

LPG dispensing system



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1. Construction / Function

1.1 Components

1.2 Functionality

1.3 Safety device

1.4 Operation / Procedure integration

1.1 Components

The LPG pumping system consists of the following main parts:

- › Storage containers/Tanks
- › Pipelines, Valves, Shut-off device
- › Booster pump
- › Measuring device
- › Dispensers computer
- › Dispensing means
- › Electrical steering circuit

1.2 Functionality

Liquefied gas is taken from the liquid phase through the lower tank outlet. This liquid gas is piped to the pressure hanger pump. With detected pressure (differential pressure approx. 6-8bar), the liquid gas is passed through the measuring device. This consists of a displacer, which generates depending on the flow of electrical impulse, which are processed by the dispenser computer.

From the measuring device, the liquefied gas is passed via pipe to the dispensing device

The electrical control includes the following functions:

- › Starting the system after release Via pushbutton
- › Opening / closing of the magnet valve
- › Start / stop the pump motor
- › Dry running protection of the motor (phase monitoring)
- › short-circuit monitoring (motor current, solenoid valve)
- › Emergency stop function via relay

1.3 Safety device

The following safety devices are installed in the system:

›Hand ball valve in the liquid line

This ball valve should only be closed for maintenance purposes and in an emergency. Otherwise this ball valve should be always open

›Solenoid valve in the liquid line

This solenoid valve is built in the „normally closed“ version, that is, as soon as the voltage at the solenoid valve is missing, it closes immediately, so that no more liquid gas can escape from the container, which is the case when:

- the power supply to the system is interrupted,
- the control switch on the gas pump is released,
- an EMERGENCY STOP has been triggered
- any electrical short occurs

›Safety valves in the pipes

There are two safety valves built into the pipes. These serve to protect the system and are set to 25 bar. If the ball valve and the angle valve are closed in the return, otherwise, when the system is heated, an overpressure could occur which could destroy individual parts of the system. The position of the valves is chosen so that all lockable pipe sections are secured.

›Breakaway coupling in the dispensing hose

In the dispensing hose a tear-off is installed. This is to prevent the rupture of the hose under tensile stress. If the tear-off coupling has been pulled apart, it can be reassembled (depending on the version under pressure or after pressure release). In any case, the breakaway coupling should be checked for leaks and integrity. The manufacturer generally recommends the replacement of a separate coupling!

›Fuel nozzle

The fuel nozzle dispenses only LPG if it has been screwed onto an appropriate counterpart. An uncontrolled escape by pulling the operating lever in the non-screwed state is thereby excluded. After each refueling, a minimal amount of liquid gas escapes from the holes provided in the fuel nozzle. This is inevitable, since a pressure relief must take place. Under normal operating conditions and in compliance with safety regulations, this does not pose any danger.

›Check valves

There are two check valves installed, which prevent an uncontrolled outflow of gas.

The first check valve is installed in the angle valve in the return line. If a return line is torn off, this valve prevents the gas in the storage tank from escaping.

The second check valve is mounted in the dispensing hose. This prevents, after a possible bursting of the filling hose, liquid gas flows out of the system or the break point.

›Safety valve in the gas tank

Fixed at 15.6 bar. Prevents overpressure in the storage container that could be caused by heating (fire).

Due to the combination of these safety devices, an uncontrolled escape of gas is largely excluded, or the amount leaving the system is minimized after mechanical damage to the system.

1.4 Operation

Refueling is carried out according to the filling instructions for filling gas tanks. This filling instruction is to be attached to the dispenser and is part of every instruction and instruction of employees and tank customers.

2. Commissioning

When the filling system is delivered to you, the system has already been tested and tested in the factory. The following steps must be carried out during commissioning:

›Installation

The system should be set up on a level surface. The site was defined when the order was placed and is part of the operating license. A change of the site is only possible after consultation.

The system is to be provided with a collision protection, depending on the installation site. This has also been specified at the time of placing the order and must be completed before acceptance before commissioning.

›Electrical connection

The supply voltage must be applied to the terminal strip in the control cabinet by a specialist company (400 V power current). The supply line must be fused with 16 A. A 5 x 1.5 mm² underground cable should be used for the supply line.

If an additional EMERGENCY STOP switch is required or provided for, an earth cable (3 x 1.5 mm²) must be used for this purpose.

Furthermore, the system must be connected to a grounding. Either over a separate rod earth or to an existing earth (foundation earth or similar). About the grounding is made by a specialist company a log and submit to the inspection before commissioning of the ZÜS (TÜV).

After connection, check the direction of rotation of the pump motor (arrow on motor housing) and, if necessary, change the direction of the rotating field (on the terminal strip in the control cabinet).

›Data cable / communication

Depending on the type of system, a data cable is required. Usually a 4-core telephone cable (earth cable, shielded) is required. This cable must reach all the way into the dispenser head, so as not to have any additional connection points, which can lead to errors in the communication.

›Hydraulics

The ball valve and the angle valve are to be opened. After opening the ball valves, the system is ready for operation. All fittings and pressure-bearing parts must be checked for leaks with a leak detector or gas detector and re-tightened if necessary.

From the test runs there is still a residual amount of LPG in the tank. This residual amount is usually sufficient to carry out a test run and a sample re-fueling.

3. Maintenance

The system you have purchased is largely maintenance-free. However, the following maintenance and monitoring activities are necessary:

- The system must be regularly checked for leaks
- The filling hose must be regularly checked for integrity
- The pressure booster pump must be maintained according to the manufacturer's instructions

If leaks occur which cannot be remedied by a slight tightening of the corresponding screw connection, the system manufacturer should be informed in order to discuss the further procedure. In any case, however, the system must then be shut down immediately by the following measures:

- Wear of the ball valve
- Closing the corner valve
- Interruption of the main power supply

4. Mandatory exam

The following examination intervals are proposed or required:

› Kind of exam

- › Hose Inspection
- › Check pump
- › Calibration measuring device - Checking the installation
- › Test pipeline / plant
- › Testing container

› Interval examiner

Operator / technical expert
semiannually operator / technical expert
annually Knowledgeable / Manufacturer
every 5 years ZÜS / TÜV
every 10 years ZÜS / TÜV

The inspection intervals and periods are to be determined by the operator in cooperation with the ZÜS. These must be entered in the form ,Verification periods and reported to the supervisory authorities (approval authority). The operator is responsible for the execution of the test and the observance of the deadlines.

5. Troubleshooting

If faults occur during commissioning or during operation, here are some ways to correct the following faults:

Disorder	Possible Causet	Remedying
Pump motor „buzzing“	a phase is missing	Check fuses Check supply line
Start button pressed, the system does not reactt	EMERGENCY STOP pressed/No electricity on the system /No release by the column computer	Disconnect EMERGENCY STOP Check power supply Depending on the operating mode, check a) Release at the cash register b) release by the tank machine power supply column computer
Plant is running for a short time and then switches off the pump	Dry run protection	Check level Check dry run protection
Pump is running but no pressure is built up	Ball valve closed Solenoid valve does not open Overflow valve opened	Open ball valve
Plant builds pressure, but refueling is not possible	Breakaway	Check micro fuse (400mA) and relay Check valve

6. Dispensing systems

Types	
1.	Autogas Plant 6,400 Liters with calibrated pump
2.	Autogas plant with calibrated gas pump Container size 6,400 l underground
3.	Autogas plant 6,400 liters with calibrated pump Column and tank system about 25 meters apart

Type : 1

Auto gas Plant 6,400 liters with calibrated pump

- › Container 6,400 l mounted on galvanized frame
- › With lower removal flange DN 25
- › Ball valve, fine filter, solenoid valve and overflow valve in DN 25
- › Sihipumpe with about 50 l / min at 9 bar differential pressure
- › Complete piping incl. Internal pressure and leak test
- › MSR control cabinet with emergency stop, plug-in electrical wiring
- › LPG dispenser made of stainless steel with calibrated counter (with MID approval)
- › Dispenser computer Hectronic ER-4, Euro / liter display, one-sided
- › Electric deadman switch
- › LPG high pressure hose with component tested breakaway and automatic
- › hose retractor
- › A fuel nozzle 1 3/4 „ACME connection (standard in Germany)
- › Pre-acceptance according to Pressure Equipment Directive 97/23 / EC by TÜV Nord and CE marking of the module
- › All necessary drawings and documentation for the TÜV inspection on site
- › For commissioning, the customer only has a power connection 400 V / 16 A, one
- › fixed mounting surface with dimensions of 6,500 mm x 1,450 mm required

Type : 2

Autogas plant with calibrated gas pump Container size 6,400 l underground

- › Container 6,400 l underground, accessible for storage in the green area
- › Ball valve, fine filter, solenoid valve and overflow valve in DN 25
- › Submersible pump mounted in the tank with approx. 45 ltr / min at 8 bar differential pressure
- › Complete piping
- › MSR control cabinet with emergency stop and complete electrical wiring
- › LPG dispenser made of stainless steel with calibrated counter (with PTB approval)
- › Dispenser computer Hectronic ER-3, Euro (other Currency) / Liter Display
- › Electric dead man switch, LPG high-pressure hose with component-tested
- › Breakaway coupling and fuel nozzle 1 ¾ „ACME“
- › Pre-acceptance according to Pressure Equipment Directive 97/23 / EC by the TÜV
- › All required drawings and documentation for on-site inspection
- › Application according to industrial safety regulation Acceptance of the complete system by the TÜV Calibration of the plant

Type : 3

Autogas plant 6,400 liters with calibrated pump Column and tank system about 25 meters apart

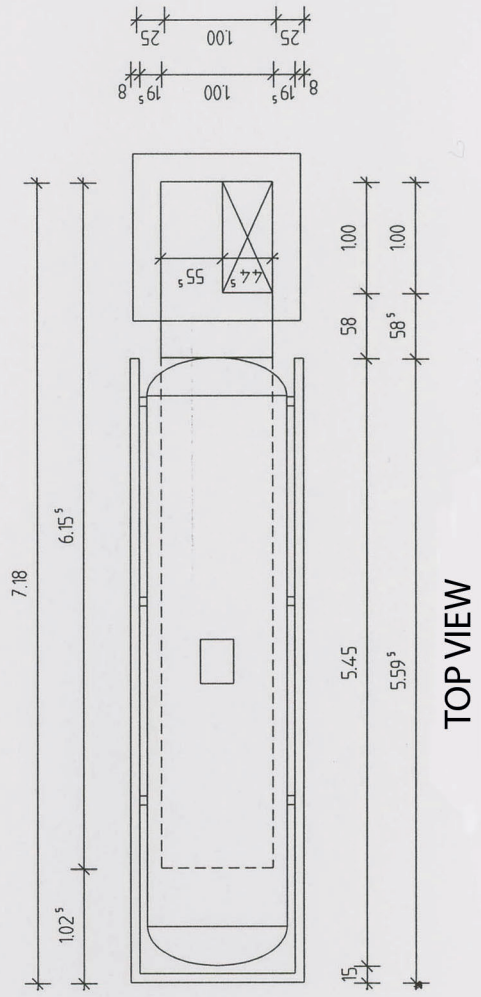
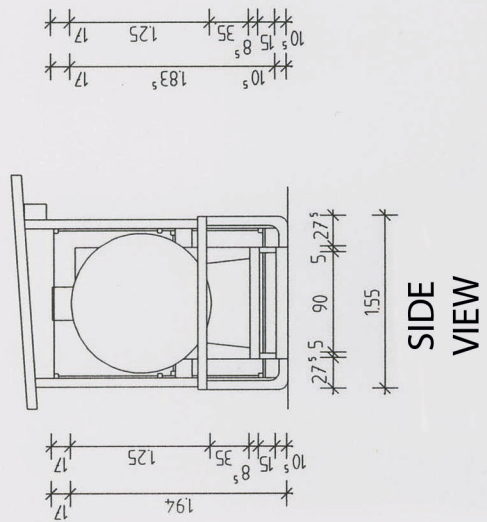
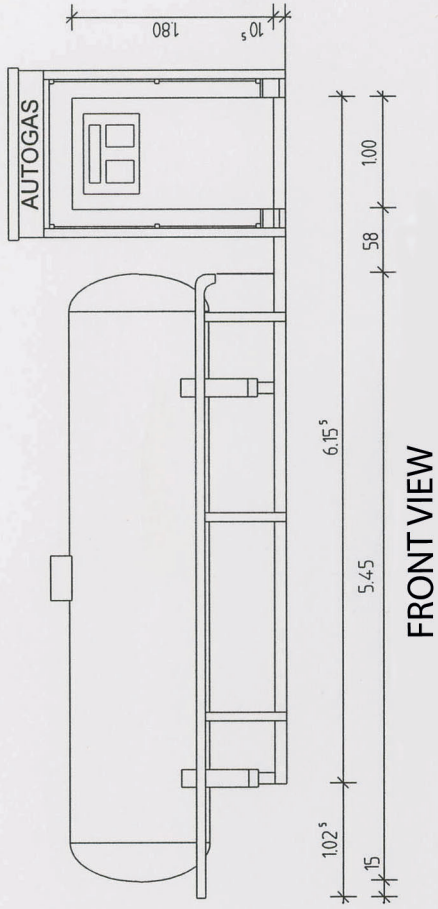
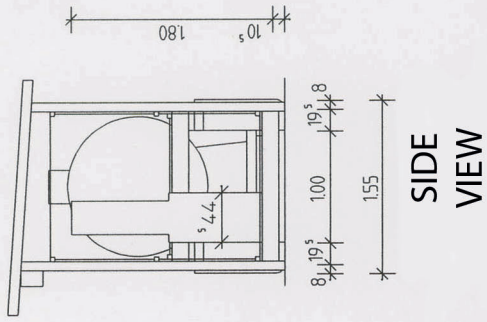
- › Container 6,400 ltr mounted on galvanized frame
- › With lower removal flange DN 25
- › Ball valve, fine filter, solenoid valve and overflow valve in DN 25
- › Pump with 50 l / min at 9 bar differential pressure, mounted on the tank
- › Complete piping incl. Internal pressure and leak test
- › MSR control cabinet with emergency stop, plug-in electrical wiring
- › LPG dispenser made of stainless steel with calibrated counter
- › Dispenser computer, tailored to your existing POS system
- › Euro (other currency)/ liter display, one-sided
- › Electric dead man switch
- › LPG high-pressure hose with component-tested breakaway coupling and automatic hose retractor
- › A fuel nozzle 1 3/4 „ACME connection (standard in Germany)
- › Pre-acceptance according to Pressure Equipment Directive 97/23 / EC by TÜV Nord and CE marking of the module
- › All necessary drawings and documentation for the TÜV inspection on site
- › Delivery and installation of the required pipeline on site
- › For commissioning, only a power connection 400 V / 16 A, one is on site
- › Fixed mounting surface with dimensions of 6,500 mm x 1,450 mm and a data cable to Your POS system required.
- › Optional:
Weatherproof roof, 1.40 mx 1.40 m, glass walls, Illumination with lettering AUTOGAS, on the frame Attached, color of your choice incl. Delivery and installation:

Type : 4

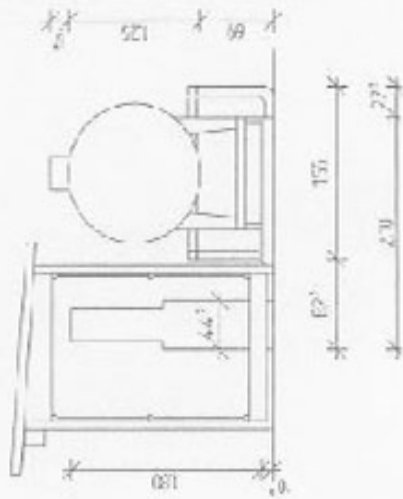
Capacity above 6400 Liters

- › All the systems are the same as the other types
- › It is possible to add more Tanks up to 4
- › The range of the capacity could be upgraded up to 25000 Liters or more

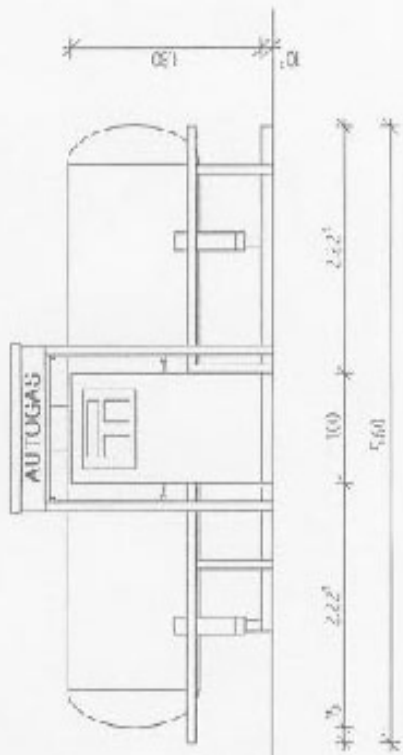




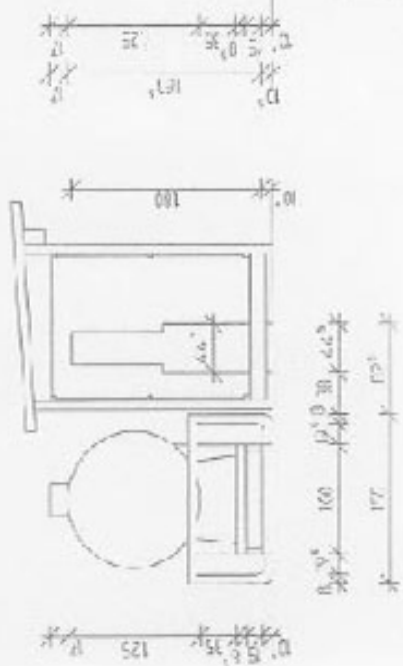
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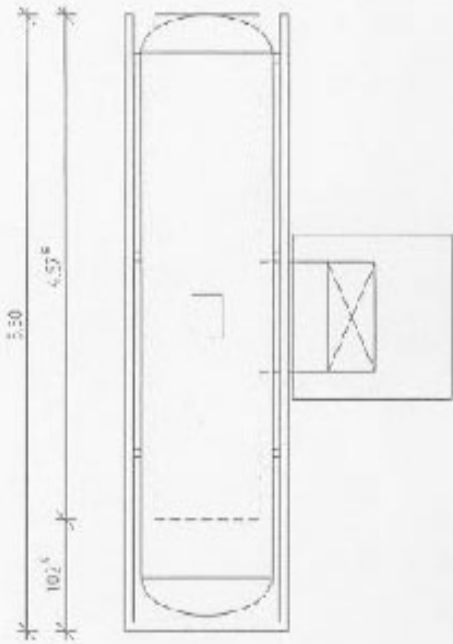
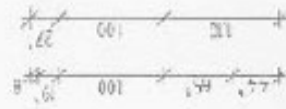
SIDE VIEW



FRONT VIEW



SIDE VIEW



TOP VIEW

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The products we provide are all 100% made in Germany.

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The tanks are all checked by the german Technical Inspection Agency so we reach the highest safety level possible.

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