



INSTALLATION, OPERATION, AND MAINTENANCE MANUAL
WELKER SAFEburn™ ODORANT FLARE

MODELS

OF-1
OF-2

DRAWING NUMBERS

AD937BB
AD937CC

MANUAL NUMBER

IOM-235

REVISION

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IMPORTANT SAFETY INFORMATION

READ ALL INSTRUCTIONS



Notes emphasize information and/or provide additional information to assist the user.



Caution messages appear before procedures that could result in damage to equipment if not observed.



Warning messages appear before procedures that could result in personal injury if not observed.

This manual is intended to be used as a basic installation and operation guide for the Welker SafeBurn™ Odorant Flare, OF-1 and OF-2. For comprehensive instructions, please refer to the IOM Manuals for each individual component. A list of relevant component IOM Manuals is provided in Appendix A of this manual.

The information in this manual has been carefully checked for accuracy and is intended to be used as a guide for the installation, operation, and maintenance of the Welker equipment described in this manual. Correct installation and operation, however, are the responsibility of the end user. Welker reserves the right to make changes to this manual and all products in order to improve performance and reliability.

BEFORE YOU BEGIN

Read these instructions completely and carefully.

IMPORTANT – Save these instructions for local inspector's use.

IMPORTANT – Observe all governing codes and ordinances.

Note to Installer – Leave these instructions with the end user.

Note to End User – Keep these instructions for future reference.

Installation of this SafeBurn™ Odorant Flare is of a mechanical nature.

Proper installation is the responsibility of the installer. Product failure due to improper installation is not covered under the warranty.

If you received a damaged SafeBurn™ Odorant Flare, please contact a Welker representative immediately.

Phone: 281.491.2331

Address: 13839 West Bellfort Street
Sugar Land, TX 77498

1.1 Introduction

We appreciate your business and your choice of Welker products. The installation, operation, and maintenance liability for this equipment becomes that of the purchaser at the time of receipt. Reading the applicable *Installation, Operation, and Maintenance (IOM) Manuals* prior to installation and operation of this equipment is required for a full understanding of its application and performance prior to use.*

If you have any questions, please call Welker at 1-281-491-2331.

**The following procedures have been written for use with standard Welker parts and equipment. Assemblies that have been modified may have additional requirements and specifications that are not listed in this manual.*

1.2 Product Description

The Welker *SafeBurn™* Odorant Flare is designed to flare off blanket gas vapor from odorant tanks or pipelines that have been contaminated with liquid odorant and cannot be released into atmosphere. Blanket gas vapors need to be released prior to refilling or performing maintenance on liquid odorant containers or tanks. The *SafeBurn™* can also be utilized on natural gas lines that need to be depressurized for maintenance purposes.

The *SafeBurn™* is available in either a four-inch (4") or eight-inch (8") model to accommodate different liquid odorant container/tank capacities. The *SafeBurn™* can be used with applications that utilize up to 1000 gallon tanks.

The *SafeBurn™* features a built-in hand truck for maximum portability and convenient storage options. Both models also come with a carrying case to store the included hoses and fittings.

Welker may custom design the SafeBurn™ to suit the particular application and specifications of each customer.

1.3 Specifications



The specifications listed in this section are generalized for this equipment. Welker can modify the equipment according to your company's needs. **Please note that the specifications may vary depending on the customization of your equipment.**

Table 1: OF-1 Specifications

Application	Removal of Blanket Gas Vapors
Materials of Construction	Body and Trim: 316/316L Stainless Steel and Aluminum Seals: Viton® (Others Available)
Maximum Allowable Operating Pressures	Flare Gas Inlet: 1500 psig @ 10 °F to 100 °F (103 barg @ -12 °C to 37 °C) Pilot Gas Inlet: 60 psig @ 10 °F to 100 °F (4 barg @ -12 °C to 37 °C)
Flare Capacity	Up to 6 scfm
Burner Size	4"
Connections	Flare Gas Inlet: ¼" Quick-Connect (Orange) Pilot Gas Inlet: ¼" Quick-Connect (Yellow)
Utility Requirement	Pilot Gas (Propane)
Odorant Supply Tank Volume	0–250 US Gallons
Weight	Approx. 60 lb
Dimensions	19½" x 20" x 48½" (Length x Width x Height)
Features	Auto Igniter Built-In Hand Truck Corrosion-Resistant Materials Flare Gas Check Valve Flex Hoses With Valve and Quick-Connect Fittings in Carrying Case Quick-Connects for Flare Gas Inlet and Pilot Gas Inlet

Table 2: OF-2 Specifications

Application	Removal of Blanket Gas Vapors
Materials of Construction	Body and Trim: 316/316L Stainless Steel and Aluminum Seals: Viton® (Others Available)
Maximum Allowable Operating Pressures	Flare Gas Inlet: 750 psig @ 10 °F to 100 °F (51 barg @ -12 °C to 37 °C) Pilot Gas Inlet: 60 psig @ 10 °F to 100 °F (4 barg @ -12 °C to 37 °C)
Flare Capacity	Up to 24 scfm
Burner Size	8"
Connections	Flare Gas Inlet: ½" Quick-Connect (Orange) Pilot Gas (Propane) Inlet: ¼" Quick-Connect (Yellow)
Utility Requirement	Pilot Gas (Propane)
Odorant Supply Tank Volume	0–1000 US Gallons
Weight	Approx. 155 lb
Dimensions	22½" x 28" x 60½" (Length x Width x Height)
Features	Auto Igniter Built-In Hand Truck Corrosion-Resistant Materials Flare Gas Check Valve Flex Hoses With Valve and Quick-Connect Fittings in Carrying Case Quick-Connects for Flare Gas Inlet and Pilot Gas Inlet

Figure 1: SafeBurn™ Connections

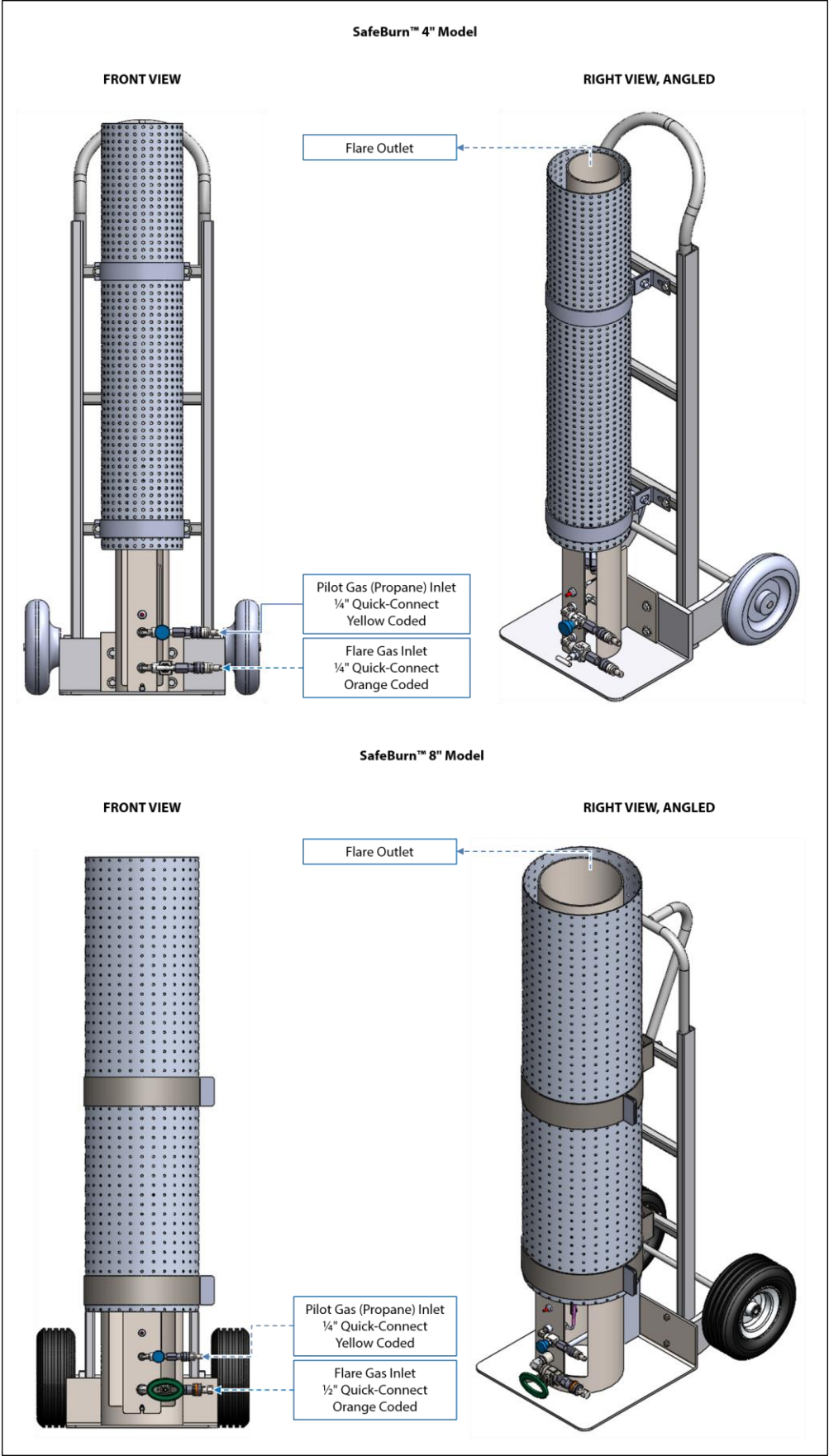
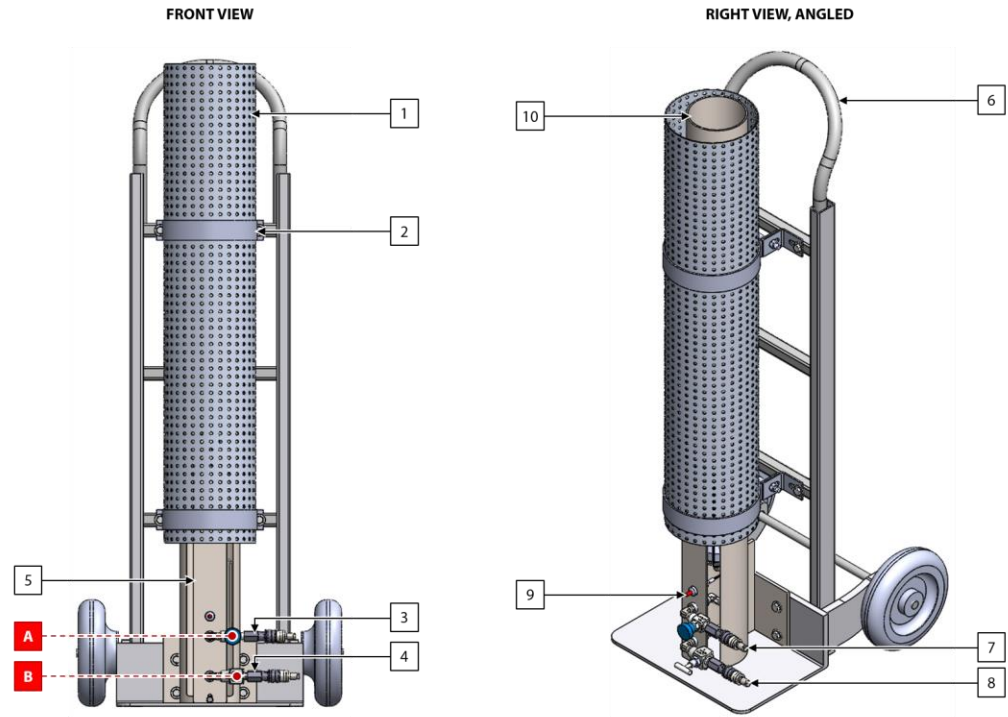
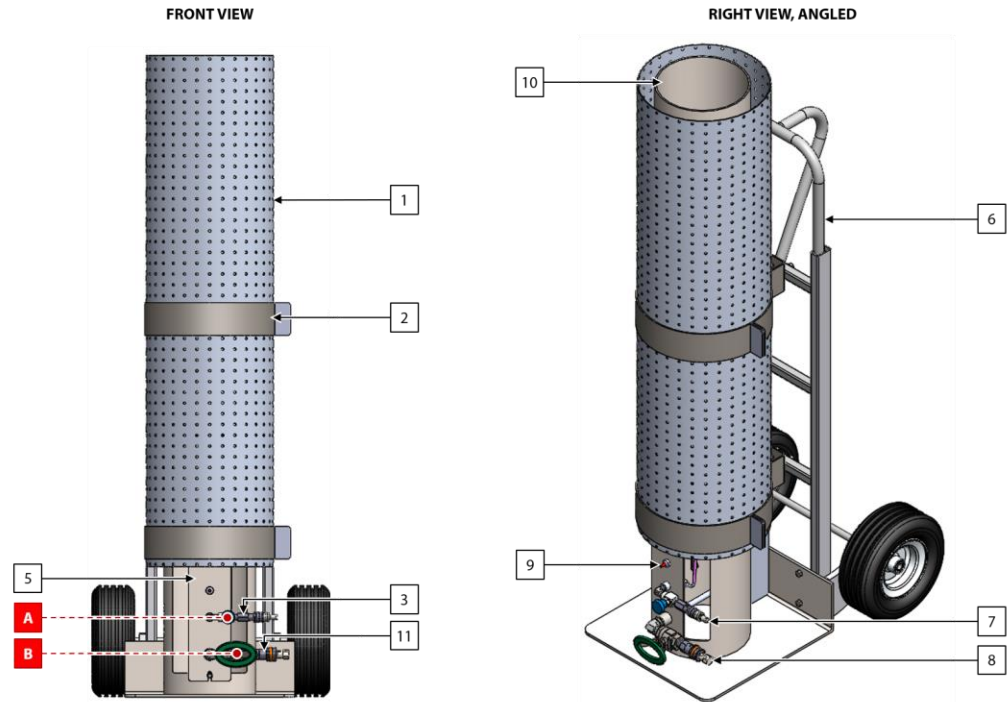


Figure 2: SafeBurn™ Diagram

SAFEburn™ 4" MODEL



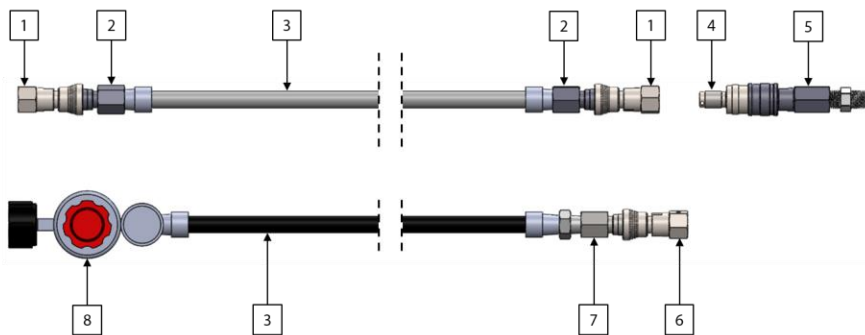
SAFEburn™ 8" MODEL



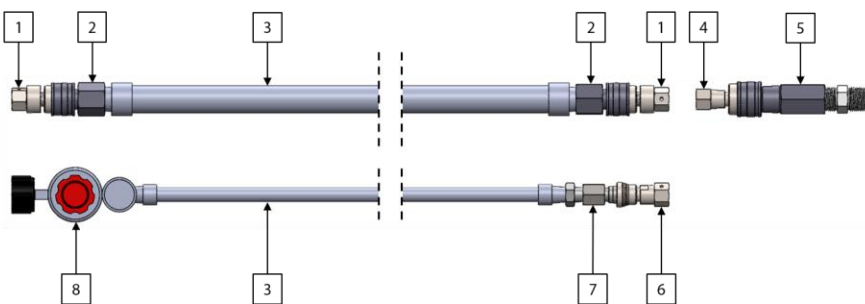
No.	Description
1	Heat Shroud
2	Adjustable Clamp (Qty. 2)
3	Quick-Connect Body (Female) – Yellow
4	Quick-Connect Body (Female) – Orange
5	Burner Base Bracket
6	Hand Truck
7	Quick-Connect Body Protector – Yellow
8	Quick-Connect Body Protector – Orange
9	Igniter Button
10	Flare Body Weld
11	Quick-Connect Body (Male) - Orange
A	Pilot Gas Inlet Valve
B	Flare Gas Inlet Valve

Figure 3: SafeBurn™ Hose Kits

SAFE BURN™ 4" MODEL HOSE KIT



SAFE BURN™ 8" MODEL HOSE KIT



No.	Description
1	Quick-Connect Stem Cap - Orange
2	Quick-Connect Stem - Orange
3	Flare Gas Flex Hose
4	Quick-Connect Body Protector - Orange
5	Quick-Connect Body (Female) - Orange
6	Quick-Connect Stem Cap - Yellow
7	Quick-Connect Stem - Yellow
8	Propane Hose Assembly

SECTION 2: INSTALLATION & OPERATION

2.1 Before You Begin



After unpacking the unit, check the equipment for compliance and any damage that may have occurred during shipment. Immediately contact a Welker representative if you received damaged equipment.



When sealing fittings with PTFE tape, refer to the proper sealing instructions for the brand used.

2.2 Installation

1. Position the SafeBurn™ on a flat, level surface, such as a concrete slab.



Follow company guidelines and procedures when determining a safe distance between the SafeBurn™ and the source tank/pipeline. A fifty foot (50 ft) flare gas hose is provided to ensure enough distance between the SafeBurn™ and the source tank/pipeline for safe operation (*Figure 3*).



Installation requirements vary according to local, provincial, and state requirements. Consult the proper authorities for exact installation requirements.

2. Using the provided pilot gas hose, connect the customer-provided propane supply to the pilot gas inlet (*Figure 1* and *Figure 3*). Push the quick-connect into the pilot gas inlet. The quick-connect will click audibly.
3. Using the provided flare gas hose, connect the source tank / pipeline outlet to the flare gas inlet (*Figure 1* and *Figure 3*). Push the quick-connect into the flare gas inlet. The quick-connect should click audibly.

2.3 Start-Up Procedures

1. Ensure all valves on the SafeBurn™ and the source tank / pipeline are closed (*Figure 2*).
2. Open the outlet valve on the customer-provided propane tank.
3. Set the pilot gas regulator to 5–10 psig.
4. Fully open pilot gas inlet valve A (*Figure 2*).



A hissing sound will be audible when pilot gas inlet valve A is opened (*Figure 2*).

5. Press the igniter button on the SafeBurn™ to ignite the pilot (*Figure 2*).



The igniter button may need to be pressed multiple times to light the pilot.

6. Once lit, wait a minimum of sixty (60) seconds to allow the pilot flame to stabilize and ensure the pilot does not shut off.
7. Open the source tank / pipeline outlet valve.
8. Slowly open flare gas inlet valve B to allow gas vapors to enter the SafeBurn™ (*Figure 2*).



A flame will be visible from the flare outlet once the gas vapors begin mixing with the pilot gas (*Figure 1*).

9. As necessary, open or close flare gas inlet valve B to control the flow rate (*Figure 2*).
10. Once the burn-off is complete, close the source tank / pipeline outlet valve.
11. Close flare gas inlet valve B (*Figure 2*).
12. After the flame dies down, close pilot gas inlet valve A (*Figure 2*).
13. Ensure there is no flame visible from the flare outlet (*Figure 1*).
14. Close the outlet valve on the customer-provided propane tank.
15. As necessary, disconnect the pilot gas hose from the pilot gas inlet (*Figure 1* and *Figure 3*). Grip the "sleeve" of the quick-connect and pull out and away from the pilot gas inlet.
16. As necessary, disconnect the flare gas hose from the flare gas inlet (*Figure 1* and *Figure 3*). Grip the "sleeve" of the quick-connect and pull out and away from the flare gas inlet.

SECTION 3: MAINTENANCE

3.1 Before You Begin

1. **Welker recommends that the unit have standard yearly maintenance.** Based on the operating conditions and/or site requirements, adjustments to the maintenance schedule may be necessary.
2. Prior to maintenance or disassembly of the unit, it is advisable to have a repair kit available for repairs of the system in case of unexpected wear or faulty seals.



New seals supplied in spare parts kits should be lightly lubricated before being installed to ease the installation of the seals and reduce the risk of damage when positioning them on parts. Wipe excess lubricant from the seals, as it may adversely affect analytical instrument results.



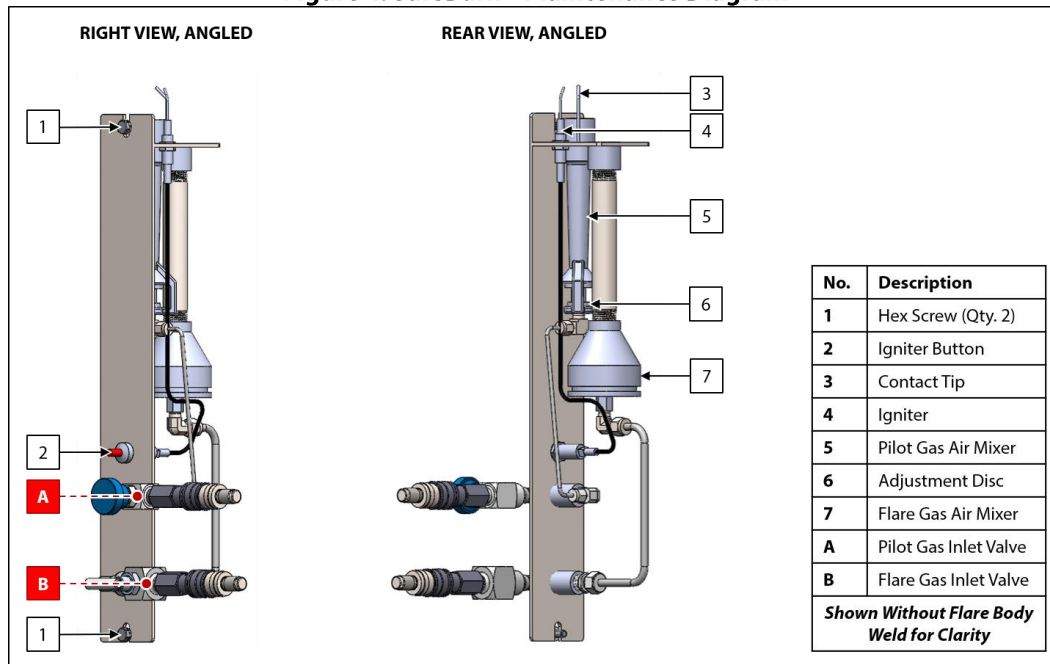
For sample-exposed seals, Welker recommends non-hydrocarbon-based lubricants, such as Krytox®. For non-sample-exposed seals, Welker recommends either non-hydrocarbon-based lubricants or silicone-based lubricants, such as Molykote® 111.

3. All maintenance and cleaning of the unit should be performed on a smooth, clean surface.
4. Welker recommends having the following tools available for maintenance. Please note that the exact tools required may vary by model.
 - a. 1–4" Pipe Wrench
 - b. 6–12" Adjustable Wrench
 - c. Sandpaper (600 Grit or Finer)

3.2 Maintenance

1. Ensure the SafeBurn™ is OFF and disconnected from the source tank / pipeline.

Figure 4: SafeBurn™ Maintenance Diagram



2. Loosen the hex screw above the igniter button and below flare gas inlet valve B (Figure 2 and Figure 4).
3. Slide the plate off the loosened hex screws (Figure 4). The igniter and air mixer components will remain attached to the plate.
4. Inspect the pilot gas air mixer for damage and ensure it is secured tightly (Figure 4). Tighten or replace if necessary.
5. Inspect the flare gas air mixer for damage and ensure it is secured tightly (Figure 4). Tighten or replace if necessary.



Ensure the adjuster for the pilot gas air mixer is open two-thirds ($\frac{2}{3}$) of a turn if a replacement is necessary.

6. Inspect the igniter and contact tip for damage, corrosion, or carbon buildup, and ensure they are secured tightly (Figure 4). Tighten or replace if necessary.



If corrosion is present on the igniter and/or the contact tip, remove with 600 grit sandpaper or replace. Excessive corrosive buildup will result in poor performance of the igniter.

7. Slide the plate onto the loosened hex screws and tighten (Figure 4).
8. Using the provided pilot gas hose, connect the customer-provided propane supply to the pilot gas inlet (Figure 1 and Figure 3). Push the quick-connect into the pilot gas inlet. The quick-connect will click audibly.
9. Set the pilot gas regulator to 5–10 psig and open pilot gas inlet valve A (Figure 2 and Figure 4).
10. Immediately push the igniter button until the pilot is lit. This may require multiple presses. See Section 3.3, *Troubleshooting*, if the pilot flame does not ignite and/or if adjustments need to be made to the pilot gas air mixer.
11. The SafeBurn™ is now operational. See Section 2.2, *Installation*, and Section 2.3, *Start-Up Procedures*, for instructions on connecting the flare gas flex hose and starting the SafeBurn™.



Check valves for leaks and repair as necessary during reinstallation.

3.3 Troubleshooting

Table 3: SafeBurn™ Troubleshooting

Issues	Possible Causes	Solutions
The pilot flame will not light.	The customer-supplied pilot gas is not propane.	Propane is needed for the pilot gas. Other gases may be used as the pilot gas, but the pilot gas flex hose assembly must be retrofitted and adjusted accordingly. Refer to the pilot gas flex hose assembly factory recommendations for retrofitting instructions.
	Pilot gas inlet valve A is closed (<i>Figure 2 and Figure 4</i>).	Open pilot gas inlet valve A.
	The pilot gas regulator is not set.	Set the pilot gas regulator to 5–10 psig.
	The pilot gas air mixer lock nut has loosened, and the air-to-gas ratio is too high or too low (<i>Figure 4</i>).	Tighten the lock nut. Adjust the pilot gas air mixer by screwing the adjustment disc clockwise until closed. Turn counterclockwise $\frac{2}{3}$ of a turn to set.
	The igniter is not sparking (<i>Figure 4</i>).	The igniter and/or contact tip may have corrosion or carbon buildup affecting the spark (<i>Figure 4</i>). Using 600 grit sandpaper, slowly clean any corrosion or carbon buildup off the igniter and the contact tip. Press the igniter button to ensure that an arc is produced across the igniter and contact tip.
		The igniter and contact tip spacing may be too far apart. The spacing between both tips should be no more than $\frac{3}{16}$ " apart from each other. Slowly bend the tip of the igniter and the contact tip toward each other until a gap of no more than $\frac{3}{16}$ " is produced.
	The pilot gas flex hose is not installed correctly (<i>Figure 3</i>).	See <i>Section 2.2, Installation</i> , for instructions on connecting the pilot gas flex hose using the quick-connects.

Table 3: SafeBurn™ Troubleshooting (Continued)

Issues	Possible Causes	Solutions
The flare gas flame will not light.	The pilot flame is shut off.	See <i>Section 2.3, Start-Up Procedures</i> , for instructions on lighting the pilot. Allow a minimum of sixty (60) seconds for the flame to stay lit before proceeding.
	The flare gas flex hose is not installed correctly (<i>Figure 3</i>).	See <i>Section 2.2, Installation</i> , for instructions on connecting the flare gas flex hose using the quick-connects.

APPENDIX A: REFERENCED OR ATTACHED DOCUMENTS

Welker *Installation, Operation, and Maintenance (IOM) Manuals* suggested for use with this unit:

- IOM-105: Welker NV-1 and NV-2 Instrument Valves

Other *Installation, Operation, and Maintenance (IOM) Manuals* suggested for use with this unit:

- Charles A Hones, Inc. Buzzer Burners (Welker IOM-V491)
- Inline Industries, Inc. 201F Ball Valve (Welker IOM-V222)
- Parker Hannifin Corporation Fluoropolymer Hose (Welker IOM-V174)
- Swagelok Company Check Valves C, CA, CH, CP, and CPA Series (Welker IOM-V076)
- Swagelok Company Quick-Connects QC, QF, QM, and QTM Series (Welker IOM-V088)

Welker drawings and schematics suggested for use with this unit:

- Assembly Drawing: AD937BB (OF-1)
- Assembly Drawing: AD937CC (OF-2)

NOTES



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welker.com