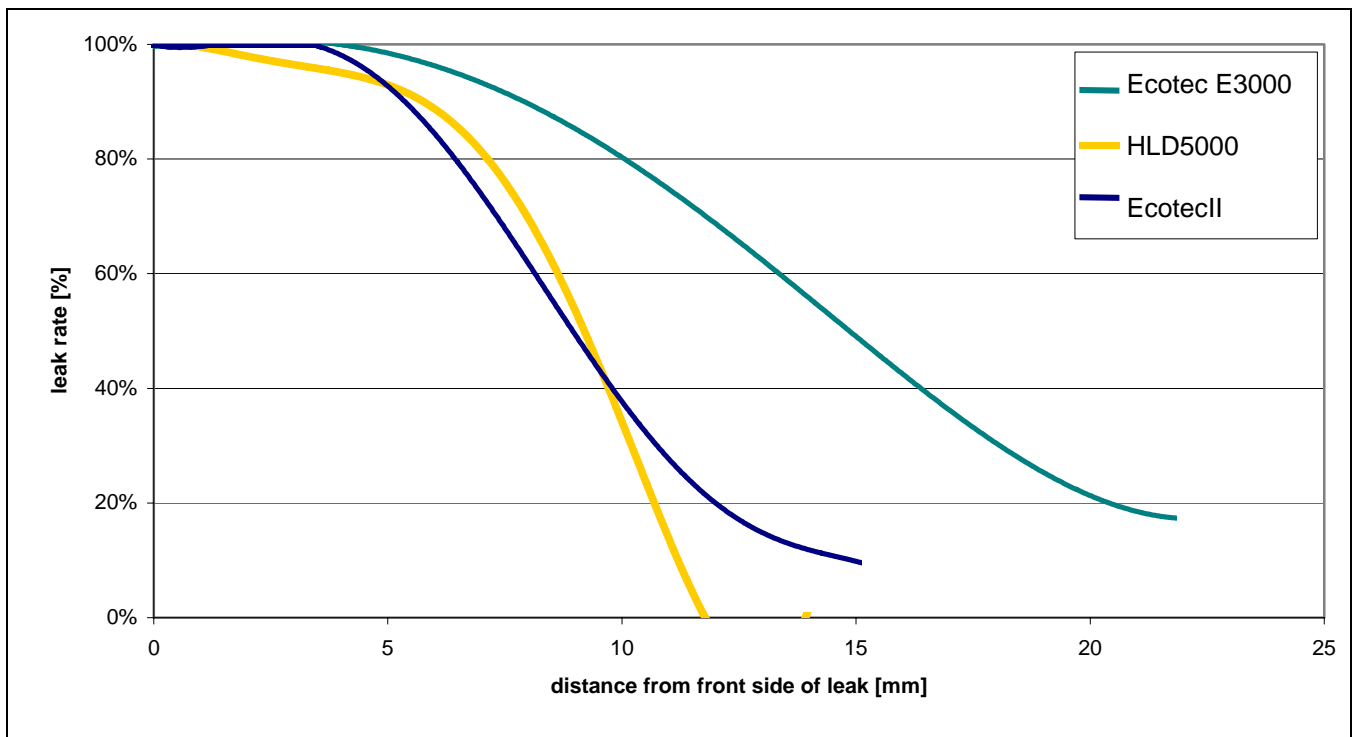


# TECHNICAL NOTE

## Sniffing Joints with the Ecotec E3000

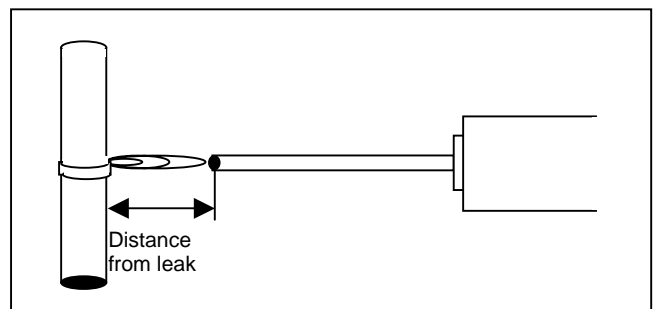
### LEAK RATE SIGNAL FOR FRONT SIDE OF A JOINT



**Fig. 1: Leak rate signal for leaks on front side of a joint**

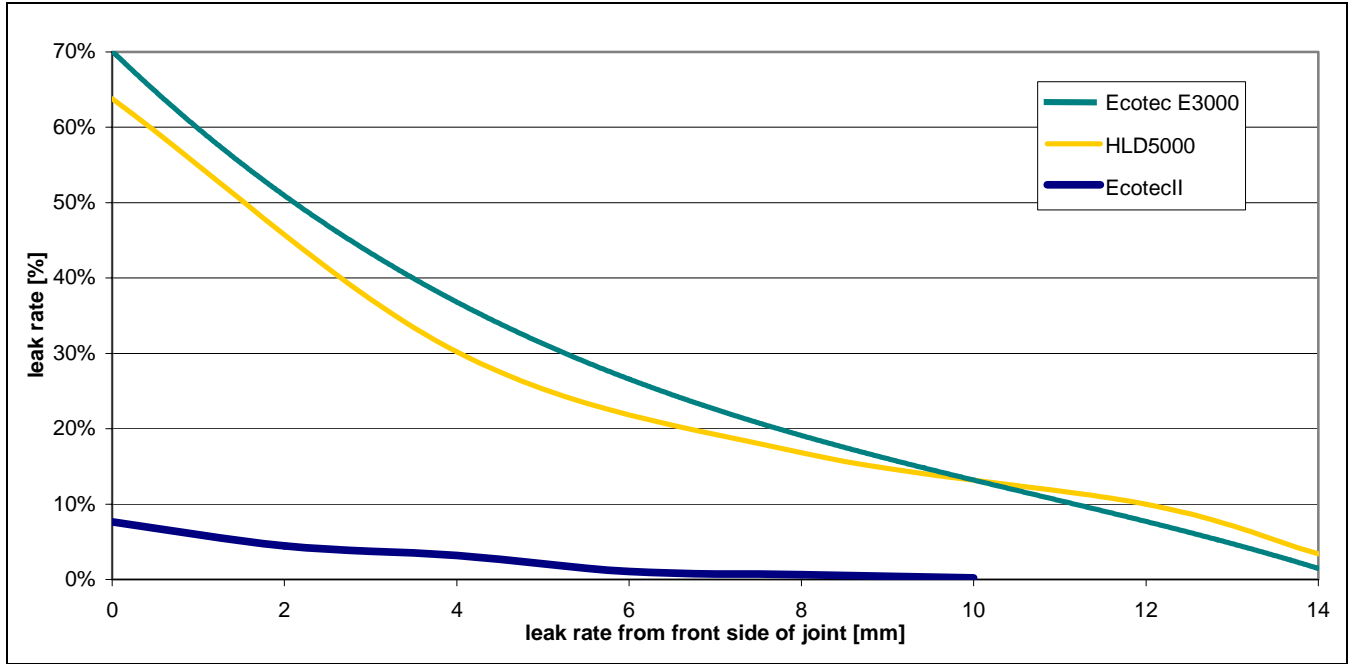
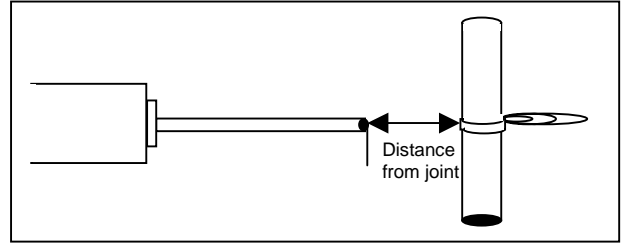
If a leak occurs on the front side of the joint the size of the leak rate signal strongly depends on the flow through the sniffer line. As indicated in Fig. 1 the Ecotec E3000 with its high flow can detect leaks to their full size almost up to 5 mm (0.2 in.) away from the joint and will still detect about 40% of the leak rate signal in about 17 mm (0.65 in.) distance from the joint.

The obsolete EcotecII and the HLD5000 show about the same behaviour and will both detect a reasonable signal (about 40% of the real leak rate) up to about 10 mm (0.4 in.) distance from the joint.



**LEAK RATE SIGNAL ON BACKSIDE OF A JOINT**

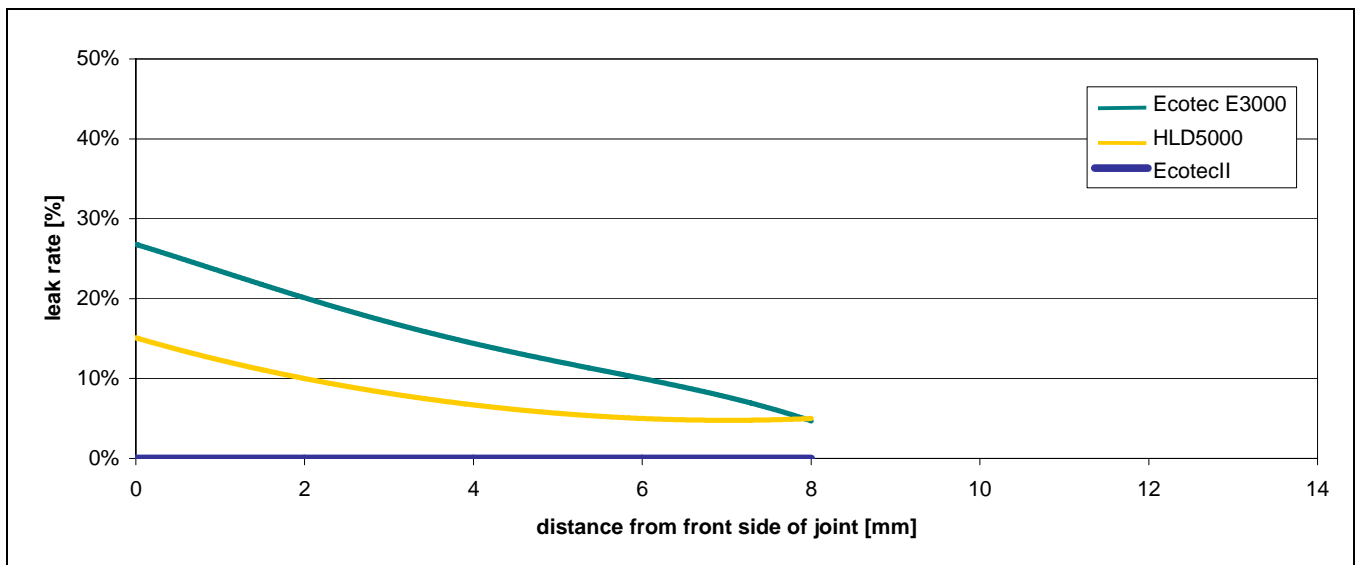
If the leak is located on the back side of the joint, the sniffer line needs to make sure that the refrigerant is taking in also with the tube itself as an obstacle in-between.



**Fig. 2: Leak on backside of 6 mm (0.25 in) tube joint, leak size 25 g/a R134a**

Fig. 2 shows the detected leak rate signal for a 6 mm (0.25 in.) tube diameter and 25 g/a R134a leak. With the sniffer tip placed directly on the front surface of the joint, the Ecotec E3000 will detect about 70% of the correct leak rate signal and the HLD5000 will detect about 65%. Both signals

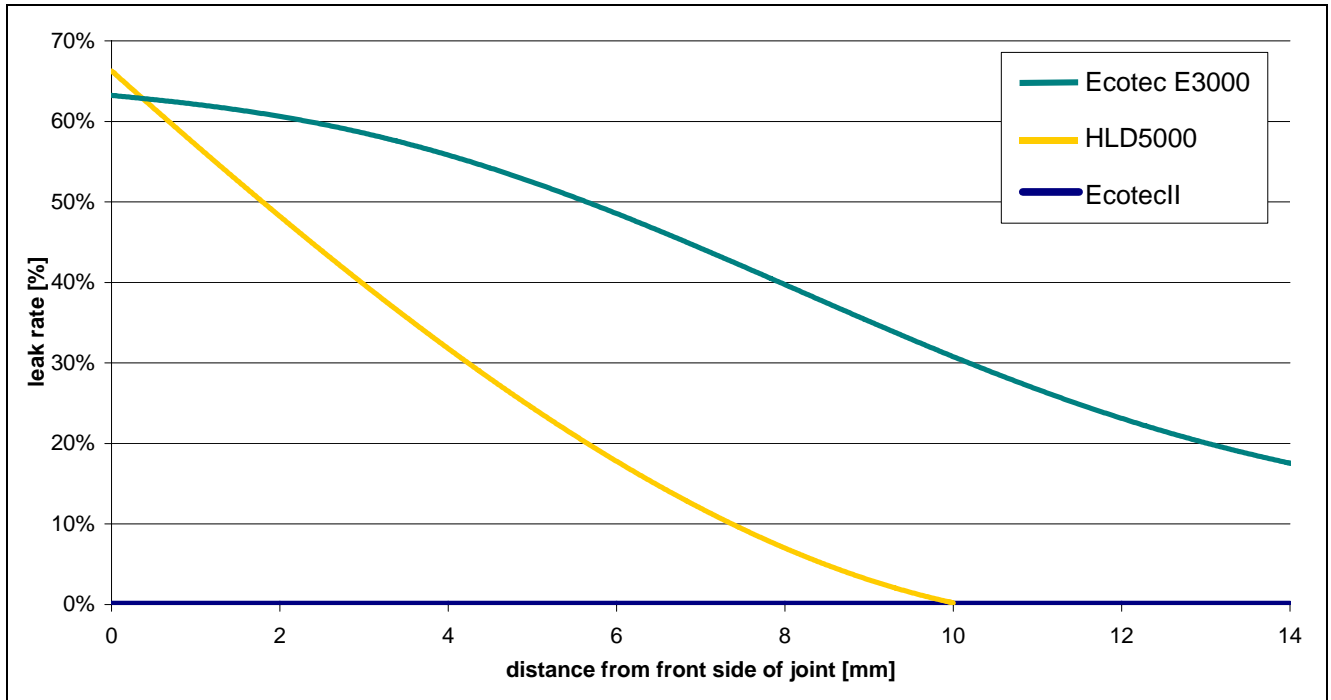
decrease very similarly with increasing distance from the joint. The obsolete EcotecII will detect about 8% when right on the joint but the signal will decrease fast with increasing distance from the joint.



**Fig. 3: Leak on backside of 11 mm (0.45 in) tube joint, leak size 25 g/a R134a**

Fig. 3 shows the detected leak rate signal for a larger 11 mm (0.45 in.) tube diameter and the same 25 g/a R134a leak. With the sniffer tip placed directly on the front surface of the joint, the Ecotec E3000 will detect about 30% of the correct leak rate

signal. At a 8 mm distance from the joint the signal will drop to 10%. The HLD5000 will detect about 15% when right on the joint and will decrease further with increasing distance from the joint. The obsolete EcotecII will not detect the leak at all.



**Fig. 4: Leak on backside of 6 mm (0.25 in.) tube joint, 6 g/a R134a**

For a smaller leak of approx. 6 g/a R134a and a small tube of 6 mm (0.25 in) diameter the Ecotec E3000 will detect almost 65% right on the joint. The signal will decrease to about 20% within the first 13 mm (0.5 in) from the joint. The HLD5000 will start at about the same signal (about 65% ) but the signal will decrease faster and will be down to 20% of the

signal at approx. 6 mm (0.25 in) already. The obsolete EcotecII will not detect the leak at all.

For the smaller 6 g/a R134a leak and a larger tube of 11 mm (0.45 in.) diameter all three leak detectors will fail to pick up the signal.

**CONCLUSION**

- The Ecotec E3000 shows the best behaviour for detecting leaks on the front side of a joint as well as of the backside of a joint.
- The Ecotec E3000 will pick up larger leaks for both tube diameters, smaller leaks will only be detected for smaller tubes.
- The HLD5000 behaves very similar to the Ecotec E3000. However, for smaller leaks the HLD5000 signal decreases faster with increasing distance.
- The obsolete EcotecII will pick up leaks reliably on the front side of the joint but will almost not pick up leaks on the backside of a joint at all.



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