PLAINTIFF'S EXHIBIT

CT-1187

TECHNICAL SPECIFICATIONS

CertainTeed CertainTeed Corporation Pipe and Plastics Group	SPECIFICATIONS CLASSIFICATION: A/C Standard Product Specification		
	T.C.O. REF. NO.: 23	SPECIFICATION NO: 3A	PAGE NO.: 1
	SUPERSEDES: January 26, 1979		DATE OF ISSUE: NOV 15 1979

DESCRIPTION:

Fluid-Tite A/C Pressure Pipe, Couplings and Accessories
Classes 100, 150 and 200 - Common Groove

GENERAL

FLUID-TITE Asbestos Cement Pressure - Common Groove is manufactured in three (3) classes, and is intended for use in underground transmission or distribution systems for the transportation of liquids under pressure.

Available Classes	Available Pipe Sizes
100	4" through 24"
150	4" through 24"
200	4" through 16"

These classes shall mean that the pipe is intended for service at maximum operating pressure of 100, 150, and 200 pounds per square inch gauge under the conditions of installation and operation encountered in a variety of field situations.

GENERAL PRODUCT DESCRIPTION

Unless otherwise listed herein, refer to "General Product Specification Data, Section D of the General Standards Manual for information concerning the following:

1. Composition
2. Trademarks
3. Test Methods
4. General Requirements

   a) Pipe lengths
   b) Lubricants
   c) Marking
   d) Installation Instructions
   e) Finish
   f) Straightness
   g) Leakage Allowance

CONFORMANCE

Pipe sizes 4" through 16", in all three classes, and 18" through 24" in classes 100 and 150 only, meet the requirements of the following external specifications:

- ASTM C296 (latest issue) Type II Uncombined calcium hydroxide - 1% maximum.
- AWWA C400 (latest issue)
- Federal Specification SS-P-351c (latest issue)
- Underwriters' Laboratory

CTD012229

PREPARED BY:	APPROVED BY:	R & D	MFG.	SALES	I.E.	OTHERS
FJS	mfs		JBH	J.R.A.		

PHYSICAL REQUIREMENTS

Hydrostatic Requirements Product	Test
Std. Pipe Lengths	Each length to 3.5 x W.P. In addition, from each 300 lengths of pipe of each size and class that have passed the routine hydrostatic proof test, one length shall be selected and hydrostatically tested to a pressure of 4.0 x W.P. for the class of pipe, maintaining pressure for 5 seconds. The pipe shall not fail under this pressure. Pipe meeting this test shall be re-tested at 3.5 x W.P.
All other Pipe lengths and Pipe Adaptor stock	3.5 x W.P.
Standard Coupling	3.5 x W.P.
Threaded Insert Couplings and Pipe Adaptors	3.0 x W.P.
Coupling Adaptors FT to Steel	Stock to 3.5 x W.P.
Coupling Adaptors FT to FT	Stock to 3.5 W.P. of lower class

Note: W.P. = Working Pressure

Flexural Strength

Each Standard 13 foot length of pipe in sizes 4", 6" and 8" shall be tested for flexural strength in accordance with the following table.

Nom. Pipe Size, In.	Flexural Proof Loads Total Applied Load, lbs., 12 ft. Span Class 100	Class 150	Class 200
4	900	1100	1400
6	2100	2800	3700
8	4000	5700	7600

Flexural strength tests are conducted in accordance with ASTM C500 (latest issue)

Minimum Crushing Strength, Lbs./ft.

Nom. Pipe Size, In.	Class 100	Class 150	Class 200
4	4100	5400	8700
6	4000	5400	9000
8	4000	5500	9300
10	4400	7000	11000
12	5200	7600	11800
14	5200	8600	13500
16	5800	9200	15400
18	6500	10100	-
20	7100	10900	-
24	8100	12700	-

The crushing strength test shall be conducted on an unmachined section of pipe one(1) foot long. The specimen shall be cut from a randomly selected pipe representing 300 lengths. The test shall be performed in accordance with ASTMC-500 (latest issue). Each coupling and fitting stock shall be capable of withstanding the same crushing strength requirements as specified for the corresponding pipe. Fully Machined Pipe and Threaded Couplings shall be capable of withstanding 75 percent of the minimum crushing strength specified for the corresponding size and class of pipe.

TECHNICAL SPECIFICATIONS

CertainTeed CertainTeed Corporation Pipe and Plastics Group	SPECIFICATIONS CLASSIFICATION: A/C Standard Product Specification		
	T.C.O. REF. NO.: 23	SPECIFICATION NO: 3A	PAGE NO.: 3
	SUPERSEDES: January 26, 1979		DATE OF ISSUE: NOV 1 5 1979

DESCRIPTION:

Fluid-Tite A/C Pressure Pipe, Couplings and Accessories
Classes 100, 150 and 200 - Common Groove

Lubricant

Field lubricant shall be furnished in 1½ quart cans in accordance with the following table. On special order, 5 gallon pails may be substituted.

Pipe Size, Inches	Joints Per 1½ Qt. Container	Joints Per 5 Gal. Pail
4	100	1,380
6	70	955
8	50	725
10	40	545
12	25	415
14	20	280
16	19	260
18	12	170
20	11	155
24	10	135

External B.O.D. Requirements

B.O.D. dimensions were developed for companies manufacturing accessory items for A/C pipe. These dimensions have been published and issued to the field. No pipe may be shipped for a given class if the average BOD anywhere along its length is beyond the range given in the Table below, unless customer approval is obtained thru Sales/Customer Service. This requirement also applies to declassed and reclassed pipe.

Pipe Size, Inches	Class 100		Class 150		Class 200	
	Min.	Max.	Min.	Max.	Min.	Max.
4	4.79	5.26	4.97	5.32	5.22	5.57
6	7.05	7.40	7.07	7.37	7.26	7.60
8	9.22	9.57	9.27	9.62	9.39	9.79
10	11.25	11.77	11.82	12.12	11.77	12.12
12	13.37	14.04	14.08	14.38	14.03	14.38
14	15.36	15.80	16.38	16.73	16.44	16.88
16	17.50	17.94	18.62	18.97	18.74	19.19

Note: Larger sizes to be determined.

Standard Coupling

One coupling, suitable for the particular size and class of pipe with which it is to be used, shall be attached to each standard and random pipe length and shipped as a pre-balled unit. Other couplings for use with includes shall be shipped loose.

CTD012231

PREPARED BY:	APPROVED BY:	R & D	MFG.	SALES	I.E.	OTHERS
TS	MRS		JBH	J.R.A.		

RUBBER RINGS

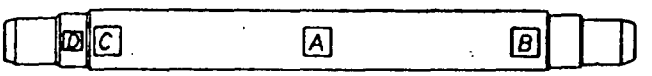
Two (2) CG rubber rings shall be furnished with each coupling. The rubber rings shall meet the requirements of Standard Purchasing Specification No. 507 and latest issue of ASTM D-1869 Rubber Rings will be composed of natural rubber, synthetic elastomer, or when specifically requested, an oil resistant compound.

PACKAGING

Packaging shall be in accordance with Standard Packaging Specification No. 1

MARKING

Standard Pipe



Color Code: Class 100 Black
Class 150 Orange
Class 200 Black

* Area A — At the exact center of the pipe, the following shall be stamped.

CERTAIN-TEED
Size Class Pressure TYPE II
FLUID-TITE CG

The words Certain-Teed shall be in block letters.

At either end of the pipe, a "handling label" (see Sec. D of the General Standards Manual) shall be attached to the B.O.D. of all pipe, 1/4-length and above.

Area B	Area C	Area D
Identification Marking: First line - Month,Day,Year,Plant,Shift Second line - Pipe No. Example: 050168580 109	Stencil in the words "Tested at ____ psi" (Insert proof pressure)	Underwriters' Label when requested, Standard length only.

Standard Coupling

* Area E — At the approximate center around the coupling.



CERTAIN-TEED
Size, Class, Pressure-T
FLUID-TITE CG

The words Certain-Teed shall be in block letters.
T - indicates coupling has been hydrostatically tested.

*Note: Plants 56 and 60 (Santa Clara and Riverside) are to show the "International Association of Plumbing and Mechanical Officials" logo on pipe and couplings, sizes 4" through 12", Classes 150 and 200. Refer to Industrial Engineering Pipe and Coupling stamps.

Logo - IAPMO

TECHNICAL SPECIFICATIONS

CertainTeed

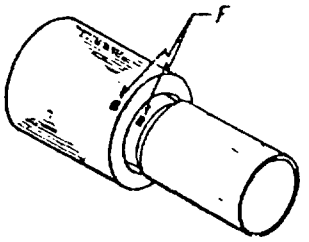
CertainTeed Corporation
Pipe and Plastics Group

SPECIFICATIONS CLASSIFICATION: A/C Standard Product Specification		
T.C.O. REF. NO. 23	SPECIFICATION NO: 3A	PAGE NO.: 5
SUPERSEDES: January 26, 1979	DATE OF ISSUE: NOV 1 5 1979	

DESCRIPTION:

Fluid-Tite A/C Pressure Pipe, Couplings and Accessories
Classes 100, 150 and 200 - Common Groove

Pre-belled Unit



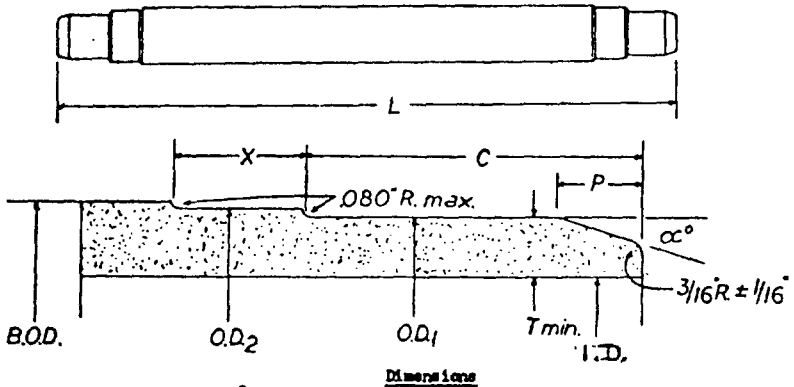
Area F

The plant number shall be stamped in black ink on the coupling B.O.D. and stamped on the pipe O.D. shoulder next to where the coupling is stamped. (Minimum length is 1 inch.)

CTD012233

PREPARED BY:	APPROVED BY:	R & D	MFG.	SALES	I.E.	OTHERS
FTS	MRS		LBH	J.R.A.		

STANDARD PIPE



Dimensions

Pipe Size, Inches All Classes	P" ±.06"	α° ±.2°	X" ±.06"
4, 6, 8, 10	.75	16	1.50
12	1.00	16	1.50
14, 16	1.00	18	1.50
18, 20, 24	1.00	20	1.50

Length of Pipe	L'	Length Tol."
Standard	13'	+0" -1"
Random	7'0" to 12'6" (6" increments)	+0" -1"
1/2 Standard (MEO)	6'6"	+0" -1"
1/4 Standard (MEO)	3'3"	+0" -1"
1/8 Standard (MEO)	19.5" (Sizes 6" thru 12" only)	±0.5"

Pipe Size, Inches	Nom. I.D."	O.D.$_1$" *	O.D.$_2$" *	C" ±.06"	B.O.B." ** +.00" -.00"	T" Min.
Class 100						
4	4.00	4.64	4.80	2.40	5.05	.240
6	6.00	6.91	7.07	2.40	7.16	.365
8	8.00	9.11	9.27	2.40	9.32	.465
10	10.00	11.24	11.40	2.40	11.46	.530
12	12.00	13.44	13.60	2.90	13.70	.630
14	13.60	15.07	15.23	3.25	15.36	.645
16	15.50	17.15	17.31	3.25	17.50	.735
18	18.00	19.90	20.06	3.75	20.30	.870
20	20.00	22.12	22.28	3.75	22.50	.960
24	24.00	26.48	26.64	3.75	27.00	1.140
Class 150						
4	4.00	4.81	4.97	2.40	5.14	.325
6	5.80	6.91	7.07	2.40	7.12	.465
8	7.80	9.11	9.27	2.40	9.32	.565
10	10.00	11.66	11.82	2.40	11.85	.740
12	12.00	13.92	14.08	2.90	14.11	.870
14	14.00	16.22	16.38	3.25	16.41	1.000
16	16.00	18.46	18.62	3.25	18.65	1.120
18	18.00	20.94	21.10	3.75	21.20	1.370
20	20.00	23.28	23.44	3.75	23.54	1.540
24	24.00	27.96	28.12	3.75	28.22	1.880
Class 200						
4	4.00	4.81	4.97	2.40	5.32	.350
6	5.70	6.91	7.07	2.40	7.36	.515
8	7.60	9.11	9.27	2.40	9.46	.665
10	9.60	11.66	11.82	2.40	11.88	.920
12	11.44	13.92	14.08	2.90	14.11	1.130
14	13.60	16.22	16.38	3.25	16.44	1.200
16	15.50	18.46	18.62	3.25	18.74	1.370

* Tolerance O.D.$_1$ and O.D.$_2$: 4" - 16" ±.02"
18" - 24" ±.03"

**See External BOD Requirements on page 2.

CTD012234

TECHNICAL SPECIFICATIONS

CertainTeed

CertainTeed Corporation
Pipe and Plastics Group

SPECIFICATIONS CLASSIFICATION: A/C Standard Product Specification

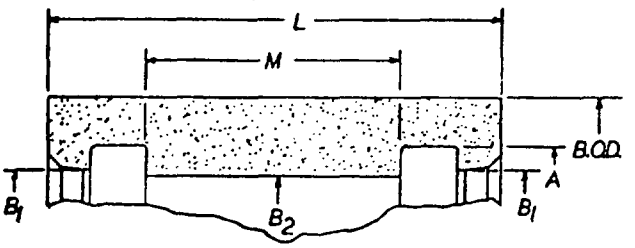
T.C.O. REF. NO.	SPECIFICATION NO:	PAGE NO.:
23	3A	7

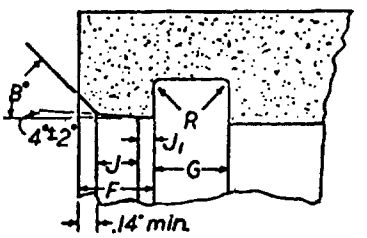
SUPERSEDES:	DATE OF ISSUE:
January 26, 1979	NOV 1 [illegible] 1979

DESCRIPTION:

Fluid-Tite A/C Pressure Pipe, Couplings and Accessories
Classes 100, 150 and 200 - Common Groove

STANDARD COUPLING





Dimensions

Coupling Size, In. All Classes	F" Min.	G" +.03" -.01"	J" +.00" -.04"	J_1" +.02" -.00"	R" +.032" -.000"	B° ±2°
4 through 12	.76	.92	.42	.18	.093	45
14 through 24	.83	1.00	.42	.25	.093	45

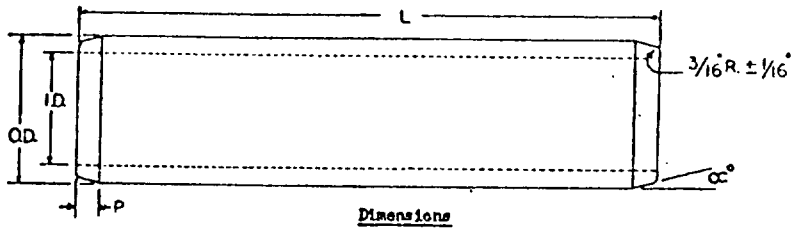
Coupling Size, Inches	A" *	B_1" *	B_2" *	K" +.00" -.06"	L" +.13" -.00"	B.O.D." +.06" -.00"
Class 100						
4	5.400	4.930	4.760	3.50	7.00	6.25
6	7.650	7.200	7.025	3.50	7.00	8.40
8	9.850	9.400	9.230	3.50	7.00	10.80
10	11.980	11.530	11.355	3.50	7.00	13.30
12	14.180	13.730	13.555	4.50	8.00	15.55
14	15.950	15.390	15.200	5.20	9.00	17.60
16	18.030	17.470	17.280	5.20	9.00	19.80
18	20.780	20.220	20.030	6.20	10.00	22.60
20	23.000	22.440	22.250	6.20	10.00	25.30
24	27.360	26.800	26.610	6.20	10.00	30.00
Class 150						
4	5.550	5.100	4.930	3.50	7.00	6.66
6	7.650	7.200	7.025	3.50	7.00	8.76
8	9.850	9.400	9.230	3.50	7.00	11.32
10	12.400	11.950	11.780	3.50	7.00	14.36
12	14.660	14.210	14.040	4.50	8.00	17.00
14	17.100	16.540	16.350	5.20	9.00	19.80
16	19.340	18.780	18.590	5.20	9.00	22.28
18	21.820	21.260	21.070	6.20	10.00	24.91
20	24.160	23.600	23.410	6.20	10.00	27.55
24	28.840	28.280	28.090	6.20	10.00	33.02
Class 200						
4	5.550	5.100	4.930	3.50	7.00	6.88
6	7.650	7.200	7.025	3.50	7.00	9.35
8	9.850	9.400	9.230	3.50	7.00	12.00
10	12.400	11.950	11.780	3.50	7.00	15.15
12	14.660	14.210	14.040	4.50	8.00	17.90
14	17.100	16.540	16.350	5.20	9.00	20.50
16	19.340	18.780	18.590	5.20	9.00	23.20

* Tolerance A, B_1, and B_2 4" - 16" ±.025"
18" - 24" ±.040"

PREPARED BY:	APPROVED BY:	R & D	MFG.	SALES	I.E.	OTHERS
FLS	[signature]		JBH	J.R.A.		

NOV 1 5 1979

FULLY MACHINED (FM)



Dimensions

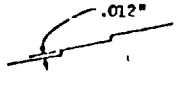
Pipe Size, In. All Classes	P" ±.06"	α° ±2°	L Std. Half +0" -1"	L Std. Quarter +0" -1"	L Std. Eighth ± 0.5"
4" thru 12"	1.00	16	6' 6"	3' 3"	19.5"
14", 16"	1.00	18	6' 6"	3' 3"	---
18" thru 24"	1.00	22	6' 6"	3' 3"	---

Pipe Size Inches	Class 100 Nom. I.D."	Class 100 O.D."*	Class 150 Nom. I.D."	Class 150 O.D."*	Class 200 Nom. I.D."	Class 200 O.D."*
4	3.80	4.64	3.80	4.81	3.49	4.81
6	5.80	6.91	5.66	6.91	5.29	6.91
8	7.80	9.11	7.55	9.11	7.45	9.11
10	9.56	11.24	9.89	11.66	9.55	11.66
12	11.44	13.44	11.86	13.92	11.44	13.92
14	13.30	15.07	13.75	16.22	13.29	16.22
16	15.16	17.15	15.84	18.46	15.15	18.46
18	17.34	19.90	18.00	20.94	-	-
20	19.63	22.12	20.00	23.28	-	-
24	23.37	26.48	24.00	27.96	-	-

* Tolerance Center O.D. ± .025"
End O.D. ± .020"

At Plant 57 the following tolerances are effective to allow for gang tooling.

* Tolerance Plant 57 Center O.D. ±.025"
End O.D. ± .020"
(6" length both ends)



In addition, there cannot be a step greater than .025" (.012" a side)

MARKING:

CERTAIN-TEED
Size Class Pressure
FLUID-TITE CO

FM Tested at ____ psi (Insert proof pressure)

05016600 (Manufacturing information)

CTD012236

TECHNICAL SPECIFICATIONS

CertainTeed

CertainTeed Corporation
Pipe and Plastics Group

SPECIFICATIONS CLASSIFICATION: A/C Standard Product Specification		
T.C.O. REF. NO.	SPECIFICATION NO:	PAGE NO.:
23	3A	9
SUPERSEDES: January 26, 1979		DATE OF ISSUE: NOV 1 5 1979

DESCRIPTION:
FLUID-TITE A/C Pressure Pipe, Couplings and Accessories
Classes 100, 150 and 200 - Common Groove

THREADED BRASS INSERT COUPLINGS (TBIC) & THREADED BRASS INSERT PIPE ADAPTORS (TBIPA)

USE

To provide a means for making service connections in asbestos cement pressure pipe systems where either NPT or AWWA threads are employed.

PHYSICAL REQUIREMENTS:

All inserts shall be cemented in place with an epoxy adhesive. The workmanship shall be such that there is no evidence of voids or holes, and there shall be no sharp protrusions of the cement on any of its surfaces. The rubber O-ring shall not be placed on the insert until the insert is ready to be cemented in place.

Coupling shall be hydrostatically tested prior to drilling and cementing the insert into position and shall meet the requirements of the standard coupling. It is also intended that couplings shall be able to withstand the specific hydrostatic pressure after the inserts have been secured.

RUBBER RINGS:

Each coupling shall be supplied with two (2) CG Rubber Rings of the appropriate size and class. Oil resistant rings will be supplied when specified by the purchaser.

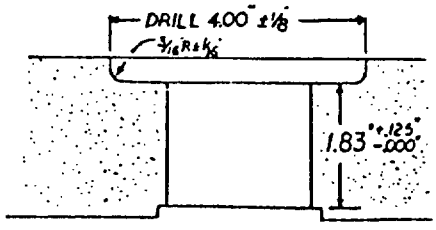
PLASTIC CLOSURES:

Prior to insertion, storage and/or shipment, each insert shall be covered with a plastic closure to prevent damage to the brass threads. Plastic closures are defined in Standard Purchasing Specification No. 525.

BRASS INSERTS:

Threaded Brass Inserts and Bushings shall meet the requirement of Purchasing Specifications 523A and 562. Threaded Brass Inserts are available in (3/4" AWWA, 1" AWWA, 3/4" NPT and 1" NPT) "A" and "B" lengths, 1½" NPT in "A", "B" and "C" lengths, and for special applications 1" NPT in "D" length. In cases marked ①, A 1½" NPT insert shall be used and bushed down, if necessary.

In the cases marked ②, the coupling shall be counterbored, as shown below, to allow for proper joining of the Corporation Stop. A "C" length 1½" NPT insert shall be used and bushed down, if necessary.



CTD012237

PREPARED BY:	APPROVED BY:	R & D	MFG.	SALES	I.E.	OTHERS
FIS	MPS		DBH	J.R.A.		

MARKING

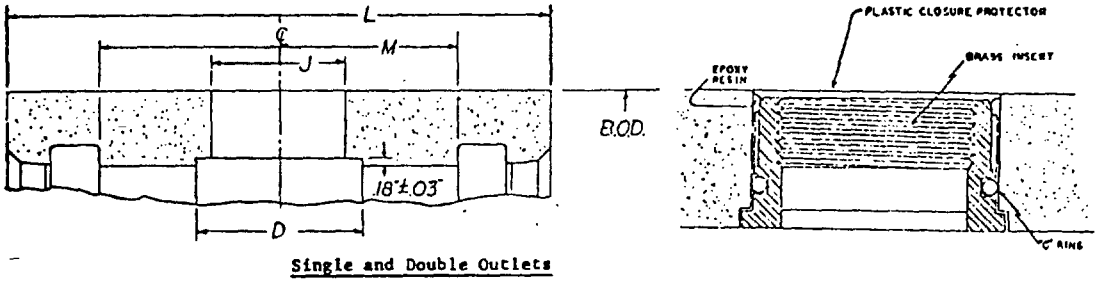
Insert size is to be stenciled near the insert. Example: 1½" NPT. Other marking as shown.

Notes:
1. For machining dimensions not shown refer to standard CG Pipe and Coupling in the specification.
2. TBIC's are available in any combination of listed inserts and coupling sizes.
3. TBIPA's are available in any combination of listed inserts and pipe sizes.
4. Double outlet - Inserts are to be located 180° apart.
5. Protrusions shall be filleted with epoxy.
6. "J" diameter to be centered on "D".
7. Rubber "O" rings per Standard Purchasing Specification No. 524.

PROCEDURE FOR USE OF BUSHINGS

Use normal cleaning procedure for inserts and bushings (degreasing). After shaking the bottle as directed on label apply Loc-tite #262 (Loc-tite #271 is an acceptable alternate sealant) to the second full thread of the bushing, filling the thread nearly full all the way around. Screw the bushing into the insert and tighten immediately to about 60-80 foot-pounds. If the Loc-tite sealant oozes outside the fitting in any noticeable amount, use less. Allow 24 hours to cure.

THREADED BRASS INSERT COUPLINGS (TBIC)



Single and Double Outlets

Coupling Size, Inches	M" +.00" -.06"	L" +.063"	B.O.D." +.08" -.00"	Brass Insert Selection Chart (Lengths) NPT 3/4"	NPT 1"	NPT 1½"	NPT 1¼"	AWWA 3/4"	AWWA 1"
Class 100									
4	5.00	8.500	6.51	A	A	A①	A	A	A
6	5.00	8.500	8.80	A	A	A①	A	A	A
8	5.00	8.500	11.35	A	A	A①	A	A	A
10	5.00	8.500	13.63	B	A	A①	A	B	A
12	6.00	9.500	16.08	B	B	B①	B	B	B
Class 150									
4	5.00	8.500	6.95	A	A	A①	A	A	A
6	5.00	8.500	9.30	A	A	A①	A	A	A
8	5.00	8.500	12.00	B	B	B①	B	B	B
10	5.00	8.500	15.03	B	B	B①	B	B	B
12	6.00	9.500	17.85	C①	C①	C①	C	C①	C①
Class 200									
4	5.00	8.500	7.54	B	B	B①	B	B	B
6	5.00	8.500	10.20	B	B	B①	B	B	B
8	5.00	8.500	13.15	C①	C①	C①	C	C①	C①
10	5.00	8.500	15.90	C①	C①	C①	C	C①	C①
12	6.00	9.500	18.80	②	②*	②	②	②	②

MARKING:

CERTAIN-TEED
TBIC
Size, Class, Pressure
FLUID-TITE CG

Brass Insert Size	J" +.010"	D" +.03"
3/4" NPT	1.335	2.56
1" NPT	1.635	2.56
1½" NPT	2.240	2.56
3/4" AWWA	1.635	2.56
1" AWWA	1.885	2.56

* - For 12" - Class 200, 1" NPT, a "D" length insert is an acceptable alternate.

TECHNICAL SPECIFICATIONS

CertainTeed

CertainTeed Corporation
Pipe and Plastics Group

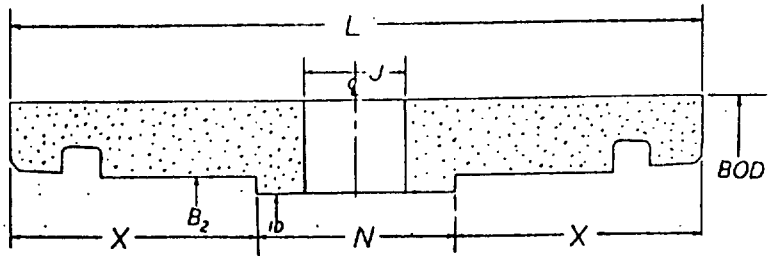
SPECIFICATIONS CLASSIFICATION:		
A/C Standard Product Specification		
T.C.O. REF. NO.	SPECIFICATION NO:	PAGE NO.:
24	3A	10A
SUPERSEDES:		DATE OF ISSUE: JUN 26 [illegible]

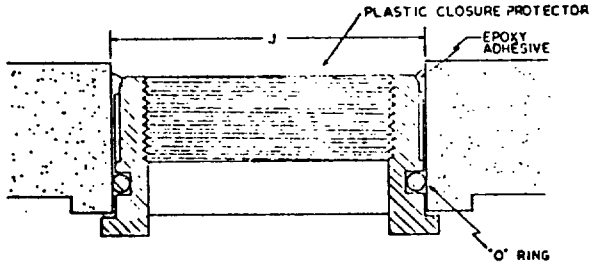
DESCRIPTION:

Fluid-Tite A/C Pressure Pipe, Couplings and Accessories
Classes 100, 150 and 200 - Common Groove

2" NPT Threaded Brass Insert Coupling

Single Outlet Only





Dimensions

Coupling Size, In.	I.D."	B_2"*	L" ±.063"	X" ±.125	N" ±.125	B.O.D." +.08" -.00"	2" Insert Length
Class 100							
6	6.81	7.025	11.50	3.50	4.50	8.80	B
8	8.95	9.230	11.50	3.50	4.50	11.35	B
10	11.01	11.355	11.50	3.50	4.50	13.66	B
12	13.19	13.555	12.50	4.00	4.50	16.27	B
14	14.85	15.200	13.50	4.50	4.50	18.15	B
16	16.82	17.280	13.50	4.50	4.50	20.64	C
18	19.64	20.030	14.50	5.00	4.50	23.92	C
20	21.81	22.250	14.50	5.00	4.50	26.57	D
24	26.13	26.610	14.50	5.00	4.50	31.78	D

PREPARED BY:	APPROVED BY:	R & D	MFG.	SALES	I.E.	OTHERS
M.R Streefy			[illegible]	J.R.A.		[illegible]

02-10-0023 (P927) 12/76 CONFIDENTIAL DOCUMENT - NOT TO BE DISTRIBUTED TO UNAUTHORIZED PERSONNEL

CTD012239

DATE OF ISSUE:	SPECIFICATION NO:	PAGE NO.:
JUN 2 6 1981	3A	10B

DESCRIPTION:

Fluid-Tite A/C Pressure Pipe, Couplings and Accessories
Classes 100, 150 and 200 - Common Groove

Coupling Size, In. Class 150	I.D."	B2"*	L" ±.063"	X" ±.125	N" ±.125	B.O.D." +.08" -.00"	2" Insert Length
6	6.81	7.025	11.50	3.50	4.50	9.37	B
8	8.95	9.230	11.50	3.50	4.50	12.18	B
10	11.47	11.780	11.50	3.50	4.50	15.48	C
12	13.77	14.040	12.50	4.00	4.50	18.39	D
14	16.02	16.350	13.50	4.50	4.50	21.36	D
16	18.15	18.590	13.50	4.50	4.50	24.09	D
Class 200							
6	6.81	7.025	11.50	3.50	4.50	10.27	C
8	8.95	9.230	11.50	3.50	4.50	13.23	C
10	11.47	11.780	11.50	3.50	4.50	16.89	D
12	13.77	14.040	12.50	4.00	4.50	20.13	D

*Tolerance - 4"-16" ± .025"
18"-24" ± .040"

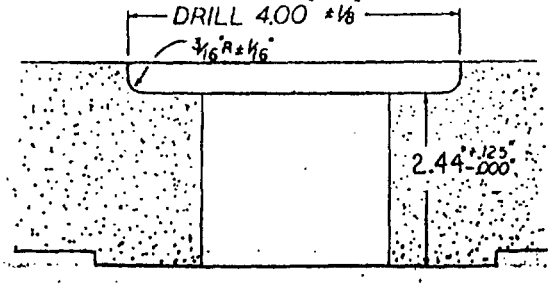
All Sizes & Classes

J = 2.900, ± .010"

NOTES -

1. For machining dimensions not shown, refer to Standard Coupling in this specification.
2. Protusions shall be filleted with epoxy.
3. "J" diameter to be centered on "N".
4. Rubber "O" ring per Purchasing Specification No. 524 except the standard dash 230 ring shall be used:

   ID = 2.484", ± .010" (2½" x 2-3/4" x 1/8")
5. Counterbore J - 4.00", ± 1/8" D. For 24"-100, 16"-150 and 12"-200.
6. Appropriate sections of pages 9 and 10 apply.



CTD012240

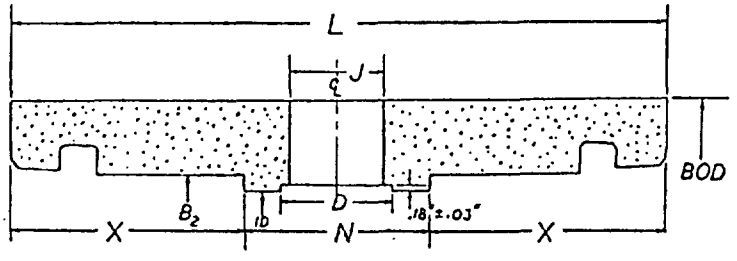
TECHNICAL SPECIFICATIONS

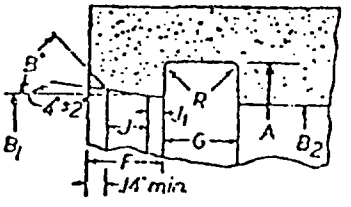
CertainTeed CertainTeed Corporation Pipe and Plastics Group	SPECIFICATIONS CLASSIFICATION: A/C Standard Product Specification		
	T.C.O. REF. NO.: 23	SPECIFICATION NO.: 3A	PAGE NO.: 11
	SUPERSEDES: January 26, 1979		DATE OF ISSUE: NOV 1 5 1979

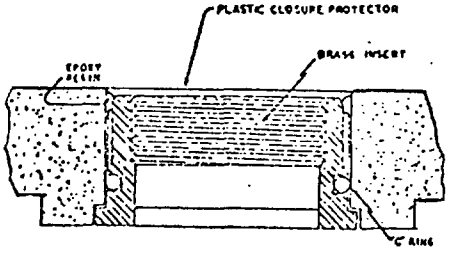
DESCRIPTION:

FLUID-TITE A/C Pressure Pipe, Couplings and Accessories
Classes 100, 150 and 200 - Common Groove

Special Application Threaded Brass Insert Couplings (TBIC)







MARKING:

CERTAIN-TEED
TBIC
Size, Class, Pressure
FLUID-TITE CG

Single and Double Outlets

Size	Class	N" ±.125"	X" ±.125"	L" ±.063"	B.O.D." +.08" -.00"	I.D." Nom.	J" ±.010"	D" ±.03"	Inserts Size	Inserts Length
10"	150	4.50	3.50	11.50	16.23	11.47	1.635	2.56	1" NPT	D
12"	150	4.50	4.00	12.50	19.00	13.77	1.635	2.56	1" NPT	D

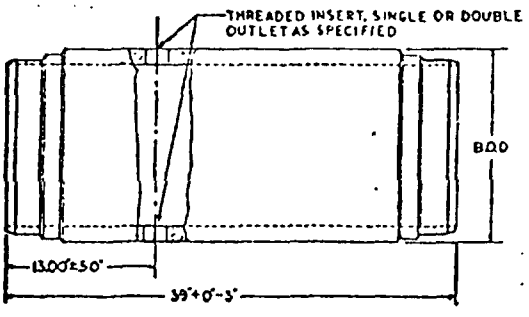
Notes: 1) For dimensions not shown, refer to standard coupling in this specification.

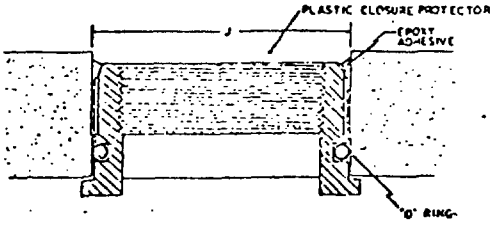
2) Stock used to manufacture TBIC's with "D" length inserts is the same as that used for 2½" x 2" Tapped Couplings.

PREPARED BY:	APPROVED BY:	R & D	MFG.	SALES	I.E.	OTHERS
FTS	MRS		[illegible]	J.R.A.		

THREADED BRASS INSERT PIPE ADAPTOR (TBIPA)

Single and Double Outlet





Marking:

CERTAIN-TEED
TBIPA
Size, Class, Pressure
FLUID-TITE CC

Insert Size	J" +.010"
3/4" NPT	1.335
1" NPT	1.635
1½" NPT	2.240
3/4" AWWA	1.635
1" AWWA	1.885

Pipe Size, Inches	Nom. I.D."	B.O.D." +.08" -.00"	Brass Insert Selection Chart (Length) NPT 3/4"	NPT 1"	NPT 1¼"	NPT 1½"	AWWA 3/4"	AWWA 1"
Class 100								
14	13.60	15.36	A	A	A①	A	A	A
16	15.50	17.48	A	A	A①	A	A	A
18	18.00	20.64	B	B	B①	B	B	B
20	20.00	22.94	B	B	B①	B	B	B
24	24.00	27.46	C①	C①	C①	C	C①	C①
Class 150								
14	14.00	16.47	B	B	B①	B	B	B
16	16.00	18.78	B	B	B①	B	B	B
18	18.00	21.32	C①	C①	C①	C	C①	C①
20	20.00	23.66	C①	C①	C①	C	C①	C①
24	24.00	28.34	②	② *	②	②	②	②
Class 200								
14	13.60	16.84	B	B	B①	B	B	B
16	15.50	19.20	C①	C①	C①	C	C①	C①

* - For 24" - Class 150, 1" NPT, a "D" length insert is an acceptable alternate.

TECHNICAL SPECIFICATIONS

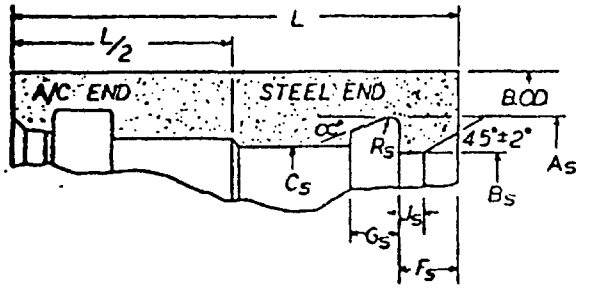
CertainTeed

CertainTeed Corporation
Pipe and Plastics Group

SPECIFICATIONS CLASSIFICATION:		
A/C Standard Product Specification		
T.C.O. REF. NO.	SPECIFICATION NO:	PAGE NO.:
24	3A	13
SUPERSEDES:		DATE OF ISSUE:
November 15, 1979		JUN 20 1981

DESCRIPTION: Fluid-Tite A/C Pressure Pipe, Couplings and Accessories
Classes 100, 150 and 200 - Common Groove

COUPLING ADAPTOR - FLUID-TITE CO TO STEEL OR PLASTIC 4" THRU 12"



Marking: CERTAIN-TEED
Size, Class, Pressure
FLUID-TITE CO
CPLG ADPT
A/C to STEEL
or
PLASTIC

STEEL PIPE END or PLASTIC PIPE END (Located at the adaptor end where the steel or plastic pipe is to be inserted.)

Dimensions

Adaptor Size, In. All Classes	Steel or Plastic O.D.	α° ±2°	G_s" +.03" -.01"	F_s" Min.	J_s" +.03" -.00"	R_s" ±.01"	A_s" ±.025"	B_s" ±.025"	C_s" ±.025"	L" ±.063"
4	4.500	13	.70	.812	.25	.125	5.52	4.56	4.63	7.00
6	6.625	13	.63	.50	.35	.200	7.31	6.69	6.77	7.00
8	8.625	16	.63	.62	.50	.200	9.40	8.69	8.78	7.00
10	10.750	16	.63	.62	.50	.200	11.55	10.81	10.92	7.00
12	12.750	16	.63	.62	.50	.200	13.55	12.81	12.92	8.00

Adaptor Size, Inches	B.O.D." +.08" -.00" Class 100	Class 150	Class 200
4	6.25	6.66	6.88
6	8.40	8.75	9.35
8	10.80	11.32	12.00
10	13.30	14.36	15.15
12	15.55	17.00	17.90

Note: 1) For machining dimensions not shown, refer to standard coupling this specification.

2) For excessively oval steel or plastic, field reworking of the B_s to the C_s dimension is permitted.

RUBBER RINGS

Each coupling adaptor shall be supplied with two (2) rubber rings. The ring for the A/C end shall be of CO design of proper size and class. The ring for the steel or plastic end shall be as shown below.

Coupling Size In.	Ring to be supplied for Steel or Plastic End
4	4" FT 100 per Standard Purchasing Specification No. 503-B
6	6" CAS ring per Standard Purchasing Specification No. 531
8	8" Sewer ring per Standard Purchasing Specification No. 531
10	10" Sewer ring per Standard Purchasing Specification No. 531
12	12" Sewer ring per Standard Purchasing Specification No. 531

* Oil resistant rings will be supplied when specified by the customer.

PREPARED BY:	APPROVED BY:	R & D	MFG.	SALES	I.E.	OTHERS
M. R. Streeping			[illegible]	J.R.A.		[illegible]

02-10-0023 (P927) 12/76 CONFIDENTIAL DOCUMENT - NOT TO BE DISTRIBUTED TO UNAUTHORIZED PERSONNEL

CTD012243

DATE OF ISSUE:	SPECIFICATION NO:	PAGE NO.:
JUN 26 [illegible]	3A	14

DESCRIPTION:

Fluid-Tite A/C Pressure Pipe, Couplings and Accessories
Classes 100, 150 and 200 - Common Groove

Deleted

Tapped Couplings 2½" x 2" Hexagonal Bushings

TECHNICAL SPECIFICATIONS

CertainTeed

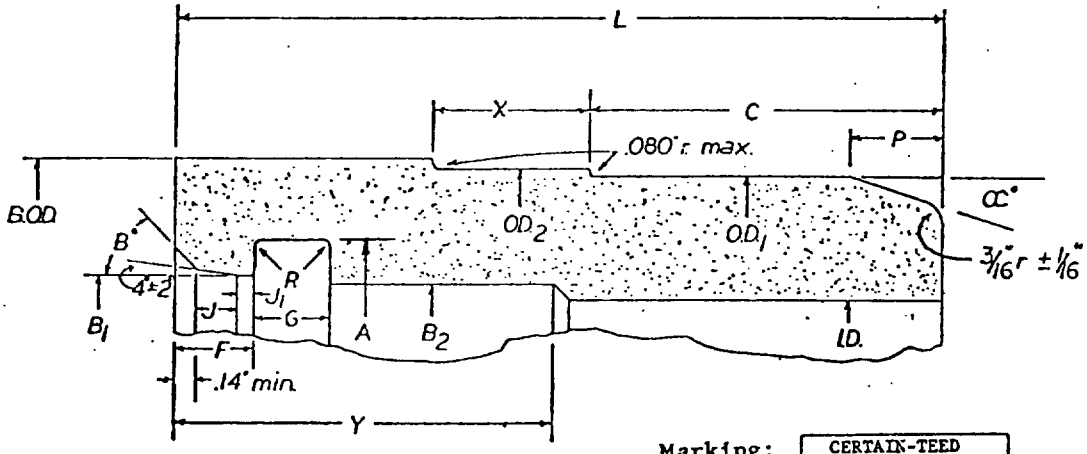
CertainTeed Corporation
Pipe and Plastics Group

SPECIFICATIONS CLASSIFICATION: A/C Standard Product Specification		
T.C.O. REF. NO.: 23	SPECIFICATION NO.: 3A	PAGE NO.: 15
SUPERSEDES: January 26, 1979	DATE OF ISSUE: NOV 1 5 1979	

DESCRIPTION:

Fluid-Tite A/C Pressure Pipe, Couplings and Accessories
Classes 100, 150 and 200 - Common Groove

Coupling Reducer - Fluid-tite CG to Fluid-tite CG



Marking:

CERTAIN-TEED
CRD
Size FT to Size FT
Class, Pressure
FLUID-TITE CG

Dimensions

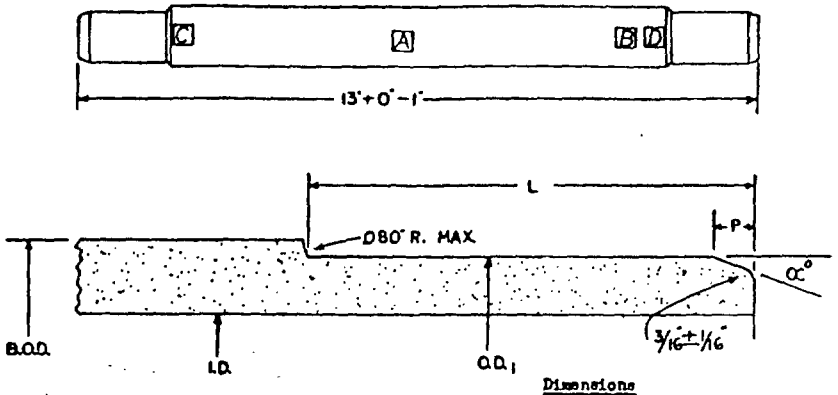
Coupling Reducer Size, In.	L" ±.063" Class 100	L" ±.063" Class 150	L" ±.063" Class 200	Y" ± .13" All Classes	Nom. I.D." Class 100	Nom. I.D." Class 150	Nom. I.D." Class 200	B.O.D." + .08" -.00" Class 100	B.O.D." + .08" -.00" Class 150	B.O.D." + .08" -.00" Class 200
6 to 4	6.50	6.50	6.50	3.50	4.56	4.68	4.68	7.16	7.16	7.16
8 to 6	6.50	6.50	6.50	3.50	6.60	6.60	6.60	9.32	9.32	9.36
10 to 8	6.50	6.50	6.50	3.50	8.69	8.69	8.69	11.46	11.85	12.00
12 to 10	7.00	7.00	8.25	3.50	11.01	11.47	11.47	13.70	14.36	15.15
14 to 12	7.75	7.75	9.00	4.00	13.19	13.77	13.60	15.55	17.00	17.90
16 to 14	8.00	9.50	9.50	4.50	14.85	16.00	15.50	17.60	19.80	20.50
18 to 16	9.00	10.00	--	4.50	16.81	18.00	---	20.30	22.28	---
20 to 18	10.00	10.50	--	5.00	19.60	20.00	---	22.60	24.91	---
24 to 20	10.00	10.00	--	5.00	21.81	23.00	---	27.00	28.22	---

Notes:
1) For machining dimensions not shown, refer to standard pipe and coupling pages in this specification except for 4" dimensions. Refer to Spec. #1 for 4" dimensions.
2) I.D. subject to manufacturing tolerances, machining of I.D. not required on pipe side.
3) Physical Requirements - Coupling Reducer shall be designed to meet the hydrostatic test requirements of the appropriate class.
4) Rubber Ring - Each Coupling Reducer shall be supplied with one (1) FLUID-TITE CG rubber ring of the appropriate size and class.

Oil resistant rings will be supplied when specified by the customer.

PREPARED BY:	APPROVED BY:	R & D	MFG.	SALES	I.E.	OTHERS
FJS			JBH	J.R.A.		

SPECIAL CLOSURE SECTIONS



Marking:

- [A] CERTAIN-TEED Size, Class FLUID-TITE CO
- [B] Manufacturing Information
- [C] Tested at _____ psi (Insert Proof Pressure)
- [D] Stencil the words CLOSURE SECTION

Pipe Size	L" ± 0.25"	P" ±.06"	OC° ± 2°
4", 6", & 8"	8	1.00	16
10" thru 16"	10	1.00	18
18" thru 24"	12	1.00	22

Other dimensions not shown refer to Standard Pipe dimensions this specification.

Use

The pipe ends are machined so as to accept a full coupling. This pipe enables the customer to make tie-ins, and replacement of damaged lengths without disturbing more than one section of the line. It also aids in main relocation work.

Standard Length

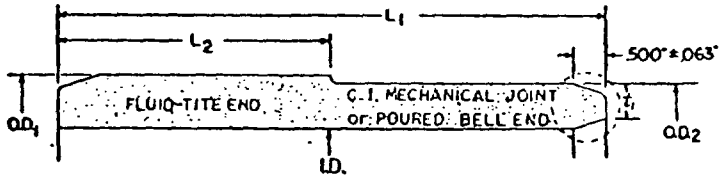
When Special Closure Sections are requested by a customer, plants unable to supply standard lengths may supply half lengths. Special Closure Sections shall represent a portion of the total footage on the order.

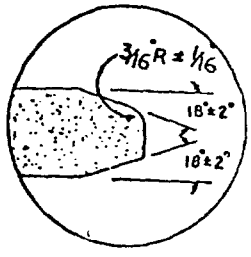
PIPE ADAPTORS

Use - To provide a means for connecting CPC dimensioned Pressure Pipe Couplings to: mechanical joint, butterfly valves and poured Class D cast iron fittings; CPC class to class Pressure Pipe.

Physical Requirements - Pipe Adaptors shall be designed to meet the hydrostatic test pressure of the appropriate size and class.

PIPE ADAPTOR (PAD 2)
Class 100 FLUID-TITE CO to C.I. Mechanical Joint and/or Poured Bell End





Pipe Size Inches	Nom. I.D."	L_1" +.00" -.50"	L_2" +.00" -.50"	O.D.$_1$" *	O.D.$_2$" *	t_1" Max.
4	3.73	15.00	8.00	4.64	4.81	.60
6①	5.80	15.00	-	6.91	6.91	.60
8	7.45	15.00	8.00	9.11	9.05	.60
10	8.96	15.00	8.00	11.24	11.10	.75
12	10.98	15.00	8.00	13.44	13.20	.75
14	13.17	19.50	11.50	15.07	15.30	1.05
16	15.16	19.50	11.50	17.15	17.40	1.20
18	17.34	19.50	11.50	19.90	19.50	1.20
20	19.02	19.50	11.50	22.12	21.60	1.20
24	22.98	19.50	11.50	26.48	25.80	1.40

①Same as Pad 3

*tolerance OD_1 & OD_2 = 4" - 16" ±.02"
18"-24" ±.03"

Marking:

FT Side	MJ/PB Side
CPC-PAD 2 Size -100 Press. FLUID-TITE CO	CPC-PAD 2 Size MJ/PB FLUID-TITE CO

Note: For machining dimensions not shown, refer to Fully Machined Pipe, this specification.

For internal bevel - find thickest wall, mark t_1 max., machine up to mark, any feathered edge reject.

TECHNICAL SPECIFICATIONS

CertainTeed

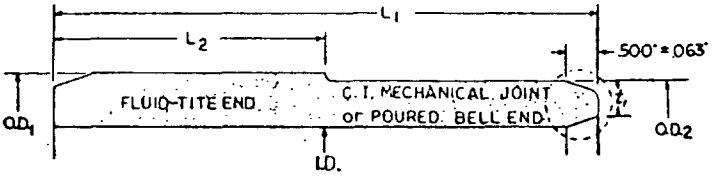
CertainTeed Corporation
Pipe and Plastics Group

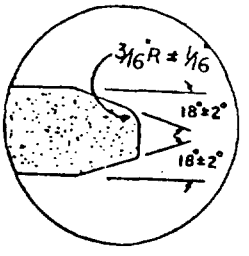
SPECIFICATIONS CLASSIFICATION: A/C Standard Product Specification		
T.C.O. REF. NO. 23	SPECIFICATION NO: 3A	PAGE NO.: 17
SUPERSEDES: January 26, 1979	DATE OF ISSUE: NOV 15 1979	

DESCRIPTION:

Fluid-Tite A/C Pressure Pipe, Couplings and Accessories
Classes 100, 150 and 200 - Common Groove

PIPE ADAPTOR (PAD 3)
Class 150/200 FLUID-TITE CG to C.I. Mechanical Joint and/or Poured Bell End





Pipe Size, Inches	Nom. I.D."	L_1" +.00" -.50"	L_2" +.00" -.50"	O.D.$_1$" *	O.D.$_2$" *	t_1" Max.
4	3.49	15.00	-	4.81	4.81	.60
6	5.29	15.00	-	6.91	6.91	.60
8(1)	7.45	15.00	8.00	9.11	9.05	.60
10	8.94	15.00	8.00	11.66	11.10	.75
12	10.98	15.00	8.00	13.92	13.20	.75
14	13.17	19.50	11.50	16.22	15.30	1.05
16	15.16	19.50	11.50	18.46	17.40	1.20
18(2)	16.81	19.50	11.50	20.94	19.50	1.20
20(2)	18.15	19.50	11.50	23.28	21.60	1.20
24(2)	21.82	19.50	11.50	27.96	25.80	1.40

Marking:

FT Side	MJ/PB Side
CPC-PAD 3 Size 150 or 200 Press. FLUID-TITE CG	CPC-PAD 3 Size MJ/PB FLUID-TITE CG

Note: For machining dimensions not shown, refer to Fully Machined Pipe, this specification.

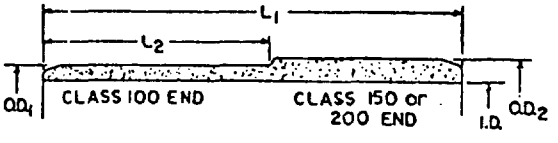
For internal bevel - find thickest wall, mark t_1 max., machine up to mark, any feathered edge reject.

(1) Same as Pad 2.

(2) Class 150 only.

*Tolerances OD_1 and OD_2 = 4" - 16" ± .02"
18" - 24" ± .03"

PIPE ADAPTOR (PAD-5)
Class 100 FLUID-TITE CG to Class 150/200 FLUID-TITE CG



Pipe Size, Inches	Nom. I.D.	Dimensions L_1" +.00" -.50"	L_2" +.00" -.50"	O.D.$_1$" ±.02"	O.D.$_2$" ±.02"
4	3.80	15.00	8.00	4.64	4.81
10	9.56	15.00	8.00	11.24	11.66
12	11.44	15.00	8.00	13.44	13.92
14	13.30	19.50	11.50	15.07	16.22
16	15.16	19.50	11.50	17.15	18.46
*18	17.34	19.50	11.50	19.90	20.94
*20	19.63	19.50	11.50	22.12	23.28
*24	23.37	19.50	11.50	26.48	27.96

Marking:

Class 100 Side	Class 150/200 Side
CPC-PAD 5 Size 100 Press. FLUID-TITE CG	CPC PAD 5 Size 150/200 Press. FLUID-TITE CG

Note: For machining dimensions not shown, refer to Fully Machined Pipe, this specification. For 6" & 8" connections use Standard Fully Machined Pipe, this specification, class 200.

* Class 150 only.

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