

MAK LYNX[®]

Mounting instructions

TB 150811

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*This document only defines functional details for the interaction with BARTEC LYNX® measurement systems.
The stipulation of further constructional details related to installation, durability and safety lie within the responsibility of the tank and truck designer.
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1 Introduction

The MAK LYNX® measurement system for milk collection trucks is designed for mobile use during the collection of milk.

It's a self-priming measurement system working even under the worst conditions.

It is only possible to use this new technology in an optimal way, however, if certain boundary conditions are observed for the construction of the tank truck, which means that the designer of the tank truck has a decisive influence on the result.

2 Piping

The measurement system MAK LYNX has an inlet and an outlet with 2.5" connections.

The remaining equipment is furnished by the superstructure builder for the tank trucks. These additional superstructures have a significant influence on the performance of the milk collection truck.

Please note:

If possible, avoid any:

- changes in cross-section
- abrupt bows
- rectangular pipe outlets
- T-pieces
- inwardly protruding welding seams
- rough inside walls of pipes
- fittings protruding into the pipe
- everything that swirls the flow
- everything that impairs the flow

Particularly on the suction side, the piping system including the sampler and the flowmeter has to be carried out continuously in min. 2.5" to prevent pressure drops.

To maximize the pump performance, the plumbing for the tank outlets and the tap should have a diameter of at least 2.5". The adoption valve used by BARTEC BENKE corresponds to 2.5" in accordance with DIN 11850.

For the construction of the measurement system, it is of particular importance that the components of the measurement system are installed in a tension-free way. One possibility is to uncouple the pipework at suitable places by means of hose connections. If the components of the measurement system are fastened to different reference systems, these components have to be mounted by means of flexible fastening elements (e.g. rubber dampers).

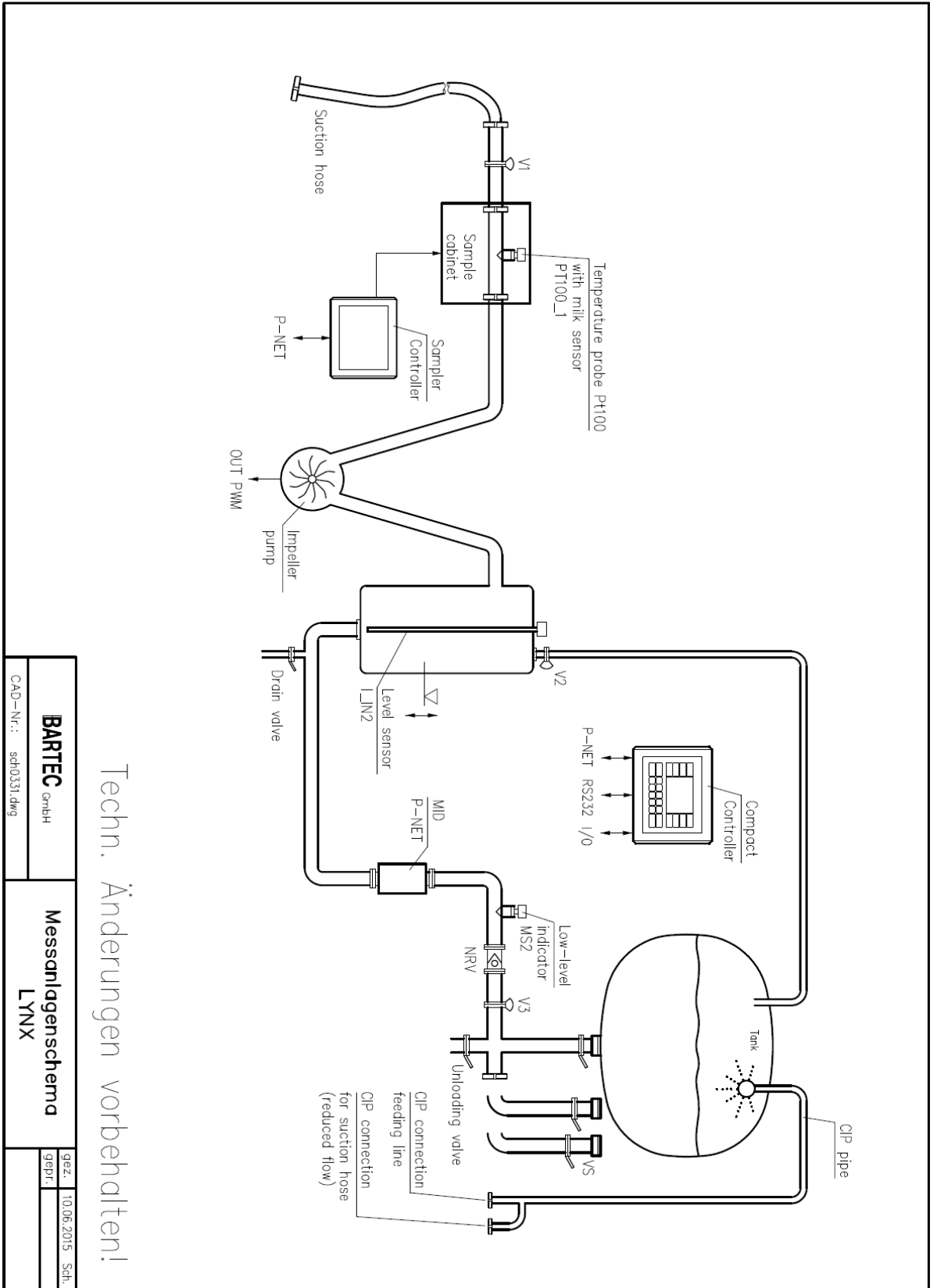
3 System requirements

For an optimal functionality of the measurement system MAK LYNX, especially the following boundary parameters have to be observed for the construction of the milk collection truck:

- Hydraulic oil supply with at least 20 l/min, 200 bar, recommended oil HLP46 DIN 51524 T2, install oil filter with 10 my.
- A suitably sized oil cooler and oil filter should be provided for the hydraulic oil.
- The pneumatic supply must be designed for 100 nl/min. The oils and antifreeze agents used in the pneumatic system (incl. compressor) must be safe for use in food production processes.
- For the electronic components, a power supply line with a cross-section of 2,5 mm² must be laid. At least one for the Compact controller, one for the Sampler controller and one for the Emergency unit. The operating voltage should be 24 Volt. For 12-volt systems, a suitable voltage converter has to be inserted.
- By means of a main switch, an all-pole separation of the electronic components from the supply voltage has to be provided.
- In cold weather, the measurement system cubicle has to be heated.

4 Measurement system

4.1 Piping diagram



4.2 Structure of the measurement system

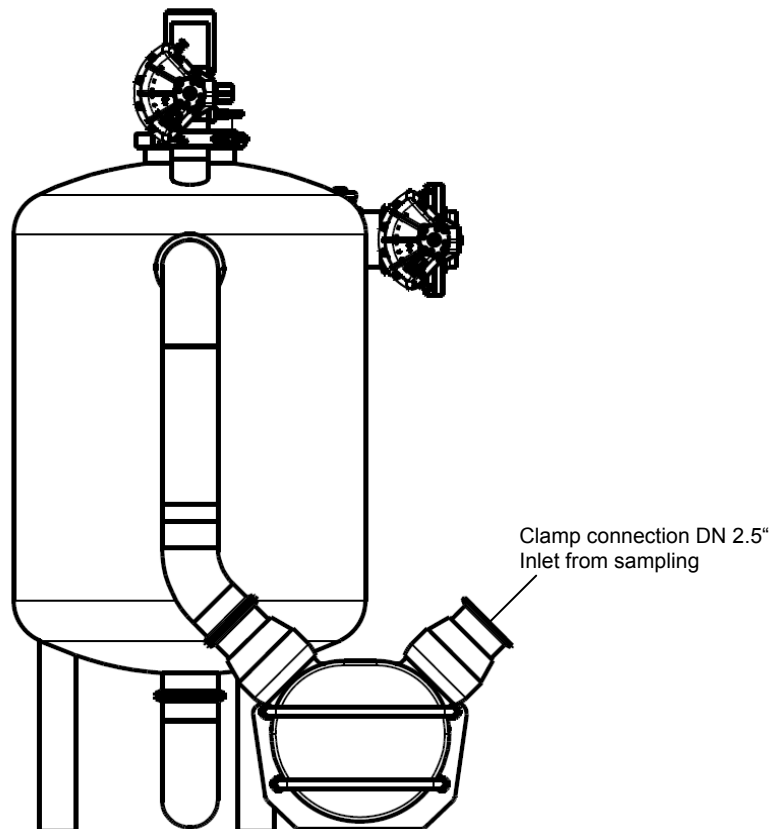
Basically, all LYNX measurement systems have the same structure (modular). They only differ slightly in the arrangement of the inlets and outlets. The arrangement and design of the purge line can be varied according to customer requirements. The purge line is not included in the delivery scope of the LYNX.

When designing the purge line, make sure it can be cleaned in place (CIP).

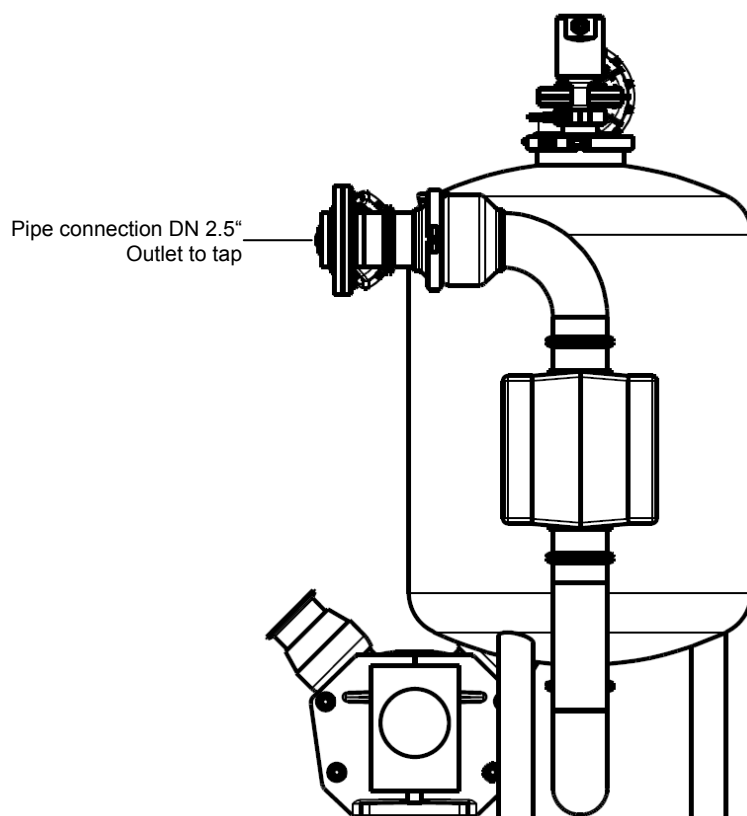
It is important that the air separator is drained automatically under all angles that the truck adopts during intake; for this purpose, it is mounted accordingly.

The hydraulic block and the coupling housing of the pump have to be protected against milk or CIP fluid leaking out from the tap by means of a suitable protective cover. The pump and the air separator have to be mounted in a tension-free and vibration-damped way.

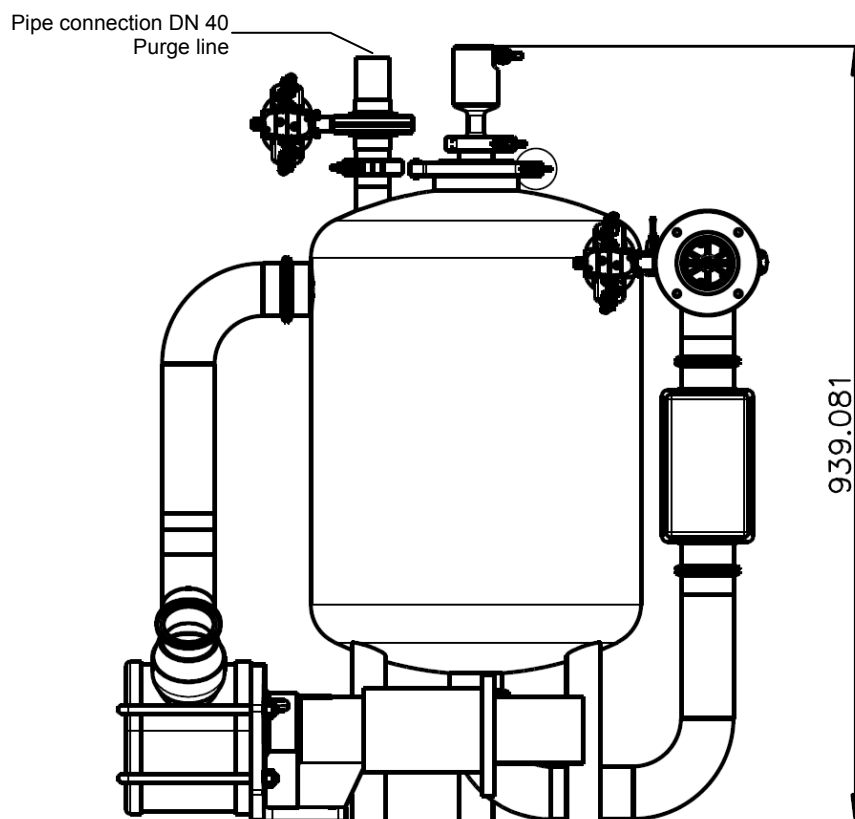
Measurement system, basic set, front view



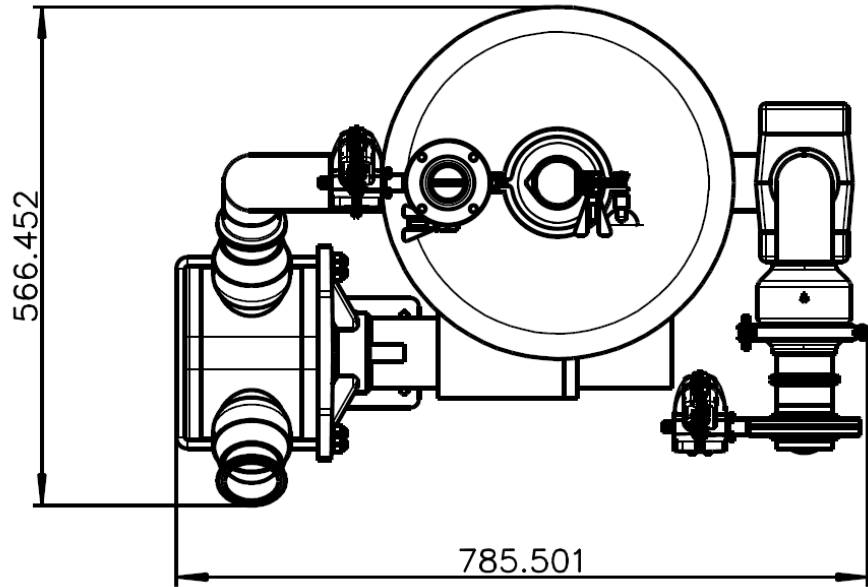
Measurement system, basic set, rear view



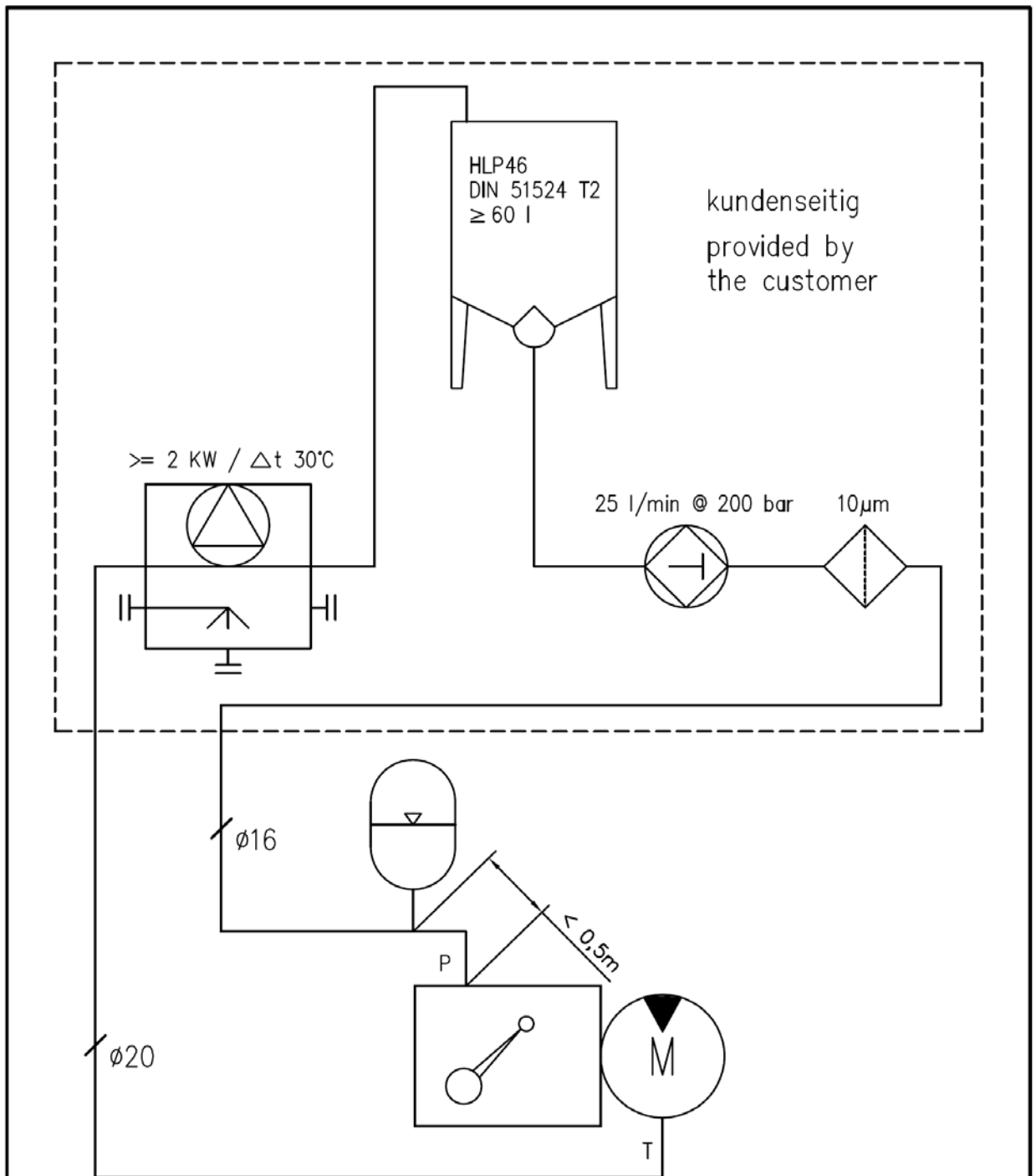
Measurement system, basic set, side view



Measurement system, basic set, top view



4.3 Overview of the hydraulic

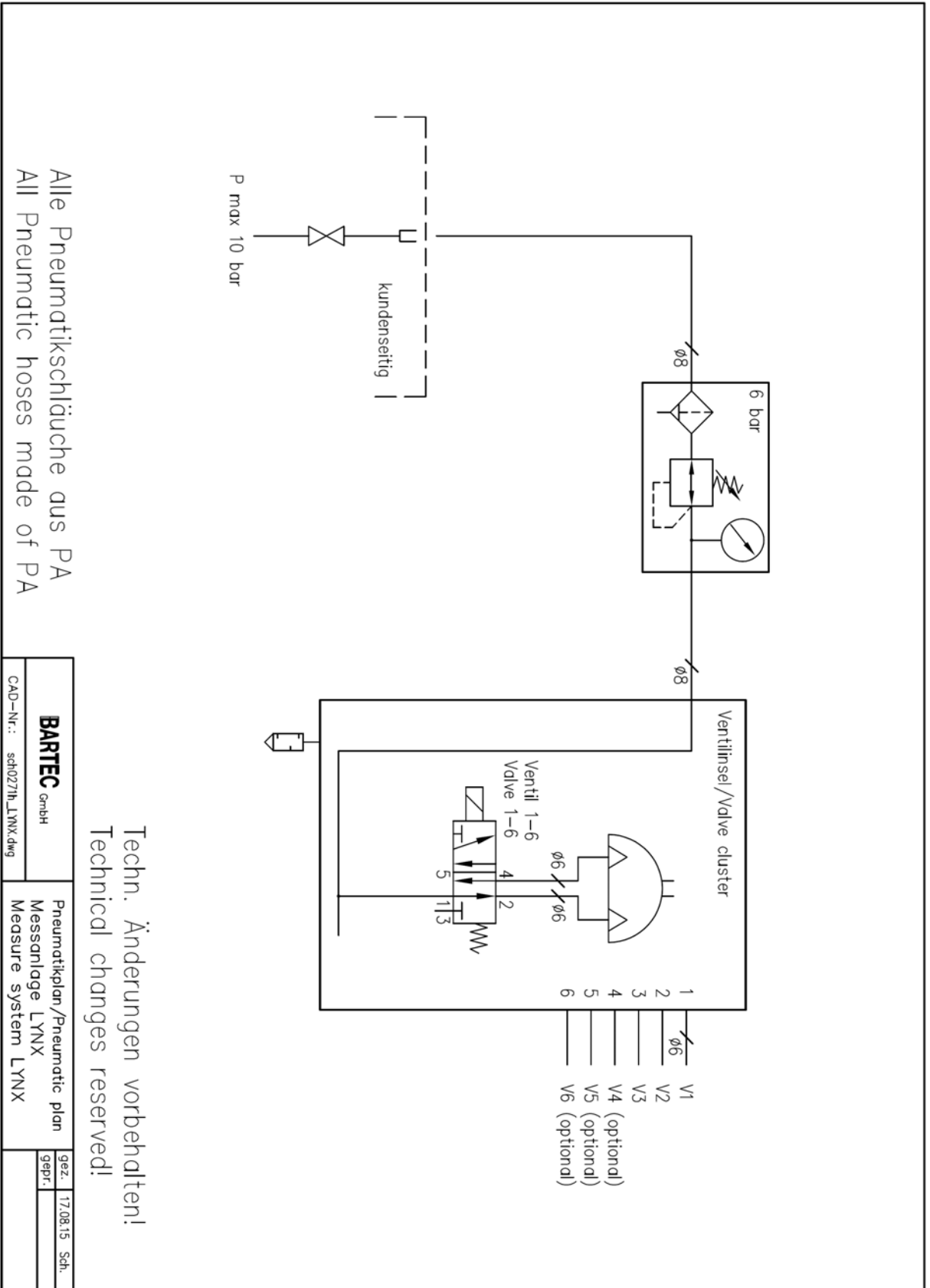


Techn. Änderungen vorbehalten!
 Technical changes reserved!

BARTEC GmbH	Hydraulikplan/Hydraulic plan Messanlage LYNX Measure system LYNX	gez.	17.08.15	Sch.
		gepr.		
CAD-Nr.: sch0271h_LYNX.dwg				

4.4 Pneumatic plan

BARTEC BENKE delivery scope



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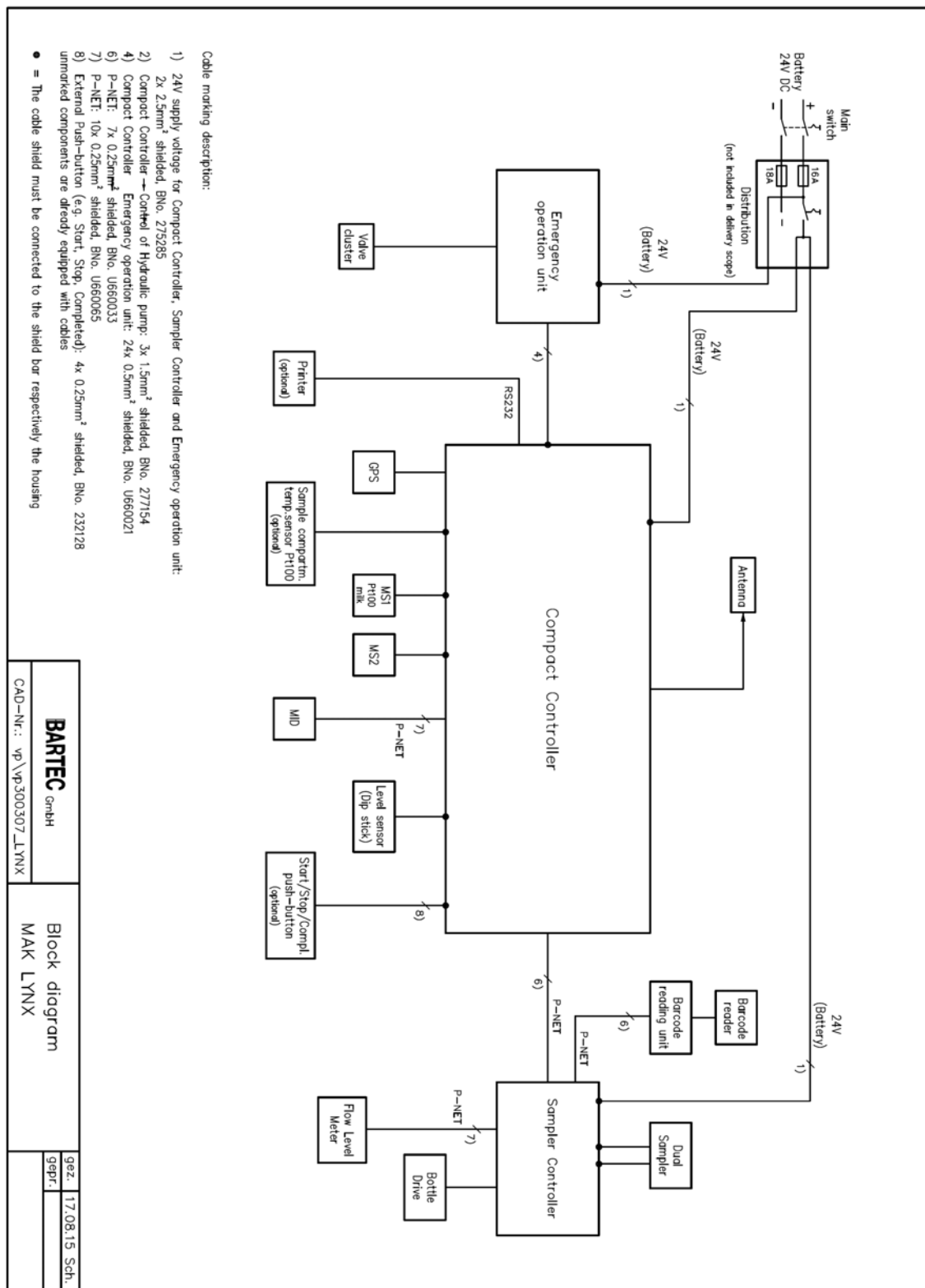
BARTEC GmbH	Pneumatikplan / Pneumatic plan Messanlage LYNX Measure system LYNX	
	CAD-Nr.: sct0271h_LYNX.dwg	gez. 17.08.15 Sch. gepr.

4.4.1 Information on the pneumatic system

It is essential to ensure that all the oils used in the pneumatic system and any additives which may get into the pneumatic system, including any anti-freeze agents, are confirmed absolutely safe for use in food production processes and comply with the relevant standards.

5 Electrical installation

5.1 Overview diagram



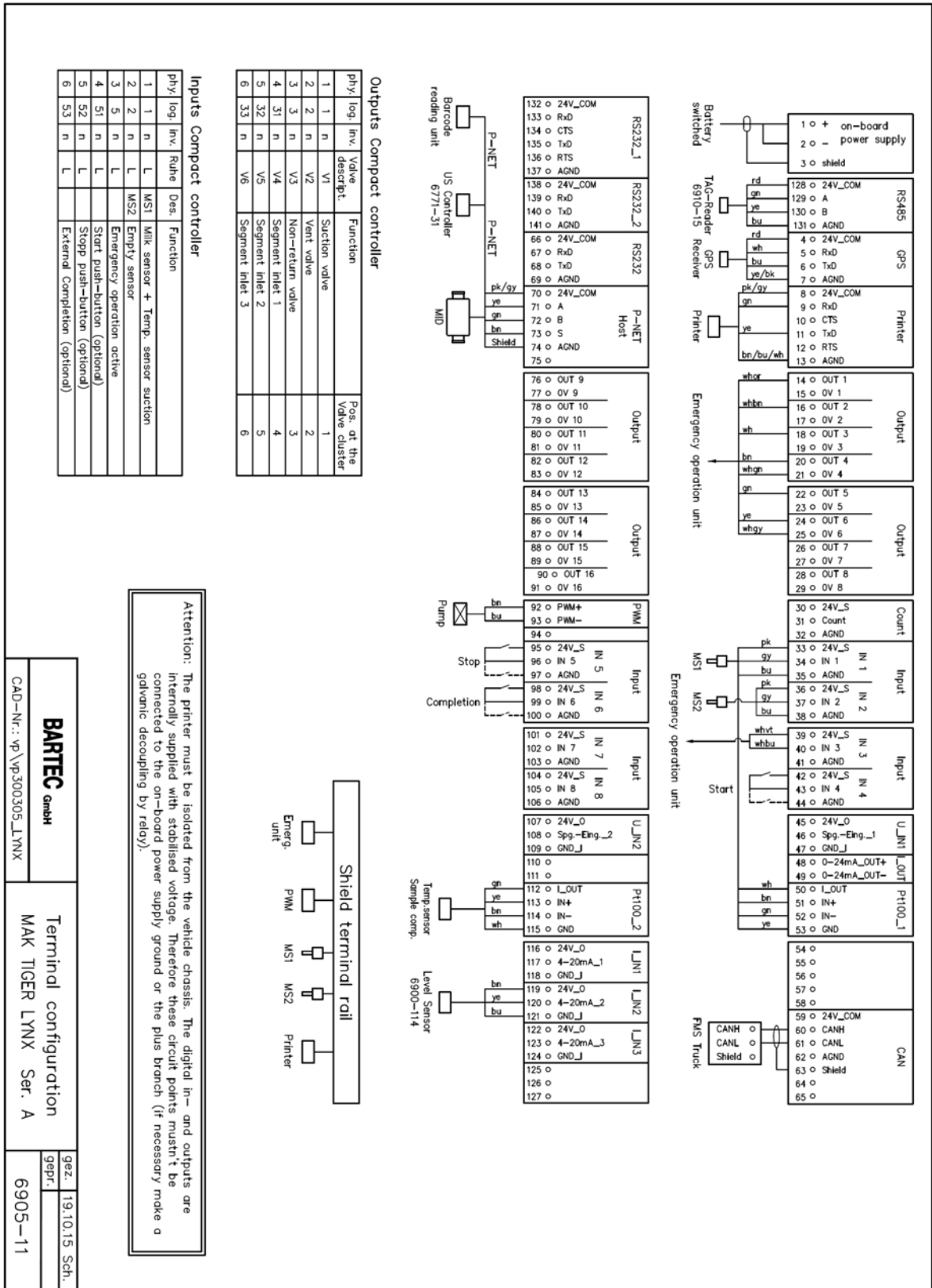
BARTEC gmbH		Block diagram MAK LYNX	
CAD-Nr.: vp\vp300307_LYNX		gez: 17.08.15 Sch.	
		gepr:	



IMPORTANT:
Mount GPS and modem antenna at the highest point of the truck, without any reception interferences.

5.2 Terminal connections of Compact Controller

5.2.1 Terminal connections general



5.2.2 Terminal connections of Bottle Drive

Bottle Drive with pneumatic lifting device type 6774-10
Outputs of Ultrasampler type 6771-31

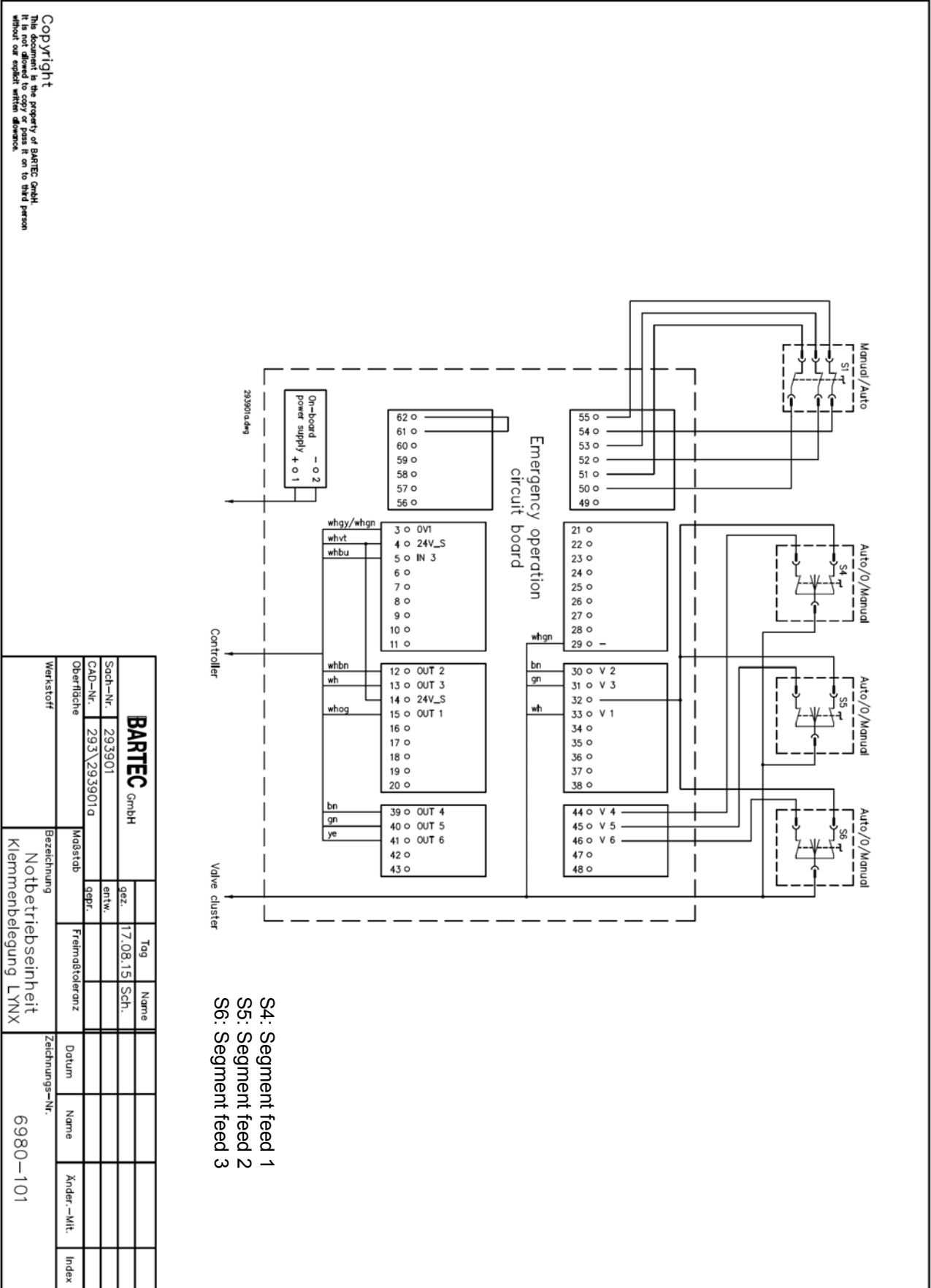
Terminal	Signal designation	Colour	Connected to
25	+24V on-board power supply, auxiliary supply for sensor system		As required
26	Digital input IN 1		As required
27	Digital input IN 2		As required
28	Digital input IN 3		As required
29	Digital input IN 4		As required
30	Digital input IN 5		As required
31	Digital input IN 6, (bottle in position)	bl	Bottle Drive
32	Digital input IN 7, (star in position)	wire jumper	P-Star (terminal 49)
33	Digital input IN 8, (bottle down)	pi/wh	Bottle Drive
34	0 V on-board power supply, reference ground for IN 1-8		As required
42	Signal M-Up, bottle lifting motor	bn	
43	Signal M-Down, bottle lifting motor	rd	
44	Signal M-Outlet, engine of outlet cassette	ye	
45	Signal M-Inlet, motor of inlet cassette	gn	
46	Signal M-star, motor of star wheel drive	rs	
47	Signal P-star, self-holding contact for star wheel drive	pk	
48	Ground reference potential for signal P-star	gywh	
49	Signal P-star, feedback signal	wire jumper	IN 7 (terminal 32)
50	+ 24 V on-board power supply line for bottle drive	bk	
51	GND on-board power supply line for bottle drive	bnwh	
⊕	Shield connection for bottle drive cable		
⊕	Shield connection on-board power supply cable		
52	+ 24 V on-board power supply feed-in		Truck battery+
53	GND on-board power supply feed-in		Truck battery -
54	+ 24 V on-board power supply output	rd 1,5 mm ²	Terminal 39, sampler board
55	AGND on-board power supply output	bu 1,5 mm ²	Terminal 40, sampler board
56	+ 44 V operating voltage output for sampler 1	bk 1,5 mm ²	Terminal 41, sampler board

5.2.3 Terminal connections of Bottle Drive Mini

Bottle Drive Mini type 6774-12
Outputs of Ultrasampler type 6771-31

Terminal	phy.	log.	inv.	Function
6	1			
7	2	82		Bottle UP/DOWN
8	3	83		Bottle transport
9	4	84		Magnetic plate motor (via relais)
10	⊕			Reference ground for OUT 1-4
11	5			
12	6			
13	7			
14	8			
15	⊕			Reference ground for OUT 5-8

5.3 Wiring of Emergency Unit



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BARTEC GmbH		Tog		Name	
Sach-Nr.	293901	gez.	17.08.15	Sch.	
CAD-Nr.	293\293901.d	ertw.			
Oberfläche		gepr.			
Werkstoff		Magstab	Freimastoleranz	Datum	
Bezeichnung		Notbetriebseinheit		Zeichnungs-Nr.	
Klemmenbelegung LYNX		6980-101			
		Änder.-Mitt.		Index	

6 Technical data

Measuring system-specific data	
Operating voltage	DC 24 V (9 - 36V) on-board power supply (load dump fixed, stabilized)
Emergency operation	On-board power supply 24 V (valves)
Valve terminal	6 bar (maintenance unit)
Suction power	max. 500 l/min during intake, max. 500 l/min during pumping over
Drive	Hydraulic motor 16,8 cm ³
Flow rate of hydraulic oil	about 25 l/min @ 200 bar
Speed	about 1400 revs/min
Hydraulic connection	> 16 mm
Hydraulic fluid	> 60 l with oil cooler
Connections	2,5" Clamp, Purge line DN 40
Precision	≤ 0,5 %
Lowest intake quantity	50 l
CIP	yes; \mathcal{I} max. 85 °C @ 2 bar
Mechanical data	
Material of milk conduit	V ₂ A; PTFE; PEEK, POM
Dimensions	See dimensional drawing
Weight	approx. 230 kg
Ambient conditions	
Operating temperature	0 ... + 85 °C medium; - 20 ... + 50 °C electronics
Storage temperature	- 20 ... + 60 °C (without fluid)
Protection type	IP 65

6.1 Three-dimensional representation of basic set

