

Bid Opportunity 864-2012
Appendix C – Shop Drawings



Submittal Data Sheet

Date: 12/05/11

POWER & MINE SUPPLY CO LTD

P.O. PO80026

4-75 MERIDIAN DRIVE

FACTORY ORDER NO 111264
FACTORY SALES ORDER NO 320335
REV 0

WINNIPEG, MB
R2R 2V9

PROJ. NAME City of Winnipeg Bid Opportunity
680-2011 PO80026

Fact. ITEM	Cust. ITEM	QTY	DESCRIPTION	PART NO. 9619286
2	2	1	BAW,48,F1,CI,NBRN-NBR,150B,DI-S1,1221D2*X*AFZ129	

Style	BAW	DeZURIK AWWA C504 Rubber-Seated Butterfly Valve
Size	48	48 Inch
End Connection	F1	Flanged, Drilled to ANSI B16.1 Class 125/150
Body Material	CI	Cast Iron, ASTM A126 Class B
Packing	NBRN	NBR (Acrylonitrile-Butadiene), Self-Adjusting Multiple V-Ring; -20 to 180°F (-29 to 82°C)
Seat Material	NBR	NBR (Acrylonitrile-Butadiene); -20 to 180°F (-29 to 82°C)
Service Class	150B	AWWA Class 150B
Disc	DI	Ductile Iron, ASTM A536 Grade 65-45-12 Type 316 Stainless Steel Seating Edge (3" - 20" =ASTM A276, 24" and larger - ASTM A240)
Shaft Option	S1	304 Stainless Steel, ASTM A276
Act Type	1221D2	Selection Not Valid
	X	Specified in Modifier Below
Modifier	AFZ129	LIMITORQUE MX-10, P/N 1400699. FUW GEARBOX P/N 1400700. MOTOR MOUNTED ON FLOORSTAND, GEAR UNIT ON VALVE, W/304 STAINLESS STEEL EXTENSION, C/L OF VALVE TO BASE OF FLOORSTAND = 132IN (11'0") BACK SIDE OF FLANGE SPOT FACED. STANDARD TEST CERTIFICATION EXCEPT VALVE TESTED WITH FLANGES VERTICAL AND SHAFT HORIZONTAL. CERTIFIED PHYSICAL AND CHEMICAL TEST REPORTS PER SPEC QY00064 CERTIFIED HOLIDAY SPARK TEST ON INTERIOR & EXTERIOR CERTIFICATION OF PAINT AS TO TYPE AND THICKNESS

RELATED DOCUMENTS

J58292	DWG INST F1 LIM HBC-4/S6 W/MX-
A47550	DWG INST VALVE BAW F1 24-72"

FEATURES

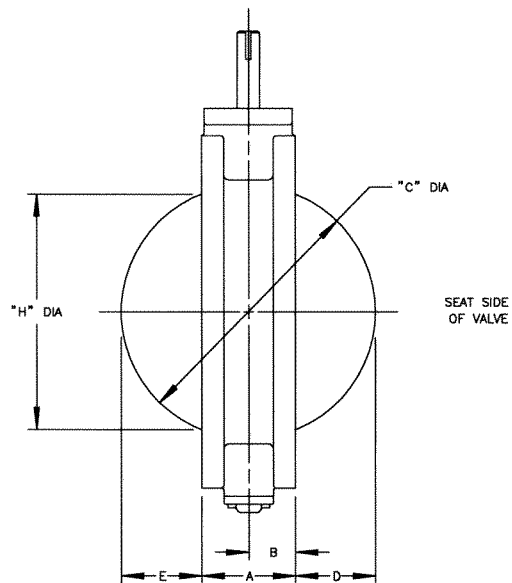
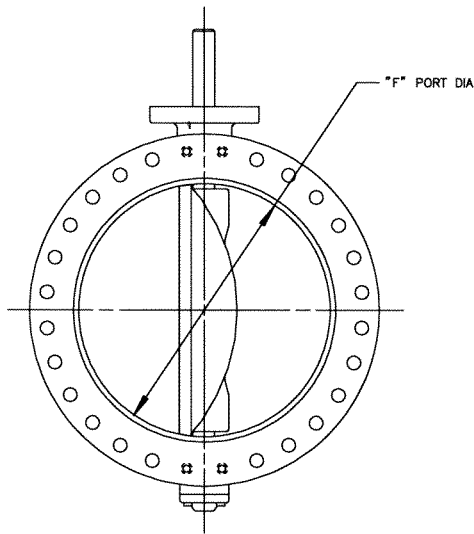
CW CERTIFICATE OF DEZURIK STANDARD SEAT AND SHELL HYDRO TEST, MTR'S
CUSTOMER INSPECTION OF HYDROSTATIC SHELL AND SEAT LEAK TEST
CUSTOMER INSPECTION OF HOLIDAY SPARK TEST

VALVE SIZE		VALVE CLASS	DIMENSIONS							
INCH	MM		A	B	C	D	E	F	H	
24	600	150B & F1 (250B)	8.00	4.00	23.06	7.51	7.51	22.91	21.68	
			203	102	586	191	191	582	551	
24	600	F2 (250B)	12.00	6.00	23.06	5.51	5.51	22.91	19.75	
			305	152	586	140	140	582	502	
28	700	150B & F1 (250B)	12.00	6.00	27.06	7.41	7.41	26.76	23.92	
			305	152	687	188	188	680	608	
30	750	25A, 75B, 150B & F1 (250B)	12.00	6.00	29.06	8.53	8.53	28.91	26.85	
			305	152	738	217	217	734	682	
30	750	F2 (250B)	12.00	6.00	29.06	8.53	8.53	28.91	26.58	
			305	152	738	217	217	734	675	
36	900	25A, 75B, 150B & F1 (250B)	12.00	6.00	35.06	11.53	11.53	34.91	33.33	
			305	152	891	293	293	887	847	
36	900	F2 (250B)	15.00	7.50	35.06	10.03	10.03	34.91	31.81	
			381	191	891	255	255	887	808	
42	1100	25A, 75B, 150B & F1 (250B)	12.00	6.00	41.06	14.53	14.53	40.91	39.74	
			305	152	1043	369	369	1039	1009	
42	1100	F2 (250B)	15.00	7.50	41.06	13.03	13.03	40.91	38.71	
			381	191	1043	331	331	1039	983	
48	1200	25A, 75B, 150B & F1 (250B)	15.00	7.50	47.06	16.02	16.02	46.91	44.70	
			381	191	1195	407	407	1192	1135	
48	1200	F2 (250B)	15.00	7.50	47.06	16.02	16.02	46.91	44.70	
			381	191	1195	407	407	1192	1135	
54	1400	25A, 75B, 150B & F1 (250B)	15.00	7.50	53.06	19.04	19.04	53.00	51.00	
			381	191	1348	484	484	1346	1295	
54	1400	F2 (250B)	15.00	7.50	53.06	19.04	19.04	53.00	51.00	
			381	191	1348	484	484	1346	1295	
60	1500	75B & 150B	15.00	7.50	59.06	22.04	22.04	59.00	57.28	
			381	191	1500	560	560	1499	1455	
66	1700	75B & 150B	18.00	9.00	65.06	23.54	23.54	65.00	62.61	
			457	229	1653	598	598	1651	1590	
72	1800	75B & 150B	18.00	9.00	71.06	26.54	26.54	71.00	68.83	
			457	229	1805	674	674	1803	1748	

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
150B & F1 (250B)	915	1360	1850	2800	4050	5750	7500	9825	12100	15150
F2 (250B)	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).
- F1 (250B) PER ANSI B16.1 CLASS 125.
F2 (250B) PER ANSI B16.1 CLASS 250.



K	03/12	05/24/04
J	03/12	05/28/06
I	03/12	07/10/04
H	01/22	12/09/04
G	01/18	02/13/04
F	03/12	09/11/02
E	07/12	05/11/02
D	03/09	12/09/04
C	03/12	04/29/07
B	03/12	02/07/07
A		

DeZURIK
Sartell, MN USA 56377
www.dezurik.com

24-72 FLANGED AWWA BUTTERFLY VALVES SHOWING DISC CLEARANCE IN FULL OPEN POSITION, VALVE WEIGHTS AND PORT DIAMETER			
DOCT. CODE	DRAWN	APPROVED	WCB
C1	CHECKED	DATE	01/13/97

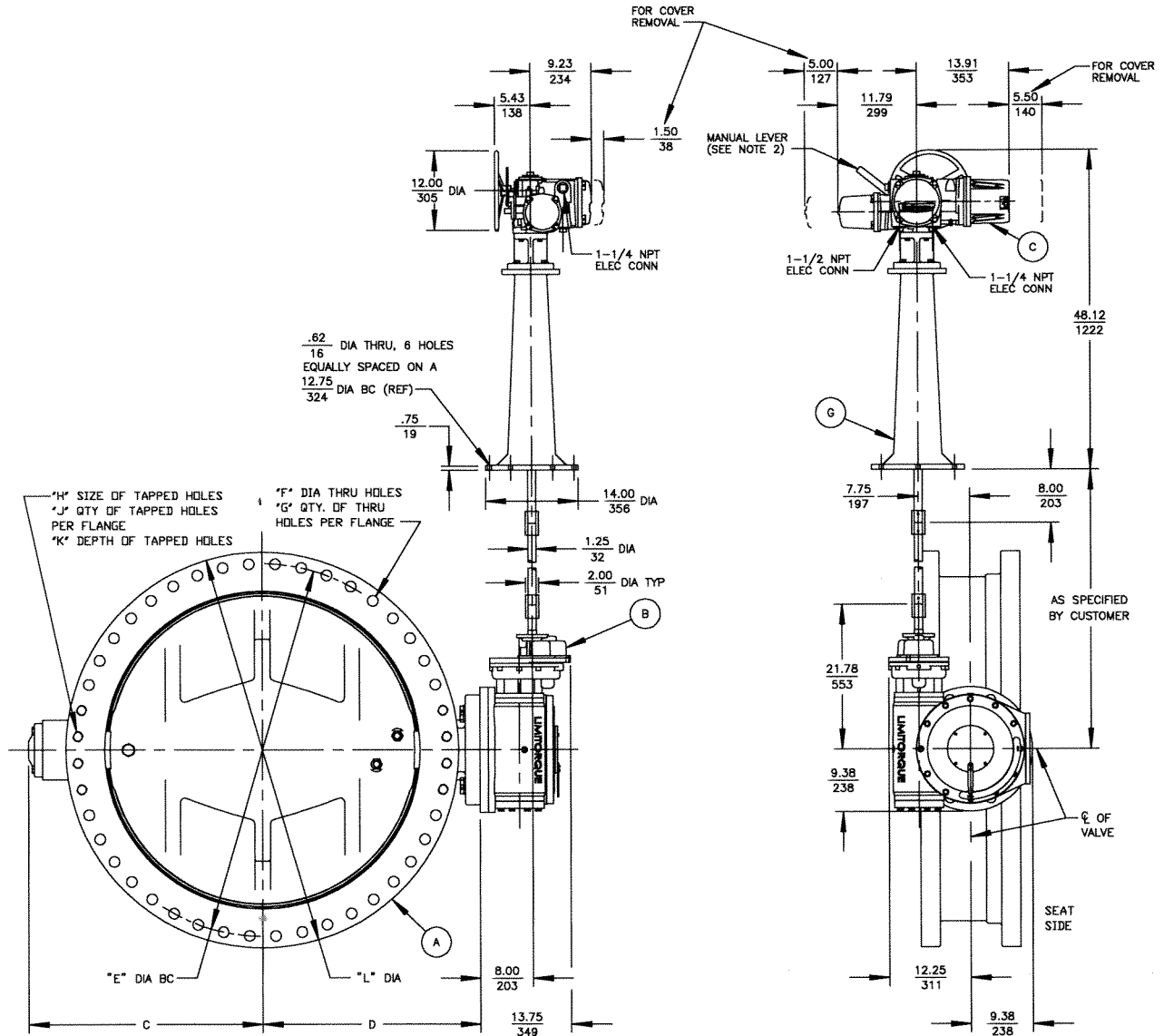
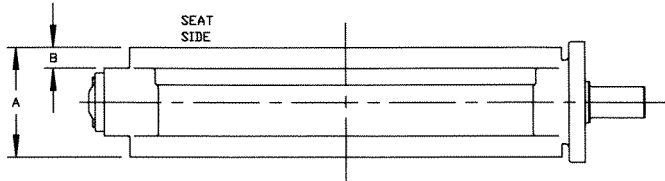
A47550

VALVE SIZE	DIMENSIONS										
	INCHES MILLIMETERS										
	A	B	C	D	E	F	G	H	J	K	L
36	12.00 305	2.50 64	27.38 695	25.62 651	42.75 1086	1.62 41	24	1-1/2-8 UNC	8	2.38 60	46.00 1168
42	12.00 305	2.75 70	30.91 785	30.42 773	49.50 1257	1.62 41	28	1-1/2-8 UNC	8	2.59 66	53.00 1346
48	15.00 381	2.88 73	35.38 899	33.00 838	56.00 1422	1.62 41	36	1-1/2-8 UNC	8	2.75 70	59.50 1511

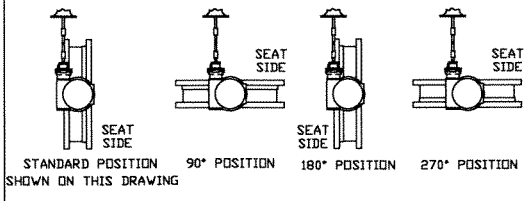
A	VALVE
B	ACTUATOR
C	MOTOR
G	FLOORSTAND

NOTE:

1. 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.
2. FOR MANUAL OPERATION PUSH LEVER IN DIRECTION OF ARROW ONLY. UNIT REMAINS IN HAND OPERATION UNTIL MOTOR IS ENERGIZED.
3. FLOW MAY BE IN EITHER DIRECTION. FOR MAINTENANCE PURPOSES THE SEAT SIDE SHOULD BE ACCESSIBLE.



ACTUATOR MOUNTING POSITIONS



DeZURIK
Sartell, MN USA 56377
www.dezurik.com

BAW BUTTERFLY VALVES SIZE 36-48 FLANGED
LIMITORQUE HBC-4/S6 GEAR UNIT ACTUATORS, MX-10 MOTOR
WITH SIDE MOUNTED HANDWHEEL MOUNTED ON FLOORSTAND

DOCT. CODE	DRAWN	APPROVED
C1	BMP	RDD
CHECKED	DATE	
	12/01/11	

J58292

DeZURIK BAW BUTTERFLY VALVES - Motor Actuator Sizing

12/6/2011

Valve Description: 48 Inch W.O. 881335
 Actuator: Limitorque MX-10, HBC-4/6 Item 2

BAW Valve Application Parameters

Valve Size (inches): 48 inch
 or Valve Size (mm): _____ mm
 Maximum Pressure: (P) 100 psi
 Seat Upstream
 Seat Downstream
 Flow Velocity: (V) 16 ft/sec
 Stem Diameter: (d) 5.625 inch
 Bearing Coefficient of Friction: (f) 0.10
 Design Safety Factor: (S) 1.50
 Pressure Class: 250B
 150B
 75B
 25A

Actuator Parameters (from supplier)

Actuator Rated Output Torque: (Ta) 12,150 ft-lbs

Calculated Valve Torque

Valve Body Size:	48 inch	$D = 48$
Pressure Class:	150B	$C = 11.0$
Bearing Torque	4,241 ft-lbs	$T_b = P \cdot D^2 \cdot \pi \cdot d \cdot f / 8 / 12$
Seating Torque	2,112 ft-lbs	$T_s = D^2 \cdot C$
Hydrostatic Torque:	783 ft-lbs	$T_h = 3.06 \cdot (D/12)^4$
Valve Operating Torque:	7,137 ft-lbs	$T_v = T_b + T_s + T_h$
Maximum Dynamic Torque:	6,551 ft-lbs	$T_d = \text{dynamic torque}$
Operating Torque with Safety Factor:	10,705 ft-lbs	$T_f = T_v \cdot S$

Calculated Actuator Torque Data

Actuator Rated Output Torque:	12,150 ft-lbs	$T_a = (\text{from supplier})$
Calculated Actuator Safety Factor:	1.70	$S_a = T_a / T_v$

10. RELAY BOARD

SET JUMPER J1 TO POSITION 1-2 ON OPTIONAL RELAY BOARD.
CONNECT 12-PIN CONNECTOR WITH YELLOW WIRES TO
ADAPTER HARNESS (6-025-0886-5) THEN TO J3

TYPE/TAPS APPL. VOLTAGES	TYPE/TAPS APPL. VOLTAGES	TYPE/TAPS APPL. VOLTAGES
1 1.06V 110V 1.20V	2 2.26V 2.26V/2.30V/2.40V	3 5.05V 5.25V
2.00V 2.06V	3.87V 4.00V/4.15V	5.30V 5.50V
1.21V 2.20V	4.50V 4.60V/4.66V/4.80V/5.72V	5.75V/6.00V

TABLE 1 - TRANSFORMER TAPPING OPTIONS

1. FUSES

FS1 (PRIMARY) 600V AC, 100mA IIR RATING, 1/4" DIA. TUBULAR, 5mm. TUBE, UL LISTED, CSA CERTIFIED
FS2 (PRIMARY) 5 x 20mm, TIME DELAY
FS3 (SECONDARY) 5 x 20mm, GLASS TUBE

2. REMOTE INPUTS

SIGNAL THRESHOLD - MINIMUM "ON" 19.2V AC/DC
MINIMUM "OFF" 10 mA / 110V AC
MAX. LOAD - 2 mA / 24V DC

REQUIRED CONTROL SIGNAL DURATION = 350ms MIN.

INPUTS 0, 1, 2 ARE FIELD CONFIGURABLE FOR CLOSE/OPEN INHIBIT USER INPUT OR ESD. IN ADDITION, INPUT 2 MAY BE CONFIGURED FOR DEFAULT INPUT CONFIGURATION.

INPUT 0 - ESD, INHIBIT
INPUT 1 - CLOSE, INHIBIT
INPUT 2 - CLOSE, INHIBIT

3. REMOTE INPUT JUMPERS

JUMPERS CAN BE USER WIRE TO CONNECT DIG COMMONS #1, 2 & 3 (AS NEEDED) TO THE 3 REMOTE WIRING GROUPS BUT DIFFERENT SOURCES MAY POWER ANY ONE GROUP. POWER SOURCES ARE USED, ENSURE THAT THE POLARITIES ARE CORRECT.

4. STATUS FEEDBACK OUTPUT SWITCHES

STATUS FEEDBACK CONTACTS (S1 & S2) MAY BE INDIVIDUALLY CONFIGURED AS NORMALLY OPEN OR NORMALLY CLOSED, LATCHED OR UNLATCHED. ONE OF THE FUNCTIONS LISTED BELOW.

- CLOSE
- MID-TRAVEL
- STOPPED
- STOPPED AND REVERSE
- LOCAL STOP/OFF
- ANALOG IP LOST
- REVERSE
- REVERSE SELECTED
- ESD CONTROL
- HARDWARE FAILURE

5. CONTACT RATINGS

R1-R4 - 5 AMPS @ 250 VAC OR 30 VDC (RESISTIVE)
MONITOR - 5 AMPS @ 250 VAC OR 30 VDC (RESISTIVE)

6. EXACT END POSITION INDICATION

ON TORQUE-SLATED VALVES THE LCI AND "R" CONTACTS, CONFIGURED AS END OF TRAVEL LIMITS, INDICATE FULLY CLOSED VALVE POSITION.

7. DEFAULT [R] SETTING

THE DEFAULT [R] SETTING IS SHOWN IN THE SCHEMATIC. THE CONTACT STATES SHOWN IN THE SCHEMATIC REPRESENT A FULLY CLOSED VALVE.

OUTPUT SWITCH	VALVE POSITION	FUNCTION	CLOSE LIMIT	OPEN LIMIT
R1	CLOSE			
R2	CLOSE			
R3	CLOSE			
R4	CLOSE			

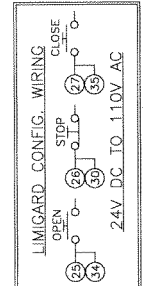
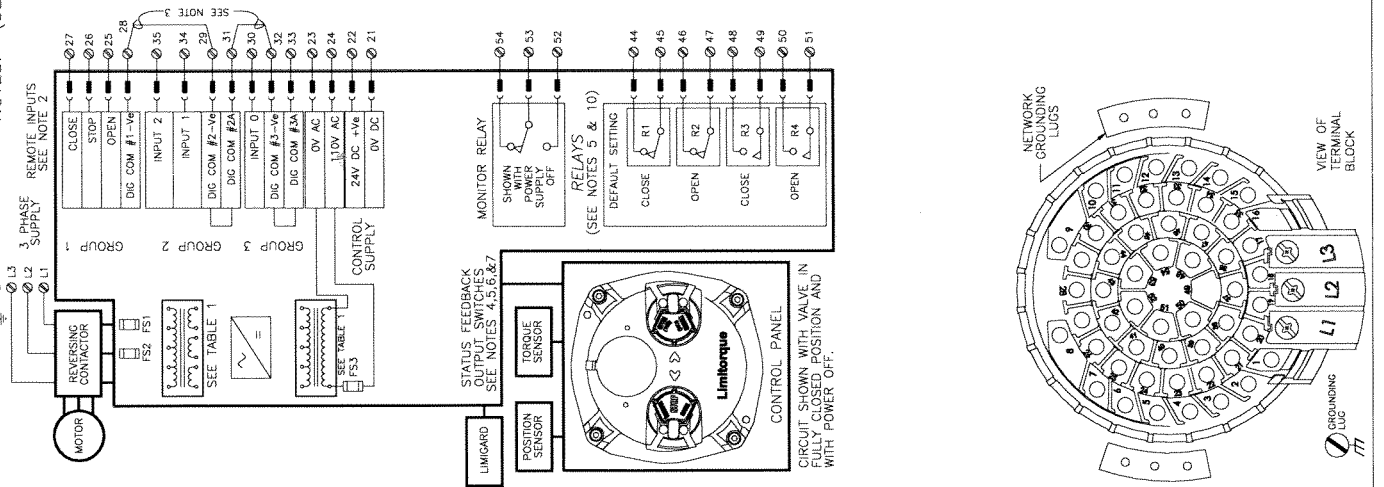
8. MAXIMUM EXTERNAL LOAD

TERMINALS 21 AND 22 (24V DC)
TERMINALS 23 AND 24 (OPTIONAL 110V AC)
- 20W MAX EXT. LOAD

9. COMMAND PRIORITY

INHIBIT AND ESD COMMANDS WILL HAVE PRECEDENCE OVER 3-WIRE/ 4-WIRE COMMANDS.

NOTES: (SEE INSTALLATION & OPERATION MANUAL FOR DETAILS)



TERMINAL POINT FUNCTION	EXTERNAL SUPPLY	INTERNAL SUPPLY
CLOSE (27)	OV AC (23) + 24V DC (22)	INTERNAL SUPPLY 24V DC
STOP (26)	110V AC (24)	INTERNAL SUPPLY 110V AC
OPEN (25)	OV DC (21)	

(-) NEGATIVE COMMON	(+) POS. COMMON
3-WIRE Configurable SET-up to give; Either -OPEN/CLOSE push-to-run (maintained) mode with mid-travel stop (stop before reverse)	ESD Configurable during SET-up to give following modes of ACTIONS on receipt of a maintained ESD signal: CLOSE/OPEN/STOP/IGNORIED at a time.
4-WIRE OPEN/STOP/CLOSE Push-and-release (maintained) mode with mid-travel stop	INHIBIT Configurable during SET-up to give; interlock/inhibit on maintained open or close contacts

DRAWN	DATE	DIG COM #1 (28)	DIG COM #2(A) (29)	DIG COM #3(A) (30)
RAC	7/18/08	OPEN INHIBIT (34)	CLOSE INHIBIT (35)	ESD (36)
CHECKED	DATE	OA. 110VAC/15VA.		
DPF	7/18/08			
APPROVED	DATE			
ZKC	7/18/08			

UNIT	TYPE	NO	REV	NO
MX-A	WD-MXG	01000	-1000	Rev.008
LIMITING Activation Systems				
MAX-A WIRING DIAGRAM				

DRAWN	DATE	UNIT	TYPE	NO	REV	NO
RAC	7/18/08	MX-A	WD-MXG	01000	-1000	Rev.008
CHECKED	DATE					
DPF	7/18/08					
APPROVED	DATE					
ZKC	7/18/08					

Flowserve®

Limitorque, Worcester, Automax

5114 Woodall Road
P.O. Box 11318
Lynchburg, VA 24506-1318

Phone: 434-528-4400
Fax: 434-845-9736
www.flowserve.com

Customer Data Sheet

SALES ORDER NO. 117327 REV 1	ORDER LINE 002	DATE ORDERED 10/28/11
CUSTOMER PURCHASE ORDER 111264		CUSTOMER NO. 89
OPERATOR EHENKEL		CONFIGURATION 123710.0
SOLD TO	DEZURIK 250 RIVERSIDE AVENUE NORTH SARTELL, MN 56377 UNITED STATES	

END USER WINNIPEG, CANADA
END PROJECT WINNIPEG BID NO 680

ACTUATOR INFORMATION

Electric Actuator Type MX-10 SERIES A
Enclosure Type WP&SUBM NEMA 3,4,4X,6,IP68
Electric Output RPM 18
Valve Torque 74 Ft Lbs 100 Nm
MX Set Torque 74 Ft Lbs 100 Nm
MX Requested Max Torque 125 Ft Lbs 170 Nm
MX Max Rated Torque 125 Ft Lbs 170 Nm
MX Stall Torque 188 Ft Lbs 255 Nm
Handwheel SIDE Mounted 12 Inch
Open Direction CCW
Lube SHC-632
MX Base Type MSS-FA10
MX Drive Nut Type HBC NUT
Outline Drawing 03-615-0004-1
Mounting Base Dwg 03-615-0005-1
Wiring Diagram WD-MXa-01000-1000
Disconnect Diagram
Conduit Entries 1-1/4,1-1/2,1-1/4
2-Speed Timer Y Quik Board N
Control Options: Network:STD Digital:OA Analog:NONE
Main Board :STD Wire Controls 3 WIRE MAINT
Disconnect Switch NONE
Warranty 2 YEAR

MOTOR INFORMATION

Motor Size 7
Motor Voltage 575
Mtr Phase/Frequency Hz 3/60
Motor Horsepower 0.31
Motor RPM 1140
Locked Rotor Amps (LRA) 4.6
Full Load Amps (FLA) 1.6

Instruction Manual LMENIM2306 on internet @ www.limitorque.com
Qualifications: The MXa complies with all the test parameters identified in Limitorque bulletin LMENBR2302.
Installation of the MXa in environments outside the parameters identified in bulletin LMENBR2302 voids the warranty.

TAGGING AND INFORMATION:



Limitorque, Worcester, Automax

5114 Woodall Road
P.O. Box 11318
Lynchburg, VA 24506-1318

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Fax: 434-845-9736
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END PROJECT WINNIPEG BID NO 680

TAG: 1400699