



Specification Drainage Engineering Guide



Cleanouts

PRODUCT COMPLIANCE

Zurn Cleanouts are constructed of high quality materials, and in general are designed to meet the requirements of ANSI Specification A112.36.2M. For an explanation of materials used, see Page 9.

TOP LOADING – CLASSIFICATION*

Selection of a Zurn floor cleanout should be based on the load factor and the anticipated traffic. Zurn cleanouts are rated as follows (Reference ANSI Standard A112.36.2M):

6.1 Loading Classifications

Covers and top rims are to be designed to meet the following loading classifications.

6.1.1 – Light Duty. All covers having safe live load (as calculated in para. 6.2.5) under 2000 lb. (900 kg).

6.1.2 – Medium Duty. All covers having safe live load (as calculated in para. 6.2.5) between 2000 lb. (900 kg) and 4999 lb. (2250 kg).

6.1.3 – Heavy Duty. All covers having safe live load (as calculated in para. 6.2.5) between 5000 lb. (2250 kg) and 7499 lb. (3375 kg).

6.1.4 – Extra Heavy Duty. All covers having safe live load (as calculated in para. 6.2.5) between 7500 lb. (3375 kg) and 10,000 lb. (4500 kg).

6.1.5 – Special Duty. Covers having safe live load (as calculated in para. 6.2.5) over 10,000 lb. (4500 kg) should be considered special and treated accordingly.

6.2 Test Procedures for Cover Loading

Live Load – Requirements listed in 6.1 through 6.1.5 shall be determined as follows:

6.2.1 – Load Classifications. Load classifications as stated in 6.1 are to be determined by laboratory tests.

6.2.2 – Platen Size. A 3.5 in. (89 mm) diameter platen shall be applied to the center of the cover specimen.

6.2.3 – Loading. Loading is to be applied slowly so that point of failure can be observed.

6.2.4 Point of Failure

(a) Brittle Materials (Cast Iron). The load (in pounds or kilograms) at which the first fracture on any part of the specimen appears.

(b) Ductile Material. The load which the permanent set (at the point of loading) is greater than 2% of the longest transverse dimension of the specimen.

6.2.5 – Cover Classification. The maximum safe live load is computed by dividing the load at failure by two.

*Safe live load rating of covers is for general classification purposes only. For the actual safe live load of any given cover, contact your Zurn representative.

Many of Zurn’s cast iron covers may be furnished in duresist iron when increased working load requirements are necessary. Specify duresist cover (-DG) when required or contact your Zurn representative when special applications are necessary.

For a description of Duresist Iron, see Page 11.

Z1400 SERIES TOP LOADING CLASSIFICATION

Top loading classification for all Zurn cleanouts is based on adequate support from the concrete pour. To ensure maximum loading classification, the top of all adjustable cleanouts must be rigidly supported at installation.

CLEANOUT RATING

Extra Heavy Duty	Light Duty
Z1400	ZN and ZB1400
ZN and ZB1400-HD	ZN and ZB1400-T
Z1402	ZN and ZB1402
ZN and ZB1402-HD	ZN and ZB1406
Z1404	Z1444
Z1406	Z1454
Z1474	Z1455
	Z1456
	Z1457

APPLICATION INDEX

Product selection should be made with a specific application and the type of construction in mind. The varied types and sizes of Zurn cleanouts along with their options, offer a selection for all applications.

APPLICATION	TYPE	RECOMMENDED CLEANOUT
Finished Floor Areas	“Level-Trol” Adjustable	ZN1400, ZN1454
	Non-Adjustable	ZN1402, ZN1455
	Linoleum, Tile or Composition Floors (Adjustable)	ZN1400-TX (Square), ZN1400-X (Round)
	Linoleum, Tile or Composition Floors (Non-Adjustable)	ZN1402-TX (Square), ZN1402-X (Round)
	Terrazzo Floors	ZN1400-Z
Heavy Traffic and Industrial Areas	“Level-Trol” Adjustable	Z1400-HD (Round or Square)
	Non-Adjustable	Z1402-HD, Z1474
Medium Traffic and Areaways	Adjustable (Finished Area) Non-Adjustable	Z1454, Z1404, Z1455
Exposed Drainage Lines	Horizontal and Vertical Cleanouts	Z1440, Z1445
Concealed Drainage Lines	Horizontal Cleanouts with Access Covers	Z1441, Z1443, Z1444, Z1446 Z1447, Z1448
Finished Wall Areas	Round Access Cover	ZN1441, ZN1444, ZN1446
	Square Access Cover	ZN1443, ZN1447, ZN1448
Access Covers and Boxes	Deck Areas	Z1456, Z1457, Z1463
	Square Covers	Z1460, Z1461, Z1462
	Round Covers	Z1463, Z1469, Z1475
	Access Boxes	Z1464, Z1467
Air Inlets	Finished Areas	Z1471, Z1472, Z1473
General Purpose	Cleanout	Z1440, Z1445, Z1449
	Cleanout Plug	Z1470

GENERAL PRODUCT INFORMATION

**“Level-Trol” Cleanout
Z1400**

Cleanout head completely adjustable to all types and all stages of construction. Positive adjustment is attained by engagement of threaded component parts easily accessible from the top.

Clamping collar, optional.
(Specify Suffix "C")

Membrane flashing flange, optional.

Full range of top styles and finishes to suit any and all types of floor coverings, including terrazzo.

Tapered, threaded plug has ample slot size and depth to provide firm grip for turning, making a gas-tight and water-tight seal.

Neo-Loc neoprene gasket connection (also available with no-hub, spigot or inside caulk connections).



ZN1400HD



ZN1400

OPTIONS and VARIATIONS

All cleanout options and variations are specified as a PREFIX and/or SUFFIX letter or number added to the series designation. Below are the available options.

PREFIXES

- Z** D.C.C.I. Body and Top
- ZB** D.C.C.I. Body with Polished Bronze Scoriated Top
- ZN** D.C.C.I. Body with Polished Nickel Bronze Scoriated Top
- ZS** Type 304 Stainless Steel
- ZAB** Bronze Body with Polished Bronze Top
- ZANB** Nickel Bronze Body with Polished Nickel Bronze Top

SUFFIXES

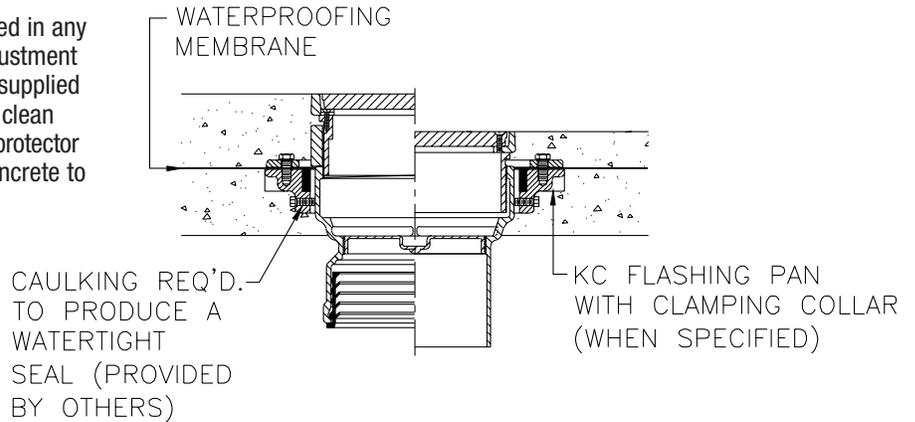
- A** Raised Head Cleanout Plug
- AR** Acid Resisting Epoxy Coated Finish
- BP** Bronze Plug
- C** Clamp Collar
- CF** Carpet Flange Cover
- CH** Cleanout Access Housing
- CM** Carpet Marker
- CP** Chrome Plated
- DC** Duresist Cover
- DX** Round ZB or ZN Top with Dex-O-Tex Flange
- G** Galvanized Cast Iron
- HC** Hinged Cover
- HD** Heavy-Duty Top
- HH** Handle Hole
- IN** Internal Cleanout
- K** Anchor Flange
- KC** Anchor Flange with Clamp Collar
- LM** Less Internal Mixing Valve Assembly
- PW** Plug Wrench
- SC** Scoriated Cover
- SG** Solid Gasketed Cover
- SL** Screws Longer than 3-1/2"
- SM** Special Marking Stamped on Top
- ST** Smooth Top
- SW** Spanner Wrench
- T** Square Top
- TX** Square Top Recessed for Tile (ZB or ZN only)
- VP** Vandal-Proof Secured Top
- X** Round Top Recessed for Tile (ZB or ZN only)
- Z** Round Top Recessed for Terrazzo



TYPICAL INSTALLATIONS

Z1400-KC

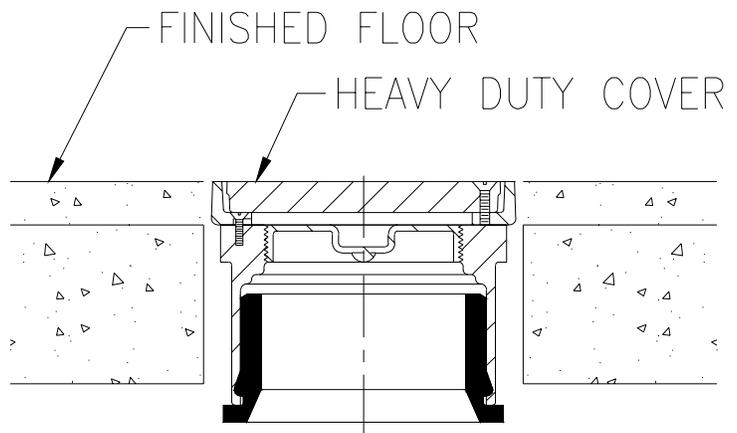
Heavy-duty cast iron cleanout is easily installed in any type floor. The cleanout head allows 2" of adjustment to meet finished floor conditions. Cleanout is supplied with a foam thread protector to keep threads clean prior to and during final concrete pour. Thread protector must then be removed and void filled with concrete to ensure working load rating.



Z1402

- Neo-Loc Push on Cleanout
- Non-Adjustable
- Uses same Top and Options as Z1400 Series

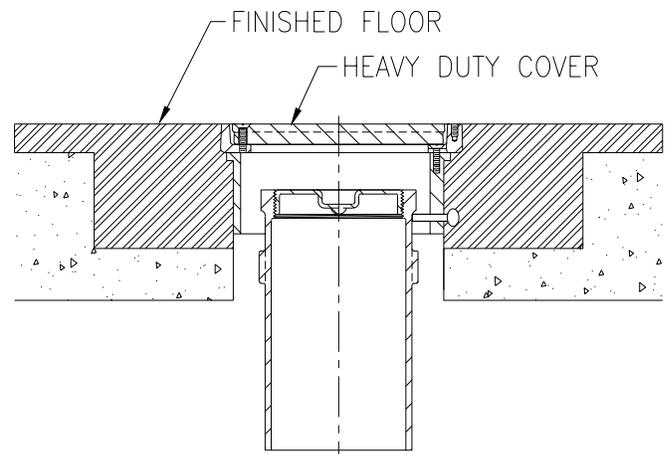
Heavy-duty push-on cleanout is used in applications where an adjustable top is not required. Cleanout is supplied with tapered threaded plug and scoriated cover.



Z1406

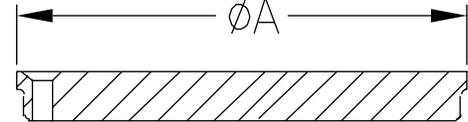
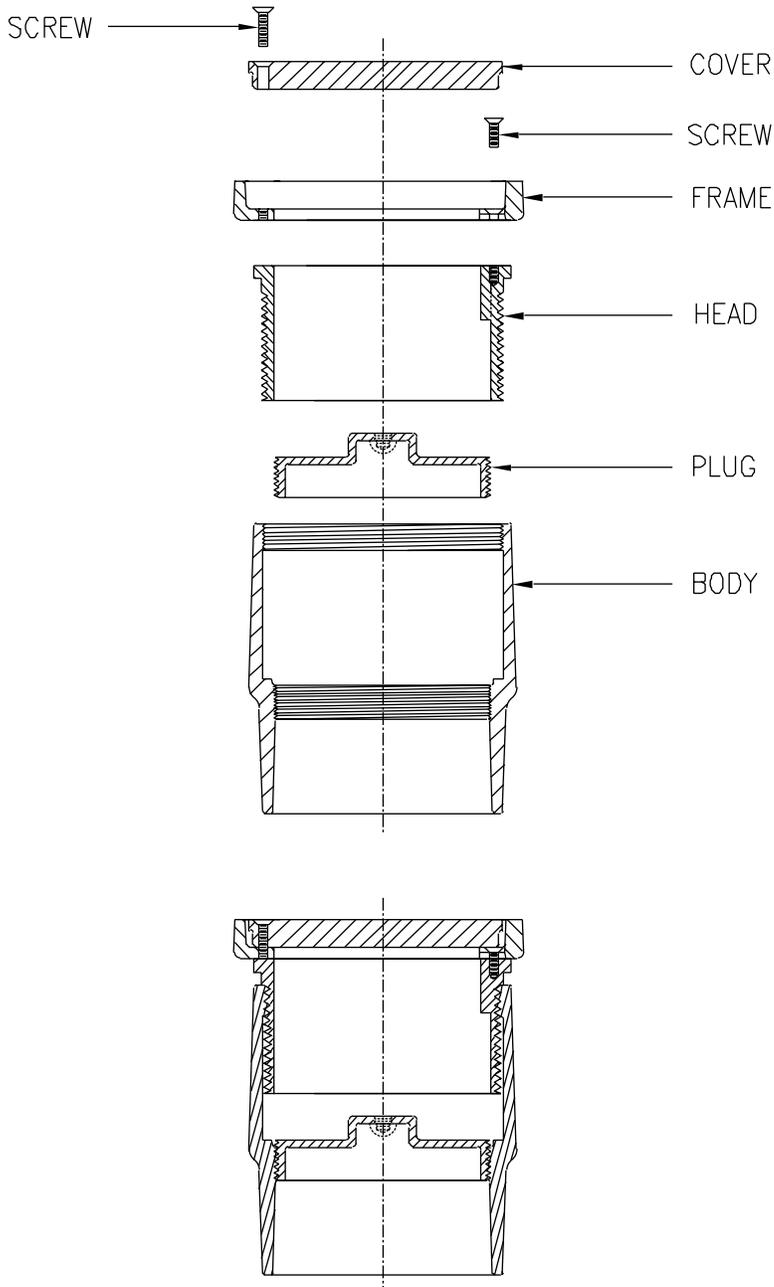
Spigot Cleanout

Heavy-duty adjustable cleanout for spigot applications. Cleanout head is furnished with 3 setscrews for adjusting the head up to 1-1/8" vertically. When installing, concrete should not be allowed between the head and the body.

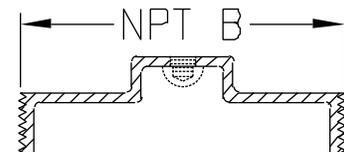


Z1400 "LEVEL TROL" FLOOR CLEANOUT Exploded Parts List and Replacement Parts

Dimensional Data (inches and [mm]) are subject to manufacturing tolerances and change without notice.



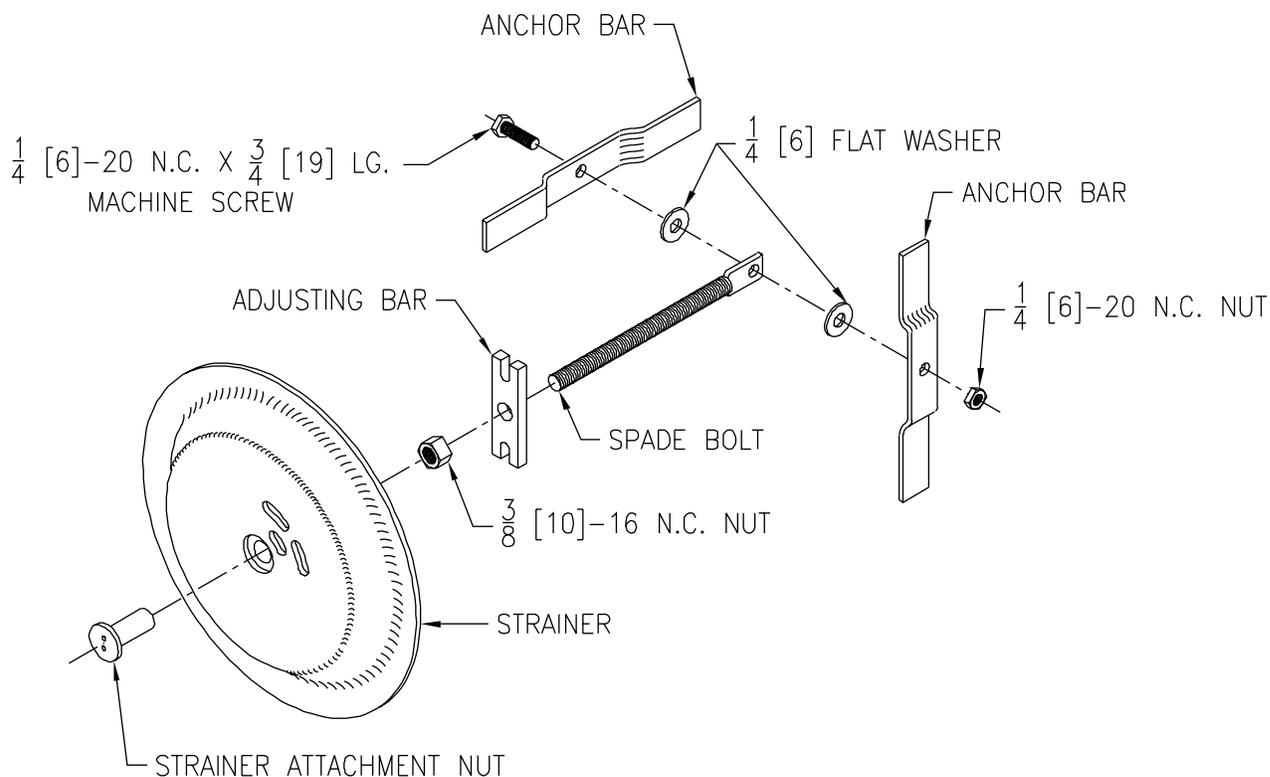
ØA	P.N.
3-1/2	22126-007
4-1/2	22126-008
5-1/2	22126-009
6-1/2	22126-001
7-1/2	22126-003
8-1/2	22126-006



ØB	P.N.
2" NPT	07073-003
3" NPT	07934-017
4" NPT	07934-018
5" NPT	07934-019
6" NPT	08384-003
8" NPT	07934-009

Z1471 PIPE CLAMP HARDWARE Assembly Instructions

Dimensional Data (inches and [mm]) are subject to manufacturing tolerances and change without notice.



Z1471 PIPE CLAMP HARDWARE

1. Assemble the two anchor bars (with formed offsets toward spade bolt) to spade bolt using:

- (1) 1/4" [6]-20 NC x 3/4" [19] Long Machine Screw
- (1) 1/4" [6]-20 NC Nut
- (2) 1/4" [6] Flat Washers

Place a 1/4" [6] flat washer on each side of spade bolt, then place an anchor bar on each side of the 1/4" [6] flat washer (a 1/4" [6] flat washer goes between the spade bolt and anchor bar on each side). Place the 1/4" [6]-20 NC x 3/4" [19] long machine screw through the entire assembly and thread on the 1/4" [6]-20 NC nut.

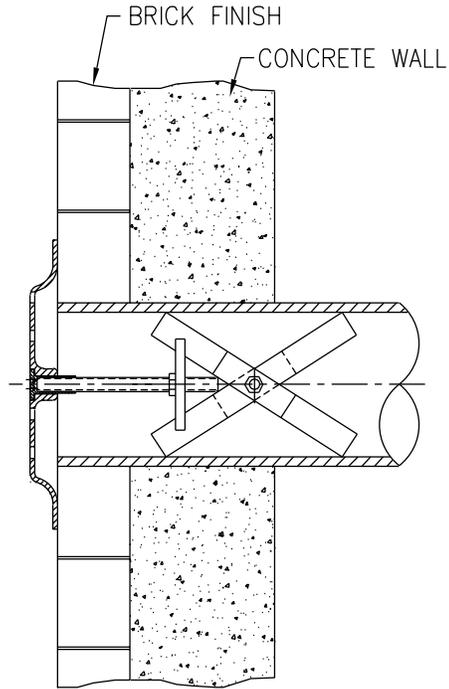
Note that the 1/4" [6]-20 NC machine screw and nut holding the anchor bars (in an "X" configuration) to the spade bolt **should not be tightened**. The nut should be run onto the machine screw until 4 or 5 threads of the machine screw are past the nut.

- 2. Slide the adjusting bar onto the threaded end of the spade bolt.
- 3. Thread the 3/8" [9]-16 NC nut onto the threaded end of the spade bolt in front of the adjusting bar.
- 4. **DO NOT** attach the strainer and strainer attachment nut. These will be used at final installation (see Page 10).

The assembly is ready to be installed in pipe.

INSTALLATION INSTRUCTIONS FOR PIPE CLAMP TYPE AIR INLET STRAINER

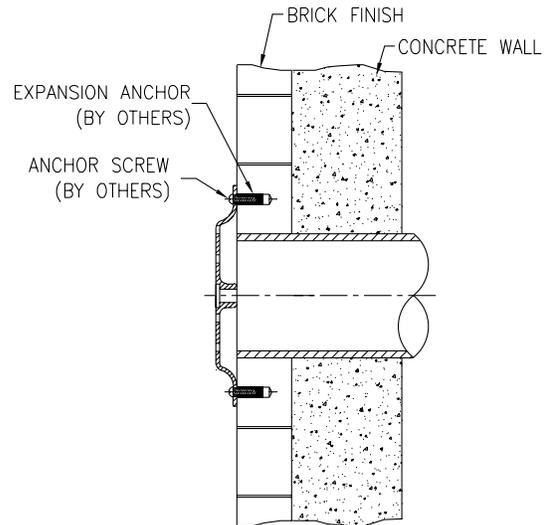
1. With the exception of the strainer and the strainer attachment nut, all pipe clamp hardware should be assembled as shown in the isometric assembly on Page 9.
 Note that the 1/4" [6]-20 NC machine screw and nut which hold the anchor bars (in an "X" configuration) to the spade bolt **should not be tightened**. The nut should be run onto the machine screw until 4 or 5 threads of the machine screw are past the nut.
2. If necessary, back off the 3/8" [9]-16 NC nut on the spade bolt to allow the adjusting bar to move toward the end of the spade bolt, away from the anchor bars.
3. Push the legs of the anchor bars together, inward toward the spade bolt until the assembly can fit onto the pipe I.D.
4. Push the assembly into the pipe until the spade bolt sticks out of the pipe (which should be flush with the finished wall) by about 1/4" [6]. Slide the adjusting bar inward between the legs of the anchor bars at the same time making sure that the anchor bars are in line with one another and as close as possible to being on the pipe centerline.
5. Run the 3/8" [9]-16 NC nut on the spade bolt up against the adjusting bar and tighten. This will force the tips of the anchor bars into the pipe I.D.; tighten until well secured.
6. Slip the strainer over the end of the spade bolt and push against wall.
7. Tighten the strainer attachment nut to secure strainer in place.



TYPICAL INSTALLATION USING PIPE CLAMP HARDWARE

INSTALLATION INSTRUCTIONS FOR FLANGE MOUNTING HOLE TYPE AIR INLET STRAINER

1. Obtain appropriate expansion anchors and screws for the type of wall construction strainer will be attached to. Note that the mounting holes in the strainer are 5/16" [8] diameter.
2. Locate the strainer on the wall, over the pipe as follows:
 - 2a. Determine the O.D. of the strainer, which will be either:
 8" [203] for 3" [76] and 4" [102] pipe
 12" [305] for 5" [127] and 6" [152] pipe
 15" [381] for 8" [203] and 10" [254] pipe
 - 2b. Determine the I.D. of the pipe, which will be either:
 3" [76], 4" [102], 5" [127], 6" [152], 8" [203], or 10" [254]
 - 2c. Subtract the pipe I.D. from the strainer O.D.
 Example: 12" [305] strainer O.D. - 5" [127] = 7" [178]
 - 2d. Then divide the difference by 2 [51].
 Example: 7" [178] ÷ 2" [51] = 3-1/2" [89]
 - 2e. Measure from the inside wall of the pipe and place a mark on the wall at 3-1/2" [89]. Do this in 4 places approximately 90° apart from one another.
3. Measure from one of the marks across to the other and you should have the strainer O.D. dimension.
4. Position the strainer within the 4 marks which should line up with the edge of the strainer O.D.
5. Hold the strainer in position and mark the flange mounting hole locations (2 places).
6. Remove the strainer, drill holes, and install expansion anchors (by others), following the anchor manufacturers instruction for hole diameter, depth, and installation.
7. Reposition strainer, align mounting holes with expansion anchors, and attach to wall with screws (by others).



TYPICAL INSTALLATION USING FLANGE MOUNTING HOLES (-LC SUFFIX)

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.

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.