



**Bateman Civil Survey Company, PC**

2524 Reliance Avenue  
Apex, NC 27539  
(919) 577-1080/fax (919) 577-1080

October 02, 2023

Harnett County Environmental Health Department  
Harnett County Environmental Health,  
900 S 9th St.  
Lillington NC 27546

**RE: Wastewater Daily Flow Calculations**

Birchwood Grove Lot 58  
296 Robert Howe Dr, Fuquay Varina, Harnett County, North Carolina  
Project #3753

Dear Harnett County Staff:

Bateman Civil Survey Company in conjunction with Central Carolina Soil Consulting (CCSC) are proposing wastewater daily flow calculations for a single-family home located at Birchwood Grove Lot 58 pursuant to session law 2014-120 and 2013-413. The proposed home will have **4** bedrooms and under the current flow calculations provided in the state rules would have a daily flow of **480** gallons per day. That would be based on 120 gallons per bedroom.

Household flow rates from the 15 NCAC 18A section of the state rules relied on fixture flow rates from 1982, and calculated the flows for common fixtures to established average flows for the purpose of calculating household daily flows and septic system based on those flows. The data for the historic fixture flows was taken from the EPA 2002 Onsite Wastewater Treatment Systems Manual.

The attached spreadsheet contains the flow reducing fixtures that are proposed for Birchwood Grove Lot 58. The table includes flow rates for the flow reducing fixtures as well as flow rates from the state rules and the percentage of water savings. On average the proposed fixtures provide a 40% savings.

We are requesting a reduction of 25% for the use of low flow fixtures. This will provide an adjusted daily flow of 90 gallons per bedroom per day and a total flow of **360** gallons per day for the proposed 4-bedroom house.

Calculations for effluent strength are shown below based on a 25% reduction in flow with a base flow concentration of 220 mg/l for both BODs and TSS. High strength effluent levels are considered to be higher than 350 mg/l for both BODs and TSS. Based on a reduction in flow of 25% we anticipate the concentration levels of both BODs and TSS to be around 293 mg/l well below the 350 mg/l threshold.

If you need further information or have any questions please contact Matt Burdette at (919) 422-2827 or Tom Speight at 919-577-1080 2524 Reliance Ave, Apex NC 27539.

Sincerely,

BATEMAN CIVIL SURVEY COMPANY  
NCBELS# C-2378.

DocuSigned by:  
*Thomas Speight, Jr, PE, PLS*  
09838E23DC404AD...



10/2/2023

Thomas Speight, P.E  
(seal)

**Birchwood Grove Lot 58**

	Item	Model	Gal/min. or flush	Number of Fixures	Base Flow From 1982	Percent Water Savings
Master	Shower Head	Moen T5152EP	1.8 gal/minute	1	5.5 gal/minute	67%
	Lavatory Faucet	Moen 5010	1.2 gal/minute	2	3.0 gal/minute	60%
Kitchen	Kitchen Sink Faucet	Moen 7585	1.5 gal/minute	1	3.0 gal/minute	50%
Bath 2	Lavatory Faucet	Moen 6172	1.2 gal/minute	1	3.0 gal/minute	60%
	Shower Head	Moen T2843EP	1.8 gal/minute	1	5.5 gal/minute	67%
Bath 3	Lavatory Faucet	Moen 5010	1.2 gal/minute	1	3.0 gal/minute	60%
	Shower Head	Moen T5152EP	1.8 gal/minute	1	5.5 gal/minute	67%
Toilets	Master, 2, 3	Gerber Maxwell Tank 28-990	1.3 gal /flush	3	3.5 gal/minute	63%

FIXTURES	TOILET	FAUCET	SHOWER	LEAK	BATH	OTHER	DISHWASHER	CLOTHES WASHER	TOTALS
PERCENT OF HOUSE HOLD WATER USE	24%	20%	20%	12%	3%	3%	2%	16%	100%
GALLONS PER DAY (480 BASE)	115	96	96	58	14	14	10	77	480
PERCENT OF SAVINGS FROM WATER SAVING FIXURES	63%	58% avg	67%	0%	0%	0%	0%	0%	40%
ADJUSTED FLOW (GALLONS)	43	40	32	58	14	14	10	77	288

# MOEN®

## Specifications

### DESCRIPTION

- Metal construction with various finishes identified by suffix
- Pressure balancing cycle valve design with an adjustable temperature limit stop
- 1/2" IPS connections
- Includes valve, tub spout, showerhead, arm and flange


### OPERATION

- Lever style handle
- Handle operates counterclockwise through a 270° arc with off at 6 o'clock and maximum hot at the 9 o'clock position. Shut off in clockwise direction
- Adjustable temperature limit stop to control maximum hot water temperature
- Pressure balancing mechanism maintains selected discharge temperature to  $\pm 2^\circ$

### FLOW

- EP suffix models are designed to deliver 1.75 gpm (6.6 L/min) at 45 psi

### STANDARDS

- Third party certified to: WaterSense®, ASME A112.18.1/CSA B-125.1 and all applicable requirements referenced therein
- Products marked with 1.75 gpm are compliant with California water efficiency regulations
- ADA  for lever handle

### WARRANTY

- Lifetime limited warranty against leaks, drips and finish defects to the original homeowner
  - 10 year limited warranty when used in a multifamily installation
  - 5 year limited warranty when used in a commercial installation
- Visit [www.moen.com/support](http://www.moen.com/support) for complete details and limitations

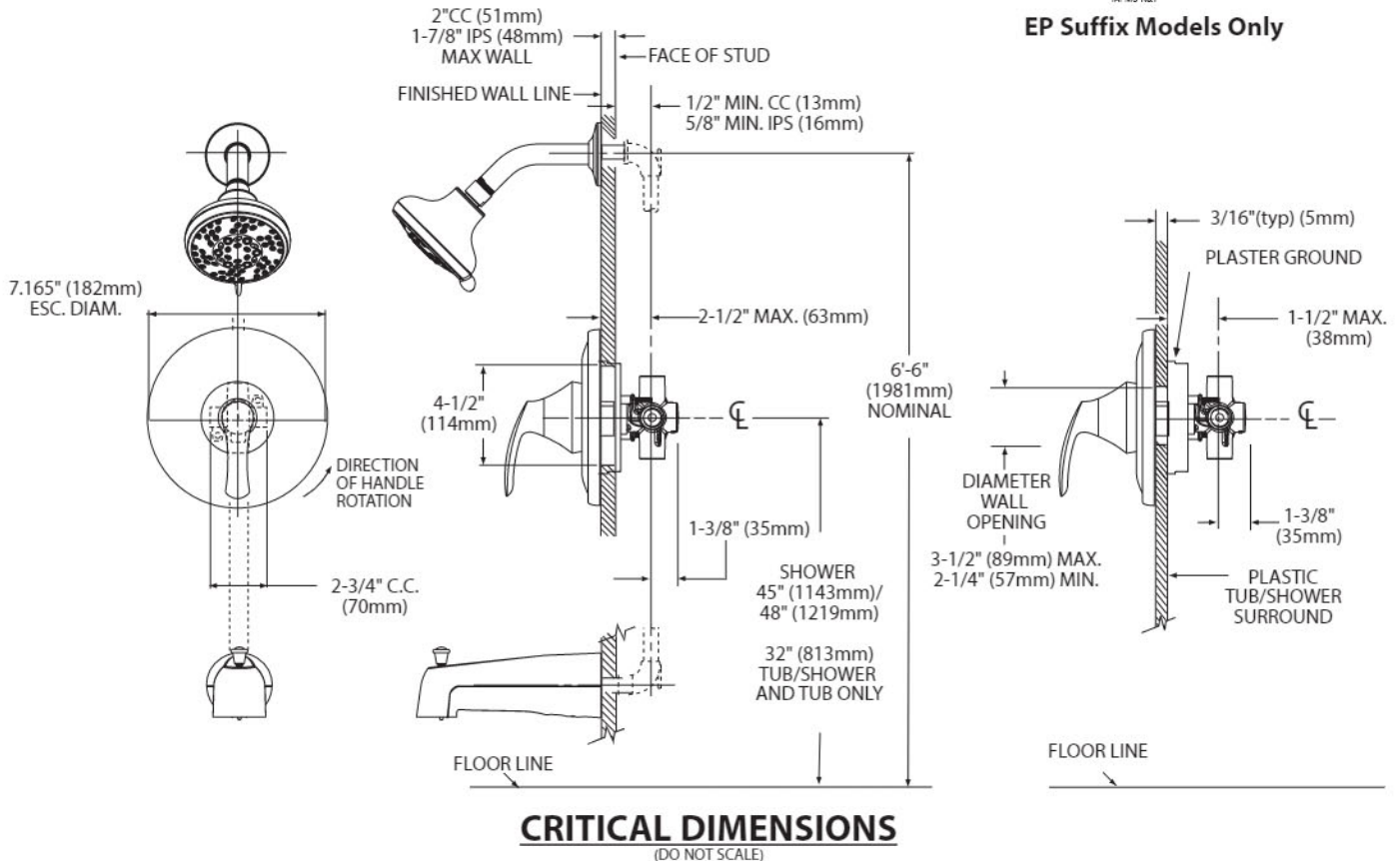


### Seena™ Posi-Temp® Single-Handle Tub/Shower

**Models:** T5152EP series - shower trim only  
T5153EP series - tub/shower trim



**EP Suffix Models Only**



# MOEN®

## Specifications

### DESCRIPTION

- Metal construction with finish identified by suffix
- 1/2" IPS connections for flexible hoses only; not for use with rigid or semi-rigid supply risers (3/8" Copper or Pex) with coupling nuts
- Installation through 3 holes, 1" min. diameter, and 4" on center
- Includes pop-up waste assembly

### OPERATION

- Lever handles
- Maximum handle rotation angle is 90° to full on
- Hot side counterclockwise to open (clockwise to close)
- Cold side clockwise to open (counterclockwise to close)

### FLOW

- Water usage is limited to the maximum flow rates as indicated by the corresponding product markings
  - 1.2 gpm max (4.5 L/min) at 60 psi

### CARTRIDGE

- 1234 cartridge
- Nonmetallic and stainless steel material

### STANDARDS

- Third party certified at WaterSense®, ASME A112.18.1/CSA B125.1, and all applicable requirements referenced therein including NSF 61/9 & 372
- Products marked with 1.2 gpm are compliant with California water efficiency regulations
- Complies with California Proposition 65 and with the Federal Safe Drinking Water Act
- ADA ♿ for lever handles

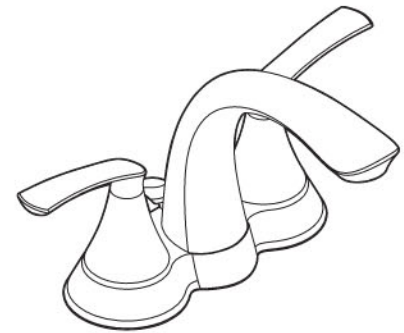
### WARRANTY

- Limited lifetime warranty against leaks, drips and finish defects to the original consumer purchaser
- 10 year warranty when used in a multifamily installation
- 5 year warranty when used in a commercial installation

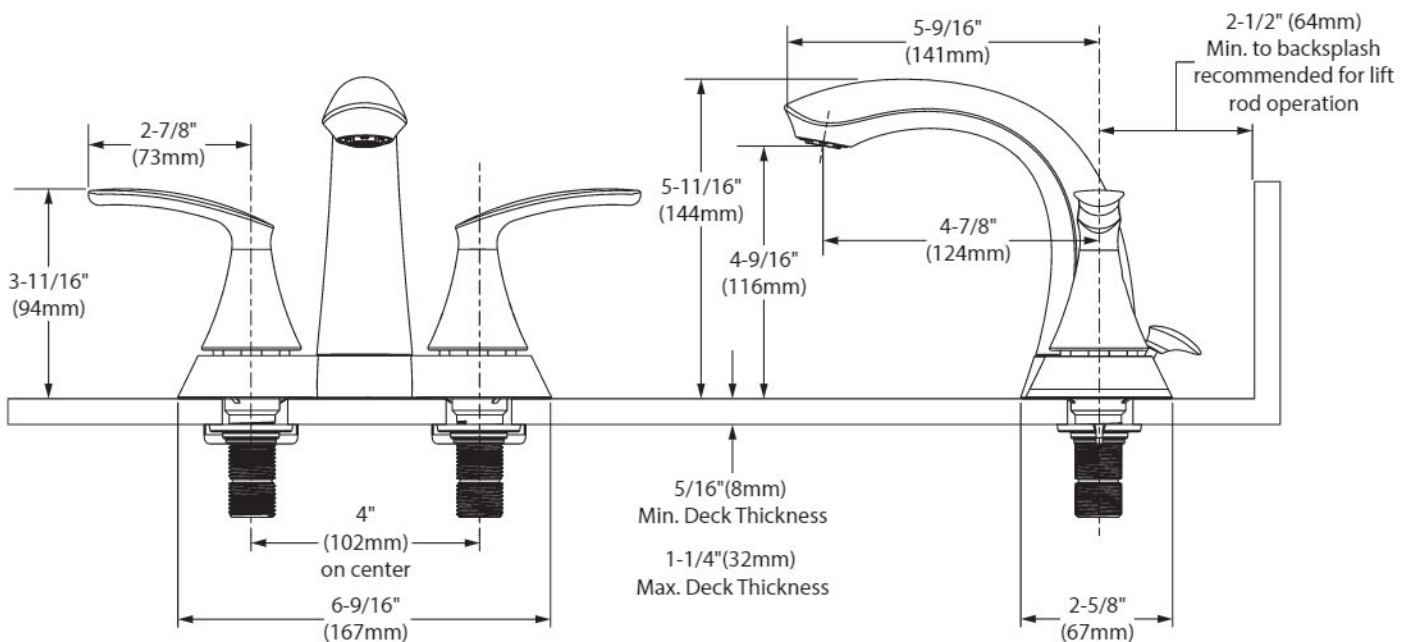
Visit [www.moen.com/support](http://www.moen.com/support) for complete details and limitations

### OPTIONS (See Illustrated Parts page)

- Thin and thick deck mounting hardware kits available

**SEENA™****Two-Handle 4" Centerset Lavatory Faucet****Models:**

5010 series includes pop-up waste



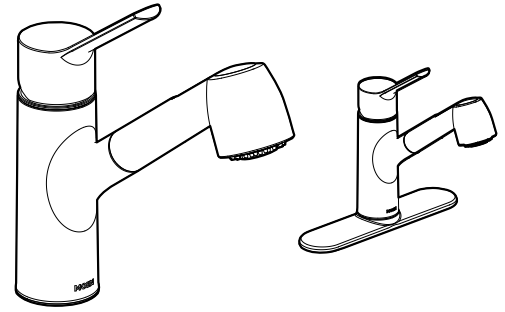
### CRITICAL DIMENSIONS

(DO NOT SCALE)



Buy it for looks. Buy it for life.®

# Specifications



## DESCRIPTION

- Metal construction with various finishes identified by suffix
- Pullout spray with 59" braided hose
- Flexible supplies with 3/8" compression fittings

## OPERATION

- Lever style handle
- Temperature controlled by 100° arc of handle travel
- Spout rotation is 120°
- Operates with less than 5lbs. of force
- Operates in stream or spray mode in the pullout or retracted position

## FLOW

- Flow is limited to 1.5 gpm (5.7 L/min) at 60 psi

## CARTRIDGE

- 1255™ Duralast™ cartridge

## STANDARDS

- Third party certified to IAPMO Green, ASME A112.18.1/CSA B-125.1 and all applicable requirements referenced therein including NSF 61/9
- Meets CalGreen and Georgia SB370 requirements
- Contains no more than 0.25% weighted average lead content
- Complies with California Proposition 65 and with the Federal Safe Drinking Water Act
- The backflow protection system in the device consists of two independently operating check valves, a primary and a secondary which prevent backflow

- **ADA**  for lever handle

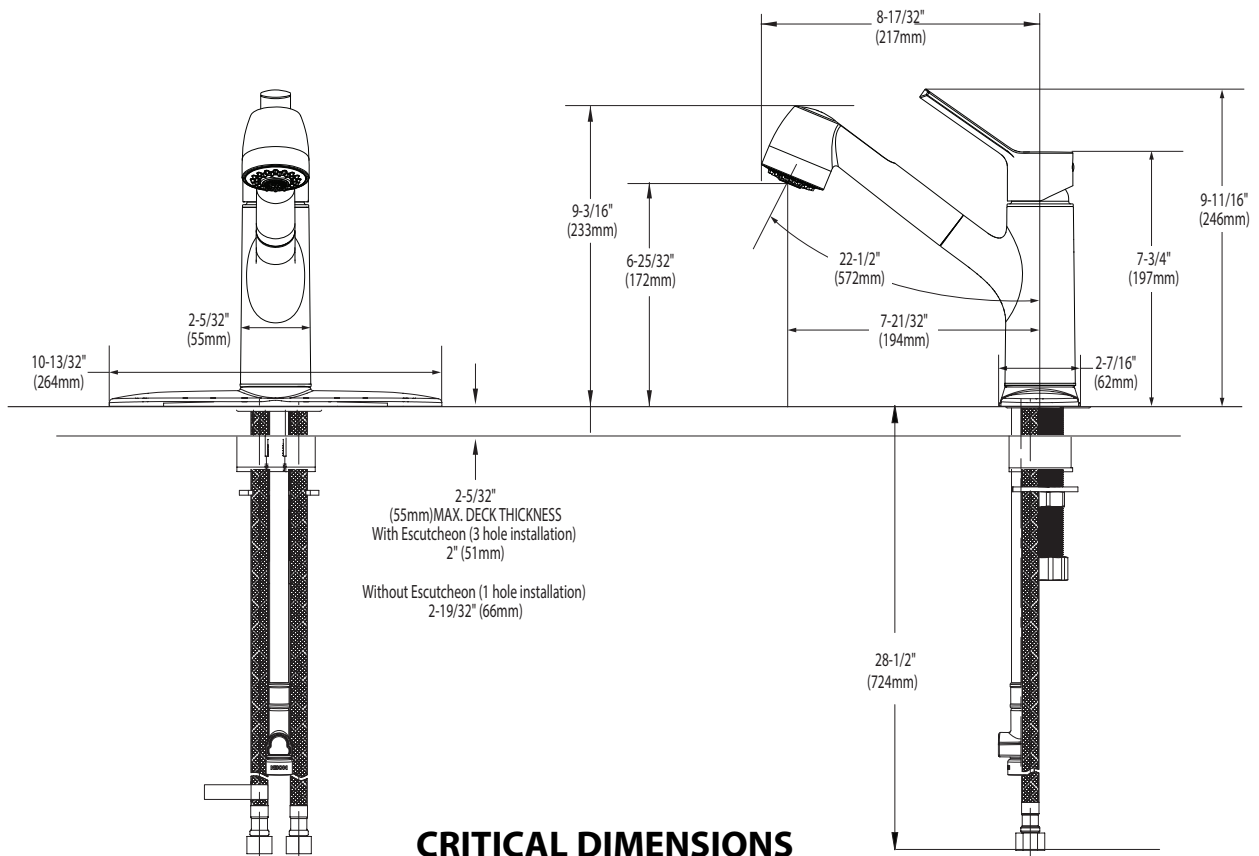
## WARRANTY

- Lifetime limited warranty against leaks, drips and finish defects to the original consumer purchaser
- 5 year warranty if used in commercial installations

## Method™ Single Handle Pullout Kitchen Faucet

Models: 7585 series

**NOTE:** DESIGNED TO INSTALL  
THRU 1 OR 3 HOLES 1-1/2" (38mm) DIA.



FOR MORE INFORMATION CALL: 1-800-BUY-MOEN

www.moen.com



# MOEN®

## Specifications

### DESCRIPTION

- Metal construction with various finishes identified by suffix
- 1/2" IPS connections
- Hot and cold temperature indicators available
- Installation through 3 holes, 1" min. diameter, and 4" on center
- Includes metal pop-up waste assembly (6172)
- Includes 50% metal/50% plastic waste assembly (66172)

### OPERATION

- Lever style handles with optional hot & cold indicators available
- Maximum handle rotation angle is 90° to full on for either handle
- Hot side counterclockwise to open (clockwise to close)
- Cold side clockwise to open (counterclockwise to close)

### FLOW

- Water usage is limited to these maximum flow rates as indicated by the corresponding product markings
  - 1.2 gpm max (4.5L/min) at 60 psi

### CARTRIDGE

- 1234 cartridge design
- Nonmetallic, nonferrous and stainless steel material

### STANDARDS

- Third party certified to WaterSense®, ASME A112.18.1/CSA B125.1 and all applicable requirements referenced therein
- Certified to NSF 61/9 & 372
- Products marked with 1.2 gpm are compliant with California water efficiency regulations
- Complies with California Proposition 65 and with the Federal Safe Drinking Water Act
- ADA ♿ for lever handles

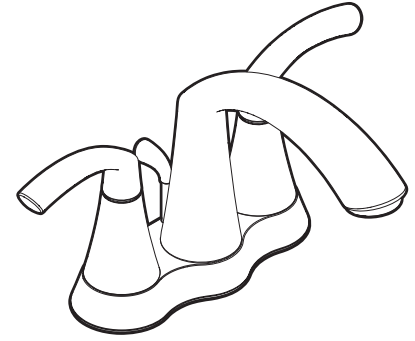
### WARRANTY

- Limited lifetime warranty against leaks, drips and finish defects to the original homeowner
- 10 year warranty when used in a multifamily installation
- 5 year warranty when used in a commercial installation

Visit [www.moen.com/support](http://www.moen.com/support) for complete details and limitations

### OPTIONS (See Illustrated Parts page)

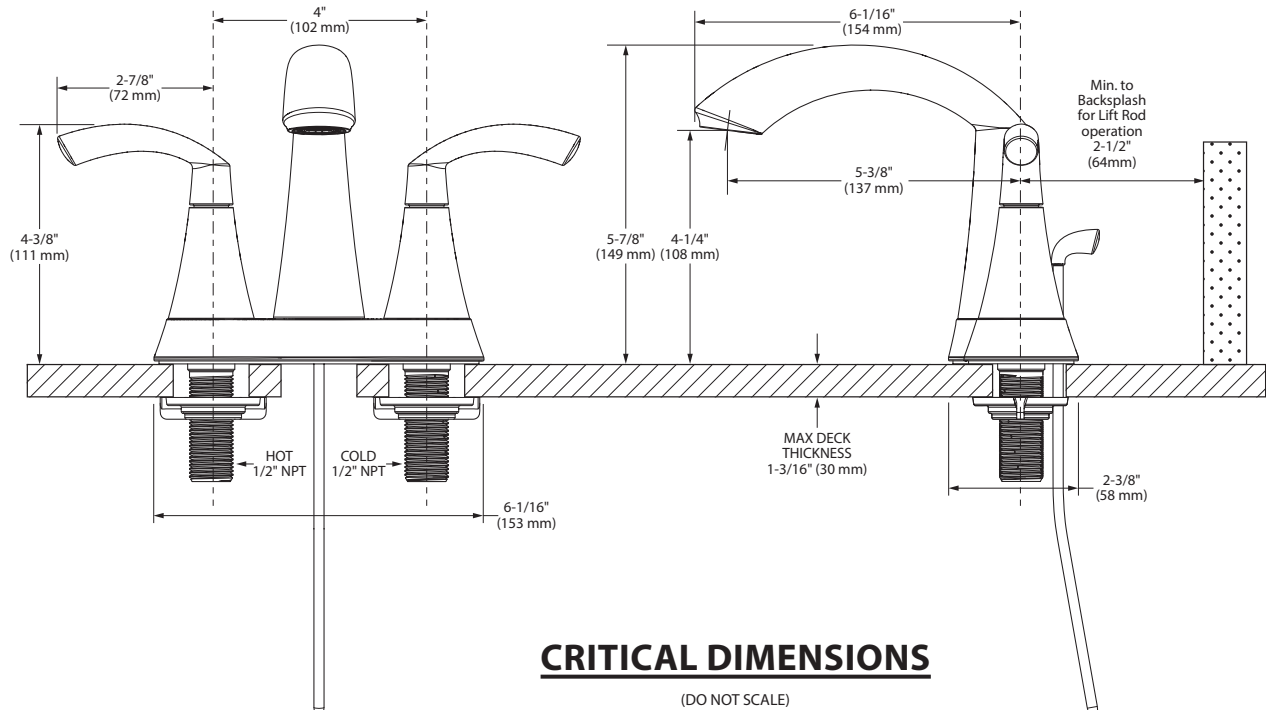
- Thin and thick deck mounting hardware kits available



**GLYDE™**  
**Two-Handle 4" Centerset**  
**Lavatory Faucet**

**Models:** 6172 series and 66172  
(bulk) includes  
pop-up waste

**NOTE:** THIS FAUCET IS DESIGNED TO  
BE INSTALLED THROUGH  
3 HOLES, 1" MIN. DIA.





Buy it for looks. Buy it for life.®

## DESCRIPTION

- Metal construction with various finishes identified by suffix
- Includes showerhead, arm, flange and diverter tub spout

## OPERATION

- Handle operates counterclockwise through a 270° arc with off at 6 o'clock and maximum hot at the 9 o'clock position. Shut off in clockwise direction
- Adjustable temperature limit stop to control maximum hot water temperature
- Pressure balancing mechanism maintains selected discharge temperature to  $\pm 3^\circ$


## FLOW

- EP suffix models are limited to 2.0 gpm (7.6 L/min) max for products manufactured prior to June 30, 2018. EP suffix models manufactured after June 30, 2018 are limited to 1.75 gpm (6.7 L/min) max.

## CARTRIDGE

- 1222 cartridge design
- Accommodates back to back installations
- Nonmetallic, nonferrous and stainless steel material

## STANDARDS

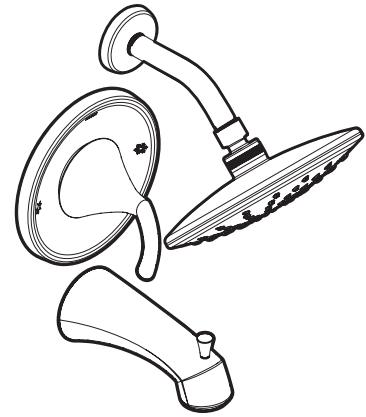
- Third party certified to meet ASME A112.18.1/CSA B125.1 and all applicable requirements referenced therein
- EP suffix models are third party certified to WaterSense®
- **ADA**  for lever handles

## WARRANTY

- Lifetime limited warranty against leaks, drips and finish defects to the original homeowner
- 10 year limited warranty when used in a multifamily installation
- 5 year limited warranty when used in a commercial installation

Visit [www.moen.com/support](http://www.moen.com/support) for complete details and limitations

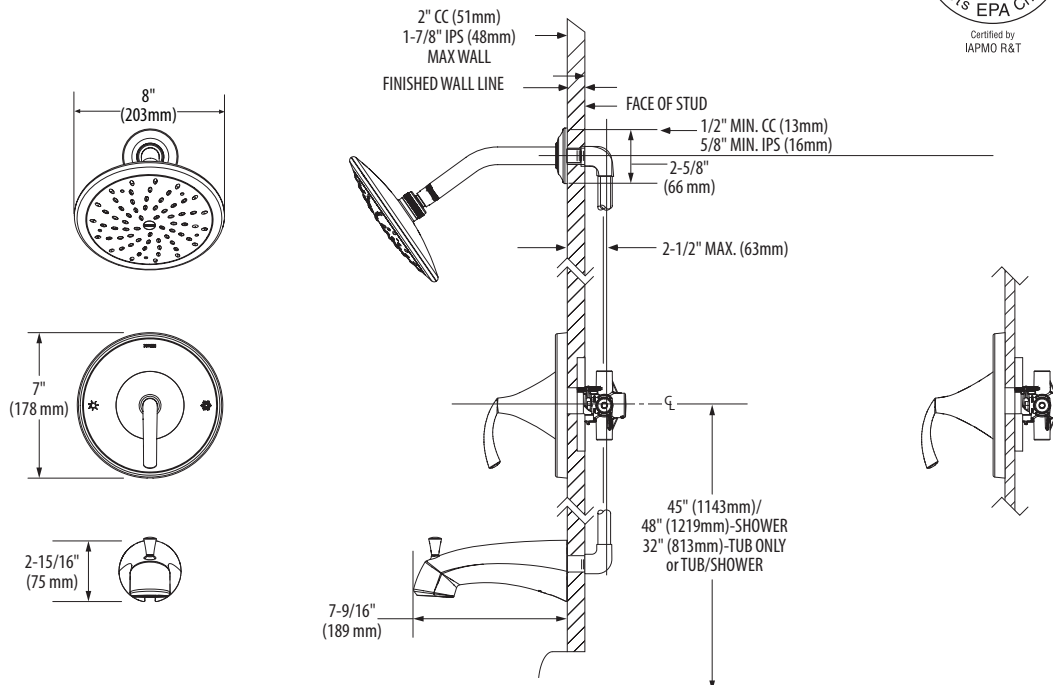
# Specifications



## Glyde™ Single-Handle Tub/Shower Trim Kit with Rainshower

**Models:** T2842EP series - shower trim only  
T2843EP series - tub/shower trim

**Valves:** 62300 series  
2500 series

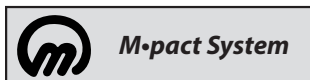


**THICK WALL APPLICATION**

**THIN WALL APPLICATION**

## CRITICAL DIMENSIONS

(DO NOT SCALE)







VITREOUS CHINA

TOILET  
**21-918**

LAVATORIES

TOILETS

BIDETS / URINALS

CAST IRON



**MAXWELL® 1.28**  
**ErgoHeight™**  
**17" High Elongated Toilet**

12" Rough-in

**Features:**

- 1.28 gpf/4.8 Lpf high efficiency two-piece toilet
- Elongated ErgoHeight™ bowl
- Dual-fed siphon jet
- Pilot fill valve
- 3" flush valve
- 2" glazed trapway
- Color matched front tank lever (white only)
- Optional insulated non-sweating tank
- Optional right-handed trip lever
- Available in White, Bone and Biscuit
- 2 bolt caps
- ADA Compliant

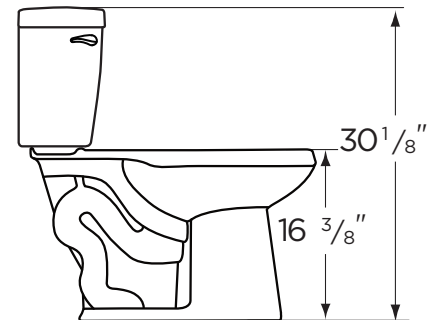
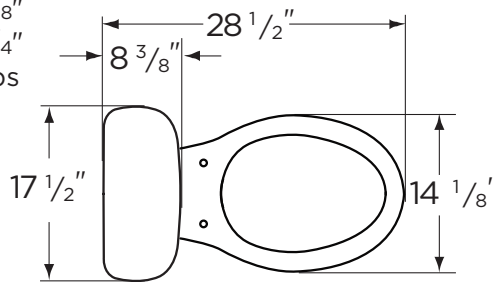


**Specifications:** Bowl—#21-928 Front Bowl  
Seat not included

Tank—#28-990

**Dimensions:**

- Height ..... 30 1/8"
- Width ..... 17 1/2"
- Depth ..... 28 1/2"
- Rough-in ..... 12"
- Water Surface from Rim ..... 6 1/2"
- Trapway ..... 2"
- Water Surface ..... 8 7/8" x 7 3/8"
- Water Seal ..... 2 1/4"
- Shipping Weight ..... 85.5 lbs



THIS FIXTURE QUALIFIES ACCORDING TO ASME TEST PROCEDURES AS A HIGH EFFICIENCY WATER CLOSET WITH AN AVERAGE CONSUMPTION OF 1.28 gpf (4.8 Lpf) OR LESS.



www.gerberonline.com

Job Name	
Date	
Model Specified	
Quantity	
Customer	
Contractor	
Architect/engineer	