

MILLIKEN VALVE

OPERATION AND MAINTENANCE MANUAL

Submittal Date: February 22, 2018

Manufacturer:

Milliken Valve
401 S. Highland Ave.
Aurora, IL 60506
PH: (877) 655-6858
Fax: (630) 844-4160

Name and Address of Local Sales Representative:

Southwest Valve, LLC.
402 W. Bedford #111
Fresno, CA 93711
Phone: 559-261-2703
Fax: 559-261-2711

Project Name: Manteca WWQF Digester Improvements - Manteca, CA

Product: Plug Valves – Manual

Milliken SO #: 2226531 ML

TABLE OF CONTENTS

Milliken Order Number: 2226531 ML

Plug Valves

Section 1

Equipment Record:

List of Equipment with Drawing References
General Arrangement Drawings

Section 2

Plug Valve Data:

Equipment Summary Forms- Manual Valves

Millcentric Plug Valve Operation and Maintenance Manual Series 600

Functional Description

Safety & Storage

Installation

Operating Instructions

Preventative Maintenance

Maintenance Instructions

Troubleshooting

Spare Parts

Cross Section Drawing -Parts List

Section 3:

Spare Parts & Labor:

Recommended Spare Parts and Service

Local Service Representative

Section 4:

Documentation:

Warranty

Equipment Record

LIST OF EQUIPMENT

Milliken Order No.: 2226531 ML

ITEM	TAG	QTY	EQUIPMENT DESCRIPTION	DRAWING REFERENCE
6.0	NONE	9	2" 611 FLANGE PLUG VALVE W/ LEVER O	G.A.: S46894
7.0	SP-VFPVP	22	4" 601 FLANGE PLUG VALVE TORQUE COLLAR & LEVER O	G.A.: S49010 G.A.: S47440
8.0	NONE	1	1" 613A THREADED PLUG VALVE W/ LEVER	G.A.: S46997
9.0	SP-VFPVU	9	6" 601 FLANGE PLUG VALVE ABOVE GROUND GEAR / HANDWHEEL	G.A.: S49110
12.0	SP-VFPVX	6	8" 601 FLANGE PLUG VALVE ABOVE GROUND GEAR / DM CHAINWHEEL	G.A.: S49110 G.A.: S49228
13.0	SP-VFPG10	2	10" 601 FLANGE PLUG VALVE ABOVE GROUND GEAR / DM CHAINWHEEL	G.A.: S49110 G.A.: S49228
14.0	SP-VFP10	8	10" 601 FLANGE PLUG VALVE ABOVE GROUND GEAR / HANDWHEEL	G.A.: S49110
19.0	SP-VFPVX	39	8" 601 FLANGE PLUG VALVE ABOVE GROUND GEAR / HANDWHEEL	G.A.: S49110

A.D. Assembly Drawing
C.S. Cross Section Drawing
G.A. General Arrangement

A.D.S. Actuator Data Sheet
D.D. Dimensional Drawing

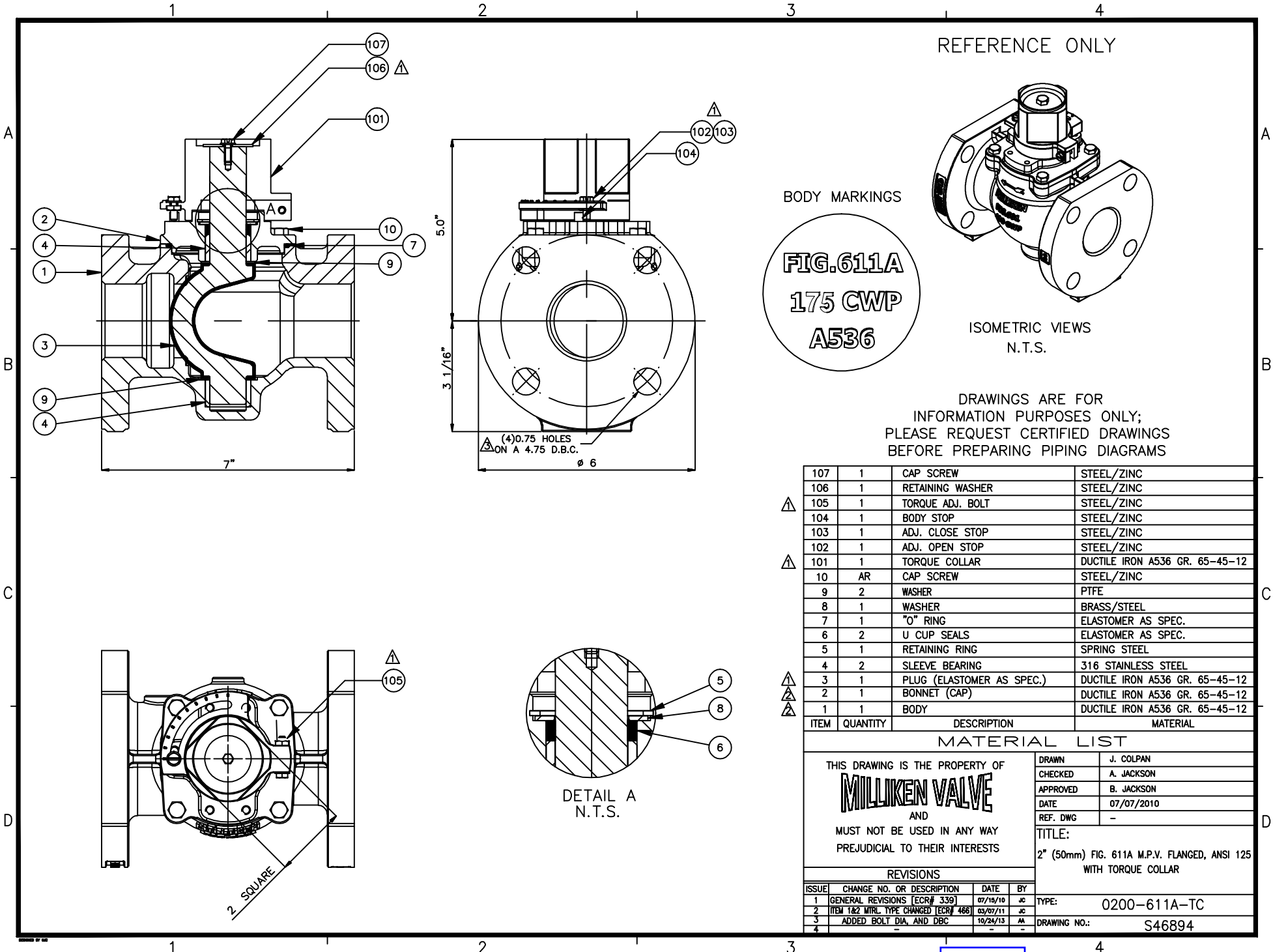
C.C. Catalog Cuts
E.P.C. Electrical Pneumatic Connections

ITEM	TAG	QTY	EQUIPMENT DESCRIPTION	DRAWING REFERENCE
22.0	SP-VFPVP	2	4" 601 FLANGE PLUG VALVE ABOVE GROUND GEAR / DM CHAINWHEEL	G.A.: S49110 G.A.: S49228
26.0	None	1	2" 613A THREADED PLUG VALVE W/ LEVER	G.A.: S46997

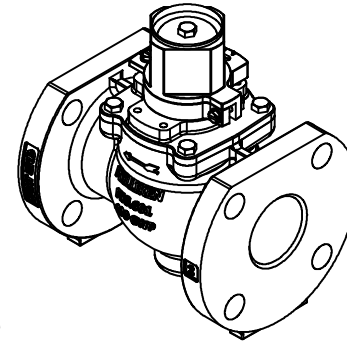
A.D. Assembly Drawing
 C.S. Cross Section Drawing
 G.A. General Arrangement

A.D.S. Actuator Data Sheet
 D.D. Dimensional Drawing

C.C. Catalog Cuts
 E.P.C. Electrical Pneumatic Connections



REFERENCE ONLY



ISOMETRIC VIEWS
N.T.S.

BODY MARKINGS

FIG.611A
175 CWP
A536

DRAWINGS ARE FOR
INFORMATION PURPOSES ONLY;
PLEASE REQUEST CERTIFIED DRAWINGS
BEFORE PREPARING PIPING DIAGRAMS

107	1	CAP SCREW	STEEL/ZINC
106	1	RETAINING WASHER	STEEL/ZINC
105	1	TORQUE ADJ. BOLT	STEEL/ZINC
104	1	BODY STOP	STEEL/ZINC
103	1	ADJ. CLOSE STOP	STEEL/ZINC
102	1	ADJ. OPEN STOP	STEEL/ZINC
101	1	TORQUE COLLAR	DUCTILE IRON A536 GR. 65-45-12
10	AR	CAP SCREW	STEEL/ZINC
9	2	WASHER	PTFE
8	1	WASHER	BRASS/STEEL
7	1	"O" RING	ELASTOMER AS SPEC.
6	2	U CUP SEALS	ELASTOMER AS SPEC.
5	1	RETAINING RING	SPRING STEEL
4	2	SLEEVE BEARING	316 STAINLESS STEEL
3	1	PLUG (ELASTOMER AS SPEC.)	DUCTILE IRON A536 GR. 65-45-12
2	1	BONNET (CAP)	DUCTILE IRON A536 GR. 65-45-12
1	1	BODY	DUCTILE IRON A536 GR. 65-45-12
ITEM	QUANTITY	DESCRIPTION	MATERIAL

MATERIAL LIST

THIS DRAWING IS THE PROPERTY OF
MILLIKEN VALVE
AND
MUST NOT BE USED IN ANY WAY
PREJUDICIAL TO THEIR INTERESTS

DRAWN	J. COLPAN
CHECKED	A. JACKSON
APPROVED	B. JACKSON
DATE	07/07/2010
REF. DWG	-
TITLE:	2" (50mm) FIG. 611A M.P.V. FLANGED, ANSI 125 WITH TORQUE COLLAR

REVISIONS

ISSUE	CHANGE NO. OR DESCRIPTION	DATE	BY
1	GENERAL REVISIONS [ECR# 339]	07/15/10	JC
2	ITEM 1&2 MTRL. TYPE CHANGED [ECR# 466]	03/07/11	JC
3	ADDED BOLT DIA. AND DBC	10/24/13	AM
4	-	-	-

TYPE: 0200-611A-TC

DRAWING NO.: S46894

1

2

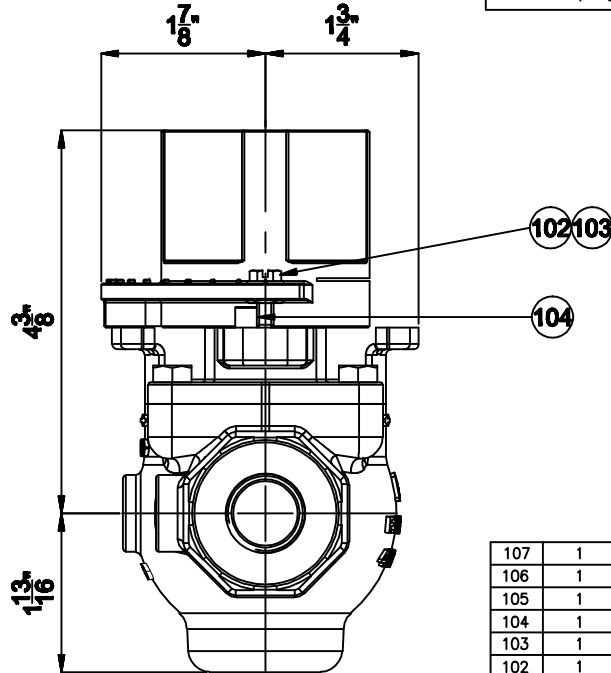
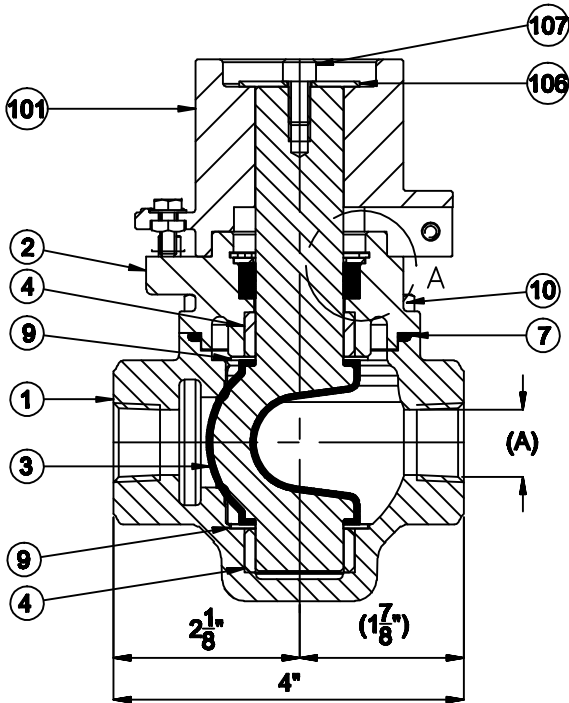
3

4

VALVE SIZE	THREAD SIZE (A)
1/2"	1/2" - 14 NPT
3/4"	3/4" - 14 NPT
1-0"	1-0" - 11.5 NPT

A

A



BODY MARKINGS

FIG.613A
400 CWP
A536

REFERENCE ONLY

DRAWINGS ARE FOR
 INFORMATION PURPOSES ONLY;
 PLEASE REQUEST CERTIFIED DRAWINGS
 BEFORE PREPARING PIPING DIAGRAMS

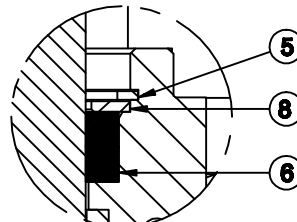
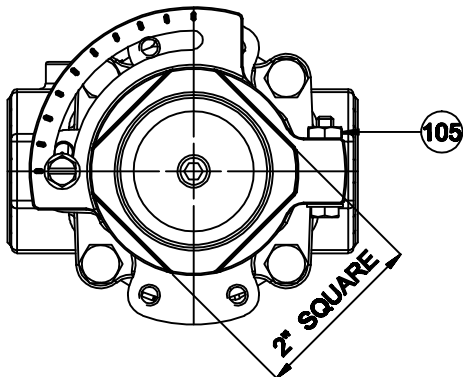
B

B

ITEM	QUANTITY	DESCRIPTION	MATERIAL
107	1	CAP SCREW	STEEL/ZINC
106	1	RETAINING WASHER	STEEL/ZINC
105	1	TORQUE ADJ. BOLT	STEEL/ZINC
104	1	BODY STOP	STEEL/ZINC
103	1	ADJ. CLOSE STOP	STEEL/ZINC
102	1	ADJ. OPEN STOP	STEEL/ZINC
101	1	TORQUE COLLAR	DUCTILE IRON A536 GR. 65-45-12
10	AR	CAP SCREW	STEEL/ZINC
9	2	WASHER	PTFE
8	1	WASHER	BRASS/STEEL
7	1	"O" RING	ELASTOMER AS SPEC.
6	2	U CUP SEALS	ELASTOMER AS SPEC.
5	1	RETAINING RING	SPRING STEEL
4	2	SLEEVE BEARING	316 STAINLESS STEEL
3	1	PLUG (ELASTOMER AS SPEC.)	DUCTILE IRON A536 GR. 65-45-12
2	1	BONNET (CAP)	DUCTILE IRON A536 GR. 65-45-12
1	1	BODY	DUCTILE IRON A536 GR. 65-45-12

C

C



DETAIL A
 2:1

D

D

MATERIAL LIST

THIS DRAWING IS THE PROPERTY OF
MILLIKEN VALVE
 AND
 MUST NOT BE USED IN ANY WAY
 PREJUDICIAL TO THEIR INTERESTS

DRAWN	J. COLPAN
CHECKED	A. JACKSON
APPROVED	B. JACKSON
DATE	06/03/2011
REF. DWG	-

TITLE:
 1/2" TO 1" FIG. 613A DUCTILE IRON,
 THREADED END, ANSI 125 MILLCENTRIC PLUG
 VALVE WITH A TORQUE COLLAR

ISSUE	CHANGE NO. OR DESCRIPTION	DATE	BY
1	-	-	-
2	-	-	-

TYPE: 0050/0075/0100-613A-TC
 DRAWING NO.: S46997

1

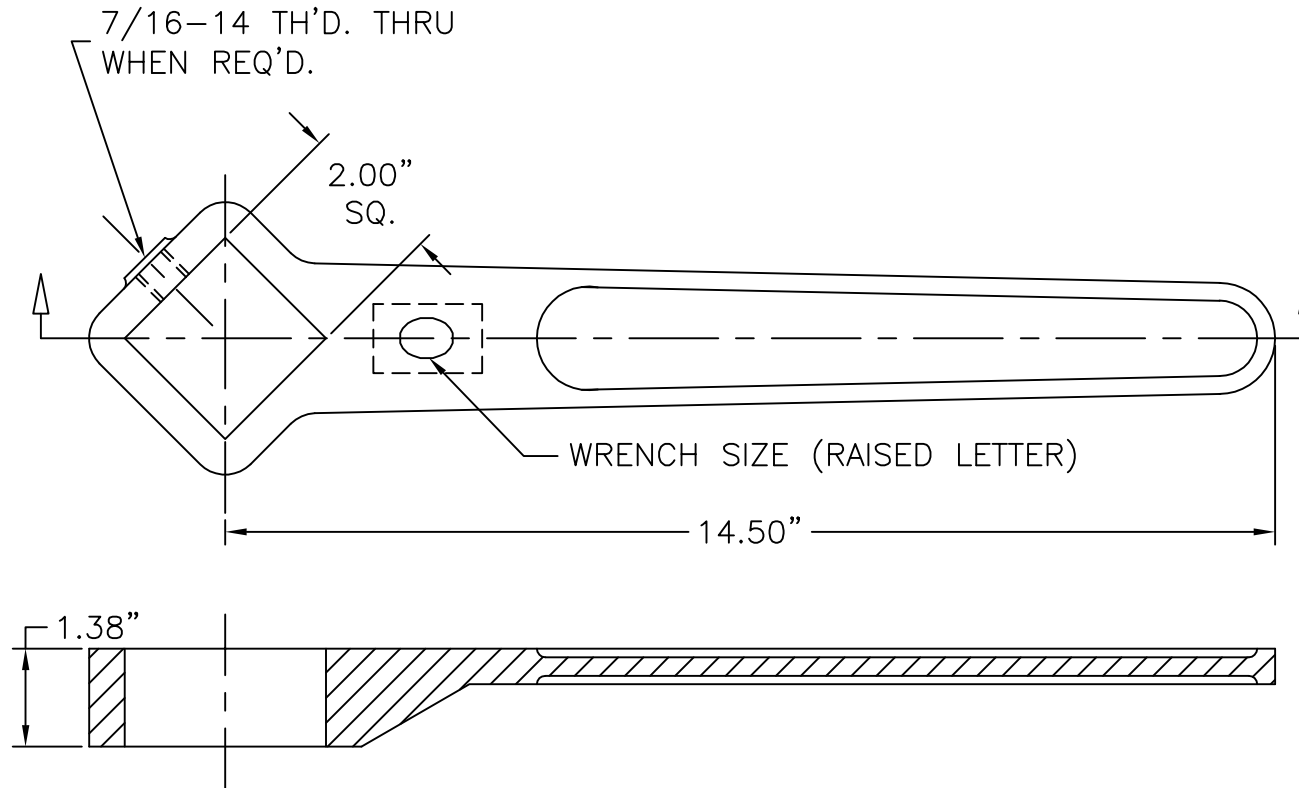
2

3

4

REFERENCE ONLY


SIZE	A	B	C	D	WT.LB.
0	2.000	14.5	1.38	7/16-14 UNC	3.5



WEIGHT: 3-1/2 LBS

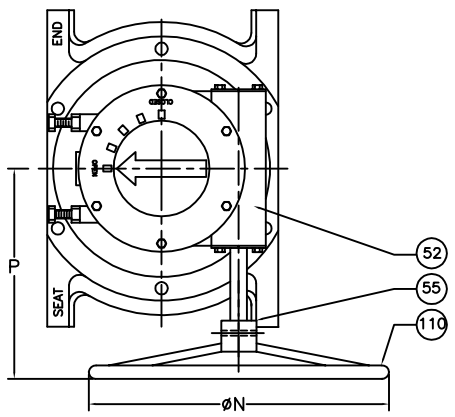
MAT'L: MALLEABLE IRON

THIS DRAWING IS THE PROPERTY OF
MILLIKEN VALVE COMPANY
AND MUST NOT BE USED IN ANY WAY
PREJUDICIAL TO THEIR INTERESTS

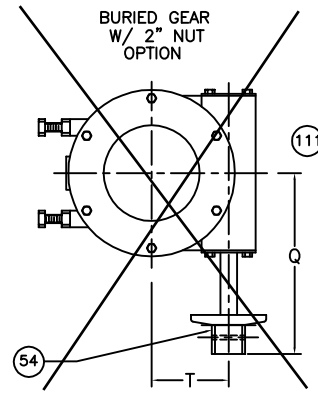
REVISION#			BY	DATE	SCALE
			RAB	06/86	NONE
	DATE	REVISIONS	BY	TITLE:	
A	D0495 ORIG		STANDARD MILLIKEN "O" WRENCH		
B	9/97 REDRAWN ON CADD	CR			
3	11/10 ADDED DIMENSIONS	RS	DWG. NO. S47440		

VALVE SIZE	GEAR SIZE & RATIO	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	S	T
2.5	M2 (20:1)	7.5	3.41	3.50	2.5	5.50	7.00	0.75	4	---	---	0.69	2.5	6	4.75	4.75	1.75	2.00
3	M2 (20:1)	8	3.41	3.75	3	6.00	7.50	0.75	4	---	---	0.75	2.5	6	4.75	4.75	1.75	2.00
4	M3 (30:1)	9	4.38	4.50	4	7.50	9	0.75	6	0.63	2	0.94	3	6	9.50	8	2.00	2.56
5	M3 (30:1)	10	5.63	5.75	5	8.50	10	0.88	6	0.75	2	0.94	3	6	9.50	8	2.00	2.56
6	M3 (30:1)	10.50	5.63	5.75	6	9.50	11	0.88	6	0.75	2	1	3	6	9.50	8	2.00	2.56
8	M5 (50:1)	11.50	7.56	7.63	8	11.75	13.50	0.88	6	0.75	2	1.13	6	12	11.25	8	2.25	3.16
10	M8 (80:1)	13	9.25	8.88	10	14.25	16	1	8	0.88	4	1.19	6	12	11.63	10	2.00	4.63
12	M8 (80:1)	14	10.88	10	12	17.00	19	1	8	0.88	4	1.25	6	12	11.63	10	2.00	4.63

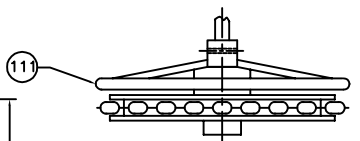
ABOVE GROUND GEAR W/ HANDWHEEL OPTION



BURIED GEAR W/ 2" NUT OPTION

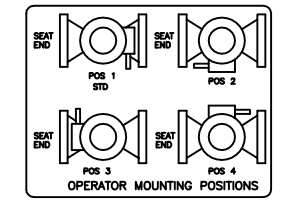


CHAINWHEEL OPTION



SIZE	GEAR	# OF TURNS
2.5"	20:1	5
3"	20:1	5
4"	30:1	7 1/2
5"	30:1	7 1/2
6"	30:1	7 1/2
8"	50:1	12 1/2
10"	80:1	20
12"	80:1	20

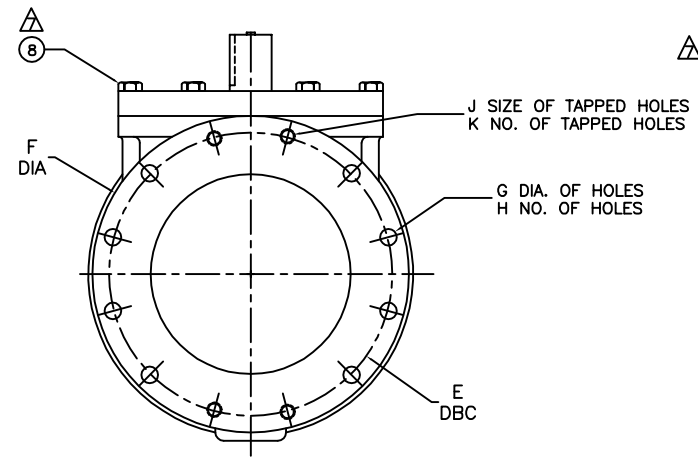
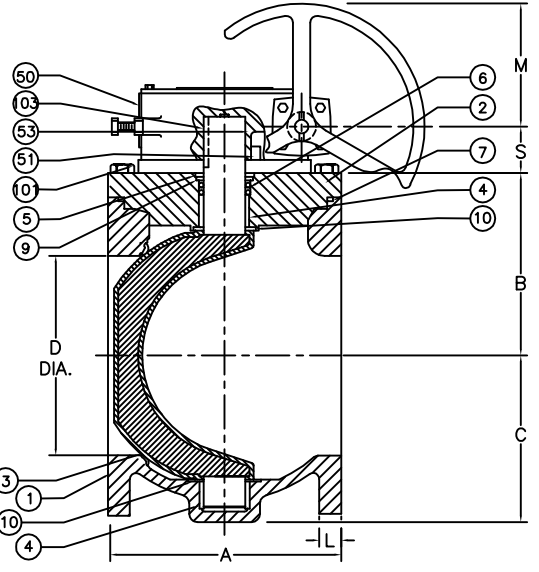
REFERENCE ONLY



THIS DRAWING IS THE PROPERTY OF MILLIKEN VALVE COMPANY AND MUST NOT BE USED IN ANY WAY PREJUDICIAL TO THEIR INTERESTS

*RISER RING IS ONLY ON 2-1/2" TO 8" VALVE

ITEM	QTY	DESCRIPTION	MATERIAL
111	1	CHAINWHEEL	DUCTILE IRON
110	1	SPRING PIN	STEEL
103	1	KEY	STEEL
*101	1	RISER RING	STEEL
55	1	HANDWHEEL	DUCTILE IRON
54	1	2" NUT	DUCTILE IRON
53	2	SLEEVE BEARING	BRONZE
52	1	WORM GEAR	STEEL
51	1	QUAD GEAR	DUCTILE IRON
50	1	HOUSING	
10	2	GRIT SEAL	PTFE
9	1	SEAL RETAINING RING	BRASS
8	AR	H.H. CAP SCREW	STEEL/ZINC
7	1	O-RING	ELAS AS SPEC.
6	2	U-CUP SEAL	ELAS AS SPEC.
5	1	SNAP RING	SPRING STEEL
4	2	SLEEVE BEARING	STN. STEEL
3	1	PLUG	ELASTOMER AS SPEC. DUCTILE IRON
2	1	CAP	CAST IRON
1	1	BODY	CAST IRON



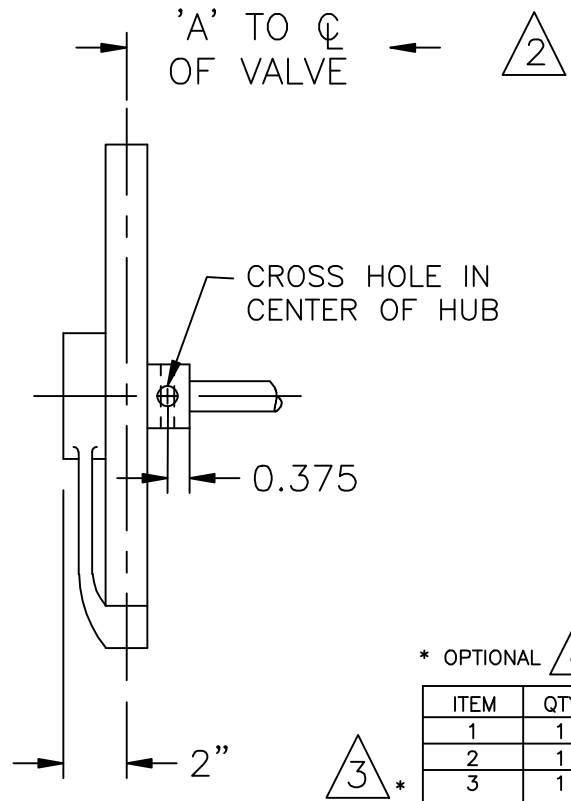
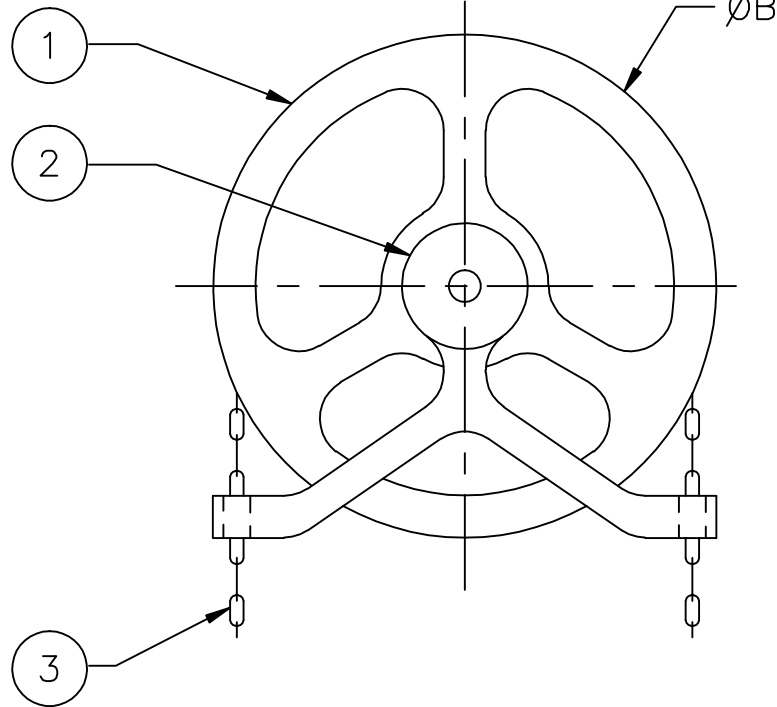
ITEM	QTY	DESCRIPTION	MATERIAL
111	1	CHAINWHEEL	DUCTILE IRON
110	1	SPRING PIN	STEEL
103	1	KEY	STEEL
*101	1	RISER RING	STEEL
55	1	HANDWHEEL	DUCTILE IRON
54	1	2" NUT	DUCTILE IRON
53	2	SLEEVE BEARING	BRONZE
52	1	WORM GEAR	STEEL
51	1	QUAD GEAR	DUCTILE IRON
50	1	HOUSING	
10	2	GRIT SEAL	PTFE
9	1	SEAL RETAINING RING	BRASS
8	AR	H.H. CAP SCREW	STEEL/ZINC
7	1	O-RING	ELAS AS SPEC.
6	2	U-CUP SEAL	ELAS AS SPEC.
5	1	SNAP RING	SPRING STEEL
4	2	SLEEVE BEARING	STN. STEEL
3	1	PLUG	ELASTOMER AS SPEC. DUCTILE IRON
2	1	CAP	CAST IRON
1	1	BODY	CAST IRON

DATE	REVISIONS	BY	TITLE:
12/97	REVISED GEAR DIM. FOR 2.5" & 3" WAS M2 NOW ALECTO 232-07	CR	FIG.601 2-1/2" TO 12" MILLCENTRIC PLUG VALVE, FLANGED, GEAR OPERATED, w/HANDWHEEL, 2" NUT, OR CHAINWHEEL OPTION
11/99	ITEM 9 WAS BRONZE	CR	
09/07	ADDED MTRL TYPE	JC	
02/10	ITEM 50 MATERIAL CHANGED FROM CAST TO DUCTILE IRON (ECON# 252)	JC	
08/10	REMOVED DATA FOR 14" (ECON # 284)	TF	
05/12	CORRECTION IN "B" & "S" DIM. (ECON# 504)	AA	
07/13	ADDED ITEM 10 AND BOM UPDATE	JC	
07/13	B.O.M. STANDARDIZATION ITEM TO NOW 8 AA	AA	

CHAINWHEEL: LINE 12.0, 13.0, 22.0 HANDWHEEL: LINE 9.0, 14.0, 19.0

DWG. NO. S49110

REFERENCE ONLY



VALVE	A	B
4-6	8 3/8	6
8	8 3/8	12
10-12	10 1/4	12

* OPTIONAL 

 *

ITEM	QTY	DESCRIPTION	MATERIAL
1	1	CHAINWHEEL	DUCTILE IRON ASTM A-536
2	1	CHAIN GUIDE	DUCTILE IRON ASTM A-536
3	1	CHAIN	GALVANIZED STEEL

M MILLIKEN VALVE COMPANY	BY	DATE	SCALE	TOL
	CS	8/04	NONE	X .060 XX .020 XXX .005 FRAC. 1/16
DIMENSION:				
INCHES				
ISSUE NUMBER	DATE	REVISION	BY	
1	2/05	Update B3 Dims 8,18,20	CS	
2	5/10	Update for current specs [ECR# 305]	RT	
3	11/10	ADDED OPTIONAL	RS	

TITLE:	4"-12"
	DIRECT MOUNT CHAINWHEEL FOR ECCENTRIC PLUG VALVES
DWG. NO.	S49228

THIS DRAWING IS THE PROPERTY OF
MILLIKEN VALVE COMPANY
AND MUST NOT BE USED IN ANY WAY
PREJUDICIAL TO THEIR INTERESTS

Plug Valve Data

EQUIPMENT SUMMARY FORM

- 1. EQUIPMENT ITEM 2" 611 FLANGE PLUG VALVE W/ LEVER O
- 2. MANUFACTURER Milliken Valve Co. 401 S. Highland Avenue Aurora, IL 60506 630-844-4000
- 3. EQUIPMENT IDENTIFICATION NUMBER(S) None Provided
(maps equipment number)
- 4. LOCATION OF EQUIPMENT None Provided
- 5. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS) 80#
- 6. NAMEPLATE DATA - Horsepower Not Applicable
~~Amperage _____
Voltage _____
Service Factor (S.F.) _____
Speed _____
ENC Type _____
Capacity _____
Other _____~~

MANUFACTURER'S LOCAL REPRESENTATIVE:

Name Southwest Valve, LLC. Address 402 W. Bedford #111 Fresno, CA 93711
Telephone Number 559-261-2703

- 8. MAINTENANCE REQUIREMENTS No maintenance required.
Cycling the valve from full open to full close on an annual basis will increase the life of the valve and operator components.
- 9. LUBRICANT LIST None Required
- 10. SPARE PARTS (recommendations) None recommended
- 11. COMMENTS _____

EQUIPMENT SUMMARY FORM

- 1. EQUIPMENT ITEM 4" 601 FLANGE PLUG VALVE TORQUE COLLAR & LEVER O
- 2. MANUFACTURER Milliken Valve Co. 401 S. Highland Avenue Aurora, IL 60506 630-844-4000
- 3. EQUIPMENT IDENTIFICATION NUMBER(S) SP-VFPVP
(maps equipment number)
- 4. LOCATION OF EQUIPMENT None Provided
- 5. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS) 80#
- 6. NAMEPLATE DATA - Horsepower Not Applicable
 - ~~Amperage _____~~
 - ~~Voltage _____~~
 - ~~Service Factor (S.F.) _____~~
 - ~~Speed _____~~
 - ~~ENC Type _____~~
 - ~~Capacity _____~~
 - ~~Other _____~~

MANUFACTURER'S LOCAL REPRESENTATIVE:

Name Southwest Valve, LLC. Address 402 W. Bedford #111 Fresno, CA 93711

Telephone Number 559-261-2703

- 8. MAINTENANCE REQUIREMENTS No maintenance required.
Cycling the valve from full open to full close on an annual basis will increase the life of the valve and operator components.
- 9. LUBRICANT LIST None Required
- 10. SPARE PARTS (recommendations) None recommended
- 11. COMMENTS _____

EQUIPMENT SUMMARY FORM

- 1. EQUIPMENT ITEM 1" 613A THREADED PLUG VALVE W/ LEVER
- 2. MANUFACTURER Milliken Valve Co. 401 S. Highland Avenue Aurora, IL 60506 630-844-4000
- 3. EQUIPMENT IDENTIFICATION NUMBER(S) None Provided
(maps equipment number)
- 4. LOCATION OF EQUIPMENT None Provided
- 5. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS) 3#
- 6. NAMEPLATE DATA - Horsepower Not Applicable
~~Amperage _____
Voltage _____
Service Factor (S.F.) _____
Speed _____
ENC Type _____
Capacity _____
Other _____~~

MANUFACTURER'S LOCAL REPRESENTATIVE:

Name Southwest Valve, LLC. Address 402 W. Bedford #111 Fresno, CA 93711
Telephone Number 559-261-2703

- 8. MAINTENANCE REQUIREMENTS No maintenance required.
Cycling the valve from full open to full close on an annual basis will increase the life of the valve and operator components.
- 9. LUBRICANT LIST None Required
- 10. SPARE PARTS (recommendations) None recommended
- 11. COMMENTS _____

EQUIPMENT SUMMARY FORM

- 1. EQUIPMENT ITEM 6" 601 FLANGE PLUG VALVE ABOVE GROUND GEAR / HANDWHEEL
- 2. MANUFACTURER Milliken Valve Co. 401 S. Highland Avenue Aurora, IL 60506 630-844-4000
- 3. EQUIPMENT IDENTIFICATION NUMBER(S) SP-VFPVU
(maps equipment number)
- 4. LOCATION OF EQUIPMENT None Provided
- 5. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS) 150#
- 6. NAMEPLATE DATA - Horsepower Not Applicable
 - ~~Amperage _____~~
 - ~~Voltage _____~~
 - ~~Service Factor (S.F.) _____~~
 - ~~Speed _____~~
 - ~~ENC Type _____~~
 - ~~Capacity _____~~
 - ~~Other _____~~

MANUFACTURER'S LOCAL REPRESENTATIVE:

Name Southwest Valve, LLC. Address 402 W. Bedford #111 Fresno, CA 93711

Telephone Number 559-261-2703

- 8. MAINTENANCE REQUIREMENTS No maintenance required.
Cycling the valve from full open to full close on an annual basis will increase the life of the valve and operator components.
- 9. LUBRICANT LIST None Required
- 10. SPARE PARTS (recommendations) None recommended
- 11. COMMENTS _____

EQUIPMENT SUMMARY FORM

- 1. EQUIPMENT ITEM 8" 601 FLANGE PLUG VALVE ABOVE GROUND GEAR / CHAINWHEEL
- 2. MANUFACTURER Milliken Valve Co. 401 S. Highland Avenue Aurora, IL 60506 630-844-4000
- 3. EQUIPMENT IDENTIFICATION NUMBER(S) SP-VFPVX
(maps equipment number)
- 4. LOCATION OF EQUIPMENT None Provided
- 5. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS) 241#
- 6. NAMEPLATE DATA - Horsepower Not Applicable
 - ~~Amperage _____~~
 - ~~Voltage _____~~
 - ~~Service Factor (S.F.) _____~~
 - ~~Speed _____~~
 - ~~ENC Type _____~~
 - ~~Capacity _____~~
 - ~~Other _____~~

MANUFACTURER'S LOCAL REPRESENTATIVE:

Name Southwest Valve, LLC. Address 402 W. Bedford #111 Fresno, CA 93711

Telephone Number 559-261-2703

- 8. MAINTENANCE REQUIREMENTS No maintenance required.
Cycling the valve from full open to full close on an annual basis will increase the life of the valve and operator components.
- 9. LUBRICANT LIST None Required
- 10. SPARE PARTS (recommendations) None recommended
- 11. COMMENTS _____

EQUIPMENT SUMMARY FORM

- 1. EQUIPMENT ITEM 10" 601 FLANGE PLUG VALVE ABOVE GROUND GEAR / CHAINWHEEL
- 2. MANUFACTURER Milliken Valve Co. 401 S. Highland Avenue Aurora, IL 60506 630-844-4000
- 3. EQUIPMENT IDENTIFICATION NUMBER(S) SP-VFPG10
(maps equipment number)
- 4. LOCATION OF EQUIPMENT None Provided
- 5. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS) 345#
- 6. NAMEPLATE DATA - Horsepower Not Applicable
 - ~~Amperage _____~~
 - ~~Voltage _____~~
 - ~~Service Factor (S.F.) _____~~
 - ~~Speed _____~~
 - ~~ENC Type _____~~
 - ~~Capacity _____~~
 - ~~Other _____~~

MANUFACTURER'S LOCAL REPRESENTATIVE:

Name Southwest Valve, LLC. Address 402 W. Bedford #111 Fresno, CA 93711

Telephone Number 559-261-2703

- 8. MAINTENANCE REQUIREMENTS No maintenance required.
Cycling the valve from full open to full close on an annual basis will increase the life of the valve and operator components.
- 9. LUBRICANT LIST None Required
- 10. SPARE PARTS (recommendations) None recommended
- 11. COMMENTS _____

EQUIPMENT SUMMARY FORM

- 1. EQUIPMENT ITEM 10" 601 FLANGE PLUG VALVE ABOVE GROUND GEAR / HANDWHEEL
- 2. MANUFACTURER Milliken Valve Co. 401 S. Highland Avenue Aurora, IL 60506 630-844-4000
- 3. EQUIPMENT IDENTIFICATION NUMBER(S) SP-VFP10
(maps equipment number)
- 4. LOCATION OF EQUIPMENT None Provided
- 5. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS) 272#
- 6. NAMEPLATE DATA - Horsepower Not Applicable
 - ~~Amperage _____~~
 - ~~Voltage _____~~
 - ~~Service Factor (S.F.) _____~~
 - ~~Speed _____~~
 - ~~ENC Type _____~~
 - ~~Capacity _____~~
 - ~~Other _____~~

MANUFACTURER'S LOCAL REPRESENTATIVE:

Name Southwest Valve, LLC. Address 402 W. Bedford #111 Fresno, CA 93711

Telephone Number 559-261-2703

- 8. MAINTENANCE REQUIREMENTS No maintenance required.
Cycling the valve from full open to full close on an annual basis will increase the life of the valve and operator components.
- 9. LUBRICANT LIST None Required
- 10. SPARE PARTS (recommendations) None recommended
- 11. COMMENTS _____

EQUIPMENT SUMMARY FORM

- 1. EQUIPMENT ITEM 8" 601 FLANGE PLUG VALVE ABOVE GROUND GEAR / HANDWHEEL
- 2. MANUFACTURER Milliken Valve Co. 401 S. Highland Avenue Aurora, IL 60506 630-844-4000
- 3. EQUIPMENT IDENTIFICATION NUMBER(S) SP-VFPVX
(maps equipment number)
- 4. LOCATION OF EQUIPMENT None Provided
- 5. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS) 247#
- 6. NAMEPLATE DATA - Horsepower Not Applicable
~~Amperage _____
Voltage _____
Service Factor (S.F.) _____
Speed _____
ENC Type _____
Capacity _____
Other _____~~

MANUFACTURER'S LOCAL REPRESENTATIVE:

Name Southwest Valve, LLC. Address 402 W. Bedford #111 Fresno, CA 93711
Telephone Number 559-261-2703

- 8. MAINTENANCE REQUIREMENTS No maintenance required.
Cycling the valve from full open to full close on an annual basis will increase the life of the valve and operator components.
- 9. LUBRICANT LIST None Required
- 10. SPARE PARTS (recommendations) None recommended
- 11. COMMENTS _____

EQUIPMENT SUMMARY FORM

- 1. EQUIPMENT ITEM 4" 601 FLANGE PLUG VALVE ABOVE GROUND GEAR / CHAINWHEEL
- 2. MANUFACTURER Milliken Valve Co. 401 S. Highland Avenue Aurora, IL 60506 630-844-4000
- 3. EQUIPMENT IDENTIFICATION NUMBER(S) SP-VFPVP
(maps equipment number)
- 4. LOCATION OF EQUIPMENT None Provided
- 5. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS) 116#
- 6. NAMEPLATE DATA - Horsepower Not Applicable
 - ~~Amperage _____~~
 - ~~Voltage _____~~
 - ~~Service Factor (S.F.) _____~~
 - ~~Speed _____~~
 - ~~ENC Type _____~~
 - ~~Capacity _____~~
 - ~~Other _____~~

MANUFACTURER'S LOCAL REPRESENTATIVE:

Name Southwest Valve, LLC. Address 402 W. Bedford #111 Fresno, CA 93711

Telephone Number 559-261-2703

- 8. MAINTENANCE REQUIREMENTS No maintenance required.
Cycling the valve from full open to full close on an annual basis will increase the life of the valve and operator components.
- 9. LUBRICANT LIST None Required
- 10. SPARE PARTS (recommendations) None recommended
- 11. COMMENTS _____

EQUIPMENT SUMMARY FORM

- 1. EQUIPMENT ITEM 2" 613A THREADED PLUG VALVE W/ LEVER
- 2. MANUFACTURER Milliken Valve Co. 401 S. Highland Avenue Aurora, IL 60506 630-844-4000
- 3. EQUIPMENT IDENTIFICATION NUMBER(S) None Provided
(maps equipment number)
- 4. LOCATION OF EQUIPMENT None Provided
- 5. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS) 50#
- 6. NAMEPLATE DATA - Horsepower Not Applicable
~~Amperage _____
Voltage _____
Service Factor (S.F.) _____
Speed _____
ENC Type _____
Capacity _____
Other _____~~

MANUFACTURER'S LOCAL REPRESENTATIVE:

Name Southwest Valve, LLC. Address 402 W. Bedford #111 Fresno, CA 93711
Telephone Number 559-261-2703

- 8. MAINTENANCE REQUIREMENTS No maintenance required.
Cycling the valve from full open to full close on an annual basis will increase the life of the valve and operator components.
- 9. LUBRICANT LIST None Required
- 10. SPARE PARTS (recommendations) None recommended
- 11. COMMENTS _____

May 2016

**Millcentric Plug Valve
Operation and Maintenance
Manual
Series 600**

MILLIKEN[®]

Milliken
401 S. Highland Avenue
Aurora, IL 60506
Phone: (877) 655-6858
Fax: (630) 844-4160
Website: www.millikenv Valve.com

Operations & Maintenance

Functional Description

PLUG VALVE

Plug valves are designed with eccentric rubber disc seating surfaces. The plug rotates 1/4 turn to provide shutoff in pipes. The eccentric seating action provides for tighter shutoff as the actuator is adjusted to provide for more rotation. The valve can be adjusted to a maximum of 10 degrees over travel. The valves can be used to regulate flow rate by positioning the plug between 15 and 90 degrees open.

Manually operated plug valves are powered with levers/2" nuts (valves with torque collars), or gear actuators, which convert multiple handwheel, chainwheel, or nut input turns into 1/4 turn valve operation. The travel of the valve plug is limited by physical stops in the torque collar for wrench operated valves, and in the actuator housing for gear operated valves.

CAUTION: Forcing the handwheel, chainwheel, or nut against the stops will not provide tighter shutoff of the valve and may damage the actuator. Only actuator adjustments will affect valve shutoff.

Motor operated valves are powered with gear actuators, which convert multiple motor input turns into 1/4 turn valve operation. The travel of the valve plug is limited by limit switches in the motor housing and physical stop in the actuator housing. Valve shutoff is affected by limit switch and physical stop settings.

CAUTION: Improperly set limit switches and/or physical stops may damage the motor and/or actuator.

Operations & Maintenance

Safety

Valves must be de-pressurized before any disassembly procedures are performed.

On gear operated valves, when the gears have the cover removed, extra caution should be taken to make sure hands or fingers are away from the moving parts. Close fitting clothing should be worn so as to avoid getting caught in the moving gears.

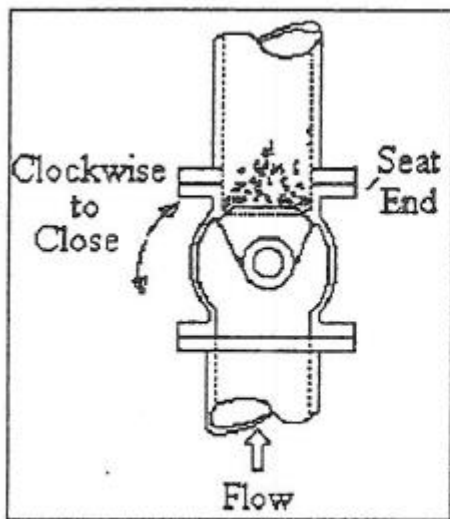
Operations & Maintenance

Installation

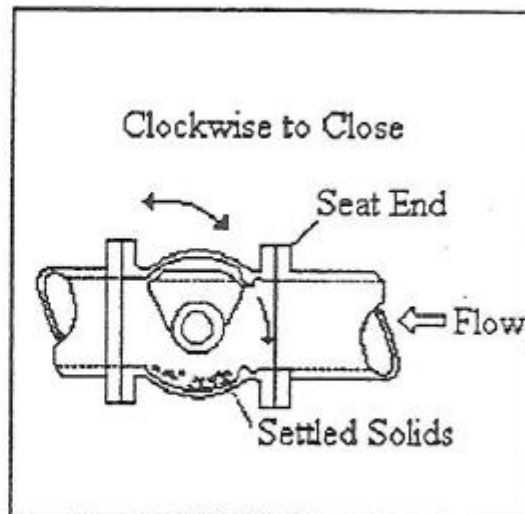
When installing the valves, the seat end should be noted. The seat end of the valve is cast in raised letters on the appropriate flange of the valve. Generally, straightway valves should be installed with the highest pressure applied from the opposite end from the seat. This will tend to push the plug into the seat. On pump discharge installations the seat end should be towards the pump.

In the case where shut-off is required in both directions, the valve should be installed so that the highest differential pressure at shut-off is opposite the seat end.

When the service is of a clogging type, with suspended solids likely to build up in the valve body, it is recommended that the valve be installed with the media entering the seat end first. In extreme cases, the valve should be installed with the plug horizontal and rotating upward into the top portion of the valve body cavity to open.



Vertical Pipeline



Horizontal Pipeline

Class 125 flanged end valves have ANSI B16.1 flat faced 125/150 flanges. Class 250 flanged end valves have ANSI B16.1 raised face 250 flanges. Standard ANSI B16.21 flanges and gaskets should be used to install the valves in the pipeline. Certain size valves utilize tapped holes on the top and bottom of the flange where a backing nut is not possible. Please check specific drawings for detailed information on sizes and quantities of hexagon head screws required on these valves.

Prior to installing valve, especially ones that are buried, they should be cycled open and closed several times to ensure they are in good working order and have not been damaged during shipment or storage.

Operations & Maintenance

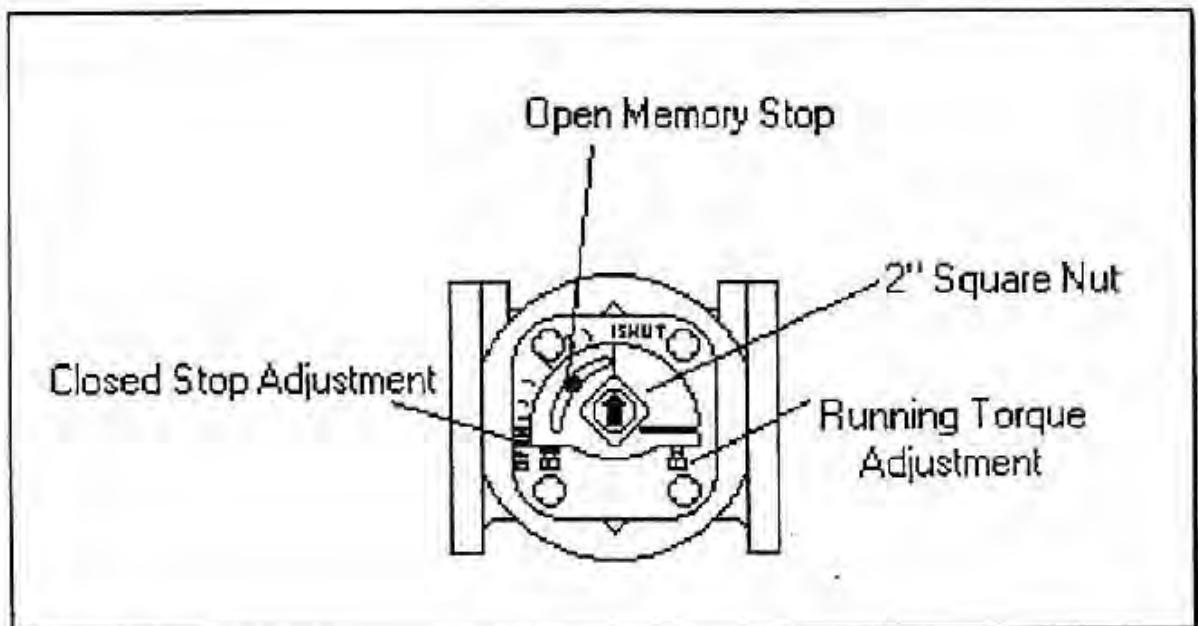
Operating Instructions

Running Torque Adjustment

The nature of the eccentric plug valves "camming" action eliminates the majority of the torque prior to seating. To prevent the plug from creeping open or slamming closed, the torque collar maintains a constant drag on the shoulder of the valve bonnet. This component is factory adjusted. However, once the valve has been installed, it is recommended that the torque adjustment nut be further tightened to assure proper friction exists to prevent unwanted closure.

To prevent the plug from unnecessary movement, rotate the hex head bolt clockwise until there is a substantial drag on the plug but not so much as to prevent the movement of the plug with the supplied wrench.

Wrench Operated Valve with Torque Collar



Operations & Maintenance

Operating Instructions

Wrench Operated Millcentric

Wrench operated Millcentric valves close by turning the valve 90 degrees clockwise.

Torque Collar

All wrench operated Millcentric valves are equipped with a multifunction device referred to here as a torque collar. This device serves as:

1. Wrench Adaptor-2" square
2. Position Indicator
3. Open Memory Stop
4. Closed Memory Stop
5. Running Torque Adjustment

Position Indicator

The top of the plug has an indicator plate to show the approximate plug position. Cast onto the torque collar is an indicator mark which corresponds to a graduated scale cast on the bonnet of the valve. This scale is divided into 15 degree lines and indicated the exact valve opening from full open to full closed.

Open Memory Stop

The torque collar also incorporates an open memory stop feature. The plug can be set by tightening the open memory stop adjustment bolt after the correct flow is achieved. The valve can then be closed for maintenance and reopened to the proper position without resetting the flow.

Closed Memory Stop

The closed memory stop is provided to allow for adjustment to compensate for wear of either the plug coating or the seat. The closed stop is pre-set at the factory and should not require readjustment unless wear occurs.

To adjust the plug for excess plug or seat wear simply rotate the closed stop two turns counter-clockwise and then rotate the plug (clockwise) further into the seat and check the flow. Should this movement fail to shut off the flow, repeat the above step. Afterward, reset the lock nut to prevent the position from being altered.

Operations & Maintenance

Operating Instructions

Gear Operated Millcentric

Gear operated Millcentric valves close by turning the gear input shaft clockwise until closed. Please see specific valve drawing for the exact number of turns to close.

Position Indicator

(Above ground units only)

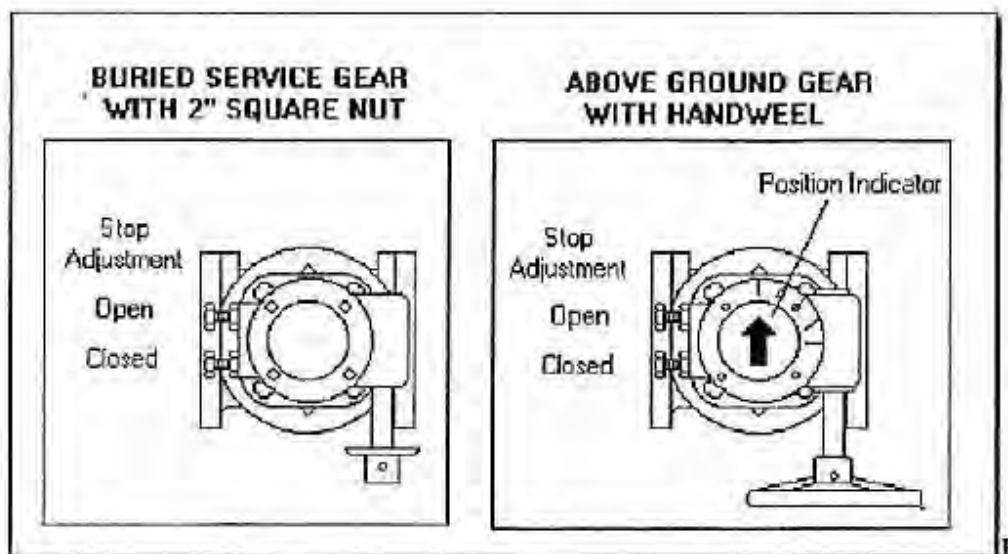
The top of the gear operator has an indicator plate to show the plug position. This scale, cast onto the gear housing, is divided into 15 degree lines and indicates the exact valve opening from full open to full closed. Buried service units are totally enclosed and sealed for use below grade.

Open and Closed Memory Stops

The closed memory stop is provided to allow for adjustment to compensate for wear of either the plug coating or the seat. The closed stop is pre-set at the factory and should not require readjustment unless wear occurs.

To adjust the plug for excess plug or seat wear simply rotate the closed stop two turns counterclockwise then rotate the hand wheel or nut (clockwise) to move the plug further into the seat and check the flow. Should this movement fail to shut off the flow then repeat the above step. Afterward re-set the lock nut to prevent the position from being altered.

Gear Operated Valve



Operations & Maintenance

Preventative Maintenance

The Millcentric eccentric plug valves do not require any routine maintenance. They should, however, be cycled from fully open to fully closed once every 6 months, which will increase the life of the valve and operator.

Operations & Maintenance

Maintenance Instructions

WRENCH OPERATED VALVE

The Millcentric is designed and manufactured to be a lifelong valve under normal circumstances. It does not require any routine maintenance.

However if maintenance is required, due to unusual wear or service conditions, the following procedure should be followed:

Disassembly Procedure

Body

The Millcentric is a top entry valve; therefore the body can remain in line during this operation. Remove the allen head cap screw securing the torque collar to the plug stem. Remove the torque collar and set aside. With the valve de-pressurized, remove the hexagonal head cap screws that hold the bonnet to the valve body. Remove the bonnet, leaving the plug in the body. At this point the plug, PTFE thrust washers, journal bearings and bonnet "O" ring are accessible and can be removed and replaced.

Care should be taken not to damage the plug elastomer or bonnet "O" rings upon reassembly.

Reverse the above process for reassembling the Millcentric.

Stem Seals

Remove the allen head cap screw securing the torque collar to the plug stem. Remove the torque collar and set aside.

With the valve de-pressurized, using internal snap ring pliers, remove the snap pin and thrust waster. The "U" cup seals can now be pried out of the seal cavity. To replace reverse the above process. After reassembly, cycle valve from open to close approximately five times in order to ensure "U" cups have been properly seated.

Operations & Maintenance

Maintenance Instructions

Gear Operated Valve

The Millcentric is designed and manufactured to be a long life valve under normal circumstances. It does not require any routine maintenance. Cycling the valve from full open to full closed on an annual basis will increase the life of the valve and operator components.

However, if maintenance is required, due to unusual wear or service conditions the following procedure should be followed:

Disassembly Procedure

Body

The Millcentric is a top entry valve therefore the body can remain in line during this operation. Remove the bolts holding the gear operator cap in place. Remove the cap and remove the internal bolts fastening the gear operator cap in place. Remove the gear operator and set aside. With the valve de-pressurized, remove the hexagonal head cap screws that hold the bonnet to the valve body. Remove the bonnet, leaving the plug in the body. At this point, the plug, PTFE thrust washers, journal bearings and bonnet "O" ring are accessible and can be removed and replaced.

Care should be taken not to damage the plug elastomer or bonnet "O" rings upon reassembly.

Reverse the above process for reassembling the Millcentric.

Stem Seals

Remove the bolts holding the gear operator cap in place. Remove the cap and remove the internal bolts fastening the gear operator to the valve body. Remove the gear operator and set aside.

With the valve de-pressurized, using internal snap ring pliers, remove the snap ring and thrust washer. The "U" cup seals can now be pried out of the seal cavity. To replace reverse the above process. After reassembly, cycle valve from open to close approximately five times in order to ensure "U" cups have been properly seated.

Operations & Maintenance

Maintenance Instructions

Gear Operated Valves To Replace “U” Cup Seals

The Millcentric is designed and manufactured to be a long life valve under normal operating conditions. It does not require any routine maintenance. Cycling the valve from fully open to fully closed on an annual basis will increase the life of the valve and gear components.

However, if maintenance is required, due to unusual wear or service conditions, the following procedure should be followed:

- Remove the internal bolts holding the gear to the valve body.
- Remove gear operator and set aside.
- Remove the external snap ring and support collar.
- Remove the internal snap ring using snap ring pliers.
- Remove the thrust washer and the “U” cup seals are now visible.
- Using a screwdriver pry out the old seals.
- Apply a small amount of silicone or grease to the new “U” cup seals. This will help them slide in the packing cavity.
- Put a piece of shim stock into the cavity and put the “U” cup over it.
- Slide the “U” cup over the stem with shim stock against the stem. This will let any trapped air out of the packing cavity.
- Using two screwdrivers, coax the outer lip of the “U” cup into the cavity while pressing down on the top of the “U” cup with the other screwdriver. Continue to do this all the way around until the “U” cup is at the bottom of the packing cavity.
- Repeat this procedure with the second “U” cup.
- Replace the thrust washer and snap ring.
- Remount the gear operator on the valve-ensure key is inserted in correct keyway.

Operations & Maintenance

Trouble Shooting

Wrench Operated Valves

<u>SYMPTOM</u>	<u>POSSIBLE CAUSE</u>	<u>ACTION</u>
Valve will not open	<ul style="list-style-type: none">-Broken or Misadjusted Torque collar-Obstruction in line-Excessive Line Pressure-Elastomer Damage	<ul style="list-style-type: none">-Adjust or Replace torque collar-Remove obstruction-Reduce Pressure-Replace Plug
Valve will not close	<ul style="list-style-type: none">-Broken or Misadjusted Torque collar-Obstruction in line-Excessive Line Pressure-Elastomer Damage	<ul style="list-style-type: none">-Adjust or Replace torque collar-Remove obstruction-Reduce Pressure-Replace Plug
Valve will not shutoff flow	<ul style="list-style-type: none">-Improper stop adjustment-Obstruction in line-Excessive Line Pressure-Elastomer Damage	<ul style="list-style-type: none">-Adjust closed stop-Remove obstruction-Reduce Pressure-Replace Plug
Valve leaks at plug stem	<ul style="list-style-type: none">-"U" cup seals not properly seated-Damaged "U" cup seal	<ul style="list-style-type: none">-Cycle valve from open to close-Replace "U" Cups

Operations & Maintenance

Trouble Shooting

Gear Operated Valves

<u>SYMPTOM</u>	<u>POSSIBLE CAUSE</u>	<u>ACTION</u>
Valve will not open	<ul style="list-style-type: none">-Bent input shaft-Obstruction in line-Excessive Line Pressure-Elastomer Damage	<ul style="list-style-type: none">-Replace Worm shaft-Remove obstruction-Reduce Pressure-Replace Plug
Valve will not close	<ul style="list-style-type: none">-Bent input shaft-Obstruction in line-Excessive Line Pressure-Elastomer Damage	<ul style="list-style-type: none">-Replace Worm shaft-Remove obstruction-Reduce Pressure-Replace Plug
Valve will not shutoff flow	<ul style="list-style-type: none">-Improper stop adjustment-Obstruction in line-Excessive Line Pressure-Elastomer Damage	<ul style="list-style-type: none">-Adjust closed stop-Remove obstruction-Reduce Pressure-Replace Plug
Valve leaks at plug stem	<ul style="list-style-type: none">-“U” cup seals not properly seated-Damaged “U” cup seal	<ul style="list-style-type: none">-Cycle valve from open to close-Replace “U” Cups

Operations & Maintenance

Lubrication Schedule

The Millcentric plug valve is a low maintenance non-lubricated eccentric plug valve. As such there is no required lubrication for the valve itself.

The manual worm gear operators where applicable are also sealed grease lubricated units and should not require any type of periodic lubrication. Should the unit need to have the lubricant replaced, it is recommended that **Shell “Gadus S2 V100”** be used, formally named “Alvania RL”.

Operations & Maintenance

Storage Procedure

Milliken valves are shipped with the plugs in the open position. Care should be taken to maintain this position while the valves are in storage prior to installation in the pipeline.

Flanged valve end protectors (if supplied) should be kept on the valves until they are ready for installation. Special care should be given to mechanical joint valves to prevent damage to the internal pipe seating area.

Valves should be stored where internal contamination due to sand and mud can be kept to a minimum. Care should be taken to avoid direct sunlight on the plug elastomer during storage.

Electric, hydraulic and pneumatic valve actuators should be care for in accordance with the storage instructions of the actuator manufacturer.

Operations & Maintenance

Spare Parts List

The Milliken eccentric plug valve is a long life valve and does not require stocking spare parts.

1

2

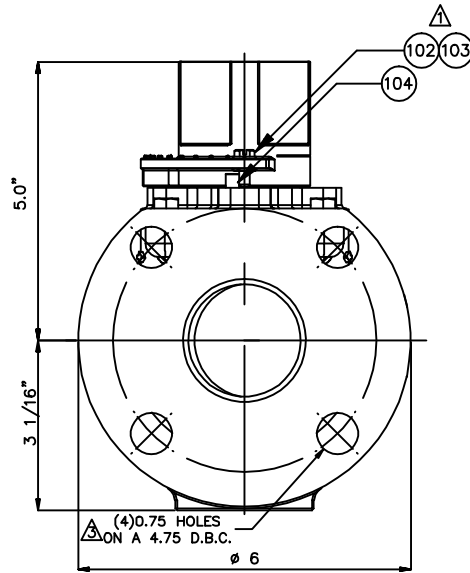
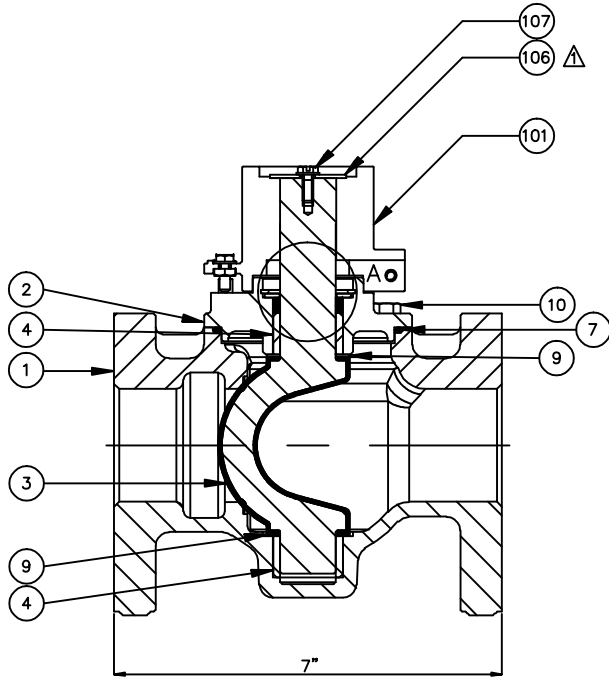
3

4

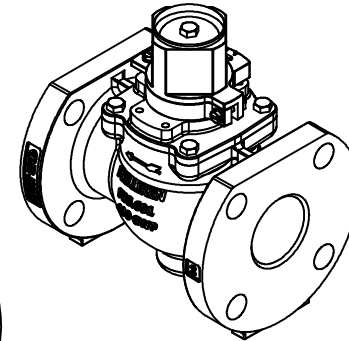
REFERENCE ONLY

A

A



BODY MARKINGS



ISOMETRIC VIEWS
N.T.S.

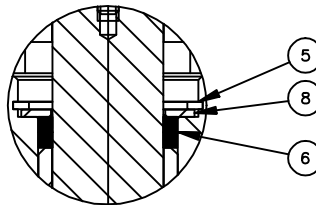
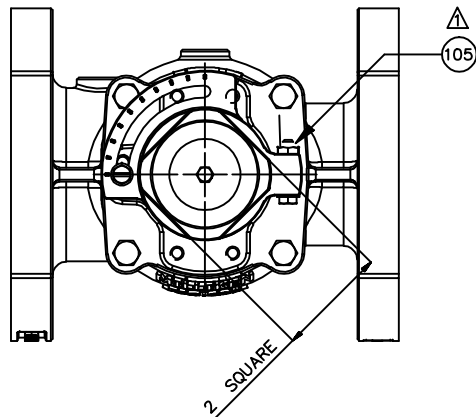
DRAWINGS ARE FOR
INFORMATION PURPOSES ONLY;
PLEASE REQUEST CERTIFIED DRAWINGS
BEFORE PREPARING PIPING DIAGRAMS

B

B

C

C



DETAIL A
N.T.S.

107	1	CAP SCREW	STEEL/ZINC
106	1	RETAINING WASHER	STEEL/ZINC
105	1	TORQUE ADJ. BOLT	STEEL/ZINC
104	1	BODY STOP	STEEL/ZINC
103	1	ADJ. CLOSE STOP	STEEL/ZINC
102	1	ADJ. OPEN STOP	STEEL/ZINC
101	1	TORQUE COLLAR	DUCTILE IRON A536 GR. 65-45-12
10	AR	CAP SCREW	STEEL/ZINC
9	2	WASHER	PTFE
8	1	WASHER	BRASS/STEEL
7	1	"O" RING	ELASTOMER AS SPEC.
6	2	U CUP SEALS	ELASTOMER AS SPEC.
5	1	RETAINING RING	SPRING STEEL
4	2	SLEEVE BEARING	316 STAINLESS STEEL
3	1	PLUG (ELASTOMER AS SPEC.)	DUCTILE IRON A536 GR. 65-45-12
2	1	BONNET (CAP)	DUCTILE IRON A536 GR. 65-45-12
1	1	BODY	DUCTILE IRON A536 GR. 65-45-12
ITEM	QUANTITY	DESCRIPTION	MATERIAL

MATERIAL LIST

THIS DRAWING IS THE PROPERTY OF
MILLIKEN VALVE
AND
MUST NOT BE USED IN ANY WAY
PREJUDICIAL TO THEIR INTERESTS

DRAWN	J. COLPAN
CHECKED	A. JACKSON
APPROVED	B. JACKSON
DATE	07/07/2010
REF. DWG	-
TITLE:	2" (50mm) FIG. 611A M.P.V. FLANGED, ANSI 125 WITH TORQUE COLLAR

REVISIONS

ISSUE	CHANGE NO. OR DESCRIPTION	DATE	BY
1	GENERAL REVISIONS [ECR# 339]	07/15/10	JC
2	ITEM 1&2 MTRL. TYPE CHANGED [ECR# 466]	03/07/11	JC
3	ADDED BOLT DIA. AND DBC	10/24/13	AM
4	-	-	-

TYPE: 0200-611A-TC

DRAWING NO.: S46894

D

D

1

2

3

4

LINE 6.0

1

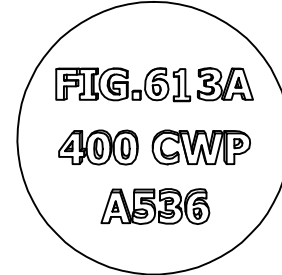
2

3

4

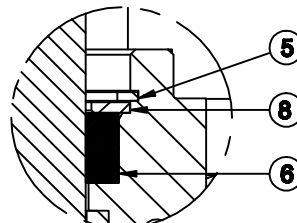
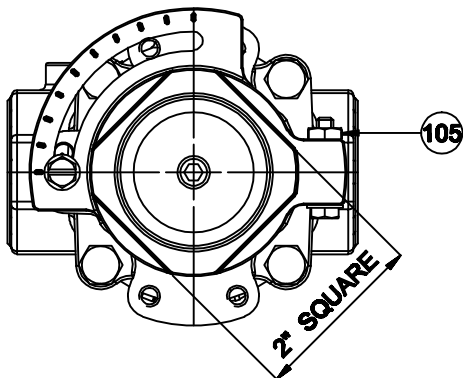
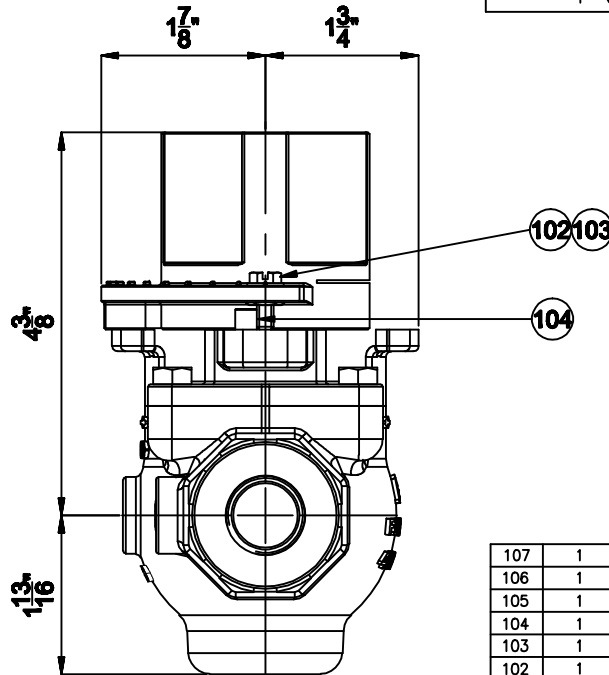
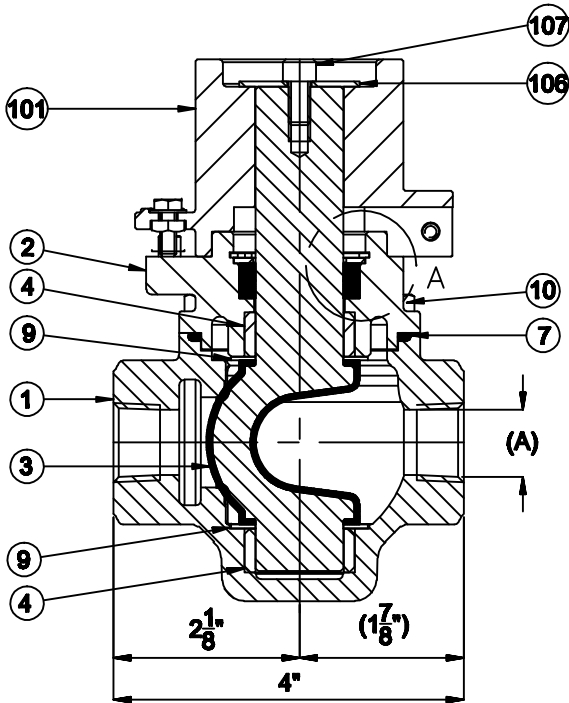
VALVE SIZE	THREAD SIZE (A)
1/2"	1/2" - 14 NPT
3/4"	3/4" - 14 NPT
1-0"	1-0" - 11.5 NPT

BODY MARKINGS



REFERENCE ONLY

DRAWINGS ARE FOR
INFORMATION PURPOSES ONLY;
PLEASE REQUEST CERTIFIED DRAWINGS
BEFORE PREPARING PIPING DIAGRAMS



DETAIL A
2:1

ITEM	QUANTITY	DESCRIPTION	MATERIAL
107	1	CAP SCREW	STEEL/ZINC
106	1	RETAINING WASHER	STEEL/ZINC
105	1	TORQUE ADJ. BOLT	STEEL/ZINC
104	1	BODY STOP	STEEL/ZINC
103	1	ADJ. CLOSE STOP	STEEL/ZINC
102	1	ADJ. OPEN STOP	STEEL/ZINC
101	1	TORQUE COLLAR	DUCTILE IRON A536 GR. 65-45-12
10	AR	CAP SCREW	STEEL/ZINC
9	2	WASHER	PTFE
8	1	WASHER	BRASS/STEEL
7	1	"O" RING	ELASTOMER AS SPEC.
6	2	U CUP SEALS	ELASTOMER AS SPEC.
5	1	RETAINING RING	SPRING STEEL
4	2	SLEEVE BEARING	316 STAINLESS STEEL
3	1	PLUG (ELASTOMER AS SPEC.)	DUCTILE IRON A536 GR. 65-45-12
2	1	BONNET (CAP)	DUCTILE IRON A536 GR. 65-45-12
1	1	BODY	DUCTILE IRON A536 GR. 65-45-12

MATERIAL LIST

THIS DRAWING IS THE PROPERTY OF
MILLIKEN VALVE
AND
MUST NOT BE USED IN ANY WAY
PREJUDICIAL TO THEIR INTERESTS

DRAWN	J. COLPAN
CHECKED	A. JACKSON
APPROVED	B. JACKSON
DATE	06/03/2011
REF. DWG	-

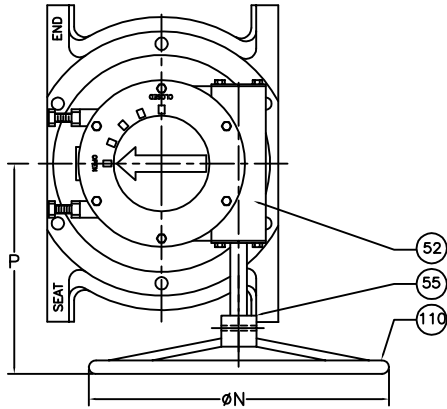
TITLE:
1/2" TO 1" FIG. 613A DUCTILE IRON,
THREADED END, ANSI 125 MILLCENTRIC PLUG
VALVE WITH A TORQUE COLLAR

ISSUE	CHANGE NO. OR DESCRIPTION	DATE	BY
1	-	-	-
2	-	-	-

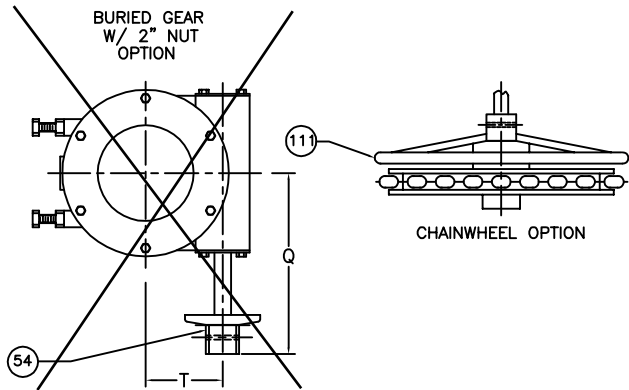
TYPE: 0050/0075/0100-613A-TC
DRAWING NO.: S46997

VALVE SIZE	GEAR SIZE & RATIO	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	S	T
2.5	M2 (20:1)	7.5	3.41	3.50	2.5	5.50	7.00	0.75	4	---	---	0.69	2.5	6	4.75	4.75	1.75	2.00
3	M2 (20:1)	8	3.41	3.75	3	6.00	7.50	0.75	4	---	---	0.75	2.5	6	4.75	4.75	1.75	2.00
4	M3 (30:1)	9	4.38	4.50	4	7.50	9	0.75	6	0.63	2	0.94	3	6	9.50	8	2.00	2.56
5	M3 (30:1)	10	5.63	5.75	5	8.50	10	0.88	6	0.75	2	0.94	3	6	9.50	8	2.00	2.56
6	M3 (30:1)	10.50	5.63	5.75	6	9.50	11	0.88	6	0.75	2	1	3	6	9.50	8	2.00	2.56
8	M5 (50:1)	11.50	7.56	7.63	8	11.75	13.50	0.88	6	0.75	2	1.13	6	12	11.25	8	2.25	3.16
10	M8 (80:1)	13	9.25	8.88	10	14.25	16	1	8	0.88	4	1.19	6	12	11.63	10	2.00	4.63
12	M8 (80:1)	14	10.88	10	12	17.00	19	1	8	0.88	4	1.25	6	12	11.63	10	2.00	4.63

ABOVE GROUND GEAR W/ HANDWHEEL OPTION



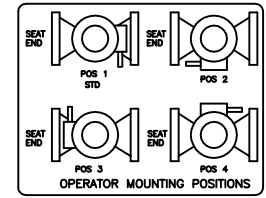
BURIED GEAR W/ 2" NUT OPTION



CHAINWHEEL OPTION

SIZE	GEAR	# OF TURNS
2.5"	20:1	5
3"	20:1	5
4"	30:1	7 1/2
5"	30:1	7 1/2
6"	30:1	7 1/2
8"	50:1	12 1/2
10"	80:1	20
12"	80:1	20

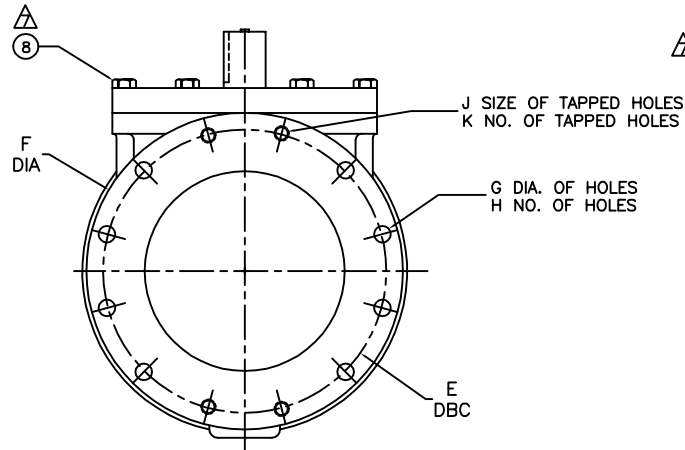
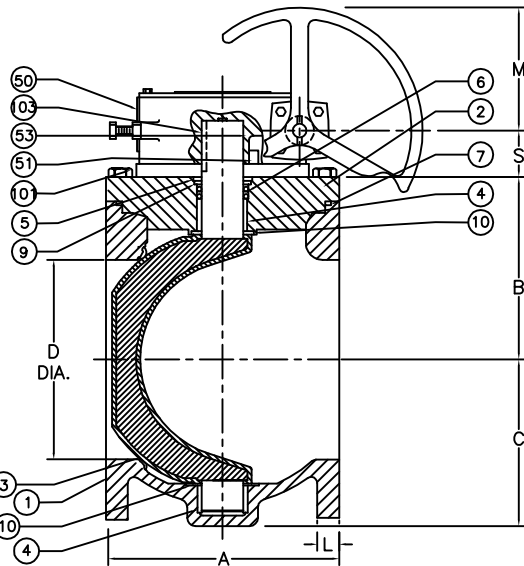
REFERENCE ONLY



THIS DRAWING IS THE PROPERTY OF MILLIKEN VALVE COMPANY AND MUST NOT BE USED IN ANY WAY PREJUDICIAL TO THEIR INTERESTS

*RISER RING IS ONLY ON 2-1/2" TO 8" VALVE

111	1	CHAINWHEEL	DUCTILE IRON
110	1	SPRING PIN	STEEL
103	1	KEY	STEEL
*101	1	RISER RING	STEEL
55	1	HANDWHEEL	DUCTILE IRON
54	1	2" NUT	DUCTILE IRON
53	2	SLEEVE BEARING	BRONZE
52	1	WORM GEAR	STEEL
51	1	QUAD GEAR	DUCTILE IRON
50	1	HOUSING	
10	2	GRIT SEAL	PTFE
9	1	SEAL RETAINING RING	BRASS
8	AR	H.H. CAP SCREW	STEEL/ZINC
7	1	O-RING	ELAS AS SPEC.
6	2	U-CUP SEAL	ELAS AS SPEC.
5	1	SNAP RING	SPRING STEEL
4	2	SLEEVE BEARING	STN. STEEL
3	1	PLUG	ELASTOMER AS SPEC. DUCTILE IRON
2	1	CAP	CAST IRON
1	1	BODY	CAST IRON



ITEM	QTY	DESCRIPTION	MATERIAL																																																															
<table border="1"> <tr> <td rowspan="2">ISSUE NUM.</td> <td colspan="2">MILLIKEN VALVE COMPANY</td> <td>BY</td> <td>CR</td> <td>DATE</td> <td>10/95</td> <td>SCALE</td> <td>NONE</td> </tr> <tr> <td colspan="2"></td> <td>CHK'D</td> <td>AJ</td> <td></td> <td></td> <td>DIM.</td> <td>INCHES</td> </tr> <tr> <td>DATE</td> <td colspan="2">REVISIONS</td> <td>BY</td> <td colspan="5">TITLE:</td> </tr> <tr> <td>1 12/97</td> <td colspan="2">REVISED GEAR DIM. FOR 2.5" & 3" WAS M2 NOW ALECTO 232-07</td> <td>CR</td> <td colspan="5" rowspan="8"> FIG. 601 2-1/2" TO 12" MILLCENTRIC PLUG VALVE, FLANGED, GEAR OPERATED, w/HANDWHEEL, 2" NUT, OR CHAINWHEEL OPTION </td> </tr> <tr> <td>2 11/98</td> <td colspan="2">ITEM 9 WAS BRONZE</td> <td>CR</td> </tr> <tr> <td>3 09/07</td> <td colspan="2">ADDED MTRL TYPE</td> <td>JC</td> </tr> <tr> <td>4 02/10</td> <td colspan="2">ITEM 50 MATERIAL CHANGED FROM CAST TO DUCTILE IRON [ECON# 252]</td> <td>JC</td> </tr> <tr> <td>5 08/10</td> <td colspan="2">REMOVED DATA FOR 14" [ECON # 284]</td> <td>TF</td> </tr> <tr> <td>6 05/12</td> <td colspan="2">CORRECTION IN "B" & "S" DIM. [ECON# 504]</td> <td>AA</td> </tr> <tr> <td>7 01/13</td> <td colspan="2">ADDED ITEM 10 AND BOM UPDATE</td> <td>JC</td> </tr> <tr> <td>8 01/13</td> <td colspan="2">B.O.M. STANDARDIZATION ITEM TO NOW 8 AA</td> <td>AA</td> </tr> </table>				ISSUE NUM.	MILLIKEN VALVE COMPANY		BY	CR	DATE	10/95	SCALE	NONE			CHK'D	AJ			DIM.	INCHES	DATE	REVISIONS		BY	TITLE:					1 12/97	REVISED GEAR DIM. FOR 2.5" & 3" WAS M2 NOW ALECTO 232-07		CR	FIG. 601 2-1/2" TO 12" MILLCENTRIC PLUG VALVE, FLANGED, GEAR OPERATED, w/HANDWHEEL, 2" NUT, OR CHAINWHEEL OPTION					2 11/98	ITEM 9 WAS BRONZE		CR	3 09/07	ADDED MTRL TYPE		JC	4 02/10	ITEM 50 MATERIAL CHANGED FROM CAST TO DUCTILE IRON [ECON# 252]		JC	5 08/10	REMOVED DATA FOR 14" [ECON # 284]		TF	6 05/12	CORRECTION IN "B" & "S" DIM. [ECON# 504]		AA	7 01/13	ADDED ITEM 10 AND BOM UPDATE		JC	8 01/13	B.O.M. STANDARDIZATION ITEM TO NOW 8 AA		AA
ISSUE NUM.	MILLIKEN VALVE COMPANY		BY		CR	DATE	10/95	SCALE	NONE																																																									
			CHK'D	AJ			DIM.	INCHES																																																										
DATE	REVISIONS		BY	TITLE:																																																														
1 12/97	REVISED GEAR DIM. FOR 2.5" & 3" WAS M2 NOW ALECTO 232-07		CR	FIG. 601 2-1/2" TO 12" MILLCENTRIC PLUG VALVE, FLANGED, GEAR OPERATED, w/HANDWHEEL, 2" NUT, OR CHAINWHEEL OPTION																																																														
2 11/98	ITEM 9 WAS BRONZE		CR																																																															
3 09/07	ADDED MTRL TYPE		JC																																																															
4 02/10	ITEM 50 MATERIAL CHANGED FROM CAST TO DUCTILE IRON [ECON# 252]		JC																																																															
5 08/10	REMOVED DATA FOR 14" [ECON # 284]		TF																																																															
6 05/12	CORRECTION IN "B" & "S" DIM. [ECON# 504]		AA																																																															
7 01/13	ADDED ITEM 10 AND BOM UPDATE		JC																																																															
8 01/13	B.O.M. STANDARDIZATION ITEM TO NOW 8 AA		AA																																																															
DWG. NO. S49110																																																																		

CHAINWHEEL: LINE 12.0, 13.0, 22.0 HANDWHEEL: LINE 9.0, 14.0, 19.0

Spare Parts and Service

RECOMMENDED SPARE PARTS AND SERVICE

The Milliken Valve products are designed for long life. The stocking of spare parts is not recommended or required for normal operations. If the need for a replacement part develops, it may be ordered from our After Market Group:

HOW TO ORDER PARTS:

To order parts, contact our Parts Department:

Write - Milliken Valve Compan
401 South Highland Avenue
Aurora, IL 60506-5563

Attention: Parts Manager

Call - (630) 844-4000

Fax - (630) 844-4191

Please include valve serial number and description of part requested.

HOW TO OBTAIN SERVICE:

To obtain further information or secure field service, contact our Field Service Department:

Write - Milliken Valve Company
401 South Highland Avenue
Aurora, IL 60506-5563

Attention: Field Service Manager

Call - (630) 844-4163

Fax - (630) 844-4160

Please include the following with your inquiry for service:

Milliken Order Number:
Milliken Item Number
Type of Service Requested

Local Service Representative

Southwest Valve, LLC.
402 W. Bedford #111
Fresno, CA 93711
Phone: 559-261-2703
Fax: 559-261-2711

Documentation



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

Purchase Order #: LOI-Manteca CA
Sales Order #: 2226531ML
Proposal/Quote #: Q-017-17005
Project Name: WQCF Digester Improvements 20
Project Location: Manteca, CA
Date: August 8, 2017
Revision: 1

MATERIAL WARRANTY

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

The warranty period shall be twelve (12) months for parts and eighteen (18) months for all other goods after date of shipment. This shall be Buyer's sole remedy.

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

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

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

In no event shall warranty include valve removal or reinstallation.



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

Purchase Order #: LOI-Manteca CA
Sales Order #: 2226531ML
Proposal/Quote #: Q-017-17005
Project Name: WQCF Digester Improvements 20
Project Location: Manteca, CA
Date: August 8, 2017
Revision: 1

Certificate of Conformance
Resilient Seated Eccentric Plug Valve

We hereby certify that the valves identified herein will be manufactured in accordance with referenced specifications and the applicable sections of AWWA C517-Latest Edition. The valves will be shop operated three (3) times to verify that the complete assembly is workable.

A handwritten signature in blue ink, appearing to read "Bob Newkirk".

Bob Newkirk
Quality Assurance Manager
Henry Pratt Company