

SUBMITTAL COVER SHEET

Project Name: COW -Hess Pump Station Valve Replacement
 Architect: PROFESSIONAL ENG. CONSULTANTS
 Submittal Date: 08/18/2020
 Revision Number: 0
 Submittal Package: 33000
 Submittal Number: 331216-001
 Submittal Title: PRATT 48, 60, 72" Butterfly Valves w/ EMO
 Specification: 33 12 16
 Drawing/Detail:

RECEIVED FROM	SENT TO	RETURNED BY	FORWARDED TO
CORE & MAIN LP	PROFESSIONAL ENG. CONSULTANTS	PROFESSIONAL ENG. CONSULTANTS	CORE & MAIN LP
08/14/2020	08/18/2020		

SUBMITTAL ITEM	STATUS	ACTIVITY DATE	SENT	COPIES	DUE	NOTES
1 : Pratt 48,60,72 BFV-EMA	New Item		08/18/2020	1		

DONDLINGER AND SONS CONST. CO., INC.

Reviewed ES
 Reviewed as Noted _____
 Revise and Resubmit _____
 Date 8/18/20
 Submittal No. 331216-001

REVIEW OF ITEMS DOES NOT RELIEVE VENDOR FROM COMPLYING WITH REQUIREMENTS OF CONTRACT PLANS AND SPECIFICATIONS, CONTRACT AND CITY STATE AND LOCAL CODES.

SUBMITTAL REVIEW FOR ENGINEERED COMPONENTS

APPROVED

APPROVED AS NOTED
 If checked above, fabrication MAY be undertaken and re-submittal is not required unless specifically noted in the correction comments. Review does not authorize changes to Contract Sum unless stated in a Change Order.

If checked below, fabrication MAY NOT be undertaken. Resubmit corrected copies for final approval. Correction shall be limited to items marked.

REVISE AND RESUBMIT

REJECTED

5/10

See Contract Documents for Contractor's engineered component responsibility. Approval is only for general conformance with the design criteria of the project. Contractor at all times remains responsible for compliance with the Contract Documents. Deviations are not approved unless Contractor has in writing called Engineer's attention to such deviation at the time of submission and Engineer has in writing approved the specific deviation. No acceptance by Engineer relieves Contractor from responsibility for errors or omissions in Compliance Submittals.



PROFESSIONAL ENGINEERING CONSULTANTS, P.A.

BY Ryan Glessner DATE 8/19/2020

PRATT®

a MUELLER brand

401 S. HIGHLAND AVENUE, AURORA, IL 60506
TEL: (630) 844-4000 FAX: (630) 844-4160

Purchase Order #: 9795011
Sales Order #: 2731977 HP
Proposal/Quote #: Q-020-13073
Project Name: Hess Pump Station Valve Replacement
Project Location: Wichita, KS
Date: August 12, 2020
Revision: 0

August 12, 2020

Mr. Robert Bollin
Core and Main LP
8405 Irving Street
Wichita, KS 67209

Subject: Customer PO#: 9795011

Reference Sales Order Number: 2731977 HP

Project Name: Hess Pump Station Valve Replacement

Scope of Supply: 48", 60" & 72" 150B Butterfly Valves with EMOs

Lead-time after release to manufacture: 26 - 30 weeks

Submittal response due back by .

Dear Mr. Bollin,

Thank you for your recent purchase order. I look forward to working with you on this project. The attached submittal package for the butterfly valves with electric motor operators is being submitted for **APPROVAL. This order will remain on hold pending the engineer's approval and release to manufacture. Once the submittal is approved any changes in scope will result in lead time and/or price adjustments.**

Our submission of this documentation does not constitute an acceptance of any contractual terms or conditions stated on the buyer's purchase order or request for quotation. All contractual terms must be negotiated and agreed to prior to release to manufacturing. The order is subject to approval of our Credit Department and an account in good standing.

Please contact me should there be any additional questions or concerns.

Kind Regards,

Laura Johnson

Project Manager

Phone: 630-844-4115

ljohnson@muellerwp.com

PRATT®

a MUELLER brand

August 12, 2020 Rev. 0

Project
Hess Pump Station Valve Replacement
Wichita, KS

Equipment
33 12 16 - 2.3 BUTTERFLY VALVES
(with electric motor operators)

Sales Order #
2731977 HP

Purchase Order #
9795011

Proposal/Quote #
Q-020-13073

Mueller refers to one or more of Mueller Water Products, Inc., a Delaware corporation ("MWP"), and its subsidiaries. MWP and each of its subsidiaries are legally separate and independent entities when providing products and services. MWP does not provide products or services to third parties. MWP and each of its subsidiaries are liable only for their own acts and omissions and not those of each other. MWP brands include Mueller®, Echologics®, Hydro Gate®, Hydro-Guard®, Jones®, Mi.Net®, Milliken®, Pratt®, Singer®, and U.S. Pipe Valve and Hydrant. Please see muellerwp.com/brands to learn more.



a **MUELLER** brand

401 S. HIGHLAND AVENUE, AURORA, IL 60506
TEL: (630) 844-4000 FAX: (630) 844-4160

Purchase Order #: 9795011
Sales Order #: 2731977 HP
Proposal/Quote #: Q-020-13073
Project Name: Hess Pump Station Valve Replacement
Project Location: Wichita, KS
Date: August 12, 2020
Revision: 0

TABLE OF CONTENTS

Scope of Supply

Certificates of Conformance

Specification Sheets

General Arrangements

Actuator Information

Torque Tables

CV Values & Graphs

Coating Data

Catalog Cut Sheets

Warranty

PRATT[®]

a **MUELLER** brand

401 S. HIGHLAND AVENUE, AURORA, IL 60506
TEL: (630) 844-4000 FAX: (630) 844-4160

Purchase Order #: 9795011

Sales Order #: 2731977 HP

Proposal/Quote #: Q-020-13073

Project Name: Hess Pump Station Valve Replacement

Project Location: Wichita, KS

Date: August 12, 2020

Revision: 0

SCOPE OF SUPPLY



a MUELLER brand

401 S. HIGHLAND AVENUE, AURORA, IL 60506
TEL: (630) 844-4000 FAX: (630) 844-4160

Purchase Order #: 9795011
Sales Order #: 2731977 HP
Proposal/Quote #: Q-020-13073
Project Name: Hess Pump Station Valve Replacement
Project Location: Wichita, KS
Date: August 12, 2020
Revision: 0

SCOPE OF SUPPLY

LINE	QTY	LOCATION/TAG	DESCRIPTION
5	6	<input checked="" type="checkbox"/> Location: Tag #: Valve 29, Valve 33, Valve 34, Valve 35, Valve 36, Valve 40	48" Flange 150B Butterfly Valve, Buna Seat, CI Body, DI Disc, 304SS Shaft, Teflon Lined Fiberglass Backing Bearing, Limitorque Electric Motor Open/Close , 8 Mils Amercoat 370 Epoxy Interior, 8 Mils Amercoat 370 Epoxy Exterior ESTIMATED WEIGHT: 5,600 lbs LEAD TIME: 26-30 weeks
7	3	<input checked="" type="checkbox"/> Location: Tag #: Valve 1, Valve 4, Valve 6	72" Flange 150B Butterfly Valve, Buna Seat, DI Body, DI Disc, 304SS Shaft, Teflon Lined Fiberglass Backing Bearing, Limitorque Electric Motor Open/Close , 8 Mils Amercoat 370 Epoxy Interior, 8 Mils Amercoat 370 Epoxy Exterior, Leak Test Second Side ESTIMATED WEIGHT: 18,300 lbs LEAD TIME: 26-30 weeks
9	3	<input checked="" type="checkbox"/> Location: Tag #: Valve 7, Valve 10, Valve 12	60" Flange 150B Butterfly Valve, Buna Seat, DI Body, DI Disc, 316SS Shaft, Teflon Lined Fiberglass Backing Bearing, Limitorque Electric Motor Open/Close , 8 Mils Amercoat 370 Epoxy Interior, 8 Mils Amercoat 370 Epoxy Exterior, Leak Test Second Side ESTIMATED WEIGHT: 10,600 lbs LEAD TIME: 26-30 weeks

PRATT[®]

a **MUELLER** brand

401 S. HIGHLAND AVENUE, AURORA, IL 60506
TEL: (630) 844-4000 FAX: (630) 844-4160

Purchase Order #: 9795011
Sales Order #: 2731977 HP
Proposal/Quote #: Q-020-13073
Project Name: Hess Pump Station Valve Replacement
Project Location: Wichita, KS
Date: August 12, 2020
Revision: 0

CERTIFICATES OF CONFORMANCE

PRATT®

a MUELLER brand

401 S. HIGHLAND AVENUE, AURORA, IL 60506
TEL: (630) 844-4000 FAX: (630) 844-4160

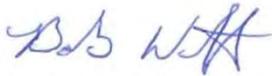
Purchase Order #: 9795011
Sales Order #: 2731977 HP
Proposal/Quote #: Q-020-13073
Project Name: Hess Pump Station Valve Replacement
Project Location: Wichita, KS
Date: August 12, 2020
Revision: 0

Certificate of Conformance Butterfly Valves

We hereby certify that the valves identified herein will be manufactured in accordance with referenced specifications and the applicable sections of:

- 1) For Valves 3" – 72" - AWWA C504 – Latest Edition

The valves will be shop operated three (3) times to verify that the complete assembly is workable.



Bob Newkirk
Quality Assurance Manager
Henry Pratt Company



CERTIFICATE OF CONFORMANCE

Valve Coatings

To: Mr. Robert Bollin
Core & Main

PO Number: 9795011

Project Name: Hess Pump Station Valve Replacement

Pratt Reference: 2731977 HP

Description: Triton XR-70 Series 150B Butterfly Valves

WE HEREBY CERTIFY that the valves identified herein are manufactured and tested under a controlled program and will be in accordance with referenced specifications and applicable sections of AWWA Standards, including C550, and that the coatings applied will be in conformance with ANSI/NSF61 and ANSI/NSF372 for Potable Water Service.

Date: August 12, 2020

Bob Newkirk
Pratt Quality Assurance Manager

CC: Steve Greenwood

Document Prepared By: Laura Johnson

Title: Project Manager

Date: August 12, 2020

For more information about Pratt or to view our full line of water products, please visit www.prattvalve.com or call Pratt customer service at 1.800.423.1323.

Mueller refers to one or more of Mueller Water Products, Inc., a Delaware corporation ("MWP"), and its subsidiaries. MWP and each of its subsidiaries are legally separate and independent entities when providing products and services. MWP does not provide products or services to third parties. MWP and each of its subsidiaries are liable only for their own acts and omissions and not those of each other. MWP brands include Mueller®, Echologics®, Hydro Gate®, Hydro-Guard®, Jones®, Mi.Net®, Milliken®, Pratt®, Singer®, and U.S. Pipe Valve & Hydrant. Please see www.muellerwp.com/about to learn more.

Copyright © 2018 Henry Pratt Company, LLC. All Rights Reserved. The trademarks, logos and service marks displayed in this document are the property of Mueller Water Products, Inc., its affiliates or other third parties. Products marked with a section symbol (§) are subject to patents or patent applications. For details, visit www.mwppat.com. These products are intended for use in potable water applications. Please contact your Mueller Sales or Customer Service Representative concerning any other application(s).

PRATT[®]

a **MUELLER** brand

401 S. HIGHLAND AVENUE, AURORA, IL 60506
TEL: (630) 844-4000 FAX: (630) 844-4160

Purchase Order #: 9795011
Sales Order #: 2731977 HP
Proposal/Quote #: Q-020-13073
Project Name: Hess Pump Station Valve Replacement
Project Location: Wichita, KS
Date: August 12, 2020
Revision: 0

SPECIFICATION SHEETS



a MUELLER brand

401 S. HIGHLAND AVENUE, AURORA, IL 60506
TEL: (630) 844-4000 FAX: (630) 844-4160

Purchase Order #: 9795011
Sales Order #: 2731977 HP
Proposal/Quote #: Q-020-13073
Project Name: Hess Pump Station Valve Replacement
Project Location: Wichita, KS
Date: August 12, 2020
Revision: 0

Line Item #: 5

Tag #: Valve 29, Valve 33, Valve 34, Valve 35, Valve 36, Valve 40

48" Flange 150B Butterfly Valve, Buna Seat, CI Body, DI Disc, 304SS Shaft, Teflon Lined Fiberglass Backing Bearing, Limatorque Electric Motor Open/Close , 8 Mils Amercoat 370 Epoxy Interior, 8 Mils Amercoat 370 Epoxy Exterior

Unit Weight: 5,600 lbs

C-020-26574

VALVE DATA

General Information

Material Specification

Product:	AWWA Butterfly Valve	Body Material:	C.I. ASTM A126 Cl.B
Valve Size:	48"	Disc Material:	D.I. ASTM A536 (65-45-12)
Pressure Class:	150B	Shaft Material:	304 S.S. ASTM A276
End Connection:	Flange	Disc Edge Material:	316-L
Drill Pattern:	125#	Bearing Material:	Teflon Lined Fiberglass Backing
Seat Design:	Seat in Body	Seat & Seal Material:	Buna-N
Disc/Pin Connection:	Thru Pin Design	Exterior Hardware:	Carbon Steel Zinc Plated
Shaft Packing Design:	Self Adjusting V Type		

Coating

Interior Coating:	Amercoat 370-Red (A-69636A) 2 Coats (8 Mils)
Exterior Coating:	Amercoat 370-Red (A-69636A) 2 Coats (8 Mils)

Valve is NSF 61, drinking water, approved.

Testing Requirements

Leak/Hydro Test:	Per AWWA C504, Latest Version
Cycle/Performance Test:	Per AWWA C504, Latest Version
Bi-Directional Leak Test:	Yes

Actual test reports will be provided at time of shipment, if required.

Literature: https://www.henrypratt.com/sites/henrypratt.com/files/uploads/media/Pratt_Triton_Rubber_Seated_Brochure_Form_13226.pdf

Notes/ Customer Specifications



a MUELLER brand

401 S. HIGHLAND AVENUE, AURORA, IL 60506
TEL: (630) 844-4000 FAX: (630) 844-4160

Purchase Order #: 9795011
Sales Order #: 2731977 HP
Proposal/Quote #: Q-020-13073
Project Name: Hess Pump Station Valve Replacement
Project Location: Wichita, KS
Date: August 12, 2020
Revision: 0

Line Item #: 5

Tag #: Valve 29, Valve 33, Valve 34, Valve 35, Valve 36, Valve 40

48" Flange 150B Butterfly Valve, Buna Seat, CI Body, DI Disc, 304SS Shaft, Teflon Lined Fiberglass Backing Bearing, Limitorque Electric Motor Open/Close , 8 Mils Amercoat 370 Epoxy Interior, 8 Mils Amercoat 370 Epoxy Exterior

Unit Weight: 5,600 lbs

C-020-26574

ACTUATOR DATA

General Information

Actuator Type:	Buyout - Limitorque
Operator:	Electric Motor Open/Close
Model:	L120-40-25/DC, WG-07-1SD-D
Actuator Position:	Position B3 (w/ side mounted handwheel) ←
Mounting Pattern:	FA35
Voltage:	125VDC
Motor Speed:	65
Fail Position:	Fail in Last Position (Standard)
Remote Controls:	No
Remote Disconnect:	No

***See vendor model specifications for more information.**

Exterior Options

Actuator Coating:	Vendor, 4 Mils
Exterior Hardware:	Vendor Standard

Literature: [\[Copy Vendor URL Here\]](#)



a MUELLER brand

401 S. HIGHLAND AVENUE, AURORA, IL 60506
TEL: (630) 844-4000 FAX: (630) 844-4160

Purchase Order #: 9795011
Sales Order #: 2731977 HP
Proposal/Quote #: Q-020-13073
Project Name: Hess Pump Station Valve Replacement
Project Location: Wichita, KS
Date: August 12, 2020
Revision: 0

Line Item #: 7

Tag #: Valve 1, Valve 4, Valve 6

72" Flange 150B Butterfly Valve, Buna Seat, DI Body, DI Disc, 304SS Shaft, Teflon Lined Fiberglass Backing Bearing, Limatorque Electric Motor Open/Close , 8 Mils Amercoat 370 Epoxy Interior, 8 Mils Amercoat 370 Epoxy Exterior, Leak Test Second Side

Unit Weight: 18,300 lbs

C-020-26576

VALVE DATA

General Information

Material Specification

Product:	AWWA Butterfly Valve	Body Material:	D.I. ASTM A536 (65-45-12)
Valve Size:	72"	Disc Material:	D.I. ASTM A536 (65-45-12)
Pressure Class:	150B	Shaft Material:	304 S.S. ASTM A276
End Connection:	Flange	Disc Edge Material:	316-L
Drill Pattern:	125#	Bearing Material:	Teflon Lined Fiberglass Backing
Seat Design:	Seat in Body	Seat & Seal Material:	Buna-N
Disc/Pin Connection:	Thru Pin Design	Exterior Hardware:	Carbon Steel Zinc Plated
Shaft Packing Design:	Self Adjusting V Type		

Coating

Interior Coating:	Amercoat 370-Red (A-69636A) 2 Coats (8 Mils)
Exterior Coating:	Amercoat 370-Red (A-69636A) 2 Coats (8 Mils)

Valve is NSF 61, drinking water, approved.

Testing Requirements

Leak/Hydro Test:	Per AWWA C504, Latest Version
Cycle/Performance Test:	Per AWWA C504, Latest Version
Bi-Directional Leak Test:	Yes

Actual test reports will be provided at time of shipment, if required.

Literature: https://www.henrypratt.com/sites/henrypratt.com/files/uploads/media/Pratt_Triton_Rubber_Seated_Brochure_Form_13226.pdf

Notes/ Customer Specifications

33 12 16, paragraph 2.3.B.5 - Body is ductile iron, ASTM A536 (65-45-12)



a MUELLER brand

401 S. HIGHLAND AVENUE, AURORA, IL 60506
TEL: (630) 844-4000 FAX: (630) 844-4160

Purchase Order #: 9795011
Sales Order #: 2731977 HP
Proposal/Quote #: Q-020-13073
Project Name: Hess Pump Station Valve Replacement
Project Location: Wichita, KS
Date: August 12, 2020
Revision: 0

Line Item #: 7

Tag #: Valve 1, Valve 4, Valve 6

72" Flange 150B Butterfly Valve, Buna Seat, DI Body, DI Disc, 304SS Shaft, Teflon Lined Fiberglass Backing Bearing, Limatorque Electric Motor Open/Close , 8 Mils Amercoat 370 Epoxy Interior, 8 Mils Amercoat 370 Epoxy Exterior, Leak Test Second Side

Unit Weight: 18,300 lbs

C-020-26576

ACTUATOR DATA

General Information

Actuator Type:	Buyout - Limatorque
Operator:	Electric Motor Open/Close
Model:	L120-190-80/DC, WG-10-1SD-D
Actuator Position:	Position B1 (w/ side mounted handwheel) ←
Mounting Pattern:	FA60
Voltage:	125VDC
Motor Speed:	60
Fail Position:	Fail in Last Position (Standard)
Remote Controls:	No
Remote Disconnect:	No

***See vendor model specifications for more information.**

Exterior Options

Actuator Coating:	Vendor, 4 Mils
Exterior Hardware:	Vendor Standard

Literature: [\[Copy Vendor URL Here\]](#)



a MUELLER brand

401 S. HIGHLAND AVENUE, AURORA, IL 60506
TEL: (630) 844-4000 FAX: (630) 844-4160

Purchase Order #: 9795011
Sales Order #: 2731977 HP
Proposal/Quote #: Q-020-13073
Project Name: Hess Pump Station Valve Replacement
Project Location: Wichita, KS
Date: August 12, 2020
Revision: 0

Line Item #: 9

Tag #: Valve 7, Valve 10, Valve 12

60" Flange 150B Butterfly Valve, Buna Seat, DI Body, DI Disc, 316SS Shaft, Teflon Lined Fiberglass Backing Bearing, Limatorque Electric Motor Open/Close , 8 Mils Amercoat 370 Epoxy Interior, 8 Mils Amercoat 370 Epoxy Exterior, Leak Test Second Side

Unit Weight: 10,600 lbs

C-020-26578

VALVE DATA

General Information

Material Specification

Product:	AWWA Butterfly Valve	Body Material:	D.I. ASTM A536 (65-45-12)
Valve Size:	60"	Disc Material:	D.I. ASTM A536 (65-45-12)
Pressure Class:	150B	Shaft Material:	316 S.S. ASTM A276
End Connection:	Flange	Disc Edge Material:	316-L
Drill Pattern:	125#	Bearing Material:	Teflon Lined Fiberglass Backing
Seat Design:	Seat in Body	Seat & Seal Material:	Buna-N
Disc/Pin Connection:	Thru Pin Design	Exterior Hardware:	Carbon Steel Zinc Plated
Shaft Packing Design:	Self Adjusting V Type		

Coating

Interior Coating:	Amercoat 370-Red (A-69636A) 2 Coats (8 Mils)
Exterior Coating:	Amercoat 370-Red (A-69636A) 2 Coats (8 Mils)

Valve is NSF 61, drinking water, approved.

Testing Requirements

Leak/Hydro Test:	Per AWWA C504, Latest Version
Cycle/Performance Test:	Per AWWA C504, Latest Version
Bi-Directional Leak Test:	Yes

Actual test reports will be provided at time of shipment, if required.

Literature: https://www.henrypratt.com/sites/henrypratt.com/files/uploads/media/Pratt_Triton_Rubber_Seated_Brochure_Form_13226.pdf

Notes/ Customer Specifications

- 33 12 16, paragraph 2.3.B.5 - Body is ductile iron, ASTM A536 (65-45-12)
- 33 12 16, paragraph 2.3.B.6 - Shaft is ASTM A276, Type 316 Stainless Steel



a MUELLER brand

401 S. HIGHLAND AVENUE, AURORA, IL 60506
TEL: (630) 844-4000 FAX: (630) 844-4160

Purchase Order #: 9795011
Sales Order #: 2731977 HP
Proposal/Quote #: Q-020-13073
Project Name: Hess Pump Station Valve Replacement
Project Location: Wichita, KS
Date: August 12, 2020
Revision: 0

Line Item #: 9

Tag #: Valve 7, Valve 10, Valve 12

60" Flange 150B Butterfly Valve, Buna Seat, DI Body, DI Disc, 316SS Shaft, Teflon Lined Fiberglass Backing Bearing, Limatorque Electric Motor Open/Close , 8 Mils Amercoat 370 Epoxy Interior, 8 Mils Amercoat 370 Epoxy Exterior, Leak Test Second Side

Unit Weight: 10,600 lbs

C-020-26578

ACTUATOR DATA

General Information

Actuator Type:	Buyout - Limatorque
Operator:	Electric Motor Open/Close
Model:	L120-85-60/DC, WG-08-1SD-D
Actuator Position:	Position B3 (w/ top mounted handwheel) ←
Mounting Pattern:	FA48
Voltage:	125VDC
Motor Speed:	73
Fail Position:	Fail in Last Position (Standard)
Remote Controls:	No
Remote Disconnect:	No

***See vendor model specifications for more information.**

Exterior Options

Actuator Coating:	Vendor, 4 Mils
Exterior Hardware:	Vendor Standard

Literature: [\[Copy Vendor URL Here\]](#)

PRATT[®]

a **MUELLER** brand

401 S. HIGHLAND AVENUE, AURORA, IL 60506
TEL: (630) 844-4000 FAX: (630) 844-4160

Purchase Order #: 9795011

Sales Order #: 2731977 HP

Proposal/Quote #: Q-020-13073

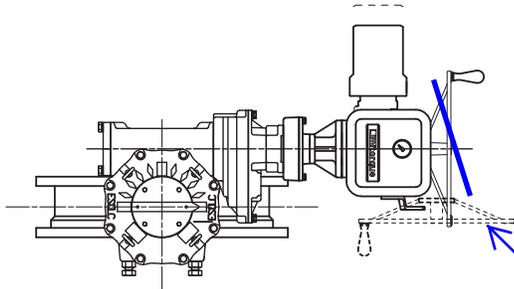
Project Name: Hess Pump Station Valve Replacement

Project Location: Wichita, KS

Date: August 12, 2020

Revision: 0

GENERAL ARRANGEMENTS



ACTUATOR SHOWN IN PRATT POSITION B3
VENDOR POSITION A, SEE VENDOR DRAWING

side mount handwheel

VALVE DIMENSIONS

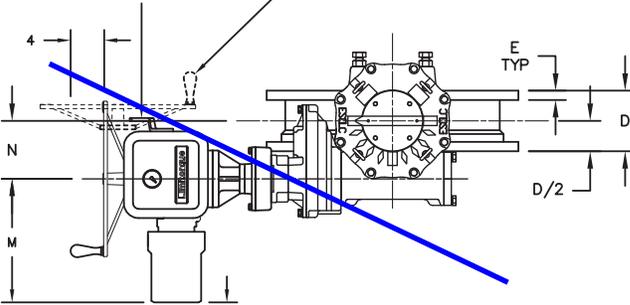
VALVE SIZE	A	B	C	D	E	F	G
24	18-5/8	18-5/8	32	8	1-7/8	20-1-1/4	29-1/2
30	21-1/2	24-3/8	38-3/4	12	2-1/8	28-1-1/4	36
36	25-7/16	28-1/4	46	12	2-3/8	32-1-1/2	42-3/4
42	29-7/8	32-7/8	53	12	2-5/8	36-1-1/2	49-1/2
48	34-1/16	37-1/8	59-1/2	15	2-3/4	44-1-1/2	56
54	37-1/2	40-7/8	66-1/4	15	3	44-1-3/4	62-3/4
60	41-3/4	45-1/8	73	15	3-1/8	52-1-3/4	69-1/4
66	46-1/16	49-3/4	80	18	3-3/8	52-1-3/4	76
72	50	53-5/8	86-1/2	18	3-1/2	60-1-3/4	82-1/2

MOTOR DIMENSIONS

UNIT SIZE	J	M	R	V
L120-10	15-7/16	14-1/4	14-1/8	12
L120-20	16-7/16	16	15-5/8	18
L120-40	17	18-15/16	18-1/8	12
L120-85	17-3/8	25-3/4	12	12
L120-190	20-1/4	32-1/4	18	24

REFER TO VENDOR ACTUATOR DRAWING FOR CERTIFIED DIMENSIONS AND ACCESSORIES

LEVER TO PERMIT MANUAL OPERATION. MOTOR OPERATION AUTOMATICALLY RESETS LEVER.
ALTERNATE HANDWHEEL POSITION SEE VENDOR DRAWINGS



2-1/2 CLEARANCE FOR COVER REMOVAL

ACTUATOR SHOWN IN PRATT POSITION B7
VENDOR POSITION A, SEE VENDOR DRAWING

WORMGEAR DIMENSIONS

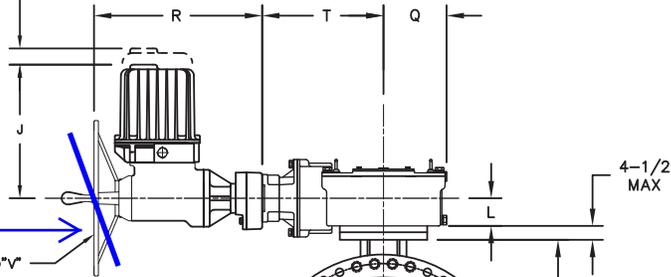
UNIT SIZE	L	N	Q	T
WG-04	2-7/8	6	6-1/8	12-5/8
WG-05	3-1/8	2-5/16	6-1/2	11-5/8
WG-55	3-1/8	8	7-3/8	13-7/8
WG-07	4-1/2	11	9	20
WG-07-1SD	4-1/2	11	11-3/8	20-1/4
WG-08-1SD	5	15	15-5/8	26-1/4
WG-10-1SD	6-3/8	20-1/4	20-1/4	31-1/8

REFER TO VENDOR ACTUATOR DRAWING FOR CERTIFIED DIMENSIONS AND ACCESSORIES

NOTES:

- ALL DIMENSIONS SHOWN IN INCHES.
- "D" DIMENSION ±1/8".
- FOR BOLTS SMALLER THAN #1-3/4, BOLT HOLES WILL BE 1/8" LARGER THAN DIAMETER OF BOLT.
~~FOR BOLTS #1-3/4 OR LARGER, BOLT HOLES WILL BE 1/4" LARGER THAN DIAMETER OF BOLT.~~
- DIMENSIONS AND DRILLING OF END FLANGES CONFORM TO THE AMERICAN CAST IRON FLANGE STANDARDS, CLASS 125 (B16.1).
- VALVES MANUFACTURED & TESTED IN ACCORDANCE WITH AWWA SPECIFICATION C-504 LATEST REVISION, CLASS 150B.
- RECOMMENDATION FOR MATING FLANGES: WHERE INSULATING BUSHINGS ARE USED, IT IS NECESSARY THAT BOLT HOLES BE DRILLED OVERSIZE BY AN AMOUNT EQUAL TO TWO TIMES THE INSULATING SLEEVE THICKNESS TO MAINTAIN THE SAME MINIMUM CLEARANCE FOR BOLTS.
- CAUTION: IT IS RECOMMENDED THAT VALVES BE INSTALLED INTO PIPING SYSTEM IN ACCORDANCE WITH AWWA M-11 TO PREVENT ANY UNDUE PIPING STRESS, DEFLECTION OR BENDING THAT MAY EFFECT THE PERFORMANCE OF THE VALVE.

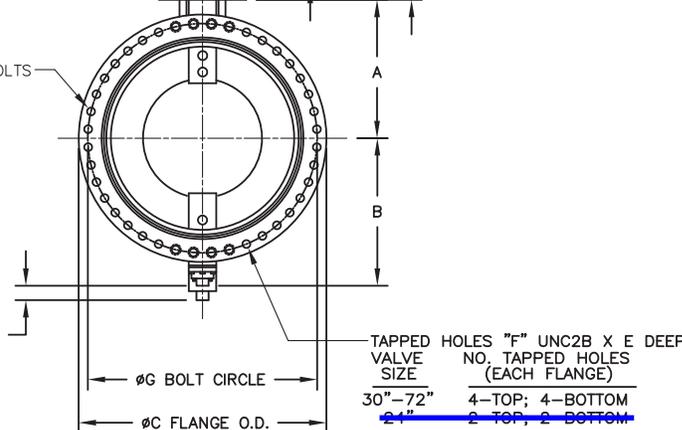
9-1/8 CLEARANCE FOR COVER REMOVAL



side mounted handwheel NOT shown

F=TOTAL NO. AND SIZE OF BOLTS
125 LB STD LAYOUT
STRADDLE CENTERLINE
EACH FLANGE
(INCLUDES TAPPED HOLES)

3-1/2" SPACE REQUIRED FOR THRUST BEARING COVER REMOVAL



2	08/03/20	ADDED WG-07-1SD, WG-08-1SD, WG-10-1SD, L120-85, L12-190 AND ALTERNATE MOUNTING POSITION	TT	RF
1	11/14/14	ADDED WG07 MODEL	DSL	RF
REV	DATE	DESCRIPTION	DWN	APP



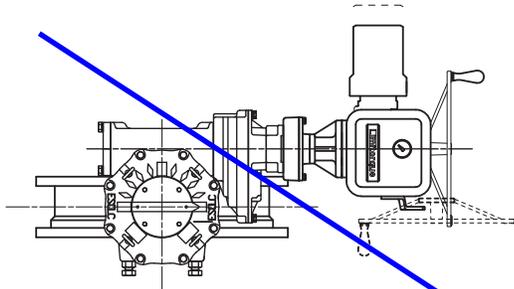
GENERAL ARRANGEMENT DRAWING
BUTTERFLY VALVE
24 INCHES THRU 72 INCHES
LIMITORQUE L120/WG ACTUATOR

SCALE NONE DATE 04/15/2014

DRAWN BY JCL CHECKED BY SS

APPROVED GA=BORDER

DRWG. NO. GA-11519 REV 2 A/C



ACTUATOR SHOWN IN PRATT POSITION B3
VENDOR POSITION A, SEE VENDOR DRAWING

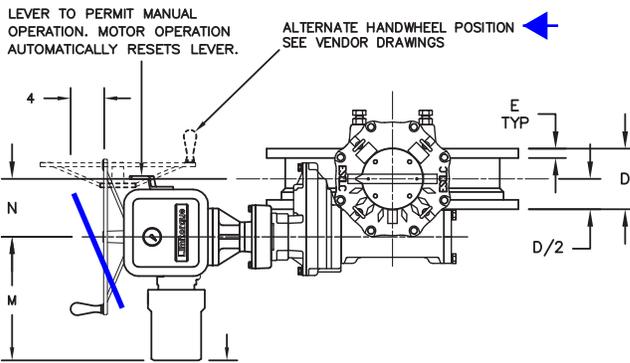
VALVE DIMENSIONS

VALVE SIZE	A	B	C	D	E	F	G
24	18-5/8	18-5/8	32	8	1-7/8	20-1-1/4	29-1/2
30	21-1/2	24-3/8	38-3/4	12	2-1/8	28-1-1/4	36
36	25-7/16	28-1/4	46	12	2-3/8	32-1-1/2	42-3/4
42	29-7/8	32-7/8	53	12	2-5/8	36-1-1/2	49-1/2
48	34-1/16	37-1/8	59-1/2	15	2-3/4	44-1-1/2	56
54	37-1/2	40-7/8	66-1/4	15	3	44-1-3/4	62-3/4
60	41-3/4	45-1/8	73	15	3-1/8	52-1-3/4	69-1/4
66	46-1/16	49-3/4	80	18	3-3/8	52-1-3/4	76
72	50	53-5/8	86-1/2	18	3-1/2	60-1-3/4	82-1/2

MOTOR DIMENSIONS

UNIT SIZE	J	M	R	V
L120-10	15-7/16	14-1/4	14-1/8	12
L120-20	16-7/16	16	15-5/8	18
L120-40	17	18-15/16	18-1/8	12
L120-85	17-3/8	25-3/4	12	12
L120-190	20-1/4	32-1/4	18	24

REFER TO VENDOR ACTUATOR DRAWING FOR CERTIFIED DIMENSIONS AND ACCESSORIES



LEVER TO PERMIT MANUAL OPERATION. MOTOR OPERATION AUTOMATICALLY RESETS LEVER.

ALTERNATE HANDWHEEL POSITION SEE VENDOR DRAWINGS

2-1/2 CLEARANCE FOR COVER REMOVAL

ACTUATOR SHOWN IN PRATT POSITION B3
VENDOR POSITION A, SEE VENDOR DRAWING

See EPS-2G for position B1

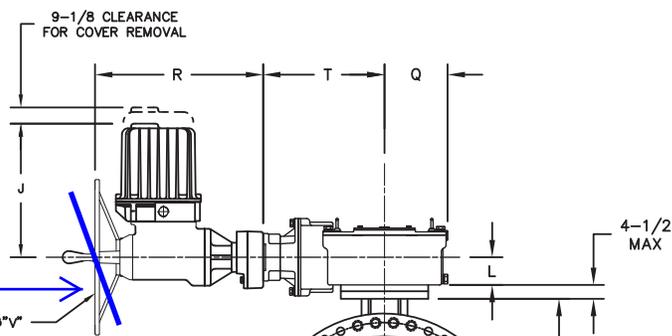
WORMGEAR DIMENSIONS

UNIT SIZE	L	N	Q	T
WG-04	2-7/8	6	6-1/8	12-5/8
WG-05	3-1/8	2-5/16	6-1/2	11-5/8
WG-55	3-1/8	8	7-3/8	13-7/8
WG-07	4-1/2	11	9	20
WG-07-1SD	4-1/2	11	11-3/8	20-1/4
WG-08-1SD	5	15	15-5/8	26-1/4
WG-10-1SD	6-3/8	20-1/4	20-1/4	31-1/8

REFER TO VENDOR ACTUATOR DRAWING FOR CERTIFIED DIMENSIONS AND ACCESSORIES

NOTES:

- ALL DIMENSIONS SHOWN IN INCHES.
- "D" DIMENSION ±1/8".
- FOR BOLTS SMALLER THAN 1 3/4", BOLT HOLES WILL BE 1/8" LARGER THAN DIAMETER OF BOLT. FOR BOLTS 1 3/4" OR LARGER, BOLT HOLES WILL BE 1/4" LARGER THAN DIAMETER OF BOLT.
- DIMENSIONS AND DRILLING OF END FLANGES CONFORM TO THE AMERICAN CAST IRON FLANGE STANDARDS, CLASS 125 (B16.1).
- VALVES MANUFACTURED & TESTED IN ACCORDANCE WITH AWWA SPECIFICATION C-504 LATEST REVISION, CLASS 150B.
- RECOMMENDATION FOR MATING FLANGES: WHERE INSULATING BUSHINGS ARE USED, IT IS NECESSARY THAT BOLT HOLES BE DRILLED OVERSIZE BY AN AMOUNT EQUAL TO TWO TIMES THE INSULATING SLEEVE THICKNESS TO MAINTAIN THE SAME MINIMUM CLEARANCE FOR BOLTS.
- CAUTION: IT IS RECOMMENDED THAT VALVES BE INSTALLED INTO PIPING SYSTEM IN ACCORDANCE WITH AWWA M-11 TO PREVENT ANY UNDUE PIPING STRESS, DEFLECTION OR BENDING THAT MAY EFFECT THE PERFORMANCE OF THE VALVE.



9-1/8 CLEARANCE FOR COVER REMOVAL

4-1/2 MAX

side mounted handwheel NOT shown

F=TOTAL NO. AND SIZE OF BOLTS
125 LB STD LAYOUT
STRADDLE CENTERLINE
EACH FLANGE
(INCLUDES TAPPED HOLES)

3-1/2" SPACE REQUIRED FOR THRUST BEARING COVER REMOVAL

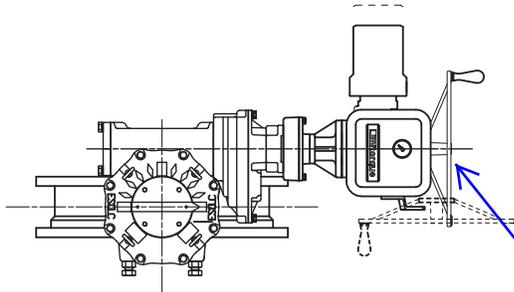
TAPPED HOLES "F" UNC2B X E DEEP
VALVE NO. TAPPED HOLES (EACH FLANGE)
30"-72" 4-TOP; 4-BOTTOM
24" 2-TOP; 2-BOTTOM

2	08/03/20	ADDED WG-07-1SD, WG-08-1SD, WG-10-1SD, L120-85, L12-190 AND ALTERNATE MOUNTING POSITION	TT	RF
1	11/14/14	ADDED WG07 MODEL	DSL	RF
REV	DATE	DESCRIPTION	DWN	APP



GENERAL ARRANGEMENT DRAWING
BUTTERFLY VALVE
24 INCHES THRU 72 INCHES
LIMITORQUE L120/WG ACTUATOR

SCALE	NONE	DATE	04/15/2014
DRAWN BY	JCL	CHECKED BY	SS
APPROVED		GA=BORDER	
DRWG. NO.	GA-11519	REV	2



▶ ACTUATOR SHOWN IN PRATT POSITION B3
VENDOR POSITION A, SEE VENDOR DRAWING

top mount handwheel

VALVE DIMENSIONS

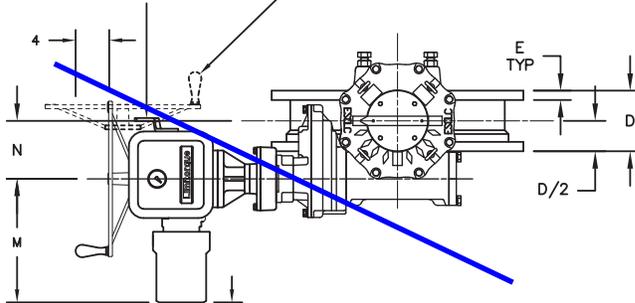
VALVE SIZE	A	B	C	D	E	F	G
24	18-5/8	18-5/8	32	8	1-7/8	20-1-1/4	29-1/2
30	21-1/2	24-3/8	38-3/4	12	2-1/8	28-1-1/4	36
36	25-7/16	28-1/4	46	12	2-3/8	32-1-1/2	42-3/4
42	29-7/8	32-7/8	53	12	2-5/8	36-1-1/2	49-1/2
48	34-1/16	37-1/8	59-1/2	15	2-3/4	44-1-1/2	56
54	37-1/2	40-7/8	66-1/4	15	3	44-1-3/4	62-3/4
60	41-3/4	45-1/8	73	15	3-1/8	52-1-3/4	69-1/4
66	46-1/16	49-3/4	80	18	3-3/8	52-1-3/4	76
72	50	53-5/8	86-1/2	18	3-1/2	60-1-3/4	82-1/2

MOTOR DIMENSIONS

UNIT SIZE	J	M	R	V
L120-10	15-7/16	14-1/4	14-1/8	12
L120-20	16-7/16	16	15-5/8	18
L120-40	17	18-15/16	18-1/8	12
L120-85	17-3/8	25-3/4	12	12
L120-190	20-1/4	32-1/4	18	24

▶ REFER TO VENDOR ACTUATOR DRAWING FOR CERTIFIED DIMENSIONS AND ACCESSORIES

LEVER TO PERMIT MANUAL OPERATION. MOTOR OPERATION AUTOMATICALLY RESETS LEVER.
ALTERNATE HANDWHEEL POSITION SEE VENDOR DRAWINGS



2-1/2 CLEARANCE FOR COVER REMOVAL

ACTUATOR SHOWN IN PRATT POSITION B7
VENDOR POSITION A, SEE VENDOR DRAWING

WORMGEAR DIMENSIONS

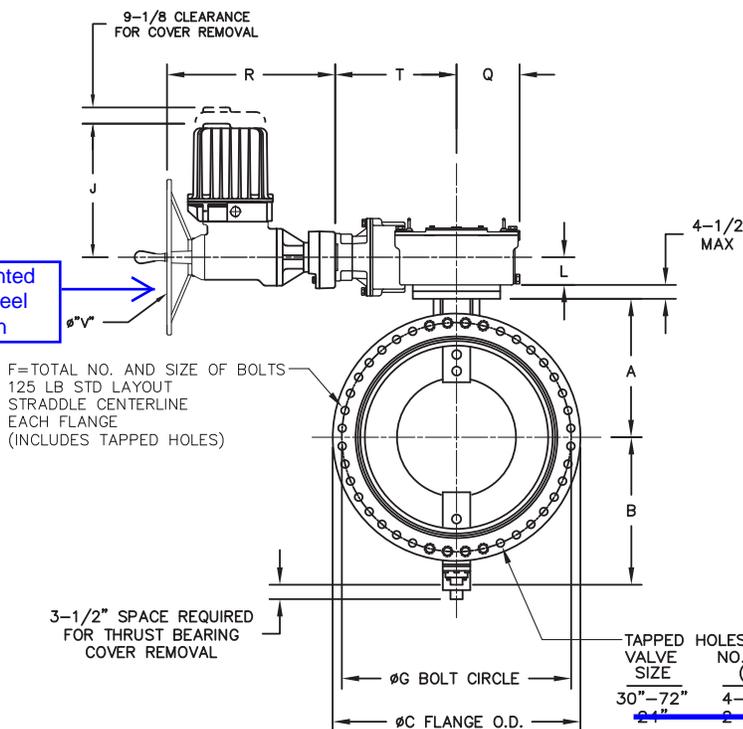
UNIT SIZE	L	N	Q	T
WG-04	2-7/8	6	6-1/8	12-5/8
WG-05	3-1/8	2-5/16	6-1/2	11-5/8
WG-55	3-1/8	8	7-3/8	13-7/8
WG-07	4-1/2	11	9	20
WG-07-1SD	4-1/2	11	11-3/8	20-1/4
WG-08-1SD	5	15	15-5/8	26-1/4
WG-10-1SD	6-3/8	20-1/4	20-1/4	31-1/8

▶ REFER TO VENDOR ACTUATOR DRAWING FOR CERTIFIED DIMENSIONS AND ACCESSORIES

NOTES:

- ALL DIMENSIONS SHOWN IN INCHES.
- "D" DIMENSION ±1/8".
- FOR BOLTS SMALLER THAN ~~1 3/4~~, BOLT HOLES WILL BE 1/8" LARGER THAN DIAMETER OF BOLT. FOR BOLTS ~~1 3/4~~ OR LARGER, BOLT HOLES WILL BE 1/4" LARGER THAN DIAMETER OF BOLT.
- DIMENSIONS AND DRILLING OF END FLANGES CONFORM TO THE AMERICAN CAST IRON FLANGE STANDARDS, CLASS 125 (B16.1).
- VALVES MANUFACTURED & TESTED IN ACCORDANCE WITH AWWA SPECIFICATION C-504 LATEST REVISION, CLASS 150B.
- RECOMMENDATION FOR MATING FLANGES: WHERE INSULATING BUSHINGS ARE USED, IT IS NECESSARY THAT BOLT HOLES BE DRILLED OVERSIZE BY AN AMOUNT EQUAL TO TWO TIMES THE INSULATING SLEEVE THICKNESS TO MAINTAIN THE SAME MINIMUM CLEARANCE FOR BOLTS.
- CAUTION: IT IS RECOMMENDED THAT VALVES BE INSTALLED INTO PIPING SYSTEM IN ACCORDANCE WITH AWWA M-11 TO PREVENT ANY UNDUE PIPING STRESS, DEFLECTION OR BENDING THAT MAY EFFECT THE PERFORMANCE OF THE VALVE.

top mounted handwheel shown



F=TOTAL NO. AND SIZE OF BOLTS
125 LB STD LAYOUT
STRADDLE CENTERLINE
EACH FLANGE
(INCLUDES TAPPED HOLES)

3-1/2" SPACE REQUIRED FOR THRUST BEARING COVER REMOVAL

TAPPED HOLES "F" UNC2B X E DEEP
VALVE NO. TAPPED HOLES (EACH FLANGE)
30"-72" 4-TOP; 4-BOTTOM
24" 2-TOP; 2-BOTTOM

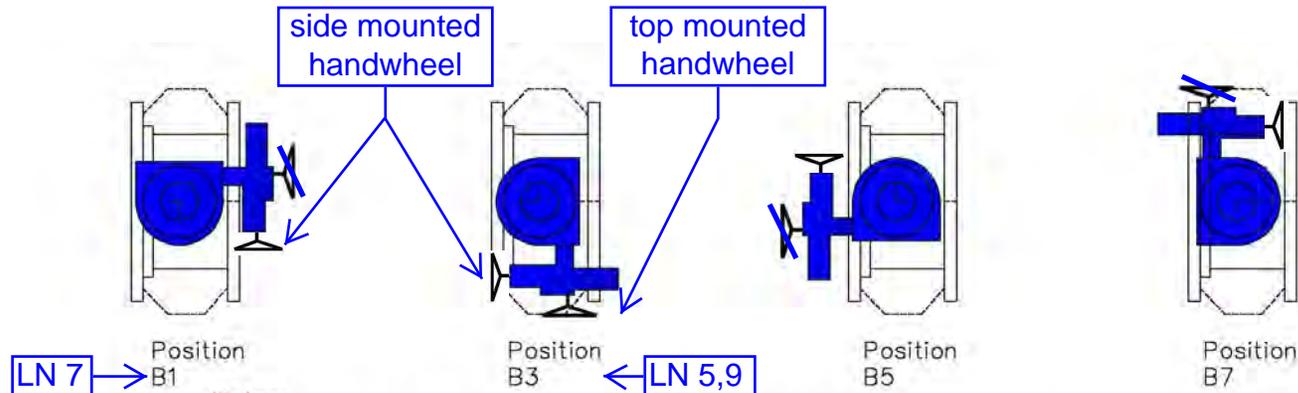
REV	DATE	DESCRIPTION	DWN	APP
2	08/03/20	ADDED WG-07-1SD, WG-08-1SD, WG-10-1SD, L120-85, L120-190 AND ALTERNATE MOUNTING POSITION	TT	RF
1	11/14/14	ADDED WG07 MODEL	DSL	RF



GENERAL ARRANGEMENT DRAWING
BUTTERFLY VALVE
24 INCHES THRU 72 INCHES
LIMITORQUE L120/WG ACTUATOR

SCALE	NONE	DATE	04/15/2014
DRAWN BY	JCL	CHECKED BY	SS
APPROVED		GA=BORDER	
DRWG. NO.	GA-11519	REV	2

REV	ECN	DESCRIPTION	DATE	DWN	APP
-----	-----	-------------	------	-----	-----



Notes:

- 1) For butterfly and Plug valves seat side is on left.
- ~~2) For ball valves seat side "A" is on left and seat side "B" is on right.~~
- ~~3) For combination valves flange side is on the left.~~

Worm Gear Motor Types

- 1) Limitorque PTA/PTC with L120 or SMC
- ~~2) Limitorque HBC with L120 or SMC~~
- ~~3) Rotork IQ IW Uses "B" Positions ONLY~~

DRAWN BY: SS DRAWN DATE: 4/26/07 APPROVED BY: APPROVED DATE: PROPRIETARY INFORMATION DO NOT COPY OR REPRODUCE WITHOUT WRITTEN PERMISSION FILE LOCATION:		Henry Pratt Company 401 S. Highland Ave Aurora, IL 60506	C A D
TITLE: Motor Worm Gear Actuators Positions		SIZE: A PART # n/a	SHEET: 1 OF 1
SCALE: NONE		DRAWING: EPS-23-G	REV: 1

PRATT[®]

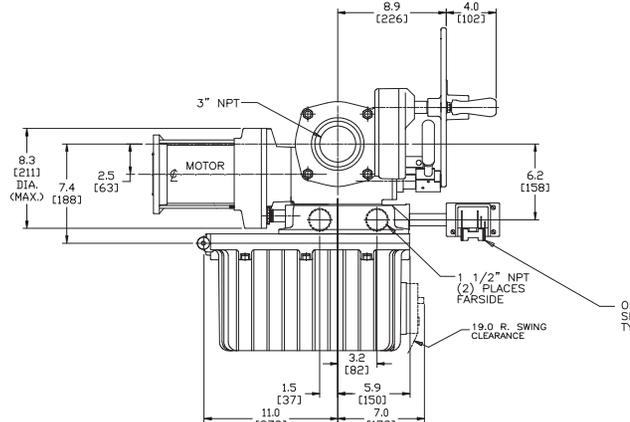
a **MUELLER** brand

401 S. HIGHLAND AVENUE, AURORA, IL 60506
TEL: (630) 844-4000 FAX: (630) 844-4160

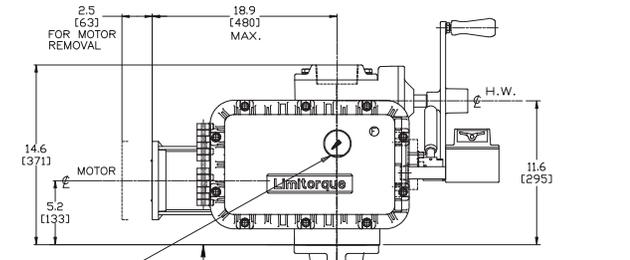
Purchase Order #: 9795011
Sales Order #: 2731977 HP
Proposal/Quote #: Q-020-13073
Project Name: Hess Pump Station Valve Replacement
Project Location: Wichita, KS
Date: August 12, 2020
Revision: 0

ACTUATOR INFORMATION

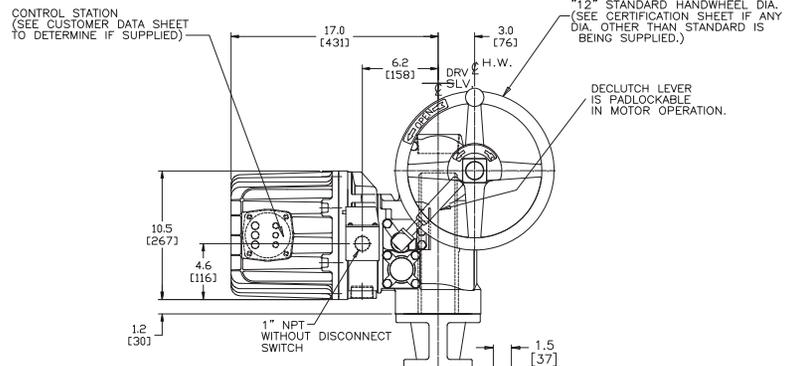
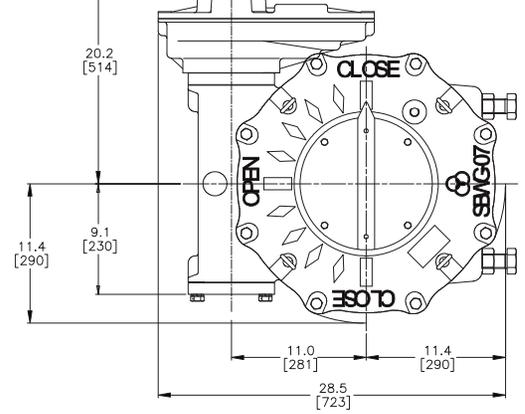
REVISONS		BY	DATE	APPVD
REV	DESCRIPTION			



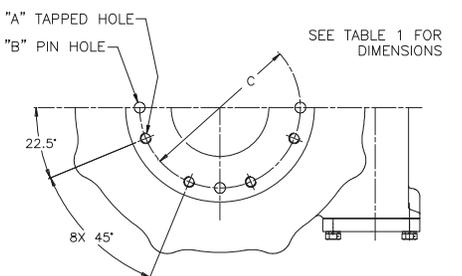
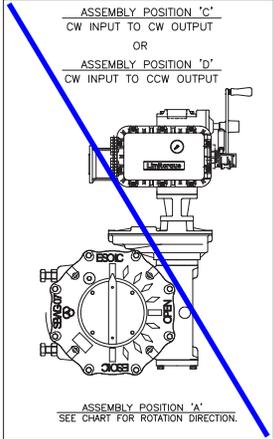
OPTIONAL DISCONNECT SWITCH
SEE WIRING DIAGRAM FOR
TYPE AND FUNCTION.



POSITION INDICATOR
SEE CUSTOMER DATA SHEET
IF SUPPLIED

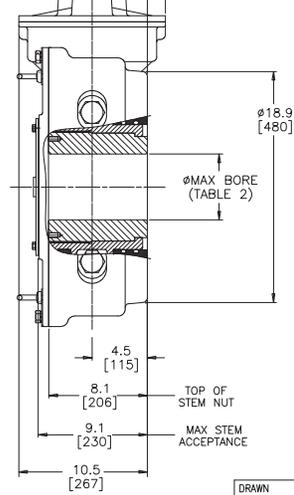


ASSEMBLY POSITION "A"
CW INPUT TO CW OUTPUT
OR
ASSEMBLY POSITION "B"
CW INPUT TO CCW OUTPUT



NOTES:
1) SEE CUSTOMER DATA SHEET TO DETERMINE BASE AND ASSEMBLY POSITION SUPPLIED.

MOUNTING BASE	A	B	C
FA30 (8) 3/4-10 UNC TAP X 1.2 DP	N/A	N/A	Ø11.7
FA35 (8) 1-8 UNC TAP X 1.8 DP	N/A	N/A	Ø14.0
FA40 (8) 1 1/4-7 UNC TAP X 2.1 DP	N/A	N/A	Ø16.0
F30 (8) M20 TAP X 30 DP	(4) Ø20 PIN X 20 DP		Ø298
F35 (8) M30 TAP X 45 DP	(4) Ø30 PIN X 30 DP		Ø356
F40 (8) M36 TAP X 54 DP	(4) Ø36 PIN X 36 DP		Ø406



MAX BORE	MAX KEYWAY (SQUARE)	MAX KEYWAY (RECTANGLE)
Ø6.188	1 1/2 X 1 1/2	-
Ø6.438	-	1 1/2 X 1
[Ø164]	-	[40 X 22]

DRAWN	DATE	 Limitorque Actuation Systems <small>5114 WOODALL ROAD, LYNCHBURG, VIRGINIA 24506-1318</small>
RLP	3/17/15	
CHECKED	DATE	TITLE L120-40 STANDARD UNIT WITH: A) SIDE MOUNTED HANDWHEEL B) MIN INTEGRAL COVER C) WG-07-1SD WORM GEAR OPERATOR D) MSS AND ISO BASE E) OPTIONAL CONTROL STATION F) OPTIONAL DISCONNECT SWITCH
ILY	3/18/15	
APPROVED	DATE	SCALE NONE
ILY	3/18/15	
SIZE A DWG NO 03-652-0093		REV
SCALE NONE		ORDER NO N/A

Flowserve®

Limitorque

5114 Woodall Road
 Lynchburg, VA 24502-2248
 434-845-9736 www.flowserve.com

Phone: 434-528-4400
 Fax:

Customer Data Sheet

SALES ORDER NO. 183123 REV 2		ORDER LINE 001	DATE ORDERED 07/02/20
CUSTOMER PURCHASE ORDER 1356591			CUSTOMER NO. 71750
OPERATOR LOBRIEN		CONFIGURATION 197491.0	
SOLD TO	HENRY PRATT CO 401 S HIGHLAND AVE AURORA, IL 60506-5563 UNITED STATES		

END USER WICHITA, KS
 END PROJECT HESS PUMP STATION VALVE REPLACEMENT

ACTUATOR INFORMATION

Electric Actuator Type L120-40
 Enclosure Type WP-LC LABEL
 Position Indication LCPI
 Control Package CLMSHL
 Control Station CS
 LSC Heater 120V/20W
 ~Output RPM (Electric) 81
 Open Direction CCW
 L120/Gear Box Max Rated Torque 16076 ft lb 21799 Nm
 L120/Gear Box Stall Torque 19642 ft lb 26635 Nm
 Valve Torque 13324 ft lb 18067 Nm
 Operating Time for 90 degrees 73
 Handwheel Diameter OPT-12"SIDE ←
 L120 Drive Type 1
 L120 Base Type MSS
 Gear Box Type WG-07-1SD-D
 Gear Box Ratio 350
 Gear Box SGA Ratio NA
 Gear Box Position A
 Gear Box Base Type MSS-FA35
 Paint LPS-130
 Outline Drawing 03-652-0093
 Wiring Diagram 16-476-2481-3
 Disconnect Switch Diagram NA
 Warranty STANDARD
 Lube LUBE-DYNALIFE-L-EP0

MOTOR INFORMATION

~Motor Size 25 Ft. Lbs.
 ~Motor Voltage 120 vdc
 ~Mtr Phase/Frequency NA
 ~Motor Horsepower/KW 1.80 / 1.34
 ~Motor RPM 1900
 ~Locked Rotor Amps (LRA) 88.00
 ~Full Load Amps (FLA) 13.10
 Motor Heater 120V/10W

INSTRUCTION MANUALS: (On the Internet www.limitorque.com)

L120-40 Instruction Manual - LMENIM1201

WG Instruction Manual - LMENIM2101

CLMSHL Instruction Manual - NA

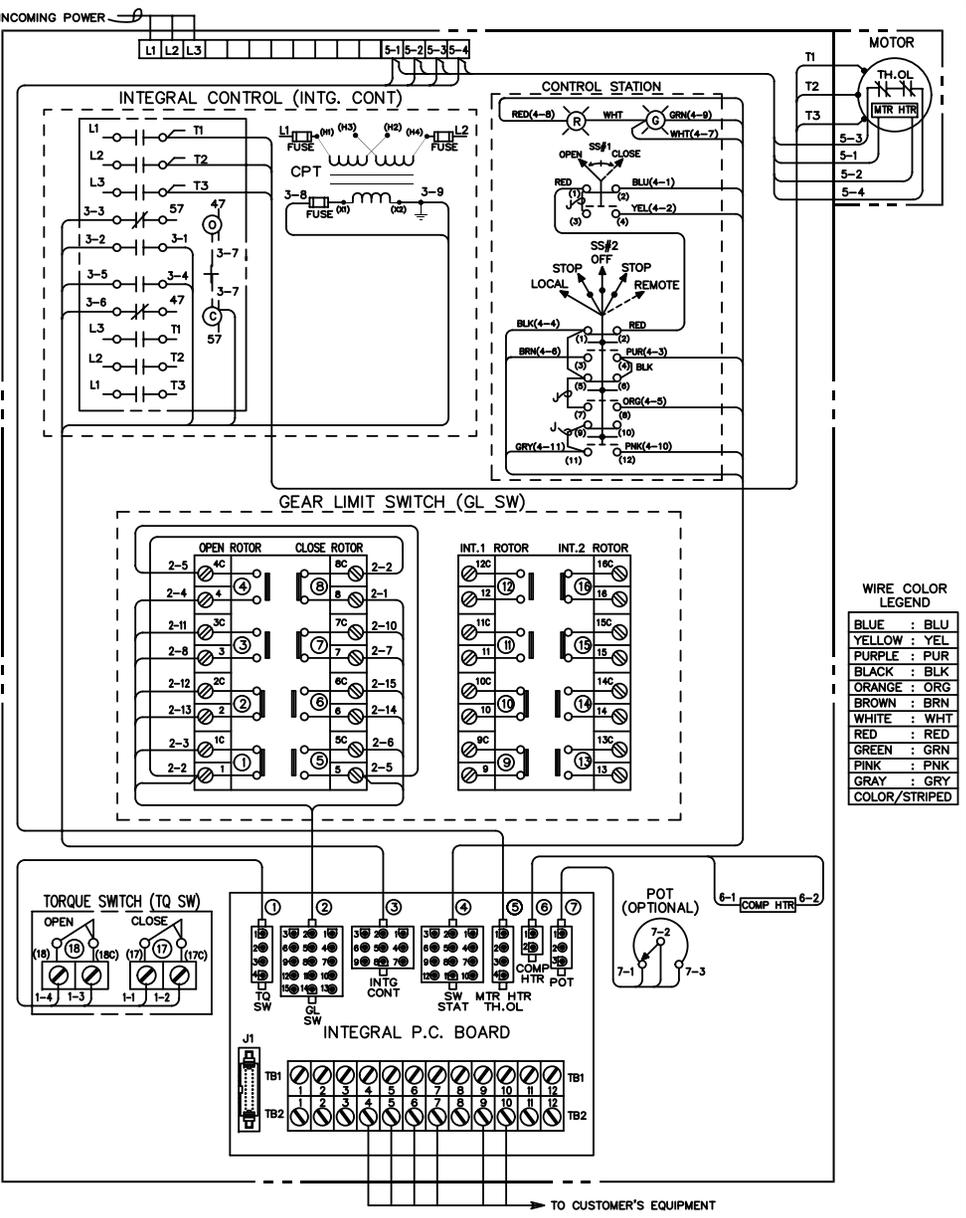
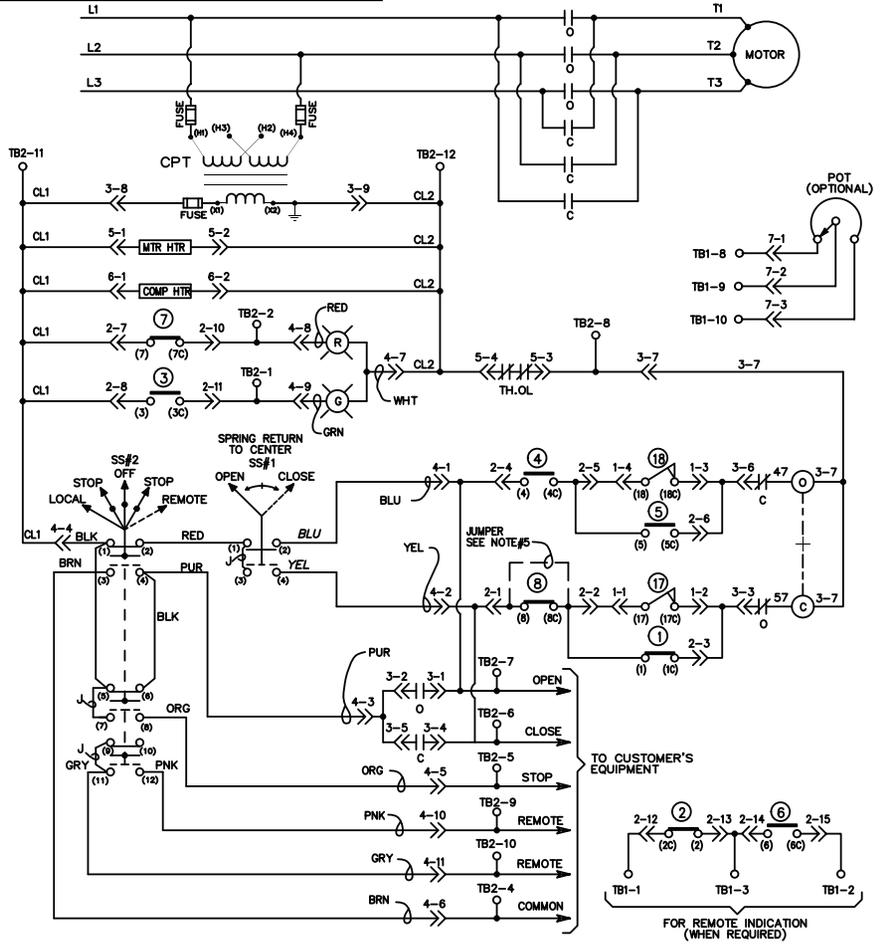
TAGGING AND INFORMATION:

TAG ALL: ZHP2731977005

Line Item 5

Valve 29
 Valve 33
 Valve 34
 Valve 35
 Valve 36
 Valve 40

B-261701-8004000-00030



WIRE COLOR LEGEND

BLUE	: BLU
YELLOW	: YEL
PURPLE	: PUR
BLACK	: BLK
ORANGE	: ORG
BROWN	: BRN
WHITE	: WHT
RED	: RED
GREEN	: GRN
PINK	: PNK
GRAY	: GRY
COLOR/STRIPED	

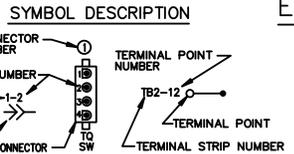
VALVE SHOWN IN FULL OPEN POSITION
LIMIT SWITCH CONTACT DEVELOPMENT

ROTOR	CONTACT	VALVE POSITION		FUNCTION
		FULLY OPEN	FULLY CLOSED	
1	1			BY-PASS CIR.
2	2			CUST-USE
3	3			IND LIGHT
4	4			OPEN LIMIT
5	5			BY-PASS CIR.
6	6			CUST-USE
7	7			IND LIGHT
8	8			CLOSE LIMIT
9	9			SPARE
10	10			SPARE
11	11			SPARE
12	12			SPARE
13	13			SPARE
14	14			SPARE
15	15			SPARE
16	16			SPARE

- NOTES
- 1 - OPEN CONTACT
 - 2 - CLOSE CONTACT
 3. ROTORS INT. 1 & INT. 2 CAN BE SET AT VALVE POSITION FULL OPEN, FULL CLOSED OR ANY POSITION IN BETWEEN AS INDICATED BY POINT A AND B.
 4. TRANSFORMER CONNECTION FOR HIGH VOLTAGE CONNECT H3 TO H2, H1 TO L1 & H4 TO L2. FOR LOW VOLTAGE CONNECT H1 & H3 TO L1 AND H2 & H4 TO L2.
 5. ADD JUMPER ON LS#B BETWEEN TERMINALS (B) & (BC) FOR TORQUE SEATING VALVES.

- LEGEND
- - OPEN CONTACT
 - ◻ - CLOSE CONTACT
 - C - CLOSE CONTACT
 - ⊖ - OPENING COIL
 - ⊕ - CLOSING COIL
 - ⊖ - CONTROL POWER TRANSFORMER
 - ⊕ - MECHANICAL INTERLOCK
 - TH.O.L. - THERMAL OVERLOAD CONTACTS
 - ⊖ - RED INDICATING LIGHT
 - ⊕ - GREEN INDICATING LIGHT
 - SS#2 - SELECTOR SWITCH (LOCAL-STOP-OFF-STOP-REMOTE)
 - SS#1 - SELECTOR SWITCH (OPEN-CLOSE) (SPRING RETURN TO CENTER)
 - COMP HTR - COMPARTMENT HEATER
 - MTR HTR - MOTOR HEATER
 - POT - POTENTIOMETER (OPTIONAL - SEE SHEET IF REQUIRED)
 - J1 - CONNECTOR (NOT USED)
 - J - INTERNAL JUMPER NOT REMOVABLE

- ⑰ CLOSING TORQUE SWITCH INTERRUPTS CONTROL CIRCUIT IF MECHANICAL OVERLOAD OCCURS DURING CLOSING CYCLE
- ⑱ OPENING TORQUE SWITCH INTERRUPTS CONTROL CIRCUIT IF MECHANICAL OVERLOAD OCCURS DURING OPENING CYCLE



ELECTRICAL COMPARTMENT

DRAWN		DATE		LIMITORQUE Actuation Systems	
SA		11/05/09		8115 WERNER ROAD, LYNDEN, WYOMING 82520-1210	
CHECKED		DATE		TITLE	
MVM		12/07/09		CLAMSHELL, CS, PRIMARY FUSES, OPTIONAL POT	
APPROVED		DATE		1ST ORDER NO.	
MVM		12/07/09		DRAWING NO.	
REVISION		STANDARD		16-476-2481-3	
NO.		DESCRIPTION		DATE	
				REV	
				SHEET	
				1 of 1	

Line Item 7 (Valves 1, 4, 6)

REVISIONS		BY	DATE	APPVD
REV	DESCRIPTION			

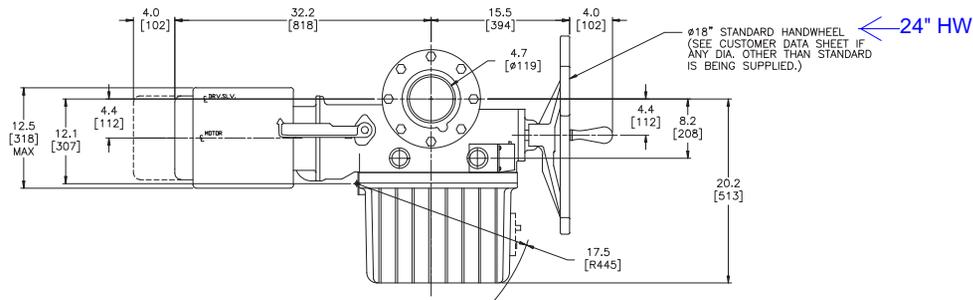
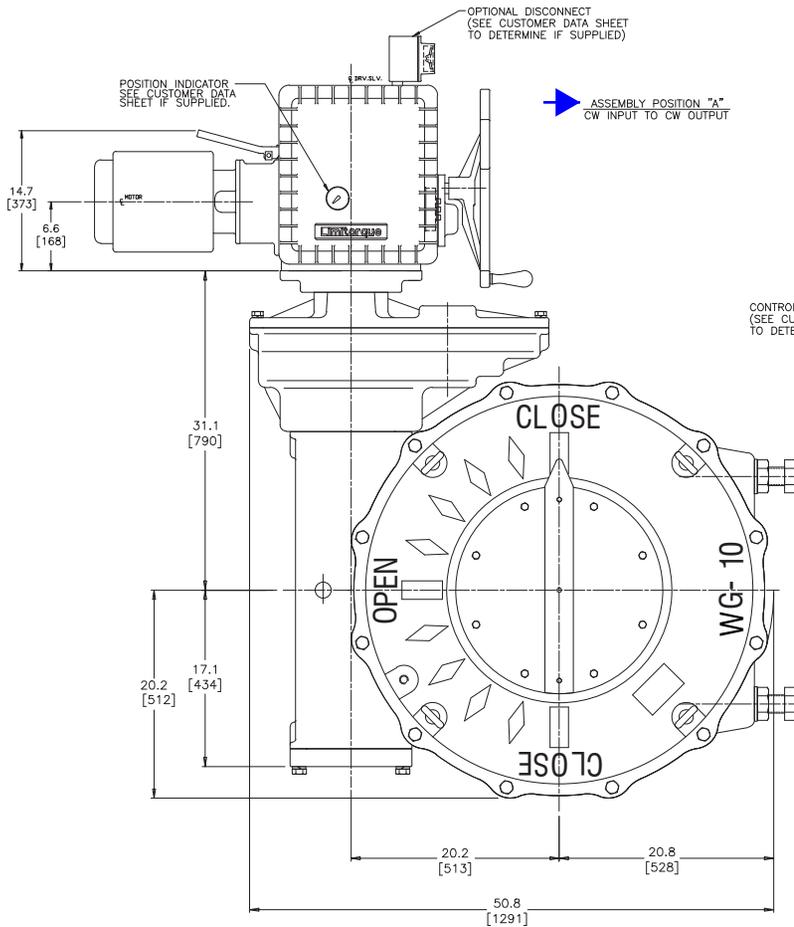


TABLE 1

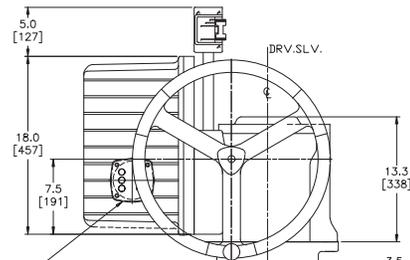
MOUNTING BASE	A	ØB	ØC
MSS F60 (INCH)	(20) 1 1/4-7 UNC TAP X 2.1 DP	NA	Ø23.7
ISO F60 (mm)	(20) M36 TAP X 55 DP	(4) Ø36 PIN X 36 DP	Ø60.3

TABLE 2

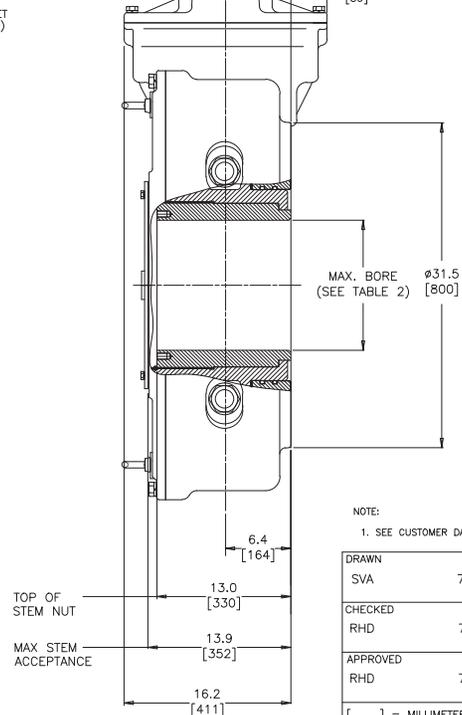
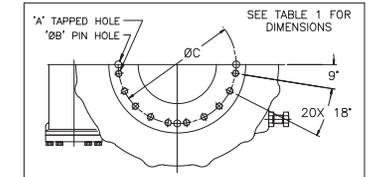
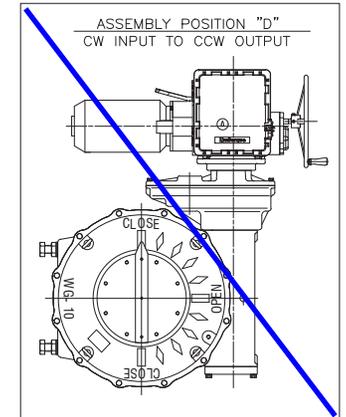
MAX BORE	MAX KEY (SQUARE)	MAX KEY (RECTANGLE)
Ø10.000	2 1/2 X 2 1/2	-
Ø10.750	-	2 1/2 X 1 3/4
[Ø286]	-	[63 X 32]



ASSEMBLY POSITION "A"
 CW INPUT TO CW OUTPUT



CONTROL STATION (SEE CUSTOMER DATA SHEET TO DETERMINE IF SUPPLIED)



NOTE:

- SEE CUSTOMER DATA SHEET TO DETERMINE BASE AND ASSEMBLY POSITION SUPPLIED.

DRAWN	DATE	Limitorque Actuation Systems <small>5114 WOODALL ROAD, LYNCHBURG, VIRGINIA 24506-1318</small>
SVA	7/23/20	
CHECKED	DATE	TITLE
RHD	7/23/20	L120-190 UNIT
APPROVED	DATE	A) MEDIUM COMPARTMENT
RHD	7/23/20	B) WG-10-1SD WORM GEAR OPERATOR
		C) MSS & ISO MOUNTING BASES
		D) OPTIONAL CS & DISCONNECT
SIZE	DRW NO	REV
	03-652-0244	
[] = MILLIMETER VALUE UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	SCALE	ORDER NO
	NONE	

Limitorque

5114 Woodall Road
 Lynchburg, VA 24502-2248
 434-845-9736 www.flowserve.com

Phone: 434-528-4400
 Fax:

SALES ORDER NO. 183124 REV 2		ORDER LINE 002	DATE ORDERED 07/02/20
CUSTOMER PURCHASE ORDER 1356592			CUSTOMER NO. 71750
OPERATOR LOBRIEN		CONFIGURATION 197495.0	
SOLD TO	HENRY PRATT CO 401 S HIGHLAND AVE AURORA, IL 60506-5563 UNITED STATES		

END USER WICHITA, KS
 END PROJECT HESS PUMP STATION VALVE REPLACEMENT

ACTUATOR INFORMATION

Line Item 7

Valve 1
 Valve 4
 Valve 6

Electric Actuator Type L120-190
 Enclosure Type WP-LC LABEL
 Position Indication LCPI
 ~Control Package CLMSHL
 Control Station CS
 LSC Heater 120V/20W
 ~Output RPM (Electric) 107
 Open Direction CCW
 ~L120/Gear Box Max Rated Torque 62211 ft lb 84347 Nm
 ~L120/Gear Box Stall Torque 124532 ft lb 168843 Nm
 Valve Torque 50461 ft lb 68425 Nm
 Operating Time for 90 degrees 53
 Handwheel Diameter OPT-24" ←
 L120 Drive Type 1
 L120 Base Type MSS
 Gear Box Type WG-10-1SD-D
 Gear Box Ratio 422
 Gear Box SGA Ratio NA
 Gear Box Position A
 Gear Box Base Type MSS-FA60
 Paint LPS-129
 ~Outline Drawing 03-652-0244
 ~Wiring Diagram 16-476-2507
 Disconnect Switch Diagram NA
 Warranty STANDARD
 Lube LUBE-DYNALIFE-L-EPO

MOTOR INFORMATION

~Motor Size 80 Ft. Lbs.
 ~Motor Voltage 125
 ~Mtr Phase/Frequency VDC



Limitorque

5114 Woodall Road
Lynchburg, VA 24502-2248
434-845-9736www.flowserve.com

Phone: 434-528-4400
Fax:

Customer Data Sheet

SALES ORDER NO. 183124 REV 2	ORDER LINE 002	DATE ORDERED 07/02/20
CUSTOMER PURCHASE ORDER 1356592		CUSTOMER NO. 71750
OPERATOR LOBRIEN		CONFIGURATION 197495.0
SOLD TO	HENRY PRATT CO 401 S HIGHLAND AVE AURORA, IL 60506-5563 UNITED STATES	

END USER WICHITA, KS
END PROJECT HESS PUMP STATION VALVE REPLACEMENT

~Motor Horsepower/KW 5.78 / 4.31
~Motor RPM 1900
~Locked Rotor Amps (LRA) 264.00
~Full Load Amps (FLA) 44.00
~Motor Heater 120V/30W
~Recommended Discharge Resistor 500 Ohms, 50 Watts
INSTRUCTION MANUALS: (On the Internet www.limitorque.com)
L120-190 Instruction Manual - LMENIM1203
WG Instruction Manual - LMENIM2101
INT Instruction Manual - NA

Line Item 7
Valve 1
Valve 4
Valve 6

TAGGING AND INFORMATION:
TAG ALL: ZHP2731977007

REVISIONS		BY	DATE	APPVD
REV	DESCRIPTION			

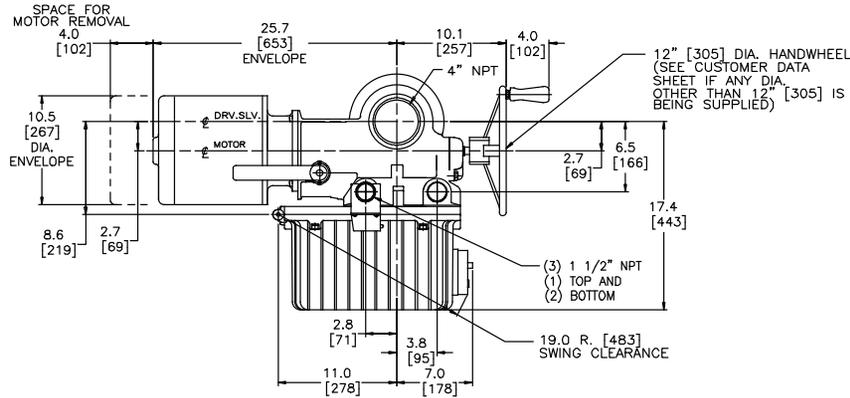


TABLE 1

MOUNTING BASE	A	B	C
MSS (INCH)	FA40 (8) 1 1/4-7 UNC TAP X 2.1 DP	N/A	Ø16.0
	FA48 (12) 1 1/4-7 UNC TAP X 2.1 DP	N/A	Ø19.0
ISO (METRIC)	F40 (8) M36 TAP X 54 DP	(4) Ø36 PIN X 36 DP	Ø406
	F48 (12) M36 TAP X 54 DP	(4) Ø36 PIN X 36 DP	Ø483

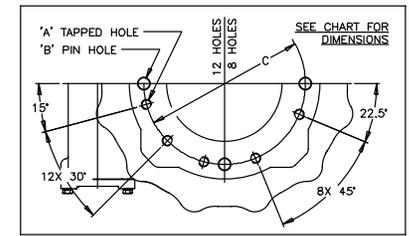
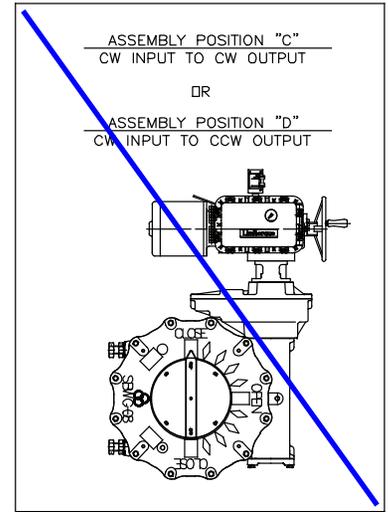
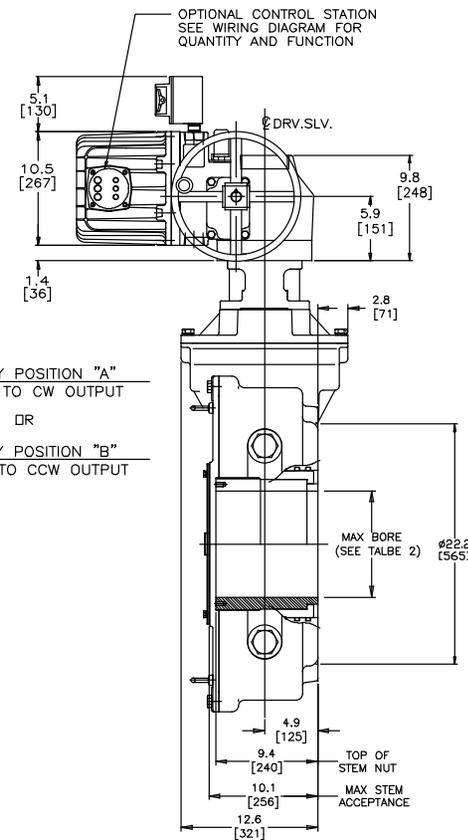
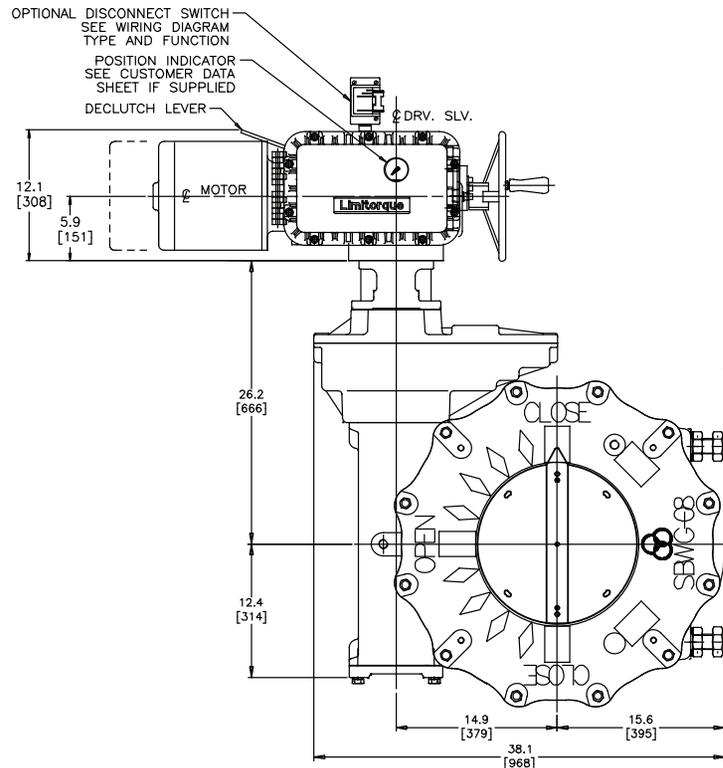


TABLE 2

MAX BORE	MAX KEYWAY (SQUARE)	MAX KEYWAY (RECTANGLE)
Ø8.000	2 X 2	-
Ø8.500	-	2 X 1 1/2
Ø[228]	-	[50 X 28]

NOTE:
1. SEE CUSTOMER DATA SHEET TO DETERMINE BASE AND ASSEMBLY POSITION SUPPLIED.

DRAWN	DATE	FLOWSERVE-LIMITORQUE		
CRH	7/25/18	5114 WOODLARK RD., LYNCHBURG, VIRGINIA 24506-1318		
CHECKED	DATE	TITLE		
MWR	7/26/18	L120-85 UNIT WITH:		
APPROVED	DATE	A) MEDIUM COMPARTMENT		
MWR	7/26/18	B) OPTIONAL CONTROL STATION		
		C) OPTIONAL DISCONNECT SWITCH		
		D) WG-08-1SD WORM GEAR OPERATOR		
		E) MSS & ISO BASES		
SIZE	DWG NO	03-652-0196	REV	
A	SCALE	NONE	ORDER NO	N/A
1 = MILLIMETER VALUE UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES				

Flowserve®

Limitorque

5114 Woodall Road
 Lynchburg, VA 24502-2248
 434-845-9736 www.flowserve.com

Phone: 434-528-4400
 Fax:

Customer Data Sheet

SALES ORDER NO. 183123 REV 2	ORDER LINE 002	DATE ORDERED 07/02/20
CUSTOMER PURCHASE ORDER 1356591		CUSTOMER NO. 71750
OPERATOR LOBRIEN		CONFIGURATION 197492.0
SOLD TO	HENRY PRATT CO 401 S HIGHLAND AVE AURORA, IL 60506-5563 UNITED STATES	

END USER WICHITA, KS
 END PROJECT HESS PUMP STATION VALVE REPLACEMENT

ACTUATOR INFORMATION

Electric Actuator Type	L120-85
Enclosure Type	WP-LC LABEL
Position Indication	LCPI
Control Package	CLMSHL
Control Station	CS
LSC Heater	120V/20W
~Output RPM (Electric)	82
Open Direction	CCW
L120/Gear Box Max Rated Torque	48265 ft lb 65447 Nm
L120/Gear Box Stall Torque	68064 ft lb 92295 Nm
Valve Torque	28523 ft lb 38677 Nm
Operating Time for 90 degrees	62
Handwheel Diameter	STD-12" ←
L120 Drive Type	1
L120 Base Type	MSS
Gear Box Type	WG-08-1SD-D
Gear Box Ratio	394
Gear Box SGA Ratio	NA
Gear Box Position	A
Gear Box Base Type	MSS-FA48
Paint	LPS-129
~Outline Drawing	03-652-0196
Wiring Diagram	16-476-2481-3
Disconnect Switch Diagram	NA
Warranty	STANDARD
Lube	LUBE-DYNALIFE-L-EP0

Line Item 9

Valve 7
 Valve 10
 Valve 12

MOTOR INFORMATION

~Motor Size	60 Ft. Lbs.
~Motor Voltage	120 vdc
~Mtr Phase/Frequency	N/A
~Motor Horsepower/KW	4.30 / 3.20
~Motor RPM	1900
~Locked Rotor Amps (LRA)	200
~Full Load Amps (FLA)	34
~Motor Heater	120V/19W

INSTRUCTION MANUALS: (On the Internet www.limitorque.com)

L120-85 Instruction Manual - LMENIM1202

WG Instruction Manual - LMENIM2101

CLMSHL Instruction Manual - NA

TAGGING AND INFORMATION:

TAG ALL: ZHP2731977009

PRATT[®]

a **MUELLER** brand

401 S. HIGHLAND AVENUE, AURORA, IL 60506
TEL: (630) 844-4000 FAX: (630) 844-4160

Purchase Order #: 9795011
Sales Order #: 2731977 HP
Proposal/Quote #: Q-020-13073
Project Name: Hess Pump Station Valve Replacement
Project Location: Wichita, KS
Date: August 12, 2020
Revision: 0

TORQUE TABLES

Valves 29, 33, 34, 35, 36 and 40
TORQUE TABLE

7/16/2020

VALVE SIZE AND TYPE: 48 INCH TRITON CLASS (150)
SEAT MATL. AND BRG. TYPE: Buna-N - RESILOSEAL R (SERIES 8) TEFLON (0.10)
SHAFT DIAMETER: 5.625 INCHES
FLOW DIRECTION: FLAT
SHUT-OFF DIFF. PRESS.: 150.0 (PSID) OR 346.5 (Ft. of water)
FULL OPEN DELTA P (K): 0.646 (PSIG) OR 1.493 (Ft. of water)
FULL OPEN DELTA P (K'): 0.374 (PSIG) OR 0.864 (Ft. of water)
FLOW RATE: 16.00 (FPS) OR 90,239 (GPM) OR 129.95 (MGD)
STATIC BACK PRESSURE: 0 (Ft. of water)
SYSTEM CONSTANT: 86.7

PIPE IN - PIPE OUT - WATER SERVICE - AND CONSTANT HEAD SOURCE

VLV * ANG *	DELTA * PRESS *	DELTA * HEAD *	SUPPLY * HEAD *	FLOW-RATE * (GPM) *	FLOW-RATE * (MGD) *	VEL * FPS *	TORQUE * IN-LBS *	CAV * CONST *	
5	148.22	342.38	346.5	9,844	14.18	1.75	92,156	0.11	
6	147.20	340.03	346.5	12,346	17.78	2.19	87,339	0.12	
7	146.02	337.28	346.5	14,740	21.23	2.61	87,312	0.13	
8	142.98	330.28	346.5	19,560	28.17	3.47	99,493	0.15	
9	139.37	321.93	346.5	24,078	34.67	4.27	104,837	0.18	****
10	136.02	314.18	346.5	27,613	39.76	4.90	97,202	0.21	
15	119.60	276.27	346.5	40,712	58.63	7.22	77,668	0.37	
20	100.13	231.28	346.5	52,147	75.09	9.25	50,958	0.64	
25	76.08	175.73	346.5	63,486	91.42	11.26	65,474	1.15	
30	59.19	136.73	346.5	70,364	101.32	12.48	34,290	1.74	
35	43.59	100.68	346.5	76,171	109.69	13.51	35,438	2.69	APPROVED
40	30.91	71.41	346.5	80,579	116.03	14.29	40,384	4.13	THROTTLING
45	20.73	47.89	346.5	83,953	120.89	14.89	46,776	6.46	RANGE
50	13.87	32.04	346.5	86,153	124.06	15.28	54,452	9.74	
55	8.87	20.50	346.5	87,719	126.32	15.55	60,260	9.90	
60	5.53	12.78	346.5	88,751	127.80	15.74	65,240	9.90	
65	3.47	8.01	346.5	89,384	128.71	15.85	56,959	9.90	
70	2.15	4.96	346.5	89,785	129.29	15.92	48,397	9.90	
75	1.47	3.39	346.5	89,992	129.59	15.96	38,547	9.90	
80	1.01	2.32	346.5	90,131	129.79	15.98	23,645	9.90	
85	0.76	1.75	346.5	90,206	129.90	15.99	6,594	9.90	
90	0.65	1.49	346.5	90,240	129.95	16.00	10,906	9.90	

CAV CONST >= 1.5 = GOOD THROTTLING RANGE

1.5 > CAV CONST > 1.0 = CONTINUOUS THROTTLING NOT RECOMMENDED

CAV CONST <= 1.0 = SERIOUS CAVITATION AND CAVITATION DAMAGE
 CAN OCCUR IN CONTINUOUS THROTTLING APPLICATION.

THROTTLING LESS THAN 15 DEGREES OPEN IS NOT RECOMMENDED DUE TO
 POSSIBILITY OF BODY AND/OR DISC EDGE EROSION.

SEATING + BEARING TORQUE: 94,773 IN-LBS @ 0 DEG.
SEATING + BEARING + HYDROSTATIC TORQUE: 104,173 IN-LBS @ 0 DEG.
MAXIMUM DYNAMIC TORQUE (GO): 104,837 IN-LBS @ 9 DEG.

Valves 29, 33, 34, 35, 36 and 40
TORQUE TABLE

7/16/2020

VALVE SIZE AND TYPE: 48 INCH TRITON CLASS (150)
SEAT MATL. AND BRG. TYPE: Buna-N - RESILOSEAL R (SERIES 8) TEFLON (0.10)
SHAFT DIAMETER: 5.625 INCHES
FLOW DIRECTION: ARCH
SHUT-OFF DIFF. PRESS.: 150.0 (PSID) OR 346.5 (Ft. of water)
FULL OPEN DELTA P (K): 0.600 (PSIG) OR 1.385 (Ft. of water)
FULL OPEN DELTA P (K'): 0.327 (PSIG) OR 0.756 (Ft. of water)
FLOW RATE: 16.00 (FPS) OR 90,239 (GPM) OR 129.95 (MGD)
STATIC BACK PRESSURE: 0 (Ft. of water)
SYSTEM CONSTANT: 86.7

PIPE IN - PIPE OUT - WATER SERVICE - AND CONSTANT HEAD SOURCE

VLV	DELTA	DELTA	SUPPLY	FLOW-RATE	FLOW-RATE	VEL	TORQUE	CAV	
ANG	PRESS	HEAD	HEAD	(GPM)	(MGD)	FPS	IN-LBS	CONST	
5	148.28	342.52	346.5	9,673	13.93	1.72	103,345	0.11	
6	147.46	340.62	346.5	11,763	16.94	2.09	106,849	0.11	
7	146.03	337.31	346.5	14,717	21.19	2.61	106,455	0.13	
8	143.46	331.39	346.5	18,875	27.18	3.35	96,496	0.15	
9	141.22	326.21	346.5	21,872	31.50	3.88	94,364	0.16	
10	138.49	319.90	346.5	25,049	36.07	4.44	92,077	0.19	
15	124.98	288.68	346.5	36,932	53.18	6.55	116,403	0.31	
20	105.26	243.15	346.5	49,380	71.11	8.76	107,821	0.56	
25	85.84	198.29	346.5	59,136	85.16	10.49	151,913	0.91	
30	66.31	153.18	346.5	67,539	97.26	11.97	159,889	1.46	****
35	46.70	107.88	346.5	75,035	108.05	13.30	154,963	2.46	
40	30.69	70.89	346.5	80,643	116.13	14.30	133,386	4.17	APPROVED
45	19.69	45.48	346.5	84,278	121.36	14.94	111,493	6.82	THROTTLING
50	12.53	28.94	346.5	86,563	124.65	15.35	97,946	9.90	RANGE
55	8.21	18.96	346.5	87,912	126.59	15.59	83,079	9.90	
60	5.40	12.48	346.5	88,777	127.84	15.74	101,952	9.90	
65	3.51	8.12	346.5	89,356	128.67	15.84	60,865	9.90	
70	2.32	5.35	346.5	89,720	129.20	15.91	51,138	9.90	
75	1.54	3.56	346.5	89,956	129.54	15.95	44,026	9.90	
80	1.01	2.33	346.5	90,117	129.77	15.98	34,985	9.90	
85	0.71	1.65	346.5	90,206	129.90	15.99	23,383	9.90	
90	0.60	1.39	346.5	90,240	129.95	16.00	7,335	9.90	

CAV CONST >= 1.5 = GOOD THROTTLING RANGE

1.5 > CAV CONST > 1.0 = CONTINUOUS THROTTLING NOT RECOMMENDED

CAV CONST <= 1.0 = SERIOUS CAVITATION AND CAVITATION DAMAGE
 CAN OCCUR IN CONTINUOUS THROTTLING APPLICATION.

THROTTLING LESS THAN 15 DEGREES OPEN IS NOT RECOMMENDED DUE TO
 POSSIBILITY OF BODY AND/OR DISC EDGE EROSION.

SEATING + BEARING TORQUE: 94,773 IN-LBS @ 0 DEG.
SEATING + BEARING + HYDROSTATIC TORQUE: 104,173 IN-LBS @ 0 DEG.
MAXIMUM DYNAMIC TORQUE (GO): 159,889 IN-LBS @ 30 DEG.

Valves 1, 4 and 6 TORQUE TABLE

7/16/2020

VALVE SIZE AND TYPE: 72 INCH TRITON CLASS (150)
SEAT MATL. AND BRG. TYPE: Buna-N - RESILOSEAL R (SERIES 8) TEFLON (0.10)
SHAFT DIAMETER: 8.500 INCHES
FLOW DIRECTION: FLAT
SHUT-OFF DIFF. PRESS.: 150.0 (PSID) OR 346.5 (Ft. of water)
FULL OPEN DELTA P (K): 0.669 (PSIG) OR 1.544 (Ft. of water)
FULL OPEN DELTA P (K'): 0.396 (PSIG) OR 0.916 (Ft. of water)
FLOW RATE: 16.00 (FPS) OR 203,039 (GPM) OR 292.38 (MGD)
STATIC BACK PRESSURE: 0 (Ft. of water)
SYSTEM CONSTANT: 86.7

PIPE IN - PIPE OUT - WATER SERVICE - AND CONSTANT HEAD SOURCE

VLV * ANG *	DELTA * PRESS *	DELTA * HEAD *	SUPPLY * HEAD *	FLOW-RATE * (GPM) *	FLOW-RATE * (MGD) *	VEL * FPS *	TORQUE * IN-LBS *	CAV * CONST *	
5	148.66	343.39	346.5	19,249	27.72	1.52	346,014	0.11	
6	147.71	341.19	346.5	25,156	36.22	1.98	371,368	0.11	
7	146.60	338.63	346.5	30,651	44.14	2.42	357,632	0.12	
8	145.37	335.79	346.5	35,764	51.50	2.82	305,799	0.13	
9	144.11	332.87	346.5	40,336	58.08	3.18	276,254	0.14	
10	142.60	329.40	346.5	45,185	65.07	3.56	262,729	0.15	
15	129.96	300.20	346.5	74,379	107.11	5.86	249,136	0.26	
20	112.28	259.37	346.5	102,039	146.94	8.04	475,094	0.46	****
25	87.40	201.89	346.5	131,457	189.30	10.36	412,225	0.87	
30	67.55	156.04	346.5	150,869	217.25	11.89	290,861	1.41	
* * * * *									
35	48.18	111.28	346.5	167,662	241.43	13.21	117,526	2.35	
40	33.48	77.34	346.5	179,352	258.27	14.13	144,159	3.76	APPROVED
45	23.01	53.14	346.5	187,239	269.62	14.75	158,318	5.77	THROTTLING
50	14.88	34.36	346.5	193,141	278.12	15.22	155,662	9.09	RANGE
55	9.65	22.30	346.5	196,838	283.45	15.51	158,291	9.90	
60	6.33	14.63	346.5	199,152	286.78	15.69	151,603	9.90	
65	3.83	8.84	346.5	200,880	289.27	15.83	152,397	9.90	
70	2.30	5.31	346.5	201,928	290.78	15.91	146,544	9.90	
75	1.49	3.44	346.5	202,481	291.57	15.96	124,451	9.90	
80	1.03	2.38	346.5	202,794	292.02	15.98	87,634	9.90	
85	0.77	1.79	346.5	202,968	292.27	15.99	25,057	9.90	
90	0.67	1.54	346.5	203,040	292.38	16.00	45,079	9.90	
* * * * *									

CAV CONST >= 1.5 = GOOD THROTTLING RANGE

1.5 > CAV CONST > 1.0 = CONTINUOUS THROTTLING NOT RECOMMENDED

CAV CONST <= 1.0 = SERIOUS CAVITATION AND CAVITATION DAMAGE
CAN OCCUR IN CONTINUOUS THROTTLING APPLICATION.

THROTTLING LESS THAN 15 DEGREES OPEN IS NOT RECOMMENDED DUE TO
POSSIBILITY OF BODY AND/OR DISC EDGE EROSION.

SEATING + BEARING TORQUE: 301,030 IN-LBS @ 0 DEG.
SEATING + BEARING + HYDROSTATIC TORQUE: 348,619 IN-LBS @ 0 DEG.
MAXIMUM DYNAMIC TORQUE (GC): 475,094 IN-LBS @ 20 DEG.

Valves 1, 4 and 6 TORQUE TABLE

7/16/2020

VALVE SIZE AND TYPE: 72 INCH TRITON CLASS (150)
SEAT MATL. AND BRG. TYPE: Buna-N - RESILOSEAL R (SERIES 8) TEFLON (0.10)
SHAFT DIAMETER: 8.500 INCHES
FLOW DIRECTION: ARCH
SHUT-OFF DIFF. PRESS.: 150.0 (PSID) OR 346.5 (Ft. of water)
FULL OPEN DELTA P (K): 0.638 (PSIG) OR 1.473 (Ft. of water)
FULL OPEN DELTA P (K'): 0.365 (PSIG) OR 0.844 (Ft. of water)
FLOW RATE: 16.00 (FPS) OR 203,039 (GPM) OR 292.38 (MGD)
STATIC BACK PRESSURE: 0 (Ft. of water)
SYSTEM CONSTANT: 86.7

PIPE IN - PIPE OUT - WATER SERVICE - AND CONSTANT HEAD SOURCE

VLV * ANG *	DELTA * PRESS *	DELTA * HEAD *	SUPPLY * HEAD *	FLOW-RATE * (GPM) *	FLOW-RATE * (MGD) *	VEL * FPS *	TORQUE * IN-LBS *	CAV * CONST *	
5	148.49	343.00	346.5	20,415	29.40	1.61	405,481	0.11	
6	147.88	341.59	346.5	24,194	34.84	1.91	400,501	0.11	
7	147.11	339.81	346.5	28,256	40.69	2.23	398,411	0.12	
8	146.01	337.26	346.5	33,200	47.81	2.62	400,879	0.13	
9	144.94	334.80	346.5	37,370	53.81	2.94	408,231	0.13	
10	143.69	331.91	346.5	41,731	60.09	3.29	436,890	0.14	
15	135.30	312.54	346.5	63,689	91.71	5.02	517,948	0.21	
20	119.02	274.93	346.5	92,470	133.16	7.29	583,555	0.38	
25	96.86	223.74	346.5	121,105	174.39	9.54	583,377	0.69	
30	73.96	170.84	346.5	144,874	208.62	11.42	605,532	1.21	****
* * * * *									
35	50.58	116.84	346.5	165,651	238.54	13.05	538,753	2.20	
40	32.56	75.21	346.5	180,041	259.26	14.19	497,478	3.88	APPROVED
45	24.47	56.53	346.5	186,135	268.03	14.67	406,840	5.39	THROTTLING
50	12.85	29.68	346.5	194,564	280.17	15.33	328,198	9.90	RANGE
55	8.13	18.79	346.5	197,879	284.95	15.59	264,257	9.90	
60	5.16	11.93	346.5	199,941	287.91	15.76	219,002	9.90	
65	3.42	7.89	346.5	201,143	289.65	15.85	183,528	9.90	
70	2.35	5.43	346.5	201,873	290.70	15.91	157,089	9.90	
75	1.61	3.71	346.5	202,381	291.43	15.95	139,201	9.90	
80	1.10	2.54	346.5	202,726	291.93	15.98	118,036	9.90	
85	0.78	1.81	346.5	202,942	292.24	15.99	86,244	9.90	
90	0.64	1.47	346.5	203,040	292.38	16.00	35,277	9.90	
* * * * *									

CAV CONST >= 1.5 = GOOD THROTTLING RANGE

1.5 > CAV CONST > 1.0 = CONTINUOUS THROTTLING NOT RECOMMENDED

CAV CONST <= 1.0 = SERIOUS CAVITATION AND CAVITATION DAMAGE CAN OCCUR IN CONTINUOUS THROTTLING APPLICATION.

THROTTLING LESS THAN 15 DEGREES OPEN IS NOT RECOMMENDED DUE TO POSSIBILITY OF BODY AND/OR DISC EDGE EROSION.

SEATING + BEARING TORQUE:	301,030	IN-LBS @	0 DEG.
SEATING + BEARING + HYDROSTATIC TORQUE:	348,619	IN-LBS @	0 DEG.
MAXIMUM DYNAMIC TORQUE (GO):	605,532	IN-LBS @	30 DEG.

Valves 7, 10 and 12 TORQUE TABLE

7/16/2020

VALVE SIZE AND TYPE: 60 INCH TRITON CLASS (150)
SEAT MATL. AND BRG. TYPE: Buna-N - RESILOSEAL R (SERIES 8) TEFLON (0.10)
SHAFT DIAMETER: 7.250 INCHES
FLOW DIRECTION: FLAT
SHUT-OFF DIFF. PRESS.: 150.0 (PSID) OR 346.5 (Ft. of water)
FULL OPEN DELTA P (K): 0.648 (PSIG) OR 1.497 (Ft. of water)
FULL OPEN DELTA P (K'): 0.376 (PSIG) OR 0.868 (Ft. of water)
FLOW RATE: 16.00 (FPS) OR 140,999 (GPM) OR 203.04 (MGD)
STATIC BACK PRESSURE: 0 (Ft. of water)
SYSTEM CONSTANT: 86.7

PIPE IN - PIPE OUT - WATER SERVICE - AND CONSTANT HEAD SOURCE

VLV * ANG *	DELTA * PRESS *	DELTA * HEAD *	SUPPLY * HEAD *	FLOW-RATE * (GPM) *	FLOW-RATE * (MGD) *	VEL * FPS *	TORQUE * IN-LBS *	CAV * CONST *	
5	147.10	339.79	346.5	19,640	28.28	2.23	223,534	0.12	
6	145.65	336.43	346.5	24,071	34.66	2.73	199,930	0.13	
7	144.11	332.88	346.5	28,004	40.33	3.18	229,568	0.14	****
8	142.25	328.58	346.5	32,127	46.26	3.65	169,238	0.15	
9	140.49	324.51	346.5	35,585	51.24	4.04	159,437	0.17	
10	137.96	318.67	346.5	40,036	57.65	4.54	179,245	0.19	
15	123.72	285.78	346.5	59,148	85.17	6.71	171,967	0.33	
20	103.18	238.34	346.5	78,946	113.68	8.96	119,928	0.59	
25	81.38	187.99	346.5	95,571	137.62	10.84	94,595	1.01	
30	63.89	147.57	346.5	107,066	154.17	12.15	77,182	1.55	
35	44.62	103.07	346.5	118,438	170.55	13.44	70,216	2.61	APPROVED
40	31.13	71.91	346.5	125,790	181.14	14.27	78,914	4.10	THROTTLING
45	20.86	48.18	346.5	131,113	188.80	14.88	58,643	6.42	RANGE
50	13.90	32.10	346.5	134,601	193.82	15.27	70,079	9.72	
55	9.01	20.82	346.5	136,995	197.27	15.55	96,638	9.90	
60	5.55	12.82	346.5	138,667	199.68	15.74	104,828	9.90	
65	3.37	7.78	346.5	139,711	201.18	15.85	103,807	9.90	
70	2.10	4.85	346.5	140,314	202.05	15.92	92,373	9.90	
75	1.39	3.20	346.5	140,652	202.54	15.96	63,368	9.90	
80	1.04	2.39	346.5	140,817	202.78	15.98	43,820	9.90	
85	0.75	1.72	346.5	140,954	202.97	15.99	8,608	9.90	
90	0.65	1.50	346.5	141,000	203.04	16.00	27,255	9.90	

CAV CONST >= 1.5 = GOOD THROTTLING RANGE

1.5 > CAV CONST > 1.0 = CONTINUOUS THROTTLING NOT RECOMMENDED

CAV CONST <= 1.0 = SERIOUS CAVITATION AND CAVITATION DAMAGE
CAN OCCUR IN CONTINUOUS THROTTLING APPLICATION.

THROTTLING LESS THAN 15 DEGREES OPEN IS NOT RECOMMENDED DUE TO
POSSIBILITY OF BODY AND/OR DISC EDGE EROSION.

SEATING + BEARING TORQUE: 182,542 IN-LBS @ 0 DEG.
SEATING + BEARING + HYDROSTATIC TORQUE: 205,492 IN-LBS @ 0 DEG.
MAXIMUM DYNAMIC TORQUE (GO): 229,568 IN-LBS @ 7 DEG.

Valves 7, 10 and 12 TORQUE TABLE

7/16/2020

VALVE SIZE AND TYPE: 60 INCH TRITON CLASS (150)
SEAT MATL. AND BRG. TYPE: Buna-N - RESILOSEAL R (SERIES 8) TEFLON (0.10)
SHAFT DIAMETER: 7.250 INCHES
FLOW DIRECTION: ARCH
SHUT-OFF DIFF. PRESS.: 150.0 (PSID) OR 346.5 (Ft. of water)
FULL OPEN DELTA P (K): 0.607 (PSIG) OR 1.401 (Ft. of water)
FULL OPEN DELTA P (K'): 0.334 (PSIG) OR 0.772 (Ft. of water)
FLOW RATE: 16.00 (FPS) OR 140,999 (GPM) OR 203.04 (MGD)
STATIC BACK PRESSURE: 0 (Ft. of water)
SYSTEM CONSTANT: 86.7

PIPE IN - PIPE OUT - WATER SERVICE - AND CONSTANT HEAD SOURCE

VLV * ANG *	DELTA * PRESS *	DELTA * HEAD *	SUPPLY * HEAD *	FLOW-RATE * (GPM) *	FLOW-RATE * (MGD) *	VEL * FPS *	TORQUE * IN-LBS *	CAV * CONST *	
5	147.54	340.79	346.5	18,110	26.08	2.06	200,929	0.11	
6	146.55	338.51	346.5	21,435	30.87	2.43	191,354	0.12	
7	144.85	334.60	346.5	26,171	37.69	2.97	182,884	0.13	
8	143.45	331.37	346.5	29,514	42.50	3.35	183,906	0.15	
9	142.01	328.02	346.5	32,617	46.97	3.70	189,717	0.16	
10	140.26	324.00	346.5	35,995	51.83	4.08	205,266	0.17	
15	129.08	298.17	346.5	52,760	75.97	5.99	280,076	0.27	
20	114.05	263.44	346.5	69,171	99.61	7.85	310,022	0.44	
25	89.99	207.87	346.5	89,366	128.69	10.14	319,651	0.82	
30	67.59	156.12	346.5	104,725	150.80	11.88	342,274	1.41	****
* * * * *									
35	46.95	108.45	346.5	117,105	168.63	13.29	305,715	2.44	
40	29.47	68.08	346.5	126,647	182.37	14.37	256,845	4.37	APPROVED
45	19.17	44.27	346.5	131,952	190.01	14.97	219,599	7.02	THROTTLING
50	12.19	28.16	346.5	135,423	195.01	15.37	184,462	9.90	RANGE
55	7.76	17.93	346.5	137,583	198.12	15.61	157,141	9.90	
60	5.16	11.92	346.5	138,834	199.92	15.75	140,214	9.90	
65	3.42	7.89	346.5	139,668	201.12	15.85	114,161	9.90	
70	2.22	5.12	346.5	140,239	201.94	15.91	93,696	9.90	
75	1.48	3.42	346.5	140,588	202.45	15.95	82,629	9.90	
80	0.98	2.26	346.5	140,825	202.79	15.98	67,339	9.90	
85	0.71	1.64	346.5	140,952	202.97	15.99	46,854	9.90	
90	0.61	1.40	346.5	141,000	203.04	16.00	15,034	9.90	
* * * * *									

CAV CONST >= 1.5 = GOOD THROTTLING RANGE

1.5 > CAV CONST > 1.0 = CONTINUOUS THROTTLING NOT RECOMMENDED

CAV CONST <= 1.0 = SERIOUS CAVITATION AND CAVITATION DAMAGE
CAN OCCUR IN CONTINUOUS THROTTLING APPLICATION.

THROTTLING LESS THAN 15 DEGREES OPEN IS NOT RECOMMENDED DUE TO
POSSIBILITY OF BODY AND/OR DISC EDGE EROSION.

SEATING + BEARING TORQUE:	182,542	IN-LBS @	0 DEG.
SEATING + BEARING + HYDROSTATIC TORQUE:	205,492	IN-LBS @	0 DEG.
MAXIMUM DYNAMIC TORQUE (GO):	342,274	IN-LBS @	30 DEG.

PRATT[®]

a **MUELLER** brand

401 S. HIGHLAND AVENUE, AURORA, IL 60506
TEL: (630) 844-4000 FAX: (630) 844-4160

Purchase Order #: 9795011
Sales Order #: 2731977 HP
Proposal/Quote #: Q-020-13073
Project Name: Hess Pump Station Valve Replacement
Project Location: Wichita, KS
Date: August 12, 2020
Revision: 0

CV VALUES & GRAPHS



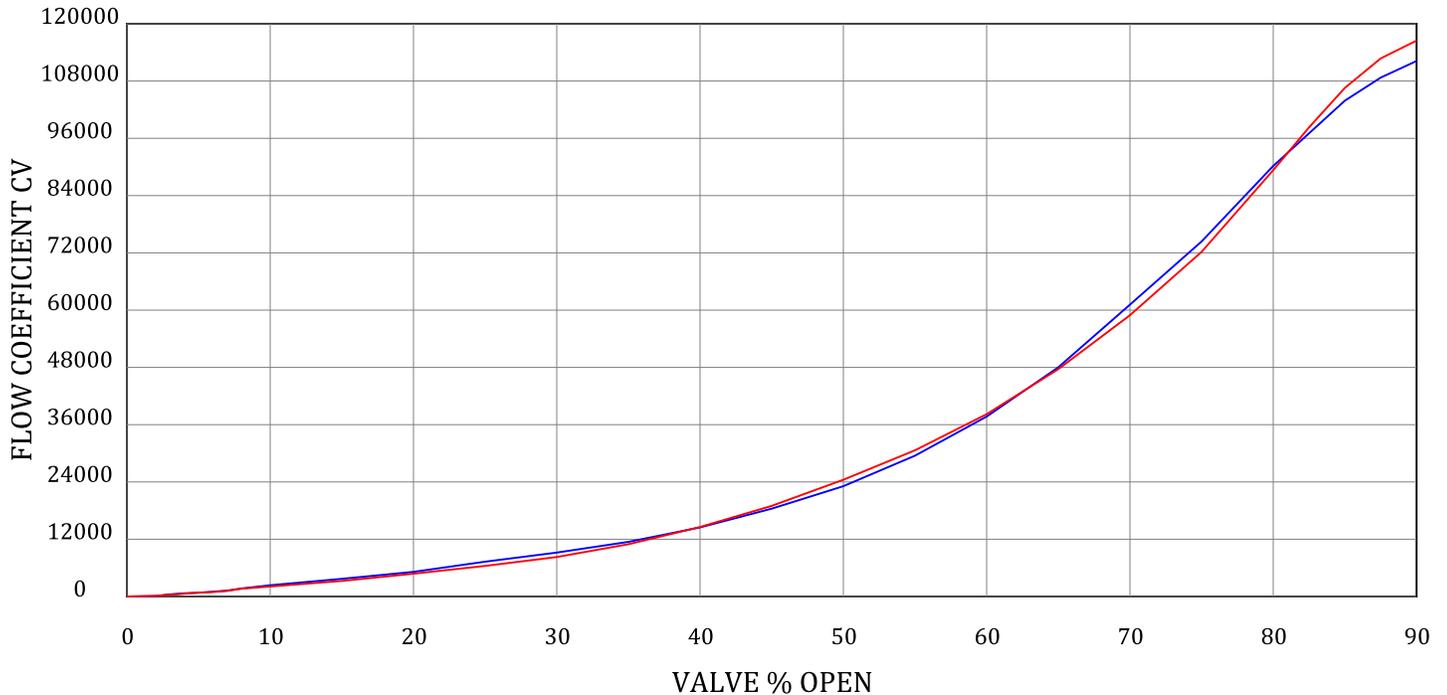
a MUELLER brand

401 S. HIGHLAND AVENUE, AURORA, IL 60506
TEL: (630) 844-4000 FAX: (630) 844-4160

Purchase Order #: 9795011
Sales Order #: 2731977 HP
Proposal/Quote #: Q-020-13073
Project Name: Hess Pump Station Valve Replacement
Project Location: Wichita, KS
Date: August 12, 2020
Revision: 0

VALVE ANGLE	FLAT VALUE	ARCH VALUE
0	0	0
2	112	116
3	449	349
4	673	582
5	785	815
6	1010	932
7	1234	1165
8	1683	1631
9	2020	1863
10	2356	2096
15	3702	3261
20	5161	4775
25	7293	6406
30	9200	8269
35	11444	10948
40	14473	14558
45	18400	18984
50	23112	24458
55	29507	30631
60	37698	38201
65	48019	47635
70	61146	58932
75	74385	72209
80	90205	89329
82.5	97049	98297
85	103893	106566
87.5	108717	112739
90	112195	116466

Product: AWWA Butterfly Valve
Item Number: 481FF-0542-SSMB#01948
Valve Size: 48"
Tag Numbers: Valve 29, Valve 33, Valve 34, Valve 35, Valve 36, Valve 40





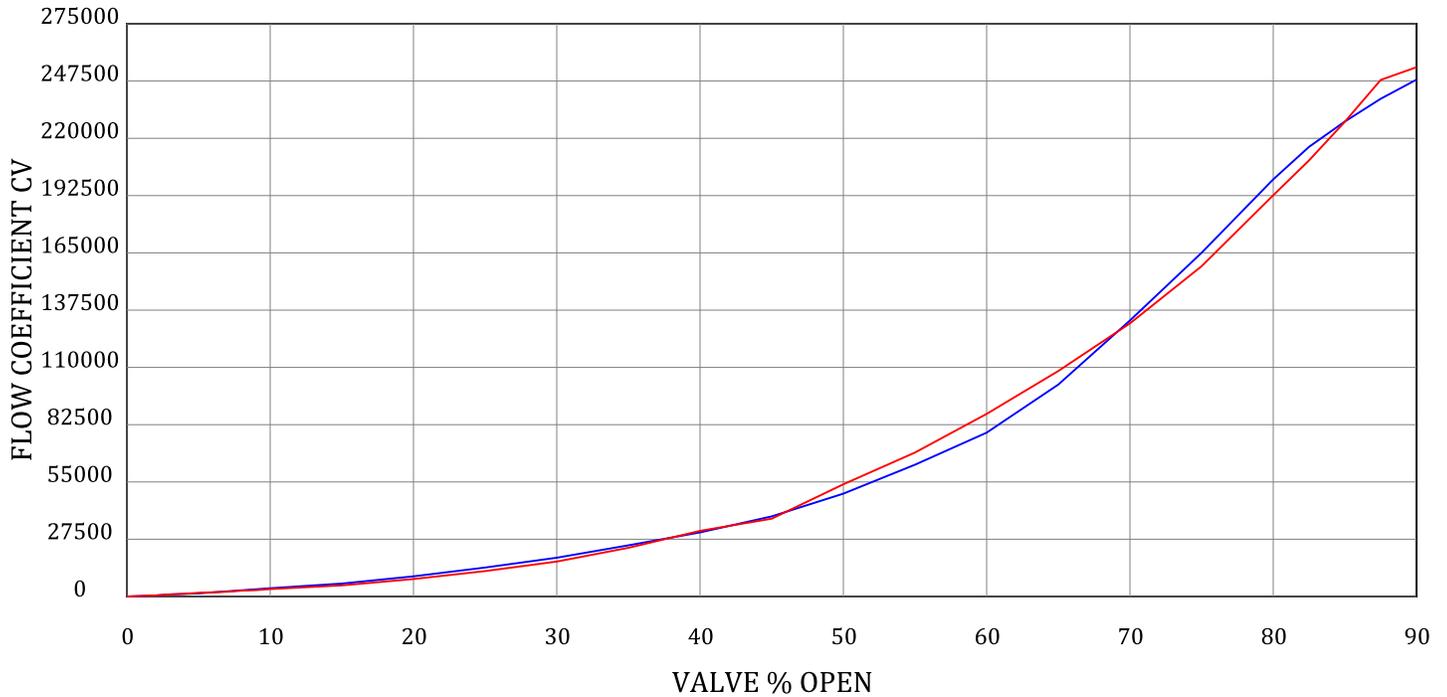
a MUELLER brand

401 S. HIGHLAND AVENUE, AURORA, IL 60506
TEL: (630) 844-4000 FAX: (630) 844-4160

Purchase Order #: 9795011
Sales Order #: 2731977 HP
Proposal/Quote #: Q-020-13073
Project Name: Hess Pump Station Valve Replacement
Project Location: Wichita, KS
Date: August 12, 2020
Revision: 0

VALVE ANGLE	FLAT VALUE	ARCH VALUE
0	0	0
2	496	508
3	993	1017
4	1241	1271
5	1489	1779
6	1985	2033
7	2482	2287
8	2978	2796
9	3474	3050
10	3971	3558
15	6204	5337
20	9679	8387
25	13898	12199
30	18613	16773
35	24569	23381
40	30774	31513
45	38467	37358
50	49387	53877
55	63284	69126
60	78671	87678
65	101751	108263
70	132525	131136
75	165036	158583
80	200276	192637
82.5	215911	209411
85	228072	227963
87.5	238992	248040
90	248174	254139

Product: AWWA Butterfly Valve
Item Number: 721FF-0562-SSMB#01950
Valve Size: 72"
Tag Numbers: Valve 1, Valve 4, Valve 6





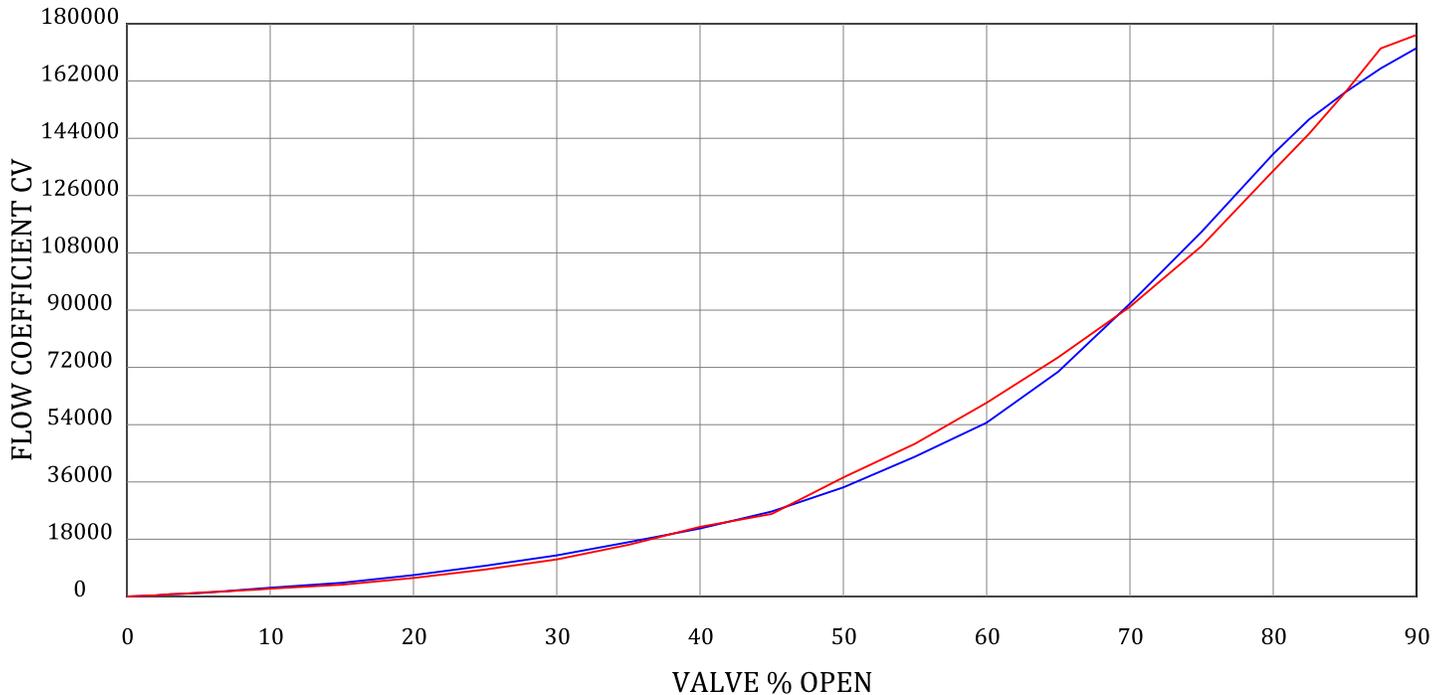
a MUELLER brand

401 S. HIGHLAND AVENUE, AURORA, IL 60506
TEL: (630) 844-4000 FAX: (630) 844-4160

Purchase Order #: 9795011
Sales Order #: 2731977 HP
Proposal/Quote #: Q-020-13073
Project Name: Hess Pump Station Valve Replacement
Project Location: Wichita, KS
Date: August 12, 2020
Revision: 0

VALVE ANGLE	FLAT VALUE	ARCH VALUE
0	0	0
2	345	353
3	689	706
4	862	882
5	1034	1235
6	1379	1412
7	1723	1588
8	2068	1941
9	2413	2118
10	2757	2471
15	4309	3706
20	6721	5824
25	9651	8471
30	12926	11648
35	17062	16237
40	21371	21884
45	26713	25943
50	34296	37415
55	43947	48004
60	54633	60888
65	70661	75183
70	92031	91067
75	114608	110127
80	139081	133776
82.5	149938	145424
85	158383	158308
87.5	165966	172250
90	172343	176486

Product: AWWA Butterfly Valve
Item Number: 601FF-1200-SSMB#01952
Valve Size: 60"
Tag Numbers: Valve 7, Valve 10, Valve 12



PRATT[®]

a **MUELLER** brand

401 S. HIGHLAND AVENUE, AURORA, IL 60506
TEL: (630) 844-4000 FAX: (630) 844-4160

Purchase Order #: 9795011
Sales Order #: 2731977 HP
Proposal/Quote #: Q-020-13073
Project Name: Hess Pump Station Valve Replacement
Project Location: Wichita, KS
Date: August 12, 2020
Revision: 0

COATING DATA

AMERCOAT® 370

DESCRIPTION

Two-component, fast dry multi-purpose epoxy coating

PRINCIPAL CHARACTERISTICS

- Multi-purpose high build epoxy
- Application over a wide range of surface temperatures
- Suitable for immersion in fresh and salt water
- Class A slip resistance for high strength bolted connections

COLOR AND GLOSS LEVEL

- White, Black, Oxide Red, Light Buff, Pearl Gray
- Flat

Note: Epoxy coatings will characteristically chalk and fade upon exposure to sunlight. Light colors are prone to ambering to some extent

BASIC DATA AT 68°F (20°C)

Data for mixed product	
Number of components	Two
Volume solids	66 ± 2%
VOC (Supplied)	max. 2.5 lb/US gal (approx. 300 g/l)
Temperature resistance (Continuous)	To 200°F (93°C)
Temperature resistance (Intermittent)	To 250°F (121°C)
Recommended dry film thickness	4.0 - 6.0 mils (100 - 150 µm) depending on system
Theoretical spreading rate	212 ft ² /US gal for 5.0 mils (5.3 m ² /l for 125 µm)
Shelf life	Base: at least 24 months when stored cool and dry Hardener: at least 24 months when stored cool and dry

Notes:

- See ADDITIONAL DATA - Overcoating intervals
- See ADDITIONAL DATA - Curing time
- Intermittent temperature resistance should be less than 5% of the time, and maximum 24 hours
- Color will drift at elevated temperatures

AMERCOAT® 370

RECOMMENDED SUBSTRATE CONDITIONS AND TEMPERATURES

- Coating performance is, in general, proportional to the degree of surface preparation
- Abrasive blasting is usually the most effective and economical method. When this is impossible or impractical, coating can be applied over mechanically cleaned surfaces
- All surfaces must be clean, dry and free of all contaminants, including salt deposits. Contact PPG for maximum allowable salt containment levels

Mild steel

- Remove all loose rust, dirt, grease or other contaminants by one of the following depending on the degree of cleanliness required: SSPC SP-2, 3, 6, 7 or 10 (ISO 8501-1 St-2, St-3, Sa 1, Sa 2.5). These minimum surface preparation standards apply to steel that has been previously abrasive blasted. The choice of surface preparation will depend on the system selected and end-use service conditions
- For more severe service and immersion, clean to SSPC SP-10 (ISO8501-1 Sa 2.5). Blast to achieve an anchor profile of 2.0 – 4.0 mils (50 – 100 µm) as indicted by a Keane-Tator Surface profile Comparator or Testex Tape. Previously blasted steel may be ultra-high pressure water jetted to SSPC SP WJ-2(L) / NACE WJ-2(L). The wet surface can be dried by blowing with dry compressed air giving special attention to horizontal surfaces and recesses

Concrete

- Prepare in accordance with SSPC SP-13 guidelines
- Abrade surface per ASTM D-4259 to remove all efflorescence and laitance, to expose subsurface voids, and to provide a surface roughness equivalent of 60 grit sandpaper or coarser
- Test for moisture by conducting a plastic sheet test in accordance with ASTM D4263
- Fill voids as necessary with AMERCOAT 114 A epoxy filler

Galvanized steel

- Remove oil or soap film with detergent or emulsion cleaner
- Lightly abrasive blast with a fine abrasive in accordance with SSPC SP-16 guidelines to achieve a profile of 1.5 – 3.0 mils (38 – 75 µm). When light abrasive blasting is not possible, galvanizing can be treated with a suitable zinc phosphate conversion coating.
- Galvanizing that has at least 12 months of exterior weathering and has a rough surface with white rust present may be over-coated after power washing and cleaning to remove white rust and other contaminants
- The surface must have a measurable profile
- A test patch is recommended to determine compatibility and adhesion
- Not recommended over chromate sealed galvanizing without blasting to thoroughly remove chromates. Adhesion problems may occur

Non-ferrous metals and stainless steel

- Abrasive blast in accordance with SSPC SP-16 guidelines to achieve a uniform and dense 1.5-4.0 mil anchor profile. Size and hardness of abrasive should be adjusted as necessary based on the hardness of the substrate
- Aluminum may be treated with a surface treatment compliant with Mil-DTL-5541 or equivalent (non-immersion applications only).



AMERCOAT® 370

Aged coatings

- All surfaces must be clean, dry, tightly bonded and free of all loose paint, corrosion products or chalky residue
 - Abrade surface, or clean with PREP 88. This product is compatible over most types of properly applied and tightly adhering coatings, however, a test patch is recommended to confirm compatibility
-

Repair

- Prepare damaged areas to original surface preparation specifications, feathering edges of intact coating. Thoroughly remove dust or abrasive residue before touch-up.
-

Substrate temperature and application conditions

- Surface temperature during application should be between 20°F (-7°C) and 120°F (49°C)
 - Surface temperature during application should be at least 5°F (3°C) above dew point
 - Ambient temperature during application and curing should be between 20°F (-7°C) and 120°F (49°C)
 - Relative humidity during application should not exceed 85%
-

SYSTEM SPECIFICATION

- Primers: Direct to substrate; DIMETCOTE- Series Primers, AMERCOAT 68HS, AMERCOAT 68MCZ
 - Topcoats: AMERCOAT 450-Series Polyurethanes, AMERSHIELD, PSX 700, AMERCOAT 229T, PITTHANE Polyurethanes
-

INSTRUCTIONS FOR USE

Mixing ratio by volume: base to hardener 80:20 (4:1)

- Pre-mix base component with a pneumatic air mixer at moderate speeds to homogenize the container. Add hardener to base and agitate with a power mixer for 1-2 minutes until completely dispersed
-

Induction time

None

Pot life

4 hours at 70°F (21°C)

Note: See ADDITIONAL DATA – Pot life

AMERCOAT® 370

Application

- Area should be sheltered from airborne particulates and pollutants
- Avoid combustion gases or other sources of carbon dioxide that may promote amine blush and ambering of light colors
- Ensure good ventilation during application and curing
- Provide shelter to prevent wind from affecting spray patterns

Material temperature

Material temperature during application should be between 40°F (4°C) and 90°F (32°C)

Air spray

- Use standard conventional equipment

Recommended thinner

THINNER 21-06 (AMERCOAT 65) (xylene), THINNER 21-25 (AMERCOAT 101) (recommended for > 90°F (32°C))

Volume of thinner

0 - 20%

Nozzle orifice

Approx. 0.070 in (1.8 mm)

Airless spray

- 45:1 pump or larger
- Can be applied with plural component equipment

Recommended thinner

THINNER 21-06 (AMERCOAT 65) (xylene), THINNER 21-25 (AMERCOAT 101) (recommended for > 90°F (32°C))

Nozzle orifice

0.017 - 0.019 in (approx. 0.43 - 0.48 mm)

Brush/roller

- Use a high quality natural bristle brush and/or solvent resistant, 3/8" nap roller. Ensure brush/roller is well loaded to avoid air entrainment. Multiple coats may be necessary to achieve adequate film-build

Recommended thinner

AMERCOAT 65 (xylene), AMERCOAT 101 (recommended for > 90°F (32°C))

Cleaning solvent

Amercoat 12 Cleaner (Thinner 90-58) or Amercoat 65 Thinner (Thinner 21-06)



AMERCOAT® 370

ADDITIONAL DATA

Overcoating interval for DFT up to 4.0 mils (100 µm)						
Overcoating with...	Interval	20°F (-7°C)	32°F (0°C)	50°F (10°C)	70°F (21°C)	90°F (32°C)
urethane and PSX	Minimum	3 hours	2 hours	1.5 hours	45 minutes	30 minutes
	Maximum	2 months	1.5 months	1.5 months	30 days	14 days

Notes:

- Surface must be clean and dry. Any contamination must be identified and removed. A detergent wash with PREP 88 or equivalent is required prior to application of topcoats after 30 days of exposure. However, particular attention must be paid to surfaces exposed to sunlight where chalking may be present. In those situations, a further degree of cleaning may be required. PPG Technical Service can advise on suitable cleaning methods. If maximum recoat/topcoat time is exceeded, then roughen surface.
- Dry times are dependent on air and surface temperatures as well as film thickness, ventilation, and relative humidity. Maximum recoating time is highly dependent upon actual surface temperatures – not simply air temperatures. Surface temperatures should be monitored, especially with sun-exposed or otherwise heated surfaces. Higher surface temperatures shorten the maximum recoat window

Overcoating interval for DFT up to 4.0 mils (100 µm)						
Overcoating with...	Interval	20°F (-7°C)	32°F (0°C)	50°F (10°C)	70°F (21°C)	90°F (32°C)
itself	Minimum	3 hours	2 hours	1.5 hours	45 minutes	30 minutes
	Maximum - immersion	3 months	2 months	30 days	30 days	30 days
	Maximum - non-immersion	6 months	6 months	6 months	6 months	6 months

Notes:

- Surface must be clean and dry. Any contamination must be identified and removed. A detergent wash with PREP 88 or equivalent is required prior to application of topcoats after 30 days of exposure. However, particular attention must be paid to surfaces exposed to sunlight where chalking may be present. In those situations, a further degree of cleaning may be required. PPG Technical Service can advise on suitable cleaning methods. If maximum recoat/topcoat time is exceeded, then roughen surface.
- If the surface is uniformly and freely chalking after 6 months of exterior weathering, the surface is recoatable with itself after thorough cleaning.
- Dry times are dependent on air and surface temperatures as well as film thickness, ventilation, and relative humidity. Maximum recoating time is highly dependent upon actual surface temperatures – not simply air temperatures. Surface temperatures should be monitored, especially with sun-exposed or otherwise heated surfaces. Higher surface temperatures shorten the maximum recoat window

Curing time for DFT up to 4.0 mils (100 µm)			
Substrate temperature	Dry to touch	Dry to handle	Service- water immersion
20°F (-7°C)	2 hours	20 hours	N/A
32°F (0°C)	1.5 hours	9 hours	7 days
50°F (10°C)	45 minutes	4.5 hours	48 hours
70°F (21°C)	30 minutes	1.5 hours	24 hours
90°F (32°C)	20 minutes	75 minutes	12 hours

Note: Adequate ventilation must be maintained during application and curing



AMERCOAT® 370

Pot life (at application viscosity)	
Mixed product temperature	Pot life
50°F (10°C)	6 hours
70°F (21°C)	4 hours
90°F (32°C)	2 hours

Product Qualifications

- ANSI / NSF Standard 61 for drinking water (valves only). For NSF application instructions, please visit our website at: www.ppgamercoatus.ppgpmc.com/NSF/
- AWWA C550-06
- Compliant with USDA Incidental Food Contact Requirements
- Qualified for Class A Slip Resistance per the Research Council on Structural Connections, Appendix A

SAFETY PRECAUTIONS

- For paint and recommended thinners see INFORMATION SHEETS 1430, 1431 and relevant Material Safety Data Sheets
- This is a solvent-borne paint and care should be taken to avoid inhalation of spray mist or vapor, as well as contact between the wet paint and exposed skin or eyes

WORLDWIDE AVAILABILITY

It is always the aim of PPG Protective and Marine Coatings to supply the same product on a worldwide basis. However, slight modification of the product is sometimes necessary to comply with local or national rules/circumstances. Under these circumstances an alternative product data sheet is used.

REFERENCES

• CONVERSION TABLES	INFORMATION SHEET	1410
• EXPLANATION TO PRODUCT DATA SHEETS	INFORMATION SHEET	1411
• SAFETY INDICATIONS	INFORMATION SHEET	1430
• SAFETY IN CONFINED SPACES AND HEALTH SAFETY, EXPLOSION HAZARD – TOXIC HAZARD	INFORMATION SHEET	1431

WARRANTY

PPG warrants (i) its title to the product, (ii) that the quality of the product conforms to PPG's specifications for such product in effect at the time of manufacture and (iii) that the product shall be delivered free of the rightful claim of any third person for infringement of any U.S. patent covering the product. THESE ARE THE ONLY WARRANTIES THAT PPG MAKES AND ALL OTHER EXPRESS OR IMPLIED WARRANTIES, UNDER STATUTE OR ARISING OTHERWISE IN LAW, FROM A COURSE OF DEALING OR USAGE OF TRADE, INCLUDING WITHOUT LIMITATION, ANY OTHER WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR USE, ARE DISCLAIMED BY PPG. Any claim under this warranty must be made by Buyer to PPG in writing within five (5) days of Buyer's discovery of the claimed defect, but in no event later than the expiration of the applicable shelf life of the product, or one year from the date of the delivery of the product to the Buyer, whichever is earlier. Buyer's failure to notify PPG of such non-conformance as required herein shall bar Buyer from recovery under this warranty.

AMERCOAT® 370

LIMITATIONS OF LIABILITY

IN NO EVENT WILL PPG BE LIABLE UNDER ANY THEORY OF RECOVERY (WHETHER BASED ON NEGLIGENCE OF ANY KIND, STRICT LIABILITY OR TORT) FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES IN ANY WAY RELATED TO, ARISING FROM, OR RESULTING FROM ANY USE MADE OF THE PRODUCT. The information in this sheet is intended for guidance only and is based upon laboratory tests that PPG believes to be reliable. PPG may modify the information contained herein at any time as a result of practical experience and continuous product development. All recommendations or suggestions relating to the use of the PPG product, whether in technical documentation, or in response to a specific inquiry, or otherwise, are based on data, which to the best of PPG's knowledge, is reliable. The product and related information is designed for users having the requisite knowledge and industrial skills in the industry and it is the end-user's responsibility to determine the suitability of the product for its own particular use and it shall be deemed that Buyer has done so, as its sole discretion and risk. PPG has no control over either the quality or condition of the substrate, or the many factors affecting the use and application of the product. Therefore, PPG does not accept any liability arising from any loss, injury or damage resulting from such use or the contents of this information (unless there are written agreements stating otherwise). Variations in the application environment, changes in procedures of use, or extrapolation of data may cause unsatisfactory results. This sheet supersedes all previous versions and it is the Buyer's responsibility to ensure that this information is current prior to using the product. Current sheets for all PPG Protective & Marine Coatings Products are maintained at www.ppgpmc.com. The English text of this sheet shall prevail over any translation thereof.

Packaging: Available in 1-gallon and 5-gallon kits; (1-gallon kits have 0.8 gallons of base and 0.2 gallons of hardener; 5 gallon kits have 4-gallons of base and 1-gallon of hardener)

Product code	Description
AT370-112	Light Buff Base
AT370-3	White Base
AT370-9	Black Base
AT370-23	Pearl Gray Base
AT370-72	Oxide Red Base
AT370-B	Hardener

The PPG logo, and all other PPG marks are property of the PPG group of companies. All other third-party marks are property of their respective owners.



PRATT[®]

a **MUELLER** brand

401 S. HIGHLAND AVENUE, AURORA, IL 60506
TEL: (630) 844-4000 FAX: (630) 844-4160

Purchase Order #: 9795011
Sales Order #: 2731977 HP
Proposal/Quote #: Q-020-13073
Project Name: Hess Pump Station Valve Replacement
Project Location: Wichita, KS
Date: August 12, 2020
Revision: 0

CATALOG CUT SHEETS

Scope of Line: Triton® XR-70 Butterfly Valve



Pratt® Triton XR-70

Sizes: 24 through 144 inches

Standard Body Styles:

- Flange x flange ends
- ~~Mechanical Joint ends (24" - 48")~~
- ~~Flange and Mechanical Joint ends (24", 30", 36")~~

Standards:

- Conforms to AWWA C504 requirements

Pressure Class:

- AWWA pressure classes ~~75B (54" - 144")~~ and 150B

Seat: Rubber seat-in-body

Actuation Options:

- ~~Pratt MDT manual actuator with AWWA nut, handwheel or chainwheel~~
- Worm gear actuators
- ~~Pratt Dura-Cyl hydraulic or pneumatic cylinder~~

Accessories/Options:

~~Anti-cavitation device, bonnets, floorstands, lantern glands, shaft locking devices, external epoxy injection port, snubbers, expansion joints, rubber lining~~

Consult factory for accessory details.

Optional Body Styles:

- ~~Victaulic Ends~~
- ~~Concrete Pipe Ends~~

Consult factory for lead times.

Features and Benefits: Triton® XR-70 Butterfly Valve

Feature	Benefit
E-Lok seat in design	– No hardware to loosen. Precision rubber seat installation and uniform interference provide long seat life. Foolproof adjustment and/or replacement (in most cases without removing the valve from the line)
Rubber seat located in body	– Reduces performance problems related to corrosive buildup in valve body and pipeline.
Optional external injection port	– E-Lok seat can be adjusted and/or repaired in the field without dewatering the pipeline
Seat material also available in EPDM	– Can accommodate temperatures up to 250 degrees F
Valve cycle tested per AWWA C504 requirements	– Proven reliability over the life of the valve
Flow through disc on 30 inch and larger	– More strength, less weight, greater free flow area. Higher C_v : lower head loss results in energy savings for customer's system
Nonmetallic bearings	– Prevents galvanic corrosion and provides lower coefficient of friction
V-type shaft packing	– Self-adjusting, lasts the life of the valve
Through disc pinning	– Provides a tight disc-to-shaft pin connection, greatly reducing the possibility of loosening through vibration

Specifications for Materials of Construction	
Body Material:	Cast Iron (24"-48") – ASTM A126, Class B Ductile Iron (54" & Larger) – ASTM A536, Grade 65-45-12
Disc Material:	Ductile Iron – ASTM A536, Grade 65-45-12
Disc Edge:	Stainless Steel – ASTM A-240 Type 316
Shaft Material:	304 Stainless Steel – ASTM A276 Type 304 ← 60" Type 316
Bearing Material:	TLFB – Teflon lined, Fiberglass backed

Design Details: Triton® XR-70 Butterfly Valve

60" Type 316

1) Corrosion Resistant Shafts

To prevent corrosion of a vital structural component, shafts are constructed of centerless ground ASTM A276 type 304. This material is superior to carbon steel or similar materials that afford little protection against the harmful effects of corrosion. The Henry Pratt Company's standard line consists of a two-piece, stub-type shaft keyed for the actuator connection.

2) Packing and Packing Gland Assemblies

Packing is self adjusting "V" type. The packing gland or shaft seal is utilized only in the top trunnion of the valve body where the shaft protrudes for actuator connection. The packing assembly incorporates a nylon packing retainer accompanied by several rings of packing. Other available packing gland arrangements include water seals (lantern glands) for positive and negative pressures, and reverse "V" type for vacuum applications. Where access to packing is required, open type bonnets can be provided. When this option is specified, "V" type packing is held in place with a bronze retaining gland which is fastened to the valve trunnion with plated steel cap screws.

3) Bearings

Self-lubricating, sleeve-type bearings are used in both trunnions of the valve body. Bearings support the shaft and provide minimum friction during shaft rotation. Bearing material is Teflon-lined with a special fiberglass backing. This type of bearing offers electrical insulating qualities between the disc/shaft assembly and the valve body, thereby diminishing the effects of galvanic corrosion. In addition, its reduced coefficient of friction requires far less torque than the metallic bearing materials.

4) Rubber Seat

The multi-ridge surface of The Henry Pratt Company's E-Lok seat seals a full 360° against a stainless steel spherical disc edge. Because of the laterally spaced grooves, rubber stress is substantially reduced, resulting in less sealing torque. The grooved seat design, coupled with the wide spherically shaped seating edge of the disc, also allows greater disc closure tolerance. Regardless of valve size, angular misposition of the disc can be 1° off center without leakage. The seat is mechanically retained by a unique epoxy injection process which moves the seat against the disc to conform to the exact radius of the disc with uniform contact pressure. It is fully adjustable by local epoxy injection and can be replaced in the field. As an option, valves may be purchased with an external injection port which allows seat adjustment and repair to be performed without removing the valve or dewatering the pipeline. For additional information regarding the E-Lok seat, refer to the "E-Lok Seat Design" section of this brochure.

5) Shaft Connection

Disc-to-shaft connection is accomplished by conservatively sized stainless steel ~~or monel~~ taper pins, threaded at one end and secured with lockwashers and nuts. ~~On 24 inch valves, stainless steel dowel pins are used.~~ The Henry Pratt Company's through-pin design provides the tightest possible connection between the shaft and disc.

6) Valve Disc

Pratt® valve discs are constructed of the highest strength-to-weight ratio materials available. ~~On our 24 inch valve, the arch side of the disc is closed and the flat side is open, forming a slightly concave surface.~~ On valves 30 inches and greater, a flow through disc design is employed to minimize line turbulence and lower head loss. The greater free flow area provides less pressure drop in the full-open position than other disc shapes. For additional information regarding The Henry Pratt Company's flow through disc design, refer to "Flow through Design" section of this brochure.

60" & 72" ASTM A536, Grade 65-45-12

7) Valve Body

The bodies of the XR-70 are constructed of heavy cast iron ASTM A126. On flange end bodies, flange drilling is provided in accordance with ANSI B16.1 for cast iron flanges through 72 inches. ~~Larger sizes where applicable per AWWA C207.~~

8) Thrust Bearing Assembly

The two-way thrust bearing is preset at the factory. On valves 30 inches and larger, the thrust bearing assembly consists of a stainless steel ~~or monel~~ stud fastened to the bottom of the valve shaft. The stud extends beyond the bottom cover. The thrust collar is threaded to the stud and pinned. ~~On the 24 inch valve, the thrust collar is pinned to the shaft and fitted with bronze spacers.~~ The bottom cover cap is then bolted to the bottom cover and retains the thrust collar which, in turn, retains the position of the disc assembly. The cavity containing the thrust collar is packed with grease providing lifetime lubrication of the thrust bearing assembly. The cap is fully gasketed to prevent leakage.

Valve End Connection Options

A wide range of valve end connection options for the Pratt Triton XR-70 are available. See "Valve End Types and Dimensions" section for details.

Actuation Options

See "Actuation" section for Pratt actuators or refer to The Henry Pratt Company's Actuator brochure for the many actuation options available for the Triton XR-70.

E-Lok Seat Design

Years of Reliable Service

The Triton® XR-70 utilizes the unique E-Lok seat-in-body design. With years of reliable performance, the E-Lok's seat retention system still remains one of the most innovative concepts in butterfly valve seat design. This design is often imitated without the superior results that only The Henry Pratt Company experience can deliver.

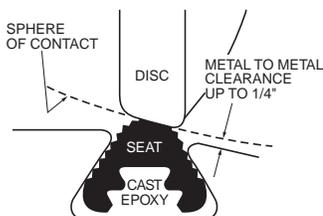
How the E-Lok Seat Provides Bubble Tight Closure

The rubber seat, which is mounted in the valve body, seals a full 360° against a stainless steel disc edge with low torque and high tolerance to seating angle. The ridges molded into the seat surface greatly reduce the possibility of the seat being over compressed and minimizes compression set of rubber. In manufacturing, a two part epoxy compound is injected into a channel behind the rubber seat with the disc in the closed position. This ensures equal interference around the complete circumference of the disc/seat contact area. The epoxy hardens, bonding neither to the metal seat channel nor to the rubber seat, yet mechanically retains the seat in the body. Since the seat is installed and remains in a "relaxed" state, the possibility of damaging the seat is greatly reduced as compared to a seat that is "stressed" when bolted on to a body or disc as in other designs.

During injection, the seat is moved against the disc as the epoxy fills the cavity to provide uniform disc-to-seat interference around the entire seating surface. The result is the bubble tight closure. This system eliminates conventional seat retention hardware that can loosen and corrode, potentially damaging pumps and other costly auxiliary equipment.

Simple Seat Adjustment

Another significant feature of the E-Lok seat is that it can be easily adjusted or replaced in the field while the valve is installed in the line. Adjustment is achieved by local injection of epoxy directly through the seat material into the channel behind the seat. The epoxy travels the circumference of the valve body channel until it finds the void and moves the seat material outward toward the disc edge, bringing the valve back into bubble tight condition. ~~the valve was supplied with the optional external injection~~



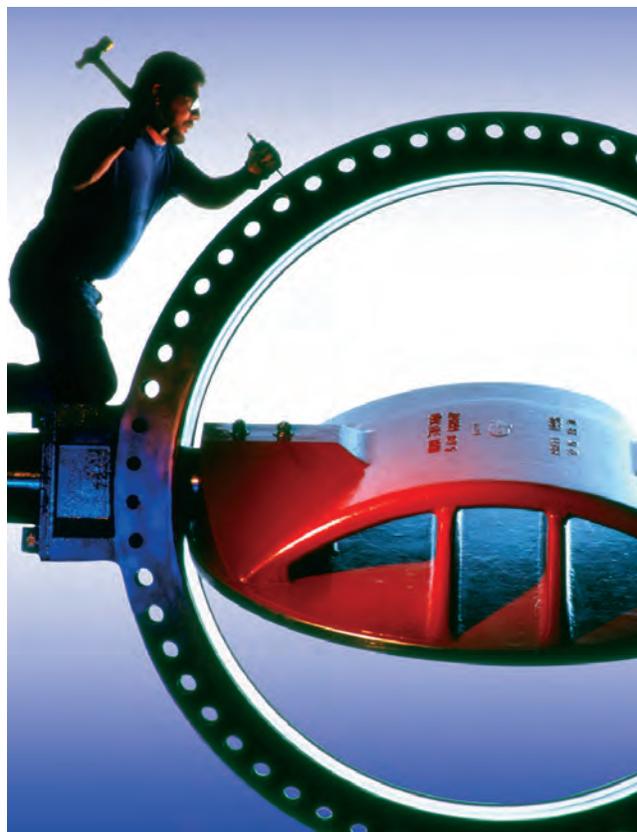
~~port, the seat can be adjusted from the outside of the valve without dewatering the pipeline.~~ The injection process can be achieved by utilizing simple tools and an inexpensive, disposable seat injection kit.

Easy Seat Replacement

In the unlikely event that seat replacement is required, it can be performed on valves 30 inches and larger without removing the valve from the pipeline (as long as a technician can access inside the valve), on all sizes without removing the shaft and/or disc. The original rubber seat and hardened epoxy compound used to retain the seat can be removed from the valve with ordinary hand tools. A replacement seat can then be installed, returning the valve to its original bubble tight condition.

Flow Through Design

The Triton disc design distributes material where it is needed to resist loads, achieving more strength at less weight than any other disc design currently on the market. The flow through disc has a greater free flow area than conventional lens-shaped or offset disc designs, resulting in lower pumping costs.



Coatings and Rubber Linings

Withstanding Harsh Conditions and the Test of Time

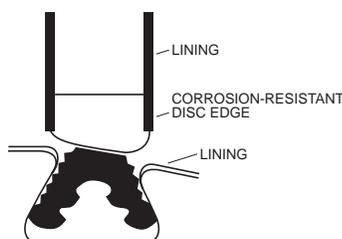
In many industrial facilities, valves are regularly subjected to harsh conditions, including recirculating water loops where corrosiveness increases each time the water passes through the system, and cooling water systems which utilize brackish water or salt water as a medium. This is especially true at fossil and nuclear power generating plants, which frequently use sea water as their main cooling water resource.

To combat the damaging effects of these harsh conditions, The Henry Pratt Company utilizes epoxy coatings and rubber linings in conjunction with superior design features to help ensure that the Triton® XR-70 butterfly valves will withstand the test of time.

The unique construction of the Pratt® Triton rubber seated butterfly valve makes both epoxy coatings and rubber linings much more effective than other butterfly valve designs. Since all surfaces of the Triton disc are exposed, there is no possibility for corrosion to start in hidden, unprotected areas like the inside of a hollow, lens-shaped offset disc. Since there is no seat retention hardware, coating and/or lining breakdown in this area is also eliminated.

In applications involving salt water and/or entrained solids which can cause erosion, the superiority of rubber lining on the valve disc has been clearly demonstrated by Pratt butterfly valves placed in service decades ago that are still providing bubble tight closure today. Both epoxy coating and rubber lining have also successfully protected the valve bodies in these corrosive service conditions as illustrated by The Henry Pratt Company's long track record of quality and reliability at industrial facilities and power plants around the world.

Other rubber lining features include The Henry Pratt Company's shaft-bearing being thoroughly protected by rubber shaft seals to maintain bearing performance throughout the life of the valve. Also, the shaft bore in disc is sealed with a rubber seal. The juncture of the rubber liner to the rubber seat is also protected by a sealant applied under pressure.



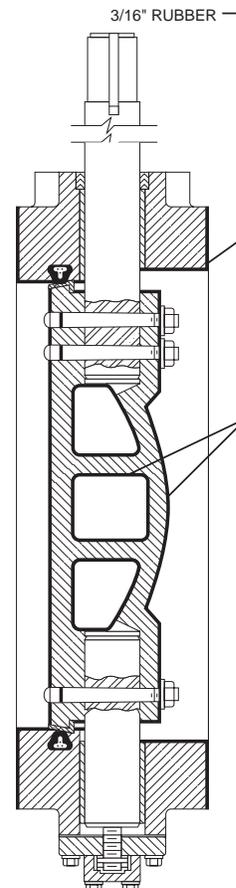
Complete coverage of corrosion susceptible wetted surfaces is demonstrated in these drawings. Body lining in conjunction with the seat creates a water barrier and protects against corrosion.

Rubber Linings

The Henry Pratt Company lines corrosion-susceptible surfaces with a 3/16-inch thick rubber of 60 Shore-A durometer. The surfaces are prepared and blasted to a near-white metal finish. The linings are applied by the "hand-lay-up method" (similar to tank lining techniques) and then cured in an open steam autoclave using 40 to 50 psig steam pressure. Following application and curing, the linings are visually inspected for air bubbles and checked at 7,000 volts with a positive control high-voltage spark tester.

Epoxy Coatings

The Henry Pratt Company has an extensive coating facility which applies and cures coatings in a controlled environment. Prior to application of the epoxy, valves are sandblasted and thoroughly cleaned to ensure a proper bond. The interior and external surfaces of each valve are coated with a Polyamide-cured, rust inhibiting epoxy, NSF approved. A magnetic dry film thickness gauge is used to confirm that the coating thickness matches the project/order specification requirements. Electronic testing for pin holes (holidays) is available. Contact The Henry Pratt Company for options and pricing.



Suggested Specifications: Butterfly Valves 24" and larger Cast Construction

General

All butterfly valves shall be of the tight closing, rubber seated type and fully comply with the latest revision of AWWA Standard C504/~~C516~~ and NSF61, where applicable. Valves shall be bubble-tight at rated pressures in either direction, and shall be satisfactory for applications involving throttling service and for applications requiring valve actuation after long periods of inactivity. Valve discs shall rotate 90° from the full open position to the tight shut position. Regardless of valve size, angular misposition of disc can be up to 1° off center without leakage.

The manufacturer shall have manufactured tight closing, rubber seated butterfly valves for a period of at least ten years. All valves from 24" through 144" shall be the Triton® XR-70 as manufactured by the Henry Pratt Company or an approved equal.

or ASTM A536, Grade 65-45-12

Valve Body

All valve bodies shall be cast iron ASTM A126, Class B, narrow body design. Flange drilling shall be in accordance with ANSI B16.1 standard for cast iron flanges. Body thickness shall be in strict accordance with AWWA C504 where applicable.

Valve Disc

All valve discs shall be constructed of ductile iron ASTM A536 with a stainless steel seating edge. The disc shall not have any hollow chambers that can entrap water. All surfaces shall be visually inspected and measurable to assure all structural members are at full disc strength. Disc and shaft connection shall be made with stainless steel pins.

Typical Applications for Triton XR-70

Thousands of Triton XR-70 butterfly valves have been installed in plants and industrial facilities around the world. Some typical applications include the following:

- Water treatment
- Wastewater treatment
- Cooling water systems
- Circulating water systems
- Nuclear, fossil fuel and cogeneration power plants
- Pumping stations
- Reservoirs
- Pipelines

Valve Shaft

All shafts shall be turned, ground, polished and constructed of ASTM A-276 Type 304 or Type 316 stainless steel. Shafts shall be two-piece, stub type and keyed for actuator connection. Shaft diameters shall meet minimum requirements established by the latest revision of AWWA Standard C504 for their class, where applicable.

Valve Seat

All seats shall be constructed of synthetic rubber compound such as Buna N or EPDM and suitable for bidirectional shutoff at rated pressure. Seats shall be retained in the valve body by mechanical means without retaining rings, segments, screws or hardware of any kind in the flow stream. Seats shall be a full 360° without interruption and have a plurality of grooves mating with a spherical disc edge seating surface. Valve seats shall be field adjustable around the full 360° circumference and replaceable without dismantling the actuator, disc or shaft and without removing the valve from the line.

Valve Bearings

All butterfly valves shall be fitted with sleeve-type bearings. Bearings shall be corrosion resistant and self-lubricating. Bearing load shall not exceed $\frac{1}{5}$ of the compressible strength of the bearing or shaft material.

Valve Actuator

Valve actuators shall conform to AWWA Standard C504 and shall be designed to hold the valve in any intermediate position between full open and fully closed without creeping or fluttering.

Painting

All surfaces of the valve shall be clean, dry and free from grease before applying paint or coating. The valve interior and exterior surfaces, except for the seating surfaces, shall be provided with the manufacturer's standard coating unless otherwise specified by contract.

Testing

Hydrostatic and leakage tests shall be conducted in strict accordance with AWWA Standard C504.

Proof of Design

The manufacturer furnishing the valves under the specification shall be prepared to show proof that the valves provided meet the design requirements of AWWA Standard C504.



Flowserve Limitorque L120 series: A solid record in demanding applications

Proven performers under the most challenging circumstances, Limitorque's L120 actuators are ideal for valves requiring rotary or linear movement.

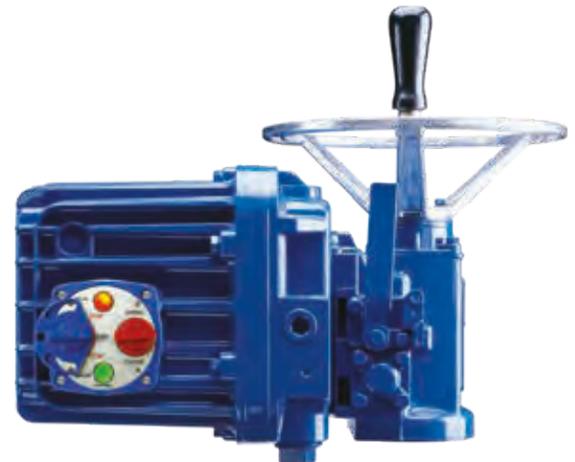
With eight unit sizes, L120 electric actuators make it easy to meet or exceed your requirements for positive, dependable valve actuation.

~~Whether used with gate valves, globe valves, penstocks or sluice gates, versatile L120 Series actuators can be direct mounted or combined with the V or SR series bevel gearboxes for any rising or non-rising stem application. When combined with a Limitorque WG or HBC series quarter-turn worm gearboxes, L120 actuators can also be used to control butterfly, ball and plug valves, as well as damper drives, flop gates or any other device which requires rotary movement.~~

Rugged, reliable and versatile, L120 actuators are proven performers in challenging applications. Thousands of L120 actuators are at work in some of the world's most demanding conditions, where nothing less than day-after-day dependable operation is acceptable.

L120 actuators are specified for use in petrochemical, power generation, and water and waste treatment applications where failure of a single actuator can be extremely costly ... even catastrophic.

Solid design and durable construction qualify the L120 actuator for applications involving harsh environmental conditions. A successful record with challenging requirements and compatibility with advanced process control systems make L120 actuators the best combination of proven and leading-edge technologies. Backed by comprehensive technical support services, product documentation, and spare parts availability, the L120 series is an easy choice for flexible, dependable valve control.



Low-maintenance requirements make the L120 Series ideally suited for water and waste treatment applications.

L120 actuators meet rigid safety requirements and are available in weatherproof, explosion-proof and submersible configurations.



The L120 makes valve control easier for some of the world's most demanding customers.

Petrochemical Installations such as refineries, pipelines, terminals, tank farms, cokers and off-shore platforms rely on the L120's safety, endurance and operational efficiencies. The L120 has network compatibility, explosion-proof certification, and resistance to lightning and EMI.

Power Generation plants value the L120's availability, controls versatility and reliable performance. The L120's rugged design and construction quality stands up to vibration, high-pressure steam and extreme temperatures.

Water and Waste Treatment Facilities benefit from the L120's low-maintenance requirements and modulating control capabilities. L120 actuators meet AWWA standards and easily fit the industry trend toward modern controls networks. The wide range of options in the L120 Series allows specification needs to be met cost-effectively.

Designed to provide positive, dependable actuation

The time-tested design and solid construction of the L120 Series allow these actuators to handle up to 60 000 ft-lb (81 600 Nm) of torque, and up to 500 000 ft-lb (225 000 kg) of thrust. Durable torque overload protection is provided in both directions of valve travel. Rugged enclosures are available in weatherproof, submersible and explosion-proof configurations.

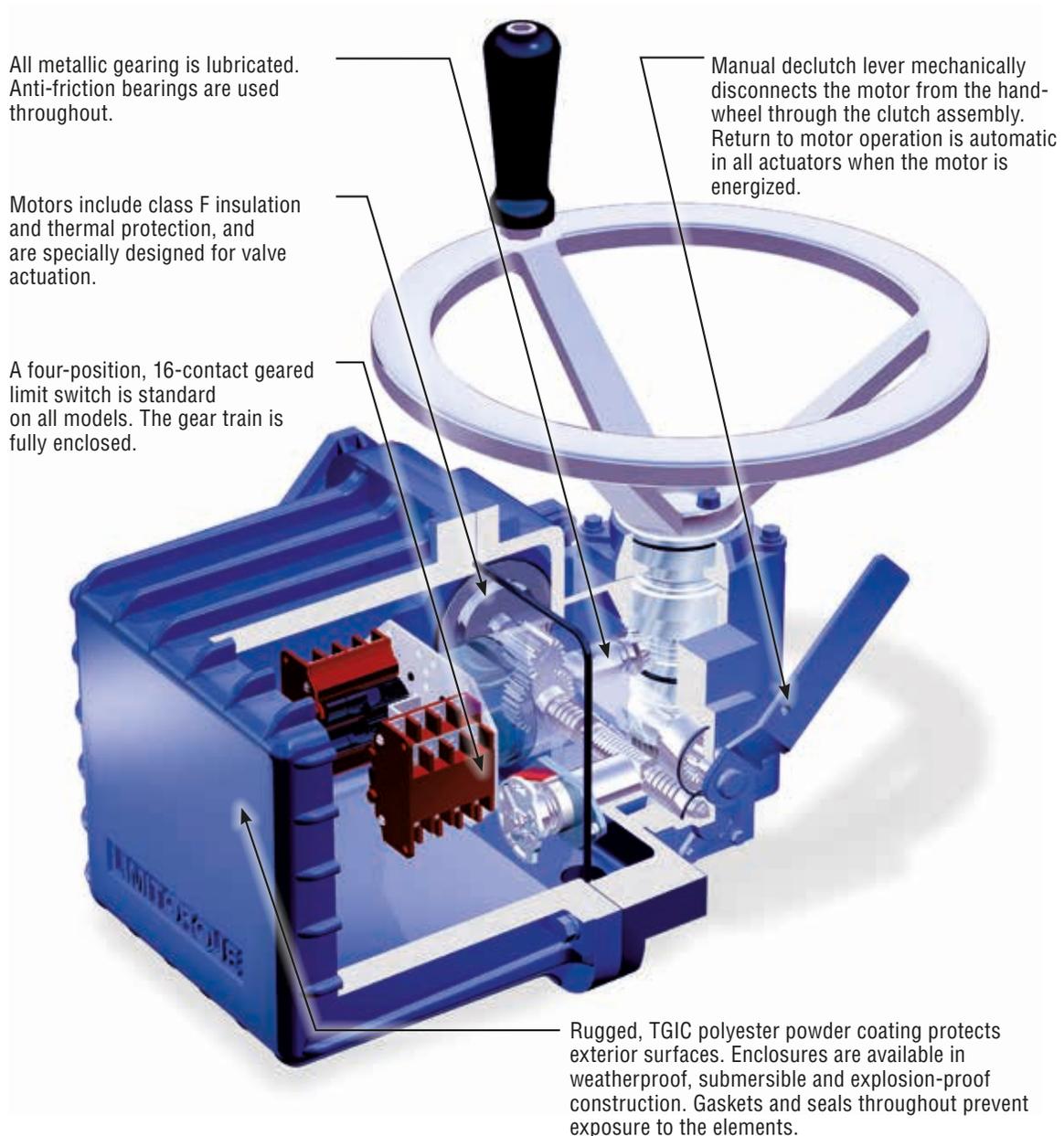
L120 actuators can also be coupled to gearboxes such as Limatorque's ~~V, WG or HBC~~ for motorized operation of valves in ~~quarter turn operation, or~~ multi-turn applications for increased torque and/or thrust requirements.

Limatorque's factories are certified to ISO 9001 standards and maintain the highest quality of performance throughout the manufacturing processes.

L120 series multi-turn electric valve actuators

L120-10 through -40 series

L120-10 through 40 actuators utilize die-cast aluminum housings and compartment covers to maximize performance in a reduced weight design.



L120-85 series

L120-85 through 2000 electric actuators utilize iron housing construction for strength and durability.



L120-190 series



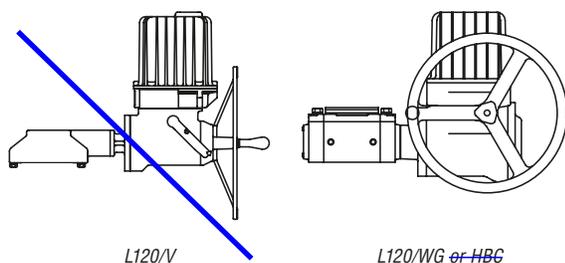
Actuation of valves, gates and dampers

Direct Mounting The L120 series can be directly coupled with valves for torque-only applications. For thrust applications, a separate thrust base is used for the L120-10 through -85.

L120/V, L120/SR Rising stem valves may be operated by an L120 coupled to a v-Series bevel gearbox or SR-series spur gearbox. Thrusts to 921 000 lb (4100 kN) and torques to 19 000 ft-lb (26 000 N-m) are available.

L120/WG and L120/HBG The L120 series may be coupled to a WG or HBG worm gearbox for operation of quarter turn valves or dampers, or multi-turn damper applications. Torque outputs to 449 000 lbs-ft (610 000 N-m) are available.

Combinations for torque reduction applications



Mounting bases

~~Thrust actuator drive bases~~

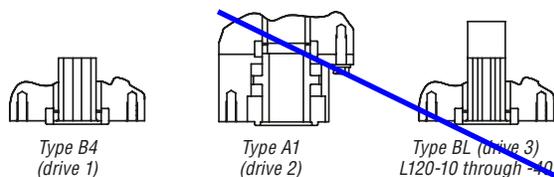
~~Type A1 (drive 2) — Alloy bronze (torque and thrust)~~

Torque-only actuator bases

Type B4 (drive 1) — Standard steel bushing

~~Type BL (drive 3) — Splined steel bushing for rising or rotating stem valves~~

Mounting bases (L120-10 through -85)



From basic controls to digital networks

The L120, with 30+ years of proven performance, continues to deliver reliable operation in a wide range of process control environments. Standard control packages utilize circuit board technology to reduce the need for hard-wiring. Control stations are available with a variety of illuminated indicator and selector switch options. These control stations are available in a standard design for basic integral control packages and an electronic version for use with the UEX electronic controls in network control packages.

Human interfaces

Control stations are available with a variety of illuminated indicator and selector switch options. The control stations offer two lights and padlockable selector switches as standard for use with electronic controllers. Switch stations can be supplied in the compartment cover (standard) or for remote mounting.

Integral package options:

No Controls Unit (NCU) is offered for open/close applications. Actuator controls such as reversing contactors and control transformers are located in motor control centers.

Basic Integral Controls (BIC) include integrally mounted reversing contactors, control transformers, fuses and interlocks.

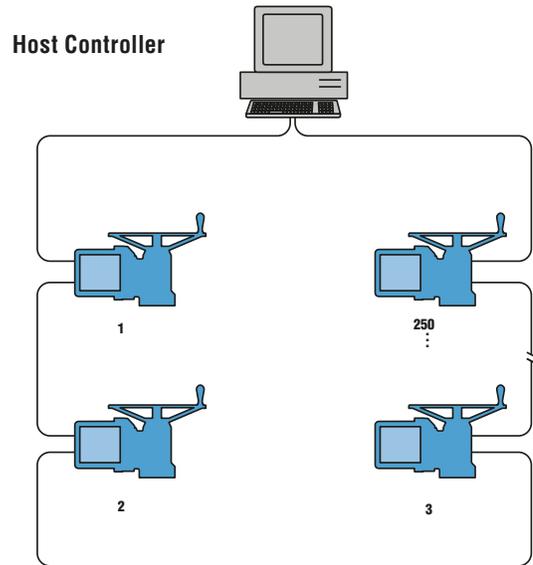
Integral Reversing Controls (IRC) include BIC functionality, plus a plug-in interconnect board and additional options.

Modutronic 20 Controls offer a choice of integral packages for positioning or process control functions in response to analog process signals.

Electronic Controls (UEX) offer state-of-the-art actuator control with advanced diagnostics and configurability. Built on MX technology, UEX features include all of the UEC-3 functionality plus position feedback via an absolute encoder, an on-board LCD display of status and position, and supports any of five network protocols. The UEX can be field-installed to replace UEC-3 control packages.

Network Protocols provided through the UEX Control package include Modbus, Foundation Fieldbus, Profibus-DP, Profibus PA and DeviceNet.

L120/DDC direct-to-host networks support up to 250 field units



L120 specifications

Gear housing

- Cast aluminum, L120-10 through -40; cast iron, L120-85 through -2000
- Lubrication — Grade 0 or Grade 00
- Gear reduction — Double-reduction type
 - › Worm gear (alloy bronze) and spur gear (heat-treated steel), L120-10 through 85
 - › Worm gear (alloy bronze) and spur gear (heat-treated steel), and worm (alloy steel) and helical gearing (heat-treated steel), L120-190 through -2000

Electrical compartment covers

- Cast aluminum, O-ring sealed
 - › Hardware is nickel-plated carbon steel, L120-10 through -85, and L120-190 through -2000. ~~Stainless steel optional for non-XP.~~

Motor

- Available as four-pole, 1800 rpm (60 Hz) or 1500 rpm (50 Hz); two-pole, 3600 rpm (60 Hz) or 3000 rpm (50 Hz); eight-pole, 900 rpm (60 Hz) or 750 rpm (50 Hz).
- Squirrel-cage induction for three-phase and capacitor start-induction run for single-phase.
- Power supply — three-phase motors, suitable for 3/60/230, 3/60/460, 3/60/575, 3/50/380 or 3/50/415.
- Nominal duty is 15 minutes. ~~Optional extended duty available.~~
- Dynamic torque is nominal 20% of start torque
- Class F insulation
- Two Class B thermal contacts embedded within motor windings provide thermal protection

Limit switch

- Gear driven, cam operated, snap acting
- Four rotor/16 SPST contact switches (four contacts per rotor — 2 N/O and 2 N/C). Rotors may be set to open or close at any valve position
- Contact rating is 300 volts per ICS-125.6. Current rated 6 amps resistive and 60 amps inrush at 120 VAC

Torque switch

- L120-10 through -85: Heavy-duty inlaid silver contacts, 300 volts, and one SPST contact each for open/closed direction dedicated to actuator torque protection
- L120-190 through -2000: 300 volts per ICS-125.6, 6 amps resistive and 60 amps inrush at 120 VAC. One SPST contact each for open/closed direction dedicated to actuator torque protection.

Reversing contactor

- Available at 12-, 25- or 50-amp ratings, selected according to motor ratings

Enclosure Ratings

L120-10 through 85 actuators are suitable for:

- Explosionproof service
 - › FM Class I, Groups B, C, D, Divisions 1 and 2; Class II, Groups E, F, G, Divisions 1 and 2, Temperature Code TC3
 - › CSA Class I, Groups C, D, Divisions 1 and 2; Class II, Groups E, F, G, Divisions 1 and 2, Temperature Code TC3
- FM weatherproof, types 3, 4, and 4X
- CSA weatherproof, types 3 and 4

L120-190 through 2000 actuators are suitable for:

- Explosionproof service
 - › FM Class I, Groups B, C, D, Divisions 1 and 2; Class II, Groups E, F, G, Divisions 1 and 2, Temperature Code TC3
 - › CSA Class I, Groups C, D, Divisions 1 and 2; Class II, Groups E, F, G, Divisions 1 and 2, Temperature Code TC3
- FM weatherproof, types 3 And 4
- CSA weatherproof, type 4

L120 submersible actuators are suitable for Nema 6 and IP68. ~~L120 FM and CSA approved actuators are also certified for Nema 3 and 4.~~

Thrust and torque output drives

- Torque output only — a removable steel torque bushing is provided
- Thrust and torque output — a removable splined, bronze stem nut is provided, housed in a ductile iron thrust base and supported on thrust bearings.

Handwheel/declutch

- Fabricated steel or ductile iron for side-mounted; ~~cast aluminum for L120-10 top-mounted only.~~ Handwheels are connected directly to drive sleeve (L120-10, -20 and -40). L120-85 operates through the worm set. Declutch lever is padlockable in motor position.

Mounting base

- Supplied to MSS (English taps) standard. ~~Optional ISO bases available.~~

Paint

- TGIC polyester powder-coating for L120-10 through -40; Valspar epoxy/polyurethane for L120-85 through -2000. Both coatings are suitable for 500-hour salt spray.

L120 specifications

Temperature rating

- Standard operating temperature range is from -20°F to 150°F (-29°C to 66°C). Optional extended ranges available.
- For explosion-proof applications, the Factory Mutual XP temperature rating is shown on the FM nameplate.

Actuator nameplate

- The stainless steel nameplate includes the Flowserve Limitorque name, point of manufacture, actuator type and size, order number, serial number, and space for customer tag information.

Controls options

- Available controls include BIC (Basic Integral Controls), Mod 20 modulating controls, and UEX (electronic controls).
- **Local Continuous Position Indication** Local position indicator shows continuous valve position in percentage open via dial, and is driven by dedicated gear set selected per application. Window in compartment cover shows indicator.
- **Local/Remote Indication** Includes local continuous position indicator with a 1000-ohm potentiometer. Potentiometers transmit valve position to remote location.
- **R/I Converter** Sends remote valve position indication signal via 4-20 mA signal. Internally powered.
- **Relay Boards** Provide isolated relays (2) or non-isolated relays (3) for interlocking with field equipment. Relay contacts rated at 250 VAC/6.5 A or 30 VDC/5 A.
- **Handwheel Gear Reduction** Bevel gear reductions are available for L120-10 through 40, and spur gear reductions are available for L120-190 through 2000.
- **Double-pole Torque Switch** Provides an additional SPDT contact in each direction that actuates when set torque is exceeded. Used as indication of over-torque condition.
- **Spring Compensation (L120S) (L120-190 through 2000)** SB-type spring-compensated stem nut used on high-speed or high-temperature, torque-seated applications.
- **Position Feedback for DDC** Communicates valve position to remote location via DDC network. Includes local position indication, 1000-ohm potentiometer and DDC analog channel. Used with DDC base actuator.
- **External Analog Feedback for DDC** Allows external analog signals to be connected to DDC field unit, converted to digital signals and transmitted over DDC network. Four signals may be accommodated. Includes DDC analog channel. Used with DDC base actuator.

- **Positioning Control for DDC** Permits positioning of valves over DDC network. Positioning commands valve to any point of travel, in 1% increments. Includes local position indication, 1000-ohm potentiometer and DDC analog channel. Used with DDC base actuator.
- **Two-speed Operation for DDC** Allows the actuator to be pulsed on and off, achieving slower operating speed for all or part of valve stroke. Default pulse rate is 2 seconds on, 10 seconds off, adjustable from 50 ms to 12.75 seconds in 50-ms increments. Configured via RS-232 link and dedicated software.
- **UEX Electronic Control Package** The UEX replaces the UEC 3 with MX technology-based control functionality. The absolute encoder provides position indication and control. Setup is achieved through the LCD display, providing status and fault indication in 11 languages. The UEX offers network control via Modbus, Foundation Fieldbus, Profibus DP, Profibus PA or DeviceNet.

Testing summary

In addition to the Factory Mutual and CSA certifications for XP and WP services, L120 actuators meet the following seismic and vibration criteria: NTS Labs, Acton, MA, Test Report #31437-94M dated 3/28/94 to the following:

- Sine survey; 5 to 200 Hz @ 0.75 g
- Sine cycling; 5 to 200 Hz to 5 Hz @ 0.75 g
- Sine cycling; 2 to 35 to 2 Hz @ 1.0 g; 10 cycles
- Sine dwells; 2 to 35 to 2 Hz @ 1/3-octave intervals, 5.0 g @ 15-second dwells each frequency

NOTE: Standards are applicable to most actuators.

L120 series performance

(Three-phase-50 Hz/380, 400 and 415 V — 60 Hz/230, 460 and 575 V)

Actuator	Maximum Torque Capacity		Maximum Thrust Capacity		Output Speed Range (RPM)	
	ft-lb	N m	lb	kg	60 Hz	50 Hz
L120-10	100	136	10000	4500	12-250	10-210
L120-20	200	272	20000	9000	12-250	10-210
L120-40	400	544	30000	13500	24-250	20-210
L120-85	850	1156	45000	20250	24-192	20-160
L120-190	1900	2584	75000	33750	24-196	20-160
L120-420	4200	5712	140000	63000	19-196	16-165
L120-800	8000	10880	250000	112500	12-168	10-140
L120-2000	20000	27200	500000	225000	12-60	10-50

L120 weights (approx.)

Actuator	Actuator with STD Comp.		Add for Integral Comp.		Add for Max. Comp.		Add for Thrust Base		Add for Side-Mount Handwheel	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
L120-10	90	41	20	9	32	14	7	3	3	1
L120-20	115	52	20	9	32	14	13	6	8	4
L120-40	160	72	20	9	32	14	22	10	16	7
L120-85	285	129	20	9	32	14	67	30	(Note 2)	
L120-190	600	272	85	39	(Note 2)		(Note 2)		(Note 2)	
L120-420	1195	541	215	98	(Note 2)		(Note 2)		(Note 2)	
L120-800	1415	641	215	98	(Note 2)		430	195	(Note 2)	
L120-2000	2550	1155	215	98	(Note 2)		826	375	(Note 2)	

Note 1: Same as overall ratio.

Note 2: Consult factory for weight.

Note 3: Performance ratings and dimensions are also available for the L120-6000. Please consult factory.

Mounting Base and Drive Sleeves

	Previous Designation	Description
Type B4	Drive 1	Bore and key bushing for torque-only applications
Type A1	Drive 2	Threaded for thrust applications
Type BL	Drive 3	Splined steel bushing for rising rotating stem valves

L120 series performance

L120-10, -20 and -40

Drive options	L120-10		L120-20		L120-40	
	inch	mm	inch	mm	inch	mm
Type B4 bore and key	1.000- $\frac{1}{4} \times \frac{3}{16}$ (rect key)	25-8x6	1.875- $\frac{1}{2} \times \frac{3}{8}$ (rect key)	48-14x9	2.125- $\frac{1}{2} \times \frac{3}{8}$ (rect key)	53-16x10
	.938- $\frac{1}{4} \times \frac{1}{4}$ (sq key)		1.813- $\frac{1}{2} \times \frac{1}{2}$ (sq key)		2.063- $\frac{1}{2} \times \frac{1}{2}$ (sq key)	
Type B4 stem nut length	3.25	83	3.50	89	3.75	95
Type A1 threaded stem	1.25	32.8	2.25	57.2	2.63	66.8
Type A1 stem length	2.38	60	3.87	98	3.84	98
Type BL splined	1.25 - 6 and 38 splines	N/A	1.5 - 6 and 1.9 - 36 splines	N/A	2 - 6 and 1.5 - 8 splines	N/A
Type BL spline length	4.50	114	4.50	114	4.50	114
Mounting base	MSS FA-10	ISO F-10	MSS FA-14	ISO F-14	MSS FA-14	ISO F-14
Pilot diameter	2.312	70	3.750	100	3.750	100
Mounting holes (Note 1)	(4) $\frac{3}{8}$ -16x.88	(4) M10x1.5x22.4	(4) $\frac{3}{8}$ -11x1.25	(4) M16x2x32	(4) $\frac{3}{8}$ -11x1.25	(4) M16x2x32
Bolt circle	4.016	102	5.500	140	5.500	140
Mounting base diameter	4.92	125	7.000	178	7.000	178
Handwheel ratios						
Standard	1:1 Top Mount		1:1 Top Mount		1:1 Top Mount	
Optional gear reduction	4.2:1 Side Mount		5.7:1 Side Mount		12:1 Side Mount	

L120-85, -190 and -420

Drive options	L120-85		L120-190		L120-420	
	inch	mm	inch	mm	inch	mm
Type B4 bore and key	2.750- $\frac{5}{8} \times \frac{7}{16}$ (rect key)	70-20x12	2.875- $\frac{3}{4} \times \frac{1}{2}$ (rect key)	73-20x12	4.250-1x $\frac{3}{4}$ (rect key)	108-28x16
	2.625- $\frac{5}{8} \times \frac{5}{8}$ (sq key)		2.750- $\frac{3}{4} \times \frac{3}{4}$ (sq key)		4.125-1x1 (sq key)	
Type B4 stem nut length	6.00	152	8.25	210	9.38	238
Type A1 threaded stem	3.00	76	3.50	89	5.00	127
Type A1 stem length	4.88	124	8.25	210	9.38	238
Mounting base	MSS FA-16	ISO F-16	MSS FA-30	ISO F-30	MSS	ISO F-35
Pilot diameter	5.00	130	7	230	8.5	215.9
Mounting holes (Note 1)	(4) $\frac{3}{4}$ -10x1.0	(4) M20x2.5x24.5	(8) $\frac{3}{4}$ -10x1.13	(8) M20x2.5x32	(8) $\frac{7}{8}$ -9x1.75	(8) M30x3.5x1.75
Bolt circle	6.50	165	11.75	298	14.00	355.6
Mounting base diameter	8.25	222	13.50	343	16.00	406.4
Handwheel ratios						
Standard	18:1 - 71:1 (Same as overall ratio) Side Mount		9:1, 22.3:1		11.07:1, 28.37:1	
Optional gear reduction	N/A		4:1		6:1	

Note 1: Mounting holes straddle centerline.

Note 2: L120-85, -190, -420 and -800 are suitable for both torque and thrust applications. L120-2000 is suitable for torque as standard; thrust units are optional.

The rugged and reliable WG series worm gearboxes are constructed for manual or motorized operation. With ductile iron housings, bearing-supported shafts, and well-designed sealing, the WG stands up to the environmental challenges of weatherproof, submersible and buried service applications. Alternate input shaft assembly positions can be accomplished in the field due to the concentric housing design. The splined adapter is captive in the housing, eliminating the concerns over proper engagement of the adapter on the valve shaft. The range of spur gear reductions allows the WG to meet operating times for virtually any application.

The WG meets AWWA C504 requirements for manual operation and, when motorized, meets AWWA C542 requirements. High-quality, maintenance-free construction will provide years of dependable operation.

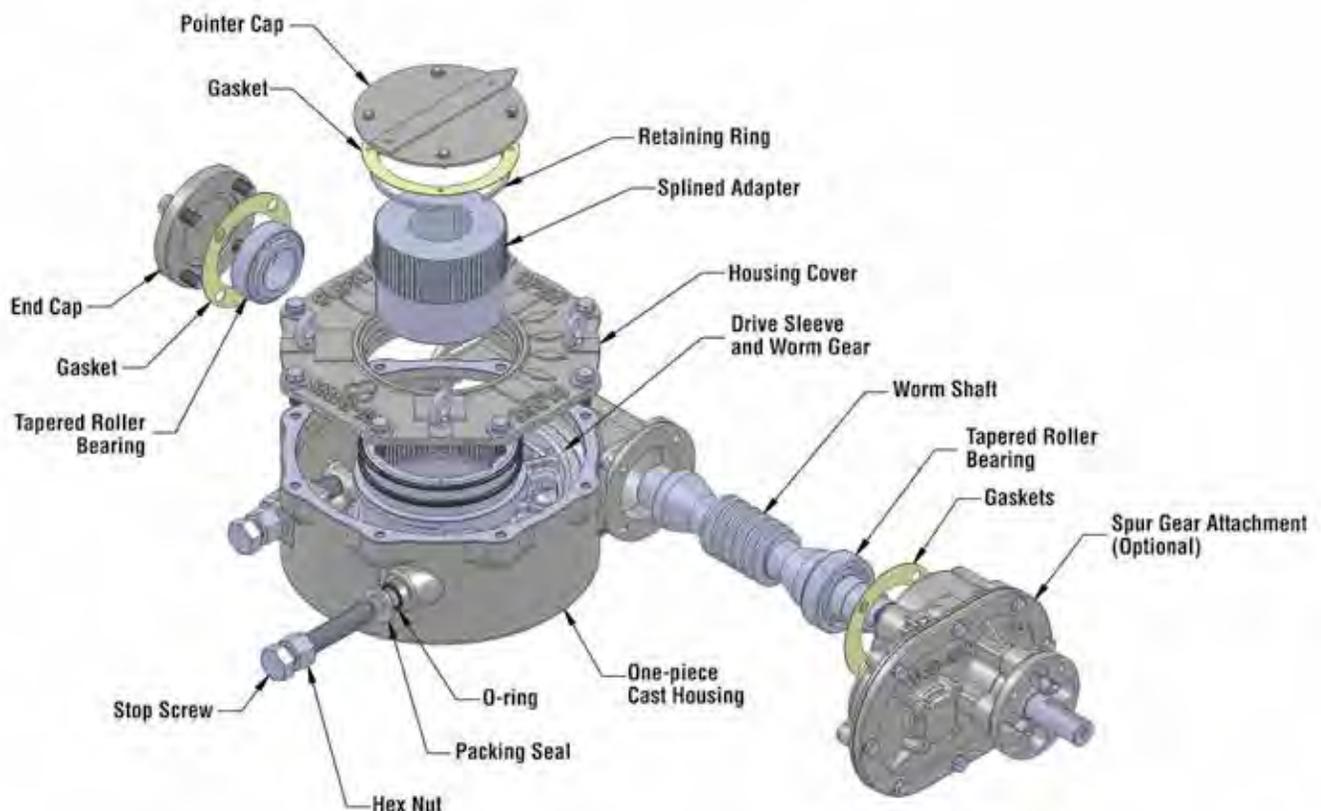
Features and Benefits

- Meets AWWA C504 and C542 when motorized with **MX**, L120 or **SMB** actuators
- Lubricated for life
- Available for 360° operation
- Input flanges machined in accordance with MSS SP-102, with keyed input shaft
- Available for buried service and submersibility to IP 68
- Self-locking gearing
- High mechanical advantage

The WG series, when motorized by **MX**, L120 or **SMB** actuators, provides effective and reliable solutions for ~~quarter-turn or~~ multi-turn process control applications.



- Ductile iron enclosure
- 90° ±5° (adjustable) travel for quarter-turn applications
- Up to 326 000 ft-lb/442 000 N-m torque output
- Worm gears available in bronze or ductile iron
- -35°C to 90°C (-31°F to 194°F) temperature range for continuous operation (options to -50°C)





Ratings

Gearbox	Ratio	Mechanical Advantage	Stem Capacity		Output Torque Rating		Input Torque for Output Torque Rating	
			Inches	MM	ft-lb	N-m	ft-lb	N-m
WG-00	40:1	13.6	1.250 - 5/16 x 5/16 sq key 1.313 - 5/16 x 1/4 rect key	32 - 8x7	885	1200	65	88
WG-02	48:1	15.4	2.125 - 1/2 x 1/2 sq key 2.188 - 1/2 x 3/8 rect key	56 - 12x8	2065	2800	134	182
WG-03	52:1	16.1	2.688 - 5/8 x 5/8 sq key	70 - 16x10	3172	4300	197	267
WG-03-1SD	217:1	52.1	2.750 - 3/4 x 1/2 rect key				61	83
WG-35	52:1	16.6	2.813 - 3/4 x 3/4 sq key	74 - 20x12	4500	6100	270	367
WG-35-1SD	148:1	35.5	2.938 - 3/4 x 1/2 rect key				127	172
WG-04	56:1	19.0	3.313 - 7/8 x 7/8 sq key	88 - 25x14	7670	10 400	404	547
WG-04-1SD	252:1	60.5	3.438 - 7/8 x 5/8 rect key				127	172
WG-05	60:1	20.4	4.000 - 1 x 1 sq key	106 - 28x16	11 720	15 890	575	779
WG-05-1SD	388:1	93.1	4.125 - 1 x 3/4 rect key				126	171
WG-55	62:1	21.7	4.375 - 1 x 1 sq key	115 - 32x18	17 330	23 497	799	1083
WG-55-1S	186:1	52.1	4.500 - 1 x 3/4 rect key				333	451
WG-55-1SD	372:1	89.3					194	263
WG-55-1SD	558:1	133.9					129	175
WG-06	64:1	19.2	4.813 - 1-1/4 X 1-1/4 sq key	128 - 32x18	24 190	32 797	1260	1708
WG-06-1SD	329:1	75.7	5.000 - 1-1/4 X 7/8 rect key				320	433
WG-06-1SD	451:1	103.7					233	316
WG-06-1SD	768:1	176.6					137	186
WG-07	68:1	21.1					1788	2424
WG-07-1SD	350:1	80.5	6.188 - 1-1/2 x 1-1/2 sq key	164 - 40x22	37 690	51 101	468	635
WG-07-1SD	674:1	155.0	6.438 - 1-1/2 x 1 rect key				243	330
WG-07-1SD	1088:1	250.2					151	204
WG-75	66:1	20.5	7.125 - 1-3/4 x 1-3/4 sq key	188 - 45x25	60 110	81 498	2938	3983
WG-75-1S	330:1	89.1	7.250 - 1-3/4 x 1-1/2 rect key				675	915
WG-75-1SD	394:1	90.6					663	899
WG-75-1SD	544:1	125.1					480	651
WG-75-1SD	1084:1	249.3					241	327
WG-08	66:1	21.8	8.500 - 2 x 2 sq key	228 - 50x28	89 240	120 992	4097	5555
WG-08-1S	330:1	92.4	8.750 - 2 x 1-1/2 rect key				966	1309
WG-08-1SD	394:1	98.5					906	1228
WG-08-1SD	770:1	192.5					464	629
WG-08-1SD	1417:1	354.3					252	342
WG-09	66:1	23.1	9.500 - 2-1/2 x 2-1/2 sq key	258 - 56x32	141 980	192 497	6146	8333
WG-09-1S	330:1	99.0	10.000 - 2-1/2 x 1-3/4 rect key				1434	1944
WG-09-1SD	394:1	102.4					1386	1879
WG-09-1SD	1155:1	300.3					473	641
WG-10	64:1	21.8	10.625 - 2-1/2 x 2-1/2 sq key	286 - 63x32	202 830	274 997	9321	12 638
WG-10-1S	320:1	92.8	11.000 - 2-1/2 x 1-3/4 rect key				2186	2962
WG-10-1SD	422:1	109.7					1849	2506
WG-10-1SD	640:1	166.4					1219	1633
WG-10-1SD	1600:1	416.0					488	661
WG-11	68:1	23.1	11.750 - 3 x 3 sq key	318 - 70x36	326 000	441 991	14 100	19 117
WG-11-1S	340:1	102.0	12.250 - 3 x 2 rect key				3196	4333
WG-11-1SD	448:1	116.5					2799	3795
WG-11-1SD	816:1	212.2					1537	2083
WG-11-1SD	994:1	258.4					1261	1710

Flowserve Corporation has established industry leadership in the design and manufacture of its products. When properly selected, this Flowserve product is designed to perform its intended function safely during its useful life. However, the purchaser or user of Flowserve products should be aware that Flowserve products might be used in numerous applications under a wide variety of industrial service conditions. Although Flowserve can (and often does) provide general guidelines, it cannot provide specific data and warnings for all possible applications. The purchaser/user must therefore assume the ultimate responsibility for the proper sizing and selection, installation, operation and maintenance of Flowserve products. The purchaser/user should read and understand the Installation Operation Maintenance (IOM) instructions included with the product, and train its employees and contractors in the safe use of Flowserve products in connection with the specific application.

While the information and specifications contained in this literature are believed to be accurate, they are supplied for informative purposes only and should not be considered certified or as a guarantee of satisfactory results by reliance thereon. Nothing contained herein is to be construed as a warranty or guarantee, express or implied, regarding any matter with respect to this product. Because Flowserve is continually improving and upgrading its product design, the specifications, dimensions and information contained herein are subject to change without notice. Should any question arise concerning these provisions, the purchaser/user should contact Flowserve Corporation at any one of its worldwide operations or offices.

© 2015 Flowserve Corporation, Irving, Texas, USA. Flowserve is a registered trademark of Flowserve Corporation.

To find your local Limitorque representative, visit www.limitorque.com or call USA 434 528 4400.

United States
 Flowserve Limitorque
 5114 Woodall Road
 Lynchburg, VA 24502 USA
 Telephone: 434 528 4400
 Fax: 434 845 9736

PRATT[®]

a **MUELLER** brand

401 S. HIGHLAND AVENUE, AURORA, IL 60506
TEL: (630) 844-4000 FAX: (630) 844-4160

Purchase Order #: 9795011

Sales Order #: 2731977 HP

Proposal/Quote #: Q-020-13073

Project Name: Hess Pump Station Valve Replacement

Project Location: Wichita, KS

Date: August 12, 2020

Revision: 0

WARRANTY

PRATT®

a MUELLER brand

401 S. HIGHLAND AVENUE, AURORA, IL 60506
TEL: (630) 844-4000 FAX: (630) 844-4160

Purchase Order #: 9795011
Sales Order #: 2731977 HP
Proposal/Quote #: Q-020-13073
Project Name: Hess Pump Station Valve Replacement
Project Location: Wichita, KS
Date: August 12, 2020
Revision: 0

MATERIAL WARRANTY

Seller warrants that, at its option, it will repair, replace, or refund the unit purchase price of any products which are non-conforming due to Seller's material or workmanship during the warranty period.

The warranty period shall be twenty four (24) months for parts and all other goods after date of shipment. This shall be Buyer's sole remedy.

In order to maintain this product warranty, Buyer must give written notice to Seller's Field Service Supervisor prior to any work being performed. In no event shall warranty include the cost of valve removal or reinstallation.

IN CONSIDERATION OF THE FOREGOING, SELLER EXCLUDES ALL OTHER EXPRESS OR IMPLIED WARRANTIES INCLUDING BUT NOT LIMITED TO MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Seller does not warrant water-operated metallic cylinders against damage caused by corrosion, electrolysis or mineral deposits.

In no event shall warranty include valve removal or reinstallation.