fomtec
Fire Fighting Foams & Equipment

Fomtec Technical Advices
FTA No. 100

Troubleshooting Inductors

Unless otherwise specified inductors are calibrated for a suction height of 3.5 meters. If the friction loss over the suction line is higher than this (height and pipe friction loss combined), it will affect the induction capability resulting in too low induction or complete loss of induction.

When ordering an inductor, we ask for calibration information, suction height (total friction loss due to height difference and pipe friction loss), inlet pressure, total system flow requirement, foam type and foam %.

We aim to calibrate the inductor to be within NFPA requirements:

1% foam = 1-1.3%
3% foam = 3-3.9%
6% foam = 6-7%

We always calibrate inductors for a slightly higher % that the exact 1%, 3% or 6%, to avoid low induction.

Example: we will calibrate a 3% inductor for 3,3 to 3.5% unless specifically instructed not do to so.

No induction

When an inductor does not give any induction, the main reason could be:

- Too high friction loss over the suction line.
- Obstruction of the suction line or orifice
- The flow is too low. (Most common reason)

In most cases, the reason for no induction ratio is a too low flow of your system.

- Verify the calibration information (pressure, flow, foam type and %) on the inductor tag plate.
- Verify that the inductor is installed in the correct direction.
- Check that the suction line is not obstructed, and that the orifice is not obstructed. Measure the orifice diameter.
- Verify the suction-line friction loss due to pipe length and suction height from bottom of the tank to inductor suction line connection and that it does not exceed the maximum suction height (normally 3.5 meter unless other ordered)
- Verify the pressure drop over the inductor by installing a pressure gauge before and after the inductor, the pressure drop should be approx. 35%
- Verify the flow rate

If the flow is too low, the pressure drop will be below 35% and if the pressure drop is below 27% the induction will stop completely.

Inductors are calibrated to a certain flow rate and if the flow is below this flow rate the induction will stop completely due to lack of pressure drop that creates suction.

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Remember that the inductor will create a pressure drop and that your system/nozzle K-Factor will give correct and rated flow only if provided with correct inlet pressure.

Low induction

When you experience low induction, it is probably because your flow is too low, but not low enough for the induction to stop completely, your pressure drop is probably capable of giving some induction, but below the rated %. You could also have too high flow, and the result would be that the orifice is not capable of letting enough foam through in relations to the water flow. The inductor is calibrated to give the correct induction ratio at a certain flow, if the flow is low or high, your inductor will not be able to induct the correct %.

- Verify the calibration information (pressure, flow, foam type and %) on the inductor tag plate.
- Verify that the inductor is installed in the correct direction.
- Check that the suction line is not obstructed, and that the orifice is not obstructed. Measure the orifice diameter.
- Verify the suction-line friction loss due to pipe length and suction height from bottom of the tank to inductor suction line connection and that it does not exceed the maximum suction height (normally 3.5 mete unless other ordered)
- Verify the pressure drop over the inductor by installing a pressure gauge before and after the inductor, the pressure drop should be approx. 35%
- Verify the flow rate of the system

High Induction

A high induction ratio is a very uncommon problem. If your inductor gives too high foam induction, it is probably due to the use of wrong foam in relation to what the inductor was calibrated for. If the inductor is calibrated for a viscous foam, and the actual foam being used is a Newtonian, low viscous product, the orifice will be too large resulting in a higher induction ratio. The reason could also be a wrong calibration. Slightly higher induction ratio may also be experienced if the suction height is very small in relation to the standard calibration of 3.5 meters, or the specific suction height for the inductor if it is calibrated to work at higher suction heights.

- Verify the calibration information (pressure, flow, foam type and %) on the inductor tag plate. Measure the orifice diameter.
- Verify the foam concentrate in your tank.

If none of your troubleshooting help

- Disassemble the inductor from the pipe and inspect the unit for mechanical failures.
- Photograph the unit from multiple angles.
- Summarize your troubleshooting measures, pressure data and flow data as well as the measurement of orifice diameter.
- Contact Fomtec for further investigations.