



- Comité de fabricants européens d'installation et de distribution de pétrole
- Committee of european manufacturers of petroleum measuring and distributing equipment
- Komitee der europäischen Hersteller von Einrichtungen zur Messung und Verteilung von flüssigen Brennstoffen

HOW TO CHECK A DISPENSER AFTER CHANGE OF HOSE AND/OR NOZZLE

BEST PRACTICE PROPOSAL FOR MI-005 PETROL STATION INSTRUMENTS

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In this specific MID/National approach, this document tries to bring the best non regressive practice proposal to the EU community of member states, to soften the “real life market” of petrol stations in the union, and remove the restrictive/obstructive consequences of MID versus market reality and existing instruments already in service or put to market before MID introduction.

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SCOPE:

In R117 (1995) and R117-1 (2007), hose and nozzle are part of the measuring instrument for petrol dispensers used on petrol stations. Measuring instrument operates with “hose full”.

Hose can have an influence on the measuring instrument result

Nozzle can also have an influence on the measuring instrument result

Changing a hose or a nozzle (or both together) can also have an influence on the measuring instrument result.

Historically, hoses and/or nozzles were sealed to the dispenser. Such need for seal(s) was bypassed in R117 and R117-1 with “need of special tool” (same wording in both versions)

In R117 (1995):

2.13.7 If the hose comprises several components, these shall be assembled either by means of a special connector which keeps the hose full, or by a connection system which is either sealed or requires the use of a special tool to be disconnected.

In R117-1 (2007):

2.13.7 If the hose comprises several components, these shall be assembled either by means of a special connector which keeps the hose full, or by a connection system which is either sealed or requires the use of a special tool to be disconnected.

Hose shall fulfil requirement of clauses

- 2.15 in R117 (1995)
- 2.15 in R117-1 (2007)

Nozzle shall fulfil requirements of clauses:

- 2.13.6 in R117 (1995)
- 2.13.6 in R117-1 (2007)

Hiding of a small number of scale intervals at the beginning of the delivery

This function is also known as “masking of hose inflation”. Calculator shall fulfil requirements of clauses

- 5.1.12 in R117 (1995)
- 5.1.15 in R117-1 (2007)

1) Domain

This document is only to be used for MID / MI-005 instruments placed on petrol stations. The purpose is to define clearly the adequate verification after a hose and/or a nozzle replacement

2) References to standards

OIML R117 (1995)

OIML R117-1 (2007)

It is assumed that R117 is a non regressive community standard, meaning that any revision of the recommendation is considered as better or equal to any prior revision to reach the essential requirements.

3) Terms, acronyms and symbols

DISPENSER: measuring instrument to transfer fuel into the tank of a vehicle, a small boat, a small aircraft or just a jerry can

Other terms are usual terms used in the petrol station domain or coming from known references such as R117, R117-1 or MID.

4) Process to verify petrol dispenser after hose or nozzle change

4.1) Failure modes

- a) Hose too soft
- b) Hose leaking or coaxial vapor recovery hose leaking
- c) Nozzle not keeping enough pressure in idle hose
- d) Non return valve in measuring line not keeping enough pressure in idle hose
- e) Nozzle leaking
- f) Air bubble introduced in hose during replacement operation

Excluded failure modes:

- Hose run over by car or truck (peak of pressure is liberated inside measurement line to avoid hose burst or leak at nozzle)
- Hose overexposed to sun radiation (overpressure is liberated inside measurement line to avoid hose burst or leak at nozzle)

4.2) Associated failure detection process

- a) **Hose too soft:** inflation of hose will exceed the minimum specified volume deviation (or twice de the minimum specified volume deviation if hose reel)
- b) **Hose leaking or coaxial vapor recovery hose leaking:** lifting nozzle to start a transaction, and keeping nozzle off the boot for 30 seconds. After first hose inflation indent is seen (if any) display will show slow volume increments
- c) **Nozzle not keeping enough pressure in idle hose:** operator will see that nozzle spout collects liquid during idle period of 30 seconds
- d) **Non return valve after meter not keeping enough pressure in idle hose:** inflation of hose will exceed the minimum specified volume deviation (or twice de the minimum specified volume deviation if hose reel). Same as case 4.2) a). Operator will discriminate cases by replacing hose again without removing failure
- e) **Nozzle leaking:** operator will see that nozzle leaks while trigger is not activated
- f) **Air bubble introduced in hose during replacement operation:** operator will see a fake hose inflation that will disappear after a hose flush operation

4.3) How to verify a instrument (petrol dispenser) in use after change of hose/nozzle

- a) Do a free run at maximum speed with a can of around 10 liters, to flush any potential bubble out of the hose and precondition instrument
- b) Hang nozzle and wait 3 minutes
- c) Calculate V_m (Maximum volume of hose inflation – $V_m = MMQ / 100$)
- d) Demask hose inflation function at calculator
- e) Lift nozzle and record (V_1) amount of centiliters displayed after 5 seconds
- f) Wait an extra 30 seconds and record (V_2) amount of centiliters displayed after this delay
- g) Hang nozzle

If $V_1 \leq V_m$ and $V_2 \leq V_m$, hose/nozzle replacement is correct, and instrument is correct
If not, redo 4.3 process from a) to g).

If still not correct, investigate instrument to find failure/defect