

AN  
Crane  
Company



**WATER  
CONTROLLED  
DIRECT  
FLUSHING  
VALVES**

**CRANE**







WATER  
CONTROLLED  
DIRECT  
FLUSHING VALVES

**CRANE CO.**

40 TWENTY-FOURTH STREET  
PITTSBURGH, PA.

CIRCULAR NO. 585-C    AUGUST, 1924

13602



## CRANE

### *“Water Controlled” Direct Flushing Valves*

**T**HE Crane “Water Controlled” Direct Flushing Valve is of the cup leather high lift plunger type with by-pass, and with oscillating handle or push button for water closets, urinals and other fixtures.

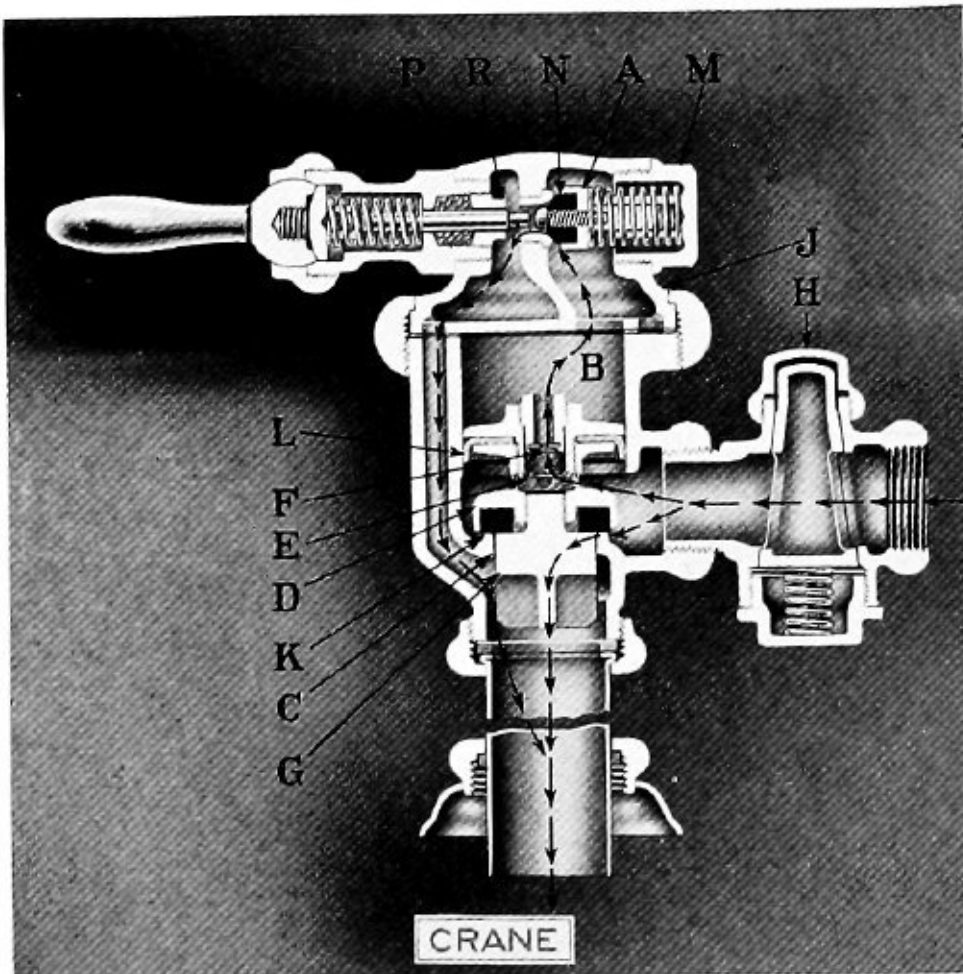
It is made of red metal with all parts of heavy construction, insuring long dependable service. The by-pass is located in the plunger and is protected by a strainer. The opening in the by-pass, being larger than the openings in the strainer, insures against stoppage.

The cup leather has been used extensively in pump construction and its lasting and durable qualities have been established for water service through a period of many years under the most severe conditions.

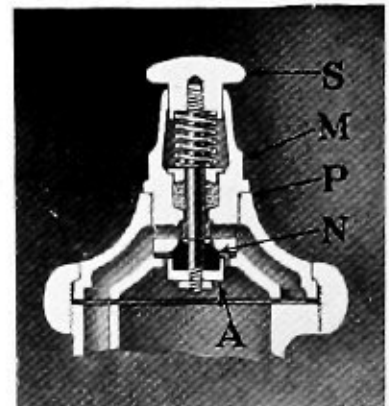
The high lifting plunger provides a large water way through the valve for operating on low pressures, and ample refill for resealing of the trapway and maintaining the water surface so necessary for sanitary conditions in the closet.

The “Water Controlled” Valve as regularly furnished will deliver a proper amount of water for efficient flush and refill of all Crane closet bowls. Should occasion arise, due to unusual conditions in the closet, that a longer flush is temporarily required, it can be obtained by holding the handle in the open position.

The Crane “Water Controlled” Direct Flushing Valves are furnished with a regulating stop, and for either exposed or concealed installations.



Exposed Oscillating Handle Valve



Exposed Push Button Valve

## Operation

Operating handle or push button opens auxiliary valve "A" relieving pressure in dashpot chamber "B". Area of dashpot chamber being greater than area through main valve seat "C", the water supply to the valve forces the main valve "D" upward, opening valve and forcing water from dashpot chamber through auxiliary valve "A" to bowl.

When handle or push button is released, auxiliary valve "A" closes. Water from supply enters dashpot chamber "B" through bypass strainer "E" and bypass "F", allowing main valve "D" to travel downward, causing valve to close.

## Refill

The refill is obtained when refill lip "G" on main valve enters main valve seat opening "C", and continues until valve is seated. The refill lip restricts the volume of water passing through the main valve seat, thus breaking the syphonic action in the trapway of the bowl, resealing the trap and supplying full water surface in bowl.

## Adjustment

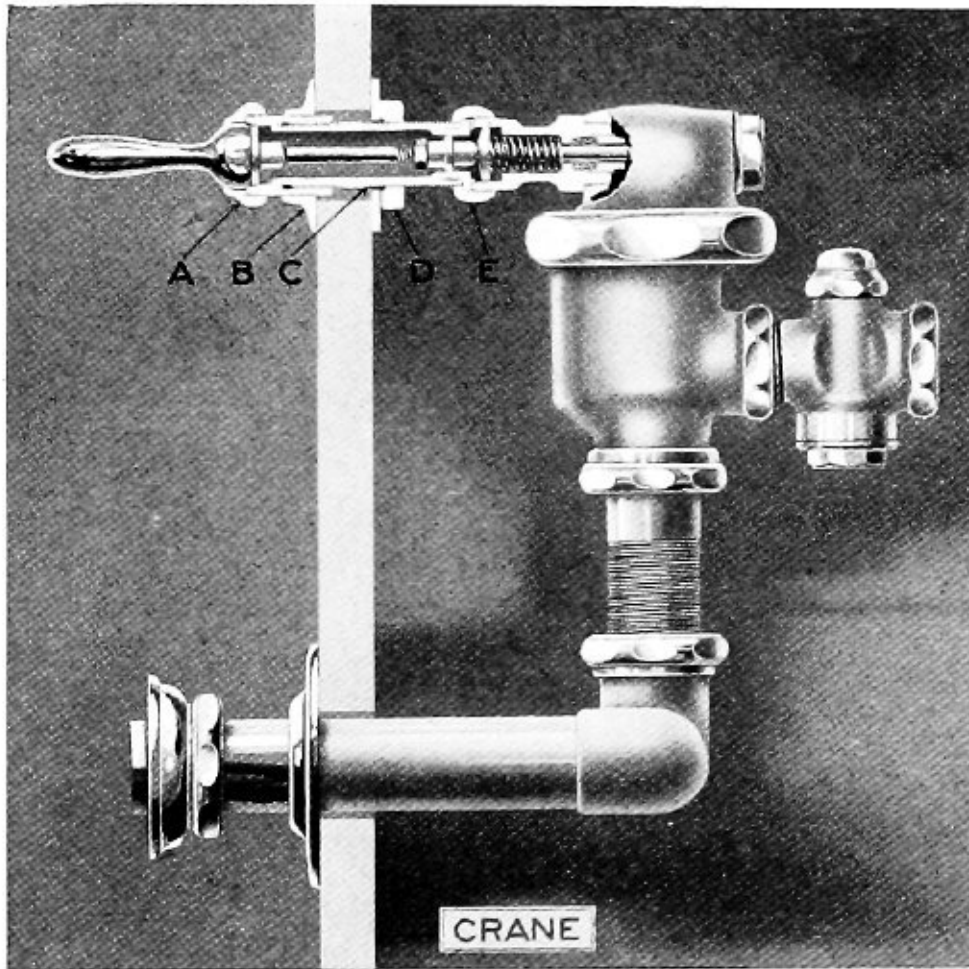
If the flush action is too vigorous or noisy and causes splashing or flooding of the bowl due to high water pressure, adjust stop valve by removing cap "H" and turning towards the closed position until, while flushing, the water surface in the bowl is just below the inlet of the bowl trap.

## Repairing

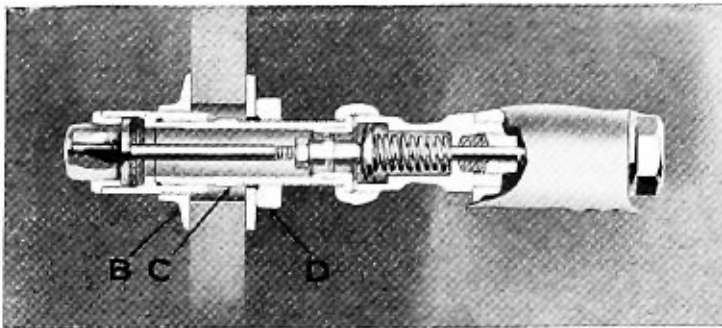
To rewasher main valve "D", remove bonnet "J", take out main valve and renew disc "K" and cup leather "L".

To renew auxiliary valve disc, remove cap "M" and renew disc "N".

To repack stem, remove operating unit at joint "P". Remove stuffing nut "R" or push button "S" and repack.



Concealed Oscillating Handle Valve



Concealed Push Button Valve

## Installation

### Concealed Valve with Oscillating Handle

Take off handle union ring "A" and flange "B" and insert the extension tube "C" through the wall from the rear. Screw on flange "B" and handle union ring "A," allowing about  $\frac{1}{4}$ -Inch between the flange and the handle union ring. Tighten up locknut "D". Connect valve to handle union with union ring "E" and then make connections between valve and supply line and between the valve and the fixture.

### Concealed Valve with Push Button

Take off flange "B" and insert extension tube "C" through the wall from the rear. Screw on flange "B" allowing about  $1\frac{7}{8}$  Inches from the face of the push button to the face of the wall. Tighten up locknut "D" and connect the valve same as the oscillating handle valve.

## IMPORTANT

Do not strain the connection between the valve and the handle unit. Ample adjustment is allowed to take care of variations in the wall thickness.

## NOTE

The inlet on the concealed valve may be placed to the right, to the left or to the back of the handle by loosening the union ring and turning the valve.

## *Features*

Satisfactory dependable flush on all pressures from 10 to 100 pounds on floor outlet bowls, and 15 pounds and up on blowout type wall closets.

Cup leather ideal for water service.

Economical in the use of water.

Ample refill to reseal trapway and maintain water surface in bowl, on all pressures.

A large capacity strainer for by-pass.

Simple, rugged construction.

Handle adjustable to three positions

Easily operated.

Length of flush can be increased by holding handle.





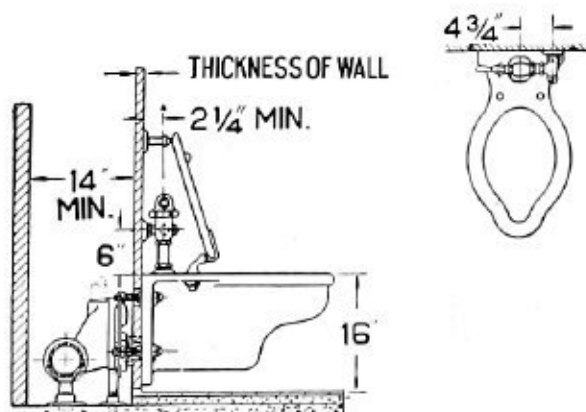
C 10050

## “Walsyn” Syphon Jet Wall Closet

(PATENTED)

Crane “WALSYN” Twice-Fired Vitreous China Noiseless Syphon Jet Wall Closet with Extended Lip and Top Inlet; C 13020 Exposed “Water Controlled” Direct Flushing Valve with China Oscillating Handle, 1-Inch Angle Stop, Metal Wall Flange with Adjustable Sleeve and C 13140 1½-Inch Outside Diameter Straight Flush Connection with Coupling Nut and Spud Escutcheon; Cast Seat Bumper; Ebony Finish “Whaleboneite” Open Front Serpentine Seat with Heavy Concealed Bar Hinge; Crane “Hulbert” Long Turn Drainage Fitting with Supporting Flange, Four 5/8-Inch Supporting Studs, Hexagon Nuts, Washers, China Bolt Caps, Asbestos Gasket and 4-Inch Electro Galvanized Outlet Nipple. All exposed metal parts are Nickel Plated Brass.

When ordering specify whether Drainage Fittings are wanted Black or Galvanized. Also state thickness of partition through which fixture is to operate.





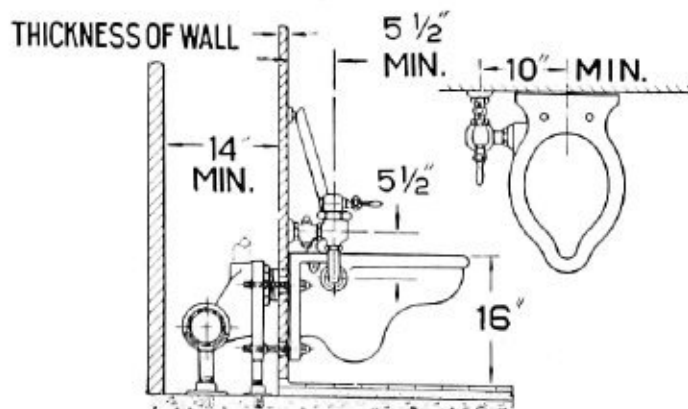
C 10204

## “Expedio” Blowout Wall Closet With Jet

(PATENTED)

Crane “EXPEDIO” Twice-Fired Vitreous China Blowout Wall Closet with Jet, Extended Lip and Side Inlet; C 13010-E Exposed “Water Controlled” Direct Flushing Valve with Metal Oscillating Handle, 1-Inch Straightway Stop, Metal Wall Flange with Adjustable Sleeve and C 13142 1½ x 1½-Inch Outside Diameter Elbow Flush Connection with Coupling Nut and Spud Escutcheon; Cast Double Seat Bumper; Ebony Finish “Whaleboneite” Open Front Serpentine Seat with heavy Concealed Bar Hinge; Crane “Hulbert” Long Turn Drainage Fitting with Supporting Flange, Three 5/8-Inch Supporting Studs, Capnuts, Washers, Asbestos Gasket and 4-Inch Electro Galvanized Outlet Nipple. All exposed metal parts are Nickel Plated Brass.

When ordering specify whether Drainage Fittings are wanted Black or Galvanized. Also state thickness of partition through which fixture is to operate.





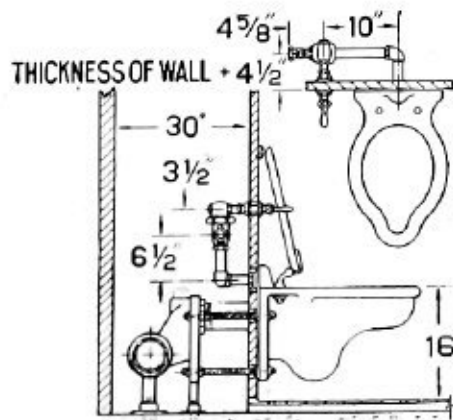
C 10276

## “Expedio” Blowout Wall Closet With Jet

(PATENTED)

Crane “EXPEDIO” Twice-Fired Vitreous China Blowout Wall Closet with Jet, Extended Lip and Back Inlet; C 13038-E Concealed “Water Controlled” Direct Flushing Valve with China Oscillating Handle, 1-Inch Straightway Stop and C 13230-W 1½ x 1½-Inch Outside Diameter Double Elbow Flush Connection with Coupling Nut; Cast Double Seat Bumper; Ebony finish “Whaleboneite” Open Front Serpentine Seat with heavy Concealed Bar Hinge; Crane “Hulbert” Long Turn Drainage Fitting with Supporting Flange, Three 5/8-Inch Supporting Studs, Capnuts, Washers, Asbestos Gasket and 4-Inch Electro Galvanized Outlet Nipple. All exposed metal parts are Nickel Plated Brass.

When ordering specify whether Drainage Fittings are wanted Black or Galvanized. Also state thickness of partition through which fixture is to operate.



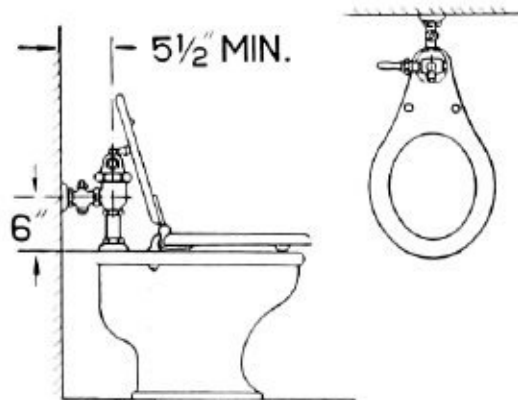


C 10452

## "Corsyn" Noiseless Syphon Jet Closet

(PATENTED)

Crane "CORSYN" Twice-Fired Vitreous China Noiseless Syphon Jet Closet with Top Inlet; C 13014 Exposed "Water Controlled" Direct Flushing Valve with China Oscillating Handle, Seat Bumper, 1-Inch Straightway Stop, Metal Wall Flange with Adjustable Sleeve and C 13140 1½-Inch Outside Diameter Straight Flush Connection with Coupling Nut and Spud Escutcheon; 1½-Inch White Sanitouré Finish Ring Seat and Cover with Concealed Hinge; Cast Brass Floor Flange with Rubber Gasket, Bolts, Screws and China Bolt Caps. All exposed metal parts are Nickel Plated Brass.





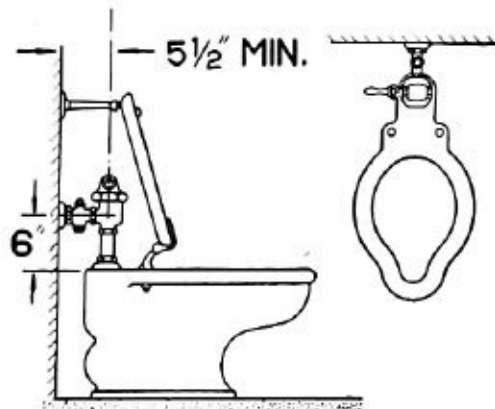
C 10502

## “Purus” Syphon Jet Closet

(PATENTED)

Crane “PURUS” Twice-Fired Vitreous China Syphon Jet Closet with Extended Lip, Top Inlet and extra large Trapway passing  $2\frac{3}{4}$ -Inch Solid Ball; C 13002 Exposed “Water Controlled” Direct Flushing Valve with Metal Oscillating Handle, 1-Inch Straightway Stop, Metal Wall Flange with Adjustable Sleeve and C 13140  $1\frac{1}{2}$ -Inch Outside Diameter Straight Flush Connection with Coupling Nut and Spud Escutcheon; Cast Seat Bumper; Ebony Finish “Whaleboneite” Open Front Serpentine Seat with heavy Concealed Bar Hinge; Cast Brass Floor Flange with Rubber Gasket, Bolts, Screws and China Bolt Caps. All exposed metal parts are Nickel Plated Brass.

The above Closet can also be furnished in the Junior size, which is  $13\frac{1}{2}$ -Inches high.





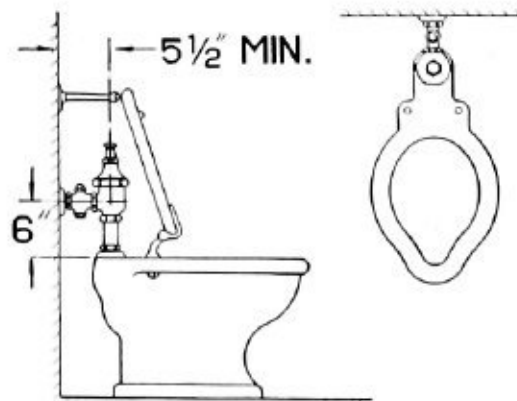
C 10672

## *“Saneto” Syphon Jet Closet*

(PATENTED)

Crane “SANETO” Twice-Fired Vitreous China Syphon Jet Closet with Extended Lip and Top Inlet; C 13004 Exposed “Water Controlled” Direct Flushing Valve with Metal Push Button, 1-Inch Straightway Stop, Metal Wall Flange with Adjustable Sleeve and C 13140 1½-Inch Outside Diameter Straight Flush Connection with Coupling Nut and Spud Escutcheon; Cast Seat Bumper; Ebony Finish “Whaleboneite” Open Front Serpentine Seat with heavy Concealed Bar Hinge; Cast Brass Floor Flange with Rubber Gasket, Bolts, Screws and China Bolt Caps. All exposed metal parts are Nickel Plated Brass.

The above Closet can also be furnished in the Junior size, which is 13½-Inches high.





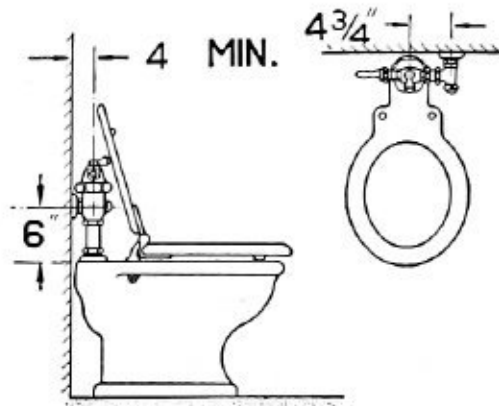
C 10684

## “Saneto” Syphon Jet Closet

(PATENTED)

Crane “SANETO” Twice-Fired Vitreous China Syphon Jet Closet with Top Inlet; C 13026 Exposed “Water Controlled” Direct Flushing Valve with China Oscillating Handle, Seat Bumper, 1-Inch Angle Stop, Metal Wall Flange with Adjustable Sleeve and C 13140 1½-Inch Outside Diameter Straight Flush Connection with Coupling Nut and Spud Escutcheon; 1½-Inch White Sanitoure Finish Square Back Ring Seat and Cover with heavy Cast Bar Hinge; Cast Brass Floor Flange with Rubber Gasket, Bolts, Screws and China Bolt Caps. All exposed metal parts are Nickel Plated Brass.

The above Closet can also be furnished in the Junior size, which is 13½-Inches high.





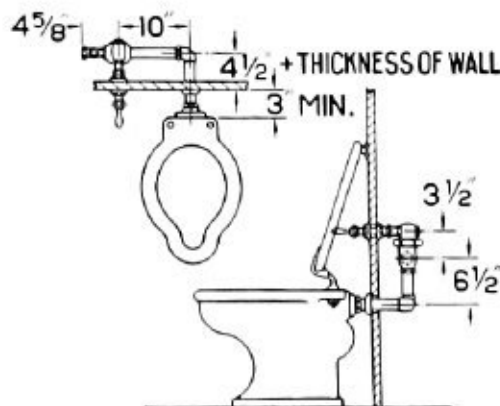
C 10700

## “Saneto” Syphon Jet Closet

(PATENTED)

Crane “SANETO” Twice-Fired Vitreous China Syphon Jet Closet with Extended Lip and Back Inlet; C 13042 Concealed “Water Controlled” Direct Flushing Valve with China Oscillating Handle, 1-Inch Straightway Stop and C 13250-W 1½ x 1½-Inch Outside Diameter Double Elbow Flush Connection with Coupling Nut, Spud Escutcheon and Metal Wall Flange; Cast Double Seat Bumper; Ebony Finish “Whaleboneite” Open Front Serpentine Seat with heavy Concealed Bar Hinge; Cast Brass Floor Flange with Rubber Gasket, Bolts, Screws and China Bolt Caps. All exposed metal parts are Nickel Plated Brass.

When ordering state thickness of partition through which fixture is to operate.





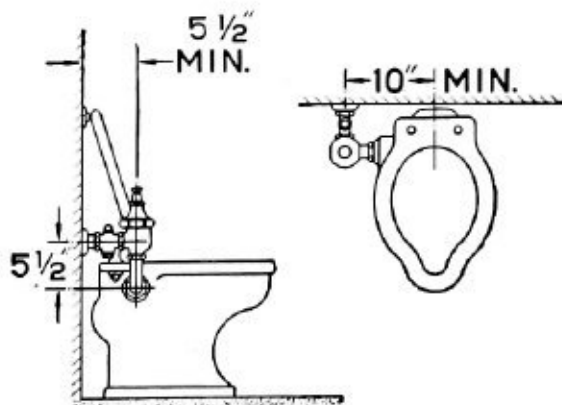


C 10944

## *“Spiro” Reverse Trap Closet With Jet*

(PATENTED)

Crane “SPIRO” Twice-Fired Vitreous China Reverse Trap Closet with Jet, Extended Lip and Side Inlet; C 13012 Exposed “Water Controlled” Direct Flushing Valve with Metal Push Button, 1-Inch Straightway Stop, Metal Wall Flange with Adjustable Sleeve and C 13142 1½ x 1½-Inch Outside Diameter Elbow Flush Connection with Coupling Nut and Spud Escutcheon; Cast Double Seat Bumper; Ebony Finish “Whaleboneite” Open Front Serpentine Seat with heavy Concealed Bar Hinge; Cast Brass Floor Flange with Rubber Gasket, Bolts and Screws. All exposed metal parts are Nickel Plated Brass.



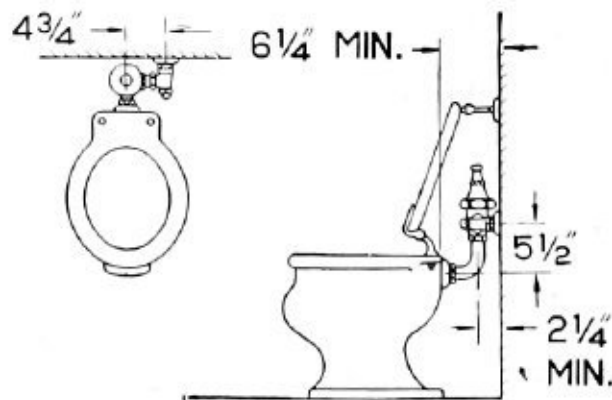


C 11144

## “Okolona” Washdown Closet With Jet

Crane “OKOLONA” Twice-Fired Vitreous China Syphon Action Washdown Closet with Jet and Back Inlet; C 13024 Exposed “Water Controlled” Direct Flushing Valve with Metal Push Button, 1-Inch Angle Stop, Metal Wall Flange with Adjustable Sleeve and C 13144 1½ x 1¼-Inch Outside Diameter Cast Elbow Flush Connection with Coupling Nut and Spud Escutcheon; Cast Seat Bumper; 1½-Inch Plain Oak Rubbed Finish Square Back Seat with heavy Bar Hinge; Cast Brass Floor Flange with Rubber Gasket, Bolts and Screws. All exposed metal parts are Nickel Plated Brass.

This Closet can also be furnished in the Junior size, which is 13¾-Inches high.





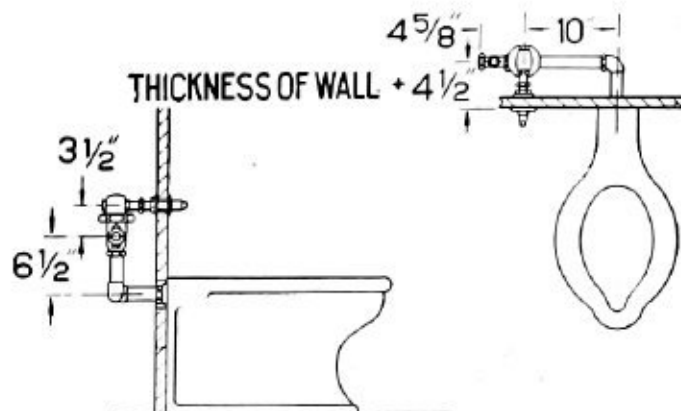
C 11290

## “Sanwall” Syphon Jet Prison Closet

Crane “SANWALL” Twice-Fired Vitreous China Syphon Jet Wall Outlet Prison Closet with Angle Wall Flange, Integral Seat, Extended Lip and Back Inlet; C 13040 Concealed “Water Controlled” Direct Flushing Valve with Vandal Proof Metal Push Button, 1-Inch Straightway Stop and C 13230-W 1½ x 1½-Inch Outside Diameter Double Elbow Flush Connection with Coupling Nut; 4-Inch Female Cast Brass Outlet Flange with Asbestos Gasket, Bolts and China Bolt Caps. All exposed metal parts are Nickel Plated Brass.

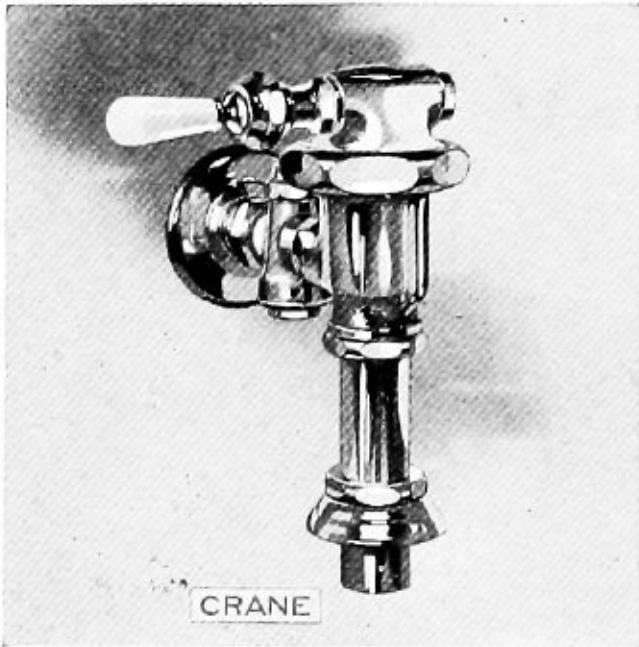
When ordering specify thickness of partition through which fixture is to operate.

The “Sanwall” Closet can be furnished with Floor Outlet when so specified, and also with Plain Rim without the Extended Lip.



# Crane Exposed "Water Controlled" Direct Closet Flushing Valves

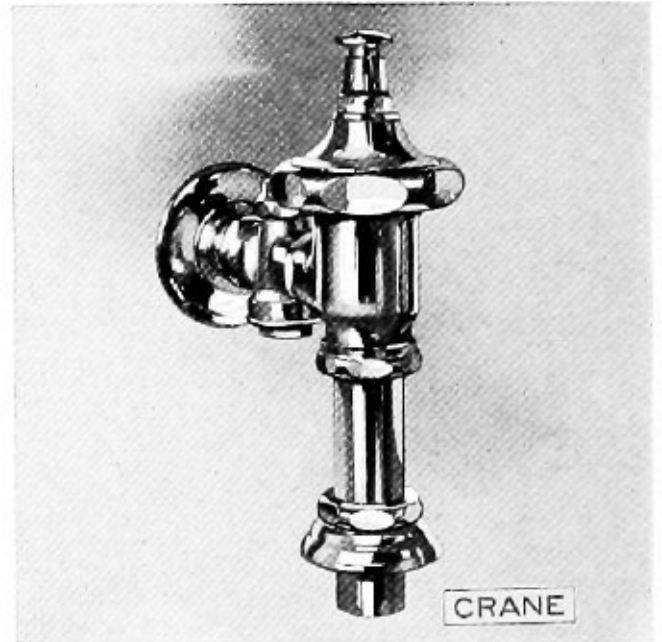
Without Seat Bumpers for Seats Less Covers



C 13000

Crane Nickel Plated Brass Exposed "Water Controlled" Direct Closet Flushing Valve with China Oscillating Handle, 1-Inch Straightway Stop, Metal Wall Flange with Adjustable Sleeve and C 13140 1½-Inch Outside Diameter Straight Flush Connection with Coupling Nut and Spud Escutcheon.

C 13002—Same as C 13000 except with Metal Oscillating Handle.



C 13004

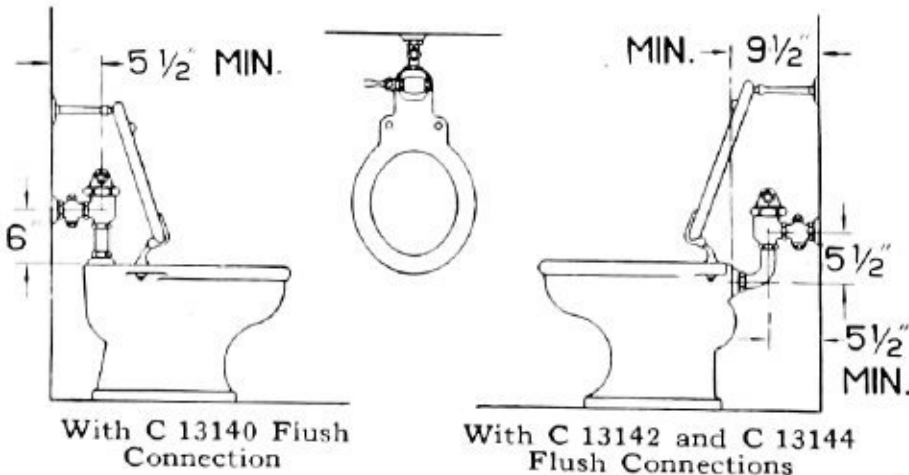
Crane Nickel Plated Brass Exposed "Water Controlled" Direct Closet Flushing Valve with Metal Push Button, 1-Inch Straightway Stop, Metal Wall Flange with Adjustable Sleeve and C 13140 1½-Inch Outside Diameter Straight Flush Connection with Coupling Nut and Spud Escutcheon.

If Valves are required for Back Supply Closets the following Flush Connections can be furnished when specified:

C 13142—1½ x 1½-Inch Outside Diameter Nickel Plated Bent Elbow Flush Connection for 1½-Inch Spud Closets.

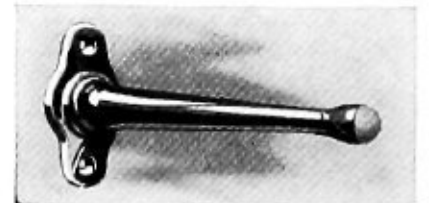
C 13144—1½ x 1¼-Inch Outside Diameter Nickel Plated Cast Elbow Flush Connection for 1¼-Inch Spud Closets.

## DIMENSIONS



With C 13140 Flush Connection

With C 13142 and C 13144 Flush Connections



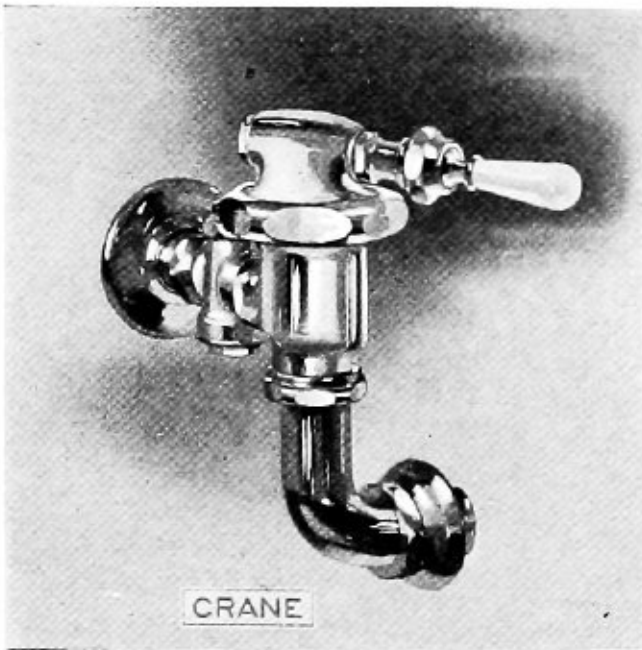
C 15336

No. 6 Seat Bumper, 6 Inches Long Over All

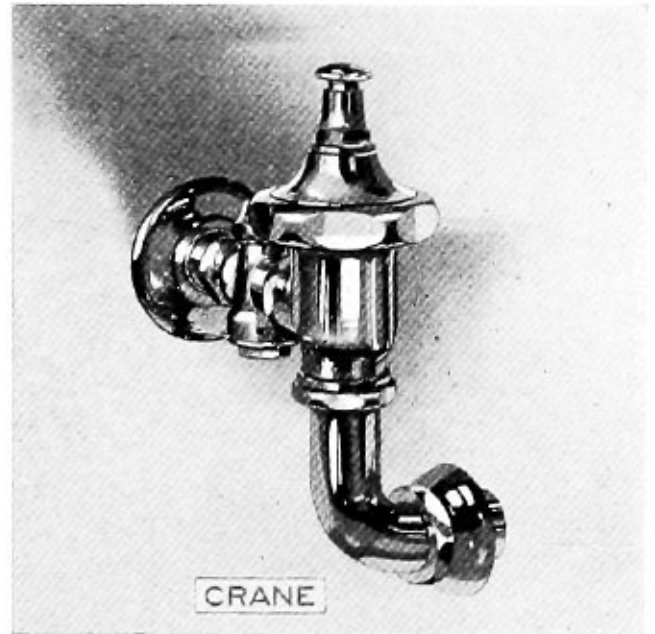
*Seat Bumpers will be furnished only when specified*

# Crane Exposed "Water Controlled" Direct Closet Flushing Valves

Without Seat Bumpers



C 13008



C 13012

Crane Nickel Plated Brass Exposed "Water Controlled" Direct Closet Flushing Valve with China Oscillating Handle, 1-Inch Straightway Stop, Metal Wall Flange with Adjustable Sleeve and C 13142 1½ x 1½-Inch Outside Diameter Bent Elbow Flush Connection with Coupling Nut and Spud Escutcheon.

**C 13008-E**—Same as C 13008 except with Special Refill for "Expedio" and other Blowout Closets.

**C 13010**—Same as C 13008 except with Metal Oscillating Handle.

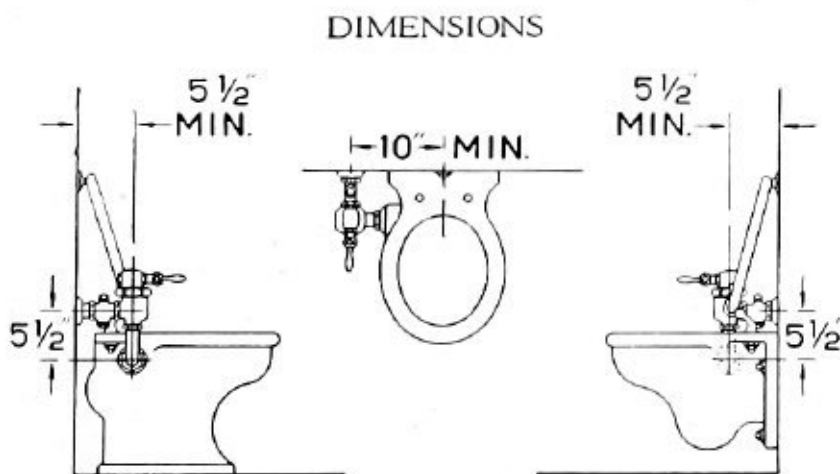
**C 13010-E**—Same as C 13010 except with Special Refill for "Expedio" and other Blowout Closets.

Crane Nickel Plated Brass Exposed "Water Controlled" Direct Closet Flushing Valve with Metal Push Button, 1-Inch Straightway Stop, Metal Wall Flange with Adjustable Sleeve and C 13142 1½ x 1½-Inch Outside Diameter Bent Elbow Flush Connection with Coupling Nut and Spud Escutcheon.

**C 13012-E**—Same as C 13012 except with Special Refill for "Expedio" and other Blowout Closets.

If Valves are required for Side Supply Closets with 1¼-Inch Spuds the following Flush Connections can be furnished when specified:

**C 13144**—1½ x 1¼-Inch Outside Diameter Nickel Plated Cast Elbow Flush Connection for 1¼-Inch Spud Closets.



With C 13142 and C 13144 Flush Connections



C 15330

No. 1 Seat Bumper for Ring Pattern Seats and Seats with Covers



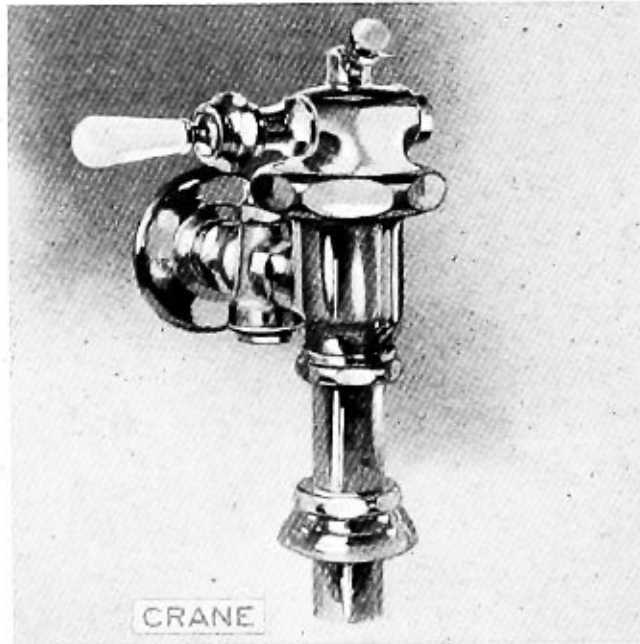
C 15334

No. 2 Seat Bumper for Open Front Seats less Covers. 5¾ Inches Center to Center of Bumpers

*Seat Bumpers will be furnished only when specified*

# Crane Exposed "Water Controlled" Direct Closet Flushing Valves

With Seat Bumpers for Seats With Covers



C 13014

Crane Nickel Plated Brass Exposed "Water Controlled" Direct Closet Flushing Valve with China Oscillating Handle, Seat Bumper, 1-Inch Straightway Stop, Metal Wall Flange with Adjustable Sleeve and C 13140 1½-Inch Outside Diameter Straight Flush Connection with Coupling Nut and Spud Escutcheon.

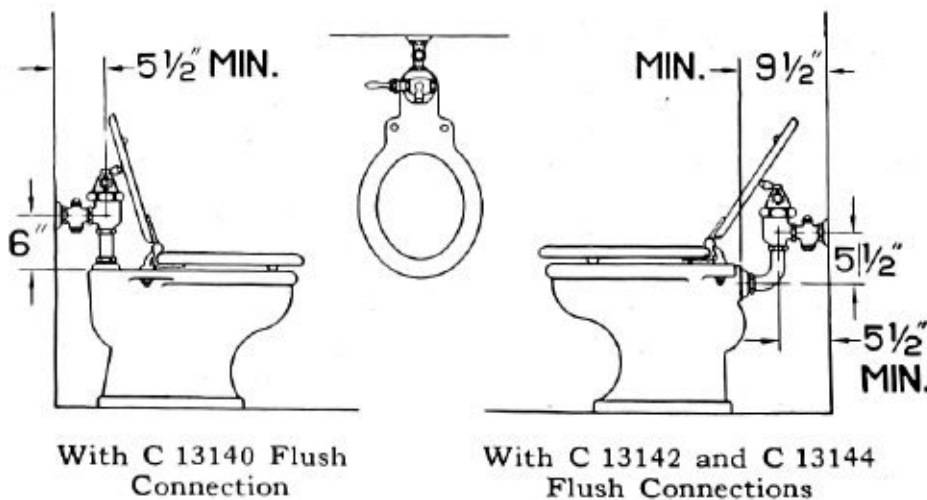
C 13016—Same as C 13014 except with Metal Oscillating Handle.

If Valves are required for Back Supply Closets the following Flush Connections can be furnished when specified:

C 13142—1½ x 1½-Inch Outside Diameter Nickel Plated Bent Elbow Flush Connection for 1½-Inch Spud Closets.

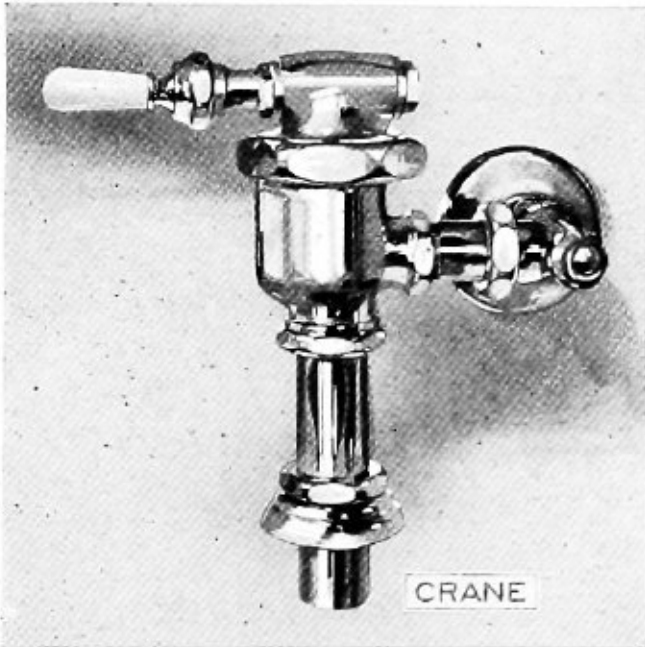
C 13144—1½ x 1¼-Inch Outside Diameter Nickel Plated Cast Elbow Flush Connection for 1¼-Inch Spud Closets.

## DIMENSIONS



# Crane Exposed "Water Controlled" Direct Closet Flushing Valves

Without Seat Bumpers for Open and Closed Front Seats Without Covers



C 13020



C 13024

Crane Nickel Plated Brass Exposed "Water Controlled" Direct Closet Flushing Valve with China Oscillating Handle, 1-Inch Angle Stop, Metal Wall Flange with Adjustable Sleeve and C 13140 1½-Inch Outside Diameter Straight Flush Connection with Coupling Nut and Spud Escutcheon.

C 13022—Same as C 13020 except with Metal Oscillating Handle.

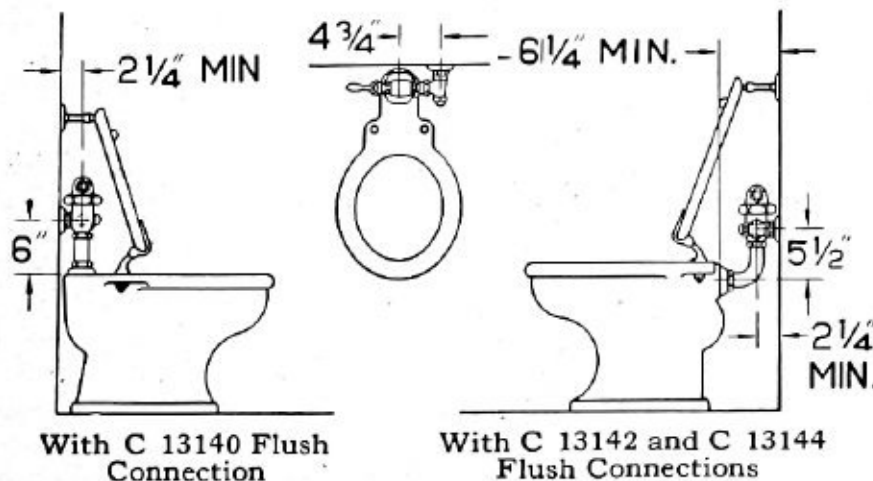
Crane Nickel Plated Brass Exposed "Water Controlled" Direct Closet Flushing Valve with Metal Push Button, 1-Inch Angle Stop, Metal Wall Flange with Adjustable Sleeve and C 13140 1½-Inch Outside Diameter Straight Flush Connection with Coupling Nut and Spud Escutcheon.

If Valves are required for Back Supply Closets the following Flush Connections can be furnished when specified:

C 13142—1½ x 1½-Inch Outside Diameter Nickel Plated Bent Elbow Flush Connection for 1½-Inch Spud Closets.

C 13144—1½ x 1¼-Inch Outside Diameter Nickel Plated Cast Elbow Flush Connection for 1¼-Inch Spud Closets.

## DIMENSIONS



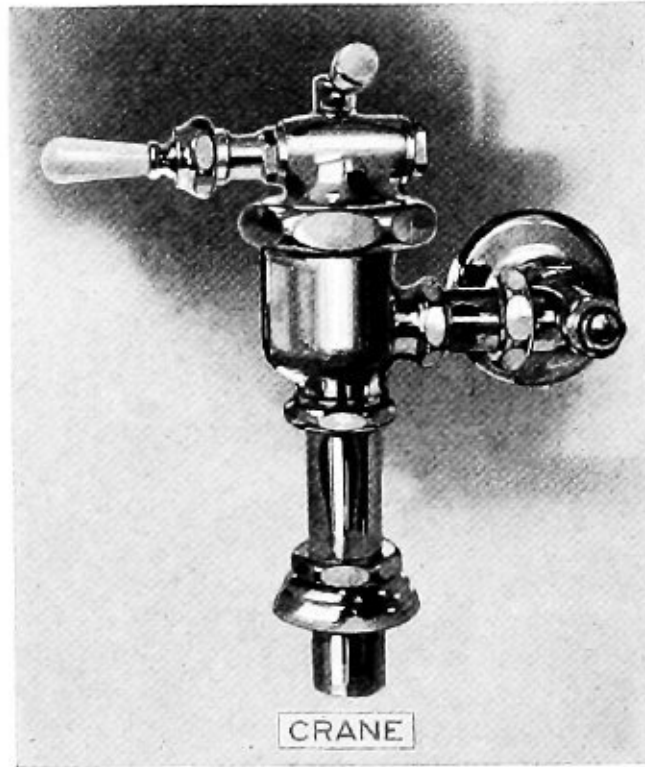
C 15336

No. 8 Seat Bumper  
3½ Inches Long Over All

*Seat Bumpers will be furnished only when specified*

# Crane Exposed "Water Controlled" Direct Closet Flushing Valves

With Seat Bumpers for Seats with Covers



**C 13026**

Crane Nickel Plated Brass Exposed "Water Controlled" Direct Closet Flushing Valve with China Oscillating Handle, Seat Bumper, 1-Inch Angle Stop, Metal Wall Flange with Adjustable Sleeve and C 13140 1½-Inch Outside Diameter Straight Flush Connection with Coupling Nut and Spud Escutcheon.

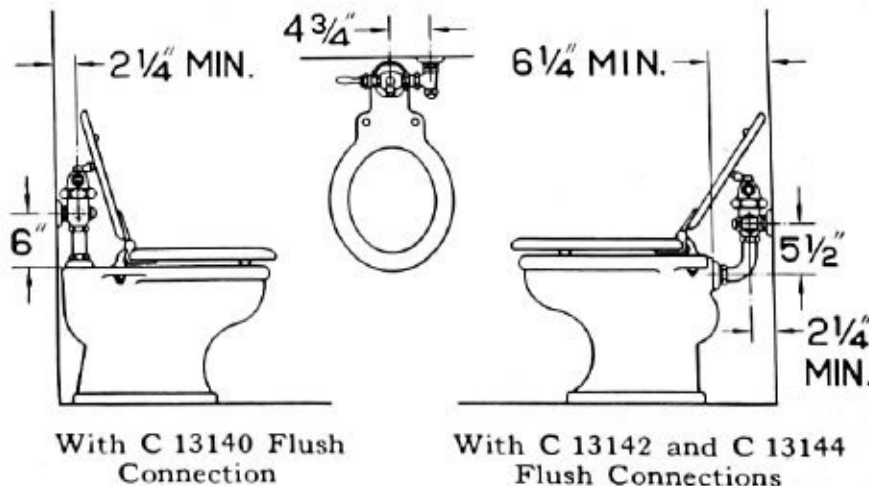
**C 13028**—Same as C 13026 except with Metal Oscillating Handle.

If Valves are required for Back Supply Closets the following Flush Connections can be furnished when specified:

**C 13142**—1½ x 1½-Inch Outside Diameter Nickel Plated Bent Elbow Flush Connection for 1½-Inch Spud Closets.

**C 13144**—1½ x 1¼-Inch Outside Diameter Nickel Plated Cast Elbow Flush Connection for 1¼-Inch Spud Closets.

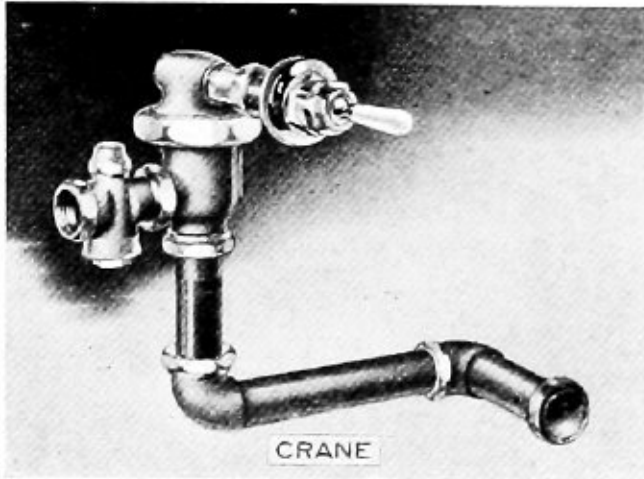
## DIMENSIONS





# Crane Concealed "Water Controlled" Direct Closet Flushing Valves

For Closets with Back Inlets installed against Wall



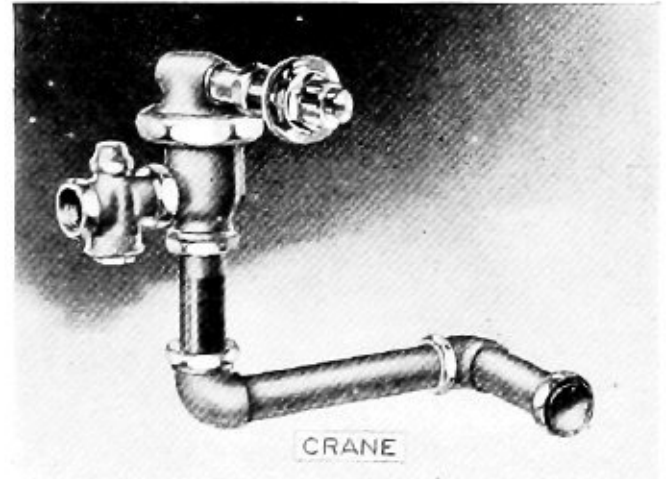
**C 13038**

Crane Concealed "Water Controlled" Direct Closet Flushing Valve with China Oscillating Handle, 1-Inch Straightway Stop and C 13230-W 1 1/2-Inch Outside Diameter Double Elbow Flush Connection with Coupling Nut, for Walls up to 1 1/4-Inches Thick. All exposed metal parts are Nickel Plated Brass.

**C 13038-E**—Same as C 13038 except with special Refill for "Expedio" and other Blowout Closets.

**C 13039**—Same as C 13038 except with Metal Oscillating Handle.

**C 13039-E**—Same as C 13039 except with special Refill for "Expedio" and other Blowout Closets.



**C 13040**

Crane Concealed "Water Controlled" Direct Closet Flushing Valve with Metal Push Button, 1-Inch Straightway Stop and C 13230-W 1 1/2-Inch Outside Diameter Double Elbow Flush Connection with Coupling Nut, for Walls up to 1 1/4-Inches Thick. All exposed metal parts are Nickel Plated Brass.

**C 13040-E**—Same as C 13040 except with special Refill for "Expedio" and other Blowout Closets.

If Flush Connections are wanted for Walls thicker than 1 1/4-Inches, specify the following:

**C 13232-W**—for Walls from 1 3/8 to 2 1/2-Inches Thick.

**C 13234-W**—for Walls 2 5/8 to 12-Inches Thick.

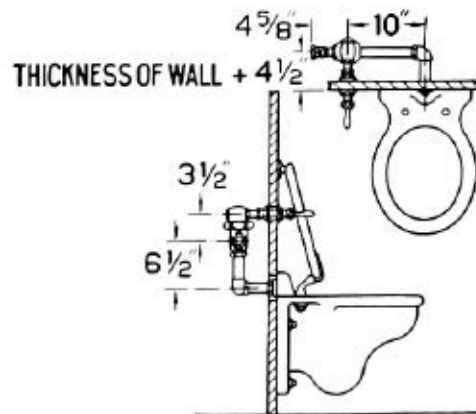
When ordering specify thickness of Wall.

## DIMENSIONS



**C 15330**

No. 1 Seat Bumper for Ring Pattern Seats and Seats with Covers



With C 13230-W, C 13232-W and C 13234-W Double Elbow Flush Connection for Closets installed against Wall



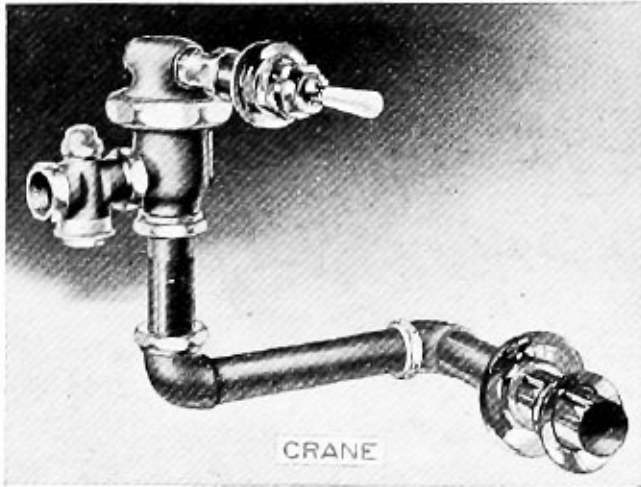
**C 15334**

No. 2 Seat Bumper for Open Front Seats Less Covers  
5 3/4-Inches Center to Center of Bumpers

*Seat Bumpers will be furnished only when specified.*

# Crane Concealed "Water Controlled" Direct Closet Flushing Valves

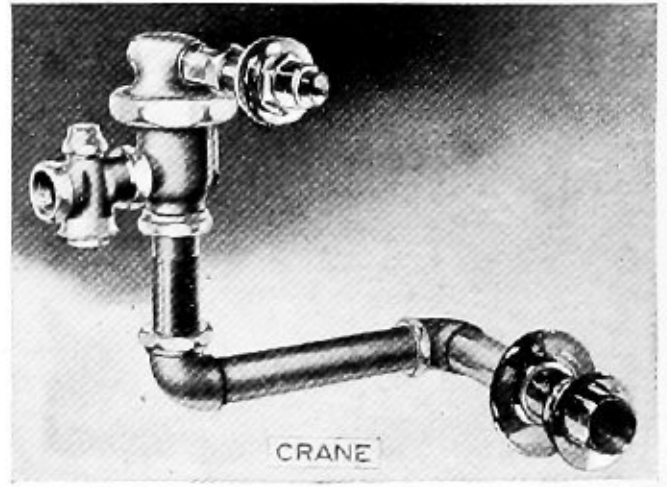
For Closets with Back Inlets Installed 3 Inches from Wall



**C 13042**

Crane Concealed "Water Controlled" Direct Closet Flushing Valve with China Oscillating Handle, 1-Inch Straightway Stop and C 13250-W 1½x1½-Inch Outside Diameter Double Elbow Flush Connection with Coupling Nut, Spud Escutcheon and Metal Wall Flange. All exposed metal parts are Nickel Plated Brass.

**C 13043**—Same as C 13042 except with Metal Oscillating Handle.



**C 13044**

Crane Concealed "Water Controlled" Direct Closet Flushing Valve with Metal Push Button, 1-Inch Straightway Stop and C 13250-W 1½x1½-Inch Outside Diameter Double Elbow Flush Connection with Coupling Nut, Spud Escutcheon and Metal Wall Flange. All exposed metal parts are Nickel Plated Brass.

Flush Connections can also be furnished in 1½x1¼-Inch Size for Closet Bowls with 1¼-Inch Spuds when specified.

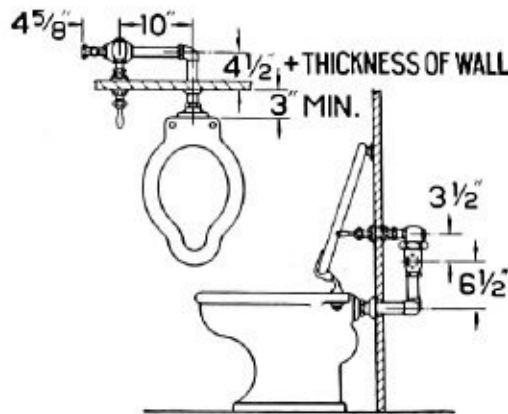
When ordering specify thickness of wall.

## DIMENSIONS



**C 15330**

No. 1 Seat Bumper for Ring Pattern Seats and Seats with Covers



**C 15334**

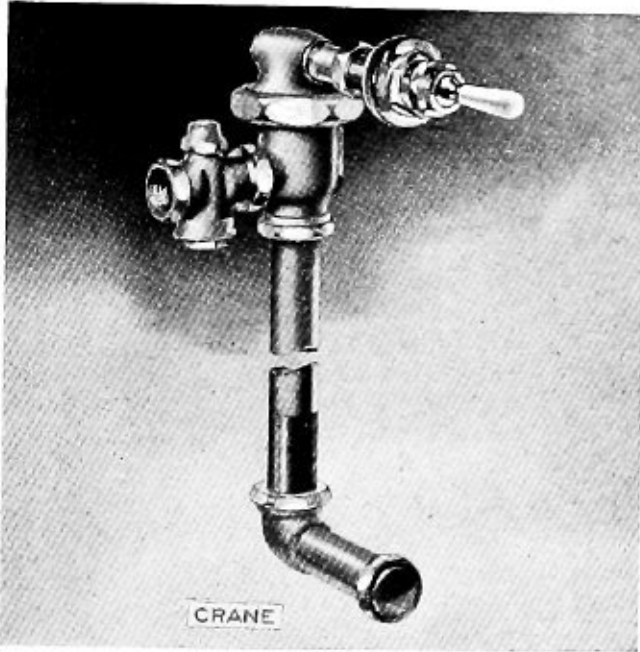
No. 2 Seat Bumper for Open Front Seats Less Covers  
5¾ Inches Center to Center of Bumpers

With C 13250-W Double Elbow Flush Connection for Closets Installed 3 Inches from Wall

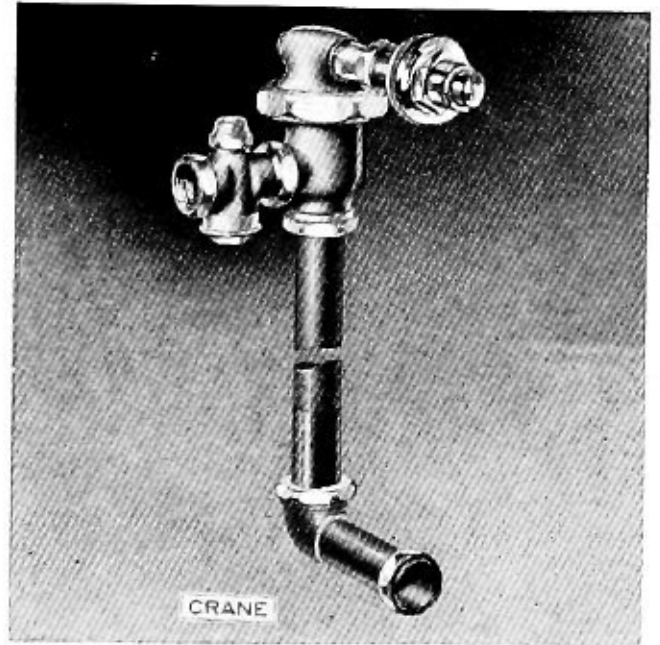
*Seat Bumpers will be furnished only when specified.*

# Crane Concealed "Water Controlled" Direct Flushing Valves

## For Slop Sinks



C 13046



C 13050

Crane Concealed "Water Controlled" Direct Flushing Valve with China Oscillating Handle, 1-Inch Straight-Way Stop and C 13200-WS 1 1/2-Inch Outside Diameter Elbow Flush Connection with Coupling Nut, for Walls up to 1 1/4 Inches Thick. All exposed metal parts are Nickel Plated Brass.

**C 13046-E**—Same as C 13046 except with Special Refill for "Expedio" and other Blow-out Slop Sinks.

**C 13048**—Same as C 13046 except with Metal Oscillating Handle.

**C 13048-E**—Same as C 13048 except with Special Refill for "Expedio" and other Blow-out Slop Sinks.

Crane Concealed "Water Controlled" Direct Flushing Valve with Metal Push Button, 1-Inch Straightway Stop and C 13200-WS 1 1/2-Inch Outside Diameter Elbow Flush Connection with Coupling Nut, for Walls up to 1 1/4-Inches Thick. All exposed metal parts are Nickel Plated Brass.

**C 13050-E**—Same as C 13050 except with Special Refill for "Expedio" and other Blow-out Slop Sinks.

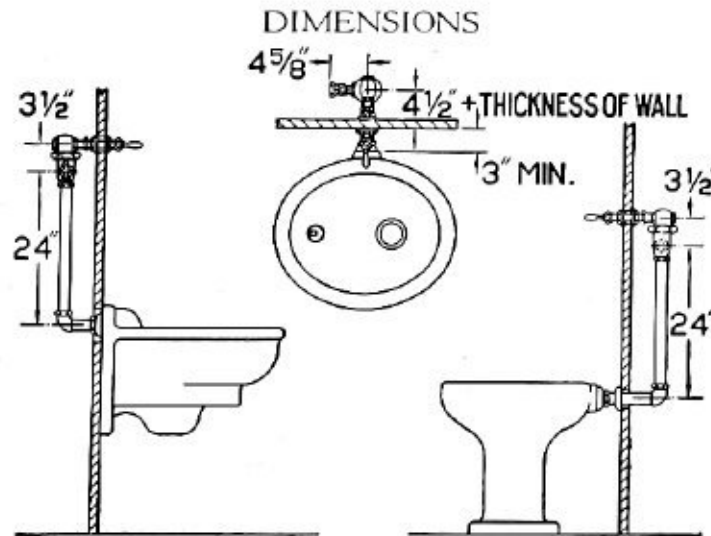
If Flush Connections are wanted for Walls thicker than 1 1/4-Inches, specify the following:

**C 13204-WS**—for Walls from 1 3/8 to 2 1/2-Inches Thick.

**C 13206-WS**—for Walls from 2 5/8 to 12-Inches Thick.

If Valves are wanted with Flush Connections for Slop Sinks to set 3-Inches from Wall, specify C 13240-WS 1 1/2x1 1/2-Inch Elbow Flush Connection.

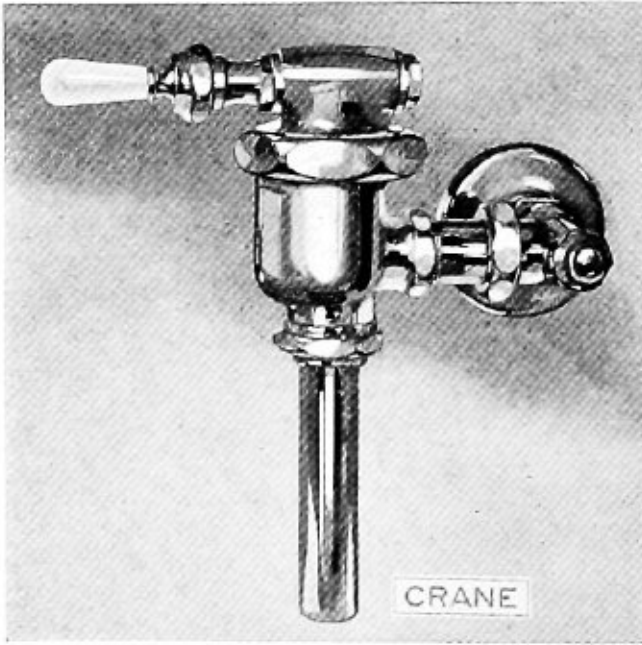
When ordering Specify Thickness of Wall.



**C 13200-WS, C 13204-WS and C 13206-WS Elbow Flush Connections for Sinks installed against Wall**

**C 13240-WS Elbow Flush Connection for Sinks installed 3 Inches from Wall**

# Crane Exposed "Water Controlled" Direct Urinal Flushing Valves



C 13056



C 13060

Crane Nickel Plated Brass Exposed "Water Controlled" Direct Urinal Flushing Valve with China Oscillating Handle, Angle Stop with  $\frac{3}{4}$ -Inch Iron Pipe Size Supply Connection, Metal Wall Flange with Adjustable Sleeve and C 13064-B  $\frac{3}{4}$ -Inch Outside Diameter Straight Flush Connection for Stall Urinals.

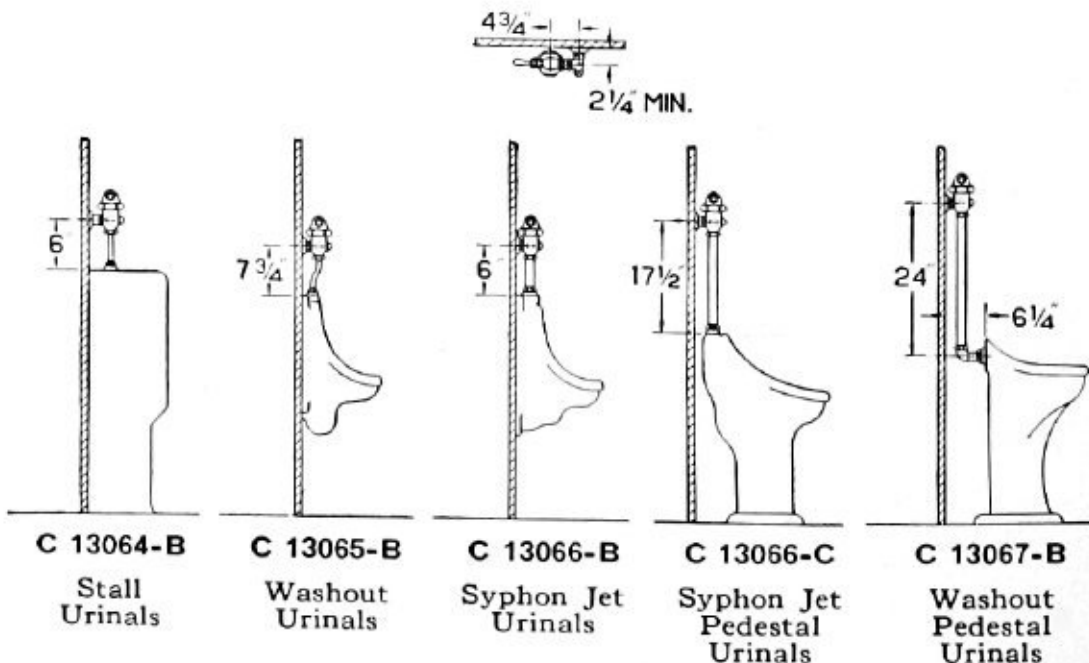
Crane Nickel Plated Brass Exposed "Water Controlled" Direct Urinal Flushing Valve with Metal Push Button, Angle Stop with  $\frac{3}{4}$ -Inch Iron Pipe Size Supply Connection, Metal Wall Flange with Adjustable Sleeve and C 13064-B  $\frac{3}{4}$ -Inch Outside Diameter Straight Flush Connection for Stall Urinals.

C 13058—Same as C 13056 except with Metal Oscillating Handle.

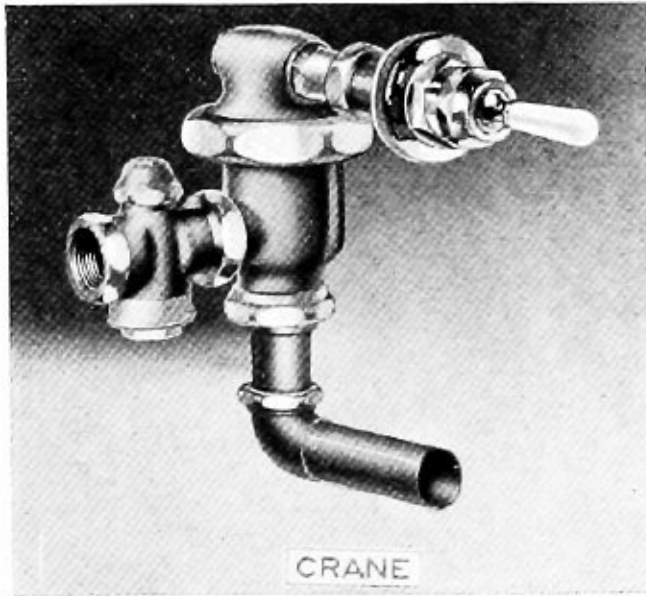
If Valves are wanted with other style Flush Connections for use with other than Stall Urinals, specify the following:

- C 13065-B— $\frac{3}{4}$  x 1-Inch Outside Diameter Offset Flush Connection with  $\frac{3}{4}$ -Inch Coupling Nut for Washout Wall Urinals.
- C 13066-B— $1\frac{1}{4}$ -Inch Outside Diameter Straight Flush Connection with  $1\frac{1}{4}$ -Inch Coupling Nut for Syphon Jet Wall Urinals.
- C 13066-C— $1\frac{1}{4}$ -Inch Outside Diameter Straight Flush Connection with  $1\frac{1}{4}$ -Inch Coupling Nut for Pedestal Urinals with Top Inlet Spuds.
- C 13067-B— $1\frac{1}{4}$ -Inch Outside Diameter Elbow Flush Connection with  $1\frac{1}{4}$ -Inch Coupling Nut for Pedestal Urinals with Back Inlet Spuds.

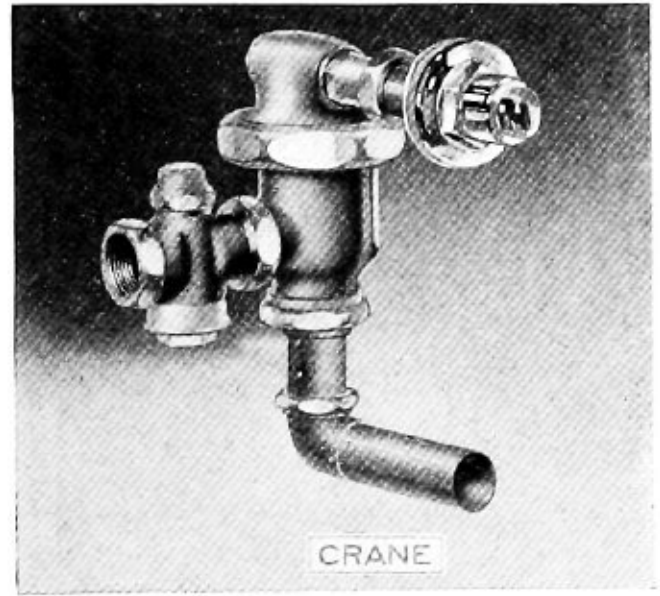
### DIMENSIONS



# Crane Concealed "Water Controlled" Direct Urinal Flushing Valves



**C 13070**



**C 13074**

Crane Concealed "Water Controlled" Direct Urinal Flushing Valve with China Oscillating Handle, Straightway Stop with  $\frac{3}{4}$ -Inch Iron Pipe Size Supply Connection and C 13076-B  $\frac{3}{4}$ -Inch Outside Diameter Elbow Flush Connection (no Coupling Nut) for Back Inlet Stall Urinals. All exposed metal parts are Nickel Plated Brass.

**C 13072**—Same as C 13070 except with Metal Oscillating Handle.

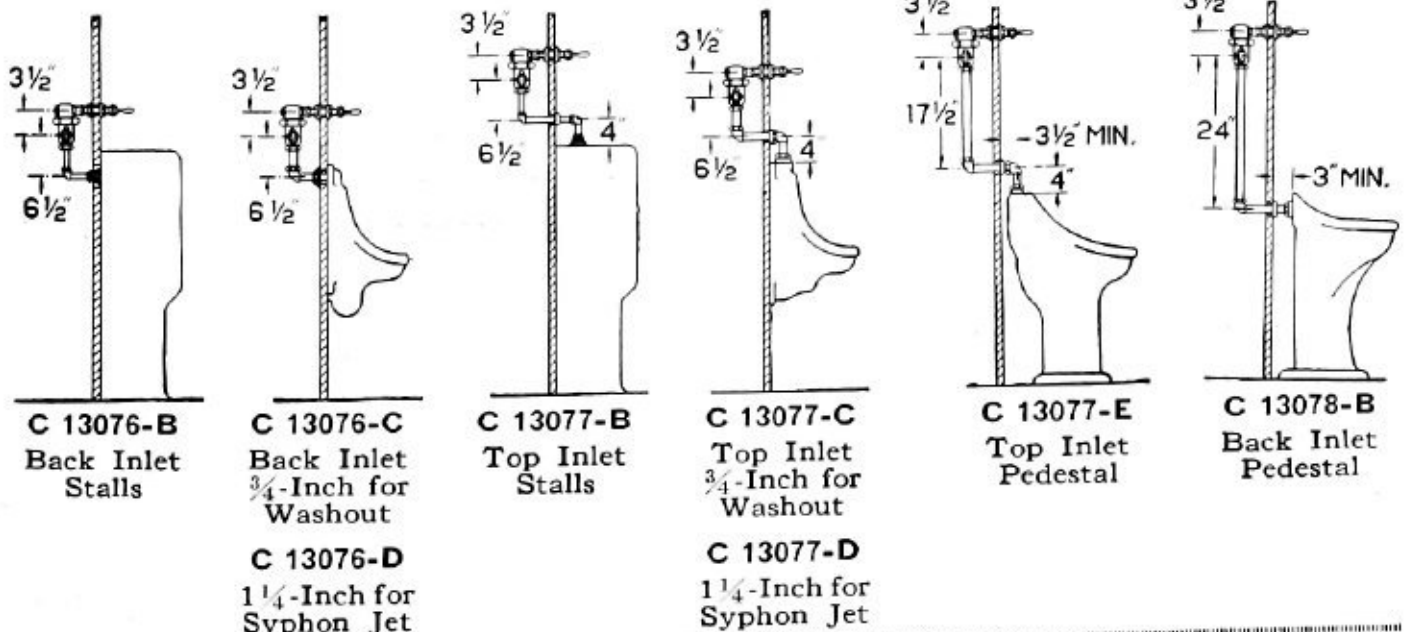
Crane Concealed "Water Controlled" Direct Urinal Flushing Valve with Metal Push Button, Straightway Stop with  $\frac{3}{4}$ -Inch Iron Pipe Size Supply Connection and C 13076-B  $\frac{3}{4}$ -Inch Outside Diameter Elbow Flush Connection (no Coupling Nut) for Back Inlet Stall Urinals. All exposed metal parts are Nickel Plated Brass.

If Valves are wanted with other style Flush Connections for use with other than Back Inlet Stall Urinals, specify the following:

- C 13076-C**— $\frac{3}{4}$ -Inch Outside Diameter Elbow Flush Connection with Coupling Nut for Back Inlet Washout Wall Urinals.
- C 13076-D**— $1\frac{1}{4}$ -Inch Outside Diameter Elbow Flush Connection with Coupling Nut for Back Inlet Syphon Jet Wall Urinals.
- C 13077-B**— $\frac{3}{4}$ -Inch Outside Diameter Double Elbow Flush Connection (no Coupling Nut) for Top Inlet Stall Urinals.
- C 13077-C**— $\frac{3}{4}$ -Inch Outside Diameter Double Elbow Flush Connection with Coupling Nut for Top Inlet Washout Wall Urinals.
- C 13077-D**— $1\frac{1}{4}$ -Inch Outside Diameter Double Elbow Flush Connection with Coupling Nut for Top Inlet Syphon Jet Wall Urinals.
- C 13077-E**— $1\frac{1}{4}$ -Inch Outside Diameter Double Elbow Flush Connection with Coupling Nut for Top Inlet Pedestal Urinals.
- C 13078-B**— $1\frac{1}{4}$ -Inch Outside Diameter Elbow Flush Connection with Coupling Nut for Back Inlet Pedestal Urinals.

When ordering specify thickness of Wall.

### DIMENSIONS





C 15556

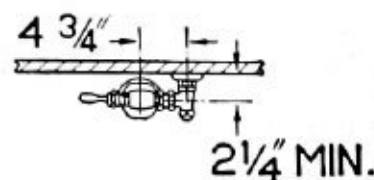
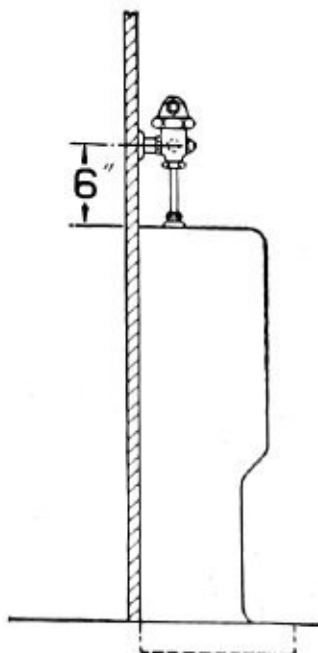
## White Solid Porcelain Urinal Stall

Crane Light Weight White Solid Porcelain Urinal Stall with Integral Drip Receptor, Extended Shields and Top Inlet; C 13056 Exposed "Water Controlled" Direct Flushing Valve with China Oscillating Handle, Angle Stop with  $\frac{3}{4}$ -Inch Iron Pipe Size Supply Connection, Metal Wall Flange with Adjustable Sleeve and C 13064-B  $\frac{3}{4}$ -Inch Outside Diameter Straight Flush Connection; Fan Flush Spreader; 3-Inch Cast Brass Outlet Strainer for Iron Pipe. All exposed metal parts are Nickel Plated Brass.

Furnished in Regular or Special Selection White Solid Porcelain as specified.

### DIMENSIONS

Width Over All.....	Inches	18	24
Height Over All.....	Inches	42	42
Depth below Floor Line.....	Inches	$3\frac{3}{4}$	$3\frac{3}{4}$





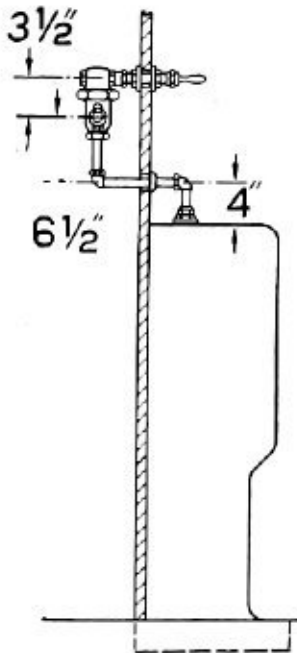
C 15568

## White Solid Porcelain Urinal Stall

Crane Light Weight White Solid Porcelain Urinal Stall with Integral Drip Receptor, Extended Shields and Top Inlet; C 13070 Concealed "Water Controlled" Direct Flushing Valve with China Oscillating Handle, Straightway Stop with  $\frac{3}{4}$ -Inch Iron Pipe Size Supply Connection and C 13077-B  $\frac{3}{4}$ -Inch Outside Diameter Double Elbow Flush Connection and Metal Wall Flange; Fan Flush Spreader; 3-Inch Cast Brass Outlet Strainer for Iron Pipe. All exposed metal parts are Nickel Plated Brass.

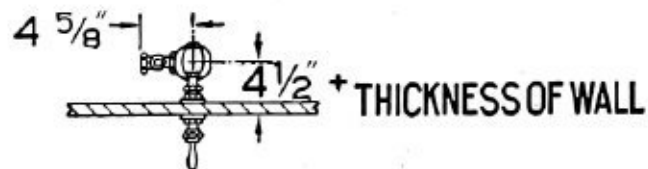
Furnished in Regular or Special Selection White Solid Porcelain as specified.

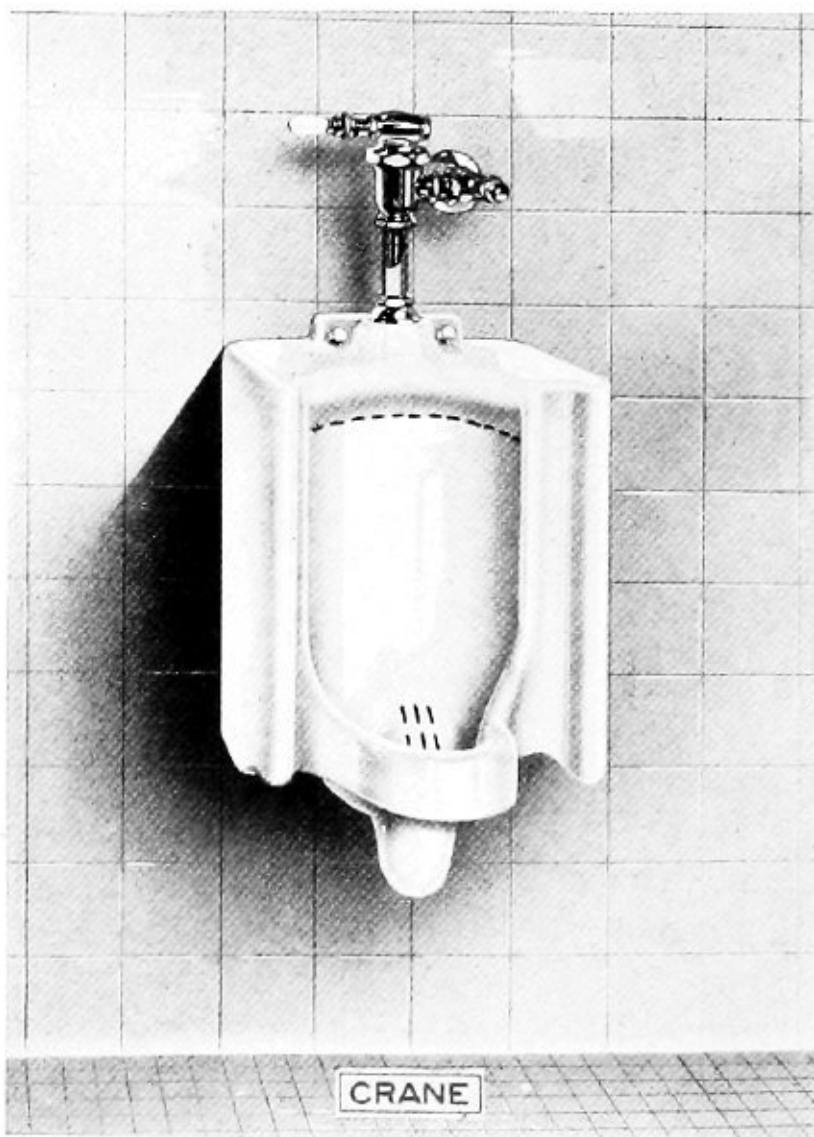
When ordering specify thickness of partition through which fixture is to operate.



### DIMENSIONS

Width Over All.....	Inches	18	24
Height Over All.....	Inches	42	42
Depth below Floor Line.....	Inches	$3\frac{3}{4}$	$3\frac{3}{4}$





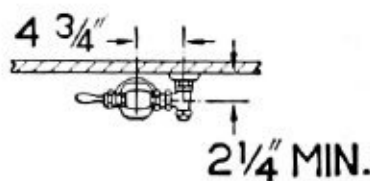
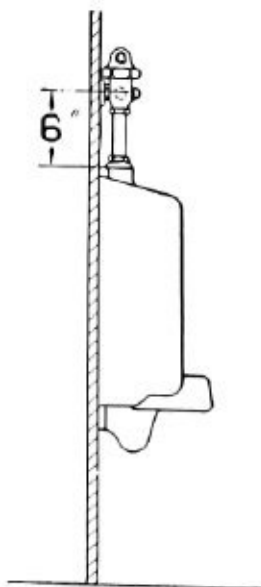
C 15610

## “Correcto” Wall Urinal

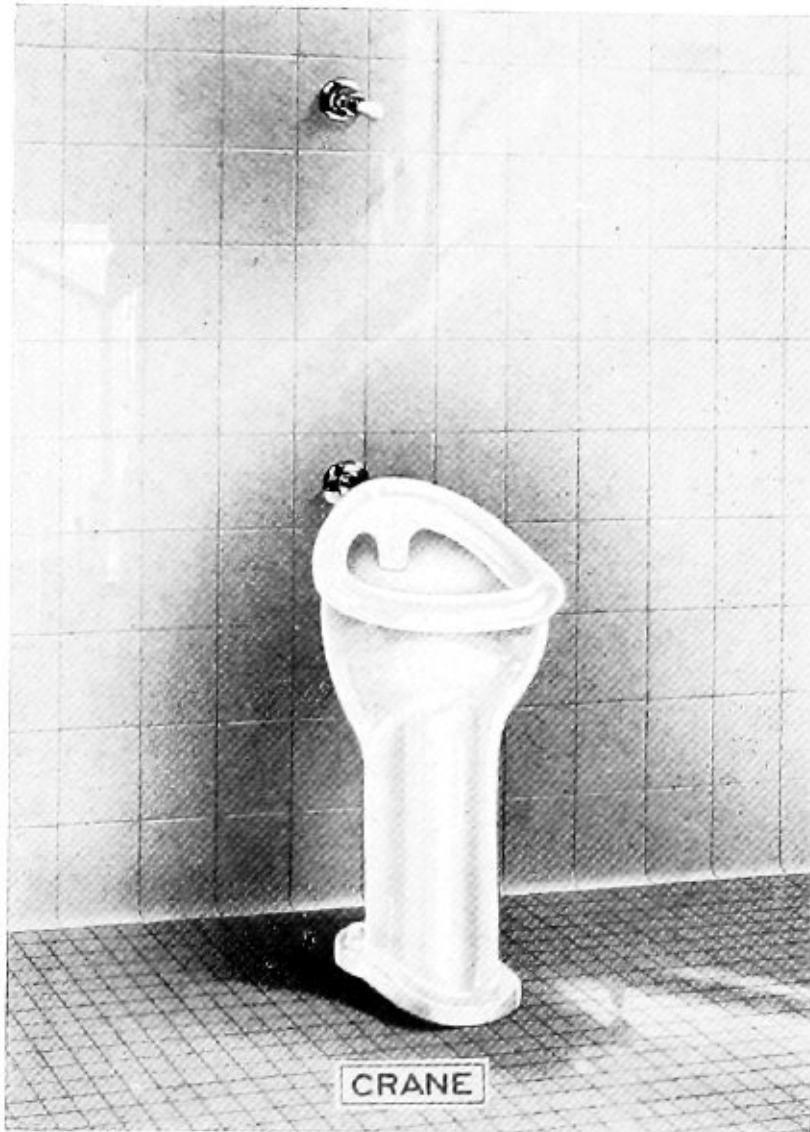
Crane “CORRECTO” Twice-Fired Vitreous China Washout Wall Pattern Stall Urinal with Integral Extended Shields, Strainer and Trap, Concealed Hanger, Top Inlet and 2-Inch Flanged Back Outlet Connection; C 13056 Exposed “Water Controlled” Direct Flushing Valve with China Oscillating Handle, Angle Stop with  $\frac{3}{4}$ -Inch Iron Pipe Size Supply Connection, Metal Wall Flange with Adjustable Sleeve and C 13066-B  $1\frac{1}{4}$ -Inch Outside Diameter Straight Flush Connection with Coupling Nut and Spud Escutcheon. All exposed metal parts are Nickel Plated Brass.

### DIMENSIONS

Width Over All.....	Inches 18	24
Height Over All.....	Inches 30	30





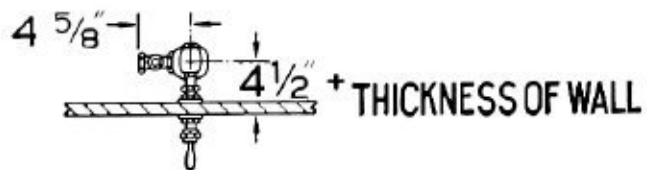
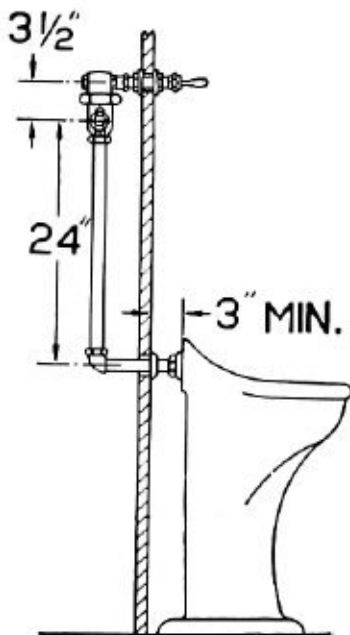


C 15650

## “Vorcy” Washdown Pedestal Urinal

Crane “VORCY” Twice-Fired Vitreous China Syphon Action Washdown Pedestal Urinal with Back Inlet; C 13070 Concealed “Water Controlled” Direct Flushing Valve with China Oscillating Handle, Straightway Stop with  $\frac{3}{4}$ -Inch Iron Pipe Size Supply Connection, C 13078-B  $1\frac{1}{4}$ -Inch Outside Diameter Elbow Flush Connection with Coupling Nut, Spud Escutcheon and Metal Wall Flange; Cast Brass Floor Flange with Rubber Gasket, Bolts and China Bolt Caps. All exposed metal parts are Nickel Plated Brass.

When ordering specify thickness of partition through which fixture is to operate.



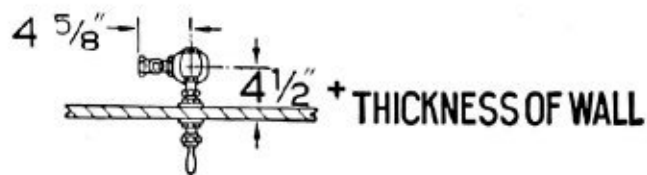
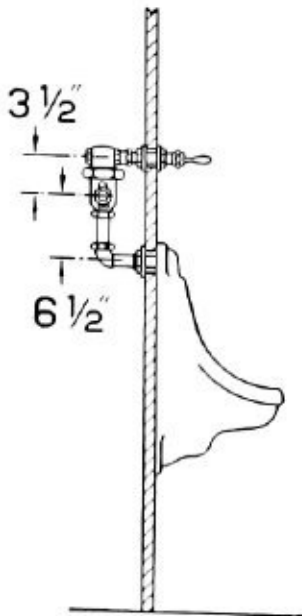


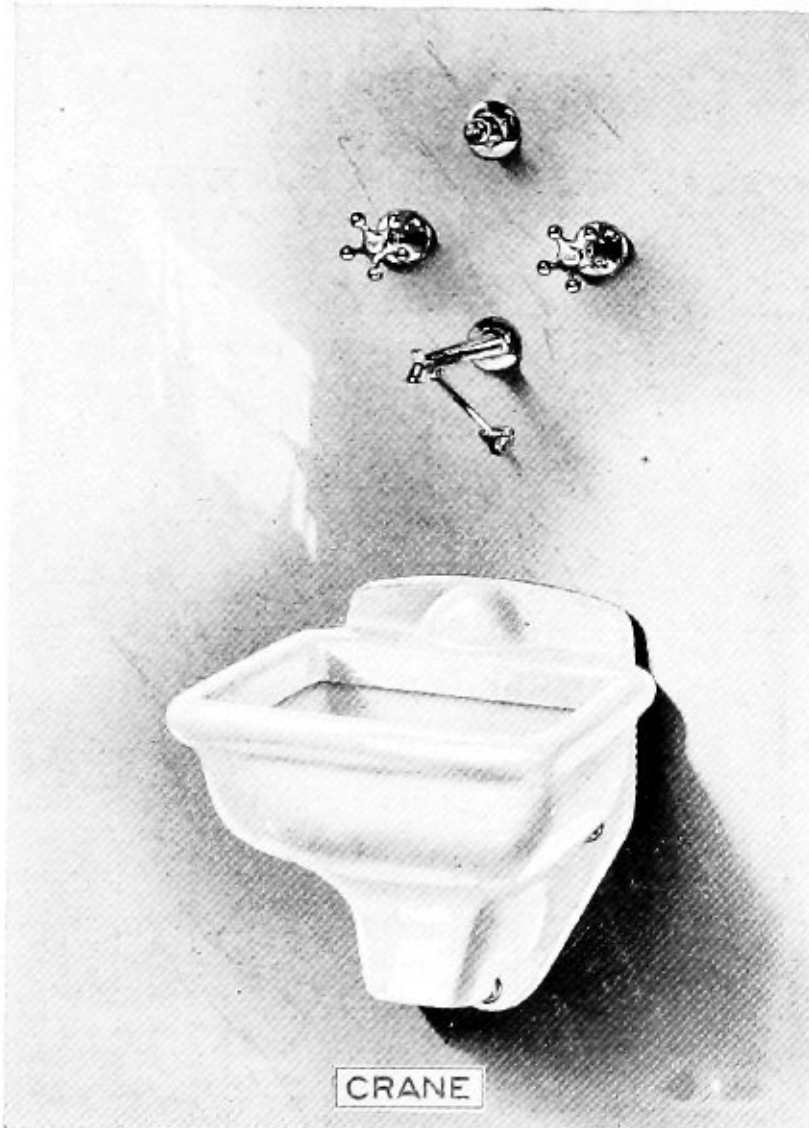
C 15670

## “Manhattan” Syphon Jet Wall Urinal

Crane “MANHATTAN” Twice-Fired Vitreous China Syphon Jet Wall Pattern Urinal with Integral Trap, Back Inlet and 2-Inch Flanged Back Outlet Connection; C 13070 Concealed “Water Controlled” Direct Flushing Valve with China Oscillating Handle. Straightway Stop with  $\frac{3}{4}$ -Inch Iron Pipe Size Supply Connection and C 13076-D  $1\frac{1}{4}$ -Inch Outside Diameter Elbow Flush Connection with Coupling Nut. All exposed metal parts are Nickel Plated Brass.

When ordering specify thickness of partition through which fixture is to operate.





C 21313

## “Expedio” Blowout Wall Slop Sink With Jet

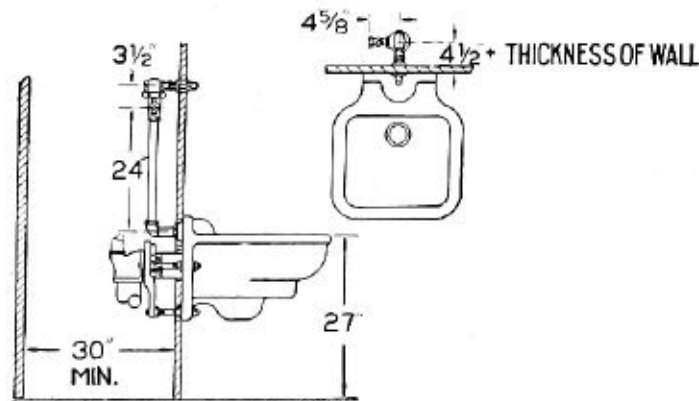
(PATENTED)

Crane “EXPEDIO” Twice-Fired Vitreous China Blowout Wall Slop Sink with Jet and Back Inlet; C 13050-E Concealed “Water Controlled” Direct Flushing Valve with Metal Push Button, 1-Inch Straightway Stop and C 13200-WS 1½-Inch Elbow Flush Connection with Coupling Nut; Concealed Combination Supply Fixture with ½-Inch Compression Supply Valves with Renewable Seats, Five-Ball China Indexed Handles and Metal Escutcheons, and heavy Cast Spout with Pail Hook and Brace to Wall; 4-Inch Cast Iron Drainage Elbow with 2-Inch Vent and Supporting Flange, Three ⅝-Inch Supporting Studs, Capnuts, Washers, Asbestos Gasket and 4-Inch Electro Galvanized Outlet Nipple. All exposed metal parts are Nickel Plated Brass.

### DIMENSIONS

Size of Sink.....Inches 21 x 24

When ordering specify whether Drainage Elbow is wanted Black or Galvanized Iron. Also state thickness of partition through which fixture is to operate.



## THE CRANE

### “Water Controlled” Direct Flushing Valve

#### GENERAL

The supply pipes to the flushing valve must be large enough to furnish a sufficient flow of water to properly flush the bowl. The size is determined to a large extent by the water pressure and the length of the supply line.

The following table indicates sizes suitable for a single closet installation or for three urinals, except the “Expedio” and Pedestal Urinals

**SIZES OF SUPPLY PIPES**

Minimum Pressure at Valve	Length of Supply Line in Feet from Water Main or Tank							
	5	10	25	50	75	100	150	200
* 5 (See Note) . . . . .	1¼	1½	1½	2	2	2½	2½	3
10 . . . . .	1	1¼	1¼	1½	1½	2	2	2½
20 . . . . .	1	1	1¼	1¼	1½	1½	2	2
30 . . . . .	1	1	1	1¼	1¼	1½	1½	1½
40 . . . . .	1	1	1	1¼	1¼	1¼	1½	1½
50 . . . . .	1	1	1	1¼	1¼	1¼	1¼	1½
60 . . . . .	†1	1	1	1	1¼	1¼	1¼	1¼
70 . . . . .	†1	†1	1	1	1¼	1¼	1¼	1¼
80 . . . . .	†1	†1	1	1	1	1¼	1¼	1¼

†—¾-Inch Pipe has sufficient capacity under these conditions and can be used if desired.

NOTE: Add 50 pipe diameters to the length of pipe for each fitting or valve in the supply line.

Regular Valve will operate floor outlet closets on pressures down to 10 pounds per square inch at the Valve, and Valve made for “Expedio” blowout Wall Closets will operate these bowls on pressures down to 15 pounds per square inch at the Valve.

\*NOTE: In cases where it is found necessary to operate Floor Outlet Closets at pressures lower than 10 pounds (minimum 5 pounds) a special valve can be furnished, but it is recommended that a pressure of at least 10 pounds be provided for if possible.

Supply connections to the Valve should not be less than 1-Inch.

Run pipe as straight as possible.

Pipe Cement, Red or White Lead should not be used *inside* of valve, fitting or pipe.

Ends of all piping should be reamed to remove burr.

Blow out supply lines thoroughly by holding the valve wide open until all pipe chips, sediment, etc., which might lodge on seat and cause valve to leak, are removed.

Should the valve fail to close, shut off the water supply, take valve apart and examine for pipe chips, scale and white lead, which may have lodged under the main or auxiliary valve seat.

NOTE: The handle on the Exposed Valve may be placed to the right, to the left or to the front of the inlet by loosening the union ring and turning the bonnet.

## *Installation Pipe Size Data*

Crane floor outlet Closet bowls flush approximately four gallons in six seconds, or at the rate of forty gallons per minute. The "EXPEDIO" Wall Closet flushes approximately three gallons in from three to six seconds or at approximately the same rate of flow per minute as the floor outlet closet bowls.

The size of pipe leading from a supply riser to a battery of closet bowls is determined by the number of bowls to be flushed at any one time. In view of the fact that a flushing period is only approximately six seconds, it will be unlikely that more than a small percentage of valves will be flushed at any one time except installations where a periodic use is common.

The following table of pipe size information shows two things:

- First:* The size of pipe which can be used for a certain number of bowls at a given pressure (pipe length 25 feet).
- Second:* The percentage of bowls which can be operated at the same time when using the pipe size given.

As an example to explain the use of this table, we give the following:

An installation is to consist of a battery of twelve closet bowls to operate at fifty pounds pressure using 25 feet of pipe. Referring to the table it will be found that—

If 1½-Inch pipe is used—44% of the bowls may be operated at one time.

If 1¼-Inch pipe is used—28% of the bowls may be operated at one time.

If 1-Inch pipe is used—16% of the bowls may be operated at one time.

Assuming that the same installation of a battery of twelve closet bowls is to be operated at 20 pounds pressure, it will be noted that—

If a 2-Inch pipe is used—57% of the bowls may be operated at one time.

If 1½-Inch pipe is used—28% of the bowls may be operated at one time.

If 1¼-Inch pipe is used—18% of the bowls may be operated at one time.

# Table of Pipe Sizes for Flush Valve Installations

This Table is based on Pipe Lengths of 25 Feet

Number of Bowls

Lbs. Press.	1	2	3	4	5	6	7	8	9	10	12	16	20	30
10	1 1/4 155%	1 1/4 78%		1 1/2 60%		2 81%		2 61%			2 1/2 72%	2 1/2 54%	3 67%	3 45%
	1 85%	1 42%		1 1/4 39%		1 1/2 40%		1 1/2 30%			2 41%	2 33%	2 1/2 43%	2 1/2 29%
23.1 ft.				1 21%		1 1/4 26%		1 1/4 19%			1 1/2 20%	1 1/2 15%	2 24%	2 16%
20	1 120%	1 60%		1 1/2 84%		1 1/2 56%		2 86%			2 57%	2 1/2 75%	2 1/2 60%	3 63%
				1 1/4 54%		1 1/4 36%		1 1/2 42%			1 1/2 28%	2 43%	2 34%	2 1/2 40%
46.2 ft.				1 30%		1 20%		1 1/4 28%			1 1/4 18%	1 1/2 21%	1 1/2 17%	2 23%
30	1 145%	1 72%		1 1/4 61%		1 1/2 67%		1 1/2 50%			2 69%	2 52%	2 1/2 73%	2 1/2 49%
				1 36%		1 1/4 44%		1 1/4 33%			1 1/2 33%	1 1/2 25%	2 41%	2 28%
69.3 ft.						1 24%		1 18%			1 1/4 22%	1 1/4 17%	1 1/2 20%	1 1/2 14%
40	1 168%	1 84%		1 1/4 76%		1 1/2 78%		1 1/2 59%			2 80%	2 60%	2 48%	2 1/2 56%
				1 42%		1 1/4 51%		1 1/4 38%			1 1/2 39%	1 1/2 29%	1 1/2 23%	2 32%
92.4 ft.						1 28%		1 21%			1 1/4 25%	1 1/4 19%	1 1/4 15%	1 1/2 16%
50	1 187%	1 94%		1 1/4 85%		1 1/2 88%		1 1/2 65%			1 1/2 44%	2 67%	2 54%	2 1/2 63%
				1 47%		1 1/4 57%		1 1/4 42%			1 1/4 28%	1 1/2 33%	1 1/2 26%	2 36%
115.5 ft.						1 31%		1 24%			1 16%	1 1/4 21%	1 1/4 21%	1 1/2 18%
60	1 208%	1 104%		1 1/4 93%		1 1/4 62%		1 1/2 72%			1 1/2 48%	2 74%	2 59%	2 1/2 69%
				1 52%		1 35%		1 1/4 47%			1 1/4 31%	1 1/2 36%	1 1/2 29%	2 39%
138.6 ft.							1 26%				1 17%	1 1/4 23%	1 1/4 19%	1 1/2 19%
70	1 225%	1 113%		1 1/4 100%		1 1/4 67%		1 1/2 77%			1 1/2 52%	2 80%	2 64%	2 1/2 74%
				1 56%		1 45%		1 1/4 50%			1 1/4 34%	1 1/2 39%	1 1/2 31%	2 43%
161.7 ft.							1 28%				1 19%	1 1/4 25%	1 1/4 20%	1 1/2 21%
80	1 240%	1 120%		1 60%		1 1/4 71%		1 1/4 53%			1 1/2 55%	1 1/2 41%	2 68%	2 45%
						1 40%		1 30%			1 1/4 36%	1 1/4 27%	1 1/2 33%	1 1/2 22%
184.8 ft.										1 20%	1 15%	1 1/4 21%	1 1/4 8%	

For pipe sizes for installations not covered by data in the foregoing table, use the data in the following tables which show capacities of different size pipes at different pressures and figure on the basis of a flow at the rate of forty gallons per minute for each closet bowl when operating a hundred per cent capacity. For smaller percentages of operation the pipe size can be reduced in proportion to capacity required.

For example: A battery of forty closet bowls will be operated at thirty pounds pressure using 75 feet of pipe.

40 x 40 Gallons = 1600 gallons per minute required for one hundred per cent operation.

Approximately twenty per cent operation is required so—

1600 x 20% = 320 gallons per minute.

Referring to the table covering capacity of pipes 75 feet long under thirty pounds pressure, it will be noted that a 2 1/2-Inch pipe will give 336 gallons per minute, so a 2 1/2-Inch pipe will be satisfactory for the supply, providing it does not run over 75 feet.

## Flow of Water Through Wrought Pipe

Valves or fittings inserted in supply line should be figured as additional pipe length as follows:

- A 90° Elbow is equal to 50 pipe diameters in length.
- A 45° Elbow is equal to 25 pipe diameters in length.
- A Gate Valve is equal to 6 pipe diameters in length.

### GALLONS DELIVERED PER MINUTE LENGTH OF PIPE 25 FEET

Lbs. Press.	Head in Ft.	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	4 1/2"	5"	6"
5	11.5	13.7	23.9	43.0	66.0	135	237	376	549	766	988	1338	2113
10	23.1	18	34	62	96	195	342	538	792	1109	1395	1812	2980
20	46.2	26	48	87	134	275	479	753	1106	1548	1975	2679	4230
30	69.3	32	58	106	162	333	583	920	1352	1892	2422	3282	5180
40	92.4	37	67	122	187	385	673	1061	1562	2191	2780	3780	5970
50	115.5	41	75	136	210	430	752	1180	1743	2435	3125	4240	6685
60	138.6	45	83	149	229	471	822	1296	1910	2670	3429	4640	7320
70	161.7	49	90	162	248	508	890	1403	2057	2892	3699	5005	7900
80	184.8	52	96	172	265	544	950	1500	2202	3088	3980	5360	8480

### LENGTH OF PIPE 50 FEET

Lbs. Press.	Head in Ft.	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	4 1/2"	5"	6"
5	11.5	9.7	16.9	30.4	46.8	95.7	168	264	388	542	699	947	1495
10	23.1	13.7	23.9	43.2	66.2	136	237	374	559	768	991	1341	2118
20	46.2	19.4	33.8	61.0	93.6	192	336	529	778	1086	1401	1898	2995
30	69.3	23.8	41.4	74.6	115	235	411	647	952	1329	1715	2322	3665
40	92.4	27.5	47.8	86.2	132	271	474	747	1100	1535	1980	2682	4239
50	115.5	30.7	53.6	96.5	148	304	531	836	1230	1719	2216	3000	4736
60	138.6	33.6	58.6	106	162	332	581	915	1346	1880	2426	3286	5188
70	161.7	36.3	63.3	114	175	359	628	989	1455	2032	2621	3550	5604
80	184.8	38.8	67.7	122	187	384	671	1058	1556	2175	2803	3792	5992

### LENGTH OF PIPE 75 FEET

Lbs. Press.	Head in Ft.	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	4 1/2"	5"	6"
5	11.5	7.9	13.8	24.8	38.1	78.2	137	215	317	442	571	773	1220
10	23.1	11.2	19.6	35.2	54.0	111	194	305	449	627	809	1095	1729
20	46.2	15.9	27.7	49.8	76.4	157	274	432	635	887	1144	1549	2446
30	69.3	19.4	33.9	61.0	93.6	192	336	529	778	1086	1401	1898	2996
40	92.4	22.4	39.1	70.4	108	222	387	610	898	1254	1618	2191	3458
50	115.5	25.1	43.7	78.7	121	248	433	682	1004	1402	1808	2449	3866
60	138.6	27.4	47.9	86.2	132	271	474	747	1099	1535	1980	2682	4233
70	161.7	29.7	51.7	93.1	143	293	513	807	1188	1659	2140	2898	4575
80	184.8	31.7	55.3	99.6	153	313	548	863	1270	1773	2288	3099	4891

## Flow of Water Through Wrought Pipe

Valves or Fittings inserted in supply line should be figured as additional pipe length as follows:

- A 90° Elbow is equal to 50 pipe diameters in length.
- A 45° Elbow is equal to 25 pipe diameters in length.
- A Gate Valve is equal to 6 pipe diameters in length.

### GALLONS DELIVERED PER MINUTE LENGTH OF PIPE 100 FEET

Lbs. Press.	Head in Ft.	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	4 1/2"	5"	6"
5	11.5	6.9	11.9	21.5	33.0	67.7	119	186	274	383	494	668	1056
10	23.1	9.8	17	31	48	98	170	269	396	543	699	946	1496
20	46.2	13.8	24	44	67	137	240	378	558	768	987	1335	2109
30	69.3	16.9	29	53	82	166	292	458	676	940	1209	1636	2586
40	92.4	19.5	34	61	94	192	336	528	779	1088	1394	1890	2985
50	115.5	21.8	38	68	104	214	375	590	870	1213	1568	2115	3342
60	138.6	24	41	75	115	235	412	650	956	1335	1710	2312	3660
70	161.7	26	45	80	124	254	444	698	1028	1439	1845	2500	3954
80	184.8	27.6	48	86	133	272	475	748	1102	1540	1980	2682	4242

### LENGTH OF PIPE 150 FEET

Lbs. Press.	Head in Ft.	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	4 1/2"	5"	6"
5	11.5	5.6	9.8	17.6	27.0	55.5	97.0	153	224	314	405	548	865
10	23.1	7.9	13.7	24.9	38.1	78.2	137	216	317	443	572	774	1222
20	46.2	11.2	19.5	35.2	54.1	111	194	305	449	627	809	1095	1729
30	69.3	13.7	24.0	43.2	66.2	136	237	374	550	768	991	1341	2117
40	92.4	15.8	27.0	49.7	76.4	157	274	432	635	887	1144	1550	2440
50	115.5	17.7	31.0	55.7	85.3	175	306	482	709	991	1279	1732	2735
60	138.6	19.4	34.0	61.0	93.5	192	336	529	777	1087	1401	1898	2994
70	161.7	21.0	36.6	66.0	101	208	363	572	840	1173	1512	2049	3235
80	184.8	22.4	39.0	70.5	108	222	388	612	898	1255	1617	2190	3450

### LENGTH OF PIPE 200 FEET

Lbs. Press.	Head in Ft.	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	4 1/2"	5"	6"
5	11.5	4.85	8.40	15.2	23.4	47.9	83.8	132	194	272	350	474	748
10	23.1	6.86	12.0	21.5	33.0	67.7	119	187	275	384	495	670	1058
20	46.2	9.72	16.9	30.5	46.7	96.0	168	264	389	542	698	950	1496
30	69.3	11.8	20.7	37.4	57.2	117	205	323	476	664	857	1160	1833
40	92.4	13.7	23.9	43.1	66.2	136	237	374	550	768	991	1341	2118
50	115.5	15.3	26.8	48.2	74.0	152	266	418	615	860	1107	1498	2368
60	138.6	16.8	29.3	52.8	81.0	166	291	457	674	941	1213	1644	2595
70	161.7	18.2	31.7	57.1	87.6	180	314	495	729	1016	1311	1774	2798
80	184.8	19.4	33.9	61.0	93.7	193	335	528	777	1086	1400	1896	2993



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