Change Order No. 003

Project Name:	Central Wastewater Treatment Plant Expansion, Phase 1	Project Number:	88
Project Owner and Address:	City of Pflugerville 100 E. Main Street P.O. Box 589 Pflugerville, TX 78691	Date of Change Order Issuance:	02/04/2021
		Date of Original Agreement:	11/19/2019
		Notice to Proceed Date:	11/19/2019
Project Contractor and Address:	BAR Constructors, Inc. 805 Katy St Lancaster, TX 75146	Original Contract End Date:	12/11/2021
		Original Contract Days:	753
		Original Contract Price	$41,863,737.95

It is agreed to modify the Contract referred to above as follows:

Description of Changes				
Item #	**Description Of Changes**	**Deduct from Contract**	**Change in Contract Price**	**Change in Contract Time**
CP029	RAS WAS PS Piping Changes		$3,589.29	0
CP032	Blower Header Valve Change		$4,081.97	0
CP033	Bio Solids Building Emergency Power		$123,142.11	14
	Difference Net =	$0.00	$130,813.37	14

*Provide attachment(s) for new items or price quotes

It is agreed to modify the contract referred to as description of changes as follows:

Contract Change Summary

Net Increase (decrease) of this Change Order

Contract Price prior to this change: $42,201,312.96

Days: 14

Net Increase (decrease) of this Change Order: $130,813.37

Revised Contract Time with all approved Change orders

Revised Contract Price with all approved Change Orders: $42,332,126.33

Substantial Completion (Days/Date): 763, 12/21/2021

Final Completion (Days and Date): 823, 02/19/2022

The changes included in this Change Order are to be accomplished in accordance with the terms, stipulations and conditions of the original Contract as though included therein.

Accepted for Contractor by:	**Date:**
Recommended for Approval by:	**Date:**
Recommended for Approval by: Patricia A. Davis, M.S.C.E., P.E. City Engineer	**Date:**
Approved for Owner by: Sereniah Breland, City Manager **Attest:**	**Date:**

Distribution: Contractor_____File _____Field_____Owner_____Other _____

Description of Changes Continued				
Item #	Description Of Changes	Deduct from Contract	Change in Contract Price	Change in Contract Time
	Difference Net =			

Memo

To: Patricia Davis, P.E., Brad Marshall
From: Jonathan Tran, P.E. / Charles Cameron
Copy: Matt Gaughan, P.E.
Date: April 29, 2021
Subject: CWWTP1 Change Order 0003

For the Central Wastewater Treatment Plant Expansion project, the Owner's Representative Team recommends approval of the attached Change Order 0003 in the amount of $130,813.37 and 14 additional days to the contract with BAR Constructors, Inc. for the one item in Table 1 below.

The current contract price is $42,201,312.96 and the revised total not to exceed contract price, including this change order, will be $42,332,126.33. The current contract Final Completion date is 02/05/2022, and the revised contract Final Completion date will be 02/19/2022.

Item No.	Description	Net Change in Cost	Net Change in Time	Change Order Code
1	CP0029 – RAS WAS Piping Changes	$3,589.29	0 days	F
2	CP0032 – Blower Header Valve Change	$4,081.97	0 days	F
3	CP033 – Bio Solids Building Emergency Power	$123,142.11	14 days	R
Total	**Net Change to Contract**	**$130,813.37**	**14 days**	

Item No. 1: CP0029 RAS WAS Piping Change
F – Field Detailed Design

During submittal of the RAS WAS Pumps, the pump manufacturer requested a change to some of the suction and discharge piping of RAS WAS Pumps for their performance requirements. The as-bid sizes were 8" and 12" piping. The piping changed to 10" for these pumps. The additional cost is for the difference in valves, fittings, pipe supports and other miscellaneous parts for this change.

Item No. 2: CP0032 Blower Header Valve Change
F – Field Detailed Design

During the review of the submittal for the blower valves for solids handling area, the engineer noted that the submitted manufacturer valve seals would not meet the

temperature requirements of the air application. The contractor found a different manufacturer which had seals rated for this application. The additional cost is for the difference of cost of these valves.

Item No. 3: CP0033 Bio Solids Building Emergency Power
R – Owner Request

This project is constructing three new electrical buildings for the new plant expansion. The existing biosolids building is currently fed off of an individual power feed and is not hooked up to an emergency generator on the plant. Due to last winter storm, this caused major issues during the power outages. The plant has requested power be run from the new electrical building no. 3 which is also backed up by an emergency generator. The additional cost is for labor and materials to install new ductbanks, wiring and miscellaneous terminations in each building.

Change Order Codes

D - Design Issue	Clarification of ambiguity in the design documents
F - Field Detailed Design	Scope of work not yet incorporated into the Tender Design Documents
R - Owner Request	Requested by authorized Owner personnel
S - Site Condition	Variation caused by unforeseen or unique site conditions
E - Value Engineering / Enhancement	Variation which resulted in increased value to the Owner
X - Other	All other categories

ITEM 1
CP0029 RAS WAS PS Piping Changes

Project:	Central Wastewater Treatment Plant	**Project Number:**	
Owner:	City of Pflugerville		88
Contractor:	BAR Constructors, Inc		279
Engineer:	Freese and Nichols, Inc		PFL16607

Change Proposal No.: CP0029 **Description:** RAS and WAS PS Ductile Changes

Specification: N/A

Drawing No.: N/A **Detail Description:** N/A

Reference Document:

☐ Request for a Change Proposal No.: _____ ☐ Request for Information No.: _____

☐ Shop Drawing Deviation Request No.: _____ ☐ Field Order No.: _____

Contractor proposes the following modifications to the Contract Documents:

Increase the size of the RAS/WAS PS individual header piping from 8” to 10” and decrease the size of the RAS/WAS suction header piping from 12” to 10”

Purpose of Change Proposal:

Engineer made changes to the RAS/WAS suction piping during the review of SD0235.

Attachments:

Requested Action:

☐ Issue a Field Order ☒ Issue a Work Change Directive or Change Order for the described changes

Basis of Compensation:

☐ Unit Prices ☒ Lump Sum calculated using Cost of Work provisions in General Conditions Paragraph 13.01

☐ Time and Materials using Cost of Work provisions in General Conditions Paragraph 13.01

Required Documentation:

☒ Detailed cost breakdown attached showing labor, materials, equipment, and all other costs for this change

☐ Schedule attached to show impacts and justification for requested change in Contract Times

Total Change Proposal Amount: $3,589.29 **Adjustment in Contract Times (days):** 1

Project:	Central Wastewater Treatment Plant	**Project Number:**	
Owner:	City of Pflugerville		88
Contractor:	BAR Constructors, Inc		279
Engineer:	Freese and Nichols, Inc		PFL16607

The compensation offered for this Change Proposal is the full, complete, and final compensation for all costs the Contractor may incur as a result of or relating to this change whether said costs are known, unknown, foreseen, or unforeseen at this time, including without limitation, any cost for delay, extended overhead, ripple or impact cost, or any other effect on changed or unchanged Work as a result of this Contract Modification. Requested changes in Contract Times are the complete and final adjustments for direct impacts to the ability of the Contractor to complete the Work within the Contract Times and are the only adjustments to which the Contractor is entitled. Except as modified hereby, the Contract Documents and all of the terms and provisions thereof remain in full force and effect.

Certified by: Dennis Berger **Date:** 4/28/2021

Action:

☐ Field Order No.: _____ Issued ☒ Change Order No.: 0003 Issued

☐ Contract Amendment No.: _____ Issued ☐ Work Change Directive No.: _____ Issued

☐ Change Proposal Not Accepted ☐ Additional information required. See comments. ☐ Cancelled

Comments:

Approved the chance in contract price but not the additional 1 day of contract time.

Response by: Jonathan Tran **Date:** 4/30/2021

BAR CONSTRUCTORS, INC.
P.O. Box 10 • Lancaster, TX 75146

April 28, 2021

Mr. Matt Gaughan
Plus Six Engineering
15500 Sun Light Near Way B
Pflugerville, TX 78660

Re: City of Pflugerville, Texas
Central WWTP Expansion Phase I Improvements
Project No. PFL16607
CP029 RAS/WAS PS 2 Changes

Dear Mr. Gaughan,

Please find the attached pricing and quotations for the RAS/WAS PS 2 Changes. BAR Constructors, Inc. requests an ADD to the contract amount of $3,589.29 and a time extension of 1 calendar days. Below are those inclusions and exclusions associated with this work.

Inclusions:

- As stated in the provided quotes.
- All "Assumptions" as stated in provided quotes.

Exclusions:

- Any exclusions stated in the attached quotation(s).
- Anything not explicitly stated as an inclusion.

Sincerely,

Dennis J. Berger
Project Manager
BAR Constructors, Inc.

805 Katy Street • Telephone (972) 227-3287 • Fax (972) 227-9043

BAR Constructors, Inc. - Cost Detail Worksheet

Job Name: Central WWTP Expanison Phase 1

Job # 279

Date: 4/23/2021

Proposal No. CP029

Labor		Unit	Quantity	**RAS/WAS PS 2 Changes**		
	Rate					
RAS/WAS PS 2 Changes				Day 1	Day 2	Total
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
Subtotal						$ -
Payroll Taxes and Insurance (55%)						$ -
Total Labor						**$ -**

Non-Taxed Material	Rate			**RAS/WAS PS 2 Changes**		
RAS/WAS PS 2 Changes						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
Subtotal						$ -

Taxed Material				**RAS/WAS PS 2 Changes**		
						$ -
						$ -
Subtotal Taxed Material + 8.25%						$ -

General Condition Material						
Small Tools 5% labor						$ -
Total Material						**$ -**

Equipment	Rate			**RAS/WAS PS 2 Changes**		Total
RAS/WAS PS 2 Changes						
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
Subtotal						$ -
Fuel, Oil, Grease & Maintenance (40% fo Equipment)						$ -
Tax @ 8.25%						$ -
Total Equipment						**$ -**

Subcontractor	Rate			**RAS/WAS PS 2 Changes**		Total
						$ -
Ferguson	$ 3,327.48	LS	1			$ 3,327.48
						$ -
						$ -
						$ -
						$ -
						$ -
Total Subcontractor						**$ 3,327.48**

	Labor			**Subcontractor**	**Material**	Total
Totals	$ -			$ 3,327.48	$ -	$ 3,327.48
Insurance (1.8%)						$ 59.89
Overhead and Profit (5% for subs)						$ 166.37
Overhead and Profit (15% Self Performed Work)						
Subtotal						$ 3,553.75
Bond @ 1%						$ 35.54
Total						**$ 3,589.29**

FERGUSON WATERWORKS

FERGUSON ENTERPRISES, LLC
FERGUSON WATERWORKS #1254
200 PARK CENTRAL BLVD
GEORGETOWN, TX 78626
Phone: 512-930-2262
Fax: 512-930-2388

Deliver To: .
From: Daniel Shimek
Comments:

FERGUSON WATERWORKS #1106
Price Quotation
Phone: 512-930-2262
Fax: 512-930-2388

Bid No: B463017
Bid Date: 04/20/21
Quoted By: XXA

Cust Phone: 972-227-3287
Terms: NET 10TH PROX

Customer:
BAR CONSTRUCTORS INC
279-23 PFLUGERVILLE-CENTR
805 KATY ST
LANCASTER, TX 75146

Ship To:
BAR CONSTRUCTORS INC
15500 SUN LIGHT NEAR WAY
.
PFLUGERVILLE-CENTRAL WWTP
PFLUGERVILLE, TX 78660

Cust PO#:

Job Name:

Item	Description	Quantity	Net Price	UM	Total
	RAS PUMP SUCTION Sequence #: 507				
BB3095HDGX	8 GALV ADJ PIPE SDL SUPP Sequence #: 509 Cust Desc : 8" X 6'10" SSTL U-BOLT SUPPORT	4	426.570	EA	1706.28
SP-8DIPFABSPOOL	8 DIP FAB SPL - DESCRIPTION BELOW Sequence #: 510 Cust Desc : 8" X 1'6" FL X PE PRO401/L- 1/2" TAP	3	226.610	EA	679.83
SP-8DIPFABSPOOL	8 DIP FAB SPL - DESCRIPTION BELOW Sequence #: 511 Cust Desc : 8" X 1'6" FL X PE PRO401/L	3	167.440	EA	502.32
SP-12DIPFABSPOOL	12 DIP FAB SPL - DESCRIPTION BELOW Sequence #: 513 Cust Desc : 12" X 3'0" FL X FL PRO401/L	1	550.210	EA	550.21
SP-12DIPFABSPOOL	12 DIP FAB SPL - DESCRIPTION BELOW Sequence #: 514 Cust Desc : 12" X 3'0" FL X PE PRO401/L	1	410.150	EA	410.15
SP-12DIPFABSPOOL	12 DIP FAB SPL - DESCRIPTION BELOW Sequence #: 515 Cust Desc : 12" X 8'6" FL X FL PRO401/L	1	1063.810	EA	1063.81
SP-12DIPFABSPOOL	12 DIP FAB SPL - DESCRIPTION BELOW Sequence #: 516 Cust Desc : 12" X 8'6" FL X PE PRO401/L	1	923.740	EA	923.74
FCRP410X	10X8 DI 125# FLG P-401 CONC RED Sequence #: 517 Cust Desc : 10" X 8" FL PRO401/L C110 DI CONC RED	3	427.440	EA	1282.32
FTP412X	12X8 DI 125# FLG P-401 TEE Sequence #: 519	3	842.960	EA	2528.88

FERGUSON WATERWORKS #1106
Price Quotation

Fax: 512-930-2388

15:54:03 APR 20 2021
Reference No: B463017

Item	Description	Quantity	Net Price	UM	Total
	Cust Desc : 12" X 8" FL PRO401/L C110 DI TEE				
FBSS16SX	8 SS 316 FLG BLT SET Sequence #: 520 Cust Desc : 8" FL ACC PKS/316 SSTL B&N'S/EPDM GSKT- DI X PV	6	22.660	EA	135.96
FBSS16SX	8 SS 316 FLG BLT SET Sequence #: 521 Cust Desc : 8" FL ACC PKS/316 SSTL B&N'S/EPDM GSKT- DI X DI	3	22.660	EA	67.98
FBSS16S12	12 SS 316 FLG BLT SET Sequence #: 524 Cust Desc : 12" FL ACC PKS/316 SSTL B&N'S/EPDM GSKT- FCA X PV	1	53.810	EA	53.81
FBSS16S12	12 SS 316 FLG BLT SET Sequence #: 525 Cust Desc : 12" FL ACC PKS/316 SSTL B&N'S/EPDM GSKT- DI X PV	3	53.810	EA	161.43
FBSS16S12	12 SS 316 FLG BLT SET Sequence #: 526 Cust Desc : 12" FL ACC PKS/316 SSTL B&N'S/EPDM GSKT- DI X FCA	1	53.810	EA	53.81
SP-S41100090502043	8 411 BLT COUP 9.05" W/ 316 HDWR Sequence #: 527 SP-S41100090502043 Cust Desc : 8" DI BDY REST BOLTED CPLG / DIP- 316 SST HARDWARE	3	170.690	EA	512.07
SP-S91113201200050	12" DI BDY REST FCA W/ SS316 HRDW Sequence #: 528 SP-S91113201200050 Cust Desc : 12" DI BDY WEDGE ACT REST FCA / DIP- 316 SST HARDWARE	2	515.100	EA	1030.20
SP-G517X	8 FLG ECC PLUG VLV Sequence #: 529 Cust Desc : 8" FL PLUG VA W / HDWHL (TAG RAS-PV-3 THRU RAS-PV-5)	3	1102.200	EA	3306.60
V5812R7000	12 PLUG VLV FLG Sequence #: 530 Cust Desc : 12" FL PLUG VA W / HDWHL	2	2104.080	EA	4208.16
SS8912	12 ADJ PIPE SUPP Sequence #: 531 Cust Desc : 12" X 2'2" SSTL U-BOLT SUPPORT	4	345.740	EA	1382.96
SP-8DIPFABSPOOL	8 DIP FAB SPL - DESCRIPTION BELOW Sequence #: 633 Cust Desc : 8" X 1'6" FL X PE PRO401/L- 1/2" TAP	2	227.820	EA	455.64
SP-8DIPFABSPOOL	8 DIP FAB SPL - DESCRIPTION BELOW Sequence #: 634 Cust Desc : 8" X 2'0" FL X	2	196.830	EA	393.66

FERGUSON WATERWORKS

FERGUSON WATERWORKS #1106
Price Quotation

Fax: 512-930-2388

15:54:03 APR 20 2021
Reference No: B463017

Item	Description	Quantity	Net Price	UM	Total
	PE PRO401/L				
SP-12DIPFABSPOOL	12 DIP FAB SPL - DESCRIPTION BELOW Sequence #: 636 Cust Desc : 12" X 3'0" FL X FL PRO401/L	2	550.220	EA	1100.44
FERP410X	10X8 DI 125# FLG P-401 ECC RED Sequence #: 637 Cust Desc : 10" X 8" FL PRO401/L C110 DI ECC RED	2	449.080	EA	898.16
FTP412X	12X8 DI 125# FLG P-401 TEE Sequence #: 640 Cust Desc : 12" X 8" FL PRO401/L C110 DI TEE	2	842.960	EA	1685.92
BFP412	12 DI P-401 125# BLND FLG Sequence #: 641 Cust Desc : 12" DI PRO401/L BLIND FLG	1	455.970	EA	455.97
FBSS16SX	8 SS 316 FLG BLT SET Sequence #: 643 Cust Desc : 8" FL ACC PKS/316 SSTL B&N'S/EPDM GSKT- DI X PV	4	22.660	EA	90.64
FBSS16SX	8 SS 316 FLG BLT SET Sequence #: 644 Cust Desc : 8" FL ACC PKS/316 SSTL B&N'S/EPDM GSKT- DI X DI	2	22.660	EA	45.32
SP-S41100090502043	8 411 BLT COUP 9.05" W/ 316 HDWR Sequence #: 648 SP-S41100090502043 Cust Desc : 8" STL BDY WEDGE ACT BOLTED CPLG / DI X DI- 316 SST HARDWARE	2	267.010	EA	534.02
SP-G517X	8 FLG ECC PLUG VLV Sequence #: 649 Cust Desc : 8" FL PLUG VA W / HDWHL (TAG RAS-PV-12, RAS-PV-13)	2	1102.200	EA	2204.40
V5812R7000	12 PLUG VLV FLG Sequence #: 650 Cust Desc : 12" FL PLUG VA W / HDWHL (TAG RAS-PV-10, RAS-PV-11)	2	2104.080	EA	4208.16
BB3095HDGX	8 GALV ADJ PIPE SDL SUPP Sequence #: 651 Cust Desc : 8" X 2'7" SSTL U-BOLT SUPPORT	2	282.610	EA	565.22
SS8912	12 ADJ PIPE SUPP Sequence #: 652 Cust Desc : 12" X 2'7" SSTL U-BOLT SUPPORT	2	359.900	EA	719.80
	SUBTOTAL		As-Bid Piping Cost		33917.87
	RAS PUMP SUCTION PS 1 Sequence #: 1501				
SP-FABSPOOL	CUSTOM FAB SPOOL Sequence #: 1502 Cust Desc : 10" X 2' - 0" (VERIFY) CL53 DIP FLGXPE	3	395.048	EA	1185.14

FERGUSON WATERWORKS #1106
Price Quotation

Fax: 512-930-2388

15:54:03 APR 20 2021
Reference No: B463017

Item	Description	Quantity	Net Price	UM	Total
	W/1/2" TAP @ 6" FROM FLG 3:00 TAG # D510.1				
SP-FABSPOOL	CUSTOM FAB SPOOL Sequence #: 1503 Cust Desc : 10" X 2' - 0" (VERIFY) CL53 DIP FLGXPE TAG # D511	3	266.133	EA	798.40
SP-FABSPOOL	CUSTOM FAB SPOOL Sequence #: 1504 Cust Desc : 10" X 3' - 0 5/8" CL53 DIP FLGXFLG TAG # D513.1	1	509.542	EA	509.54
SP-FABSPOOL	CUSTOM FAB SPOOL Sequence #: 1505 Cust Desc : 10" X 3' - 6" (VERIFY) CL53 DIP FLGXPE TAG # D514.1	1	368.391	EA	368.39
SP-FABSPOOL	CUSTOM FAB SPOOL Sequence #: 1506 Cust Desc : 10" X 7' - 4 9/16" (VERIFY) CL53 DIP FLGXPE TAG # D515.1	1	641.079	EA	641.08
SP-FABSPOOL	CUSTOM FAB SPOOL Sequence #: 1507 Cust Desc : 10" X 7' - 6" (VERIFY) CL53 DIP FLGXPE TAG # D516.1	1	641.079	EA	641.08
FCR1210	12X10 DI 125# C110 FLG CONC RED Sequence #: 1508 Cust Desc : 12" X 10" DI C110 FLG CONC RED TAG # D518.1	2	395.048	EA	790.10
FT10	10 DI 125# C110 FLG TEE Sequence #: 1509 Cust Desc : 10" DI C110 FLG TEE TAG # D519.1	3	454.210	EA	1362.63
SP-UBOLTSUPP10	10" SSTL U-BOLT SUPPORT Sequence #: 1510 Cust Desc : 10" SSTL U-BOLT SUPPORT TAG # D508.1	3	374.400	EA	1123.20
SP-S411COUP	10 SMITH BLAIR Sequence #: 1511 Cust Desc : 10" COUPLING TAG # D527.1	3	694.287	EA	2082.86
SP-91111101000050	RES FLG COUP ADPT F/10 PIPE 316 SBR Sequence #: 1512 SP-91111101000050 Cust Desc : 10" FCA TAG # D528.1	2	586.188	EA	1172.38
SP-PLUGVLV10	10IN PLUG VLV Sequence #: 1513 Cust Desc : 10" FLG PLUG VLV TAG # D529.1	3	1869.500	EA	5608.50
SP-PLUGVLV10	10IN PLUG VLV Sequence #: 1514 Cust Desc : 10" FLG PLUG VLV TAG # D530.1	2	1869.500	EA	3739.00
SP-UBOLTSUPP10	10" SSTL U-BOLT SUPPORT Sequence #: 1515	4	374.400	EA	1497.60

FERGUSON WATERWORKS

FERGUSON WATERWORKS #1106
Price Quotation

Fax: 512-930-2388

15:54:03 APR 20 2021
Reference No: B463017

Item	Description	Quantity	Net Price	UM	Total
	Cust Desc : 10" SSTL U-BOLT SUPPORT TAG # D531.1				
FBSS16S10	10 SS 316 FLG BLT SET Sequence #: 1516 Cust Desc : 10" FL ACC PKS/316 SSTL B&N'S/EPDM GSKT- DI X PMP RAS PUMP SUCTION PS 2 Sequence #: 1517	16	51.720	EA	827.52
SP-FABSPOOL	CUSTOM FAB SPOOL Sequence #: 1518 Cust Desc : 10" X 1' - 10 3/8" (VERIFY) CL53 DIP FLGXPE W/1/2" TAP 8" FROM FL TAG # D633.1	2	395.048	EA	790.10
SP-FABSPOOL	CUSTOM FAB SPOOL Sequence #: 1519 Cust Desc : 10" X 2' - 8 11/16" (VERIFY) CL53 DIP FLGXPE TAG # D634.1	2	334.305	EA	668.61
SP-FABSPOOL	CUSTOM FAB SPOOL Sequence #: 1520 Cust Desc : 10" X 1' - 9 1/8" CL53 DIP FLGXFLG TAG # D636.2	1	407.284	EA	407.28
SP-FABSPOOL	CUSTOM FAB SPOOL Sequence #: 1521 Cust Desc : 10" X 3' - 0 5/8" CL53 DIP FLGXFLG TAG # D636.3	1	509.542	EA	509.54
SP-FE3810SSS16	10" REST COUP W/ 316 SS HRDWR Sequence #: 1522 Cust Desc : 10" STL WEDGE ACT BOLTED CPLG TAG # D648.1	2	610.610	EA	1221.22
SP-UBOLTSUPP10	10" SSTL U-BOLT SUPPORT Sequence #: 1523 Cust Desc : 10" SSTL U-BOLT SUPPORT TAG # D652.1	5	374.400	EA	1872.00
FCR1210	12X10 DI 125# C110 FLG CONC RED Sequence #: 1524 Cust Desc : 12" X 10" DI C110 FLG CONC RED TAG # D636.4	1	335.740	EA	335.74
FT10	10 DI 125# C110 FLG TEE Sequence #: 1525 Cust Desc : 10" DI C110 FLG TEE TAG # D640.1	2	454.210	EA	908.42
BF10	10 DI C110 125# BLND FLG Sequence #: 1526 Cust Desc : 10" DI C110 BLIND FLG TAG # D641.1	1	138.100	EA	138.10
SP-PLUGVLV10	10IN PLUG VLV Sequence #: 1527 Cust Desc : 10" PLUG VALVE TAG # D649.1	2	1869.500	EA	3739.00
SP-PLUGVLV10	10IN PLUG VLV Sequence #: 1528	2	1869.500	EA	3739.00

FERGUSON WATERWORKS

FERGUSON WATERWORKS #1106
Price Quotation

Fax: 512-930-2388

15:54:03 APR 20 2021
Reference No: B463017

Item	Description	Quantity	Net Price	UM	Total
	Cust Desc : 10" PLUG VALVE TAG # D650.1				
FBSS16S10	10 SS 316 FLG BLT SET Sequence #: 1529 Cust Desc : 10" FL ACC PKS/316 SSTL B&N'S/EPDM GSKT- DI X PMP	11	51.720	EA	568.92
	SUBTOTAL	Change in Piping Cost			37245.35

Net Total:	$71163.22
Tax:	$0.00
Freight:	$0.00
Total:	$71163.22

Quoted prices are based upon receipt of the total quantity for immediate shipment (48 hours). SHIPMENTS BEYOND 48 HOURS SHALL BE AT THE PRICE IN EFFECT AT TIME OF SHIPMENT UNLESS NOTED OTHERWISE. QUOTES FOR PRODUCTS SHIPPED FOR RESALE ARE NOT FIRM UNLESS NOTED OTHERWISE.

CONTACT YOUR SALES REPRESENTATIVE IMMEDIATELY FOR ASSISTANCE WITH DBE/MBE/WBE/SMALL BUSINESS REQUIREMENTS.

Seller not responsible for delays, lack of product or increase of pricing due to causes beyond our control, and/or based upon Local, State and Federal laws governing type of products that can be sold or put into commerce. This Quote is offered contingent upon the Buyer's acceptance of Seller's terms and conditions, which are incorporated by reference and found either following this document, or on the web at https://www.ferguson.com/content/website-info/terms-of-sale
Govt Buyers: All items are open market unless noted otherwise.

LEAD LAW WARNING: It is illegal to install products that are not "lead free" in accordance with US Federal or other applicable law in potable water systems anticipated for human consumption. Products with *NP in the description are NOT lead free and can only be installed in non-potable applications. Buyer is solely responsible for product selection.

Cost Difference:
As Bid: $33,917.89
Change: $37,245.35
Difference: $3,327.48

lTEM 2
CP0032 Blower Header Valve Change

Project:	Central Wastewater Treatment Plant	**Project Number:**	
Owner:	City of Pflugerville	88	
Contractor:	BAR Constructors, Inc	279	
Engineer:	Freese and Nichols, Inc	PFL16607	

Change Proposal No.: CP0032 **Description:** Changes in Blower Header Valves

Specification: N/A

Drawing No.: N/A **Detail Description:** N/A

Reference Document:

☐ Request for a Change Proposal No.: _____ ☐ Request for Information No.: _____

☐ Shop Drawing Deviation Request No.: _____ ☐ Field Order No.: _____

Contractor proposes the following modifications to the Contract Documents:

Revise the blower valves for the solids handling area to meet the specified temperature requirements

Purpose of Change Proposal:

The submitted manufacturer seals could not meet the temperature requirements of the air application. BAR found another manufacturer that that could meet these requirements. The additional cost is for the difference between the original and proposed valves

Attachments:

Requested Action:

☐ Issue a Field Order ☒ Issue a Work Change Directive or Change Order for the described changes

Basis of Compensation:

☐ Unit Prices ☒ Lump Sum calculated using Cost of Work provisions in General Conditions Paragraph 13.01

☐ Time and Materials using Cost of Work provisions in General Conditions Paragraph 13.01

Required Documentation:

☒ Detailed cost breakdown attached showing labor, materials, equipment, and all other costs for this change

☐ Schedule attached to show impacts and justification for requested change in Contract Times

Total Change Proposal Amount: $4,081.97 **Adjustment in Contract Times (days):** 0

Project:	Central Wastewater Treatment Plant	**Project Number:**	
Owner:	City of Pflugerville		88
Contractor:	BAR Constructors, Inc		279
Engineer:	Freese and Nichols, Inc		PFL16607

The compensation offered for this Change Proposal is the full, complete, and final compensation for all costs the Contractor may incur as a result of or relating to this change whether said costs are known, unknown, foreseen, or unforeseen at this time, including without limitation, any cost for delay, extended overhead, ripple or impact cost, or any other effect on changed or unchanged Work as a result of this Contract Modification. Requested changes in Contract Times are the complete and final adjustments for direct impacts to the ability of the Contractor to complete the Work within the Contract Times and are the only adjustments to which the Contractor is entitled. Except as modified hereby, the Contract Documents and all of the terms and provisions thereof remain in full force and effect.

Certified by: Dennis Berger **Date:** 4/28/21

Action:

☐ Field Order No.: _____ Issued ☒ Change Order No.: 0003 Issued

☐ Contract Amendment No.: _____ Issued ☐ Work Change Directive No.: _____ Issued

☐ Change Proposal Not Accepted ☐ Additional information required. See comments. ☐ Cancelled

Comments:

Approved

Response by:  **Date:** 4/30/21

BAR CONSTRUCTORS, INC.
P.O. Box 10 • Lancaster, TX 75146

April 28, 2021

Mr. Matt Gaughan
Plus Six Engineering
15500 Sun Light Near Way B
Pflugerville, TX 78660

Re: City of Pflugerville, Texas
Central WWTP Expansion Phase I Improvements
Project No. PFL16607
CP032 Changes in Requirements for Blower Head Valve Replacement

Dear Mr. Gaughan,

Please find the attached pricing and quotations for the Changes in Requirements for Blower Head Valve Replacement per discussions with CM Team and Engineers. BAR Constructors, Inc. requests an ADD to the contract amount of $4,081.97 and a time extension of 0 calendar days. Below are those inclusions and exclusions associated with this work.

Inclusions:

- As stated in the provided quotes.
- All "Assumptions" as stated in provided quotes.

Exclusions:

- Any exclusions stated in the attached quotation(s).
- Anything not explicitly stated as an inclusion.

Sincerely,

Dennis J. Berger
Project Manager
BAR Constructors, Inc.

805 Katy Street • Telephone (972) 227-3287 • Fax (972) 227-9043

BAR Constructors, Inc. - Cost Detail Worksheet

Job Name: Central WWTP Expanison Phase 1

Job # 279

Date: 4/28/2021

Proposal No. CP032

Labor		Unit	Quantity	**Changes in Requirements for Blower Head Valve Replacement**		
	Rate					
Changes in Requirements for Blower Head Valve Replacement						Total
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
Subtotal						$ -
Payroll Taxes and Insurance (55%)						$ -
Total Labor						**$ -**

Non-Taxed Material	Rate			**Changes in Requirements for Blower Head Valve Replacement**		
Changes in Requirements for Blower Head Valve Replacement						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
Subtotal						$ -

Taxed Material				**Changes in Requirements for Blower Head Valve Replacement**		
						$ -
						$ -
Subtotal Taxed Material + 8.25%						$ -

General Condition Material						
Small Tools 5% labor						$ -
Total Material						**$ -**

Equipment	Rate			**Changes in Requirements for Blower Head Valve Replacement**		Total
Changes in Requirements for Blower Head Valve Replacement						
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
Subtotal						$ -
Fuel, Oil, Grease & Maintenance (40% fo Equipment)						$ -
Tax @ 8.25%						$ -
Total Equipment						**$ -**

Subcontractor	Rate			**Changes in Requirements for Blower Head Valve Replacement**		Total
						$ -
Ferguson	$ (5,520.46)	LS	1			$ (5,520.46)
Ferguson	$ 9,304.69	LS	1			$ 9,304.69
						$ -
						$ -
						$ -
						$ -
Total Subcontractor						**$ 3,784.23**

	Labor			**Subcontractor**	**Material**	Total
Totals	$ -			$ 3,784.23	$ -	$ 3,784.23
Insurance (1.8%)						$ 68.12
Overhead and Profit (5% for subs)						$ 189.21
Overhead and Profit (15% Self Performed Work)						
Subtotal						$ 4,041.56
Bond @ 1%						$ 40.42
Total						**$ 4,081.97**

FERGUSON WATERWORKS

FERGUSON ENTERPRISES, LLC
FERGUSON WATERWORKS #1254
200 PARK CENTRAL BLVD
GEORGETOWN, TX 78626
Phone: 512-930-2262
Fax: 512-930-2388

Deliver To:
From: **Daniel Shimek**
Comments:

FERGUSON WATERWORKS #1106
Price Quotation
Phone: 512-930-2262
Fax: 512-930-2388

Bid No: B442889
Bid Date: 03/12/20
Quoted By: XXA

Cust Phone: 972-227-3287
Terms: NET 10TH PROX

Customer:
BAR CONSTRUCTORS INC
279-23 PFLUGERVILLE-CENTR
805 KATY ST
LANCASTER, TX 75146

Ship To:
BAR CONSTRUCTORS INC
279-23 PFLUGERVILLE-CENTR
805 KATY ST
LANCASTER, TX 75146

Cust PO#: RCP-1

Job Name: 279-23 PFLUGERVILLE-CENTR

Item	Description	Quantity	Net Price	UM	Total
	ITEM 1 ANALYZER REPURPOSING ----				
SP-ZZS415SS5SSAR	2 CI FLR DRN W/ SS GRT & ACID REST WITH SS 304 GRATE & ACID RESISTING EPOXY COATED CAST IRON	1	105.000	EA	105.00
SP-S3906020PT	2 PVC P-TRAP SCH80	1	50.760	EA	50.76
P80BK	2 X 20 FT PVC S80 BE PIPE	200	205.740	C	411.48
P80SCK	2 PVC S80 SXS COUP	5	6.160	EA	30.80
P80S4K	2 PVC S80 SXS 45 ELL	6	11.620	EA	69.72
P40SBPK	4X2 PVC S40 SPXSLIP BUSH	1	6.360	EA	6.36
MUL067259	15X4 PVC HW SWR GXGXG WYE	1	380.690	EA	380.69
MUL067483	15 PVC HW SWR GXG REP COUP	1	347.490	EA	347.49
P80PG	1 X 20 FT PVC S80 PE PIPE	40	92.340	C	36.94
P80SCG	1 PVC S80 SXS COUP	3	3.490	EA	10.47
P80S9G	1 PVC S80 SXS 90 ELL	4	2.860	EA	11.44
SP-SC9202	2 HDG ADJ PIPE CLAMP SUPPORT	2	186.540	EA	373.08
	SUBTOTAL				1834.23
	---- ITEM 2 CLARIFIER DRAIN LINE ---- **DELETED DI DRAIN ITEMS**				
MJTP4LA12	12 MJ C153 P-401 TEE L/A	1	0.000	EA	0.00
SSLDE12	12 DI MJ WDG REST GLND *ONELOK	3	0.000	EA	0.00
BFP412	12 DI P-401 125# BLND FLG	1	0.000	EA	0.00
SP-12DIPFABSPOOL	12 DIP FAB SPL - DESCRIPTION BELOW 12" x 3'6" FLxCxPE DI PRO401 L	1	0.000	EA	0.00
SP-FBSS16S12	12 SS 316 FLG BOLT SET	1	0.000	EA	0.00
	SUBTOTAL				0.00
	TOTAL FOR REMOVED ITEMS $1893.67 **END OF DELETED ITEMS** ----				
SDR26HWSPX14	8X14 SDR26 HW PVC GJ SWR PIPE	112	5.190	FT	581.28
MUL067251	10X8 PVC HW SWR GXGXG FAB WYE	1	298.750	EA	298.75

FERGUSON WATERWORKS

FERGUSON WATERWORKS #1106
Price Quotation

Fax: 512-930-2388

17:03:08 MAR 19 2020
Reference No: B442889

Item	Description	Quantity	Net Price	UM	Total
MUL067480	10 PVC HW SWR GXG FAB REP COUP	1	125.340	EA	125.34
MUL067328	8 PVC HW SWR GXG 45 ELL	1	82.480	EA	82.48
MJYP4LAX	8 MJ C153 P-401 WYE L/A	2	624.400	EA	1248.80
MJ4P4LAX	8 MJ C153 P-401 45 BEND L/A	2	285.600	EA	571.20
FPPP4X12	8X12'0 FLGXPE P-401 BT DI SPL	2	1195.360	EA	2390.72
BFP4X	8 DI P-401 125# BLND FLG	2	287.200	EA	574.40
SSLDE8	8 DI MJ WDG REST GLND *ONELOK	6	34.480	EA	206.88
SSLCE8	8 PVC WDG REST GLND *ONELOK	6	42.450	EA	254.70
R051MJSDR08	8 MJ X SDR35 TRAN GSKT	6	16.500	EA	99.00
SP-IMJBCGASX	8 MJ CORTEN BLUE BOLT & GSKT PK	12	41.250	EA	495.00
FBSS16SX	8 SS 316 FLG BLT SET	2	27.540	EA	55.08
D118MJX	8 MJ N/LUBE PLUG VLV W/A	1	1425.880	EA	1425.88
PSVB562SW	2PC SCRW 16T/24B COMP CI VLV BX WTR	1	75.000	EA	75.00
	SUBTOTAL				8484.51

	ITEM 5				
	BLOWER HEADER VALVES				

SP-J815L113600XZ10	10 SS SS LUG 150# XT BFV	1	1141.250	EA	1141.25
SP-S91050008910000	10" ALL 316 SS FLG COUP ADPT 10.75	1	1761.490	EA	1761.49
J815W113600XZU	6 SS SS 150# WAFER HP BFV XT BS	2	632.500	EA	1265.00
SP-S41100066302002	6" ALL 316 SS FLG COUP ADPT 6.625	2	579.320	EA	1158.64
FBSS16S10	10 SS 316 FLG BLT SET	2	51.720	EA	103.44
FBSS16SU	6 SS 316 FLG BLT SET	4	22.660	EA	90.64
	SUBTOTAL				5520.46

As-bid Price

Flow Line Valves

Net Total:	$15839.20
Tax:	$0.00
Freight:	$0.00
Total:	$15839.20

Quoted prices are based upon receipt of the total quantity for immediate shipment (48 hours). SHIPMENTS BEYOND 48 HOURS SHALL BE AT THE PRICE IN EFFECT AT TIME OF SHIPMENT UNLESS NOTED OTHERWISE. QUOTES FOR PRODUCTS SHIPPED FOR RESALE ARE NOT FIRM UNLESS NOTED OTHERWISE.

CONTACT YOUR SALES REPRESENTATIVE IMMEDIATELY FOR ASSISTANCE WITH DBE/MBE/WBE/SMALL BUSINESS REQUIREMENTS.

Seller not responsible for delays, lack of product or increase of pricing due to causes beyond our control, and/or based upon Local, State and Federal laws governing type of products that can be sold or put into commerce. This Quote is offered contingent upon the Buyer's acceptance of Seller's terms and conditions, which are incorporated by reference and found either following this document, or on the web at https://www.ferguson.com/content/website-info/terms-of-sale
Govt Buyers: All items are open market unless noted otherwise.

LEAD LAW WARNING: It is illegal to install products that are not "lead free" in accordance with US Federal or other applicable law in potable water systems anticipated for human consumption. Products with *NP in the description are NOT lead free and can only be installed in non-potable applications. Buyer is solely responsible for product selection.

FERGUSON WATERWORKS

FERGUSON ENTERPRISES, LLC
FERGUSON WATERWORKS #1254
200 PARK CENTRAL BLVD
GEORGETOWN, TX 78626
Phone: 512-930-2262
Fax: 512-930-2388

Deliver To:
From: **Daniel Shimek**
Comments:

15:38:38 APR 26 2021

FERGUSON WATERWORKS #1106
Price Quotation
Phone: 512-930-2262
Fax: 512-930-2388

Dezurik Valves

Bid No: B460054
Bid Date: 03/01/21
Quoted By: XXA

Cust Phone: 972-227-3287
Terms: NET 10TH PROX

Customer:
BAR CONSTRUCTORS INC
279-23 PFLUGERVILLE-CENTR
805 KATY ST
LANCASTER, TX 75146

Ship To:
BAR CONSTRUCTORS INC
279-23 PFLUGERVILLE-CENTR
805 KATY ST
LANCASTER, TX 75146

Cust PO#:

Job Name:

Item	Description	Quantity	Net Price	UM	Total
	HIGH PERFORMANCE BFV 10"				
SP-J815L113600XZ10	10 SS SS LUG 150# XT BFV	1	2838.890	EA	2838.89
SP-S911-900108410	10 FLG COUP ADPT 10.84	1	1828.160	EA	1828.16
	HIGH PERFORMANCE BFV 6"				
J815W113600XZU	6 SS SS 150# WAFER HP BFV XT BS	2	1622.220	EA	3244.44
SP-41100066302002	6" COUPLER ALL SS BODY & HRDWR	2	599.560	EA	1199.12
FBSS16S10	10 SS 316 FLG BLT SET	2	51.720	EA	103.44
FBSS16SU	6 SS 316 FLG BLT SET	4	22.660	EA	90.64

Change Price

Net Total: $9304.69
Tax: $0.00
Freight: $0.00
Total: $9304.69

Quoted prices are based upon receipt of the total quantity for immediate shipment (48 hours). SHIPMENTS BEYOND 48 HOURS SHALL BE AT THE PRICE IN EFFECT AT TIME OF SHIPMENT UNLESS NOTED OTHERWISE. QUOTES FOR PRODUCTS SHIPPED FOR RESALE ARE NOT FIRM UNLESS NOTED OTHERWISE.

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Change Price: $9,304.69
As-Bid Price: $5,520.46
Difference: $3,784.23

March 30, 2021

MUNICIPAL VALVE & EQUIPMENT CO
4010 BILLY MITCHELL
ADDISON, TX 75001
USA

******Note**** On approval orders only, written submittal approval must be received by your factory representative before production can be authorized.**

PLEASE DIRECT ALL INQUIRIES AND CORRESPONDENCE TO THE FOLLOWING REPRESENTATIVES.

Environmental Improvements Inc
235 Trademark Dr.
Buda, Texas 78610
USA

March 30, 2021

SUBMITTAL

PROJECT NAME

SS BFV's

PURCHASE ORDER

VALVE TYPE

High Performance Butterfly Valve (BHP)

CONTRACTOR:	MUNICIPAL VALVE & EQUIPMENT CO 4010 BILLY MITCHELL ADDISON, TX 75001 USA
LOCAL SUPPLIER:	Environmental Improvements Inc 235 Trademark Dr. Buda, Texas 78610 USA
MANUFACTURER:	DeZURIK 250 RIVERSIDE AVE NORTH SARTELL, MN 56377 (320) 259-2000
Quote Number:	222838

TABLE OF CONTENTS

A Data Sheet is included for each line item on the purchase order.
Document numbers are listed at the bottom of the Data Sheet.
Any one drawing may apply to more than one item number.
All documents are assembled in alpha/numeric order within each section

Submittal Data Sheet

Date: 03/30/2021

MUNICIPAL VALVE & EQUIPMENT CO
4010 BILLY MITCHELL
ADDISON, TX 75001
USA

QUOTE NUMBER 222838
REV

PROJ. SS BFV's

Fact. ITEM	Cust. ITEM	QTY	DESCRIPTION
1		2	BHP,6,L1,S2,TC,S2-S5B-FT-RT,CMC*LT

Style	BHP	High Performance Butterfly Valve
Size	6	6 Inch (150mm)
End Connection	L1	Lugged Drilling; ASME Class 150
Body Material	S2	316 Stainless Steel
Packing	TC	PTFE V-Flex; Temperature to 500° F. (260° C.)
Disc	S2	316 Stainless Steel
Shaft	S5B	17-4PH Stainless Steel; Double Offset
Bearing	FT	Stainless Steel with PTFE Fabric Liner 2"-24" (50-600mm); 316 Stainless Steel with PTFE Fabric Liner 30"-48" (75-=1200mm); to 500° F. (260° C.)
Seat Seal	RT	Reinforced PTFE/Titanium; Temperature to 500° F. (260° C.)
Option	CMC	Certificate of Material Conformance
Actuator Type	LT	Lever; Ten Position

RELATED DOCUMENTS

A060698	DWG INST BHP L1 LT 2-8"
A058088	DWG VALVE ASSY BHP L 2-12"
A042310	DWG ACT LT
A039819	DWG CONN PARTS PR/MG/DR/CMD/LT
D010503	IM VALVE BHP 2-20"
D010316	IM ACT LEVER TEN POSITION

Submittal Data Sheet

Date: 03/30/2021

MUNICIPAL VALVE & EQUIPMENT CO
4010 BILLY MITCHELL
ADDISON, TX 75001
USA

QUOTE NUMBER 222838
REV

PROJ. SS BFV's

Fact. ITEM	Cust. ITEM	QTY	DESCRIPTION
2		1	BHP,10,L1,S2,TC,S2-S5B-FT-RT*MG-1012-HD8

Style	BHP	High Performance Butterfly Valve
Size	10	10 Inch (250mm)
End Connection	L1	Lugged Drilling; ASME Class 150
Body Material	S2	316 Stainless Steel
Packing	TC	PTFE V-Flex; Temperature to 500° F. (260° C.)
Disc	S2	316 Stainless Steel
Shaft	S5B	17-4PH Stainless Steel; Double Offset
Bearing	FT	Stainless Steel with PTFE Fabric Liner 2"-24" (50-600mm); 316 Stainless Steel with PTFE Fabric Liner 30"-48" (75-=1200mm); to 500° F. (260° C.)
Seat Seal	RT	Reinforced PTFE/Titanium; Temperature to 500° F. (260° C.)
Actuator Type	MG-1012-HD8	Manual Gear Handwheel; 8 In Dia

RELATED DOCUMENTS

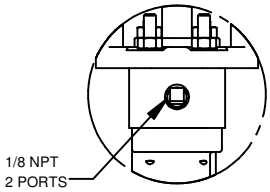
A060812	DWG INST BHP L1 MG-1012-HD 10-16"
A058088	DWG VALVE ASSY BHP L 2-12"
A052096	DWG ACT MG-_-HD/CW
A039819	DWG CONN PARTS PR/MG/DR/CMD/LT
D010503	IM VALVE BHP 2-20"
D010408	IM ACT MANUAL GEAR

VALVE SIZE		DIMENSIONS IN [MM]										L SEAT OPTIONS				
IN	MM	A	B	C	D	E	F	G	J	H	K	TT & TI	TTS2	S2	M	U
2	50	1.75 [44]	6.06 [154]	3.31 [84]	5.50 [140]	3.50 [89]	4 5/8-11 UNC	4.75 [121]	6.75 [171]	2.00 [51]	2.44 [62]	10.00 [254]	N/A	N/A	2.00 [51]	.89 [23]
2-1/2	65	1.88 [48]	7.00 [178]	3.44 [87]	5.75 [146]	3.75 [95]	4 5/8-11 UNC	5.50 [140]	7.00 [178]	2.00 [51]	2.44 [62]	10.00 [254]	N/A	N/A	2.00 [51]	.91 [23]
3	75	1.88 [48]	7.62 [194]	3.97 [101]	6.00 [152]	4.00 [102]	4 5/8-11 UNC	6.00 [152]	7.25 [184]	2.00 [51]	2.44 [62]	10.00 [254]	N/A	N/A	2.00 [51]	.91 [23]
4	100	2.12 [54]	9.00 [229]	4.75 [121]	6.75 [171]	4.75 [121]	8 5/8-11 UNC	7.50 [191]	8.00 [203]	2.00 [51]	2.44 [62]	10.00 [254]	N/A	N/A	2.00 [51]	.98 [25]
5	125	2.31 [59]	10.00 [254]	5.50 [140]	7.75 [197]	5.25 [133]	8 3/4-10 UNC	8.50 [216]	9.00 [229]	2.00 [51]	2.44 [62]	10.00 [254]	N/A	N/A	2.00 [51]	1.10 [28]
6	150	2.31 [59]	11.00 [279]	6.50 [165]	8.25 [210]	5.75 [146]	8 3/4-10 UNC	9.50 [241]	9.50 [241]	2.25 [57]	3.56 [90]	14.00 [356]	N/A	N/A	3.00 [76]	1.20 [30]
8	200	2.50 [64]	13.50 [343]	7.59 [193]	9.50 [241]	7.00 [178]	8 3/4-10 UNC	11.75 [298]	10.75 [273]	2.25 [57]	3.38 [86]	22.00 [559]	N/A	N/A	2.75 [70]	1.38 [35]

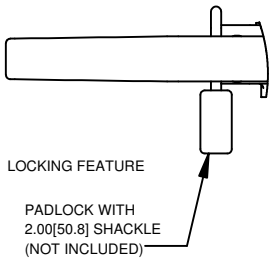
A	VALVE
B	ACTUATOR

NOTE:

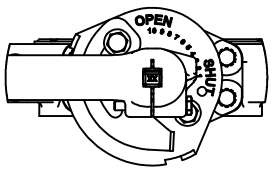
1. MATING PIPE FLANGE I.D. MUST BE EQUIVALENT TO ANSI CLASS 150 WELD NECK OR SLIP ON FOR SCHEDULE 40 PIPE.
2. DRAWING SHOWS MOUNTING HOLES FOR MOUNTING WITH ANSI CLASS 150 FLANGES.
3. WHEN USING OTHER THAN ANSI FLANGES, SEE A43512 FOR DIMENSIONS.
4. VALVES WITH UNDRILLED SEAT RETAINER OPTION REQUIRE A FLANGE TO BE ATTACHED TO THE SEAT SIDE OF THE VALVE.
5. USE DIMENSION "J" WHEN SECONDARY PACKING CHAMBER IS ORDERED.



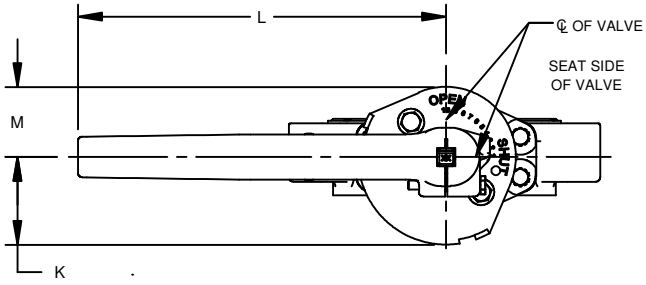
DETAIL "A"
SECONDARY PACKING CHAMBER
WHEN ORDERED

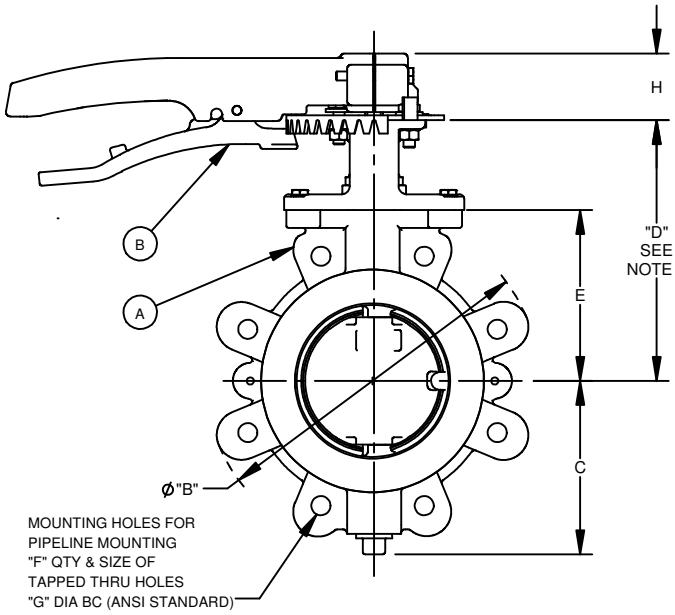


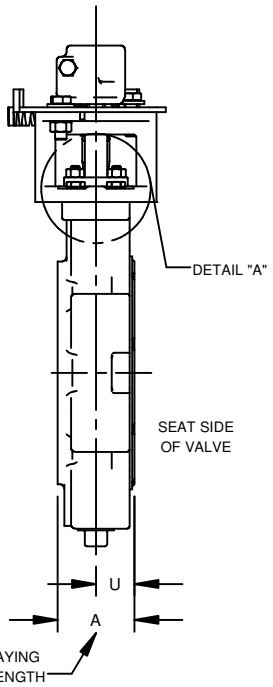
NOTICE
THIS DRAWING DOES NOT SHOW ACTUATOR ACCESSORIES. IF ACCESSORIES ARE REQUIRED, REFER TO THE APPROPRIATE ACCESSORY INSTALLATION DRAWING FOR DIMENSIONS AND OTHER RELATED INFORMATION.



ADJUSTABLE OPEN POSITION INDICATOR
(OPTIONAL)
FURNISHED WHEN ST IS ORDERED







ACTUATOR MOUNTING POSITIONS

STANDARD POSITION
SHOWN ON THIS DRAWING

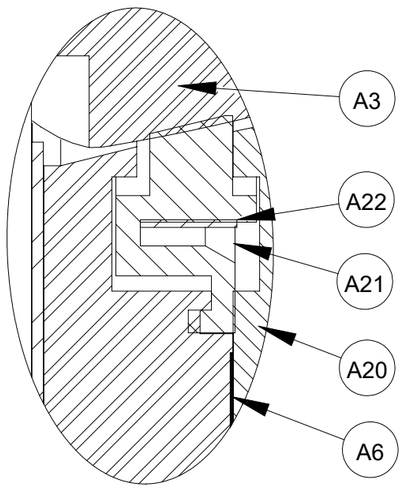
180° POSITION

G F E D C B A

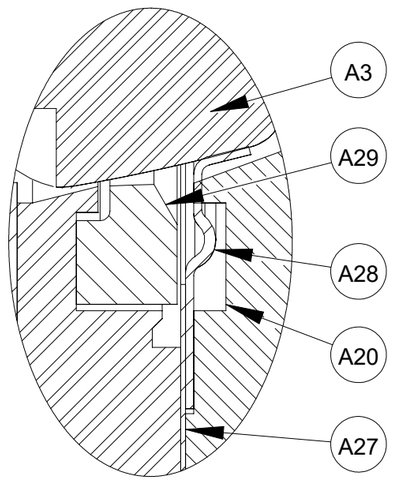
DeZURIK
Sartell, MN USA 56377
www.dezurik.com

BHP BUTTERFLY VALVES SIZE 2 - 8, CLASS 150, LUGGED
LT 10 POSITION LEVER ACTUATOR

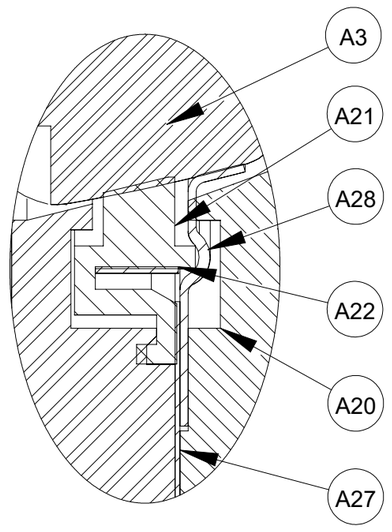
DOCT. CODE	DRAWN	APPROVED	
C1	SN	CEG	A60698
	CHECKED	DATE	
	SN	1/28/2016	



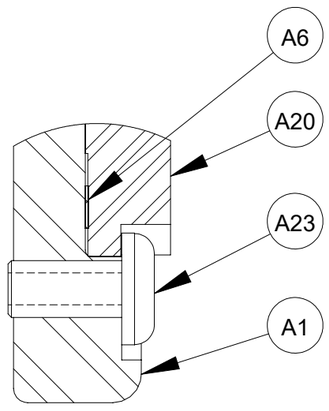
DETAIL "B"
RESILIENT SEAT
RI, RT, TI & TT OPTIONS



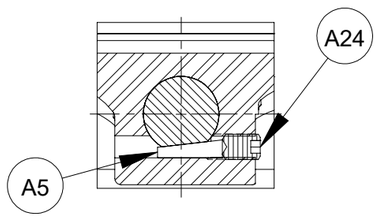
DETAIL "B"
METAL SEAT
S2 OPTION



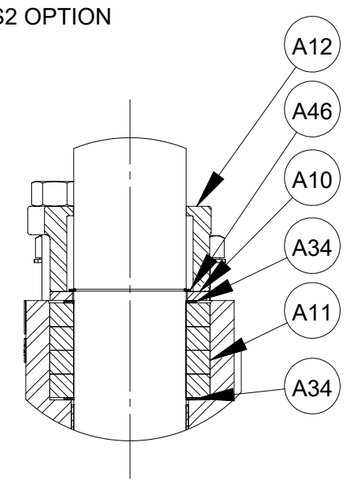
DETAIL "B"
DUAL SEAT
RTS2, TTS2, RIS2
& TIS2 OPTIONS



"UR" UNDRILLED
RETAINER OPTION
(2 - 10 VALVES SEAT)

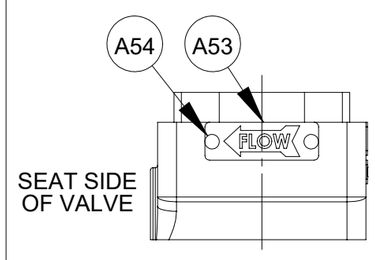


SECTION C-C

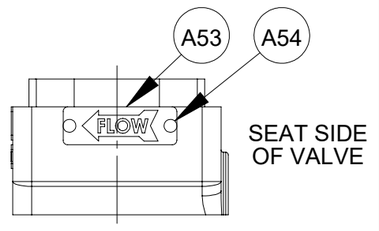


DETAIL "E"
G2 PACKING OPTION

FLOW ARROW ORIENTATION



DETAIL F - F
ALL SEAT OPTIONS EXCEPT
METAL SEAT (S2)

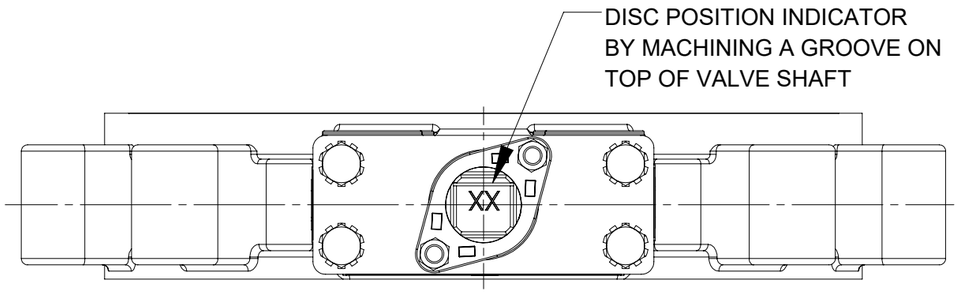


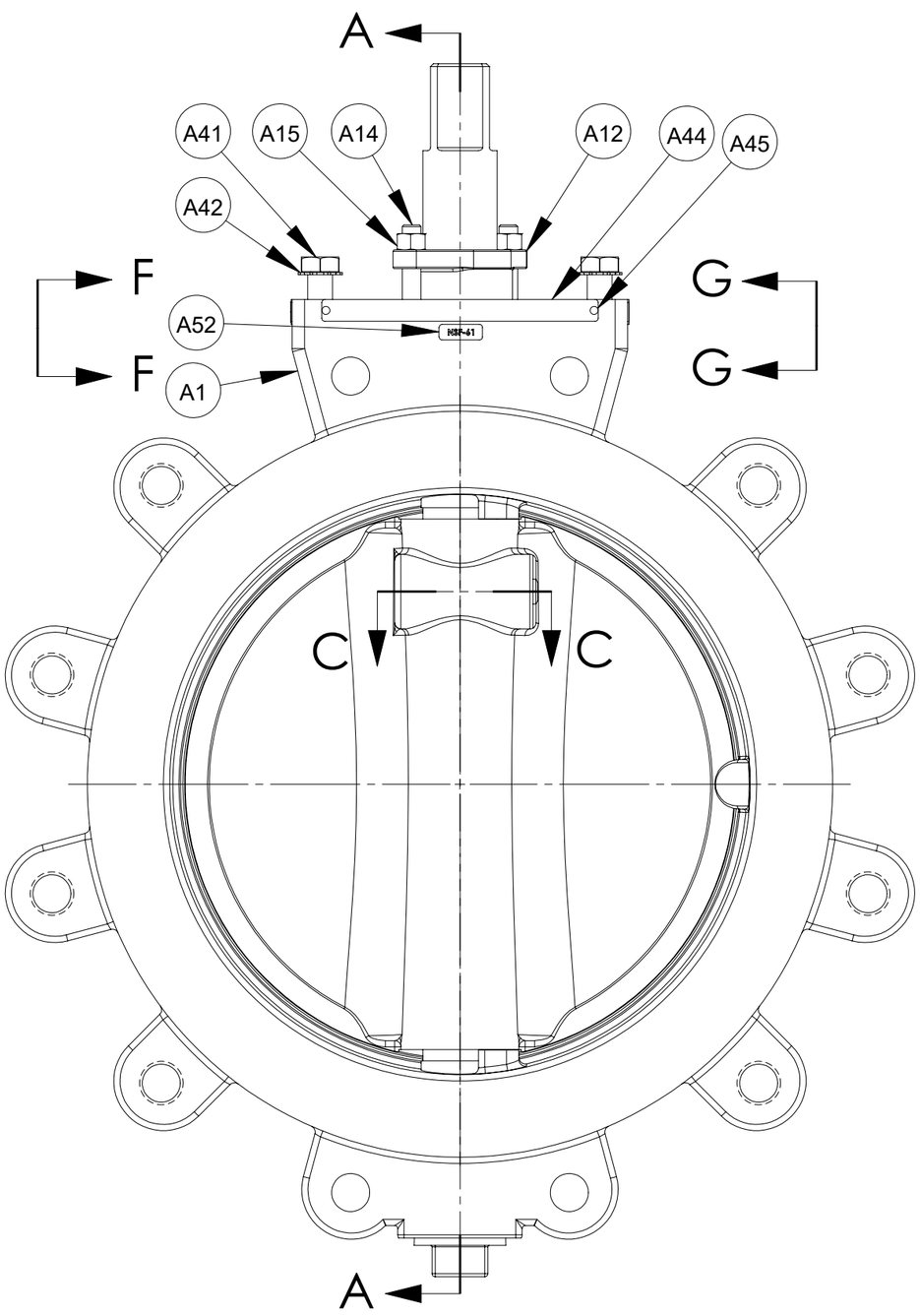
DETAIL G - G
METAL SEAT (S2) ONLY

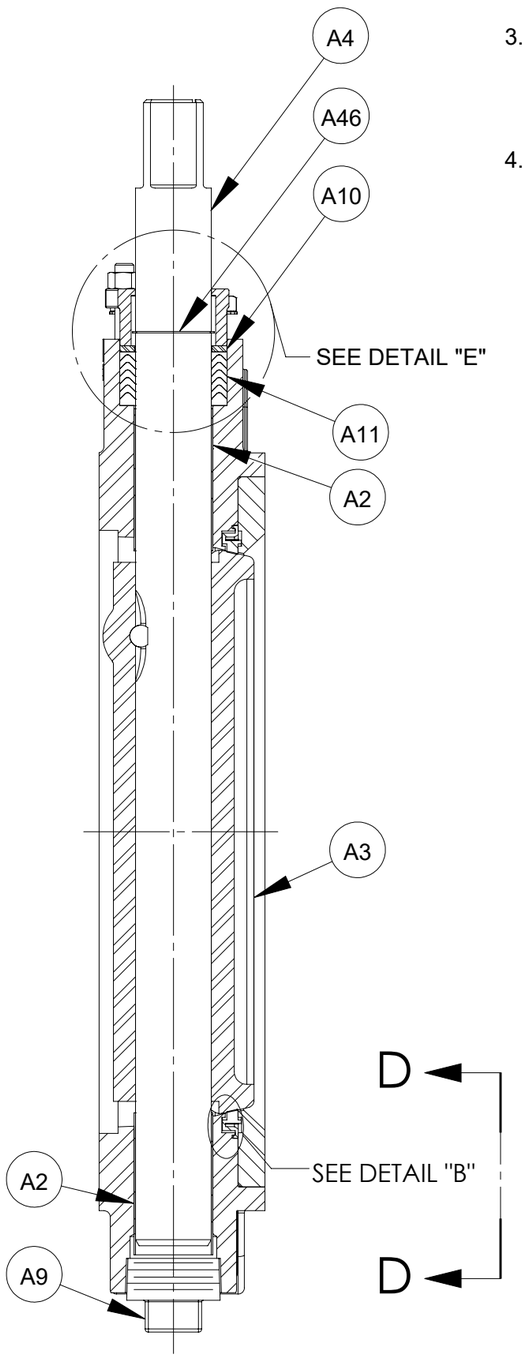
NO	PART NAME	QTY
A1	BODY	1
A2	BEARING	2
A3	DISC	1
A4	SHAFT	1
A5	TANGENTIAL PIN	1
A6	GASKET (SIZES 5 - 10 RESILIENT SEAT ONLY)	1
A9	PIPE PLUG	1
A10	PACKING WASHER	1
A11	PACKING	1
A12	PACKING GLAND	1
A14	STUD	2
A15	NUT	2
A20	SEAT RETAINER	1
A21	RESILIENT SEAT (EXCEPT S2 OPTION)	1
A22	SEAT CONTROL RING (EXCEPT S2 OPTION)	1
A23	SCREW (SIZES 2 & 2-1/2)	4
A23	SCREW (SIZES 3 - 6)	8
A23	SCREW (SIZES 8 - 12)	12
A23	SCREW (UR OPTION - SIZES 2 - 10)	2
A24	SET SCREW	1
A27	GASKET (EXCEPT RESILIENT SEAT OPTION)	1
A28	METAL SEAT RING (EXCEPT RESILIENT SEAT OPTION)	1
A29	SEAT SUPPORT RING (METAL SEAT S2 OPTION)	1
A34	ANTI-EXTRUSION WASHER (G2 OPTION ONLY)	2
A36	SPRING WASHER (G2L AND TCL OPTIONS)	-
A37	WASHER (G2L AND TCL OPTIONS)	2
A41	SCREW	4
A42	LOCKWASHER	4
A44	DATA TAG	1
A45	DRIVE SCREWS (WHEN REQUIRED)	2
A46	RETAINING RING	1
A52	TAG (NSF OPTION ONLY)	1
A53	TAG (PREFERRED FLOW ARROW)	1
A54	DRIVE SCREWS (WHEN REQUIRED)	2

NOTE:

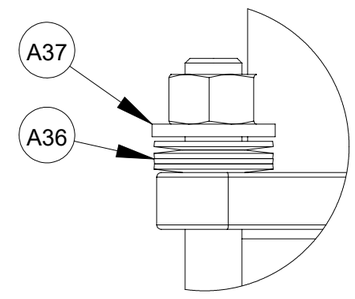
1. WHEN ORDERING PARTS, INCLUDE VALVE SIZE AND PART NUMBER FROM DATA PLATE, ALSO INCLUDE THIS DRAWING NUMBER WITH PART NUMBER, NUMBER AND QUANTITY.
2. RECOMMENDED SPARE PARTS ARE A2, A6, A11, A21, A22, A27, A28, A36, AND A46.
3. ITEMS A41, A42, (P1) SEAL AND (P6) GASKET WILL BE SUPPLIED WITH WITH BASIC VALVE WITH METAL SEAT (S2).
4. THIS DRAWING IS FOR VALVE ASSEMBLY ONLY AND SHOULD NOT BE USED FOR VALVE INSTALLATION.



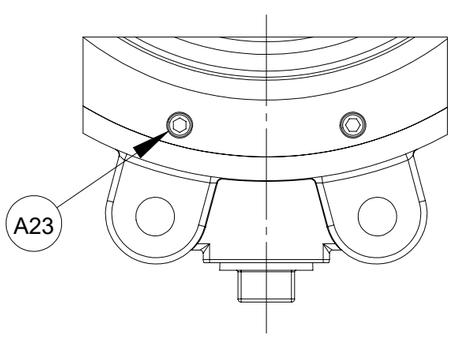




SECTION A-A



G2L AND TCL PACKING OPTIONS ONLY
(QUANTITY OF CENTER SPRING WASHERS
MAY VARY BY VALVE SIZE)



VIEW D - D

	DOCT. CODE	DRAWN	APPROVED
G			
F	70380 01/11/19		
E	70343 12/04/18		
D	63295 9/27/16		
C	63123 2/23/16		
B	62162 9/9/11		
A	62075 3/23/11		
	C1	SN	CEG
		CHECKED CEG	DATE 10/8/10

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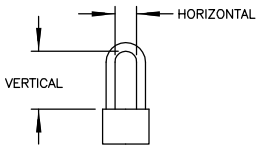
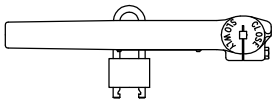
BHP BUTTERFLY VALVE LUGGED SIZE 2 - 12

A58088

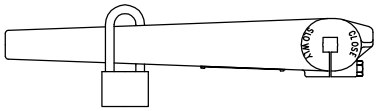
LOCKING FEATURE
(PADLOCK NOT INCLUDED)
SEE NOTE 2
(REDUCED SCALE)



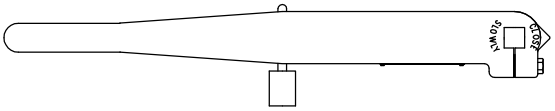
DIMENSIONS IN THE
LOCKED POSITION



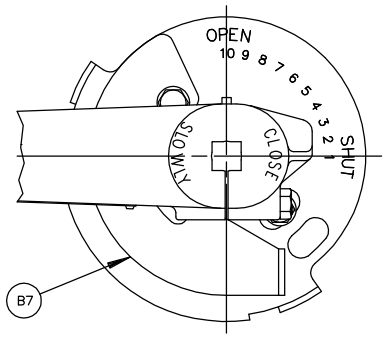
SMALL LEVER



MEDIUM LEVER



LARGE LEVER



ADJUSTABLE OPEN POSITION STOP
(OPTIONAL)

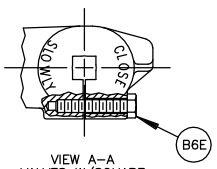
NO	PART NAME	QTY
B1	DIAL	1
B2	SCREW	2
B3	LOCKWASHER	2
B4	NUT (EXCEPT AWWA BFLY VALVES)	2
B5	WASHER	2
B6	LEVER SUB–ASSEMBLY	1
B6A	HANDLE	1
B6B	LEVER	1
B6C	PIN	1
B6D	SPRING	1
B6E	SCREW	1
B7	MEMORY STOP (OPTIONAL)	1
B8	DATA PLATE (EXCEPT BHP API–609 OPTION)	1
B9	DRIVE SCREW (EXCEPT BHP API–609 OPTION)	2
B10	GLAND PLATE (AWWA BFLY VALVES)	1
B11	BEARING (AWWA BFLY VALVES)	1
B12	KEY (AWWA BFLY VALVE ONLY, SEE NOTE 3)	1
B13	RIVET (BHP BFLY VALVES)	1
B14	PIN (BHP BFLY VALVES – API)	1

NOTE:

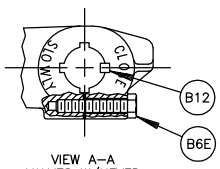
1. WHEN ORDERING PARTS, INCLUDE VALVE SIZE AND PART NUMBER FROM DATA PLATE. ALSO INCLUDE THIS DRAWING NUMBER WITH PART NAME, NUMBER AND QUANTITY.

2. SMALL LEVER WILL USE A $\frac{.28}{7}$ DIA X $\frac{2.00}{51}$ VERTICAL X $\frac{.81}{21}$ HORIZONTAL ADJUSTABLE SHACKLE PADLOCK.
   MEDIUM AND LARGE LEVERS WILL USE A $\frac{.38}{10}$ DIA X $\frac{2.50}{64}$ VERTICAL X $\frac{.94}{24}$ HORIZONTAL ADJUSTABLE OR NON–ADJUSTABLE SHACKLE PADLOCK.

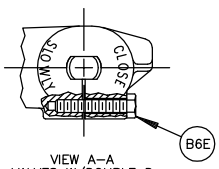
3. KEY IS SUPPLIED AS PART OF VALVE ASSEMBLY AND WILL BE SHIPPED WITH VALVE.



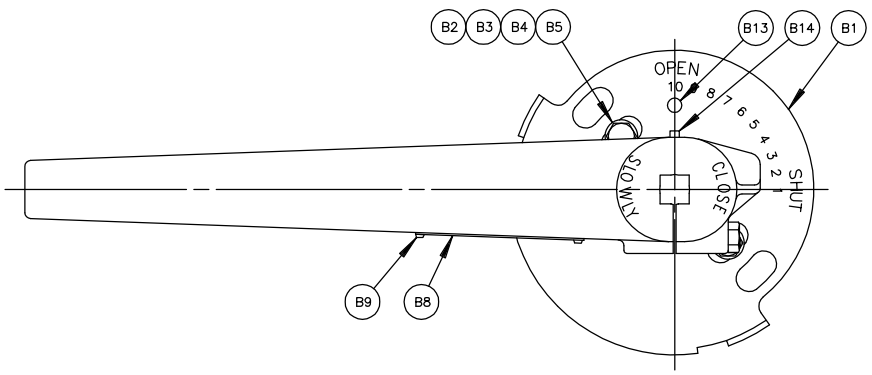
VIEW A–A
VALVES W/SQUARE
SHAFT CONNECTION
(REDUCED)

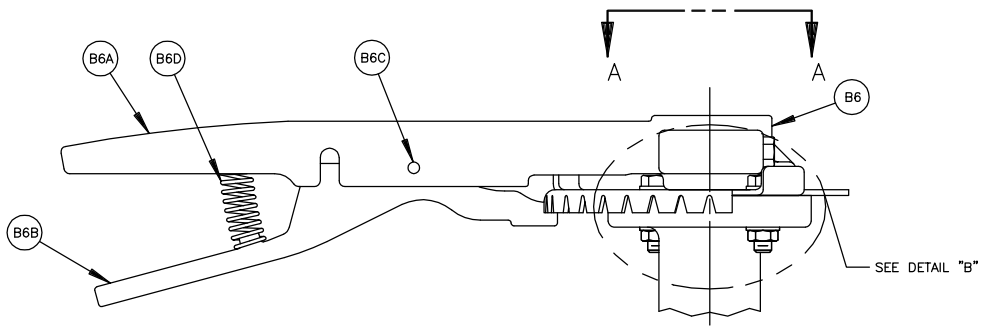


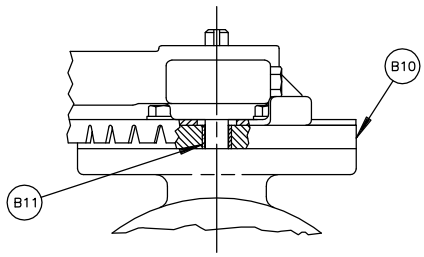
VIEW A–A
VALVES W/KEYED
SHAFT CONNECTION
(REDUCED)



VIEW A–A
VALVES W/DOUBLE D
SHAFT CONNECTION
(REDUCED)







DETAIL "B"
(AWWA VALVES)

G	50312	02/13/15
F	50312	03/10/10
E	61158	02/13/04
D	50312	04/08/02
C	60712	02/20/02
B	50312	09/09/96
A	51690	05/29/96

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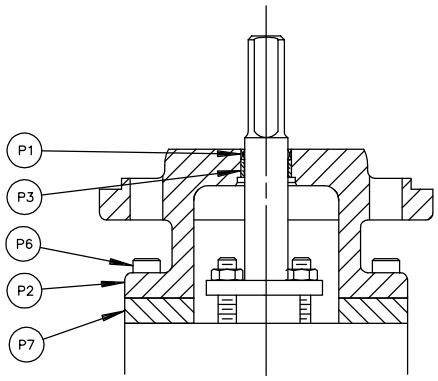
LT 10 POSITION LEVER ACTUATOR

DOCT. CODE	DRAWN	APPROVED
C1	WP	SJ
	CHECKED	DATE
	SJ	7–12–93

A42310

NO	PART NAME	QTY
P1	SEAL (SEE NOTE 3)	1
P2	ADAPTER	1
P3	BEARING (SEE NOTE 3)	1
P4		
P5	GASKET (S2, IS_ SEATS ONLY)	1
P6	SCREW	4
P7	SPACER (14" CLASS 150 ONLY)	2

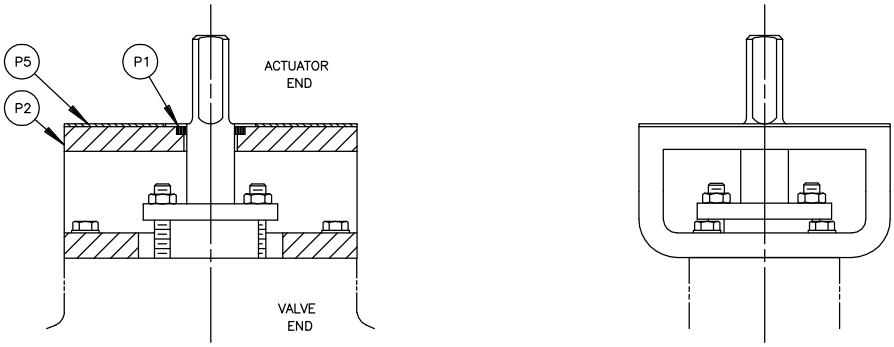


BHP VALVE WITH DR55 AND DR85 ACTUATORS

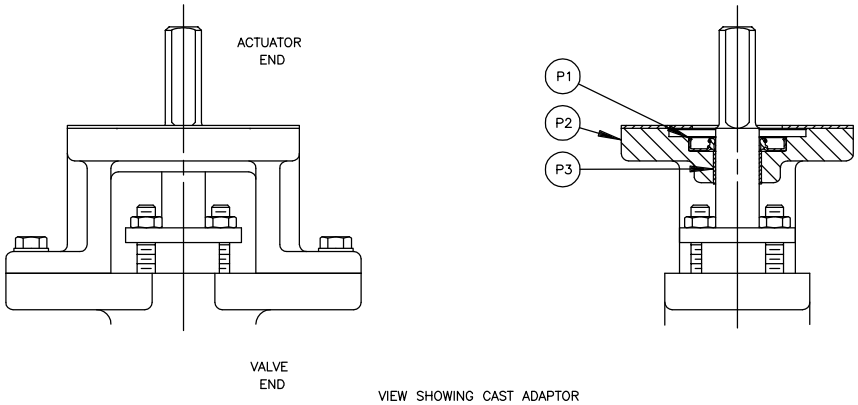
NOTE:

1. WHEN ORDERING PARTS, INCLUDE VALVE SIZE AND PART NUMBER FROM DATA PLATE. ALSO INCLUDE THIS DRAWING NUMBER WITH PART NAME, NUMBER AND QUANTITY.
2. RECOMMENDED SPARE PARTS ARE ITEMS NO. P1 & P5.
3. ITEM P1 (SEAL) IS USED WITH DIAPHRAGM DR40/55/85 AND POWERRAC PR ACTUATORS ONLY.

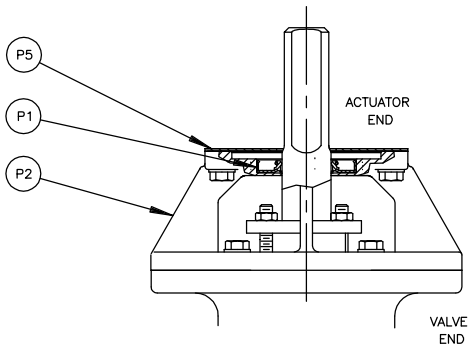
   ITEM P3 (BEARING) IS USED WITH LEVER AND DIAPHRAM DR55_ & DR85_ ACTUATORS ONLY.



VIEW SHOWING FABRICATED ADAPTOR



VIEW SHOWING CAST ADAPTOR



VIEW SHOWING ADAPTOR FUW BHP VALVES

K	50312	1/28/16
J	50312	02/19/02
H	60110	01/02/02
G	54088	12/04/97
F	50312	08/09/95
E	50896	01/06/95
D	52896	09/19/94
C	52753	04/29/94
B	52492	04/29/94
A	51960	06/11/92

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CONNECTING PARTS FOR USE WITH LEVER, POWERRAC, MANUAL GEAR AND DIAPHRAGM ACTUATORS ON VPB, RCV AND BHP VALVES

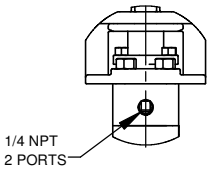
DOCT. CODE	DRAWN	APPROVED
C1	SN	JEB
	CHECKED TNB	DATE 09-19-91

A-39819

VALVE SIZE		DIMENSIONS IN [MM]								
IN	MM	A	B	C	D	E	F	G	H	U
10	250	2.93 [74]	16.12 [409]	8.78 [223]	11.19 [284]	8.31 [211]	12 7/8-9 UNC	14.25 [362]	12.69 [322]	1.64 [42]
12	300	3.28 [83]	19.12 [486]	10.19 [259]	12.75 [324]	9.75 [248]	12 7/8-9 UNC	17.00 [432]	14.50 [368]	1.81 [46]
14	350	3.61 [92]	21.00 [533]	11.81 [300]	14.50 [368]	11.00 [279]	12 1-8 UNC	18.75 [476]	16.25 [413]	2.10 [53]
16	400	3.99 [101]	23.50 [597]	12.94 [329]	15.75 [400]	12.25 [311]	16 1-8 UNC	21.25 [540]	17.50 [445]	2.48 [63]

ACTUATOR NUMBER	DIM IN [MM]	
	L	P
MG-1012-HD8	8.00 [203]	12.75 [324]
MG-1012-HD12	12.00 [305]	12.88 [327]

A	VALVE
B	ACTUATOR
P	CONNECTING PARTS

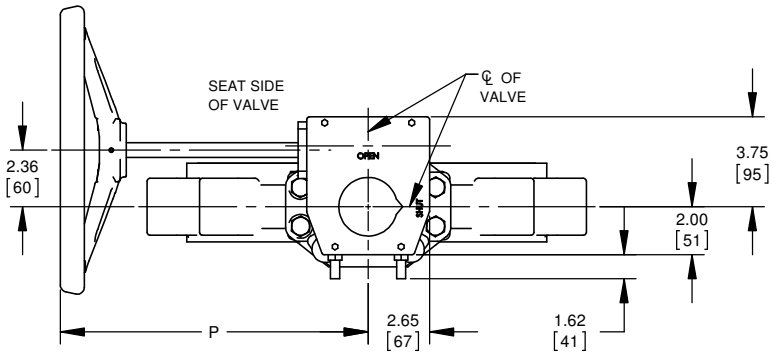


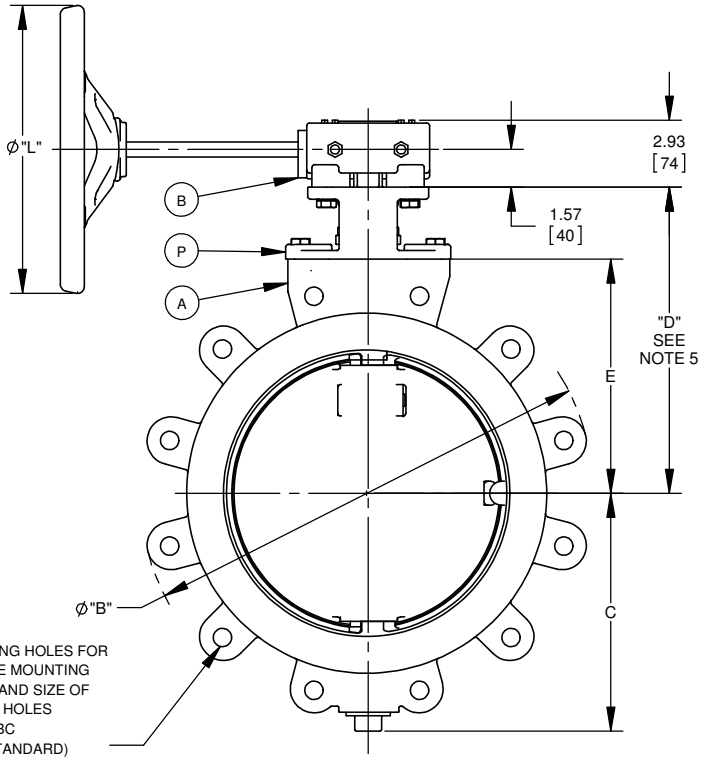
DETIAL "A"
SECONDARY PACKING CHAMBER
WHEN ORDERED

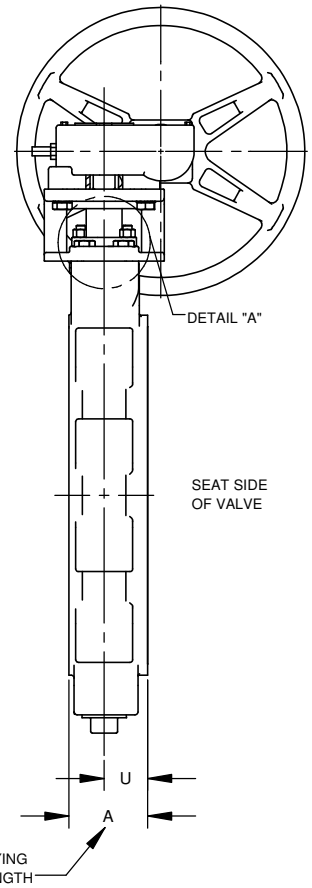
NOTE:

1. MATING PIPE FLANGE I.D. MUST BE EQUIVALENT TO ANSI CLASS 150 WELD NECK OR SLIP ON FOR SCHEDULE 40 PIPE.
2. DRAWING SHOWS MOUNTING HOLES FOR MOUNTING WITH ANSI CLASS 150 FLANGES.
3. WHEN USING OTHER THAN ANSI FLANGES, SEE A43512 FOR DIMENSIONS.
4. VALVES WITH UNDRILLED SEAT RETAINER OPTION REQUIRE A FLANGE TO BE ATTACHED TO THE SEAT SIDE OF THE VALVE.
5. USE DIMENSION "H" WHEN SECONDARY PACKING CAHMBER IS ORDERED.
6. 8 TURNS OF HANDWHEEL ARE REQUIRED TO OPEN VALVE.

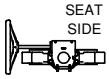
NOTICE
THIS DRAWING DOES NOT SHOW ACTUATOR ACCESSORIES. IF ACCESSORIES ARE REQUIRED, REFER TO THE APPROPRIATE ACCESSORY INSTALLATION DRAWING FOR DIMENSIONS AND OTHER RELATED INFORMATION.



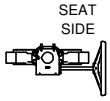




ACTUATOR MOUNTING POSITIONS



STANDARD POSITION
SHOWN ON THIS DRAWING



180° POSITION

G F E D C B A

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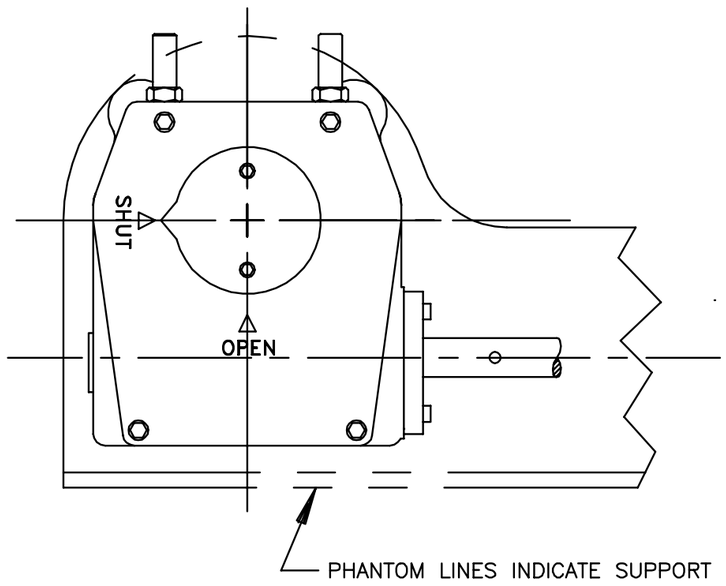
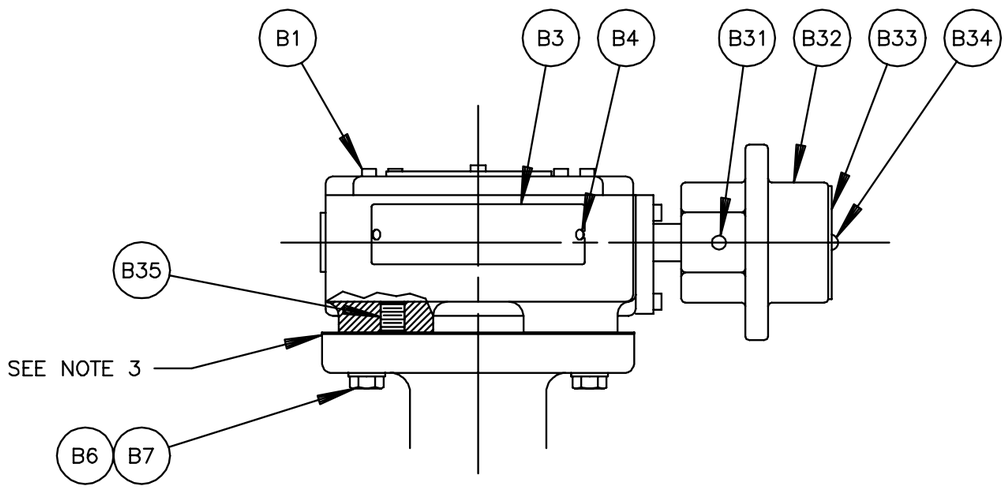
BHP BUTTERFLY VALVES SIZE 10 - 16 CLASS 150 LUGGED
MG-1012-HD_ HANDWHEEL ACTUATOR

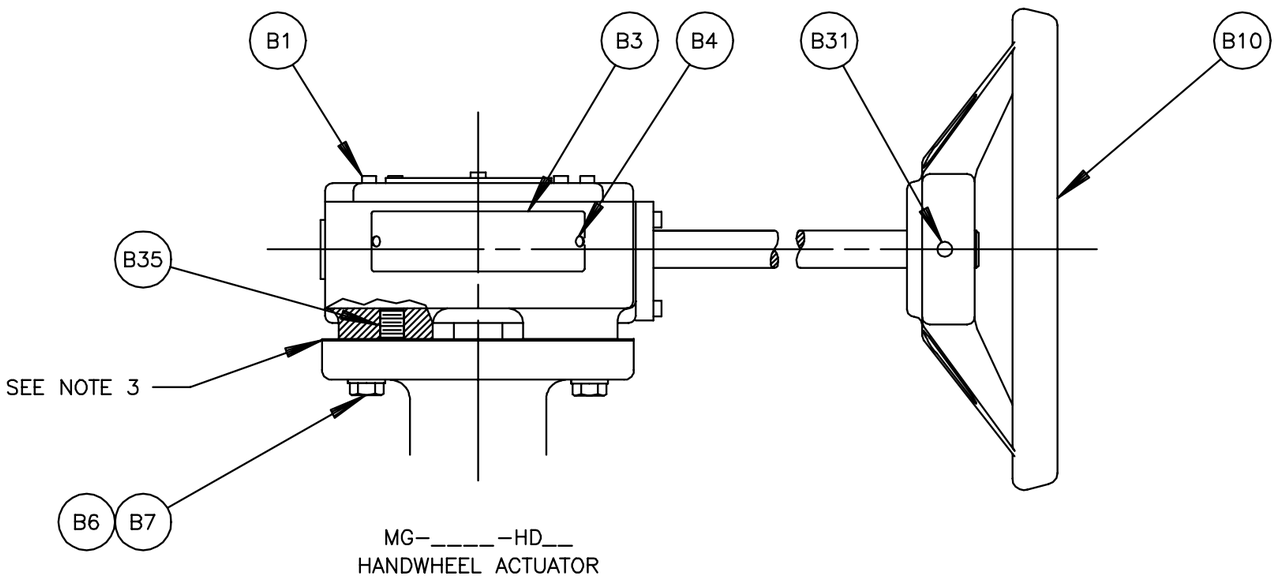
DOCT. CODE	DRAWN	APPROVED	
C1	SN	CEG	A60812
	CHECKED	DATE	
	SN	1/28/2016	



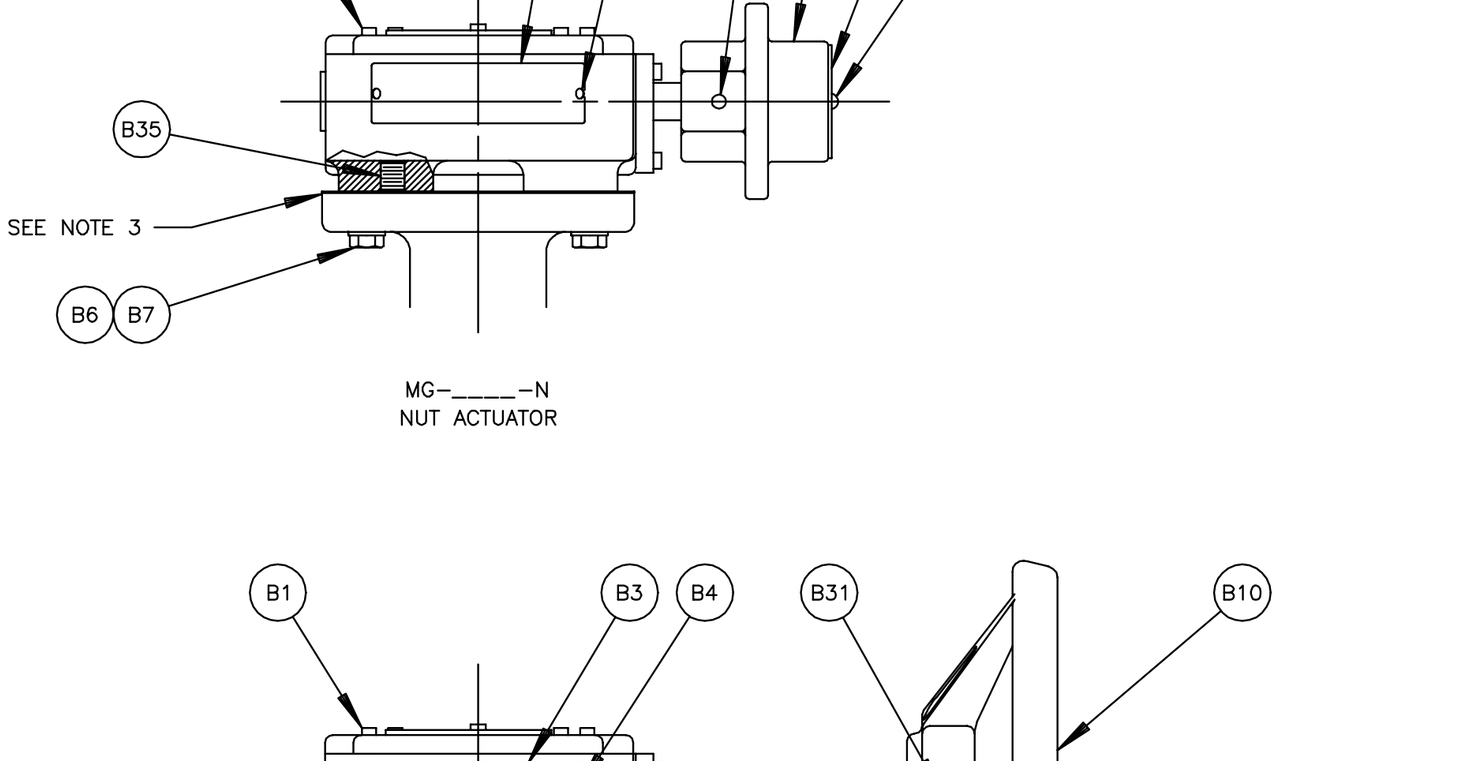
PHANTOM LINES INDICATE SUPPORT
BRACKET FOR CHAINWHEEL ACTUATOR



MG–____–N
NUT ACTUATOR



MG–____–HD__
HANDWHEEL ACTUATOR



MG–___–CW__
CHAINWHEEL ACTUATOR

NO	PART NAME	QTY
B1	ACTUATOR	1
B2		
B3	DATA PLATE (SEE NOTE 4 & 5)	1
B4	DRIVE SCREW (SEE NOTE 4 & 5)	2
B5		
B6	SCREW	4
B7	LOCKWASHER	4
B8		
B9		
B10	HANDWHEEL	1
B11		
B12		
B13		
B14		
B15		
B16	CHAIN GUIDE	1
B17		
B18	SET SCREW	1
B19	CHAINWHEEL	1
B20		
B21	CHAIN	–
B22	CLOSING LINK	1
B23	SHAFT EXTENSION (CHAINWHEEL ONLY)	1
B24	PIN (CHAINWHEEL ONLY)	1
B25	BEARING	1
B26	WASHER	2
B27	RETAINING RING	1
B28	GASKET (CHAINWHEEL ONLY)	1
B29	SUPPORT	1
B30	BEARING	1
B31	PIN	1
B32	NUT	1
B33	ROTATION TAG	1
B34	DRIVE SCREW	2
B35	SET SCREW (WHEN REQUIRED)	4

NOTE:

1. WHEN ORDERING PARTS, INCLUDE VALVE SIZE AND PART NUMBER FROM DATA PLATE. ALSO INCLUDE THIS DRAWING NUMBER WITH PART NAME, NUMBER AND QUANTITY.

2. RECOMMENDED SPARE PARTS ARE ITEMS B24, B25, B30 AND B31.

3. GASKET (ITEM P5) IS REQUIRED AND SUPPLIED ONLY WITH METAL–SEATED BASIC VALVES.

4. DATA PLATE WILL BE FASTENED DIRECTLY TO ACTUATOR WHEN HANDWHEEL IS ORDERED OR TO SUPPORT BRACKET WHEN CHAINWHEEL IS ORDERED.

5. DATA PLATE WILL BE FASTENED DIRECTLY TO VALVE FOR BHP API–609 OPTION.

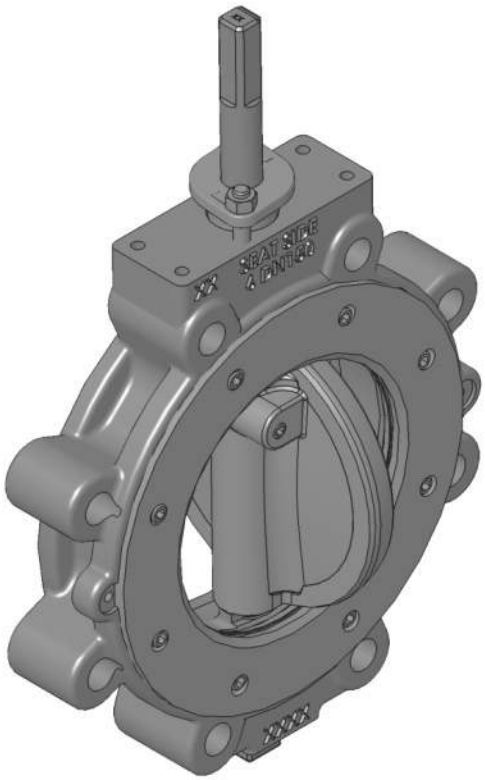
G		
F		
E		
D		
C	62369	10/08/12
B	50312	12/08/06
A	50312	04/08/02

DeZURIK
Sartell, MN USA 56377
www.dezurik.com

CHAINWHEEL, HANDWHEEL AND NUT OPERATOR
FOR USE WITH MG–___–CW__, MG–___–HD__ AND MG–___–N
MANUAL ACTUATORS

DOCT. CODE	DRAWN	APPROVED	
C1	SN	SN	A52096
	CHECKED SN	DATE 08/10/01	

DEZURIK BHP HIGH PERFORMANCE BUTTERFLY VALVE



Instruction D10503

November 2020

DeZURIK, Inc. Sartell, Minnesota USA | Phone: 320-259-2000 | www.dezurik.com | info@dezurik.com

Instructions

These instructions provide information about the DeZURIK High Performance Butterfly Valve. They are for use by personnel who are responsible for installation, operation and maintenance of High Performance Butterfly Valve.

Safety Messages

All safety messages in the instructions are flagged with an exclamation symbol and the word Caution, Warning or Danger. These messages indicate procedures that must be followed exactly to avoid equipment damage, personal injury or death.

Safety label(s) on the product indicate hazards that can cause equipment damage, personal injury or death. If a safety label becomes difficult to see or read, or if a label has been removed, please contact DeZURIK for replacement label(s).

WARNING!

Personnel involved in the installation or maintenance of valves should be constantly alert to potential emission of pipeline material and take appropriate safety precautions. Always wear suitable protection when dealing with hazardous pipeline materials. Handle valves which have been removed from service with suitable protection for any potential pipeline material in the valve.

Inspection

Your High Performance Butterfly Valve has been packaged to provide protection during shipment; however, it can be damaged in transport. Carefully inspect the unit for damage upon arrival and file a claim with the carrier if damage is apparent.

Parts

Recommended spare parts are listed on the assembly drawing. These parts should be stocked to minimize downtime.

Order parts from your DeZURIK sales representative, or directly from DeZURIK. When ordering parts, please include the 7-digit part number and 4-digit revision number (example: **9999999R000**) located on the data plate attached to the valve assembly. Also include the part name, the assembly drawing number, the balloon number and the quantity stated on the assembly drawing.

DeZURIK Service

DeZURIK service personnel are available to install, maintain and repair all DeZURIK products. DeZURIK also offers customized training programs and consultation services.

For more information, contact your local DeZURIK sales representative or visit our website at www.dezurik.com.

Table of Contents

Description

The High Performance Butterfly Valve is designed for on-off and throttling applications in the chemical, power, paper, air conditioning, petroleum and refining industries.

A choice of body styles, ratings, seat and packing options, materials, actuators and accessories are available in valve sizes from 2–20" (50– 500mm). Pressure and temperature ratings are shown on the valve data plate.

Handling

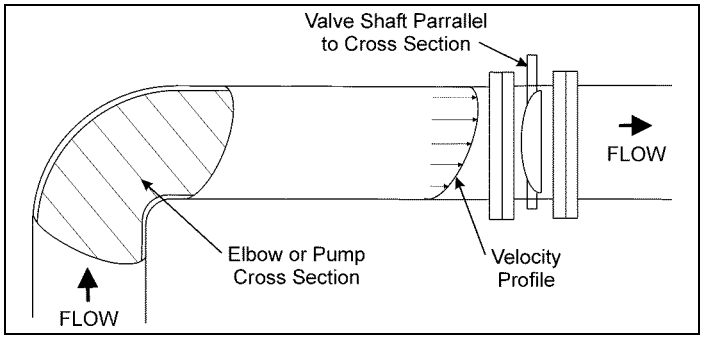
Lifting the valve improperly may damage it. Do not fasten lifting devices to the actuator, disc or through the seat opening in the body. Lift the valve with slings, chains or cables fastened around the valve body, or fastened to bolts or rods through bolt holes in the flanges.

Installing Valve

Recommendations

Refer to the valve installation drawing for dimensional information.

- Installing the valve in the wrong location may cause excessive dynamic torque and damage the valve. When pipeline fluid velocities exceed 20 fps (6.0 m/s) for 12” (300mm) and smaller valves or 12 fps (3.6 m/s) for 14” (350mm) and larger valves, it is recommended to install the valve at least 8 diameters from the nearest upstream elbow or pump. For best performance results, install valve shaft parallel with elbow or pump cross section (see image below). For more specific installation recommendations, contact your local representative or DeZURIK for assistance.



- Valves with undrilled seat retainers are not suitable for dead-end service without a downstream flange.
- If possible, install the valve with the shaft horizontal to provide a self-cleaning action on the seat.

  Note: Install the valve so that the side opposite the seat will be on the higher pressure side when the valve is closed. The seat side of the valve is marked “SEAT”. Pipeline flow may be in either direction through the valve.

  - **Valves with the metal seat option must be installed with higher pressure on the seat side when the valve is closed.**

  Use self-centering flat ring flange gaskets.

- Class 150 and Class 300 valves use mating flanges that comply with the same class of ASME/ANSI B16.5.

Installing Valve

CAUTION!

Lifting the valve incorrectly can damage it. Do not fasten lifting devices to the actuator or disc, or through the seat opening in the body. Lift the valve with slings fastened around the valve body or attach them to bolts or rods run through holes for the pipeline flanges.

1. If the valve does not have an actuator, mount the actuator on the valve. Refer as necessary to the actuator instructions and drawings.
2. Remove all foreign material such as weld spatter, oil, grease and dirt from the valve, flanges and pipeline.
3. Open the valve and clean the seat and the sealing edge of the disc.

   Note: Install the valve so that the side opposite the seat will be on the higher pressure side when the valve is closed. The seat side of the valve is marked “SEAT”. Pipeline flow may be in either direction through the valve.

   - **Valves with the metal seat option must be installed with higher pressure on the seat side when the valve is closed.**
4. Place the valve in the pipeline with the valve closed—handle the valve carefully so that the flange gasket sealing surfaces do not get damaged.
5. Ensure that the valve, the pipeline and the mating connections are aligned and centered before tightening the pipeline bolts.
6. Tighten the bolts evenly, in a crisscross pattern.

Operation

Clockwise rotation of the valve shaft closes the disc into the seat. A line on the top of the valve shaft indicates the position of the disc when the disc is not visible.

The valve is fully closed when the flat side of the disc is parallel with the flange sealing surface on the body. The valve is fully open when the disc is 90° counterclockwise from the closed position.

Note: The closed disc should not touch the stop lug in the body.

The actuator is connected to the valve shaft and positions the disc at the open, closed or intermediate positions. The position stops in the actuator are set to match the open and closed positions of the valve.

Note: Refer to the actuator instructions for stop adjustment information.

Required Tools

This valve is assembled using only SAE fasteners. To service this unit, you should have a full set of combination wrenches, Allen wrenches, a flat tipped screwdriver, a pin punch and a dead blow hammer.

Lubrication

The valve is lubricated at the factory and does not require lubrication except when it is being reassembled. Refer to the actuator instructions for actuator lubrication requirements.

Adjusting Packing

The shaft seal consists of packing that is contained and compressed by the packing gland (A12).

1. If the packing leaks, tighten the two adjustment nuts (A15) on top of the packing gland (A12).

   Note: Tighten the nuts evenly and gently—just enough to stop the leak. Over tightening will cause excessive torque and decrease packing life.
2. If the leak cannot be stopped by tightening the packing, replace the packing. See "Replacing Packing" section.

Drawings

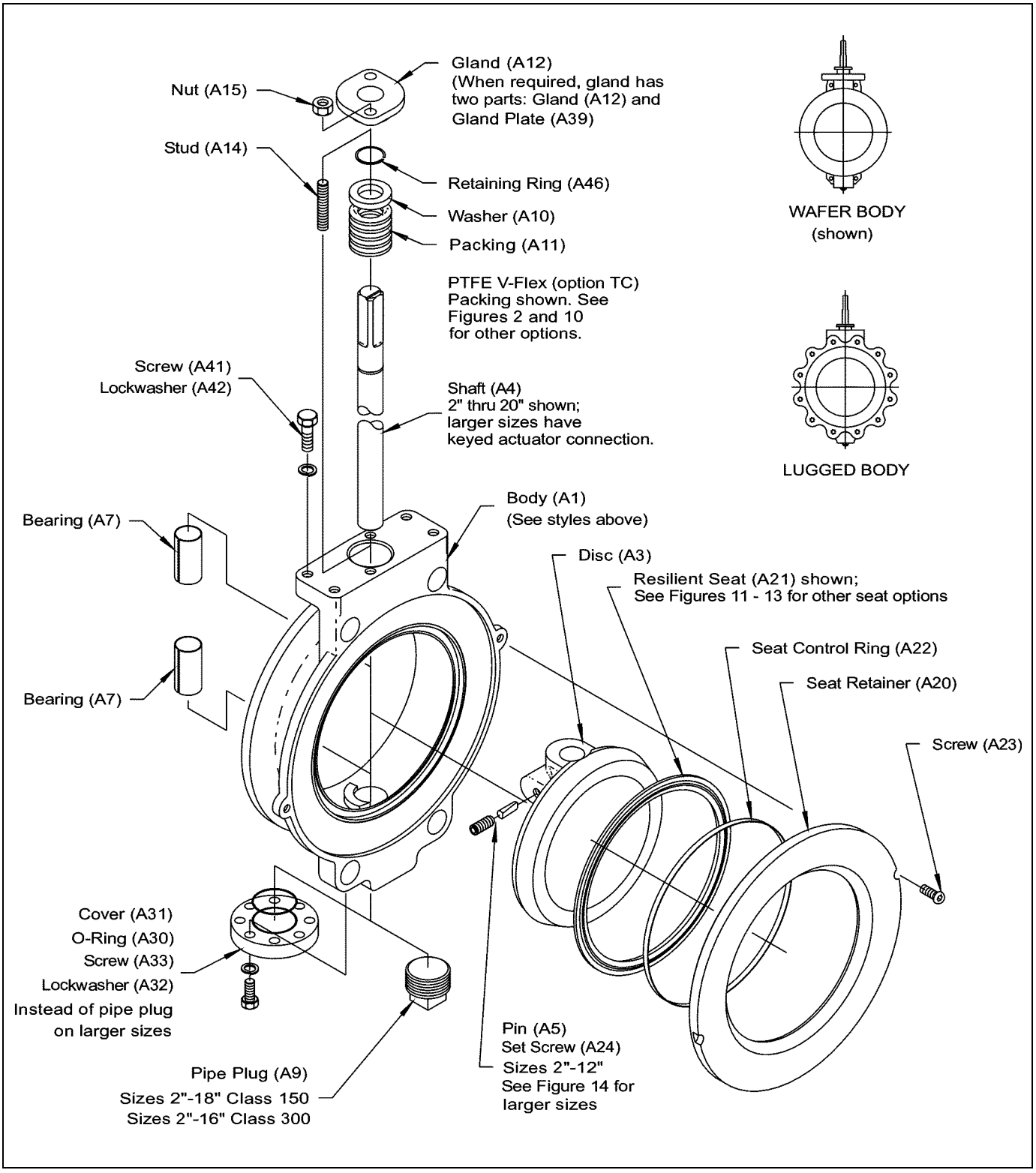


Figure 1 – Component Identification

Replacing Packing

Several packing options are available. See Figure 1 for parts identification.

WARNING!

Pipeline pressure can cause personal injury or equipment damage. Relieve the pressure in the pipeline before removing the packing gland.

1. Discontinue flow and relieve pipeline pressure.

WARNING!

Accidental operation of powered actuator can cause personal injury or equipment damage. Disconnect and lock out power to actuator before servicing.

2. If the actuator is powered, disconnect and lock out the power to the actuator.
3. Remove the actuator as described in the actuator instructions and remove the actuator bracket from the valve.
4. Remove the two gland nuts (A15) and remove the gland (A12).

   Note: Live-loaded packing options include a flat washer (A37) and several spring washers (A36) under each gland nut. When required, the gland consists of two pieces: gland (A12) and gland plate (A39).
5. Remove the retaining ring (A46) from the shaft (A4).
6. Remove the packing washer (A10) and all of the packing (A11).
7. If the valve has the dual packing option, remove the secondary packing chamber (A17), the gasket (A16) and the secondary packing (A26).
8. Remove any packing fragments and ensure that all packing chamber sealing surfaces are clean.
9. Follow the procedure for the applicable packing option:
   - PTFE V-Flex Dual-Seal Live-Loaded Packing Option (TCDL) —page 8
   - PTFE V-Flex Packing Option (TC) —page 9
   - PTFE Dual-Seal with Mechanical Spring Packing Option (TMD) —page 10
   - PTFE V-Flex Live-Loaded Packing Option (TCL) —page 11
   - Carbon Graphite Packing Option (G1) —page 12
   - Graphoil Packing Option (G2) —page 12
   - Graphoil Live-Loaded Packing Option (G2L) —page 13
   - Graphoil Dual-Seal Packing Option (G2D) —page 14
   - Graphoil Dual-Seal Live-Loaded Packing Option (G2DL) —page 15

Replacing Packing *(Continued)*

PTFE V-Flex Dual-Seal Live-Loaded Packing Option (TCDL)

The new primary packing (A11) and the new secondary packing (A26) each consist of one bottom end ring, three or more chevron rings and one top end ring. A quantity of new spring washers (A36) is required as shown in Table A (page 17) for Class 150 valves and in Table B (page 18) for Class 300 valves.

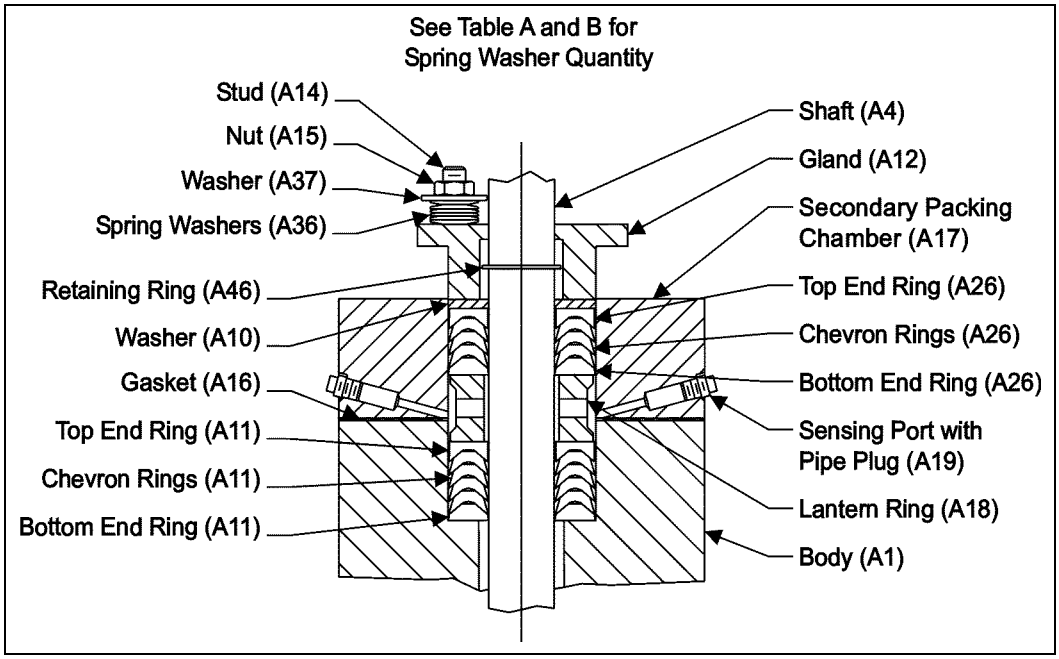


Figure 2 – Packing Option (TCDL)

a. Place the primary (lower) set of packing (A11) in the body, one ring at a time, in the configuration shown in Figure 2. Do not lubricate. Start each chevron ring into the packing chamber at a slight angle and push each ring carefully into position so that the sealing lips do not bend over.
b. Place the new gasket (A16), the secondary packing chamber (A17) and the lantern ring (A18) in the configuration shown in Figure 2.
c. Place the secondary (upper) set of packing (A26) in the secondary packing chamber (A17), one ring at a time—do not lubricate. Start each chevron ring into the packing chamber at a slight angle and push each ring carefully into position so that the sealing lips do not bend over.
d. Place the packing washer (A10) in the secondary packing chamber.
e. Lubricate the threads of the two studs (A14) and the threads and contact faces of the two gland nuts (A15).
f. Install the retaining ring (A46) into the groove in the shaft (A4).
g. Replace the gland (A12), the new spring washers (A36), the two flat washers (A37) and the two gland nuts (A15). Arrange the spring washers with the top and bottom washers in series and the remaining washers in parallel as shown above. Do not tighten the nuts.
h. Mount the actuator bracket and the secondary packing chamber to the body with the same screws and tighten the screws as shown in Table C (page 19).

Replacing Packing *(Continued)*

i. Tighten the gland nuts (A15) finger tight and torque the nuts evenly to the value in Table A for Class 150 valves and in Table B for Class 300 valves. Continue with step 10 on page 16.

PTFE V-Flex Packing Option (TC)

The new packing (A11) consists of one bottom end ring, three or more chevron rings and one top end ring.

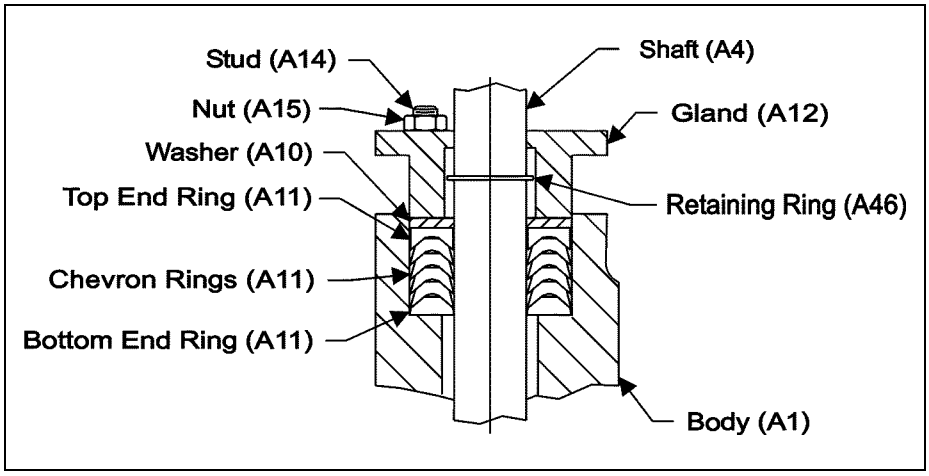


Figure 3 – Packing Option (TC)

a. Place the packing in the body, one ring at a time, in the configuration shown in Figure 3. Do not lubricate.

   Note: Start each chevron ring into the packing chamber at a slight angle and push each ring carefully into position so that the sealing lips do not bend over.

b. Place the packing washer (A10) into the packing chamber.

c. Install the retaining ring (A46) into the groove in the shaft.

d. Replace the gland (A12) and the two gland nuts (A15). Tighten the nuts finger tight, plus ½ turn.

e. Continue with step 10 on page 16.

Replacing Packing *(Continued)*

PTFE Dual-Seal with Mechanical Spring Packing Option (TMD)

The new primary packing (A11) consists of one spring-loaded bottom end ring, three or more chevron rings and one top end ring, all between two anti-extrusion washers (A34); the new secondary packing (A26) consists of one bottom end ring, three or more chevron rings and one top end ring, all between two anti-extrusion washers (A34).

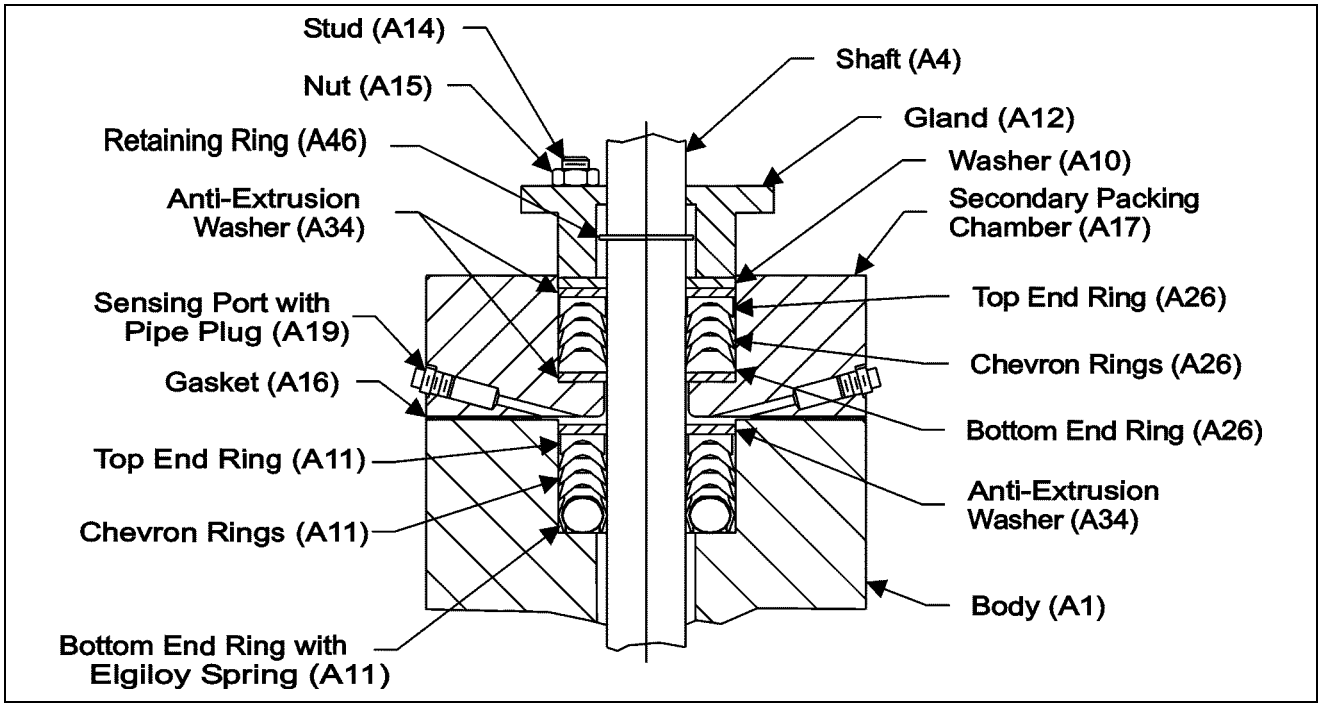


Figure 4 – Packing Option (TMD)

a. Place the primary (lower) set of new packing (A11) and anti-extrusion washers (A34) in the body, one ring at a time, as shown in Figure 4—do not lubricate.

b. Place the new gasket (A16), the secondary packing chamber (A17) and the new secondary packing (A26), one ring at a time, in the configuration shown in Figure 4—do not lubricate.

   Note: Start each chevron ring into the packing chamber at a slight angle and push each ring carefully into position so that the sealing lips do not bend over.

c. Place the packing washer (A10) into the secondary packing chamber.

d. Install the retaining ring (A46) into the groove in the shaft.

e. Place the gland (A12) and the two gland nuts (A15) in position as shown—do not tighten the nuts.

f. Mount the actuator bracket and the secondary packing chamber to the body with the same screws and tighten the screws as shown in Table C on page 19.

g. Tighten the gland nuts (A15) finger tight, plus ½ turn.

h. Continue with step 10 on page 16.

Replacing Packing *(Continued)*

PTFE V-Flex Live-Loaded Packing Option (TCL)

The new packing (A11) consists of one bottom end ring, three or more chevron rings and one top end ring. A quantity of new spring washers (A36) is required as shown in Table A for Class 150 valves and in Table B for Class 300 valves.

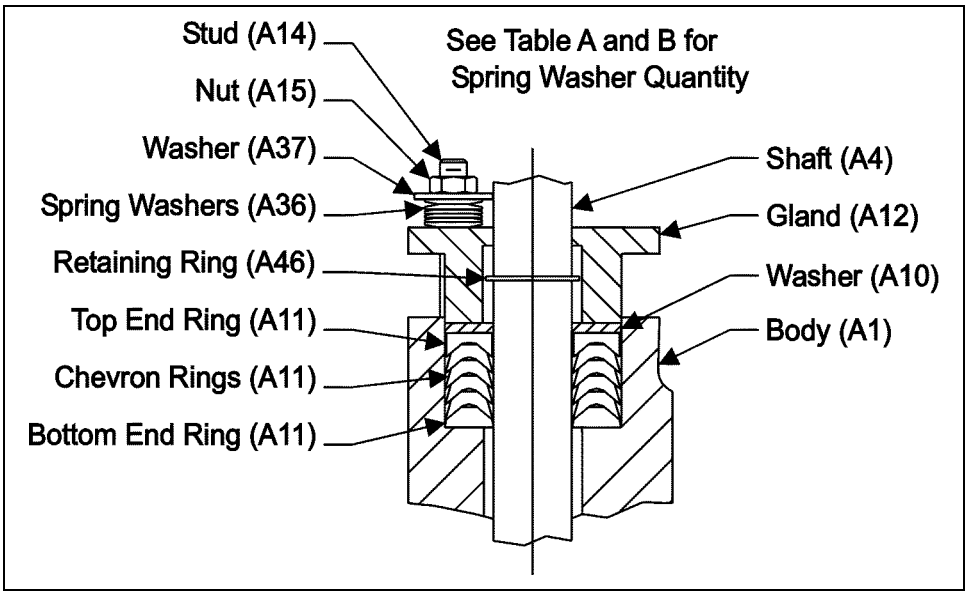


Figure 5 — Packing Option (TCL)

a. Place the packing in the body, one ring at a time, in the configuration shown in Figure 5—do not lubricate.

   Note: Start each chevron ring into the packing chamber at a slight angle and push each ring carefully into position so that the sealing lips do not bend over.

b. Place the packing washer (A10) into the packing chamber.

c. Lubricate the following surfaces:

   - The threads of the two studs (A14)
   - The threads and contact faces of the two gland nuts (A15)

d. Install the retaining ring (A46) into the groove in the shaft.

e. Replace the gland (A12), the new spring washers (A36), the two flat washers (A37) and the two gland nuts (A15).

   Note: Arrange the spring washers in the configuration shown in Figure 8 on page 13, with the top and bottom washers in series and the remaining washers in parallel.

f. Tighten the nuts finger tight and torque the nuts evenly to the value in Table A (page 17) for Class 150 valves and in Table B (page 18) for Class 300 valves.

g. Continue with step 10 on page 16.

Replacing Packing (*Continued)*

Carbon Graphite Packing Option (G1)

The new packing (A11) consists of one Graphoil ring and two carbon rings.

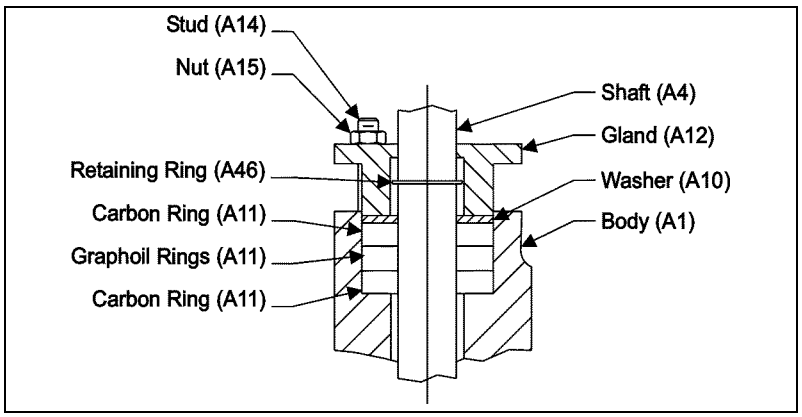


Figure 6 — Packing Option (G1)

a. Place the packing in the body, one ring at a time, in the configuration shown in Figure 6 — do not lubricate.
b. Place the packing washer (A10) into the packing chamber.
c. Install the retaining ring (A46) into the groove in the shaft (A4).
d. Replace the gland (A12) and the two gland nuts (A15).
e. Tighten the nuts finger tight, plus ½ turn.
f. Continue with step 10 on page 16.

Graphoil Packing Option (G2)

The new packing consists of three or more Graphoil rings (A11) between two anti-extrusion washers (A34).

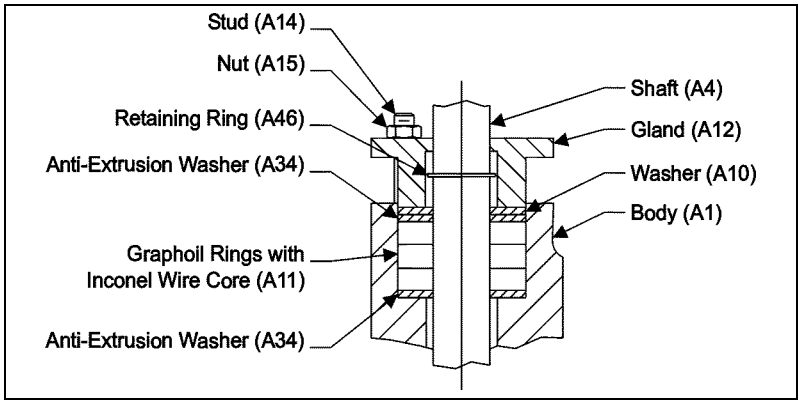


Figure 7 — Packing Option (G2)

a. Lubricate the inside and outside diameters of each new packing ring with Krytox 240 AC lubricant.
b. Place the new packing and anti-extrusion washers in the body, one ring at a time, in the configuration shown in Figure 7.
c. Place the packing washer (A10) into the packing chamber.
d. Install the retaining ring (A46) into the groove in the shaft (A4).

Replacing Packing (*Continued)*

e. Replace the gland (A12) and the two gland nuts (A15). Tighten the nuts finger tight, plus ½ turn.

f. Continue with step 10 on page 16.

Graphoil Live-Loaded Packing Option (G2L)

The new packing (A11) consists of three or more Graphoil rings between two anti-extrusion washers (A34). A quantity of new spring washers (A36) is required as shown in Table A (page 17) for Class 150 valves and in Table B (page 18) for Class 300 valves.

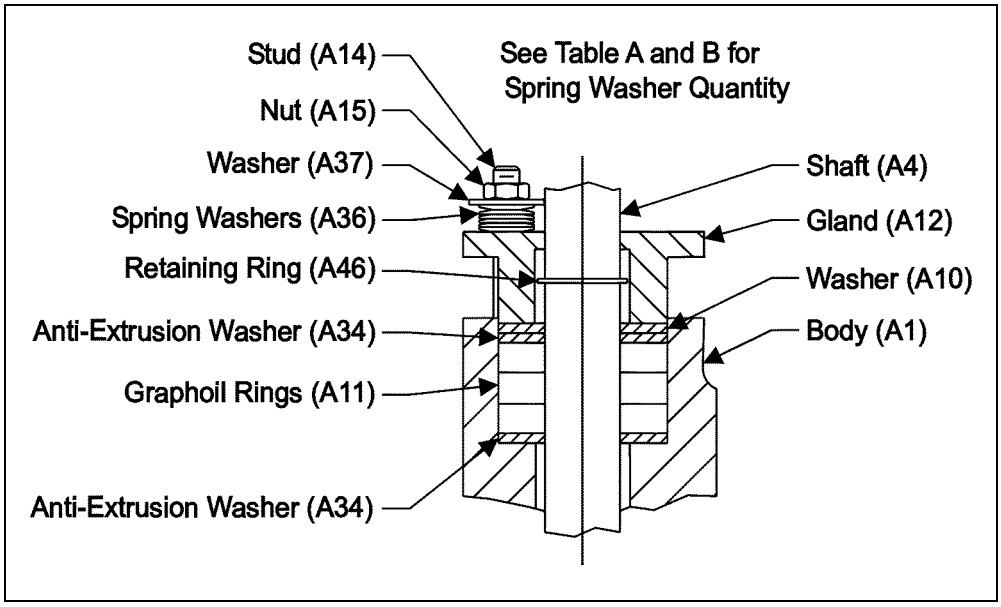


Figure 8 — Packing Option (G2L)

a. Lubricate the following surfaces with Krytox 240 AC lubricant:
   - The inside and outside of each new packing ring
   - The threads of the two studs (A14)
   - The threads and contact faces of the two gland nuts (A15)

b. Place the new packing (A11) and anti-extrusion washers (A34) in the body, one ring at a time, in the configuration shown in Figure 8.

c. Place the packing washer (A10) into the packing chamber.

d. Install the retaining ring (A46) into the groove in the shaft (A4).

e. Replace the gland (A12), the new spring washers (A36), the two flat washers (A37) and the two gland nuts (A15).

f. Arrange the spring washers in the configuration shown, with the top and bottom washers in series and the remaining washers in parallel.

g. Tighten the nuts finger tight and torque the nuts evenly to the value in Table A (page 17) for Class 150 valves and in Table B (page 18) for Class 300 valves.

h. Continue with step 10 on page 16.

Replacing Packing *(Continued)*

Graphoil Dual-Seal Packing Option (G2D)

The new primary packing (A11) consists of three or more Graphoil rings between two anti-extrusion washers (A34); the new secondary packing (A26) consists of two Graphoil rings between two anti-extrusion washers (A34).

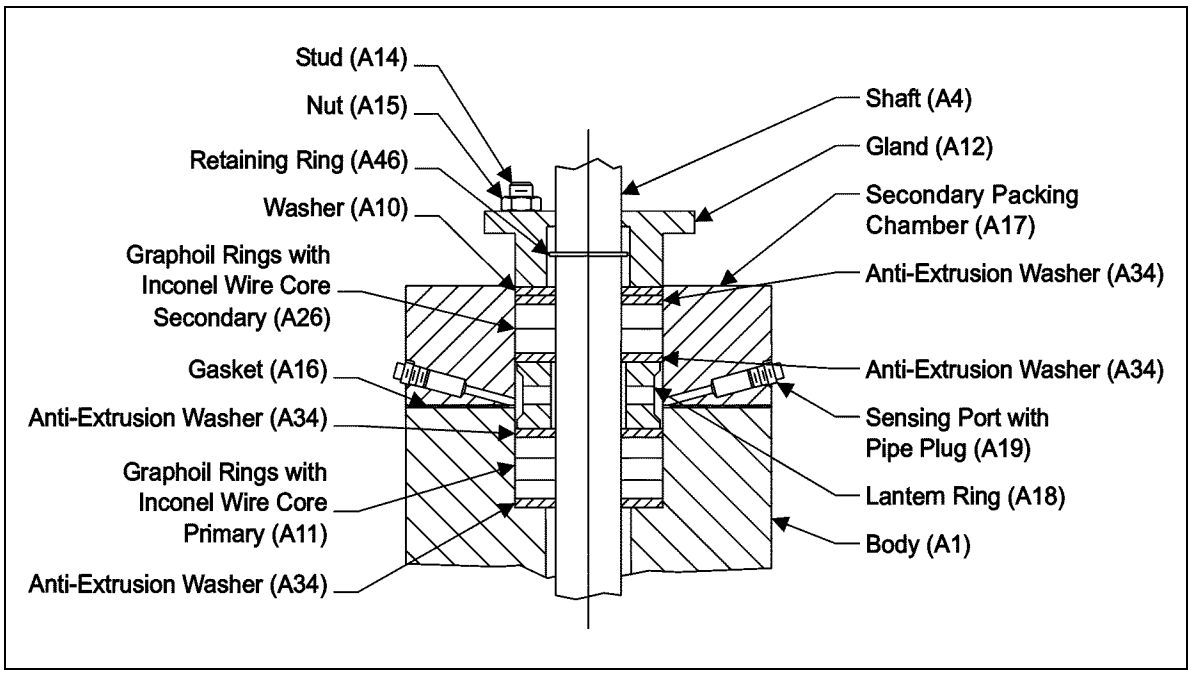


Figure 9 — Packing Option (G2D)

a. Lubricate the inside and outside diameters of each new packing ring with Krytox 240 AC lubricant.
b. Place the primary (lower) set of new packing (A11) and anti-extrusion washers (A34) in the body, one ring at a time, as shown in Figure 9.
c. Remove the two gland studs (A14) from the secondary packing chamber (A17) and temporarily place the studs in the threaded holes in the body.
d. Place the gland (A12) and nuts (A15) on the studs and turn the nuts evenly until the gland has moved about 25% of the distance from the bottom of the gland to the top of the body.
e. Remove the nuts, the gland and the studs and replace the studs in the secondary packing chamber.
f. Place the following parts in the configuration shown in Figure 9:
   - The new gasket (A16)
   - The secondary packing chamber (A17)
   - The lantern ring (A18), the two new packing rings (A26)
   - One ring at a time (lubricated)
   - Anti-extrusion washers (A34)
   - Packing washer (A10)
   - Retaining ring (A46)
   - The gland (A12) and the gland nuts (A15)—do not tighten the nuts.

Replacing Packing *(Continued)*

g. Mount the actuator bracket and secondary packing chamber to the body with the same screws and tighten as shown in Table C (page 19). Tighten the gland nuts (A15) finger tight, plus ½ turn.
h. Continue with step 10 on page 16.

Graphoil Dual-Seal Live-Loaded Packing Option (G2LD)

Components are the same as option G2D. In addition, a quantity of new spring washers (A36) is required as shown in Table A (page 17) for Class 150 valves and in Table B (page 18) for Class 300 valves.

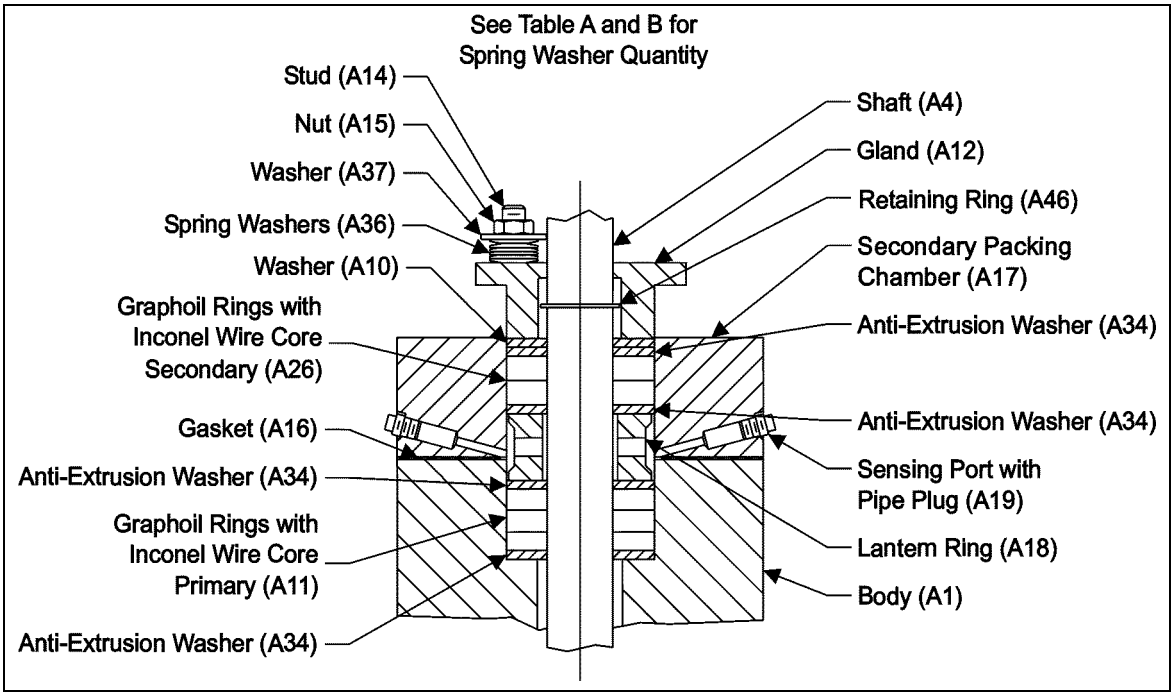


Figure 10 — Packing Option (G2DL)

a. Follow steps “a” through “e” in G2D section.
b. Place the following components in the configuration shown in Figure 10:
   - The new gasket (A16)
   - The secondary packing chamber (A17)
   - The lantern ring (A18), the two new packing rings (A26), (one ring at a time)
   - Anti-extrusion washers (A34)
   - Packing washer (A10)
   - Retaining ring (A46)
   - The gland (A12) and the gland nuts (A15) and the new spring washers (A36)
   - The two flat washers (A37) in the configuration shown in Figure 8 on page 13, with the top and bottom washers in series and the remaining washers in parallel—do not tighten the nuts.

Replacing Packing *(Continued)*

c. Lubricate the threads of the two studs (A14) and the threads and contact faces of the two gland nuts (A15).

d. Mount the actuator bracket and the secondary packing chamber to the body with the same screws and tighten the screws as shown in Table C (page 19).

e. Tighten the gland nuts (A15) finger tight, plus ½ turn.

f. Torque the nuts evenly to the value in Table A (page 17) for Class 150 valves, or in Table B (page 18) for Class 300 valves.

g. Continue with step 10 on page 16.

10. If the valve has single packing, re-mount the actuator bracket on the valve and tighten the screws as shown in Table A (page 17).
11. Mount the actuator on the valve—see actuator instructions.
12. If the actuator is a powered actuator, reconnect power to the actuator.
13. Actuate the valve. If necessary, adjust the position stops—see actuator instructions.
14. Pressurize the valve.
15. If the packing leaks, tighten the gland nuts evenly and slowly, just enough to stop the leak.
16. If the valve has dual packing, remove the pipe plug from one of the sensing ports in the secondary packing chamber.
    - If leakage occurs through the sensing port on valves with the graphoil dual-seal packing option, tighten the gland nuts evenly and slowly, just enough to stop the leakage and replace the pipe plug.
    - If leakage occurs through the sensing port on valves with the PTFE dual-seal/mechanical spring packing option, repeat the steps in this section, starting with step 1, and replace the packing components located in the valve body, below the secondary packing chamber.

Torque Specification

Table A: Class 150 Valves—Gland Nut Torques and Spring Washer Quantities for Live-Loaded Packing

Valve Size		Gland Nut Torque		Spring Washers (17-7PH Stainless Steel)				
				Quantity Each Gland Stud	Dimensions (Ref) in [mm]			
in	mm	in lbs	Nm		Outside Diameter	Inside Diameter	Material Thickness	Overall Height
2	50	4±0.5	0.45±0.05	5	0.551 [14.00]	0.283 [7.19]	0.014 [0.35]	0.032 [0.81]
2.5	65	5±0.5	0.56±0.05					
3	75	6±0.5	0.67±0.05					
4	100	6±0.5	0.67±0.05	6				
5	125	11±0.5	1.2±0.05	8	0.551 [14.00]	0.283 [7.19]	0.014 [0.35]	0.032 [0.81]
6	150	16±1	1.8±0.11	5	0.709 [18.00]	0.323 [8.20]	0.020 [0.50]	0.043 [1.09]
8	200	19±1	2.1±0.11	6				
10	250	23±1	2.5±0.11	7				
12	300	43±2	4.8±0.22	4	0.787 [20.00]	0.402 [10.21]	0.035 [0.89]	0.057 [1.45]
14	350	43±2	4.8±0.22					
16	400	45±2	5±0.22					
18	450	59±2	6.6±0.22	6	0.984 [25.00]	0.480 [12.19]	0.028 [0.71]	0.063 [1.60]
20	500	70±2	7.9±0.22	5	0.984 [25.00]	0.480 [12.19]	0.035 [0.89]	0.063 [1.60]

Torque Specification *(Continued)*

Table B: Class 300 Valves—Gland Nut Torques and Spring Washer Quantities for Live-Loaded Packing

Valve Size		Gland Nut Torque		Spring Washers (17-7PH Stainless Steel)				
				Quantity Each Gland Stud	Dimensions (Ref) in [mm]			
in	mm	in lbs	Nm		Outside Diameter	Inside Diameter	Material Thickness	Overall Height
2	50	13±0.5	1.4±0.05	9	0.551 [14.00]	0.283 [7.19]	0.014 [0.35]	0.032 [0.81]
2.5	65	14±0.5	1.5 ±0.05	10				
3	75	16±1	1.8±0.11	6	0.551 [14.00]	0.283 [7.19]	0.020 [0.50]	0.035 [0.89]
4	100	28±1	3.1±0.11	8				
5	125	40±1	4.5±0.11	7	0.630 [16.00]	0.323 [8.20]	0.024 [0.61]	0.041 [1.04]
6	150	49±2	5.5±0.22	8				
8	200	59±2	6.6±0.22	4	0.630 [16.00]	0.323 [8.20]	0.035 [0.89]	0.049 [1.24]
10	250	110±3	12.4±0.33	8	0.984 [25.00]	0.480 [12.19]	0.035 [0.89]	0.063 [1.60]
12	300	126±3	14.2±0.33					
14	350	152±3	17.1±0.33	7	1.100 [27.94]	0.480 [12.19]	0.039 [0.99]	0.077 [1.96]
16	400	163±3	18.4±0.33	7	1.240 [31.50]	0.480 [12.19]	0.039 [0.99]	0.083 [2.11]
18	450	181±3	20.4±0.33	8				
20	500	274±4	30.9±0.45	7	1.340 [34.04]	0.563 [14.30]	0.049 [1.24]	0.095 [2.41]

Torque Specification *(Continued)*

Table C: Fastener Torques, Actuator Bracket–to–Valve

Valve			Fastener			
Class	Size		Size (Ref)	Grade (Ref)	Torque	
	in	mm			ft lbs	Nm
150	2–4	50–100	1/4-20	8	13±1	18±1
	5–8	125–200	5/16-18		27±4	37±5
	10	250	3/8-16	5	41±5	56±10
	12–16	300–400	1/2-13		99±13	135±18
	18 and 20	450–500	5/8-11		200±20	272±27
300	2–3	50–150	1/4-20	8	13±1	18±1
	4–6	100–150	5/16-18		27±4	37±5
	8	200	3/8-16	5	41±5	56±10
	10 & 12	250 & 300	1/2-13		99±13	135±18
	14	350	5/8-11		200±20	272±27
	16–20	400–500	5/8-11		180±20	244±27

Seat Replacement

Removing Valve from Pipeline

WARNING!

Pipeline pressure can cause personal injury or equipment damage. Relieve the pressure in the pipeline before removing flange bolts and flanges.

1. Relieve pressure in the pipeline and drain the pipeline.
2. Close the valve.

WARNING!

Accidental operation of powered actuator can cause personal injury or equipment damage. Disconnect and lock out power to actuator before servicing.

3. If the actuator is powered, disconnect and lock out the power to the actuator.
4. Support the valve, remove the flange bolts and remove the valve from the pipeline.

   Note: Lifting the valve incorrectly can damage it. Do not fasten lifting devices to the actuator or disc, or through the seat opening in the body. Lift the valve with slings fastened around the valve body, or attach them to bolts or rods run through holes for the pipeline flanges.

Replacing the Seat

1. Place the valve in a horizontal position, with the seat side up.
2. Refer to Figure 1 (page 6) for component identification.
3. Remove the seat retainer screws (A23), the seat retainer (A20) and all of the seat components.

   Note: The seat retainer on valve sizes 14" (350mm) and larger has two tapped holes. Screws may be threaded into these holes to remove the seat retainer.
4. Clean the seat cavity in the body and the seat cavity in the seat retainer.
5. Close the valve.
6. Refer to the appropriate seat option:
   - Resilient Seat Options (TT, TI, RT and RI)—see page 21
   - Metal Seat Option (S2)—see page 22
   - Dual Seat Options (RTS2, TTS2, TIS2, and RIS2)—see page 23

Seat Replacement *(Continued)*

Resilient Seat Options (TT, TI, RT and RI)

a. Place the seat control ring (A22) in the groove in the new seat (A21) and center the seat on the closed disc

b. On valve sizes 5–10" (125–250mm) only, center seat retainer gasket (A6) in position on the body.

c. Apply a media compatible rust inhibitor to the threads of the seat retainer screws (A23). Mount the seat retainer (A20) to the body with the seat retainer screws and tighten the screws as shown in Table D (page 23).

d. Continue with step 7 on page 24.

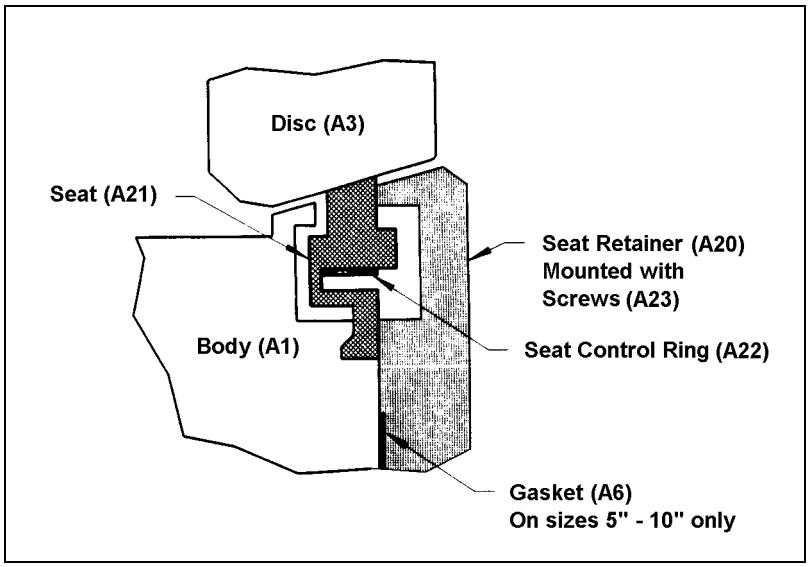


Figure 11 — Resilient Seat Option

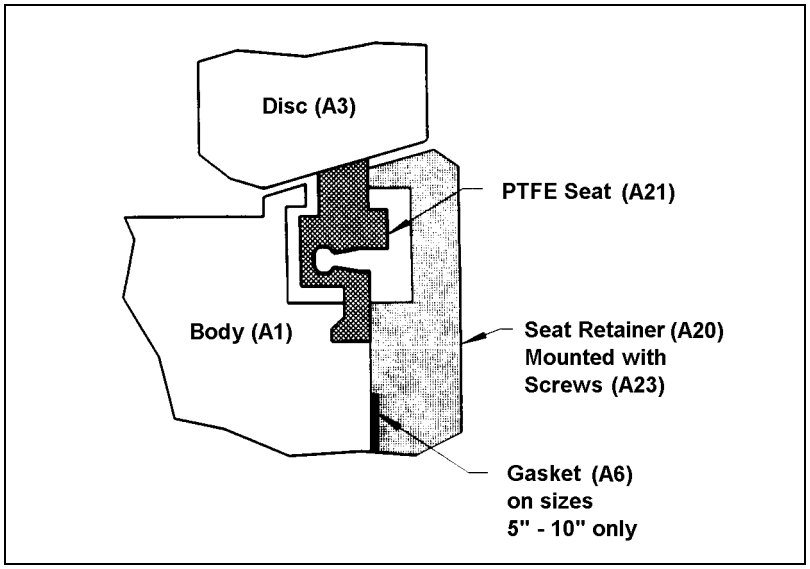


Figure 11 — Previous Version of Resilient Seat

Seat Replacement *(Continued)*

Metal Seat Option (S2)

a. If the actuator is connected to the valve shaft, loosen the connection so that the valve shaft can rotate.

b. Loosen the packing gland nuts (A15).

c. Place the seat support ring (A29) in the body.

d. Center the gasket (A27) and the metal seat (A28) on the closed disc.

e. Apply a media compatible rust inhibitor to the threads of the seat retainer screws (A23).

f. With all components centered, mount the seat retainer (A20) to the body with the seat retainer screws. Tighten the screws as shown in Table D (page 23).

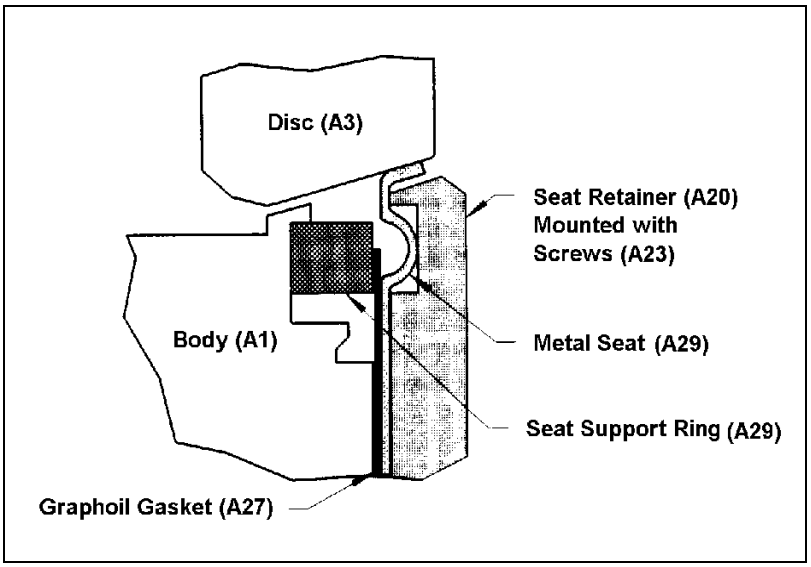


Figure 12 — Metal Seat Option (S2)

g. If the valve-to-actuator connection was loosened in step a, re-tighten the connection.

h. Adjust the packing gland nuts (A15) as described in the *Packing Adjustment* section. If the packing is live-loaded, tighten the nuts as shown in Table A (page 17) for Class 150 valves, or in Table B (page 18) for Class 300 valves.

i. Continue with step 7 on page 24.

Seat Replacement *(Continued)*

Dual Seat Options (RTS2, TTS2, TIS2, and RIS2)

a. If the actuator is connected to the valve shaft, loosen the connection so that the valve shaft can rotate.

b. Loosen the packing gland nuts (A15).

c. Place the seat control ring (A22) in the groove in the new PTFE seat (A21).

d. Center the PTFE seat (A21), the gasket (A27) and the metal seat (A28) on the closed disc.

e. Apply a media compatible rust inhibitor to the threads of the seat retainer screws (A23).

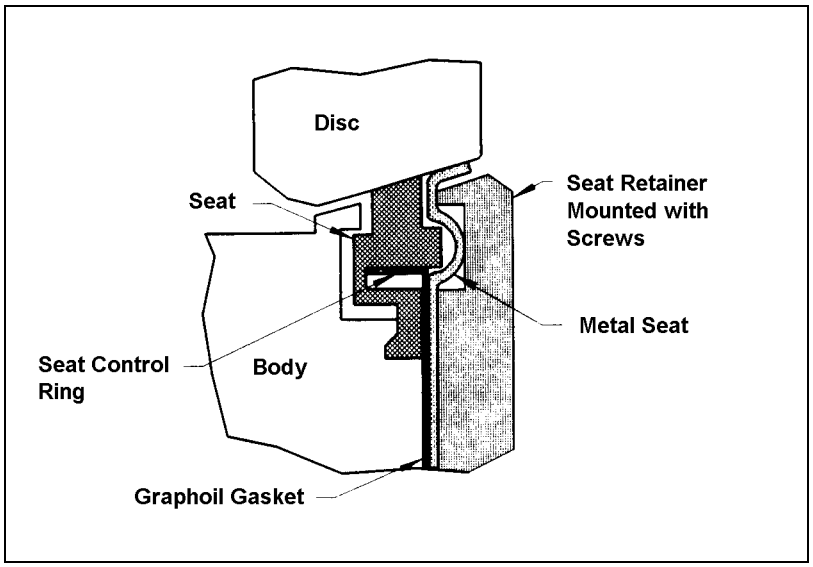


Figure 13 — Seat Options (RTS2, TTS2, TIS2, and RIS2)

f. With all components centered, mount the seat retainer (A20) to the body with the seat retainer screws. Tighten the screws as shown in Table D.

g. If the valve actuator connection was loosened in step a, tighten the connection.

h. Adjust the packing gland nuts (A15) as described in the *Packing Adjustment* section.

i. Continue with step 7 on page 24.

Table D: Seat Retainer Screw Torques

Screw Size	Torque	
	ft lbs	Nm
8-32	1.5 ± 0.5	2.03 ± 0.69
10-24	2.5 ± 0.5	3.39 ± 0.69
1/4-20	5.5 ± 1.5	7.46 ± 2.03
5/16-18	12.0 ± 3.0	16.27 ± 4.07
3/8-16	21.5 ± 5.5	29.15 ± 7.46

Valve Disassembly

Refer to Figure 1 (page 6) for component identification.

WARNING!

Pipeline pressure can cause personal injury or equipment damage. Relieve the pressure in the pipeline before removing flange bolts and flanges.

1. Relieve the pressure in the pipeline, drain the pipeline and close the valve.

WARNING!

Accidental operation of powered actuator can cause personal injury or equipment damage. Disconnect and lock out power to actuator before servicing.

2. If the actuator is powered, disconnect and lock out the power to the actuator.
3. Support the valve, remove the flange bolts and remove the valve from the pipeline.

   Note: Lifting the valve incorrectly can damage it. Do not fasten lifting devices to the actuator or disc, or through the seat opening in the body. Lift the valve with slings fastened around the valve body, or attach them to bolts or rods run through holes for the pipeline flanges.
4. Remove the actuator and the actuator bracket from the valve.
5. Remove the two gland nuts (A15) and remove the gland (A12).

   Note: Live-loaded packing options include a flat washer (A37) and several spring washers (A36) under each gland nut. When required, the gland consists of a two-piece gland (A12) and gland plate (A39).
6. Remove the retaining ring (A46) from the shaft (A4).
7. Remove the packing washer (A10) and all of the packing (A11).
8. If the valve has the dual-packing option, remove the secondary packing chamber (A17) and the gasket (A16) and remove all of the secondary packing—do not re-use removed packing.
9. Remove all packing fragments, dirt and other contaminants from all packing sealing surfaces.
10. Remove the seat retainer screws (A23), the seat retainer (A20) and all of the seat components.

    Note: The seat retainer on valve sizes 14" and larger has two tapped holes. Screws may be threaded into these holes to remove the seat retainer.
11. On Class 150 valve sizes 2–18" (50–450mm) and Class 300 valve sizes 2–16" (50–400mm), remove the pipe plug (A9) from the bottom of the body.

Valve Disassembly *(Continued)*

12. On larger sizes, remove the cover screws (A33), lockwashers (A32), cover (A31) and seal (A30) from the bottom of the body.
13. Remove the disc pin—see Figure 14 (page 28):
    - On valve sizes 2–12" (50–400mm), remove the disc pin set screw (A24) and drive the disc pin (A5) from the disc with a small punch. Do not damage the shaft with the punch.
    - On larger sizes, remove the two disc pins (A5) with a large screw driver.
14. Place the valve in a horizontal position with the seat side down.
15. While supporting the disc (A3), carefully pull the shaft (A4) from the body and remove the disc.

Bearing Replacement

Bearing Removal

1. Remove the upper bearing (A2) from the body through the packing chamber.
2. Remove the lower bearing (A2) from the body through the pipe plug/cover access located on the bottom of the valve.

Bearing Replacement

1. Apply a light coat of media compatible grease to the inside diameter of the bearings (A2).
    a. If bearing has a fabric liner, the bearing does not require lubrication.
2. Insert the new upper bearing (A2) through the packing chamber and into position in the body.
3. Insert the lower bearing (A2) through the pipe plug/cover access located on the bottom of the valve and into position in the body.

    Note: For FT bearings, to increase bearing life, position the split in the bearing towards the side of the body rather than parallel with the pipeline.

Valve Reassembly

Clean and inspect all parts, and replace worn parts before reassembly. Refer to Figure 1 for component identification. The valve requires lubrication only when it is being assembled. Refer to the Actuator Instructions for lubrication requirements for the actuator.

1. Apply a light coat of media compatible grease around the shaft hole on each end of the disc (area that contacts the disc locating surfaces in the body).
2. With the valve horizontal and the seat side down, insert the disc (A3) into body (A1) and align the shaft hole in the disc with the bearing in the body.
3. Insert the bottom end of the shaft (the end without an actuator connection) into the top of the body and push the shaft into position.
4. Rotate the shaft so that the line on the top end of the shaft is towards and parallel with the flat (or concave) side of the disc.

On valve sizes 2–12" (50–400mm)

a. Slide the shaft so that the top end of the shaft protrudes from the body to the dimension in Table E.

b. Place the disc pin (A5) in the hole in the disc (A3) as shown in Figure 14 on page 28 and tap the end of the pin lightly to seat the pin against the flat on the shaft (A4). A new set screw (A24) is required.

c. Apply Loctite 271 to the set screw threads.

Table E: Dimension from Top–of–Body to Top–of–Shaft

Valve Size		Class 150		Class 300	
in	**mm**	**in**	**mm**	**in**	**mm**
2–3	25–75	3.75	95	3.75	95
4	100	3.75	95	4.25	105
5 & 6	125&150	4.25	108	4.25	108
8	200	4.25	108	4.63	118
10	250	4.63	118	4.75	120
12	300	4.75	120	4.75	120

d. Turn the set screw into the end of the pin and tighten the set screw as shown in Table F (page 27).

e. As shown in Figure 14 (page 28), stake the end of the set screw threads once with a pointed punch to secure the set screw in position.

On valve sizes 14" (350mm) and larger,

a. Slide the shaft so that the disc pin slots in the shaft are aligned with the disc pin holes in the disc.

b. Apply a media compatible rust inhibitor to the threads of the disc pins (A5).

c. Use two new pins and turn the pins into the threaded holes in the disc (A3) and against the slots in the shaft (A4) as shown in Figure 14 (page 28).

d. Adjust the pins so that both pins protrude the same distance above the disc surface and tighten the pins as shown in Table F (page 27).

e. As shown in Figure 14 (page 28), stake the screw threads on each disc pin once with a pointed punch to secure the pins in position.

5. Replace the seat and the seat retainer as described in steps 4, 5 and 6 in the *Seat Replacement* section on page 20.

Valve Reassembly *(Continued)*

6. Replace the packing, the packing gland and the gland adjustment nuts as shown in steps 7, 8 and 9 of the *Replacing Packing* section on page 7.
7. On Class 150 valve sizes 2–18" (50–450mm) and Class 300 valve sizes 2–16" (50–400mm), replace and tighten the pipe plug (A9) in the bottom of the body.

   Note: With metal seat option, seal the threads of the pipe plug with Sepco SG630805AN-25 UCAR Graphoil Tape; with other seats, use PTFE tape. Wind the tape three turns counterclockwise, as viewed from the threaded end and spiral the tape approximately one thread for each turn.
8. On larger sizes:
   a. Mount the cover (A31) and seal (A30) to the bottom of the body with the cover screws (A33).
   b. Lubricate the threads of the screw with a rust inhibitor.
   c. Tighten the 1/2-13 screws to 38±5 ft lbs. (52±6 Nm).
9. Mount the actuator bracket on the valve and tighten the screws as shown in Table A (page 17).
10. Re-mount the actuator on the valve (see actuator instructions).
11. Actuate the valve. If necessary, adjust the actuator position stops.
    Note: The closed disc should not touch the stop lug in the body.
12. Install the valve in the pipeline as described in the *Installing Valve* section.
13. If the actuator is a powered actuator, reconnect the power to the actuator.
14. Pressurize the valve.
15. If packing leaks, tighten the gland nuts evenly and slowly – just enough to stop the leak.

Table F: Disc Pin Torques

Fastener Type	Fastener Size	Torque	
		ft lbs.	Nm
2–12” (50-300mm) Disc Pin Set Screw (A24)	1/4-20	3±1/2	4±1
	5/16-18	7±1	10±1
	3/8-16	13±2	18±2
	1/2-13	30±4	40±5
	5/8-11	63±8	85±10
14–20” (350- 500mm) Disc Pin (A5)	3/4-10	115±15	160±20
	7/8-9	180±23	245±30
	1-8	270±35	370±50
	1 1/8-7	380±50	520±70

Valve Reassembly *(Continued)*

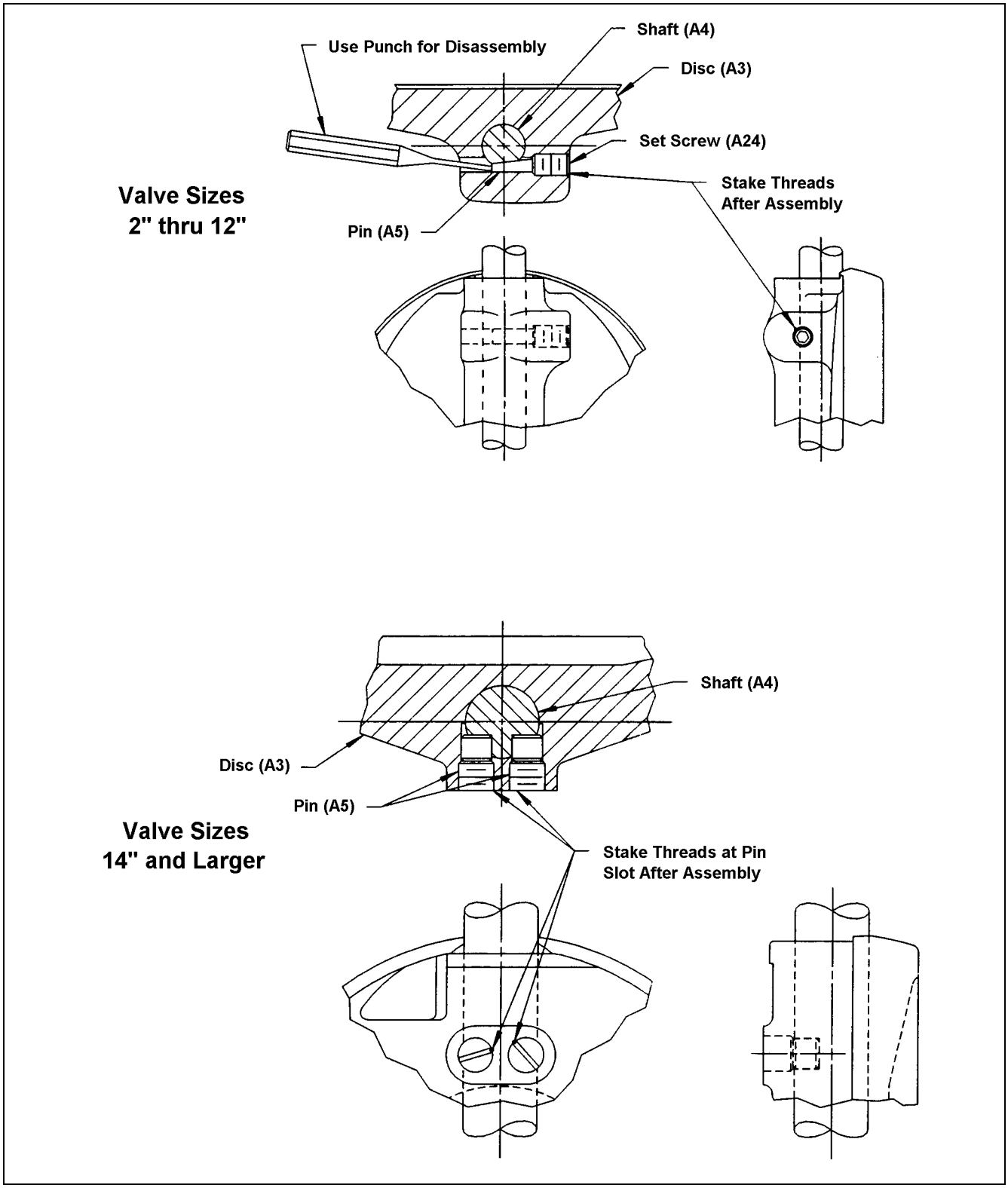
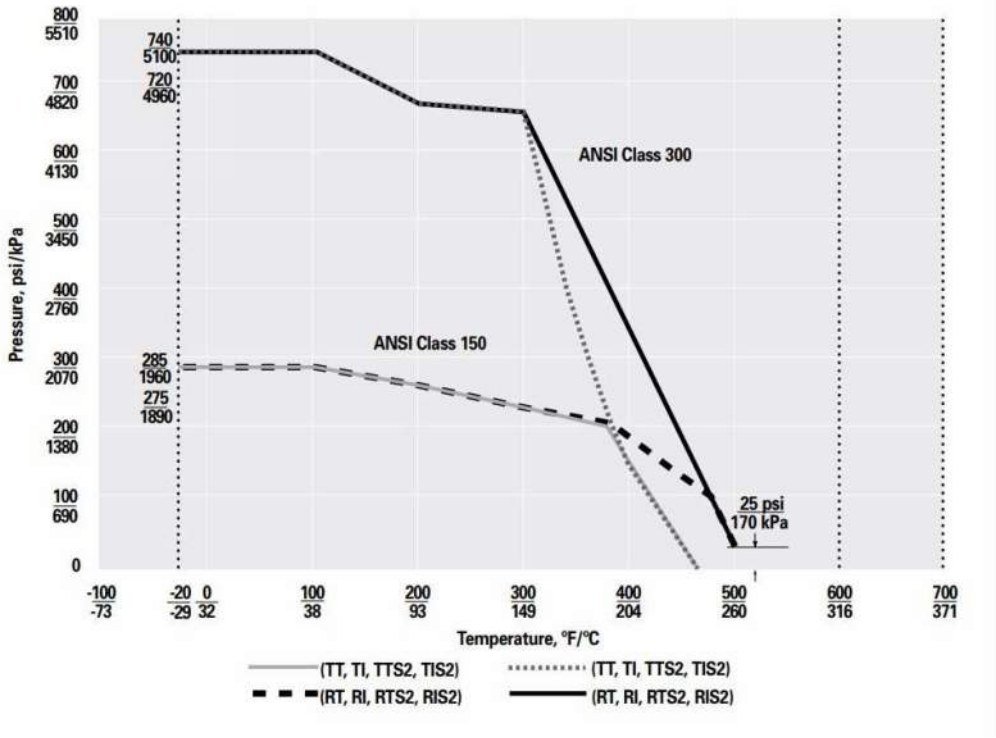


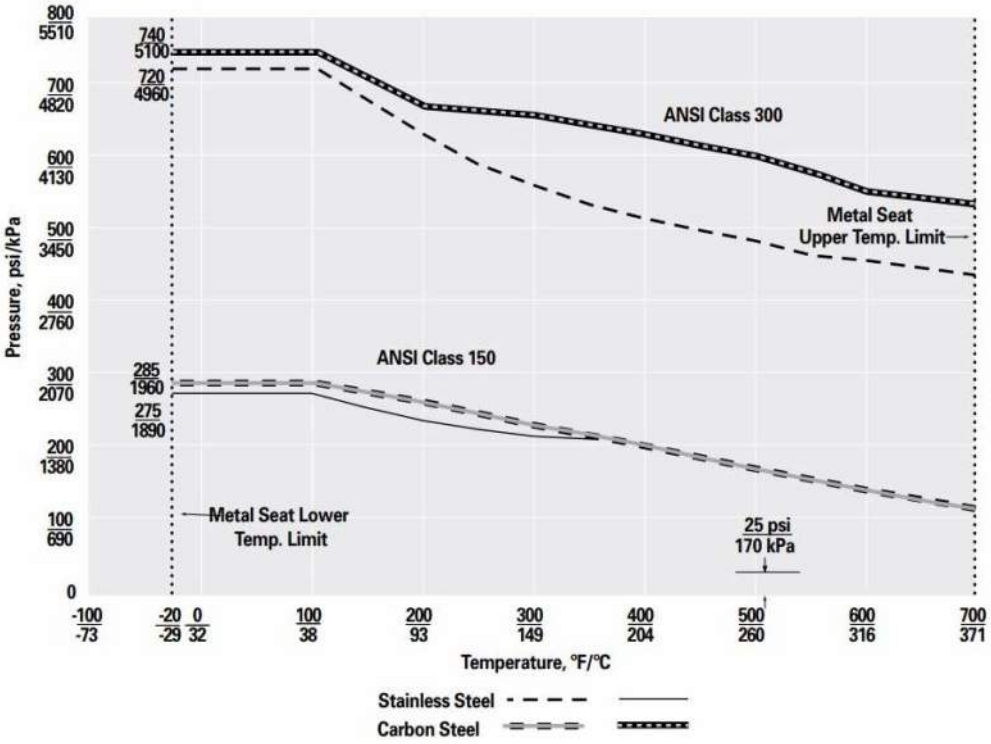
Figure 14 – Disc Pin Assembly

Pressure-Temperature Curves

Resilient and Dual Seats



Metal Seat



Troubleshooting

Condition	Possible Cause	Corrective Action
Packing Leaks	Packing is loose.	Adjust packing.
	Packing is worn.	Replace packing.
Valve leaks when closed.	Closed position stop is set incorrectly.	Adjust closed stop.
	Seat is worn or damaged.	Replace seat.
	Sealing edge of disc is worn or damaged.	Replace disc.
Valve body leaks from seat retainer area.	Pipeline flange bolting is loose.	Tighten pipeline flange bolts.
	Pipeline flanges are misaligned.	Align pipeline flanges.
	Pipeline flange gasket or seat retainer gasket is worn.	Replace gasket(s).
Valve does not fully close.	Object is wedged between disc and seat.	Open valve and allow flushing action to remove object.
	Closed position stop is not adjusted correctly.	Adjust closed stop.
	Disc-to-shaft connection has failed.	Replace disc pins and/or shaft.
Valve does not fully open.	Open position stop is not adjusted correctly.	Adjust open stop.
	Disc-to-shaft connection has failed.	Replace disc pins and/or shaft.
Opening or closing torque is excessive.	Bearings, shaft, disc and/or seat are dirty or worn.	Clean or replace dirty or worn components.
	Shaft is bent.	Replace shaft.
Seat leakage and/or damage to seat has occurred.	Media is abrasive.	Replace existing seat with a seat that is suitable for abrasive media.
Valve components are eroding.		Replace valve with materials suitable for abrasive media.
Valve leakage and/or damage to valve has occurred.	Valve encountered higher than rated pressure.	Reduce media pressure.
Seat leakage and/or damage to seat has occurred.	Valve encountered higher than rated temperature.	Reduce media temperature.
		Replace existing seat with a seat suitable for the required temperature.
Valve components are corroding.	Media is corrosive and incompatible with valve material.	Replace existing valve with a valve constructed of material compatible with the media.

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DEZURIK TEN-POSITION LEVER MANUAL ACTUATOR

Instruction D10316

August 2012

DeZURIK, Inc. Sartell, Minnesota USA | Phone: 320-259-2000 | www.dezurik.com | info@dezurik.com

Instructions

These instructions provide information about Lever Actuators. They are for use by personnel who are responsible for installation, operation and maintenance of Lever Actuators.

Safety Messages

All safety messages in the instructions are flagged with an exclamation symbol and the word Caution, Warning or Danger. These messages indicate procedures that must be followed exactly to avoid equipment damage, personal injury or death.

Safety label(s) on the product indicate hazards that can cause equipment damage, personal injury or death. If a safety label becomes difficult to see or read, or if a label has been removed, please contact DeZURIK for replacement label(s).

WARNING!

Personnel involved in the installation or maintenance of valves should be constantly alert to potential emission of pipeline material and take appropriate safety precautions. Always wear suitable protection when dealing with hazardous pipeline materials. Handle valves, which have been removed from service with suitable protection for any potential pipeline material in the valve.

Inspection

Your Lever Actuator has been packaged to provide protection during shipment, however, it can be damaged in transport. Carefully inspect the unit for damage upon arrival and file a claim with the carrier if damage is apparent.

Parts

Recommended spare parts are listed on the assembly drawing. These parts should be stocked to minimize downtime.

Order parts from your DeZURIK sales representative, or directly from DeZURIK. When ordering parts, please include the 7-digit part number and 4-digit revision number (example: **9999999R000**) located on the data plate attached to the valve assembly. Also include the part name, the assembly drawing number, the balloon number and the quantity stated on the assembly drawing.

DeZURIK Service

DeZURIK service personnel are available to install, maintain and repair all DeZURIK products. DeZURIK also offers customized training programs and consultation services.

For more information, contact your local DeZURIK sales representative or visit our website at www.dezurik.com.

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Description

The Ten-Position Lever is a manual actuator for 90° rotation of Butterfly Valves. The actuator holds the valve in the open or closed position, or in any of eight other equally-spaced intermediate positions. A lockout feature allows the actuator to be padlocked in any of the ten positions. There are three sizes of levers as shown in Figure 1.

An Adjustable Open Position Stop is available as an option. This device prevents the actuator from opening beyond a preset partially-open position.

Operation

To operate the actuator, firmly grasp and squeeze the end of the handle and the lever to disengage the lever; then slowly rotate the handle to the desired valve position. Clockwise rotation closes the valve, and counterclockwise rotation opens the valve. Ensure that the lever is engaged in one of the 10 notches before releasing the handle.

CAUTION!

1. Close the valve slowly. Rapid closure of the valve can cause pipeline pressure surges that will damage pipeline equipment.

2. Ensure that the lever is engaged in one of the 10 notches before releasing the handle. If the lever is not engaged, the valve can slam closed and cause pipeline pressure surges that will damage pipeline equipment.

Closed Position Adjustment

If the valve is not closed when the actuator is in the closed position, the closed position of the actuator may be adjusted as described below. Maintain a firm grip on the actuator during adjustment to prevent pipeline damage as described in the OPERATION section above. Refer to Figure 1 for component identification.

1. Loosen the two dial screws and place the valve—not the actuator—in the closed position.
2. Rotate the dial so that the handle points to “shut” and the lever engages with the last (most clockwise) notch in the dial.
3. Tighten the two dial screws to the torque shown in Table A.
4. Operate the actuator to the open and closed positions to confirm that the valve is closed when the actuator is in the closed position. Repeat steps 1 through 4 if necessary.

Locking the Actuator

A lockout feature allows the actuator to be padlocked in any of the 10 actuator positions. To lock the actuator, insert the padlock (not included) between the lever and the handle as shown in Figure 1. See recommendations below.

Padlock for the small size lever:

Master No. 510 or equivalent, with a 9/32" (7.1 mm) diameter removable shackle, 2" (50 mm) vertical clearance, and 13/16" (21 mm) horizontal clearance, as shown in Figure 1.

Locking the Actuator *(Continued)*

Padlock for the medium and large size levers:

Master No. 5 or equivalent, with a 3/8" (9.5 mm) diameter shackle, 2½" (64 mm) vertical clearance, and 15/16" (24 mm) horizontal clearance, as shown in Figure 1.

Open Position Stop (Optional)

The optional Adjustable Open Position Stop prevents the actuator from opening beyond a preset partially-open position. To adjust the stop:

1. Loosen the screw that mounts the stop to the dial.
2. Place the actuator in the desired partially-open position, with the lever engaged in one of the ten dial notches.
3. Rotate the stop so that the stop is against the handle.
4. Tighten the stop mounting screw to the torque shown in Table A.

Table A: Fastener Torques

Fastener Size	Carbon Steel		Stainless Steel	
	(ft lbs)	(Nm)	(ft lbs)	(Nm)
1/4-20	7 ± 1	9 ± 1	45 ± 6 (in lbs)	5.1 ± 0.7
5/16-18	14 ± 2	19 ± 3	8 ± 1	11 ± 1
3/8-16	26 ± 3	35 ± 4	15 ± 2	20 ± 3
1/2-13	63 ± 8	85 ± 11	38 ± 5	52 ± 7
M8 X 1.25	23 ± 3	31 ± 4	16 ± 2	22 ± 3
M10 X 1.5	47 ± 6	64 ± 8	33 ± 4	45 ± 5
M12 X 1.75	83 ± 10	113 ± 14	58 ± 8	79 ± 1

Removing Actuator

WARNING!

Flow in the pipeline with the actuator removed can allow the valve to slam closed and cause personal injury and/or damage to the flow system. Shut down the flow in the pipeline before removing the actuator.

Refer to Figure 1 for actuator component identification.

1. Shut down the flow in the pipeline.
2. Close the valve.
3. Loosen the screw that secures the handle to the valve shaft.
4. While squeezing the lever, lift and remove the handle from the valve shaft.
5. Remove the two dial screws and the dial.

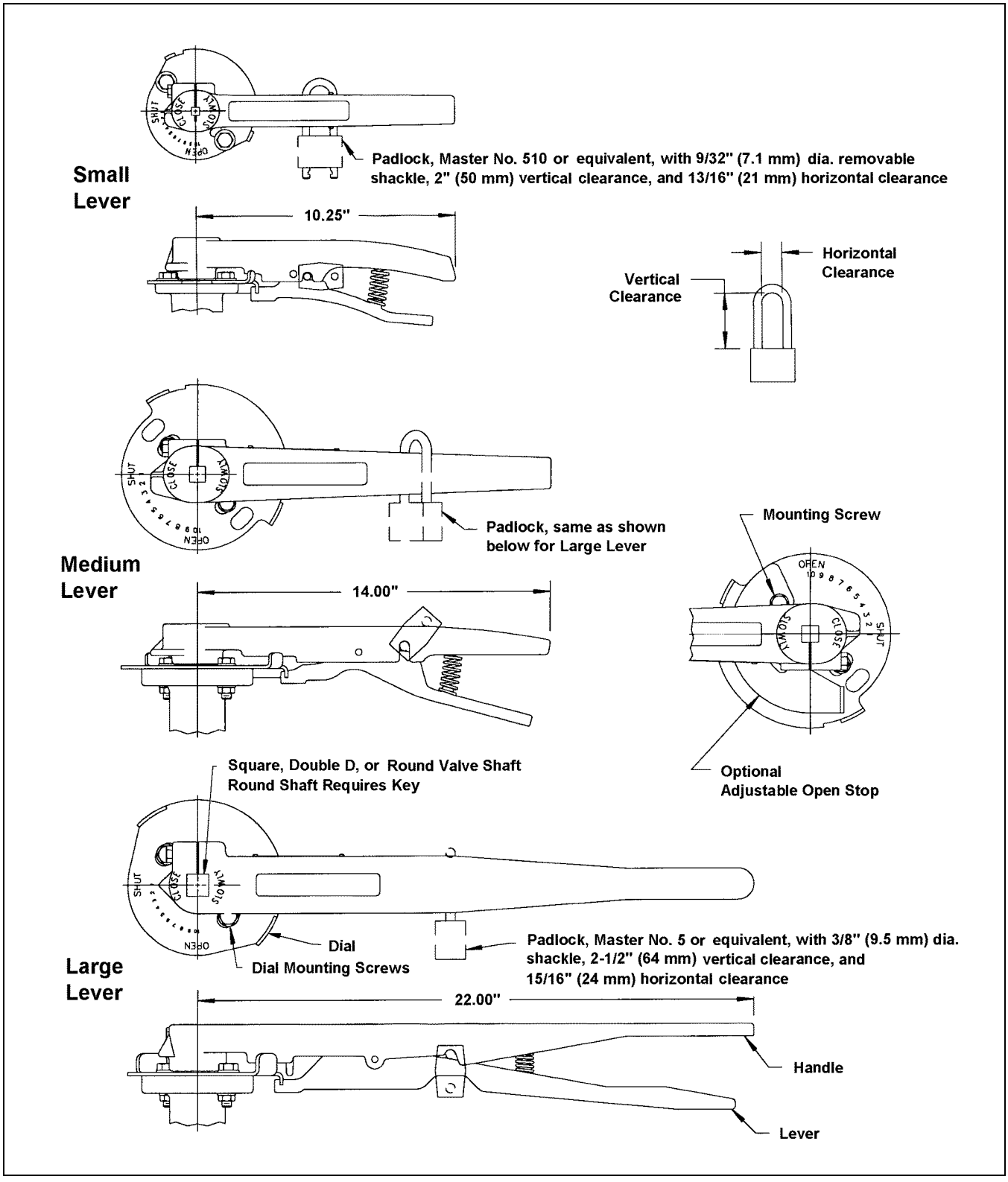

Figure 1 – Actuator Components

Installing Actuator

Refer to Figure 1 for actuator component identification.

1. Select the desired actuator mounting position. The actuator may be mounted in any of two or four positions, as shown on the Installation Drawing for the Valve; however, the standard position shown is recommended—with the handle perpendicular to the pipeline when the valve and actuator are in the closed position.
2. Mount the dial to the top of the valve with the two screws. Tighten the screws finger tight.
3. If the valve has a round keyed shaft, lubricate the key with light grease, and place the key in the valve shaft.
4. Place the handle in position on the valve shaft, and against the dial.
5. Tighten the screw in the handle to the torque in Table A.
6. Adjust the closed position as described in the Closed Position Adjustment section.

Changing Mounting Position

The actuator may be mounted on the valve in any of two or four mounting positions, as shown on the Installation Drawing for the valve. To change to a different mounting position:

1. Remove the actuator as described in the *Removing Actuator* section.
2. Determine the new mounting position for the actuator, and replace the actuator on the valve as described in the *Installing Actuator* section.

Guarantee

Products, auxiliaries and parts thereof of DeZURIK, Inc. manufacture are warranted to the original purchaser for a period of twenty-four (24) months from date of shipment from factory, against defective workmanship and material, but only if properly installed, operated and serviced in accordance with DeZURIK, Inc. recommendations. Repair or replacement, at our option, for items of DeZURIK, Inc. manufacture will be made free of charge, (FOB) our facility with removal, transportation and installation at your cost, if proved to be defective within such time, and this is your sole remedy with respect to such products. Equipment or parts manufactured by others but furnished by DeZURIK, Inc. will be repaired or replaced, but only to the extent provided in and honored by the original manufacturers warranty to DeZURIK, Inc., in each case subject to the limitations contained therein. No claim for transportation, labor or special or consequential damages or any other loss, cost or damage shall be allowed. You shall be solely responsible for determining suitability for use and in no event shall DeZURIK, Inc. be liable in this respect. DeZURIK, Inc. does not guarantee resistance to corrosion, erosion, abrasion or other sources of failure, nor does DeZURIK, Inc. guarantee a minimum length of service. Your failure to give written notice to us of any alleged defect under this warranty within twenty (20) days of its discovery, or attempts by someone other than DeZURIK, Inc. or its authorized representatives to remedy the alleged defects therein, or failure to return product or parts for repair or replacement as herein provided, or failure to install and operate said products and parts according to instructions furnished by DeZURIK, Inc., or misuse, modification, abuse or alteration of such product, accident, fire, flood or other Act of God, or failure to pay entire contract price when due shall be a waiver by you of all rights under this warranty.

The foregoing guarantee shall be null and void if, after shipment from our factory, the item is modified in any way or a component of another manufacturer, such as but not limited to, an actuator is attached to the item by anyone other than DeZURIK, Inc. Factory Service personnel. All orders accepted shall be deemed accepted subject to this limited warranty, which shall be exclusive of any other or previous Warranty, and this shall be the only effective guarantee or warranty binding on DeZURIK, Inc., despite anything to the contrary contained in the purchase order or represented by any agent or employee of DeZURIK, Inc., in writing or otherwise, notwithstanding, including but not limited to implied warranties.

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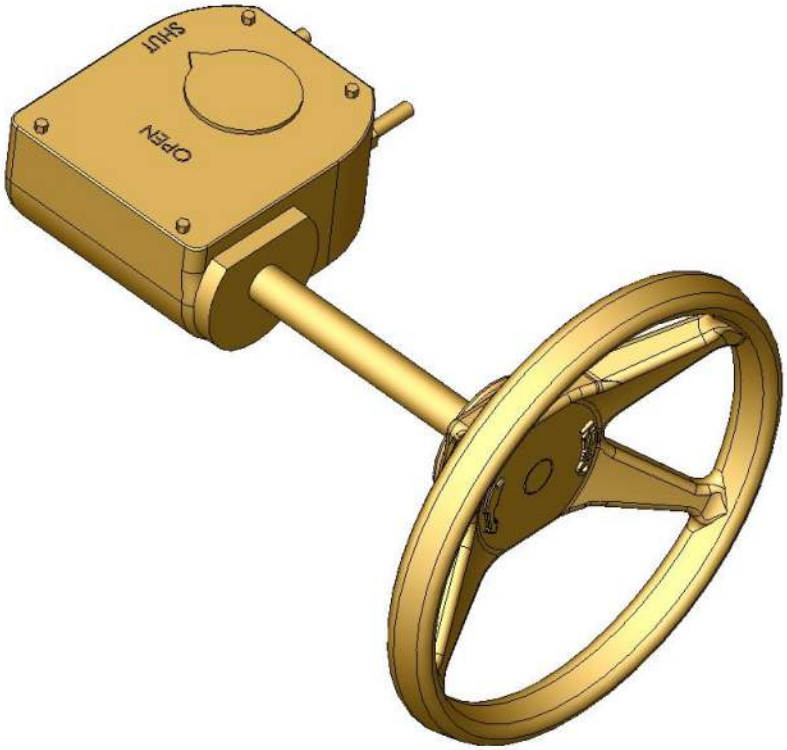
DEZURIK MANUAL GEAR ACTUATOR



Instruction D10408

August 2012

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DeZURIK

Manual Gear Actuator

Instructions

These instructions provide information about Manual Gear Actuators. They are for use by personnel who are responsible for installation, operation and maintenance of Manual Gear Actuators.Safety Messages

All safety messages in the instructions are flagged with an exclamation symbol and the word Caution, Warning or Danger. These messages indicate procedures that must be followed exactly to avoid equipment damage, personal injury or death.

Safety label(s) on the product indicate hazards that can cause equipment damage, personal injury or death. If a safety label becomes difficult to see or read, or if a label has been removed, please contact DeZURIK for replacement label(s).

WARNING!

Personnel involved in the installation or maintenance of valves should be constantly alert to potential emission of pipeline material and take appropriate safety precautions. Always wear suitable protection when dealing with hazardous pipeline materials. Handle valves, which have been removed from service with suitable protection for any potential pipeline material in the valve.

Inspection

Your Manual Gear Actuator has been packaged to provide protection during shipment, however, it can be damaged in transport. Carefully inspect the unit for damage upon arrival and file a claim with the carrier if damage is apparent.

Parts

Recommended spare parts are listed on the assembly drawing. These parts should be stocked to minimize downtime.

Order parts from your DeZURIK sales representative, or directly from DeZURIK. When ordering parts, please include the 7-digit part number and 4-digit revision number (example: **9999999R000**) located on the data plate attached to the valve assembly. Also include the part name, the assembly drawing number, the balloon number and the quantity stated on the assembly drawing.

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Description

The Manual Gear Actuator is a quarter-turn gear actuator. The actuator is available with a handwheel, chainwheel or 2" (50mm) square nut operator. Each actuator has adjustable open and closed position stops and may be mounted on the valve in four positions.

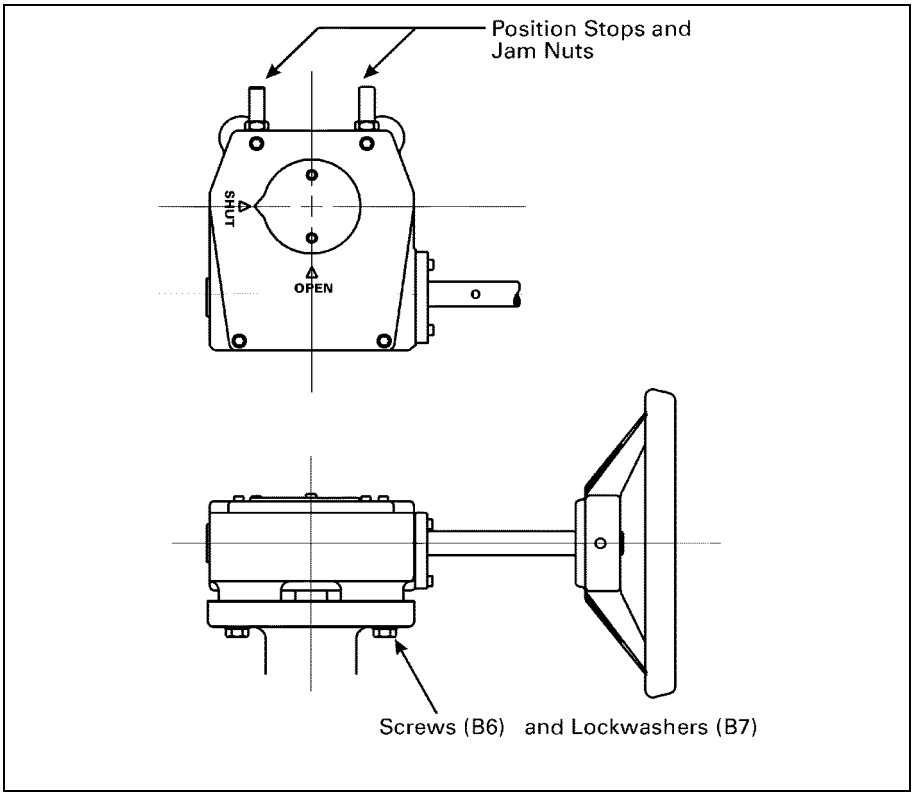


Figure 1— Component Identification

Operation

Clockwise rotation of the operator closes the valve; counterclockwise rotation opens the valve.

Lubrication

The actuator is lubricated at the factory, and does not require further lubrication.

Position Stops

The open and closed position stops prevent the actuator from rotating beyond the open and closed positions of the valve. Each stop is adjustable. If the actuator is factory-mounted, the stops do not require adjustment. If the actuator is not factory mounted, or if the actuator has been removed, adjust the stops as described below. See Figure 1 for component identification.

Adjusting the Closed Position Stop

1. Loosen the jam nut on the closed position stop screw and loosen the stop screw about two turns.
2. Turn the handwheel so that the valve is in the closed position.
3. Turn the closed position stop screw clockwise until resistance is felt from the screw coming into contact with the gear inside of the actuator.
4. Hold the stop screw to prevent it from turning and tighten the jam nut to the torque shown in Table A.

Adjusting the Open Position Stop

1. Loosen the jam nut on the open position stop screw and loosen the stop screw about two turns.
2. Turn the handwheel so that the valve is in the open position.
3. Turn the open position stop screw clockwise until resistance is felt from the stop screw contacting the gear inside of the actuator.
4. Hold the stop screw to prevent it from turning and tighten the jam nut to the torque shown in Table A.

Table A : Jam Nut Torque

	Actuator			
	MG-7	**MG-1012**	**MG-1216**	**MG-16**
Torque, ft lbs **Jam Nut Nm**	6±2 8±3	21±5 28±7	21±5 28±7	45±5 61±7

Removing Actuator

Refer to Figure 1 for component identification.

WARNING!

Flow in the pipeline with the actuator removed can slam the valve closed causing personal injury and damaging the flow system. Shut down the flow in the pipeline before removing the actuator from the valve.

1. Close the valve.
2. Remove the four mounting screws (B6) and lockwashers (B7).
3. Remove the actuator from the valve.

Adaptor Mounting Screws

The MG-1012 and MG-1216 Manual Gear Actuators have two sets of mounting holes.

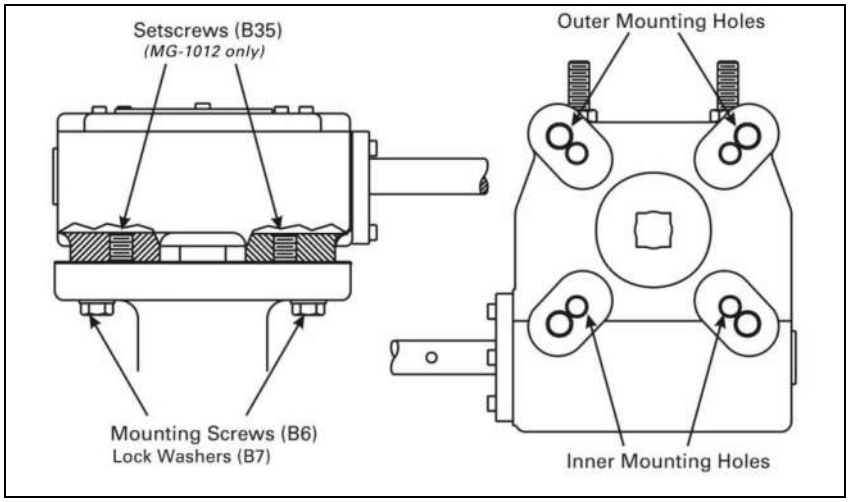


Figure 2 — Mounting Screw Locations

MG-1012

When using the outer mounting holes on the MG-1012 actuator, you must first remove the setscrews from the two mounting holes that are inline with the input shaft. When using the outer mounting holes, plug all interior holes with setscrews.

> ***Note:*** Tighten the setscrews only until they are flush with the edge of the body. Make sure the setscrews are not protruding into the gears.

Table B: Mounting Bolt Torque ft. lb./Nm

Mounting Bolts	Actuator			
	MG-1012		MG-1216	
Torque, ft lbs	47±6	83±10	83±10	435±60
Carbon Steel Nm	64±8	113±14	113±14	592±81
Torque, ft lbs	33±4	58±8	58±8	300±40
Stainless Steel Nm	45±5	79±11	79±11	407±54

Mounting Actuator

Refer to Figure 1 for component identification.

1. Place both the actuator and the valve in the closed position.
2. Select the desired actuator mounting position from the optional positions shown on the installation drawing. Place the gasket in position (see note below), engage the actuator with the valve shaft, and slide the actuator into position on the top of the valve.

   Note: All chainwheel actuators use a 1/32" (0.8 mm) thick gasket (B28) between the actuator and the chainwheel support (B29). High-temperature valves use a 1/16" (1.6 mm) thick insulating gasket (P5) on both handwheel and chainwheel operators. The insulating gasket is used only when the gasket is included with the valve.
3. Mount the actuator and gasket (see note above) to the valve with the four mounting screws (B6) and lockwashers (B7). Tighten the screws as shown in Table C or Table B.

Table C: Mounting Bolt Torque ft. lb./Nm

Mounting Bolts	Actuator			
	MG-7	MG-1012	MG-1216	MG-16
Torque, ft lbs	23±3	See	See	435±60
Carbon Steel Nm	31±4	Table B	Table B	592±81
Torque, ft lbs	16±2	See	See	300±40
Stainless Steel Nm	22±3	Table B	Table B	407±54

4. Adjust the open and closed position stops as shown in the Adjustments section.

Changing the Mounting Position

No additional components are needed to change the mounting position of the Manual Gear Actuator.

Before changing the actuator mounting position, check to assure that dimensional clearance is available for the proposed actuator location. The actuator may be mounted in any one of two or four positions as indicated on the installation drawing for the valve. To change the position, follow the steps in the *"REMOVING ACTUATOR"* and *"MOUNTING ACTUATOR"* sections.

Replacing a Handwheel with a Chainwheel

On sizes MG-7 through MG-16, the handwheel can be replaced with a chainwheel. Refer to Figure 1 for component identification.

1. Remove the actuator from the valve as described in the *"REMOVING ACTUATOR"* section.
2. Support the actuator shaft on a solid surface, drive out the handwheel pin (B31), and remove the handwheel (B10).

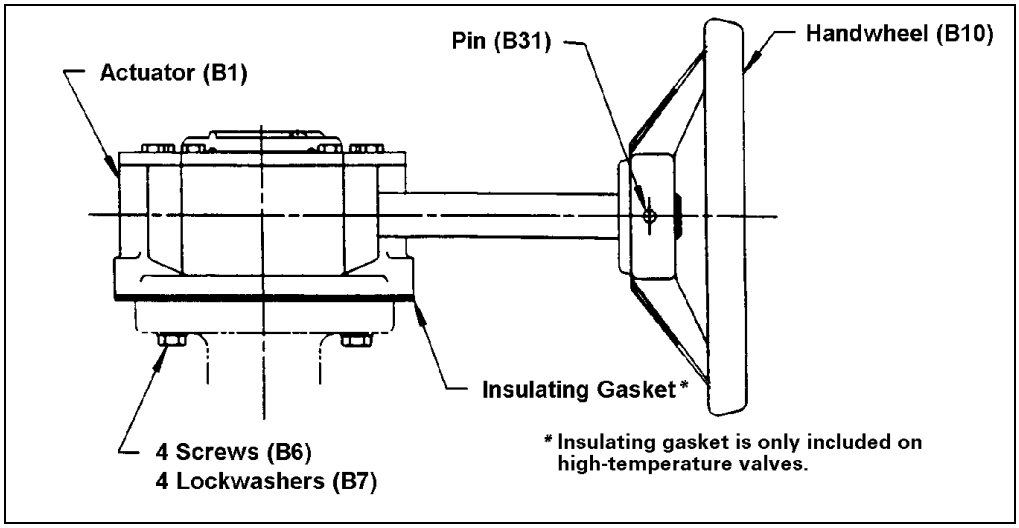


Figure 3—Handwheel

3. Place the shaft extension (B23) on the actuator shaft, and align the pin holes. Support the shaft extension on a solid surface, and drive the pin (B31) into position.

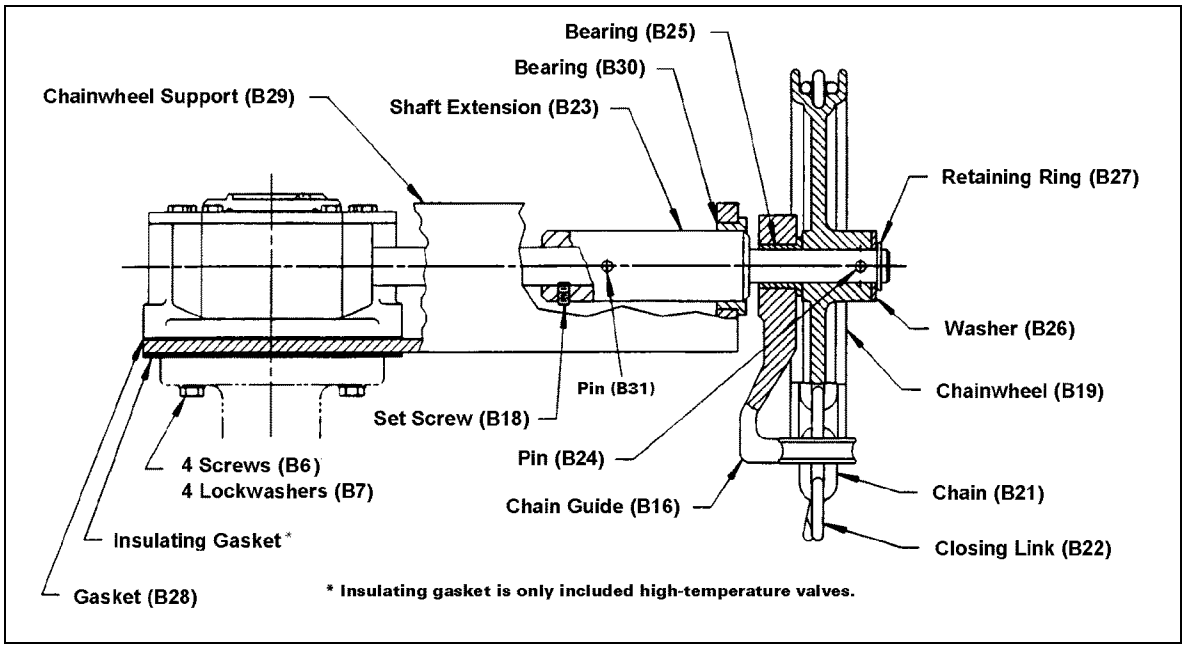


Figure 4—Chainwheel Assembly

4. Turn the set screw (B18) into the threaded hole in the shaft extension, and tighten the set screw to 7 ± 1 foot pounds (9 ± 1 Nm).

Replacing a Handwheel with a Chainwheel *(Continued)*

5. Place the gasket (B28) on the chainwheel support (B29) and align the holes in the gasket with the mounting holes.
6. Insert the shaft extension (B23) through the bearing (B30) in the chainwheel support (B29).
7. Place the chain guide (B16) and the chainwheel (B19) onto the shaft extension, and align the pin holes in the shaft and the chainwheel.
8. Place the hub of the chainwheel on a solid surface, and drive the pin (B24) into position.
9. Place the washer (B26) on the end of the shaft extension, and then place the retaining ring (B27) in the groove on the end of the shaft extension.

Replacing a Chainwheel with a Handwheel

1. Remove the actuator from the valve as described in the *"REMOVING ACTUATOR"* section.
2. Loosen the set screw (B18), and drive out the pin (B31). Remove the support (B29) and the shaft extension (B23)—including the chain guide (B16) and the chainwheel (B19)—from the actuator.
3. Place the handwheel (B10) on the actuator shaft. Align the pin holes, support the actuator shaft on a solid surface, and drive the pin (B31) into position.
4. Replace the actuator on the valve as described in the *"MOUNTING ACTUATOR"* section.

Lockout

Operation

The handwheel actuator is available with an optional lockout that allows the handwheel to be locked with a padlock at any 1/8-turn increment. Lockouts may be ordered with a valve or ordered separately as a kit. A padlock is not included with the lockout accessory.

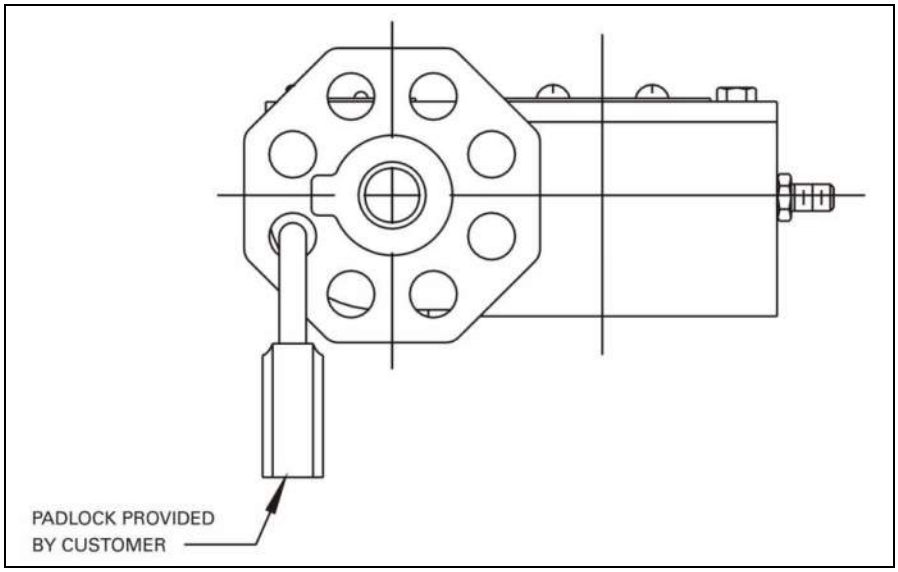


Figure 5—Lockout

Adding a Lockout to Actuator

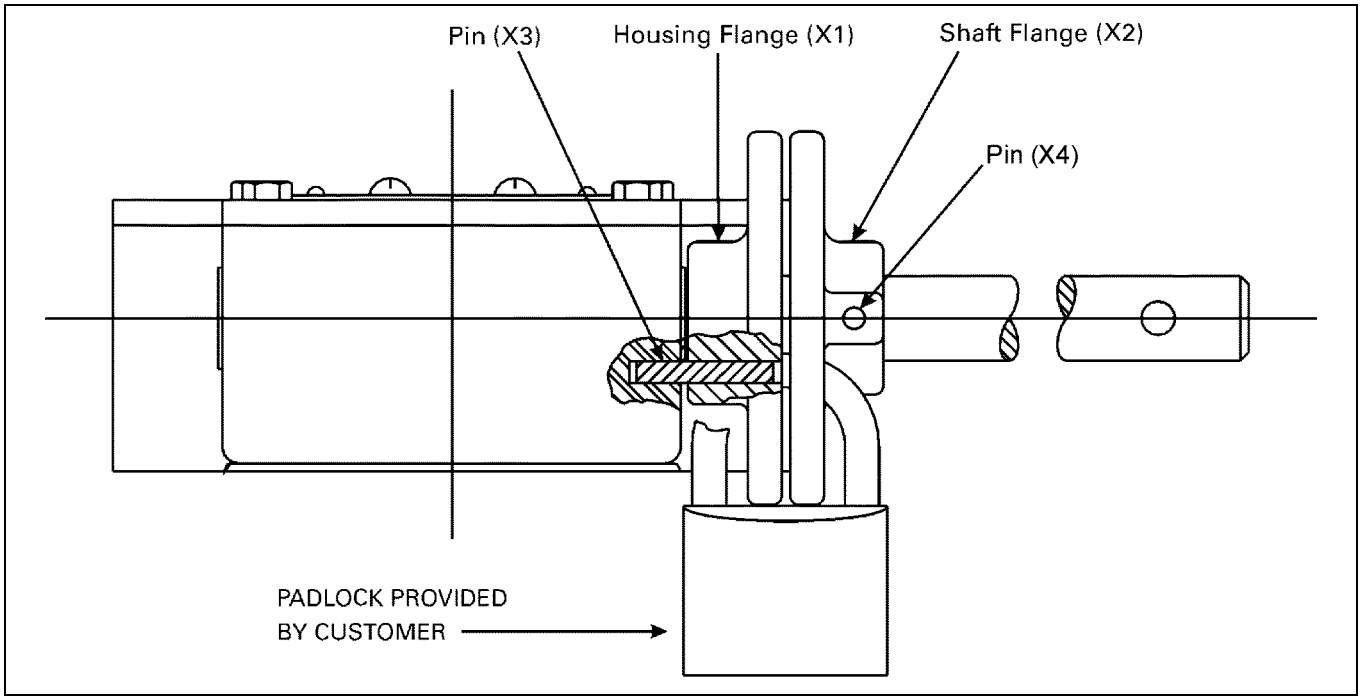


Figure 6—Lockout Parts

1. Remove the handwheel pin (B31), and remove the handwheel (B10) from the handwheel shaft.
2. Note the drilled hole in the side of the actuator next to the shaft. Insert the pin (X3) into the hole so that the pin is bottomed out in the hole.
3. With the hub side of the housing flange (X1) facing the actuator, slide the flange onto the shaft so that the hole in the flange is aligned with the pin (X3) in the actuator. Carefully drive the flange onto the pin until the flange hub is against the side of the actuator.
4. With the flat side of the shaft flange (X2) facing the actuator, slide the flange onto the shaft. Align the hole in the flange hub (X2) with the hole in the actuator shaft. Drive the shaft pin (X4) through the hole in the flange hub and into the hole in the shaft so that the pin is approximately flush with the flange hub.
5. Place the handwheel (B10) in the original position on the handwheel shaft, and secure the handwheel with the pin (B31).

Adjustable Memory Stop

MG-7 & MG-1012

The Manual Gear Actuator (MG-7 & MG-1012) has an optional adjustable memory stop. The memory stop adjusts by rotating it around the pins. One side of the stop adjusts to 0, 30 and 60°; the other side adjusts to 15, 45, 75 and 90°.

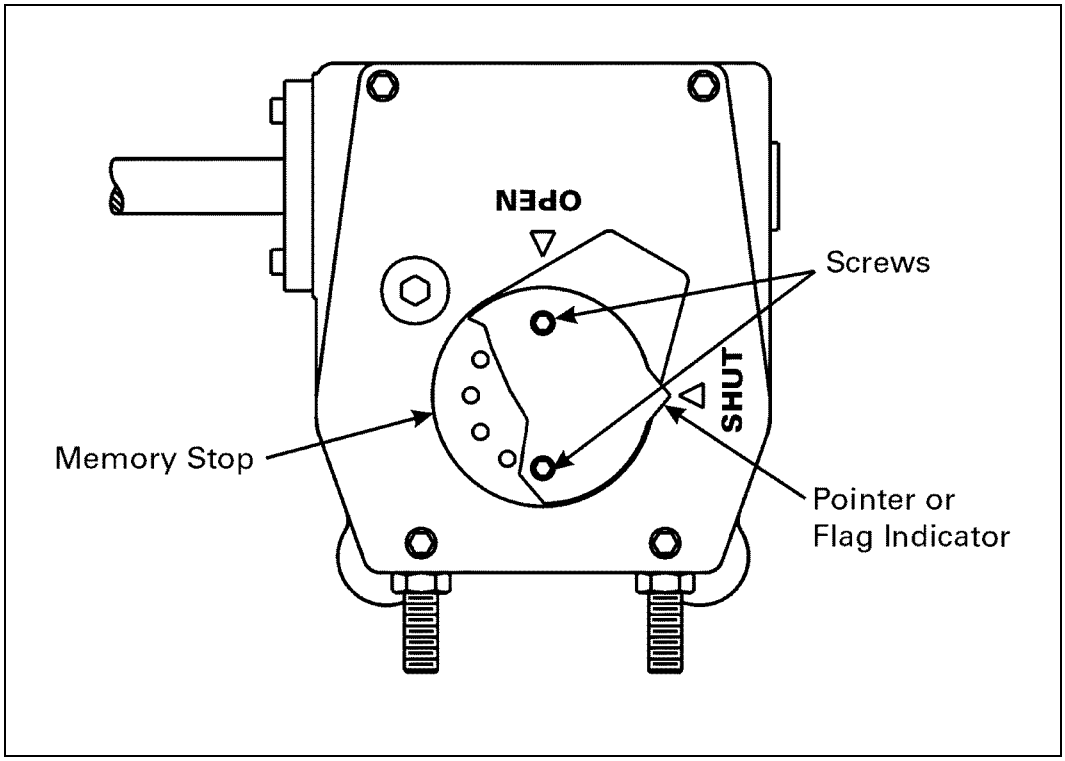


Figure 7—Memory Stop (MG-7 and MG1012)

To adjust the memory stop:

1. Remove the two screws, the pointer or flag indicator and the memory stop.
2. Position the actuator where you want it to stop.
3. Place the memory stop in position on the pins located on the gear.

   Note: If needed, flip the stop over to adjust to the correct position.
4. Replace the pointer or flag indicator and tighten the screws to secure the stop. Ensure the pointer or flag indicator is aligned with the valve position.

Adjustable Memory Stop *(Continued)*

MG-1216 & MG-16

The Manual Gear Actuator (MG-1216 & MG-16) has an optional field mountable adjustable memory stop. The memory stop adjusts by rotating the traveling stop screw (T2) around the actuator shaft. For every rotation of the actuator shaft, there are 6 positions for stop adjustment.

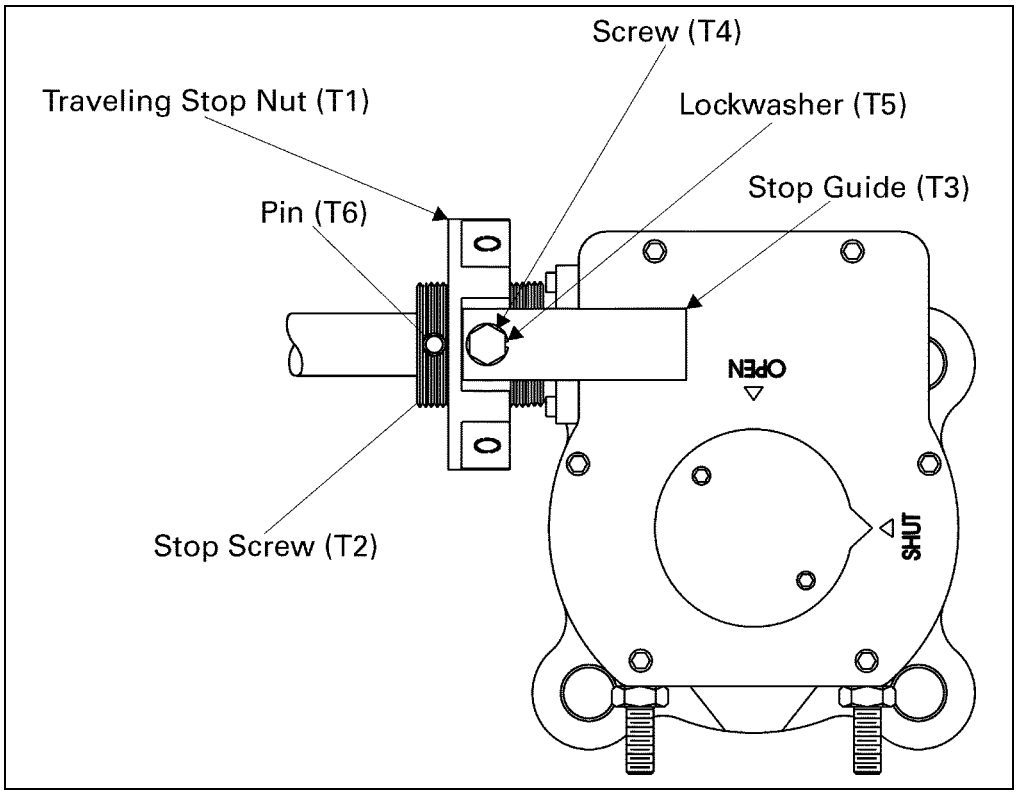


Figure 8—Memory Stop (MG-1216 & MG-16)

To adjust the memory stop:

1. Remove the handwheel, chainwheel or nut from the actuator shaft.
2. Slide the stop screw (T2) on to the actuator shaft.
3. Align the pin hole in the stop screw (T2) with the hole in the actuator shaft nearest the actuator housing.
4. Insert the pin (T6) into the pin hole in the stop screw (T2) and through the actuator shaft.

   Note: Ensure the pin (T6) is recessed below the threads on both ends of the stop screw (T2).
5. Install the handwheel, chainwheel or nut on the actuator shaft. Position the actuator to the desired stop location.
6. Rotate the traveling stop nut (T1) until it makes contact with the actuator housing.
7. Attach the stop guide (T3) to the traveling stop nut (T1) so it is extended over the actuator housing with the screw (T4) and lockwasher (T5).

Replacing Pointer with Flag Indicator

1. Remove the screws holding the pointer and remove the pointer.

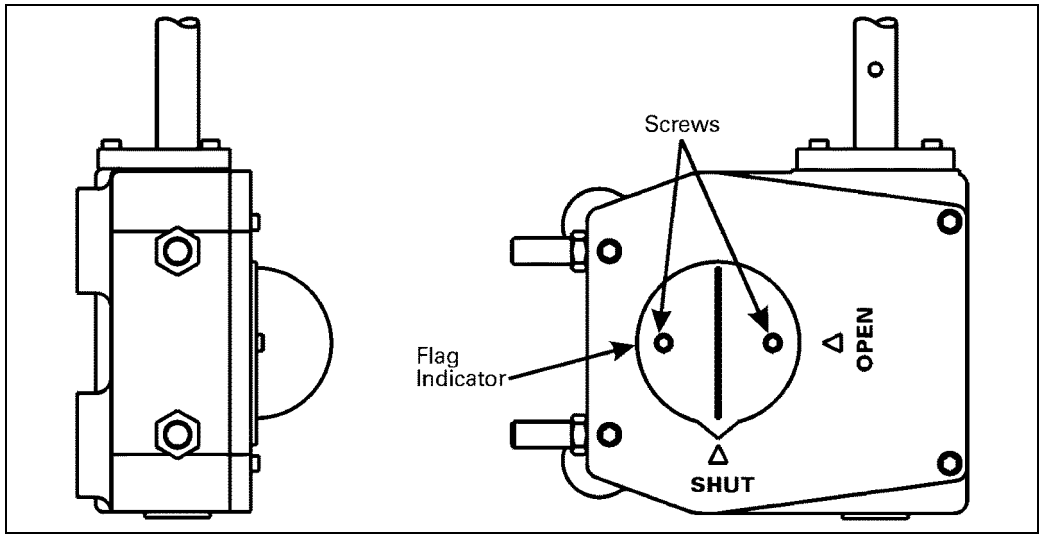


Figure 9—Flag Indicator

2. Using the same screws, attach the flag indicator to the actuator.

   Note: Make sure the arrow is aligned with the valve position.

Troubleshooting

Condition	Possible Cause	Corrective Action
Actuator closes to wrong position.	Closed position stop is set incorrectly.	Adjust closed position stop.
Actuator opens to wrong position.	Open position stop is set incorrectly.	Adjust open position stop.
Actuator will not fully operate valve.	Internal pipeline obstruction is preventing closure.	Remove obstruction.
Actuator will not operate or will move only in one direction. *	Setscrews are interfering with gear operation.	Make sure the setscrews are flush with body.

* Models MG-1012 and MG-1216

Guarantee

Products, auxiliaries and parts thereof of DeZURIK, Inc. manufacture are warranted to the original purchaser for a period of twenty-four (24) months from date of shipment from factory, against defective workmanship and material, but only if properly installed, operated and serviced in accordance with DeZURIK, Inc. recommendations. Repair or replacement, at our option, for items of DeZURIK, Inc. manufacture will be made free of charge, (FOB) our facility with removal, transportation and installation at your cost, if proved to be defective within such time, and this is your sole remedy with respect to such products. Equipment or parts manufactured by others but furnished by DeZURIK, Inc. will be repaired or replaced, but only to the extent provided in and honored by the original manufacturers warranty to DeZURIK, Inc., in each case subject to the limitations contained therein. No claim for transportation, labor or special or consequential damages or any other loss, cost or damage shall be allowed. You shall be solely responsible for determining suitability for use and in no event shall DeZURIK, Inc. be liable in this respect. DeZURIK, Inc. does not guarantee resistance to corrosion, erosion, abrasion or other sources of failure, nor does DeZURIK, Inc. guarantee a minimum length of service. Your failure to give written notice to us of any alleged defect under this warranty within twenty (20) days of its discovery, or attempts by someone other than DeZURIK, Inc. or its authorized representatives to remedy the alleged defects therein, or failure to return product or parts for repair or replacement as herein provided, or failure to install and operate said products and parts according to instructions furnished by DeZURIK, Inc., or misuse, modification, abuse or alteration of such product, accident, fire, flood or other Act of God, or failure to pay entire contract price when due shall be a waiver by you of all rights under this warranty.

The foregoing guarantee shall be null and void if, after shipment from our factory, the item is modified in any way or a component of another manufacturer, such as but not limited to, an actuator is attached to the item by anyone other than DeZURIK, Inc. Factory Service personnel. All orders accepted shall be deemed accepted subject to this limited warranty, which shall be exclusive of any other or previous Warranty, and this shall be the only effective guarantee or warranty binding on DeZURIK, Inc., despite anything to the contrary contained in the purchase order or represented by any agent or employee of DeZURIK, Inc., in writing or otherwise, notwithstanding, including but not limited to implied warranties.

Metric fasteners should not be used with ASME Class 150/300 bolt holes and flange bolt patterns. If you use metric fasteners with ASME Class 150/300 bolt holes and flange bolt patterns, it may lead to product failure, injury, and loss of life. DeZURIK Inc. disclaims all liability associated with the use of metric fasteners with ASME Class 150/300 bolt holes and flange patterns, including but not limited to personal injury, loss of life, loss of product, production time, equipment, property damage, lost profits, consequential damages of any kind and environment damage and/or cleanup. Use of metric fasteners with ASME Class 150/300 bolt holes and flange bolt patterns is a misuse that voids all warranties and contractual assurances. If you use metric fasteners with ASME Class 150/300 bolt holes and flange bolt patterns, you do so at your sole risk and any liability associated with such use shall not be the responsibility of DeZURIK, Inc. In addition to the foregoing, DeZURIK's Manufacturer's Conditions apply.

THE FOREGOING REPAIR AND REPLACEMENT OBLIGATIONS ARE IN LIEU OF ALL OTHER WARRANTIES, OBLIGATIONS AND LIABILITIES, INCLUDING ALL WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR OF MERCHANTABILITY OR OTHERWISE, EXPRESSED OR IMPLIED IN FACT OR BY LAW, AND STATE DEZURIK, INC.'S ENTIRE AND EXCLUSIVE LIABILITY AND YOUR EXCLUSIVE REMEDY FOR ANY CLAIM IN CONNECTION WITH THE SALE AND FURNISHING OF SERVICES, GOODS OR PARTS, THEIR DESIGN, SUITABILITY FOR USE, INSTALLATION OR OPERATIONS.

Limitation of liability

LIMITATION OF LIABILITY: IN NO EVENT SHALL DEZURIK, INC. BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES WHATSOEVER, AND DEZURIK, INC.'S LIABILITY, UNDER NO CIRCUMSTANCES, WILL EXCEED THE CONTRACT PRICE FOR THE GOODS AND/OR SERVICES FOR WHICH LIABILITY IS CLAIMED. ANY ACTION BY YOU FOR BREACH OF CONTRACT MUST BE COMMENCED WITHIN 12 MONTHS AFTER THE DATE OF SALE.

Sales and Service

For information about our worldwide locations, approvals, certifications and local representative:

Web site: www.dezurik.com E-Mail: info@dezurik.com

DeZURIK

APCO | HILTON

250 Riverside Ave. N., Sartell, MN 56377 ● Phone: 320-259-2000 ● Fax: 320-259-2227

Printed in U.S.A.

EQUIPMENT DATA FORM
(MAINTENANCE SUMMARY FORM)

PROJECT: SS BFV's
PURCHASE ORDER:
EQUIPMENT ITEM:
EQUIPMENT / TAG NUMBERS: /
MANUFACTURER: DeZURIK
DESCRIPTION: BHP,6,L1,S2,TC,S2-S5B-FT-RT,CMC*LT
MANUFACTURER'S LOCAL REPRESENTATIVE:
Environmental Improvements Inc **235 Trademark Dr.** **Buda, Texas 78610** **USA** **Phone: 5122953733** **Email: jjustice@ei2austin.com**

MAINTENANCE REQUIREMENTS

- DeZURIK recommends exercising your valve every 30 days.
- Valve lubrication required upon disassembly only.
- For valve maintenance and lubrication refer to instruction manual(s): D010503
- For actuator maintenance and lubrication refer to instruction manual(s): D010316

RECOMMENDED SPARE PARTS

See Drawing(s) A060698, A058088, A058088, A042310, A039819

PART NO.	DESCRIPTION:	QTY	LINE
1383832	6" BRG SLV SPLIT FABRIC .749	2	A02
1131379	GSKT PTFE 8-1/4X7-7/8	1	A06
1053736	PACKING V-SET PTFE	1	A11
3001785	6" SEAT RING PTFE W/CARB GRAPH	1	A21
1053707	6" RING CONTROL TITANIUM	1	A22
1383877	RING RET 0.722 +/- .002 GRV	1	A46

For current spare parts pricing, contact local manufacturer’s representative listed above.

EQUIPMENT DATA FORM
(MAINTENANCE SUMMARY FORM)

PROJECT: SS BFV's
PURCHASE ORDER:
EQUIPMENT ITEM:
EQUIPMENT / TAG NUMBERS: /
MANUFACTURER: DeZURIK
DESCRIPTION: BHP,10,L1,S2,TC,S2-S5B-FT-RT*MG-1012-HD8
MANUFACTURER'S LOCAL REPRESENTATIVE:
Environmental Improvements Inc **235 Trademark Dr.** **Buda, Texas 78610** **USA** **Phone: 5122953733** **Email: jjustice@ei2austin.com**

MAINTENANCE REQUIREMENTS

- DeZURIK recommends exercising your valve every 30 days.
- Valve lubrication required upon disassembly only.
- For valve maintenance and lubrication refer to instruction manual(s): D010503
- For actuator maintenance and lubrication refer to instruction manual(s): D010408

RECOMMENDED SPARE PARTS

See Drawing(s) A060812, A058088, A058088, A052096, A039819

PART NO.	DESCRIPTION:	QTY	LINE
1383834	10" BRG SLV SPLIT FABRIC 1.249	2	A02
1131381	GSKT TFE 12-1/2X12-1/8	1	A06
1053738	PACKING V-SET PTFE	1	A11
3001787	10" SEAT RING PTFE W/CARB GRAPH	1	A21
1053709	10" RING CONTROL TITANIUM	1	A22
1383879	RING RET 1.206 +/- .004 GRV	1	A46
1266298	PIN SPIROL 3/16X2-1/2 HDSTL	1	B31

For current spare parts pricing, contact local manufacturer's representative listed above.

MATERIALS OF CONSTRUCTION

DRAWING(S): A58088
DESCRIPTION: BHP,6,L1,S2,TC,S2-S5B-FT-RT,CMC*LT

Item	Material
A01	STAINLESS STEEL, ASTM A351, TYPE CF-8M, CERTIFIED, NACE COMPLIANT
A02	TETRAFLOUROETHYLENE (TEFLON) WITH 317 STAINLESS STEEL BACKING
A03	STAINLESS STEEL, ASTM A351, TYPE CF-8M, CERTIFIED, NACE COMPLIANT
A04	STAINLESS STEEL, TYPE 630, ASTM A564, 17-4PH, CONDITION H1150D, NACE, CERT
A05	STAINLESS STEEL, ASTM A479, GRADE XM-19, NACE COMPLIANT
A06	VIRGIN PTFE
A09	STAINLESS STEEL, TYPE 316
A10	STAINLESS STEEL, TYPE 316, ASTM A240, CERTIFIED, NACE COMPLIANT
A11	PACKING, V-FLEX, VIRGIN TEFLON
A12	STAINLESS STEEL, ASTM A351, TYPE CF-8M, CERTIFIED, NACE COMPLIANT
A14	STAINLESS STEEL, TYPE 316, NACE MR0175 & MR0103 COMPLIANT
A15	STAINLESS STEEL, TYPE 316, NACE MR0175 & MR0103 COMPLIANT
A20	STAINLESS STEEL, ASTM A351, TYPE CF-8M, CERTIFIED, NACE COMPLIANT
A21	REINFORCED PTFE, CARBON FILLED, EGC ALLOY 88
A22	TITANIUM, ASTM B265, GRADE 3, CERTIFIED
A23	STAINLESS STEEL, TYPE 316, ASTM A-193, GRADE B8MA
A24	STAINLESS STEEL, TYPE 316, ASTM A-193, GRADE B8MA
A41	STAINLESS STEEL, TYPE 316, NACE MR0175 & MR0103 COMPLIANT
A42	STAINLESS STEEL, TYPE 316, NACE MR0175 & MR0103 COMPLIANT
A44	STAINLESS STEEL, TYPE 316
A46	STAINLESS STEEL, TYPE 316
A53	STAINLESS STEEL, TYPE 316
A54	STAINLESS STEEL, TYPE 18-8

MATERIALS OF CONSTRUCTION

DRAWING(S): A58088
DESCRIPTION: BHP,10,L1,S2,TC,S2-S5B-FT-RT*MG-1012-HD8

Item	Material
A01	STAINLESS STEEL, ASTM A351, TYPE CF-8M, CERTIFIED, NACE COMPLIANT
A02	TETRAFLOUROETHYLENE (TEFLON) WITH 317 STAINLESS STEEL BACKING
A03	STAINLESS STEEL, ASTM A351, TYPE CF-8M, CERTIFIED, NACE COMPLIANT
A04	STAINLESS STEEL, TYPE 630, ASTM A564, 17-4PH, CONDITION H1150D, NACE, CERT
A05	STAINLESS STEEL, ASTM A479, GRADE XM-19, NACE COMPLIANT
A06	VIRGIN PTFE
A09	STAINLESS STEEL, TYPE 316
A10	STAINLESS STEEL, TYPE 316, ASTM A240, CERTIFIED, NACE COMPLIANT
A11	PACKING, V-FLEX, VIRGIN TEFLON
A12	STAINLESS STEEL, ASTM A351, TYPE CF-8M, CERTIFIED, NACE COMPLIANT
A14	STAINLESS STEEL, TYPE 316, NACE MR0175 & MR0103 COMPLIANT
A15	STAINLESS STEEL, TYPE 316, NACE MR0175 & MR0103 COMPLIANT
A20	STAINLESS STEEL, ASTM A351, TYPE CF-8M, CERTIFIED, NACE COMPLIANT
A21	REINFORCED PTFE, CARBON FILLED, EGC ALLOY 88
A22	TITANIUM, ASTM B265, GRADE 3, CERTIFIED
A23	STAINLESS STEEL, TYPE 316, ASTM A-193, GRADE B8MA
A24	STAINLESS STEEL, TYPE 316, ASTM A-193, GRADE B8MA
A41	STAINLESS STEEL, TYPE 316, NACE MR0175 & MR0103 COMPLIANT
A42	STAINLESS STEEL, TYPE 316, NACE MR0175 & MR0103 COMPLIANT
A44	STAINLESS STEEL, TYPE 316
A46	STAINLESS STEEL, TYPE 316
A53	STAINLESS STEEL, TYPE 316
A54	STAINLESS STEEL, TYPE 18-8

RECOMMENDED LONG & SHORT TERM STORAGE PROCEDURES

LONG TERM STORAGE (6 MONTHS +)

1. All valves shall be stored in the position in which they were shipped.

2. Valves shall be stored fully enclosed in a crate or on a skid. It is acceptable to store the valves uncrated but protected from any dirt, debris or UV exposure as long as the environmental conditions as described in item 3 are met. Any desiccant packages received with the original shipment should be replaced before putting valves into long term storage. Please follow your desiccant manufacturer's recommended usage of any desiccant based on the volume of the enclosed area.

3. Valves shall be stored in a well ventilated, clean, dry indoor facility on skids or raised racks with temperatures ranging from 35°F to 95°F (2°C to 35°C) with humidity levels not exceeding 50%.

4. If the above conditions cannot be met, valves shall be separately packaged inside sealed heavy duty plastic sheeting and a weather resistant enclosure, or a standard crate lined with moisture proof paper, to protect the valves from dirt, debris and UV exposure. Desiccant packages shall be used to control moisture both inside the enclosure and the sealed heavy duty plastic covering. Please follow your desiccant manufacturer's recommended usage of any desiccant based on the volume of the enclosed area.

5. Do not store valves next to operating electric motors or equipment which may emit ozone, which can cause deterioration of valve elastomers. Store in an environment with less than 0.1 ppm concentration, at least 25 feet from ozone emitting devices, with ventilation.

6. Valves with cylinder actuators and control valves which are stored for extended periods may be subject to cylinder blow-by caused by permanent distortion of any of the seals. Valves should be operated prior to installation and damaged seals replaced. If possible, it is recommended that cylinders be cycled every 4-6 months to maintain seals.

7. Valves with electric motor operators shall be stored in accordance with the individual motor manufacturer's recommended long term storage procedures.

8. All electrical components shall be visually inspected prior to valve installation.

SHORT TERM STORAGE (LESS THAN 6 MONTHS)

1. All valves shall be stored in the position in which they were shipped.

2. Valves shall be protected from dirt, debris, excessive moisture and UV exposure. Store at temperatures ranging from 35°F to 95°F (2°C to 35°C) with humidity levels not exceeding 50%.

ITEM 3
CP0033 Bio Solids Building
Emergency Power

Project:	Central Wastewater Treatment Plant	**Project Number:**	
Owner:	City of Pflugerville	88	
Contractor:	BAR Constructors, Inc	279	
Engineer:	Freese and Nichols, Inc	PFL16607	

Change Proposal No.: CP0033 **Description:** Bio-Solids Building Emergency Power

Specification: N/A

Drawing No.: N/A **Detail Description:** N/A

Reference Document:

☐ Request for a Change Proposal No.: _____ ☐ Request for Information No.: _____

☐ Shop Drawing Deviation Request No.: _____ ☐ Field Order No.: _____

Contractor proposes the following modifications to the Contract Documents:

Run power to the biosolids building from the new electrical building No .3, work includes the installation of ductbanks, wiring and misc terminations in each building.

Purpose of Change Proposal:

This project is constructing three new electrical buildings for the new plant expansion. The existing biosolids building is currently fed off of an individual power feed and is not hooked up to an emergency generator on the plant. Due to last winter storm, this caused major issues during the power outages. The plant has requested power be run from the new electrical building no. 3 which is also backed up by an emergency generator.

Attachments:

C-2

Requested Action:

☐ Issue a Field Order ☒ Issue a Work Change Directive or Change Order for the described changes

Basis of Compensation:

☐ Unit Prices ☒ Lump Sum calculated using Cost of Work provisions in General Conditions Paragraph 13.01

☐ Time and Materials using Cost of Work provisions in General Conditions Paragraph 13.01

Required Documentation:

☒ Detailed cost breakdown attached showing labor, materials, equipment, and all other costs for this change

☐ Schedule attached to show impacts and justification for requested change in Contract Times

Total Change Proposal Amount: $123,142.11 **Adjustment in Contract Times (days):** 14

Project:	Central Wastewater Treatment Plant	**Project Number:**	
Owner:	City of Pflugerville		88
Contractor:	BAR Constructors, Inc		279
Engineer:	Freese and Nichols, Inc		PFL16607

The compensation offered for this Change Proposal is the full, complete, and final compensation for all costs the Contractor may incur as a result of or relating to this change whether said costs are known, unknown, foreseen, or unforeseen at this time, including without limitation, any cost for delay, extended overhead, ripple or impact cost, or any other effect on changed or unchanged Work as a result of this Contract Modification. Requested changes in Contract Times are the complete and final adjustments for direct impacts to the ability of the Contractor to complete the Work within the Contract Times and are the only adjustments to which the Contractor is entitled. Except as modified hereby, the Contract Documents and all of the terms and provisions thereof remain in full force and effect.

Certified by: Dennis Berger **Date:** 4/28/21

Action:

☐ Field Order No.: _____ Issued ☒ Change Order No.: 0003 Issued

☐ Contract Amendment No.: _____ Issued ☐ Work Change Directive No.: _____ Issued

☐ Change Proposal Not Accepted ☐ Additional information required. See comments. ☐ Cancelled

Comments:

Approved

Response by: [signature] **Date:** 4/30/21

BAR CONSTRUCTORS, INC.
P.O. Box 10 • Lancaster, TX 75146

April 27, 2021

Mr. Matt Gaughan
Plus Six Engineering
15500 Sun Light Near Way B
Pflugerville, TX 78660

Re: City of Pflugerville, Texas
Central WWTP Expansion Phase I Improvements
Project No. PFL16607
CP033 Bio-Solids Building Emergency Power

Dear Mr. Gaughan,

Please find the attached pricing and quotations for the Bio-Solids Building Emergency Power. BAR Constructors, Inc. requests an ADD to the contract amount of $123,142.11 and a time extension of 14 calendar days. Below are those inclusions and exclusions associated with this work.

Inclusions:

- As stated in the provided quotes.
- All "Assumptions" as stated in provided quotes.

Exclusions:

- Any exclusions stated in the attached quotation(s).
- Anything not explicitly stated as an inclusion.

Sincerely,

Dennis J. Berger
Project Manager
BAR Constructors, Inc.

805 Katy Street • Telephone (972) 227-3287 • Fax (972) 227-9043

BAR Constructors, Inc. - Cost Detail Worksheet

Job Name: Central WWTP Expanison Phase 1

Job # 279

Date: 4/27/2021

Proposal No. CP033

Labor		Unit	Quantity	**Bio-Solids Building Emergency Power**		
	Rate					
Bio-Solids Building Emergency Power						Total
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
Subtotal						$ -
Payroll Taxes and Insurance (55%)						$ -
Total Labor						**$ -**

Non-Taxed Material	Rate			**Bio-Solids Building Emergency Power**		
Bio-Solids Building Emergency Power						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
Subtotal						$ -

Taxed Material				**Bio-Solids Building Emergency Power**		
						$ -
						$ -
Subtotal Taxed Material + 8.25%						$ -

General Condition Material						
Small Tools 5% labor						$ -
Total Material						**$ -**

Equipment	Rate			**Bio-Solids Building Emergency Power**		Total
Bio-Solids Building Emergency Power						
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
Subtotal						$ -
Fuel, Oil, Grease & Maintenance (40% fo Equipment)						$ -
Tax @ 8.25%						$ -
Total Equipment						**$ -**

Subcontractor	Rate			**Bio-Solids Building Emergency Power**		Total
						$ -
T. Morales Company	$ 114,160.00	LS	1			$ 114,160.00
						$ -
						$ -
						$ -
						$ -
						$ -
Total Subcontractor						**$ 114,160.00**

	Labor			**Subcontractor**	**Material**	Total
Totals	$ -			$ 114,160.00	$ -	$ 114,160.00
Insurance (1.8%)						$ 2,054.88
Overhead and Profit (5% for subs)						$ 5,708.00
Overhead and Profit (15% Self Performed Work)						
Subtotal						$ 121,922.88
Bond @ 1%						$ 1,219.23
Total						**$ 123,142.11**

T. Morales Company
Electric / Controls & Instrumentation

Project: **Pflugerville Central Plant WWTP** Expansion Phase 1
Owner: City of Pflugerville

Date: **04/27/21**
TMC Change #: **COR-07**
Project Change #: **N/A**

Change Order Request

Per the request of the engineer, T. Morales Company offers a change in pricing for consideration by the owner to provide changes for the Bio-Solids Building to maintain emergency power in the case of power loss.

TMC will provide the work and materials required for the change regarding the Ductbank running from EB-3 to the bio solids building. TMC will provide and install the additional PVC Conduit, duct banks, grounding and termination and material required. TMC will run a separate ductbank on the right side of the road to maintain clearance from future projects. TMC will run the power from Switchboard UV to the 480V Distribution Panel PP1-1 located on the inside of the South Wall of the Biosoilds building using the Two Existing 3" LBs located on the outside of the south wall.

The Total Cost to provide the changes will equate to a total of $114,160.00

Extension in Time Request:

Submittals and approvals:	0 weeks.
Lead time for procurement:	0 weeks.
Approx time for installation:	2 weeks.

Change Initiated By: Mazhar Hajizadeh / Gupta
Change Prepared By: Tye Eldridge / TMC
Change Delivered To: Dennis Berger / Bar Const
Response Rqst'd By: ASAP
Carbon Copy To: Kirk Brobst/ TMC

PO Box 859
Florence, Texas 76527
Phone: 254-793-4344

601 South Patterson Avenue
Florence, Texas 76527
Fax: 254-793-3044

JOB 1425 2019050: 2019-050 COPVille ...
ESTIMATE 6 COR07: Biosolids Bldg
DATA SET 9 TMC WTP - NECA dataset
DATE 4/16/2021 3:28:56 PM

Bid: #1 - Lump Sum
T Morales Company
PO Box 859
Florence, Tx 76527
254-793-4344 / 254-793-3044
tdeldridge@moralescompany.com

Index	Description	Reference Type	Reference	Ref Amount	Operation	Rate	Amount
1	MATERIALS / QUOTES:						0.00
2	Misc Materials:	Material	Total	57,828.76	*	1.00	57,828.76
3	Eaton 400Amp Brkr	Calculated		3,916.00	*	1.00	3,916.00
4	Quote #2	Calculated		0.00	*	1.00	0.00
5	SUBTOTAL						61,744.76
6	##################						0.00
7	SALES TAX:	Material	Total	57,828.76	%		0.00
8	SUBTOTAL						0.00
9	##################						0.00
10	LABOR:						0.00
11	Straight Time Labor	Labor	Total	356.65	*	46.22	16,484.36
12	Overtime Labor	Calculated		0.00	*	69.33	0.00
13	Exec Order 13706 Hours	Labor	Total	356.65	*		0.00
14	Exec Order 13706 Rate	Component	13	0.00	*	46.22	0.00
15	Gen Foreman Hours	Labor	Total	356.65	%	10.00	35.66
16	Gen Foreman Rate	Component	15	35.66	*	50.97	1,817.85
17	Material Hndler Hrs	Labor	Total	356.65	%	5.00	17.83
18	Material Hndler Rate	Component	17	17.83	*	35.04	624.85
19	Update As Built Dwgs	Calculated		1.00	*	49.00	49.00
20	SUBTOTAL						18,976.06
21	##################						0.00
22	DIRECT JOB EXPENSES:						0.00
23	Expendable Tools	Material	Total	57,828.76	%	6.00	3,469.73
24	Equipment						0.00
25	Warranty on Material	Component	5	61,744.76	%	3.00	1,852.34
26	Warranty on Labor	Component	20	18,976.06	%	3.00	569.28
27	SUBTOTAL						5,891.35
28	##################						0.00
29	SUBCONTRACTS:						0.00
30	Sub #1	Calculated		0.00	*		0.00
31	Sub #2	Calculated		0.00	*		0.00
32	SUBTOTAL						0.00
33	##################						0.00
34	JOB SUBTOTAL						86,612.17
35	##################						0.00
36	MARKUPS:						0.00
37	Liability/Bldrs Risk	Component	34	86,612.17	%	2.00	1,732.24
38	WrkComp/SS/Unmplymnt	Component	20	18,976.06	%	25.00	4,744.01
39	Overhead @ 10%	Component	34	86,612.17	%	10.00	8,661.22
40	JOB TOTAL						101,749.64
41	##################						0.00
42	Profit @ 10%	Component	40	101,749.64	%	10.00	10,174.96
43	JOB TOTAL + PROFIT	Component	42	10,174.96	*	1.00	111,924.61
44	Perf _Payment Bond	Component	43	111,924.61	%	2.00	2,238.49
45	ADD BOND	Component	44	2,238.49	*	1.00	114,163.10
46	##################						0.00
47	BID TOTAL						114,163.10

Combined All - Job File Pricing

JOB 1425 2019050: 2019-050 COPVille ...
ESTIMATE 6 COR07: Biosolids Bldg
DATA SET 9 TMC WTP - NECA dataset

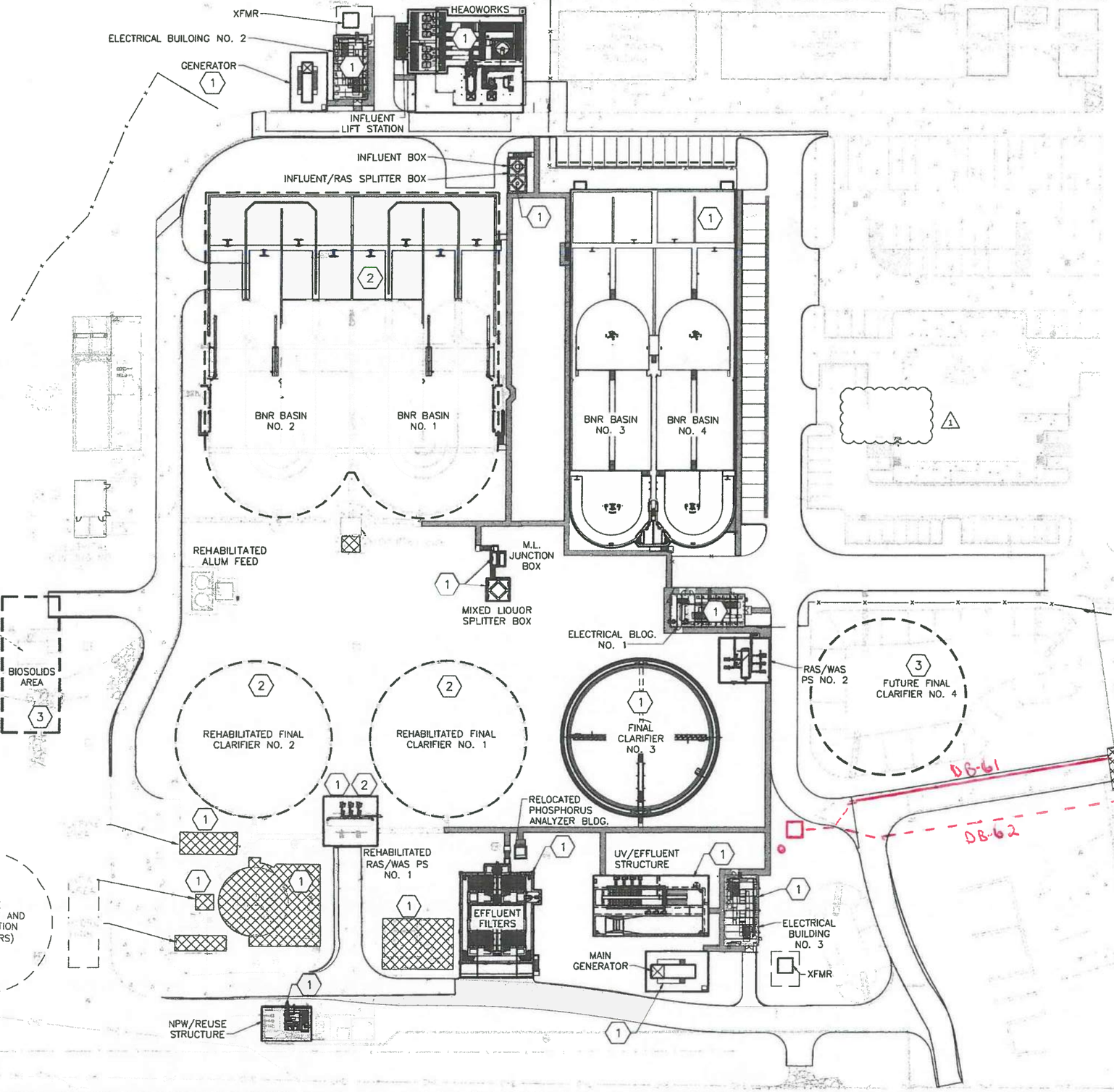
T Morales Company
PO Box 859
Florence, Tx 76527
254-793-4344 / 254-793-3044
tdeldridge@moralescompany.com

PRINTED 4/16/2021 3:32:38 PM
MATERIAL Primary
LABOR Primary

NOTES

Item				Material			Labor		
Size	Item Desc	Qty	UOM	Mat Unit	Mat Adj	Mat Ext	Lbr Unit	Lbr Adj	Lbr Ext
3"	PVC Sch 40 Carlon #49013010	500.00	FEET						
3"	PVC Coup Carlon #E940L	8.00	EACH						
3"	PVC End Bell Carlon #E997L	2.00	EACH						
3"	PVC Fem Adapt Carlon #E942L	8.00	EACH						
3"	CUT/THREAD-LABOR	6.00	EACH						
3"	ALUM MYERS HUBS GRDG	8.00	EACH						
3"	S.S.STRUT STRAPS	8.00	EACH						
1 1/2.	ALUM STRUT	10.00	FEET						
	NYLON LINE	1,020.00	FEET						
4/0	XHHW STR CU	3,700.00	FEET						
4/0	WIRE TERM-LABOR ONLY	16.00	EACH						
3X3	BASE SPACER	250.00	EACH						
36W X 36D	TRENCHER DITCHING	500.00	FEET						
36W X 36D	BACKFILL TRENCHER	500.00	FEET						
	6" WARNING TAPE MAG.	300.00	FEET						
	#4 STEEL REBAR	750.00	FEET						
	#5 STEEL REBAR	3,000.00	FEET						
	3000# CONCRETE	27.00	CYD						
	Red Dye (Lbs)	80.00	LBS						
3"	PVC COATED GRC 40MIL	10.00	FEET						
3"	PVC COATED ELB 40MIL	4.00	EACH						
3"	PVC CTD COUP 40MIL	8.00	EACH						
Grand Totals						57,828.76			356.6500

RECORD DOCUMENT



NOTE:

1. YARD PIPING NOT SHOWN FOR CLARITY.
2. REFERENCE SHEET C-3 FOR DETAILS ON STRUCTURES TO BE ABANDONED OR DEMOLISHED

NOTES BY SYMBOLS "(X)"

(1) PHASE 1 IMPROVEMENTS
(2) PHASE 2 IMPROVEMENTS
(3) PHASE 3 IMPROVEMENTS

LEGEND:

- EXISTING
- NEW
- FUTURE PHASES (2 & 3)
- ABANDONED OR DEMOLISHED STRUCTURE
- NEW PAVEMENT
- CONCRETE SIDEWALK
- FLEXIBLE BASE

ISSUED FOR CONSTRUCTION ON 11/04/19

Freese and Nichols Inc.
Texas Registered Engineering Firm F-2144

CORY C. GEE 118665 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS 09/11/19

FREESE NICHOLS
10431 Morado Circle, Suite 300
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Phone - (512) 617-3100
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CITY OF PFLUGERVILLE
CENTRAL WWTP EXPANSION
PHASE I IMPROVEMENTS
CIVIL

FUTURE AREA PLAN

NO.	ISSUE	BY	DATE
1	ADDENDUM NO.3	CG	9/11/19

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

FAN JOB NO. PFL16607
DATE 07/17/19
DESIGNED CCC
DRAWN MGA
REVIEWED
CHECKED ED/CG
FILE NAME WW-ALL-OA-SITE-02.dwg

SHEET C-2
SEQ. 23

ACAD Rel: 21.0s (LMS Tech)
Filename: N:\WW\WW-ALL-OA-SITE-02.dwg
Last Saved: 8/7/2019 10:09 AM Saved By: 90119

Plot Date: 9/6/2019 11:23 AM Plot By: 90119 Filename: N:\WW\WW-ALL-OA-SITE-02.dwg