



# Dispenser STD 11

# Specifications

**Two users simultaneously - up to 30 kg / min at 200 barg differential pressure.**

**Dispenser fitted with NGV1 nozzle**

**Two users simultaneously - up to 70 kg / min at 200 barg differential. pressure**

**Dispenser fitted with NGV2 nozzle**

**Dispenser can be connected to both booster and multi-bank system**

- **Design pressure for dispenser 300 bar.**
- **Design temperature -40 ° to +60 ° C.**
- **Power supply 230 V 50 Hz.**
- **Dispenserelektronik . Dispenser Electronics.**
- **Accumulating and resetable totals.**
- **Communicating protocols including Tatsuno, Wayne Darts or Autotank POS systems.**
- **Advanced electronic temperature compensation.**
- **Exess flow valve to ensure the delivery pressure to the vehicle.**
- **PLC systems constructed according to "fail to safe" method.**
- **Advanced electronic pressure monitoring system.**
- **Mass Flow Meter Type Micro Motion CNG 050th**
- **Mechanical and electronic security, against unwanted pressure drop.**
- **Modern functional design in a rugged cabinet.**
- **Painting and decals retirement - according to customer requirements.**

*Dispenser are functional and pressure tested up to 430 bar, before delivery.*

*Dispenser is designed according to Swedish rules and laws, and certified in accordance with PED 97/23/EC and ATEX 94/9/EC.*

*Dispenser follow Swedish filling station instructions TSA 2010*

*Dispenser are construction reviewed by third-party agencies.*



# Dispenser Construction:

The dispenser is built around a logic controller (PLC) that controls the fillings of the vehicles. To the control system is sensor for ambient temperature (T), gas pressure in the filling hose (P) and mass flow rate (Q) connected. In addition to the sensors for the TPQ is the start button and stop button and the dispensers computer connected to the controller. The PLC system controls the main valve <sup>1</sup>, and two parallel solenoid valves (low flow valve and high flow valve).

The PLC system also controls any possibly occurring storage valves, replacing the above mentioned main valve.

The PLC system execute the calculations and set the conditions on how the filling of the vehicles is carried out.

To the PLC system is connected an operator panel where current process values and settings for the dispenser are displayed and can be programmed, There are also logging of various faults / events in the control system and these can be read out in the operator panel.

# Safety Features:

***Sensor Control***- For a malfunction in the temperature, pressure or mass flow sensors, the PLC system stops the dispenser and filling ends. Even an internal error of the PLC system causes a stop of the dispenser. The failure of one of the sensors or internal fault in the PLC system prevents start of the dispenser.

***Low flow filling***- The dispenser always start to fill with a low flow. This "security filling" limits the flow by about 80%. If leakage occurs in the filling system, it is detected by the leakage control (see below) after the low flow filling is completed.

***Leakage Control***- The system controls that the pressure is stable between the dispenser and the vehicle to detect any leakage of the filling system. Detected leakage stops and finish the filling.

***Pressure drop test***- The dispenser checks that no abnormal pressure drop occurs during the filling. Detected pressure drop stops dispenser and ends the filling. The dispenser is also equipped with a pressure release valve that is set to 10% (including tolerance) of the maximum allowable filling pressure of 230 bar (ie 253 bar).

# Temperature compensation system:

**The dispenser measures the ambient temperature and calculates a temperature that determines the pressure that the vehicle is allowed to fill up to equal to the nominal filling pressure of 200 bar at 15 ° C.**

**The calculation includes the ambient temperature and a factor that mainly depends on the pressure that remains in the vehicle before filling.**

# Filling Sequence:

## **Initial phase / Low flow filling:**

1. The dispenser is activated by pressing the start button. The counter is reset and gives a start signal to the PLC. (about 3 sec.)
2. The dispenser opens the main valve and low flow valve and fills with a low flow for a few seconds.
3. The dispenser makes a short stop for a leakage check and control of the gas pressure in the vehicle.
4. The dispenser calculates temperature compensation and sets the limit to what pressure the vehicle is allowed to fill to. The dispenser is now entering normal filling state reopening the main valve, low flow valve and also now high flow valve.

## **Normal phase:**

1. The dispenser checks that no abnormal pressure drop occurs in the system during a normal filling phase.

The dispenser quits filling and closes all valves when the pressure reaches the estimated filling pressure equal to 200 bar at 15 ° C or when the maximum allowed filling pressure reach 230 bar.

The dispenser also ends the filling if the flow is under a certain level too long, even if the estimated filling pressure is not reached