Installation, Assembly and Disassembly Instructions for

Slenderized

Manual Contents **Page**

U.S. Boiler Company ships Slenderized Radiators in even number sections up to 48 section assemblies.

U.S. Boiler Company

113526-01 5/26

The following terms are used throughout this manual to bring attention to the presence of hazards of various risk levels, or to important information concerning product life.

⚠ DANGER

Indicates a hazardous situation that, if not avoided, will result in death or serious injury.

⚠ WARNING

Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

⚠ CAUTION

Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

NOTICE: Indicates special instructions on installation, operation, or service which are important but not related to personal injury hazards.

1 Product Specification/Rating

Table 1-1: Product Ratings (per section)

Steam				Water	
Size	Square Feet EDR	Ratings BTU/hr.	Max Steam Pressure (psi)	Ratings BTU/hr. at 170°F	Max Pressure (psi)
4 x 19	1.6	384	15	240	30
4 x 25	2.0	480		300	
6 x 25	3.0	720		450	

Table 1-3: Legged Intermediate Location

Number of Sections	E
30	13
32	14
34	15
36	16
38	17
40	18
42	19
44	20
46	21
48	22

Table 1-2: Product Dimensions

Size	Water Volume (Gal)	Width (inches) (A)	Length (inches) (B)	Height (inches) (C)	Distance Between Top and Bottom Ports (inches) (D)	Shipping Weight (lbs.)
4 x 19	0.075 x # of Sections	4.4	1.75 x # of Sections	19.2	15.3	7.45 x # of Sections
4 x 25	0.125 x # of Sections	4.4	1.75 x # of Sections	25.1	21.3	9.125 x # of Sections
6 x 25	0.175 x # of Sections	6.9	1.75 x # of Sections	25.1	21.3	16.0 x # of Sections

1 Product Specification/Rating *(continued)*

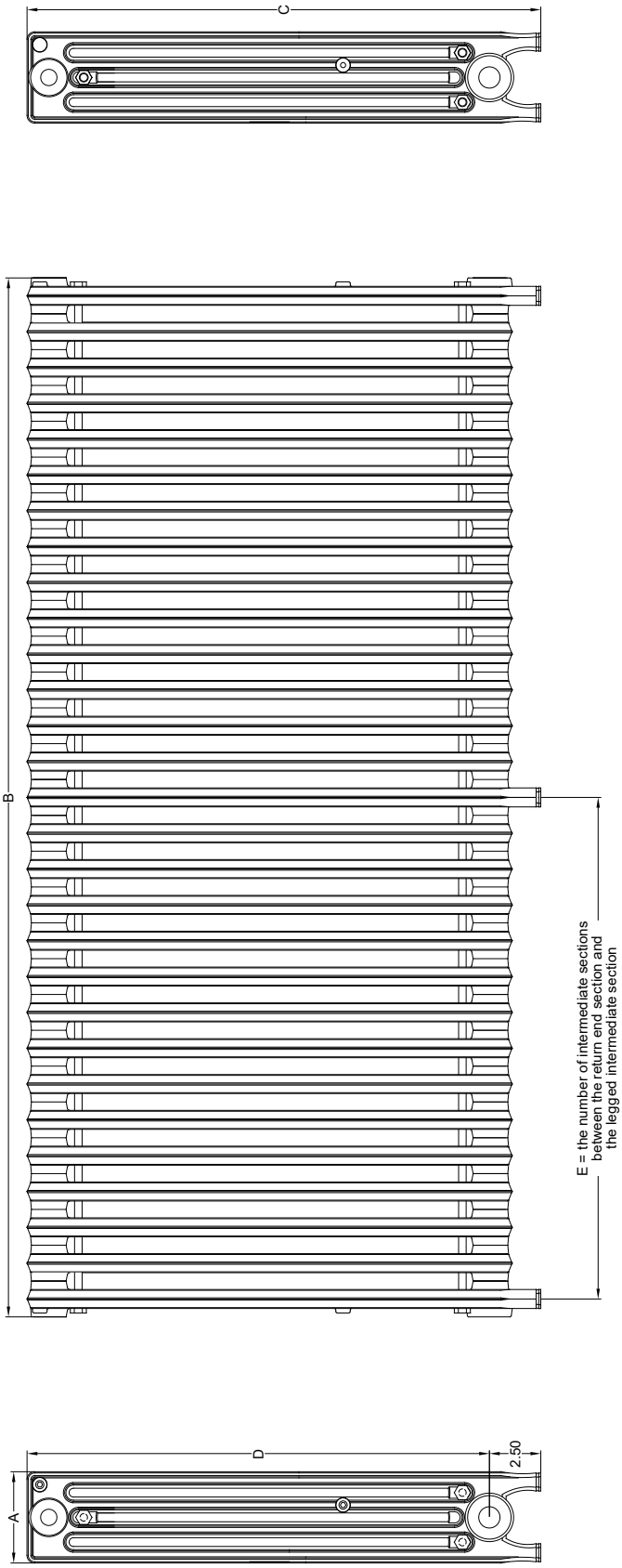

Figure 1-4

2 Installation/Piping

NOTICE:

- Ensure wall is properly insulated.
- Recommend installing thermal reflective material behind radiator before installation.

A. Pre-Installation Guidelines

1. Positioning Pipes

   Never install final pipe work for cast iron radiators without confirmed measurements.

   Measure radiator length, add 3 in. from the outside face of the end section for each hydronic valve from end of bushings.

B. Hydronic

1. Valves

   Install balancing valve on the inlet side. Install isolation valves on the return side.

2. Balancing Radiators

   Balancing radiators is an essential part of installation that should never be overlooked. It ensures that your radiators heat evenly without being too hot or too cold.

3. Paint

   Radiators are primed with a water-based paint and must be coated with a high grade oil or solvent based enamel to prevent rusting.

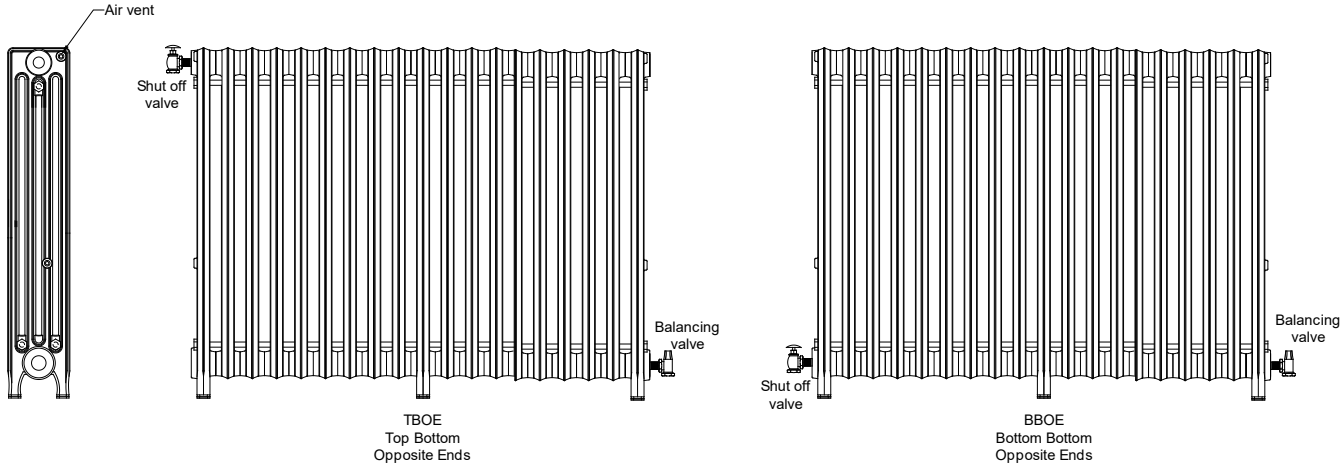

Figure 2-1

2 Installation/Piping *(continued)*

C. Steam

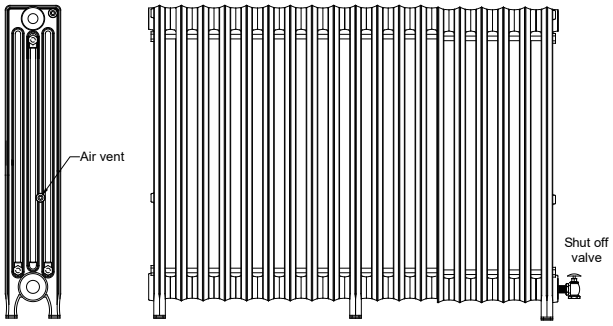

Figure 2-2: One Pipe

1. Site Preparation

   Don't install a cast iron radiator on unsound flooring.

   There is likely to be some residual water inside the radiator from the manufacturing process. This will stain floors, so be sure to protect the area in which you're working.

   Cast iron radiators are very heavy. Always protect the floor from scratches.

2. Pitch (One Pipe Only)

   The radiator should lean very slightly towards the inlet valve. A rule of thumb is approximately 1/16 in. for every eight sections of radiator.

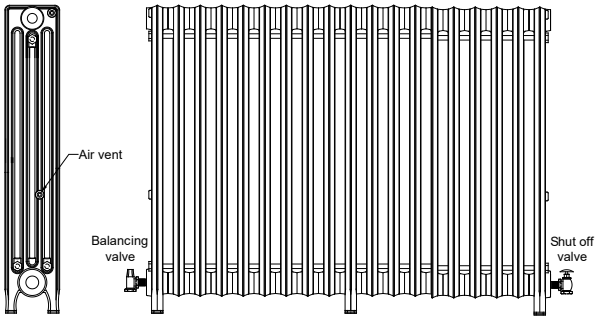

Figure 2-3: Two Pipe

3 Adding Section/Resizing

⚠ DANGER

- Use precautions and appropriate rigging apparatus when moving heavy objects.
- Use proper Personal Protective Equipment (PPE) during assembly.

NOTICE: Failure to follow these instructions may result in damage and/or cracking of cast iron sections.

A. Section Assembly

See Figure 3-1 and 3-2 for References.

1. Thoroughly clean nipples, **Item 4**, and nipple ports with a de-greasing solvent.
2. Evenly coat nipples and nipple ports with provided Loctite® 592.
3. Place nipples in nipple ports and set carefully with a wooden block. Make sure nipples are squarely placed.
4. Place section assembly A as close to section assembly B as possible, aligning nipples to nipple ports.
5. Screw together enough 3/4-10 x 11 in. draw rods using coupling nuts to pass through section assemblies, draw plates, washers & nuts on both sides. Two draw rods are required, one through upper nipple port and other through lower nipple port.
6. Keep draw rod threads lubricated to reduce friction for easier assembly.
7. Draw section assemblies together slowly and evenly. Alternately tighten upper and lower draw rods. Tighten each draw rod a little at a time so sections are evenly spaced. Section assemblies may require adjusting to maintain nipple and nipple port alignments.

NOTICE:

- Do not use wrenches longer than 16 in.
- Do not use 'cheater bars' or handle extensions with assembly wrenches.
- Do not over tighten sections.
- If the torque feels excessive at one of the nipple ports, this could be a sign that the nipple is cocked or the blocks are not drawn together evenly.

3 Adding Section/Resizing *(continued)*

8. Tighten until sections meet iron-to-iron. When surfaces make first contact, the resistance to draw-up will suddenly increase. Do not continue to tighten.

   NOTICE: Do not loosen or remove draw rods until tie rods are secured.

9. Place long tie rods through top lug holes at upper and lower nipple ports.
10. Tighten nut and washer onto each end of a tie rod until hand tight. This will allow for thermal expansion.
11. Remove draw rods.
12. Hydrostatically test section assembly.

B. Section Disassembly (Refer to Figure 3-3)

1. Remove tie rods.
2. Lay radiator on its back.
3. Use a high angle chisel and a 5-pound hammer to open a gap between the sections.
4. Using a two (2) plastic or wooden wedges and a 5-pound hammer, position the wedges on either side of the top nipple port and strike with hammer. Alternate between wedges.
5. Repeat Step 2 for bottom nipple port.
6. Follow Paragraph A for section reassembly. Do not reuse the used nipples.

C. Hydro Test

Hydro-Test per requirements of authority having jurisdiction. In the absence of such requirements, the following procedure can be used.

1. Connect a hose from water service to one of the lower tappings.
2. Install a boiler drain valve in one of the tappings on top of block and connect other end to a drain.
3. Plug tappings on end sections that will not be used on final installation with supplied plugs.
4. Install a pressure gauge in any convenient tapping.
5. Plug all remaining unused tappings.
6. Fill until a steady stream of water is flowing down the drain.
7. Slowly close valve until pressure reads between 40 and 45 psi.

⚠ CAUTION

Do not exceed 50 psi. Over pressurizing section assembly could cause failure.

8. Let stand 5 to 10 minutes.

⚠ CAUTION

Do not leave section assembly filled with water and unattended. Leaks may occur resulting in substantial property damage.

9. Examine all parts of section assembly for leaks.
10. Drain.
11. Remove plugs from tappings used on final installation.

⚠ CAUTION

Leaving radiators unattended during hydrotesting can cause critical fracture of radiator section.

3 Adding Section/Resizing *(continued)*

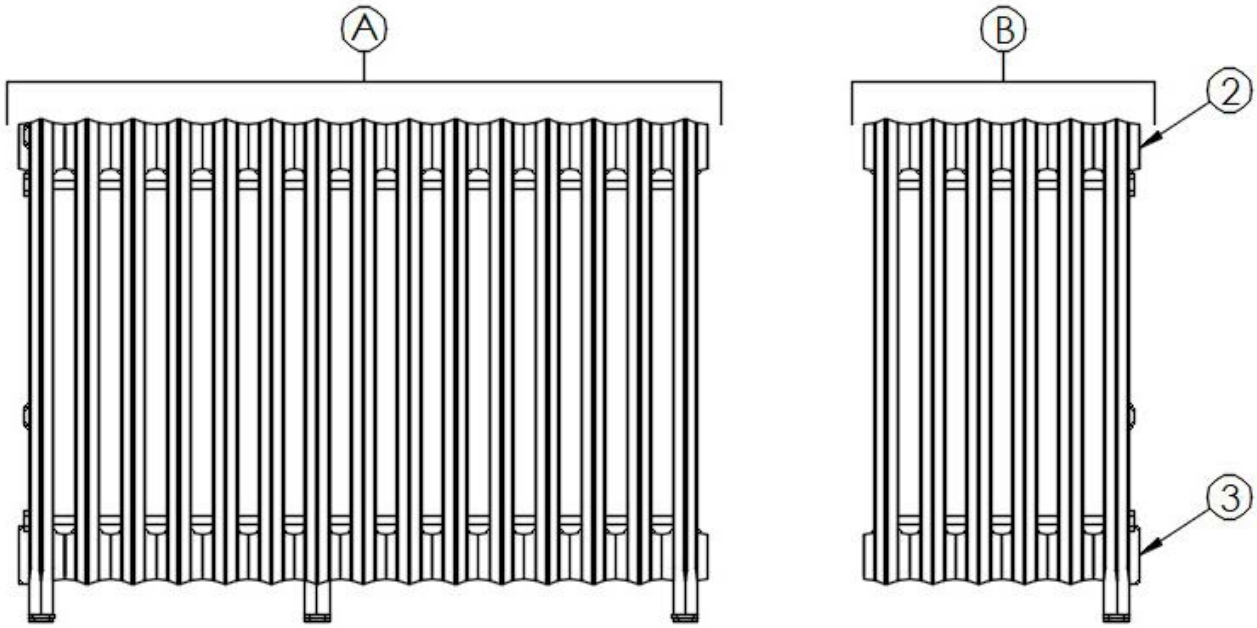

Figure 3-1

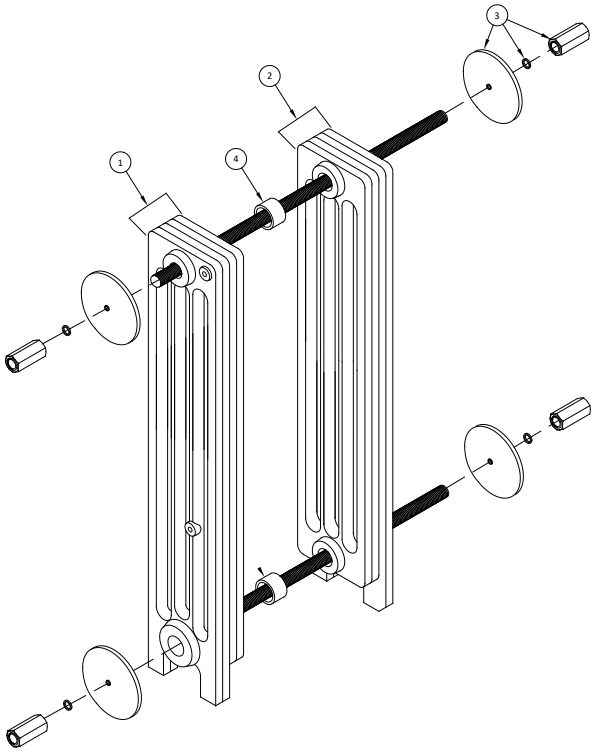

Figure 3-2

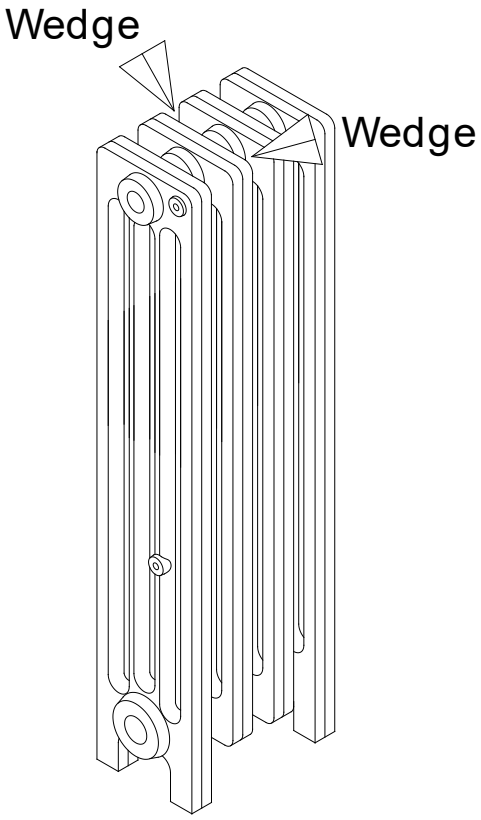

Figure 3-3

4 Installation of Adjustable Radiator Wall Hanging Bracket

1. Fasten two or more adjustable wall brackets to wall using 1/2 in. screws or bolts thru large hole 1 in top of bracket. NOTE: Slot in top of bracket will be same height as upper tie rod of radiator when hung. Fasteners must be secured to structurally sound material. Unsound base material may allow the bracket to come loose causing property damage or injury.
2. Place bottom nipple port of radiator into hooks of brackets and swing radiator until back of radiator is flush against flange A, see Figure 4-1 and 4-2.
3. Slip “U” shape clips over tie rod at top of radiator. Tapped hole in “U” clip is to be facing the inside of the radiator.
4. Using large screw driver, tighten or loosen large bolts until clearance holes in “U” clips are opposite bolts in flange A (Figure 4-1).
5. Using 1/4 in. - 20 x 1 in. cap screws and spacer, secure radiator to “U” clip.
6. Tighten large bolts (Figure 4-1) further if necessary.

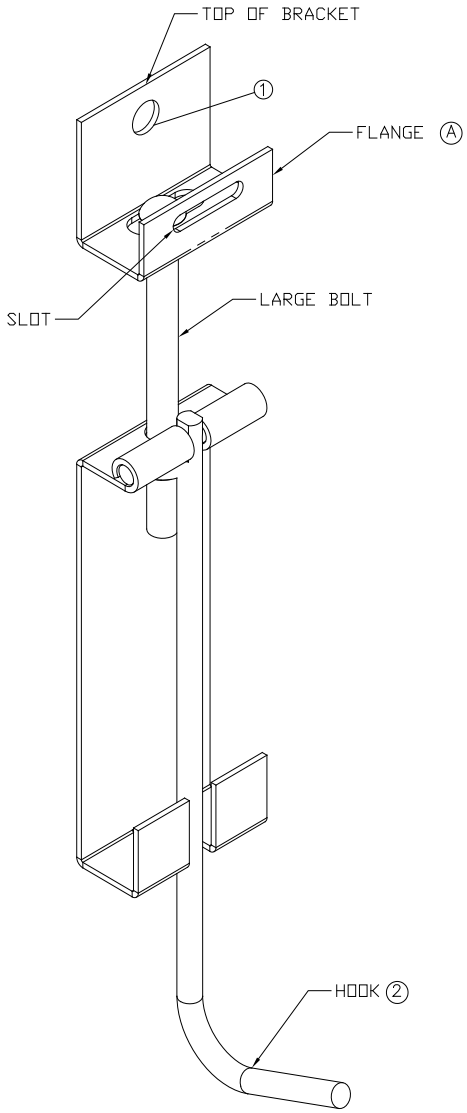

Figure 4-1

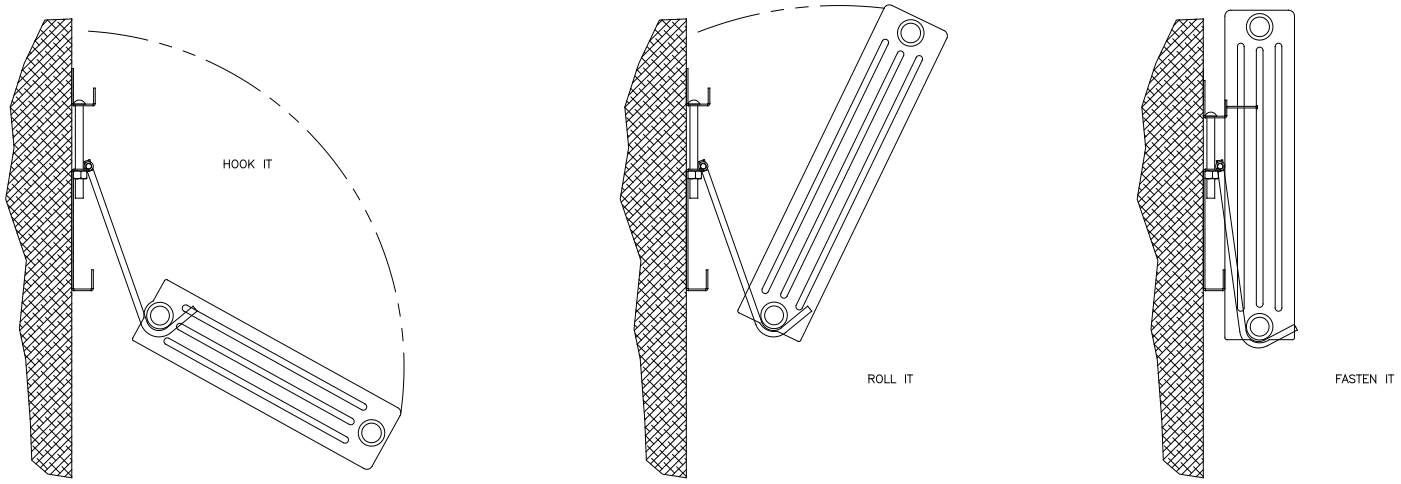

Figure 4-2

5 Parts

Number	Description	4 x 19	4 x 25	6 x 25
113525-01	Draw-up Tool	1	1	1
105510-01	Slip Nipple (per connection)	2	2	2
7174301	Intermediate Sections	1		
7174302			1	
7174303				1
7174604	Legged Intermediate Section	1		
7174605			1	
7174606				1
8074301	Pedestal (per legged assemble)	4	4	4
8084301	Adjustable Wall Hanging Brackets (two required per Radiator up to 30 sections)	1	1	1
101394-01	Loctite 592	1	1	1

SERVICE RECORD

DATE	SERVICE PERFORMED

U.S. Boiler Company, LLC
P.O. Box 3020
Lancaster, PA 17604
(717) 397-4701
www.usboiler.net