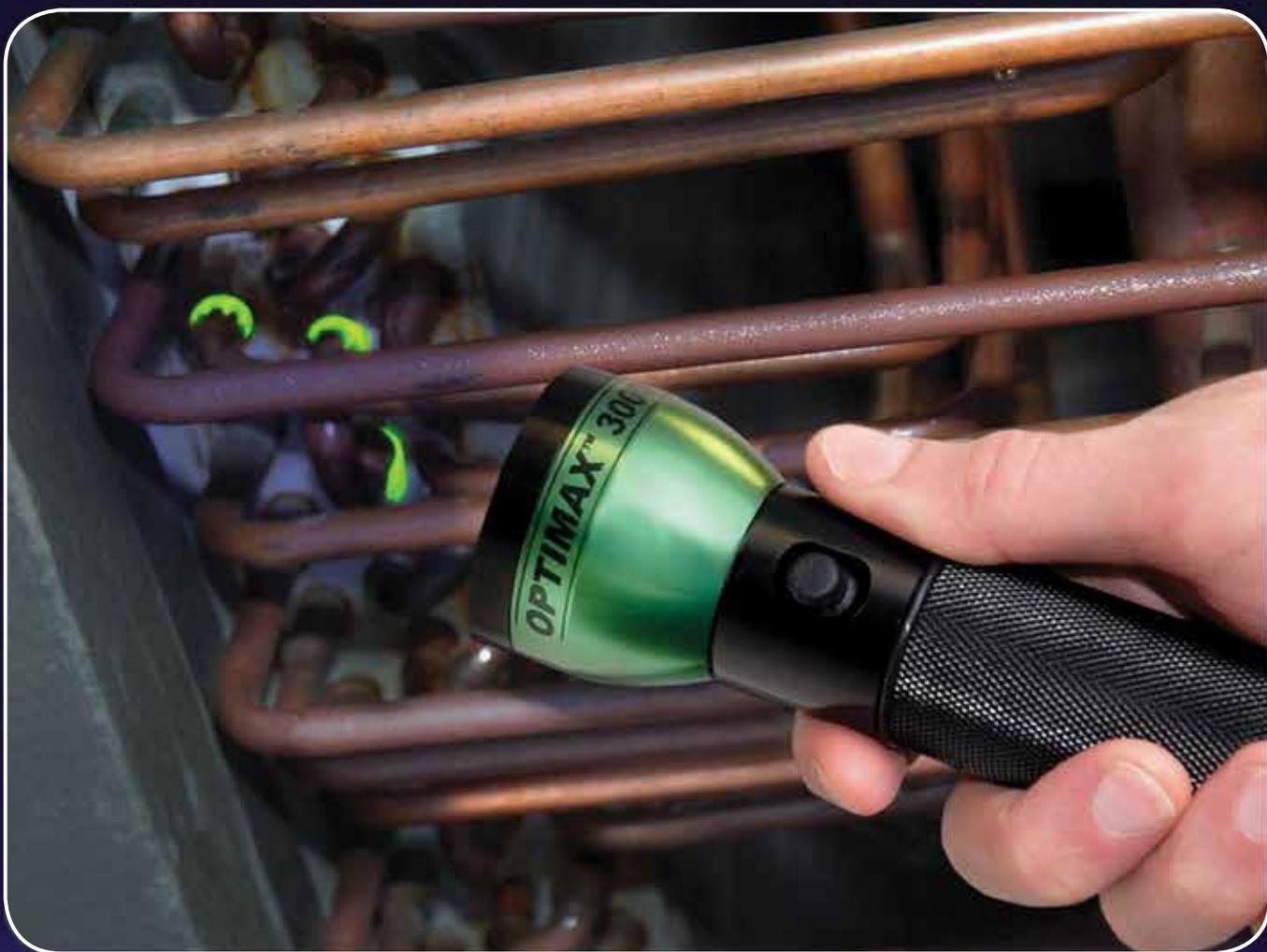


## Fluorescent Leak Detection Products and Diagnostic Tools for HVAC/R Systems



OEM-Approved AC&R Dyes



Powerful Inspection Lamps



Versatile Leak Detection Kits



# Fluorescent Leak Detection

## How It Works

A small amount of fluorescent dye is added to an air conditioning or refrigeration system and allowed to circulate. The dye escapes with the system's refrigerant and remains at all leak sites. When the system is scanned with a Spectroline® inspection lamp, the dye fluoresces brilliantly to pinpoint the exact source of every leak. Proven to find multiple and intermittent leaks undetectable by any other method. Even leaks smaller than 1/8 ounce per year!

Easily verify repairs by removing the dye from the leak sites with GLO-AWAY™ dye cleaner and then reinspect. The dye can remain safely in AC&R systems indefinitely for future leak inspections.

Fluorescent leak detection is the only method that can be used for both accurate diagnostics and as part of a comprehensive preventive maintenance program.

AR-GLO® fluorescent dyes are the only dyes that are co-solvent free and OEM-approved by major compressor, refrigerant, lubricant and AC&R equipment manufacturers.

AR-GLO® dyes are super-concentrated and proven in over 50 million AC&R systems worldwide.

AR-GLO® dyes are completely safe and will not alter or impair lubricant properties, which could lead to equipment damage and costly downtime. They have been successfully tested in accordance with ASHRAE Standards 97 and 86.

## Small to Medium Size AC&R Systems

- Ice Machines
- Window Units
- Refrigerators
- Residential
- Commercial



## Large Size AC&R Systems

- Supermarkets
- Refrigerated Warehouses
- Food and Dairy Plants
- Industrial Facilities



# Contents

Page No.

## 1. Leak Detection Lamps and Kits

4-9

### **Cordless LED Lamps**

OPD-500CS Dual-Max™, OPX-365 OPTIMAX™ 365,  
OLX-365 OPTI-LUX™ 365, OPX-400CS OPTIMAX™ 400,  
OPX-500CS OPTIMAX Jr™, OPX-3000 OPTIMAX™ 3000,

### **Corded UV Lamps**

BIB-150P, ML-3500S MAXIMA™, ML-3500MS MAXIMA™ (battery-operated),  
TRI-365 TRITAN™ 365, TRI-365M TRITAN™ 365 (battery-operated)

## 2. Fluorescent Dyes and Injection Methods

10-18

### **EZ-Ject™ Dye Cartridges** *(Small to Medium Size AC&R Systems)*

How It Works — Hook-Up Diagram — Injection Chart — What to Order

### **GLO-STICK® Dye Capsules** *(Small to Medium Size AC&R Systems)*

How It Works — Hook-Up Diagrams — Selection Chart — What to Order

### **BigEZ™ Dye Cartridges** *(Medium to Large Size AC&R Systems)*

How It Works — Hook-Up Diagram — Injection Chart — What to Order

### **AR-GLO® Bottled Dyes** *(Very Large Size AC&R Systems)*

How It Works — What to Order

### **Special Applications: Ammonia Systems**

## 3. Specialized Diagnostic Tools

19-20

### **COBRA™ Series Multi-Purpose Borescopes:**

**CB-1000 COBRA™** 10 mm, 24 inch shaft

**CB-1036 COBRA-Plus™** 10 mm, 36 inch shaft

**CB-600 COBRA-6™** Ultra-thin, 6 mm, 38 inch shaft

**CCV-1000 COBRA CAM™** UV/White Light Videoscope

**MDE-2000 Marksman™ II** Ultrasonic Diagnostic Tool

**ELD-1000 PRO-Alert™** Electronic Refrigerant Leak Detector

## 4. ACID-BUSTER™ Acid Scavenging Solution

21

## 5. GLO-AWAY™ Dye Cleaner, Drip Plugs and Tamper-Evident Straps

22

## 6. Lamp and Kit Accessories

23

## 7. Replacement Parts

24

## 8. Warranty Information

25

## 9. Product Index

26

## 10. Customer Service and Support

27

# Leak Detection Lamps and Kits

## Cordless LED Lamps

Powerful  
Blue LED!



CE U



### OPX-500CS OPTIMAX Jr™ Cordless, Blue Light LED Leak Detection Flashlight

— Powerful, Portable and Affordable!

- Perfect for tight spaces
- Power comparable to high-intensity 75W lamps
- Inspection range up to 6 feet (1.8 m) or more
- 100,000-hour LED life
- Powered by 3 "AA" batteries (included)
- UVS-40 fluorescence-enhancing glasses

### OPK-50EZ/E

#### Complete EZ-Ject™ Kit

Features the OPX-500CS OPTIMAX Jr™ ultra-compact, cordless, blue light LED flashlight

FOR SMALL TO MEDIUM SIZE AC&R SYSTEMS, including high-pressure R-410A systems!

Kit contains:

- EZ-50 EZ-Ject dye injector assembly
- EZ-25 hose assembly with check valve and low-loss fitting
- (2) EZ-4/ECS 0.5 oz (14.8 ml) Universal/POE cartridges
- (3) Drip plugs for hose/coupler



### OPK-50GS/E

#### Complete GLO-STICK® Kit

Features the OPX-500CS OPTIMAX Jr™ ultra-compact, cordless, blue light LED flashlight

FOR SMALL TO MEDIUM SIZE AC&R SYSTEMS, including high-pressure R-410A systems!

Kit contains:

- (1) BV-50 bleed valve for attaching GLO-STICK capsule to service hose
- (1) PC-0249 purge capsule
- (1) 119567 hose to connect to low side service port
- (1) GS-1/E universal/POE GLO-STICK dye capsule
- (2) GS-2/E universal/POE GLO-STICK dye capsules
- (1) GS-3/E universal/POE GLO-STICK dye capsule



Fluorescence-enhancing glasses (UVS-40), plastic carrying case (CC-110) and 8 oz (237 ml) spray bottle of GLO-AWAY™ dye cleaner (CR-800) are included in above kits.

Super-High  
Intensity  
Blue LED!



CE U

### OPX-3000 OPTIMAX™ 3000 Cordless, Rechargeable Blue Light LED Leak Detection Flashlight

— Most Powerful Portable!

- 15 times brighter than regular LED lights
- Power comparable to super-high intensity 150W lamps
- Inspection range up to 20 feet (6.1 m) or more
- Compatible with all standard leak detection dyes
- 50,000-hour LED life
- Powered by a rechargeable NiMH battery (included)
- Smart AC and DC chargers
- UVS-40 fluorescence-enhancing glasses

Also available: OPK-300 OPTIMAX™ 3000 Lamp Kit  
Features all the above in a rugged carrying case.

### OPK-300EZ/E

#### Complete EZ-Ject™ Kit

Features the OPTIMAX™ 3000  
Cordless, Rechargeable LED  
Flashlight

FOR SMALL TO MEDIUM SIZE  
SYSTEMS, INCLUDING HIGH-  
PRESSURE R-410A SYSTEMS

Contains:

- EZ-50 EZ-Ject™ dye injector assembly
- EZ-25 hose assembly with check valve and low-loss fitting
- (2) EZ-4/ECS 0.5 oz (14.8 ml) EZ-Ject™ universal/POE dye cartridges
- (3) Drip plugs for hose/coupler

Also available: OPK-300EZ/E/DC Kit

Same as above kit, except comes with a smart 12V DC charger only.



### OPK-300BEZ/E

#### Complete BigEZ™ Kit

Features the OPTIMAX™ 3000  
Cordless, Rechargeable LED  
Flashlight

FOR MEDIUM TO LARGE SIZE  
SYSTEMS, INCLUDING HIGH-  
PRESSURE R-410A SYSTEMS

Contains:

- BEZ-50 BigEZ™ dye injector assembly
- BEZ-25 hose assembly with check valve and low-loss fitting
- BEZ-4/ECS 4 oz (118 ml) BigEZ™ universal/POE dye cartridge
- (3) Drip plugs for hose/coupler

Also available: OPK-300BEZ/OL Kit

Same as above kit, except comes with BEZ-4/OL BigEZ™ A/C dye cartridge formulated specifically for oil-less systems.



Fluorescence-enhancing glasses (UVS-40), smart AC charger (RB-300), smart DC charger with cigarette lighter adapter (RB-300DC), plastic carrying case (CC-130) and 8 oz (237 ml) spray bottle of GLO-AWAY™ dye cleaner (CR-800) are included in above kits.

# Leak Detection Lamps and Kits

## Cordless LED Lamps

**Powerful  
UV LED!**



**OPX-365  
OPTIMAX™ 365 Cordless, Rechargeable,  
Enhanced UV LED Leak Detection Flashlight**  
(Patent Pending)

CE

— **Makes Every Leak Glow Brightly!**

- Ultra-high intensity UV LED technology
- **4 times stronger** than most corded, high-intensity UV leak detection lamps
- Works with all dyes, including difficult-to-fluoresce yellow dyes
- Inspection range up to 20 feet (6.1 m) or more
- 30,000-hour LED life
- Instant-on start, no warm-up required
- Powered by a rechargeable NiMH battery (included)

*UV-absorbing glasses (UVS-30), smart AC charger (RB-300), smart DC charger with cigarette lighter adapter (RB-300DC), rubber lamp protector (125565), holster (127243) and padded carrying case (CC-365) are included with this lamp.*



**OLX-365  
OPTI-LUX™ 365  
Super-Compact, Cordless, Enhanced UV  
LED Leak Detection Flashlight**

CE

— **Works with All Fluorescent Dyes!**

- More than twice as powerful as most corded, high-intensity UV lamps
- Works with all fluorescent dyes, including difficult-to-fluoresce yellow dyes
- Inspection range up to 10 feet (3.0 m) or more
- Compact design easily gets into tight, cramped spaces
- 30,000-hour LED life
- Instant-on operation; no warm up required
- Powered by a rechargeable lithium-ion battery (included).

*UV-absorbing glasses (UVS-30), smart charging cradle (127446), two rechargeable batteries (127568), belt holster (127574) and padded carrying case (CC-365) are included with this lamp.*



CE U

**OPX-400CS  
OPTIMAX™ 400  
Cordless, True UV LED Leak Detection Flashlight**

— **Optimized for Refrigerant Leak Detection!**

- Power comparable to high-intensity 100-watt lamps
- Inspection range up to 10 feet (3.0 m) or more
- Provides optimal fluorescent dye response and contrast, ensuring that all leaks glow more brilliantly!
- 30,000-hour LED life
- Compact design easily gets into tight, cramped spaces
- Instant-on operation; no warm-up time required
- Powered by 3 "AAA" batteries (included)
- Lanyard, holster and UVS-40 fluorescence-enhancing glasses

**Two  
Powerful  
LEDs!**



CE U

**OPD-500CS  
Dual-Max™ Cordless, Multi-Function  
LED Flashlight**

— **Two Powerful LEDs! One Lightweight Lamp!**

**Dual-head flashlight features super-bright blue light LED for leak detection, plus white light LED for general component inspection**

- Power comparable to high-intensity 75W lamps
- Inspection range up to 6 feet (1.8 m) or more
- Compact design allows easy access into tight spaces
- 100,000-hour LED life
- Powered by 3 "AAA" batteries (included)
- Holster and UVS-40 fluorescence-enhancing glasses

*Choose GLO-STICK® capsules, bottled AR-GLO® dye or BigEZ™ or EZ-Ject™ dye cartridges separately.*

# Leak Detection Lamps and Kits

## Corded UV Lamps

*Ultraviolet Lamps Are the Original Leak Detection Technology and Produce Virtually No Visible Light, Making the Smallest Leaks Glow Brighter!*

**Most Popular UV Lamp!**



### **BIB-150P** **Built-In-Ballast™ UV Lamp** **For large AC&R systems**

*Highest intensity self-ballasted UV lamp in the industry!*

- Inspection range of up to 25 feet (7.6 m) or more
- Built-In-Ballast™ bulb eliminates the need for a heavy, external transformer
- Bulb rating: 120 volts, 150 watts (also available in 230V, 240V and 100V versions)
- Specifications: 3¼ lbs (1.5 kg), 6¾ x 10¼ in (17.1 x 26 cm)
- UVS-30 UV-absorbing glasses

**BIB-150PR** — Same as the BIB-150P (above), but with a 30 foot (9.1 m) retractable power cord in “flying reel”.

**BIB-150PX** — Same as the BIB-150P (above), but with a 20 foot (6.1 m) power cord.



### **HVLD-80GS** **Complete Leak Detection Kit** *Featuring the BIB-150P UV lamp*

Contains:

- GS-70 starter/assortment pack of GLO-STICK® dye capsules for mineral oil lubricant systems
- BV-50 bleed valves (2)

\*Additional items shown (listed below) are included in this kit



### **LD-80SK** **Lamp Kit** *Featuring the BIB-150P UV lamp*

\*Additional items shown (listed below) are included in this kit

Choose GLO-STICK® capsules, bottled AR-GLO® dye or BigEZ™ or EZ-Ject™ dye cartridges separately.

\* The BIB-150P kits above include: UV-absorbing glasses (UVS-30), plastic carrying case (CC-120A), and 8 oz (237 ml) spray bottle of GLO-AWAY™ dye cleaner (CR-800).

# Leak Detection Lamps and Kits

## Corded UV Lamps



### ML-3500S MAXIMA™ (Patented)

#### For large AC&R systems

#### Ultra-high intensity spot UV lamp

- Inspection range of up to 30 feet (9.1 m) or more
- Works even in *direct sunlight!*
- Micro Discharge Light (MDL) technology
- Bulb rating: 120 volts, 35 watts (also available in 230V, 240V and 100V versions)
- Specifications: total weight 6.1 lbs (2.8 kg), lamp head 2.5 lbs (1.1 kg), solid-state ballast
- UVS-30 UV-absorbing glasses

**NOTE:** Battery-operated AC/DC version (MAXIMA ML-3500MS) also available



MLK-35

### MLK-35

#### Lamp Kit

Featuring the ML-3500S MAXIMA™ spot UV lamp

\* Additional items shown (listed below) are included in this kit



MLK-35M

### MLK-35M

#### Battery-Operated Lamp Kit

Featuring the ML-3500MS MAXIMA™ spot UV lamp

Contains:

- BP-12A 12-volt rechargeable battery pack
- AC and 12V DC cord sets

\* Additional items shown (listed below) are included in this kit

Choose GLO-STICK® capsules, bottled AR-GLO® dye, BigEZ™ or EZ-Ject™ cartridges separately.

\* The MAXIMA kits above include: UV-absorbing glasses (UVS-30), plastic carrying case (CC-350) and 8 oz (237 ml) spray bottle of GLO-AWAY™ dye cleaner (CR-800).

### TRI-365 TRITAN™ 365 (Patent Pending)

#### For large AC&R systems

#### Ultra-high intensity, multi-LED, broad-beam UV lamp

- Inspection range of up to 20 feet (6.1 m) or more
- Three-position rocker switch: UV/White/Off (three UV LEDs for leak detection and one white light LED for general component inspection)
- 30,000-hour LED service life
- Electronic Intensity Stabilizer ensures consistent LED performance
- Rugged, ergonomic, angled lamp body provides safe, fatigue-free handling
- Instant-on start; no warm-up required
- Broad-beam design provides wider coverage area than conventional UV leak detection lamps
- Rubber bumper with Borofloat™ glass lens protects LEDs from damage
- Built-in fan keeps LEDs cool to maintain optimum light intensity during extended use
- Power requirements: 120 volts AC (also available in 230V, 240V and 100V versions)
- Specifications: Weight 1 lb (454 g), length 8 in (20.3 cm), lamp head diameter 3.25 in (8.3 cm)
- UVS-30 UV-absorbing glasses



### TRI-365M

#### Battery-Operated Lamp Kit

Featuring the TRI-365M TRITAN™ 365 UV lamp

Contains:

- BP-25A 12-volt rechargeable battery pack
- BR-150A smart charger
- PSA-250A AC/DC power supply adapter
- CC-370A padded carrying case
- UVS-30 UV-absorbing glasses

Choose GLO-STICK® capsules, bottled AR-GLO® dye or BigEZ™ or EZ-Ject™ dye cartridges separately.



# Lamp Comparison Chart

## Comparison Chart for

Please note that lamps are not shown in size proportion to each other

Cordless LED Lamps						
	OPX-365	OLX-365	OPX-400CS	OPX-3000	OPX-500CS	OPD-500CS
			 U	 U	 U	 U
<b>Specifications</b>						
<b>Light Intensity</b>	Super High	Ultra High		Super High	High	
<b>Light Source</b>	UV LED			Blue LED		Blue LED & White LED
<b>LED Life</b>	30,000 hours			50,000 hours	100,000 hours	
<b>Inspection Range<sup>①</sup></b>	Up to 20 feet (6.1 m) or more	Up to 10 feet (3.0 m) or more		Up to 20 feet (6.1 m) or more	Up to 6 feet (1.8 m) or more	
<b>Lamp Style</b>	Flashlight					
<b>Operation</b>	Instant-on					
<b>Lamp Head Diameter X Length</b>	1 <sup>15</sup> / <sub>16</sub> x 8 in (4.9 x 20.3 cm)	1 <sup>1</sup> / <sub>4</sub> x 6 in (3.2 x 15.2 cm)	1 <sup>1</sup> / <sub>4</sub> x 5 <sup>1</sup> / <sub>2</sub> in (3.2 x 14 cm)	1 <sup>15</sup> / <sub>16</sub> x 7 <sup>1</sup> / <sub>2</sub> in (4.9 x 19 cm)	1 <sup>3</sup> / <sub>32</sub> x 7 <sup>5</sup> / <sub>16</sub> in (2.8 x 19 cm)	1 <sup>1</sup> / <sub>8</sub> x 6 <sup>1</sup> / <sub>16</sub> in (2.9 x 15.4 cm)
<b>Weight</b>	11.8 oz (334.5 g)	4.6 oz (130 g)	4.8 oz (135 g)	11.2 oz (318 g)	4.8 oz (135 g)	5.8 oz (164.4 g)
<b>Cord Length</b>	Cordless					
<b>Power Requirements</b>	Rechargeable NiMH Battery	Rechargeable Lithium-Ion Battery	(3) AAA batteries	Rechargeable NiMH Battery	(3) AA batteries	(3) AAA batteries
<b>Charge Time</b>	4 hours (approximately)	8 hours (approximately)	N/A	4 hours (approximately)	N/A	
<b>Continuous Run Time</b>	3 hours	4 hours	N/A	3 hours	N/A	

① Depending on ambient light conditions (the darker the better).

② Lamps and battery chargers also available in 230V/50Hz, 240V/50Hz and 100V/50-60Hz.

③ For ML-3500MS, primary DC cord is 3 feet (0.9 m).

④ Lamp's broad UV beam profile works best at closer distances.

Green "U" symbol indicates that lamp works best with universal, polyol ester AC&R dyes.



# Fluorescent Dyes and Injection Methods

## **SPECTROLINE<sup>®</sup>** fluorescent leak detection combines **AR-GLO<sup>®</sup>** fluorescent dyes and **Spectroline<sup>®</sup>** inspection lamps to pinpoint all leaks in two simple steps!

### STEP ONE:

Add fluorescent dye to the system and let it circulate.

### STEP TWO:

Scan the system with a Spectroline<sup>®</sup> inspection lamp and see all leaks in one inspection!

- **Universal** dye is compatible with all refrigerants and lubricants, including mineral oil, PVE, polyol ester and alkyl benzene\*
- **Lubricant-specific** dyes exactly match the OEM lubricant type in the system
- **Co-solvent free** dyes will not impair lubricant properties (lubricity and viscosity), which could lead to excessive wear or damage to system components
- **OEM-approved** by major compressor, refrigerant, lubricant and AC&R equipment manufacturers
- **Safe:** ASHRAE and ANSI compliant, proven in over 50 million AC&R systems worldwide

AR-GLO<sup>®</sup> fluorescent dyes quickly pinpoint the *exact* source of *every* air conditioning and refrigeration leak. They locate leaks not detectable by *any* other method — even multiple or intermittent leaks as small as  $\frac{1}{8}$  of an ounce per year!

\* For special applications such as ammonia systems with oil separator or low pressure centrifugal, use mineral oil dye.

1. When the lubricant is unknown, use universal “E” polyol ester dye.
2. To improve performance and reduce inspection time, add dye in advance as part of a preventive maintenance program.
3. The more time the dye circulates, the brighter the glow!

**Technical Tips!**

# Four Ways to Add AR-GLO®

Co-Solvent  
FREE  
AC&R Dyes!



**SPECTROLINE®** offers **FOUR WAYS**  
to add **AR-GLO®** dye to **AC&R** systems:

## Small to Medium Systems

1



### EZ-Ject™ Multi-Dose Dye Injection System (Patented)

*Convenient and economical. Works in all systems, including high-pressure R-410A systems!*

- Each prefilled, disposable EZ-Ject dye cartridge treats up to 2 gallons (7.6 L) of lubricant, 25 lbs (11.3 kg) of refrigerant or 12 tons of cooling. No pouring and no refrigerant required for injection.
- One calibrated cartridge provides exact dosing for multiple systems
- Easily overcomes system pressure. Inject dye with a turn of the handle.

2



### GLO-STICK® Dye Capsules (Patented)

*Fast and easy servicing. Works in all systems, including high-pressure R-410A systems!*

- Prefilled, single-dose, self-cleaning, disposable dye capsules eliminate measuring, pouring and messy spills
- Available in 4 sizes/concentrations to match the capacity of the system. Treats up to 2 gallons (7.6 L) of lubricant, 25 lbs (11.3 kg) of refrigerant or 12 tons of cooling.
- Inject dye while charging with refrigerant, or when connecting from the high side to the low side
- Metering orifice prevents slugging of the compressor

## Medium to Large Systems

3



### BigEZ™ Multi-Dose Dye Injection System (Patented)

*Most economical for larger systems. Works in all systems, including high-pressure R-410A systems!*

- Each prefilled, disposable 4 oz (118 ml) BigEZ dye cartridge treats up to 16 gallons (60.8 L) of lubricant, 400 lbs (180 kg) of refrigerant or 150 tons of cooling. No pouring and no refrigerant required for injection.
- One calibrated cartridge provides exact dosing for multiple systems
- Easily overcomes system pressure. Inject dye with a turn of the handle.

## Very Large Systems

4



### AR-GLO® Bottled Dyes

*The easiest and most economical way to service very large capacity systems.*

- Uses standard, refillable injectors
- Highly concentrated dyes available in 0.5 oz (14.8 ml), 2 oz (59 ml), pint (473 ml) and gallon (3.8 L) sizes
- Special dye available for oil-less systems

# EZ-Ject™ Dye Injection System

## For Small to Medium Size Systems

### 1 EZ-Ject™ Multi-Dose Injector and Dye Cartridges Works with all systems, including high-pressure R-410A systems

The revolutionary way to add fluorescent dyes into air conditioning and refrigeration systems — *without* the use of additional refrigerant! Just one connection, then turn the handle to inject the dye. No complicated hookups! Ideal for preventive maintenance programs and for multiple, small AC&R units.

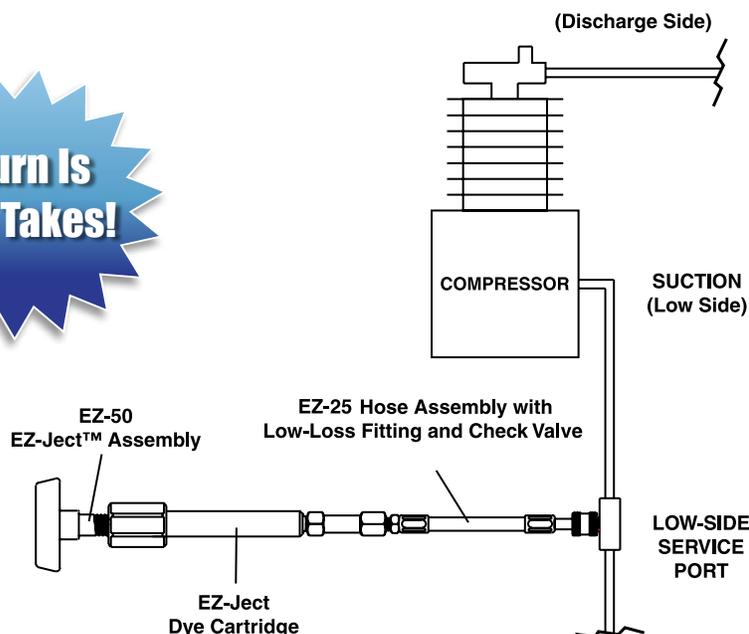
- **Cost effective for small to medium size systems** — Each disposable EZ-Ject™ dye cartridge treats up to 2 gallons (7.6 L) of lubricant or 25 lbs (11.3 kg) of refrigerant.
- **No pouring, no refrigerant, no spills** — Prefilled EZ-Ject™ cartridges are clearly labeled with 14 calibrations so you'll introduce *exactly* the right amount of dye every time! When the cartridge is empty, just throw it away. A new one connects in seconds.
- **Check valve** prevents the backflow of dye or refrigerant and allows for easy storage of the hose/cartridge between jobs. It also prevents dye leakage or contamination. Torque from the EZ-Ject™ assembly easily overcomes AC&R system pressure, even with R-410A.



## HOW IT WORKS

1. Install the cartridge, then connect the hose to the low-side service port. Turn the EZ-Ject™ handle to inject the exact amount of AR-GLO® fluorescent dye required into the system and let the dye circulate.
2. Scan the system with a Spectroline® inspection lamp. The *precise* location of *all* leaks will be shown by a bright, yellow-green glow.

**A Turn Is  
All It Takes!**



1. For plunger-type manual injectors, insert the purge fitting into the low-loss fitting. Inject the dye into the hose assembly until the dye exits the purge fitting.
2. An additional hose assembly is recommended for each lubricant type, so no dye is wasted.

**Technical Tips!**

# EZ-Ject™ Kits and Dye Cartridges



## EZ-100/ECS Universal Dye Injection Kit

**For Mineral Oil, PVE, Polyol Ester and Alkyl Benzene Lubricant Systems**

Contains:

- EZ-50 EZ-Ject™ dye injector assembly
- EZ-25 hose assembly complete with check valve and 1/4 inch flare low-loss fitting
- (2) EZ-4/ECS 0.5 oz (14.8 ml) universal/POE dye cartridges
- 119690 purge fitting
- Service labels

**Also available: EZ-100CS Dye Injection Kit**

Same as EZ-100/ECS kit, but features (2) EZ-4CS 0.5 oz (14.8 ml) EZ-Ject™ dye cartridges for mineral oil lubricant systems

## EZ-Ject™ Dye Cartridges



### EZ-4/ECS (Universal/Polyol Ester)

Also available: EZ-4CS for mineral oil lubricant systems

## EZ-Ject™ Dye Cartridge Injection Chart

SYSTEM TYPE ①	Small systems, e.g., ice machines, window A/C units and refrigerators	Residential systems <sup>②</sup>	Light commercial and large residential systems <sup>②</sup>	Commercial and light industrial, including all split systems <sup>②</sup>
<b>Refrigeration Oil Charge</b>	Up to 15 fl oz (450 ml)	Up to 1.6 qt (1.5 L)	1.7 to 3.2 qt (1.6 to 3.0 L)	3.3 qt to 2 gal (3.1 to 7.6 L)
<b>Refrigerant Charge</b>	Up to 2.9 lb (1.3 kg)	3 to 4.9 lb (1.4 to 2.2 kg)	5 to 9.9 lb (2.3 to 4.5 kg)	10 to 25 lb (4.6 to 11.3 kg)
<b>Tons of Cooling</b>	Up to 1 ton	1.1 to 2 tons	2.1 to 6 tons	6.1 to 12 tons
<b>Horsepower</b>	Up to 1 Hp	1.1 to 4 Hp	4.1 to 10 Hp	10.1 to 25 Hp
<b>No. of Graduations on EZ-Ject</b>	1	2	6	8-14

**Treatment:** One graduation treats one pint of refrigeration oil; two graduations treat one quart.

① Always use the **refrigeration oil charge** when it is known. Refrigerant charge, tonnage and horsepower are approximations.

② One full cartridge is recommended for **all** split systems, including residential applications, even if they hold less than 10 pounds of refrigerant.

## EZ-Ject™ Kits, Dye Cartridges and Accessories What to Order

PRODUCT NUMBER	DESCRIPTION
<b>EZ-100/ECS</b> <b>EZ-100CS</b>	<b>EZ-Ject Universal Dye Injection Kit — for Mineral Oil, PVE, Polyol Ester and Alkyl Benzene Lubricant Systems</b> <b>EZ-Ject Dye Injection Kit — for Mineral Oil Lubricant Systems</b>
<b>EZ-4/ECS</b>	<b>EZ-Ject Universal Dye Cartridge — for Mineral Oil, PVE, Polyol Ester and Alkyl Benzene Lubricant Systems</b> Treats up to 25 lbs (11.3 kg) of refrigerant or 2 gallons (7.6 L) of lubricant (case of six 0.5 oz (14.8 ml) cartridges)
<b>EZ-4CS</b>	<b>EZ-Ject Dye Cartridge — for Mineral Oil Lubricant Systems</b> Treats up to 25 lbs (11.3 kg) of refrigerant or 2 gallons (7.6 L) of lubricant (case of six 0.5 oz (14.8 ml) cartridges)
<b>EZ-4/LT</b>	<b>EZ-Ject Dye Cartridge — for Alkyl Benzene Lubricant Systems</b> Treats up to 25 lbs (11.3 kg) of refrigerant or 2 gallons (7.6 L) of lubricant (case of six 0.5 oz (14.8 ml) cartridges)
<b>EZ-50</b> <b>EZ-25</b>	<b>EZ-Ject Dye Injector Assembly — Plunger, Handle and Fitting</b> <b>EZ-Ject Hose Assembly — with Check Valve and 1/4" Flare Low-loss Fitting</b>

Product numbers with a "CS" suffix denote clamshell packaging

# GLO-STICK® Dye Capsules

## For Small to Medium Size Systems

### 2 GLO-STICK® Dye Cartridges

The revolutionary way to add fluorescent dyes into air conditioning and refrigeration systems — *without* the use of additional refrigerant! Just one connection, then turn the handle to inject the dye. No complicated hookups! Ideal for preventive maintenance programs and for multiple, small AC&R units.

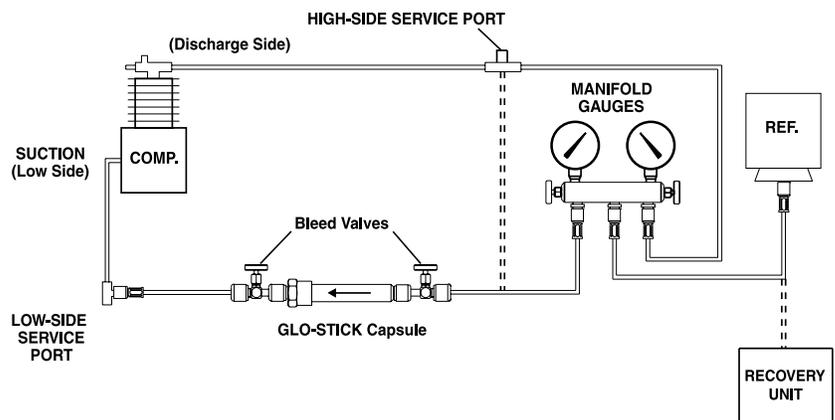
- **Easy to use** — Prefilled, disposable capsules allow dye to be injected into pressurized systems using refrigerant.
- **Clean and precise** — The entire contents is washed into the system.
- **Choice of sizes** — Available in 4 sizes/concentrations to match the capacity of the system.
- **Safe** — Will withstand pressures of more than 1000 psi.



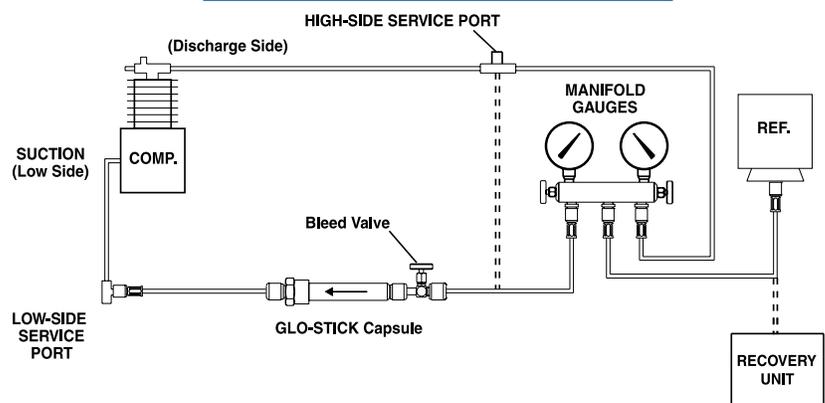
### HOW IT WORKS

- 1. Connect the GLO-STICK® capsule** between the low-pressure gauge of a charged manifold and the service port using bleed valves. Open the valves *slowly* to gradually add AR-GLO dye into the system and let it circulate.
- 2. Scan the system with a Spectroline® inspection lamp.** The *precise* location of *all* leaks will be shown by a bright, yellow-green glow.

GLO-STICK HOOKUP (EXCEPT OPK-50GS/E KIT)



GLO-STICK HOOKUP FOR OPK-50GS/E KIT



1. Use the system pressure to bleed the hose from the AC&R system back to the front valve.
2. Use the pressure from the manifold to bleed the hose from the manifold to the back valve.
3. Install the GLO-STICK® capsule between the pressurized hoses, with the arrow pointing in the direction of the refrigerant flow.
4. To verify that the AC&R system is properly treated with AR-GLO® dye, locate the system site glass or release a small amount of refrigerant/oil onto a dark cloth and check for a bright glow with a Spectroline® inspection lamp.

### Technical Tips!

# GLO-STICK® Dye Capsules

It's easy to choose the right GLO-STICK® dye capsule for your application. Simply read across the chart to locate your system's refrigeration oil charge, refrigerant, tonnage, or horsepower. Then read down to locate its lubricant type. The GLO-STICK® capsule you need is shown where the column and row meet.

## GLO-STICK® A/C Dye Capsules

SYSTEM TYPE ①	Small systems, e.g., ice machines, window A/C units and refrigerators	Residential systems ②	Light commercial and large residential systems ②	Commercial and light industrial, including all split systems ②
<b>Refrigeration Oil Charge</b>	Up to 15 fl oz (450 ml)	Up to 1.6 qt (1.5 L)	1.7 to 3.2 qt (1.6 to 3.0 L)	3.3 qt to 2 gal (3.1 to 7.6 L)
<b>Refrigerant Charge</b>	Up to 2.9 lb (1.3 kg)	3 to 4.9 lb (1.4 to 2.2 kg)	5 to 9.9 lb (2.3 to 4.5 kg)	10 to 25 lb (4.6 to 11.3 kg)
<b>Tons of Cooling</b>	Up to 1 ton	1.1 to 2 tons	2.1 to 6 tons	6.1 to 12 tons
<b>Horsepower</b>	Up to 1 Hp	1.1 to 4 Hp	4.1 to 10 Hp	10.1 to 25 Hp
LUBRICANT TYPE				
<b>Polyol Ester (Universal)</b>	GS-101/ECS	GS-1/ECS	GS-2/ECS	GS-3/ECS
<b>Mineral Oil</b>	GS-101CS	GS-1CS	GS-2CS	GS-3CS
<b>Alkyl Benzene</b>	GS-101/LT	GS-1/LT	GS-2/LT	GS-3/LT
<b>PVE</b>	GS-101/PVE	GS-1/PVE	GS-2/PVE	GS-3/PVE

① Always use the **refrigeration oil charge** when it is known. Refrigerant charge, tonnage and horsepower are approximations.

② Use GS-3 series with **all** split systems, even if they are being used for residential applications and they hold less than 10 lbs of refrigerant.

**NOTE:** Most GLO-STICK® capsules require the use of two BV-50 bleed valves (for use on 1/4 inch flare hose fittings).

## GLO-STICK® Dye Capsules What to Order

PRODUCT NUMBER	Description	How Much to Use
<b>Universal — For Mineral Oil, PVE, Polyol Ester and Alkyl Benzene Lubricant Systems</b>		
<b>GS-101/ECS</b>	Up to 2.9 pounds (1.3 kg) of refrigerant or up to 15 fluid ounces (450 ml) of lubricant [case of six 0.03 oz (1 ml) capsules]	
<b>GS-1/ECS</b>	Up to 4.9 pounds (2.2 kg) of refrigerant or up to 1.6 quarts (1.5 L) of lubricant [case of six 0.5 oz (14.8 ml) capsules]	
<b>GS-2/ECS</b>	5 to 9.9 pounds (2.3 to 4.5 kg) of refrigerant or 1.7 to 3.2 quarts (1.6 to 3.0 L) of lubricant [case of six 0.5 oz (14.8 ml) capsules]	
<b>GS-3/ECS</b>	10 to 25 pounds (4.6 to 11.3 kg) of refrigerant or 3.3 quarts to 2 gallons (3.1 to 7.6 L) of lubricant [case of six 0.5 oz (14.8 ml) capsules]	
<b>GS-70/E</b>	Starter Assortment Pack, Contains One GS-101/E, Two GS-1/E, Two GS-2/E and One GS-3/E	
<b>For Mineral Oil Lubricant Systems</b>		
<b>GS-101CS</b>	Up to 2.9 pounds (1.3 kg) of refrigerant or up to 15 fluid ounces ((450 ml) of lubricant [case of six 0.03 oz (1 ml) capsules]	
<b>GS-1CS</b>	Up to 4.9 pounds (2.2 kg) of refrigerant or up to 1.6 quarts (1.5 L) of lubricant [case of six 0.5 oz (14.8 ml) capsules]	
<b>GS-2CS</b>	5 to 9.9 pounds (2.3 to 4.5 kg) of refrigerant or 1.7 to 3.2 quarts (1.6 to 3.0 L) of lubricant [case of six 0.5 oz (14.8 ml) capsules]	
<b>GS-3CS</b>	10 to 25 pounds (4.6 to 11.3 kg) of refrigerant or 3.3 quarts to 2 gallons (3.1 to 7.6 L) of lubricant [case of six 0.5 oz (14.8 ml) capsules]	
<b>GS-70</b>	Starter Assortment Pack, Contains One GS-101, Two GS-1, Two GS-2 and One GS-3	
<b>For Alkyl Benzene Lubricant Systems</b>		
<b>GS-101/LT</b>	Up to 2.9 pounds (1.3 kg) of refrigerant or up to 15 fluid ounces (450 ml) of lubricant [case of six 0.03 oz (1 ml) capsules]	
<b>GS-1/LT</b>	Up to 4.9 pounds (2.2 kg) of refrigerant or up to 1.6 quarts (1.5 L) of lubricant [case of six 0.5 oz (14.8 ml) capsules]	
<b>GS-2/LT</b>	5 to 9.9 pounds (2.3 to 4.5 kg) of refrigerant or 1.7 to 3.2 quarts (1.6 to 3.0 L) of lubricant [case of six 0.5 oz (14.8 ml) capsules]	
<b>GS-3/LT</b>	10 to 25 pounds (4.6 to 11.3 kg) of refrigerant or 3.3 quarts to 2 gallons (3.1 to 7.6 L) of lubricant [case of six 0.5 oz (14.8 ml) capsules]	
<b>GS-70/LT</b>	Starter Assortment Pack, Contains One GS-101/LT, Two GS-1/LT, Two GS-2/LT and One GS-3/LT	
<b>For Poly Vinyl Ether (PVE) Lubricant Systems</b>		
<b>GS-101/PVE</b>	Up to 2.9 pounds (1.3 kg) of refrigerant or 15 fluid ounces (450 ml) of lubricant [case of six 0.03 oz (1 ml) capsules]	
<b>GS-1/PVE</b>	Up to 4.9 pounds (2.2 kg) of refrigerant or 1.6 quarts (1.5 L) of lubricant [case of six 0.03 oz (1 ml) capsules]	
<b>GS-2/PVE</b>	5 to 9.9 pounds (2.3 - 4.5 kg) of refrigerant or 1.7 - 3.2 quarts (1.6-3.0 L) of lubricant [case of six 0.03 oz (1 ml) capsules]	
<b>GS-3/PVE</b>	10 to 25 pounds (4.6 - 11.3 kg) of refrigerant or 3.3 quarts – 2 gallons (3.1-7.6 L) of lubricant [case of six 0.03 oz (1 ml) capsules]	
<b>GLO-STICK® Accessories</b>		
<b>BV-50</b>	Bleed Valve for all GLO-STICK® capsules	

Product numbers with a "CS" suffix denote clamshell packaging

For residential systems, allow 4 to 6 hours to inspect for leaks.  
For supermarkets, allow 2-3 days.

**Technical Tip!**

# BigEZ™ Dye Injection System

## For Medium to Large Size Systems

### 3 BigEZ™ Multi-Dose Dye Injector and Dye Cartridges

Works with all systems, including high-pressure R-410A systems

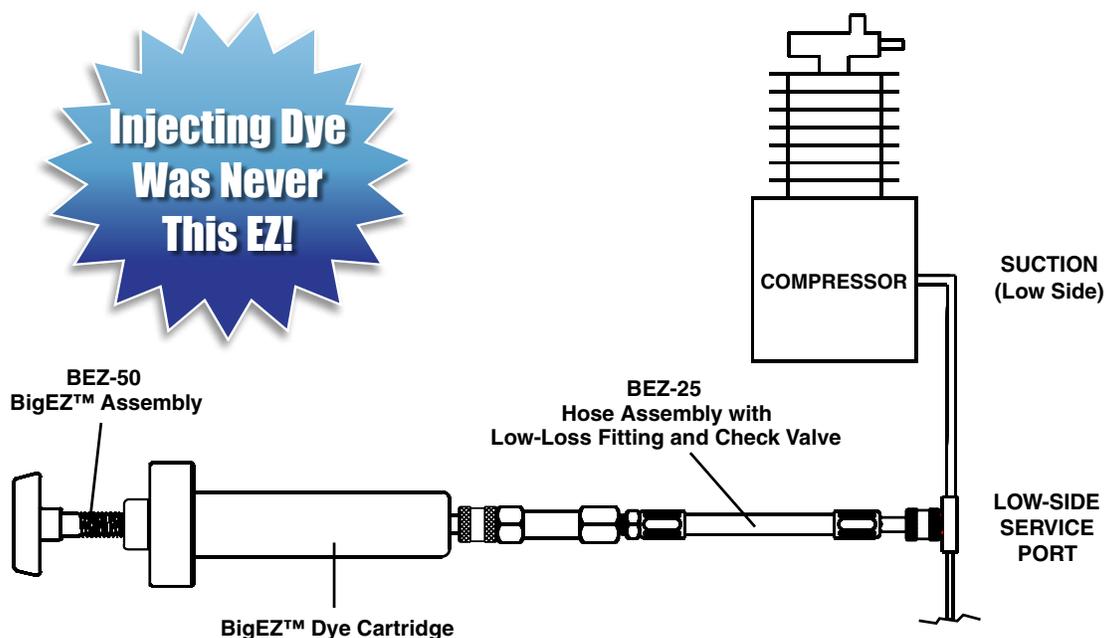
The revolutionary way to add fluorescent dyes into air conditioning and refrigeration systems — *without* the use of additional refrigerant! Just one connection, then turn the handle to inject the dye. No complicated hookups! Ideal for preventive maintenance programs and for multiple, medium to large AC&R units.

- **Cost effective for medium to large size systems** — Each disposable Big-EZ™ dye cartridge treats up to 16 gallons (60.8 L) of lubricant, approximately 400 lbs (180 kg) of refrigerant or 150 tons of coolant.
- **No pouring, no refrigerant, no spills** — Prefilled Big-EZ™ cartridges are clearly labeled with 32 calibrations so you'll introduce *exactly* the right amount of dye every time! When the cartridge is empty, just throw it away. A new one connects in seconds.
- **Check valve** prevents the backflow of dye or refrigerant and allows for easy storage of the hose/cartridge between jobs. It also prevents dye leakage or contamination. Torque from the Big-EZ™ assembly easily overcomes AC&R system pressure, even with R-410A.



### HOW IT WORKS

1. Install the cartridge, then connect the injector hose to the system's low-side service port. Turn the handle to inject the exact amount of dye required and let it circulate.
2. Scan the system with a Spectroliner® inspection lamp. The *precise* location of *all* leaks will be shown by a bright, yellow-green glow.



For plunger-type manual injectors, always use a cloth to wipe residual fluorescent dye from low-loss fitting so no false leak indications occur.

**Technical Tip!**

# BigEZ™ Kits and Dye Cartridges



## BEZ-400/ECS Universal Dye Injection Kit For Mineral Oil, PVE, Polyol Ester and Alkyl Benzene Lubricant Systems

- Contains:
- BEZ-50 Big-EZ™ dye injector assembly
  - BEZ-25 hose assembly complete with check valve and 1/4 inch flare low-loss fitting
  - (1) 4 oz (118 ml) BEZ-4/ECS universal/POE dye cartridge
  - 119690 purge fitting
  - Service labels

**Also available: BEZ-400CS Dye Injection Kit**  
Same as BEZ-400/ECS kit, but features (1) 4 oz (118 ml) BEZ-4CS BigEZ™ dye cartridges for **mineral oil** lubricant systems

## BigEZ™ Dye Cartridges



### BEZ-4/ECS (Universal/Polyol Ester)

- Also available:** BEZ-4CS for **mineral oil** lubricant systems  
BEZ-4/LTCS for **alkyl benzene** lubricant systems  
BEZ-4/OL for **oil-less** lubricant systems  
BEZ-2/E (Universal/Polyol Ester) [package of three 4 oz (118 ml) cartridges]  
BEZ-8/E (Universal/Polyol Ester) [one 8 oz (237 ml) cartridge]

## BigEZ™ Dye Injection Chart

For best results, use the amount of lubricant in the AC&R system to determine the dye dose.

DYE DOSE	SYSTEM SIZE
<b>BEZ-4 Series</b>	
1 line, 1/8 fl oz (3.7 ml)	1/2 gal (1.9 L) lubricant [approximately 12.5 lb (5.7 kg) refrigerant or 5 tons of cooling]
<b>BEZ-2/E</b>	
1 line, 1/8 fl oz (3.7 ml)	42 oz (1.2 L) lubricant [approximately 8.1 lb (3.7 kg) refrigerant or 3 tons of cooling]
<b>BEZ-8/E</b>	
1 line, 1/8 fl oz (3.7 ml)	1/2 gal (1.9 L) lubricant [approximately 12.5 lb (5.7 kg) refrigerant or 5 tons of cooling]

**BEZ-4/OL**— Use 4 oz per 625 lb (283.5 kg) of refrigerant for oil-less systems

## BigEZ™ Kits, Dye Cartridges and Accessories What to Order

PRODUCT NUMBER	DESCRIPTION
<b>BEZ-400/ECS</b> <b>BEZ-400CS</b>	<b>BigEZ Universal Dye Injection Kit</b> — for Mineral Oil, PVE, Polyol Ester and Alkyl Benzene Lubricant Systems <b>BigEZ Dye Injection Kit</b> — for Mineral Oil Lubricant Systems
<b>BEZ-4/ECS</b>	<b>BigEZ Dye Universal Cartridge</b> — for Mineral Oil, PVE, Polyol Ester and Alkyl Benzene Lubricant Systems Treats up to 400 lbs (180 kg) of refrigerant oil or 16 gal (60.8 L) of lubricant in system [One 4 oz (118 ml) dye cartridge]
<b>BEZ-4/CS</b>	<b>BigEZ Dye Cartridge</b> — for Mineral Oil Lubricant Systems Treats up to 400 lbs (180 kg) of refrigerant oil or 16 gal (60.8 L) of lubricant in system [One 4 oz (118 ml) dye cartridge]
<b>BEZ-4/LTCS</b>	<b>BigEZ Dye Cartridge</b> — for Alkyl Benzene Lubricant Systems Treats up to 400 lbs (180 kg) of refrigerant oil or 16 gal (60.8 L) of lubricant in system [One 4 oz (118 ml) dye cartridge]
<b>BEZ-4/OL</b>	<b>BigEZ Dye Cartridges</b> — for Oil-less Lubrication Systems Treats up to 625 lbs (283.5 kg) of refrigerant in system [Package of three 4 oz (118 ml) dye cartridges]
<b>BEZ-2/E</b>	<b>BigEZ Dye Universal Cartridges</b> — for Mineral Oil, PVE, Polyol Ester and Alkyl Benzene Lubricant Systems Treats up to 260 lbs (118 kg) of refrigerant or 10 gal (37.9 L) of lubricant in system [Package of three 4 oz (118 ml) dye cartridges]
<b>BEZ-8/E</b>	<b>BigEZ Dye Universal Cartridge</b> — for Mineral Oil, PVE, Polyol Ester and Alkyl Benzene Lubricant Systems Treats up to 800 lbs (360 kg) of refrigerant or 32 gal (121 L) of lubricant in system [One 8 oz (237 ml) dye cartridge]
<b>BEZ-25</b> <b>BEZ-50</b>	<b>BigEZ Hose Assembly with Check Valve and Low-Loss Fitting</b> <b>BigEZ Dye Injector Assembly</b>

Product numbers with a “CS” suffix denote clamshell packaging

# AR-GLO® Bottled Dyes

## For Very Large Size Systems

### 4 AR-GLO® Bottled Dyes For Very Large Systems

**AR-GLO® bottled dyes are the most economical method of treating very large AC&R systems with dye.**

The faster, safer and easier way to locate even tiny leaks in very large industrial air conditioning and refrigeration systems. AR-GLO® bottled dyes can be poured directly into any large AC&R system or be added by using a standard, refillable injector.



- **AR-GLO/E** is a **universal** dye. It is formulated for **mineral oil, PVE, polyol ester and alkyl benzene** lubricant systems.
- **AR-GLO** is formulated for **mineral oil** lubricant systems.
- **AR-GLO/LT** is formulated for **alkyl benzene** lubricant systems.
- **AR-GLO/OL** is formulated for use with **oil-less** systems such as centrifugal chillers or condensing systems or simple heat transfer fluid systems where there is no lubricant present. AR-GLO/OL will also effectively treat heat transfer systems as long as the heat transfer fluid will take an oil into the solution and allow the dye to circulate.

## HOW IT WORKS

1. Pour AR-GLO® bottled dye directly into the AC&R system or fill an injector with dye and connect it to the low-side access port. Add the exact amount of dye needed and let it circulate.
2. Scan the system with a Spectroline® inspection lamp. The *precise* location of *all* leaks will be shown by a bright, yellow-green glow.

## AR-GLO® Bottled Dyes/What to Order

PRODUCT NUMBER	DESCRIPTION	HOW MUCH TO USE
<b>Universal — for Mineral Oil, PVE, Polyol Ester and Alkyl Benzene Lubricant Systems</b>		
<b>AR-GLO 4/E</b> <b>AR-GLO 4/E-P</b>	Case of 6 - 2 oz (59 ml) bottles 1 - 16 oz (473 ml) bottle	Use 0.25 oz (7.4 ml) per gallon (3.8 L) of refrigeration oil in system
<b>For Mineral Oil Lubricant Systems</b>		
<b>AR-GLO 1</b>	Case of 12 - 0.5 oz (14.8 ml) bottles	Use 0.5 oz (14.8 ml) per 4.9 pounds (2.2 kg) of refrigerant or 1.6 quarts (1.5 L) of lubricant
<b>AR-GLO 2</b>	Case of 12 - 0.5 oz (14.8 ml) bottles	Use 0.5 oz (14.8 ml) per 5 to 9.9 pounds (2.3 to 4.5 kg) of refrigerant or 1.7 to 3.2 quarts (1.6 to 3.0 L) of lubricant
<b>AR-GLO 3</b>	Case of 12 - 0.5 oz (14.8 ml) bottles	Use 0.5 oz (14.8 ml) per 10 to 25 pounds (4.6 to 11.3 kg) of refrigerant or 3.3 quarts to 2 gallons (3.1 to 7.6 L) of lubricant
<b>AR-GLO 4</b> <b>AR-GLO 4-P</b>	Case of 6 - 2 oz (59 ml) bottles 1 - 16 oz (473 ml) bottle	Use 0.25 oz (7.4 ml) per gallon (3.8 L) of refrigeration oil in system
<b>For Alkyl Benzene Lubricant Systems</b>		
<b>AR-GLO 4/LT</b> <b>AR-GLO 4/LT-P</b>	Case of 6 - 2 oz (59 ml) bottles 1 - 16 oz (473 ml) bottle	Use 0.25 oz (7.4 ml) per gallon (3.8 L) of refrigeration oil in system
<b>For Oil-Less Systems</b>		
<b>AR-GLO 4/OL-P</b>	1 - 16 oz (473 ml) bottle	Use one pint (473 ml) per 2,500 pounds (1134 kg) of refrigerant in system

NOTE: AR-GLO 4 formulations are the most concentrated dyes on the market.

## Large Size AC&R Systems

- Supermarkets
- Refrigerated warehouses
- Food and dairy plants
- Industrial facilities



# Specialized Diagnostic Tools

## COBRA™ Series Multi-Purpose Borescopes



### CB-1000 COBRA™ & CB-1036 COBRA-Plus™ (Patented)

Feature built-in UV and white light LEDs. Perfect for refrigerant and fluid leak detection, detecting cracks in heat exchangers, boiler inspections, behind-the-wall moisture or insect investigation, checking duct work clearance and integrity, diagnosing blocked evaporator coils and much more!

- Advanced 7400 pixel imaging bundle and adjustable-focus eyepiece allow crystal-clear viewing
- “No-droop” shaft maintains position for easier access into hard-to-view areas
- Strong, impact- and water-resistant nylon housing stands up to daily abuse
- Pistol grip handle provides steady, comfortable viewing
- Clip-on mirror permits viewing at an angle to detect “hidden” leaks and flaws
- CB-1000 COBRA equipped with 10 mm, 24 inch shaft
- CB-1036 COBRA-Plus features 10 mm, extra-long 36 inch shaft for greater versatility
- Include fluorescence-enhancing glasses and padded carrying case



### CB-600 COBRA-6™ Multi-Purpose Borescope

Features Dual-Max™ dual-head flashlight with super-bright blue and white light LEDs. Designed for specialized applications that require extended reach or viewing into deep recesses. Slides easily into inaccessible areas!

- Ultra-thin, 6mm water- and abrasive-resistant shaft gets into spaces and orifices other scopes miss
- Advanced 7400 pixel imaging bundle provides unsurpassed resolution and clarity
- Versatile, press-fit coupler design allows for quick changing of light sources
- Extra-long 38 inch (96.5 cm) shaft for added reach and versatility
- Clip-on, angled mirror helps pinpoint leaks and flaws normally hidden from view
- Includes fluorescence-enhancing glasses and padded carrying case



### CCV-1000 COBRA CAM™ UV/White Light Videoscope

Feature-packed video inspection scope equipped with UV and white light LEDs. Ideal for fluid leak detection, component inspection and a wide range of other inspection applications!

- Video Display Unit (VDU) features large high-resolution 3.5 in (8.9 cm) color LCD screen for crystal-clear viewing
- Compact, 10 mm imager head with side-mounted camera surrounded by four UV and two white light LEDs allows easy access into confined spaces
- Camera wand includes image capture button, LED light intensity adjustment and UV/white light toggle switch for simple, one-handed operation
- Captured images can be repositioned, rotated and zoomed for greater detail
- Lightweight, shock- and water-resistant housing with rubberized grip for safe, easy handling
- USB port and SD card (included) for downloading captured images to a personal computer
- Includes rechargeable NiMH battery pack, charger, charging cradle, VDU stand and padded carrying case

# Specialized Diagnostic Tools

## MDE-2000 Marksman™ II Ultrasonic Diagnostic Tool

Features advanced heterodyne circuitry and “Sound Signature technology” to convert and amplify inaudible ultrasonic sounds into audible “natural” sounds. Provides quick diagnosis and detection of problems before they become major breakdowns.



- Convenient, easy-to-use, touch-control sensitivity pad and power switch
- 5-LED signal intensity indicator and audible alarm easily pinpoint the exact problem source
- Internal Noise Control (INC) ensures tool is unaffected by ambient noise. Ideal for use in extremely noisy environments.
- Self-adjusting Automatic Gain Control (AGC) circuitry enhances sensitivity and simplifies operation
- Precision-engineered hollow air probe helps isolate leak sources in cramped areas
- Solid contact probe quickly pinpoints wear and damage to internal components and electric motors — *without disassembly!*
- Unique ultrasonic emitter helps locate faulty seals, gaskets and weather stripping in doors, windows, ductwork and other non-pressurized enclosures
- Powered by two “D” cell alkaline batteries (included)

**MDE-2000 kit includes** ultrasonic receiver, ultrasonic emitter, hollow air probe, contact probe, headphones and rugged carrying case.

**Also available:**

**MD-600** (same as MDE-2000, but without ultrasonic emitter)

**MDE-2000NC** (same as MDE-2000, but with HP-100 noise-canceling headphones)

**MD-600NC** (same as MDE-2000NC, but without ultrasonic emitter)

## ELD-1000 Pro-Alert™ Electronic Refrigerant Leak Detector

Features high performance heated-diode sensor technology!



- Optimum sensitivity detects leaks down to 0.25 oz/yr.
- Sensor life up to 200 hours or more
- Automatically self-calibrates to neutralize background contamination
- Sensitive to all CFC, HFC and HCFC refrigerants
- High/low switch for accurate diagnosis of both large and small leaks
- Variable-intensity audible alarm plus flashing LED help pinpoint leaks fast
- Flexible metal probe holds its position in tight quarters
- Easily replaceable foam filter protects sensor and pump
- Includes replacement filters, (2) D cell batteries and durable plastic carrying case



# ACID-BUSTER™ Acid Scavenging Solution



## AB-100CS ACID-BUSTER™ Injection Kit

*Acid Scavenging Solution — Eliminates Acid Buildup in AC&R Systems. Prevents Compressor Burnout! Ideal for small to medium sized systems!*

**Works with all lubricants and systems, including high-pressure R-410A systems.**

Contains:

- EZ-50 EZ-Ject™ injector assembly
- EZ-25 hose assembly complete with check valve and ¼ inch flare low-loss fitting
- (2) AB-5CS 0.5 oz (14.8 ml) EZ-Ject™ cartridges filled with ACID-BUSTER™ acid scavenging solution.



## AB-400CS ACID-BUSTER™ Injection Kit

*Acid Scavenging Solution — Eliminates Acid Buildup in AC&R Systems. Prevents Compressor Burnout! Ideal for medium to large sized systems!*

**Works with all lubricants and systems, including high-pressure R-410A systems.**

Contains:

- BEZ-50 BigEZ™ injector assembly
- BEZ-25 hose assembly complete with check valve and ¼ inch flare low-loss fitting
- (1) AB-4CS 4 oz (118 ml) BigEZ™ cartridge filled with ACID-BUSTER™ acid scavenging solution.



AB-5CS



AB-4CS



AB-8

## Replacement ACID-BUSTER™ Universal Cartridges

*Filled with ACID-BUSTER™ Acid Scavenging Solution*

**AB-5CS EZ-Ject™, 0.5 oz (14.8 ml) cartridge**

**AB-4CS BigEZ™, 4 oz (118 ml) cartridge**

**AB-8 BigEZ™, 8 oz (237 ml) cartridge**

## ACID-BUSTER™ Acid Scavenging Solution

Product Number	Injector	Cartridge Size	Dosage <sup>①</sup>
AB-5CS	EZ-Ject™	0.5 oz (14.8 ml)	4 lines, 1/8 oz (3.7 ml) per 8 oz (237 ml) of refrigerant oil. One cartridge treats up to 1 qt (946 ml) of oil.
AB-4CS	BigEZ™	4 oz (118 ml)	1 line, 1/8 oz (3.7 ml) per 8 oz (237 ml) of refrigerant oil. One cartridge treats up to 2 gal (7.6 L) of oil.
AB-8	BigEZ™	8 oz (237 ml)	1 line, 1/8 oz (3.7 ml) per 8 oz (237 ml) of refrigerant oil. One cartridge treats up to 4 gal (15.1 L) of oil.

<sup>①</sup> On severely acidic systems, double the dosage shown

For additional information, please refer to Spectrolin **Technical Bulletin #190**, available on our website: [www.spectrolin.com](http://www.spectrolin.com).

# GLO-AWAY™ Dye Cleaner, Drip Plugs and Tamper-Evident Straps

## GLO-AWAY™ Dye Cleaner

**Removes all traces of fluorescent dye** from repaired leak sites so repairs can be verified.

**Safe for the environment** — water-based, nontoxic, nonflammable, noncarcinogenic, biodegradable and has no offensive odor.

**Contains no harmful solvents or CFCs** — safe for use on plastic, rubber and metals. It can be shipped without a hazardous material surcharge.



8 oz (237 ml)  
spray bottle



16 oz (437 ml)  
refill bottle

## What to Order

Product Number	Description
CR-800	1 – 8 oz (237 ml) refillable bottle with spray nozzle
CR-800C	12 – 8 oz (237 ml) refillable bottles with spray nozzle
CR-1600	1 – 16 oz (473 ml) refill bottle
CR-1600C	12 – 16 oz (473 ml) refill bottles

## DP-25 Drip Plugs

Made of special sponge-type foam to soak up residual dye in low-side hose coupler and in O-ring grooves.

- Absorbs dye to prevent dripping
- Prevent messy toolboxes
- Keep hands dye-free
- Push into the cavity of the coupler on any injector system
- Come 25 to a pack



## TES-31 Tamper-Evident Straps

Protects AC&R systems against refrigerant cross-contamination and unqualified repairs. Warranties your work and ensures return business. Safeguards your service equipment.

- Fast and easy to use
- No special tools required
- Packaged in convenient zip-lock storage bag
- Comes complete with 10 tamper-proof tie straps with unique serial numbers and matching labels



# Lamp and Kit Accessories



**BP-12A**  
BATTERY PACK, Complete with RB-12S Battery Charger, Rechargeable Battery and Nylon Carrying Case. For MAXIMA™ MLK-35M Lamp Kits



**BP-25A**  
BATTERY PACK, Complete with BR-150A Smart Battery Charger, Rechargeable Battery and Nylon Carrying Case. For TRI-365M AC/DC Lamp Kit



**CC-110**  
CARRYING CASE for OPK-50GS/E, OPK-50EZ/E and OPK-300 Lamp Kits



**CC-130**  
CARRYING CASE for OPK-300EZ/E, OPK-300BEZ/E and OPK-300BEZ/OL Lamp Kits



**CC-120A**  
CARRYING CASE for BIB-150P Lamp Kits



**CC-350**  
CARRYING CASE for MAXIMA™ ML-3500S Series Lamps



**CC-365**  
CARRYING CASE for OPTI-LUX™ OLX-365 and OPTIMAX™ OPX-365 Flashlights



**CC-370A**  
CARRYING CASE for TRITAN™ TRI-365M Lamp Kit



**UVS-30**  
SPECTACLES, UV-Absorbing



**UVS-40**  
SPECTACLES, Fluorescence-Enhancing



**UVG-50**  
GOGGLES, UV-Absorbing

Using genuine Spectrolin<sup>®</sup> replacement parts ensures that lamps will operate at their optimum performance.

# Replacement Parts



**BLE-35RA**  
SPOT BULB/REFLECTOR ASSEMBLY  
for MAXIMA™ ML-3500 Series Lamps

**BLE-35RAF**  
FLOOD BULB/REFLECTOR  
ASSEMBLY for MAXIMA™  
ML-3500 Series Lamps



**BLE-150CS-100/M**  
BULB for BIB-150P Series Lamps,  
100 volt version

**BLE-150CS-115/M**  
BULB for BIB-150P Series Lamps,  
115 volt version

**BLE-150CS-230/M**  
BULB for BIB-150P Series Lamps,  
230 volt version



**124482**  
LED Assembly for OPX-3000 Lamp



**2F350**  
DIFFUSING FILTER for  
MAXIMA™ ML-3500S Series Lamps

**2F958**  
FILTER for MAXIMA™ ML-3500S  
and BIB-150P Series Lamps



**RB-12S**  
SMART BATTERY CHARGER  
for BP-12A Battery Pack



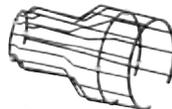
**BR-150A**  
SMART BATTERY CHARGER  
for BP-25A Battery Pack



**127446**  
SMART BATTERY CHARGING  
CRADLE WITH AC CORD  
for OPTI-LUX™ OLX-365 Flashlight



**FP-365**  
RUBBER BUMPER  
with Borofloat® glass for  
TRITAN™ TRI-365 Series Lamps



**HGS-150A**  
HEAT GUARD/STAND  
for BIB-150P Series Lamps



**IM-50**  
TELESCOPIC INSPECTION MIRROR  
for use with all Lamps



**127243**  
BELT HOLSTER for  
OPX-500CS, OPX-365 and OPX-3000  
Flashlights



**127574**  
BELT HOLSTER for OPD-500CS,  
OPX-400CS and OPTI-LUX™ OLX-365  
Flashlights



**125565**  
RUBBER LAMP PROTECTOR  
for OPX-365 Lamp



**124827**  
CORD SET, 8 Foot, 7 pin, 230V AC,  
for MAXIMA™ ML-3500 Series Lamps

**124828**  
CORD SET, 8 Foot, 7 pin, 120V or 100V AC  
for MAXIMA™ ML-3500 Series Lamps



**PSA-250A**  
POWER SUPPLY ADAPTER with 12V  
DC and 120V AC charging cords for  
TRITAN™ TRI-365M AC/DC Lamp Kit



**RB-300**  
SMART AC CHARGER for OPX-365  
and OPX-3000 Lamps (120V/60Hz)



**RB-300DC**  
SMART DC CHARGER for  
OPX-365 and OPX-3000 Lamps



**125608**  
BATTERY STICK for OPX-365  
and OPX-3000 Lamps



**127568**  
LITHIUM-ION BATTERY for  
OPTI-LUX™ OLX-365 Flashlight

Using genuine Spectroline® replacement parts ensures that lamps will operate at their optimum performance.

# Warranty Information

## Warranty

All equipment is warranted against defects in manufacture. Spectronics Corporation's obligation under this warranty is limited to repairing or replacing, at the option of Spectronics Corporation, any part(s) of the product which, if properly installed, used and maintained, proves upon factory examination to have been defective in materials or workmanship within 12 months from the date of delivery to the customer.

This warranty does not apply to any component which (1) is normally consumed in operation or (2) has a normal life inherently shorter than the warranty stated. For example, bulbs, filters and rechargeable batteries are warranted for 30 days. In addition, Spectronics Corporation does not warrant any instrument that has been subjected to misuse, negligence or accident, or has been repaired or altered by anyone other than Spectronics Corporation.

This warranty is in place of all other warranties of quality. There are no other warranties either oral, written, express, implied or statutory. **IMPLIED WARRANTIES OF FITNESS FOR PURPOSE AND MERCHANTABILITY ARE EXCLUDED.** This warranty and your remedies thereunder are solely as stated in this form. In no event shall Spectronics Corporation be liable for special, indirect, incidental or consequential damages, nor for any damages arising out of delay in shipment or production.

## Warranty

### **PRO-Alert™ Electronic Refrigerant Leak Detector and Marksman II™ Ultrasonic Diagnostic Tool:**

#### **Two Year Warranty**

The precision quality instrument you have chosen is of the finest design and craftsmanship. As such, Spectronics Corporation warrants that when delivered it will be free from defects in manufacture.

Spectronics Corporation's obligation under this warranty is limited to repairing or replacing, at the option of Spectronics Corporation, any part(s) of the product which if properly installed, used and maintained, proves upon factory examination to have been defective in materials or workmanship within two (2) years from the date of delivery to the customer.

This warranty does not apply to any component that deteriorates under normal use or has a normal life inherently shorter than the warranty stated. For example, power cells, sensors and filters are warranted for 30 days. In addition, Spectronics Corporation does not warrant any instrument that has been subjected to misuse, negligence or accident, or has been repaired or altered by anyone other than Spectronics Corporation.

This warranty is in place of all other warranties of quality. There are no other warranties either oral, written, express, implied or statutory. **IMPLIED WARRANTIES OF FITNESS FOR PURPOSE AND MERCHANTABILITY ARE EXCLUDED.** This warranty and your remedies thereunder are solely as stated here. In no event shall Spectronics Corporation be liable for special, indirect, incidental or consequential damages, nor for any damages arising out of delay in shipment or production.

## Product Specifications

Spectronics Corporation reserves the right to alter product specifications without notice. Spectronics is under no obligation to make similar changes in its products previously produced.

# Product Index

## GLO-STICK®, BigEZ™ AND EZ-JECT™ LEAK DETECTION KITS

HVLD-80GS . . . . .	6
OPK-50EZ/E . . . . .	5
OPK-50GS/E . . . . .	5
OPK-300BEZ/E . . . . .	4
OPK-300BEZ/OL . . . . .	4
OPK-300EZ/E . . . . .	4
OPK-300EZ/E/DC . . . . .	4

## LEAK DETECTION LAMP KITS

(With these kits, choose BigEZ™ or EZ-Ject™ cartridges, GLO-STICK® capsules or AR-GLO® bottled dyes separately)

LD-80SK . . . . .	6
MLK-35 . . . . .	7
MLK-35M . . . . .	7
TRI-365M . . . . .	7

## LEAK DETECTION LAMPS

BIB-150P . . . . .	6, 9
BIB-150PR . . . . .	6, 9
BIB-150PX . . . . .	6, 9
ML-3500S . . . . .	7, 9
ML-3500MS . . . . .	7, 9
OLX-365 . . . . .	5, 8
OPD-500CS . . . . .	5, 8
OPX-365 . . . . .	4, 8
OPX-400CS . . . . .	5, 8
OPX-500CS . . . . .	5, 8
OPX-3000 . . . . .	4, 8
TRI-365 . . . . .	7, 9
TRI-365M . . . . .	7, 9

## BigEZ™ DYE INJECTION SYSTEM

BEZ-400CS . . . . .	17
BEZ-400/ECS . . . . .	17
BEZ-4CS . . . . .	17
BEZ-4/ECS . . . . .	17
BEZ-2/E . . . . .	17
BEZ-8/E . . . . .	17
BEZ-4/LTCS . . . . .	17
BEZ-4/LT . . . . .	17
BEZ-4/OL . . . . .	17

## BigEZ™ ACCESSORIES

BEZ-25 . . . . .	16, 17
BEZ-50 . . . . .	16, 17

## EZ-JECT™ DYE INJECTION SYSTEM

EZ-100CS . . . . .	13
EZ-100/ECS . . . . .	13
EZ-4CS . . . . .	13
EZ-4/ECS . . . . .	13
EZ-4/LT . . . . .	13

## EZ-JECT™ ACCESSORIES

EZ-25 . . . . .	12, 13
EZ-50 . . . . .	12, 13
119690 . . . . .	13

## GLO-STICK® CAPSULES

### Universal — For Mineral Oil, PVE, Polyol Ester and Alkyl Benzene Lubricant Systems:

GS-101/ECS . . . . .	15
GS-1/ECS . . . . .	15
GS-2/ECS . . . . .	15
GS-3/ECS . . . . .	15
GS-70/E . . . . .	15

### For Mineral Oil Lubricant Systems:

GS-1CS . . . . .	15
GS-2CS . . . . .	15
GS-3CS . . . . .	15
GS-70 . . . . .	15
GS-101CS . . . . .	15

### For Alkyl Benzene Lubricant Systems:

GS-1/LT . . . . .	15
GS-2/LT . . . . .	15
GS-3/LT . . . . .	15
GS-70/LT . . . . .	15
GS-101/LT . . . . .	15

### For PVE Lubricant Systems:

GS-101/PVE . . . . .	15
GS-1/PVE . . . . .	15
GS-2/PVE . . . . .	15
GS-3/PVE . . . . .	15

## GLO-STICK® ACCESSORIES

BV-50 . . . . .	15
-----------------	----

## AR-GLO® BOTTLED DYES

### Universal — For Mineral Oil, PVE, Polyol Ester and Alkyl Benzene Lubricant Systems:

AR-GLO 4/E . . . . .	18, 19
AR-GLO 4/E-P . . . . .	18, 19

## For Mineral Oil Lubricant Systems:

AR-GLO 1 . . . . .	19
AR-GLO 2 . . . . .	19
AR-GLO 3 . . . . .	19
AR-GLO 4 . . . . .	19
AR-GLO 4-P . . . . .	19

## For Alkyl Benzene Lubricant Systems:

AR-GLO 4/LT . . . . .	19
AR-GLO 4/LT-P . . . . .	19

## For Oil-less Systems:

AR-GLO 4/OL-P . . . . .	19
-------------------------	----

## ACID-BUSTER™ ACID SCAVENGING SYSTEM

AB-4CS . . . . .	21
AB-5CS . . . . .	21
AB-100CS . . . . .	21
AB-400CS . . . . .	21
AB-8 . . . . .	21

## GLO-AWAY™ DYE CLEANER and ACCESSORIES

CR-800 . . . . .	22
CR-800C . . . . .	22
CR-1600 . . . . .	22
CR-1600C . . . . .	22
DP-25 . . . . .	22
TES-31 . . . . .	22

## SPECIALIZED DIAGNOSTIC TOOLS

CB-600 . . . . .	19
CB-1036 . . . . .	19
CB-1000 . . . . .	19
CCV-1000 . . . . .	19
ELD-1000 . . . . .	20
MD-600 . . . . .	20
MD-600NC . . . . .	20
MDE-2000 . . . . .	20
MDE-2000NC . . . . .	20

## LAMP & KIT ACCESSORIES

BP-12A . . . . .	23
BP-25A . . . . .	23
CC-110 . . . . .	23
CC-120A . . . . .	23
CC-130 . . . . .	23
CC-140 . . . . .	23
CC-350 . . . . .	23
CC-365 . . . . .	23
CC-370A . . . . .	23

UVS-30 . . . . .	23
UVS-40 . . . . .	23
UVG-50 . . . . .	23

## REPLACEMENT PARTS

BLE-35RA . . . . .	24
BLE-35RAF . . . . .	24
BLE-150CS-100/M . . . . .	24
BLE-150CS-115/M . . . . .	24
BLE-150CS-230/M . . . . .	24
BR-150A . . . . .	24
FP-365 . . . . .	24
HGS-150A . . . . .	24
IM-50 . . . . .	24
PSA-250A . . . . .	24
RB-12S . . . . .	24
RB-300 . . . . .	24
RB-300DC . . . . .	24
119846 . . . . .	24
124482 . . . . .	24
124827 . . . . .	24
124828 . . . . .	24
125565 . . . . .	24
125608 . . . . .	24
127243 . . . . .	24
127446 . . . . .	24
127568 . . . . .	24
127574 . . . . .	24
2F325 . . . . .	24
2F350 . . . . .	24
2F958 . . . . .	24

## APPLICATIONS INDEX

### Special Applications:

Ammonia Systems . . . . .	10
---------------------------	----

### Hook Up Diagrams:

EZ-Ject™ Multi-Dose Injector and Dye Cartridges . . . . .	12
GLO-STICK™ Dye Capsules . . . . .	14
BigEZ™ Multi-Dose Injector and Dye Cartridges . . . . .	16

Product number with a "CS" suffix denote clamshell display packaging

# Customer Service and Support

## Company Background

Spectronics Corporation *invented* fluorescent leak detection in 1955 and is the world's leading manufacturer of ultraviolet equipment and fluorescent materials. Spectronics supplies over 1,000 different products for the HVAC/R, laboratory, biotechnology, industrial, forensics, financial, automotive and other markets.

Spectrolite® fluorescent leak detection was laboratory and field tested extensively before it was introduced to the stationary air conditioning and refrigeration (AC&R) market in 1989. Spectronics' modern, 100,000 square-foot manufacturing facility and office headquarters is located in Westbury, New York. Nearly 200 personnel are involved in all phases of research and development, manufacturing, sales, marketing, customer service, and logistical and technical support.

Over five decades since its inception, the goal of Spectronics remains the same — to produce effective, top-quality products with the utmost dedication to customer satisfaction.



**SPECTRONICS CORPORATION**

## Customer Service & Technical Assistance

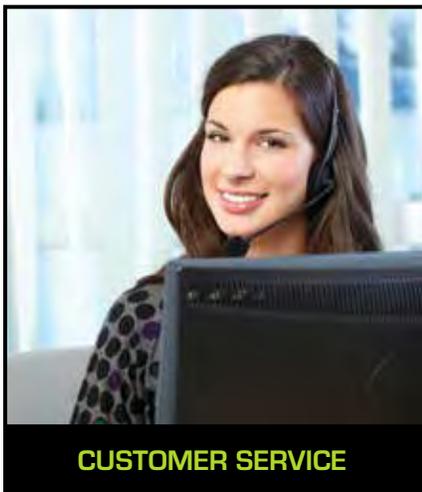
Product literature, instructions and a full staff of trained customer service representatives and technical service engineers are available for support. Additional product information and support are available on our website.

➤ **Order Information**

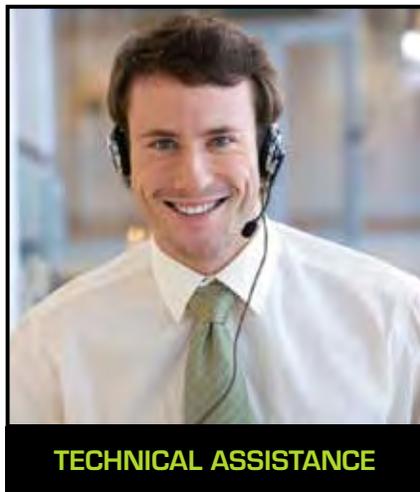
➤ **Local Sales Representatives**

➤ **Technical Assistance**

➤ **Authorized Distributors**



**CUSTOMER SERVICE**



**TECHNICAL ASSISTANCE**



**WEBSITE**

**Call Toll-Free:**

**1-800-274-8888**

(Outside the U.S. and Canada: 516-333-4840)

**Fax Toll-Free:**

**1-800-491-6868**

(Outside the U.S. and Canada: 516-333-4859)

**Website**

**[www.spectrolite.com](http://www.spectrolite.com)**

# Need Help?

**Call Toll-Free:**

**1-800-274-8888**

(Outside the U.S. and Canada: 516-333-4840)

**Fax Toll-Free:**

**1-800-491-6868**

(Outside the U.S. and Canada: 516-333-4859)

**Website**

**[www.spectroline.com](http://www.spectroline.com)**

**Proud Members of:**



Heating, Air conditioning & Refrigeration Distributors International



**SPECTRONICS  
CORPORATION**

956 Brush Hollow Road, P.O. Box 483  
Westbury, New York 11590  
800-274-8888 • 516-333-4840  
Fax: 800-491-6868 • 516-333-4859

**[www.spectroline.com](http://www.spectroline.com)**



Follow us on Facebook and Twitter