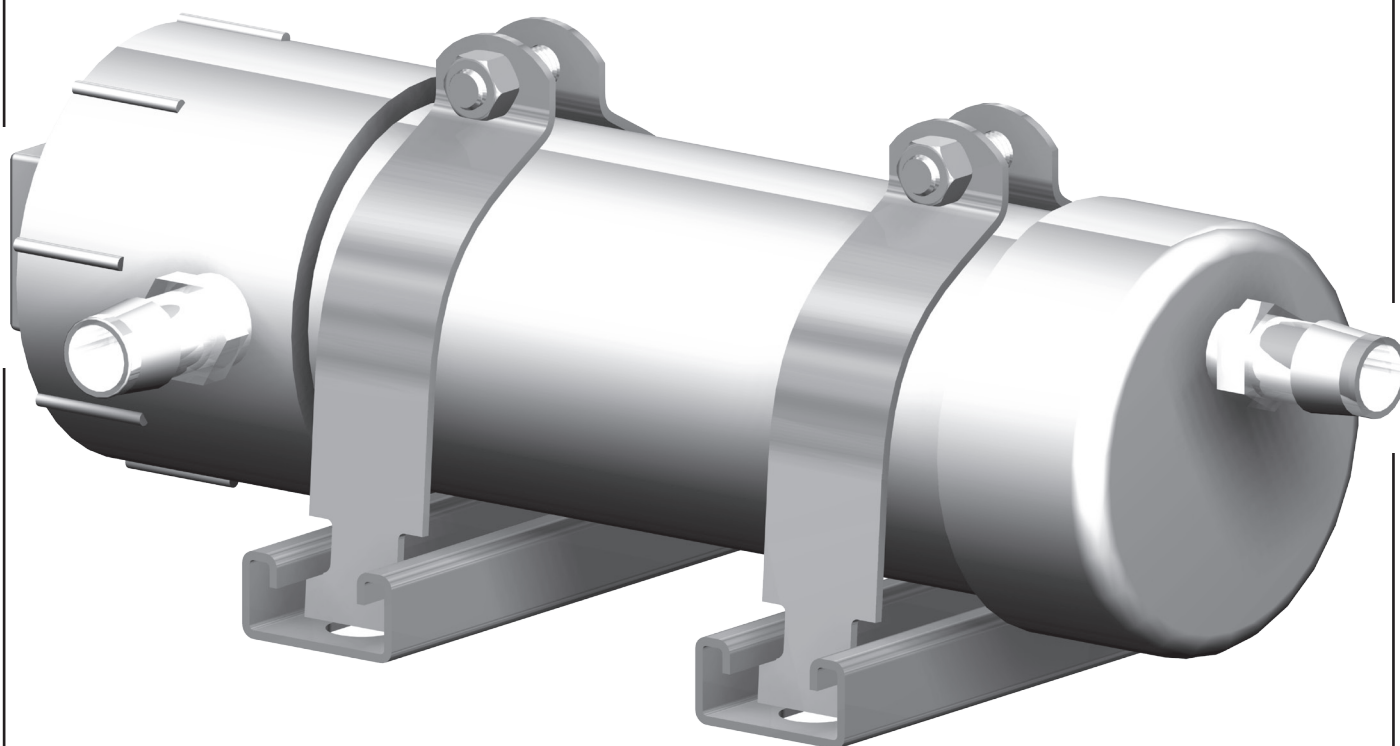


JM Series Installation Operation & Maintenance

Models: JM6 - JM50

Acidic Condensate pH Treatment Tubes



ALL JJM NEUTRALIZING PRODUCTS

WARNING

**JJM neutralizers are sized by BTU input to establish a flow rating.
Job site conditions will determine neutralizer design. See GPH chart below.**

How much fireside condensate will my equipment develop? Hot water heaters / Boilers / Furnaces / Economizers

Equipment Efficiency	GPH Condensate
90%	.725 / Per 100,000 BTU Input
91%	.733 / Per 100,000 BTU Input
92%	.741 / Per 100,000 BTU Input
93%	.750 / Per 100,000 BTU Input
94%	.758 / Per 100,000 BTU Input
95%	.766 / Per 100,000 BTU Input
96%	.774 / Per 100,000 BTU Input
97%	.782 / Per 100,000 BTU Input
98%	.790 / Per 100,000 BTU Input
99%	.798 / Per 100,000 BTU Input

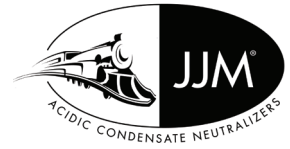
Multiple Boiler Common Flue drains: 33.3% of total BTU input of connected equipment.

Example: (3) Boilers @ 100,000 BTU Input would need a pH treatment kit rated @ 100,000 BTU for the stack drain and a flow rate of .725 to .798 depending on efficiency.

Consider the following when choosing a neutralizer for less maintenance during operation of your heating equipment.

- 1. Your location in relation to weather (Very Cold, Cold, Moderately Cold)**
- 2. System Design (Process, Radiate, Snow Melt, Heating, etc.)**
- 3. Yearly Operating Hours**
- 4. pH level out of heating equipment (3.2 to 4.0 is normal)**
- 5. If pH out of the heating equipment is below 3.2 pH contact the factory for sizing.**
- 6. Abnormally low pH out of the equipment condensate drain can be caused by the following:**
 - A. Improper Combustion**
 - B. Contaminated Combustion Air**
 - C. High Sulfur Content in Gas Supply**
 - D. pH below 2.0 is considered hazardous waste by EPA. Contact JJM Technical Service at 413-427-3373 or 413-527-1893**

JJM highly recommends operating your heating equipment for 24-48 hours prior to connecting a neutralizer so as to flush out dirt, grease, and oils from connected piping and the heater. This is also the best time to check the heater condensate pH level for sizing your neutralizer.



⚠ DANGER

Indicates a condition or hazard which will cause severe personal injury, death or major property damage.

⚠ WARNING

Indicates a condition or hazard which may cause severe personal injury, death or major property damage.

⚠ CAUTION

Indicates a condition or hazard which will or can cause minor personal injury or property damage.

⚠ NOTICE

Indicates special attention is needed, but not directly related to potential injury or property damage.

Install all electrical wiring in accordance with the **National Electrical Code** and local requirements.

⚠ NOTICE

This unit when installed must be electrically grounded in accordance with the requirements of the authority having jurisdiction or, in the absence of such requirements, with the current edition of the National Electrical Code, ANSI/NFPA 70 and/or the Canadian Electrical Code, Part 1, CSA C22.1, Electrical Code.

⚠ CAUTION

Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

Inspect frequently

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

Replacement parts

Contact JJM Boiler Works, your local wholesaler or manufacturer's representative for replacement parts and refill kit.



Overview

Read before proceeding



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

Neutralizer and lines must be wet

- **Before operating the boiler, furnace or hot water heater, fill the JM tube and traps with tap water. NEVER operate with tubes or P-traps dry.**

Application restrictions

- Condensing boilers, furnaces, hot water heaters and flue pipe condensate drains.
- DO NOT exhaust flue gases through JM tubes, they are not rated for boiler or furnace flue gases. Operating JM tubes as exhaust vents can cause injury or death from carbon monoxide.
- Gas traps must be installed between the boiler, flue drains, and furnace condensate outlet and the inlet of all JM tubes.
- JM tubes must be installed below system P-traps, boiler, furnace, and breaching 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

- Boiler/furnace condensate drain and flue condensate drain can be commonly piped to a neutralizer tube. Also, the flue pipe must be terminated so rain water cannot enter the flue pipe.

Recharge tubes regularly

- Tubes should be recharged when pH level moves below 5.0. The pH should be checked regularly (at least twice during the first year of operation) to determine the required recharging schedule.
- At minimum a recharge should take place at least once a year.
- Use only JJM® pH Power Pellets®, DO NOT USE LIMESTONE 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 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 waste water.

JM-series condensate pH treatment tubes increase pH (reduce acidity).

JM-series fire side condensate neutralizing tubes are designed to raise the pH level of the condensate discharged by high-efficiency boilers, warm air furnaces and hot water heaters.

Each increase of 1.0 in pH is a 10-times decrease in acidity. The pH of condensate is increased by approximately 1.0 to 3.0 after passing through neutralizing tubes.

Applying JM-series neutralizing tubes

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

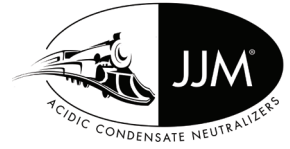
Match neutralizing tubes to boiler/furnace ratings. Consider using the next larger size neutralizing tube for boiler systems with domestic hot water heating.

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

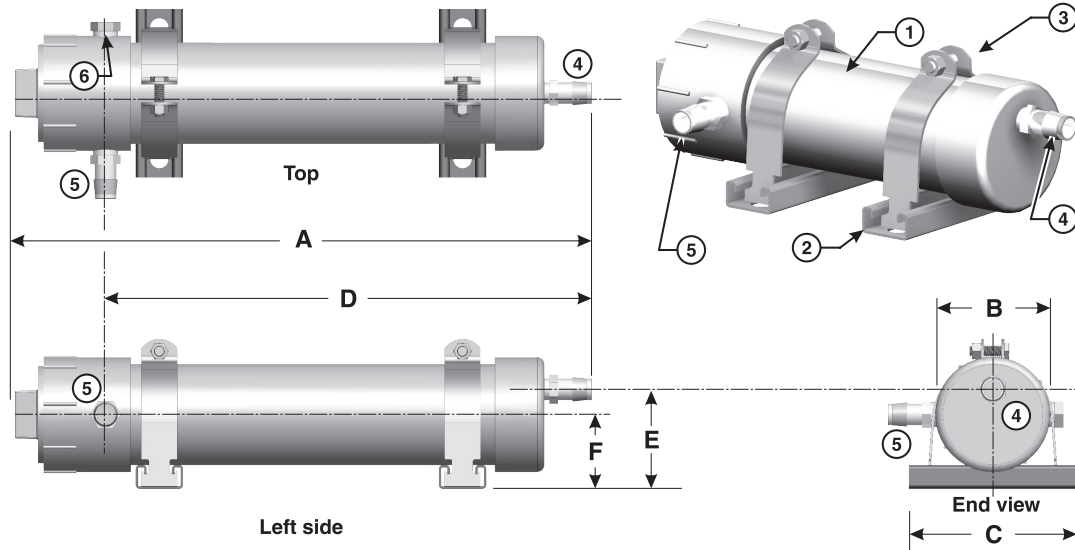
Follow the guidelines in this manual, the boiler/furnace manual and all applicable local codes when installing, using and maintaining JM-series condensate neutralizing tubes.

Installation sequence

1. Before installing boiler or furnace, determine if a mounting pad will be needed to elevate the boiler or furnace so that the condensate connection will be above bottom of the JM tube OUTLET. See Figure 2 or Figure 3. Provide a mounting pad for the JM tube if needed to obtain the proper elevation relative to a condensate pump reservoir (when used — see Figure 3).
2. Mount the strut channel to the wall or floor, insert strut clamps to the JM tube, tighten bolts & nuts.
3. Connect PVC piping from appliance or breaching drains to P-traps and then from P-trap outlets to either one of the two JM tube inlets.
4. Connect the JM tube outlet to house drain or condensate pump.
5. Use Teflon tape on all threaded plastic fittings.
6. **NOTE** — Always consult the local authority regarding any requirements concerning flue gas condensate handling codes.



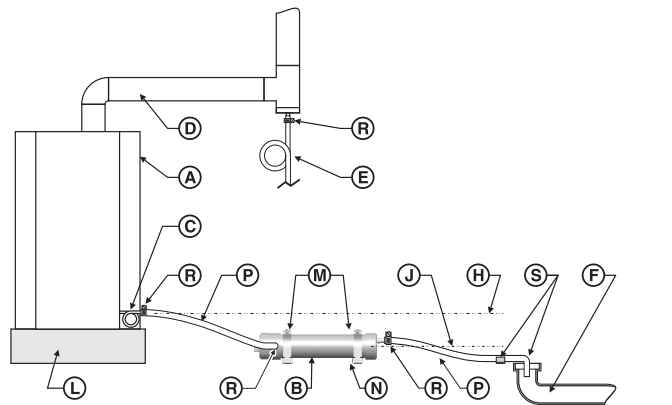
Installation **Figure 1** JM-series condensate neutralizing tubes – features and dimensions



RATINGS & DIMENSIONS (in inches)								
Model	MBH	GPH	A	B	C	D	E	F
JM-6	600	4.78	14.25	4	6	10.75	3.5	2.5
JM-10	1,000	8.00	19	4	6	16.125	3.5	2.5
JM-20	2,000	16.00	19.5	5	6	16.125	4.5	3.125
JM-30	3,000	24.00	24.5	5	6	21	4.5	3.125
JM-40	4,000	32.00	22.5	7.1875	10	19.25	7.5	4.5
JM-50	5,000	40.00	28.5	7.1875	10	24	7.5	4.5

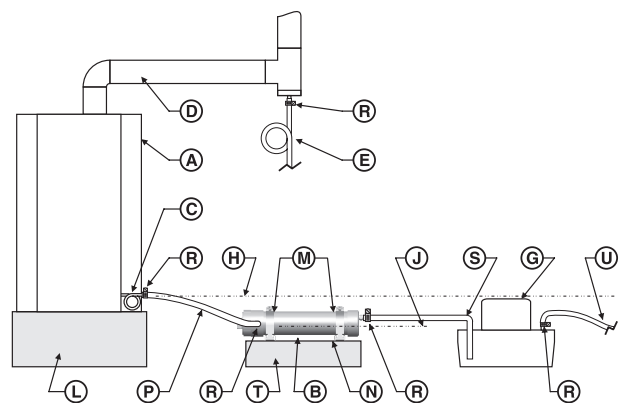
Item	Description
1	PVC tubing filled with pH Power Pellets®
2	Channel strut mounts
3	Galvanized strut clamps, bolts and nuts
4	Condensate outlet hose barb fitting JM-6 to -10: 3/4" hose barb x 1/2" NPT JM-20 to -30: 3/4" hose barb x 3/4" NPT
5	Condensate inlet hose barb fitting JM-40 to -50: 1" hose barb x 3/4" NPT
6	Plugged — alternate location for condensate inlet hose barb fitting

Figure 2 JM-series tube with floor drain, typical



- A Condensing boiler, hot water heater or furnace
- B Condensate neutralizing tube (or multiple tubes piped in parallel)
- C Boiler/furnace condensate trap connection
- D Boiler/furnace vent
- E Vent condensate trap, when used — Install a trap as shown. Connect the tubing to a separate JM tube if appliances are common vented. For individually-vented appliances, the vent condensate drain can be connected to the appliance condensate drain line.
- F Drain or sump
- G Condensate pump
- H Bottom of boiler/furnace condensate outlet — MUST be ABOVE condensate pump inlet connection
- J Bottom of JM tube condensate outlet
- L Mounting pad or structural platform, when required to elevate boiler condensate drain as needed
- M Mounting clamps

Figure 3 JM-series tube with condensate pump, typical



- N Mounting clamps must be secured to the mounting surface
- P Plastic tubing or PVC pipe — When using PVC pipe, remove the JM inlet and outlet hose barb fittings and replace with threaded PVC fittings. Include unions in the piping to allow removal of the JM tube for inspection and service. — Secure pipe or tubing in place. — Protect with a shield if necessary if routed through traffic areas.
- R Use hose clamps at all connections when using plastic tubing.
- S Condensate drain termination at floor drain (or condensate pump reservoir inlet) — secure in place with clamps. — Follow instructions for condensate pump.
- T Elevate the JM tube on a structural base if necessary for the outlet to be raised.
- U Route condensate discharge line from to appropriate drain location.

Installation *(continued)*

Piping Options - Overflow by-pass piping

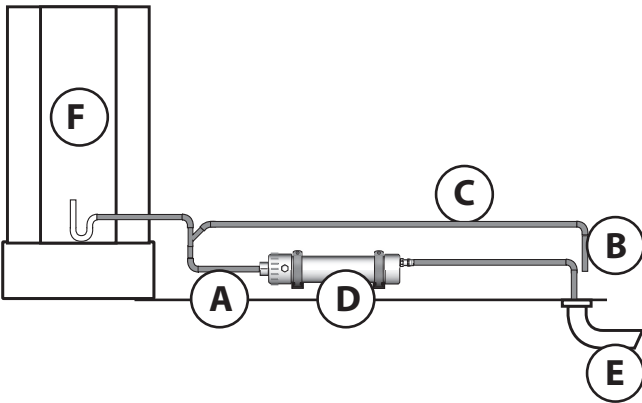
See Figure 4 and Figure 5 for installation with a y-fitting for an overflow by-pass line.

Locate the overflow discharge so flow can be easily seen. **Instruct the owner to notify the service technician immediately if flow through the overflow line is frequent or steady.**

Make sure the installation complies with all local code requirements.

Piping for multiple boilers/furnaces/vent (see figures 6, 7, 8, 9, and 10)

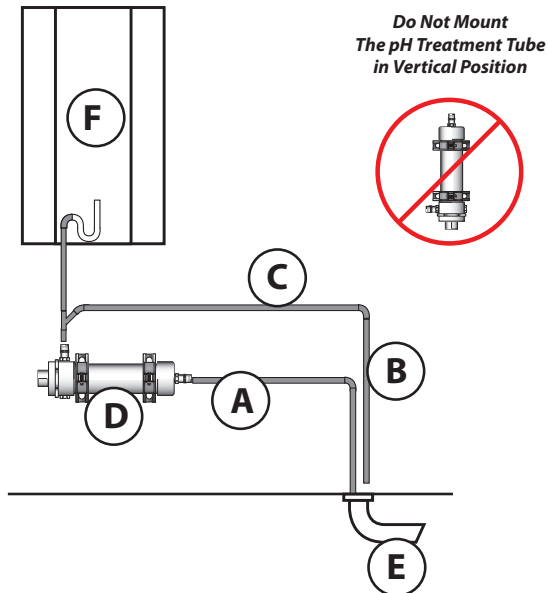
Figure 4 Y-fitting by-pass with floor-mounted boiler (see legend at left)



- A Boilers / Hot Water Heaters / Furnace Condensate Drains
- B By-pass Drain
- C By-pass Piping
- D pH Treatment Tube
- E House Drain
- F Boiler / Hot Water Heater / Furnace Condensate Drain

Note: Contact Factory for pH Treatment Tube and Tank Sizing and Pipe Sizing.

Figure 5 Y-fitting by-pass with wall-mounted boiler (see legend at left)

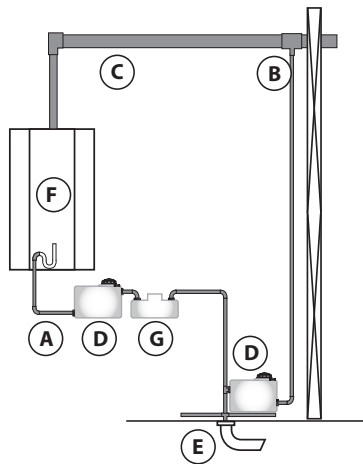


- A Boilers / Hot Water Heaters / Furnace Condensate Drains
- B By-pass Drain
- C By-pass Piping
- D pH Treatment Tube
- E House Drain
- F Boiler / Hot Water Heater / Furnace Condensate Drain

Note: Contact Factory for pH Treatment Tube and Tank Sizing and Pipe Sizing.

Installation *(continued)*

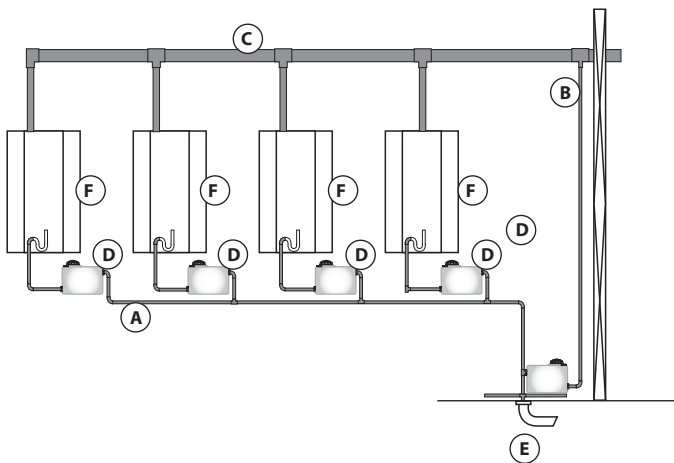
Figure 6 Piping for Single Heating Unit with Condensate Pump



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

Note: Contact Factory for pH Treatment Tube and Tank Sizing and Pipe Sizing.

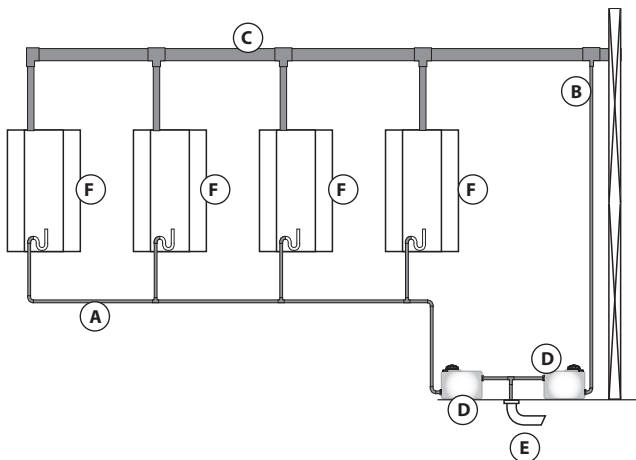
Figure 7 Piping for Single Heating Unit with Common pH Treatment Tube or Tank



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

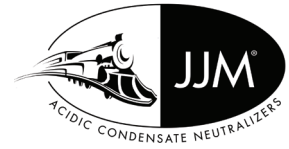
Note: Contact Factory for pH Treatment Tube and Tank Sizing and Pipe Sizing.

Figure 8 Piping for Single Heating Unit with Common pH Treatment Tube or Tank



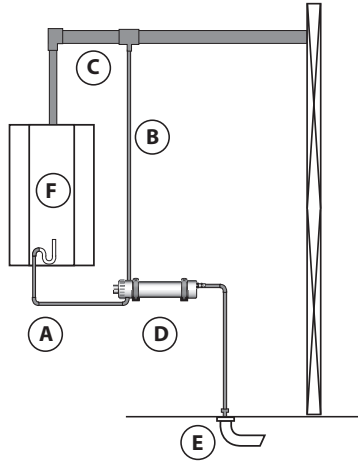
- A Boilers / Hot Water Heaters / Furnace Condensate Drains
- B Flue Drain
- C Common Flue Vent
- D pH Treatment Tube or Tank
- E House Drain
- F Boilers / Hot Water Heaters / Furnaces

Note: Contact Factory for pH Treatment Tube and Tank Sizing and Pipe Sizing.



Installation *(continued)*

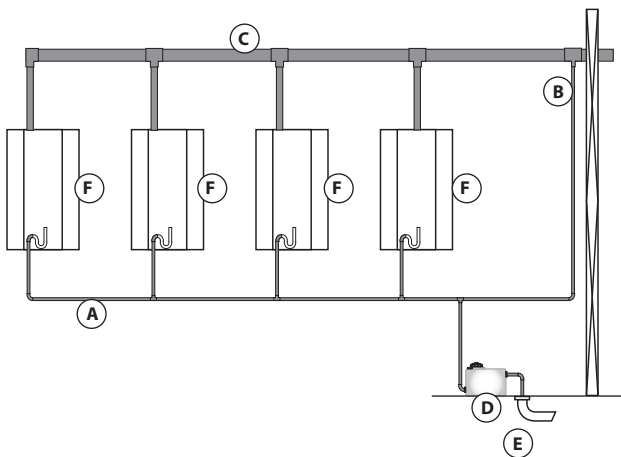
Figure 9 Piping for Single Heating Unit with Common pH Treatment Tube or Tank



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

Note: Contact Factory for pH Treatment Tube and Tank Sizing and Pipe Sizing.

Figure 10 Piping Multiple Heating Units/Single pH Treatment Kit/Common Piping



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

Note: Contact Factory for pH Treatment Tube and Tank Sizing and Pipe Sizing.

WARNING

OUTDOOR INSTALLATIONS — provide and install electric heat tape and insulation on the condensate drain lines and around the JM tube 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.

Maintenance

Inspect frequently

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

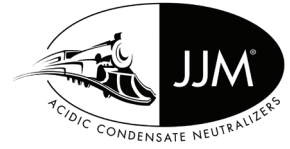
Recharge as required

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

Replacement parts

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.