

NB Series Installation Operation & Maintenance

Models: NBT-23

Acidic Condensate pH Treatment Tank





Overview

Read before proceeding

WARNING

Always use eye protection and plastic or rubber gloves when installing, recharging, adding water, or cleaning the NBT-23 tank.

Failure to comply with these guidelines could result in severe personal injury, death or substantial property damage.

Keep pH Power Pellets® and power pellet bags out of the reach of children and animals. pH Power Pellets® (magnesium Hydroxide) are NOT food grade and should not be consumed by humans or animals.

Always return the clear cover lockdown bolts and nuts in place and tighten for child safety.

DO NOT exhaust flue gases through NBT-23 tank, they are not rated for boiler or furnace flue gases. Operating NBT-23 tank as exhaust vents can cause injury or death from carbon monoxide.

Gas traps must be installed between the boiler, vent drains, and furnace condensate outlet and the inlet of all NBT-23 tank.

Neutralizer and lines must be wet

- Before operating the boiler, hot water heater or furnace, fill the NBT-23 tank and traps with tap water. NEVER operate with tubes or P-traps dry.

Application restrictions

- Condensing boilers, hot water heaters or furnaces, and flue pipe condensate drains.
- NBT-23 tank must be installed below system P-traps, boiler, furnace, and breeching condensate drains.
- The use of Ferris and Copper piping on the neutralizer inlet or out is not permitted. The use of CPVC, PVC, PP Tubing, and Stainless Steel piping is the only material that shall be used.

Combined piping options

Flue pipe condensate drains / NBT-23 tank

- Condensate drain piping options / Flue Drain, Boiler Drain, Furnace Drain, Hot Water Heater Drains: See Figures 1,2,3,4,5,6, and 7.
- If using a separate NBT-23 tank for a common flue pipe drain the tank should be rated at 33.3% of the total gross BTU of all units attached to the common vent.

Replacement of the NBT-23 pH Power Pellet® Media Bag

- The media bag should be replaced when pH level at the NBT-23 outlet level falls below 5.0.
- At a minimum the media bag must be changed once a year.
- Use only JJM pH Power Pellet® media bags. DO NOTE USE LIMESTONE OR MARBLE CHIPS.

What is pH?

The pH measurement of a fluid is an indicator of the acidity or alkalinity. Neutral fluids have pH of 7.0. Acid fluids have pH below 7. And alkaline fluids have pH above 7 (up to 14). The pH can be easily measured using a digital pocket pH probe.

Condensate pH from condensing boilers and furnaces is typically around 3.2 - 4.0. The condensate pH needs to be increased (made more neutral) to prevent possible damage to cast iron soil pipe, ABS pipe, septic tanks, plants, wastewater treatment plants and other materials handling wastewater.

NBT-23 condensate pH treatment tanks increase pH (reduce acidity).

NBT-23 residential/commercial flue-side condensate neutralizing tubes & tanks are designed to raise the pH level of the condensate discharged by high-efficiency boilers and warm air furnaces and hot water heaters.

Applying NBT-23 neutralizing tanks

Condensate can be collected from flueways and boiler/furnace condensate trap outlets. See WARNING section at left for guidelines on application.

Match neutralizing tank to boiler, hot water heater and furnace gross BTU input ratings.

Do not install a condensate pump unit before the NBT-23 inlet; a condensate pump can only be installed at the outlet of a NBT-23.

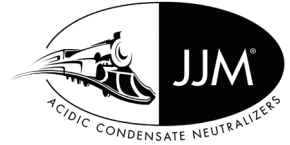
Locate the neutralizing tank outlet port below the condensate connection and slightly above the floor drain or inlet to a condensate pump reservoir (if used).

Follow the guidelines in this manual, the boiler/furnace manual and all applicable local codes when installing, using and maintaining NBT-23 condensate neutralizing tank.

WARNING

Keep pH Power Pellets® and power pellet bags out of the reach of children and animals. pH power pellets (magnesium Hydroxide) are NOT food grade and should not be consumed by humans or animals.

Always return the clear cover lockdown bolts and nuts in place and tighten for child safety.



Installation

1. Remove Clear Cover machine bolt and nuts at both ends of cover.
2. Remove shipping bubble wrap and safely discard.
3. Remove “Date of installation label” and the “red warranty tag”.
4. Remove the wall mounting “J” hook brackets.
5. Remove the pH Power Pellet® bag.
6. Remove porous pellet bag from plastic shipping bag before placing in the NBT-23 tank.

Wall hung units:

1. Secure the “J” brackets through the holes provided 10” apart to the wall using the proper screws or bolts to handle eight pounds of weight. If mounting to the jacket of boiler, hot water heater, or furnace caution should be taken not to damage wiring or any components of these units with your mounting anchors. Place the NBT-23 tank into the “J” hooks; it is now ready to be piped. We highly recommend using ¾” schedule40 PVC pipe and fittings.
2. The outlet port of the NBT-23 pH treatment tank shall be below the condensate drain of the boiler; hot water heater, furnace, and stack drain. The heating units condensate drains shall be piped to the tank inlet port. The outlet port of the tank can be piped to an open house waste drain or condensate pump system. Follow the piping diagram in this manual which best applies your installation.
3. Do not terminate the tank outlet piping outside where temperatures will reach freezing or below (32F or 0C).
4. Once mounting and piping are complete assure that the black ABS flow baffle is placed flatly on top of the mounting ribs at the bottom of the tank.
5. Remove the pH Power Pellets® from the plastic shipping bag and place the single pellet bag flat, evenly and on top of the black ABS flow baffle. Do not remove the pellets from the polyester mesh bag. It is important that the bag and pellets fit squarely across the ABS baffle so as not to let acidic condensate bypass the pellets.
6. Before operating the boiler, hot water heater, furnace or stack, fill the NBT-23 tank with fresh tap water to the tank outlet port. Also fill any “P” traps with fresh tap water. NEVER OPERATE THE NBT-23 TANK DRY.
7. Replace the clear cover with the bolts and nuts provided, DO NOT OVER TIGHTEN. The flow arrow should always point in the direction of the outlet port (Highest Port on the tank).
8. Pipe hangers or brackets should be used to support all piping.
9. Place the “Installation Label” on the side on the NBT-23 tank so as to be visible to the end user. Indicate on which date the unit was installed. Also place the stringed “Red Warranty” tag in close proximity to the outlet port and advise the owner of the need to replace the pellet bag at least once a year at minimum or if the pH falls below 5.0 pH which ever occurs first. Also advise the owner of the need to fill out the warranty card online at www.jjmboilerworks.com or via mail.

Floor mounting units:

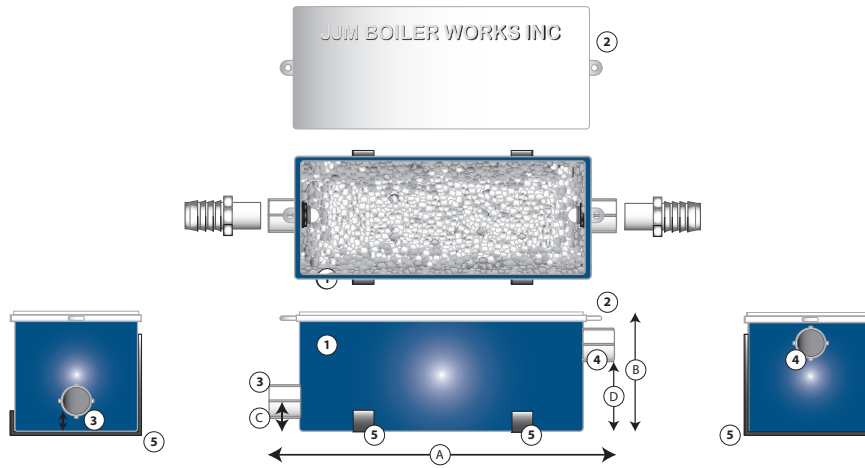
1. Place the NBT-23 tank in a location where it will not be a foot traffic hazard.
2. The “J” hook brackets may be used if the tank is place next to a wall or heating unit.
3. Follow steps 1-9 in the “WALL HUNG” section.

Operational Flow:

1. Once the heating unit is fired and acidic condensate is produced the condensate will flow from the heater condensate drain down into the NBT-23 tank’s inlet port. The acidic condensate enters the bottom chamber of the tank below the ABS flow baffle. The acid will now flow up through the ABS baffle ports via gravity and slight head pressure at which point it comes in contact with the Magnesium Hydroxide Pellet bag (pH Power Pellets®). A chemical reaction now takes place in which ions from the acid and pellets are exchanged raising the ph level of the acid in the range of 5.0 to 9.0 pH. In this ranged the condensate can be safely be put to a waste drain via the NBT-23 outlet port and piping.

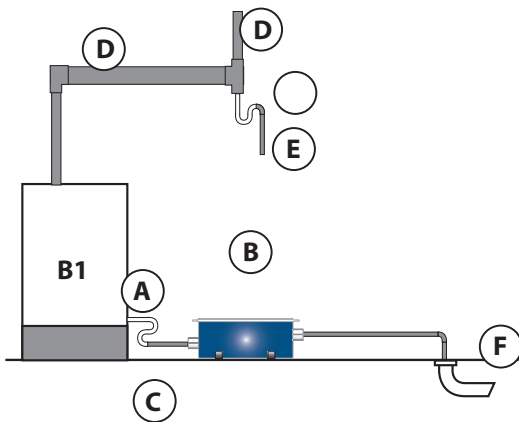


Installation **Figure 1** NBT-23 pH Treatment Tank – features and dimensions



NBT-23 pH Treatment Tank Ratings & Dimensions (in inches)						
MBH	Flow Rating	(A)	(B)	(C)	(D)	Active Ingredient/pH Power Pellets® by JJM Boiler Works, Inc.
1 to 300	0 to 2.4	13.75"	4.75"	7/8"	3"	(3) INLET (4) OUTLET Port Size/PVC - 3/4" Socket (EDPM Flat Gasket)
(1) Tank - Corrosion-resistant, blue polypropylene					(3C) INLET 7/8" From Base to Center (4D) Outlet 3" From Base to Center	
(2) Cover plate - clear polycarbonate (8-32 x 1/2" Screw/ 8-32 Nut)					(5) Mounting - Horizontal; Floor or Wall (Steel Wall Brackets Shown)	

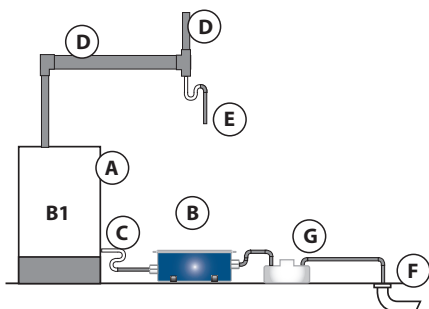
Figure 2 NBT-23 pH Treatment Tank/Single Unit



- A Boilers / Hot Water Heaters / Furnace Condensate Drains
- B NBT-23 pH Treatment Tank
- C Trap
- D Flue Pipe
- E Trap
- F Floor Drain

Note: Contact Factory for pH Treatment Tank and Piping Size

Figure 3 NBT-23 pH Treatment Tank Single Unit - Condensate Pump



- A Boilers / Hot Water Heaters / Furnace Condensate Drains
- B NBT-23 pH Treatment Tank
- C Trap
- D Flue Pipe
- E Trap
- F Floor Drain
- G Condensate Pump

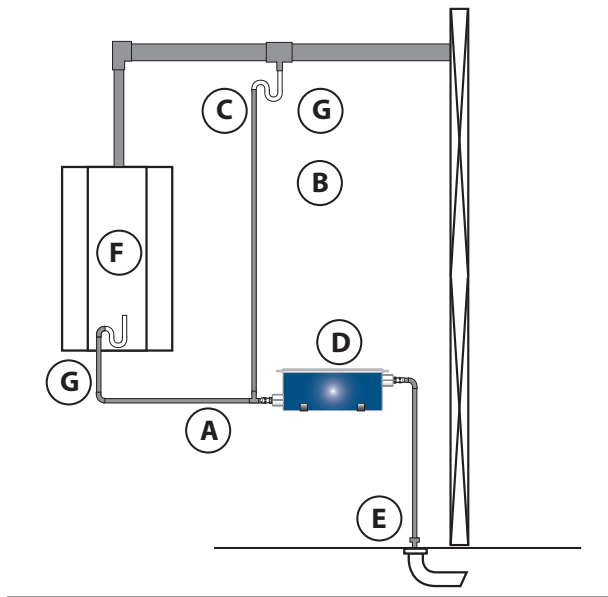
Note: Contact Factory for pH Treatment Tank and Piping Size

Piping Methods

⚠ WARNING

Do not install the NBT-23 in a vertical position. Only mount in a horizontal position on the floor or wall mounted horizontally using the mounting brackets provided.

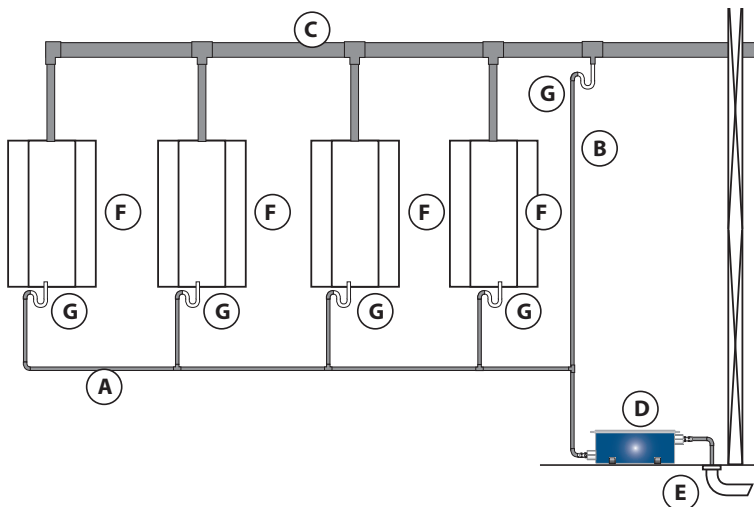
Figure 4 Piping for Single Heating Unit with Common NBT-23 pH Treatment Tank and Flue Drain Connection



- A Boilers / Hot Water Heaters / Furnace Condensate Drains
- B Flue Drain/Trapped
- C Single Flue Vent
- D NBT-23 pH Treatment Tank
- E House Drain
- F Boilers / Hot Water Heaters / Furnaces
- G Gas/Water Trap

Note: Contact Factory for pH Treatment Tank and Piping Size

Figure 5 Piping Multiple Heating Units/Single NBT-23 pH Treatment Kit / Common Vent Piping / Common Condensate Drain

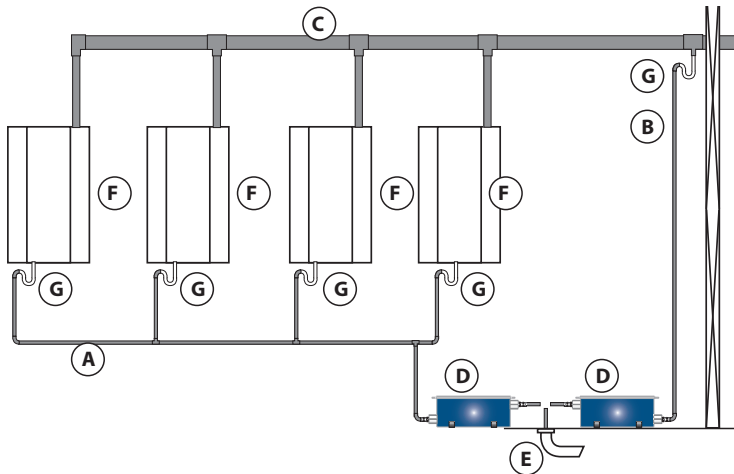


- A Boilers / Hot Water Heaters / Furnace Condensate Common Drain
- B Flue Drain
- C Common Flue Vent
- D NBT-23 pH Treatment Tank
- E House Drain
- F Boilers / Hot Water Heaters / Furnaces
- G Condensate Trap

Note: Contact Factory for pH Treatment Tank and Piping Size

Piping Methods

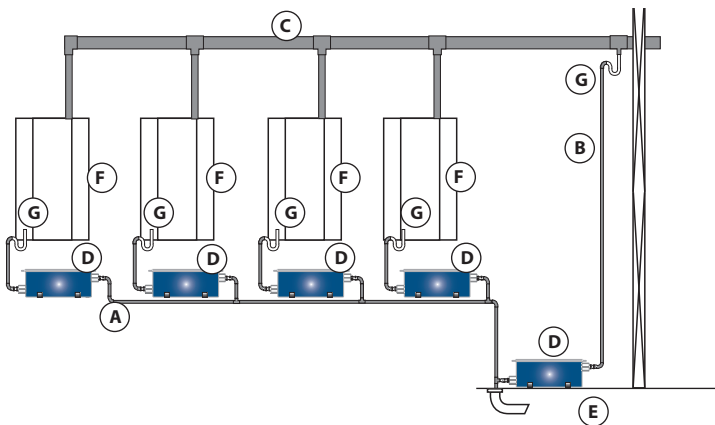
Figure 6 Piping for Multiple Heating Units with Common NBT-23 pH Treatment Tank. Common Flue Vent with Separate NBT-23 pH Treatment Tank.



- A Boilers / Hot Water Heaters / Furnace Common Drain
- B Flue Drain
- C Common Flue Vent
- D NBT-23 pH Treatment Tank
- E House Drain
- F Boilers / Hot Water Heaters / Furnaces
- G Condensate Trap

Note: Contact Factory for pH Treatment Tank Piping Size

Figure 7 Piping for Multiple Heating Units / Single pH Treatment Kit / Common Vent Piping / Common Condensate Drain



- A Boilers / Hot Water Heaters / Furnace Condensate Common Drains
- B Flue Drain
- C Common Flue Vent
- D NBT-23 pH Treatment Tank
- E House Drain
- F Boilers / Hot Water Heaters / Furnaces
- G Condensate Trap

Note: Contact Factory for pH Treatment Tank Piping Size

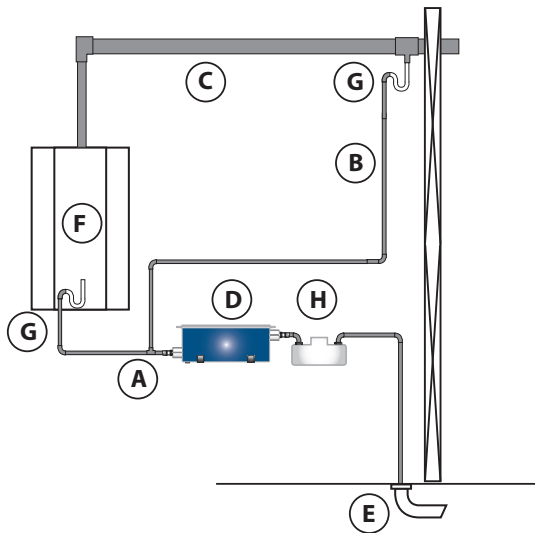
WARNING

OUTDOOR INSTALLATIONS — provide and install electric heat tape and insulation of the pipes on the condensate drain lines and around the NBT-23 tank to prevent possibility of neutralizer tube damage or line blockage due to freezing. Failure to comply with the following guidelines could result in severe personal injury, death or substantial property damage.

Wall Mounting Piping:

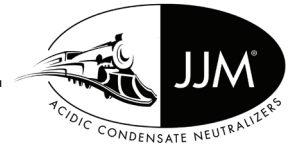
The NBT-23 can also be wall mounted by using the wall mounting brackets supplied with the unit. Always make sure that the method of wall mounting will support the weight of a fully operating NBT-23 unit. (8.5 U.S. pounds). Piping and pipe clamps should also be used.

Figure 8



- A Boilers / Hot Water Heaters / Furnace Condensate Drains
- B Flue Drain
- C Single Flue Vent
- D NBT-23 pH Treatment Tube Tank
- E House Drain
- F Boilers / Hot Water Heaters / Furnaces
- G Condensate Trap
- H Condensate Pump

Note: Contact Factory for pH Treatment Tank and Piping Size



Maintenance

Inspect frequently

Installer — Instruct the building owner to frequently inspect the NBT-23 tank neutralizer and all condensate connections. The owner must notify a qualified technician if any problems are noticed.

Environmentally Friendly

The pH Power Pellets® (Magnesium Hydroxide) pellets are NON-Hazardous to the environment and can be disposed of as normal refuse. Do not allow children or animals to consume pH power pellets as they are not meant as a neutralizer for human or animal consumption.

Important

Remove porous pellet bag from plastic shipping bag before placing in the NBT-23 tank.

MSDS and MDS sheets are included with the NBT-23 units or can be found on the JJM Boiler Works, Inc. website @ www.jjmboilerworks.com

Recharge as required

When pH tank outlet falls below 5PH. Local codes may have different requirement, check with local authority.

At least at a minimum once a year.

Cleaning

The baffle at the bottom of the NBT-23 tank should be lifted out every three years during re-charging for cleaning of the tank bottom. This should be done by a trained technician.

Contact your local wholesaler or manufacturer's representative for replacement parts.

Dealer listing at www.jjmboilerworks.com



Maintenance Procedures

Getting the most out of your JJM® Neutralizer

Acidic wastewater neutralizers like all filtering devices need both maintenance and replacing. The average pH level of acidic wastewater produced by today's condensing boilers, hot water heaters, furnaces, flue stack drains, and stack economizers is 3.2pH. When using a passive Inline Tube, Tank, or Canister the range of pH modification will fall in between 5.0 and 9.5 pH.

When the pH falls below 5.0 at the outlet port of any neutralizer the active ingredient must be replaced. **Media replacement schedule will depend on several factors including Operating Hours, Efficiency, System Design, and Neutralizer Piping Scheme.** The active ingredient in the case of JJM® products is Magnesium Hydroxide Pellets. The trade name is pH Power Pellets®.

Before changing the pellets when the pH level falls below 5.0 you can get the most out of your neutralizer by first agitating the pellets. In the case of an **inline tube products** try lightly tapping the outer sides of the tube with a rubber mallet several times and then check the pH level once again at the outlet port. You may find that your pH level has risen back into the 5.0 to 9.5pH range.

When your **neutralizer is a tank product with loose pellets** you can simply use a wooded dowel to stir the pellets and again use fresh tap water to flush out the tank.

If your **neutralizer pellets are incased in a porous pellet bag** there are three methods to agitating the pellets:

1. Remove the pellet bag or bags from the tank and using your hands move the pellets around inside the bags.
2. Using a five gallon bucket filled with fresh tap water, use step one with the bag under water.
3. Using a fresh water hose slowly pour fresh water over both sides of the pellet bag and also use method one.

If the pH level is has not risen back into the safe range of 5.0 to 9.5 pH the pellets must be replaced.

If you have our **Model V-250 or V-250 Combi vertical canisters** try the following method:

1. Twist off the outer canister to get access to the inner pellet cartridge and over a five gallon pail shake the Cartridge several times to agitate the pellets.
2. Again using a five gallon pail filled with fresh tap water let the cartridge soak for five minutes under water and then drain and hand shake the cartridge to agitate the pellets. Also clean out any sediment which may be held within the outer canister.

DURING ALL OF THE ABOVE PROCEDURES THE FOLLOWING SAFETY ITEMS MUST BE USED:

- 1. WEAR SAFETY GLASSES**
- 2. WEAR RUBBER OR LATEX PROTECTIVE GLOVES**
- 3. SHUT OFF ALL ELECTRICAL POWER TO THE HEATING UNIT OR UNITS BEFORE SERVICING YOUR NEUTRALIZERS.**

The pellets are **Non-Hazardous** and can be disposed of in your normal refuge.

MSDS sheets can be found online at www.jjmboilerworks.com.

Any questions can be directed to JJM Boiler Works, Inc. at

413-527-1893 or at www.jjmboilerworks.com

George Carney, President, JJM Boiler Works, Inc.