

SERVICE ENGINEERING BULLETIN**REVISIONS**

REV	DESCRIPTION	DATE	CHG	APPR
C	Revised per ECN 21837	12/10/01		

APPROVALS**UBA GmbH
Neu-Anspach****ORIGINATOR: RWS 1-19-00****PRODUCT ENG: JMF 1-19-00****CHECKED: TJT 1-19-00****ENGINEERING: DDW 1-19-00****BULLETIN, FURNACE REPLACEMENT KIT****807J001-1****Rev: C****Sheet: 1 OF 7**

SCOPE

This bulletin applies to Furnace Replacement Kit 807K003-1, which consists of:

Qty	Part Number	Description
1	3617877-1	Tube, Quartz
2	3617499-12	Ferrule, Reducing, 1/4-inch to 6 mm
2	3617499-2	Ferrule, Reducing, 1/16-inch to 0.8 mm
2	009610-604	Union
1	807K001-1	Bulletin, Furnace Replacement Kit

PURPOSE

This procedure explains how to remove and replace the furnace inside the isothermal oven. It also explains how to remove and replace the furnace tube within the furnace assembly, and how to replace the thermocouple.

REMOVING THE FURNACE COVER

1. Turn off all power to the analyzer.
2. Shut off all flows.
3. Allow furnace to cool before proceeding.
4. Open the Isothermal Oven door.
5. Remove the 18 M8 hex socket screws that hold the furnace housing cover.

CAUTION

The jack screws may be set screw type supplied with the analyzer or ABB P/N 807M003-1. Do not use any other type of screw, as it may damage the threads. Such damage can make it impossible to remove the cover.

6. Insert the four jack screws into the designated holes in the Furnace Housing cover (see Figure 1).

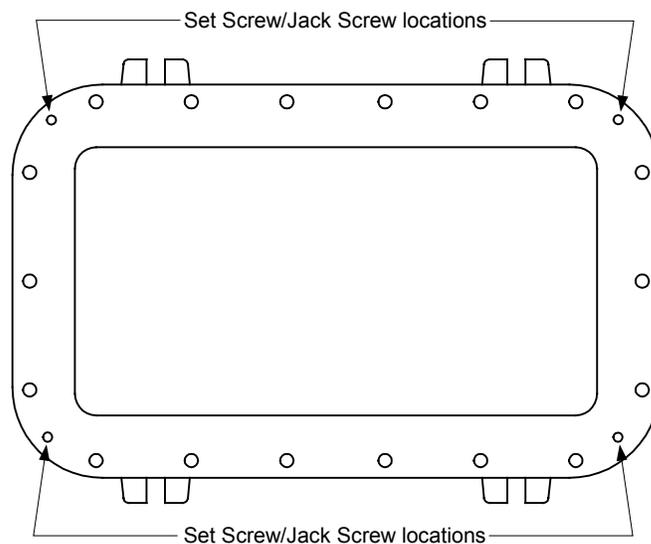


Figure 1. FURNACE HOUSING

CAUTION

You must alternately tighten the jack screws to ensure appropriate separation of the cover from the housing. This is due to the spigot joint between the cover and housing. Otherwise you may strip the threads or damage the flame-path surfaces.

Do not attempt to loosen the cover by inserting a screwdriver or other tool between the cover and the housing, as this will damage the flame-path surfaces.

7. Turn the jack screws until they bottom out.
8. Tighten each jack screw one turn.
9. Continue alternately tightening the jack screws, until the cover comes loose.
10. Remove the furnace housing cover.
11. Loosen the jack screws in the furnace housing cover. Remove and store the jack screws if they were not supplied with the analyzer.

REMOVING THE FURNACE

1. Disconnect the carrier lines from the furnace (see Figure 2).

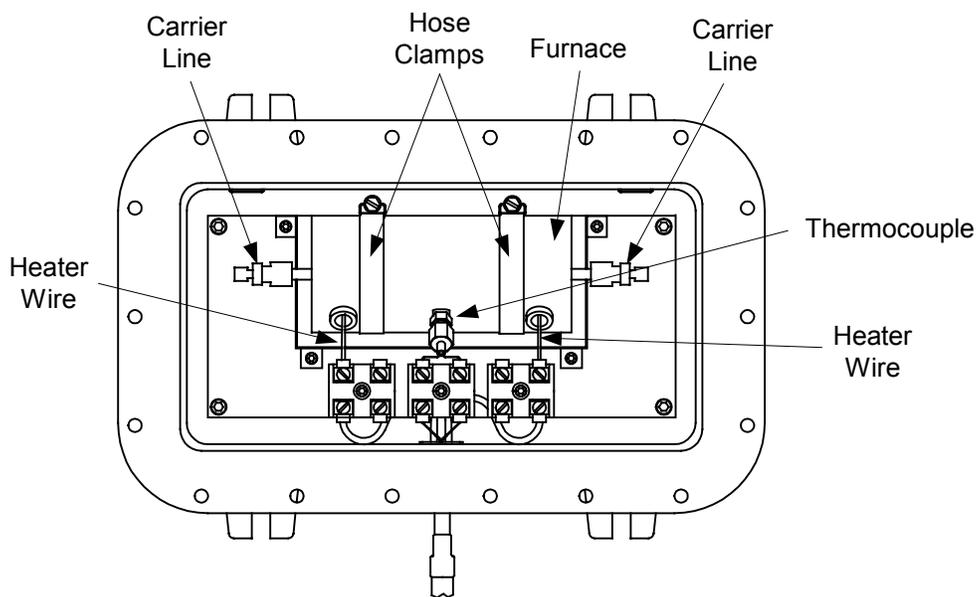


Figure 2. FURNACE HOUSING WITH COVER REMOVED

2. Tag the wires for identification and then disconnect the wiring connections from the furnace to the terminals.
3. Loosen the hose clamps and slide them toward the center of the furnace.
4. Remove the furnace from the housing.
5. Remove the hose clamps from the furnace, being careful not to damage any wiring.

INSTALLING THE FURNACE

CAUTION

You must reinstall the furnace wires in the same positions from which they were removed. If the connections are reversed the furnace will not heat properly.

1. Insert the hose clamps over the furnace, being careful not to damage any wiring.
2. Install the furnace and slide the clamps over the holding brackets. Do not tighten the hose clamps.
3. Rotate the furnace until the thermocouple (see Figure 2) is on approximately a 45 degree angle. If the thermocouple approaches a horizontal position, it may contact the cover when it is installed (see Figure 3), either damaging the thermocouple or causing an electrical short.

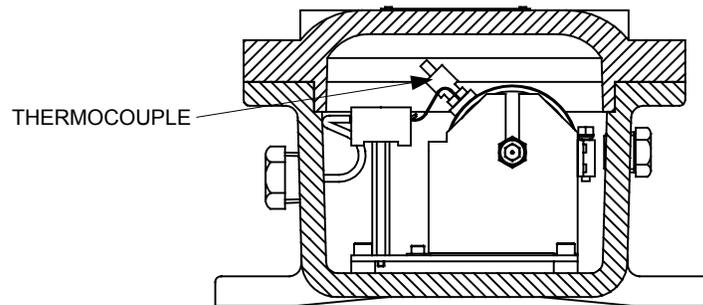


Figure 3. THERMOCOUPLE/COVER ORIENTATION

4. Tighten the hose clamps holding the furnace in place.

CAUTION

The thermocouple wires are polarity sensitive. They must be re-connected to the same terminals from which they were removed.

5. Connect the thermocouple wires to the center terminal. Hold the terminal as you tighten the screws holding the wires in place, to prevent damage to the terminal.

CAUTION

The heater wires are flat conductors as opposed to the usual round conductors. The heater wires must be kept flat (not twisted or turned) when inserting them between the terminal plates.

6. Connect the heater wires to the outside terminals as shown in Figure 2. Hold the terminal as you tighten the screw holding the wire in place, to prevent damage to the terminal.
7. Reconnect the carrier lines to the furnace.

REMOVING THE SULFUR FURNACE TUBE

1. Remove the furnace cover as described in "Removing the Furnace Cover."
2. Remove the furnace from the explosion-proof housing as described in "Removing the Furnace."
3. Loosen the fitting nuts on each end of the sulfur furnace tube.

CAUTION

The quartz sulfur furnace tube must never be touched with bare hands. Always use gloves when handling the quartz tube.

4. Remove the old sulfur furnace tube by pulling it through the furnace heater assembly.

INSTALLING THE NEW SULFUR FURNACE TUBE

1. Install the new sulfur furnace tube into the furnace heater assembly by inserting the tube into one end and sliding it through until an equal portion protrudes from each end.
2. Using new nuts and graphite ferrules supplied in the furnace tube kit, place a nut and a ferrule on one end of the furnace tube.
3. Insert the sulfur furnace tube (nut and ferrule end first) into the sample fitting until the tube stops, and then thread the nuts and ferrules into place. Do not tighten at this time.
4. With the nuts and ferrules still loose, be sure that the tubing is completely inserted to the tube stop.
5. Move the ferrule until it is approximately 1/16 inch (1.6 mm) from the end of the tube.
6. Place the other nut and ferrule on the opposite end of the furnace tube, ensuring that the ferrule is approximately 1/16-inch (1.6 mm) from the end of the tube.
7. Tighten the fittings until there are no leaks. Be sure not to overtighten the fittings as damage to the tube may result.

NOTE

When a compression fitting is tightening, the tubing that it is sealing will be forced towards the tube stop. With most tubing materials this is not a problem. Quartz, however, will crush at the tips if the tube is not backed off the tube stop. You must take care to see that the ferrules make proper engagement on the tube to prevent leaks.

8. Install the furnace into the explosion-proof housing as described in "Installing the Furnace."
9. If this completes the furnace work, install the furnace cover as described in "Installing the Furnace Cover."

REMOVING THE THERMOCOUPLE

The thermocouple is part of the furnace assembly. This procedure explains how to replace the thermocouple when the furnace does not need to be replaced,

1. Remove the furnace cover as described in "Removing the Furnace Cover."
2. Locate the thermocouple connections to the furnace (see Figure 2).
3. Place one wrench on the 1/8-inch fitting and a second wrench (backup wrench) on the 3/16-inch tube fitting, and remove the tube fitting and its ferrule from the furnace.
4. Remove the old thermocouple from the furnace.

INSTALLING A NEW THERMOCOUPLE

1. Ensure that the 1/8-inch fitting on the furnace is tight.
2. Assemble the tube nut, ferrule and new thermocouple.

3. Insert the new thermocouple assembly into the furnace until the tip touches the furnace tube.
4. Tighten the tube nut slightly but allowing the thermocouple to be moved.
5. Withdraw the thermocouple 1/32 inch (0.8 mm) from the furnace tube. It must be very close to the tube without actually touching the furnace tube.
6. Hold the thermocouple in place and tighten the tube nut finger tight, then tighten it 1/4-turn with a wrench on the tube nut. Be sure to use a backup wrench on the body of the tube fitting. The tube nut should be just tight enough to ensure the thermocouple cannot move. It does not have to be a gas-tight fitting.
7. Verify that the thermocouple cannot move in the fitting.
8. If this completes the furnace work, install the furnace cover as described in "Installing the Furnace Cover."

INSTALLING THE FURNACE COVER

1. Align the cover with the housing and fit the cover into place, using approximately equal force on both sides.
2. Coat the 18 M8 hex socket screws that secure the cover to the furnace housing with anti-seize compound and then insert the screws into place.

CAUTION

You must tighten the cover screws as described below, to ensure proper installation of the cover and an appropriate flame gap between the cover and the housing.

3. Tighten one M8 hex socket head screw until you meet resistance, then skip five screws and tighten the next screw the same amount. Continue around the cover, tightening every sixth screw until all screws are tightened in the same way. This ensures the cover is correctly positioned on the furnace housing.
4. Next repeat the tightening process for these screws, tightening every sixth screw to a torque value of 17 foot-pounds (23.05 Newton-meters) until all 18 M8 hex socket head screws are torqued.
5. Close the Isothermal Oven door.

REPLACEMENT PARTS

Ordering Information

The replacement parts in this section supplement those contained in Operation and Service Manual 2000-OSM.

NOTE

Since the application defines the component parts specific to any given system, you should refer to "Recommended Spare Parts Lists" in the Data Package supplied with the analyzer to obtain the full and correct part number for the desired part or assembly.

The following information, found in the Engineering Drawing package and on the analyzer's nameplate, should be included in any communication concerning replacement parts or components:

- Sales Order Number
- Analyzer Model Number
- Analyzer Part Number (P/N) and serial number

- For serial number subassemblies such as PC boards, include the serial number and the part number (including dash number and revision letter) for the subassembly in the request
- Applicable references from the "Recommended Spare Parts List" of the Engineering Drawing Package, included with each analyzer
- Description of part

Contact Aftermarket Spares for specific instructions and include a complete description of the component, analyzer, symptoms and problems. Please address your requests as follows:

ABB Inc.
 Attention: Aftermarket Spares
 843 North Jefferson Street
 P.O. Box 831
 Lewisburg, WV 24901

Telephone: (304) 647-1736
 Fax: (304) 647-1837

Replacement Parts Listing

See Figure 4 for location of the parts listed in this section.

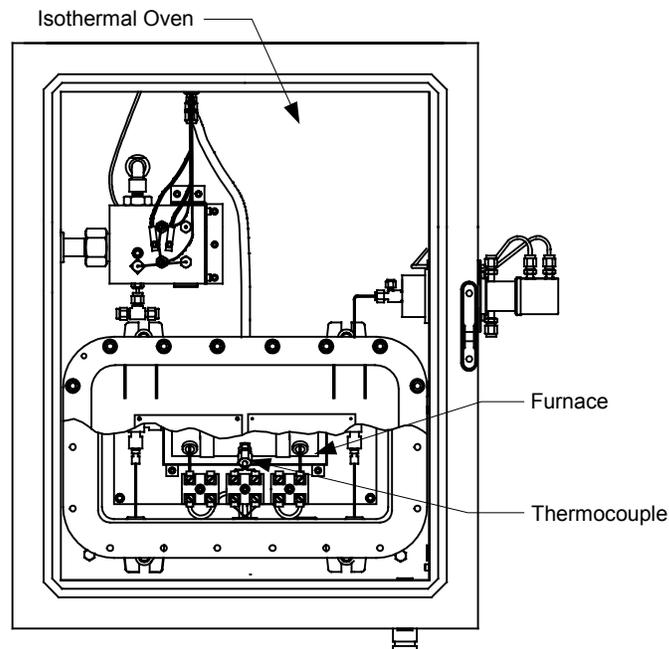


Figure 4. OVEN COMPARTMENT

<u>Description</u>	<u>Name</u>	<u>Part Number</u>
Furnace	Furnace, Solid Tube	3617496-1
Jack Screw	Screw, Jack	807M003-1
Furnace Tube	Kit, Furnace Tube	807K003-1
Thermocouple	Thermocouple Assembly Type R	3617109-1
Anti-Seize Compound	Lubricant, Anti-Seize	3615440-2
Front Ferrule	Ferrule Front Gyr 0.187	009594-203
Rear Ferrule	Ferrule Rear Gyo 0.187	009595-203