms.aspx). The individual that makes the contacts should document all contacts. Contact at least 2 minority business enterprises (MBEs) and 2 women's business enterprises (WBEs); additional contacts may be to any type of DBE. Only contacts made to DBEs on DOT's UCP list can be considered in determining whether a good faith effort was made to solicit DBEs.

Project Information

Name of Municipality	EIF Project Number
Name of Prime Contractor	Information Prepared By (Name and Phone or E-Mail Address)

Contacts

Information Needed For Review	Contact 1	Contact 2	Contact 3
a. Name of Firm Contacted			
b. Contact's Phone Number or E-Mail			
c. Firm Type	◯ MBE ◯ WBE ◯ Other DBE	◯ MBE ◯ WBE ◯ Other DBE	◯ MBE ◯ WBE ◯ Other DBE
d. On DOT UCP list?	◯ Yes ◯ No	◯ Yes ◯ No	◯ Yes ◯ No
e. Date Contacted			
f. Result of contact			
g. Bid received?	◯ Yes ◯ No	◯ Yes ◯ No	◯ Yes ◯ No
h. If bid received and rejected, why rejected?			
i. Utilizing this firm? (If yes, more on p. 4)*	◯ Yes ◯ No	◯ Yes ◯ No	◯ Yes ◯ No

Information Needed For Review	Contact 4	Contact 5	Contact 6
a. Name of Firm Contacted			
b. Contact's Phone Number or E-Mail			
c. Firm Type	◯ MBE ◯ WBE ◯ Other DBE	◯ MBE ◯ WBE ◯ Other DBE	◯ MBE ◯ WBE ◯ Other DBE
d. On DOT UCP list?	◯ Yes ◯ No	◯ Yes ◯ No	◯ Yes ◯ No
e. Date Contacted			
f. Result of contact			
g. Bid received?	◯ Yes ◯ No	◯ Yes ◯ No	◯ Yes ◯ No
h. If bid received and rejected, why rejected?			
i. Utilizing this firm? (If yes, more on p. 4)*	◯ Yes ◯ No	◯ Yes ◯ No	◯ Yes ◯ No

Information Needed For Review	Contact 7	Contact 8	Contact 9
a. Name of Firm Contacted			
b. Contact's Phone Number or E-Mail			
c. Firm Type	◯ MBE ◯ WBE ◯ Other DBE	◯ MBE ◯ WBE ◯ Other DBE	◯ MBE ◯ WBE ◯ Other DBE
d. On DOT UCP list?	◯ Yes ◯ No	◯ Yes ◯ No	◯ Yes ◯ No
e. Date Contacted			
f. Result of contact			
g. Bid received?	◯ Yes ◯ No	◯ Yes ◯ No	◯ Yes ◯ No
h. If bid received and rejected, why rejected?			
i. Utilizing this firm? (If yes, more on p. 4)*	◯ Yes ◯ No	◯ Yes ◯ No	◯ Yes ◯ No

Information Needed For Review	Contact 10	Contact 11	Contact 12
a. Name of Firm Contacted			
b. Contact's Phone Number or E-Mail			
c. Firm Type	◯ MBE ◯ WBE ◯ Other DBE	◯ MBE ◯ WBE ◯ Other DBE	◯ MBE ◯ WBE ◯ Other DBE
d. On DOT UCP list?	◯ Yes ◯ No	◯ Yes ◯ No	◯ Yes ◯ No
e. Date Contacted			
f. Result of contact			
g. Bid received?	◯ Yes ◯ No	◯ Yes ◯ No	◯ Yes ◯ No
h. If bid received and rejected, why rejected?			
i. Utilizing this firm? (If yes, more on p. 4)*	◯ Yes ◯ No	◯ Yes ◯ No	◯ Yes ◯ No

Information Needed For Review	Contact 13	Contact 14	Contact 15
a. Name of Firm Contacted			
b. Contact's Phone Number or E-Mail			
c. Firm Type	◯ MBE ◯ WBE ◯ Other DBE	◯ MBE ◯ WBE ◯ Other DBE	◯ MBE ◯ WBE ◯ Other DBE
d. On DOT UCP list?	◯ Yes ◯ No	◯ Yes ◯ No	◯ Yes ◯ No
e. Date Contacted			
f. Result of contact			
g. Bid received?	◯ Yes ◯ No	◯ Yes ◯ No	◯ Yes ◯ No
h. If bid received and rejected, why rejected?			
i. Utilizing this firm? (If yes, more on p. 4)*	◯ Yes ◯ No	◯ Yes ◯ No	◯ Yes ◯ No

Information Needed For Review	Contact 16	Contact 17	Contact 18
a. Name of Firm Contacted			
b. Contact's Phone Number or E-Mail			
c. Firm Type	◯ MBE ◯ WBE ◯ Other DBE	◯ MBE ◯ WBE ◯ Other DBE	◯ MBE ◯ WBE ◯ Other DBE
d. On DOT UCP list?	◯ Yes ◯ No	◯ Yes ◯ No	◯ Yes ◯ No
e. Date Contacted			
f. Result of contact			
g. Bid received?	◯ Yes ◯ No	◯ Yes ◯ No	◯ Yes ◯ No
h. If bid received and rejected, why rejected?			
i. Utilizing this firm? (If yes, more on p. 4)*	◯ Yes ◯ No	◯ Yes ◯ No	◯ Yes ◯ No

Information on Utilized Firms

Business Name	Street Address	City, State, Zip	Type of Product or Service	Subcontract Amount

EPA United States Environmental Protection Agency

OMB Control No: 2090-0030
Approved: 8/13/2013
Approval Expires: 8/31/2015

Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Utilization Form

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certified DBE[1] subcontractors[2] and the estimated dollar amount of each subcontract. An EPA Financial Assistance Agreement Recipient must require its prime contractors to complete this form and include it in the bid or proposal package. Prime contractors should also maintain a copy of this form on file.

Prime Contractor Name		Project Name
Bid/ Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.		Email Address
Issuing/Funding Entity:		

I have identified potential DBE certified subcontractors	__ YES	__ NO
If yes, please complete the table below. If no, please explain:		

Subcontractor Name/ Company Name	Company Address/ Phone/ Email	Est. Dollar Amt	Currently DBE Certified?

Continue on back if needed

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

EPA FORM 6100-4 (DBE Subcontractor Utilization Form)

EPA United States Environmental Protection Agency

OMB Control No:
Approved:
Approval Expires:

Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Utilization Form

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
Title	**Date**

The public reporting and recordkeeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

EPA FORM 6100-4 (DBE Subcontractor Utilization Form)

SAMPLE AD FORMAT

ATTENTION WBE/MBE/DBE
SUBCONTRACTORS & SUPPLIERS

REQUEST FOR PROPOSALS
(PROJECT NAME)

_____(*Name of Company*)_____ is seeking proposals for the following disciplines:

_____ - Description (optional)
subcontract

_____ - Description (optional)
subcontract

_____ - Description (optional)
subcontract

Disadvantaged Business Enterprises (DBEs) are encouraged to submit proposals. An 8% DBE participation goal has been established for this project.

Proposals must be received by _____(*Date & Time*)_____.

For information regarding specific jobs and any assistance you may need, please contact our office.

Company Name
Address
City, State zip
Phone Number
Email address
EEO Employer

State of Wisconsin
Department of Natural Resources
Bureau of Community Financial Assistance
101 S. Webster St., PO Box 7921
Madison WI 53707-7921
Phone No. (608) 266-7555 FAX (608) 267-0496
website: dnr.wi.gov/org/caer/cfa/cfindex.html

Environmental Improvement Fund (EIF) Disadvantaged Business Enterprise (DBE) Good Faith Certification

Form 8700-294 (R 8/10)

Notice: Under ss. NR 162.09(3) and NR 166.12(4)(b), Wis. Adm. Code, a municipality is required to provide complete information, as requested on this form, to verify that it has complied with requirements regarding solicitation of minority-and women-business enterprises (MBE/WBEs) and other Disadvantaged Business Enterprises (DBEs). The Department will not complete a financial assistance agreement unless the municipality submits documentation regarding DBE solicitation or utilization. Failure to provide information requested, or make a good faith effort, may result in sanctions described in s. NR 162.09(3)(b) or s. NR 166.12(4), Wis. Adm. Code.

Personally identifiable information provided on this form will be used to review participation in a project and may also be made available to requesters as required by Wisconsin Open Records law [ss. 19.31 - 19.39, Wis. Stats.].

Check applicable program: ☐ Safe Drinking Water Loan Program ☐ Clean Water Fund Program

I. Project Information

1. Name of Municipality	2. EIF Project Number

3. Name of Authorized Representative (Print or Type)	4.Title of Authorized Representative (Print or Type)

II. Good Faith Effort

1. Are any DBEs performing any type of work on this project? If yes, attach EPA Form 6100-4 for each DBE utilized. ☐ Yes ☐ No
2. Did your municipality either: ☐ Yes ☐ No
   a. Contact DBEs included on the Unified Certification Program List (e.g., WisDOT UCP) when soliciting bids?
   OR
   b. Publish an advertisement in the official newspaper of record that included language encouraging DBEs to submit bids?
3. Did each primary contractor either: ☐ Yes ☐ No
   a. Contact DBEs included on the Unified Certification Program List (e.g., WisDOT UCP) when soliciting bids?
   OR
   b. Publish an advertisement in an industry trade publication and/or the official newspaper of record that included language encouraging DBEs to submit proposals?
4. Did your municipality, your primary engineer, and/or primary contractor divide the total scope of work into smaller tasks and packages to permit maximum utilization of DBEs? ☐ Yes ☐ No
5. Did your municipality, your primary engineer, and/or primary contractor establish delivery schedules that enabled DBEs to compete for contracts or subcontracts? ☐ Yes ☐ No
6. Did your municipality, your primary engineer, and/or primary contractor use the disadvantaged business services (obtain lists of certified disadvantaged businesses or request other assistance) of agencies such as the Wisconsin Department of Transportation or the Small Business Administration? ☐ Yes ☐ No
7. Were solicited DBEs provided a reasonable amount of time to respond to requests for bids? ☐ Yes ☐ No
8. If you answered "No" to any of the questions in numbers II.1-II.7 above, provide justification or an explanation of why you could not answer "Yes" to that question. Attach an additional sheet of paper if extra space is required.

Municipal Certification

I certify that, to the best of my knowledge, the information provided on this form is true, accurate and complete.

Signature of Authorized Representative	Date Signed

DO NOT WRITE BELOW THIS LINE - DNR USE ONLY

a. Is form filled out completely? ☐ Yes ☐ No
b. Did authorized representative sign the form? ☐ Yes ☐ No
b. Are submitted justifications and explanations acceptable? ☐ Yes ☐ No ☐ NA

Project Manager Signature	Date Review Completed

2.7 Federal Equivalency Requirements

This project is being financed in whole or in part by the Wisconsin Department of Natural Resources through the Clean Water Fund Program (CWFP) or the Safe Drinking Water Loan Program (SDWLP). This project is subsequently designated as Federal Equivalency and must comply with the following federal laws and all applicable state and federal laws, rules, and regulations and must ensure that their contractor(s) also comply with these laws, rules, and regulations.

1) Title VI of the Civil Rights Act of 1964 (P.L 88-352), the Rehabilitation Act of 1973 (P.L. 93-1123, 87 Stat. 355, 29 U.S.C. Sec. 794), the Older Americans Amendments of 1975 (P.L. 94-135 Sec. 303, 89 Stat. 713, 728, 42 U.S.C. Sec. 6102), and subsequent regulations ensure access to facilities or programs regardless of race, color, national origin, sex, age, or handicap.

2) Executive Order 11246, as amended by Executive Orders 11375 and 12086 and subsequent regulations, prohibits employment discrimination on the basis of race, color, religion, sex, or national origin. Inclusion of the seven clauses in Section 202 of E.O. 11246 as amended by E.O. 11375 and 12086 are required in all project related contracts and subcontracts for municipalities over 3,300 population.

3) Executive Orders 11625, 12138, and 12432; 40 CFR part 33; Section 129 of P.L. 100-590 Small Businesses Reauthorization & Amendment Act of 1988; Public Law 102-389 (42 USC. 437d); a 1993 appropriations act ("EPA's 8% statute"); and Public Law 101-549, Title X of the Clean Air Acts Amendments of 1990 (42 USC. 7601 note) ("EPA's 10% statute") encourage recipients to award construction, supply, and professional service contracts to minority and women's business enterprises (MBE/WBE) and small businesses and require recipients to utilize affirmative steps in procurement.

4) 40 CFR Part 33 - Participation by Disadvantaged Business Enterprises in Procurement under Environmental Protection Agency (EPA) Financial Assistance Agreements sets forth a narrowly tailored EPA program to serve the compelling government interest of remedying past and current racial discrimination through agency-wide DBE procurement objectives.

5) Executive Order 12549, 3 CFR, 189; and 40 CFR Part 32, Subparts B and C, prohibit entering into contracts or subcontracts with individuals or businesses who are debarred or suspended. Borrowers are required to check the status of all contractors (construction and professional services) and must require contractors to check the status of subcontractors for contracts expected to be equal to or over $25,000 via this Internet address: http://epls.arnet.gov/.

6) Executive Order 13202, as amended by Executive Order 13208, does not allow bid specifications, project agreements, or other controlling agreements to require or prohibit bidders, contractors, or subcontractors to enter into or to adhere to project labor agreements.

7) Section 513 of the Federal Water Pollution Control Act (33 USC 1372) or Section 1450(e) of the Safe Drinking Water Act (42 USC 300j-9(e)), as applicable, requires that all laborers and mechanics employed by contractors and subcontractors on projects funded directly by or assisted in whole or in part by and through the Federal Government pursuant to this Act shall be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by the Secretary of Labor in accordance with subchapter IV of chapter 31 of title 40, United States Code. With respect to the labor standards specified in this section, the Secretary of Labor has the authority and functions set forth in Reorganization Plan Numbered 14 of 1950 (64 Stat. 1267; 5 USC. App.) and section 3145 of title 40, United State Code.

SECTION D: SPECIAL PROVISIONS

FELLAND RESERVOIR BOOSTER PUMP INSTALL

MILKY WAY RESERVOIR VALVE INSTALL

CONTRACT NO. 9336

It is the intent of these Special Provisions to set forth the final contractual intent as to the matter involved and shall prevail over the Standard Specifications and plans whenever in conflict therewith. In order that comparisons between the Special Provisions can be readily made, the numbering system for the Special Provisions is equivalent to that of the Specifications.

Whenever in these Specifications the term "Standard Specifications" appears, it shall be taken to refer to the City of Madison Standard Specifications for Public Works Construction and Supplements thereto.

SECTION 102.11 BEST VALUE CONTRACTING

This Contract shall be considered a Best Value Contract if the Contractor's bid is equal to or greater than $74,000 for a single trade contract; or equal to or greater than $360,500 for a multi-trade contract pursuant to MGO 33.07(7).

Work shall begin after any pre-construction submittals are approved and the start work letter is received. Submit any proposed construction schedules prior to mobilization.

Work shall begin at Felland Reservoir 229 no later than November 15, 2023 and shall be completed within 30 calendar days.

Work shall begin at Milky Way Reservoir 225 no later than November 15, 2023 and shall be completed within 30 calendar days.

Work dates are set based on the most recent information for the materials manufacture and delivery dates for each reservoir site, and may be adjusted as mutually agreed if those dates change according to the manufacturer.

BID ITEM 90000 FELLAND RESERVOIR (229)

Description: Complete all of the required construction and installation of all building components related to Reservoir 229, including the turn-in of all deliverables as outlined in the plans and specifications.

Method of Measurement: Measured as a Lump Sum of the required construction and installations described in the plans and specifications.

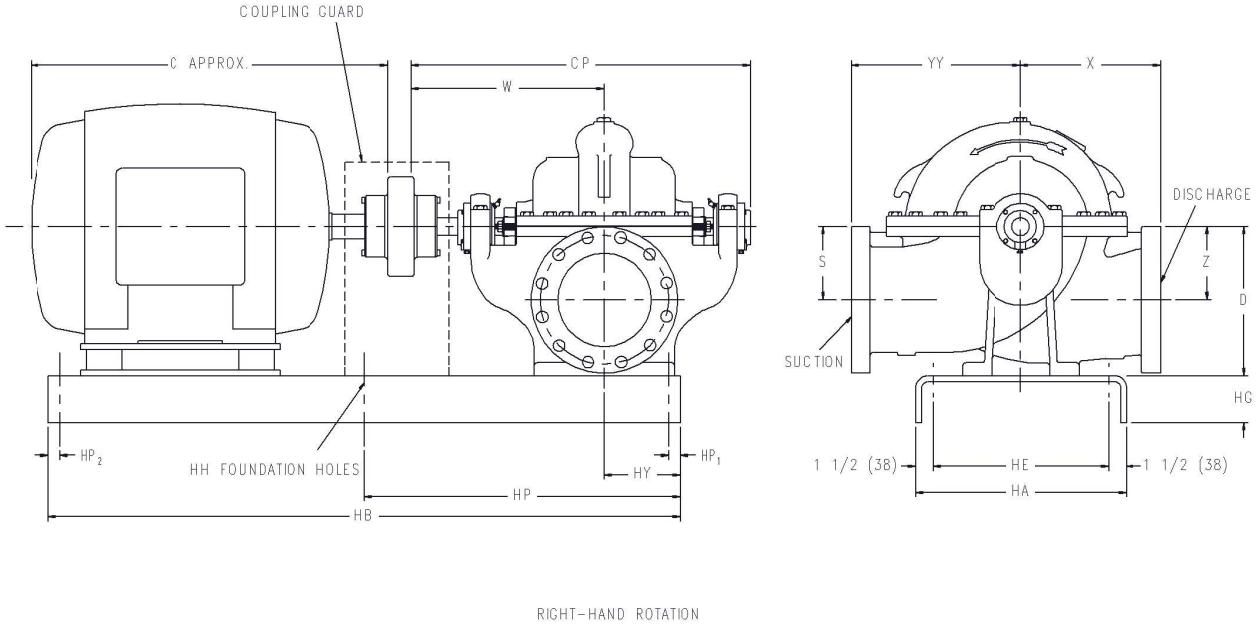
BID ITEM 90001 MILKY WAY RESERVOIR (225)

Description: Complete all of the required construction and installation of all building components related to Reservoir 225, including the turn-in of all deliverables as outlined in the plans and specifications.

Method of Measurement: Measured as a Lump Sum of the required construction and installations described in the plans and specifications.

[Setting plans and specs on nest pages]

General Arrangement Drawing



RIGHT-HAND ROTATION

CP	S	W	X	Z	HY	YY	D	C	HA	HB	HE	HG	HH	HP	HP1	HP2
32.00	8.00	18.00	17.00	8.00	7.00	17.75	14.75	33.00	22.00	60.00	19.00	4.00	0.75	N/A	1.00	1.00

Notes:
All dimensions are in inches.
Dimensions may vary ± 1/2" (13mm) due to normal manufacturing tolerances.
Discharge and suction flanges - ANSI Standard flat face.

Pump Data			
Pump series	1800	Power series	5
Model	1820	Discharge size	8.00 in
Size	8"1824B	Suction size	10.00 in
Flow	2,100.0 USgpm	Impeller diameter	15.75 in
Head	94.00 ft	Pressure rating	250.0 psi
RPM	1180 rpm	Temperature rating	68.00 deg F
Rotation	Right	Connection suc/disc	125#/125#
Paint	Standard	Base type	Steel Base
Liquid type	Water	Coupling type	Rubber-in-shear

Motor Data			
Horsepower	75.00 hp	-	-
Phase	3	Efficiency (%)	94.5
Hertz	60 Hz	Rating	premium
Volts	230/460	Enclosure	ODP
RPM	1200 rpm	Manufacturer	WEG
Frame	405T		

Pump Materials of Construction			
Pump material	Bronze fitted	Shaft	Steel, AISI C1045
Casing	Cast iron, ASTM A48	Shaft sleeve	Stainless steel, AISI 316
Casing wear ring	Stainless Steel, AISI 416	Gland	-
Impeller	Low zinc Silicon Bronze, ASTM B584	Seal type	Mechanical
Impeller wear ring	316 stainless steel	Sealing material	-
Flush lines	1/4" Stainless Steel (316) Tubing, from volute to stuffing boxes		

Estimated Weights	
Pump	865.0 lb
Driver	1,121.0 lb
Base type	270.0 lb
Coupling	60.00 lb
Total	2,378.1 lb

Additional Options

Scotchkote bonded casing

-

-

-

-

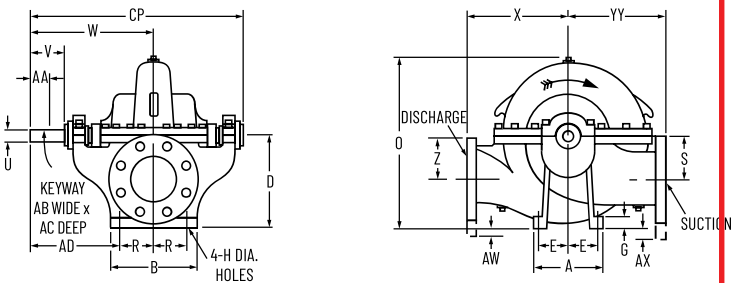
-

-

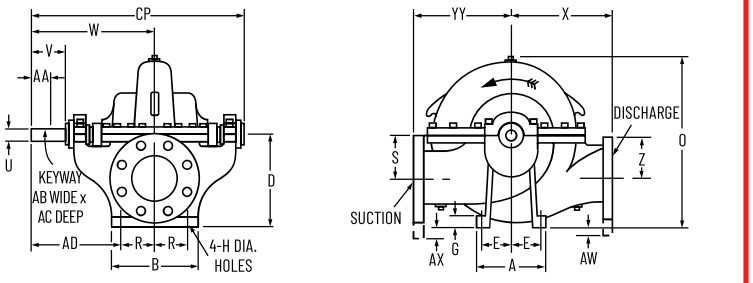
-

Quote Information			
Customer	LW Allen		
Customer quote	1770293		
Job name	Madison Water - Felland Reservoir		
Market	Municipal		
PENTAIR		Quote item	001
		Quote date	16 Sep 2022

Dimensional Data – 1800 Horizontal Split Case Pumps



LEFT-HAND ROTATION



RIGHT-HAND ROTATION

PUMP	DISCH.	SUCT.	POWER SERIES	A	B	D	E	G	H	O	R	S	U	V	W	X	Z	AA	AB	AC	AD	AW	AX	CP	YY
6" 1823HH	6	8	5A	12 (305)	14-1/2 (368)	16-1/2 (351)	5 (127)	1-1/4 (32)	7/8 (22)	26-21/32 (609)	6 (152)	7-1/2 (191)	1-3/4 (44)	4-1/8 (105)	20-7/16 (519)	15 (381)	7-1/2 (191)	2-7/8 (73)	3/8 (10)	3/16 (5)	14-7/16 (367)	–	–	36-3/4 (933)	17 (432)
6" 1823	6	8	5	12 (305)	14 (356)	13-1/2 (343)	5 (127)	1 (25)	7/8 (22)	24-7/8 (632)	6 (152)	6-3/4 (171)	1-3/4 (44)	4 (102)	18 (457)	14-1/4 (362)	6-3/4 (171)	2-7/8 (73)	3/8 (10)	3/16 (5)	12 (305)	–	3/4 (19)	32 (813)	16-3/4 (425)
6" 1824	6	8	5	12 (305)	14 (356)	14-3/4 (375)	5 (127)	3/4 (19)	7/8 (22)	27-1/4 (692)	6 (152)	8 (203)	1-3/4 (44)	4 (102)	18 (457)	16 (406)	8 (203)	2-7/8 (73)	3/8 (10)	3/16 (5)	12 (305)	–	3/4 (19)	32 (813)	18 (457)
6" 1825	6	8	5	12 (305)	14 (356)	14-3/4 (375)	5 (127)	1 (25)	7/8 (22)	27-3/4 (705)	6 (152)	8 (203)	1-3/4 (44)	4 (102)	18 (457)	15-3/4 (400)	8 (203)	2-7/8 (73)	3/8 (10)	3/16 (5)	12 (305)	–	3/4 (19)	32 (813)	18 (457)
8" 1822	8	10	5	12 (305)	14 (356)	14-3/4 (375)	5 (127)	1-1/4 (32)	7/8 (22)	26-3/8 (670)	6 (152)	8 (203)	1-3/4 (44)	4 (102)	18 (457)	17 (432)	9 (229)	2-7/8 (73)	3/8 (10)	3/16 (5)	12 (305)	1-3/4 (44)	2 (51)	32 (813)	17-3/4 (451)
8" 1823	8	10	5	12 (305)	14 (356)	14-3/4 (375)	5 (127)	1-1/4 (32)	7/8 (22)	26-5/8 (676)	6 (152)	8 (203)	1-3/4 (44)	4 (102)	18 (457)	17 (432)	9 (229)	2-7/8 (73)	3/8 (10)	3/16 (5)	12 (305)	1-3/4 (44)	2 (51)	32 (813)	17-3/4 (451)
8" 1824	8	10	5	12 (305)	14 (356)	14-3/4 (375)	5 (127)	1-1/4 (32)	7/8 (22)	27-1/8 (689)	6 (152)	8 (203)	1-3/4 (44)	4 (102)	18 (457)	17 (432)	8 (203)	2-7/8 (73)	3/8 (10)	3/16 (5)	12 (305)	3/4 (19)	2 (51)	32 (813)	17-3/4 (451)
8" 1825	8	10	6B	20 (508)	17 (432)	18-1/2 (470)	9 (229)	1 (25)	7/8 (22)	32-1/2 (826)	7-1/2 (191)	9-1/2 (241)	2-1/8 (54)	5-7/16 (138)	21-7/8 (556)	18 (457)	9-1/2 (241)	4-3/4 (121)	1/2 (13)	1/4 (6)	14-3/8 (365)	–	–	38 (965)	21 (533)
10" 1822B	10	12	6B	15 (381)	22 (559)	23 (584)	6-1/2 (165)	1 (25)	7/8 (22)	35-1/2 (902)	10 (254)	12 (305)	2-1/8 (54)	5-7/16 (138)	21-7/8 (556)	16 (406)	12 (305)	4-3/4 (121)	1/2 (13)	1/4 (6)	11-7/8 (302)	–	–	38 (965)	19 (483)
10" 1823B&C	10	12	6B	15 (381)	22 (559)	25 (635)	6-1/2 (165)	1 (25)	7/8 (22)	38-1/2 (978)	10 (254)	13-1/2 (343)	2-1/8 (54)	5-7/16 (138)	21-7/8 (556)	17 (432)	13-1/2 (343)	4-3/4 (121)	1/2 (13)	1/4 (6)	11-7/8 (302)	–	–	38 (965)	20 (508)
10" 1824	10	12	6B	15 (381)	22 (559)	25 (635)	6-1/2 (165)	1 (25)	7/8 (22)	39-1/2 (1003)	10 (254)	13-1/2 (343)	2-1/8 (54)	5-7/16 (138)	21-7/8 (556)	18 (457)	13-1/2 (343)	4-3/4 (121)	1/2 (13)	1/4 (6)	11-7/8 (302)	–	–	38 (965)	22 (559)
10" 1824D	10	12	7A	15 (381)	22 (559)	25 (635)	6-1/2 (165)	1-1/4 (32)	7/8 (22)	40-3/8 (1026)	10 (254)	12-1/4 (311)	2-1/8 (54)	5-3/4 (146)	24-5/16 (618)	20 (508)	12-1/4 (311)	4-3/4 (121)	1/2 (13)	1/4 (6)	14-5/16 (364)	–	–	42-15/16 (1090)	24 (610)
8" 1826	8	12	7	15 (381)	22 (559)	26 (660)	6-1/2 (165)	1-1/8 (29)	7/8 (22)	43-7/8 (1114)	10 (254)	15 (381)	2-1/2 (64)	6-5/8 (168)	25-1/4 (641)	20 (508)	15 (381)	5 (127)	5/8 (16)	5/16 (8)	15-1/4 (387)	–	–	43-7/8 (1114)	25 (635)
12" 1823B	12	14	7	15 (381)	22 (559)	24 (610)	6-1/2 (165)	1 (25)	7/8 (22)	39 (991)	10 (254)	15 (343)	2-1/2 (64)	6-5/8 (168)	25-1/4 (641)	17 (432)	15 (381)	5 (127)	5/8 (16)	5/16 (8)	15-1/4 (387)	1-1/4 (32)	2-1/2 (64)	43-7/8 (1114)	22 (559)
12" 1824	12	14	7	15 (381)	22 (559)	24 (610)	6-1/2 (165)	1 (25)	7/8 (22)	40-1/8 (1019)	10 (254)	15 (381)	2-1/2 (64)	6-5/8 (168)	25-1/4 (641)	18 (457)	15 (381)	5 (127)	5/8 (16)	5/16 (8)	15-1/4 (387)	1-1/4 (32)	2-1/2 (64)	43-7/8 (1114)	23 (584)
14" 1824	14	16	7	15 (381)	22 (559)	29-1/4 (743)	6-1/2 (165)	1 (25)	7/8 (22)	47-1/2 (1207)	10 (254)	16 (406)	2-1/2 (64)	6-5/8 (168)	25-1/4 (641)	22 (559)	16 (406)	5 (127)	5/8 (16)	5/16 (8)	15-1/4 (387)	–	–	43-7/8 (1114)	27 (686)

NOTES:

All dimensions in inches (mm).

Dimensions may vary ± 3/8" (10).

Not for construction purposes unless certified.

Discharge and suction flanges – ANSI Standard flat face.

STD. 125# FLANGES	OPT. 250# FLANGES

Item number	001	Size / Stages	8"18x4B /
Quote number	Madison Water - Felland Reservoir	Pump speed	

Pump

Qty	Description
1	*Series 8"18x4B*

Pump information

Parameters

Impeller Diameter Selection Criteria: Impeller diameter calculated from 2100 USgpm and 94 Ft

Flow: 2100.0 US gpm
Head: 94.0 ft
Impeller diameter: 15.7500 inches - based on curve data
Speed: 1180 RPM
Pump model: Model 1820 - Horizontal, single-stage, split case pump
Rotation: Right
Paint: Standard

Driver

Selected Motor Parameters

Power: 75hp
Phase: 3
Frequency: 60 Hz
Voltage: 230/460V
Enclosure: ODP
Manufacturer: WEG

Materials of Construction

Pump: 8"1824B - Split case, Model 1820, NSF 61/372 Certified
Casing: Cast iron, ASTM A48
Impeller: Low zinc Silicon Bronze, ASTM B584
Shaft: Steel, AISI C1045
Case wear ring: Stainless Steel, AISI 416
Shaft sleeve: Stainless steel, AISI 316
Gland material: Cast Iron A48
Gland hardware: Gland hardware - standard
Sealing: Mechanical Seal, John Crane, Type 21; hot water, 225 °F max; Buna-N, Carbon, Ceramic, 18-8 SS

Pump Options

Base: Steel Base, 405T Frame
Coupling: Rubber-in-shear coupling, 405T Frame
Bearing lubrication: None
Impeller wear ring: 316 stainless steel
Flush lines: 1/4" Stainless Steel (316) Tubing, from volute to stuffing boxes
Abrasive separator: None
Flange rating: 125 lb. suction, 125 lb. discharge
3M Scotchkote 134-fusion bonded casing: 3M Skotchkote 134-fusion bonded casing

Product Configuration (MADISON_12_BAW_SA_GS)

Configured by: Dorner Company
Configured on: 3/30/2022
Printed: 4/24/2022

DESCRIPTION	SAR07.6/GS63.3/AC01.2
INDUSTRY	
Industry code	Water, Wastewater
DEVICE CHARACTERISTICS	
AUMA product	Quarter-turn electric actuator
Rated output torque [lbs.ft.]	740
Rated output torque [inch.lbs.]	8,880
Rated output torque [Nm]	1,003
Approximate weight (lbs.)	99
SERVICE CONDITIONS	
Version	Weather-proof
Operating mode	Modulating duty
Enclosure protection	NEMA type 6P
Color	AUMA silver-grey (similar to RAL 7037)
Ambient temperature	-30 °C to +70 °C (-22 °F to +158 °F)
Nameplates	English - aluminum (US-AL)
Sealing elements	NBR - Nitrile Butadiene Rubber
Corrosion protection	KS
ELECTRICAL DATA	
Mains voltage	120 Volts AC
Phase	1-Ph
Frequency	60 Hz
Type of duty	S4 - 25% intermittent duty
Motor protection	(W-1T-O140) 1Ph-1 thermal switch 140°C N.C., class F insulation, tropicalized winding
Motor type	1 ph AC TENV motor, type VE/VC/AE/AC with capacitors in motor compartment
MOTOR DATA	
Motor designation	VE0R048-4-0,07
Nominal power (HP)	1/10
Nominal power (kW)	0.07
Nominal speed (RPM)	1,680
Nominal current (FLA)	3.6
Current approx. Imax. (RTA)	4.6
Starting current (LRA)	7
COS	0.82
Capacitor uF	50

ACTUATOR FEATURES

SA model	SAR 07.6
Output speed	13 RPM
Valve attachment	FA10
Output drive	FA10-B3 Ø=20mm; key width=6mm; key height 6mm
Torque switches	(0-M) torque sensing via MWG
Limit switches	(0-M) limit sensing via MWG
Position transm.	(30.5) MWG absolute encoder for AC 01.2
Turns per stroke	12.75 turns per stroke at output drive act.
Operating time (seconds)	59
Stem protection tube	Without stem tube, with protective screw plug, thread form G1 1/4" BSPP
Heater	(22.5) 24 V in combination with controls: 5 W
Motor heater	(0) without
Torque switching	Setting range 20-45 lbs.ft.
Set to close lbs.ft.	23
Set to open lbs.ft.	23
Handwheel	6.3" (160mm)
Close direction	RH - clockwise
Limit switching	(230) 1-500 rev/stroke adjustable with MWG
Lubricant	F15 Shell ALVANIA 1029
Electrical connection	(S0-000) actuator plug for mounting AM/SEM/AC

GS GEARBOX

GS model	GS 63.3
Version 1	Without
Version 2	Standard
Reduction ratio i	51:1
Mechanical adv.	17.3
Valve coupling	Machined valve shaft coupling, bore plus one keyway
Coupling type	steel
Explosion protection	(0) not suitable for potentially explosive atmospheres
Mounting position	Position A
Swing angle	92 degrees, adjusted at factory •
Version	RR: input shaft clockwise, clockwise rotation of the valve shaft
Valve attachment	FA12-N according to MSS SP-101 without pilot
Housing material	Cast iron housing GJL-250 •
Worm wheel material	Bronze worm wheel
Gearbox input	(FA10-EW20) FA10, input shaft Ø=20mm
Lubricant	F15 Shell ALVANIA 1029
GS name plate	English - self-adhesive polyester (PET) label (US-E1)
Enclosure	IP68-8-Z - max. 26' (8m) head of water, with pointer cover •

ACTUATOR CONTROLS

AUMATIC version	AC 01.2
Feedback E2	MWG magnetic limit/ torque sensor (non-intrusive setting)
Max. motor power	(B00.01) Contactors for power class A1
Motor protection	(C00.01) thermal switch, automatic reset
Interface	(D00.01) Parallel I/O Interface
Positioner	(F10.01) Positioner
Input signals	(R00.02) MODE, CLOSE, OPEN, STOP, EMERGENCY •
Control voltage	(E00.01) 24 V DC

Electronics supply	(A10.01) 24 V DC internal •
Output aux. voltage	(A30.01) 24 V DC - 100mA (internally powered)
Output contacts	(H00.03) 6 output contacts: 6 NO/NC without common 250V AC/5A •
Output signals	(S00.01) default setting: K1=Fault, K2=End pos. CLOSED, K3=End pos. OPEN, K4=Selector sw. REMOTE, K5=Torque fault CLOSE, K6=Torque fault OPEN
Local controls	(L00.01) selector switch LOCAL-OFF-REMOTE with padlock; push buttons OPEN-STOP-CLOSE-RESET; large graphical LCD with a resolution of 200 x 100 pixels
Activ. Bluetooth	(L90.01) Switched on
Indication lights	(L10.02) 1 CLOSED:green, 2 TRQ-CL:blue, 3 TH:yellow, 4 TRQ-OP:violet, 5 OPEN:red, BLUETOOTH:blue (with numbers) •
Face plate	(EN-ES-FR) English-Spanish-French •
Tolerance mains voltage	(A40.01) +/- 10%
Electrical connection	(SB-080) plug/socket 100mm, 2 x ¾" NPT; 1 x 1 ¼" NPT •
Heater	(Q00.01) heater 24 V, internal supply •
Analog input 1	(P20.02) setpoint: 4-20mA
Analog output 1	(P00.02) Position feedback: 4-20mA
Analog output 2	(P10.02) Torque feedback: 4-20mA
Blinker version	(N00.02) lights illuminated in mid travel (electronic)
Display language	English
Switch off in CLOSE	(042.01) Limit
Switch off in OPEN	(043.01) Limit
Self retaining LOCAL	(033.03) In direction OPEN and CLOSE
Self retaining REMOTE	(052.00) OFF
Safety mode	(153.01) OFF
Emergency function	(140.01) OFF
Torque by-pass	Function not active
Mounting position	Position A
Mounting pos. local controls	Position A-1, selector switch at 6 o'clock in relation to base of controls (standard for SA/SQ)

DRAWINGS

POINT-TO-POINT WIRING DWG	TPCA-1B2-1C1-A000TPA01R100-0I1-000
OUTPUT DRIVE/MOUNTING FLANGE DWG	SK099241
ACTUATOR DIMENSIONAL DWG	DDS00C211ALAAQ331

OPERATION MANUALS

WIRING DIAGRAM LEGEND	Legend for AUMATIC AC 01.2/ACExC 01.2
GEARBOX OPERATION MANUAL	Part-turn gearboxes GS 50.3 - GS 250.3
DEVICE INTEGRATION MANUAL	Actuator controls AUMATIC AC 01.2/ACExC 01.2 Parallel
ACTUATOR OPERATION MANUAL	SA(R) 07.2 - 16.2 with AC 01.2 Parallel Non-intrusive

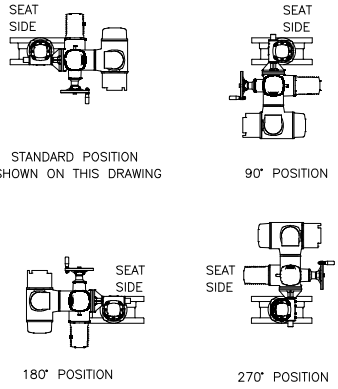
VALVE SIZE	DIMENSIONS INCHES / MILLIMETERS										
	A	B	C	D	E	F	G	H	J	K	L
3	5.00 127	.81 21	4.00 102	4.81 122	6.00 152	.75 19	4	N/A	N/A	N/A	7.50 191
4	5.00 127	1.00 25	4.75 121	5.56 141	7.50 191	.75 19	4	5/8–11 UNC	4	1.06 27	9.00 229
6	5.00 127	1.06 27	6.03 153	7.00 178	9.50 241	.88 22	8	N/A	N/A	N/A	11.00 279
8	6.00 152	1.19 30	7.16 182	8.31 211	11.75 298	.88 22	8	N/A	N/A	N/A	13.50 343
10	8.00 203	1.25 32	8.38 213	9.50 241	14.25 362	1.00 25	10	7/8–9 UNC	2	1.56 40	16.00 406
12	8.00 203	1.31 33	9.66 245	11.00 279	17.00 432	1.00 25	8	7/8–9 UNC	4	1.56 40	19.00 483

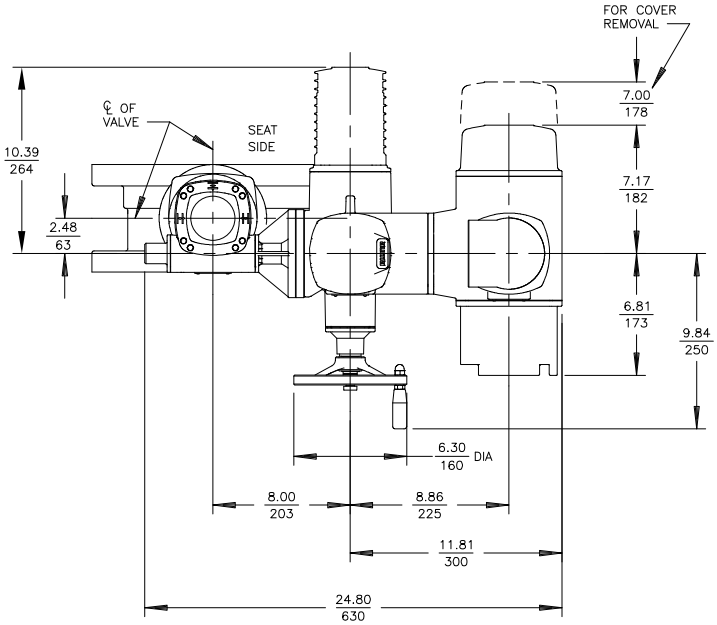
A	VALVE
C	MOTOR AND GEAR UNIT
P	CONNECTING PARTS

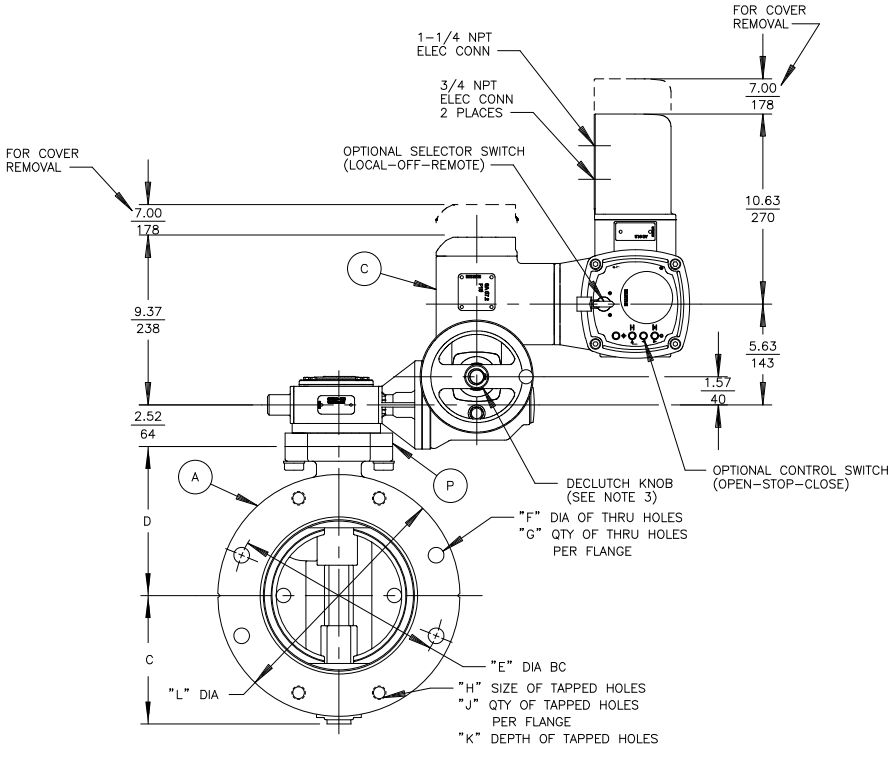
NOTE:

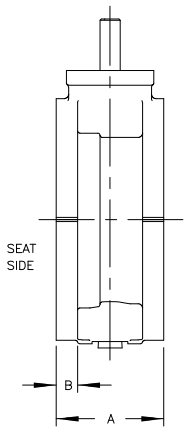
1. FLANGES ARE FLAT FACED WITH DIMENSIONS AND DRILLING TO ANSI B16.1 CLASS 125 EXCEPT FOR TAPPED HOLES AS INDICATED. SEE A26506 FOR NON–ANSI FLANGE DATA.
2. FLOW MAY BE IN EITHER DIRECTION. THE PREFERRED INSTALLATION IS WITH THE SEAT SIDE DOWN STREAM.
3. PULL OUT KNOB TO ENGAGE FOR MANUAL OPERATION. UNIT REMAINS IN HAND OPERATION UNTIL MOTOR IS ENERGIZED.

ACTUATOR MOUNTING POSITIONS









G	F	E	D	C	B	A	12/13/18
							RLP

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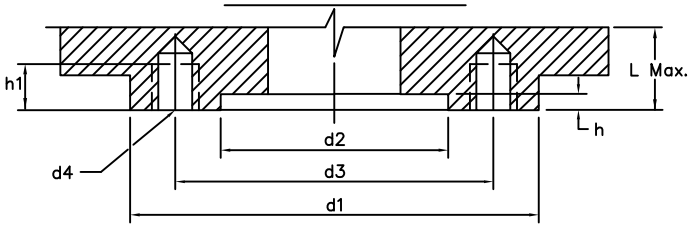
BAW BUTTERFLY VALVES SIZE 3–12 FLANGED
AUMA SA(R)07._/GS63.3 AUMATIC (3 PHASE) MOTOR ACTUATOR

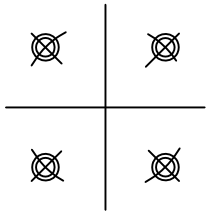
DOCT. CODE	DRAWN	APPROVED	
C1	BMP	JWM	Z13786
	CHECKED JWM	DATE 12/14/18	

auma®

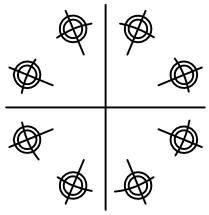
AUMA ACTUATORS, INC.

FA10 – FA48

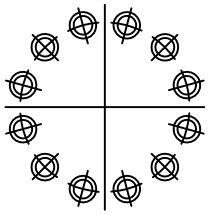




4 HOLE PATTERN
(FA10 – FA16)



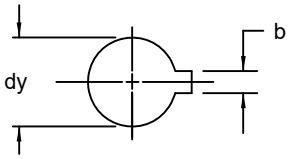
8 HOLE PATTERN
(FA25 – FA40)



12 HOLE PATTERN
(FA48)

GEARBOX MODEL	FLANGE TYPE	d1	d2 (H8)	d3 ± 0.01	(qty.)d4	h	h1	L MAX.	SQ. KEY		RECT. KEY	
									b	dy max.	b	dy max.
GS50.3	FA10	4.9	3.346	4.00	(4) 3/8–16	0.157	0.63	2.48	3/8	1 7/16	3/8 X 1/4	1 1/2
GS63.3 (5)	FA10	4.9	3.346	4.00	(4) 3/8–16	0.157	0.63	2.95	1/2	1 7/8	1/2 X 3/8	2
GS63.3	FA12	5.9	4.134	4.92	(4) 1/2–13	0.157	0.75	3.07	1/2	1 7/8	1/2 X 3/8	2
GS80.3 (5)	FA12	5.9	4.134	4.92	(4) 1/2–13	0.157	0.75	3.15	5/8	2 3/8	5/8 X 7/16	2 1/2
GS80.3	FA14	6.9	4.528	5.51	(4) 5/8–11	0.197	0.98	3.54	5/8	2 3/8	5/8 X 7/16	2 1/2
GS100.3 (5)	FA14	6.9	4.528	5.51	(4) 5/8–11	0.197	0.98	4.92	3/4	3	3/4 X 1/2	3 1/8
GS100.3	FA16	8.3	5.512	6.50	(4) 3/4–10	0.197	1.26	4.92	3/4	3	3/4 X 1/2	3 1/8
GS125.3 (5)	FA16	8.3	5.512	6.50	(4) 3/4–10	0.197	1.26	5.04	7/8	3 3/8	7/8 X 5/8	3 5/8
GS125.3	FA25	11.8	8.858	10.00	(8) 5/8–11	0.197	0.98	5.04	7/8	3 3/8	7/8 X 5/8	3 5/8
GS160.3	FA25	11.8	8.858	10.00	(8) 5/8–11	0.236	1.00	5.24	1	4	1 X 3/4	4 3/16
GS125.3 (5)	FA30	13.8	9.055	11.75	(8) 3/4–10	0.236	1.26	6.57	7/8	3 3/8	7/8 X 5/8	3 5/8
GS160.3 (5)								5.83	1	4	1 X 3/4	4 3/16
GS200.3								6.30	1 1/4	5	1 1/4 X 7/8	5 1/4
GS160.3 (5)	FA35	16.3	10.236	14.00	(8) 1–8	0.236	1.57	7.50	1	4	1 X 3/4	4 3/16
GS200.3 (5)									1 1/4	5	1 1/4 X 7/8	5 1/4
GS250.3								9.20	1 1/2	5 3/4	1 1/2 X 1	6
GS200.3 (5)	FA40	18.7	11.811	16.00	(8) 1 1/4–7	0.393	2.00	9.00	1 1/4	5	1 1/4 X 7/8	5 1/4
GS250.3 (5)								9.65	1 1/2	5 3/4	1 1/2 X 1	6
GS250.3 (5)	FA48	22.0	14.566	19.01	(12) 1 1/4–7	0.275	2.00	11.33	1 1/2	5 3/4	1 1/2 X 1	6
GS315	FA40	18.7	11.811	16.00	(8) 1 1/2–6 (4)	0.393	2.00	9.10	1 3/4	7 1/8	1 3/4 X 1 1/2	7 1/4

Notes:
1. All dimensions are in inches.
2. Unless specified tolerance per ISO 2768-m.
3. FA Flange per MSS STANDARD SP-101 unless otherwise noted.
4. FA40 Thread size 1 1/2-6 not per MSS STANDARD SP-101.
5. Optional FA Mounting Flange.



DIMENSIONS 'b' BASED
ON ANSI B17.1
AT MAX. BORE 'dy'

STANDARD FA MOUNTING FLANGE DIMENSIONS

GS50.3 - GS315	BY/DATE MC 09/28/20	APP/DATE PM 09/28/20	DWG. NO. SK099241	REV 11

AWWA BUTTERFLY VALVES (BAW)
TEST SPECIFICATION

DeZURIK
APCO | HILTON

APPLICATION DATA 43.01-4
Page 1
July, 2012
Supersedes April, 2012

SHELL TEST

VALVE SIZE	DURATION	TEST PRESSURE - WATER, psi / kPa				
		PRESSURE CLASS				
		25 170	75 520	150 1030	200 1380	250 1720
3 - 8" 80 - 200mm	1Minute	50 340	150 1030	300 2070	400 2760	500 3450
10 - 20" 250 - 500mm	3 Minutes					
24 - 120" 600 - 3000mm	10 Minutes					

SEAT TEST

VALVE SIZE	DURATION	TEST PRESSURE - WATER, psi / kPa				
		PRESSURE CLASS				
		25 170	75 520	150 1030	200 1380	250 1720
3 - 20" 80 - 500mm	5 Minutes	25 170	75 520	150 1030	200 1380	250 1720
24 - 120" 600 - 3000mm	10 Minutes					

BAW FLANGE BOLT STANDARDS

DeZURIK
APCO | HILTON

APPLICATION DATA 43.01-12
Page 1
July, 2012
Supersedes November, 2008

Class 125 / 150

Valve Size	Size mm	Flange Thickness (inches)		Thread Size *inches	Tapped Holes, UNC Each Flange			Through Holes, Each Flange		
		BAW	ANSI		Depth	Quantity	Bolt Length *inches	Diameter	Quantity	Bolt Size with Nut *inches
3”	75	0.81	0.75	5/8-11 UNC	n/a	0	n/a	0.75	4	2-3/4
4"	100	1.00	0.94	5/8-11 UNC	1.06	4	2	0.75	4	2-3/4
6”	150	1.06	1.00	3/4-10 UNC	1.28	4	2-1/4	0.88	4	3
8”	200	1.18	1.12	3/4-10 UNC	n/a	0	n/a	0.88	8	3-1/4
10"	250	1.25	1.19	7/8-9 UNC	1.56	2	2-3/4	1.00	10	3-1/2
12"	300	1.31	1.25	7/8-9 UNC	1.56	4	2-3/4	1.00	8	3-1/2
14"	350	1.47	1.38	1-8 UNC	1.56	4	3	1.12	8	4
16"	400	1.53	1.44	1-8 UNC	1.62	4	3	1.12	12	4
18"	450	1.65	1.56	1-1/8-7 UNC	1.69	4	3-1/4	1.25	12	4-1/2
20"	500	1.78	1.69	1-1/8-7 UNC	1.75	4	3	1.25	16	4-3/4
24"	600	1.97	1.88	1-1/4-7 UNC	2.00	4	3	1.38	16	4-3/4
30"	750	2.25	2.12	1-1/4-7 UNC	2.09	4	4-1/4	1.38	24	5-3/4
36"	900	2.50	2.38	1-1/2-6 UNC	2.38	8	4-3/4	1.62	24	6-1/2
42"	1050	2.75	2.62	1-1/2-6 UNC	2.59	8	5-1/4	1.62	28	7
48"	1200	2.88	2.75	1-1/2-6 UNC	2.72	8	5-1/2	1.62	36	7-1/4
54"	1350	3.12	3.00	1-3/4-5 UNC	3.00	8	6	2.00	36	8
60"	1500	3.25	3.12	1-3/4-5 UNC	3.12	8	6-1/4	2.00	44	8-1/2
66"	1650	3.50	3.38	1-3/4-5 UNC	3.38	8	6-3/4	2.00	44	9
72"	1800	3.62	3.50	1-3/4-5 UNC	3.50	8	7	2.00	52	9-1/4

Class 250

Valve Size	Size mm	Flange Thickness (inches)		Thread Size *inches	Tapped Holes, UNC Each Flange			Through Holes, Each Flange		
		BAW	ANSI		Depth	Quantity	Bolt Length *inches	Diameter	Quantity	Bolt Size with Nut *inches
3”	75	1.19	1.13	3/4-10 UNC	1.19	4	2.1/4	0.88	4	3-1/4
4"	100	1.31	1.25	3/4-10 UNC	1.19	4	2.1/4	0.88	4	3-1/2
6”	150	1.50	1.44	3/4-10 UNC	1.19	4	2-1/2	0.88	8	4
8”	200	1.69	1.63	7/8-9 UNC	1.44	4	3	1.00	8	4-1/4
10"	250	1.97	1.88	1-8 UNC	1.75	4	3-1/2	1.13	12	5
12"	300	2.09	2.00	1-1/8-7 UNC	1.75	4	3-3/4	1.25	12	5-1/4
14"	350	2.25	2.13	1-1/8-7 UNC	2.00	4	4	1.25	16	5-1/2
16"	400	2.38	2.25	1 -1/4-7UNC	2.00	4	4	1.38	16	5-3/4
18"	450	2.50	2.38	1 -1/4-7UNC	1.69	4	4	1.38	20	6-1/4
20"	500	2.63	2.50	1 -1/4-7UNC	2.55	4	4-3/4	1.38	20	6-1/2
24"	600	2.91	2.75	1-1/2-6 UNC	2.00	4	4-3/4	1.63	20	7
30"	750	3.13	3.00	1-3/4-5 UNC	2.38	4	5-1/4	2.00	24	7-1/2
36"	900	3.50	3.38	2-4-1/2 UNC	2.64	8	6	2.25	24	8-1/2
42"	1050	2.81	3.69	2-4-1/2 UNC	2.64	8	6	2.25	28	9
48"	1200	4.13	4.00	2-4-1/2 UNC	2.75	8	6-1/2	2.25	32	9-3/4

* Bolt length based on ANSI Class 125 and 250 mating flange thickness, 1/8” gasket thickness and no washers.

FLANGE BOLT TORQUE GUIDELINES

DeZURIK | APCO | HILTON

Pressure: 150 psi

WEB DATA 10.03-2
July, 2012
Supersedes January, 2011

Nominal Valve Size	Flange Bolting		80 Durometer Rubber Gasket			Compressed Non-asbestos Hard Gasket		
	Number of Bolts	Flange Bolt Size	Recommended Bolt Load	Bolt Torque Non-lubricated	Bolt Torque Lubricated	Recommended Bolt Load	Bolt Torque Non-lubricated	Bolt Torque Lubricated
3	4	5/8 x 11	1,250	31	10	4,500	112	36
4	8	5/8 x 11	1,020	24	8	3,980	94	29
6	8	3/4 x 10	1,580	45	14	4,810	136	42
8	8	3/4 x 10	2,450	69	22	6,860	193	60
10	12	7/8 x 9	2,390	80	26	6,210	209	68
12	12	7/8 x 9	3,500	118	39	9,570	321	105
14	12	1 - 8	3,650	146	46	11,700	468	147
16	16	1 - 8	3,550	142	44	11,300	453	142
18	16	1-1/8 x 7	3,950	181	60	10,600	486	159
20	20	1-1/8 x 7	3,840	177	58	10,000	461	151
24	20	1-1/4 x 7	5,320	272	89	13,000	666	218
30	28	1-1/4 x 7	5,710	292	96	13,000	662	217
36	32	1-1/2 x 6	6,980	445	140	14,900	950	298
42	36	1-1/2 x 6	8,390	535	168	17,700	1,130	354
48	44	1-1/2 x 6	8,820	563	177	17,900	1,140	358
54	44	1-3/4 x 5	12,600	933	293	21,600	1,600	503
60	52	1-3/4 x 5	11,300	847	266	21,700	1,620	507
66	52	1-3/4 x 5	13,800	1,020	321	26,200	1,950	611
72	60	1-3/4 x 5	14,100	1,050	329	26,300	1,950	613
78	64	2 X 4.5	15,300	1,320	433	27,300	2,370	775
84	64	2 X 4.5	17,600	1,530	500	31,100	2,700	882
90	68	2-1/4 X 4.5	18,800	1,800	565	32,100	3,100	963
96	68	2-1/4 X 4.5	21,300	2,000	640	35,900	3,400	1,080
102	72	2-1/2 X 4	22,200	2,400	788	35,000	3,800	1,240
108	72	2-1/2 X 4	24,700	2,700	876	37,900	4,100	1,340
114	76	2-3/4 X 4	25,600	3,100	1,000	36,900	4,400	1,440
120	76	2-3/4 X 4	28,100	3,400	1,100	38,800	4,600	1,510

Note: The Bolt Loads are given in lbs, and the Bolt Torques are given in ft-lbs.
Minimum torgue to achieve gasket seal.

RUBBER IDENTIFICATION
IN ORDER BY RS#

DeZURIK
APCO | HILTON

APPLICATION DATA 10.60-5B
July, 2012
Supersedes March, 2010

RS #	ASTM	DeZURIK	Trade	Other	Products
RS-16	CR	Chloroprene	Neoprene	Polychloroprene	(0.5"-6") PEC, (24"-36") BRS, (14"-36") KGS & KGL
RS-17	CR	Chloroprene	Neoprene	Polychloroprene	(8" & larger) PEC
RS-24	NBR	Acrylonitrile-Butadiene	Hycar, Krynac, NIPOL	Buna-N, Nitrile	(0.5"-6") PEC
RS-25	NBR	Acrylonitrile-Butadiene	Hycar, Krynac, NIPOL	Buna-N, Nitrile	(8" & larger) PEC
RS-26	NBR	Acrylonitrile-Butadiene	Hycar, Krynac, NIPOL	Buna-N, Nitrile	(4"-6") PEC, (24"-36") BRS, (14"-36") KGS & KGL
RS-46	CSM	Chlorosulfonated Polyethylene	Hypalon		(8" & larger) PEC
RS-47	CSM	Chlorosulfonated Polyethylene	Hypalon		(0.5"-6") PEC, BRS, (14"-36") KGS & KGL
RS-48	FKM	Fluoro Rubber	Viton A, Fluorel	Fluorocarbon	(0.5"-6") PEC, (14"-36") KGS & KGL
RS-49	XNBR	Carboxylic Acrylonitrile-Butadiene	NIPOL		(2"-20") BRS
RS-50	CR	Chloroprene	Neoprene	Polychloroprene	(2"-20") BRS
RS-53	NR	Natural Hard Rubber	Duro Micro	Natural Rubber	3" & larger PEC (body lining) (purc)
RS-54	FKM	Fluoro Rubber	Viton A, Fluorel	Fluorocarbon	(24"-36") BRS
RS-55	CIIR	Chloro-Isobutylene-Isoprene	Chlorobutyl		(0.5"-6") PEC
RS-56	CIIR	Chloro-Isobutylene-Isoprene	Chlorobutyl		(8" & larger) PEC
RS-58	FKM	Fluoro Rubber	Viton A, Fluorel	Fluorocarbon	(8" & larger) PEC
RS-59	CRW	Off White Chloroprene	Neoprene	Polychloroprene	BRS, KGS, KBD & KGL
RS-63	NBR	Acrylonitrile-Butadiene	Hycar, Krynac, NIPOL	Buna-N, Nitrile	(2"-20") BRS
RS-65	CIIR	Chloro-Isobutylene-Isoprene	Chlorobutyl		Transmitter seal
RS-66	EPDM	Ethylene, Propylene, & Diene Terpolymer	Keltan, Royalene	EP	BRS, (14"-36") KGS & KGL
RS-72	NBR	Acrylonitrile-Butadiene	Hycar, Krynac, NIPOL	Buna-N, Nitrile	Vee packing (male & female) PEC
RS-73	NBR	Acrylonitrile-Butadiene	Hycar, Krynac, NIPOL	Buna-N, Nitrile	Vee packing PEC
RS-76	NR	Natural Soft Rubber	Duro Micro	Natural Rubber	lining/curtains for foundry rotoblast
RS-78	EU	Polyether Urethane	Adiprene	Polyurethane	BRS
RS-81	XNBR	Carboxylic Acrylonitirle-Butadiene	NIPOL		BGS
RS-82	EPDM	Ethylene, Propylene, & Diene Terpolymer	Keltan, Royalene	EP	BGS
RS-88	EPDM	Ethylene, Propylene, & Diene Terpolymer	Keltan, Royalene	EP	(2"-20") BAW
RS-91	NBR	Acrylonitrile-Butadiene	Hycar, Krynac, NIPOL	Buna-N, Nitrile	(2"-20") BAW
RS-92	EPDM	Ethylene, Propylene, & Diene Terpolymer	Keltan, Royalene	EP	(24"-72") BAW (old design)
RS-94	CR	Chloroprene	Neoprene	Polychloroprene	(24"-72") BAW (old design)
RS-95	NBR	Acrylonitrile-Butadiene	Hycar, Krynac, NIPOL	Buna-N, Nitrile	(24"-72") BAW (old design)
RS-99	CR	Chloroprene	Neoprene	Polychloroprene	(2"-12") KGS & KBD
RS-101	NBR	Acrylonitrile-Butadiene	Hycar, Krynac, NIPOL	Buna-N, Nitrile	(2"-12") KGS & KBD
RS-103	CSM	Chlorosulfonated Polyethylene	Hypalon		(2"-12") KGS & KBD
RS-105	FKM	Fluoro Rubber	Viton A, Fluorel	Fluorocarbon	(2"-12") KGS & KBD
RS-109	EPDM	Ethylene, Propylene, & Diene Terpolymer	Keltan, Royalene	EP	(2"-12") KGS & KBD
RS-111	FKM	Fluoro Rubber	Viton GF, Fluorel	Fluorocarbon	(8" & larger) PEC
RS-112	EPDM	Ethylene, Propylene, & Diene Terpolymer	Keltan, Royalene	EP	BGS (seat backing)
RS-113	EPDM	Ethylene, Propylene, & Diene Terpolymer	Keltan, Royalene	EP	(8" & larger) PEC (purchased)
RS-114	BIIR	Bromo-Isobutylene-Isoprene	Bromobutyl		(8" & larger) PEC

Technical Data Actuator controls

General information

AC 01.2 actuator controls for controlling multi-turn actuators of the SA/SAR .2 type range and part-turn actuators of the SG/SGR type range.

Features and functions

Power supply

Standard voltages:

3-phase AC current voltages/frequencies								**1-phase AC current** voltages/frequencies		
Volt	380	400	415	440	460	480	500	Volt	110, 115, 120	220, 230, 240
Hz	50	50	50	60	60	60	50	Hz	60	50

Special voltages:

3-phase AC current voltages/frequencies					**1-phase AC current** voltages/frequencies	
Volt	525	575	660	690	Volt	208
Hz	50	50	50	50	Hz	60

Permissible variation of mains voltage: ±10 %

Permissible variation of mains voltage: ±30 % (option)

Permissible variation of mains frequency: ±5 %

External supply of the electronics (option)

24 V DC +20 %/–15 %,

Current consumption: Basic version approx. 250 mA, with options up to 500 mA

External power supply must have reinforced insulation against mains voltage in accordance with IEC 61010-1 and may only be supplied by a circuit limited to 150 VA in accordance with IEC 61010-1.

Current consumption

Current consumption of controls depending on mains voltage:

For permissible variation of the mains voltage 10 %

- 100 to 120 V AC = max. 740 mA
- 208 to 240 V AC = max. 400 mA
- 380 to 500 V AC = max. 250 mA
- 515 to 690 V AC = max. 200 mA

For permissible variation of the mains voltage ±30 %:

- 100 to 120 V AC = max. 1,200 mA
- 208 to 240 V AC = max. 750 mA
- 380 to 500 V AC = max. 400 mA
- 515 to 690 V AC = max. 400 mA

Overvoltage category

Category III according to IEC 60364-4-443

Rated power

Controls are designed for rated motor power, refer to Electrical Data Multi-turn actuators/Part-turn actuators

Switchgear

Standard:	Reversing contactors (mechanically and electrically interlocked) for AUMA power classes A1/A2
Options:	Reversing contactors (mechanically and electrically interlocked) for AUMA power class A3
	Thyristor unit for mains voltage up to 500 V AC (recommended for modulating actuators) for AUMA power classes B1, B2 and B3

Reversing contactors are designed for a lifetime of 2 million starts. For applications requiring a high number of starts, we recommend the use of thyristor units.

For AUMA power class assignment, refer to Electrical data on Multi-turn actuators or Part-turn actuators.

Control

Via digital inputs OPEN, STOP, CLOSE, EMERGENCY (via opto-isolator, OPEN, STOP, CLOSE with one common), respect minimum pulse duration for modulating actuators.

Control voltage/current consumption for control inputs

Standard:	24 V DC, current consumption: approx. 10 mA per input
Options:	48 V DC, current consumption: approx. 7 mA per input
	60 V DC, current consumption: approx. 9 mA per input
	115 V DC, current consumption: approx. 15 mA per input
	115 V AC, current consumption: approx. 15 mA per input

All input signals must be supplied with the same potential.

Technical Data Actuator controls

Status signals (output signals)	Standard:	• 6 programmable output contacts:: - 5 potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load), default configuration: End position CLOSED, end position OPEN, selector switch REMOTE, torque fault CLOSE, torque fault OPEN - 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load), default configuration: Collective fault signal (torque fault, phase failure, motor protection tripped) • Analogue output signal for position feedback - Galvanically isolated position feedback signal 0/4 – 20 mA (load max. 500 Ω)
	Options:	• 6 programmable output contacts: - 5 change-over contacts with one common, max. 250 V AC, 1 A (resistive load), 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) 12 programmable output contacts: - 10 potential-free NO contacts, 5 with one common each, max. 250 V AC, 1 A (resistive load), 2 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) • 6 programmable output contacts: - 6 potential-free change-over contacts without one common, per contact max. 250 V AC, 5 A (resistive load) • 10 programmable output contacts: - 10 potential-free change-over contacts without one common, per contact max. 250 V AC, 5 A (resistive load) All output signals must be supplied with the same potential.
Voltage output	Standard:	Auxiliary voltage 24 V DC, max. 100 mA for supply of control inputs, galvanically isolated from internal voltage supply
	Option:	Auxiliary voltage 115 V AC, max. 30 mA for supply of control inputs, galvanically isolated from internal voltage supply Not possible in combination with PTC tripping device
Local controls	Standard:	• Selector switch LOCAL - OFF - REMOTE (lockable in all three positions) • Push buttons OPEN, STOP, CLOSE, RESET - Local Stop The actuator can be stopped via push button Stop of local controls if the selector switch is in position REMOTE. Not activated when leaving the factory. • 6 indication lights: - End position and running indication CLOSED (yellow), torque fault CLOSE (red), motor protection tripped (violet), torque fault OPEN (red), end position and running indication OPEN (green), Bluetooth (blue) • Graphic LC display, illuminated
	Option:	• Special colours for the 5 indication lights: - End position CLOSED (green), torque fault CLOSE (blue), torque fault OPEN (yellow), motor protection tripped (white), end position OPEN (red)
Bluetooth communication interface	Bluetooth class II chip, version 2.0 with a range up to 10 m in industrial environments. Supports the SPP Bluetooth profile (Serial Port Profile). Programming software: AUMA ToolSuite, commissioning and diagnostic tool for Windows-based PCs, PDAs and smartphones	
Application functions	Standard:	• Switch-off mode adjustable - Limit or torque seating for end position OPEN and end position CLOSED • Torque by-pass, adjustable up to 5 seconds (no torque monitoring during start-up time) • Start and end of stepping mode as well as ON and OFF times (1 to 1,800 seconds) can be set individually for directions OPEN and CLOSE. • Any 8 intermediate positions between 0 and 100 %, reaction and signal behaviour programmable
	Options:	• Positioner: - Position setpoint via analogue input E1 = 0/4 – 20 mA - Programmable behaviour on loss of signal - Automatic adaptation of the dead band (adaptive behaviour selectable) - Split Range operation - MODE input for selecting between open-close and modulating duty • PID controller with adaptive positioner, 0/4 – 20 mA inputs for process setpoint and actual process value

Technical Data Actuator controls

Safety functions	Standard:	• EMERGENCY operation, programmable behaviour - Digital input low active - Reaction can be selected: Stop, run to end position CLOSED, run to end position OPEN, run to intermediate position - Torque monitoring can be by-passed during EMERGENCY operation. - Thermal protection can be by-passed during EMERGENCY operation (only in combination with thermoswitch within actuator, not with PTC thermistor).
	Options:	• Enabling local controls via digital input Enable LOCAL. Thus, actuator operation can be enabled or disabled via push buttons on the local controls. • Interlock, enable of operation commands OPEN and CLOSE via two digital inputs • EMERGENCY Stop push button (latching) interrupts electrical operation, irrespective of the selector switch positions.
Monitoring function	Standard:	• Valve overload protection (adjustable), results in switching off and generates fault signal • Motor temperature monitoring (thermal monitoring), results in switching off and generates fault indication • Monitoring the heater within actuator, generates warning signal • Monitoring of permissible on-time and number of starts (adjustable), generates warning signal • Operation time monitoring (adjustable), generates warning signal • Phase failure monitoring, results in switching off and generates fault signal • Automatic correction of rotation direction upon wrong phase sequence (3-ph AC current)
Diagnostic function	• Electronic device ID with order and product data • Logging of operating data: A resettable counter and a lifetime counter each for: - Motor running time, number of starts, torque switch trippings in end position CLOSED, limit switch trippings in end position CLOSED, torque switch trippings in end position OPEN, limit switch trippings in end position OPEN, torque faults CLOSE, torque faults OPEN, motor protection trippings • Time-stamped event report with history for setting, operation and faults: - Status signals according to NAMUR recommendation NE 107: "Failure", "Function check", "Out of specification", "Maintenance required" • Torque characteristics - 3 torque characteristics (torque-travel characteristic) for opening and closing directions, can be saved separately. Torque characteristics stored can be shown on the display.	
Motor protection evaluation	Standard:	• Monitoring the motor temperature in combination with thermoswitches within actuator motor
	Options:	• Thermal overload relay in controls combined with thermoswitches within the actuator • PTC tripping device in combination with PTC thermistors within actuator motor
Electrical connection	Standard:	AUMA plug/socket connector with screw-type connection
	Options:	• Terminals or crimp connection • Gold-plated control plug (sockets and plugs)
Threads for cable entries	Standard:	Metric threads
	Options:	Pg-threads, NPT-threads, G-threads
Wiring diagram (basic version)	TPCA-0A1-1C1-A000 TPA00R1AA-0A1-000	

Further options for version with MWG in actuator	
Setting of limit and torque switching via local controls	
Torque feedback signal	Galvanically isolated analogue output E6 = 0/4 – 20 mA (max. load 500 Ω)

Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	Standard:	≤ 2,000 m above sea level
	Option:	> 2,000 m above sea level, please contact AUMA
Ambient temperature	Standard:	–25 °C to +70 °C
	Options:	–60 °C to +60 °C, extreme low temperature version incl. heating system
		Low temperature versions incl. heating system for connection to external power supply 230 V AC or 115 V AC.
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Technical Data Actuator controls

Enclosure protection according to EN 60529	Standard:	IP 68 with AUMA 3-phase AC motor/1-phase AC motor Differing enclosure protection for special motors: refer to name plate	
	Option:	Terminal compartment additionally sealed against interior (double sealed)	
	According to AUMA definition, enclosure protection IP 68 meets the following requirements: • Depth of water: maximum 8 m head of water • Duration of continuous immersion in water: Max. 96 hours • Up to 10 operations during continuous immersion Modulating duty is not possible during continuous immersion.		
Pollution degree	Pollution degree 4 (when closed)		
Vibration resistance according to IEC 60068-2-6	1 g, from 10 Hz to 200 Hz Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. Not valid in combination with gearboxes.		
Corrosion protection	Standard:	KS	Suitable for installation in industrial units, in water or power plants with a low pollutant concentration as well as for installation in occasionally or permanently aggressive atmosphere with a moderate pollutant concentration (e.g. wastewater treatments plants, chemical industry)
	Options:	KX	Suitable for installation in extremely aggressive atmospheres with high humidity and high pollutant concentration
Finish coating	Powder paint Two-component iron-mica combination		
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)	
	Option:	Other colours are possible on request.	

Accessories	
Wall bracket	AC mounted separately from the actuator, including plug/socket connector. Connecting cable on request. Recommended for high ambient temperatures, difficult access, or in case of heavy vibration during service. Cable length between actuator and AC max. 100 m. Not suitable for version with potentiometer in the actuator. Instead of the potentiometer, the actuator has to be provided with RWG. Cable length for Non-intrusive version with MWG in the actuator max. 100 m. Requires separate data cable for MWG.
Programming software	AUMA ToolSuite

Further information	
Weight	Approx. 7 kg (with AUMA plug/socket connector)
EU Directives	Electromagnetic Compatibility (EMC): (2004/108/EC) Low Voltage Directive: (2006/95/EC) Machinery Directive: (2006/42/EC)
Reference documents	Product description Electric multi-turn actuators with integral controls SA 07.2 – SA 16.2/SA 25.1 – SA 48.1 with AM 01.1/2.1 and AC 01.2 Product description Electric part-turn actuators with integral controls SG 05.1 – SG12.1 with AM 01.1 – AM 02.1 and AC 01.2 Dimensions Multi-turn actuators with integral controls AUMATIC Dimensions Part-turn actuators with integral controls AUMATIC

Technical data Part-turn gearboxes with primary reduction gearings, version with worm wheel made of bronze for modulating application

GS 50.3 – GS 125.3/VZ
GS 160.3 – GS 250.3/GZ
Bronze

Application

For motor and manual operation of valves (e.g. butterfly and ball valves), especially suitable for modulating duty.
For special applications, e.g. dampers or gas diverters, special sizing is required.

Worm gearboxes GS 50.3 – GS 125.3 with primary reduction gearings VZ 2.3 – VZ 4.3

Valve				Gearboxes						
Max. valve torque		Valve attachment		Gearbox/ prim. red. gearing	Reduction ratio	Factor[2]	Turns for 90°	Input shaft[3]	Max. input torques[4]	Weight[5]
in Nm up to	Modulating torque[1] in Nm up to	Flange acc. to EN ISO 5211	Max. shaft diameter in mm					mm	in Nm	GS+VZ kg
350	125	F05[6]	20	GS 50.3	51:1	17.9	12.75	16	20	7
		F07[6] F10	38							
700	250	F10[6] F12	50	GS 63.3	51:1	17.3	12.75	20	41	12
1,400	500	F12[6] F14	60	GS 80.3	53:1	19.3	13.25	20	73	16
2,800	1,000	F14[6] F16	80	GS 100.3	52:1	20.2	13	30/(20)	139	33
				GS 100.3/ VZ 2.3	126:1	44.4	31.5	20	63	39
				GS 100.3/ VZ 3.3	160:1	55.5	40	20	50	39
				GS 100.3/ VZ 4.3	208:1	77	52	20	37	39
5,600	2,000	F16[6] F25	90	GS 125.3	52:1	20.8	13	30	269	40
				GS 125.3/ VZ 2.3	126:1	45.4	31.5	20/(30)	123	46
				GS 125.3/ VZ 3.3	160:1	57.9	40	20/(30)	97	46
				GS 125.3/ VZ 4.3	208:1	77	52	20	73	46

Possible combinations with multi-turn actuators											Multi-turn actuators	Flange[3] for mounting of multi-turn actuator		Max. weight[8]
Gearbox/ prim.red. gearing	Operating times for 50 Hz[7] in second for 90° at actuator speed rpm										Actuator for max. input torque			
	4	5,6	8	11	16	22	32	45	63[9]	90[9]		EN ISO 5210	DIN 3210	GS+VZ+SA max. kg
GS 50.3	192	137	96	70	48	35	24	17	12	8	SAR 07.1 SAR 07.2	F07 F10	G0	27.1
GS 63.3	192	137	96	70	48	35	24	17	12	9	SAR 07.5 SAR 07.6	F07 F10	G0	33.1
GS 80.3	199	142	100	72	50	36	25	18	13	9	SAR 10.1 SAR 10.2	(F07) F10	– G0	41.4
GS 100.3	195	140	98	71	49	35	24	17	12	9	SAR 14.1 SAR 14.2	(F10) F14	(G0) G1/2	85.1
GS 100.3/ VZ 2.3	472	337	236	172	118	86	59	42	30	21	SAR 10.1 SAR 10.2	F10	G0	64.4
GS 100.3/ VZ 3.3	600	429	300	218	150	109	75	53	38	27	SAR 07.5 SAR 07.6	F10	G0	60.1
GS 100.3/ VZ 4.3	780	557	390	284	195	142	98	69	50	35	SAR 07.5 SAR 07.6	F10	G0	60.1
GS 125.3	195	140	98	71	49	35	24	17	12	9	SAR 14.5 SAR 14.6	F14	G1/2	98.1
GS 125.3/ VZ 2.3	472	338	236	172	118	86	59	42	30	21	SAR 14.1 SAR 14.2	(F10) F14	(G0) G1/2	98.1
GS 125.3/ VZ 3.3	600	429	300	218	150	109	75	53	38	27	SAR 10.1 SAR 10.2	F10	G0	71.4
GS 125.3/ VZ 4.3	780	557	390	284	195	142	98	69	50	35	SAR 10.1 SAR 10.2	F10	G0	71.4

1) Modulating torque = permissible, average torque for modulating duty
2) Conversion factor from output torque to input torque to determine the actuator size
3) Depending on the required input torque
4) In new condition approx. 15 % higher input torque required
5) With coupling (without bore) and grease filling in the gear housing
6) Observe output torque assignment according to EN ISO 5211.
7) Standard values at 50 Hz; at 60 Hz, the indicated operating time is reduced by 17 %.
8) With coupling (without bore) and grease filling in the gear housing, multi-turn actuator AUMA NORM with 3-phase AC motor, standard electrical connection, output drive type B3 and handwheel
9) Only available in combination with actuator range SAR 07.2 – SAR 16.2 and without primary reduction gearing in multi-turn version, without end stops

GS 50.3 – GS 125.3/VZ GS 160.3 – GS 250.3/GZ Bronze

Technical data Part-turn gearboxes with primary reduction gearings, version with worm wheel made of bronze for modulating application

Worm gearboxes GS 160.3 – GS 250.3 with primary reduction gearings GZ 160.3 – GZ 250.3

Valve				Gearboxes						
Max. valve torque		Valve attachment		Gearbox/ prim.red. gearing	Reduction ratio	Factor[2]	Turns for 90°	Input shaft[3]	Max. input torques[4]	Weight[5]
in Nm up to	Modulating torque[1] in Nm up to	Flange acc. to EN ISO 5211	Max. shaft diameter in mm					mm	in Nm	GS+VZ kg
11, 250	4,000	F25[6] F30	100	GS 160.3	54:1	22.7	13.5	30	496	80
				GS 160.3/ GZ 4:1	218:1	83	54.5	30/(20)	136	91
				GS 160.3/ GZ 8:1	442:1	167	110.5	20	68	91
22,500	8,000	F30[6] F35	125	GS 200.3	53:1	22.3	13.5	40	1,009	140
				GS 200.3/ GZ 4:1	214:1	81.3	53.5	30	277	160
				GS 200.3/ GZ 8:1	434:1	165	108.5	30/(20)	137	160
				GS 200.3/ GZ 16:1	864:1	308	216	20	73	170
45,000	16,000	F35[6] F40	160	GS 250.3	52:1	21.9	13	50	2,060	273
				GS 250.3/ GZ 4:1	210:1	80	52.5	40/(30)	563	296
				GS 250.3/ GZ 8:1	411:1	156	109	30	289	296
				GS 250.3/ GZ 16:1	848:1	305	212	30/(20)	148	308

Gearbox/ prim. red. gearing	Possible combinations with multi-turn actuators: Operating times for 50 Hz[7] in seconds for 90° at actuator speed in rpm										Multi-turn actuator: Actuator for max. input torque	Flange[3] for mounting of multi-turn actuator		Max. Weight[8]
	4	5,6	8	11	16	22	32	45	63[9]	90[9]		EN ISO 5210	DIN 3210	GS+GZ+SA max. kg
GS 160.3	203	145	102	74	51	37	25	18	13	9	SAR 14.5 SAR 14.6	F14	G1/2	138.1
GS 160.3/ GZ 4:1	818	584	409	297	204	149	102	73	52	36	SAR 14.1 SAR 14.2	(F10) F14	(G0) G1/2	143.1
GS 160.3/ GZ 8:1	–	–	829	603	414	301	207	147	105	74	SAR 10.1 SAR 10.2	F10	G0	116.4
GS 200.3	199	142	100	72	–	–	–	–	–	–	SAR 25.1	(F16) F25	(G3) –	295.1
GS 200.3/ GZ 4:1	803	573	401	292	201	146	100	71	51	36	SAR 14.5 SAR 14.6	F14	G1/2	218.1
GS 200.3/ GZ 8:1	–	–	814	592	407	296	203	145	103	72	SAR 14.1 SAR 14.2	(F10) F14	(G0) G1/2	212.1
GS 200.3/ GZ 16:1	–	–	–	–	810	589	405	288	206	144	SAR 10.1 SAR 10.2	F10	G0	195.4
GS 250.3	195	140	98	71	–	–	–	–	–	–	SAR 30.1	(F25) F30	–	471.6
GS 250.3/ GZ 4:1	788	563	394	286	197	143	98	70	50	35	SAR 16.1 SAR 16.2	(F14) F16	(G1/2) G3	384.4
GS 250.3/ GZ 8:1	–	–	773	562	386	281	193	137	98	69	SAR 14.5 SAR 14.6	F14	G1/2	354.1
GS 250.3/ GZ 16:1	–	–	–	–	795	578	398	283	202	141	SAR 14.1 SAR 14.2	(F10) F14	(G0) G1/2	360.1

1) Modulating torque = permissible, average torque for modulating duty
2) Conversion factor from output torque to input torque to determine the actuator size
3) Depending on the required input torque
4) In new condition approx. 15 % higher input torque required
5) With coupling (without bore) and grease filling in the gear housing
6) Observe output torque assignment according to EN ISO 5211.
7) Standard values at 50 Hz; at 60 Hz, the indicated operating time is reduced by 17 %.
8) With coupling (without bore) and grease filling in the gear housing, multi-turn actuator AUMA NORM with 3-phase AC motor, standard electrical connection, output drive type B3 and handwheel
9) Only available in combination with actuator range SAR 07.2 – SAR 16.2 and without primary reduction gearing in multi-turn version, without end stops

auma®

Features and functions

Version	Standard: clockwise rotation RR, counterclockwise rotation LL, option: RL or LR
Housing material	Standard: cast iron (GJL-250), option: spheroidal cast iron (GJS-400-15)
Self-locking	The gearboxes are self-locking when at stand-still under normal service conditions; strong vibrations may cancel the self-locking effect. While in motion, safe breaking is not guaranteed. If this is required, a separate brake must be used.
End stops	Positive for both end positions by travelling nut, sensitive adjustment
Strength of end stop	Guaranteed strength of end stop (in Nm) for input side operation according to AWWA

Type	GS 50.3	GS 63.3	GS 80.3	GS 100.3			GS 125.3		
Prim.red.gearing	–	–	–	VZ 2.3	VZ 3.3	VZ 4.3	VZ 2.3	VZ 3.3	VZ 4.3
Nm	(250)[10]	450	450	500		250[10]	500		250[10]

Type	GS 160.3		GS 200.3			GS 250.3		
Prim.red.gearing	GZ 160.3		GZ 200.3			GZ 250.3		
Reduction ratio	4:1	8:1	4:1	8:1	16:1	4:1	8:1	16:1

Swing angle GS 50.3 – GS 125.3	Standard:	Fixed swing angle between 10° and max. 100°; set in the factory to 92° unless ordered otherwise.
	Options:	Adjustable ins steps of: 10° – 35°, 35° – 60°, 60° – 80°, 80° – 100°, 100° – 125°, 125° – 150°, 150° – 170°, 170° – 190° Swing angle > 190°, multi-turn version without end stops, GSD version special sizing necessary
Swing angle GS 160.3 – GS 250.3	Standard: Options	Adjustable 80° – 100°; set in the factory to 92° unless ordered otherwise. Adjustable in steps of: 0° – 20°, 20° – 40°, 40° – 60°, 60° – 80°, 90° – 110°, 110° – 130°, 130° – 150°, 150° – 170°, 170° – 190° Swing angle > 190°, multi-turn version without end stops, GSD version special sizing necessary
Mechanical position indicator	Standard:	Pointer cover for continuous position indication
	Options:	Sealed pointer cover for horizontal outdoor installation[11] Protection cover for buried service instead of pointer cover Sealed pointer cover with air vent[11], not for GS 50.3
Input shaft	Cylindrical with parallel key according to DIN 6885.1 (refer to tables page 1 and page 2)	

Operation

Motor operation	With electric multi-turn actuator, directly or through primary reduction gearing VZ/GZ Flanges for mounting of actuator, refer to tables page 1 and page 2.
Type of duty	Intermittent duty S4 - 25 % (modulating duty) Push-to-run operation permissible, max. 10 steps in one direction and max. of 30 starts per hour
Manual operation	Via handwheel in aluminium, directly or through primary reduction gearing VZ/GZ Available handwheel diameters, selection according to the output torque:

Type	GS 50.3	GS 63.3	GS 80.3	GS 100.3				GS 125.3			
Prim.red. gearing	–	–	–	–	VZ 2.3	VZ 3.3	VZ 4.3	–	VZ 2.3	VZ 3.3	VZ 4.3
Handwheel Ø mm	160 200 250	250 315	315 400	400 500	315 400	315 400	250 315	500 630 800	400 500	400 500	315 400

Type	GS 160.3			GS 200.3				GS 250.3			
Prim.red.gearing	–	GZ 160.3		–	GZ 200.3			–	GZ 250.3		
Handwheel Ø mm	630 800	400	315	–	500 630	400	315	–	800	500 630	400

	Standard:	Without ball handle
	Options:	- With ball handle - Handwheel material GJL-200

Primary reduction gearing

Primary reduction gearing	- Types VZ and GZ as planetary gear with various reduction ratios for reducing the input torques (refer to tables page 1 and page 2). - Combination with GK bevel gearbox directly on GS or on GS with VZ/GZ possible

Valve attachment

Valve attachment	Dimensions according to EN ISO 5211 (refer to tables page 1 and page 2): Observe the maximum torques of the mounting flanges in accordance with EN ISO 5211.	
	Standard:	GS 50.3 – GS 125.3: without spigot GS 160.3 – GS 250.3: with spigot
	Options:	GS 50.3 – GS 125.3: with spigot GS 160.3 – GS 250.3: without spigot

10) Not qualified in accordance with AWWA

11) For gas applications with sealed pointer cover, an air vent in the pointer cover or venting keyways in the valve mounting flange must be provided.

Technical data Part-turn gearboxes with primary reduction gearings, version with worm wheel made of bronze for modulating application

Coupling	Splined coupling for connection to the valve shaft		
	Standard:		Without bore or pilot bore from GS 160.3 Worm gearbox can be repositioned 4 x 90° on coupling
	Options:		Machined with bore and keyway, square bore or bore with two-flats with grub screw for fixing on valve shaft
Service conditions			
Mounting positions	Any position		
Enclosure protection according to EN 60529[12]	Standard:		IP 68-3, dust and water tight up to max. 3 m head of water
	Options[13]:		IP 68-6, dust and water tight up to max. 6 m head of water IP 68-10, dust and water tight up to max. 10 m head of water IP 68-20, dust and water tight up to max. 20 m head of water
Corrosion protection	Standard:	KN	Suitable for installation in industrial units, in water or power plants with a low pollutant concentration
	Options:	KS	Suitable for installation in occasionally or permanently aggressive atmosphere with a moderate pollutant concentration (e.g. in wastewater treatment plants, chemical industry)
		KX	Suitable for installation in extremely aggressive atmosphere with high humidity and high pollutant concentration
Paint	Standard:	GS 50.3 – GS 125.3:	Two-component iron-mica combination
		GS 160.3 – GS 250.3:	Primer coating
	Option:	GS 160.3 – GS 250.3:	Two component iron-mica combination
Colour	Standard:	AUMA silver-grey (similar to RAL 7037) if finish painted	
	Option:	Other colours on request	
Ambient temperature	Standard:	–40 °C to +80 °C	
	Options:	–60 °C to +60 °C, version EL –0 °C to +120 °C, version H	
Lifetime	Modulating duty:	2.5 million modulating steps[14]	
Accessories			
Valve position indicators	WSG valve position indicator for signalling intermediate and end positions for precise and low-backlash feedback of swing angles ranging from 82° – 98° (refer to separate data sheet)		
	WGD valve position indicator for signalling intermediate and end positions for swing angles > 180° (refer to separate data sheet)		
Limit switch device	WSH limit switching device for manually operated valves. For signalling intermediate and end positions (refer to separate data sheet)		
Special features for use in potentially explosive atmospheres			
Explosion protection according to ATEX 94/9/EC	Standard:	II2G c IIC T4 II2D c T130 °C	
	Options:	II2G c IIC T3 II2D c T190 °C IM2 c	
Type of duty[15]	Standard:	Intermittent duty S4 - 25 % with modulating torque and max. input speed of 45 rpm or 11 rpm for GS 200.3 and 250.3, refer to tables pages 1 and 2	
	Exception:	GS 200.3 with modulating torque up to 4,800 Nm	
	Option:	GSD multi-turn version, special sizing required; please consult AUMA	
Ambient temperature	Standard:	–40 °C to +60 °C (II2G c IIC T4; II2D c T130 °C) –50 °C to +60 °C (II2G c IIC T4; II2D c T130 °C) –60 °C to +60 °C (II2G c IIC T4; II2D c T130 °C) –40 °C to +40 °C (II2G c IIC T4; II2D c T130 °C)	
	Options:	–40 °C to +80 °C (II2G c IIC T3; II2D c T190 °C) 0 °C to +120 °C (II2G c IIC T3; II2D c T190 °C) –20 °C to +40 °C (IM2 c)	
Output speeds	Standard:	50 Hz, refer to table page 1 and 2	
	Option:	60 Hz with adapted output speed of the multi-turn actuator	
Further information			
EU directives	ATEX directive: (94/9/EC) Machinery directive: (2006/42/EC)		
Reference documents	Product description Part-turn gearboxes GS 50.3 – GS 250.3/GS 315 – GS 500 Dimension sheets GS 50.3 – GS 125.3, GS 160.3 – GS 250.3 Technical data SA, SAR, WSG, WGD, WSH		
Lever gearboxes	Refer to separate documents		

12) Refer to information sheet “Enclosure protection IP 68 (submersible) for worm gearboxes and primary reduction gearings”.

13) Not available for GS 50.3

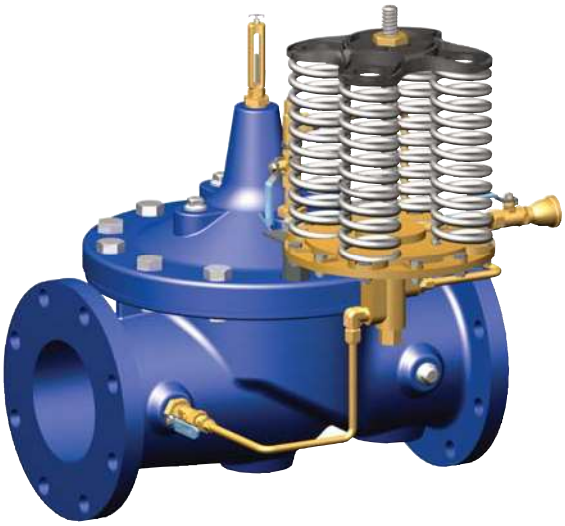
14) The lifetime depends on the load and the number of starts. A high starting frequency will rarely improve the modulating accuracy. To reach the longest possible maintenance and fault-free operating time, the number of starts per hour chosen should be as low as possible for the process.

15) The type of duty must not be exceeded.

CLA-VAL™

MODEL 210-16 (Full Internal Port)
610-16 (Reduced Internal Port)

Altitude Valve For Two-Way Flow



- **Accurate and Repeatable Level Control**
- **Drip-Tight Positive Shut-Off**
- **Reliable Hydraulic Operation**
- **Easily Adjustable Control**
- **Completely Automatic Operation**

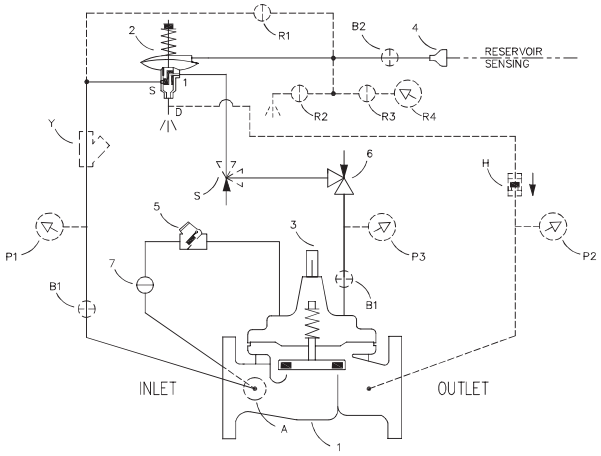
The Cla-Val Model 210-16/610-16 Altitude Valve controls the high water level in reservoirs without the need for floats or other devices. It is a non-throttling valve that remains fully open until the shut off point is reached. This valve closes at a high water level, and opens for return flow when the pressure at the valve inlet is less than the reservoir pressure.

This valve is hydraulically operated and pilot controlled. The pilot control operates on the differential in forces between a spring load and the water level in the reservoir. When the force of the spring is overcome by the force of the reservoir head, the pilot closes the main valve. The desired high water level is set by adjusting the spring force. The pilot control measures the reservoir head through a customer supplied sensing line* connected directly to the reservoir.

This valve can also be furnished with auxiliary controls to meet the need for multiple functions, such as: pressure sustaining, pressure reduction, rate of flow control, solenoid override, etc.

Schematic Diagram

Item	Description
1	Hytrol (Main Valve)
2	CDS6A Altitude Control
3	X101 Valve Position Indicator
4	Bell Reducer
5	Check Valve
6	CV Flow Control (Closing)
7	CK2 Isolation Valve



Optional Features

Item	Description
A	X46A Flow Clean Strainer
B	CK2 Isolation Valve
H	Dry Drain
P	X141 Pressure Gauge
R	Reservoir Gauge with Tester
S	CV Flow Control (Opening)
Y	X43 "Y" Strainer

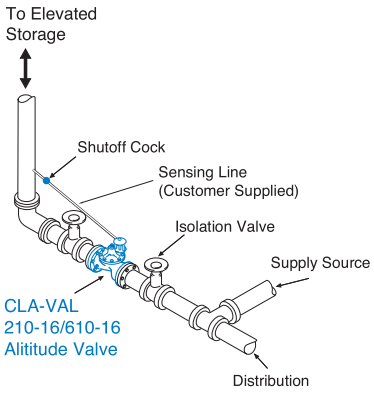
Typical Applications

Used on reservoirs where water is withdrawn through the Altitude Valve. The valve closes at the high water level and opens for return flow when the pressure at the valve inlet lowers below the reservoir pressure.

For more information see data sheet E-CDS6A

*Note: The reservoir pressure sensing line should be ¾" minimum I.D. installed with a 2° slope from valve to reservoir to avoid air pockets.

We recommend protecting tubing and valve from freezing temperatures.



CLA-VAL™

Model 210-16 (Uses Basic Valve Model 100-01)

Pressure Ratings (Recommended Maximum Pressure - psi)

Valve Body & Cover		Pressure Class				
		Flanged			Grooved	Threaded
Grade	Material	ANSI Standards*	150 Class	300 Class	300 Class	End‡ Details
ASTM A536	Ductile Iron	B16.42	250	400	400	400
ASTM A216-WCB	Cast Steel	B16.5	285	400	400	400
ASTM B62	Bronze	B16.24	225	400	400	400

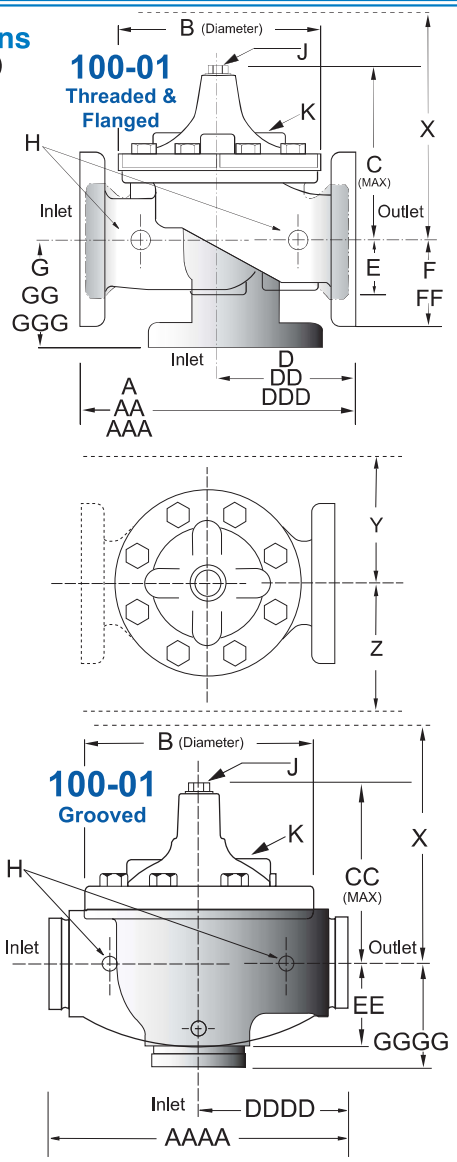
Note: * ANSI standards are for flange dimensions only.
Flanged valves are available faced but not drilled.
‡ End Details machined to ANSI B2.1 specifications.
Valves for higher pressure are available; consult factory for details

Cover Capacity

Liquid Volume Displaced from Diaphragm Chamber When Valve Opens or Closes

Valve Size	Displacement
2”	.032 gal
2 1/2”	.043 gal
3”	.080 gal
4”	.169 gal
6”	.531 gal
8”	1.26 gal
10”	2.51 gal
12”	4.00 gal
14”	6.50 gal
16”	9.57 gal
18”	9.57 gal
20”	12.00 gal
24”	29.00 gal
36”	42.00 gal

Dimensions (In inches)



Materials

Component	Standard Material Combinations		
Body & Cover	Ductile Iron	Cast Steel	Bronze
Available Sizes	2" - 36"	2" - 16"	2" - 16"
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze
Trim: Disc Guide, Seat & Cover Bearing	Bronze is Standard Stainless Steel is Optional		
Disc	Buna-N® Rubber		
Diaphragm	Nylon Reinforced Buna-N® Rubber		
Stem, Nut & Spring	Stainless Steel		
For material options not listed, consult factory. Cla-Val manufactures valves in more than 50 different alloys.			

Model 210-16 Dimensions (In Inches)

Valve Size (Inches)	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	30	36
A Threaded	9.38	11.00	12.50	—	—	—	—	—	—	—	—	—	—	—	—
AA 150 ANSI	9.38	11.00	12.00	15.00	20.00	25.38	29.75	34.00	39.00	41.38	46.00	52.00	61.50	63.00	76.00
AAA 300 ANSI	10.00	11.62	13.25	15.62	21.00	26.38	31.12	35.50	40.50	43.50	47.64	53.62	63.24	64.50	76.00
AAAA Grooved End	9.00	11.00	12.50	15.00	20.00	25.38	—	—	—	—	—	—	—	—	—
B Dia.	6.62	8.00	9.12	11.50	15.75	20.00	23.62	28.00	32.75	35.50	41.50	45.00	53.16	56.00	66.00
C Max.	6.50	7.56	8.19	10.62	13.38	16.00	17.12	20.88	24.19	25.00	39.06	41.90	43.93	54.60	61.50
CC Max. Grooved End	5.75	6.88	7.25	9.31	12.12	14.62	—	—	—	—	—	—	—	—	—
D Threaded	4.75	5.50	6.25	—	—	—	—	—	—	—	—	—	—	—	—
DD 150 ANSI	4.75	5.50	6.00	7.50	10.00	12.69	14.88	17.00	19.50	20.81	—	—	30.75	—	—
DDD 300 ANSI	5.00	5.88	6.38	7.88	10.50	13.25	15.56	17.75	20.25	21.62	—	—	31.62	—	—
DDDD Grooved End	4.75	—	6.00	7.50	—	—	—	—	—	—	—	—	—	—	—
E	1.50	1.69	2.06	3.19	4.31	5.31	9.25	10.75	12.62	15.50	12.95	15.00	17.75	21.31	24.56
EE Grooved End	2.50	2.88	3.12	4.25	6.00	7.56	—	—	—	—	—	—	—	—	—
F 150 ANSI	3.00	3.50	3.75	4.50	5.50	6.75	8.00	9.50	10.50	11.75	15.00	16.50	19.25	22.50	25.60
FF 300 ANSI	3.25	3.75	4.13	5.00	6.25	7.50	8.75	10.25	11.50	12.75	15.00	16.50	19.25	24.00	25.60
G Threaded	3.25	4.00	4.50	—	—	—	—	—	—	—	—	—	—	—	—
GG 150 ANSI	3.25	4.00	4.00	5.00	6.00	8.00	8.62	13.75	14.88	15.69	—	—	22.06	—	—
GGG 300 ANSI	3.50	4.31	4.38	5.31	6.50	8.50	9.31	14.50	15.62	16.50	—	—	22.90	—	—
GGGG Grooved End	3.25	—	4.25	5.00	—	—	—	—	—	—	—	—	—	—	—
H NPT Body Tapping	.375	.50	.50	.75	.75	1	1	1	1	1	1	1	1	2	2
J NPT Cover Center Plug	.50	.50	.50	.75	.75	1	1	1.25	1.5	2	1.5	1.5	1.5	2	2
K NPT Cover Tapping	.375	.50	.50	.75	.75	1	1	1	1	1	1	1	1	2	2
Stem Travel	0.6	0.7	0.8	1.1	1.7	2.3	2.8	3.4	4.0	4.5	5.1	5.63	6.75	7.5	8.5
Approx. Ship Wt. Lbs.	35	50	70	140	285	500	780	1165	1600	2265	2982	3900	6200	7703	11720
X Pilot System	13	14	15	17	29	31	33	36	40	40	43	47	68	79	85
Y Pilot System	9	10	11	12	20	22	24	26	29	30	32	34	39	40	45
Z Pilot System	9	10	11	12	20	22	24	26	29	30	32	34	39	42	47

Note: The top two flange holes on valve size 36 are threaded to 1 1/2"-6 UNC.

Model 610-16 (Uses Basic Valve Model 100-20)

Pressure Ratings (Recommended Maximum Pressure - psi)

Valve Body & Cover		Pressure Class		
		Flanged		
Grade	Material	ANSI Standards*	150 Class	300 Class
ASTM A536	Ductile Iron	B16.42	250	400
ASTM A216-WCB	Cast Steel	B16.5	285	400
ASTM B62	Bronze	B16.24	225	400

Note: * ANSI standards are for flange dimensions only.
Flanged valves are available faced but not drilled.
Valves for higher pressure are available; consult factory for details

Materials

Component	Standard Material Combinations		
Body & Cover	Ductile Iron	Cast Steel	Bronze
Available Sizes	3" - 48"	3" - 16"	3" - 16"
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze
Trim: Disc Guide, Seat & Cover Bearing	Bronze is Standard Stainless Steel is Optional		
Disc	Buna-N® Rubber		
Diaphragm	Nylon Reinforced Buna-N® Rubber		
Stem, Nut & Spring	Stainless Steel		

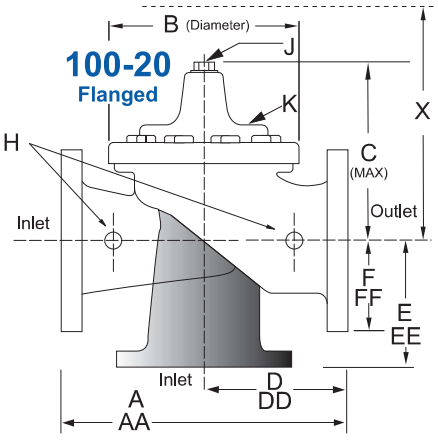
For material options not listed, consult factory.
Cla-Val manufactures valves in more than 50 different alloys.

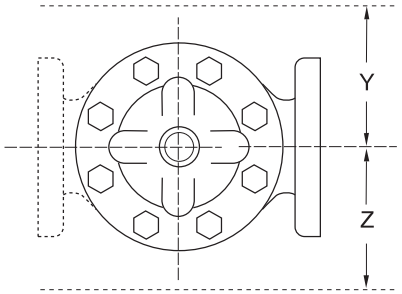
Cover Capacity

Liquid Volume Displaced from Diaphragm Chamber When Valve Opens or Closes

Valve Size	Displacement
3"	.032 gal
4"	.080 gal
6"	.169 gal
8"	.531 gal
10"	1.26 gal
12"	2.51 gal
14"	2.51 gal
16"	4.00 gal
18"	4.00 gal
20"	9.57 gal
24"	9.57 gal
30"	29.00 gal

Dimensions
(In inches)





Model 610-16 Dimensions (In Inches)

Valve Size (Inches)	3	4	6	8	10	12	14	16	18	20	24	30	36	42	48
A 150 ANSI	10.25	13.88	17.75	21.38	26.00	30.00	34.25	35.00	42.12	48.00	48.00	63.25	65.00	76.00	94.50
AA 300 ANSI	11.00	14.50	18.62	22.38	27.38	31.50	35.75	36.62	43.63	49.62	49.75	63.75	67.00	76.00	94.50
B Dia.	6.62	9.12	11.50	15.75	20.00	23.62	27.47	28.00	35.44	35.44	35.44	53.19	56.00	66.00	66.00
C Max.	7.00	8.62	11.62	15.00	17.88	21.00	20.88	25.75	25.00	31.00	31.00	43.94	54.60	61.50	61.50
D 150 ANSI	—	6.94	8.88	10.69	CF*	CF*	CF*	CF*	CF*	CF*	CF*	—	—	—	—
DD 300 ANSI	—	7.25	9.38	11.19	CF*	CF*	CF*	CF*	CF*	CF*	CF*	—	—	—	—
E 150 ANSI	—	5.50	6.75	7.25	CF*	CF*	CF*	CF*	CF*	CF*	CF*	—	—	—	—
EE 300 ANSI	—	5.81	7.25	7.75	CF*	CF*	CF*	CF*	CF*	CF*	CF*	—	—	—	—
F 150 ANSI	3.75	4.50	5.50	6.75	8.00	9.50	11.00	11.75	15.88	14.56	17.00	19.88	25.50	28.00	31.50
FF 300 ANSI	4.12	5.00	6.25	7.50	8.75	10.25	11.50	12.75	15.88	16.06	19.00	22.00	27.50	28.00	31.50
H NPT Body Tapping	.375	.50	.75	.75	1	1	1	1	1	1	1	1	2	2	2
J NPT Cover Center Plug	.50	.50	.75	.75	1	1	1.25	1.25	2	2	2	2	2	2	2
K NPT Cover Tapping	.375	.50	.75	.75	1	1	1	1	1	1	1	1	2	2	2
Stem Travel	0.6	0.8	1.1	1.7	2.3	2.8	3.4	3.4	4.5	4.5	4.5	6.5	7.5	8.5	8.5
Approx. Ship Wt. Lbs.	45	85	195	330	625	900	1250	1380	1500	2551	2733	6500	8545	12450	13100
X Pilot System	13	15	27	30	33	36	36	41	40	46	55	68	79	85	86
Y Pilot System	10	11	18	20	22	24	26	26	30	30	30	39	40	45	47
Z Pilot System	10	11	18	20	22	24	26	26	30	30	30	39	42	47	49

*Consult Factory

Note: The top two flange holes on valve sizes 36 thru 48 are threaded to 1 1/2"-6 UNC.

210-16 Valve Selection	100-01 Pattern: Globe (G), Angle (A), End Connections: Threaded (T), Grooved (GR), Flanged (F) Indicate Available Sizes															
	Inches	2	2½	3	4	6	8	10	12	14	16	18	20	24	30	36
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600	750	900
Basic Valve 100-01	Pattern	G, A	G, A	G, A	G, A	G, A	G, A	G, A	G, A	G, A	G, A	G	G	G, A	G	G
	End Detail	T, F, Gr	T, F, Gr*	T, F, Gr	F, Gr	F, Gr*	F, Gr*	F	F	F	F	F	F	F	F	F
Suggested Flow (gpm)	Maximum	210	300	460	800	1800	3100	4900	7000	8400	11000	14000	17000	25000	42000	50000
	Maximum Intermittent	260	370	580	990	2250	3900	6150	8720	10540	13700	17500	21700	31300	48000	62500
Suggested Flow (Liters/Sec)	Maximum	13	19	29	50	113	195	309	442	530	694	883	1073	1577	2650	3150
	Maximum Intermittent	16	23	37	62	142	246	387	549	664	863	1104	1369	1972	3028	3940

100-01 Series is the full internal port Hytrol. *Globe Grooved Only

610-16 Valve Selection	100-20 Pattern: Globe (G), Angle (A), End Connections: Flanged (F) Indicate Available Sizes														
	Inches	3	4	6	8	10	12	14	16	18	20	24	30	36	42	48
	mm	80	100	150	200	250	300	350	400	450	500	600	750	900	1000	1200
Basic Valve 100-20	Pattern	G	G, A	G, A	G, A	G	G	G	G	G	G	G	G	G	G	G
	End Detail	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
Suggested Flow (gpm)	Maximum	260	580	1025	2300	4100	6400	9230	9230	16500	16500	16500	28000	33500	33500	33500
Suggested Flow (Liters/Sec)	Maximum	16	37	65	145	258	403	581	581	1040	1040	1040	1764	2115	2115	2115

100-20 Series is the reduced internal port size version of the 100-01 Series.

Pilot System Specifications

Adjustment Ranges

5 - 40 ft.
30 - 80 ft.
70 - 120 ft.
110 - 160 ft.
150 - 200 ft.

Temperature Range

Water: to 180°F

If flowing line pressure is less than 10 psi, consult factory for full details.

If inlet pressure is above 150 psi, consult factory for recommendations.

Materials

Standard Pilot System Materials

Pilot Control: Bronze ASTM B62
Trim: Stainless Steel Type 303
Rubber: Buna-N® Synthetic Rubber

Optional Pilot System Materials

Pilot Systems are available with optional Aluminum, Stainless Steel or Monel materials.

Valve position indicator is standard.

When Ordering Please Specify

1. Catalog No. 210-16 or No. 610-16
2. Valve Size
3. Pattern - Globe or Angle
4. Pressure Class
5. Threaded or Flanged
6. Materials Desired
7. Adjustment Range
8. Desired Options
9. When Vertically Installed

CLA-VAL®

CLA-VAL

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Lausanne, Switzerland
Phone: 41-21-643-15-55
Fax: 41-21-643-15-50

www.cla-val.com

E-210-16/610-16 (R-4/2013)

Represented By:

SECTION E: BIDDERS ACKNOWLEDGEMENT

FELLAND RESERVOIR BOOSTER PUMP INSTALL

MILKY WAY RESERVOIR VALVE INSTALL

CONTRACT NO. 9336

Bidder must state a Unit Price and Total Bid for each item. The Total Bid for each item must be the product of quantity, by Unit Price. The Grand Total must be the sum of the Total Bids for the various items. In case of multiplication errors or addition errors, the Grand Total with corrected multiplication and/or addition shall determine the Grand Total bid for each contract. The Unit Price and Total Bid must be entered numerically in the spaces provided. All words and numbers shall be written in ink.

1. The undersigned having familiarized himself/herself with the Contract documents, including Advertisement for Bids, Instructions to Bidders, Form of Proposal, City of Madison Standard Specifications for Public Works Construction - 2023 Edition thereto, Form of Agreement, Form of Bond, and Addenda issued and attached to the plans and specifications on file in the office of the City Engineer, hereby proposes to provide and furnish all the labor, materials, tools, and expendable equipment necessary to perform and complete in a workmanlike manner the specified construction on this project for the City of Madison; all in accordance with the plans and specifications as prepared by the City Engineer, including Addenda Nos. _____ through _____ to the Contract, at the prices for said work as contained in this proposal. (Electronic bids submittals shall acknowledge addendum under Section E and shall not acknowledge here)
2. If awarded the Contract, we will initiate action within seven (7) days after notification or in accordance with the date specified in the contract to begin work and will proceed with diligence to bring the project to full completion within the number of work days allowed in the Contract or by the calendar date stated in the Contract.
3. The undersigned Bidder or Contractor certifies that he/she is not a party to any contract, combination in form of trust or otherwise, or conspiracy in restraint of trade or commerce or any other violation of the anti-trust laws of the State of Wisconsin or of the United States, with respect to this bid or contract or otherwise.
4. I hereby certify that I have met the Bid Bond Requirements as specified in Section 102.5. *(IF BID BOND IS USED, IT SHALL BE SUBMITTED ON THE FORMS PROVIDED BY THE CITY. FAILURE TO DO SO MAY RESULT IN REJECTION OF THE BID).*
5. I hereby certify that all statements herein are made on behalf of _____ (name of corporation, partnership, or person submitting bid) a corporation organized and existing under the laws of the State of _____ a partnership consisting of _____; an individual trading as _____; of the City of _____ State of _____; that I have examined and carefully prepared this Proposal, from the plans and specifications and have checked the same in detail before submitting this Proposal; that I have fully authority to make such statements and submit this Proposal in (its, their) behalf; and that the said statements are true and correct.

_____
SIGNATURE

_____
TITLE, IF ANY

Sworn and subscribed to before me this
_____ day of _____, 20_____.

_____
(Notary Public or other officer authorized to administer oaths)
My Commission Expires _____
Bidders shall not add any conditions or qualifying statements to this Proposal.

SECTION F: BEST VALUE CONTRACTING

FELLAND RESERVOIR BOOSTER PUMP INSTALL

MILKY WAY RESERVOIR VALVE INSTALL

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Best Value Contracting

1. The Contractor shall indicate the non-apprenticeable trades used on this contract.

_____

_____

2. Madison General Ordinance (M.G.O.), 33.07(7), does provide for some exemptions from the active apprentice requirement. Apprenticeable trades are those trades considered apprenticeable by the State of Wisconsin. Please check applicable box if you are seeking an exemption.

☐ Contractor has a total skilled workforce of four or less individuals in all apprenticeable trades combined.

☐ No available trade training program; The Contractor has been rejected by the only available trade training program, or there is no trade training program within 90 miles.

☐ Contractor is not using an apprentice due to having a journey worker on layoff status, provided the journey worker was employed by the contractor in the past six months.

☐ First-time Contractor on City of Madison Public Works contract requests a onetime exemption but intends to comply on all future contracts and is taking steps typical of a "good faith" effort.

☐ Contractor has been in business less than one year.

☐ Contractor doesn't have enough journeyman trade workers to qualify for a trade training program in that respective trade.

☐ An exemption is granted in accordance with a time period of a "Documented Depression" as defined by the State of Wisconsin.

3. The Contractor shall indicate on the following section which apprenticeable trades are to be used on this contract. Compliance with active apprenticeship, to the extent required by M.G.O. 33.07(7), shall be satisfied by documentation from an applicable trade training body; an apprenticeship contract with the Wisconsin Department of Workforce Development or a similar agency in another state; or the U.S Department of Labor. This documentation is required prior to the Contractor beginning work on the project site.

☐ The Contractor has reviewed the list and shall not use any apprenticeable trades on this project.

LIST APPRENTICABLE TRADES (check all that apply to your work to be performed on this contract)

- ☐ BRICKLAYER
- ☐ CARPENTER
- ☐ CEMENT MASON / CONCRETE FINISHER
- ☐ CEMENT MASON (HEAVY HIGHWAY)
- ☐ CONSTRUCTION CRAFT LABORER
- ☐ DATA COMMUNICATION INSTALLER
- ☐ ELECTRICIAN
- ☐ ENVIRONMENTAL SYSTEMS TECHNICIAN / HVAC SERVICE TECH/HVAC INSTALL / SERVICE
- ☐ GLAZIER
- ☐ HEAVY EQUIPMENT OPERATOR / OPERATING ENGINEER
- ☐ INSULATION WORKER (HEAT & FROST)
- ☐ IRON WORKER
- ☐ IRON WORKER (ASSEMBLER, METAL BLDGS)
- ☐ PAINTER & DECORATOR
- ☐ PLASTERER
- ☐ PLUMBER
- ☐ RESIDENTIAL ELECTRICIAN
- ☐ ROOFER & WATER PROOFER
- ☐ SHEET METAL WORKER
- ☐ SPRINKLER FITTER
- ☐ STEAMFITTER
- ☐ STEAMFITTER (REFRIGERATION)
- ☐ STEAMFITTER (SERVICE)
- ☐ TAPER & FINISHER
- ☐ TELECOMMUNICATIONS (VOICE, DATA & VIDEO) INSTALLER-TECHNICIAN
- ☐ TILE SETTER

SECTION G: BID BOND

LET ALL KNOW BY THESE DOCUMENTS PRESENTED, THAT Principal and Surety, as identified below, are held and firmly bound unto the City of Madison, (hereinafter referred to as the “Obligee”), in the sum of five per cent (5%) of the amount of the total bid or bids of the Principal herein accepted by the Obligee, for the payment of which the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The conditions of this obligation are such that, whereas the Principal has submitted, to the City of Madison a certain bid, including the related alternate, and substitute bids attached hereto and hereby made a part hereof, to enter into a contract in writing for the construction of:

FELLAND RESERVOIR BOOSTER PUMP INSTALL

MILKY WAY RESERVOIR VALVE INSTALL

CONTRACT NO. 9336

1. If said bid is rejected by the Obligee, then this obligation shall be void.

2. If said bid is accepted by the Obligee and the Principal shall execute and deliver a contract in the form specified by the Obligee (properly completed in accordance with said bid) and shall furnish a bond for his/her faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said bid, then this obligation shall be void.

   If said bid is accepted by the Obligee and the Principal shall fail to execute and deliver the contract and the performance and payment bond noted in 2. above executed by this Surety, or other Surety approved by the City of Madison, all within the time specified or any extension thereof, the Principal and Surety agree jointly and severally to forfeit to the Obligee as liquidated damages the sum mentioned above, it being understood that the liability of the Surety for any and all claims hereunder shall in no event exceed the sum of this obligation as stated, and it is further understood that the Principal and Surety reserve the right to recover from the Obligee that portion of the forfeited sum which exceed the actual liquidated damages incurred by the Obligee.

   The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by an extension of the time within which the Obligee may accept such bid, and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, on the day and year set forth below.

Seal PRINCIPAL

Name of Principal

By Date

Name and Title

Seal SURETY

Name of Surety

By Date

Name and Title

This certifies that I have been duly licensed as an agent for the above company in Wisconsin under National Provider No. _____ for the year _____, and appointed as attorney in fact with authority to execute this bid bond and the payment and performance bond referred to above, which power of attorney has not been revoked.

Date Agent Signature

Address

City, State and Zip Code

Telephone Number

NOTE TO SURETY & PRINCIPAL

The bid submitted which this bond guarantees shall be rejected if the following instrument is not attached to this bond:

Power of Attorney showing that the agent of Surety is currently authorized to execute bonds on behalf of the Surety, and in the amounts referenced above.

Certificate of Biennial Bid Bond

TIME PERIOD - VALID (FROM/TO)
NAME OF SURETY
NAME OF CONTRACTOR
CERTIFICATE HOLDER City of Madison, Wisconsin

This is to certify that a biennial bid bond issued by the above-named Surety is currently on file with the City of Madison.

This certificate is issued as a matter of information and conveys no rights upon the certificate holder and does not amend, extend or alter the coverage of the biennial bid bond.

Cancellation: Should the above policy be cancelled before the expiration date, the issuing Surety will give thirty (30) days written notice to the certificate holder indicated above.

Signature of Authorized Contractor Representative

Date

SECTION H: AGREEMENT

THIS AGREEMENT made this _____ day of _____ in the year Two Thousand and _____ between _____ hereinafter called the Contractor, and the City of Madison, a Wisconsin municipal corporation, hereinafter called the City.

WHEREAS, the Common Council of the City of Madison ("Council") under the provisions of a resolution adopted on _____, and by virtue of authority vested in the Council, has awarded to the Contractor the work of performing certain public construction.

NOW, THEREFORE, the Contractor and the City, for the consideration hereinafter named, agree as follows:

1. **Scope of Work.** The Contractor shall perform the construction, execution and completion of the following listed complete work or improvement in full compliance with the Plans, Specifications, Standard Specifications, Supplemental Specifications, Special Provisions and Agreement; perform all items of work covered or stipulated in the Proposal; perform all altered or extra work; and shall furnish, unless otherwise provided in the contract, all materials, implements, machinery, equipment, tools, supplies, transportation, and labor necessary to the prosecution and completion of the work or improvements:

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2. **Completion Date/Contract Time.** Construction work must begin within seven (7) calendar days after the date appearing on mailed written notice to do so shall have been sent to the Contractor and shall be carried on at a rate so as to secure full completion SEE SPECIAL PROVISIONS, the rate of progress and the time of completion being essential conditions of this Agreement.

3. **Contract Price.** The City shall pay to the Contractor at the times, in the manner and on the conditions set forth in said specifications, the sum of _____($_____) Dollars being the amount bid by such Contractor and which was awarded as provided by law.

4. **A. Non-Discrimination.** During the term of this Agreement the Contractor agrees not to discriminate against any employee or applicant because of race, religion, marital status, age, color, sex, disability, national origin or ancestry, income level or source of income, arrest record or conviction record, less than honorable discharge, physical appearance, sexual orientation, gender identity, political beliefs, or student status. The Contractor further agrees not to discriminate against any subcontractor or person who offers to subcontract on this contract because of race, religion, color, age, disability, sex, sexual orientation, gender identity or national origin.

   B. Affirmative Action. The Contractor agrees that within thirty (30) days after the effective date of this agreement, the Contractor will provide to the City Affirmative Action Division certain workforce utilization statistics, using a form to be furnished by the City.

   If the contract is still in effect, or if the City enters into a new agreement with the Contractor, within one year after the date on which the form was required to be provided, the Contractor will provide updated workforce information using a second form, also to be furnished by the City. The second form will be submitted to the City Affirmative Action Division no later than one year after the date on which the first form was required to be provided.

   The Contractor further agrees that, for at least twelve (12) months after the effective date of this contract, it will notify the City Affirmative Action Division of each of its job openings at facilities in Dane County for which applicants not already employees of the Contractor are to be considered. The notice will include a job description, classification, qualifications and application procedures and deadlines, shall be provided to the City by the opening date of advertisement and with sufficient time for the City to notify candidates and make a timely referral. The Contractor agrees to interview

and consider candidates referred by the Affirmative Action Division, or an organization designated by the Division, if the candidate meets the minimum qualification standards established by the Contractor, and if the referral is timely. A referral is timely if it is received by the Contractor on or before the date started in the notice.

Articles of Agreement
Article I

The Contractor shall take affirmative action in accordance with the provisions of this contract to insure that applicants are employed, and that employees are treated during employment without regard to race, religion, color, age, marital status, disability, sex, sexual orientation, gender identity or national original and that the employer shall provide harassment free work environment for the realization of the potential of each employee. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation and selection for training including apprenticeship insofar as it is within the control of the Contractor. The Contractor agrees to post in conspicuous places available to employees and applicants notices to be provided by the City setting out the provisions of the nondiscrimination clauses in this contract.

Article II

The Contractor shall in all solicitations or advertisements for employees placed by or on behalf of the Contractors state that all qualified or qualifiable applicants will be employed without regard to race, religion, color, age, marital status, disability, sex, sexual orientation, gender identity or national origin.

Article III

The Contractor shall send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding a notice to be provided by the City advising the labor union or worker's representative of the Contractor's equal employment opportunity and affirmative action commitments. Such notices shall be posted in conspicuous places available to employees and applicants for employment.

Article V

The Contractor agrees that it will comply with all provisions of the Affirmative Action Ordinance of the City of Madison, including the contract compliance requirements. The Contractor agrees to submit the model affirmative action plan for public works contractors in a form approved by the Affirmative Action Division Manager.

Article VI

The Contractor will maintain records as required by Section 39.02(9)(f) of the Madison General Ordinances and will provide the City Affirmative Action Division with access to such records and to persons who have relevant and necessary information, as provided in Section 39.02(9)(f). The City agrees to keep all such records confidential, except to the extent that public inspection is required by law.

Article VII

In the event of the Contractor's or subcontractor's failure to comply with the Equal Employment Opportunity and Affirmative Action Provisions of this contract or Section 39.03 and 39.02 of the Madison General Ordinances, it is agreed that the City at its option may do any or all of the following:

1. Cancel, terminate or suspend this Contract in whole or in part.

2. Declare the Contractor ineligible for further City contracts until the Affirmative Action requirements are met.

3. Recover on behalf of the City from the prime Contractor 0.5 percent of the contract award price for each week that such party fails or refuses to comply, in the nature of liquidated damages, but not to exceed a total of five percent (5%) of the contract price, or ten thousand dollars ($10,000), whichever is less. Under public works contracts, if a subcontractor is in noncompliance, the City may recover liquidated damages from the prime Contractor in the manner described above. The preceding sentence shall not be construed to prohibit a prime Contractor from recovering the amount of such damage from the non-complying subcontractor.

Article VIII

The Contractor shall include the above provisions of this contract in every subcontract so that such provisions will be binding upon each subcontractor. The Contractor shall take such action with respect to any subcontractor as necessary to enforce such provisions, including sanctions provided for noncompliance.

Article IX

The Contractor shall allow the maximum feasible opportunity to small business enterprises to compete for any subcontracts entered into pursuant to this contract. (In federally funded contracts the terms “DBE, MBE and WBE” shall be substituted for the term “small business” in this Article.)

5. Substance Abuse Prevention Program Required. Prior to commencing work on the Contract, the Contractor, and any Subcontractor, shall have in place a written program for the prevention of substance abuse among its employees as required under Wis. Stat. Sec. 103.503.

6. **Contractor Hiring Practices.**

Ban the Box - Arrest and Criminal Background Checks. (Sec. 39.08, MGO)

This provision applies to all prime contractors on contracts entered into on or after January 1, 2016, and all subcontractors who are required to meet prequalification requirements under MGO 33.07(7)(I), MGO as of the first time they seek or renew pre-qualification status on or after January 1, 2016. The City will monitor compliance of subcontractors through the pre-qualification process.

a. **Definitions.** For purposes of this section, “Arrest and Conviction Record” includes, but is not limited to, information indicating that a person has been questioned, apprehended, taken into custody or detention, held for investigation, arrested, charged with, indicted or tried for any felony, misdemeanor or other offense pursuant to any law enforcement or military authority.

“Conviction record” includes, but is not limited to, information indicating that a person has been convicted of a felony, misdemeanor or other offense, placed on probation, fined, imprisoned or paroled pursuant to any law enforcement or military authority.

“Background Check” means the process of checking an applicant’s arrest and conviction record, through any means.

b. **Requirements.** For the duration of this Contract, the Contractor shall:

1. Remove from all job application forms any questions, check boxes, or other inquiries regarding an applicant’s arrest and conviction record, as defined herein.

2. Refrain from asking an applicant in any manner about their arrest or conviction record until after conditional offer of employment is made to the applicant in question.

3. Refrain from conducting a formal or informal background check or making any other inquiry using any privately or publicly available means of obtaining the arrest or conviction record of an applicant until after a conditional offer of employment is made to the applicant in question.

4. Make information about this ordinance available to applicants and existing employees, and post notices in prominent locations at the workplace with information about the ordinance and complaint procedure using language provided by the City.

5. Comply with all other provisions of Sec. 39.08, MGO.

c. Exemptions: This section shall not apply when:

1. Hiring for a position where certain convictions or violations are a bar to employment in that position under applicable law, or

2. Hiring a position for which information about criminal or arrest record, or a background check is required by law to be performed at a time or in a manner that would otherwise be prohibited by this ordinance, including a licensed trade or profession where the licensing authority explicitly authorizes or requires the inquiry in question.

To be exempt, Contractor has the burden of demonstrating that there is an applicable law or regulation that requires the hiring practice in question, if so, the contractor is exempt from all of the requirements of this ordinance for the position(s) in question.

7. **Choice of Law and Forum Selection.** This Contract shall be governed by and construed, interpreted and enforced in accordance with the laws of the State of Wisconsin. The parties agree, for any claim or suit or other dispute relating to this Contract that cannot be mutually resolved, the venue shall be a court of competent jurisdiction within the State of Wisconsin and the parties agree to submit themselves to the jurisdiction of said court, to the exclusion of any other judicial district that may have jurisdiction over such a dispute according to any law.

8. **Counterparts, Electronic Signature and Delivery.** This Contract may be signed in counterparts, each of which shall be taken together as a whole to comprise a single document. Signatures on this Contract may be exchanged between the parties by facsimile, electronic scanned copy (.pdf) or similar technology and shall be as valid as original; and this Contract may be converted into electronic format and signed or given effect with one or more electronic signature(s) if the electronic signature(s) meets all requirements of Wis. Stat. ch. 137 or other applicable Wisconsin or Federal law. Executed copies or counterparts of this Contract may be delivered by facsimile or email and upon receipt will be deemed original and binding upon the parties hereto, whether or not a hard copy is also delivered. Copies of this Contract, fully executed, shall be as valid as an original.

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MILKY WAY RESERVOIR VALVE INSTALL
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IN WITNESS WHEREOF, the Contractor has hereunto set his/her hand and seal and the City has caused this contract to be executed by its Mayor and City Clerk on the dates written below.

Countersigned:

	Company Name
Witness Date	President Date
Witness Date	Secretary Date

CITY OF MADISON

_____ _____
Satya Rhodes-Conway, Mayor Date

_____ _____
Maribeth Witzel-Behl, City Clerk Date

Provisions have been made to pay the liability that will accrue under this contract.

_____ _____
David P. Schmiedicke, Finance Director Date

Approved as to form:

_____ _____
Michael Haas, City Attorney Date

Execution of this Agreement by City was authorized by Resolution Enactment No. RES -_____, ID No. _____, adopted by the Common Council of the City of Madison on _____, 20___.

SECTION I: PAYMENT AND PERFORMANCE BOND

LET ALL KNOW BY THESE DOCUMENTS PRESENTED, that we _____ as principal, and _____ Company of _____ as surety, are held and firmly bound unto the City of Madison, Wisconsin, in the sum of _____ ($_____) Dollars, lawful money of the United States, for the payment of which sum to the City of Madison, we hereby bind ourselves and our respective executors and administrators firmly by these presents.

The condition of this Bond is such that if the above bounden shall on his/her part fully and faithfully perform all of the terms of the Contract entered into between him/herself and the City of Madison for the construction of:

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in Madison, Wisconsin, and shall pay all claims for labor performed and material furnished in the prosecution of said work, and save the City harmless from all claims for damages because of negligence in the prosecution of said work, and shall save harmless the said City from all claims for compensation (under Chapter 102, Wisconsin Statutes) of employees and employees of subcontractor, then this Bond is to be void, otherwise of full force, virtue and effect.

Signed and sealed this _____day of _____

Countersigned:

_____
Company Name (Principal)

_____ _____
Witness President Seal

_____
Secretary

_____
Surety Seal
☐ Salary Employee ☐ Commission

By _____
Attorney-in-Fact

This certifies that I have been duly licensed as an agent for the above company in Wisconsin under National Producer Number _____ for the year _____, and appointed as attorney-in-fact with authority to execute this payment and performance bond which power of attorney has not been revoked.

_____ _____
Date Agent Signature

The foregoing Bond has been approved as to form:

Date	City Attorney