



Bateman Civil Survey Company, PC

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

June 10, 2024

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

RE: Wastewater Daily Flow Calculations

Cotton Farms Lot 9
196 Hook Drive, Fuquay Varina, Harnett County, NC 27526
Job #4943

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 Cotton Farms Lot 9 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 Cotton Farms Lot 9. 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 38% 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, P.E, PLS
09838E23DC404AD...



Thomas Speight, P.E
(seal)

6/18/2024

Cotton Farms Lot 9						
	Item	Model	Gal/min. or flush	Number of Fixures	Base Flow From 1982	Percent Water Savings
Master	Shower Head	Moen T2472EP	1.8 gal/minute	1	5.5 gal/minute	67%
	Tub Faucet	Moen T908	Fill & Release	1	Fill & Release	0%
	Lavatory Faucet	Moen T6708	1.2 gal/minute	2	3.0 gal/minute	60%
Downstairs Bath	Shower Head	Moen T2903EP	1.8 gal/minute	1	5.5 gal/minute	67%
	Lavatory Faucet	Moen T6708	1.2 gal/minute	1	3.0 gal/minute	60%
Kitchen	Kitchen Sink Faucet	Moen 5923	1.5 gal/minute	1	3.0 gal/minute	50%
Laundry	Utility Sink Faucet	Moen 4376	4.0 gal/minute	1	4.0 gal/minute	0%
Upstairs Bath	Lavatory Faucet	Moen T6142	1.2 gal/minute	1	3.0 gal/minute	60%
	Shower Head	Moen T2903EP	1.8 gal/minute	1	5.5 gal/minute	67%
Toilets	Master, J&J, 2	Alto 3173	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%	48% avg	67%	0%	0%	0%	0%	0%	38%
ADJUSTED FLOW (GALLONS)	43	50	32	58	14	14	10	77	298

MOEN®

Specifications



Genta™ LX POSI-TEMP® Single-Handle Tub/Shower Trim Kit

Models: T2471 series - valve trim only
T2472EP series - shower trim only
T2473EP series - tub/shower trim only

Valves: 62300 series
2500 series



DESCRIPTION

- Metal construction with chrome finish
- Includes showerhead, arm, flange and diverter spout

OPERATION

- Lever style handle with temperature red/blue indicator on the escutcheon
- 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 $\pm 3.6^\circ\text{F}$ ($\pm 2^\circ\text{C}$)
- 6 function showerhead

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
- Nonmetallic/nonferrous and stainless steel materials
- Accommodates back to back installations

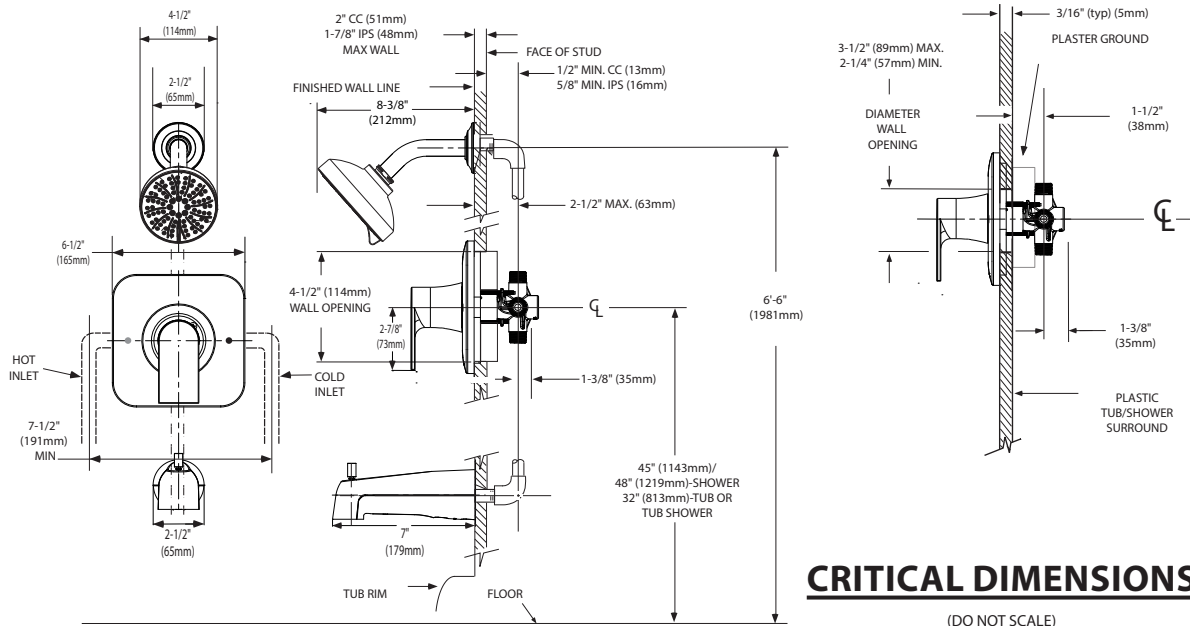
STANDARDS

- 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 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 for complete details and limitations



MOEN®

Specifications

DESCRIPTION

- Metal construction with various finishes identified by suffix
- Compatible with M•pact™ valve system

OPERATION

- Lever style handles
- Maximum handle rotation angle is 90° to full on for either handle
- Rotate hot side handle counterclockwise to open (clockwise to close)
- Rotate cold side handle clockwise to open and (counterclockwise to close)

FLOW

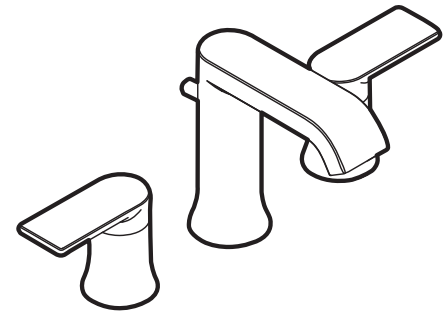
- Water usage is limited to these maximum flow rates as indicated by the corresponding product markings.
- 1.2gpm max (4.5L/min)

STANDARDS

- Third party certified to meet Watersense®, ASME A112.18.1/CSA B125.1 and all applicable requirements referenced therein
- ADA ♿ for lever handles
- Certified to NSF 61/9 + 372

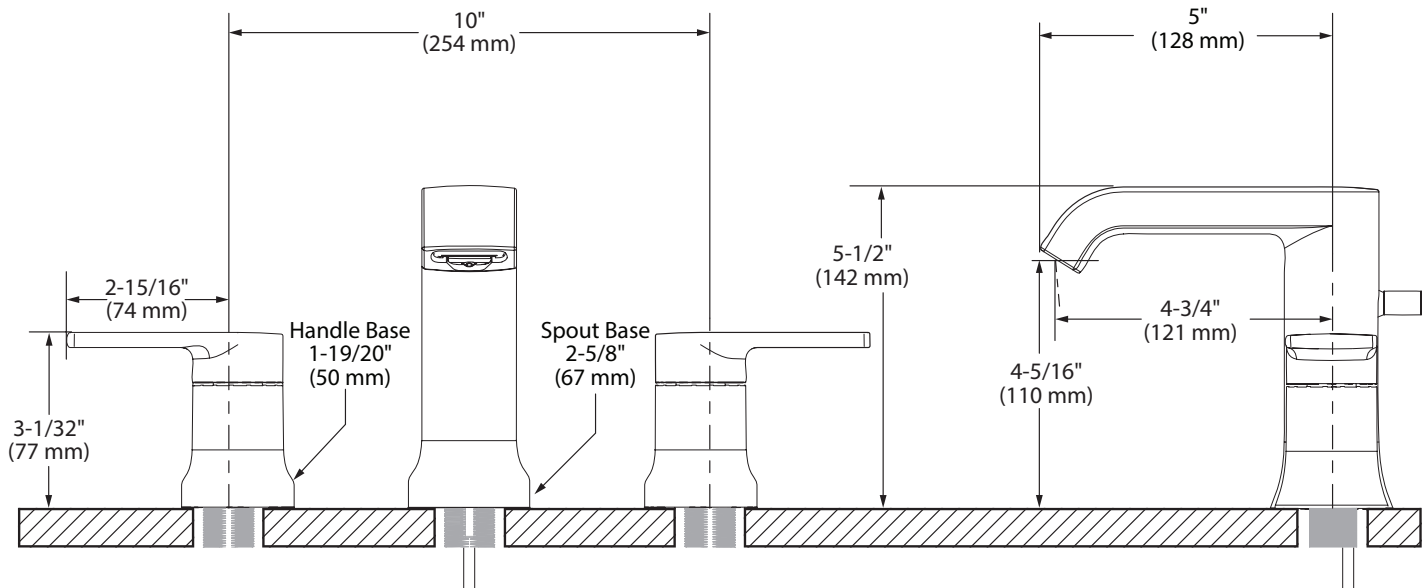
WARRANTY

- 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 for complete details and limitations



GENTA™ LX
Two-Handle Widespread
Lavatory Faucet Trim
Models: T6708 series

Valves: 9000, 69000



CRITICAL DIMENSIONS

(DO NOT SCALE)



Buy it for looks. Buy it for life.®

DESCRIPTION

- Metal construction with chrome finish
- Includes showerhead, arm, flange and diverter tub spout

OPERATION

- Lever style handle with red/blue temperature indicator on the escutcheon
- 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 1.75 gpm (6.6 L/min) at 80 psi
- NH suffix models contain no showerhead

CARTRIDGE

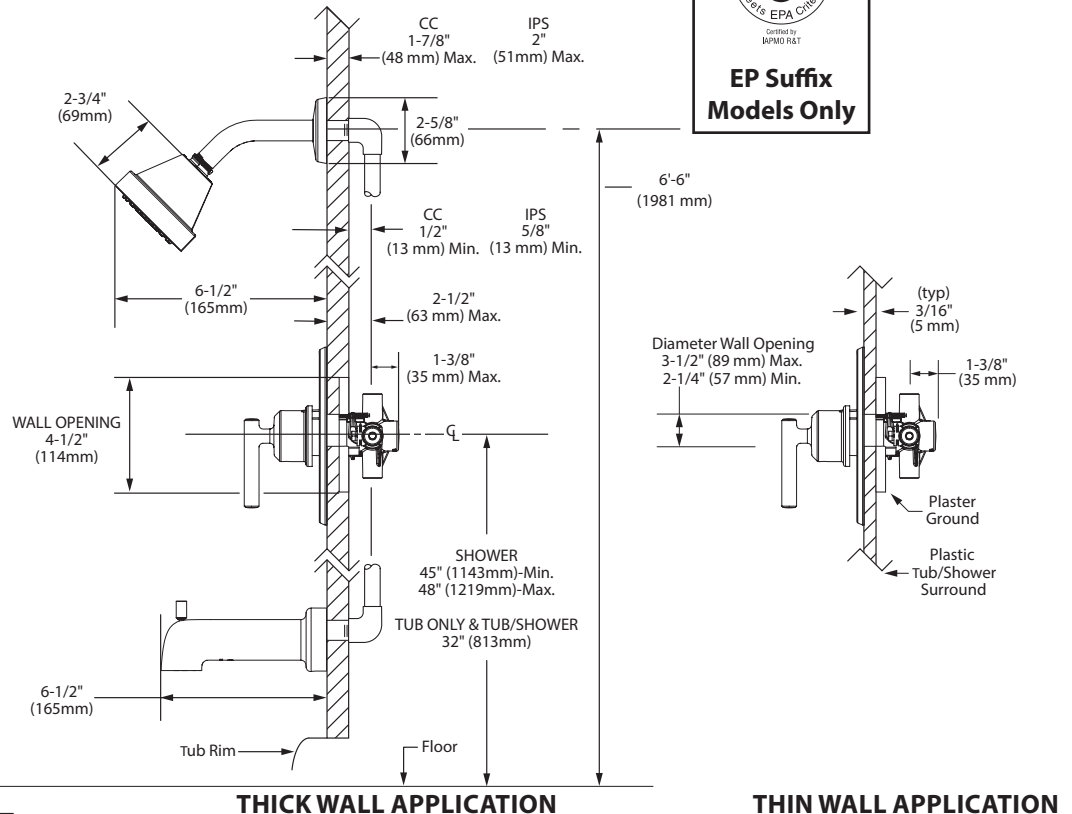
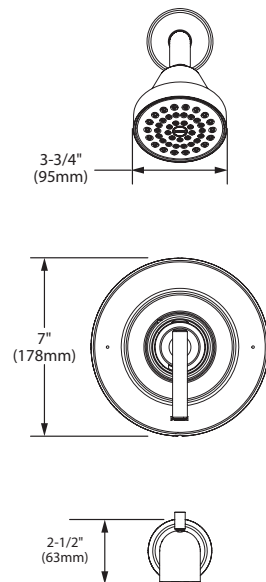
- 1222 cartridge design
- Accommodates back to back installations
- Nonmetallic, nonferrous and stainless steel material

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 handle

WARRANTY

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



THICK WALL APPLICATION

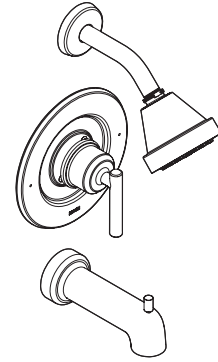
THIN WALL APPLICATION



CRITICAL DIMENSIONS

(DO NOT SCALE)

Specifications

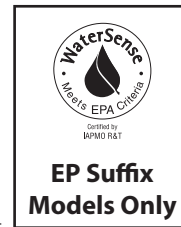


Gibson™

Single-Handle Tub/Shower Trim Kit

Models: T2901 series - valve trim only
T2902 series - shower trim only
T2903 series - tub/shower trim

Valves: 62300 series
2500 series



MOEN®

Specifications

FAUCET DESCRIPTION

- Pulldown system offers smooth operation, easy movement and secure docking
- Metal construction with various finishes identified by suffix
- Quick connect installation - Duralock™
- PowerBoost™ spray technology
- Pulldown spray with 68" braided hose
- Flexible supply lines with 3/8" compression fittings
- High arc spout provides height and reach to fill or clean large pots while pulldown wand provides the maneuverability for cleaning or rinsing
- Faucet designed for handle to be mounted on right side

OPERATION

- Lever style handle
- Temperature controlled by 100° arc of handle travel
- Operates with less than 5 lbs. 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) max at 60 psi

CARTRIDGE

- 1255™ Duralast™ cartridge for single handle faucets

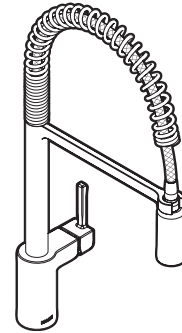
STANDARDS

- Third party certified to IAPMO Green, ASME A112.18.1/CSA B125.1 and all applicable requirements therein including NSF 61/9 & 372
- Meets CalGreen and Georgia SB370 requirements
- 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 homeowner
- 10 year limited warranty when used in a multifamily installation
- 5 year limited warranty when used in a commercial installation

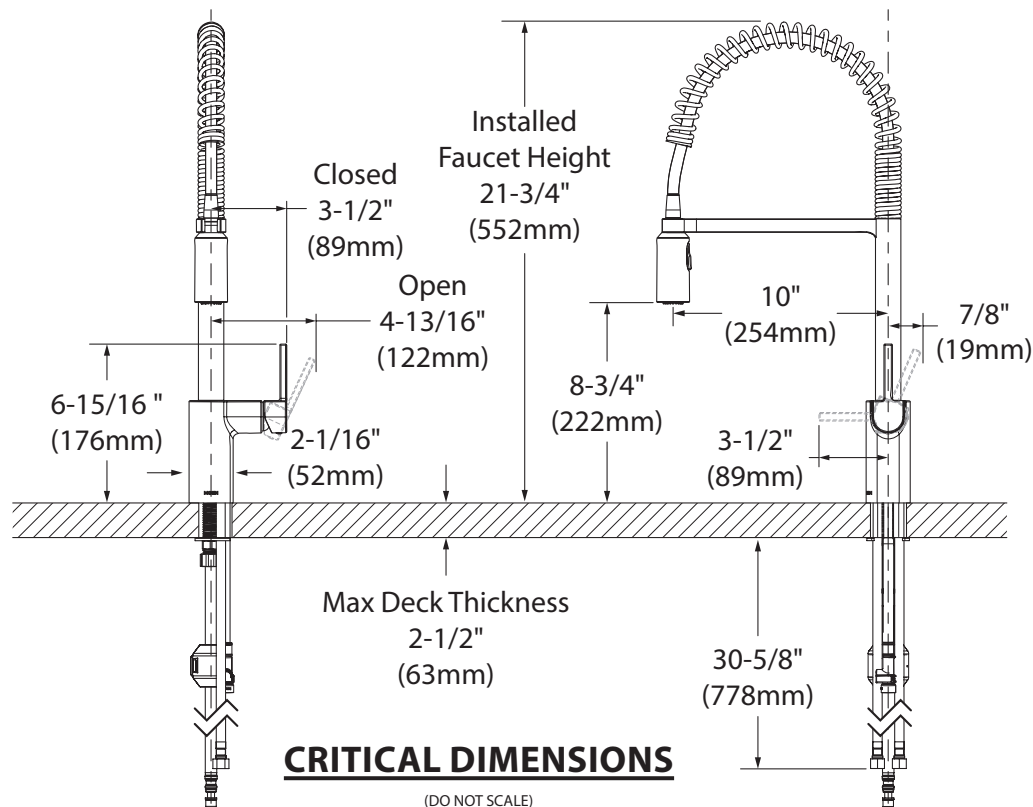
Visit www.moen.com/support for complete details and limitations



Align™ Single Handle Pre-Rinse Spring Pulldown Kitchen Faucet

Models: 5923 series

NOTE: this faucet is designed to be installed through 1 hole, 1-1/2" (38mm) min. dia. (optional 3-hole escutcheon 141002 available)



MOEN®

Specifications

DESCRIPTION

- Metal construction with various finishes identifiable by suffix
- 1/2" IPS connections
- Hot and cold temperature indicators available
- Includes metal pop-up waste assembly

OPERATION

- Lever style handles
- 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

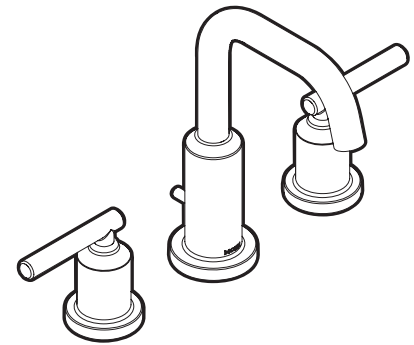
- 1234 cartridge design
- Nonmetallic, nonferrous and stainless steel material

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
- Complies with California Proposition 65 and with the Federal Safe Drinking Water Act
- ADA ♿ for lever handles

WARRANTY

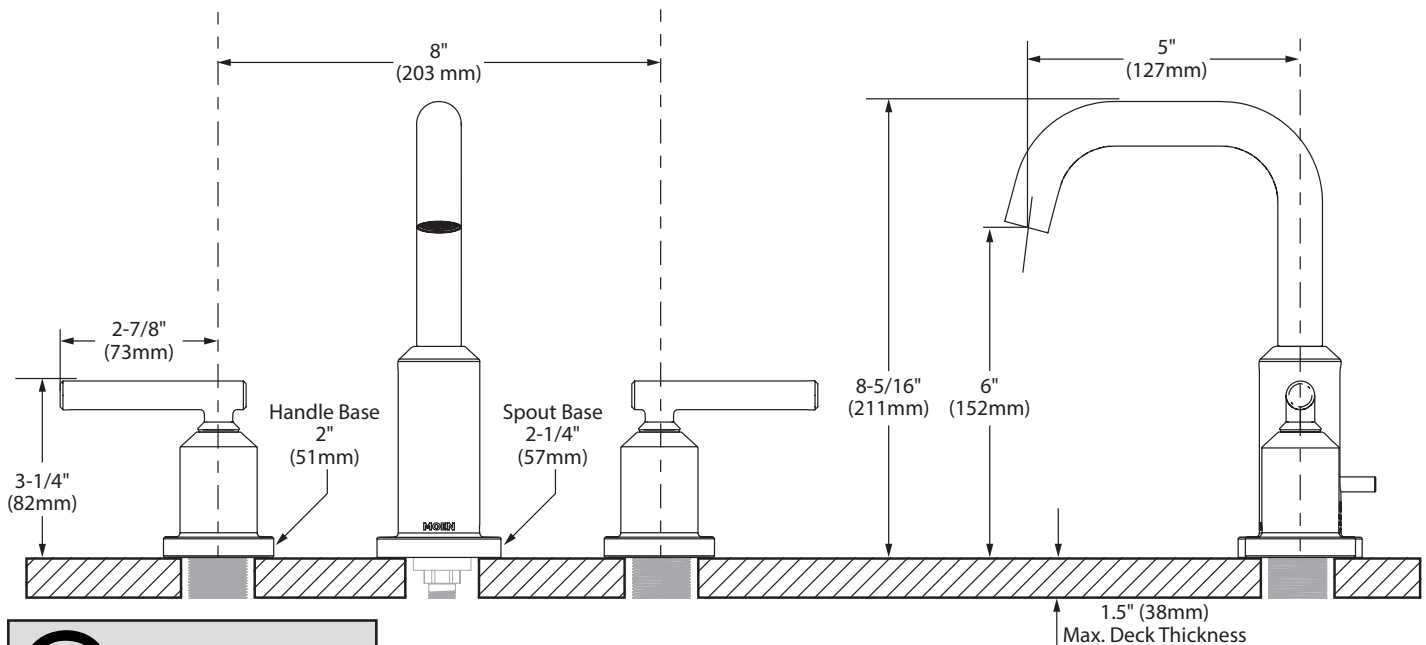
- Lifetime limited warranty against leaks, drips and finish defects to the original homeowner
 - 10 year limited warranty when used in a multifamily installation
 - 5 year limited warranty when used in a commercial installation
- Visit www.moen.com/support for complete details and limitations



Gibson™
Two-Handle Widespread
Lavatory Faucet

Models: T6142 series
Valve: 9000, 69000

NOTE: THIS FAUCET IS DESIGNED TO BE INSTALLED THROUGH 3 HOLES, 1-1/8" MIN. DIA.



CRITICAL DIMENSIONS

(DO NOT SCALE)

130-3173 ALTO® 1.28

MANSFIELD®

Round Front, Vitreous China, Two-Piece Toilet

FEATURES

- 3-bolt SmartFasten™ tank-to-bowl connection
- 1.28 gpf / 4.8 lpf high efficiency water consumption
- Uses 20% less water than conventional toilets
- Round front bowl
- 3-2" hybrid flapper flush valve
- Fluidmaster® anti-siphon pilot fill valve
- 12" rough-in
- Model 31 color-match, plastic trip lever
- 2" glazed trapway
- The Mansfield® Limited Lifetime Warranty
- Available in White, Biscuit, and Bone



MODEL 130-3173

Toilet seat not included

Available as CTK






ROUND



CTK

COMPONENTS

MODEL #	DESCRIPTION	CODES/STANDARDS
130-3173	Round front, two-piece toilet	  
130	Round front, toilet bowl only. Less toilet seat. Specify color.	
3173	Tank and cover only with left hand, front-mount, color-match, plastic trip lever. Fluidmaster® anti-siphon pilot fill valve. Less supply. Specify color.	
TANK TRIM & REPLACEMENT PARTS		
31	Trip lever - color-match, plastic trip lever, left hand	
228	3-2" Hybrid flapper flush valve	
400A	Fluidmaster® anti-siphon pilot fill valve	
2206	Anti-siphon pilot fill valve (compatible replacement)	
630-0207	3" Replacement flapper kit	
160-LID	Tank lid	

