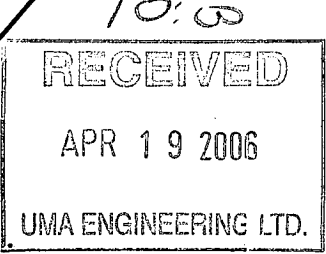


POWER & MINE SUPPLY Co. LTD.

an APPLIED ENGINEERING company

75 Meridian Drive, Unit 4,
Winnipeg, MB, R2R 2V9
204-694-9300 FAX 204-694-7876



April 18, 2006

Earth Tech (Canada) Inc.
850 Pembina Hwy.
Winnipeg, MB R3M 2M7

Bill Richert, P. Eng.
UMA Engineering
1 copy

Attention: Ray Bilevicius
Phone #: 204-477-5381
Fax #: 204-284-2040

Reference: City of Winnipeg WTP Bid Opportunity 731-2005
Supply of Large Butterfly Valves

Dear Ray:

Attached is data as listed below:

Qty	Description	Remarks
6+1	Shop drawings for approval. Equipment tag numbers: <ul style="list-style-type: none"> ● V-I011A, V-I012A, V-I016A manual actuated ● FV-F051A, FV-F052A electric actuated Included submissions: <ol style="list-style-type: none"> 1. Technical specifications compliance 2. Dezurik Order Datasheet 3. Bare stem valve drawing (dwg#: A47550) 4. FV-F051A and FV-F052A drawing (dwg#: J53758) 5. V-I011A, V-I012A and V-I016A drawing (dwg#: J54831) 6. Valve assembly drawing (dwg#: A56178) 7. Materials of construction list 8. Actuator mounting drawing (dwg#: J14943) 9. ENK neck extension drawing (dwg#: J78626) 10. Rotork electric actuator wiring diagram (dwg# 3000-000-08) 11. Dezurik Model BAW technical bulletin 	

- (X) Above submittal is for **APPROVAL** and we are withholding the order from entry for production awaiting receipt of approved data at this office along with full information to enable us to proceed. See note below.
- () Above submittal is for record and file. We are proceeding with production in accordance with same. Please note that any changes after this date may result in delays and possible additional charges.
- () Above for record and file.

REMARKS: If you have any questions or need additional information, please call this office.

Regards,

Cam Wilson, P.Eng

cc: Bill Richert, P.Eng - UMA Engineering (1 copy)

POWER & MINE SUPPLY CO LTD
 4-75 MERIDIAN DRIVE, UNIT 4
 WINNIPEG, MB
 R2R 2V9

P.O. PO70477
 FACTORY ORDER NO 724571
 FACTORY SALES ORDER NO 606873
 REV 2

Fact. ITEM	Cust. ITEM	QTY	DESCRIPTION	PART NO. 9474642
1	1	2	BAW, 54, F1, CI, NBRN-NBR, 75B, CI-S2, 1421D0*X*AFZ056	

Style	BAW	AWWA Butterfly Valve
Size	54	54 Inch
End Connection	F1	Flanged Drilling; ANSI 125/150
Body Material	CI	Cast Iron
Packing	NBRN	Acrylonitrile Butadiene; Self Adjusting
Seat Material	NBR	Acrylonitrile Butadiene
Service Class	75B	AWWA Class 75B
Disc	CI	Cast Iron with 316 Stainless Steel Edge
Shaft	S2	316 Stainless Steel
Option	1421D0	12 mils minimum of Blue Epoxy (NSF Std. 61) on Interior with SP5 surface prep and Holiday Spark Test and 12 mils minimum of Blue Epoxy (NSF Std. 61) on Exterior with Standard (SP10) surface prep
Act Type	X	Specified in Modifier Below
Modifier	AFZ056	ROTORK MODEL IQ20FA14B4/IW8R240 P/N: 1366600 ACTUATOR MOUNTED ON TOTALLY ENCLOSED EXTENSION C/L OF VALVE TO TOP OF EXT = 102IN (8'6") BACK SIDE OF FLANGE SPOT FACED TYPE 316 STAINLESS STEEL EXTENSION STANDARD TEST CERTIFICATION EXCEPT VALVE FLANGES VERTICAL AND SEAT LEAK TEST IN BOTH DIRECTIONS (SEE TEXT) CUSTOMER INSPECTION REQUIRED AT HOLIDAY SPARK TEST (14 DAYS NOTIFICATION) CERTIFIED PHYSICAL AND CHEMICAL TEST REPORTS PER SPEC QY00006 CERTIFICATION OF PAINT AS TO TYPE AND THICKNESS CUSTOMER INSPECTION REQUIRED AT INTERIOR AND EXTERIOR PAINT (14 DAYS NOTIFICATION) CUSTOMER INSPECTION REQUIRED AT SEAT LEAK TEST (14 DAY NOTIFICATION) CUSTOMER INSPECTION REQUIRED AT HYDROSTATIC SHELL TEST (14 DAY NOTIFICATION)

**** ----- RELATED DOCUMENTS ----- ****

J053758	DWG INST F1 ROT IW_R/IQ_ENK
A047550	DWG INST VALVE F1 24-72IN
A056178	DWG VALVE ASSY F 54 BAW
J078626	DWG ACCESS ENK FUW BAW
3000-000-08	WIRING DIAGRAM

**** ----- FEATURES ----- ****

INTERIOR SURFACES: 12 MILS MINIMUM (THREE 4 MIL
COATS) OF BLUE EPOXY (NSF STD. 61) WITH SP5
SURFACE PREPARATION AND HOLIDAY SPARK TEST.
EXTERIOR SURFACES: 12 MILS MINIMUM (THREE 4 MIL
COATS) OF BLUE EPOXY (NSF STD. 61) WITH STANDARD
(SP10) SURFACE PREPARATION.

===

DEZ STD TEST CERTS

POWER & MINE SUPPLY CO LTD
 4-75 MERIDIAN DRIVE, UNIT 4
 WINNIPEG, MB
 R2R 2V9

P.O. PO70477
 FACTORY ORDER NO 724571
 FACTORY SALES ORDER NO 606873
 REV 2

Fact. ITEM	Cust. ITEM	QTY	DESCRIPTION	PART NO. 9474643
2	2	3	BAW, 54, F1, CI, NBRN-NBR, 75B, CI-S2, 1421D0*X*AFZ057	

Style	BAW	AWWA Butterfly Valve
Size	54	54 Inch
End Connection	F1	Flanged Drilling; ANSI 125/150
Body Material	CI	Cast Iron
Packing	NBRN	Acrylonitrile Butadiene; Self Adjusting
Seat Material	NBR	Acrylonitrile Butadiene
Service Class	75B	AWWA Class 75B
Disc	CI	Cast Iron with 316 Stainless Steel Edge
Shaft	S2	316 Stainless Steel
Option	1421D0	12 mils minimum of Blue Epoxy (NSF Std. 61) on Interior with SP5 surface prep and Holiday Spark Test and 12 mils minimum of Blue Epoxy (NSF Std. 61) on Exterior with Standard (SP10) surface prep
Act Type	X	Specified in Modifier Below
Modifier	AFZ057	BACK SIDE OF FLANGE SPOT FACED ROTORK GEARS MODEL IW85R (720:1) AWWA C504 ABOVE GROUND WORM GEAR ACTUATOR WITH 24" HANDWHEEL AND 2" SQ NUT WELDED TO HUB AND SPINNER KNOB AND TORQUE LIMITER. STANDARD TEST CERTIFICATION EXCEPT VALVE FLANGES VERTICAL AND SEAT LEAK TEST IN BOTH DIRECTIONS (SEE TEXT) CUSTOMER INSPECTION REQUIRED AT HOLIDAY SPARK TEST (14 DAYS NOTIFICATION) CERTIFIED PHYSICAL AND CHEMICAL TEST REPORTS PER SPEC QY00006 CERTIFICATION OF PAINT AS TO TYPE AND THICKNESS CUSTOMER INSPECTION REQUIRED AT INTERIOR AND EXTERIOR PAINT (14 DAYS NOTIFICATION) CUSTOMER INSPECTION REQUIRED AT SEAT LEAK TEST (14 DAY NOTIFICATION) CUSTOMER INSPECTION REQUIRED AT HYDROSTATIC SHELL TEST (14 DAY NOTIFICATION)

**** ----- RELATED DOCUMENTS ----- ****

J054831	DWG INST F1 ROTORK IW8R HD/2"
A047550	DWG INST VALVE F1 24-72IN
A056178	DWG VALVE ASSY F 54 BAW
J014943	DWG CONN PART AWWA
3000-000-08	WIRING DIAGRAM

**** ----- FEATURES ----- ****

INTERIOR SURFACES: 12 MILS MINIMUM (THREE 4 MIL
COATS) OF BLUE EPOXY (NSF STD. 61) WITH SP5
SURFACE PREPARATION AND HOLIDAY SPARK TEST.
EXTERIOR SURFACES: 12 MILS MINIMUM (THREE 4 MIL
COATS) OF BLUE EPOXY (NSF STD. 61) WITH STANDARD
(SP10) SURFACE PREPARATION.

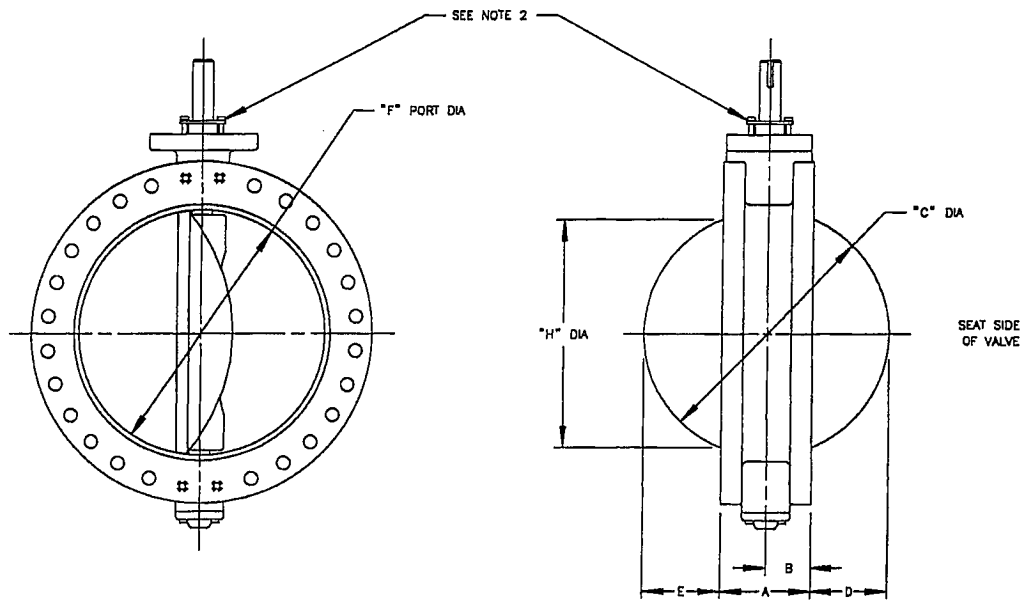
DEZ STD TEST CERTS

VALVE SIZE INCH	VALVE SIZE MM	VALVE CLASS	DIMENSIONS INCHES MILLIMETERS							
			A	B	C	D	E	F	H	
24	600	1508 & F1 (2508)	8.00	4.00	23.06	7.51	7.51	22.91	21.68	
			203	102	586	191	191	582	551	
28	700	1508 & F1 (2508)	12.00	8.00	27.06	7.41	7.41	26.76	23.82	
			305	152	687	188	188	680	608	
30	750	25A, 758, 1508 & F1 (2508)	12.00	6.00	29.06	8.53	8.53	28.91	26.85	
			305	152	738	217	217	734	682	
36	900	25A, 758, 1508 & F1 (2508)	12.00	6.00	35.06	11.53	11.53	34.91	33.33	
			305	152	891	293	293	887	847	
42	1100	25A, 758, 1508 & F1 (2508)	12.00	6.00	41.06	14.53	14.53	40.91	39.74	
			305	152	1043	369	369	1039	1009	
48	1200	25A, 758, 1508 & F1 (2508)	15.00	7.50	47.06	16.02	16.02	46.91	44.70	
			381	191	1195	407	407	1192	1135	
54	1400	25A, 758, 1508 & F1 (2508)	15.00	7.50	53.06	19.04	19.04	53.00	51.00	
			381	191	1348	484	484	1346	1295	
60	1500	758 & 1508	15.00	7.50	59.06	22.04	22.04	59.00	57.28	
			381	191	1500	560	560	1499	1455	
66	1700	758 & 1508	18.00	9.00	65.06	23.54	23.54	65.00	62.61	
			457	229	1653	598	598	1651	1580	
72	1800	758 & 1508	18.00	9.00	71.06	26.54	26.54	71.00	68.83	
			457	229	1805	674	674	1803	1748	
24	600	F2 (2508)	12.00	6.00	23.06	5.51	5.51	22.91	19.75	
			305	152	586	140	140	582	502	
30	750	F2 (2508)	12.00	6.00	29.06	8.53	8.53	28.91	26.58	
			305	152	738	217	217	734	675	
36	900	F2 (2508)	15.00	7.50	35.06	10.03	10.03	34.91	31.81	
			381	191	891	255	255	887	808	
42	1100	F2 (2508)	15.00	7.50	41.06	13.03	13.03	40.91	38.71	
			381	191	1043	331	331	1039	983	
48	1200	F2 (2508)	15.00	7.50	47.06	16.02	16.02	46.91	44.70	
			381	191	1195	407	407	1192	1135	
54	1400	F2 (2508)	15.00	7.50	53.06	19.04	19.04	53.00	51.00	
			381	191	1348	484	484	1346	1295	

SIZE	"G" (VALVE WEIGHT)										
	24	28	30	36	42	48	54	60	66	72	
25A	N/A	N/A	1450	2200	3225	4250	N/A	N/A	N/A	N/A	
75B	N/A	N/A	1700	2650	3600	4950	6550	8500	10350	13100	
1508 & F1 (2508)	915	1360	1850	2800	4050	5750	7500	9825	12100	15150	
F2 (2508)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

NOTE:

- "G" IS BARE SHAFTED VALVE WEIGHT (LBS).
- VALVES ARE SHOWN WITH OPTIONAL PACKING GLAND. 24-48 SIZES (OPTIONAL) 54 - 72 SIZES (STANDARD).
- F1 (2508) PER ANSI B16.1 CLASS 125. F2 (2508) PER ANSI B16.1 CLASS 250.



		24-72 FLANGED AWWA BUTTERFLY VALVES SHOWING DISC CLEARANCE IN FULL OPEN POSITION, VALVE WEIGHTS AND PORT DIAMETER	
DOCT. CODE	DRAWN	APPROVED	DATE
C1	KW	WCB	01/13/97
CHECKED	WCB	A47550	
Sartell, MN USA 56377-1743 http://www.dezurikwater.com			

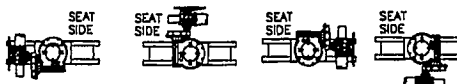
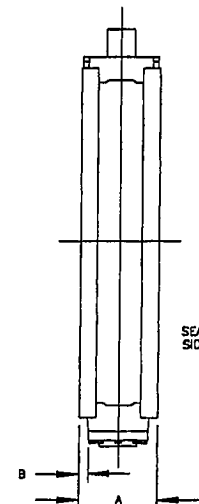
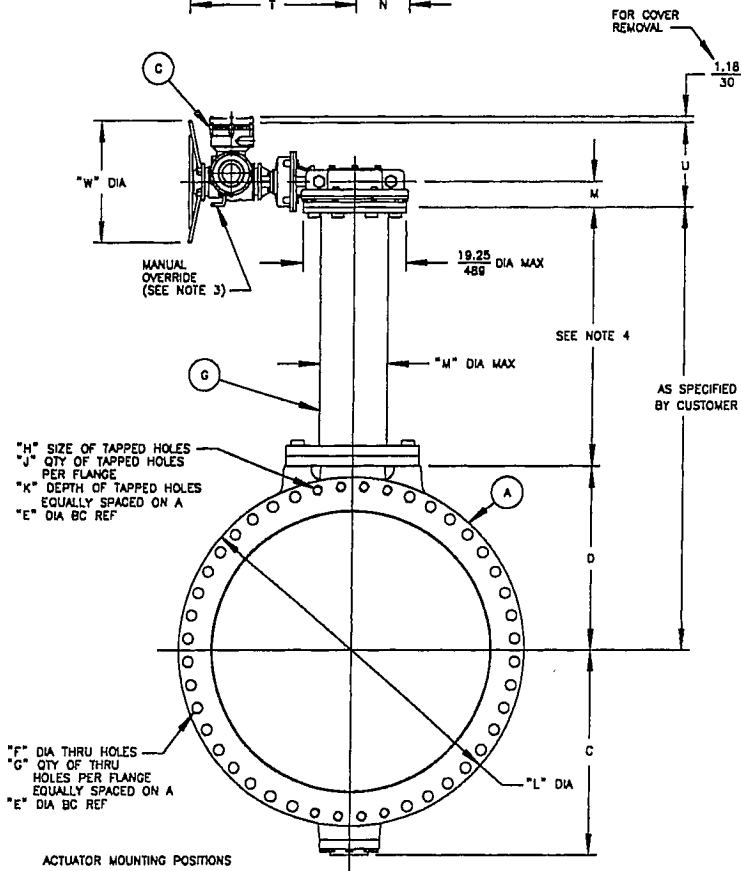
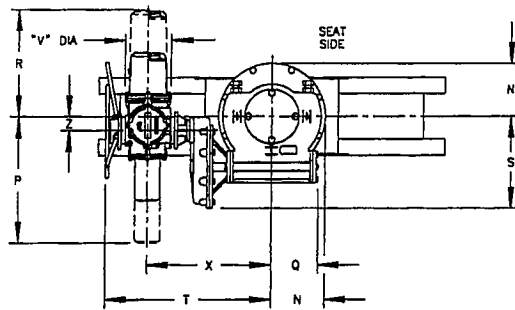
VALVE SIZE	CLASS	DIMENSIONS												
		INCHES												
		A	B	C	D	E	F	G	H	J	K	L	M	
54	75 B 150 B	15.00 381	3.12 79	38.88 988	35.25 895	62.75 1584	2.00 51	36	1-3/4-S UNC	8	3.00 76	66.25 1683	12.75 324	

ACTUATOR NUMBER	DIMENSIONS												
	MILLIMETERS												
	M	N	P	Q	R	S	T	U	V	W	X	Y	Z
HWB/1020	5.19 132	10.25 260	22.64 575	6.91 226	24.34 618	15.38 391	32.44 824	15.62 397	9.02 229	25.59 650	24.78 629	5.00 127	5.00 127

NO	PART NAME
A	VALVE
C	MOTOR & GEAR UNIT
G	NECK EXTENSION

NOTE:

- FLANGES ARE FLAT FACED WITH DIMENSIONS AND DRILLING TO ANSI B16.1 CLASS 125 EXCEPT FOR TAPPED HOLES AS INDICATED. SEE A-26506 FOR NON-ANSI FLANGED DATA.
- FLOW MAY BE IN EITHER DIRECTION. FOR MAINTENANCE PURPOSES THE SEAT SIDE SHOULD BE ACCESSIBLE.
- FOR MANUAL OPERATION PUSH LEVER IN DIRECTION OF ARROW ONLY. UNIT REMAINS IN HAND OPERATION UNTIL MOTOR IS ENERGIZED.
- SUPPORT REQUIRED BY CUSTOMER WHEN EXTENSION IS MOUNTED OTHER THAN VERTICAL OR VERTICAL EXTENSIONS OVER 38.00
914



TITLE) STANDARD POSITION 90° POSITION 180° POSITION 270° POSITION SHOWN ON THIS DRAWING



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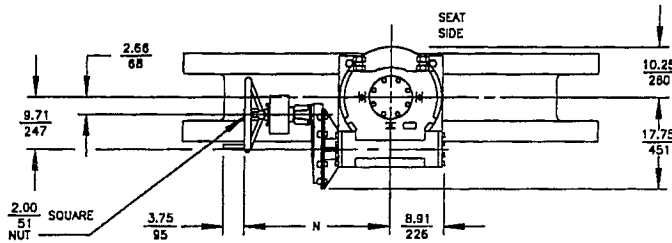
AWWA BUTTERFLY VALVE SIZES 54 FLANGED ROTORK IW ₂ /R/IQ ₂ MOTOR ACTUATED WITH ENK NECK EXTENSION			
DOCT. CODE	DRAWN	EMP	APPROVED
C1	CHECKED	GK	GK
		DATE	03/17/04
			J53758

VALVE SIZE	CLASS	DIMENSIONS <small>IN INCHES</small>											
		A	B	C	D	E	F	G	H	J	K	L	O
54	75 B 150 B	15.00 381	3.12 79	38.88 988	35.25 895	62.75 1594	2.00 51	36	1-3/4-5 UNC	B	3.00 76	66.25 1683	13.88 353
ACTUATOR NUMBER	DIM M	HANDWHEEL SIZE	DIMENSIONS <small>IN INCHES</small>										
			N	P									
IWSR-720	180	HD24	28.75 730	24.00 610									

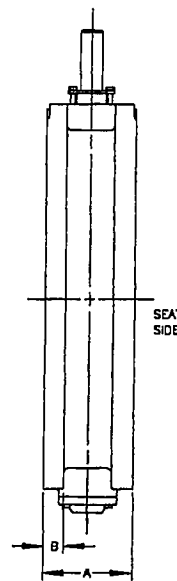
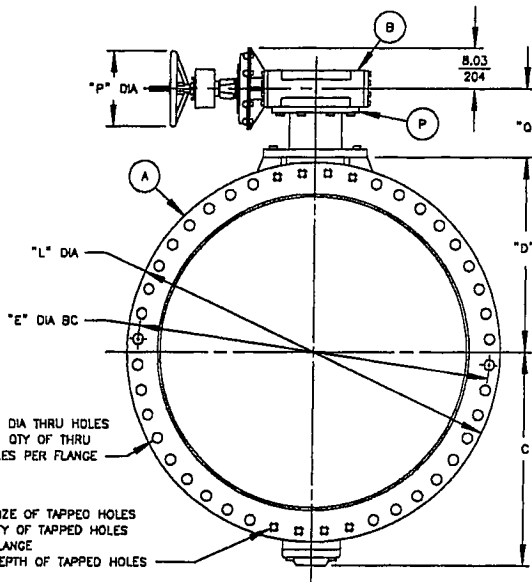
A	VALVE
B	ACTUATOR
P	CONNECTING PARTS

NOTE:

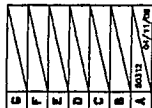
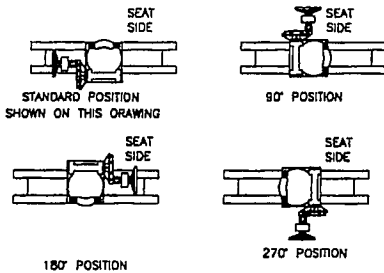
1. FLANGES ARE FLAT FACED WITH DIMENSIONS AND DRILLING TO ANSI B18.1 CLASS 125 EXCEPT FOR TAPPED HOLES AS INDICATED. SEE A-28506 FOR NON-ANSI FLANGED DATA.
2. FLOW MAY BE IN EITHER DIRECTION. FOR MAINTENANCE PURPOSES THE SEAT SIDE SHOULD BE ACCESSIBLE.
3. "M" TURNS OF HANDWHEEL OR NUT ARE REQUIRED TO OPEN VALVE.



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



ACTUATOR MOUNTING POSITIONS

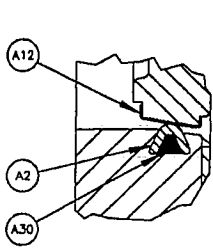


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<http://www.dezirkwater.com>

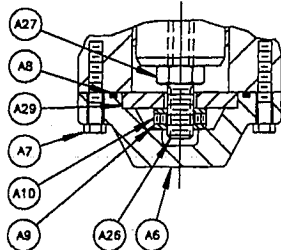
BAW BUTTERFLY VALVES SIZE 54-72 FLANGED
ROTORK IWSR (480, 540 OR 720 RATIO) HANDWHEEL ACTUATORS
W/2" SQUARE NUT AND TORQUE LIMITING DEVICE

DOCT. / CORR.	DRAWN	TC	APPROVED	GLK
C1	CHECKED	CLK	DATE	04/05/08

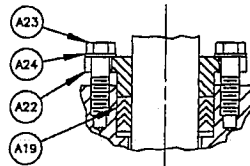
J54831



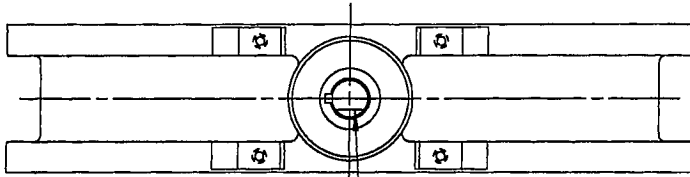
DETAIL "A"
(ENLARGED)



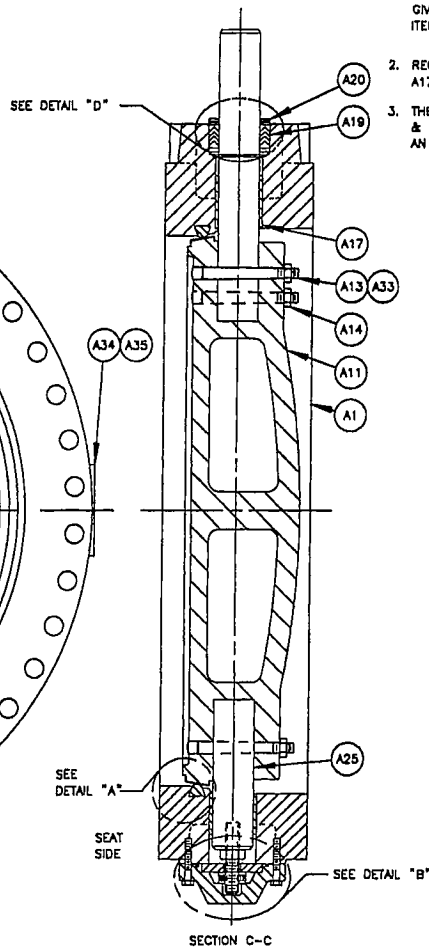
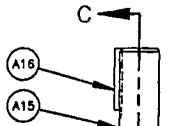
DETAIL "B"
(ENLARGED)



DETAIL "D"
(OPTIONAL)
(ENLARGED)



DISC POSITION INDICATED
BY LINE ON TOP OF SHAFT

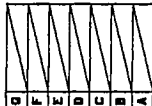


SECTION C-C

NO	PART NAME	QTY
A1	BODY	1
A2	SEAT	1
A3		
A4		
A5		
A6	THRUST BEARING COVER	1
A7	SCREW	8
A8	O-RING	1
A9	THRUST COLLAR	1
A10	SET SCREW	2
A11	DISC	1
A12	DISC EDGE	1
A13	PIN	3
A14	NUT	3
A15	OPERATOR SHAFT	1
A16	KEY	1
A17	BEARING	2
A18		
A19	PACKING	-
A20	SPACER	-
A21		
A22	GLAND (OPTIONAL)	1
A23	SCREW	3
A24	WASHER	3
A25	STUB SHAFT	1
A26	ADJUSTING SCREW	1
A27	JAM NUT	1
A28		
A29	THRUST PLATE	1
A30	EPOXY	-
A33	O-RING	3
A34	SCREW	4
A35	CAUTION TAG	2

NOTE:

1. WHEN ORDERING PARTS, SPECIFY VALVE SIZE AND MODEL NUMBER FROM DATA PLATE. ALSO GIVE DRAWING NUMBER WITH PART NAME, ITEM NUMBER AND QUANTITY.
2. RECOMMENDED SPARE PARTS ARE ITEMS NO. A2, A8, A17 & A19.
3. THE DISC, ITEM NO. A11, UPPER SHAFT, ITEM NO. A15 & LOWER SHAFT, ITEM NO. A25 MUST BE ORDERED AS AN ASSEMBLY.



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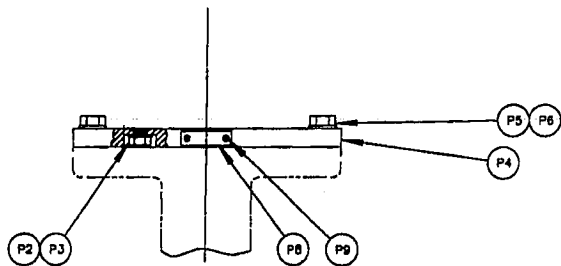
DOCT. CODE	DRAWN	APPROVED
C1	SJ	SJ
CHECKED	DATE	
	05/27/05	

BAW BUTTERFLY VALVE SIZE 54
FLANGED VALVE ASSEMBLY

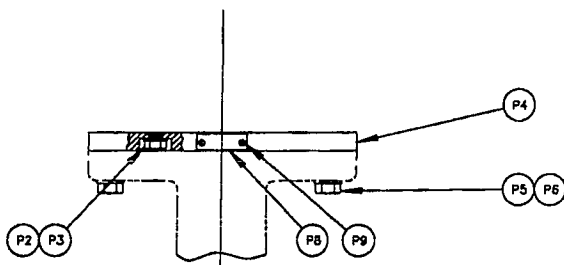
A56178

MATERIALS OF CONSTRUCTION
 Parts List Per Drawing A-56178
 54" AWWA Butterfly Valve Assembly, Flanged

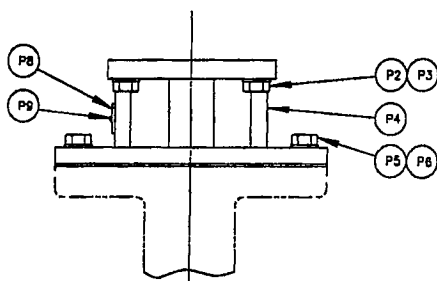
<u>Part Description</u>	<u>Line No.</u>	<u>Material</u>
Body	A01	Cast Iron ASTM A126 Class B
Seat	A02	NBR
Thrust Cover	A06	Cast Iron ASTM A126 Class B
Screw	A07	Stainless Steel Type 18-8
O-Ring	A08	Nitrile
Thrust Collar	A09	Steel ASTM A582 Type 303
Set Screw	A10	Stainless Steel Type 18-8
Disc	A11	Cast Iron ASTM A126 Class B
Disc Edge	A12	Stainless Steel ASTM A240 Type 316
Key	A16	Cold Drawn Steel 1018
Bearing	A17	Fiberglass Backed Teflon
Packing	A19	BUNA-N
Spacer	A20	Stainless Steel Type 316
Adjusting Screw	A26	Stainless Steel ASTM A276 Type 304
Jam Nut	A27	Stainless Steel Type 18-8
Thrust Plate	A29	Steel A108 12L14
Epoxy	A30	Epoxy
Seal O-Ring	A33	NBR
Screw	A34	Stainless Steel Type 18-8
Caution Tag	A35	Stainless Steel Type 302



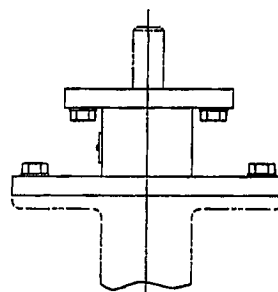
24 - 36 VALVE CONSTRUCTION



42 & 48 VALVE CONSTRUCTION
30 & 36 VALVE WITH OVERSIZE ACTUATOR



54 - 72 VALVE CONSTRUCTION
AND 24 - 48 VALVES W/ADJUSTABLE
PACKING GLAND



54 - 72 VALVE CONSTRUCTION AND
24 - 48 VALVES W/ADJUSTABLE PACKING GLAND
ALTERNATE VIEW SHOWING
ADAPTOR CONSTRUCTION

NO	PART NAME	QTY
P1		
P2	SCREW	4
P2	SCREW	8
P2	SCREW	12
P3	LOCKWASHER	4
P3	LOCKWASHER	8
P3	LOCKWASHER	12
P4	ADAPTOR	1
P5	SCREW	3
P5	SCREW	4
P5	SCREW	6
P6	LOCKWASHER	3
P6	LOCKWASHER	4
P6	LOCKWASHER	6
P7		
P8	DATA PLATE	1
P9	DRIVE SCREW	2

NOTE:

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

11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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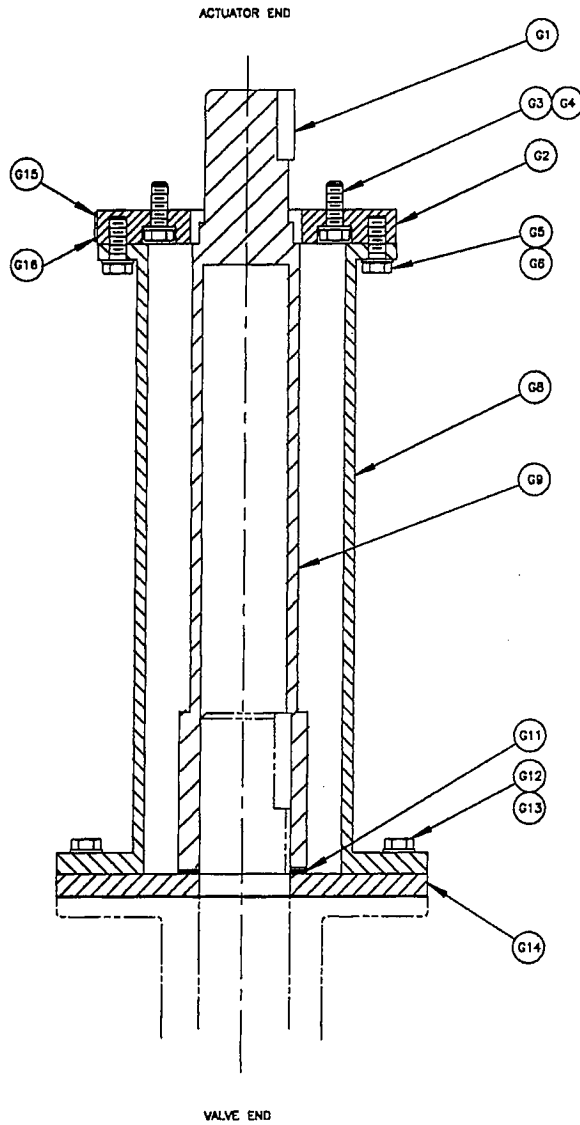
DeZURIK®
WATER CONTROLS
Sartell, MN USA 56377-1743
http://www.dezurikwater.com

CONNECTING PARTS FOR USE WITH PURCHASED ACTUATOR
ON 24 - 72 AWMA BUTTERFLY VALVES

DOCT. CODE	DATE	APPROVES	JDM
C1	LH	08/08/95	

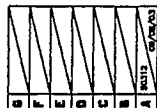
J14943

NO	PART NAME	QTY
G1	KEY	1
G2	ADAPTOR PLATE	1
G3	SCREW (WHEN REQ'D)	-
G4	LOCKWASHER (WHEN REQ'D)	-
G5	SCREW	-
G6	LOCK WASHER	-
G7		
G8	OUTER EXTENSION	1
G9	INNER EXTENSION	1
G10		
G11	THRUST BEARING	1
G12	SCREW	4
G13	LOCKWASHER	4
G14	PACKING PLATE	1
G15	DATA PLATE	1
G18	DRIVE SCREW	2



NOTE:

1. WHEN ORDERING PARTS, SPECIFY VALVE SIZE AND MODEL NUMBER FROM DATA PLATE, ALSO GIVE DRAWING NUMBER WITH PART NAME, ITEM NUMBER AND QUANTITY.
2. RECOMMENDED SPARE PARTS ARE ITEMS G11.

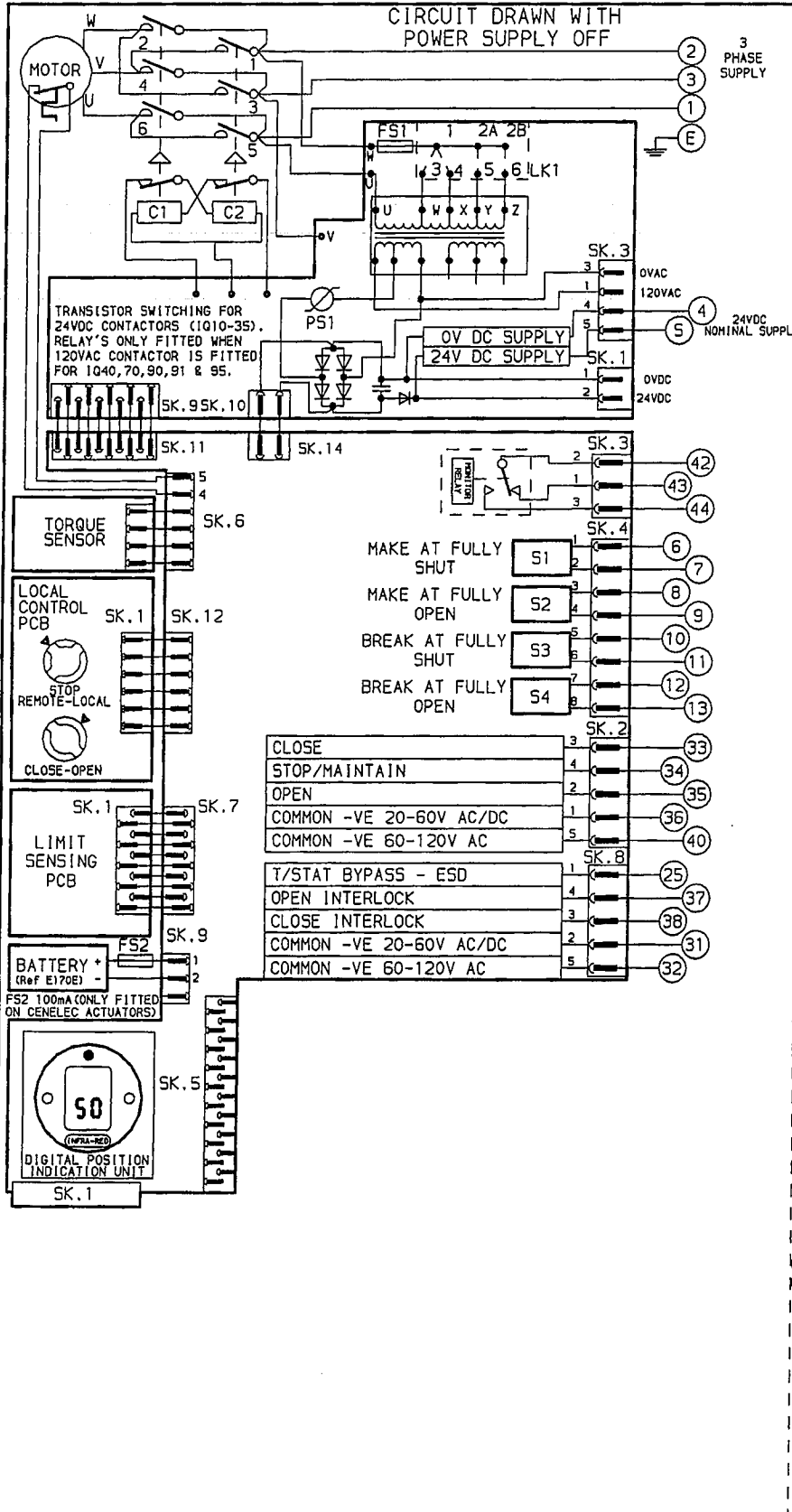


DeZURIK
WATER CONTROLS
 Sartell, MN USA 56377-1743
<http://www.dezurikwater.com>

ENK NECK EXTENSION FOR USE WITH AMWA BUTTERFLY VALVES

DOCT. CODE	DRAWN	DJ	APPROVED	JM
C1	CHECKED	JM	DATE	05/14/99

J78626



FOR TYPICAL REMOTE CONTROL
DETAILS SEE DOCUMENT
RWS300

TRANSFORMER TAPPING OPTIONS

TYPE 1

TAP	NOM 50/60HZ	50HZ	60HZ
W	220/230	176-242	198-259
X	380/400	304-418	342-446
Y	415/420	332-457	374-487
Z	440/460	352-484	396-517

FUSE FS1 - 250mA ANTI-SURGE

TYPE 2

TAP	NOM 50/60HZ	50HZ	60HZ
W	346/380	285-388	321-419
X	480/500	406-552	432-564
Y	240/240	192-261	216-282
Z	550/575	445-605	501-654

FUSE FS1 - 250mA ANTI-SURGE

TYPE 3

TAP	NOM 50/60HZ	50HZ	60HZ
X	660/660-690	534-726	600-726
Y	690/---	558-759	

FUSE FS1 - 150mA ANTI-SURGE

ALL TRANSFORMER TYPES - PS1 SELF
RESETTING
FUSE

NOTE

REFER TO PUBLICATION E170E FOR
APPROVED FUSES FS1 AND FS2.

MAX EXTERNAL LOAD ON TERMINALS
4 & 5 TO BE 5W.

CONTROL SIGNAL THRESHOLD VOLTAGES
TO BE MINIMUM 'ON' 20V AC/DC
MAXIMUM 'OFF' = 3V
MINIMUM CONTROL SIGNAL DURATION
TO BE 300ms.

CURRENT DRAWN FROM EACH REMOTE
CONTROL SIGNAL IS 5mA ON 24V DC
OR 12mA ON 120V AC

WIRES ARE IDENTIFIED AT EACH END
BY TERMINAL No. OR TAG No.

INDICATION CONTACTS S1-S4 ARE SHOWN
IN THEIR DEFAULT CONFIGURATION.
CONTACTS MAY BE CONFIGURED FOR ANY
OF THE FUNCTIONS DESCRIBED IN E170E

No	DATE	REVISION DETAILS
08	300503	DIAGRAM RE-FORMATTED TO SEPERATE REMOTE CONTROL CIRCUITRY (See 'RWS' Ref)
	021303	

www.rotork.com

ROTORK CONTROLS LTD
BATH, BA1 3JQ
ENGLAND
Tel: 01225-733200

ROTORK CONTROLS INC
ROCHESTER
NY 14624, USA
Tel: 585-328-1550

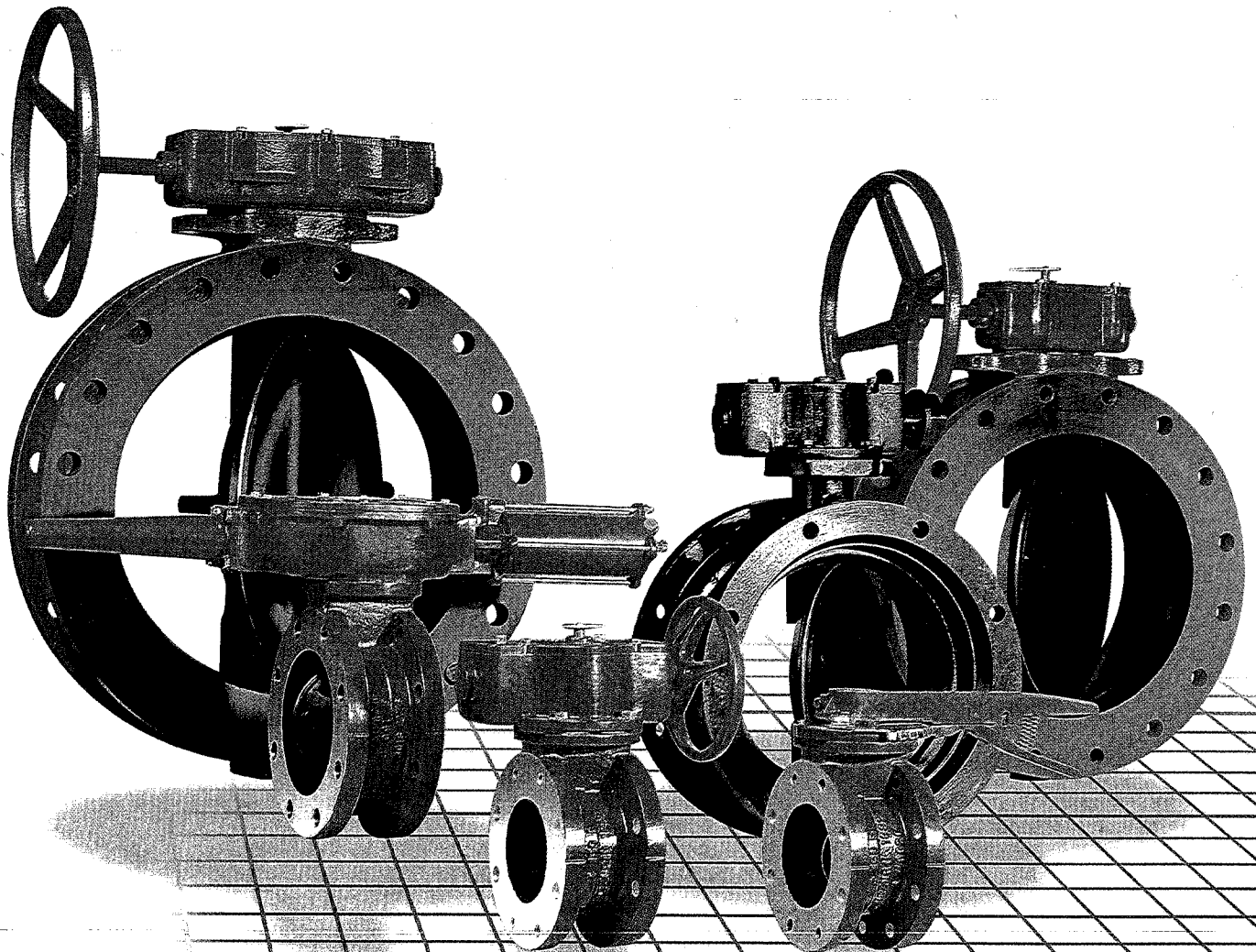
CONFIG BY PRE
DATE 240904
CHECKED PJW
BASE WD --
JOB No --
M.I.No .

IQ BASIC

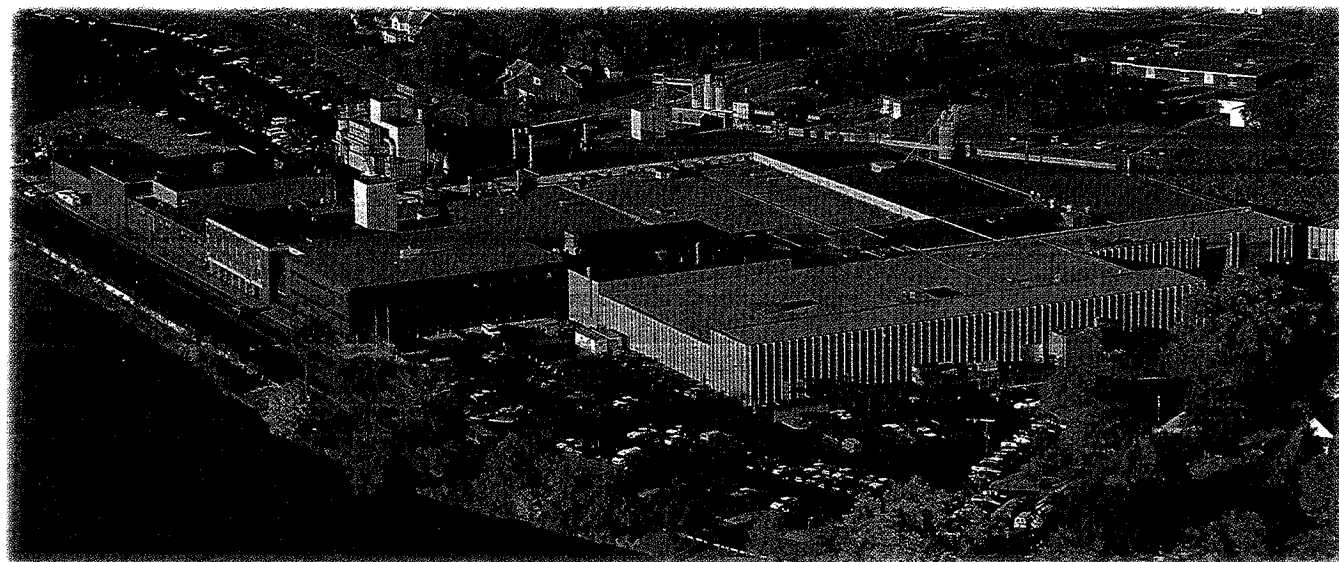
CIRCUIT DIAGRAM No -REV 10
3000-000-08
B1 C1 B2 C2



AWWA BUTTERFLY VALVES



Defining the DeZURIK Difference



DeZURIK History

DeZURIK was founded in 1925 in Sartell, Minnesota. The company's first products were designed to solve problems and increase production capabilities of pulp & paper mills. Over the past 70 years, DeZURIK developed a wide variety of valve styles to meet the application requirements of Water and Wastewater Treatment, Pulp & Paper, Chemical and Petrochemical, Power, Mining, Steel, and other process industries. Today, DeZURIK products are recognized worldwide for quality and performance.

AWWA Compliance

Each DeZURIK AWWA Butterfly Valve is designed to meet the latest requirements of AWWA C504.

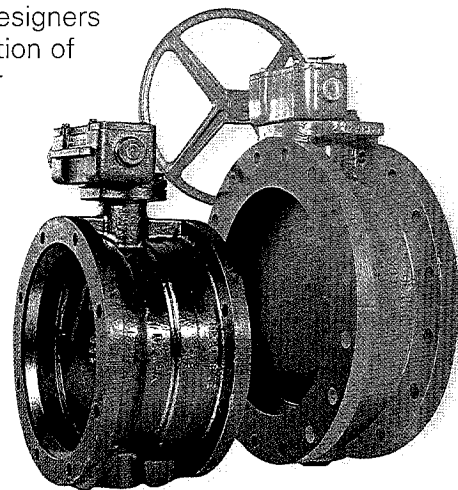
ISO 9001/9002 Certification

DeZURIK's ISO certifications represent its commitment to ongoing quality improvements and dedication to higher levels of performance. DeZURIK received its first certification in 1993, and continues to improve quality in all aspects of design, manufacturing, order processing and service to DeZURIK customers.



Leading Edge Design Software

Computer Aided Design systems are used by Research and Development engineers throughout the product development cycle. DeZURIK utilizes leading edge solid modeling software which allows product designers to view valve parts and assemblies three dimensionally. The 3D models are electronically transferred to Finite Element Analysis software where stress and deflection calculations are performed. This software allows designers to visualize deflection of critical parts under extreme loads. Proper relief and safety factors are included in every valve design to ensure long performance life.



UL Classified

The full size range of DeZURIK AWWA Butterfly Valves, 3-120" (80-3000mm), are classified by Underwriters Laboratories, Inc. in accordance with ANSI/NSF standard 61 for drinking water system components.

Advanced Machining Capabilities

DeZURIK's solid modeling CAD software allows parts to be directly transferred to CAM modules for machine fixture design and NC programming. AWWA Butterfly Valves are manufactured with the most sophisticated machining centers available. Milling, drilling, boring, and tapping operations are performed on fully automated machine centers that perform sequential, error-free operations. DeZURIK's investment in state-of-the-art machining centers ensures products of consistently high quality.



Rubber & Elastomer Compounding

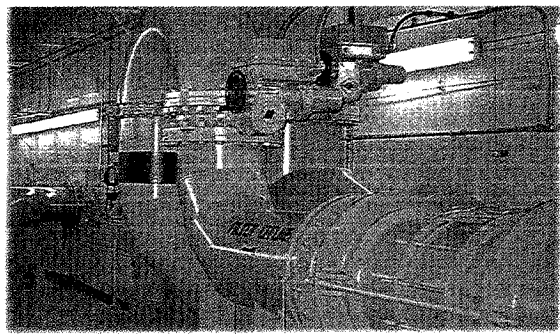
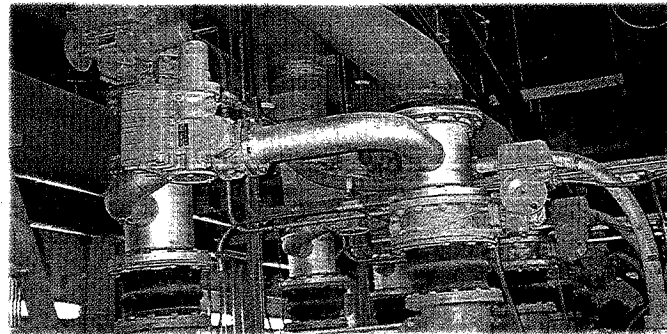
DeZURIK formulates and handcrafts rubber to control quality on critical components. Over 50 years of pressure/temperature rubber-molding experience assures the AWWA seat design provides long, maintenance-free service. DeZURIK compounds its own resilient seat materials to assure low operating torque and protection from pipeline corrosion and abrasion from sedimentation deposits.

Prototype Design Testing

Valve prototypes of sizes up to 36" (900mm) are tested in DeZURIK's flow laboratory. Flow ranges from a few cubic centimeters per minute to 72,000 gallons per minute can be tested. Computer controlled testing automatically sets flow, monitors temperatures, takes sample readings, and analyzes information. Before release, beta test sites are used to gain actual field experience. Valves are tested up to 10,000 cycles per AWWA C504 specifications. Proof of design testing certification is available.

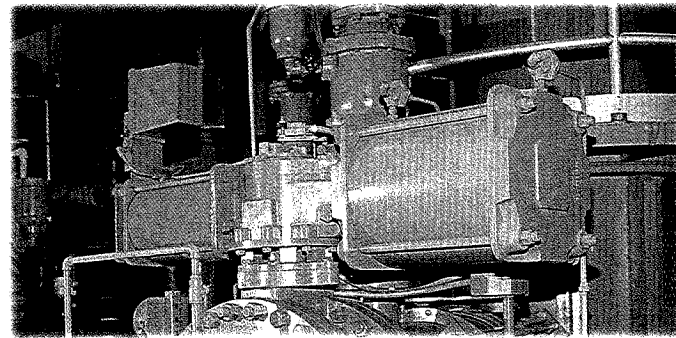
Applications

DeZURIK AWWA Butterfly Valves are designed for applications throughout water and wastewater treatment plants, water distribution systems, power plants, and industrial plants. AWWA Butterfly Valves can be applied in applications demanding high-quality and thoroughly tested valves which offer many years of trouble-free service.



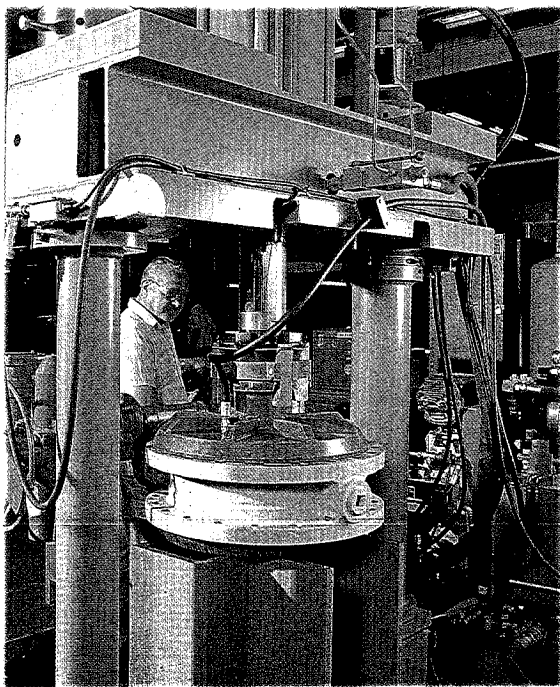
Pump Check Control Systems

Pump check control systems, utilizing AWWA Butterfly Valves, are available in many different models.



Production Testing

Each valve is given a hydrostatic, seat leakage and performance test per AWWA C504 before it is shipped.



3-20" (80-500mm) Design Features for Years of Trouble-Free Service

Body Styles

Flanged, ANSI B16.1 Class 125, 3-20" (80-500mm), Valve Class 150B

Flanged, ANSI B16.1 Class 125, 3-20" (80-500mm), Valve Class 250B*

Flanged, ANSI B16.1 Class 250, 3-18" (80mm-450mm), Valve Class 250B*

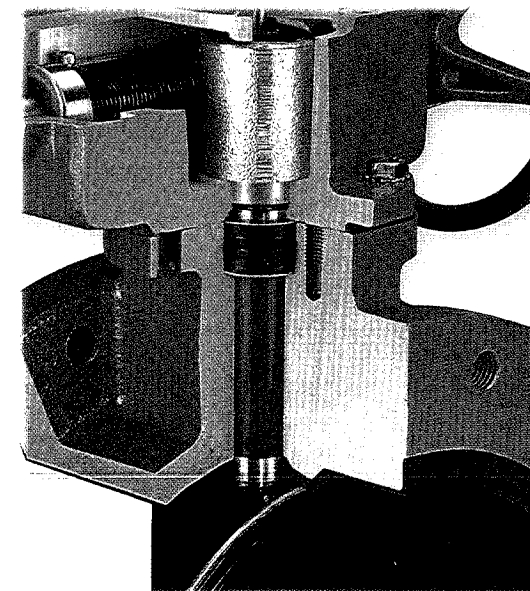
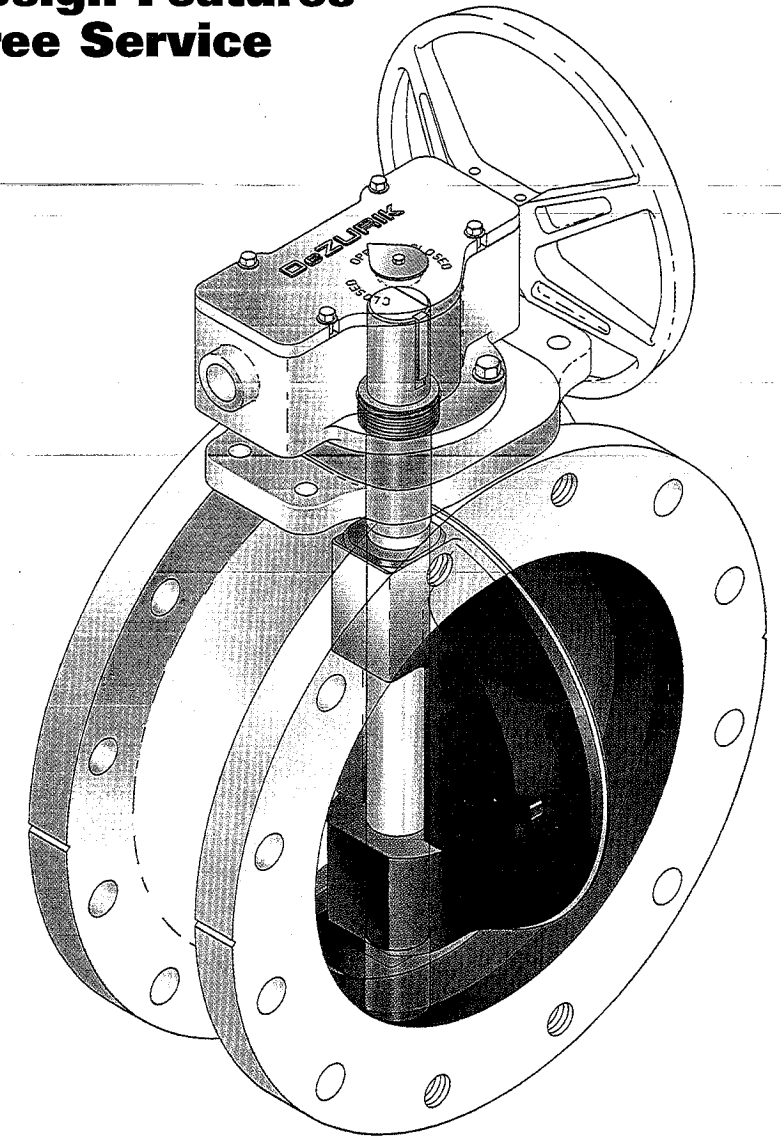
Mechanical Joint, ANSI/AWWA C111/A21.11, 4-20" (100-500mm), Valve Class 150B

Mechanical Joint, ANSI/AWWA C111/A21.11, 4-20" (100-500mm), Valve Class 250B*

*These valve classes meet or exceed the full intent of AWWA C504 including design, material, and testing requirements.

Corrosion Resistant Shaft

Stainless steel shafts provide corrosion resistance in bearing and packing journal areas to ensure long bearing and packing life. Standard shaft materials include 304, 316, and 17-4 PH stainless steel.



Long Life, Low Friction Bearings

Upper and lower journal shaft bearings are designed to provide high compressive strength, low friction and require no lubrication.

Self-Compensating Shaft Seals

Shaft seals are self-compensating, V-type packing. DeZURIK uses a minimum of four sealing rings. This proven multi-ring sealing technology offers reliability and continuous self-adjustment.

Fully Rubber Lined Body

A fully rubber lined body is standard, eliminating the need for inner body coating, and protecting the body against corrosion buildup.

Integrity of the Proven Molding Process

The rubber bonding process used on DeZURIK AWWA Butterfly Valves is proven by more than 50 years of field experience. AWWA C504 requires testing of the bonding process per ASTM D429, method B. The test requires a 1" (25mm) wide strip of rubber to withstand a minimum 75 lbs. pull force (at a 90° angle) before tearing away from the valve body. During destructive testing, the rubber must tear before the bond between the rubber seat and metal valve body gives way, demonstrating that the bond is stronger than the rubber. Based on extensive experience and proof of design testing, DeZURIK can assure that a molded-in body seat remains maintenance-free for the life of the valve.

Choice of Seat Materials

Standard seat materials include Acrylonitrile-Butadiene (NBR) for water service and EPDM for high-temperature applications such as air blower lines.

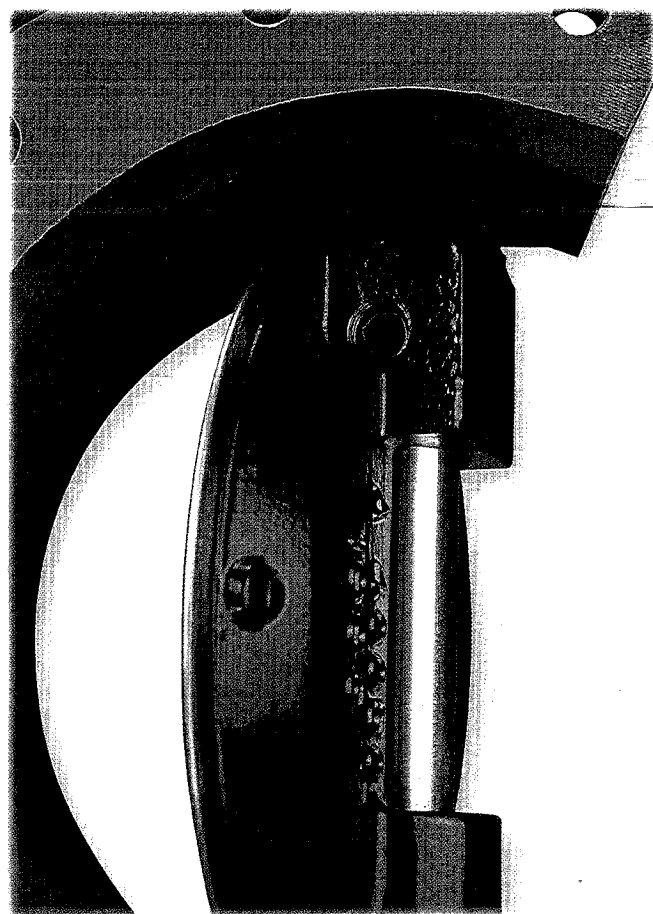
4° Sealing Surface

The spherical sealing surface, molded into the valve seat, provides constant interference between the sealing surface and the disc edge for a full 4° sealing range. This allows the actuator to be adjusted within the correct sealing range while the valve is under pressure and flow.

Molded-In Body Seat

The pressure/temperature molding process used on AWWA Butterfly Valves provides a long-lasting, maintenance-free seat. DeZURIK's molded-in body seat lasts far beyond the 10,000 cycles required by AWWA C504. The molded seat-in-body design provides:

- uniform rubber thickness;
- consistent interference between the rubber seating surfaces and the stainless steel disc edge;
- tight tolerance control on critical seat dimensions.



Disc Locators

An innovative, molded-in, disc-centering device aligns the disc in the seat, providing a positive seal and longer seat life. Disc hubs, supported by the locators, ensure disc location accuracy. The off-set style disc design means disc-alignment locators are separate from the sealing surface, extending valve seat life.

Proven Disc-To-Shaft Pinning

All DeZURIK disc-to-shaft pinning connections conform to AWWA C504. Disc-to-shaft pinning is provided by a stainless steel torque screw on sizes 3-12" (80-300mm). Sizes 14-20" (350-500mm) utilize a tangential pin which is locked in place with a stainless steel set screw.

High Temperature Applications

For operating temperatures to 290° F (143°C), EPDM seat material and packing, high temperature bearings, and high temperature paint on the disc are available as standard options.

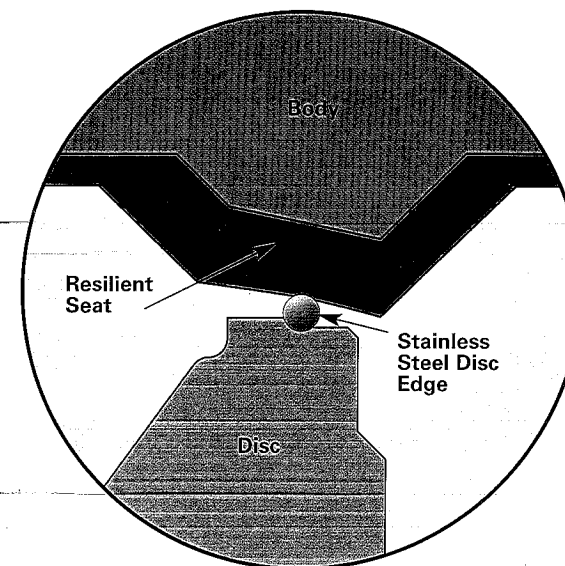
Integral Shaft Bearing Seals

To ensure all components of the valve remain maintenance-free, the molded-in body seat and body liner contain integral shaft bearing seals in the upper and lower journals. These seals protect bearing journal areas against sedimentation, mineral deposits, and corrosion particles — all of which can damage bearings and shorten valve life.

Seat-In-Body vs. Seat-On-Disc

DeZURIK's AWWA Butterfly began its evolution over 40 years ago. For over 25 years, a stationary rubber seat located in the valve body has been the standard. This feature is fundamental to the long-term performance of the valve.

After years of service, water distribution valves and pipelines (regardless of material) suffer the effects of abrasive corrosion and tuberculation buildup. When the rubber seat of a butterfly valve is located on the moving disc edge, it will erode or tear away as it plows its way through line buildup, causing the valve to leak. With a rubber seat-in-body design, the stainless steel disc provides the resistance necessary to plow through line buildup without seat-on-disc edge damage.

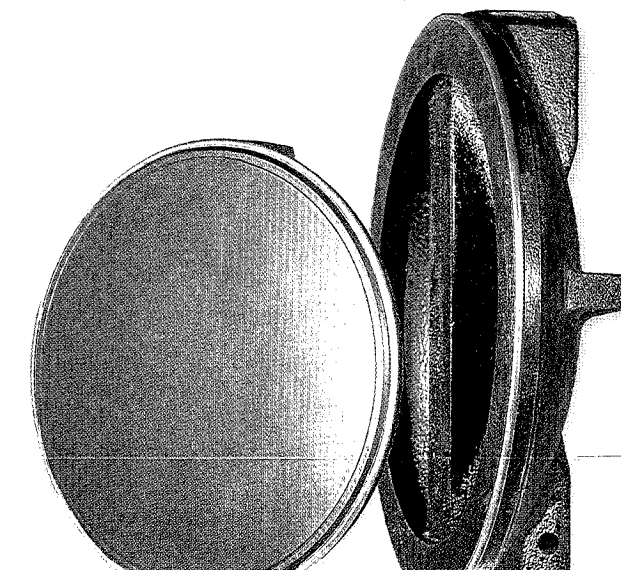
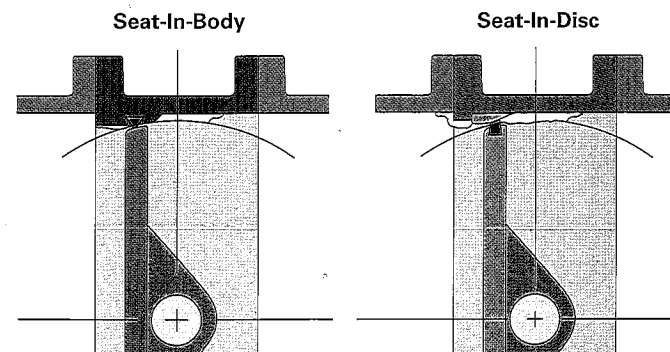


Off-Set Disc Design

The off-set disc provides an uninterrupted 360° sealing surface. The sealing surface is not interrupted by the valve shaft and does not have any continuous contact points between the rubber seat and the disc edge. This results in a longer seat life.

Stainless Steel Disc Edge

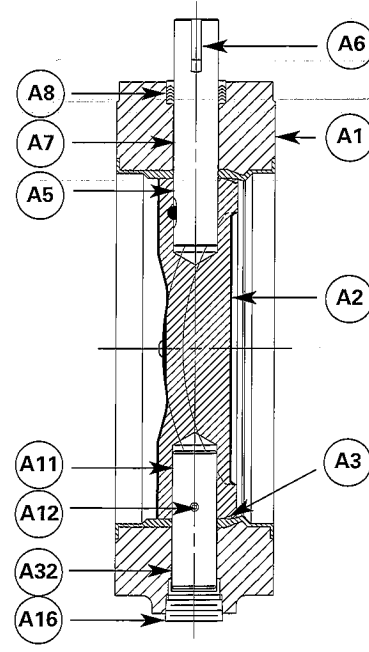
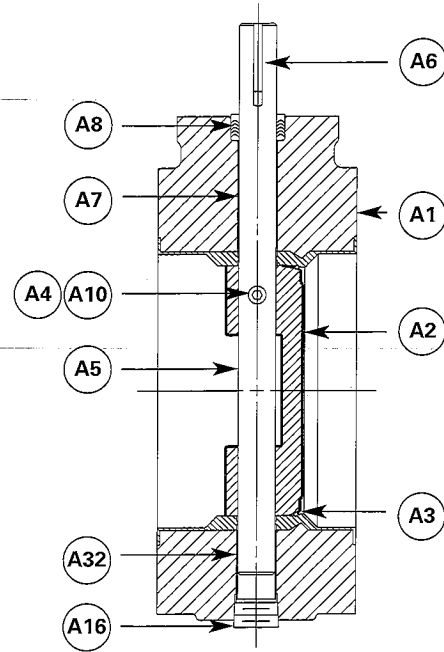
Solid 316 stainless steel disc edge provides the corrosion and abrasion resistance essential for long-lasting, maintenance-free service.



Materials of Construction

3-16" (80-400mm)

18 & 20" (450 & 500mm)



3-20" (80-500mm) Valve Sizes

Item	Description	Material
A1	Body NBR or EPDM seat is permanently bonded to the body	Cast Iron ASTM A126 Class B Ductile Iron ASTM A536 Grade 65-45-12
A2	Disc	Cast Iron ASTM A48 Class 40C Ductile Iron ASTM A536 Grade 65-45-12 316 Stainless Steel, ASTM A743, Type CF8M
A3	Disc Seating Edge	316 Stainless Steel, ASTM A276, Type 316
A4	Tangential Pin 14-20" (350-500mm)	316 Stainless Steel, ASTM A276, Type 316 (250B) 17-4 PH Stainless Steel, H1100
A5	Shaft 3-16" (80-400mm) Upper Shaft 18-20" (450-600mm)	304 Stainless Steel, ASTM A276, Type 304 316 Stainless Steel, ASTM A276, Type 316 17-4 PH Stainless Steel, ASTM A564, Type 630 Condition 1150
A6	Key	Steel AISI 1018
A7	Upper Journal Bearing	Nylon and Molybdenum Disulphide Composition (NBR Seat) PTFE (EPDM Seat) (250B) Teflon/Dacron Fabric Liner, Fiberglass back-up shell
A8	Packing	Acrylonitrile Butadiene (NBR Seat) Ethylene Propylene Diene Terpolymer (EPDM Seat)
A10	Torque Screw 3-12" (80-300mm)	304 Stainless Steel, ASTM A276, Type 304 (250B) 17-4 PH Stainless Steel, Condition 1100
A10	Set Screw 14-20" (350-500mm)	18-8 Stainless Steel
A11	Lower Shaft 18-20" (450-600mm)	304 Stainless Steel, ASTM A276, Type 304 316 Stainless Steel, ASTM A276, Type 316 17-4 PH Stainless Steel, ASTM A564, Type 630 Condition 1150
A12	Set Screw 18-20" (450-500mm)	18-8 Stainless Steel
A16	Plug 3-20" (80-500mm)	3-8" (80-200mm) Carbon Steel, ASTM 105 10-20" (250-500mm) Malleable Iron, ASTM A47-52 Grade 35018 (250B, 3-6" (80-150mm)) Carbon Steel, ASTM 105 (250B, 8-20" (200-500mm)) Malleable Iron, ASTM A47-52 Grade 35018
A32	Lower Journal Bearing	Nylon and Molybdenum Disulphide Composition (NBR Seat) PTFE (EPDM Seat) (250B) Teflon/Dacron Fabric Liner, Fiberglass back-up shell

24" (600mm) and Larger Design — Quality Features for Superior Performance

Body Styles

Flanged, ANSI B16.1 Class 125, 24-120" (600-3000mm), Valve Class 150B

Flanged, ANSI B16.1 Class 125, 30-72" (750-1800mm), Valve Class 75B*

Flanged, ANSI B16.1 Class 125, 30-48" (750-1200mm), Valve Class 25A*

Flanged, ANSI B16.1 Class 125, 20-54" (600-1400mm), Valve Class 250B*

Flanged, ANSI B16.1 Class 250, 24-48" (600-1200mm), Valve Class 250B*

Mechanical Joint, ANSI/AWWA C111/A21.11, 24-48" (600-1200mm), Valve Class 150B

Mechanical Joint, ANSI/AWWA C111/A21.11, 24-48" (600-1200mm), Valve Class 250B*

*These valve classes meet or exceed the full intent of AWWA C504 including design, material, and testing requirements.

Corrosion Resistant Shaft Material

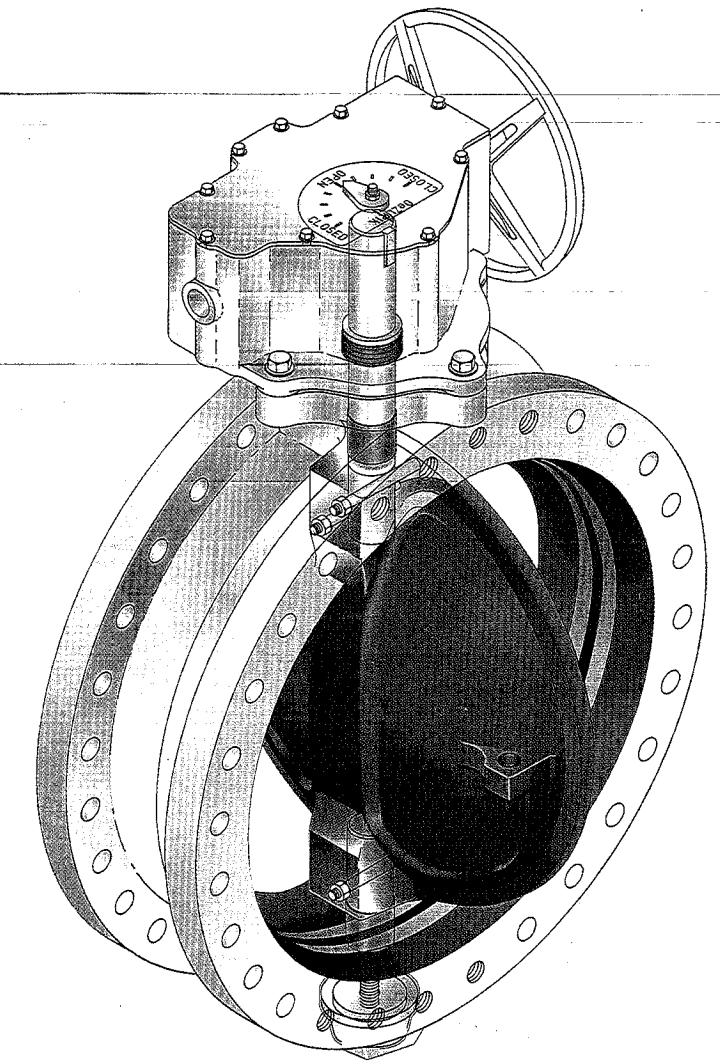
Standard shaft materials include 304, 316, and 17-4 PH stainless steel, providing the corrosion resistance in the bearing and packing journal areas necessary to ensure long bearing and packing life.

Stainless Steel Disc Edge

Solid 316 stainless steel disc edges provide a corrosion and abrasion resistant seating area essential for long-lasting, maintenance-free service.

Choice of Seat Materials

Standard seat materials include Acrylonitrile-Butadiene (NBR) for water service and EPDM for high temperature applications such as air blower lines.



High Temperature Applications

For operating temperatures to 290°F (143°C), EPDM seat material and packing, high temperature bearings, and high temperature paint on the body and disc are standard.

Positive Disc Locators

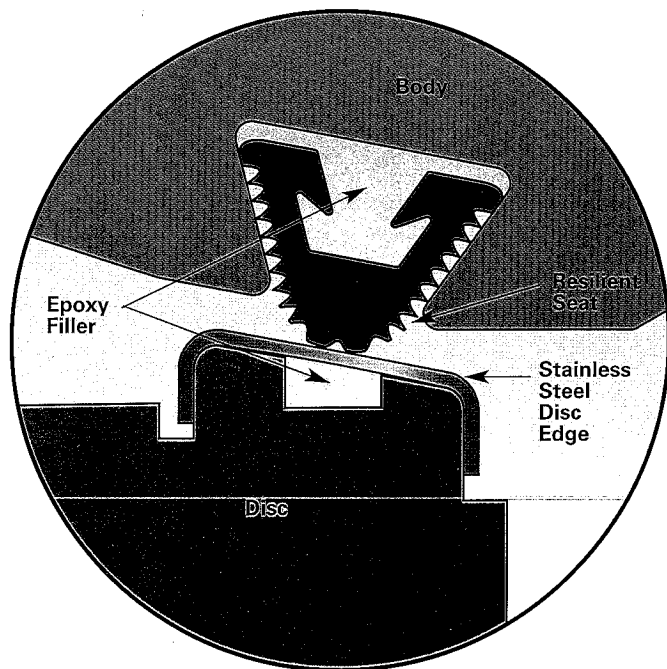
Incorporated into the lower shaft is an adjustable thrust bearing assembly which holds the disc position in all possible installation orientations. This thrust bearing absorbs forces from the disc weight, internal hydraulics and axial shaft loads.

Rugged Disc Structure

DeZURIK utilized state-of-the-art design and analysis computer software and test equipment to develop the optimum disc structure. Larger valves have an open disc structure, allowing water to flow through the center ports of the disc. On smaller sizes, DeZURIK utilizes a dome disc structure. On all valve sizes, the disc structure is non-hollow, allowing inspection of each surface and wall thickness against shrinkage and core shift during the casting process.

Seat Design

DeZURIK's large valve seat design is industry proven and offers reliability, low operating torque, and long life. The rubber seat is retained within a dovetail groove in the valve body and locked in place by an epoxy wedge. This design eliminates the need for fasteners, retaining rings, or retaining segments to lock the seat in place. After the valve is fully assembled, with the disc in the closed position, an epoxy compound is injected behind the rubber seat and cured at a predetermined pressure, based on the valve's pressure class. The injection pressure controls the interference between the rubber and stainless steel disc edge, providing a level of seating performance virtually impossible to achieve with other seat designs.



Adjustable, Replaceable Seat

As required by AWWA C504 for valves 24" (600mm) and larger, this seat design offers field adjustment and replacement capabilities. Proper field adjustment can be performed from either the upstream or downstream side of a pressurized valve.

Proven Disc-To-Shaft Pinning

Disc-to-shaft pinning is provided by a stainless steel tapered pin on sizes 24" (600mm) and larger. This proven design provides a reliable, high strength connection that conforms to AWWA C504.

Long Life, Low Friction Bearings

The upper and lower journal shaft bearings are designed to provide high compressive strength, low friction and require no lubrication.

Self-Compensating Shaft Seals

Shaft seals are self-compensating, V-type packing. DeZURIK uses a minimum of four sealing rings. This proven multi-ring sealing technology offers reliability and continuous self-adjustment. Standard packing materials include Acrylonitrile-Butadiene (NBR) or EPDM to meet all application requirements.

Off-Set Disc Design

The off-set disc provides an uninterrupted 360° sealing surface. The sealing surface is not interrupted by the valve shaft and does not have any continuous contact points between the rubber seat and the disc edge. This results in a longer seat life.

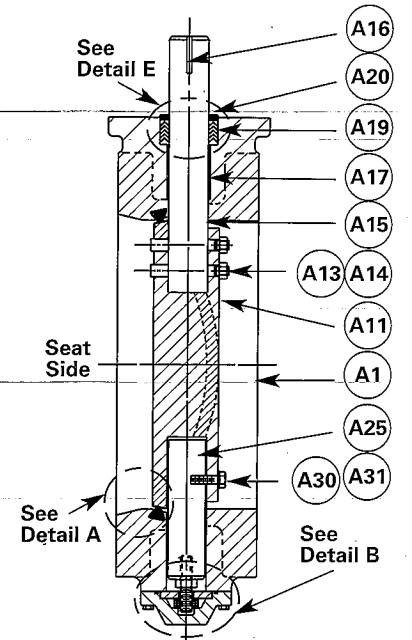
Materials of Construction

24-72" (600-1800mm) Valve Sizes

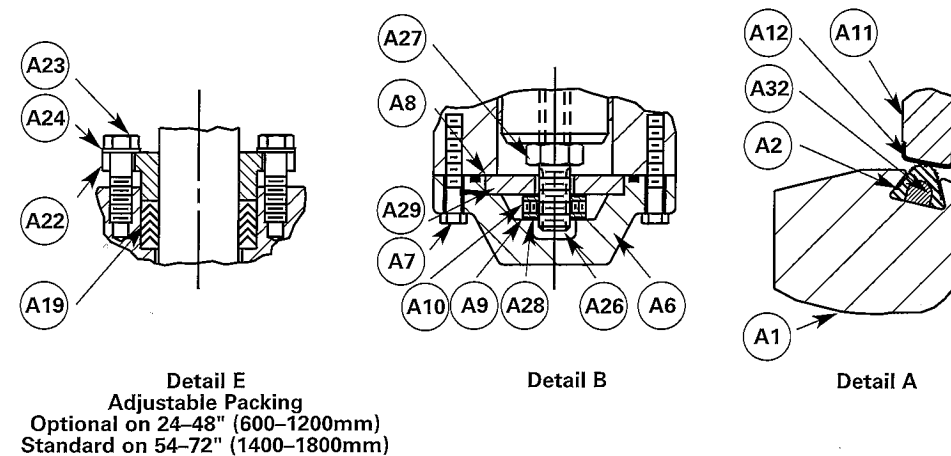
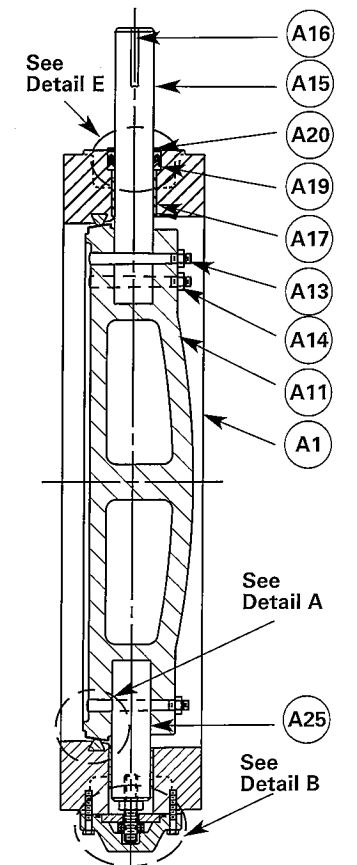
Item	Description	Material
A1	Body	Cast Iron, ASTM A126 Class B Ductile Iron, ASTM A536 Grade 65-45-12
A2	Seat	Acrylonitrile-Butadiene (NBR) Terpolymer of Ethylene, Propylene and a Diene (EPDM)
A6	Thrust Bearing Cover	Cast Iron, ASTM A126 Class B Ductile Iron, A536 Grade 65-45-12
A7	Screw	18-8 Stainless Steel
A8	O-Ring	Acrylonitrile-Butadiene (NBR) Terpolymer of Ethylene Propylene and a Diene (EPDM)
A9	Thrust Collar	Steel, ASTM 108
A10	Set Screw	18-8 Stainless Steel
A11	Disc	Cast Iron ASTM A48 Class 40C Ductile Iron ATM A536 Grade 65-45-12
A12	Disc Edge	316 Stainless Steel, ASTM A240, Type 316
A13	Disc Pin	24-48" (600-1200mm) 304 Stainless Steel, ASTM A276, Type 304 54-72" (1400-1800mm) 303 Stainless Steel, ASTM 582, Type 303
A14	Nut	18-8 Stainless Steel
A15	Upper Shaft	304 Stainless Steel, ASTM A276, Type 304 316 Stainless Steel, ASTM A276, Type 316 17-4 PH Stainless Steel, ASTM, Type 630 Condition 1150
A16	Key	Steel AISI 1018
A17	Bearing	Teflon/Dacron Fabric Liner, Fiberglass back-up shell
A19	Packing	NBR Acrylonitrile-Butadiene (NBR Seat) EPDM Ethylene Propylene and a Diene (EPDM Seat)
A20	Spacer 30-48" (750-1200mm)	Garlock 3200
A22	Gland 60-72" (1500-1800mm)	Bronze ASTM B-62
A23	Screw (Used with A22)	18-8 Stainless Steel
A24	Washer (Used with A22)	18-8 Stainless Steel
A25	Lower Shaft	304 Stainless Steel, ASTM A276, Type 304 316 Stainless Steel, ASTM A276, Type 316 17-4 PH Stainless Steel, ASTM, Type 630 Condition 1150
A26	Adjusting Screw	303 Stainless Steel, ASTM A582, Type 303
A27	Jam Nut	18-8 Stainless Steel
A28	Thrust Washer 54-72" (1400-1800mm)	Fiberglass with Teflon Lining
A29	Thrust Plate	Carbon Steel AISI A108
A30	Screw	18-8 Stainless Steel
A31	Lockwasher 30-48" (750-1200mm)	18-8 Stainless Steel
A32	Epoxy	Epoxy

Contact DeZURIK for materials of construction on valve sizes 78-120" (2000-3000mm).

24-48" (600-1200mm)



54-72" (1400-1800mm)



Detail E
Adjustable Packing
Optional on 24-48" (600-1200mm)
Standard on 54-72" (1400-1800mm)

Cv/Kv Values

Class 150B

Valve Size	100% Cv/Kv	
	Flat Cv/Kv	Dome Cv/Kv
3" 80mm	362 313	356 308
4" 100mm	658 569	646 559
6" 150mm	1,380 1,194	1,360 1,176
8" 200mm	2,440 2,111	2,390 2,067
10" 250mm	3,910 3,382	3,840 3,322
12" 300mm	5,730 4,960	5,630 4,870
14" 350mm	7,840 6,782	7,700 6,661
16" 400mm	10,200 8,823	9,980 8,633
18" 450mm	12,600 10,899	12,400 10,726
20" 500mm	15,800 13,667	15,500 13,408
24" 600mm	22,900 19,809	22,500 19,463

Class 25A, 75B, 150B

Valve Size	100% Cv/Kv	
	Flat Cv/Kv	Dome Cv/Kv
30" 750mm	36,500 31,573	35,900 31,054
36" 900mm	53,200 40,018	52,300 45,240
42" 1100mm	73,100 63,232	71,800 62,107
48" 1200mm	109,000 94,285	103,000 89,095
54" 1400mm	140,000 121,100	131,000 113,315
60" 1500mm	173,000 149,645	163,000 140,995
66" 1700mm	210,000 181,650	198,000 171,270
72" 1800mm	250,000 216,250	236,000 204,140

% Open vs. % Cv/Kv 3-42" (80-1100mm)

% Open	Flat Cv/Kv	Dome Cv/Kv
10	3/3	3/3
15	4/4	4/4
20	6/5	5/4
25	8/7	7/6
30	10/9	9/8
35	12/12	11/10
40	15/13	14/12
45	19/16	18/16
50	23/20	22/19
55	28/24	27/23
60	35/30	34/29
70	49/42	49/42
75	55/48	58/50
80	61/53	66/57
85	69/60	75/65
90	79/68	87/75
95	91/79	98/85
100	100/87	100/87

Contact DeZURIK for Cv/Kv Values on 78-120" (2000-3000mm) valves and for Class 250B.

48-72" (1200-1800mm)

% Open	Flat Cv/Kv	Dome Cv/Kv
10	1/1	2/2
15	2/2	2/2
20	4/4	3/3
25	5/4	4/4
30	6/5	6/5
35	7/6	8/7
40	9/8	10/9
45	13/11	14/12
50	15/13	18/16
55	18/16	22/19
60	23/20	27/23
70	35/30	41/36
75	44/38	48/42
80	55/48	59/51
85	67/58	71/61
90	79/68	84/73
95	96/83	96/83
100	100/87	100/87

Ordering Information

Valve Size	
3" (80mm)	48" (1200mm)
4" (100mm)	54" (1400mm)
6" (150mm)	60" (1500mm)
8" (200mm)	66" (1700mm)
10" (250mm)	72" (1800mm)
12" (300mm)	78" (2000mm)
14" (350mm)	84" (2100mm)
16" (400mm)	90" (2300mm)
18" (450mm)	96" (2400mm)
20" (500mm)	102" (2600mm)
24" (600mm)	108" (2700mm)
30" (750mm)	114" (2900mm)
36" (900mm)	120" (3000mm)
42" (1100mm)	

Note: All orders for 30" (750mm) and larger must include valve pipeline mounting position and shaft orientation as second line information.

End Connection	
F1 = ANSI 125 Flanged 3-72" (80-1800mm) 78-120" (2000-3000mm) On Application	
F2 = ANSI 250 Flanged 3-54" (80-1400mm) 60-120" (1500-3000mm) On Application	
MJ = Mechanical Joint 4-48" (100-1200mm)	

Mechanical joint ends must have buriable actuators except with ENK neck extensions or FSTS floorstands.

Body Material	
Cast Iron	
F1 = 3-72" (80-1800mm) (Standard) Class 25A, 75B, 150B 78-120" (2000-3000mm) On Application	
MJ = 4-48" (100-1200mm) Class 150B (Standard)	
Ductile Iron	
F1 = 3-72" (80-1800mm) (Standard Option) Class 25A, 75B, 150B; 250B 78-120" (2000-3000mm) On Application	
F2 = 3-54" (80-1400mm) (Standard Option) Class 250B 60-120" (1500-3000mm) On Application	
MJ = 4-48" (100-1200mm) Class 150B (Standard Option) Class 250B (Standard)	

Packing/Seat Combination	
Packing Material	
NBRN = Acrylonitrile-Butadiene Self-Adjusting 3-72" (80-1800mm); 78-120" (2000-3000mm) On Application	
NBRA = Acrylonitrile-Butadiene Adjustable Do not use with buried service. 3-72" (80-1800mm); 78-120" (2000-3000mm) On Application	
EPDN = EPDM Self-Adjusting 3-24" (80-600mm); 30-120" (750-3000mm) On Application	
EPDA = EPDM Adjustable Do not use with buried service. 3-24" (80-600mm); 30-120" (750-3000mm) On Application	
TCN = PTFE Self-Adjusting 30-72" (750-1800mm)	
TCA = PTFE Adjustable Do not use with buried service. 30-72" (750-1800mm)	
Seat Material	
NBR = Acrylonitrile-Butadiene (Must use NBRN or NBRA packing.)	
EPDM = Terpolymer of Ethylene Propylene & A Diene (Must use EPDA or EPDN, TCN or TCA packing.)	

Class AWWA C-504	
25A = 30-48" (750-1200mm) flanged	
75B = 30-120" (750-3000mm) flanged	
150B = 3-120" (80-3000mm) flanged 4-48" (100-1200mm) mechanical joint	
250B = 3-120" (80-3000mm) flanged 4-48" (100-1200mm) mechanical joint	

Disc/Shaft Combination	
Disc Material	
CI = Cast Iron disc with 316 stainless steel edge Class 25A & 75B 30-48" (80-1200mm); 75B 54-120" (1400-3000mm) On Application Class 150B 3-20" (80-500mm)	
DI = Ductile Iron disc with 316 stainless steel edge Class 75B 54-72" (1400-1800mm) Class 150B 3-72" (80-1800mm); 78-120" (2000-3000mm) On Application Class 250B 3-54" (80-1400mm)	
S2 = 316 stainless steel Class 150B 3-42" (80-1100mm)	
Shaft Material	
S1 = 304 stainless steel shaft (Standard) Class 25A = 30-48" (750-1200mm) Class 75B = 30-72" (750-1800mm) 78-120" (2000-3000mm) On Application Class 150B = 3-72" (750-1800mm) 78-120" (2000-3000mm) On Application	
S2 = 316 stainless steel shaft (Standard Option) Class 150B = 3-42" (80-1100mm) All others on application.	
S5 = 17-4 PH stainless steel shaft (Standard Option) Class 250B = 3-54" (80-1400mm) All others on application.	

Applicable Standards

DeZURIK AWWA valves are in conformance with the industry standards listed below.

Underwriters Laboratories Inc. Classification in accordance with ANSI/NSF Standard 61 for Drinking Water System Components.

Valves conform to AWWA Standard ANSI/AWWA C-504, Rubber-Seated Butterfly Valves.

This standard includes reference to other applicable standards shown below.

Dimensions and drilling of flanged end connections conform to Class 125 sections of ASME/ANSI B16.1, Cast Iron Pipe Flanges and Flanged Fittings.

Mechanical-Joint bell dimensions conform to ANSI/AWWA C111/A21.11, Rubber Gasket Joints for Ductile Iron and Gray Iron Pressure Pipe and Fittings.

Bonding of 3" (80mm) through 20" (600mm) seat conforms to ASTM D429, Standard Test Methods for Rubber Property — Adhesion to Rigid Substrates.

Ozone resistance of seat material conforms to ASTM D1149, Standard Test Method for Rubber Deterioration — Surface Ozone Cracking in a Chamber.

Seat material volume increase is less than 2% after immersion in distilled water for 70 hours, when tested in accordance with ASTM D471, Standard Test Method for Rubber Property — Effect of Liquids.

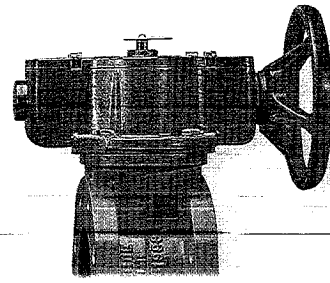
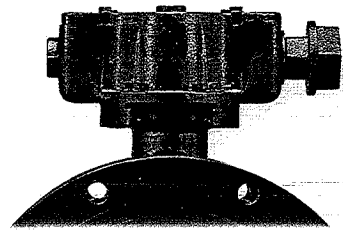
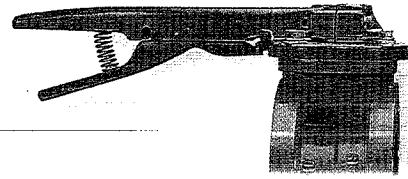
Valves conform to MSS SP-67, Butterfly Valves.

Materials conform to standards as listed in the Materials of Construction.

Options	
TB = Standard Certified Hydrostatic Shell Test and Bi-Directional Seat Leak Test. Stainless Steel bolting on valve.	
SB = 316 Stainless Steel Bolting	

Ordering Example:
BAW,24,F1,CI,NBRN-NBR,150B,DI-S1*Actuator

Actuators



Rotary Manual Actuators

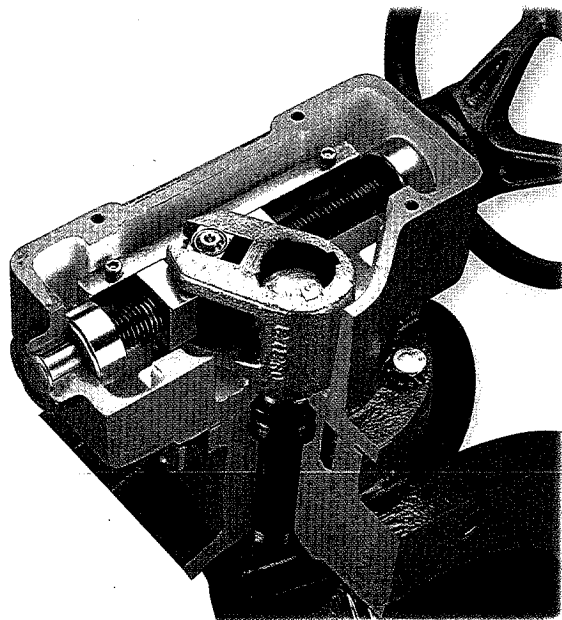
DeZURIK offers a variety of rotary manual actuator options which are in complete compliance with AWWA C504. Manual actuators are available with handwheel, chainwheel or 2" (80mm) square nut options.

Easily Adjustable Stops

Open and closed position stops can be easily adjusted without drilling, shimming or pinning. The stops ride the input shaft and can be repositioned with a simple adjustment of the stop nut.

Rugged Designs

Manual actuators are sized to operate with a maximum input of 150 foot pounds on 2" (80mm) square operating nuts, and 80 pound rim pull on handwheels and chainwheels. The actuators are self-locking, maintaining valve position under varying flow conditions.



Easily Rotatable

The four keyways in the yoke make DeZURIK manual actuators easy to rotate to any of four mounting positions.

Lever Actuators

Lever actuators are available on 3-8" (80-200mm) valve sizes.

Buriable and Weatherproof Construction

DeZURIK actuators feature a cast iron housing in buriable or weatherproof construction. The mechanism is totally enclosed and does not require lubrication for routine maintenance. Buried service actuators are grease filled per AWWA C504.

Valve Position Indicator

The pointer on weatherproof actuators clearly indicates the valve position marked on top of the housing. The indicator shaft is sealed to keep moisture from entering the actuator housing.

M-Series Design

The M-Series design is available on 3-36" (80-900mm) valve sizes. The scotch yoke mechanism allows the M-Series actuators to provide a torque curve matching the torque required by the valve. The actuator features a steel threaded input shaft and ductile iron yoke nuts. The high-strength stainless steel yoke nut bearings ensure efficiency and increase cycle life.

300 & 450 Foot Pound Input Torque

As required by AWWA C504, an input torque of 300 foot pounds against the fully adjustable open and closed position stops is standard. A 450 foot pound input capability against the stops is an option.

LA-Series Design

The LA-Series design is available on 30-72" (750-1800mm) valve sizes. The link-arm mechanism allows the LA-Series actuator to provide characterized closure which slows valve travel as the disc comes into the seat. The actuators feature high compressive strength yoke nut bearings which ensure reliable operation and increase cycle life.

High Output Torque

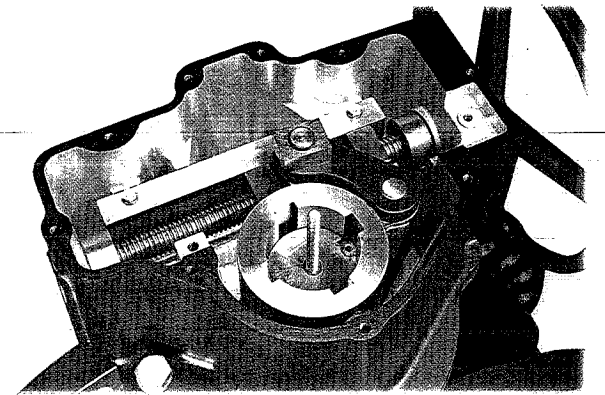
The LA-Series actuators feature an input torque capability of 450 foot pounds against the open and closed position stops as standard. An optional spur gear provides a 2:1 mechanical advantage while maintaining an input torque capability of 300 foot pounds against the stops. The spur gear slows closing of the valve, minimizing the possibility of water hammer.

Accessories

DeZURIK offers a complete line of extensions and accessories including enclosed neck extensions, extended operating nuts, floor stands, valve boxes, floor boxes, mechanical joint accessories, solenoid valves, speed control valves, positioners and switches.

Cylinder Actuators

All cylinder actuators are double-acting, stationary mounted, with all working parts totally protected within weatherproof enclosures.



Electric Motors

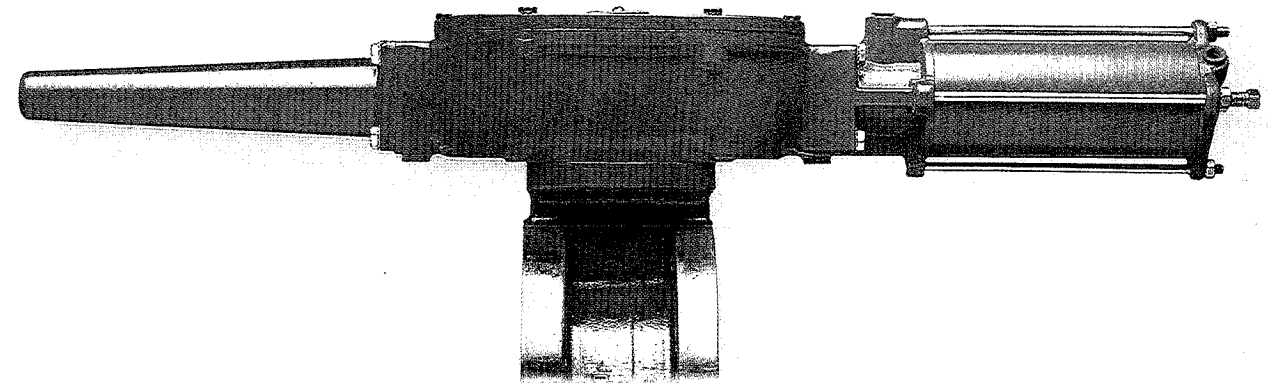
Electric motors offer reliable and economical valve operation. The electric actuator and associated gearing meet AWWA C540. DeZURIK AWWA Butterfly Valves can be furnished with electric motor actuators produced by leading manufacturers.

C540 Cylinder Actuators

DeZURIK C540 pneumatic and hydraulic cylinder construction is in strict accordance with AWWA C540. The cylinder head and end cap are ductile iron. On pneumatic cylinders, interior surfaces are epoxy coated; on hydraulic cylinders, interior surfaces are nickel plated.

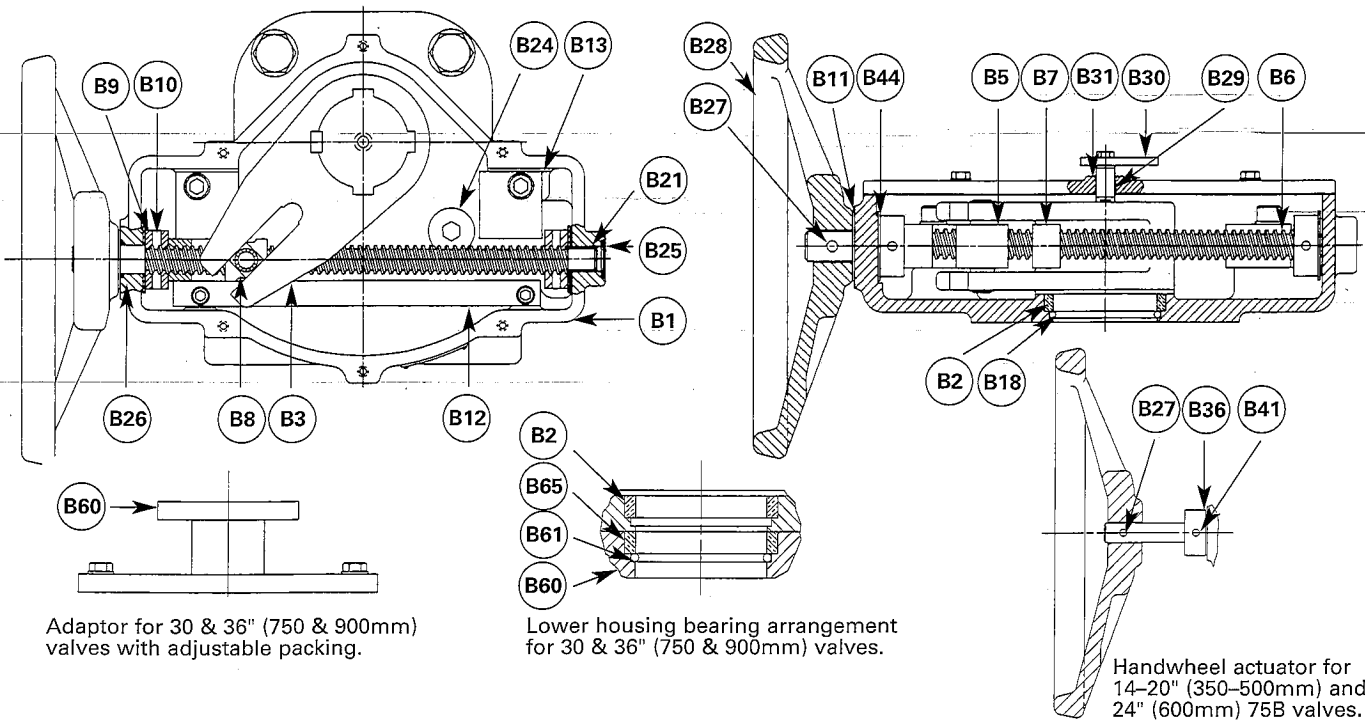
On pneumatic cylinders, the piston is epoxy coated cast iron and the piston rod is chrome plated carbon steel.

On hydraulic cylinders, the piston is nickel plated cast iron and the piston rod is chrome plated stainless steel.

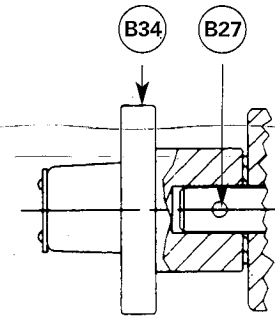


M-Series Manual Actuator

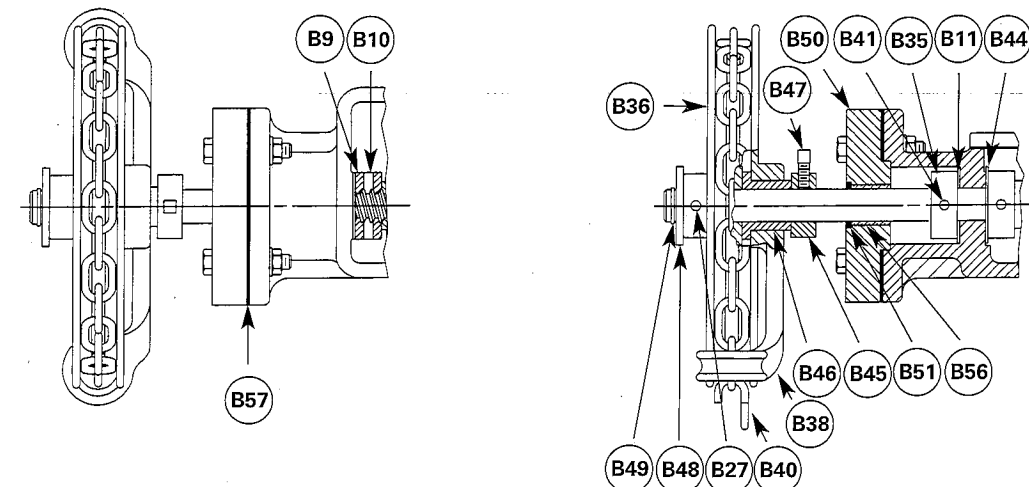
Handwheel



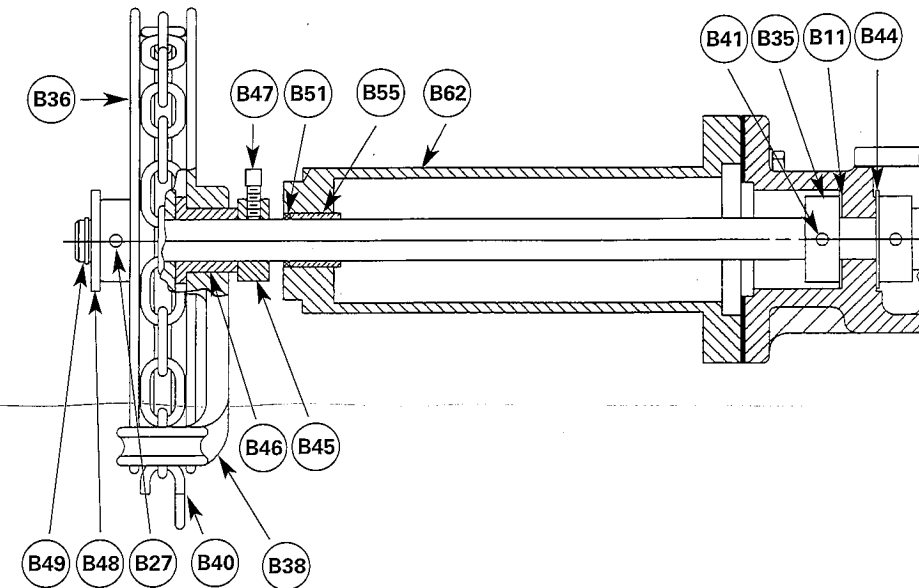
Nut



Chainwheel 3-20" (80-500mm)



Chainwheel 24-36" (600-900mm)



M-Series Manual Actuator Materials of Construction

Item	Description	Material
B1	Housing	Cast Iron, ASTM A126 Class B
B2	Bearing (Housing)	Bronze Oil Impregnated
B3	Yoke	Ductile Iron, ASTM A536 80-55-06
B5	Yoke Nut Assembly	Ductile Iron, ASTM A536 80-55-06
B6	Shaft	Steel, ASTM A29 1144
B7	Stop Nut	Steel, AISI 1018
B8	Bearing	Sintered Stainless Steel
B9	Collar	Steel, AISI 1215
B10	Pin	Chrome Steel, Type 420
B11	Thrust Washer	Bronze Oil Impregnated
B12	Yoke Guide	Steel, AISI 1018
B13	Guide Block (450 ft. lb. Actuator only)	Steel, AISI 1018
B18	O-Ring	Nitrile
B21	Bearing	Bronze Oil Impregnated
B24	Screw (M-7 Actuator only)	Zinc Plated Steel
B25	Expansion Plug	Zinc Plated Steel
B26	O-Ring	Nitrile
B27	Pin	Zinc Plated Steel
B28	Handwheel	Cast Iron, ASTM A126 Class B
B29	Driver	Stainless Steel, 316L
B30	Pointer	Steel 14 Gauge
B31	Seal	Steel with Nitrile
B34	Wrenching Square	Cast Iron, ASTM A126 Class B

Item	Description	Material
B35	Collar	Steel, AISI 1215
B36	Chainwheel	Cast Iron, ASTM A126 Class B
B38	Chain Guide	Cast Iron, ASTM A126 Class B
B40	Link Closing	Steel Zinc Plated
B41	Pin	Steel Zinc Plated
B44	Thrust Washer	Fiberglass with Steel Zinc Plated Back (M-7 Actuator)
B45	Collar	Steel, AISI 1215
B46	Bearing	Bronze Oil Impregnated
B47	Set Screw	Steel Zinc Plated
B48	Washer	Steel Zinc Plated
B49	Ring Retainer	Steel
B50	Adaptor A36 12-20" (300-500mm) Valves	Steel Hot Rolled
B51	Seal 12-20" (300-500mm) Valves	Carbon Steel, Nitrile
B55	Bearing (Adaptor Plate)	Bronze Oil Impregnated
B57	Gasket	Fiber Non-Asbestos
B60	Adaptor 30 & 36" (750 & 900mm)	Steel, ASTM A36
B61	O-Ring 30 & 36" (750 & 900mm)	Nitrile (NBR)
B62	Shaft Extension	Steel, ASTM A36
B65	Bearing	Bronze Oil Impregnated 30 & 36" (750 & 900mm)

Note: Fasteners are zinc plated steel unless stainless steel bolting is specified.

LA-Series Manual Actuator

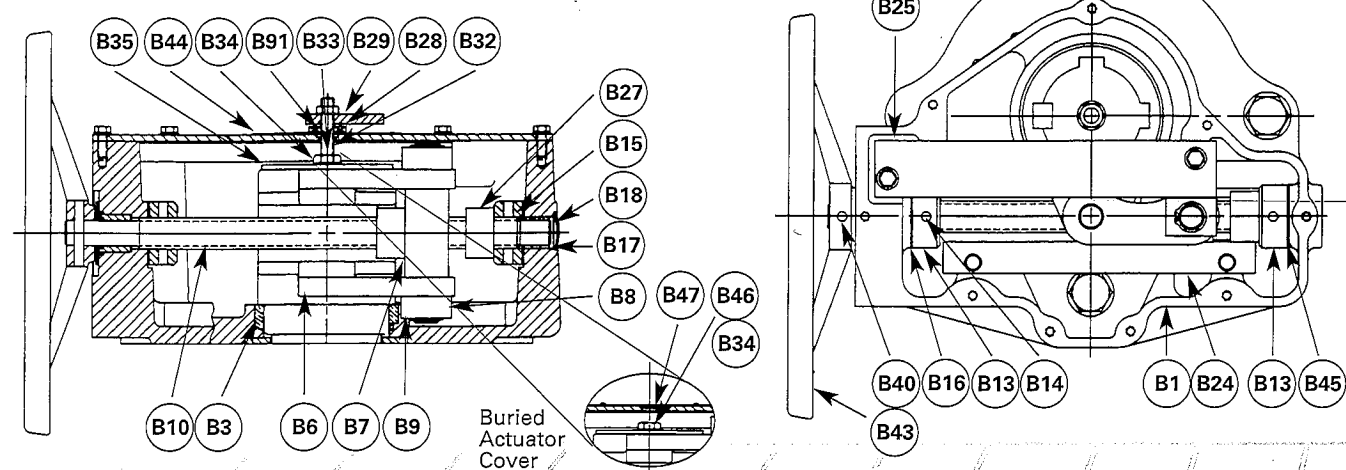
LA-Series Actuator Materials of Construction

Item	Description	Material
B1	Housing	Cast Iron, ASTM A126 Class B
B2	Bearing	Bronze Oil Impregnated
B3	Yoke	Ductile Iron, ASTM A536 80-55-06
B4	Cover	Steel Plate, A36 HR
B5	Packing Retainer	Steel Plate, A36 HR
B6	Link	Steel
B7	Yoke Nut	Ductile Iron, ASTM A536 80-55-06
B8	Guide Nut (LA-4 & LA-6)	Powder Metal 8020 23B
B9	Retaining Ring	Carbon Steel, SAE 1060-1090
B10	Input Shaft	Steel, AISI 1141
B11	O-Ring	Acrylonitrile-Butadiene
B12	O-Ring	Acrylonitrile-Butadiene
B13	Collar	Steel, AISI 1215
B14	Pin	Steel
B15	Thrust Washer	Teflon/Glass Fabric, Stainless Steel Backing
B16	Thrust Washer	Teflon/Glass Fabric, Stainless Steel Backing
B17	Bearing	Bronze Oil Impregnated
B18	Expansion Plug	Steel Zinc Plated
B23	Retaining Washer	Stainless Steel, Type 18-8
B24	Outer Guide Bar	Steel, AISI 1018
B25	Inner Guide Bar	Steel, AISI 1018
B26	Square Nut	Steel, AISI 1018
B27	Stop Nut	Steel, AISI 1018
B28	Seal	Steel with Nitrile
B29	Pointer	Steel, ASTM A36
B32	Stud	Steel Zinc Plated
B33	Nut	Steel Zinc Plated
B34	Thread Seal	Steel with Nitrile
B35	Yoke Cover	Steel, ASTM A569
B40	Pin	Steel Zinc Plated
B43	Handwheel	Cast Iron, ASTM A126 Class B
B44	Position Plate	Vinyl
B45	Shim	Steel
B47	Expansion Plug	Steel Zinc Plated

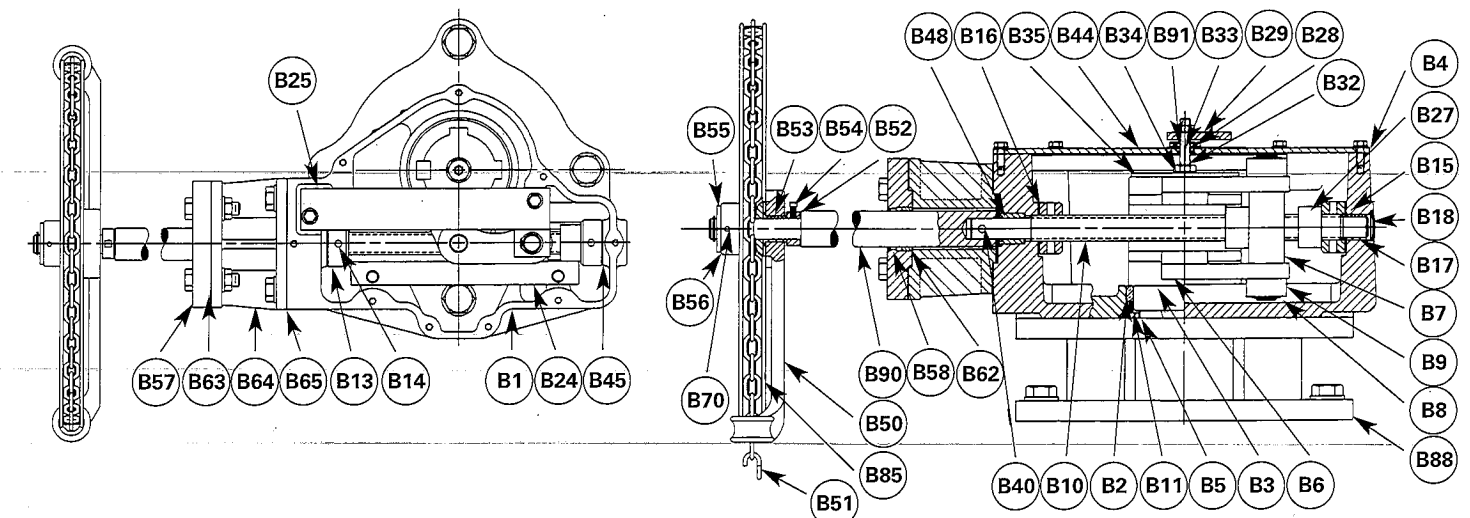
Item	Description	Material
B48	Bushing	Bronze Oil Impregnated
B50	Chain Guide	Cast Iron, ASTM A126
B51	Closing Link	Steel
B52	Collar	Steel, ASTM A36
B53	Bearing	Bronze
B54	Screw	Steel Zinc Plated
B55	Washer	Steel Zinc Plated
B56	Retaining Ring	Carbon Steel
B57	Adaptor Plate	Steel, ASTM A36
B58	Seal	Garlock
B62	Bearing	Bronze
B63	Gasket	Non-Asbestos
B64	Adaptor	Cast Iron, ASTM A126 Class B
B65	Gasket	Non-Asbestos
B69	Housing (Spur Gear)	Cast Iron, ASTM A126
B70	Pin (Chainwheel)	Steel Zinc Plated
B71	Gasket	Fiber Non-Asbestos
B72	Screw	Steel Zinc Plated
B73	Screw	Steel Zinc Plated
B74	Seal	Steel Zinc Plated
B75	Pin	Steel Zinc Plated
B76	Pin	Steel Zinc Plated
B77	Retainer Ring	Steel Zinc Plated
B78	Cover	Steel Plate, ASTM A36
B81	Gear	Carbon Steel
B82	Gear	Carbon Steel
B83	Input Shaft (Spur Gear)	Steel, ASTM A29
B84	O-Ring	Nitrile
B85	Chainwheel	Cast Iron, ASTM A126 Class B
B88	Adaptor (Adj. Packing)	Steel, ASTM A36
B89	Bearing	Bronze
B90	Shaft Extension	Steel, AISI 1215
B91	Washer	Steel Zinc Plated
B92	Expansion Plug	Zinc Plated Steel
B93	Lockwasher	Zinc Plated Steel

Note: All fasteners are zinc plated steel unless stainless steel bolting is specified.

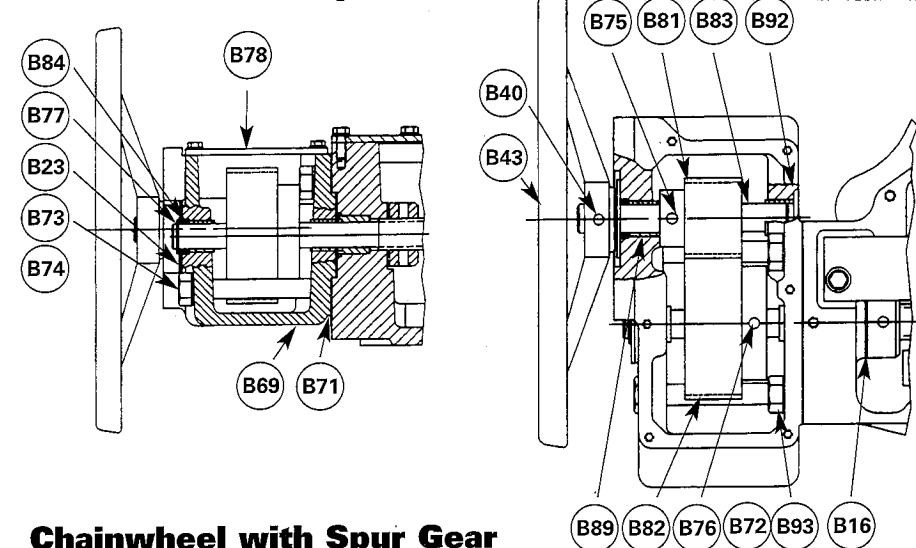
Handwheel



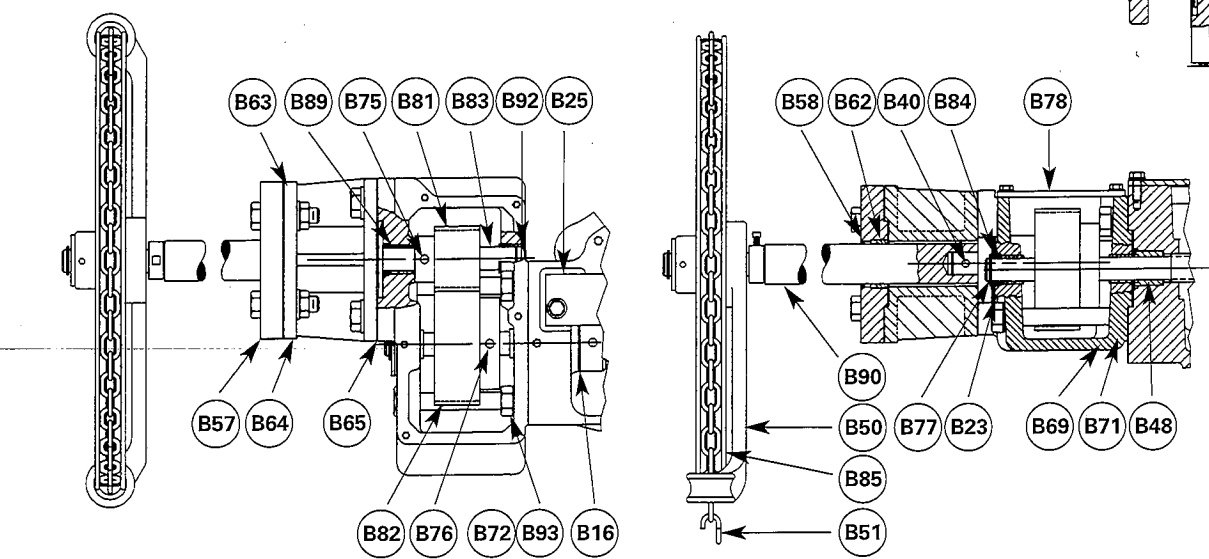
Chainwheel



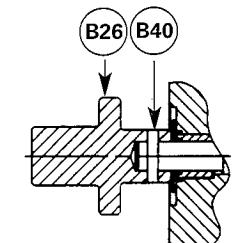
Handwheel with Spur Gear



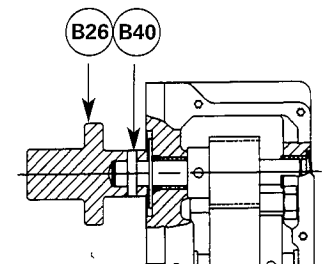
Chainwheel with Spur Gear



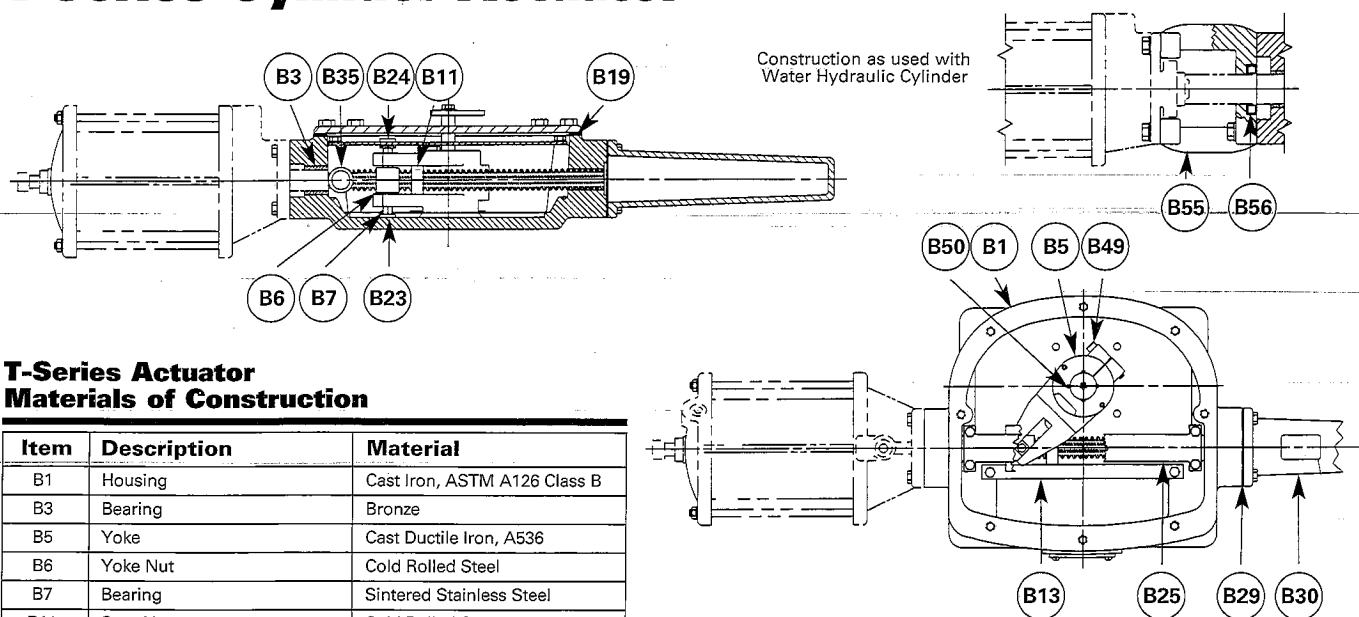
Nut



Nut with Spur Gear



T-Series Cylinder Actuator

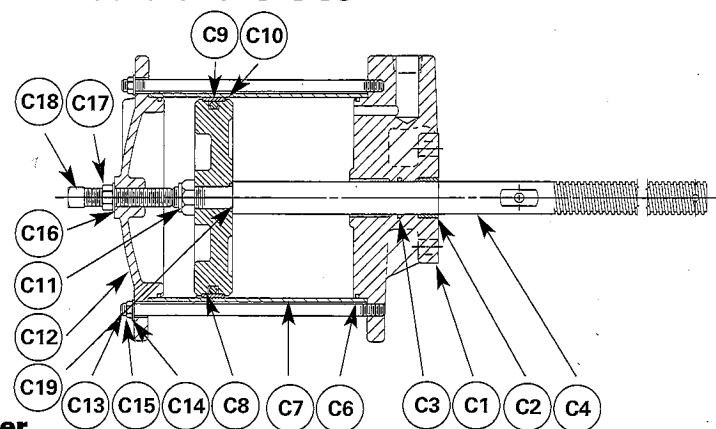


T-Series Actuator Materials of Construction

Item	Description	Material
B1	Housing	Cast Iron, ASTM A126 Class B
B3	Bearing	Bronze
B5	Yoke	Cast Ductile Iron, A536
B6	Yoke Nut	Cold Rolled Steel
B7	Bearing	Sintered Stainless Steel
B11	Stop Nut	Cold Rolled Steel
B13	Guide Rail	Cold Rolled Steel
B19	Gasket	Neoprene
B23	Lower Yoke Guide (TW-7 only)	Steel, AISI 1215
B24	Upper Yoke Guide (TW-7 only)	Steel, ASTM A366
B25	Guide Rail (TW-7 only)	Steel, ASTM A36
B29	Gasket	Neoprene
B30	Cap	Fiberglass
B35	Stay Pin	Steel
B49	Screw	Alloy Steel
B50	Key	Steel, AISI 1018
B55	Adaptor (Hydraulic only)	Cast Iron, ASTM A126 Class B
B56	Wiper (Hydraulic only)	Carbon Steel

Note: All fasteners are zinc plated steel unless stainless steel bolting is specified.

Pneumatic/Low Pressure Oil Hydraulic Standard and C-540



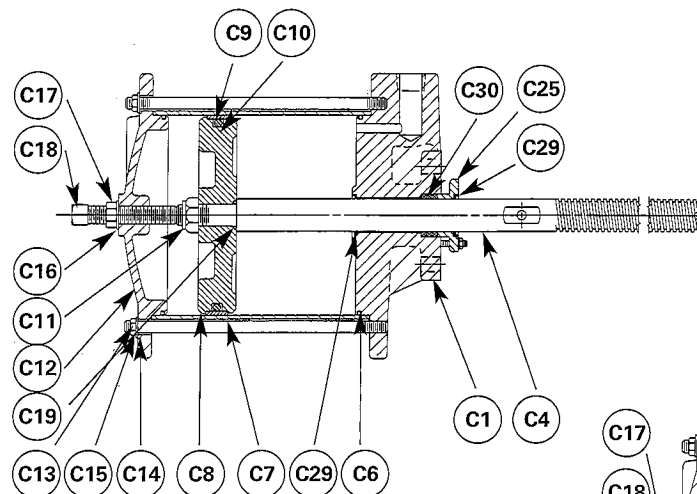
Pneumatic/Low Pressure Oil Hydraulic Cylinder Materials of Construction

Item	Description	Standard Construction	C-540 Construction
C1	Cylinder Head	Cast Iron, ASTM A126 Class B	Ductile Iron, ASTM A536 65-45-12
C2	Bearing	Bronze Oil Impregnated	Bronze Oil Impregnated
C3	Rod Seal	Teflon with NBR	Teflon with NBR
C4	Piston Rod	Steel, AISI 1215 Chrome Plated	Steel, AISI 1215 Chrome Plated
C6	O-Ring	Acrylonitrile-Butadiene	Acrylonitrile-Butadiene
C7	Cylinder Tube	Fiberglass	Fiberglass
C8	Piston	Cast Iron, ASTM A126 Class B	Cast Iron, ASTM A126 Class B
C9	O-Ring	Acrylonitrile-Butadiene	Acrylonitrile-Butadiene
C10	Piston Seal	Virgin Teflon	Virgin Teflon
C11	Nut	Zinc Plated Steel	Zinc Plated Steel
C12	Cylinder Cap	Ductile Iron, ASTM A536 65-45-12	Ductile Iron, ASTM A536 65-45-12
C13	Tie Rod	Zinc Plated Steel	Steel, AISI C1018 Zinc Plated
C14	Washer	Zinc Plated Steel	Zinc Plated Steel
C15	Nut	Zinc Plated Steel	Zinc Plated Steel
C16	Seal Thread	Steel with Nitrile	Steel with Nitrile
C17	Jam Nut	Zinc Plated Steel	Zinc Plated Steel
C18	Set Screw	Zinc Plated Steel	Zinc Plated Steel
C19	O-Ring	Acrylonitrile-Butadiene	Acrylonitrile-Butadiene

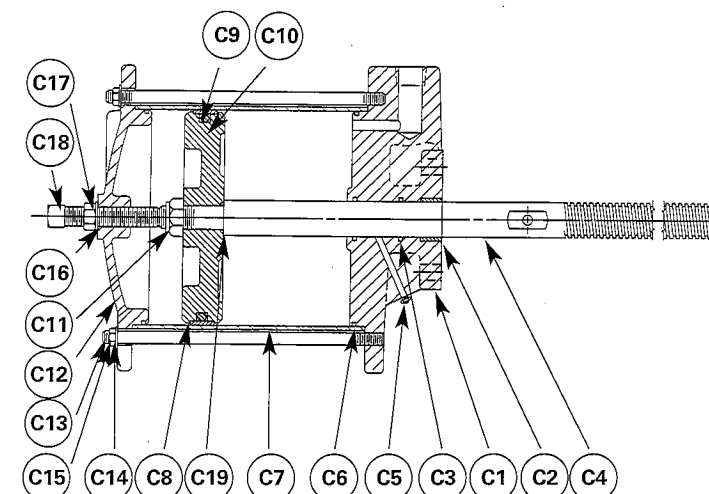
Water Hydraulic Cylinder Materials of Construction

Item	Description	Standard Construction	C-540 Construction
C1	Cylinder Head	Cast Iron, ASTM A126	Ductile Iron, ASTM A536 65-45-12 Nickel Plated
C2	Bearing	-	Bronze Oil Impregnated
C3	Rod Seal	-	Teflon with NBR
C4	Piston Rod	Stainless Steel, ASTM A564, Type 17-4	Stainless Steel, Type 304 Chrome Plated
C5	Vent Plug	-	Alemite 47200
C6	O-Ring	Acrylonitrile-Butadiene	Acrylonitrile-Butadiene
C7	Cylinder Tube	Fiberglass	Fiberglass
C8	Piston	Cast Iron, ASTM A126	Cast Iron, ASTM A126 Class B Nickel Plated
C9	O-Ring	Acrylonitrile-Butadiene	Acrylonitrile-Butadiene
C10	Piston Seal	Virgin Teflon	Virgin Teflon
C11	Nut	Stainless Steel, Type 18-8	Stainless Steel, Type 18-8
C12	Cylinder Cap	Ductile Iron, ASTM A536	Ductile Iron, ASTM A536 65-45-12 Nickel Plated
C13	Tie Rod	Zinc Plated Steel	Steel, AISI C1018 Zinc Plated
C14	Washer	Zinc Plated Steel	Zinc Plated Steel
C15	Nut	Zinc Plated Steel	Zinc Plated Steel
C16	Seal Thread	Steel with Nitrile	Steel with Nitrile
C17	Jam Nut	Zinc Plated Steel	Zinc Plated Steel
C18	Set Screw	Stainless Steel, Type 18-8	Stainless Steel, Type 18-8
C19	O-Ring	Acrylonitrile-Butadiene	Acrylonitrile-Butadiene
C25	Gland	Cast Iron, ASTM A126	-
C29	Scraper	Carbon Steel	-
C30	Packing	Neoprene & Cotton Duck	-

Water Hydraulic — Standard



Water Hydraulic — C-540



Valve Accessories

Mechanical Joint Accessories

Accessories include bolts, nuts, packing and glands for both ends.

Manual Actuators

10-Position Levers

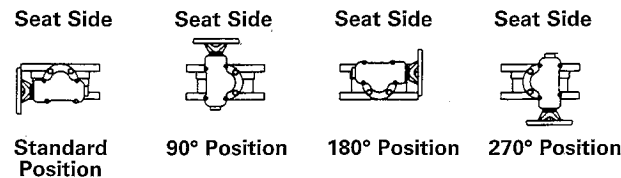
A 10-position dial provides positive latching in open, closed and eight intermediate positions. A pointer indicates position of disc plus a notch in the handle allows use of a padlock to prevent unauthorized valve operation.

Mounting

Lever actuators can be mounted at standard or 180°. Levers are available on 3-8" (80-200mm) valve sizes.



Mounting Nut & Handwheel



Chainwheel



M-Series Handwheel Mounting Positions

Valve Size	AWWA Class	Mounting Positions
3-12" (80-300mm)	150B	Std., 90, 180, 270
14-16" (350-400mm)	150B	Std., 180
18" (450mm)	150B	Std., 90, 180, 270
20" (500mm)	150B	Std., 180
24" (600mm)	75B 150B	Std., 90, 180, 270 Std., 180
30" (750mm)	25A 75A/75B	Std., 90, 180, 270 Std., 180
36" (900mm)	25A	Std., 180

Rotating Manual Actuators

DeZURIK offers a variety of rotary manual actuators which are in complete compliance with AWWA C-504. Manual actuators are available with handwheel, chainwheel or 2" (50mm²) square nut options.

Accessories — Manual Actuators

450 Ft-Lb (612 Nm) Input Stops

Available on M-Series actuators with handwheel or nut. LA-Series actuators have 450 Ft. Lb (612 Nm) input stops as standard.

Chain — For Chainwheel Actuators

Chain for chainwheel actuators are available in zinc plated, galvanized or 304 stainless steel.

Stainless Steel Bolting

Includes stainless steel fasteners on valve and actuator.

Galvanized Chainwheel and Guide

Same as chainwheel actuator except chainwheel and guide are galvanized.

Dial Indicating Floorstand

For 3-54" (80-900mm) valves with M-Series or LA-Series handwheel actuators. Actuator is mounted on the valve and the input shaft is extended to the floorstand. Included with the floorstand are the handwheel mounted on the floorstand, dial indicator and couplings. Extension rod must be ordered separately. Floorstand may be directly above valve or offset from valve location. A buried actuator must be specified when ordering an FSDI.

Extension Rod

Extension rod is required for use with FSDI floorstand.

Floorstand

For 3-36" (80-900mm) valves with M-Series actuators. Included with floorstand are the couplings, extension pipe and mounting of actuator on floorstand. Contact DeZURIK for floorstands on larger valves and with LA-Series actuators.

Extended Nut for M-Series Actuators

For M-Series actuators used with floorboxes or valve boxes. Includes couplings, extension pipe, and extended 2" (50mm²) square nut.

Neck Extensions

For use with 3-48" (80-1200mm) valves with M-Series or LA-Series actuators. Included is an extended valve neck and shaft. Valves for use with neck extensions must be furnished with non-adjustable packing and a non-buried actuator. Extensions are not recommended for use with positioners.

Extended Nut for LA-Series

For LA-Series actuators used with floorboxes and valve boxes. Includes couplings, extension rod and extended 2" (50mm) square nut.

Valve Box and Valve Box Extensions

For use with buried actuators. Includes valve box and cover. One to five extension pieces may be ordered to extend depth of valve box. Valve boxes may be used with valves having standard or extended nut actuators. Top of nut must be 6" (150mm) below grade. Valve boxes are tee wrench actuated. Tee wrenches must be ordered separately.

Floorbox

For use with nut style actuators. It includes floorbox and cover. May be used with valves having standard or extended nut actuators. Top of nut must be 2" (50mm) from top of floorbox. Floorboxes are tee wrench actuated. Tee wrenches must be ordered separately. Box depth is available in 1" (25mm) increments from 6" (150mm) through 18" (450mm). Standard is 6" (150mm).

Tee Wrench

For use in actuating 2" (50mm) nut actuators. Available in 4, 5, 6, 7 or 8 foot lengths. Other lengths available on special order.

Cylinder Actuators

DeZURIK cylinder actuators are available as double-acting pneumatic or water hydraulic cylinders for either on-off or positioning services. Cylinder actuators per AWWA C-540 should be specified.

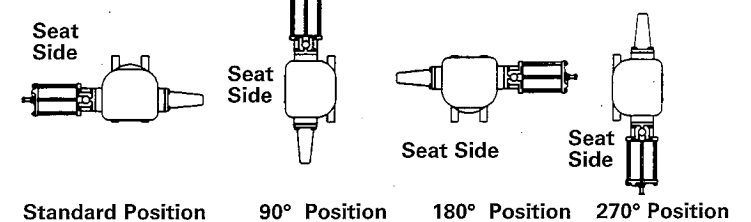
Mounting

Cylinder actuators can be mounted at 90° increments from standard.

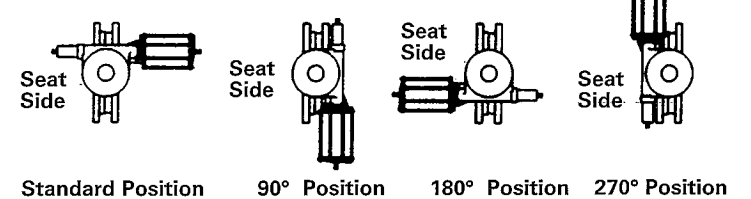
Manual and Throttling Manual Override

Contact Application Engineer for assistance.

T-Series



G-Series



Electric Motors

When ordering electric motor actuators, please provide information listed on "Data Input Checklist" at end of bulletin.

Accessories — Cylinder Actuators

Positioners

DeZURIK offers both pneumatic and electronic signal valve positioners for use with cylinder actuators.

Gauges

Pneumatic positioners are available with 3 gauges mounted and piped; electronic positioners are available with 2 gauges mounted and piped.

4-Way Solenoid Valves

For cylinder actuators, 4-way direct acting, two position solenoid valves feature metal enclosures, .25" (6mm) NPT connections, Cv of .70 and a maximum pressure differential of 125 psi (8.5 Bar). Solenoid coil voltage is both 110/50/1 and 120/60/1 AC power. Contact DeZURIK for DC voltage. Solenoids are available with or without manual overrides. On large valves, furnish valve/actuator size, service conditions, and required operating speed for recommendations. Solenoid action should be specified.

Air Filter Regulator

For use on all pneumatic actuators. Includes a pressure reducing valve with filter and gauge. Maximum supply is 100 psi (7 Bar).

Speed Control Valves

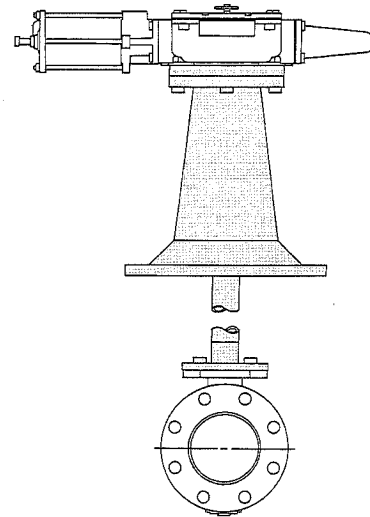
Speed control valves are available for controlling opening and closing speed on cylinder actuators.

Position Indicating Switches

Available in NEMA 4, 4x, 7 or 9 ratings. Switches are available as two SPDT or four SPDT.

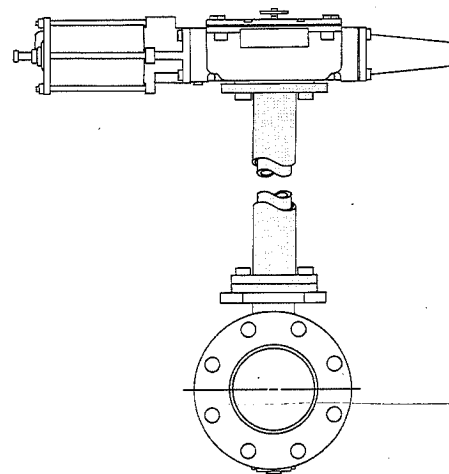
Floorstand

For 3–20" (80–500mm) valves with T-Series cylinder actuator mounted on floorstand. Included with the floorstand are couplings, the extension pipe and mounting of the actuator on the floorstand.

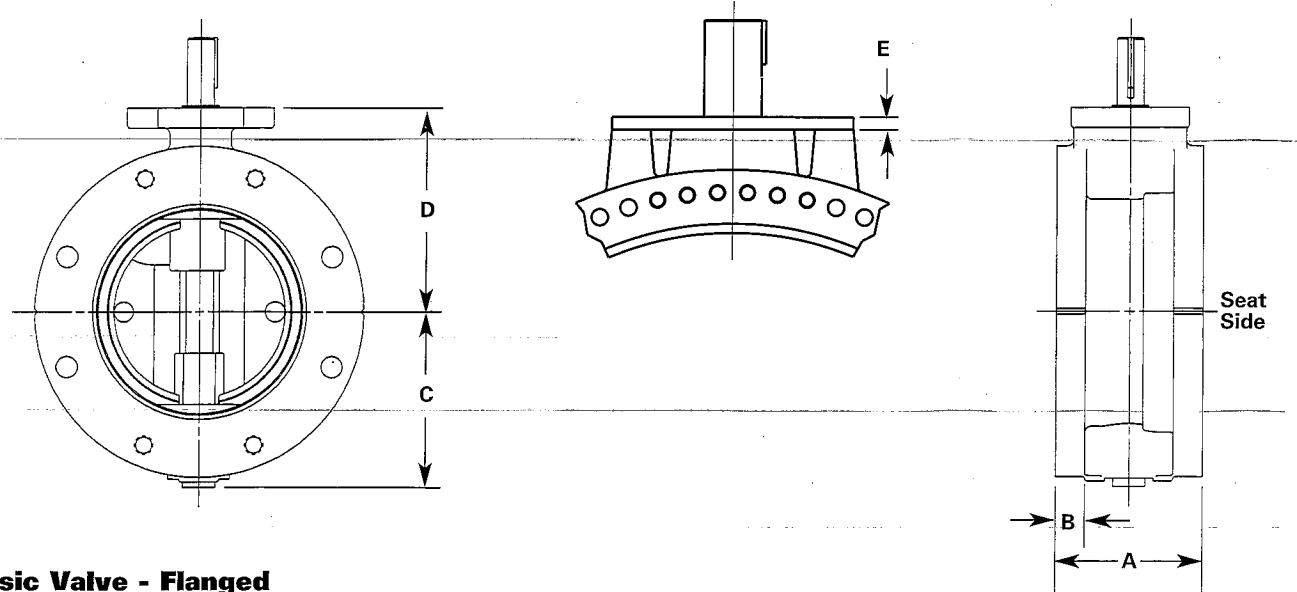


Neck Extension

For 3–20" (80–500mm) valves using T-Series Cylinder actuators. Included is the extended valve neck and shaft with actuator mounted.



Dimensions



Basic Valve - Flanged

Valve Size	A		B		C		D		E
	25A, 75B & 150B*	250B	25A, 75B & 150B*	250B	25A, 75B & 150B*	250B	25A, 75B & 150B*	250B	250B Only
3 80	5.00 127	5.00 127	.81 21	1.19 30	4.00 102	4.12** 105	4.81 122	4.81 122	-
4 100	5.00 127	5.00 127	1.00 25	1.31 33	4.75 121	5.00** 127	5.56 141	5.56 141	-
6 150	5.00 127	5.00 127	1.06 27	1.50 38	6.03 153	6.25** 159	7.00 178	7.00 178	-
8 200	6.00 152	6.00 152	1.19 30	1.69 43	7.16 182	7.50** 191	8.31 211	8.31 211	-
10 250	8.00 203	8.00 203	1.25 32	1.97 50	8.38 213	8.75** 222	9.50 241	9.50 241	-
12 300	8.00 203	8.00 203	1.31 33	2.09 53	9.66 245	10.25** 260	11.00 279	11.00 279	-
14 350	8.00 203	8.00 203	1.47 37	2.25 57	10.91 277	11.50** 292	11.50 292	11.50 292	-
16 400	8.00 203	8.00 203	1.53 39	2.38 60	12.06 306	12.75** 324	12.75 324	12.75 324	-
18 450	8.00 203	8.00 203	1.66 42	2.50 64	14.03 356	14.50 368	13.50 343	14.00 356	-
20 500	8.00 203	8.00 203	1.78 45	2.63 67	15.02 382	17.50 445	15.25 387	15.25 387	-
24 600	8.00 203	12.00 305	1.97 50	2.91 74	19.00 483	20.19 513	18.41 468	19.50 495	-
30 750	12.00 305	12.00 305	2.25 57	3.13 80	23.00 584	23.75 603	22.62 575	21.75 552	1.25 32
36 900	12.00 305	15.00 381	2.50 64	3.50 89	27.38 696	27.38 695	25.62 651	25.62 651	1.25 32
42 1100	12.00 305	15.00 381	2.75 70	3.81 97	30.91 785	30.91 785	30.42 773	30.42 773	1.25 32
48 1200	15.00 381	15.00 381	2.88 73	4.13 105	35.38 899	35.38 899	33.00 838	33.00 838	1.25 32

Inches
Millimeter

Contact DeZURIK for dimensions on valve sizes 54" (1400mm) and larger.

*Available in AWWA Class 250B when ordered with 17-4 Shaft and 250 psi bearings.

**Flange length exceeds thrust bearing cover in these valve sizes.

Note: All dimensions are subject to change without notice. Request certified drawings for use in preparing piping layouts.

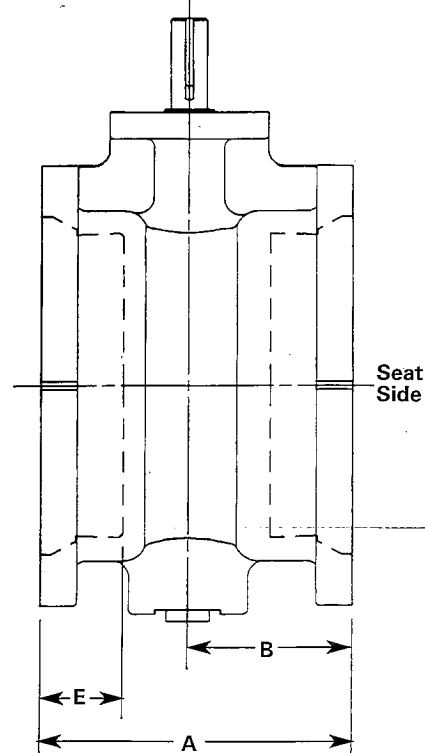
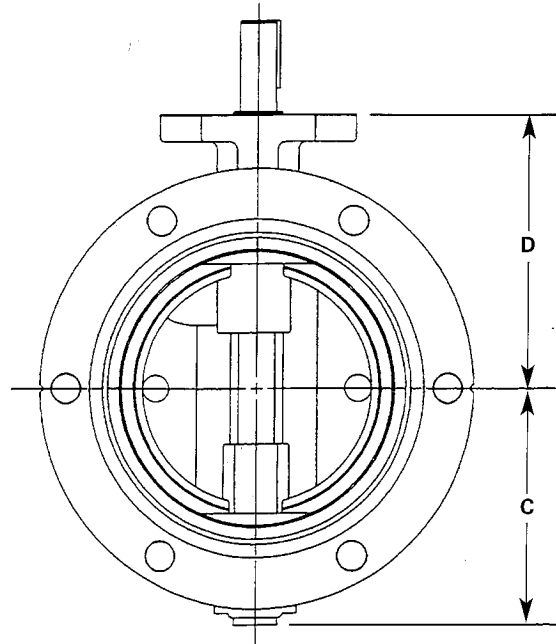
Dimensions

Basic Valve — Mechanical Joint

Valve Size	A	B	C	D	E
4 100	8.56 217	4.75 121	4.75 121	5.56 141	2.50 64
6 150	8.88 226	4.75 121	6.03 153	7.00 178	2.50 64
8 200	9.50 241	5.00 127	7.16 182	8.31 211	2.50 64
10 250	9.88 251	5.25 133	8.38 213	9.50 241	2.50 64
12 300	10.00 254	5.38 137	9.66 245	11.00 279	2.50 64
14 350	12.38 315	6.62 168	10.91 277	11.50 292	3.50 89
16 400	12.75 324	6.75 171	12.06 306	12.75 324	3.50 89
18 450	13.42 341	7.00 178	14.03 356	13.50 343	3.50 89
20 500	13.38 340	7.12 181	15.02 382	15.25 387	3.50 89
24 600	13.75 349	7.50 191	19.00 483	18.41 468	3.50 89
30 750	17.75 451	9.62 244	23.00 584	22.62 575	4.00 102
36 900	18.00 458	10.00 254	27.38 696	25.62 651	4.00 102
42 1100	18.75 476	10.25 260	30.91 785	30.41 772	4.00 102
48 1200	19.62 498	10.62 270	35.38 898	33.00 838	4.00 102

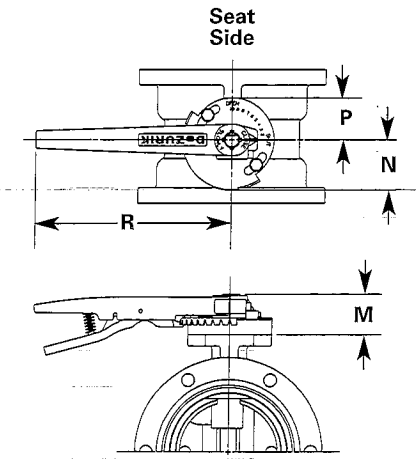
Inches
Millimeter

Note: All dimensions are subject to change without notice.
Request certified drawings for use in preparing piping layouts.



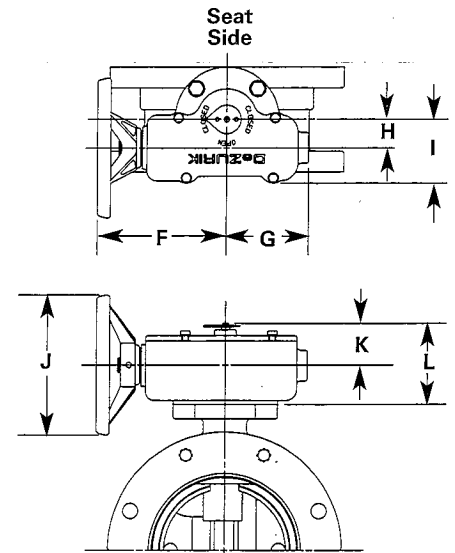
Lever Actuator

Valve Size	M	N	P	R
3-4 80-100	2.56 65	3.56 90	3.00 76	14.00 356
6-8 150-200	2.88 73	3.56 90	3.00 76	14.00 356



Handwheel Actuator M-Series 3-24" (80-600mm)

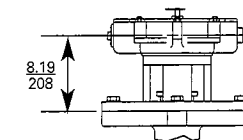
Valve Size (Handwheel Size)	F	G	H	I	J	K	L
3-12 8-300	7.44 189	4.75 121	1.62 41	3.62 92	8.00 203	2.25 57	5.00 127
14-16 350-400	11.69 297	4.75 121	1.62 41	3.62 92	16.00 406	2.25 57	5.00 127
18 450	9.81 249	7.25 184	3.50 89	7.19 183	8.00 203	2.19 56	5.19 132
20 500	14.06 357	7.25 184	3.50 89	7.19 183	16.00 406	2.19 56	5.19 132
24 600 (HD12)	10.06 256	7.25 184	3.50 89	7.19 183	12.00 305	2.19 56	5.19 132
24 600 (HD16)	13.06 332	7.25 184	3.50 89	7.19 183	16.00 406	2.19 56	5.19 132
24 600 (HD24)	15.69 399	7.25 184	3.50 89	7.19 183	24.00 610	2.19 56	5.19 132



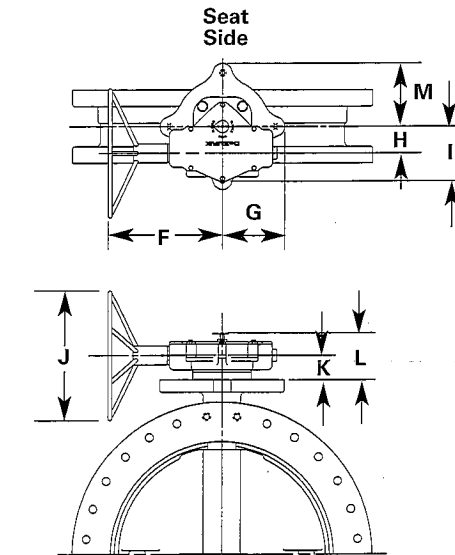
Handwheel Actuator M-Series 30-36" (750-900mm)

Valve Size (Handwheel Size)	F	G	H	I	J	K	L	M
30 750 (HD16)	13.06 332	8.25 210	3.50 89	7.19 183	16.00 406	3.19 81	6.19 157	8.25 210
30-36 750-900 (HD24)	15.69 399	8.25 210	3.50 89	7.19 183	24.00 610	3.19 81	6.19 157	8.25 210
30-36 750-900 (HD36)	21.00 533	8.25 210	3.50 89	7.19 183	36.00 914	3.19 81	6.19 157	8.25 210

Inches
Millimeter



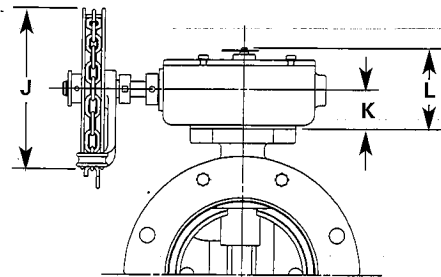
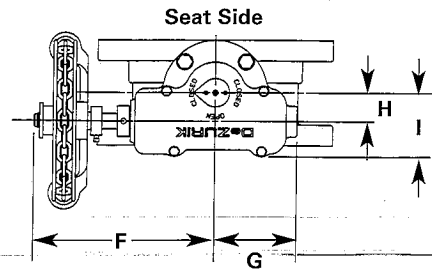
Optional Adjustable Packing Construction
30-36" (80-900mm)



Dimensions (continued)

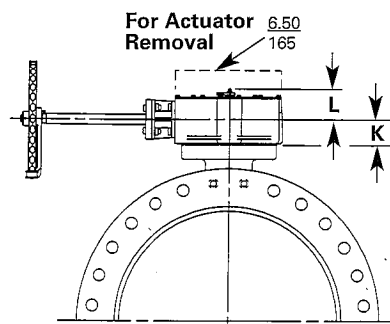
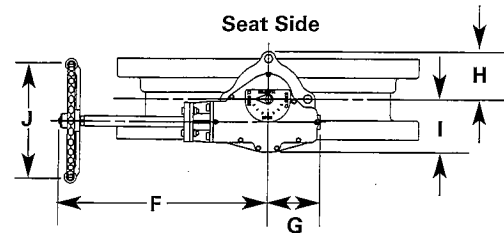
Chainwheel Actuator M-Series 3-20" (80-500mm)

Valve Size	F	G	H	I	J	K	L
3-10 8-250	10.38 264	4.75 121	1.62 41	3.62 92	9.19 233	2.25 57	5.00 127
12 300	12.78 325	4.75 121	1.62 41	3.62 92	9.19 233	2.25 57	5.00 127
14-16 350-400	14.78 375	4.75 121	1.62 41	3.62 92	20.06 510	2.25 57	5.00 127
18 450	15.19 386	7.25 184	3.50 89	7.19 183	9.19 233	2.19 56	5.19 132
20 500	16.00 406	7.25 184	3.50 89	7.19 183	20.06 510	2.19 56	5.19 132



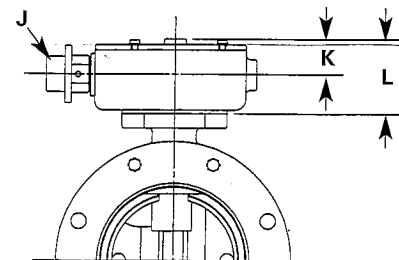
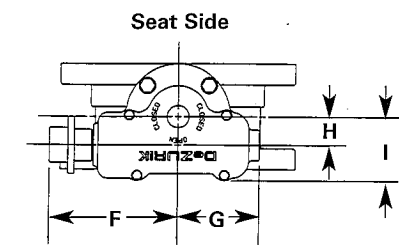
Chainwheel Actuator M-Series 24-36" (600-900mm)

Valve Size (Chainwheel Size)	F	G	H	I	J	K	L	M
24 600 (MS-7-CW20)	25.62 651	7.25 184	3.50 89	7.19 183	20.06 510	2.19 56	5.19 132	6.38 162
24 600 (MS-7-CW30)	25.62 651	7.25 184	3.50 89	7.19 183	29.75 756	2.19 56	5.19 132	6.38 162
30 750 (MS-7-CW20)	25.62 651	8.25 210	3.50 89	7.19 183	20.06 510	3.19 81	6.19 157	8.25 210
30 750 (MS-7-CW30)	25.62 651	8.25 210	3.50 89	7.19 183	29.75 756	3.19 81	6.19 157	8.25 210
36 900 (MS-7-CW30)	25.62 651	8.25 210	3.50 89	7.19 183	29.75 756	3.19 81	6.19 157	8.25 210



Nut (M-Series)

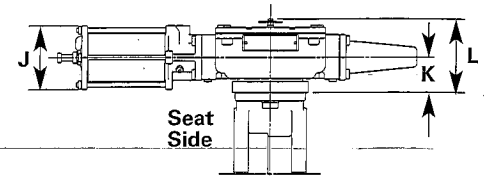
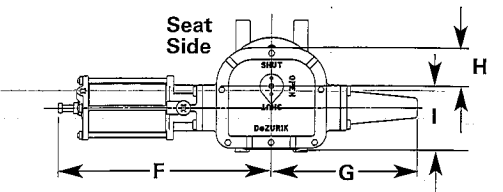
Valve Size	F	G	H	I	J	K	L
3-16 80-400	7.38 188	4.75 121	1.62 41	3.62 92	2.00 51	2.25 57	5.00 127
18-24 450-600	9.75 248	7.25 184	3.50 89	7.19 183	2.00 51	2.19 56	5.19 132
30-36 750-900	10.25 260	7.56 192	4.00 102	8.12 206	2.00 51	3.06 78	5.94 151



Inches
Millimeter
Note: All dimensions are subject to change without notice.
Request certified drawings for use in preparing piping layouts.

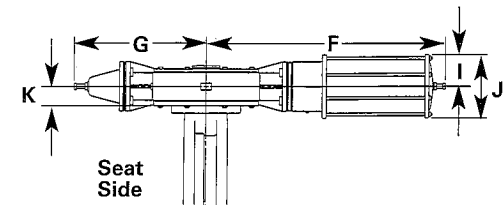
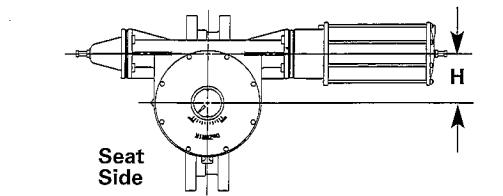
Cylinder Actuator (T-Series)

Valve Size (Cylinder Size)	F		G	H	I	J	K	L
	Pneumatic	Hydraulic						
3-4 80-100	14.69 373	17.69 449	10.06 256	2.62 67	4.38 111	4.38 111	2.41 61	5.31 135
6-10 150-250 (C3)	17.69 449	17.69 449	16.31 414	3.25 83	5.94 151	4.38 111	1.81 46	4.69 119
6-12 150-300 (C4)	18.12 460	21.12 536	16.31 414	3.25 83	5.94 151	5.38 137	1.81 46	4.69 119
12 300 (C6)	18.88 480	21.88 556	16.31 414	3.25 83	5.94 151	7.88 200	1.81 46	4.69 119
14-16 350-400 (C6)	23.44 595	26.44 672	17.88 454	4.44 113	8.12 206	7.88 200	3.12 79	5.84 148
18-20 450-500 (C6)	23.44 595	26.44 672	17.88 454	4.44 113	8.12 206	7.88 200	3.12 79	6.03 153
18-20 450-500 (C8)	24.06 611	27.06 687	17.88 454	4.44 113	8.12 206	10.25 260	3.12 79	6.03 153



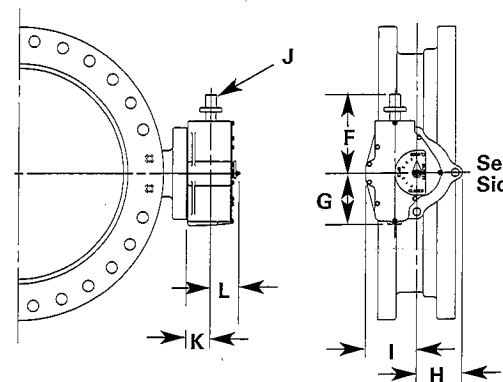
Cylinder Actuator (G-Series)

Valve Size (Cylinder Size)	F		G	H	I	J	K
	Pneumatic	Hydraulic					
24 600 (GS-12-PC8)	31.50 800	32.75 832	17.50 445	6.88 175	4.25 108	8.50 216	3.25 83
24 600 (GS-12-PC10)	31.62 803	33.88 861	17.50 445	6.88 175	5.25 133	10.50 267	3.25 83
24 600 (GS-16-PC10)	43.88 1115	41.78 1061	24.25 616	9.00 229	5.88 149	11.75 298	3.50 89
30 750 (GS-12-PC8)	31.50 800	32.75 832	17.50 445	6.88 175	4.25 108	8.50 216	3.50 89
30-36 750-900 (GS-12-PC10)	31.62 803	33.88 861	17.50 445	6.88 175	5.25 133	10.50 267	3.50 89
30-42 750-1100 (GS-16-PC10)	43.25 1099	41.78 1061	24.25 616	9.00 229	5.88 149	11.75 298	3.75 95
36-42 900-1100 (GS-16-PC12)	44.62 1133	43.50 1105	24.25 616	9.00 229	7.00 178	14.00 356	3.75 95



Nut (LA-Series)

Valve Size (Actuator Size)	F	F with Spur Gear	G	H	I	J	K	L
30-48 750-1200 (LA-4)	14.19 360	20.81 529	9.38 238	8.25 210	9.44 240	2.00 51	4.41 112	6.25 159
36-54 900-1400 (LA-6)	16.19 411	22.81 579	12.12 308	8.25 210	11.12 282	2.00 51	4.41 112	6.25 159
42-54 1100-1400 (LA-10)	20.19 513	26.81 681	16.81 427	8.25 210	16.12 409	2.00 51	4.81 122	5.84 148

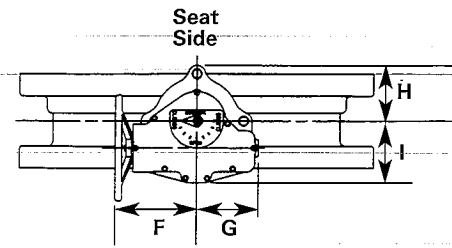


Inches
Millimeter

Dimensions (continued)

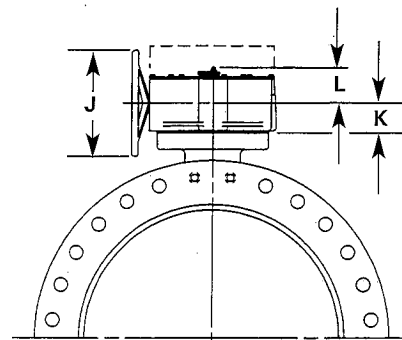
Handwheel LA-Series 30-48" (750-1200mm)

Actuator Size	F	F with Spur Gear	G	H	I	J	K	L
LA-4-HD12	11.62 295	18.25 464	9.38 238	8.25 210	9.44 240	12.00 305	4.41 112	6.25 159
LA-4-HD16	12.25 311	18.88 480	9.38 238	8.25 210	9.44 240	16.00 406	4.41 112	6.25 159
LA-4-HD24	20.25 514	26.88 683	9.38 238	8.25 210	9.44 240	24.00 610	4.41 112	6.25 159
LA-4-HD30	22.88 581	29.50 749	9.38 238	8.25 210	9.44 240	30.00 762	4.41 112	6.25 159
LA-4-HD36	25.50 648	32.12 816	9.38 238	8.25 210	9.44 240	36.00 914	4.41 112	6.25 159



Handwheel LA-Series 36-54" (900-1400mm)

Actuator Size	F	F with Spur Gear	G	H	I	J	K	L
LA-6-HD12	13.62 346	20.25 514	12.12 308	8.25 210	11.12 282	12.00 305	4.41 112	6.25 159
LA-6-HD16	14.25 362	20.88 530	12.12 308	8.25 210	11.12 282	16.00 406	4.41 112	6.25 159
LA-6-HD24	22.25 565	28.88 734	12.12 308	8.25 210	11.12 282	24.00 610	4.41 112	6.25 159
LA-6-HD30	24.88 632	31.50 800	12.12 308	8.25 210	11.12 282	30.00 762	4.41 112	6.25 159
LA-6-HD36	27.50 699	34.12 867	12.12 308	8.25 210	11.12 282	36.00 914	4.41 112	6.25 159



Handwheel LA-Series 42-54" (1100-1400mm)

Actuator Size	F	F with Spur Gear	G	H	I	J	K	L
LA-10-HD12	17.62 448	24.25 616	16.81 427	8.25 210	16.12 409	12.00 305	4.81 122	5.84 148
LA-10-HD16	18.25 464	24.88 632	16.81 427	8.25 210	16.12 409	16.00 406	4.81 122	5.84 148
LA-10-HD24	26.25 667	32.88 835	16.81 427	8.25 210	16.12 409	24.00 610	4.81 122	5.84 148
LA-10-HD30	28.88 734	35.50 902	16.81 427	8.25 210	16.12 409	30.00 762	4.81 122	5.84 148
LA-10-HD36	31.50 800	38.12 968	16.81 427	8.25 210	16.12 409	36.00 914	4.81 122	5.84 148

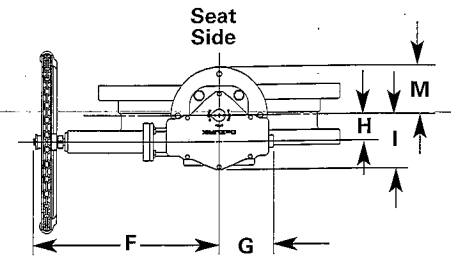
Inches

Millimeter

Note: All dimensions are subject to change without notice.
Request certified drawings for use in preparing piping layouts.

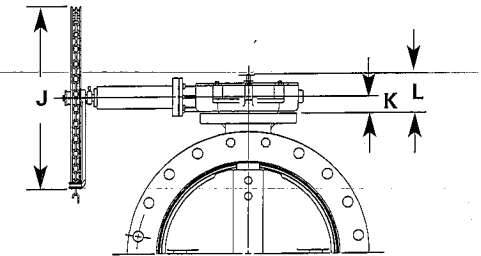
Chainwheel LA-Series 30-48" (750-1200mm)

Actuator Size	F	F with Spur Gear	G	H	I	J	K	L
LA-4-CW12	35.00 889	41.62 1057	9.38 238	8.25 210	9.44 240	12.75 324	4.41 112	6.25 159
LA-4-CW20	35.00 889	41.62 1057	9.38 238	8.25 210	9.44 240	20.06 510	4.41 112	6.25 159
LA-4-CW30	35.00 889	41.62 1057	9.38 238	8.25 210	9.44 240	29.75 756	4.41 112	6.25 159



Chainwheel LA-Series 36-54" (900-1400mm)

Actuator Size	F	F with Spur Gear	G	H	I	J	K	L
LA-6-CW12	37.00 940	43.62 1108	12.12 308	8.25 210	11.12 282	12.75 324	4.41 112	6.25 159
LA-6-CW20	37.00 940	43.62 1108	12.12 308	8.25 210	11.12 282	20.06 510	4.41 112	6.25 159
LA-6-CW30	37.00 940	43.62 1108	12.12 308	8.25 210	11.12 282	29.75 756	4.41 112	6.25 159



Chainwheel LA-Series 42-54" (1100-1400mm)

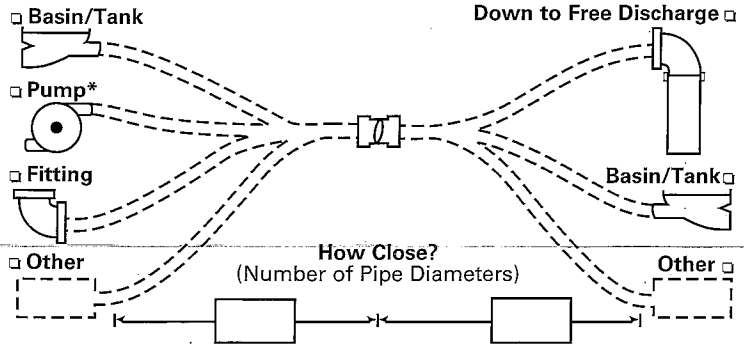
Actuator Size	F	F with Spur Gear	G	H	I	J	K	L
LA-10-CW12	41.00 1041	47.62 1210	16.81 427	8.25 210	16.12 409	12.75 324	4.81 122	5.84 148
LA-10-CW20	41.00 1041	47.62 1210	16.81 427	8.25 210	16.12 409	20.06 510	4.81 122	5.84 148
LA-10-CW30	41.00 1041	47.62 1210	16.81 427	8.25 210	16.12 409	29.75 756	4.81 122	5.84 148

Inches

Millimeter

Note: All dimensions are subject to change without notice.
Request certified drawings for use in preparing piping layouts.

DeZURIK Butterfly Valve Applications Data Input Checklist



Part A: Check boxes and complete lines to show upstream/downstream configuration, enter distances in pipe diameters.

*Attach pump curve to checklist if available.

Part B: Check off or enter operating conditions.

- Valve Function? Open/Shut Throttling Modulating Control
- Where Installed? Buried Submerged Above Ground, In Plant
- Line Fluid? Fresh Water Sewage Air Other? _____
- Maximum Fluid Temperature? _____°C _____°F
- Line Size? _____ inches _____ (mm) (nominal)
- Normal Working Pressure? _____ psi _____ kPa
Maximum (Shutoff) Pressure Differential? _____ psi _____ kPa
- Normal Wide Open Valve Flow? _____ flow rate or _____ flow units
- Emergency Maximum (Line Break, Etc.) Flow? _____ flow rate _____ flow units
- (If Throttling or Modulating Control) Flow Range Desired?
Maximum Flow? _____ flow rate _____ flow units
Minimum Flow? _____ flow rate _____ flow units
- Pipe Connection? _____ Flanged _____ Mechanical Joint _____ Other

Part C: Check off or enter operator requirements.

- Operator Type? Manual: Lever Lead Screw Gear Other?
Power: Cylinder Electric Other?
- Direction of Rotation To Open: Clockwise—(OR) Counter clockwise—(OL)
- Cylinder Specifications:
 - Supply Type and Pressure? Water _____ psi _____ kPa Oil _____ psi _____ kPa
 Air _____ psi _____ kPa Other _____ psi _____ kPa
 - Fail Safe? Yes No; If yes which way if valve fails? Open Close
 - Operating Times? _____ sec Open to Close; _____ sec Close to Open
 - Accessories?

<input type="checkbox"/> Speed Control	<input type="checkbox"/> Limit Switches (ES) (Qty: _____ O, _____ C, _____ I)
<input type="checkbox"/> Solenoid W/Manual Override	<input type="checkbox"/> Positioner
<input type="checkbox"/> Manual Override (On loss of supply press.)	<input type="checkbox"/> Solenoid W/O Manual Override
<input type="checkbox"/> Other? _____	
- Electric Specifications:
 - Supply? _____ Volts _____ Phase _____ Hz
 - Duty Cycle? Intermittent Continuous
 - Starter/Control Needs? _____
 - Operating Times? _____ sec (Note: 60 sec per AWWA unless specified)
 - Accessories?

<input type="checkbox"/> AUX Switches	<input type="checkbox"/> Potentiometer	<input type="checkbox"/> Slidewire Receiver	<input type="checkbox"/> Reversing Starter
<input type="checkbox"/> Heaters	<input type="checkbox"/> Control Station	<input type="checkbox"/> Control Transformer	<input type="checkbox"/> Other? _____

Sales and Service

SPX Valves & Controls is an ISO 9001 Certified Company
For information about our worldwide locations, approvals and certifications, and local representatives, please visit our web site.

Web Site: www.spxvalves.com E-Mail: info@spxvalves.com

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