



# See•All® Moisture & Liquid Indicator

INSTALLATION AND SERVICING INSTRUCTIONS  
SD-21 / 112016



## GENERAL

The Sporlan See•All® Moisture & Liquid Indicator may be installed anywhere in the liquid line. When located between the Catch-All® Filter-Drier and the expansion device, bubbles indicate a shortage of refrigerant or a restriction in the liquid line such as a plugged drier. **Change the drier when the color is in the caution or wet range.** When received, the indicator may not indicate dry. This in no way affects operation or calibration of the indicator. **The action of the indicator element is completely reversible and will change color whenever the moisture content of the system changes.**

The indicating element may change color rapidly on some installations, while others may take a much longer period of time. New systems or systems where the drier has been replaced will cause the indicator to start changing color almost immediately. However, it is recommended that the equipment **operate for 12 hours** to allow the system to reach equilibrium before deciding if the drier should be changed.

The drying of the system should be continued until the indicating element stays **Dark Green**.

## MOISTURE CONTENT PPM

REFRIGERANT	LIQUID LINE TEMPERATURE	SEE • ALL SHOWS		
		Green – DRY	Chartreuse – CAUTION	Yellow – WET
R-22	75°F	↓30	30-90	↑90
	100°F	↓45	45-130	↑130
R-32	75°F	↓125	125-500	↑500
	100°F	↓145	145-580	↑580
R-134a	75°F	↑50	50-200	↑200
	100°F	↑80	80-225	↑225
R-290	75°F	↓15	15-30	↑30
	100°F	↓45	45-60	↑60
R-404A, R-507	75°F	↓15	15-90	↑90
	100°F	↓30	30-140	↑140
R-407A, R-407C, R-407F	75°F	↓120	120-280	↑280
R-410A	75°F	↓75	75-150	↑150
R-448A, R-449A	75°F	↓45	45-150	↑150
	100°F	↓50	50-255	↑255
R-450A, R-513A*	75°F	↓30	30-90	↑90
	100°F	↓50	50-150	↑150
R-744	20°F	↓40	40-65	↑65
R-1234ze	75°F	↓40	40-80	↑80
	100°F	↓55	55-120	↑120

The moisture change level of the refrigerant in Parts Per Million (PPM) for the various See•All Moisture Indicator colors is shown below.

## BRAZING INSTRUCTIONS

See•All Moisture & Liquid Indicators with 1/4" through 1-1/8" ODF connections are ready for brazing as received. Avoid overheating the body since extreme heat could damage the glass joint. If a wet rag is used it should be wrapped around the fittings and bottom of the body, but not around the top of the See•All body. In this way, any moisture inside the See•All will not condense on the cool glass surface and wash away the color indicator material.

The **indicator cartridge** must be removed from the SA-211, SA-213 and SA-217 (1-3/8", 1-5/8" and 2-1/8" line sizes) See•All indicators before brazing into the liquid line. It is shipped hand tight.

All See•All indicators with sweat fittings are suitable for use with any of the **commonly used** brazing

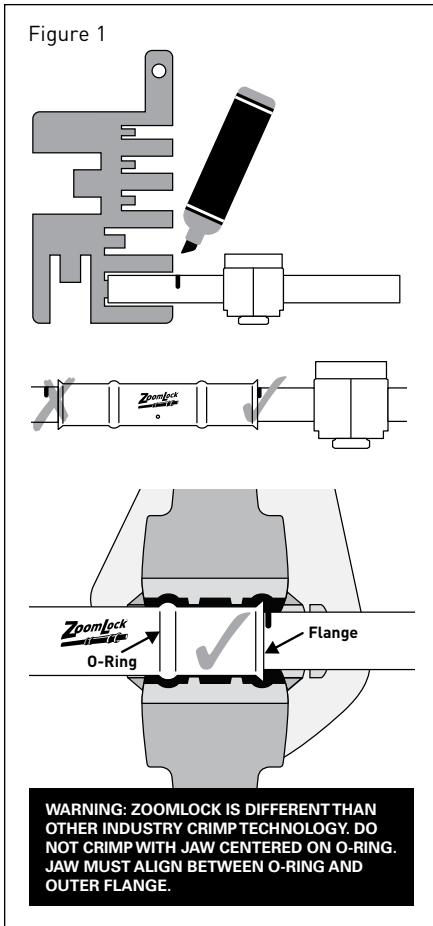
alloys including silver solder, Sil-Fos, Phos-copper or Sta-Brite.

**BRAZING TECHNIQUE**

1. Fittings are clean and ready to braze as received. **Avoid excessive polishing with steel wool** since this may rub off the copper plating on models with plated steel fittings, making brazing more difficult.
2. During brazing, bleed an inert gas (dry nitrogen or CO<sub>2</sub>) through the tubing and See•All.
3. Use a torch that is large enough to rapidly heat the line size being used.
4. Direct the flame away from the See•All body.
5. Perform the brazing as rapidly as possible.

**FLARING TECHNIQUE**

1. Deburr tubing before flaring.
2. Use a drop of oil on the cone of the flaring tool.
3. Place drops of refrigerant oil on the front and back surface of the flare before drawing the nut tight. This allows flare and fitting to mate smoothly.



**4. It is especially important to use oil on joints where both the male and female fittings are plated steel. The oil will prevent galling.**

**ZOOMLOCK™ INSTRUCTIONS**

The Type PZK models with ODM X ODM connections are compatible with ZoomLock™ braze-free fittings. Please see SD-404 for thorough instructions for installing ZoomLock braze-free fittings.

1. Deburr and clean copper to ensure tube ends are free and clear of any residual burrs, oxidation, dirt or debris. Use the ZoomLock depth gauge to determine the proper insertion depth. Mark the tubing with a permanent marker to indicate proper insertion depth on every tube.
2. Push the ZoomLock fitting onto the tube. Use the mark to assure insertion depth and secure fit.
3. Use the grooves in the jaws as a guide to properly place the crimping jaws onto the fitting. (See illustration below for proper crimping alignment.) Press and continue to hold the trigger on the ZoomLock Crimping Tool until the tool completes its cycle. Remove the Crimping Tool from the fitting and visually inspect for a “RLS” mark on the tube connection, indicating a proper crimp.

**WARNING: ZOOMLOCK IS DIFFERENT THAN OTHER INDUSTRY CRIMP TECHNOLOGY. DO NOT CRIMP WITH JAW CENTERED ON O-RING. JAW MUST ALIGN BETWEEN O-RING AND OUTER FLANGE.**

**NOTE:** The Type PZK ODM X ODM models can be brazed into the ODF solder connections of other components or tubing using the brazing instructions contained herein.

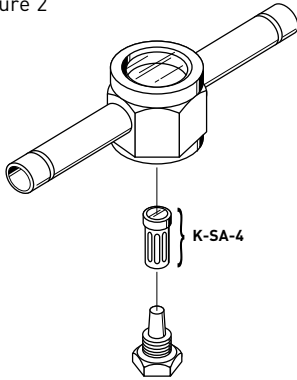
**APPLICATION SUGGESTIONS**

The Sporlan See•All Moisture & Liquid Indicator should not be used on systems containing **methyl alcohol** or similar liquid dehydrating agents unless an oversize Catch-All Filter-Drier has been installed previously to remove these additives. Certain colored liquid leak detectors in a system may permanently discolor the moisture indicating element.

On systems containing an **excessive amount of water**, as a result of a broken condenser or water chiller, do not install the See•All indicator until the Catch-All Filter-Drier or the replaceable cores have been changed several times to reduce the initial high moisture content. Liquid water will dissolve and wash away the color indicator material resulting in a light yellow or white color. This type of damage is permanent - the See•All will no longer change color. If the indicator paper is damaged, it is preferable to change the See•All.

When the See•All is soldered in a **difficult location**, it may be desirable to change only the indicator. This can be done with the fused glass models manufactured since 1984. Sporlan kit K-SA-4 consists of a new slotted cylinder and indicator assembly. These parts can be replaced by removing the plug opposite to the glass. See Figure 2.

Figure 2



The recommended clean-up procedure **after a hermetic motor burnout** is described completely in Bulletin 40-10. A See•All should be installed after the clean-up procedure is nearly complete (when the Catch-All Filter-Drier is being replaced.)

**BYPASS INSTALLATION**

The See•All Moisture & Liquid Indicator may be installed in a bypass to the main liquid line when desired - and must be installed in this manner on lines larger than 2-1/8" OD.

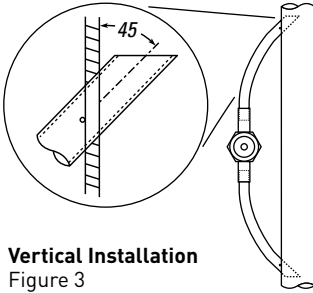
**BYPASS INSTALLATION KITS**

Bypass Installation Kits are available from your Sporlan Wholesaler. While satisfactory liquid and moisture indication will generally be obtained in any position, preferred methods of installation are shown in Figures 3 and 4.

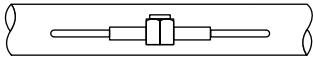
**SPECIAL CONDITIONS OF USE**

Warning: To avoid possible electrostatic charge only clean with a cloth damp with water. Operating fluid temperature range shall be limited to a range from -50°F (-46°C) to 149°F (65°C). Sporlan See•All indicators are suitable for use with the halocarbon refrigerants, including 22, 134a, 290, 404A, 407A, 407C, 407F, 410A, 448A, 449A, 450A, 507, 513A, 1234yf, and 1234ze. Listed by Underwriter's Laboratories, Inc. for a working pressure of 650 psig (44.8 bar) or 4482 kPa.

Refer to Bulletin 70-10 for more information on the See-All Liquid and Moisture Indicators installation, servicing, and Δ ATEX requirements. This symbol indicates that the product is in compliance with ATEX Directive 94/9/CE under II 3 G TX Ta -46°C (-50°F) to +65°C (149°F).



**Vertical Installation**  
Figure 3



**Horizontal Installation**  
Figure 4

**⚠ WARNING – USER RESPONSIBILITY**

**Failure or improper selection or improper use of the products described herein or related items can cause death, personal injury and property damage.**

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

