



*Installation, Operation, and
Maintenance Manual*

***Welker[®] WelkerScope[®]
Model
WS-2012A***

***Drawing No.: AD514CP
Manual No.: IOM-153***

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 above. Correct operating and/or installation techniques, however, are the responsibility of the end user. Welker[®] reserves the right to make changes to this and all products in order to improve performance and reliability.

This manual is intended to be used as a basic installation and operation guide for the Welker[®] WelkerScope[®] *WS-2012A*. For comprehensive instructions, please refer to the IOM Manuals for each individual component. A list of relevant component IOM Manuals is given in the Appendix section of this manual.

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Section 1: SPECIFICATIONS

1.1 INTRODUCTION

We appreciate your business and your choice of Welker® products. The installation, operation, and maintenance liability for this product becomes that of the purchaser at the time of receipt. Reading the applicable *Installation, Operation, and Maintenance (IOM) Manual* 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 1-800-776-7267 (USA) or 1-281-491-2331.

Notes, Cautions, and Warnings



Notes emphasize information or set it off from the surrounding text.



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



Warnings are alerts to a specific procedure or practice that, if not followed correctly, could cause personal injury.

*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 DESCRIPTION OF PRODUCT

The WelkerScope® is a liquid gel illuminated inspection device that provides a means of inspecting meter tubes or other piping configurations without having to disassemble them. The WelkerScope® is powered by a 120 VAC / 60 Hz power source. The power unit is equipped with a thermostat inside its explosion-proof box that cuts off the power to the system if the temperature inside the box gets too high. The optical insertion probe has an inverted image with a 1.5 times magnification and can be focused from 4 inches to infinity.

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. However, **please note that the specifications may vary depending on the customization of your product.**

Table 1: System Specifications	
Materials of Construction	316 Stainless Steel, Aluminum
Insertion Length	8 to 10 inches
Temperature Range	-20° to 104°F (-28.9° to 40°C)
Maximum Line Pressure	Atmospheric
Pipeline Connection	½" NPT or Larger
Power Connection	120 VAC
Area Classification	Class 1, Division 1, Groups C & D

1.4 SYSTEM DIAGRAM

Figure 1: System Diagram

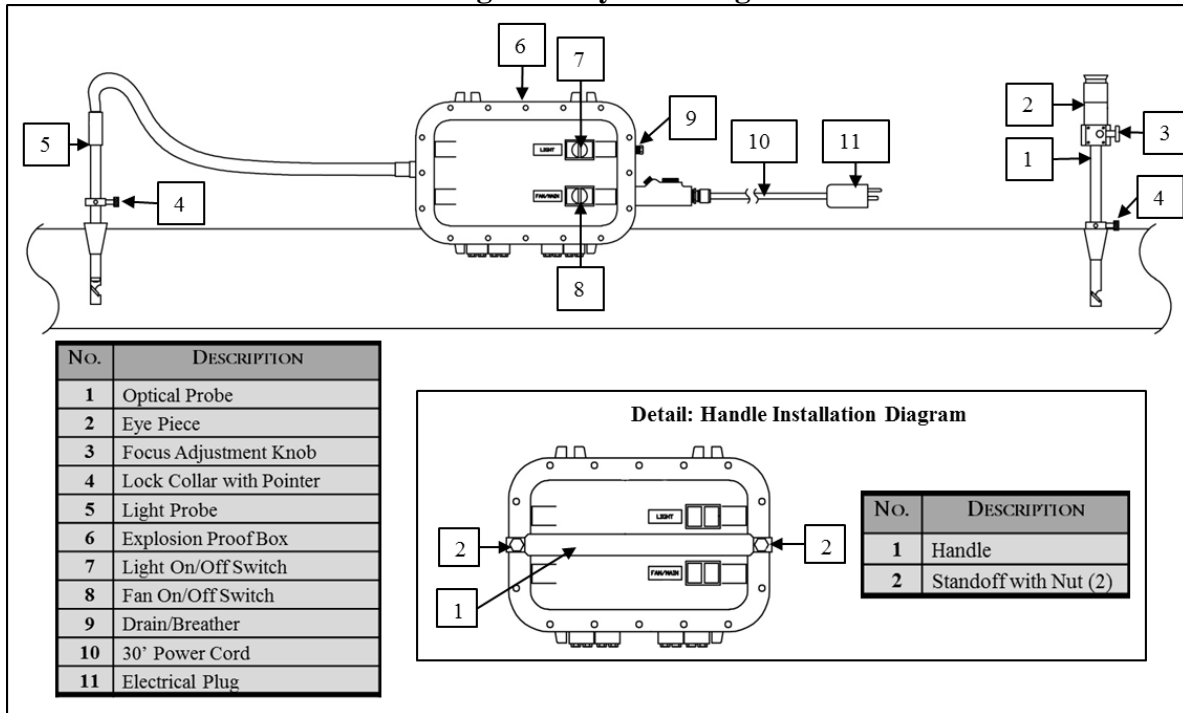
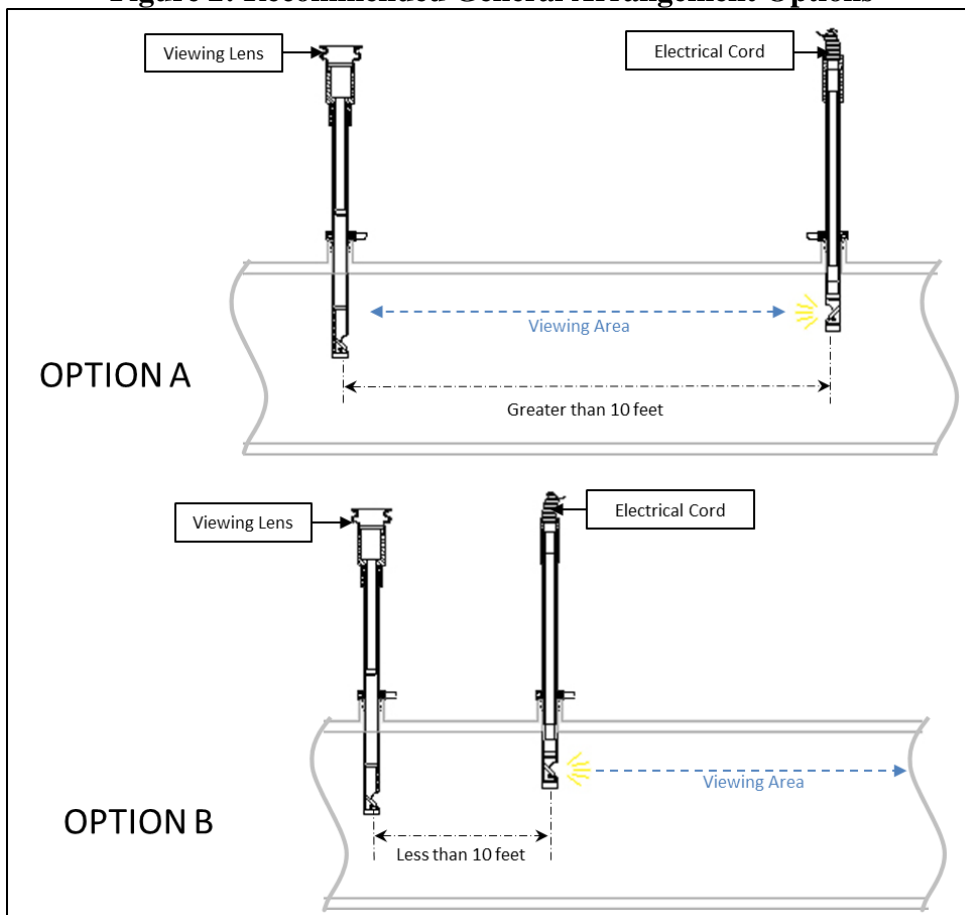


Figure 2: Recommended General Arrangement Options



Section 2:

INSTALLATION & OPERATIONS

2.1 BEFORE YOU BEGIN



After unpacking the unit, check the equipment for compliance and for any damage that may have occurred during shipment. **Claims for damage caused during shipping must be initiated by the receiver and directed to the shipping carrier.** Welker[®] is not responsible for any damage caused by mishandling by the shipping company.

2.2 INSTALLATION

1. Depressurize and purge the section of pipeline to be inspected.
2. Screw the two stainless steel standoffs with nuts into the two openings on the explosion-proof box.
3. Remove the nuts.
4. Slide the anodized black aluminum handle onto the standoffs.
5. Replace the nuts.
6. Set the lock collar in such a way that the insertion depth will reach approximately halfway into the pipeline to be inspected. For example, if the diameter of the pipeline is 8" and there is a 1" coupling, then the lock collar should be set so at approximately 5" insertion length (4" to be inserted into the center of the pipeline and 1" for the coupling).
7. Align the pointer on the lock collar with the mirror opening.
8. The probe and light may be situated in one of two ways (*Figure 2*):
 - a. If there is a distance of 10 feet or greater between available ports, insert the light probe on the opposite side of the viewing area from the optical probe. The optical probe and light probe should be input to approximately the same depth. Turn the light toward the optical probe. Do not shine the light directly into the eyepiece (*Figure 2, Option A*).
 - b. If there is a distance of less than 10 feet between available ports, insert the light probe on the same side of the viewing area as the optical probe. If both probes are used on the same end, the light probe should be in front of the optical probe and slightly higher (*Figure 2, Option B*).
9. Insert the WelkerScope[®] probes through ½" NPT or larger couplings.



Do not force the probe through a connection point. The probe is a delicate instrument; the use of excessive force may result in damage to the probe.

10. Connect the standard 30-foot electrical cord to an explosion-proof outlet. The unit is now ready for operation.

2.3 OPERATIONS

1. To operate the fan, push the Fan/Main start button.
2. To operate the light, push the Light start button. The light source delivers an intensity of more than 10,000 foot candles.
3. Using the pointer on the lock collar, line up the light source and the visual image.
4. Focus the image by moving the eye piece up and down using the focus adjustment knob. This may take some practice.

Section 3:

MAINTENANCE

3.1 BEFORE YOU BEGIN

1. **Welker® recommends that the unit have annual maintenance under normal operating conditions.** In cases of severe service, dirty conditions, excessive usage, or other unique applications that may lead to excess wear on the unit, a more frequent maintenance schedule may be appropriate.
2. All maintenance and cleaning of the unit should be done on a smooth, clean surface.
3. The WelkerScope® is a scientific precision instrument and should be handled with care at all times.

3.2 MAINTENANCE

1. When transporting the unit, tape over the mirror openings on both the optical probe and light probe to protect the mirrors during transport.
2. Periodically clean the optical components using appropriate lens cleaning fluid, paper, and cotton swabs.



Use caution when cleaning the mirrors. The WelkerScope® utilizes “First Surface Mirrors,” which are aluminized on the surface nearest the incident light and are vulnerable to scratching.

3. It is advisable to have a spare bulb available at all times for maintenance of this unit. The light bulb used in the WelkerScope® has a life expectancy of approximately 20 hours.
4. If the light bulb burns out, change the light bulb in a non-hazardous area.



If used recently, the bulb may be very hot. Handle with care.

APPENDIX

ATTACHED DOCUMENTS:

Welker® *Installation, Operation, and Maintenance* Manuals suggested for use with this unit:

- None

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

- None

Welker® drawings and schematics suggested for use with this unit:

- Assembly Drawing: AD514CP



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