ZERO-LEAK GOLD® PLUG TROUBLESHOOTING

LEAK CHECK PROCEDURE

There may be instances when a leak is detected at a port with a Zero-Leak Gold Plug installed. It is necessary to determine the root cause of that leak in order to correct and prevent the leak. The Troubleshooting Checklist for discovering the leak root cause and establishing Corrective / Preventive Action is designed for those situations.

NOTE BEFORE BEGINNING TROUBLESHOOTING

The Leak Check Procedure may be continued once it has been determined that a ZLGP is in the port. Proceed through each step listed below in sequence until a determination of the root cause and Corrective / Preventive Action of the leak are made.

☐ 1. **The first step is to determine the specific type of plug that is installed.**
What does it say on the top of the plug? All ZLGPs will be engraved with the name "Zero-Leak Gold" for positive identification as well as engraved with the size of the plug. A "-12" mark denotes a SAE -12 (1-1/16" - 12) compatible plug and a "16 X 1.5" mark ZLGP denotes a metric 12MM compatible plug. A complete list of ZLGP SAE J514 and Metric plug sizes may be found at www.zeroleak.com/technical-info/sizes-drawings/.

Results / Findings

"Zero-Leak Gold" on top of plug? _____
If yes, size: _____
If no, identify type & size: _____

Initials _____ **Date** _____

☐ 2. **Was the originally supplied ZLGP O-ring replaced at any time with an SAE or Metric plug O-ring?**
ZLGP O-rings are smaller in size and cross-sectional area than the O-rings used with their SAE J514 and Metric O-ring boss plug counterparts. Cross-sectional areas of the SAE J514 and Metric plug O-rings are greater than the cross-sectional area of the recess under the head of the ZLGP and therefore will not allow for the ZLGP metal-to-metal seal to engage properly. When the larger SAE J514 O-ring is installed on a ZLGP, it may be forced into the threads of the port and plug where it can become nibbled, and it may also be extruded from the spot faced area of the port when pressure is applied to the system. The correct sizes for ZLGP O-rings are listed at www.zeroleak.com/technical-info/sizes-drawings/ (last column on the right under the part drawings). It will be necessary to replace the larger O-ring with the correct ZLGP O-ring.

Results / Findings

Initials _____ **Date** _____

☐ 3. **Confirm that the ZLGP was installed to the optimum torque value.**
A suggested starting point for the final determination of the torque value for individual applications may be found at www.zeroleak.com under Torque Values. The installation torques shown are as a result of the specific testing parameters completed by the Fluid Power Institute located at the Milwaukee School of Engineering. Should a failure occur at the suggested torque value, shut down, clean port and plug, reinstall, and increase torque value by 5%. Repeat the process until a successful torque value is established for the particular application.

Results / Findings

Initials _____ **Date** _____

☐ 4. **Is a calibrated torque wrench used to install the ZLGP?**
Confirm calibration status of the torque wrench.

Results / Findings

Initials _____ **Date** _____

☐ 5. **Are there any nicks or other visible damage to the tapered surfaces of either the ZLGP or the port that could cause a leak path by preventing the metal-to-metal seals to engage?**
Replace any components that have damaged tapered sealing surfaces.

Results / Findings

Initials _____ **Date** _____

☐ 6. **Is there any interference with the ZLGP tapered surface seating completely in the port that would prevent the tapers on the ZLGP and in the port from engaging?**

Results / Findings

Initials _____ **Date** _____

☐ 7. **Confirm that the port configuration is 1) concentric (taper to thread) and conforms to either SAE J 1926 or the metric port standard ISO 6149 and 2) an out of round port does not exist.**
An out of round condition in port configuration will prevent a metal-to-metal seal from being formed. It may also provide a leak path through which the O-ring may be extruded.

Results / Findings

Initials _____ **Date** _____

☐ 8. **Was the port produced with a one-piece form tool?**
Are all port tool dimensions within their tolerances? See #7 above.

Results / Findings

Initials _____ **Date** _____

☐ 9. **Was the port produced in a multi-step and/or multiple tool process?**
See #7 above.

Results / Findings

Initials _____ **Date** _____

☐ 10. **Are the tapers of the ZLGP and the port the same for mating components?**
-02 thru -06 must be 12 degrees and -08 and larger 15 degrees.

Results / Findings

Initials _____ **Date** _____

☐ 11. **Are other SAE J514 or Metric configured plugs experiencing leaks at the same size port?**

Results / Findings

Initials _____ **Date** _____

☐ 12. **Are there other ZLGP of the same size installed in the same system? Are any of those ports leaking?**

a. If some ports are not leaking, exchange the plugs in the ports - those ports where leaks are observed with those where leaks are not observed. Wipe away all fluid from all ZLGP and ports prior to making the changes.

b. Pressurize the system and apply the same conditions under which the leaks were initially reported and observe the results. Does the same port leak? Does the previously leak free port leak with the ZLGP from the reported leaking port? If the original leaking port continues to leak and the port that received the ZLGP from the leaking port does not, the root cause of the leak may be focused on the port.

Results / Findings

Initials _____ **Date** _____

☐ 13. **Observe the source of the initially reported leak. Is the fluid coming from one area or is it uniform around the circumference of the port?**

a. If the source of the leak is in one location, scribe the location of the leak on the head of the ZLGP and on to the port.

b. Wipe away all fluid from the port and ZLGP and exchange the ZLGP in the leaking port(s) with a ZLGP from a non-leaking port, pressurize the system and observe the results.

Results / Findings

Initials _____ **Date** _____

☐ 14. **Contact an EPCO Applications Consultant for additional assistance or clarification if the root cause of the leak has not been identified after completing all 13 steps of the check list.**

Please send this sheet, with the Results / Findings sections completed, to EPCO for further assistance.

Results / Findings

Initials _____ **Date** _____