ZURN® *Specification Drainage Engineering Guide*

Carrier Systems

www.zurn.com

APPLICATION INDEX

APPLICATION	TYPE	RECOMMENDED CARRIER
Commercial Construction Off-the-Floor Closet		Z1203, ZE1203, Z1204, Z1207, Z1208, Z1209
Light Construction and Residential Off-the-Floor Closet		Z1212, Z1280, Z1282, Z1283, Z1284
Penal Fixtures and Floor Mounted Back Outlet Fixtures		Z1214, Z1215, Z1216
Off-the-Floor Lavatories	Plate Type	Z1224 Z1259 (No Uprights)
	Concealed Arm	Z1231, Z1231-EZ Z1251, Z1253, Z1254 (No Uprights)
	Exposed Arm	Z1236 Z1255, Z1256, Z1257, Z1258 (No Uprights)
Wash Sinks, Mop Sinks, Heavy Cast Sinks, Service Sinks		Z1218, Z1229
Off-the-Floor Urinals		Z1221, Z1222, Z1223
Drinking Fountains, Water Coolers		Z1225
Eastern Style Water Closet		Z1290

PRODUCT COMPLIANCE

Zurn systems comply with ANSI A112.6.1M and are listed with IAPMO.

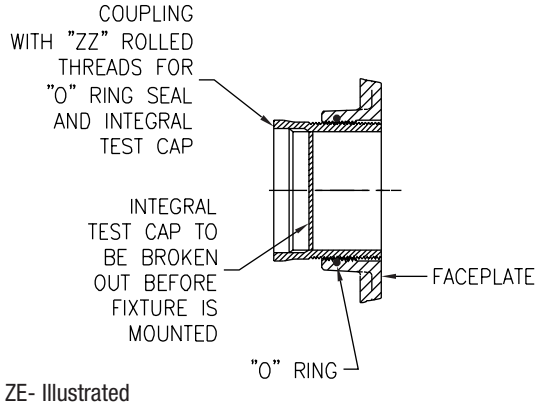
OPTIONS and VARIATIONS

All Zurn systems optional variations are specified as a prefix and or suffix letter or number added to the series designation.

PREFIXES

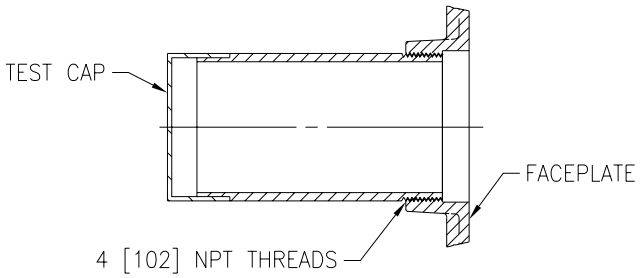
Z Dura-Coated Cast Iron System with “ZZ” Coupling (Z1203 thru Z1209 Series)
Z Dura-Coated Cast Iron System with Plate(s) or Arms
ZE Dura-Coated Cast Iron System with “ZZ” Coupling (ZE1203 Series)
ZEQ Dura-Coated Cast Iron System with NPT Faceplate and Non-Adjustable Coupling (ZE1203 Series)
ZQ Dura-Coated Cast Iron System with NPT Faceplate and Non-Adjustable Coupling

Z- Adjustable coupling with O-ring seal easily adjusted with Zurn coupling wrench.



Z- and ZE- Illustrated

ZQ- Coupling system for cutting off to required length after testing.

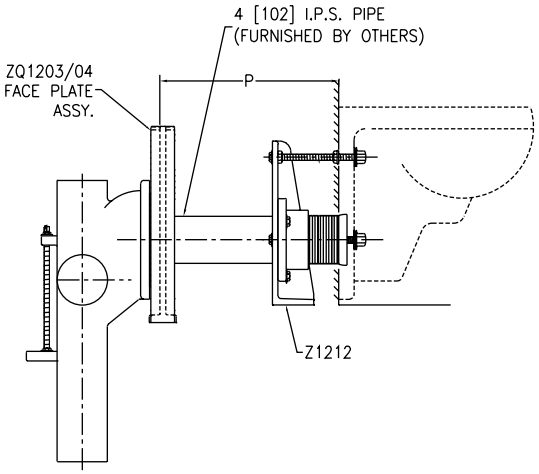


ZQ- and ZEQ- Illustrated

OPTIONS and VARIATIONS

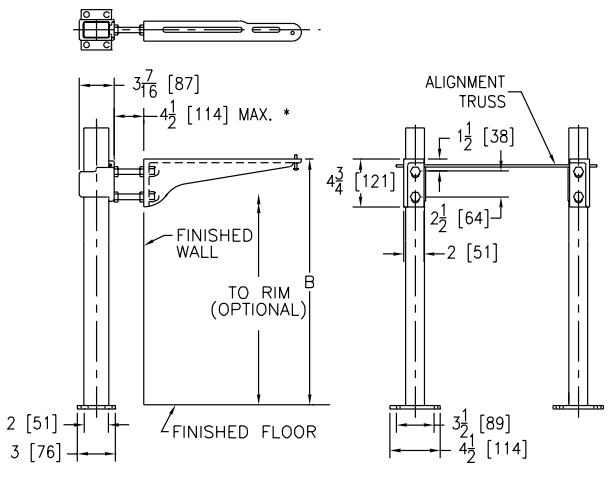
SUFFIXES

–A Auxiliary Support Assembly (For 'P' Dim. Greater than 18")
(For Dimensional Data See Z1212)



Z1204-A Illustrated

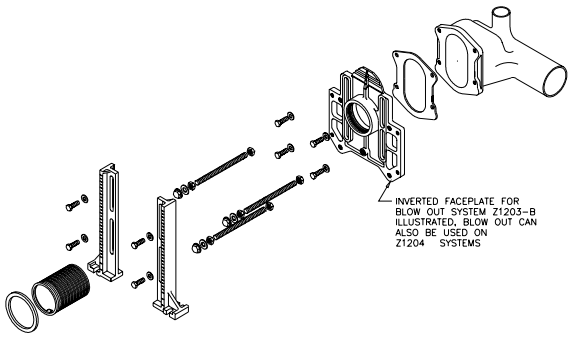
–AL Adapter Lug



Z1236-AL Illustrated

–AV 2" NH Vent Connection (Z1214, Z1215)

–B Blowout Type Fixture Support
(3-Bolt System Chair Carrier)



Z1203-B Illustrated

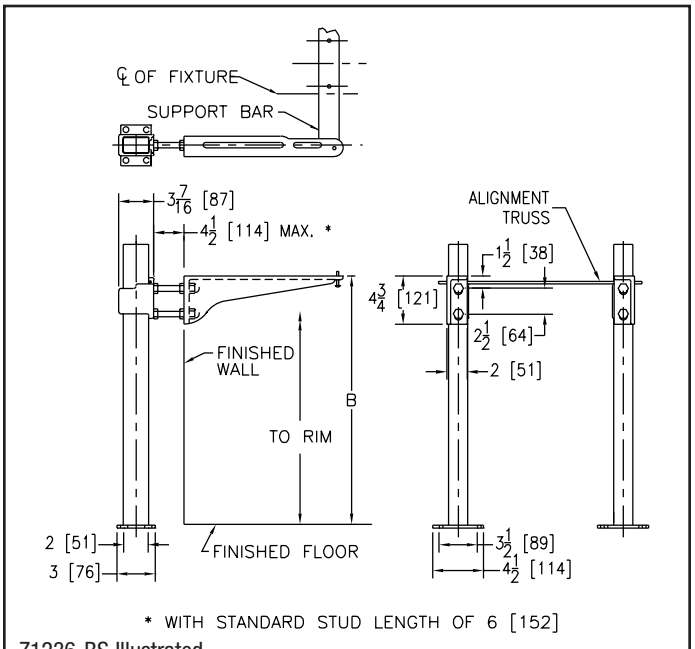
–BC Back Cleanout (Z1203, Z1204)

–BL Bi-Level Cooler Support (See Z1225)

–BP Bottom Back Plate with Bearing Jacks (See Z1259)

–BR Bracket Support (Z1225, Z1280)

–BS Bar Support Valve Plate
(Valve Name and Number must be specified.)



Z1236-BS Illustrated

–CC Corrosion Resistant Cast Iron Coupling (6" to 12")

–CL Coupling Length Greater than 12"
(Specify length required.)

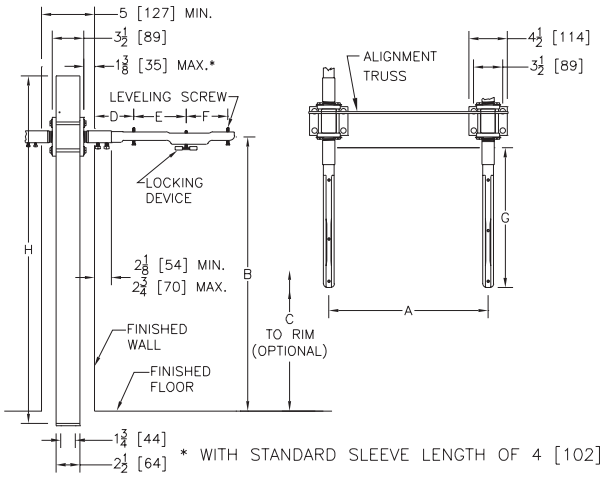
–CU Floor to Ceiling Upright (See Z1231)
(Height must be specified.)

–CV 2" NH Center Vent Connection Available on 90° Fittings
(See Z1215)

OPTIONS and VARIATIONS

SUFFIXES (Continued)

–D Back-to-Back System
(Z1224, Z1225, Z1231, Z1231-EZ, Z1236, Z1259, Z1280)



Z1231-D Illustrated

–DB Back-to-Back Top and Bottom Plates with Bearing Jacks (See Z1259)

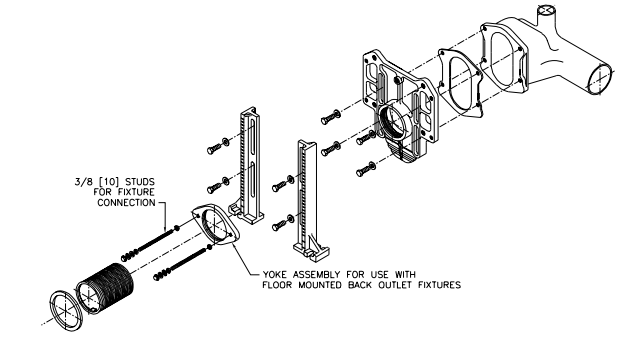
–E2 Concealed Arm Escutcheons 2" Long

–E4 Concealed Arm Escutcheons 4" Long

–E6 Concealed Arm Escutcheons 6" Long

–EZ Time Saver Installation Unit (See Z1231-EZ, Page 11)

–F Floor Mounted Back Outlet Closet Connection (See Z1212)



Z1203-F Illustrated

–F0 Main Fitting Only (Specified for Zurn Systems when faceplate and trim are not required. Z1203 thru Z1209. See appropriate system page.)

–FP Top Front and Back Plate (Z1259)

–F2 Z1208 Fitting with 2" Vent (Z1218)

–F4 Z1208 Fitting with 4" Vent

–G Galvanized Cast Iron

–H Hub and Spigot Stack Connection

–J 45° Auxiliary Inlet

–JC 2" Auxiliary Inlet with Sanitary Sweep on Faceplate Centerline

–JJ Two 2" Auxiliary Inlets (Z1204, Z1208, Z1209)

–JL 2" Left-Hand Auxiliary Inlet (Z1204, Z1208)

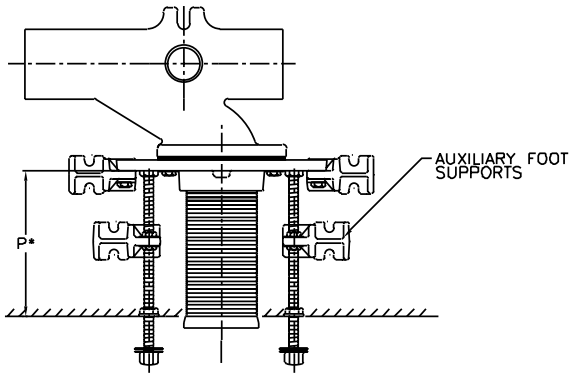
–JR 2" Right-Hand Auxiliary Inlet (Z1204, Z1208, Z1209)
(See Suffix -JJ for Example)

–JS 2" Auxiliary Inlet Stack Side (Z1209)

–JV 2" Auxiliary Inlet Vent Side (Z1209)

–L2 Less Bearing Plate (Z1225)

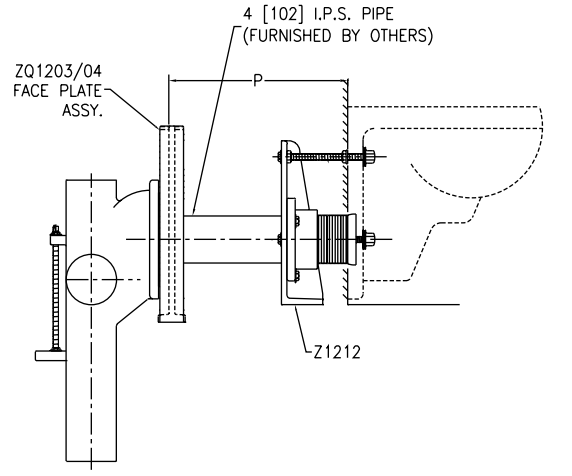
–M Auxiliary Foot Support for 'P' Dim. 10" thru 18"



Z1203-M Illustrated

–P 3" Plastic Fitting Support System

–PA Adjustable Coupling Connection for Penal Fixtures

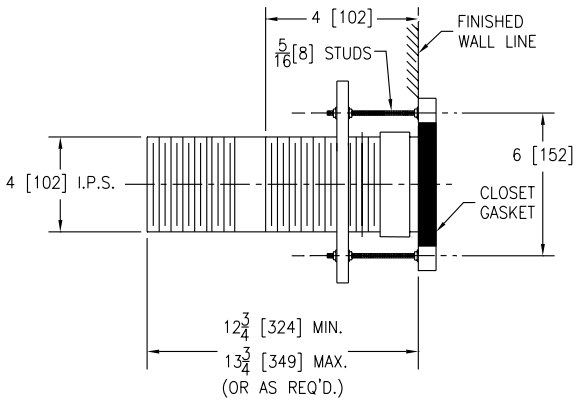


Z1210-PA Illustrated

OPTIONS and VARIATIONS

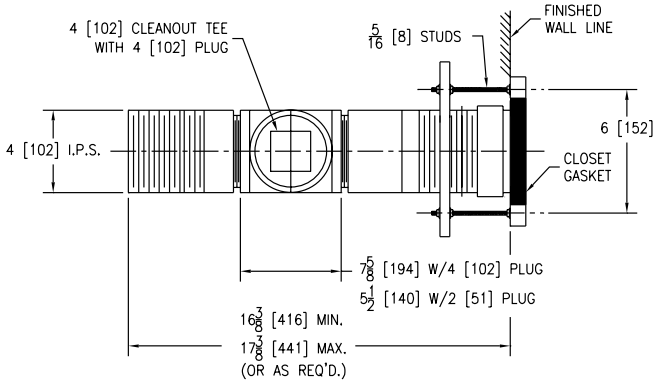
SUFFIXES (Continued)

–PB Coupling Connection for Penal Fixtures



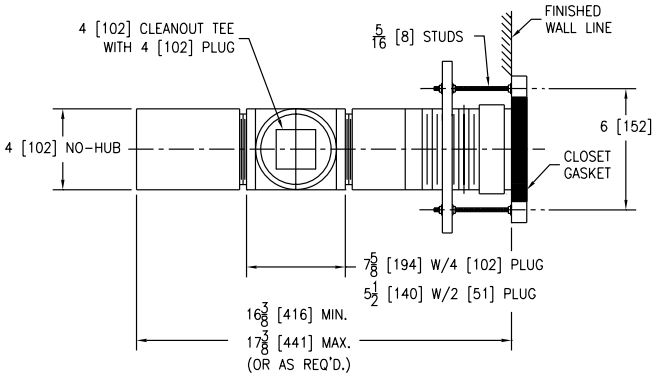
Z1210-PB Illustrated

–PC Coupling Connection with 4" Cleanout for Penal Fixtures



Z1210-PC Illustrated

–PN NH Coupling Connection with 4" Cleanout for Penal Fixtures



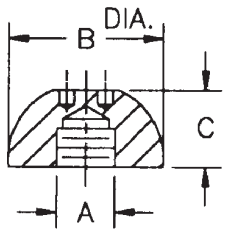
Z1210-PN Illustrated

–SL Stud or Sleeve Length Greater than Standard

–T Threaded Stack Connection

–VL Left-Hand Vent Connection (Z1204)

–VP Vandal-Proof Trim

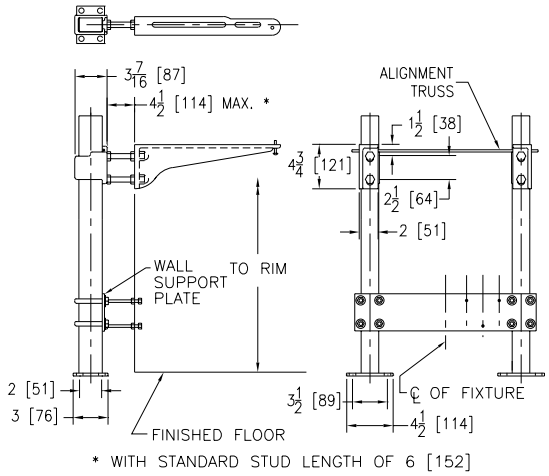


-VP Illustrated

A Thread Size	B	C
1/4-20 N.C.	1	1/2
3/8-16 N.C.		
5/8-11 N.C.	1-1/4	3/4

–W Adapter Assembly for Women's Urinal

–WS Wall Support Valve Plate
(Valve Name and Number must be specified.)



Z1236-WS Illustrated

–W6 6" Wide Support Plate (See Z1251)

–XH Extra-Heavy-Duty 500-Pound Carrier

–X3 3-Foot Extension

–X4 4-Foot Extension

–Y Foot Support System

–1 Longer than Standard Urinal/Sink/Lavatory (Z1223, Z1224, Z1229, Z1236)

–2 Bearing Plate Assembly (Z1223, Z1224, Z1259)

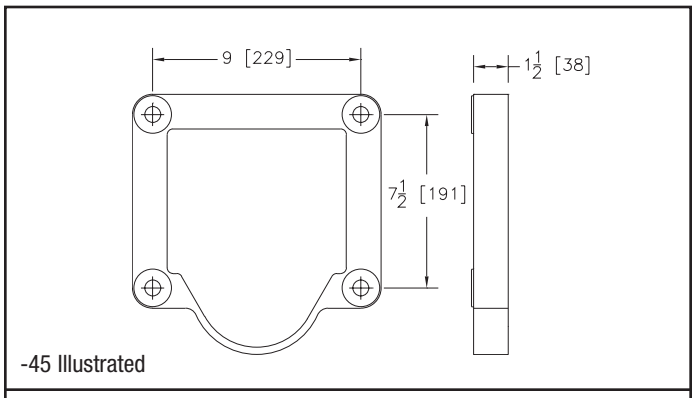
–5 Corner Lavatory Support (Z1224)

–29 Mechanical Test Cap Assembly (For Any Carrier System)

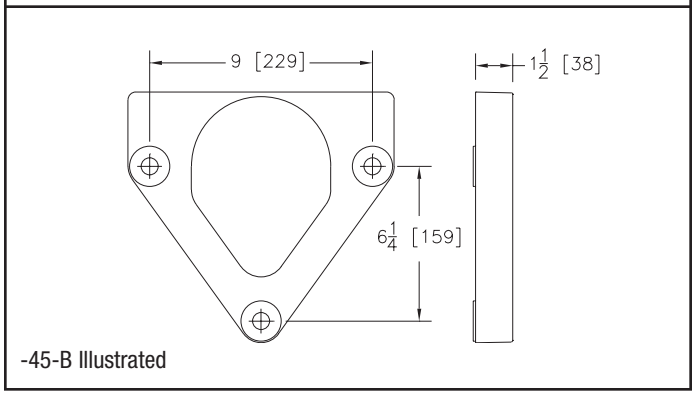
OPTIONS and VARIATIONS

SUFFIXES (Continued)

–45 Finishing Frame for Siphon Jet Closet
(For Blowout System specify -45-B)



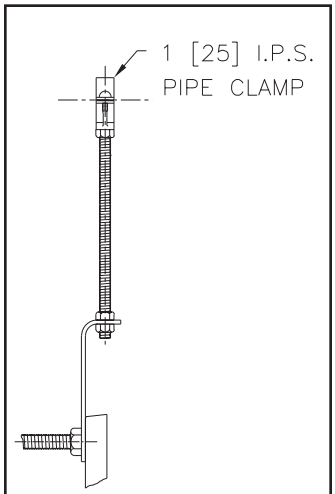
-45 Illustrated



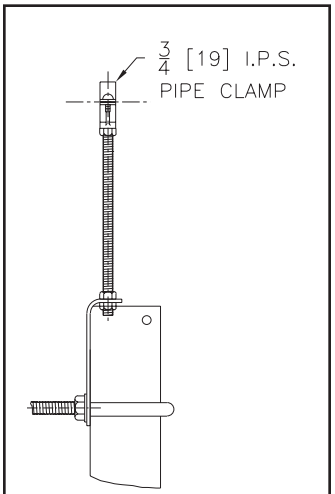
-45-B Illustrated

–50 Flush Valve Supply Support for Water Closets

–58 Flush Valve Supply Support for Urinals



-50 Illustrated



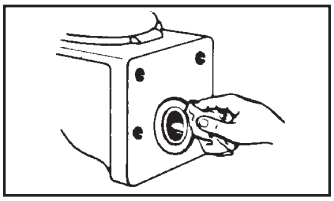
-58 Illustrated

–57 4" "Neo-Seal" Closet Gasket Kit
This positive sealing gasket with a special adhesive formula eliminates leakage often encountered with inferior gaskets. The gasket is made from expanded Closed Cell Dupont Neoprene.

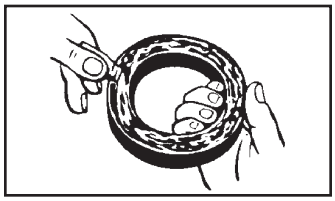
It's a controlled-analysis, specially prepared seal (not a sponge rubber). Retains its resiliency permanently. Resistant to water, petroleum products, chemicals, similar substances, or rotting.

Complete installation instructions are contained in an easily stacked flat cardboard container.

EASY TO INSTALL

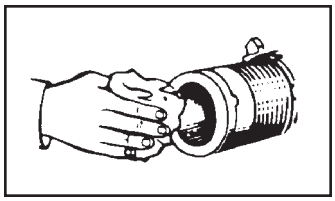


1. Wipe gasket recess in fixture clean with dry cloth. Remove plastic or cardboard liner from gasket.

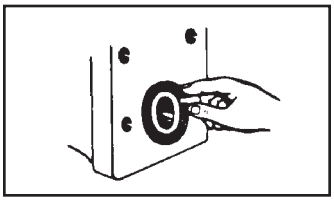


2. Unfold bottom crimp on tube and spread half of adhesive over one side of "Neo-Seal" gasket.

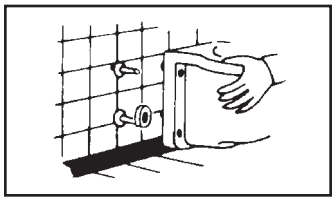
3. Press adhesive-coated side of "Neo-Seal" gasket firmly into gasket recess in fixture being sure it bottoms in groove, and that contact between adhesive and china is maintained.



4. Wipe lip of coupling clean and dry.



5. Spread other half of tube of adhesive over exposed face of "Neo-Seal" gasket.



6. Place closet in position over adjustable coupling without delay. Coupling should extend beyond finished wall far enough to compress "Neo-Seal" gasket.

Clean surfaces are important. Take special precaution to make sure all surfaces are clean and dry. Allow bonded joint to dry for several days before running water through the bowl. Solvent for adhesive is "Toluene" (or "Toluol").

–60 Wrench for Vandal-Proof Screws

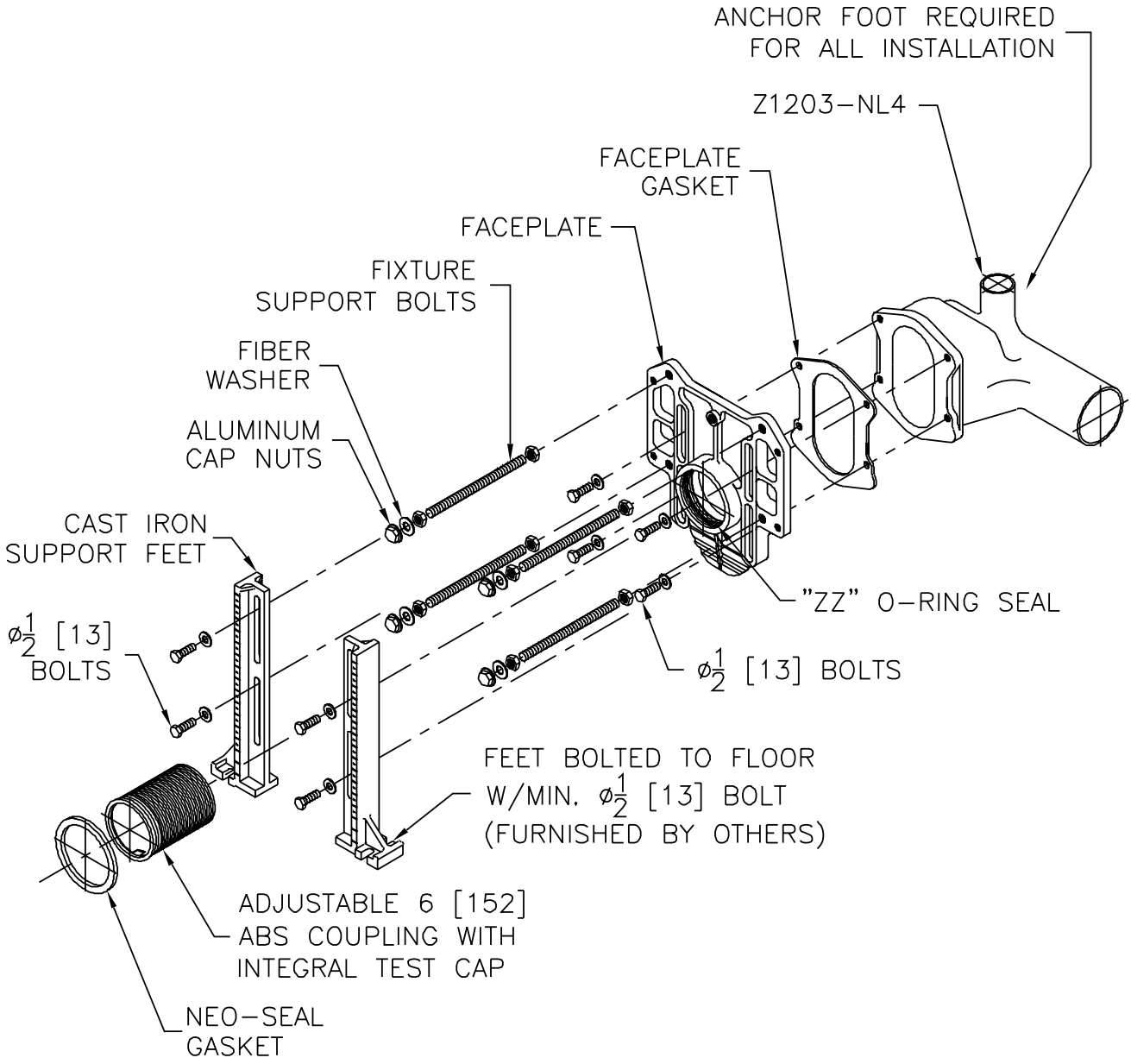
–61 Adjusting Wrench for "ZZ" Coupling

–74 Flush Wall Adjustment Nut/Washer

–79 Paraplegic Rough In (See Page 10 for Illustration)

GENERAL PRODUCT ILLUSTRATIONS

OFF-THE-FLOOR WATER CLOSET SYSTEM
Z1203-NL4



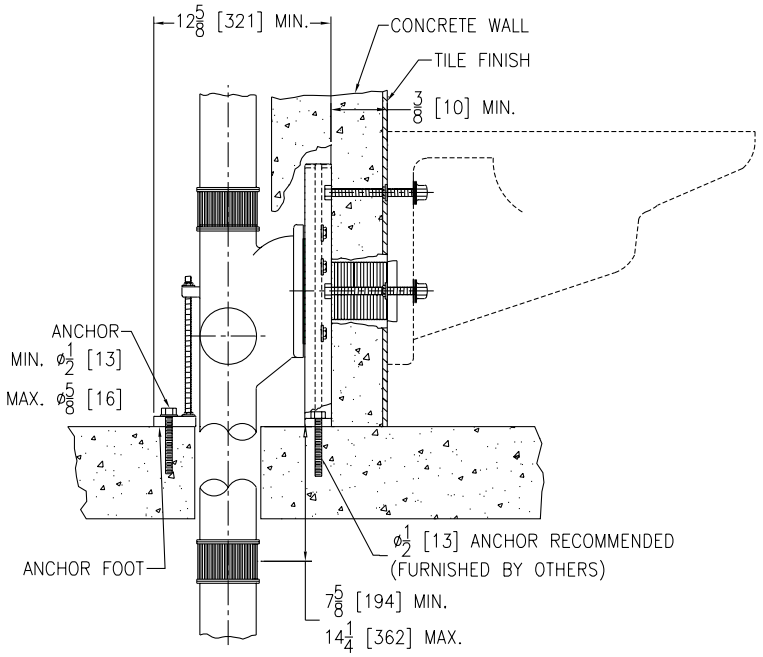
Z1203 – Off-the-Floor Water Closet System Offers:

1. All Dura-Coated cast iron construction with 300 lb. load bearing capability to A.N.S.I. standards.
2. Vertical adjustment of 4-1/2" to 9-1/2" for Siphon-Jet closet installation. System accommodates for both paraplegic and standard rough-in requirements.
3. 14" inches required from finished wall to back of system (Z1203 NL4, NR4).
4. Non-corrosive ABS adjustable coupling with integral test cap and unique 'ZZ' Zurn adjusting thread.

GENERAL PRODUCT ILLUSTRATIONS

Z1204-1N

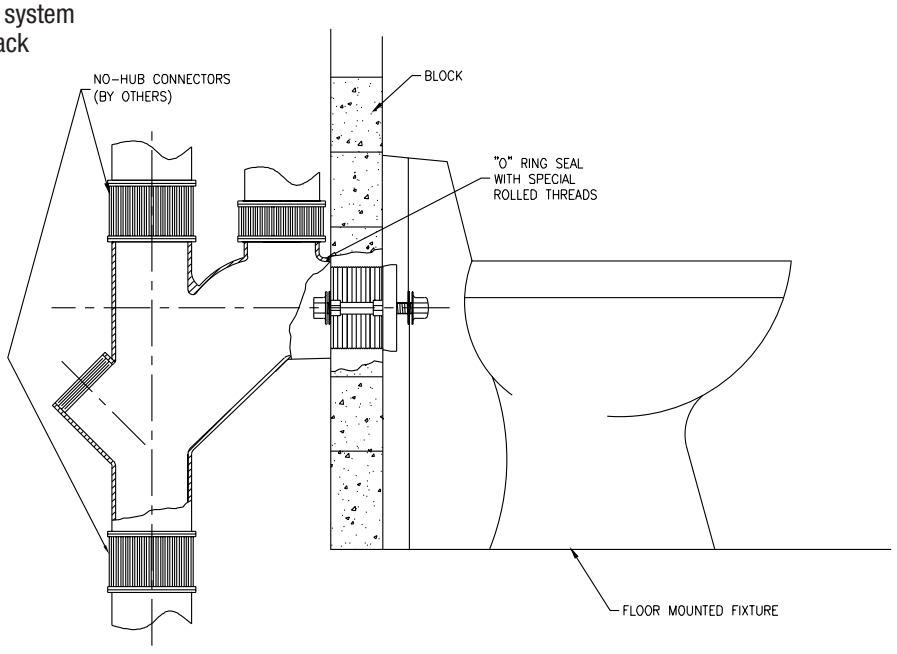
Installed in No-Hub waste systems, the Zurn Rigid System offers minimal deflection at three hundred cantilevered pounds. Through three tie down bolts, the system is rigidly secured and supports the fixture independent of the finished wall.



Floor Anchoring Bolts Furnished by Others

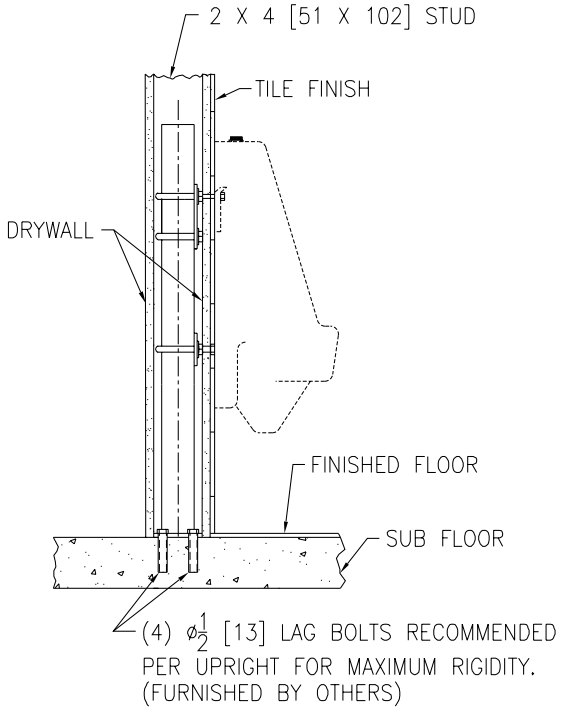
Z1214

Installed in No-Hub waste systems, for use with floor mounted back outlet water closets. The Z1214 system offers adjustable coupling, optional vent and back auxiliary inlet.

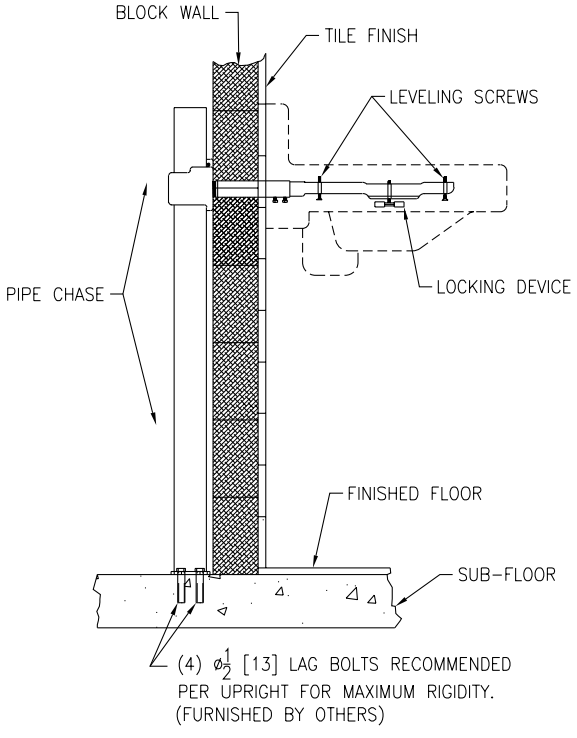


GENERAL PRODUCT ILLUSTRATIONS

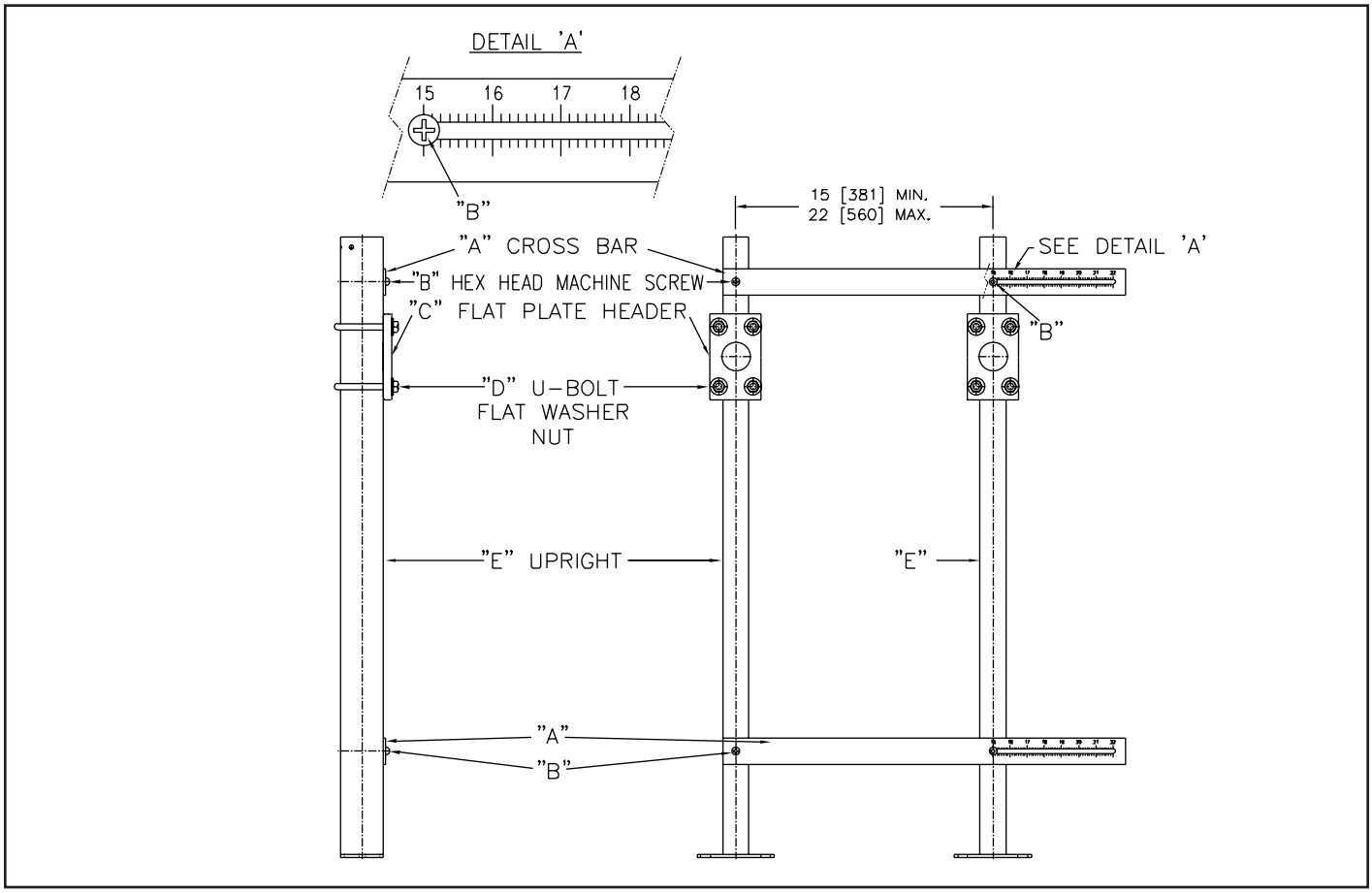
Z1222
Installed in 2 x 4 stud wall, offers fixture support independent of wall. The system is lagged to the floor as shown. Standard hardware furnished for wall thickness (front of plate to finished wall) up to 4-3/4" and minimum space requirements for system are 3-3/8".



Z1231-SL
Installed behind a block wall. The fixture is installed over cast iron arms and leveled by use of four leveling screws. Securing the fixture is accomplished by turning down the locking devices.



Z1231-EZ ADJUSTMENT INSTRUCTIONS Factory Assembly



STEP 1
Refer to installation instructions in the box/bag containing the arms and sleeves to determine the appropriate dimensions for the fixture.

STEP 2
Measure from the bottom of the upright ("E") to the center of the large tapped (1-1/4" - 11-1/2" NPT) hole in the flat plate header ("C") to the set height dimension for centerline of sleeves. Tighten the nuts and U-bolts ("D") to secure flat plate headers ("C") to each upright ("E").

STEP 3
Slightly loosen the two hex head machine screws ("B") which are in the right-hand side upright at the stamped-in ruler and slot on cross bars ("A"). Make sure the bottom of the uprights ("E") are sitting on a flat surface if standing up or against an even surface if laying down, to make sure the bottoms are even. Using the stamped-in ruler on the cross bars ("A"), slide the right-hand upright ("E") to the desired location until the center of the top and bottom hex head machine screws ("B") are at the proper stamped-in ruler mark (i.e. 17-1/2, 18-1/4, etc.) for the center-to-center spacing between the uprights ("E") which will then give the sleeves and arms their correct center-to-center spacing dimensions. Tighten the two hex head machine screws ("B").

STEP 4
Recheck tightness of all U-bolts and nuts ("D") and hex head machine screws ("B").

STEP 5
Mount uprights ("E") to concrete floor using 1/2 lags (furnished by others).

CLOSET CARRIER ILLUSTRATIONS

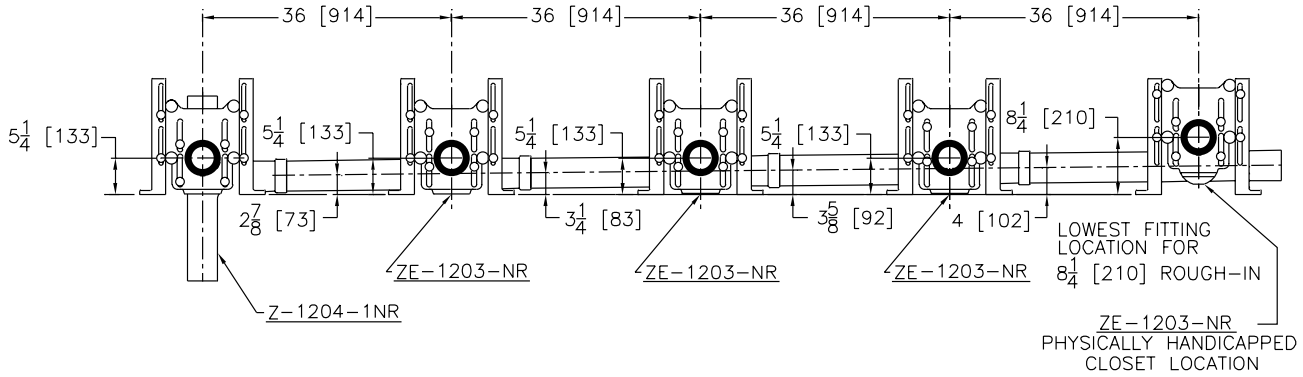
High Rough-In Requirements for Physically Handicapped Water Closet Bowls

Illustrations shown below are based on meeting ANSI Standard A-112.19.2, Vitreous China Plumbing Fixtures, Para. 5.1.3.3 stating "Physically Handicapped" water closet bowl is a siphon jet water closet bowl measuring 18 inches from the floor to the top of the rim.

The dimensional drawings shown are based on using 1/8" pitch and 5-1/4" centerline of closet outlet to finished floor; 15" to rim for standard bowl height with 8-1/4" and 18" respectively for physically handicapped bowl.

Physically handicapped water closet bowls may also be incorporated on the vertical Z1204 System by locating the faceplate in the highest position on the fitting.

Adjustable Zurn 1203 Systems



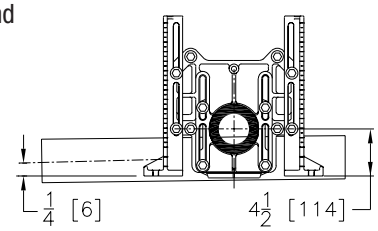
For installation of fixtures, up to a ten fixture maximum, either side of stack fitting:

- 5-1/4" Centerline of Closet Outlet
- 8-1/4" Centerline of Handicapped Closet Outlet
- 1/8" Pitch Per Foot

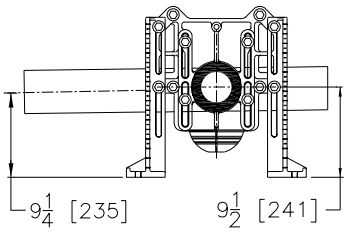
The handicapped fixture can be installed on any of the last three fixtures at the far right end of a battery.

Maximum Adjustment of Zurn Z1203 and Z1204 Systems

Lowest Fixture Outlet and Drain Line Position



Highest Fixture Outlet and Drain Line Position

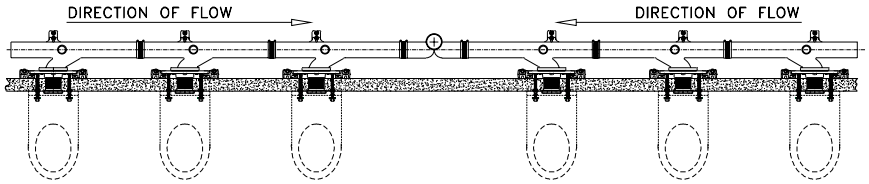


C/L Fixture Outlet Height From Floor	Centerline Drain Line Position From Floor	
	Min.	Max.
Dimensions In Inches		
4-1/2	4-1/4	1/4
4-3/4	4-1/2	1/2
5	4-3/4	3/4
5-1/2	5-1/4	1-1/4
6	5-3/4	1-3/4
6-1/2	6-1/4	2-1/4
7	6-3/4	2-3/4
7-1/2	7-1/4	3-1/4
8	7-3/4	3-3/4
8-1/4	8	4
8-1/2	8-1/4	4-1/4
8-3/4	8-1/2	4-1/2
9	8-3/4	4-3/4
9-1/2	9-1/4	5-1/4

For any given rough-in height, the fitting can be adjusted up and down (a maximum of 4") to accommodate drainage pitch on long runs. When back-to-back and handicapped rough-ins are used, note that there are further limitations to the number of fittings in a given run.

TECHNICAL DATA

Determination of Right- and Left-Hand Systems



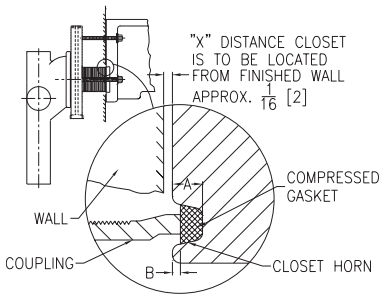
Left-Hand Zurn System

Right-Hand Zurn System

Stand facing the fixture.
If flow is from the right, Zurn System is right-hand. If flow is from the left, Zurn System is left-hand.

Determination of Coupling and Fixture Distances From Front of Wall

To ensure a tight seal at outlet of closet having a rectangular groove, the front end of the coupling should be located to compress the gasket adequately when the fixture is in the desired location. This dimension will vary depending on depth of recess (Dim. A) in closet. The following formula may be used to determine amount coupling should extend (Dim. B) in front of finished wall.



Inset illustrates depth of gasket recess in fixture and coupling with normal pressure on gasket.

Let A = depth of recess in closet
X = distance closet is to be located from finished wall
B = distance coupling should extend in front of finished wall
Thus, A + X -1/2" = B

With fixtures having vee shaped grooves, coupling may have to extend an additional 1/8" or more. With any closet, the coupling must compress the gasket enough so the adhesive coated surfaces are in good contact with the china and the face of the coupling.

IMPORTANT: Bearing nuts and washers must be located properly to establish and maintain dimension "X."

Distance Fixture Bolts Located in Front of Wall

To locate fixture bolts:
Let T = thickness of wall flange of closet
X = distance closet is to be located from finished wall
B = distance fixture studs should extend in front of finished wall
Thus, T + X + 5/8" = B

The "Minimum 'P' Dimension" is the minimum dimension from front of faceplate to finished wall:

Z1203 thru Z1204	Z1208 thru Z1209
1-3/4"	1"

The "Standard 'P' Dimension," which is regularly supplied unless otherwise specified, provides for the following dimensions from the front of the faceplate to finished wall:

Z1203 thru Z1204		Z1208 thru Z1209	
Min.	Max.	Min.	Max.
5"	6"	4"	5-1/8"

Longer 'P' dimensions (or shorter) with couplings up to and including 12" are furnished at no extra charge. An additional charge will be made for greater 'P' dimensions. (See Suffix -CL.)

Allowance for Concealed Flush Valves

When wall closets are installed with concealed flush valves having rear inlet supply, location of faceplate is important – for Siphon Jet bowls it is not necessary to locate faceplate behind supply line, since supply line will clear top of faceplate and vent line. For Blow Out installations, however, faceplate must be located behind supply line to prevent interference of faceplate with supply line.

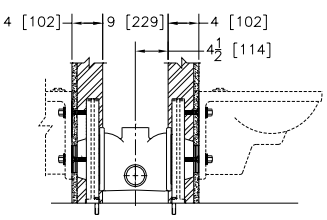
Dimensions below based on B = 3/8".

Z1203 thru Z1204				Z1208 thru ZE1209			
'P' Dimension*		Coupling Length	Stud Length	'P' Dimension*		Coupling Length	Stud Length
Min.	Max.			Min.	Max.		
1-3/4	2-3/4	2-3/4	6	1	1-7/8	2-3/4	6
2-1/2	3-1/2	3-1/2	8	1-1/2	2-5/8	3-1/2	8
3	4	4	8	2	3-1/8	4	8
4	5	5	8	3	4-1/8	5	8
5	6	6	9	4	5-1/8	6	9
6	7	7	10	5	6-1/8	7	9
7	8	8	11-1/4	6	7-1/8	8	11-1/4
7-1/2	8-1/2	8-1/2	11-1/4	6-1/2	7-5/8	8-1/2	11-1/4
8-1/4	9-1/4	9-1/4	12-3/4	7-1/4	8-3/8	9-1/4	12-3/4
9	10	10	12-3/4	8	9-1/8	10	12-3/4
10	11	11	15-3/4	9	10-1/8	11	15-3/4
11	12	12	15-3/4	10	11-1/8	12	15-3/4

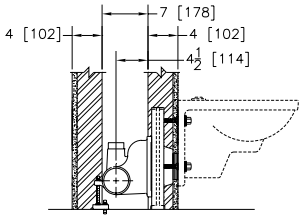
*'P' Dimension is from the front of the faceplate to finished wall.

INSTALLATIONS

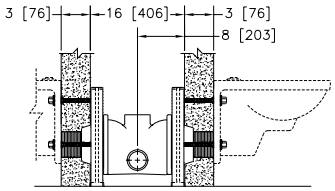
Horizontal Adjustable Carriers



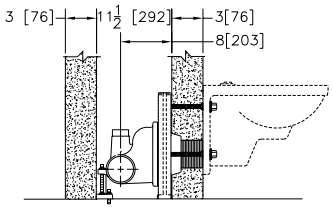
Z1203–ND4 DOUBLE IN METAL STUD WALL



Z1203–N4 SINGLE IN METAL STUD WALL

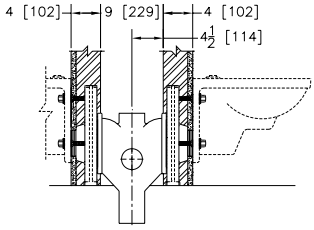


Z1203–ND4 DOUBLE IN BLOCK WALL

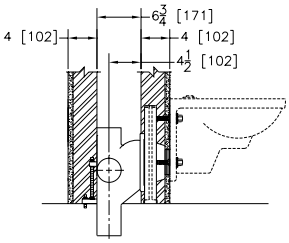


Z1203–N4 SINGLE IN BLOCK WALL

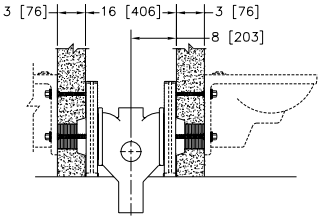
Vertical Adjustable Carriers



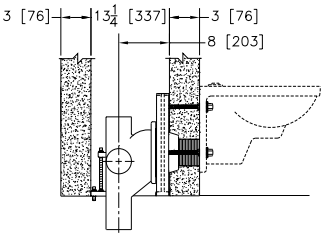
Z1204–ND4 DOUBLE IN METAL STUD WALL



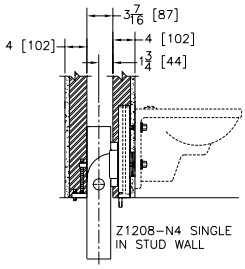
Z1204–N4 SINGLE IN METAL STUD WALL



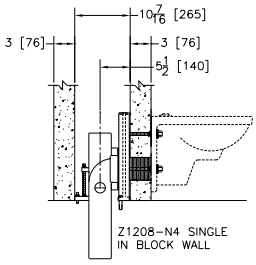
Z1204–ND4 DOUBLE IN BLOCK WALL



Z1204–N4 SINGLE IN BLOCK WALL



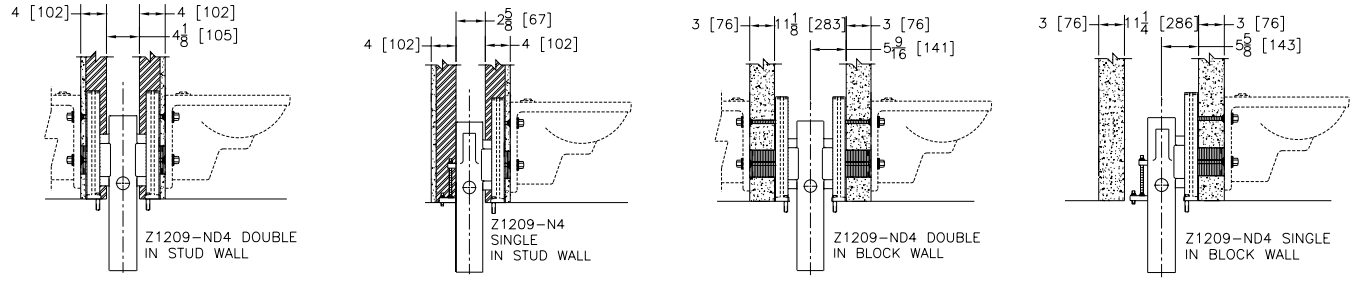
Z1208–N4 SINGLE IN STUD WALL



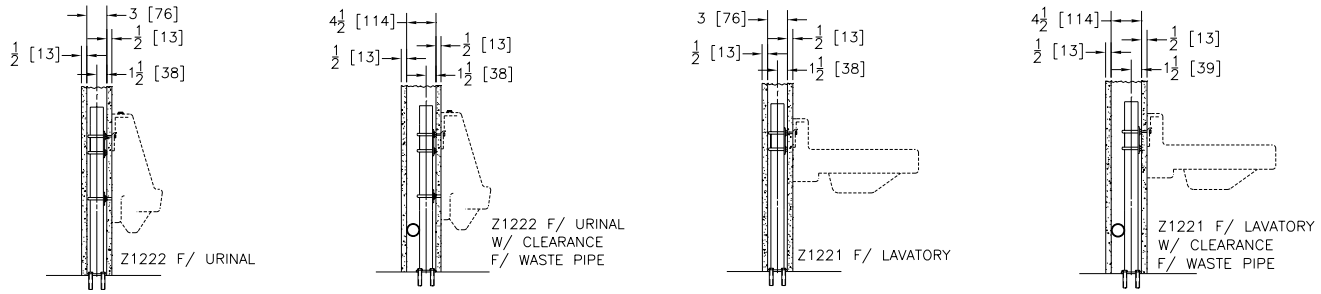
Z1208–N4 SINGLE IN BLOCK WALL

INSTALLATIONS

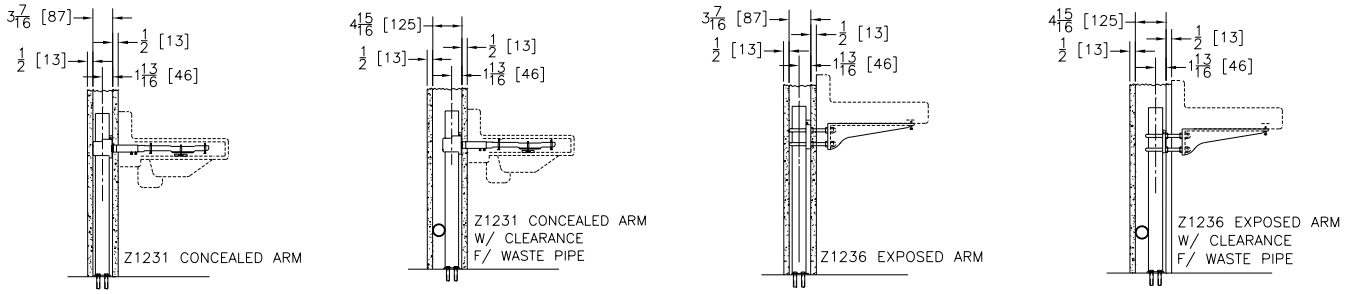
Vertical Fixed Carriers



Hanger Plate Carriers



Arm Lavatory Carriers



MATERIALS and FINISHES

Zurn Cast Iron conforms to ASTM Specification for Gray Iron Castings A 48-83, Class 25. It is produced utilizing the latest equipment and newest developed foundry techniques. Zurn cast iron castings are characterized by a high degree of strength, corrosion-resistance, workmanship, and finish.

Zurn Duresist is a ductile iron complying with ASTM Specification A 536-84, Grade 60-45-10. Its physical properties make it ideal for grates and drain components that are subjected to severe and heavy duty service. Its chemical characteristics make possible a degree of corrosion-resistance far superior to that of cast iron. Zurn Duresist exhibits remarkable stress qualities, possessing a yield strength in the same range as that of cast carbon steel, while its ability to absorb the shock loading of traffic areas is unequalled, making its use ideal for all areas where extra heavy duty service is a requirement – whether indoors or outdoors – in chemical and metal processing plants or other industrial applications.

"Zurn Dura Coat" is a specially formulated paint designed to resist cracking and chipping. Dura Coat is a latex based coating developed to be used with cast iron substrate.

Zurn Galvanized Cast Iron is a process of applying heavy zinc coating to a thoroughly cleaned iron casting. This coating contains 95% zinc. Zurn galvanizing can be supplied on all cast iron parts. It increases longevity and is recommended wherever the discoloration caused by oxidation of cast iron is objectionable. Galvanize should be used in coastal and industrial areas where corrosive atmosphere may be encountered. Zurn galvanizing meets and exceeds Federal Specification MIL-P-21035, MIL-P-26915A, MIL-P-26433, and MIL-C-10578 (Type II). It also meets ASTM A239-89 and is listed by Underwriters Laboratories, Inc. (U.L.)

Cadmium Plated Cast Iron is a process of applying a heavy cadmium coating to a thoroughly cleaned iron casting. This coating contains 95% cadmium in a cold applied process. Cadmium plating can be supplied on all cast iron parts. It increases longevity and is recommended wherever the discoloration caused by oxidation of cast iron is objectionable.

Properties of Basic Ductile Versus Cast Iron

Metal	Cast Iron	Ductile Iron
Specification	Class 25	60-45-10
Tensile Strength (PSI)	25/30,000	60/80,000
Yield Strength (PSI)	NIL	45/60,000
Elongation	NIL	10% to 25%
Modules of Elasticity	16 x 10	24 x 10

Zurn Bronze is a semi-red brass conforming to ASTM Specification for Copper Alloy Sand Casting B 584-90, Copper Alloy No. 844. The exposed surface is normally supplied possessing a satin sheen texture which allows it to blend unobtrusively with surrounding finishes. When the application requires, Zurn Bronze can be polished to a high gloss.

Zurn Nickel Bronze is a unique material that is ideally suited to traffic-bearing grates and strainers in finished floor areas. It affords the combined advantage of greater strength, better appearance, and longer service life at the same price as chrome plated brass. Superior ductility and shock resistance are the result of a copper nickel alloy (Copper Alloy 997) having a wearing surface similar in appearance to satin chrome plate; however, because it does not have a plated surface it cannot chip, peel, crack, or wear off. It is highly resistant to corrosion; however, the process of oxidation will naturally occur over time with most metals. Methods have been developed to prevent, preserve, and restore metals affected by oxidation.

Chrome Plated Bronze is ideal for installation in walls, gutters, and other areas where a bright decorative finish is desired, and is not subject to the abrasive action of foot and other traffic. It is not recommended for installations where the abrasion will eventually wear through and cause peeling. It should always be specified for swimming pool fittings due to its high resistance to the halogens (chlorine, etc.), encountered in swimming pool sanitation.

Aluminum supplied is casting grade 319. This is an alloy containing both silicon and copper. It is a solid cast metal in a pleasing light gray color. The light weight, coupled with its exceptional strength and corrosion resistance, makes it ideal for drain components such as sediment buckets and strainers. When used with acid-resisting porcelain enamel coated drains, the possibility of chipping is minimized.

Zurn Stainless Steel castings are normally produced in Type CF8 (304) which is an 18-8 Austenitic Stainless possessing excellent corrosion resistant qualities. For some applications where conditions demand, Type CF8M (316) stainless steel can be supplied. Items formed from stainless steel sheet and other stainless steel products are regularly furnished in Type 304 with 316 as an optional material.

A.R.C. Acid Resisting Epoxy Coating is a baked-on powder coating, which produces a smooth, hard, high gloss finish. This epoxy based coating offers high impact resistance and excellent life expectancy in all drainage applications. Zurn A.R.C. coating conforms to the requirements of F.D.A. (Food and Drug Administration) Regulation 21-CFR5 117.1360.

A.R.E. Acid Resisting Porcelain Enamel is a substantially vitreous or glassy inorganic coating bonded to metal by fusion at a high temperature above 800°F. This coating offers excellent acid, abrasion, and wear resistance. The coating is extremely hard and is the ultimate for sanitation in drainage applications. Zurn A.R.E. coating conforms to the requirements of F.D.A. (Food and Drug Administration) Regulation 21-CFR5 117.1360.