Western Water Constructors, Inc.
license no. 188068

Submittal Cover

Job no. 16-05

CONTRACT NAME:	Manteca WQCF Digester Improvements	**SUB #:**	283
SPEC SECTION:	13208 Polyethylene Storage Tanks	**REV #:**	0
SUBMITTAL TITLE:	PE Tanks – O&M	**CODE:**	13208-03
FILE NAME:	283-R0_13208-03_PE Tanks-OM	**DATE:**	2/13/2018

WWC REVIEW/COMMENTS: ☒ **NO EXCEPTIONS** ☐ **EXCEPTIONS / DEVIATIONS AS NOTED**

REVIEWED BY: ST **SIGNED:**

WWC HAS REVIEWED THIS SUBMITTAL FOR CONFORMANCE WITH THE PROJECT PLANS & SPECIFICATIONS.

OWNER REVIEW:

ITEM	DESCRIPTION	REVIEW STATUS				
		A	B	C	D	E
1	PE Tanks – O&M	☐	☐	☐	☐	☐
2		☐	☐	☐	☐	☐
3		☐	☐	☐	☐	☐
4		☐	☐	☐	☐	☐
5		☐	☐	☐	☐	☐

LEGEND: **A =** No Exceptions Taken **B =** Make Correction Noted **C =** Correct & Resubmit
D = Rejected **E** = Accepted for Record

OWNER COMMENTS:

REVIEWER'S NAME: _____

REVIEWER'S SIGNATURE: _____ **DATE:** _____

707 Aviation Blvd
Santa Rosa, CA 95403

www.westernwater.com
general engineering contractors

p 707.540.9640
f 707.540.9641

EQUIPMENT SUMMARY FORM

1. EQUIPMENT ITEM 1,550-Gallon SAFE Xlpe Chemical Storage Tanks

2. MANUFACTURER Poly Processing Company

3. EQUIPMENT IDENTIFICATION NUMBER(S) (maps equipment number) DCS-TNK-07-805/ALUMINUM SULFATE, DCS-TNK-07-800/FERRIC CHLORIDE

4. LOCATION OF EQUIPMENT City of Manteca WW QC

5. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS)

Empty tank weight 800 lbs (Inner Tank 400 lbs, Outer Tank 400 lbs)

6. NAMEPLATE DATA - Horsepower
   Amperage
   Voltage
   Service Factor (S.F.)
   Speed
   ENC Type
   Capacity 1,586 Gallons
   Other

7. MANUFACTURER'S LOCAL REPRESENTATIVE

Name Burlingame Engineers, Inc.

Address 1225 David Ave., Concord, CA 94518

Telephone Number (925) 943-5200

8. MAINTENANCE REQUIREMENTS See pg. 35-36 of Installation & Operation Guide in Section 3 of Poly Tank O&M

9. LUBRICANT LIST N/A

10. SPARE PARTS (recommendations) N/A

11. COMMENTS

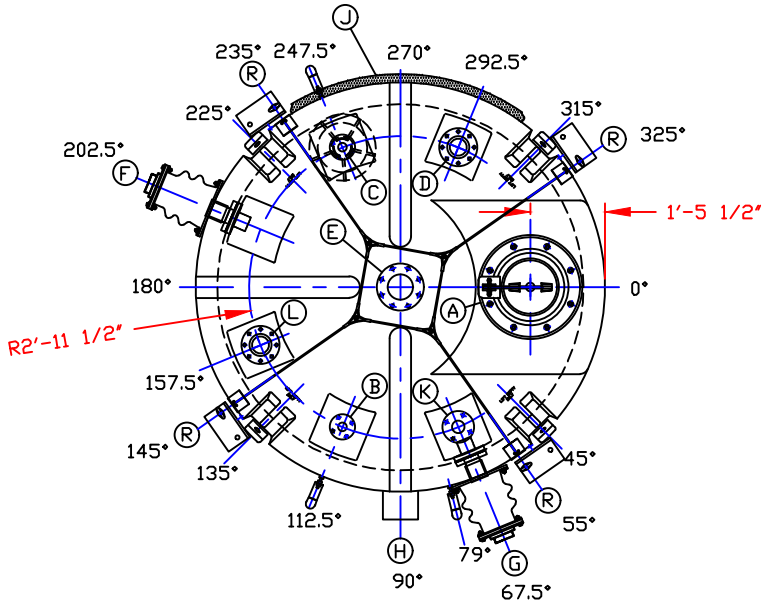
OPERATION & MAINTENANCE MANUAL

DATE:	February 8, 2018	Rev. 2/2018
CUSTOMER:	City of Manteca, CA	
PROJECT NAME:	City of Manteca – Digester Improvements Project	
SPECIFICATION:	13208	
MANUFACTURER:	Poly Processing Company, LLC 2201 Old Sterlington Rd Monroe, LA 71203-3028 Ph: (318) 343-7565 Fax: (318) 343-9679	
ENGINEER:	Herwit Engineering 6200 Center Street, Suite 310 Clayton, CA 94517 Ph: (925) 672-6051	
CONTRACTOR:	Western Water Constructor, Inc. 707 Aviation Blvd. Santa Rosa, CA 95403 Ph: (707) 540-9640	
REPRESENTATIVE:	Burlingame Engineers, Inc. 1225 David Avenue Concord, CA 94518 Ph: (925) 943-5200	

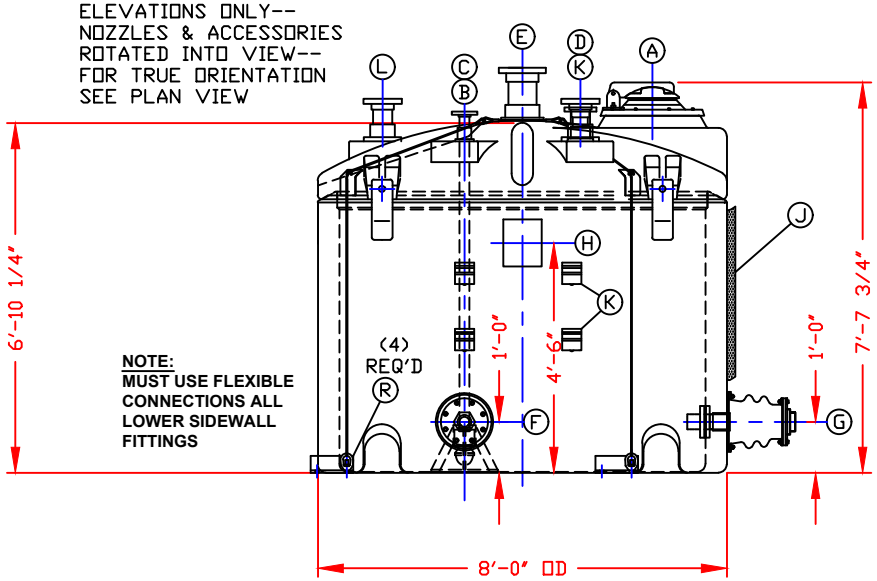
8055 S. Ash Street
French Camp, CA 95231
(209) 982-4904

Table of Contents

Section 1



ELEVATIONS ONLY--
NOZZLES & ACCESSORIES
ROTATED INTO VIEW--
FOR TRUE ORIENTATION
SEE PLAN VIEW



NOTE:
MUST USE FLEXIBLE CONNECTIONS ALL LOWER SIDEWALL FITTINGS

NOZZLE SCHEDULE & ACCESSORIES

	SERVICE	MK	STOCK NO	SIZE	FITTING	INNER TANK DEG	INNER TANK ELEV	OUTER TANK DEG	OUTER TANK ELEV
	MANWAY	A	8529/3224	19"	CVR ASMLY 19" SAFE-SURGE W/GSKT PE	0°	DOME	--	--
			7845		(8) BOLT 1/2-13 X 2" HEX HD SS 316				
			8827		(8) WASHER 1/2" FLAT SS 316				
A	INLET	B	7117/2063	2"	BHF ASMLY 2" SXT H'WARD PVC/EPDM W/FLG ADPT THRD PVC	112.5°	DOME	--	--
			3198/3209		(2) SUPP'T VERT EXT PIPE SS W/GSKT EPDM				
	OUTLET	C	3162	2"	DROP PIPE 2" INT PVC	247.5°	DOME	--	--
B			7117/2063	2"	BHF ASMLY 2" SXT H'WARD PVC/EPDM W/FLG ADPT THRD PVC				
			10344		PIPE SUPPORT 2" INTERNAL PVC/PE				
C			10591		FOOT VALVE 2" W/SCREEN SPEARS TRUE/UN PVC W/EPDM				
			3198/3209		(2) SUPP'T VERT EXT PIPE SS W/GSKT EPDM				
	LEVEL SENSOR	D	7127	4"	BHF ASMLY 4" SXT H'WARD PVC/EPDM	292.5°	DOME	--	--
			2107		FLG ADPT 4" THRD PVC				
	LEVEL SWITCH	E	7132	6"	BHF ASMLY 6" SXT H'WARD PVC/EPDM	TDC	DOME	--	--
			2129		FLG ADPT 6" THREADED PVC				
A	DISCHARGE 1	F	9870	3"	B.O.S.S. FITTING 3" ASMLY PE/PVC/SS/EPDM	202.5°	1'-0"	--	--
B			9758	3"	TRNS FTG 3" BELLOW STYLE II PVC/EPDM/SS W/EXP JNT PTFE	--	--	202.5°	1'-0"
	DISCHARGE 2	G	9870	3"	B.O.S.S. FITTING 3" ASMLY PE/PVC/SS/EPDM	67.5°	1'-0"	--	--
			9758	3"	TRNS FTG 3" BELLOW STYLE II PVC/EPDM/SS W/EXP JNT PTFE	--	--	67.5°	1'-0"
	HEATER	H	6787	--	HEATER SYSTEM NON-HAZ (3)SP420-16	--	--	90°	4'-6"
	INSULATION	J	6967	--	INSULATION POLYFOAM 230 2" THK W/MASTIC COATING	ALL	DOME	ALL	SDWL
B	OVERFLOW	K	7122/2085	3"	BHF ASMLY 3" SXT H'WARD PVC/EPDM W/FLG ADPT THRD PVC	67.5°	DOME	--	--
A			3198/3209		(2) SUPP'T VERT EXT PIPE SS W/GSKT EPDM	--	--	79°	SDWL
B	VENT	L	7127/2107	4"	BHF ASMLY 4" SXT H'WARD PVC/EPDM W/FLG ADPT THRD PVC	157.5°	DOME	--	--
	RESTRAINT	R	NS-140	--	L6-10 SSMC 1550ST OD/316SS @ GRADE	55°	DOME	55°	SDWL
						145°		145°	
			10443		(4) RC L6-10 SS 316 6" X 4" X 1/2" X 10" HR ANGLE	235°		235°	
			10794		(8) ANCHOR ROD 7/8" X 10" 316SS	325°		325°	
	LABEL	--	LABEL	--	LAMINATED VINYL ID LABEL	SHIP LOOSE			
	LABEL	--	LABEL	--	NFPA ALUMINUM SULFATE LABEL				

NOTES:
1. THIS IS A COMPUTER GENERATED DWG. DO NOT REVISE BY HAND.
2. DIMENSIONS WILL VARY ±3% DUE TO VARIATIONS IN MULTIPLE MOLDS & CONDITIONS PREVALENT DURING MANUFACTURE & USAGE.
3. TANKS DESIGNED FOR 1.9 SpG MAT'L @ 100°F/ATMOS PRESSURE

CALCULATED CAPACITIES/ VOLUME IN U.S. GALLONS			
TANK	DESIGN CAP	DOME VOL	TOTAL VOL
INNER	1586	204	1790
OUTER	1954	N/A	1954

REV "C" MK C ADDED PIPE SUPP'TS BY:JB 12/5/17
REV "B" MK C,F,K,L RELOCATED BY:JB 6/6/17
REV "A" MK B & K ADDED PIPE SUPP'TS/MK F RELOCATED BY:JB 5/17/17

DWG TITLE
1550 GALLON SAFE-TANK ASSEMBLY
DCS-TNK-07-805/ALUMINUM SULFATE

1.9 SpG/XLPE/NATURAL
INNER STOCK NO. 72001550410
OUTER STOCK NO. 72101950410

SERVICE: ALUMINUM SULFATE

SCALE: 3/8"= 1'-0"

DATE: 10/31/16

POLYPROCESSING
SOLUTIONS, SIMPLIFIED.
Central Region
P.O. Box 4150 (71211)
2201 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7955
FAX (318) 343-8795

DR: J. BRANTLEY
CK: B. HALL

BURLINGAME ENG, INC PO #7171
FOR: CITY OF MANTECA WASTE WATER QC

SHEET 1 OF 1
COMPUTER FILE BER7171A
REV C

B-275

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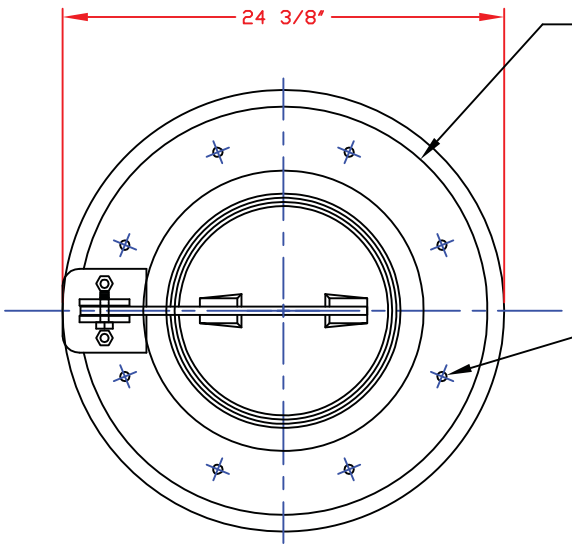
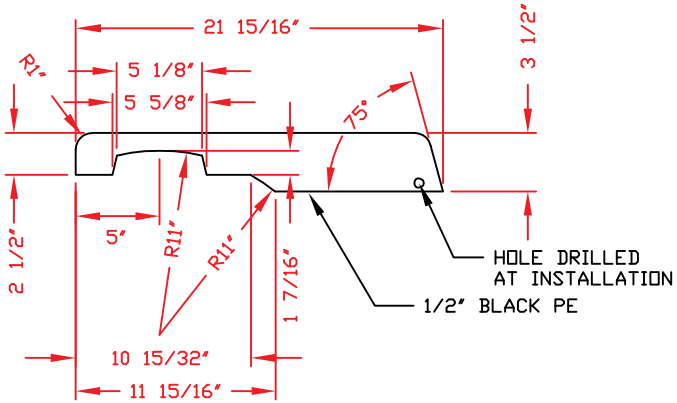
VERIFY REV LEVEL OF PAPER COPY WITH REV LEVEL ON PPC WEB SITE

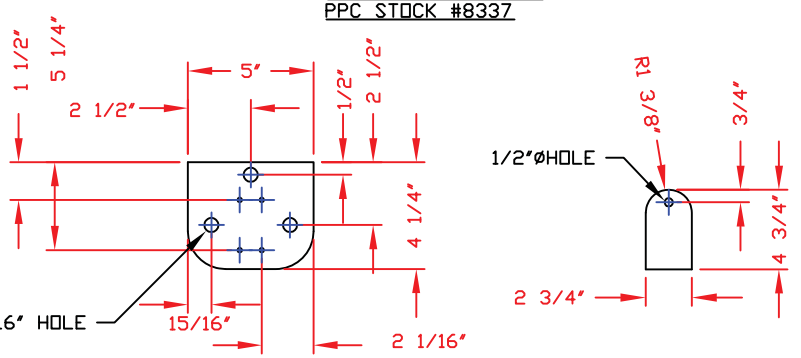


19" SAFE-SURGE EMERGENCY
PRESSURE RELIEF ASSEMBLY
STANDARD (8) BOLT COVER SHOWN

9/16" DIAMETER HOLE
ON 20 1/2" BOLT CIRCLE
(8) REQ'D EQUALLY SPACED

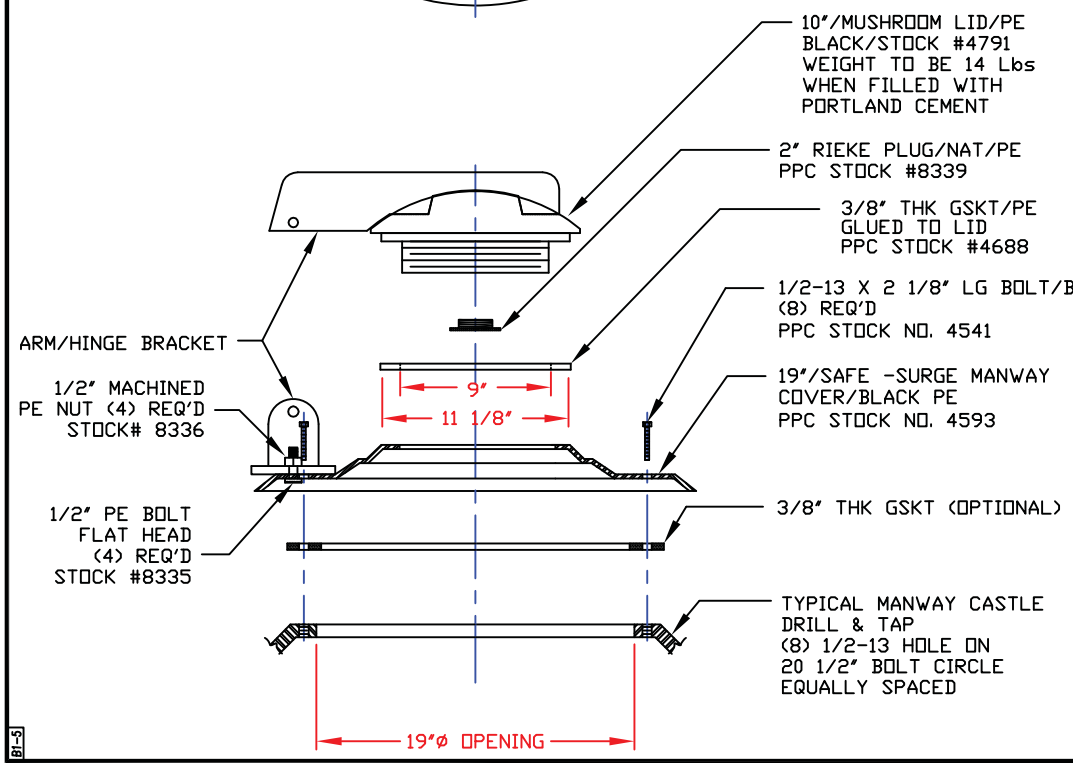


HINGE ARM (1) REQ'D
PPC STOCK #8337



BASE PLATE 3/8"THK/BLK/PE (1) REQ'D
SCALE: NONE

HINGE PLATE 3/8" THK
BLK/PE (2) REQ'D



HINGE BRACKET DETAIL "A"
PPC STOCK #8341

NOTES
1. THIS IS A COMPUTER GENERATED DWG. DO NOT REVISE BY HAND.
2. PPC STOCK NO. 3216.

DWG TITLE
19" SAFE-SURGE EMERGENCY PRESSURE RELIEF ASSEMBLY

SCALE: 1 1/2"=1'-0"
DATE: 8/2/10

POLY PROCESSING Company
Central Region
P.O. Box 4159 (71210)
2201 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7565
FAX (318) 343-8795

DR: J. BRANTLEY
CK: B THURMON

Manway Mark A

SHEET	COMPUTER FILE	REV
1 OF 1	19MWYSS	

B1-S

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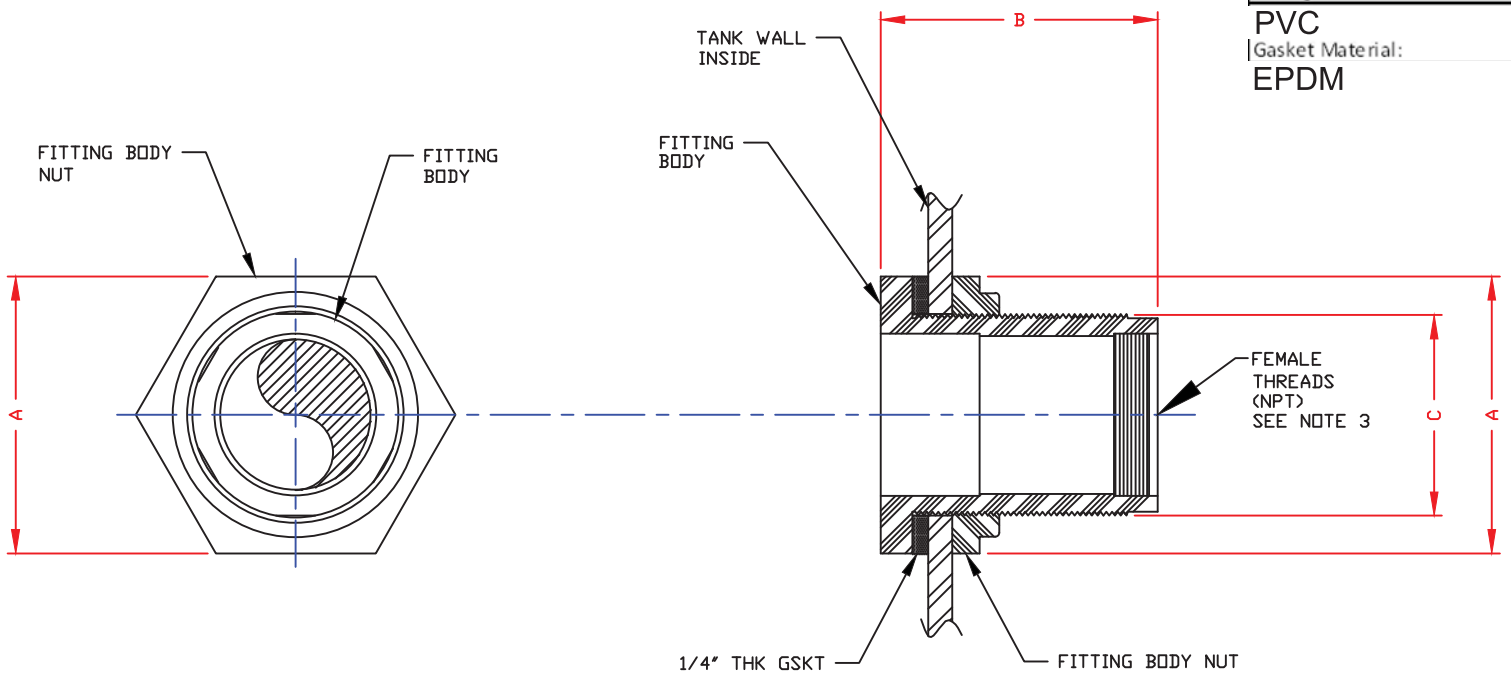
VERIFY REV LEVEL OF PAPER COPY WITH REV LEVEL ON PPC WEB SITE

Fitting Size:
2"
Fitting Material:
PVC
Gasket Material:
EPDM



PIPE SIZE (NPT)	DIM A	DIM B	DIM C
1/2"	2"	3 3/4"	1 3/8"
3/4"	2 3/8"	3 7/8"	1 5/8"
1"	2 9/16"	3 7/8"	1 7/8"
1 1/4"	3 1/4"	4"	2 3/8"
1 1/2"	3 1/4"	4"	2 3/8"
2"	4 3/8"	4 1/4"	3 1/4"
3"	6"	4 5/8"	4 1/2"
4"	8 3/4"	5 3/4"	5 3/4"
6"	12"	8"	8"

NOTES
1. THIS IS A COMPUTER GENERATED DWG. DO NOT REVISE BY HAND.
2. PLASTIC BULKHEAD FITTINGS (EXCEPT 4") MAY BE USED ON THE TANK SIDE WALL, IN THE BOTTOM, OR ON THE CENTER OF THE DOME. PLASTIC BULKHEAD FITTINGS MAY ALSO BE USED ELSEWHERE ON THE DOME IF IT IS NOT NECESSARY THAT THE FITTING BE VERTICAL TO THE BASE OF THE TANK AS THE FITTING WILL FOLLOW THE CURVE OF THE DOME.
3. PVC FITTING MAY BE SPECIAL ORDERED WITH THREADS ON BOTH ENDS. PP IS THREADED ON BOTH ENDS. CPVC IS S X T ONLY.

REV "A" REVISED & REDRAWN BY:JB 1/20/12 CK:CD

DWG TITLE
PLASTIC BULKHEAD FITTING (HAYWARD)

SCALE: 6"=1'-0"
DATE: 4/23/10

POLY PROCESSING COMPANY LLC
Central Region
P.O. Box 4150 (71211)
2201 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7565
FAX (318) 343-8795

DR: C. DAVIES
CK: J. BRANTLEY

Inlet Mark B

SHEET 1 OF 1
COMPUTER FILE BHFM
REV A

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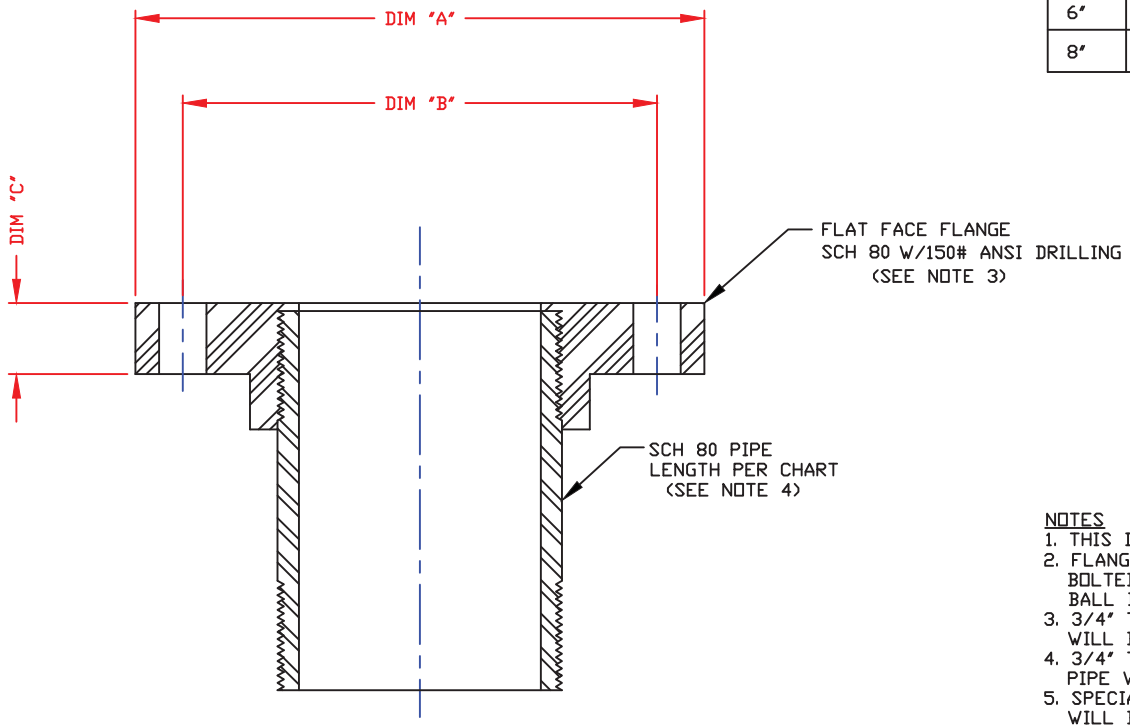
INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE

VERIFY REV LEVEL OF PAPER COPY WITH REV LEVEL ON PPC WEB SITE

Fitting Size:
2"
Fitting Material:
PVC
Flange Type:
THREADED
Gasket Material:
NONE

PIPE SIZE	DIM "A"	DIM "B"	DIM "C"	DIA BOLT HOLES	NO. BOLT HOLES	PIPE LENGTH
3/4"	3 7/8"	2 3/4"	1/2"	1/2"	4	4
1"	4 1/4"	3 1/8"	5/8"	1/2"	4	4
1 1/2"	5"	3 7/8"	11/16"	1/2"	4	4
2"	6"	4 3/4"	3/4"	5/8"	4	4
3"	7 1/2"	6"	15/16"	5/8"	8	4"
4"	9"	7 1/2"	1 1/8"	5/8"	8	6"
6"	11"	9 1/2"	1 1/4"	3/4"	8	8
8"	13 1/2"	11 3/4"	1 7/16"	3/4"	8	12"



NOTES

1. THIS IS A COMPUTER GENERATED DWG. DO NOT REVISE BY HAND.
2. FLANGE ADAPTERS MAY BE THREADED INTO BULKHEAD FTGS, BOLTED FLANGE FTGS, FEMALE SS BULKHEAD FTGS OR UNIVERSAL BALL DOME FTGS.
3. 3/4" THRU 4" FLANGES WILL BE THREADED/6" & 8" FLANGES WILL BE SOCKET FLANGES, UNLESS SPECIFIED OTHERWISE.
4. 3/4" THRU 4" PIPE WILL BE THREADED BOTH ENDS/6" & 8" PIPE WILL BE STRAIGHT PIPE, UNLESS SPECIFIED OTHERWISE.
5. SPECIAL SS FLANGE ADAPTERS CAN BE ORDERED. ALL SIZES WILL BE THREADED.

DWG TITLE: FLANGE ADAPTER

SCALE: 6"=1'-0"

DATE: 4/28/10

POLY PROCESSING COMPANY LLC
Central Region
P.O. Box 4130 (71211)
2824 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7365
FAX (318) 343-8795

DR: C. DAVIES

CK: J. BRANTLEY

Inlet Mark B

SHEET: 1 OF 1

COMPUTER FILE: FLGADPTM

REV: -

68

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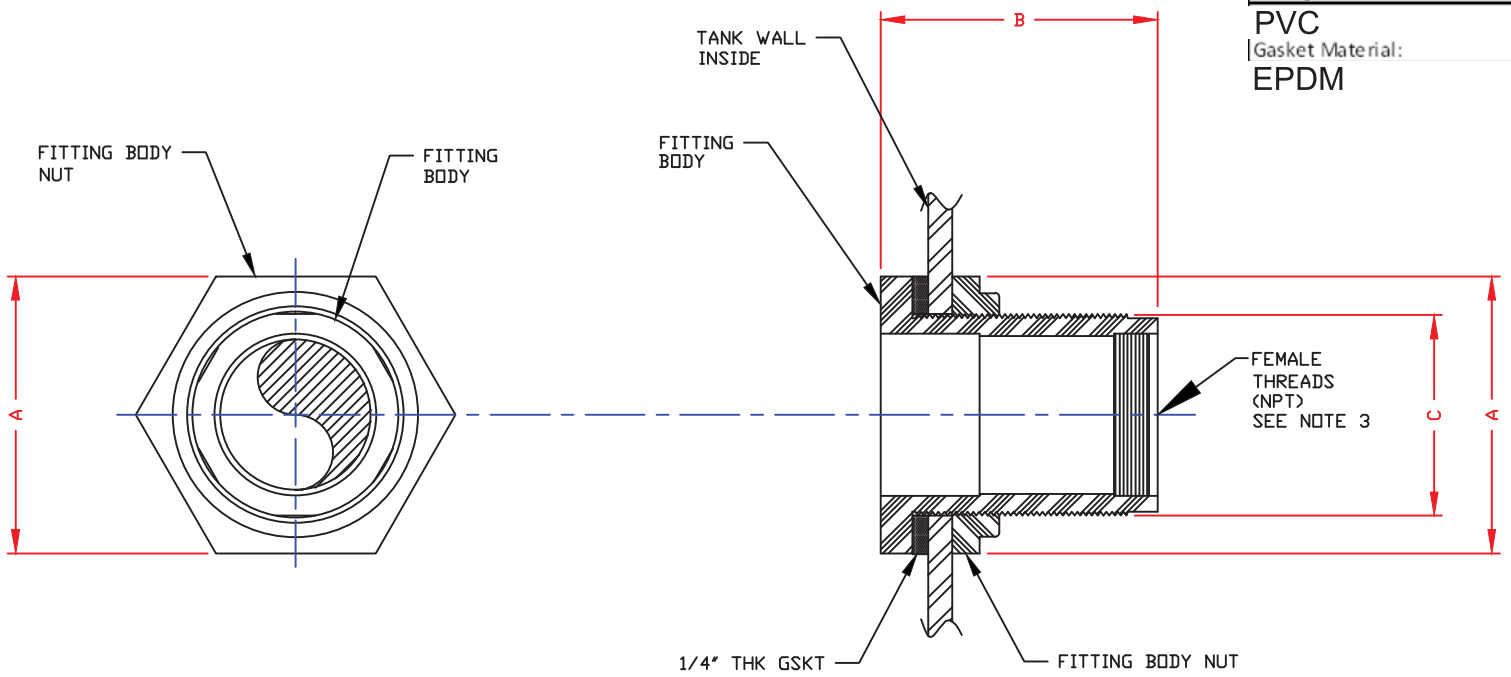
INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE

VERIFY REV LEVEL OF PAPER COPY WITH REV LEVEL ON PPC WEB SITE

Fitting Size:
2"
Fitting Material:
PVC
Gasket Material:
EPDM



PIPE SIZE (NPT)	DIM A	DIM B	DIM C
1/2"	2"	3 3/4"	1 3/8"
3/4"	2 3/8"	3 7/8"	1 5/8"
1"	2 9/16"	3 7/8"	1 7/8"
1 1/4"	3 1/4"	4"	2 3/8"
1 1/2"	3 1/4"	4"	2 3/8"
2"	4 3/8"	4 1/4"	3 1/4"
3"	6"	4 5/8"	4 1/2"
4"	8 3/4"	5 3/4"	5 3/4"
6"	12"	8"	8"

NOTES
1. THIS IS A COMPUTER GENERATED DWG. DO NOT REVISE BY HAND.
2. PLASTIC BULKHEAD FITTINGS (EXCEPT 4") MAY BE USED ON THE TANK SIDE WALL, IN THE BOTTOM, OR ON THE CENTER OF THE DOME. PLASTIC BULKHEAD FITTINGS MAY ALSO BE USED ELSEWHERE ON THE DOME IF IT IS NOT NECESSARY THAT THE FITTING BE VERTICAL TO THE BASE OF THE TANK AS THE FITTING WILL FOLLOW THE CURVE OF THE DOME.
3. PVC FITTING MAY BE SPECIAL ORDERED WITH THREADS ON BOTH ENDS. PP IS THREADED ON BOTH ENDS. CPVC IS S X T ONLY.

Includes internal drop pipe

REV "A" REVISED & REDRAWN BY:JB 1/20/12 CK:CD

DWG TITLE
PLASTIC BULKHEAD FITTING (HAYWARD)

SCALE: 6"=1'-0"
DATE: 4/23/10

PolyProcessing Company LLC
Central Region
P.O. Box 4150 (71211)
2281 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7565
FAX (318) 343-8795

DR: C. DAVIES
CK: J. BRANTLEY

Outlet Mark C

SHEET: 1 OF 1
COMPUTER FILE: BHFM
REV: A

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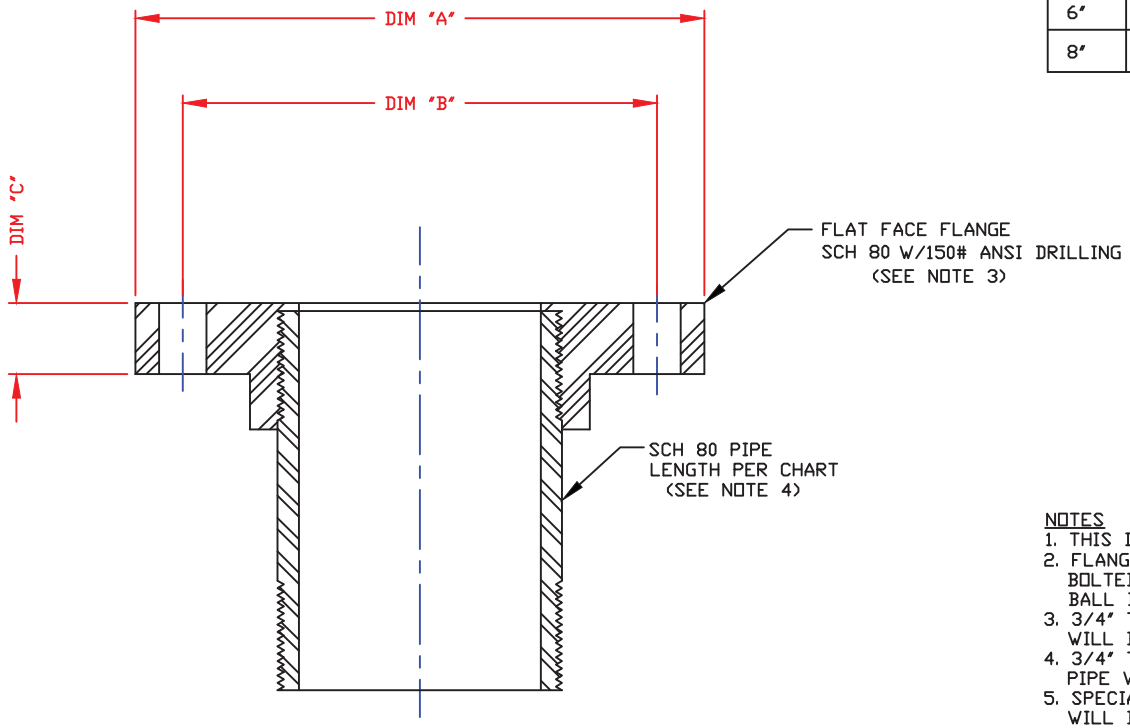
INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE

VERIFY REV LEVEL OF PAPER COPY WITH REV LEVEL ON PPC WEB SITE

Fitting Size:
2"
Fitting Material:
PVC
Flange Type:
THREADED
Gasket Material:
NONE

PIPE SIZE	DIM "A"	DIM "B"	DIM "C"	DIA BOLT HOLES	NO. BOLT HOLES	PIPE LENGTH
3/4"	3 7/8"	2 3/4"	1/2"	1/2"	4	4
1"	4 1/4"	3 1/8"	5/8"	1/2"	4	4
1 1/2"	5"	3 7/8"	11/16"	1/2"	4	4
2"	6"	4 3/4"	3/4"	5/8"	4	4
3"	7 1/2"	6"	15/16"	5/8"	8	4"
4"	9"	7 1/2"	1 1/8"	5/8"	8	6"
6"	11"	9 1/2"	1 1/4"	3/4"	8	8
8"	13 1/2"	11 3/4"	1 7/16"	3/4"	8	12"



NOTES

1. THIS IS A COMPUTER GENERATED DWG. DO NOT REVISE BY HAND.
2. FLANGE ADAPTERS MAY BE THREADED INTO BULKHEAD FTGS, BOLTED FLANGE FTGS, FEMALE SS BULKHEAD FTGS OR UNIVERSAL BALL DOME FTGS.
3. 3/4" THRU 4" FLANGES WILL BE THREADED/6" & 8" FLANGES WILL BE SOCKET FLANGES, UNLESS SPECIFIED OTHERWISE.
4. 3/4" THRU 4" PIPE WILL BE THREADED BOTH ENDS/6" & 8" PIPE WILL BE STRAIGHT PIPE, UNLESS SPECIFIED OTHERWISE.
5. SPECIAL SS FLANGE ADAPTERS CAN BE ORDERED. ALL SIZES WILL BE THREADED.

DWG TITLE: FLANGE ADAPTER

SCALE: 6"=1'-0"

DATE: 4/28/10

PolyProcessing Company LLC
Central Region
P.O. Box 4130 (71211)
2824 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7565
FAX (318) 343-8795

DR: C. DAVIES

CK: J. BRANTLEY

Outlet Mark C

SHEET: 1 OF 1

COMPUTER FILE: FLGADPTM

REV: -

68

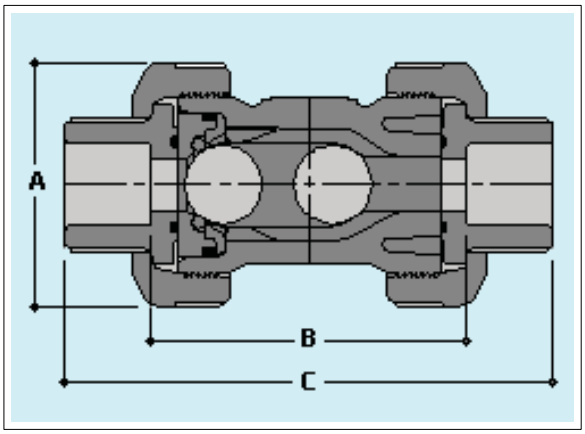
Part No : 2229-020 VALVES

Product Code :220

Est'd Weight : 4.94 lbs or 2.24 Kg

Color : GRAY

Material : PVC



Outlet Mark C
Includes Foot Screen

Cv Value = 540.00

A = 5.125" B = 5.750" C = 8.750"

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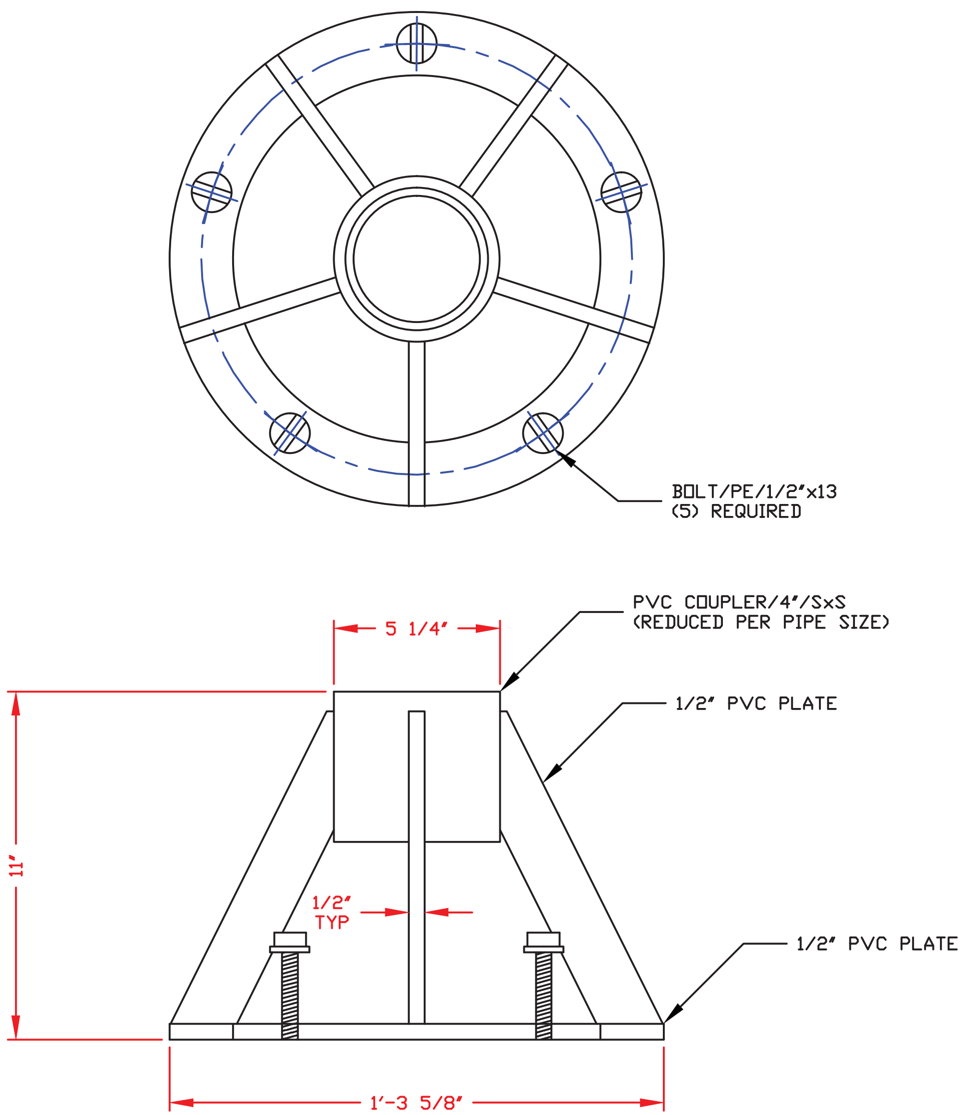
Internal Pipe Support Stand Size
2" W/ Reducer Bushing 4X2 Part#10344



NOTES:
1. THIS IS A COMPUTER GENERATED DWG. DO NOT REVISE BY HAND.
2. PPC STOCK NO. 10344

DWG TITLE: FREE STANDING INTERNAL PIPE SUPPORT				
SCALE: 3"=1'-0"	POLYPROCESSING SOLUTIONS, SIMPLIFIED.	Central Region P.O. Box 4150 (71211) 2201 Old Sterlington Rd. Monroe, LA 71203 (318) 343-7565 FAX (318) 343-8795	DR: B. THURMON	
DATE: 4/04/11			CK: J. BRANTLEY	
Outlet Mark C	SHEET 1 OF 1	COMPUTER FILE PSSTANDM	REV -	

B3

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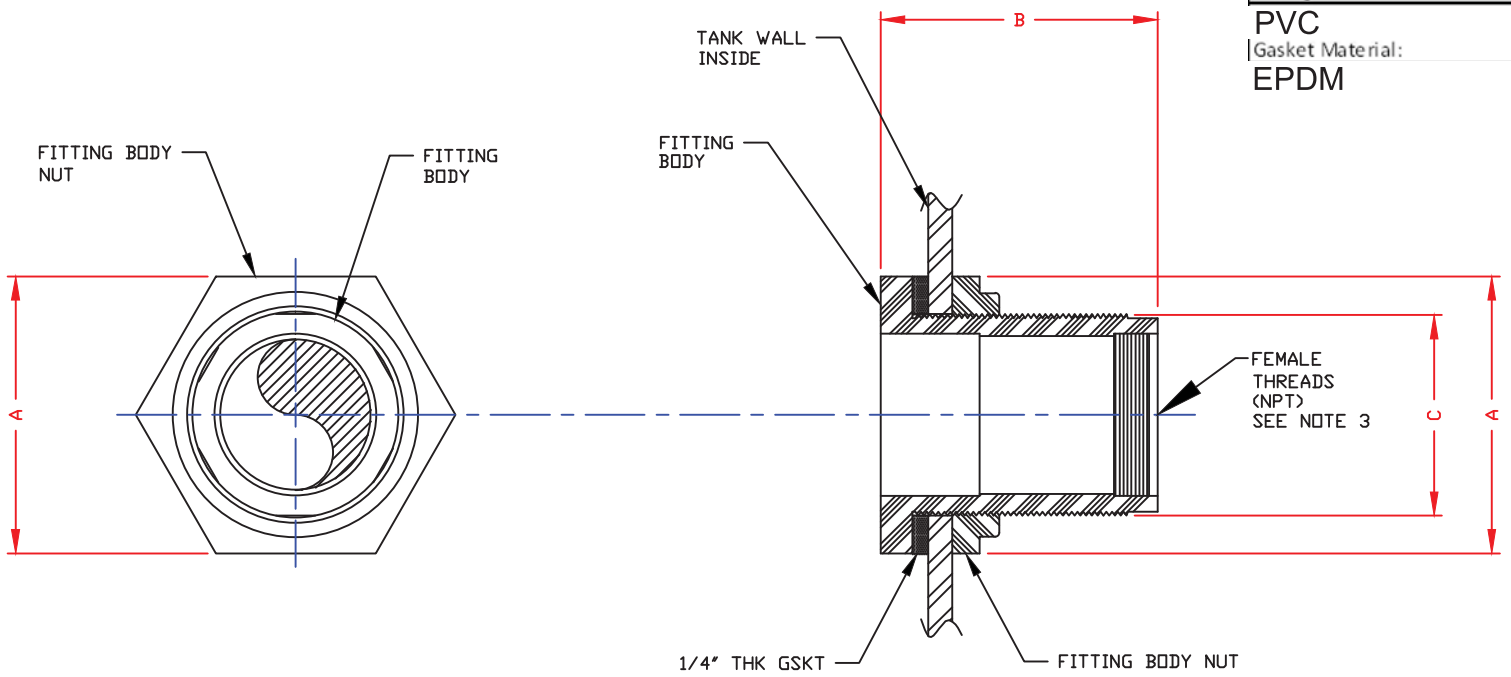
VERIFY REV LEVEL OF PAPER COPY WITH REV LEVEL ON PPC WEB SITE

Fitting Size:
4"
Fitting Material:
PVC
Gasket Material:
EPDM



PIPE SIZE (NPT)	DIM A	DIM B	DIM C
1/2"	2"	3 3/4"	1 3/8"
3/4"	2 3/8"	3 7/8"	1 5/8"
1"	2 9/16"	3 7/8"	1 7/8"
1 1/4"	3 1/4"	4"	2 3/8"
1 1/2"	3 1/4"	4"	2 3/8"
2"	4 3/8"	4 1/4"	3 1/4"
3"	6"	4 5/8"	4 1/2"
4"	8 3/4"	5 3/4"	5 3/4"
6"	12"	8"	8"

NOTES
1. THIS IS A COMPUTER GENERATED DWG. DO NOT REVISE BY HAND.
2. PLASTIC BULKHEAD FITTINGS (EXCEPT 4") MAY BE USED ON THE TANK SIDE WALL, IN THE BOTTOM, OR ON THE CENTER OF THE DOME. PLASTIC BULKHEAD FITTINGS MAY ALSO BE USED ELSEWHERE ON THE DOME IF IT IS NOT NECESSARY THAT THE FITTING BE VERTICAL TO THE BASE OF THE TANK AS THE FITTING WILL FOLLOW THE CURVE OF THE DOME.
3. PVC FITTING MAY BE SPECIAL ORDERED WITH THREADS ON BOTH ENDS. PP IS THREADED ON BOTH ENDS. CPVC IS S X T ONLY.

REV "A" REVISED & REDRAWN BY:JB 1/20/12 CK:CD

DWG TITLE
PLASTIC BULKHEAD FITTING (HAYWARD)

SCALE: 6"=1'-0"
DATE: 4/23/10

PolyProcessing Company LLC
Central Region
P.O. Box 4150 (71211)
2224 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7565
FAX (318) 343-8795

DR: C. DAVIES
CK: J. BRANTLEY

Level Sensor Mark D

SHEET 1 OF 1
COMPUTER FILE BHFM
REV A

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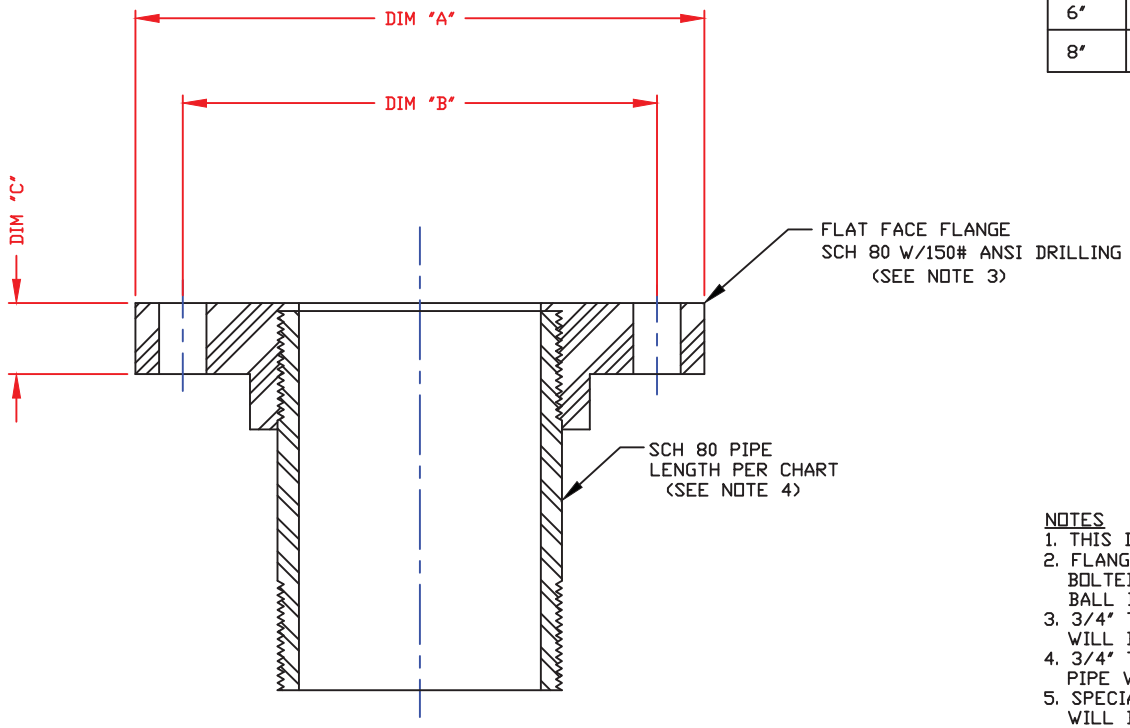
VERIFY REV LEVEL OF PAPER COPY WITH REV LEVEL ON PPC WEB SITE

Fitting Size:
4"
Fitting Material:
PVC
Flange Type:
THREADED
Gasket Material:
NONE

PIPE SIZE	DIM "A"	DIM "B"	DIM "C"	DIA BOLT HOLES	NO. BOLT HOLES	PIPE LENGTH
3/4"	3 7/8"	2 3/4"	1/2"	1/2"	4	4
1"	4 1/4"	3 1/8"	5/8"	1/2"	4	4
1 1/2"	5"	3 7/8"	11/16"	1/2"	4	4
2"	6"	4 3/4"	3/4"	5/8"	4	4
3"	7 1/2"	6"	15/16"	5/8"	8	4"
4"	9"	7 1/2"	1 1/8"	5/8"	8	6"
6"	11"	9 1/2"	1 1/4"	3/4"	8	8
8"	13 1/2"	11 3/4"	1 7/16"	3/4"	8	12"



NOTES

1. THIS IS A COMPUTER GENERATED DWG. DO NOT REVISE BY HAND.
2. FLANGE ADAPTERS MAY BE THREADED INTO BULKHEAD FTGS, BOLTED FLANGE FTGS, FEMALE SS BULKHEAD FTGS OR UNIVERSAL BALL DOME FTGS.
3. 3/4" THRU 4" FLANGES WILL BE THREADED/6" & 8" FLANGES WILL BE SOCKET FLANGES, UNLESS SPECIFIED OTHERWISE.
4. 3/4" THRU 4" PIPE WILL BE THREADED BOTH ENDS/6" & 8" PIPE WILL BE STRAIGHT PIPE, UNLESS SPECIFIED OTHERWISE.
5. SPECIAL SS FLANGE ADAPTERS CAN BE ORDERED. ALL SIZES WILL BE THREADED.

DWG TITLE: FLANGE ADAPTER

SCALE: 6"=1'-0"

DATE: 4/28/10

POLYPROCESSING COMPANY LLC
Central Region
P.O. Box 4130 (71211)
2824 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7565
FAX (318) 343-8795

DR: C. DAVIES

CK: J. BRANTLEY

Level Sensor Mark D

SHEET: 1 OF 1

COMPUTER FILE: FLGADPTM

REV: -

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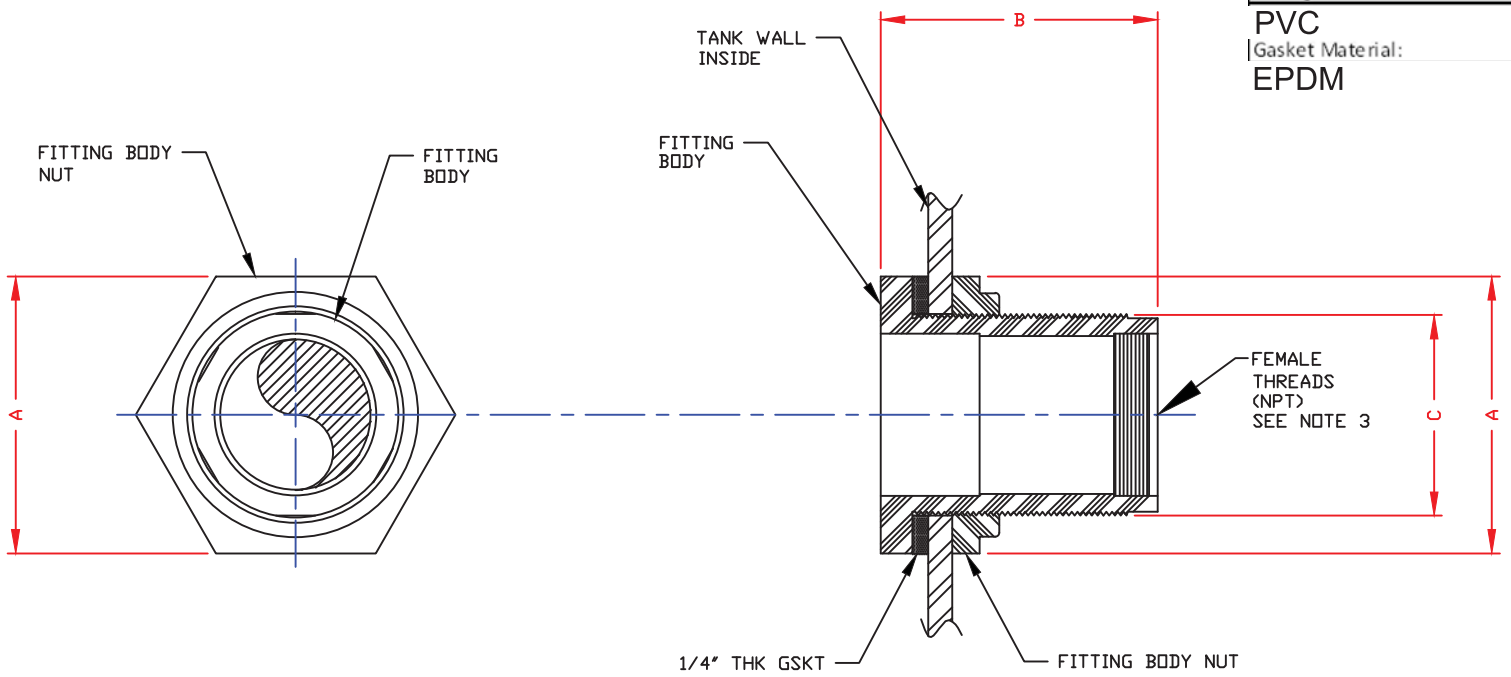
INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE

VERIFY REV LEVEL OF PAPER COPY WITH REV LEVEL ON PPC WEB SITE

Fitting Size:
6"
Fitting Material:
PVC
Gasket Material:
EPDM



PIPE SIZE (NPT)	DIM A	DIM B	DIM C
1/2"	2"	3 3/4"	1 3/8"
3/4"	2 3/8"	3 7/8"	1 5/8"
1"	2 9/16"	3 7/8"	1 7/8"
1 1/4"	3 1/4"	4"	2 3/8"
1 1/2"	3 1/4"	4"	2 3/8"
2"	4 3/8"	4 1/4"	3 1/4"
3"	6"	4 5/8"	4 1/2"
4"	8 3/4"	5 3/4"	5 3/4"
6"	12"	8"	8"

NOTES
1. THIS IS A COMPUTER GENERATED DWG. DO NOT REVISE BY HAND.
2. PLASTIC BULKHEAD FITTINGS (EXCEPT 4") MAY BE USED ON THE TANK SIDE WALL, IN THE BOTTOM, OR ON THE CENTER OF THE DOME. PLASTIC BULKHEAD FITTINGS MAY ALSO BE USED ELSEWHERE ON THE DOME IF IT IS NOT NECESSARY THAT THE FITTING BE VERTICAL TO THE BASE OF THE TANK AS THE FITTING WILL FOLLOW THE CURVE OF THE DOME.
3. PVC FITTING MAY BE SPECIAL ORDERED WITH THREADS ON BOTH ENDS. PP IS THREADED ON BOTH ENDS. CPVC IS S X T ONLY.

REV "A" REVISED & REDRAWN BY:JB 1/20/12 CK:CD

DWG TITLE
PLASTIC BULKHEAD FITTING (HAYWARD)

SCALE: 6"=1'-0"	PolyProcessing Company LLC — Central Region P.O. Box 4150 (71211) 2224 Old Sterlington Rd. Monroe, LA 71203 (318) 343-7565 FAX (318) 343-8795	DR: C. DAVIES	
DATE: 4/23/10		CK: J. BRANTLEY	
Level Switch Mark E	SHEET 1 OF 1	COMPUTER FILE BHFM	REV A

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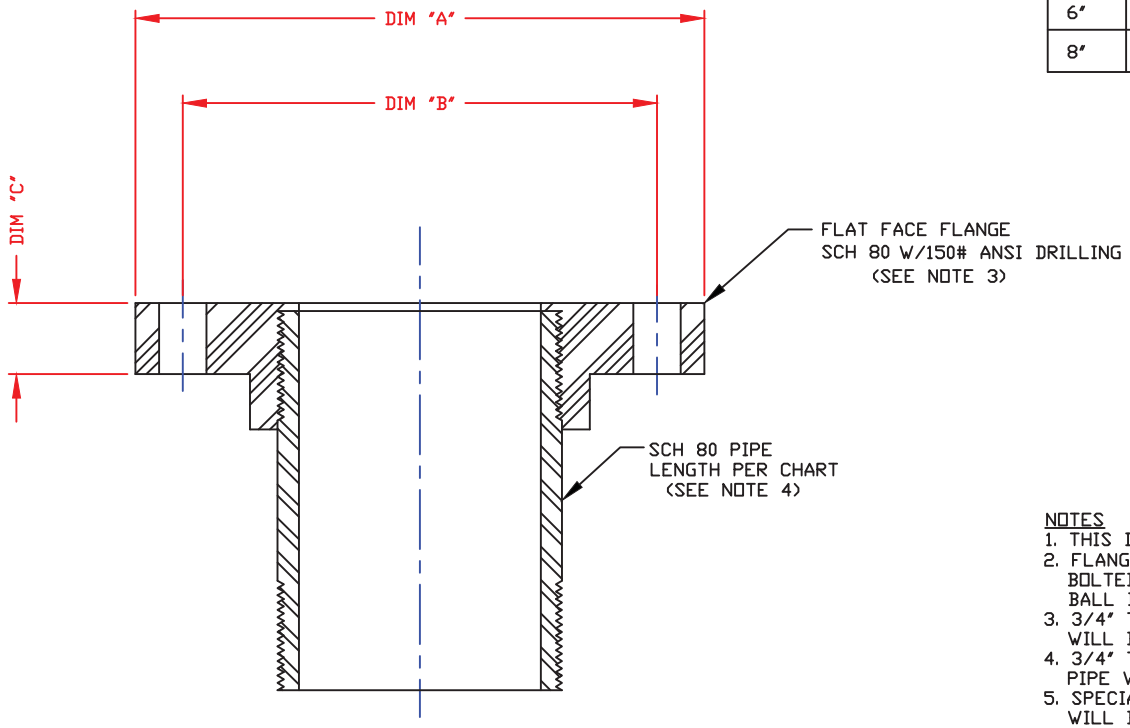
INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE

VERIFY REV LEVEL OF PAPER COPY WITH REV LEVEL ON PPC WEB SITE

Fitting Size:
6"
Fitting Material:
PVC
Flange Type:
THREADED
Gasket Material:
NONE

PIPE SIZE	DIM "A"	DIM "B"	DIM "C"	DIA BOLT HOLES	NO. BOLT HOLES	PIPE LENGTH
3/4"	3 7/8"	2 3/4"	1/2"	1/2"	4	4
1"	4 1/4"	3 1/8"	5/8"	1/2"	4	4
1 1/2"	5"	3 7/8"	11/16"	1/2"	4	4
2"	6"	4 3/4"	3/4"	5/8"	4	4
3"	7 1/2"	6"	15/16"	5/8"	8	4"
4"	9"	7 1/2"	1 1/8"	5/8"	8	6"
6"	11"	9 1/2"	1 1/4"	3/4"	8	8
8"	13 1/2"	11 3/4"	1 7/16"	3/4"	8	12"



NOTES

1. THIS IS A COMPUTER GENERATED DWG. DO NOT REVISE BY HAND.
2. FLANGE ADAPTERS MAY BE THREADED INTO BULKHEAD FTGS, BOLTED FLANGE FTGS, FEMALE SS BULKHEAD FTGS OR UNIVERSAL BALL DOME FTGS.
3. 3/4" THRU 4" FLANGES WILL BE THREADED/6" & 8" FLANGES WILL BE SOCKET FLANGES, UNLESS SPECIFIED OTHERWISE.
4. 3/4" THRU 4" PIPE WILL BE THREADED BOTH ENDS/6" & 8" PIPE WILL BE STRAIGHT PIPE, UNLESS SPECIFIED OTHERWISE.
5. SPECIAL SS FLANGE ADAPTERS CAN BE ORDERED. ALL SIZES WILL BE THREADED.

DWG TITLE: FLANGE ADAPTER

SCALE: 6"=1'-0"

DATE: 4/28/10

PolyProcessing Company LLC
Central Region
P.O. Box 4130 (71211)
2824 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7365
FAX (318) 343-8795

DR: C. DAVIES

CK: J. BRANTLEY

Level Switch Mark E

SHEET: 1 OF 1

COMPUTER FILE: FLGADPTM

REV: -

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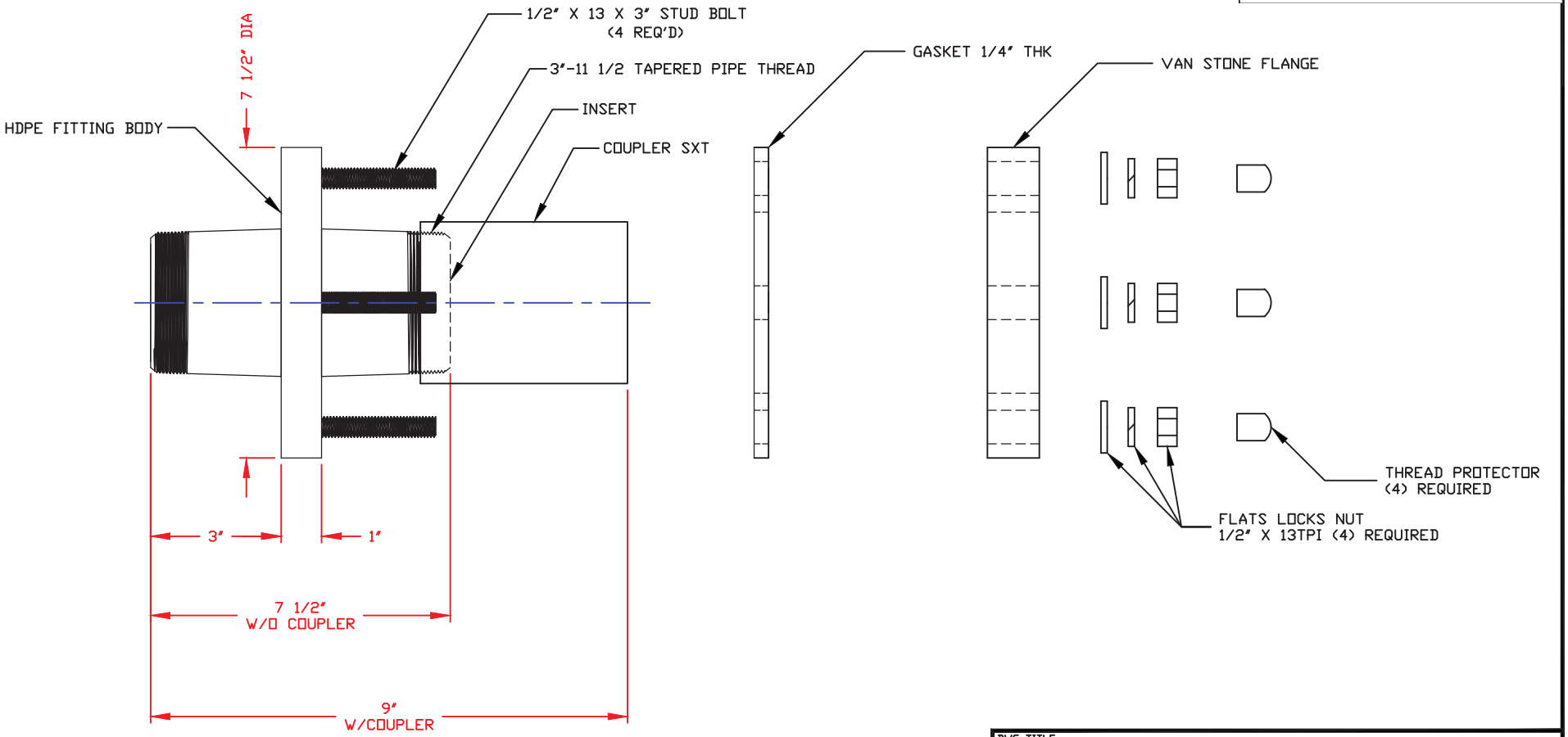
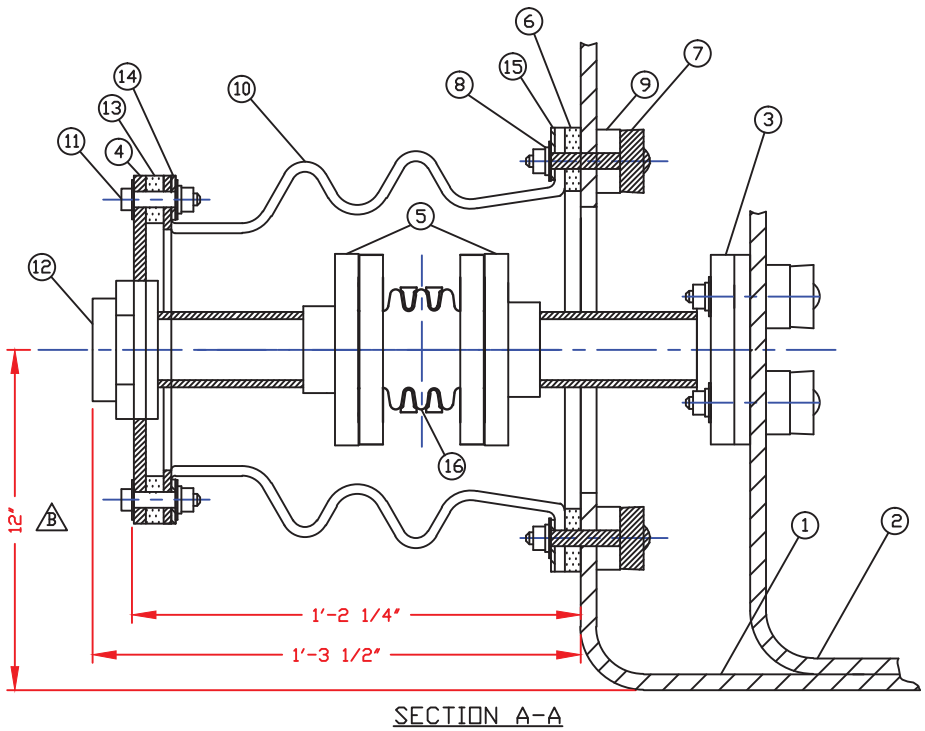
Fitting Material:
PVC
Bolt Type:
316 STAINLESS STEEL
Gasket Material:
EPDM



SIDE VIEW

DWG TITLE	3" B.O.S.S. FITTING/PE		
SCALE: NONE	PolyProcessing Company LLC	Central Region P.O. Box 4130 (71211) 2201 Old Sterlington Rd. Monroe, LA 71203 (318) 343-7565 FAX (318) 343-8795	DR: C. DAVIES
DATE: 4/28/10			CK: J. BRANTLEY
Discharge 1&2 Mk D&E		SHEET 1 OF 1	COMPUTER FILE 3BOSSPEM / REV –



MARK	QTY	PART NO.	DESCRIPTION
1	1	--	OUTER TANK
2	1	--	INNER TANK
3	1	--	AS SPECIFIED BY CUSTOMER (NOT INCLUDED)
4	1	9687	3/8" THK PLATE/BLACK PE
5	1	--	FLANGE ADAPTER/PVC
6	1	--	GASKET 8" SPOOL (TANK END)
7	12	--	1/2" X 3" STUD BOLT
8	12	--	1/2" FLAT WASHER
	12	--	1/2" LOCK WASHER
	12	--	1/2-13 UNC NUT
9	12	--	STUD BOLT GASKET
10	1	9688	TRANS FITTING BELLOWS II/LLDPE/NATURAL
11	8	--	1/2"-13 X 2" BOLT
	16	--	1/2" FLAT WASHER
	8	--	1/2" LOCK WASHER
	8	--	1/2"-13 NUT
12	1	--	BULKHEAD FITTING/PVC/SxT
13	1	--	GASKET 6" FLANGE (PLATE END)
14	1	9685	SPLIT BACK-UP RING II/SS (PLATE END)
15	1	9686	SPLIT BACK-UP RING II/SS (TANK END)
16	1	--	FLANGED FLEX JOINT

A

ASSEMBLY			
SIZE	BOLT	GASKET	PART #
2	SS	EPDM	9752
2	SS	LV	9755
2	TITAN	EPDM	9753
2	TITAN	LV	9756
2	C-276	EPDM	9754
2	C-276	LV	9757
3	SS	EPDM	9758
3	SS	LV	9761
3	TITAN	EPDM	9759
3	TITAN	LV	9762

Discharge 1 & 2 Mk D & E

Tank Connection Fitting
B.O.S.S. FITTING
Fitting Material:
PVC
Fitting Size:
3"
Gasket Material:
EPDM
Bolt Type:
316 STAINLESS STEEL

NOTES:
1. THIS IS A COMPUTER GENERATED DRAWING. DO NOT REVISE BY HAND.

REV "B" REVISED CENTER LINE ELEVATION DIMENSION FROM 10-3/4" TO 12" BY:BT 3/17/10 CK:BD
REV "A" REVISED PART NUMBERS BY:JB 2/25/10 CK:TR

DWG TITLE
2" & 3" TRANSITION FITTING II W/PTFE FLEX JOINT

SCALE: 3"=1'-0"
DATE: 8/24/09

POLY PROCESSING COMPANY
Central Region
P.O. Box 4150 (71211)
2281 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7565
FAX (318) 343-8795

DR: B THURMON
CK:

SHEET 1 OF 2
COMPUTER FILE 2-3TRANSIIPTFE1
REV B

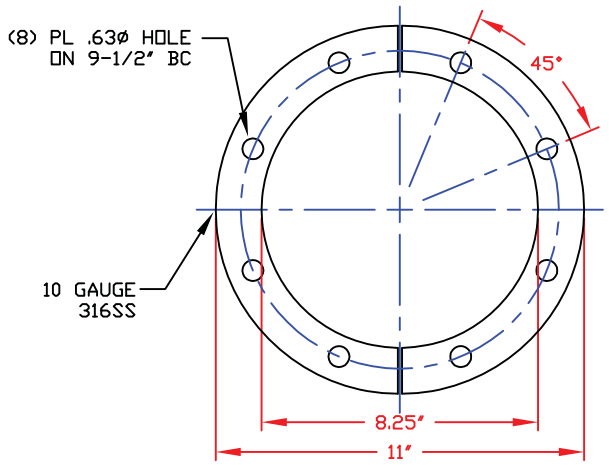


PLATE END SPLIT BACK-UP RING
PART # 9685

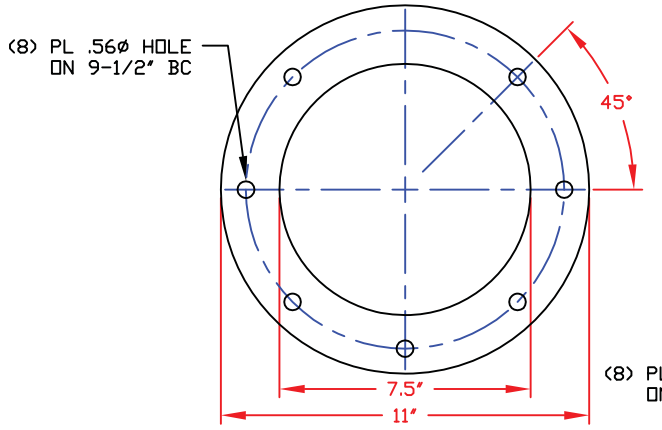
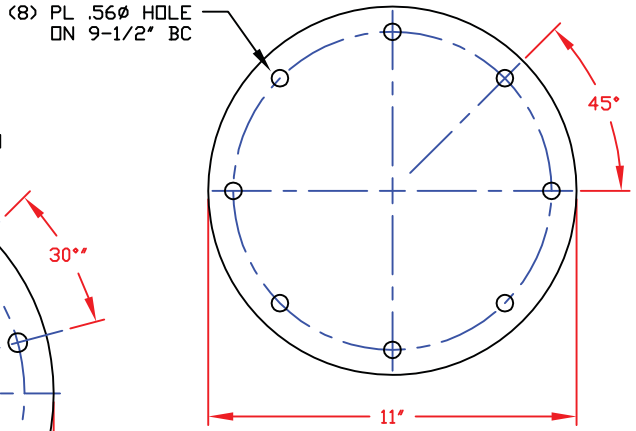
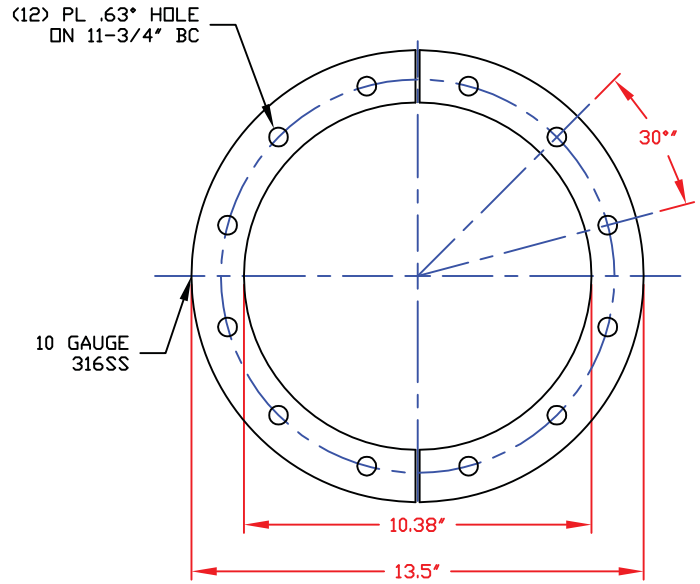


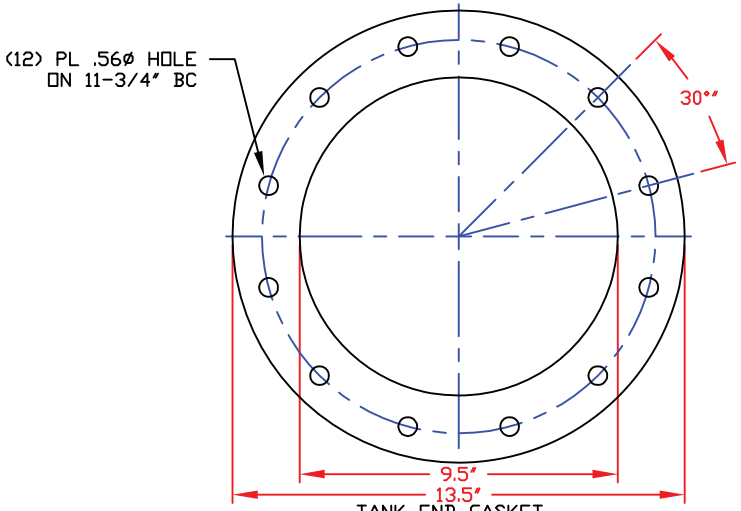
PLATE END GASKET
PART # 4740 /1/4" THK EPDM
PART # 4741 /1/4" THK VITON



PLATE/3/8" THK BLACK PE
PART # 9687



TANK END SPLIT BACK-UP RING
PART # 9686



TANK END GASKET
PART # 8342 /1/4" THK EPDM
PART # 9689 /1/4" THK VITON

Discharge 1 & 2 Mk D & E

DWG TITLE: 2" & 3" TRANSITION FITTING II			
SCALE: 3"=1'-0"	PolyProcessing Company — Central Region, P.O. Box 4159 (71211), 2201 Old Sterlington Rd., Monroe, LA 71203, (318) 343-7565, FAX (318) 343-8795		DR: B THURMON
DATE: 8/24/09			CK:
	SHEET: 2 OF 2	COMPUTER FILE: 2-3TRANSIIPTFE2	REV

B3

Heater Mark H

TYPE 2SPCP DUAL ELECTRONIC-THERMOSTAT TANK HEATING SYSTEM CONTROLLER

The type 2SPCP controller is designed specifically for tank heating applications that require both process and over-temperature control features. Such applications involve the control of EGLX and SPX tank heaters installed on FRP, polyethylene, polypropylene and other forms of heat sensitive applications. Dual electronic thermostats, switching the heaters via a solid state relay (SSR) provide accurate, efficient temperature and power control. Type “J” thermocouples are supplied for accurate temperature sensing and each 2SPCP can handle up to 26 amps of operating load.

System Capability: 120 VAC – 26 A Max. (208-480 VAC options available)

Enclosure size:10 x 8 x 6 inches

Enclosure rating: NEMA 4X

Process thermostat: 50 to 175º F

Over temperature thermostat: 50 to 175º F

Solid State Relay: 50A, 480 VAC, 90 to 280 VAC input

Approvals: C ETL LISTED US Intertek

Unclassified (nonhazardous) locations

Conforms to ANSI/UL 508

Certified to CAN/CSA STD 22.2 NO 14

Thermocouples: Type “J” with 10 ft long with SS braid and FEP over-jacket

Terminal Block: 4 point, screw type, 30A 600 VAC

Heater On Light: NEMA 4X, 22 mm full voltage LED pilot light

Optional controller mounting pad: 14” x 24” expanded PVC with LSE adhesive and hardware

HEAT TRACE
8 Bartles Corner Road, Unit # 104 Flemington, New Jersey USA 08822-5758
WWW.HTDHEATTRACE.COM
Tel (908) 788 5210 Fax (908) 788 5204 e-mail: sales@htdheattrace.com

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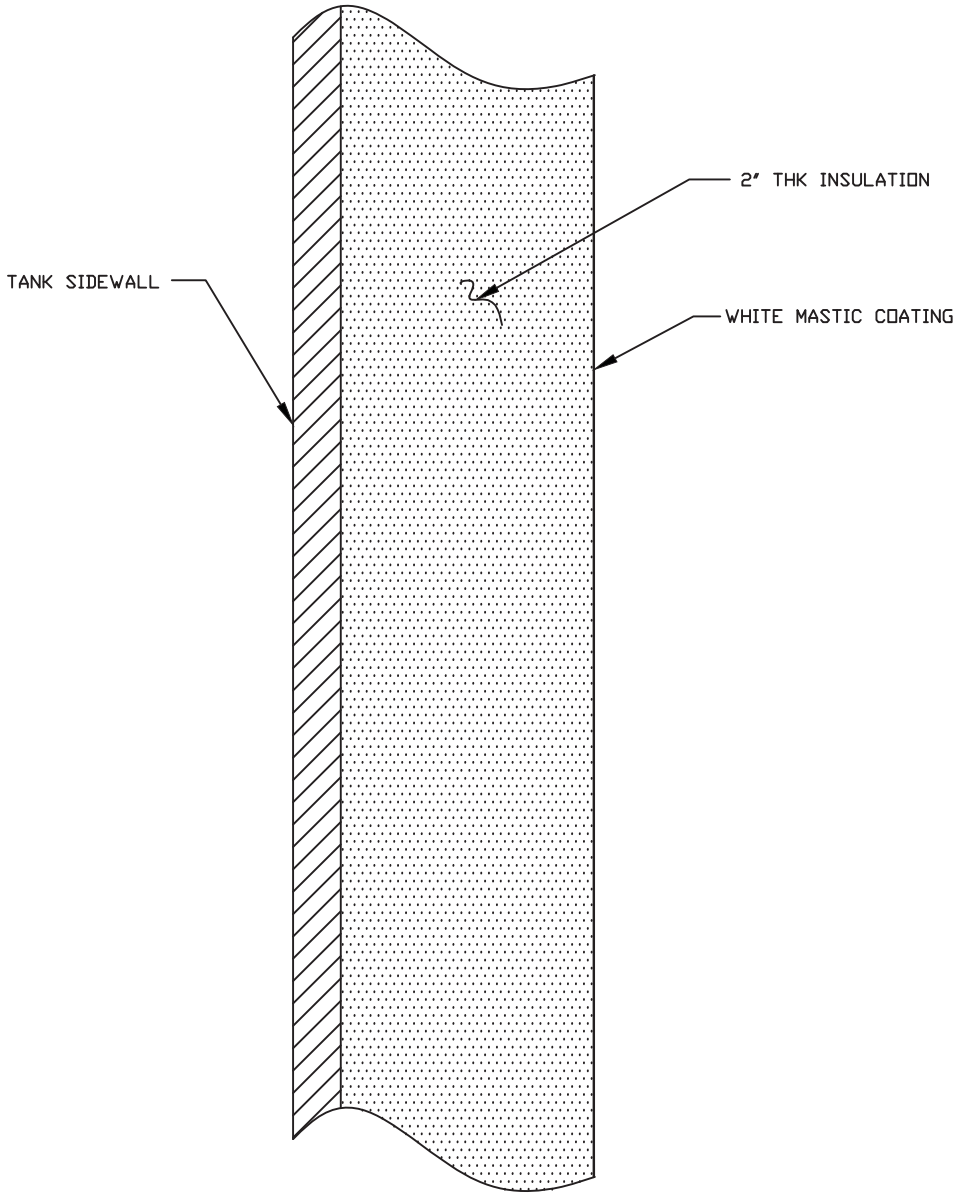
Insulation:
WINCHESTER VA INSULATION R 6.8
Mastic
WINCHESTER VA MASTIC



DWG TITLE: 2" THK INSULATION

SCALE: FULL

DATE: 5/20/10

PolyProcessing Company LLC
Central Region
P.O. Box 4130 (71211)
2201 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7565
FAX (318) 343-8795

DR: J. BRANTLEY

CK: C. DAVIES

Insulation Mark J

SHEET: 1 OF 1

COMPUTER FILE: INSULATIONM

REV: -

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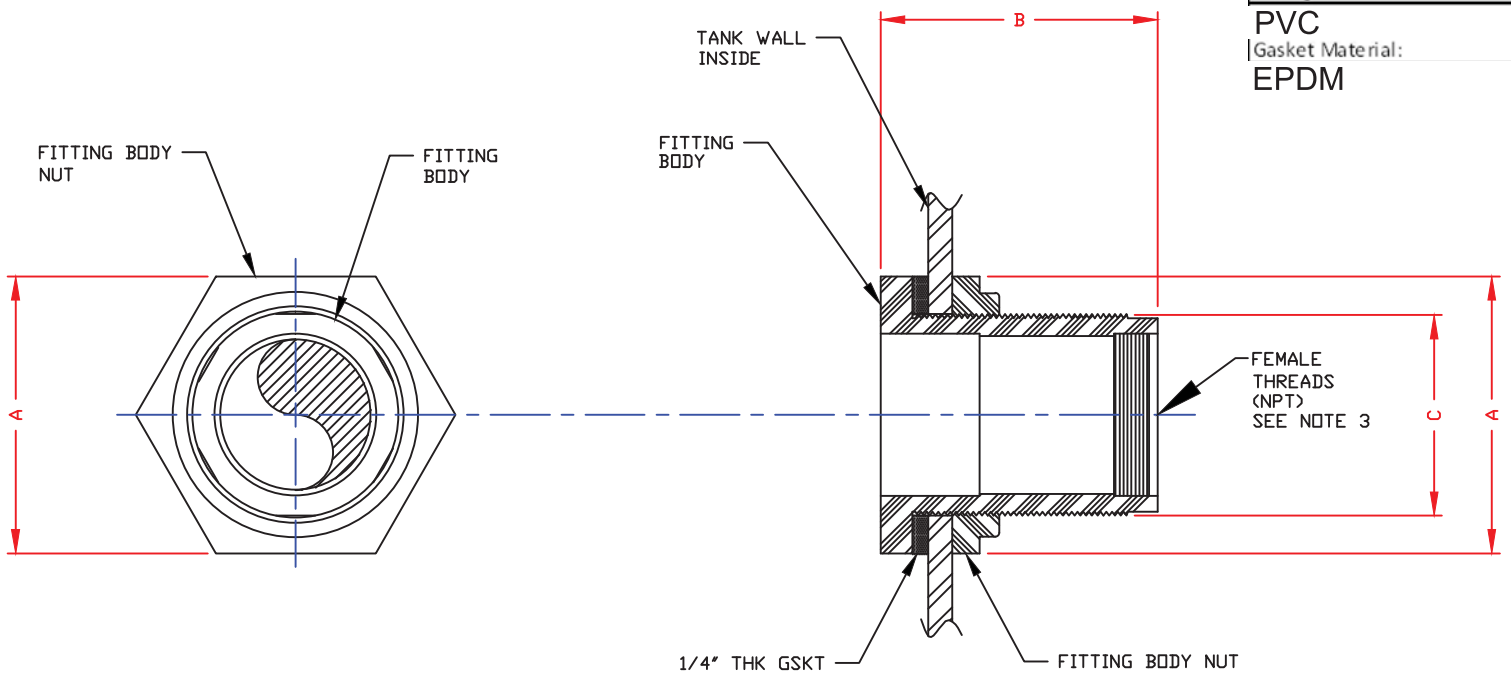
VERIFY REV LEVEL OF PAPER COPY WITH REV LEVEL ON PPC WEB SITE

Fitting Size:
3"
Fitting Material:
PVC
Gasket Material:
EPDM



PIPE SIZE (NPT)	DIM A	DIM B	DIM C
1/2"	2"	3 3/4"	1 3/8"
3/4"	2 3/8"	3 7/8"	1 5/8"
1"	2 9/16"	3 7/8"	1 7/8"
1 1/4"	3 1/4"	4"	2 3/8"
1 1/2"	3 1/4"	4"	2 3/8"
2"	4 3/8"	4 1/4"	3 1/4"
3"	6"	4 5/8"	4 1/2"
4"	8 3/4"	5 3/4"	5 3/4"
6"	12"	8"	8"

NOTES
1. THIS IS A COMPUTER GENERATED DWG. DO NOT REVISE BY HAND.
2. PLASTIC BULKHEAD FITTINGS (EXCEPT 4") MAY BE USED ON THE TANK SIDE WALL, IN THE BOTTOM, OR ON THE CENTER OF THE DOME. PLASTIC BULKHEAD FITTINGS MAY ALSO BE USED ELSEWHERE ON THE DOME IF IT IS NOT NECESSARY THAT THE FITTING BE VERTICAL TO THE BASE OF THE TANK AS THE FITTING WILL FOLLOW THE CURVE OF THE DOME.
3. PVC FITTING MAY BE SPECIAL ORDERED WITH THREADS ON BOTH ENDS. PP IS THREADED ON BOTH ENDS. CPVC IS S X T ONLY.

REV "A" REVISED & REDRAWN BY:JB 1/20/12 CK:CD

DWG TITLE
PLASTIC BULKHEAD FITTING (HAYWARD)

SCALE: 6"=1'-0"
DATE: 4/23/10

PolyProcessing Company LLC
Central Region
P.O. Box 4150 (71211)
2201 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7565
FAX (318) 343-8795

DR: C. DAVIES
CK: J. BRANTLEY

Overflow Mark K

SHEET: 1 OF 1
COMPUTER FILE: BHFM
REV: A

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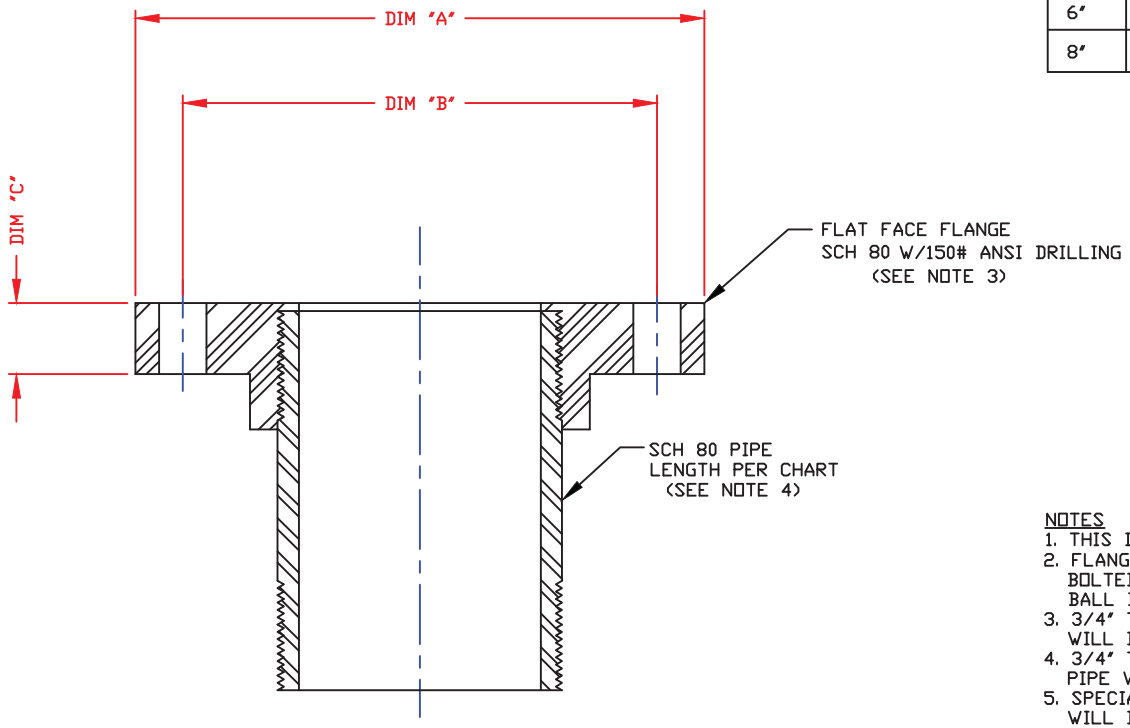
INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE

VERIFY REV LEVEL OF PAPER COPY WITH REV LEVEL ON PPC WEB SITE

Fitting Size:
3"
Fitting Material:
PVC
Flange Type:
THREADED
Gasket Material:
NONE

PIPE SIZE	DIM "A"	DIM "B"	DIM "C"	DIA BOLT HOLES	NO. BOLT HOLES	PIPE LENGTH
3/4"	3 7/8"	2 3/4"	1/2"	1/2"	4	4
1"	4 1/4"	3 1/8"	5/8"	1/2"	4	4
1 1/2"	5"	3 7/8"	11/16"	1/2"	4	4
2"	6"	4 3/4"	3/4"	5/8"	4	4
3"	7 1/2"	6"	15/16"	5/8"	8	4"
4"	9"	7 1/2"	1 1/8"	5/8"	8	6"
6"	11"	9 1/2"	1 1/4"	3/4"	8	8
8"	13 1/2"	11 3/4"	1 7/16"	3/4"	8	12"



NOTES

1. THIS IS A COMPUTER GENERATED DWG. DO NOT REVISE BY HAND.
2. FLANGE ADAPTERS MAY BE THREADED INTO BULKHEAD FTGS, BOLTED FLANGE FTGS, FEMALE SS BULKHEAD FTGS OR UNIVERSAL BALL DOME FTGS.
3. 3/4" THRU 4" FLANGES WILL BE THREADED/6" & 8" FLANGES WILL BE SOCKET FLANGES, UNLESS SPECIFIED OTHERWISE.
4. 3/4" THRU 4" PIPE WILL BE THREADED BOTH ENDS/6" & 8" PIPE WILL BE STRAIGHT PIPE, UNLESS SPECIFIED OTHERWISE.
5. SPECIAL SS FLANGE ADAPTERS CAN BE ORDERED. ALL SIZES WILL BE THREADED.

DWG TITLE: FLANGE ADAPTER

SCALE: 6"=1'-0"

DATE: 4/28/10

POLYPROCESSING COMPANY LLC
Central Region
P.O. Box 4130 (71211)
2824 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7565
FAX (318) 343-8795

DR: C. DAVIES

CK: J. BRANTLEY

Overflow Mark K

SHEET: 1 OF 1

COMPUTER FILE: FLGADPTM

REV: -

68

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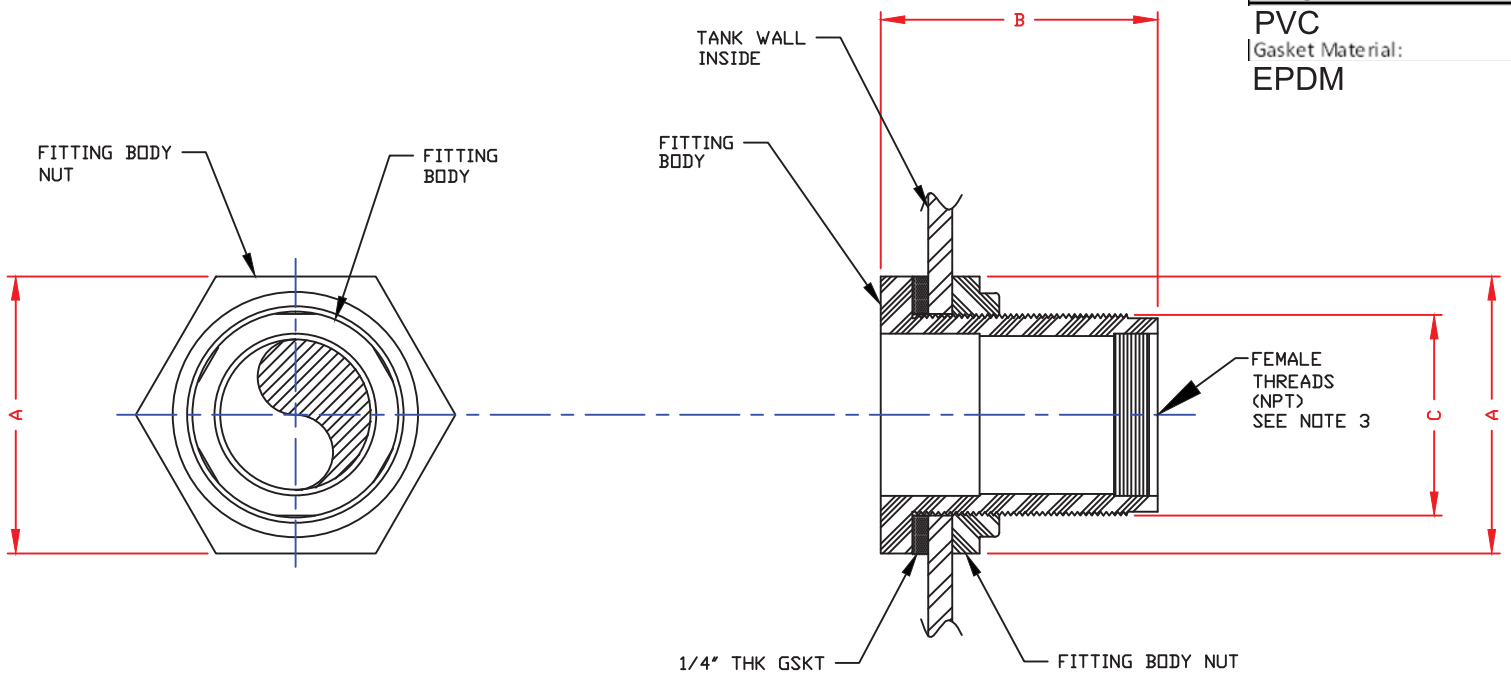
INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE

VERIFY REV LEVEL OF PAPER COPY WITH REV LEVEL ON PPC WEB SITE

Fitting Size:
4"
Fitting Material:
PVC
Gasket Material:
EPDM



PIPE SIZE (NPT)	DIM A	DIM B	DIM C
1/2"	2"	3 3/4"	1 3/8"
3/4"	2 3/8"	3 7/8"	1 5/8"
1"	2 9/16"	3 7/8"	1 7/8"
1 1/4"	3 1/4"	4"	2 3/8"
1 1/2"	3 1/4"	4"	2 3/8"
2"	4 3/8"	4 1/4"	3 1/4"
3"	6"	4 5/8"	4 1/2"
4"	8 3/4"	5 3/4"	5 3/4"
6"	12"	8"	8"

NOTES
1. THIS IS A COMPUTER GENERATED DWG. DO NOT REVISE BY HAND.
2. PLASTIC BULKHEAD FITTINGS (EXCEPT 4") MAY BE USED ON THE TANK SIDE WALL, IN THE BOTTOM, OR ON THE CENTER OF THE DOME. PLASTIC BULKHEAD FITTINGS MAY ALSO BE USED ELSEWHERE ON THE DOME IF IT IS NOT NECESSARY THAT THE FITTING BE VERTICAL TO THE BASE OF THE TANK AS THE FITTING WILL FOLLOW THE CURVE OF THE DOME.
3. PVC FITTING MAY BE SPECIAL ORDERED WITH THREADS ON BOTH ENDS. PP IS THREADED ON BOTH ENDS. CPVC IS S X T ONLY.

REV "A" REVISED & REDRAWN BY:JB 1/20/12 CK:CD

DWG TITLE
PLASTIC BULKHEAD FITTING (HAYWARD)

SCALE: 6"=1'-0"	POLY PROCESSING COMPANY LLC	Central Region P.O. Box 4150 (71211) 2224 Old Sterlington Rd. Monroe, LA 71203 (318) 343-7565 FAX (318) 343-8795	DR: C. DAVIES
DATE: 4/23/10			CK: J. BRANTLEY
Vent Mark L	SHEET 1 OF 1	COMPUTER FILE BHFM	REV A

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INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE

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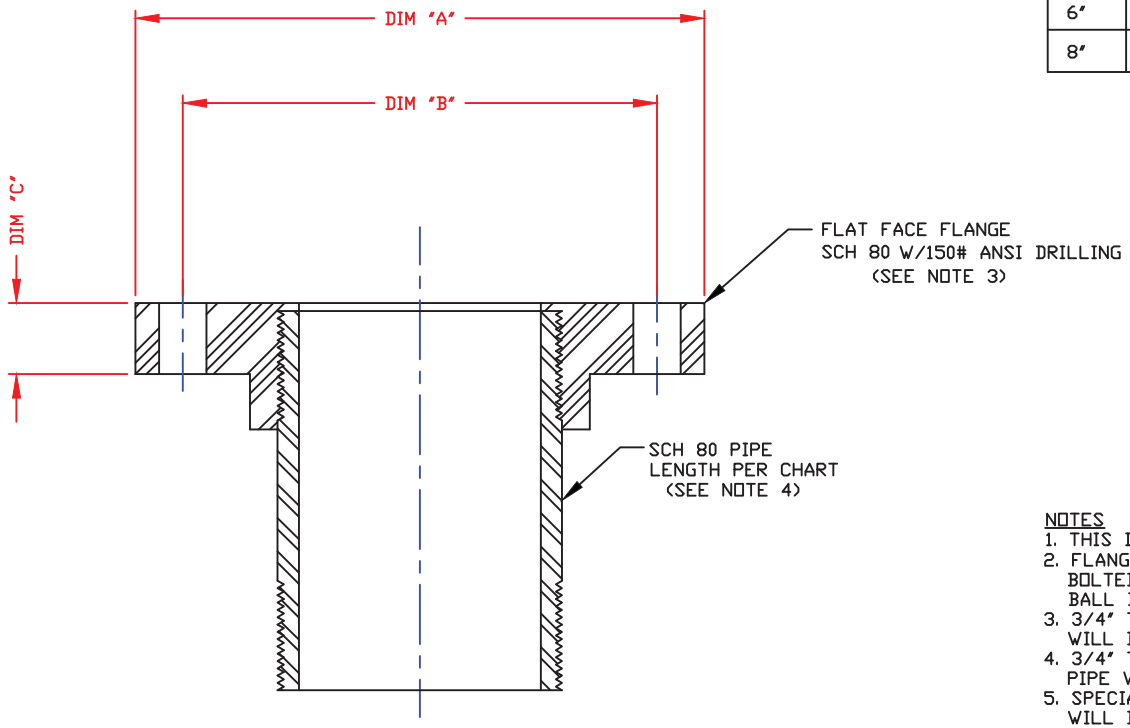
Fitting Size:
4"
Fitting Material:
PVC
Flange Type:
THREADED
Gasket Material:
NONE

PIPE SIZE	DIM "A"	DIM "B"	DIM "C"	DIA BOLT HOLES	NO. BOLT HOLES	PIPE LENGTH
3/4"	3 7/8"	2 3/4"	1/2"	1/2"	4	4
1"	4 1/4"	3 1/8"	5/8"	1/2"	4	4
1 1/2"	5"	3 7/8"	11/16"	1/2"	4	4
2"	6"	4 3/4"	3/4"	5/8"	4	4
3"	7 1/2"	6"	15/16"	5/8"	8	4"
4"	9"	7 1/2"	1 1/8"	5/8"	8	6"
6"	11"	9 1/2"	1 1/4"	3/4"	8	8
8"	13 1/2"	11 3/4"	1 7/16"	3/4"	8	12"



NOTES

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3. 3/4" THRU 4" FLANGES WILL BE THREADED/6" & 8" FLANGES WILL BE SOCKET FLANGES, UNLESS SPECIFIED OTHERWISE.
4. 3/4" THRU 4" PIPE WILL BE THREADED BOTH ENDS/6" & 8" PIPE WILL BE STRAIGHT PIPE, UNLESS SPECIFIED OTHERWISE.
5. SPECIAL SS FLANGE ADAPTERS CAN BE ORDERED. ALL SIZES WILL BE THREADED.

DWG TITLE: FLANGE ADAPTER

SCALE: 6"=1'-0"

DATE: 4/28/10

POLYPROCESSING COMPANY LLC
Central Region
P.O. Box 4130 (71211)
2824 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7565
FAX (318) 343-8795

DR: C. DAVIES

CK: J. BRANTLEY

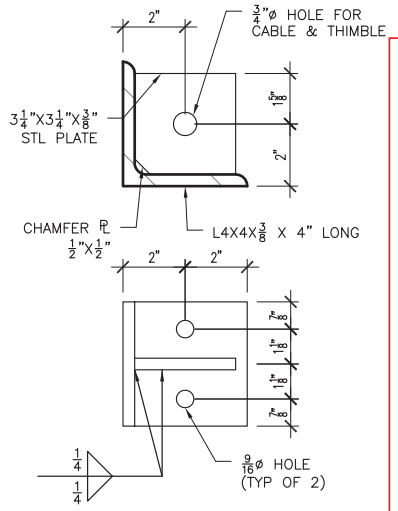
Vent Mark L

SHEET: 1 OF 1

COMPUTER FILE: FLGADPTM

REV: -

68



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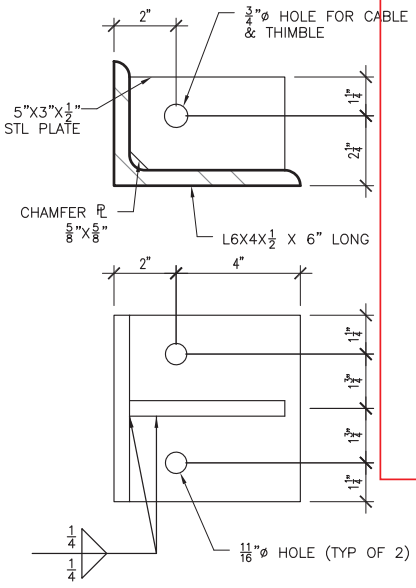

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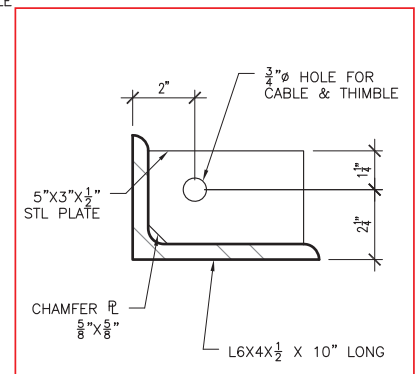

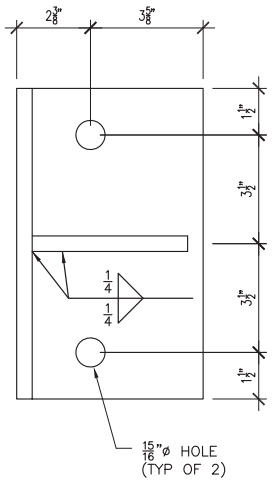

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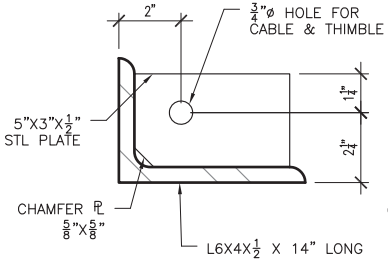

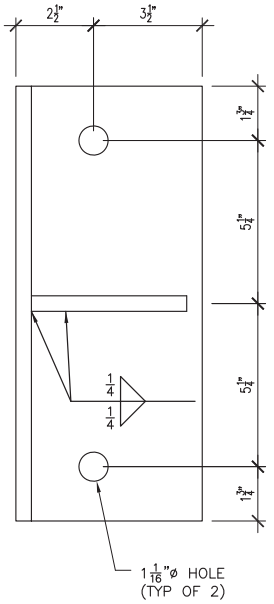

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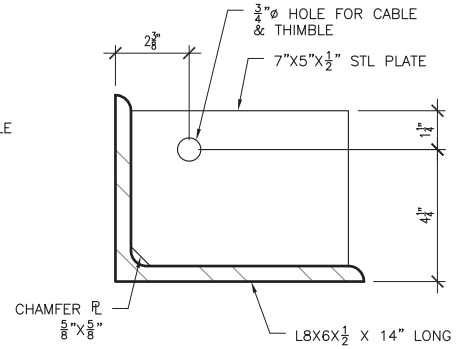
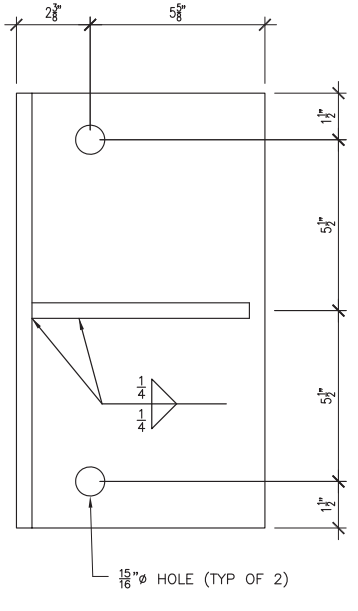




L8–14

Restraint Mark R

LANE ENGINEERS INC.
CIVIL • STRUCTURAL • SURVEYING
979 N. Blackstone Street
Tulare, California 93274
(559) 688-5263

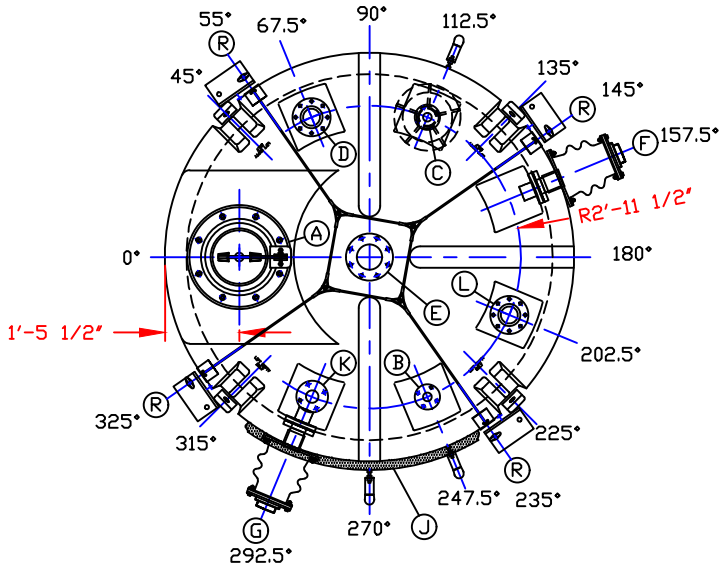
REVISIONS

MANUFACTURER:
POLY PROCESSING CO.
WESTERN REGION
8055 South Ash Street
French Camp, CA 95231
PH: (209) 982-4904

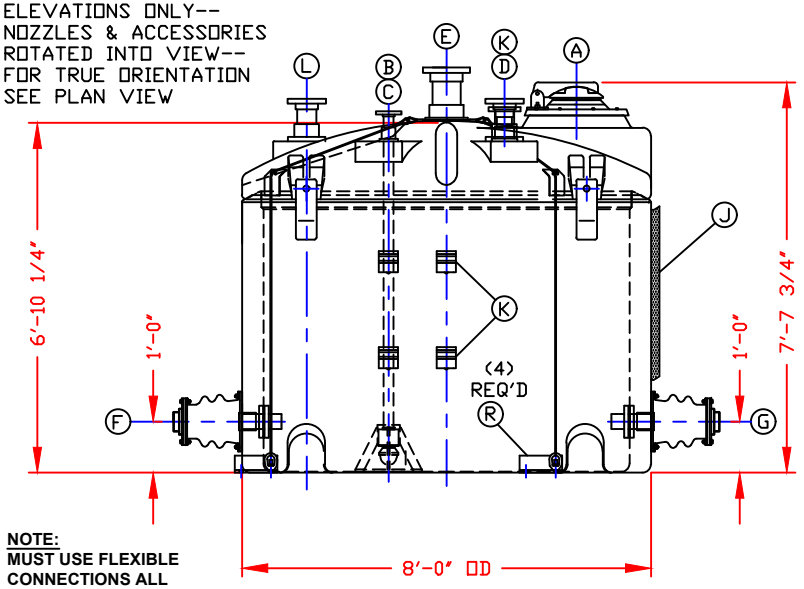
2009 IBC STAINLESS RESTRAINT CLIPS

NAME	J.A.
DATE	02-28-2012
SCALE	NOTED
CHECKED	D.K.A.
DRAWING NO.	CLIP-02
JOB NO.	

2/29/2012 8:04:43 AM Clips.dwg



ELEVATIONS ONLY--
NOZZLES & ACCESSORIES
ROTATED INTO VIEW--
FOR TRUE ORIENTATION
SEE PLAN VIEW



NOTE:
MUST USE FLEXIBLE CONNECTIONS ALL LOWER SIDEWALL FITTINGS

NOZZLE SCHEDULE & ACCESSORIES

						INNER TANK		OUTER TANK	
SERVICE	MK	STOCK NO	SIZE	FITTING		DEG	ELEV	DEG	ELEV
MANWAY	A	8529/3224	19"	CVR ASMLY 19" SAFE-SURGE W/GSKT PE		0°	DOME	--	--
		7658		(8) BOLT 1/2-13 X 2" HEX HD SS TITANIUM					
		7641		(8) WASHER 1/2" FLAT TITANIUM					
INLET	B	7117/2063	2"	BHF ASMLY 2" SXT H'WARD PVC/EPDM W/FLG ADPT THRD PVC	A	247.5°	DOME	--	--
		3198/3209		(2) SUPP'TS VERT EXT PIPE SS W/GSKT EPDM					
OUTLET	C	3162	2"	DROP PIPE 2" INT PVC		112.5°	DOME	--	--
		7117/2063	2"	BHF ASMLY 2" SXT H'WARD PVC/EPDM W/FLG ADPT THRD PVC	B				
		10344		PIPE SUPPORT 2" INTERNAL PVC/PE	C				
		10591		FOOT VALVE 2" W/SCREEN SPEARS TRUE/UN PVC W/EPDM					
		3198/3209		(2) SUPP'TS VERT EXT PIPE SS W/GSKT EPDM					
LEVEL SENSOR	D	7127	4"	BHF ASMLY 4" SXT H'WARD PVC/EPDM		67.5°	DOME	--	--
		2107		FLG ADPT 4" THRD PVC					
LEVEL SWITCH	E	7132	6"	BHF ASMLY 6" SXT H'WARD PVC/EPDM		TDC	DOME	--	--
		2129		FLG ADPT 6" THREADED PVC	B				
DISCHARGE 1	F	9869	3"	B.O.S.S. FITTING 3" ASMLY PE/PVC/TITAN/EPDM		157.5°	1'-0"	--	--
		9759	3"	TRNS FTG 3" BELLOW STYLE II PVC/EPDM/TITAN W/EXP JNT PTFE		--	--	157.5°	1'-0"
DISCHARGE 2	G	9869	3"	B.O.S.S. FITTING 3" ASMLY PE/PVC/TITAN/EPDM		292.5°	1'-0"	--	--
		9759	3"	TRNS FTG 3" BELLOW STYLE II PVC/EPDM/TITAN W/EXP JNT PTFE		--	--	292.5°	1'-0"
INSULATION	J	6967	--	INSULATION POLYFOAM 230 2" THK W/MASTIC COATING	B A	ALL	DOME	ALL	SDWL
OVERFLOW	K	7122/2085	3"	BHF ASMLY 3" SXT H'WARD PVC/EPDM W/FLG ADPT THRD PVC		292.5°	DOME	--	--
		3198/3209		(2) SUPP'TS VERT EXT PIPE SS W/GSKT EPDM	B	--	--	270°	SDWL
VENT	L	7127/2107	4"	BHF ASMLY 4" SXT H'WARD PVC/EPDM W/FLG ADPT THRD PVC		202.5°	DOME	--	--
RESTRAINT	R	NS-140	--	L6-10 SSMC 1550ST OD/316SS @ GRADE		55°	DOME	55°	SDWL
						145°		145°	
		10443		(4) RC L6-10 SS 316 6" X 4" X 1/2" X 10" HR ANGLE		235°		235°	
		10794		(8) ANCHOR ROD 7/8" X 10" 316SS		325°		325°	
LABEL	--	LABEL	--	LAMINATED VINYL ID LABEL		SHIP LOOSE			
LABEL	--	LABEL	--	NFPA FERRIC CHLORIDE LABEL					

NOTES:
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2. DIMENSIONS WILL VARY ±3% DUE TO VARIATIONS IN MULTIPLE MOLDS & CONDITIONS PREVALENT DURING MANUFACTURE & USAGE.
3. TANKS DESIGNED FOR 1.9 SpG MAT'L @ 100°F/ATMOS PRESSURE

CALCULATED CAPACITIES/ VOLUME IN U.S. GALLONS			
TANK	DESIGN CAP	DOME VOL	TOTAL VOL
INNER	1586	204	1790
OUTER	1954	N/A	1954

REV "C" MK C ADDED PIPE SUPP'TS BY:JB 12/5/17
REV "B" MK C,F,K,L RELOCATED BY:JB 6/6/17
REV "A" MK B & K ADDED PIPE SUPP'TS BY:JB 5/17/17

DWG TITLE
1550 GALLON SAFE-TANK ASSEMBLY
DCS-TNK-07-800/FERRIC CHLORIDE

1.9 SpG/XLPE/NATURAL
INNER STOCK NO. 72001550410
OUTER STOCK NO. 72101950410

SERVICE: FERRIC CHLORIDE

SCALE: 3/8"= 1'-0"

DATE: 10/31/16

POLYPROCESSING SOLUTIONS, SIMPLIFIED.
Central Region
P.O. Box 4150 (71211)
2201 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7255
FAX (318) 343-8795

DR: J. BRANTLEY
CK: B. HALL

BURLINGAME ENG, INC PO #7171
FOR: CITY OF MANTECA WASTE WATER QC

SHEET 1 OF 1
COMPUTER FILE BER7171B
REV C

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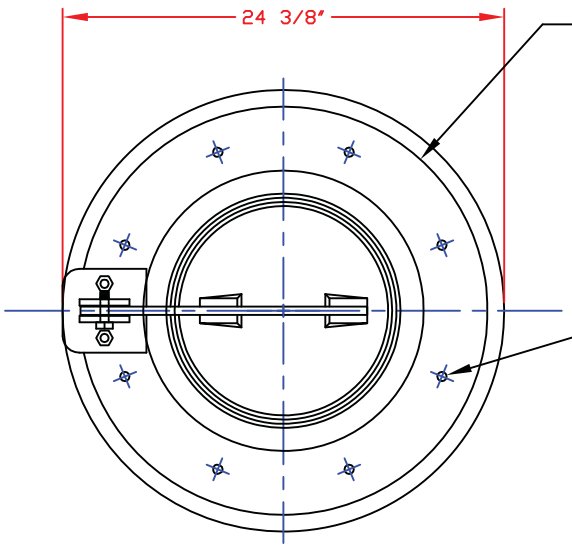
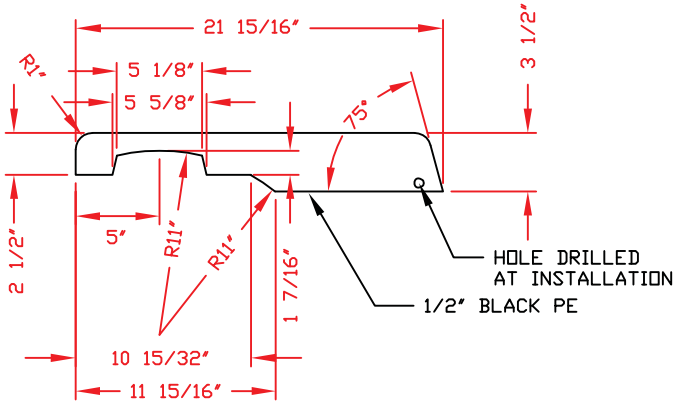
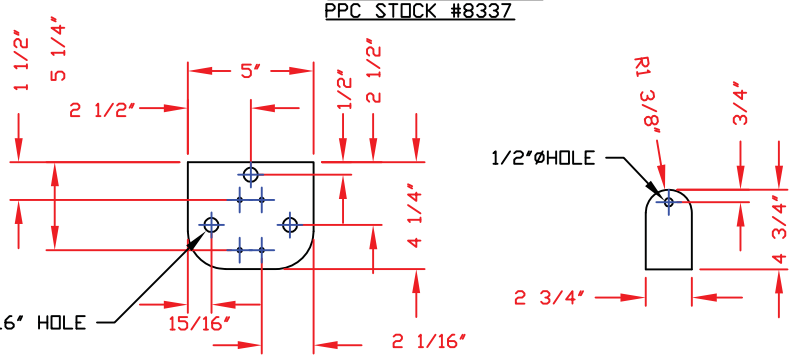


19" SAFE-SURGE EMERGENCY
PRESSURE RELIEF ASSEMBLY
STANDARD (8) BOLT COVER SHOWN

9/16" DIAMETER HOLE
ON 20 1/2" BOLT CIRCLE
(8) REQ'D EQUALLY SPACED

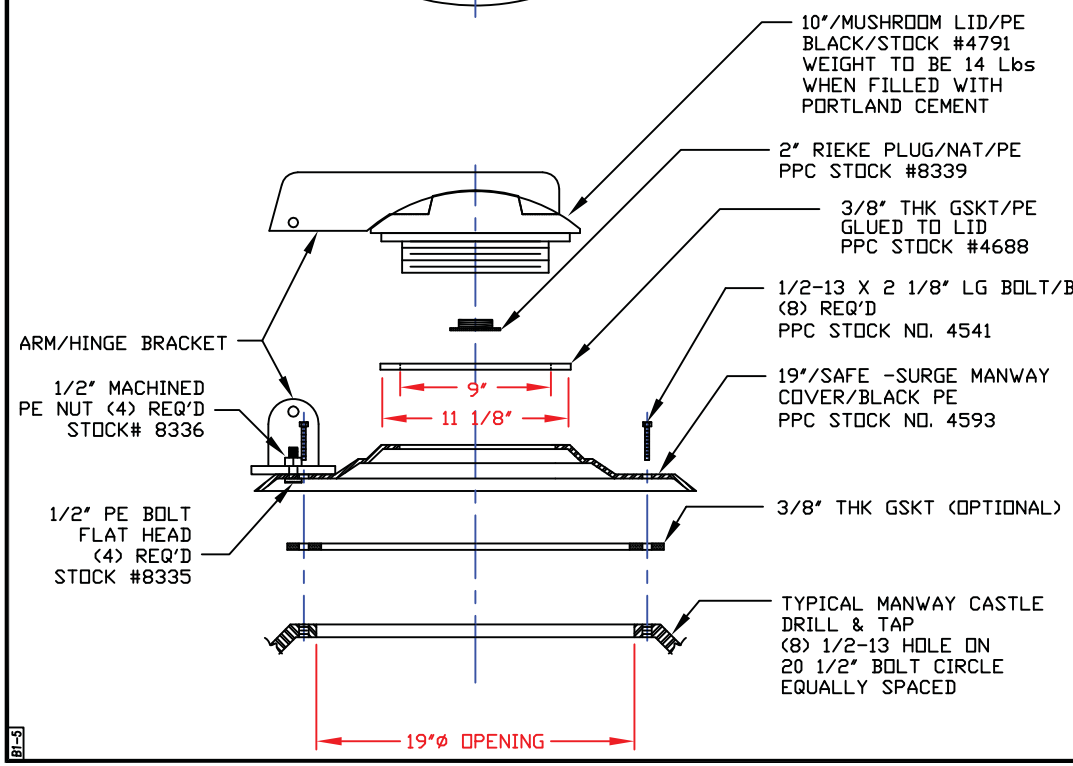


HINGE ARM (1) REQ'D
PPC STOCK #8337



BASE PLATE 3/8"THK/BLK/PE (1) REQ'D
SCALE: NONE

HINGE PLATE 3/8" THK
BLK/PE (2) REQ'D



HINGE BRACKET DETAIL "A"
PPC STOCK #8341

NOTES
1. THIS IS A COMPUTER GENERATED DWG. DO NOT REVISE BY HAND.
2. PPC STOCK NO. 3216.

DWG TITLE
19" SAFE-SURGE EMERGENCY PRESSURE RELIEF ASSEMBLY

SCALE: 1 1/2"=1'-0"
DATE: 8/2/10

POLY PROCESSING Company
Central Region
P.O. Box 4159 (71210)
2201 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7565
FAX (318) 343-8795

DR: J. BRANTLEY
CK: B THURMON

Manway Mark A

SHEET	COMPUTER FILE	REV
1 OF 1	19MWYSS	

B1-S

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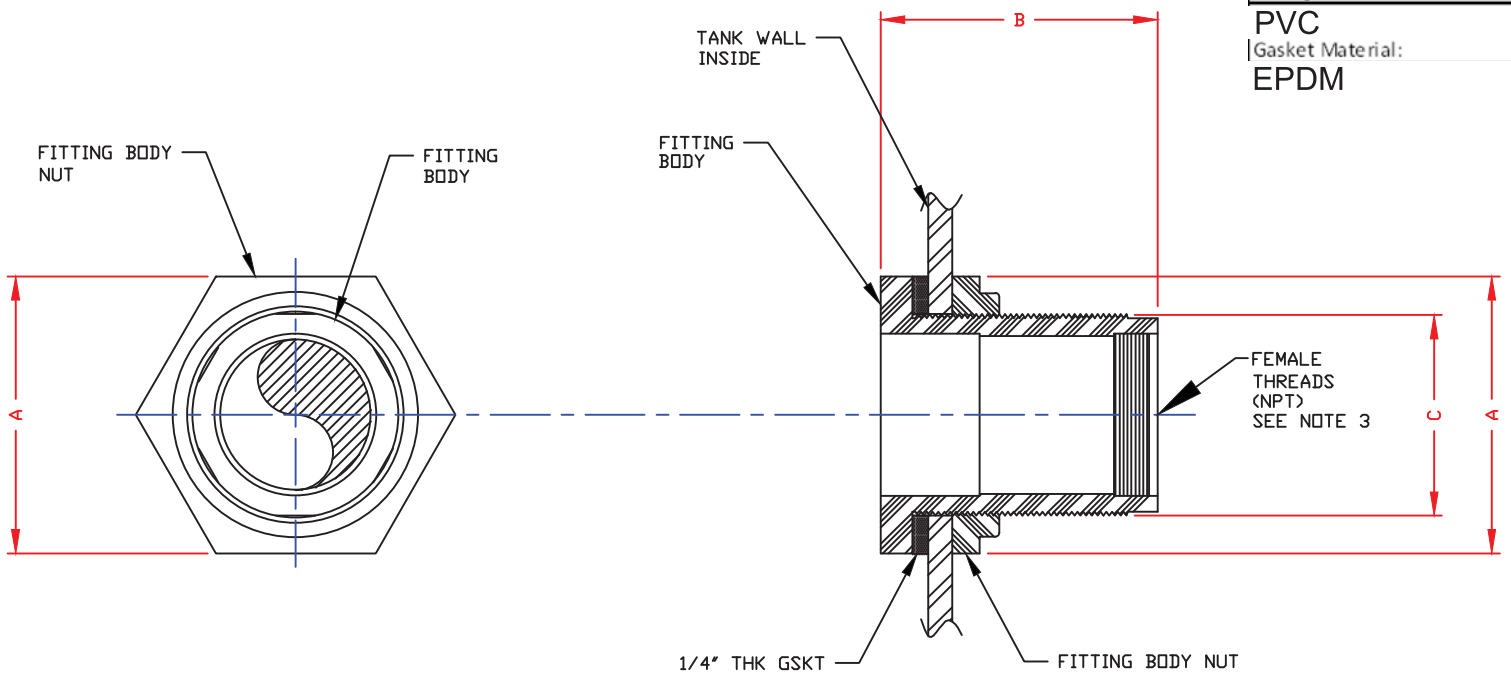
Fitting Size:
2"
Fitting Material:
PVC
Gasket Material:
EPDM



PIPE SIZE (NPT)	DIM A	DIM B	DIM C
1/2"	2"	3 3/4"	1 3/8"
3/4"	2 3/8"	3 7/8"	1 5/8"
1"	2 9/16"	3 7/8"	1 7/8"
1 1/4"	3 1/4"	4"	2 3/8"
1 1/2"	3 1/4"	4"	2 3/8"
2"	4 3/8"	4 1/4"	3 1/4"
3"	6"	4 5/8"	4 1/2"
4"	8 3/4"	5 3/4"	5 3/4"
6"	12"	8"	8"

NOTES
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REV "A" REVISED & REDRAWN BY:JB 1/20/12 CK:CD

DWG TITLE
PLASTIC BULKHEAD FITTING (HAYWARD)

SCALE: 6"=1'-0"
DATE: 4/23/10

POLY PROCESSING COMPANY LLC
Central Region
P.O. Box 4150 (71211)
2201 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7565
FAX (318) 343-8795

DR: C. DAVIES
CK: J. BRANTLEY

Inlet Mark B

SHEET 1 OF 1
COMPUTER FILE BHFM
REV A

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VERIFY REV LEVEL OF PAPER COPY WITH REV LEVEL ON PPC WEB SITE

Fitting Size:
2"
Fitting Material:
PVC
Flange Type:
THREADED
Gasket Material:
NONE

PIPE SIZE	DIM "A"	DIM "B"	DIM "C"	DIA BOLT HOLES	NO. BOLT HOLES	PIPE LENGTH
3/4"	3 7/8"	2 3/4"	1/2"	1/2"	4	4
1"	4 1/4"	3 1/8"	5/8"	1/2"	4	4
1 1/2"	5"	3 7/8"	11/16"	1/2"	4	4
2"	6"	4 3/4"	3/4"	5/8"	4	4
3"	7 1/2"	6"	15/16"	5/8"	8	4"
4"	9"	7 1/2"	1 1/8"	5/8"	8	6"
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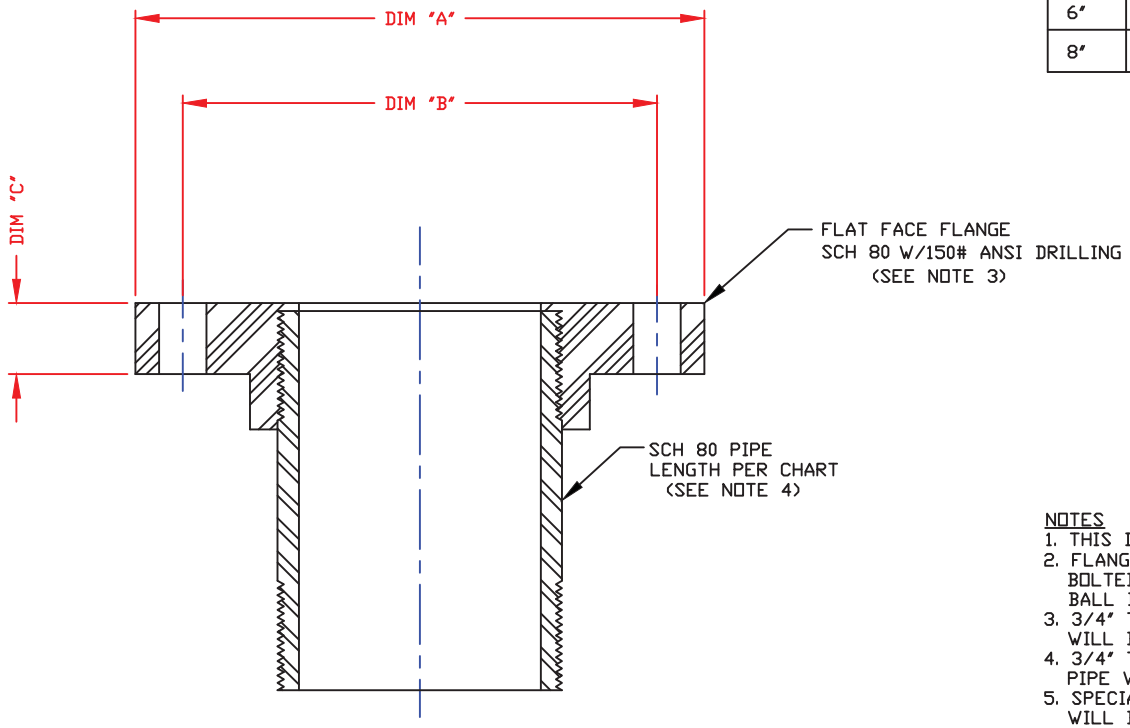
8"	13 1/2"	11 3/4"	1 7/16"	3/4"	8	12"



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4. 3/4" THRU 4" PIPE WILL BE THREADED BOTH ENDS/6" & 8" PIPE WILL BE STRAIGHT PIPE, UNLESS SPECIFIED OTHERWISE.
5. SPECIAL SS FLANGE ADAPTERS CAN BE ORDERED. ALL SIZES WILL BE THREADED.

DWG TITLE: FLANGE ADAPTER

SCALE: 6"=1'-0"

DATE: 4/28/10

POLY PROCESSING COMPANY LLC
Central Region
P.O. Box 4130 (71211)
2824 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7365
FAX (318) 343-8795

DR: C. DAVIES

CK: J. BRANTLEY

Inlet Mark B

SHEET: 1 OF 1

COMPUTER FILE: FLGADPTM

REV: -

68

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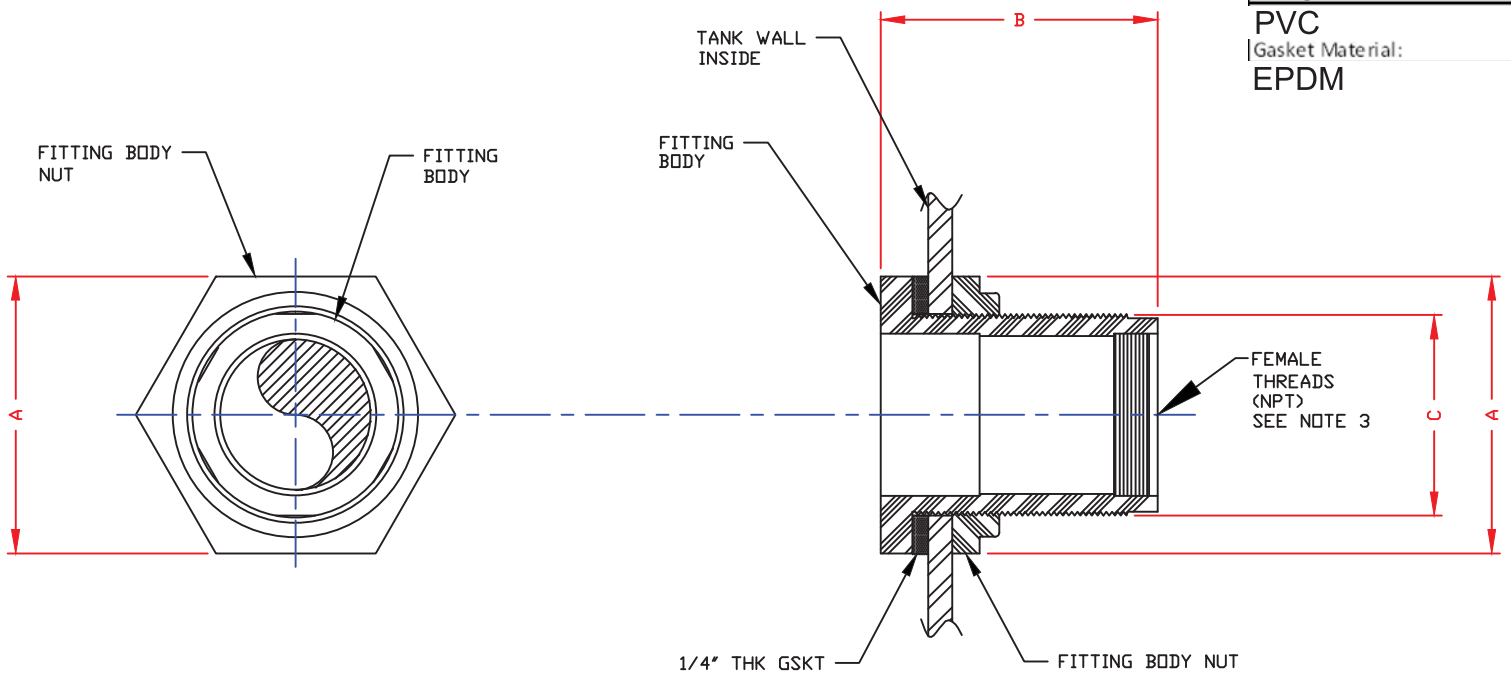
Fitting Size:
2"
Fitting Material:
PVC
Gasket Material:
EPDM



PIPE SIZE (NPT)	DIM A	DIM B	DIM C
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3/4"	2 3/8"	3 7/8"	1 5/8"
1"	2 9/16"	3 7/8"	1 7/8"
1 1/4"	3 1/4"	4"	2 3/8"
1 1/2"	3 1/4"	4"	2 3/8"
2"	4 3/8"	4 1/4"	3 1/4"
3"	6"	4 5/8"	4 1/2"
4"	8 3/4"	5 3/4"	5 3/4"
6"	12"	8"	8"

NOTES
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3. PVC FITTING MAY BE SPECIAL ORDERED WITH THREADS ON BOTH ENDS. PP IS THREADED ON BOTH ENDS. CPVC IS S X T ONLY.

Includes internal drop pipe

REV "A" REVISED & REDRAWN BY:JB 1/20/12 CK:CD

DWG TITLE
PLASTIC BULKHEAD FITTING (HAYWARD)

SCALE: 6"=1'-0"
DATE: 4/23/10

PolyProcessing Company LLC
Central Region
P.O. Box 4150 (71211)
2281 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7565
FAX (318) 343-8795

DR: C. DAVIES
CK: J. BRANTLEY

Outlet Mark C

SHEET: 1 OF 1
COMPUTER FILE: BHFM
REV: A

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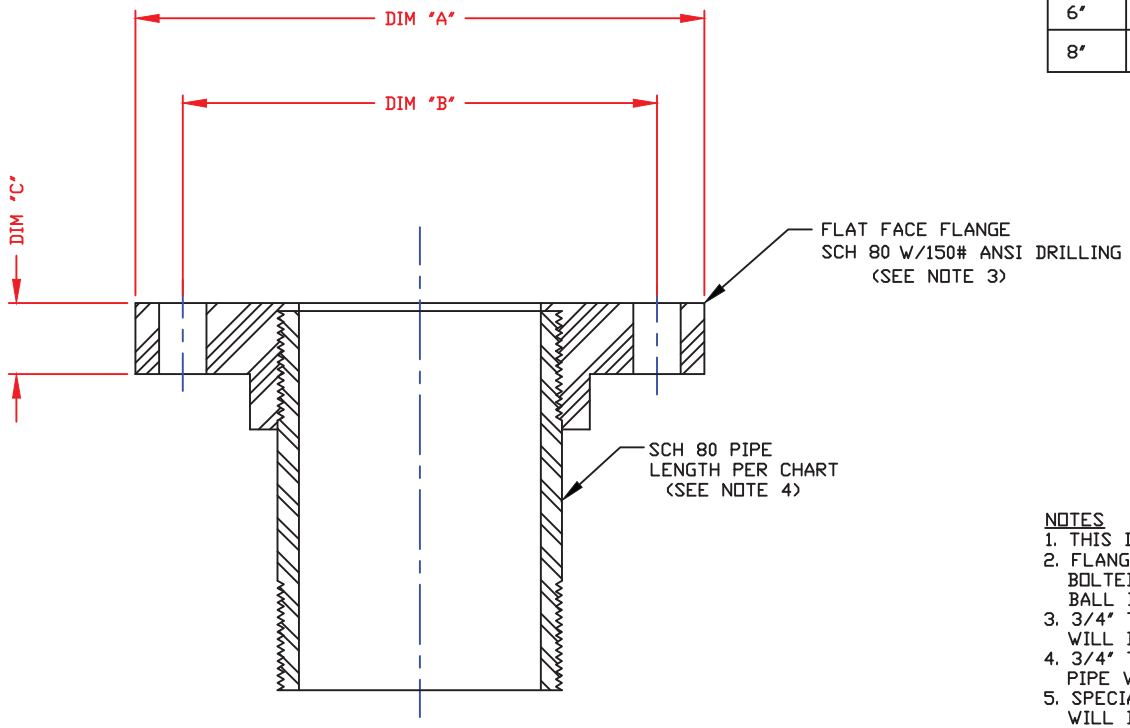
INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE

VERIFY REV LEVEL OF PAPER COPY WITH REV LEVEL ON PPC WEB SITE

Fitting Size:
2"
Fitting Material:
PVC
Flange Type:
THREADED
Gasket Material:
NONE

PIPE SIZE	DIM "A"	DIM "B"	DIM "C"	DIA BOLT HOLES	NO. BOLT HOLES	PIPE LENGTH
3/4"	3 7/8"	2 3/4"	1/2"	1/2"	4	4
1"	4 1/4"	3 1/8"	5/8"	1/2"	4	4
1 1/2"	5"	3 7/8"	11/16"	1/2"	4	4
2"	6"	4 3/4"	3/4"	5/8"	4	4
3"	7 1/2"	6"	15/16"	5/8"	8	4"
4"	9"	7 1/2"	1 1/8"	5/8"	8	6"
6"	11"	9 1/2"	1 1/4"	3/4"	8	8
8"	13 1/2"	11 3/4"	1 7/16"	3/4"	8	12"



NOTES

1. THIS IS A COMPUTER GENERATED DWG. DO NOT REVISE BY HAND.
2. FLANGE ADAPTERS MAY BE THREADED INTO BULKHEAD FTGS, BOLTED FLANGE FTGS, FEMALE SS BULKHEAD FTGS OR UNIVERSAL BALL DOME FTGS.
3. 3/4" THRU 4" FLANGES WILL BE THREADED/6" & 8" FLANGES WILL BE SOCKET FLANGES, UNLESS SPECIFIED OTHERWISE.
4. 3/4" THRU 4" PIPE WILL BE THREADED BOTH ENDS/6" & 8" PIPE WILL BE STRAIGHT PIPE, UNLESS SPECIFIED OTHERWISE.
5. SPECIAL SS FLANGE ADAPTERS CAN BE ORDERED. ALL SIZES WILL BE THREADED.

DWG TITLE: FLANGE ADAPTER

SCALE: 6"=1'-0"

DATE: 4/28/10

PolyProcessing Company LLC
Central Region
P.O. Box 4130 (71211)
2824 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7565
FAX (318) 343-8795

DR: C. DAVIES

CK: J. BRANTLEY

Outlet Mark C

SHEET: 1 OF 1

COMPUTER FILE: FLGADPTM

REV: -

68

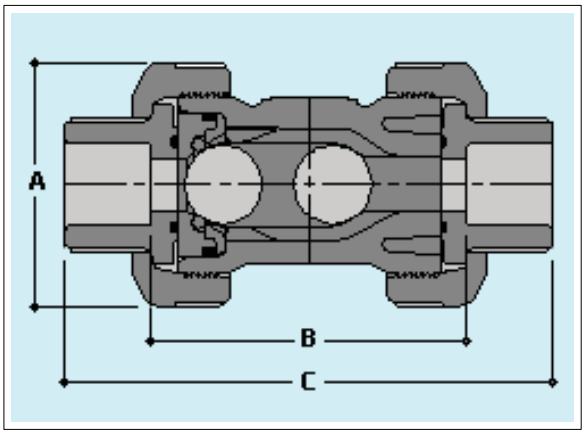
Part No : 2229-020 VALVES

Product Code :220

Est'd Weight : 4.94 lbs or 2.24 Kg

Color : GRAY

Material : PVC



Outlet Mark C
Includes Foot Screen

Cv Value = 540.00

A = 5.125" B = 5.750" C = 8.750"

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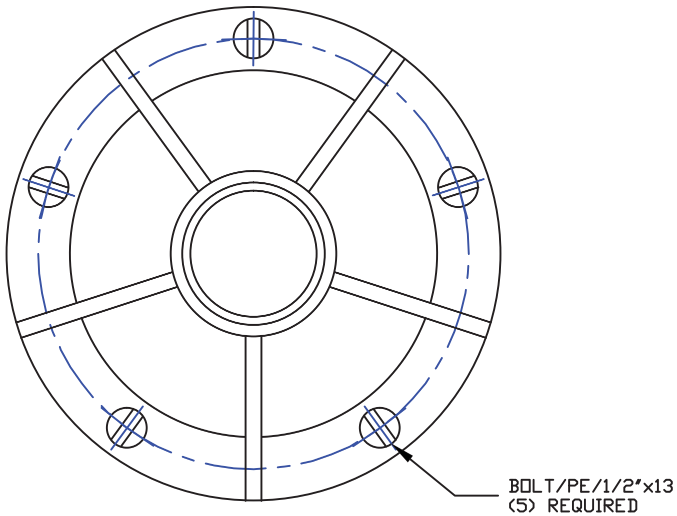
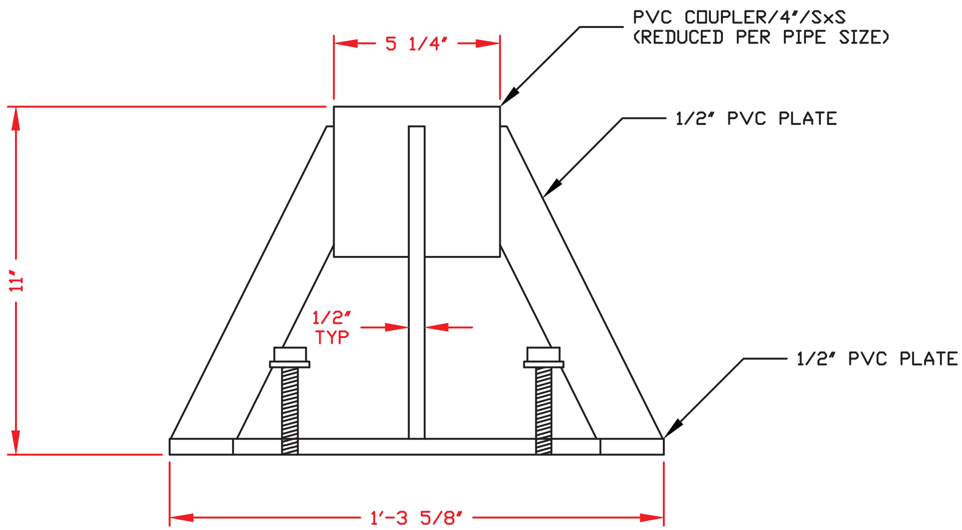
INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE

VERIFY REV LEVEL OF PAPER COPY WITH REV LEVEL ON PPC WEB SITE

Internal Pipe Support Stand Size
2" W/ Reducer Bushing 4X2 Part#10344





NOTES:
1. THIS IS A COMPUTER GENERATED DWG. DO NOT REVISE BY HAND.
2. PPC STOCK NO. 10344

DWG TITLE			
FREE STANDING INTERNAL PIPE SUPPORT			
SCALE: 3"=1'-0"	POLYPROCESSING SOLUTIONS, SIMPLIFIED.	Central Region P.O. Box 4150 (71211) 2201 Old Sterlington Rd. Monroe, LA 71203 (318) 343-7565 FAX (318) 343-8795	DR: B. THURMON
DATE: 4/04/11			CK: J. BRANTLEY
Outlet Mark C	SHEET 1 OF 1	COMPUTER FILE PSSTANDM	REV -

B3

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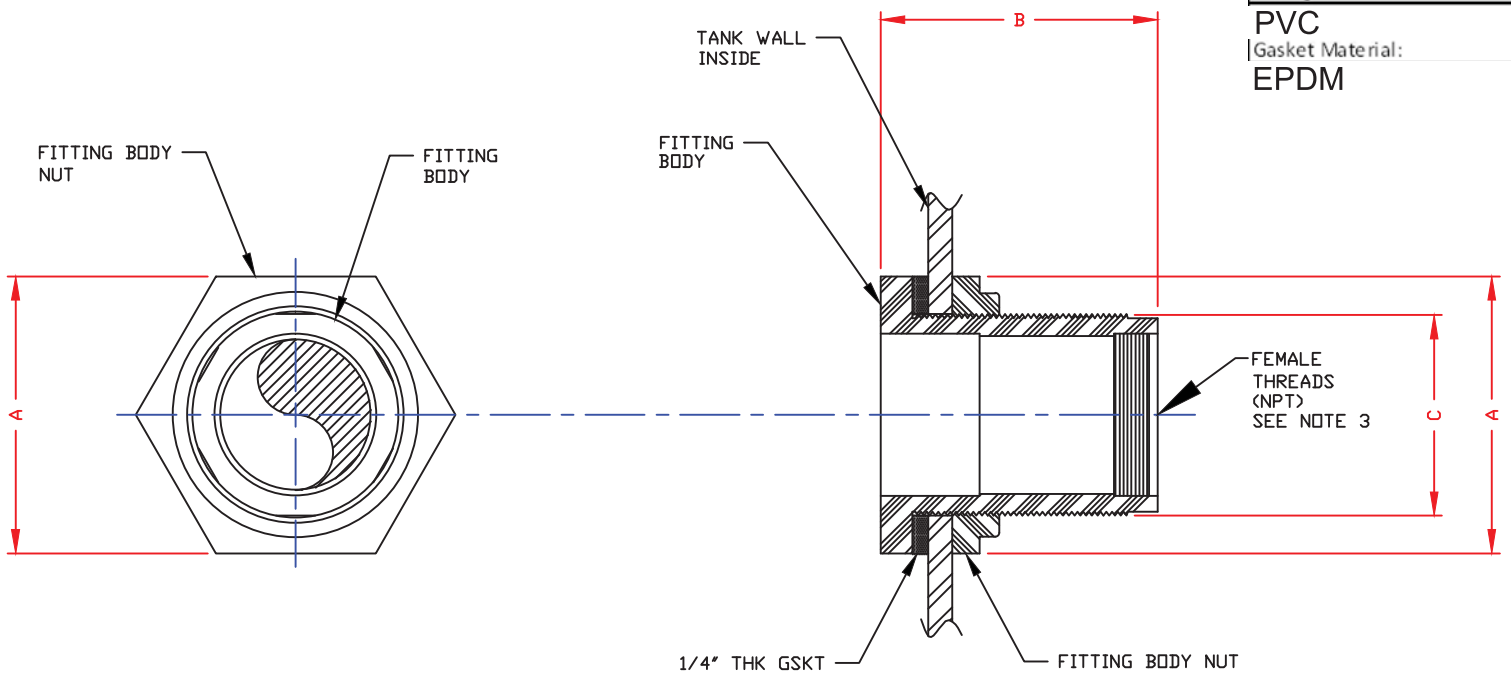
INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE

VERIFY REV LEVEL OF PAPER COPY WITH REV LEVEL ON PPC WEB SITE

Fitting Size:
4"
Fitting Material:
PVC
Gasket Material:
EPDM



PIPE SIZE (NPT)	DIM A	DIM B	DIM C
1/2"	2"	3 3/4"	1 3/8"
3/4"	2 3/8"	3 7/8"	1 5/8"
1"	2 9/16"	3 7/8"	1 7/8"
1 1/4"	3 1/4"	4"	2 3/8"
1 1/2"	3 1/4"	4"	2 3/8"
2"	4 3/8"	4 1/4"	3 1/4"
3"	6"	4 5/8"	4 1/2"
4"	8 3/4"	5 3/4"	5 3/4"
6"	12"	8"	8"

NOTES
1. THIS IS A COMPUTER GENERATED DWG. DO NOT REVISE BY HAND.
2. PLASTIC BULKHEAD FITTINGS (EXCEPT 4") MAY BE USED ON THE TANK SIDE WALL, IN THE BOTTOM, OR ON THE CENTER OF THE DOME. PLASTIC BULKHEAD FITTINGS MAY ALSO BE USED ELSEWHERE ON THE DOME IF IT IS NOT NECESSARY THAT THE FITTING BE VERTICAL TO THE BASE OF THE TANK AS THE FITTING WILL FOLLOW THE CURVE OF THE DOME.
3. PVC FITTING MAY BE SPECIAL ORDERED WITH THREADS ON BOTH ENDS. PP IS THREADED ON BOTH ENDS. CPVC IS S X T ONLY.

REV "A" REVISED & REDRAWN BY:JB 1/20/12 CK:CD

DWG TITLE
PLASTIC BULKHEAD FITTING (HAYWARD)

SCALE: 6"=1'-0"
DATE: 4/23/10

PolyProcessing Company LLC
Central Region
P.O. Box 4150 (71211)
2224 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7565
FAX (318) 343-8795

DR: C. DAVIES
CK: J. BRANTLEY

Level Sensor Mark D

SHEET 1 OF 1
COMPUTER FILE BHFM
REV A

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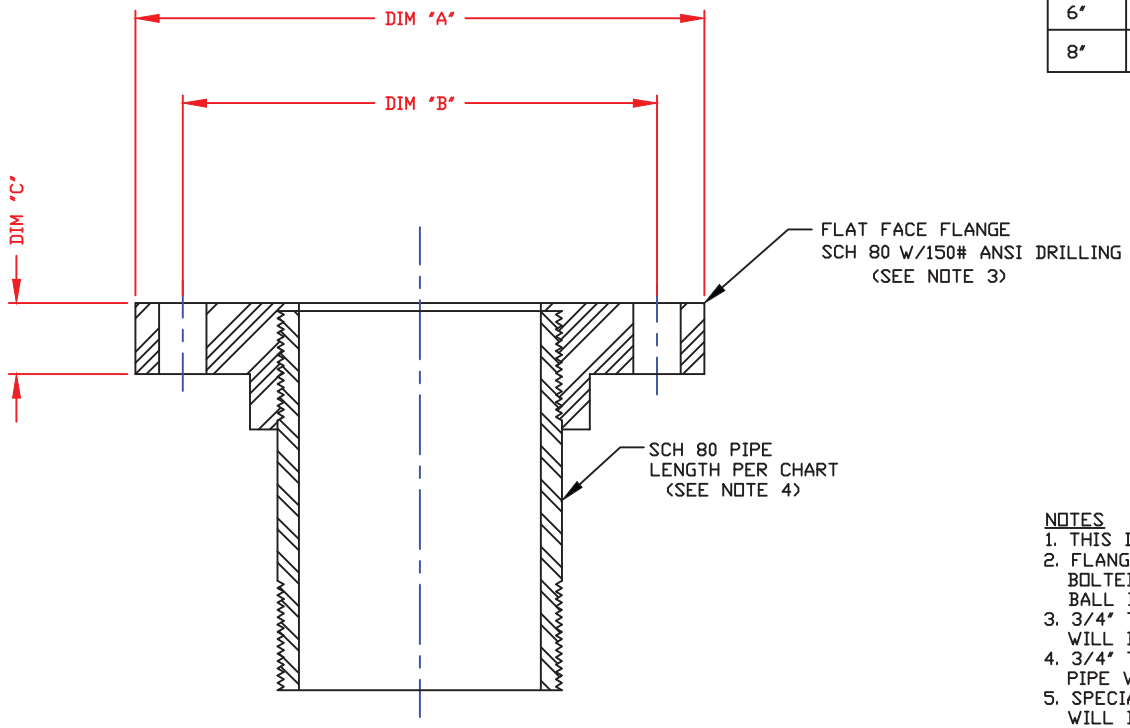
INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE

VERIFY REV LEVEL OF PAPER COPY WITH REV LEVEL ON PPC WEB SITE

Fitting Size:
4"
Fitting Material:
PVC
Flange Type:
THREADED
Gasket Material:
NONE

PIPE SIZE	DIM "A"	DIM "B"	DIM "C"	DIA BOLT HOLES	NO. BOLT HOLES	PIPE LENGTH
3/4"	3 7/8"	2 3/4"	1/2"	1/2"	4	4
1"	4 1/4"	3 1/8"	5/8"	1/2"	4	4
1 1/2"	5"	3 7/8"	11/16"	1/2"	4	4
2"	6"	4 3/4"	3/4"	5/8"	4	4
3"	7 1/2"	6"	15/16"	5/8"	8	4"
4"	9"	7 1/2"	1 1/8"	5/8"	8	6"
6"	11"	9 1/2"	1 1/4"	3/4"	8	8
8"	13 1/2"	11 3/4"	1 7/16"	3/4"	8	12"



NOTES

1. THIS IS A COMPUTER GENERATED DWG. DO NOT REVISE BY HAND.
2. FLANGE ADAPTERS MAY BE THREADED INTO BULKHEAD FTGS, BOLTED FLANGE FTGS, FEMALE SS BULKHEAD FTGS OR UNIVERSAL BALL DOME FTGS.
3. 3/4" THRU 4" FLANGES WILL BE THREADED/6" & 8" FLANGES WILL BE SOCKET FLANGES, UNLESS SPECIFIED OTHERWISE.
4. 3/4" THRU 4" PIPE WILL BE THREADED BOTH ENDS/6" & 8" PIPE WILL BE STRAIGHT PIPE, UNLESS SPECIFIED OTHERWISE.
5. SPECIAL SS FLANGE ADAPTERS CAN BE ORDERED. ALL SIZES WILL BE THREADED.

DWG TITLE: FLANGE ADAPTER

SCALE: 6"=1'-0"

DATE: 4/28/10

POLYPROCESSING COMPANY LLC
Central Region
P.O. Box 4130 (71211)
2824 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7565
FAX (318) 343-8795

DR: C. DAVIES

CK: J. BRANTLEY

Level Sensor Mark D

SHEET: 1 OF 1

COMPUTER FILE: FLGADPTM

REV: -

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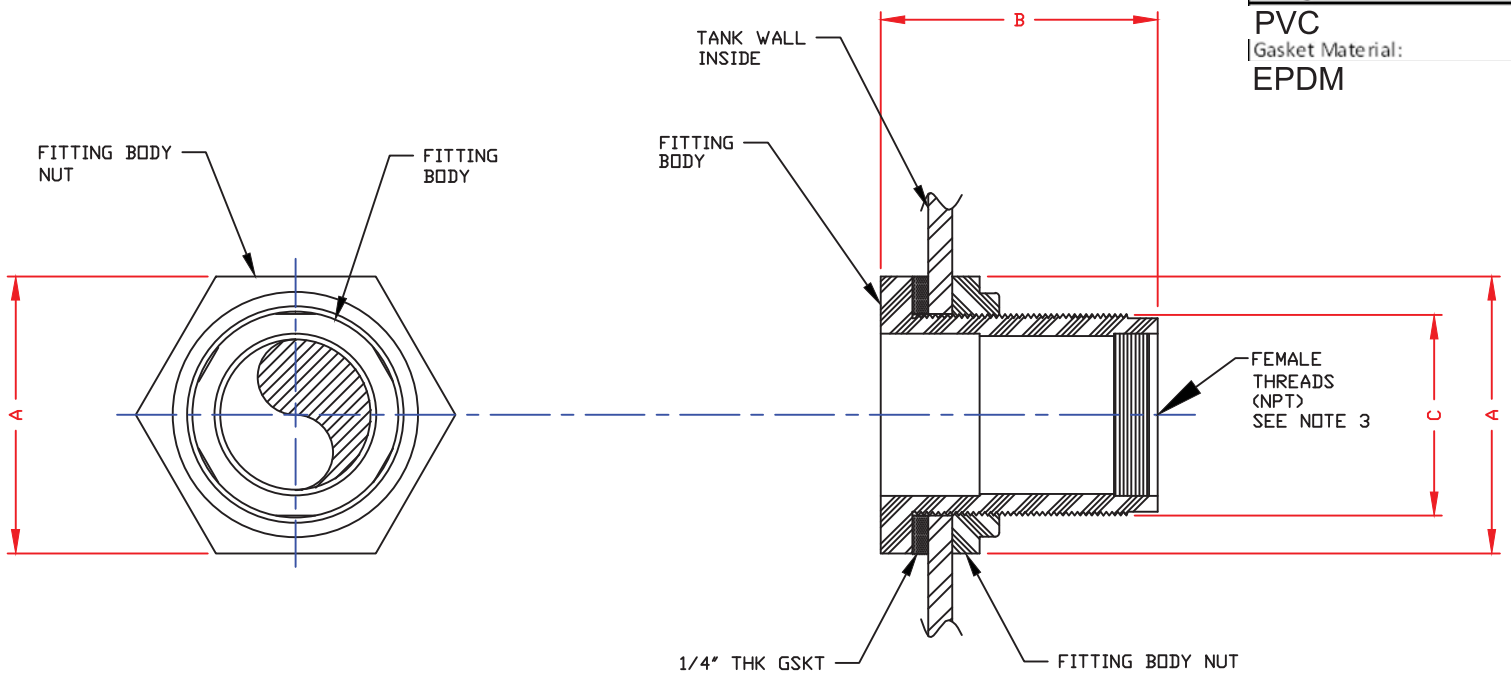
INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE

VERIFY REV LEVEL OF PAPER COPY WITH REV LEVEL ON PPC WEB SITE

Fitting Size:
6"
Fitting Material:
PVC
Gasket Material:
EPDM



PIPE SIZE (NPT)	DIM A	DIM B	DIM C
1/2"	2"	3 3/4"	1 3/8"
3/4"	2 3/8"	3 7/8"	1 5/8"
1"	2 9/16"	3 7/8"	1 7/8"
1 1/4"	3 1/4"	4"	2 3/8"
1 1/2"	3 1/4"	4"	2 3/8"
2"	4 3/8"	4 1/4"	3 1/4"
3"	6"	4 5/8"	4 1/2"
4"	8 3/4"	5 3/4"	5 3/4"
6"	12"	8"	8"

NOTES
1. THIS IS A COMPUTER GENERATED DWG. DO NOT REVISE BY HAND.
2. PLASTIC BULKHEAD FITTINGS (EXCEPT 4") MAY BE USED ON THE TANK SIDE WALL, IN THE BOTTOM, OR ON THE CENTER OF THE DOME. PLASTIC BULKHEAD FITTINGS MAY ALSO BE USED ELSEWHERE ON THE DOME IF IT IS NOT NECESSARY THAT THE FITTING BE VERTICAL TO THE BASE OF THE TANK AS THE FITTING WILL FOLLOW THE CURVE OF THE DOME.
3. PVC FITTING MAY BE SPECIAL ORDERED WITH THREADS ON BOTH ENDS. PP IS THREADED ON BOTH ENDS. CPVC IS S X T ONLY.

REV "A" REVISED & REDRAWN BY:JB 1/20/12 CK:CD

DWG TITLE
PLASTIC BULKHEAD FITTING (HAYWARD)

SCALE: 6"=1'-0"	PolyProcessing Company LLC — Central Region P.O. Box 4150 (71211) 2224 Old Sterlington Rd. Monroe, LA 71203 (318) 343-7565 FAX (318) 343-8795	DR: C. DAVIES	
DATE: 4/23/10		CK: J. BRANTLEY	
Level Switch Mark E	SHEET 1 OF 1	COMPUTER FILE BHFM	REV A

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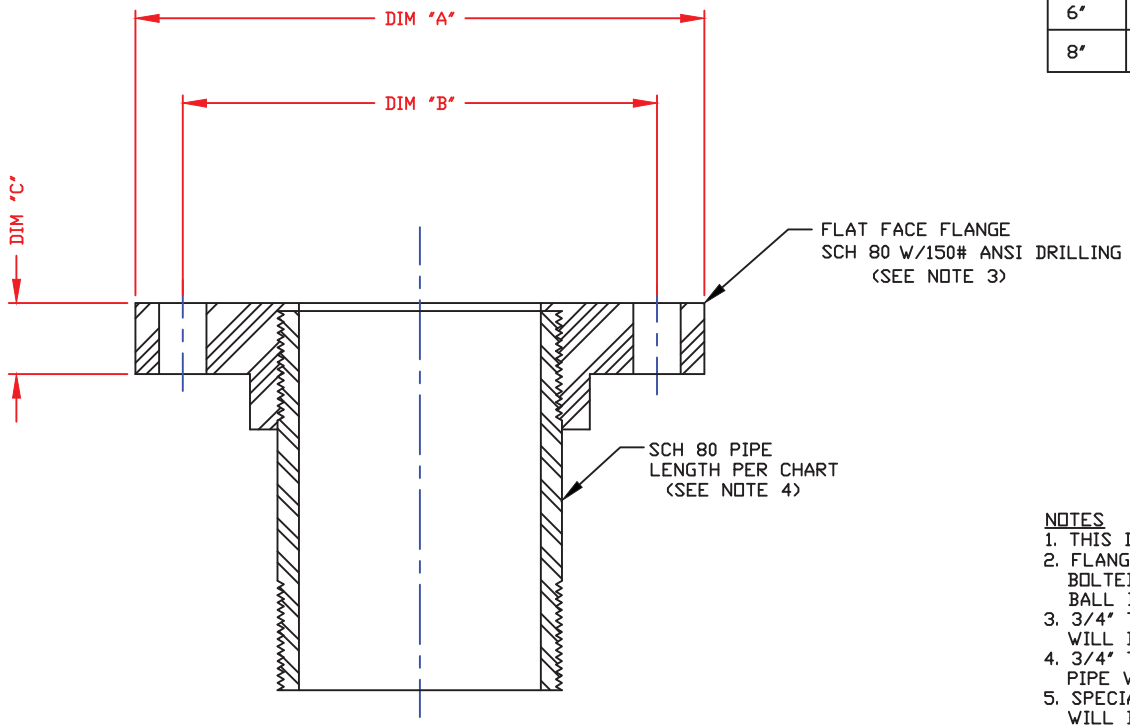
INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE

VERIFY REV LEVEL OF PAPER COPY WITH REV LEVEL ON PPC WEB SITE

Fitting Size:
6"
Fitting Material:
PVC
Flange Type:
THREADED
Gasket Material:
NONE

PIPE SIZE	DIM "A"	DIM "B"	DIM "C"	DIA BOLT HOLES	NO. BOLT HOLES	PIPE LENGTH
3/4"	3 7/8"	2 3/4"	1/2"	1/2"	4	4
1"	4 1/4"	3 1/8"	5/8"	1/2"	4	4
1 1/2"	5"	3 7/8"	11/16"	1/2"	4	4
2"	6"	4 3/4"	3/4"	5/8"	4	4
3"	7 1/2"	6"	15/16"	5/8"	8	4"
4"	9"	7 1/2"	1 1/8"	5/8"	8	6"
6"	11"	9 1/2"	1 1/4"	3/4"	8	8
8"	13 1/2"	11 3/4"	1 7/16"	3/4"	8	12"



NOTES

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2. FLANGE ADAPTERS MAY BE THREADED INTO BULKHEAD FTGS, BOLTED FLANGE FTGS, FEMALE SS BULKHEAD FTGS OR UNIVERSAL BALL DOME FTGS.
3. 3/4" THRU 4" FLANGES WILL BE THREADED/6" & 8" FLANGES WILL BE SOCKET FLANGES, UNLESS SPECIFIED OTHERWISE.
4. 3/4" THRU 4" PIPE WILL BE THREADED BOTH ENDS/6" & 8" PIPE WILL BE STRAIGHT PIPE, UNLESS SPECIFIED OTHERWISE.
5. SPECIAL SS FLANGE ADAPTERS CAN BE ORDERED. ALL SIZES WILL BE THREADED.

DWG TITLE: FLANGE ADAPTER

SCALE: 6"=1'-0"

DATE: 4/28/10

PolyProcessing Company LLC
Central Region
P.O. Box 4130 (71211)
2824 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7365
FAX (318) 343-8795

DR: C. DAVIES

CK: J. BRANTLEY

Level Switch Mark E

SHEET: 1 OF 1

COMPUTER FILE: FLGADPTM

REV: -

68

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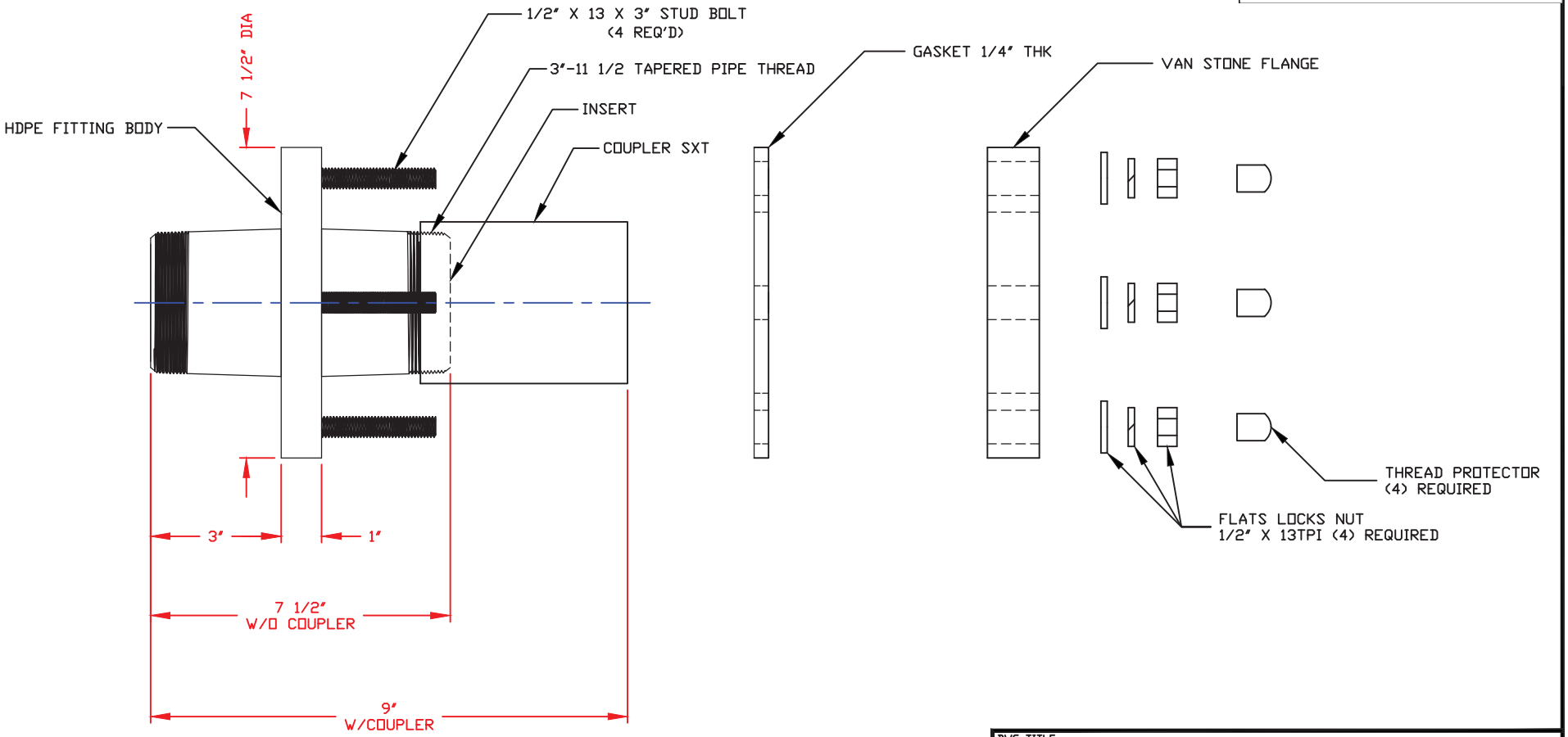
INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE

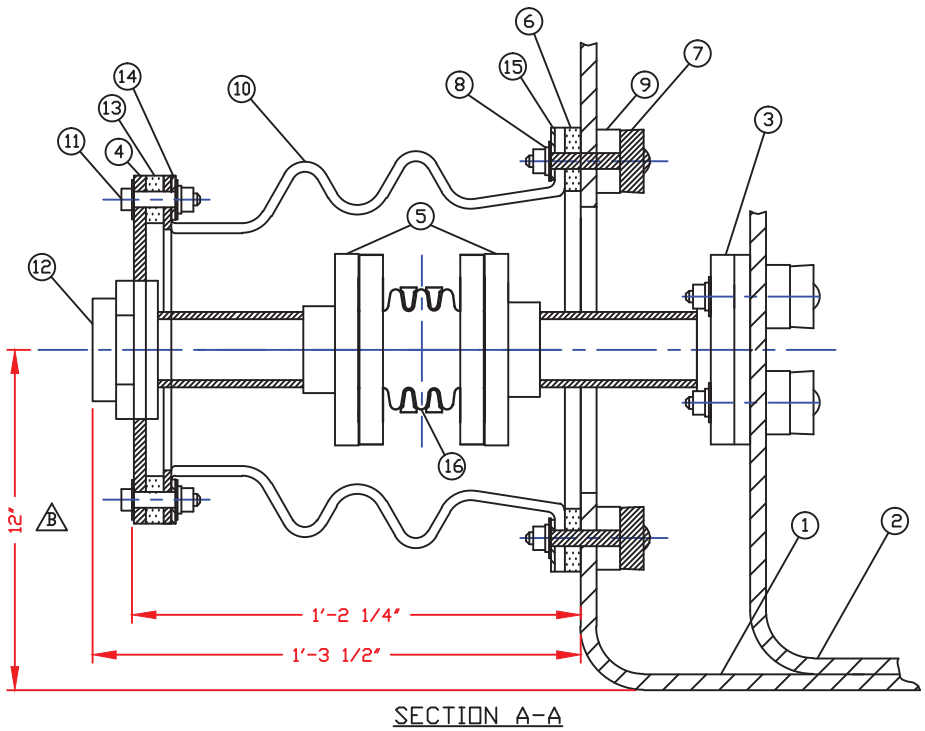
VERIFY REV LEVEL OF PAPER COPY WITH REV LEVEL ON PPC WEB SITE

Fitting Material:
PVC
Bolt Type:
TITANIUM
Gasket Material:
EPDM



SIDE VIEW

DWG TITLE	3" B.O.S.S. FITTING/PE		
SCALE: NONE	PolyProcessing Company LLC	Central Region P.O. Box 4130 (71211) 2201 Old Sterlington Rd. Monroe, LA 71203 (318) 343-7565 FAX (318) 343-8795	DR: C. DAVIES
DATE: 4/28/10			CK: J. BRANTLEY
Discharge 1&2 Mk D&E		SHEET 1 OF 1	COMPUTER FILE 3BOSSPEM / REV –



SECTION A-A

MARK	QTY	PART NO.	DESCRIPTION
1	1	--	OUTER TANK
2	1	--	INNER TANK
3	1	--	AS SPECIFIED BY CUSTOMER (NOT INCLUDED)
4	1	9687	3/8" THK PLATE/BLACK PE
5	1	--	FLANGE ADAPTER/PVC
6	1	--	GASKET 8" SPOOL (TANK END)
7	12	--	1/2" X 3" STUD BOLT
8	12	--	1/2" FLAT WASHER
	12	--	1/2" LOCK WASHER
	12	--	1/2-13 UNC NUT
9	12	--	STUD BOLT GASKET
10	1	9688	TRANS FITTING BELLOWS II/LLDPE/NATURAL
11	8	--	1/2"-13 X 2" BOLT
	16	--	1/2" FLAT WASHER
	8	--	1/2" LOCK WASHER
	8	--	1/2"-13 NUT
12	1	--	BULKHEAD FITTING/PVC/SxT
13	1	--	GASKET 6" FLANGE (PLATE END)
14	1	9685	SPLIT BACK-UP RING II/SS (PLATE END)
15	1	9686	SPLIT BACK-UP RING II/SS (TANK END)
16	1	--	FLANGED FLEX JOINT

A

ASSEMBLY			
SIZE	BOLT	GASKET	PART #
2	SS	EPDM	9752
2	SS	LV	9755
2	TITAN	EPDM	9753
2	TITAN	LV	9756
2	C-276	EPDM	9754
2	C-276	LV	9757
3	SS	EPDM	9758
3	SS	LV	9761
3	TITAN	EPDM	9759
3	TITAN	LV	9762

Discharge 1 & 2 Mark D & E

Tank Connection Fitting
B.O.S.S. FITTING
Fitting Material:
PVC
Fitting Size:
3"
Gasket Material:
EPDM
Bolt Type:
TITANIUM

NOTES:
1. THIS IS A COMPUTER GENERATED DRAWING. DO NOT REVISE BY HAND.

REV "B" REVISED CENTER LINE ELEVATION DIMENSION FROM 10-3/4" TO 12" BY:BT 3/17/10 CK:BD
REV "A" REVISED PART NUMBERS BY:JB 2/25/10 CK:TR

DWG TITLE
2" & 3" TRANSITION FITTING II W/PTFE FLEX JOINT

SCALE: 3"=1'-0"
DATE: 8/24/09

POLY PROCESSING COMPANY
Central Region
P.O. Box 4150 (71212)
2281 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7565
FAX (318) 343-8795

DR: B THURMON
CK:

SHEET 1 OF 2
COMPUTER FILE 2-3TRANSIIPTFE1
REV B

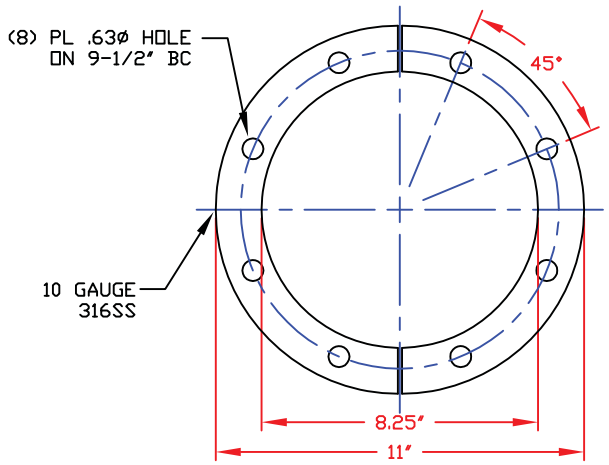


PLATE END SPLIT BACK-UP RING
PART # 9685

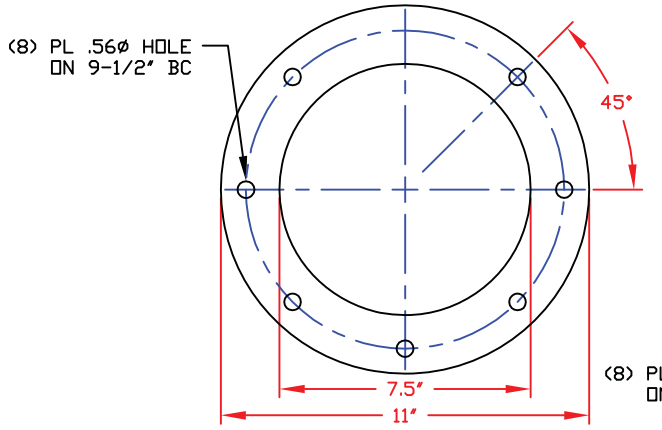
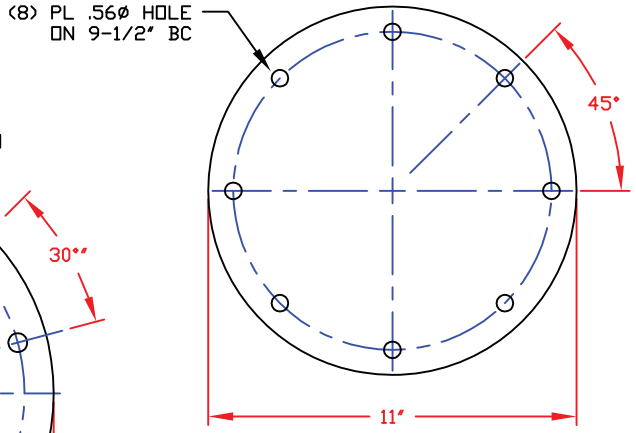
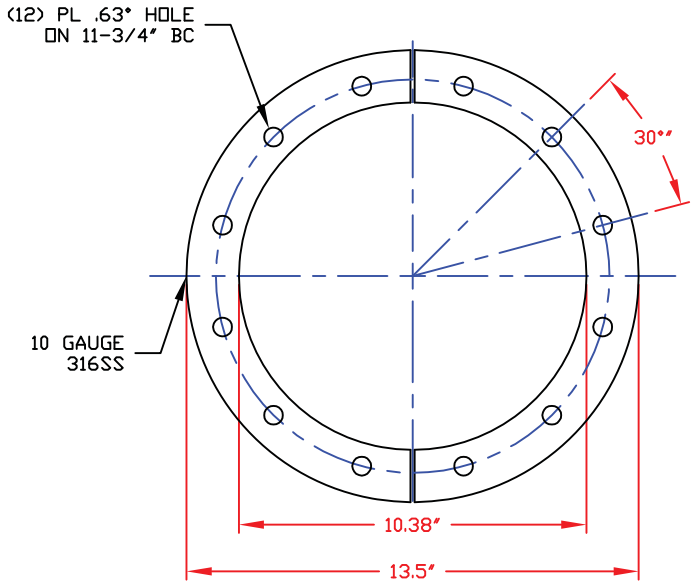


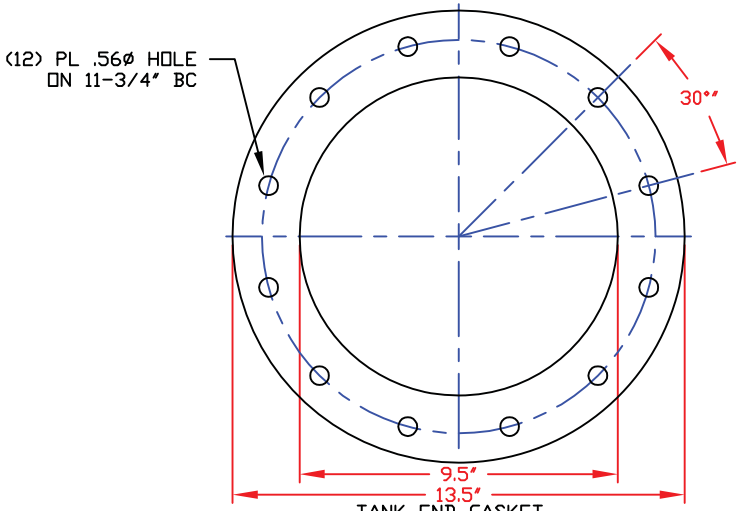
PLATE END GASKET
PART # 4740 /1/4" THK EPDM
PART # 4741 /1/4" THK VITON



PLATE/3/8" THK BLACK PE
PART # 9687



TANK END SPLIT BACK-UP RING
PART # 9686



TANK END GASKET
PART # 8342 /1/4" THK EPDM
PART # 9689 /1/4" THK VITON

Discharge 1 & 2 Mark D & E

DWG TITLE: 2" & 3" TRANSITION FITTING II			
SCALE: 3"=1'-0"	PolyProcessing Company — Central Region, P.O. Box 4159 (71211), 2201 Old Sterlington Rd, Monroe, LA 71203, (318) 343-7565, FAX (318) 343-8795		DR: B THURMON
DATE: 8/24/09			CK:
	SHEET: 2 OF 2	COMPUTER FILE: 2-3TRANSIIPTFE2	REV

B3

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INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE

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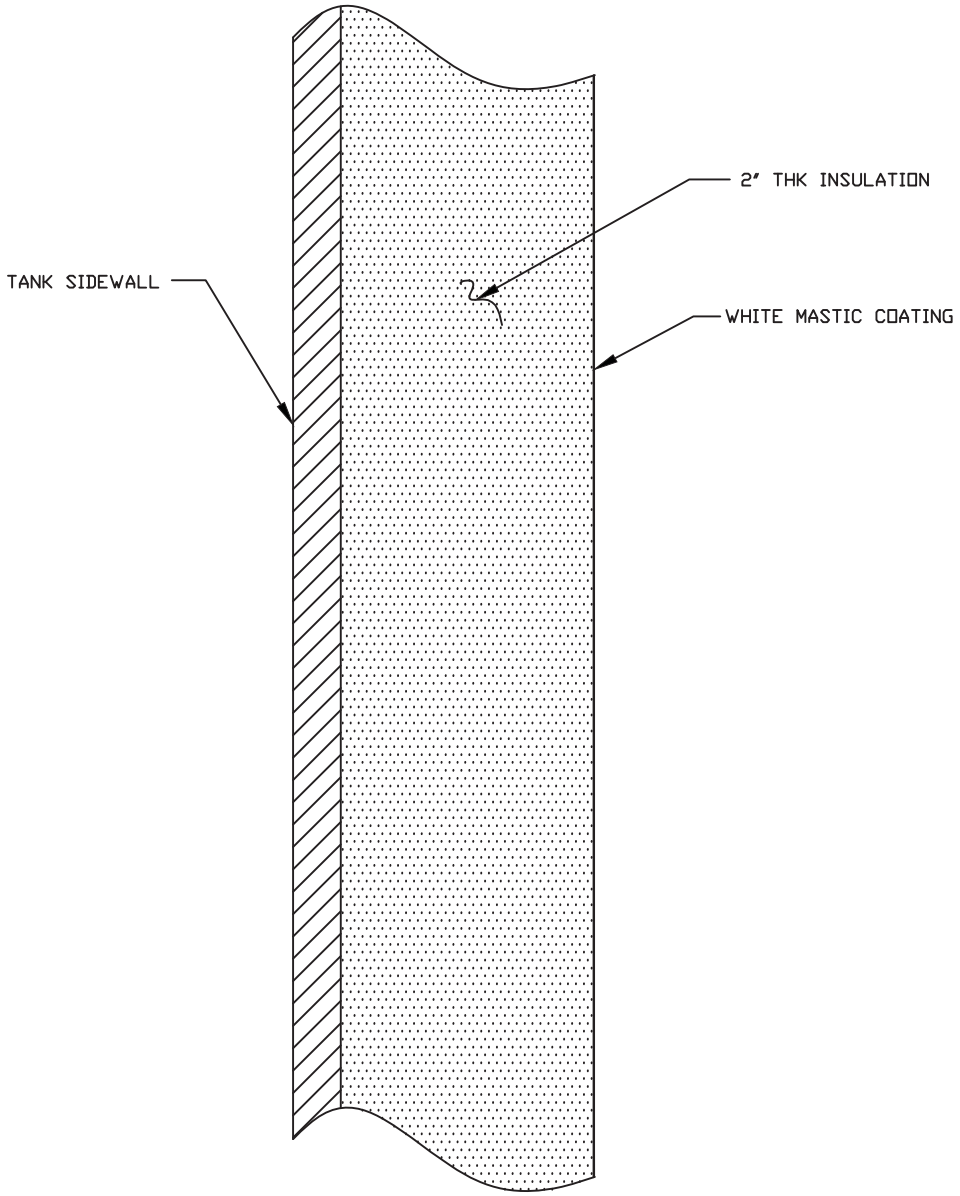
Insulation:
WINCHESTER VA INSULATION R 6.8
Mastic
WINCHESTER VA MASTIC



DWG TITLE: 2" THK INSULATION

SCALE: FULL

DATE: 5/20/10

PolyProcessing Company LLC
Central Region
P.O. Box 4130 (71211)
2201 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7565
FAX (318) 343-8795

DR: J. BRANTLEY

CK: C. DAVIES

Insulation Mark J

SHEET: 1 OF 1

COMPUTER FILE: INSULATIONM

REV: -

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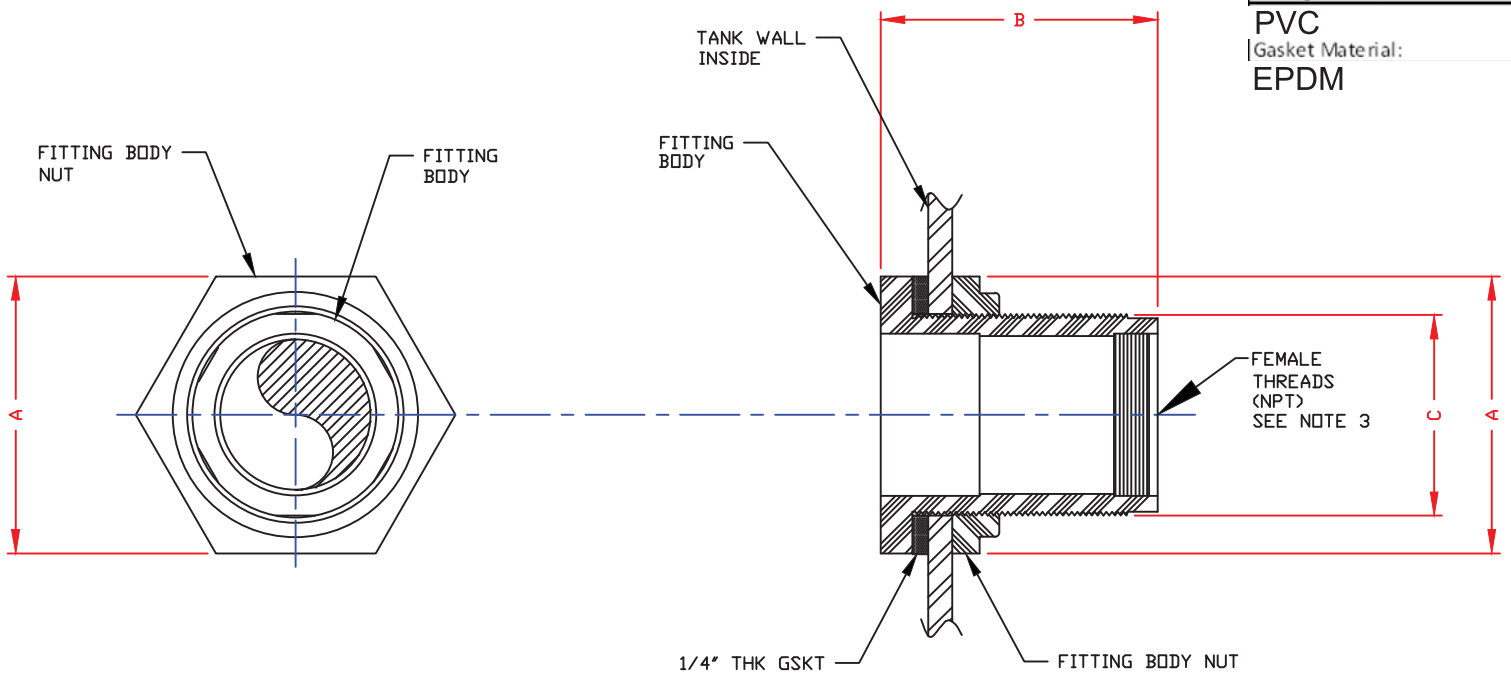
INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE

VERIFY REV LEVEL OF PAPER COPY WITH REV LEVEL ON PPC WEB SITE

Fitting Size:
3"
Fitting Material:
PVC
Gasket Material:
EPDM



PIPE SIZE (NPT)	DIM A	DIM B	DIM C
1/2"	2"	3 3/4"	1 3/8"
3/4"	2 3/8"	3 7/8"	1 5/8"
1"	2 9/16"	3 7/8"	1 7/8"
1 1/4"	3 1/4"	4"	2 3/8"
1 1/2"	3 1/4"	4"	2 3/8"
2"	4 3/8"	4 1/4"	3 1/4"
3"	6"	4 5/8"	4 1/2"
4"	8 3/4"	5 3/4"	5 3/4"
6"	12"	8"	8"

NOTES
1. THIS IS A COMPUTER GENERATED DWG. DO NOT REVISE BY HAND.
2. PLASTIC BULKHEAD FITTINGS (EXCEPT 4") MAY BE USED ON THE TANK SIDE WALL, IN THE BOTTOM, OR ON THE CENTER OF THE DOME. PLASTIC BULKHEAD FITTINGS MAY ALSO BE USED ELSEWHERE ON THE DOME IF IT IS NOT NECESSARY THAT THE FITTING BE VERTICAL TO THE BASE OF THE TANK AS THE FITTING WILL FOLLOW THE CURVE OF THE DOME.
3. PVC FITTING MAY BE SPECIAL ORDERED WITH THREADS ON BOTH ENDS. PP IS THREADED ON BOTH ENDS. CPVC IS S X T ONLY.

REV "A" REVISED & REDRAWN BY:JB 1/20/12 CK:CD

DWG TITLE
PLASTIC BULKHEAD FITTING (HAYWARD)

SCALE: 6"=1'-0"
DATE: 4/23/10

PolyProcessing Company LLC
Central Region
P.O. Box 4150 (71211)
2201 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7565
FAX (318) 343-8795

DR: C. DAVIES
CK: J. BRANTLEY

Overflow Mark K

SHEET: 1 OF 1
COMPUTER FILE: BHFM
REV: A

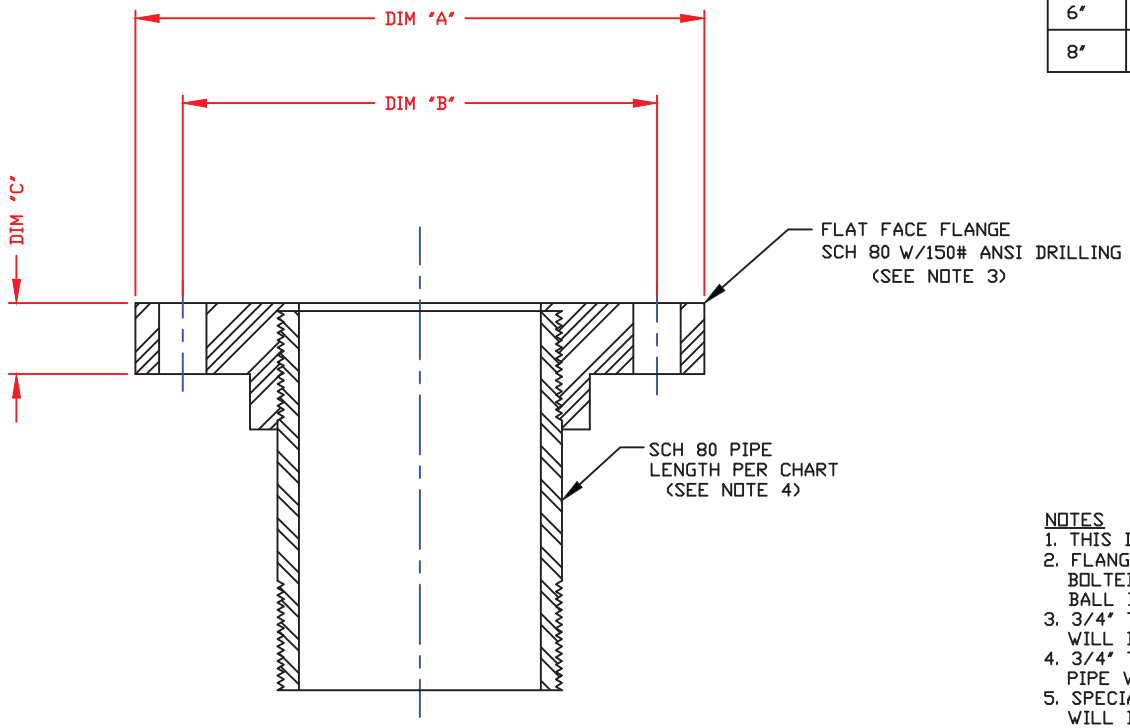
NON-CONTROLLED COPY

INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE

VERIFY REV LEVEL OF PAPER COPY WITH REV LEVEL ON PPC WEB SITE

Fitting Size:
3"
Fitting Material:
PVC
Flange Type:
THREADED
Gasket Material:
NONE

PIPE SIZE	DIM "A"	DIM "B"	DIM "C"	DIA BOLT HOLES	NO. BOLT HOLES	PIPE LENGTH
3/4"	3 7/8"	2 3/4"	1/2"	1/2"	4	4
1"	4 1/4"	3 1/8"	5/8"	1/2"	4	4
1 1/2"	5"	3 7/8"	11/16"	1/2"	4	4
2"	6"	4 3/4"	3/4"	5/8"	4	4
3"	7 1/2"	6"	15/16"	5/8"	8	4"
4"	9"	7 1/2"	1 1/8"	5/8"	8	6"
6"	11"	9 1/2"	1 1/4"	3/4"	8	8
8"	13 1/2"	11 3/4"	1 7/16"	3/4"	8	12"



NOTES

1. THIS IS A COMPUTER GENERATED DWG. DO NOT REVISE BY HAND.
2. FLANGE ADAPTERS MAY BE THREADED INTO BULKHEAD FTGS, BOLTED FLANGE FTGS, FEMALE SS BULKHEAD FTGS OR UNIVERSAL BALL DOME FTGS.
3. 3/4" THRU 4" FLANGES WILL BE THREADED/6" & 8" FLANGES WILL BE SOCKET FLANGES, UNLESS SPECIFIED OTHERWISE.
4. 3/4" THRU 4" PIPE WILL BE THREADED BOTH ENDS/6" & 8" PIPE WILL BE STRAIGHT PIPE, UNLESS SPECIFIED OTHERWISE.
5. SPECIAL SS FLANGE ADAPTERS CAN BE ORDERED. ALL SIZES WILL BE THREADED.

DWG TITLE: FLANGE ADAPTER

SCALE: 6"=1'-0"

DATE: 4/28/10

POLYPROCESSING COMPANY LLC
Central Region
P.O. Box 4130 (71211)
2824 Old Sterlington Rd.
Monroe, LA 71203
(318) 343-7565
FAX (318) 343-8795

DR: C. DAVIES

CK: J. BRANTLEY

Overflow Mark K

SHEET: 1 OF 1

COMPUTER FILE: FLGADPTM

REV: -

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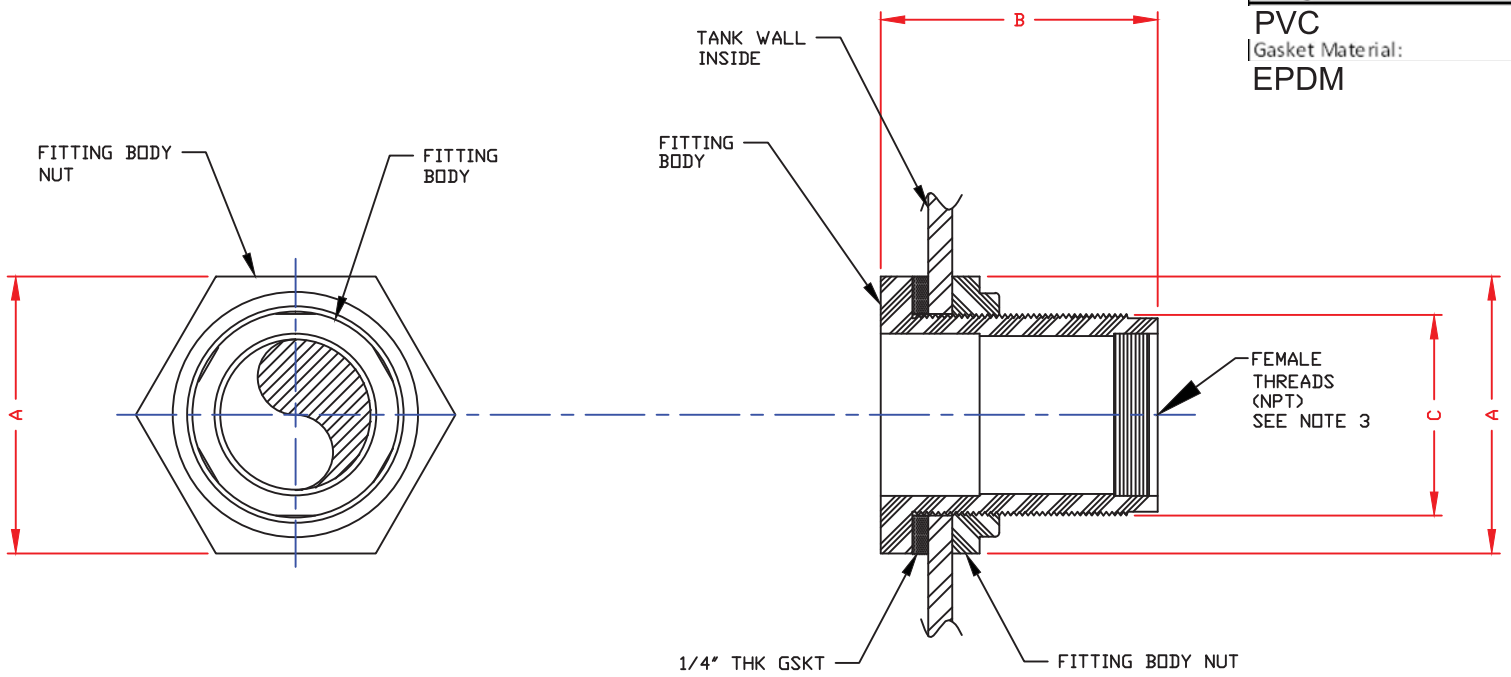
Fitting Size:
4"
Fitting Material:
PVC
Gasket Material:
EPDM



PIPE SIZE (NPT)	DIM A	DIM B	DIM C
1/2"	2"	3 3/4"	1 3/8"
3/4"	2 3/8"	3 7/8"	1 5/8"
1"	2 9/16"	3 7/8"	1 7/8"
1 1/4"	3 1/4"	4"	2 3/8"
1 1/2"	3 1/4"	4"	2 3/8"
2"	4 3/8"	4 1/4"	3 1/4"
3"	6"	4 5/8"	4 1/2"
4"	8 3/4"	5 3/4"	5 3/4"
6"	12"	8"	8"

NOTES
1. THIS IS A COMPUTER GENERATED DWG. DO NOT REVISE BY HAND.
2. PLASTIC BULKHEAD FITTINGS (EXCEPT 4") MAY BE USED ON THE TANK SIDE WALL, IN THE BOTTOM, OR ON THE CENTER OF THE DOME. PLASTIC BULKHEAD FITTINGS MAY ALSO BE USED ELSEWHERE ON THE DOME IF IT IS NOT NECESSARY THAT THE FITTING BE VERTICAL TO THE BASE OF THE TANK AS THE FITTING WILL FOLLOW THE CURVE OF THE DOME.
3. PVC FITTING MAY BE SPECIAL ORDERED WITH THREADS ON BOTH ENDS. PP IS THREADED ON BOTH ENDS. CPVC IS S X T ONLY.

REV "A" REVISED & REDRAWN BY:JB 1/20/12 CK:CD

DWG TITLE
PLASTIC BULKHEAD FITTING (HAYWARD)

SCALE: 6"=1'-0"	POLY PROCESSING COMPANY LLC	Central Region P.O. Box 4150 (71211) 2224 Old Sterlington Rd. Monroe, LA 71203 (318) 343-7565 FAX (318) 343-8795	DR: C. DAVIES
DATE: 4/23/10			CK: J. BRANTLEY
Vent Mark L	SHEET 1 OF 1	COMPUTER FILE BHFM	REV A

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INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE

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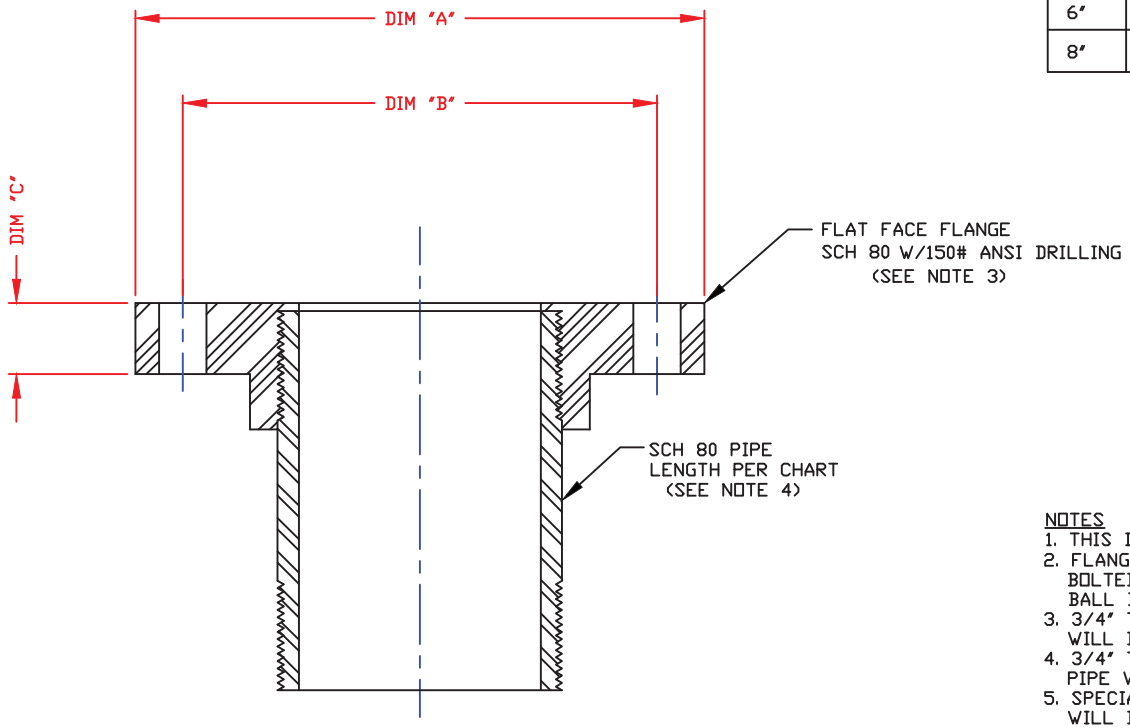
Fitting Size:
4"
Fitting Material:
PVC
Flange Type:
THREADED
Gasket Material:
NONE

PIPE SIZE	DIM "A"	DIM "B"	DIM "C"	DIA BOLT HOLES	NO. BOLT HOLES	PIPE LENGTH
3/4"	3 7/8"	2 3/4"	1/2"	1/2"	4	4
1"	4 1/4"	3 1/8"	5/8"	1/2"	4	4
1 1/2"	5"	3 7/8"	11/16"	1/2"	4	4
2"	6"	4 3/4"	3/4"	5/8"	4	4
3"	7 1/2"	6"	15/16"	5/8"	8	4"
4"	9"	7 1/2"	1 1/8"	5/8"	8	6"
6"	11"	9 1/2"	1 1/4"	3/4"	8	8
8"	13 1/2"	11 3/4"	1 7/16"	3/4"	8	12"



NOTES

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5. SPECIAL SS FLANGE ADAPTERS CAN BE ORDERED. ALL SIZES WILL BE THREADED.

DWG TITLE: FLANGE ADAPTER

SCALE: 6"=1'-0"

DATE: 4/28/10

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DR: C. DAVIES

CK: J. BRANTLEY

Vent Mark L

SHEET: 1 OF 1

COMPUTER FILE: FLGADPTM

REV: -

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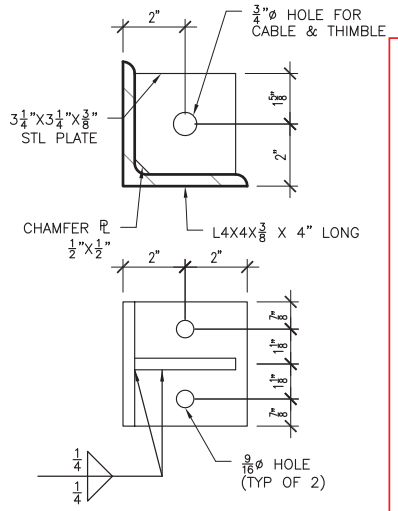

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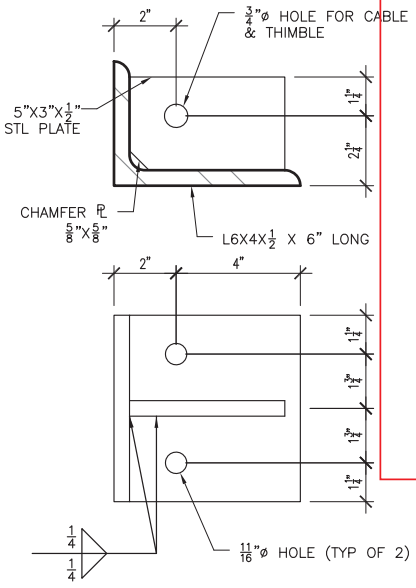

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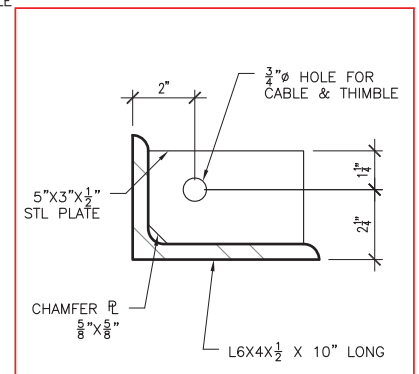

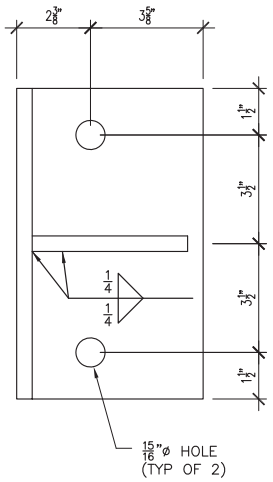

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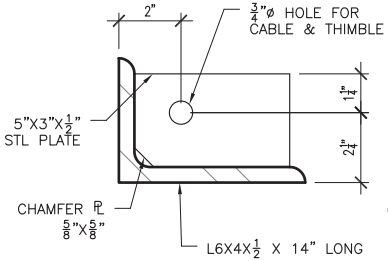
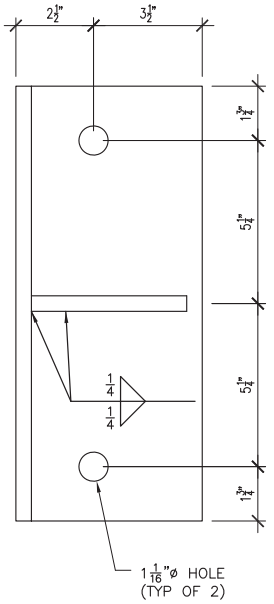
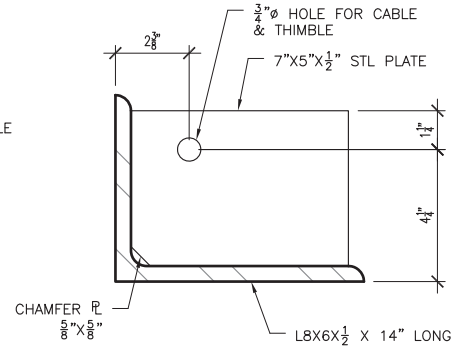
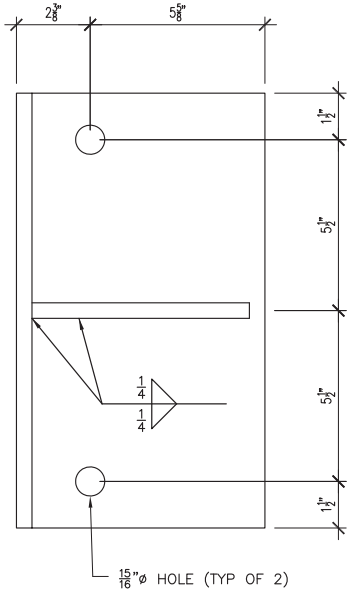




L6–14





L8–14

Restraint Mark R

LANE ENGINEERS INC.
CIVIL • STRUCTURAL • SURVEYING
979 N. Blackstone Street
Tulare, California 93274
(559) 688-5263

REVISIONS

MANUFACTURER:
POLY PROCESSING CO.
WESTERN REGION
8055 South Ash Street
French Camp, CA 95231
PH: (209) 982-4904

2009 IBC STAINLESS RESTRAINT CLIPS

NAME	J.A.
DATE	02-28-2012
SCALE	NOTED
CHECKED	D.K.A.
DRAWING NO.	CLIP-02
JOB NO.	

2/29/2012 8:04:43 AM Clips.dwg

Section 2

Tank Specifications

Our Tank Offerings

SAFE-Tank® SYSTEMS

A tank-within-a-tank that creates secondary containment with a minimal footprint. Available with or without OR-1000™ surfacing.

VERTICAL TANKS WITH IMFO®

Tanks with drainage at the true base, allowing for minimal sludge buildup and easier maintenance.

VERTICAL TANKS

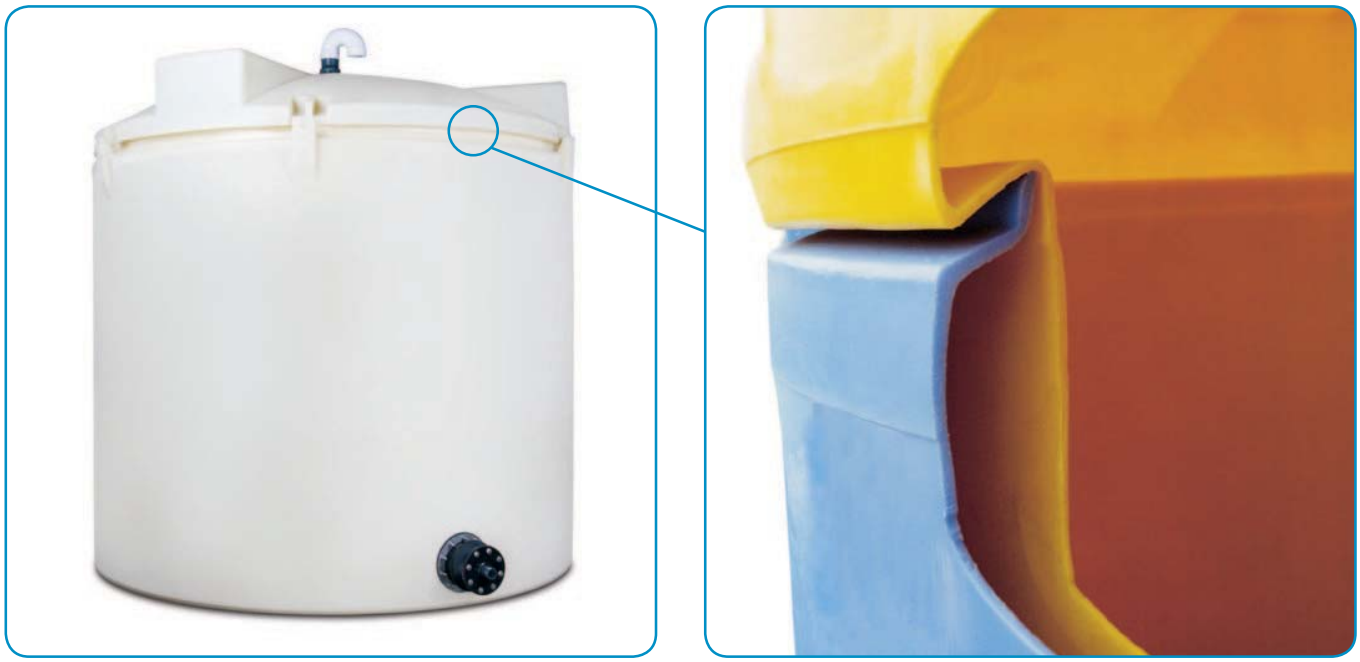
Standard-sized chemical storage tanks in crosslinked polyethylene for superior strength. Available with OR-1000™ antioxidant surface.

CONE-BOTTOM TANKS

Generally used in a process environment, where the tank has to be 100% drained, and to address concerns about vortexing.

SAFE-Tank®

A complete system for secondary containment.



Poly Processing's SAFE-Tank® is a tank-within-a-tank system that keeps contaminants from entering the interstitial area. These tanks provide secondary containment to avoid the damaging of equipment or property, loss of chemical, or injury to employees in the event of a spill.

The SAFE-Tank®:

- Provides 110% secondary containment
- Will equalize the liquid and allow the chemical to be continually used until it is convenient to repair the tank
- Is ideal for chemicals like sulfuric acid that can have dangerous exothermic reactions to water
- Eliminates the expense, cost and maintenance of secondary concrete containment
- Minimizes the system's footprint by providing secondary containment in a more compact way
- Adding a bellows transition fitting will maximize your SAFE-Tank® system's performance

SAFE-Tank® systems are also available with OR-1000™ for superior antioxidant resistance.

SAFE-Tank® System

1550 Gallon Safe Tank

T1		SAFE-Tank® SYSTEMS – STORAGE & CONTAINMENT								
		F.O.B.			Stock Number	Nominal Capacity	Approx. O.D.	Approx. Overall Height	Lid Size	Ladder Height
		LA	VA	CA						
		4			2008700					
		4			2110150					
L	•				Assembly	8,700	11'-11"	14'-6"	24"	15'
		4		1	2006650					
		4		1	2107450					
L	•				Assembly	6,650	10'-2"	14'-3"	24"	14'
		4			2005400					
		4			2106300					
L	•				Assembly	5,400	11'-11"	9'-9"	24"	10'
			7	1	2004400					
			7	1	2104950					
L	•				Assembly	4,400	10'-3"	10'-3"	24"	10'
		4			2003150					
		4			2103550					
L	•				Assembly	3,150	10'-2"	7'-7"	24"	7'
		4			2002500					
		4			2103100					
L	•				Assembly	2,500	8'-0"	9'-11"	17"	10'
			7		2001550					
			7		2101950					
	•				Assembly	1,550	8'-0"	6'-11"	17"	7'
			7	1	2001000					
			7	1	2101200					
	•				Assembly	1,000	6'-5"	6'-7"	17"	6'
			7	1	2000750					
			7	1	2100940	750	5'-0"	7'-5"	17"	7'
	•				Assembly					
		4			2000540					
		4			2100655					
	•				Assembly	540	6'-5"	4'-0"	17"	
			7	1	2000405					
			7	1	2100445					
					Assembly	405	4'-0"	5'-9"	7"	
			7	1	2000250					
			7	1	2100295					
					Assembly	250	3'-11"	4'-4"	7"	
		4	7	1	2000160					
		4	7	1	2100220					
					Assembly	160	3'-0"	4'-11"	7"	
		4	7	1	2000105					
		4	7	1	2100150					
					Assembly	105	3'-0"	3'-6"	7"	
		4			2000055					
		4			2100085					
					Assembly	55	3'-0"	2'-5"	7"	

• = Molded-in lifting lugs
L = Molded-in ladder attachment lugs

Section 3

Flexible Connections

Flexible connections are required on fittings installed on the lower 1/3 of the tank sidewall to allow the tank to expand and contract and to protect the tank from pump vibrations.

Flexible Connection Minimum Specifications:

- Axial Compression ≥ 0.67”
- Axial Extension ≥ 0.67”
- Lateral Deflection ≥ 0.51”
- Angular Deflection ≥ 14°
- Torsional Rotation ≥ 4°

☐ Contractor Supplied

☑ Poly Processing Company Supplied

PolyProcessing
SOLUTIONS, SIMPLIFIED.

www.polyprocessing.com

FLEXIJOINT® EXPANSION JOINT

These flexible PTFE connectors and tremor barriers are designed to compensate for misalignment, absorb expansion and contraction, and isolate the vibration and shock that could damage a tank. Their low spring rate protects stress-sensitive connections. Can be installed directly to the dome of the tank to overcome piping misalignment

- Made of pure 100% virgin PTFE resin
- Ethylene's exclusive Fluorforming™ process guarantees multiple convolution walls of consistently uniform thickness for any size.
- Features T-Band™ root and sidewall support and protection from over-compression
- LimitLinks™ stainless steel cables protect from over-expansion.

Bolts: 316 stainless steel, titanium, C-276, Alloy 400

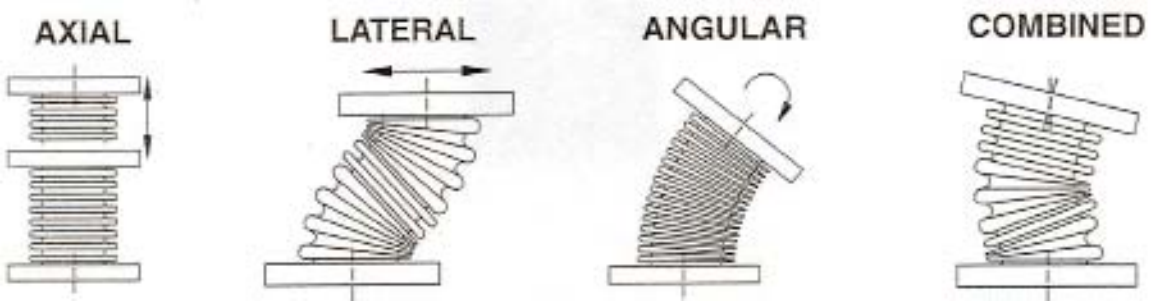
Gaskets: EPDM, Viton® and Viton® GF

CALIFORNIA
8055 S. Ash St.
French Camp, CA 95231
Tel: 877.325.3142

LOUISIANA
P.O. Box 4150
2201 Old Sterlington Rd.
Monroe, LA 71203
Tel: 866.590.6845
sales@polyprocessing.com

VIRGINIA
161 McGhee Rd.
Winchester, VA 22603
Tel: 877.633.6416

Performace specifications



» Axial Compression ≥ .67″
» Axial Extension ≥ 0.67″
» Lateral Deflection ≥ 0.51″
» Angular Deflection ≥ 14°
» Torsional Rotation ≥ 4°

PolyProcessing
SOLUTIONS, SIMPLIFIED.

Limited Warranty

POLY PROCESSING COMPANY PRODUCT	WARRANTY PERIOD
CROSSLINKED POLYETHYLENE TANKS for all suitable applications except those listed below ~~Max tank size for on-site generation of low concentration sodium hypochlorite (.08%) is 4,000 gallons unless larger size approved for specific application~~	3 Years

Warranty begins on the date of provisional acceptance by the owner.

»» Chemical manufacturing service, rental service, mobile service and elevated temperature service are special applications. Contact Poly Processing Customer Service for warranty for these applications.

Poly Processing Company's warranty consists of repair or ONE TIME replacement of defective product. Owner and/or user may be requested to provide a cleaned section of the product in question for evaluation. Product disposal or alternate use is the owner and/or user's responsibility.

Standard Poly Processing parts and ancillary items are warranted for ninety (90) days. Electrical heat tracing systems are warranted ONE YEAR. Non-standard parts warranty is by manufacturer.

Poly Processing Company's liability is limited to either repair or replacement of its product. By accepting delivery of the product, owner and/or user waives any claim against PPC for incidental or consequential damages as they relate to lost profits or sales or to injury of persons or property, including secondary containment. Owner and/or user accepts full responsibility for providing secondary containment appropriate and adequate for the stored material.

This warranty will be nullified if:

1. Product has been used in manner other than its originally declared purpose or if PPC tank recommendations have not been followed.
2. Product has not been installed, used and maintained in accordance with a) all federal, state and local laws and regulations; b) generally accepted best practices within the applicable industry; c) guidelines set forth in the PPC Installation Manual and/or in PPC Position Statements.
3. Product has been altered or repaired by unauthorized personnel.
4. Notification of the defect has not been made in writing within the warranty period.
5. Invoice for product has not been paid.
6. Product has been subjected to misuse, negligence, fire, accident, act of war or act of God.

The limited warranty described herein is Poly Processing Company's sole warranty and the complete, final and exclusive statement of the terms of the warranty. Owner and/or user may not rely on any oral statement or representations. This warranty is neither assignable nor transferable.

Technical Training Document

ASTM D 1998 - 13

Standard Specification
for
Polyethylene Upright Storage Tanks

Developed by Kelly Kemp
December 10, 1993
Rev. April 1, 2009
Rev. March 5, 2015

I. PURPOSE

The purpose of this document is to familiarize the reader with ASTM D 1998 - 13 and to emphasize its significance. This document is intended to serve as a supplement to the ASTM Standard and is not intended to preempt the requirements of that standard. ASTM D 1998 - 13 should be read in its entirety before applying this supplemental information.

II. REFERENCES

Standard Specification for Polyethylene Upright Storage Tanks, ASTM Designation D 1998 - 13, current edition Sept. 1, 2006, American Society for Testing and Materials, ASTM Committee D - 20 on Plastics, Subcommittee D20.15 on Thermoplastic Materials (Section D20.15.01).

Glossary of Terms, Association of Rotational Molders, 1986.

2014 Annual Book of ASTM Standards, Section 8 - Plastics

Tank Installation and Use Instructions, Poly Processing Co., page 3.

III. TEXT

Background Information on ASTM:

The American Society for Testing and Materials (ASTM) is a scientific and technical organization dedicated to "the development of standards on characteristics and performance of materials, products, systems, and services; and the promotion of related knowledge." The organization was founded in 1898 and is the world's largest source of voluntary consensus standards. The ASTM is an operational network of 137 primary technical committees and 1925 subcommittees. This structure exists to allow for a balanced representation among producers, users, and general interest parties.

The ASTM Designation:

The designation for the ASTM Standard Specification for Polyethylene Upright Storage Tanks is "D 1998 - 13." The "D 1998" is a fixed designation and the "13" signifies either the year of original adoption or the year of latest revision. The year of latest reapproval is indicated by a number in parentheses while a superscript epsilon (ε) shows that an editorial change has occurred since the last revision or reapproval.

Breakdown of ASTM D 1998 - 13:

The ASTM D 1998 - 13 Standard is divided into 15 sections as follows:

1. Scope	6. Design Requirements	11. Test Methods
2. Referenced Documents	7. Fittings	12. Marking
3. Terminology	8. Performance Requirements	13. Packing, Packaging, Marking
4. Classification	9. Dimensions and Tolerances	14. Shipping
5. Materials	10. Workmanship	15. Keywords

These fifteen sections are further subdivided and in this training document the resulting subdivisions will be referred to as "sections" as well. For example, section 3.1 indicates the first subdivision of section 3 which is **Terminology**; section 10.2 indicates the second subdivision of section 10 which is **Workmanship**, etc.

Discussion of the 15 Subgroups:

1. Scope

This section of the ASTM Standard sets up the range of products covered by the standard with regard to the material of construction, manufacturing process, product application, and product size. The following chart groups products according to whether or not they fall into the scope of the ASTM Standard:

Products which are covered by the ASTM Standard must be:	Examples of products not covered by the ASTM Standard:
One-piece seamless tanks molded from polyethylene through the rotational molding process, and	Slope bottom tanks
	Rectangular tanks
	Horizontal tanks
	Underground tanks
	Agricultural tanks
flat bottom, cylindrical tanks for vertical above ground installation, and	General purpose tanks
	Tanks subject to vacuum conditions
	Tanks subject to higher than atmospheric pressure
	Tanks containing liquids above their flash points
tanks with capacities of 500 gallons and up	Type I tanks containing liquids above 150°
	Type II tanks containing liquids above 140°
	Tanks with capacities of less than 500 gallons

The **Scope** section covers several other points involving design, safety, and interpretation:

Design - The ASTM Standard states that the exposure of tanks to forces such as windload, seismic, agitation; service temperatures above 73.4º F; or pressure greater than 10 inches of water column (.36 psi) constitutes the need for special design considerations. Section 1.3 states that such considerations are not covered in the ASTM Standard and should be given to products subject to these conditions.

Safety - The ASTM Standard by purpose does not attempt to address the safety issues associated with the test methods mentioned in the **Test Methods** section. Furthermore, it is declared in the **Scope** section of the ASTM Standard that "it is the responsibility of the user of this standard" to set up proper safety and health guidelines for test practices.

Interpretation - Section 1.5 refers to the interpretation of impact values in the **Performance Requirements** section (section 8). Values are stated in foot-pounds with Joules (newton-meters) to the right in parentheses. Section 1.5 points out that the metric units of Joules are to observed as information only and that the U.S. units of foot-pounds are to be Interpreted as the actual standard. (NOTE: ASTM D 1998 - 13 uses the phrase "inch-pounds" in section 1.5. It should be noted that foot-pounds are given in section 8 as the standard for low-temperature impact.)

2. Referenced Documents

Section 2 lists the documents used as resources for the ASTM Standard D 1998 - 13. There are four subdivisions in section 2 and they exist to stratify the resources into the four organizations whose documents were used as reference material. The four organizations are as follows:

ASTM	American Society for Testing and Materials
OSHA	Occupational Safety and Health Administration
ANSI	American National Standards Institute
NFPA	National Fire Protection Association
ISO	International Organization for Standardization

3. Terminology

Section 3 defines terms used in the standard in accordance with reference documents ASTM D 883 and F 412, and the Association of Rotational Molders Glossary of Terms. The three terms defined in section 3 are *rotational molding*, *impact failure*, and *service factor* and the definitions given are as follows:

O Rotational Molding a three-stage commercial process consisting of loading the mold with powdered resin, fusing the resin by heating while rotating the mold about more than one axis, and cooling and removing the molded article.

O Impact Failure any crack in the test specimen resulting from the impact and visible in normal room lighting to a person with normal eyesight.

O Service Factor a number less than 1.0 (which takes into consideration all the variables and degrees of safety involved in a polyethylene storage tank installation) which is multiplied by the hydrostatic design basis to give the design hoop stress.

These definitions are specific to ASTM D 1998 - 13 and are established as operational definitions in order to allow readers of the ASTM Standard to be unified in their understanding of these terms. This attempts to eliminate interpretation errors caused by differences in perceptions that may occur between different readers.

4. Classification

Section 4 discusses the breakdown of tanks by the type of polyethylene used in their construction. The two classifications of tanks are Type I and Type II and are defined as follows:

- Type I — the classification name given to tanks molded from cross-linkable polyethylene.
- Type II — the classification name given to tanks molded from noncross-linkable polyethylene.

5. Materials

Section 5 describes the standards for the input material (resin). This section states that the polyethylene used in the production process is to be free from previous processing other than that required for the initial manufacturing of the resin. This standard prohibits the use of regrind or recycled material as an input material. Structural requirements for the polyethylene are also mentioned in this section in terms of stress- cracking resistance, test conditions, and guidelines for obtaining the test specimen. At the end of subdivision 5.1.1, the standard states that stress-cracking test specimens which are rotationally molded must be done so under conditions similar to that of the tanks which will be molded from this material. It is also pointed out in this section that stress-cracking resistance of the polyethylene is not an indicator of the material's general chemical resistance and that chemical resistance charts should be referred to for chemical resistance properties.

Subdivision 5.2 requires that tanks intended for outdoor applications have an ultraviolet stabilizer compounded in the polyethylene. Section 5.3 gives the maximum weight of pigment in terms of percentage of total weight. The maximum weight for dry blended pigment is given as .5% while 2% is the maximum given for pigment compounded into the polyethylene. A note in section 5.3 states that impact strength can be affected by using dry blended pigments.

6. Design Requirements for Both Type I and Type II Tanks

This section addresses the design requirements for the cylinder shell, top head, top edge of open top tanks, and bottom head. In this section, the most emphasized aspect of the tank is its structural integrity as a function of necessary wall thickness. Wall thickness for the cylinder shell is determined by applying the following formula given in section 6.1:

$$T = \frac{P \times O.D.}{2\,SD} = \frac{0.433 \times S.G. \times H \times O.D.}{2\,SD}$$

where	T	=	wall thickness, in. (mm)
	SD	=	hydrostatic design stress, psi (MPa)
	P	=	pressure (0.433 x S.G. x H), psi (MPa)
	H	=	fluid head, ft. (m)
	S.G.	=	specific gravity of fluid (g/cm^3)
	O.D.	=	outside diameter, in. (mm)

The wall thickness (T) required for various portions on the tank shell is dependent upon the amount of ***application stress*** imposed to these portions and the ***design allowable hoop stress*** of the resin. Both of these design stresses are tensile stresses.

The ***application stress*** is dependent on the pressure (P) exerted on the tank wall by the design fluid. This pressure (P) is dependent on the density of the design fluid and the height of the fluid column (H) affecting the tank portion being considered. Design pressure (P) is determined by taking the pressure exerted by a one foot water column (0.433 psi) and multiplying it by the relative density of the design fluid (S.G.) and then by the height of the fluid column involved (H).

The ***design allowable hoop stress*** is dependent on the hydrostatic design basis and the service factor used. The hydrostatic design basis is dependent on the service temperature of the design fluid. Service temperatures above 73.4° F require downgrading of the maximum allowable hoop stress. The service factor is dependent on the wall thickness of the tank. For wall thicknesses greater than .375 inches, the maximum service factor is 0.475; for wall thicknesses less than .375 inches, the maximum service factor is 0.5. At Poly Processing, the design hoop stress for a 100° F service temperature is applied as a maximum hoop stress and is derated for service temperatures above 100° using a constant service factor of 0.475. The resulting design hoop stresses used in the wall thickness formula for various service temperatures are as follows:

Service Temperature	Design Hoop Stress
100° F	600 psi
110° F	550 psi
120° F	500 psi
130° F	450 psi
140° F	400 psi
150° F	300 psi

The following example illustrates the process of wall thickness determination through using the equation given in section 6.1:

Given: Service temperature of 100° F
Fluid specific gravity of 1.35
Maximum fluid height of 10 feet
Outside diameter of tank of 108 inches

$$T = \frac{P \times O.D.}{2\,SD} = \frac{0.433 \times S.G. \times H \times O.D.}{2\,SD}$$

therefore:

$$T = \frac{P \times 108}{2 \times 600} = \frac{0.433 \times 1.35 \times 10 \times 108}{2 \times 600}$$

$$T = \frac{P \times 108}{1200} = \frac{5.8455 \times 108}{1200} = \textbf{.526 in.}$$

The example calculation indicates that given a maximum service temperature of 100° F, the minimum required wall thickness for the unsupported tank shell exposed to a 10 ft. column of 1.35 S.G. fluid is .526 inches. In addition to supplying this wall thickness formula, section 6.1 states that wall thickness shall not be below .187 (3/16) inches at any point on the cylindrical shell of the tank (e.g. any fluid height). The remaining subdivisions of section 6 collectively state that neither the top head, bottom head, nor supported tank shell shall have a wall thickness less than .187 inches.

Section 6.4 calls for a minimum bottom head knuckle radius of 1 inch. Section 6.5 requires the top edge of open top tanks to be reinforced by design in order to maintain its shape after installation.

7. Fittings

This section addresses the requirement for chemical compatibility among fitting materials, the requirement for rounded corners on all holes cut in the tank, minimum sizes for venting, structural requirements for fittings, the need for hold down devices for outdoor tanks, and bolt circle compatibility requirements.

Venting is to be sized as no smaller than the larger of inlet and extraction sizes and no lower than 1" nominal inside diameter. Bolt circles are to comply with ANSI/ASME B-16.5 for 150 psi fittings.

8. Performance Requirements

Section 8 describes how the manufacturer tests for proper molding of both Type I and Type II tanks. Low-temperature impact tests are performed on Type I and Type II test samples to indicate the quality of the product. The minimum requirements for passing the low-temperature impact test are listed for various wall thicknesses in section 8.1.1.

Percent gel tests are performed on Type I samples to determine the amount of crosslinking present in the molded material. The ASTM D 1998 - 13 minimum requirement for percent gel is 60%.

These tests are discussed thoroughly in section 11.

9. Dimensions and Tolerances

Section 9 begins by stating that all dimensions are to be taken with the tank in the vertical position and unfilled. Tolerance for outside diameter and out of roundness is to be plus or minus 3%.

Section 9.1.3 gives the tolerance for wall thickness at the head and shell portions of the tank to be plus or minus 20% of the design thickness. This section goes on to say that the amount of tank area that is measured to be less than the design thickness is not to exceed 10% of the total tank area. Also, any individual low wall thickness area shall not exceed 1 square foot.

The tolerance for the placement of fittings is addressed in section 9.1.4 in terms of radial dimensions (degrees) and elevation (inches). The tolerance for fitting location elevation is plus or minus .5 inches and the tolerance for radial location is plus or minus 2° at ambient temperature. The radial tolerance of 2° can be easily translated into circumferential inches by multiplying the fraction 2/360 by the outside circumference of the tank in inches as follows:

> Given a tank with an outside diameter of 72 inches, the circumference at the outside wall of the tank is found by multiplying pi (π) by the outside diameter (72 inches in this case):
>
> $$\pi \times 72 = 226.19 \text{ inches}$$
>
> Since 226.19 inches is the outside circumference of this tank, radial degrees for this tank can be equated as 360° = 226.19 inches. Furthermore, this can be reduced to .63 inches per degree making 2° approximately 1.25 inches.
>
> Multiplying 2/360 (.0056) by the outside circumference (226.19 inches) also gives the approximate value of 1.25 inches. Both of these approaches utilize the same concept of proportionality.

According to the ASTM Standard, the radial tolerance for a fitting being placed on this example tank would be plus or minus 1.25 inches at ambient temperature (e.g. a 2.5 inch range of possible locations for the fitting in question). While this would be within the technical range of acceptance according to the ASTM Standard, this may not be acceptable to the customer.

10. Workmanship

So far, the ASTM Standard has addressed many aspects of the product such as the definition of what products are covered, the quality requirements of the input material, and the design of the product. Sections 8 and 9 focused on measuring quality quantitatively with numerical methods. Section 10 focuses on measuring quality qualitatively with visual methods.

Type I tanks are required to be practically free from visual defects, foreign particles, bubbles, pinholes, pimples, crazing, cracks, and delaminations. These visible flaws are not only unattractive from the cosmetic standpoint but may also weaken the tank structurally. Type II tanks, according to section 10.1, are allowed to have the presence of fine bubbles as long as the bubbles do not interfere with proper fusion of the resin melt. Section 10.2 explains that different resins and different molding conditions may yield various interior surface characteristics; therefore, the level of finish quality is to be determined by the manufacturer and the buyer.

11. Test Methods

Section 11 gives a thorough description of the low-temperature impact tests for Type I and Type II tanks, percent gel determination for Type I tanks, visual inspections, and the water test. The significance behind performing the low-temperature impact test is to measure the quality of the molding process. By subjecting a test specimen to a specified level of impact energy, a relative measurement basis can be established for impact resistance. In this case, the standard is regarded as a certain value of foot-pounds of impact energy applied to the conditioned test specimen by an impact dart.

Accuracy and precision statements for the impact test method were obtained by issuing a round robin, which consisted of the shared experimental testing of two materials among seven participating laboratories. The information resulting from this method is used to measure variability within the labs and variability among the labs. This allows for determining the characteristics of repeatability and reproducibility (respectively) which are measures used to establish the approximate precision of the test method. Statements of test variability and confidence are given in section 11.3.6.2. This round robin was administered in 1988 and involved low-temperature impact tests performed at -40° F. Currently, a round robin is being conducted to provide test results at the ASTM required test temperature of -20° F.

The ASTM Standard calls for an impact dart to be dropped through either a 3" pipe or a 2" x 2" angle. The Poly Processing lab uses a twenty pound impact dart with a 3" pipe. To impose an impact of 90 foot-pounds (the minimum required impact value for wall thicknesses less than or equal to .25 in.) the twenty pound dart is dropped from 4.5 ft. The impact value is obtained by multiplying the weight of the dart by the distance dropped. Wall thicknesses greater than 1.00 in. must withstand an impact of 200 foot-pounds; therefore, the dart is dropped from 10 feet.

For cross-linkable samples, the gel test is administered in order to determine the amount of crosslinking present in the sample. The test specimen is first placed in a special container and weighed. While in the container, the specimen is then submerged in boiling o-xylene and the uncrosslinked material is dissolved. The resulting weight is compared to the original weight to determine the percentage of uncrosslinked material present in the sample. The sample values from the test specimen are then assumed to be reasonably accurate estimates of the amount of crosslinking present in the entire product. The minimum allowable gel percentage at Poly Processing is 60% as per ASTM.

Accuracy and precision statements for the percent gel test (referred to as the O-Xylene insoluble fraction) are given in section 11.4.10.2 and are based on a round robin administered 1989.

The third and fourth test methods described in section 11 are the visual inspection and water test. The visual inspection simply refers back to the **Workmanship** section where visually notable defects are defined. The **Workmanship** section states that these defects are not acceptable and the **Test Methods** section emphasizes the fact that a visual inspection is required to detect them. The implication here is that samples passing the gel test and the low-temperature impact test may come from a tank having these visual defects. The water test demonstrates the ability of the tank and its fittings to perform under hydrostatic pressure. Section 11.6 states that this test should occur at the time of installation before service by filling the tank completely with water. The duration of the water test is not specified in the ASTM Standard. Poly Processing hydrostatically tests tanks by filling them with water to straight wall capacity and allowing them to stand for one hour minimum; however, more time may be required by the customer. In the manual entitled Tank Installation and Use Instructions by Poly Processing Company, it is recommended that tanks be water tested in the field for 24 hour minimum before use.

12. Marking

Section 12 declares that the tank marking shall be permanent and indicate the producer, month and year of manufacture, capacity, design specific gravity, serial number, and classification of the tank as Type I or Type II.

Section 12.2 brings in OSHA standard 29 CFR 1970.106 which requires proper warning or caution signs to be placed on the tank in a visible manner. Section 12.3 states that tank capacities are to be based on total tank volume.

13. Packing, Packaging, and Marking

Section 13 references ASTM Practice D 3892 as the guidelines for the standard. A copy of ASTM Practice D 3892 is included at the back of this training document. ASTM Practice D 3892 supports the measures required in the **Shipping** section regarding the protection of products from shipping mishaps and offers more detail concerning appropriate procedures for packing and packaging. The scope of ASTM D 3892 includes packaging and packing of thermoset and thermoplastic resins and fabricated shapes.

14. Shipping

Section 14 addresses the maintaining of quality in the delivering of the product to the customer. Protection of open top tanks, flange faces, pipe and tubing, and fittings are to be adequately protected from scratches and damage during the shipping process. This statement requires the use of fitting protectors such as thread protectors for bolts and suitable plywood, hard-board, or securely fastened plastic for flange faces. Most of the statements given in section 14 exist as recommendations since shipping methods differ somewhat among manufacturers. Poly Processing utilizes the ability to place fittings inside tanks as a means of protection during shipping.

Section 14.5 lays out the responsibilities for the parties involved in the product transactions in the case of damage that occurs during shipping. The manufacturer's shipping instructions are to be followed and it is the purchaser's responsibility to visually inspect products for damage that may have occurred during transit. If damage occurs in shipping, the purchaser is responsible for filing a claim with the carrier. The purchaser should inform the supplier if the manufacturer does not repair the damage before the product is put into service. The purchaser is also responsible for any future "effects of the tank failure" resulting from shipping damage.

15. Keywords

Three keywords are mentioned in section 15 which represent the scope of ASTM D 1998 - 13. The words are:

polyethylene tanks upright

IV. SUMMARY OF KEY POINTS

A. ASTM D 1998 - 13 serves as a printed referential standard of quality for the producers of polyethylene upright storage tanks.

B. ASTM D 1998 - 13 should be read and understood in its entirety by all employees of the manufacturer to provide a consistent understanding of the pertinent minimum standards and thus facilitate quality control.

C. Some of the products of Poly Processing Company do not fall into the intended scope of ASTM D 1998 - 13. Products not falling into the scope of D 1998 – 13 are to be given the same level of quality considerations and, where applicable, the same minimum requirements should be imposed.

Poly Processing Company
Thickness Requirements for Rotationally Molded Vertical Tanks
Calculation Spreadsheet for 100 deg. F Service

Tank: 1550 Gallon Safe Tank
Date: 11/09/16

OD = 86 in SD = 600 psi
SL = 64.5 in

I. Top Head Design Thickness, t TH (inches)

SG:	1.35		1.65		1.90		2.20	
	Design Thickness	Lower Limit	Design Thickness	Lower Limit	Design Thickness	Lower Limit	Design Thickness	Lower Limit
	0.29	0.23	0.29	0.23	0.29	0.23	0.29	0.23

II. Cylindrical Shell Design Thickness, t CS (inches)

SG:	1.35		1.65		1.90		2.20	
E	Design Thickness	Lower Limit	Design Thickness	Lower Limit	Design Thickness	Lower Limit	Design Thickness	Lower Limit
60	0.29	0.23	0.29	0.23	0.29	0.23	0.29	0.23
48	0.29	0.23	0.29	0.23	0.29	0.23	0.29	0.23
36	0.29	0.23	0.29	0.23	0.29	0.23	0.29	0.23
24	0.29	0.23	0.29	0.23	0.29	0.23	0.29	0.23
12	0.29	0.23	0.29	0.23	0.29	0.23	0.30	0.24
0	0.29	0.23	0.29	0.23	0.32	0.25	0.37	0.29

PE stamped calculations to be supplied once tank sizes are confirmed.

POLY PROCESSING COMPANY

CALCULATION DATA SHEET FOR VERTICAL TANK LATERAL RESTRAINT SYSTEMS
2012 INTERNATIONAL BUILDING CODE

Job No.:

Customer: City of Manteca — Tank No.: 72001550

City, State: — Manuf. Site: VA

Mat'l Package: 316 Stainless Steel — Date: 11/9/2016

TANK TYPE: SAFE

TANK DESCRIPTION (1550 GALLONS)

Design Cap.	=	1,586	Gal.
Diameter, Do	=	8.000	ft
Dome Height, H	=	6.854	ft
Shell Height	=	5.375	ft
Knuckle Radius	=	2.00	in
Insulation Thick.	=	0.00	in

WEIGHTS

Wempty	=	800	lbs.
Specific Gravity	=	1.90	
Contents	=	25,139	lbs.
Wfull	=	25,939	lbs.
# Cables	=	4	(3 through 12)
# Base Clips	=	4	(3,4, 6, 8,10,12)

WIND LOADING (Tank Empty for Max Overturning Force):

Wind Speed	=	150	mph	
(Wind speed is based on):		3-sec Gust		
Exposure Cat.	=	C		G = 0.952
Pressure, w1	=	35.36	psf (0'<height<=15')	Cf1 = 0.800

W	=	1,939	lbs.
Mot,wind	=	6,645	ft.-lbs.
Mr,empty	=	3,200	ft.-lbs.
Mr,empty/Mot,wind	=	0.535	TANK RESTRAINT CABLES ARE REQUIRED!

FLOTATION LOADING (Tank Empty)

Submersion Depth	=	0.00	ft.
Buoyancy Force	=	0	lbs.
Mot,sub	=	0	ft.-lbs.

SEISMIC LOADING (ρ = 1.0, R = 2.5, T_L = 4 sec, Tank Full):

Risk Category	=	III	Ie = 1.25	R = 2.50	
Soil Site Class	=	D	Ss = 1.042	F_a = 1.08	
Design Category	=	D	S_1 = 0.037	F_v = 2.40	
V_b	=	1,769	(ASCE 15.7-4)		
$E_h = \rho Q_E / 1.4$	=	1,264	lbs. (ASD, ASCE Eq. 12.4-3 and IBC §1605.3.2)		
$E_v = 0.2 S_{DS} D / 1.4$	=	0.107	D (ASD, ASCE Eq. 12.4-4 and IBC §1605.3.2)		
Mot, eq	=	4,330	ft.-lbs.		
Mr, full	=	82,226	ft.-lbs. (0.9D - E/1.4, includes 0.2*S_{DS}*D factor for vertical EQ considerations)		
Mr,full/Mot,eq	=	18.9890			

BASE CLIP RESTRAINT FORCE (Allowable Stress Design):

TANK EMPTY + WIND	Max. Shear per Clip	1,512	lbs.
	Cable Tension	191	lbs.
TANK FULL + SEISMIC	Kinetic Friction Factor	0.27	
	Max. Shear per Clip	0	lbs.

ANCHOR FORCE (ACI 318, APP. D)

Shear	1,939	lbs.
Cable Tension	235	lbs.
Tension	1,873	lbs.
Shear	0	lbs.
Tension	0	lbs.

BASE CLIP (Allowable Stress Design):

Allowable Force = 5,614 lbs -- O.K.

ANCHORAGE COMBINED STRESS RATIO:

C.S.R. = 0.109 <1.0 -- O.K.

CABLE TENSION (Allowable Stress Design):

Allowable Force = 3,200 lbs -- O.K.

CONCRETE BEARING STRESS:

Bearing Stress = 192 psi -- O.K.

Restraints	Anchors
4 - L6-10 BASE CLIPS (L6x4x1/2 x 10"), LLH. 316 STAINLESS STEEL	WIND GOVERNS
1/4 x 18 x 4 CABLE SLING	2 - 7/8" DIA. HAS THREADED RODS (TYPE 304/316) PER CLIP W/ HILTI HIT-HY 200 ADHESIVE AND 6" EMBED. INTO CONC. INSTALL PER ICC ESR-3187. SPECIAL INSP. IS REQUIRED.
4 - 1/4 IN DIA. 7X19 CABLES PER MIL-W-83420 TYPE 1, COMP B	11" MIN DIST. FROM TANK TO EDGE OF CONCRETE
	8" MIN. CONCRETE THICKNESS

POLYPROCESSING
SOLUTIONS, SIMPLIFIED.

8055 S. Ash Street
French Camp, CA 95231
(209) 982-4904

Project: City of Manteca – Digester Improvements Project
Contractor: Western Water Constructors, Inc.
Engineer: Herwit Engineering

This letter shall serve to certify that each tank is suitable for the intended chemical service with no degradation within the warranty period, including tank fittings and gasket material.

Brandon J. Hall
Project Manager
Poly Processing Company, LLC
www.polyprocessing.com
209-390-0106 Direct

Chemical Storage Installations

City of Greensboro
6268 Bryan Park Road
Brown Summit, NC 27214

Missouri City WTP
8850 ½ Sienna Ranch Road
Missouri City, TX 77489

Corpus Christy WTP
601 Nile
Corpus Christy, TX 78412

City of Manassas
10310 Central Park Drive
Manassas, VA 20110

County of Fairfax
Noman Monroe Cole Jr. plant
9399 Richmond Hwy
Lorton, VA 22079

Installation, Operation and Maintenance Manual For Heating Systems on Poly Processing Company Storage Tanks

Submitted system uses 120 VAC

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Figures and Tables

Figures

Figures and Tables (continued)

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Appendix

Chapter One

System Overview

SPX Tank Heating Systems are specifically designed for temperature maintenance on Poly Processing's polyethylene tanks. SPX Tank Heating Systems maintain the desired product temperature, not to exceed 100°F. Each heating system consists of tank heating pad(s) and a temperature controller.

The quantity and type of SPX Tank Heating Pads required is determined by the size of the tank, desired temperature maintenance and environmental conditions. Tanks are available with standard heating systems with a delta-T of 30, 60 and 100°F. The delta-T is the difference between the product temperature and the minimum ambient temperature. For example if you wanted to maintain 60°F in a 0°F ambient a heating system with a 60°F delta-T would be selected.

Tanks are typically supplied with the heating panels and a controller installed by Poly Processing. The only field connection required is supply power to the heating system.

Chapter Two

General Information

2.1 System Design

SPX Tank Heating Systems are manufactured by HTD Heat Trace specifically for use on Poly Processing's polyethylene storage tanks. Each tank heating system is specifically designed to suit a specific tank based on desired maintenance temperature and environmental conditions.

2.2 Thermal Insulation

All tanks must be thermally insulated for SPX Tank Heating Systems to be effective. Do not operate the SPX Tank Heating System without thermal insulation installed over the entire surface area of the tank. Tanks supplied by Poly Processing Company are normally supplied to the end user with 2" of polyurethane insulation installed at the factory.

Chapter Three

Heating Pad Installation

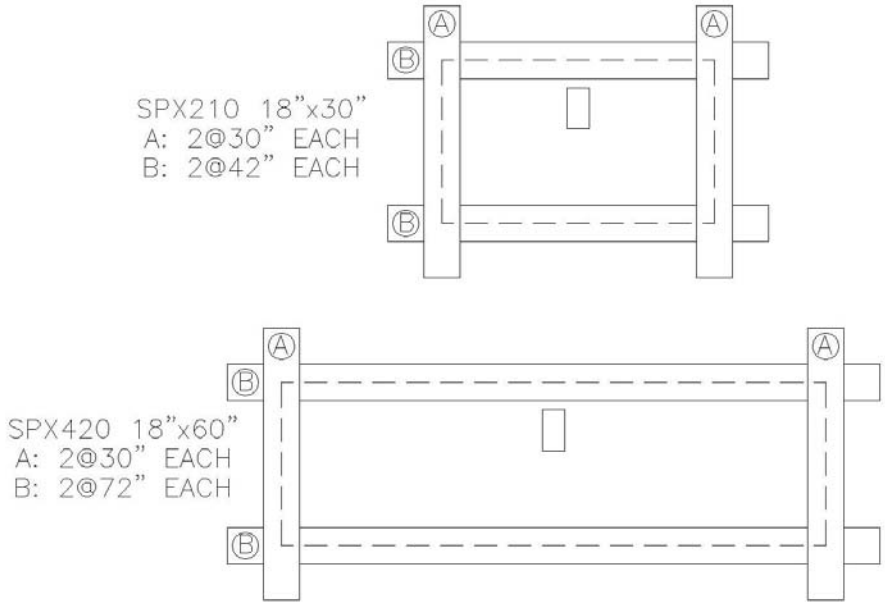
Heating pad and controller installation is normally completed by Poly Processing prior to supply to the end user. Installation information is provided only to give an overview of the total heating system.

3.1 Preparation

1) Determine the heating panel Locations for the style and type of tank. Heaters should be located towards the bottom of the tank approximately 6" up from the bottom on a vertical tank.
2) Determine control package location, making sure heating pad cold leads reach the control package.
3) Ensure that the tank surface is clean, dry and free of dirt, grease, oil, or any other substance that may interfere with the self-adhesive bonding material on the heating pad.

3.2 Installation Tasks

1) Remove a heating pad from the shipping box and carefully peel back the protective backing to expose adhesive surface.
2) Affix the heating pad to the tank surface in the position determined in step 1.
3) Beginning at the end of a heating pad, carefully press the heating pad to the surface of the tank. Apply sufficient pressure to the back of the heating pad so the first 6 to 8" of the heating pad adheres to the tank surface.
4) With continuing pressure and smooth hand strokes to the back of the heating pad, adhere the next several inches of the heating pad to the tank. Use firm pressure to ensure that no creases, bubbles, or air gaps are present between the heating pad and surface of the tank. Repeat this process until the total inner pad surface is bonded to the tank surface.
5) Use 3" aluminum wide tape to secure cold leads to the tank, and seal the outer edges of the heating pad to prevent ingress of dirt, moisture and other contaminants. Cut the tape in the required lengths as shown on figure 1.



Aluminum Tape Requirements for Heating Pad Installation

Figure 1

6) Apply the aluminum tape as shown.
7) Repeat Steps 1 through 6 for each additional heating pad.

Chapter Four

Heating System Controller

4.1 Overview

SPX Tank Heating Systems are available with a choice of two controllers. The 2SPCP is for use in electrically unclassified (non-hazardous) areas and the 2HSPCP controller for use in electrically classified (hazardous) areas.

The controller is provided mounted on the tank with the heaters connected. The customer/end user must provide power to the controller.

4.2 Control Location

Both the 2SPCP and 2HSPCP are rated NEMA4 and suitable for indoor and outdoor installation. Where possible the controller should be mounted out of direct sunlight to provide maximum visibility for the heater on/off light.

4.3 Unclassified (Non-hazardous) Areas

The 2SPCP controller is for use in ordinary, non-hazardous areas. The controller has two electronic thermostats one for process temperature control and one for over temperature protection. The process thermostat should be set to the desired process temperature, but limited to a maximum of 100°F.

The over temperature setting protects the tank or product from high heater temperatures. If the heating pad reaches the over temperature setting the heating system is shut off to avoid high tank or product temperatures. The over temperature thermostat is factory locked to 150°F, 175°F for double wall Safe Tanks.

4.4 Classified (Hazardous) Areas

The 2HSPCP controller is suitable for use in hazardous Class I, Division 2, Groups B, C, D and Class II, Division 2 areas. The 2HSPCP uses two explosion-proof thermostats one for process temperature and one for over temperature with a general purpose junction box for heater connection.

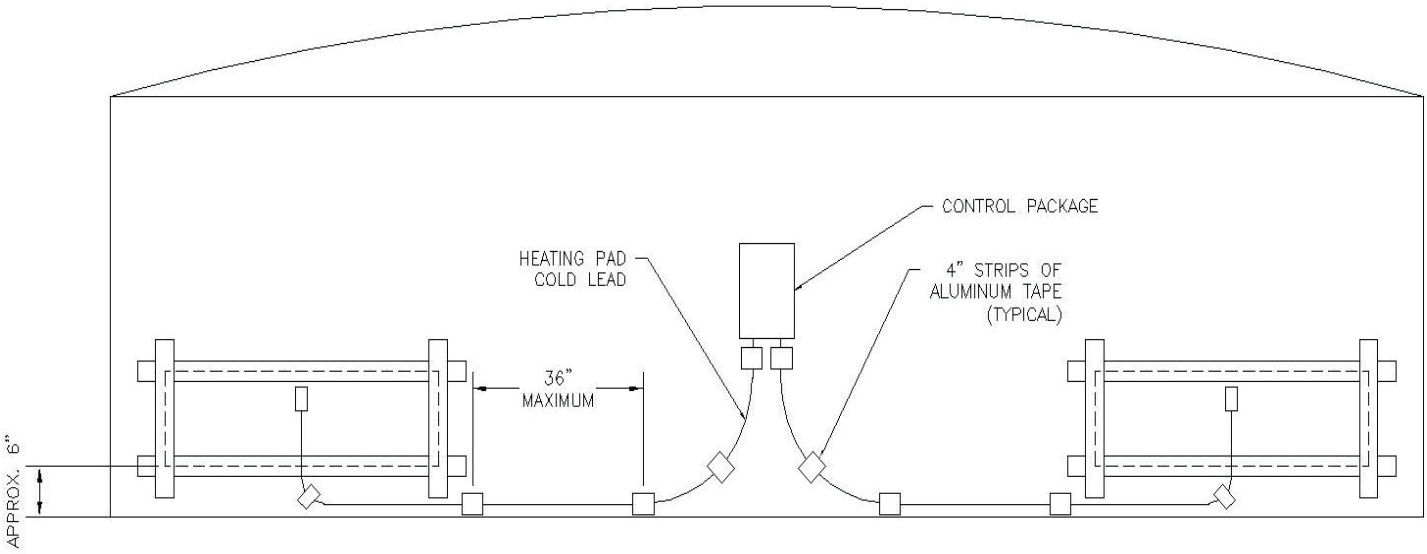
The 2HSPCP controller is provided with the process temperature thermostat factory set to 60°F. The process temperature thermostat should be set to the desired product temperature. The over temperature thermostat is factory set to 150°F (175°F for double wall Safe Tanks) this setting should not be changed.

Chapter Five

Controller Installation

5.1 Physical Installation

1) Mount the control package in the location determined during the heating pad installation.
2) Run the cold leads from each heating pad to a common point below the control package. Cold leads should be secured to the tank with 4" long strips of aluminum tape as shown in fig 2.



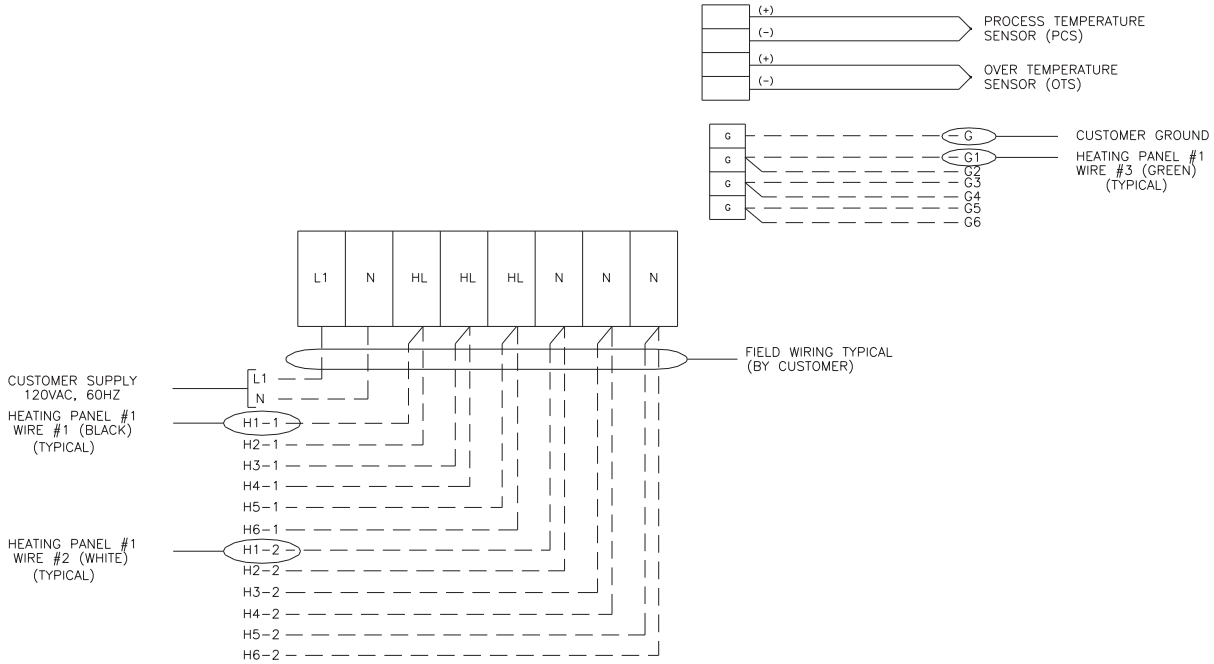
Cold Lead Routing

Figure 2

3) Install one entry fitting on each cold lead and install the entry fitting into one of the holes on the base of control package. Allow approximately 6" of cold lead for termination inside the control package. Seal any unused holes.

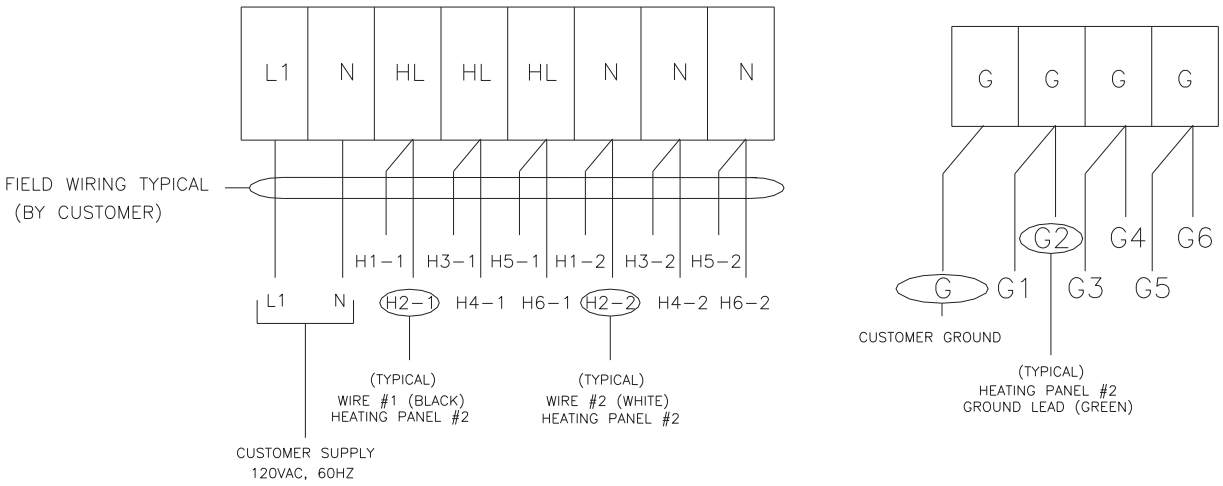
5.2 Heater Connection

1) Connect each heating pad into the heater terminal blocks as shown in either figure 3 or 4. An additional wiring diagram is included inside each control box. Ensure all connections are tight.



2SPCP Heater Connection

Figure 3



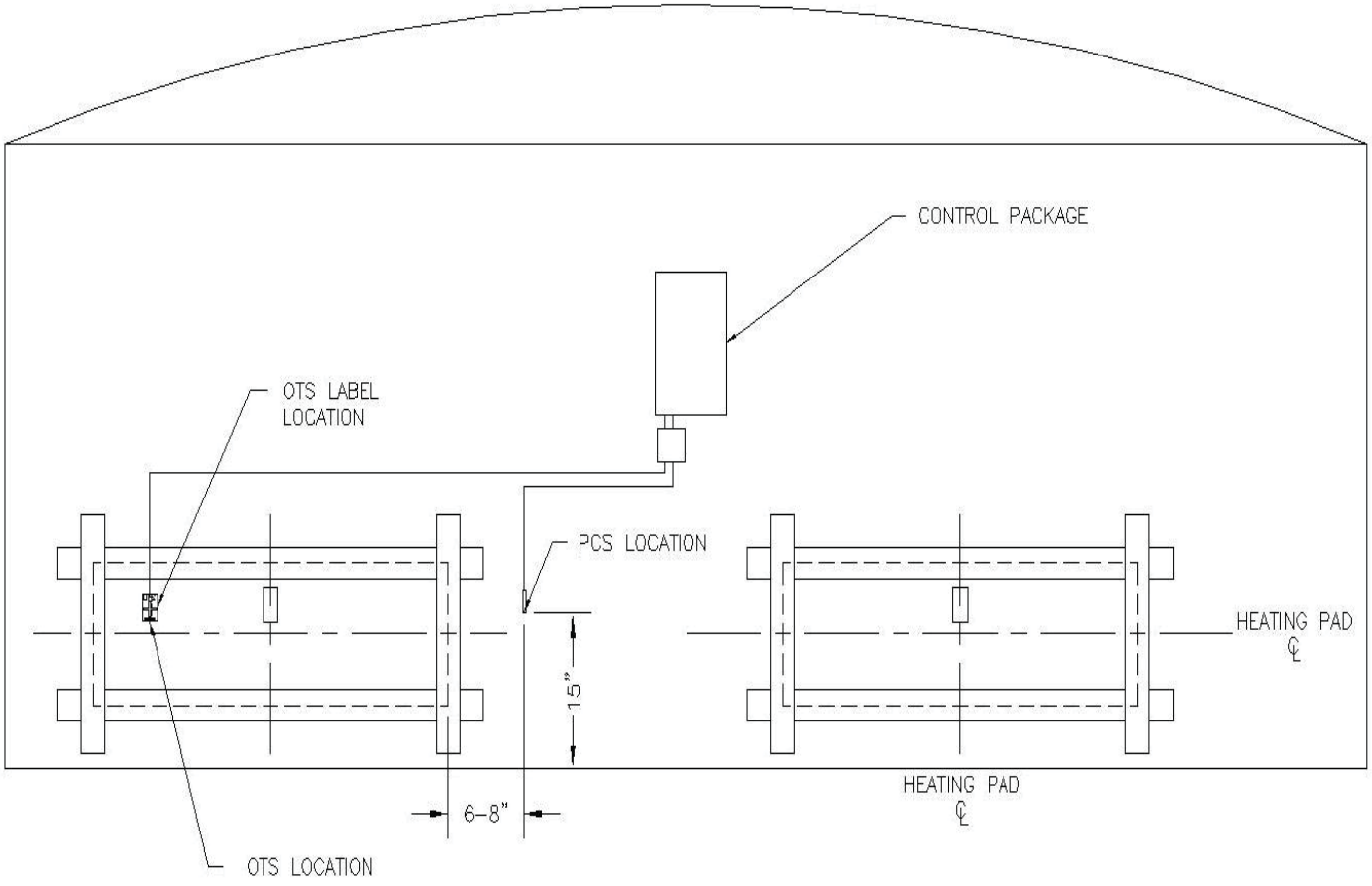
2HSPCP Heater Wiring Diagram

Figure 4

2) The black (hot) lead and the white (neutral) lead on each SPX heater are supplied with factory installed ring terminals. Connect ring terminals to designated terminal blocks as per wiring diagram. The green (ground) lead should be connected to the grounding bar as per wiring diagram.
3) After connecting customer supply in Chapter 6, test the heaters as shown on Chapter 8.

5.3 Sensor Location

1) The temperature sensor designated as “PCS” inside the control package must be located as per fig 5 and installed on the tank surface using aluminum tape.



Sensor Location
Figure 5

2) The temperature sensor that is designated “OTS” must be located on the SPX pad that is highest up on the tank wall in the designated OTS location and installed directly onto the selected heating pad using sufficient lengths of aluminum tape. The OTS sensor must be located in the cross of the OTS sticker
3) Route the leads/capillary tubes from the sensors as shown in fig 5 using 4” strips of aluminum tape. Excess sensor lead or capillary should be coiled neatly under the control package and protected.

Chapter Six

Power Supply Connection

6.1 Power Supply Requirements

The required customer power supply to the controller is 120 VAC, 60HZ, with the current sized to match the heating system. Heating systems range in size from 210 watts to 2,520 watts depending upon the heating system supplied. The controller is labeled "120VAC, 26A Service" reflecting the maximum rating of the controller. The incoming supply should be sized to fit the specific heating system supplied.

The heating pads are available in two wattages and three standard types. The available heaters are shown in table 1.

SPX Pad Size	Part#	Watts	Volts
18"x30"	SPX210	210	120
18"x60"	SPX420	420	120
18"x60"	SPX420-16	420	120

SPX Heating Pad Types

Table 1

The NEC (Section 427-22) requires that all heat tracing systems be ground fault protected. Circuit breakers are commonly available to provide ground fault protection. Circuit breakers for protection of tank heating systems should be 30 mA trip units such as Square D type QO-EPD. *GFI type breakers with a 5 mA trip are not suitable for this type of protection and can cause nuisance tripping*.

Circuit Breaker Sizing Criteria:

1. Determine the power of the heating system.
2. Divide the heating system power by 120 VAC to determine the nominal current.
3. Size the circuit breaker at 125% of the heating load minimum or as required by voltage drop calculations.
4. Choose the circuit breaker that most closely matches the calculation, see example.

Example:

1. A heating system with 2 heating pads has a power of 840 watts.
2. By dividing the power by 120 VAC the nominal current is 7 A.
3. Sizing the circuit breaker at 125% requires a circuit breaker of 8.75 A or greater.
4. Pick the closest circuit breaker that is not less than 125% of the nominal load. The lowest commonly available circuit breaker trip rating is 15 A. Use a 15A, 120VAC, 30mA ground fault protected circuit breaker such as Square D part# QO115EPD.

6.2 Customer Connection

Each controller is provided with a cord grip for incoming power suitable for 10 AWG, SJO flexible cable. Suitability of flexible cable should be evaluated by the customer based on the specific application and applicable codes. Where required the cord grip can be removed and supply connection completed using conduit connections supplied by the end user or installer. Conduit is recommended where physical protection is required.

Chapter Seven

Controller Operation

7.1 General Information

The type 2SPCP and 2HSPCP controllers have two temperature settings. The PCS sensor is for control of the process temperature and the OTS for over temperature protection. The heating system is energized when the process temperature drops below the set point. The heating system stays energized until the process temperature exceeds the set point. In this manner the desired tank temperature is maintained by cycling the heating system on and off as required.

The OTS sensor shuts off the heating system if a heating pad temperature exceeds the over temperature thermostat setting. This protects the tank and/or product from over temperature caused by upset conditions, such as low liquid level.

Heating system status indication is provided via the power on to heaters light. When heat is required and the heaters are energized the power on to heaters light is illuminated.

7.2 Temperature Settings

1) The PCS controller/thermostat is factory set to 60°F. This setting can be adjusted for the desired maintenance temperature of the specific application. The process knob in the 2SPCP is limited to a maximum of 100°F. Under no circumstances should the process setting for the 2SPCP or 2HSPCP be set in excess of 100°F.
2) The OTS controller/thermostat is factory set to 150°F. In the 2SPCP the over temperature thermostat knob is locked at 150°F. This setting should not be adjusted regardless of the application. *Do not operate the SPX Tank Heating System with the OTS Controller/Thermostat set point at any temperature other than 150°F (175°F for double wall Safe Tanks).*

7.3 Heating System On/Off Indication

SPX Tank Heating control packages are supplied with a “Power On to Heaters” indicating light. This light will stay illuminated only when the OTS Controller/Thermostat is permitting safe operation of the system and the PCS Controller/Thermostat is calling for heat. This light will not be illuminated when:

a. The tank and tank contents have reached the desired maintenance temperature and the PCS controller is not calling for heat.
b. The OTS controller has sensed unusually high heating pad temperatures and has switched off the heating system.
c. There is no power to the system.
d. The bulb inside the “Heat On” indicating light has failed and requires replacing.

Items “c” and “d” will require on site attention before safe operation of the system can resume.

Chapter Eight

Post Installation Testing and Setup

Some testing requires exposure to electrically live components and should only be completed by an electrician or other qualified personnel.

8.1 Testing

1) Use an Ohmmeter to check the resistance of each heating pad. Compare your reading with the acceptable Ω range in Table 2. Do not proceed with any heating pad that is outside the tolerance bands shown on table 2.

SPX Pad Size	Part #	Watts	Volts	Nom Ω	Acceptable Ω Range
18”x30”	SPX210	210	120	68.6	61.7 to 75.5
18”x60”	SPX420	420	120	34.3	30.9 to 37.7
18”x60”	SPX420-16	420	120	34.3	30.9 to 37.7

SPX Heating Pad Resistance Tolerances

Table 2

2) Using a 500 VDC Megger, measure the insulation resistance (IR) value between the heating element and the ground. All values below 20 MΩ are unacceptable. Do not proceed with any tank heating pad that has an unacceptable Megger reading.

8.2 Customer Power

1) Turn on customer power supply to the heating system.
2) Verify 120 VAC is present between terminals L1 & N in the controller.
3) Correct power wiring if necessary.

8.3 Controller

1) Once presence of customer power is verified proceed to step 2.
2) Raise the process temperature setting until the “power on to heaters” light illuminates. Verify 120 VAC is present on HL & N.
3) Verify correct current out from the HL terminal, determined by the total current for the system using the values listed below.
   1.75 Amps for each SPX210
   3.5 Amps for each SPX420 or SPX420-16
4) Decrease the process and verify 120 VAC is not present on HL & N.

8.4 Setup

1) After testing proper operation of the heating system and controller complete the following two steps.
2) Set the Process Temperature knob to the desired tank maintenance temperature.
3) Verify proper setting of the over temperature setting, not to exceed 150°F (175°F for double wall Safe Tanks).

Chapter Nine

System Maintenance

9.1 SPX Maintenance Schedule

Procedure	Frequency	Recommendations
Visual inspection of outer coating and thermal insulation.	Monthly	1) Repair all damage to the outer coating and/or thermal insulation.
Resistance Check (ohmmeter)	Every 6 Months	2) Disconnect any SPX Tank Heating Pad that shows a resistance value outside the tolerance figures (table 2). Remove and replace the heating pad and the earliest opportunity.
Insulation Resistance (IR) Test or Megger® Test	Every 6 Months	3) Disconnect any SPX tank heating pad with an IR value of less than 20MΩ. Remove and replace the pad at the earliest opportunity.
Voltage Check (voltmeter)	Every 6 Months	4a) Reduced voltages should be evaluated to determine decreased power levels and the potential impact on the performance of the tank heating system. 4b) Operating voltages above 130 VAC are not acceptable. De-energize the system and investigate cause of over-voltage. Do not re-energize the system until the cause of excess voltage is eliminated.
Current Check* (ammeter)	Every 6 Months	5a) Any reduction in operating current should be evaluated based on the values for 2 and 4a above. Reduced current resulting from a damaged or failed heating pad(s) requires heating pad replacement. 5b) Increased current readings resultant from 2 and 4b may be normal and acceptable. Maximum acceptable current readings for SPX Heaters are: SPX210 - 2.0 Amps SPX420 - 4.0 Amps ***Do not operate any SPX Heating Pad Above These Values***

Table 3

*Some clamp on ammeters may give unreliable readings at these operating currents.

Chapter Ten

Troubleshooting and Spare Parts

10.1 SPX Troubleshooting Guide

Problem	Probable Cause	Possible Solution
Heaters do not energize	a. No incoming power	Switch on/reset
	b. Blown fuse	Replace
	c. Incorrect Heater Connections	Correct wiring
	d. Failed SSR	Replace
	e. Failed or damaged Thermocouple	Replace
	f. Failed Thermostat	Replace
"Power on to Heaters" light does not illuminate	a. Heating not required to maintain temp.	Heat not required
	b. No incoming power	Switch on/reset
	c. Blown fuse	Replace fuse
	d. Incorrect temp. controller settings	Correct settings
	e. Burnt out light bulb	Replace bulb
	f. Failed or damaged Thermocouple	Repair wiring
	g. Failed Thermostat	Replace
Low tank Temp.	a. No incoming power	Switch on/reset
	b. Blown fuse	Replace fuse
	c. Incorrect temp. controller settings	Correct temp. controller settings
	d. Low incoming product temp.	Wait for product heat up (can take a very long time)
	e. Damaged/missing thermal insulation	Repair or replace insulation
	f. Low tank liquid level	Fill Tank
	g. Damaged/failed heating pad	Repair or replace
	h. Incorrect heater connections	Correct wiring
	i. Failed SSR	Replace
	j. Failed or damaged Thermocouple	Replace
	k. Failed Thermostat	Replace
	l. Maintenance temp. too high	Lower process temp. setting
High Tank Temp.	a. Incorrect temp. settings	Correct
	b. Failed SSR	Replace
Customer supplied breaker trips	a. Damaged wiring	Repair or replace
	b. Damaged heater	Repair replace
	c. Incorrect heater connection	Correct wiring

Table 4

10.2 Spare Parts List

Note: The Spare Parts list is a set of available parts that can be purchased. They are not necessarily included in the standard system.

HTD Part#	Item
H01020	2SPCP Fuse
H05703	4 pt Power Terminal
H01013	Solid State Relay 50A, 480VAC
H01038	Thermocouple Terminals
H01010	Thermocouple
G01034	Heater Cord grip assembly (including sealing ring and nut)
G01024	Thermocouple Cord grip assembly (including sealing ring and nut)
G01035	Customer Power Cord grip assembly (including sealing ring and nut)
H05220	Electronic Thermostat 50-175°F for controllers Supplied 2006 and earlier (Contact HTD for options)
H05220A	Electronic Thermostat 50-175°F for controllers Supplied 2007 and later
H05808A	Light Bulb (120 VAC, 3W)
H05834	2SPCP Pilot Light assembly 22mm
H05808	2HSPCP 30mm Light Assembly
H01009	Silcopad Cold Lead
H05120	Thermostat, Hazardous Rated, N7, N9, 480VAC, 22A, 10’ Bulb and capillary.

Table 5

Chapter Eleven

Component Details

11.1 Components

A detailed control panel parts list can be seen on drawing 2028742P for the 2SPCP or 2028744 for the 2HSPCP. This list includes HTD part numbers. Most common spare parts are listed in Chapter 10, table 6.

11.2 Replacing Components

WARNING!!!!

The interior of the Control Panel must not be accessed while energized. Remove power to the control panel using the customer supplied disconnect switch or circuit breaker.

Replacement of components or panel repair should only be attempted by qualified personnel. ***Incorrect wiring can cause injury to personnel and/or damage to components, heaters and/or the tank. If there are any questions or concerns contact HTD Heat Trace before commencing any work***.

To replace a component it is first necessary to note all the wiring connections and the corresponding location on the component. All these connections can also be seen on the associated drawings. Disconnect the wires and remove the component from the sub-panel or front door. Care must be taken to make sure that the mounting screws and washers do not fall into other components.

Mount the new component and reconnect the wires. Vacuum any debris out of the enclosure especially around the new component. Double-check the wire connections to insure they are correct. Close the enclosure and energize the control panel. Test the operation of the new component to insure it functions correctly.

Chapter Twelve

HTD Heat Trace Contact Information

12.1 General Contact Information

HTD Heat Trace can be contacted via any of the methods listed below:

Address

HTD Heat Trace, Inc.
8 Bartles Corner Road
Flemington, NJ 08822

Phone

Telephone: 908 788-5210
Fax: 908 788-5204

E-mail: support@htdheattrace.com

12.2 Technical Support

Technical support is available from 8:00 am to 5:00 PM EST Monday through Friday at 908 788-5210 option 2.

HTD HEAT TRACE
8 Bartles Corner Road, Unit 104, Flemington, NJ 08822 • 908 788-5210 • Fax 908 788-5204

Appendix A

SPX Tank Heater Sales Literature

HTD HEAT TRACE

SPX

PLASTIC TANK HEATER PAD

WATERPROOF, ADHESIVE-BACKED HEATER PADS FOR PLASTIC AND OTHER HEAT-SENSITIVE TANKS

FM C US APPROVED

SPX SALES 9/11/14

SPX

For freeze protection and process heating applications on Plastic Tanks

PLASTIC TANK HEATER PAD

- ***Specifically designed for safe operation on polyethylene, polypropylene and other types of heat-sensitive tanks***
- ***Two sizes and power outputs fit horizontal, vertical and conical tanks***
- ***Proven epoxy-glass laminate platform performance, with thousands of major installations worldwide***
- ***Will not overheat or burn out***
- ***Adhesive backing makes installation quick, simple and effective***
- ***FM Approved for use in unclassified, hazardous and corrosive environments for the United States and Canada***

SPX heater pads are specifically designed to provide the unique product and system features essential for the safe and reliable application of heat to the surface of plastic tanks and other types of heat-sensitive, non-metallic tanks. SPX heater pads are most commonly used on polyethylene and polypropylene tanks for freeze protection and temperature maintenance applications up to 120° F(48.9°C). When used on metal or FRP tanks, SPX heating systems can be designed for temperature maintenance applications up to 150° F (65.6°C).

The total construction of the SPX heater pad is completely waterproof. Each SPX heater is supplied with a rugged, encapsulated, factory made power termination complete with over-braided cold leads in standard lengths of 10 or 16 Ft and custom lengths to suit your application from 2 to 50 feet.

The SPX heater pad uses a proprietary multi-path, parallel circuit heating element with continuously spot welded connections. This proprietary heating element is laminated into multiple layers of NEMA grade G-10 / FR-4 flame retardant, epoxy-glass composite to form a flexible, lightweight heater pad that is easily and quickly installed.

SPX tank heaters are extremely safe, reliable and cannot overheat or burnout.

The gentle heat output of 0.39 w/sq.in will not harm a plastic tank or its contents. Additional security is also incorporated into every SPX heater by the inclusion of a preset, automatic over-temperature safety switch that is built directly into the pad. This factory installed device completely eliminates all potential for over-heating the tank, even if the heating system should remain energized while the tank is empty.

The SPX heater construction also includes an internal aluminum ground shield for full compliance with the latest requirements of the National Electric Code. Factory applied adhesive backing is used to bond the heater pad directly to the tank surface, allowing one person to complete a simple and effective installation in a matter of just a few minutes.

SPX HEATER PAD

PLASTIC TANK HEATER PAD

ADVANCED
HEATING ELEMENT DESIGN

The SPX Tank Heater pad incorporates a proprietary, multi-path heating element that provides an evenly distributed flow of current across many **parallel connected paths**. See Figure 1 opposite.

If one or more element paths are broken or damaged, *the current flow is instantaneously, automatically and evenly re-routed around the damaged area into the remaining undamaged element paths*. See Figure 2 opposite.

This uniform redistribution of current prevents the development of hot spots and burn outs that would normally result in the total failure of a heater pad. Hot spots and localized overheating are also potentially disastrous failure modes that can significantly damage the structure and integrity of any heat-sensitive tank, or scald any heat-sensitive products contained within a tank.

The parallel connected, multi-path circuit design unique to the SPX heater pad offers a durable, robust, safe and *reliable heat source* that is clearly superior to all types of series circuit designs.

Thermal aging, electrical stress, mechanical stress and destruction testing of the epoxy/ glass laminate platform have shown that *over 70% of the circuit paths within the element must be completely destroyed and broken before total heater failure can occur.*

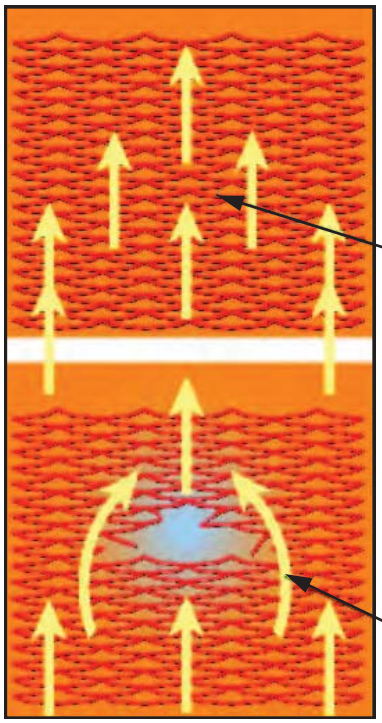


Figure 1

Multi-path heating element construction provides a uniform flow of current across many parallel connected circuit paths.

Figure 2

Current is automatically and evenly re-routed around damaged area. Integrity of the heating circuit remains intact and the heater pad continues to function normally.

SPX heater pads are the safest and most reliable form of tank heater available.

PRODUCT SPECIFICATIONS

PHYSICAL, ELECTRICAL & THERMAL

PLASTIC TANK HEATER PAD

PRODUCT FAMILY	SPX
PRODUCT REFERENCES	SPX210 & SPX420
SIZES	SPX210 18 x 30 in (457 x 762 mm) SPX420 18 x 60 in (457 x 1524mm)
PAD THICKNESS	0.05 inches (1.27 mm)
WEIGHTS	SPX210 2.2 lbs. (1 kg) SPX420 4 lbs. (1.81 kg)
POWER RATINGS	SPX210 210 watts SPX420 420 watts
POWER DENSITY	0.39 watts/inch² (605 watts/m²)
OPERATING VOLTAGE	120 VAC 240 VAC options available, contact HTD
NOMINAL CURRENT	SPX 210 1.75 A SPX 420 3.50 A
LEAKAGE CURRENT ON 120VAC	SPX 210 0.9 mA SPX 420 1.8 mA
TYPICAL MAXIMUM APPLICATION TEMPERATURES	Polyethylene 120° F (49°C) Polypropylene 120° F PVC 140° F(60°C) CPVC 150° F(65.5°C) FRP 150° F Steel 150° F

The above maximum application temperatures are only typical for the materials listed. Service temperature ratings for each tank material depend upon operating pressure and may be lower. Maximum permissible operating temperatures for each specific type of tank must be determined by the Tank Manufacturer and/or End User.

T-RATING:	T4A
MAXIMUM EXPOSURE TEMPERATURE	220° F (105°C)
MINIMUM TEMPERATURE DURING INSTALLATION	40°F (4.4°C)
MINIMUM BENDING RADIUS	15 in (381 mm)
MINIMUM TANK DIAMETER	30 in (762 mm)

ACCESSORIES

SEALING TAPE	Use type IAAT 3 adhesive backed aluminum tape to seal the four edges of each SPX heater pad to the tank surface. This simple procedure prevents infiltration of thermal insulation between the tank surface and the heater pad.

CONSTRUCTIONAL

HEATING ELEMENT	Proprietary multi-path, heating element with continuously spot-welded connections
HEATING ELEMENT DESIGN	Parallel circuit
DIELECTRIC MATERIALS	Multi-ply epoxy/glass composite
DIELECTRIC STRENGTH TEST	1.48KV for one minute
INTEGRAL GROUND PLANE	Expanded aluminum sheet
TERMINATION BOX	4.5 x 2.5 inch (114 x 65 mm) polycarbonate enclosure
COLD LEAD CABLE	3 conductor # 16 AWG tinned copper with TPE insulation and tinned copper over-braid
STANDARD COLD LEAD LENGTHS	SPX210 10 Ft (3m) SPX210 –16 16 Ft (4.88m) SPX420 10 Ft (3m) SPX420-16 16 Ft (4.88m)
INSTALLATION METHOD	Factory applied adhesive backing with release liner

APPROVALS

Factory Mutual approved to IEEE standard 515 and CSA standard C22.2 no.130-03 for use in the following areas:
Unclassified
Class I Div.2 Groups B,C,D
Class II Div.2 Group F,G
Class III Div.2

FM C US APPROVED

CONTROLS

The recommended controller for unclassified, non-hazardous area installations is type 2SPCP with dual electronic thermostats for process control and high temperature cut out.

Use type 2HSPCP controller to provide the same features on all hazardous area installations.

HTD HEAT TRACE

8 Bartles Corner Road, Unit # 104
Flemington , New Jersey
08822-5758
USA

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www.htdheattrace.com

HTD HEAT TRACE
8 Bartles Corner Road, Unit 104, Flemington, NJ 08822 • 908 788-5210 • Fax 908 788-5204

Appendix B

SPX Tank Heater Datasheet

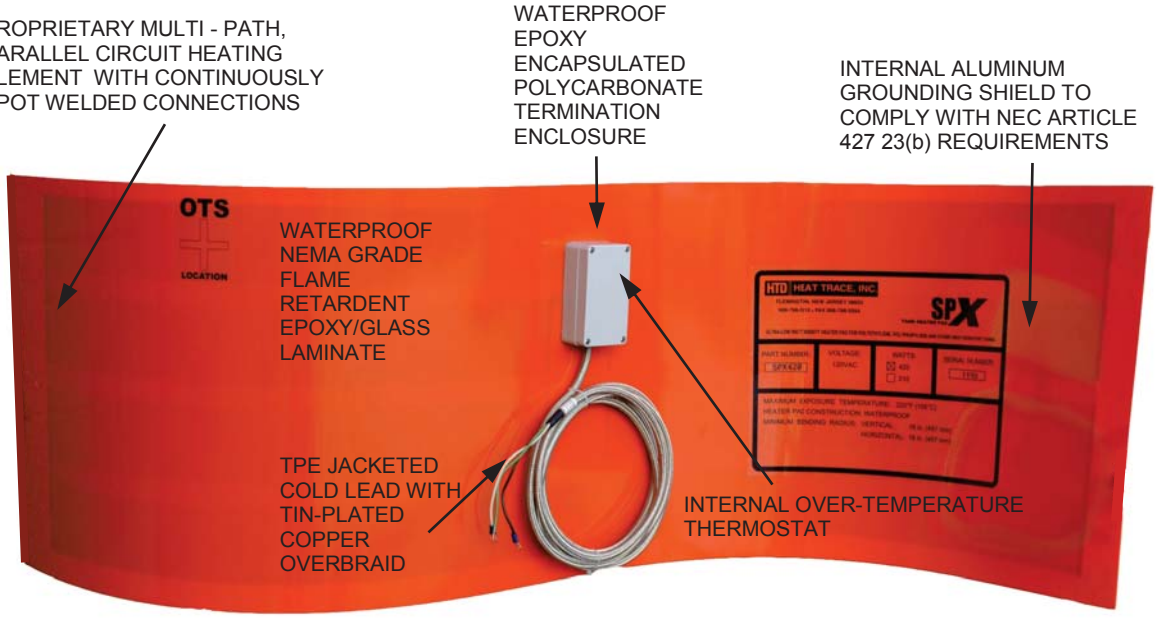
SPX

For freeze protection and process heating applications on Plastic Tanks

PLASTIC TANK HEATING PAD

- *Specifically designed for safe, reliable operation on heat sensitive plastic storage tanks*
- *Proven epoxy-glass laminate platform performance, with thousands of major installations worldwide*
- *Ultra low watt density, high efficiency, flexible heating pads with adhesive backing.*
- *FM Approved for use in unclassified, hazardous and corrosive environments for the United States and Canada*
- *Quick, simple, low cost, one person installation*
- *Two pad sizes and power outputs for conventional, small and custom-shaped tanks.*

FM C US APPROVED



The HTD Heat Trace SPX heater pad is the latest step in the improvement of the SilcoPad range of heaters for plastic tanks.
The SPX epoxy/glass composite construction was first developed and used in the Eagle Panel range of products for heating FRP tanks. This rugged construction has been re-engineered for performance on heat-sensitive tanks, resulting in a new, ultra-low watt density, highly flexible, waterproof heating pad that includes adhesive backing for quick and simple installation.

The SPX tank heater pad has been specifically designed for temperature maintenance and freeze protection on heat-sensitive polyethylene and polypropylene tanks. These tanks require ultra-low watt density, evenly applied heat.

The SPX heater pad provides this with the added safety feature of an internal over-temperature thermostat.
This extra feature ensures that the pad cannot operate above the maximum permissible temperature of the tank.

Being completely waterproof, the new SPX heater pad will continue to operate as designed even if rain, flooding or tank overflow infiltrates between the tank and the thermal insulation.
The new HTD Heat trace SPX 210 and SPX 420**:** engineered for efficiency, long life and safety.

8 Bartles Corner Road, Unit # 104
Flemington, NJ 08822-5758 USA
Tel (908) 788-5210
Fax (908) 788-5204

e-mail: sales@htdheattrace.com
WWW.HTDHEATTRACE.COM

HTD HEAT TRACE

SPECIFICATIONS

PLASTIC TANK HEATING PAD

PRODUCT FEATURES

ULTRA-LOW WATT DENSITY	SPX Tank Heater pads have a power rating of 0.39 w/sq.in(603 w/m²) for ultra-safe operation and reliability on heat-sensitive applications
LAMINATED CONSTRUCTION WITH PEEL AND STICK APPLICATION	With its laminated, epoxy composite construction, the SPX heater pad is superbly qualified to meet the rigorous requirements for use in all industrial and climatic environments. It is extremely rugged, completely waterproof, dust-tight and corrosion-resistant.
MULTI-PATH PARALLEL CIRCUIT HEATING ELEMENT	SPX heater pads are built with unique multi-path, parallel circuit heating elements that are significantly safer and more reliable than the series type heating elements used in competitors products.

PRODUCT REFERENCES, RATINGS AND SIZES

SPX 420	420 Watts (0.39 w/sq.in) 60" long by 18" wide (457 x 762 mm)
SPX 210	210 Watts (0.39 w/sq.in) 30" long by 18" wide (457 x 1524 mm)

APPLICATIONS AND USAGE

TANK MATERIAL	APPLICATION RANGES	SPX 420	SPX 210
Polyethylene, Polypropylene	Up to 120° F (49°C)	YES	YES
FRP	Up to 150° F (66°C)	YES	YES
Steel, Stainless Steel	Up to 150° F (66°C)	YES	YES

DESIGN RATINGS

MAX MAINTAIN TEMP	150°F (66°C)
MAX EXPOSURE TEMP	220°F (104° C)
MIN INSTALLATION TEMP	40° F (4.4°C)
MINIMUM BENDING	15" (381 mm) Do not install SPX pads on any tank that is less than 30" (762 mm) diameter
VOLTAGE RATINGS	120 VAC *Consult HTD for 240 VAC applications

CONSTRUCTION

HEATING ELEMENTS	Multi-path, parallel circuitry
CIRCUIT CONNECTIONS	Stainless steel bridge pieces continuously spot welded with triple welding passes
DIELECTRIC CONSTRUCTION	Multi-layer glasscloth composite
LAMINATE PROPERTIES	Density - 0.069 lbs/cu.in Rockwell Hardness - 115 Flexural Strength - 50,000 psi Dielectric Strength - 550 vpm Flammability Rating - UL-94.V.O
GROUND SHIELD	5 mil thick aluminum mesh
TERMINATION METHOD	Epoxy encapsulated polycarbonate termination box
COLD LEAD CABLE	3-16 AWG conductors with TPE outer jacket and Tin-Plated Copper over-braid
COLD LEAD LENGTHS	Standard lengths: SPX 210 SPX 420 10 FT (3 m) SPX 210-16 SPX 420-16, 16 FT (4.87 m) Custom cold lead lengths available to suit your application. 2 Ft. min., 50 Ft. max.

T-RATING: T4A

APPROVALS

Factory Mutual approved to IEEE standard 515 and CSA standard C22.2 no.130-03 for use in the following areas:
Unclassified
Class I Div.2 Groups B,C,D
Class II Div.2 Group F,G
Class III Div.2

FM C US APPROVED

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Appendix C

2SPCP Controller Datasheet

TYPE 2SPCP DUAL ELECTRONIC-THERMOSTAT TANK HEATING SYSTEM CONTROLLER

The type 2SPCP controller is designed specifically for tank heating applications that require both process and over-temperature control features. Such applications involve the control of EGLX and SPX tank heaters installed on FRP, polyethylene, polypropylene and other forms of heat sensitive applications. Dual electronic thermostats, switching the heaters via a solid state relay (SSR) provide accurate, efficient temperature and power control. Type “J” thermocouples are supplied for accurate temperature sensing and each 2SPCP can handle up to 26 amps of operating load.

System Capability: 120 VAC – 26 A Max. (208-480 VAC options available)

Enclosure size:10 x 8 x 6 inches

Enclosure rating: NEMA 4X

Process thermostat: 50 to 175º F

Over temperature thermostat: 50 to 175º F

Solid State Relay: 50A, 480 VAC, 90 to 280 VAC input

Approvals: C ETL LISTED US Intertek

Unclassified (nonhazardous) locations

Conforms to ANSI/UL 508

Certified to CAN/CSA STD 22.2 NO 14

Thermocouples: Type “J” with 10 ft long with SS braid and FEP over-jacket

Terminal Block: 4 point, screw type, 30A 600 VAC

Heater On Light: NEMA 4X, 22 mm full voltage LED pilot light

Optional controller mounting pad: 14” x 24” expanded PVC with LSE adhesive and hardware

HEAT TRACE
8 Bartles Corner Road, Unit # 104 Flemington, New Jersey USA 08822-5758
WWW.HTDHEATTRACE.COM

Tel (908) 788 5210 Fax (908) 788 5204 e-mail: sales@htdheattrace.com

INSTALLATION And Operation Guide

PROTECT YOUR WARRANTY - READ THESE INSTRUCTIONS – ENSURE PROPER VENTING

Thank you for making us your chosen tank supplier!

40 years in the tank business has taught us that proper installation is the key to long-term, trouble-free tank service. Please study and use the information contained in this manual. It will make a tremendous difference in the useful life of your tank.

PolyProcessing
SOLUTIONS, SIMPLIFIED.
866-590-6845

GENERAL INFORMATION

- Installation Videos: Please visit http://www.polyprocessing.com/technical-resources/installation-manuals-videos/ for installation videos and a digital copy of the Installation Guide.

- Installation: Hydro test (water test) tank system for 24 hours before introduction of chemical. If necessary, remove all test water to prevent reaction with chemical stored.

- Heat Maintenance Systems: Two thermostats are furnished, one for control and one for high limit; heating requirements vary depending on maintenance temperature, ambient temperature, and wind conditions.

- Polyurethane Insulation with Mastic Coating: 2-in nominal thickness, density range 2 – 2.8 lbs /cubic foot, R value ≥ 6.3 / inch, mastic coasting is white acrylic vinyl.

- Nominal / Working Capacity: Calculated vertical tank capacity is to top of straight sidewall.

- ASTM D 1998 Standard: All vertical, IMFO®, and SAFE-Tank® systems greater than 500 gallons are manufactured in accordance with ASTM D 1998 standards.

- Gallonage Markers: Approximate indicators are not intended for precise measuring or metering. Fill vertical tanks and cones only to top of sidewall.

- Support hoses, piping and valves independent of tank sidewall and dome. Flexible connections must be used to protect your tank warranty (See page 23)! Shield all fittings, valves, and piping from physical impact and to protect personnel from chemical spray or release.

- Tank Foundation:

    - Place tank on a clean, smooth, and properly designed concrete foundation or in PPC approved support assembly. Ensure NO trash of any kind is trapped between the tank and its foundation or support.

    - IMFO® tank – use a PPC polyethylene pad or a monolithic concrete pad with finished edges to elevate bottom of tank above primary floor surface. The pad must be at least 4-in thick to provide full clearance for the IMFO® flange. At the IMFO® location, the straight wall of the tank must align with the straight wall of the foundation to prevent stress. DO NOT use a polyethylene pad when storing fluids with a specific gravity greater than 1.65.

    - General guideline to accommodate restraint clips and ladders:
        - Make foundation 2-ft larger in diameter than the diameter of the tank.
        - If using the IMFO® tank, provide a “notch” in the foundation to accommodate the IMFO® outlet.
        - If tank will have fixed ladder, include adequate landing for the ladder to prevent injury.

WARNING: Failure to provide proper foundation support constitutes a misuse of the tank and will void your warranty!

PRODUCT SPECIFICATIONS

- Temperature: Tank specific gravity ratings are based on continuous product operating temperature of 100°F. For temperatures between 100°F and 150°F, please contact Customer Support.

- Pressure: Polyethylene tanks are designed and rated for atmospheric pressure only. Proper venting alleviates pressure or vacuum from developing as the tank is filled and emptied. See venting table below for proper configuration.

<table>
<tr><td colspan="10">Venting Requirements for Polyethylene Tanks</td></tr>
<tr><td>Mechanical Pump Fill</td><td colspan="9">Pneumatic Fill</td></tr>
<tr><td>IF ≤ 1000 gallons</td><td colspan="3">IF—Vent length ≤ 3 feet</td><td colspan="3">IF—Vent length > 3’ and ≤ 30’</td><td colspan="3">IF—Scrubber Application</td></tr>
<tr><td rowspan="2">Vent size should equal size of largest fill or discharge fitting</td><td colspan="3" rowspan="2">AND—Vent screen mesh size ≥ 1/4” or no screen used</td><td colspan="3" rowspan="2">And—3 or less 90° elbows with no other restrictions or reduction in pipe size</td><td colspan="3">Vent pipe size throughout scrubber system CANNOT be reduced!</td></tr>
<tr><td colspan="3">Centerline of dispersion pipe not to be submersed > 6 inches</td></tr>
<tr><td>IF > 1000 gallons</td><td colspan="3">Emergency Pressure Relief Cover Required</td><td colspan="3">Emergency Pressure Relief Cover Required</td><td colspan="3">Perforated dispersion pipe must be same diameter or larger, as vent. Sum of perforations ≥ cross sectional area of pipe</td></tr>
<tr><td rowspan="4">Vent size should exceed the largest fill or discharge fitting by 1 inch min</td><td>Tanker Discharge</td><td>Inlet/ Fitting Size</td><td>Minimum Vent Size</td><td>Tanker Discharge</td><td>Inlet/ Fitting Size</td><td>Minimum Vent Size</td><td>Tanker Discharge</td><td>Inlet/ Fitting Size</td><td>Minimum Vent Size</td></tr>
<tr><td>2”</td><td>2”</td><td>4”</td><td>2”</td><td>2”</td><td>6”</td><td>2”</td><td>2”</td><td>6”</td></tr>
<tr><td>3”</td><td>2”</td><td>6”</td><td>3”</td><td>2”</td><td>6”</td><td>3”</td><td>2”</td><td>8”</td></tr>
<tr><td>3”</td><td>3”</td><td>6”</td><td>3”</td><td>3”</td><td>8”</td><td>3”</td><td>3”</td><td>10”</td></tr>
</table>

(2) 2-in vents DO NOT EQUAL 4-in venting capacity Rev. Nov. 2006

For detailed venting guidelines, please visit our Technical Resources at www. polyprocessing.com

- Flexible Connections allow for tank expansion / contraction and reduce pump / piping vibration stresses. Flexible connections are required on any fitting connection on the lower 1/3 sidewall of the tank to preserve your warranty. See page 23. Shield all fittings, valves, and piping from physical impact to protect personnel from chemical spray or release.

- Tank Dome Loading: DO NOT stand or work on top of tank. The tank surfaces are flexible and slippery and a dangerous fall could occur. There is no weight or load rating for the domes of tanks.

RECEIVING MERCHANDISE

RECEIVING:

- Inspect immediately upon receipt for obvious damage, defects, or missing parts and accessories.
- Parts and accessories are often secured boxed and shipped loose from the tank. Locate and open packages to account for all parts using the packing slip.
- Note damage/discrepancies on the driver's copy and the packing slip and have the driver initial.
- Immediately notify your Authorized Distributor or Poly Processing Company of any problems.
- DAMAGED/MISSING MERCHANDISE: Report damaged/missing merchandise within THREE (3) working days to ensure your claim. Your authorized distributor and/or Poly Processing Company can assist you with this process.

Poly Processing Customer Support

Monroe, Louisiana
866.590.6845

French Camp, California
877.325.3412

RETURNING MERCHANDISE

- To return unused merchandise for proper credit:
    - Contact your authorized distributor or Poly Processing Customer Support and obtain a PPC Return Merchandise Authorization (RMA) number. Have your packing slip available for any needed information.
    - Use the RMA number on all return shipping paperwork and all correspondence.
    - Return the merchandise prepaid. Freight collect shipments will be refused.
    - Upon receipt, PPC will inspect the merchandise and issue appropriate credit. A restocking fee may be assessed, particularly on products "made to order".
- To ensure employee safety, Poly Processing Company will not accept used tanks at its facilities.

TANK LOCATION

- Locate the tank wisely:
- Minimal employee and equipment traffic near tank
- Safe distance away from heat and flames
- Ease of future maintenance and inspection
- Ability to remove and replace the tank cost effectively in the future, i.e. Do not trap the tank in a building or by other equipment
- Provide flat, level and smooth monolithic foundation, adequate for the weight of the chemical to be stored
- Utilize secondary containment of proper size and chemical resistance to comply with local, state and federal regulations. The Safe Tank system is designed to provide a minimum of 110% secondarycontainment

OFF-LOADING INSTRUCTIONS

- Keep personnel clear of tank, rigging, and lift equipment! Improper and unsafe unloading can result in property damage, serious injury, or death.
- DO NOT STAND OR WORK ON TOP OF TANK. The tank surfaces are flexible and slippery, which could cause a dangerous fall. The tank dome is not load rated, as it is not required per ASTM D D1998-06; therefore, it cannot be guaranteed that the top of the dome can support the weight of personnel.
- Whether unloading or moving, the tank must be fully drained before lifting.
- Use of Lifting Lugs:

  - Consult the tank drawing for the proper number of molded-in lifting lug sets to use during a lift. Two molded lugs constitute a set. See picture below.

  - Position the boom of the crane directly over the centerline of the tank lying on its side near the dome (top). Use all lifting lug sets as the lift points (the holes in the lifting lugs have a 1-3/8-in diameter and are spaced 8-in from side to side). Thread a bolt through each eyelet that is large enough to take up as much of the hole as possible to improve lifting control. Ensure each bolt and cable have a lifting capacity of a minimum 3000 pounds. (INSULATED TANKS: Extreme care should be taken to ensure that during the attachment of the bolts and cables from the boom position to the lifting lugs, none come in contact with the tank, causing damage to the foam surface. To prevent this from happening, attach pieces of cardboard to the dome, near the lifting lug positions to protect the sensitive surface area from any contact during the lifting process. Once you have confirmed that all Lifting Lugs are properly attached and the slack in the cables have been removed, it is now an appropriate time to cut away the protective wrap and wooden cradle before starting the lifting process)

  - Slowly begin to raise the tank into an upright position. Take extreme care in balancing the weight of the tank. (INSULATED TANKS: The bottom portion of the foam area of the tank base will be crushed if it is allowed to tilt and sit on its own weight)

  - Once the tank is positioned in its upright position, lift it up and lower the tank back onto the bed of the trailer. This will remove the tension from the cables temporarily to provide the opportunity to reposition the clamps and cables and find the true balance point positions. (INSULATED TANKS: Remove protective wrap and wooden cradle and discard)

  - Raise the boom slowly until all slack has been removed from all lifting cables and you are assured the weight of the tank is now balanced. Lift the tank high enough to clear the trailer. You are now positioned to transport the tank to its final position.

  - IMPORTANT NOTE: If the tank has an IMFO, before it is allowed to sit flat on its own weight at any point during the off-loading process, a block (preferably a 12-in 4x4) must be set underneath the IMFO base to keep it off the ground. This is necessary to keep the IMFO from being damaged (by design, it sits lower than the flat bottom of the tank).

- Use of Manway:
    - Use a lifting device as shown below. The bar should be a minimum 3-in in diameter, have adequate strength for the load, and range in length from 42-in to 46-in.



- Use of Forklift:
    - Ensure the forklift tines are smooth and free from burrs.
    - Use extended tines if handling a large tank.
    - Tie the tank to the forklift mast to prevent rolling or sliding.
    - Insert the forklift tines into the long side of the tank (either from the dome or floor) to achieve a balance point (INSULATED TANKS: Use the center point of the wooden cradle). Lift the tank off the bed of the truck. Back away from the truck slowly, as the weight of the tank and the cradle are both very heavy. Be prepared to stop and adjust your load if need be.
    - Slowly set the tank onto the floor in an unobstructed, flat area that allows for the forklifts to move around as needed. (INSULATED TANKS: Do not remove the stretch wrap protecting the tank at this time. It aids in preventing damage, positioning and holding the cradle to the tank, as it is lifted into the upright position.)
    - Set (3) or (4) 4x4 blocks on the floor in a pattern of the outside radius of the tank. This will aid in temporarily allowing the tank to be elevated off the ground to allow the forks to get underneath for transporting the tank to its final position.
    - Station another forklift on the opposite side of the tank. This forklift is used so the tank will not tip forward or rock back and forth and is used as a safety measure to catch the tank as it is stood up. Using cardboard sleeves or other protective methods, wrap the ends of the forks to prevent the tank from being gouged in the event the forks touch the tank as it is being stood up. Raise and widen the fork spacing to straddle the outside radius of the tank.
    - From the dome (top) end of the tank, insert the forks near the center (balance point) of the tank. Slowly lift the cradle up and set the tank upright onto the 4x4 blocks. (INSULATED TANK: You may now safely remove the stretch wrap and cradle from the tank. CAUTION: As you remove the wrap, position the forks of one of the forklifts to catch the wooden cradle to keep it from falling on its own and preventing any injuries to anyone in the area. Once the wrap is removed, slowly lower the forks until the cradle gently lies back onto the ground. Discard cradle and wrap.)
    - Set tank upright over the blocks so the tank is positioned and the weight is equally distributed. Insert the forks of one of the lifts under the bottom of the tank and lift the tank slowly, just enough to clear the blocks, and transport the tank to the desired location, SLOWLY.

SAFE-SURGE® EMERGENCY AIR SURGE PROTECTION

To install:

1. SAFE-Surge® lids are HEAVY. Use lifting equipment to place the SAFE-Surge® lid over the tank manway.
2. Rotate the lid until the warning label is next to the edge of the tank.
3. Secure the lid with the polyethylene bolts provided.
4. Make certain the movement of the center cap of the lid is unrestricted and able to open to relieve pressure build-up in the tank.

WARNING: SAFE-Surge® lids are heavy (22 lbs.) and awkward! DO NOT attempt to use a ladder for installing the SAFE-Surge® lid. The ladder may become unstable and lead to a fall or injury! Use lift equipment appropriate for work environment or use scaffolding and hoisting equipment.

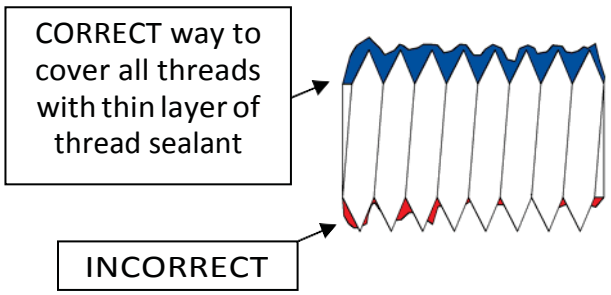
RECOMMENDED TORQUE VALUES AND TECHNIQUES

ALWAYS:

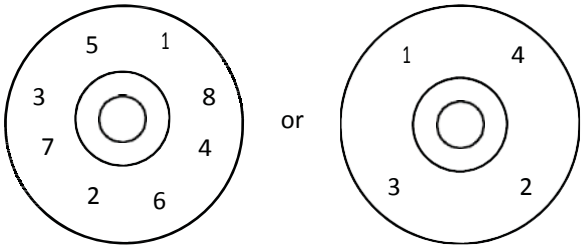
- Lubricate bolts with anti-seize compound prior to installing nuts.
- Tighten the nuts in a crisscross pattern using a torque wrench. Tighten in 5 ft. lb. increments.

Fitting	Torque
PVC Bolted Flange	15-20 ft. lbs.
CPVC Bolted Flange	15-20 ft. lbs.
PP Bolted Flange	15-20 ft. lbs.
Stainless Steel Bulk Head	25 ft. lbs.
B.O.S.S.® Fitting	15-20 ft. lbs.
Bellows Transition Fitting	15-20 ft. lbs.
IMFO® Flange Fitting	15-20 ft. lbs.
Flexible Connections	15-20 ft. lbs.
PVC Bulkhead Fitting	1/4 turn beyond hand tight

Method for applying thread sealant to threaded fittings:



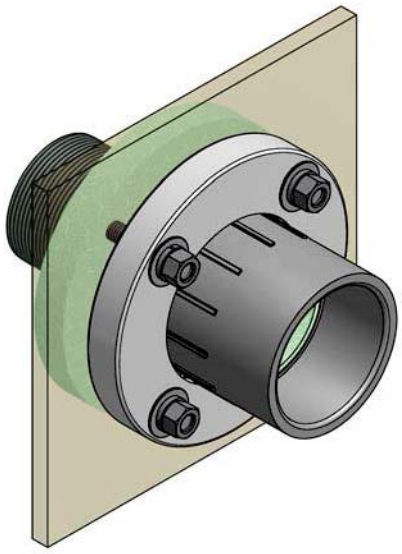
The following tightening sequence is suggested for the flange bolts.



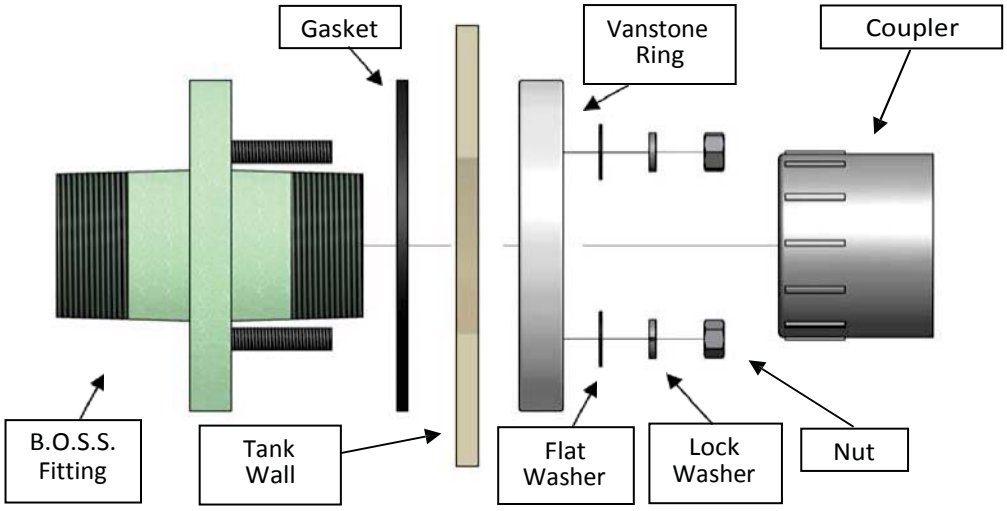
ILLUSTRATION

B.O.S.S. FITTING® (Bolted One-Piece Sure Seal) ASSEMBLY

1. Using the gasket as a template, mark the bolt holes on the outside of the tank.
2. Drill the center hole and stud holes with a 1/4-in pilot bit. Be precise with the layout and drilling of the tank as the fitting requires close tolerances.
3. Drill out the pipe fitting hole using a hole saw. Please note that the hole to be drilled into the tank may be smaller than the hole in the outer plate that was used as a template. The hole drilled should be only slightly larger than the outside diameter of the pipe fitting.
4. Next drill out the stud bolt holes using a 9/16-in drill bit for the 1/2-in diameter studs.
5. Clean and bevel all drilled and cut holes on the inside and outside of tank surfaces.
6. Install the fitting and gasket from the inside of the tank. Inside of tank must be flat and smooth. If the inner surface is uneven or lumpy, the inner wall must be faced smooth using a drill with sandpaper attached to a steel plate. All surfacing must be done in a circular manner.
7. Slide the flange onto the stud bolts that are protruding on the outside of the tank.
8. Place the washers and nuts on the stud bolts. Tighten the nuts in a crisscross pattern using a torque wrench. Tighten until the gasket is fully compressed (approximately 15-20 ft. lbs. on a torque wrench).
9. Inspect the fitting. The gasket should be compressed and the flange should conform to the wall of the tank.
10. Hydro test the tank for at least 24 hours prior to loading with chemical.



Fitting size	Hole saw size
1”	1 1/2”
2”	2 5/8”
3”	3 5/8”

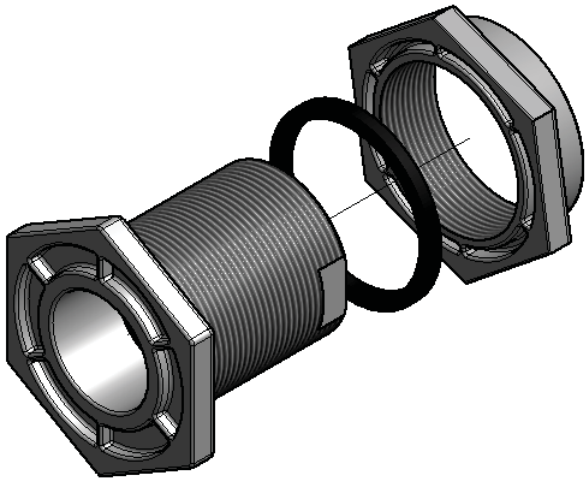


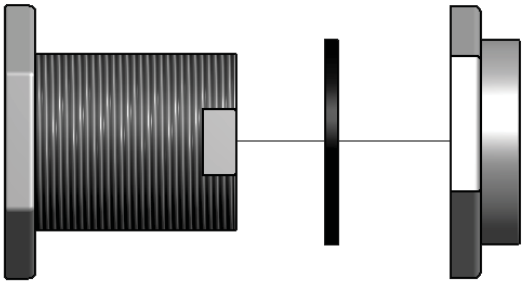
BULKHEAD FITTINGS

1. Slide the gasket over the body of the fitting.
2. From inside the tank, insert fitting body into hole in tank sidewall.
3. Lubricate threads on fitting body with thread sealant and install large nut on the outside of the tank.
4. Hand tighten plus 1/4 turn with a wrench. Most Bulkhead fittings use left hand threads.
5. Do not allow fitting body to slip or spin when tightening to prevent the gasket from creeping between the fitting and the tank wall.
6. Inspect gasket for creep. If found, loosen nut and perform steps 4 & 5 again.
7. When installing a pipe or flange adapter into the BHF, do not allow BHF to slip and do not over tighten.
8. Hydro test the tank for a minimum of 24 hours before placing into chemical service.

Bulkhead fittings and tank sidewall restrictions:

BHF size	Hole saw size
1/2”	1 3/8”
3/4”	1 5/8”
1”	1 7/8”
1 1/4”	2 3/8”
1 1/2”	2 5/8”
2”	3 1/4”
3”	4 1/2”
4”	5 3/4”





FREE STANDING INTERNAL PIPE SUPPORT

Note: All piping associated with the use and installation of the pipe support will be packaged separately. Each length of pipe has been carefully measured at the factory and dry fitted to ensure ease of installation in the field.

1

The pipe support comes standard with a 4” slip by slip connection. 2” & 3” connections are obtained by using slip by slip reducer bushings.

2

From inside the tank , connect the pre cut piping to the dome fitting. The dome fitting should be loosened so that it has about ¼” to ½” of play in it. There are several types of dome fittings that can be used, Universal Ball Dome BHF , Universal Ball Dome Flange, Stainless Steel BHF, and PVC BHF.

3

Once the dome connection is made, pull the bottom section of the pre cut piping to one side while angling the base until the slip by slip connection can be made. Note: All connections are “glued connections”. As the piping is slipping into the base bring the entire system back to a vertical position aligned with the dome fitting.

4

Photo showing the base installed to the piping and aligned vertically with the dome fitting.

NOTE: At this point, re- tighten the dome fitting.

5

After tightening the dome fitting, hand, tighten the plastic thumb screws (5) until they **touch** the bottom of the tank.

6

BELLOWS TRANSITION FITTING

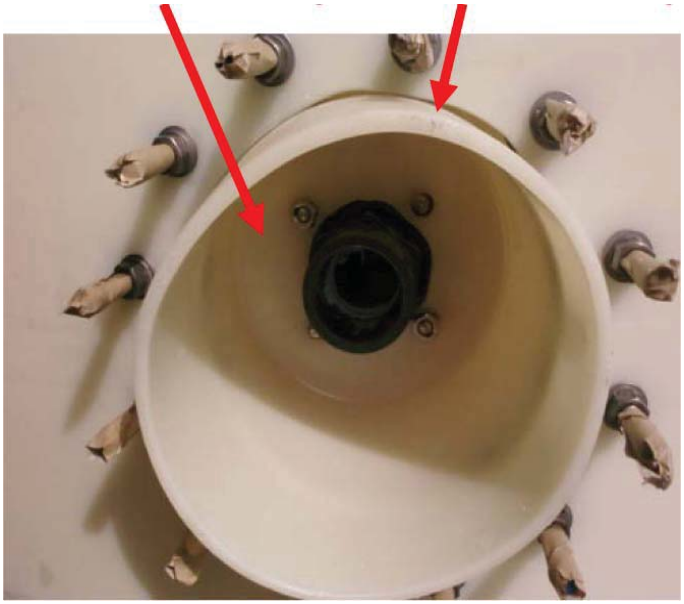
Introduction and Warning

These instructions are intended to make your transition fitting installation and maintenance trouble free. Read them carefully and identify all parts before starting your installation. Follow all general safety practices and your company specific safety practices.

Inner and Outer Tank Alignment

The design of the alignment sleeve is to ensure that your tank arrives without any alignment issues. In the event that a misalignment does occur during shipment or set up, please contact the manufacturer for instructions.

Nuts and Alignment Sleeve



WARNING: The SAFE-Tank® system is designed to provide a minimum of 110% secondary containment. Once the transition fitting is installed, a leak in the inner tank will result in product collection between the inner and outer tank. If this product is not drained off prior to breaking the seals of the transition fitting, serious property damage, injury or death may occur. Great care must be taken to protect people and property when working with a transition fitting.

Filling and Testing Inner Tank

1. Attach flexible connection assembly to inner tank fitting. (Do not install bellows at this time.) If the connection is a solvent weld, allow adequate dry time.
2. Cap or plug all inner tank sidewall fittings and fill the inner tank with water to top knuckle. Make sure you provide support to the flexible connection during the hydro test. Allow the tank to remain full for 12 to 24 hours. This allows:
   a. The inner tank to fully seat itself in the outer tank.
   b. The inner tank to fully expand without stressing the inner tank flange and recently installed flexible connection assembly.
   c. Detection of any leaks in the inner tank created during shipping and handling.
   d. Detection of any leaks between the inner tank flange and recently installed nipple.
3. Determine if any leaks are occurring by using the outer tank access hole to look for water collecting in the space between the inner and outer tank. Correct any problems. Leak cannot always be visually detected once the transition fitting is installed!

Assembly of the Transition Fitting

(Video Demonstration can be found at http://www.polyprocessing.com/technical-resources/installation-manuals-videos/)

Loose parts boxed for shipment
*Note: pipe is shipped long and needs to be cut to fit before installation

Remove nuts and alignment sleeve before beginning

Confirm proper alignment

After measuring and cutting pipe, glue PVC pipe/flexible connection assembly to inner tank fitting

** It is recommended that the entire assembly be dry fitted prior to making any glued connections.

Install gasket for bellows

Install bellows and SS Back Rings

After measuring and cutting pipe, glue pipe and BHF

Install Outer Face Plate and SS Back Ring

Tighten nut on BHF

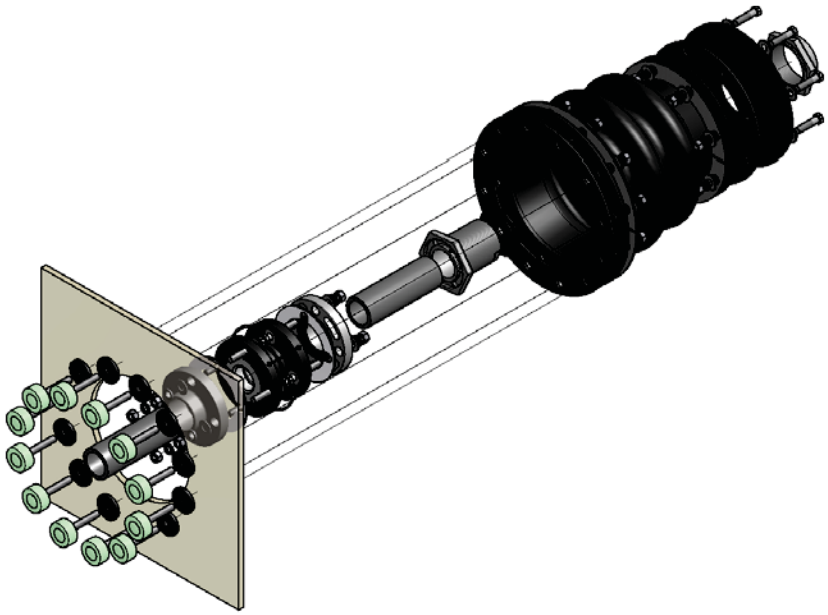
(left hand threads)

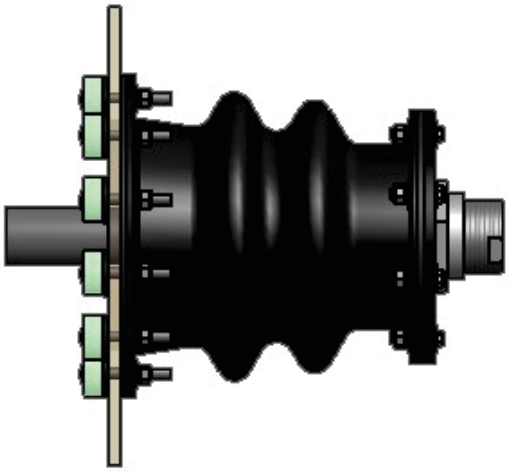
Finished Assembly

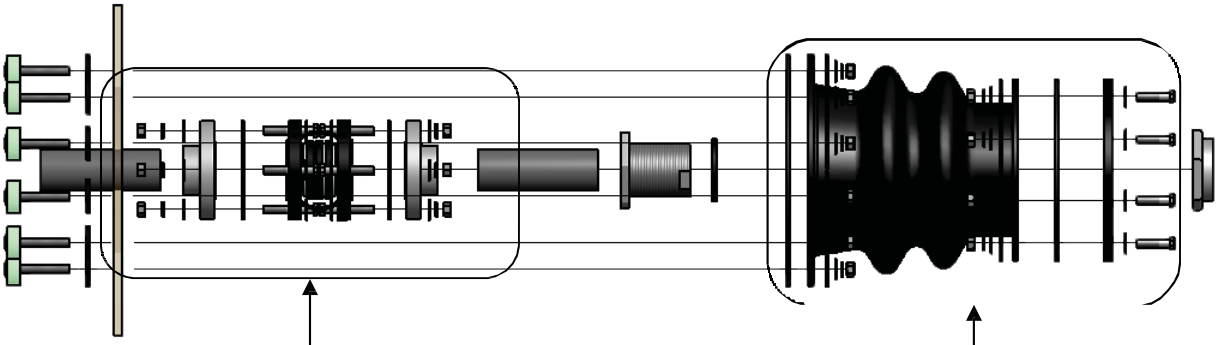
Tightening/torque criteria:

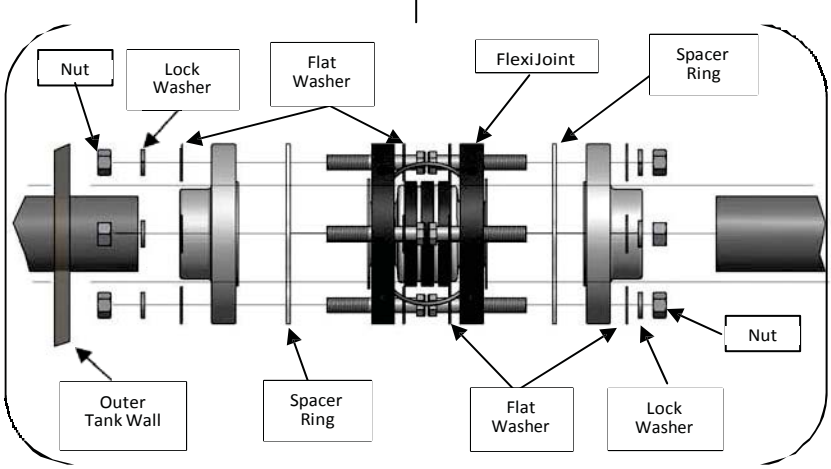
- Steel bolts/stud bolts: progressively tighten in crisscross pattern to 20 ft lbs max.
- PVC BHF Nut: Hand tighten plus 1/4 turn with a wrench.

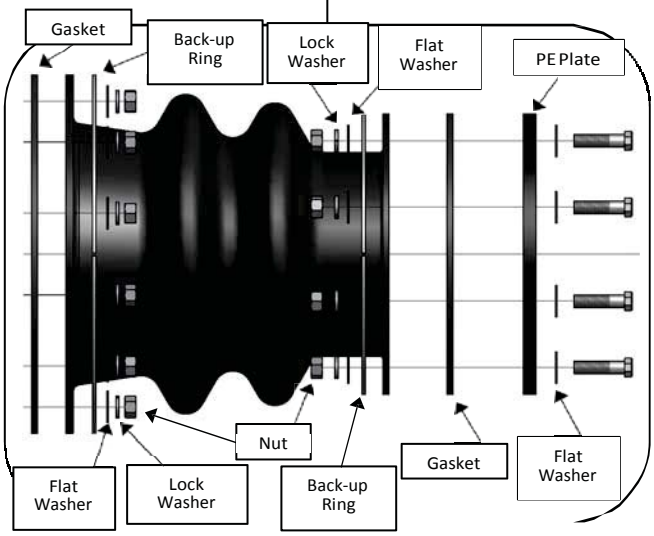
BELLOWS TRANSITION FITTING EXPLODED VIEW







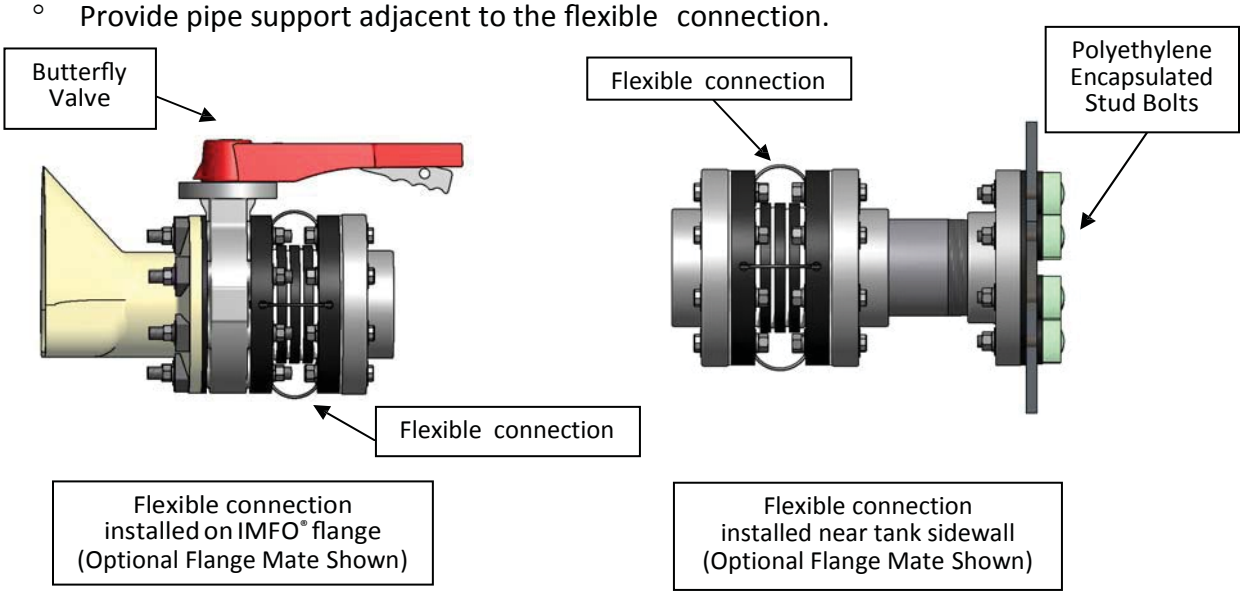




FLEXIBLE CONNECTIONS

Flexible connections are required on fittings installed on the lower 1/3 of the tank sidewall to allow the tank to expand and contract and to protect the tank from pump vibrations.

- Install flexible connection in accordance with the specific manufacturer's installation guidelines:
  - The "breech opening" in the piping for the flexible connection should be within 1/8-in of the relaxed length of the flexible connection.
  - Flexible connections are not to be used for correcting piping misalignment. The flexible connection and mating flanges must be installed in a centered and neutral position.
  - Attach only FULL FACE flanges to the flexible connection. They are not designed to attach directly to tank wall.
  - Ensure adequate clearance between bolt ends for full use of flexible connections.
  - Torque to 20 ft. lbs using crisscross tightening pattern.
  - Provide pipe support adjacent to the flexible connection.



Flexible connection installed on IMFO® flange (Optional Flange Mate Shown)

Flexible connection installed near tank sidewall (Optional Flange Mate Shown)

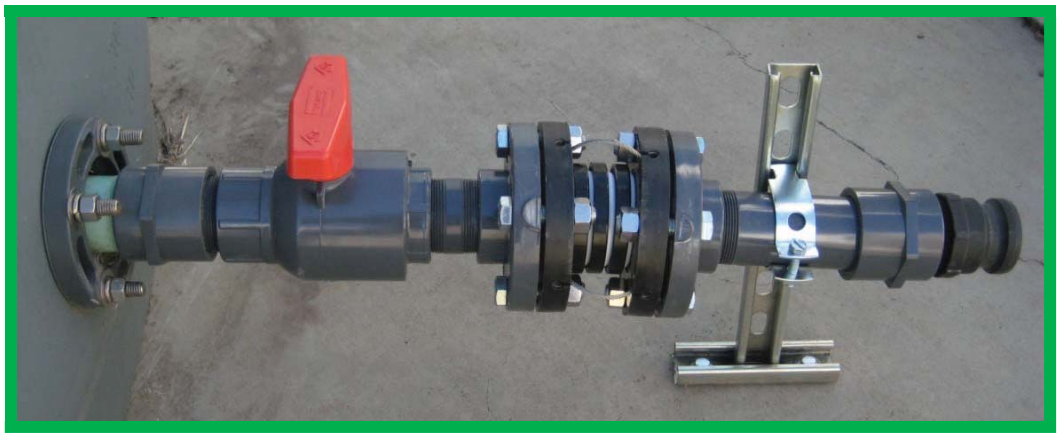
- Flexible Connection Minimum Specifications:
  - Axial Compression ≥ 0.67"
  - Axial Extension ≥ 0.67"
  - Lateral Deflection ≥ 0.51"
  - Angular Deflection ≥ 14°
  - Torsional Rotation ≥ 4°

- Installation of flexible hose connections:
  - Use thread sealant for pipe thread preparation.
  - Support hose adequately but do not restrict its ability to move in horizontal directions.

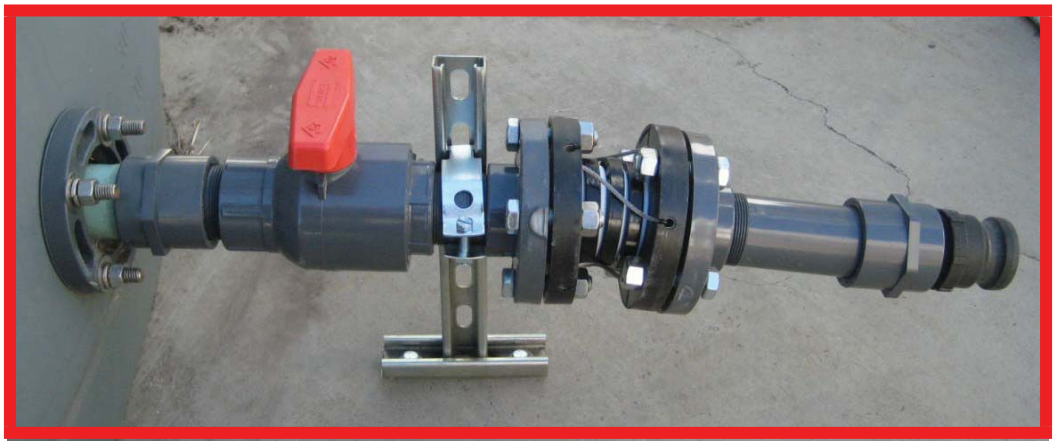
FLEXIBLE CONNECTIONS

Proper Installation of Pipe Supports

Pipe supports positioned CORRECTLY: pipe support must be placed after the flexible connection to allow the tank to properly expand and contract.



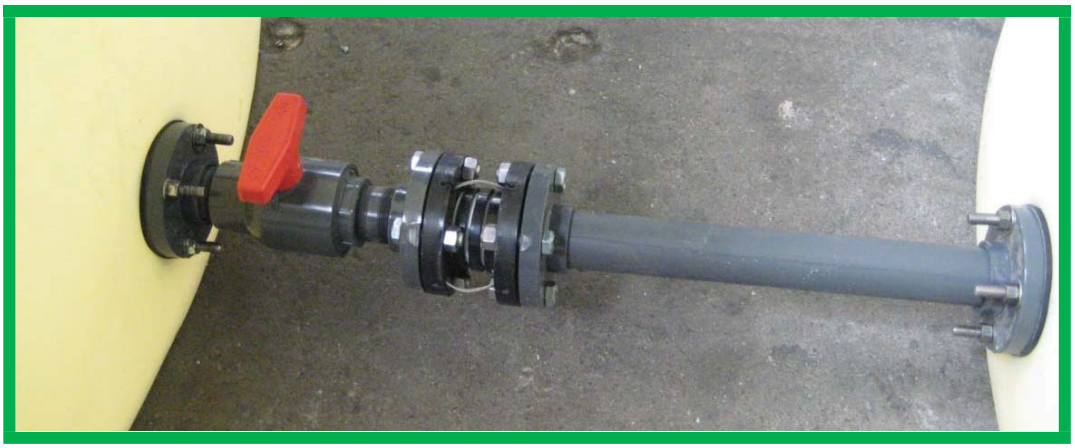
Pipe supports positioned INCORRECTLY: pipe support incorrectly placed before the flexible connection does not allow the tank to properly expand and contract, which can cause the piping or tank to crack over time.



FLEXIBLE CONNECTIONS

Proper Installation of Flexijoints

Flexible connections aligned CORRECTLY: pipe system with the Flexijoint is aligned in a straight manner, which allows for proper expansion and contraction of the two connecting tanks.

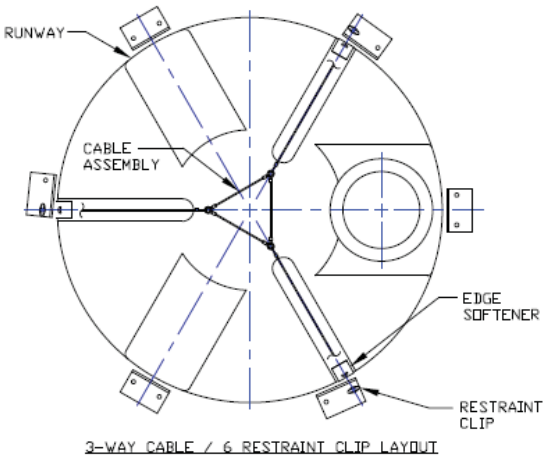


Flexible connections aligned INCORRECTLY: the Flexijoint should not be used to accommodate misaligned piping. This will limit the ability of the Flexijoint to function correctly and possibly damage the joint itself.

RESTRAINT SYSTEMS

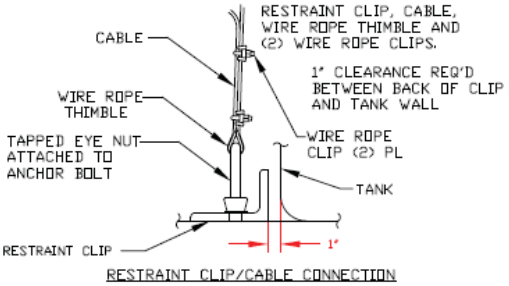
Wind and seismic restraint systems are governed by state and local code. Consult your local code for requirements.

1. Restraint Clips
   a. Space equally around circumference of tank. If tank operating temperatures exceed 100° F, contact Customer Support for proper clip placement.
   b. Allow minimum of 1-in clearance between tank and back of clip to accommodate tank expansion.
   c. Attach the clips to the foundation with appropriate fasteners (customer supplied).
2. Cable Assembly
   a. Place cable assembly over the tank with the cable sling or tension ring at the top center of the dome.
   b. Pass each cable leg over the upper shell knuckle through the Edge Softener.
   c. Place the wire rope thimble in the eye-nut (Style A) or the hole provided in the restraint clip (Style B) and loop the cable around the thimble.
   d. Install the wire rope clips by forming a loop with the cable end. See instructions included with wire rope clips.
   e. After the cable is attached to the restraint clips, the excess cable slack must be removed. Cable tension should only be snug enough to secure the Edge Softeners against the upper tank knuckle. Excessive cable tension should be avoided as it may cause undue stress and deformation to the tank.
   f. After cable tension is properly adjusted, the wire rope clips should be checked for proper tightening.
3. Periodic Inspection
   a. Periodically check cables and wire rope clips to ensure proper but not excessive tension
   b. Adjust if necessary, following steps e and f above.

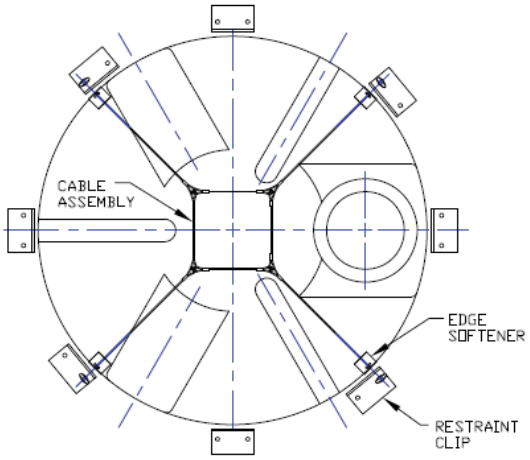


3-WAY CABLE / 6 RESTRAINT CLIP LAYOUT

STYLE A

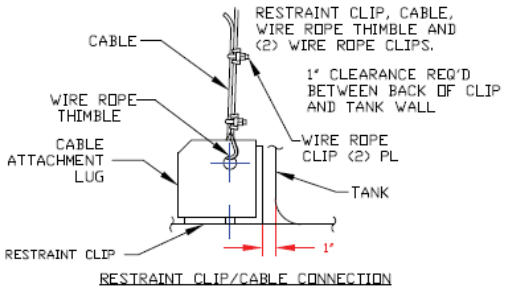


RESTRAINT CLIP/CABLE CONNECTION



4-WAY CABLE / 4 RESTRAINT CLIP LAYOUT

STYLE B



RESTRAINT CLIP/CABLE CONNECTION

START-UP CHECKLIST

- ⌋ Hydro test (water test) tank system for 24 hours before introduction of chemical. Remove all test water from tank to prevent reaction with chemical stored.
- ⌋ Follow chemical manufacturer's best practices for product being stored.
- ⌋ Confirm compatibility of tank, fittings, bolts and gaskets before filling tank with chemical.
- ⌋ Obtain, utilize and retail Material Safety Data Sheets (MSDS) for the chemical being stored.
- ⌋ Make sure vent size is not reduced. Inspect vent lines for obstruction. Verify vent size is adequate to prevent over pressurization of the tank. Follow Poly Processing's venting guidelines. See page 4.
- ⌋ Ensure flexible connections are installed on all lower sidewall fittings and that they are installed correctly. See page 23.
- ⌋ Ensure there is adequate support of valves, piping and hoses and that support is installed correctly. See page 24
- ⌋ Ensure valves are installed as close to the tank as possible. Be sure valves can be easily accessed.
- ⌋ Check ladders at top and bottom for stability and safety.
- ⌋ Label tank with the appropriate warning label for the chemical being stored. Do not remove Poly Processing's general warning labels.

SAFETY TIPS

- DO NOT STAND OR WALK ON TOP OF TANK. The tank surfaces are flexible and slippery and a dangerous fall can occur. There is no weight or load rating for the domes of tanks.
- Tanks are confined spaces. Follow proper entry procedures based on local, state and federal regulations. Establish and adequate retrieval plan.
- Maintain guards, shields, barriers and walkways to protect tank, fittings and piping from impact and to protect personnel from chemical release.

WARNING: Failure to adequately support tank, fittings, valves, piping, and hoses and to protect them from impact can cause chemical release resulting in serious injury or death.

MAINTENANCE ITEMS

- ⌋ Conduct annual inspections of the tank. See page 34 for inspection guidelines.
- ⌋ Inspect gaskets for signs of fatigue. Replace as necessary.
- ⌋ Check bolt torque on fittings and adjust as needed.
- ⌋ Look for signs of stress cracking on both the exterior and interior surfaces of the tank. Look for hazing or a spider web type look.
- ⌋ Check flexible connections to make sure they are functioning properly, are not in a bind, and are not worn or leaking.
- ⌋ Check threaded couplers to make sure they cannot be turned by hand.
- ⌋ Check for leaks at the threaded couplers. This can be caused by over tightening and can take months or years to finally give.
- ⌋ Inspect valves for leaks and make sure they are working properly.
- ⌋ Inspect vent lines for any restrictions or obstructions.
- ⌋ Inspect ladders, brackets, stabilizers and stands for signs of corrosion.

ANNUAL TANK INSPECTION CHECKLIST

Even relatively new polyethylene tanks should receive routine and careful visual inspections. These inspection guidelines should be followed at least annually to ensure the safety of personnel and the preservation of the chemical stored. The tank should be replaced if it displays stress cracking, crazing, or embrittlement.

- ⌋ Empty the tank. Neutralize any chemical remaining. Thoroughly clean the exterior and interior of the tank. A dirty tank cannot be properly inspected.
- ⌋ Examine the exterior and the interior of the tank for cracking, crazing and brittle appearance.
- ⌋ Pay particular attention to areas around fittings and where different portions of the tank converge into one another. In other words, give special attention to "corners" where sidewall and dome meet and where sidewall and bottom meet.
- ⌋ If a confined space entry is not feasible, use a bright light source to inspect the tank interior from the manway opening. An interior inspection is essential because stress cracks normally show up on the inside of a tank before appearing on the outside.
- ⌋ Don't forget to inspect areas of the tank that never actually come in contact with the chemical stored. With fume-emitting chemicals, oxidation and resulting embrittlement of the dome can occur without any actual contact with the chemical stored.
- ⌋ Inspect fittings, flexible connection hoses, and gaskets for leaks and signs of general corrosion or deterioration.
- ⌋ Inspect vents and fume scrubbers to ensure adequate venting for pressure and vacuum. Ensure end of scrubber piping is never submerged in more than 6-in of liquid.
- ⌋ Confirm that filling of the tank from tanker trucks is not causing over pressurization and not ending with a line purge that "balloons" the tank. See "VENTING" on page 4.
- ⌋ Confirm secondary containment is appropriate for chemical stored, adequate in size, and in good repair.

WARNING: Failure to follow these inspection guidelines and take necessary corrective actions can result in unintended chemical release causing serious property damage, injury, or death.

Chemical fumes may be present in the area of the manway opening.

A tank is a confined space. Do not enter tank without a confined space entry and retrieval plan.

Use lift equipment and/or fall protection to prevent fall into or away from tank.

DO NOT STAND OR WORK ON TOP OF TANK. Dome surfaces are flexible and slippery. The dome may be embrittled. A dangerous fall could occur.

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Section 4

About XLPE

High-density crosslinked polyethylene, or XLPE, is a thermoset resin that is specifically designed for critical applications like chemical storage. During the XLPE manufacturing process, a catalyst (peroxide) is built into the resin, which creates a free radical. The free radical generates the crosslinking of the polymer chain, so the tank essentially becomes one giant molecule. The result is a resin that is specifically designed for critical chemical applications.

XLPE versus Linear Polyethylene

- XLPE has 20 times the environmental stress crack resistance of HDPE.
- It has 10 times the molecular weight of HDPE.
- It has 5 times the impact and tensile strength of HDPE.

XLPE versus Fiberglass-Reinforced Plastic (FRP)

- XLPE offers seamless construction for greater strength.
- With FRP, chemicals can wick into the fiber, compromising tank life.
- XLPE can have a lower cost of ownership, due to the low amount of required maintenance compared to FRP.
- FRP often requires special handling to avoid cracking.

XLPE versus Carbon and Stainless Steel

- XLPE has seamless one-piece construction, which eliminates the potential for chemical attack points and bad welds.
- Unlike carbon and stainless steel, XLPE has very broad chemical resistance capabilities without the need for high-cost coatings.
- XLPE does not require ongoing maintenance and inspection.
- XLPE is a cost-effective solution to high-priced alloys.

PolyProcessing
SOLUTIONS, SIMPLIFIED.

Product Data Sheet

PolyCL™ **Rotomolding Crosslinkable Polyethylene**

Description:

PolyCL™ rotomolding, crosslinkable polyethylene is designed to create a robust finished product suitable for harsh chemical applications, including strong oxidizers. The customer can expect structural integrity, with superior stress cracking resistance and with thermal resistance and UV stabilization.

For specific field applications, the processing characteristics of **PolyCL™** encourage the bonding of resin to create a robust oxidation-resistant chemical storage system.

PolyCL™ is available in natural, black, and white colors.

Properties:

Property	Test Method	Unit	Value
ESCR Condition A, F50	ASTM D1693		
100% Igepal		hr	$F_0 >$ 2,000
10% Igepal		hr	$F_0 >$ 2,000
Density	ASTM D1505	g/cc	0.943-0.946
Tensile Strength at Yield 2.0"/min	ASTM D638	psi	3290
Elongation at Break 2.0"/	ASTM D638	%	640
min Flexural Modulus	ASTM D790	psi	88,700
Impact Strength, -40°C	ARM	ft-lbs	71
Deflection Temperature @ 66 psi	ASTM D648	°F	157

Note:
1.All values measured on rotationally molded samples except ESCR, which was measured on compression molded samples.

June. 27, 2012

Customer Service 1-866-590-6845
sales@polyprocessing.com
www.polyprocessing.com

Request a tank quote

Sales: 866-765-9957
866-PolyXLPE

Other Inquiries: 800-523-9871

Chemical Resistance

ChemName	Formula	Concentration	Tank Specific Gravity	XLPE 100 F	XLPE 140 F	HDPE 70 F	HDPE 140 F	PVC	CPVC	PP	SS 304	SS 316	C-276	Titanium	Alloy 400	Viton®	Buna	Teflon® (Gortex)	EPDM	Neoprene®	Comments
Aluminum Sulfate	AI2(SO4)3	Saturated	0	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	

S – Satisfactory
U – Unsatisfactory

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Ferric Chloride	FeCl3	<96%	0	S	S	S	S	S	S	S	U	U	100	S	U	S	S	S	S	S	

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End of submittal