

Technical Instruction Document

Condensate Neutralization Tank

For Neutralizing Condensate Waste from Gas Burning Boilers & Water Heaters

| Condensate Neutralizer Tank Kit | |
|--|----------|
| Part Description | P/N: |
| Condensate Neutralization Tank, 18 Liter (4.8 gal), with x2 Unions and x2 Nipples | 89030 |
| Replacement Neutralization Media (40 lbs.) for BMK, INN, Recon, MFC (nat. gas only), Modulex, and KC | 89031 |
| Replacement Neutralization Media (25 lbs.) for AM Series Boilers/Heaters | 62801022 |



Applies to the following AERCO models:

- Benchmark Series
- Innovation Series
- Recon Series
- MFC Series (natural gas only)
- Modulex Series
- AM Series (Maintenance only. For tank installation see O&M manual GF-146)
- KC1000 Models

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1. INTRODUCTION

The Condensate Neutralization Tank is used for neutralizing condensate from condensing boilers that use natural gas or propane as fuel. Waste condensate, produced by the burning of these fuels, is potentially harmful to the environment and can corrode unprotected piping systems. The kit is used to neutralize the acidic PH of the condensate to ensure the harmful effects are minimized.

Features and Benefits:

- *Prevents acidic condensate from corroding pipes and sewer systems.*
- *Environmentally friendly.*
- *Fast and easy installation.*
- *Kit materials are made from corrosion resistant materials.*
- *For use on all types of Natural Gas and Propane appliances.*
- *Initial charge of neutralizer agent is included.*
- *Includes: baffles designed to channel flow thoroughly for complete neutralization, integral bypass to prevent condensate backflow into appliance, NPT connections with unions for fast and versatile installation.*

2. INSTALLATION INSTRUCTIONS

NOTE: Check with your local water authority for regulations regarding discharge of treated condensate into a drain or sewer system.

WARNING!

RISK OF DAMAGE TO APPLIANCE!

Follow these instructions carefully to avoid damage to equipment and appliances.

The Condensate Neutralization Tank can be installed using either of the following methods:

- Neutralization tank is installed such that the inlet and discharge of the tank are at a lower elevation than the AERCO condensate trap outlet. This can be achieved by:
 - a) Installing the Neutralization Tank in a pit (see Figure 2).
 - b) Elevating the AERCO boiler/water heater(s) and the AERCO condensate trap(s) (see Figure 3).
- A condensate pump is used to lift the condensate from the appliance to the Neutralization Tank (Figure 4).

Do not allow exhaust flue gases to vent through the Neutralization Tank. Flue gas leakage can cause injury or death from carbon monoxide. Ensure the AERCO condensate trap is properly installed with the boiler/water heater, upstream of the Neutralization Tank. See the boiler/water heater installation manual for condensate trap installation instructions.

Connection to the appliance and Neutralization Tank must be installed to ensure that no condensate backflow into the appliance can occur.

TABLE 1: Condensate Neutralizer Tank Contents (P/N 89030)

| Qty. | Description |
|------|--|
| 1 | 18 liter (4.8 U.S. gallon) tank (1" FNPT inlet/outlet connections) and lid made from polypropylene construction; comes filled with neutralization media (P/N 89031). |
| 2 | 1" NPT PVC unions |
| 2 | 1" NPT PVC close nipples |

Each Neutralization Tank will neutralize condensate from appliances up to 6,400,000 BTU/hr input. Table 1 lists the parts included in the Condensate Neutralization Kit (P/N **89030**).

The neutralizer tank can be used for multiple appliance installation with a combined BTU/hr. input not exceeding 6,400,000. See Tables 2 and 3 for selection guideline for all AERCO gas fired products.

TABLE 2: Neutralizer Tank Application Chart (BMK, INN, MLX EXT)

| AERCO Equipment | BTU/Hr. Input | Kit Qty Required |
|------------------------|---------------|------------------|
| Eight (8) BMK750 | 6,000,000 | 1 |
| Six (6) BMK1000 | 6,000,000 | 1 |
| Four (4) BMK1500 | 6,000,000 | 1 |
| Three (3) BMK2000 | 6,000,000 | 1 |
| Two (2) BMK2500 | 5,000,000 | 1 |
| Four (4) BMK2500 | 10,000,000 | 2* |
| Two (2) BMK3000 | 6,000,000 | 1 |
| Four (4) BMK3000 | 12,000,000 | 2* |
| One (1) BMK6000 | 6,000,000 | 1 |
| Eight (8) INN800 | 6,400,000 | 1 |
| Six (6) INN1060 | 6,360,000 | 1 |
| Four (4) INN1350 | 5,400,000 | 1 |
| Eight (8) MLX EXT 802 | 6,416,000 | 1 |
| Six (6) MLX EXT 962 | 5,772,000 | 1 |
| Five (5) MLX EXT 1123 | 5,615,000 | 1 |
| Four (4) MLX EXT 1530 | 6,120,000 | 1 |
| Three (3) MLX EXT 1912 | 5,736,000 | 1 |
| Two (2) MLX EXT 2295 | 4,590,000 | 1 |
| Two (2) MLX EXT 2677 | 5,354,000 | 1 |
| Four (4) MLX EXT 2677 | 10,708,000 | 2* |
| Two (2) MLX EXT 3060 | 6,120,000 | 1 |
| Four (4) MLX EXT 3060 | 12,240,000 | 2* |

* Use one (1) neutralizer tank for each pair of BMK 3.0/BMK 3000. Do not install multiple neutralizer tanks in series.

| TABLE 3: Neutralizer Tank Application Chart (MFC Series) | | |
|--|---------------|------------------|
| AERCO Equipment | BTU/Hr. Input | Kit Qty Required |
| Two (2) MFC 3000 | 6,000,000 | 1 |
| One (1) MFC 4000 | 4,000,000 | 1 |
| One (1) MFC 5000 | 5,000,000 | 1 |
| One (1) MFC 6000 | 6,000,000 | 1 |
| One (1) MFC 8000 | 8,000,000 | 2** |
| One (1) MFC 10000 | 10,000,000 | 2** |

** Neutralizer tanks are to be installed in parallel. Do not install multiple neutralizer tanks in series.

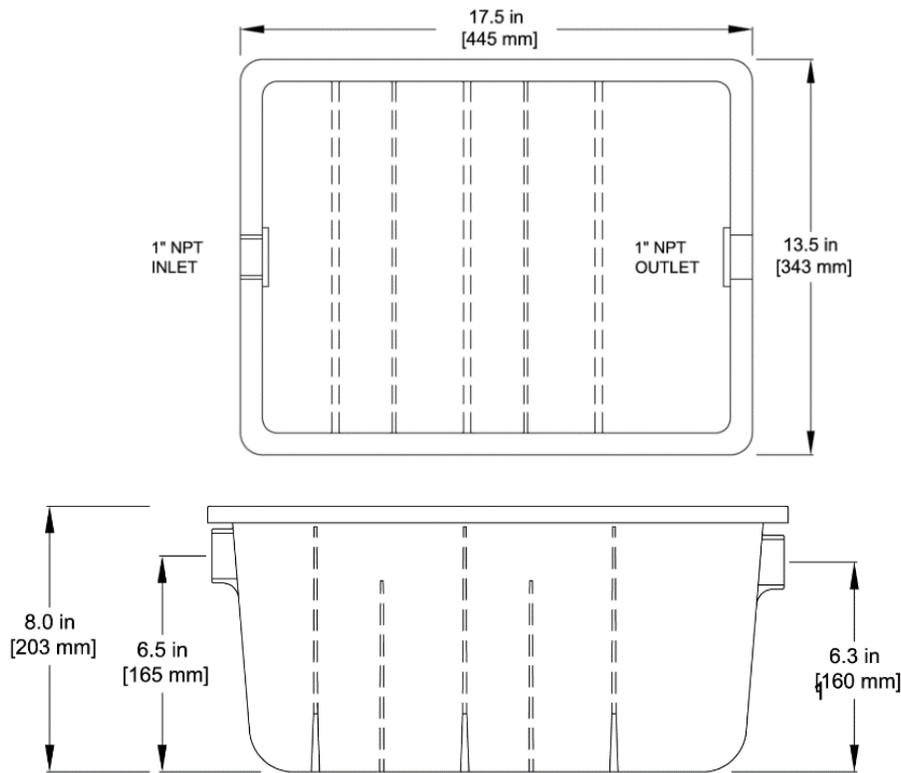


Figure 1: Condensate Neutralization Tank (P/N 89030) Dimensions

The inlet connection (6.5") is higher than the outlet connection (6.3"). Set the neutralization tank on a secure and level base. Connections to the appliance and neutralization kit must be installed to ensure that no condensate backflow can occur. Connect appliance condensate drain to the inlet using corrosion resistant piping. Do not route the condensate line through any area that is exposed to freezing temperatures. If traffic poses a risk, install some protection to prevent movement and/or damage. Mount as per installation diagram. Ensure that no air pockets will remain or form in the piping and that the condensate will flow freely from the appliance condensate drain into the tank and then to the drain. Access to the discharge is necessary for proper maintenance in order to check the effectiveness of the neutralizing media, using pH test strips.

If there is no gravity drain available or if the boiler/water heater cannot be elevated to be higher than the Neutralization Tank, install a condensate removal pump designed for use on condensing boilers and furnaces (Figure 4).

The condensate pump must be equipped with an over flow switch to prevent the appliance from running should a failure occur. The over flow switch must be wired to the Remote Interlock of the AERCO boiler/water heater I/O Box for KC1000, Innovation, and Benchmark units (see Figure 8); or, for Modulex units, on Pins 3 and 4 of Connector I on Modulex E8 controller (see Figure 9).

NOTE:

For Modulex boilers, an over flow switch may only be utilized in Indoor/Outdoor Reset and Constant Set Point modes of operation.

It cannot be utilized in 0 to 10 Volt Remote Set Point mode and when a BMS II is used.

To utilize an overflow switch, set the Modulex boiler to Standby mode (⏻). To set the boiler to Standby mode, close the swing-down front panel door of the E8 and turn the wheel counter-clockwise until the Standby symbol (⏻) is displayed. With pins 3 and 4 closed, the Standby symbol, and others in the display, will be blinking. This indicates that the boiler is enabled. When the connection is broken between pins 3 and 4, the Standby symbol, and others in the display, will stop blinking indicating that the boiler is disabled. Closing/breaking pins 3 and 4 not only start/stops the boiler but also start/stops other pumps (boiler water pumps) wired to the Modulex boiler.

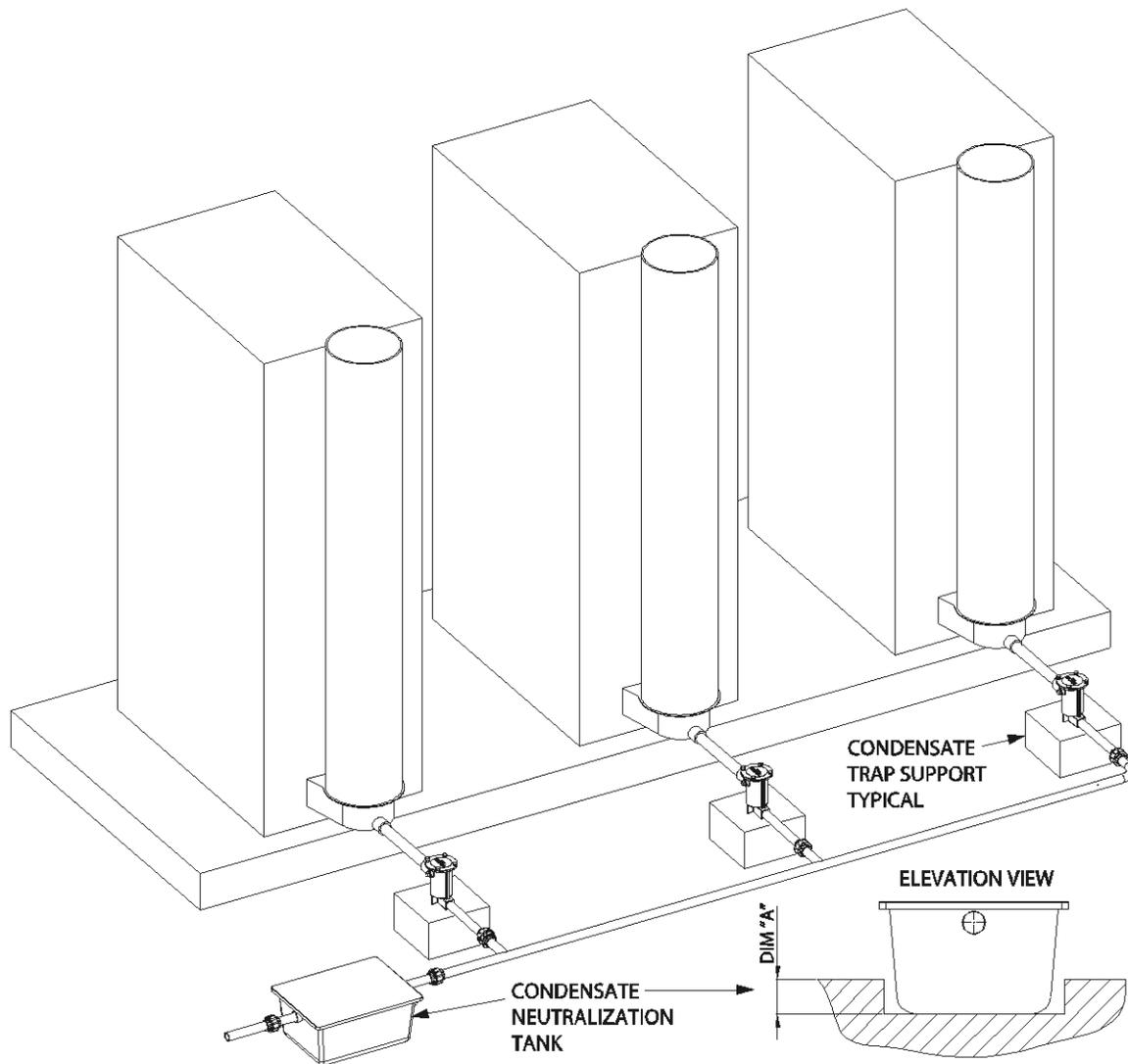


Figure 2: Multiple Boiler Units with Tank (P/N 89030) Placed in a Pit

| Minimum Pit Depth | |
|-------------------|-------------------------|
| BOILER MODEL | DIM. A (MIN. PIT DEPTH) |
| BMK1500/2000 | 1-1/4" |
| BMK2500/3000 | 1" |
| BMK 4000/5000N | 2" |

Use Figure 2 and the above table for installations where a boiler pad no thicker than 4" is desired. For models not shown in this table: the condensate neutralizer can be installed on the floor while the boiler is installed on a 4 inch pad.

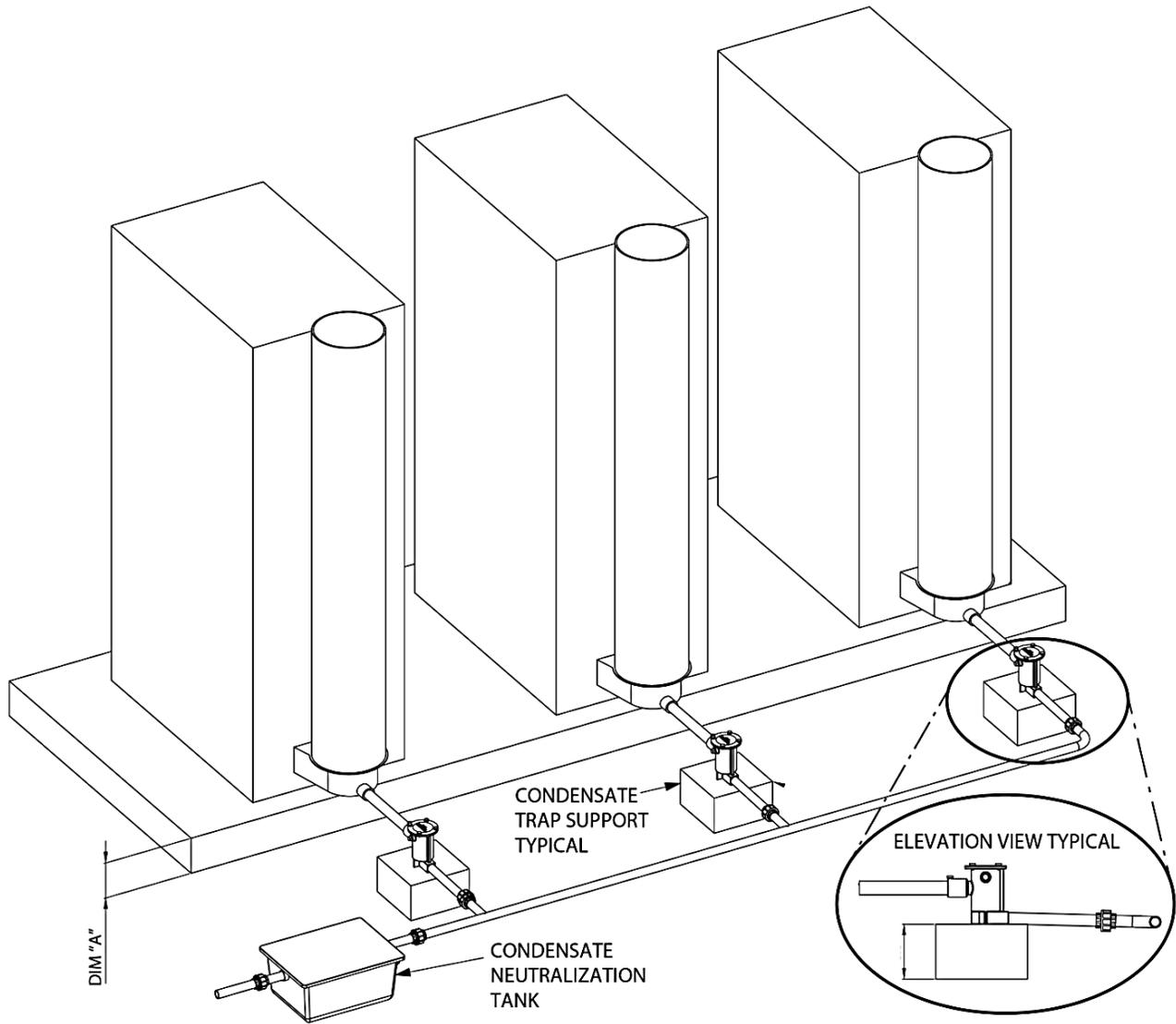


Figure 3: Elevated Multiple Boiler Units with Tank (P/N 89030)

NOTE: The condensate neutralizer tank inlet and outlet ports must be lower than the boiler condensate outlet.

| Minimum Boiler Pad Height | |
|---------------------------|---------------------------------|
| BOILER MODEL | DIM. A (MIN. BOILER PAD HEIGHT) |
| BMK1500/2000 | 5-1/4" |
| BMK2500/3000 | 5" |
| BMK 4000/5000N | 6" |

Use Figure 3 and the above table for installations where a pit cannot be constructed for the condensate neutralizer tank. For models not shown in this table: the condensate neutralizer can be installed on the floor using a 4 inch pad.

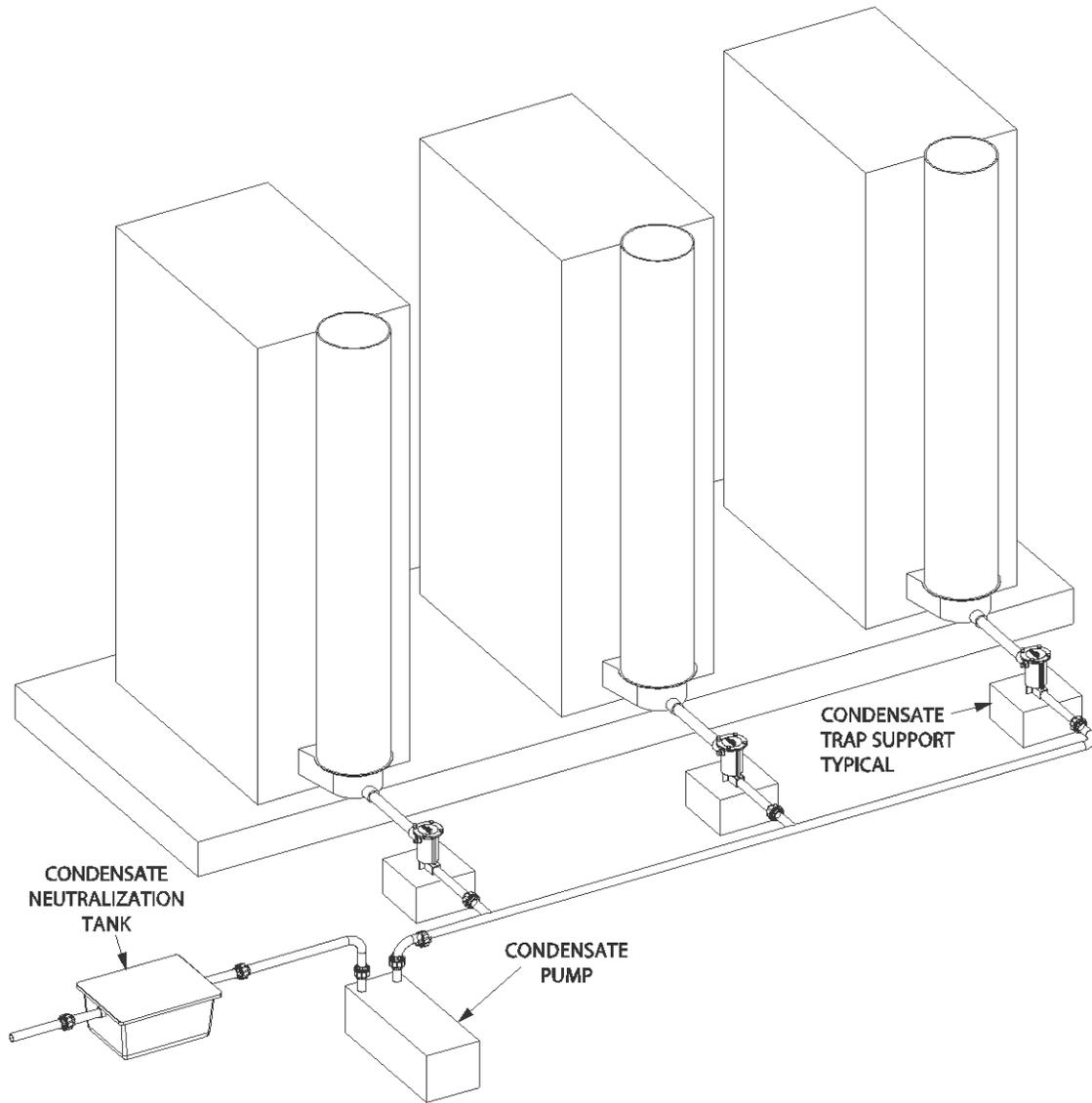


Figure 4: Multiple Boiler Units with Tank and Condensate Pump (P/N 89030)

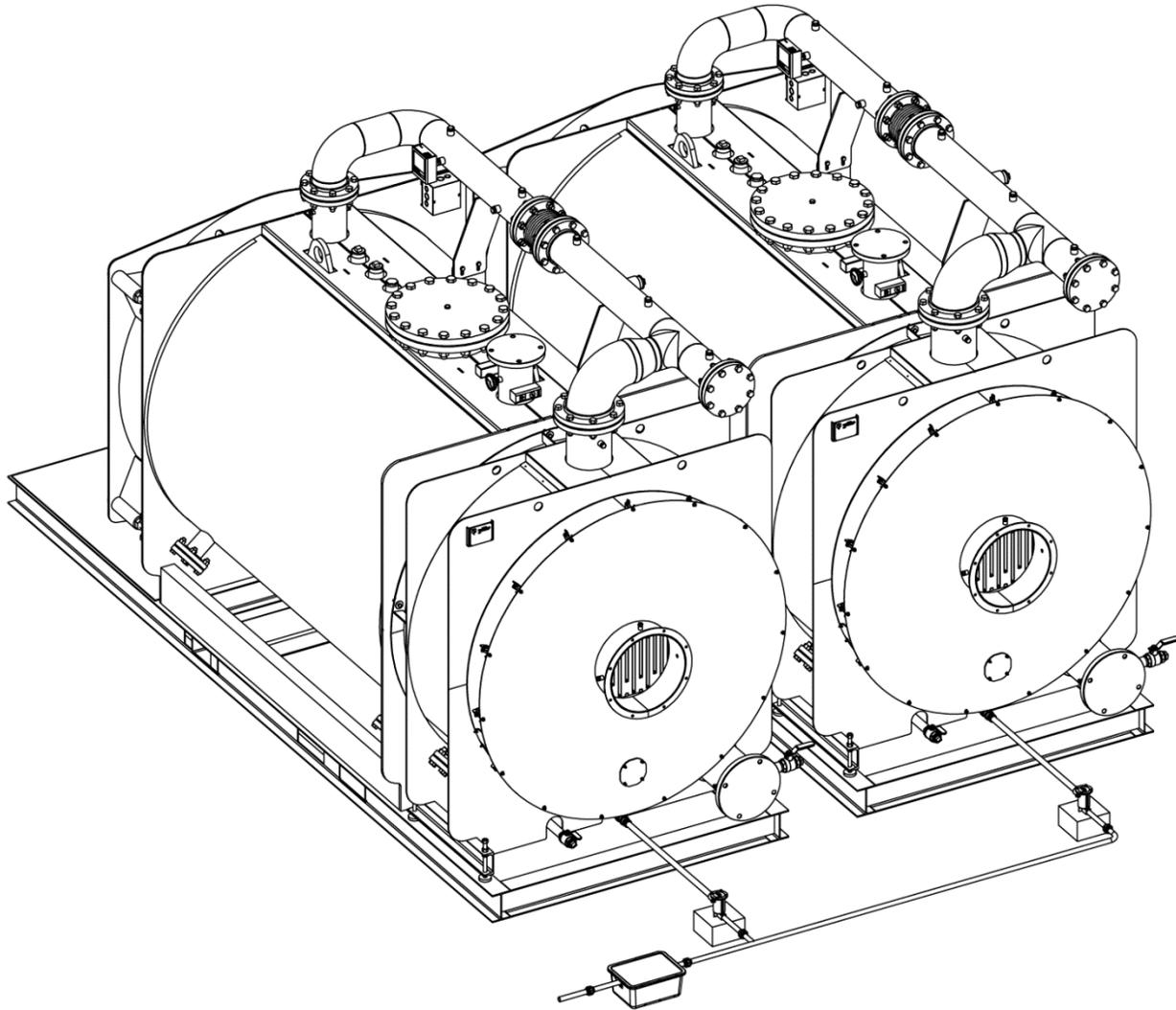


Figure 5: MFC 3000: Dual Boiler Units with Condensate Neutralizer Tank (P/N 89030)

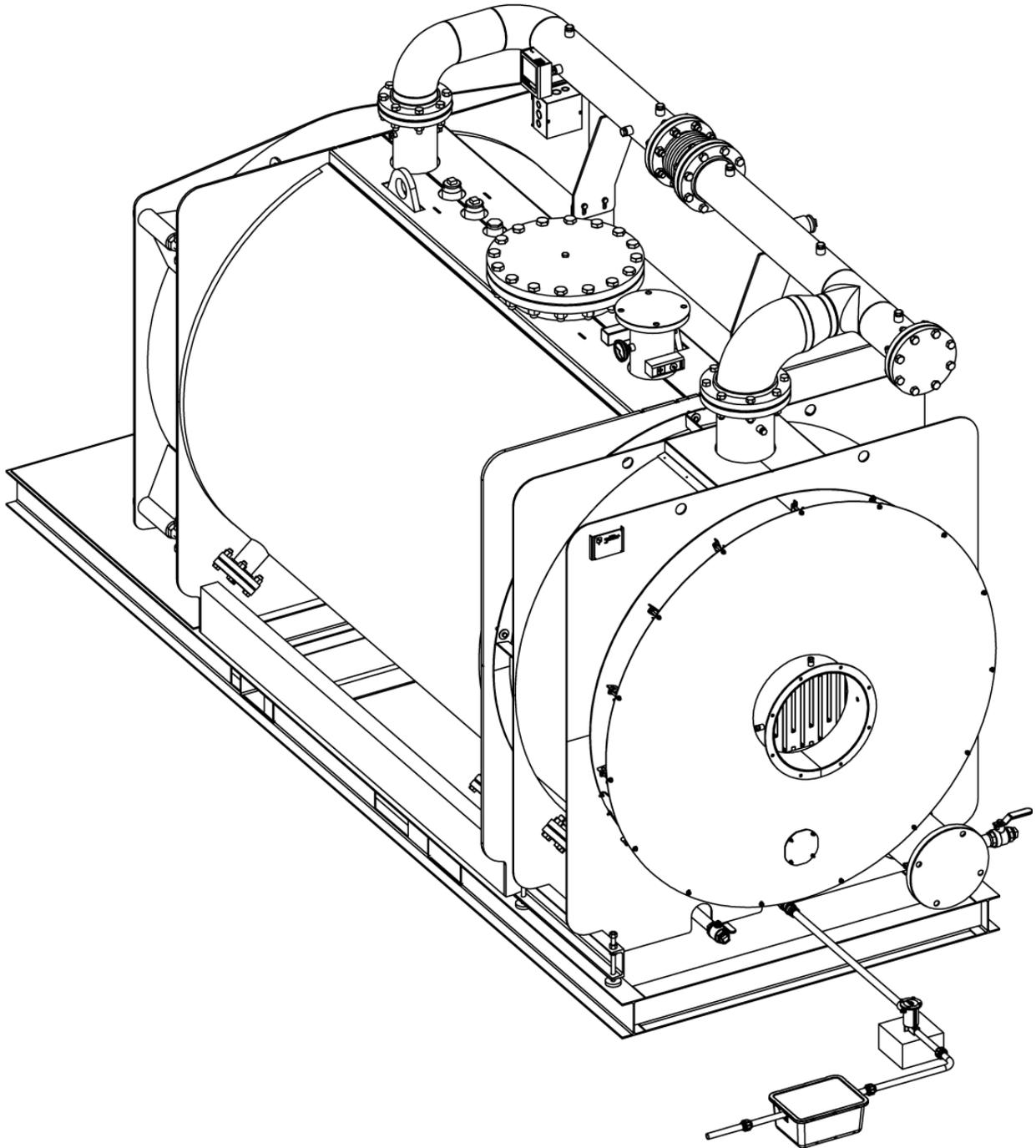


Figure 6: MFC-4000 – 6000: Single Boiler Unit with Condensate Tank (P/N 89030)

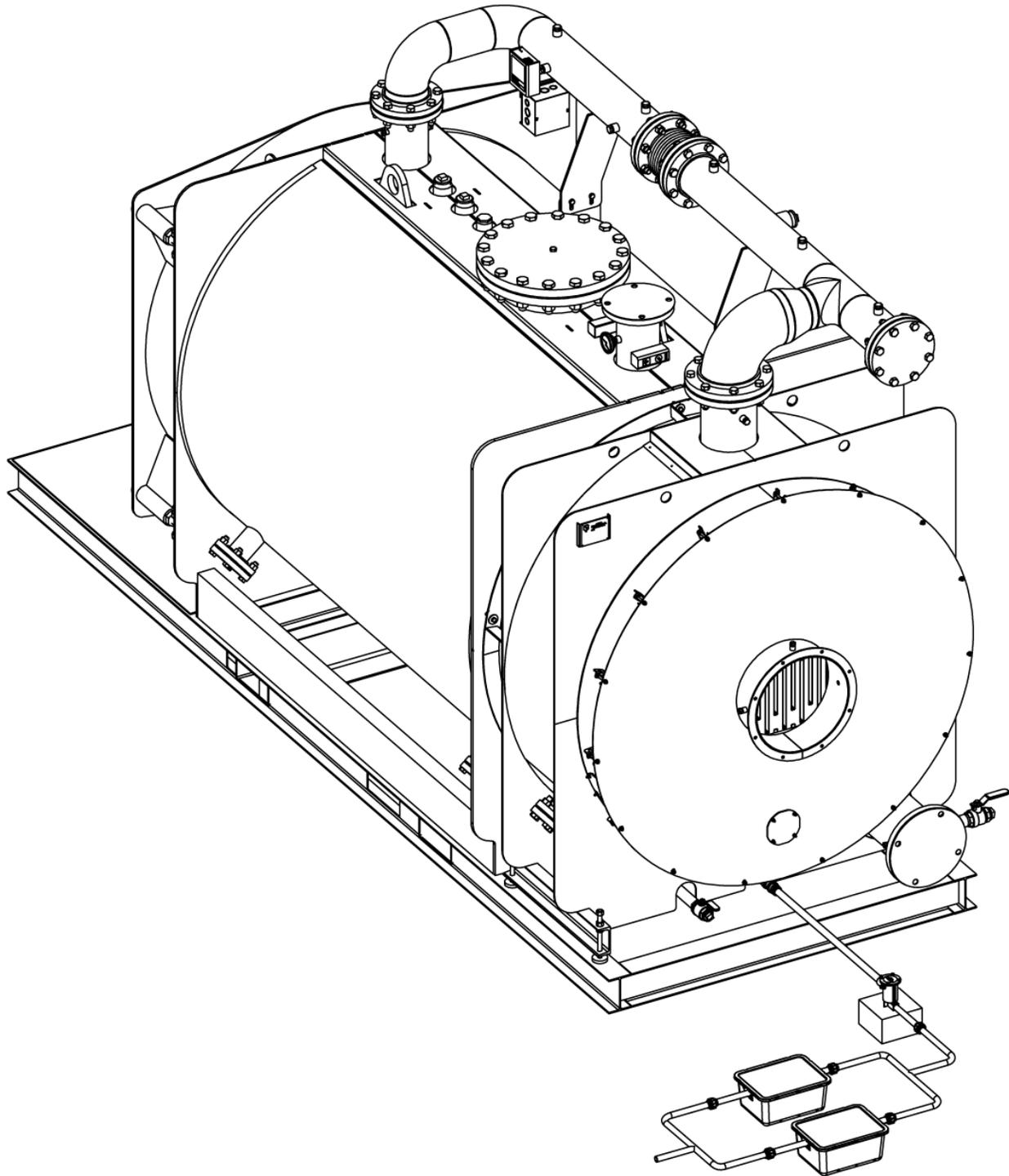


Figure 7: MFC8000 – 10000: Single Boiler Unit with Two Condensate Tanks (P/N 89030)

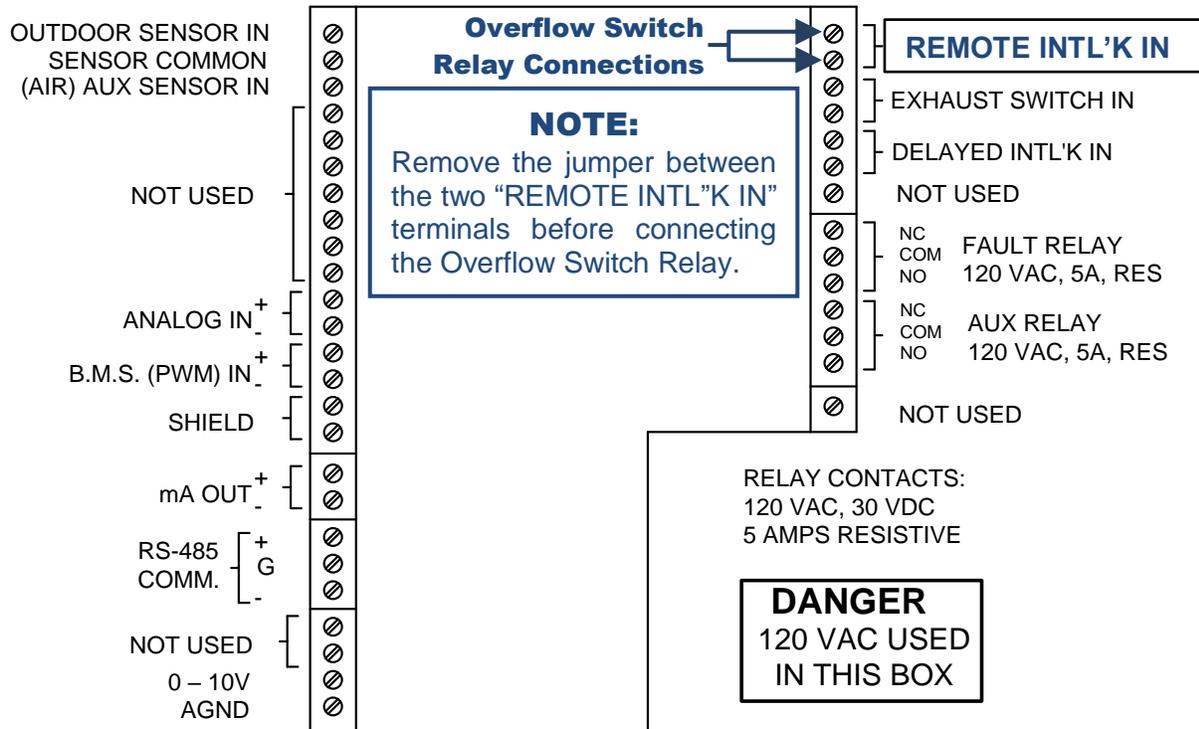


Figure 8: BMK, KC, and INN I/O Box Wiring for Overflow Switch Relay Connection (REMOTE INTL'K IN)

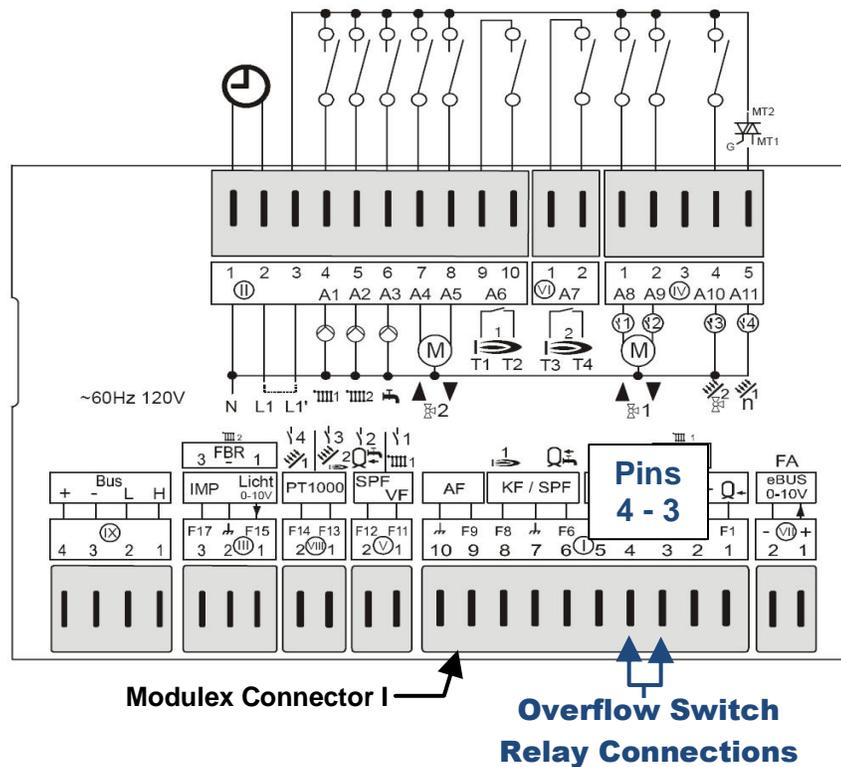


Figure 9: Modulex E8 Controller Wiring for Overflow Switch Relay Connection (Pins 3 & 4 of Connector I)

3. OPERATION

The appliance condensate will flow through the neutralizing media, raising the condensate pH to a level that will help prevent corrosion of the domestic drain and the public sewer system.

4. MAINTENANCE

Monitor the level of the neutralization media in the tank periodically. The pH can be checked after the condensate has exited the tank or by removing the lid and taking a sample from the last chamber before the outlet. Check the pH level every three months for the first year. Use a suitable pH test strip paper or an electronic pH meter for precise measurement. The frequency of checking the pH level can be reduced to every six months or every year depending on the readings obtained compared to local water authority requirements. The neutralizing media should be replaced when the pH level drops below the minimum level of the local water authority. For replacement media contact your local AERCO sales representative.

- Replacement neutralization media for KC, BMK, INN, Recon, MFC, and Modulex series models is P/N **89031**.
- Replacement neutralization media for AM Series models is P/N **62801022**.

At delivery, the replacement media comes in two clear plastic bags; a smaller one inside the bigger (Figure 10). The larger bag consists of larger pieces of neutralization material, while the smaller bag consists of smaller pellets of neutralization material. Replenish the tank with the larger material, then sprinkle the smaller pellets on top.

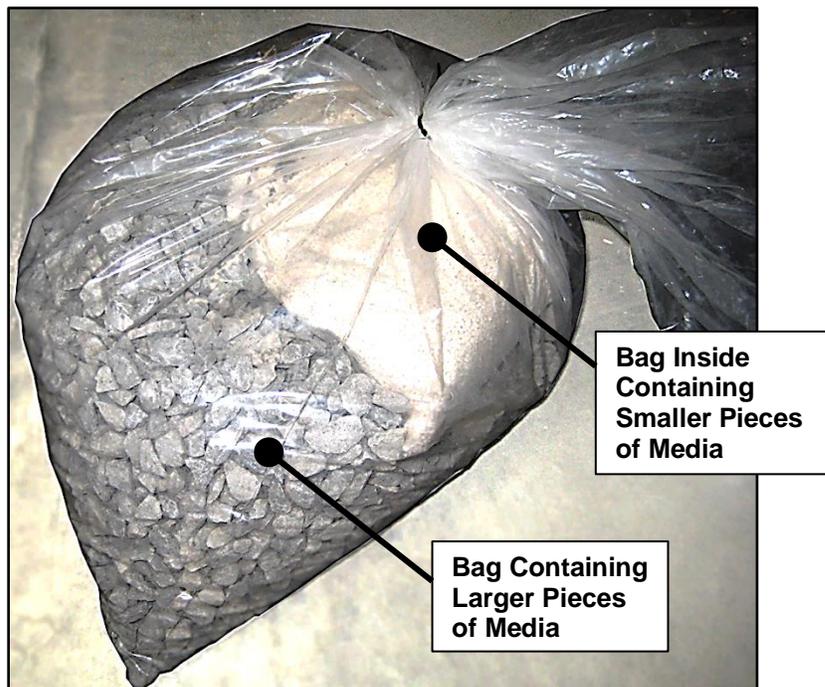


Figure 10: Condensate Neutralization Tank Replacement Media (In Bags)

5. LIMITED WARRANTY

The unit is warranted against defects in materials and workmanship for one year.

| Change Log: | | |
|-------------|--|------------------|
| Date | Description | Changed By |
| 11/13/2019 | Rev F: DIR 19-71 – Updated overall format; Updated Figure 3. | Linley Thobourne |
| 8/22/2022 | Rev G: Added BMK 4000 & 5000N to tables. | Lisa Weiss |



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