LIQUIP INTERNATIONAL PTY LTD - ENGINEERING DEPARTMENT - 13 HUME RD SMITHFIELD SYDNEY NSW AUSTRALIA 2164
PH: +61 2 9725 9000 FAX: +61 2 9609 4739 EMAIL: engineering@liquip-nsw.com.au

TECH TALK: 0069

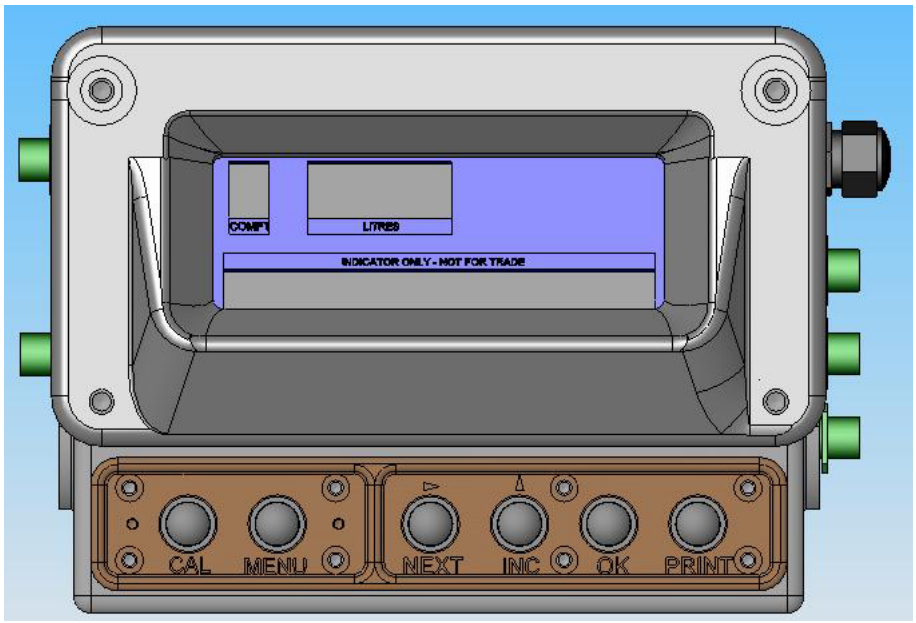
DIPTRONIC: DIP200 LEAK TEST

INTRODUCTION

The Diptronic DIP200 assembly recently underwent a series of tests to establish a leak in the housing. Due to cases of warranty work regarding water leaking into the unit, the tests comprised of directional hosing of the housing, concentrating on the buttons and sealing edges. The housing was assembled strictly following the assembly procedure P7433 and P7435, for the DIP200 series. However, the PCB was omitted for this test because our focus was on the housing itself. Careful attention in the specified torque setting of the fittings were closely adhered to in order to see if the settings specified contributed to water leakage.

METHOD & FINDINGS

Before water testing, a standard pressure test to see if there were any air leaks was performed. This is standard procedure stated in our procedural assembly manual P7345, which stipulates that an air connection be fitted to the bottom of the housing and soapy water brushed onto all glands and seals. Then setting the air pressure to 20kPA to the sealed unit. Checking for bubbles, which indicate leaks. If leaks are found tighten or replace as necessary. Hence, we try to establish any leaks early in our production stage. No leaks were found in this test so we proceeded.



DIPTRONIC DIP200 UNIT

From here, we conducted water leak testing by spraying high-pressure water at the unit, replicating how it would be fitted to a truck. For 5 minutes, the unit was sprayed with water on all glands, seals and on each button. After this, the unit was dried with an air gun in the same position it was in when sprayed with water. This is to make sure if water does leak into the unit; it can be traced, since there would be a trail from where the leak originated from. With the unit dry, we disassembled the lid of the unit carefully, to look for signs of water entry on the sealing

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surfaces. In this instance, we found no water seepage. Next, we inspected the unit's internal surfaces for water. With the button assembly still mounted, behind each button and around the seals of the button assembly, there were no signs of water seepage. Each MIL-spec fitting and power cable gland also did not show any sign of leakage.

This testing procedure was repeated another three times. Again, on reassembly of the unit's lid we made sure the torque settings were followed just to see if having broken the unit's seal would it still seal the same after being reassembled. On the second test, the button assembly was disassembled and inspected closely for evidence of water entry. No signs of water entry were found so it was reassembled and retested.

CONCLUSION

The results from these tests demonstrate that if the standard assembly and testing procedures are followed correctly, then water will not leak into the DIP200 unit. Therefore, our assembly specifications cannot be faulted based on these tests. However, if leaks were found, cases of this would point to tampering of the unit in the field or the unit was not assembled to our specifications.

EXECUTIVE SUMMARY

- DIP200 unit leak tested, due to water ingress issues in the field.
- Leak testing included a pressure test where air is pumped into the sealed unit to detect leaks early in the assembly stages of production, this is standard assembly procedure.
- No leaks were found so a water leak test was conducted. Using a high-pressure water hose, water was sprayed on all surfaces of the unit, focusing on sealing edges and buttons.
- Unit was dismantled and inspected for leaks. No leaks were found. Test was repeated another three times.
- No leaks were found throughout the testing, standard assembly procedure cannot be faulted based on these results. Any leakages would point to tampering of unit or not assembled to our specifications.