



The Original Tankless Water  
Heater Manufacturer and World  
Leader in Tankless Technology  
since 1951



1

## INTRODUCTION

- NCC3000D & NCC300DV
- NC380-SV-ASME
- NCC199CDV
- Hybrid Hot System
- CMK & CRK Manifold Systems
- CR61 Systems
- TTS – S and SWH Series
- TTS – TWST Series
- Sizing and FIOP (Factory Installed Options)



2

# NCC300 SERIES



Sales only in CA, MN & WI

Indoor Model: NCC300DV (4" PVC, CPVC, PP and 5" SS w/ adapters)

Outdoor Model: NCC300OD (no vent cap required)

BTU Range: 15,000 – 300,000 BTUh

Flow Range: 0.5 – 13.2 gpm

Temperature Range: 100 F – 185 F

Thermal Efficiency: 97%

Turndown Ratio: 20:1

Multi System: up to 24 units (up to 7.2 million BTUh)

Warranty: 5 yr HEX, 5 yr parts, 1 yr labor

HEX: K type copper (primary) SS (secondary)

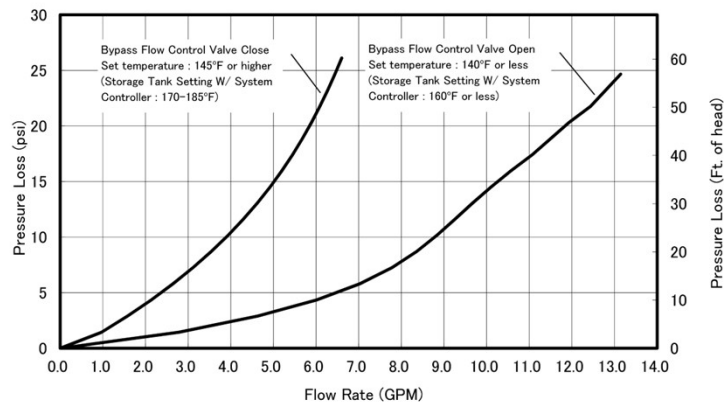


3

# NCC300 SERIES

## Flow Rates and Pressure Loss

Temperature Rise (°F)	30	40	45	50	60	70	80	90	100	110	120	130	140
Flow Rate (GPM)	13.2	13.2	12.4	11.6	9.7	8.3	7.3	6.5	5.8	5.3	4.8	4.5	4.2



4

# NC380-SV-ASME



**Non-Condensing - Indoor/Outdoor Installations**  
**Indoor - 5" Cat III Stainless Steel Venting**  
**Outdoor - Vent Cap Required (VC-132)**  
**BTU Range: 22,500 - 380,000 BTUh**  
**Flow Range: 0.7 - 13.2 gpm**  
**Temperature Range: 100 F - 180 F**  
**Thermal Efficiency: 80%**  
**Multi System: up to 24 units (up to 9.1 million BTUh)**  
**Warranty: 5 yr HEX, 5 yr parts, 1 yr labor**  
**HEX: K type copper**

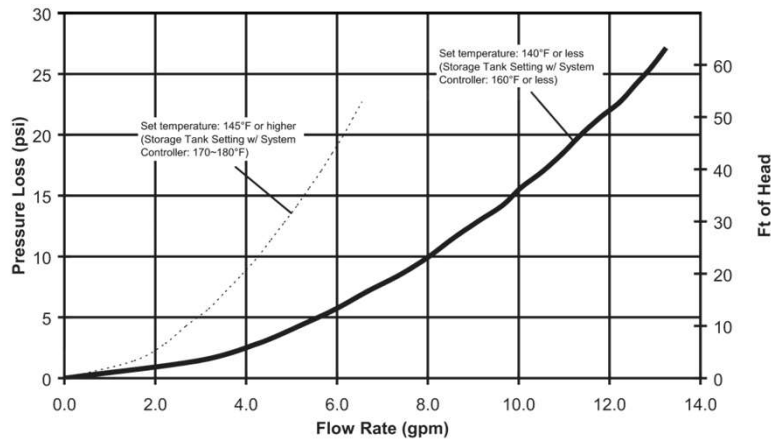


5

# NC380-SV-ASME

Flow Rates and Pressure Loss

Temperature Rise (°F)	20	30	40	45	50	60	70	80	90	100	110	120	130
Flow Rate (GPM)	13.2	13.2	13.2	13.2	12.5	10.4	8.9	7.8	6.9	6.2	5.7	5.2	4.8



6

# NCC199CDV PRO SERIES



- Indoor/Outdoor Model (Versatile Venting)
- Indoor: 2"- 75', 3"- 150' or 4"- 65' PVC/CPVC/PP
- Outdoor: Vent Cap required (VC-6-1)
- BTU Range: 12,800 – 199,900 BTUh
- Flow Range: 0.4 – 11.1 gpm
- Temperature Range: 100 F – 185 F
- Thermal Efficiency: 98% (UEF 0.98)
- Turndown Ratio: 16:1
- Multi System: up to 24 units (up to 4.8 million BTUh)
- Warranty: 10 yr HEX, 5 yr parts, 1 yr labor
- HEX: Stainless Steel for both Primary and Secondary



7

# NCC199CDV PRO ADD'L FEATURES



- Bluetooth Connectivity: EZ Start Plus App
- Wi-Fi Capable
- Operation Panel
- Service Reminder
- Field Convertible: LP parts included in box
- Built in non-return valve
- Common Vent up to 12 units
- High Altitude Approved up to 10,200 ft
- Scale Detection
- Pre-Mix Burner w/ Negative Pressure Gas Valve
- Quick Connect Capable up to 8 units

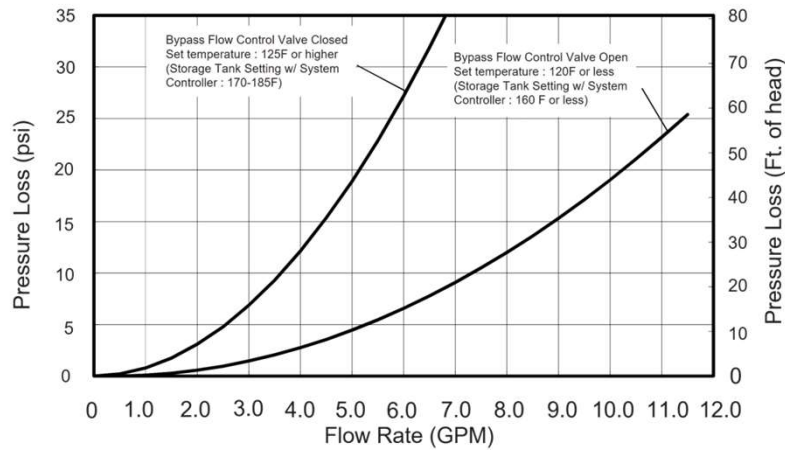


8

# NCC199CDV PRO SERIES

## Flow Rates and Pressure Loss

Temperature Rise (°F)	30	40	45	50	60	70	80	90	100	110	120	130	140
NCC199CDV (GPM)	11.1	9.7	8.7	7.8	6.5	5.5	4.8	4.3	3.9	3.5	3.2	3.0	2.8



9

# NCC199CDV PRO MULTI UNIT SYSTEMS

Superior commercial unit linking made easy



### Quick Connect Cord (QC-2)

- Up to 8 units
- Stages, rotates, load balances



### System Controller (SC(U)-##M)

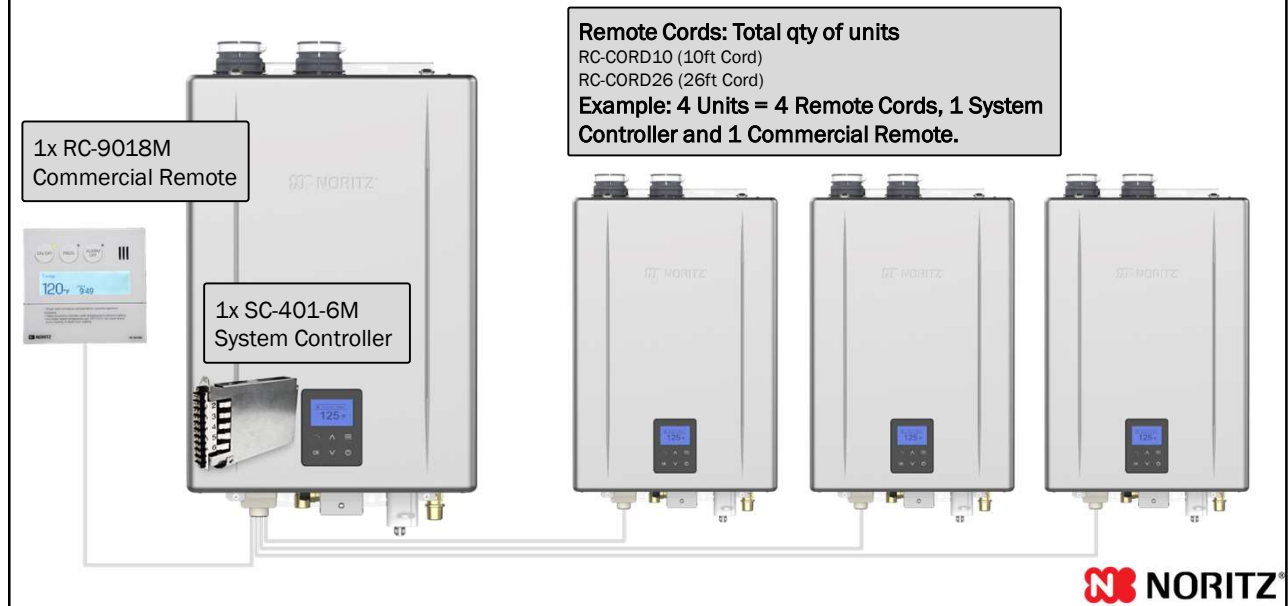
- Up to 24 units (6, 12 & 24)
- Stages, rotates, load balances
- Settings types:
  - Standard, Recirculation, Storage
- Aquastat & Timer
- Fan Control (External)



10

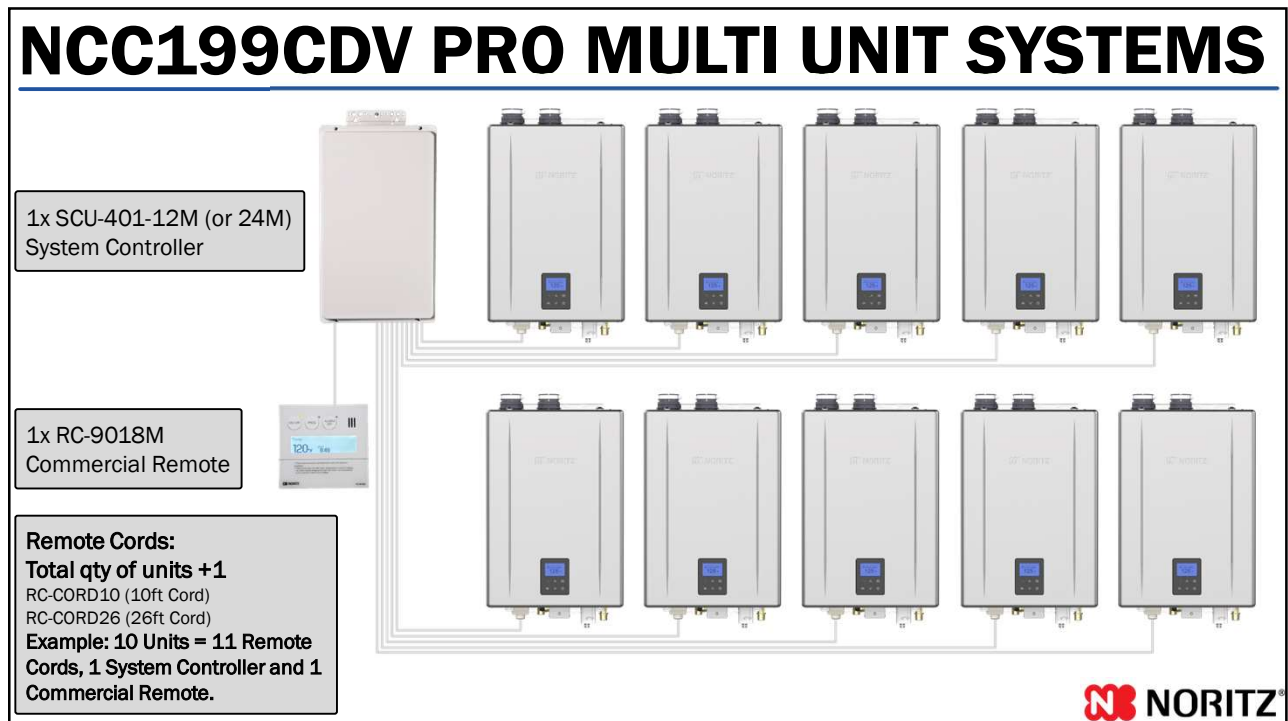


# NCC199CDV PRO MULTI UNIT SYSTEMS



13

# NCC199CDV PRO MULTI UNIT SYSTEMS



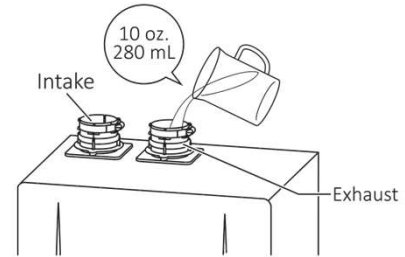
14

# VENT MATERIALS

- **This is a Category IV appliance.** Only vent materials approved for use with Category IV appliances may be used.
- Under normal conditions, this water heater will not produce an exhaust flue Temperature greater than 149 °F (65 °C) and schedule 40 PVC pipe may be used as the vent material. **If the water heater set temperature is 160 °F (70 °C) or higher and there is a return line to the water heater from either a recirculation pump or a combination space heating system, schedule 40/80 CPVC, polypropylene or stainless steel must be used.**

Material	United States		Canada	
	Exhaust	Air Intake	Exhaust	Air Intake
Schedule 40 PVC	ANSI/ASTM D1785		ULC S636 Certified Materials Only	CSA B137.3
PVC-DWV	ANSI/ASTM D2665			CSA B181.2
Schedule 40 CPVC	ANSI/ASTM F441			CSA B137.3
Polypropylene*	Centrotherm - InnoFlue® (certified ULC S636), DuraVent PolyPro® (certified ULC S636)			
System 1738™ PVC Fuel Gas Venting	IPEX Management Inc. (certified UL 1738)			
Stainless Steel*	DuraVent - FasNSeal® (certified UL1738 and ULC S636)			

Fill the condensate container by pouring approx. 10 oz. (280 mL) of water into the exhaust flue on the top of the water heater as illustrated below.



If the vent pipe has already been installed: After installing the condensate drain pipe, make sure that the area around the water heater is well ventilated. Open a window or a door if necessary. Then operate the water heater and check that condensate comes out of the condensate drain pipe. (During normal use of the water heater, condensate will usually begin to discharge from the condensate drain pipe within 15 minutes of use, but it may take longer depending on the season and/or installation site conditions.)



# NCC199CDV PRO VENT VERSATILITY



Direct Vent

Single Vent

Outdoor

Common Direct Vent

Common Single Vent



# COMMON VENTING

**Up to 12 Noritz Water Heaters** can share the same venting system. This means significantly reduced penetrations through the wall or roof resulting in less labor and a cleaner finished look. The use of a larger vent diameter system allows for longer vent runs for larger and taller building – up to 200 ft. of equivalent length.

## OFFERS A CLEAN, LABOR SAVING INSTALL WHILE ENSURING THE UTMOST IN SAFETY AND PERFORMANCE

- Tested with safety in mind – each water heater has a built-in non-return valve to prevent flue gas from entering idle units.
- Reduces wall or ceiling penetrations.
- Utilizes either ULCS-636 approved Polypropylene (PP) venting (capable of handling temperatures up to 230° F) or Schedule 40/80 PVC.



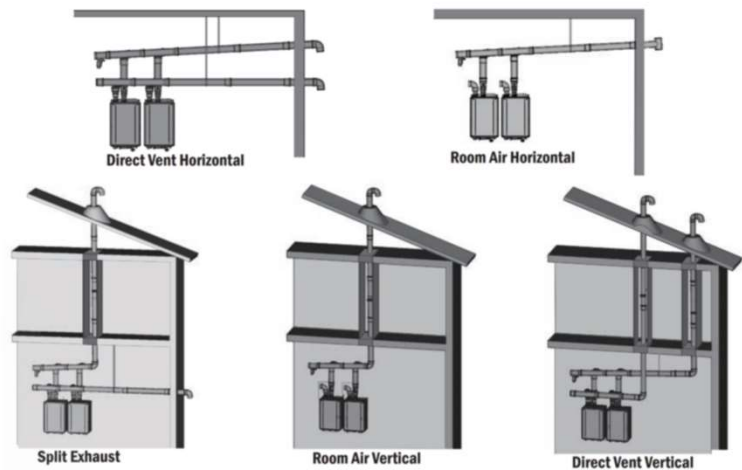
17

# COMMON VENT OPTIONS

## Ultimate Flexibility

Figuring out where to safely and efficiently route the exhaust system is one of the biggest hurdles for any HVAC system designer.

Noritz Common Venting offers designers the most flexibility to decide how to safely and efficiently route the vent. For room air installations, the combustion air can be drawn from the room environment, further reducing the installation complexity, by requiring only a single penetration for the exhaust.



18

# COMMON VENT LENGTHS

**NOTE:** The sizing method shown in this table is provided for the convenience of the installer. Maximum acceptable vent system static pressure drop is 0.6" WC.

Model	Number of Units	Vent Diameter (inch) and Maximum Equivalent Vent Length (feet)			
		PVC or CPVC Schedule 40 Pipe / Polypropylene vent			
		3 Inch	4 Inch	6 Inch	8 Inch
NCC199CDV Pro (GQ-C3261WZ-FF-1 US)	2	65*	200*	200	200
	3	25*	130*	200	200
	4	N/A	65*	200*	200
	5		35*	200*	200
	6		20*	200*	200
	7		185*	185	
	8		140*	140	
	9		105*	110	
	10		75*	105	
	11		50*	100*	
	12	40*	90*		

\* The Btu/h input of the unit will be reduced by up to 9%

Diameter of Elbow	Equivalent Length of each Elbow (feet)			
	3 Inch	4 Inch	6 Inch	8 Inch
Length	5	12	18	20

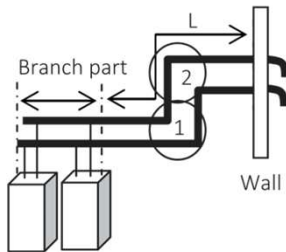
When counting the number of elbows, DO NOT include the termination, see next slide



# COMMON VENT LENGTHS

(e.g. 1)

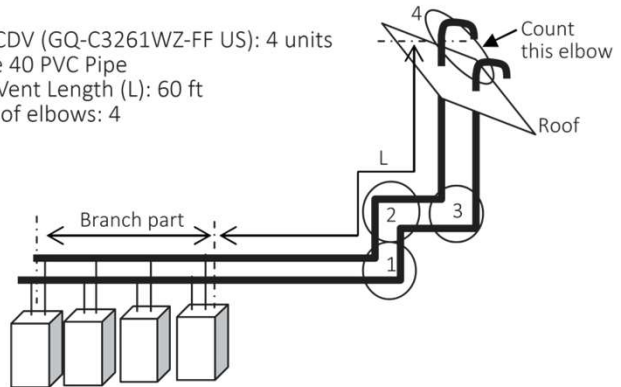
- EZ98DV (GQ-C2861WX-FF US): 2 units
- Schedule 40 PVC Pipe
- Straight Vent Length (L): 35 ft
- Number of elbows: 2



Total Equivalent Length  
 = 35 ft + 2 x 5 ft (3" Elbow)  
 = **45 ft** < 65 ft (Refer to table)  
 3" Vent System is **Suitable**

(e.g. 2)

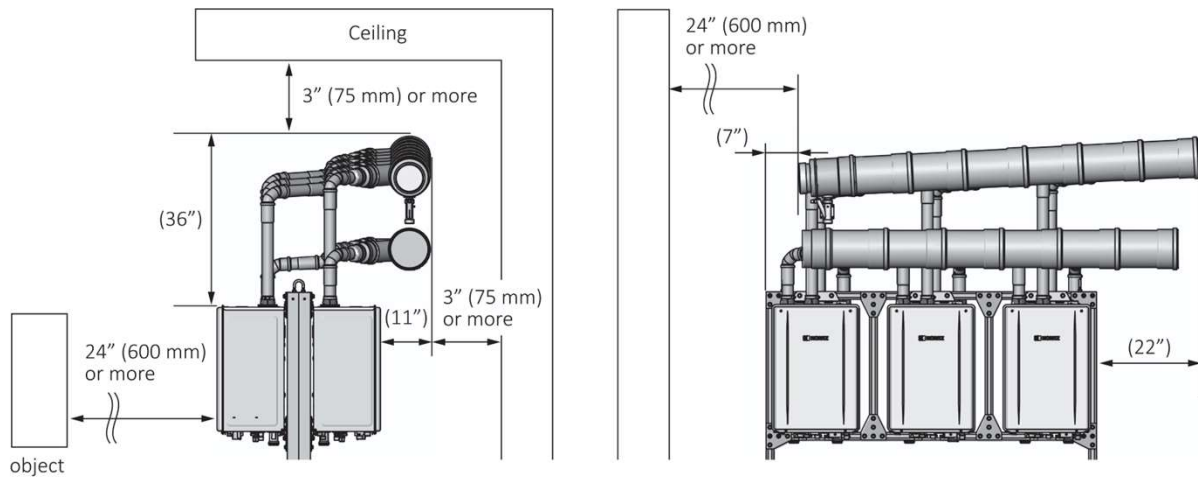
- NCC199CDV (GQ-C3261WZ-FF US): 4 units
- Schedule 40 PVC Pipe
- Straight Vent Length (L): 60 ft
- Number of elbows: 4



Total Equivalent Length  
 = 60 ft + 4 x 12 ft (4" Elbow) = **108 ft** > 65 ft (Refer to table)  
 4" Vent System is **NOT Suitable**  
 = 60 ft + 4 x 18 ft (6" Elbow) = **132 ft** < 200 ft (Refer to table)  
 6" Vent System is **Suitable**



# COMMON VENT EXAMPLES



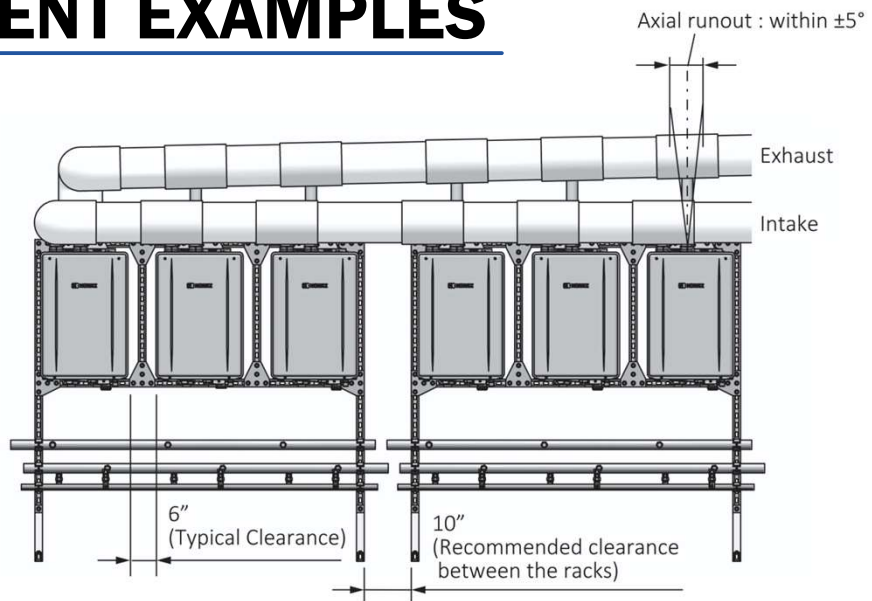
e.g. Back to Back Configuration (e.g. 6 units)



21

# COMMON VENT EXAMPLES

## 6 Units in-line PVC DV



<Front view>



22

# BUILT-IN BACK FLOW PREVENTER

Does not need an external Non-Return Valve. Built in one is CSA certified and satisfies their requirements (less cost to common vent).



External Non-Return Valve Not Required because of integrated Internal Back Flow Damper for Common Venting.

This System w/o NRV is certified and satisfies CSA safety guideline.



23

## HH HYBRID HOT SERIES



NHH199100

The Hybrid Hot Series by Noritz brings together the storage of a standard tank and the power and efficiency of a tankless to take on any commercial hot water demand.

Combined to meet the hot water requirements of businesses, the Hybrid Hot Series by Noritz utilizes the latest in tankless and tank storage technologies to create a powerful and reliable solution for businessowners. The Hybrid Hot also offers common venting for multiple units to ensure endless hot water is always available.



### FASTER HOT WATER RECOVERY

The Hybrid Hot offers the best BTU possible at the quickest rate, providing businesses with energy savings and more.



### THE BEST OF TANK AND TANKLESS

With an endless supply of hot water, lower pressure drop, and no limitation of hot water flow rate, the Hybrid Hot Series by Noritz combines features of both technologies to provide the most reliable hot water delivery system to date for commercial applications.



### CONTINUOUS HOT WATER DELIVERY

If your tank suddenly runs out of hot water, no need to worry. The Hybrid Hot Series by Noritz can continue to provide hot water using the paired NCC199CDV tankless even after your stored supply is depleted\*. (\*Hot water capabilities are limited)



### CEMENT LINING

With no anode rod and a greater warranty than other tanks on the market, our tank also features cement lining for superior corrosion resistance.



Assembled in the USA



25

# HH HYBRID HOT SERIES



NHH199100



Recovery GPH Temperature Rise	
Tank (Gallon)	119
°F	GPH
30 F	780
40 F	585
50 F	468
60 F	390
70 F	334
80 F	292
90 F	260
100 F	234
110 F	213
120 F	195
130 F	180
140 F	168

Installation Location		Indoor
Weight		536 lbs (Product Weight) 643 lbs (Shipping Weight)
Working Pressure	Water	15 - 150 psi
	Gas	NG: 3.5 - 10.5" LP: 8.0 - 13.0"
Connection Size	Cold Water	NPT 1 1/2"
	Hot Water	NPT 1 1/2"
	Return (Recirc)	NPT 3/4"
	Gas	NPT 3/4"
Vent	Type	DV / SV
	Size/Max Length	2"/75' 3"/150' 4"/65'
	Common Vent	Yes (Up to 12 Units)
Dimensions	H x W x D	67 3/4" x 28" x 43.5"
First Hour Rating		317 GPH
Capacity at 100° F Rise		234 GPH
CDV Pro Efficiency		0.98 UEF
Power Supply		120 VAC (60Hz)
Tank Capacity		119 Gallon (Cement Lined)
Tankless Capacity		12,800 - 199,900 BTU/h
Temperature Settings		100 - 185° F (37 - 85° C)

26

# HH HYBRID HOT SERIES

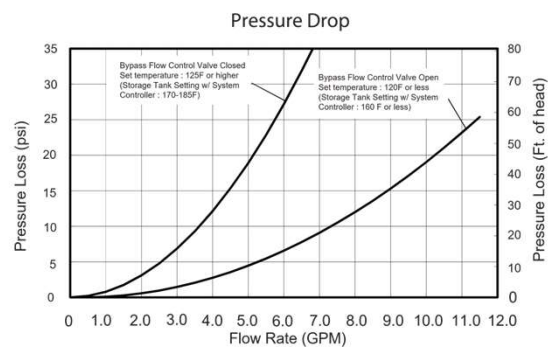


NHH199100



Set Temperature	Pump OFF Temperature	Pump ON Temperature
100 °F	90 °F	85 °F
105 °F	95 °F	90 °F
110 °F	100 °F	90 °F
115 °F	105 °F	95 °F
120 °F	110 °F	100 °F
125 °F	115 °F	105 °F
130 °F	120 °F	110 °F
135 °F	125 °F	115 °F
140 °F	130 °F	120 °F
145 °F	135 °F	125 °F
150 °F	140 °F	130 °F
160 °F	150 °F	140 °F
170 °F	160 °F	150 °F
185 °F	165 °F	155 °F

The NCC199CDV on the Hybrid Hot Unit comes programmed from the factory to function like a tankless and storage system without the system controller.



27

# THERMAL CYCLING & HEAT STRESS



A Standard Efficiency Commercial Gas water Heater can reach temperatures over 500°F at the burner chamber. The constant expansion and contraction of the steel tank and heat related stresses to the tank can, over time shorten its life (Stress Crack Corrosion).

Add in the accumulation of scale build up in the bottom of the tank (covering the burner) acting as an insulated layer. Causing the heater to fire longer each time the tank needs to be regenerated.

These main two factors add to shorter tank life. The hotter the outlet water needs to be, the more effect it will have on the tank.



AO Smith Cyclone



28

# THERMAL CYCLING & HEAT STRESS



Our Hybrid Hot by Noritz reduces the amount of heat stress and thermal wear to the tank by up to 2/3 of commercial tank heaters. The Hybrid Hot storage tank will never see temperatures above 185°F.

Also, with no burner under the tank, expansion and contraction of the tank will be held to a minimum.

Our concrete lined tank adds another layer of protection.



29

# CEMENT LINED VS. GLASS LINED

## Hydrastone Lining

A seamless ½” thick lining is impervious to adverse water conditions and is proven to be the most effective method of preventing tank failure due to corrosion. Hydrastone lining absorbs and traps water, which then loses its oxygen and becomes inert, thus preventing tank corrosion.

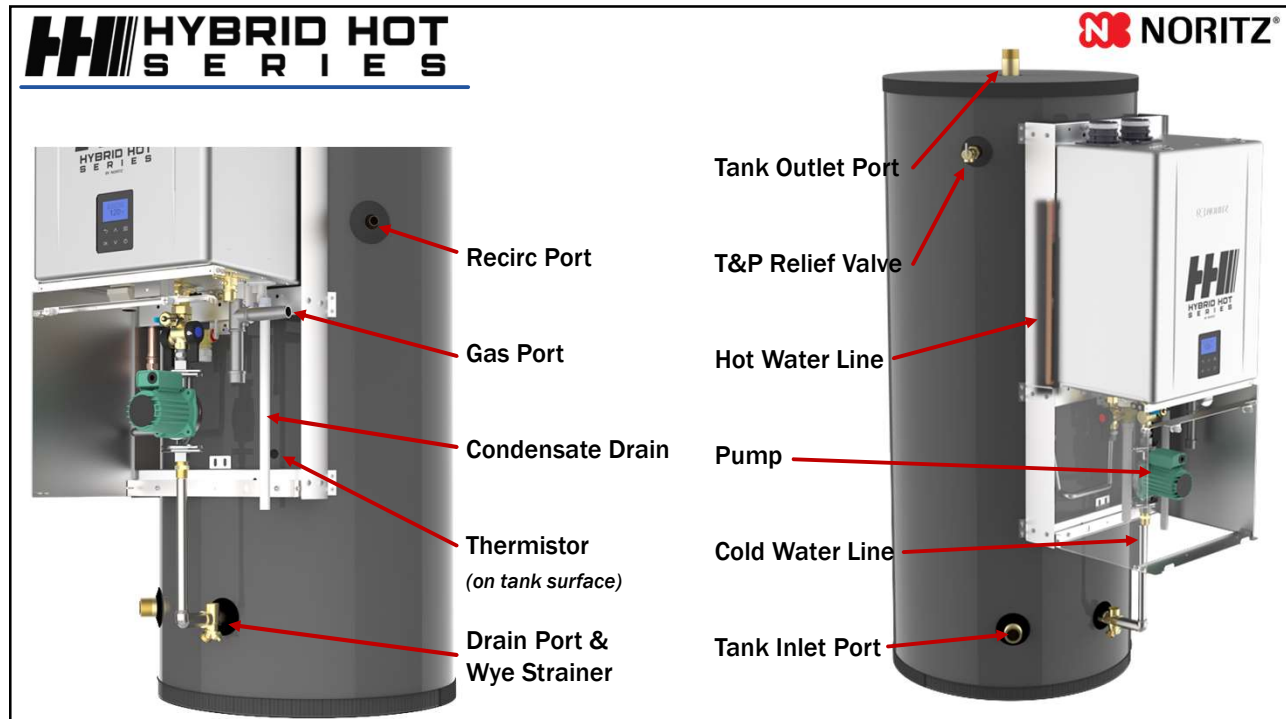
## Premium Insulation

2” thick polyurethane foam combined with heat-retaining Hydrastone lining allows less than 0.3°F heat loss per hour.

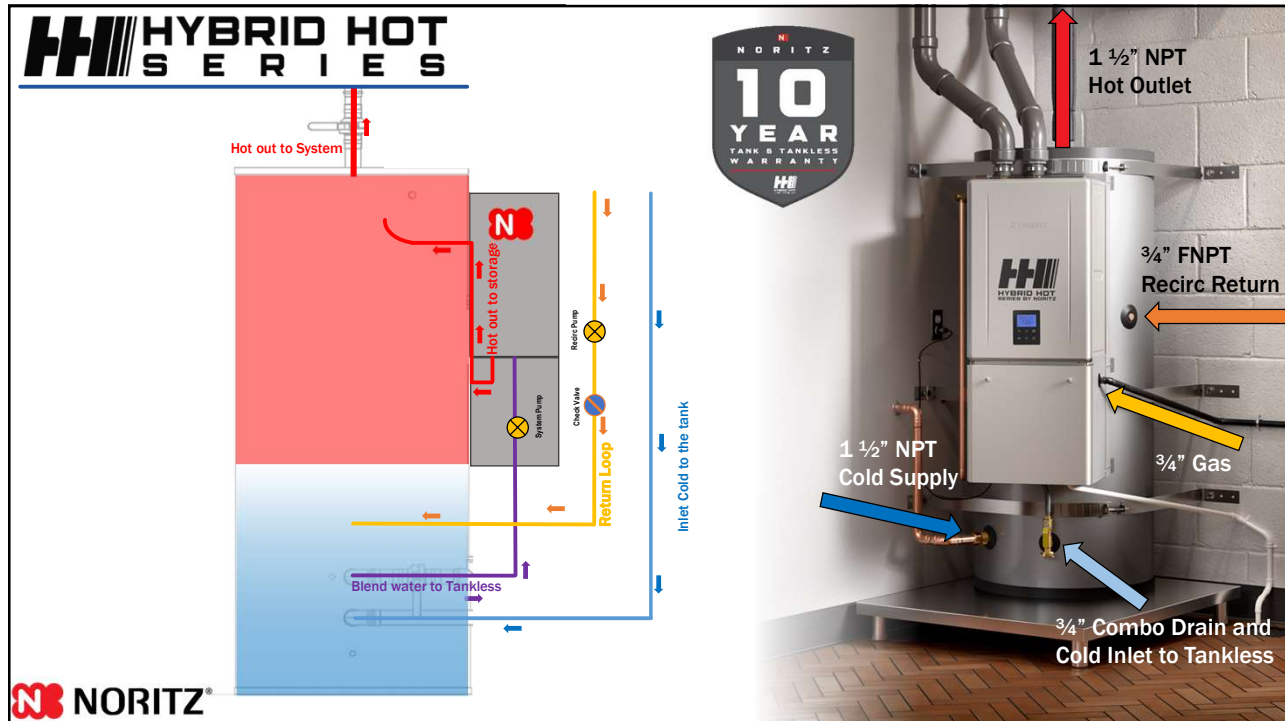
0.005” Glass lined storage tanks require an anode rod to attract the corrosive minerals that attack the water heater



30



31



32

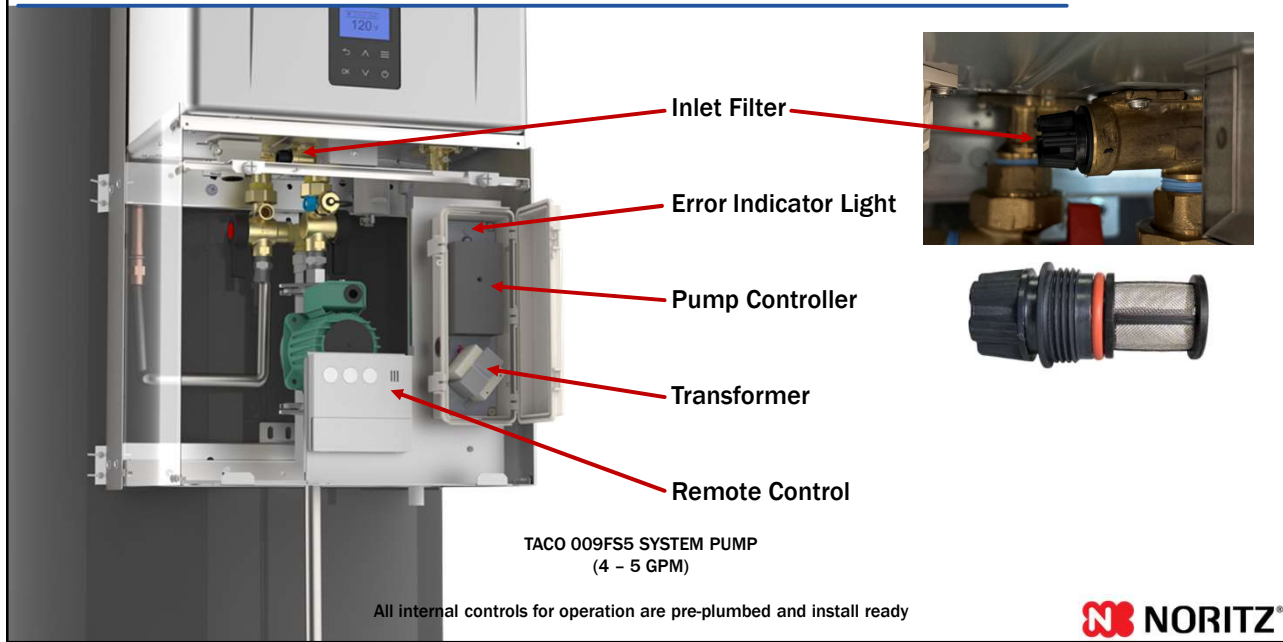
# HYBRID HOT SERIES BASIC OPERATION

Water connection locations help to stratify the water temperatures in the tank keeping the upper tank full of the hottest water. Provides the best energy efficient supply of hot water. This extends the 70% rule associated with tank heaters

**NORITZ**

33

# HYBRID HOT SERIES UNDER THE HOOD



34

# HYBRID HOT SERIES ELECTRICAL WIRING

**NORITZ**

Supplying Power (120VAC) to the Unit

Power supply (120 VAC; min. 16 AWG)

Hot

Neutral

LED indications (Pump controller)

[Green]

Solid : Standby (Normal)

Blinking : Operating (pump is operating)

[Red]

1 blink : Thermistor Error

2 blinks : Communication Error

3 blinks : Pump Operation Error

4 blinks : Water Heater Error

(e.g. 3 blinks [pump error])

1 2 3

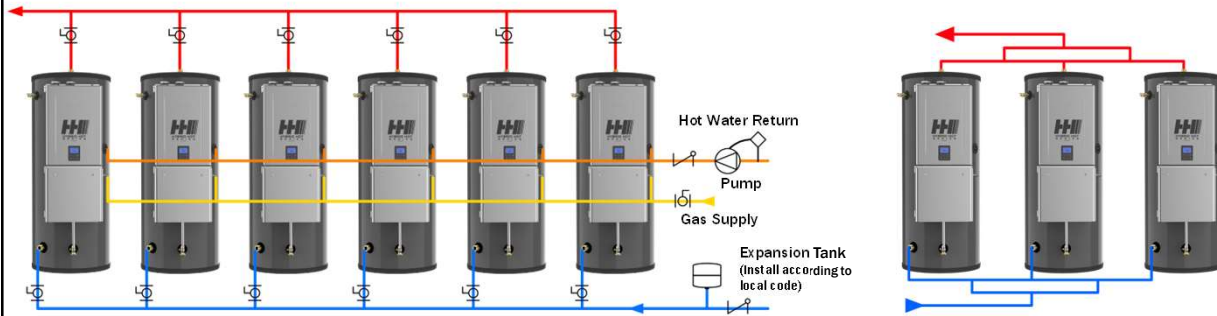
The Hybrid Hot doesn't come with a power cord. The contractor will need to purchase and wire

**NORITZ**

35

# HHI HYBRID HOT SERIES MULTIPLE PIPING

WATER PIPING DIAGRAM. PIPING CAN BE EITHER FIRST IN, LAST OUT OR IN PARALLEL



36

# HHI HYBRID HOT SERIES COMMON VENTING

When common venting Hybrid Hot Water heaters, a system controller (SC-401-6M or 12M) must be installed (purchased separately).

Multi unit systems require pressure balancing of the piping system (Piping in Parallel or first in last out).

System bypass controls are set to stay open to 160°F



37

Hybrid Hot install at the State of Washington  
Facilities complex, Whidbey Island, Washington



One of two Hybrid Hot installs at Farmer Boys  
Burgers, So. Cal




38



## CMK and CRK Commercial Systems

Introducing the new Noritz  
Complete Commercial  
System Bundles


39



## CMK and CRK Systems Features & Benefits


- ✓ Easy to Transport
- ✓ Sturdy Aluminum Frame
- ✓ Assembly uses only 12 Bolts vs 60 Bolts of Competitor Racks!
- ✓ Install in Less Than 2 Hours
- ✓ True Commercial Manifold
- ✓ Best Value in the Industry
- ✓ Retrofit Easy Button

CRK-BASE + CMK-BB4 Shown, NCC199CDV Pro Units Sold Separately.




40

## CMK (Commercial Manifold Kit) System Configurations




### Side by Side



**CMK-SS2**

Wall Hanging Side by Side Commercial Manifold Kit featuring 2 NCC199CDV Tankless Water Heaters (sold separately)


**Max BTU/h: 399,800**



**CMK-SS3**

Wall Hanging Side by Side Commercial Manifold Kit featuring 3 NCC199CDV Tankless Water Heaters (sold separately)

**Max BTU/h: 599,700**



**CMK-SS4**

Wall Hanging Side by Side Commercial Manifold Kit featuring 4 NCC199CDV Tankless Water Heaters (sold separately)

**Max BTU/h: 799,600**

41

## CMK (Commercial Manifold Kit) System Configurations

### Back to Back



#### CMK-BB2

Commercial Manifold Kit connecting 2 Back to Back NCC199CDV Tankless Water Heaters (sold separately) installed on CRK Base – Floor standing rack (sold separately)

**Max BTU/h: 399,800**



#### CMK-BB4

Commercial Manifold Kit connecting 4 Back to Back NCC199CDV Tankless Water Heaters (sold separately) installed on CRK Base – Floor standing rack (sold separately)

**Max BTU/h: 799,600**

42

## CRK (Commercial Rack Kit) System Configurations



#### CRK-BASE

The CRK-BASE commercial rack kit allows for custom floor standing installations of 1 to 4 tankless units.



#### CRK-ADDON

The CRK-ADDON commercial kit lets you expand your existing system to more than 4 units.

43

## CMK (Commercial Manifold Kit) Additional Notes

- ✓ One CRK-ADDON may be used per CRK-BASE. Attempting to use multiple CRK-ADDON may result in misaligned water and gas manifolds.
- ✓ Up to 24 NCC199CDV Pro heaters can be connected using multiples of the CRK-BASE and CRK-ADDON kits. Quick Connect Pro up to 8 units or use a 6, 12 or 24 unit system controller (sold separately) to ensure system balancing and load management.
- ✓ NCC199CDV Pro units may be common vented, refer to the common vent manual for full details.
- ✓ Manifold sizing is designed for a maximum of eight (8) water heaters. In order to connect units in greater number than eight, a common header of a larger diameter may be necessary. Refer to local plumbing and/or building code for minimum pipe sizing requirements.

Common Header Diameter Recommendation

	<i>Min. Common Gas Header</i>	<i>Min. Common Water Header</i>	<i>Min. Common Condensate Header</i>
Up to 8 units	2 in	2 in	0.75 in
>8 and <=16	2.5 in	2.5 in	1 in
>16 and <=24	3 in	3 in	1.25 in



44

# Scan Here for Video



45

# MULTI SYSTEM TANKLESS SOLUTIONS

## Pre-Engineered & Pre-Fabricated

- Tankless
- Tankless with Storage



46

## TTS SYNERGY S E R I E S

### COMPARISON

### CR61 Commercial Rack System

VS.

### TTS-S & TTS-TWST Synergy Series



FEATURES	CR61	TTS-S	TTS-TWST
Pre-Engineered	X	X	X
Pre-Wired System Controller	X	X	X
Water Pre-Plumbed	X	X	X
Gas Pre-Plumbed	X	X	X
Shut Off Valves / Service Valves	X	X	X
Condensate Pre-Plumbed	X	X	X
Fits Through 3'0 x 7'0 Door	X	X	X
Power OPC		X	X
Breaker Box with Included Circuit Breakers		X	X
Surge Protector		X	X
Building Recirculation		X	X
Pump Control & Timer		X	X
Most Compact Footprint		X	X
Expansion Tank		X	X
ECM Circulator for Storage Tank			X
System Pump Bypass			X
Storage Tank Manifolds			X
115 Gallon Storage Tank			X
Storage Tank and Building Check Valves			X
Y Strainer			X
Pre-Configured Control Wiring			X
Building Supply and Return Well Immersed Temperature Gauges			X

47

# COMMERCIAL RACK SERIES (CR)

## HOT WATER SUPPLY CAPACITY



Item Number	Heater Quantity	Heater Configuration	Min BTU/hr Input	Max BTU Input	Hot Water Capacity (GPM)						
					50°	60°	70°	80°	90°	100°	110°
CR61-WH-2	2	Wall Hanging In-Series	12,800	399,800	15.7	13.1	11.2	9.8	8.7	7.8	7.1
CR61-WH-3	3	Wall Hanging In-Series	12,800	599,700	23.5	19.6	16.8	14.7	13.1	11.8	10.7
CR61-FS-3	3	Free Standing 1x2 Back to Back	12,800	599,700	23.5	19.6	16.8	14.7	13.1	11.8	10.7
CR61-FS-4	4	Free Standing 2x2 Back to Back	12,800	799,600	31.3	26.1	22.4	19.6	17.4	15.7	14.2
CR61-FS-5	5	Free Standing 3x2 Back to Back	12,800	999,500	39.2	32.7	28	24.5	21.8	19.6	17.8
CR61-FS-6	6	Free Standing 3x3 Back to Back	12,800	1,199,400	47	39.2	33.6	29.4	26.1	23.5	21.4

### INCLUDES:

- NCC199CDV PRO w/ industry leading 0.98 UEF (GQ-C3261WZ-FF US)
- System Controller (SC-401-6M)
- Remote Control Cord (RC-CORD-10)
- 2" Copper Manifold for Hot & Cold
- 2" Black Iron Manifold for Gas
- 3/4" PVC Manifold Condensate Drain
- Aluminum Frames
- Isolation Valves w/ PRV for Water
- Gas Shut Offs
- Serial Number Barcode tags
- Individual Heater Number Label



48



Kenny Deel Stadium – Melissa Texas ISD



4 Separate Racks – 9 total units – Main Stadium

49

## What is TTS? The TOTAL TANKLESS SOLUTION

**Why SYNERGY?**  
We're Synergizing Multiple Technologies & Resources for the Best Commercial Water Heater System Available



50

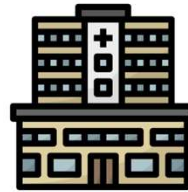
### Commercial Market Segments / Verticals to Target:



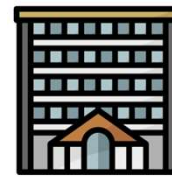
Education: K - 12  
University Dorms



Restaurants

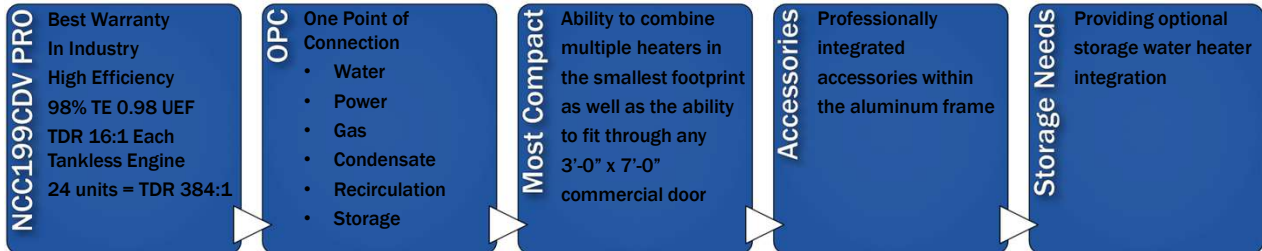


Assisted Living  
Senior Care



Multi Family

### Most Unmatched Complete Water Heater Solution in the Industry



REDUCTION IN LABOR HOURS | FULL SOLUTION FOR CUSTOMER | WORRY-FREE INSTALLATION



51

# TTS SYNERGY

## S Series



The **S Series** comes with all the necessary equipment needed for a 2 to 6 tankless commercial system.

### Features

- One Point of Connection
- Aluminum Frame
- 2 to 6 – Noritz NCC199CDV (GQ61) Tankless Water Heaters with System Controller
- 1 1/2" Water & Gas Manifolds
- 3/4" Condensate Drain Manifold
- Expansion Tank Included
- Neutralizer Included
- Breaker Box w/ Included Circuit Breakers
- Pump Controller with Timer
- Surge Protector
- ECM Building Recirculation Pump
- Shutoff Valves
- Well Immersed Thermistors for Easy Monitoring of Building Hot Water Performance



52

# TTS SYNERGY

## SWH Series



The **SWH Series** provides the most complete commercial water heater solution in the market. This tankless water heating system provides up to 799,600BTU/hr. in a wall mounted platform for maximizing unutilized space, with built in redundancy and equalization of heating performance

### Features

- One Point of Connection
- Aluminum Frame
- 2 to 4 – Noritz NCC199CDV (GQ61) Tankless Water Heaters with System Controller
- 1 1/2" Water & Gas Manifolds
- 3/4" Condensate Drain Manifold
- Expansion Tank Included
- Neutralizer Included
- Breaker Box w/ Included Circuit Breakers
- ECM Pump Controller with Timer
- Surge Protector
- Building Recirculation Pump
- Shutoff Valves
- Well Immersed Thermistors for Easy Monitoring of Building Hot Water Performance

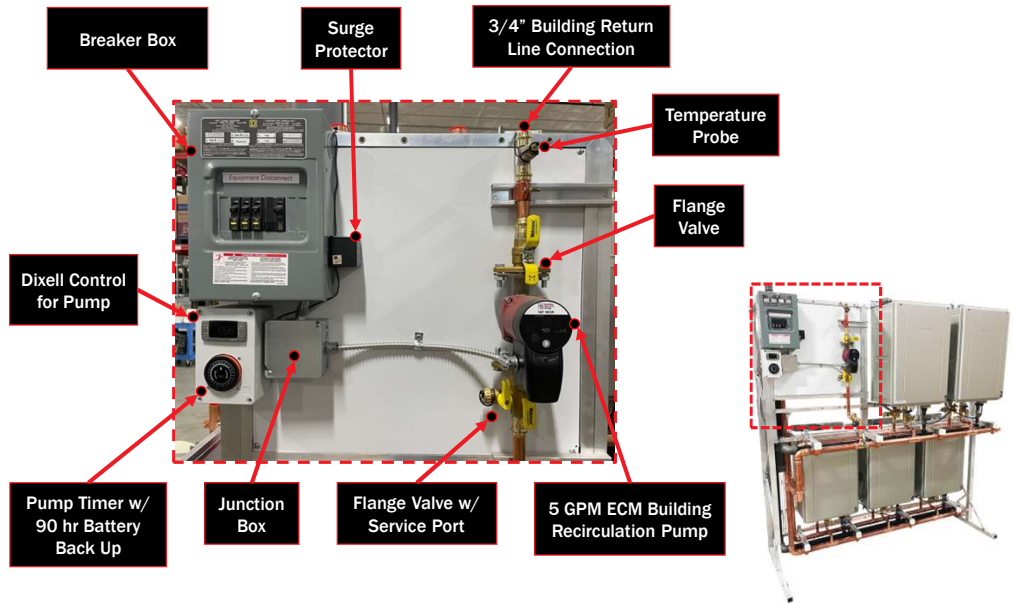
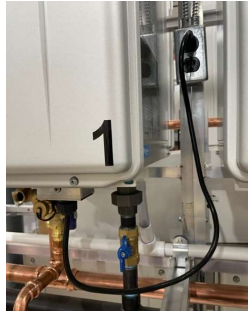


53

# TTS SYNERGY PUMPS & CONTROLS

## S Series

Power supplies each outlet



# TTS SYNERGY HOT WATER THERMOMETER

## S Series

Hot Water Outlet Thermometer



# TTS SYNERGY PLUMBING

## S Series

Check Valve



Isolation valve



56

# TTS SYNERGY SYSTEM CONTROLLER

## S Series

Labeled (System Controller) Installed



#1 Unit is the Main unit and where the commercial remote wires to communicate with the system controller



57

# TTS SYNERGY WATER/GAS CONNECTIONS

## S Series



Hot Water Isolation Valve w/ PRV

Cold Water Isolation Valve

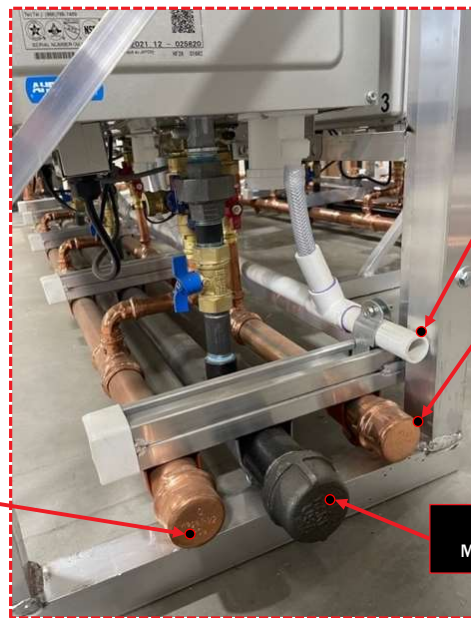
Gas Valve w/ Union



58

# TTS SYNERGY MANIFOLDS

## S Series



1 1/2" Cold Water Manifold, End

3/4" Condensate Drain, Open

1 1/2" Hot Water Manifold, End

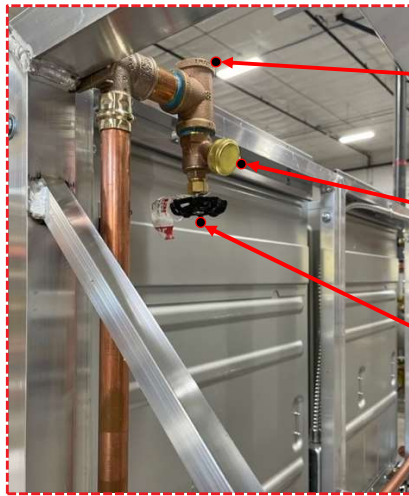
1 1/2" Gas Manifold, End



59

# TTS SYNERGY EXPANSION TANK CONNECTION

## S Series

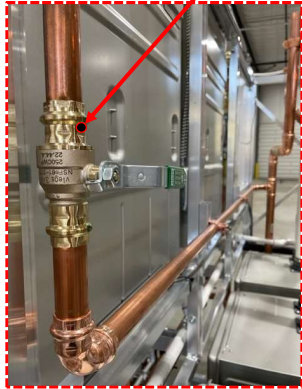


Expansion Tank Thread Connection

Expansion Tank Isolation Valve

Hose, Drain Port

Valve w/ Turn Wheel



60

# TTS SYNERGY BOTTOM UNITS PRE-VENTED

## S Series



2" PVC air intake venting

2" PVC exhaust venting



61

# TTS SYNERGY WATER/GAS CONNECTIONS

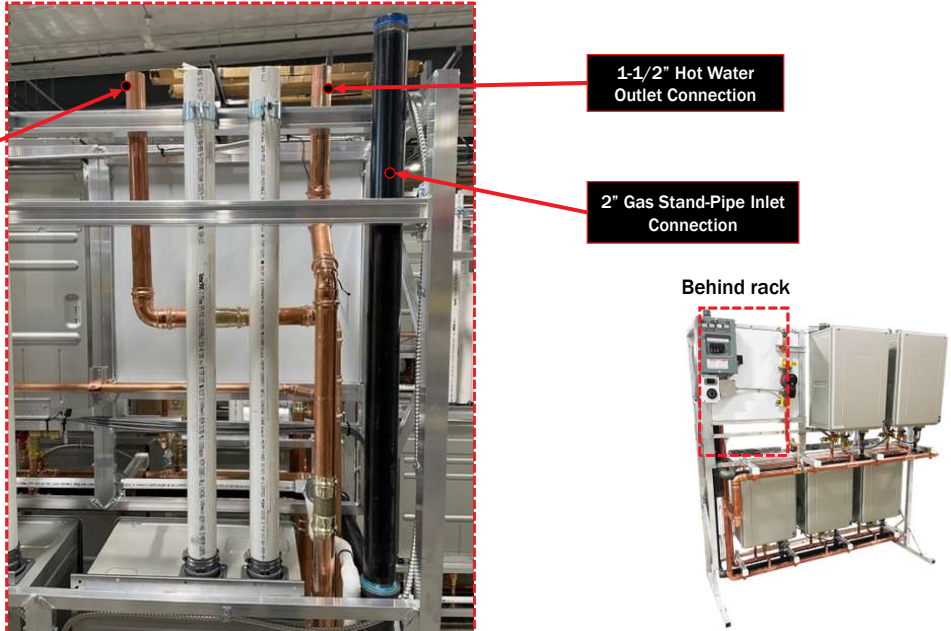
## S Series

1-1/2" Cold Water Inlet Connection

1-1/2" Hot Water Outlet Connection

2" Gas Stand-Pipe Inlet Connection

Behind rack



62

# TTS SYNERGY INCLUDED ACCESSORIES

## S Series



Literature Rack w/ Manuals & Commercial Remotes



4.4 Gallon Expansion Tank



Condensate Neutralizer



63

# TTS SYNERGY

## TWST Series (Tankless w/ Storage)



- One Point of Connection
- Aluminum Frame
- 2 to 6 - Noritz NCC199CDV Tankless Water Heaters with System Controller
- 115 Gallon Storage Tank Included
- 1 1/2" Water & Gas Manifolds
- 2" Gas Inlet Connection
- 3/4" Condensate Drain Manifold
- Expansion Tank Included
- Breaker Box w/ Included Circuit Breakers
- Pump Controller with Timer
- Surge Protector
- ECM Building Recirculation Pump
- ECM Storage Tank Recovery Circulator
- Shutoff Valves
- Well Immersed Thermistors for Easy Monitoring of Building Hot Water Performance
- 2" Hot Water Supply to Storage Tank
- 2" Cold Make Up Water
- 2" Supply through Pump to Tankless
- 2" Pump Bypass
- Integrated 2" Check Valves

64

# TTS SYNERGY

## BUILDING PUMP & RETURN LINE

### TWST Series (Tankless w/ Storage)



1" Building Return  
Line Connection



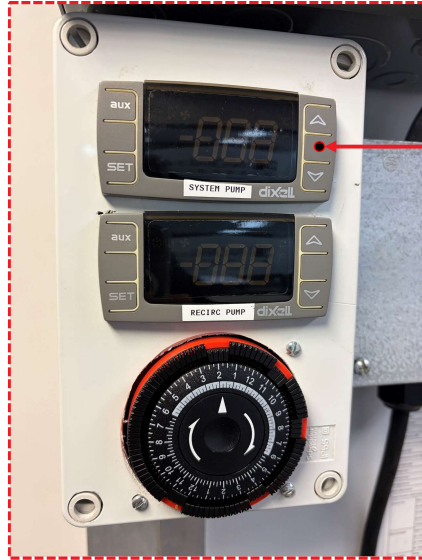
Differences between S Series



65

# TTS SYNERGY CONTROLS

## TWST Series (Tankless w/ Storage)



Additional Dixell Control for System Pump

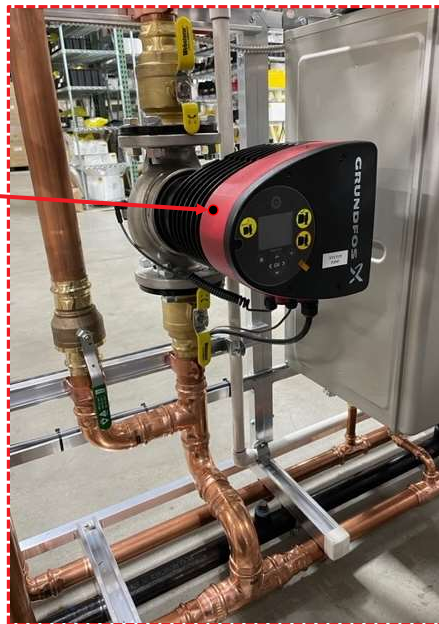


Differences between S Series



# TTS SYNERGY SYSTEM PUMP

## TWST Series (Tankless w/ Storage)



ECM System Pump

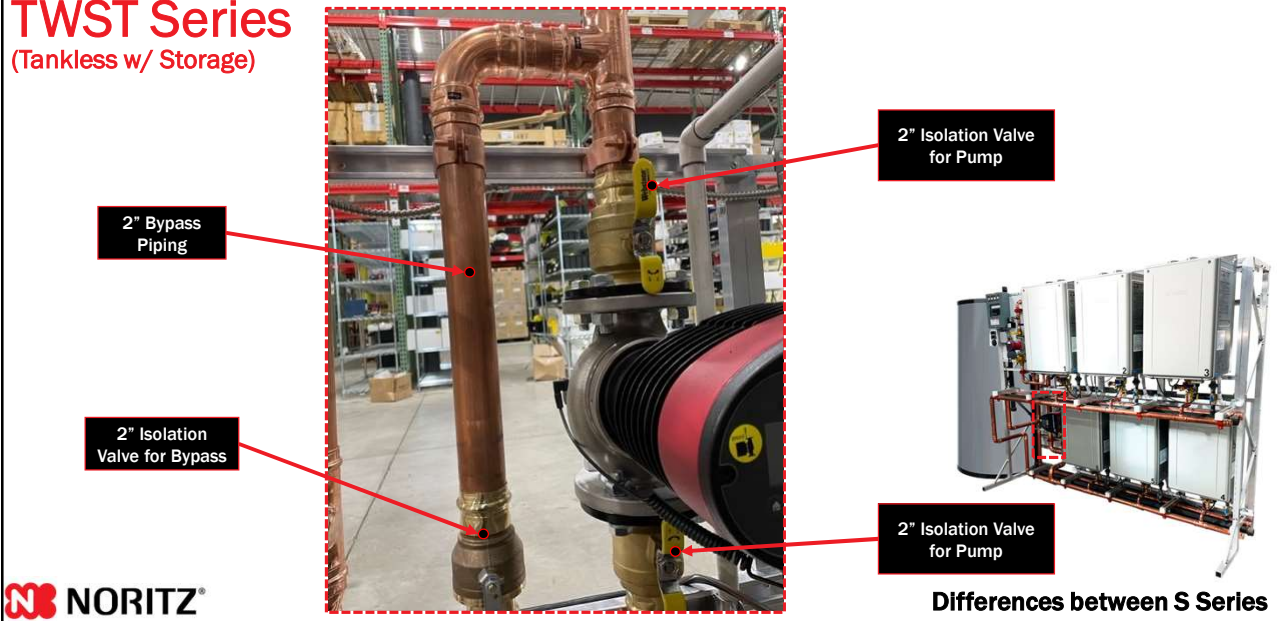


Differences between S Series



# TTS SYNERGY SYSTEM PUMP PIPING

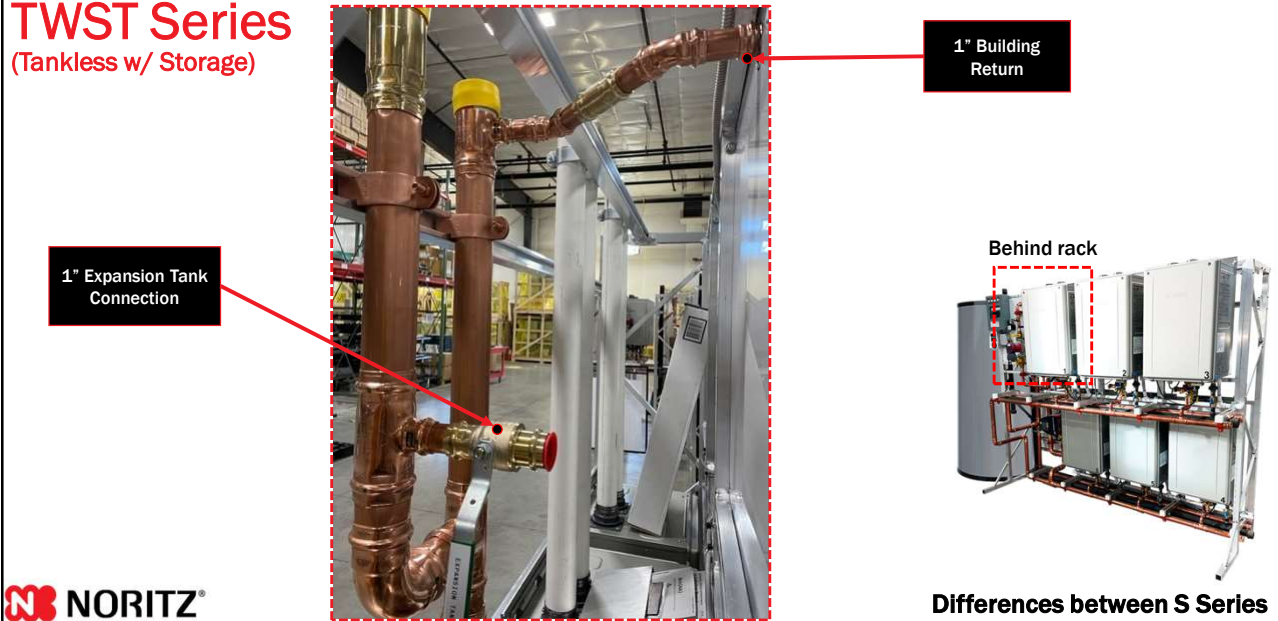
## TWST Series (Tankless w/ Storage)



68

# TTS SYNERGY EXPANTION TANK & RETURN CONNECTION

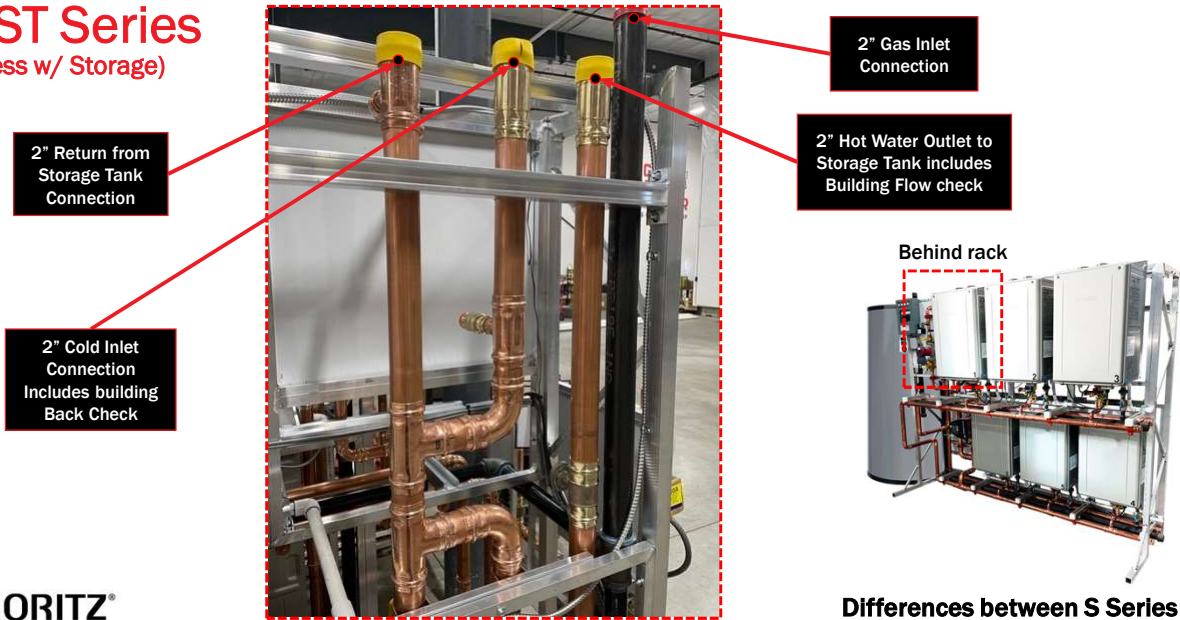
## TWST Series (Tankless w/ Storage)



69

# TTS SYNERGY WATER/GAS CONNECTIONS

## TWST Series (Tankless w/ Storage)



70

# TTS SYNERGY INCLUDED ACCESSORIES

## TWST Series (Tankless w/ Storage)



Literature Rack w/ Manuals & Commercial Remotes



20 Gallon Expansion Tank



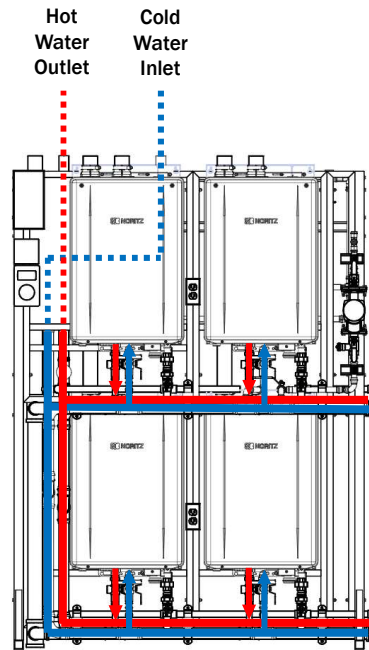
Condensate Neutralizer



71

**TTS SYNERGY**  
**S Series**

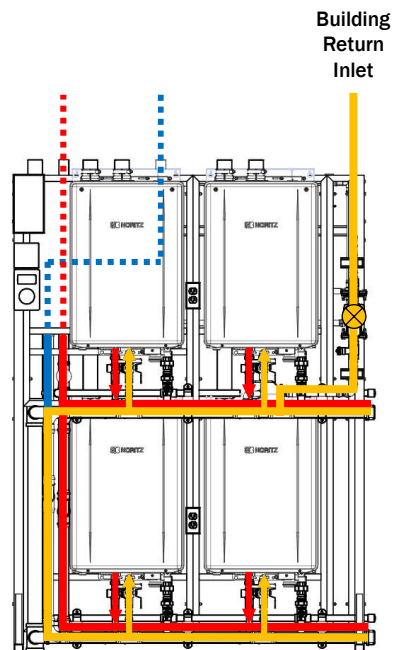
**Sequence of Operations**



72

**TTS SYNERGY**  
**S Series**

**Sequence of Operations**



73

# TTS SYNERGY

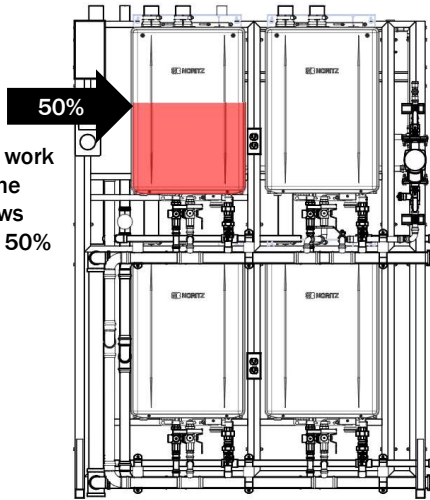
## S Series

- In a multi-system setup, the Noritz commercial units will communicate with one another and work in unison to even out the load on each individual unit, maximizing output and system life.
- With the ability to modulate between multiple units with the use of a system controller makes Noritz commercial water heaters the most efficient water heating system on the market today.



# INTELLIGENT SYSTEM

1 heater will work solely until the demand grows greater than 50%



74

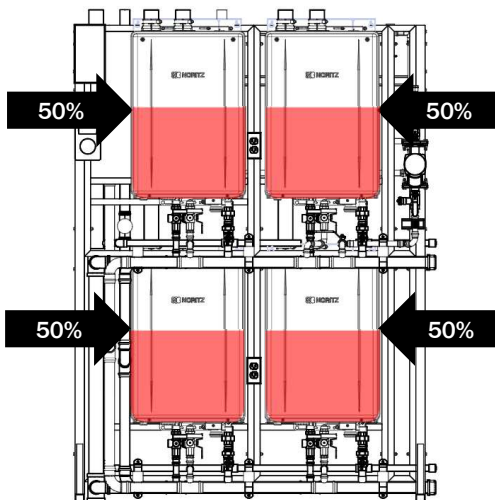
# TTS SYNERGY

## S Series

The load will equalize among more heaters to meet high volume demand.



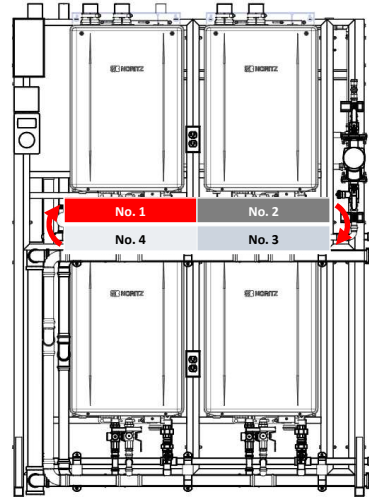
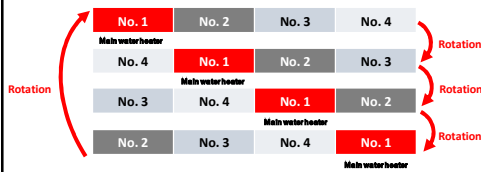
# INTELLIGENT SYSTEM



75

# MODULAR OPERATION

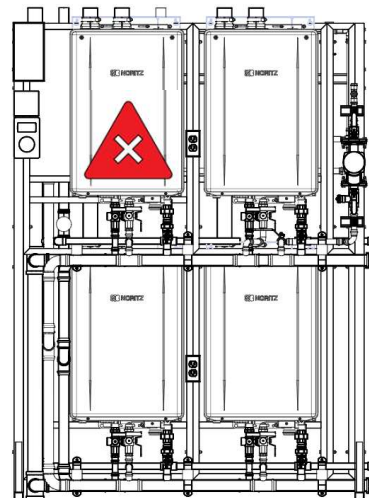
The Noritz modular system is based on a single self-contained, interchangeable unit that can combine and communicate with like units to meet any hot water demand.



# MODULAR OPERATION

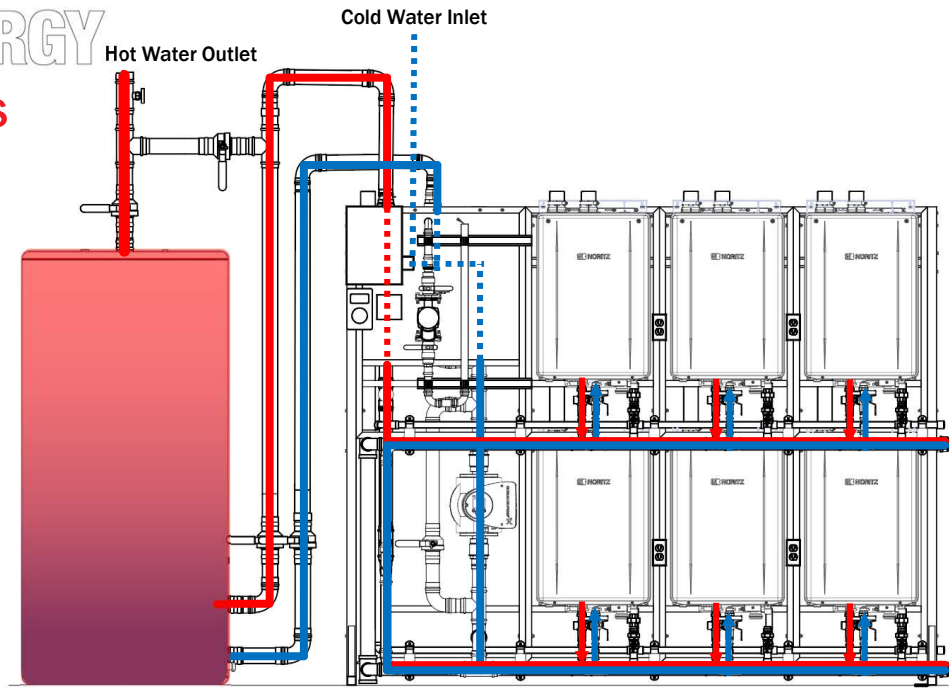
If 1 unit is inoperable due to maintenance or issues, the other units can pick up the demand.

Ensuring the property NEVER loses hot water.



# TTS SYNERGY

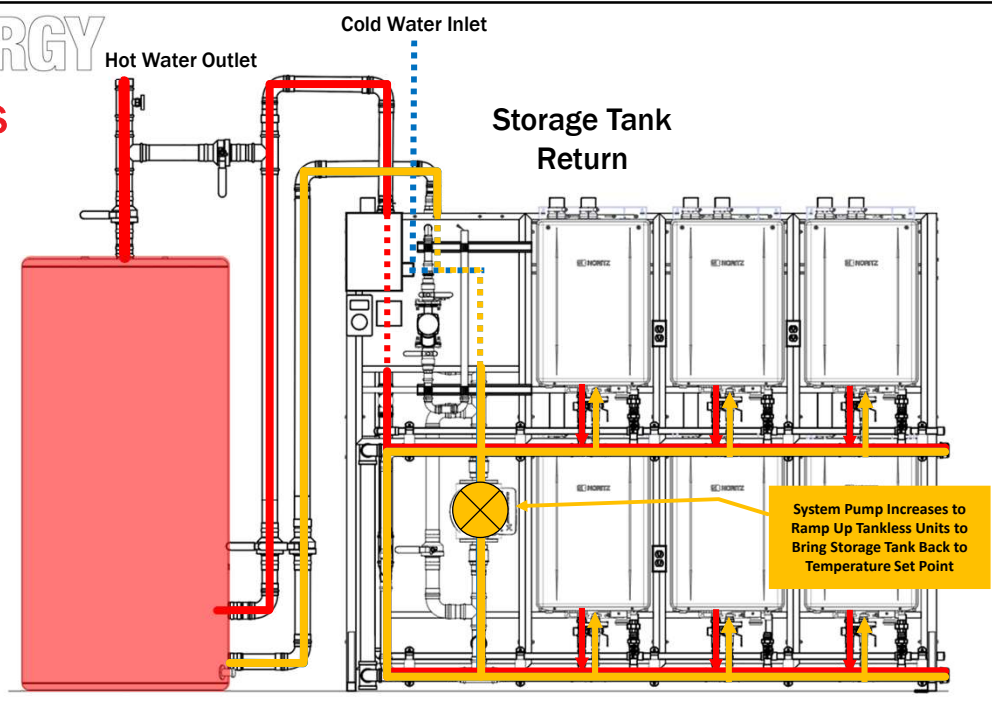
## TWST Series Sequence of Operation



78

# TTS SYNERGY

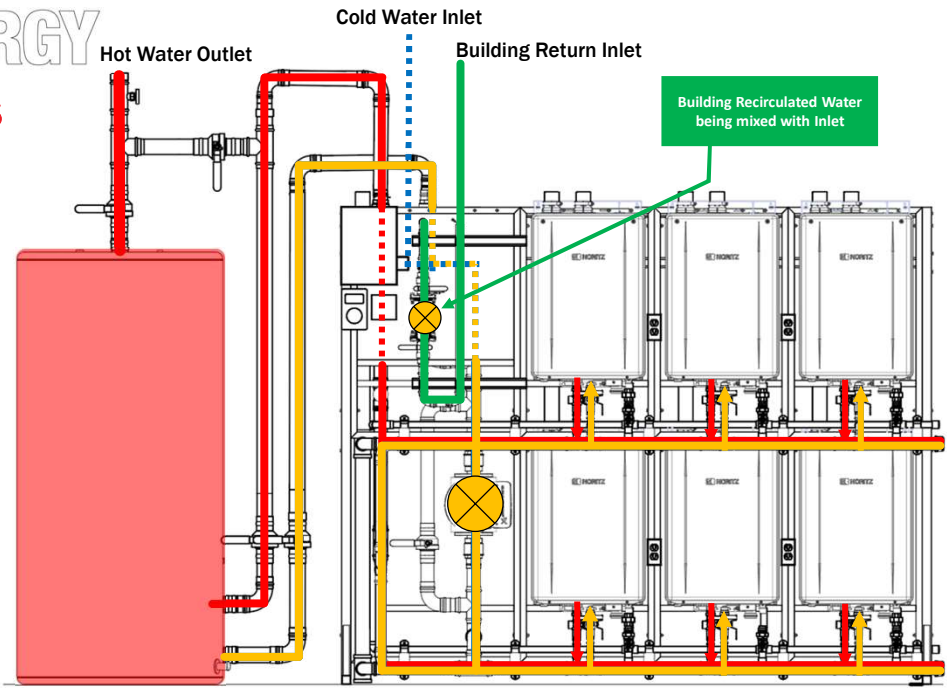
## TWST Series Sequence of Operation



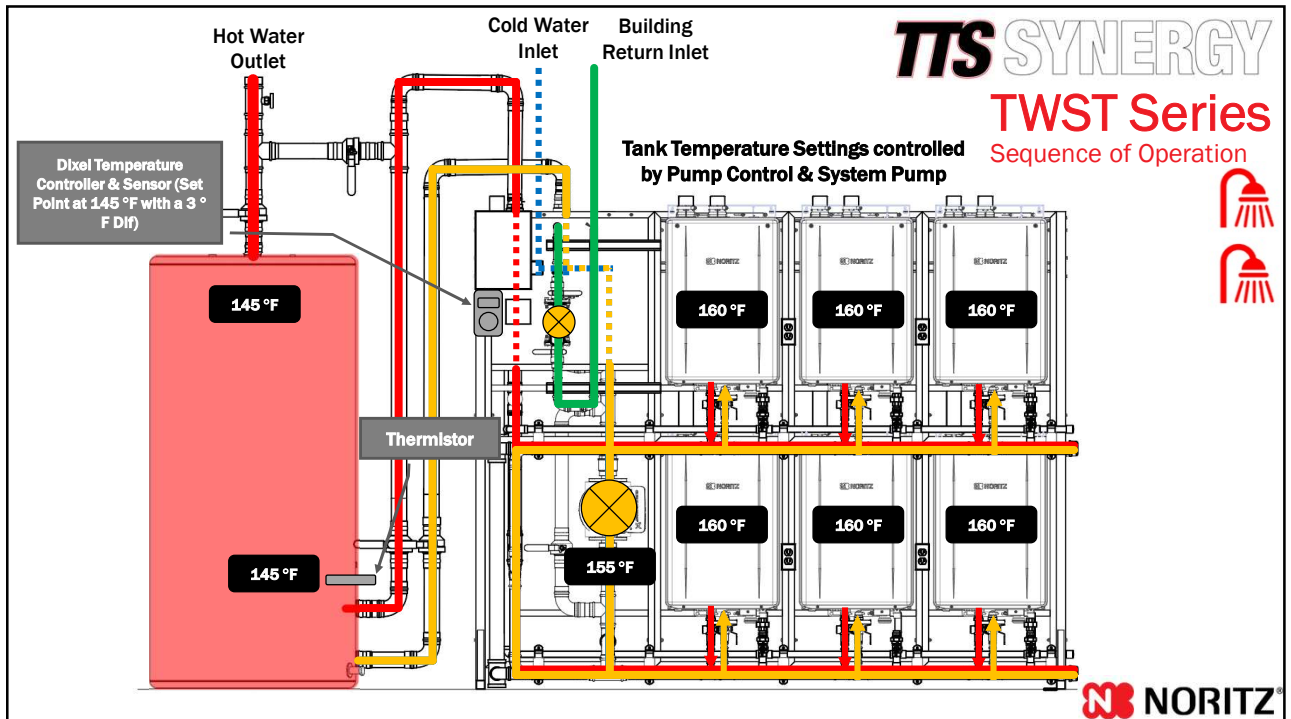
79

# TTS SYNERGY

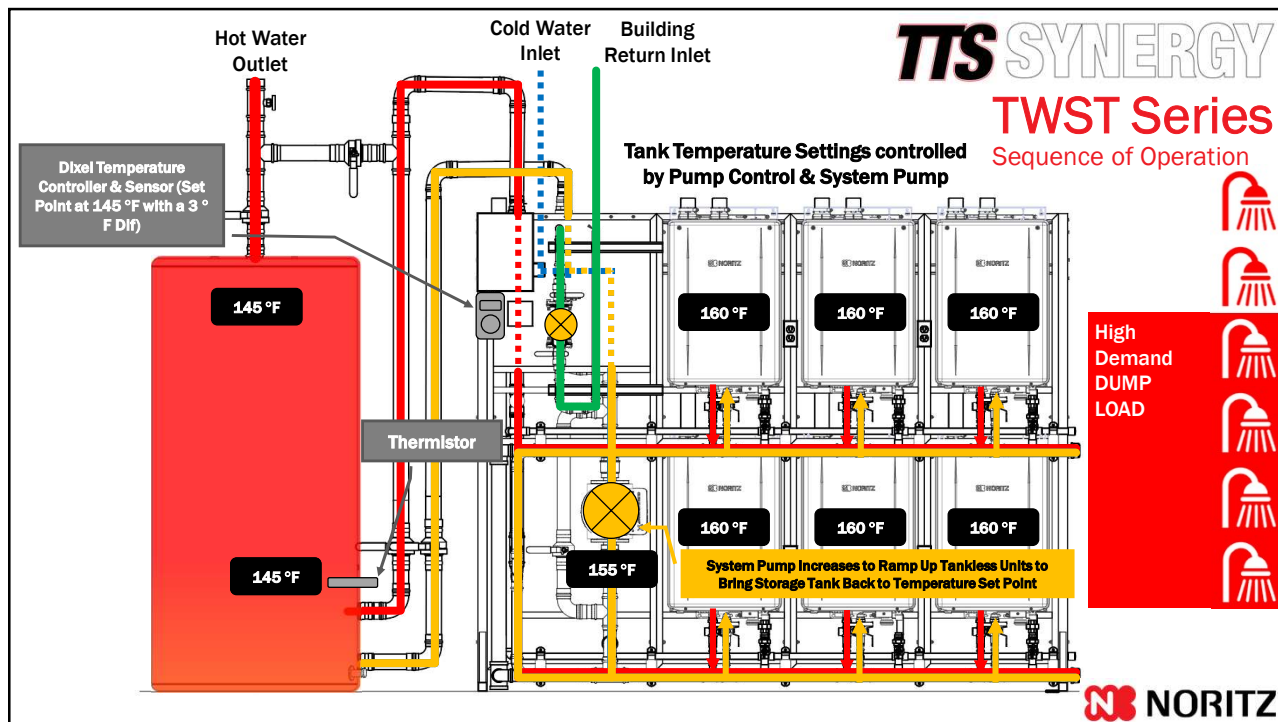
## TWST Series Sequence of Operation



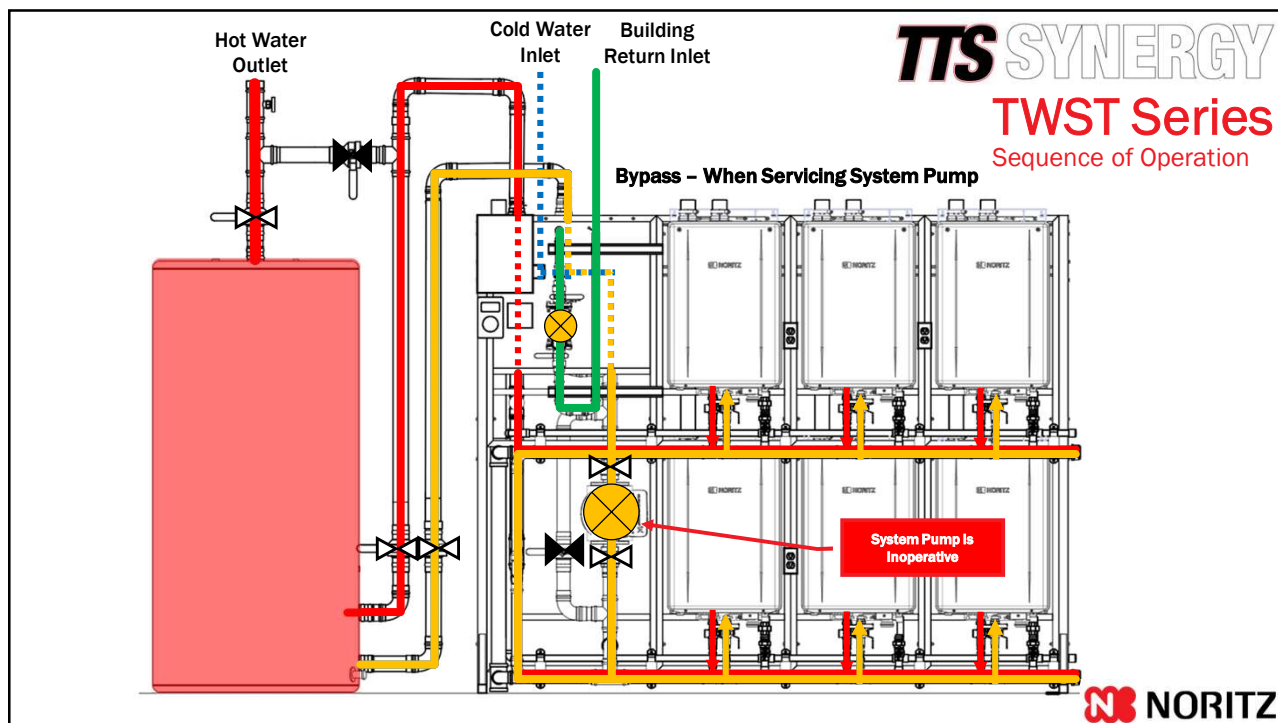
80



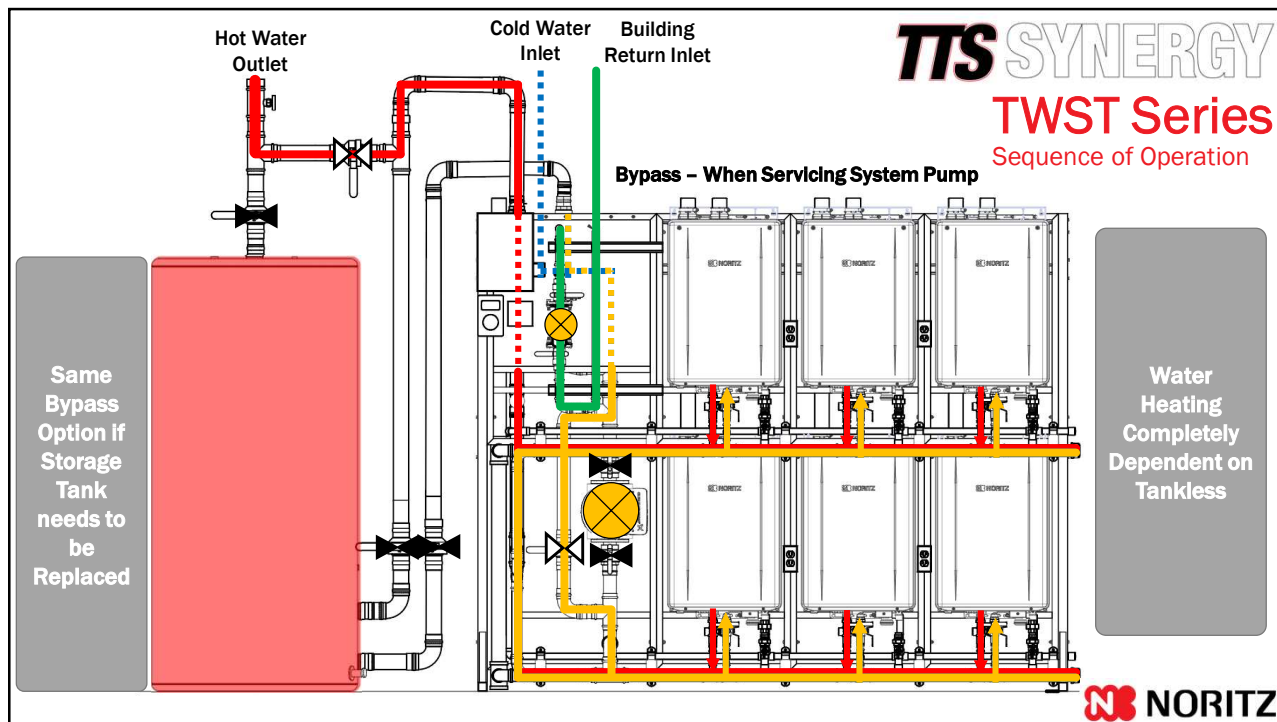
82



83



84



85

# **TTS SYNERGY SHIPPING CRATE**

Professionally crated and available through National Distribution

**NORITZ**

86

# TTS SYNERGY JOHNS HOPKINS UNIVERSITY

Baltimore, MD

Before



After



87

# TTS SYNERGY COTTON MILL APARTMENTS

New Orleans, LA

## TTS-TWST10

Replaced 3Mbtuh input mid efficiency boiler w/ 1.9 Mbtuh 98% condensing commercial tankless technology

- 2 x 175G ASME Tank
- ASME Expansion tank
- Neutralizer
- ECM System pump and controls
- Building recirculation pump and controls
- 110:1 turn down ratio
- 10 year HEX warranty
- 5 year parts warranty
- 1 year reasonable labor



88

# TTS SYNERGY ALLEN INDEPENDENT SCHOOL DISTRICT

Allen, TX

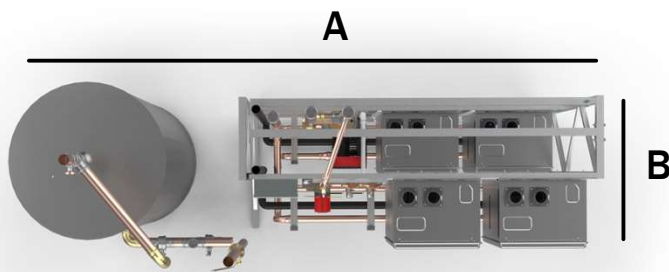


**CR60 WHEEL KIT**  
 Noritz CR60 Wheel Kit is designed to simplify logistics of moving Noritz Commercial Racks from the crate to the mechanical room. Designed to last, the wheel kits are compatible to move all Noritz Commercial Rack configurations for years to come.



89

# TTS SYNERGY FOOTPRINT DIMENSIONS



	(A) Length	(B) Width	Height
TTS-S2 MINI	35"	31.5"	80"
TTS-SWH2	58"	17"	44"
TTS-S3	52.25"	31.5"	80"
TTS-SWH3	79.75"	17"	44"
TTS-S4 MINI	56.75"	31.5"	80"
TTS-SWH4	101.5"	17"	44"
TTS-S5	74"	31.5"	80"
TTS-S6	95.75"	31.5"	80"
TTS-TWST2	82.25"	31.5"	80"
TTS-TWST3	82.25"	31.5"	80"
TTS-TWST4	104"	31.5"	80"
TTS-TWST5	125.75"	31.5"	80"
TTS-TWST6	125.75"	31.5"	80"



90

# NORITZ ONLINE SIZING



www.noritz.com/commercial-sizing-calculator/

**COMMERCIAL SIZING CALCULATOR**

**1. APPLICATION**  
Choose your application to get sizing for your installation.

Gas Type\*  
Natural Gas

Application Type  
Tankless Only

Condensing\* / Non Condensing\*  
 Condensing Tankless  
 Non-Condensing Tankless  
 Both

Install Location\*  
Indoor

Postal Code\*  
49333

I agree to the terms of service

**NEXT**

**2. INFORMATION**  
Help us gain a better understanding of the needs of your install.

**Set Point Temperature**  
The set point temperature is the temperature the heater will be set at. The heater should be set at the temperature required to meet the hot water demand. If multiple hot water temperatures are required, the temperature should be estimated for the coldest time of the year.  
**120 F**

**Ground Water Temperature**  
The incoming temperature of the local water supply for sizing purposes, the temperature should be estimated for the coldest time of the year.  
**47 F**

**Approximate Elevation**  
This number was estimated based off the Postal Code you provided. Feel free to adjust this number if you know the exact elevation of the install if this is an important factor.  
**766 Ft**

**FIXTURES**  
Setting an accurate fixture count helps recommend the best unit for the job.

Map Sink: 1, Public Lavatory: 4, Pre-Rinse Sprayer: 2, 2 compartment Sink (hood service): 1  
 3 compartment sink (hood service): 1, 4 compartment sink (hood service): 0, Pre-scraper (hood operated): 1, Bar Sink (hood service): 2

**CALCULATE**

**RECOMMENDATION**

**NCC199CDV**  
(GQ-C3260WZ-FF US NG)

Dimensions: 27.0 (H)x18.5(x)x14.2(D)Depth  
 Weight: 66lb  
 GAS Consumption NG: N/A  
 GAS Consumption LP: N/A  
 Capacity Range: 0.5-3.3 GPM  
 Thermal Efficiency: 97% (NG), N/A (LP)  
 Temperature Output: 100°F - 185°F  
 Included Accessories: N/A

**SIZING RECOMMENDATION**

Model	Quantity	Min. BTU/hr	Max. BTU/hr	Min. Flow	Max. Flow @ Temp Rise
NCC199CDV (GQ-C3260WZ-FF US NG)	3	18000	139900	0.5	33.3 GPM

**RECOMMENDED ACCESSORIES**

- Remote Control and Cord (RC-9018M)
- Isolator Valve (IR-WV-200-1-1/4)
- Freeze Protection (F)
- Outdoor Vent Cap (OC-2)
- Single Vent Conversion Kit (SV-CK-2)
- Pipe Cover (PC-10S)

**GET PDF REPORT**



91

# TTS ONLY SIZING – FRG WEBSITE

## What Is A FIOP?

- Factory Installed Options
- If a standard offering doesn't fit the needs
- Allows for the most complete solution from the factory

**Facilities Resource Group** FIOP 2.0: Factory Installed Options Submittal Sheet

Page 1 | Page 2 | Page 3 | Page 4 | Page 5 | Page 6

**Customer Information**

Name \*  
 First Name: \_\_\_\_\_ Last Name: \_\_\_\_\_

Company Name \*  
 \_\_\_\_\_

Company Type \*  
 -Select- [v]

Phone Number \*  
 \_\_\_\_\_

Email \*  
 \_\_\_\_\_



92

# WHERE TO FIND FIOP SIZING?

Facilities Resource Group

Products Tools Warranty Registration About Us Careers Contact Us

[www.webfrg.com/tts](http://www.webfrg.com/tts)  
Get a TTS FIOP Quote

GET A TTS FIOP QUOTE

**TTS SYNERGY**  
S E R I E S

Offering high performance tankless rack systems as well as options to pair with a storage tank, the TTS Synergy Series offers industry leading performance in a wide range of configurations. Commercial Tankless engineering meets high performance with the TTS Synergy Series.

**NORITZ**

93

# USING FIOP FORM

## Application \*

- |   |                                      |                                      |
|---|--------------------------------------|--------------------------------------|
| <input type="radio"/> Multi-Family            | <input type="radio"/> Brewery/Winery | <input type="radio"/> Car Wash       |
| <input type="radio"/> Correctional Facility   | <input type="radio"/> Dormitory      | <input type="radio"/> Fitness Center |
| <input type="radio"/> Food Service Restaurant | <input type="radio"/> Hospital       | <input type="radio"/> Hotel          |
| <input type="radio"/> Laundromat              | <input type="radio"/> School         | <input type="radio"/> Senior Living  |

- Choose your application
- By choosing you application you will see the options for the most common fixtures used in that application

**NORITZ**

94

# USING FIOP FORM

All **Red Asterisk\*** Fields must be filled in. Enter “0” if not applicable

Multi-Family Fixtures *	Fixture Count *
Tub/Shower *	<input type="text"/>
Shower *	<input type="text"/>
Private Lavatory *	<input type="text"/>
Public Lavatory *	<input type="text"/>
Kitchen Sink *	<input type="text"/>
Dishwasher *	<input type="text"/>
Washing Machine (Residential) *	<input type="text"/>
Washing Machine (Coin-op) *	<input type="text"/>
Mop Sink *	<input type="text"/>
Additional Type #1(Please add Type and Count)	<input type="text"/>
Additional Type #2(Please add Type and Count)	<input type="text"/>
Additional Type #3(Please add Type and Count)	<input type="text"/>



Multi-Family Example

Correctional Facility Fixtures *	Fixture Count *
Standard Shower *	<input type="text"/>
Private Lavatory *	<input type="text"/>
Public Lavatory *	<input type="text"/>
Mop Sink *	<input type="text"/>
Washing Machine (Enter Lbs rating and Count) *	<input type="text"/>
Bradley Wash Fountain (36" full) *	<input type="text"/>
Bradley Wash Fountain (36" half) *	<input type="text"/>
Bradley Wash Fountain (54" full) *	<input type="text"/>
Bradley Wash Fountain (54" half) *	<input type="text"/>
Additional Type #1(Please add Type and Count)	<input type="text"/>
Additional Type #2(Please add Type and Count)	<input type="text"/>
Additional Type #3(Please add Type and Count)	<input type="text"/>

Correctional Facility Example

95

# WHY FILL OUT A FIOP FORM?

- Ensures the client is getting what they need
- All while maintaining our TTS Features
- Professionally Crafted – Expertly installed

#### Select all Applicable Options

- Power (Standard on S, SWH, and TWST Models)
- Legionella Prevention
- Polypropylene Common Venting
- PVC Concentric Vent Kit for Each Heater
- System Monitoring
- System Start Up and Commissioning (Equipment & Building Commissioning w/ System Performance Testing)
- Building Recirculation
- Pipe Insulation

#### ASME Selection \*

- ASME
- Non-ASME(Standard on TTS)

Select either ASME or Non-ASME this will effect Expansion Tank and Storage Tank(if applicable)



96

# EQUIPMENT SIZING – TANKLESS ONLY

APPLICATION INFO					
Job Type	Apartment				
Hot Water Temperature( F)	140				
Cold Water Temp ( F)	45				
Temperature Rise( F)	95				
Gas Type	NG				
Indoor or Outdoor	Indoor				
Elevation (Ft)	Less Than 2000				
FIXTURE TYPE	QUANTITY	FIXTURE UNITS	SUB-TOTAL FIXTURE UNITS	GPH	SUB-TOTAL GPH
Shower / Tub	8	1.50	12.00	18	144
Lav	8	0.75	6.00	2	16
Public Lav		1.00	0.00	4	0
Kitchen Sink	4	1.50	6.00	10	40
Dishwasher	4	1.50	6.00	15	60
Clothes Washer (20 lb)	4	1.50	6.00	40	160
TOTAL FIXTURE UNITS			36.00	TOTAL LOAD (GPH)	420
PEAK LOAD (GPM)			5.0	PEAK LOAD (GPH)	300
OPTION 1 : TANKLESS W/O STORAGE					
Model	UEF / TE	QTY RACKS	TOTAL QTY HEATERS	MAX INPUT (BTU/HR)	TOTAL FLOWRATE (GPM)
TTS-S3	96% / 98%	1	3	599,700	12.4



97

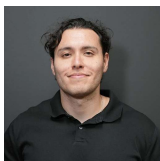
# COMMERCIAL CONSULTATION

Have a question on specs, sizing or how you can build Noritz into your next project? Talk to our commercial experts directly.

[commercial@noritz.com](mailto:commercial@noritz.com)

Case Studies, Resources, Technical Documents, Sizing Calculator:

[www.noritz.com/commercial](http://www.noritz.com/commercial)



**Juan Rivera**  
Commercial Application Engineer  
Jrivera@noritz.com



98

# SUPERIOR WARRANTIES



99

## THANK YOU



100