FAS
modern industrial solutions

ENERGY SAFETY COMPETENCE

LPG, LNG, CNG, INDUSTRIAL MANAGEMENT

Petrochemical industry inspector by Olivier Lantzendörffer

2016

FAS modern industrial solutions

CONTENTS

Important Notes

The appearance and the disposition of elements and components may be different from the illustrations. The manufacturer retains the right to execute some technical changes without any prior advertising without any influence on the quality of the products.

CAUTION!
Hydrocarbon gas es and refinery products are flammable products! Danger of freezing! Installation and servicing have to be carried out by qualified personnel only .

Professionals have to be trained and qualified especially to work with the equipment for flammable gases and liquids. The operation with liquefied gas installations is only permitted, if every safety rule and regulation is strictly observed and considered .

Please read and follow all instructions, guidelines and rules as per description in the accompanying documents. The guarantee obligations will be invalid in case of contempt against rules and instructions . The manufacturer resumes no liability for damages which were a result of the improper use of the installations.

DISCLAIMER
The information of this catalogue are compiled with utmost care and according to current knowledge . However company FAS resumes no warranty for accuracy, completeness and actuality o f the contents. All written texts and stated dimensions in this catalogue are non-binding. The graphics and illustrations are exemplary. Construction and design changes are expected.

Flüssiggas-Anlagen GmbH

The Company was established in 1975 and is specialised in the production and development of processing equipment for the mineral oil industry and gas companies.

With over 40 years of experience and our international team we provide independent and safe energy supply. Qualified and professional employees develop environment-friendly solutions in the area LNG, LPG and CNG systems (gas stations, industry, communities).

The sustainable and very effective partnership with market leaders in the pump, compressor and measurement technology divisions in numerous application areas enables us to materialize the highest customer requests for quality and energy efficiency.

In the past years, FAS developed many own products extended new market segments to satisfy the increased demands from our customers. We extended our production plant several times und also entered into cooperation with various partners, with which we developed innovative solutions to satisfy the highest standards of our customers.

Today FAS has at its disposal top modern and large-scale production facilities and is able to produce all the innovative FAS-products in possible highest quality reliably and on schedule. The products developed by FAS and it's cooperation partners are manufactured on most modern machines by highly qualified and efficient experts and are subject to a very extensive quality securing system.

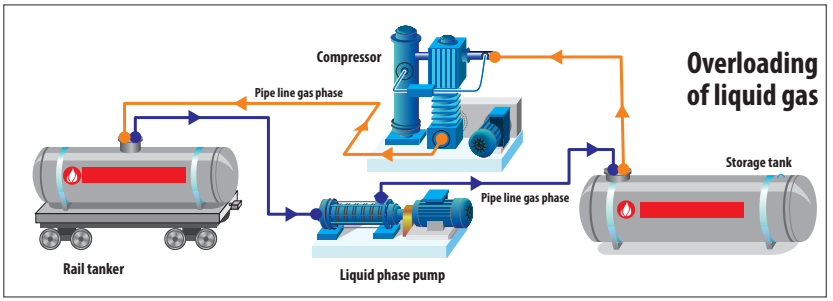
The company can resort today to one of the best assorted and largest stock of equipment of any kind destined for all industrial LPG applications withi n Europe. With more than thousands of different articles on stock, FAS has one of the widest assortments of this branch world-wide. FAS is represented by own branches, local sales consultants or representatives in almost every important market of Europe. I t is our permanent endeavour to develop our products and to keep the high-quality standard to achieve furthermore the most competitive advantage together with our customers also in the future.

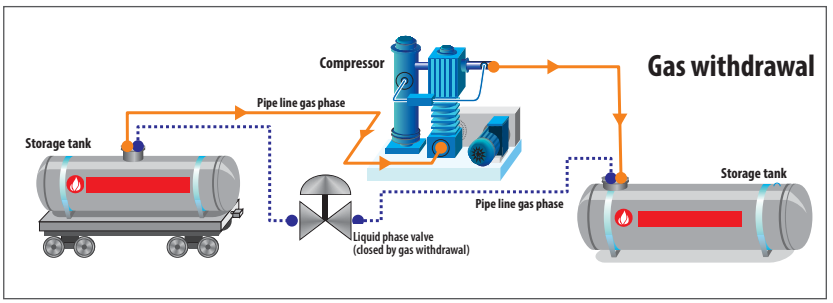
Made in Germany obligates! The total manufacturing, development and sales process of our products is executed and organised by a certified quality management system according to EN ISO 9001:2008. Our products are produced according to EU-standards and delivered with the CE sign. Further international recognised standards or rather product certifications are followed or are rather available and are adjusted to the regional standards.

A Compressors • Pumps • Complete installations and units • Fittings

Dry run piston compressor
- vertical execution
- oil-free dry run piston compressor
- v-belt drive
- air cooler
- suction and pressure gauge

Order No.	Type Corken	Max. capacity (m^3/h)
21 050	91	13
21 054	291	27
21 055	491	60
21 056	691	102
21 059	891	200
Order No.	**Type Blackmer**	**Max. capacity (m^3/h)**
21 104	161	26
21 105	361	58
21 106	601	100
21 097	942	200





Single stage compressors (gas compression proportion less than 5:1) are normally used to transfer propane/butane from rail tankers and tank ships.

Two staged compressors are used for a gas compression proportion greater than 5:1.

Compressors with water coolers are used for great differential pressures and high temperatures.

Model line		Single stage compressors							Two stage compressors						
		D91	D291	D491	D491-3	D691	D691-4	D891(a)	FD151	D191	FD351	D391	D590	FD591	D791(a)
Cylinder diameter, mm	1 stage	1 cylinder	76,2	101,6	76,2	114,3	101,6	114,3	63,5	76,2	69,9	114,3	152,4	152,4	152,4
	2 stage	76,2							31,8	44,5	44,5	63,5	82,5	82,5	82,5
Piston stroke, mm		63,5	63,5	76,2	76,2	101,6	101,6	101,6	63,5	63,5	76,2	76,2	101,6	101,6	101,6
Capacity, m^3/h:															
Min. at 400 U/min^{-1}		6,8	13,6	29,2	16,7	49,6	39,4	96,2	79	6,8	117	18,8	30,9	30,9	87,0
Max. at 825 U/min^{-1}		14,1	25,4	60,3	34,3	102,3	81,6	192,4	164	14	14,4	38,7	63,7	63,7	179,6
Max. operation pressure, bar		24,1	24,1	24,1	42,4	24,1	42,4	32,1	82,8	42,4	82,8	43,1	24,1	42,4	42,4
Max. power consumption, kW		5,6	11	11	11	26,1	26,1	34	11	11	11	11	34	26,1	34
Max. piston rod liability, kgs		1633	1633	1814	1814	2495	3175	3175	1633	1633	1814	1814	3175	3175	3175
Max. outlet temperature, °C		177	177	177	177	177	177	177	177	177	177	177	177	177	177
Double gland T-style (optional)		•	•	•	•	•	•			•		•		•	
Flanges ANSI/DIN (optional)		•	•	•	•	•	•		•	•	•	•		•	
Water cooling (optional)						•	•				•	•	•	•	

Stationary compressor unit Type Corken-FAS

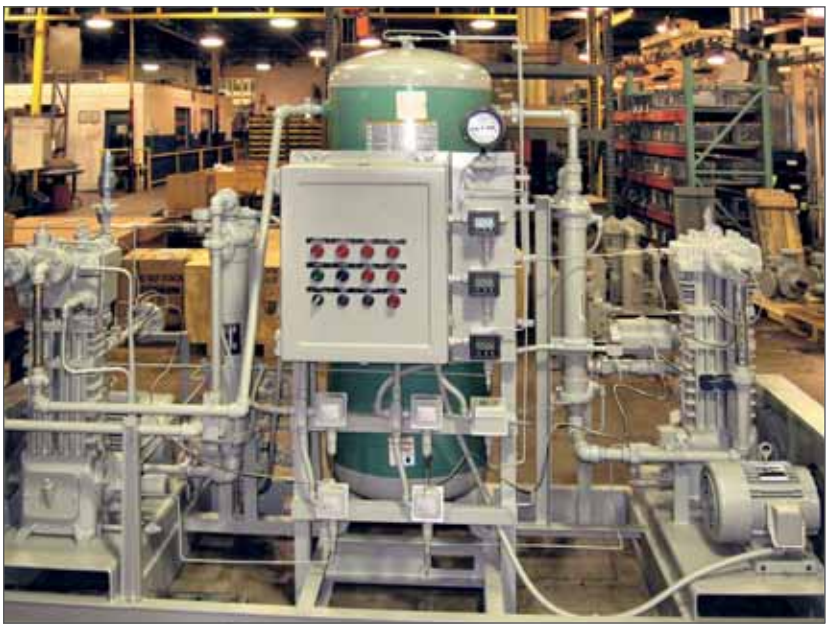
- **Oil free**
- **Air cooling**
- **External electrical switch box for mounting out of Ex zone**
- **On common base frame**

Basic Version:

- *Compressor unit with suction and pressure gauges*
- *Mechanical liquid trap*
- *V-belt tensioner*
- *Electrical motor Ex-execution*
- *V-belt drive with protection plate*

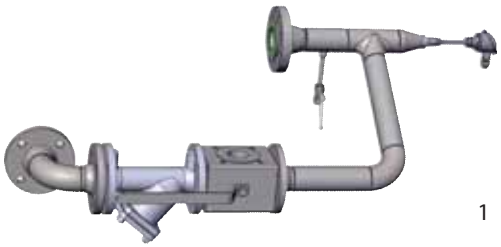
Automatic set standard consisting from:

- *Max. pressure switch (pressure side)*
- *Min. pressure switch (suction side)*
- *Liquid level sensor in liquid trap*



Dry running piston compressor unit Type FAS-Corken, PN 25

- to transfer of propane/butane from tankers, rail tankers or road trucks into the storage tanks
- three-phase motor in Ex-Execution with V-Belt drive
- cylinder and cylinder head from ductile graphite iron ASTM A536 on common ground frame
- grounded and painted



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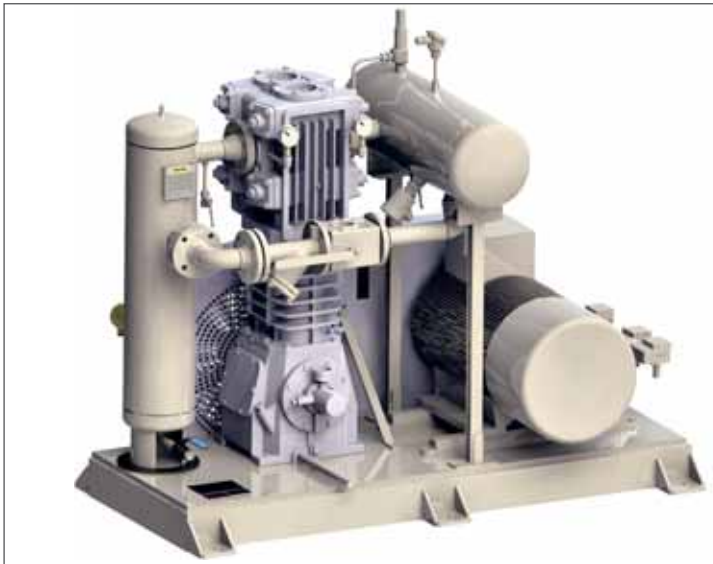

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3

Supplementary equipment

Order No. FAS		Capacity, m^3/h	Motor power, kW
Basic equipment	Expanded equipment		
210141	**210142**	13	3,6
210930	**210932**	27	5,0
210952	**210953**	60	10,0
210640	**210641**	102	17,5
218201	**218202**	180	30,0

Order No.	Description	Picture
Expanded equipment incl. four-way-ball valve, strainer, incl. pipe line for mounting on compressor unit		1
184560	Max. pressure switch (pressure side)	
184573	Min. pressure switch (suction side)	
184621	Oil pressure switch	
26130	Level sensor	
21195	Bracketry for mounting of pressure switches	
26301	Amplifier	
26312	Resistance thermometer	
263140	Measuring transmitter PMT 50 Ex	
939854	Complete anti-vibration set with built-in surge drum	3

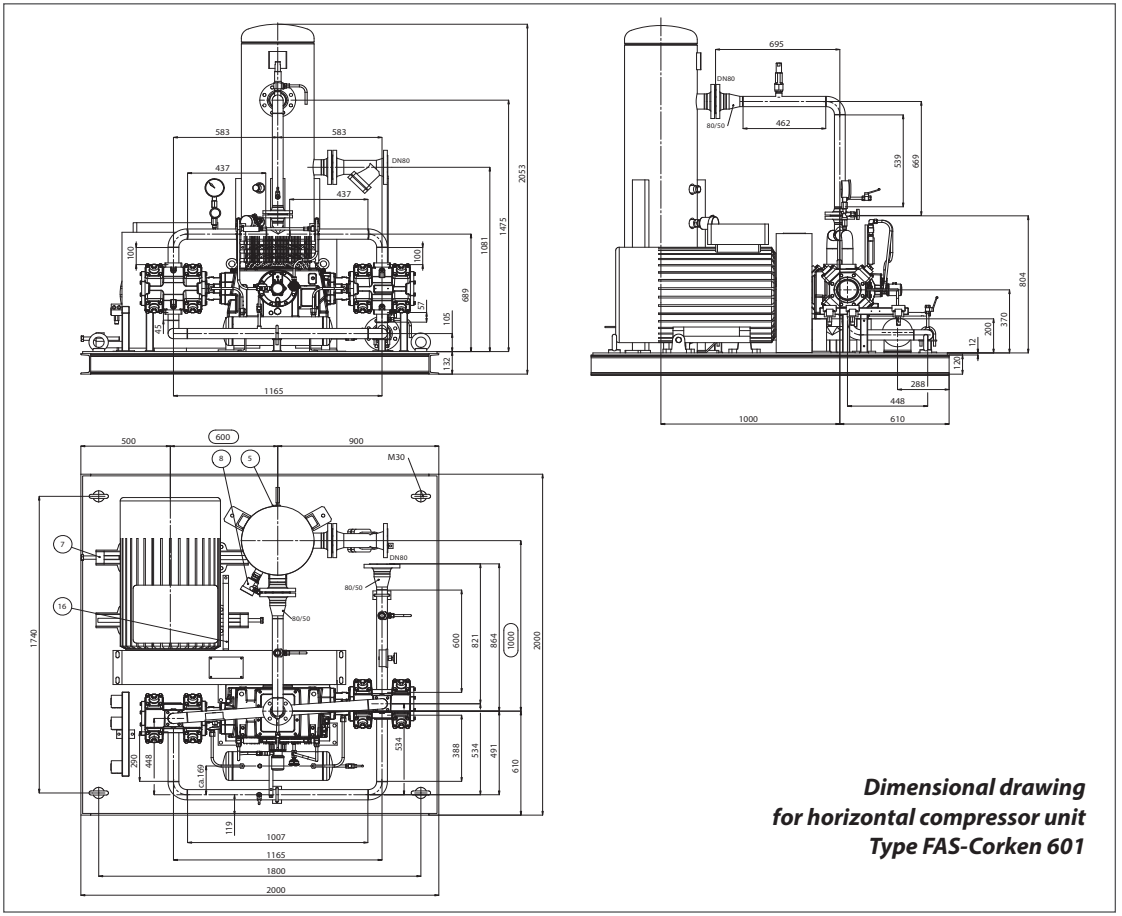
Horizontal industrial compressors

- up to 4-stage version
- max. pressure – 310 bar
- max. cubic capacity voltage more than 600 m^3/h
- piston stroke – 76,2 mm
- max. piston rod strain – 3175,2 kgs
- max. motor capacity – 58 kW
- max. outlet temperature – 176,7°C
- speed range – 400...1200 U/min^{-1}

Two stage model	HG602AB	HG602AD	HG602BD	HG602BE	HG602DE	HG602DF	HG602EF
Cylinder diameter, inch	8×6	8×4	6×4	6×3,25	4×3,25	4×2,75	3,25×2,75
Capacity (1200 min^{-1}), m^3/h	351,7	351,7	195,4	195,4	84,6	84,6	54,5
Weight, kg	430,0	423,2	386,9	380,1	373,3	373,3	364,2
Water cooling (optional)	WG602AB	WG602AD	WG602BD	WG602BE	WG602DE	–	–
Single stage model	**HG601AX**	**HG601BX**	**HG601CX**	**HG601DX**	**HG601EX**	**HG601FX**	**HG601AA**
Cylinder diameter, inch	8	6	5	4	3,25	2,75	8×8
Capacity (1200 min^{-1}), m^3/h	351,7	195,4	134,4	84,6	54,5	56,0	703,5
Weight, kg	423,2	393,7	390,5	373,3	364,2	364,2	456,8
Water cooling (optional)	WG601AX	WG601BX	–	WG601DX	WG601EX	–	WG601AA
Cylinder bore, mm	203,2	203,2	152,4	152,4	127	127	101,6
Max. operation pressure, bar	21,7	21,7	25,2	25,2	51,7	51,7	70,0

Horizontal compessor unit Type FAS-Corken HG601BB

- medium – LPG
- cylinder number/stage number – 2/1
- capacity – up 375 Nm^3/h
- min. inlet pressure – 0,5 bar
- max. differential pressure – 10 bar
- speed – 1100 U/min^{-1}
- With pressure monitoring system (Gas/oil), liquid gas trap, strainer, four-way ball valve, safety relief valve (adjustable), V-Belt drive with protection plate
- Three-phase motor with a capacity of: 58 kW, EEx IICT3, 400/690 V, 50 Hz



Dimensional drawing for horizontal compressor unit Type FAS-Corken 601

Mobile compressor unit

- for use in Ex zone
- dry running piston compressor unit with three phase motor 400/690 V in EX-execution
- with pressure monitoring and safety fittings
- Ex-control unit for three phase motor with 30 m connection cable
- 2 LPG hoses a' 12 m with shut-off valves
- mounted on a light ground plate, grounded and painted, mounted on a hand cart (up to 60 km/h)

Additional equipment for liquid phase: high pressure hoses, sight flow indicator, strainer, valves.

Can be constructed on a base frame for the mounting in a car.

Compressor Type		161	161 291	361	361 491	601 691	942 D891
Order No. FAS		21221	21093	21223	21223/21095	21226/21064	21234/21820
Connection	Compressor (NPT IG)	¾"	¾"	1¼"	1¼"	1½"	2" ANSI
	Unit (flange DN)	20	25	32	32	40	50
Cylinder number		2	2	2	2	2	2
Piston stroke, mm		63	63	76	76	102	102
Max. capacity, m^3/h		26	26	58	58	100	200
Min. inlet pressure, bar		0,21	0,21	0,21	0,21	0,21	0,21
Max. outlet pressure, bar		24,1	24,1	20,7	22,4	24,1	29,0
Speed, U/min^{-1}		790	790	790	790	770	790
Max. approved consuption of electricity, kW		8,0	8,0	15,0	15,0	30,0	37,0
Motor capacity, kW		5,0	5,0	10,0	10,0	17,5	30,0
Weight of compressor, kg		104	104	153	153	322	410
Weight of complete compressor unit, kg		140	265	214	400	630	990

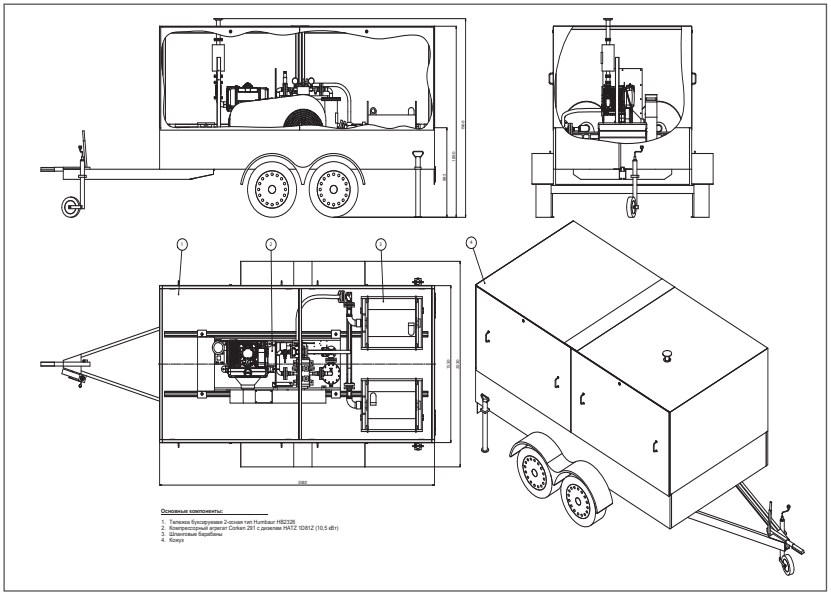
Mobile compressor unit

- **for use in Ex zone**
- **dry running piston compressor unit with Diesel motor Hatz 1D81Z for Ex-protection area**
- **with pressure monitoring and safety fittings**
- **2 LPG hoses a' 12 m**
- **mounted on a light base construction, primed and painted, mounted on a trailer (up to 60 km/h)**

Additional equipment for liquid phase: high pressure hoses, visual flow indicator, strainer, valves.

Can be constructed on a base frame for the mounting in a car.

Order No. FAS		933930
Compressor Type		**291**
Connection	Compressor (NPT IG)	¾"
	Unit (flange DN)	25
Cylinder number		2
Piston stroke, mm		63
Max. capacity, m^3/h		26
Min. inlet pressure, bar		0,21
Max. outlet pressure, bar		24,1
Speed, U/min^{-1}		790
Max. approved consumption of electricity, kW		8,0
Motor Type		**Hatz 1D81Z**
Cylinder number and capacity, l		1/0,67
Compression grade		20.5
Max. motor capacity (3000 U/min^{-1}), kW		10,3
Fuel consumption (2000 U/min^{-1}), g/kW•h		240



Dimensional drawing of mobile compressor unit with diesel motor drive

Industrial compressors

Dry running piston compressor unit for ammonia (NH_3)

- technical process for a chemical facility
- combined 1- and 2-staged execution
- automated change over in 2-staged execution
- application of control equipment with AUMA-drives
- heat exchanger as an intercooler
- complete pipe system
- liquid trap
- pulsation damper
- instrumentation and monitoring of operation process
- suitable for location outside and inside
- suitable for installation in Ex-Zone II

Technical data	
Inlet pressure min.	0,5 bar
Inlet pressure max.	21 bar
Cubic capacuty	1-staged operation – 302,8 m^3/h
	2-staged operation – 179,4 m^3/h
Motor capacity	58 kW
Weight	2650 kg

Dry running piston compressor unit for propylene

- rail tanker unloading station
- medium: Propylene
- 1-stage design
- complete pipe line system
- liquid trap
- instrumentation and monitoring of operation process
- suitable for location outside and inside
- suitable for installation in Ex-Zone II

Technical data	
Inlet pressure min.	0,5 bar
Inlet pressure max.	19 bar
Cubic capacuty	393 Nm^3/h
Motor capacity	58 kW
Weight	2289 kg

Dry running piston compressor unit for Hexane

- technical process for a chemical facility
- medium: Hexane
- 2-staged execution
- heat exchanger as an intercooler
- controlling of frequency converters
- complete pipe system
- instrumentation and monitoring of operation process
- suitable for location outside and inside
- suitable for installation in Ex-Zone II

Technical data	
Inlet pressure min.	0,5 bar
Inlet pressure max.	25 bar
Cubic capacuty	13 Nm^3/h
Motor capacity	5,5 kW
Weight	460 kg

Dry running piston compressor unit for Nitrogen (N_2)

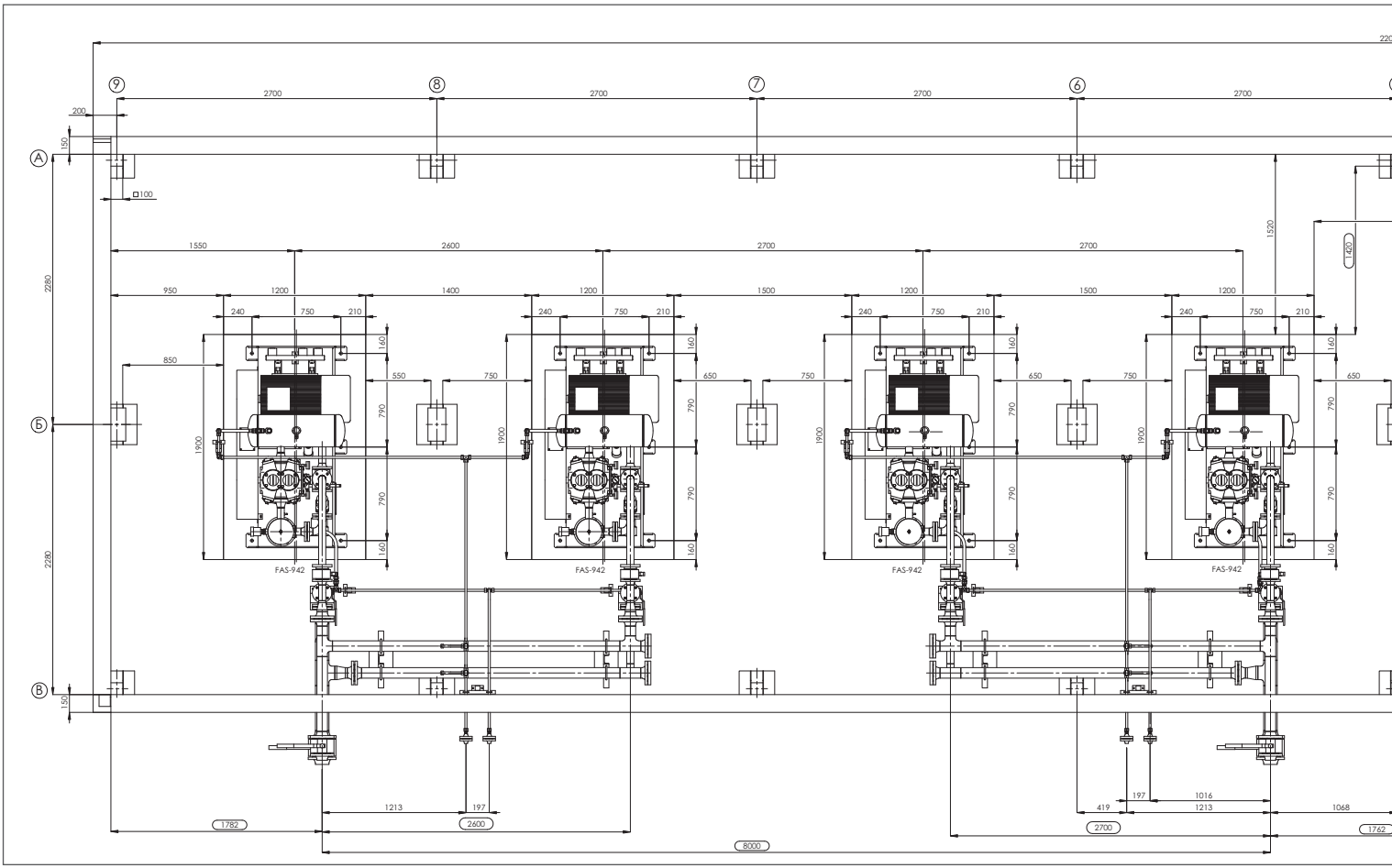
- technical process for fertilizer facility
- 2 compressors, 2 process lines
- surge drum acc. To ASME with isolation
- 2-staged compressor FD351
- heat exchanger as an intercooler
- complete pipe system acc. To ASME 31.3
- medium contacting parts from stainless steel
- instrumentation and monitoring of operation process
- fittings from ASME
- instrumentation with UL/FM
- suitable for location inside
- suitable for installation in Ex-Zone II

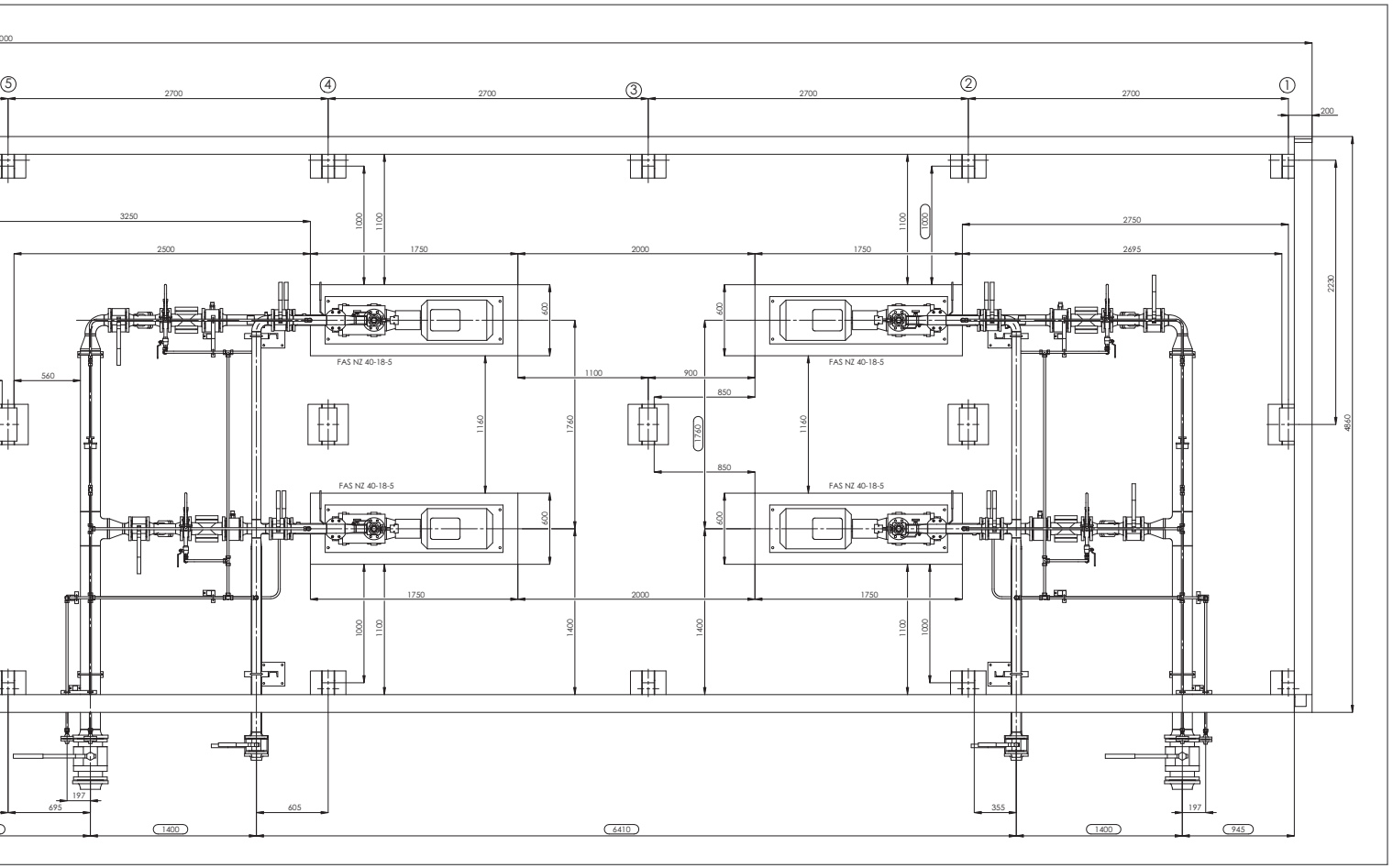
Technical data	
Inlet pressure min.	5 bar
Inlet pressure max.	58 bar
Cubic capacuty	1-staged – 9,6 Nm^3/h / 2-staged – 3,9 Nm^3/h
Motor capacity	2×7,4 kW
Weight	3476 kg

Complete pump-compressor station
Type FAS for LPG-terminal:

- 4 pcs. of dry running piston compressor units FAS-891, max. cubic capacity voltage 200 m³/h each, with motor 30 kW, 400/690 V 50Hz, EEx e II T3
- 4 pcs. of FAS pump units Type NZ 40-8-15, nominal delivery rate 40 m³/h each, differential pressure – 8 bar, with motor 15 kW, 400/690 V 50 Hz, 2G EExe IIT3

Inlet/Outlet		
Pump group	Inlet:	DN 150
	Outlet	DN 80
	Bypass line	DN 65
Compressor group	Inlet:	DN 80
	Outlet	DN 100

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Accessories, additional equipment and safety devices for piston compressors

Mechanical liquid gas trap PN 25 type FAS
- made from steel
- with ball valve 3/8" NPT made from steel for condensate drainage
- available connection for installation of an electrical filling-level sensor

Order No.	Type compressor	Connection	Execution	Content, l	Weight, kg
21 130	161/162	DN 20	TKW	5,8	18,4
21 131	161/162	DN 25	for stationary systems	5,8	18,7
21 132	361/362	DN 32		5,8	19,1
21 133	601/602	DN 40		7,8	21,3
21 134	942	DN 50		30,0	49,4
26 130	Filling-level sensor type VEGASWING, probe – stainless steel L=69 mm, case: synthetic, operating temperature range 40...150°C, operating pressure – up to 64 bar				
26 301	Switch amplifier for stationary systems, 1 channel intrinsically safe circuit (EEx i) IIC with relay outlet, 1 changeover contact, supply voltage: 230 V, 45 . . . 65 Hz, NAMUR				
21 137	Shut-off device, pneumatic, PN25 (for trucks), connection 2" NPT AG, control pressure 1,4 – 4,1 bar				

Mechanic liquid gas trap PN 25 Type FAS
- made from steel

Order No.	Type Compressor	Connection	Content, l	Weight, kg
21 171	Blackmer 161/162/361/362	1¼"	9,7	14,4
21 170	Corken 290/291/D291/490/491/D491		9,7	14,4
21 172	Blackmer 601/602		13,0	16,3

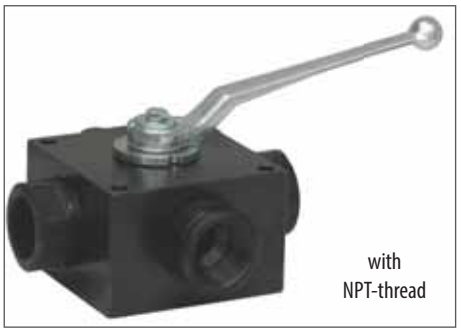
Safety relief valve PN 40 for stationary systems
- angled form
- soft seal
- free of non-ferrous metal
- set at 19 bar

Order No.	Inlet,"	Outlet,"	Weight, kg
21 145	G¾ AG	G½ IG	2,3

4-way ball valve PN 40

- from forged steel
- acc. to AD A4 requirements
- seals from PTFE/Viton

Executions:
A – with manual lever
B – with pneumatic actuator without spring reset, operating angle 90°, designed to handle a pilot pressure of 5-8 bar



with NPT-thread

with DIN-flanges

Order No.	Execution	Weight, kg	Connection	Type Compressor
21 140	A	5,1	¾" NPT	161/162
21 141	A	7,3	1" NPT	161/162
21 142	A	7,3	1¼" NPT	361/362
21 143	A	7,4	1½" NPT	601/602
21 240	B	16,3	¾" NPT	161/162
21 241	B	18,5	1" NPT	161/162
21 242	B	18,5	1¼" NPT	361/362
21 243	B	18,6	1½" NPT	601/602
21 147	A	5,7	DN 20	161/162

Order No.	Execution	Weight, kg	Connection	Type Compressor
21 148	A	7,1	DN 25	161/162
21 149	A	12,5	DN 32	361/362
21 150	A	14,2	DN 40	601/602
21 144	A	16,1	DN 50	942
21 247	B	16,9	DN 20	161/162
21 248	B	18,3	DN 25	161/162
21 249	B	23,7	DN 32	361/362
21 250	B	25,4	DN 40	601/602
21 244	B	27,3	DN 50	942

Pneumatic Actuator for 4-Way Ball Valve

- without spring reset
- operating angle 90°
- designed to handle a pilot pressure of 5-8 bar
- complete with mounting bracket and screws

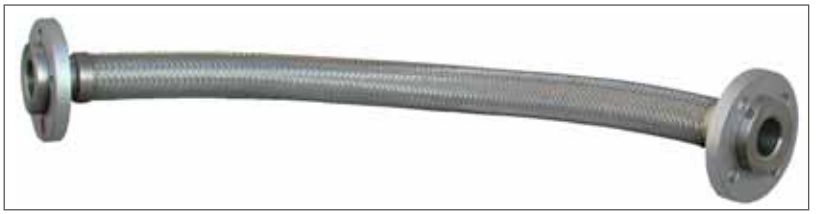
with NPT-thread

with DIN-flanges

Order No.	Execution
21 180	with NPT female thread (order No. 21140-21143)
21 020	with DIN flanges DN 20-32 (order No. 21147-21149)
21 181	with DIN flanges DN 40-50 (Order No. 21150 and 21144)
21 200	Limit switch in housing, Ex-proof, for position feedbacks, without display
19 748	5/2-way solenoid valve, Ex-proof, with NAMUR connection, for compressed air max. 10 bar, thread connection G¼", operating voltage 230 V-AC, 50 Hz
19 749	5/2-way solenoid valve, Ex-proof, with NAMUR connection, for compressed air max. 10 bar, thread connection G¼", operating voltage 24 V-DC

Flexible hose PN40

- from stainless steel
- on both sides lapped flanges acc. to DIN2656 from C-steel
- welded execution
- with single stainless steel covering
- for flexible connection of compressors to the pipeline



Order No.	Nominal diameter, DN	Length, mm	Weight, kg
21 175	25	1000	4,0
21 191	32		5,0
21 192	40		6,3
21 193	50		7,6

Repair kits for piston compressors

We offer a wide selection of spare parts for Blackmer and Corken compressors. We provide service and professional repair of compressors promptly.

Order No.	Type Compressor	Description	Quantity
21 151	161	Complete set of suction valves	1
21 152	162	Complete set of pressure valves	1
21 153	361	Piston rings	6
21 154	362	Expander rings	6
21 155	362B	Complete set of piston rod gaskets	1
		Connection rod bearing	2
21 157	601	Complete set of suction valves	1
21 158	602	Complete set of pressure valves	1
21 159	602A	Piston rings	6
21 161	942	Expander rings	6
21 163	290/291	Complete set of suction valves	1
21 164	D291	Complete set of pressure valves	1
21 165	490/491	Piston rings	6
21 166	D491	Expander rings	6
21 167	690/691	Complete repair set	
21 168	D691	Complete set of piston rod gaskets	1
		Connection rod bearing	2

Temperature monitoring at the compressor outlet

Art. 26 312

Order No.	Description
26 130	Filling-level sensor, process connection – 1"NPT, PN25, output – 2-wire NAMUR-signal, designed for use in Ex zone
26 301	Switch amplifier 1 channel intrinsically safe circuit (EEx i) IIC with relay outlet, 1 changeover contact, supply voltage: 230 V, 45…65 Hz, for installation in an electrical switch box, NAMUR, type of protection (EEx i) II C
26 312	Resistance thermometer PT 100, M18×1,5 AG connection, stainless steel probe Ø 6 mm, length 100 mm, 3-wire-connection, for temperature monitoring of compressed gas
26 3140	Measuring amplifier PMT 50 Ex, intrinsically safe inlet (Ex ia) for resistance thermometer PT 100, with relay outlet for 2 limits 110°C/130°C, with temperature indication, with voltage and current outlet for additional level indicator. Operating voltage: 230 V AC.
26 316	Welding Thermometer well for temperature sensor acc. to DIN 43769. Form D1, material C 22.8

Pressure monitoring for compressor suction and pressure line

Order No.	Description
High pressure switch (pressure side), setting range 4-25 bar, set at 15 bar	
18 4561	Pressure switch with Ex I – equipment, for intrinsically safe circuits, break contact with resistance combination for break of circuit and short circuit monitoring, single pole changing over, gilt contacts, differential gap 1,0 bar, only for suitable switch amplifiers (FAS 26301 against more cost).
Low pressure switch (suction side), setting range 0,5 – 6 bar, set at 0,8 bar	
18 4573	Pressure switch with Ex i – equipment, for intrinsically safe circuits, break contact with resistance combination for break of circuit and short circuit monitoring, single pole changing over, pressure side connection – nipple G1/2"-AG, gilt contacts, differential gap 0,25 bar, only for suitable switch amplifiers (26301 against more cost).
Pressure switch oil-pressure control, setting range 0,5 – 6 bar, set at 1 bar	
18 4621	Pressure switch with EX I – equipment, for intrinsically safe circuits, break contact with resistance combination for break of circuit and short circuit monitoring, single pole changing over, gilt contacts, differential gap 0,2 bar, only for suitable switch amplifiers (FAS 26301 against more cost).
Accessories for pressure switches	
21 195	Bracketry for securing pressure switch to steel base plate including pulse conductors and assembly

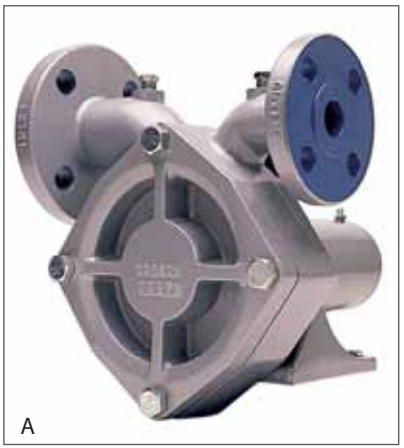
LPG-Pumps
(for LPG filling stations, trucks and stationary facilities)

- **housing from ductile cast iron ASTM A536**
- **mechanical seal**
- **with free shaft end**

Executions:
A – with NPT thread flanges
B – with flanges acc. to DIN 2635
C – with ANSI-flanges for internal valve

Order No.	Execution	Pump Type	Capacity, l/min (capacity data at 5 bar differential pressure)	Max. differential pressure, bar	Weight, kg
Corken-Pumps					
21 608	B	FD150	180	13,5	28,0
21 296	A	Z2000	309	8,6	39,0
21 297	C	Z3200	424	8,6	71,0
91 727	D	Z3500	424	8,6	73,0
21 788	C	Z4200	1390	8,6	96,0
21 718	C	Z4500	1390	8,6	92,0

Order No.	Pump Type	Capacity, l/min (capacity data at 5 bar differential pressure)	Max. differential pressure, bar	Weight, kg
Blackmer-Pumps				
21 301	LGB 1"C	20	8,6	9,0
21 302	LGB 1"PC	35	8,6	9,0
21 303	LGL 1¼"	50	10,5	14,0
21 304	LGL 1½"	90	10,5	14,0
21 305	LGL 2"E	220	10,5	40,0
21 306	LGL 3"E	490	10,5	74,0
21 337	LGL 4"	950	10,5	99,0


A

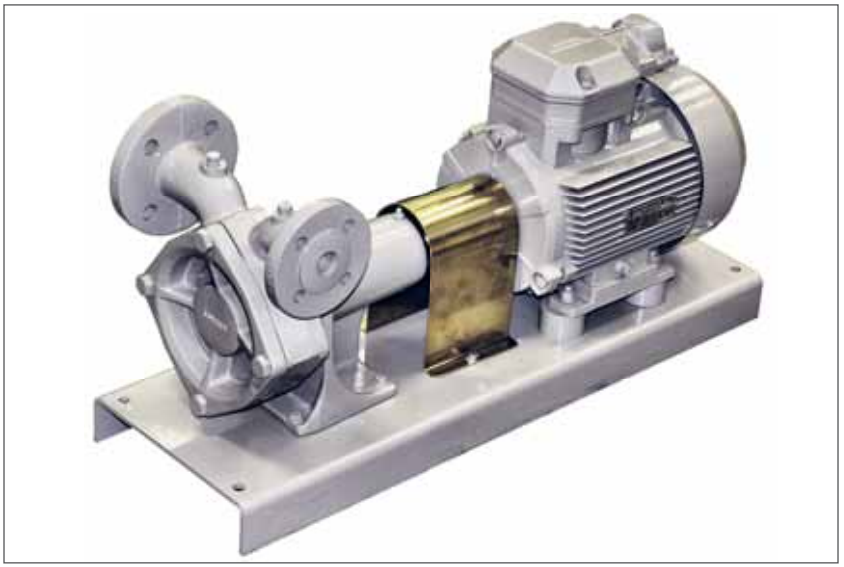

B


C

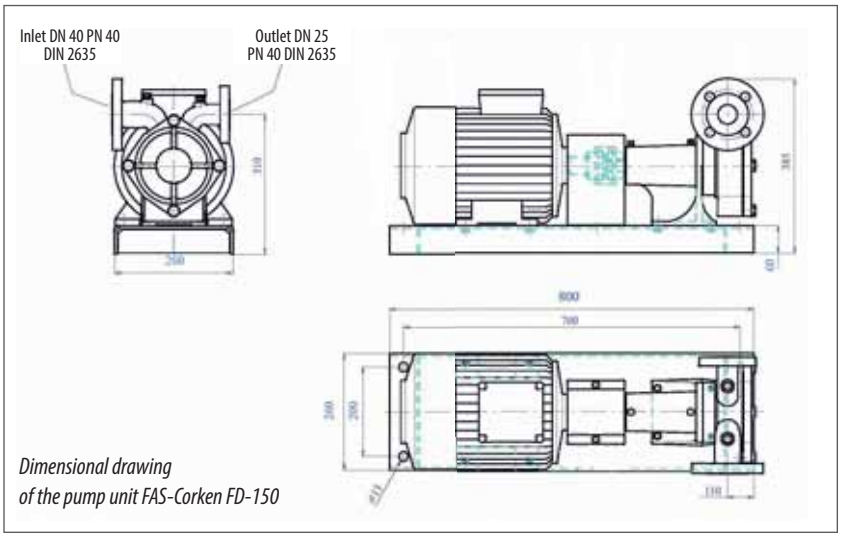

D

Pump unit type FAS-Corken FD-150

- housing from ductile cast iron ASTM A536
- flow rate – up to 180 l/min
- max. differential pressure – 13,5 bar
- speed – up to 3000 U/min
- inlet – flange DN 40 (PN 40, DIN 2635)
- outlet – flange DN 25 (PN 40, DIN 2635)
- dimensions – 800×385×260 mm
- mechanical seal
- coupling
- Ex-Motor 400/690 V/50 Hz AC, E Ex II T3
- coupling protection
- mounted on a base plate, primed and painted



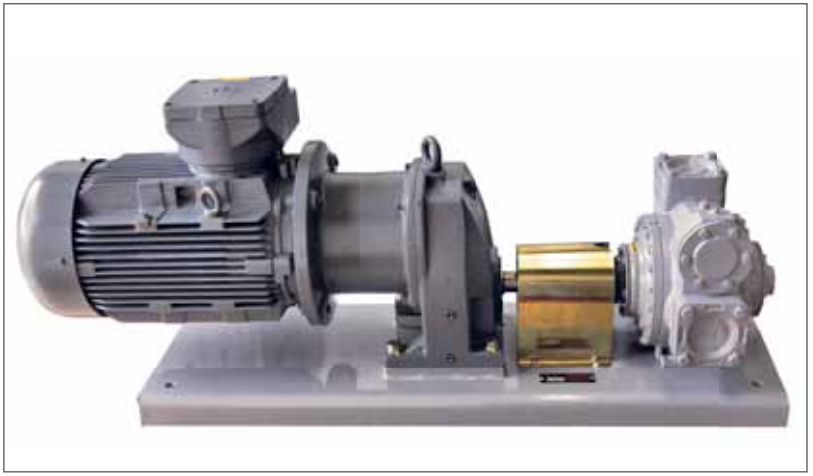
Order No.	Motor capacity, kW
91 434	4,6
91 501	5,5



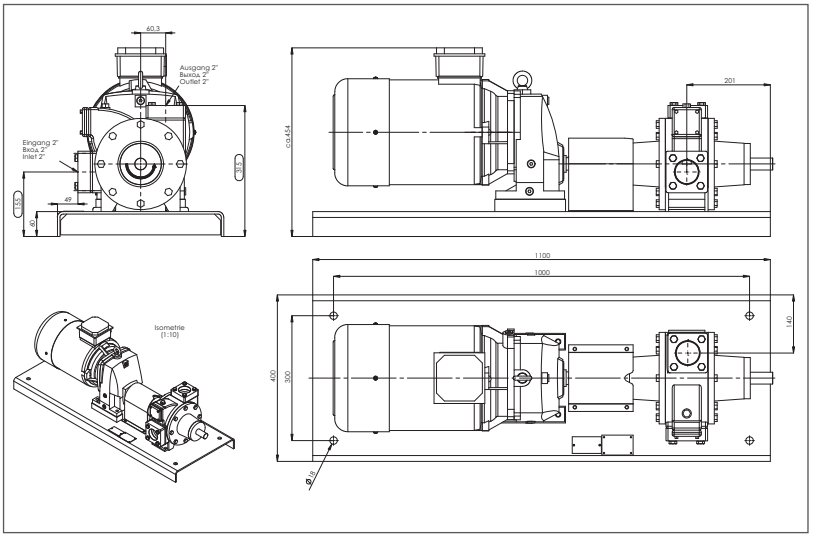
Dimensional drawing of the pump unit FAS-Corken FD-150

Pump unit type FAS-Corken Z2000

- housing from ductile cast iron ASTM A536
- flow rate – up to 290 l/min at differential pressure of 5 bar
- max. differential pressure – 13,5 bar
- inlet – flange DN 50 (PN 40, DIN 2635)
- outlet – flange DN 50 (PN 40, DIN 2635)
- mechanical seal
- coupling with coupling protection
- Ex-Motor 400/690 V/50 Hz AC, E Ex II T3
- mounted on a base plate, primed and painted



Order No.	Motor capacity, kW
Pump unit type FAS-Corken Z2000	
21 225	5,0
Pump unit type Blackmer LGL 2" E	
21 315	5,0

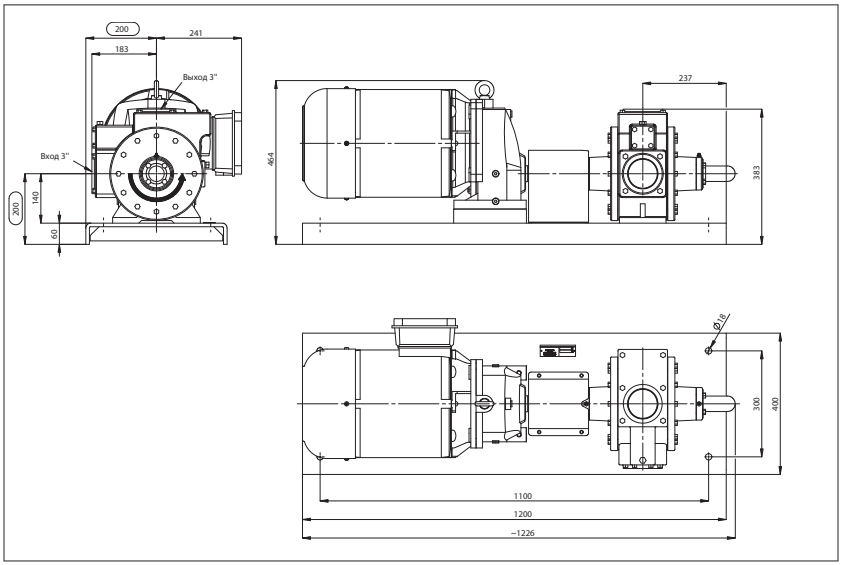


Dimensional drawing of pump unit FAS-Corken Z2000

Pump unit type FAS-Corken Z3200/3500/4500

- housing from ductile cast iron ASTM A536
- flow rate – 420 l/min at differential pressure of 4,5 bar
- inlet/outlet – flange DN 80 (Z4500 – DN 100)
- mechanical seal
- coupling with coupling protection
- Ex-Motor 400/690 V/50 Hz AC, E Ex II T3
- mounted on a base plate, primed and painted

Order No.	Pump Type	Motor capacity, kW
Pump unit type Corken		
21 808	Z 4500	15,0
21 3160	Z 3500	10,0
Pump unit type Blackmer		
21316	LGL 3″ E	10,0
21317	LGL 4″	15,0



Pump unit with hydraulic drive

- housing from ductile cast iron ASTM A536
- pumps – serial Z
- with coupling, mechanical seal
- hydraulic drive and adaptor, right handed

Left turning pumps and accessories for hydraulic drive at your require

Order No.	Pump Type	Capacity l/min at differential pressure of 5 bar	Rotation min^{-1}	Connection	
				Inlet	Outlet
21 5720	Z 2000	220	650	2″ NPT	2″ NPT
21 299	Z 3200	490		3″ ANSI	2″ NPT

Complete suction pump unit for the transfer of LPG from underground tanks

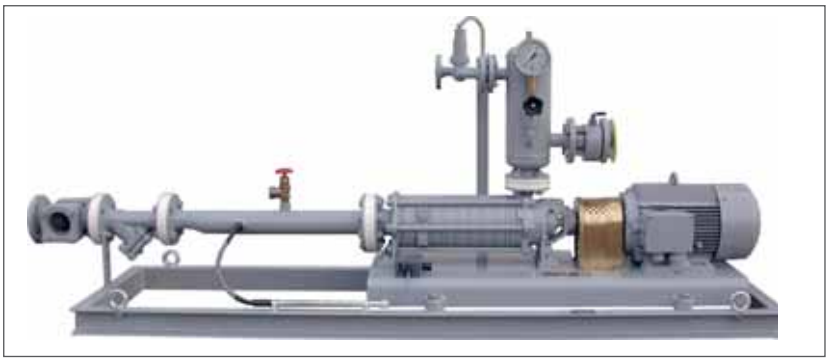
- side channel pump
- coupling with coupling protection
- Ex-Motor 400/690 V/50 Hz AC, E Ex II T3
- gas bubble trap
- mounted on a ground frame, grounded and painted

The complete side channel pump unit is equipped with two types of pump units:

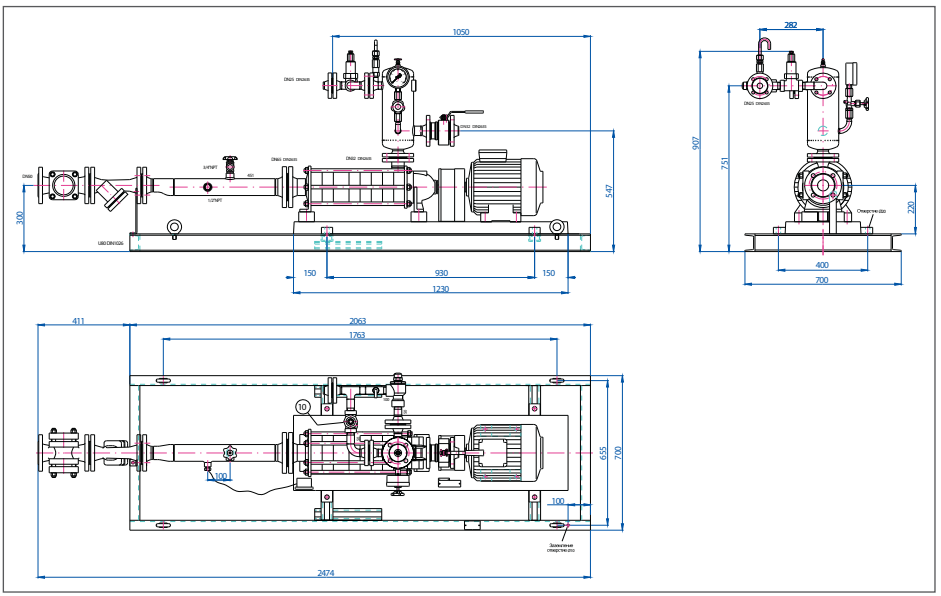
- *capacity 50 l/min (for one or two dispensers);*
- *capacity 100 l/min (for two or three dispensers),*
- *with three phase motor 5 or 6,8 kW.*

The gas bubble trap facility is equipped with a mechanical liquid gas trap, by-pass valve, pressure gauge with shut-off valve, back check valve, ball valve and differential valve, strainer and pipe line.

Executions:
A – with three phase motor 5 or 6,8 kW, with sight flow indicator
B – with three phase motor 5 or 6,8 kW, without sight flow indicator



Order No.		Pump unit type	Connection DN (Inlet/Outlet)	Max. differential pressure, bar	Capacity l/min at differential pressure 10 bar	Weight, kg	
Execution A	Execution B					Execution A	Execution B
21 707	**21 776**	AP 31-8	50/32	14	50	300,0	220,0
21 708	**21 777**	AP 36-8	50/32	14	100	320,0	240,0

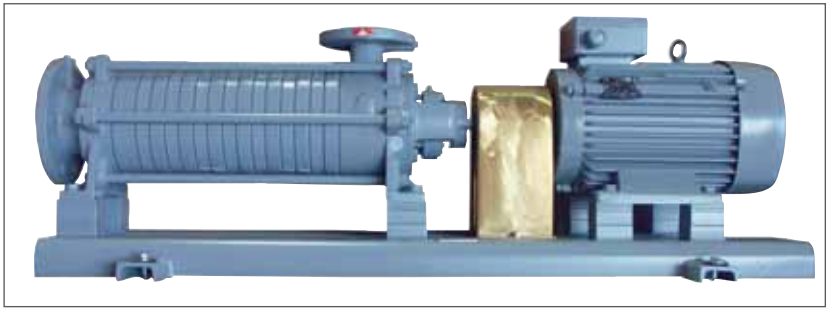


Dimensional drawing of complete suction pump unit capacity 50/100 l/min with 3-phase motors 5/6,8 kW

LPG side channel pump unit for overground and underground tanks

- for positive suction heads
- mechanical seal
- flanges in PN 25/40 with flat seal strip
- Ex 3-phase motor 400/690 V/50 Hz AC, E Ex II T3
- coupling with coupling protection
- mounted on a ground frame, grounded and painted

Executions:
A – side channel pump unit for overground tanks; with mechanical seal, coupling and coupling protection
B – side channel pump unit for underground tanks; with mechanical seal, coupling and coupling protection
C – side channel pump unit for high-duty transfer; with mechanical seal, coupling and coupling protection



Horizontal, self-priming pump unit in a link-body version with open impellers

Order No.	Type	Max. differential pressure,bar	Motor capacity, kW	Connection, DN		Capacity, l/min
				Inlet	Outlet	
21 720	FAS NZ 12-5	6	1,0	40	20	10
21 783	FAS NZ 31-6	10	3,6	65	32	50
21 781	FAS NZ 31-7	14	3,6	65	32	50
21 784	FAS NZ 36-6	10	5,0	65	32	100
21 729	FAS NZ 36-8	14	5,0	65	32	100
21 807	FAS NZ 51-6	14	13,5	100	50	200
21 787	FAS NZ 51-8	14	15,0	100	50	300
21 795	FAS NZ 61-8	14	24,0	100	65	500
21 785	FAS AP 31-8	14	5,0	65	32	50
21 786	FAS AP 36-8	14	6,8	65	32	100
46 026	FAS-18-8-10	11	10,0	65	40	300
46 025	FAS-28-10-15	11	15,0	80	65	500

Order No.	Type	Capacity, m³/h (l/min)	Differential pressure,bar	Motor capacity, kW	Connection, DN (Inlet/Outlet)
46 001	NZ 40-6-12,5	40 (6 60)	6	12,5	80/65
46 002	NZ 40-8-15		8	15,0	
46 003	NZ 40-10-20		10	20,0	125/100
46 004	NZ 60-5-15	60 (990)	5	15,0	
46 005	NZ 60-7-20		7	20,0	
46 006	NZ 60-10-28		10	28,0	
46 007	NZ 80-6-24	80 (1320)	5	24,0	
46 008	NZ 80-7-28		7	24,0	
46 009	NZ 80-11-47		11	47,0	
46 010	NZ 100-5-24	100 (1660)	5	24,0	
46 011	NZ 100-7-28		7	28,0	
46 012	NZ 100-10-47	100 (1660)	10	47,0	125/100
46 013	NZ 150-7-36	150 (2490)	7	36,0	
46 015	NZ 150-10-58		10	58,0	
46 016	NZ 200-5-55	200 (3320)	5	58,0	
46 017	NZ 200-7-80		7	80,0	
46 018	NZ 200-10-100		10	100,0	
46 019	NZ 260-5-68	260 (4310)	5	68,0	
46 020	NZ 240-7-90		7	100,0	
46 021	NZ 260-10-132		10	135,0	

Universal single-stage circulation pump in a compact block version BLOC NUB/NUBF

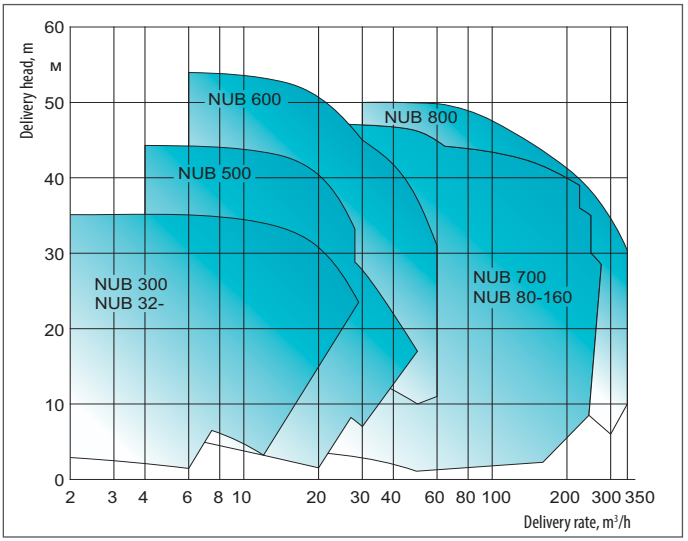
High power efficiency
- low flow rate
- slight speed-hight difference

Technical advantages
- thrust free open or balanced closed impellers
- compensation of radial force through control equipment in ring housing

Process reliability
- partial gas transfer
- wide characteristic curves
- selection between flat or abrupt characteristic curves
- top control mode

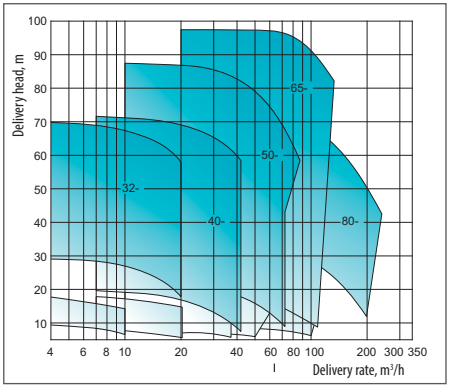
Easy installation
- large flange nominal sizes
- no pipe extension required
- any installation position
- compact pump design

Easy service and operation conditions
- operating pressure up to 10 bar
- temperature -40°C up to +140°C
- viscosity up to 115 mm²/s



Universal single-stage centrifugal pump BLOC CB BC in stainless steel

- closed impellers
- single or double mechanical seal
- easy service thanks to pull-back version
- material stainless steel/stainless steel sheet
- operating pressure up to 10 bar
- temperature -25 up to +110°C
- viscosity up to 115 mm²/s



Universal single-stage circulation pump in inline-version LUB

High power efficiency

Technical advantages

- thrust free open or balanced closed impellers
- compensation of radial force through control equipment in ring housing

Process reliability

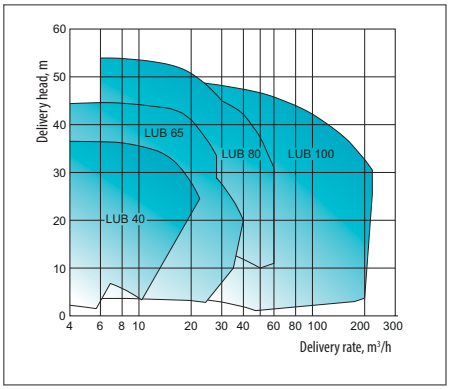
- capability of transfer of gas in the liquid
- wide characteristic curves
- selection between flat or abrupt characteristic curves
- top control mode

Easy installation and service

- pull-back version
- extracting coupling

Application

- operating pressure up to 10 bar
- temperature -40°C up to +140°C
- viscosity up to 115 mm²/s



Unchokable pump
in a compact block version FUB CBF

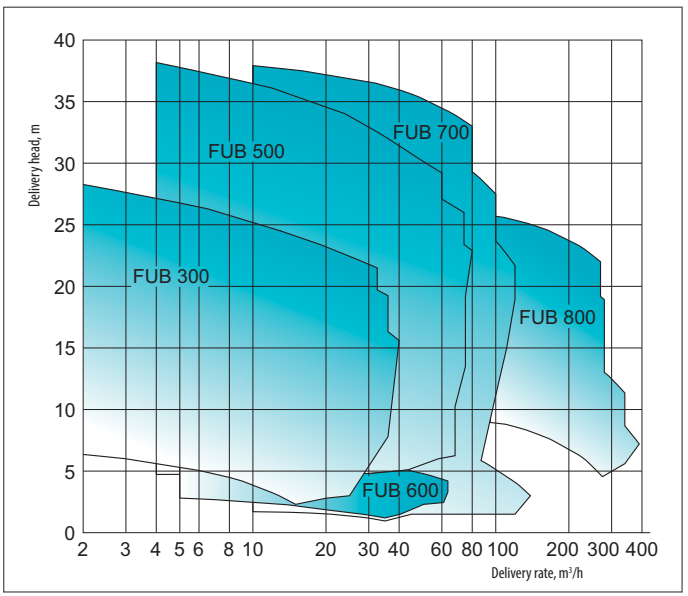
Process reliability
- solid transfer
- cavitation adaptability
- mild medium transfer
- non-sensitive for pigtail- and clew formation

Technical advantages
- pulse transmission by recessed vortex type impeller
- free ball pass up to 80 mm diameter
- abrasion cover and other special designes

Easy installation
- any installation position
- compact pump design

Easy service
- pull-back version
- robust construction

Application
- operating pressure up to 10 bar
- temperature -40°C up to +140°C
- viscosity up to 60 mm²/s
- solids content



Multi-stage circulation pump LBU VBU NHP Z

High power efficiency
- integrated jet pump or mixture formation
- low flow rate
- optimized impeller inflow
- small internal friction losses
- optimized stage's delivery head

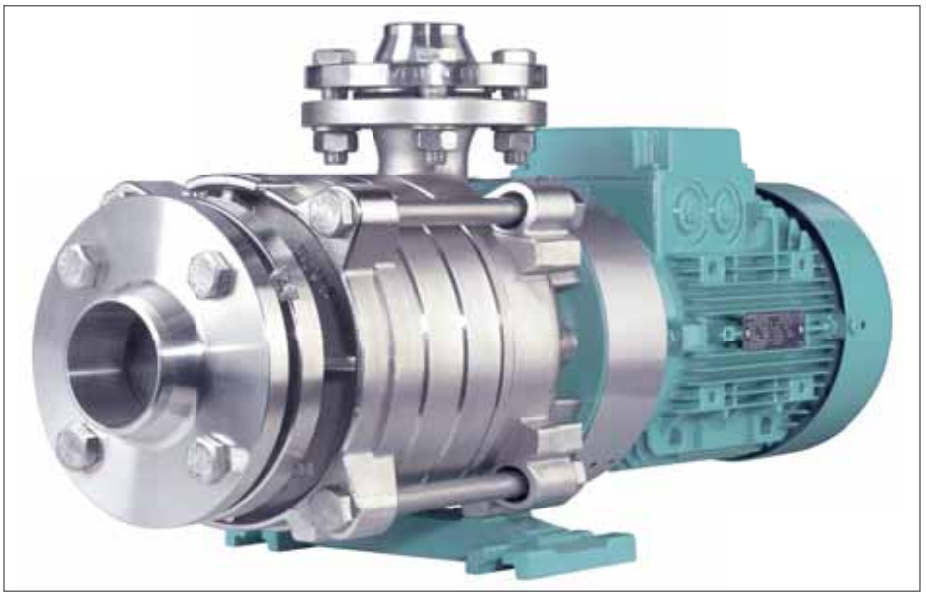
Technical advantages
- thrust free open or balanced closed impellers
- compensation of radial force through control equipment in ring housing
- NPSH-pre-stages

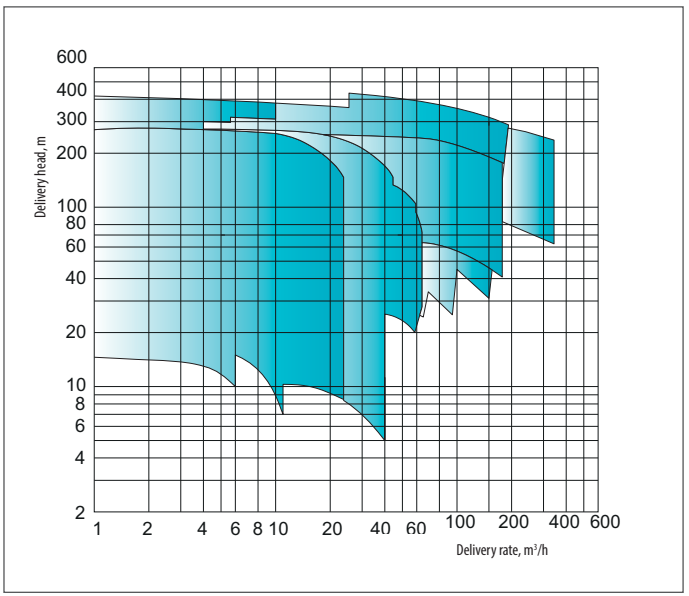
Process reliability
- capability of transfer of gas in the liquid
- wide characteristic curves
- selection between flat or abrupt characteristic curves
- top control mode

Easy installation
- modular system for individual solutions
- free selection of nipple position
- horizontal or vertical execution
- block- or ground plate design

Easy service

Application
- operating pressure up to 64 bar
- temperature -60°C up to +220°C
- viscosity up to 115 mm²/s





Self-sucking centrifugal pump E SUB S

High power efficiency
- integrated jet pump or mixture formation
- low flow rate
- optimized impeller inflow
- small internal friction losses
- optimized stage's delivery head

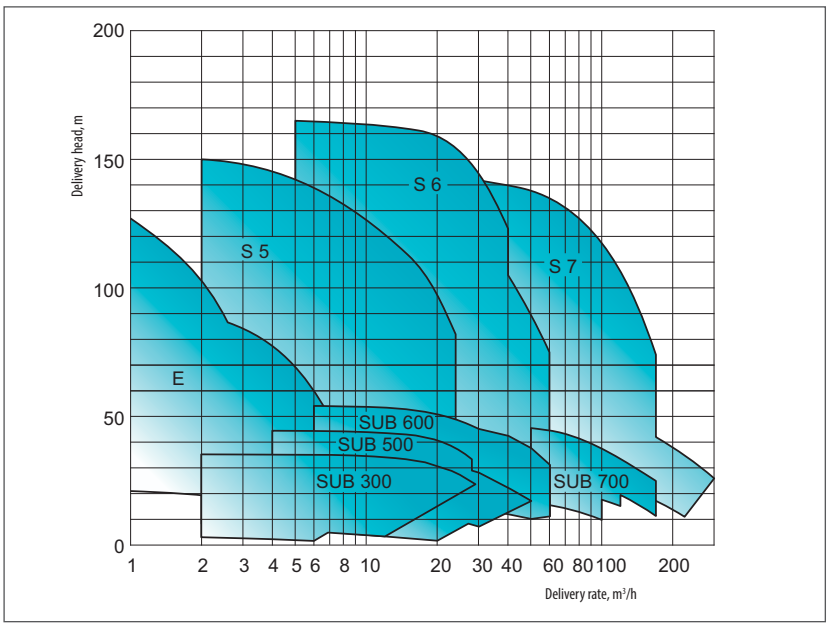
Technical advantages
- thrust free open or balanced closed impellers
- compensation of radial force through control equipment in ring housing

Process reliability
- self-sucking
- capability of transfer of gas in the liquid
- wide characteristic curves
- selection between flat or abrupt characteristic curves

Easy installation
- modular system for individual solutions
- horizontal execution
- block- or ground plate design

Easy service

Application
- operating pressure up to 16 bar
- temperature -40°C up to +90°C
- viscosity up to 115 mm²/s



Multiphase centrifugal pump type PBU EB LBU

High power efficiency
- optimal enrichment and mixing of fluids with gases
- high degree of dispersion
- low flow rate
- optimized impeller inflow
- small internal friction losses
- optimized stage's delivery head

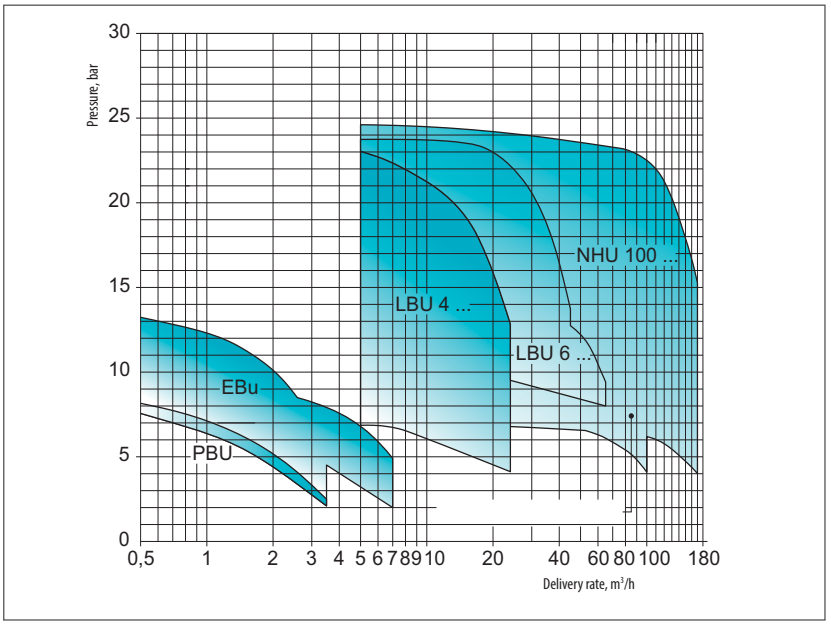
Technical advantages
- thrust free open impellers
- compensation of radial force through control equipment in ring housing
- direct gas addition acc. To VDMA24430

Process reliability
- ability of gas transfer up to 30%
- stable producing of micro bubbles

Easy installation
- modular system for individual solutions
- horizontal execution
- block- or ground plate design

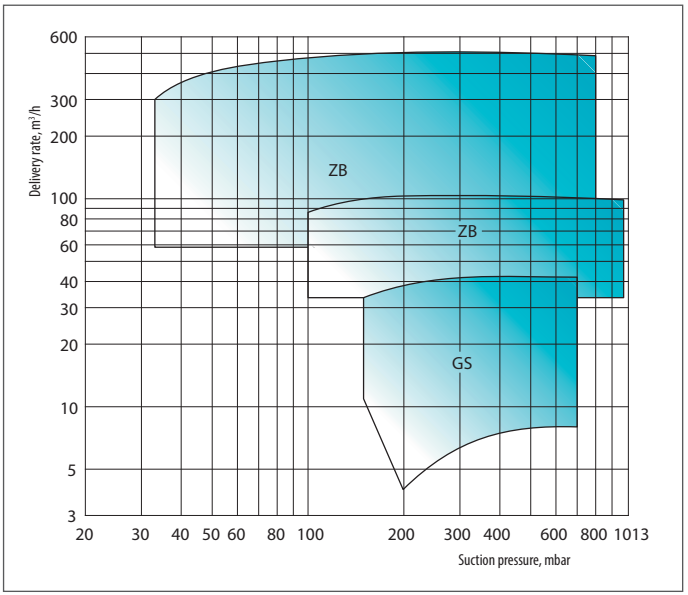
Easy service

Application
- operating pressure up to 40 bar
- temperature -40°C up to +140°C
- viscosity up to 115 mm²/s



Centrifugal vacuum pump in compact block version GS ZB

- oil free – no grease in working chamber
- reliable in operation – no control devices in working chamber
- also limited transfer of fluid
- easy Service – few spare parts
- low liquid need during the operation
- inlet pressure up to 33 mbar
- absorption capacity up to 600 m^3/h



Universal space saving submersible pump B CTOL

High power efficiency

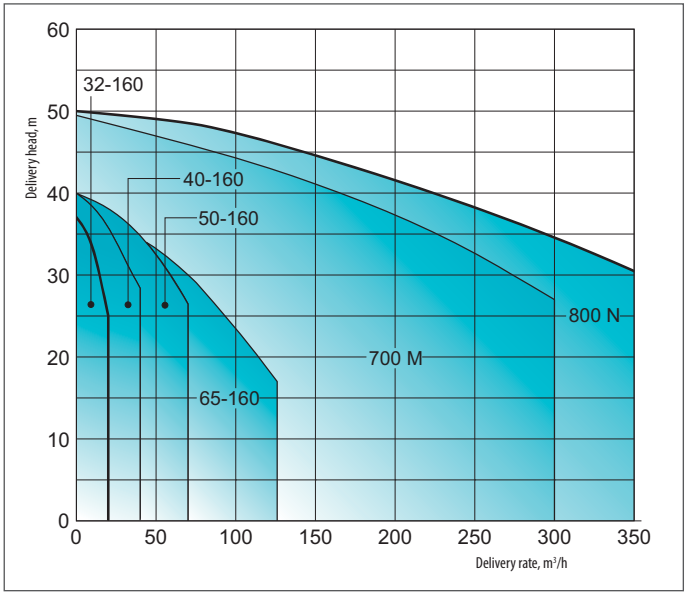
- no shaft seal
- no external leakage
- with vortex type impeller

Easy installation

- space saving design
- modular system for individual solutions

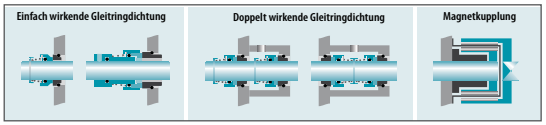
Applications

- operating pressure up to 10 bar
- temperature -25 up to +90°C
- viscosity up to 115 mm^2/s
- special pump models for other conditions



Pump unit for transfer of light fuel oil products (petrol, kerosene, diesel and fuel oil)

- constant high efficiency
- ability to increase the productivity and differential pressure
- mechanical seal
- available with double mechanical seal "Tandem" or magnetic coupling
- compact version

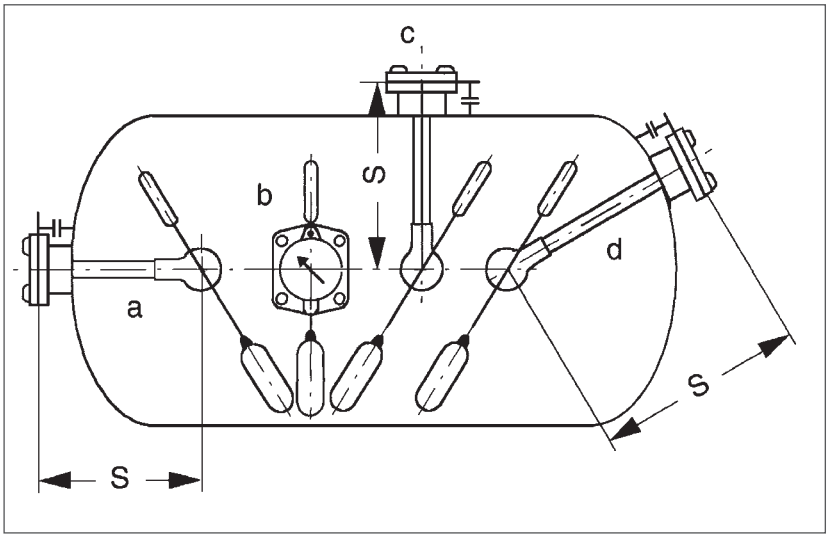


Order No.	Pump type	Delivery rate m^3/h (l/min)	Delivery head (NPSH), m (bar)	Max. pressure, bar	Inlet/Outlet	Motor capacity, kW	Weight, kg
46 0301	NZ-3-6-2,5	3 (50)	66 (5,5)	16,0	65/40 (PN16/PN40)	2,5(T3)	70
46 0302	NZ-6-7-3,3	6 (100)	79 (6,5)	16,0		3,3 (T3)	100
46 0303	NZ-12-7-5,5	12 (200)	80,5 (6,7)	16,0		5,5 (T3)	100
46 0304	NZ-18-6-5,5	18 (300)	68 (5,6)	16,0		5,5 (T3)	100
46 0305	NZ-30-6-10	30 (500)	71,5 (5,9)	16,0	80/65 (PN16/PN40)	10,0 (T3)	162
46 0306	NZ-42-6-12,5	42 (700)	69 (5,7)	16,0		12,5 (T3)	171
46 0307	NZ-60-6-15	60 (1000)	64 (5,3)	40,0	125/100 (PN40)	15,0 (T3)	281
46 0308	NZ-90-6-24	90 (1500)	65 (5,4)	40,0		24,0 (T3)	370
46 0309	NZ-150-6-36	150 (2500)	72 (5,9)	40,0		36,0 (T3)	395
46 0310	NZ-180-7-68	180 (3000)	87,5 (7,2)	40,0	200/125 (PN40)	68,0 (T3)	1100

B Measurement equipment • Liquid level gauges • Control fittings • Meters • Accessories

Floating liquid level gauge

With transfer of measured values in % of tank volume



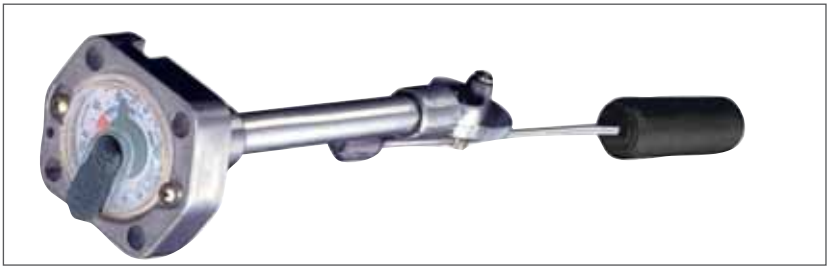
By order must be specified:

1. Type name: Junior, Senior, large tank version
2. Tank inside diameter
3. Tank type: cylindrical or spherical
4. Mounting position:
a. End mounted in tank bottom
b. Side-mounted in tank shell
c. Top-mounted
d. Angle-mounted in tank bottom or in tank shell
5. For dimensional determination of gauge:
for 4a) Stem length (S)
for 4b)Stem length (S)
for 4c) distance from center line of tank to top of mounting flange (S= stem length)
for 4d) degree of angle between horizontal center line of tank and center line of liquid level gauge or vertical distance in mm from horizontal center line of tank to center of gauge; distance from center of motion of liquid level gauge to top of mounting flange (S = stem length)

Liquid level gauge PN 25, Type Junior

- with rubber seal
- protection cup
- mounting screws M6×25 from stainless steel

Order No.	Type Junior	Mounting position	Tank ø, mm	Shaft length, mm
18 001	6284	horizontal	up 800	≈350
18 002			up 1250	
18 003			up 1600	
18 006	Special execution for ammonia			
18 011	6281	vertical	800	630
18 012			1000	510
18 013			1250	630
18 014			1250	755
18 015			1250	785
18 016			1250	805
18 017			up 1600	up 1200
18 019	Special execution for ammonia			



Liquid level gauge PN 25, Type Senior

- with rubber seal
- protection cup
- mounting screws M6×25 from stainless steel

Order No.	Type Senior	Mounting position	Tank ø, mm	Shaft length, mm
18 021	6283	horizontal	up 1600	≈200
18 031	6280	vertical	up 1500	up 825
18 032			up 2000	up 1200

Liquid level gauge large tank version for horizontal cylindrical tanks

- horizontal installation
- 8″ dial
- spiral wound gasket 1.4571/graphite to 550°C
- screws M12×25 from stainless steel

Executions:

- *A – for propane/butane, Type W709, flange PN 40, from 1.4541*
- *B – for propane/butane und ammonia, flange PN 25, from stainless steel*
- *C – for propane/butane, Type W709, with spring shock absorber for road tankers, shaft length – 475 mm, side mounting, flange PN 40, from 1.4541*

Order No.	Tank ø, mm	Shaft length, mm
Execution A		
18 071	1600	610
18 072	1900	610
18 073	2000	610
18 074	2100	610
18 075	2200	610
18 076	2300	610
18 077	2400	610
18 078	2500	610
18 079	2700	610
18 080	2800	610
18 081	2900	610

Order No.	Tank ø, mm	Shaft length, mm
18 082	3000	610
18 083	3200	610
18 084	3400	610
18 085	3500	610
18 086	3600	610
18 087	3800	610
18 088	4000	610
18 094	Additional price – alternativ tank Ø or shaft length	
Execution B		
18 167	up 2500	610
18 168	up 3000	610
18 169	up 3600	610

Order No.	Tank ø, mm	Shaft length, mm
18 170	up 4000	610
Execution C		
18 100	2000	without shaft (side mounting)
18 101	2100	
18 102	2200	
18 103	2150	
18 104	2050	
18 105	1900	
18 106	2250	
18 107	1800	
18 108	1750	

Liquid level gauge – large tank version for horizontal cylindrical tanks

- vertical installation
- 8″ dial
- spiral wound gasket 1.4571/graphite to 550°C
- screws M12×25 from stainless steel

Executions:

- *A – for propane/butane, Type S709 (max. shaft length – 2500 mm, other lengths – on your request), flange PN 40, from 1.4541*
- *B – for propane/butane und ammonia, flange PN 25, from stainless steel*

Order No.	Tank ø, mm	Shaft length, mm
Execution A		
18 140	1600	980
18 141	2000	1100
18 142	2300	1330
18 143	2500	1350
18 144	2500	1380
18 145	2500	1400
18 146	2500	1430
18 147	2500	1450
18 148	2500	1550
18 149	2500	1650
18 150	2600	1540
18 151	2600	1590
18 152	2900	1550
18 153	2900	1580
18 154	2900	1600
18 155	2900	1650
18 156	3000	1530
18 157	3000	1635
18 158	3200	1750
18 159	3400	1850
18 160	3600	1800
18 161	4000	2085
18 094	Additional price – alternativ tank Ø or shaft length	
Execution B		
18 172	up 2500	up 1550
18 173	up 3000	up 1800
18 174	up 3600	up 2300
18 175	up 4000	up 2300

Liquid level gauge – large tank version for horizontal cylindrical tanks

- type Rochester
- 4″ dial
- spiral wound gasket 1.4571/graphite to 550°C
- screws M12×25 from stainless steel

Level gauges – large tank version with dial 4″ for ammonia (NH) on your request

Order No.	Mounting position	Tank ø, mm	Shaft length, mm
18 330	Horizontal	up 2000	610
18 331		up 2500	610
18 332		up 3000	610
18 333	Vertikal	up 2000	up 1250
18 334		up 2500	up 1550
18 335		up 3000	up 1800
18094	Additional price – alternativ tank Ø or shaft length		

TDR-Sensor

for continuous liquid measurement of filling level and of separator

- **filling level sensor VEGAFLEX 81 for mounting in tank**
- **switch amplifier type VEGAMET 381 for continuous measurement with**
- **integrated limit switches, for installation in electrical switch box**
- **filling level measurement of LPG in tank in the real time**
- **control of min. and max. values of tank filling (for example 5/85%) with supply control signal for switching off of pump motor or of solenoid valve control at reaching of min. or max. filling level**

Order No.	Execution
26 0855	Level sensor VEGAFLEX 81 with built in display-operation module (PLICSCOM), EX ia IIC T1..T6 X, thread G¾, material 316L
26 182	Switch amplifier type VEGAMET 381 for filling level sensors, Inlet: 1×4-20 mA, Outlet: 1×0/4-20 mA – current outlet, 2×Relay outlets, 1×device defect relay, operating voltage: 20-253 V AC, 50/60 Hz, error of indication-accuracy±20µA (0,1% from 20mA), number of relay outlets 2×operation relays, 1×device defect relay, LC display for digital and analog presentation of measured value, ambient temperature -20...60°C, protection art IP 40
26 087	VEGACONNECT 3 interface adaptor between PC and communicable VEGA devices

Devices for „dry running protection" of pumps

- **no mechanical parts, full electronical version**
- **for use in Ex-Zone 1**

Order No.	Execution	Weight, kg
18 381	Flow detector analyzing device for connection to sensor, EExib II C, operating voltage 230 V/50 Hz AC, relay output: 1, for installation in electrical switch box	0,3
18 380	Flow detector analyzing device for connection to sensor, EExib II C, operating voltage 24 DC, relay output: 1, for installation in electrical switch box	0,3
18 384	Flow detector analyzing device with connection ½" NPT AG, EExib II C, Operating voltage 24 V DC, vrsion: Eurocard-size 100×160 mm	0,3
18 382	Flow detector dip sensor for use in hazardous areas, case form stainless steel A4, art of protection IP68, with 2 m connection cable, ambient temperature -20 °C up to +85 °C, max. pressure – 60 bar	0,2
18 389	Welding half coupling ½" NPT, PN 40, for dip sensor, from steel ASTM 105	0,1

Gas withdrawal valve with limit indicator PN 25 for LPG storage tank

- case from brass
- tank connection ¾" NPT-AG
- gas withdrawal connection POL-IG
- complete with pressure gauge, gauge and dip tube

Order No.	Type	Dip tube, mm	Weight, kg
18 024	489	250	1,5
18 025	489	310	1,5
18 026	489	463	1,5

Adaptor PN 40, for dip sensor

- for installation between two flanges
- material – steel H II

Executions:

- *A – connection for sensor ½" NPT-IG*
- *B – connection for sensor ½" NPT-IG and additional connection ¼" NPT-IG for one safety relief valve*

Order No.		Nominal width, DN	Weight, kg
Execution A	Execution B		
18 390	**18 680**	15	0,3
18 391	**18 681**	20	0,5
18 392	**18 682**	25	0,7
18 393	**18 683**	32	0,9
18 394	**18 684**	40	1,1
18 395	**18 685**	50	1,5
18 396	**18 686**	65	2,0
18 397	**18 687**	80	2,3
18 398	**18 688**	100	3,0
18 399	**18 689**	125	3,6
18 400	**18 690**	150	4,2

Flow indicator PN 25

- connection 2" NPT-AG
- for pipe diameter 50 up to 100 mm

Order No.	Length, mm	Weight, kg
18 440	55	0,9
18 441	75	0,9
18 442	125	0,9
18 444	4" dial (spare part)	

Sight flow indicator PN 25

- NPT- female thread
- case from ductile cast iron ASTM 536
- back check valve from stainless steel
- with two opposing glasses

Order No.	RegO	Connection, "	Weight, kg
18 501	A7794	2	4,7
18 502	A7796	3	10,0

Vent valve PN 40
- ¼" NPT-male thread

Executions:
- *A – with type approval*
- *B – with knurled screw*
- *C – with tee handle*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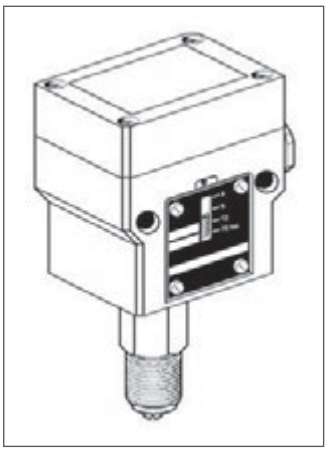
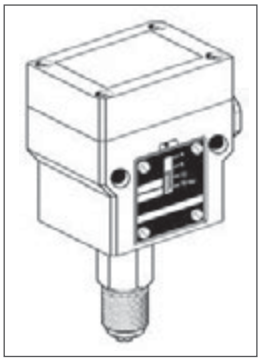
Order No.	Type	Execution	Warning plate	Dip tube	Material	Picture
18 430	FAS 7155	A, B	–	–	Brass	1
18 431	RegO 3165 C	B	–	–		1
18 432	RegO 3165 CP		+	–		2
18 433	RegO 3165 CF		–	300 mm		5
18 434	RegO 3165 CPF		+	300 mm		4
18 438	FAS AL 1917		–	–	Steel	1
18 435	RegO TSS 3169	C	–	–	Stainless steel	3
18 436	RegO TA 3169 F		–	300 mm	Steel	5

Pressure switch
- explosion protected
- EEx ed IIC T6
- connection G¼" AG
- protection art IP 55
- ambient temperature -20 up to +40°C
- changer protected against explosions
- switching capacity – 0,5 A 230 V AC
- control button is mounted inside
- PTB approval



Order No.	Type	Range, bar	Difference, bar	Max. testing pressure, bar	Weight, kg
18 461	Ex/FF 142V-3	-0,4...8,0	0,3...3,0	25	1,2
18 460	Ex/FF 142V-10	5,0...40,0	2,0...10,0	50	1,2



Pressure switch

- Ex-i proof, protection art IP 54
- connection G½" AG
- case from aluminium
- max. admitted pressure – 25 bar
- ambient temperature -25 up to +70°C
- 1 changer
- switching capacity – 5/230 V AC
- Ex-proof when used in conjunction with isolating switch amplifier Oder No. 25301 (230 V) or 26303 (24 V)

Pressure switch

- Ex-i proof, protection art IP 54
- connection G½" AG
- case from Aluminium
- max. admitted pressure – 25 bar
- ambient temperature -25 up to +70°C
- 1 changer
- switching capacity – 5/230 V AC
- Ex-proof when used in conjunction with isolating switch amplifier No. 25301 (230 V) or 26303 (24 V)

Order No.	Type	Range, bar	Difference, bar	Weight, kg
18 4573	DWR 625	0,5...6,0	0,25	0,3
18 4560	DWR 25	4,0...25,0	1,00	0,3

Order No.	Type	Range, bar	Difference, bar	Weight, kg
18 4621	DCM 6	0,5 - 6 bar	0,15 bar	0,3

Maximal Pressure control switch

- acc. To TRB 801/25, without Ex-proof, protection art IP 65
- connection G½" AG
- case from Aluminium
- max. admitted pressure – 25 bar
- ambient temperature -25 up to +60°C
- setting range 3-16 bar
- 1 changer
- Ex-proof when used in conjunction with isolating switch amplifier No. 25305 (230 V)

Order No.	Type	Execution	Weight, kg
18 453	FD 16-326	External electrical locking system required in switch box	0,6
18 454	FD 16-327	With mechanical locking device	0,6
26 301/302	KHA6-SH-EX1	Isolation switch amplifier in safety engineering, intrinsically safe control circuit, supply voltage 230 V / 50 Hz	0,1

Sight flow indicator PN 25

- socket connection NPT-female thread
- housing from steel casting GS-C 25
- with two opposite glasses

Order No.	Connection, "	Length, mm	Weight, kg
18 503	½ NPT	100	2,8
18 504	¾ NPT	100	2,8
18 505	1 NPT	130	5,6
18 506	1¼ NPT	130	5,6
18 507	1½ NPT	150	6,0
18 508	2 NPT	180	9,5

Sight flow indicator PN 25

- flange connection acc. to DIN 2635
- housing from steel casting GS-C 25 with two opposite glasses from borosilicate glass acc. to DIN 7080

Order No.	Connection (DN)	Length, mm	Weight. kg
18 588	15	150	3,5
18 589	20	150	4,5
18 590	25	160	5,5
18 591	32	180	8,0
18 592	40	200	9,0
18 593	50	230	11,0
18 517	65	290	16,0
18 518	80	310	21,0
18 519	100	350	27,0
18 509	125	400	38,0
18 510	150	480	50,0
92 662	200	400	111,

Rotary level gauge PN 25

- material – steel
- for horizontal tanks
- connection – 1" NPT-AG
- complete with dial and rotary level gauge for stationary and mobile tanks

Order No.	Type (RegO)	Stem length, mm	Stem execution	Weight, kg
18 531	A9091 R	490	Standard stem	1,7
18 533	A9092 R	675		2,0
18 535	A9093 RS	915		2,3
18 536	A9093 TS	915	Reinforced stem	3,0
18 537	A9094 TS	1150		3,5
18 530	A9095 TS	1422		3,8

Rotary level gauge PN 40

- stuffing box and union of stainless steel
- for horizontal tanks
- connection – 1"NPT male
- complete with dial and rotary level gauge for stationary and mobile tanks

Order No.	Type	Stem length, mm	Stem execution	Weight, kg
18 538	FAS-3.1B	490	Standard stem	1,7
18 539	FAS-3.1B	675		2,0

Please indicate tank diameter when placing your order. The max. stem length of rotary level gauges with standard stem for use in mobile tanks is 675 mm

Spare parts for rotary level gauges

Other spare parts are available on request

Order No.	Type	Description	Material
18 545	A3163-6	Screw plug with seal	Steel
18 546	FAS		
18 547	FAS	Dial	Alu
18 548	RegO		

Turbine flow meter PN 40 for LPG

- 6 digit LCD-display with floating point
- installation independent on location
- various measuring options: total sum, sub-total (resettable)
- current flow rate in l/min
- lithium battery (approx. 4.000 operation hours)
- automatic switching on and off
- not calibratable

When operated without vapor eliminator great deviations because of cavities formation depending on operation conditions are possible

Order No.	Connection	Accuracy of measurement, %	Measuring range, l/min	Temperature range, °C	Dimensions,мм	Weight, kg
18 326	½" NPT	±2	4...40	10...60	110×50×55	0,9
18 325	2" NPT		80...800		160×85×100	2,5
18 385	1" NPT		2...200		115×50×70	1,2
18 388	ISO G¾"		8...80		110×50×70	1,1

Measuring unit for LPG, Type MA7-TE550 Truck III, 2" NPT with temperature compensation

- meter consists of: vapor eliminator with fine mesh filter, back check pressure valve in inlet, temperature sensor PT 100, metering chamber, differential pressure valve, BUNA seals
- electronic counter consisting of: pulser, CPU to be installed in the drivers cabin, printer mounted on the CPU, TE550 Truck III installed on the meter, basic software, language English (other language on request), lettering English
- inclusive: set cables 12 m (other length on request), set impulse line, ³⁄₂W solenoid valve
- capacity max. – 380 l/min, temperature range – -25 up to +55°C
- connections – 2" female NPT, operation voltage 24 V DC
- digital display in liter

Documentation: CE-Declaration of Conformity ATEX, MID

Order No.	Execution	Weight, kg
18 857	Flow direction from right to the left	41,0
18 864	Flow direction from left to the right	41,0

Complete measuring unit Type LC

- flow direction from left to the right
- BUNA seals
- incl. fastening base without ground plate
- execution for road tanker:
  - type MA-4 up to MA-15 – housing from alu
- execution for stationary units:
  - type MSA-15 up to MSA-120 – housing from steel

Equipment: Back check pressure valve in inlet (standard for MA-4 – MA-7), vapor eliminator with fine mesh filter, LC-Meter, mechanical counter Type VR with ticket printer, differential pressure valve. Combination options, spares and conversion parts on special request: electronic counter with ticket printer, flow direction from right to the left, with DIN-flanges, with pulser etc.

Order No.	Type	Connection	Capacity, l/min	Operation pressure, bar	Housing	Execution	Weight, kg
Execution for road tanker							
38 046	FAS-LC M4 SX	1″	20...113	25	Alu	without temperature compensation, with printer	60,0
38 047	FAS-LC M4 SX	1″	20...113	25		without temperature compensation, without printer	60,0
18 792	FAS-LC M5 GX	1½″	20...227	25		without temperature compensation	37,0
18 932	FAS-LC M5 GY	1½″	45...227	25		with temperature compensation	40,0
18 793	FAS-LC M7 GX	2″	75...380	25		without temperature compensation	44,0
18 904	FAS-LC M7 GY	2″	75...380	25		with temperature compensation	49,0
18 903	FAS-LC M7 GY	2″	75...380	25		with temperature compensation and Ex-pulser	46,0
18 794	FAS-LC M15 GX	3″	150...760	25		without temperature compensation	49,0
18 933	FAS-LC M15 GY	3″	150...757	25		with temperature compensation	46,0
18 750	Extra charge for factory acceptance test with flow measurement and adjustment						
Execution for stationary units							
18 915	FAS-LC M15 GX	3″ ANSI	150...760	21	Steel	without temperature compensation	56,0
18 914	FAS-LC M15 GY	3″ ANSI	150...760	21		with temperature compensation	59,0
18 795	FAS-LC M30 GX	3″ ANSI	265...1325	21		without temperature compensation	138,0
18 909	FAS-LC M30 GY	3″ ANSI	265...1325	21		with temperature compensation	141,0
18 786	FAS-LC M75 GX	4″ ANSI	530...2650	21		without temperature compensation	320,0
18 789	FAS-LC M75 GY	4″ ANSI	530...2650	21		with temperature compensation	272,0
18 918	FAS-LC M120 GX	6″ ANSI	760...3785	21		without temperature compensation	269,0
18 928	FAS-LC M120 GY	6″ ANSI	760...3785	21		with temperature compensation	372,0
18 750	Extra charge for factory acceptance test with flow measurement and adjustment						

Measuring unit DN 40 for LPG
Type FAS-Cori 400

- with mass flow meter Type Coriolis
- electronic counter LCR-TE550
- capacity approx. 420 l/min (235 kg/min)
- connections 2" NPT
- with temperature compensation
- flow direction – from right to the left
- ambient temperature range: -25...+55°C or -20 up to +60°C
- operating voltage: 24 V DC

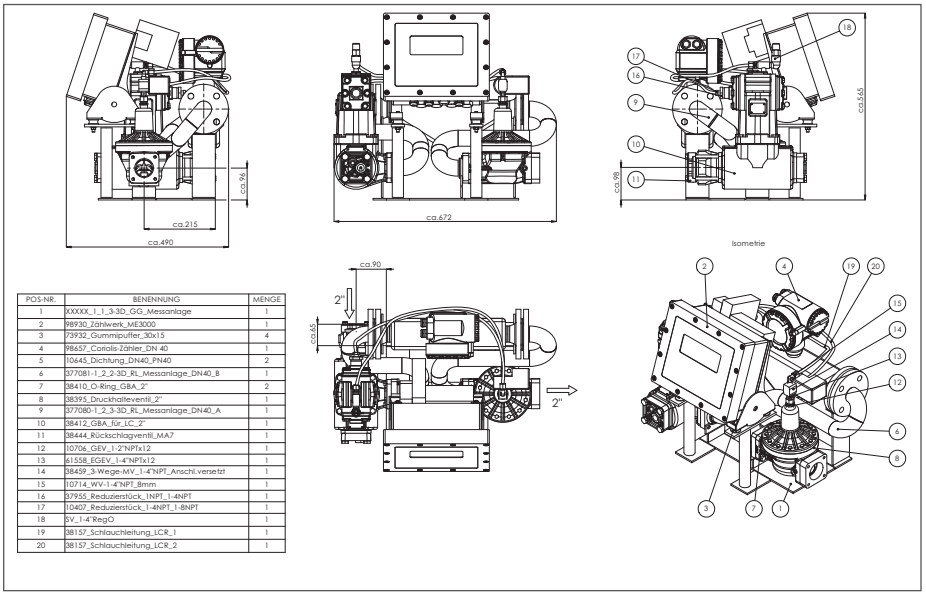
Order No.	Execution	Weight, kg
98636	CPU/processor in the driver's cab	90
98638	CPU/processor in Ex-protecting case (zone 1)	100

Flow meter consists of: vapor eliminator with filter, back check pressure valve in inlet, temperature sensor PT100, LPG mass DN 40, differential pressure valve, connection in- and outlet: 2" female NPT , BUNA seals

Electronic counter consists of: ticket printer for installation in driver's cab, TE550 mounted on meter, digital display in liter, basic software, standard ticket, incl. Set of connections cables, set of pulser, 3/2 way solenoid valve

LPG measuring unit, Type Cori 400-ME 3000, 2" NPT for installation in road tankers primarily, consisting of following main components:

- mass meter
- electronic counter ME 3000 in Exde – execution
- differential pressure valve
- vapor eliminator
- capacity – up to 420 l/min (235 kg/min)



POS-NR.	BENENNUNG	MENGE
1	XXXXX_1_1_3-3D_GG_Messanlage	1
2	98930_Zählwerk_ME3000	1
3	73932_Gummipuffer_30x15	4
4	98657_Coriolis-Zähler_DN 40	1
5	10645_Dichtung_DN40_PN40	2
6	377081-1_2_2-3D_RL_Messanlage_DN40_B	1
7	38410_O-Ring_GBA_2"	2
8	38395_Druckhalteventil_2"	1
9	377080-1_2_3-3D_RL_Messanlage_DN40_A	1
10	38412_GBA_für_LC_2"	1
11	38444_Rückschlagventil_MA7	1
12	10706_GEV_1-2"NPTx12	1
13	61558_EGEV_1-4"NPTx12	1
14	38459_3-Wege-MV_1-4"NPT_Anschl.versetzt	1
15	10714_WV-1-4"NPT_8mm	1
16	37955_Reduzierstück_1NPT_1-4NPT	1
17	10407_Reduzierstück_1-4NPT_1-8NPT	1
18	SV_1-4"RegO	1
19	38157_Schlauchleitung_LCR_1	1
20	38157_Schlauchleitung_LCR_2	1

The measuring unit is executed for road tanker and is very compact. It takes very small space for installation. For applications including E-register in Exde-execution no more control box is needed. Measuring data are determined in volume or in mass (kg) optionally. Free set-up possible.

Promass 83E

Separate execution

Coriolis mass flow meter for LPG Type PROMASS

- measures in real time, independent on physical characteristics of fluids
- mass flow meter especially designed for analyses of viscosity, density, temperature and mass
- sparkling measuring accuracy, recording of several process sizes: mass flow density and temperature of fluids and gases
- cost-efficient, space-saving and maintenance free construction: no moving parts or seals
- incompatible with all established communication-protocols: HART, PROFIBUS DP / PA, MODBUS, etc.
- high anti-vibration stability, for example for operation on road tankers

For other mediums – on special request

Order No.	Type	Connection DN	Max. measuring range, l/min (by LPG-applications)	Mediation
988624	PROMASS 80E	15	180	HART, frequency output; analog input/output
988625	PROMASS 83E			Modbus+RS485, frequency output; analog input/output
988612	PROMASS 80E	25	500	HART, frequency output; analog input/output
988613	PROMASS 83E			Modbus+RS485, frequency output; analog input/output
988614	PROMASS 80E	40	1268	HART, frequency output; analog input/output
988615	PROMASS 83E			Modbus+RS485, frequency output; analog input/output
988616	PROMASS 80E	50	1950	HART, frequency output; analog input/output
988617	PROMASS 83E			Modbus+RS485, frequency output; analog input/output
988618	PROMASS 80E	80	5075	HART, frequency output; analog input/output
988619	PROMASS 83E			Modbus+RS485, frequency output; analog input/output

Complete support-measuring unit (FAS 93 93 52)

For draining of road tankers and business commercial registration of mass and/or volum devices (under consideration of real density and temperature of LPG), PN 25

- capacity up to 220 l/min
- steel sheet cabinet – 1200×1200×600 mm
- in- and outlet connections M60×4 (left) with ball valve
- 2-digits LCD display
- return pipe line RVS 22 mm
- medium temperature -50 up to 125°C
- pump unit – FAS-Z200 (220 l/min), mass flow meter – Promass 80E
- measuring data – density, temperature, flow
- totalizing counter for volume or mass

Measuring unit in a cabinet construction (FAS 93 93 54)

- steel sheet cabinet – 1600×1200×500 mm
- medium temperature -50 up to 125°C
- in- and outlet connections M60×4 (left) with ball valve
- 4-digits LCD display
- return pipe line RVS 22 mm
- vapor eliminator with filter
- differential pressure valve
- complete shut-off and safety fittings
- mass flow meter – Promass 83E
- Modbus RS 485-interface
- power supply 230V
- measuring data – density, temperature, flow
- totalizing counter for volume or mass

Measuring unit in a cabinet construction (FAS 93 93 59)

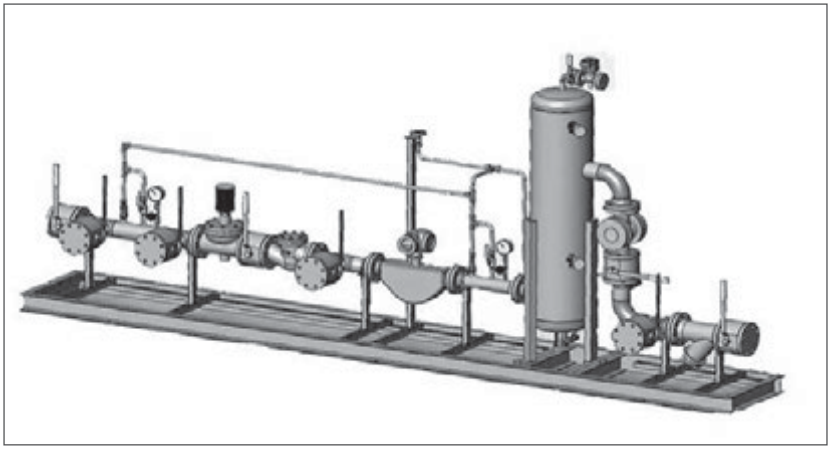
- steel sheet cabinet – 2000×1600×500 mm
- medium temperature -50 up to 125°C
- in- and outlet connections flange DN 80 with ball valve
- 4-digits LCD display
- return pipe line RVS 22 mm
- vapor eliminator with filter
- differential pressure valve
- complete shut-off and safety fittings
- mass flow meter – Promass 83E
- Modbus RS 485-interface
- power supply 230 V
- measuring data – density, temperature, flow
- totalizing counter for volume or mass

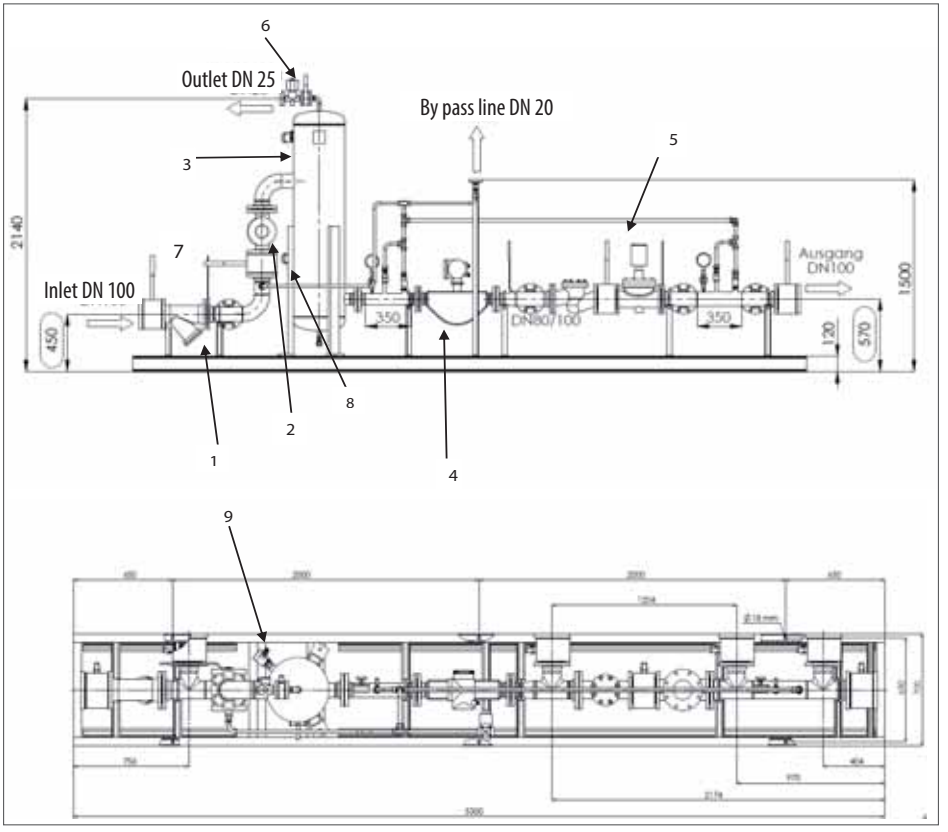
Complete measuring line (FAS 93 1053)

- capacity up to 2500 l/min
- 2-digits LCS display
- in- and outlet connections flange DN 100
- power supply 230 V
- measuring data – density, temperature, flow
- totalizing counter for volume or mass

Consisting of following main components:

- *Strainer*
- *Sight flow indicator*
- *Vapor eliminator*
- *Mass flow meter*
- *Solenoid valves*
- *Ball valves*
- *Liquid level sensors*



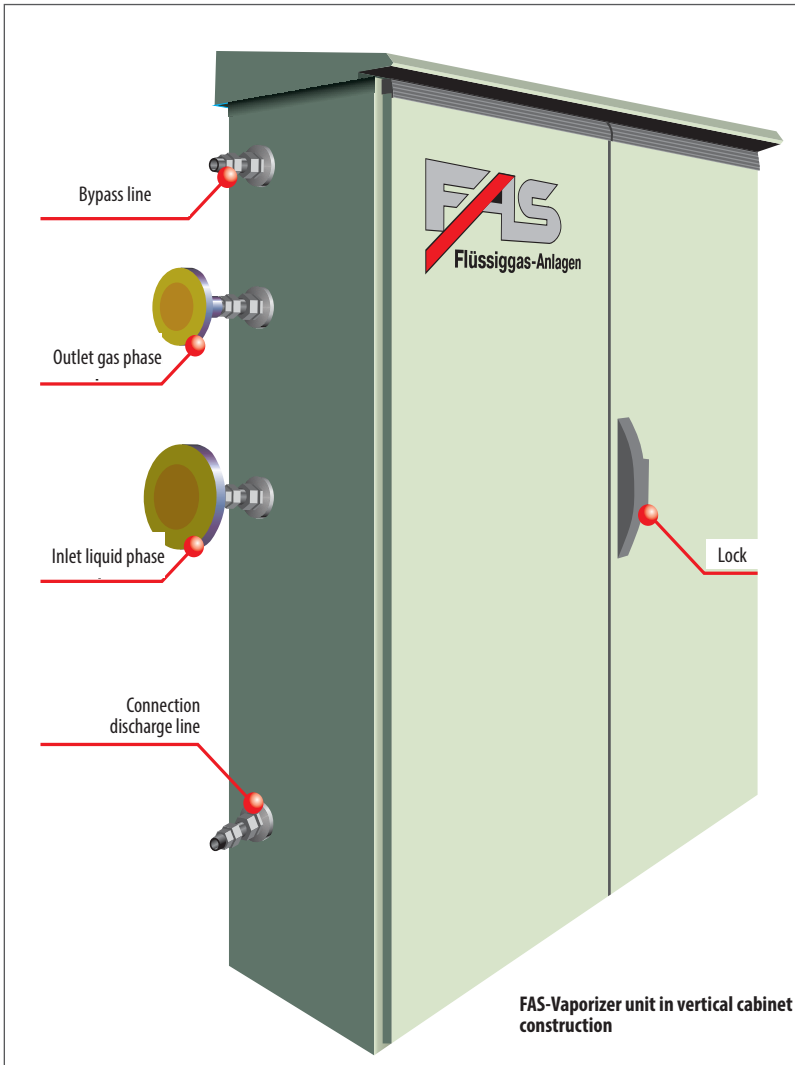


Dimensional drawing of measuring line FAS 931053

C Vaporizers • Vaporizer units • Mixturing units

FAS vaporizers will be assembled generally as a facility and will be delivered as a complete ready unit. Vaporizers and their components (trap, regulator etc.) will be mounted on a base frame, in a lockable vertical cabinet or container.

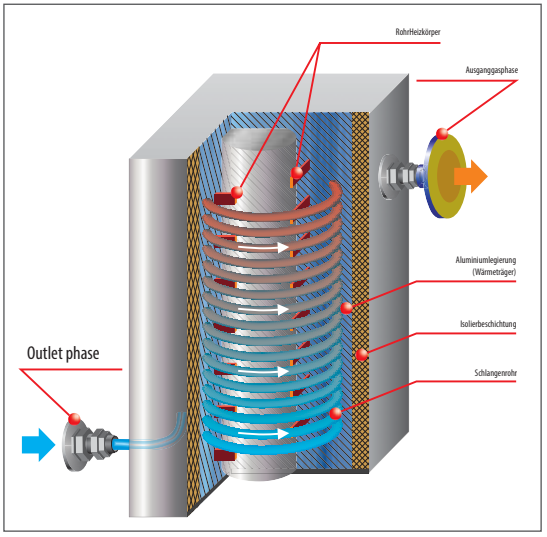
This simplifies the selection of installation place both internally and externally. The regulation of the connecting pipe lines may vary depending on typee, constellation and customer requests.



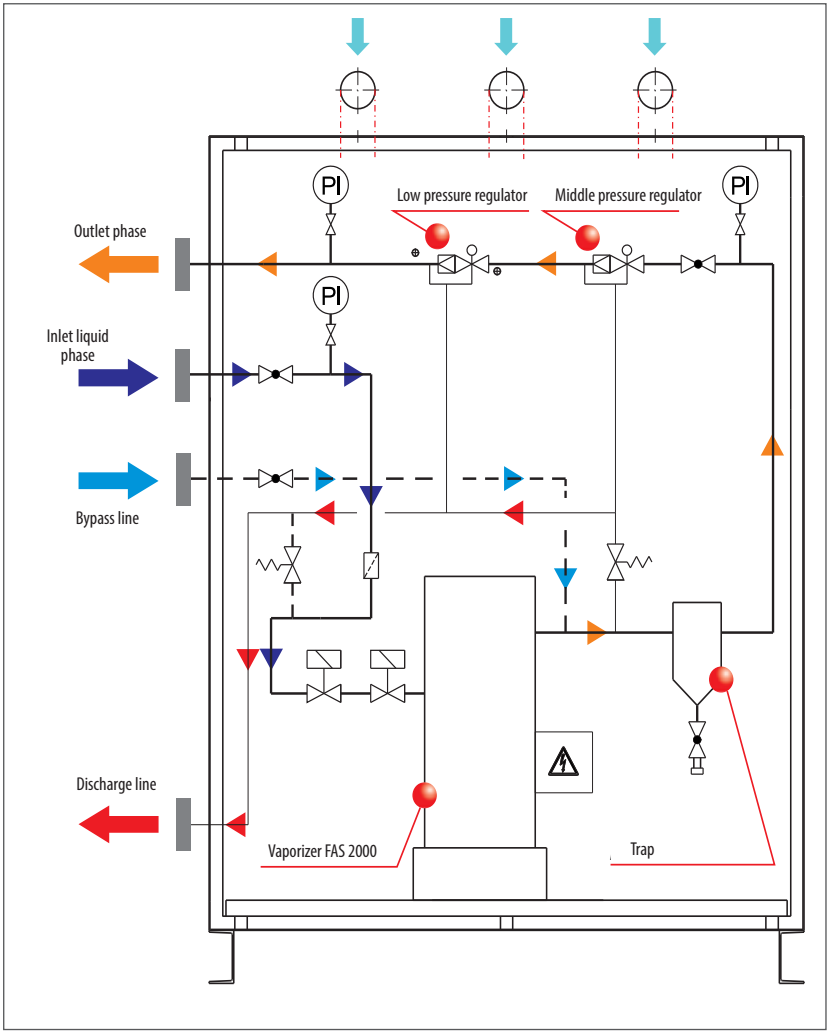
FAS-Vaporizer unit in vertical cabinet construction

Vaporizers FAS 2000 are so called „Dry typee vaporizers“ with indirect heating. An aluminium core with high heat conductivity is used as the heat transfer medium. This ensures short warm-up and reaction time.

The control of solenoid valves and of the heating will be realized means of temperature sensor on aluminium block, hereby safety operation of the unit will be ensured.



Operating diagram of dry typee vaporizer FAS 2000



Typeical diagram of vaporizer unit FAS 2000

Electrical dry typee vaporizer FAS 2000

- electrical dry typee vaporizer
- capacity – 15 kg/h
- gas temperature outlet – max. 70°C
- connection value – 4,4 kW (230 V, 14 A)
- max. operation pressure – 25 bar
- pipe screw connection
- inlet 12 mm/outlet – 12 mm
- wire cross section – min. 2,5 mm²
- height – 350 mm
- weight – 25 kg

Complete vaporizer unit with vaporizer FAS 2000

Order No.	Vaporizer typee	Capacity, kg/h
20333	FAS 2000	15
20332		40

LPG Vaporizer unit FAS 2000

- electrical dry type vaporizer
- gas temperature outlet – max. 70°C
- connection value – 6 kW (380 V)
- for Ex-Zone II
- 2-staged regulator unit
- max. operation pressure – 25 bar
- outlet pressure – 50 mbar
- inlets (liquid phase, bypass line, discharge line) – DN 15, outlet gas phase – DN 25
- wire cross section – min. 2,5 mm²
- dimensions – 800×400×1200 mm
- weight – 140 kg

Vaporizer type	Capacity, kg/h
FAS 2000	32

Scope of delivery

- *Steel sheet cabinet with rain protection roof and vents, painted, bracket h=100 m*
- *Strainer and safety relief valve in front of vaporizer*
- *FAS-dry type vaporizer Type 2000 with 2 pcs. solenoid valves and one safety relief valve*
- *Liquid gas trap with emptying of remainders*
- *Pressure gauge 0-25 bar with shut-off valve*
- *2-stage regulator unit PN 25*
- *Outlet pressure 50 mbar (other pressure on special request)*

LPG Vaporizer unit FAS 2000

- electrical dry type vaporizer
- gas temperature outlet – max. 70°C
- connection value – 4,4 kW (230 V)
- for Ex-Zone II
- 2-staged regulator unit
- max. operation pressure – 25 bar
- outlet pressure – 50 mbar
- inlets (liquid phase, bypass line, discharge line) – DN 15, outlet gas phase – DN 25
- wire cross section – min. 2,5 mm²
- dimensions – 800×400×1200 mm
- weight – 140 kg

Vaporizer type	Capacity, kg/h
FAS 2000	40

Scope of delivery

- *Steel sheet cabinet with rain protection roof and vents, painted, bracket h=100 m*
- *Strainer and safety relief valve in front of*
- *FAS-dry type vaporizer Type 2000 with 2 pcs. solenoid valves and one safety relief valve*
- *Liquid gas trap with emptying of remainders*
- *Pressure gauge 0-25 bar with shut-off valve*
- *2-stage regulator unit PN 25*
- *Outlet pressure 50 mbar (other pressure on special request)*

LPG Vaporizer unit FAS 2000

- electrical dry type vaporizer
- gas temperature outlet – max. 70°C
- connection value – 12 kW (380 V)
- for Ex-Zone II
- 2-staged regulator unit
- max. operation pressure – 25 bar
- outlet pressure – 50 mbar
- inlets (liquid phase, bypass line, discharge line) – DN 15, outlet gas phase – DN 25
- dimensions – 1200×500×1200 mm
- weight – 256 kg

Vaporizer type	Capacity, kg/h
FAS 2000	60

Scope of delivery

- *Steel sheet cabinet with rain protection roof and vents, painted, bracket h=100 m*
- *Strainer and safety relief valve in front of vaporizer*
- *FAS-dry type vaporizer Type 2000 with 2 pcs. solenoid valves and one safety relief valve*
- *Liquid gas trap with emptying of remainders*
- *Pressure gauge 0-25 bar with shut-off valve*
- *2-stage regulator unit PN 25*
- *Outlet pressure 50 mbar (other pressure on special request)*

LPG Vaporizer unit FAS 2000

- electrical dry type vaporizer
- gas temperature outlet – max. 70°C
- connection value – 12×4,4 kW (230 V)
- for Ex-Zone II
- 2-staged regulator unit
- max. operation pressure – 25 bar
- outlet pressure – 50 mbar
- inlets (liquid phase, bypass line, discharge line) – DN 25, outlet gas phase – DN 25
- wire cross section – min. 2,5 mm²
- dimensions – 1200×400×1200 mm
- weight – 240 kg

Vaporizer type	Capacity, kg/h
FAS 2000	80

Scope of delivery

- *Steel sheet cabinet with rain protection roof and vents, painted, bracket h=100 m*
- *Strainer and safety relief valve in front of*
- *FAS-dry type vaporizer Type 2000 with 2 pcs. solenoid valves and one safety relief valve*
- *Liquid gas trap with emptying of remainders*
- *Pressure gauge 0-25 bar with shut-off valve*
- *2-stage regulator unit PN 25*
- *Outlet pressure 50 mbar (other pressure on special request)*

LPG Vaporizer unit FAS 2000

- electrical dry type vaporizer
- gas temperature outlet – max. 70°C
- connection value – 18 kW (380 V)
- for Ex-Zone II
- 2-staged regulator unit
- max. operation pressure – 25 bar
- outlet pressure – 50 mbar
- inlets (liquid phase, bypass line, discharge line) – DN 25, outlet gas phase – DN 50
- wire cross section – min. 2,5 mm²
- dimensions – 1600×400×1200 mm

Vaporizer type	Capacity, kg/h
FAS 2000	100

Scope of delivery

- *Steel sheet cabinet with rain protection roof and vents, painted, bracket h=100 m*
- *Strainer and safety relief valve in front of vaporizer*
- *FAS-dry type vaporizer Type 2000 with 2 pcs. solenoid valves and one safety relief valve*
- *Liquid gas trap with emptying of remainders*
- *Pressure gauge 0-25 bar with shut-off valve*
- *2-stage regulator unit PN 25*
- *Outlet pressure 50 mbar (other pressure on special request)*

LPG Vaporizer unit FAS 2000

- electrical dry type vaporizer
- gas temperature outlet – max. 70°C
- connection value – 2×18 kW (380 V)
- for Ex-Zone II
- 2-staged regulator unit
- max. operation pressure – 25 bar
- outlet pressure – 50 mbar
- inlets (liquid phase, bypass line, discharge line) – DN 25, outlet gas phase – DN 50
- wire cross section – min. 2,5 mm²
- dimensions – 1600×400×1200 mm
- weight – 340 kg

Vaporizer type	Capacity, kg/h
FAS 2000	170

Scope of delivery

- *Steel sheet cabinet with rain protection roof and vents, painted, bracket h=100 m*
- *Strainer and safety relief valve in front of*
- *FAS-dry type vaporizer Type 2000 with 2 pcs. solenoid valves and one safety relief valve*
- *Liquid gas trap with emptying of remainders*
- *Pressure gauge 0-25 bar with shut-off valve*
- *2-stage regulator unit PN 25*
- *Outlet pressure 50 mbar (other pressure on special request)*

LPG Vaporizer unit FAS 2000

- electrical dry type vaporizer
- gas temperature outlet – max. 70°C
- for Ex-Zone II
- connection value – 380 V
- 2-staged regulator unit
- max. operation pressure – 25 bar

Order No.	Vaporizer, pcs.	Capacity, kg/h	Consumption, kW	Connection, DN		Outlet pressure, mbar	Dimensions, mm	Weight, kg
				Inlet (Liquid phase, Bypass line, Discharge line)	Outlet Gas phase			
20 924	2	200	2×18	25/25/25	50	50...300	2000×500×1600	360
20 321	2	330	2×24	25/25/25	50	50...300	2000×500×1600	380
20 259	3	450	3×24	15/15/25	50	50...300	2400×1800×1200	390
20 324	4	620	4×24	25	50	1500	2400×600×1800	450
20 328	6	900	6×24	25	50	1500	4800×600×1800	650
20 327	8	1250	8×24	25	50	1500	3000×2500×2600	900

Vaporizer unit in compact construction
with tank and dry-type vaporizer Type FAS 2000, Ex-Zone 2, connection voltage single-phase alternating current 230 V/50 Hz, 3-phase current 400 V/50 Hz, complete mounted in steel sheet cabinet, piped, tank and cabinet are mounted on a galvanized ground frame, piped, grounded and painted.

Compact unit consisting of:

- *Steel sheet cabinet, painter, with rain protection roof, vents, console h=100 mm*
- *Ball valve in in- and outlet as well as between trap and middle pressure regulator*
- *Strainer with fine mesh filter and safety relief valve in front of dry-type vaporizer*
- *Pressure gauge 0-25 bar with pressure gauge shut-off valve in front of and behind the middle pressure regulator*
- *Dry-type vaporizer Type 2000 (see Order No. 20333, 20554-20556), for Ex-Zone 2, with 2 pcs. of solenoid valves at vaporizer's inlet, 1 safety relief valve at vaporizer's outlet, control box on vaporizer, wired ready for connection*
- *Trap with emptying of remainders*
- *Middle pressure regulator PN 25 with emergency shut-off valve (SAV) and connection with pressure tap (SBV) and pressure gauge*
- *LPG storage tank acc. To DIN 4680 (domestic tank), for over ground installation, for storage of LPG (propane/butane), with standard fittings*
- *Ground frame in special execution*
- *Excess flow valve*
- *By pass line from safety relief valves in vaporizer's cabinet*

Execution:

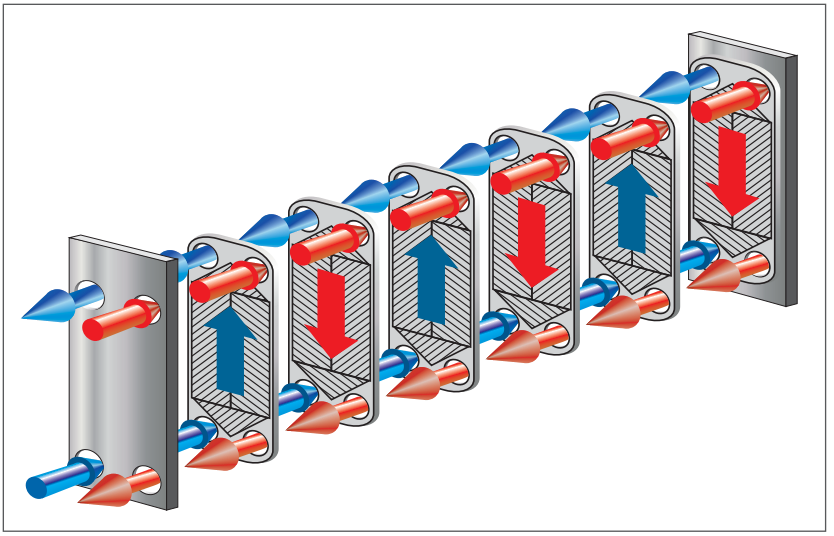
- *Outlet pressure 0,8 bar. Other setting pressures on request. Various adds-on such as step tread for operation of tank fittings, by-pass line with manual switching suitable for unit configuration are available on your request.*

Vaporizer size	Tank size	Ground frame	Cabinet dimensions	Inlet	Outlet	Connection voltage	Connection value el.
15	4850	4230×850×100	1200×800×400	RVS15 left	RVS18 left	230 V	4,4 kW
	6400	5820×850×100					
32	4850	4230×850×100			RVS22 left	400 V	6,0 kW
	6400	5820×850×100					
60	4850	4230×850×100	1200×1200×400				12,0 kW
	6400	5820×850×100					
100	4850	4230×850×100					18,0 kW
	6400	5820×850×100					

Wet-type vaporizer FAS 3000 are generally designed for middle and large industrial consumers. They will be also used in mixing units for production of liquid gas-air-mixture (synthetic natural gas).

The effectivity of wet-type vaporizers FAS 3000 will be achieved through applications of welded plate heat exchangers especially designed for these purposes with a high efficiency factor as well as their potential to work with small temperature differences. The thermal transfer will be affected over curly plates from stainless steel, mounted in a package. Hot and cold sectors are alternating. Such construction ensures an affective system of heat exchange surface.

Detailed view
of heat exchanger.
Special profiling to optimize
the heat transfer.



Functioning principle of plate heat
exchangers.

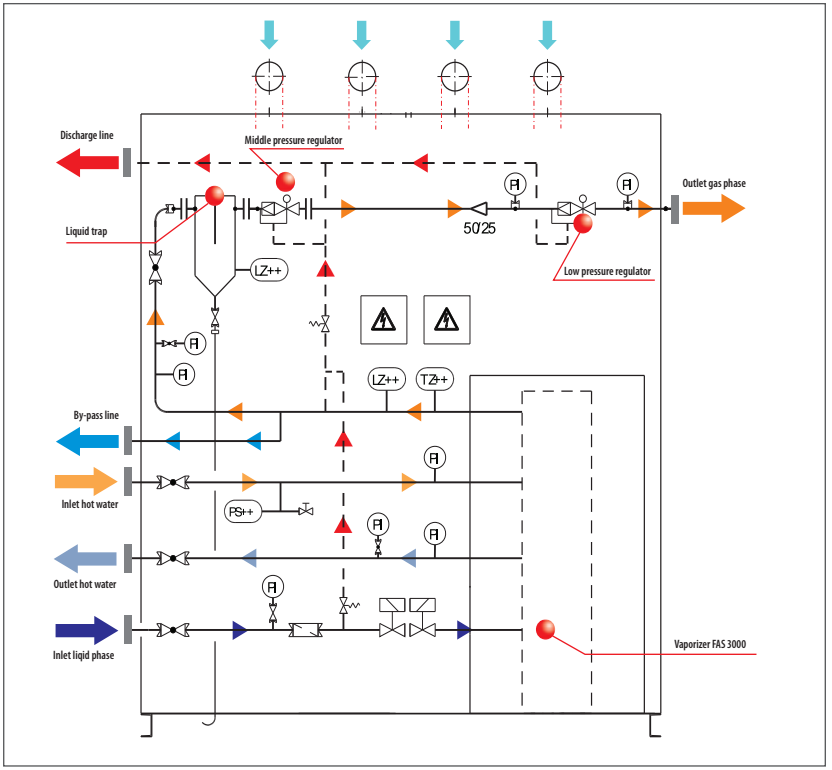
LPG vaporizer unit FAS 3000

- capacity – 200 kg/h
- outlet pressure – 50 mbar
- design pressure – 25/10 bar (gas/water)
- heat carrier temperature – 90/70°C
- power supply 230 V
- inlet connection DN 25 (liquid phase, by-pass line, discharge line, hot water)
- outlet connection DN 25/DN 50 (water, gas)
- dimensions – 1200×1200×400 mm
- weight – 255 kg

Scope of delivery

- *Vaporizer FAS 3000*
- *Thermostat for gas temperature*
- *2 liquid level sensors*
- *2 solenoid valves in inlet of liquid phase*
- *Safety relief valve in liquid phase*
- *Thermometer*
- *Pressure switch in water space*
- *Liquid trap with ball valve for emptying*
- *Separate control box for mounting outside of Ex-zone*
- *Regulator unit: (middle pressure regulator, inlet pressure – up to 16 bar,*
- *Outlet pressure – 1,5 bar, low pressure regulator, outlet pressure – 50 mbar, emergency shut-off valve (SAV) and connection with pressure tap (SBV), pressure gauge*

Vaporizer type	Capacity, kg/h
FAS 3000	200
	300



Hydraulic schema of vaporizer unit FAS 3000-200

LPG Vaporizer unit FAS 3000

- outlet pressure – 50…5000 mbar
- design pressure – 25/10 bar (gas/water)
- heat carrier temperature – 90/70°C
- thermostat for gas temperature
- 2 liquid level sensors
- 2 solenoid valves in inlet of liquid phase
- safety relief valves in liquid phase
- thermometer
- pressure switch in water space
- liquid trap with ball valve for emptying
- separate control box for mounting outside of Ex-zone
- regulator unit

Order No.	Capacity, kg/h	Connection, DN		Dimensions, mm	Weight, kg
		Inlet (Liquid phase, Bypass line, Discharge line)	Outlet Gas phase		
20 248	800	50/50/50	80	2400×600×1800	862
93 065	1200	50/50/50	80	2400×600×1800	867
93 073	1900	50/50/50	80	2400×600×1800	877
93 584	3000	50/50/50	80	2400×600×1800	900
93 153	4000	50/50/50	100	2400×600×1800	950
93 074	7000	150		2438×2200×2250 (Container)	
93 075	12000	150		2931×2200×2250 (Container)	

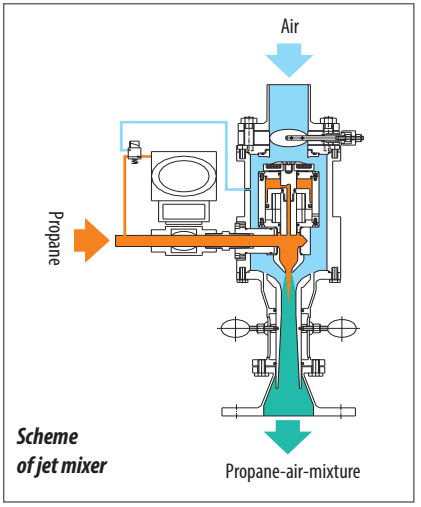
LPG-Air-Mixing unit FAS 4000 (Vaporizer + Mixing unit) for large demand. The facility is developed for great gas supply systems with natural gas to cover the pick loads as well as for places of location with an elevated risk of condensation in the gas line.

Mixing unit FAS 4000 are available in two executions:

- *ND – as low pressure unit*
- *HD – as high pressure unit*

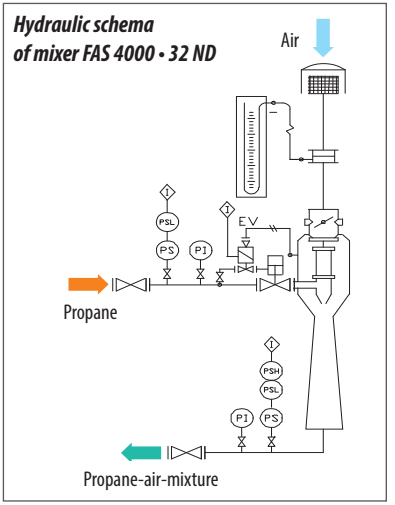
Low pressure mixing units are designed in cabinet construction for systems with an outlet pressure of not higher as 500 mbar.

High pressure mixing units are depending on local operation conditions at side. They will be designed and manufactured accordingly to corresponding requirements and specifications of customers.



Scheme of jet mixer

Hydraulic schema of mixer FAS 4000 • 32 ND



The combined Mixing units FAS 4000 can be designed in special configurations depending on conditions of a special object.

Order No.	Mixing units Type	Capacity, m^3 (propane-air-mixture) kg/h	Inlet/Outlet LPG	Inlet/Outlet pressure, mbar
93710	FAS 4000-32 ND	30/30	DN15/DN50	2000–5000/ up to 500
93711	FAS 4000-60 ND	50/60	DN15/DN50	
93712	FAS 4000-100 ND	80/100	DN20/DN65	
93713	FAS 4000-160 ND	130/160	DN25/DN65	
93714	FAS 4000-300 ND	240/300	DN25/DN65	
93953	FAS 4000-640-4 ND	640/790	DN32/DN200	
–	FAS 4000-1200 ND	1200/1480	DN65/DN200	

D LPG dispensers • Autogas filling staions

LPG small dispenser
for in-company application and disposition, not calibratable, with integrated control system in head of dispenser without measuring device and without price calculator, housing from stainless steel

Electronic:

- *Dead man push button*
- *Signal lamp*
- *Control system with logo item integrated in dispenser head, for electrical connection of pump motor, solenoid valve, emergency-button, etc.*
- *Dry-running protection by electrical power measurement or differential pressure switch depending on pump type*
- *Lockable nozzle holder*

Hydraulic:

- *Safety relief valve 25 bar*
- *Vent valve ¼" NPT*
- *Expansion vessel*
- *Excess flow valve in front of high pressure hose*
- *High pressure hose DN 16, length = 4,5 m, with breakaway coupling and dispenser nozzle – connection of pressure line: ball valve ¾" female NPT*

Documentation:

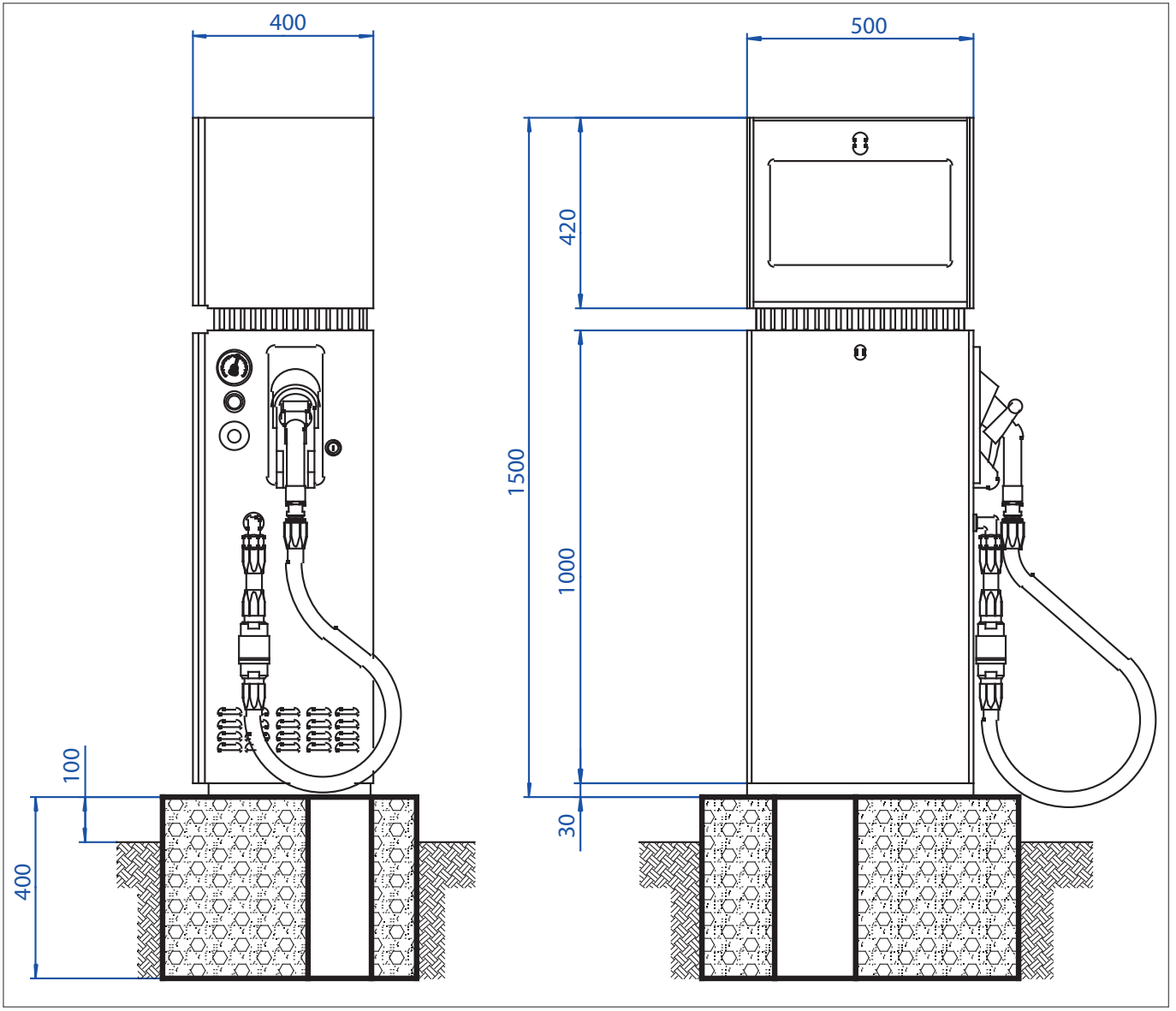
- *EC-Declaration of Conformity acc. to PED*
- *Shear valve male ainst extra cost*

FAS 130 with LLPM 101

Electronic LPG dispenser type FAS-120

Operation pressure, bar	up to 25
Flow capacity, l/min	
min.	5
max.	50
Weight, kg	110
Dimensions, mm:	
Height (entire dispenser)	1500
Height (mechanical part)	1000
Width	500
Depth	400
Power supply	230 V AC, 50 Hz

Counter-Display (kg)/LCD-Display	1 (inside)/1
Hydraulic	PN 25
Coriolis flow meter	5-50 l/min
Equipment: vapor eliminator with fine mesh filter, differential pressure valve, back check pressure valve, safety relief valves, expansion vessel, high pressure hose LPG 19 (length 5 m) with excess flow valve and breakaway coupling	
Connection: liquid phase / gas return line	Ball valve 1" female NPT/ Ball valve ¾" female NPT
Information data at LCD-Display "price per liter", "filling volume liter", "total sum"	
Information data at internal counter-display: volume, kg, density and temperature data of LPG	
Additional equipment (against extra cost): solenoid valve (single- or double-acting), heating for electronic part, insulating flange set for underground pipe lines	



Dimensional drawing of LPG-dispenser type FAS-120

LPG-dispenser type FAS-130

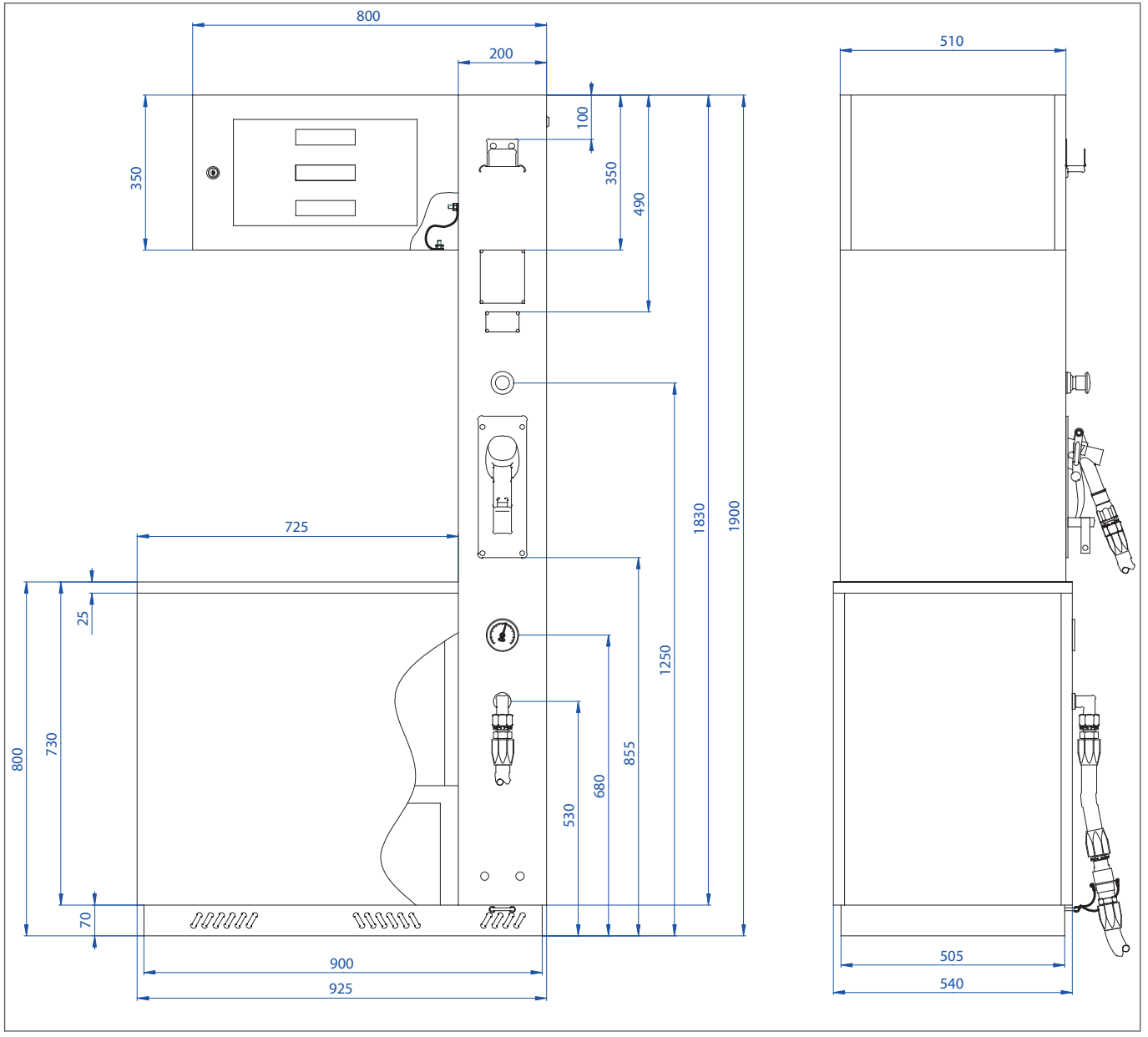
			
Description	**LPG small dispenser** for in-company application and disposition, not calibratable, with integrated control system in head of dispenser without measuring device and without price calculator, housing from stainless steel	**LPG-dispenser FAS-130** for in-company application and disposition, not calibrabable, with integrated control system in head of dispenser without measuring device, housing from stainless steel	
Electric	• Dead man push button • Signal lamp • Control system with logo item integrated in dispenser head, for electrical connection of pump motor, solenoid valve, emergency-button, etc. • Dry-running protection by electrical power measurement or differential pressure switch depending on pump type • Lockable nozzle holder		
Hydraulic PN 25	• Safety relief valve 25 bar • Vent valve ¼" NPT • Expansion vessel • Excess flow valve in front of high pressure hose • High pressure hose DN 16, length = 4,5 m, with breakaway coupling and dispenser nozzle • Connection of pressure line: ball valve ¾" female NPT		• Safety relief valve 25 bar • Vent valve ¼" NPT • Expansion vessel • Excess flow valve in front of high pressure hose • Liter-cyclometer register (only integrator, not resettable), flow capacity – 12-70 l/min • High pressure hose DN 16, length = 4,5 m, with breakaway coupling and dispenser nozzle • Connection of pressure line: ball valve ¾" female NPT
Documentation	• EC-Declaration of Conformity acc. to PED • Shear valve male ainst extra cost	• EC-Declaration of Conformity acc. to PED • Hose feedback male ainst extra cost • Shear valve male ainst extra cost	

Electronic LPG dispenser type FAS-220
Electronic LPG dispenser type FAS-230

Operation pressure, bar	up to 25
Flow capacity, l/min	
min.	5
max.	50
Weight, kg	250
Dimensions, mm:	
Height (entire dispenser)	2450
Height (mechanical part)	718
Width	500
Depth	760
Power supply	230 V AC, 50 Hz

Dispensers FAS-230 differ from dispensers FAS-220 in their construction in so far that all components required for delivery of product are doubled.

Counter-Display (kg)/LCD-Display	1 (inside)/1 (FAS-220) 2 (inside)/2 (FAS-230)
Hydraulic	PN 25
Coriolis flow meter (0-50 l/min)	1 (FAS-220)/1 (FAS-220)
Equipment: vapor eliminator with fine mesh filter, differential pressure valve, back check pressure valve, safety relief valves, expansion vessel, high pressure hose LPG 19 (length 5 m) with excess flow valve and breakaway coupling	
Connection: liquid phase / gas return line	ball valve 1" female NPT/ Ball valve ¾" female NPT
Information data at LCD-display "price per liter", "filling volume liter", "total sum"	
Information data at internal counter-display: volume, kg, density and temperature data of LPG	
Additional equipment (against extra cost): solenoid valve (single- or double-acting), heating for electronic part, insulating flange set for underground pipe lines	



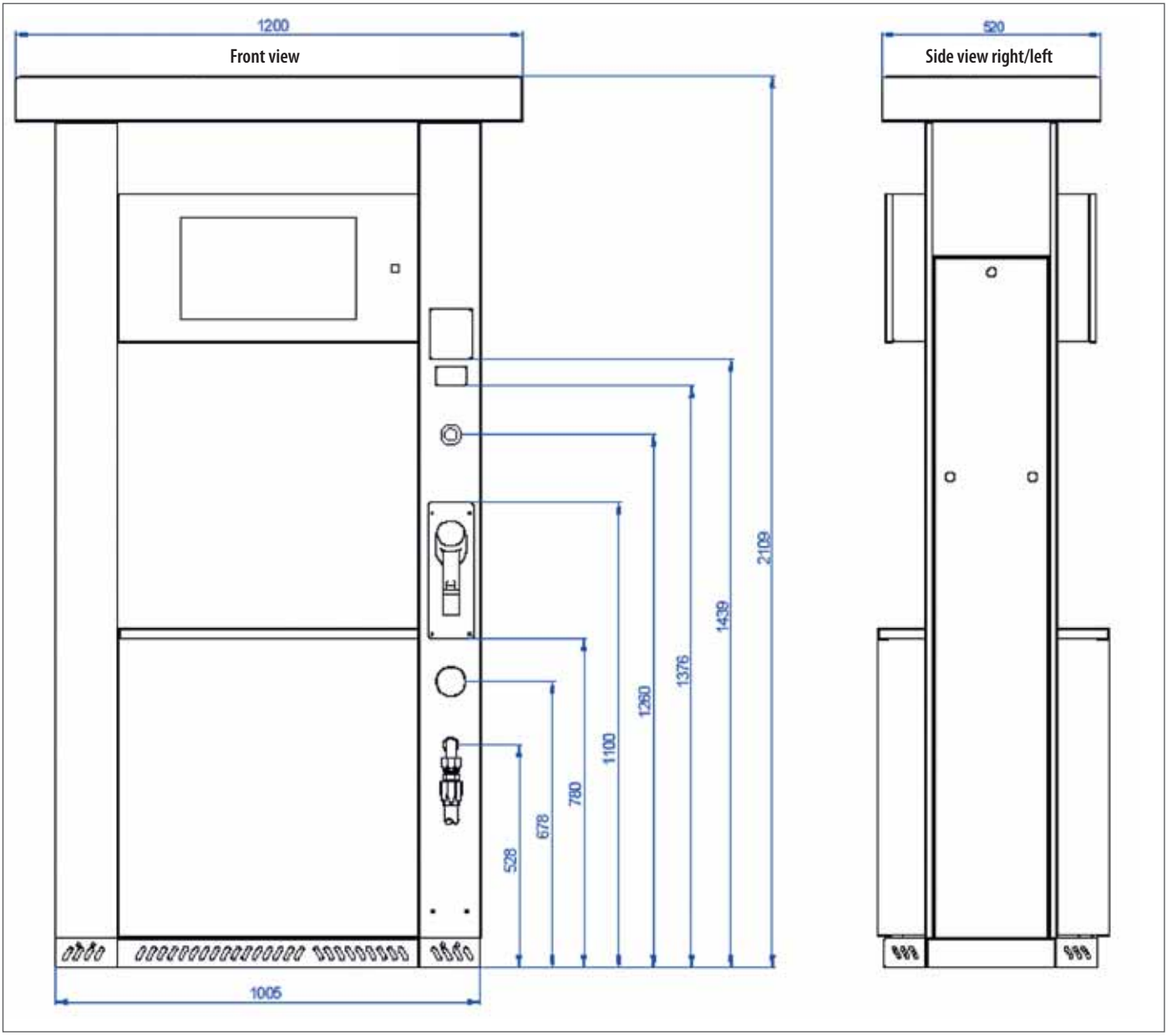
Dimensional drawing of electronic LPG-dispenser type FAS-220/FAS-230

Electronic LPG-dispenser type FAS-220 HM
Electronic LPG-dispenser type FAS-230 HM

Operation pressure, bar	up to 25
Flow capacity, l/min	
min.	5
max.	50
Weight FAS-220/FAS-230, kg	190/220
Dimensions, mm:	
Height (entire dispenser)	2109
Width	1200
Depth	520
Power supply	230 V AC, 50 Hz
Housing execution	High Mast (HM), from stainless steel

Dispensers FAS-230 differ from dispensers FAS-220 in their construction in so far that all components required for delivery of product are doubled.

Counter-Display (kg)/ LCD-Display	1 (inside)/1 (FAS-220 HM) 2 (inside)/2 (FAS-230 HM)
Hydraulic	PN 25
Coriolis flow meter (0...50 l/min)	1 (FAS-220 HM)/1 (FAS-220 HM)
Equipment: vapor eliminator with fine mesh filter, differential pressure valve, back check pressure valve, safety relief valves, expansion vessel, high pressure hose LPG 19 (length 5 m) with excess flow valve and breakaway coupling	
Connection: liquid phase / gas return line	Ball valve 1" female NPT/ Ball valve ¾" female NPT
Information data at LCD-display "price per liter", "filling volume liter", "total sum"	
Information data at internal counter-display: volume, kg, density and temperature data of LPG	
Additional equipment (against extra cost): solenoid valve (single- or double-acting), heating for electronic part, insulating flange set for underground pipe lines	



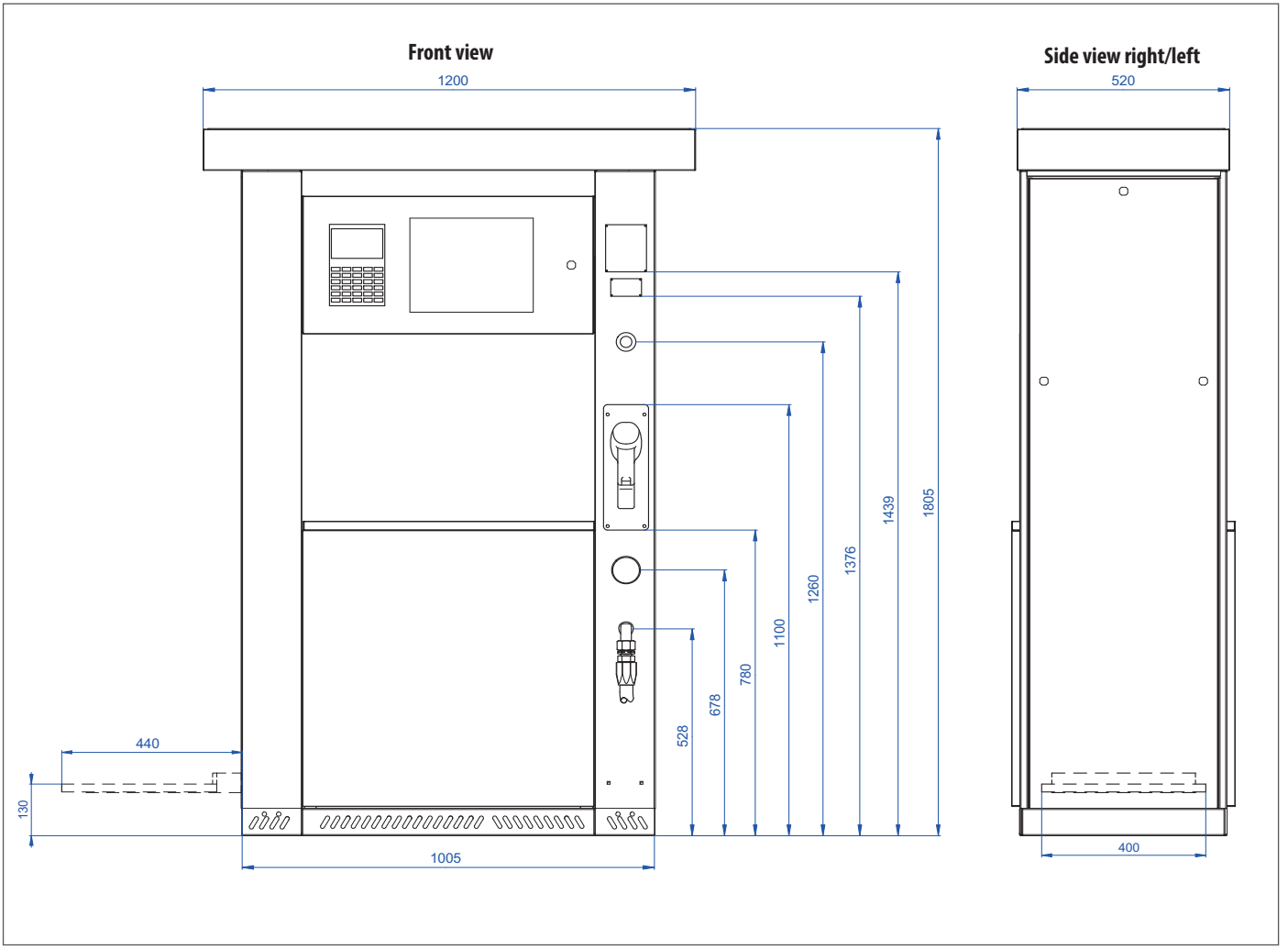
Dimensional drawing of electronic LPG-dispenser
Type FAS-220 HM/FAS-230 HM

Combined Electronic LPG Dispenser Type FAS-220 WM

Operation pressure, bar	up to 25
Flow capacity, l/min	
min.	5
max.	50
Weight, kg	270
Dimensions, mm:	
Height (entire dispenser)	2450
Height (mechanical part)	718
Width	500
Depth	760
Power supply	230 V AC, 50 Hz

With filling device for filling of 27- and 50-liter gas cylinders and a filling unit for filling of cars.

Counter-Display (kg)/LCD-Display	1 (inside)/1 (FAS-220) 2 (inside)/2 (FAS-230)
Hydraulic	PN 25
Equipment: vapor eliminator with fine mesh filter, differential pressure valve, back check pressure valve, safety relief valves, expansion vessel, high pressure hose LPG 19 (length 5 m) with excess flow valve and breakaway coupling	
Connection: liquid phase / gas return line	Ball valve 1" female NPT / Ball valve ¾" female NPT
Information data at LCD-Display "price per liter", "filling volume liter", "total sum", "tare", "filling weight, kg", "total weight, kg"	
Information data at internal counter-display: volume, kg, density and temperature data of LPG	
Additional equipment (against extra cost): solenoid valve (single- or double-acting), heating for electronic part, insulating flange set for underground pipe lines	



Dimensional drawing of electronic LPG-dispenser type FAS-220 WM with filling device

LPG-dispenser FAS 430

		
Description	**LPG-dispenser FAS-430_L** for in-company application and disposition, not calibratable, with integrated control system in head of dispenser, with transponder system, with special piston meter, without ticket printer	**LPG dispenser FAS-430_E** for in-company application and disposition, not calibratable, with integrated control system in head of dispenser, with transponder system, with special piston meter, without ticket printer
Electric:	• TA Model 630/T/E • cutting point V 24 • transponder reading device (contactless) • power supply 230 V AC/50-60 Hz with mains filter • LCD-display with heating • 4 MB Flash Memory Card • electronic Journal • dead man push button • signal lamp • control system with logo item integrated in dispenser head, for electrical connection of pump motor, solenoid valve, emergency-button, etc. • dry-running protection by electrical power measurement or differential pressure switch depending on pump type • lockable nozzle holder	• TA Model FAS-430_E • cutting point RS232 • transponder reading device (contactless) • power supply 230 V AC/50-60 Hz with mains filter • LCD-display • USB-connection for data transfer • dead man push button • signal lamp • control system with logo item integrated in dispenser head, for electrical connection of pump motor, solenoid valve, emergency-button, etc. • dry-running protection by electrical power measurement or differential pressure switch depending on pump type • lockable nozzle holder
Hydraulic PN 25:	• special piston meter for LPG, flow capacity 5-50 l/min • vapor eliminator with installed fine filter, differential pressure valve, backpressure check valve, expansion reservoir and pressure gauge, safety relief valve 25 bar • excess flow valve in front of high pressure hose • high-pressure hose LPG16, length = 4,5 m, with breakaway coupling and filling nozzle • connection pressure line: ball valve 1" female NPT; connection vapor return line: ball valve 3/4" female NPT	
Against extra cost	• Hose feedback; shear valve; solenoid valve in the pressure line; transponder round marks; emergency button in dispenser head; alternate fueling button; metal keypad; data transfer per modem	• Hose feedback; shear valve; solenoid valve in the pressure line; transponder round marks; emergency button in dispenser head; alternate fueling button; data transfer network connection

Service kit in a tool bag for service technicians
(FAS-No. 93583)

Service kit in a tool bag with calibrated flow turbine and set of adaptors for connection to internal filling valve. For control measuring of LPG Dispenser Type FAS-120/220/230 after.

Consists of:

- *Tool bag*
- *Measuring turbine, max. flow capacity 50 l/min, with 1¾" ACME connections*
- *1×FAS 22344 rotary switch attachment*
- *1×Adapter FAS 13532, T3 / W 21,8×1/14" male*
- *1×Adapter FAS 13518, 1¾" ACME coupling / Bajonett*
- *1×Adapter FAS 13509, 1¾" ACME coupling / T3*
- *1×Adapter FAS 10065, 1¾" ACME male / W 21,8×1/14" male*
- *Protective glove*

Conversion kit for modification of a LPG-dispenser type FAS of early versions

The conversion kit makes it possible to modify quickly an early version of LPG-dispenser with piston meter. Consisting of:

- *2 pcs. of Coriolis mass meter, cable, LCD-display and 2 pcs. differential pressure valves*
- *Installation material*
- *Manual*

Order No.	Description
93 602	Conversion kit for modification of dispenser FAS-230 with one 4-piston meter, year of manufacture from 2007
93 601	Conversion kit for modification of dispenser FAS-220 with one 4-piston meter, year of manufacture from 2007
93 6020	Conversion kit for modification of dispenser FAS-230 with one 2 or 4-piston meter, year of manufacture before 2004
93 6021	Conversion kit for modification of dispenser FAS-120 with one 2-piston meter

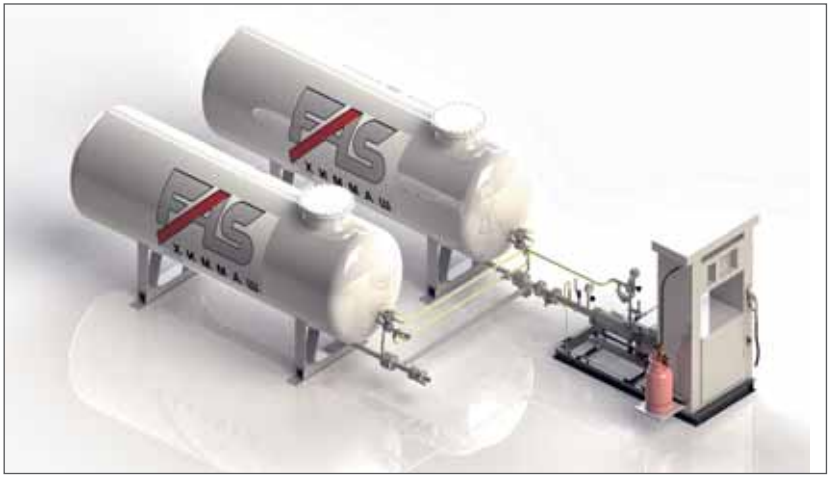
Complete LPG filling unit type FAS with above-ground tanks

LPG filling station of filling of cars with LPG

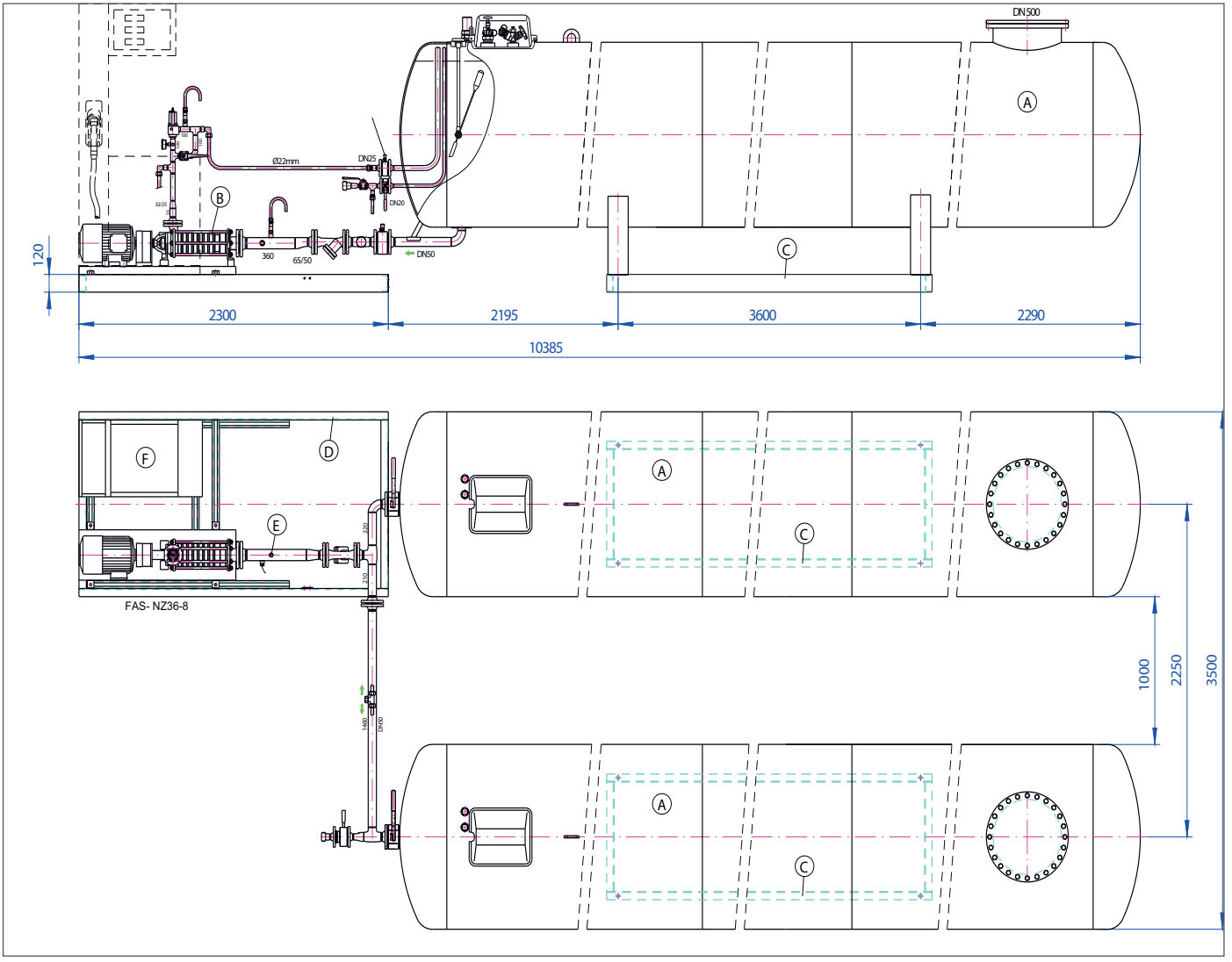
- *Overground storage tanks, mounted on a steel base frame, with LPG-Dispenser, pump unit for the removal of liquid phase from the tank, incl. all the necessary safety- and shut-off fittings, strainer, by-pass valve and all necessary pipe lines*
- *The construction on a common frame reduces the installation and remanufacturing costs, speeds mounting and commissioning, retaining system stability.*

Main components:

- *1-3 over-ground storage tanks for LPG (4,85/6,7/9,0 m³)*
- *1-3 pump units type FAS-NZ with flow rate of 50 up to 130 l/min*
- *1-4 LPG-dispenser type FAS, with one or two filling nozzles, capacity – up to 50 l/min*
- *Complete measuring, shut-off and safety fittings*
- *Optional: an additional pump unit for filling and emptying of storage tanks, capacity 220 l/min*



REMARK: execution and installation versions will be processed accordingly to county-specific regulations and standards as well as to specific customer requirements and can be combined in modular construction system as necessary.



Dimensional drawing of complete LPG filling station with two over-ground storage tanks and LPG-dispenser type FAS-220

Complete LPG-filling station type FAS with underground storage tanks of 4 850 up to 20 000 l

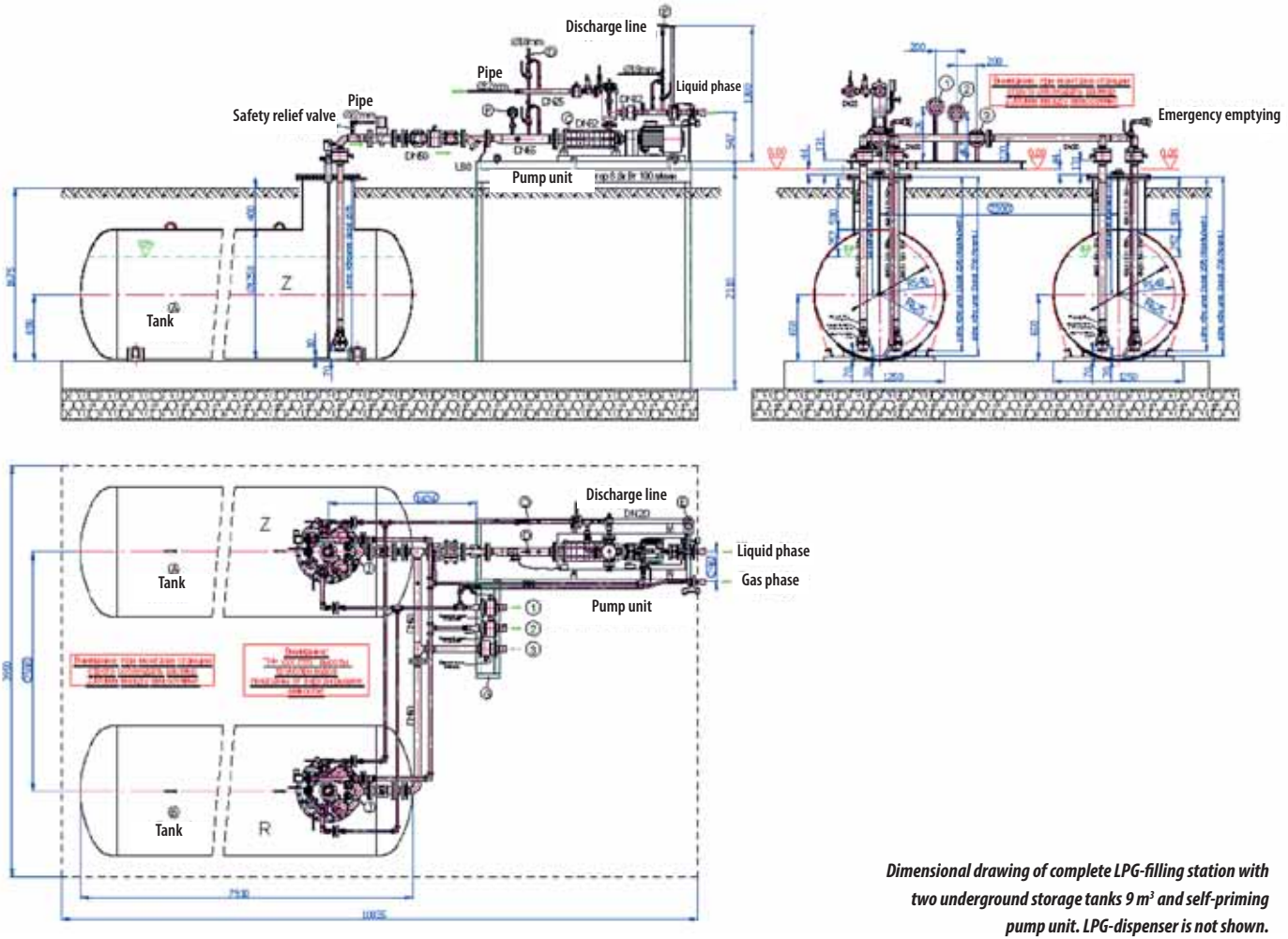
LPG-Filling Station for filling of cars with LPG:

- *Underground storage tanks*
- *Common steel base frame, with LPG-Dispenser, pump unit for the removal of liquid phase from the tank, incl. all the necessary safety- and shut-off fittings, strainer, by-pass valve and all necessary pipe lines*
- *The construction on a common frame reduces the installation and remanufacturing costs, speeds mounting and commissioning, retaining system stability.*

Main components:

- *1-3 underground storage tanks for LPG (4,85/6,7/9,0/20,0 m^3)*
- *Complete self-priming pump facility with pump unit type FAS-AP, capacity 50/100 l/min*
- *By-pass line*
- *Pipe lines for filling of cars, filling and emptying of storage tanks, also by emergency emptying*
- *Dry running protection – flow detector dip sensor*
- *Insolating flanges for underground pipe lines*
- *1-4 LPG-dispenser type FAS, with one or two filling nozzles, capacity – up to 50 l/min*
- *Complete measuring, shut-off and safety fittings*

REMARK: execution and installation versions will be processed accordingly to county-specific regulations and standards as well as to specific customer requirements and can be combined in modular construction system as necessary.



Dimensional drawing of complete LPG-filling station with two underground storage tanks 9 m³ and self-priming pump unit. LPG-dispenser is not shown.

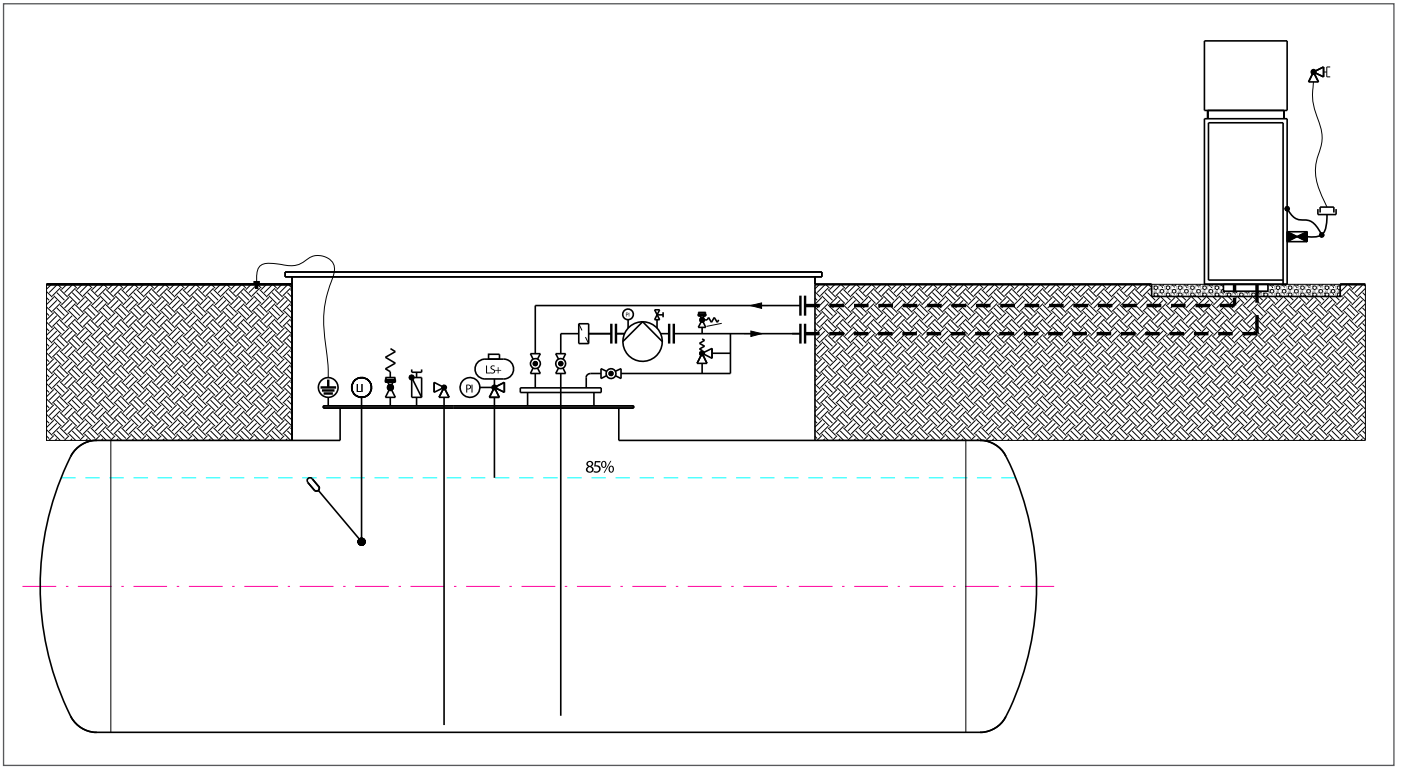
Complete compact LPG-filling station type FAS with one underground storage tank

REMARK: the execution of this compact station is possible with LPG-dispenser type FAS-220 WM

Neither long construction no mounting works are required. Only a spoil for storage tank and a trench for power supply as well as data cables are needed.

Pump unit is equipped with pump FD-150, flow capacity 90 l/min at differential pressure of up to 10,5 bar and electrical motor with motor capacity 4,1 kW in Ex-execution.

- *Capacity of filling station is up to 20 cars per hour*
- *Completely pre-assembled and tested*
- *Quick installation and comissioning*



Hydraulic schema of compact filling unit with underground storage tank and pump unit FD-150. LPG-dispenser – FAS-120.

Compact filling station
with LPG-dispenser conforming to the schema at the former page, not calibratable, for in-company application and disposition

Completely with a LPG storage tank and following fittings/equipment mounted on a ground frame, piped, grounded and painted, pipe line from precision steel tube galvanized, housing from stainless steel.

Documentation:

- *EC-Declaration of Conformity acc. to PED directive with CE-marking, estimated acc. to category IV module H1.*
- *Technical documentation for tank*
- *Technical documentation for pump unit*
- *Manual*

Execution consisting of:

- *LPG storage tank*
- *Ball valve and strainer DN 25, PN 40*
- *Safety relief valve 25 bar*
- *Solenoid valve Ex-proof DN 25, PN 40, 230 V, 50 Hz*
- *EBS-Ray pump unit type RC25, PN 25, capacity approx. 50 l/min at differential pressure of 7 bar and 2990 u/min, 3-phase motor with cage rotor 2,5 kW, type of protection: EEx e II T3, voltage: 230/400 V, 50 Hz, protection art IP 55, type of construction IM B5, flanged gas drainage valve in the pressure line*
- *Corken- by-pass valve with return line to the vapor of tank*
- *Ball valve in the by-pass line, open plumped*
- *Incl. galvanized fire protection plate*

Additional equipment / versions:

- *Available with tank sizes 2.700, 4.850 and 6.400 l*
- *Available with exterior pump or submersible pump / different versions on request*
- *Execution with counter on request*
- *Shear valves in dispenser frames*

Split filling union
with FAS-dispenser conforming to the schema at the former page, not calibratable, for in-company application and disposition

Completely with one LPG storage tank and following fittings/equipment mounted on a ground frame, pipes, grounded and painted, pipe line from precision steel tube galvanized, housing from stainless steel.

Execution consisting of:

- *LPG storage tank over-ground or underground*
- *Ball valve and strainer DN 25, PN 40; safety relief valve 25 bar*
- *Solenoid valve Ex-proof DN 25 PN 40, 230 V, 50 Hz*
- *EBS-Ray pump unit depending on position of tank*
- *Corken bypass valve with return line to vapor phase of tank*
- *Ball valve in the by-pas line, open plumped*
- *Incl. galvanized fire protection plate (over-ground version)*

Additional equipment/ versions:

- *Available with tank sizes 2.700, 4.850 and 6.400 l*
- *Available with exterior pump or submersible pump / different versions on request*
- *Execution with counter on request*
- *Shear valves in dispenser frames*

Large tank stations

LPG storage tanks for over-ground installation acc. to TRBS 3146, for volume ≥ 3 t up to < 30 t, withdrawal from gas or liquid phase, in traversable or not traversable execution

Technical data / Execution

Earth covering	1.000 mm
Operationing pressure	15,6 bar
Testing pressure	22,3 bar
Operation temperature	-20°/+40°C
Filling level	85%
Material thickness	Acc. to static requirement (corrosion allowance 1 mm)

Scope of delivery:

- *Epoxy covered LPG storage tank for earth covered storage with earth covering of 1 meter, ditch mounting*
- *Manhole pit 2000×1200×110 mm, sealed screwed, with entrance aid, with turn-up lid from alu bulb plate, split execution, man-size or traversable, lockable*
- *Manhole DN 500*
- *Operating pressure 16,6 bar*
- *With all necessary connections and pipe penetration*
- *Mounting ears for transport of empty tank*
- *Flooding connection G2"*
- *Acc. to PED Directive 97/23 EG Interpretation acc. to ADD 2000, with CE-marking*
- *Acc. to DGRL and Declaration of Conformity*
- *Without tank fittings*

Standard sizes of tanks

Volume, l	Storage volume, t	Diameter, mm	Lenght, mm
32.000	14,7	2.000	10.880
57.000	25,5	2.400	13.200
62.000	27,7	2.500	13.200

Further sizes of tanks as well >30 t for cars filling stations on request.

Fitting kits for LPG storage tanks

for underground installation acc. to TRBS3146, for volumes ≥ 3 t up to < 30 t, withdrawal from vapor phase

Consisting from:

- *Safety relief valve facility as a 3-way shut off valve DN 32 with 2 internal 1" safety relief valves*
- *Float level gauge large tank version for horizontal cylindrical tanks*
- *Gas withdrawal valve with limit indicator with lifted wall connector*
- *Filling connection: ball valve DN 50, back check pressure valve DN 50, flange DN 50, reduction 50/32, safety relief valve and filling valve 1¾" ACME×1¼" NPT / alternative: filling connection: ball valve DN 50, back check pressure valve DN 50, flange DN 50, safety relief valve and filling valve 2¼" ACME×2" NPT*
- *Vapor withdrawal: ball valve DN 25*
- *Venting: ball valve DN 25 with blind flange DN 25/PN 40*
- *Emergency emptying: ball valve DN 50 with blind flange DN 50/PN 40*
- *Reserve socket DN 25 with blind flange DN 25/PN 40, entering in the vapor phase*

As well fitting kits for stations with withdrawal from liquid phase with or without pump unit are available.

E

Shut-off valves • Bypass valves • 3-way valves • Solenoid valves • Ball valves • Quick-acting valves

Globe valve PN 25
- NPT-thread
- Soft seal

Order No.	Type	Size, DN, "	Length, mm	Weight, kg
19 001	N301-04	½	94	1,40
19 002	A7505 AP	¾	94	1,10
19 003	A7507 AP	1	110	1,60
19 004	A7509BP	1¼	125	3,10
19 005	A7511AP	2	150	3,70
19 006	A7513AP	2	150	7,70
19 007	A7517AP	3	230	18,00

Angle valve PN 25
- NPT-thread
- Soft seal

Order No.	Type	Size, DN, "	Length, mm	Weight, kg
19 009	N401-04	½	45	1,25
19 010	A7506 AP	¾	45	1,20
19 011	A7508AP	1	51	1,20
19 012	A7510 BP	1¼	57	2,70
19 013	A7512AP	1½	62	3,60
19 014	A7514 AP	2	69	5,00
19 015	A7518AP	3	102	15,00

Shut-off valve PN 25

- NPT-thread
- Collar seal

Type

- *A – straight type*
- *B – angle type*

Type A

Type B

Order No.	Type	Size, DN, "	Length, mm	Weight, kg	Pic.
Type A					
19 017	7704 P	½	95	1,0	1
19 018	7705 P	¾	95	1,0	1
Type B					
19 020	7704 LP	½	43	0,9	2
19 021	7706 P	¾	43	0,9	2

Quick acting valve with lever PN 25

- NPT-thread

1

2

Order No.	Type	Size, DN, "	Length, mm	Weight, kg	Pic.
19 026	7901 T	¼	63	0,6	1
19 027	7554 SAV	½	94	1,0	2
19 028	7554 SV	¾	94	1,0	2

Ball valve with spring release PN 25

- NPT-thread
- Mechanical hand lever

Order No.	Type	Size, DN, "	Length, mm	Weight, kg
19 151	Argus	½	90	2,0

Shut-off valve/ regulating valve PN 20

- NPT-thread

1

2

Order No.	Type	Size, DN, "	Weight, kg	Pic.
19 033	1224 WA	¼	0,1	1
19 034	2553	¼	0,7	2
19 035	2553 A	⅜	0,7	2

Angle valve PN 25

- **Connection ¾" NPT male**

Other dip tubes are available on request


1


2


3

Order No.	Type	Outlet	Material	Pic.	Weight, kg
19 439	9101 C1	POL	Brass	1	0,4
19 440	7550 P	¾" NPT	Brass	1	0,6
19 441	FAS 484	¾" NPT, with brass plug	Brass	1	0,7
19 442	A7550 P	¾" NPT	Steel	1	0,6
19 443	7550 PX	¾" NPT, with excess flow valve	Brass	2	0,6
19 444	A7550 PX	¾" NPT, with excess flow valve	Steel	2	0,6
19 445	901 C5	POL, with excess flow valve	Brass	2	0,4
19 446	9101 DNP	POL, with dip tube 300 mm	Brass	–	0,5
19 447	FAS 483	POL, with dip tube 300 mm and pressure gauge	Brass	3	0,7
19 448	Brass plug for angle valve ¾" NPT, brass, with seal				

Shut-off valve PN 40

- Straight type
- Flanges acc. to DIN 2635
- Length acc. to DIN 3202
- Body of cast steel GS-C 25
- Seat ring, disc and stem of stainless steel
- Leakproof class 1 to DIN 3230 part 3

Type:

- *A – gland seal of pure graphite*
- *B – bellows seal, maintenance free*

Order No.		Size, DN	Length, mm	Weight, kg
Type A	Type B			
19 041	**19 101**	15	130	4,8
19 042	**19 102**	20	150	5,4
19 043	**19 103**	25	160	7,1
19 044	**19 104**	32	180	8,0
19 045	**19 105**	40	200	11,5
19 046	**19 106**	50	230	13,5
19 047	**19 107**	65	290	23,5
19 048	**19 108**	80	310	28,0
19 049	**19 109**	100	350	39,5

Ball valve PN 40 straight type with hand lever

- Execution „Fire-Safe“ acc. To BS 6755 part 2,
- Compact FAS-KHV
- Body and ball of stainless steel (CrNi AISI 304), seals – PTFE
- Leakproof class 1 acc. to DIN 3230 part 3

Order No.	Size, DN	Weight, kg	Length, mm
93251	15	1,5	38
93252	20	2,0	40
93253	25	2,7	45
93254	32	5,2	58
93255	40	6,8	64
93256	50	11,1	82
93257	65	15,6	103
93258	80	22,3	122
93259	100	37,3	150

Ball valve type F120 PN 63

- Full bore
- Two-piece body – steel 1.4408
- Seals of PTFE
- Ball of stainless steel CF8M
- Operating lever
- Length acc. to DIN 3202 T4M3

Order No.	Size, DN	Connection (NPT), "	Weight, kg
19 449	8	¼	0,2
19 450	10	3/8	0,3
19 451	15	½	0,4
19 452	20	¾	0,6
19 453	25	1	0,9
19 454	32	1¼	1,5
19 455	40	1½	2,2
19 456	50	2	2,9

Ball valve PN 40
full bore with operating lever

- Execution "Fire-Safe" acc. to BS 6735 part 2
- Body – ASTM A 105, Ball of stainless steel (CrNiAISI 304), seals of PTFE
- Leakproff class 1 acc. to DIN 3230

Type:

- *A-type FAS-KHB, compact execution, block body*
- *B-type FAS-KHF, standard, two piece body*

FAS-KHB

FAS-KHF

Order No.		Size, DN	Weight, kg	
Type A	Type B		Type A	Type B
92 151	**92 271**	15	1,3	3,3
92 152	**92 272**	20	1,9	4,5
92 153	**92 273**	25	2,6	6,0
92 154	**92 274**	32	5,3	8,0
92 155	**92 275**	40	6,9	13,0
92 156	**92 276**	50	11,0	17,0
92 157	**92 277**	65	15,6	23,0
92 158	**92 278**	80	22,4	28,0
92 159	**92 279**	100	37,4	43,0
92 171	**92 280**	125	60,0	69,0
92 172	**92 281**	150	–	80,0
92 173	**92 282**	200	–	120,0

Ball valve PN 40 type Mecafrance

- Three-piece body of forged steel C 22.8
- Seals of PTFE, selector shaft and ball of stainless steel
- Operating lever

Type:

- *A – full bore*
- *B – reduced bore, standard execution*
- *C –seal kit*

Special executions: for road tankers, FIRE SAFE, and for temperature up to -20°C are available on request.

Order No.				Size, DN, "	Weight, kg	Order No.	Size, DN, "		Weight, kg
Welding ends		Pipe thread	NPT-thread			Type C	full bore	reduced bore	
Type A	Type B	Type B	Type B						
19 121	**19 231**	**19 241**	**19 251**	15 – ½	0,5	19 261	10 – ¼	15 – ½	0,1
19 122	**19 232**	**19 242**	**19 252**	20 – ¾	0,8	19 262	15 – ½	20 – ¾	0,1
19 123	**19 233**	**19 243**	**19 253**	25 – 1	1,3	19 263	20 – ¾	25 – 1	0,1
19 124	**19 234**	**19 244**	**19 254**	32 – 1¼	1,8	19 264	25 – 1	32 – 1¼	0,1
19 125	**19 235**	**19 245**	**19 255**	40 – 1½	2,8	19 265	32 – 1¼	40 – 1½	0,1
19 126	**19 236**	**19 246**	**19 256**	50 – 2½	3,8	19 266	40 – 1½	50 – 2	0,1
19 127	**19 237**	-	-	65 – 2	7,5	19 267	50 – 2	65 – 2½	0,1
19 128	**19 238**	-	-	80 – 3	12,0	19 268	65 – 2½	80 – 3	0,1
19 129	**19 239**	-	-	100 – 4	20,5	19 269	80 – 3	100 – 4	0,1

Ball valve PN 40
with full bore with electrical actuator

- "Fire-Safe" version acc. to BS6755 part 2
- Type:
  - with flanges – Type FAS-KHF,
  - compact – Type FAS-KHB
- Body of steel ASTM A105, ball of stainless steel (CrNi AISI 304), seals of PTFE
- Leakproof class 1 acc. to DIN 3230
- Electrical actuator – AUMA NORM SGEXC


FAS-KHB


FAS-KHF

Order No.	Size, DN	Weight, kg
93820	15	26,5
93821	20	27
93822	25	28
93823	32	31
93824	40	32

Order No.	Size, DN	Weight, kg
93825	50	36
93826	65	41
93827	80	48
93828	100	51
93829	125	94

Order No.	Size, DN	Weight, kg
93830	150	121
93831	200	240
93832*	250	500

** with FAS-KHF*

Electrical actuator AUMA series SGEXC for ball valve

- Bending range 80-110°
- Ex-protection II2G EEx de IICT4
- Temperature range – -40…+40°C
- Power supply 400 V 50 Hz, protection class IP 67

Order No.	Ball valve size	Actuator type
93844	DN 15, DN 20, DN 25, DN 32, DN 40, DN 50, DN 65	SGExC 05.1
93845	DN 80, DN 100, DN 125	SGExC 07.1
93847	DN 150	SGExC 12.1

3-way ball valve type FAS-KHF W3, PN 40

- Full bore
- Body of steel ASTM A105, ball of stainless steel CrNi AISI 304, seals of PTFE
- L-bore
- DIN-flanges acc. to DIN 2635
- Three-piece body
- Hand lever

Order No.	Size, DN	Weight, kg
92 292	DN15	4
92 291	DN20	6
92 293	DN25	7
92 294	DN32	12
92 295	DN40	14
92 296	DN50	20

Order No.	Size, DN	Weight, kg
92 297	DN65	34
92 298	DN80	50
92 299	DN100	71
92 300	DN125	119
92 301	DN150	185

Quick-acting ball valve PN 40

with full bore

- "Fire Safe" version acc. to BS6755 part 2 and antistatic device
- DIN-flanges acc. to DIN 2635
- Seals of PTFE
- Leackproof class 1 acc. to DIN 3230
- With pneumatic actuator in maintenance free compact execution, angle of rotation 90°, with automatic spring return, 5-8 bar, min. pilot pressure of 5 bar (at a max. differential pressure of 25 bar)

Type:

- *A – type ARGUS, body of forged steel TSTE 355N, ball and shaft of stainless steel, shaft seal of Viton*
- *B – type ALFA, body of forged steel ASTM A 105 (C 21), ball and shaft of stainless steel, shaft seal of PTFE/Viton*
- *C – type Bont, body of forged steel ASTM A 105 (C 21), three-piece body, ball and shaft of stainless steel, shaft seal of PTFE/Viton*

DIN-flange connection on both sides, length acc. to DIN 3202 F4/F5 short model

Order No.		Size, DN	Length, mm	Weight, kg	
Type A	Type B			Type A	Type B
19 700	**19 730**	15	115	8,0	8,5
19 701	**19 731**	20	120	9,0	9,5
19 702	**19 732**	25	125	9,5	10,5
19 703	**19 733**	32	130	14,2	15,3
19 704	**19 734**	40	140	15,1	18,8
19 705	**19 735**	50	150	21,4	26,4
19 706	**19 736**	65	170	33,5	37,7
19 707	**19 737**	80	180	47,0	53,0
19 708	**19 738**	100	190	69,3	80,0
19 709	**19 739**	125	325	80,0	95,0
19 880	**19 890**	150	350	137,0	122,0

Welded end connection on one side, DIN-flange on other side

Order No.		Size, DN	Length, mm	Weight, kg		
Type A	Type B			Type A	Type B	Type C
19 750	**19 860**	15	230	7,6	205	7,5
19 751	**19 861**	20	250	8,3	225	8,1
19 752	**19 862**	25	260	9,5	235	9,3
19 753	**19 863**	32	250	13,0	250	12,4
19 754	**19 864**	40	260	14,9	270	14,6
19 755	**19 865**	50	270	20,2	211	25,5
19 756	**19 866**	65	285	32,4	250	34,5
19 757	**19 867**	80	315	46,7	308	48,0
19 758	-	100	355	69,2	-	-
19 759	-	125	463	95,0	-	-

Accessories

Order No.	Type	Weight, kg
19 710	Limit switch in housing, Ex-proof, for open/closed position indication, with optical position indicator	1,8
19 711 **19 763 ATEX**	3/2-way solenoid valve, Ex-proof, Namur interface, for compressed air, max. 10 bar, thread connection G¼", operating voltage 230 V, 50 Hz	1,5
19 712	3/2-way solenoid valve, Ex-proof, for compressed air, max. 10 bar, thread connection G¼", operating voltage 24 V, coflow	1,5

Solenoid valve PN 40

- Ex-proof
- With automatic lifting, normal closed
- Leakproof class 1 to DIN 3230
- Operating pressure 0...25 bar
- Flanges acc. to DIN 2635

Type:

- *A – body of cast steel*
- *B – body of stainless steel, non-ferrous free*
- *C – body of cast steel, non-ferrous free*

Solenoid valves with optical position indicator are available on request.

1

2

Order No.						Size, DN	Length, mm	Pic.	Weight, kg
Type A		Type B		Type C					
230 B (AC)	24 B (DC)	230 B (AC)	24 B (DC)	230 B (AC)	24 B (DC)				
19 419	**19 369**	**19 429**	**19 379**	-	-	15	130	1	5,5
19 420	**19 370**	**19 430**	**19 380**	-	-	20	150	1	5,8
19 421	**19 371**	**19 431**	**19 381**	-	-	25	160	1	6,5
19 422	**19 372**	**19 432**	**19 382**	-	-	32	180	1	11,0
19 423	**19 373**	**19 433**	**19 383**	-	-	40	200	1	12,0
19 424	**19 374**	**19 434**	**19 384**	-	-	50	230	1	14,0
19 425	**19 375**	-	-	**19 435**	**19 385**	65	290	2	36,5
19 426	**19 376**	-	-	**19 436**	**19 386**	80	310	2	46,5
19 427	**19 377**	-	-	**19 437**	**19 387**	100	350	2	70,0

Accessories	
19 388	*Extra charge for 2 solenoid switches for contactless electronic indication of position ON/OFF for solenoid valves with flanged DN 15-50, Ex-proof to EEx d IIC T6*
19 389	*Extra charge for 2 solenoid switches for contactless electronic indication of position ON/OFF for solenoid valves with flanged DN 65-100, Ex-proof to EEx d IIC T6*

Solenoid valve PN 40
- Ex-proof
- Indirectly actuated, normal closed
- Power supply 230 V, 50 Hz
- Operating pressure 0,5...40,0 bar
- Body of brass

Order No.	Connection female , "	Length, mm	Weight, kg
19 401	G ½	67	0,8
19 402	G ¾	80	1,2
19 403	G 1	95	1,6
19 404	G 1¾	132	2,5
19 405	G 1½	132	3,5
19 406	G 2	160	4,5
19 408	Special voltage 24 V – DC		

Solenoid valve PN 25
- Ex-proof
- With automatic lifting, normal closed
- Power supply 230 V, 50 Hz
- Operating pressure 0,5 – 25 bar
- Body of brass

Order No.	Connection female , "	Length, mm	Weight, kg
19 411	G ½	67	1,8
19 412	G ¾	95	4,0
19 413	G 1	95	3,8
19 414	G 1¾	132	5,3
19 415	G 1½	132	5,5
19 416	G 2	160	6,6
19 408	Special voltage 24 V – DC		

By-pass valve PN 25
- Angle form
- With spring loading
- NPT female thread

see next page


1


2

Order No.	Type (Corken)	Connection NPT,"	Setting ranges, bar	Capacity max. l/min	Weight, kg	Pic.
19 330	B 166	¾	3,5...10,5	115	3,5	1
19 331	B 166	1	3,5...10,5	150	3,5	1
19 332	B 166	1	1,7...4,1	150	3,4	1
19 333	B 166	1	6,9...15,5	150	3,5	1
19 337	B 177	1½	5,0...11,0	380	3,0	
19 338	B 166	¾	1,7...4,1	115	3,4	1
19 339	B 166	¾	6,9...15,5	115	3,6	1

By-pass valve PN 25

Order No.	Type (Corken)	Connection NPT, "	Setting ranges, bar	Capacity max. l/min	Weight, kg	Pic.
19 346	T 166	1½	6,9...15,5	380	3,5	1
19 348	T 166	1¼	6,9...15,5	300	3,8	1
19 349	T 166	1½	3,5...10,5	380	4,0	1
19 350	B 177	2	3,5...8,6	1140	18,8	2

Order No.	Type (Corken)	Connection NPT, "	Setting ranges, bar	Capacity max. l/min	Weight, kg	Pic.
19 354	T 166	1¼	3,5...10,5	300	3,8	1
19 355	B 177	1½	4,1...6,9	570	6,0	2
19 359	B 177	1¼	5,0...11,0	470	3,8	2

Relief valve manifold with 3-way ball valve PN40

- **Ball valve of forged steel C 22.8, ball of stainless steel with L-bore, seals of PTFE**
- **Angle of rotation – 90°**
- **Flange connection acc. to DIN 2635 or NPT-thread**

Type:

- *A – standard execution, with 2 internal safety relief valves of brass, 1" NPT, setting pressure 15,6 bar, completely welded, assembled, primed and painted*
- *B – with 2 internal safety relief valves of stainless steel, 1" NPT, setting pressure 15,6 bar, completely welded, assembled, primed and painted*
- *C – without relief valves, completely welded, assembled, primed and painted*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2

Order No.			Connection	Dimensions, mm		Weight, kg	Pic.
Type A	Type B	Type C		Width	Height		
19 481	**19 501**	**19 506**	DN 25	200	375	6,5	1
19 482	**19 502**	**19 507**	DN 32	200	385	7,1	1
19 483	**19 503**	**19 508**	1" NPT male	200	425	5,7	2
19 484	**19 504**	**19 509**	1¼" NPT male	200	425	5,8	2
19 485	**19 505**	**19 510**	DN 50	200	390	8,0	1
19 537	**19 538**	**19 539**	DN 40	200	390	7,5	1

Liquid withdrawal valve PN 25
with excess flow valve

Type:
- *A – Standard model*
- *B – with built-in back pressure check valve*

Order No.	Type	Inlet, "	Outlet, "	Filling connection	Weight, kg
19 341	A8017 DP	1¼ NPT male	1 NPT female	–	1,8
19 342	A8017 DH	1¼ NPT male	1 NPT female	with back pressure check valve	1,8
19 343	A8018 DP	1¼ NPT male	1 NPT female	1¾ ACME male	1,9
19 344	A8016 DP	1¼ NPT male	–	1¾ ACME male	1,4

Multivalve PN 25
for storage tanks
- Body of brass

Order No.	Type (RegO)	Connection, "	Weight, kg	Components:
19 561	8475RV	2½ NPT-IG	5,7	*FIller valve 1¾" ACME, vapor equalizing valve 1¼" ACME, vapour withdrawal valve POL-female, vent valve with dip tube, connection for pressure gauge, flange connection for liquid level gauge, pressure relief valve, connection for dip tube ¾" NPT*
19562	8593 AR 16.0	1½ NPT-AG	1,8	*Filler valve 1¾" ACME, vapour equalizing valve 1¼" ACME, vapour withdrawal valve POL-female, vent valve with dip tube, connection for pressure gauge, connection for dip tube ¾" NPT*

Duoport pressure relief valve manifold PN 25
- Connection 2" NPT male
- Body of ductile iron ASTM A395
- For 2 external relief valves 1 ¼" NPT male Type RegO 3135 of brass
- Without plastic cap

Order No.	Type RegO	Connection, "	Relief valve (quantity)	Set pressure, bar	Weight, kg
19 571	A8540	2 NPT male	–	–	4,5
19 572	8542G	2 NPT male	2	2...27	6,8

Multiport pressure relief valve manifold PN 25

- ANSI/ASA flanges
- Body of ductile iron ASTM A395
- For external relief valves 2½" NPT male type RegO A3149 of steel
- With plastic cap

Type:

- *A – tank connection 3" ANSI/ASA-flange 300 lbs*
- *B – tank connection 4" ANSI/ASA-flange 300 lbs*

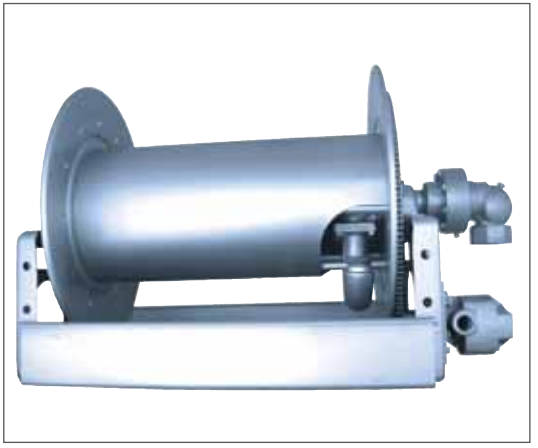
Order No.	Type RegO	Relief valve (quantity)	Set pressure, bar	Weight, kg
Type A				
19 511	A8563	no safety relief valvee	–	32,0
19 569	8530	2	17,2	30,0
19 512	A8563	3	17,2	53,0
19 513	A8564	4	17,2	60,0
19 570	A8532	2	2...21	40,0
19 514	A8563	3	2...21	53,0
19 515	A8564	4	2...21	60,0

Order No.	Type RegO	Relief valve (quantity)	Set pressure, bar	Weight, kg
Type B				
19 516	A8573	no safety relief valvee	–	38,0
19 517	A8573	3	17,2	59,0
19 518	A8574	4	17,2	66,0
19 519	A8573	3	2...21	59,0
19 520	A8574	4	2...21	66,0

F Accessories for road tankers

Hose reel PN 25
- LPG high-pressure hoses LPG 25 and LPG 32
- Hose connection G ¼" male
- Inlet 1½" NPT female
- Swivel joint 90°
- Completely mounted on base frame, primed and painted

Type:
- *A – inlet and drive right-hand*
- *B – inlet and drive left-hand*



Order No.		Type of LPG high pressure hoses	Weight, kg
Type A	Type B		
24 331	24 332	LPG 25 (up to 44 m) LPG 32 (up to 38 m)	50,0
24 333	24 334	LPG 25 (up to 60 m) LPG 32 (up to 50 m)	57,0

Hose reel PN 25
with pneumatic drive
- LPG high-pressure hoses LPG 25 and LPG 32
- Hose connection G¼" male
- Inlet 1½" NPT female
- Swivel joint 90°
- Completely mounted on base frame, primed and painted

Type:
- *A – inlet and drive right-hand*
- *B – inlet and drive left-hand*

Order No.		Type of LPG high pressure hoses	Weight, kg
Type A	Type B		
24 341	24 342	LPG 25 (up to 44 m) LPG 32 (up to 38 m)	60,0
24 343	24 344	LPG 25 (up to 60 m) LPG 32 (up to 50 m)	68,0

Pneumatic drive
with integrated coupling for hose reels
- Cog-wheel with 10 cogs: z=10, t=½"×$^{3}/_{16}$"

Order No.	Weight, kg
24 016	4,3

Hose reel PN 25

- Hydraulic drive
- LPG high pressure hose LPG 25 and LPG 32
- Inlet 1½" NPT female
- Swivel joint 90°
- Completely mounted on base frame, primed and painted

Type:

- *A – inlet and drive right-hand, hose connection G 1¼" male*
- *B – inlet and drive left-hand, hose connection G 1¼" male*
- *C – inlet and drive left-hand, hose connection 1¼" NPT male*
- *D – inlet and drive right-hand, hose connection 1¼" NPT male*

Order No.				Type of LPG high pressure hoses	Weight, kg
Type A	Type B	Type C	Type D		
24 361	**24 362**	**24 365**	**24 366**	LPG 25 (up to 44 m) LPG 32 (up to 38 m)	62,0
24 363	**24 364**	**24 368**	**24 367**	LPG 25 (up to 60 m) LPG 32 (up to 50 m)	68,0

Tandem hose reel PN 25

- Left reel for LPG high-pressure hose LPG 25 for a length up to 40 m, with swivel joint 90°, inlet 1½" female NPT and hose connection 1" female NPT
- Right reel for LPG high-pressure hose LPG 13 for a length up to 40 m, with swivel joint 90°, inlet 1" female NPT and hose connection ½" female NPT
- Completely mounted on a base frame, primed and painted

Type:

- *A – with hand drive*
- *B – with pneumatic drive*
- *C – with hydraulic drive*

Order No.	Type	Weight, kg
24 356	A	92,0
24 329	B	106,0
24 351	C	110,0

Complete high-pressure hose line

suitable for hose reel

- Complete with hose connections on both sides
- Inlet flat seal with union nut
- Outlet – male NPT thread

Type:

- *A – Length 40 m*
- *B – Length 50 m*

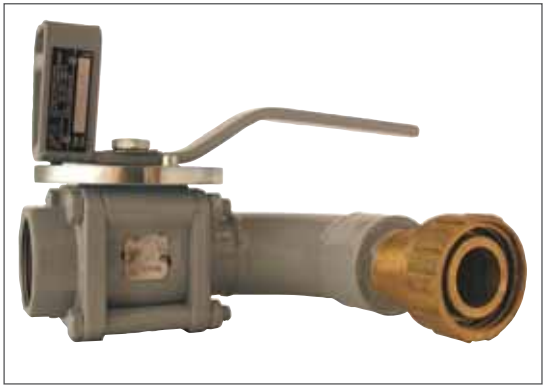
Order No.		LPG-Hose length	Connection, "		Weight, kg	
Type A	Type B		Inlet	Outlet	Type A	Type B
24 005	**24 014**	25	G 1¼	1 NPT	42,0	52,0
24 006	**24 015**	32		1¼ NPT		

Ball valve PN 25 25 for road tankers

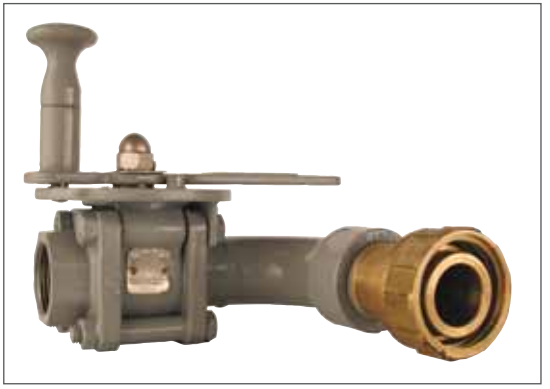
- Positioning plate
- Locking device to prevent unintentional opening
- Coupling for filler valve of brass

Type:

- *A – Standard execution, ball valve of steel C 22.8, with half coupling, pipe bend and locking device of steel, primed and painted*
- *B – Execution with ball valve of stainless steel 1.4401 respectively 1.4404, with half coupling, pipe blend and locking device of stainless steel*
- *C – Execution with hoop guard, ball valve of steel C 22.8, with half coupling, pipe bend and locking device of steel, primed and painted*



Order No.			DN	Filler connection coupling ACME female, "	Hose connection ball valve NPT female, "	Weight, kg
Type A	Type B	Type C				
24 030	**24 028**	**24 008**	25	1¾	1	2,5
24 023	**24 029**	**24 009**	32		1¼	3,1



Cable drum type FAS

- Cable and earthing clamp
- Spring rewind
- Lockable in any position
- Cable material copper cable cross section 2,5 mm²

Type:

- *A – open execution*
- *B – closed execution*

Order No.	Type	Cable length, m	Weight, kg
24 321	A	50	17,6
24 322	A	25	7,0
24 019	B	30	7,0

Excess flow valve PN 25 for road tankers
- Of stainless steel 1.4541
- 2" female NPT connection on both sides
- For installation in front of hose reel

Order No.	Type	Capacity (liquid phase), l/min	Weight, kg
24 013	FAS 697-2	1210	2,5

Wheel block as rolling protection
for road tankers up to 40 tons gross weight
- Stainless steel
- Mechanical switch EEx dII C T6, 250 V AC/6 A respectively 24 V DC/4 A Ex-proof
- Cable connecting end length = 10 m
- Flexible plastic protection hose

Order No.	Execution
24 191	In case of interruption of contact, e.g. in case of rolling of the tank truck, the stop of the filling process is effected by the quick-acting shut-off equipment, respectively by the emergency stop system

Pneumatic actuator for RegO internal valves

Order No.	Type RegO	Connection, "
24 137	A3209 PA	1¼
24 138	A3212 PA	2
24 139	A3213 PA	3

Hand pump
for RegO internal valves with hydraulic control

Order No.	Execution	Weight, kg
24 751	Type Whessoe 7012, connection – ¼"BSP, with oil tank, max. oil pressure 80 bar	15,0

Additional body
body for pipelines, for internal valves with ANSI/ASA RF-flange connection

Order No.	Connection, "	Max. pressure, bar	Weight, kg
24 731	2	30	20,0
24 732	3		31,0
24 733	4		50,0
24734	6		73,0
24 735	8		103,0
24 736	10		127,0

Internal valve PN 25

- NPT connection
- Body of ductile iron ASTM A395 or equivalent
- With built-in excess flow valve
- Hand lever
- Actuated mechanically by cable, by pneumatic or by hydraulic force

RegO internal vale with ANSI-flange on request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Order No.	Type	Connection NPT,"	Outlet	Weight, kg	Pic.
24 131	RegO A3209 A050	1¼	1	0,9	1
24 132	RegO A3212 A175	2	1	4,1	2
24 135	RegO A3213 A300	3	1	7,3	3
24 101	Fisher C407-10	1¼	1	0,9	1
24 1021	Fisher C427-16	2	1	4,1	2

Order No.	Type	Connection NPT,"	Outlet	Weight, kg	Pic.
24 103	Fisher C421-16	2	2	5,0	2
24 104	Fisher C402-16	2	3	6,8	2
24 1051	Fisher C427-24	3	1	7,3	3
24 106	Fisher C421-24	3	2	9,6	3
24 107	Fisher C402-24	3	3	17,2	3

Internal withdrawal-quick acting valve
for road tanker and stationary tanks

- Type Whessoe, internal
- Additional body for pipe lines
- In case of failure of auxiliary energy the valves close automatically by means of a spring
- With hydraulic or pneumatic control system (min. 5 bar)
- Body of steel ASTM A352 Grade LCB, chromed steel cylinder and pistons, spring of stainless steel, seals resistant male ainst LPG
- Connection auxiliary energy 3/8" NPT

Type:

- *A – type 6239, for pneumatic control, flange connection to DIN 2635, with approval according to EEC directive 94/55/CE, not available, only spare parts*
- *B – type 6239, for pneumatic control, flange connection according to ANSI/ASA RF, not available, only spare parts*
- *C – type 6139, from 8" type 6240, for hydraulic control, flange connection according to ANSI/ASA RF*

Type 6240

Type 6139

Order No.		Max. pressure, bar	Connection ANSI/ASA RF, "	Weight, kg
Type B	Type C			
–	**24 721**	21,0	2	9,0
–	**24 722**		3	12,0
–	**24 723**	17,5	4	21,0
–	**24 724**		6	32,0
–	**24 725**		8	47,0
–	**24 726**		10	63,0

Spare parts

Order No.	For internal valve
Type A, B	
24 791	6239 – 2"/DN 50
24 792	6239 – 3"/DN 80
24 793	6239 – 4"/DN 100
24 794	6239 – 6"/DN 150
Type C	
24 741	6139 – 2"

Order No.	For internal valve
Type C	
24 742	6139 – 3"
24 743	6139 – 4"
24 744	6139 – 6"
24 745	6139 – 8"
24 746	6139 – 10"

G Regulators • Emergency shut-off valves

Regulator PN 25,
middle pressure
- With ¼" NPT lateral connection for pressure gauge
- Admission pressure – up to 16 bar

Order No.	Type (RegO)	Back pressure, bar	Connection NPT, "	Capacity up to	Weight, kg
16 009	AA1582 MW	0,2...1,7	¼	20 m³/h (NH_3)	0,7
16 000	AA1582 ML	0,4...3,5	¼	22 m³/h (NH_3)	0,7
16 001	1584 ML		½	80 kg/h	0,9
16 002	AA1584 ML		½	45 m³/h (NH_3)	0,7
16 003	1586 ML		¾	160 kg/h	1,4
16 004	AA1586 ML		¾	70 m³/h (NH_3)	1,4
16 005	1588 ML		1	160 kg/h	1,3
16 007	1584 MH	0,4...8,5	½	80 kg/h	0,9
16 008	1588 MH		1	160 kg/h	1,3

Regulator PN 25
middle pressure
- With ¼" NPT lateral connection for pressure gauge (suitable for liquid or vapor service)
- Admission pressure – up to 16 bar
- Capacity – up to 80 kg/h

Order No.	Fisher Type	Connection NPT, "	Back pressure, bar	Weight, kg
16 011	627-7710	1	0,3...2,5	2,2
16 012	630-104/78	2	2,0...4,0	15,8

Regulator PN 25,
middle pressure
- With lateral connection for vent line

Order No.	Type Fisher	Connection NPT, ″	Back pressure, bar	Capacity, kg/h	Weight, kg
16 015	627-7710	1	0,4...1,4	230	2,2
16 116	630-104/78	2	0,6...1,4	300	15,8

Regulator PN 25,
low pressure
- Compact two-stage regulator
- With integral relief valve
- Connection for pressure tap ¾″ NPT or ¼″ NPT
- Admission pressure – up to 16 bar

Order No.	Type	Connection NPT, ″		Back pressure, mbar	Capacity, kg/h	Weight, kg
		Inlet	Outlet			
16 019	Fisher R 532BCG	¼	½	25...50	15	0,9
16 020	Fisher R 532CFG	¼	¾			0,9
16 021	RegO LV404B4	¼	½		11	1,6
16 022	RegO LV404B46	¼	¾			1,6
28 000	RegO LV404B46	¼	¾	22,8...33		1,6

Regulator PN 25,
middle pressure
- Admission pressure – up to 16 bar
- Back pressure – 1,5...2,0 bar
- Capacity – up to 24 kg/h

Order No.	Connection		Weight, kg
	Inlet	Outlet	
16 023	POL	G 3/8 male	0,70
16 024	POL	Ring 12 mm	0,60
16 025	POL	Ring 15 mm	0,63

Regulator PN 2,5,
low pressure
- Admission pressure up to 2,5 bar
- Back pressure 50 mbar

Further regulators are available on request

Order No.	Type RegO	Connection NPT, "		Capacity, kg/h	Weight, kg
		Inlet	Outlet		
16 013	LV5503 B6	¾	¾	25	1,30
16 014	LV5503 B4	½	¾	25	1,30
16 017	LV4403 B46	½	¾	20	1,30
16 018	LV4403 B4	½	½	12	1,30

Regulator PN 2,5,
Low pressure
- With integral relief valve
- Connection for pressure tap ¾" NPT
- Admission pressure – up to 2,5 bar

Order No.	Type (Fisher)	Connection, "	Capacity, kg/h	Weight, kg
Capacity – up to 40 kg/h				
16 031	R422 CDG	¾ NPT	25...100	2,36
16 032	R522 H-DFJ	¾ NPT	450...700	2,50
Capacity – up to 20 kg/h, connection for pressure tap ¼" NPT				
16 033	R522 CFG	½ NPT (Inlet) ¾ NPT (Outlet)	20...70	1,20

Order No.	Type (Fisher)	Connection NPT, "	Weight, kg
16 041	S102 L-BFC	¾	2,27
16 042	S102 L-CFC	1	2,27
16 043	S102 L-FFC	1¼	2,27
16 044	S102 L-KFC	1½	2,27

Regulator PN 2,5,
low pressure
- With integral relief valve
- Connection for presure tap ¾" NTP
- Admission pressure – up to 1,7 bar
- Back pressure – 35...70 mbar
- Capacity – up to 45 kg/h

Regulator PN 2,5,
low pressure
- With integral relief valve
- Connection for presure tap ¾" NPT
- Admission pressure – up to 1,0 bar
- Back pressure – 35-70 mbar
- Capacity – up to 150 kg/h

Order No.	Type (Fisher)	Connection NPT, "	Weight, kg
16 047	S302 G-FMJ	¼	3,80
16 048	S302 G-SMJ	2	4,17

Regulator PN 2,5,
low pressure
- With integral relief valve
- Connection for presure tap 1" NPT
- Admission pressure – up to 0,9...1,7 bar
- Back pressure – 30-70 mbar

Order No.	Type (Fisher)	Connection NPT, "	Capacity, kg/h	Weight, kg
16 051	S202 G-BNC	1½	180	10,9
16 052	S202 G-CNC	2	280	10,9

Regulator PN 25,

- **Admission pressure – up to 25 bar**
- **Capacity – up to 12 kg/h**

Tank-regulator combination

- *1. And 2. Stage, consisting of: middle pressure regulator (1. Stage) with emergency shut-off valve (SAV)*
- *Low pressure regulator (2. Stage) with relief valve with connection for pressure tap (SBV) with emergency supply connection and check plug*

Order No.	Connection		Back pressure, mbar	Weight, kg
	Inlet	Outlet		
16 060	POL	G ¾ female	50	2,9
16 223	POL	R ¾ female	30	3.2

Regulator Low pressure
(2. Stage)

- **Emergency shut-off valve (SAV)**
- **Connection for pressure tap (SBV)**
- **Admission pressure – up to 25 bar**

Order No.	PN	Capacity, kg/h	Connection, "		Back pressure, mbar	Weight, kg
			Inlet	Outlet		
16 065	2,5	12	G ½ female	G ½ female	50	1,7
16 066	2,5	24	G ¾ female	G ¾ female	50	2,0

Regulator PN 25
middle pressure (1. Stage)
- Emergency shut-off valve (SAV)
- Connection for pressure tap (SBV)
- Admission pressure – up to 25 bar
- With device male ainst freezing
- Emergency supply connection
- Admission pressure – up to 25 bar
- Capacity – up to 24 kg/h

Order No.	Back pressure, bar	Connection		Weight, kg
		Inlet	Outlet	
16 027	2,0	POL	G ½ female	3,1

Regulator PN 25
middle pressure (1. Stage)
- Connection for pressure tap (SBV)
- Admission pressure – up to 25 bar
- Emergency supply connection
- Pressure gauge
- Admission pressure – up to 25 bar
- Capacity – up to 60 kg/h

Order No.	Back pressure, bar	Connection		Weight, kg
		Inlet	Outlet	
16 029	0,7...2,0	POL	G ¾ female	3,3

Regulator PN 25
middle pressure (1. Stage)
- Flanges acc. to DIN 2635
- Body of steel GS-C25
- Admission pressure – up to 16 bar
- Back pressure – 0,7...7,0 bar
- Set pressure – 1,5 bar (standard version)

Order No.	Size,	Weight, kg
16 101	DN25	11,0

Regulator PN 25
Middlepressure (1. Stage)
- Emergency shut-off valve (SAV)
- Connection for pressure tap (SBV)
- Admission pressure – up to 25 bar
- Pressure gauge

Order No.	Inlets pressure, bar	Back pressure, bar	Capacity, kg/h	Connection, "		Weight, kg
				Inlet	Outlet	
16 081	1,5...16	0,8	100	G1 female	G1 female	4,0
16 082	2,5...16	1,5	150	G1 female	G1 female	4,0
16 083	3,8...16	2,8	150	G1 female	G1 female	4,0

Emergency shut-off valve (SAV)
PN 25, adjustable
- Also with diaphragm-fracture protection
- Material – cast iron GGG 40

Order No.	Stage connection, DN	Stage	Setting range, bar	Factory setting, bar	Dimensions, mm		Weight, kg
					Length	Height	
16 111	DN 25	PN 16	0,05...0,25	0,10	160	240	11,0
16 112	DN 50			0,10	230	245	16,0
16 113	DN 80			0,10	310	285	26,0
16 115	DN 25		0,20...0,80	0,50	160	240	11,0
16 116	DN 50			0,50	230	245	16,0
16 117	DN 80			0,50	10	285	26,0
16 119	DN 25	PN 40	0,60...6,60	3,00	160	240	11,0
16 120	DN 50			3,00	230	245	16,0
16 121	DN 80			3,00	310	285	26,0

Regulator PN 4,
low pressure (2. Stage)

- Flange connection acc. to DIN 2633
- Body of cast iron GGG 40 and GD-AL Si 12
- Inlet pressure 0,35...4,0 bar
- Operating temperature – 15 to +60°C
- Emergency shut-off valve
- Capacity – size DN 25 up to 70 kg/h; size DN 50 up to 520 kg/h

Type:

- *A – with emergency shut-off valve for upper limit switch*
- *B – with emergency shut-off valve for upper and lower limit switches and relief valve, relief valve connection for pressure tap, vent pressure permanently set 30 mbar above outlet pressure*

Order No.		Size, DN	Back pressure, mbar	Factory setting, mbar	Connection, ″	Length, mm	Weight, kg
Type A	Type B						
16 135	**16 139**	25	35...140	50	G ¾	160	6,0
16 136	**16 140**	25	70...280	150	G ¾	160	6,0
16 137	**16 141**	25	140...420	300	G ¾	160	6,0
16 156	**16 161**	50	30...70	50	G 1	200	14,0
16 157	**16 162**	50	70...140	100	G 1	200	14,0
16 159	**16 164**	50	140...300	200	G 1	200	14,0
16 158	**16 163**	50	210...450	250	G 1	200	14,0
–	**16 144**	50	30...450	300	G 1"	200	14,0

H Safety relief valvee

Safety relief valve
- Spring-loaded relief valve
- Thread connection
- Plastic protection cap
- Body of brass

Order No.	Type (RegO)	Connection	Total height, mm	Hexagon size, mm	Flow capacity, m³/min	Adjusted at (bar)	Weight, kg
28 301	RS3131	¾" M.NPSM	85	46	48,9	17,2	1,0
28 303	RS3132	1" M.NPSM	129	60	77,5	17,2	1,0
28 305	RS3135	¼" M.NPSM	141	68	118,0	17,2	1,0
28 382	RS3145	M45×2	139	68	187,2	15,6	1,0
28 869	RS3136	M36×2	135	60	134,3	15,6	1,0
28 875	RS3136	M36×2	135	60	134,3	17,0	1,0
90 904	RS3145	M45×2	139	68	187,2	17,0	1,0

Check device
for safety relief valves
- For exchange of relief valves without emptying of tank
- Seal
- Body of brass

Order No.	Type (RegO)	Valve type	Internal thread	External thread	Total height, mm	Hexagon size, mm	Weight, kg
28 306	CD35	RS3135	1¼" F.NPSM	2" M.NPT	59	62	0,5
28 387	CD31	RS3131	¾" F.NPSM	1¼" M.NPT	59	46	0,5
28 388	CD32	RS3132	1" F.NPSM	1¼" M.NPT	59	46	0,5
28 389	CD45	RS3145	M45×2	2" M.NPT	59	62	0,5
28 854	CD36	RS3136	M36×2	1¼" M.NPT	58	52	0,5

Safety relief valves
for pipelines, mobile and stationary tanks, multivalves and duoports
- **Without protection cap**

Please indicate the required setting pressure when placing your order. Valves 15281, 15291 and 15292 – without threaded connection for vent piping. Order number is depending on setting pressure.

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Order No.	Type RegO	Connection NPT, "	Pressure range (bar)	Material	Pic.	Weight, kg
15 281	RegO 3127	¼	3...44	Brass	1	0,1
15 291	RegO SS8001	¼	10...31	Stainless steel	1	0,1
15 292	RegO SS8002	½	10...31	Stainless steel	1	
15 282	RegO 3129	½	4...31	Brass	1	0,1
15 293	RegO SS8021	¼	10...31	Stainless steel	1	0,1
15 294	RegO SS8021	½	10...31	Stainless steel	1	0,1
15 284	RegO 3131	¾	2...27	Brass	2	0,5
15 287	RegO W3132	1	3...34	Brass	2	1,2
15 288	RegO 8684	1	12...21	Brass	3	0,6
15 289	RegO 8685	1¼	7...20	Brass	3	1,0
15 311	RegO 3132	1¼	2...27	Brass	2	1,3
15 285	RegO 3135	1¼	7...19	Brass	2	1,5
15 312	RegO 3133	1½	6...19	Brass	2	2,1
15 314	RegO 7573	2	6...31	Brass	3	4,4
15 315	Fisher H280/H281...	2	10...25	Brass	3	4,2
15 316	RegO A8434 Fisher H720/H721	2	10...25	Steel	4	2,1
15 286	RegO A3149	2½	2...21	Steel	2	7,2
15 317	RegO A8436 Fisher H730/H731	3	10...25	Steel	4	5,2

Adaptor
for attachment of vent piping


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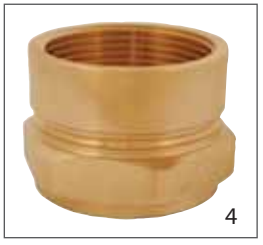
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Order No.	Type RegO	For safety relief valve	Material	Connection, ″	Pic.	Weight, kg
15 331	3129-10	RegO 3129	Brass	½ NPT female	1	0,06
15 334	7534-20	RegO 7534		3 NPT female	2	1,00
15 336	3132-10	RegO 3132		1¼ NPT female	1	0,20
15 328	3131-10	RegO 3131		1 NPT female		0,20
15 329	3133-10	RegO 3133		2 NPT female		0,50
15 330	3135-10	RegO 3135		2 NPT female		0,40
15 332	–	SV-A 12, A 22, A 23 SV-A 24, A 26, SV 805		½ NPT female	3	0,06
15 333	–	SV 486		Rp 1½ female	4	0,20
15 335	–	SV-A 3		Rp 1½ female	3	0,30
15 337*	–	SV-A 12ES, A 14ES, SV-A 16ES, SV 805	Stainless steel	½ NPT female		0,06
15 338*	–	SV-A 12ES, A 14ES	Steel, galvanized	½ NPT female		0,06

Protective cap
for relief valve

Order No.	Ventil Type	For relief valve type	Material	Weight, kg
15 403	RegO 3131-40	RegO 3131	Rubber	0,01
15 405	RegO 7545-40	RegO 3127, 3129		0,05
15 406	RegO 3132-40	RegO 3132	Steel	0,15
15 407	RegO 7534-40	RegO 7534	Rubber	0,37
15 408	RegO 7584-40	RegO 8684		0,09
15 409	RegO 7585-40	RegO 8685		0,14
15 411	Fisher P297	Fisher H720/721		0,10
15 412	Fisher P298	Fisher H730/731		0,15
15 413	RegO A8434-11B	RegO A8434		0,31
15 414	RegO A8436-11B	RegO A8436		0,10
15 415	RegO 3133-40	RegO 3133		0,05
15 416	RegO 3149-40	RegO A3149		0,10
15 417	RegO 3135-40	RegO 3135		0,10
15 401	–	SV-A 12/A 22/A 23/A 24/A 26/12ES/14ES/16 ES, SV 805	Plastics	0,01
15 404	–	SV-A 3		0,01
15 410	–	SV 486, SV 741		0,09

I Excess flow valves • Back pressure check valves

Excess flow valve PN 25
• NPT-thread

Order No.	Type	Connection, "		Closing flow			Weight, kg	Pic.
		Inlet NPT	Outlet NPT	Liquid, approx. l/min	Vapor, approx. Nm³/h			
					at 1,7 bar	at 7,0 bar		
12 001	1519 A2	1	1	95	140	250	1,54	1
12 002*	A1519 A2	1	1	95	140	250	2,50	1
12 003	1519 A3	1 ½	1½	225	325	570	1,54	1
12 004	1519 B4	2	2	510	784	1420	2,50	1
12 031	1519 A4	2	2	378	512	925	2,50	1
12 005*	A1519 B4	2	2	510	784	1420	2,50	1
12 006*	A1519 A6	3	3	850	1270	2350	5,27	1
12 007*	FAS	3	3	1190	1780	3290	5,50	1
12 008	1519 C2	1½ male /1 G	1 female	95	140	250	1,10	2
12 009	-	3 male	3 male /2 female	985	1400	2385	4,50	3
12 010*	A2137 A	2 male /1¼ female	2 male /1¼ female	265	396	707	1,60	3
12 011	2139 A	3 male /2 female	3 male /2 female	620	750	1300	4,50	3
12 032	12472	¾	¾	15	20	35	0,15	4

see next page

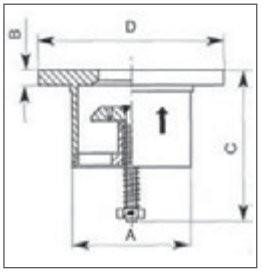
Order No.	Type	Connection, "		Closing flow			Weight, kg	Pic.
		Inlet NPT	Outlet NPT	Liquid, approx. l/min	Vapor, approx. Nm^3/h			
					at 1,7 bar	at 7,0 bar		
12 012	3272 E	¾	¾	30	40	75	0,18	4
12 041	3272 F	¾	¾	48	77	135	0,15	4
12 013	3272 G	¾	¾	76	105	195	0,18	4
12 014*	A3272 G	¾	¾	76	105	195	0,18	4
12 042	3282 A	1¼	1¼	110	145	270	0,36	4
12 015	3282 C	1¼	1¼	190	255	461	0,36	4
12 016*	A3282 C	1¼	1¼	190	255	461	0,40	4
12 017	7574	1½	1½	340	430	795	0,68	4
12 018	3292 B	2	2	378	512	925	1,04	4
12 019*	A3292 C	2	2	462	625	1064	1,27	4
12 046*	A3500 L4	2	-	290	435	650	0,90	5
12 047*	A3500 N4	2	-	480	650	1170	0,90	5
12 022*	A3500 P4	2	-	568	863	1470	0,90	5
12 023*	A3500 R	3	-	568	908	1570	1,86	5
12 048*	A3500 T6	3	-	770	1024	1850	1,86	5
12 024*	A3500 V6	3	-	950	1446	2510	1,86	5
12 025*	A4500 Y8	4	-	1890	2518	4360	3,31	5
12 028*	A8523	¾	¾	57	146	250	0,23	6
12 043*	A8525	¼	1¼	134	290	525	0,60	6
12 044*	A7537 L4	2AG	2 male /1¼ female	284	432	735	0,60	6
12 029*	A7537 P4	2AG	2 male /1¼ female	568	863	1470	1,54	6
12 030*	A7539 V6	3AG	3 male /2 female	946	1446	2150	4,68	6
For pressure gauge								
12 038	2884 D	¾	¼	-	-	-	0,13	7
Check-Lock								
12 033	7572 FC	¾	¾	75	-	-	0,23	8
12 034	7580 FC	1¼	¾	132	-	-	0,50	8
Check-Lock adaptor								
12 037	7572 C-14A	¾	¾	-	-	-	0,10	9

The indicated vapor closing flows refer tot he normal condition of 15°C and 762 torr.

Excess flow valve PN 40
type FAS-F, for installation between two flanges
- **Body and spring of stainless steel**

Type:
- *A – Standard execution*
- *B – With stronger spring*

The minimum flow rate should be twice as high as the maximum pumping capacity

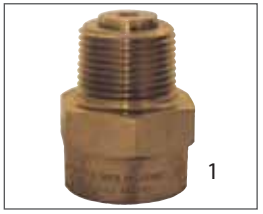


Order No. Type A	Size, "	Suitable for flanges	Closing flow propane, approx. l/min	Dimensions A	B	C	D	Weight, kg
12 069	1¼	DN 32	90	30	10	60	75	0,6
12 070	1	DN 25	45	25	10	43	68	0,3
12 071	2	DN 50	167	48	13	85	92	0,9
12 072	2½	DN 65	224	60	13	94	105	1,3
12 073	3	DN 80	378	76	13	96	127	1,8
12 074	1½	DN 40	125	36	13	70	80	0,8
12 075	4	DN 100	791	97	16	118	157	3,3
12 076	5	DN 125	1257	121	16	151	186	5,0
12 077	6	DN 150	1764	142	19,6	183	216	8,4
12 078	8	DN 200	2388	190	20	211	270	12,9
12 079	10	DN 250	4035	245	22,5	285	323	23,7

Order No. Type B	Size, "	Suitable for flanges	Closing flow propane, approx. l/min	Dimensions A	B	C	D	Weight, kg
12 081	2	DN 50	208	48	13	85	92	0,9
12 082	2½	DN 65	435	60	13	94	105	1,3
12 083	3	DN 80	606	76	13	96	127	1,8
12 085	4	DN 100	1287	97	16	118	157	3,3
12 086	5	DN 125	1567	121	16	151	186	5,0
12 087	6	DN 150	2911	142	19,6	183	216	8,4
12 088	8	DN 200	3217	190	20	211	270	12,9
12 089	10	DN 250	6185	245	22,5	285	323	23,7

Back pressure check valve PN 25

- With NPT-thread
- Metallic sealed
- Sitting position variably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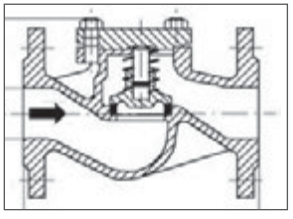
Order No.	Type	Connection NPT	Capacity l/min. at 0,7 bar	Material	Weight, kg	Pic.
12 501	3146	¾	60	Brass	0,18	1
12 502*	A3146	¾	60	Steel	0,23	1
12 503	3176	1¼	150	Brass	0,36	1
12 504*	A3176	1¼	150	Steel	1,00	1
12 505	6586 C	2	1020	Brass	0,90	2
12 506*	A3186	2	662	Steel	1,27	1
12 507*	A3196	3	1600		2,81	1
12 508*	A6586 C	2	1020		1,02	2
12 509*	A3400 L4	2	1200		1,00	3
12 510*	A3400 L6	3	2300		1,90	3

Back pressure check valve PN 40

- Flange connection acc. to DIN 2635
- Body of cast steel GS-C25
- Disc of stainless steel



Order No.	Size, DN	Length, mm	Height, mm	Weight, kg
12 511	15	130	66	3,6
12 512	20	150	75	4,5
12 513	25	160	80	5,5
12 514	32	180	88	8,0
12 515	40	200	105	11,5
12 516	50	230	115	14,0
12 517	65	290	135	23,0
12 518	80	310	145	30,0
12 519	100	350	175	47,0
12 520	125	400	215	70,0
12 521	150	480	240	96,0

Back pressure check valve PN 40

- **For installation between two flanges**
- **Soft seal**

Type:

- *A – housing material 1.4317, soft seal made of viton, for propane / butane*
- *B – housing material 1.4317, soft seal made of viton, for propane / butane, with type approval*
- *C – housing material 1.4552, with PTFE-special seal for DME, refrigerant and NH_3, with type approval*

Order No.			Size, DN	Length, мм	Weight, kg
Type A	Type B	Type C			
12 531	**12 541**	**12 561**	15	16	0,12
12 532	**12 542**	**12 562**	20	19	0,18
12 533	**12 543**	**12 563**	25	22	0,29
12 534	**12 544**	**12 564**	32	28	0,50
12 535	**12 545**	**12 565**	40	32	0,66
12 536	**12 546**	**12 566**	50	40	1,23
12 537	**12 547**	**12 567**	65	46	1,55
12 538	**12 548**	**12 568**	80	50	2,35
12 539	**12 549**	**12 569**	100	60	3,63

J

Filler valves • Quick-acting shut-off valves • Vapor equalizing valves • Safety breakaway couplings • Accessories

Filler valve PN 25
- Brass
- With double back pressure check valve
- Brass cap
- One-piece housing

Order No.	Type	Dimensions, ”		Weight, kg	Pic.
		Inlet	Outlet		
13 000	70321	1¾ ACME	¾ NPT	0,4	1
13 006	481	1¾ ACME	1¼ NPT	0,5	1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Filler valve PN 25
- Brass
- With double back pressure check valve
- Brass cap
- One-piece housing

Order No.	Type	Dimensions, ”		Weight, kg	Pic.
		Inlet	Outlet		
13 001	7547 BC	1¾ ACME	¾ NPT	0,4	1
13 002	7579 C	1¾ ACME	1¼ NPT	0,6	2
13 003	6579 C	1¾ ACME	1¼ NPT	0,6	2
13 004	6587 EC	2¼ ACME	2 NPT	2,3	3
13 005	3197 C	3¼ ACME	3 NPT	6,5	3


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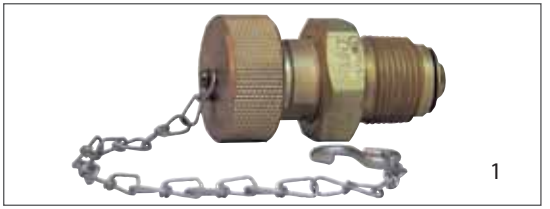
Filler valve PN 25
- Brass
- With single back pressure check valve
- Brass cap
- One-piece housing

Order No.	Type	Dimensions “		Weight, kg	Pic.
		Inlet	Outlet		
13 008	6584 C	2¼ ACME	2 NPT	1,4	4
13 009	3194 C	3¼ ACME	3 NPT	4,3	4


4

Vapor equalizing valve PN 25
- Brass
- Excess flow valve
- Brass cap

Order No.	Type	Dimensions "		Weight, kg	Pic.
		Inlet	Outlet		
13 011	7573 AC	1¼ ACME	¾ NPT	0,3	1
13 012	3183 AC	1¾ ACME	1¼ NPT	0,9	2
13 013	FAS	2¼ ACME	2 NPT	2,5	–
13 077 [1]	7573 D	1¼ ACME	¾ NPT	0,2	–
13 069 [1]	3183 AC	1¾ ACME	1¼ NPT	0,8	3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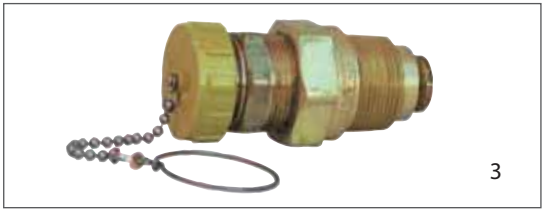
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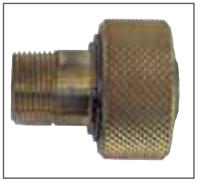
Vapor equalizing valve PN 25
- Brass
- Excess flow valve
- Brass cap

Order No.	Type	Dimensions "		Weight, kg
		Inlet	Outlet	
13 015	FAS	2¼ ACME	2 NPT	1,4

Quick-Acting shut-off valve PN 25
- Housing of ductile iron – ASTM A395

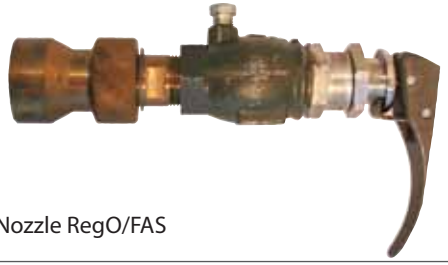
Order No.	Type	Execution	Inlet "	Outlet "	Weight, kg
13 021*	A7708 L	Angular	1 NPT	1 NPT	1,6
13 022*	A7707 L	Straight	1 NPT	1 NPT	1,7

Safety filler coupling PN 25
- Brass
- Back pressure check valve



Order No.	Inlet NPT, "	Outlet ACME, "	Length, мм	Weight, kg
13 025	1 NPT	1¾ ACME	120	1,5
13 026	¾ NPT	1¾ ACME	59	0,3

Nozzle PN 25
- With safety filler coupling
- Back pressure check valve



Nozzle RegO/FAS

Nozzle LG/FAS

Nozzle Nettuno

Nozzle LG/FAS
with outlet DISH

Order No.	Type	Inlet	Outlet	Weight, kg
13 018	RegO/FAS	1 NPT female	1¾ ACME	2,9
13 031	RegO/FAS			2,9
13 037	LG/FAS	¾ NPT female		2,0
13 038	LG/FAS	M 30×1,5 left male		2,0
13 023	LG/FAS	¾ NPT female		2,0
13 024	LG/FAS	M 30×1,5 links male		2,0
13 086	Nettuno T4	G1 female	Clamp	1,4
13 039	Nettuno T3		Clamp	1,4
13 516	DV-V10 (NL)	¾ NPT female	Bajonett	1,6
13 529	LG/FAS		DISH	2,0
13 200	LG/FAS	EUROPA Connection		2,0
13 498	Nettuno R 1	G1 female	Clamp	1,4

Other quick-acting shut-off valves for other countries, adaptors or connections on request.

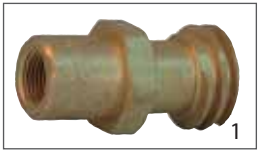
Coupling PN 25
for filler valve

Type:
- *A – standard type*
- *B – hose coupling*

**Single ACME union nuts are available on request*

Order No.		Type	Dimensions		Material	Weight, kg
Type A	Type B		A	B		
13 050*	**13 280***	A3175	¾ NPT	1¾ ACME	Steel	0,35
13 051	–	3175 B	¼ NPT	1¾ ACME	Brass	0,40
13 052	–	3175	¾ NPT	1¾ ACME	Brass	0,35
13 053	–	3175 A	1 NPT	1¾ ACME	Brass	0,32
13 054*	**13 281***	A3175A	1 NPT	1¾ ACME	Steel	0,36
13 055	–	3185	1¼ NPT	2¼	Brass	0,77
13 056*	**13 282***	A3185	1¼ NPT	2¼	Steel	0,73
13 057	–	3195	2 NPT	3¼ ACME	Brass	1,95
13 058*	**13 283***	A3195	2 NPT	3¼ ACME	Steel	1,95
13 059*	**13 284***	FAS	3 NPT	3¼ ACME	Steel	2,90
13 060*	**13 285***	FAS	3 NPT	4¼ ACME	Steel	3,45

Coupling PN 25
- With back pressure check valve
- Brass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3

Order No.	Type	Dimensions		Pic.	Weight, kg
		Inlet	Outlet		
13 061	7141 F	1¼ ACME female	¼ NPT female	1	0,20
13 062	7141 M	3/8 NPT female	1¼ ACME male	2	0,20
13 068	7193L-10A	1¼ ACME female	¼ ACME male	3	0,85

Coupling PN 25 for vapor equalizing valves
- Brass

Order No.	Type	Dimensions "		Weight
		A	B	
13 064	3171 A	½ NPT	1¼ ACME	0,17
13 065	3181	¾ NPT	1¾ ACME	0,29
13 066	3181 A	1 NPT	1¾ ACME	0,34
13 067	3191	1¼ NPT	2¼ ACME	0,85

Coupling PN 25
- Both sides with ACME-male thread

Order No.	Type	Dimensions	Material	Weight, kg
13 071	FAS	1¼ ACME	Brass	0,14
13 072	5765 M	1¾ ACME	Brass	0,36
13 073	5767 M	2¼ ACME	Brass	0,59
13 074	5769 M	3¼ ACME	Brass	1,35
13 075	FAS	4¼ ACME	Steel	3,86

Reducer-coupling PN 25
- Both sides with ACME-connection

Order No.	Type	Dimensions "		Material	Weight, kg
		A – male	B – female		
13 078	FAS	1¾ ACME	2¼ ACME	Brass	0,73
13 079	A5776	1¾ ACME	3¼ ACME	Steel	2,27
13 080	FAS	3¼ ACME	4 ¼ ACME	Steel	3,45

Cap plug PN 25
- With chain

Order No.	Type	Dimensions	Material	Weight, kg
13 091	FAS-1	1¼ ACME	Brass	0,10
13 092	FAS-2	1¾ ACME	Brass	0,15
13 093	FAS-3	1¾ ACME	Steel	0,36
13 094	3184-90	2¼ ACME	Brass	0,86
13 095	A3184-90	2¼ ACME	Steel	0,82
13 096	3194-90	3¼ ACME	Brass	1,92
13 097	A3194-90	3¼ ACME	Steel	1,95
13 098	FAS-4	4¼ ACME	Steel	2,95
13 099	3144-91	1¼ ACME	Plastics	0,10
13 100	3174-93	1¾ ACME	Plastics	0,10

Filler hose adaptor PN 25

- For installation between inner tube valve and filler valve
- Vent valve

Type:

- *A – standard type of brass*
- *B – with ball valve of steel, connection parts of brass*


1


2

Order No.	Type	Inlet, "	Outlet, "	Length, mm	Pic.	Weight, kg
Type A						
13 111	7577V	1¾ ACME female	1¾ ACME male	85	1	0,60
13 107	FAS	1¾ ACME female	1¾ ACME male	97	1	0,60
Type B						
13 110	FAS	1¾ ACME female	1¾ ACME male	170	2	1,50

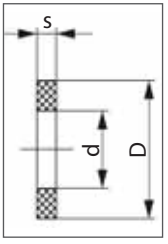
Unloading adaptor PN 25

for descharging of LPG tanks

Order No.	Type	Inlet, "	Outlet, "	Form	Pic.	Weight, kg
13 112	FAS	1¾ ACME female	1¾ ACME male	Angular	1	1,00
13 113	3119A	1¾ ACME female	1¾ ACME male	Straight	2	1,20
13 114	M450A	1¾ ACME female	1¾ ACME male	Angular	1	1,05
13 115	FAS	1¾ ACME female	¾ NPT female	Eckform	1	0,90

Seal PN 40

for filling fittings



Order No.	Connection	Dimensions, mm		
		D	d	s
13 121	1 ¼ ACME	23	13	3
13 122	1 ¾ ACME	34	23	3
13 123	2 ¼ ACME	46	36	3
13 124	3 ¼ ACME	72	54	3
13 125	4 ¼ ACME	94	73	3

Spanner wrench for ACME-coupling

Other types of spanner wrenches for other sizes on request

Order No.	Type	Size of jaw, "	Weight, kg
13 126	P120B	2¼, 3¼, 4¼	0,52
13 127	3195-50	2¼, 3¼	0,45

Safety breakaway coupling PN 40
for loading arms
- Flanges acc. to DIN 2635
- Entirely of stainless steel
- No welds
- Both valves sealed when separated
- Disconnecting over pull cable and shear pin mechanism

Type:
- *A – Viton O-rings for propane / butane (LPG)*
- *B – O-rings (PTFE encapsulated) for ammonia (NH_3)*

Models with seals suitable for other products are available on request

Order No.		Type	Size, DN	Length, mm	Weight, kg
Type A	Type B				
13 171	13 173	ERC 2"	50	200	18,0
13 172	13 174	ERC 3 "	80	360	30,0

Pull cable activating mechanism with fastening elements

Order No.	Execution
13 181	Cable length in accordance to project specifications

Spare parts kit with shear pins and O-rings

Order No.		Execution
Type A	Type B	
13 191	13193	for DN 50
13 192	13194	for DN 80

Safety breakaway coupling for hoses PN 25
breakaway protection for high-pressure LPG hoses
- Thread connections
- Both halves sealed when separated

Order No.	Type	Connection A+B, "	Length, mm	Material	Weight, kg
13 131	ARK19	¾ NPT female	90	Red brass	0,8
13 132	A2141A6L	¾ NPT female	98	Steel	0,6
13 133	A2141A8L	1 NPT female	115	Steel	1,4
13 134	A2141A10	1 NPT female	142	Alu	2,2
13 135	A2141A16	2" NPT female	363	Alu	11,3
13 208	FAS	¾ NPT female	155	Steel	1,2
Breakaway coupling for hose LPG 19					
13 105	Walther	¾ NPT female	163	Stainless steel	1,3

Safety breakaway coupling for hoses PN 25

- Type approval
- Flanges acc. to DIN 2635
- Stainless steel
- No pressure-containing welds
- Viton O-Rings
- Disconnects using 3 break pins, max. angle of traction 90°

Type approval is only valid during standard pull-off strength operation, other pull-off strengths are available on request.

Order No.	Type, ″	Size, DN	Length, mm	Material	Standard breakload, kN	Weight, kg
13 150	APC 1½	25	163	Niro	–	4,0
13 151 [1]	APC 1½	32	163	Niro	6,99	5,0
13 152	APC 1½	40	163	Niro	–	6,0
13 153 [1]	APC 2½	50	200	Niro	14,98	12,0
13 154 [1]	APC 2½	65	200	Niro	14,98	13,0
13 156 [1]	APC 3	80	360	Niro	30,62	24,0
13 157	APC 4	100	340	Niro	–	38,0
13 158	APC 4	125	340	Niro	–	45,0
13 159	APC 6	150	380	Niro	–	100,0
13 160	APC 8	200	640	Niro	–	195,0
13 140	Steel safety cable with fastening elements					

Breakspade kit with viton O-rings

13 161	for DN 25, DN 32 and DN 40 (1½ ″)
13 162	for DN 50 and DN 65 (2½ ″)
13 164	for DN 80 (3″)
13 163	for DN 80 (4″), DN 100 and DN 125 (4″)
13 165	for DN 150 (6″)
13 166	for DN 200 (8″)
13 197	Torque wrench with 2 nuts, setting range 4...12 N•m

Shear valve for LPG-dispenser PN 25

for leak protection within pipeline in case of unintentional knocking over of dispenser

- On both sides ¾" female NPT
- Body of brass
- Valve closes automatically

Order No.	Length, mm	Weight, kg
13 700	125	0,67

In coupled position (thread execution)

Male part

Female part

Ball valve coupling PN 40

- Flanges acc. to DIN 2635
- Full bore
- Material:
  Body – steel
  Ball – steel
  Seals – viton
  Annular piston – stainless steel /PTFE
- Disconnection of coupling only possible in closed condition

Order No.	Size, DN / "	Size	Length, mm	Weight, kg
13 139	DN50 / 2	Male, flange DN 50	107,5	7,8
13 149	DN50 / 2	Female, M65×2 male	117,5	5,0
13 286	DN50 / 2	Male, flange DN 80	122,5	9,8
13 287	DN50 / 2	Female, M100×2 male	122,5	6,0
13 288	Double-ended ring spanner for male and female part			0,4

Quick-acting dry breakaway coupling PN 25

for loading and unloading of rail and road tankers

- Body of stainless steel 1.4408
- With NBR flat compression seals
- With cam lever

Type:

- *A – male part*
- *B – female part*

Order No.		Size
Type A	Type B	
13 821	**13 823**	DN50
13 824	–	DN80
13 800	**13 801**	1" NPT female
13 802	**13 803**	2" NPT female
13 804	**13 805**	3" NPT female

K

Strainers • Traps • Fine-mesh filters • Device for methanol • Drain device

Strainer PN 40

- Body of steel
- Y-type
- Flange connection acc. to DIN 2635
- Inner screen of stainless steel

Type:

- *A – standard type*
- *B – with fine-mesh screen, mesh size 0,25 mm*

Other sizes and strainers in nominal pressure PN 16, or with ANSI flanges are available on request.

Order No. (type A)	Size, DN	Length, mm	Mesh size, mm	Weight, kg
14 001	15	130	0,60	2,0
14 002	20	150		3,0
14 003	25	160		4,0
14 004	32	180		6,0
14 005	40	200		8,0
14 006	50	230		11,0
14 007	65	290	1,20	15,0
14 008	80	310		24,2
14 009	100	350		28,0
14 010	125	400		44,0
14 000	150	480		62,0

Order No. (type B)	Size, DN	Length, мм	Mesh size, mm	Weight, kg
14 011	15	130	0,25	2,0
14 012	20	150		3,0
14 013	25	160		4,0
14 014	32	180		6,0
14 015	40	200		8,0
14 016	50	230		11,0
14 017	65	290		15,0
14 018	80	310		24,2
14 019	100	350		28,0
14 020	125	400		44,0
14 040	150	480		62,0

Strainer PN 40

- Y-type
- Thread connection
- Inner screen 0,25 mm of stainless steel
- Body of steel GP240GH (1.0619)

Order No.	Connection NPT,"	Length, mm	Weight, kg
14 0610	½	80	0,3
14 0620	¾	95	0,4
14 0630	1	100	0,8
14 0640	1 ¼	120	1,2
14 0650	1 ½	140	1,5
14 0660	2	180	2,4

Strainer PN 40

- For installation between flanges
- In short version acc. To DIN 3202
- Cylindrical housing with two discharging screws
- Body of steel (GP265GH (1.0425)
- Mesh size 1,0 mm

Order No.	Size, DN	Length, mm	Diameter, mm	Weight, kg
14 091	40	40	92	1,1
14 092	50	42	107	1,3
14 093	65	46	127	1,5
14 094	80	50	142	2,3
14 095	100	60	168	2,8

Filling device for methanol PN 25 (order No.14085), weight – 7,2 kg

Consisting of:

- *Adapter, brass, 1¾" ACME with pin, for attachment to filler valve*
- *Shut-off valve, brass, ¾" NPT*
- *Vent valve, brass, ¼" NPT*
- *Methanol-pressure vessel, nominal capacity approx. 2 l*
- *Plug*
- *High-pressure LPG hose DN 10, length approx. 2 m*
- *Swivel POL adaptor for connection to service valve for gas withdrawal*

Trap PN 25
for installation downstream from vaporizer unit

- **Connection 1" NTP female for liquid level sensors**
- **Primed and painted**

All traps are fitted with:

- *a fine-mesh screen, mesh size 1,0 mm*
- *gas deflector*
- *drain valve*

Order No.	Connection	Contents, l	Length, mm	Weight, kg
14 121	½" NPT	2,9	160	6,0
14 122	¾" NPT	2,9	160	6,9
14 123	1" NPT	2,9	160	7,8
14 124	DN 25	2,9	220	8,7
14 125	DN 32	2,9	220	9,5
14 126	DN 40	2,9	225	10,1
14 127	DN 50	2,9	230	12,4
14 128	DN 65	12,5	330	26,8
14 129	DN 80	12,5	340	28,6
14 130	DN 100	12,5	350	31,7
26 130	Extra charge for level sensor (PN 25, connection 1" NPT male, approved for use in hazardous locations, Zone 0, with PTB-type approval, length of sensor: 66,5 mm)			
26 301	Extra charge for isolating switch amplifier (with intrinsically safe input and relay output, 1-channel)			
14 120	Extra charge for sealing of level sensor including pressure test			

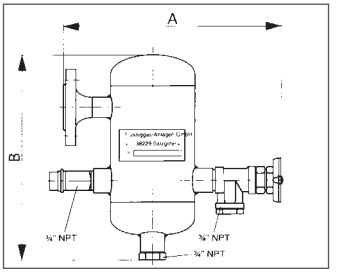
Drain device PN 25
for draining of water from stationary pressure tanks

- **volume approx. 4 l**
- **Inlet flange acc. to DIN 2635**
- **Primed and painted**

Type:

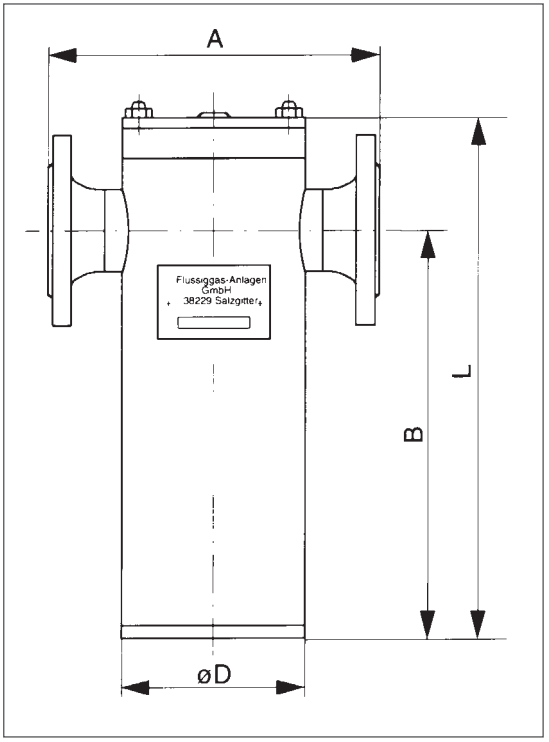
- *A – Angle valve of brass, ¾" NPT with plug, relief valve of brass, type approval, ¾" NPT, set pressure 25 bar*
- *B – Ball valve of steel, ½" NPT with plug, relief valve of stainless steel, type approval, ½" NPT, set pressure 25 bar*

Order No.		Size, DN	Dimensions, mm		Weight, kg
Type A	Type B		A	B	
14 151	**14 156**	15	310	300	5,2
14 152	**14 157**	20	310	300	5,5
14 153	**14 158**	25	310	300	5,7



Fine-mesh filter PN 25 for stationary systems

- Primed and painted
- Straight type
- Connecting flanges acc. to DIN 2635
- Fine-mesh screen of stainless steel, mesh size of 0,125 mm
- Connection ½" female NPT, with plug



Order No.	Size, DN	Dimensions, mm				Weight, kg
		A	B	D	L	
14 131	25	250	205	133	285	11,0
14 132	32	250	255	133	335	13,0
14 133	40	285	250	152	335	16,0
14 134	50	285	310	152	395	19,0
14 135	65	350	350	194	465	29,0
14 136	80	350	440	194	560	33,0
14 137	100	460	585	273	720	42,0
14 138	125	460	585	273	720	42,0
14 139	150	648	714	406	899	192,0
14 169	200	648	714	406	899	192,0

L Accessories for loading/unloading equipment • Swivel joints • Loading arm stations

Liquid and vapor transfer hose system in full hose system PN25

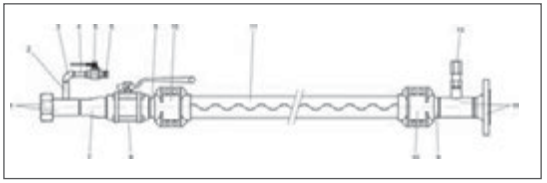
- Standard connections for road tankers
- Respectively for rail tankers
- Tested at a hydrostatic pressure of 37,5 bar

Type:

- *A – Length 4 m*
- *B – Length 5 m*

Order No.		Execution
Type A	Type B	
Filler hose for road tankers with safety relief valve 25 bar and venting device		
25 021	**25 221**	High-pressure hose LPG 80, connections: one side ball valve DN 65 PN 40 with coupling 3¼"ACME with union nut and plug of brass, other side flange DN 80 PN 40 to DIN 2635
25 022	**25 222**	High-pressure hose LPG 50, connections: one side ball valve DN 50 PN 40 with coupling 3¼"ACME with union nut and plug of brass, other side flange DN 50 PN 40 to DIN 2635
Vapor transfer hose for road tankers		
25 023	**25 223**	High-pressure hose LPG 80, connections: one side ball valve DN 65 PN 40 with coupling 2¼"ACME with union nut and plug of brass, other side flange DN 50 PN 40 to DIN 2635
25 024	**25 224**	High-pressure hose LPG 32, connections: one side ball valve DN 32 PN 40 with coupling 2¼"ACME with union nut and plug of brass, other side flange DN 32 PN 40 to DIN 2635
Filler hose for rail tankers with safety relief valve 25 bar and venting device		
25 031	**25 231**	High-pressure hose LPG 80, connections: one side ball valve DN 65 PN 40 with lapped DIN flange DN 80 PN 40 and installed blind flange, other side flange DN 80 PN 40 to DIN 2635
Vapor transfer hose for rail tankers without safety relief valves 25 bar and venting device		
25 032	**25 232**	High-pressure hose LPG 50, connections: one side ball valve DN 50 PN 40 with lapped DIN flange DN 50 PN 40 and installed blind flange, other side flange DN 50 PN 40 to DIN 2635

Complete hose system
for applications in CIS and Baltic states



LPG-filling hose DN 50 in full hose system (FAS 25027)

1.	Union nut M60×4, left
2.	Pipe DN 10
3.	Pipe bend DN 10
4.	Socket ¼"
5.	Ball valve (FAS 19169)
6.	Plug ¼"
7.	Reducer 40/50
8.	Ball valve (FAS 19236)
9.	Socket DN 50
10.	Alu clamp
11.	High pressure hose
12.	Flange connection DN 50
13.	Safety relief valve, set pressure – 25 bar (FAS 90137)

Order No.	Execution
25027	LPG-filling hose DN 50 in full hose system with safety relief valve and tension release, length = 4 m, connections: ball valve DN 50 PN 40 with union nut M60×4 and plug on one side, other side flange DN 50 PN 40 to 2635, completely mounted
25028	LPG-filling hose DN 50 in full hose system with safety relief valve and tension release, length = 4 m, connections: ball valve DN 50 PN 40 with union nut M60×4 and plug on one side, other side union nut M60×4, completely mounted
25029	LPG-filling hose DN 50 in full hose system with safety relief valve and tension release, length = 5 m, connections: ball valve DN 50 PN 40 with union nut M60×4 on one side, other side flange DN 50 PN 40 to 2635, completely mounted
25030	LPG-filling hose DN 32 in full hose system with safety relief valve and tension release, length = 10 m, connections: ball valve DN 32 PN 40 with union nut M60×4 and plug on one side, other side flange DN 32 PN 40 to 2635, completely mounted
25037	LPG vapor transfer hose DN 32 in full hose system with safety relief valve and tension release, length = 4 m, connections: ball valve DN 32 PN 40 with union nut M60×4 and plug on one side, other side flange DN 32 PN 40 to 2635, completely mounted
25039	LPG vapor transfer hose DN 32 in full hose system with safety relief valve and tension release, length = 7 m, connections: ball valve 1¼" with union nut M60×4 and plug on one side, other side flange DN 32 PN 40 to 2635, completely mounted
25042	LPG-filling hose DN 50 in full hose system with safety relief valve and tension release, length = 7 m, connections: ball valve DN 50 PN 40 with union nut M60×4 and plug on one side, other side flange DN 50 PN 40 to 2635, completely mounted
93016	Complete LPG high pressure hose line DN 50, PN 25, 2", electrical conductively, temperature range: -40 up to +70°C, hose length = 4 m, connections: flange DN 50 PN 40 with ball valve DN 50, PN 40 on one side, other side flange DN 50 PN 40 to 2635, safety relief valve, excess flow valve, flange outside for welding
93018	Complete LPG high pressure hose line DN 50, PN 25, 2", electrical conductively, temperature range: -40 up to +70°C, hose length = 4 m, connections: flange DN 50 PN 40 with ball valve DN 50, PN 40 on one side, other side flange DN 50 PN 40 to 2635, safety relief valve, excess flow valve, flange outside for welding

Mechanical rail hook

for rail tankers for automatic maintaining of the internal valve

- **Material – bronze/brass (sparkproof)**
- **Holding load – 350 N**
- **Fire protection – 150°C**

The ratchet, which anchors the rail hook on the rail, is prestressed by means of resilience. When displacing the rail tanker, the ratchet latches by 90°, releases from the rail and the internal valves close automatically. A release by pull cord mechanism is also possible by remote control.

Order No.	Execution	Weight, kg
25 045	Mechanical rail hook	5,8

Pneumatic rail hook with actuator

for fixed installation in front of rail tanker

- **Traction rope and chain, base plate, holding devieces**
- **Weather-proof cover, limit switch for position "EMERGENCY-OFF", Ex-proof with isolating switch amplifier**
- **In connection with a 3/2-way solenoid valve this device may be integrated in the emergency-off system**

Order No.	Execution
25 048	Pneumatic actuator unit
Accessories	
19 713	3/2-way solenoid valve, Ex-proof, for product compressed-air max. 10 bar, thread connection G ¼", 230 V, 50 Hz
19 714	3/2-way solenoid valve, Ex-proof, for product compressed-air max. 10 bar, thread connection G ¼", 24 V direct current
26 305	Isolating switch amplifier in safety construction, control current circuit intrinsically safe, 1 change-over contact, 230 V, 50 Hz
26 301	Isolating switch amplifier, control current circuit intrinsically safe, 1 change-over contact, 230 V, 50 Hz
25 043	Limit switch (inductive sensor) for position "operation", Ex-proof with isolating switch amplifier (for example FAS 26301)

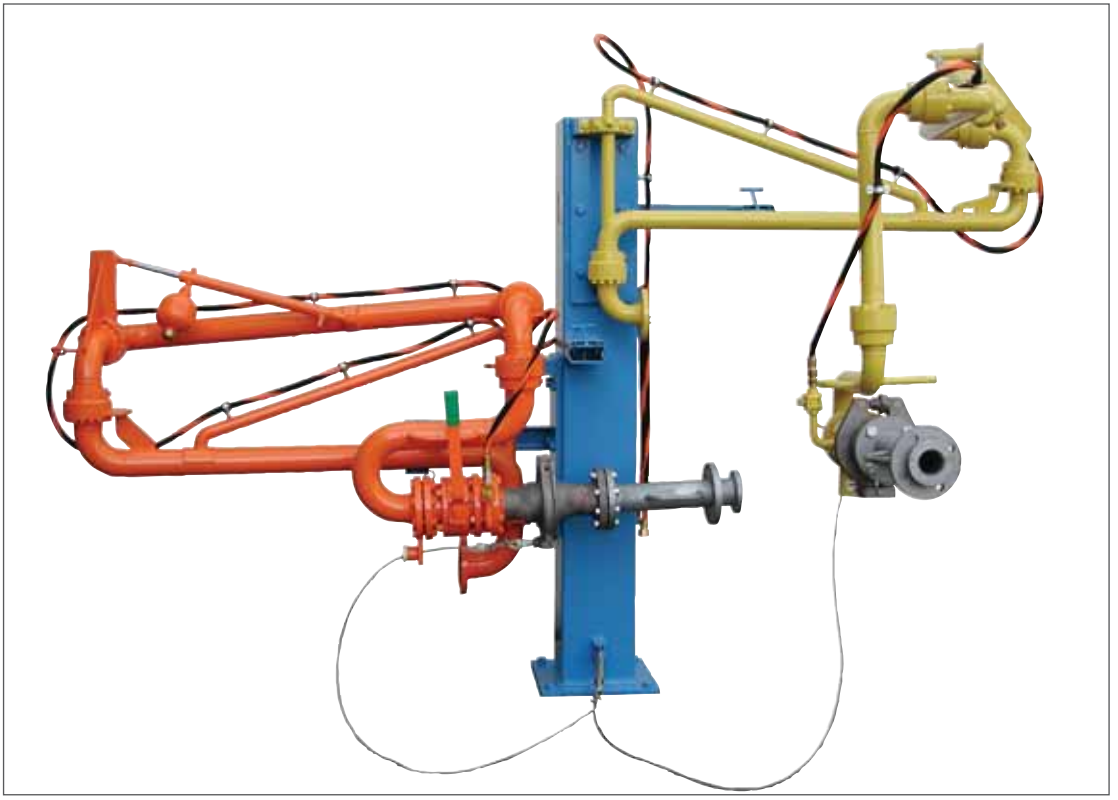
Loading Arm Station PN 25 Type FAS-G5
for the unloading of road tankers or rail tankers

- **Two product arms (liquid and vapor phase)**
- **Connection for road tankers or rail tankers**
- **10% X-ray of welding seams**
- **Completely mounted and primed**

Type:

- *A – for Propan/Butan*
- *B – for Ammonia NH_3*

Loading arm stations with other dimensions and ANSI-connections for other media on request.



Order No.		Execution
Type A	Type B	
25 302	**25 307**	Road tanker
25 304	**25 309**	Rail tanker
Additional Service		
25 392		Painting of the complete loading arms station
25 399		X-ray 100% of welding seams

Loading Arm Station

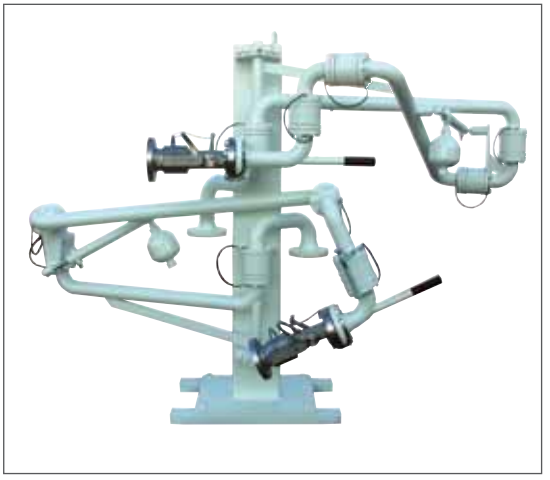
- *Loading arm DN 80 (liquid phase), connection road tanker: coupling 3¼" ACME with union nut and blind plug*
- *Loading arm DN 50 (vapor phase), connection road tanker: coupling 2¼" ACME with union nut and blind plug*
- *Flanged ball valve DN 50 and DN 80, Fire-safe acc. to BS 6755 Part 2*
- *ERC-safety breakaway coupling DN 50 and DN 80 with release system*
- *Ball valve ½" NPT for tension release, vent hose line LPG 10 for propane / butane or flexible stainless steel hose line for ammonia NH_3*
- *Support column with thrust bearing system and 2 parking position locks*
- *Hydraulic/pneumatic balance system for easy operation and handling*

Flexible loading arm Type FAS
for unloading of rail tankers (execution for Russia)
- 3 pcs. per rail tanker

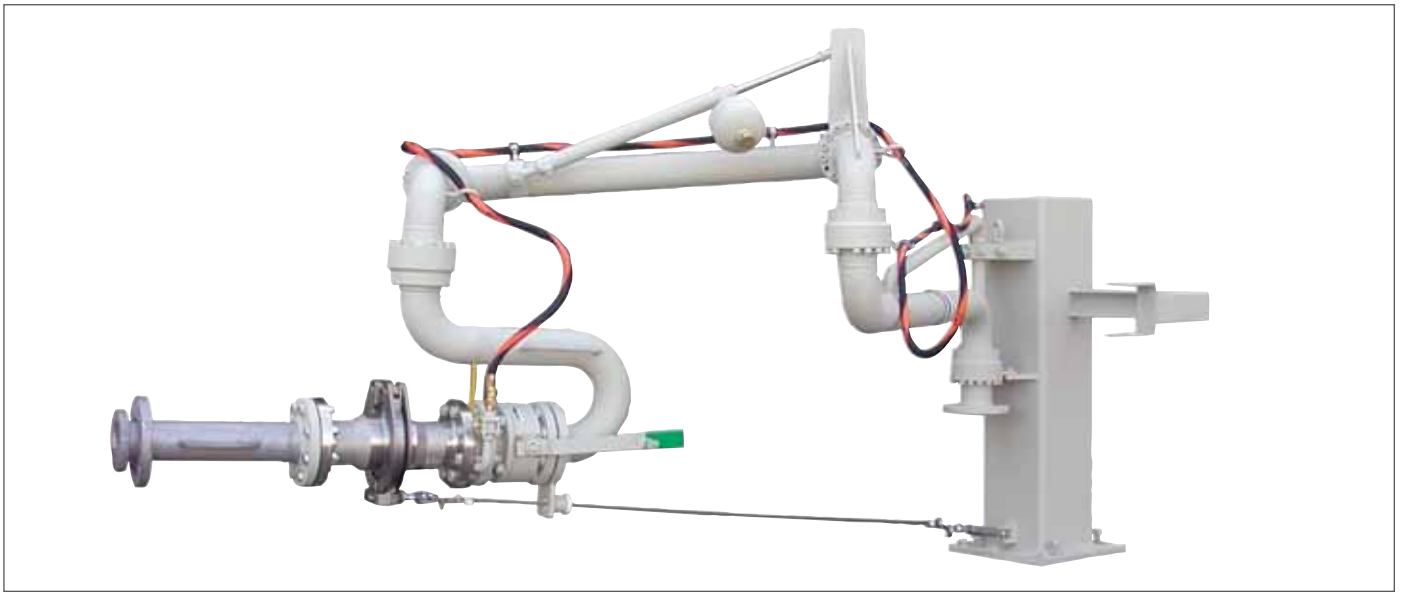
Order No.	Execution
93 268	Basic version: lapped flange DN 50, PN 40, socket 1½" NPT – 2 pcs., flexible hose of stainless steel DN 40, PN 25, length 6 m, ball valve DN 40, PN 63, filling connection for rail tankers
Additional accessories	
12 081	Excess flow valve 2", Type FAS, 166 l, PN 40
13 135	Breakaway coupling for hoses, PN 25, 2" female NPT on both sides

Loading arm station PN 25, Type FAS-G4,
for loading and unloading of road tankers
- Two loading arms (liquid and vapor phases)
- 100% X-ray of welding seams
- Completely mounted and primed

Order No.	Execution
25 466	TKW



Equipment:
- *Two loading arms DN 50, connection liquid phase with coupling 3¼" ACME with union nut and blind plug, connection vapor phase coupling 2 ¼" ACME with union nut and blind plug*
- *Flanged ball valve DN 50 PN 40, Fire-safe acc. to BS 6755 Part 2*
- *ERC-safety breakaway coupling DN 50 with release system*
- *Ball valve ½" NPT with hose line LPG 10 for venting*
- *Support column with thrust bearing system and 2 parking position locks*



Loading arm station PN 25, Type FAS-G7,
for loading and unloading of road tankers or rail tankers

- **With one product arm (liquid phase)**
- **Completely mounted and primed**
- **10% X-Ray of welding seams**

Type:

- *A – for Propan/Butan*
- *B – for Ammonia NH_3*

Equipment:

- *Loading arm DN 80/DN 50 for road tanker, connection ACME-coupling with union nut and blind plug or respectively connection lapped flange with blind flange for rail tankers.*
- *Flanged ball valve DN 50 or DN 80, Fire-safe acc. to BS 6755 Part 2*
- *ERC-safety breakaway coupling DN 50 with release system*
- *Ball valve ½" NPT for tension release, vent hose line LPG 10 for propane / butane or flexible stainless steel hose line for ammonia NH_3*
- *Support column with thrust bearing system and 2 parking position locks*
- *Hydraulic/pneumatic balance system for easy operation and handling*

Order No.		DN	Execution	Connection
Type A	Type B			
25 451	**25 468**	80	TKW	3¼" ACME
25 452	**25 469**	80	EKW	DN80
25 401	**25 464**	50	TKW	2¼" ACME
25 402	**25 465**	50	EKW	DN50
25 519	–	80	FAS-RFP	DN50
25 520	–	50	FAS-RGP	DN50
25 521	Swivel joint 90°, connections 1½"×1½" female NPT, with corrosion resistant metallic seal, max. operation pressure 25 bar, min. temperature -40° C			
Additional service				
25 391	Extra charge for painting of complete loading arm station			
25 398	X-ray 100% of welding seams			

Swivel joint PN 40, 3-piece body

- Straight construction
- Of steel
- Welding ends on both sides
- Seals of PTFE

Order No.	Size, DN	Length, mm	Weight, kg
25076	DN 50	170	8,8
25078	DN 80	175	12,0

Due to this 3-piece construction an exchange of the swivel joint head is possible without difficulties.

Swivel joint PN 40, 2-piece body

- Straight construction
- Welding ends on both sides
- Seals of PTFE

Type:

- *A – of stainless steel for ammonia NH_3*
- *B – of steel for propane / butane*

Order No.		Size, DN	Length, мм	Weight, kg
Execution A	Execution B			
25 064	**25 084**	DN 32	90	3,5
25 066	**25 086**	DN 50	145	7,2
25 068	**25 088**	DN 80	155	11,8

Swivel joint PN 25

for hose and pipe connections

- Seals of PTFE

Type:

- *A – angular construction 90°, steel, both sides female NPT*
- *B – straight construction, steel, both sides female NPT*
- *C – straight construction, steel, one side female NPT, other side male NPT male*

Order No.			Connection NPT, ″	Weight, kg		
Type				Type		
A	B	C		A	B	C
25 161	**25 171**	**25 182**	¾	3,2	2,2	0,9
25 162	**25 172**	**25 183**	1	3,2	2,2	0,9
25 163	**25 173**	**25 186**	1¼	3,0	2,0	1,2
25 164	**25 174**	–	1½	5,9	5,4	–
25 165	**25 175**	–	2	5,6	5,0	–

Torch for safe burning of vapor and liquid LPG

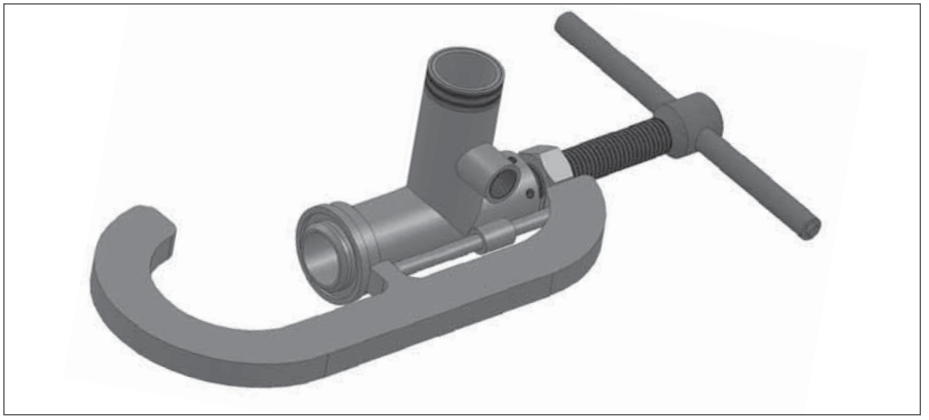
(Order No. 25 290)

- 3 removable supports, with brackets for fixing
- Automatic ignition device and flash back arrestor
- 20 meters cable with plug
- Solenoid valve 230 V 50 Hz in inlet
- Connection 1¾″ male ACME
- Total height approx. 3500 mm, space required for erection approx. 9 m^2

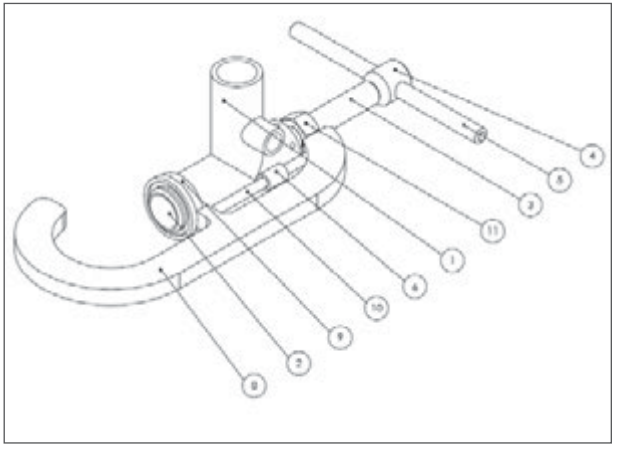
Road tanker connection (FAS-98124), PN 25,
for liquid gas line of any LGP filling station
- Connection M60×4 left, male with welding end DN 50
- Welded neck flange DN 50
- Cap M60×4 left, female
- Weight – 2,9 kg
- Completely welded, primed, painted and mounted

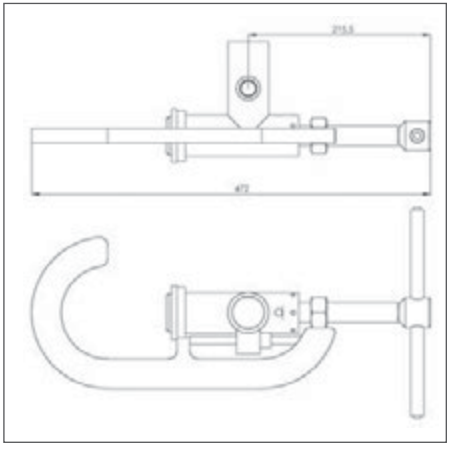
Road tanker connection (FAS-98127), PN 25,
for liquid gas line of any LPG filling station
- Connection M60×4 left, male with welding end DN 50, reducer DN 80 / DN 50
- Welded neck flange DN 80
- Cap M60×4 left, female
- Weight – 5,9 kg
- Completely welded, primed, painted and mounted

Filling connection type FAS-RKSW-III (FAS-25522)
for fixation of LPG-filling line to GUS-LPG-rail tankers
- For liquid and vapor phase
- Without locking facility
- Thread-less connection to rail tanker's side, with O-ring, pipe line side connection 1½" male NPT
- Galvanized and tested for functioning



Parts list
1. *Socket 1" NPT*
2. *Coupling*
3. *Spindle*
4. *Guide arm*
5. *Handle*
6. *Guide shell*
7. *Grease nipple M 10.1*
8. *Bracket*
9. *Guide ring*
10. *Guide pin*
11. *Guide screw nut*





Dimension drawing.

M Electrical components • Gas leakage detectors

Control button for controlling of electrical drives
- Insulating box
- E Ex dem IIC T6
- Protection class IP 65

Order No.	Type	Pic.
26041	Emergency stop button with mushroom button actuator	1
26042	ON-OFF push-button	2
26043	ON-OFF push-button with indicating lamp	3
26044	Emergency stop button with mushroom key-operated button actuator	4

Control button
for installation outside of Ex-zone
- Insolating box
- Protection class IP 64

Order No.	Type	Pic.
26 046	Emergency stop button with mushroom button actuator	1


1


2


3


4

Temperature measuring and monitoring system
(e.g. for vapor outlet in compressors)
- Measuring amplifier with 2 adjustable limit outputs
- Temperature indication
- Intrinsically safe input circuit for PT 100
- Connection PT100 – M18×1,5 female
- DIN resistors in 2-, 3- or 4-wire circuit
- Potential-free outputs
- Operating voltage 24 V DC
- Installation in electrical switch box

Order No.	Type
26312	Resistance thermometer, PT 100
263140	Measuring amplifier PMT 50 Ex
26316	Welding thermometer well, connection M18×1,5 female

Horn
with powerful electromagnetic system
- 230 V / 50 Hz
- For use in damp areas or outdoors

Order No.	Type	Weight, kg
26061	Without explosion protection	0,9
26062	With explosion protection	1,0

Beacon
for use in moist areas or outdoors
AC 230 V, 50/60 Hz

Order No.	Type	Weight, kg
26151	Without explosion protection	0,5
26152	With explosion protection	1,3

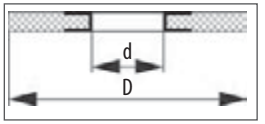
Electric torch
2,5 V for hazardous areas zone 1, protection class EEx ia e II C T6, batteries type I EC R 20

Order No.	Lamp	Qty. of Batteries	Weight, kg
26 161	2,5 V/0,3 A	2	0,20
26 162	3,7 V/0,3A	3	0,25

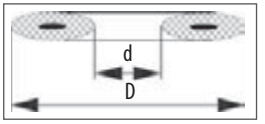
N Connecting Parts

Dichtung PN40, flüssiggasbeständig,
seal PN 40, LPG-proof
- DIN 2690
- Asbestos-free

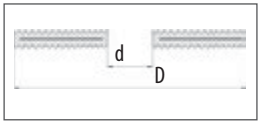
Type:
- *A – Universal high-pressure seal with inner rim of galvanized soft iron, 2 mm thick*
- *B – Soft seal of Perbunan with steel insert, DIN-DVGW-approved, reusable, 5 mm thick*
- *C – Graphite high-pressure seal with insert of stainless steel foil, corrugated, FIRE SAFE to BS 6755, max. 650°C, with inner rim of stainless steel, 2 mm thick*
- *D – Special high-pressure seal, FIRE SAFE to BS 5146, max. 650°C, with inner rim of galvanized soft iron, 2 mm thick*



Type A, D



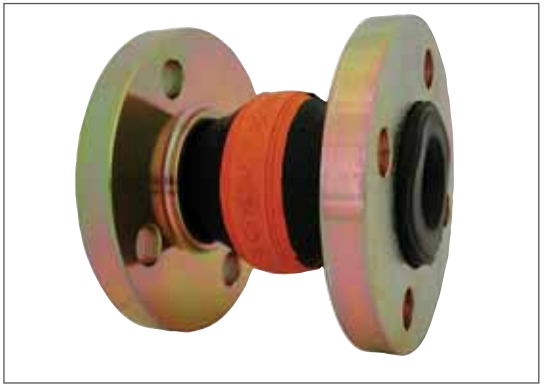
Type B



Type C

Order No.				Size, DN	Dimensions, mm	
Type A	Type B	Type C	Type D		D	d
10 641	10 651	10 941	10 991	15	50	22
10 642	10 652	10 942	10 992	20	60	27
10 643	10 653	10 943	10 993	25	70	34
10 644	10 654	10 944	10 994	32	82	43
10 645	10 655	10 945	10 995	40	92	48
10 646	10 656	10 946	10 996	50	107	60
10 647	10 657	10 947	10 997	65	127	76
10 648	10 658	10 948	10 998	80	142	89
10 649	10 659	10 949	10 999	100	168	114
10 650	10 660	10 940	10 990	125	195	141

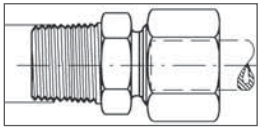
Compensator
for pipelines PN 25
- DIN 2635
- With flange connection



Order No.	DN	Weight, kg
10 751	25	2,00
10 752	32	3,20
10 753	40	3,40
10 754	50	4,75
10 755	65	6,00
10 756	80	7,50
10 757	100	10,15

Straight pipe union PN 40
- With NPT male thread
- Galvanized

Elbow and tee unions available on request



Order No.	NPT,"	Pipe O.D.	Weight, kg
10 701	¼	8	0,04
10 702	¼	10	0,05
10 703	¼	12	0,06
10 704	⅜	10	0,06
10 705	⅜	12	0,07
10 706	½	12	0,08

Order No.	NPT,"	Pipe O.D.	Weight, kg
10 707	½	15	0,11
10 708	½	18	0,13
10 709	½	22	0,16
10 710	¾	18	0,15
10 711	¾	22	0,18
10 712	1	28	0,21

Insulating Flange Set PN 40
- Pre-assembled and dielectrically tested to 5000 V

Flanges must be demounted before installation in pipelines.

Order No.	Size, DN	Connection D×s	Length, mm	Weight, kg
10 770	15	21,3×2,0	88	1,9
10 771	20	26,9×2,3	97	2,2
10 772	25	33,7×2,6	97	3,5
10 773	32	42,4×2,6	100	5,0
10 774	40	48,3×2,6	108	6,0
10 775	50	60,3×2,9	114	7,0
10 776	65	76,1×2,9	122	10,0
10 777	80	88,9×3,2	133	12,3
10 778	100	114,3×3,6	148	17,5

Discharger
explosion-proof, for bridging of insulating flanges in hazardous areas
- Complete with connecting cable = 200 mm

Order No.	Screw connection	Weight, kg
10 615	M12	1,1
10 616	M16	1,1
10 617	M20	1,2
10 618	M24	1,2

High pressure LPG hose
LPG PN 25, Type FAS
- Acc. to DIN EN 1762
- Temperature range: -30 up to +70°C
- Electrically conductive

High-pressure hose for ammonia and other sizes are available on request

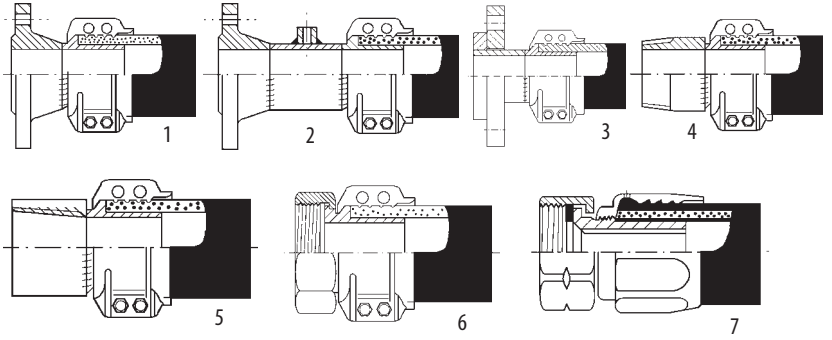
Order No.	DN	External diameter, mm
10 801	10	20
10 800	13	23
10 802	19	31
10 803	25	37
10 804	32	44
10 805	50	66
10 806	80	93

Complete hose connection PN 25

- Hose nipple of steel
- With clamp of aluminium
- Complete mounting parts

Type:

1. Flange PN 40, DIN 2635
2. Flange PN 40, DIN 2635 and half coupling PN 40, ½" NPT for relief valve
3. Lapped flange PN 40, DIN 2656
4. Nipple PN 40, with NPT-thread
5. Half coupling PN 40, with NPT-thread
6. Union nut (brass), flat seal
7. Union nut (brass), flat seal



Order No.	Connection /LPG	Type
10 811	DN 20/19	1
10 812	DN 25/19 R	1
10 813	DN 25/25	1
10 814	DN 25/32	1
10 815	DN 32/25 R	1
10 816	DN 32/32	1
10 817	DN 40/32 R	1
10 818	DN 40/50	1
10 819	DN 50/32 R	1
10 820	DN 50/50	1
10 821	DN 50/50	2
10 822	DN 50/50	3
10 823	DN 65/50 R	1
10 824	DN 65/80	1
10 825	DN 80/50 R	1
10 826	DN 80/80	1
10 827	DN 80/80	2
10 828	DN 80/80	3
10 888	½" NPT/13	4

Order No.	Connection /LPG	Type
10 831*	½" NPT/19	4
10 832*	¾" NPT/19	4
10 833	¾" NPT/25	4
10 834	1"NPT/19 R	4
10 835*	1" NPT/25	4
10 836*	1" NPT/32	4
10 837*	ГА" NPT/32	4
10 838	172" NPT/32	4
10 839*	2" NPT/50	4
10 840	2" NPT/80 R	4
10 841	2½" NPT/50 R	4
10 842	3" NPT/50 R	4
10 843*	3" NPT/80	4
10 851	½" NPT/19	5
10 852	¾" NPT/19 R	5
10 853*	¾" NPT/25	5
10 854	1" NPT/19 R	5
10 886	G ½"/1 3	7
10 855	1" NPT/25 R	5

Order No.	Connection /LPG	Type
10 844*	1" NPT/32 R	5
10 856	1¼" NPT/25	5
10 857	1¼" NPT/32 R	5
10 858	1½" NPT/32 R	5
10 859	2" NPT/50	5
10 860	2" NPT/80	5
10 861	2½" NPT/50 R	5
10 862	2½" NPT/80	5
10 863	3" NPT/50 R	5
10 864	3" NPT/80 R	5
10 869	¾" NPT female	like 5
10 873	G 1¼"/25	6
10 865	G 1¼"/32	6
10 850	M 65×2/50	like 6
10 849	M 100×2/80	like 6
10 866	M 30×1,5 links/19	7
10 867	W 21,8×714" links/10 7	
10 892	M 60×4/ DN 32	like 6
10 920	M 60×4/ DN 50	like 6

** One-piece turned part without welding, galvanized*

0 Gas generators

FAS gas generators series have numerous advantages:

- Applications for emergency supply as well as for constant power supply
- Temperature independent "stand-up"-automatic
- Operating medium LPG and natural gas
- Power control system
- Simple service and maintenance

Gas generator FAS-M

for industrial applications

FAS-gas generators with it's direct drive cover the whole capacity range 3-phase 40, 50 and 55 kW.

Model	Capacity, kWt	Weight, kg	Dimensions, mm
FAS-40-3 /M	40	990	2200×1200×1350
FAS-50-3 /M	50		
FAS-55-3 /MT	55	1100	

Gas generator FAS-WR

for natural gas and LPG for personal applications

FAS-gas generators with belt drive cover the capacity range of 11 up to 24 kWt and are perfect for domestic home supply by current interruption. The machines are very compact and efficient.

Model	Capacity, kWt	Phasen	Weight, kg	Dimensions, mm
FAS-15-1 /WR	15	1	490	1350×870×990
FAS-15-3 /WR	15	3		
FAS-18-1 /WR	18	1	530	
FAS-18-3 /WR	18	3		
FAS-21-3 /WR	21	3		
FAS-24-3/WR	24	3		

Gas generator FAS-WP

for natural gas and LPG for industrial applications

FAS-gas generator with direct drive covers the capacity range of 20 up to 32 kWt.

Model	Capacity, kWt	Phasen	Weight, kg	Dimensions, mm
FAS-8-1 /WP	8	1	380	1320×780×965
FAS-10-1 /WP	10	1		
FAS-12-1 /WP	12	1		
FAS-21-1 /WP	21	1	530	1720×870×1010
FAS-28-3 /WP	28	3		
FAS-32-3 /WP	32	3		

P LNG- and Cryo- Equipment

LNG and Cryotanks

Storage tanks LNG-LIN-LOX-LAR in vertical or horizontal version according to 97/23/EG or ASME Code (U-stamp). Volume from 3 cub meter to 63 cub meter.

LNG version

- Design Code: EN13458 – ANNEX C
- Operation pressure: 5 bar
- Design pressure: 6 bar
- Inside tank material: EN 10028-7
- External tank material: EN 10025-2
- Radiographic control: Acc. to EN 13 458 – ANNEX C

Volume, m^3	Dimensions, cm
LNG-Version	
3,0	3423×2114×2159
6,0	4470×2327×2502
10,0	6412×2442×2502
16,0	7135×2690×2793
22,0	6943×2805×3005
32,0	9443×2805×3005
53,0	14448×2805×3005
63,0	16470×3141×3104
LIN-LOX-LAR Version	
5,0	4403×2132×2396
10,0	72452×2350×2310
15,0	6635×2690×2795
30,0	12360×2400×2850
50,0	15045×2800×3240

Regasification plants

After transportation in rail, road tankers or in containers the LNG is returned to the gaseous state by using of regasification plants and then fed into the pipeline network so that a highly economic, constant and safe delivery of LNG is guaranteed to the consumers.

The regasification plants are available in several versions:

- with one or many vertical or horizontal tanks,
- with one or many vaporizer units,
- customized versions are available.

Odorizing systems (option)
allow you to add many different odorants to gases. This includes natural gas (1 bar to 300 bar), biogas (1 bar to 300 bar), LPG, oxygen, nitrogen, carbon dioxide, hydrogen, LNG, as well as unconventional gases.

Notes

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